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Werkzeuge & Maschinen

ENDMILLS & SOLID MILLS

FACE MILLS

PROFILING

FAST FEED

SLOTTING

THREAD MILLING

MILLING INSERTS

TOOLING SYSTEMS

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# MILLING TOOLS

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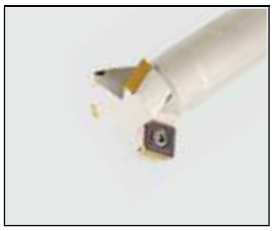

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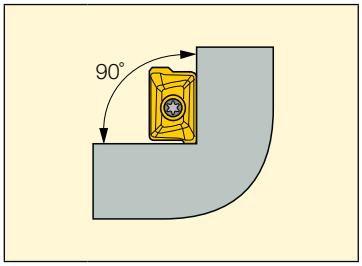
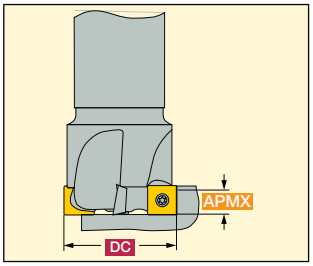
ISCARMILL

## 90° Endmills Selection Guide

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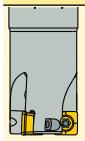
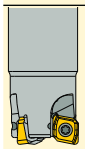
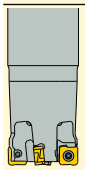
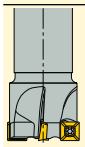
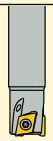
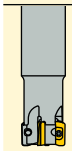
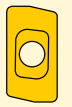
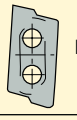
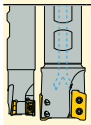
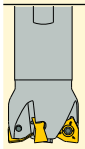
|  E90SO-04<br>E90SO-MM-04 | 13<br>13 | 3.5 | • | • | • | • | • | • | | | | • | | | | | | | | | | | | SOMT/CT 0402 |
|  E90CN-M<br>E90CN | 19<br>19 | 4 | | | | | | • | | | | • | | | • | | | | | | | | | CNHT/MT 07 |
|  S890 ESZ<br>S890 ESZ-MMT | 18<br>19 | 5 | | | | | | | | | | | | | • | | | • | | | | | | S890 SZMU 0804 |
|  E90SP<br>E90X | 28<br>20 | 9.6<br>5.8 | | • | • | • | • | • | | • | | • | | | • | | | • | | • | | | | SPMT 10<br>XPMT 10<br>QPMR 10<br>QPMT 10<br>SOMT 06<br>XOMT 06<br>SPCT 10<br>SPMR 10 |
|  T290 ELN-05<br>T290 ELN-MM-05<br>T290 ELN-10 | 18<br>18<br>29 | 5<br>10 | | • | • | • | • | • | | | | • | | | • | | | • | | • | | | | T290 LNMT 05<br>T290 LNMT 1004 |
|  HP E90AN-07<br>HP E90AN-M-07<br>HP E90AN-MM-07<br>HP E90AT-19 | 21<br>21<br>22<br>49 | 7.7<br>18 | | | • | • | • | • | | | | • | | | • | • | | • | | | | | |  HP ANKT 0702<br>  HP AD..19 |
|  HM90 E90A-10<br>HM90 E90A-MM-10<br>HM90 E90A-M-10<br>HM90 E90AD-15<br>HM90 E90AD-M-15 | 32-37<br>37-38<br>39<br>43<br>50-52 | 10<br>10<br>10<br>14.3<br>14.3 | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | | | HM90 AP...10<br>AP...10<br>HM90 AD...15<br>AD...15 |
|  H690 EWN-04<br>H690 EWN-07 | 14<br>20 | 4<br>7 | | | | | | | | • | • | • | | | • | | | • | | • | | | | H690 WNMU 0403<br>H690 WNHU/WNMU 0705 |

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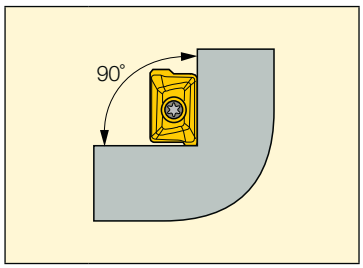
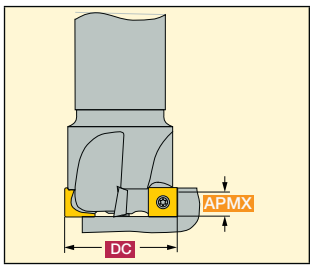
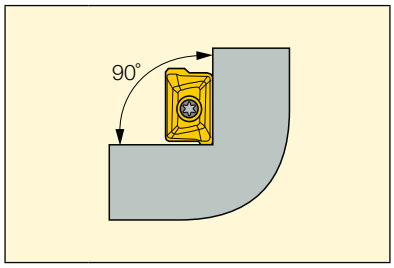
## 90° Endmills Selection Guide

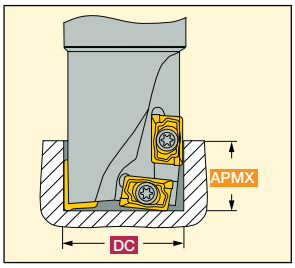



| Tools | Pages | DC / APMX | 6 | 8 | 10 | 12 | 14 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 25 | 28 | 30 | 32 | 38 | 40 | 50 | 63 | 80 | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETP-04<br>HM390 ETP-MM-04<br>HM390 ETP-05<br>HM390 ETP-MM-05<br>HM390 ETC-07<br>HM390 ETC-MM<br>HM390 ETP-10<br>HM390 ETP-M<br>HM390 ETP-C#-10<br>HM390 ETD-15<br>HM390 ETD-M<br>HM390 ETD-19 | 15<br>15<br>16<br>16-17<br>22<br>23<br>29<br>30<br>31<br>42<br>42<br>46 | 3<br>3.5<br>5<br>8<br>13<br>16 | • | • | • | • | • | • | | • | | • | | • | • | • | | • | | • | • | | HM390 TPKR 0401<br>HM390 TPKT/CT 0502<br>HM390 TCKT/CT 0703<br>HM390 TPKT/CT 1003<br>HM390 TDKT/CT 1505<br>HM390 TDKT 1907 |
| H490 E90AX-09<br>H490 E90AX-M<br>H490 E90AX-MM<br>H490 E90AX-12<br>H490 E90AX-17 | 26<br>27<br>27<br>41<br>47 | 8<br>12<br>16.3 | | | | | | • | | • | | • | | • | • | | | • | | • | • | • | • | H490 ANKX/ANCX-09<br>H490 ANKX/ANCX-12<br>H490 ANKX/ANCX-17 |
| P290 EPW<br>P290 EPW-M | 48<br>49 | 12<br>18 | | | | | | | | | | • | | | • | | | • | | • | | | | P290 ACCT/KT1204<br>P290 ACCT/KT1806 |
| H690 E90AX-10 | 39 | 8 | | | | | | | | | | • | | | • | | | • | | • | | | | H690 TNKX/TNCX 1005 |
| T490 ELN-05<br>T490 ELN-MM-05<br>T490 ELN-08<br>T490 ELN-M-08<br>T490 ELN-MM..-08<br>T490 ELN-11<br>T490 ELN-13<br>T490 ELN-16 | 23<br>23<br>24<br>25<br>25<br>40<br>41<br>46 | 4.6<br>8<br>9<br>12.5<br>16 | | | • | • | | • | | • | | • | | • | • | | | • | | • | • | | | T490 LN..0502<br>T490 LN..0804<br>T490 LN..1106<br>T490 LN..1306<br>T490 LN..1607 |
| HCE<br>HCE-MM | 31<br>31 | 8.1-<br>14.7 | | | | • | | • | | | | • | | | • | | | | | | | | | HTR<br>HCC |

## Center Cutting Endmills




| Tools | Pages | DC / APMX | 8 | 10 | 12 | 14 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 25 | 28 | 30 | 32 | 38 | 40 | 50 | 63 | 80 | Inserts |
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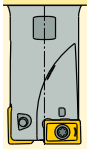
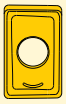
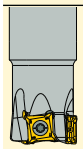
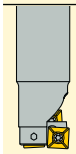
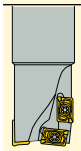
|  MDR-D-C<br>MDR-MMT | 12<br>12 | 7.3<br>8.9<br>11.5 | | | | | • | | | | • | | | • | | | | | | | | |  MDR ANMU |
|  T890HT ELN-R13 | 40 | 9.5 | | | | | | | | | | | | | | | • | | • | | | | T890 LNHT 1306 |
|  E90XC | 50 | 5.8-22 | | | • | | | | | | • | | | | | | | | | | | | SOMT-HQ<br>XOMT-HQ |
|  E90AC | 50 | 19-38 | | | | | | | | | | | | • | | | • | • | | | | | ADCT 1505<br>ADKT 1505<br>FDKT 1505 |

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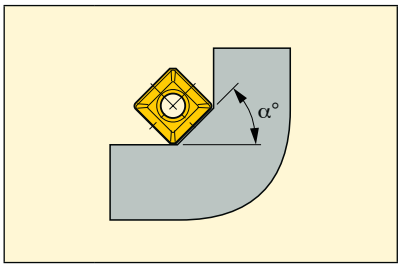
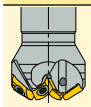
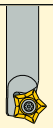
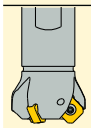
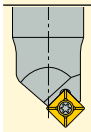
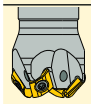
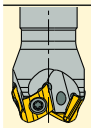
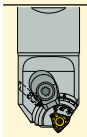
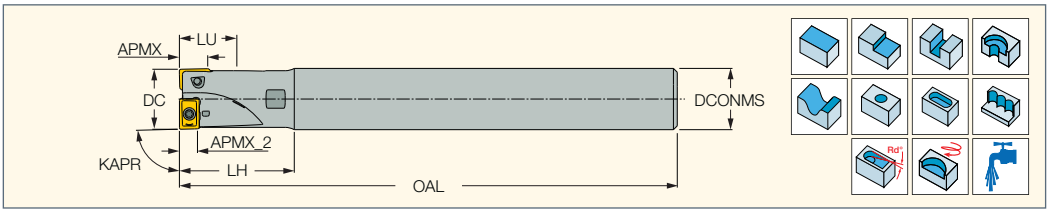
## Endmills 30°, 45°, 60° Selection Guide




| Tools | Pages | DC / APMX | 6 | 8 | 12 | 16 | 20 | 25 | 30 | 32 | 40 | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number of Teeth (Effective) | | | | | | | | | |
|  E30 / T230 | 51 | 2.5<br>7<br>α°=30° | | | 4 | 3 | | | | | | T290 LNMT 05<br> TPMT |
|  CH45-PN06<br>CH45-MM-PN06 | 51<br>51 | 1.5<br>α°=45° | | | 1 | 1 | | | | | | PNMT 0602-TN |
|  SOE 45 8/16 | 52 | 3.5-6<br>α°=45° | | | | | | 2 | | 3 | 4 | S845 SNMU/SNHU 1306<br> ONMU/ONHU 0505 |
|  E45X | 53 | 4<br>α°=45° | 1 | 1 | | | | | | | | SOMT 06<br>XOMT 06<br>QOMT 06 |
|  E45 / T245 | 53 | 3.6-9.7<br>α°=45° | | | 1-4 | 2 | | | 3 | | | SCMT 12<br>SDMT 09<br>T290 LNMT 05<br>TPMT |
| HCM | 304-307 | 5 - 12<br>α°=45° | | | 2 | 2 | 2 | 2 | | | | HCD |
|  E60 / T260 | 53 | 4.5<br>12.3<br>α°=60° | | | 4 | | | 2 | | | | T290 LNMT 05<br>TPMT |
|  HM390 E10-80-07 | 54 | 0.35-1.97<br>α°=10°-80° | | | | | | 1 | | | | HM390 TCK/CT 0703 |

QUICK D MILL

**MDR D-C-AN**
Multi-Function Endmill Cutters




| Designation | DC | APMX | APMX_2 | KAPR[1] | CICT[2] | LU[3] | LH | OAL | DCONMS | Shank | MDN[4] | MDX[5] | MIID[6] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MDR D16-2-C16-AN07 | 16.00 | 7.30 | 4.70 | 90.0 | 2 | 12.00 | 30.0 | 130.00 | 16.00 | C | 16.80 | 30.80 | MDR ANMU 0703... | 0.14 |
| MDR D20-2-C20-AN09 | 20.00 | 8.90 | 5.70 | 90.0 | 2 | 15.00 | 35.0 | 145.00 | 20.00 | C | 21.80 | 38.20 | MDR ANMU 0903... | 0.30 |
| MDR D25-2-C25-AN12 | 25.00 | 11.50 | 6.50 | 90.0 | 2 | 18.50 | 50.0 | 150.00 | 25.00 | C | 26.30 | 47.60 | MDR ANMU 1204... | 0.47 |

**New**

- When drilling holes deeper than 5 mm, it is recommended to use the pecking method (G83)
- For user guide, see pages 616-622

(1) Tool cutting edge angle
(2) Number of inserts (or edges for solid tool)
(3) Max.drilling depth
(4) Minimum diameter to obtain a flat-bottom pocket having no protrusions by use of helical or circular interpolation
(5) Maximum diameter to obtain a flat-bottom pocket having no protrusions by use of helical or circular interpolation
(6) Master insert identification

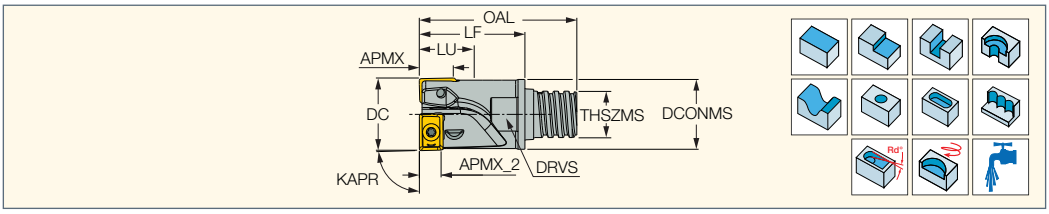
**For inserts, see pages:** MDR ANMU PNTR (508)

## Spare Parts

| Designation | | |
|---|---|---|
| MDR D16-2-C16-AN07 | SR M2.5-L6-D3.25-T7 | T-7/51 |
| MDR D20-2-C20-AN09 | SR 10508082-HG | T-8/53 |
| MDR D25-2-C25-AN12 | SR 14-571 | T-10/51 |

QUICK D MILL

**MDR MMT-JHP**
Multi-Function Modular Head for Endmill Cutters with a MULTI-MASTER Threaded Adaptation




| Designation | DC | APMX | APMX_2 | KAPR[1] | CICT[2] | LU[3] | LF | OAL | THSZMS | DCONMS | DRVS[4] | RMPX°[5] | MDN[6] | MDX[7] | MIID[8] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MDR D16/.63-2-MMT10-07JHP | 16.00 | 7.30 | 4.70 | 90.0 | 2 | 12.00 | 23.00 | 34.30 | T10 | 15.20 | 13.0 | 90.0 | 16.80 | 30.80 | MDR ANMU 07 | 0.07 |
| MDR D20/.79-2-MMT12-09JHP | 20.00 | 8.90 | 5.70 | 90.0 | 2 | 15.00 | 24.70 | 38.00 | T12 | 18.30 | 16.0 | 90.0 | 21.80 | 38.20 | MDR ANMU 09 | 0.08 |
| MDR D25/.98-2-MMT15-12JHP | 25.00 | 11.50 | 6.50 | 90.0 | 2 | 18.50 | 33.00 | 50.00 | T15 | 23.90 | 20.0 | 90.0 | 26.30 | 47.60 | MDR ANMU 12 | 0.08 |

**New**

- Do not apply lubricant to the MULTI-MASTER threaded connection
- When drilling holes deeper than 5 mm, it is recommended to use the pecking method (G83)
- For adaptation, see page 59
- For user guide, see pages 616-622

(1) Tool cutting edge angle
(2) Number of inserts (or edges for solid tool)
(3) Max.drilling depth
(4) Torque key size
(5) Maximum ramping angle
(6) Minimum diameter to obtain a flat-bottom pocket having no protrusions by use of helical or circular interpolation
(7) Maximum diameter to obtain a flat-bottom pocket having no protrusions by use of helical or circular interpolation
(8) Master insert identification

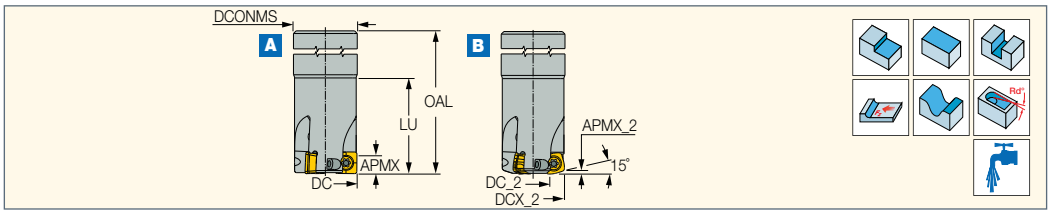
**For inserts, see pages:** MDR ANMU PNTR (508)
**For holders, see pages:** MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106)
• MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106)
• MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

## Spare Parts

| Designation | | |
|---|---|---|
| MDR D16/.63-2-MMT10-07JHP | SR M2.5-L6-D3.25-T7 | T-7/51 |
| MDR D20/.79-2-MMT12-09JHP | SR 10508082-HG | T-8/53 |
| MDR D25/.98-2-MMT15-12JHP | SR 14-571 | T-10/51 |

HELI4MILL

**E90SO-04**
Endmills Carrying Square Inserts for Shouldering and Fast Feed Milling Applications




| Designation | DC | APMX | DC_2 | DCX_2 | APMX_2 | LU | OAL | DCONMS | Shank[1] | CICT[2] | RMPX°[3] | MIID[4] | MIID_2[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E90SO D06-1-C06-04-C | 6.00 | 3.50 | - | 6.17 | 0.50 | 15.00 | 57.00 | 6.00 | C | 1 | - | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.06 |
| E90SO D08-1-C08-04-C | 8.00 | 3.50 | 1.90 | 8.17 | 0.50 | 15.30 | 60.00 | 8.00 | C | 1 | 8.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.01 |
| E90SO D10-2-C10-04-C | 10.00 | 3.50 | 3.90 | 10.17 | 0.50 | 18.00 | 70.00 | 10.00 | C | 2 | 6.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.04 |
| E90SO D12-2-C12-04-C | 12.00 | 3.50 | 5.90 | 12.17 | 0.50 | 18.00 | 70.00 | 12.00 | C | 2 | 3.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.05 |
| E90SO D12-3-C12-04-C | 12.00 | 3.50 | 5.90 | 12.17 | 0.50 | 18.00 | 70.00 | 12.00 | C | 3 | 3.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.05 |
| E90SO D14-4-C14-04-C | 14.00 | 3.50 | 7.90 | 14.17 | 0.50 | 20.00 | 80.00 | 14.00 | C | 4 | 2.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.08 |
| E90SO D16-4-C16-04-C | 16.00 | 3.50 | 9.90 | 16.17 | 0.50 | 20.00 | 90.00 | 16.00 | C | 4 | 2.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.12 |
| E90SO D16-5-C16-04-C | 16.00 | 3.50 | 9.90 | 16.17 | 0.50 | 20.00 | 90.00 | 16.00 | C | 5 | 2.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.12 |
| E90SO D20-6-C20-04-C | 20.00 | 3.50 | 13.90 | 20.17 | 0.50 | 25.00 | 110.00 | 20.00 | C | 6 | 1.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.23 |

• A - with SOMT/CT 0402 insert • B - with SOMT 0402-FF insert • Tightening torque 0.5 Nxm
(1) C-Cylindrical
(2) Number of inserts (or edges for solid tool)
(3) Maximum ramping angle - valid only with SOMT 040208 PNR-FF insert
(4) Master insert identification
(5) Master insert identification 2

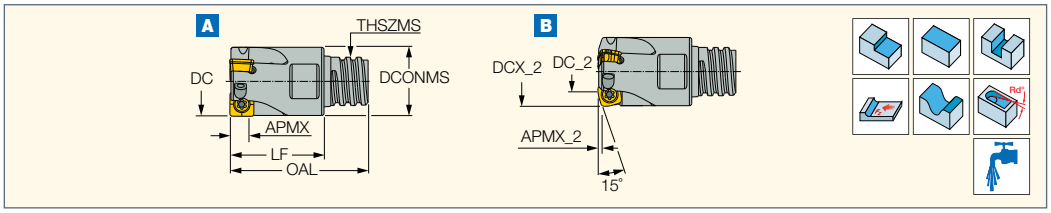
**For inserts, see pages:** SOMT 0402-FF (568) • SOMT/CT 0402 (568)

## Spare Parts

| Designation | | |
|---|---|---|
| E90SO D06-1-C06-04-C | TS 18041I/HG/S | T-6IP/51 |
| E90SO D08-1-C08-04-C | TS 18041I/HG/S | T-6IP/51 |
| E90SO D10-2-C10-04-C | TS 18041I/HG | T-6IP/51 |
| E90SO D12-2-C12-04-C | TS 18041I/HG | T-6IP/51 |
| E90SO D12-3-C12-04-C | TS 18041I/HG | T-6IP/51 |
| E90SO D14-4-C14-04-C | TS 18041I/HG | T-6IP/51 |
| E90SO D16-4-C16-04-C | TS 18041I/HG | T-6IP/51 |
| E90SO D16-5-C16-04-C | TS 18041I/HG | T-6IP/51 |
| E90SO D20-6-C20-04-C | TS 18041I/HG | T-6IP/51 |

HELI4MILL

**E90SO-MM-04**
Endmills with a MULTI-MASTER Connection Carrying Inserts for Shouldering and Fast Feed Applications




| Designation | DC | APMX | DC_2 | DCX_2 | APMX_2 | LF | OAL | CICT[1] | DCONMS | THSZMS | DRVS[2] | RMPX°[3] | MIID[4] | MIID_2[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E90SO D10-2-MMT06-04 | 10.00 | 3.50 | 3.90 | 10.17 | 0.50 | 15.00 | 21.30 | 2 | 9.70 | T06 | 8.0 | 6.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.05 |
| E90SO D12-3-MMT08-04 | 12.00 | 3.50 | 5.90 | 12.17 | 0.50 | 16.00 | 23.50 | 3 | 11.60 | T08 | 10.0 | 3.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.15 |
| E90SO D14-4-MMT08-04 | 14.00 | 3.50 | 7.90 | 14.17 | 0.50 | 16.00 | 23.50 | 4 | 13.60 | T08 | 10.0 | 2.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.01 |
| E90SO D16-5-MMT10-04 | 16.00 | 3.50 | 9.90 | 16.17 | 0.50 | 18.00 | 29.30 | 5 | 15.60 | T10 | 13.0 | 2.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.03 |
| E90SO D20-6-MMT12-04 | 20.00 | 3.50 | 13.90 | 20.17 | 0.50 | 25.00 | 38.80 | 6 | 19.60 | T12 | 16.0 | 1.0 | SOMT 040204 PNTR | SOMT 040208 PNR-FF | 0.08 |

• A - with SOMT/CT 0402 insert • B - with SOMT 0402-FF insert • Tightening torque 0.5 Nxm
(1) Number of inserts (or edges for solid tool)
(2) Torque key size
(3) Maximum ramping angle - valid only with SOMT 040208 PNR-FF insert
(4) Master insert identification
(5) Master insert identification 2

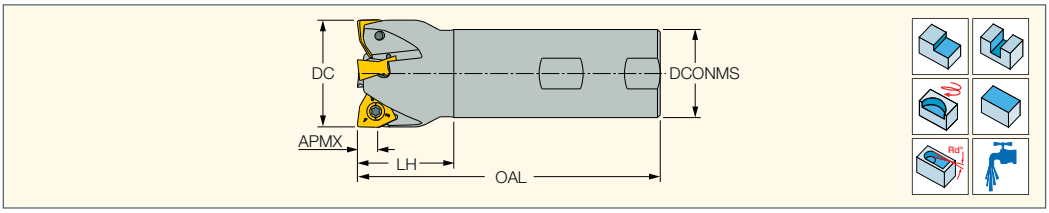
**For inserts, see pages:** SOMT 0402-FF (568) • SOMT/CT 0402 (568)
**For holders, see pages:** MM CAB (110) • MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102)
• MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104)
• MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

## Spare Parts

| Designation | | |
|---|---|---|
| E90SO-MM-04 | TS 18041I/HG | T-6IP/51 |

HELIDO TRIGON LINE

**H690 EWN-04**
90° Endmills Carrying
H690 WNMU 0403
Double-Sided Trigonal Inserts
with 6 Helical Cutting Edges




| Designation | DC | CICT(1) | APMX | OAL | LH | DCONMS | Shank(2) | RMPX°(3) | kg |
|---|---|---|---|---|---|---|---|---|---|
| H690 EWN D18-2-C16-R04 | 18.00 | 2 | 4.00 | 100.00 | 24.0 | 16.00 | C | 1.7 | 0.14 |
| H690 EWN D18-2-C16-R04-B | 18.00 | 2 | 4.00 | 160.00 | 24.0 | 16.00 | C | 1.7 | 0.21 |
| H690 EWN D20-2-C19-R04-B | 20.00 | 2 | 4.00 | 160.00 | 26.0 | 19.00 | C | 1.5 | 0.31 |
| H690 EWN D20-2-C20-R04 | 20.00 | 2 | 4.00 | 110.00 | 26.0 | 20.00 | C | 1.5 | 0.42 |
| H690 EWN D20-3-C19-R04-B | 20.00 | 3 | 4.00 | 160.00 | 26.0 | 19.00 | C | 1.5 | 0.30 |
| H690 EWN D20-3-C20-R04 | 20.00 | 3 | 4.00 | 110.00 | 26.0 | 20.00 | C | 1.5 | 0.24 |
| H690 EWN D20-3-C20-R04-B | 20.00 | 3 | 4.00 | 160.00 | 26.0 | 20.00 | C | 1.5 | 0.31 |
| H690 EWN D20-3-W20-R04 | 20.00 | 3 | 4.00 | 85.00 | 26.0 | 20.00 | W | 1.5 | 0.16 |
| H690 EWN D25-4-C25-R04 | 25.00 | 4 | 4.00 | 120.00 | 30.0 | 25.00 | C | 1.1 | 0.36 |
| H690 EWN D25-5-C25-R04 | 25.00 | 5 | 4.00 | 120.00 | 30.0 | 25.00 | C | 1.1 | 0.37 |
| H690 EWN D25-5-W25-R04 | 25.00 | 5 | 4.00 | 95.00 | 30.0 | 25.00 | W | 1.1 | 0.22 |
| H690 EWN D32-5-C32-R04 | 32.00 | 5 | 4.00 | 130.00 | 35.0 | 32.00 | C | 0.8 | 0.68 |
| H690 EWN D32-6-C32-R04 | 32.00 | 6 | 4.00 | 130.00 | 35.0 | 32.00 | C | 0.8 | 0.68 |
| H690 EWN D32-6-W32-R04 | 32.00 | 6 | 4.00 | 110.00 | 35.0 | 32.00 | W | 0.8 | 0.56 |

- For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)
(2) C-Cylindrical , W-Weldon
(3) Maximum ramping angle

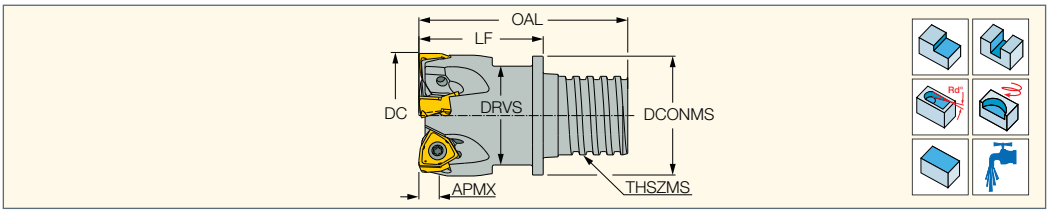
**For inserts, see pages:** H690 WNMU 0403 (536)

## Spare Parts

| Designation | | |
|---|---|---|
| H690 EWN-04 | SR M2.5X6-T7-60 | T-7/51 |

HELIDO TRIGON LINE

**H690 EWN-MM-04**
90° Endmills with a MULTI-MASTER
ThreadedConnection Carrying
H690 WNMU 0403 Double
Sided Trigonal Inserts




| Designation | DC | APMX | CICT(1) | LF | DCONMS | THSZMS | OAL | DRVS(2) | RMPX°(3) | TQ_3(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H690 EWN D20-3-MMT12-R04 | 20.00 | 4.00 | 3 | 20.00 | 18.30 | T12 | 33.00 | 16.0 | 1.5 | 28 | 0.07 |
| H690 EWN D25-5-MMT15-R04 | 25.00 | 4.00 | 5 | 25.00 | 23.90 | T15 | 42.00 | 20.0 | 1.1 | 40 | 0.12 |

- Insert clamping screw must be lubricated every indexing. • For adaptation see page 59 • For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)
(2) Clamping wrench size
(3) Maximum ramping angle
(4) Tool tightening torque (Nxm)

**For inserts, see pages:** H690 WNMU 0403 (536)
**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109)
• MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106)
• MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

## Spare Parts

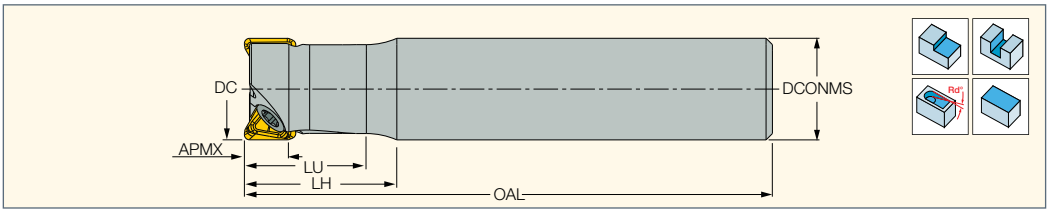
| Designation | | |
|---|---|---|
| H690 EWN-MM-04 | SR M2.5X6-T7-60(a) | T-7/51 |

(a) Tightening torque 0.9 Nxm

NANMILL
NANO ENDMILL

## HM390 ETP-04

90° Small Diameter Endmills Carrying HM390 TPKR 0401 Triangular Inserts with 3 Helical Cutting Edges




| Designation | DC | APMX | CICT(1) | OAL | LU | LH | DCONMS | Shank(2) | RMPX°(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETP D08-2-C08-04 | 8.00 | 3.00 | 2 | 60.00 | 9.60 | 12.0 | 8.00 | C | 3.0 | 0.02 |
| HM390 ETP D10-3-C10-04 | 10.00 | 3.00 | 3 | 80.00 | 12.60 | 15.0 | 10.00 | C | 2.5 | 0.05 |

- Tightening torque 0.5 Nxm

(1) Number of inserts (or edges for solid tool)
(2) C-Cylindrical
(3) Maximum ramping angle

**For inserts, see pages:** HM390 TPKR 0401 (511)

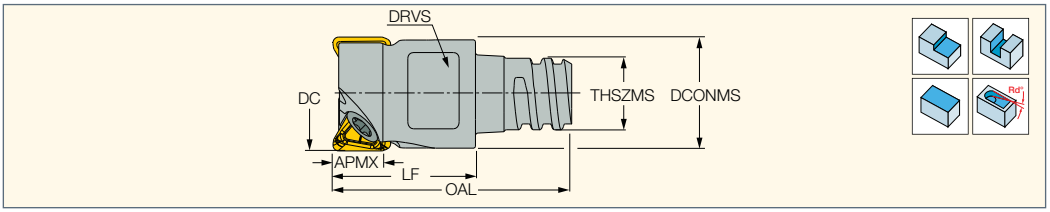
### Spare Parts

| Designation | | |
|---|---|---|
| HM390 ETP D08-2-C08-04 | SR M2X0.4-3 T6 | T-6/5 MAGNET 3X3 |
| HM390 ETP D10-3-C10-04 | SR M2X0.4-3.5 T6 | T-6/5 MAGNET 3X3 |

NANMILL
NANO ENDMILL

## HM390 ETP-MM-04

90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying HM390 TPKR 0401... Triangular Inserts




| Designation | DC | APMX | CICT(1) | LF | DCONMS | THSZMS | OAL | DRVS(2) | RMPX°(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETP D08-2-MMT05-04 | 8.00 | 3.00 | 2 | 10.00 | 7.60 | T05 | 16.75 | 5.5 | 3.0 | 0.04 |
| HM390 ETP D10-3-MMT06-04 | 10.00 | 3.00 | 3 | 12.00 | 9.60 | T06 | 18.30 | 8.0 | 2.5 | 0.04 |

- Insert tightening torque 0.5 N*m • For adaptation, see page 59 • For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)
(2) Clamping wrench size
(3) Maximum ramping angle

**For inserts, see pages:** HM390 TPKR 0401 (511)
**For holders, see pages:** MM CAB (110) • MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102)
• MM S-A (straight shanks) (106) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109)
• MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

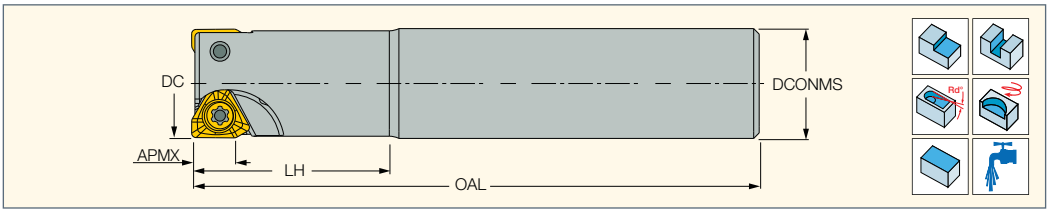
### Spare Parts

| Designation | | |
|---|---|---|
| HM390 ETP D08-2-MMT05-04 | SR M2X0.4-3 T6 | T-6/5 MAGNET 3X3 |
| HM390 ETP D10-3-MMT06-04 | SR M2X0.4-3.5 T6 | T-6/5 MAGNET 3X3 |

HELI3MILL HM390 LINE

## HM390 ETP-05

90° Endmills Carrying HM390 TPKT 0502 Triangular Inserts with 3 Helical Cutting Edges




| Designation | DC | APMX | CICT(1) | OAL | LH | DCONMS | Shank(2) | RMPX°(3) | kg |
|---|---|---|---|---|---|---|---|---|---|
| HM390 ETP D06-1-C06-05-C | 6.00 | 3.50 | 1 | 57.00 | 15.0 | 6.00 | C | 1.0 | 0.06 |
| HM390 ETP D08-1-C08-05-C | 8.00 | 3.50 | 1 | 60.00 | 14.9 | 8.00 | C | 1.0 | 0.03 |
| HM390 ETP D10-2-C10-05-C | 10.00 | 3.50 | 2 | 70.00 | 18.0 | 10.00 | C | 2.0 | 0.03 |
| HM390 ETP D12-3-C12-05-C | 12.00 | 3.50 | 3 | 70.00 | 18.0 | 12.00 | C | 1.5 | 0.06 |
| HM390 ETP D14-3-C14-05-C | 14.00 | 3.50 | 3 | 80.00 | 20.0 | 14.00 | C | 1.5 | 0.08 |
| HM390 ETP D16-4-C16-05-C | 16.00 | 3.50 | 4 | 90.00 | 20.0 | 16.00 | C | 1.5 | 0.12 |

• Tightening torque 0.5 N*m • For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) C-Cylindrical

(3) Maximum ramping angle

**For inserts, see pages:** HM390 TPKT/CT 0502 (511)

### Spare Parts

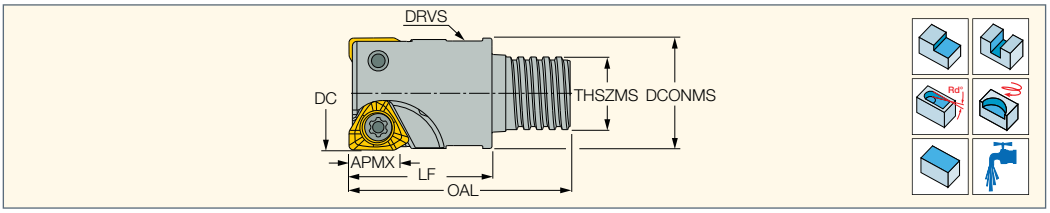
| Designation | | |
|---|---|---|
| HM390 ETP D06-1-C06-05-C | TS 18041I/HG/S | T-6IP/51(a) |
| HM390 ETP D08-1-C08-05-C | TS 18041I/HG/S | T-6IP/51(a) |
| HM390 ETP D10-2-C10-05-C | TS 18041I/HG | T-6IP/51(a) |
| HM390 ETP D12-3-C12-05-C | TS 18041I/HG | T-6IP/51(a) |
| HM390 ETP D14-3-C14-05-C | TS 18041I/HG | T-6IP/51(a) |
| HM390 ETP D16-4-C16-05-C | TS 18041I/HG | T-6IP/51(a) |

(a) For optimal tightening torque, use 7007317 HSD 4-0.65NM + 7007375 BLD 4 T06-0.65NM optional torque limiting screwdriver.

HELI3MILL HM390 LINE

## HM390 ETP-MM-05

90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying HM390 TPKT 0502... Triangular Inserts




| Designation | DC | APMX | CICT(1) | LF | DCONMS | THSZMS | OAL | DRVS(2) | RMPX°(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETP D10-2-MMT06-05 | 10.00 | 3.50 | 2 | 15.00 | 9.60 | T06 | 21.60 | 8.0 | 2.0 | 0.01 |
| HM390 ETP D12-3-MMT08-05 | 12.00 | 3.50 | 3 | 16.00 | 11.60 | T08 | 24.20 | 10.0 | 1.5 | 0.00 |
| HM390 ETP D14-3-MMT08-05 | 14.00 | 3.50 | 3 | 16.00 | 13.60 | T08 | 22.90 | 10.0 | 1.5 | 0.01 |
| HM390 ETP D16-4-MMT10-05 | 16.00 | 3.50 | 4 | 18.00 | 15.60 | T10 | 29.80 | 13.0 | 1.5 | 0.03 |

• Insert tightening torque 0.5 N*m • For adaptation, see page 59 • For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) Clamping wrench size

(3) Maximum ramping angle

**For inserts, see pages:** HM390 TPKT/CT 0502 (511)

**For holders, see pages:** MM CAB (110) • MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

### Spare Parts

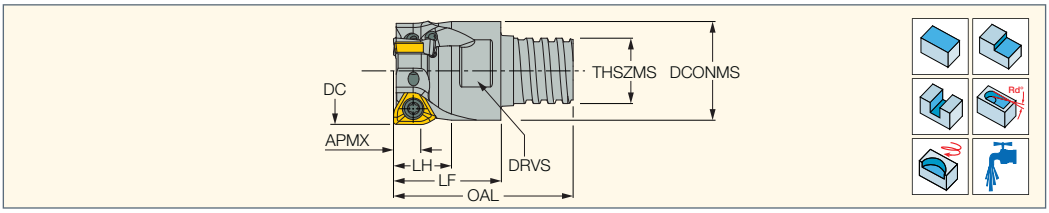
| Designation | | |
|---|---|---|
| HM390 ETP-MM-05 | TS 18041I/HG | T-6IP/51(a) |

(a) For optimal tightening torque, use 7007317 HSD 4-0.65NM + 7007375 BLD 4 T06-0.65NM optional torque limiting screwdriver.

HELI3MILL HM390 LINE

## HM390 ETP/C/D-MM-JHP

90° JHP Endmill with a
MULTI-MASTER
Threaded Adaptation




| Designation | DC | APMX | CICT(1) | LF | DCONMS | THSZMS | OAL | DRVS(2) | RMPX°(3) | MIID(4) |
|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETPD16-4MMT10-05JHP | 16.00 | 3.50 | 4 | 18.00 | 15.50 | T10 | 29.30 | 13.0 | 1.5 | HM390 TPKT 0502 |
| HM390 ETPD20-5MMT12-05JHP | 20.00 | 3.50 | 5 | 20.00 | 19.40 | T12 | 33.27 | 16.0 | 1.3 | HM390 TPKT 0502 |
| HM390 ETCD16-2MMT10-07JHP | 16.00 | 5.00 | 2 | 16.00 | 15.30 | T10 | 27.30 | 13.0 | 1.9 | HM390 TCKT 0703 |
| HM390 ETCD20-3MMT12-07JHP | 20.00 | 5.00 | 3 | 20.00 | 18.30 | T12 | 33.30 | 16.0 | 1.4 | HM390 TCKT 0703 |
| HM390 ETCD25-4MMT15-07JHP | 25.00 | 5.00 | 4 | 25.00 | 23.90 | T15 | 42.00 | 20.0 | 1.0 | HM390 TCKT 0703 |
| HM390 ETPD25-3MMT15-10JHP | 25.00 | 8.00 | 3 | 30.00 | 24.00 | T15 | 47.00 | 20.0 | 2.9 | HM390 TPKT 1003 |
| HM390 ETPD32-4MMT21-10JHP | 32.00 | 8.00 | 4 | 30.00 | 29.00 | T21 | 53.10 | 24.0 | 2.1 | HM390 TPKT 1003 |
| HM390 ETDD40-4MMT21-15JHP | 40.00 | 13.00 | 4 | 35.00 | 29.00 | T21 | 58.10 | 24.0 | 2.1 | HM390 TDKT 1505 |

**New**

• Insert tightening torque 0.5 N*m • For adaptation, see page 59 • For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) Torque key size

(3) Maximum ramping angle

(4) Master insert identification

**For inserts, see pages:** HM390 TCKT/CT 0703 (512) • HM390 TDCR 1505 (514) • HM390 TDKT/CT 1505 (513) • HM390 TPCR 1003 (513) • HM390 TPKT/CT 0502 (511) • HM390 TPKT/CT 1003 (512)

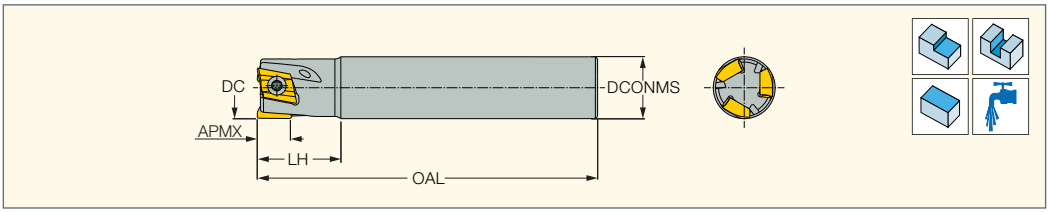
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM390 ETPD16-4MMT10-05JHP | TS 18041I/HG | T-6IP/51 | | |
| HM390 ETPD20-5MMT12-05JHP | TS 18041I/HG | T-6IP/51 | | |
| HM390 ETCD16-2MMT10-07JHP | SR M2.5X5-T7-60 | T-7/51 | | |
| HM390 ETCD20-3MMT12-07JHP | SR M2.5X5-T7-60 | T-7/51 | | |
| HM390 ETCD25-4MMT15-07JHP | SR M2.5X6-T7-60 | T-7/51 | | |
| HM390 ETPD25-3MMT15-10JHP | SR 14-562/S | | BLD T10/S7 | SW6-SD |
| HM390 ETPD32-4MMT21-10JHP | SR 14-562/S | | BLD T10/S7 | SW6-SD |
| HM390 ETDD40-4MMT21-15JHP | SR 10511869 | | BLD IP20/S7 | SW6-T |

SUMOMILL 290 LINE

## T290 ELN-05

Endmills Carrying Tangentially Clamped Inserts




| Designation | DC | CICT(1) | OAL | LH | APMX | DCONMS | Shank(2) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|
| T290 ELN D08-01-C08-05 | 8.00 | 1 | 60.00 | 20.0 | 5.00 | 8.00 | C | 0.02 | SR 10503833 | T-7/51 |
| T290 ELN D10-02-C10-05 | 10.00 | 2 | 80.00 | 20.0 | 5.00 | 10.00 | C | 0.04 | SR 10503833-S | T-7/51 |
| T290 ELN D12-02-C12-05 | 12.00 | 2 | 80.00 | 20.0 | 5.00 | 12.00 | C | 0.06 | SR 10503833 | T-7/51 |
| T290 ELN D12-03-C12-05 | 12.00 | 3 | 80.00 | 20.0 | 5.00 | 12.00 | C | 0.05 | SR 10503833 | T-7/51 |
| T290 ELN D14-03-C14-05 | 14.00 | 3 | 80.00 | 20.0 | 5.00 | 14.00 | C | 0.08 | SR 10503833 | T-7/51 |
| T290 ELN D16-04-C16-05 | 16.00 | 4 | 80.00 | 22.0 | 5.00 | 16.00 | C | 0.10 | SR 10503833 | T-7/51 |
| T290 ELN D16-05-C16-05 | 16.00 | 5 | 80.00 | 22.0 | 5.00 | 16.00 | C | 0.10 | SR 10503833 | T-7/51 |

- For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)

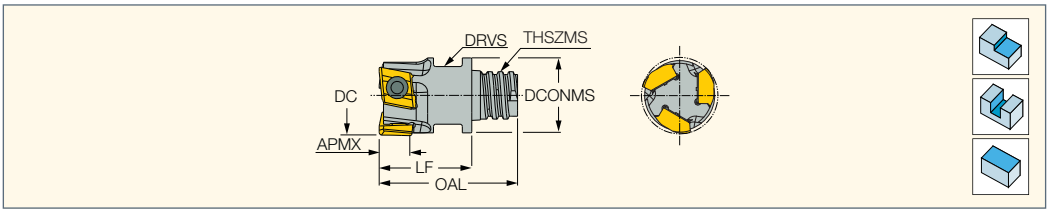
(2) C-Cylindrical

**For inserts, see pages:** T290 LNMT/LNHT 0502 (542)

SUMOMILL 290 LINE

## T290 ELN-MM-05

Endmills with a MULTI-MASTER Adaptation Carrying Tangentially Clamped Inserts




| Designation | DC | CICT(1) | APMX | DCONMS | THSZMS | LF | OAL | DRVS(2) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T290 ELN D10-02-MMT06-05 | 10.00 | 2 | 5.00 | 9.20 | T06 | 13.40 | 20.00 | 8.0 | 0.01 | SR 10503833-S | T-7/51 |
| T290 ELN D12-03-MMT08-05 | 12.00 | 3 | 5.00 | 11.00 | T08 | 16.00 | 24.00 | 10.0 | 0.01 | SR 10503833 | T-7/51 |
| T290 ELN D14-03-MMT08-05 | 14.00 | 3 | 5.00 | 13.00 | T08 | 16.06 | 24.00 | 10.0 | 0.01 | SR 10503833 | T-7/51 |
| T290 ELN D16-04-MMT10-05 | 16.00 | 4 | 5.00 | 14.95 | T10 | 19.25 | 30.55 | 13.0 | 0.03 | SR 10503833 | T-7/51 |

- Do not apply lubricant to the MULTI-MASTER threaded connection
- For adaptation see page 59
- For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) Clamping wrench size

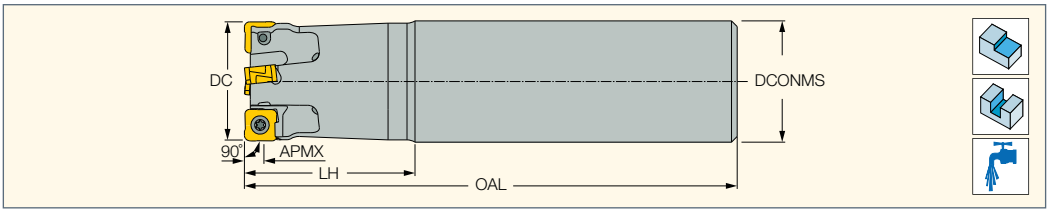
**For inserts, see pages:** T290 LNMT/LNHT 0502 (542)

**For holders, see pages:** MM CAB (110) • MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

NEODO 90° LINE

## S890 ESZ-R08

Endmills Carrying Double-Sided Square Inserts with 8 Cutting Edges




| Designation | DC | APMX | CICT(1) | LH | OAL | DCONMS | Shank(2) | MIID(3) | kg |
|---|---|---|---|---|---|---|---|---|---|
| S890 ESZ D25-3-C25-R08 | 25.00 | 5.00 | 3 | 35.0 | 120.00 | 25.00 | C | S890 SZMU 0804 | 0.35 |
| S890 ESZ D25-3-W25-R08 | 25.00 | 5.00 | 3 | 35.0 | 95.00 | 25.00 | W | S890 SZMU 0804 | 0.07 |
| S890 ESZ D32-4-C32-R08 | 32.00 | 5.00 | 4 | 45.0 | 130.00 | 32.00 | C | S890 SZMU 0804 | 0.66 |
| S890 ESZ D32-4-W32-R08 | 32.00 | 5.00 | 4 | 45.0 | 110.00 | 32.00 | W | S890 SZMU 0804 | 0.17 |

New

- For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) C-Cylindrical, W-Weldon

(3) Master insert identification

**For inserts, see pages:** S890 SZMU-0804PN (572)

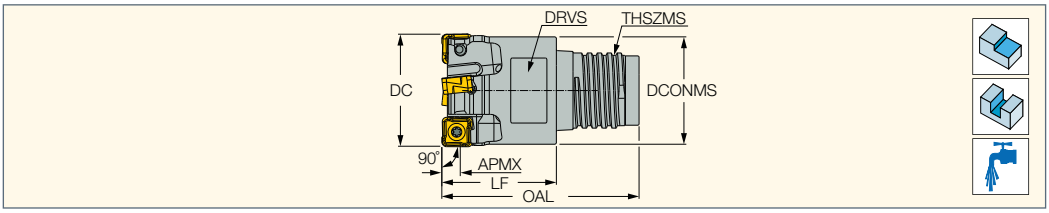
### Spare Parts

| Designation | | |
|---|---|---|
| S890 ESZ-R08 | SR M3X0.5-L7.4 IP9 | IP-9/151 |

NEODO S90° LINE

## S890 ESZ-MMT15-R08

Endmills Carrying
Double-Sided Square Inserts
with 8 Cutting Edges




| Designation | DC | APMX | CICT(1) | LF | THSZMS | DCONMS | OAL | CSP(2) | DRVS(3) | MIID(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S890 ESZ D25-3-MMT15-R08 | 25.00 | 5.00 | 3 | 25.00 | T15 | 23.90 | 42.00 | 1 | 20.0 | S890 SZMU 0804... | 0.10 |
| S890 ESZ D32-4-MMT21-R08 | 32.00 | 5.00 | 4 | 32.00 | T21 | 30.00 | 55.10 | 1 | 24.0 | S890 SZMU0804... | 0.20 |

New

- For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Torque key size
(4) Master insert identification

**For inserts, see pages:** S890 SZMU-0804PN (572)
**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER-H (108) • MM TS-A (105)

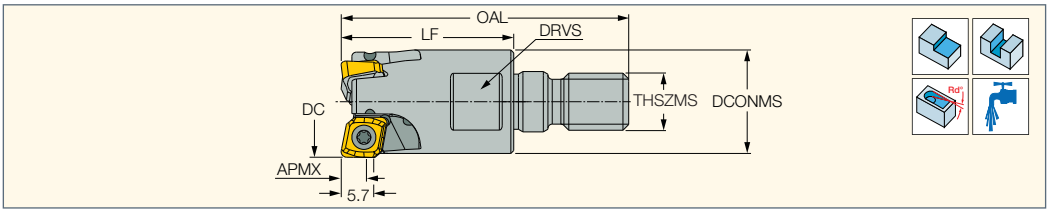
### Spare Parts

| Designation | | |
|---|---|---|
| S890 ESZ-MMT15-R08 | SR M3X0.5-L7.4 IP9 | IP-9/151 |

TORMILL

## E90CN-M

90° Endmills with a FLEX-FIT
Threaded Connection Carrying
CNMT/HT 0703 Inserts




| Designation | DC | CICT(1) | APMX(2) | LF | OAL | THSZMS | RMPX°(3) | DCONMS | DRVS(4) | TQ_3(5) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E90CN D16-2-M08-07-C | 16.00 | 2 | 4.00 | 30.00 | 47.50 | M08 | 5.0 | 13.00 | 13.0 | 20 | 0.03 | SR 34-505/LHG | T-8/53 |
| E90CN D20-3-M10-07-C | 20.00 | 3 | 4.00 | 30.00 | 50.00 | M10 | 3.5 | 18.00 | 16.0 | 29 | 0.05 | SR 34-505/LHG | T-8/53 |
| E90CN D25-4-M12-07-C | 25.00 | 4 | 4.00 | 35.00 | 57.00 | M12 | 2.5 | 21.00 | 17.0 | 33 | 0.09 | SR 34-505/LHG | T-8/53 |

• For adaptation see page 59 • For user guide see pages 616-622 • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

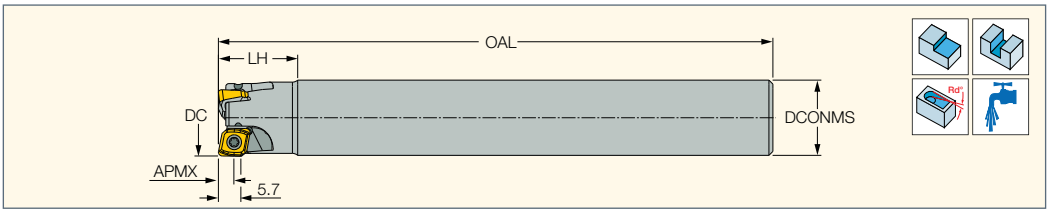
(1) Number of inserts (or edges for solid tool)
(2) Maximum recommended depth of cut for CNMT 070308-MM insert, APMX=2 mm for CNHT 070305 insert
(3) Maximum ramping angle
(4) Clamping wrench size
(5) Tool tightening torque Nxm

**For inserts, see pages:** CNHT/MT 07 (611)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

TORMILL

## E90CN

90° Endmills Carrying
CNMT/HT 0703 Inserts




| Designation | DC | CICT(1) | APMX(2) | LH | OAL | RMPX°(3) | DCONMS | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|
| E90CN D16-2-L100-C15-07-C | 16.00 | 2 | 4.00 | 20.0 | 100.00 | 5.0 | 15.00 | 0.11 | SR 34-505/LHG | T-8/53 |
| E90CN D20-3-L140-C19-07-C | 20.00 | 3 | 4.00 | 20.0 | 140.00 | 3.5 | 19.00 | 0.27 | SR 34-505/LHG | T-8/53 |
| E90CN D25-4-L160-C24-07-C | 25.00 | 4 | 4.00 | 20.0 | 160.00 | 2.5 | 24.00 | 0.48 | SR 34-505/LHG | T-8/53 |

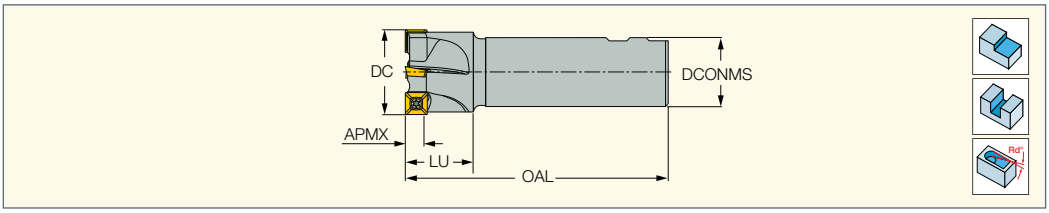
- For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)
(2) Maximum recommended depth of cut for CNMT 070308-MM insert, for CNHT 070305 insert APMX=2 mm
(3) Maximum ramping angle

**For inserts, see pages:** CNHT/MT 07 (611)

HELIQUAD

**E90X**
Endmills Carrying Square
Q/S/XOMT Inserts




| Designation | DC | CICT(1) | APMX | LU | OAL | DCONMS | Shank(2) | RMPX°(3) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **E90X D08-C10-06** | 8.00 | 1 | 5.80 | 16.0 | 70.00 | 10.00 | C | - | 0.04 | SR 34-508 M2.2X0.45 | T-7/51 |
| **E90X D10-C10-06** | 10.00 | 1 | 5.80 | 20.0 | 80.00 | 10.00 | C | - | 0.04 | SR 34-508 M2.2X0.45 | T-7/51 |
| **E90X D12-C16-06** | 12.00 | 1 | 5.80 | 22.0 | 80.00 | 16.00 | C | - | 0.10 | SR 34-508 M2.2X0.45 | T-7/51 |
| **E90X D14-C16-06** | 14.00 | 2 | 5.80 | 20.0 | 80.00 | 16.00 | C | 9.0 | 0.11 | SR 34-508/L | T-7/51 |
| **E90X D14-W16-06** | 14.00 | 2 | 5.80 | 22.0 | 70.00 | 16.00 | W | 9.0 | 0.09 | SR 34-508/L | T-7/51 |
| **E90X D16-C16-06** | 16.00 | 2 | 5.80 | 20.0 | 90.00 | 16.00 | C | 5.5 | 0.13 | SR 34-508/L | T-7/51 |
| **E90X D20-C20-06** | 20.00 | 3 | 5.80 | 22.0 | 110.00 | 20.00 | C | 3.0 | 0.25 | SR 34-508/L | T-7/51 |
| **E90X D25-C20-06** | 25.00 | 4 | 5.80 | 25.0 | 120.00 | 20.00 | C | 1.7 | 0.29 | SR 34-508/L | T-7/51 |
| **E90X D32-W25-06** | 32.00 | 5 | 5.80 | 25.0 | 90.00 | 25.00 | W | 1.3 | 0.34 | SR 34-508/L | T-7/51 |

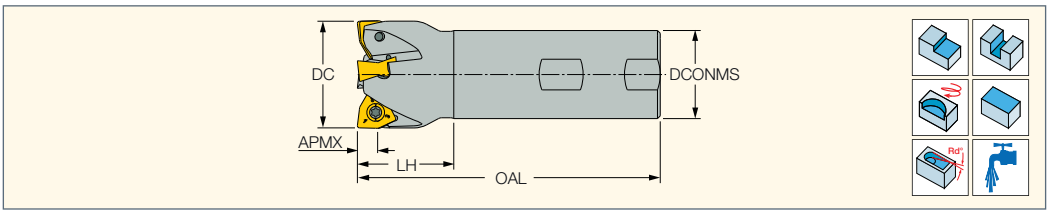
- For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)
(2) C-Cylindrical, W-Weldon
(3) Maximum ramping angle

**For inserts, see pages:** QOMT-HQ (560) • SOMT-HQ (560) • XOMT-HQ (561)

HELIDO TRIGON LINE

**H690 EWN-07**
90° Endmills Carrying H690
WNMU 0704
Double-Sided Trigonal Inserts
with 6 Helical Cutting Edges




| Designation | DC | CICT(1) | APMX | OAL | LH | DCONMS | Shank(2) | RMPX°(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **H690 EWN D032-03-W32-R07** | 32.00 | 3 | 7.00 | 110.00 | 48.0 | 32.00 | W | 2.0 | 0.56 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH |
| **H690 EWN D040-04-W32-R07** | 40.00 | 4 | 7.00 | 110.00 | 35.0 | 32.00 | W | 1.5 | 0.64 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH |

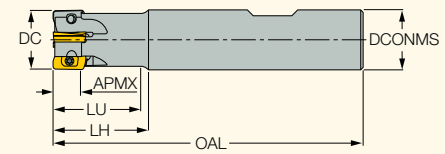
- Insert clamping screw must be lubricated every indexing • For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)
(2) C-cylindrical, W-Weldon
(3) Maximum ramping angle

**For inserts, see pages:** H690 WNHU/WNMU 0705 (537)

HELIPLUS

**HP E90AN-07**
Endmills with HELI-PLUS
HP ANKT 0702.. Inserts



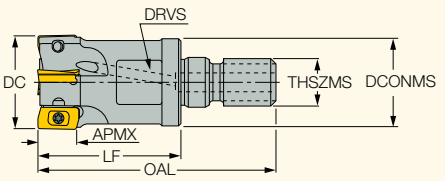

| Designation | DC | CICT(2) | LH | LU | OAL | APMX | DCONMS | Shank(3) | RMPX°(4) | RMPX°_2(5) | RPMX(6) | CSP(7) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HP E90AN-D10-1-C10-07-C** | 10.00 | 1 | 20.0 | 18.0 | 80.00 | 7.70 | 10.00 | C | 2.5 | - | 66390 | 1 | 0.04 | SR 34-533 | T-6/51 |
| **HP E90AN-D12-2-C12-07-C** | 12.00 | 2 | 18.0 | 16.2 | 80.00 | 7.70 | 12.00 | C | 2.7 | 3.5 | 56970 | 1 | 0.06 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D14-2-C14-07-C** | 14.00 | 2 | 18.0 | 16.5 | 80.00 | 7.70 | 14.00 | C | 3.2 | 4.2 | 999 | 1 | 0.08 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D16-3-C15-07-C-B** (1) | 16.00 | 3 | 26.0 | 24.5 | 150.00 | 7.70 | 15.00 | C | 3.2 | 6.0 | 45100 | 1 | 0.17 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D16-3-C16-07-C** | 16.00 | 3 | 26.0 | 24.5 | 90.00 | 7.70 | 16.00 | C | 3.2 | 6.0 | 45100 | 1 | 0.11 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D16-3-W16-07** | 16.00 | 3 | 21.0 | 18.5 | 85.00 | 7.70 | 16.00 | W | 3.2 | 6.0 | 45100 | 0 | 0.12 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D16-4-C16-07-C** | 16.00 | 4 | 26.0 | 24.5 | 90.00 | 7.70 | 16.00 | C | 3.2 | 6.0 | 45100 | 1 | 0.11 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D16-4-W16-07** | 16.00 | 4 | 20.0 | 18.5 | 85.00 | 7.70 | 16.00 | W | 3.2 | 6.0 | 45100 | 0 | 0.12 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D20-4-C19-07-C-B** (1) | 20.00 | 4 | 22.0 | 20.5 | 160.00 | 7.70 | 19.00 | C | 2.4 | 4.5 | 38890 | 1 | 0.31 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D20-4-C20-07-C** | 20.00 | 4 | 22.0 | 20.5 | 110.00 | 7.70 | 20.00 | C | 2.4 | 4.5 | 38890 | 1 | 0.23 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D20-5-C20-07-C** | 20.00 | 5 | 22.0 | 20.5 | 110.00 | 7.70 | 20.00 | C | 2.4 | 4.5 | 38890 | 1 | 0.23 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D20-5-W20-07** | 20.00 | 5 | 22.0 | 20.5 | 90.00 | 7.70 | 20.00 | W | 2.4 | 4.5 | 38890 | 0 | 0.20 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D25-5-C20-07-C** | 25.00 | 5 | 24.0 | - | 120.00 | 7.70 | 20.00 | C | 2.0 | 3.0 | 33440 | 1 | 0.28 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D25-7-C20-07-C** | 25.00 | 7 | 24.0 | - | 120.00 | 7.70 | 20.00 | C | 2.0 | 3.0 | 33440 | 1 | 0.27 | SR 34-533/L/HG | T-6/51 |
| **HP E90AN-D32-8-C25-07-C** | 32.00 | 8 | 30.0 | - | 130.00 | 7.70 | 25.00 | C | 1.4 | 2.5 | 26610 | 1 | 0.48 | SR 34-533/L/HG | T-6/51 |

• Insert tightening torque: 0.6 Nxm. • For user guide see pages 616-622
(1) "B" suffix - cylindrical shank which may be shortened.
(2) Number of inserts (or edges for solid tool)
(3) C-Cylindrical, W-Weldon
(4) Maximum ramping angle
(5) Values only for HP ANKT 0702R12T-FF insert
(6) Maximum RPM
(7) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** HP ANCR 0702PNFR (509) • HP ANKT 0702-FF (510) • HP ANKT/ANCT 0702 PN-R/PNTR (508) • HP ANKW 070204PNTR (509)

HELIPLUS

**HP E90AN-M-07**
90° Endmills with a FLEX-FIT
Threaded Adaptation
Carrying HELI-PLUS HP
ANKT 0702.. Inserts



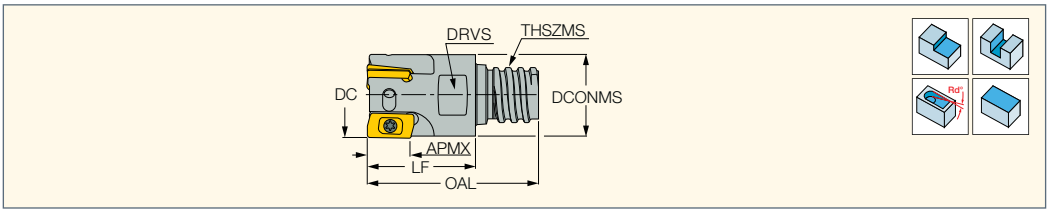

| Designation | DC | CICT(1) | THSZMS | OAL | LF | APMX | DCONMS | RMPX°(2) | RMPX°_2(3) | DRVS(4) | TQ_3(5) | RPMX(6) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HP E90AN-D25-5-M12** | 25.00 | 5 | M12 | 57.00 | 35.00 | 7.70 | 21.00 | 2.0 | 3.0 | 17.1 | 33 | 33440 | 0.09 | SR 34-533/L/HG | T-6/51 |

• Insert tightening torque: 0.6 Nxm. • For adaptation see page 59 • For user guide see pages 616-622 • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter
(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) Values only for HP ANKT 0702R12T-FF insert
(4) Torque key size
(5) Tool tightening torque Nxm (lbfxin)
(6) Maximum RPM

**For inserts, see pages:** HP ANCR 0702PNFR (509) • HP ANKT 0702-FF (510) • HP ANKT/ANCT 0702 PN-R/PNTR (508) • HP ANKW 070204PNTR (509)
**For holders, see pages:** (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360)
• ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

HELIPLUS

**HP E90AN-MM-07**
90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying HELI-PLUS HP ANKT 0702.. Inserts




| Designation | DC | CICT(1) | OAL | LF | APMX | THSZMS | DCONMS | DRVS(2) | RMPX°(3) | RMPX°_2(4) | RPMX(5) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP E90AN-D12-2-MMT08 | 12.00 | 2 | 24.45 | 16.50 | 7.70 | T08 | 10.60 | 10.0 | 2.7 | 3.5 | 56970 | 0.01 | SR 34-533/L/HG | T-6/51 |
| HP E90AN-D16-3-MMT10 | 16.00 | 3 | 31.75 | 20.00 | 7.70 | T10 | 14.95 | 13.0 | 3.2 | 6.0 | 44860 | 0.03 | SR 34-533/L/HG | T-6/51 |
| HP E90AN-D16-4-MMT10 | 16.00 | 4 | 31.75 | 20.00 | 7.70 | T10 | 14.95 | 13.0 | 3.2 | 6.0 | 37630 | 0.03 | SR 34-533/L/HG | T-6/51 |
| HP E90AN-D20-5-MMT12 | 20.00 | 5 | 35.30 | 21.50 | 7.70 | T12 | 18.40 | 16.0 | 2.4 | 4.5 | 38890 | 0.05 | SR 34-533/L/HG | T-6/51 |

• Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation see page 59 • For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) Clamping wrench size

(3) Maximum ramping angle

(4) Values only for HP ANKT 0702R12T-FF insert

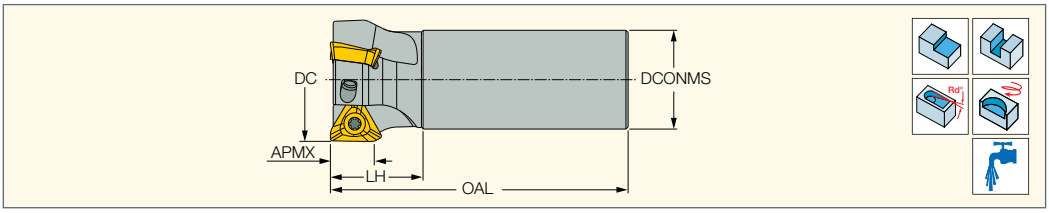
(5) The maximum cutting speed (RPM) for the cutting head assembled on the shank should be the lower parameter (RPMX) of either the cutting head or the shank

**For inserts, see pages:** HP ANCR 0702PNFR (509) • HP ANKT 0702-FF (510) • HP ANKT/ANCT 0702 PN-R/PNTR (508) • HP ANKW 070204PNTR (509)

**For holders, see pages:** MM CAB (110) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

HELI3MILL HM390 LINE

**HM390 ETC-07**
90° Endmills Carrying HM390 TCKT 0703 Triangular Inserts with 3 Helical Cutting Edges




| Designation | DC | APMX | CICT(1) | OAL | LH | DCONMS | Shank(2) | RMPX°(3) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETC D14-1-C16-07 | 14.00 | 5.00 | 1 | 80.00 | 21.0 | 16.00 | C | 1.9 | 0.10 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D16-2-C15-07-B | 16.00 | 5.00 | 2 | 150.00 | 26.0 | 15.00 | C | 1.9 | 0.17 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D16-2-C16-07 | 16.00 | 5.00 | 2 | 100.00 | 26.0 | 16.00 | C | 1.9 | 0.12 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D16-2-C16-07-B | 16.00 | 5.00 | 2 | 150.00 | 40.0 | 16.00 | C | 1.9 | 0.19 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D16-2-W16-07 | 16.00 | 5.00 | 2 | 80.00 | 26.0 | 16.00 | W | 1.9 | 0.10 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D18-2-C16-07 | 18.00 | 5.00 | 2 | 100.00 | 30.0 | 16.00 | C | 1.4 | 0.13 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D18-2-C16-07-B | 18.00 | 5.00 | 2 | 160.00 | 30.0 | 16.00 | C | 1.4 | 0.21 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D20-3-C16-07 | 20.00 | 5.00 | 3 | 55.00 | 20.0 | 16.00 | C | 1.4 | 0.07 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D20-3-C19-07-B | 20.00 | 5.00 | 3 | 160.00 | 30.0 | 19.00 | C | 1.4 | 0.28 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D20-3-C20-07 | 20.00 | 5.00 | 3 | 110.00 | 30.0 | 20.00 | C | 1.4 | 0.21 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D20-3-C20-07-B | 20.00 | 5.00 | 3 | 160.00 | 40.0 | 20.00 | C | 1.4 | 0.31 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D20-3-W20-07 | 20.00 | 5.00 | 3 | 85.00 | 30.0 | 20.00 | W | 1.4 | 0.16 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D22-3-C20-07 | 22.00 | 5.00 | 3 | 110.00 | 30.0 | 20.00 | C | 1.0 | 0.21 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D22-3-C20-07-B | 22.00 | 5.00 | 3 | 180.00 | 30.0 | 20.00 | C | 1.0 | 0.37 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D25-4-C25-07 | 25.00 | 5.00 | 4 | 120.00 | 35.0 | 25.00 | C | 1.0 | 0.36 | SR M2.5X6-T7-60 | T-7/51 |
| HM390 ETC D25-4-W25-07 | 25.00 | 5.00 | 4 | 95.00 | 35.0 | 25.00 | W | 1.0 | 0.28 | SR M2.5X6-T7-60 | T-7/51 |
| HM390 ETC D28-4-C25-07-B | 28.00 | 5.00 | 4 | 200.00 | 35.0 | 25.00 | C | 0.9 | 0.64 | SR M2.5X6-T7-60 | T-7/51 |
| HM390 ETC D32-5-C32-07 | 32.00 | 5.00 | 5 | 130.00 | 45.0 | 32.00 | C | 0.8 | 0.68 | SR M2.5X6-T7-60 | T-7/51 |
| HM390 ETC D32-5-W32-07 | 32.00 | 5.00 | 5 | 110.00 | 45.0 | 32.00 | W | 0.8 | 0.56 | SR M2.5X6-T7-60 | T-7/51 |

• Insert clamping screw must be lubricated every indexing. • Tightening torque 0.9 Nxm. • For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) C-Cylindrical, W-Weldon

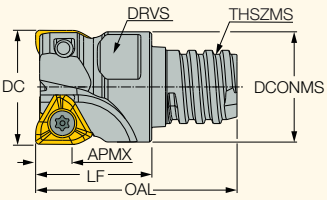
(3) Maximum ramping angle

**For inserts, see pages:** HM390 TCKT/CT 0703 (512)

HELI3MILL HM390 LINE

## HM390 ETC-MM

90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying HM390 TCKT 0703 Triangular Inserts




| Designation | DC | APMX | CICT(1) | LF | DCONMS | THSZMS | OAL | DRVS(2) | RMPX°(3) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETC D16-2-MMT10-07 | 16.00 | 5.00 | 2 | 16.00 | 15.20 | T10 | 27.30 | 13.0 | 1.9 | 0.02 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D20-3-MMT12-07 | 20.00 | 5.00 | 3 | 20.00 | 18.30 | T12 | 33.30 | 16.0 | 1.4 | 0.04 | SR M2.5X5-T7-60 | T-7/51 |
| HM390 ETC D25-4-MMT15-07 | 25.00 | 5.00 | 4 | 25.00 | 23.90 | T15 | 42.00 | 20.0 | 1.0 | 0.08 | SR M2.5X6-T7-60 | T-7/51 |

- Insert clamping screw must be lubricated every indexing. • Tightening torque 0.9 Nxm. • For adaptation see page 59
- For user guide see pages 616-622

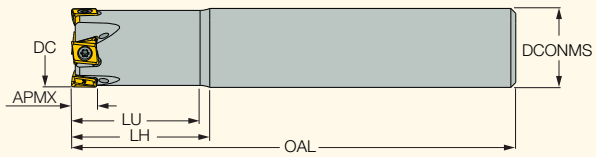
(1) Number of inserts (or edges for solid tool)
(2) Clamping wrench size
(3) Maximum ramping angle

**For inserts, see pages:** HM390 TCKT/CT 0703 (512)
**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109)
• MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106)
• MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

HELITANG T490 LINE

## T490 ELN-05

90° Endmills Carrying Tangentially Clamped Inserts with 4 Helical, 4.6 mm Long Cutting Edges




| Designation | DC | CICT(1) | OAL | LH | LU | APMX | DCONMS | Shank | RMPX°(2) | MIID(3) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 ELN D10-2-C10-05 | 10.00 | 2 | 80.00 | 21.0 | 20.1 | 4.60 | 10.00 | C | 1.3 | T490 LNMT 0502PNR-RD | SR M2X0.4-3.8 IP6 | T-6IP/51 |
| T490 ELN D12-3-C12-05 | 12.00 | 3 | 80.00 | 25.5 | 23.3 | 4.60 | 12.00 | C | 0.9 | T490 LNMT 0502PNR-RD | SR M2X0.4-4.8 IP6 | T-6IP/51 |
| T490 ELN D16-4-C16-05 | 16.00 | 4 | 90.00 | 28.0 | 26.0 | 4.60 | 16.00 | C | 0.6 | T490 LNMT 0502PNR-RD | SR M2X0.4-4.8 IP6 | T-6IP/51 |
| T490 ELN D20-5-C20-05 | 20.00 | 5 | 110.00 | 27.0 | 25.5 | 4.60 | 20.00 | C | 0.5 | T490 LNMT 0502PNR-RD | SR M2X0.4-4.8 IP6 | T-6IP/51 |
| T490 ELN D25-6-C25-05 | 25.00 | 6 | 120.00 | 30.0 | 28.5 | 4.60 | 25.00 | C | 0.4 | T490 LNMT 0502PNR-RD | SR M2X0.4-4.8 IP6 | T-6IP/51 |

New

- For user guide see pages 616-622

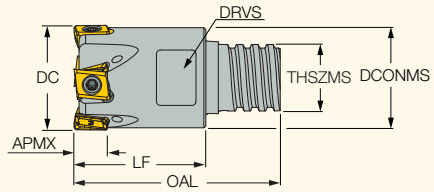
(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) Master insert identification

**For inserts, see pages:** T490 LNMT 0502 (543)

HELITANG T490 LINE

## T490 ELN-MM-05

90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying Tangentially Clamped Inserts




| Designation | DC | CICT(1) | APMX | DCONMS | LF | OAL | THSZMS | DRVS(2) | RMPX°(3) | kg | MIID(4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 ELN D10-2-MMT06-05 | 10.00 | 2 | 4.60 | 9.20 | 13.00 | 19.30 | T06 | 8.0 | 1.3 | 0.01 | T490 LNMT 0502PNR-RD | SR M2X0.4-3.8 IP6 | T-6IP/51 |
| T490 ELN D12-3-MMT08-05 | 12.00 | 3 | 4.60 | 11.00 | 14.50 | 22.00 | T08 | 10.0 | 0.9 | 0.01 | T490 LNMT 0502PNR-RD | SR M2X0.4-4.8 IP6 | T-6IP/51 |
| T490 ELN D16-4-MMT10-05 | 16.00 | 4 | 4.60 | 15.20 | 20.00 | 31.30 | T10 | 13.0 | 0.6 | 0.03 | T490 LNMT 0502PNR-RD | SR M2X0.4-4.8 IP6 | T-6IP/51 |
| T490 ELN D20-5-MMT12-05 | 20.00 | 5 | 4.60 | 19.20 | 22.00 | 35.30 | T12 | 16.0 | 0.5 | 0.05 | T490 LNMT 0502PNR-RD | SR M2X0.4-4.8 IP6 | T-6IP/51 |

New

- Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation see page 59 • For user guide see pages 616-622

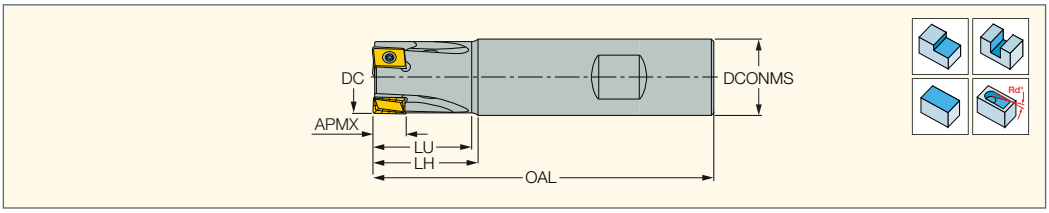
(1) Number of inserts (or edges for solid tool)
(2) Torque key size
(3) Maximum ramping angle
(4) Master insert identification

**For inserts, see pages:** T490 LNMT 0502 (543)
**For holders, see pages:** MM CAB (110) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109)
• MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106)
• MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

HELITANG T490 LINE

## T490 ELN-08

90° Endmills Carrying Tangentially Clamped Inserts with 4 Helical, 8 mm Long Cutting Edges




| Designation | DC | CICT[1] | LH | LU | APMX | OAL | DCONMS | Shank[2] | CSP[3] | RMPX°[4] | RMPX°_2[5] | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **T490 ELN D16-2-C15-08B** | 16.00 | 2 | 41.0 | 40.0 | 8.00 | 150.00 | 15.00 | C | 1 | 2.0 | 1.1 | 0.18 | SR 10502813-HGSM | IP-7/51 |
| **T490 ELN D16-2-C16-08** | 16.00 | 2 | 28.0 | 26.0 | 8.00 | 90.00 | 16.00 | C | 0 | 2.0 | 1.1 | 0.13 | SR 10502813-HGSM | IP-7/51 |
| **T490 ELN D16-2-C16-08C** | 16.00 | 2 | 28.0 | 26.0 | 8.00 | 90.00 | 16.00 | C | 1 | 2.0 | 1.1 | 0.12 | SR 10502813-HGSM | IP-7/51 |
| **T490 ELN D16-2-W16-08** | 16.00 | 2 | 28.0 | 26.0 | 8.00 | 85.00 | 16.00 | W | 0 | 2.0 | 1.1 | 0.12 | SR 10502813-HGSM | IP-7/51 |
| **T490 ELN D16-2-W16-08C** | 16.00 | 2 | 28.0 | 26.0 | 8.00 | 85.00 | 16.00 | W | 1 | 2.0 | 1.1 | 0.11 | SR 10502813-HGSM | IP-7/51 |
| **T490 ELN D18-2-C20-08C** | 18.00 | 2 | 28.0 | 26.0 | 8.00 | 90.00 | 20.00 | C | 1 | 1.8 | 1.0 | 0.18 | SR 10502813-HGSM | IP-7/51 |
| **T490 ELN D20-2-C19-08B** | 20.00 | 2 | 41.0 | 40.0 | 8.00 | 160.00 | 19.00 | C | 1 | 1.7 | 0.8 | 0.31 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D20-2-C20-08C** | 20.00 | 2 | 28.0 | 26.0 | 8.00 | 110.00 | 20.00 | C | 1 | 1.7 | 0.8 | 0.23 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D20-2-W20-08C** | 20.00 | 2 | 28.0 | 26.0 | 8.00 | 90.00 | 20.00 | W | 1 | 1.7 | 0.8 | 0.19 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D20-3-C20-08** | 20.00 | 3 | 28.0 | 26.0 | 8.00 | 110.00 | 20.00 | C | 0 | 1.7 | 0.8 | 0.25 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D20-3-C20-08C** | 20.00 | 3 | 28.0 | 26.0 | 8.00 | 110.00 | 20.00 | C | 1 | 1.7 | 0.8 | 0.23 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D20-3-W20-08** | 20.00 | 3 | 28.0 | 26.0 | 8.00 | 90.00 | 20.00 | W | 0 | 1.7 | 0.8 | 0.20 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D20-3-W20-08C** | 20.00 | 3 | 28.0 | 26.0 | 8.00 | 90.00 | 20.00 | W | 1 | 1.7 | 0.8 | 0.18 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D22-3-C20-08C** | 22.00 | 3 | 28.0 | 30.0 | 8.00 | 110.00 | 20.00 | C | 1 | - | - | 0.24 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D25-3-C24-08B** | 25.00 | 3 | 41.0 | 40.0 | 8.00 | 200.00 | 24.00 | C | 1 | - | - | 0.61 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D25-3-C25-08C** | 25.00 | 3 | 28.0 | 26.0 | 8.00 | 120.00 | 25.00 | C | 1 | - | - | 0.39 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D25-3-W25-08C** | 25.00 | 3 | 28.0 | 26.0 | 8.00 | 95.00 | 25.00 | W | 1 | - | - | 0.30 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D25-4-C25-08** | 25.00 | 4 | 28.0 | 26.0 | 8.00 | 120.00 | 25.00 | C | 0 | - | - | 0.43 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D25-4-C25-08C** | 25.00 | 4 | 28.0 | 26.0 | 8.00 | 120.00 | 25.00 | C | 1 | - | - | 0.39 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D25-4-W25-08** | 25.00 | 4 | 28.0 | 26.0 | 8.00 | 95.00 | 25.00 | W | 0 | - | - | 0.33 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D25-4-W25-08C** | 25.00 | 4 | 28.0 | 26.0 | 8.00 | 95.00 | 25.00 | W | 1 | - | - | 0.30 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D32-3-C32-08C** | 32.00 | 3 | 32.0 | 30.0 | 8.00 | 130.00 | 32.00 | C | 1 | - | - | 0.72 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D32-3-W32-08C** | 32.00 | 3 | 32.0 | 30.0 | 8.00 | 110.00 | 32.00 | W | 1 | - | - | 0.60 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D32-4-C32-08B** | 32.00 | 4 | 32.0 | 30.0 | 8.00 | 200.00 | 32.00 | C | 1 | - | - | 1.14 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D32-5-C32-08C** | 32.00 | 5 | 32.0 | 30.0 | 8.00 | 130.00 | 32.00 | C | 1 | - | - | 0.73 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D32-5-W32-08C** | 32.00 | 5 | 32.0 | 30.0 | 8.00 | 110.00 | 32.00 | W | 1 | - | - | 0.60 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D40-4-C32-08C** | 40.00 | 4 | - | 30.0 | 8.00 | 130.00 | 32.00 | C | 1 | - | - | 0.81 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D40-6-C32-08C** | 40.00 | 6 | - | 30.0 | 8.00 | 130.00 | 32.00 | C | 1 | - | - | 0.82 | SR 10502813-HG-M | IP-7/51 |
| **T490 ELN D40-6-W32-08C** | 40.00 | 6 | - | 30.0 | 8.00 | 110.00 | 32.00 | W | 1 | - | - | 0.69 | SR 10502813-HG-M | IP-7/51 |

• "B" suffix with long cylindrical shank which may be shortened. • For user guide, see pages 616-622

[1] Number of inserts (or edges for solid tool)

[2] C-Cylindrical, W-Weldon

[3] 0 - Without coolant supply, 1 - With coolant supply

[4] Maximum ramping angle - valid only with T490 LNHT 080404PNR-RD inserts

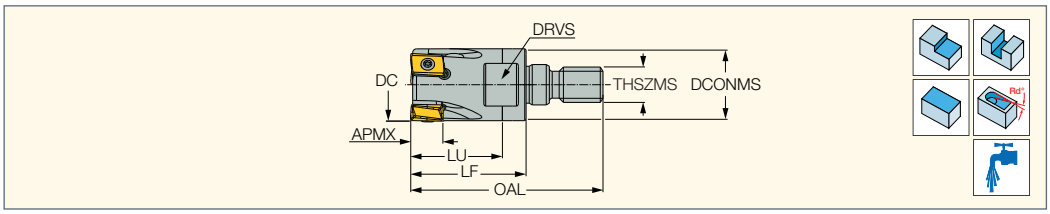
[5] Maximum ramping angle - valid only with T490 LNMT 080404PNR-RD inserts

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT/LNHT 0804 (544)

HELITANG T490 LINE

## T490 ELN-M

90° Endmills with a FLEX-FIT Threaded Adaptation Carrying Tangentially Clamped Inserts




| Designation | DC | CICT(1) | APMX | DCONMS | LU | LF | OAL | THSZMS | DRVS(2) | RMPX°(3) | RMPX°_2(4) | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 ELN D20-3-M10 | 20.00 | 3 | 8.00 | 18.70 | - | 30.00 | 50.00 | M10 | 15.0 | 1.7 | 0.8 | 29 | 0.06 |
| T490 ELN D25-3-M12 | 25.00 | 3 | 8.00 | 21.00 | - | 28.00 | 50.00 | M12 | 17.0 | - | - | 33 | 0.08 |
| T490 ELN D25-4-M12 | 25.00 | 4 | 8.00 | 21.00 | - | 28.00 | 50.00 | M12 | 17.0 | - | - | 33 | 0.08 |
| T490 ELN D32-3-M16-13 | 32.00 | 3 | 12.50 | 29.00 | - | 45.00 | 70.00 | M16 | 25.0 | - | - | 40 | 0.22 |
| T490 ELN D32-5-M16 | 32.00 | 5 | 8.00 | 29.00 | - | 30.00 | 55.00 | M16 | 25.0 | - | - | 40 | 0.16 |

• For adaptation see page 59 • For user guide see pages 616-622 • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Number of inserts (or edges for solid tool)

(2) Clamping wrench size

(3) Maximum ramping angle - valid only with T490 LNHT 080404PNR-RD inserts

(4) Maximum ramping angle - valid only with T490 LNMT 080404PNR-RD inserts

(5) Tool tightening torque Nxm (lbfxin)

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNR-FF (547) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT 0804 (544) • T490 LNMT/LNHT/LNAR 1306 (546)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

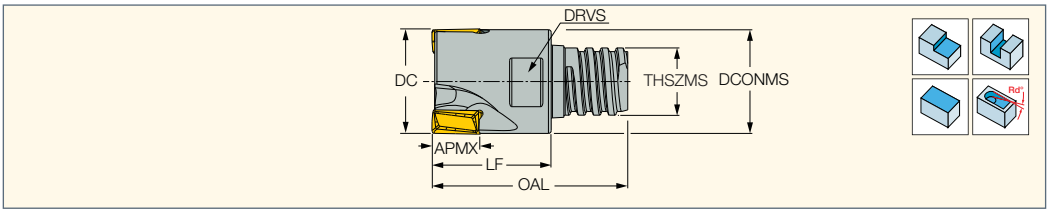
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| T490 ELN D20-3-M10 | SR 10502813-HG-M | IP-7/51 | | |
| T490 ELN D25-3-M12 | SR 10502813-HG-M | IP-7/51 | | |
| T490 ELN D25-4-M12 | SR 10502813-HG-M | IP-7/51 | | |
| T490 ELN D32-3-M16-13 | SR 34-535-SN | | SW6-T-SH | BLD T15/S7 |
| T490 ELN D32-5-M16 | SR 10502813-HG-M | IP-7/51 | | |

HELITANG T490 LINE

## T490 ELN-MM-08

90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying Tangentially Clamped Inserts




| Designation | DC | CICT(1) | APMX | DCONMS | LF | OAL | THSZMS | DRVS(2) | RMPX°(3) | RMPX°_2(4) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 ELN D16-2-MMT10 | 16.00 | 2 | 8.00 | 14.70 | 20.00 | 32.00 | T10 | 13.0 | 2.0 | 1.1 | 0.03 | SR 10502813-HGSM | IP-7/51 |
| T490 ELN D20-3-MMT12 | 20.00 | 3 | 8.00 | 18.70 | 22.00 | 35.00 | T12 | 16.0 | 1.7 | 0.8 | 0.05 | SR 10502813-HG-M | IP-7/51 |

• Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation see page 59 • For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) Clamping wrench size

(3) Maximum ramping angle - valid only with T490 LNHT 080404PNR-RD inserts

(4) Maximum ramping angle - valid only with T490 LNMT 080404PNR-RD inserts

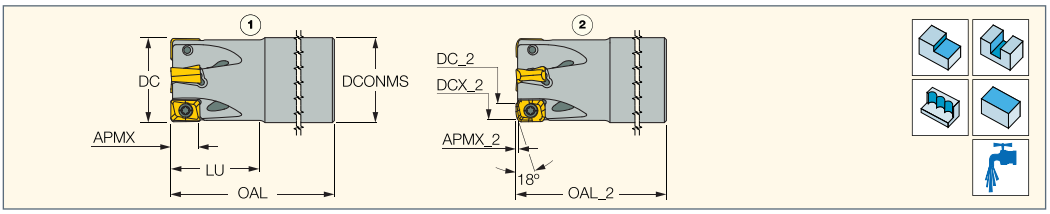
**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT/LNHT 0804 (544)

**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

HELIDO 490 LINE

**H490 E90AX-09**

90° Endmills Carrying H490 ANKX 09... Double-Sided Rectangular Inserts with 4 Helical Cutting Edges




| Designation | DC | DCX_2 | DC_2 | CICT(1) | APMX | APMX_2 | AE (2) | OAL | OAL_2 | LU |
|---|---|---|---|---|---|---|---|---|---|---|
| H490 E90AX D16-2-C15-09-B | 16.00 | 16.10 | 10.60 | 2 | 8.00 | 0.70 | 5.5 | 150.00 | 150.00 | 40.0 |
| H490 E90AX D16-2-C16-09 | 16.00 | 16.10 | 10.60 | 2 | 8.00 | 0.70 | 5.5 | 90.00 | 90.00 | 26.0 |
| H490 E90AX D16-2-W16-09 | 16.00 | 16.10 | 10.60 | 2 | 8.00 | 0.70 | 5.5 | 85.00 | 85.00 | 26.0 |
| H490 E90AX D18-2-C16-09 | 18.00 | 18.10 | 12.60 | 2 | 8.00 | 0.70 | 5.5 | 90.00 | 90.00 | 25.0 |
| H490 E90AX D20-2-C19-09-B | 20.00 | 20.10 | 14.60 | 2 | 8.00 | 0.70 | 5.5 | 160.00 | 160.00 | 40.0 |
| H490 E90AX D20-2-C20-09 | 20.00 | 20.10 | 14.60 | 2 | 8.00 | 0.70 | 5.5 | 110.00 | 110.00 | 26.0 |
| H490 E90AX D20-2-W20-09 | 20.00 | 20.10 | 14.60 | 2 | 8.00 | 0.70 | 5.5 | 90.00 | 90.00 | 26.0 |
| H490 E90AX D20-3-C20-09 | 20.00 | 20.10 | 14.60 | 3 | 8.00 | 0.70 | 5.5 | 110.00 | 110.00 | 26.0 |
| H490 E90AX D20-3-W20-09 | 20.00 | 20.10 | 14.60 | 3 | 8.00 | 0.70 | 5.5 | 90.00 | 90.00 | 26.0 |
| H490 E90AX D22-3-C20-09 | 22.00 | 22.10 | 16.60 | 3 | 8.00 | 0.70 | 5.5 | 115.00 | 115.00 | 25.0 |
| H490 E90AX D25-3-C24-09-B | 25.00 | 25.10 | 19.60 | 3 | 8.00 | 0.70 | 5.5 | 200.00 | 200.00 | 40.0 |
| H490 E90AX D25-3-C25-09 | 25.00 | 25.10 | 19.60 | 3 | 8.00 | 0.70 | 5.5 | 120.00 | 120.00 | 26.0 |
| H490 E90AX D25-3-W25-09 | 25.00 | 25.10 | 19.60 | 3 | 8.00 | 0.70 | 5.5 | 95.00 | 95.00 | 26.0 |
| H490 E90AX D25-4-C25-09 | 25.00 | 25.10 | 19.60 | 4 | 8.00 | 0.70 | 5.5 | 120.00 | 120.00 | 26.0 |
| H490 E90AX D25-4-W25-09 | 25.00 | 25.10 | 19.60 | 4 | 8.00 | 0.70 | 5.5 | 95.00 | 95.00 | 26.0 |
| H490 E90AX D32-4-W32-09 | 32.00 | 32.10 | 26.60 | 4 | 8.00 | 0.70 | 5.5 | 110.00 | 110.00 | 30.0 |
| H490 E90AX D32-5-C32-09 | 32.00 | 32.10 | 26.60 | 5 | 8.00 | 0.70 | 5.5 | 130.00 | 130.00 | 30.0 |
| H490 E90AX D32-5-W32-09 | 32.00 | 32.10 | 26.60 | 5 | 8.00 | 0.70 | 5.5 | 110.00 | 110.00 | 30.0 |

| Designation | DCONMS | RMPX°_2 (3) | MDN | MDX | Shank(4) | MIID(5) | MIID_2(6) | kg |
|---|---|---|---|---|---|---|---|---|
| H490 E90AX D16-2-C15-09-B | 15.00 | 4.0 | 26.70 | 31.20 | C | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.18 |
| H490 E90AX D16-2-C16-09 | 16.00 | 4.0 | 26.70 | 31.20 | C | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.12 |
| H490 E90AX D16-2-W16-09 | 16.00 | 4.0 | 26.70 | 31.20 | W | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.11 |
| H490 E90AX D18-2-C16-09 | 16.00 | 3.0 | 30.70 | 35.20 | C | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.12 |
| H490 E90AX D20-2-C19-09-B | 19.00 | 2.5 | 34.70 | 39.20 | C | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.31 |
| H490 E90AX D20-2-C20-09 | 20.00 | 2.5 | 34.70 | 39.20 | C | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.23 |
| H490 E90AX D20-2-W20-09 | 20.00 | 2.5 | 34.70 | 39.20 | W | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.18 |
| H490 E90AX D20-3-C20-09 | 20.00 | 2.5 | 34.70 | 39.20 | C | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.23 |
| H490 E90AX D20-3-W20-09 | 20.00 | 2.5 | 34.70 | 39.20 | W | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.18 |
| H490 E90AX D22-3-C20-09 | 20.00 | 1.6 | 38.70 | 43.20 | C | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.25 |
| H490 E90AX D25-3-C24-09-B | 24.00 | 1.6 | 44.70 | 49.20 | C | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.61 |
| H490 E90AX D25-3-C25-09 | 25.00 | 1.6 | 44.70 | 49.20 | C | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.39 |
| H490 E90AX D25-3-W25-09 | 25.00 | 1.6 | 44.70 | 49.20 | W | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.30 |
| H490 E90AX D25-4-C25-09 | 25.00 | 1.6 | 44.70 | 49.20 | C | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.39 |
| H490 E90AX D25-4-W25-09 | 25.00 | 1.6 | 44.70 | 49.20 | W | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.30 |
| H490 E90AX D32-4-W32-09 | 32.00 | 1.4 | 58.70 | 63.20 | W | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.60 |
| H490 E90AX D32-5-C32-09 | 32.00 | 1.4 | 58.70 | 63.20 | C | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.72 |
| H490 E90AX D32-5-W32-09 | 32.00 | 1.4 | 58.70 | 63.20 | W | H490 ANKX 0904 | H490 ANKX 0904..-FF | 0.60 |

• For user guide, see pages 616-622 • "B" Suffix cylindrical shank which may be shortened • 1- with standard square insert • 2- with FF (fast feed) insert

• When assembled the H490 ANKX 0904R12T-FF insert, tool diameter enlarges by 0.1 mm

(1) Number of inserts (or edges for solid tool)

(2) Maximum side plunge

(3) Maximum ramping angle when using FF inserts

(4) C-Cylindrical, W-Weldon

(5) Master insert identification

(6) Master insert identification 2

**For inserts, see pages:** H490 ANKX 0904-FF (538) • H490 ANKX/ANCX-09 (537)

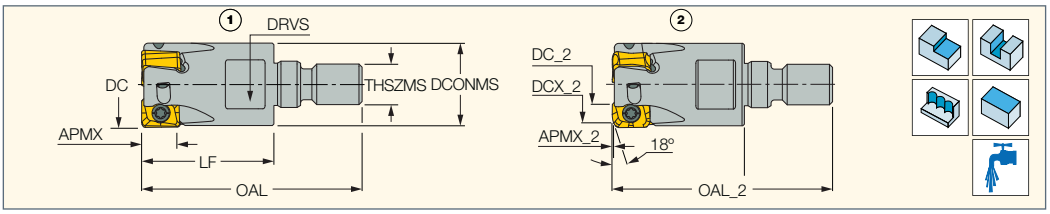
## Spare Parts

| Designation | | | |
|---|---|---|---|
| H490 E90AX-09 | SR 10508082-HG | SW4-SD | BLD T08/M7 |

HELIDO 490 LINE

## H490 E90AX-M

90° Endmills with a FLEX-FIT Threaded Connection Carrying H490 ANKX/ANCX 09... Double-Sided Rectangular Inserts




| Designation | DC | DCX_2 | DC_2 | CICT(1) | APMX | APMX_2 | MDN | MDX | RMPX°_2 | AE |
|---|---|---|---|---|---|---|---|---|---|---|
| H490 E90AX D20-3-M10-09 | 20.00 | 20.10 | 14.60 | 3 | 8.00 | 0.70 | 34.70 | 39.20 | 2.5 | 5.5 |
| H490 E90AX D25-4-M12-09 | 25.00 | 25.10 | 19.60 | 4 | 8.00 | 0.70 | 44.70 | 49.20 | 1.6 | 5.5 |
| H490 E90AX D32-5-M16-09 | 32.00 | 32.10 | 26.60 | 5 | 8.00 | 0.70 | 58.70 | 63.20 | 1.4 | 5.5 |

| Designation | LF_2 | DCONMS | THSZMS | DRVS(2) | MIID(3) | MIID_2(4) | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|
| H490 E90AX D20-3-M10-09 | 30.00 | 18.70 | M10 | 16.0 | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 29 | 0.06 |
| H490 E90AX D25-4-M12-09 | 28.00 | 21.00 | M12 | 17.0 | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 33 | 0.07 |
| H490 E90AX D32-5-M16-09 | 30.00 | 29.00 | M16 | 25.0 | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 40 | 0.16 |

• For adaptation, see page 59 • For user guide, see pages 616-622 • When mounting items with FLEXFIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

• 1- with standard square insert • 2- with FF (fast feed) insert

(1) Number of inserts (or edges for solid tool)

(2) Clamping wrench size

(3) Master insert identification

(4) Master insert identification 2

(5) Tool tightening torque Nxm (lbfxin)

**For inserts, see pages:** H490 ANKX 0904-FF (538) • H490 ANKX/ANCX-09 (537)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

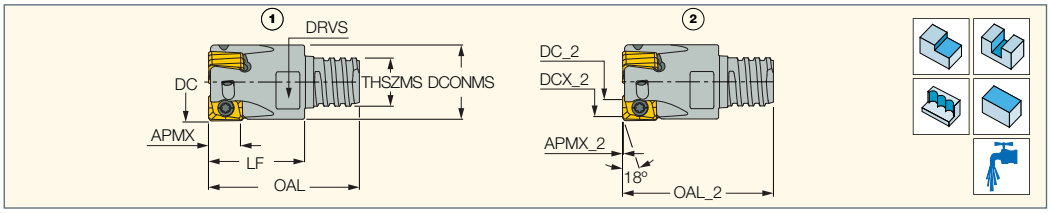
### Spare Parts

| Designation | | | |
|---|---|---|---|
| H490 E90AX-M | SR 10508082-HG | BLD T08/M7 | SW4-SD |

HELIDO 490 LINE

## H490 E90AX-MM

90° Endmills with a MULTI-MASTER Threaded Connection Carrying H490 ANKX/ANCX 090... Double-Sided Rectangular Inserts




| Designation | DC | DCX_2 | DC_2 | CICT(1) | APMX | APMX_2 | AE | LF | RMPX°_2 |
|---|---|---|---|---|---|---|---|---|---|
| H490 E90AX D20-3-MMT12-09 | 20.00 | 20.10 | 20.00 | 3 | 8.00 | 0.70 | 5.5 | 24.70 | 2.5 |

| Designation | OAL | OAL_2 | DCONMS | THSZMS | MDN | MDX | MIID(2) | MIID_2(3) | DRVS(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| H490 E90AX D20-3-MMT12-09 | 37.30 | 37.30 | 18.70 | T12 | 34.70 | 39.20 | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 16.0 | 0.05 |

• Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation, see page 59 • For user guide, see pages 616-622

• 1- with standard square insert • 2- with FF (fast feed) insert

(1) Number of inserts (or edges for solid tool)

(2) Master insert identification

(3) Master insert identification 2

(4) Clamping wrench size

**For inserts, see pages:** H490 ANKX 0904-FF (470) • H490 ANKX/ANCX-09 (469)

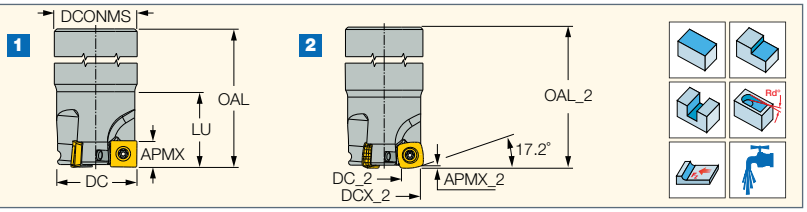
**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

### Spare Parts

| Designation | | | |
|---|---|---|---|
| H490 E90AX-MM | SR 10508082-HG | BLD T08/M7 | SW4-SD |

HELIQUAD

**E90SP**
Endmills Carrying Square Inserts




| Designation | DC | CICT[1] | DCONMS | LU | APMX | OAL | RMPX°[2] | DC_2 | DCX_2 | APMX_2 | OAL_2 | RMPX°_2[3] | Shank[4] | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **E90SP D25-02-C25-10** | 25.00 | 2 | 25.00 | 32.0 | 9.60 | 110.00 | 3.0 | 8.30 | 25.45 | 1.27 | 110.26 | 5.0 | C | 0.35 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH |
| **E90SP D25-02-W25-10** | 25.00 | 2 | 25.00 | 32.0 | 9.60 | 95.00 | 3.0 | 8.30 | 25.45 | 1.27 | 95.26 | 5.0 | W | 0.29 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH |
| **E90SP D25-03-C25-10** | 25.00 | 3 | 25.00 | 32.0 | 9.60 | 110.00 | 3.0 | 8.30 | 25.45 | 1.27 | 110.26 | 5.0 | C | 0.76 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH |
| **E90SP D25-03-W25-10** | 25.00 | 3 | 25.00 | 32.0 | 9.60 | 95.00 | 3.0 | 8.30 | 25.45 | 1.27 | 95.26 | 5.0 | W | 0.29 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH |
| **E90SP D32-03-C32-10** | 32.00 | 3 | 32.00 | 32.0 | 9.60 | 130.00 | 2.0 | 15.30 | 32.45 | 1.27 | 130.26 | 4.0 | C | 0.69 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH |
| **E90SP D32-03-W25-10** | 32.00 | 3 | 25.00 | 31.8 | 9.60 | 95.00 | 2.0 | 15.30 | 32.45 | 1.27 | 95.26 | 4.0 | W | 0.31 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH |
| **E90SP D32-04-W25-10** | 32.00 | 4 | 25.00 | 32.0 | 9.60 | 95.00 | 2.0 | 15.30 | 32.45 | 1.27 | 95.26 | 4.0 | W | 0.02 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH |
| **E90SP D40-04-C32-10** | 40.00 | 4 | 32.00 | 32.0 | 9.60 | 130.00 | 1.5 | 23.30 | 40.45 | 1.27 | 130.26 | 3.5 | C | 0.72 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH |
| **E90SP D40-04-W32-10** | 40.00 | 4 | 32.00 | 32.0 | 9.60 | 110.00 | 1.5 | 23.30 | 40.45 | 1.27 | 110.26 | 3.5 | W | 0.60 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH |
| **E90SP D40-05-W32-10** | 40.00 | 5 | 32.00 | 32.0 | 9.60 | 110.00 | 1.5 | 23.30 | 40.45 | 1.27 | 110.26 | 3.5 | W | 0.12 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH |
| **E90SP D50-06-C32-10** | 50.00 | 6 | 32.00 | 35.0 | 9.60 | 130.00 | 1.0 | 33.30 | 50.45 | 1.27 | 130.26 | 3.0 | C | 0.80 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH |

• 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-622

[1] Number of inserts (or edges for solid tool)

[2] Maximum ramping angle when using 90° inserts

[3] Maximum ramping angle when using FF inserts

[4] C-Cylindrical, W-Weldon

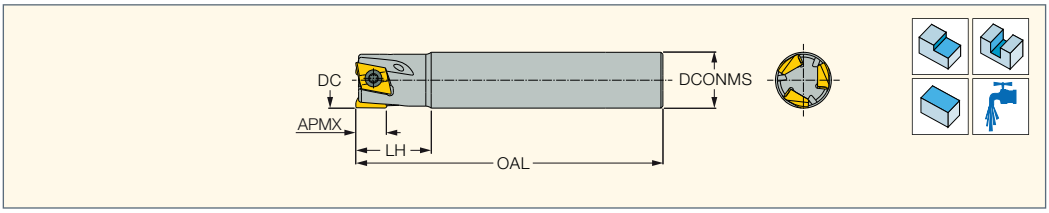
[a] Recommended tightening torque:4.8 N*m

**For inserts, see pages:** QPMR 1004-HQ-M (495) • QPMT 100408PDTN (495) • SPCT/SPMR PDR (496) • SPMT-HQ (495) • XPMT-HQ (496)

SUMOMILL 290 LINE

## T290 ELN-10

Endmills Carrying Tangentially Clamped Inserts




| Designation | DC | CICT(1) | OAL | LH | APMX | DCONMS | Shank(2) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T290 ELN D20-02-C20-10 | 20.00 | 2 | 110.00 | 27.0 | 10.00 | 20.00 | C | 0.22 | SR 10504970 | BLD IP15/M7 | SW6-T-SH |
| T290 ELN D20-03-C20-10 | 20.00 | 3 | 110.00 | 27.0 | 10.00 | 20.00 | C | 0.23 | SR 10504970 | BLD IP15/M7 | SW6-T-SH |
| T290 ELN D20-03-W20-10 | 20.00 | 3 | 90.00 | 28.0 | 10.00 | 20.00 | W | 0.18 | SR 10504970 | BLD IP15/M7 | SW6-T-SH |
| T290 ELN D25-03-C25-10-XL | 25.00 | 3 | 150.00 | 30.0 | 10.00 | 25.00 | C | 0.51 | SR 10504970 | BLD IP15/M7 | SW6-T-SH |
| T290 ELN D25-04-C25-10 | 25.00 | 4 | 120.00 | 28.0 | 10.00 | 25.00 | C | 0.40 | SR 10504970 | BLD IP15/M7 | SW6-T-SH |
| T290 ELN D25-04-W25-10 | 25.00 | 4 | 95.00 | 30.0 | 10.00 | 25.00 | W | 0.30 | SR 10504970 | BLD IP15/M7 | SW6-T-SH |
| T290 ELN D32-05-C32-10 | 32.00 | 5 | 130.00 | 28.0 | 10.00 | 32.00 | C | 0.73 | SR 10504970 | BLD IP15/M7 | SW6-T-SH |

- For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)

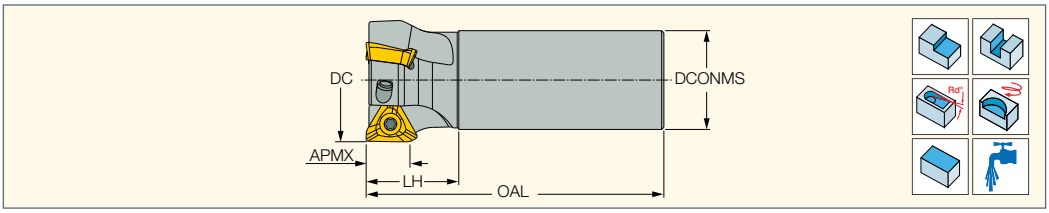
(2) C-Cylindrical, W-Weldon

**For inserts, see pages:** T290 LNMT/LNHT 1004 (542)

HELI3MILL HM390 LINE

## HM390 ETP-10

90° Endmills Carrying HM390 TPKT 1003 Triangular Inserts with 3 Helical Cutting Edges




| Designation | DC | APMX | CICT(1) | OAL | LH | DCONMS | Shank(2) | RMPX°(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETP D25-2-C25-10 | 25.00 | 8.00 | 2 | 120.00 | 25.0 | 25.00 | C | 2.9 | 0.38 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D25-2-W25-10 | 25.00 | 8.00 | 2 | 95.00 | 25.0 | 25.00 | W | 2.9 | 0.30 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D25-3-C24-10-B | 25.00 | 8.00 | 3 | 200.00 | 25.0 | 24.00 | C | 2.9 | 0.60 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D25-3-C25-10 | 25.00 | 8.00 | 3 | 120.00 | 25.0 | 25.00 | C | 2.9 | 0.38 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D25-3-C25-10-B | 25.00 | 8.00 | 3 | 200.00 | 40.0 | 25.00 | C | 2.9 | 0.66 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D25-3-W25-10 | 25.00 | 8.00 | 3 | 95.00 | 25.0 | 25.00 | W | 2.9 | 0.30 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D25-4-C25-10 | 25.00 | 8.00 | 4 | 120.00 | 25.0 | 25.00 | C | 2.9 | 0.38 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D28-3-C25-10 | 28.00 | 8.00 | 3 | 120.00 | 25.0 | 25.00 | C | 2.5 | 0.40 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D28-3-C25-10-B | 28.00 | 8.00 | 3 | 200.00 | 25.0 | 25.00 | C | 2.5 | 0.67 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D32-3-C31-10-B | 32.00 | 8.00 | 3 | 250.00 | 30.0 | 31.00 | C | 2.1 | 1.33 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D32-3-C32-10 | 32.00 | 8.00 | 3 | 130.00 | 30.0 | 32.00 | C | 2.1 | 0.71 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D32-3-W32-10 | 32.00 | 8.00 | 3 | 110.00 | 30.0 | 32.00 | W | 2.1 | 0.58 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D32-4-C32-10 | 32.00 | 8.00 | 4 | 130.00 | 30.0 | 32.00 | C | 2.1 | 0.70 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D32-4-C32-10-B | 32.00 | 8.00 | 4 | 200.00 | 40.0 | 32.00 | C | 2.1 | 1.11 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D32-4-W32-10 | 32.00 | 8.00 | 4 | 110.00 | 30.0 | 32.00 | W | 2.1 | 0.58 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D40-5-C32-10 | 40.00 | 8.00 | 5 | 130.00 | 30.0 | 32.00 | C | 1.6 | 0.76 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D40-5-W32-10 | 40.00 | 8.00 | 5 | 110.00 | 30.0 | 32.00 | W | 1.6 | 0.64 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D50-6-C32-10 | 50.00 | 8.00 | 6 | 130.00 | 38.0 | 32.00 | C | 1.2 | 0.86 | SR 14-562/S | BLD T10/S7 | SW6-SD |

- For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) C-Cylindrical, W-Weldon

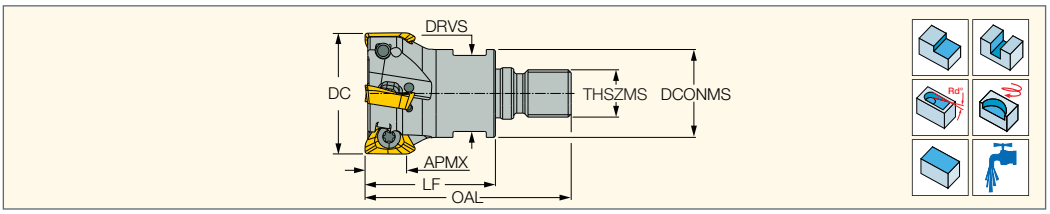
(3) Maximum ramping angle

**For inserts, see pages:** HM390 TPCR 1003 (513) • HM390 TPKT/CT 1003 (512)

HELI3MILL HM390 LINE

## HM390 ETP-M

90° Endmills with a FLEX-FIT Threaded Adaptation Carrying HM90 TPKT 1003... Inserts with 3 Helical Cutting Edges




| Designation | DC | APMX | CICT(1) | LF | DCONMS | THSZMS | OAL | DRVS(2) | RMPX°(3) | TQ_3(4) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETP D25-3-M12 | 25.00 | 8.00 | 3 | 35.00 | 21.00 | M12 | 57.00 | 17.1 | 2.9 | 33 | 0.08 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D32-4-M16 | 32.00 | 8.00 | 4 | 35.00 | 29.00 | M16 | 60.00 | 25.1 | 2.1 | 40 | 0.16 | SR 14-562/S | BLD T10/S7 | SW6-SD |
| HM390 ETP D32-5-10-M16 | 32.00 | 8.00 | 5 | 35.00 | 29.00 | M16 | 60.00 | 25.1 | 2.1 | 40 | 0.17 | SR 14-562/S | BLD T10/S7 | SW6-SD |

• For adaptation see page 59 • For user guide see pages 616-622 • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Number of inserts (or edges for solid tool)

(2) Clamping wrench size

(3) Maximum ramping angle

(4) Tool tightening torque Nxm (lbfxin)

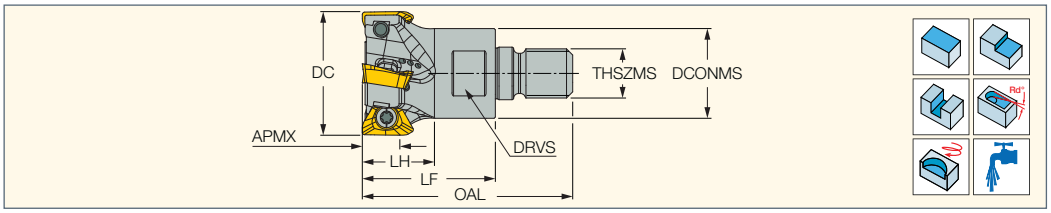
**For inserts, see pages:** HM390 TPCR 1003 (513) • HM390 TPKT/CT 1003 (512)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

HELI3MILL HM390 LINE

## HM390 ETP/C/D-M-JHP

90° JHP endmill with a FLEX-FIT threaded adaptation




| Designation | DC | CICT(1) | APMX | OAL | LF | DCONMS | THSZMS | RMPX°(2) | MIID(3) |
|---|---|---|---|---|---|---|---|---|---|
| HM390 ETC D16-2-M08-07JHP | 16.00 | 2 | 5.00 | 38.00 | 20.50 | 15.30 | M08 | 1.9 | HM390 TCKT 0703 |
| HM390 ETC D20-3-M10-07JHP | 20.00 | 3 | 5.00 | 45.50 | 25.50 | 18.30 | M10 | 1.4 | HM390 TCKT 0703 |
| HM390 ETC D25-4-M12-07JHP | 25.00 | 4 | 5.00 | 59.00 | 37.00 | 21.00 | M12 | 1.0 | HM390 TCKT 0703 |
| HM390 ETP D25-3-M12-10JHP | 25.00 | 3 | 8.00 | 57.00 | 35.00 | 21.00 | M12 | 2.9 | HM390 TPKT 1003 |
| HM390 ETP D32-4-M16-10JHP | 32.00 | 4 | 8.00 | 55.00 | 30.00 | 29.00 | M16 | 2.1 | HM390 TPKT 1003 |
| HM390 ETP D40-4-M16-10JHP | 40.00 | 4 | 8.00 | 55.00 | 30.00 | 29.00 | M16 | 1.6 | HM390 TPKT 1003 |
| HM390 ETD D40-4-M16-15JHP | 40.00 | 4 | 13.00 | 68.00 | 43.00 | 29.00 | M16 | 2.1 | HM390 TDKT 1505 |

**New**

• When assembled the HM390 TDKT 1505PDR-FW insert, tool diameter enlarges by 1.0 mm • For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) Maximum ramping angle

(3) Master insert identification

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

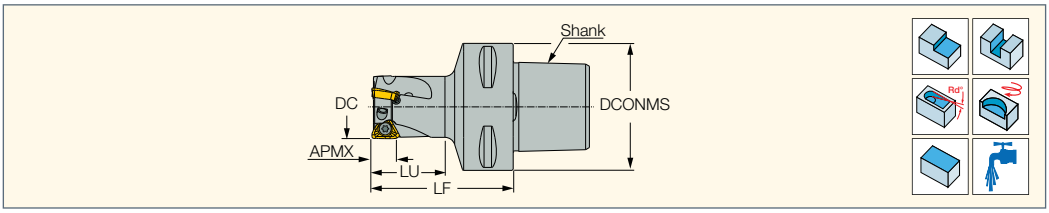
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM390 ETC D16-2-M08-07JHP | SR M2.5X5-T7-60 | T-7/51 | | |
| HM390 ETC D20-3-M10-07JHP | SR M2.5X5-T7-60 | T-7/51 | | |
| HM390 ETC D25-4-M12-07JHP | SR M2.5X6-T7-60 | T-7/51 | | |
| HM390 ETP D25-3-M12-10JHP | SR 14-562/S | | BLD T10/S7 | |
| HM390 ETP D32-4-M16-10JHP | SR 14-562/S | | BLD T10/S7 | SW6-SD |
| HM390 ETP D40-4-M16-10JHP | SR 14-562/S | | BLD T10/S7 | |
| HM390 ETD D40-4-M16-15JHP | SR 10511869 | | BLD IP20/S7 | SW6-T |

HELI3MILL HM390 LINE

## HM390 ETP-C#-10

90° Endmills Carrying HM390 TPKT 1003 Triangular Inserts with 3 Helical Cutting Edges




| Designation | DCONMS | DC | APMX | CICT(1) | LU | LF | RMPX°(2) | Shank | DCP(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETP D25-3-L39-C3-10 | 32.00 | 25.00 | 8.00 | 3 | 39.0 | 55.00 | 2.9 | CAMFIX | 0 | 0.21 | SR 14-562/S | BLD T10/S7 | SW6-SD |

- For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) Maximum ramping angle

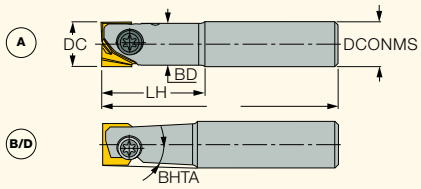
(3) 1 - Slot for data chip, 0 - Without slot for data chip

**For inserts, see pages:** HM390 TPCR 1003 (513) • HM390 TPKT/CT 1003 (512)

BALLPLUS

## HCE

Multifunction Endmills that Can Carry Several Insert Geometries




| Designation | DC | LH | OAL | BD | DCONMS | Shank(1) | BHTA | Type | TQ(2) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCE D12-A-L120-C12 | 12.00 | 30.0 | 120.00 | 11.10 | 12.00 | C | - | A | 6.0 | 0.10 | SR 34-540 | BLD T15/S7(a) | SW6-T |
| HCE D12-B-L160-C20 | 12.00 | 50.0 | 160.00 | - | 20.00 | C | 4.6 | B | 6.0 | 0.42 | SR 34-540 | BLD T15/S7(a) | SW6-T |
| HCE D12-D-L160-C16 | 12.00 | 60.0 | 160.00 | - | 16.00 | C | 1.9 | D | 6.0 | 0.21 | SR 34-540 | BLD T15/S7(a) | SW6-T |
| HCE D16-A-L130-C16 | 16.00 | 36.0 | 130.00 | 14.90 | 16.00 | C | - | A | 7.8 | 0.19 | SR 10503579 | BLD T20/S7(a) | SW6-T |
| HCE D16-B-L160-C25 | 16.00 | 60.0 | 160.00 | - | 25.00 | C | 4.3 | B | 7.8 | 0.50 | SR 10503579 | BLD T20/S7(a) | SW6-T |
| HCE D16-D-L160-C20 | 16.00 | 65.0 | 160.00 | - | 20.00 | C | 1.7 | D | 7.8 | 0.32 | SR 10503579 | BLD T20/S7(a) | SW6-T |
| HCE D20-A-L150-C20 | 20.00 | 60.0 | 150.00 | 18.80 | 20.00 | C | - | A | 12.0 | 0.33 | SR 1052964 | BLD T25/S7(a) | SW6-T |
| HCE D20-D-L200-C25 | 20.00 | 90.0 | 200.00 | - | 25.00 | C | 1.6 | D | 12.0 | 0.62 | SR 1052964 | BLD T25/S7(a) | SW6-T |
| HCE D25-A-L170-C25 | 25.00 | 70.0 | 170.00 | 23.00 | 25.00 | C | - | A | 12.0 | 0.57 | SR 1051666 | BLD T25/S7(a) | SW6-T |
| HCE D25-D-L250-C32 | 25.00 | 125.0 | 250.00 | - | 32.00 | C | 1.6 | D | 12.0 | 1.20 | SR 1051666 | BLD T25/S7(a) | SW6-T |

- For undercutting, use HTR inserts only • The dimensions are for HCC inserts with RE=0.5 mm • For user guide, see pages 616-622

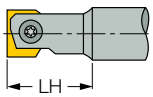
(1) C-Cylindrical

(2) Screw Tightening Torque

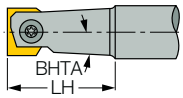
(a) Recommended torque value according to the "Tightening Torque" table

**For inserts, see pages:** HCC-QF (608) • HLB-QF (609)

**Type A**



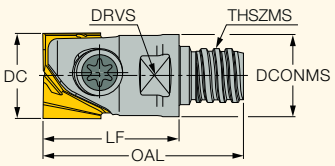

**Type B, D**




BALLPLUS

## HCE-MM

Multifunction Endmills with a MULTI-MASTER Threaded Adaptation that Mounts Several Insert Geometries




| Designation | DC | OAL | LF | APMX | THSZMS | DCONMS | DRVS(1) | TQ(2) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCE D12/.50-MMT08 | 12.00 | 28.00 | 20.00 | 8.10 | T08 | 11.50 | 10.0 | 6.0 | 0.01 | SR 34-540 | BLD T15/S7(a) | SW6-T |
| HCE D16/.62-MMT10 | 16.00 | 36.75 | 25.00 | 10.30 | T10 | 15.20 | 13.0 | 7.8 | 0.03 | SR 10503579 | BLD T20/S7(a) | SW6-T |
| HCE D20/.75-MMT12 | 20.00 | 48.80 | 35.40 | 12.80 | T12 | 18.50 | 15.0 | 12.0 | 0.06 | SR 1052964 | BLD T25/S7(a) | SW6-T |

- For undercutting, use HTR inserts only • The dimensions are for HCC inserts with RE=0.5 mm • Do not apply lubricant to the MULTI-MASTER threaded connection
- For adaptation options, see page 59 • For user guide, see pages 616-622

(1) Width across flats (wrench should be ordered separately)

(2) Screw Tightening Torque

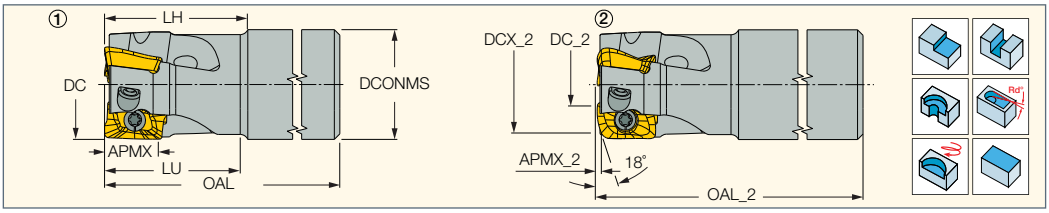
(a) Recommended torque value according to the "Tightening Torque" table

**For inserts, see pages:** HCC-QF (608) • HLB-QF (609)

**For holders, see pages:** MM CAB (110) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106)
• MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106)
• MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

HELI2000

**HM90 E90A-10**
Endmills Carrying HM90
AP.. 1003... Inserts




| Designation | DC | DCX_2 | DC_2 | DCONMS | APMX | APMX_2 | CICT(1) | OAL | OAL_2 | LH | LU |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D10-1-C10 | 10.00 | 10.10 | 1.00 | 10.00 | 9.80 | 1.00 | 1 | 80.00 | 79.63 | 20.0 | 13.8 |
| HM90 E90A-D10-1-C10-C | 10.00 | 10.10 | 1.00 | 10.00 | 9.80 | 1.00 | 1 | 80.00 | 79.63 | 20.0 | 13.8 |
| HM90 E90A-D10-1-C16-LB | 10.00 | 10.10 | 1.00 | 16.00 | 9.80 | 1.00 | 1 | 160.00 | 159.63 | 30.0 | 13.8 |
| HM90 E90A-D10-1-W16 | 10.00 | - | - | 16.00 | 9.80 | - | 1 | 80.00 | - | 20.0 | 10.6 |
| HM90 E90A-D12-1-C16 | 12.00 | 12.10 | 3.00 | 16.00 | 9.80 | 1.00 | 1 | 80.00 | 79.63 | 20.0 | 14.0 |
| HM90 E90A-D12-1-C16-LB | 12.00 | 12.10 | 3.00 | 16.00 | 9.80 | 1.00 | 1 | 160.00 | 59.63 | 30.0 | 16.0 |
| HM90 E90A-D12-1-W16 | 12.00 | 12.10 | 3.00 | 16.00 | 9.80 | 1.00 | 1 | 80.00 | 79.63 | 20.0 | 14.0 |
| HM90 E90A-D12-1-W16-C | 12.00 | 12.10 | 3.00 | 16.00 | 9.80 | 1.00 | 1 | 80.00 | 79.63 | 20.0 | 14.0 |
| HM90 E90A-D12-1-C16-C | 12.00 | - | - | 16.00 | 9.80 | - | 1 | 80.00 | - | 20.0 | 14.0 |
| HM90 E90A-D14-1-C16 | 14.00 | 14.10 | 5.00 | 16.00 | 9.80 | 1.00 | 1 | 80.00 | 79.63 | 23.0 | 18.4 |
| HM90 E90A-D14-1-W16 | 14.00 | 14.10 | 5.00 | 16.00 | 9.80 | 1.00 | 1 | 80.00 | 79.63 | 23.0 | 18.4 |
| HM90 E90A-D16-2-C15-B | 16.00 | 16.10 | 7.00 | 15.00 | 9.80 | 1.00 | 2 | 150.00 | 149.63 | 25.0 | 24.4 |
| HM90 E90A-D16-2-C15-B-C | 16.00 | 16.10 | 7.00 | 15.00 | 9.80 | 1.00 | 2 | 150.00 | 149.63 | 25.0 | 24.4 |
| HM90 E90A-D16-2-C16 | 16.00 | 16.10 | 7.00 | 16.00 | 9.80 | 1.00 | 2 | 90.00 | 89.63 | 26.0 | 25.2 |
| HM90 E90A-D16-2-C16-B | 16.00 | 16.10 | 7.00 | 16.00 | 9.80 | 1.00 | 2 | 150.00 | 149.63 | 40.0 | 38.2 |
| HM90 E90A-D16-2-C16-B-C | 16.00 | 16.10 | 7.00 | 16.00 | 9.80 | 1.00 | 2 | 150.00 | 149.63 | 40.0 | 38.2 |
| HM90 E90A-D16-2-C16-C | 16.00 | 16.10 | 7.00 | 16.00 | 9.80 | 1.00 | 2 | 90.00 | 89.63 | 26.0 | 25.2 |
| HM90 E90A-D16-2-C16-LB | 16.00 | 16.10 | 7.00 | 16.00 | 9.80 | 1.00 | 2 | 180.00 | 179.63 | 40.0 | 38.1 |
| HM90 E90A-D16-2-W16 | 16.00 | 16.10 | 7.00 | 16.00 | 9.80 | 1.00 | 2 | 85.00 | 84.63 | 26.0 | 25.2 |
| HM90 E90A-D16-2-W16-C | 16.00 | 16.10 | 7.00 | 16.00 | 9.80 | 1.00 | 2 | 85.00 | 84.63 | 26.0 | 25.2 |
| HM90 E90A-D17-2-C16 | 17.00 | 17.10 | 8.00 | 16.00 | 9.80 | 1.00 | 2 | 90.00 | 89.63 | 28.0 | 27.0 |
| HM90 E90A-D17-2-C16-L170 | 17.00 | 17.10 | 8.00 | 16.00 | 9.80 | 1.00 | 2 | 170.00 | 169.63 | 27.0 | - |

| Designation | RMPX°(2) | RMPX°_2 | MDN | MDX | Shank(3) | CSP(4) | RPMX(5) | MIID(6) | MIID_2(7) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D10-1-C10 | 5.0 | 5.0 | 11.10 | 19.20 | C | 0 | 132843 | HM90 APKT 1003 PDR | - | 0.04 |
| HM90 E90A-D10-1-C10-C | 5.0 | 5.0 | 11.10 | 19.20 | C | 1 | 131850 | HM90 APKT 1003 PDR | - | 0.04 |
| HM90 E90A-D10-1-C16-LB | 5.0 | 5.0 | 11.10 | 19.20 | C | 0 | 132843 | HM90 APKT 1003 PDR | - | 0.22 |
| HM90 E90A-D10-1-W16 | 5.0 | - | - | - | W | 0 | 132843 | HM90 APKT 1003 PDR | - | 0.10 |
| HM90 E90A-D12-1-C16 | 32.0 | 32.0 | 15.10 | 23.20 | C | 0 | 92536 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.11 |
| HM90 E90A-D12-1-C16-LB | 32.0 | 32.0 | 15.10 | 23.20 | C | 0 | 92536 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.23 |
| HM90 E90A-D12-1-W16 | 32.0 | 32.0 | 15.10 | 23.20 | W | 0 | 92536 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.11 |
| HM90 E90A-D12-1-W16-C | 32.0 | 32.0 | 15.10 | 23.20 | W | 1 | 92536 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.10 |
| HM90 E90A-D12-1-C16-C | 32.0 | - | - | - | C | 1 | 92536 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.10 |
| HM90 E90A-D14-1-C16 | 7.0 | 7.0 | 19.10 | 27.20 | C | 0 | 75930 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.11 |
| HM90 E90A-D14-1-W16 | 7.0 | 7.0 | 19.10 | 27.20 | W | 0 | 75930 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.11 |
| HM90 E90A-D16-2-C15-B | 15.0 | 15.0 | 23.10 | 31.20 | C | 0 | 66712 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.19 |
| HM90 E90A-D16-2-C15-B-C | 15.0 | 15.0 | 23.10 | 31.20 | C | 1 | 66712 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.17 |
| HM90 E90A-D16-2-C16 | 15.0 | 15.0 | 23.10 | 31.20 | C | 0 | 66712 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.12 |
| HM90 E90A-D16-2-C16-B | 15.0 | 15.0 | 23.10 | 31.20 | C | 0 | 66712 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.22 |
| HM90 E90A-D16-2-C16-B-C | 15.0 | 15.0 | 23.10 | 31.20 | C | 1 | 66712 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.20 |
| HM90 E90A-D16-2-C16-C | 15.0 | 15.0 | 23.10 | 31.20 | C | 1 | 66712 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.11 |
| HM90 E90A-D16-2-C16-LB | 15.0 | 15.0 | 23.10 | 31.20 | C | 0 | 66712 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.26 |
| HM90 E90A-D16-2-W16 | 15.0 | 15.0 | 23.10 | 31.20 | W | 0 | 66712 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.12 |
| HM90 E90A-D16-2-W16-C | 15.0 | 15.0 | 23.10 | 31.20 | W | 1 | 66712 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.11 |
| HM90 E90A-D17-2-C16 | 15.0 | 15.0 | 25.10 | 33.20 | C | 0 | 63393 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.13 |
| HM90 E90A-D17-2-C16-L170 | 4.5 | 15.0 | 25.10 | 33.20 | C | 0 | 63393 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.25 |

• 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

(4) 0 - Without coolant supply, 1 - With coolant supply

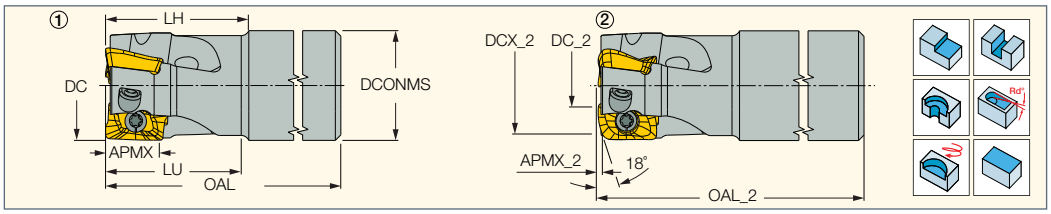
(5) Maximum RPM

(6) Master insert identification

(7) Master insert identification 2

**For inserts, see pages:** APCR 1003PDFR-P (517) • APCT 1003PDR-HM (516) • APKR 1003PDR (517) • APKT 1003-FF (520) • APKT 1003..R (519) • APKT 1003..TR-RM (519) • APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • APKT 1003PDTR/L-RM (518) • APKW 100304 PDR (PCD) (516) • HM90 APCR 100304PDFR-P/DP (515) • HM90 APCT 1003 (514) • HM90 APKT 1003 (515) • HM90 APKT 1003PD-W (520) • HM90 APKW 1003PDR (519)

**HM90 E90A-10**
Endmills Carrying HM90
AP.. 1003... Inserts




| Designation | DC | DCX_2 | DC_2 | DCONMS | APMX | APMX_2 | CICT[1] | OAL | OAL_2 | LH | LU |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D18-2-C16 | 18.00 | 18.10 | 9.00 | 16.00 | 9.80 | 1.00 | 2 | 90.00 | 89.63 | 26.0 | - |
| HM90 E90A-D18-2-C16-C | 18.00 | 18.10 | 9.00 | 16.00 | 9.80 | 1.00 | 2 | 90.00 | 89.63 | 26.0 | - |
| HM90 E90A-D18-2-W20 | 18.00 | 18.10 | 9.00 | 20.00 | 9.80 | 1.00 | 2 | 90.00 | 89.63 | 30.0 | 26.4 |
| HM90 E90A-D18-2-W20-C | 18.00 | 18.10 | 9.00 | 20.00 | 9.80 | 1.00 | 2 | 90.00 | 89.63 | 30.0 | 26.4 |
| HM90 E90A-D19-2-C20 | 19.00 | 19.10 | 10.00 | 20.00 | 9.80 | 1.00 | 2 | 90.00 | 89.63 | 26.0 | 25.0 |
| HM90 E90A-D20-2-C19-B | 20.00 | 20.10 | 11.00 | 19.00 | 9.80 | 1.00 | 2 | 160.00 | 159.63 | 25.0 | - |
| HM90 E90A-D20-2-C19-B-C | 20.00 | 20.10 | 11.00 | 19.00 | 9.80 | 1.00 | 2 | 160.00 | 159.63 | 25.0 | - |
| HM90 E90A-D20-2-C20 | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 2 | 110.00 | 109.63 | 26.0 | 25.3 |
| HM90 E90A-D20-2-C20-B | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 2 | 160.00 | 159.63 | 40.0 | 38.0 |
| HM90 E90A-D20-2-C20-B-C | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 2 | 160.00 | 159.63 | 40.0 | 38.0 |
| HM90 E90A-D20-2-C20-C | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 2 | 110.00 | 109.63 | 26.0 | 25.3 |
| HM90 E90A-D20-2-C20-LB | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 2 | 200.00 | 199.63 | 40.0 | 38.0 |
| HM90 E90A-D20-2-C20-XL | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 2 | 130.00 | 129.63 | 60.0 | 59.0 |
| HM90 E90A-D20-2-W20 | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 2 | 90.00 | 89.63 | 26.1 | 25.0 |
| HM90 E90A-D20-2-W20-XL | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 2 | 130.00 | 129.63 | 60.0 | 59.0 |
| HM90 E90A-D20-3-C20 | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 3 | 110.00 | 109.63 | 26.1 | 25.0 |
| HM90 E90A-D20-3-C20-C | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 3 | 110.00 | 109.63 | 26.1 | 25.0 |
| HM90 E90A-D20-3-W16 | 20.00 | 20.10 | 11.00 | 16.00 | 9.80 | 1.00 | 3 | 85.00 | 84.63 | 26.1 | - |
| HM90 E90A-D20-3-W16-C | 20.00 | 20.10 | 11.00 | 16.00 | 9.80 | 1.00 | 3 | 85.00 | 84.63 | 26.1 | - |
| HM90 E90A-D20-3-W20 | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 3 | 90.00 | 89.63 | 26.1 | 25.0 |
| HM90 E90A-D20-3-W20-C | 20.00 | 20.10 | 11.00 | 20.00 | 9.80 | 1.00 | 3 | 90.00 | 89.63 | 26.1 | 25.0 |

| Designation | RMPX°[2] | RMPX°_2 | MDN | MDX | Shank[3] | CSP[4] | RPMX[5] | MIID[6] | MIID_2[7] | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D18-2-C16 | 7.5 | 7.5 | 27.10 | 35.20 | C | 0 | 60361 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.13 |
| HM90 E90A-D18-2-C16-C | 7.5 | 7.5 | 27.10 | 35.20 | C | 1 | 60361 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.12 |
| HM90 E90A-D18-2-W20 | 7.5 | 7.5 | 27.10 | 35.20 | W | 0 | 60361 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.18 |
| HM90 E90A-D18-2-W20-C | 7.5 | 7.5 | 27.10 | 35.20 | W | 1 | 60361 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.17 |
| HM90 E90A-D19-2-C20 | 7.5 | 7.5 | 29.10 | 37.20 | C | 0 | 57727 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.19 |
| HM90 E90A-D20-2-C19-B | 7.5 | 7.5 | 31.10 | 39.20 | C | 0 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.33 |
| HM90 E90A-D20-2-C19-B-C | 7.5 | 7.5 | 31.10 | 39.20 | C | 1 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.30 |
| HM90 E90A-D20-2-C20 | 7.5 | 7.5 | 31.10 | 39.20 | C | 0 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.24 |
| HM90 E90A-D20-2-C20-B | 7.5 | 7.5 | 31.10 | 39.20 | C | 0 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.36 |
| HM90 E90A-D20-2-C20-B-C | 7.5 | 7.5 | 31.10 | 39.20 | C | 1 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.33 |
| HM90 E90A-D20-2-C20-C | 7.5 | 7.5 | 31.10 | 39.20 | C | 1 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.22 |
| HM90 E90A-D20-2-C20-LB | 7.5 | 7.5 | 31.10 | 39.20 | C | 0 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.46 |
| HM90 E90A-D20-2-C20-XL | 7.5 | 7.5 | 31.10 | 39.20 | C | 0 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.27 |
| HM90 E90A-D20-2-W20 | 7.5 | 7.5 | 31.10 | 39.20 | W | 0 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.19 |
| HM90 E90A-D20-2-W20-XL | 7.5 | 7.5 | 31.10 | 39.20 | W | 0 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.27 |
| HM90 E90A-D20-3-C20 | 7.5 | 7.5 | 31.10 | 39.20 | C | 0 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.24 |
| HM90 E90A-D20-3-C20-C | 7.5 | 7.5 | 31.10 | 39.20 | C | 1 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.22 |
| HM90 E90A-D20-3-W16 | 7.5 | 7.5 | 31.10 | 39.20 | W | 0 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.13 |
| HM90 E90A-D20-3-W16-C | 7.5 | 7.5 | 31.10 | 39.20 | W | 1 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.12 |
| HM90 E90A-D20-3-W20 | 7.5 | 7.5 | 31.10 | 39.20 | W | 0 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.19 |
| HM90 E90A-D20-3-W20-C | 7.5 | 7.5 | 31.10 | 39.20 | W | 1 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.18 |

• 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-622

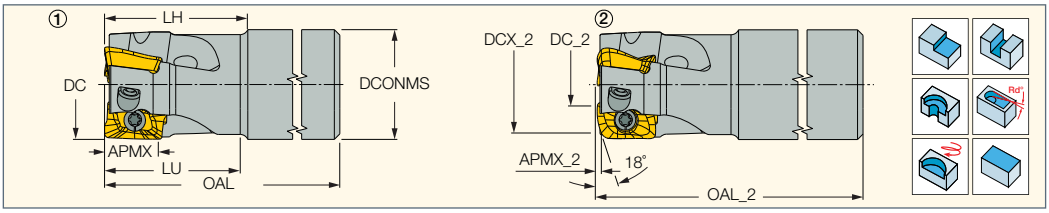
[1] Number of inserts (or edges for solid tool)
[2] Maximum ramping angle
[3] C-Cylindrical, W-Weldon
[4] 0 - Without coolant supply, 1 - With coolant supply
[5] Maximum RPM
[6] Master insert identification
[7] Master insert identification 2

**For inserts, see pages:** APCR 1003PDFR-P (517) • APCT 1003PDR-HM (516) • APKR 1003PDR (517) • APKT 1003-FF (520) • APKT 1003..R (519) • APKT 1003..TR-RM (519) • APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • APKT 1003PDTR/L-RM (518) • APKW 100304 PDR (PCD) (516) • HM90 APCR 100304PDFR-P/DP (515) • HM90 APCT 1003 (514) • HM90 APKT 1003 (515) • HM90 APKT 1003PD-W (520) • HM90 APKW 1003PDR (519)

Continued

HELI2000

**HM90 E90A-10**
Endmills Carrying HM90
AP.. 1003... Inserts




| Designation | DC | DCX_2 | DC_2 | DCONMS | APMX | APMX_2 | CICT(1) | OAL | OAL_2 | LH | LU |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D20-2-W20-C | 20.00 | - | - | 20.00 | 9.80 | - | 2 | 90.00 | - | 26.1 | 25.0 |
| HM90 E90A-D21-2-C20-L270 | 21.00 | 21.10 | 12.00 | 20.00 | 9.80 | 1.00 | 2 | 270.00 | 269.63 | 26.0 | - |
| HM90 E90A-D21-3-C20 | 21.00 | 21.10 | 12.00 | 20.00 | 9.80 | 1.00 | 3 | 115.00 | 114.63 | 26.0 | 25.0 |
| HM90 E90A-D22-3-C20 | 22.00 | 22.10 | 13.00 | 20.00 | 9.80 | 1.00 | 3 | 115.00 | 114.63 | 26.0 | - |
| HM90 E90A-D22-3-C20-C | 22.00 | 22.10 | 13.00 | 20.00 | 9.80 | 1.00 | 3 | 115.00 | 114.63 | 26.0 | - |
| HM90 E90A-D22-3-W25 | 22.00 | 22.10 | 13.00 | 25.00 | 9.80 | 1.00 | 3 | 95.00 | 94.63 | 26.0 | 21.0 |
| HM90 E90A-D22-3-W25-C | 22.00 | 22.10 | 13.00 | 25.00 | 9.80 | 1.00 | 3 | 95.00 | 94.63 | 26.0 | 21.0 |
| HM90 E90A-D25-3-C24-B | 25.00 | 25.10 | 16.00 | 24.00 | 9.80 | 1.00 | 3 | 200.00 | 199.63 | 25.0 | - |
| HM90 E90A-D25-3-C24-B-C | 25.00 | 25.10 | 16.00 | 24.00 | 9.80 | 1.00 | 3 | 200.00 | 199.63 | 25.0 | 24.0 |
| HM90 E90A-D25-3-C25 | 25.00 | 25.10 | 16.00 | 25.00 | 9.80 | 1.00 | 3 | 120.00 | 119.63 | 26.1 | 25.0 |
| HM90 E90A-D25-3-C25-B | 25.00 | 25.10 | 16.00 | 25.00 | 9.80 | 1.00 | 3 | 200.00 | 199.63 | 40.0 | 37.0 |
| HM90 E90A-D25-3-C25-B-C | 25.00 | 25.10 | 16.00 | 25.00 | 9.80 | 1.00 | 3 | 200.00 | 199.63 | 40.0 | 37.0 |
| HM90 E90A-D25-3-C25-C | 25.00 | 25.10 | 16.00 | 25.00 | 9.80 | 1.00 | 3 | 120.00 | 119.63 | 26.1 | 25.0 |
| HM90 E90A-D25-3-W25 | 25.00 | 25.10 | 16.00 | 25.00 | 9.80 | 1.00 | 3 | 95.00 | 94.63 | 26.1 | 25.0 |
| HM90 E90A-D25-3-W25-C | 25.00 | 25.10 | 16.00 | 25.00 | 9.80 | 1.00 | 3 | 95.00 | 94.63 | 26.1 | 25.0 |
| HM90 E90A-D25-3-W25-XL | 25.00 | 25.10 | 16.00 | 25.00 | 9.80 | 1.00 | 3 | 140.00 | 139.63 | 80.0 | 79.0 |
| HM90 E90A-D25-4-C25 | 25.00 | 25.10 | 16.00 | 25.00 | 9.80 | 1.00 | 4 | 120.00 | 119.63 | 26.0 | 25.0 |
| HM90 E90A-D25-4-C25-C | 25.00 | 25.10 | 16.00 | 25.00 | 9.80 | 1.00 | 4 | 120.00 | 120.00 | 26.0 | 25.0 |
| HM90 E90A-D25-4-W25 | 25.00 | 25.10 | 16.00 | 25.00 | 9.80 | 1.00 | 4 | 95.00 | 94.63 | 26.0 | 25.0 |
| HM90 E90A-D25-4-W25-C | 25.00 | 25.10 | 16.00 | 25.00 | 9.80 | 1.00 | 4 | 95.00 | 94.63 | 26.0 | 25.0 |
| HM90 E90A-D25-2-C25 | 25.00 | - | - | 25.00 | 9.80 | - | 2 | 120.00 | 120.00 | 26.1 | 25.0 |
| HM90 E90A-D25-2-W25 | 25.00 | - | - | 25.00 | 9.80 | - | 2 | 95.00 | 95.00 | 26.1 | 25.0 |

| Designation | RMPX°(2) | RMPX°_2 | MDN | MDX | Shank(3) | CSP(4) | RPMX(5) | MIID(6) | MIID_2(7) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D20-2-W20-C | 7.5 | - | - | - | W | 1 | 55578 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.18 |
| HM90 E90A-D21-2-C20-L270 | 2.8 | 2.8 | 33.10 | 41.20 | C | 0 | 53729 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.64 |
| HM90 E90A-D21-3-C20 | 7.5 | 2.8 | 33.10 | 41.20 | C | 0 | 53729 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.26 |
| HM90 E90A-D22-3-C20 | 7.5 | 7.5 | 35.10 | 43.20 | C | 0 | 51846 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.26 |
| HM90 E90A-D22-3-C20-C | 7.5 | 7.5 | 35.10 | 43.20 | C | 1 | 51846 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.25 |
| HM90 E90A-D22-3-W25 | 7.5 | 7.5 | 35.10 | 43.20 | W | 0 | 51846 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.31 |
| HM90 E90A-D22-3-W25-C | 7.5 | 7.5 | 35.10 | 43.20 | W | 1 | 51846 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.29 |
| HM90 E90A-D25-3-C24-B | 2.5 | 2.5 | 41.10 | 49.20 | C | 0 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.67 |
| HM90 E90A-D25-3-C24-B-C | 2.5 | 2.5 | 41.10 | 49.20 | C | 1 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.64 |
| HM90 E90A-D25-3-C25 | 2.5 | 2.5 | 41.10 | 49.20 | C | 0 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.42 |
| HM90 E90A-D25-3-C25-B | 2.5 | 2.5 | 41.10 | 49.20 | C | 0 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.72 |
| HM90 E90A-D25-3-C25-B-C | 2.5 | 2.5 | 41.10 | 49.20 | C | 1 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.68 |
| HM90 E90A-D25-3-C25-C | 2.5 | 2.5 | 41.10 | 49.20 | C | 1 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.39 |
| HM90 E90A-D25-3-W25 | 2.5 | 2.5 | 41.10 | 49.20 | W | 0 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.32 |
| HM90 E90A-D25-3-W25-C | 2.5 | 2.5 | 41.10 | 49.20 | W | 1 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.30 |
| HM90 E90A-D25-3-W25-XL | 2.5 | 2.5 | 41.10 | 49.20 | W | 0 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.47 |
| HM90 E90A-D25-4-C25 | 2.5 | 2.5 | 41.10 | 49.20 | C | 0 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.42 |
| HM90 E90A-D25-4-C25-C | 2.5 | 2.5 | 41.10 | 49.20 | C | 1 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.39 |
| HM90 E90A-D25-4-W25 | 2.5 | 2.5 | 41.10 | 49.20 | W | 0 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.31 |
| HM90 E90A-D25-4-W25-C | 2.5 | 2.5 | 41.10 | 49.20 | W | 1 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.30 |
| HM90 E90A-D25-2-C25 | 2.5 | - | - | - | C | 0 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.42 |
| HM90 E90A-D25-2-W25 | 2.5 | - | - | - | W | 0 | 47512 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.32 |

• 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

(4) 0 - Without coolant supply, 1 - With coolant supply

(5) Maximum RPM

(6) Master insert identification

(7) Master insert identification 2

**For inserts, see pages:** APCR 1003PDFR-P (517) • APCT 1003PDR-HM (516) • APKR 1003PDR (517) • APKT 1003-FF (520) • APKT 1003..R (519) • APKT 1003..TR-RM (519) • APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • APKT 1003PDTR/L-RM (518) • APKW 100304 PDR (PCD) (516) • HM90 APCR 100304PDFR-P/DP (515) • HM90 APCT 1003 (514) • HM90 APKT 1003 (515) • HM90 APKT 1003PD-W (520) • HM90 APKW 1003PDR (519)

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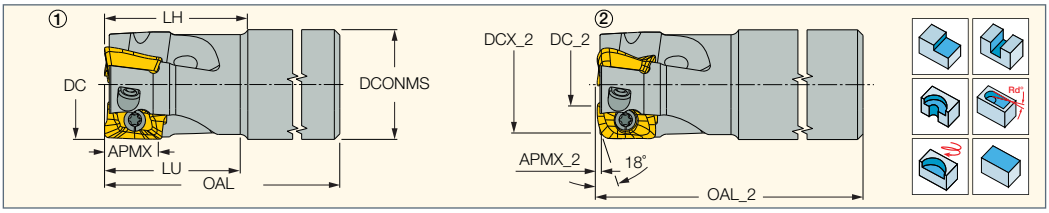
HELI2000

**HM90 E90A-10**
Endmills Carrying HM90
AP.. 1003... Inserts




| Designation | DC | DCX_2 | DC_2 | DCONMS | APMX | APMX_2 | CICT(1) | OAL | OAL_2 | LH | LU |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D28-4-C25 | 28.00 | 28.10 | 19.00 | 25.00 | 9.80 | 1.00 | 4 | 120.00 | 119.63 | 26.0 | - |
| HM90 E90A-D28-4-C25-C | 28.00 | 28.10 | 19.00 | 25.00 | 9.80 | 1.00 | 4 | 120.00 | 119.63 | 26.0 | - |
| HM90 E90A-D28-4-W25 | 28.00 | 28.10 | 19.00 | 25.00 | 9.80 | 1.00 | 4 | 95.00 | 94.63 | 26.0 | - |
| HM90 E90A-D30-4-C32 | 30.00 | 30.10 | 21.00 | 32.00 | 9.80 | 1.00 | 4 | 130.00 | 129.63 | 40.0 | 35.4 |
| HM90 E90A-D30-4-W25 | 30.00 | 30.10 | 21.00 | 25.00 | 9.80 | 1.00 | 4 | 95.00 | 94.63 | 30.0 | - |
| HM90 E90A-D30-4-W25-C | 30.00 | 30.10 | 21.00 | 25.00 | 9.80 | 1.00 | 4 | 95.00 | 94.63 | 30.0 | - |
| HM90 E90A-D32-3-C32 | 32.00 | 32.10 | 23.00 | 32.00 | 9.80 | 1.00 | 3 | 130.00 | 129.63 | 30.0 | 28.5 |
| HM90 E90A-D32-3-W32 | 32.00 | 32.10 | 23.00 | 32.00 | 9.80 | 1.00 | 3 | 110.00 | 109.63 | 30.0 | 28.5 |
| HM90 E90A-D32-4-C32 | 32.00 | 32.10 | 23.00 | 32.00 | 9.80 | 1.00 | 4 | 130.00 | 129.63 | 30.0 | 28.5 |
| HM90 E90A-D32-4-C32-B | 32.00 | 32.10 | 23.00 | 32.00 | 9.80 | 1.00 | 4 | 200.00 | 199.63 | 40.0 | 37.2 |
| HM90 E90A-D32-4-C32-LB | 32.00 | 32.10 | 23.00 | 32.00 | 9.80 | 1.00 | 4 | 250.00 | 249.63 | 40.0 | 37.2 |
| HM90 E90A-D32-4-W25 | 32.00 | 32.10 | 23.00 | 25.00 | 9.80 | 1.00 | 4 | 95.00 | 94.63 | 30.0 | - |
| HM90 E90A-D32-4-W32-XL | 32.00 | 32.10 | 23.00 | 32.00 | 9.80 | 1.00 | 4 | 160.00 | 159.63 | 100.0 | 28.5 |
| HM90 E90A-D32-5-C32 | 32.00 | 32.10 | 23.00 | 32.00 | 9.80 | 1.00 | 5 | 130.00 | 129.63 | 30.0 | 28.5 |
| HM90 E90A-D32-5-C32-C | 32.00 | 32.10 | 23.00 | 32.00 | 9.80 | 1.00 | 5 | 130.00 | 129.63 | 30.0 | 28.5 |
| HM90 E90A-D32-5-W25 | 32.00 | 32.10 | 23.00 | 25.00 | 9.80 | 1.00 | 5 | 95.00 | 94.63 | 30.0 | - |
| HM90 E90A-D32-5-W25-C | 32.00 | 32.10 | 23.00 | 25.00 | 9.80 | 1.00 | 5 | 95.00 | 94.63 | 30.0 | - |
| HM90 E90A-D32-5-W32-C | 32.00 | 32.10 | 23.00 | 32.00 | 9.80 | 1.00 | 5 | 110.00 | 109.63 | 30.0 | 28.5 |
| HM90 E90A-D40-5-C32 | 40.00 | 40.10 | 31.00 | 32.00 | 9.80 | 1.00 | 5 | 130.00 | 129.63 | 30.0 | - |
| HM90 E90A-D40-5-W32-C | 40.00 | 40.10 | 31.00 | 32.00 | 9.80 | 1.00 | 5 | 110.00 | 109.63 | 30.0 | - |
| HM90 E90A-D50-7-C32 | 50.00 | - | - | 32.00 | 9.80 | - | 7 | 130.00 | 130.00 | 41.6 | - |

| Designation | RMPX°(2) | RMPX°_2 | MDN | MDX | Shank(3) | CSP(4) | RPMX(5) | MIID(6) | MIID_2(7) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D28-4-C25 | 2.0 | 2.0 | 47.10 | 55.20 | C | 0 | 44005 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.44 |
| HM90 E90A-D28-4-C25-C | 2.0 | 2.0 | 47.10 | 55.20 | C | 1 | 44005 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.41 |
| HM90 E90A-D28-4-W25 | 2.0 | 2.0 | 47.10 | 55.20 | W | 0 | 44005 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.33 |
| HM90 E90A-D30-4-C32 | 2.0 | 2.0 | 51.10 | 59.20 | C | 0 | 36782 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.72 |
| HM90 E90A-D30-4-W25 | 2.0 | 2.0 | 51.10 | 59.20 | W | 0 | 36782 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.35 |
| HM90 E90A-D30-4-W25-C | 2.0 | 2.0 | 51.10 | 59.20 | W | 1 | 36782 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.33 |
| HM90 E90A-D32-3-C32 | 3.0 | 3.0 | 55.10 | 63.20 | C | 0 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.76 |
| HM90 E90A-D32-3-W32 | 3.0 | 3.0 | 55.10 | 63.20 | W | 0 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.63 |
| HM90 E90A-D32-4-C32 | 3.0 | 3.0 | 55.10 | 63.20 | C | 0 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.75 |
| HM90 E90A-D32-4-C32-B | 3.0 | 3.0 | 55.10 | 63.20 | C | 0 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 1.18 |
| HM90 E90A-D32-4-C32-LB | 3.0 | 3.0 | 55.10 | 63.20 | C | 0 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 1.50 |
| HM90 E90A-D32-4-W25 | 3.0 | 3.0 | 55.10 | 63.20 | W | 0 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.37 |
| HM90 E90A-D32-4-W32-XL | 3.0 | 3.0 | 55.10 | 63.20 | W | 0 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.87 |
| HM90 E90A-D32-5-C32 | 3.0 | 3.0 | 55.10 | 63.20 | C | 0 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.75 |
| HM90 E90A-D32-5-C32-C | 3.0 | 3.0 | 55.10 | 63.20 | C | 1 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.72 |
| HM90 E90A-D32-5-W25 | 3.0 | 3.0 | 55.10 | 63.20 | W | 0 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.37 |
| HM90 E90A-D32-5-W25-C | 3.0 | 3.0 | 55.10 | 63.20 | W | 1 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.35 |
| HM90 E90A-D32-5-W32-C | 3.0 | 3.0 | 55.10 | 63.20 | W | 1 | 35614 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.60 |
| HM90 E90A-D40-5-C32 | 2.7 | 2.7 | 71.10 | 79.20 | C | 0 | 31855 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.83 |
| HM90 E90A-D40-5-W32-C | 2.7 | 2.7 | 71.10 | 79.20 | W | 1 | 31855 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.68 |
| HM90 E90A-D50-7-C32 | 2.7 | - | - | - | C | 0 | 28492 | HM90 APKT 1003 PDR | APKT 1003R8T-FF | 0.94 |

• 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) C-Cylindrical, W-Weldon
(4) 0 - Without coolant supply, 1 - With coolant supply
(5) Maximum RPM
(6) Master insert identification
(7) Master insert identification 2

**For inserts, see pages:** APCR 1003PDFR-P (517) • APCT 1003PDR-HM (516) • APKR 1003PDR (517) • APKT 1003-FF (520) • APKT 1003..R (519) • APKT 1003..TR-RM (519) • APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • APKT 1003PDTR/L-RM (518) • APKW 100304 PDR (PCD) (516) • HM90 APCR 100304PDFR-P/DP (515) • HM90 APCT 1003 (514) • HM90 APKT 1003 (515) • HM90 APKT 1003PD-W (520) • HM90 APKW 1003PDR (519)

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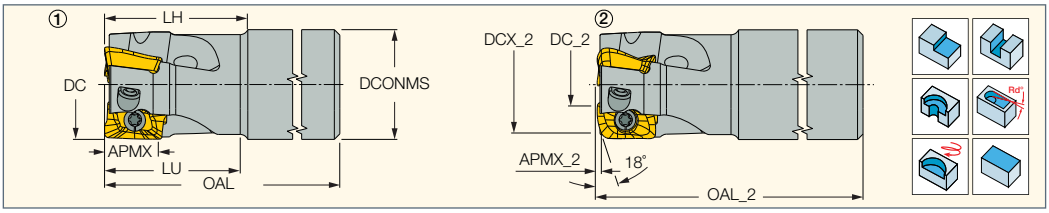
HELI2000

**HM90 E90A-10**
Endmills Carrying HM90
AP.. 1003... Inserts




## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM90 E90A-D10-1-C10 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D10-1-C10-C | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D10-1-C16-LB | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D10-1-W16 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D12-1-C16 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D12-1-C16-LB | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D12-1-W16 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D12-1-W16-C | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D12-1-C16-C | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D14-1-C16 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D14-1-W16 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D16-2-C15-B | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D16-2-C15-B-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D16-2-C16 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D16-2-C16-B | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D16-2-C16-B-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D16-2-C16-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D16-2-C16-LB | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D16-2-W16 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D16-2-W16-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D17-2-C16 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D17-2-C16-L170 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D18-2-C16 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D18-2-C16-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D18-2-W20 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D18-2-W20-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D19-2-C20 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D20-2-C19-B | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-2-C19-B-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-2-C20 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-2-C20-B | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-2-C20-B-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-2-C20-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-2-C20-LB | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-2-C20-XL | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-2-W20 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-2-W20-XL | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-3-C20 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-3-C20-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-3-W16 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-3-W16-C | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D20-3-W20 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-3-W20-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D20-2-W20-C | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D21-2-C20-L270 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D21-3-C20 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D22-3-C20 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D22-3-C20-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D22-3-W25 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D22-3-W25-C | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D25-3-C24-B | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D25-3-C24-B-C | SR 34-505/HG | T-8/53 | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-3-C25 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-3-C25-B | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-3-C25-B-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-3-C25-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-3-W25 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-3-W25-C | SR 34-505/HG | T-8/53 | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-3-W25-XL | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-4-C25 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-4-C25-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-4-W25 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-4-W25-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |

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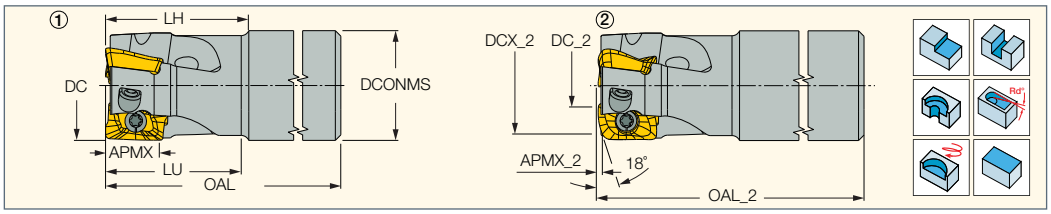
HELI2000

**HM90 E90A-10**
Endmills Carrying HM90
AP.. 1003... Inserts

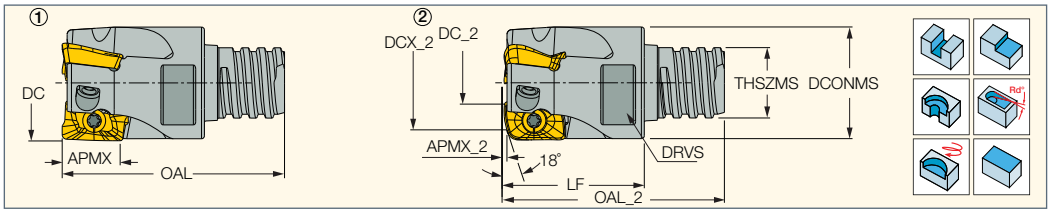



## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM90 E90A-D25-2-C25 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D25-2-W25 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D28-4-C25 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D28-4-C25-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D28-4-W25 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D30-4-C32 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D30-4-W25 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D30-4-W25-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D32-3-C32 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D32-3-W32 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D32-4-C32 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D32-4-C32-B | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D32-4-C32-LB | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D32-4-W25 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D32-4-W32-XL | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D32-5-C32 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D32-5-C32-C | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D32-5-W25 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |
| HM90 E90A-D32-5-W25-C | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D32-5-W32-C | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D40-5-C32 | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D40-5-W32-C | SR 34-505/HG | T-8/53 | | |
| HM90 E90A-D50-7-C32 | SR 34-505/HG | | BLD T08/M7 | SW4-SD |

HELI2000

**HM90 E90A-MM-10**
90° Endmills with a
MULTI-MASTER Threaded
Adaptation Carrying HM90
AP.. 1003... Inserts




| Designation | DC | DC_2 | DCX_2 | CICT(1) | APMX | APMX_2 | OAL | OAL_2 | RMPX°(2) | RMPX°_2 | LF | THSZMS | DRVS(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D16-2-MMT10 | 16.00 | 7.00 | 16.10 | 2 | 9.80 | 1.00 | 34.75 | 34.38 | 15.0 | 15.0 | 23.00 | T10 | 13.0 |
| HM90 E90A-D20-2-MMT12 | 20.00 | 11.00 | 20.10 | 2 | 9.80 | 1.00 | 38.30 | 37.93 | 7.5 | 7.5 | 24.60 | T12 | 16.0 |
| HM90 E90A-D20-3-MMT12 | 20.00 | 11.00 | 20.10 | 3 | 9.80 | 1.00 | 38.30 | 37.93 | 7.5 | 7.5 | 24.60 | T12 | 16.0 |

| Designation | MDN | MDX | RPMX(4) | DCONMS | kg | MIID(5) | MIID_2(6) | | |
|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D16-2-MMT10 | 23.10 | 31.20 | 66712 | 15.30 | 0.03 | APKT 1003PDR-HM | APKT 1003R8T-FF | SR 34-505/HG | |
| HM90 E90A-D20-2-MMT12 | 31.10 | 39.20 | 55578 | 19.20 | 0.05 | APKT 1003PDR-HM | APKT 1003R8T-FF | SR 34-505/HG | T-8/53 |
| HM90 E90A-D20-3-MMT12 | 31.10 | 39.20 | 55578 | 19.20 | 0.05 | APKT 1003PDR-HM | APKT 1003R8T-FF | SR 34-505/HG | |

• 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-622 • Do not apply lubricant to the MULTI-MASTER threaded connection
• For adaptation see page 59

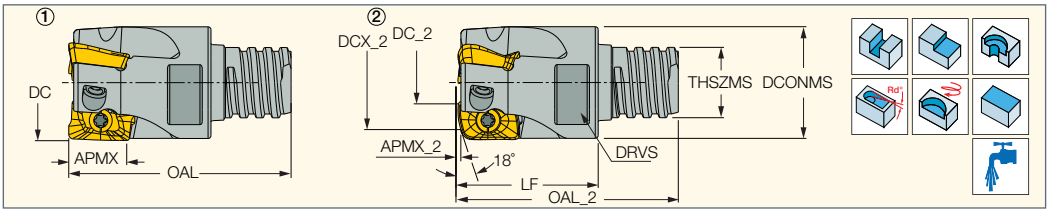
(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) Clamping wrench size
(4) The maximum cutting speed (RPM) for the cutting head assembled on the shank should be the lower parameter (RPMX) of either the cutting head or the shank
(5) Master insert identification
(6) Master insert identification 2

**For inserts, see pages:** APCR 1003PDFR-P (517) • APCT 1003PDR-HM (516) • APKR 1003PDR (517) • APKT 1003-FF (520) • APKT 1003..R (519)
• APKT 1003..TR-RM (519) • APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • APKT 1003PDTR/L-RM (518)
• HM90 APCR 100304PDFR-P/DP (515) • HM90 APCT 1003 (514) • HM90 APKT 1003 (515) • HM90 APKT 1003PD-W (520) • HM90 APKW 1003PDR (519)
**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104)
• MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108)
• MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)(6) Master insert identification 2

HELI2000 JET LINE

**HM90 E90A-MM-10-JHP**

90° JHP Endmills with a MULTI-MASTER Threaded Adaptation Carrying HELI-2000 and HELI-MILL Inserts




| Designation | DC | DC_2 | DCX_2 | CICT[1] | APMX | APMX_2 | OAL | OAL_2 | RMPX°[2] | RMPX°_2 | MDN | MDX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HM90 E90A D16-2-MMT10-JHP** | 16.00 | 7.00 | 16.10 | 2 | 9.80 | 1.00 | 34.80 | 35.17 | 15.0 | 15.0 | 23.10 | 31.20 |
| **HM90 E90A D20-3-MMT12-JHP** | 20.00 | 11.00 | 20.10 | 3 | 9.80 | 1.00 | 38.50 | 38.87 | 7.5 | 7.5 | 31.10 | 39.20 |
| **HM90 E90A D25-4-MMT15-JHP** | 25.00 | 16.00 | 25.10 | 4 | 9.80 | 1.00 | 47.00 | 47.37 | 7.5 | 7.5 | 41.10 | 49.20 |
| **HM90 E90A D32-5-MMT21-JHP** | 32.00 | 23.00 | 32.10 | 5 | 9.80 | 1.00 | 57.95 | 58.32 | 3.0 | 3.0 | 55.10 | 63.20 |

| Designation | LF | DCONMS | THSZMS | RPMX[3] | DRVS[4] | TQ_3[5] | kg | MIID[6] | MIID_2[7] |
|---|---|---|---|---|---|---|---|---|---|
| **HM90 E90A D16-2-MMT10-JHP** | 23.40 | 15.60 | T10 | 66710 | 13.0 | 28 | 0.10 | APKT 1003PDR-HM | APKT 1003R8T-FF |
| **HM90 E90A D20-3-MMT12-JHP** | 25.50 | 19.70 | T12 | 55575 | 16.0 | 28 | 0.15 | APKT 1003PDR-HM | APKT 1003R8T-FF |
| **HM90 E90A D25-4-MMT15-JHP** | 30.00 | 24.70 | T15 | 47510 | 20.0 | 40 | 0.05 | APKT 1003PDR-HM | APKT 1003R8T-FF |
| **HM90 E90A D32-5-MMT21-JHP** | 34.85 | 30.10 | T21 | 35610 | 24.0 | 110 | 0.20 | APKT 1003PDR-HM | APKT 1003R8T-FF |

• 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-622 • Do not apply lubricant to the MULTI-MASTER threaded connection
• For adaptation see page 59

[1] Number of inserts (or edges for solid tool)
[2] Maximum ramping angle
[3] The maximum cutting speed (RPM) for the cutting head assembled on the shank should be the lower parameter (RPMX) of either the cutting head or the shank
[4] Torque key size
[5] Tool tightening torque Nxm (lbfxin)
[6] Master insert identification
[7] Master insert identification 2

**For inserts, see pages:** APCR 1003PDFR-P (517) • APCT 1003PDR-HM (516) • APKR 1003PDR (517) • APKT 1003-FF (520) • APKT 1003..R (519) • APKT 1003..TR-RM (519) • APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • APKT 1003PDTR/L-RM (518) • APKW 100304 PDR (PCD) (516) • HM90 APCR 100304PDFR-P/DP (515) • HM90 APCT 1003 (514) • HM90 APKT 1003 (515) • HM90 APKT 1003PD-W (520) • HM90 APKW 1003PDR (519)

**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

## Spare Parts

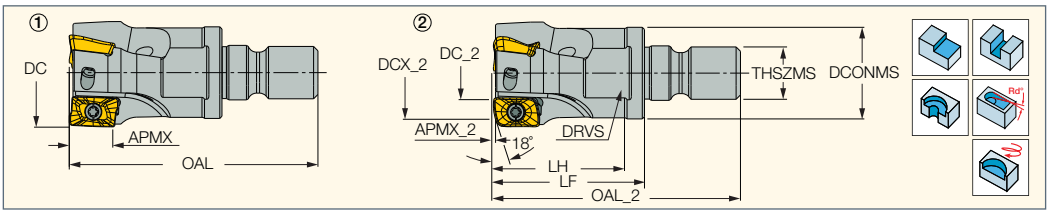
| Designation | | | | |
|---|---|---|---|---|
| **HM90 E90A-MM-10-JHP** | SR 34-505/HG | SR 34-505/HG[a] | BLD T08/M7 | SW4-SD |

[a] Recommended tightening torque for this item: 1.2 Nxm

HELI2000

## HM90 E90A-M-10

90° Endmills with a FLEX-FIT Threaded Adaptation Carrying HM90 AP.. 1003... Inserts




| Designation | DC | DC_2 | DCX_2 | CICT(1) | DCONMS | THSZMS | LH | LF | OAL | AL_2 | APMX | APMX_2 | RMPX°(2) | RMPX°_2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D16-2-M08 | 16.00 | 7.00 | 16.10 | 2 | 14.75 | M08 | 24.0 | 30.00 | 47.50 | 47.13 | 9.80 | 1.00 | 15.0 | 15.0 |
| HM90 E90A-D20-3-M10 | 20.00 | 11.00 | 20.10 | 3 | 18.00 | M10 | 30.0 | 30.00 | 50.00 | 49.63 | 9.80 | 1.00 | 7.5 | 7.5 |
| HM90 E90A-D20-3-M12 | 20.00 | 11.00 | 20.10 | 3 | 21.00 | M12 | 24.0 | 30.00 | 52.00 | 51.63 | 9.80 | 1.00 | 7.5 | 7.5 |
| HM90 E90A-D25-3-M12 | 25.00 | 16.00 | 25.10 | 3 | 21.00 | M12 | 35.0 | 35.00 | 57.00 | 56.63 | 9.80 | 1.00 | 2.5 | 2.5 |
| HM90 E90A-D25-4-M12 | 25.00 | 16.00 | 25.10 | 4 | 21.00 | M12 | 35.0 | 35.00 | 57.00 | 56.63 | 9.80 | 1.00 | 2.5 | 2.5 |
| HM90 E90A-D32-4-M16 | 32.00 | 23.00 | 32.10 | 4 | 29.00 | M16 | 35.0 | 35.00 | 60.00 | 59.63 | 9.80 | 1.00 | 3.0 | 3.0 |

| Designation | MDN | MDX | CSP(3) | DRVS(4) | TQ_3(5) | RPMX(6) | MIID(7) | MIID_2(8) | kg |
|---|---|---|---|---|---|---|---|---|---|
| HM90 E90A-D16-2-M08 | 23.10 | 31.20 | 0 | 9.6 | 20 | 66712 | APKT 1003PDR-HM | APKT 1003R8T-FF | 0.03 |
| HM90 E90A-D20-3-M10 | 31.10 | 39.20 | 1 | 15.1 | 29 | 55578 | APKT 1003PDR-HM | APKT 1003R8T-FF | 0.05 |
| HM90 E90A-D20-3-M12 | 31.10 | 39.20 | 1 | 17.1 | 33 | 55578 | APKT 1003PDR-HM | APKT 1003R8T-FF | 0.06 |
| HM90 E90A-D25-3-M12 | 41.10 | 49.20 | 1 | 17.1 | 33 | 47512 | APKT 1003PDR-HM | APKT 1003R8T-FF | 0.08 |
| HM90 E90A-D25-4-M12 | 41.10 | 49.20 | 1 | 17.1 | 33 | 47512 | APKT 1003PDR-HM | APKT 1003R8T-FF | 0.08 |
| HM90 E90A-D32-4-M16 | 55.10 | 63.20 | 1 | 25.1 | 40 | 35614 | APKT 1003PDR-HM | APKT 1003R8T-FF | 0.16 |

• 1- with standard square insert • 2- with FF (fast feed) insert • For adaptation,see page 59 • For user guide see pages 616-622

• When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Number of inserts (or edges for solid tool)

(2) Maximum ramping angle

(3) 0 - Without coolant supply, 1 - With coolant supply

(4) Torque key size

(5) Tool tightening torque Nxm (lbfxin)

(6) Maximum RPM

(7) Master insert identification

(8) Master insert identification 2

**For inserts, see pages:** APCR 1003PDFR-P (517) • APCT 1003PDR-HM (516) • APKR 1003PDR (517) • APKT 1003-FF (520) • APKT 1003..R (519) • APKT 1003..TR-RM (519) • APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • APKT 1003PDTR/L-RM (518) • APKW 100304 PDR (PCD) (516) • HM90 APCR 100304PDFR-P/DP (515) • HM90 APCT 1003 (514) • HM90 APKT 1003 (515) • HM90 APKT 1003PD-W (520) • HM90 APKW 1003PDR (519)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

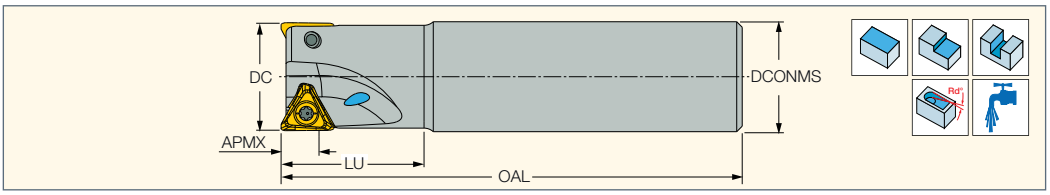
### Spare Parts

| Designation | | | |
|---|---|---|---|
| HM90 E90A-M-10 | SR 34-505/HG | SW4-SD | BLD T08/M7 |

HELIDO 690 LINE

## H690 E90AX-10

90° Endmills Carrying H690 TNKX 1005..Triangular Inserts with 6 Helical Cutting Edges




| Designation | DC | CICT(1) | APMX | OAL | LU | DCONMS | Shank(2) | RMPX°(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H690 E90AX D20-2-C20-10 | 20.00 | 2 | 8.00 | 110.00 | 26.0 | 20.00 | C | 2.8 | 0.23 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D20-2-W20-10 | 20.00 | 2 | 8.00 | 90.00 | 26.0 | 20.00 | W | 2.8 | 0.18 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D20-3-C20-10 | 20.00 | 3 | 8.00 | 110.00 | 26.0 | 20.00 | C | 2.8 | 0.23 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D20-3-W20-10 | 20.00 | 3 | 8.00 | 90.00 | 26.0 | 20.00 | W | 2.8 | 0.18 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D25-3-C25-10 | 25.00 | 3 | 8.00 | 120.00 | 26.0 | 25.00 | C | 2.6 | 0.39 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D25-3-W25-10 | 25.00 | 3 | 8.00 | 95.00 | 26.0 | 25.00 | W | 2.6 | 0.29 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D25-4-C25-10 | 25.00 | 4 | 8.00 | 120.00 | 26.0 | 25.00 | C | 2.6 | 0.39 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D25-4-W25-10 | 25.00 | 4 | 8.00 | 95.00 | 26.0 | 25.00 | W | 2.6 | 0.30 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D32-4-C32-10 | 32.00 | 4 | 8.00 | 130.00 | 30.0 | 32.00 | C | 1.6 | 0.72 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D32-4-W32-10 | 32.00 | 4 | 8.00 | 110.00 | 30.0 | 32.00 | W | 1.6 | 0.60 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D32-5-C32-10 | 32.00 | 5 | 8.00 | 130.00 | 30.0 | 32.00 | C | 1.6 | 0.71 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D32-5-W32-10 | 32.00 | 5 | 8.00 | 110.00 | 30.0 | 32.00 | W | 1.6 | 0.59 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H690 E90AX D40-5-W32-10 | 40.00 | 5 | 8.00 | 110.00 | 38.0 | 32.00 | W | 1.1 | 0.63 | SR 10508082-HG | BLD T08/M7 | SW4-SD |

• For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) C-Cylindrical, W-Weldon

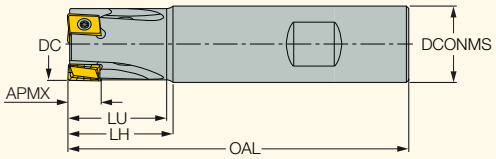
(3) Maximum ramping angle

**For inserts, see pages:** H690 TNKX/TNCX 1005 (540)

HELITANG T490 LINE

## T490 ELN-11

90° Endmills Carrying T490 LN#T 11... Tangentially Clamped Inserts




| Designation | DC | CICT[2] | LH | LU | APMX | OAL | DCONMS | Shank[3] | RMPX°[4] | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 ELN D22-2-W25-11 | 22.00 | 2 | 35.0 | 33.0 | 9.00 | 95.00 | 25.00 | W | - | 0.29 | SR 34-535-SN/L9.3 | BLD T15/S7[a] | SW6-SD |
| T490 ELN D25-3-C24-11B [1] | 25.00 | 3 | 35.0 | 33.0 | 9.00 | 200.00 | 24.00 | C | 1.7 | 0.64 | SR 34-535/L9.5-SN | BLD T15/S7[a] | SW6-SD |
| T490 ELN D25-3-C25-11 | 25.00 | 3 | 35.0 | 33.0 | 9.00 | 120.00 | 25.00 | C | 1.7 | 0.40 | SR 34-535/L9.5-SN | BLD T15/S7[a] | SW6-SD |
| T490 ELN D25-3-W25-11 | 25.00 | 3 | 35.0 | 33.0 | 9.00 | 95.00 | 25.00 | W | 1.7 | 0.30 | SR 34-535/L9.5-SN | BLD T15/S7[a] | SW6-SD |
| T490 ELN D32-3-C32-11 | 32.00 | 3 | 40.0 | 38.0 | 9.00 | 130.00 | 32.00 | C | 1.5 | 0.73 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD |
| T490 ELN D32-3-C32-11B [1] | 32.00 | 3 | 40.0 | 38.0 | 9.00 | 200.00 | 32.00 | C | 1.5 | 1.16 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD |
| T490 ELN D32-3-W32-11 | 32.00 | 3 | 40.0 | 38.0 | 9.00 | 110.00 | 32.00 | W | 1.5 | 0.60 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD |
| T490 ELN D32-4-C32-11 | 32.00 | 4 | 40.0 | 38.0 | 9.00 | 130.00 | 32.00 | C | 1.5 | 0.73 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD |
| T490 ELN D32-4-W32-11 | 32.00 | 4 | 40.0 | 38.0 | 9.00 | 110.00 | 32.00 | W | 1.5 | 0.60 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD |
| T490 ELN D40-4-C32-11 | 40.00 | 4 | 44.0 | 38.0 | 9.00 | 130.00 | 32.00 | C | 1.4 | 0.84 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD |
| T490 ELN D40-4-W32-11 | 40.00 | 4 | 44.0 | 38.0 | 9.00 | 115.00 | 32.00 | W | 1.4 | 0.75 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD |
| T490 ELN D40-5-C32-11 | 40.00 | 5 | 44.0 | 38.0 | 9.00 | 130.00 | 32.00 | C | 1.4 | 0.83 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD |

- Important: Maximum clamping torque 3.2 N*m

[1] Long cylindrical shank

[2] Number of inserts (or edges for solid tool)

[3] C-Cylindrical, W-Weldon

[4] Maximum ramping angle - valid only with T490 LNHT 1106PNTR-RD insert

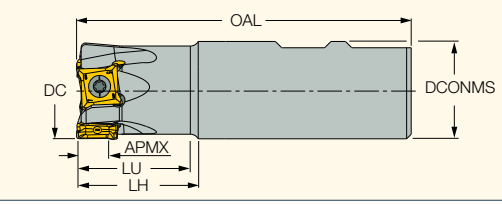
[a] Recommended key handle for limiting torque to 3.2 N*m for this item is HSD 4-3.2NM (to be used with BLD 4 T15-4.8 blade)

**For inserts, see pages:** T490 LNMT/LNHT 1106 (545)

LOGIQ8TANG T890 MILLING LINE

## T890HT ELN-R13

90° Endmills Carrying T890 LNT 1306... Tangentially Clamped Inserts with 8 Cutting Edges




| Designation | DC | APMX | CICT[1] | DCONMS | Shank[2] | LU | LH | OAL | kg |
|---|---|---|---|---|---|---|---|---|---|
| T890HT ELN D32-3-C32-13 | 32.00 | 9.50 | 3 | 32.00 | C | 37.40 | 40.0 | 130.00 | 0.68 |
| T890HT ELN D32-3-C32-13B | 32.00 | 9.50 | 3 | 32.00 | C | 47.40 | 50.0 | 250.00 | 1.43 |
| T890HT ELN D32-3-W32-13 | 32.00 | 9.50 | 3 | 32.00 | W | 37.40 | 40.0 | 110.00 | 0.56 |
| T890HT ELN D40-4-C32-13 | 40.00 | 9.50 | 4 | 32.00 | C | - | 44.0 | 130.00 | 0.12 |
| T890HT ELN D40-4-W32-13 | 40.00 | 9.50 | 4 | 32.00 | W | - | 40.0 | 115.00 | 0.69 |

[1] Number of inserts (or edges for solid tool)

[2] C-Cylindrical, W-Weldon

**For inserts, see pages:** T890 LN.. 1306 (543)

### Spare Parts

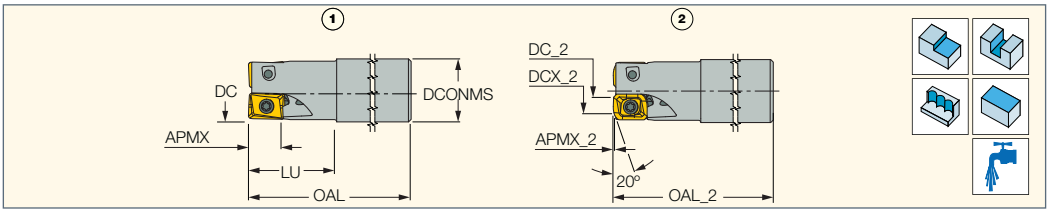
| Designation | | | |
|---|---|---|---|
| T890HT ELN-R13 | SR 10513105[a] | BLD IP20/M7 | SW6-T-SH |

[a] Recommended tightening torque: 8.0 N*m (71.0 lbf*in)

HELIDO 490 LINE

## H490 E90AX-12

90° Endmills Carrying H490 ANKX 12...Double-Sided Rectangular Inserts with 4 Helical Cutting Edges




| Designation | DC | DCX_2 | DC_2 | CICT(1) | APMX | APMX_2 | AE (2) | OAL | OAL_2 | LU |
|---|---|---|---|---|---|---|---|---|---|---|
| H490 E90AX D25-2-C25-12 | 25.00 | 25.50 | 15.20 | 2 | 12.00 | 1.40 | 8.5 | 110.00 | 109.77 | 35.0 |
| H490 E90AX D25-2-W25-12 | 25.00 | 25.50 | 15.20 | 2 | 12.00 | 1.40 | 8.5 | 110.00 | 109.77 | 35.0 |
| H490 E90AX D32-3-C32-12 | 32.00 | 32.50 | 22.20 | 3 | 12.00 | 1.40 | 8.5 | 110.00 | 109.77 | 40.0 |
| H490 E90AX D32-3-W32-12 | 32.00 | 32.50 | 22.20 | 3 | 12.00 | 1.40 | 8.5 | 110.00 | 109.77 | 40.0 |
| H490 E90AX D40-4-C32-12 | 40.00 | 40.50 | 30.20 | 4 | 12.00 | 1.40 | 8.5 | 130.00 | 129.77 | 40.0 |
| H490 E90AX D40-4-W32-12 | 40.00 | 40.50 | 30.20 | 4 | 12.00 | 1.40 | 8.5 | 115.00 | 114.77 | 40.0 |

| Designation | DCONMS | Shank(3) | RMPX°_2 (4) | MDN | MDX | MIID(5) | MIID_2(6) | kg |
|---|---|---|---|---|---|---|---|---|
| H490 E90AX D25-2-C25-12 | 25.00 | C | 4.5 | 40.70 | 50.00 | H490 ANKX 1205PNTRR | H490 ANCX 1205..-FF | 0.36 |
| H490 E90AX D25-2-W25-12 | 25.00 | W | 4.5 | 40.70 | 50.00 | H490 ANKX 1205PNTRR | H490 ANCX 1205..-FF | 0.35 |
| H490 E90AX D32-3-C32-12 | 32.00 | C | 3.1 | 54.70 | 64.00 | H490 ANKX 1205PNTRR | H490 ANCX 1205..-FF | 0.60 |
| H490 E90AX D32-3-W32-12 | 32.00 | W | 3.1 | 54.70 | 64.00 | H490 ANKX 1205PNTRR | H490 ANCX 1205..-FF | 0.59 |
| H490 E90AX D40-4-C32-12 | 32.00 | C | 2.3 | 70.70 | 80.00 | H490 ANKX 1205PNTRR | H490 ANCX 1205..-FF | 0.83 |
| H490 E90AX D40-4-W32-12 | 32.00 | W | 2.3 | 70.70 | 80.00 | H490 ANKX 1205PNTRR | H490 ANCX 1205..-FF | 0.73 |

• For user guide, see pages 616-622 • 1- with standard square insert, 2- with FF (fast feed) insert • Ramping angle is valid only when H490 ANCX 1205R15T-FF insert is used • When assembled the H490 ANCX 1205R15T-FF insert, tool diameter enlarges by 0.5 mm

(1) Number of inserts (or edges for solid tool)

(2) Maximum side plunge

(3) C-Cylindrical, W-Weldon

(4) Maximum ramping angle when using FF inserts

(5) Master insert identification

(6) Master insert identification 2

**For inserts, see pages:** H490 ANKX/ANCX 1205-FF (539) • H490 ANKX/ANCX-12 (538)

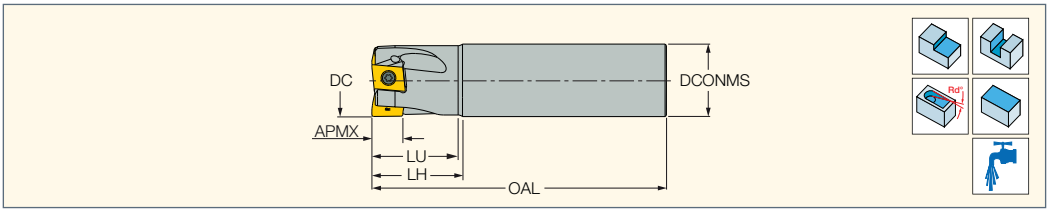
### Spare Parts

| Designation | | | |
|---|---|---|---|
| H490 E90AX D25-2-C25-12 | SR 14-544/S | SW6-T | BLD T15/M7 |
| H490 E90AX D25-2-W25-12 | SR 14-544/S | SW6-T | BLD T15/M7 |
| H490 E90AX D32-3-C32-12 | SR 14-544 | SW6-T | BLD T15/M7 |
| H490 E90AX D32-3-W32-12 | SR 14-544 | SW6-T | BLD T15/M7 |
| H490 E90AX D40-4-C32-12 | SR 14-544 | SW6-T | BLD T15/M7 |
| H490 E90AX D40-4-W32-12 | SR 14-544 | SW6-T | BLD T15/M7 |

HELITANG T490 LINE

## T490 ELN-13

90° Endmills Carrying Tangentially Clamped Inserts with 4 Helical, 12.5 mm Long Cutting Edges




| Designation | DC | CICT(3) | OAL | LH | LU | APMX | DCONMS | Shank(4) | RMPX°(5) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 ELN D25-2-C25-13 | 25.00 | 2 | 120.00 | 35.0 | 33.0 | 12.50 | 25.00 | C | - | 0.39 | SR M4.5-10507218(a) | BLD T15/S7 | SW6-T-SH |
| T490 ELN D25-2-W25-13 (1) | 25.00 | 2 | 95.00 | 35.0 | 33.0 | 12.50 | 25.00 | W | - | 0.29 | SR M4.5-10507218(a) | BLD T15/S7 | SW6-T-SH |
| T490 ELN D32-3-C32-13 | 32.00 | 3 | 130.00 | 40.0 | 38.0 | 12.50 | 32.00 | C | 2.1 | 0.72 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490 ELN D32-3-C32-13B (2) | 32.00 | 3 | 250.00 | 50.0 | 48.0 | 12.50 | 32.00 | C | 2.1 | 1.44 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490 ELN D32-3-W32-13 | 32.00 | 3 | 110.00 | 40.0 | 38.0 | 12.50 | 32.00 | W | 2.1 | 0.59 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490 ELN D40-3-C40-13B (2) | 40.00 | 3 | 250.00 | 50.0 | 48.0 | 12.50 | 40.00 | C | 1.5 | 2.25 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490 ELN D40-4-C32-13 | 40.00 | 4 | 130.00 | 40.0 | - | 12.50 | 32.00 | C | 1.5 | 0.81 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490 ELN D40-4-W32-13 | 40.00 | 4 | 115.00 | 40.0 | - | 12.50 | 32.00 | W | 1.5 | 0.72 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490 ELN D50-4-C32-13 | 50.00 | 4 | 130.00 | 36.5 | - | 12.50 | 32.00 | C | 1.1 | 0.96 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490 ELN D50-5-C32-13 | 50.00 | 5 | 130.00 | 36.5 | - | 12.50 | 32.00 | C | 1.1 | 0.96 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |

• For user guide see pages 616-622

(1) Cutting recommendations: at $a_p$=5, $f_z$=0.15 at $a_p$=10, $f_z$=0.1

(2) "B" suffix for long cylindrical shank which may be shortened.

(3) Number of inserts (or edges for solid tool)

(4) C-Cylindrical, W-Weldon

(5) Maximum ramping angle - valid only when T490 LNHT 1306 PNTR-RD insert is used

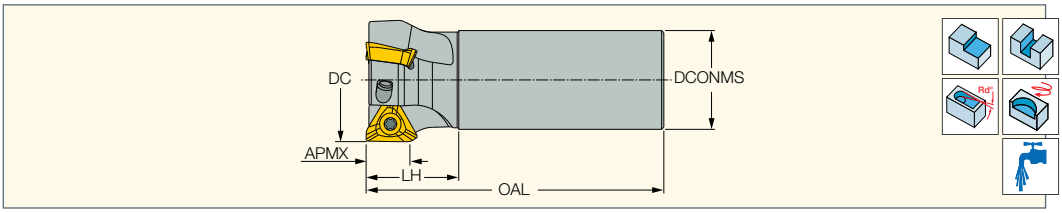
(a) Recommended tightening torque:4.8 N*m (42.5 lbf*in)

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNR-FF (547) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

HELI3MILL HM390 LINE

## HM390 ETD-15

90° Endmills Carrying HM390 TDKT 1505 Triangular Inserts with 3 Helical Cutting Edges




| Designation | DC | APMX | CICT(1) | OAL | LH | DCONMS | RMPX°(2) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETD D040-3-C32-15 | 40.00 | 13.00 | 3 | 130.00 | 40.0 | 32.00 | 2.1 | 0.71 | SR 10511869 | BLD IP20/S7 | SW6-T |
| HM390 ETD D040-4-C32-15 | 40.00 | 13.00 | 4 | 130.00 | 30.0 | 32.00 | 2.1 | 0.73 | SR 10511869 | BLD IP20/S7 | SW6-T |
| HM390 ETD D050-4-C32-15 | 50.00 | 13.00 | 4 | 130.00 | 40.0 | 32.00 | 1.6 | 0.84 | SR 10505427 | BLD IP20/S7 | SW6-T |

• When assembled the HM390 TDKT 1505PDR-FW insert, tool diameter enlarges by 1.0 mm • For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)

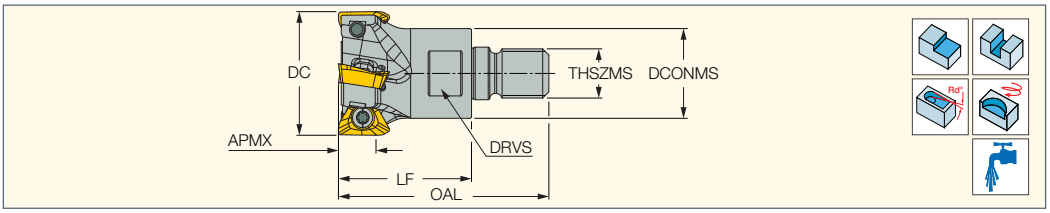
(2) Maximum ramping angle

**For inserts, see pages:** HM390 TDCR 1505 (514) • HM390 TDKT/CT 1505 (513)

HELI3MILL HM390 LINE

## HM390 ETD-M

90° Endmills with a FLEX-FIT Threaded Adaptation Carrying HM390 TDKT 1505 Triangular Inserts




| Designation | DC | APMX | CICT(1) | LF | DCONMS | THSZMS | OAL | DRVS(2) | RMPX°(3) | TQ_3(4) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETD D040-4-M16 | 40.00 | 13.00 | 4 | 43.00 | 29.00 | M16 | 68.00 | 25.0 | 1.6 | 40 | 0.22 | SR 10511869 | BLD IP20/S7 | SW6-T |

• For adaptation, see page 59 • For user guide, see pages 616-622 • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

• When assembled the HM390 TDKT 1505PDR-FW insert, tool diameter enlarges by 1.0 mm

(1) Number of inserts (or edges for solid tool)

(2) Clamping wrench size

(3) Maximum ramping angle

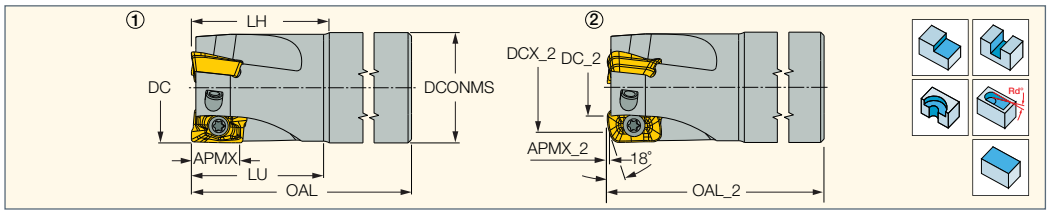
(4) Tool tightening torque Nxm (lbfxin)

**For inserts, see pages:** HM390 TDCR 1505 (514) • HM390 TDKT/CT 1505 (513)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

HELI2000

**HM90 E90AD-15**
90° Endmills Carrying HM90
ADKT-1505... Inserts




| Designation | DC | DCX_2 | DC_2 | DCONMS | APMX | APMX_2 | CICT[1] | OAL | OAL_2 | LH | LU | RMPX°[2] | RMPX°_2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90AD-D20-1-C20 | 20.00 | 20.50 | 7.26 | 20.00 | 14.30 | 1.50 | 1 | 110.00 | 109.74 | 35.0 | 34.0 | 3.0 | 3.0 |
| HM90 E90AD-D25-2-C24-B | 25.00 | 25.50 | 12.26 | 24.00 | 14.30 | 1.50 | 2 | 200.00 | 199.74 | 30.0 | - | 11.5 | 11.5 |
| HM90 E90AD-D25-2-C25 | 25.00 | 25.50 | 12.26 | 25.00 | 14.30 | 1.50 | 2 | 110.00 | 109.74 | 35.0 | 34.0 | 11.5 | 11.5 |
| HM90 E90AD-D25-2-C25-B | 25.00 | 25.50 | 12.26 | 25.00 | 14.30 | 1.50 | 2 | 200.00 | 199.74 | 50.0 | 49.0 | 11.5 | 11.5 |
| HM90 E90AD-D25-2-C25-C | 25.00 | 25.50 | 12.26 | 25.00 | 14.30 | 1.50 | 2 | 110.00 | 109.74 | 35.0 | 34.0 | 11.5 | 11.5 |
| HM90 E90AD-D25-2-C25-XL | 25.00 | 25.50 | 12.26 | 25.00 | 14.30 | 1.50 | 2 | 150.00 | 149.74 | 35.0 | 34.0 | 11.5 | 11.5 |
| HM90 E90AD-D25-2-W25 | 25.00 | 25.50 | 12.26 | 25.00 | 14.30 | 1.50 | 2 | 100.00 | 99.74 | 35.0 | 34.0 | 11.5 | 11.5 |
| HM90 E90AD-D25-2-W25-C | 25.00 | 25.50 | 12.26 | 25.00 | 14.30 | 1.50 | 2 | 100.00 | 109.74 | 35.0 | 34.0 | 11.5 | 11.5 |
| HM90 E90AD-D25-2-W25-XL | 25.00 | 25.50 | 12.26 | 25.00 | 14.30 | 1.50 | 2 | 150.00 | 149.74 | 70.0 | 69.0 | 11.5 | 11.5 |
| HM90 E90AD-D32-2-C32 | 32.00 | 32.50 | 19.26 | 32.00 | 14.30 | 1.50 | 2 | 120.00 | 119.74 | 40.0 | 38.0 | 5.3 | 5.3 |
| HM90 E90AD-D32-3-C31-B | 32.00 | 32.50 | 19.26 | 31.00 | 14.30 | 1.50 | 3 | 250.00 | 249.74 | 30.0 | - | 5.3 | 5.3 |
| HM90 E90AD-D32-3-C32 | 32.00 | 32.50 | 19.26 | 32.00 | 14.30 | 1.50 | 3 | 120.00 | 119.74 | 40.0 | 38.0 | 5.3 | 5.3 |
| HM90 E90AD-D32-3-C32-B | 32.00 | 32.50 | 19.26 | 32.00 | 14.30 | 1.50 | 3 | 250.00 | 249.74 | 50.0 | 48.0 | 5.3 | 5.3 |
| HM90 E90AD-D32-3-C32-C | 32.00 | 32.50 | 19.26 | 32.00 | 14.30 | 1.50 | 3 | 120.00 | 119.74 | 40.0 | 38.0 | 5.3 | 5.3 |
| HM90 E90AD-D32-3-C32-XL | 32.00 | 32.50 | 19.26 | 32.00 | 14.30 | 1.50 | 3 | 160.00 | 159.74 | 40.0 | 38.0 | 5.3 | 5.3 |
| HM90 E90AD-D32-3-W32 | 32.00 | 32.50 | 19.26 | 32.00 | 14.30 | 1.50 | 3 | 110.00 | 109.74 | 40.0 | 38.3 | 5.3 | 5.3 |
| HM90 E90AD-D32-3-W32-C | 32.00 | 32.50 | 19.26 | 32.00 | 14.30 | 1.50 | 3 | 110.00 | 109.74 | 40.0 | 38.3 | 5.3 | 5.3 |
| HM90 E90AD-D32-3-W32-XL | 32.00 | 32.50 | 19.26 | 32.00 | 14.30 | 1.50 | 3 | 160.00 | 159.74 | 40.0 | 38.3 | 5.3 | 5.3 |
| HM90 E90AD-D40-3-C40-B | 40.00 | 40.50 | 27.26 | 40.00 | 14.30 | 1.50 | 3 | 250.00 | 249.74 | 50.0 | 48.0 | 4.0 | 4.0 |
| HM90 E90AD-D40-3-W40-XL | 40.00 | 40.50 | 27.26 | 40.00 | 14.30 | 1.50 | 3 | 200.00 | 199.74 | 80.0 | 78.0 | 4.0 | 4.0 |
| HM90 E90AD-D40-4-C32 | 40.00 | 40.50 | 27.26 | 32.00 | 14.30 | 1.50 | 4 | 130.00 | 129.74 | 40.0 | - | 4.0 | 4.0 |
| HM90 E90AD-D40-4-W32 | 40.00 | 40.50 | 27.26 | 32.00 | 14.30 | 1.50 | 4 | 115.00 | 114.74 | 40.0 | - | 4.0 | 4.0 |
| HM90 E90AD-D40-4-W32-C | 40.00 | 40.50 | 13.26 | 32.00 | 14.30 | 1.50 | 4 | 115.00 | 114.74 | 40.0 | - | 4.0 | 11.5 |

| Designation | MDN | MDX | Shank[3] | RPMX[4] | CSP[5] | MIID_2[6] | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90AD-D20-1-C20 | 27.76 | 40.00 | C | 51586 | 0 | ADCT 1505R8T-FF | 0.24 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D25-2-C24-B | 37.76 | 50.00 | C | 41967 | 0 | ADCT 1505R8T-FF | 0.67 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D25-2-C25 | 37.76 | 50.00 | C | 41967 | 0 | ADCT 1505R8T-FF | 0.37 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D25-2-C25-B | 37.76 | 50.00 | C | 41967 | 0 | ADCT 1505R8T-FF | 0.71 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D25-2-C25-C | 37.76 | 50.00 | C | 41967 | 1 | ADCT 1505R8T-FF | 0.34 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D25-2-C25-XL | 37.76 | 50.00 | C | 41967 | 0 | ADCT 1505R8T-FF | 0.53 | SR 14-544/S | SW6-T-SH | BLD T15/M7 |
| HM90 E90AD-D25-2-W25 | 37.76 | 50.00 | W | 41967 | 0 | ADCT 1505R8T-FF | 0.33 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D25-2-W25-C | 37.76 | 50.00 | W | 41967 | 1 | ADCT 1505R8T-FF | 0.30 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D25-2-W25-XL | 37.76 | 50.00 | W | 41967 | 0 | ADCT 1505R8T-FF | 0.51 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D32-2-C32 | 51.76 | 64.00 | C | 28924 | 0 | ADCT 1505R8T-FF | 0.68 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D32-3-C31-B | 51.76 | 64.00 | C | 28924 | 0 | ADCT 1505R8T-FF | 1.41 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D32-3-C32 | 51.76 | 64.00 | C | 28924 | 0 | ADCT 1505R8T-FF | 0.67 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D32-3-C32-B | 51.76 | 64.00 | C | 28924 | 0 | ADCT 1505R8T-FF | 1.48 | SR 14-544/S | SW6-T-SH | BLD T15/M7 |
| HM90 E90AD-D32-3-C32-C | 51.76 | 64.00 | C | 28924 | 1 | ADCT 1505R8T-FF | 0.63 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D32-3-C32-XL | 51.76 | 64.00 | C | 28924 | 0 | ADCT 1505R8T-FF | 0.92 | SR 14-544/S | SW6-T-SH | BLD T15/M7 |
| HM90 E90AD-D32-3-W32 | 51.76 | 64.00 | W | 28924 | 0 | ADCT 1505R8T-FF | 0.59 | SR 14-544/S | SW6-T-SH | BLD T15/M7 |
| HM90 E90AD-D32-3-W32-C | 51.76 | 64.00 | W | 28924 | 1 | ADCT 1505R8T-FF | 0.56 | SR 14-544/S | SW6-T-SH | BLD T15/M7 |
| HM90 E90AD-D32-3-W32-XL | 51.76 | 64.00 | W | 28924 | 0 | ADCT 1505R8T-FF | 0.91 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D40-3-C40-B | 67.76 | 80.00 | C | 25870 | 0 | ADCT 1505R8T-FF | 2.34 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D40-3-W40-XL | 67.76 | 80.00 | W | 25870 | 0 | ADCT 1505R8T-FF | 1.81 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D40-4-C32 | 67.76 | 80.00 | C | 25870 | 0 | ADCT 1505R8T-FF | 0.82 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D40-4-W32 | 67.76 | 80.00 | W | 25870 | 0 | ADCT 1505R8T-FF | 0.73 | SR 14-544/S | SW6-SD | BLD T15/M7 |
| HM90 E90AD-D40-4-W32-C | 39.76 | 52.00 | W | 25870 | 1 | ADCT 1505R8T-FF | 0.69 | SR 14-544/S | SW6-SD | BLD T15/M7 |

• 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-622

[1] Number of inserts (or edges for solid tool)

[2] Maximum ramping angle

[3] C-Cylindrical, W-Weldon

[4] Maximum RPM

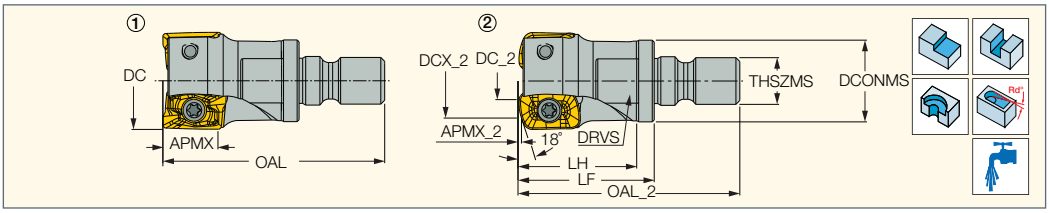
[5] 0 - Without coolant supply, 1 - With coolant supply

[6] Master insert identification 2

**For inserts, see pages:** ADCR 1505PDFR (523) • ADCT 1505PDFR-HM (523) • ADKR 1505PDR/L (523) • ADKT 1505-FF (527) • ADKT 1505..R/L-HM (526) • ADKT 1505PD-W (527) • ADKT 1505PDR/L-HM (525) • ADKT 1505PDTR-76 (526) • ADKT 1505PDTR/L-RM (525) • ADKW (CBN) (524) • ADKW (PCD) (524) • ADMT 1505PDR-HS (525) • HM90 ADCR 1505PDFR-P (522) • HM90 ADCT 1505 (521) • HM90 ADCT 1505PDR-CF (522) • HM90 ADKT 1505 (521) • HM90 ADKT 1505PD-W (527) • HM90 ADKW 1505PDR (530)

HELI2000

**HM90 E90AD-M-15**
90° Endmills with a FLEX-FIT Threaded Adaptation Carrying HM90 ADKT-1505... Inserts




| Designation | DC | DC_2 | DCX_2 | CICT(1) | APMX | APMX_2 | DCONMS | THSZMS | LH | LF | OAL | OAL_2 | RMPX°(2) | RMPX°_2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HM90 E90AD-D25-2-M12** | 25.00 | 12.26 | 25.50 | 2 | 14.30 | 1.50 | 21.00 | M12 | 30.8 | 35.00 | 57.00 | 56.74 | 11.5 | 11.5 |
| **HM90 E90AD-D32-3-M16** | 32.00 | 19.26 | 32.50 | 3 | 14.30 | 1.50 | 29.00 | M16 | 40.0 | 40.00 | 65.00 | 64.74 | 5.3 | 5.3 |
| **HM90 E90AD-D40-4-M16** | 40.00 | 27.26 | 40.50 | 4 | 14.30 | 1.50 | 29.00 | M16 | 40.0 | 40.00 | 65.00 | 64.74 | 4.0 | 4.0 |

| Designation | MDN | MDX | MIID(3) | MIID_2(4) | RPMX(5) | DRVS(6) | TQ_3(7) | kg |
|---|---|---|---|---|---|---|---|---|
| **HM90 E90AD-D25-2-M12** | 37.76 | 50.00 | ADKT 1505PDTR | ADCT 1505R8T-FF | 41967 | 17.1 | 33 | 0.08 |
| **HM90 E90AD-D32-3-M16** | 51.76 | 64.00 | ADKT 1505PDTR | ADCT 1505R8T-FF | 28924 | 25.1 | 40 | 0.16 |
| **HM90 E90AD-D40-4-M16** | 67.76 | 80.00 | ADKT 1505PDTR | ADCT 1505R8T-FF | 25870 | 25.1 | 40 | 0.21 |

• 1- with standard square insert • 2- with FF (fast feed) insert • For adaptation,see page 59 • For user guide see pages 616-622

• When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) Master insert identification
(4) Master insert identification 2
(5) Maximum RPM
(6) Torque key size
(7) Tool tightening torque Nxm (lbfxin)

**For inserts, see pages:** ADCR 1505PDFR (523) • ADCT 1505PDFR-HM (523) • ADKR 1505PDR/L (523) • ADKT 1505-FF (527) • ADKT 1505..R/L-HM (526) • ADKT 1505PD-W (527) • ADKT 1505PDR/L-HM (525) • ADKT 1505PDTR-76 (526) • ADKT 1505PDTR/L-RM (525) • ADKW (CBN) (524) • ADKW (PCD) (524) • ADMT 1505PDR-HS (525) • HM90 ADCR 1505PDFR-P (522) • HM90 ADCT 1505 (521) • HM90 ADCT 1505PDR-CF (522) • HM90 ADKT 1505 (521) • HM90 ADKT 1505PD-W (527) • HM90 ADKW 1505PDR (530)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

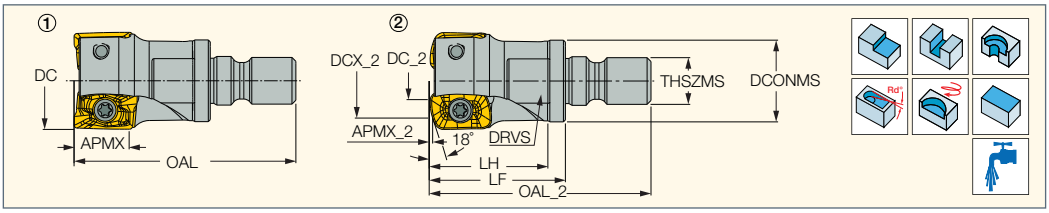
## Spare Parts

| Designation | | | |
|---|---|---|---|
| **HM90 E90AD-D25-2-M12** | SR 14-544/S | SW6-T-SH | BLD T15/M7 |
| **HM90 E90AD-D32-3-M16** | SR 14-544/S | SW6-T-SH | BLD T15/M7 |
| **HM90 E90AD-D40-4-M16** | SR 14-544/S | SW6-SD | BLD T15/M7 |

HELI2000 JET LINE

**HM90 E90AD-M-15-JHP**

90° JHP Endmills With a FLEX-FIT Threaded Adaptation Carrying HELI-2000 and HELI-MILL Inserts




| Designation | DC | DC_2 | DCX_2 | CICT[1] | APMX | APMX_2 | OAL | OAL_2 | RMPX°[2] | RMPX°_2 | LF | THSZMS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90AD D32-3-M16-JHP | 32.00 | 19.26 | 32.50 | 3 | 14.30 | 1.50 | 65.00 | 64.74 | 5.3 | 5.3 | 40.00 | M16 |

| Designation | MDN | MDX | RPMX[3] | DRVS[4] | DCONMS | TQ_3[5] | MIID[6] | MIID_2[7] | kg |
|---|---|---|---|---|---|---|---|---|---|
| HM90 E90AD D32-3-M16-JHP | 51.76 | 64.00 | 28924 | 25.0 | 30.50 | 40 | ADKT 1505PDTR | ADCT 1505R8T-FF | 0.17 |

• 1- with standard square insert • 2- with FF (fast feed) insert • For adaptation,see page 59 • For user guide see pages 616-622

• When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

[1] Number of inserts (or edges for solid tool)

[2] Maximum ramping angle

[3] Maximum RPM

[4] Torque key size

[5] Tool tightening torque Nxm (lbfxin)

[6] Master insert identification

[7] Master insert identification 2

**For inserts, see pages:** ADCR 1505PDFR (523) • ADCT 1505PDFR-HM (523) • ADKR 1505PDR/L (523) • ADKT 1505-FF (527) • ADKT 1505..R/L-HM (526) • ADKT 1505PD-W (527) • ADKT 1505PDR/L-HM (525) • ADKT 1505PDTR-76 (526) • ADKT 1505PDTR/L-RM (525) • ADKW (CBN) (524) • ADKW (PCD) (524) • ADMT 1505PDR-HS (525) • HM90 ADCR 1505PDFR-P (522) • HM90 ADCT 1505 (521) • HM90 ADCT 1505PDR-CF (522) • HM90 ADKT 1505 (521) • HM90 ADKT 1505PD-W (527) • HM90 ADKW 1505PDR (530)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

## Spare Parts

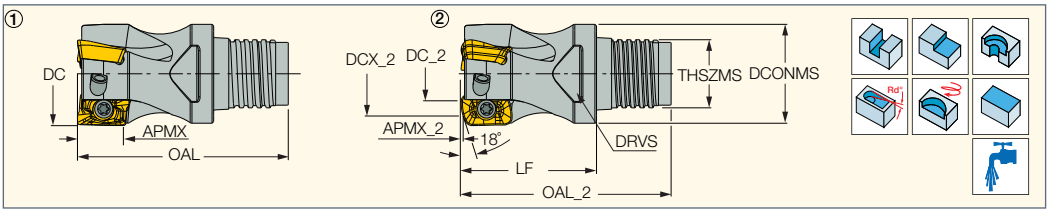
| Designation | | | | |
|---|---|---|---|---|
| HM90 E90AD-M-15-JHP | SR 14-544/S | SR 14-544/S[a] | BLD T15/M7 | SW6-T-SH |

[a] Recommended tightening torque for this item: 4.8 Nxm

HELI2000 JET LINE

## HM90 E90AD-MM-15-JHP

90° JHP Endmills with a MULTI-MASTER Threaded Adaptation Carrying HELI-2000 and HELI-MILL Inserts




| Designation | DC | DC_2 | DCX_2 | CICT(1) | APMX | APMX_2 | OAL | OAL_2 | DCONMS | RMPX°(2) | RMPX°_2 | LF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 E90AD D25-2-MMT15JHP | 25.00 | 12.26 | 25.00 | 2 | 14.30 | 1.50 | 56.30 | 56.04 | 24.00 | 11.5 | 11.5 | 39.30 |
| HM90 E90AD D32-3-MMT21JHP | 32.00 | 19.26 | 32.50 | 3 | 14.30 | 1.50 | 63.00 | 62.74 | 30.50 | 5.3 | 5.3 | 39.90 |

| Designation | RPMX(3) | THSZMS | MDN | MDX | TQ_3(4) | DRVS(5) | MIID(6) | MIID_2(7) | kg |
|---|---|---|---|---|---|---|---|---|---|
| HM90 E90AD D25-2-MMT15JHP | 41967 | T15 | 37.76 | 50.00 | 40 | 20.0 | ADKT 1505PDTR | ADKT 1505R8T-FF | 0.10 |
| HM90 E90AD D32-3-MMT21JHP | 28924 | T21 | 51.76 | 64.00 | 40 | 24.0 | ADKT 1505PDTR | ADKT 1505R8T-FF | 0.26 |

**New**

- 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-622 • Do not apply lubricant to the MULTI-MASTER threaded connection
- For adaptation see page 59

(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) The maximum cutting speed (RPM) for the cutting head assembled on the shank should be the lower parameter (RPMX) of either the cutting head or the shank
(4) Tool tightening torque Nxm (lbfxin)
(5) Torque key size
(6) Master insert identification
(7) Master insert identification 2

**For inserts, see pages:** ADCR 1505PDFR (523) • ADCT 1505PDFR-HM (523) • ADKR 1505PDR/L (523) • ADKT 1505-FF (527) • ADKT 1505..R/L-HM (526) • ADKT 1505PD-W (527) • ADKT 1505PDR/L-HM (525) • ADKT 1505PDTR-76 (526) • ADKT 1505PDTR/L-RM (525) • ADKW (CBN) (524) • ADKW (PCD) (524) • ADMT 1505PDR-HS (525) • HM90 ADCR 1505PDFR-P (522) • HM90 ADCT 1505 (521) • HM90 ADCT 1505PDR-CF (522) • HM90 ADKT 1505 (521) • HM90 ADKT 1505PD-W (527) • HM90 ADKW 1505PDR (530)

**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER-H (108) • MM TS-A (105)

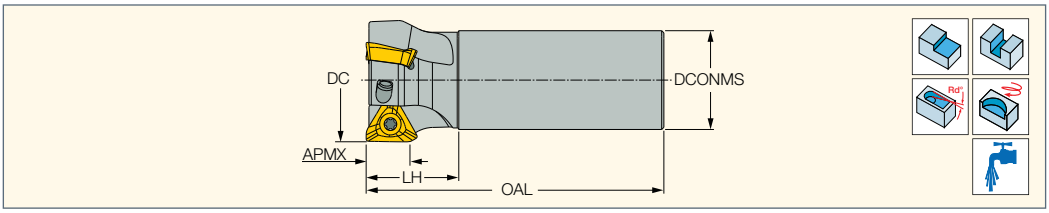
### Spare Parts

| Designation | | | |
|---|---|---|---|
| HM90 E90AD-MM-15-JHP | SR 14-544/S | BLD T15/M7 | SW6-T-SH |

HELI3MILL HM390 LINE

## HM390 ETD-19

90° Endmills Carrying HM390 TDKT 1907 Triangular Inserts with 3 Helical Cutting Edges




| Designation | DC | APMX | CICT(1) | OAL | LH | DCONMS | RMPX°(2) | Shank(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 ETD D040-2-C32-19 | 40.00 | 16.00 | 2 | 130.00 | 45.0 | 32.00 | 2.0 | C | 0.69 | SR 14-591/L12 | BLD T20/S7 | SW6-T |

- For user guide, see pages 616-622

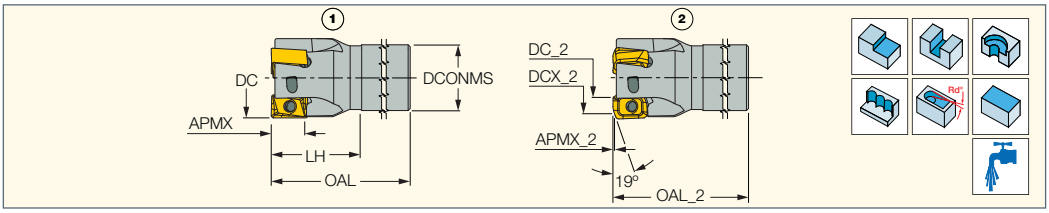
(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) C-Cylindrical

**For inserts, see pages:** HM390 TDKT 1907 (514)

HELIDO 490 LINE

## H490 E90AX-17

90° Endmills Carrying H490 ANKX 17... Double-Sided Rectangular Inserts with 4 Helical Cutting Edges




| Designation | DC | DCX_2 | DC_2 | CICT(1) | APMX | APMX_2 | AE (2) | OAL | OAL_2 | LH | DCONMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H490 E90AX D32-2-C32-17 | 32.00 | 33.50 | 21.70 | 2 | 16.30 | 1.60 | 9.5 | 130.00 | 129.86 | 44.0 | 32.00 |
| H490 E90AX D32-2-W32-17 | 32.00 | 33.50 | 21.70 | 2 | 16.30 | 1.60 | 9.5 | 95.00 | 94.86 | 30.0 | 32.00 |
| H490 E90AX D40-3-C32-17 | 40.00 | 41.50 | 29.70 | 3 | 16.30 | 1.60 | 9.5 | 130.00 | 129.86 | 44.0 | 32.00 |
| H490 E90AX D40-3-W32-17 | 40.00 | 41.50 | 29.70 | 3 | 16.30 | 1.60 | 9.5 | 110.00 | 109.86 | 35.0 | 32.00 |
| H490 E90AX D50-4-C32-17 | 50.00 | 51.50 | 39.70 | 4 | 16.30 | 1.60 | 9.5 | 120.00 | 119.86 | 40.0 | 32.00 |

| Designation | Shank(3) | RMPX°_2 (4) | MDN | MDX | MIID(5) | MIID_2(6) | kg |
|---|---|---|---|---|---|---|---|
| H490 E90AX D32-2-C32-17 | C | 5.5 | 55.20 | 66.00 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.70 |
| H490 E90AX D32-2-W32-17 | W | 5.5 | 55.20 | 66.00 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.50 |
| H490 E90AX D40-3-C32-17 | C | 3.7 | 71.20 | 82.00 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.76 |
| H490 E90AX D40-3-W32-17 | W | 3.7 | 71.20 | 82.00 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.64 |
| H490 E90AX D50-4-C32-17 | C | 2.5 | 91.20 | 102.00 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.81 |

• For user guide, see pages 616-622 • 1- with standard square insert, 2- with FF (fast feed) insert • Ramping angle is valid only when H490 ANKX 1706R15T-FF insert is used • When assembled the H490 ANKX 1706R15T-FF insert, tool diameter enlarges by 1.5 mm

(1) Number of inserts (or edges for solid tool)

(2) Maximum side plunge

(3) C-Cylindrical, W-Weldon

(4) Maximum ramping angle when using FF inserts

(5) Master insert identification

(6) Master insert identification 2

**For inserts, see pages:** H490 ANKX 1706-FF (540) • H490 ANKX/ANCX-17 (539)

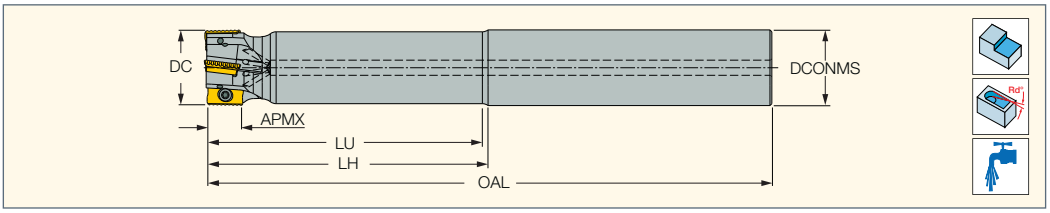
### Spare Parts

| Designation | | | |
|---|---|---|---|
| H490 E90AX-17 | SR 14-591 | SW6-T | BLD T20/M7 |

MILLSHRED P290 LINE

## P290 EPW

Long Reach Endmills Carrying 12 and 18 mm Long Edged Inserts




| Designation | DC | CICT[1] | LU | LH | OAL | DCONMS | Shank[2] | RMPX°[3] | APMX | MIID[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P290 EPW D20-2-100-W20-12 | 20.00 | 2 | 37.00 | 40.0 | 100.00 | 20.00 | W | 2.0 | 12.00 | P290 ACKT 1204PDR-FW | 0.20 |
| P290 EPW D25-3-130-W25-12 | 25.00 | 3 | 68.00 | 70.0 | 130.00 | 25.00 | W | 1.4 | 12.00 | P290 ACKT 1204PDR-FW | 0.39 |
| P290 EPW D25-3-160-C25-12 | 25.00 | 3 | 88.00 | 90.0 | 160.00 | 25.00 | C | 1.4 | 12.00 | P290 ACKT 1204PDR-FW | 0.47 |
| P290 EPW D25-3-200-C25-12 | 25.00 | 3 | 117.00 | 120.0 | 200.00 | 25.00 | C | 1.4 | 12.00 | P290 ACKT 1204PDR-FW | 0.62 |
| P290 EPW D32-4-130-W25-12 | 32.00 | 4 | 70.00 | - | 130.00 | 25.00 | W | 1.0 | 12.00 | P290 ACKT 1204PDR-FW | 0.46 |
| P290 EPW D32-4-150-C25-12 | 32.00 | 4 | 90.00 | - | 150.00 | 25.00 | C | 1.0 | 12.00 | P290 ACKT 1204PDR-FW | 0.54 |
| P290 EPW D25-2-120-W25-18 | 25.00 | 2 | 57.70 | 60.0 | 120.00 | 25.00 | W | 2.5 | 18.00 | P290 ACKT 1806PDR-FW | 0.36 |
| P290 EPW D32-3-170-W32-18 | 32.00 | 3 | 97.70 | 100.0 | 170.00 | 32.00 | W | 2.0 | 18.00 | P290 ACKT 1806PDR-FW | 0.84 |
| P290 EPW D32-3-210-C32-18 | 32.00 | 3 | 127.70 | 130.0 | 210.00 | 32.00 | C | 2.0 | 18.00 | P290 ACKT 1806PDR-FW | 1.06 |
| P290 EPW D32-3-240-C32-18 | 32.00 | 3 | 157.00 | 160.0 | 240.00 | 32.00 | C | 2.0 | 18.00 | P290 ACKT 1806PDR-FW | 1.22 |
| P290 EPW D40-4-170-W32-18 | 40.00 | 4 | 108.00 | - | 170.00 | 32.00 | W | 1.5 | 18.00 | P290 ACKT 1806PDR-FW | 0.95 |
| P290 EPW D40-4-200-C32-18 | 40.00 | 4 | 140.00 | - | 200.00 | 32.00 | C | 1.5 | 18.00 | P290 ACKT 1806PDR-FW | 1.13 |
| P290 EPW D40-4-250-W40-18 | 40.00 | 4 | 147.00 | 150.0 | 250.00 | 40.00 | W | 1.5 | 18.00 | P290 ACKT 1806PDR-FW | 2.08 |

- For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) C-Cylindrical, W-Weldon

(3) Maximum ramping angle

(4) Master insert identification

**For inserts, see pages:** P290 ACCT/KT (529) • P290 ACKT (529)

### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| P290 EPW D20-2-100-W20-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | |
| P290 EPW D25-3-130-W25-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | |
| P290 EPW D25-3-160-C25-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | |
| P290 EPW D25-3-200-C25-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | |
| P290 EPW D32-4-130-W25-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | |
| P290 EPW D32-4-150-C25-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | |
| P290 EPW D25-2-120-W25-18 | SR 14-544/S[b] | | BLD T15/M7 | SW6-T-SH |
| P290 EPW D32-3-170-W32-18 | SR 14-544/S[b] | | BLD T15/M7 | SW6-T-SH |
| P290 EPW D32-3-210-C32-18 | SR 14-544/S[b] | | BLD T15/M7 | SW6-T-SH |
| P290 EPW D32-3-240-C32-18 | SR 14-544/S[b] | | BLD T15/M7 | SW6-T-SH |
| P290 EPW D40-4-170-W32-18 | SR 14-544/S[b] | | BLD T15/M7 | SW6-T-SH |
| P290 EPW D40-4-200-C32-18 | SR 14-544/S[b] | | BLD T15/M7 | SW6-T-SH |
| P290 EPW D40-4-250-W40-18 | SR 14-544/S[b] | | BLD T15/M7 | SW6-T-SH |

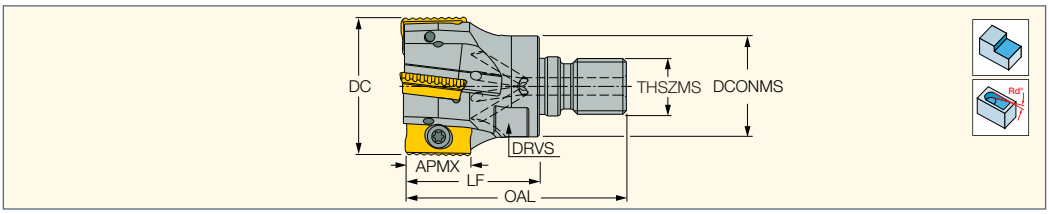
[a] Recommended tightening torque:2.0 N*m

[b] Recommended tightening torque:4.8 N*m

MILLSHRED P290 LINE

**P290 EPW-M**

Endmills with FLEX-FIT Threaded Adaptation Carrying 12 and 18 mm Long Edged Inserts




| Designation | DC | APMX | CICT(1) | LF | OAL | THSZMS | DCONMS | DRVS(2) | RMPX°(3) | CSP(4) | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P290 EPW D20-2-M10-12 | 20.00 | 12.00 | 2 | 25.00 | 45.00 | M10 | 18.00 | 15.0 | 2.0 | 0 | 29 | 0.04 |
| P290 EPW D25-3-M12-12 | 25.00 | 12.00 | 3 | 30.00 | 52.00 | M12 | 21.00 | 19.0 | 1.4 | 1 | 33 | 0.07 |
| P290 EPW D32-4-M16-12 | 32.00 | 12.00 | 4 | 35.00 | 60.00 | M16 | 29.00 | 25.0 | 1.0 | 1 | 40 | 0.16 |
| P290 EPW D32-3-M16-18 | 32.00 | 18.00 | 3 | 40.00 | 65.00 | M16 | 29.00 | 25.0 | 2.0 | 1 | 40 | 0.15 |
| P290 EPW D40-4-M16-18 | 40.00 | 18.00 | 4 | 40.00 | 65.00 | M16 | 29.00 | 25.0 | 1.5 | 1 | 40 | 0.20 |

• For adaptation see page 59 • For user guide, see pages 616-622 • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Number of inserts (or edges for solid tool)

(2) Clamping wrench size

(3) Maximum ramping angle

(4) 0 - Without coolant supply, 1 - With coolant supply

(5) Tool tightening torque Nxm

**For inserts, see pages:** P290 ACCT/KT (529) • P290 ACKT (529)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| P290 EPW D20-2-M10-12 | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | | |
| P290 EPW D25-3-M12-12 | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | | |
| P290 EPW D32-4-M16-12 | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | | |
| P290 EPW D32-3-M16-18 | SR 14-544/S(b) | | BLD T15/M7 | SW6-T-SH |
| P290 EPW D40-4-M16-18 | SR 14-544/S(b) | | BLD T15/M7 | SW6-T-SH |

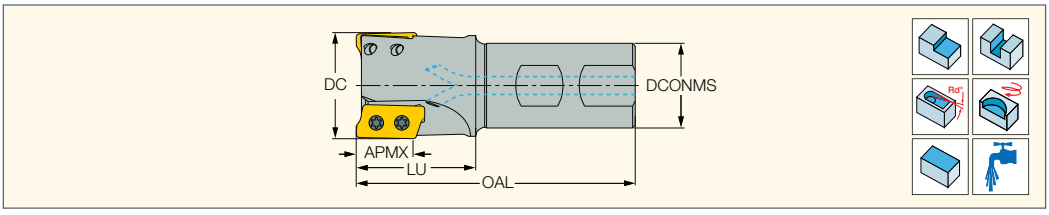
(a) Recommended tightening torque:2.0 N*m

(b) Recommended tightening torque:4.8 N*m

HELIPLUS

**HP E90AT-19**

90° Endmills Carrying HP AD.. 1906.. Inserts




| Designation | DC | CICT(1) | APMX | OAL | LU | DCONMS | RMPX°(2) | RPMX(3) | Shank(4) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP E90AT-D25-2-W25-19 | 25.00 | 2 | 18.70 | 100.00 | 40.0 | 25.00 | 14.0 | 27995 | W | 0.30 | SR 14-571/L | SW6-SD | BLD T10/S7 |
| HP E90AT-D32-3-W32-19 | 32.00 | 3 | 18.40 | 105.00 | 40.0 | 32.00 | 7.0 | 18330 | W | 0.52 | SR 14-571/L | SW6-SD | BLD T10/S7 |

• First loosely attach the inner clamping screw, then the outer one. In the same order tighten them both. • For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) Maximum ramping angle

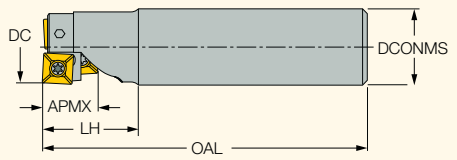
(3) Maximum RPM

(4) W-Weldon

**For inserts, see pages:** HP ADCR 1906 (532) • HP ADKT/ADCT 1906 (532)

HELIQUAD

**E90XC**
Drilling Endmills Carrying Square S/XOMT Inserts




| Designation | DC | CICT(1) | NOF(2) | APMX | LH | OAL | DCONMS | Shank(3) | CSP(4) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E90XC D12-06-C12-06 | 12.00 | 1 | 1 | 5.80 | 25.0 | 90.00 | 12.00 | C | 0 | 0.07 | SR 34-508 M2.2X0.45 | T-7/51 |
| E90XC D20-22-C20-06 | 20.00 | 5 | 1 | 22.00 | 37.0 | 120.00 | 20.00 | C | 1 | 0.24 | SR 34-508/L | T-7/51 |

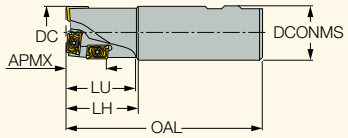
- Use the XOMT 06.... insert in central face location
- For user guide, see pages 616-622

(1) Number of inserts (or edges for solid tool)
(2) Number of flutes
(3) C-Cylindrical
(4) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** SOMT-HQ (560) • XOMT-HQ (561)

HELIMILL

**E90AC**
Drilling Endmills Carrying APKT/ADKT Inserts




| Designation | DC | CICT(1) | NOF(2) | APMX | LU | LH | OAL | DCONMS | Shank(3) | MIID(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E90AC D25-20W25 | 25.00 | 3 | 2 | 19.00 | 49.0 | 50.0 | 110.00 | 25.00 | W | APKT 1003PDR-HM | 0.30 |
| E90AC D32-25W32 | 32.00 | 3 | 2 | 25.00 | 48.0 | 50.0 | 130.00 | 32.00 | W | ADCT 1505PDFR-HM | 0.60 |
| E90AC D38-25W32 | 38.00 | 5 | 2 | 26.00 | - | 50.0 | 130.00 | 32.00 | W | ADCT 1505PDFR-HM | 0.70 |

- For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)
(2) Number of flutes
(3) W-Weldon
(4) Master insert identification

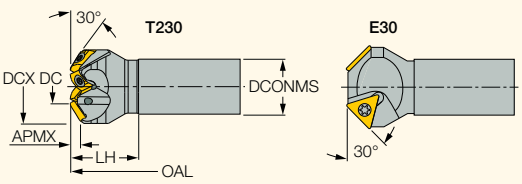
**For inserts, see pages:** ADCT 1505PDFR-HM (523) • ADKT 1505..R/L-HM (526) • ADKT 1505PDR/L-HM (525) • ADKT 1505PDTR-76 (526) • APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • XPMT-HQ (563)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| E90AC D25-20W25 | SR 34-505/HG | BLD T08/M7 | SW4-SD | |
| E90AC D32-25W32 | SR 14-544/S | BLD T15/M7 | SW6-T-SH | |
| E90AC D38-25W32 | SR 14-544/S | BLD T15/M7 | SW6-T-SH | ZPN 4-520 |

ISCARMILL

**E30 / T230**
30° Chamfering Endmills




| Designation | DC | DCX(1) | CICT(2) | APMX | OAL | LH | DCONMS | Shank(3) | CSP(4) | MIID(5) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T230 ELN D12-4-C16-05 | 12.00 | 21.50 | 4 | 2.50 | 90.00 | 20.0 | 16.00 | C | 1 | T290 LNHT 0502TR | 0.13 | SR 10503833 | T-7/51 |
| T230 ELN D12-4-W16-05 | 12.00 | 21.50 | 4 | 2.50 | 90.00 | 20.0 | 16.00 | W | 1 | T290 LNHT 0502TR | 0.13 | SR 10503833 | T-7/51 |
| E30 D16-W25 | 16.00 | 40.90 | 3 | 7.00 | 100.00 | 36.4 | 25.00 | W | 0 | TPMT 160304 | 0.42 | SR 14-541 | T-15/51 |

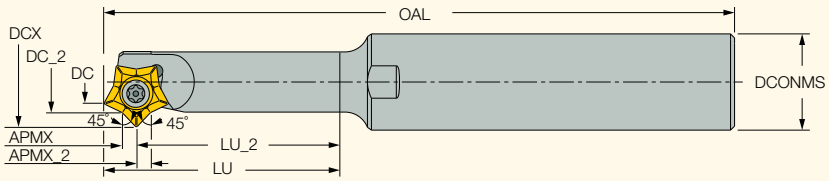
- For user guide see pages 616-622

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) C - Cylindrical, W - Weldon
(4) 0 - Without coolant supply, 1 - With coolant supply
(5) Master insert identification

**For inserts, see pages:** T290 LNMT/LNHT 0502 (542) • TPMT (536)

CHAMFMILL
CHAMFERING LINE

**CH45-PN06**
Upper and Bottom Chamfering Endmills Carrying Pentagonal Inserts




| Designation | DCX(1) | DC_2 | DC | APMX | APMX_2 | DCONMS | CICT(2) | LU | LU_2 | OAL | DMIN(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CH45-10-30-1-C12-PN06 | 11.70 | 8.45 | 6.60 | 1.50 | 1.50 | 12.00 | 1 | 29.40 | 25.40 | 100.00 | 10.00 | 0.00 |
| CH45-17-60-2-C16-PN06 | 16.70 | 13.45 | 11.40 | 1.50 | 1.50 | 16.00 | 2 | 29.40 | 25.40 | 110.00 | 17.00 | 0.13 |
| CH45-19-80-3-C16-PN06 | 18.70 | 15.45 | 13.40 | 1.50 | 1.50 | 16.00 | 3 | 29.40 | 25.40 | 130.00 | 19.00 | 0.16 |

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Minimum penetration diameter for back chamfering

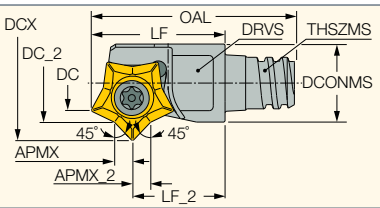
**For inserts, see pages:** PNMT 0602-TN (613)

## Spare Parts

| Designation | | |
|---|---|---|
| CH45-PN06 | SR M2.5X5-T7-60 | T-7/51 |

CHAMFMILL
CHAMFERING LINE

**CH45-MM-PN06**
Upper and Bottom Chamfering Endmills with a MULTI-MASTER Threaded Adaptation




| Designation | DCX(1) | DC_2 | DC | APMX | APMX_2 | LF | LF_2 | OAL | DCONMS | THSZMS | CICT(2) | DRVS(3) | DMIN(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CH45-10/.39-1-MMT05-PN06 | 11.70 | 8.45 | 6.60 | 1.50 | 1.50 | 13.00 | 9.00 | 19.75 | 7.60 | T05 | 1 | 5.5 | 10.00 | 0.00 |
| CH45-17/.67-2-MMT08-PN06 | 16.70 | 13.45 | 11.40 | 1.50 | 1.50 | 18.00 | 14.00 | 25.50 | 12.20 | T08 | 2 | 10.0 | 17.00 | 0.02 |
| CH45-19/.75-3-MMT10-PN06 | 18.70 | 15.45 | 13.40 | 1.50 | 1.50 | 20.00 | 16.00 | 31.30 | 15.30 | T10 | 3 | 13.0 | 19.00 | 0.02 |

- Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation options, see page 59 • For user guide, see pages 616-622

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Width across flats (wrench should be ordered separately)
(4) Minimum penetration diameter for back chamfering

**For inserts, see pages:** PNMT 0602-TN (613)
**For holders, see pages:** MM CAB (110) • MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102)
• MM S-A (straight shanks) (106) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106)
• MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

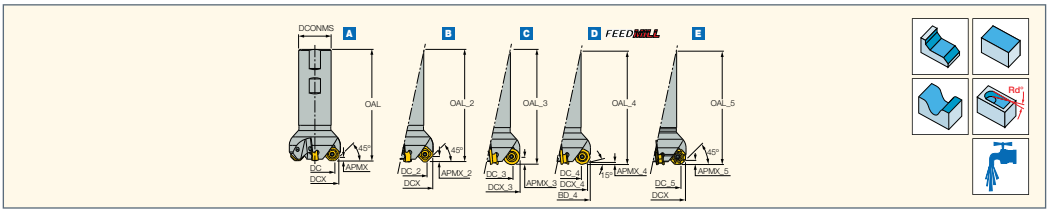
## Spare Parts

| Designation | | |
|---|---|---|
| CH45-MM-PN06 | SR M2.5X5-T7-60 | T-7/51 |

HELIDO 800 LINE

**SOE45 8/16**

Multifunctional Endmills for Octagonal, Square and Round Insert Contours with Several Entry Angles




| Designation | DC | DC_2 | DC_3 | DC_4 | DC_5 | DCX[1] | DCX_3 | DCX_4 | BD_4 | APMX | APMX_2 | APMX_3 | APMX_4 | APMX_5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOE45 8/16-D025-02-W20R | 25.00 | 22.65 | 20.90 | 20.10 | 25.30 | 35.40 | 36.50 | 29.40 | 35.60 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOE45 8/16-D032-03-W25R | 32.00 | 29.65 | 27.50 | 26.70 | 32.30 | 42.40 | 43.30 | 36.20 | 42.60 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOE45 8/16-D040-04-W32R | 40.00 | 37.65 | 35.40 | 37.50 | 40.30 | 50.40 | 51.30 | 47.00 | 50.60 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |

| Designation | DCONMS | CICT[2] | OAL | OAL_2 | OAL_3 | OAL_4 | OAL_5 | RMPX°[3] | kg |
|---|---|---|---|---|---|---|---|---|---|
| SOE45 8/16-D025-02-W20R | 20.00 | 2 | 100.00 | 101.2 | 101.60 | 101.30 | 101.20 | 3.1 | 0.25 |
| SOE45 8/16-D032-03-W25R | 25.00 | 3 | 100.00 | 101.2 | 101.60 | 101.30 | 101.20 | 4.2 | 0.38 |
| SOE45 8/16-D040-04-W32R | 32.00 | 4 | 110.00 | 111.2 | 111.60 | 111.30 | 111.20 | 3.7 | 0.72 |

- A- with ONMU 0505... insert
- B- with S845 SNMU 1305... insert
- C- with RXMT 1607N insert
- D- with OXMT 0507R08-FF insert
- E- with OXMT 050705-R-HP insert
- Use only Torx Plus keys
- For user guide see pages 616-622

[1] Cutting diameter maximum

[2] Number of inserts (or edges for solid tool)

[3] Maximum ramping angle - valid only with RXMT 1607N insert

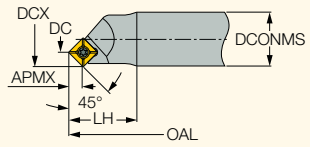
**For inserts, see pages:** ONHU 0505-W (574) • ONHU/ONMU-05 (574) • OXMT 0507 (575) • RXMT 1607 (602) • S845 SNHU 1305-W (569) • S845 SNMU/SNHU-13 (569)

## Spare Parts

| Designation | | | |
|---|---|---|---|
| SOE45 8/16 | SR 11800745 | BLD IP15/S7 | SW6-T-SH |

HELIQUAD

**E45X**
45° Chamfering Endmills
Carrying X/Q/SOMT 06 Inserts




| Designation | DC | DCX(1) | CICT(2) | APMX | LH | OAL | DCONMS | Shank(3) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **E45X D06-C12-06** | 6.00 | 14.10 | 1 | 4.00 | 25.0 | 80.00 | 12.00 | C | 0.06 | SR 34-508 M2.2X0.45 | T-7/51 |
| **E45X D06-W12-06** | 6.00 | 14.10 | 1 | 4.00 | 19.0 | 70.00 | 12.00 | W | 0.05 | SR 34-508 M2.2X0.45 | T-7/51 |
| **E45X D08-C16-06** | 8.00 | 16.10 | 1 | 4.00 | 25.0 | 100.00 | 16.00 | C | 0.14 | SR 34-508 M2.2X0.45 | T-7/51 |
| **E45X D08-W16-06** | 8.00 | 16.10 | 1 | 4.00 | 23.0 | 80.00 | 16.00 | W | 0.11 | SR 34-508 M2.2X0.45 | T-7/51 |

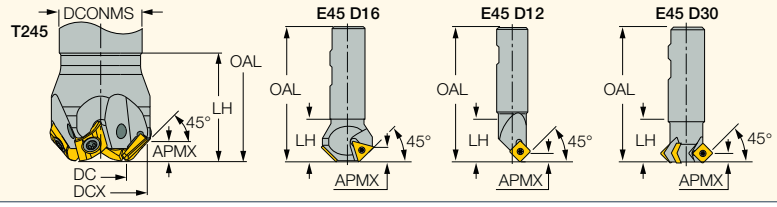
- For user guide, see pages 616-622

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) C-Cylindrical, W-Weldon

**For inserts, see pages:** QOMT-HQ (560) • SOMT-HQ (560) • XOMT-HQ (561)

ISCARMILL

**E45 / T245**
45° Chamfering Endmills




| Designation | DC | DCX(1) | CICT(2) | APMX | OAL | LH | DCONMS | Shank(3) | CSP(4) | MIID(5) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **T245 ELN D12-4-C16-05** | 12.00 | 19.70 | 4 | 3.60 | 90.00 | 20.0 | 16.00 | C | 1 | T290 LNHT 0502 | 0.12 | SR 10503833 | T-7/51 |
| **T245 ELN D12-4-W16-05** | 12.00 | 19.70 | 4 | 3.60 | 90.00 | 20.0 | 16.00 | W | 1 | T290 LNHT 0502 | 0.12 | SR 10503833 | T-7/51 |
| **E45 D12-W20** | 12.00 | 23.20 | 1 | 5.60 | 100.00 | 30.0 | 20.00 | W | 0 | SDMT 0903 | 0.20 | SR 14-541 | T-15/51 |
| **E45 D16-W25** | 16.00 | 35.90 | 2 | 9.70 | 100.00 | 33.0 | 25.00 | W | 0 | TPMT 1603 | 0.35 | SR 14-541 | T-15/51 |
| **E45 D30-W25** | 30.00 | 46.10 | 3 | 7.80 | 100.00 | 35.0 | 25.00 | W | 0 | SCMT 120408-19 | 0.37 | SR 16-212 | T-20/51 |
| **E45 D30-W32** | 30.00 | 46.10 | 3 | 7.80 | 110.00 | 35.0 | 32.00 | W | 0 | SCMT 120408-19 | 0.61 | SR 16-212 | T-20/51 |

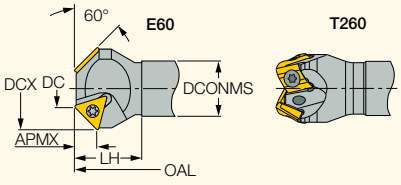
- For user guide see pages 616-622

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) W-Weldon C-Cylindrical
(4) 0 - Without coolant supply, 1 - With coolant supply
(5) Master insert identification

**For inserts, see pages:** SCMT-19 (584) • SDMT-AD-N (584) • T290 LNMT/LNHT 0502 (542) • TPMT (536)

ISCARMILL

**E60 / T260**
60° Chamfering Endmills




| Designation | DC | DCX(1) | CICT(2) | APMX | OAL | LH | DCONMS | Shank(3) | CSP(4) | MIID(5) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **T260 ELN D12-4-C12-05** | 12.00 | 17.50 | 4 | 4.50 | 80.00 | 20.0 | 12.00 | C | 1 | T290 LNHT 0502 | 0.06 | SR 10503833 | T-7/51 |
| **T260 ELN D12-4-W12-05** | 12.00 | 17.50 | 4 | 4.50 | 80.00 | 20.0 | 12.00 | W | 1 | T290 LNHT 0502 | 0.06 | SR 10503833 | T-7/51 |
| **E60 D25-W25** | 25.00 | 39.40 | 2 | 12.30 | 100.00 | 33.0 | 25.00 | W | 0 | TPMT 1603 | 0.39 | SR 14-541 | T-15/51 |

- For user guide see pages 616-622

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) W-Weldon C-Cylindrical
(4) 0 - Without coolant supply, 1 - With coolant supply
(5) Master insert identification

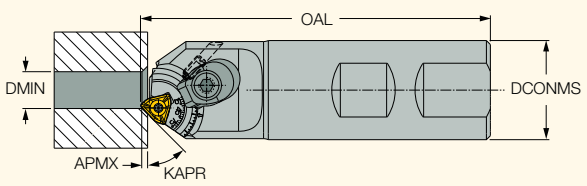
**For inserts, see pages:** T290 LNMT/LNHT 0502 (542) • TPMT (536)

HELI3MILL HM390 LINE

## HM390 E10-80-07

Chamfering Endmill with an Adjustable Edge Angle

| KAPR | DMIN | APMX | OAL |
|---|---|---|---|
| 10° | 5 | 0.35 | 87.15 |
| 20° | 6.1 | 0.68 | 87.55 |
| 30° | 7.3 | 1.00 | 87.90 |
| 40° | 8.6 | 1.29 | 88.15 |
| 45° | 9.3 | 1.41 | 88.20 |
| 50° | 10 | 1.53 | 88.25 |
| 60° | 11.3 | 1.73 | 88.20 |
| 70° | 12.6 | 1.88 | 88.10 |
| 80° | 13.9 | 1.97 | 87.85 |




| Designation | CICT(1) | OAL | DCONMS | Shank(2) | MIID(3) | kg |
|---|---|---|---|---|---|---|
| HM390 E10-80 D05-1-W25-07 | 1 | 87.85 | 25.00 | W | HM390 TCCT 0703PCR | 0.28 |

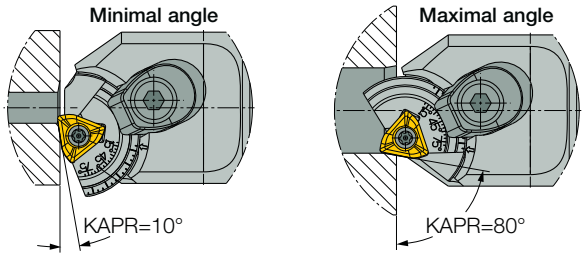
- For user guide see pages 616-622

(1) Number of inserts (or edges for solid tool)

(2) W-Weldon

(3) Master insert identification

**For inserts, see pages:** HM390 TCKT/CT 0703 (512)




### Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| HM390 E10-80 D05-1-W25-07 | SR M4X10DIN912 | T-7/51 | CR E10-80 HM390-07 | CLAMP E10-80 | SR M2.5X5-T7-60 | HW 3.0 |

# MULTI-MASTER

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E = Economical

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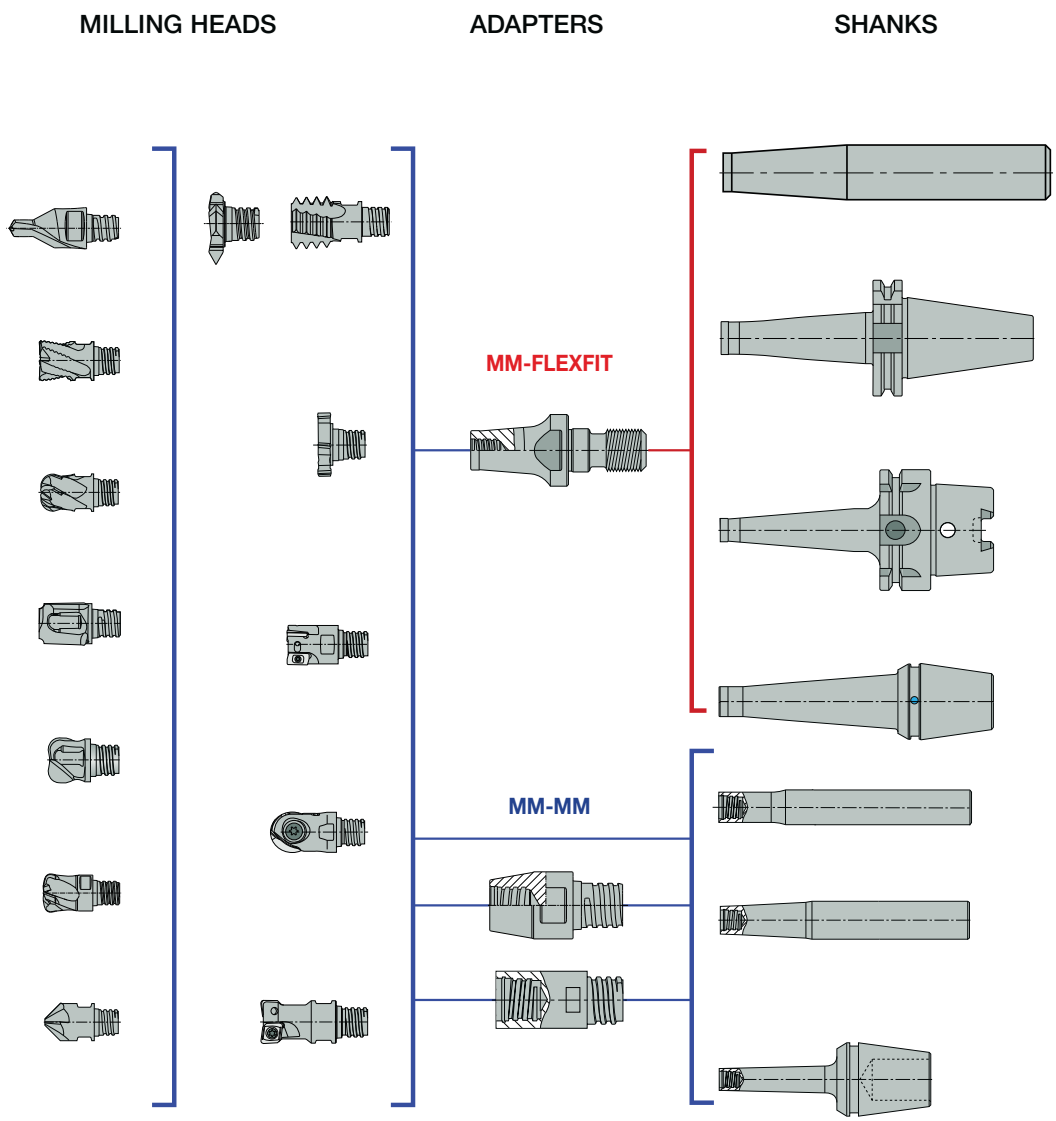
| **MM TRF 60** | — | 5,6 | 11.94,15.94, 19.94,27.7 | | 78 |
| **MM TRD**<br>**MT-MM** | — | 3,4<br>3-6 | 15.7, 21.7 10-20 | 55º-DIN ISO 228, B.S 84<br>60º-ISO 68, DIN13 | 79<br>80-82 |
| **MM ESR-G** | — | | 8-32<br>8-25.4 | Blank Heads | 100-101 |
| **MM TC-G** | — | | 13.8,17.1,23.4, 28.6,35.6 | Blank Heads | 100 |


E = Economical

## MULTI-MASTER and FLEXFIT Connection Options

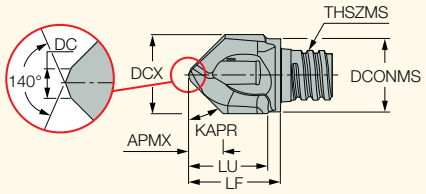


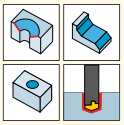

**Features**
Modular system reduces stock cost by using the same head with different shank options. Enables machining with larger overhang. Same head can be mounted on metric and inch combinations.

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM HCD**

Interchangeable 2 Flute Solid Carbide Heads for Chamfering, Countersinking and Spot Drilling



**ECONOMICAL SOLUTION**

| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DCX[4] | DCXTOL | NOF[5] | LU | THSZMS | DCONMS | LF | APMX | DC | KAPR[6] | |
| **MM HCD060-090-2T04** | 6.00 | z9 | 2 | 6.86 | T04 | 5.80 | 8.50 | 2.66 | 1.00 | 45.0 | ● |
| **MM HCD080-060-2T05** | 8.00 | h10 | 2 | 8.00 | T05 | 7.60 | 10.50 | 6.08 | 1.20 | 60.0 | ● |
| **MM HCD080-120-2T05** | 8.00 | h10 | 2 | 7.80 | T05 | 7.60 | 10.30 | 2.15 | 1.00 | 30.0 | ● |
| **MM HCD080-090-2T05** [1] | 8.00 | z9 | 2 | 7.00 | T05 | 7.60 | 9.75 | 3.15 | 1.00 | 45.0 | ● |
| **MM HCD083-090-2T05** [1] | 8.30 | z9 | 2 | 7.50 | T05 | 7.60 | 10.00 | 3.56 | 1.00 | 45.0 | ● |
| **MM HCD.375-100-2T06** [2] | 9.50 | h10 | 2 | 9.70 | T06 | 9.50 | 13.40 | 3.60 | 2.00 | 40.0 | ● |
| **MM HCD.375-080-2T06** | 9.50 | z9 | 2 | 9.00 | T06 | 9.20 | 11.80 | 5.00 | 2.00 | 50.0 | ● |
| **MM HCD100-060-2T06** | 10.00 | h10 | 2 | 9.30 | T06 | 9.50 | 11.75 | 7.60 | 1.50 | 60.0 | ● |
| **MM HCD100-120-2T06** | 10.00 | h10 | 2 | 9.50 | T06 | 9.50 | 12.70 | 2.70 | 1.50 | 30.0 | ● |
| **MM HCD100-090-2T06-N** [1] | 10.00 | z9 | 2 | 10.10 | T06 | 9.50 | 14.00 | 4.50 | 1.50 | 45.0 | ● |
| **MM HCD104-090-2T06** [1] | 10.40 | z9 | 2 | 9.00 | T06 | 9.50 | 11.75 | 4.60 | 1.50 | 45.0 | ● |
| **MM HCD120-060-2T08** | 12.00 | h10 | 2 | 11.00 | T08 | 11.50 | 15.40 | 9.24 | 1.50 | 60.0 | ● |
| **MM HCD120-120-2T08** | 12.00 | h10 | 2 | 11.65 | T08 | 11.50 | 15.20 | 3.50 | 1.50 | 30.0 | ● |
| **MM HCD120-090-2T08** [1] | 12.00 | z9 | 2 | 12.00 | T08 | 11.50 | 15.50 | 5.30 | 1.50 | 45.0 | ● |
| **MM HCD124-090-2T08** [1] | 12.40 | z9 | 2 | 11.80 | T08 | 11.50 | 15.50 | 5.50 | 1.50 | 45.0 | ● |
| **MM HCD.500-080-2T08** [3] | 12.70 | z9 | 2 | 11.10 | T08 | 12.20 | 15.50 | 6.80 | 1.50 | 50.0 | ● |
| **MM HCD.500-100-2T08** [2] | 12.70 | z9 | 2 | 10.90 | T08 | 11.50 | 14.70 | 4.90 | 1.50 | 40.0 | ● |
| **MM HCD.625-080-2T10** | 15.90 | z9 | 2 | 15.20 | T10 | 15.00 | 18.80 | 8.80 | 2.00 | 50.0 | ● |
| **MM HCD.625-100-2T10** [2] | 15.90 | z9 | 2 | 14.90 | T10 | 15.10 | 19.00 | 6.20 | 2.00 | 40.0 | ● |
| **MM HCD160-060-2T10** | 16.00 | h10 | 2 | 16.20 | T10 | 15.20 | 20.20 | 12.00 | 2.50 | 60.0 | ● |
| **MM HCD160-120-2T10** | 16.00 | h10 | 2 | 15.50 | T10 | 15.20 | 19.90 | 4.40 | 1.50 | 30.0 | ● |
| **MM HCD160-090-2T10-N** | 16.00 | z9 | 2 | 15.70 | T10 | 15.20 | 20.00 | 7.40 | 1.50 | 45.0 | ● |
| **MM HCD165-090-2T10** [1] | 16.50 | z9 | 2 | 14.90 | T10 | 15.20 | 18.80 | 7.10 | 1.50 | 45.0 | ● |
| **MM HCD.750-080-2T12** | 19.05 | z9 | 2 | 19.60 | T12 | 18.45 | 24.70 | 11.00 | 2.00 | 50.0 | ● |
| **MM HCD.750-100-2T12** [2] | 19.05 | z9 | 2 | 18.50 | T12 | 18.30 | 23.60 | 7.50 | 1.50 | 40.0 | ● |
| **MM HCD200-060-2T12** | 20.00 | h10 | 2 | 18.20 | T12 | 18.30 | 24.70 | 15.50 | 2.60 | 60.0 | ● |
| **MM HCD200-120-2T12** | 20.00 | h10 | 2 | 14.65 | T12 | 18.30 | 21.15 | 5.50 | 1.50 | 30.0 | ● |
| **MM HCD200-090-2T12** [1] | 20.00 | z9 | 2 | 18.20 | T12 | 18.30 | 24.70 | 9.40 | 1.50 | 45.0 | ● |

• For shanks, see pages 101-111 • Clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

[1] May be used for F-type (fine) countersink according to DIN 74.

[2] May be used for 100° countersink according to ISO 5856, DIN EN 4072, ANSI B18.6.3-1972

[3] Countersink according to American National and British standard flat screws.

[4] Cutting diameter maximum

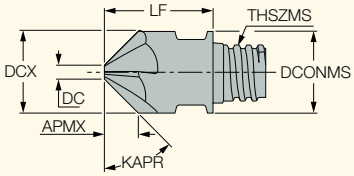
[5] Number of flutes

[6] Tool cutting edge angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM ECF

Interchangeable Solid Carbide Heads for Chamfering and Countersinking




| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | KAPR(1) | DCX(2) | NOF(3) | DC | APMX | THSZMS | DCONMS | LF | |
| MM ECF120-02/100-4T06 | 30.0 | 10.00 | 4 | 2.00 | 2.30 | T06 | 10.00 | 13.00 | • |
| MM ECF120-02/120-4T08 | 30.0 | 12.00 | 4 | 2.00 | 2.90 | T08 | 12.00 | 16.50 | • |
| MM ECF120-03/160-6T10 | 30.0 | 16.00 | 6 | 3.00 | 3.70 | T10 | 16.00 | 20.50 | • |
| MM ECF120-05/200-6T12 | 30.0 | 20.00 | 6 | 5.00 | 4.30 | T12 | 18.45 | 25.50 | • |
| MM ECF120-06/250-6T15 | 30.0 | 25.00 | 6 | 6.00 | 5.40 | T15 | 25.00 | 25.00 | • |
| MM ECF45-080-4T05 | 45.0 | 8.00 | 4 | 1.95 | 3.00 | T05 | 8.00 | 10.00 | • |
| MM ECF45-100-4T06 | 45.0 | 10.00 | 4 | 1.95 | 4.00 | T06 | 10.00 | 13.00 | • |
| MM ECF45-120-4T08 | 45.0 | 12.00 | 4 | 1.95 | 5.00 | T08 | 12.00 | 16.50 | • |
| MM ECF45-.500-4T08 | 45.0 | 12.70 | 4 | 1.95 | 5.00 | T08 | 12.70 | 16.50 | • |
| MM ECF45-160-6T10 | 45.0 | 16.00 | 6 | 3.00 | 6.50 | T10 | 16.00 | 20.50 | • |
| MM ECF45-200-6T12 | 45.0 | 20.00 | 6 | 5.00 | 7.50 | T12 | 18.45 | 25.50 | • |
| MM ECF45-250-6T15-M | 45.0 | 25.00 | 6 | 5.00 | 10.00 | T15 | 25.00 | 25.00 | • |
| MM ECF60-100-4T06 | 60.0 | 10.00 | 4 | 1.60 | 7.30 | T06 | 10.00 | 13.00 | • |
| MM ECF60-02/100-4T06 | 60.0 | 10.00 | 4 | 2.00 | 6.90 | T06 | 10.00 | 13.00 | • |
| MM ECF60-03/120-4T08 | 60.0 | 12.00 | 4 | 3.00 | 7.80 | T08 | 12.00 | 16.50 | • |
| MM ECF60-04/160-6T10 | 60.0 | 16.00 | 6 | 4.00 | 10.00 | T10 | 16.00 | 20.50 | • |
| MM ECF60-05/200-6T12 | 60.0 | 20.00 | 6 | 5.00 | 13.00 | T12 | 18.45 | 25.50 | • |
| MM ECF60-08/250-6T15 | 60.0 | 25.00 | 6 | 8.00 | 14.00 | T15 | 25.00 | 25.00 | • |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) Tool cutting edge angle

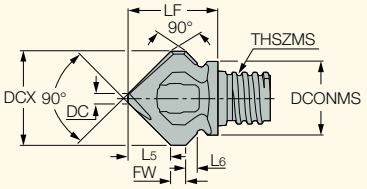
(2) Cutting diameter maximum

(3) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM HDF

Interchangeable 2 Flute Solid Carbide Heads for Upper and Bottom Chamfering




ECONOMICAL SOLUTION

| Designation | Dimensions | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCX(1) | NOF(2) | L5 | L6 | FW | DC | THSZMS | DCONMS | LF | |
| MM HDF100-090-2T05 | 9.80 | 2 | 4.30 | 0.90 | 2.50 | 1.20 | T05 | 7.60 | 10.80 | MM KEY 8X5* | • |
| MM HDF120-090-2T06 | 11.80 | 2 | 5.30 | 1.20 | 2.00 | 1.20 | T06 | 9.30 | 11.20 | MM KEY 10X7* | • |
| MM HDF160-090-2T08 | 15.70 | 2 | 7.10 | 2.20 | 2.00 | 1.50 | T08 | 11.50 | 14.00 | MM KEY 13X8* | • |

• For shanks, see pages 101-111 • Clamping keys to be ordered separately • For tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection • For user guide, see pages 59,211-218

(1) Cutting diameter maximum

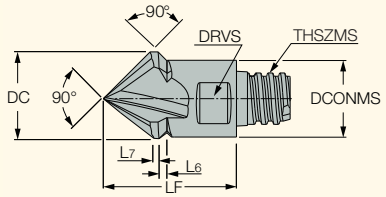
(2) Number of flutes

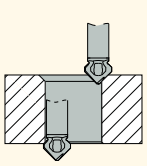
* Optional, to be ordered separately

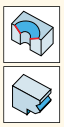
MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EDF**

Interchangeable 3 Flute Solid Carbide Heads for Upper and Bottom Chamfering





| Designation | Dimensions | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | NOF(1) | L6 | L7 | LF | THSZMS | |
| MM EDF074-090-58-3T04 | 7.40 | 5.80 | 3 | 0.90 | 1.00 | 10.00 | T04 | ● |
| MM EDF094-090-76-3T05 | 9.40 | 7.60 | 3 | 0.90 | 1.00 | 12.50 | T05 | ● |
| MM EDF116-090-95-3T06 | 11.60 | 9.60 | 3 | 1.00 | 1.00 | 16.50 | T06 | ● |

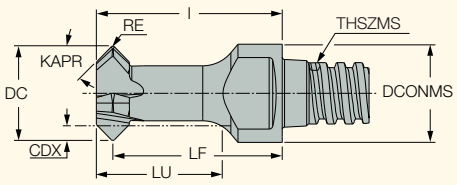
• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

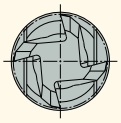
(1) Number of flutes

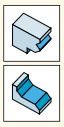
MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TS-45**

Interchangeable Solid Carbide Small Diameter 45° Chamfering Heads





| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | KAPR(1) | CDX(2) | RE | NOF(3) | l | THSZMS | DCONMS | LU | LF | |
| MM TS077-45-20A-4T05 | 7.70 | 45.0 | 1.20 | 0.20 | 4 | 15.20 | T05 | 8.00 | 10.3 | 13.85 | ● |

• For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection

(1) Tool cutting edge angle

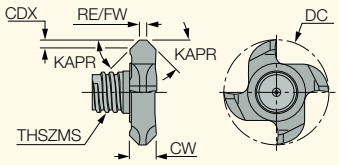
(2) Cutting depth maximum

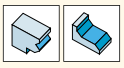
(3) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM GRIT-45A**

Interchangeable Solid Carbide Small Diameter 45° Chamfering Heads



| Designation | Dimensions | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | KAPR(1) | CDX(2) | RE | FW | CW | THSZMS | NOF(3) | | |
| MM GRIT18K-45A-3T6 | 17.70 | 45.0 | 1.40 | 0.10 | - | 3.47 | T06 | 3 | T-25/3* | ● |
| MM GRIT18P-45A-3T6 | 17.70 | 45.0 | 1.40 | 0.10 | - | 3.47 | T06 | 3 | T-25/3* | ● |
| MM GRIT22K-45A-4T8 | 21.70 | 45.0 | 1.70 | - | 1.50 | 5.55 | T08 | 4 | T-30/3 L* | ● |
| MM GRIT22P-45A-4T8 | 21.70 | 45.0 | 1.70 | - | 1.50 | 5.55 | T08 | 4 | T-30/3 L* | ● |
| MM GRIT28K-45A-6T10 | 27.70 | 45.0 | 4.00 | - | 0.50 | 9.80 | T10 | 6 | T-40/3 L* | ● |

• P-TYPE - Positive geometry for soft and gummy materials. • K-Type - For general steel machining. • Modification options on request. • Do not apply lubricant to the threaded connection. • For clamping instructions, see pages 111-112 • For shanks, see pages 101-111

(1) Tool cutting edge angle

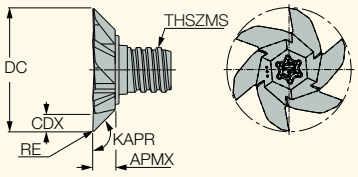
(2) Cutting depth maximum

(3) Number of flutes

* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM Dovetail**
Interchangeable Solid Carbide Heads




| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | DC | KAPR(1) | CDX(2) | APMX | RE | THSZMS | NOF(3) | | |
| MM TS105-45D-06T04 | 10.50 | 135.0 | 1.33 | 1.60 | 0.20 | T04 | 6 | T-15/3* | ● |
| MM TS135-45D-06T05 | 13.50 | 135.0 | 1.75 | 2.00 | 0.20 | T05 | 6 | T-20/3* | ● |
| MM TS165-45D-06T06 | 16.50 | 135.0 | 1.75 | 2.00 | 0.20 | T06 | 6 | T-25/3* | ● |
| MM TS195-45D-06T08 | 19.50 | 135.0 | 2.55 | 2.80 | 0.20 | T08 | 6 | T-30/3 L* | ● |
| MM TS225-45D-06T08 | 22.50 | 135.0 | 3.48 | 3.70 | 0.20 | T08 | 6 | T-40/3 L* | ● |
| MM TS250-45D-06T10 | 25.00 | 135.0 | 3.68 | 3.90 | 0.20 | T10 | 6 | T-50/3 L* | ● |
| MM GRIT 28K-45D-6T10 | 27.70 | 135.0 | 4.00 | 4.20 | 0.20 | T10 | 6 | T-40/3 L* | ● |
| MM TS105-60D-06T04 | 10.50 | 120.0 | 0.84 | 1.70 | 0.20 | T04 | 6 | T-15/3* | ● |
| MM TS135-60D-06T05 | 13.50 | 120.0 | 1.67 | 3.10 | 0.20 | T05 | 6 | T-20/3* | ● |
| MM TS165-60D-06T06 | 16.50 | 120.0 | 2.02 | 3.70 | 0.20 | T06 | 6 | T-25/3* | ● |
| MM TS195-60D-06T08 | 19.50 | 120.0 | 2.70 | 4.80 | 0.20 | T08 | 6 | T-30/3 L* | ● |
| MM TS225-60D-06T08 | 22.50 | 120.0 | 3.79 | 6.70 | 0.20 | T08 | 6 | T-40/3 L* | ● |
| MM TS250-60D-06T10 | 25.00 | 120.0 | 3.85 | 6.80 | 0.20 | T10 | 6 | T-50/3 L* | ● |
| MM GRIT 28K-60D-6T10 | 27.70 | 120.0 | 4.00 | 7.08 | 0.20 | T10 | 6 | T-40/3 L* | ● |
| MM GRIT 28K-75D-6T10 | 27.70 | 105.0 | 2.20 | 8.39 | 0.20 | T10 | 6 | T-40/3 L* | ● |

• Use carbide shanks for groove milling heads • For user guide, see pages 59,211-218

(1) Tool cutting edge angle

(2) Cutting depth maximum

(3) Number of flutes

* Optional, to be ordered separately

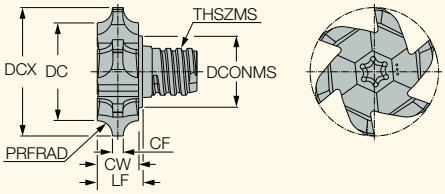
MM GRIT 28K-45D-6T10

MM GRIT 28K-60D-6T10

MM GRIT 28K-75D-6T10

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM GRIT 28P-DR**
Interchangeable 6 Flute Solid Carbide Double-Sided Corner Round Milling Heads




| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRFRAD | CF | DCX(1) | DC | LF | CW | NOF(2) | THSZMS | DCONMS | | |
| MM GRIT 28P-2.7-DR1.0 | 1.00 | 2.70 | 27.70 | 24.80 | 6.00 | 5.60 | 6 | T10 | 15.30 | T-40/3 L* | ● |
| MM GRIT 28P-2.6-DR2.0 | 2.00 | 2.60 | 27.70 | 22.90 | 7.70 | 7.30 | 6 | T10 | 15.30 | T-40/3 L* | ● |
| MM GRIT 28P-2.3-DR3.0 | 3.00 | 2.30 | 27.70 | 21.10 | 9.70 | 8.90 | 6 | T10 | 15.30 | T-40/3 L* | ● |
| MM GRIT 28P-2.6-DR4.0 | 4.00 | 2.60 | 27.70 | 19.70 | 11.70 | 10.90 | 6 | T10 | 15.30 | T-40/3 L* | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

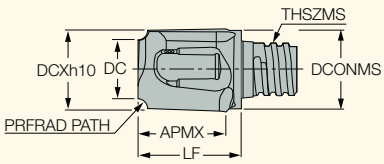
(1) Cutting diameter maximum

(2) Number of flutes

* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM HR**
Interchangeable 2 Flute
Solid Carbide Corner
Round Milling Heads




ECONOMICAL SOLUTION

| Designation | Dimensions | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCX(1) | PRFRAD | Tm(2) | NOF(3) | DC | APMX | THSZMS | DCONMS | LF | |
| MM HR1.0/047-5.8-2T05 | 8.00 | 1.00 | r0.5-3.0 | 2 | 5.80 | 7.50 | T05 | 7.60 | 10.60 | ● |
| MM HR1.6/063-6.8-2T06 | 10.00 | 1.60 | r0.5-3.0 | 2 | 6.80 | 9.50 | T06 | 9.50 | 12.50 | ● |
| MM HR2.0/078-6.0-2T06 | 10.00 | 2.00 | r0.5-3.0 | 2 | 6.00 | 9.50 | T06 | 9.50 | 12.50 | ● |
| MM HR2.5/094-5.1-2T06 | 10.00 | 2.50 | r0.5-3.0 | 2 | 5.10 | 9.50 | T06 | 9.50 | 12.50 | ● |
| MM HR3.0/125-6.5-2T08 | 12.70 | 3.00 | r0.5-4.0 | 2 | 6.50 | 12.00 | T08 | 11.50 | 15.60 | ● |
| MM HR4.0/156-4.7-2T08 | 12.70 | 4.00 | r0.5-4.0 | 2 | 4.70 | 12.00 | T08 | 11.50 | 15.60 | ● |
| MM HR5.0/188-6.2-2T10 | 16.00 | 4.88 | r0.5-5.0 | 2 | 6.20 | 15.00 | T10 | 15.20 | 19.10 | ● |
| MM HR6.0/236-8.0-2T12 | 20.00 | 6.00 | r0.5-6.0 | 2 | 8.00 | 7.00 | T12 | 18.45 | 17.40 | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

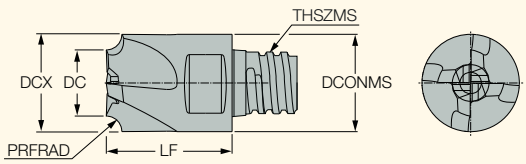
(1) Cutting diameter maximum

(2) Specially tailored radius range upon request.

(3) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM ER**
Interchangeable 4 Flute
Solid Carbide Corner
Round Milling Heads




| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | PRFRAD | Tm(1) | DC | DCX(2) | DCONMS | NOF(3) | LF | THSZMS | |
| MM ER0.5/020-5.0-4T04 | 0.50 | 0.5-1.0 | 5.00 | 6.00 | 6.00 | 4 | 8.50 | T04 | ● |
| MM ER1.0/040-5.8-4T05 | 1.00 | 0.5-1.4 | 5.80 | 8.00 | 8.00 | 4 | 10.00 | T05 | ● |
| MM ER1.6/063-6.8-4T06 | 1.60 | 0.5-2.5 | 6.80 | 10.00 | 10.00 | 4 | 13.00 | T06 | ● |
| MM ER2.0/078-6.0-4T06 | 2.00 | 0.5-2.5 | 6.00 | 10.00 | 10.00 | 4 | 13.00 | T06 | ● |
| MM ER2.5/094-5.1-4T06 | 2.50 | 0.5-2.5 | 5.10 | 10.00 | 10.00 | 4 | 13.00 | T06 | ● |
| MM ER3.0/125-6.5-4T08 | 3.00 | 0.5-3.1 | 6.50 | 12.70 | 12.70 | 4 | 16.50 | T08 | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

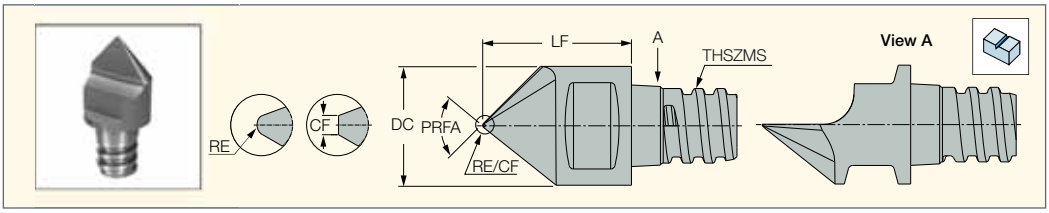
(1) Specially tailored radius range upon request.

(2) Cutting diameter maximum

(3) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EPG**
Single Flute MULTI-MASTER
Engraving Tool Head




| Designation | Dimensions | | | | | | IC908 |
|---|---|---|---|---|---|---|---|
| | DC | RE | CF(1) | PRFA | LF | THSZMS | |
| MM EPG060/60-1T04 | 6.00 | 0.20 | - | 60.00 | 8.50 | T04 | ● |
| MM EPG080/30-1T05 | 8.00 | 0.20 | - | 30.00 | 10.00 | T05 | ● |
| MM EPG080/45-1T05 | 8.00 | 0.20 | - | 45.00 | 10.00 | T05 | ● |
| MM EPG080/60-1T05 | 8.00 | 0.20 | - | 60.00 | 10.00 | T05 | ● |
| MM EPG080/90-1T05 | 8.00 | 0.20 | - | 90.00 | 10.00 | T05 | ● |
| MM EPG080/60-F50-1T05 | 8.00 | - | 0.50 | 60.00 | 10.00 | T05 | ● |
| MM EPG080/60-F75-1T05 | 8.00 | - | 0.75 | 60.00 | 10.00 | T05 | ● |
| MM EPG080/90-F32-1T05 | 8.00 | - | 0.32 | 90.00 | 10.00 | T05 | ● |
| MM EPG080/90-F50-1T05 | 8.00 | - | 0.50 | 90.00 | 10.00 | T05 | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection

(1) Front flat

**MULTI-MASTER**

**MM ECS**
Interchangeable Solid Carbide
Centering Drills (DIN 332)

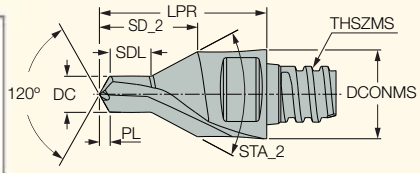



Fig. 1 Type A

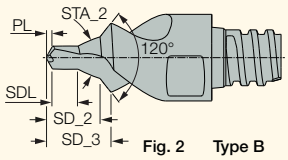
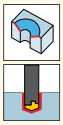
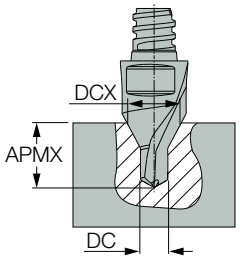



Fig. 2 Type B



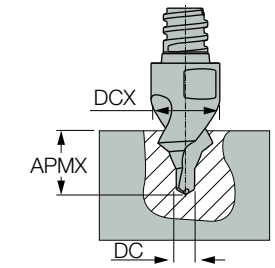
| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | THSZMS | LPR | SDL | SD_2 | SD_3 | STA_2 | PL | Fig. | |
| MM ECS-A1.00X06-2T04 | 1.07 | 6.00 | T04 | 10.00 | 1.32 | 4.14 | - | 60.0 | 0.280 | 1 | ● |
| MM ECS-A1.60X06-2T04 | 1.65 | 6.00 | T04 | 10.00 | 1.97 | 4.45 | - | 60.0 | 0.430 | 1 | ● |
| MM ECS-A2.00X06-2T04 | 2.07 | 6.00 | T04 | 10.00 | 2.36 | 6.37 | - | 60.0 | 0.540 | 1 | ● |
| MM ECS-A3.15X08-2T05 | 3.28 | 8.00 | T05 | 15.00 | 3.75 | 8.76 | - | 60.0 | 0.850 | 1 | ● |
| MM ECS-A4.00X10-2T06 | 4.12 | 10.00 | T06 | 19.00 | 4.83 | 11.05 | - | 60.0 | 1.070 | 1 | ● |
| MM ECS-A5.00X12-2T08 | 5.13 | 12.00 | T08 | 23.00 | 5.88 | 13.23 | - | 60.0 | 1.320 | 1 | ● |
| MM ECS-A6.30X16-2T10 | 6.46 | 16.00 | T10 | 28.00 | 7.25 | 17.18 | - | 60.0 | 1.650 | 1 | ● |
| MM ECS-B3.15X12-2T08 | 3.24 | 12.00 | T08 | 23.00 | 3.55 | 7.40 | 8.94 | 60.0 | 0.830 | 2 | ● |
| MM ECS-B4.00X127-2T08 | 4.09 | 12.70 | T08 | 23.00 | 4.53 | 9.50 | 10.71 | 60.0 | 1.070 | 2 | ● |
| MM ECS-B5.00X19-2T12 | 5.09 | 18.45 | T12 | 25.50 | 5.56 | 11.70 | 14.17 | 60.0 | 1.330 | 2 | ● |
| MM ECS-B6.30X20-2T12 | 6.41 | 18.45 | T12 | 25.50 | 6.95 | 14.50 | 16.58 | 60.0 | 1.680 | 2 | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112
• Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218




| ISO | | IC908 *$V_c$ x $f_z$ [m/min x mm/tooth] | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | MM ECS-A1.00X06-2T04 | MM ECS-A1.60X06-2T04 | MM ECS-A2.00X06-2T04 | MM ECS-A3.15X08-2T05 | MM ECS-A4.00X10-2T06 | MM ECS-A5.00X12-2T08 | MM ECS-A6.30X16-2T10 |
| | | DCX=2.12, APMX=2.5 | DCX=3.35, APMX=3.9 | DCX=4.25, APMX=4.8 | DCX=6.70, APMX=7.60 | DCX=8.50, APMX=9.80 | DCX=10.60, APMX=12.00 | DCX=13.20, APMX=14.80 |
| P | 4340 24-29HRC | 80x0.020 | 80x0.025 | 80x0.025 | 80x0.030 | 80x0.040 | 80x0.050 | 80x0.060 |
| P | 4340 38-42HRC | 65x0.020 | 65x0.025 | 65x0.025 | 65x0.030 | 65x0.040 | 65x0.050 | 65x0.060 |
| M | 316L MAX-215 HB | 50x0.015 | 50x0.020 | 50x0.020 | 50x0.025 | 50x0.030 | 50x0.040 | 50x0.040 |
| S | Inconel 718 | 15x0.010 | 15x0.010 | 15x0.015 | 15x0.015 | 15x0.020 | 15x0.020 | 15x0.025 |

* $V_c$ Calculated for ØDC



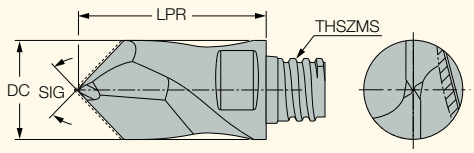

| ISO | | IC908 *$V_c$ x $f_z$ [m/min x mm/tooth] | | | |
|---|---|---|---|---|---|
| | | MM ECS-A3.15X12-2T08 | MM ECS-A4.00X127-2T08 | MM ECS-A5.00X19-2T12 | MM ECS-A6.30X20-2T12 |
| | | DCX=10.00, APMX=8.80 | DCX=12.50, APMX=11.00 | DCX=16.00, APMX=13.900 | DCX=18.00, APMX=16.80 |
| P | 4340 24-29HRC | 75x0.030 | 75x0.040 | 75x0.050 | 75x0.060 |
| P | 4340 38-42HRC | 60x0.030 | 60x0.040 | 60x0.050 | 60x0.060 |
| M | 316L MAX-215 HB | 45x0.025 | 45x0.030 | 45x0.040 | 45x0.040 |
| S | Inconel 718 | 12x0.015 | 12x0.020 | 12x0.020 | 12x0.025 |

* $V_c$ Calculated for ØDC

**MULTI-MASTER**

## MM ECD

NC Spot Drills for Accurate Hole Location without the need for a Bushing Guide.

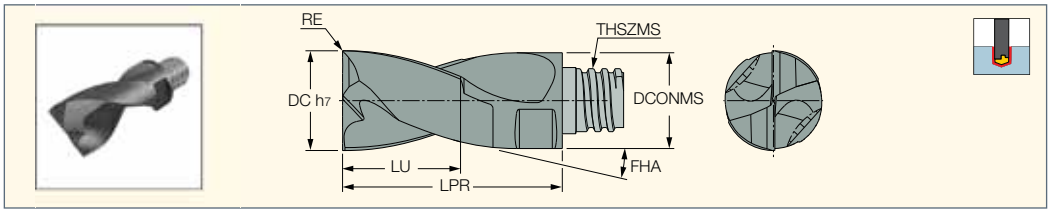



| Designation | Dimensions | | | | IC908 |
|---|---|---|---|---|---|
| | DC | LPR | THSZMS | SIG | |
| MM ECD-06X145-2T04 | 6.00 | 8.50 | T04 | 145 | ● |
| MM ECD-06X90-2T04 | 6.00 | 11.00 | T04 | 90 | ● |
| MM ECD-08X145-2T05 | 8.00 | 10.00 | T05 | 145 | ● |
| MM ECD-08X90-2T05 | 8.00 | 15.00 | T05 | 90 | ● |
| MM ECD-10X145-2T06 | 10.00 | 13.00 | T06 | 145 | ● |
| MM ECD-10X90-2T06 | 10.00 | 19.00 | T06 | 90 | ● |
| MM ECD-12X145-2T08 | 12.00 | 16.50 | T08 | 145 | ● |
| MM ECD-12X90-2T08 | 12.00 | 23.00 | T08 | 90 | ● |
| MM ECD-16X145-2T10 | 16.00 | 20.50 | T10 | 145 | ● |
| MM ECD-16X90-2T10 | 16.00 | 28.00 | T10 | 90 | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112
• Do not apply lubricant to the threaded connection

**MULTI-MASTER**

**MM ECDF**
MULTI-MASTER
Exchangeable Solid Carbide
Flat Bottom Drill Heads




| Designation | Dimensions DC | DCONMS | NOF(1) | LU | LPR | RE | FHA | THSZMS | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| MM ECDF080A100-2T05 | 8.00 | 7.70 | 2 | 10.00 | 18.00 | 0.00 | 30.0 | T05 | • |
| MM ECDF085A120-2T05 | 8.50 | 7.70 | 2 | 12.00 | 22.00 | 0.00 | 30.0 | T05 | • |
| MM ECDF090A120-2T05 | 9.00 | 7.70 | 2 | 12.00 | 22.00 | 0.00 | 30.0 | T05 | • |
| MM ECDF095A120-2T06 | 9.50 | 9.20 | 2 | 12.00 | 22.00 | 0.00 | 30.0 | T06 | • |
| MM ECDF100A120-2T06 | 10.00 | 9.60 | 2 | 12.00 | 22.00 | 0.00 | 30.0 | T06 | • |
| MM ECDF105A120-2T06 | 10.50 | 9.60 | 2 | 12.00 | 23.00 | 0.00 | 30.0 | T06 | • |
| MM ECDF110A120-2T06 | 11.00 | 9.60 | 2 | 12.00 | 23.00 | 0.00 | 30.0 | T06 | • |
| MM ECDF115A120-2T06 | 11.50 | 9.60 | 2 | 12.00 | 23.00 | 0.00 | 30.0 | T06 | • |
| MM ECDF120A150-2T08 | 12.00 | 11.70 | 2 | 15.00 | 27.00 | 0.00 | 30.0 | T08 | • |
| MM ECDF125A150-2T08 | 12.50 | 12.10 | 2 | 15.00 | 27.00 | 0.00 | 30.0 | T08 | • |
| MM ECDF130A150-2T08 | 13.00 | 12.20 | 2 | 15.00 | 27.00 | 0.00 | 30.0 | T08 | • |
| MM ECDF135A150-2T08 | 13.50 | 12.20 | 2 | 15.00 | 27.00 | 0.00 | 30.0 | T08 | • |
| MM ECDF140A150-2T08 | 14.00 | 12.20 | 2 | 15.00 | 27.00 | 0.00 | 30.0 | T08 | • |
| MM ECDF145A150-2T08 | 14.50 | 12.20 | 2 | 15.00 | 27.00 | 0.00 | 30.0 | T08 | • |
| MM ECDF150A150-2T08 | 15.00 | 12.20 | 2 | 15.00 | 27.00 | 0.00 | 30.0 | T08 | • |
| MM ECDF155A150-2T08 | 15.50 | 12.20 | 2 | 15.00 | 27.00 | 0.00 | 30.0 | T08 | • |
| MM ECDF160A200-2T10 | 16.00 | 15.30 | 2 | 20.00 | 33.50 | 0.00 | 30.0 | T10 | • |
| MM ECDF165A200-2T10 | 16.50 | 15.30 | 2 | 20.00 | 33.50 | 0.00 | 30.0 | T10 | • |
| MM ECDF170A200-2T10 | 17.00 | 15.30 | 2 | 20.00 | 33.50 | 0.00 | 30.0 | T10 | • |
| MM ECDF175A200-2T10 | 17.50 | 15.30 | 2 | 20.00 | 33.50 | 0.00 | 30.0 | T10 | • |
| MM ECDF180A200-2T10 | 18.00 | 15.30 | 2 | 20.00 | 33.50 | 0.00 | 30.0 | T10 | • |
| MM ECDF185A200-2T12 | 18.50 | 18.20 | 2 | 25.00 | 41.00 | 0.00 | 30.0 | T12 | • |
| MM ECDF190A250-2T12 | 19.00 | 18.30 | 2 | 25.00 | 41.00 | 0.00 | 30.0 | T12 | • |
| MM ECDF195A250-2T12 | 19.50 | 18.30 | 2 | 25.00 | 41.00 | 0.00 | 30.0 | T12 | • |
| MM ECDF200A250-2T12 | 20.00 | 18.45 | 2 | 25.00 | 41.00 | 0.00 | 30.0 | T12 | • |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) Number of flutes

## Recommended Machining Conditions for Solid Carbide Endmill Heads DC=8.0-25.4 mm

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Material Group No. | V m/min | Feed vs. Flat-Drill Diameter DC=8.0-9.9 | DC=10.0-12.9 | DC=13.0-15.9 | DC=16.0-17.9 | DC=18.0-25.4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | frev mm/rev | | | | |
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %C | annealed | 420 | 125 | 1 | 80-110-140 | 0.08 | 0.10 | 0.12 | 0.14 | 0.18 |
| | | ≥ 0.25 %C | annealed | 650 | 190 | 2 | | 0.10 | 0.12 | 0.15 | 0.17 | 0.21 |
| | | < 0.55 %C | quenched and tempered | 850 | 250 | 3 | | 0.12 | 0.14 | 0.18 | 0.20 | 0.24 |
| | | ≥ 0.55 %C | annealed | 750 | 220 | 4 | | | | | | |
| | | | quenched and tempered | 1000 | 300 | 5 | 80-105-130 | | | | | |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | | | | | | |
| | | | quenched and tempered | 930 | 275 | 7 | | | | | | |
| | | | | 1000 | 300 | 8 | | 0.06 | 0.06 | 0.08 | 0.10 | 0.12 |
| | | | | 1200 | 350 | 9 | 60-80-100 | 0.08 | 0.08 | 0.10 | 0.12 | 0.14 |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 200 | 10 | | 0.10 | 0.10 | 0.12 | 0.14 | 0.16 |
| | | | quenched and tempered | 1100 | 325 | 11 | | | | | | |
| | stainless steel and cast steel | | ferritic/martensitic | 680 | 200 | 12 | | 0.01 | 0.02 | 0.03 | 0.04 | 0.06 |
| | | | martensitic | 820 | 240 | 13 | 60-80-100 | 0.02 | 0.03 | 0.04 | 0.05 | 0.07 |
| | | | | | | | | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 |
| M | stainless steel and cast steel | | austenitic, duplex | 600 | 180 | 14 | 60-80-100 | 0.01 | 0.02 | 0.03 | 0.04 | 0.06 |
| | | | | | | | | 0.02 | 0.03 | 0.04 | 0.05 | 0.07 |
| | | | | | | | | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 |
| K | gray cast iron (GG) | | ferritic / pearlitic | | 180 | 17 | 80-120-160 | 0.08 | 0.10 | 0.14 | 0.16 | 0.18 |
| | | | pearlitic / martensitic | | 260 | 18 | | 0.10 | 0.12 | 0.16 | 0.18 | 0.20 |
| | nodular cast iron (GGG) | | ferritic | | 160 | 15 | | 0.12 | 0.14 | 0.18 | 0.20 | 0.22 |
| | | | pearlitic | | 250 | 16 | | | | | | |
| | malleable cast iron | | ferritic | | 130 | 19 | | | | | | |
| | | | pearlitic | | 230 | 20 | | | | | | |

■ recommended cutting data

## Spare Parts

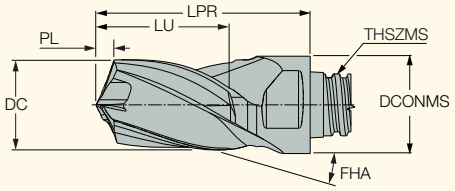
| Designation | |
|---|---|
| MM ECDF080A100-2T05 | MM KEY 6X4* |
| MM ECDF100A120-2T06 | MM KEY 8X5* |
| MM ECDF120A150-2T08 | MM KEY 10X7* |
| MM ECDF160A200-2T10 | MM KEY 13X8* |
| MM ECDF200A250-2T12 | MM KEY 16X9* |

* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM SPD-3T

Three-Flute Exchangeable Solid Carbide Drilling Heads




| Designation | Dimensions | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|
| | DC | LU | LF | THSZMS | DCONMS | SIG | FHA | |
| MM SPD080-08-3T06 | 8.00 | 12.10 | 22.00 | T06 | 10.00 | 142 | 15.0 | ● |
| MM SPD085-09-3T06 | 8.50 | 12.20 | 22.00 | T06 | 10.00 | 142 | 15.0 | ● |
| MM SPD090-09-3T06 | 9.00 | 12.30 | 22.00 | T06 | 10.00 | 142 | 15.0 | ● |
| MM SPD0925-10-3T06 | 9.25 | 13.80 | 22.00 | T06 | 10.00 | 142 | 15.0 | ● |
| MM SPD095-10-3T06 | 9.50 | 13.90 | 22.00 | T06 | 10.00 | 142 | 15.0 | ● |
| MM SPD100-10-3T08 | 10.00 | 15.00 | 27.00 | T08 | 12.00 | 142 | 15.0 | ● |
| MM SPD105-11-3T08 | 10.50 | 15.00 | 27.00 | T08 | 12.00 | 142 | 15.0 | ● |
| MM SPD1075-11-3T08 | 10.75 | 15.10 | 27.00 | T08 | 12.00 | 142 | 15.0 | ● |
| MM SPD110-11-3T08 | 11.00 | 15.10 | 27.00 | T08 | 12.00 | 142 | 15.0 | ● |
| MM SPD1125-12-3T08 | 11.25 | 16.20 | 27.00 | T08 | 12.00 | 142 | 15.0 | ● |
| MM SPD115-12-3T08 | 11.50 | 16.20 | 27.00 | T08 | 12.00 | 142 | 15.0 | ● |
| MM SPD120-12-3T08 | 12.00 | 16.60 | 27.00 | T08 | 12.70 | 142 | 15.0 | ● |
| MM SPD125-13-3T08 | 12.50 | 16.60 | 27.00 | T08 | 12.70 | 142 | 15.0 | ● |
| MM SPD1275-13-3T10 | 12.75 | 20.00 | 33.50 | T10 | 16.00 | 142 | 15.0 | ● |
| MM SPD130-13-3T10 | 13.00 | 20.00 | 33.50 | T10 | 16.00 | 142 | 15.0 | ● |
| MM SPD140-14-3T10 | 14.00 | 19.70 | 33.50 | T10 | 16.00 | 142 | 15.0 | ● |
| MM SPD145-15-3T10 | 14.50 | 20.80 | 33.50 | T10 | 16.00 | 142 | 15.0 | ● |
| MM SPD150-15-3T10 | 15.00 | 20.40 | 33.50 | T10 | 16.00 | 142 | 15.0 | ● |
| MM SPD1525-16-3T10 | 15.25 | 20.50 | 33.50 | T10 | 16.00 | 142 | 15.0 | ● |
| MM SPD155-16-3T10 | 15.50 | 20.50 | 33.50 | T10 | 16.00 | 142 | 15.0 | ● |
| MM SPD160-16-3T12 | 16.00 | 25.10 | 41.00 | T12 | 18.43 | 142 | 15.0 | ● |

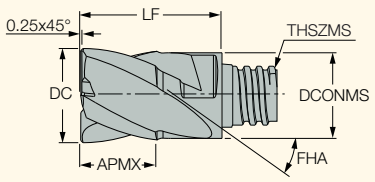
New

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM EFCB

Interchangeable 4 Flute 30° Helix Solid Carbide Heads for Flat Counter Boring




| Designation | Dimensions | | | | | | | | | IC908 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC(1) | APMX | LF | DCONMS | THSZMS | NOF(2) | FHA | CHW | KCH | | $f_z$ (mm/t) |
| MM EFCB110A08-4T06 | 11.00 | 8.40 | 16.50 | 10.00 | T06 | 4 | 30.0 | 0.25 | 45.0 | ● | 0.03-0.04 |
| MM EFCB140A11-4T08 | 14.00 | 11.50 | 28.00 | 12.00 | T08 | 4 | 30.0 | 0.25 | 45.0 | ● | 0.04-0.05 |

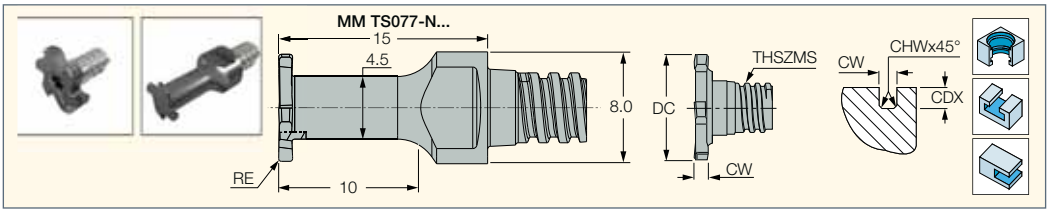
• 0.06 mm maximum concavity on the tool's bottom • For shanks, see pages 101-117 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) e8 tolerance

(2) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TS-N**
Interchangeable Solid Carbide T-SLOT Milling Heads

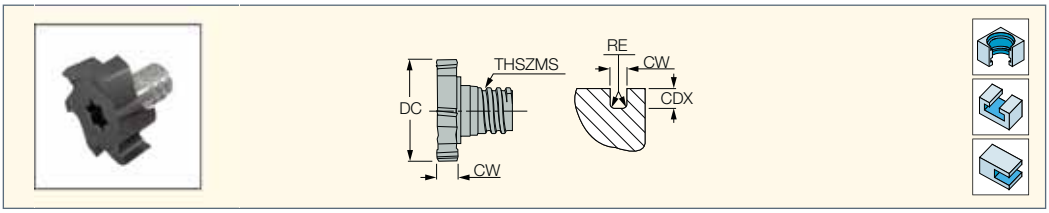



| Designation | Dimensions DC | DCTOLL | CW | NOF(1) | THSZMS | CDX(2) | RE | CHW | | | Tough ↔ Hard IC928 | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM TS077-N07A-4T05 | 7.70 | -0.0500 | 0.70 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS077-N08A-4T05 | 7.70 | -0.0500 | 0.80 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS077-N09A-4T05 | 7.70 | -0.0500 | 0.90 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS077-N10A-4T05 | 7.70 | -0.0500 | 1.00 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS077-N15A-4T05 | 7.70 | -0.0500 | 1.50 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS077-N20A-4T05 | 7.70 | -0.0500 | 2.00 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS105-N20D-06T04 | 10.50 | -0.0500 | 2.00 | 6 | T04 | 2.00 | 0.40 | - | | T-15/3* | ● | |
| MM TS.500-N062P-06T05 | 12.70 | -0.0500 | 1.58 | 6 | T05 | 2.25 | - | 0.15 | | T-20/3* | | ● |
| MM TS.500-N078P-06T05 | 12.70 | -0.0500 | 1.98 | 6 | T05 | 2.25 | - | 0.15 | | T-20/3* | | ● |
| MM TS135-N20P-06T05 | 13.50 | -0.0500 | 2.00 | 6 | T05 | 2.65 | - | 0.20 | | T-20/3* | | ● |
| MM TS135-N25P-06T05 | 13.50 | -0.0500 | 2.50 | 6 | T05 | 2.65 | - | 0.20 | | T-20/3* | | ● |

• For shanks, see pages 101-111 • For tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection
• For user guide, see pages 59,211-218
(1) Number of flutes
(2) Cutting depth maximum
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TS-H**
Interchangeable Solid Carbide T-SLOT Milling Heads with Diverse Corner Radii



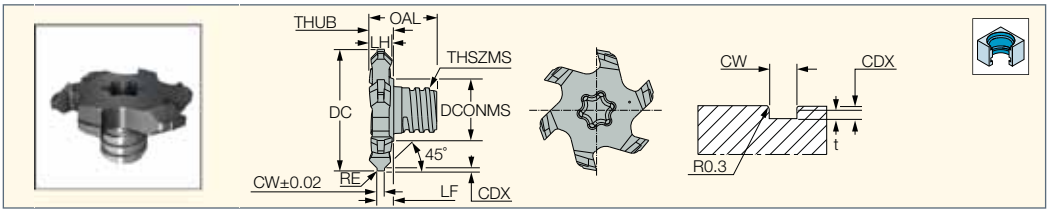

| Designation | Dimensions DC | DCTOLL | CW | CDX(1) | NOF(2) | RE | THSZMS | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| MM TS135-H30D-06T05 | 13.50 | -0.0500 | 3.00 | 2.65 | 6 | 0.40 | T05 | T-20/3* | ● |
| MM TS135-H40D-06T05 | 13.50 | -0.0500 | 4.00 | 2.65 | 6 | 0.40 | T05 | T-20/3* | ● |
| MM TS165-H40A-06T05 | 16.50 | -0.0500 | 4.00 | 4.25 | 6 | 0.20 | T05 | T-20/3* | ● |
| MM TS160-H20D-06T06 | 16.00 | -0.0500 | 2.00 | 3.00 | 6 | 0.40 | T06 | T-20/3* | ● |
| MM TS160-H30D-06T06 | 16.00 | -0.0500 | 3.00 | 3.00 | 6 | 0.40 | T06 | T-25/3* | ● |
| MM TS160-H40D-06T06 | 16.00 | -0.0500 | 4.00 | 3.00 | 6 | 0.40 | T06 | T-25/3* | ● |
| MM TS165-H20D-06T06 | 16.50 | -0.0500 | 2.00 | 3.25 | 6 | 0.40 | T06 | T-20/3* | ● |
| MM TS165-H30D-06T06 | 16.50 | -0.0500 | 3.00 | 3.25 | 6 | 0.40 | T06 | T-25/3* | ● |
| MM TS165-H40D-06T06 | 16.50 | -0.0500 | 4.00 | 3.25 | 6 | 0.40 | T06 | T-25/3* | ● |
| MM TS195-H60A-06T06 | 19.50 | -0.0500 | 6.00 | 4.45 | 6 | 0.20 | T06 | T-25/3* | ● |
| MM TS225-H60A-06T06 | 22.50 | -0.0500 | 6.00 | 5.95 | 6 | 0.20 | T06 | T-25/3* | ● |
| MM TS195-H40D-06T08 | 19.50 | -0.0500 | 4.00 | 3.45 | 6 | 0.40 | T08 | T-30/3 L* | ● |
| MM TS195-H50D-06T08 | 19.50 | -0.0500 | 5.00 | 3.45 | 6 | 0.40 | T08 | T-30/3 L* | ● |
| MM TS195-H60D-06T08 | 19.50 | -0.0500 | 6.00 | 3.45 | 6 | 0.40 | T08 | T-30/3 L* | ● |
| MM TS225-H40D-06T08 | 22.50 | -0.0500 | 4.00 | 4.90 | 6 | 0.40 | T08 | T-40/3 L* | ● |
| MM TS225-H50D-06T08 | 22.50 | -0.0500 | 5.00 | 4.95 | 6 | 0.40 | T08 | T-40/3 L* | ● |
| MM TS225-H60D-06T08 | 22.50 | -0.0500 | 6.00 | 4.95 | 6 | 0.40 | T08 | | ● |
| MM TS225-H80D-06T08 | 22.50 | -0.0500 | 8.00 | 4.95 | 6 | 0.40 | T08 | T-40/3 L* | ● |
| MM TS250-H50D-06T08 | 25.00 | -0.0500 | 5.00 | 5.90 | 6 | 0.40 | T08 | T-50/3 L* | ● |
| MM TS250-H60D-06T08 | 25.00 | -0.0500 | 6.00 | 5.90 | 6 | 0.40 | T08 | T-50/3 L* | ● |
| MM TS250-H80D-06T08 | 25.00 | -0.0500 | 8.00 | 5.90 | 6 | 0.40 | T08 | T-50/3 L* | ● |
| MM TS250-H50D-06T10 | 25.00 | -0.0500 | 5.00 | 4.30 | 6 | 0.40 | T10 | T-50/3 L* | ● |
| MM TS250-H60D-06T10 | 25.00 | -0.0500 | 6.00 | 4.30 | 6 | 0.40 | T10 | T-50/3 L* | ● |
| MM TS250-H80D-06T10 | 25.00 | -0.0500 | 8.00 | 4.30 | 6 | 0.40 | T10 | T-50/3 L* | ● |

• Inserts in 5 mm and wider feature chip splitting edges • For tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection • For shanks, see pages 101-111 • For user guide, see pages 59,211-218
(1) Cutting depth maximum
(2) Number of flutes
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TS-C**

Interchangeable Solid Carbide Circlip Groove Milling Heads Conform to DIN 471/472




| Designation | Dimensions | | | | | | | | | | | | | IC928 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | CW | CDX | LF | t | RE | THUB | LH | OAL | DCONMS | NOF(1) | THSZMS | | |
| MM TS127C118T035-6T05 | 12.70 | 1.18 | 0.35 | 2.23 | 0.27 | 0.05 | 3.00 | 2.7 | 8.43 | 7.70 | 6 | T05 | T-20/3* | ● |
| MM TS127C118T040-6T05 | 12.70 | 1.18 | 0.40 | 2.23 | 0.32 | 0.05 | 3.00 | 2.7 | 8.43 | 7.70 | 6 | T05 | T-20/3* | ● |
| MM TS127C118T050-6T05 | 12.70 | 1.18 | 0.50 | 2.23 | 0.42 | 0.05 | 3.00 | 2.7 | 8.43 | 7.70 | 6 | T05 | T-20/3* | ● |
| MM TS127C138T050-6T05 | 12.70 | 1.38 | 0.50 | 2.23 | 0.42 | 0.05 | 3.00 | 2.7 | 8.63 | 7.70 | 6 | T05 | T-20/3* | ● |
| MM TS225C138T060-6T08 | 22.50 | 1.38 | 0.60 | 3.08 | 0.50 | 0.05 | 4.50 | 4.2 | 9.48 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C138T070-6T08 | 22.50 | 1.38 | 0.70 | 3.08 | 0.60 | 0.05 | 4.50 | 4.2 | 9.48 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C138T085-6T08 | 22.50 | 1.38 | 0.85 | 3.08 | 0.74 | 0.05 | 4.50 | 4.2 | 9.48 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C168T070-6T08 | 22.50 | 1.68 | 0.70 | 3.23 | 0.60 | 0.10 | 4.50 | 4.2 | 9.78 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C168T085-6T08 | 22.50 | 1.68 | 0.85 | 3.23 | 0.74 | 0.10 | 4.50 | 4.2 | 9.78 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C168T100-6T08 | 22.50 | 1.68 | 1.00 | 3.23 | 0.89 | 0.10 | 4.50 | 4.2 | 9.78 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C193T100-6T08 | 22.50 | 1.93 | 1.00 | 3.35 | 0.89 | 0.10 | 4.50 | 4.2 | 10.03 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C193T125-6T08 | 22.50 | 1.93 | 1.25 | 3.35 | 1.13 | 0.10 | 4.50 | 4.2 | 10.03 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C223T150-6T08 | 22.50 | 2.23 | 1.50 | 3.50 | 1.38 | 0.10 | 4.50 | 4.2 | 10.33 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C273T150-6T08 | 22.50 | 2.73 | 1.50 | 3.77 | 1.39 | 0.20 | 4.50 | 4.1 | 10.83 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C273T175-6T08 | 22.50 | 2.73 | 1.75 | 3.77 | 1.64 | 0.20 | 4.40 | 3.9 | 10.83 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C325T175-6T08 | 22.50 | 3.25 | 1.75 | 4.40 | 1.64 | 0.20 | 5.10 | 4.6 | 11.35 | 11.70 | 6 | T08 | T-40/3 L* | ● |

• For shanks, see pages 101-111 • For tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection
• For user guide, see pages 59,211-218

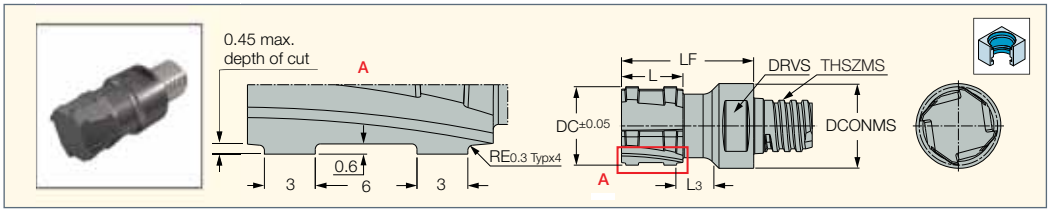
(1) Number of flutes

* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TS-DG**

Double Groove Internal Grooving Heads with a Threaded Connection for Heat Exchanger Tube Sheets




| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | PHD(1) | THSZMS | NOF(2) | LF | L3 | L | DRVS(3) | | |
| MM TS155-04T10-8238 | 15.50 | 16.00 | 15.88 | T10 | 4 | 33.70 | 17.80 | 14.20 | 10.0 | MM KEY 10X7* | ● |
| MM TS185-04T12-8239 | 18.50 | 18.45 | 19.05 | T12 | 4 | 34.50 | 18.30 | 14.50 | 13.0 | MM KEY 13X8* | ● |
| MM TS245-04T15-8240 | 24.50 | 23.80 | 25.40 | T15 | 4 | 37.20 | 11.00 | 14.40 | 20.0 | MM KEY 20* | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection • For user guide, see pages 59,211-218

(1) For minimum tube outer diameter

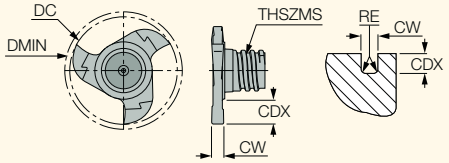
(2) Number of flutes

(3) Clamping wrench size

* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM GRIT-3T6**
Interchangeable Solid Carbide Small Diameter Groove Milling Heads




| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | DC | CW | CDX(1) | NOF(2) | RE | DMIN(3) | THSZMS | ∠ | |
| **MM GRIT16K150-010-3T6** | 15.70 | 1.50 | 2.80 | 3 | 0.10 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16P150-010-3T6** | 15.70 | 1.50 | 2.80 | 3 | 0.10 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16K157-020-3T6** | 15.70 | 1.57 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-25/3* | ● |
| **MM GRIT16K200-020-3T6** | 15.70 | 2.00 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16P220-110-3T6** | 15.70 | 2.20 | 2.80 | 3 | 1.10 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16K239-020-3T6** | 15.70 | 2.39 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-25/3* | ● |
| **MM GRIT16K250-020-3T6** | 15.70 | 2.50 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16K300-020-3T6** | 15.70 | 3.00 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-25/3* | ● |
| **MM GRIT16P300-020-3T6** | 15.70 | 3.00 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-25/3* | ● |
| **MM GRIT16K317-020-3T6** | 15.70 | 3.17 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-25/3* | ● |
| **MM GRIT18K120-005-3T6** | 17.70 | 1.20 | 3.80 | 3 | 0.05 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18P120-060-3T6** | 17.70 | 1.20 | 3.80 | 3 | 0.60 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K140-005-3T6** | 17.70 | 1.40 | 3.80 | 3 | 0.05 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K150-010-3T6** | 17.70 | 1.50 | 3.80 | 3 | 0.10 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K157-020-3T6** | 17.70 | 1.57 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K170-005-3T6** | 17.70 | 1.70 | 3.80 | 3 | 0.05 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K200-020-3T6** | 17.70 | 2.00 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18P200-100-3T6** | 17.70 | 2.00 | 3.80 | 3 | 1.00 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18P220-110-3T6** | 17.70 | 2.20 | 3.80 | 3 | 1.10 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K239-020-3T6** | 17.70 | 2.39 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K250-020-3T6** | 17.70 | 2.50 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K300-020-3T6** | 17.70 | 3.00 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-25/3* | ● |
| **MM GRIT18P300-150-3T6** | 17.70 | 3.00 | 3.80 | 3 | 1.50 | 18.00 | T06 | T-25/3* | ● |
| **MM GRIT18K317-020-3T6** | 17.70 | 3.17 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-25/3* | ● |

• Recommended for O-rings and retaining rings • Modification options on request • Do not apply lubricant to the threaded connection • For clamping instructions, see pages 111-112 • For user guide, see pages 59,211-218 • For shanks, see pages 101-111 • K-Type - For general steel machining • P-Type - Positive geometry for soft and gummy materials

(1) Cutting depth maximum

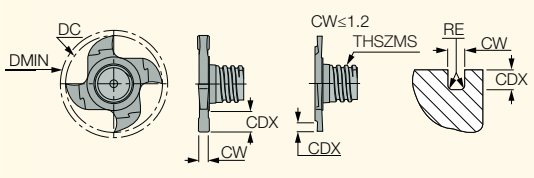
(2) Number of flutes

(3) Minimum bore diameter

* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM GRIT-4T8/6T10**
Interchangeable Solid Carbide Small Diameter Groove Milling Heads




| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | DC | CW | CDX(1) | NOF(2) | RE | DMIN(3) | THSZMS | | |
| MM GRIT22K076-000-4T8 | 21.70 | 0.76 | 1.50 | 4 | 0.00 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K086-000-4T8 | 21.70 | 0.86 | 1.70 | 4 | 0.00 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K096-000-4T8 | 21.70 | 0.96 | 1.90 | 4 | 0.00 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K100-005-4T8 | 21.70 | 1.00 | 2.00 | 4 | 0.05 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22P100-005-4T8 | 21.70 | 1.00 | 2.00 | 4 | 0.05 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K120-005-4T8 | 21.70 | 1.20 | 4.50 | 4 | 0.05 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K140-005-4T8 | 21.70 | 1.40 | 4.50 | 4 | 0.05 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K157-000-4T8 | 21.70 | 1.57 | 4.50 | 4 | 0.00 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K170-010-4T8 | 21.70 | 1.70 | 4.50 | 4 | 0.10 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22P170-010-4T8 | 21.70 | 1.70 | 4.50 | 4 | 0.10 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K195-020-4T8 | 21.70 | 1.95 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K200-020-4T8 | 21.70 | 2.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22P200-020-4T8 | 21.70 | 2.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K225-020-4T8 | 21.70 | 2.25 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K239-020-4T8 | 21.70 | 2.39 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K250-020-4T8 | 21.70 | 2.50 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22P250-020-4T8 | 21.70 | 2.50 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K275-020-4T8 | 21.70 | 2.75 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K300-020-4T8 | 21.70 | 3.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22P300-020-4T8 | 21.70 | 3.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K317-020-4T8 | 21.70 | 3.17 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K325-020-4T8 | 21.70 | 3.25 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22P381-020-4T8 | 21.70 | 3.81 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K400-020-4T8 | 21.70 | 4.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22P400-020-4T8 | 21.70 | 4.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22P400-200-4T8 | 21.70 | 4.00 | 4.50 | 4 | 2.00 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K425-020-4T8 | 21.70 | 4.25 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K425-120-4T8 | 21.70 | 4.25 | 4.50 | 4 | 1.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K475-020-4T8 | 21.70 | 4.75 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K525-020-4T8 | 21.70 | 5.25 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K600-300-4T8 | 21.70 | 6.00 | 4.50 | 4 | 3.00 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT28K250-020-6T10 | 27.70 | 2.50 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28K525-020-6T10 | 27.70 | 5.25 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28P700-350-6T10 | 27.70 | 7.00 | 6.00 | 6 | 3.50 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28K1000-020-6T10 | 27.70 | 10.00 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28K1100-020-6T10 | 27.70 | 11.00 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28K1200-020-6T10 | 27.70 | 12.00 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28K1300-020-6T10 | 27.70 | 13.00 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |

• Recommended for Orings and retaining rings • K - for general steel & cast iron machining P - for soft and gummy materials • Modification options on request • Do not apply lubricant to the threaded connection • For clamping instructions, see pages 111-112 • For user guide, see pages 59,211-218 • For shanks, see pages 101-111

(1) Cutting depth maximum

(2) Number of flutes

(3) Minimum bore diameter

* Optional, to be ordered separately

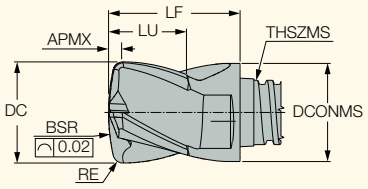
MULTI-MASTER

## Machining Data for MULTI-MASTER Groove Milling Heads

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Material No. | MM-TS | | | MM-GRIT K-TYPE | | | MM-GRIT P-TYPE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Speed | Feed mm/t | | Speed | Feed mm/t | | Speed | Feed mm/t | |
| | | | | | | | V m/min | $F_{z\ (min)}$ | $F_{z\ (max)}$ | V m/min | $F_{z\ (min)}$ | $F_{z\ (max)}$ | V m/min | $F_{z\ (min)}$ | $F_{z\ (max)}$ |
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %C | annealed | 420 | 125 | 1 | 110-140 | 0.08 | 0.20 | 110-160 | 0.05 | 0.15 | - | - | - |
| | | >= 0.25 %C | annealed | 650 | 190 | 2 | 100-120 | 0.08 | 0.18 | 100-150 | 0.05 | 0.15 | - | - | - |
| | | < 0.55 %C | quenched and tempered | 850 | 250 | 3 | 70-100 | 0.08 | 0.15 | 80-100 | 0.05 | 0.15 | - | - | - |
| | | >= 0.55 %C | annealed | 750 | 220 | 4 | 70-100 | 0.08 | 0.15 | 80-100 | 0.05 | 0.15 | - | - | - |
| | | | quenched and tempered | 1000 | 300 | 5 | 60-80 | 0.08 | 0.15 | 60-80 | 0.05 | 0.15 | - | - | - |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | 100-120 | 0.08 | 0.15 | 110-150 | 0.05 | 0.15 | - | - | - |
| | | | quenched and tempered | 930 | 275 | 7 | 90-120 | 0.08 | 0.15 | 100-120 | 0.05 | 0.15 | - | - | - |
| | | | | 1000 | 300 | 8 | 80-110 | 0.08 | 0.15 | 70-110 | 0.05 | 0.15 | - | - | - |
| | | | | 1200 | 350 | 9 | 70-100 | 0.05 | 0.12 | 70-100 | 0.05 | 0.15 | - | - | - |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 200 | 10 | 60-80 | 0.05 | 0.18 | 60-80 | 0.05 | 0.15 | - | - | - |
| | | | quenched and tempered | 1100 | 325 | 11 | 55-70 | 0.08 | 0.15 | 55-70 | 0.05 | 0.15 | - | - | - |
| | stainless steel and cast steel | | ferritic/ martensitic. | 680 | 200 | 12 | 100-130 | 0.06 | 0.12 | 100-130 | 0.03 | 0.15 | 100-130 | 0.03 | 0.10 |
| | | | martensitic | 820 | 240 | 13 | 100-120 | 0.08 | 0.15 | 100-130 | 0.03 | 0.15 | 100-130 | 0.03 | 0.10 |
| M | stainless steel and cast steel | | austenitic | 600 | 180 | 14 | 80-120 | 0.05 | 0.10 | 90-120 | 0.03 | 0.12 | 90-120 | 0.03 | 0.10 |
| K | grey cast iron (GG) | | ferritic/ pearlitic | | 180 | 15 | 160-220 | 0.10 | 0.20 | 160-220 | 0.03 | 0.12 | - | - | - |
| | | | pearlitic / martensitic | | 260 | 16 | 120-200 | 0.10 | 0.15 | 120-200 | 0.03 | 0.12 | - | - | - |
| | cast iron nodular (GGG) | | ferritic | | 160 | 17 | 100-140 | 0.10 | 0.20 | - | - | - | - | - | - |
| | | | pearlitic | | 250 | 18 | 80-100 | 0.10 | 0.15 | - | - | - | - | - | - |
| | malleable cast iron | | ferritic | | 130 | 19 | 180-250 | 0.10 | 0.20 | 180-250 | 0.03 | 0.15 | - | - | - |
| | | | pearlitic | | 230 | 20 | 160-220 | 0.10 | 0.15 | 160-220 | 0.03 | 0.15 | - | - | - |
| N | aluminum-wrought alloys | | not cureable | | 60 | 21 | 800-1200 | 0.10 | 0.20 | - | - | - | 800-1200 | 0.05 | 0.15 |
| | | | cured | | 100 | 22 | 800-1200 | 0.10 | 0.20 | - | - | - | 800-1200 | 0.05 | 0.15 |
| | aluminum-cast-alloys | <=12% Si | not cureable | | 75 | 23 | - | - | - | - | - | - | 600-1000 | 0.05 | 0.15 |
| | | | cured | | 90 | 24 | - | - | - | - | - | - | 500-1000 | 0.05 | 0.15 |
| | | >12% Si | high temperature | | 130 | 25 | - | - | - | - | - | - | 200-400 | 0.05 | 0.15 |
| | copper alloys | >1% Pb | free cutting | | 110 | 26 | - | - | - | - | - | - | - | - | - |
| | | | brass | | 90 | 27 | - | - | - | - | - | - | - | - | - |
| | | | electrolitic copper | | 100 | 28 | - | - | - | - | - | - | - | - | - |
| | non-metallic | | duroplastics, fiber plastics | | | 29 | - | - | - | - | - | - | - | - | - |
| | | | hard rubber | | | 30 | - | - | - | - | - | - | - | - | - |
| S | high temp. alloys | Fe based | annealed | | 200 | 31 | - | - | - | 30-40 | 0.02 | 0.12 | - | - | - |
| | | | cured | | 280 | 32 | 25-35 | 0.05 | 0.12 | 25-40 | 0.02 | 0.12 | - | - | - |
| | | Ni or Co based | annealed | | 250 | 33 | 25-35 | 0.05 | 0.12 | 25-40 | - | - | - | 0.01 | 0.12 |
| | | | cured | | 350 | 34 | 25-35 | 0.05 | 0.12 | 25-40 | - | - | - | 0.01 | 0.12 |
| | | | cast | | 320 | 35 | 40-60 | 0.05 | 0.12 | 25-40 | - | - | - | 0.01 | 0.12 |
| | titanium ti alloys | | | RM 400 | | 36 | 40-60 | 0.05 | 0.12 | 40-60 | - | - | - | 0.05 | 0.12 |
| | | | alpha+beta alloys cured | RM 1050 | | 37 | 40-60 | 0.05 | 0.10 | 40-60 | - | - | - | 0.05 | 0.10 |
| H | hardened steel | | hardened | | 55 HRC | 38 | | | | | | | | | |
| | | | hardened | | 60 HRC | 39 | | | | | | | | | |
| | chilled cast iron | | cast | | 400 | 40 | | | | | | | | | |
| | cast iron | | hardened | | 55 HRC | 41 | | | | | | | | | |

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM ELB**
Interchangeable Lens-Shaped (Barrel) Solid Carbide Heads for 3D Profiling

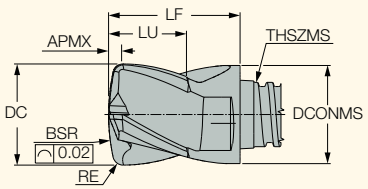



| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | DC | BSR | RE | LU | APMX | THSZMS | DCONMS | NOF(1) | LF | |
| MM ELB08R16A05-4T05 | 8.00 | 16.00 | 0.50 | 5.50 | 0.90 | T05 | 7.70 | 4 | 10.00 | ● |
| MM ELB10R20A07-4T06 | 10.00 | 20.00 | 1.00 | 7.50 | 1.42 | T06 | 9.70 | 4 | 13.00 | ● |
| MM ELB12R24A09-4T08 | 12.00 | 24.00 | 1.00 | 9.00 | 1.55 | T08 | 11.70 | 4 | 16.50 | ● |
| MM ELB16R32A12-4T10 | 16.00 | 32.00 | 1.00 | 12.00 | 1.80 | T10 | 15.30 | 4 | 20.50 | ● |

• For user guide, see pages 59,211-218
(1) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM ELBA**
Interchangeable Lens-Shaped (Barrel) Solid Carbide Heads for 3D Aluminum Profiling

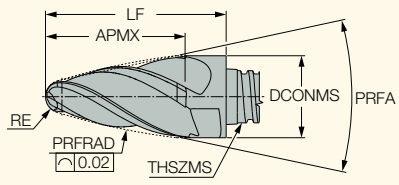



| Designation | Dimensions | | | | | | | | IC08 |
|---|---|---|---|---|---|---|---|---|---|
| | DC | BSR | RE | LU | APMX | THSZMS | DCONMS | NOF(1) | LF | |
| MM ELBA08R16A05-4T05 | 8.00 | 16.00 | 0.50 | 5.00 | 0.90 | T05 | 8.00 | 4 | 10.00 | ● |
| MM ELBA10R20A07-4T06 | 10.00 | 20.00 | 1.00 | 7.00 | 1.42 | T06 | 10.00 | 4 | 13.00 | ● |
| MM ELBA12R24A09-4T08 | 12.00 | 24.00 | 1.00 | 9.00 | 1.55 | T08 | 12.00 | 4 | 16.50 | ● |
| MM ELBA16R32A12-4T10 | 16.00 | 32.00 | 1.00 | 12.00 | 1.80 | T10 | 16.00 | 4 | 20.50 | ● |

New
• For user guide, see pages 59,211-218
(1) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EOB**
Interchangeable Oval-Shaped (Barrel) Solid Carbide Heads for 3D Profiling



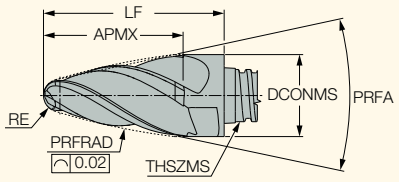

| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | PRFRAD | RE | APMX | PRFA | THSZMS | NOF(1) | DCONMS | LF | |
| MM EOB08R1.5R80A13-4T05 | 80.00 | 1.50 | 14.20 | 24.00 | T05 | 4 | 8.00 | 18.00 | ● |
| MM EOB08R1.5R80A13-6T05 | 80.00 | 1.50 | 14.10 | 24.00 | T05 | 6 | 8.00 | 18.00 | ● |
| MM EOB10R2.0R85A16-4T06 | 85.00 | 2.00 | 16.50 | 24.00 | T06 | 4 | 10.00 | 22.00 | ● |
| MM EOB10R2.0R85A16-6T06 | 85.00 | 2.00 | 16.50 | 24.00 | T06 | 6 | 10.00 | 22.00 | ● |
| MM EOB12R2.0R75A21-4T08 | 75.00 | 2.00 | 21.30 | 24.00 | T08 | 4 | 12.00 | 27.00 | ● |
| MM EOB12R2.0R75A21-6T08 | 75.00 | 2.00 | 21.30 | 24.00 | T08 | 6 | 12.00 | 27.00 | ● |
| MM EOB16R3.0R75A26-4T10 | 75.00 | 3.00 | 27.00 | 24.00 | T10 | 4 | 16.00 | 33.50 | ● |
| MM EOB16R3.0R75A26-6T10 | 75.00 | 3.00 | 27.00 | 24.00 | T10 | 6 | 16.00 | 33.50 | ● |

• For user guide, see pages 59,211-218
(1) Number of flutes

MULTI-MASTER INDEXABLE SOLID CARBIDE LINE

## MM EOBA

Interchangeable Oval-Shaped (Barrel) Solid Carbide Heads for 3D Aluminum Profiling




| Designation | Dimensions | | | | | | | | IC08 |
|---|---|---|---|---|---|---|---|---|---|
| | PRFRAD | RE | APMX | PRFA | THSZMS | NOF[1] | DCONMS | LF | |
| MM EOBA08R1.5R80A13-4T05 | 80.00 | 1.50 | 14.20 | 24.00 | T05 | 4 | 8.00 | 18.00 | ● |
| MM EOBA10R2.0R85A16-4T06 | 85.00 | 2.00 | 16.50 | 24.00 | T06 | 4 | 10.00 | 22.00 | ● |
| MM EOBA12R2.0R75A21-4T08 | 75.00 | 2.00 | 21.30 | 24.00 | T08 | 4 | 12.00 | 27.00 | ● |
| MM EOBA16R3.0R75A26-4T10 | 75.00 | 3.00 | 27.00 | 24.00 | T10 | 4 | 16.00 | 33.50 | ● |

New

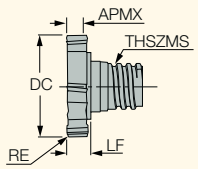
- For user guide, see pages 59,211-218

(1) Number of flutes

MULTI-MASTER INDEXABLE SOLID CARBIDE LINE

## MM FM

Interchangeable Solid Carbide Face Milling Heads with MULTI-MASTER Threaded Connections




| Designation | Dimensions | | | | | | | IC908 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|
| | DC | APMX | RE | NOF[1] | THSZMS | LF | | | $f_z$ (mm/t) |
| MM FM100-36R0.2-06T05 | 10.00 | 3.60 | 0.20 | 6 | T05 | 4.40 | T-20/3* | ● | 0.04-0.10 |
| MM FM120-36R0.2-06T05 | 12.00 | 3.60 | 0.20 | 6 | T05 | 4.40 | T-20/3* | ● | 0.04-0.10 |
| MM FM160-48R0.4-06T06 | 16.00 | 4.80 | 0.40 | 6 | T06 | 5.60 | T-25/3* | ● | 0.05-0.10 |
| MM FM200-60R0.4-06T08 | 20.00 | 6.00 | 0.40 | 6 | T08 | 6.80 | T-40/3 L* | ● | 0.05-0.10 |
| MM FM250-75R0.4-06T10 | 25.00 | 7.50 | 0.40 | 6 | T10 | 8.40 | T-50/3 L* | ● | 0.05-0.10 |

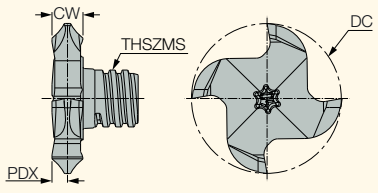
(1) Number of flutes

* Optional, to be ordered separately

MULTI-MASTER INDEXABLE SOLID CARBIDE LINE

## MM SS

Interchangeable Solid Carbide Heads for Milling Involute Spline Shafts According to DIN 5480




| Designation | Dimensions | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|
| | Module | T range[1] | DC | PDX | CW | NOF[2] | THSZMS | |
| MM SS22M100Z1720-4T08 | 1.00 | 17-20 | 21.70 | 2.8 | 5.50 | 4 | T08 | ● |
| MM SS22M100Z2125-4T08 | 1.00 | 21-25 | 21.70 | 2.3 | 4.50 | 4 | T08 | ● |
| MM SS22M150Z1720-4T08 | 1.50 | 17-20 | 21.70 | 2.7 | 5.40 | 4 | T08 | ● |

- Tightening torque 1500 Nxcm
- Do not apply lubricant to the threaded connection.
- For clamping instructions, see pages 111-112
- For user guide, see pages 59,211-218
- For shanks see pages 101-111

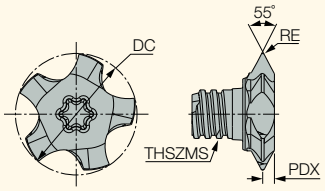
(1) Teeth range

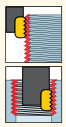
(2) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM TRF 55°

Interchangeable Solid Carbide Milling Heads for 55° Partial Profile Thread Milling



| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | NOF(1) | TPIN(2) | TPIX(3) | RE | PDX | THSZMS | TDZ(4) | DMIN | TQ(5) | |
| MM TRF12-W55-P11-5T05 | 11.94 | 5 | 11.00 | 14.00 | 0.23 | 1.15 | T05 | 15.875 | 13.60 | 7.0 | ● |
| MM TRF12-W55-P19-5T05 | 11.94 | 5 | 19.00 | 28.00 | 0.11 | 0.75 | T05 | 14.287 | 13.10 | 10.0 | ● |
| MM TRF16-W55-P8-5T06 | 15.94 | 5 | 8.00 | 14.00 | 0.23 | 1.55 | T06 | 20.637 | 18.30 | 15.0 | ● |
| MM TRF20-W55-P6-6T08 | 19.94 | 6 | 6.00 | 8.00 | 0.40 | 1.95 | T08 | 25.4 | 21.30 | 28.0 | ● |

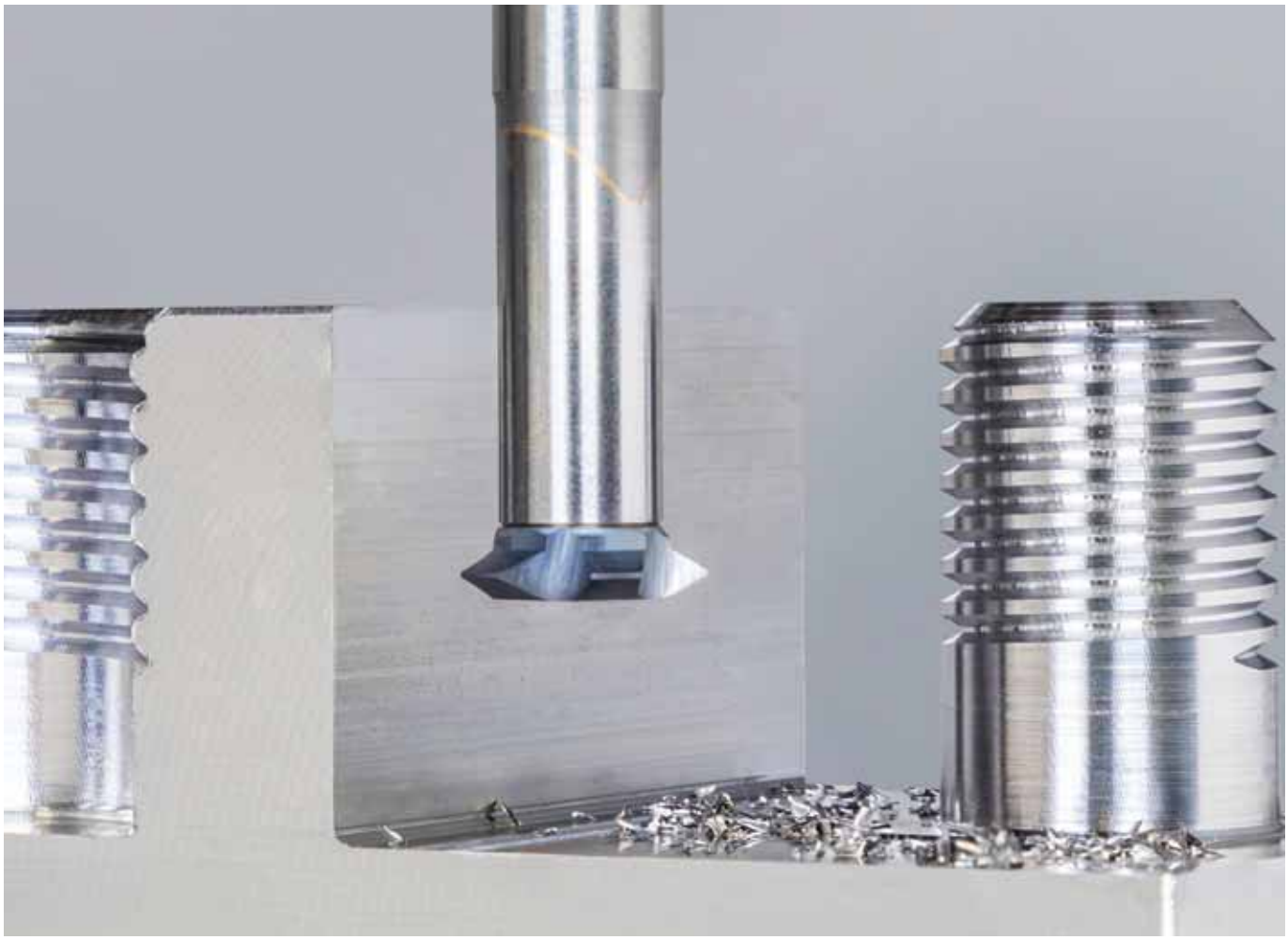
• For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 101-111 • For clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection.

(1) Number of flutes
(2) Threads per inch minimum
(3) Threads per inch maximum
(4) Smallest possible thread
(5) Tightening torque

### Spare Parts

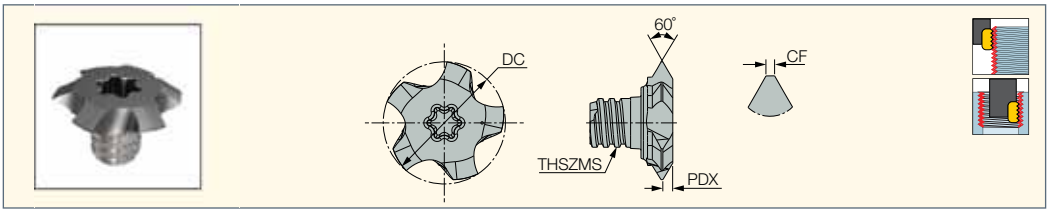
| Designation | |
|---|---|
| MM TRF12-W55-P11-5T05 | BIT SOCKET T20 3/8" DRIVE* |
| MM TRF12-W55-P19-5T05 | BIT SOCKET T20 3/8" DRIVE* |
| MM TRF16-W55-P8-5T06 | BIT SOCKET T25 3/8" DRIVE* |
| MM TRF20-W55-P6-6T08 | BIT SOCKET T40 3/8" DRIVE* |

* Optional, to be ordered separately



MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TRF 60°**
Interchangeable Solid Carbide Milling Heads for 60° Partial Profile Thread Milling




| Designation | Dimensions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | NOF(1) | TPN(2) | TPX(3) | TPN_DF2(4) | TPX_DF2(5) | TPIN(6) | TPIX(7) | TPIN_DF2(8) | TPIX_DF2(9) |
| MM TRF12A60-P080-5T05 | 11.94 | 5 | 0.500 | 0.800 | 0.400 | 0.800 | 28.00 | 56.00 | 32.00 | 64.00 |
| MM TRF12A60-P175-5T05 | 11.94 | 5 | 1.000 | 1.750 | 0.800 | 1.500 | 14.00 | 28.00 | 16.00 | 32.00 |
| MM TRF12A60-P250-5T05 | 11.94 | 5 | 2.000 | 2.500 | 1.750 | 2.000 | 10.00 | 13.00 | 11.00 | 15.00 |
| MM TRF16A60-P080-5T06 | 15.94 | 5 | 0.500 | 0.800 | 0.400 | 0.800 | 28.00 | 56.00 | 32.00 | 64.00 |
| MM TRF16A60-P175-5T06 | 15.94 | 5 | 1.000 | 1.750 | 0.800 | 1.500 | 14.00 | 28.00 | 16.00 | 32.00 |
| MM TRF16A60-P300-5T06 | 15.94 | 5 | 2.000 | 3.000 | 1.750 | 2.500 | 8.00 | 13.00 | 10.00 | 15.00 |
| MM TRF20A60-P200-6T08 | 19.94 | 6 | 1.000 | 2.000 | 0.800 | 1.750 | 13.00 | 28.00 | 15.00 | 32.00 |
| MM TRF20A60-P300-6T08 | 19.94 | 6 | 2.000 | 3.000 | 1.750 | 2.500 | 8.00 | 13.00 | 10.00 | 15.00 |
| MM TRF20A60-P400-6T08 | 19.94 | 6 | 3.000 | 4.000 | 2.500 | 3.500 | 6.00 | 9.00 | 7.00 | 10.00 |
| MM TRF28A60-P600-5T10 | 27.70 | 5 | 5.000 | 6.000 | 4.500 | 5.000 | 4.00 | 5.00 | 5.00 | 6.00 |
| MM TRF28A60-P500-6T10 | 27.70 | 6 | 3.000 | 5.000 | 2.500 | 4.500 | 6.00 | 8.00 | 6.00 | 10.00 |

| Designation | Dimensions | | | | | | IC908 |
|---|---|---|---|---|---|---|---|
| | CF | PDX | THSZMS | TDZ(10) | TQ | DMIN | |
| MM TRF12A60-P080-5T05 | 0.05 | 0.55 | T05 | M14 | 7.0 | 13.50 | ● |
| MM TRF12A60-P175-5T05 | 0.11 | 0.96 | T05 | M14 | 7.0 | 13.00 | ● |
| MM TRF12A60-P250-5T05 | 0.22 | 1.21 | T05 | M16 | 7.0 | 14.00 | ● |
| MM TRF16A60-P080-5T06 | 0.05 | 0.55 | T06 | M18 | 10.0 | 17.50 | ● |
| MM TRF16A60-P175-5T06 | 0.10 | 1.00 | T06 | M18 | 10.0 | 17.00 | ● |
| MM TRF16A60-P300-5T06 | 0.22 | 1.41 | T06 | M20 | 10.0 | 18.00 | ● |
| MM TRF20A60-P200-6T08 | 0.11 | 0.95 | T08 | M24 | 10.0 | 23.00 | ● |
| MM TRF20A60-P300-6T08 | 0.22 | 1.41 | T08 | M24 | 15.0 | 22.00 | ● |
| MM TRF20A60-P400-6T08 | 0.31 | 1.86 | T08 | M25 | 15.0 | 22.00 | ● |
| MM TRF28A60-P600-5T10 | 0.57 | 2.49 | T10 | M38 | 28.0 | 33.00 | ● |
| MM TRF28A60-P500-6T10 | 0.34 | 2.17 | T10 | M33 | 28.0 | 30.00 | ● |

• For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 101-111 • For clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection.

(1) Number of flutes
(2) Thread pitch minimum (mm)-internal
(3) Thread pitch maximum (mm)-internal
(4) Thread pitch minimum (mm)-external
(5) Thread pitch maximum (mm)-external
(6) Threads per inch minimum-internal
(7) Threads per inch maximum-internal
(8) Threads per inch minimum-external
(9) Threads per inch maximum-external
(10) Smallest possible thread

## Spare Parts

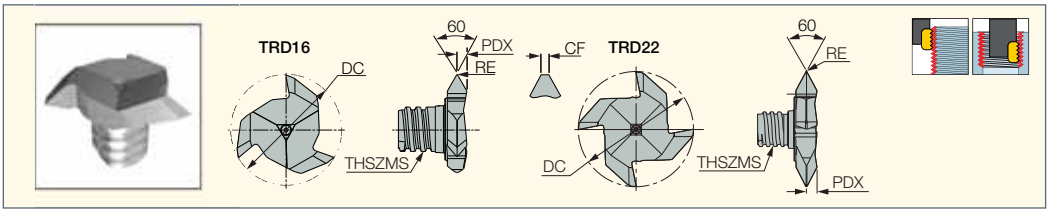
| Designation | |
|---|---|
| MM TRF12A60-P080-5T05 | BIT SOCKET T20 3/8" DRIVE* |
| MM TRF12A60-P175-5T05 | BIT SOCKET T20 3/8" DRIVE* |
| MM TRF12A60-P250-5T05 | BIT SOCKET T20 3/8" DRIVE* |
| MM TRF16A60-P080-5T06 | BIT SOCKET T20 3/8" DRIVE* |
| MM TRF16A60-P175-5T06 | BIT SOCKET T25 3/8" DRIVE* |
| MM TRF16A60-P300-5T06 | BIT SOCKET T25 3/8" DRIVE* |
| MM TRF20A60-P200-6T08 | BIT SOCKET T40 3/8" DRIVE* |
| MM TRF20A60-P300-6T08 | BIT SOCKET T40 3/8" DRIVE* |
| MM TRF20A60-P400-6T08 | BIT SOCKET T40 3/8" DRIVE* |
| MM TRF28A60-P600-5T10 | BIT SOCKET T40 3/8" DRIVE* |
| MM TRF28A60-P500-6T10 | BIT SOCKET T40 3/8" DRIVE* |

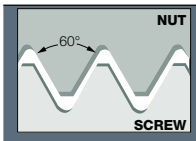
‘ Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

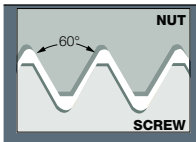
## MM TRD-M

Interchangeable Solid Carbide Milling Heads for 60° Partial Profile Thread Milling




| Designation | Dimensions DC | NOF(1) | TPN(2) | TPX(3) | TPN_DF2(4) | TPX_DF2(5) | TPIN(6) | TPIX(7) | TPIN_DF2(8) | TPIX_DF2(9) |
|---|---|---|---|---|---|---|---|---|---|---|
| MM TRD16-M60-05P-3T06 | 15.70 | 3 | 0.500 | 2.000 | 0.400 | 2.000 | 13.00 | 48.00 | 16.00 | 56.00 |
| MM TRD16-M60-15P-3T06 | 15.70 | 3 | 1.500 | 2.000 | 1.000 | 1.500 | 13.00 | 16.00 | 16.00 | 28.00 |
| MM TRD22-M60-30P-4T08 | 21.70 | 4 | 3.000 | 4.500 | 2.500 | 4.000 | 6.00 | 9.00 | 7.00 | 10.00 |




| Designation | Dimensions RE | CF | PDX | THSZMS | TDZ(10) | DMIN | Tough ↔ Hard IC528 | IC908 |
|---|---|---|---|---|---|---|---|---|
| MM TRD16-M60-05P-3T06 | - (11) | 0.05 | 1.4 | T06 | M20 | 19.05 | ● | ● |
| MM TRD16-M60-15P-3T06 | 0.05 | - | 1.4 | T06 | M22 | 19.05 | ● | ● |
| MM TRD22-M60-30P-4T08 | 0.20 | - | 2.4 | T08 | M36 | 31.00 | ● | ● |

• For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 101-111 • For clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • DIN13 , ISO 68-1, ISO 965 (1&2) - Internal tolerance: 6H, External tolerance: 6g • ANSI/ASME B1.1 - Internal tolerance: 2B, External tolerance: 2A

(1) Number of flutes
(2) Thread pitch minimum (mm)-internal
(3) Thread pitch maximum (mm)-internal
(4) Thread pitch minimum (mm)-external
(5) Thread pitch maximum (mm)-external
(6) Threads per inch minimum-internal
(7) Threads per inch maximum-internal
(8) Threads per inch minimum-external
(9) Threads per inch maximum-external
(10) Smallest possible thread
(11) Flat

### Spare Parts

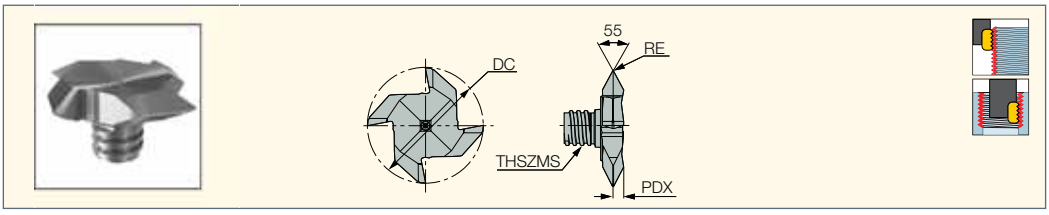
| Designation | | |
|---|---|---|
| MM TRD16-M60-05P-3T06 | MM EGR 16-18* | T-25/3* |
| MM TRD16-M60-15P-3T06 | MM EGR 16-18* | T-25/3* |
| MM TRD22-M60-30P-4T08 | MM EGR 20-22* | T-30/3 L* |

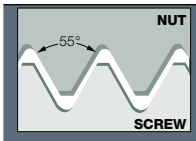
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM TRD-W

Interchangeable Solid Carbide Milling Heads for 55° Partial Profile Thread Milling




| Designation | Dimensions DC | NOF(1) | RE | PDX | TPIN(2) | TPIX(3) | TPIN_DF2(4) | TPIX_DF2(5) | THSZMS | TDZ(6) | DMIN | Standard | Tough ↔ Hard IC528 | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM TRD22-W55-14P-4T08 | 21.70 | 4 | 0.20 | 2.0 | 11.00 | 14.00 | 11.50 | 16.00 | T08 | G3/4 | 24.20 | DIN ISO 228, B.S. 84 | ● | ● |

• For shanks, see pages 101-111 • For clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • B.S.84 Internal & External tolerance: Medium class

(1) Number of flutes
(2) Threads per inch minimum-internal
(3) Threads per inch maximum-internal
(4) Threads per inch minimum-external
(5) Threads per inch maximum-external
(6) Thread diameter size

### Spare Parts

| Designation | | |
|---|---|---|
| MM TRD-W | T-30/3 L* | MM EGR 20-22* |

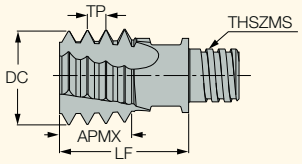
* Optional, to be ordered separately

## Identification Code

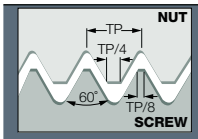
| MT | 10 | D | 6 | 0.75 | ISO | MMT/MMTT |
|---|---|---|---|---|---|---|
| MULTI-MASTER thread mill | cutting dia. | no. of flutes | cutting length | pitch | thread profile iso un G (55°) | connection size |

**MULTI-MASTER**
INDEXABLE SOLID CARBIDE LINE

**MT-ISO-MM**
Carbide Milling Heads with a Threaded Connection for Internal ISO Metric Thread



Application: General engineering




| Designation | Dimensions | | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TP(1) | M Coarse | M Fine | DC | NOF(2) | APMX | LF | THSZMS | | | | |
| MT10D7.5 0.5ISO-MMT05 | 0.500 | - | =>14 | 10.00 | 4 | 7.50 | 12.75 | T05 | MM KEY 6X4* | | | ● |
| MT 10D6 0.75ISO-MMT05 | 0.750 | - | =>12 | 10.00 | 4 | 6.00 | 12.75 | T05 | MM KEY 6X4* | | | ● |
| MT 10D6 1.0ISO-MMT05 | 1.000 | - | =>12 | 10.00 | 4 | 6.00 | 12.75 | T05 | MM KEY 6X4* | | | ● |
| MT 10D5 1.25ISO-MMT05 | 1.250 | - | =>14 | 10.00 | 4 | 5.00 | 12.75 | T05 | MM KEY 6X4* | | | ● |
| MT 10D6 1.5ISO-MMT05 | 1.500 | - | =>14 | 10.00 | 4 | 6.00 | 12.75 | T05 | MM KEY 6X4* | | | ● |
| MT 12D8 0.5ISO-MMT06 | 0.500 | - | =>16 | 12.00 | 4 | 8.00 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 12E8 0.75ISO-MMT06 | 0.750 | - | =>16 | 12.00 | 5 | 8.30 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 12E8 1.0ISO-MMT06 | 1.000 | - | =>16 | 12.00 | 5 | 8.00 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 12D8 1.25ISO-MMT06 | 1.250 | - | =>16 | 12.00 | 4 | 7.50 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 12D7 1.5ISO-MMT06 | 1.500 | - | =>16 | 12.00 | 4 | 7.60 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 12D7 1.75ISO-MMT06 | 1.750 | - | =>16 | 12.00 | 4 | 7.10 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT12D8 2.0ISO-MMT06 | 2.000 | M16 | =>17 | 12.00 | 4 | 8.00 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 16F12 1.0ISO-MMT08 | 1.000 | - | =>22 | 16.00 | 6 | 12.00 | 20.00 | T08 | MM KEY 10X7* | | | ● |
| MT 16F12 1.5ISO-MMT08 | 1.500 | - | =>20 | 16.00 | 6 | 12.00 | 20.00 | T08 | MM KEY 10X7* | | | ● |
| MT 16E12 2.0ISO-MMT08 | 2.000 | - | =>19 | 16.00 | 5 | 12.00 | 20.00 | T08 | MM KEY 10X7* | | | ● |
| MT15.4E13 2.5ISO-MMT08 | 2.500 | M20 | =>22 | 15.40 | 5 | 12.70 | 20.00 | T08 | MM KEY 10X7* | | | ● |
| MT 16C12 3.0ISO-MMT08 | 3.000 | M24 | =>25 | 16.00 | 3 | 12.10 | 20.00 | T08 | MM KEY 10X7* | | | ● |
| MT20F14 2.0ISO-MMTT10 | 2.000 | - | =>27 | 20.00 | 6 | 12.00 | 21.00 | T10 | | BIT SOCKET T30 3/8" DRIVE* | T-40/3 L* | ● |
| MT20D12 3.0ISO-MMTT10 | 3.000 | - | =>27 | 20.00 | 4 | 12.20 | 21.00 | T10 | | BIT SOCKET T40 3/8" DRIVE* | T-40/3 L* | ● |
| MT20D14 3.5ISO-MMTT10 | 3.500 | - | =>30 | 20.00 | 4 | 10.60 | 21.00 | T10 | | BIT SOCKET T40 3/8" DRIVE* | T-40/3 L* | ● |

• Note: Description and dimensions relate to the new products with clamping flats. • For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection

(1) Thread pitch

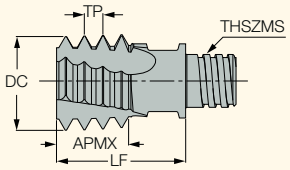
(2) Number of flutes

* Optional, to be ordered separately

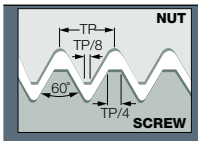
MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MT-UN-MM**

Carbide Milling Heads with a Threaded Connection for Internal UN Thread Profile



Application: General engineering




| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | UNC | UNF | UNEF | DC | NOF[2] | APMX | LF | THSZMS | TP[3] | |
| **MT 10D7 32UN-MMT05** | 32.0 | - | - | - | 10.00 | 4 | 6.40 | 12.75 | T05 | 0.794 | ● |
| **MT 10D6 28UN-MMT05** | 28.0 | - | - | 1/2 | 10.00 | 4 | 5.50 | 12.75 | T05 | 0.907 | ● |
| **MT 10D6 24UN-MMT05** | 24.0 | - | - | 9/16-5/8 | 10.00 | 4 | 5.30 | 12.75 | T05 | 1.058 | ● |
| **MT 10D6 20UN-MMT05** | 20.0 | - | 1/2 | - | 10.00 | 4 | 5.10 | 12.75 | T05 | 1.270 | ● |
| **MT 10D5 18UN-MMT05** | 18.0 | - | 9/16-5/8 | 1 1/8-1 5/8 | 10.00 | 4 | 5.60 | 12.75 | T05 | 1.411 | ● |
| **MT 10D7 16UN-MMT05** | 16.0 | - | 3/4 | - | 10.00 | 4 | 6.40 | 12.75 | T05 | 1.588 | ● |
| **MT 12D8 24UN-MMT06** | 24.0 | - | - | 5/8- 11/16 | 12.00 | 4 | 7.40 | 14.30 | T06 | 1.058 | ● |
| **MT 12D8 20UN-MMT06** | 20.0 | - | - | 3/4 - 1 | 12.00 | 4 | 7.70 | 14.30 | T06 | 1.270 | ● |
| **MT 12D8 18UN-MMT06** | 18.0 | - | 5/8 | =>1 11/16 | 12.00 | 4 | 7.10 | 14.30 | T06 | 1.411 | ● |
| **MT 12D8 16UN-MMT06** | 16.0 | - | 3/4 | - | 12.00 | 4 | 8.00 | 14.30 | T06 | 1.588 | ● |
| **MT 12D8 14UN-MMT06** | 14.0 | - | 7/8 | - | 12.00 | 4 | 7.30 | 14.30 | T06 | 1.814 | ● |
| **MT 16E11 18UN-MMT08** | 18.0 | - | 5/8 | =>1 11/16 | 16.00 | 5 | 11.30 | 20.00 | T08 | 1.411 | ● |
| **MT 16E13 14UN-MMT08** | 14.0 | - | 7/8 | - | 16.00 | 5 | 12.70 | 20.00 | T08 | 1.814 | ● |
| **MT 16E13 12UN-MMT08** | 12.0 | - | 1-1 1/2 | - | 16.00 | 5 | 12.70 | 20.00 | T08 | 2.117 | ● |
| **MT 15.3D13 10UN-MMT08** | 10.0 | 3/4 | - | - | 15.30 | 4 | 12.70 | 20.00 | T08 | 2.540 | ● |
| **MT 16C11 9UN-MMT08** | 9.0 | 7/8 | - | - | 16.00 | 3 | 11.30 | 20.00 | T08 | 2.822 | ● |
| **MT 16C13 8UN-MMT08** | 8.0 | 1.0 | - | - | 16.00 | 3 | 12.70 | 20.00 | T08 | 3.175 | ● |
| **MT20F13 12UN-MMTT10** | 12.0 | - | =>1 | - | 20.00 | 6 | 12.70 | 21.00 | T10 | 2.117 | ● |
| **MT20D13 8UN-MMTT10** | 8.0 | 1 | | - | 20.00 | 4 | 12.70 | 21.00 | T10 | 3.175 | ● |
| **MT20D15 7UN-MMTT10** | 7.0 | - | 1 1/8 - 1 1/4 | - | 20.00 | 4 | 10.90 | 21.00 | T10 | 3.629 | ● |

• Note: Description and dimensions relate to the new products with clamping flats • For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection

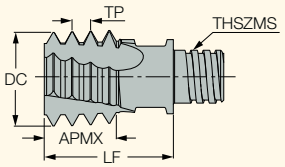
[1] Threads per inch

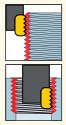
[2] Number of flutes

[3] Thread pitch

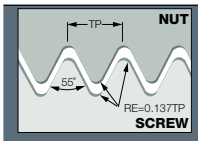
MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MT-W-MM**
Carbide Milling Heads with a Threaded Connection for Internal and External 55° BSW Thread Profile



Application: General engineering fittings and pipe couplings




| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | TDZ | DC | NOF[2] | APMX | LF | THSZMS | TP[3] | |
| MT 10D6 19W-MMT05 | 19.0 | G1/4-3/8 | 10.00 | 4 | 5.30 | 12.75 | T05 | 1.337 | ● |
| MT 16D13 14W-MMT08 | 14.0 | G1/2-7/8 | 16.00 | 4 | 12.70 | 20.00 | T08 | 1.814 | ● |
| MT 16D11 11W-MMT08 | 11.0 | G=>1 | 16.00 | 4 | 11.50 | 20.00 | T08 | 2.309 | ● |
| MT20F15 14W-MMTT10 | 14.0 | G3/4-7/8 | 20.00 | 6 | 12.70 | 21.00 | T10 | 1.814 | ● |
| MT20F14 11W-MMTT10 | 11.0 | G=>1 | 20.00 | 6 | 11.50 | 21.00 | T10 | 2.309 | ● |

• Note: Description and dimensions relate to the new products with clamping flats • For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection • B.S.84 Internal & External tolerance: Medium class

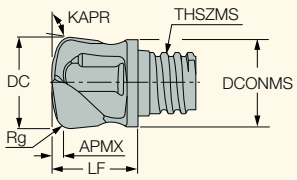
(1) Threads per inch
(2) Number of flutes
(3) Thread pitch

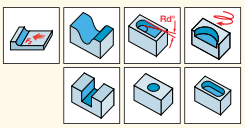
| Thread Size | Key[1] | Torque Wrench[1] | Wrench[1] | Tightening Torque (N×cm) |
|---|---|---|---|---|
| T05 | MM KEY 6x4 | TORQUE WRENCH 5-50Nm 9X12 | MM WRENCH 6-05 | 700 |
| T06 | MM KEY 8x5 | TORQUE WRENCH 5-50Nm 9X12 | MM WRENCH 8-06 | 1000 |
| T08 | MM KEY 10x7 | TORQUE WRENCH 5-50Nm 9X12 | MM WRENCH 10-08 | 1500 |
| T10 | MM KEY 13x8 | TORQUE WRENCH 5-50Nm 9X12 | MM WRENCH 13-10 | 2800 |

(1) Order separately

MULTI FEED MASTER

**MM FF**
Interchangeable 2 Flute FEED-MILL Solid Carbide Heads for Milling at Very Fast Feeds and Small D.O.C.



ECONOMICAL SOLUTION

| Designation | Dimensions | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | NOF[1] | APMX | Rg[2] | THSZMS | DCONMS | LF | KAPR[3] | RMPX°[4] | IC908 | IC903 | $f_z$ (mm/t) |
| MM FF100R1.5-L12-2T06 | 10.00 | 2 | 0.60 | 2.00 | T06 | 9.60 | 12.50 | 97.0 | 7.0 | ● | | 0.30-0.60 |
| MM FF120R2.0-2T08 | 12.00 | 2 | 0.68 | 2.50 | T08 | 11.50 | 11.10 | 97.0 | 7.0 | ● | ● | 0.50-1.00 |
| MM FF500R08-L59-2T08 | 12.70 | 2 | 0.68 | 2.50 | T08 | 11.50 | 15.00 | 95.0 | 7.0 | ● | | 0.50-1.00 |
| MM FF160R2.0-2T10 | 16.00 | 2 | 1.10 | 3.00 | T10 | 15.20 | 13.50 | 97.0 | 7.0 | ● | | 0.55-1.10 |
| MM FF200R2.0-2T12 | 20.00 | 2 | 1.50 | 3.40 | T12 | 18.45 | 17.40 | 95.0 | 7.0 | ● | | 0.75-1.50 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) Number of flutes
(2) Radius for programming
(3) Tool cutting edge angle
(4) Maximum ramping angle

### Machining Example:
**Shank:** MM S-B-L140-C16-T08
**Milling head:** MM FF 120R2.0-2T08
**Workpiece material:** SAE 4340 HRc 28

**Plunging**
$a_p$ = 2 mm
$V_c$ = 80 mm
F = 0.24 m/min

**Milling**
$a_p$ = 0.7 mm
$a_e$ = 8 mm
$V_c$ = 150 m/min
$F_z$ = 1 mm/tooth
$V_f$ = 7960 mm/min

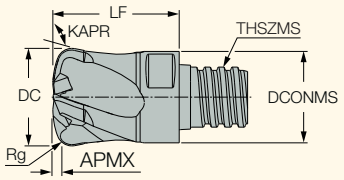
### Machining Example:
**Shank:** MM S-A-L070-W20-T10
**Milling head:** MM FF160R2.0-2T10 908
**Workpiece material:** P20 HRc 52

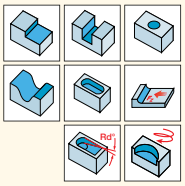
**Milling**
$a_p$ = 0.2 mm
$a_e$ = 6 mm
$V_c$ = 150 m/min
$F_z$ = 1.4 mm/tooth
$V_f$ = 8355
T = 60 min

MULTI FEED MASTER

**MM EFF**

4, 6 Flute Solid Carbide Heads for Milling at Very Fast Feeds and Small D.O.C.



| Designation | Dimensions DC | NOF[1] | APMX | THSZMS | DCONMS | LF | RMPX°[2] | KAPR[3] | Rg[4] | CSP[5] | Tough ↔ Hard IC908 | IC903 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM EFF080T3R1.62-4T05 | 8.00 | 4 | 0.40 | T05 | 7.50 | 10.00 | 5.0 | 97.0 | 1.62 | 0 | | • | 0.12-0.48 |
| MM EFF080S2R0.86-6T05 | 8.00 | 6 | 0.40 | T05 | 7.50 | 10.00 | 5.0 | 97.0 | 0.86 | 0 | | • | 0.12-0.48 |
| MM EFF100T4R2.01-4T06 | 10.00 | 4 | 0.50 | T06 | 9.50 | 13.00 | 5.0 | 97.0 | 2.01 | 0 | | • | 0.16-0.57 |
| MM EFF100S2R1.0-6T06 | 10.00 | 6 | 0.45 | T06 | 9.50 | 13.00 | 5.0 | 97.0 | 1.00 | 0 | | • | 0.16-0.57 |
| MM EFF100T2R1.0-6T06H | 10.00 | 6 | 0.45 | T06 | 9.50 | 10.00 | 3.0 | 97.0 | 1.00 | 1 | | • | 0.16-0.47 |
| MM EFF120T4R1.8-4T08H | 12.00 | 4 | 0.60 | T08 | 11.50 | 16.50 | 5.0 | 97.0 | 1.80 | 1 | • | • | 0.16-0.67 |
| MM EFF120T4R2.47-4T08 | 12.00 | 4 | 0.60 | T08 | 11.50 | 16.50 | 5.0 | 97.0 | 2.47 | 0 | | • | 0.16-0.67 |
| MM EFF120S3R1.2-6T08 | 12.00 | 6 | 0.65 | T08 | 11.50 | 16.50 | 5.0 | 97.0 | 1.20 | 0 | | • | 0.16-0.67 |
| MM EFF120T2R1.2-6T08H | 12.00 | 6 | 0.65 | T08 | 11.50 | 12.00 | 3.0 | 97.0 | 1.20 | 1 | | • | 0.16-0.54 |
| MM EFF127T4R2.59-4T08 | 12.70 | 4 | 0.60 | T08 | 12.20 | 16.50 | 5.0 | 97.0 | 2.59 | 0 | | • | 0.16-0.67 |
| MM EFF127S3R1.3-6T08 | 12.70 | 6 | 0.70 | T08 | 12.70 | 16.50 | 5.0 | 97.0 | 1.30 | 0 | | • | 0.16-0.67 |
| MM EFF127T4R1.3-6T08H | 12.70 | 6 | 0.70 | T08 | 12.20 | 12.70 | 3.0 | 97.0 | 1.30 | 1 | | • | 0.16-0.67 |
| MM EFF160T5R2.2-4T10H | 16.00 | 4 | 0.80 | T10 | 15.40 | 20.50 | 5.0 | 97.0 | 2.20 | 1 | • | | 0.20-0.75 |
| MM EFF160T5R3.25-4T10 | 16.00 | 4 | 0.80 | T10 | 15.40 | 20.50 | 5.0 | 97.0 | 3.25 | 0 | | • | 0.20-0.75 |
| MM EFF160S4R2.0-6T10 | 16.00 | 6 | 1.05 | T10 | 15.40 | 20.50 | 5.0 | 97.0 | 2.00 | 0 | | • | 0.20-0.75 |
| MM EFF160T4R2.0-6T10H | 16.00 | 6 | 1.05 | T10 | 15.40 | 16.00 | 3.0 | 97.0 | 2.00 | 1 | | • | 0.20-0.65 |
| MM EFF200T6R4.02-4T12 | 20.00 | 4 | 1.00 | T12 | 18.45 | 25.50 | 5.0 | 97.0 | 4.02 | 0 | | • | 0.20-0.90 |
| MM EFF200S5R2.2-6T12 | 20.00 | 6 | 1.25 | T12 | 18.45 | 25.50 | 5.0 | 97.0 | 2.20 | 0 | | • | 0.20-0.90 |
| MM EFF200T5R2.2-6T12H | 20.00 | 6 | 1.25 | T12 | 18.45 | 20.00 | 3.0 | 97.0 | 2.20 | 1 | | • | 0.20-0.80 |
| MM EFF250A7R3.1-6T15 | 25.00 | 6 | 1.20 | T15 | 23.90 | 25.00 | 5.0 | 97.0 | 3.10 | 0 | | • | 0.25-1.00 |
| MM EFF250S6R2.5-6T15 | 25.00 | 6 | 1.55 | T15 | 23.90 | 25.00 | 5.0 | 97.0 | 2.50 | 0 | | • | 0.25-1.00 |
| MM EFF254A7R3.1-6T15 | 25.40 | 6 | 1.20 | T15 | 23.90 | 25.00 | 5.0 | 97.0 | 3.10 | 0 | | • | 0.25-1.00 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection • Heads with coolant supply are recommended for shouldering operations • For user guide, see pages 59,211-218

(1) Number of flutes
(2) Maximum ramping angle
(3) Tool cutting edge angle
(4) Radius for programming
(5) 0 - Without coolant supply, 1 - With coolant supply

## MULTI-MASTER Machining Recommendations for MM EFF Heads

| VDI 3323 | Material Group[1] | $v_c$ (m/min) | $a_p$ | $a_e$ | $f_z$ (mm/t) vs. Tool Diameter (mm) 8 | 10 | 12 | 16 | 20 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 180 | 0.045xD | 0.7xD | 0.48 | 0.57 | 0.67 | 0.75 | 0.90 | 1.00 |
| | 2 | 160 | 0.045xD | 0.7xD | 0.48 | 0.57 | 0.67 | 0.75 | 0.90 | 1.00 |
| | 3 | 160 | 0.045xD | 0.7xD | 0.48 | 0.57 | 0.67 | 0.75 | 0.90 | 1.00 |
| | 4 | 160 | 0.045xD | 0.7xD | 0.48 | 0.57 | 0.67 | 0.75 | 0.90 | 1.00 |
| | 5 | 150 | 0.045xD | 0.7xD | 0.43 | 0.50 | 0.57 | 0.65 | 0.75 | 0.87 |
| | 6 | 150 | 0.045xD | 0.7xD | 0.33 | 0.40 | 0.48 | 0.57 | 0.67 | 0.78 |
| | 7 | 140 | 0.045xD | 0.7xD | 0.33 | 0.40 | 0.48 | 0.57 | 0.67 | 0.78 |
| | 8 | 140 | 0.045xD | 0.7xD | 0.30 | 0.35 | 0.43 | 0.52 | 0.60 | 0.70 |
| | 9 | 140 | 0.045xD | 0.7xD | 0.30 | 0.35 | 0.43 | 0.52 | 0.60 | 0.70 |
| | 10 | 130 | 0.04xD | 0.6xD | 0.28 | 0.33 | 0.38 | 0.48 | 0.57 | 0.67 |
| | 11 | 120 | 0.04xD | 0.6xD | 0.25 | 0.30 | 0.35 | 0.43 | 0.52 | 0.62 |
| | 12, 13 | 120 | 0.04xD | 0.6xD | 0.30 | 0.35 | 0.43 | 0.52 | 0.60 | 0.70 |
| K | 15-16 | 180 | APMX | 0.7xD | 0.45 | 0.52 | 0.60 | 0.70 | 0.80 | 0.90 |
| | 17-18 | 160 | APMX | 0.7xD | 0.38 | 0.45 | 0.52 | 0.60 | 0.70 | 0.80 |
| H | 38.1[2] | 100 | 0.035xD | 0.45xD | 0.20 | 0.25 | 0.33 | 0.40 | 0.48 | 0.55 |
| | 38.2[3] | 80 | 0.03xD | 0.3xD | 0.16 | 0.22 | 0.30 | 0.38 | 0.45 | 0.52 |
| | 39[4] | 60 | 0.02xD | 0.25xD | 0.12 | 0.16 | 0.16 | 0.20 | 0.20 | 0.25 |

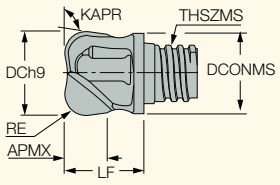
(1) ISCAR material group in accordance with VDI 3323 standard
(2) 45-49 HRC
(3) 50-55 HRC
(4) 56-63 HRC

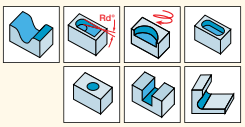
$a_p$ - maximum depth of cut
$a_e$ - maximum width of cut

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM HT

Torodial 2 Flute Interchangeable Solid Carbide Milling Heads



**ECONOMICAL SOLUTION**

| Designation | Dimensions | | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | NOF(1) | APMX | RE | Tm(2) | THSZMS | DCONMS | LF | KAPR(3) | IC908 | IC903 |
| MM HT100C08R0.5-2T06 | 10.00 | 2 | 7.00 | 0.50 | r0-1.0 | T06 | 9.50 | 12.45 | 95.0 | ● | |
| MM HT100C08R1.0-2T06 | 10.00 | 2 | 7.00 | 1.00 | r0-1.0 | T06 | 9.50 | 12.45 | 95.0 | ● | |
| MM HT100N06R2.0-2T06 | 10.00 | 2 | 6.00 | 2.00 | r0-3.0 | T06 | 9.50 | 12.40 | 97.0 | ● | |
| MM HT100N07R0.5-2T06 | 10.00 | 2 | 6.90 | 0.50 | r0-1.0 | T06 | 9.50 | 11.20 | 95.0 | | ● |
| MM HT100N07R1.0-2T06 | 10.00 | 2 | 6.90 | 1.00 | r0-1.0 | T06 | 9.50 | 11.20 | 95.0 | | ● |
| MM HT100N07R2.0-2T06 | 10.00 | 2 | 6.90 | 2.00 | r0-3.0 | T06 | 9.50 | 11.20 | 95.0 | | ● |
| MM HT100N07R3.0-2T06 | 10.00 | 2 | 6.90 | 3.00 | r2.7-4.0 | T06 | 9.50 | 11.20 | 95.0 | | ● |
| MM HT120N06R3.0-2T06 | 12.00 | 2 | 5.40 | 3.00 | r2.7-4.0 | T06 | 9.10 | 9.10 | 97.0 | ● | |
| MM HT120N06R4.0-2T06 | 12.00 | 2 | 5.10 | 4.00 | r2.7-4.0 | T06 | 11.50 | 9.10 | 97.0 | ● | |
| MM HT120N06R1.6-2T08 | 12.00 | 2 | 5.70 | 1.60 | r1.3-r2.7 | T08 | 11.50 | 11.10 | 97.0 | ● | ● |
| MM HT120N06R2.0-2T08 | 12.00 | 2 | 5.90 | 2.00 | r1.3-2.7 | T08 | 11.50 | 11.10 | 97.0 | ● | ● |
| MM HT120N06R2.5-2T08 | 12.00 | 2 | 5.50 | 2.50 | r1.3-4.0 | T08 | 11.50 | 11.10 | 97.0 | ● | |
| MM HT120N06R3.0-2T08 | 12.00 | 2 | 5.50 | 3.00 | r2.7-4.4 | T08 | 11.50 | 11.10 | 97.0 | ● | ● |
| MM HT120N06R4.0-2T08 | 12.00 | 2 | 5.60 | 4.00 | r2.7-4.4 | T08 | 11.50 | 11.10 | 97.0 | ● | |
| MM HT160N07R2.0-2T10 | 16.00 | 2 | 6.90 | 2.00 | r1.5-4.0 | T10 | 15.20 | 13.10 | 97.0 | ● | |
| MM HT160N07R3.0-2T10 | 16.00 | 2 | 7.20 | 3.00 | r1.5-4.0 | T10 | 15.20 | 13.40 | 97.0 | ● | |
| MM HT160N07R4.0-2T10 | 16.00 | 2 | 7.10 | 4.00 | r1.5-4.0 | T10 | 15.20 | 13.40 | 97.0 | ● | |
| MM HT160N08R5.0-2T10 | 16.00 | 2 | 8.00 | 5.00 | r2.7-4.4 | T10 | 15.20 | 20.20 | 97.0 | ● | ● |
| MM HT200N11R3.0-2T12 | 20.00 | 2 | 10.80 | 3.00 | r3.0-8.0 | T12 | 18.45 | 17.00 | 97.0 | ● | |
| MM HT200N11R4.0-2T12 | 20.00 | 2 | 11.10 | 4.00 | r3.0-8.0 | T12 | 18.45 | 17.30 | 97.0 | ● | |
| MM HT200N11R5.0-2T12 | 20.00 | 2 | 11.10 | 5.00 | r3.0-8.0 | T12 | 18.45 | 17.30 | 97.0 | ● | |
| MM HT200N11R6.0-2T12 | 20.00 | 2 | 11.00 | 6.00 | r3.0-8.0 | T12 | 18.45 | 17.30 | 97.0 | ● | |
| MM HT200N11R8.0-2T12 | 20.00 | 2 | 10.90 | 8.00 | r3.0-8.0 | T12 | 18.45 | 17.30 | 97.0 | ● | |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) Number of flutes

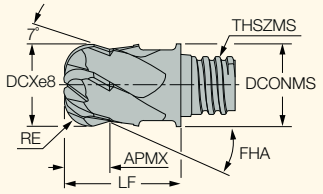
(2) Specially tailored radius range upon request

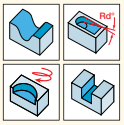
(3) Tool cutting edge angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM ETR

Torodial 6 Flute Interchangeable Solid Carbide Milling Heads



| Designation | Dimensions | | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DCX(1) | RE | NOF(2) | APMX | THSZMS | DCONMS | LF | FHA | RMPX°(3) | IC908 | IC903 |
| MM ETR080A4R05CF-6T05 | 8.00 | 0.50 | 6 | 4.00 | T05 | 7.70 | 10.00 | 30.0 | 9.0 | | ● |
| MM ETR080A4R10CF-6T05 | 8.00 | 1.00 | 6 | 4.00 | T05 | 7.70 | 10.00 | 30.0 | 9.0 | | ● |
| MM ETR080A04R2.0-6T05 | 8.00 | 2.00 | 6 | 5.00 | T05 | 7.70 | 10.00 | 30.0 | 9.0 | ● | |
| MM ETR100A5R05CF-6T06 | 10.00 | 0.50 | 6 | 5.00 | T06 | 9.60 | 13.00 | 30.0 | 9.0 | | ● |
| MM ETR100A5R10CF-6T06 | 10.00 | 1.00 | 6 | 5.00 | T06 | 9.60 | 13.00 | 30.0 | 9.0 | | ● |
| MM ETR100A05R3.0-6T06 | 10.00 | 3.00 | 6 | 7.00 | T06 | 9.60 | 13.00 | 30.0 | 9.0 | ● | |
| MM ETR120A7R05CF-6T08 | 12.00 | 0.50 | 6 | 7.00 | T08 | 12.00 | 17.00 | 30.0 | 9.0 | | ● |
| MM ETR120A7R10CF-6T08 | 12.00 | 1.00 | 6 | 7.00 | T08 | 11.70 | 16.50 | 30.0 | 9.0 | | ● |
| MM ETR120A07R4.0-6T08 | 12.00 | 4.00 | 6 | 9.00 | T08 | 11.70 | 16.50 | 30.0 | 9.0 | ● | |
| MM ETR160A09R5.0-6T10 | 16.00 | 5.00 | 6 | 12.00 | T10 | 15.30 | 20.50 | 30.0 | 9.0 | ● | |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) Cutting diameter maximum

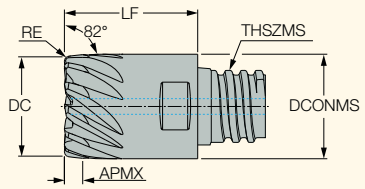
(2) Number of flutes

(3) Maximum ramping angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM ET**

Solid Carbide Tapered Heads with 20/30° Helix, Variable Pitch and Coolant Holes for CHATTER-FREE Finishing Operations




| Designation | Dimensions DC | RE | NOF(1) | APMX | THSZMS | DCONMS | LF | RMPX°(2) | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| MM ET11/8H4R10CF-8T08H | 11.00 | 1.00 | 8 | 3.50 | T08 | 12.00 | 16.50 | 3.0 | ● | 0.04-0.10 |
| MM ET15/8H4R10CF-12T10H | 15.00 | 1.00 | 12 | 3.50 | T10 | 16.00 | 20.50 | 3.0 | ● | 0.05-0.11 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

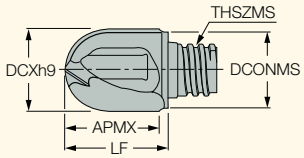
(1) Number of flutes

(2) Maximum ramping angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM HCR**

Interchangeable 2 Flute Solid Carbide Ball Nose Milling Heads




ECONOMICAL SOLUTION

| Designation | Dimensions DCX(1) | NOF(2) | APMX | THSZMS | DCONMS | LF | IC908 |
|---|---|---|---|---|---|---|---|
| MM HCR080-2T05 | 8.00 | 2 | 7.80 | T05 | 7.60 | 9.95 | ● |
| MM HCR100-2T06 | 10.00 | 2 | 10.00 | T06 | 9.50 | 12.35 | ● |
| MM HCR120-2T08 | 12.00 | 2 | 11.45 | T08 | 11.50 | 15.30 | ● |
| MM HCR160-2T10 | 16.00 | 2 | 15.80 | T10 | 15.20 | 19.10 | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

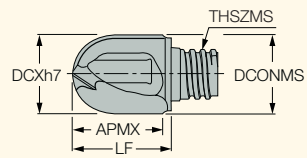
(1) Cutting diameter maximum

(2) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM HRF**

Interchangeable 2 Flute Solid Carbide Ball Nose Finishing Milling Heads




| Designation | Dimensions DCX(1) | NOF(2) | APMX | THSZMS | DCONMS | LF | Tough ↔ Hard IC908 | IC903 |
|---|---|---|---|---|---|---|---|---|
| MM HRF080-2T05 | 8.00 | 2 | 7.60 | T05 | 7.60 | 9.95 | | ● |
| MM HRF100-2T06 | 10.00 | 2 | 10.20 | T06 | 9.50 | 12.35 | ● | ● |
| MM HRF120-2T08 | 12.00 | 2 | 11.50 | T08 | 11.50 | 15.30 | | ● |
| MM HRF160-2T10 | 16.00 | 2 | 15.80 | T10 | 15.20 | 19.10 | | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

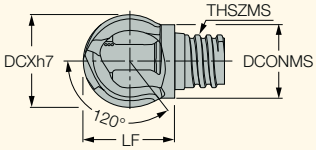
(1) Cutting diameter maximum

(2) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM HBR**

Interchangeable 2 Flute High Precision Ball Nose Solid Carbide Milling Heads




**ECONOMICAL SOLUTION**

| Designation | Dimensions DCX(1) | NOF(2) | THSZMS | DCONMS | LF | | IC908 |
|---|---|---|---|---|---|---|---|
| MM HBR080-2T04 | 8.00 | 2 | T04 | 5.80 | 8.22 | MM KEY 6X4* | ● |
| MM HBR100-2T05 | 10.00 | 2 | T05 | 7.60 | 10.00 | MM KEY 6X4* | ● |
| MM HBR120-2T06 | 12.00 | 2 | T06 | 9.50 | 11.60 | MM KEY 10X7* | ● |
| MM HBR160-2T08 | 16.00 | 2 | T08 | 12.20 | 15.40 | MM KEY 13X8* | ● |
| MM HBR200-2T10 | 20.00 | 2 | T10 | 15.20 | 18.40 | MM KEY 13X8* | ● |
| MM HBR250-2T12 | 25.00 | 2 | T12 | 18.30 | 23.20 | MM KEY 16X9* | ● |

• For shanks, see pages 101-111 • For tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection.
• For user guide, see pages 59,211-218

(1) Cutting diameter maximum

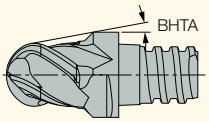
(2) Number of flutes

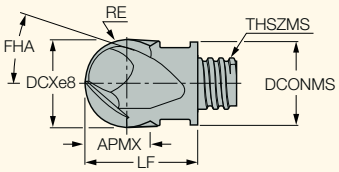
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EB**

Interchangeable Solid Carbide Ball Nose Milling Heads




| Designation | Dimensions DCX(2) | NOF(3) | APMX | RE | THSZMS | DCONMS | LF | FHA | BHTA | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| MM EB050E07-4T05 | 5.00 | 4 | 7.00 | 2.49 | T05 | 8.00 | 15.00 | 38.0 | 7.4 | ● |
| MM EB060E04-4T04 | 6.00 | 4 | 4.00 | 2.99 | T04 | 5.80 | 8.50 | 37.0 | - | ● |
| MM EB060E05-4T05 | 6.00 | 4 | 5.00 | 2.99 | T05 | 8.00 | 10.00 | 38.0 | 11.7 | ● |
| MM EB080A05-2T05 | 8.00 | 2 | 5.00 | 3.98 | T05 | 7.70 | 10.00 | 30.0 | - | ● |
| MM EB080A05-4T05 | 8.00 | 4 | 5.00 | 3.98 | T05 | 7.70 | 10.00 | 30.0 | - | ● |
| MM EB100A07-2T06 | 10.00 | 2 | 7.00 | 4.98 | T06 | 9.60 | 13.00 | 30.0 | - | ● |
| MM EB100A07-4T06 | 10.00 | 4 | 7.00 | 4.98 | T06 | 9.60 | 13.00 | 30.0 | - | ● |
| MM EB120A09-2T08 | 12.00 | 2 | 9.00 | 5.98 | T08 | 11.70 | 16.50 | 30.0 | - | ● |
| MM EB120H09CF-3T08I (1) | 12.00 | 3 | 9.00 | 5.98 | T08 | 11.70 | 16.50 | 38.0 | - | ● |
| MM EB120A09-4T08 | 12.00 | 4 | 9.00 | 5.98 | T08 | 11.70 | 16.50 | 30.0 | - | ● |
| MM EB160A09-2T10 | 16.00 | 2 | 9.00 | 7.98 | T10 | 15.30 | 20.50 | 30.0 | - | ● |
| MM EB160A12-4T10 | 16.00 | 4 | 12.00 | 7.98 | T10 | 15.30 | 20.50 | 30.0 | - | ● |
| MM EB200A15-4T12 | 20.00 | 4 | 15.00 | 9.97 | T12 | 18.45 | 25.50 | 30.0 | - | ● |
| MM EB250A22-4T15 | 25.00 | 4 | 22.00 | 12.47 | T15 | 23.90 | 37.00 | 30.0 | - | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) With coolant holes directed to each flute

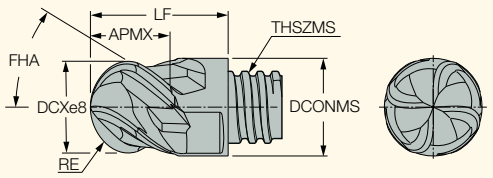
(2) Cutting diameter maximum

(3) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EBC**

Interchangeable Solid Carbide Ball Nose Milling Heads for High Productivity on Hard Materials




| Designation | Dimensions | | | | | | | | | IC903 |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCX(1) | NOF(2) | APMX | RE | THSZMS | DCONMS | LF | FHA | | |
| MM EBC080B05-4T05CF | 8.00 | 4 | 5.40 | 3.98 | T05 | 7.70 | 10.00 | 45.0 | MM KEY 6X4* | ● |
| MM EBC100B07-4T06CF | 10.00 | 4 | 7.40 | 4.98 | T06 | 9.60 | 13.00 | 45.0 | MM KEY 8X5* | ● |
| MM EBC120B09-4T08CF | 12.00 | 4 | 9.30 | 5.98 | T08 | 11.70 | 16.50 | 45.0 | MM KEY 10X7* | ● |
| MM EBC160B12-4T10CF | 16.00 | 4 | 12.40 | 7.98 | T10 | 15.30 | 20.50 | 45.0 | MM KEY 13X8* | ● |
| MM EBC200B15-4T12CF | 20.00 | 4 | 16.00 | 9.97 | T12 | 18.45 | 25.50 | 45.0 | | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) Cutting diameter maximum

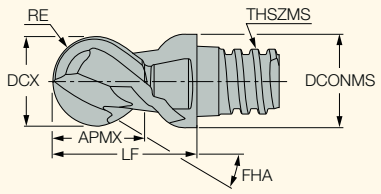
(2) Number of flutes

* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EBA-2**

Interchangeable 2 Flute High Precision Solid Carbide Ball Nose Heads for Machining Aluminum




ALUMINUM

| Designation | Dimensions | | | | | | | | | IC08 |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCX(1) | NOF(2) | APMX | RE | RETOL(3) | THSZMS | DCONMS | LF | FHA | |
| MM EBA080B05-2T05 | 8.00 | 2 | 5.00 | 3.98 | 0.010 | T05 | 7.70 | 10.00 | 45.0 | ● |
| MM EBA100B07-2T06 | 10.00 | 2 | 7.00 | 4.98 | 0.010 | T06 | 9.60 | 13.00 | 45.0 | ● |
| MM EBA120B09-2T08 | 12.00 | 2 | 9.00 | 5.98 | 0.012 | T08 | 11.50 | 16.50 | 45.0 | ● |
| MM EBA160B12-2T10 | 16.00 | 2 | 12.00 | 7.98 | 0.012 | T10 | 15.30 | 20.50 | 45.0 | ● |
| MM EBA200B15-2T12 | 20.00 | 2 | 15.00 | 9.97 | 0.012 | T12 | 18.45 | 25.50 | 45.0 | ● |
| MM EBA250B22-2T15 | 25.00 | 2 | 22.00 | 12.50 | 0.012 | T15 | 23.90 | 37.00 | 45.0 | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) Cutting diameter maximum

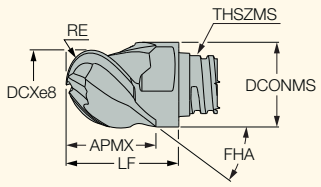
(2) Number of flutes

(3) Corner radius tolerance (+/-)

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EBA-3**

Interchangeable 3 Flute High Precision Solid Carbide Ball Nose Heads for Machining Aluminum




ALUMINUM

| Designation | Dimensions DCX(1) | NOF(2) | APMX | RE | RETOL(3) | THSZMS | DCONMS | LF | FHA | IC08 |
|---|---|---|---|---|---|---|---|---|---|---|
| MM EBA080H05-3T05 | 8.00 | 3 | 5.50 | 3.98 | 0.010 | T05 | 7.70 | 10.00 | 45.0 | ● |
| MM EBA100H07-3T06 | 10.00 | 3 | 7.50 | 4.98 | 0.010 | T06 | 9.60 | 13.00 | 45.0 | ● |
| MM EBA120H09-3T08 | 12.00 | 3 | 9.50 | 5.98 | 0.012 | T08 | 11.70 | 16.50 | 45.0 | ● |
| MM EBA160H12-3T10 | 16.00 | 3 | 12.70 | 7.98 | 0.012 | T10 | 15.30 | 20.50 | 45.0 | ● |
| MM EBA200H15-3T12 | 20.00 | 3 | 15.60 | 9.97 | 0.012 | T12 | 18.25 | 25.50 | 45.0 | ● |
| MM EBA250H22-3T15 | 25.00 | 3 | 22.60 | 12.47 | 0.015 | T15 | 23.80 | 37.00 | 45.0 | ● |

New

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) Cutting diameter maximum

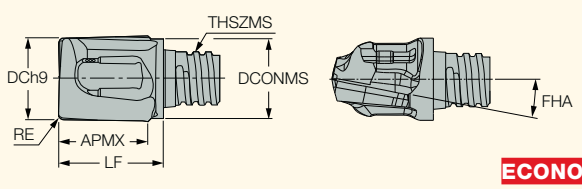
(2) Number of flutes

(3) Corner radius tolerance (+/-)

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM HC**

Interchangeable Solid Carbide Slot Drill Milling Heads with Two 10° Helix Flutes




ECONOMICAL SOLUTION

| Designation | Dimensions DC | NOF(1) | APMX | RE | Tm(2) | THSZMS | DCONMS | LF | FHA | Tough ↔ Hard IC908 | IC903 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM HC078C08R0.2-2T05 | 7.80 | 2 | 7.70 | 0.20 | r0-2.0 | T05 | 7.60 | 10.00 | 10.0 | ● | | 0.03-0.09 |
| MM HC080C08R0.4-2T05 | 8.00 | 2 | 7.70 | 0.40 | r0-2.0 | T05 | 7.60 | 10.00 | 10.0 | ● | ● | 0.03-0.09 |
| MM HC080C08R1.0-2T05 | 8.00 | 2 | 7.70 | 1.00 | r0-2.0 | T05 | 7.60 | 10.00 | 10.0 | ● | ● | 0.03-0.09 |
| MM HC080C08R2.0-2T05 | 8.00 | 2 | 7.70 | 2.00 | r0-2.0 | T05 | 7.60 | 10.00 | 10.0 | ● | ● | 0.03-0.09 |
| MM HC098C10R0.3-2T06 | 9.80 | 2 | 9.00 | 0.30 | r0-3.0 | T06 | 9.50 | 12.35 | 10.0 | ● | | 0.03-0.10 |
| MM HC100C10R0.4-2T06 | 10.00 | 2 | 9.00 | 0.40 | r0-3.0 | T06 | 9.50 | 12.35 | 10.0 | ● | ● | 0.03-0.10 |
| MM HC100C10R1.0-2T06 | 10.00 | 2 | 9.00 | 1.00 | r0-3.0 | T06 | 9.50 | 12.35 | 10.0 | ● | ● | 0.03-0.10 |
| MM HC100C10R2.0-2T06 | 10.00 | 2 | 9.00 | 2.00 | r0-3.0 | T06 | 9.50 | 12.35 | 10.0 | ● | ● | 0.03-0.10 |
| MM HC117C13R0.3-2T08 | 11.70 | 2 | 10.00 | 0.30 | r0-3.0 | T08 | 11.50 | 14.20 | 10.0 | ● | | 0.04-0.11 |
| MM HC120C13R0.4-2T08 | 12.00 | 2 | 10.00 | 0.40 | r0-3.0 | T08 | 11.50 | 14.20 | 10.0 | ● | ● | 0.04-0.11 |
| MM HC120C13R1.0-2T08 | 12.00 | 2 | 10.00 | 1.00 | r0-3.0 | T08 | 11.50 | 14.20 | 10.0 | ● | ● | 0.04-0.11 |
| MM HC120C13R2.0-2T08 | 12.00 | 2 | 10.00 | 2.00 | r0-3.0 | T08 | 11.50 | 14.20 | 10.0 | ● | ● | 0.04-0.11 |
| MM HC140C11R0.4-2T08 | 14.00 | 2 | 11.60 | 0.40 | r0-4.0 | T08 | 11.50 | 15.05 | 10.0 | ● | | 0.04-0.12 |
| MM HC157C16R0.3-2T10 | 15.70 | 2 | 15.00 | 0.30 | r0-4.0 | T10 | 15.20 | 19.05 | 10.0 | ● | | 0.05-0.13 |
| MM HC160C16R0.4-2T10 | 16.00 | 2 | 14.90 | 0.40 | r0-4.0 | T10 | 15.20 | 19.05 | 10.0 | ● | ● | 0.05-0.13 |
| MM HC160C16R0.8-2T10 | 16.00 | 2 | 14.90 | 0.80 | r0-4.0 | T10 | 15.15 | 19.05 | 10.0 | ● | ● | 0.05-0.13 |

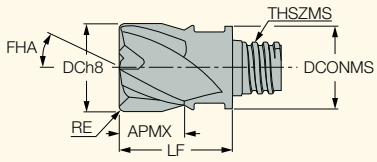
• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

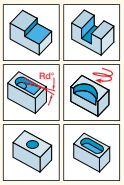
(1) Number of flutes

(2) Specially tailored radius range, available upon request.

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM ECU**
Interchangeable 3 Flute
Undersized Solid Carbide Heads
for Keyways (DIN 6885)



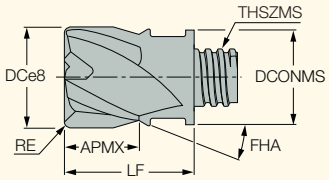
| Designation | Dimensions DC | NOF[1] | APMX | RE | THSZMS | DCONMS | LF | FHA | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| MM ECU077E04R020-3T05 | 7.70 | 3 | 4.00 | 0.20 | T05 | 7.70 | 10.00 | 38.0 | ● | 0.03-0.08 |
| MM ECU097E05R030-3T06 | 9.70 | 3 | 5.00 | 0.30 | T06 | 9.60 | 13.00 | 38.0 | ● | 0.03-0.09 |
| MM ECU117E07R030-3T08 | 11.70 | 3 | 7.00 | 0.30 | T08 | 11.50 | 16.50 | 38.0 | ● | 0.03-0.10 |
| MM ECU157E08R030-3T10 | 15.70 | 3 | 8.00 | 0.30 | T10 | 15.30 | 20.50 | 38.0 | ● | 0.04-0.12 |
| MM ECU197E12R040-3T12 | 19.70 | 3 | 12.00 | 0.40 | T12 | 18.45 | 25.50 | 38.0 | ● | 0.05-0.13 |

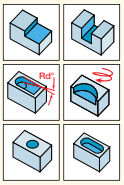
• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EC-3**
Interchangeable 3 Flute
Solid Carbide Endmill
Heads with 45° Helix



| Designation | Dimensions DC | NOF[2] | APMX | RE | THSZMS | LF | FHA | DCONMS | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| MM EC080B05R0.4-3T05 | 8.00 | 3 | 5.00 | 0.40 | T05 | 10.00 | 45.0 | 7.70 | ● | 0.03-0.09 |
| MM EC080B05R000-3T05 | 8.00 | 3 | 5.00 | 0.00 | T05 | 10.00 | 45.0 | 7.70 | ● | 0.03-0.09 |
| MM EC100B07R000-3T06 | 10.00 | 3 | 7.00 | 0.00 | T06 | 13.00 | 45.0 | 9.60 | ● | 0.03-0.10 |
| MM EC100B12R000-3T06 | 10.00 | 3 | 12.00 | 0.00 | T06 | 19.00 | 45.0 | 9.60 | ● | 0.03-0.10 |
| MM EC120B09R000-3T08I [1] | 12.00 | 3 | 9.00 | 0.00 | T08 | 16.50 | 45.0 | 11.70 | ● | 0.04-0.11 |
| MM EC120B09R000-3T08 | 12.00 | 3 | 9.00 | 0.00 | T08 | 16.50 | 45.0 | 11.70 | ● | 0.04-0.11 |

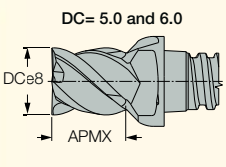
• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see page 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

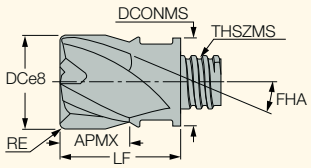
(1) With coolant holes directed to each flute

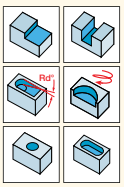
(2) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EC-4**
Interchangeable 4 Flute Solid Carbide Endmill Heads with 30°, 45° Helix and Various Corner Radii



| Designation | Dimensions DC | RE | FHA | NOF[1] | APMX | THSZMS | DCONMS | LF | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| MM EC050B07R000-4T05 | 5.00 | 0.00 | 45.0 | 4 | 7.00 | T05 | 8.00 | 15.00 | ● | 0.02-0.06 |
| MM EC060B05R000-4T05 | 6.00 | 0.00 | 45.0 | 4 | 5.00 | T05 | 8.00 | 10.00 | ● | 0.03-0.07 |
| MM EC060B04R0.5-4T04 | 6.00 | 0.50 | 45.0 | 4 | 4.00 | T04 | 5.80 | 8.50 | ● | 0.02-0.04 |
| MM EC080B05R000-4T05 | 8.00 | 0.00 | 45.0 | 4 | 5.00 | T05 | 7.70 | 10.00 | ● | 0.03-0.09 |
| MM EC080B09R000-4T05 | 8.00 | 0.00 | 45.0 | 4 | 9.00 | T05 | 7.70 | 15.00 | ● | 0.03-0.09 |
| MM EC080A05R0.5-4T05 | 8.00 | 0.50 | 30.0 | 4 | 5.00 | T05 | 7.70 | 10.00 | ● | 0.03-0.09 |
| MM EC080A09R0.5-4T05 | 8.00 | 0.50 | 30.0 | 4 | 9.00 | T05 | 7.70 | 15.00 | ● | 0.03-0.09 |
| MM EC080B05R0.5-4T05 | 8.00 | 0.50 | 45.0 | 4 | 5.00 | T05 | 7.70 | 10.00 | ● | 0.03-0.09 |
| MM EC080A05R1.0-4T05 | 8.00 | 1.00 | 30.0 | 4 | 5.00 | T05 | 7.70 | 10.00 | ● | 0.03-0.09 |
| MM EC080B05R1.0-4T05 | 8.00 | 1.00 | 45.0 | 4 | 5.00 | T05 | 7.70 | 10.00 | ● | 0.03-0.09 |
| MM EC080A05R1.5-4T05 | 8.00 | 1.50 | 30.0 | 4 | 5.00 | T05 | 7.70 | 10.00 | ● | 0.03-0.09 |
| MM EC080B05R1.5-4T05 | 8.00 | 1.50 | 45.0 | 4 | 5.00 | T05 | 7.70 | 10.00 | ● | 0.03-0.09 |
| MM EC100B07R000-4T06 | 10.00 | 0.00 | 45.0 | 4 | 7.00 | T06 | 9.60 | 13.00 | ● | 0.03-0.10 |
| MM EC100B12R000-4T06 | 10.00 | 0.00 | 45.0 | 4 | 12.00 | T06 | 9.60 | 19.00 | ● | 0.03-0.10 |
| MM EC100A07R0.5-4T06 | 10.00 | 0.50 | 30.0 | 4 | 7.00 | T06 | 9.60 | 13.00 | ● | 0.03-0.10 |
| MM EC100B07R0.5-4T06 | 10.00 | 0.50 | 45.0 | 4 | 7.00 | T06 | 9.60 | 13.00 | ● | 0.03-0.10 |
| MM EC100A07R1.0-4T06 | 10.00 | 1.00 | 30.0 | 4 | 7.00 | T06 | 9.60 | 13.00 | ● | 0.03-0.10 |
| MM EC100B07R1.0-4T06 | 10.00 | 1.00 | 45.0 | 4 | 7.00 | T06 | 9.60 | 13.00 | ● | 0.03-0.10 |
| MM EC120B09R000-4T08 | 12.00 | 0.00 | 45.0 | 4 | 9.00 | T08 | 11.70 | 16.50 | ● | 0.04-0.11 |
| MM EC120B14R000-4T08 | 12.00 | 0.00 | 45.0 | 4 | 14.00 | T08 | 11.70 | 23.00 | ● | 0.04-0.11 |
| MM EC120A09R0.5-4T08 | 12.00 | 0.50 | 30.0 | 4 | 9.00 | T08 | 11.70 | 16.50 | ● | 0.04-0.11 |
| MM EC120B09R0.5-4T08 | 12.00 | 0.50 | 45.0 | 4 | 9.00 | T08 | 11.70 | 16.50 | ● | 0.04-0.11 |
| MM EC120A09R1.0-4T08 | 12.00 | 1.00 | 30.0 | 4 | 9.00 | T08 | 11.70 | 16.50 | ● | 0.04-0.11 |
| MM EC120B09R1.0-4T08 | 12.00 | 1.00 | 45.0 | 4 | 9.00 | T08 | 11.70 | 16.50 | ● | 0.04-0.11 |
| MM EC160B12R000-4T10 | 16.00 | 0.00 | 45.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160A12R0.5-4T10 | 16.00 | 0.50 | 30.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160B12R0.5-4T10 | 16.00 | 0.50 | 45.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160A12R1.0-4T10 | 16.00 | 1.00 | 30.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160B12R1.0-4T10 | 16.00 | 1.00 | 45.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160A12R1.5-4T10 | 16.00 | 1.50 | 30.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160B12R1.5-4T10 | 16.00 | 1.50 | 45.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160A12R2.0-4T10 | 16.00 | 2.00 | 30.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160B12R2.0-4T10 | 16.00 | 2.00 | 45.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160A12R3.0-4T10 | 16.00 | 3.00 | 30.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160B12R3.0-4T10 | 16.00 | 3.00 | 45.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160A12R4.0-4T10 | 16.00 | 4.00 | 30.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC160B12R4.0-4T10 | 16.00 | 4.00 | 45.0 | 4 | 12.00 | T10 | 15.30 | 20.50 | ● | 0.05-0.13 |
| MM EC200B15R000-4T12 | 20.00 | 0.00 | 45.0 | 4 | 15.00 | T12 | 18.45 | 25.50 | ● | 0.05-0.13 |
| MM EC200A15R0.5-4T12 | 20.00 | 0.50 | 30.0 | 4 | 15.00 | T12 | 18.45 | 25.50 | ● | 0.05-0.13 |
| MM EC200A15R1.0-4T12 | 20.00 | 1.00 | 30.0 | 4 | 15.00 | T12 | 18.45 | 25.50 | ● | 0.05-0.13 |
| MM EC200A15R2.0-4T12 | 20.00 | 2.00 | 30.0 | 4 | 15.00 | T12 | 18.45 | 25.50 | ● | 0.05-0.13 |
| MM EC200A15R3.0-4T12 | 20.00 | 3.00 | 30.0 | 4 | 15.00 | T12 | 18.45 | 25.50 | ● | 0.05-0.13 |

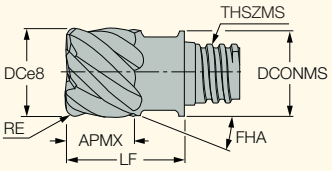
• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

[1] Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM EC-6

Interchangeable 6 Flute Solid Carbide Endmill Heads with 30°, 45° Helix and Corners with Different Radius




| Designation | Dimensions DC | NOF(1) | APMX | RE | THSZMS | DCONMS | LF | FHA | RMPX°(2) | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM EC080A05R0.5-6T05 | 8.00 | 6 | 5.00 | 0.50 | T05 | 7.70 | 10.00 | 30.0 | 6.0 | • | 0.03-0.09 |
| MM EC080A05R1.0-6T05 | 8.00 | 6 | 5.00 | 1.00 | T05 | 7.70 | 10.00 | 30.0 | 6.0 | • | 0.03-0.09 |
| MM EC080A05R1.5-6T05 | 8.00 | 6 | 5.00 | 1.50 | T05 | 7.70 | 10.00 | 30.0 | 6.0 | • | 0.03-0.09 |
| MM EC080B05R0.5-6T05 | 8.00 | 6 | 5.00 | 0.50 | T05 | 7.70 | 10.00 | 45.0 | 3.0 | • | 0.03-0.10 |
| MM EC080B05R1.0-6T05 | 8.00 | 6 | 5.00 | 1.00 | T05 | 7.70 | 10.00 | 45.0 | 3.0 | • | 0.03-0.09 |
| MM EC080B05R1.5-6T05 | 8.00 | 6 | 5.00 | 1.50 | T05 | 7.70 | 10.00 | 45.0 | 3.0 | • | 0.03-0.09 |
| MM EC100A07R0.5-6T06 | 10.00 | 6 | 7.00 | 0.50 | T06 | 9.60 | 13.00 | 30.0 | 6.0 | • | 0.03-0.10 |
| MM EC100A07R1.0-6T06 | 10.00 | 6 | 7.00 | 1.00 | T06 | 9.60 | 13.00 | 30.0 | 6.0 | • | 0.03-0.10 |
| MM EC100A07R1.5-6T06 | 10.00 | 6 | 7.00 | 1.50 | T06 | 9.60 | 13.00 | 30.0 | 6.0 | • | 0.03-0.10 |
| MM EC100B07R0.5-6T06 | 10.00 | 6 | 7.00 | 0.50 | T06 | 9.60 | 13.00 | 45.0 | 3.0 | • | 0.04-0.10 |
| MM EC100B07R000-6T06 | 10.00 | 6 | 7.00 | 0.00 | T06 | 9.60 | 13.00 | 45.0 | 3.0 | • | 0.03-0.10 |
| MM EC100B07R1.0-6T06 | 10.00 | 6 | 7.00 | 1.00 | T06 | 9.60 | 13.00 | 45.0 | 3.0 | • | 0.04-0.10 |
| MM EC100B07R1.5-6T06 | 10.00 | 6 | 7.00 | 1.50 | T06 | 9.60 | 13.00 | 45.0 | 3.0 | • | 0.03-0.10 |
| MM EC100B12R1.5-6T06 | 10.00 | 6 | 12.00 | 1.50 | T06 | 9.60 | 19.00 | 45.0 | 3.0 | • | 0.04-0.10 |
| MM EC120A09R0.5-6T08 | 12.00 | 6 | 9.00 | 0.50 | T08 | 11.70 | 16.50 | 30.0 | 6.0 | • | 0.04-0.11 |
| MM EC120A09R1.0-6T08 | 12.00 | 6 | 9.00 | 1.00 | T08 | 11.70 | 16.50 | 30.0 | 6.0 | • | 0.04-0.11 |
| MM EC120B09R0.5-6T08 | 12.00 | 6 | 9.00 | 0.50 | T08 | 11.70 | 16.50 | 45.0 | 3.0 | • | 0.04-0.10 |
| MM EC120B09R000-6T08 | 12.00 | 6 | 9.00 | 0.00 | T08 | 11.70 | 16.50 | 45.0 | 3.0 | • | 0.04-0.11 |
| MM EC120B09R1.0-6T08 | 12.00 | 6 | 9.00 | 1.00 | T08 | 11.70 | 16.50 | 45.0 | 3.0 | • | 0.04-0.10 |
| MM EC120B09R1.5-6T08 | 12.00 | 6 | 9.00 | 1.50 | T08 | 11.70 | 16.50 | 45.0 | 3.0 | • | 0.04-0.11 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

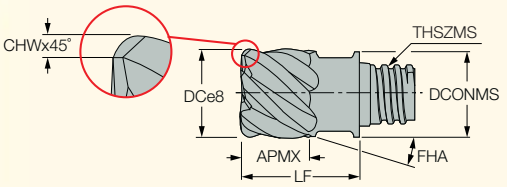
(1) Number of flutes

(2) Maximum ramping angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM EC-D

Interchangeable 6, 8, 10 Flute Solid Carbide Endmill Heads with 50° Helix for Machining Hardened Steel




| Designation | Dimensions DC | NOF(1) | APMX | CHW | KCH | THSZMS | DCONMS | LF | FHA | RMPX°(2) | IC903 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM EC080D05C01-6T05 | 8.00 | 6 | 5.00 | 0.10 | 45.0 | T05 | 7.70 | 10.00 | 50.0 | 2.0 | • | 0.03-0.10 |
| MM EC100D07C01-6T06 | 10.00 | 6 | 7.00 | 0.10 | 45.0 | T06 | 9.60 | 13.00 | 50.0 | 2.0 | • | 0.03-0.10 |
| MM EC120D09C01-6T08 | 12.00 | 6 | 9.00 | 0.10 | 45.0 | T08 | 11.70 | 16.50 | 50.0 | 3.0 | • | 0.04-0.11 |
| MM EC160D12C02-8T10 | 16.00 | 8 | 12.00 | 0.20 | 45.0 | T10 | 15.30 | 20.50 | 50.0 | 3.0 | • | 0.05-0.13 |
| MM EC200D15C02-10T12 | 20.00 | 10 | 15.00 | 0.20 | 45.0 | T12 | 18.45 | 25.50 | 50.0 | 3.0 | • | 0.05-0.13 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

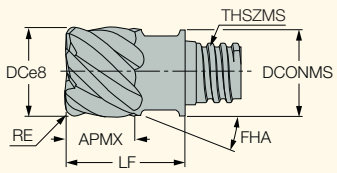
(1) Number of flutes

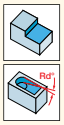
(2) Maximum ramping angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EC-8/10**

Interchangeable 8, 10 Flute Solid Carbide Endmill Heads with 30°, 45° Helix and Corners with Different Radius



| Designation | Dimensions DC | NOF(2) | APMX | RE | THSZMS | DCONMS | LF | FHA | RMPX°(3) | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM EC160A12R0.5-8T10 | 16.00 | 8 | 12.00 | 0.50 | T10 | 15.30 | 20.50 | 30.0 | 5.0 | ● | 0.05-0.13 |
| MM EC160A12R0.5-8T10H (1) | 16.00 | 8 | 12.00 | 0.50 | T10 | 15.30 | 20.50 | 30.0 | 5.0 | ● | 0.05-0.13 |
| MM EC160A12R1.0-8T10 | 16.00 | 8 | 12.00 | 1.00 | T10 | 15.30 | 20.50 | 30.0 | 5.0 | ● | 0.05-0.13 |
| MM EC160A12R1.6-8T10 | 16.00 | 8 | 12.00 | 1.60 | T10 | 15.30 | 20.50 | 30.0 | 5.0 | ● | 0.05-0.13 |
| MM EC160A12R2.0-8T10 | 16.00 | 8 | 12.00 | 2.00 | T10 | 15.30 | 20.50 | 30.0 | 5.0 | ● | 0.05-0.13 |
| MM EC160B12R0.5-8T10 | 16.00 | 8 | 12.00 | 0.50 | T10 | 15.30 | 20.50 | 45.0 | 5.0 | ● | 0.05-0.13 |
| MM EC160B12R1.0-8T10 | 16.00 | 8 | 12.00 | 1.00 | T10 | 15.30 | 20.50 | 45.0 | 5.0 | ● | 0.05-0.13 |
| MM EC160B12R1.6-8T10 | 16.00 | 8 | 12.00 | 1.60 | T10 | 15.30 | 20.50 | 45.0 | 5.0 | ● | 0.05-0.13 |
| MM EC160B12R2.0-8T10 | 16.00 | 8 | 12.00 | 2.00 | T10 | 15.30 | 20.50 | 45.0 | 5.0 | ● | 0.05-0.13 |
| MM EC200A15R1.0-10T12 | 20.00 | 10 | 15.00 | 1.00 | T12 | 18.45 | 25.50 | 30.0 | 3.0 | ● | 0.05-0.13 |
| MM EC200A15R2.0-10T12 | 20.00 | 10 | 15.00 | 2.00 | T12 | 18.45 | 25.50 | 30.0 | 3.0 | ● | 0.05-0.13 |
| MM EC250A22R0.8-10T15 | 25.00 | 10 | 22.00 | 0.80 | T15 | 23.90 | 37.00 | 30.0 | 3.0 | ● | 0.05-0.13 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) With a central coolant hole

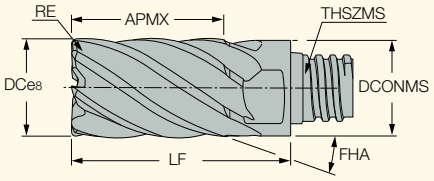
(2) Number of flutes

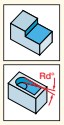
(3) Maximum ramping angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EC-CF-Z7/9-1.5xD**

Interchangeable 7, 9 Flute Solid Carbide Endmill Heads with 36° Helix and 1.5xD Flute Lengths



| Designation | Dimensions DC | APMX | RE | NOF(1) | THSZMS | DCONMS | LF | FHA | RMPX°(2) | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM EC080H12R05CF-7T05 | 8.00 | 12.00 | 0.50 | 7 | T05 | 7.70 | 18.00 | 36.0 | 3.0 | ● | 0.03-0.10 |
| MM EC100H15R05CF-7T06 | 10.00 | 15.00 | 0.50 | 7 | T06 | 9.60 | 22.00 | 36.0 | 3.0 | ● | 0.04-0.10 |
| MM EC120H18R05CF-7T08 | 12.00 | 18.00 | 0.50 | 7 | T08 | 11.70 | 27.00 | 36.0 | 3.0 | ● | 0.04-0.10 |
| MM EC160H24R08CF-9T10 | 16.00 | 24.00 | 0.80 | 9 | T10 | 15.30 | 33.50 | 36.0 | 1.0 | ● | 0.05-0.10 |
| MM EC200H30R10CF-9T12 | 20.00 | 30.00 | 1.00 | 9 | T12 | 18.45 | 41.00 | 36.0 | 1.0 | ● | 0.05-0.10 |
| MM EC250H37R10CF-9T15 | 25.00 | 37.00 | 1.00 | 9 | T15 | 23.90 | 52.50 | 36.0 | 1.0 | ● | 0.05-0.10 |

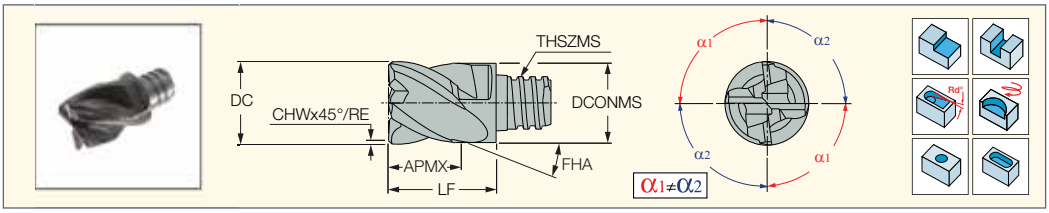
• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection • For user guide, see pages 59,211-218

(1) Number of flutes

(2) Maximum ramping angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EC-CF**
Interchangeable Solid Carbide Endmill Heads for CHATTER-FREE Roughing and Finishing Operations




| Designation | Dimensions DC | RE | NOF(2) | APMX | THSZMS | DCONMS | LF | FHA | CHW | KCH | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM EC080E05C3CF-4T05 | 8.00 | - | 4 | 5.00 | T05 | 7.70 | 10.00 | 38.0 | 0.30 | 45.0 | ● | 0.03-0.09 |
| MM EC080E05R0CF-4T05 | 8.00 | - | 4 | 5.00 | T05 | 7.70 | 10.00 | 38.0 | - | - | ● | 0.03-0.09 |
| MM EC080E05R05CF-4T05 | 8.00 | 0.50 | 4 | 5.00 | T05 | 7.70 | 10.00 | 38.0 | - | - | ● | 0.03-0.09 |
| MM EC100E07C4CF-4T06 | 10.00 | - | 4 | 7.00 | T06 | 9.60 | 13.00 | 38.0 | 0.40 | 45.0 | ● | 0.03-0.10 |
| MM EC100E07R00CF-4T06 | 10.00 | - | 4 | 7.00 | T06 | 9.60 | 13.00 | 38.0 | - | - | ● | 0.03-0.10 |
| MM EC100E07R02CF-4T06 | 10.00 | 0.20 | 4 | 7.00 | T06 | 9.60 | 13.00 | 38.0 | - | - | ● | 0.03-0.10 |
| MM EC100E07R04CF-4T06 | 10.00 | 0.40 | 4 | 7.00 | T06 | 9.60 | 13.00 | 38.0 | - | - | ● | 0.03-0.10 |
| MM EC100E07R05CF-4T06 | 10.00 | 0.50 | 4 | 7.00 | T06 | 9.60 | 13.00 | 38.0 | - | - | ● | 0.03-0.10 |
| MM EC100E07R25CF-4T06 | 10.00 | 2.50 | 4 | 7.00 | T06 | 9.60 | 13.00 | 38.0 | - | - | ● | 0.03-0.10 |
| MM EC120E09C5CF-4T08 | 12.00 | - | 4 | 9.00 | T08 | 11.70 | 16.50 | 38.0 | 0.50 | 45.0 | ● | 0.04-0.11 |
| MM EC120E09C5CF-4T08I (1) | 12.00 | - | 4 | 9.00 | T08 | 11.70 | 16.50 | 38.0 | 0.50 | 45.0 | ● | 0.04-0.11 |
| MM EC120E09R00CF-4T08 | 12.00 | - | 4 | 9.00 | T08 | 11.70 | 16.50 | 38.0 | - | - | ● | 0.04-0.11 |
| MM EC120E09R02CF-4T08 | 12.00 | 0.20 | 4 | 9.00 | T08 | 11.70 | 16.50 | 38.0 | - | - | ● | 0.04-0.11 |
| MM EC120E09R04CF-4T08 | 12.00 | 0.40 | 4 | 9.00 | T08 | 11.70 | 16.50 | 38.0 | - | - | ● | 0.04-0.11 |
| MM EC120E09R05CF-4T08 | 12.00 | 0.50 | 4 | 9.00 | T08 | 11.70 | 16.50 | 38.0 | - | - | ● | 0.04-0.11 |
| MM EC120E09R15CF-4T08 | 12.00 | 1.50 | 4 | 9.00 | T08 | 11.70 | 16.50 | 38.0 | - | - | ● | 0.04-0.11 |
| MM EC160E12C6CF-4T10 | 16.00 | - | 4 | 12.00 | T10 | 15.30 | 20.50 | 38.0 | 0.60 | 45.0 | ● | 0.05-0.13 |
| MM EC160E12R05CF-4T10 | 16.00 | 0.50 | 4 | 12.00 | T10 | 15.30 | 20.50 | 38.0 | - | - | ● | 0.05-0.13 |
| MM EC200E15C6CF-4T12 | 20.00 | - | 4 | 15.00 | T12 | 18.45 | 25.50 | 38.0 | 0.60 | 45.0 | ● | 0.05-0.17 |
| MM EC200E15R05CF-4T12 | 20.00 | 0.50 | 4 | 15.00 | T12 | 18.45 | 25.50 | 38.0 | - | - | ● | 0.05-0.17 |
| MM EC250E28C6CF-12T15 | 25.00 | - | 12 | 28.00 | T15 | 23.90 | 43.00 | 38.0 | 0.60 | 45.0 | ● | 0.06-0.13 |
| MM EC250E28C6CF-4T15 | 25.00 | - | 4 | 28.00 | T15 | 23.90 | 43.00 | 38.0 | 0.60 | 45.0 | ● | 0.06-0.17 |
| MM EC250E22C6CF-4T15 | 25.00 | - | 4 | 22.00 | T15 | 23.90 | 37.00 | 38.0 | 0.60 | 45.0 | ● | 0.06-0.17 |
| MM EC250E22R05CF-4T15 | 25.00 | 0.50 | 4 | 22.00 | T15 | 23.90 | 37.00 | 38.0 | - | - | ● | 0.06-0.17 |
| MM EC250E22R10CF-4T15 | 25.00 | 1.00 | 4 | 22.00 | T15 | 23.90 | 37.00 | 38.0 | - | - | ● | 0.06-0.17 |
| MM EC250E22R20CF-4T15 | 25.00 | 2.00 | 4 | 22.00 | T15 | 23.90 | 37.00 | 38.0 | - | - | ● | 0.06-0.17 |
| MM EC250E22R30CF-4T15 | 25.00 | 3.00 | 4 | 22.00 | T15 | 23.90 | 37.00 | 38.0 | - | - | ● | 0.06-0.17 |
| MM EC320H38C06-4T21 | 32.00 | - | 4 | 38.00 | T21 | 30.00 | 55.00 | 38.0 | 0.60 | 45.0 | ● | 0.06-0.18 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

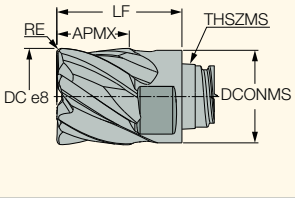
(1) With coolant holes directed to each flute

(2) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM ECK-CF**

5,6 Flute Solid Carbide Heads with 35°/38° Helix Featuring Different Corner Radii For Machining Titanium Alloys




| Designation | Dimensions DC | RE | NOF(1) | APMX | THSZMS | DCONMS | LF | RMPX°(2) | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| MM ECK080H05R04-6T05CF | 8.00 | 0.40 | 6 | 5.00 | T05 | 7.70 | 10.00 | 5.0 | ● | 0.04-0.08 |
| MM ECK100H07R05-6T06CF | 10.00 | 0.50 | 6 | 7.00 | T06 | 9.60 | 13.00 | 5.0 | ● | 0.04-0.08 |
| MM ECK120H09R05-6T08CF | 12.00 | 0.50 | 6 | 9.00 | T08 | 11.70 | 16.50 | 5.0 | ● | 0.04-0.08 |
| MM ECK160H12R08-6T10CF | 16.00 | 0.80 | 6 | 12.00 | T10 | 15.30 | 20.50 | 5.0 | ● | 0.07-0.12 |
| MM ECK160H12R30-6T10CF | 16.00 | 3.00 | 6 | 12.00 | T10 | 15.30 | 20.50 | 5.0 | ● | 0.07-0.12 |
| MM ECK160H12R40-6T10CF | 16.00 | 4.00 | 6 | 12.00 | T10 | 15.30 | 20.50 | 5.0 | ● | 0.07-0.12 |
| MM ECK200H15R10-6T12CF | 20.00 | 1.00 | 6 | 15.00 | T12 | 18.45 | 25.50 | 5.0 | ● | 0.07-0.12 |
| MM ECK200H15R30-6T12CF | 20.00 | 3.00 | 6 | 15.00 | T12 | 18.45 | 25.50 | 5.0 | ● | 0.07-0.12 |
| MM ECK200H15R40-6T12CF | 20.00 | 4.00 | 6 | 15.00 | T12 | 18.45 | 25.50 | 5.0 | ● | 0.07-0.12 |
| MM ECK250H22R10-6T15CF | 25.00 | 1.00 | 6 | 22.00 | T15 | 23.90 | 37.00 | 5.0 | ● | 0.07-0.12 |
| MM ECK250H22R30-6T15CF | 25.00 | 3.00 | 6 | 22.00 | T15 | 23.90 | 37.00 | 5.0 | ● | 0.07-0.12 |
| MM ECK250H22R40-6T15CF | 25.00 | 4.00 | 6 | 22.00 | T15 | 23.90 | 37.00 | 5.0 | ● | 0.07-0.12 |
| MM ECK320H38R4-5T21 | 32.00 | 4.00 | 5 | 38.00 | T21 | 30.00 | 55.00 | 1.0 | ● | 0.06-0.18 |
| MM ECK320H38R5-5T21 | 32.00 | 5.00 | 5 | 38.00 | T21 | 30.00 | 55.00 | 1.0 | ● | 0.06-0.18 |

• For shanks, see pages 101-111 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages111-112
• Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

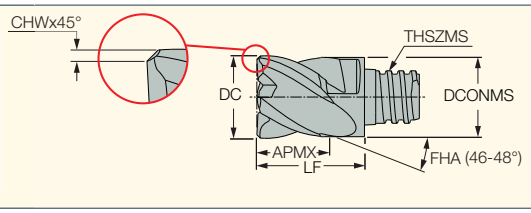
(1) Number of flutes

(2) Maximum ramping angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EC-H-4-CF**

Interchangeable Carbide Endmill Heads for CHATTER-FREE Milling Alloyed Steel




| Designation | Dimensions DC | NOF(1) | APMX | THSZMS | DCONMS | LF | CHW | KCH | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| MM EC080H05C3-4T05CF | 8.00 | 4 | 5.00 | T05 | 7.70 | 10.00 | 0.30 | 45.0 | ● | 0.03-0.09 |
| MM EC100H07C4-4T06CF | 10.00 | 4 | 7.00 | T06 | 9.60 | 13.00 | 0.40 | 45.0 | ● | 0.03-0.10 |
| MM EC120H09C5-4T08CF | 12.00 | 4 | 9.00 | T08 | 11.70 | 16.50 | 0.50 | 45.0 | ● | 0.04-0.11 |
| MM EC160H12C6-4T10CF | 16.00 | 4 | 12.00 | T10 | 15.30 | 20.50 | 0.60 | 45.0 | ● | 0.05-0.13 |
| MM EC200H15C6-4T12CF | 20.00 | 4 | 15.00 | T12 | 18.45 | 25.50 | 0.60 | 45.0 | ● | 0.05-0.17 |

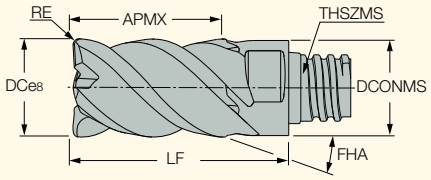
• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EC-Z4-1.5xD**

Interchangeable Solid Carbide Endmill Heads with 1.5xD Flute Lengths for Roughing and Finishing




| Designation | Dimensions DC | NOF(1) | APMX | RE | THSZMS | DCONMS | LF | FHA | Tough ↔ Hard IC908 | IC608 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM EC080B12R000-4T05 | 8.00 | 4 | 12.00 | 0.00 | T05 | 7.70 | 18.00 | 46.5 | | ● | 0.03-0.09 |
| MM EC080H12R05CF-4T05 | 8.00 | 4 | 12.00 | 0.50 | T05 | 7.70 | 18.00 | 46.5 | ● | | 0.03-0.09 |
| MM EC100B15R000-4T06 | 10.00 | 4 | 15.00 | 0.00 | T06 | 9.60 | 22.00 | 46.5 | | ● | 0.03-0.10 |
| MM EC100H15R05CF-4T06 | 10.00 | 4 | 15.00 | 0.50 | T06 | 9.60 | 22.00 | 46.5 | ● | | 0.03-0.10 |
| MM EC120B18R000-4T08 | 12.00 | 4 | 18.00 | 0.00 | T08 | 11.70 | 27.00 | 46.5 | | ● | 0.04-0.11 |
| MM EC120H18R05CF-4T08 | 12.00 | 4 | 18.00 | 0.50 | T08 | 11.70 | 27.00 | 46.5 | ● | | 0.04-0.11 |
| MM EC160B24R000-4T10 | 16.00 | 4 | 24.00 | 0.00 | T10 | 15.30 | 33.50 | 46.5 | | ● | 0.05-0.13 |
| MM EC160H24R05CF-4T10 | 16.00 | 4 | 24.00 | 0.50 | T10 | 15.30 | 33.50 | 46.5 | ● | | 0.05-0.13 |
| MM EC200B30R000-4T12 | 20.00 | 4 | 30.00 | 0.00 | T12 | 18.45 | 41.00 | 46.5 | | ● | 0.05-0.17 |
| MM EC200H30R05CF-4T12 | 20.00 | 4 | 30.00 | 0.50 | T12 | 18.45 | 41.00 | 46.5 | ● | | 0.05-0.17 |
| MM EC250B37R000-4T15 | 25.00 | 4 | 37.00 | 0.00 | T15 | 23.90 | 52.50 | 46.5 | | ● | 0.06-0.17 |
| MM EC250H37R05CF-4T15 | 25.00 | 4 | 37.00 | 0.50 | T15 | 23.90 | 52.50 | 46.5 | ● | | 0.06-0.17 |

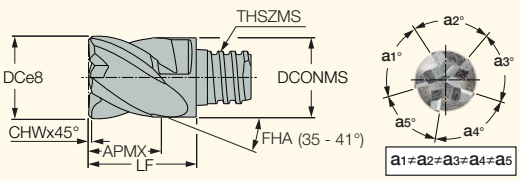
• For shanks, see pages 101-111 • Do not apply lubricant to the threaded connection • For user guide, see pages 59,211-218

(1) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EC-H-5-CF**

Interchangeable Carbide Endmill Heads for CHATTER-FREE Milling of High Temperature Alloys Such as Titanium and Inconel




| Designation | Dimensions DC | NOF(1) | APMX | THSZMS | DCONMS | LF | RMPX°(2) | CHW | KCH | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM EC080H05C3-5T05CF | 8.00 | 5 | 5.00 | T05 | 7.70 | 10.00 | 5.0 | 0.30 | 45.0 | ● | 0.03-0.09 |
| MM EC100H07C4-5T06CF | 10.00 | 5 | 7.00 | T06 | 9.60 | 13.00 | 5.0 | 0.40 | 45.0 | ● | 0.03-0.10 |
| MM EC120H09C5-5T08CF | 12.00 | 5 | 9.00 | T08 | 11.70 | 16.50 | 4.0 | 0.50 | 45.0 | ● | 0.04-0.11 |
| MM EC160H12C6-5T10CF | 16.00 | 5 | 12.00 | T10 | 15.30 | 20.50 | 4.0 | 0.60 | 45.0 | ● | 0.05-0.13 |
| MM EC200H15C6-5T12CF | 20.00 | 5 | 15.00 | T12 | 18.45 | 25.50 | 3.0 | 0.60 | 45.0 | ● | 0.05-0.17 |
| MM EC250H22C6-5T15CF | 25.00 | 5 | 22.00 | T15 | 23.90 | 37.00 | 3.0 | 0.60 | 45.0 | ● | 0.06-0.17 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

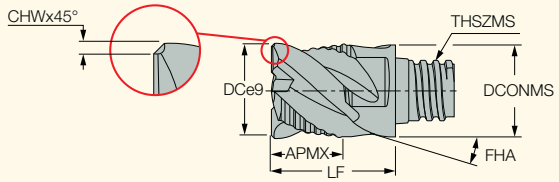
(1) Number of flutes

(2) Maximum ramping angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EFS**

Combination of Interchangeable Solid Carbide Endmill Heads for Roughing and Finishing



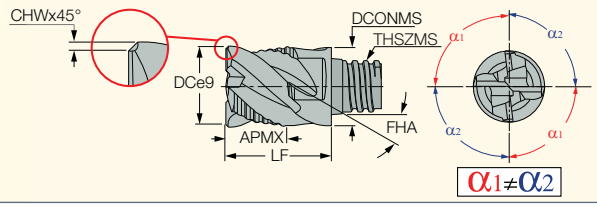

| Designation | Dimensions DC | NOF(1) | APMX | THSZMS | DCONMS | LF | FHA | CHW | KCH | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM EFS080B05-4T05 | 8.00 | 4 | 5.00 | T05 | 7.70 | 10.00 | 45.0 | 0.30 | 45.0 | ● | 0.03-0.08 |
| MM EFS100B07-4T06 | 10.00 | 4 | 7.00 | T06 | 9.60 | 13.00 | 45.0 | 0.30 | 45.0 | ● | 0.03-0.09 |
| MM EFS120B09-4T08 | 12.00 | 4 | 9.00 | T08 | 11.70 | 16.50 | 45.0 | 0.40 | 45.0 | ● | 0.04-0.10 |
| MM EFS160B12-4T10 | 16.00 | 4 | 12.00 | T10 | 15.30 | 20.50 | 45.0 | 0.60 | 45.0 | ● | 0.05-0.11 |
| MM EFS200B15-4T12 | 20.00 | 4 | 15.00 | T12 | 18.45 | 25.50 | 45.0 | 0.60 | 45.0 | ● | 0.05-0.11 |
| MM EFS250B22-4T15 | 25.00 | 4 | 22.00 | T15 | 23.90 | 37.00 | 45.0 | 0.60 | 45.0 | ● | 0.06-0.11 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112
• Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218
(1) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EFS-CF**

4 Flute Solid Carbide Heads with 38° Helix and Variable Pitch for CHATTER-FREE Roughing and Finishing Applications



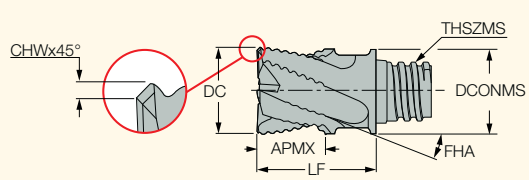

| Designation | Dimensions DC | NOF(1) | APMX | CHW | KCH | THSZMS | DCONMS | LF | FHA | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM EFS060E05-4T05 CF | 6.00 | 4 | 5.00 | 0.25 | 45.0 | T05 | 7.70 | 10.00 | 38.0 | ● | 0.03-0.08 |
| MM EFS080E05-4T05 CF | 8.00 | 4 | 5.00 | 0.30 | 45.0 | T05 | 7.70 | 10.00 | 38.0 | ● | 0.03-0.08 |
| MM EFS100E07-4T06 CF | 10.00 | 4 | 7.00 | 0.40 | 45.0 | T06 | 9.60 | 13.00 | 38.0 | ● | 0.03-0.09 |
| MM EFS120E09-4T08 CF | 12.00 | 4 | 9.00 | 0.50 | 45.0 | T08 | 11.70 | 16.50 | 38.0 | ● | 0.04-0.10 |
| MM EFS160E12-4T10 CF | 16.00 | 4 | 12.00 | 0.60 | 45.0 | T10 | 15.30 | 20.50 | 38.0 | ● | 0.05-0.11 |
| MM EFS200E15-4T12 CF | 20.00 | 4 | 16.00 | 0.60 | 45.0 | T12 | 18.45 | 25.50 | 38.0 | ● | 0.05-0.11 |
| MM EFS250E22-4T15 CF | 25.00 | 4 | 22.00 | 0.60 | 45.0 | T15 | 23.90 | 37.00 | 38.0 | ● | 0.06-0.11 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218
(1) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM ERS

Interchangeable Solid Carbide Rough Milling Heads for High Metal Removal Rates




| Designation | Dimensions DC | NOF[3] | APMX | THSZMS | DCONMS | LF | FHA | RMPX°[4] | CHW | KCH | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM ERS080B05-4T05 | 8.00 | 4 | 5.00 | T05 | 7.70 | 10.00 | 45.0 | 5.0 | 0.25 | 45.0 | ● | 0.03-0.08 |
| MM ERS080B09-4T05 | 8.00 | 4 | 9.00 | T05 | 7.70 | 15.00 | 45.0 | 5.0 | 0.25 | 45.0 | ● | 0.03-0.08 |
| MM ERS100B07-4T06 | 10.00 | 4 | 7.00 | T06 | 9.60 | 13.00 | 45.0 | 5.0 | 0.30 | 45.0 | ● | 0.03-0.09 |
| MM ERS120B09-4T08 | 12.00 | 4 | 9.00 | T08 | 11.70 | 16.50 | 45.0 | 5.0 | 0.35 | 45.0 | ● | 0.04-0.10 |
| MM ERS120B09-4T08H [1] | 12.00 | 4 | 9.00 | T08 | 11.70 | 16.50 | 45.0 | 5.0 | 0.35 | 45.0 | ● | 0.04-0.10 |
| MM ERS120B09-4T08I [2] | 12.00 | 4 | 9.00 | T08 | 11.70 | 16.50 | 45.0 | 5.0 | 0.35 | 45.0 | ● | 0.04-0.11 |
| MM ERS120B14-4T08 | 12.00 | 4 | 14.00 | T08 | 11.70 | 23.00 | 45.0 | 5.0 | 0.35 | 45.0 | ● | 0.04-0.10 |
| MM ERS160B12-5T10 | 16.00 | 5 | 12.00 | T10 | 15.30 | 20.50 | 45.0 | 5.0 | 0.40 | 45.0 | ● | 0.04-0.10 |
| MM ERS160B12-5T10H [1] | 16.00 | 5 | 12.00 | T10 | 15.30 | 20.50 | 45.0 | 5.0 | 0.40 | 45.0 | ● | 0.04-0.10 |
| MM ERS200B15-6T12 | 20.00 | 6 | 15.00 | T12 | 18.45 | 25.50 | 45.0 | 3.0 | 0.40 | 45.0 | ● | 0.05-0.11 |
| MM ERS250B22-6T15 | 25.00 | 6 | 22.00 | T15 | 23.90 | 37.00 | 45.0 | 3.0 | 0.50 | 45.0 | ● | 0.05-0.11 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

[1] With a central coolant hole

[2] With coolant holes directed to each flute

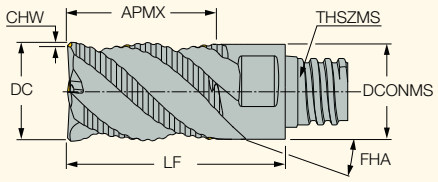
[3] Number of flutes

[4] Maximum ramping angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM ERS-1.5xD

Interchangeable Solid Carbide Rough Milling Heads with 1.5xD Flute Lengths for High Metal Removal Rates




| Designation | Dimensions DC | NOF[1] | APMX | CHW | KCH | THSZMS | DCONMS | LF | FHA | RMPX°[2] | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM ERS080B12-4T05 | 8.00 | 4 | 12.00 | 0.25 | 45.0 | T05 | 7.70 | 18.00 | 46.0 | 5.0 | ● | 0.03-0.08 |
| MM ERS100B15-4T06 | 10.00 | 4 | 15.00 | 0.30 | 45.0 | T06 | 9.60 | 22.00 | 46.0 | 5.0 | ● | 0.03-0.09 |
| MM ERS120B18-4T08 | 12.00 | 4 | 18.00 | 0.35 | 45.0 | T08 | 11.70 | 27.00 | 46.0 | 5.0 | ● | 0.04-0.10 |
| MM ERS160B24-5T10 | 16.00 | 5 | 24.00 | 0.40 | 45.0 | T10 | 15.30 | 33.50 | 40.0 | 5.0 | ● | 0.04-0.10 |
| MM ERS200B30-6T12 | 20.00 | 6 | 30.00 | 0.40 | 45.0 | T12 | 18.45 | 41.00 | 47.0 | 3.0 | ● | 0.05-0.11 |
| MM ERS250B37-6T15 | 25.00 | 6 | 37.00 | 0.50 | 45.0 | T15 | 23.90 | 52.50 | 47.0 | 3.0 | ● | 0.05-0.11 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection • For user guide, see pages 59,211-218

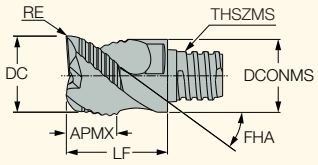
[1] Number of flutes

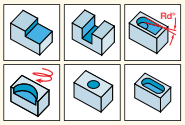
[2] Maximum ramping angle

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM ERA**

Interchangeable Solid Carbide Rough Milling Heads for Machining Aluminum at High Metal Removal Rates



ALUMINUM

| Designation | Dimensions DC | NOF(1) | APMX | RE | THSZMS | DCONMS | LF | FHA | IC08 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| MM ERA080B05R0.2-3T05 | 8.00 | 3 | 5.00 | 0.20 | T05 | 7.70 | 10.00 | 45.0 | ● | 0.03-0.15 |
| MM ERA100B06R0.2-3T06 | 10.00 | 3 | 6.00 | 0.20 | T06 | 9.60 | 13.00 | 45.0 | ● | 0.05-0.20 |
| MM ERA120B08R0.2-3T08 | 12.00 | 3 | 8.00 | 0.20 | T08 | 11.70 | 16.50 | 45.0 | ● | 0.07-0.22 |
| MM ERA160B10R0.2-3T10 | 16.00 | 3 | 10.00 | 0.20 | T10 | 15.30 | 20.50 | 45.0 | ● | 0.07-0.25 |
| MM ERA200B12R0.2-3T12 | 20.00 | 3 | 12.00 | 0.20 | T12 | 18.45 | 25.50 | 45.0 | ● | 0.07-0.25 |
| MM ERA250B19R0.2-3T15 | 25.00 | 3 | 19.00 | 0.20 | T15 | 23.90 | 37.00 | 45.0 | ● | 0.07-0.25 |

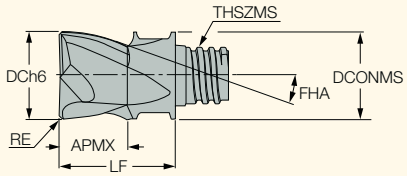
• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

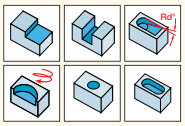
(1) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EA**

Interchangeable Solid Carbide Slot Drill Milling Heads for Machining Aluminum



ALUMINUM

| Designation | Dimensions DC | NOF(1) | APMX | RE | THSZMS | DCONMS | LF | FHA | IC08 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| MM EA060B03R0.0-3T04 | 6.00 | 3 | 3.20 | 0.00 | T04 | 5.80 | 8.50 | 45.0 | ● | 0.02-0.05 |
| MM EA080B05R0.5-2T05 | 8.00 | 2 | 5.00 | 0.50 | T05 | 7.70 | 10.00 | 45.0 | ● | 0.03-0.09 |
| MM EA080B05R0.5-3T05 | 8.00 | 3 | 5.00 | 0.50 | T05 | 7.70 | 10.00 | 45.0 | ● | 0.03-0.09 |
| MM EA100B07R0.5-2T06 | 10.00 | 2 | 7.00 | 0.50 | T06 | 9.60 | 13.00 | 45.0 | ● | 0.03-0.10 |
| MM EA100B07R1.0-2T06 | 10.00 | 2 | 7.00 | 1.00 | T06 | 9.60 | 13.00 | 45.0 | ● | 0.03-0.10 |
| MM EA100B06R0.5-3T06 | 10.00 | 3 | 6.00 | 0.50 | T06 | 9.60 | 13.00 | 45.0 | ● | 0.03-0.10 |
| MM EA100B06R1.0-3T06 | 10.00 | 3 | 6.00 | 1.00 | T06 | 9.60 | 13.00 | 45.0 | ● | 0.03-0.10 |
| MM EA120B09R0.5-2T08 | 12.00 | 2 | 9.00 | 0.50 | T08 | 11.70 | 16.50 | 45.0 | ● | 0.04-0.11 |
| MM EA120B09R1.0-2T08 | 12.00 | 2 | 9.00 | 1.00 | T08 | 11.70 | 16.50 | 45.0 | ● | 0.04-0.11 |
| MM EA120B08R0.5-3T08 | 12.00 | 3 | 8.00 | 0.50 | T08 | 11.70 | 16.50 | 45.0 | ● | 0.04-0.11 |
| MM EA120B08R1.0-3T08 | 12.00 | 3 | 8.00 | 1.00 | T08 | 11.70 | 16.50 | 45.0 | ● | 0.04-0.11 |
| MM EA120B08R3.0-3T08 | 12.00 | 3 | 8.00 | 3.00 | T08 | 11.70 | 16.50 | 45.0 | ● | 0.04-0.11 |
| MM EA160B10R000-3T10 | 16.00 | 3 | 10.00 | 0.00 | T10 | 15.30 | 20.50 | 45.0 | ● | 0.05-0.13 |
| MM EA160B10R1.0-3T10 | 16.00 | 3 | 10.00 | 1.00 | T10 | 15.30 | 20.50 | 45.0 | ● | 0.05-0.13 |
| MM EA160B10R2.0-3T10 | 16.00 | 3 | 10.00 | 2.00 | T10 | 15.30 | 20.50 | 45.0 | ● | 0.05-0.13 |
| MM EA160B10R3.0-3T10 | 16.00 | 3 | 10.00 | 3.00 | T10 | 15.30 | 20.50 | 45.0 | ● | 0.05-0.13 |
| MM EA160B10R4.0-3T10 | 16.00 | 3 | 10.00 | 4.00 | T10 | 15.30 | 20.50 | 45.0 | ● | 0.05-0.13 |
| MM EA200B12R0.5-3T12 | 20.00 | 3 | 12.00 | 0.50 | T12 | 18.45 | 25.50 | 45.0 | ● | 0.05-0.13 |
| MM EA200B12R1.0-3T12 | 20.00 | 3 | 12.00 | 1.00 | T12 | 18.45 | 25.50 | 45.0 | ● | 0.05-0.13 |
| MM EA200B12R2.0-3T12 | 20.00 | 3 | 12.00 | 2.00 | T12 | 18.45 | 25.50 | 45.0 | ● | 0.05-0.13 |
| MM EA200B12R3.0-3T12 | 20.00 | 3 | 12.00 | 3.00 | T12 | 18.45 | 25.50 | 45.0 | ● | 0.05-0.13 |
| MM EA200B12R4.0-3T12 | 20.00 | 3 | 12.00 | 4.00 | T12 | 18.45 | 25.50 | 45.0 | ● | 0.05-0.13 |

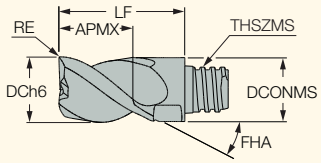
• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection.

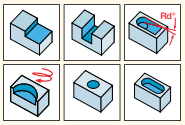
(1) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM EA-CF**

Interchangeable Solid Carbide Endmill Heads with Different Helix for Machining Aluminum



ALUMINUM

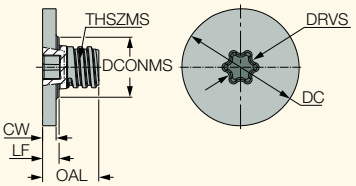
| Designation | Dimensions | | | | | | | | IC08 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | NOF(1) | APMX | RE | THSZMS | DCONMS | LF | FHA | | $f_z$ (mm/t) |
| MM EA080H08R0CF-4T05 | 8.00 | 4 | 8.00 | 0.00 | T05 | 7.70 | 15.00 | 40.0 | ● | 0.03-0.09 |
| MM EA100H10R0CF-4T06 | 10.00 | 4 | 10.00 | 0.00 | T06 | 9.60 | 19.00 | 40.0 | ● | 0.03-0.10 |
| MM EA120H12R0.2CF-3T08 | 12.00 | 3 | 12.00 | 0.20 | T08 | 11.70 | 23.00 | 40.0 | ● | 0.04-0.11 |
| MM EA120H12R0CF-4T08 | 12.00 | 4 | 12.00 | 0.00 | T08 | 11.70 | 23.00 | 40.0 | ● | 0.04-0.11 |
| MM EA160H16R0.0CF-3T10 | 16.00 | 3 | 16.00 | 0.00 | T10 | 15.30 | 28.00 | 40.0 | ● | 0.05-0.13 |
| MM EA160H16R0.2CF-3T10 | 16.00 | 3 | 16.00 | 0.20 | T10 | 15.30 | 28.00 | 40.0 | ● | 0.05-0.13 |
| MM EA160H16R0.5CF-3T10 | 16.00 | 3 | 16.00 | 0.50 | T10 | 15.30 | 28.00 | 40.0 | ● | 0.05-0.13 |
| MM EA160H16R2.5CF-3T10 | 16.00 | 3 | 16.00 | 2.50 | T10 | 15.30 | 28.00 | 40.0 | ● | 0.05-0.13 |
| MM EA160H16R3CF-3T10 | 16.00 | 3 | 16.00 | 3.00 | T10 | 15.30 | 28.00 | 40.0 | ● | 0.05-0.13 |
| MM EA160H16R4CF-3T10 | 16.00 | 3 | 16.00 | 4.00 | T10 | 15.30 | 26.00 | 40.0 | ● | 0.05-0.13 |
| MM EA160H16R0CF-4T10 | 16.00 | 4 | 16.00 | 0.00 | T10 | 15.30 | 26.00 | 40.0 | ● | 0.05-0.13 |
| MM EA200H20R0.0CF-3T12 | 20.00 | 3 | 20.00 | 0.00 | T12 | 18.45 | 34.00 | 40.0 | ● | 0.05-0.13 |
| MM EA200H20R0.2CF-3T12 | 20.00 | 3 | 20.00 | 0.20 | T12 | 18.45 | 34.00 | 40.0 | ● | 0.05-0.13 |
| MM EA200H20R0.5CF-3T12 | 20.00 | 3 | 20.00 | 0.50 | T12 | 18.45 | 34.00 | 40.0 | ● | 0.05-0.13 |
| MM EA200H20R2.5CF-3T12 | 20.00 | 3 | 20.00 | 2.50 | T12 | 18.45 | 34.00 | 40.0 | ● | 0.05-0.13 |
| MM EA200H20R3CF-3T12 | 20.00 | 3 | 20.00 | 3.00 | T12 | 18.30 | 34.00 | 40.0 | ● | 0.05-0.13 |
| MM EA200H20R4CF-3T12 | 20.00 | 3 | 20.00 | 4.00 | T12 | 18.45 | 34.00 | 40.0 | ● | 0.05-0.13 |
| MM EA250H19R0.5-3T15 | 25.00 | 3 | 19.00 | 0.50 | T15 | 23.90 | 37.00 | 40.0 | ● | 0.06-0.16 |
| MM EA250H19R1.0-3T15 | 25.00 | 3 | 19.00 | 1.00 | T15 | 23.90 | 37.00 | 40.0 | ● | 0.06-0.16 |
| MM EA250H19R3.0-3T15 | 25.00 | 3 | 19.00 | 3.00 | T15 | 23.90 | 37.00 | 40.0 | ● | 0.06-0.16 |
| MM EA250H19R4.0-3T15 | 25.00 | 3 | 25.00 | 4.00 | T15 | 23.90 | 37.00 | 40.0 | ● | 0.06-0.16 |
| MM EA320H32R0.2-4T21 | 32.00 | 4 | 32.00 | 0.20 | T21 | 29.90 | 55.00 | 38.0 | ● | 0.06-0.16 |
| MM EA320H32R0.4-4T21 | 32.00 | 4 | 32.00 | 0.40 | T21 | 29.90 | 55.00 | 38.0 | ● | 0.06-0.16 |
| MM EA320H32R0.8-4T21 | 32.00 | 4 | 32.00 | 0.80 | T21 | 29.90 | 55.00 | 38.0 | ● | 0.06-0.16 |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection. • For user guide, see pages 59,211-218

(1) Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TC-G**
Interchangeable Cemented Carbide Blank Heads



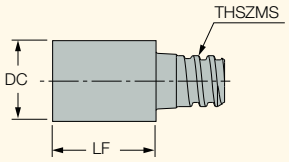

| Designation | Dimensions | | | | | | | IC28 |
|---|---|---|---|---|---|---|---|---|
| | DC | CW | LF | OAL | DCONMS | DRVS[1] | THSZMS | |
| MM TC138N-19-G-T05 | 13.80 | 1.90 | 2.50 | 9.60 | 7.60 | 20.0 | T05 | ● |
| MM TC138N-23-G-T05 | 13.80 | 2.30 | 2.90 | 10.00 | 7.60 | 20.0 | T05 | ● |
| MM TC138N-28-G-T05 | 13.80 | 2.80 | 3.40 | 10.50 | 7.60 | 20.0 | T05 | ● |
| MM TC138N-35-G-T05 | 13.80 | 3.50 | 4.10 | 11.20 | 7.60 | 20.0 | T05 | ● |
| MM TC138N-43-G-T05 | 13.80 | 4.30 | 4.90 | 12.00 | 7.60 | 20.0 | T05 | ● |
| MM TC171N-19-G-T06 | 17.10 | 1.90 | 2.75 | 9.40 | 9.25 | 25.0 | T06 | ● |
| MM TC171N-23-G-T06 | 17.10 | 2.30 | 3.15 | 9.80 | 9.25 | 25.0 | T06 | ● |
| MM TC171N-33-G-T06 | 17.10 | 3.30 | 4.15 | 10.80 | 9.25 | 25.0 | T06 | ● |
| MM TC171N-43-G-T06 | 17.10 | 4.30 | 5.15 | 11.80 | 9.25 | 25.0 | T06 | ● |
| MM TC171N-50-G-T06 | 17.10 | 5.00 | 5.85 | 12.50 | 9.25 | 25.0 | T06 | ● |
| MM TC234N-27-G-T08 | 23.40 | 2.70 | 3.30 | 11.25 | 12.00 | 40.0 | T08 | ● |
| MM TC234N-42-G-T08 | 23.40 | 4.20 | 4.80 | 12.75 | 12.00 | 40.0 | T08 | ● |
| MM TC234N-53-G-T08 | 23.40 | 5.30 | 5.90 | 13.85 | 12.00 | 40.0 | T08 | ● |
| MM TC234N-66-G-T08 | 23.40 | 6.60 | 7.20 | 15.75 | 12.00 | 40.0 | T08 | ● |
| MM TC234N-82-G-T08 | 23.40 | 8.20 | 8.80 | 17.35 | 12.00 | 40.0 | T08 | ● |
| MM TC234N-99-G-T08 | 23.40 | 9.90 | 10.50 | 18.45 | 12.00 | 40.0 | T08 | ● |
| MM TC286N-28-G-T10 | 28.60 | 2.80 | 3.65 | 15.40 | 15.30 | 40.0 | T10 | ● |
| MM TC286N-36-G-T10 | 28.60 | 3.60 | 4.45 | 16.20 | 15.30 | 40.0 | T10 | ● |
| MM TC286N-46-G-T10 | 28.60 | 4.60 | 5.45 | 17.20 | 15.30 | 40.0 | T10 | ● |
| MM TC286N-56-G-T10 | 28.60 | 5.60 | 6.45 | 18.20 | 15.30 | 40.0 | T10 | ● |
| MM TC286N-66-G-T10 | 28.60 | 6.60 | 7.45 | 19.20 | 15.30 | 40.0 | T10 | ● |
| MM TC286N-83-G-T10 | 28.60 | 8.30 | 9.15 | 20.90 | 15.30 | 40.0 | T10 | ● |
| MM TC286N-93-G-T10 | 28.60 | 9.30 | 10.15 | 21.90 | 15.30 | 40.0 | T10 | ● |
| MM TC286N-103-G-T10 | 28.60 | 10.30 | 11.15 | 22.90 | 15.30 | 40.0 | T10 | ● |
| MM TC356N-60-G-T12 | 35.60 | 6.00 | 6.55 | 20.35 | 18.30 | 50.0 | T12 | ● |
| MM TC356N-100-G-T12 | 35.60 | 10.00 | 10.55 | 24.35 | 18.30 | 50.0 | T12 | ● |
| MM TC356N-120-G-T12 | 35.60 | 12.00 | 12.55 | 26.35 | 18.30 | 50.0 | T12 | ● |
| MM TC356N-160-G-T12 | 35.60 | 16.00 | 16.55 | 30.35 | 18.30 | 50.0 | T12 | ● |

• For shanks, see pages 101-111 • For tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection
• For user guide, see pages 59,211-218

(1) Torque key size

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

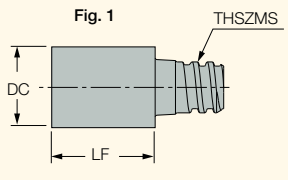
**MM ESR-1.5D BLANKS**
Interchangeable Solid Carbide Blank Heads




| Designation | Dimensions | | | IC08 |
|---|---|---|---|---|
| | DC | LF | THSZMS | |
| MM ESR-G 080-18.0 T05 08 | 8.00 | 18.40 | T05 | ● |
| MM ESR-G.375-.87T06 | 9.53 | 22.40 | T06 | ● |
| MM ESR-G 100-22.0 T06 | 10.00 | 22.40 | T06 | ● |
| MM ESR-G 120-27.0 T08 08 | 12.00 | 27.45 | T08 | ● |
| MM ESR-G.500-1.06T08 | 12.70 | 27.45 | T08 | ● |
| MM ESR-G 160-33.5 T10 | 16.00 | 34.00 | T10 | ● |
| MM ESR-G.750-1.61T12 | 19.05 | 41.50 | T12 | ● |
| MM ESR-G 200-41.0 T12 | 20.00 | 41.50 | T12 | ● |
| MM ESR-G 250-52.5 T15 | 25.00 | 53.00 | T15 | ● |
| MM ESR-G1.00-2.07T15 | 25.40 | 53.00 | T15 | ● |

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

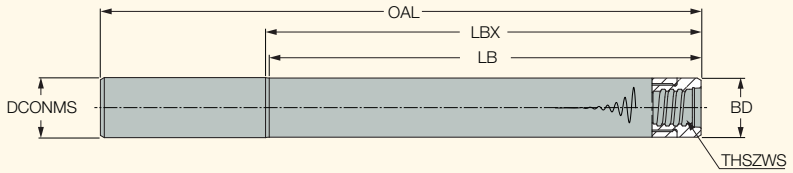
**MM ESR BLANKS**
Interchangeable Solid Carbide Blank Heads




| Designation | Dimensions DC | LF | THSZMS | LH | DN | Fig. | Tough ↔ Hard IC08 | IC03 |
|---|---|---|---|---|---|---|---|---|
| MM ESR-G 080-10 T05 | 8.00 | 10.35 | T05 | - | - | 1 | ● | ● |
| MM ESR-G 080-15 T05 | 8.00 | 15.40 | T05 | - | - | 1 | ● | |
| MM ESR-G.375-.56T06 | 9.53 | 13.35 | T06 | - | - | 1 | ● | |
| MM ESR-G.375-.75T06 | 9.53 | 19.40 | T06 | - | - | 1 | ● | |
| MM ESR-G 100-13 T05 | 10.00 | 13.35 | T05 | - | - | 1 | ● | |
| MM ESR-G 100-13 T06 | 10.00 | 13.35 | T06 | - | - | 1 | ● | ● |
| MM ESR-G 100-19 T06 | 10.00 | 19.45 | T06 | - | - | 1 | ● | |
| MM ESR-G 120-17 T06 | 12.00 | 17.05 | T06 | - | - | 1 | ● | |
| MM ESR-G 120-17 T08 | 12.00 | 17.05 | T08 | - | - | 1 | ● | |
| MM ESR-G 120-23 T08 | 12.00 | 23.40 | T08 | - | - | 1 | ● | |
| MM ESR-G.500-.67T06 | 12.70 | 17.09 | T06 | - | - | 1 | ● | |
| MM ESR-G.500-.67T08 | 12.70 | 17.09 | T08 | - | - | 1 | ● | ● |
| MM ESR-G.500-.91T08 | 12.70 | 23.45 | T08 | - | - | 1 | ● | |
| MM ESR-G.625-.83 T10 | 15.88 | 20.90 | T10 | - | - | 1 | ● | |
| MM ESR-G 160-21 T08 | 16.00 | 20.90 | T08 | - | - | 1 | ● | |
| MM ESR-G 160-21 T10 | 16.00 | 20.90 | T10 | - | - | 1 | ● | ● |
| MM ESR-G 160-28 T08 | 16.00 | 28.45 | T08 | - | - | 1 | ● | |
| MM ESR-G 160-28 T10 | 16.00 | 28.45 | T10 | - | - | 1 | ● | |
| MM ESR-G.750-1.02T12 | 19.05 | 26.05 | T12 | 17.0 | 18.45 | 2 | ● | |
| MM ESR-G 200-26 T12 | 20.00 | 28.10 | T12 | 16.6 | 18.45 | 2 | ● | ● |
| MM ESR-G 200-34 T12 | 20.00 | 34.50 | T12 | - | - | 1 | ● | |
| MM ESR-G 222-295 T12 | 22.00 | 29.50 | T12 | 17.9 | 18.45 | 2 | ● | |
| MM ESR-G 222-295 T10 | 22.22 | 29.50 | T10 | 17.9 | 18.45 | 2 | ● | |
| MM ESR-G 250-25 T15 | 25.00 | 25.60 | T15 | - | - | 1 | ● | ● |
| MM ESR-G 250-37 T12 | 25.00 | 37.60 | T12 | - | - | 1 | ● | |
| MM ESR-G 250-37 T15 | 25.00 | 37.60 | T15 | - | - | 1 | ● | |
| MM ESR-G 320-55-T21 NECK | 32.00 | 55.80 | T21 | 39.5 | 30.00 | 2 | ● | |

MULTI-MASTER

**MM S-A-AV**
Anti-Vibration Cylindrical Shanks Mount Interchangeable Milling Heads



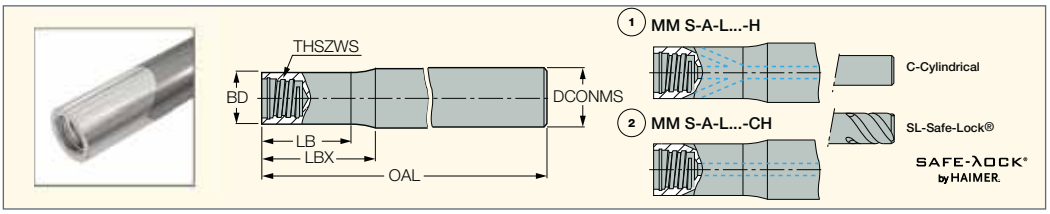

| Designation | THSZWS | OAL | LBX | LB | DCONMS | BD |
|---|---|---|---|---|---|---|
| MM S-A-L175/120-C20-T12AV | T12 | 175.00 | 120.00 | 118.80 | 20.00 | 19.70 |
| MM S-A-L200/145-C20-T12AV | T12 | 200.00 | 145.00 | 143.80 | 20.00 | 19.70 |
| MM S-A-L210/150-C25-T15AV | T15 | 210.00 | 150.00 | 148.60 | 25.00 | 24.60 |
| MM S-A-L250/190-C25-T15AV | T15 | 250.00 | 190.00 | 188.60 | 25.00 | 24.60 |

New

- Do not apply lubricant to the threaded connection

**MULTI-MASTER**

**MM S-A (stepped shanks)**
Stepped Cylindrical Shanks
Mount Interchangeable
Milling Heads




| Designation | THSZWS | DCONMS | BD | LB | LBX | OAL | Shank[2] | Shank m.[3] | CSP[4] | Fig. | RPMX[5] | Kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM S-A-L050-C08-T04 | T04 | 8.00 | 5.80 | 9.90 | 14.0 | 50.00 | C | S | 0 | - | 60000 | 0.03 |
| MM S-A-L060/20-C08-T04-C | T04 | 8.00 | 5.80 | 16.90 | 20.0 | 60.00 | C | C | 0 | - | 60000 | 0.03 |
| MM S-A-L060-C08-T05 | T05 | 8.00 | 7.60 | 12.50 | 15.0 | 60.00 | C | S | 0 | - | 60000 | 0.05 |
| MM S-A-L065/24-SL08T05C | T05 | 8.00 | 7.60 | 24.00 | 25.6 | 65.00 | SL | C | 0 | - | 60000 | 0.04 |
| MM S-A-L070-C08-T05-C | T05 | 8.00 | 7.60 | 18.60 | 20.0 | 70.00 | C | C | 0 | - | 60000 | 0.04 |
| MM S-A-L070-C08-T05-W | T05 | 8.00 | 7.60 | 18.90 | 20.0 | 70.00 | C | W | 0 | - | 60000 | 0.06 |
| MM S-A-L090-C08-T05-C | T05 | 8.00 | 7.60 | 38.60 | 40.0 | 90.00 | C | C | 0 | - | 50160 | 0.06 |
| MM S-A-L090-C08-T05-W | T05 | 8.00 | 7.60 | 38.60 | 40.0 | 90.00 | C | W | 0 | - | 36090 | 0.07 |
| MM S-A-L110-C08-T05-C | T05 | 8.00 | 7.60 | 57.90 | 60.0 | 110.00 | C | C | 0 | - | 30600 | 0.07 |
| MM S-A-L110-C08-T05-W | T05 | 8.00 | 7.60 | 58.90 | 60.0 | 110.00 | C | W | 0 | - | 21060 | 0.09 |
| MM S-A-L070-C10-T06-C | T06 | 10.00 | 9.60 | 18.50 | 20.0 | 70.00 | C | C | 0 | - | 54900 | 0.08 |
| MM S-A-L070-C10-T06-W-H | T06 | 10.00 | 9.60 | 18.90 | 20.0 | 70.00 | C | W | 1 | 1 | 60000 | 0.08 |
| MM S-A-L075-C10-T06 | T06 | 10.00 | 9.60 | 17.70 | 20.0 | 75.00 | C | S | 0 | - | 60000 | 0.05 |
| MM S-A-L075-C10-T06-H | T06 | 10.00 | 9.60 | 19.40 | 20.0 | 75.00 | C | S | 1 | 1 | 53940 | 0.04 |
| MM S-A-L075/12-C10-T06-CH | T06 | 10.00 | 9.60 | 10.60 | 12.0 | 75.00 | C | S | 1 | 2 | 53940 | 0.04 |
| MM S-A-L075/30-SL10T06C | T06 | 10.00 | 9.60 | 30.00 | 31.7 | 75.00 | SL | C | 0 | - | 53940 | 0.00 |
| MM S-A-L090-C10-T06-C | T06 | 10.00 | 9.60 | 38.60 | 40.0 | 90.00 | C | C | 0 | - | 55170 | 0.06 |
| MM S-A-L090/040C10T06C-H | T06 | 10.00 | 9.60 | 38.60 | 40.0 | 90.00 | C | C | 1 | 1 | 60000 | 0.08 |
| MM S-A-L090-C10-T06-W | T06 | 10.00 | 9.60 | 17.20 | 20.0 | 90.00 | C | W | 0 | - | 41670 | 0.12 |
| MM S-A-L090-C10-T06-W-H | T06 | 10.00 | 9.60 | 39.00 | 40.0 | 90.00 | C | W | 1 | 1 | 40860 | 0.10 |
| MM S-A-L110-C10-T06-C | T06 | 10.00 | 9.60 | 57.90 | 60.0 | 110.00 | C | C | 0 | - | 34530 | 0.11 |
| MM S-A-L110-C10-T06-W-H | T06 | 10.00 | 9.60 | 59.00 | 60.0 | 110.00 | C | W | 1 | 1 | 24840 | 0.12 |
| MM S-A-L150-C10-T06-C | T06 | 10.00 | 9.60 | 98.50 | 100.0 | 150.00 | C | C | 0 | - | 16620 | 0.16 |
| MM S-A-L070-C12-T08-C | T08 | 12.00 | 11.60 | 17.90 | 20.0 | 70.00 | C | C | 0 | - | 60000 | 0.10 |
| MM S-A-L070-C12-T08-W-H | T08 | 12.00 | 11.60 | 18.70 | 20.0 | 70.00 | C | W | 1 | 1 | 60000 | 0.11 |
| MM S-A-L085/36-C12T08C | T08 | 12.00 | 11.60 | 36.00 | 37.7 | 85.00 | C | C | 0 | - | 60000 | 0.13 |
| MM S-A-L090/14-C12-T08-CH | T08 | 12.00 | 11.60 | 13.00 | 14.0 | 90.00 | C | S | 1 | 2 | 43000 | 0.08 |
| MM S-A-L090-C12-T08 | T08 | 12.00 | 11.60 | 13.30 | 16.0 | 90.00 | C | S | 0 | - | 43000 | 0.10 |
| MM S-A-L070/020C12T08C-CH | T08 | 12.00 | 11.60 | 18.00 | 20.0 | 70.00 | C | C | 1 | 2 | 43050 | 0.08 |
| MM S-A-L090-C12-T08-C | T08 | 12.00 | 11.60 | 39.00 | 40.0 | 90.00 | C | C | 0 | - | 43050 | 0.12 |
| MM S-A-L090-C12-T08-H | T08 | 12.00 | 11.60 | 38.70 | 40.0 | 90.00 | C | S | 1 | 1 | 41040 | 0.08 |
| MM S-A-L090-C12-T08-W-H | T08 | 12.00 | 11.60 | 38.70 | 40.0 | 90.00 | C | W | 1 | 1 | 49800 | 0.15 |
| MM S-A-L090/040C12T08C-CH | T08 | 12.00 | 11.60 | 38.00 | 40.0 | 90.00 | C | C | 1 | 2 | 49800 | 0.11 |
| MM S-A-L090/42-C12-T08-CH | T08 | 12.00 | 11.60 | 41.00 | 42.0 | 90.00 | C | S | 1 | 2 | 41010 | 0.07 |
| MM S-A-L110-C12-T08-W | T08 | 12.00 | 11.60 | 17.00 | 20.0 | 110.00 | C | W | 0 | - | 31350 | 0.20 |
| MM S-A-L110-C12-T08-C | T08 | 12.00 | 11.60 | 57.00 | 60.0 | 110.00 | C | C | 0 | - | 41040 | 0.16 |
| MM S-A-L110-C12-T08-W-H | T08 | 12.00 | 11.60 | 58.70 | 60.0 | 110.00 | C | W | 1 | 1 | 30210 | 0.18 |
| MM S-A-L110/060C12T08C-CH | T08 | 12.00 | 11.60 | 58.00 | 60.0 | 110.00 | C | C | 1 | 2 | 30210 | 0.12 |
| MM S-A-L130-C12-T08-C | T08 | 12.00 | 11.60 | 78.60 | 80.0 | 130.00 | C | C | 0 | - | 27960 | 0.19 |
| MM S-A-L130-C12-T08-W-H | T08 | 12.00 | 11.60 | 78.70 | 80.0 | 130.00 | C | W | 1 | 1 | 20100 | 0.21 |
| MM S-A-L130/080C12T08C-CH | T08 | 12.00 | 11.60 | 78.00 | 80.0 | 130.00 | C | C | 1 | 2 | 20100 | 0.17 |
| MM S-A-L070-C16-T10-W-H | T10 | 16.00 | 15.30 | 18.20 | 20.0 | 70.00 | C | W | 1 | 1 | 60000 | 0.00 |
| MM S-A-L090-C16-T10-C | T10 | 16.00 | 15.30 | 38.00 | 40.0 | 90.00 | C | C | 0 | - | 60000 | 0.21 |
| MM S-A-L090-C16-T10-W-H | T10 | 16.00 | 15.30 | 38.20 | 40.0 | 90.00 | C | W | 1 | 1 | 57510 | 0.27 |
| MM S-A-L090/040C16T10C-CH | T10 | 16.00 | 15.30 | 38.00 | 40.0 | 90.00 | C | C | 1 | 2 | 57510 | 0.17 |
| MM S-A-L100-C16-T10 | T10 | 16.00 | 15.30 | 17.10 | 20.0 | 100.00 | C | S | 0 | - | 39000 | 0.15 |
| MM S-A-L100-C16-T10-H | T10 | 16.00 | 15.30 | 48.00 | 50.0 | 100.00 | C | S | 1 | 1 | 37140 | 0.13 |
| MM S-A-L100/20-C16-T10-CH | T10 | 16.00 | 15.30 | 18.00 | 20.0 | 100.00 | C | S | 1 | 2 | 37140 | 0.12 |
| MM S-A-L100/42-C16-T10-CH | T10 | 16.00 | 15.30 | 40.20 | 42.0 | 100.00 | C | S | 1 | 2 | 38040 | 0.14 |
| MM S-A-L100/48-C16T10C [1] | T10 | 16.00 | 15.30 | 48.00 | 50.3 | 100.00 | C | C | 0 | - | 38040 | 0.06 |
| MM S-A-L110-C16-T10-C | T10 | 16.00 | 15.30 | 58.20 | 60.0 | 110.00 | C | C | 0 | - | 47010 | 0.27 |
| MM S-A-L110-C16-T10-W-H | T10 | 16.00 | 15.30 | 58.20 | 60.0 | 110.00 | C | W | 1 | 1 | 36030 | 0.33 |
| MM S-A-L110/060C16T10C-H | T10 | 16.00 | 15.30 | 58.10 | 60.0 | 110.00 | C | C | 1 | 1 | 60000 | 0.24 |
| MM S-A-L110/060C16T10C-CH | T10 | 16.00 | 15.30 | 58.00 | 60.0 | 110.00 | C | C | 1 | 2 | 36030 | 0.28 |
| MM S-A-L130-C16-T10-C | T10 | 16.00 | 15.30 | 77.40 | 80.0 | 130.00 | C | C | 0 | - | 33510 | 0.32 |
| MM S-A-L130-C16-T10-W-H | T10 | 16.00 | 15.30 | 78.20 | 80.0 | 130.00 | C | W | 1 | 1 | 24450 | 0.41 |
| MM S-A-L130/080C16T10C-CH | T10 | 16.00 | 15.30 | 78.00 | 80.0 | 130.00 | C | C | 1 | 2 | 24450 | 0.32 |
| MM S-A-L150-C16-T10-C | T10 | 16.00 | 15.30 | 97.40 | 100.0 | 150.00 | C | C | 0 | - | 24660 | 0.37 |
| MM S-A-L150-C16-T10-W-H | T10 | 16.00 | 15.30 | 98.20 | 100.0 | 150.00 | C | W | 1 | 1 | 17610 | 0.45 |
| MM S-A-L090-C20-T12-C | T12 | 20.00 | 18.30 | 37.20 | 40.0 | 90.00 | C | C | 0 | - | 60000 | 0.27 |

- Do not apply lubricant to the threaded connection

(1) With Safe-Lock® (by Haimer) pull-out prevention helical grooves

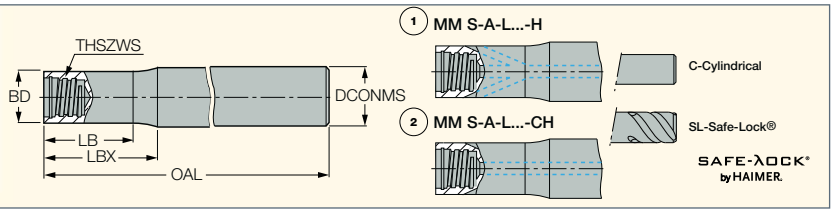
(2) C-Cylindrical, W-Weldon, SL-Safe-Lock® by Haimer, helical grooves that prevent pull-out (available upon request).

(3) S-steel, C-carbide, W-tungsten

(4) 0 - Without coolant supply, 1 - With coolant supply

(5) The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

**MM S-A (stepped shanks)**
Stepped Cylindrical Shanks
Mount Interchangeable
Milling Heads



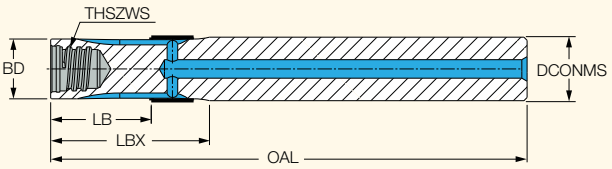

| Designation | THSZWS | DCONMS | BD | LB | LBX | OAL | Shank[2] | Shank m.[3] | CSP[4] | Fig. | RPMX[5] | Kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM S-A-L090-C20-T12-W-H | T12 | 20.00 | 18.30 | 36.90 | 40.0 | 90.00 | C | W | 1 | 1 | 60000 | 0.41 |
| MM S-A-L090/040C20T12C-CH | T12 | 20.00 | 18.30 | 37.20 | 40.0 | 90.00 | C | C | 1 | 2 | 60000 | 0.30 |
| MM S-A-L110/50-SL20T12C | T12 | 20.00 | 18.30 | 50.00 | 53.3 | 110.00 | SL | C | 0 | - | 60000 | 0.41 |
| MM S-A-L120-C20-T12 | T12 | 20.00 | 18.30 | 20.30 | 25.0 | 120.00 | C | S | 0 | - | 36000 | 0.27 |
| MM S-A-L120-C20-T12-H | T12 | 20.00 | 18.30 | 66.70 | 70.0 | 120.00 | C | S | 1 | 1 | 32160 | 0.25 |
| MM S-A-L120/25-C20-T12-CH | T12 | 20.00 | 18.30 | 22.20 | 25.0 | 120.00 | C | S | 1 | 2 | 32160 | 0.12 |
| MM S-A-L120/48-C20-T12-CH | T12 | 20.00 | 18.30 | 45.20 | 48.0 | 120.00 | C | S | 1 | 2 | 32160 | 0.20 |
| MM S-A-L130-C20-T12-C | T12 | 20.00 | 18.30 | 77.20 | 80.0 | 130.00 | C | C | 0 | - | 42360 | 0.47 |
| MM S-A-L130-C20-T12-W-H | T12 | 20.00 | 18.30 | 76.90 | 80.0 | 130.00 | C | W | 1 | 1 | 31650 | 0.59 |
| MM S-A-L130/080C20T12C-CH | T12 | 20.00 | 18.30 | 77.20 | 80.0 | 130.00 | C | C | 1 | 2 | 42360 | 0.44 |
| MM S-A-L170-C20-T12-C | T12 | 20.00 | 18.30 | 97.20 | 100.0 | 170.00 | C | C | 0 | - | 25170 | 0.63 |
| MM S-A-L200-C20-T12-C | T12 | 20.00 | 18.30 | 116.50 | 120.0 | 200.00 | C | C | 0 | - | 17790 | 0.76 |
| MM S-A-L200-C20-T12-W-H | T12 | 20.00 | 18.30 | 116.90 | 120.0 | 200.00 | C | W | 1 | 1 | 12540 | 0.92 |
| MM S-A-L200/120C20T12C-CH | T12 | 20.00 | 18.30 | 117.20 | 120.0 | 200.00 | C | C | 1 | 2 | 17790 | 0.74 |
| MM S-A-L120-C25-T15-C | T15 | 25.00 | 23.90 | 57.50 | 60.0 | 120.00 | C | C | 0 | - | 49400 | 0.64 |
| MM S-A-L120-C25-T15-W-H | T15 | 25.00 | 23.90 | 58.00 | 60.0 | 120.00 | C | W | 1 | 1 | 41700 | 0.89 |
| MM S-A-L125/63-C25T15C [1] | T15 | 25.00 | 24.00 | 63.00 | 65.8 | 125.00 | C | C | 0 | - | 41700 | 0.75 |
| MM S-A-L135-C25-T15 | T15 | 25.00 | 23.90 | 33.00 | 35.0 | 135.00 | C | S | 0 | - | 28290 | 0.47 |
| MM S-A-L135/35-C25-T15-CH | T15 | 25.00 | 23.90 | 33.00 | 35.0 | 135.00 | C | S | 1 | 2 | 28230 | 0.42 |
| MM S-A-L135/50-C25-T15-CH | T15 | 25.00 | 23.90 | 47.70 | 50.0 | 135.00 | C | S | 1 | 2 | 28230 | 0.40 |
| MM S-A-L170-C25-T15-C | T15 | 25.00 | 23.90 | 98.00 | 100.0 | 170.00 | C | C | 0 | - | 27360 | 0.96 |
| MM S-A-L175-C25-T15 | T15 | 25.00 | 23.90 | 62.70 | 65.0 | 175.00 | C | S | 0 | - | 16890 | 0.10 |
| MM S-A-L250-C25-T15-C | T15 | 25.00 | 23.90 | 148.00 | 150.0 | 250.00 | C | C | 0 | - | 12690 | 1.45 |
| MM S-A-L100-W32-T21-CH | T21 | 32.00 | 30.00 | - | - | 100.00 | W | S | 1 | 2 | 12690 | 0.51 |
| MM S-A-L100/32-C32-T21 | T21 | 32.00 | 30.00 | 32.00 | 35.3 | 100.00 | C | S | 0 | - | 12690 | 0.56 |
| MM S-A-L130/60-C32-T21-C | T21 | 32.00 | 30.00 | 60.00 | 63.3 | 130.00 | C | C | 0 | - | 12690 | 1.22 |
| MM S-A-L135/64-C32T21C | T21 | 32.00 | 30.00 | 64.00 | 67.5 | 135.00 | C | C | 0 | - | 12690 | 1.02 |
| MM S-A-L150/50-C32-T21 | T21 | 32.00 | 30.00 | 50.00 | 53.5 | 150.00 | C | S | 0 | - | 12690 | 0.86 |
| MM S-A-L150/50-C32-T21-CH | T21 | 32.00 | 30.00 | 50.00 | 53.3 | 150.00 | C | S | 1 | 2 | 12690 | 0.80 |
| MM S-A-L170/100-C32-T21-C | T21 | 32.00 | 30.00 | 100.00 | 103.5 | 170.00 | C | C | 0 | - | 12690 | 1.22 |
| MM S-A-L170/100C32T21C-CH | T21 | 32.00 | 30.00 | 100.00 | 103.5 | 170.00 | C | C | 1 | 2 | 12690 | 0.00 |
| MM S-A-L250/150-C32-T21-C | T21 | 32.00 | 30.00 | 150.00 | 153.5 | 250.00 | C | C | 0 | - | 12690 | 2.50 |
| MM S-A-L300/200-C32-T21-C | T21 | 32.00 | 30.00 | 200.00 | 203.5 | 300.00 | C | C | 0 | - | 12690 | 3.00 |

- Do not apply lubricant to the threaded connection

[1] With Safe-Lock® (by Haimer) pull-out prevention helical grooves
[2] C-Cylindrical, W-Weldon, SL-Safe-Lock® by Haimer, helical grooves that prevent pull-out (available upon request).
[3] S-steel, C-carbide, W-tungsten
[4] 0 - Without coolant supply, 1 - With coolant supply
[5] The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

MULTI-MASTER

**MM S-A-N**
Stepped Cylindrical Shanks with Parallel Directed Coolant Mount Interchangeable Milling Heads



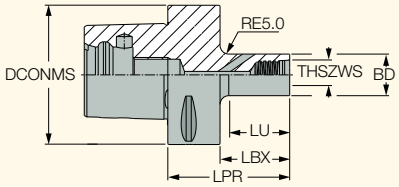

| Designation | THSZWS | DCONMS | BD | LB | LBX | OAL | Shank m.[1] | kg |
|---|---|---|---|---|---|---|---|---|
| MM S-A-L075-C10-T06-N | T06 | 10.00 | 9.60 | 18.00 | 28.0 | 75.00 | S | 0.04 |
| MM S-A-L090-C12-T08-N | T08 | 12.00 | 11.60 | 18.00 | 30.0 | 90.00 | S | 0.07 |
| MM S-A-L100-C16-T10-N | T10 | 16.00 | 15.30 | 23.00 | 35.0 | 100.00 | S | 0.04 |

- Do not apply lubricant to the threaded connection

[1] S-steel

MULTI-MASTER

**MM S-A-C#**
MULTI-MASTER Threaded Connection Shanks with a CAMFIX (ISO 26623-1) Exchangeable Adaptation



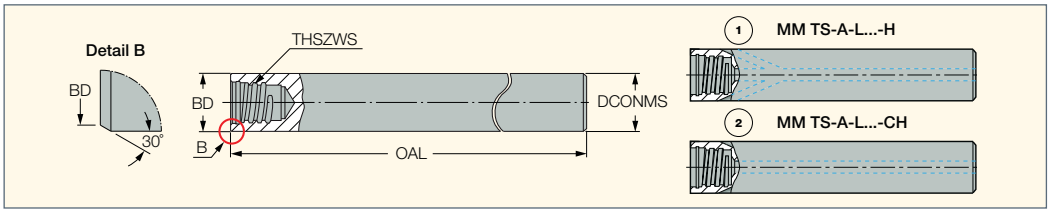

| Designation | DCONMS | THSZWS | BD | LPR | LBX | LU | DCP[1] | kg |
|---|---|---|---|---|---|---|---|---|
| MM S-A-H035-C3-T05 | 32.00 | T05 | 7.60 | 35.00 | 20.0 | 15.00 | 0 | 0.12 |
| MM S-A-H035-C3-T06 | 32.00 | T06 | 9.25 | 35.00 | 20.0 | 15.00 | 0 | 0.12 |
| MM S-A-H040-C3-T08 | 32.00 | T08 | 11.60 | 40.00 | 25.0 | 20.00 | 0 | 0.13 |
| MM S-A-H040-C3-T10 | 32.00 | T10 | 15.30 | 40.00 | 25.0 | 20.00 | 0 | 0.15 |
| MM S-A-H045-C3-T12 | 32.00 | T12 | 18.30 | 45.00 | 30.0 | 25.00 | 0 | 0.16 |
| MM S-A-H045-C4-T06 | 40.00 | T06 | 9.25 | 45.00 | 25.0 | 20.00 | 0 | 0.25 |
| MM S-A-H045-C4-T08 | 40.00 | T08 | 11.60 | 45.00 | 25.0 | 20.00 | 0 | 0.25 |
| MM S-A-H050-C4-T10 | 40.00 | T10 | 15.30 | 50.00 | 30.0 | 25.00 | 0 | 0.28 |
| MM S-A-H055-C4-T12 | 40.00 | T12 | 18.30 | 55.00 | 35.0 | 30.00 | 0 | 0.22 |
| MM S-A-H055-C4-T15 | 40.00 | T15 | 23.90 | 55.00 | 35.0 | 30.00 | 0 | 0.35 |
| MM S-A-H060-C5-T10 | 50.00 | T10 | 15.30 | 60.00 | 40.0 | 35.00 | 0 | 0.22 |
| MM S-A-H060-C5-T12 | 50.00 | T12 | 18.30 | 60.00 | 40.0 | 35.00 | 0 | 0.48 |
| MM S-A-H060-C5-T15 | 50.00 | T15 | 23.90 | 60.00 | 40.0 | 35.00 | 0 | 0.58 |
| MM S-A-H065-C6-T12 | 63.00 | T12 | 18.30 | 65.00 | 43.0 | 38.00 | 0 | 0.80 |
| MM S-A-H065-C6-T15 | 63.00 | T15 | 23.90 | 65.00 | 43.0 | 38.00 | 0 | 0.84 |
| MM S-A-H070-C8-T15 | 80.00 | T15 | 23.90 | 70.00 | 40.0 | 35.00 | 0 | 1.83 |

- Do not apply lubricant to the threaded connection
- For adaptation options, see page 59

[1] 1 - Slot for data chip, 0 - Without slot for data chip

MULTI-MASTER

**MM TS-A**
Cylindrical Shanks Mount
Interchangeable Milling Heads




| Designation | THSZWS | DCONMS | BD | OAL | Shank m.(1) | RPMX(2) | CSP(3) | Fig. | kg |
|---|---|---|---|---|---|---|---|---|---|
| MM TS-A-L070-C08-T04 | T04 | 8.00 | 5.80 | 70.00 | S | - | 0 | - | 0.03 |
| MM TS-A-L070-C08-T05 | T05 | 8.00 | 7.60 | 70.00 | S | 60000 | 0 | - | 0.03 |
| MM TS-A-L080-C10-T06 | T06 | 10.00 | 9.60 | 80.00 | S | 47400 | 0 | - | 0.05 |
| MM TS-A-L080-C10-T06-H | T06 | 10.00 | 9.60 | 80.00 | S | 46920 | 1 | 1 | 0.04 |
| MM TS-A-L090-C12-T08 | T08 | 12.00 | 11.60 | 90.00 | S | 43110 | 0 | - | 0.07 |
| MM TS-A-L090-C12-T08-H | T08 | 12.00 | 11.60 | 90.00 | S | 42780 | 1 | 1 | 0.12 |
| MM TS-A-L070-C16-T10-CH | T10 | 16.00 | 15.30 | 70.00 | S | 39420 | 1 | 2 | 0.00 |
| MM TS-A-L100-C16-T10 | T10 | 16.00 | 15.30 | 100.00 | S | 39420 | 0 | - | 0.16 |
| MM TS-A-L100-C16-T10-H | T10 | 16.00 | 15.30 | 100.00 | S | 39210 | 1 | 1 | 0.14 |
| MM TS-A-L090-C20-T12-CH | T12 | 20.00 | 18.30 | 90.00 | S | - | 1 | 2 | 0.20 |
| MM TS-A-L100-C25-T15-CH | T15 | 25.00 | 23.90 | 100.00 | S | - | 1 | 2 | 0.34 |

- Do not apply lubricant to the threaded connection

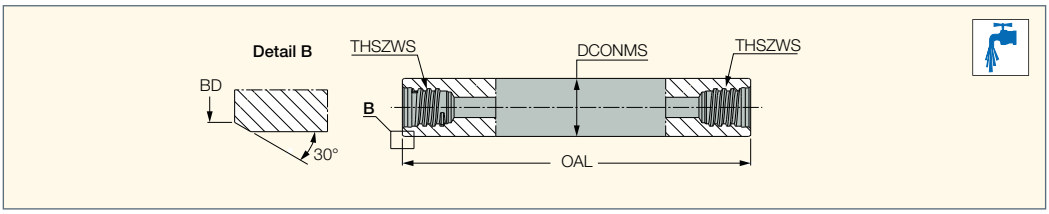
(1) S-steel

(2) The actual maximum RPM to be calculated by dividing the listed RPM max by the number of the head's flutes being used.

(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

**MM TS2-A**
Double-Sided Cylindrical Shanks
for Interchangeable Heads



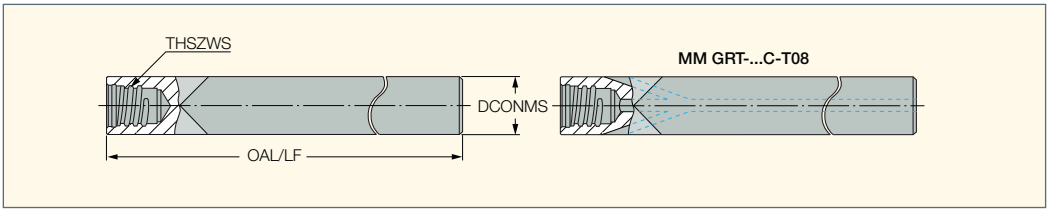

| Designation | THSZWS | DCONMS | BD | OAL | Shank m. | kg |
|---|---|---|---|---|---|---|
| MM TS2-A-L050-C06-T04-CH | T04 | 6.00 | 5.80 | 50.00 | S | 0.03 |
| MM TS2-A-L050-C08-T05-CH | T05 | 8.00 | 7.60 | 50.00 | S | 0.02 |
| MM TS2-A-L060-C10-T06-CH | T06 | 10.00 | 9.60 | 60.00 | S | 0.04 |
| MM TS2-A-L070-C12-T08-CH | T08 | 12.00 | 11.60 | 70.00 | S | 0.06 |
| MM TS2-A-L080-C16-T10-CH | T10 | 16.00 | 15.30 | 80.00 | S | 0.00 |
| MM TS2-A-L090-C20-T12-CH | T12 | 20.00 | 18.30 | 90.00 | S | 0.18 |

New

- Do not apply lubricant to the threaded connection

MULTI-MASTER

**MM GRT (shanks)**
Mount Slitting and Grooving
Interchangeable Milling Heads




| Designation | THSZWS | DCONMS | OAL | Shank m.(1) | CSP(2) | kg |
|---|---|---|---|---|---|---|
| MM GRT-095-T06 | T06 | 9.52 | 80.00 | C | 0 | 0.07 |
| MM GRT-100-T06 | T06 | 10.00 | 100.00 | C | 0 | 0.10 |
| MM GRT-120C-T08 | T08 | 12.00 | 100.00 | C | 1 | 0.12 |
| MM GRT-127C-T08 | T08 | 12.70 | 120.00 | C | 1 | 0.17 |

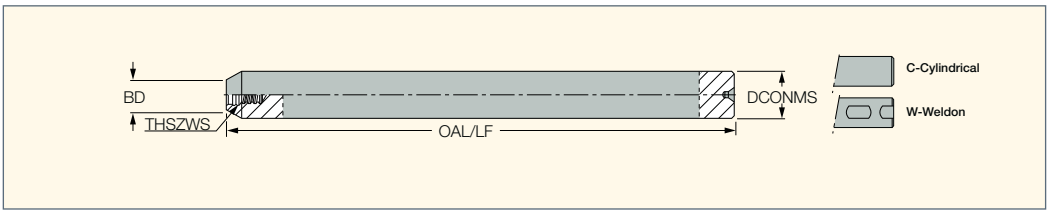
- MM GRT... shanks serve mainly for MM GRIT... slitting heads. When mounting other types of milling heads, do not exceed maximum specified depth of cut for the particular milling head. Since the shank diameter is not relieved, it may touch a wall on the workpiece being machined. • Use carbide shanks for groove milling heads and for applications requiring high rigidity and processes.

(1) C - Solid carbide

(2) 0 - Without coolant supply, 1 - With coolant supply

**MULTI-MASTER**

**MM S-A (straight shanks)**
Shanks Mount Interchangeable Milling Heads



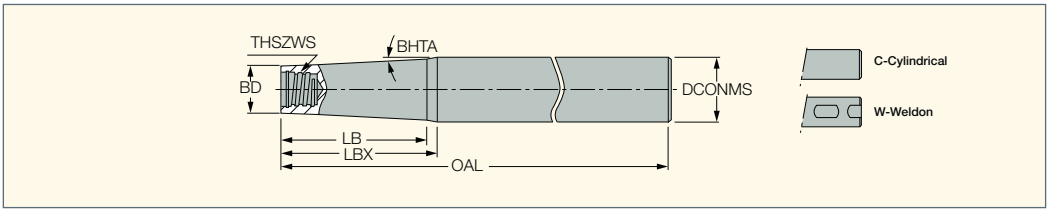

| Designation | THSZWS | DCONMS | BD | OAL | Shank[2] | Shank m.[3] | RPMX[4] | kg |
|---|---|---|---|---|---|---|---|---|
| MM S-A-L055-W12-T05 | T05 | 12.00 | 7.60 | 55.00 | W | S | 60000 | 0.05 |
| MM S-A-L070-C20T05 | T05 | 20.00 | 7.60 | 70.00 | C | S | 60000 | 0.24 |
| MM S-A-L150-C12-T05-B [1] | T05 | 12.00 | 7.60 | 150.00 | C | S | 18270 | 0.13 |
| MM S-A-L065-W16-T06 | T06 | 16.00 | 9.60 | 65.00 | W | S | 60000 | 0.09 |
| MM S-A-L080-C25T06 | T06 | 25.00 | 9.60 | 80.00 | C | S | 60000 | 0.29 |
| MM S-A-L200-C16-T06-B [1] | T06 | 16.00 | 9.60 | 200.00 | C | S | 11970 | 0.33 |
| MM S-A-L065-W16-T08 | T08 | 16.00 | 11.60 | 65.00 | W | S | 60000 | 0.10 |
| MM S-A-L080-C25T08 | T08 | 25.00 | 11.60 | 80.00 | C | S | 60000 | 0.40 |
| MM S-A-L250-C20-T08-B [1] | T08 | 20.00 | 11.60 | 250.00 | C | S | 9330 | 0.60 |
| MM S-A-L070-W20-T10 | T10 | 20.00 | 15.30 | 70.00 | W | S | 60000 | 0.17 |
| MM S-A-L080-C32T10 | T10 | 32.00 | 15.30 | 80.00 | C | S | 60000 | 0.65 |
| MM S-A-L250-C25-T10-B [1] | T10 | 25.00 | 15.30 | 250.00 | C | S | 11130 | 0.94 |
| MM S-A-L075-W25-T12 | T12 | 25.00 | 18.30 | 75.00 | W | S | 60000 | 0.28 |
| MM S-A-L080-C32T12 | T12 | 32.00 | 18.30 | 80.00 | C | S | 60000 | 0.65 |
| MM S-A-L100-W32-T15 | T15 | 32.00 | 23.90 | 100.00 | W | S | 60000 | 0.30 |
| MM S-A-L100-C40T15 | T15 | 40.00 | 23.90 | 100.00 | C | S | 60000 | 0.94 |
| MM S-A-L100-C40T21 | T21 | 40.00 | 30.00 | 100.00 | C | S | 60000 | 1.56 |

- Do not apply lubricant to the threaded connection.

[1] "B" suffix - cylindrical shank which may be shortened.
[2] C-Cylindrical, W-Weldon
[3] S-steel
[4] The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

**MULTI-MASTER**

**MM S-B (85° conical shanks)**
Shanks Interchangeable Milling Heads



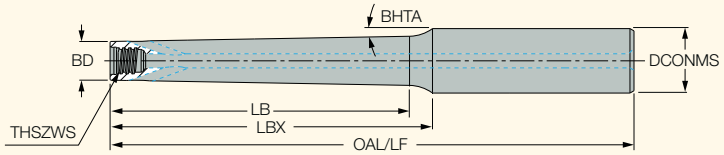

| Designation | THSZWS | DCONMS | BD | BHTA | Shank[1] | LB | LBX | OAL | Shank m.[2] | RPMX[3] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM S-B-L080/24-C08-T04 | T04 | 8.00 | 5.80 | 2.6 | C | - | 24.0 | 80.00 | S | 60000 | 0.04 |
| MM S-B-L080-C12-T05 | T05 | 12.00 | 7.60 | 5.0 | C | - | 25.0 | 80.00 | S | 60000 | 0.06 |
| MM S-B-L085/32-C16T05 | T05 | 16.00 | 7.60 | 5.0 | C | 27.00 | 32.0 | 85.00 | S | 41280 | 0.11 |
| MM S-B-L125-C16-T06 | T06 | 16.00 | 9.60 | 5.0 | C | 31.50 | 31.7 | 125.00 | S | 41280 | 0.19 |
| MM S-B-L095/40-C20T06 | T06 | 20.00 | 9.60 | 5.0 | C | 34.00 | 40.0 | 95.00 | S | 41280 | 0.19 |
| MM S-B-L140-C20-T06-W | T06 | 20.00 | 9.65 | 5.0 | C | - | 60.3 | 140.50 | W | 51180 | 0.62 |
| MM S-B-L140-C16-T08 | T08 | 16.00 | 11.60 | 5.0 | C | 19.30 | 22.0 | 140.00 | S | 25590 | 0.22 |
| MM S-B-L100/48-C20T08 | T08 | 20.00 | 11.60 | 5.0 | C | - | 48.0 | 100.00 | S | 25590 | 0.32 |
| MM S-B-L140-C20-T10 | T10 | 20.00 | 15.30 | 5.0 | C | - | 27.0 | 140.00 | S | 31020 | 0.34 |
| MM S-B-L170-C25-T10 | T10 | 25.00 | 15.30 | 5.0 | C | - | 56.0 | 170.00 | S | 29490 | 0.16 |
| MM S-B-L120/55-C25T10 | T10 | 25.00 | 15.30 | 5.0 | C | - | 55.4 | 120.00 | S | 29490 | 0.40 |
| MM S-B-L160-C25-T12 | T12 | 25.00 | 18.30 | 5.0 | C | - | 40.0 | 160.00 | S | 28680 | 0.08 |
| MM S-B-L190-C32-T12 | T12 | 32.00 | 18.30 | 5.0 | C | - | 80.0 | 190.00 | S | 34890 | 0.56 |
| MM S-B-L150/78-C32T12 | T12 | 32.00 | 18.30 | 5.0 | C | - | 78.3 | 150.00 | S | 34890 | 0.78 |
| MM S-B-L200-C32-T15 | T15 | 32.00 | 23.90 | 5.0 | C | - | 50.0 | 200.00 | S | 14160 | 1.19 |
| MM S-B-L180/92-C40T15 | T15 | 40.00 | 23.90 | 5.0 | C | - | 92.0 | 180.00 | S | 14160 | 0.28 |
| MM S-B-L250-W40-T15 | T15 | 40.00 | 23.90 | 5.0 | W | - | 100.0 | 250.00 | S | 21840 | 2.12 |
| MM S-B-L150/57-C40T21 | T21 | 40.00 | 30.00 | 5.0 | C | - | 57.0 | 150.00 | S | 21840 | 0.62 |

- Do not apply lubricant to the threaded connection.

[1] C-Cylindrical, W-Weldon
[2] S-steel, W-tungsten
[3] The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

**MULTI-MASTER**

**MM S-D (89° conical shanks)**
Shanks Mount Interchangeable Milling Heads




| Designation | THSZWS | DCONMS | BD | LB | Shank | LBX | OAL | BHTA | Shank m. | CSP[1] | RPMX[2] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM S-D-L100-C12-T05 | T05 | 12.00 | 7.60 | 29.60 | C | 35.0 | 100.00 | 1.0 | S | 0 | 52000 | 0.08 |
| MM S-D-L110-C12-T05-C | T05 | 12.00 | 7.60 | 55.90 | C | 60.0 | 110.00 | 1.0 | C | 0 | 53430 | 0.13 |
| MM S-D-L110-C12-T05-W-H | T05 | 12.00 | 7.60 | 55.70 | C | 60.0 | 110.00 | 1.0 | W | 1 | 38460 | 0.14 |
| MM S-D-L130-C12-T05-C | T05 | 12.00 | 7.60 | 77.30 | C | 80.0 | 130.00 | 1.0 | C | 0 | 36420 | 0.15 |
| MM S-D-L130-C12-T05-W-H | T05 | 12.00 | 7.60 | 76.40 | C | 80.0 | 130.00 | 1.0 | W | 1 | 26160 | 0.16 |
| MM S-D-L150-C16-T05-C | T05 | 16.00 | 7.60 | 91.50 | C | 100.0 | 150.00 | 1.0 | C | 0 | 29700 | 0.26 |
| MM S-D-L110-C12-T06-W-H | T06 | 12.00 | 9.60 | 58.80 | C | 60.0 | 110.00 | 1.0 | W | 1 | 36990 | 0.17 |
| MM S-D-L130-C16-T06-W-H | T06 | 16.00 | 9.60 | 73.40 | C | 80.0 | 130.00 | 1.0 | W | 1 | 29490 | 0.28 |
| MM S-D-L150-C16-T06-C | T06 | 16.00 | 9.60 | 95.40 | C | 100.0 | 150.00 | 1.0 | C | 0 | 30150 | 0.27 |
| MM S-D-L150-C16-T06-W-H | T06 | 16.00 | 9.60 | 93.80 | C | 100.0 | 150.00 | 1.0 | W | 1 | 21660 | 0.33 |
| MM S-D-L160-C16-T06 | T06 | 16.00 | 9.60 | 46.80 | C | 55.0 | 160.00 | 1.0 | S | 0 | 23370 | 0.12 |
| MM S-D-L170-C16-T06-C | T06 | 16.00 | 9.60 | 116.90 | C | 120.0 | 170.00 | 1.0 | C | 0 | 23400 | 0.11 |
| MM S-D-L170-C16-T06-W | T06 | 16.00 | 9.60 | 46.30 | C | 55.0 | 170.00 | 1.0 | W | 0 | 21210 | 0.48 |
| MM S-D-L130-C16-T08-C | T08 | 16.00 | 11.60 | 77.20 | C | 80.0 | 130.00 | 1.0 | C | 0 | 39870 | 0.28 |
| MM S-D-L130-C16-T08-W-H | T08 | 16.00 | 11.60 | 76.40 | C | 80.0 | 130.00 | 1.0 | W | 1 | 29040 | 0.32 |
| MM S-D-L150-C16-T08-C | T08 | 16.00 | 11.60 | 97.80 | C | 100.0 | 150.00 | 1.0 | C | 0 | 29970 | 0.33 |
| MM S-D-L150-C16-T08-W-H | T08 | 16.00 | 11.60 | 98.30 | C | 100.0 | 150.00 | 1.0 | W | 1 | 21540 | 0.38 |
| MM S-D-L170-C20-T08 | T08 | 20.00 | 11.60 | 69.70 | C | 80.0 | 170.00 | 1.0 | S | 0 | 22680 | 0.30 |
| MM S-D-L170-C20-T08-C | T08 | 20.00 | 11.60 | 112.00 | C | 120.0 | 170.00 | 1.0 | C | 0 | 26250 | 0.47 |
| MM S-D-L170-C20-T08-W | T08 | 20.00 | 11.60 | 69.70 | C | 80.0 | 170.00 | 1.0 | W | 0 | 24900 | 0.65 |
| MM S-D-L170-C20-T08-W-H | T08 | 20.00 | 11.60 | 113.10 | C | 120.0 | 170.00 | 1.0 | W | 1 | 18750 | 0.53 |
| MM S-D-L150-C20-T10-C | T10 | 20.00 | 15.30 | 97.50 | C | 100.0 | 150.00 | 1.0 | C | 0 | 35610 | 0.10 |
| MM S-D-L150-C20-T10-W-H | T10 | 20.00 | 15.30 | 96.80 | C | 100.0 | 150.00 | 1.0 | W | 1 | 25800 | 0.60 |
| MM S-D-L170-C20-T10-C | T10 | 20.00 | 15.30 | 118.30 | C | 120.0 | 170.00 | 1.0 | C | 0 | 28140 | 0.61 |
| MM S-D-L170-C20-T10-W-H | T10 | 20.00 | 15.30 | 118.00 | C | 120.0 | 170.00 | 1.0 | W | 1 | 20100 | 0.73 |
| MM S-D-L190-C20-T10 | T10 | 20.00 | 15.30 | 73.70 | C | 80.0 | 190.00 | 1.0 | S | 0 | 15780 | 0.42 |
| MM S-D-L190-C20-T10-C | T10 | 20.00 | 15.30 | - | C | 140.0 | 190.00 | 1.0 | C | 0 | 22830 | 0.68 |
| MM S-D-L190-C20-T10-W-H | T10 | 20.00 | 15.30 | - | C | 140.0 | 190.00 | 1.0 | W | 1 | 16170 | 0.83 |
| MM S-D-L210-C20-T10-C | T10 | 20.00 | 15.30 | - | C | 160.0 | 210.00 | 1.0 | C | 0 | 18270 | 0.75 |
| MM S-D-L210-C20-T10-W-H | T10 | 20.00 | 15.30 | - | C | 160.0 | 210.00 | 1.0 | W | 1 | 12870 | 0.93 |
| MM S-D-L180-C25-T12-C | T12 | 25.00 | 18.30 | 115.70 | C | 120.0 | 180.00 | 1.0 | C | 0 | 29460 | 0.91 |
| MM S-D-L180-C25-T12-W-H | T12 | 25.00 | 18.30 | 114.60 | C | 120.0 | 180.00 | 1.0 | W | 1 | 20940 | 1.15 |
| MM S-D-L200-C25-T12-W-H | T12 | 25.00 | 18.30 | 146.60 | C | 150.0 | 200.00 | 1.0 | W | 1 | 16560 | 1.21 |
| MM S-D-L210-C25-T12 | T12 | 25.00 | 18.30 | 94.60 | C | 100.0 | 210.00 | 1.0 | S | 0 | 15540 | 0.66 |
| MM S-D-L250-C25-T12-C | T12 | 25.00 | 18.30 | 135.60 | C | 140.0 | 250.00 | 1.0 | C | 0 | 16170 | 1.40 |
| MM S-D-L250-C25-160T12W-H | T12 | 25.00 | 18.30 | 157.20 | C | 160.0 | 250.00 | 1.0 | W | 1 | 11310 | 1.76 |
| MM S-D-L250-C25-T12-W-H | T12 | 25.00 | 18.30 | 135.60 | C | 140.0 | 250.00 | 1.0 | W | 1 | 11300 | 1.80 |
| MM S-D-L250-C32-T15 | T15 | 32.00 | 23.90 | 90.10 | C | 100.0 | 250.00 | 1.0 | S | 0 | 14160 | 1.00 |
| MM S-D-L250-C32-T15-C | T15 | 32.00 | 23.90 | 143.30 | C | 150.0 | 250.00 | 1.0 | C | 0 | 20370 | 1.88 |
| MM S-D-L300-C32-T15-C | T15 | 32.00 | 23.90 | 195.70 | C | 200.0 | 300.00 | 1.0 | C | 0 | 16000 | 2.62 |

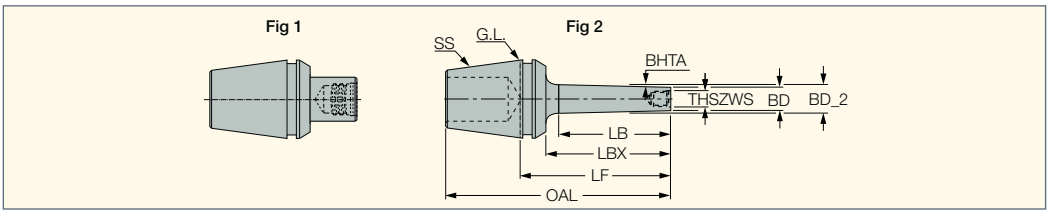
• Shank material (Shank m.): S-steel, C-carbide, W-tungsten. • Do not apply lubricant to the threaded connection.

(1) 0 - Without coolant supply, 1 - With coolant supply

(2) The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

MULTI-MASTER

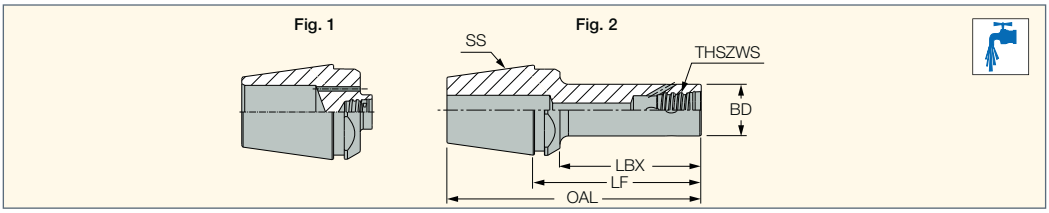
**MM S-ER**
Shanks that Mount MULTI-MASTER Solid Carbide Heads with an ER Collet Adaptation




| Designation | SS | THSZWS | BHTA | BD | BD_2 | LB | LBX | LF | OAL | Fig. | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM S-A-H004-ER11-T04 | ER11 | T04 | - | 5.80 | - | - | 4.0 | 9.60 | 22.00 | 1 | 0.01 |
| MM S-A-H004-ER11-T05 | ER11 | T05 | - | 7.60 | - | - | 4.0 | 9.60 | 22.00 | 1 | 0.01 |
| MM S-A-H10.5-ER11-T05 | ER11 | T05 | - | 7.60 | - | - | 10.5 | 16.10 | 28.50 | 1 | 0.01 |
| MM S-A-H004-ER16-T08 | ER16 | T08 | - | 11.60 | - | - | 4.0 | 11.60 | 31.50 | 1 | 0.03 |
| MM S-A-H10.5-ER16-T05 | ER16 | T05 | - | 7.60 | - | - | 10.5 | 18.10 | 38.00 | 1 | 0.03 |
| MM S-A-H10.5-ER16-T06 | ER16 | T06 | - | 9.25 | - | - | 10.5 | 18.10 | 38.00 | 1 | 0.04 |
| MM S-A-H013-ER16-T08 | ER16 | T08 | - | 11.60 | - | - | 14.0 | 20.60 | 40.50 | 1 | 0.02 |
| MM S-A-H004-ER20-T10 | ER20 | T10 | - | 15.30 | - | - | 4.0 | 12.60 | 35.50 | 1 | 0.05 |
| MM S-A-H10.5-ER20-T05 | ER20 | T05 | - | 7.60 | - | - | 10.5 | 19.10 | 42.00 | 1 | 0.04 |
| MM S-A-H10.5-ER20-T06 | ER20 | T06 | - | 9.25 | - | - | 10.5 | 19.10 | 42.00 | 1 | 0.05 |
| MM S-A-H016-ER20-T10 | ER20 | T10 | - | 15.30 | - | - | 16.0 | 24.60 | 47.50 | 1 | 0.06 |
| MM S-A-H004-ER25-T12 | ER25 | T12 | - | 18.30 | - | - | 4.0 | 13.10 | 38.00 | 1 | 0.08 |
| MM S-A-H10.5-ER25-T12 | ER25 | T12 | - | 18.30 | - | - | 10.5 | 19.60 | 44.50 | 1 | 0.06 |
| MM S-A-H025-ER32-T06 | ER32 | T06 | - | 9.25 | 10.00 | 18.00 | 25.0 | 35.10 | 65.00 | 2 | 0.15 |
| MM S-B-H025-ER32-T06 | ER32 | T06 | 5.0 | 9.60 | 13.50 | 22.30 | 25.0 | 35.10 | 65.00 | 2 | 0.16 |
| MM S-B-H050-ER32-T06 | ER32 | T06 | 5.0 | 9.60 | 17.90 | 47.30 | 50.0 | 60.10 | 90.00 | 2 | 0.20 |
| MM S-B-H075-ER32-T06 | ER32 | T06 | 5.0 | 9.60 | 22.60 | 74.10 | 75.0 | 85.10 | 115.00 | 2 | 0.25 |
| MM S-D-H050-ER32-T06 | ER32 | T06 | 1.0 | 9.60 | 11.20 | 45.00 | 50.0 | 60.10 | 90.00 | 2 | 0.17 |

• Do not apply lubricant to the threaded connection. • For adaptation see page 59 • When a rigid ER collet is assembled in an ER holder, the actual protruding length of the holder becomes shorter by 2.0 mm for ER20 and by 3.0 mm for ER25/ER32

**MM S-ER-H**
Shanks that Mount MULTI-MASTER Solid Carbide Heads with an ER Collet Adaptation and Coolant Holes

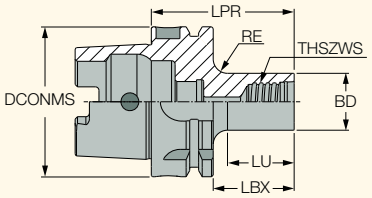



| Designation | SS | THSZWS | BD | LBX | LF | OAL | Fig. | kg |
|---|---|---|---|---|---|---|---|---|
| MM S-A-H004-ER16-T05-H | ER16 | T05 | 7.60 | 4.0 | 11.60 | 31.50 | 1 | 0.02 |
| MM S-A-H004-ER16-T06-H | ER16 | T06 | 9.25 | 4.0 | 11.60 | 31.50 | 1 | 0.03 |
| MM S-A-H004-ER20-T05-H | ER20 | T05 | 7.60 | 4.0 | 12.60 | 35.50 | 1 | 0.06 |
| MM S-A-H004-ER20-T06-H | ER20 | T06 | 9.25 | 4.0 | 12.60 | 35.50 | 1 | 0.06 |
| MM S-A-H004-ER20-T08-H | ER20 | T08 | 11.60 | 4.0 | 12.60 | 35.50 | 1 | 0.04 |
| MM S-A-H013-ER20-T08-H | ER20 | T08 | 11.60 | 13.0 | 21.60 | 44.50 | 1 | 0.07 |
| MM S-A-H004-ER25-T05-H | ER25 | T05 | 7.60 | 4.0 | 13.10 | 38.00 | 1 | 0.08 |
| MM S-A-H004-ER25-T06-H | ER25 | T06 | 9.25 | 4.0 | 13.10 | 38.00 | 1 | 0.07 |
| MM S-A-H004-ER25-T08-H | ER25 | T08 | 11.60 | 4.0 | 13.10 | 38.00 | 1 | 0.11 |
| MM S-A-H004-ER25-T10-H | ER25 | T10 | 15.30 | 4.0 | 13.10 | 38.00 | 1 | 0.10 |
| MM S-A-H10.5-ER25-T05-H | ER25 | T05 | 7.60 | 10.5 | 19.60 | 44.50 | 1 | 0.08 |
| MM S-A-H10.5-ER25-T06-H | ER25 | T06 | 9.25 | 10.5 | 19.60 | 44.50 | 1 | 0.12 |
| MM S-A-H10.5-ER25-T08-H | ER25 | T08 | 11.60 | 10.5 | 19.60 | 44.50 | 1 | 0.06 |
| MM S-A-H10.5-ER25-T10-H | ER25 | T10 | 15.30 | 10.5 | 19.60 | 44.50 | 1 | 0.10 |
| MM S-A-H004-ER32-T05-H | ER32 | T05 | 7.60 | 4.0 | 14.10 | 44.00 | 1 | 0.14 |
| MM S-A-H025-ER32-T05-H | ER32 | T05 | 7.60 | 25.0 | 35.10 | 65.00 | 1 | 0.14 |
| MM S-A-H040-ER32-T05-H | ER32 | T05 | 7.60 | 40.0 | 50.10 | 80.00 | 1 | 0.15 |
| MM S-A-H004-ER32-T06-H | ER32 | T06 | 9.60 | 4.0 | 14.10 | 44.00 | 1 | 0.14 |
| MM S-A-H025-ER32-T06-H | ER32 | T06 | 9.25 | 25.0 | 35.10 | 65.00 | 1 | 0.14 |
| MM S-A-H040-ER32-T06-H | ER32 | T06 | 9.25 | 40.0 | 50.10 | 80.00 | 1 | 0.22 |
| MM S-A-H004-ER32-T08-H | ER32 | T08 | 11.60 | 4.0 | 14.10 | 44.00 | 1 | 0.16 |
| MM S-A-H025-ER32-T08-H | ER32 | T08 | 11.60 | 25.0 | 35.10 | 65.00 | 1 | 0.16 |
| MM S-A-H050-ER32-T08-H | ER32 | T08 | 11.60 | 50.0 | 60.10 | 90.00 | 2 | 0.23 |
| MM S-A-H004-ER32-T10-H | ER32 | T10 | 15.30 | 4.0 | 14.10 | 44.00 | 1 | 0.14 |
| MM S-A-H025-ER32-T10-H | ER32 | T10 | 15.30 | 25.0 | 35.10 | 65.00 | 1 | 0.20 |
| MM S-A-H050-ER32-T10-H | ER32 | T10 | 15.20 | 50.0 | 60.10 | 90.00 | 2 | 0.25 |
| MM S-A-H004-ER32-T12-H | ER32 | T12 | 18.30 | 4.0 | 14.10 | 44.00 | 1 | 0.14 |
| MM S-A-H025-ER32-T12-H | ER32 | T12 | 18.30 | 25.0 | 35.10 | 65.00 | 1 | 0.17 |
| MM S-A-H050-ER32-T12-H | ER32 | T12 | 18.30 | 50.0 | 60.10 | 90.00 | 2 | 0.22 |
| MM S-A-H004-ER32-T15-H | ER32 | T15 | 23.90 | 4.0 | 14.10 | 44.00 | 1 | 0.16 |
| MM S-A-H025-ER32-T15-H | ER32 | T15 | 23.90 | 25.0 | 35.10 | 65.00 | 2 | 0.21 |
| MM S-A-H050-ER32-T15-H | ER32 | T15 | 23.90 | 50.0 | 60.10 | 90.00 | 2 | 0.25 |

• Do not apply lubricant to the threaded connection. • For adaptation see page 59

## MULTI-MASTER HSK

**MM S-A-HSK**
MULTI-MASTER Threaded Connection Shanks with an Integral HSK DIN 69893 Form A Tapered Adaptation

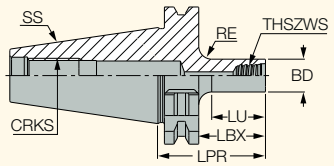



| Designation | DCONMS | THSZWS | BD | LPR | LBX | LU | RE | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|
| MM S-A-H035-HSK A40-T05 | 40.00 | T05 | 7.60 | 35.00 | 15.0 | 10.00 | 5.0 | 1 | 0.20 |
| MM S-A-H040-HSK A40-T06 | 40.00 | T06 | 9.25 | 40.00 | 20.0 | 15.00 | 5.0 | 1 | 0.28 |
| MM S-A-H045-HSK A40-T08 | 40.00 | T08 | 11.60 | 45.00 | 25.0 | 20.00 | 5.0 | 1 | 0.24 |
| MM S-A-H050-HSK A40-T10 | 40.00 | T10 | 15.30 | 50.00 | 30.0 | 25.00 | 5.0 | 1 | 0.23 |
| MM S-A-H050-HSK A40-T12 | 40.00 | T12 | 18.30 | 50.00 | 30.0 | 25.00 | 5.0 | 1 | 0.27 |
| MM S-A-H050-HSK A63-T06 | 63.00 | T06 | 9.25 | 50.00 | 24.0 | 18.00 | 6.0 | 1 | 0.70 |
| MM S-A-H050-HSK A63-T08 | 63.00 | T08 | 11.60 | 50.00 | 24.0 | 18.00 | 6.0 | 1 | 0.72 |
| MM S-A-H055-HSK A63-T10 | 63.00 | T10 | 15.30 | 55.00 | 29.0 | 23.00 | 6.0 | 1 | 0.73 |
| MM S-A-H055-HSK A63-T12 | 63.00 | T12 | 18.30 | 55.00 | 29.0 | 23.00 | 6.0 | 1 | 0.40 |
| MM S-A-H055-HSK A63-T21 | 63.00 | T21 | 30.00 | 55.00 | 29.0 | 19.00 | 10.0 | 1 | 0.83 |
| MM S-A-H060-HSK A63-T15 | 63.00 | T15 | 23.90 | 62.00 | 34.0 | 28.00 | 6.0 | 1 | 0.76 |
| MM S-A-H080-HSK A63-T21 | 63.00 | T21 | 30.00 | 80.00 | 54.0 | 44.00 | 10.0 | 1 | 0.94 |

• Do not apply lubricant to the threaded connection • For adaptation options, see page 59
(1) 1 - Slot for data chip, 0 - Without slot for data chip

## MULTI-MASTER DIN69871

**MM S-A-SK**
DIN 69871 Integral Tapered Shanks Mount MULTI-MASTER Milling Heads

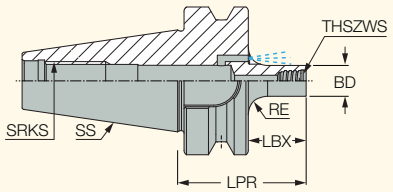



| Designation | SS | CRKS | THSZWS | BD | LPR | LBX | LU | RE | kg |
|---|---|---|---|---|---|---|---|---|---|
| MM S-A-H040-SK 40-T06 | 40 | M16 | T06 | 9.25 | 40.00 | 21.0 | 15.00 | 6.0 | 0.86 |
| MM S-A-H045-SK 40-T08 | 40 | M16 | T08 | 11.60 | 45.00 | 26.0 | 20.00 | 6.0 | 0.87 |
| MM S-A-H050-SK 40-T10 | 40 | M16 | T10 | 15.30 | 50.00 | 31.0 | 25.00 | 6.0 | 0.83 |
| MM S-A-H050-SK 40-T12 | 40 | M16 | T12 | 18.30 | 50.00 | 31.0 | 25.00 | 6.0 | 0.90 |
| MM S-A-H050-SK 40-T15 | 40 | M16 | T15 | 23.90 | 50.00 | 31.0 | 25.00 | 6.0 | 0.09 |

• Do not apply lubricant to the threaded connection • For adaptation, see page 59

## MULTI-MASTER BT MAS

**MM S-A-BT**
BT Integral Tapered Shanks Mount MULTI-MASTER Milling Heads



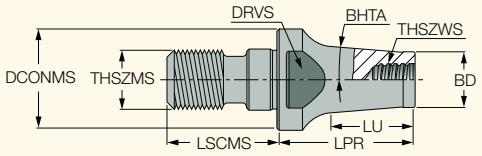

| Designation | SS | CRKS | THSZWS | BD | LPR | LBX | RE |
|---|---|---|---|---|---|---|---|
| MM S-A-H040-BT30-T06-H | 30 | M12 | T06 | 9.60 | 40.00 | 18.0 | 6.0 |
| MM S-A-H045-BT30-T08-H | 30 | M12 | T08 | 11.60 | 45.00 | 23.0 | 6.0 |
| MM S-A-H050-BT30-T10-H | 30 | M12 | T10 | 15.30 | 50.00 | 28.0 | 6.0 |
| MM S-A-H050-BT30-T12-H | 30 | M12 | T12 | 18.30 | 50.00 | 28.0 | 6.0 |
| MM S-A-H050-BT30-T15-H | 30 | M12 | T15 | 23.90 | 50.00 | 28.0 | 3.0 |

New

• Do not apply lubricant to the threaded connection • For adaptation, see page 59

MULTI-MASTER

**MM CAB**
Adapters for Connecting
FLEX-FIT Shanks and
MULTI-MASTER Milling Heads




| Designation | THSZWS | THSZMS | LPR | LU | BD | DCONMS | LSCMS | DRVS(1) | BHTA | TQ_3(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM CAB T06M06-16/.63 | T06 | M06 | 16.00 | 11.60 | 9.30 | 9.70 | 14.50 | 8.0 | 1.5 | 15 | 0.01 |
| MM CAB T06M08-16/.63 | T06 | M08 | 16.00 | 13.70 | 9.60 | 13.00 | 17.50 | 11.0 | 6.0 | 20 | 0.02 |
| MM CAB T06M08-25/1.0 | T06 | M08 | 25.00 | 11.30 | 9.30 | 13.00 | 17.50 | 11.0 | 1.5 | 20 | 0.02 |
| MM CAB T06M10-25/1.0 | T06 | M10 | 25.00 | 16.60 | 9.60 | 18.00 | 20.00 | 11.0 | 5.0 | 29 | 0.04 |
| MM CAB T08M08-16/.63 | T08 | M08 | 16.00 | 5.40 | 11.70 | 13.00 | 17.50 | 11.0 | 11.4 | 20 | 0.02 |
| MM CAB T08M08-25/1.0 | T08 | M08 | 25.00 | 19.50 | 11.70 | 13.00 | 17.50 | 11.0 | 1.5 | 20 | 0.02 |
| MM CAB T08M10-20/.75 | T08 | M10 | 20.00 | 11.30 | 11.70 | 18.00 | 20.00 | 13.0 | 7.0 | 29 | 0.04 |
| MM CAB T08M10-25/1.0 | T08 | M10 | 25.00 | 14.20 | 11.70 | 18.00 | 20.00 | 11.0 | 1.5 | 29 | 0.03 |
| MM CAB T08M12-20/.75 | T08 | M12 | 20.00 | 9.30 | 11.70 | 21.00 | 22.00 | 13.0 | 7.0 | 33 | 0.05 |
| MM CAB T08M12-25/1.0 | T08 | M12 | 25.00 | 12.50 | 11.70 | 21.00 | 22.00 | 13.0 | 1.5 | 33 | 0.04 |

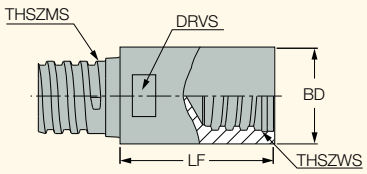
• Do not apply lubricant to the threaded connection • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Clamping wrench size

(2) Tool tightening torque Nxm (lbfxin)

MULTI-MASTER

**MM CAB-T-T**
MULTI-MASTER
Shank Extensions



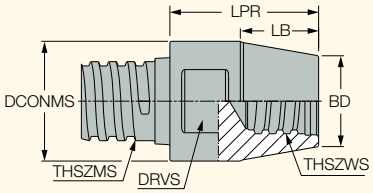

| Designation | BD | THSZWS | THSZMS | LF | DRVS(1) | kg |
|---|---|---|---|---|---|---|
| MM CAB T05T05-25/1.0-C | 7.60 | T05 | T05 | 25.40 | 6.0 | 0.02 |
| MM CAB T06T06-25/1.0-C | 9.30 | T06 | T06 | 25.40 | 8.0 | 0.02 |
| MM CAB T08T08-25/1.0-C | 11.50 | T08 | T08 | 25.40 | 10.0 | 0.02 |
| MM CAB T10T10-38/1.5-C | 15.20 | T10 | T10 | 38.10 | 13.0 | 0.08 |
| MM CAB T12T12-38/1.5-C | 18.45 | T12 | T12 | 38.10 | 16.0 | 0.11 |
| MM CAB T15T15-45/1.77-C | 23.90 | T15 | T15 | 45.00 | 20.0 | 0.21 |

• Clamping key to be ordered separately • For adaptation, see page 59

(1) Clamping wrench size

**MULTI-MASTER**

## MM CAB-T-T-W
MULTI-MASTER Shank Reducers




| Designation | DCONMS | THSZMS | THSZWS | BD | LB | LPR | DRVS[1] | kg |
|---|---|---|---|---|---|---|---|---|
| MM CAB T05T04-14.0/.55-W | 7.60 | T05 | T04 | 5.80 | 8.20 | 14.00 | 5.5 | 0.01 |
| MM CAB T06T05-15.0/.59-W | 9.60 | T06 | T05 | 7.60 | 9.00 | 15.00 | 8.0 | 0.03 |
| MM CAB T08T06-16.0/.63-W | 11.60 | T08 | T06 | 9.60 | 9.00 | 16.00 | 10.0 | 0.04 |
| MM CAB T10T08-19.0/.75-W | 15.30 | T10 | T08 | 11.60 | 10.00 | 19.00 | 13.0 | 0.07 |
| MM CAB T12T10-24.0/.94-W | 18.30 | T12 | T10 | 15.30 | 15.00 | 24.00 | 16.0 | 0.12 |
| MM CAB T15T12-30.0/1.18-W | 23.90 | T15 | T12 | 18.30 | 17.50 | 30.00 | 20.0 | 0.24 |

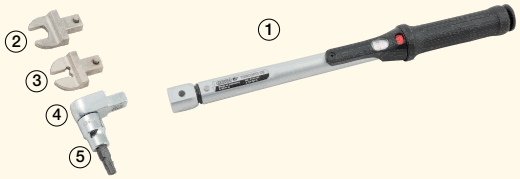
New

- Clamping key to be ordered separately
- For adaptation, see page 59

[1] Torque key size

## Accessories

### MM Adjustable Torque Keys
Adjustable Torque Handle and Keys for Secure and Accurate Tightening of MULTI-MASTER Milling Heads




| Designation | Fig. | Ts[1] | Key | TQ[2] |
|---|---|---|---|---|
| TORQUE WRENCH 3-25NM 9X12 | 1 | - | - | - |
| TORQUE WRENCH 5-50NM 9X12 | 1 | - | - | - |
| MM WRENCH 6-05 | 2 | T05 | - | 7.0 |
| MM WRENCH 8-06 | 2 | T06 | - | 10.0 |
| MM WRENCH 10-08 | 2 | T08 | - | 15.0 |
| MM WRENCH 13-10 | 2 | T10 | - | 28.0 |
| MM WRENCH 16-12 | 2 | T12 | - | 28.0 |
| MM WRENCH 20-15 | 2 | T15 | - | 40.0 |
| MM WRENCH 24-21 | 2 | T21 | - | 110.0 |
| MM WRENCH 4E-05 | 3 | T05 | - | 7.0 |
| MM WRENCH 5E-06 | 3 | T06 | - | 10.0 |
| MM WRENCH 7E-08 | 3 | T08 | - | 15.0 |
| MM WRENCH 8E-10 | 3 | T10 | - | 28.0 |
| MM WRENCH 9E-12 | 3 | T12 | - | 28.0 |
| INSERT TOOL 3/8" 9X12mm | 4 | - | - | - |
| BIT SOCKET T20 3/8" DRIVE | 5 | - | Torx T20 | - |
| BIT SOCKET T25 3/8" DRIVE | 5 | - | Torx T25 | - |
| BIT SOCKET T30 3/8" DRIVE | 5 | - | Torx T30 | - |
| BIT SOCKET T40 3/8" DRIVE | 5 | - | Torx T40 | - |
| BIT SOCKET T50 3/8" DRIVE | 5 | - | Torx T50 | - |

- NOTE: Recommended clamping torque for each MULTI-MASTER connection size, see next page

[1] MULTI-MASTER connection size

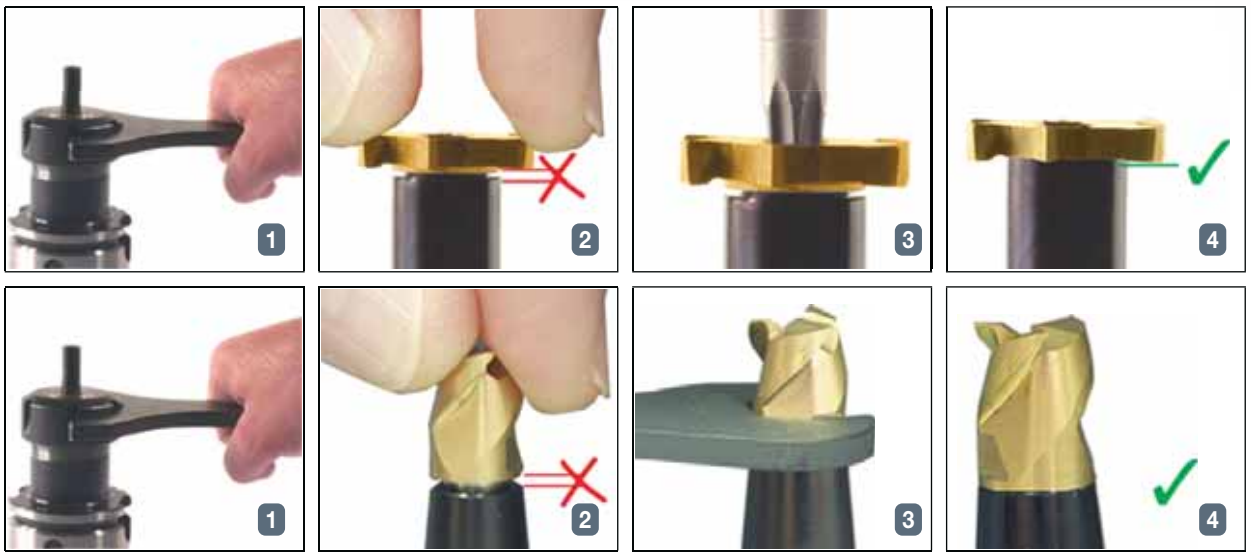
[2] Clamping torque Nxm

### Adjustable Torque Handle with Interchangeable Wrenches for Clamping MULTI-MASTER Milling Heads

The adjustable torque handle, interchangeable wrenches and Torx bits are optional and should be ordered separately.

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

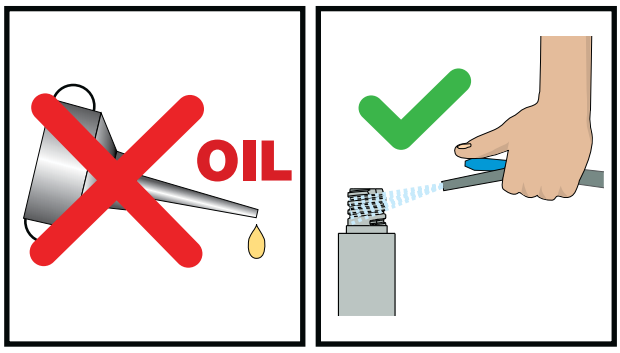
Clamping and Indexing Instructions




Do not apply lubricant to the threaded connection.

| Thread Size | Key[1] | Tightening Torque (Nxcm) |
|---|---|---|
| T04 | MM KEY 4X3 | 400 |
| T04 | MM KEY 6x4 | 400 |
| T05 | MM KEY 6x4 | 700 |
| T06 | MM KEY 8x5 | 1000 |
| T08 | MM KEY 10x7 | 1500 |
| T10 | MM KEY 13x8 | 2800 |
| T12 | MM KEY 16x9 | 2800 |
| T15 | MM KEY 20 | 4000 |
| T21 | MM WRENCH 24-21 | 11000 |

(1) Order separately




Do not apply lubricant to the threaded connection

# SOLID CARBIDE ENDMILLS

SOLIDMILL PREMIUM LINE

| WORKPIECE MATERIAL | ISO | Page |
|---|---|---|
| STEEL | P | 114 |
| STAINLESS STEEL | M | 118 |
| CAST IRON | K | 120 |
| ALUMINUM / NON FERROUS MATERIALS | N | 123 |
| SUPERALLOYS / TITANIUM | S | 125 |
| HARD STEELS | H | 127 |

**P (Steel Materials)**

**Tool Selection Priorities**

| Tool | Rough | Semi-Finish | Finish/H.S.M |
|---|---|---|---|
| EC-H6/20 | - | - | 1 |
| EC-E7/H7-CF | - | - | 2 |
| EFS-B44 | 5 | 6 | - |
| EFS-E44-CF | 4 | 5 | - |
| ECR-B-MF | 6 | 7 | - |
| EC-E5L-CF | 7 | 1 | 4 |
| EC-E4L-CF | 3 | 3 | 5 |
| ECP-H4L-CF | 2 | 4 | - |
| EC-H4M-CF-E | 1 | 2 | 3 |

## ROUGHING

| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | EC-H4M-CF-E | 4-20 | - | 2xDC | 4 | CHWx45 | NO | 136 |
| | ECP-H4L-CFR | 10-20 | 3XDC | 2xDC | 4 | RE | NO | 137 |
| | EC-E4L-CF | 1-25 | 3XDC | 2xDC | 4 | CHWx45 | NO | 151 |
| | EFS-E44 | 6-25 | - | 2xDC | 4 | CHWx45 | NO | 148 |
| | EFS-B44 | 4-25 | 3xDC | 2xDC | 4 | CHWx45 | NO | 149 |
| | ECR-B-MF | 6-25 | - | 2xDC | 4/6 | CHWx45 | NO | 154 |
| | EC-E5L-CF | 6-20 | - | 2xDC | 5 | CHWx45 | NO | 152 |

SOLIDMILL PREMIUM LINE



## FINISHING

| P (Steel Materials) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
| | EC-E5L-CF | 6-20 | - | 2xDC | 5 | CHWx45 | NO | 152 |
| | EC-E7/H7-CF | 2-20 | - | 2xDC, 4xDC | 7 | - | NO | 141-142 |
| | EC-H-CF | 6-20 | - | 2xDC | 6-20 | CHWx45 | NO | 145 |
| | ECXL-B-4/6 | 10-20 | - | 6xDC | 4/6 | - | NO | 184 |
| | ECH-B-6 | 6-20 | - | 2xDC | 6 | - | NO | 183 |

## TROCHOIDAL / DYNAMIC MILLING

| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
|---|---|---|---|---|---|---|---|---|
| | EC-E7/H7-CF | 2-20 | - | 2xDC, 4xDC | 7 | - | NO | 141-142 |
| | EC-H-CF | 6-20 | - | 2xDC | 6-20 | CHWx45 | NO | 152 |

## HIGH FEED MILLING

| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
|---|---|---|---|---|---|---|---|---|
| | EFP-E4,5CF | 6-20 | - | 2.5xDC | 4/5 | RE | NO | 158 |
| | EFF-S | 1-20 | 3xDC | MIN. | 2/4 | RE | NO | 158 |

SOLIDMILL PREMIUM LINE

## CHAMFERING AND DEBURRING

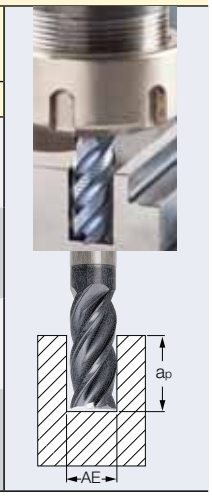
| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | ECF.../45 | 4-12 | - | 2.5xDC | 4 | - | NO | 207 |
| | ECD-S2 | 3-12 | 2xDC | 0.5xDC | 2 | - | NO | 208 |

| P (Steel Materials) | |
|---|---|
| **Tool Type** | **Features** |
| EC-H4M-CF-E (ECO Type) | • Rough and finish operations<br>• General use<br>• Low power machines<br>• CHATTER-FREE |
| ECP-H4L-CFR | • Rough operations<br>• General use<br>• Chip splitter CHATTER-FREE |
| EC-E4L-CF | • Rough and finish operations<br>• Used for machining alloyed steel and general use<br>• Low power machines CHATTER-FREE |
| EC-E5L-CF | • Rough and finish operations<br>• Used for machining alloyed steel and general use<br>• High material removal rates |
| ECR-B-MF | • Rough operations<br>• Used in unstable components |
| EFS-E44 | • Used for machining alloyed steel<br>• Combination of VIBRAFREE and FINISH ROUGH |
| EFS-B44 | • Unique design<br>• Used for machining titanium, stainless and alloyed steel<br>• Fully effective<br>• Semi-finish surface quality |
| EC-E7/H7-CF | • For high speed machining<br>• Trochoidal milling<br>• Finish operations up to 10% X DC |
| EC-H-CF | • High speed machining<br>• Multiflute solid endmill<br>• Tools for super finish<br>• Up to 5% X DC |

## P (Steel Materials)

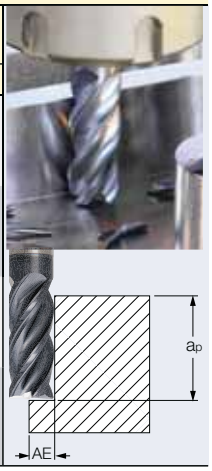
### ROUGH: AE = 40% - Full Cut , $A_p$ = 2 x DC

| Material Group Parameters | Unalloyed Steel | | Low Alloyed Steel | | High Alloyed Steel | | Martensitic Steels | Ferritic Steels |
|---|---|---|---|---|---|---|---|---|
| | 1-4 | 5 | 6-7 | 8-9 | 10 | 11 | 12 | 13 |
| $V_c$ (IC900/608) (m/min) | 160-180 | 140-150 | 120-160 | 130-150 | 130-150 | 70-90 | 80-100 | 60-90 |
| $F_z$ (Ø6-8) (mm/t) | 0.025-0.035 | 0.025-0.035 | 0.02-0.03 | 0.02-0.03 | 0.02-0.03 | 0.02-0.03 | 0.02-0.035 | 0.02-0.035 |
| $F_z$ (Ø10-12) (mm/t) | 0.03-0.045 | 0.03-0.045 | 0.03-0.045 | 0.03-0.045 | 0.03-0.045 | 0.03-0.045 | 0.03-0.04 | 0.03-0.04 |
| $F_z$ (Ø16-20) (mm/t) | 0.04-0.055 | 0.04-0.055 | 0.04-0.055 | 0.04-0.055 | 0.04-0.055 | 0.04-0.055 | 0.035-0.045 | 0.035-0.045 |



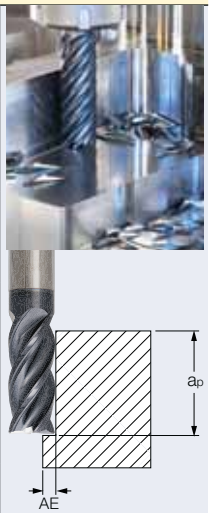

### SEMI-FINISH: AE = 10% - 40%, $A_p$ = 2 x DC

| Material Group Parameters | Unalloyed Steel | | Low Alloyed Steel | | High Alloyed Steel | | Martensitic Steels | Ferritic Steels |
|---|---|---|---|---|---|---|---|---|
| | 1-4 | 5 | 6-7 | 8-9 | 10 | 11 | 12 | 13 |
| $V_c$ (IC900/608) (m/min) | 200-220 | 150-170 | 160-180 | 150-170 | 150-160 | 90-110 | 100-130 | 90-120 |
| $F_z$ (Ø6-8) (mm/t) | 0.03-0.06 | 0.03-0.06 | 0.02-0.05 | 0.02-0.05 | 0.02-0.05 | 0.02-0.05 | 0.025-0.04 | 0.025-0.04 |
| $F_z$ (Ø10-12) (mm/t) | 0.06-0.07 | 0.06-0.07 | 0.04-0.065 | 0.04-0.065 | 0.04-0.065 | 0.04-0.065 | 0.035-0.045 | 0.035-0.045 |
| $F_z$ (Ø16-20) (mm/t) | 0.07-0.08 | 0.07-0.08 | 0.045-0.07 | 0.045-0.07 | 0.045-0.07 | 0.045-0.07 | 0.04-0.05 | 0.04-0.05 |




### FINISH: AE = 5% - 10%, $A_p$ = Max. Cutting Length

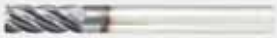
| Material Group Parameters | Unalloyed Steel | | Low Alloyed Steel | | High Alloyed Steel | | Martensitic Steels | Ferritic Steels |
|---|---|---|---|---|---|---|---|---|
| | 1-4 | 5 | 6-7 | 8-9 | 10 | 11 | 12 | 13 |
| $V_c$ (IC900/608) (m/min) | 220-280 | 170-180 | 180-220 | 170-180 | 160-180 | 110-120 | 130-160 | 120-150 |
| $V_c$ (IC902/903/702) (m/min) | 230-290 | 180-200 | 190-230 | 180-230 | 170-190 | 120-130 | 140-170 | 130-160 |
| $F_z$ (Ø6-8) (mm/t) | 0.05-0.07 | 0.05-0.07 | 0.05-0.07 | 0.05-0.07 | 0.05-0.07 | 0.05-0.07 | 0.03-0.045 | 0.03-0.045 |
| $F_z$ (Ø10-12) (mm/t) | 0.07-0.08 | 0.07-0.08 | 0.07-0.08 | 0.07-0.08 | 0.07-0.08 | 0.07-0.08 | 0.04-0.05 | 0.04-0.05 |
| $F_z$ (Ø16-20) (mm/t) | 0.08-0.1 | 0.08-0.1 | 0.08-0.1 | 0.08-0.1 | 0.08-0.1 | 0.08-0.1 | 0.045-0.06 | 0.045-0.06 |



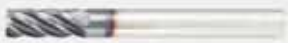
SOLIDMILL PREMIUM LINE

| M (Stainless Steel) | | | |
|---|---|---|---|
| Tool Selection Priorities | | | |
| **Tool** | **Rough** | **Semi-Finish** | **Finish/H.S.M** |
| ECY-S5-CFR | 1 | 1 | - |
| EC-H-CF | - | - | 1 |
| EC-E7/H7-CF | - | - | 2 |
| EFS-B44 | 6 | 7 | - |
| ECP-E4L | 5 | 6 | - |
| EC-H5M-CFR | - | 4 | 3 |
| EC-H4M-CFR | 4 | 5 | 5 |
| ECP-H4L-CFR | 3 | 3 | - |
| EC-H4M-CF-E | 2 | 2 | 4 |

## ROUGHING

| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | ECY-S5-CFR | 5-16 | - | 2xDC | 5 | RE | NO | 140 |
| | EC-H4M-CF-E | 4-20 | - | 2xDC | 4 | CHWx45 | NO | 136 |
| | ECP-H4L-CFR | 10-20 | 3XDC | 2xDC | 4 | RE | NO | 137 |
|  | EC-H5M-CFR | 4-20 | - | 2xDC | 5 | RE | NO | 139 |
| | EC-H4-L/M/XL-CFR | 3-25 | - | 2xDC | - | RE | NO | 137-138 |
| | EFS-B44 | 6-25 | 3xDC | 2xDC | 4 | CHWx45 | NO | 149 |
| | ECP-E4L | 5-20 | 3xDC | 2xDC | 4 | CHWx45 | NO | 155 |

## FINISHING

| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | ECY-S5-CFR | 5-16 | - | 2xDC | 5 | RE | NO | 140 |
| | EC-E7/H7-CF | 2-20 | - | 2xDC, 4xDC | 7 | - | NO | 141-142 |
| | EC-H-CF | 6-20 | - | 2xDC | 6-20 | CHWx45 | NO | 152 |
|  | EC-H5M-CFR | 4-20 | - | 2xDC | 5 | RE | NO | 139 |
| | ECXL-B-4/6 | 10-20 | - | 6xDC | 7 | - | NO | 184 |
| | ECH-B-6 | 6-20 | - | 2xDC | 6 | - | NO | 183 |

SOLIDMILL PREMIUM LINE

## TROCHOIDAL / DYNAMIC MILLING

| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | EC-E7/H7-CF | 2-20 | - | 2xDC, 4xDC | 7 | - | NO | 141-142 |
| | EC-H-CF | 6-20 | - | 2xDC | 6-20 | CHWx45 | NO | 152 |

## HIGH FEED MILLING

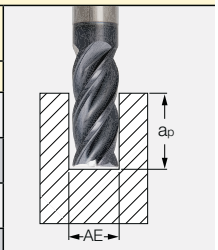
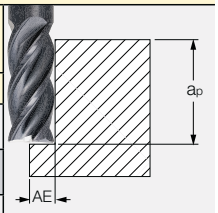
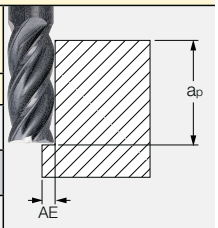
| M (Stainless Steel) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
| | EFP-E4,5CF | 6-20 | - | 2.5xDC | 4/5 | RE | NO | 158 |
| | EFF-S | 1-20 | 3xDC | MIN. | 2/4 | RE | NO | 158 |

## CHAMFERING AND DEBURRING

| M (Stainless Steel) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
| | ECF.../45 | 4-12 | - | 2.5xDC | 4 | - | NO | 207 |
| | ECD-S2 | 3-12 | 2xDC | 0.5xDC | 2 | - | NO | 208 |

| Tool Type | Features |
|---|---|
| ECY-S5-CFR | • Unique design<br>• Used for machining stainless steel<br>• Rough and finish operations<br>• High material removal rates |
| EC-H4M-CF-E (ECO Type) | • Rough and finish operations<br>• General use<br>• Low power machines<br>• CHATTER-FREE |
| ECP-H4L-CFR | • Rough operations<br>• General use<br>• Chip splitter CHATTER-FREE |
| EC-H4M-CFR | • Rough and finish operations<br>• Used for machining stainless steel<br>• High material removal rates |
| EC-H5M-CFR | • Rough and finish operations<br>• Used for machining stainless steel<br>• High material removal rates |
| ECP-E4L | • Used for machining stainless steel and high-temperature alloys<br>• Chip Splitter |
| EFS-B44 | • Unique design<br>• Used for machining titanium, stainless and alloyed steel<br>• Fully effective<br>• Semi-finish surface quality |
| EC-E7/H7-CF | • For high speed machining<br>• Trochoidal milling<br>• Finish operations up to 10% X DC |
| EC-H-CF | • High speed machining<br>• Multiflute solid endmill<br>• Tools for super finish<br>• Up to 5% X DC |

SOLIDMILL PREMIUM LINE

| M (Stainless Steel) | | |
|---|---|---|
| **ROUGH: AE = 40% - Full Cut , $A_p$ = 2 x DC** | | |
| **Material Group Parameters** | **Austenitic Steels** |  |
| | **14** | |
| $V_c$ (IC900/608) (m/min) | 60-80 | |
| $F_z$ (Ø6-8) (mm/t) | 0.02-0.035 | |
| $F_z$ (Ø10-12) (mm/t) | 0.03-0.04 | |
| $F_z$ (Ø16-20) (mm/t) | 0.035-0.045 | |
| **SEMI-FINISH: AE = 10% - 40%, $A_p$ = 2 x DC** | | |
| **Material Group Parameters** | **Austenitic Steels** |  |
| | **14** | |
| $V_c$ (IC900/608) (m/min) | 80-100 | |
| $F_z$ (Ø6-8) (mm/t) | 0.025-0.04 | |
| $F_z$ (Ø10-12) (mm/t) | 0.035-0.045 | |
| $F_z$ (Ø16-20) (mm/t) | 0.04-0.05 | |
| **FINISH / H.S.M: AE = 5% - 10%, $A_p$ = Max. Cutting Length** | | |
| **Material Group Parameters** | **Austenitic Steels** |  |
| | **14** | |
| $V_c$ (IC900/608) (m/min) | 100-120 | |
| $V_c$ (IC902/903/702) (m/min) | 110-130 | |
| $F_z$ (Ø6-8) (mm/t) | 0.03-0.045 | |
| $F_z$ (Ø10-12) (mm/t) | 0.04-0.05 | |
| $F_z$ (Ø16-20) (mm/t) | 0.045-0.06 | |

| K (Cast Iron) | | | |
|---|---|---|---|
| **Tool Selection Priorities** | | | |
| **Tool** | **Rough** | **Semi-Finish** | **Finish/HSM** |
| EC-H-CF | - | - | 1 |
| EC-E7/H7-CF | - | - | 2 |
| EFS-B44 | 2 | 7 | - |
| EFS-E44 | 5 | 6 | - |
| ECR-B-MF | 4 | 3 | - |
| EC-E5L-CF | 7 | 1 | 4 |
| EC-E4L-CF | 6 | 5 | 5 |
| ECP-H4L-CFR | 3 | 4 | - |
| EC-H4M-CF-E | 1 | 2 | 3 |

SOLIDMILL PREMIUM LINE

## ROUGHING

| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | EC-H4M-CF-E | 4-20 | - | 2xDC | 4 | CHWx45 | NO | 136 |
| | ECP-H4L-CFR | 10-20 | 3XDC | 2xDC | 4 | RE | NO | 137 |
| | EC-E4L-CF | 1-25 | 3XDC | 2xDC | 4 | CHWx45 | NO | 151 |
| | EFS-E44 | 6-25 | - | 2xDC | 4 | CHWx45 | NO | 148 |
| | EFS-B44 | 4-25 | 3xDC | 2xDC | 4 | CHWx45 | NO | 149 |
| | ECR-B-MF | 6-20 | - | 2xDC | 4/6 | CHWx45 | NO | 149 |
| | EC-E5L-CF | 6-20 | - | 2xDC | 5 | CHWx45 | NO | 152 |

## FINISHING

| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | EC-E5L-CF | 6-20 | - | 2xDC | 5 | CHWx45 | NO | 152 |
| | EC-E7/H7-CF | 2-20 | - | 2xDC, 4xDC | 7 | - | NO | 141-142 |
| | EC-H-CF | 6-20 | - | 2xDC | 6-20 | CHWx45 | NO | 152 |
| | ECXL-B-4/6 | 10-20 | - | 6xDC | 4/6 | - | NO | 184 |
| | ECH-B-6 | 6-20 | - | 2xDC | 6 | - | NO | 183 |

## TROCHOIDAL / DYNAMIC MILLING

| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | EC-E7/H7-CF | 2-20 | - | 2xDC, 4xDC | 7 | - | NO | 141-142 |
| | EC-H-CF | 6-20 | - | 2xDC | 6-20 | CHWx45 | NO | 152 |

SOLIDMILL PREMIUM LINE

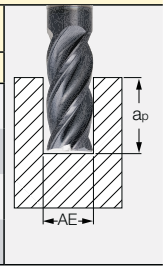
## HIGH FEED MILLING

| K (Cast Iron) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
| | EFP-E4,5CF | 6-20 | - | 2.5xDC | 4/5 | RE | NO | 158 |
| | EFF-S | 1-20 | 3xDC | MIN. | 2/4 | RE | NO | 158 |

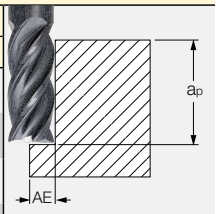
## CHAMFERING AND DEBURRING

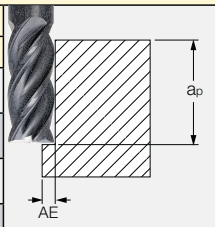
| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
|---|---|---|---|---|---|---|---|---|
| | ECF.../45 | 4-12 | - | 2.5xDC | 4 | - | NO | 207 |
| | ECD-S2 | 3-12 | 2xDC | 0.5xDC | 2 | - | NO | 208 |

| **Tool Type** | **Features** |
|---|---|
| EC-H4M-CF-E (ECO Type) | • Rough and finish operations<br>• General use<br>• Low power machines<br>• CHATTER-FREE |
| ECP-H4L-CFR | • Rough operations<br>• General use<br>• Chip splitter CHATTER-FREE |
| EC-E4L-CF | • Rough and finish operations<br>• Used for machining alloyed steel and general use<br>• Low power machines no vibrations |
| EC-E5L-CF | • Rough and finish operations<br>• Used for machining alloyed steel and general use<br>• High material removal rates |
| ECR-B-MF | • Rough operations<br>• Used on unstable components |
| EFS-E44 | • Used for machining alloyed steel<br>• Combination of VIBRAFREE and FINISHROUGH |
| EFS-B44 | • Unique design<br>• Used for machining titanium, stainless and alloyed steel<br>• Fully effective<br>• Semi-finish surface quality |
| EC-E7/H7-CF | • For high speed machining<br>• Trochoidal milling<br>• Finish operations up to 10% X DC |
| EC-H-CF | • High speed machining<br>• Multiflute solid endmill<br>• Tools for Super-Finish<br>• Up to 5% X DC |

| **ROUGH: AE = 40% - Full Cut , $A_p$ = 2 x DC** | | | | |
|---|---|---|---|---|
| **Material Group Parameters** | **Grey Cast Iron** | **Ductile Cast Iron** | **Malleable Cast Iron** |  |
| | **15-16** | **17-18** | **19-20** | |
| $V_c$ (IC900/608) (m/min) | 80-130 | 90-130 | 140-180 | |
| $F_z$ (Ø6–8) (mm/t) | 0.02-0.04 | 0.02-0.04 | 0.02-0.04 | |
| $F_z$ (Ø10-12) (mm/t) | 0.03-0.05 | 0.03-0.05 | 0.03-0.05 | |
| $F_z$ (Ø16-20) (mm/t) | 0.04-0.06 | 0.04-0.06 | 0.04-0.06 | |

SOLIDMILL PREMIUM LINE

| K (Cast Iron) | | | | |
|---|---|---|---|---|
| **SEMI-FINISH: AE = 10% - 40%, $A_p$ = 2 x DC** | | | | |
| **Material Group Parameters** | **Grey Cast Iron** | **Ductile Cast Iron** | **Malleable Cast Iron** |  |
| | **15-16** | **17-18** | **19-20** | |
| $V_c$ (IC900/608) (m/min) | 130-180 | 130-200 | 180-220 | |
| $F_z$ (Ø6–8) (mm/t) | 0.03-0.05 | 0.03-0.05 | 0.03-0.05 | |
| $F_z$ (Ø 10-12) (mm/t) | 0.04-0.06 | 0.04-0.06 | 0.04-0.06 | |
| $F_z$ (Ø16-20) (mm/t) | 0.06-0.07 | 0.06-0.07 | 0.06-0.07 | |

| **FINISH / H.S.M: AE = 5% - 10%, $A_p$ = Max. Cutting Length** | | | | |
|---|---|---|---|---|
| **Material Group Parameters** | **Grey Cast Iron** | **Ductile Cast Iron** | **Malleable Cast Iron** |  |
| | **15-16** | **17-18** | **19-20** | |
| $V_c$ (IC900/608) (m/min) | 180-260 | 200-280 | 220-280 | |
| $V_c$ (IC902/903/702) (m/min) | 190-270 | 210-290 | 220-290 | |
| $F_z$ (Ø6–8) (mm/t) | 0.035-0.06 | 0.035-0.06 | 0.035-0.06 | |
| $F_z$ (Ø10-12) (mm/t) | 0.06-0.065 | 0.06-0.065 | 0.06-0.065 | |
| $F_z$ (Ø16-20) (mm/t) | 0.065-0.08 | 0.065-0.08 | 0.065-0.08 | |

| N (Non-Ferrous Metals) | | | |
|---|---|---|---|
| **Tool Selection Priorities** | | | |
| **Tool** | **Rough** | **Semi-Finish** | **Finish/H.S.M** |
| ECR-B3-R | 5 | 6 | - |
| ECA-B-3 | 6 | 3 | 3 |
| ECA-H4-CF | 2 | 1 | 1 |
| ECAP-H3-CF | 3 | 4 | - |
| ECA-H3-CF | 4 | 5 | 4 |

## ROUGHING

| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
|---|---|---|---|---|---|---|---|---|
| | ECA-H3-CF | 1.5-25 | 3XDC | 2xDC | 3 | RE | NO | 186-188 |
| | ECAP-H3-CF | 10-25 | 5XDC | 2xDC | 3 | RE | YES | 189 |
| | ECA-H4-CF | 6-25 | 5XDC | 2xDC | 4 | RE | NO | 188 |
| | ECA-B-3 | 4-20 | 4xDC | 2xDC | 3 | RE | NO | 192 |
| | ECR-B3-R | 6-20 | - | 1xDC | 3 | RE | NO | 190 |

SOLIDMILL PREMIUM LINE

## FINISHING

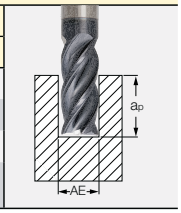
| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | ECA-H3-CF | 1-25 | 3XDC | 2xDC | 3 | RE | NO | 186-188 |
| | ECA-H4-CF | 6-25 | 5XDC | 2xDC | 4 | RE | NO | 188 |
| | ECA-B-3 | 4-20 | 4xDC | 2xDC | 3 | RE | NO | 192 |

### N (Non-Ferrous Metals)

| Tool Type | Features |
|---|---|
| ECA-H3-CF | • Suitable for roughing and finishing operations<br>• CHATTER-FREE<br>• Full slot up to 1.5XDC and 2XDC *<br>• Excellent solution for low power machines |
| ECAP-H3-CF | • Suitable for roughing<br>• Chip splitter CHATTER-FREE<br>• Internal coolant for better chip evacuation in deep cavity |
| ECA-H4-CF | • Suitable for roughing and finishing operations<br>• CHATTER-FREE<br>• Full slot up to 1XDC |
| ECA-B-3 | • Suitable for roughing and finishing operations<br>• Excellent surface finish |
| ECR-B3-R | • Suitable for roughing<br>• Good cheap evacuation |

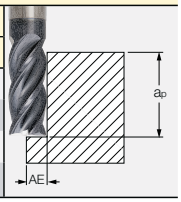
**D 2x ROUGH: AE = 40% - Full Cut , $A_p$ = 1.5xDC***

| Material Group Parameters | Alu Wrought Alloy 21-22 | Alu Cast Alloy 23-25 | Copper Alloy 26-27 | Electrolitic Copper 28 | Non-Metallic 29-30 |
|---|---|---|---|---|---|
| $V_c$ (IC08) (m/min) | 700-760 | 400-550 | 500-520 | 350-360 | 350-360 |
| $F_z$ (Ø6–8) (mm/t) | 0.02-0.04 | 0.02-0.04 | 0.02-0.04 | 0.02-0.04 | 0.02-0.04 |
| $F_z$ (Ø10-12) (mm/t) | 0.03-0.05 | 0.03-0.05 | 0.03-0.05 | 0.03-0.05 | 0.03-0.05 |
| $F_z$ (Ø 16-20) (mm/t) | 0.03-0.07 | 0.03-0.07 | 0.03-0.07 | 0.03-0.07 | 0.03-0.07 |



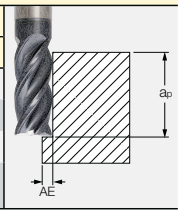

**SEMI-FINISH: AE = 10% - 40%, $A_p$ = 2 x DC**

| Material Group Parameters | Alu Wrought Alloy 21-22 | Alu Cast Alloy 23-25 | Copper Alloy 26-27 | Electrolitic Copper 28 | Non-Metallic 29-30 |
|---|---|---|---|---|---|
| $V_c$ (IC08) (m/min) | 760-840 | 550-700 | 520-530 | 360-370 | 360-370 |
| $F_z$ (Ø6–8) (mm/t) | 0.04-0.06 | 0.04-0.06 | 0.03-0.05 | 0.03-0.05 | 0.03-0.05 |
| $F_z$ (Ø 10-12) (mm/t) | 0.06-0.08 | 0.06-0.08 | 0.045-0.055 | 0.045-0.055 | 0.045-0.055 |
| $F_z$ (Ø 16-20) (mm/t) | 0.08-0.1 | 0.08-0.1 | 0.055-0.07 | 0.055-0.07 | 0.055-0.07 |




**FINISH / H.S.M: AE = 5% - 10%, $A_p$ = Max. Cutting Length**

| Material Group Parameters | Alu Wrought Alloy 21-22 | Alu Cast Alloy 23-25 | Copper Alloy 26-27 | Electrolitic Copper 28 | Non-Metallic 29-30 |
|---|---|---|---|---|---|
| $V_c$ (IC08) (m/min) | 840-900 | 700-900 | 530-550 | 370-380 | 370-380 |
| $F_z$ (Ø6–8)(mm/t) | 0.045-0.07 | 0.045-0.07 | 0.035-0.06 | 0.035-0.06 | 0.035-0.06 |
| $F_z$ (Ø10-12) (mm/t) | 0.07-0.1 | 0.07-0.1 | 0.06-0.07 | 0.06-0.07 | 0.06-0.07 |
| $F_z$ (Ø16-20) (mm/t) | 0.1-0.15 | 0.1-015 | 0.065-0.08 | 0.065-0.08 | 0.065-0.08 |



SOLIDMILL PREMIUM LINE

| S (High Heat Resistant Alloys) | | | |
|---|---|---|---|
| **Tool Selection Priorities** | | | |
| **Tool** | **Rough** | **Semi-Finish** | **Finish/H.S.M** |
| EC-H-CF | - | - | 1 |
| EC-E7/H7-CF | - | - | 2 |
| ECK-H4M-CFR | 3 | 3 | - |
| ECR-B-MF | 2 | 2 | - |
| EC-H5M-CFR | 7 | 4 | 3 |
| EC-H4M-CFR | 6 | 7 | 5 |
| ECP-H4L-CFR | 4 | 5 | - |
| EC-H4M-CF-E | 5 | 6 | 4 |

## ROUGHING

| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | EC-H4M-CF-E | 4-20 | - | 2xDC | 4 | CHWx45 | NO | 136 |
| | ECP-H4L-CFR | 10-20 | 3XDC | 2xDC | 4 | RE | NO | 137 |
| | EC-E4L-CF | 1-25 | 3XDC | 2xDC | 4 | CHWx45 | NO | 151 |
| | ECK-H4M-CFR | 6-20 | - | 2xDC | 4 | - | NO / YES | 146 |
| | EFS-B44 | 4-25 | 3xDC | 2xDC | 4 | CHWx45 | NO | 149 |
| | ECR-B-MF | 6-25 | - | 2xDC | 4/6 | CHWx45 | NO | 149 |
| | EC-E5L-CF | 6-20 | - | 2xDC | 5 | CHWx45 | NO | 152 |

## FINISHING

| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | EC-E5L-CF | 6-20 | - | 2xDC | 5 | CHWx45 | NO | 152 |
| | EC-E7/H7-CF | 2-20 | - | 2xDC, 4xDC | 7 | - | NO | 141-142 |
| | EC-H-CF | 6-20 | - | 2xDC | 6-20 | CHWx45 | NO | 152 |
| | ECXL-B-4/6 | 10-20 | - | 6xDC | 4/6 | - | NO | 184 |
| | ECH-B-6 | 6-20 | - | 2xDC | 6 | - | NO | 183 |

SOLIDMILL PREMIUM LINE

## TROCHOIDAL / DYNAMIC MILLING

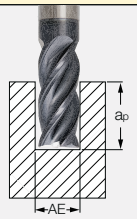
| S (High Heat Resistant Alloys) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
| | EC-E7/H7-CF | 2-20 | - | 2xDC, 4xDC | 7 | - | NO | 141-142 |
| | EC-H-CF | 6-20 | - | 2xDC | 6-20 | CHWx45 | NO | 152 |

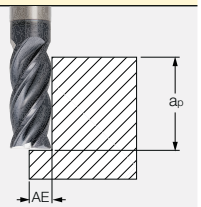
## HIGH FEED MILLING

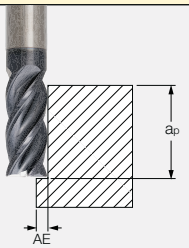
| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
|---|---|---|---|---|---|---|---|---|
| | EFP-E4,5CF | 6-20 | - | 2.5xDC | 4/5 | RE | NO | 158 |
| | EFF-S | 1-20 | 3xDC | MIN. | 2/4 | RE | NO | 158 |

## CHAMFERING AND DEBURRING

| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
|---|---|---|---|---|---|---|---|---|
| | ECF.../45 | 4-12 | - | 2.5xDC | 4 | - | NO | 207 |
| | ECD-S2 | 3-12 | 2xDC | 0.5xDC | 2 | - | NO | 208 |

| ***ROUGH: AE = 40% - Full Cut , $A_p$ = 1.5 x DC** | | | |
|---|---|---|---|
| **Material Group Parameters** | **Nickel Based Alloys** | **Titanium and Ti Alloys** |  |
| | **31-35** | **36-37** | |
| $V_c$ (IC900/608) (m/min) | 20-40 | 30-50 | |
| $F_z$ (Ø6–8) (mm/t) | 0.02-0.03 | 0.02-0.03 | |
| $F_z$ (Ø 10-12) (mm/t) | 0.03-0.04 | 0.03-0.04 | |
| $F_z$ (Ø 16-20) (mm/t) | 0.03-0.07 | 0.03-0.07 | |

| **SEMI-FINISH: AE = 10% - 40%, $A_p$ = 2 x DC** | | | |
|---|---|---|---|
| **Material Group Parameters** | **Nickel Based Alloys** | **Titanium and Ti Alloys** |  |
| | **31-35** | **36-37** | |
| $V_c$ (IC900/608) (m/min) | 40-50 | 50-60 | |
| $F_z$ (Ø6–8) (mm/t) | 0.03-0.04 | 0.03-0.04 | |
| $F_z$ (Ø 10-12) (mm/t) | 0.035-0.05 | 0.035-0.05 | |
| $F_z$ (Ø 16-20) (mm/t) | 0.05-0.08 | 0.05-0.08 | |

| **FINISH / H.S.M: AE = 5% - 10%, $A_p$ = Max. Cutting Length** | | | |
|---|---|---|---|
| **Material Group Parameters** | **Nickel Based Alloys** | **Titanium and Ti Alloys** |  |
| | **31-35** | **36-37** | |
| $V_c$ (IC900/608) (m/min) | 50-70 | 60-70 | |
| $V_c$ (IC902/903/702) (m/min) | 55-80 | 65-80 | |
| $F_z$ (Ø6–8) (mm/t) | 0.035-0.05 | 0.035-0.05 | |
| $F_z$ (Ø 10-12) (mm/t) | 0.04-0.06 | 0.04-0.06 | |
| $F_z$ (Ø 16-20) (mm/t) | 0.06-0.085 | 0.06-0.085 | |

SOLIDMILL PREMIUM LINE

| H (Hard Materials) | | | |
|---|---|---|---|
| **Tool Selection Priorities** | | | |
| **Tool** | **Rough** | **Semi-Finish** | **Finish/H.S.M** |
| EC-H-CF | - | - | 1 |
| EC-E7/H7-CF | - | - | 2 |
| EFS-B44 | 2 | 3 | - |
| ECR-B-MF | 1 | 1 | - |
| EC-E5L-CF | 6 | 2 | 3 |
| EC-E4L-CF | 5 | 6 | 5 |
| ECP-H4L-CFR | 3 | 4 | - |
| EC-H4M-CF-E | 4 | 5 | 4 |

## ROUGHING

| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | EC-H4M-CF-E | 4-20 | - | 2xDC | 4 | CHWx45 | NO | 136 |
| | ECP-H4L-CFR | 10-20 | 3XDC | 2xDC | 4 | RE | NO | 137 |
| | EC-E4L-CF | 1-25 | 3XDC | 2xDC | 4 | CHWx45 | NO | 151 |
| | EFS-B44 | 4-25 | 3xDC | 2xDC | 4 | CHWx45 | NO | 149 |
| | ECR-B-MF | 6-25 | - | 2xDC | 4/6 | CHWx45 | NO | 149 |
| | EC-E5L-CF | 6-20 | - | 2xDC | 5 | CHWx45 | NO | 152 |

## FINISHING

| | Designation | Ø | LU (Neck) | $A_p$ | ZEFF | Corner Type | Coolant | Page |
|---|---|---|---|---|---|---|---|---|
| | EC-E5L-CF | 6-20 | - | 2xDC | 5 | CHWx45 | NO | 152 |
| | EC-E7/H7-CF | 2-20 | - | 2xDC, 4xDC | 7 | - | NO | 141-142 |
| | EC-H-CF | 6-20 | - | 2xDC | 6-20 | CHWx45 | NO | 152 |
| | ECXL-B-4/6 | 10-20 | - | 6xDC | 4/6 | - | NO | 184 |
| | ECH-B-6 | 6-20 | - | 2xDC | 6 | - | NO | 183 |

SOLIDMILL PREMIUM LINE

## TROCHOIDAL / DYNAMIC MILLING

| H (Hard Materials) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
| | EC-E7/H7-CF | 2-20 | - | 2xDC, 4xDC | 7 | - | NO | 141-142 |
| | EC-H-CF | 6-20 | - | 2xDC | 6-20 | CHWx45 | NO | 152 |

## HIGH FEED MILLING

| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
|---|---|---|---|---|---|---|---|---|
| | EFP-E4,5CF | 6-20 | - | 2.5xDC | 4/5 | RE | NO | 158 |
| | EFF-S | 1-20 | 3xDC | MIN. | 2/4 | RE | NO | 158 |

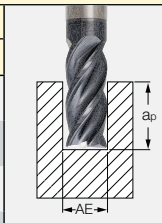
## CHAMFERING AND DEBURRING

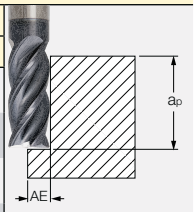
| | **Designation** | **Ø** | **LU (Neck)** | **$A_p$** | **ZEFF** | **Corner Type** | **Coolant** | **Page** |
|---|---|---|---|---|---|---|---|---|
| | ECF.../45 | 4-12 | - | 2.5xDC | 4 | - | NO | 207 |
| | ECD-S2 | 3-12 | 2xDC | 0.5xDC | 2 | - | NO | 208 |

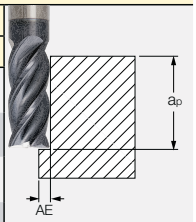
| **Tool Type** | **Features** |
|---|---|
| EC-H4M-CF-E (ECO Type) | • Rough and finish operations<br>• General use<br>• Low power machines<br>• CHATTER-FREE |
| ECP-H4L-CFR | • Rough operations<br>• General use<br>• Chip splitter CHATTER-FREE |
| EC-E4L-CF | • Rough and finish operations<br>• Used for machining alloyed steel and general use<br>• Low power machines no vibrations |
| EC-E5L-CF | • Rough and finish operations<br>• Used for machining alloyed steel and general use<br>• High material removal rates |
| ECR-B-MF | • Rough operations<br>• Used on unstable components |
| EFS-B44 | • Unique design<br>• Used for machining titanium, stainless and alloyed steel<br>• Fully effective<br>• Semi-finish surface quality |
| EC-E7/H7-CF | • For high speed machining<br>• Trochoidal milling<br>• Finish operations up to 10% X DC |
| EC-H-CF | • High speed machining<br>• Multiflute solid endmill<br>• Tools for super finish<br>• Up to 5% X DC |

SOLIDMILL PREMIUM LINE



| H (Hard Materials) | | | | |
|---|---|---|---|---|
| **ROUGH: AE = 40% - Full Cut , Ap = 2 x DC** | | | | |
| **Material Group Parameters** | **Hardened Steel** | **Chilled Cast Iron** | **Cast Iron** |  |
| | **38-39** | **40** | **41** | |
| $V_c$ (IC900/608) (m/min) | 20-30 | 60-65 | 30-35 | |
| $F_z$ (Ø6 – 8) (mm/z) | 0.01-0.015 | 0.01-0.015 | 0.01-0.015 | |
| $F_z$ (Ø 10 -12) (mm/z) | 0.03-0.045 | 0.03-0.045 | 0.03-0.045 | |
| $F_z$ (Ø 16 -20) (mm/z) | 0.04-0.05 | 0.04-0.05 | 0.04-0.05 | |

| **SEMI-FINISH: AE = 10% - 40%, Ap = 2 x DC** | | | | |
|---|---|---|---|---|
| **Material Group Parameters** | **Hardened Steel** | **Chilled Cast Iron** | **Cast Iron** |  |
| | **38-39** | **40** | **41** | |
| $V_c$ (IC900/608) (m/min) | 30-40 | 65-70 | 35-40 | |
| $F_z$ (Ø6 – 8) (mm/z) | 0.015-0.035 | 0.015-0.035 | 0.015-0.035 | |
| $F_z$ (Ø 10 -12) (mm/z) | 0.035-0.055 | 0.035-0.055 | 0.035-0.055 | |
| $F_z$ (Ø 16 -20) (mm/z) | 0.045-0.06 | 0.045-0.06 | 0.045-0.06 | |

| **FINISH / H.S.M: AE = 5% - 10%, Ap = Max. Cutting Length** | | | | |
|---|---|---|---|---|
| **Material Group Parameters** | **Hardened Steel** | **Chilled Cast Iron** | **Cast Iron** |  |
| | **38-39** | **40** | **41** | |
| $V_c$ (IC900/608) (m/min) | 40-50 | 70-80 | 40-50 | |
| $V_c$ (IC902/903/702) (m/min) | 45-60 | 75-90 | 45-60 | |
| $F_z$ (Ø6 – 8) (mm/z) | 0.02-0.04 | 0.02-0.04 | 0.02-0.04 | |
| $F_z$ (Ø 10 -12) (mm/z) | 0.04-0.06 | 0.04-0.06 | 0.04-0.06 | |
| $F_z$ (Ø 16 -20) (mm/z) | 0.05-0.07 | 0.05-0.07 | 0.05-0.07 | |

SOLIDMILL PREMIUM LINE

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| Type | Helix Angle | Cutting Length | Workpiece Hardness HRc | No. of Flutes | Diameter Range | Remarks | Page | |
|---|---|---|---|---|---|---|---|---|
| **EFS-E44** | 38º | 2DC | <45 | 4 | 6-25 | | 148 | |
| **ECK-H4M-CFR** | different helix with variable pitch | 2DC | Titanium | 4 | 4-20 | | 146 | |
| **ECK-H7/9-CFR** | different helix with variable pitch | 2DC | Titanium | 7-9 | 6-20 | | 147 | |
| **EFS-B44** | 45º | 2DC | <55 | 4 | 4-25 | | 149 | |
| **EC-H4S-CF** | different helix with variable pitch | DC | <55 | 4 | 6-20 | | 135 | |
| **EC-H4M-CF-E** | different helix with variable pitch | 2DC | <55 | 4 | 4-20 | | 136 | |
| **EC-H4-L/M/XL/-CFR EC-H5M-CFR** | different helix with variable pitch | - | <55 | 4 | 3-25 | | 137-138 139 | |
| **ECP-H4L-CFR** | different helix with variable pitch | 2DC | <55 | 4 | 10-20 | | 137 | |
| **EC-E7/H7-CF** | different helix with variable pitch | 2DC, 4DC | <55 | 7 | 2-20 | | 141-142 | |
| **EC-H-CF** | different helix with variable pitch | 2DC | <55 | 6-20 | 6-20 | | 152 | |
| **EC-E4L-CF EC-E4M-CF** | 38º helix with variable pitch | 2DC | <45 | 4 | 1-25 | | 151 150 | |
| **EC-E5L-CF** | 38º helix with variable pitch | 2.5DC | <45 | 5 | 6-20 | | 152 | |
| **EFP-E4,5CF** | 38º helix with variable pitch | 2DC | <55 | 4-5 | 6-20 | high feed at small D.O.C. | 158 | |
| **ECR-B-X/L/M/S** | 45º | 1-2DC | <55 | 4-7 | 5-20 | | 153 | |
| **ECR-B-MF** | 45º | 2DC | <65 | 4,6 | 6-25 | excellent for hardened steel | 149 | |
| **ECP-E-L** | 38º | 2DC | <45 | 3,4 | 5-20 | recommended for stainless steel | 155 | |
| **ERF-A/E-3,4,6** | 30º, 38º | 2DC | <55 | 3-6 | 4-25 | fine pitch steel alloys | 156 | |
| **ECR-T-M** | 20º | 2DC | <55 | 4 | 6-20 | | 157 | |

SOLIDMILL PREMIUM LINE

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| Type | Helix Angle | Cutting Length | Workpiece Hardness HRc | No. of Flutes | Diameter Range | Remarks | Page | |
|---|---|---|---|---|---|---|---|---|
| EBRF-T | 20º | 2DC | <55 | 3,4 | 6-20 | | 157 | |
| EFF-S | 0º | 0.05DC | <65 | 4 | 1-20 | | 158 | |
| ETR-A2 | 30º | 1DC | <45 | 2 | 2-10 | | 159 | |
| EC-A2 (economical Short/ Medium/extra Long) | 30º | 1-10DC | <45 | 2 | 1-20 | | 161 | |
| EC/ECC-A-2 | 30º | 2-3.5DC | <45 | 2 | 2-20 | reinforced | 160 | |
| ECS/ECCS-E-3 | 38º | 1-1.5DC | <45 | 3 | 2-20 | | 159 | |
| EC-B3 (economical-Short/ Medium) | 45º | 1-2DC | <45 | 3 | 1.5-20 | | 163 | |
| EC-E-3 | 38º | 1-2.5DC | <45 | 3 | 1-20 | | 164 | |
| ECC-E-3 | 38º | 2-3.5DC | <45 | 3 | 2-20 | reinforced | 165 | |
| ECU-E-3 | 38º | 2DC | <45 | 3 | 2.8-19.7 | undersized for keyholes | 165 | |
| ECU-E-3-R | 38º | 1.25DC | <45 | 3 | 3.8-11.7 | undersized for keyholes with corner radii | 166 | |
| EC-B-3/3R | 45º | 2-3.5DC | <45 | 3 | 2-20 | | 167 | |
| EC-B-4/4R | 45º | 2-3.5DC | <45 | 4 | 2-20 | | 168 | |
| EC-A-4/4R | 30º | 2-3.5DC | <45 | 4 | 2-20 | | 169 | |
| EC-A4 (economical- Medium & Extra Long) | 30º | 2-10DC | <45 | 4 | 2-20 | | 171 | |
| ECC-A-4 | 30º | 2-3.5DC | <45 | 4 | 2-20 | reinforced | 170 | |
| EC-A2-M EC-A2-T | 30º | 1-1.5DC | <65 | 2 | 0.3-6 | | 179-180 172-177 | |
| EC-A2-R/H | 30° | 1.5DC | <65 | 2 | 0.1-12 | | 177-178 | |

SOLIDMILL PREMIUM LINE

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| Type | Helix Angle | Cutting Length | Workpiece Hardness HRc | No. of Flutes | Diameter Range | Remarks | Page | |
|---|---|---|---|---|---|---|---|---|
| EC-A2 (medium Length) | 30º | 2DC | <65 | 2 | 1-25 | | 181 | |
| EC-A4 | 30º | 2-3DC | <65 | 4 | 2-25 | | 182 | |
| ECH-B-6 | 45º | 2DC | <65 | 6 | 6-20 | high temp. alloys | 183 | |
| ECL-B-4/6 | 45º | 3-5DC | <45 | 4,6 | 6-20 | | 183 | |
| ECXL-B-4,6 | 45º | 4-6DC | <45 | 4,6 | 10-20 | | 184 | |
| EC-D6 | 50º | 2DC | <65 | 6 | 6-20 | | 184 | |
| EC-B6-H | 45º | 2DC | <65 | 6 | 6-20 | | 185 | |
| EC-B6 | 45º | 4DC | <65 | 6 | 6-25 | | 185 | |
| EPN-F | 15º | 2-4DC | CFRP composites | 9-12 | 3-12 | | 193 | |
| EPNC | 15º | 2-4DC | CFRP composites | 10 | 8-12 | | 194 | |
| EPND | 15º | 2-4DC | CFRP composites | 6-10 | 1.6-12 | | 194 | |
| EPX | 15º | 2DC | CFRP composites | 6-8 | 6-12 | | 195 | |
| ECA-H3-CF | 39-41° variable helix | 2DC | aluminum | 3 | 1-25 | | 186-188 | |
| ECA-H4-CF | different helix with variable pitch | 1.5-2DC | aluminum | 4 | 6-25 | | 188 | |
| ECAP-H3-CF | different helix with variable pitch | 1.5-2DC | aluminum | 3 | 10-25 | | 189 | |
| ERC-E-3 | 38º | 2DC | aluminum | 3 | 6-25 | | 189 | |
| ECR-B3-R | 45º | 1-3DC | aluminum | 3 | 6-20 | | 190 | |
| ECR-B3-R-C | 45º | DC | aluminum | 3 | 8-25 | | 190 | |

SOLIDMILL PREMIUM LINE

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| Type | Helix Angle | Cutting Length | Workpiece Hardness HRc | No. of Flutes | Diameter Range | Remarks | Page | |
|---|---|---|---|---|---|---|---|---|
| **ECA-B-2** | 45 | 2-3DC | Aluminum | 2 | 4-20 | high speed machining on aluminum | 191 | |
| **ECA-B-3** | 45º | 2-3DC | Aluminum | 3 | 4-20 | high speed machining on aluminum | 192 | |
| **ECA-F-2** | 55º | 2-5DC | Aluminum | 2 | 4-25 | high speed machining on aluminum | 193 | |
| **EB-H-CF** | different helix with variable pitch | 2DC | <55 | 3-5 | 6-20 | | 196 | |
| **EB-E4L-CF** | 38º | 2DC | <45 | 4 | 3-16 | | 197 | |
| **EB-A-2** | 30º | 1-2DC | <45 | 2 | 2-20 | | 197 | |
| **EB-A2 (stub Cut Length)** | 30º | 1DC | <70 | 2 | 1-25 | stub cut length | 198 | |
| **EB-A2 (rib Processing)** | 30º | 1.5DC | <65 | 2 | 0.4-6 | | 203-204 | |
| **EB-A2-H (rib Processing)** | 30° | 0.8-1DC | <65 | 2 | 0.1-4.0 | | 202 | |
| **EB-A2 (long With Neck)** | 30º | 2-3DC | <65 | 2 | 3-25 | long overhang length | 204 | |
| **EB-A2 (extra Long)** | 30º | 2-3DC | <65 | 2 | 2-20 | extra long overhang length | 205 | |
| **EB-A2 (tapered Flute & Neck)** | 30º | 2DC | <65 | 2 | 1-12 | tapered neck | 205 | |
| **EB-A2 (precision Stub Cut)** | 30º | 1DC | <65 | 2 | 1-25 | precision stub cut | 206 | |
| **ESB-A2** | 30º | 0.75DC | <65 | 2 | 3-16 | long overhand length | 207 | |
| **ESB-A4** | 30º | 0.75DC | <65 | 4 | 5-16 | | 207 | |
| **EBM-A-2** | 30º | 2-3DC | <45 | 2 | 0.4-2 | miniature | 206 | |
| **EB-A2 (economical)** | 30º | 2-3DC | <45 | 2 | 2-20 | | 199 | |
| **EB-A2 (economical- Extra Long)** | 30º | 3.5-10DC | <45 | 2 | 3-20 | | 199 | |

SOLIDMILL PREMIUM LINE

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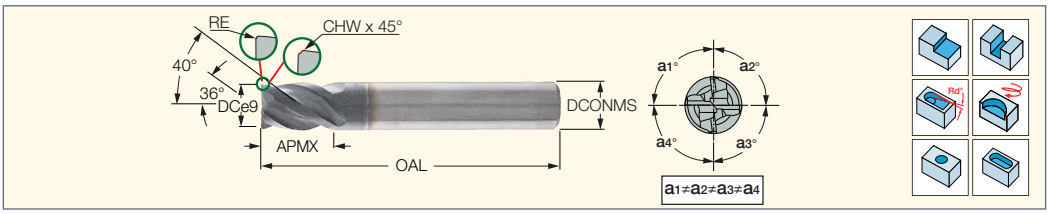
| Type | Helix Angle | Cutting Length | Workpiece Hardness HRc | No. of Flutes | Diameter Range | Remarks | Page | |
|---|---|---|---|---|---|---|---|---|
| EB-A-3 | 30º | 1.25DC | <45 | 3 | 1.6-12 | | 200 | |
| EB-A4 (economical-Short) | 30º | 1-2DC | <45 | 4 | 2-20 | | 200 | |
| EB-A-4 (short Length) | 30º | 1-1.5DC | <45 | 4 | 2-20 | | 201 | |
| EB-A-4 (medium Length) | 30º | 2-2.5DC | <45 | 4 | 3-20 | | 201 | |
| EBL-A-4 | 30º | 2-3DC | <45 | 4 | 4-16 | | 202 | |
| ECF../45 | | 1.5-2.5DC | <65 | 4 | 4-12 | | 207 | |
| ECD-S2 | straight | - | - | 2 | 3-12 | | 208 | |
| EOB | | 2.5-3D | <45 | 4 | 8-12 | 3d profiling | 209 | |
| ETB | | 1D | <45 | 4 | 8-12 | 3d profiling | 210 | |
| ELB | | 0.7D | <45 | 4,6 | 8-12 | 3d profiling | 208 | |
| ER-S4 R | | | | 4 | 6-12 | for rounding corners | 210 | |

CHATTERFREE
SOLID MILL LINE

## EC-H4S-CF

Short 4 Flute Endmills with Different Helix and Variable Pitch for Chatter Dampening




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | RE | RMPX°(2) | Shank(3) | CHW | KCH | IC900 | IC608 | $f_z$ (mm/t) |
| EC-H4S 06-06C06CF-E50 | 6.00 | 6.00 | 6.00 | 50.00 | 4 | - | 5.0 | C | 0.25 | 45.0 | ● | ● | 0.03-0.08 |
| EC-H4S 06-06C06CFR.2E50 | 6.00 | 6.00 | 6.00 | 50.00 | 4 | 0.20 | 5.0 | C | - | - | ● | ● | 0.03-0.08 |
| EC-H4S 06-06W06CF-E50 | 6.00 | 6.00 | 6.00 | 50.00 | 4 | - | 5.0 | W | 0.25 | 45.0 | ● | ● | 0.03-0.08 |
| EC-H4S 08-08C08CF-E63 | 8.00 | 8.00 | 8.00 | 63.00 | 4 | - | 5.0 | C | 0.30 | 45.0 | ● | ● | 0.03-0.08 |
| EC-H4S 08-08C08CFR.4E63 | 8.00 | 8.00 | 8.00 | 63.00 | 4 | 0.40 | 5.0 | C | - | - | ● | ● | 0.03-0.08 |
| EC-H4S 08-08W08CF-E63 | 8.00 | 8.00 | 8.00 | 63.00 | 4 | - | 5.0 | W | 0.30 | 45.0 | ● | ● | 0.03-0.08 |
| EC-H4S 10-10C10CF-E66 | 10.00 | 10.00 | 10.00 | 66.00 | 4 | - | 5.0 | C | 0.40 | 45.0 | ● | ● | 0.03-0.10 |
| EC-H4S 10-10C10CFR.5E66 | 10.00 | 10.00 | 10.00 | 66.00 | 4 | 0.50 | 5.0 | C | - | - | ● | ● | 0.03-0.10 |
| EC-H4S 10-10W10CF-E66 | 10.00 | 10.00 | 10.00 | 66.00 | 4 | - | 5.0 | W | 0.40 | 45.0 | ● | ● | 0.03-0.10 |
| EC-H4S 12-12C12CF-E73 | 12.00 | 12.00 | 12.00 | 73.00 | 4 | - | 5.0 | C | 0.50 | 45.0 | ● | ● | 0.04-0.10 |
| EC-H4S 12-12C12CFR.6E73 | 12.00 | 12.00 | 12.00 | 73.00 | 4 | 0.60 | 5.0 | C | - | - | ● | ● | 0.04-0.10 |
| EC-H4S 12-12W12CF-E73 | 12.00 | 12.00 | 12.00 | 73.00 | 4 | - | 5.0 | W | 0.50 | 45.0 | ● | ● | 0.04-0.10 |
| EC-H4S 16-16C16CF-E82 | 16.00 | 16.00 | 16.00 | 82.00 | 4 | - | 5.0 | C | 0.60 | 45.0 | ● | ● | 0.05-0.11 |
| EC-H4S 16-16W16CF-E82 | 16.00 | 16.00 | 16.00 | 82.00 | 4 | - | 5.0 | W | 0.60 | 45.0 | ● | ● | 0.05-0.11 |
| EC-H4S 20-20C20CF-E92 | 20.00 | 20.00 | 20.00 | 92.00 | 4 | - | 5.0 | C | 0.60 | 45.0 | ● | ● | 0.05-0.11 |
| EC-H4S 20-20W20CF-E92 | 20.00 | 20.00 | 20.00 | 92.00 | 4 | - | 5.0 | W | 0.60 | 45.0 | ● | ● | 0.05-0.11 |

• For user guide, see pages 211-218

(1) Number of flutes

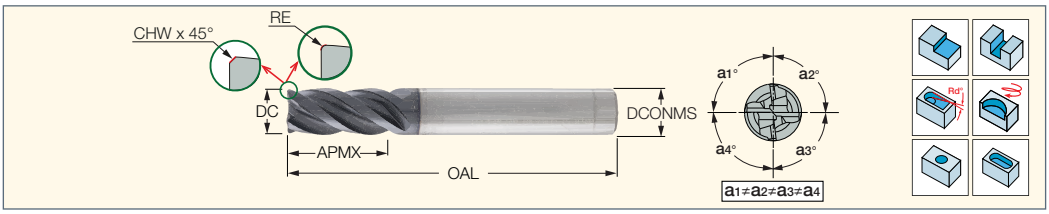
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

CHATTERFREE SOLID MILL LINE

**EC-H4M-CF-E**

4 Flute Endmills with Different Helix and Variable Pitch for Chatter Dampening




| Designation | Dimensions | | | | | | | | | | IC900 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | RE | KCH | OAL | NOF[1] | RMPX°[2] | Shank[3] | CHW | | $f_z$ (mm/t) |
| EC-H4M 04-08C4CF-E50 | 4.00 | 4.00 | 8.00 | - | 45.0 | 50.00 | 4 | 5.0 | C | 0.15 | ● | 0.03-0.05 |
| EC-H4M 06-12C06CF-E57 | 6.00 | 6.00 | 12.00 | - | 45.0 | 57.00 | 4 | 5.0 | C | 0.25 | ● | 0.03-0.07 |
| EC-H4M 06-12C06CFR0.2-E57 | 6.00 | 6.00 | 12.00 | 0.20 | - | 57.00 | 4 | 5.0 | C | - | ● | 0.03-0.07 |
| EC-H4M 06-12C06CFR0.5-E57 | 6.00 | 6.00 | 12.00 | 0.50 | - | 57.00 | 4 | 5.0 | C | - | ● | 0.03-0.07 |
| EC-H4M 06-12C06CFR1-E57 | 6.00 | 6.00 | 12.00 | 1.00 | - | 57.00 | 4 | 5.0 | C | - | ● | 0.03-0.07 |
| EC-H4M 06-12W06CF-E57 | 6.00 | 6.00 | 12.00 | - | 45.0 | 57.00 | 4 | 5.0 | W | 0.25 | ● | 0.03-0.07 |
| EC-H4M 08-16C08CF-E63 | 8.00 | 8.00 | 16.00 | - | 45.0 | 63.00 | 4 | 5.0 | C | 0.30 | ● | 0.03-0.09 |
| EC-H4M 08-16C08CFR0.3-E63 | 8.00 | 8.00 | 16.00 | 0.30 | - | 63.00 | 4 | 5.0 | C | - | ● | 0.03-0.09 |
| EC-H4M 08-16C08CFR0.5-E63 | 8.00 | 8.00 | 16.00 | 0.50 | - | 63.00 | 4 | 5.0 | C | - | ● | 0.03-0.09 |
| EC-H4M 08-16C08CFR1.5-E63 | 8.00 | 8.00 | 16.00 | 1.50 | - | 63.00 | 4 | 5.0 | C | - | ● | 0.03-0.09 |
| EC-H4M 08-16C08CFR1-E63 | 8.00 | 8.00 | 16.00 | 1.00 | - | 63.00 | 4 | 5.0 | C | - | ● | 0.03-0.09 |
| EC-H4M 08-16W08CF-E63 | 8.00 | 8.00 | 16.00 | - | 45.0 | 63.00 | 4 | 5.0 | W | 0.30 | ● | 0.03-0.09 |
| EC-H4M 10-20C10CF-E72 | 10.00 | 10.00 | 20.00 | - | 45.0 | 72.00 | 4 | 5.0 | C | 0.40 | ● | 0.03-0.09 |
| EC-H4M 10-20C10CFR0.3-E72 | 10.00 | 10.00 | 20.00 | 0.30 | - | 72.00 | 4 | 5.0 | C | - | ● | 0.03-0.09 |
| EC-H4M 10-20C10CFR0.5-E72 | 10.00 | 10.00 | 20.00 | 0.50 | - | 72.00 | 4 | 5.0 | C | - | ● | 0.03-0.09 |
| EC-H4M 10-20C10CFR1.5-E72 | 10.00 | 10.00 | 20.00 | 1.50 | - | 72.00 | 4 | 5.0 | C | - | ● | 0.03-0.09 |
| EC-H4M 10-20C10CFR1-E72 | 10.00 | 10.00 | 20.00 | 1.00 | - | 72.00 | 4 | 5.0 | C | - | ● | 0.03-0.09 |
| EC-H4M 10-20W10CF-E72 | 10.00 | 10.00 | 20.00 | - | 45.0 | 72.00 | 4 | 5.0 | W | 0.40 | ● | 0.03-0.09 |
| EC-H4M 12-24C12CF-E83 | 12.00 | 12.00 | 24.00 | - | 45.0 | 83.00 | 4 | 5.0 | C | 0.50 | ● | 0.04-0.10 |
| EC-H4M 12-24C12CFR0.5-E83 | 12.00 | 12.00 | 24.00 | 0.50 | - | 83.00 | 4 | 5.0 | C | - | ● | 0.04-0.10 |
| EC-H4M 12-24C12CFR1.5-E83 | 12.00 | 12.00 | 24.00 | 1.50 | - | 83.00 | 4 | 5.0 | C | - | ● | 0.04-0.10 |
| EC-H4M 12-24C12CFR2-E83 | 12.00 | 12.00 | 24.00 | 2.00 | - | 83.00 | 4 | 5.0 | C | - | ● | 0.04-0.10 |
| EC-H4M 12-24C12CFR3-E83 | 12.00 | 12.00 | 24.00 | 3.00 | - | 83.00 | 4 | 5.0 | C | - | ● | 0.04-0.10 |
| EC-H4M 12-24W12CF-E83 | 12.00 | 12.00 | 24.00 | - | 45.0 | 83.00 | 4 | 5.0 | W | 0.50 | ● | 0.04-0.10 |
| EC-H4M 16-32C16CF-E92 | 16.00 | 16.00 | 32.00 | - | 45.0 | 92.00 | 4 | 5.0 | C | 0.60 | ● | 0.05-0.11 |
| EC-H4M 16-32C16CFR0.5-E92 | 16.00 | 16.00 | 32.00 | 0.50 | - | 92.00 | 4 | 5.0 | C | - | ● | 0.05-0.11 |
| EC-H4M 16-32C16CFR1.5-E92 | 16.00 | 16.00 | 32.00 | 1.50 | - | 92.00 | 4 | 5.0 | C | - | ● | 0.05-0.11 |
| EC-H4M 16-32C16CFR2-E92 | 16.00 | 16.00 | 32.00 | 2.00 | - | 92.00 | 4 | 5.0 | C | - | ● | 0.05-0.11 |
| EC-H4M 16-32C16CFR3-E92 | 16.00 | 16.00 | 32.00 | 3.00 | - | 92.00 | 4 | 5.0 | C | - | ● | 0.05-0.11 |
| EC-H4M 16-32C16CFR4-E92 | 16.00 | 16.00 | 32.00 | 4.00 | - | 92.00 | 4 | 5.0 | C | - | ● | 0.05-0.11 |
| EC-H4M 16-32W16CF-E92 | 16.00 | 16.00 | 32.00 | - | 45.0 | 92.00 | 4 | 5.0 | W | 0.60 | ● | 0.05-0.11 |
| EC-H4M 20-40C20CF-E104 | 20.00 | 20.00 | 40.00 | - | 45.0 | 104.00 | 4 | 5.0 | C | 0.60 | ● | 0.05-0.11 |
| EC-H4M 20-40C20CFR0.5E104 | 20.00 | 20.00 | 40.00 | 0.50 | - | 104.00 | 4 | 5.0 | C | - | ● | 0.05-0.11 |
| EC-H4M 20-40C20CFR1.5E104 | 20.00 | 20.00 | 40.00 | 1.50 | - | 104.00 | 4 | 5.0 | C | - | ● | 0.05-0.11 |
| EC-H4M 20-40C20CFR2-E104 | 20.00 | 20.00 | 40.00 | 2.00 | - | 104.00 | 4 | 5.0 | C | - | ● | 0.05-0.11 |
| EC-H4M 20-40C20CFR3-E104 | 20.00 | 20.00 | 40.00 | 3.00 | - | 104.00 | 4 | 5.0 | C | - | ● | 0.05-0.11 |
| EC-H4M 20-40C20CFR5-E104 | 20.00 | 20.00 | 40.00 | 5.00 | - | 104.00 | 4 | 5.0 | C | - | ● | 0.05-0.11 |
| EC-H4M 20-40W20CF-E104 | 20.00 | 20.00 | 40.00 | - | 45.0 | 104.00 | 4 | 5.0 | W | 0.60 | ● | 0.05-0.11 |

• For user guide, see pages 211-218

(1) Number of flutes

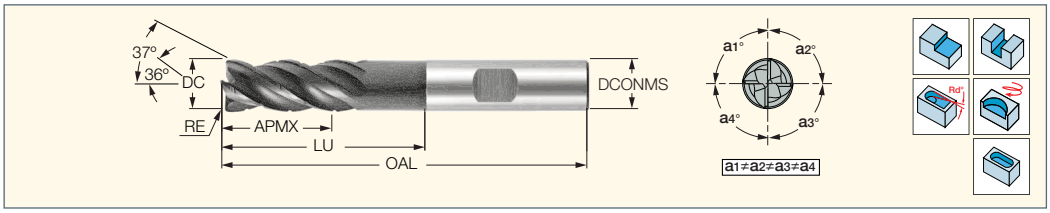
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

CHATTERFREE SOLID MILL LINE

## ECP-H4L-CFR

4 Flute Solid Carbide Endmills with Different Helix, Variable Pitch and Chip Splitting Cutting Edges for Roughing



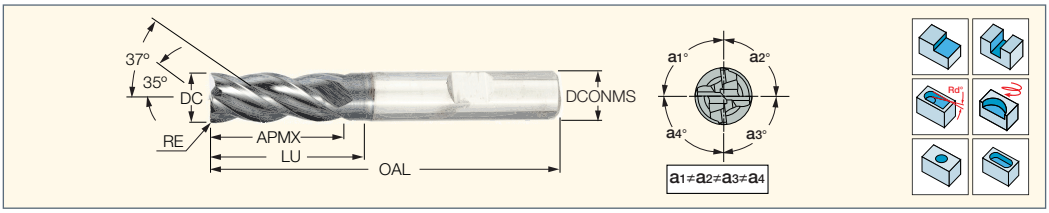

| Designation | Dimensions | | | | | | | | | IC900 |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | OAL | NOF(1) | Shank(2) | RE | RMPX°(3) | |
| ECP-H4L 10-22/32W10CFR.5 | 10.00 | 10.00 | 22.00 | 32.0 | 72.00 | 4 | W | 0.50 | 5.0 | ● |
| ECP-H4L 10-22/40W10CFR.5 | 10.00 | 10.00 | 22.00 | 40.0 | 80.00 | 4 | W | 0.50 | 5.0 | ● |
| ECP-H4L 12-26/38W12CFR.5 | 12.00 | 12.00 | 26.00 | 38.0 | 83.00 | 4 | W | 0.50 | 5.0 | ● |
| ECP-H4L 12-26/50W12CFR.5 | 12.00 | 12.00 | 26.00 | 50.0 | 95.00 | 4 | W | 0.50 | 5.0 | ● |
| ECP-H4L 16-34/50W16CFR1 | 16.00 | 16.00 | 34.00 | 50.0 | 100.00 | 4 | W | 1.00 | 5.0 | ● |
| ECP-H4L 16-34/64W16CFR1 | 16.00 | 16.00 | 34.00 | 64.0 | 116.00 | 4 | W | 1.00 | 5.0 | ● |
| ECP-H4L 20-42/62W20CFR1 | 20.00 | 20.00 | 42.00 | 62.0 | 112.00 | 4 | W | 1.00 | 5.0 | ● |
| ECP-H4L 20-42/75W20CFR1 | 20.00 | 20.00 | 42.00 | 75.0 | 125.00 | 4 | W | 1.00 | 5.0 | ● |

(1) Number of flutes
(2) C-Cylindrical, W-Weldon
(3) Maximum ramping angle

CHATTERFREE SOLID MILL LINE

## EC-H4-L/M/XL-CFR

4 Flute Endmills with Different Helix and Variable Pitch for Chatter Dampening with Assorted Radii




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard IC900 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | OAL | NOF(1) | RE | RMPX°(2) | Shank(3) | CSP(4) | | |
| EC-H4L 03-08/10C6CFR.2 | 3.00 | 6.00 | 8.00 | 10.00 | 52.00 | 4 | 0.20 | 5.0 | C | 0 | ● | 0.03-0.06 |
| EC-H4L 04-11/13C6CFR.2 | 4.00 | 6.00 | 11.00 | 13.00 | 52.00 | 4 | 0.20 | 5.0 | C | 0 | ● | 0.03-0.06 |
| EC-H4L 05-13/20C6CFR.2 | 5.00 | 6.00 | 13.00 | 20.00 | 57.00 | 4 | 0.20 | 5.0 | C | 0 | ● | 0.03-0.06 |
| EC-H4L 06-14/20C6CFR.2 | 6.00 | 6.00 | 14.00 | 20.00 | 52.00 | 4 | 0.20 | 5.0 | C | 0 | ● | 0.03-0.06 |
| EC-H4L 06-14/20C6CFR.2C | 6.00 | 6.00 | 14.00 | 20.00 | 52.00 | 4 | 0.20 | 5.0 | C | 1 | ● | 0.03-0.06 |
| EC-H4L 06-14/25C6CFR.2 | 6.00 | 6.00 | 14.00 | 25.00 | 57.00 | 4 | 0.20 | 5.0 | C | 0 | ● | 0.03-0.06 |
| EC-H4L 06-14/25C6CFR.2C | 6.00 | 6.00 | 14.00 | 25.00 | 57.00 | 4 | 0.20 | 5.0 | C | 1 | ● | 0.03-0.06 |
| EC-H4M 06-12C06CFR0.2-57 | 6.00 | 6.00 | 12.00 | - | 57.00 | 4 | 0.20 | 5.0 | C | 0 | ● | 0.03-0.06 |
| EC-H4M 06-12C06CFR0.5-57 | 6.00 | 6.00 | 12.00 | - | 57.00 | 4 | 0.50 | 5.0 | C | 0 | ● | 0.03-0.06 |
| EC-H4M 06-12W06CFR0.2-57 | 6.00 | 6.00 | 12.00 | - | 57.00 | 4 | 0.20 | 5.0 | W | 0 | ● | 0.03-0.06 |
| EC-H4XL 06-12/25C06CFR.2 | 6.00 | 6.00 | 12.00 | 25.00 | 61.00 | 4 | 0.20 | 5.0 | C | 0 | ● | 0.03-0.06 |
| EC-H4XL 06-12/25W06CFR.2 | 6.00 | 6.00 | 12.00 | 25.00 | 61.00 | 4 | 0.20 | 5.0 | W | 0 | ● | 0.03-0.06 |
| EC-H4L 08-18/26W8CFR.3 | 8.00 | 8.00 | 18.00 | 26.00 | 63.00 | 4 | 0.30 | 5.0 | W | 0 | ● | 0.03-0.08 |
| EC-H4L 08-18/26W8CFR.3C | 8.00 | 8.00 | 18.00 | 26.00 | 63.00 | 4 | 0.30 | 5.0 | W | 1 | ● | 0.03-0.08 |
| EC-H4L 08-18/32W8CFR.3 | 8.00 | 8.00 | 18.00 | 32.00 | 63.00 | 4 | 0.30 | 5.0 | W | 0 | ● | 0.03-0.08 |
| EC-H4L 08-18/32W8CFR.3C | 8.00 | 8.00 | 18.00 | 32.00 | 63.00 | 4 | 0.30 | 5.0 | W | 1 | ● | 0.03-0.08 |
| EC-H4M 08-16C08CFR0.4-63 | 8.00 | 8.00 | 16.00 | - | 63.00 | 4 | 0.40 | 5.0 | C | 0 | ● | 0.03-0.08 |
| EC-H4M 08-16C08CFR0.5-63 | 8.00 | 8.00 | 16.00 | - | 63.00 | 4 | 0.50 | 5.0 | C | 0 | ● | 0.03-0.08 |
| EC-H4M 08-16C08CFR1-63 | 8.00 | 8.00 | 16.00 | - | 63.00 | 4 | 1.00 | 5.0 | C | 0 | ● | 0.03-0.08 |
| EC-H4M 08-16W08CFR0.4-63 | 8.00 | 8.00 | 16.00 | - | 63.00 | 4 | 0.40 | 5.0 | W | 0 | ● | 0.03-0.08 |
| EC-H4M 08-16W08CFR1.5-63 | 8.00 | 8.00 | 16.00 | - | 63.00 | 4 | 1.50 | 5.0 | W | 0 | ● | 0.03-0.08 |
| EC-H4XL 08-16/32C08CFR.4 | 8.00 | 8.00 | 16.00 | 32.00 | 68.00 | 4 | 0.40 | 5.0 | C | 0 | ● | 0.03-0.08 |
| EC-H4XL 08-16/32W08CFR.4 | 8.00 | 8.00 | 16.00 | 32.00 | 68.00 | 4 | 0.40 | 5.0 | W | 0 | ● | 0.03-0.08 |
| EC-H4L 10-22/32W10CFR.5 | 10.00 | 10.00 | 22.00 | 32.00 | 72.00 | 4 | 0.50 | 5.0 | W | 0 | ● | 0.03-0.09 |
| EC-H4L 10-22/32W10CFR.5C | 10.00 | 10.00 | 22.00 | 32.00 | 72.00 | 4 | 0.50 | 5.0 | W | 1 | ● | 0.03-0.09 |
| EC-H4L 10-22/40W10CFR.5 | 10.00 | 10.00 | 22.00 | 40.00 | 80.00 | 4 | 0.50 | 5.0 | W | 0 | ● | 0.03-0.09 |
| EC-H4L 10-22/40W10CFR.5C | 10.00 | 10.00 | 22.00 | 40.00 | 80.00 | 4 | 0.50 | 5.0 | W | 1 | ● | 0.03-0.09 |
| EC-H4M 10-20C10CFR0.5-72 | 10.00 | 10.00 | 20.00 | - | 72.00 | 4 | 0.50 | 5.0 | C | 0 | ● | 0.03-0.09 |

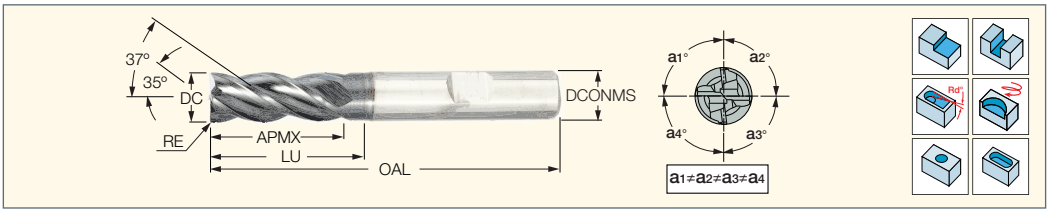
• For user guide, see pages 211-218
(1) Number of flutes
(2) Maximum ramping angle
(3) C-Cylindrical, W-Weldon

Continued

CHATTERFREE SOLID MILL LINE

**EC-H4-L/M/XL-CFR**

4 Flute Endmills with Different Helix and Variable Pitch for Chatter Dampening with Assorted Radii




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | OAL | NOF(1) | RE | RMPX°(2) | Shank(3) | CSP(4) | IC900 | $f_z$ (mm/t) |
| EC-H4M 10-20W10CFR0.5-72 | 10.00 | 10.00 | 20.00 | - | 72.00 | 4 | 0.50 | 5.0 | W | 0 | • | 0.03-0.09 |
| EC-H4M 10-20W10CFR1.5-72 | 10.00 | 10.00 | 20.00 | - | 72.00 | 4 | 1.50 | 5.0 | W | 0 | • | 0.03-0.09 |
| EC-H4M 10-20W10CFR1-72 | 10.00 | 10.00 | 20.00 | - | 72.00 | 4 | 1.00 | 5.0 | W | 0 | • | 0.03-0.09 |
| EC-H4XL 10-20/40C10CFR.5 | 10.00 | 10.00 | 20.00 | 40.00 | 80.00 | 4 | 0.50 | 5.0 | C | 0 | • | 0.03-0.09 |
| EC-H4XL 10-20/40W10CFR.5 | 10.00 | 10.00 | 20.00 | 40.00 | 80.00 | 4 | 0.50 | 5.0 | W | 0 | • | 0.03-0.09 |
| EC-H4L 12-26/38W12CFR.5 | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 4 | 0.50 | 5.0 | W | 0 | • | 0.04-0.10 |
| EC-H4L 12-26/38W12CFR.5C | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 4 | 0.50 | 5.0 | W | 1 | • | 0.04-0.10 |
| EC-H4L 12-26/50W12CFR.5 | 12.00 | 12.00 | 26.00 | 50.00 | 95.00 | 4 | 0.50 | 5.0 | W | 0 | • | 0.04-0.10 |
| EC-H4L 12-26/50W12CFR.5C | 12.00 | 12.00 | 26.00 | 50.00 | 95.00 | 4 | 0.50 | 5.0 | W | 1 | • | 0.04-0.10 |
| EC-H4M 12-24C12CFR0.6-83 | 12.00 | 12.00 | 24.00 | - | 83.00 | 4 | 0.60 | 5.0 | C | 0 | • | 0.04-0.10 |
| EC-H4M 12-24W12CFR0.6-83 | 12.00 | 12.00 | 24.00 | - | 83.00 | 4 | 0.60 | 5.0 | W | 0 | • | 0.04-0.10 |
| EC-H4M 12-24W12CFR1.5-83 | 12.00 | 12.00 | 24.00 | - | 83.00 | 4 | 1.50 | 5.0 | W | 0 | • | 0.04-0.10 |
| EC-H4M 12-24W12CFR1-83 | 12.00 | 12.00 | 24.00 | - | 83.00 | 4 | 1.00 | 5.0 | W | 0 | • | 0.04-0.10 |
| EC-H4M 12-24W12CFR2-83 | 12.00 | 12.00 | 24.00 | - | 83.00 | 4 | 2.00 | 5.0 | W | 0 | • | 0.04-0.10 |
| EC-H4M 12-24W12CFR3-83 | 12.00 | 12.00 | 24.00 | - | 83.00 | 4 | 3.00 | 5.0 | W | 0 | • | 0.04-0.10 |
| EC-H4XL 12-24/50C12CFR.6 | 12.00 | 12.00 | 24.00 | 50.00 | 95.00 | 4 | 0.60 | 5.0 | C | 0 | • | 0.04-0.10 |
| EC-H4XL 12-24/50W12CFR.6 | 12.00 | 12.00 | 24.00 | 50.00 | 95.00 | 4 | 0.60 | 5.0 | W | 0 | • | 0.04-0.10 |
| EC-H4M 14-28C14CFR0.7-83 | 14.00 | 14.00 | 28.00 | - | 83.00 | 4 | 0.70 | 5.0 | C | 0 | • | 0.04-0.11 |
| EC-H4M 14-28W14CFR0.7-83 | 14.00 | 14.00 | 28.00 | - | 83.00 | 4 | 0.70 | 5.0 | W | 0 | • | 0.04-0.11 |
| EC-H4L 16-34/50W16CFR1 | 16.00 | 16.00 | 34.00 | 50.00 | 100.00 | 4 | 1.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4L 16-34/50W16CFR1C | 16.00 | 16.00 | 34.00 | 50.00 | 100.00 | 4 | 1.00 | 5.0 | W | 1 | • | 0.05-0.11 |
| EC-H4L 16-34/64W16CFR1 | 16.00 | 16.00 | 34.00 | 64.00 | 116.00 | 4 | 1.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4L 16-34/64W16CFR1C | 16.00 | 16.00 | 34.00 | 64.00 | 116.00 | 4 | 1.00 | 5.0 | W | 1 | • | 0.05-0.11 |
| EC-H4M 16-32C16CFR0.8-92 | 16.00 | 16.00 | 32.00 | - | 92.00 | 4 | 0.80 | 5.0 | C | 0 | • | 0.05-0.11 |
| EC-H4M 16-32W16CFR0.5-92 | 16.00 | 16.00 | 32.00 | - | 92.00 | 4 | 0.50 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4M 16-32W16CFR0.8-92 | 16.00 | 16.00 | 32.00 | - | 92.00 | 4 | 0.80 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4M 16-32W16CFR1.5-92 | 16.00 | 16.00 | 32.00 | - | 92.00 | 4 | 1.50 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4M 16-32W16CFR1-92 | 16.00 | 16.00 | 32.00 | - | 92.00 | 4 | 1.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4M 16-32W16CFR2-92 | 16.00 | 16.00 | 32.00 | - | 92.00 | 4 | 2.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4M 16-32W16CFR3-92 | 16.00 | 16.00 | 32.00 | - | 92.00 | 4 | 3.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4M 16-32W16CFR4-92 | 16.00 | 16.00 | 32.00 | - | 92.00 | 4 | 4.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4XL 16-32/64C16CFR.8 | 16.00 | 16.00 | 32.00 | 64.00 | 115.00 | 4 | 0.80 | 5.0 | C | 0 | • | 0.05-0.11 |
| EC-H4XL 16-32/64W16CFR.8 | 16.00 | 16.00 | 32.00 | 64.00 | 115.00 | 4 | 0.80 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4L 20-42/64W20CFR1 | 20.00 | 20.00 | 42.00 | 64.00 | 116.00 | 4 | 1.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4L 20-42/64W20CFR1C | 20.00 | 20.00 | 42.00 | 64.00 | 112.00 | 4 | 1.00 | 5.0 | W | 1 | • | 0.05-0.11 |
| EC-H4L 20-42/75W20CFR1 | 20.00 | 20.00 | 42.00 | 75.00 | 125.00 | 4 | 1.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4L 20-42/75W20CFR1C | 20.00 | 20.00 | 42.00 | 75.00 | 125.00 | 4 | 1.00 | 5.0 | W | 1 | • | 0.05-0.11 |
| EC-H4M 20-40C20CFR1.0-104 | 20.00 | 20.00 | 40.00 | - | 104.00 | 4 | 1.00 | 5.0 | C | 0 | • | 0.05-0.11 |
| EC-H4M 20-40W20CFR1.0-104 | 20.00 | 20.00 | 40.00 | - | 104.00 | 4 | 1.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4M 20-40W20CFR1.5-104 | 20.00 | 20.00 | 40.00 | - | 104.00 | 4 | 1.50 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4M 20-40W20CFR3-104 | 20.00 | 20.00 | 40.00 | - | 104.00 | 4 | 3.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4M 20-40W20CFR5-104 | 20.00 | 20.00 | 40.00 | - | 104.00 | 4 | 5.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4XL 20-40/75C20CFR1.0 | 20.00 | 20.00 | 40.00 | 75.00 | 125.00 | 4 | 1.00 | 5.0 | C | 0 | • | 0.05-0.11 |
| EC-H4XL 20-40/75W20CFR1.0 | 20.00 | 20.00 | 40.00 | 75.00 | 125.00 | 4 | 1.00 | 5.0 | W | 0 | • | 0.05-0.11 |
| EC-H4M 25-50C25CFR1.2-121 | 25.00 | 25.00 | 50.00 | - | 121.00 | 4 | 1.20 | 5.0 | C | 0 | • | 0.06-0.11 |
| EC-H4M 25-50W25CFR1.2-121 | 25.00 | 25.00 | 50.00 | - | 121.00 | 4 | 1.20 | 5.0 | W | 0 | • | 0.06-0.11 |

• For user guide, see pages 211-218

(1) Number of flutes

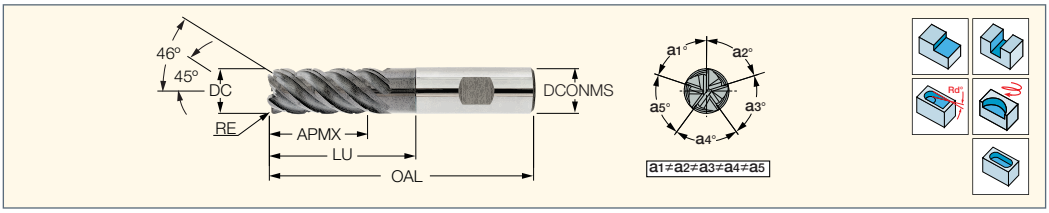
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

CHATTERFREE SOLID MILL LINE

## ECP-H5L-CFR

5 Flute Solid Carbide Endmills with Different Helix, Variable Pitch and Chip Splitting Cutting Edges for Roughing



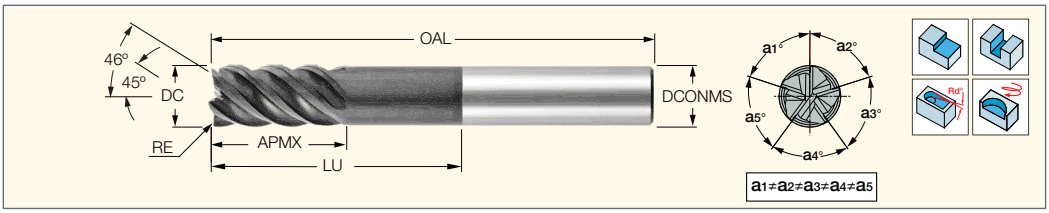

| Designation | Dimensions DC | DCONMS | APMX | LU | OAL | NOF(1) | Shank | RE | RMPX°(2) | IC900 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ECP-H5L 08-18/26W08CFR.3 | 8.00 | 8.00 | 18.00 | 26.0 | 63.00 | 5 | W | 0.30 | 5.0 | • | 0.03-0.08 |
| ECP-H5L 08-18/32W08CFR.3 | 8.00 | 8.00 | 18.00 | 32.0 | 68.00 | 5 | W | 0.30 | 5.0 | • | 0.03-0.08 |
| ECP-H5L 10-22/32W10CFR.5 | 10.00 | 10.00 | 22.00 | 32.0 | 72.00 | 5 | W | 0.50 | 5.0 | • | 0.04-0.11 |
| ECP-H5L 10-22/40W10CFR.5 | 10.00 | 10.00 | 22.00 | 40.0 | 80.00 | 5 | W | 0.50 | 5.0 | • | 0.04-0.11 |
| ECP-H5L 12-26/38W12CFR.5 | 12.00 | 12.00 | 26.00 | 38.0 | 83.00 | 5 | W | 0.50 | 5.0 | • | 0.04-0.11 |
| ECP-H5L 12-26/50W12CFR.5 | 12.00 | 12.00 | 26.00 | 50.0 | 95.00 | 5 | W | 0.50 | 5.0 | • | 0.04-0.11 |
| ECP-H5L 16-34/50W16CFR1 | 16.00 | 16.00 | 34.00 | 50.0 | 100.00 | 5 | W | 1.00 | 5.0 | • | 0.05-0.17 |
| ECP-H5L 16-34/64W16CFR1 | 16.00 | 16.00 | 34.00 | 64.0 | 116.00 | 5 | W | 1.00 | 5.0 | • | 0.05-0.17 |
| ECP-H5L 20-42/62W20CFR1 | 20.00 | 20.00 | 42.00 | 62.0 | 112.00 | 5 | W | 1.00 | 5.0 | • | 0.05-0.17 |
| ECP-H5L 20-42/75W20CFR1 | 20.00 | 20.00 | 42.00 | 75.0 | 125.00 | 5 | W | 1.00 | 5.0 | • | 0.05-0.17 |

(1) Number of flutes
(2) Maximum ramping angle

CHATTERFREE SOLID MILL LINE

## EC-H5M-CFR

5 Flute Endmills with Different Helix and Variable Pitch for Chatter Dampening with Assorted Radius Dimensionsii



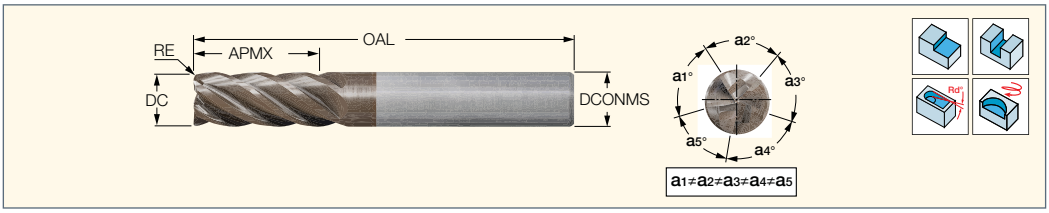

| Designation | Dimensions DC | DCONMS | APMX | LU | OAL | NOF(1) | RE | RMPX°(2) | Shank(3) | CSP(4) | IC900 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EC-H5M 04-09C06CFR0.2-57 | 4.00 | 6.00 | 9.00 | 12.00 | 57.00 | 5 | 0.20 | 2.0 | C | 0 | • |
| EC-H5M 05-11C06CFR0.2-57 | 5.00 | 6.00 | 11.00 | 14.50 | 57.00 | 5 | 0.20 | 2.0 | C | 0 | • |
| EC-H5M 06-10/25C06CFR.1 | 6.00 | 6.00 | 10.00 | 25.00 | 61.00 | 5 | 0.10 | 2.0 | C | 0 | • |
| EC-H5M 06-10/25C06CFR.1C | 6.00 | 6.00 | 10.00 | 25.00 | 61.00 | 5 | 0.10 | 2.0 | C | 1 | • |
| EC-H5M 06-13/19C06CFR.1 | 6.00 | 6.00 | 13.00 | 19.00 | 55.00 | 5 | 0.10 | 2.0 | C | 0 | • |
| EC-H5M 06-13/19C06CFR.1C | 6.00 | 6.00 | 13.00 | 19.00 | 55.00 | 5 | 0.10 | 2.0 | C | 1 | • |
| EC-H5M 08-13/33C08CFR.1 | 8.00 | 8.00 | 13.00 | 33.00 | 69.00 | 5 | 0.10 | 2.0 | C | 0 | • |
| EC-H5M 08-13/33C08CFR.1C | 8.00 | 8.00 | 13.00 | 33.00 | 69.00 | 5 | 0.10 | 2.0 | C | 1 | • |
| EC-H5M 08-17/25C08CFR.1 | 8.00 | 8.00 | 17.00 | 25.00 | 61.00 | 5 | 0.10 | 2.0 | C | 0 | • |
| EC-H5M 08-17/25C08CFR.1C | 8.00 | 8.00 | 17.00 | 25.00 | 61.00 | 5 | 0.10 | 2.0 | C | 1 | • |
| EC-H5M 10-17/42C10CFR.1 | 10.00 | 10.00 | 17.00 | 42.00 | 82.00 | 5 | 0.10 | 2.0 | C | 0 | • |
| EC-H5M 10-17/42C10CFR.1C | 10.00 | 10.00 | 17.00 | 42.00 | 82.00 | 5 | 0.10 | 2.0 | C | 1 | • |
| EC-H5M 10-22/32C10CFR.1 | 10.00 | 10.00 | 22.00 | 32.00 | 72.00 | 5 | 0.10 | 2.0 | C | 0 | • |
| EC-H5M 10-22/32C10CFR.1C | 10.00 | 10.00 | 22.00 | 32.00 | 72.00 | 5 | 0.10 | 2.0 | C | 1 | • |
| EC-H5M 12-20/50C12CFR.2 | 12.00 | 12.00 | 20.00 | 50.00 | 95.00 | 5 | 0.20 | 2.0 | C | 0 | • |
| EC-H5M 12-20/50C12CFR.2C | 12.00 | 12.00 | 20.00 | 50.00 | 95.00 | 5 | 0.20 | 2.0 | C | 1 | • |
| EC-H5M 12-26/38C12CFR.2 | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 5 | 0.20 | 2.0 | C | 0 | • |
| EC-H5M 12-26/38C12CFR.2C | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 5 | 0.20 | 2.0 | C | 1 | • |
| EC-H5M 16-26/66C16CFR.2 | 16.00 | 16.00 | 26.00 | 66.00 | 116.00 | 5 | 0.20 | 2.0 | C | 0 | • |
| EC-H5M 16-26/66C16CFR.2C | 16.00 | 16.00 | 26.00 | 66.00 | 114.00 | 5 | 0.20 | 2.0 | C | 1 | • |
| EC-H5M 16-34/50C16CFR.2 | 16.00 | 16.00 | 34.00 | 50.00 | 98.00 | 5 | 0.20 | 2.0 | C | 0 | • |
| EC-H5M 16-34/50C16CFR.2C | 16.00 | 16.00 | 34.00 | 50.00 | 98.00 | 5 | 0.20 | 2.0 | C | 1 | • |
| EC-H5M 20-32/82C20CFR.2 | 20.00 | 20.00 | 32.00 | 82.00 | 132.00 | 5 | 0.20 | 2.0 | C | 0 | • |
| EC-H5M 20-32/82C20CFR.2C | 20.00 | 20.00 | 32.00 | 82.00 | 132.00 | 5 | 0.20 | 2.0 | C | 1 | • |
| EC-H5M 20-42/62C20CFR.2 | 20.00 | 20.00 | 42.00 | 62.00 | 112.00 | 5 | 0.20 | 2.0 | C | 0 | • |
| EC-H5M 20-42/62C20CFR.2C | 20.00 | 20.00 | 42.00 | 62.00 | 112.00 | 5 | 0.20 | 2.0 | C | 1 | • |

• For user guide, see pages 211-218
(1) Number of flutes
(2) Maximum ramping angle
(3) C-Cylindrical
(4) 0 - Without coolant supply, 1 - With coolant supply

CHATTERFREE SOLID MILL LINE

**ECY-S5-CFR**

5 Flute Endmills with Different Helix for Milling Austenitic, Duplex, Cast and Precipitation Hardening Stainless Steels




| Designation | Dimensions | | | | | | | | IC608 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | RE | RMPX°(2) | Shank | | $f_z$ (mm/t) |
| ECY-S5 05-11C06CFR.2-57 | 5.00 | 6.00 | 11.00 | 57.00 | 5 | 0.20 | 5.0 | C | ● | 0.03-0.06 |
| ECY-S5 06-13C06CFR.2-57 | 6.00 | 6.00 | 13.00 | 57.00 | 5 | 0.20 | 5.0 | C | ● | 0.03-0.08 |
| ECY-S5 08-19C08CFR.4-63 6 | 8.00 | 8.00 | 19.00 | 63.00 | 5 | 0.40 | 5.0 | C | ● | 0.03-0.12 |
| ECY-S5 10-22C10CFR.5-72 6 | 10.00 | 10.00 | 22.00 | 72.00 | 5 | 0.50 | 5.0 | C | ● | 0.03-0.12 |
| ECY-S5 12-26C12CFR.6-83 6 | 12.00 | 12.00 | 26.00 | 83.00 | 5 | 0.60 | 5.0 | C | ● | 0.04-0.13 |
| ECY-S5 16-32C16CFR.8-92 6 | 16.00 | 16.00 | 32.00 | 92.00 | 5 | 0.80 | 5.0 | C | ● | 0.04-0.13 |

**New**

• For user guide, see pages 211-218

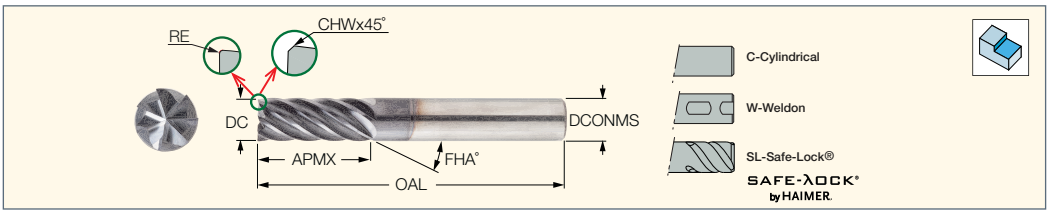
(1) Number of flutes

(2) Maximum ramping angle

**CHATTERFREE** SOLID MILL LINE

## EC-E7/H7-CF

7 Flute Endmills with Different Helix and Variable Pitch for CHATTER-FREE High Speed Finish Milling




| Designation | Dimensions | | | | | | | | | | | | Tough ↔ Hard | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | Shank[2] | NOF[3] | FHA | RE | RETOL[4] | CHW | KCH | RMPX°[5] | IC902 | $f_z$ (mm/t) |
| EC-E7 02-04C06CF-M57 | 2.00 | 6.00 | 4.00 | 57.00 | C | 7 | 38.0 | - | - | 0.05 | 45.0 | 3.0 | • | 0.01-0.02 |
| EC-E7 03-06C06CF-M57 | 3.00 | 6.00 | 6.00 | 57.00 | C | 7 | 38.0 | - | - | 0.10 | 45.0 | 3.0 | • | 0.02-0.05 |
| EC-E7 04-08C06CF-M57 | 4.00 | 6.00 | 8.00 | 57.00 | C | 7 | 38.0 | - | - | 0.10 | 45.0 | 3.0 | • | 0.02-0.05 |
| EC-E7 05-10C06CF-M57 | 5.00 | 6.00 | 10.00 | 57.00 | C | 7 | 38.0 | - | - | 0.20 | 45.0 | 3.0 | • | 0.03-0.07 |
| EC-H7 06-12C06CF-M57 | 6.00 | 6.00 | 12.00 | 57.00 | C | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.03-0.07 |
| EC-H7 06-12C06CFR.2M57 | 6.00 | 6.00 | 12.00 | 57.00 | C | 7 | 37.0 | 0.20 | 0.050 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 06-18C06CF-M65 | 6.00 | 6.00 | 18.00 | 65.00 | C | 7 | 37.0 | - | - | 0.20 | 45.0 | 3.0 | • | 0.03-0.07 |
| EC-H7 06-24C06CF-70 | 6.00 | 6.00 | 24.00 | 70.00 | C | 7 | 37.0 | - | - | 0.20 | 45.0 | 3.0 | • | 0.03-0.07 |
| EC-H7 06-36C06CF-90 | 6.00 | 6.00 | 36.00 | 90.00 | C | 7 | 37.0 | - | - | 0.20 | 45.0 | 3.0 | • | 0.03-0.07 |
| EC-H7 08-16C08CF-M63 | 8.00 | 8.00 | 16.00 | 63.00 | C | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.03-0.09 |
| EC-H7 08-16C08CFR.4M63 | 8.00 | 8.00 | 16.00 | 63.00 | C | 7 | 37.0 | 0.40 | 0.050 | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 08-24C08CF-M90 | 8.00 | 8.00 | 24.00 | 90.00 | C | 7 | 37.0 | - | - | 0.20 | 45.0 | 3.0 | • | 0.03-0.08 |
| EC-H7 08-32C08CF-90 | 8.00 | 8.00 | 32.00 | 90.00 | C | 7 | 37.0 | - | - | 0.20 | 45.0 | 3.0 | • | 0.03-0.09 |
| EC-H7 08-48C08CF-110 | 8.00 | 8.00 | 48.00 | 110.00 | C | 7 | 37.0 | - | - | 0.20 | 45.0 | 3.0 | • | 0.03-0.08 |
| EC-H7 10-20C10CF-M72 | 10.00 | 10.00 | 20.00 | 72.00 | C | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-20C10CFR.5M72 | 10.00 | 10.00 | 20.00 | 72.00 | C | 7 | 37.0 | 0.50 | - | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-20C10CFR1.6-M72 | 10.00 | 10.00 | 20.00 | 72.00 | C | 7 | 37.0 | 1.60 | 0.050 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-20C10CFR2.0-M72 | 10.00 | 10.00 | 20.00 | 72.00 | C | 7 | 37.0 | 2.00 | 0.050 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-20C10CFR2.5-M72 | 10.00 | 10.00 | 20.00 | 72.00 | C | 7 | 37.0 | 2.50 | 0.050 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-20C10CFR3.0-M72 | 10.00 | 10.00 | 20.00 | 72.00 | C | 7 | 37.0 | 3.00 | 0.070 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-20W10CF-M72 | 10.00 | 10.00 | 20.00 | 72.00 | W | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-30C10CF-M100 | 10.00 | 10.00 | 30.00 | 85.00 | C | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.03-0.10 |
| EC-H7 10-30C10CFR0.5-M85 | 10.00 | 10.00 | 30.00 | 85.00 | C | 7 | 37.0 | 0.50 | 0.050 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-30C10CFR1.6-M85 | 10.00 | 10.00 | 30.00 | 85.00 | C | 7 | 37.0 | 1.60 | 0.050 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-30C10CFR2.0-M85 | 10.00 | 10.00 | 30.00 | 85.00 | C | 7 | 37.0 | 2.00 | 0.050 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-30C10CFR2.5-M85 | 10.00 | 10.00 | 30.00 | 85.00 | C | 7 | 37.0 | 2.50 | 0.050 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-30C10CFR3.0-M85 | 10.00 | 10.00 | 30.00 | 85.00 | C | 7 | 37.0 | 3.00 | 0.070 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-40C10CF-100 | 10.00 | 10.00 | 40.00 | 100.00 | C | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.03-0.10 |
| EC-H7 10-40C10CFR0.5-M100 | 10.00 | 10.00 | 40.00 | 100.00 | C | 7 | 37.0 | 0.50 | 0.050 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-40C10CFR1.6-M100 | 10.00 | 10.00 | 40.00 | 100.00 | C | 7 | 37.0 | 1.60 | 0.070 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-40C10CFR2.0-M100 | 10.00 | 10.00 | 40.00 | 100.00 | C | 7 | 37.0 | 2.00 | 0.070 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-40C10CFR2.5-M100 | 10.00 | 10.00 | 40.00 | 100.00 | C | 7 | 37.0 | 2.50 | 0.070 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-40C10CFR3.0-M100 | 10.00 | 10.00 | 40.00 | 100.00 | C | 7 | 37.0 | 3.00 | 0.080 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-60C10CF-130 | 10.00 | 10.00 | 60.00 | 130.00 | C | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.03-0.10 |
| EC-H7 10-60C10CFR0.5-M130 | 10.00 | 10.00 | 60.00 | 130.00 | C | 7 | 37.0 | 0.50 | 0.050 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 10-60C10CFR1.0-M130 | 10.00 | 10.00 | 60.00 | 130.00 | C | 7 | 37.0 | 1.00 | 0.050 | - | - | 3.0 | • | 0.03-0.10 |
| EC-H7 12-24C12CF-M83 | 12.00 | 12.00 | 24.00 | 83.00 | C | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-24C12CFR.6M83 | 12.00 | 12.00 | 24.00 | 83.00 | C | 7 | 37.0 | 0.60 | - | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-24C12CFR1.6-M83 | 12.00 | 12.00 | 24.00 | 83.00 | C | 7 | 37.0 | 1.60 | - | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-24C12CFR2.0-M83 | 12.00 | 12.00 | 24.00 | 83.00 | C | 7 | 37.0 | 2.00 | - | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-24C12CFR2.5-M83 | 12.00 | 12.00 | 24.00 | 83.00 | C | 7 | 37.0 | 2.50 | - | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-24C12CFR3.0-M83 | 12.00 | 12.00 | 24.00 | 83.00 | C | 7 | 37.0 | 3.00 | - | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-24SL12CF-M83 [1] | 12.00 | 12.00 | 24.00 | 83.00 | SL | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 12-24SL12CFR.6M83 [1] | 12.00 | 12.00 | 24.00 | 83.00 | SL | 7 | 37.0 | 0.60 | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 12-24W12CF-M83 | 12.00 | 12.00 | 24.00 | 83.00 | W | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 12-36C12CF-M95 | 12.00 | 12.00 | 36.00 | 95.00 | C | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.04-0.12 |
| EC-H7 12-36C12CFR0.6-M95 | 12.00 | 12.00 | 36.00 | 95.00 | C | 7 | 37.0 | 0.60 | 0.050 | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-36C12CFR1.6-M95 | 12.00 | 12.00 | 36.00 | 95.00 | C | 7 | 37.0 | 1.60 | 0.050 | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-36C12CFR2.0-M95 | 12.00 | 12.00 | 36.00 | 95.00 | C | 7 | 37.0 | 2.00 | 0.050 | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-36C12CFR2.5-M95 | 12.00 | 12.00 | 36.00 | 95.00 | C | 7 | 37.0 | 2.50 | 0.050 | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-36C12CFR3.0-M95 | 12.00 | 12.00 | 36.00 | 95.00 | C | 7 | 37.0 | 3.00 | 0.070 | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-36SL12CF-M95 [1] | 12.00 | 12.00 | 36.00 | 95.00 | SL | 7 | 37.0 | - | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 12-48C12CF-110 | 12.00 | 12.00 | 48.00 | 110.00 | C | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.04-0.11 |
| EC-H7 12-48C12CFR0.6-M110 | 12.00 | 12.00 | 48.00 | 110.00 | C | 7 | 37.0 | 0.60 | 0.050 | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-48C12CFR1.6-M110 | 12.00 | 12.00 | 48.00 | 110.00 | C | 7 | 37.0 | 1.60 | 0.070 | - | - | 3.0 | • | 0.04-0.11 |

• Enables processing at a radial width of cut (AE) of up to 0.10xDC ,For user guide,see pages 211-218

[1] With Safe-Lock® (by Haimer) pull-out prevention helical grooves

[2] C-Cylindrical, W-Weldon, SL-Safe-Lock® (by Haimer)

[3] Number of flutes

[4] Corner radius tolerance (+/-)

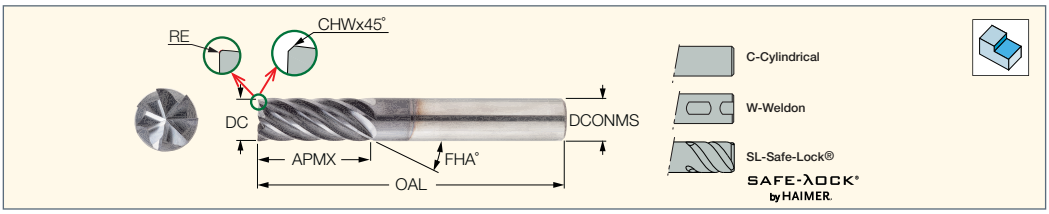
[5] Maximum ramping angle

Continued

CHATTERFREE SOLID MILL LINE

**EC-E7/H7-CF**

7 Flute Endmills with Different Helix and Variable Pitch for CHATTER-FREE High Speed Finish Milling




| Designation | Dimensions | | | | | | | | | | | | Tough ↔ Hard | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | Shank(2) | NOF(3) | FHA | RE | RETOL(4) | CHW | KCH | RMPX°(5) | IC902 | $f_z$ (mm/t) |
| EC-H7 12-48C12CFR2.0-M110 | 12.00 | 12.00 | 48.00 | 110.00 | C | 7 | 37.0 | 2.00 | 0.070 | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-48C12CFR2.5-M110 | 12.00 | 12.00 | 48.00 | 110.00 | C | 7 | 37.0 | 2.50 | 0.070 | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-48C12CFR3.0-M110 | 12.00 | 12.00 | 48.00 | 110.00 | C | 7 | 37.0 | 3.00 | 0.080 | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-48SL12CF-110 (1) | 12.00 | 12.00 | 48.00 | 110.00 | SL | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.04-0.12 |
| EC-H7 12-72C12CF-140 | 12.00 | 12.00 | 72.00 | 140.00 | C | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.04-0.12 |
| EC-H7 12-72C12CFR1.0-M140 | 12.00 | 12.00 | 72.00 | 140.00 | C | 7 | 37.0 | 1.00 | 0.050 | - | - | 3.0 | • | 0.04-0.11 |
| EC-H7 12-72SL12CF-140 (1) | 12.00 | 12.00 | 72.00 | 140.00 | SL | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.04-0.12 |
| EC-H7 16-32C16CF-M92 | 16.00 | 16.00 | 32.00 | 92.00 | C | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-32C16CFR.8M92 | 16.00 | 16.00 | 32.00 | 92.00 | C | 7 | 37.0 | 0.80 | - | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-32C16CFR1.6-M92 | 16.00 | 16.00 | 32.00 | 92.00 | C | 7 | 37.0 | 1.60 | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 16-32C16CFR2.0-M92 | 16.00 | 16.00 | 32.00 | 92.00 | C | 7 | 37.0 | 2.00 | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 16-32C16CFR2.5-M92 | 16.00 | 16.00 | 32.00 | 92.00 | C | 7 | 37.0 | 2.50 | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 16-32C16CFR3.0-M92 | 16.00 | 16.00 | 32.00 | 92.00 | C | 7 | 37.0 | 3.00 | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 16-32C16CFR4.0-M92 | 16.00 | 16.00 | 32.00 | 92.00 | C | 7 | 37.0 | 4.00 | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 16-32SL16CF-M92 (1) | 16.00 | 16.00 | 32.00 | 92.00 | SL | 7 | 37.0 | - | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 16-32SL16CFR.8M92 (1) | 16.00 | 16.00 | 32.00 | 92.00 | SL | 7 | 37.0 | 0.80 | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 16-32W16CF-M92 | 16.00 | 16.00 | 32.00 | 92.00 | W | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-48C16CF-M110 | 16.00 | 16.00 | 48.00 | 110.00 | C | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.05-0.13 |
| EC-H7 16-48C16CFR0.8-M110 | 16.00 | 16.00 | 48.00 | 110.00 | C | 7 | 37.0 | 0.80 | 0.050 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-48C16CFR1.6-M110 | 16.00 | 16.00 | 48.00 | 110.00 | C | 7 | 37.0 | 1.60 | 0.050 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-48C16CFR2.0-M110 | 16.00 | 16.00 | 48.00 | 110.00 | C | 7 | 37.0 | 2.00 | 0.050 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-48C16CFR2.5-M110 | 16.00 | 16.00 | 48.00 | 110.00 | C | 7 | 37.0 | 2.50 | 0.050 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-48C16CFR3.0-M110 | 16.00 | 16.00 | 48.00 | 110.00 | C | 7 | 37.0 | 3.00 | 0.070 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-48C16CFR4.0-M110 | 16.00 | 16.00 | 48.00 | 110.00 | C | 7 | 37.0 | 4.00 | 0.070 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-48SL16CF-M110 (1) | 16.00 | 16.00 | 48.00 | 110.00 | SL | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.04-0.12 |
| EC-H7 16-64C16CF-131 | 16.00 | 16.00 | 64.00 | 131.00 | C | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.05-0.13 |
| EC-H7 16-64C16CFR0.8-M131 | 16.00 | 16.00 | 64.00 | 131.00 | C | 7 | 37.0 | 0.80 | 0.050 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-64C16CFR1.6-M131 | 16.00 | 16.00 | 64.00 | 131.00 | C | 7 | 37.0 | 1.60 | 0.070 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-64C16CFR2.0-M131 | 16.00 | 16.00 | 64.00 | 131.00 | C | 7 | 37.0 | 2.00 | 0.070 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-64C16CFR2.5-M131 | 16.00 | 16.00 | 64.00 | 131.00 | C | 7 | 37.0 | 2.50 | 0.070 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-64C16CFR3.0-M131 | 16.00 | 16.00 | 64.00 | 131.00 | C | 7 | 37.0 | 3.00 | 0.080 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-64C16CFR4.0-M131 | 16.00 | 16.00 | 64.00 | 131.00 | C | 7 | 37.0 | 4.00 | 0.080 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-64SL16CF-131 (1) | 16.00 | 16.00 | 64.00 | 131.00 | SL | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.04-0.12 |
| EC-H7 16-96C16CF-175 | 16.00 | 16.00 | 96.00 | 175.00 | C | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.05-0.13 |
| EC-H7 16-96C16CFR1.0M175 | 16.00 | 16.00 | 96.00 | 175.00 | C | 7 | 37.0 | 1.00 | 0.050 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 16-96SL16CF-175 (1) | 16.00 | 16.00 | 96.00 | 175.00 | SL | 7 | 37.0 | - | - | 0.30 | 45.0 | 3.0 | • | 0.04-0.12 |
| EC-H7 20-40C20CF-M104 | 20.00 | 20.00 | 40.00 | 104.00 | C | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-40C20CFR1.6-M104 | 20.00 | 20.00 | 40.00 | 104.00 | C | 7 | 37.0 | 1.60 | 0.060 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-40C20CFR1M104 | 20.00 | 20.00 | 40.00 | 104.00 | C | 7 | 37.0 | 1.00 | - | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-40C20CFR2.0-M104 | 20.00 | 20.00 | 40.00 | 104.00 | C | 7 | 37.0 | 2.00 | 0.060 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-40C20CFR2.5-M104 | 20.00 | 20.00 | 40.00 | 104.00 | C | 7 | 37.0 | 2.50 | 0.060 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-40C20CFR3.0-M104 | 20.00 | 20.00 | 40.00 | 104.00 | C | 7 | 37.0 | 3.00 | 0.060 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-40C20CFR4.0-M104 | 20.00 | 20.00 | 40.00 | 104.00 | C | 7 | 37.0 | 4.00 | 0.080 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-40SL20CF-M104 (1) | 20.00 | 20.00 | 40.00 | 104.00 | SL | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.04-0.12 |
| EC-H7 20-40SL20CFR1M104 (1) | 20.00 | 20.00 | 40.00 | 104.00 | SL | 7 | 37.0 | 1.00 | - | - | - | 3.0 | • | 0.05-0.15 |
| EC-H7 20-40W20CF-M104 | 20.00 | 20.00 | 40.00 | 104.00 | W | 7 | 37.0 | 0.00 | - | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-60C20CF-M140 | 20.00 | 20.00 | 60.00 | 140.00 | C | 7 | 37.0 | - | - | 0.40 | 45.0 | 3.0 | • | 0.05-0.13 |
| EC-H7 20-60C20CFR1.0-M140 | 20.00 | 20.00 | 60.00 | 140.00 | C | 7 | 37.0 | 1.00 | 0.060 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-60C20CFR2.0-M140 | 20.00 | 20.00 | 60.00 | 140.00 | C | 7 | 37.0 | 2.00 | 0.060 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-60C20CFR2.5-M140 | 20.00 | 20.00 | 60.00 | 140.00 | C | 7 | 37.0 | 2.50 | 0.060 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-60C20CFR3.0-M140 | 20.00 | 20.00 | 60.00 | 140.00 | C | 7 | 37.0 | 3.00 | 0.060 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-60C20CFR4.0-M140 | 20.00 | 20.00 | 60.00 | 140.00 | C | 7 | 37.0 | 4.00 | 0.080 | - | - | 3.0 | • | 0.05-0.13 |
| EC-H7 20-60SL20CF-M140 (1) | 20.00 | 20.00 | 60.00 | 140.00 | SL | 7 | 37.0 | - | - | 0.40 | 45.0 | 3.0 | • | 0.05-0.15 |
| EC-H7 20-80C20CF-140 | 20.00 | 20.00 | 80.00 | 140.00 | C | 7 | 37.0 | - | - | 0.40 | 45.0 | 3.0 | • | 0.05-0.13 |
| EC-H7 20-80C20CFR1.0-M140 | 20.00 | 20.00 | 80.00 | 140.00 | C | 7 | 37.0 | 1.00 | 0.060 | - | - | 3.0 | • | 0.05-0.13 |

• Enables processing at a radial width of cut (AE) of up to 0.10xDC ,For user guide,see pages 211-218

(1) With Safe-Lock® (by Haimer) pull-out prevention helical grooves

(2) C-Cylindrical, W-Weldon, SL-Safe-Lock® (by Haimer)

(3) Number of flutes

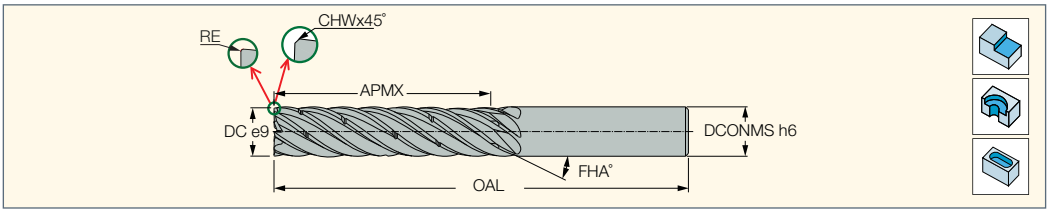
(4) Corner radius tolerance (+/-)

(5) Maximum ramping angle

CHATTERFREE SOLID MILL LINE

## ECP-H7-CF

7 Flute Solid Carbide Endmills with Different Helix, Variable Pitch and Chip Splitting Cutting Edges




| Designation | Dimensions | | | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | RE | RETOL(3) | CHW | KCH | IC900 | IC902 | $f_z$ (mm/t) |
| ECP-H7 06-18C06CF-65 | 6.00 | 6.00 | 18.00 | 65.00 | 7 | 36.0 | C | - | - | 0.20 | 45.0 | | ● | 0.02-0.07 |
| ECP-H7 06-18W06CF-65 | 6.00 | 6.00 | 18.00 | 65.00 | 7 | 36.0 | W | - | - | 0.20 | 45.0 | | ● | 0.02-0.07 |
| ECP-H7 06-24C06CF-70 | 6.00 | 6.00 | 24.00 | 70.00 | 7 | 36.0 | C | - | - | 0.20 | 45.0 | | ● | 0.02-0.07 |
| ECP-H7 06-24W06CF-70 | 6.00 | 6.00 | 24.00 | 70.00 | 7 | 36.0 | W | - | - | 0.20 | 45.0 | | ● | 0.02-0.07 |
| ECP-H7 06-36C06CF-90 | 6.00 | 6.00 | 36.00 | 90.00 | 7 | 36.0 | C | - | - | 0.20 | 45.0 | | ● | 0.02-0.07 |
| ECP-H7 06-36W06CF-90 | 6.00 | 6.00 | 36.00 | 90.00 | 7 | 36.0 | W | - | - | 0.20 | 45.0 | | ● | 0.02-0.07 |
| ECP-H7 08-24C08CF-90 | 8.00 | 8.00 | 24.00 | 90.00 | 7 | 36.0 | C | - | - | 0.20 | 45.0 | | ● | 0.02-0.08 |
| ECP-H7 08-24W08CF-90 | 8.00 | 8.00 | 24.00 | 90.00 | 7 | 36.0 | W | - | - | 0.20 | 45.0 | | ● | 0.02-0.08 |
| ECP-H7 08-32C08CF-90 | 8.00 | 8.00 | 32.00 | 90.00 | 7 | 36.0 | C | - | - | 0.20 | 45.0 | | ● | 0.02-0.09 |
| ECP-H7 08-32W08CF-90 | 8.00 | 8.00 | 32.00 | 90.00 | 7 | 36.0 | W | - | - | 0.20 | 45.0 | | ● | 0.02-0.09 |
| ECP-H7 08-48C08CF-110 | 8.00 | 8.00 | 48.00 | 110.00 | 7 | 36.0 | C | - | - | 0.20 | 45.0 | | ● | 0.02-0.08 |
| ECP-H7 10-30C10CF-85 | 10.00 | 10.00 | 30.00 | 85.00 | 7 | 36.0 | C | - | - | 0.30 | 45.0 | | ● | 0.02-0.10 |
| ECP-H7 10-30C10CFR0.5-85 | 10.00 | 10.00 | 30.00 | 85.00 | 7 | 36.0 | C | 0.50 | 0.050 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-30W10CFR0.5-85 | 10.00 | 10.00 | 30.00 | 85.00 | 7 | 36.0 | W | 0.50 | 0.050 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-30C10CFR1.6-85 | 10.00 | 10.00 | 30.00 | 85.00 | 7 | 36.0 | C | 1.60 | 0.050 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-30C10CFR2.0-85 | 10.00 | 10.00 | 30.00 | 85.00 | 7 | 36.0 | C | 2.00 | 0.080 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-30C10CFR2.5-85 | 10.00 | 10.00 | 30.00 | 85.00 | 7 | 36.0 | C | 2.50 | 0.080 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-30C10CFR3.0-85 | 10.00 | 10.00 | 30.00 | 85.00 | 7 | 36.0 | C | 3.00 | 0.080 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-40C10CF-100 | 10.00 | 10.00 | 40.00 | 100.00 | 7 | 36.0 | C | - | - | 0.30 | 45.0 | | ● | 0.02-0.10 |
| ECP-H7 10-40C10CFR0.5-100 | 10.00 | 10.00 | 40.00 | 100.00 | 7 | 36.0 | C | 0.50 | 0.050 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-40W10CFR0.5-100 | 10.00 | 10.00 | 40.00 | 100.00 | 7 | 36.0 | W | 0.50 | 0.050 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-40C10CFR1.6-100 | 10.00 | 10.00 | 40.00 | 100.00 | 7 | 36.0 | C | 1.60 | 0.050 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-40C10CFR2.0-100 | 10.00 | 10.00 | 40.00 | 100.00 | 7 | 36.0 | C | 2.00 | 0.080 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-40C10CFR2.5-100 | 10.00 | 10.00 | 40.00 | 100.00 | 7 | 36.0 | C | 2.50 | 0.080 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-40C10CFR3.0-100 | 10.00 | 10.00 | 40.00 | 100.00 | 7 | 36.0 | C | 3.00 | 0.080 | - | - | | ● | 0.02-0.10 |
| ECP-H7 10-60C10CF-130 | 10.00 | 10.00 | 60.00 | 130.00 | 7 | 36.0 | C | - | - | 0.30 | 45.0 | | ● | 0.02-0.10 |
| ECP-H7 10-60C10CFR0.5-130 | 10.00 | 10.00 | 60.00 | 130.00 | 7 | 36.0 | C | 0.50 | 0.050 | - | - | | ● | 0.04-0.12 |
| ECP-H7 10-60C10CFR1.0-130 | 10.00 | 10.00 | 60.00 | 130.00 | 7 | 36.0 | C | 1.00 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-36C12CF-95 | 12.00 | 12.00 | 36.00 | 95.00 | 7 | 36.0 | C | - | - | 0.30 | 45.0 | | ● | 0.04-0.12 |
| ECP-H7 12-36C12CFR0.6-95 | 12.00 | 12.00 | 36.00 | 95.00 | 7 | 36.0 | C | 0.60 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-36W12CFR0.6-95 | 12.00 | 12.00 | 36.00 | 95.00 | 7 | 36.0 | W | 0.60 | 0.050 | - | - | | ● | 0.05-0.05 |
| ECP-H7 12-36C12CFR1.6-95 | 12.00 | 12.00 | 36.00 | 95.00 | 7 | 36.0 | C | 1.60 | 0.070 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-36C12CFR2.0-95 | 12.00 | 12.00 | 36.00 | 95.00 | 7 | 36.0 | C | 2.00 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-36C12CFR2.5-95 | 12.00 | 12.00 | 36.00 | 95.00 | 7 | 36.0 | C | 2.50 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-36C12CFR3.0-95 | 12.00 | 12.00 | 36.00 | 95.00 | 7 | 36.0 | C | 3.00 | 0.070 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-36C12CFR4.0-95 | 12.00 | 12.00 | 36.00 | 110.00 | 7 | 36.0 | C | 4.00 | 0.080 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-48C12CF-110 | 12.00 | 12.00 | 48.00 | 110.00 | 7 | 36.0 | C | - | - | 0.30 | 45.0 | | ● | 0.04-0.11 |
| ECP-H7 12-48C12CFR0.6-110 | 12.00 | 12.00 | 48.00 | 110.00 | 7 | 36.0 | C | 0.60 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-48W12CFR0.6-110 | 12.00 | 12.00 | 48.00 | 110.00 | 7 | 36.0 | W | 0.60 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-48C12CFR1.6-110 | 12.00 | 12.00 | 48.00 | 110.00 | 7 | 36.0 | C | 1.60 | 0.070 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-48C12CFR2.0-110 | 12.00 | 12.00 | 48.00 | 110.00 | 7 | 36.0 | C | 2.00 | 0.060 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-48C12CFR2.5-110 | 12.00 | 12.00 | 48.00 | 110.00 | 7 | 36.0 | C | 2.50 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-48C12CFR3.0-110 | 12.00 | 12.00 | 48.00 | 110.00 | 7 | 36.0 | C | 3.00 | 0.070 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-48C12CFR4.0-110 | 12.00 | 12.00 | 48.00 | 110.00 | 7 | 36.0 | C | 4.00 | 0.080 | - | - | | ● | 0.05-0.13 |
| ECP-H7 12-72C12CF-140 | 12.00 | 12.00 | 72.00 | 140.00 | 7 | 36.0 | C | - | - | 0.30 | 45.0 | | ● | 0.04-0.12 |
| ECP-H7 12-72C12CFR1.0-140 | 12.00 | 12.00 | 72.00 | 140.00 | 7 | 36.0 | C | 1.00 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H6 16-32W16CFR0.8 | 16.00 | 16.00 | 32.00 | 92.00 | 6 | - | W | 0.80 | 0.050 | - | - | ● | | 0.05-0.13 |
| ECP-H7 16-48C16CF-110 | 16.00 | 16.00 | 48.00 | 110.00 | 7 | 36.0 | C | - | - | 0.30 | 45.0 | | ● | 0.05-0.13 |
| ECP-H7 16-48C16CFR0.8-110 | 16.00 | 16.00 | 48.00 | 110.00 | 7 | 36.0 | C | 0.80 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 16-48C16CFR1.6-110 | 16.00 | 16.00 | 48.00 | 110.00 | 7 | 36.0 | C | 1.60 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 16-48C16CFR2.0-110 | 16.00 | 16.00 | 48.00 | 110.00 | 7 | 36.0 | C | 2.00 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 16-48C16CFR2.5-110 | 16.00 | 16.00 | 48.00 | 110.00 | 7 | 36.0 | C | 2.50 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 16-48C16CFR3.0-110 | 16.00 | 16.00 | 48.00 | 110.00 | 7 | 36.0 | C | 3.00 | 0.070 | - | - | | ● | 0.05-0.13 |
| ECP-H7 16-48C16CFR4.0-110 | 16.00 | 16.00 | 48.00 | 110.00 | 7 | 36.0 | C | 4.00 | 0.070 | - | - | | ● | 0.05-0.13 |
| ECP-H7 16-64C16CF-131 | 16.00 | 16.00 | 64.00 | 131.00 | 7 | 36.0 | C | - | - | 0.30 | 45.0 | | ● | 0.05-0.13 |
| ECP-H7 16-64C16CFR0.8-131 | 16.00 | 16.00 | 64.00 | 131.00 | 7 | 36.0 | C | 0.80 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 16-64W16CFR0.8-131 | 16.00 | 16.00 | 64.00 | 131.00 | 7 | 36.0 | W | 0.80 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 16-96C16CF-175 | 16.00 | 16.00 | 96.00 | 175.00 | 7 | 36.0 | C | - | - | 0.30 | 45.0 | | ● | 0.05-0.13 |

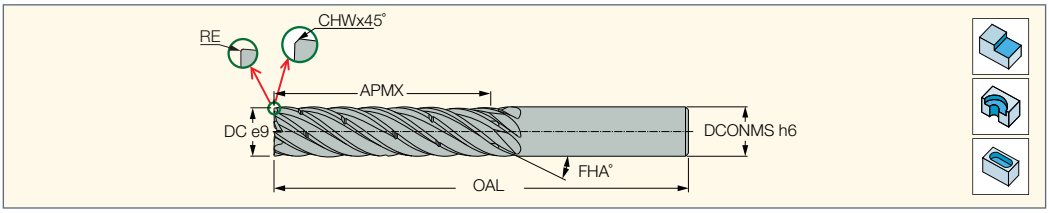
(1) Number of flutes
(2) C-Cylindrical, W-Weldon
(3) Corner radius tolerance (+/-)

Continued

CHATTERFREE SOLID MILL LINE

**ECP-H7-CF**

7 Flute Solid Carbide Endmills with Different Helix, Variable Pitch and Chip Splitting Cutting Edges




| Designation | Dimensions | | | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | RE | RETOL(3) | CHW | KCH | IC900 | IC902 | $f_z$ (mm/t) |
| ECP-H7 16-96C16CFR1.0-175 | 16.00 | 16.00 | 96.00 | 175.00 | 7 | 36.0 | C | 1.00 | 0.050 | - | - | | ● | 0.05-0.13 |
| ECP-H7 20-40C20CFR1.0 | 20.00 | 20.00 | 40.00 | 104.00 | 7 | 36.0 | C | 1.00 | 0.050 | - | - | ● | | 0.07-0.20 |
| ECP-H7 20-40W20CFR1.0 | 20.00 | 20.00 | 40.00 | 104.00 | 7 | 36.0 | W | 1.00 | 0.050 | - | - | ● | | 0.07-0.20 |
| ECP-H7 20-60C20CF-140 | 20.00 | 20.00 | 60.00 | 140.00 | 7 | 36.0 | C | - | - | 0.40 | 45.0 | | ● | 0.07-0.20 |
| ECP-H7 20-60C20CFR1.0-140 | 20.00 | 20.00 | 60.00 | 140.00 | 7 | 36.0 | C | 1.00 | 0.050 | - | - | | ● | 0.07-0.20 |
| ECP-H7 20-60W20CFR1.0-140 | 20.00 | 20.00 | 60.00 | 140.00 | 7 | 36.0 | W | 1.00 | 0.050 | - | - | | ● | 0.07-0.20 |
| ECP-H7 20-60C20CFR2.0-140 | 20.00 | 20.00 | 60.00 | 140.00 | 7 | 36.0 | C | 2.00 | 0.050 | - | - | | ● | 0.07-0.20 |
| ECP-H7 20-60C20CFR2.5-140 | 20.00 | 20.00 | 60.00 | 140.00 | 7 | 36.0 | C | 2.50 | 0.050 | - | - | | ● | 0.07-0.20 |
| ECP-H7 20-60C20CFR3.0-140 | 20.00 | 20.00 | 60.00 | 140.00 | 7 | 36.0 | C | 3.00 | 0.050 | - | - | | ● | 0.07-0.20 |
| ECP-H7 20-60C20CFR4.0-140 | 20.00 | 20.00 | 60.00 | 140.00 | 7 | 36.0 | C | 4.00 | 0.080 | - | - | | ● | 0.07-0.20 |
| ECP-H7 20-80C20CF-140 | 20.00 | 20.00 | 80.00 | 140.00 | 7 | 36.0 | C | - | - | 0.40 | 45.0 | | ● | 0.05-0.20 |
| ECP-H7 20-80W20CFR1.0-140 | 20.00 | 20.00 | 80.00 | 140.00 | 7 | 36.0 | W | 1.00 | 0.050 | - | - | | ● | 0.05-0.20 |

(1) Number of flutes

(2) C-Cylindrical, W-Weldon

(3) Corner radius tolerance (+/-)

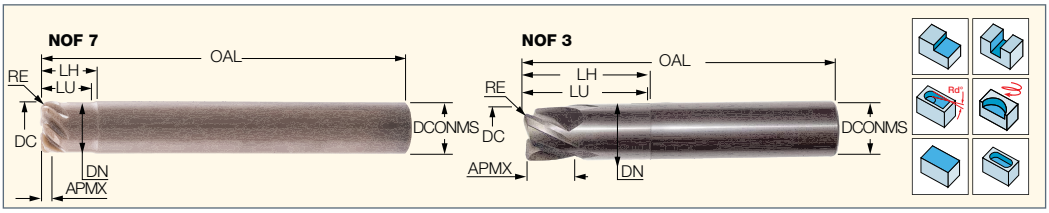
## Table - Average Cutting Data for ECP-H7...

| ISO class DIN/ ISO 513 | Material | | Condition | Hardness HB | Material Group No. | Typical Materials | | Cutting Speed $v_c$ [m/min] | $f_z$ [mm/tooth] | | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | AISI/SAE/ ASTM | DIN W.-Nr. | | Starting | Range | |
| P | non-alloy steel and cast steel, free cutting steel | <0.25% C | annealed | 125 | 1 | 1020 | 1.1151 | 210-300 | 0.12 | 0.05-0.2 | dry |
| | | ≥0.25% C | annealed | 190 | 2 | 1040 | 1.0511 | 200-280 | 0.12 | 0.05-0.2 | |
| | | <0.55% C | quenched and tempered | 250 | 3 | 1040 | 1.1186 | 200-260 | 0.1 | 0.05-0.2 | |
| | | ≥0.55% C | annealed | 220 | 4 | 1060 | 1.0601 | 180-250 | 0.1 | 0.05-0.2 | |
| | | | quenched and tempered | 300 | 5 | E 360 | 1.0070 | 180-240 | 0.1 | 0.05-0.2 | |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 200 | 6 | 5120 | 1.0841 | 170-240 | 0.1 | 0.05-0.2 | |
| | | | quenched and tempered | 275 | 7 | 4340 | 1.6565 | 160-230 | 0.1 | 0.05-0.2 | |
| | | | | 300 | 8 | 6150 | 1.8159 | 150-230 | 0.1 | 0.05-0.2 | |
| | | | | 350 | 9 | | 1.4882 | 140-220 | 0.1 | 0.05-0.2 | |
| | high alloyed steel, cast steel and tool steel | | annealed | 200 | 10 | H13 | 1.2344 | 120-210 | 0.08 | 0.05-0.2 | |
| | | | quenched and tempered | 325 | 11 | T15 | 1.3243 | 110-170 | 0.08 | 0.05-0.2 | |
| | stainless steel and cast steel | | ferritic/martensitic | 200 | 12 | 420 | 1.4028 | 150-230 | 0.08 | 0.03-0.16 | dry / wet |
| | | | martensitic | 240 | 13 | 430 | 1.4021 | 140-220 | 0.08 | 0.03-0.16 | |
| M | stainless steel and cast steel | | austenitic, duplex | 180 | 14 | 304L | 1.4306 | 100-160 | 0.06 | 0.03-0.16 | wet |
| K | gray cast iron (GG) | | ferritic / pearlitic | 180 | 15 | CLASS25 | 0.6015 | 150-250 | 0.1 | 0.03-0.16 | dry |
| | | | pearlitic / martensitic | 260 | 16 | CLASS45 | 0.6030 | 120-200 | 0.1 | 0.03-0.16 | |
| | nodular cast iron (GGG) | | ferritic | 160 | 17 | 80-55-06 | 0.7050 | 150-300 | 0.08 | 0.03-0.16 | |
| | | | pearlitic | 250 | 18 | 100/70/03 | 0.7070 | 100-250 | 0.08 | 0.03-0.16 | |
| | malleable cast iron | | ferritic | 130 | 19 | 32510 | 0.8135 | 150-300 | 0.08 | 0.03-0.16 | |
| | | | pearlitic | 230 | 20 | 90001 | 0.8170 | 100-220 | 0.08 | 0.03-0.16 | |
| S | high temperature alloys | Fe based | annealed | 200 | 31 | 330 | 1.4864 | 50-60 | 0.08 | 0.02-0.16 | wet |
| | | | hardened | 280 | 32 | | 1.4977 | 40-50 | 0.03 | 0.02-0.16 | |
| | | Ni or Co based | annealed | 250 | 33 | Inconel 625 | 2.4856 | 35-50 | 0.04 | 0.02-0.16 | |
| | | | hardened | 350 | 34 | Inconel 718 | 2.4668 | 25-35 | 0.03 | 0.02-0.16 | |
| | | | cast | 320 | 35 | Inconel X-750 | 2.4669 | 30-40 | 0.03 | 0.02-0.16 | |
| | titanium alloys | | pure | HRC 30-32 | 36 | AMS 5397 | 2.4674 | 65-110 | 0.1 | 0.02-0.16 | |
| | | | alpha+beta alloys, hardened | HRC 30-32 | 37 | AMS R56400 | 3.7165 | 35-70 | 0.08 | 0.02-0.16 | |
| H | hardened steel | | hardened | HRC 45-49 | 38.1 | 4340 | 1.6565 | 55-75 | 0.03 | 0.02-0.16 | dry |
| | | | hardened | HRC 50-55 | 38.2 | P20 | 1.2330 | 55-75 | --- | --- | |

SOLIDMILL CERAMIC ENDMILL

## EC-E3/E7-CE (CER)

3 and 7 Flute Solid Ceramic Endmills with Relieved Necks for Machining Nickel Based Alloys,Cast Iron and Graphite




| Designation | Dimensions DC | APMX | LU | LH | DN | RE(1) | NOF(2) | DCONMS | RMPX°(3) | OAL | Shank(4) | Tough ↔ Hard IS35 | IS6 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC-E3 06-06/15C06R.4N50CE | 6.00 | 6.00 | 14.50 | 15.0 | 5.50 | 0.42 | 3 | 6.00 | 3.0 | 50.00 | C | ● | | 0.02-0.03 |
| EC-E3 08-08/20C08R.5N57CE | 8.00 | 8.00 | 19.50 | 20.0 | 7.50 | 0.56 | 3 | 8.00 | 3.0 | 57.00 | C | ● | | 0.02-0.03 |
| EC-E3 10-10/25C10R.7N65CE | 10.00 | 10.00 | 24.50 | 25.0 | 9.50 | 0.70 | 3 | 10.00 | 3.0 | 65.00 | C | ● | | 0.02-0.03 |
| EC-E3 12-12/30C12R1.N72CE | 12.00 | 12.00 | 29.50 | 30.0 | 11.50 | 1.10 | 3 | 12.00 | 3.0 | 72.00 | C | ● | | 0.02-0.03 |
| EC-E3 16-16/35C16R2.N83CE | 16.00 | 16.00 | 34.50 | 35.0 | 15.50 | 1.90 | 3 | 16.00 | 3.0 | 83.00 | C | ● | | 0.02-0.04 |
| EC-E7 08-02C08R1.0N63CE | 8.00 | 0.40 | 8.00 | 9.5 | 7.50 | 1.00 | 7 | 8.00 | 3.0 | 63.00 | C | | ● | 0.02-0.03 |
| EC-E7 10-02C10R1.5N72CE | 10.00 | 0.70 | 10.00 | 11.5 | 9.50 | 1.50 | 7 | 10.00 | 3.0 | 72.00 | C | | ● | 0.02-0.03 |
| EC-E7 12-02C12R1.5N83CE | 12.00 | 1.30 | 10.00 | 12.0 | 11.50 | 1.50 | 7 | 12.00 | 3.0 | 83.00 | C | | ● | 0.02-0.03 |

• Recommended cutting speed on high temperature nickel-based superalloys: 250-1000 m/min • Maximum width of cut for the 3 flute cutters is 0.1xDC • Maximum width of cut for the 7 flute cutters is DC • Only air coolant should be used

(1) Programming radius

(2) Number of flutes

(3) Maximum ramping angle

(4) C-Cylindrical

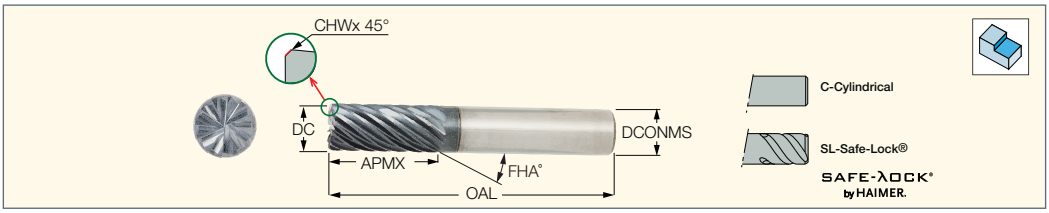
| P | M | K | N(K) | S(M) | H(P/K) |
|---|---|---|---|---|---|
| | | + | + | + | |

+ recommended

CHATTERFREE SOLID MILL LINE

## EC-H-CF

6-20 Flute Endmills with Different Helix and Variable Pitch for CHATTER-FREE High Speed Finish Milling




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(2) | FHA | Shank(3) | CHW | KCH | IC902 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EC-H6 06-12C06CF-H57 | 6.00 | 6.00 | 12.00 | 57.00 | 6 | 45.0 | C | 0.20 | 45.0 | ● | 0.03-0.07 |
| EC-H8 08-16C08CF-H63 | 8.00 | 8.00 | 16.00 | 63.00 | 8 | 45.0 | C | 0.20 | 45.0 | ● | 0.03-0.09 |
| EC-H10 10-20C10CF-H72 | 10.00 | 10.00 | 20.00 | 72.00 | 10 | 35.0 | C | 0.30 | 45.0 | ● | 0.03-0.10 |
| EC-H10 10-20SL10CF-H72 (1) | 10.00 | 10.00 | 20.00 | 72.00 | 10 | 35.0 | SL | - | - | ● | 0.03-0.10 |
| EC-H12 12-24C12CF-H83 | 12.00 | 12.00 | 24.00 | 83.00 | 12 | 35.0 | C | 0.30 | 45.0 | ● | 0.04-0.11 |
| EC-H12 12-24SL12CF-H83 (1) | 12.00 | 12.00 | 20.00 | 83.00 | 12 | 35.0 | SL | - | - | ● | 0.04-0.11 |
| EC-H16 16-32C16CF-H92 | 16.00 | 16.00 | 32.00 | 92.00 | 16 | 35.0 | C | 0.30 | 45.0 | ● | 0.05-0.13 |
| EC-H16 16-32SL16CF-H92 (1) | 16.00 | 16.00 | 32.00 | 92.00 | 16 | 35.0 | SL | - | - | ● | 0.05-0.13 |
| EC-H20 20-40C20CFH104 | 20.00 | 20.00 | 40.00 | 104.00 | 20 | 30.0 | C | 0.40 | 45.0 | ● | 0.05-0.13 |
| EC-H20 20-40SL20CFH104 (1) | 20.00 | 20.00 | 41.00 | 105.00 | 20 | 30.0 | SL | - | - | ● | 0.05-0.13 |

• Enables processing at a radial width of cut (AE) of up to 0.06xDC .For user guide,see pages 211-218

(1) With Safe-Lock® (by Haimer) pull-out prevention helical grooves

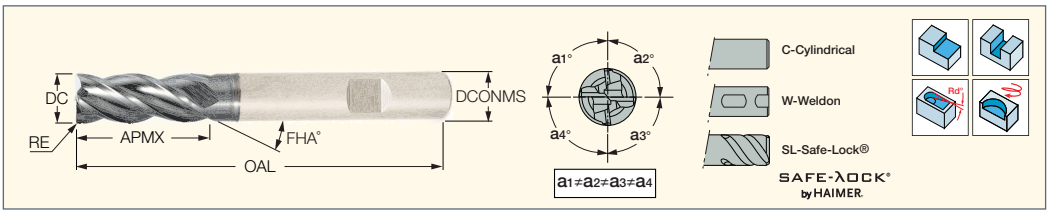
(2) Number of flutes

(3) C-Cylindrical, SL-Safe-Lock® (by Haimer)

Ti-TURBO
SOLID MILL LINE

## ECK-H4M-CFR

Endmills with Different Helix, Chamfered Edges and Variable Pitch for Chatter Dampening on Titanium




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(2) | RE | FHA | RMPX°(3) | Shank(4) | CSP(5) | IC900 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECK-H4M 04-08C06CFR0.2-57 | 4.00 | 6.00 | 8.00 | 57.00 | 4 | 0.20 | 36.0 | 5.0 | C | 0 | ● | 0.02-0.05 |
| ECK-H4M 04-08C06CFR0.5-57 | 4.00 | 6.00 | 8.00 | 57.00 | 4 | 0.50 | 36.0 | 5.0 | C | 0 | ● | 0.02-0.05 |
| ECK-H4M 05-10C06CFR0.2-57 | 5.00 | 6.00 | 10.00 | 57.00 | 4 | 0.20 | 36.0 | 5.0 | C | 0 | ● | 0.02-0.05 |
| ECK-H4M 06-12C06CFR0.2-57 | 6.00 | 6.00 | 12.00 | 57.00 | 4 | 0.20 | 36.0 | 5.0 | C | 0 | ● | 0.03-0.06 |
| ECK-H4M 06-12C06CFR0.5-57 | 6.00 | 6.00 | 12.00 | 57.00 | 4 | 0.50 | 36.0 | 5.0 | C | 0 | ● | 0.03-0.06 |
| ECK-H4M 06-12C06CFR1-57 | 6.00 | 6.00 | 12.00 | 57.00 | 4 | 1.00 | 36.0 | 5.0 | C | 0 | ● | 0.03-0.06 |
| ECK-H4M 06-12W06CFR0.2-57 | 6.00 | 6.00 | 12.00 | 57.00 | 4 | 0.20 | 36.0 | 5.0 | W | 0 | ● | 0.03-0.06 |
| ECK-H4M 08-16C08CFR0.4-63 | 8.00 | 8.00 | 16.00 | 63.00 | 4 | 0.40 | 36.0 | 5.0 | C | 0 | ● | 0.03-0.06 |
| ECK-H4M 08-16C08CFR0.5-63 | 8.00 | 8.00 | 16.00 | 63.00 | 4 | 0.50 | 36.0 | 5.0 | C | 0 | ● | 0.03-0.06 |
| ECK-H4M 08-16C08CFR1-63 | 8.00 | 8.00 | 16.00 | 63.00 | 4 | 1.00 | 36.0 | 5.0 | C | 0 | ● | 0.03-0.06 |
| ECK-H4M 08-16W08CFR0.4-63 | 8.00 | 8.00 | 16.00 | 63.00 | 4 | 0.40 | 36.0 | 5.0 | W | 0 | ● | 0.03-0.06 |
| ECK-H4 10-20SL10CFR.5-72C (1) | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 0.50 | 36.0 | 5.0 | SL | 1 | ● | 0.03-0.07 |
| ECK-H4 10-20SL10CFR0.5-72 (1) | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 0.50 | 36.0 | 5.0 | SL | 0 | ● | 0.03-0.07 |
| ECK-H4M 10-20C10CFR0.5-72 | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 0.50 | 36.0 | 5.0 | C | 0 | ● | 0.03-0.07 |
| ECK-H4M 10-20C10CFR1-72 | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 1.00 | 36.0 | 5.0 | C | 0 | ● | 0.03-0.07 |
| ECK-H4M 10-20C10CFR2-72 | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 2.00 | 36.0 | 5.0 | C | 0 | ● | 0.03-0.07 |
| ECK-H4M 10-20C10CFR3-72 | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 3.00 | 36.0 | 5.0 | C | 0 | ● | 0.03-0.07 |
| ECK-H4M 10-20W10CFR0.5-72 | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 0.50 | 36.0 | 5.0 | W | 0 | ● | 0.03-0.07 |
| ECK-H4 12-24SL12CFR0.6-83 (1) | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 0.60 | 36.0 | 5.0 | SL | 0 | ● | 0.04-0.08 |
| ECK-H4M 12-24C12CFR0.6-83 | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 0.60 | 36.0 | 5.0 | C | 0 | ● | 0.04-0.08 |
| ECK-H4M 12-24C12CFR1-83 | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 1.00 | 36.0 | 5.0 | C | 0 | ● | 0.04-0.08 |
| ECK-H4M 12-24C12CFR2-83 | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 2.00 | 36.0 | 5.0 | C | 0 | ● | 0.04-0.08 |
| ECK-H4M 12-24C12CFR3-83 | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 3.00 | 36.0 | 5.0 | C | 0 | ● | 0.04-0.08 |
| ECK-H4M 12-24W12CFR0.6-83 | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 0.60 | 36.0 | 5.0 | W | 0 | ● | 0.04-0.08 |
| ECK-H4 16-32SL16CFR.8-92C (1) | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 0.80 | 36.0 | 5.0 | SL | 1 | ● | 0.05-0.08 |
| ECK-H4 16-32SL16CFR0.8-92 (1) | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 0.80 | 36.0 | 5.0 | SL | 0 | ● | 0.05-0.08 |
| ECK-H4M 16-32C16CFR0.8-92 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 0.80 | 36.0 | 5.0 | C | 0 | ● | 0.05-0.08 |
| ECK-H4M 16-32C16CFR1-92 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 1.00 | 36.0 | 5.0 | C | 0 | ● | 0.05-0.08 |
| ECK-H4M 16-32C16CFR2-92 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 2.00 | 36.0 | 5.0 | C | 0 | ● | 0.05-0.08 |
| ECK-H4M 16-32C16CFR3-92 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 3.00 | 36.0 | 5.0 | C | 0 | ● | 0.05-0.08 |
| ECK-H4M 16-32C16CFR4-92 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 4.00 | 36.0 | 5.0 | C | 0 | ● | 0.05-0.08 |
| ECK-H4M 16-32W16CFR0.8-92 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 0.80 | 36.0 | 5.0 | W | 0 | ● | 0.05-0.08 |
| ECK-H4 20-40SL20CFR1.-104 (1) | 20.00 | 20.00 | 40.00 | 104.00 | 4 | 1.00 | 36.0 | 5.0 | SL | 0 | ● | 0.05-0.08 |
| ECK-H4M 20-40C20CFR1.-104 | 20.00 | 20.00 | 40.00 | 104.00 | 4 | 1.00 | 36.0 | 5.0 | C | 0 | ● | 0.05-0.08 |
| ECK-H4M 20-40W20CFR1.-104 | 20.00 | 20.00 | 40.00 | 104.00 | 4 | 1.00 | 36.0 | 5.0 | W | 0 | ● | 0.05-0.08 |

• For user guide, see pages 211-218

(1) With Safe-Lock® (by Haimer) pull-out prevention helical grooves

(2) Number of flutes

(3) Maximum ramping angle

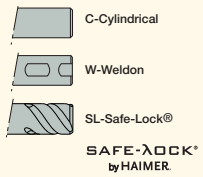
(4) C-Cylindrical, W-Weldon, SL-Safe-Lock® (by Haimer)

(5) 0 - Without coolant supply, 1 - With coolant supply

Ti-TURBO
SOLID MILL LINE

## ECK-H7/9-CFR

7 and 9 Flute Endmills with Different Helix and Variable Pitch for Chatter Dampening on Titanium




| Designation | Dimensions | | | | | | | | IC900 |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(2) | RE | RMPX°(3) | Shank(4) | |
| ECK-H7 06-13C06CFR0.2T57 | 6.00 | 6.00 | 13.00 | 57.00 | 7 | 0.20 | 5.0 | C | ● |
| ECK-H7 06-13W06CFR0.2T57 | 6.00 | 6.00 | 13.00 | 57.00 | 7 | 0.20 | 5.0 | W | ● |
| ECK-H7 08-19C08CFR0.4T63 | 8.00 | 8.00 | 19.00 | 63.00 | 7 | 0.40 | 5.0 | C | ● |
| ECK-H7 08-19W08CFR0.4T63 | 8.00 | 8.00 | 19.00 | 63.00 | 7 | 0.40 | 5.0 | W | ● |
| ECK-H7 10-22C10CFR0.5T72 | 10.00 | 10.00 | 22.00 | 72.00 | 7 | 0.50 | 5.0 | C | ● |
| ECK-H7 10-22W10CFR0.5T72 | 10.00 | 10.00 | 22.00 | 72.00 | 7 | 0.50 | 5.0 | W | ● |
| ECK-H7 12-26C12CFR0.6T83 | 12.00 | 12.00 | 26.00 | 83.00 | 7 | 0.60 | 3.0 | C | ● |
| ECK-H7 12-26SL12CFR0.6T83 (1) | 12.00 | 12.00 | 26.00 | 83.00 | 7 | 0.60 | 5.0 | SL | ● |
| ECK-H7 12-26W12CFR0.6T83 | 12.00 | 12.00 | 26.00 | 83.00 | 7 | 0.60 | 5.0 | W | ● |
| ECK-H9 16-32C16CFR0.8T92 | 16.00 | 16.00 | 32.00 | 92.00 | 9 | 0.80 | 5.0 | C | ● |
| ECK-H9 16-32SL16CFR0.8T92 (1) | 16.00 | 16.00 | 32.00 | 92.00 | 9 | 0.80 | 5.0 | SL | ● |
| ECK-H9 16-32W16CFR0.8T92 | 16.00 | 16.00 | 32.00 | 92.00 | 9 | 0.80 | 5.0 | W | ● |
| ECK-H9 20-38C20CFR1T104 | 20.00 | 20.00 | 38.00 | 104.00 | 9 | 1.00 | 5.0 | C | ● |
| ECK-H9 20-38SL20CFR1T104 (1) | 20.00 | 20.00 | 38.00 | 104.00 | 9 | 1.00 | 5.0 | SL | ● |
| ECK-H9 20-38W20CFR1T104 | 20.00 | 20.00 | 38.00 | 104.00 | 9 | 1.00 | 5.0 | W | ● |

• Enables processing at a radial width of cut (AE) of up to 0.10xDC ,For user guide,see pages 211-218

(1) With Safe-Lock® (by Haimer) pull-out prevention helical grooves

(2) Number of flutes

(3) Maximum ramping angle

(4) C-Cylindrical, W-Weldon, SL-Safe-Lock® (by Haimer)

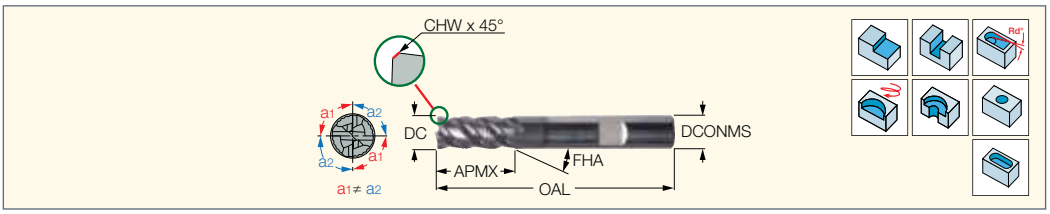
### Feed Recommendations

| Designation | Finishing | | High Speed Machining | |
|---|---|---|---|---|
| | $f_{z\ (min)}$ mm/t | $f_{z\ (max)}$ mm/t | $f_{z\ (min)}$ mm/t | $f_{z\ (max)}$ mm/t |
| ECK-H7 06-13C06CFR0.2T57 | 0.02 | 0.04 | 0.08 | 0.15 |
| ECK-H7 06-13W06CFR0.2T57 | 0.02 | 0.04 | 0.08 | 0.15 |
| ECK-H7 08-19C08CFR0.4T63 | 0.02 | 0.04 | 0.08 | 0.15 |
| ECK-H7 08-19W08CFR0.4T63 | 0.02 | 0.04 | 0.08 | 0.15 |
| ECK-H7 10-22C10CFR0.5T72 | 0.03 | 0.05 | 0.1 | 0.25 |
| ECK-H7 10-22W10CFR0.5T72 | 0.03 | 0.05 | 0.1 | 0.25 |
| ECK-H7 12-26C12CFR0.6T83 | 0.03 | 0.05 | 0.1 | 0.25 |
| ECK-H7 12-26W12CFR0.6T83 | 0.03 | 0.05 | 0.1 | 0.25 |
| ECK-H9 16-32C16CFR0.8T92 | 0.04 | 0.07 | 0.15 | 0.3 |
| ECK-H9 16-32W16CFR0.8T92 | 0.04 | 0.07 | 0.15 | 0.3 |
| ECK-H9 20-38C20CFR1T104 | 0.04 | 0.07 | 0.15 | 0.3 |
| ECK-H9 20-38W20CFR1T104 | 0.04 | 0.07 | 0.15 | 0.3 |

FINISHRED

**EFS-E44**

Combination of Roughing and Finishing Solid Carbide Endmills with Variable Pitch for Chatter Free Milling




| Designation | Dimensions | | | | | | | | | | IC900 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | CHW | KCH | | $f_z$ (mm/t) |
| **EFS-E44 06-14C06CF57** | 6.00 | 6.00 | 14.00 | 57.00 | 4 | 38.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.03-0.06 |
| **EFS-E44 06-14W06CF57** | 6.00 | 6.00 | 14.00 | 57.00 | 4 | 38.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.03-0.06 |
| **EFS-E44 08-18C08CF63** | 8.00 | 8.00 | 18.00 | 63.00 | 4 | 38.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.03-0.08 |
| **EFS-E44 08-18W08CF63** | 8.00 | 8.00 | 18.00 | 63.00 | 4 | 38.0 | 5.0 | W | 0.30 | 45.0 | ● | 0.03-0.08 |
| **EFS-E44 10-22C10CF72** | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 38.0 | 5.0 | C | 0.40 | 45.0 | ● | 0.03-0.09 |
| **EFS-E44 10-22W10CF72** | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 38.0 | 5.0 | W | 0.40 | 45.0 | ● | 0.03-0.09 |
| **EFS-E44 12-26C12CF83** | 12.00 | 12.00 | 26.00 | 83.00 | 4 | 38.0 | 5.0 | C | 0.50 | 45.0 | ● | 0.04-0.10 |
| **EFS-E44 12-26W12CF83** | 12.00 | 12.00 | 26.00 | 83.00 | 4 | 38.0 | 5.0 | W | 0.50 | 45.0 | ● | 0.04-0.10 |
| **EFS-E44 14-30C14CF83** | 14.00 | 14.00 | 30.00 | 83.00 | 4 | 38.0 | 5.0 | C | 0.50 | 45.0 | ● | 0.04-0.11 |
| **EFS-E44 14-30W14CF83** | 14.00 | 14.00 | 30.00 | 83.00 | 4 | 38.0 | 5.0 | W | 0.50 | 45.0 | ● | 0.04-0.11 |
| **EFS-E44 16-34C16CF92** | 16.00 | 16.00 | 34.00 | 92.00 | 4 | 38.0 | 5.0 | C | 0.60 | 45.0 | ● | 0.05-0.11 |
| **EFS-E44 16-34W16CF92** | 16.00 | 16.00 | 34.00 | 92.00 | 4 | 38.0 | 5.0 | W | 0.60 | 45.0 | ● | 0.05-0.11 |
| **EFS-E44 20-42C20CF104** | 20.00 | 20.00 | 42.00 | 104.00 | 4 | 38.0 | 5.0 | C | 0.60 | 45.0 | ● | 0.05-0.11 |
| **EFS-E44 20-42W20CF104** | 20.00 | 20.00 | 42.00 | 104.00 | 4 | 38.0 | 5.0 | W | 0.60 | 45.0 | ● | 0.05-0.11 |
| **EFS-E44 25-52C25CF121** | 25.00 | 25.00 | 52.00 | 121.00 | 4 | 38.0 | 5.0 | C | 0.60 | 45.0 | ● | 0.06-0.11 |
| **EFS-E44 25-52W25CF121** | 25.00 | 25.00 | 52.00 | 121.00 | 4 | 38.0 | 5.0 | W | 0.60 | 45.0 | ● | 0.06-0.11 |

• Minimum width of cut for semi-finishing operation >= 0.05 x DC • For user guide, see pages 211-218

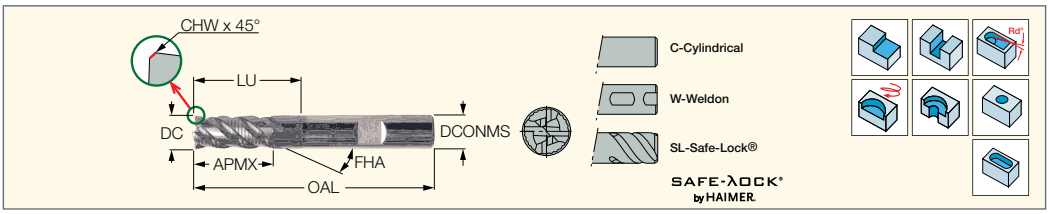
(1) Number of flutes

(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

FINISHRED

**EFS-B44**
Combination of Roughing and Finishing Solid Carbide Endmills with a Single Tool




| Designation | Dimensions DC | DCONMS | APMX | LU | OAL | NOF[2] | FHA | RMPX°[3] | Shank[4] | CSP[5] | CHW | KCH | Tough ↔ Hard IC900 | IC608 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EFS-B44 04-10C06-57 | 4.00 | 6.00 | 10.00 | - | 57.00 | 4 | 45.0 | 5.0 | C | 0 | 0.12 | 45.0 | ● | | 0.03-0.05 |
| EFS-B44 05-12C06-57 | 5.00 | 6.00 | 12.00 | - | 57.00 | 4 | 45.0 | 5.0 | C | 0 | 0.18 | 45.0 | ● | | 0.03-0.06 |
| EFS-B44 06-14/20C06-57 | 6.00 | 6.00 | 14.00 | 20.0 | 57.00 | 4 | 45.0 | 5.0 | C | 0 | 0.25 | 45.0 | ● | | 0.03-0.06 |
| EFS-B44 06-14/20W06-57 | 6.00 | 6.00 | 14.00 | 20.0 | 57.00 | 4 | 45.0 | 5.0 | W | 0 | 0.25 | 45.0 | ● | | 0.03-0.06 |
| EFS-B44 06-14C06-57 | 6.00 | 6.00 | 14.00 | - | 57.00 | 4 | 45.0 | 5.0 | C | 0 | 0.25 | 45.0 | ● | ● | 0.03-0.06 |
| EFS-B44 06-14W06-57 | 6.00 | 6.00 | 14.00 | - | 57.00 | 4 | 45.0 | 5.0 | W | 0 | 0.25 | 45.0 | ● | ● | 0.03-0.06 |
| EFS-B44 08-18/26C08-63 | 8.00 | 8.00 | 18.00 | 26.0 | 63.00 | 4 | 45.0 | 5.0 | C | 0 | 0.30 | 45.0 | ● | | 0.03-0.08 |
| EFS-B44 08-18/26W08-63 | 8.00 | 8.00 | 18.00 | 26.0 | 63.00 | 4 | 45.0 | 5.0 | W | 0 | 0.30 | 45.0 | ● | | 0.03-0.08 |
| EFS-B44 08-18C08-63 | 8.00 | 8.00 | 18.00 | - | 63.00 | 4 | 45.0 | 5.0 | C | 0 | 0.30 | 45.0 | ● | ● | 0.03-0.08 |
| EFS-B44 08-18W08-63 | 8.00 | 8.00 | 18.00 | - | 63.00 | 4 | 45.0 | 5.0 | W | 0 | 0.30 | 45.0 | ● | ● | 0.03-0.08 |
| EFS-B44 10-22/32C10-72 | 10.00 | 10.00 | 22.00 | 32.0 | 72.00 | 4 | 45.0 | 5.0 | C | 0 | 0.30 | 45.0 | ● | | 0.03-0.09 |
| EFS-B44 10-22/32SL10-72 [1] | 10.00 | 10.00 | 22.00 | 32.0 | 72.00 | 4 | 45.0 | 5.0 | SL | 0 | 0.00 | 45.0 | ● | | 0.03-0.09 |
| EFS-B44 10-22/32W10-72 | 10.00 | 10.00 | 22.00 | 32.0 | 72.00 | 4 | 45.0 | 5.0 | W | 0 | 0.30 | 45.0 | ● | | 0.03-0.09 |
| EFS-B44 10-22C10-72 | 10.00 | 10.00 | 22.00 | - | 72.00 | 4 | 45.0 | 5.0 | C | 0 | 0.30 | 45.0 | ● | ● | 0.03-0.09 |
| EFS-B44 10-22SL10-72 [1] | 10.00 | 10.00 | 22.00 | - | 72.00 | 4 | 45.0 | 5.0 | SL | 0 | 0.30 | 45.0 | ● | | 0.03-0.09 |
| EFS-B44 10-22SL10-72C [1] | 10.00 | 10.00 | 22.00 | - | 72.00 | 4 | 45.0 | 5.0 | SL | 1 | 0.30 | 45.0 | ● | | 0.04-0.07 |
| EFS-B44 10-22W10-72 | 10.00 | 10.00 | 22.00 | - | 72.00 | 4 | 45.0 | 5.0 | W | 0 | 0.30 | 45.0 | ● | ● | 0.03-0.09 |
| EFS-B44 12-26/38C12-83 | 12.00 | 12.00 | 26.00 | 38.0 | 83.00 | 4 | 45.0 | 5.0 | C | 0 | 0.40 | 45.0 | ● | | 0.04-0.10 |
| EFS-B44 12-26/38SL12-83 [1] | 12.00 | 12.00 | 26.00 | 38.0 | 83.00 | 4 | 45.0 | 5.0 | SL | 0 | 0.40 | 45.0 | ● | | 0.04-0.10 |
| EFS-B44 12-26/38W12-83 | 12.00 | 12.00 | 26.00 | 38.0 | 83.00 | 4 | 45.0 | 5.0 | W | 0 | 0.40 | 45.0 | ● | | 0.04-0.10 |
| EFS-B44 12-26C12-83 | 12.00 | 12.00 | 26.00 | - | 83.00 | 4 | 45.0 | 5.0 | C | 0 | 0.40 | 45.0 | ● | ● | 0.04-0.10 |
| EFS-B44 12-26SL12-83 [1] | 12.00 | 12.00 | 26.00 | - | 83.00 | 4 | 45.0 | 5.0 | SL | 0 | 0.40 | 45.0 | ● | | 0.04-0.10 |
| EFS-B44 12-26SL12-83C [1] | 12.00 | 12.00 | 26.00 | - | 83.00 | 4 | 45.0 | 5.0 | SL | 1 | 0.40 | 45.0 | ● | | 0.04-0.08 |
| EFS-B44 12-26W12-83 | 12.00 | 12.00 | 26.00 | - | 83.00 | 4 | 45.0 | 5.0 | W | 0 | 0.40 | 45.0 | ● | ● | 0.04-0.10 |
| EFS-B44 14-30C14-83 | 14.00 | 14.00 | 30.00 | - | 83.00 | 4 | 45.0 | 5.0 | C | 0 | 0.40 | 45.0 | ● | ● | 0.04-0.11 |
| EFS-B44 14-30W14-83 | 14.00 | 14.00 | 30.00 | - | 83.00 | 4 | 45.0 | 5.0 | W | 0 | 0.40 | 45.0 | ● | ● | 0.04-0.11 |
| EFS-B44 16-34/50C16-100 | 16.00 | 16.00 | 34.00 | 50.0 | 100.00 | 4 | 45.0 | 5.0 | C | 0 | 0.60 | 45.0 | ● | | 0.05-0.11 |
| EFS-B44 16-34/50SL16-100 [1] | 16.00 | 16.00 | 34.00 | 50.0 | 100.00 | 4 | 45.0 | 5.0 | SL | 0 | 0.60 | 45.0 | ● | | 0.05-0.11 |
| EFS-B44 16-34/50W16-100 | 16.00 | 16.00 | 34.00 | 50.0 | 100.00 | 4 | 45.0 | 5.0 | W | 0 | 0.60 | 45.0 | ● | | 0.05-0.11 |
| EFS-B44 16-34C16-92 | 16.00 | 16.00 | 34.00 | - | 92.00 | 4 | 45.0 | 5.0 | C | 0 | 0.60 | 45.0 | ● | ● | 0.05-0.11 |
| EFS-B44 16-34SL16-92 [1] | 16.00 | 16.00 | 34.00 | - | 92.00 | 4 | 45.0 | 5.0 | SL | 0 | 0.60 | 45.0 | ● | | 0.05-0.11 |
| EFS-B44 16-34SL16-92C [1] | 16.00 | 16.00 | 34.00 | - | 92.00 | 4 | 45.0 | 5.0 | SL | 1 | 0.60 | 45.0 | ● | | 0.05-0.08 |
| EFS-B44 16-34W16-92 | 16.00 | 16.00 | 34.00 | - | 92.00 | 4 | 45.0 | 5.0 | W | 0 | 0.60 | 45.0 | ● | ● | 0.05-0.11 |
| EFS-B44 20-42/62C20-125 | 20.00 | 20.00 | 42.00 | 62.0 | 125.00 | 4 | 45.0 | 5.0 | C | 0 | 0.60 | 45.0 | ● | | 0.05-0.11 |
| EFS-B44 20-42/62SL20-125 [1] | 20.00 | 20.00 | 42.00 | 62.0 | 125.00 | 4 | 45.0 | 5.0 | SL | 0 | 0.60 | 45.0 | ● | | 0.05-0.11 |
| EFS-B44 20-42/62W20-125 | 20.00 | 20.00 | 42.00 | 62.0 | 125.00 | 4 | 45.0 | 5.0 | W | 0 | 0.60 | 45.0 | ● | | 0.05-0.11 |
| EFS-B44 20-42C20-104 | 20.00 | 20.00 | 42.00 | - | 104.00 | 4 | 45.0 | 5.0 | C | 0 | 0.60 | 45.0 | ● | ● | 0.05-0.11 |
| EFS-B44 20-42SL20-104 [1] | 20.00 | 20.00 | 42.00 | - | 104.00 | 4 | 45.0 | 5.0 | SL | 0 | 0.60 | 45.0 | ● | | 0.05-0.11 |
| EFS-B44 20-42W20-104 | 20.00 | 20.00 | 42.00 | - | 104.00 | 4 | 45.0 | 5.0 | W | 0 | 0.60 | 45.0 | ● | ● | 0.05-0.11 |
| EFS-B44 25-52C25-121 | 25.00 | 25.00 | 52.00 | - | 121.00 | 4 | 45.0 | 5.0 | C | 0 | 0.60 | 45.0 | ● | ● | 0.06-0.11 |
| EFS-B44 25-52SL25-121 [1] | 25.00 | 25.00 | 52.00 | - | 121.00 | 4 | 45.0 | 5.0 | SL | 0 | 0.60 | 45.0 | ● | | 0.06-0.11 |
| EFS-B44 25-52W25-121 | 25.00 | 25.00 | 52.00 | - | 121.00 | 4 | 45.0 | 5.0 | W | 0 | 0.60 | 45.0 | ● | ● | 0.06-0.11 |

• Minimum width of cut for semi-finishing operations>= 0.05 x DC • For user guide, see pages 211-218

[1] With Safe-Lock® (by Haimer) pull-out prevention helical grooves

[2] Number of flutes

[3] Maximum ramping angle

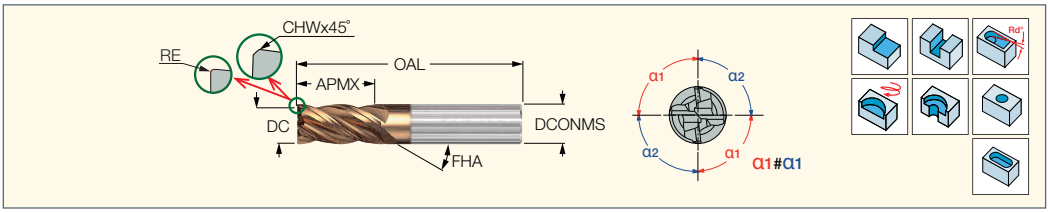
[4] C-Cylindrical, W-Weldon, SL-Safe-Lock® (by Haimer)

[5] 0 - Without coolant supply, 1 - With coolant supply

**CHATTERFREE** SOLID MILL LINE

## EC-E4M-CF

4 Flute, 38° Helix Endmills, up to 2XD depth of cut with Variable Pitch for Chatter Dampening




| Designation | Dimensions | | | | | | | | | | | IC608 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank | CHW | KCH | RE | | $f_z$ (mm/t) |
| **EC-E4M 06-12C06CF-57** | 6.00 | 6.00 | 12.00 | 57.00 | 4 | 38.0 | 5.0 | C | 0.25 | 45.0 | - | ● | 0.03-0.07 |
| **EC-E4M 06-12C06CFR0.5-57** | 6.00 | 6.00 | 12.00 | 50.00 | 4 | 38.0 | 5.0 | C | - | - | 0.50 | ● | 0.03-0.07 |
| **EC-E4M 06-12C06CFR1-57** | 6.00 | 6.00 | 12.00 | 50.00 | 4 | 38.0 | 5.0 | C | - | - | 1.00 | ● | 0.03-0.07 |
| **EC-E4M 08-16C08CF-63** | 8.00 | 8.00 | 16.00 | 63.00 | 4 | 38.0 | 5.0 | C | 0.30 | 45.0 | - | ● | 0.03-0.09 |
| **EC-E4M 08-16C08CFR0.5-63** | 8.00 | 8.00 | 16.00 | 63.00 | 4 | 38.0 | 5.0 | C | - | - | 0.50 | ● | 0.03-0.09 |
| **EC-E4M 08-16C08CFR1-63** | 8.00 | 8.00 | 16.00 | 63.00 | 4 | 38.0 | 5.0 | C | - | - | 1.00 | ● | 0.03-0.09 |
| **EC-E4M 10-20C10CF-72** | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 38.0 | 5.0 | C | 0.40 | 45.0 | - | ● | 0.03-0.10 |
| **EC-E4M 10-20C10CFR0.5-72** | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 38.0 | 5.0 | C | - | - | 0.50 | ● | 0.03-0.10 |
| **EC-E4M 10-20C10CFR1-72** | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 38.0 | 5.0 | C | - | - | 1.00 | ● | 0.03-0.10 |
| **EC-E4M 10-20C10CFR2-72** | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 38.0 | 5.0 | C | - | - | 2.00 | ● | 0.03-0.10 |
| **EC-E4M 10-20C10CFR3-72** | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 38.0 | 5.0 | C | - | - | 3.00 | ● | 0.03-0.10 |
| **EC-E4M 12-24C12CF-83** | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 38.0 | 5.0 | C | 0.50 | 45.0 | - | ● | 0.04-0.11 |
| **EC-E4M 12-24C12CFR0.5-83** | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 38.0 | 5.0 | C | - | - | 0.50 | ● | 0.04-0.11 |
| **EC-E4M 12-24C12CFR1-83** | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 38.0 | 5.0 | C | - | - | 1.00 | ● | 0.04-0.11 |
| **EC-E4M 12-24C12CFR2-83** | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 38.0 | 5.0 | C | - | - | 2.00 | ● | 0.04-0.11 |
| **EC-E4M 12-24C12CFR3-83** | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 38.0 | 5.0 | C | - | - | 3.00 | ● | 0.04-0.11 |
| **EC-E4M 12-24W12CF-83** | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 38.0 | 5.0 | W | 0.50 | 45.0 | - | ● | 0.04-0.11 |
| **EC-E4M 16-32C16CF-100** | 16.00 | 16.00 | 32.00 | 100.00 | 4 | 38.0 | 5.0 | C | 0.60 | 45.0 | - | ● | 0.05-0.13 |
| **EC-E4M 16-32C16CFR3-100** | 16.00 | 16.00 | 32.00 | 100.00 | 4 | 38.0 | 5.0 | C | - | - | 3.00 | ● | 0.05-0.13 |
| **EC-E4M 16-32W16CF-100** | 16.00 | 16.00 | 32.00 | 100.00 | 4 | 38.0 | 5.0 | W | 0.60 | 45.0 | - | ● | 0.05-0.13 |

**New**

- For user guide , see pages 211-218

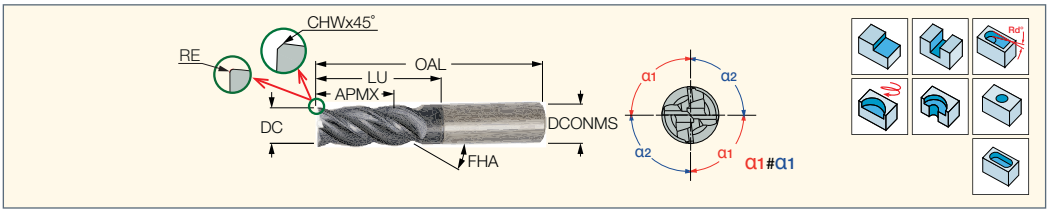
(1) Number of flutes

(2) Maximum ramping angle

**CHATTERFREE** SOLID MILL LINE

## EC-E4L-CF

4 Flute, 38° Helix Endmills with 3xD Relieved Neck and Variable Pitch for Chatter Dampening




| Designation | Dimensions | | | | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | OAL | NOF[1] | FHA | RMPX°[2] | RE | Shank[3] | CHW | KCH | IC900 | IC608 | $f_z$ (mm/t) |
| EC-E4L 01-2/04C04CF50 | 1.00 | 4.00 | 2.00 | 4.00 | 50.00 | 4 | 38.0 | 5.0 | - | C | 0.04 | 45.0 | ● | | 0.02-0.05 |
| EC-E4L 02-4/06C04CF50 | 2.00 | 4.00 | 4.00 | 6.00 | 50.00 | 4 | 38.0 | 5.0 | - | C | 0.08 | 45.0 | ● | | 0.02-0.05 |
| EC-E4L 03-8/11C06CF57 | 3.00 | 6.00 | 8.00 | 11.00 | 57.00 | 4 | 38.0 | 5.0 | - | C | 0.10 | 45.0 | ● | ● | 0.02-0.05 |
| EC-E4L 04-10/14C06CF57 | 4.00 | 6.00 | 10.00 | 14.00 | 57.00 | 4 | 38.0 | 5.0 | - | C | 0.15 | 45.0 | ● | ● | 0.02-0.05 |
| EC-E4L 05-12/17C06CF57 | 5.00 | 6.00 | 12.00 | 17.00 | 57.00 | 4 | 38.0 | 5.0 | - | C | 0.18 | 45.0 | ● | ● | 0.02-0.06 |
| EC-E4L 06-14/20C06CFR0.2 | 6.00 | 6.00 | 14.00 | 20.00 | 57.00 | 4 | 38.0 | 5.0 | 0.20 | C | - | - | ● | | 0.03-0.07 |
| EC-E4L 06-14/20C06CFR0.5 | 6.00 | 6.00 | 14.00 | 20.00 | 57.00 | 4 | 38.0 | 5.0 | 0.50 | C | - | - | ● | | 0.03-0.07 |
| EC-E4L 06-14/20C06CFR1 | 6.00 | 6.00 | 14.00 | 20.00 | 57.00 | 4 | 38.0 | 5.0 | 1.00 | C | - | - | ● | | 0.03-0.07 |
| EC-E4L 06-14/20C06CF57 | 6.00 | 6.00 | 14.00 | 20.00 | 57.00 | 4 | 38.0 | 5.0 | - | C | 0.25 | 45.0 | ● | ● | 0.03-0.07 |
| EC-E4L 06-14/20W06CF57 | 6.00 | 6.00 | 14.00 | 20.00 | 57.00 | 4 | 38.0 | 5.0 | - | W | 0.25 | 45.0 | ● | ● | 0.03-0.07 |
| EC-E4L 08-18/26C08CFR0.3 | 8.00 | 8.00 | 18.00 | 26.00 | 63.00 | 4 | 38.0 | 5.0 | 0.30 | C | - | - | ● | | 0.03-0.08 |
| EC-E4L 08-18/26C08CFR0.5 | 8.00 | 8.00 | 18.00 | 26.00 | 63.00 | 4 | 38.0 | 5.0 | 0.50 | C | - | - | ● | | 0.03-0.08 |
| EC-E4L 08-18/26C08CFR1 | 8.00 | 8.00 | 18.00 | 26.00 | 63.00 | 4 | 38.0 | 5.0 | 1.00 | C | - | - | ● | | 0.03-0.08 |
| EC-E4L 08-18/26C08CFR1.5 | 8.00 | 8.00 | 18.00 | 26.00 | 63.00 | 4 | 38.0 | 5.0 | 1.50 | C | - | - | ● | | 0.03-0.08 |
| EC-E4L 08-18/26C08CFS63 | 8.00 | 8.00 | 18.00 | 26.00 | 63.00 | 4 | 38.0 | 5.0 | - | C | - | - | ● | | 0.03-0.08 |
| EC-E4L 08-18/26C08CF63 | 8.00 | 8.00 | 18.00 | 26.00 | 63.00 | 4 | 38.0 | 5.0 | - | C | 0.30 | 45.0 | ● | ● | 0.03-0.09 |
| EC-E4L 08-18/26W08CF63 | 8.00 | 8.00 | 18.00 | 26.00 | 63.00 | 4 | 38.0 | 5.0 | - | W | 0.30 | 45.0 | ● | ● | 0.03-0.09 |
| EC-E4L 10-22/32C10CFR0.5 | 10.00 | 10.00 | 22.00 | 32.00 | 72.00 | 4 | 38.0 | 5.0 | 0.50 | C | - | - | ● | | 0.03-0.10 |
| EC-E4L 10-22/32C10CFR1 | 10.00 | 10.00 | 22.00 | 65.00 | 72.00 | 4 | 38.0 | 5.0 | 1.00 | C | - | - | ● | | 0.03-0.10 |
| EC-E4L 10-22/32C10CFR1.5 | 10.00 | 10.00 | 22.00 | 32.00 | 72.00 | 4 | 38.0 | 5.0 | 1.50 | C | - | - | ● | | 0.03-0.10 |
| EC-E4L 10-22/32C10CFR2 | 10.00 | 10.00 | 22.00 | 32.00 | 72.00 | 4 | 38.0 | 5.0 | 2.00 | C | - | - | ● | | 0.03-0.10 |
| EC-E4L 10-22/32C10CFR3 | 10.00 | 10.00 | 22.00 | 32.00 | 72.00 | 4 | 38.0 | 5.0 | 3.00 | C | - | - | ● | | 0.03-0.10 |
| EC-E4L 10-22/32C10CFS72 | 10.00 | 10.00 | 22.00 | 32.00 | 72.00 | 4 | 38.0 | 5.0 | - | C | - | - | ● | | 0.03-0.09 |
| EC-E4L 10-22/32C10CF72 | 10.00 | 10.00 | 22.00 | 32.00 | 72.00 | 4 | 38.0 | 5.0 | - | C | 0.40 | 45.0 | ● | ● | 0.03-0.10 |
| EC-E4L 10-22/32W10CF72 | 10.00 | 10.00 | 22.00 | 32.00 | 72.00 | 4 | 38.0 | 5.0 | - | W | 0.40 | 45.0 | ● | ● | 0.03-0.10 |
| EC-E4L 12-26/38C12CFR0.5 | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 4 | 38.0 | 5.0 | 0.50 | C | - | - | ● | | 0.04-0.11 |
| EC-E4L 12-26/38C12CFR1 | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 4 | 38.0 | 5.0 | 1.00 | C | - | - | ● | | 0.04-0.11 |
| EC-E4L 12-26/38C12CFR1.5 | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 4 | 38.0 | 5.0 | 1.50 | C | - | - | ● | | 0.04-0.11 |
| EC-E4L 12-26/38C12CFR2 | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 4 | 38.0 | 5.0 | 2.00 | C | - | - | ● | | 0.04-0.11 |
| EC-E4L 12-26/38C12CFR3 | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 4 | 38.0 | 5.0 | 3.00 | C | - | - | ● | | 0.04-0.11 |
| EC-E4L 12-26/38C12CFR4 | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 4 | 38.0 | 5.0 | 4.00 | C | - | - | ● | | 0.04-0.11 |
| EC-E4L 12-26/38C12CFS83 | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 4 | 38.0 | 5.0 | - | C | - | - | ● | | 0.04-0.10 |
| EC-E4L 12-26/38C12CF83 | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 4 | 38.0 | 5.0 | - | C | 0.50 | 45.0 | ● | ● | 0.04-0.11 |
| EC-E4L 12-26/38W12CF83 | 12.00 | 12.00 | 26.00 | 38.00 | 83.00 | 4 | 38.0 | 5.0 | - | W | 0.50 | 45.0 | ● | ● | 0.04-0.11 |
| EC-E4L 16-34/50C16CFR2 | 16.00 | 16.00 | 34.00 | 50.00 | 100.00 | 4 | 38.0 | 5.0 | 2.00 | C | - | - | ● | | 0.05-0.13 |
| EC-E4L 16-34/50C16CFR3 | 16.00 | 16.00 | 34.00 | 50.00 | 100.00 | 4 | 38.0 | 5.0 | 3.00 | C | - | - | ● | | 0.05-0.13 |
| EC-E4L 16-34/50C16CFR5 | 16.00 | 16.00 | 34.00 | 50.00 | 100.00 | 4 | 38.0 | 5.0 | 5.00 | C | - | - | ● | | 0.05-0.13 |
| EC-E4L 16-34/50C16CF100 | 16.00 | 16.00 | 34.00 | 50.00 | 100.00 | 4 | 38.0 | 5.0 | - | C | 0.60 | 45.0 | ● | ● | 0.05-0.13 |
| EC-E4L 16-34/50W16CF100 | 16.00 | 16.00 | 34.00 | 50.00 | 100.00 | 4 | 38.0 | 5.0 | 1.00 | W | 0.60 | 45.0 | ● | ● | 0.05-0.13 |
| EC-E4L 20-42/60C20CFR2 | 20.00 | 20.00 | 42.00 | 60.00 | 110.00 | 4 | 38.0 | 5.0 | 2.00 | C | - | - | ● | | 0.05-0.17 |
| EC-E4L 20-42/60C20CFR3 | 20.00 | 20.00 | 42.00 | 60.00 | 110.00 | 4 | 38.0 | 5.0 | 3.00 | C | - | - | ● | | 0.05-0.17 |
| EC-E4L 20-42/60C20CFR5 | 20.00 | 20.00 | 42.00 | 60.00 | 110.00 | 4 | 38.0 | 5.0 | 5.00 | C | - | - | ● | | 0.05-0.17 |
| EC-E4L 20-42/60C20CF110 | 20.00 | 20.00 | 42.00 | 60.00 | 110.00 | 4 | 38.0 | 5.0 | - | C | 0.60 | 45.0 | ● | ● | 0.05-0.17 |
| EC-E4L 20-42/60W20CF110 | 20.00 | 20.00 | 42.00 | 60.00 | 110.00 | 4 | 38.0 | 5.0 | - | W | 0.60 | 45.0 | ● | ● | 0.05-0.17 |
| EC-E4L 25-50/65C25CFR2 | 25.00 | 25.00 | 50.00 | 65.00 | 121.00 | 4 | 38.0 | 5.0 | 2.00 | C | - | - | ● | | 0.05-0.17 |
| EC-E4L 25-50/65C25CFR3 | 25.00 | 25.00 | 50.00 | 65.00 | 121.00 | 4 | 38.0 | 5.0 | 3.00 | C | - | - | ● | | 0.05-0.17 |
| EC-E4L 25-50/65C25CFR5 | 25.00 | 25.00 | 50.00 | 65.00 | 121.00 | 4 | 38.0 | 5.0 | 5.00 | C | - | - | ● | | 0.05-0.17 |
| EC-E4L 25-50/65C25CF121 | 25.00 | 25.00 | 50.00 | 65.00 | 121.00 | 4 | 38.0 | 5.0 | - | C | 0.60 | 45.0 | ● | | 0.05-0.17 |
| EC-E4L 25-50/65W25CFR5 | 25.00 | 25.00 | 50.00 | 65.00 | 121.00 | 4 | 38.0 | 5.0 | 5.00 | W | - | - | ● | | 0.05-0.17 |
| EC-E4L 25-50/65W25CF121 | 25.00 | 25.00 | 50.00 | 65.00 | 121.00 | 4 | 38.0 | 5.0 | - | W | 0.60 | 45.0 | ● | | 0.05-0.17 |

• For user guide, see pages 211-218

[1] Number of flutes

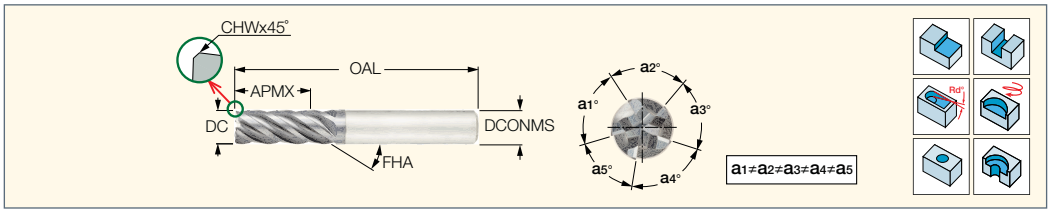
[2] Maximum ramping angle

[3] C-Cylindrical, W-Weldon

CHATTERFREE SOLID MILL LINE

**EC-E5L-CF**

5 Flute, 38° Helix Medium Length (2.5xD) Variable Pitch Endmills




| Designation | Dimensions | | | | | | | | | | IC900 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | CHW | KCH | | $f_z$ (mm/t) |
| **EC-E5L 06-15C06CF57** | 6.00 | 6.00 | 15.00 | 57.00 | 5 | 38.0 | 5.0 | C | 0.20 | 45.0 | ● | 0.03-0.07 |
| **EC-E5L 06-15W06CF57** | 6.00 | 6.00 | 15.00 | 57.00 | 5 | 38.0 | 5.0 | W | 0.20 | 45.0 | ● | 0.03-0.07 |
| **EC-E5L 08-20C08CF63** | 8.00 | 8.00 | 20.00 | 63.00 | 5 | 38.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.03-0.09 |
| **EC-E5L 08-20W08CF63** | 8.00 | 8.00 | 20.00 | 63.00 | 5 | 38.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.03-0.09 |
| **EC-E5L 10-25C10CF72** | 10.00 | 10.00 | 25.00 | 72.00 | 5 | 38.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.03-0.10 |
| **EC-E5L 10-25W10CF72** | 10.00 | 10.00 | 25.00 | 72.00 | 5 | 38.0 | 5.0 | W | 0.30 | 45.0 | ● | 0.03-0.10 |
| **EC-E5L 12-30C12CF83** | 12.00 | 12.00 | 30.00 | 83.00 | 5 | 38.0 | 5.0 | C | 0.40 | 45.0 | ● | 0.04-0.11 |
| **EC-E5L 12-30W12CF83** | 12.00 | 12.00 | 30.00 | 83.00 | 5 | 38.0 | 5.0 | W | 0.40 | 45.0 | ● | 0.04-0.11 |
| **EC-E5L 16-40C16CF100** | 16.00 | 16.00 | 40.00 | 100.00 | 5 | 38.0 | 5.0 | C | 0.50 | 45.0 | ● | 0.05-0.13 |
| **EC-E5L 16-40W16CF100** | 16.00 | 16.00 | 40.00 | 100.00 | 5 | 38.0 | 5.0 | W | 0.50 | 45.0 | ● | 0.05-0.13 |
| **EC-E5L 20-50C20CF125** | 20.00 | 20.00 | 50.00 | 125.00 | 5 | 38.0 | 5.0 | C | 0.50 | 45.0 | ● | 0.05-0.17 |
| **EC-E5L 20-50W20CF125** | 20.00 | 20.00 | 50.00 | 125.00 | 5 | 38.0 | 5.0 | W | 0.50 | 45.0 | ● | 0.05-0.17 |

• For user guide, see pages 211-218

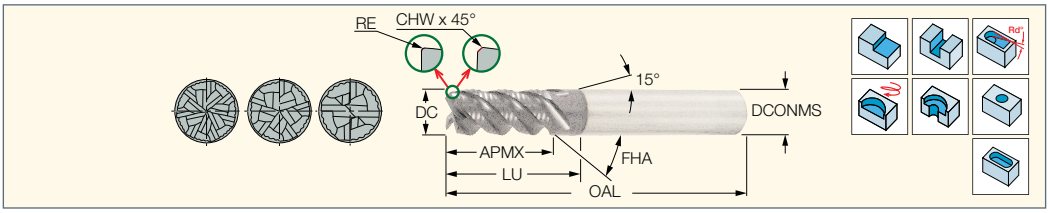
(1) Number of flutes

(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

**SOLIDSHRED**

**ECR-B-X/L/M/S**
4-7 Flute, 45° Helix with Different Length Solid Carbide Roughing Endmills




| Designation | Dimensions | | | | | | | | | | | | IC900 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | OAL | NOF[2] | FHA | RMPX°[3] | Shank[4] | RE | CHW | KCH | | $f_z$ (mm/t) |
| ECR-B4M 05-10C06-57 | 5.00 | 6.00 | 10.00 | 15.00 | 57.00 | 4 | 45.0 | 5.0 | C | - | 0.20 | 45.0 | ● | 0.02-0.05 |
| ECR-B4M 05-10W06-57 | 5.00 | 6.00 | 10.00 | 15.00 | 57.00 | 4 | 45.0 | 5.0 | W | - | 0.20 | 45.0 | ● | 0.02-0.05 |
| ECR-B4S 05-05C06-57 | 5.00 | 6.00 | 5.00 | 10.00 | 57.00 | 4 | 45.0 | 5.0 | C | - | 0.20 | 45.0 | ● | 0.02-0.05 |
| ECR-B4S 05-05W06-57 | 5.00 | 6.00 | 5.00 | 10.00 | 57.00 | 4 | 45.0 | 5.0 | W | - | 0.20 | 45.0 | ● | 0.02-0.05 |
| ECR-B4L 06-12/18C06-57 | 6.00 | 6.00 | 12.00 | 18.00 | 57.00 | 4 | 45.0 | 5.0 | C | - | 0.25 | 45.0 | ● | 0.03-0.06 |
| ECR-B4L 06-12/18W06-57 | 6.00 | 6.00 | 12.00 | 18.00 | 57.00 | 4 | 45.0 | 5.0 | W | - | 0.25 | 45.0 | ● | 0.03-0.06 |
| ECR-B4M 06-12C06-57 | 6.00 | 6.00 | 12.00 | - | 57.00 | 4 | 45.0 | 5.0 | C | - | 0.25 | 45.0 | ● | 0.03-0.06 |
| ECR-B4M 06-12W06-57 | 6.00 | 6.00 | 12.00 | - | 57.00 | 4 | 45.0 | 5.0 | W | - | 0.25 | 45.0 | ● | 0.03-0.06 |
| ECR-B4S 06-06C06-57 | 6.00 | 6.00 | 6.00 | - | 57.00 | 4 | 45.0 | 5.0 | C | - | 0.25 | 45.0 | ● | 0.03-0.06 |
| ECR-B4S 06-06W06-57 | 6.00 | 6.00 | 6.00 | - | 57.00 | 4 | 45.0 | 5.0 | W | - | 0.25 | 45.0 | ● | 0.03-0.06 |
| ECR-B4S 07-07C08-63 | 7.00 | 8.00 | 7.00 | 14.10 | 63.00 | 4 | 45.0 | 5.0 | C | - | 0.25 | 45.0 | ● | 0.03-0.07 |
| ECR-B4L 08-16/24C08-63 | 8.00 | 8.00 | 16.00 | 24.00 | 63.00 | 4 | 45.0 | 5.0 | C | - | 0.25 | 45.0 | ● | 0.03-0.08 |
| ECR-B4L 08-16/24W08-63 | 8.00 | 8.00 | 16.00 | 24.00 | 63.00 | 4 | 45.0 | 5.0 | W | - | 0.25 | 45.0 | ● | 0.03-0.08 |
| ECR-B4M 08-16C08-63 | 8.00 | 8.00 | 16.00 | - | 63.00 | 4 | 45.0 | 5.0 | C | - | 0.25 | 45.0 | ● | 0.03-0.08 |
| ECR-B4M 08-16W08-63 | 8.00 | 8.00 | 16.00 | - | 63.00 | 4 | 45.0 | 5.0 | W | - | 0.25 | 45.0 | ● | 0.03-0.08 |
| ECR-B4S 08-08C08-63 | 8.00 | 8.00 | 8.00 | - | 63.00 | 4 | 45.0 | 5.0 | C | - | 0.25 | 45.0 | ● | 0.03-0.08 |
| ECR-B4S 08-08W08-63 | 8.00 | 8.00 | 8.00 | - | 63.00 | 4 | 45.0 | 5.0 | W | - | 0.25 | 45.0 | ● | 0.03-0.08 |
| ECR-B4X 08-12/32C08-68 | 8.00 | 8.00 | 12.00 | 32.00 | 68.00 | 4 | 45.0 | 5.0 | C | - | 0.25 | 45.0 | ● | 0.03-0.08 |
| ECR-B4X 08-12/32W08-68 | 8.00 | 8.00 | 12.00 | 32.00 | 68.00 | 4 | 45.0 | 5.0 | W | - | 0.25 | 45.0 | ● | 0.03-0.08 |
| ECR-B4L 10-20/30C10-72 | 10.00 | 10.00 | 20.00 | 30.00 | 72.00 | 4 | 45.0 | 5.0 | C | - | 0.30 | 45.0 | ● | 0.03-0.09 |
| ECR-B4L 10-20/30W10-72 | 10.00 | 10.00 | 20.00 | 30.00 | 72.00 | 4 | 45.0 | 5.0 | W | - | 0.30 | 45.0 | ● | 0.03-0.09 |
| ECR-B4M 10-20C10-72 | 10.00 | 10.00 | 20.00 | - | 72.00 | 4 | 45.0 | 5.0 | C | - | 0.30 | 45.0 | ● | 0.03-0.09 |
| ECR-B4M 10-20C10-72R1.0 | 10.00 | 10.00 | 20.00 | - | 72.00 | 4 | 45.0 | 5.0 | C | 1.00 | - | - | ● | 0.03-0.09 |
| ECR-B4M 10-20W10-72 | 10.00 | 10.00 | 20.00 | - | 72.00 | 4 | 45.0 | 5.0 | W | - | 0.30 | 45.0 | ● | 0.03-0.09 |
| ECR-B4S 10-10C10-72 | 10.00 | 10.00 | 10.00 | - | 72.00 | 4 | 45.0 | 5.0 | C | - | 0.30 | 45.0 | ● | 0.03-0.09 |
| ECR-B4S 10-10W10-72 | 10.00 | 10.00 | 10.00 | - | 72.00 | 4 | 45.0 | 5.0 | W | - | 0.30 | 45.0 | ● | 0.03-0.09 |
| ECR-B4X 10-15/40C10-80 90 | 10.00 | 10.00 | 15.00 | 40.00 | 80.00 | 4 | 45.0 | 5.0 | C | - | 0.30 | 45.0 | ● | 0.03-0.09 |
| ECR-B4X 10-15/40W10-80 90 | 10.00 | 10.00 | 15.00 | 40.00 | 80.00 | 4 | 45.0 | 5.0 | W | - | 0.30 | 45.0 | ● | 0.03-0.09 |
| ECR-B4L 12-24/36C12-83 | 12.00 | 12.00 | 24.00 | 36.00 | 83.00 | 4 | 45.0 | 5.0 | C | - | 0.35 | 45.0 | ● | 0.04-0.10 |
| ECR-B4L 12-24/36W12-83 | 12.00 | 12.00 | 24.00 | 36.00 | 83.00 | 4 | 45.0 | 5.0 | W | - | 0.35 | 45.0 | ● | 0.04-0.10 |
| ECR-B4M 12-24C12-83 | 12.00 | 12.00 | 24.00 | - | 83.00 | 4 | 45.0 | 5.0 | C | - | 0.35 | 45.0 | ● | 0.04-0.10 |
| ECR-B4M 12-24C12-83R1.2 | 12.00 | 12.00 | 24.00 | - | 83.00 | 4 | 45.0 | 5.0 | C | 1.20 | - | - | ● | 0.04-0.10 |
| ECR-B4M 12-24W12-83 | 12.00 | 12.00 | 24.00 | - | 83.00 | 4 | 45.0 | 5.0 | W | - | 0.35 | 45.0 | ● | 0.04-0.10 |
| ECR-B4M 12-24W12-83R1.2 | 12.00 | 12.00 | 24.00 | - | 83.00 | 4 | 45.0 | 5.0 | W | 1.20 | - | - | ● | 0.04-0.10 |
| ECR-B4S 12-12C12-83 | 12.00 | 12.00 | 12.00 | - | 83.00 | 4 | 45.0 | 5.0 | C | - | 0.35 | 45.0 | ● | 0.04-0.10 |
| ECR-B4S 12-12W12-83 | 12.00 | 12.00 | 12.00 | - | 83.00 | 4 | 45.0 | 5.0 | W | - | 0.35 | 45.0 | ● | 0.04-0.10 |
| ECR-B4X 12-18/48C12-100 | 12.00 | 12.00 | 18.00 | 48.00 | 100.00 | 4 | 45.0 | 5.0 | C | - | 0.35 | 45.0 | ● | 0.04-0.10 |
| ECR-B4X 12-18/48W12-100 | 12.00 | 12.00 | 18.00 | 48.00 | 100.00 | 4 | 45.0 | 5.0 | W | - | 0.35 | 45.0 | ● | 0.05-0.11 |
| ECR-B5L 16-32/48C16-100 [1] | 16.00 | 16.00 | 32.00 | 48.00 | 100.00 | 5 | 45.0 | 5.0 | C | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B5L 16-32/48W16-100 [1] | 16.00 | 16.00 | 32.00 | 48.00 | 100.00 | 5 | 45.0 | 5.0 | W | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B5M 16-32C16-92 [1] | 16.00 | 16.00 | 32.00 | - | 92.00 | 5 | 45.0 | 5.0 | C | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B5M 16-32C16-92R1.6 [1] | 16.00 | 16.00 | 32.00 | - | 92.00 | 5 | 45.0 | 5.0 | C | 1.60 | - | - | ● | 0.05-0.11 |
| ECR-B5M 16-32W16-92 [1] | 16.00 | 16.00 | 32.00 | - | 92.00 | 5 | 45.0 | 5.0 | W | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B5M 16-32W16-92R1.6 [1] | 16.00 | 16.00 | 32.00 | - | 92.00 | 5 | 45.0 | 5.0 | W | 1.60 | - | - | ● | 0.05-0.11 |
| ECR-B5S 16-16C16-92 [1] | 16.00 | 16.00 | 16.00 | - | 92.00 | 5 | 45.0 | 5.0 | C | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B5S 16-16W16-92 [1] | 16.00 | 16.00 | 16.00 | - | 92.00 | 5 | 45.0 | 5.0 | W | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B5X 16-24/64C16-115 [1] | 16.00 | 16.00 | 24.00 | 64.00 | 115.00 | 5 | 45.0 | 5.0 | C | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B5X 16-24/64W16-115 [1] | 16.00 | 16.00 | 24.00 | 64.00 | 115.00 | 5 | 45.0 | 5.0 | W | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B7L 20-40/60C20-110 [1] | 20.00 | 20.00 | 40.00 | 60.00 | 110.00 | 7 | 45.0 | 5.0 | C | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B7L 20-40/60W20-110 [1] | 20.00 | 20.00 | 40.00 | 60.00 | 110.00 | 7 | 45.0 | 5.0 | W | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B7M 20-40C20-104 [1] | 20.00 | 20.00 | 40.00 | - | 104.00 | 7 | 45.0 | 5.0 | C | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B7M 20-40W20-104 [1] | 20.00 | 20.00 | 40.00 | - | 104.00 | 7 | 45.0 | 5.0 | W | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B7S 20-20C20-104 [1] | 20.00 | 20.00 | 20.00 | - | 104.00 | 7 | 45.0 | 5.0 | C | - | 0.40 | 45.0 | ● | 0.05-0.11 |
| ECR-B7S 20-20W20-104 [1] | 20.00 | 20.00 | 20.00 | - | 104.00 | 7 | 45.0 | 5.0 | W | - | 0.40 | 45.0 | ● | 0.05-0.11 |

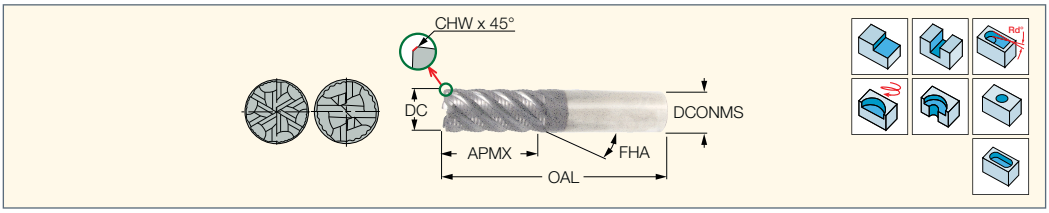
• For user guide, see pages 211-218

[1] Cannot be used for plunging application
[2] Number of flutes
[3] Maximum ramping angle
[4] C-Cylindrical, W-Weldon

**SOLIDSHRED**

**ECR-B-MF**

4 and 6 Flute, 45° Helix
Medium Length Solid Carbide
Roughing Endmills for
Materials up to 65 HRC




| Designation | Dimensions | | | | | | | | | | IC900 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF[2] | FHA | RMPX°[3] | Shank[4] | CHW | KCH | | $f_z$ (mm/t) |
| **ECR-B4MF 06-14C06-57** | 6.00 | 6.00 | 14.00 | 57.00 | 4 | 45.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.03-0.06 |
| **ECR-B4MF 06-14W06-57** | 6.00 | 6.00 | 14.00 | 57.00 | 4 | 45.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.03-0.06 |
| **ECR-B4MF 08-18C08-63** | 8.00 | 8.00 | 18.00 | 63.00 | 4 | 45.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.03-0.08 |
| **ECR-B4MF 08-18W08-63** | 8.00 | 8.00 | 18.00 | 63.00 | 4 | 45.0 | 5.0 | W | 0.30 | 45.0 | ● | 0.03-0.08 |
| **ECR-B4MF 10-22C10-72** | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 45.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.03-0.09 |
| **ECR-B4MF 10-22W10-72** | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 45.0 | 5.0 | W | 0.30 | 45.0 | ● | 0.03-0.09 |
| **ECR-B4MF 12-26C12-83** | 12.00 | 12.00 | 26.00 | 83.00 | 4 | 45.0 | 5.0 | C | 0.40 | 45.0 | ● | 0.04-0.10 |
| **ECR-B4MF 12-26W12-83** | 12.00 | 12.00 | 26.00 | 83.00 | 4 | 45.0 | 5.0 | W | 0.40 | 45.0 | ● | 0.04-0.10 |
| **ECR-B4MF 14-30C14-83** | 14.00 | 14.00 | 30.00 | 83.00 | 4 | 45.0 | 5.0 | C | 0.40 | 45.0 | ● | 0.04-0.11 |
| **ECR-B4MF 14-30W14-83** | 14.00 | 14.00 | 30.00 | 83.00 | 4 | 45.0 | 5.0 | W | 0.40 | 45.0 | ● | 0.04-0.11 |
| **ECR-B6MF 16-34C16-92** [1] | 16.00 | 16.00 | 34.00 | 92.00 | 6 | 45.0 | 5.0 | C | 0.50 | 45.0 | ● | 0.05-0.11 |
| **ECR-B6MF 16-34W16-92** [1] | 16.00 | 16.00 | 34.00 | 92.00 | 6 | 45.0 | 5.0 | W | 0.50 | 45.0 | ● | 0.05-0.11 |
| **ECR-B6MF 20-42C20-104** [1] | 20.00 | 20.00 | 42.00 | 104.00 | 6 | 45.0 | 5.0 | C | 0.70 | 45.0 | ● | 0.05-0.11 |
| **ECR-B6MF 20-42W20-104** [1] | 20.00 | 20.00 | 42.00 | 104.00 | 6 | 45.0 | 5.0 | W | 0.70 | 45.0 | ● | 0.05-0.11 |
| **ECR-B6MF 25-52C25-121** [1] | 25.00 | 25.00 | 52.00 | 121.00 | 6 | 45.0 | 5.0 | C | 0.90 | 45.0 | ● | 0.06-0.11 |
| **ECR-B6MF 25-52W25-121** [1] | 25.00 | 25.00 | 52.00 | 121.00 | 6 | 45.0 | 5.0 | W | 0.90 | 45.0 | ● | 0.06-0.11 |

• The rougher's cutting edge profile has shallow serrations. • A very durable design which leaves only a small amount of material for the finishing cut. • For user guide, see pages 211-218

[1] Cannot be used for plunging application

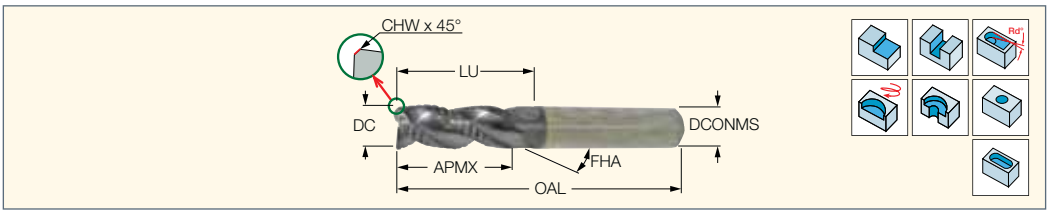
[2] Number of flutes

[3] Maximum ramping angle

[4] C-Cylindrical, W-Weldon

SOLIDSHRED

**ECP-E3L**
3 Flute, 38° Helix Solid Carbide Roughing Endmills with 3xD Relieved Necks and Chip Splitting Cutting Edges

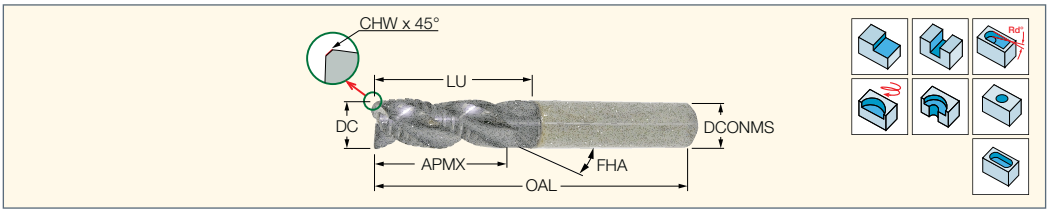



| Designation | Dimensions DC | DCONMS | APMX | LU | OAL | NOF(1) | RMPX°(2) | FHA | Shank(3) | CHW | KCH | IC900 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECP-E3L 05-12/17C06S57 | 5.00 | 6.00 | 12.00 | 17.0 | 57.00 | 3 | 5.0 | 38.0 | C | 0.20 | 45.0 | • | 0.02-0.05 |
| ECP-E3L 05-12/17W06S57 | 5.00 | 6.00 | 12.00 | 17.0 | 57.00 | 3 | 5.0 | 38.0 | W | 0.20 | 45.0 | • | 0.02-0.05 |
| ECP-E3L 06-14/20C06S57 | 6.00 | 6.00 | 14.00 | 20.0 | 57.00 | 3 | 5.0 | 38.0 | C | 0.30 | 45.0 | • | 0.03-0.06 |
| ECP-E3L 06-14/20W06S57 | 6.00 | 6.00 | 14.00 | 20.0 | 57.00 | 3 | 5.0 | 38.0 | W | 0.30 | 45.0 | • | 0.03-0.06 |
| ECP-E3L 08-18/26C08S63 | 8.00 | 8.00 | 18.00 | 26.0 | 63.00 | 3 | 5.0 | 38.0 | C | 0.40 | 45.0 | • | 0.03-0.08 |
| ECP-E3L 08-18/26W08S63 | 8.00 | 8.00 | 18.00 | 26.0 | 63.00 | 3 | 5.0 | 38.0 | W | 0.40 | 45.0 | • | 0.03-0.08 |
| ECP-E3L 10-22/32C10S72 | 10.00 | 10.00 | 22.00 | 32.0 | 72.00 | 3 | 5.0 | 38.0 | C | 0.40 | 45.0 | • | 0.03-0.09 |
| ECP-E3L 10-22/32W10S72 | 10.00 | 10.00 | 22.00 | 32.0 | 72.00 | 3 | 5.0 | 38.0 | W | 0.40 | 45.0 | • | 0.03-0.09 |
| ECP-E3L 12-26/38C12S83 | 12.00 | 12.00 | 26.00 | 38.0 | 83.00 | 3 | 5.0 | 38.0 | C | 0.40 | 45.0 | • | 0.04-0.10 |
| ECP-E3L 12-26/38W12S83 | 12.00 | 12.00 | 26.00 | 38.0 | 83.00 | 3 | 5.0 | 38.0 | W | 0.40 | 45.0 | • | 0.04-0.10 |
| ECP-E3L 14-30/44C14S100 | 14.00 | 14.00 | 30.00 | 44.0 | 100.00 | 3 | 5.0 | 38.0 | C | 0.50 | 45.0 | • | 0.05-0.11 |
| ECP-E3L 14-30/44W14S100 | 14.00 | 14.00 | 30.00 | 44.0 | 100.00 | 3 | 5.0 | 38.0 | W | 0.50 | 45.0 | • | 0.05-0.11 |
| ECP-E3L 16-34/50C16S100 | 16.00 | 16.00 | 34.00 | 50.0 | 100.00 | 3 | 5.0 | 38.0 | C | 0.50 | 45.0 | • | 0.05-0.11 |
| ECP-E3L 16-34/50W16S100 | 16.00 | 16.00 | 34.00 | 50.0 | 100.00 | 3 | 5.0 | 38.0 | W | 0.50 | 45.0 | • | 0.05-0.11 |
| ECP-E3L 20-42/62C20S125 | 20.00 | 20.00 | 42.00 | 62.0 | 125.00 | 3 | 5.0 | 38.0 | C | 0.50 | 45.0 | • | 0.05-0.11 |
| ECP-E3L 20-42/62W20S125 | 20.00 | 20.00 | 42.00 | 62.0 | 125.00 | 3 | 5.0 | 38.0 | W | 0.50 | 45.0 | • | 0.05-0.11 |

• Most recommended for machining stainless steel. • For user guide, see pages 211-218
(1) Number of flutes
(2) Maximum ramping angle
(3) C-Cylindrical, W-Weldon

SOLIDSHRED

**ECP-E4L**
4 Flute, 38° Helix Solid Carbide Roughing Endmills with 3xD Relieved Necks and Chip Splitting Cutting Edges

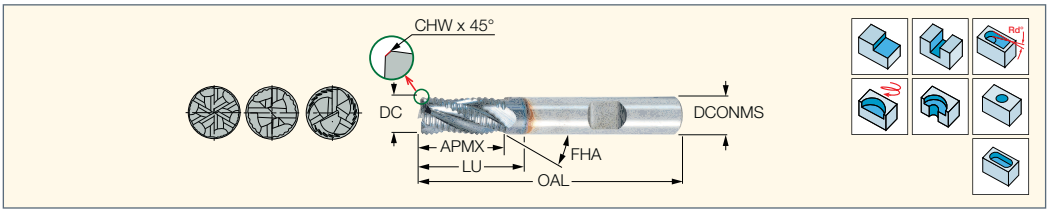



| Designation | Dimensions DC | DCONMS | APMX | LU | OAL | NOF(1) | FHA | Shank(2) | RMPX°(3) | CHW | KCH | IC900 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECP-E4L 05-12/17C06S57 | 5.00 | 6.00 | 12.00 | 17.0 | 57.00 | 4 | 38.0 | C | 5.0 | 0.20 | 45.0 | • | 0.02-0.05 |
| ECP-E4L 05-12/17W06S57 | 5.00 | 6.00 | 12.00 | 17.0 | 57.00 | 4 | 38.0 | W | 5.0 | 0.20 | 45.0 | • | 0.02-0.05 |
| ECP-E4L 06-14/20C06S57 | 6.00 | 6.00 | 14.00 | 20.0 | 57.00 | 4 | 38.0 | C | 5.0 | 0.30 | 45.0 | • | 0.03-0.06 |
| ECP-E4L 06-14/20W06S57 | 6.00 | 6.00 | 14.00 | 20.0 | 57.00 | 4 | 38.0 | W | 5.0 | 0.30 | 45.0 | • | 0.03-0.06 |
| ECP-E4L 08-18/26C08S63 | 8.00 | 8.00 | 18.00 | 26.0 | 63.00 | 4 | 38.0 | C | 5.0 | 0.40 | 45.0 | • | 0.03-0.08 |
| ECP-E4L 08-18/26W08S63 | 8.00 | 8.00 | 18.00 | 26.0 | 63.00 | 4 | 38.0 | W | 5.0 | 0.40 | 45.0 | • | 0.03-0.08 |
| ECP-E4L 10-22/32C10S72 | 10.00 | 10.00 | 22.00 | 32.0 | 72.00 | 4 | 38.0 | C | 5.0 | 0.40 | 45.0 | • | 0.03-0.09 |
| ECP-E4L 10-22/32W10S72 | 10.00 | 10.00 | 22.00 | 32.0 | 72.00 | 4 | 38.0 | W | 5.0 | 0.40 | 45.0 | • | 0.03-0.09 |
| ECP-E4L 12-26/38C12S83 | 12.00 | 12.00 | 26.00 | 38.0 | 83.00 | 4 | 38.0 | C | 5.0 | 0.40 | 45.0 | • | 0.04-0.10 |
| ECP-E4L 12-26/38W12S83 | 12.00 | 12.00 | 26.00 | 38.0 | 83.00 | 4 | 38.0 | W | 5.0 | 0.40 | 45.0 | • | 0.04-0.10 |
| ECP-E4L 14-30/44C14S100 | 14.00 | 14.00 | 30.00 | 44.0 | 100.00 | 4 | 38.0 | C | 5.0 | 0.50 | 45.0 | • | 0.04-0.11 |
| ECP-E4L 14-30/44W14S100 | 14.00 | 14.00 | 30.00 | 44.0 | 100.00 | 4 | 38.0 | W | 5.0 | 0.50 | 45.0 | • | 0.04-0.11 |
| ECP-E4L 16-34/50C16S100 | 16.00 | 16.00 | 34.00 | 50.0 | 100.00 | 4 | 38.0 | C | 5.0 | 0.50 | 45.0 | • | 0.05-0.12 |
| ECP-E4L 16-34/50W16S100 | 16.00 | 16.00 | 34.00 | 50.0 | 100.00 | 4 | 38.0 | W | 5.0 | 0.50 | 45.0 | • | 0.05-0.12 |
| ECP-E4L 20-42/62C20S125 | 20.00 | 20.00 | 42.00 | 62.0 | 125.00 | 4 | 38.0 | C | 5.0 | 0.50 | 45.0 | • | 0.05-0.15 |
| ECP-E4L 20-42/62W20S125 | 20.00 | 20.00 | 42.00 | 62.0 | 125.00 | 4 | 38.0 | W | 5.0 | 0.50 | 45.0 | • | 0.05-0.15 |

• Most recommended for machining stainless steel. • For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical, W-Weldon
(3) Maximum ramping angle

**SOLIDSHRED**

**ERF-A/E-3,4,6**
3, 4, and 6 Flute, 30° and 38° Helix Solid Carbide Roughing Endmills with 3xD Relieved Neck for Alloy Steel




| Designation | Dimensions | | | | | | | | | | | IC900 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | OAL | NOF[2] | FHA | RMPX°[3] | Shank[4] | CHW | KCH | | $f_z$ (mm/t) |
| **ERF040E08-3C06** | 4.00 | 6.00 | 8.00 | 13.00 | 57.00 | 3 | 38.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.02-0.05 |
| **ERF050E10-3C06** | 5.00 | 6.00 | 10.00 | 17.00 | 57.00 | 3 | 38.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.02-0.05 |
| **ERF060E13-3C06** | 6.00 | 6.00 | 13.00 | 21.00 | 57.00 | 3 | 38.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.03-0.06 |
| **ERF060E13-3W06** | 6.00 | 6.00 | 13.00 | 21.00 | 57.00 | 3 | 38.0 | 5.0 | W | 0.30 | 45.0 | ● | 0.03-0.06 |
| **ERF070E20-3C08** | 7.00 | 8.00 | 20.00 | 26.00 | 63.00 | 3 | 38.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.03-0.07 |
| **ERF080E20-3C08** | 8.00 | 8.00 | 20.00 | 28.00 | 63.00 | 3 | 38.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.03-0.08 |
| **ERF080E20-3W08** | 8.00 | 8.00 | 20.00 | 28.00 | 63.00 | 3 | 38.0 | 5.0 | W | 0.30 | 45.0 | ● | 0.03-0.08 |
| **ERF090A22-4C10** | 9.00 | 10.00 | 22.00 | 30.00 | 72.00 | 4 | 30.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.03-0.08 |
| **ERF100A22-4C10** | 10.00 | 10.00 | 22.00 | 30.00 | 72.00 | 4 | 30.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.03-0.09 |
| **ERF100A22-4W10** | 10.00 | 10.00 | 22.00 | 30.00 | 72.00 | 4 | 30.0 | 5.0 | W | 0.30 | 45.0 | ● | 0.03-0.09 |
| **ERF110A25-4C12** | 11.00 | 12.00 | 25.00 | 31.00 | 83.00 | 4 | 30.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.03-0.09 |
| **ERF120A25-4C12** | 12.00 | 12.00 | 25.00 | 37.00 | 83.00 | 4 | 30.0 | 5.0 | C | 0.40 | 45.0 | ● | 0.04-0.10 |
| **ERF120A25-4W12** | 12.00 | 12.00 | 25.00 | 37.00 | 83.00 | 4 | 30.0 | 5.0 | W | 0.40 | 45.0 | ● | 0.04-0.10 |
| **ERF130A25-4C14** | 13.00 | 14.00 | 25.00 | 32.00 | 83.00 | 4 | 30.0 | 5.0 | C | 0.40 | 45.0 | ● | 0.04-0.10 |
| **ERF140A25-4C14** | 14.00 | 14.00 | 25.00 | 37.00 | 83.00 | 4 | 30.0 | 5.0 | C | 0.50 | 45.0 | ● | 0.04-0.11 |
| **ERF140A25-4W14** | 14.00 | 14.00 | 25.00 | 37.00 | 83.00 | 4 | 30.0 | 5.0 | W | 0.50 | 45.0 | ● | 0.04-0.11 |
| **ERF160A32-4C16** | 16.00 | 16.00 | 32.00 | 44.00 | 92.00 | 4 | 30.0 | 5.0 | C | 0.50 | 45.0 | ● | 0.05-0.11 |
| **ERF160A32-4W16** | 16.00 | 16.00 | 32.00 | 44.00 | 92.00 | 4 | 30.0 | 5.0 | W | 0.50 | 45.0 | ● | 0.05-0.11 |
| **ERF180A32-4C18** | 18.00 | 18.00 | 32.00 | 44.00 | 92.00 | 4 | 30.0 | 5.0 | C | 0.50 | 45.0 | ● | 0.05-0.11 |
| **ERF180A32-4W18** | 18.00 | 18.00 | 32.00 | 44.00 | 92.00 | 4 | 30.0 | 5.0 | W | 0.50 | 45.0 | ● | 0.05-0.11 |
| **ERF200A38-4C20** | 20.00 | 20.00 | 38.00 | 55.00 | 104.00 | 4 | 30.0 | 5.0 | C | 0.60 | 45.0 | ● | 0.05-0.11 |
| **ERF200A38-4W20** | 20.00 | 20.00 | 38.00 | 55.00 | 104.00 | 4 | 30.0 | 5.0 | W | 0.60 | 45.0 | ● | 0.05-0.11 |
| **ERF250A45-6W25** [1] | 25.00 | 25.00 | 45.00 | 64.00 | 121.00 | 6 | 30.0 | 5.0 | W | 0.60 | 45.0 | ● | 0.06-0.11 |

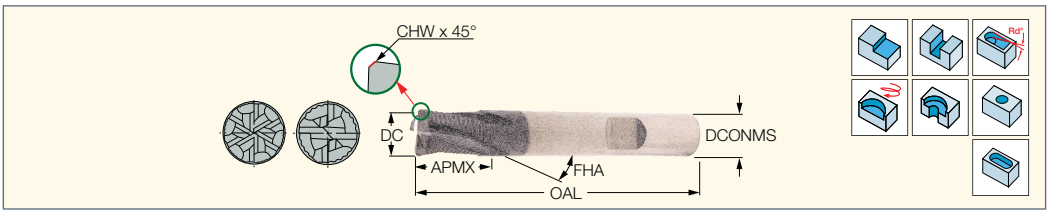
• For user guide, see pages 211-218

(1) No center cutting • Cannot be used for plunging application
(2) Number of flutes
(3) Maximum ramping angle
(4) C-Cylindrical, W-Weldon

SOLIDSHRED

**ECR-T-M**

4 Flute, 20° Helix Medium Length Solid Carbide Roughing Endmills for High Stock Removal Rates




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF[1] | FHA | RMPX°[2] | Shank[3] | CHW | KCH | IC900 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECR-T4M 06-10-C06-57 | 6.00 | 6.00 | 10.00 | 57.00 | 4 | 20.0 | 5.0 | C | 0.30 | 45.0 | ● | 0.03-0.06 |
| ECR-T4M 06-10-W06-57 | 6.00 | 6.00 | 10.00 | 57.00 | 4 | 20.0 | 5.0 | W | 0.30 | 45.0 | ● | 0.03-0.06 |
| ECR-T4M 08-16-C08-63 | 8.00 | 8.00 | 16.00 | 63.00 | 4 | 20.0 | 5.0 | C | 0.40 | 45.0 | ● | 0.03-0.08 |
| ECR-T4M 08-16-W08-63 | 8.00 | 8.00 | 16.00 | 63.00 | 4 | 20.0 | 5.0 | W | 0.40 | 45.0 | ● | 0.03-0.08 |
| ECR-T4M 10-20-C10-72 | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 20.0 | 5.0 | C | 0.40 | 45.0 | ● | 0.03-0.09 |
| ECR-T4M 10-20-W10-72 | 10.00 | 10.00 | 20.00 | 72.00 | 4 | 20.0 | 5.0 | W | 0.40 | 45.0 | ● | 0.03-0.09 |
| ECR-T4M 12-24-C12-83 | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 20.0 | 5.0 | C | 0.40 | 45.0 | ● | 0.04-0.10 |
| ECR-T4M 12-24-W12-83 | 12.00 | 12.00 | 24.00 | 83.00 | 4 | 20.0 | 5.0 | W | 0.40 | 45.0 | ● | 0.04-0.10 |
| ECR-T4M 16-32-C16-92 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 20.0 | 5.0 | C | 0.50 | 45.0 | ● | 0.05-0.11 |
| ECR-T4M 16-32-W16-92 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 20.0 | 5.0 | W | 0.50 | 45.0 | ● | 0.05-0.11 |
| ECR-T4M 20-40-C20-104 | 20.00 | 20.00 | 40.00 | 104.00 | 4 | 20.0 | 5.0 | C | 0.50 | 45.0 | ● | 0.05-0.11 |
| ECR-T4M 20-40-W20-104 | 20.00 | 20.00 | 40.00 | 104.00 | 4 | 20.0 | 5.0 | W | 0.50 | 45.0 | ● | 0.05-0.11 |

• For user guide, see pages 211-218

[1] Number of flutes

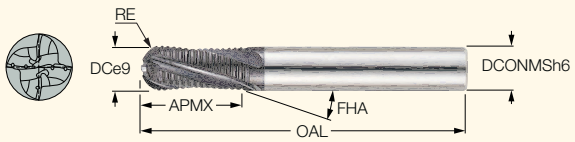
[2] Maximum ramping angle

[3] C-Cylindrical, W-Weldon

SOLIDSHRED

**EBRF-T**

3, 4 Flute, 20° Helix Long Solid Carbide Ball Nose Endmills for Roughing Materials up to 55 HRC




HARD MATERIALS

| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF[1] | FHA | Shank[2] | RE | RETOL[3] | IC903 |
|---|---|---|---|---|---|---|---|---|---|---|
| EBRF-T3 06-16C06M57 | 6.00 | 6.00 | 16.00 | 57.00 | 3 | 20.0 | C | 3.00 | 0.010 | ● |
| EBRF-T3 08-16C08M63 | 8.00 | 8.00 | 16.00 | 63.00 | 3 | 20.0 | C | 4.00 | 0.010 | ● |
| EBRF-T4 10-22C10M72 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 20.0 | C | 5.00 | 0.010 | ● |
| EBRF-T4 12-26C12M83 | 12.00 | 12.00 | 26.00 | 83.00 | 4 | 20.0 | C | 6.00 | 0.012 | ● |
| EBRF-T4 14-26C14M83 | 14.00 | 14.00 | 26.00 | 83.00 | 4 | 20.0 | C | 7.00 | 0.012 | ● |
| EBRF-T4 16-32C16M92 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 20.0 | C | 8.00 | 0.012 | ● |
| EBRF-T4 20-38C20M104 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 20.0 | C | 10.00 | 0.012 | ● |

• For user guide, see pages 211-218

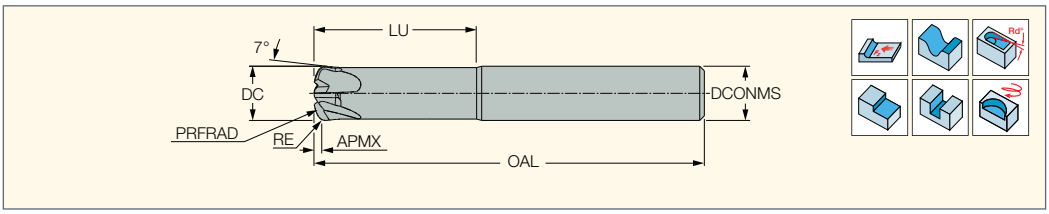
[1] Number of flutes

[2] C-Cylindrical

[3] Corner radius tolerance (+/-)

SOLIDFEEDMILL

**EFF-S2/S4/S6**
Solid Carbide Endmills with Relieved Necks for Fast Feed High Productivity



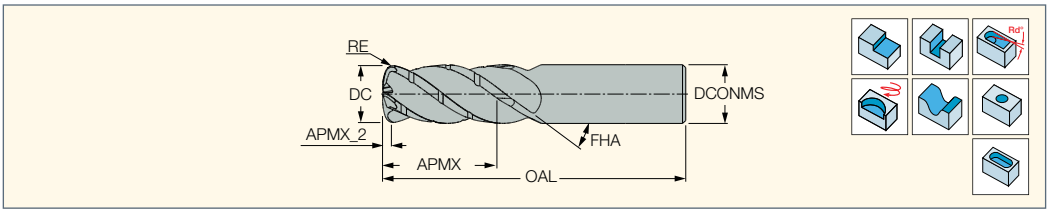

| Designation | Dimensions | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | OAL | NOF(1) | LU | RE(2) | PRFRAD | APMX | Shank(3) | IC903 | IC902 | $f_z$ (mm/t) |
| EFF-S2 01-04/03C6RP.15M50 | 1.00 | 6.00 | 50.00 | 2 | 3.0 | 0.15 | 0.8 | 0.06 | C | | ● | 0.02-0.05 |
| EFF-S2 02-07/06C6RP0.3M50 | 2.00 | 6.00 | 50.00 | 2 | 6.0 | 0.30 | 1.6 | 0.11 | C | | ● | 0.10-0.14 |
| EFF-S2 03-1/09C06RP0.5M50 | 3.00 | 6.00 | 50.00 | 2 | 9.0 | 0.50 | 2.4 | 0.18 | C | | ● | 0.10-0.20 |
| EFF-S4-04 020/14C06M57 | 4.00 | 6.00 | 57.00 | 4 | 14.0 | 0.70 | 3.8 | 0.20 | C | | ● | 0.10-0.25 |
| EFF-S4-05 022/17C06M57 | 5.00 | 6.00 | 57.00 | 4 | 17.0 | 0.90 | 4.0 | 0.31 | C | | ● | 0.10-0.30 |
| EFF-S4-06 030/20C06R1.0M | 6.00 | 6.00 | 57.00 | 4 | 20.0 | 1.23 | 5.3 | 0.29 | C | ● | | 0.10-0.30 |
| EFF-S6-06 025/20C06R0.7M | 6.00 | 6.00 | 57.00 | 6 | 20.0 | 0.70 | 5.0 | 0.33 | C | | ● | 0.10-0.25 |
| EFF-S4-08 035/26C08R1.3M | 8.00 | 8.00 | 63.00 | 4 | 26.0 | 1.62 | 7.0 | 0.40 | C | ● | | 0.10-0.40 |
| EFF-S6-08 025/26C08R0.86M | 8.00 | 8.00 | 63.00 | 6 | 26.0 | 0.86 | 6.0 | 0.40 | C | | ● | 0.10-0.35 |
| EFF-S4-10 040/30C10R1.6M | 10.00 | 10.00 | 72.00 | 4 | 30.0 | 2.01 | 8.8 | 0.50 | C | ● | | 0.15-0.50 |
| EFF-S6-10 025/30C10R1.0M | 10.00 | 10.00 | 72.00 | 6 | 30.0 | 1.00 | 6.0 | 0.50 | C | | ● | 0.15-0.45 |
| EFF-S4-12 045/34C12R2.0M | 12.00 | 12.00 | 83.00 | 4 | 34.0 | 2.46 | 10.6 | 0.57 | C | ● | | 0.15-0.50 |
| EFF-S6-12 030/34C12R1.2M | 12.00 | 12.00 | 83.00 | 6 | 34.0 | 1.20 | 10.0 | 0.65 | C | | ● | 0.15-0.45 |
| EFF-S4-16 055/42C16R2.6M | 16.00 | 16.00 | 92.00 | 4 | 42.0 | 3.25 | 14.0 | 0.80 | C | ● | | 0.20-0.60 |
| EFF-S6-16 045/42C16R2.0M | 16.00 | 16.00 | 92.00 | 6 | 42.0 | 2.00 | 16.0 | 1.10 | C | | ● | 0.20-0.55 |
| EFF-S4-20 060/46C20R3.2M | 20.00 | 20.00 | 104.00 | 4 | 46.0 | 4.01 | 17.7 | 1.00 | C | ● | | 0.20-0.70 |

- For user guide, see pages 211-218

(1) Number of flutes
(2) To be used for programming
(3) C-Cylindrical

SOLIDFEEDMILL

**EFP-E4,5CF**
Solid Carbide Roughing Endmills with Chip Splitting, Cutting Edges, Variable Pitch and Large Radius Front Edge




| Designation | Dimensions | | | | | | | | | | IC903 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | OAL | RE(2) | NOF(3) | FHA | APMX_2(4) | APMX | RMPX°(5) | Shank(6) | | $f_z$ (mm/t) |
| EFP-E4CF 06-12C06R1.0M57 | 6.00 | 6.00 | 57.00 | 1.00 | 4 | 38.0 | 0.30 | 12.00 | 5.0 | C | ● | 0.02-0.30 |
| EFP-E4CF 08-16C08R1.4M63 | 8.00 | 8.00 | 63.00 | 1.40 | 4 | 38.0 | 0.40 | 16.00 | 5.0 | C | ● | 0.03-0.40 |
| EFP-E4CF 10-20C10R1.7M72 | 10.00 | 10.00 | 72.00 | 1.70 | 4 | 38.0 | 0.50 | 20.00 | 5.0 | C | ● | 0.03-0.50 |
| EFP-E4CF 12-25C12R2.0M83 | 12.00 | 12.00 | 83.00 | 2.00 | 4 | 38.0 | 0.60 | 24.00 | 5.0 | C | ● | 0.04-0.50 |
| EFP-E4CF 16-32C16R2.7M92 | 16.00 | 16.00 | 92.00 | 2.70 | 4 | 38.0 | 0.80 | 32.00 | 5.0 | C | ● | 0.05-0.60 |
| EFP-E5CF 16-40C16R2.7M92 (1) | 16.00 | 16.00 | 92.00 | 2.70 | 5 | 38.0 | 0.80 | 40.00 | 5.0 | C | ● | 0.05-0.60 |
| EFP-E4CF 20-40C20R3.4M104 | 20.00 | 20.00 | 104.00 | 3.40 | 4 | 38.0 | 1.00 | 40.00 | 5.0 | C | ● | 0.05-0.70 |
| EFP-E5CF 20-48C20R3.4M104 (1) | 20.00 | 20.00 | 104.00 | 3.40 | 5 | 38.0 | 1.00 | 48.00 | 5.0 | C | ● | 0.05-0.70 |

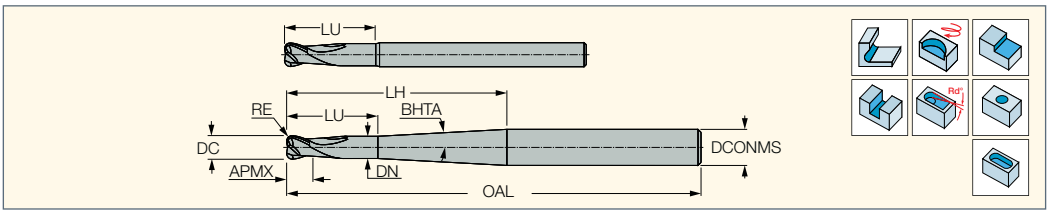
- For user guide, see pages 211-218

(1) Cannot be used for plunging application
(2) Used for programming
(3) Number of flutes
(4) Maximum D.O.C. for high feed milling (FEEDMILL)
(5) Maximum ramping angle
(6) C-Cylindrical

SOLIDMILL PREMIUM LINE

## ETR-A2

2 Flute Toroidal Endmills




| Designation | Dimensions | | | | | | | | | | | | IC900 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | LU | DN | LH | BHTA | RMPX°(2) | RE | Shank(3) | | $f_z$ (mm/t) |
| ETR-A2 02-2/08C06R.5M80 | 2.00 | 6.00 | 2.00 | 80.00 | 2 | 8.0 | 1.90 | 40.0 | 3.6 | 5.0 | 0.50 | C | ● | 0.01-0.03 |
| ETR-A2 03-2/12C06R.5M80 | 3.00 | 6.00 | 2.00 | 80.00 | 2 | 12.0 | 2.80 | 40.0 | 3.3 | 5.0 | 0.50 | C | ● | 0.01-0.04 |
| ETR-A2 04-3/16C06R1M80 | 4.00 | 6.00 | 3.00 | 80.00 | 2 | 16.0 | 3.70 | 40.0 | 2.8 | 5.0 | 1.00 | C | ● | 0.02-0.05 |
| ETR-A2 06-4/25C08R2M100 | 6.00 | 8.00 | 4.00 | 100.00 | 2 | 25.0 | 5.60 | 66.0 | 2.0 | 5.0 | 2.00 | C | ● | 0.03-0.07 |
| ETR-A2 10-6/40C12R3M160 | 10.00 | 12.00 | 6.00 | 158.00 | 2 | 40.0 | 9.60 | 110.0 | 1.0 | 5.0 | 3.00 | C | ● | 0.03-0.10 |

- For user guide, see pages 211-218

(1) Number of flutes

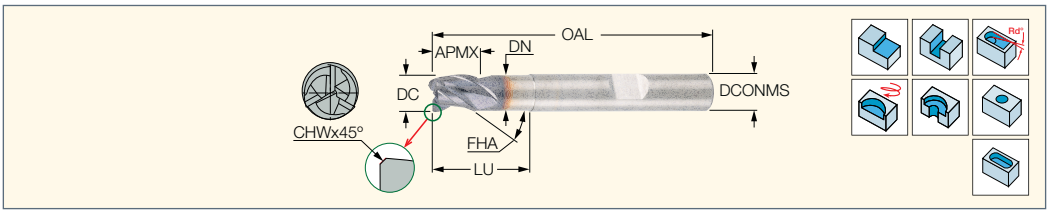
(2) Maximum ramping angle

(3) C-Cylindrical

SOLIDMILL PREMIUM LINE

## ECS/ECCS-E-3

3 Flute, 38° Helix Short Solid Carbide Slot / Drill Endmills with 3xD Relieved Necks and Chamfered Corners




| Designation | Dimensions | | | | | | | | | | | | IC900 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | DN | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | CHW | KCH | | $f_z$ (mm/t) |
| ECS020E03-3W06-57 | 2.00 | 6.00 | 3.00 | 8.00 | 1.90 | 57.00 | 3 | 38.0 | 5.0 | W | - | - | ● | 0.01-0.03 |
| ECS025E03-3W06-57 | 2.50 | 6.00 | 3.00 | 8.00 | 2.40 | 57.00 | 3 | 38.0 | 5.0 | W | - | - | ● | 0.01-0.03 |
| ECS030E04-3W06-57 | 3.00 | 6.00 | 4.00 | 9.00 | 2.90 | 57.00 | 3 | 38.0 | 5.0 | W | - | - | ● | 0.01-0.04 |
| ECS035E04-3W06-57 | 3.50 | 6.00 | 4.00 | 12.00 | 3.40 | 57.00 | 3 | 38.0 | 5.0 | W | - | - | ● | 0.01-0.04 |
| ECS040E05-3W06-57 | 4.00 | 6.00 | 5.00 | 13.00 | 3.90 | 57.00 | 3 | 38.0 | 5.0 | W | - | - | ● | 0.02-0.05 |
| ECS050E06-3W06-57 | 5.00 | 6.00 | 6.00 | 14.00 | 4.90 | 57.00 | 3 | 38.0 | 5.0 | W | - | - | ● | 0.02-0.06 |
| ECCS060E07-3W06-57 | 6.00 | 6.00 | 7.00 | 15.00 | 5.90 | 57.00 | 3 | 38.0 | 5.0 | W | 0.15 | 45.0 | ● | 0.03-0.07 |
| ECCS070E08-3W08-63 | 7.00 | 8.00 | 8.00 | 20.00 | 6.70 | 63.00 | 3 | 38.0 | 5.0 | W | 0.15 | 45.0 | ● | 0.03-0.08 |
| ECCS080E09-3W08-63 | 8.00 | 8.00 | 9.00 | 21.00 | 7.60 | 63.00 | 3 | 38.0 | 5.0 | W | 0.15 | 45.0 | ● | 0.03-0.09 |
| ECCS090E10-3W10-72 | 9.00 | 10.00 | 10.00 | 22.00 | 8.60 | 72.00 | 3 | 38.0 | 5.0 | W | 0.15 | 45.0 | ● | 0.03-0.09 |
| ECCS100E11-3W10-72 | 10.00 | 10.00 | 11.00 | 23.00 | 9.50 | 72.00 | 3 | 38.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.03-0.10 |
| ECCS120E12-3W12-83 | 12.00 | 12.00 | 12.00 | 24.00 | 11.30 | 83.00 | 3 | 38.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.04-0.11 |
| ECCS160E16-3W16-92 | 16.00 | 16.00 | 16.00 | 33.00 | 15.20 | 92.00 | 3 | 38.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.05-0.13 |

- For user guide, see pages 211-218

(1) Number of flutes

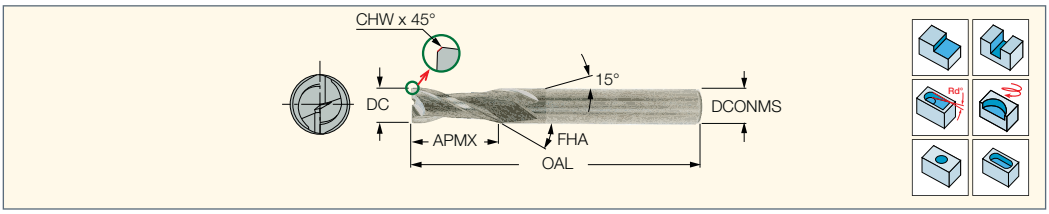
(2) Maximum ramping angle

(3) W-Weldon

SOLIDMILL PREMIUM LINE

**EC/ECC-A-2**

2 Flute, 30 and 45° Helix
Medium Length Solid Carbide
Slot / Drill Endmills




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | KCH | CHW | IC08 | IC900 | $f_z$ (mm/t) |
| ECC020B07-2C03 | 2.00 | 3.00 | 7.00 | 38.00 | 2 | 45.0 | 5.0 | C | 45.0 | 0.10 | | ● | 0.01-0.03 |
| EC020B07-2C03 | 2.00 | 3.00 | 7.00 | 38.00 | 2 | 45.0 | 5.0 | C | - | - | ● | | 0.01-0.03 |
| EC020B07-2C06 | 2.00 | 6.00 | 7.00 | 57.00 | 2 | 45.0 | 5.0 | C | - | - | | ● | 0.01-0.03 |
| ECC025A07-2C03 | 2.50 | 3.00 | 7.00 | 38.00 | 2 | 30.0 | 5.0 | C | 45.0 | 0.10 | | ● | 0.01-0.03 |
| EC025A07-2C03 | 2.50 | 3.00 | 7.00 | 38.00 | 2 | 30.0 | 5.0 | C | - | - | ● | | 0.01-0.03 |
| ECC030A10-2C03 | 3.00 | 3.00 | 10.00 | 38.00 | 2 | 30.0 | 5.0 | C | 45.0 | 0.10 | | ● | 0.01-0.04 |
| EC030A10-2C03 | 3.00 | 3.00 | 10.00 | 38.00 | 2 | 30.0 | 5.0 | C | - | - | ● | | 0.01-0.04 |
| EC030A10-2C06 | 3.00 | 6.00 | 10.00 | 57.00 | 2 | 30.0 | 5.0 | C | - | - | | ● | 0.01-0.04 |
| EC035A12-2C04 | 3.50 | 4.00 | 12.00 | 50.00 | 2 | 30.0 | 5.0 | C | - | - | ● | | 0.01-0.04 |
| ECC040A12-2C04 | 4.00 | 4.00 | 12.00 | 50.00 | 2 | 30.0 | 5.0 | C | 45.0 | 0.15 | | ● | 0.02-0.05 |
| EC040A12-2C04 | 4.00 | 4.00 | 12.00 | 50.00 | 2 | 30.0 | 5.0 | C | - | - | ● | ● | 0.02-0.05 |
| EC040A12-2C06 | 4.00 | 6.00 | 12.00 | 57.00 | 2 | 30.0 | 5.0 | C | - | - | ● | ● | 0.02-0.05 |
| ECC050A14-2C05 | 5.00 | 5.00 | 14.00 | 50.00 | 2 | 30.0 | 5.0 | C | 0.15 | 45.0 | | ● | 0.02-0.06 |
| EC050A14-2C05 | 5.00 | 5.00 | 14.00 | 50.00 | 2 | 30.0 | 5.0 | C | - | - | ● | | 0.02-0.06 |
| EC050A14-2C06 | 5.00 | 6.00 | 14.00 | 57.00 | 2 | 30.0 | 5.0 | C | - | - | | ● | 0.02-0.06 |
| ECC060A16-2C06 | 6.00 | 6.00 | 16.00 | 57.00 | 2 | 30.0 | 5.0 | C | 0.15 | 45.0 | | ● | 0.03-0.07 |
| EC060A16-2C06 | 6.00 | 6.00 | 16.00 | 57.00 | 2 | 30.0 | 5.0 | C | - | - | ● | ● | 0.03-0.07 |
| EC060A16-2W06 | 6.00 | 6.00 | 16.00 | 57.00 | 2 | 30.0 | 5.0 | W | - | - | | ● | 0.03-0.07 |
| EC070A20-2C07 | 7.00 | 7.00 | 20.00 | 60.00 | 2 | 30.0 | 5.0 | C | - | - | ● | | 0.03-0.08 |
| ECC080A20-2C08 | 8.00 | 8.00 | 20.00 | 63.00 | 2 | 30.0 | 5.0 | C | 45.0 | 0.15 | | ● | 0.03-0.09 |
| EC080A20-2C08 | 8.00 | 8.00 | 20.00 | 63.00 | 2 | 30.0 | 5.0 | C | - | - | ● | ● | 0.03-0.09 |
| EC080A20-2W08 | 8.00 | 8.00 | 20.00 | 63.00 | 2 | 30.0 | 5.0 | W | - | - | | ● | 0.03-0.09 |
| ECC100A22-2C10 | 10.00 | 10.00 | 22.00 | 72.00 | 2 | 30.0 | 5.0 | C | 45.0 | 0.25 | | ● | 0.03-0.10 |
| EC100A22-2C10 | 10.00 | 10.00 | 22.00 | 72.00 | 2 | 30.0 | 5.0 | C | - | - | ● | ● | 0.03-0.10 |
| ECC120A25-2C12 | 12.00 | 12.00 | 25.00 | 83.00 | 2 | 30.0 | 5.0 | C | 0.25 | 45.0 | | ● | 0.04-0.11 |
| EC120A25-2C12 | 12.00 | 12.00 | 25.00 | 83.00 | 2 | 30.0 | 5.0 | C | - | - | ● | ● | 0.04-0.11 |
| EC140A25-2C14 | 14.00 | 14.00 | 25.00 | 83.00 | 2 | 30.0 | 5.0 | C | - | - | ● | ● | 0.04-0.12 |
| ECC160A32-2C16 | 16.00 | 16.00 | 32.00 | 92.00 | 2 | 30.0 | 5.0 | C | 45.0 | 0.25 | | ● | 0.05-0.13 |
| EC160A32-2C16 | 16.00 | 16.00 | 32.00 | 92.00 | 2 | 30.0 | 5.0 | C | - | - | | ● | 0.05-0.13 |
| EC180A32-2C18 | 18.00 | 18.00 | 32.00 | 92.00 | 2 | 30.0 | 5.0 | C | - | - | ● | | 0.05-0.13 |
| ECC200A38-2C20 | 20.00 | 20.00 | 38.00 | 104.00 | 2 | 30.0 | 5.0 | C | 45.0 | 0.25 | | ● | 0.05-0.13 |
| EC200A38-2C20 | 20.00 | 20.00 | 38.00 | 104.00 | 2 | 30.0 | 5.0 | C | - | - | ● | ● | 0.05-0.13 |

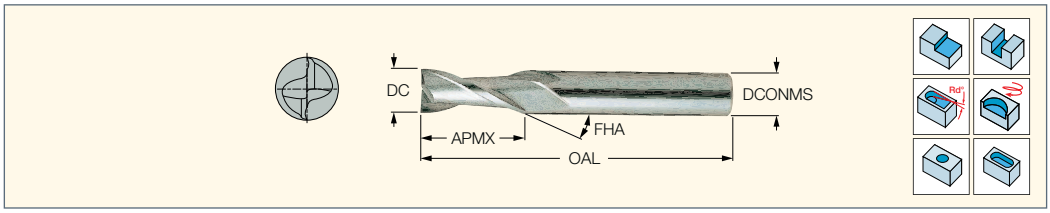
• For user guide, see pages 211-218

(1) Number of flutes

(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

**EC-A2 (economical-short/ medium/extra long)**
Economical Type 2 Flute, 30° Helix Center Cutting, Short, Medium, and Extra Long Length Solid Carbide Endmills




| Designation | Dimensions | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF[1] | FHA | RMPX°[2] | Shank[3] | IC08 | IC900 | $f_z$ (mm/t) |
| EC-A2 01-03C04E50 | 1.00 | 4.00 | 3.00 | 50.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0050-0.0100 |
| EC-A2 015-045C04E50 | 1.50 | 4.00 | 4.50 | 50.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0050-0.0200 |
| EC-A2 02-08C02E32 | 2.00 | 2.00 | 8.00 | 32.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0100-0.0300 |
| EC-A2 02-03W06E50 | 2.00 | 6.00 | 3.00 | 50.00 | 2 | 30.0 | 5.0 | W | ● | ● | 0.0100-0.0300 |
| EC-A2 025-08C025E32 | 2.50 | 2.50 | 8.00 | 32.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0100-0.0300 |
| EC-A2 03-12C03E38 | 3.00 | 3.00 | 12.00 | 38.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0100-0.0400 |
| EC-A2 03-30C03E75 | 3.00 | 3.00 | 30.00 | 75.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0100-0.0400 |
| EC-A2 03-04W06E50 | 3.00 | 6.00 | 4.00 | 50.00 | 2 | 30.0 | 5.0 | W | ● | ● | 0.0100-0.0400 |
| EC-A2 035-12C035E32 | 3.50 | 3.50 | 12.00 | 32.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0100-0.0400 |
| EC-A2 04-12C04E50 | 4.00 | 4.00 | 12.00 | 50.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0200-0.0500 |
| EC-A2 04-30C04E75 | 4.00 | 4.00 | 30.00 | 75.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0200-0.0500 |
| EC-A2 04-05W06E54 | 4.00 | 6.00 | 5.00 | 54.00 | 2 | 30.0 | 5.0 | W | ● | ● | 0.0200-0.0500 |
| EC-A2 045-05W06E54 | 4.50 | 6.00 | 5.00 | 54.00 | 2 | 30.0 | 5.0 | W | ● | ● | 0.0200-0.0500 |
| EC-A2 05-14C05E50 | 5.00 | 5.00 | 14.00 | 50.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0200-0.0600 |
| EC-A2 05-40C05E100 | 5.00 | 5.00 | 40.00 | 100.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0200-0.0600 |
| EC-A2 05-06W06E54 | 5.00 | 6.00 | 6.00 | 54.00 | 2 | 30.0 | 5.0 | W | ● | ● | 0.0200-0.0600 |
| EC-A2 055-16C055E50 | 5.50 | 5.50 | 16.00 | 50.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0200-0.0600 |
| EC-A2 06-07W06E54 | 6.00 | 6.00 | 7.00 | 54.00 | 2 | 30.0 | 5.0 | W | ● | ● | 0.0300-0.0700 |
| EC-A2 06-16C06E50 | 6.00 | 6.00 | 16.00 | 50.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0300-0.0700 |
| EC-A2 06-50C06E150 | 6.00 | 6.00 | 50.00 | 150.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0300-0.0700 |
| EC-A2 07-20C07E60 | 7.00 | 7.00 | 20.00 | 60.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0300-0.0800 |
| EC-A2 08-09W08E58 | 8.00 | 8.00 | 9.00 | 58.00 | 2 | 30.0 | 5.0 | W | ● | ● | 0.0300-0.0900 |
| EC-A2 08-20C08E63 | 8.00 | 8.00 | 20.00 | 63.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0300-0.0900 |
| EC-A2 08-50C08E150 | 8.00 | 8.00 | 50.00 | 150.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0300-0.0900 |
| EC-A2 09-20C09E60 | 9.00 | 9.00 | 20.00 | 60.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0300-0.0900 |
| EC-A2 10-11W10E66 | 10.00 | 10.00 | 11.00 | 66.00 | 2 | 30.0 | 5.0 | W | ● | ● | 0.0300-0.1000 |
| EC-A2 10-22C10E72 | 10.00 | 10.00 | 22.00 | 72.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0300-0.1000 |
| EC-A2 10-60C10E150 | 10.00 | 10.00 | 60.00 | 150.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0300-0.1000 |
| EC-A2 12-22C12E73 | 12.00 | 12.00 | 22.00 | 73.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0400-0.1100 |
| EC-A2 12-75C12E150 | 12.00 | 12.00 | 75.00 | 150.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0400-0.1100 |
| EC-A2 14-25C14E75 | 14.00 | 14.00 | 25.00 | 75.00 | 2 | 30.0 | 5.0 | C | | ● | 0.0400-0.1200 |
| EC-A2 14-65C14E150 | 14.00 | 14.00 | 65.00 | 150.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0400-0.1200 |
| EC-A2 16-25C16E92 | 16.00 | 16.00 | 25.00 | 92.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0500-0.1300 |
| EC-A2 16-65C16E150 | 16.00 | 16.00 | 65.00 | 150.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0500-0.1300 |
| EC-A2 18-18W18E84 | 18.00 | 18.00 | 18.00 | 84.00 | 2 | 30.0 | 5.0 | W | ● | | 0.0500-0.1300 |
| EC-A2 20-20W20E92 | 20.00 | 20.00 | 20.00 | 92.00 | 2 | 30.0 | 5.0 | W | ● | ● | 0.0500-0.1300 |
| EC-A2 20-32C20E100 | 20.00 | 20.00 | 32.00 | 100.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0500-0.1300 |
| EC-A2 20-65C20E150 | 20.00 | 20.00 | 65.00 | 150.00 | 2 | 30.0 | 5.0 | C | ● | ● | 0.0500-0.1300 |

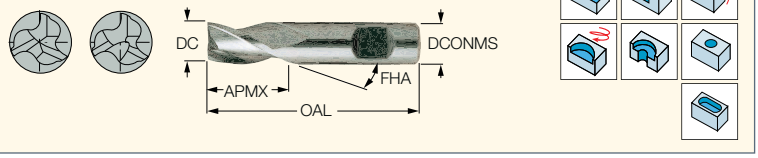
• For user guide, see pages 211-218

(1) Number of flutes
(2) Maximum ramping angle
(3) C-Cylindrical,W-Weldon

SOLIDMILL TEC LINE

**EC-A3/E3 (economical-short/ medium)**

Economical Type 3 Flute, 30° and 38° Helix, Center Cutting, Short, Mediun Length Solid Carbide Endmills




| Designation | Dimensions | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | IC08 | IC900 | $f_z$ (mm/t) |
| **EC-A3 005-015C03E38** | 0.50 | 3.00 | 1.50 | 38.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0070-0.0100 |
| **EC-A3 008-02C03E38** | 0.80 | 3.00 | 2.00 | 38.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0070-0.0100 |
| **EC-A3 01-02C03E38** | 1.00 | 3.00 | 2.00 | 38.00 | 3 | 30.0 | 5.0 | C | ● | | 0.0100-0.0300 |
| **EC-A3 012-02C03E38** | 1.20 | 3.00 | 2.00 | 38.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0100-0.0300 |
| **EC-A3 015-02C03E38** | 1.50 | 3.00 | 2.00 | 38.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0100-0.0300 |
| **EC-A3 018-02C03E38** | 1.80 | 3.00 | 2.00 | 38.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0100-0.0300 |
| **EC-E3 02-08C02E32** | 2.00 | 2.00 | 8.00 | 32.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0100-0.0300 |
| **EC-E3 02-04C06E35** | 2.00 | 6.00 | 4.00 | 35.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0100-0.0300 |
| **EC-E3 025-08C025E32** | 2.50 | 2.50 | 8.00 | 32.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0100-0.0300 |
| **EC-E3 025-05C06E36** | 2.50 | 6.00 | 5.00 | 36.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0100-0.0300 |
| **EC-E3 03-12C03E38** | 3.00 | 3.00 | 12.00 | 38.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0100-0.0400 |
| **EC-E3 03-05C06E36** | 3.00 | 6.00 | 5.00 | 36.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0100-0.0400 |
| **EC-A3 035-12C035E32** | 3.50 | 3.50 | 12.00 | 32.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0100-0.0400 |
| **EC-A3 035-06W06E37** | 3.50 | 6.00 | 6.00 | 37.00 | 3 | 30.0 | 5.0 | W | ● | ● | 0.0100-0.0400 |
| **EC-E3 04-12C04E50** | 4.00 | 4.00 | 12.00 | 50.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0200-0.0500 |
| **EC-E3 04-07C06E39** | 4.00 | 6.00 | 7.00 | 39.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0200-0.0500 |
| **EC-A3 045-14C045E50** | 4.50 | 4.50 | 14.00 | 50.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0200-0.0500 |
| **EC-A3 045-08W06E38** | 4.50 | 6.00 | 8.00 | 38.00 | 3 | 30.0 | 5.0 | W | ● | ● | 0.0200-0.0500 |
| **EC-E3 05-14C05E50** | 5.00 | 5.00 | 14.00 | 50.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0200-0.0600 |
| **EC-E3 05-08C06E39** | 5.00 | 6.00 | 8.00 | 39.00 | 3 | 30.0 | 5.0 | C | | ● | 0.0200-0.0600 |
| **EC-A3 055-16C055E50** | 5.50 | 5.50 | 16.00 | 50.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0200-0.0600 |
| **EC-A3 055-08W06E39** | 5.50 | 6.00 | 8.00 | 39.00 | 3 | 30.0 | 5.0 | W | ● | ● | 0.0200-0.0600 |
| **EC-E3 06-08C06E39** | 6.00 | 6.00 | 8.00 | 39.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0300-0.0700 |
| **EC-E3 06-16C06E50** | 6.00 | 6.00 | 16.00 | 50.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0300-0.0700 |
| **EC-A3 0675-10W08E42** | 6.75 | 8.00 | 10.00 | 42.00 | 3 | 30.0 | 5.0 | W | ● | ● | 0.0300-0.0700 |
| **EC-E3 07-20C07E60** | 7.00 | 7.00 | 20.00 | 60.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0300-0.0800 |
| **EC-A3 07-10W08E42** | 7.00 | 8.00 | 10.00 | 42.00 | 3 | 30.0 | 5.0 | W | ● | ● | 0.0300-0.0800 |
| **EC-E3 08-11C08E43** | 8.00 | 8.00 | 11.00 | 43.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0300-0.0900 |
| **EC-E3 08-20C08E63** | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0300-0.0900 |
| **EC-A3 09-20C09E60** | 9.00 | 9.00 | 20.00 | 60.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0300-0.0900 |
| **EC-A3 09-11W10E48** | 9.00 | 10.00 | 11.00 | 48.00 | 3 | 30.0 | 5.0 | W | ● | ● | 0.0300-0.0900 |
| **EC-A3 097-11W10E48** | 9.70 | 10.00 | 11.00 | 48.00 | 3 | 30.0 | 5.0 | W | ● | ● | 0.0300-0.0900 |
| **EC-E3 10-13C10E50** | 10.00 | 10.00 | 13.00 | 50.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0300-0.1000 |
| **EC-E3 10-22C10E72** | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0300-0.1000 |
| **EC-E3 12-15C12E55** | 12.00 | 12.00 | 15.00 | 55.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0400-0.1100 |
| **EC-E3 12-22C12E73** | 12.00 | 12.00 | 22.00 | 73.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.0400-0.1100 |
| **EC-A3 14-25C14E75** | 14.00 | 14.00 | 25.00 | 75.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0400-0.1200 |
| **EC-A3 16-18W16E62** | 16.00 | 16.00 | 18.00 | 62.00 | 3 | 30.0 | 5.0 | W | ● | ● | 0.0500-0.1300 |
| **EC-A3 16-25C16E75** | 16.00 | 16.00 | 25.00 | 75.00 | 3 | 30.0 | 5.0 | C | ● | ● | 0.0500-0.1300 |
| **EC-E3 20-32C20E104** | 20.00 | 20.00 | 32.00 | 104.00 | 3 | 38.0 | 5.0 | C | ● | | 0.0500-0.1300 |

• For user guide, see pages 211-218

(1) Number of flutes

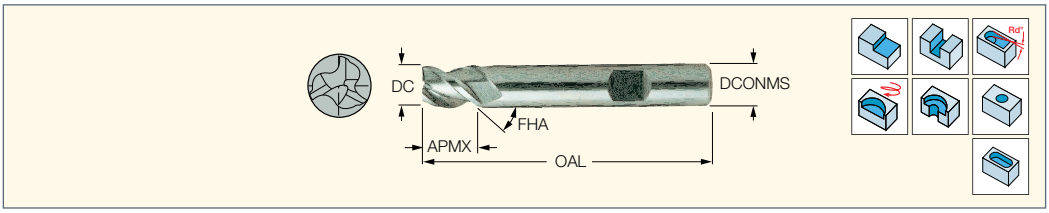
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

SOLIDMILL TEC LINE

**EC-B3 (economical-short/ medium)**

Economical Type 3 Flute, 45° Helix, Center Cutting, Short, Medium Length Solid Carbide Endmills




| Designation | Dimensions | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF[1] | FHA | RMPX°[2] | Shank[3] | IC08 | IC900 | $f_z$ (mm/t) |
| **EC-B3 015-03C03E38** | 1.50 | 3.00 | 3.00 | 38.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.00-0.02 |
| **EC-B3 02-03W06E50** | 2.00 | 6.00 | 3.00 | 50.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.01-0.03 |
| **EC-B3 03-04W06E50** | 3.00 | 6.00 | 4.00 | 50.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.01-0.04 |
| **EC-B3 03-08C06E50** | 3.00 | 6.00 | 8.00 | 50.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.01-0.04 |
| **EC-B3 035-04W06E50** | 3.50 | 6.00 | 4.00 | 50.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.01-0.04 |
| **EC-B3 04-05W06E54** | 4.00 | 6.00 | 5.00 | 54.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.02-0.05 |
| **EC-B3 04-11C06E50** | 4.00 | 6.00 | 11.00 | 50.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.02-0.05 |
| **EC-B3 045-05W06E54** | 4.50 | 6.00 | 5.00 | 54.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.02-0.05 |
| **EC-B3 05-06C06E57** | 5.00 | 6.00 | 6.00 | 57.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.02-0.06 |
| **EC-B3 05-13C06E50** | 5.00 | 6.00 | 13.00 | 50.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.02-0.06 |
| **EC-B3 06-07W06E54** | 6.00 | 6.00 | 7.00 | 54.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.03-0.07 |
| **EC-B3 06-13C06E50** | 6.00 | 6.00 | 13.00 | 50.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.03-0.07 |
| **EC-B3 08-09W08E58** | 8.00 | 8.00 | 9.00 | 58.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.03-0.09 |
| **EC-B3 08-19C08E63** | 8.00 | 8.00 | 19.00 | 63.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.03-0.09 |
| **EC-B3 09-10W10E66** | 9.00 | 10.00 | 10.00 | 66.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.03-0.09 |
| **EC-B3 10-11W10E66** | 10.00 | 10.00 | 11.00 | 66.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.03-0.10 |
| **EC-B3 10-22C10E72** | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.03-0.10 |
| **EC-B3 12-12W12E73** | 12.00 | 12.00 | 12.00 | 73.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.04-0.11 |
| **EC-B3 12-26C12E73** | 12.00 | 12.00 | 26.00 | 73.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.04-0.11 |
| **EC-B3 14-26C14E75** | 14.00 | 14.00 | 26.00 | 75.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.04-0.12 |
| **EC-B3 16-16W16E82** | 16.00 | 16.00 | 16.00 | 82.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.05-0.13 |
| **EC-B3 16-25C16E92** | 16.00 | 16.00 | 25.00 | 92.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.05-0.13 |
| **EC-B3 20-20W20E92** | 20.00 | 20.00 | 20.00 | 92.00 | 3 | 45.0 | 5.0 | W | ● | ● | 0.05-0.13 |
| **EC-B3 20-32C20E104** | 20.00 | 20.00 | 32.00 | 104.00 | 3 | 45.0 | 5.0 | C | ● | ● | 0.05-0.13 |

• For user guide, see pages 211-218

(1) Number of flutes

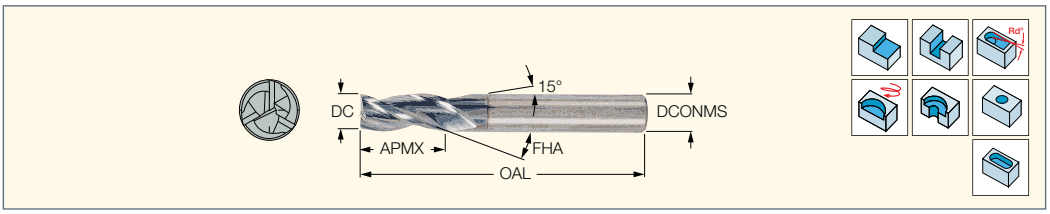
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

SOLIDMILL PREMIUM LINE

**EC-E-3**

3 Flute, 38° Helix Medium Length Solid Carbide Endmills




| Designation | Dimensions | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF[1] | FHA | RMPX°[2] | Shank[3] | IC08 | IC900 | $f_z$ (mm/t) |
| **EC010E025-3C03** | 1.00 | 3.00 | 2.50 | 38.00 | 3 | 38.0 | 5.0 | C | | ● | 0.01-0.01 |
| **EC015E04-3C04** | 1.50 | 4.00 | 4.00 | 50.00 | 3 | 38.0 | 5.0 | C | | ● | 0.01-0.02 |
| **EC025E07-3C03** | 2.50 | 3.00 | 7.00 | 38.00 | 3 | 38.0 | 5.0 | C | | ● | 0.01-0.03 |
| **EC030E10-3C03** | 3.00 | 3.00 | 10.00 | 38.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.01-0.04 |
| **EC030E10-3C06** | 3.00 | 6.00 | 10.00 | 57.00 | 3 | 38.0 | 5.0 | C | | ● | 0.01-0.04 |
| **EC035E12-3C04** | 3.50 | 4.00 | 12.00 | 50.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.01-0.04 |
| **EC040E12-3C04** | 4.00 | 4.00 | 12.00 | 50.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.02-0.05 |
| **EC040E12-3C06** | 4.00 | 6.00 | 12.00 | 57.00 | 3 | 38.0 | 5.0 | C | | ● | 0.02-0.05 |
| **EC045E14-3C06** | 4.50 | 6.00 | 14.00 | 57.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.02-0.05 |
| **EC050E14-3C05** | 5.00 | 5.00 | 14.00 | 50.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.02-0.06 |
| **EC050E14-3C06** | 5.00 | 6.00 | 14.00 | 57.00 | 3 | 38.0 | 5.0 | C | | ● | 0.02-0.06 |
| **EC050E14-3W06** | 5.00 | 6.00 | 14.00 | 57.00 | 3 | 38.0 | 5.0 | W | | ● | 0.02-0.06 |
| **EC060E16-3C06** | 6.00 | 6.00 | 16.00 | 57.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.03-0.07 |
| **EC060E16-3W06** | 6.00 | 6.00 | 16.00 | 57.00 | 3 | 38.0 | 5.0 | W | | ● | 0.03-0.07 |
| **EC070E20-3C07** | 7.00 | 7.00 | 20.00 | 60.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.03-0.08 |
| **EC080E20-3C08** | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.03-0.09 |
| **EC080E20-3W08** | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 38.0 | 5.0 | W | | ● | 0.03-0.09 |
| **EC100E22-3C10** | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.03-0.10 |
| **EC100E22-3W10** | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 38.0 | 5.0 | W | | ● | 0.03-0.10 |
| **EC120E25-3C12** | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.04-0.11 |
| **EC120E25-3W12** | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 38.0 | 5.0 | W | | ● | 0.04-0.11 |
| **EC140E25-3C14** | 14.00 | 14.00 | 25.00 | 83.00 | 3 | 38.0 | 5.0 | C | | ● | 0.04-0.12 |
| **EC140E25-3W14** | 14.00 | 14.00 | 25.00 | 83.00 | 3 | 38.0 | 5.0 | W | | ● | 0.04-0.12 |
| **EC160E32-3C16** | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 38.0 | 5.0 | C | ● | ● | 0.05-0.13 |
| **EC160E32-3W16** | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 38.0 | 5.0 | W | | ● | 0.05-0.13 |
| **EC180E32-3C18** | 18.00 | 18.00 | 32.00 | 92.00 | 3 | 38.0 | 5.0 | C | | ● | 0.05-0.13 |
| **EC180E32-3W18** | 18.00 | 18.00 | 32.00 | 92.00 | 3 | 38.0 | 5.0 | W | | ● | 0.05-0.13 |
| **EC200E38-3C20** | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 38.0 | 5.0 | C | | ● | 0.05-0.13 |
| **EC200E38-3W20** | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 38.0 | 5.0 | W | | ● | 0.05-0.13 |

• Multi-purpose endmill. • Suitable for deep slotting. • For user guide, see pages 211-218

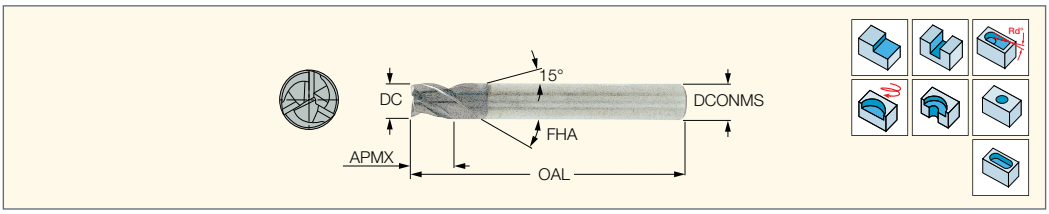
(1) Number of flutes

(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

SOLIDMILL PREMIUM LINE

**ECU-E-3**
3 Flute, 38° Helix Short Undersized Slot / Drill Solid Carbide Endmills

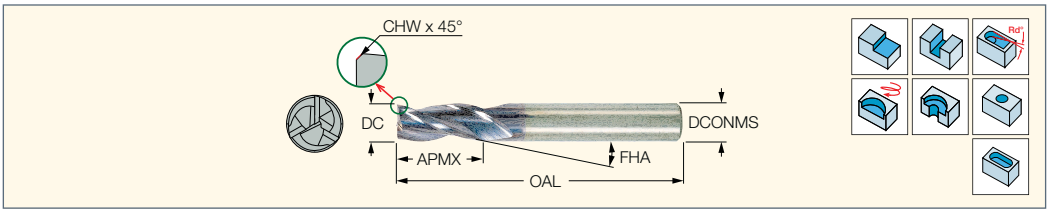



| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | IC900 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| ECU028E04-3W06-57 | 2.80 | 6.00 | 4.00 | 57.00 | 3 | 38.0 | 5.0 | W | ● | 0.01-0.04 |
| ECU038E05-3W06-57 | 3.80 | 6.00 | 5.00 | 57.00 | 3 | 38.0 | 5.0 | W | ● | 0.01-0.04 |
| ECU048E06-3W06-57 | 4.80 | 6.00 | 6.00 | 57.00 | 3 | 38.0 | 5.0 | W | ● | 0.02-0.05 |
| ECU057E07-3W06-57 | 5.70 | 6.00 | 7.00 | 57.00 | 3 | 38.0 | 5.0 | W | ● | 0.02-0.06 |
| ECU067E08-3W08-63 | 6.70 | 8.00 | 8.00 | 63.00 | 3 | 38.0 | 5.0 | W | ● | 0.03-0.07 |
| ECU077E09-3W08-63 | 7.70 | 8.00 | 9.00 | 63.00 | 3 | 38.0 | 5.0 | W | ● | 0.03-0.08 |
| ECU097E11-3W10-72 | 9.70 | 10.00 | 11.00 | 72.00 | 3 | 38.0 | 5.0 | W | ● | 0.03-0.09 |
| ECU117E12-3W12-73 | 11.70 | 12.00 | 12.00 | 73.00 | 3 | 38.0 | 5.0 | W | ● | 0.03-0.10 |
| ECU137E16-3W14-83 | 13.70 | 14.00 | 14.00 | 83.00 | 3 | 38.0 | 5.0 | W | ● | 0.04-0.11 |
| ECU157E16-3W16-92 | 15.70 | 16.00 | 16.00 | 92.00 | 3 | 38.0 | 5.0 | W | ● | 0.04-0.12 |
| ECU177E18-3W18-92 | 17.70 | 18.00 | 18.00 | 92.00 | 3 | 38.0 | 5.0 | W | ● | 0.05-0.13 |

• Undersized short design for keyholes • For user guide, see pages 211-218
(1) Number of flutes
(2) Maximum ramping angle
(3) W-Weldon

SOLIDMILL PREMIUM LINE

**ECC-E-3**
3 Flute, 38° Helix Medium Length Slot / Drill Solid Carbide Endmills with Chamfered Corners



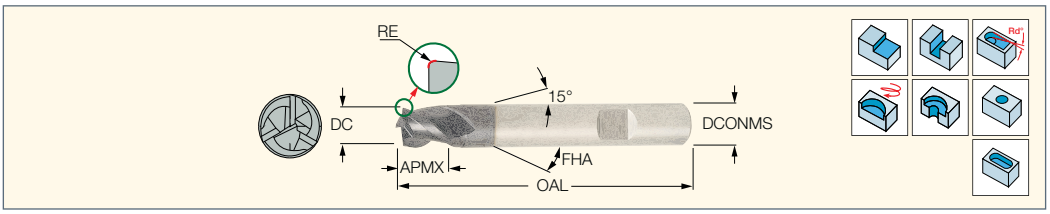

| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | CHW | KCH | IC900 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECC030E10-3C03 | 3.00 | 3.00 | 10.00 | 38.00 | 3 | 38.0 | 5.0 | C | 0.10 | 45.0 | ● | 0.01-0.04 |
| ECC035E12-3C04 | 3.50 | 4.00 | 12.00 | 50.00 | 3 | 38.0 | 5.0 | C | 0.10 | 45.0 | ● | 0.01-0.04 |
| ECC040E12-3C04 | 4.00 | 4.00 | 12.00 | 50.00 | 3 | 38.0 | 5.0 | C | 0.15 | 45.0 | ● | 0.02-0.05 |
| ECC050E14-3C05 | 5.00 | 5.00 | 14.00 | 50.00 | 3 | 38.0 | 5.0 | C | 0.15 | 45.0 | ● | 0.02-0.06 |
| ECC060E16-3C06 | 6.00 | 6.00 | 16.00 | 57.00 | 3 | 38.0 | 5.0 | C | 0.15 | 45.0 | ● | 0.03-0.07 |
| ECC060E16-3W06 | 6.00 | 6.00 | 16.00 | 57.00 | 3 | 38.0 | 5.0 | W | 0.15 | 45.0 | ● | 0.03-0.07 |
| ECC080E20-3C08 | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 38.0 | 5.0 | C | 0.15 | 45.0 | ● | 0.03-0.09 |
| ECC080E20-3W08 | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 38.0 | 5.0 | W | 0.15 | 45.0 | ● | 0.03-0.09 |
| ECC100E22-3C10 | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 38.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.03-0.10 |
| ECC100E22-3W10 | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 38.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.03-0.10 |
| ECC120E25-3C12 | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 38.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.04-0.11 |
| ECC120E25-3W12 | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 38.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.04-0.11 |
| ECC160E32-3C16 | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 38.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.05-0.13 |
| ECC160E32-3W16 | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 38.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.05-0.13 |
| ECC200E38-3C20 | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 38.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.05-0.13 |
| ECC200E38-3W20 | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 38.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.05-0.13 |

• Multi-purpose endmill • Suitable for deep slotting • For user guide, see pages 211-218
(1) Number of flutes
(2) Maximum ramping angle
(3) C-Cylindrical, W-Weldon

SOLIDMILL PREMIUM LINE

**ECU-E-3-R**

3 Flute, 38° Helix Short Undersized Slot / Drill Solid Carbide Endmills with Various Radii According to DIN 6885




| Designation | Dimensions | | | | | | | | | IC900 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | RE | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | | $f_z$ (mm/t) |
| **ECU038E05-3W06R01L57** | 3.80 | 6.00 | 5.00 | 0.10 | 57.00 | 3 | 38.0 | 5.0 | W | ● | 0.01-0.04 |
| **ECU048E06-3W06R02L57** | 4.80 | 6.00 | 6.00 | 0.20 | 57.00 | 3 | 38.0 | 5.0 | W | ● | 0.02-0.05 |
| **ECU057E07-3W06R02L57** | 5.70 | 6.00 | 7.00 | 0.20 | 57.00 | 3 | 38.0 | 5.0 | W | ● | 0.02-0.06 |
| **ECU077E09-3W08R02L63** | 7.70 | 8.00 | 9.00 | 0.20 | 63.00 | 3 | 38.0 | 5.0 | W | ● | 0.03-0.08 |
| **ECU097E11-3W10R03L72** | 9.70 | 10.00 | 11.00 | 0.30 | 72.00 | 3 | 38.0 | 5.0 | W | ● | 0.03-0.09 |
| **ECU117E12-3W12R03L83** | 11.70 | 12.00 | 12.00 | 0.30 | 83.00 | 3 | 38.0 | 5.0 | W | ● | 0.03-0.10 |

• For user guide, see pages 211-218

(1) Number of flutes

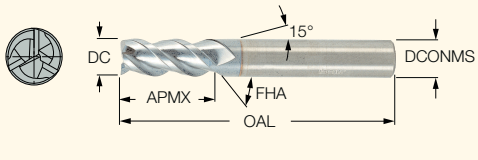
(2) Maximum ramping angle

(3) W-Weldon

SOLIDMILL PREMIUM LINE

**EC-B-3/3R**

3 Flute, 45° Helix Medium Length Slot / Drill Solid Carbide Endmills




| Designation | Dimensions | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | RE | IC08 | IC900 | $f_z$ (mm/t) |
| EC020B07-3C03 | 2.00 | 3.00 | 7.00 | 38.00 | 3 | 45.0 | 5.0 | C | - | • | • | 0.01-0.03 |
| EC020B07-3C06 | 2.00 | 6.00 | 7.00 | 57.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.01-0.03 |
| EC025B07-3C03 | 2.50 | 3.00 | 7.00 | 38.00 | 3 | 45.0 | 5.0 | C | - | • | • | 0.01-0.03 |
| EC030B10-3C03 | 3.00 | 3.00 | 10.00 | 38.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.01-0.04 |
| EC030B10-3C06 | 3.00 | 6.00 | 10.00 | 57.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.01-0.04 |
| EC040B12-3C04 | 4.00 | 4.00 | 12.00 | 50.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.02-0.05 |
| EC040B12-3C06 | 4.00 | 6.00 | 12.00 | 57.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.02-0.05 |
| EC050B14-3C05 | 5.00 | 5.00 | 14.00 | 50.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.02-0.06 |
| EC050B14-3C06 | 5.00 | 6.00 | 14.00 | 57.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.02-0.06 |
| EC060B13-3C06R0.5 | 6.00 | 6.00 | 13.00 | 57.00 | 3 | 45.0 | 5.0 | C | 0.50 | | • | 0.03-0.07 |
| EC060B13-3C06R1.0 | 6.00 | 6.00 | 13.00 | 57.00 | 3 | 45.0 | 5.0 | C | 1.00 | | • | 0.03-0.07 |
| EC060B16-3C06 | 6.00 | 6.00 | 16.00 | 57.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.03-0.07 |
| EC060B16-3W06 | 6.00 | 6.00 | 16.00 | 57.00 | 3 | 45.0 | 5.0 | W | - | | • | 0.03-0.07 |
| EC070B16-3C07 | 7.00 | 7.00 | 16.00 | 60.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.03-0.08 |
| EC080B20-3C08 | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.03-0.09 |
| EC080B20-3C08R0.5 | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 45.0 | 5.0 | C | 0.50 | | • | 0.03-0.09 |
| EC080B20-3C08R1 | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 45.0 | 5.0 | C | 1.00 | | • | 0.03-0.09 |
| EC080B20-3C08R1.5 | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 45.0 | 5.0 | C | 1.50 | | • | 0.03-0.09 |
| EC080B20-3C08R2 | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 45.0 | 5.0 | C | 2.00 | | • | 0.03-0.09 |
| EC080B20-3W08 | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 45.0 | 5.0 | W | - | | • | 0.03-0.09 |
| EC090B20-3C09 | 9.00 | 9.00 | 20.00 | 67.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.03-0.09 |
| EC100B22-3C10 | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.03-0.10 |
| EC100B22-3C10R0.5 | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 45.0 | 5.0 | C | 0.50 | | • | 0.03-0.10 |
| EC100B22-3C10R1 | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 45.0 | 5.0 | C | 1.00 | | • | 0.03-0.10 |
| EC100B22-3C10R1.5 | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 45.0 | 5.0 | C | 1.50 | | • | 0.03-0.10 |
| EC100B22-3C10R2 | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 45.0 | 5.0 | C | 2.00 | | • | 0.03-0.10 |
| EC100B22-3C10R3 | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 45.0 | 5.0 | C | 3.00 | | • | 0.03-0.10 |
| EC100B22-3W10 | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 45.0 | 5.0 | W | - | | • | 0.03-0.10 |
| EC120B25-3C12 | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.04-0.11 |
| EC120B25-3C12R0.5 | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | C | 0.50 | | • | 0.04-0.11 |
| EC120B25-3C12R1 | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | C | 1.00 | | • | 0.04-0.11 |
| EC120B25-3C12R1.5 | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | C | 1.50 | | • | 0.04-0.11 |
| EC120B25-3C12R2 | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | C | 2.00 | | • | 0.04-0.11 |
| EC120B25-3C12R3 | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | C | 3.00 | | • | 0.04-0.11 |
| EC120B25-3W12 | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | W | - | | • | 0.04-0.11 |
| EC140B25-3C14 | 14.00 | 14.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.04-0.12 |
| EC140B25-3W14 | 14.00 | 14.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | W | - | | • | 0.04-0.12 |
| EC160B32-3C16 | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.05-0.13 |
| EC160B32-3C16R0.5 | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 45.0 | 5.0 | C | 0.50 | | • | 0.05-0.13 |
| EC160B32-3C16R1 | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 45.0 | 5.0 | C | 1.00 | | • | 0.05-0.13 |
| EC160B32-3C16R2 | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 45.0 | 5.0 | C | 2.00 | | • | 0.05-0.13 |
| EC160B32-3C16R3 | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 45.0 | 5.0 | C | 3.00 | | • | 0.05-0.13 |
| EC160B32-3W16 | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 45.0 | 5.0 | W | - | | • | 0.05-0.13 |
| EC180B32-3C18 | 18.00 | 18.00 | 32.00 | 92.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.05-0.13 |
| EC180B32-3W18 | 18.00 | 18.00 | 32.00 | 92.00 | 3 | 45.0 | 5.0 | W | - | | • | 0.05-0.13 |
| EC200B38-3C20 | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 45.0 | 5.0 | C | - | | • | 0.05-0.13 |
| EC200B38-3C20R0.5 | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 45.0 | 5.0 | C | 0.50 | | • | 0.05-0.13 |
| EC200B38-3C20R1 | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 45.0 | 5.0 | C | 1.00 | | • | 0.05-0.13 |
| EC200B38-3C20R2 | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 45.0 | 5.0 | C | 2.00 | | • | 0.05-0.13 |
| EC200B38-3C20R3 | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 45.0 | 5.0 | C | 3.00 | | • | 0.05-0.13 |
| EC200B38-3C20R4 | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 45.0 | 5.0 | C | 4.00 | | • | 0.05-0.13 |
| EC200B38-3W20 | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 45.0 | 5.0 | W | - | | • | 0.05-0.13 |

• Excellent for deep slotting and shouldering. • For user guide, see pages 211-218

(1) Number of flutes

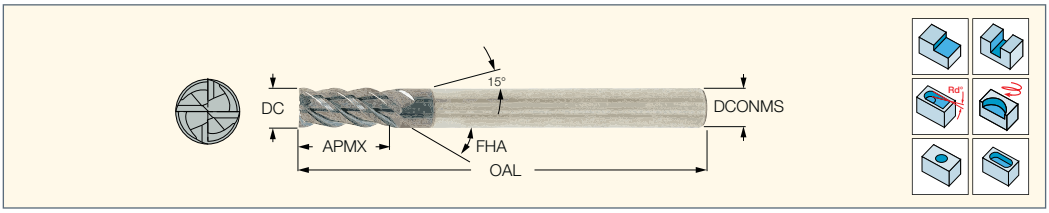
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

SOLIDMILL PREMIUM LINE

**EC-B-4/4R**

4 Flute, 45° Helix Medium Length Solid Carbide Endmills




| Designation | Dimensions | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF[1] | FHA | RMPX°[2] | Shank[3] | RE | IC900 | IC902 | $f_z$ (mm/t) |
| EC020B07-4C03 | 2.00 | 3.00 | 7.00 | 38.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.01-0.03 |
| EC020B07-4C03R0.25-38 | 2.00 | 3.00 | 7.00 | 38.00 | 4 | 45.0 | 5.0 | C | 0.25 | | • | 0.01-0.03 |
| EC020B07-4C06 | 2.00 | 6.00 | 7.00 | 57.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.01-0.03 |
| EC030B10-4C03 | 3.00 | 3.00 | 10.00 | 38.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.01-0.04 |
| EC030B10-4C06 | 3.00 | 6.00 | 10.00 | 57.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.01-0.04 |
| EC040B12-4C04 | 4.00 | 4.00 | 12.00 | 50.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.02-0.05 |
| EC040B12-4C06 | 4.00 | 6.00 | 12.00 | 57.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.02-0.05 |
| EC050B14-4C05 | 5.00 | 5.00 | 14.00 | 50.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.02-0.06 |
| EC050B14-4C06 | 5.00 | 6.00 | 14.00 | 57.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.02-0.06 |
| EC060B16-4C06 | 6.00 | 6.00 | 16.00 | 57.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.03-0.07 |
| EC060B16-4C06R0.5 | 6.00 | 6.00 | 16.00 | 57.00 | 4 | 45.0 | 5.0 | C | 0.50 | • | | 0.03-0.07 |
| EC060B16-4C06R1 | 6.00 | 6.00 | 16.00 | 57.00 | 4 | 45.0 | 5.0 | C | 1.00 | • | | 0.03-0.07 |
| EC060B16-4W06 | 6.00 | 6.00 | 16.00 | 57.00 | 4 | 45.0 | 5.0 | W | - | • | | 0.03-0.07 |
| EC070B16-4C07 | 7.00 | 7.00 | 16.00 | 60.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.03-0.08 |
| EC080B20-4C08 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.03-0.09 |
| EC080B20-4C08R0.5 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 45.0 | 5.0 | C | 0.50 | • | | 0.03-0.09 |
| EC080B20-4C08R1 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 45.0 | 5.0 | C | 1.00 | • | | 0.03-0.09 |
| EC080B20-4C08R1.5 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 45.0 | 5.0 | C | 1.50 | • | | 0.03-0.09 |
| EC080B20-4C08R2 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 45.0 | 5.0 | C | 2.00 | • | | 0.03-0.09 |
| EC080B20-4W08 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 45.0 | 5.0 | W | - | • | | 0.03-0.09 |
| EC090B20-4C09 | 9.00 | 9.00 | 20.00 | 67.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.03-0.09 |
| EC100B22-4C10 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.03-0.10 |
| EC100B22-4C10R0.5 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 45.0 | 5.0 | C | 0.50 | • | | 0.03-0.10 |
| EC100B22-4C10R1 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 45.0 | 5.0 | C | 1.00 | • | | 0.03-0.10 |
| EC100B22-4C10R1.5 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 45.0 | 5.0 | C | 1.50 | • | | 0.03-0.10 |
| EC100B22-4C10R2 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 45.0 | 5.0 | C | 2.00 | • | | 0.03-0.10 |
| EC100B22-4C10R3 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 45.0 | 5.0 | C | 3.00 | • | | 0.03-0.10 |
| EC100B22-4W10 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 45.0 | 5.0 | W | - | • | | 0.03-0.10 |
| EC120B25-4C12 | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.04-0.11 |
| EC120B25-4C12R0.5 | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 45.0 | 5.0 | C | 0.50 | • | | 0.04-0.11 |
| EC120B25-4C12R1 | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 45.0 | 5.0 | C | 1.00 | • | | 0.04-0.11 |
| EC120B25-4C12R1.5 | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 45.0 | 5.0 | C | 1.50 | • | | 0.04-0.11 |
| EC120B25-4C12R2 | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 45.0 | 5.0 | C | 2.00 | • | | 0.04-0.11 |
| EC120B25-4C12R3 | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 45.0 | 5.0 | C | 3.00 | • | | 0.04-0.11 |
| EC120B25-4W12 | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 45.0 | 5.0 | W | - | • | | 0.04-0.11 |
| EC140B25-4C14 | 14.00 | 14.00 | 25.00 | 83.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.04-0.12 |
| EC160B32-4C16 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.05-0.13 |
| EC160B32-4C16R0.5 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 45.0 | 5.0 | C | 0.50 | • | | 0.05-0.13 |
| EC160B32-4C16R1 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 45.0 | 5.0 | C | 1.00 | • | | 0.05-0.13 |
| EC160B32-4C16R1.5 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 45.0 | 5.0 | C | 1.50 | • | | 0.05-0.13 |
| EC160B32-4C16R2 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 45.0 | 5.0 | C | 2.00 | • | | 0.05-0.13 |
| EC160B32-4C16R2.5 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 45.0 | 5.0 | C | 2.50 | • | | 0.05-0.13 |
| EC160B32-4C16R3 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 45.0 | 5.0 | C | 3.00 | • | | 0.05-0.13 |
| EC160B32-4W16 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 45.0 | 5.0 | W | - | • | | 0.05-0.13 |
| EC180B32-4C18 | 18.00 | 18.00 | 32.00 | 92.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.05-0.13 |
| EC200B38-4C20 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 45.0 | 5.0 | C | - | • | | 0.05-0.13 |
| EC200B38-4C20R0.5 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 45.0 | 5.0 | C | 0.50 | • | | 0.05-0.13 |
| EC200B38-4C20R1 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 45.0 | 5.0 | C | 1.00 | • | | 0.05-0.13 |
| EC200B38-4C20R1.5 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 45.0 | 5.0 | C | 1.50 | • | | 0.05-0.13 |
| EC200B38-4C20R2 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 45.0 | 5.0 | C | 2.00 | • | | 0.05-0.13 |
| EC200B38-4C20R2.5 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 45.0 | 5.0 | C | 2.50 | • | | 0.05-0.13 |
| EC200B38-4C20R3 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 45.0 | 5.0 | C | 3.00 | • | | 0.05-0.13 |
| EC200B38-4C20R4 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 45.0 | 5.0 | C | 4.00 | • | | 0.05-0.13 |
| EC200B38-4C20R5 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 45.0 | 5.0 | C | 5.00 | • | | 0.05-0.13 |
| EC200B38-4W20 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 45.0 | 5.0 | W | - | • | | 0.05-0.13 |

• For user guide, see pages 211-218

(1) Number of flutes

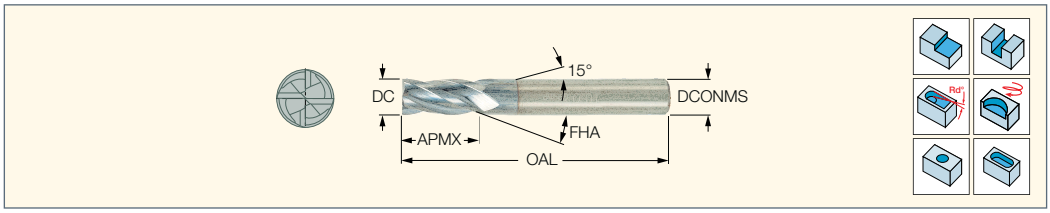
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

SOLIDMILL PREMIUM LINE

**EC-A-4/4R**

4 Flute, 30° Helix Medium Length Solid Carbide Endmills with Different Radii Dimensions




| Designation | Dimensions | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | RE | IC08 | IC900 | $f_z$ (mm/t) |
| EC020A07-4C03 | 2.00 | 3.00 | 7.00 | 38.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.01-0.03 |
| EC020A10-4C05R0.4 | 2.00 | 5.00 | 10.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.40 | | ● | 0.01-0.04 |
| EC025A07-4C03 | 2.50 | 3.00 | 7.00 | 38.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.01-0.03 |
| EC030A10-4C03 | 3.00 | 3.00 | 10.00 | 38.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.01-0.04 |
| EC030A10-4C03R0.6 | 3.00 | 3.00 | 10.00 | 38.00 | 4 | 30.0 | 5.0 | C | 0.60 | | ● | 0.01-0.04 |
| EC030A10-4C03R0.8 | 3.00 | 3.00 | 10.00 | 38.00 | 4 | 30.0 | 5.0 | C | 0.80 | | ● | 0.01-0.04 |
| EC030A10-4C04R0.4 | 3.00 | 4.00 | 10.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.40 | | ● | 0.01-0.04 |
| EC030A10-4C06 | 3.00 | 6.00 | 10.00 | 57.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.01-0.04 |
| EC035A12-4C04 | 3.50 | 4.00 | 12.00 | 50.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.01-0.04 |
| EC035A12-4C04R0.4 | 3.50 | 4.00 | 12.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.40 | | ● | 0.01-0.04 |
| EC040A07-4C04R0.4 | 4.00 | 4.00 | 7.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.40 | | ● | 0.02-0.05 |
| EC040A10-4C04R1.0 | 4.00 | 4.00 | 10.00 | 50.00 | 4 | 30.0 | 5.0 | C | 1.00 | | ● | 0.02-0.05 |
| EC040A12-4C04 | 4.00 | 4.00 | 12.00 | 50.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.02-0.05 |
| EC040A12-4C04R0.4 | 4.00 | 4.00 | 12.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.40 | | ● | 0.02-0.05 |
| EC040A12-4C04R0.8 | 4.00 | 4.00 | 12.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.80 | | ● | 0.02-0.05 |
| EC040A12-4C06 | 4.00 | 6.00 | 12.00 | 57.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.02-0.05 |
| EC045A14-4C06 | 4.50 | 6.00 | 14.00 | 57.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.02-0.05 |
| EC050A14-4C05 | 5.00 | 5.00 | 14.00 | 50.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.02-0.06 |
| EC050A14-4C05R0.5 | 5.00 | 5.00 | 14.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.50 | | ● | 0.02-0.06 |
| EC050A20-4C05R0.8 | 5.00 | 5.00 | 20.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.80 | | ● | 0.02-0.06 |
| EC050A14-4C06 | 5.00 | 6.00 | 14.00 | 57.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.02-0.06 |
| EC060A16-4C06 | 6.00 | 6.00 | 16.00 | 57.00 | 4 | 30.0 | 5.0 | C | - | ● | ● | 0.03-0.07 |
| EC060A16-4C06R0.4 | 6.00 | 6.00 | 16.00 | 57.00 | 4 | 30.0 | 5.0 | C | 0.40 | | ● | 0.03-0.07 |
| EC060A16-4C06R0.8 | 6.00 | 6.00 | 16.00 | 57.00 | 4 | 30.0 | 5.0 | C | 0.80 | | ● | 0.03-0.07 |
| EC060A16-4W06 | 6.00 | 6.00 | 16.00 | 57.00 | 4 | 30.0 | 5.0 | W | - | | ● | 0.03-0.07 |
| EC070A20-4C07 | 7.00 | 7.00 | 20.00 | 60.00 | 4 | 30.0 | 5.0 | C | - | ● | ● | 0.03-0.08 |
| EC075A20-4C08 | 7.50 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.03-0.08 |
| EC080A20-4C08 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | 5.0 | C | - | ● | ● | 0.03-0.09 |
| EC080A20-4C08R0.8 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | 5.0 | C | 0.80 | | ● | 0.03-0.09 |
| EC080A20-4W08 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | 5.0 | W | - | | ● | 0.03-0.09 |
| EC100A22-4C10 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 30.0 | 5.0 | C | - | ● | ● | 0.03-0.10 |
| EC100A22-4W10 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 30.0 | 5.0 | W | - | | ● | 0.03-0.10 |
| EC120A25-4C12 | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 30.0 | 5.0 | C | - | ● | ● | 0.04-0.11 |
| EC120A25-4W12 | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 30.0 | 5.0 | W | - | | ● | 0.04-0.11 |
| EC140A25-4C14 | 14.00 | 14.00 | 25.00 | 83.00 | 4 | 30.0 | 5.0 | C | - | ● | ● | 0.04-0.12 |
| EC140A32-4C14 | 14.00 | 14.00 | 32.00 | 83.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.04-0.12 |
| EC160A32-4C16 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 30.0 | 5.0 | C | - | ● | ● | 0.05-0.13 |
| EC160A32-4W16 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 30.0 | 5.0 | W | - | | ● | 0.05-0.13 |
| EC160A40-4C16-92 | 16.00 | 16.00 | 40.00 | 92.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.05-0.13 |
| EC180A32-4C18 | 18.00 | 18.00 | 32.00 | 92.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.05-0.13 |
| EC200A38-4C20 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 30.0 | 5.0 | C | - | | ● | 0.05-0.13 |
| EC200A38-4W20 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 30.0 | 5.0 | W | - | | ● | 0.05-0.13 |

• For user guide, see pages 211-218

(1) Number of flutes

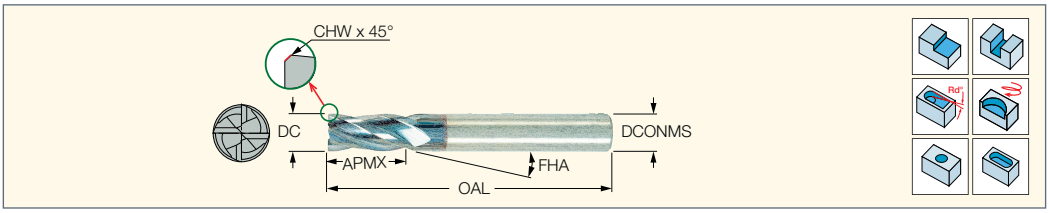
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

SOLIDMILL PREMIUM LINE

**ECC-A-4**

4 Flute, 30° Helix Medium Length Solid Carbide Endmills with Chamfered Corners




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | CHW | KCH | IC900 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ECC020B07-4C03** | 2.00 | 3.00 | 7.00 | 38.00 | 4 | 45.0 | 5.0 | C | 0.10 | 45.0 | ● | 0.01-0.03 |
| **ECC025A07-4C03** | 2.50 | 3.00 | 7.00 | 38.00 | 4 | 30.0 | 5.0 | C | 0.10 | 45.0 | ● | 0.01-0.03 |
| **ECC030A10-4C03** | 3.00 | 3.00 | 10.00 | 38.00 | 4 | 30.0 | 5.0 | C | 0.10 | 45.0 | ● | 0.01-0.04 |
| **ECC035A12-4C04** | 3.50 | 4.00 | 12.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.10 | 45.0 | ● | 0.01-0.04 |
| **ECC040A12-4C04** | 4.00 | 4.00 | 12.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.15 | 45.0 | ● | 0.02-0.05 |
| **ECC050A14-4C05** | 5.00 | 5.00 | 14.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.15 | 45.0 | ● | 0.02-0.06 |
| **ECC060A16-4C06** | 6.00 | 6.00 | 16.00 | 57.00 | 4 | 30.0 | 5.0 | C | 0.15 | 45.0 | ● | 0.03-0.07 |
| **ECC080A20-4C08** | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | 5.0 | C | 0.15 | 45.0 | ● | 0.03-0.09 |
| **ECC080A20-4W08** | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | 5.0 | W | 0.15 | 45.0 | ● | 0.03-0.09 |
| **ECC100A22-4C10** | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 30.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.03-0.10 |
| **ECC100A22-4W10** | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 30.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.03-0.10 |
| **ECC120A25-4C12** | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 30.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.04-0.11 |
| **ECC120A25-4W12** | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 30.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.04-0.11 |
| **ECC160A32-4C16** | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 30.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.05-0.13 |
| **ECC160A32-4W16** | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 30.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.05-0.13 |
| **ECC200A38 4W20** | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 30.0 | 5.0 | W | 0.25 | 45.0 | ● | 0.05-0.13 |
| **ECC200A38-4C20** | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 30.0 | 5.0 | C | 0.25 | 45.0 | ● | 0.05-0.13 |

• For user guide, see pages 211-218

(1) Number of flutes

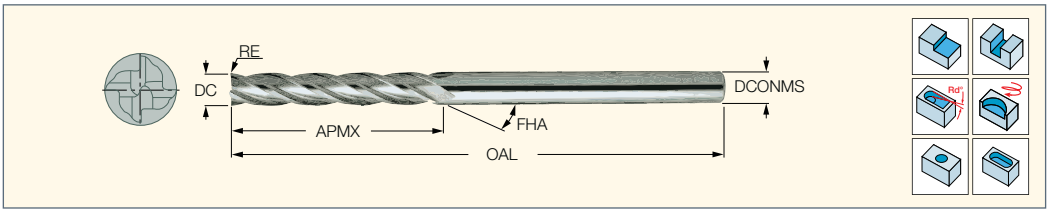
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

SOLIDMILL TEC LINE

**EC-A4 (economical-medium & extra long)**

Economical Type 4 Flute, 30° Helix, Center Cutting, Medium & Extra Long Solid Carbide Endmills




| Designation | Dimensions | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | RE | IC08 | IC900 | $f_z$ (mm/t) |
| EC-A4 02-08C02E32 | 2.00 | 2.00 | 8.00 | 32.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.01-0.03 |
| EC-A4 025-08C025E32 | 2.50 | 2.50 | 8.00 | 32.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.01-0.03 |
| EC-A4 03-12C03E38 | 3.00 | 3.00 | 12.00 | 38.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.01-0.04 |
| EC-A4 03-30C03E75 | 3.00 | 3.00 | 30.00 | 75.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.01-0.04 |
| EC-A4 04-12C04E50 | 4.00 | 4.00 | 12.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.02-0.05 |
| EC-A4 04-30C04E75 | 4.00 | 4.00 | 30.00 | 75.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.02-0.05 |
| EC-A4 05-14C05E50 | 5.00 | 5.00 | 14.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.02-0.06 |
| EC-A4 05-40C05E100 | 5.00 | 5.00 | 40.00 | 100.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.02-0.06 |
| EC-A4 055-16C055E50 | 5.50 | 5.50 | 16.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.02-0.06 |
| EC-A4 06-16C06E50 | 6.00 | 6.00 | 16.00 | 50.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.03-0.07 |
| EC-A4 06-18C06E61 | 6.00 | 6.00 | 18.00 | 61.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.03-0.07 |
| EC-A4 06-50C06E150 | 6.00 | 6.00 | 50.00 | 150.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.03-0.07 |
| EC-A4 07-20C07E60 | 7.00 | 7.00 | 20.00 | 60.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.03-0.08 |
| EC-A4 08-20C08E63 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.03-0.09 |
| EC-A4 08-20C08R.5E63 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | 5.0 | C | 0.50 | | ● | 0.03-0.09 |
| EC-A4 08-20C08R1E63 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | 5.0 | C | 1.00 | | ● | 0.03-0.09 |
| EC-A4 08-20C08R1.5E63 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | 5.0 | C | 1.50 | | ● | 0.03-0.09 |
| EC-A4 08-20C08R2-63 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | 5.0 | C | 2.00 | | ● | 0.03-0.09 |
| EC-A4 08-24C08E69 | 8.00 | 8.00 | 24.00 | 69.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.03-0.09 |
| EC-A4 08-50C08E150 | 8.00 | 8.00 | 50.00 | 150.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.03-0.09 |
| EC-A4 09-20C09E60 | 9.00 | 9.00 | 20.00 | 60.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.03-0.09 |
| EC-A4 10-22C10E72 | 10.00 | 10.00 | 22.00 | 70.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.03-0.10 |
| EC-A4 10-22C10R.5E72 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 30.0 | 5.0 | C | 0.50 | | ● | 0.03-0.10 |
| EC-A4 10-22C10R.8E72 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 30.0 | 5.0 | C | 0.80 | | ● | 0.03-0.10 |
| EC-A4 10-22C10R1E72 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 30.0 | 5.0 | C | 1.00 | | ● | 0.03-0.10 |
| EC-A4 10-22C10R1.5E72 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 30.0 | 5.0 | C | 1.50 | | ● | 0.03-0.10 |
| EC-A4 10-22C10R2E72 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 30.0 | 5.0 | C | 2.00 | | ● | 0.03-0.10 |
| EC-A4 10-30C10E81 | 10.00 | 10.00 | 30.00 | 81.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.03-0.10 |
| EC-A4 10-60C10E150 | 10.00 | 10.00 | 60.00 | 150.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.03-0.10 |
| EC-A4 12-22C12E73 | 12.00 | 12.00 | 22.00 | 73.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.04-0.11 |
| EC-A4 12-22C12R.5E73 | 12.00 | 12.00 | 22.00 | 73.00 | 4 | 30.0 | 5.0 | C | 0.50 | | ● | 0.04-0.11 |
| EC-A4 12-22C12R.8E73 | 12.00 | 12.00 | 22.00 | 73.00 | 4 | 30.0 | 5.0 | C | 0.80 | | ● | 0.04-0.11 |
| EC-A4 12-22C12R1.5E73 | 12.00 | 12.00 | 22.00 | 73.00 | 4 | 30.0 | 5.0 | C | 1.50 | | ● | 0.04-0.11 |
| EC-A4 12-22C12R1E73 | 12.00 | 12.00 | 22.00 | 73.00 | 4 | 30.0 | 5.0 | C | 1.00 | | ● | 0.04-0.11 |
| EC-A4 12-22C12R2E73 | 12.00 | 12.00 | 22.00 | 73.00 | 4 | 30.0 | 5.0 | C | 2.00 | | ● | 0.04-0.11 |
| EC-A4 12-36C12E94 | 12.00 | 12.00 | 36.00 | 94.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.04-0.11 |
| EC-A4 12-75C12E150 | 12.00 | 12.00 | 75.00 | 150.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.04-0.11 |
| EC-A4 14-25C14E83 | 14.00 | 14.00 | 25.00 | 83.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.04-0.12 |
| EC-A4 14-65C14E150 | 14.00 | 14.00 | 65.00 | 150.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.04-0.12 |
| EC-A4 16-25C16E82 | 16.00 | 16.00 | 25.00 | 82.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.05-0.13 |
| EC-A4 16-42C16E116 | 16.00 | 16.00 | 42.00 | 116.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | | 0.05-0.13 |
| EC-A4 16-48C16E116 | 16.00 | 16.00 | 48.00 | 116.00 | 4 | 30.0 | 5.0 | C | 0.00 | | ● | 0.05-0.13 |
| EC-A4 16-65C16E150 | 16.00 | 16.00 | 65.00 | 150.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.05-0.13 |
| EC-A4 18-65C18E150 | 18.00 | 18.00 | 65.00 | 150.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.05-0.13 |
| EC-A4 20-32C20E104 | 20.00 | 20.00 | 32.00 | 104.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.05-0.13 |
| EC-A4 20-65C20E150 | 20.00 | 20.00 | 65.00 | 150.00 | 4 | 30.0 | 5.0 | C | 0.00 | ● | ● | 0.05-0.13 |

• For user guide, see pages 211-218

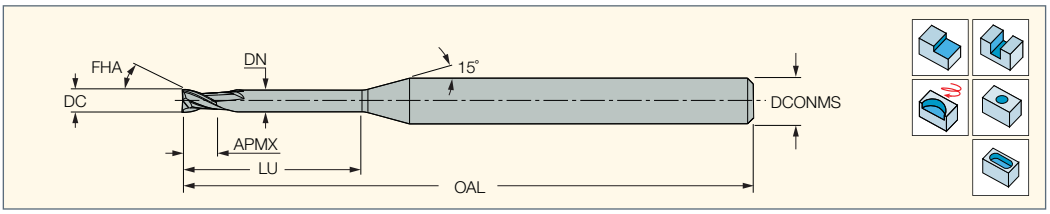
(1) Number of flutes

(2) Maximum ramping angle

(3) C-Cylindrical

SOLIDMILL PREMIUM LINE

**EC-A2-T**
2 Flute Endmill for
High-Speed Machining Hardened
Steel of Up to 65 HRc




| Designation | Dimensions | | | | | | | | | Tough ↔ Hard | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | OAL | DN | NOF(1) | FHA | Shank | IC602 | $f_z$ (mm/t) |
| **EC-A2 003-04/1C4H45T** | 0.30 | 4.00 | 0.40 | 1.0 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 003-04/15C4H45T** | 0.30 | 4.00 | 0.40 | 1.5 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 003-04/2C4H45T** | 0.30 | 4.00 | 0.40 | 2.0 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 003-04/25C4H45T** | 0.30 | 4.00 | 0.40 | 2.5 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 003-04/3C4H45T** | 0.30 | 4.00 | 0.40 | 3.0 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 003-04/4C4H45T** | 0.30 | 4.00 | 0.40 | 4.0 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0050-0.0080 |
| **EC-A2 003-04/5C4H45T** | 0.30 | 4.00 | 0.40 | 5.0 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0050-0.0080 |
| **EC-A2 004-06/1C4H45T** | 0.40 | 4.00 | 0.60 | 1.0 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 004-06/15C4H45T** | 0.40 | 4.00 | 0.60 | 1.5 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 004-06/2C4H45T** | 0.40 | 4.00 | 0.60 | 2.0 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 004-06/25C4H45T** | 0.40 | 4.00 | 0.60 | 2.5 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 004-06/3C4H45T** | 0.40 | 4.00 | 0.60 | 3.0 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 004-06/4C4H45T** | 0.40 | 4.00 | 0.60 | 4.0 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 004-06/5C4H45T** | 0.40 | 4.00 | 0.60 | 5.0 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0050-0.0080 |
| **EC-A2 004-06/6C4H45T** | 0.40 | 4.00 | 0.60 | 6.0 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0050-0.0080 |
| **EC-A2 005-07/1C4H45T** | 0.50 | 4.00 | 0.70 | 1.0 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 005-07/15C4H45T** | 0.50 | 4.00 | 0.70 | 1.5 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 005-07/2C4H45T** | 0.50 | 4.00 | 0.70 | 2.0 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 005-07/25C4H45T** | 0.50 | 4.00 | 0.70 | 2.5 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0090 |
| **EC-A2 005-07/3C4H45T** | 0.50 | 4.00 | 0.70 | 3.0 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0090 |
| **EC-A2 005-07/4C4H45T** | 0.50 | 4.00 | 0.70 | 4.0 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0080 |
| **EC-A2 005-07/5C4H45T** | 0.50 | 4.00 | 0.70 | 5.0 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0080 |
| **EC-A2 005-07/6C4H45T** | 0.50 | 4.00 | 0.70 | 6.0 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0050-0.0070 |
| **EC-A2 005-07/8C4H45T** | 0.50 | 4.00 | 0.70 | 8.0 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0050-0.0070 |
| **EC-A2 006-09/10C4H45T** | 0.60 | 4.00 | 0.90 | 10.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 006-09/2C4H45T** | 0.60 | 4.00 | 0.90 | 2.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| **EC-A2 006-09/3C4H45T** | 0.60 | 4.00 | 0.90 | 3.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| **EC-A2 006-09/4C4H45T** | 0.60 | 4.00 | 0.90 | 4.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| **EC-A2 006-09/5C4H45T** | 0.60 | 4.00 | 0.90 | 5.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| **EC-A2 006-09/6C4H45T** | 0.60 | 4.00 | 0.90 | 6.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| **EC-A2 006-09/8C4H45T** | 0.60 | 4.00 | 0.90 | 8.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 007-12/10C4H45T** | 0.70 | 4.00 | 1.20 | 10.0 | 45.00 | 0.65 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 007-12/12C4H45T** | 0.70 | 4.00 | 1.20 | 12.0 | 45.00 | 0.65 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| **EC-A2 007-12/2C4H45T** | 0.70 | 4.00 | 1.20 | 2.0 | 45.00 | 0.65 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| **EC-A2 007-12/4C4H45T** | 0.70 | 4.00 | 1.20 | 4.0 | 45.00 | 0.65 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| **EC-A2 007-12/6C4H45T** | 0.70 | 4.00 | 1.20 | 6.0 | 45.00 | 0.65 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| **EC-A2 007-12/8C4H45T** | 0.70 | 4.00 | 1.20 | 8.0 | 45.00 | 0.65 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| **EC-A2 008-12/10C4H45T** | 0.80 | 4.00 | 1.20 | 10.0 | 45.00 | 0.73 | 2 | 30.0 | C | ● | 0.0070-0.0120 |
| **EC-A2 008-12/12C4H45T** | 0.80 | 4.00 | 1.20 | 12.0 | 45.00 | 0.73 | 2 | 30.0 | C | ● | 0.0070-0.0120 |
| **EC-A2 008-12/2C4H45T** | 0.80 | 4.00 | 1.20 | 2.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| **EC-A2 008-12/3C4H45T** | 0.80 | 4.00 | 1.20 | 3.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| **EC-A2 008-12/4C4H45T** | 0.80 | 4.00 | 1.20 | 4.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| **EC-A2 008-12/5C4H45T** | 0.80 | 4.00 | 1.20 | 5.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| **EC-A2 008-12/6C4H45T** | 0.80 | 4.00 | 1.20 | 6.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| **EC-A2 008-12/8C4H45T** | 0.80 | 4.00 | 1.20 | 8.0 | 45.00 | 0.73 | 2 | 30.0 | C | ● | 0.0070-0.0130 |
| **EC-A2 010-15/10C4H50T** | 1.00 | 4.00 | 1.50 | 10.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0090-0.0160 |
| **EC-A2 010-15/12C4H50T** | 1.00 | 4.00 | 1.50 | 12.0 | 50.00 | 0.93 | 2 | 30.0 | C | ● | 0.0080-0.0140 |
| **EC-A2 010-15/14C4H50T** | 1.00 | 4.00 | 1.50 | 14.0 | 50.00 | 0.93 | 2 | 30.0 | C | ● | 0.0080-0.0140 |
| **EC-A2 010-15/16C4H50T** | 1.00 | 4.00 | 1.50 | 16.0 | 50.00 | 0.91 | 2 | 30.0 | C | ● | 0.0080-0.0140 |
| **EC-A2 010-15/18C4H55T** | 1.00 | 4.00 | 1.50 | 18.0 | 55.00 | 0.91 | 2 | 30.0 | C | ● | 0.0080-0.0120 |
| **EC-A2 010-15/20C4H55T** | 1.00 | 4.00 | 1.50 | 20.0 | 55.00 | 0.85 | 2 | 30.0 | C | ● | 0.0080-0.0120 |
| **EC-A2 010-15/3C4H50T** | 1.00 | 4.00 | 1.50 | 3.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0200 |
| **EC-A2 010-15/4C4H50T** | 1.00 | 4.00 | 1.50 | 4.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0200 |
| **EC-A2 010-15/5C4H50T** | 1.00 | 4.00 | 1.50 | 5.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| **EC-A2 010-15/6C4H50T** | 1.00 | 4.00 | 1.50 | 6.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| **EC-A2 010-15/7C4H50T** | 1.00 | 4.00 | 1.50 | 7.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| **EC-A2 010-15/8C4H50T** | 1.00 | 4.00 | 1.50 | 8.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| **EC-A2 012-18/10C4H50T** | 1.20 | 4.00 | 1.80 | 10.0 | 50.00 | 1.15 | 2 | 30.0 | C | ● | 0.0100-0.0190 |

**New**

- For user guide, see pages 211-218

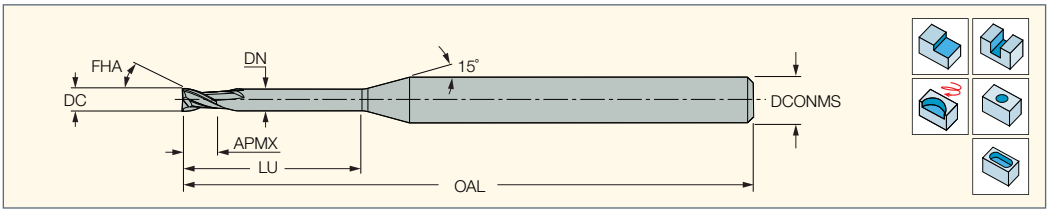
(1) Number of flutes

Continued

SOLIDMILL PREMIUM LINE

**EC-A2-T**

2 Flute Endmill for High-Speed Machining Hardened Steel of Up to 65 HRc




| Designation | Dimensions | | | | | | | | | Tough ↔ Hard IC602 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | OAL | DN | NOF(1) | FHA | Shank | | |
| EC-A2 012-18/12C4H50T | 1.20 | 4.00 | 1.80 | 12.0 | 50.00 | 1.15 | 2 | 30.0 | C | ● | 0.0100-0.0180 |
| EC-A2 012-18/16C4H50T | 1.20 | 4.00 | 1.80 | 16.0 | 50.00 | 1.13 | 2 | 30.0 | C | ● | 0.0100-0.0180 |
| EC-A2 012-18/4C4H50T | 1.20 | 4.00 | 1.80 | 4.0 | 50.00 | 1.17 | 2 | 30.0 | C | ● | 0.0100-0.0200 |
| EC-A2 012-18/6C4H50T | 1.20 | 4.00 | 1.80 | 6.0 | 50.00 | 1.17 | 2 | 30.0 | C | ● | 0.0100-0.0200 |
| EC-A2 012-18/8C4H50T | 1.20 | 4.00 | 1.80 | 8.0 | 50.00 | 1.15 | 2 | 30.0 | C | ● | 0.0100-0.0200 |
| EC-A2 015-23/10C4H50T | 1.50 | 4.00 | 2.30 | 10.0 | 50.00 | 1.45 | 2 | 30.0 | C | ● | 0.0150-0.0250 |
| EC-A2 015-23/12C4H50T | 1.50 | 4.00 | 2.30 | 12.0 | 50.00 | 1.43 | 2 | 30.0 | C | ● | 0.0130-0.0250 |
| EC-A2 015-23/14C4H50T | 1.50 | 4.00 | 2.30 | 14.0 | 50.00 | 1.43 | 2 | 30.0 | C | ● | 0.0130-0.0250 |
| EC-A2 015-23/16C4H50T | 1.50 | 4.00 | 2.30 | 16.0 | 50.00 | 1.41 | 2 | 30.0 | C | ● | 0.0110-0.0150 |
| EC-A2 015-23/18C4H55T | 1.50 | 4.00 | 2.30 | 18.0 | 55.00 | 1.41 | 2 | 30.0 | C | ● | 0.0110-0.0150 |
| EC-A2 015-23/20C4H55T | 1.50 | 4.00 | 2.30 | 20.0 | 55.00 | 1.41 | 2 | 30.0 | C | ● | 0.0110-0.0150 |
| EC-A2 015-23/4C4H50T | 1.50 | 4.00 | 2.30 | 4.0 | 50.00 | 1.47 | 2 | 30.0 | C | ● | 0.0150-0.0250 |
| EC-A2 015-23/6C4H50T | 1.50 | 4.00 | 2.30 | 6.0 | 50.00 | 1.47 | 2 | 30.0 | C | ● | 0.0150-0.0250 |
| EC-A2 015-23/8C4H50T | 1.50 | 4.00 | 2.30 | 8.0 | 50.00 | 1.45 | 2 | 30.0 | C | ● | 0.0150-0.0250 |
| EC-A2 020-30/10C4H50T | 2.00 | 4.00 | 3.00 | 10.0 | 50.00 | 1.95 | 2 | 30.0 | C | ● | 0.0180-0.0400 |
| EC-A2 020-30/12C4H50T | 2.00 | 4.00 | 3.00 | 12.0 | 50.00 | 1.93 | 2 | 30.0 | C | ● | 0.0160-0.0250 |
| EC-A2 020-30/14C4H50T | 2.00 | 4.00 | 3.00 | 14.0 | 50.00 | 1.93 | 2 | 30.0 | C | ● | 0.0160-0.0250 |
| EC-A2 020-30/16C4H50T | 2.00 | 4.00 | 3.00 | 16.0 | 50.00 | 1.91 | 2 | 30.0 | C | ● | 0.0150-0.0220 |
| EC-A2 020-30/18C4H55T | 2.00 | 4.00 | 3.00 | 18.0 | 55.00 | 1.91 | 2 | 30.0 | C | ● | 0.0150-0.0220 |
| EC-A2 020-30/20C4H55T | 2.00 | 4.00 | 3.00 | 20.0 | 55.00 | 1.91 | 2 | 30.0 | C | ● | 0.0130-0.0190 |
| EC-A2 020-30/25C4H60T | 2.00 | 4.00 | 3.00 | 25.0 | 60.00 | 1.91 | 2 | 30.0 | C | ● | 0.0130-0.0190 |
| EC-A2 020-30/30C4H70T | 2.00 | 4.00 | 3.00 | 30.0 | 70.00 | 1.91 | 2 | 30.0 | C | ● | 0.0100-0.0150 |
| EC-A2 020-30/4C4H50T | 2.00 | 4.00 | 3.00 | 4.0 | 50.00 | 1.95 | 2 | 30.0 | C | ● | 0.0180-0.0400 |
| EC-A2 020-30/6C4H50T | 2.00 | 4.00 | 3.00 | 6.0 | 50.00 | 1.95 | 2 | 30.0 | C | ● | 0.0180-0.0400 |
| EC-A2 020-30/8C4H50T | 2.00 | 4.00 | 3.00 | 8.0 | 50.00 | 1.95 | 2 | 30.0 | C | ● | 0.0180-0.0400 |
| EC-A2 025-40/10C4H50T | 2.50 | 4.00 | 4.00 | 10.0 | 50.00 | 2.40 | 2 | 30.0 | C | ● | 0.0190-0.0450 |
| EC-A2 025-40/12C4H50T | 2.50 | 4.00 | 4.00 | 12.0 | 50.00 | 2.40 | 2 | 30.0 | C | ● | 0.0170-0.0400 |
| EC-A2 025-40/16C4H50T | 2.50 | 4.00 | 4.00 | 16.0 | 50.00 | 2.40 | 2 | 30.0 | C | ● | 0.0150-0.0300 |
| EC-A2 025-40/20C4H55T | 2.50 | 4.00 | 4.00 | 20.0 | 55.00 | 2.40 | 2 | 30.0 | C | ● | 0.0130-0.0200 |
| EC-A2 025-40/8C4H50T | 2.50 | 4.00 | 4.00 | 8.0 | 50.00 | 2.40 | 2 | 30.0 | C | ● | 0.0190-0.0450 |
| EC-A2 030-45/10C6H55T | 3.00 | 6.00 | 4.50 | 10.0 | 55.00 | 2.85 | 2 | 30.0 | C | ● | 0.0210-0.0600 |
| EC-A2 030-45/12C6H55T | 3.00 | 6.00 | 4.50 | 12.0 | 55.00 | 2.85 | 2 | 30.0 | C | ● | 0.0180-0.0500 |
| EC-A2 030-45/14C6H55T | 3.00 | 6.00 | 4.50 | 14.0 | 55.00 | 2.85 | 2 | 30.0 | C | ● | 0.0180-0.0450 |
| EC-A2 030-45/16C6H55T | 3.00 | 6.00 | 4.50 | 16.0 | 55.00 | 2.85 | 2 | 30.0 | C | ● | 0.0180-0.0450 |
| EC-A2 030-45/18C6H60T | 3.00 | 6.00 | 4.50 | 18.0 | 60.00 | 2.85 | 2 | 30.0 | C | ● | 0.0150-0.0400 |
| EC-A2 030-45/20C6H60T | 3.00 | 6.00 | 4.50 | 20.0 | 60.00 | 2.85 | 2 | 30.0 | C | ● | 0.0150-0.0400 |
| EC-A2 030-45/25C6H60T | 3.00 | 6.00 | 4.50 | 25.0 | 60.00 | 2.85 | 2 | 30.0 | C | ● | 0.0150-0.0400 |
| EC-A2 030-45/30C6H70T | 3.00 | 6.00 | 4.50 | 30.0 | 70.00 | 2.85 | 2 | 30.0 | C | ● | 0.0150-0.0380 |
| EC-A2 030-45/35C6H75T | 3.00 | 6.00 | 4.50 | 35.0 | 75.00 | 2.85 | 2 | 30.0 | C | ● | 0.0150-0.0380 |
| EC-A2 030-45/40C6H80T | 3.00 | 6.00 | 4.50 | 40.0 | 80.00 | 2.85 | 2 | 30.0 | C | ● | 0.0150-0.0300 |
| EC-A2 030-45/8C6H55T | 3.00 | 6.00 | 4.50 | 8.0 | 55.00 | 2.85 | 2 | 30.0 | C | ● | 0.0210-0.0600 |
| EC-A2 040-60/10C6H55T | 4.00 | 6.00 | 6.00 | 10.0 | 55.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0750 |
| EC-A2 040-60/12C6H55T | 4.00 | 6.00 | 6.00 | 12.0 | 55.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0750 |
| EC-A2 040-60/16C6H55T | 4.00 | 6.00 | 6.00 | 16.0 | 55.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0750 |
| EC-A2 040-60/20C6H60T | 4.00 | 6.00 | 6.00 | 20.0 | 60.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/25C6H60T | 4.00 | 6.00 | 6.00 | 25.0 | 60.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/30C6H70T | 4.00 | 6.00 | 6.00 | 30.0 | 70.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/35C6H75T | 4.00 | 6.00 | 6.00 | 35.0 | 75.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0680 |
| EC-A2 040-60/40C6H80T | 4.00 | 6.00 | 6.00 | 40.0 | 80.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0680 |

New

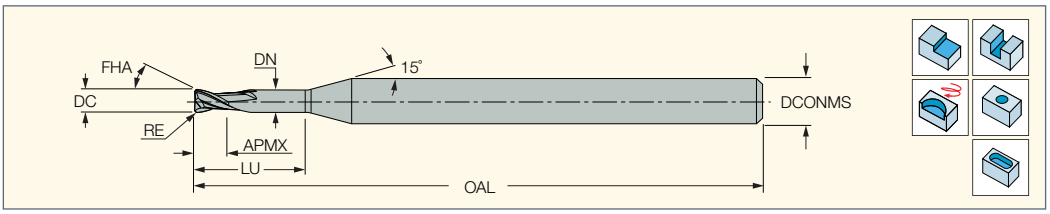
- For user guide, see pages 211-218

(1) Number of flutes

SOLIDMILL PREMIUM LINE

**EC-A2-R-T**

2 Flute Endmill with a Corner Radius for High Speed Machining Hardened Steel of Up to 65 HRc




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | RE | LU | OAL | DN | NOF[1] | FHA | Shank | IC602 | $f_z$ (mm/t) |
| EC-A2 003-04/1C4R005H45T | 0.30 | 4.00 | 0.40 | 0.05 | 1.0 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| EC-A2 003-04/2C4R005H45T | 0.30 | 4.00 | 0.40 | 0.05 | 2.0 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| EC-A2 003-04/3C4R005H45T | 0.30 | 4.00 | 0.40 | 0.05 | 3.0 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| EC-A2 004-06/1C4R005H45T | 0.40 | 4.00 | 0.60 | 0.05 | 1.0 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| EC-A2 004-06/15C4R005H45T | 0.40 | 4.00 | 0.60 | 0.05 | 1.5 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| EC-A2 004-06/25C4R005H45T | 0.40 | 4.00 | 0.60 | 0.05 | 2.5 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| EC-A2 004-06/3C4R005H45T | 0.40 | 4.00 | 0.60 | 0.05 | 3.0 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| EC-A2 004-06/4C4R005H45T | 0.40 | 4.00 | 0.60 | 0.05 | 4.0 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| EC-A2 005-07/1C4R005H45T | 0.50 | 4.00 | 0.70 | 0.05 | 1.0 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| EC-A2 005-07/15C4R005H45T | 0.50 | 4.00 | 0.70 | 0.05 | 1.5 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0100 |
| EC-A2 005-07/25C4R005H45T | 0.50 | 4.00 | 0.70 | 0.05 | 2.5 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0090 |
| EC-A2 005-07/3C4R005H45T | 0.50 | 4.00 | 0.70 | 0.05 | 3.0 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0090 |
| EC-A2 005-07/4C4R005H45T | 0.50 | 4.00 | 0.70 | 0.05 | 4.0 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0060-0.0080 |
| EC-A2 006-09/2C4R005H45T | 0.60 | 4.00 | 0.90 | 0.05 | 2.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| EC-A2 006-09/2C4R010H45T | 0.60 | 4.00 | 0.90 | 0.10 | 2.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| EC-A2 006-09/2C4R020H45T | 0.60 | 4.00 | 0.90 | 0.20 | 2.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| EC-A2 006-09/4C4R005H45T | 0.60 | 4.00 | 0.90 | 0.05 | 4.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| EC-A2 006-09/4C4R010H45T | 0.60 | 4.00 | 0.90 | 0.10 | 4.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| EC-A2 006-09/4C4R020H45T | 0.60 | 4.00 | 0.90 | 0.20 | 4.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| EC-A2 006-09/6C4R005H45T | 0.60 | 4.00 | 0.90 | 0.05 | 6.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| EC-A2 006-09/6C4R010H45T | 0.60 | 4.00 | 0.90 | 0.10 | 6.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| EC-A2 006-09/6C4R020H45T | 0.60 | 4.00 | 0.90 | 0.20 | 6.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0080-0.0130 |
| EC-A2 008-12/2C4R005H45T | 0.80 | 4.00 | 1.20 | 0.05 | 2.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| EC-A2 008-12/2C4R010H45T | 0.80 | 4.00 | 1.20 | 0.10 | 2.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| EC-A2 008-12/2C4R020H45T | 0.80 | 4.00 | 1.20 | 0.20 | 2.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| EC-A2 008-12/4C4R005H45T | 0.80 | 4.00 | 1.20 | 0.05 | 4.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| EC-A2 008-12/4C4R010H45T | 0.80 | 4.00 | 1.20 | 0.10 | 4.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| EC-A2 008-12/4C4R020H45T | 0.80 | 4.00 | 1.20 | 0.20 | 4.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| EC-A2 008-12/6C4R005H45T | 0.80 | 4.00 | 1.20 | 0.05 | 6.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| EC-A2 008-12/6C4R010H45T | 0.80 | 4.00 | 1.20 | 0.10 | 6.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| EC-A2 008-12/6C4R020H45T | 0.80 | 4.00 | 1.20 | 0.20 | 6.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0070-0.0150 |
| EC-A2 008-12/8C4R005H45T | 0.80 | 4.00 | 1.20 | 0.05 | 8.0 | 45.00 | 0.73 | 2 | 30.0 | C | ● | 0.0070-0.0130 |
| EC-A2 008-12/8C4R010H45T | 0.80 | 4.00 | 1.20 | 0.10 | 8.0 | 45.00 | 0.73 | 2 | 30.0 | C | ● | 0.0070-0.0130 |
| EC-A2 008-12/8C4R020H45T | 0.80 | 4.00 | 1.20 | 0.20 | 8.0 | 45.00 | 0.73 | 2 | 30.0 | C | ● | 0.0070-0.0130 |
| EC-A2 010-20/10C4R005H50T | 1.00 | 4.00 | 2.00 | 0.05 | 10.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0090-0.0160 |
| EC-A2 010-20/10C4R010H50T | 1.00 | 4.00 | 2.00 | 0.10 | 10.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0090-0.0160 |
| EC-A2 010-20/10C4R020H50T | 1.00 | 4.00 | 2.00 | 0.20 | 10.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0090-0.0160 |
| EC-A2 010-20/10C4R030H50T | 1.00 | 4.00 | 2.00 | 0.30 | 10.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0090-0.0160 |
| EC-A2 010-20/3C4R005H50T | 1.00 | 4.00 | 2.00 | 0.05 | 3.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0200 |
| EC-A2 010-20/3C4R010H50T | 1.00 | 4.00 | 2.00 | 0.10 | 3.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0200 |
| EC-A2 010-20/3C4R020H50T | 1.00 | 4.00 | 2.00 | 0.20 | 3.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0200 |
| EC-A2 010-20/3C4R030H50T | 1.00 | 4.00 | 2.00 | 0.30 | 3.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0200 |
| EC-A2 010-20/4C4R005H50T | 1.00 | 4.00 | 2.00 | 0.05 | 4.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0200 |
| EC-A2 010-20/4C4R010H50T | 1.00 | 4.00 | 2.00 | 0.10 | 4.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0200 |
| EC-A2 010-20/4C4R020H50T | 1.00 | 4.00 | 2.00 | 0.20 | 4.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0200 |
| EC-A2 010-20/4C4R030H50T | 1.00 | 4.00 | 2.00 | 0.30 | 4.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0200 |
| EC-A2 010-20/6C4R005H50T | 1.00 | 4.00 | 2.00 | 0.05 | 6.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| EC-A2 010-20/6C4R010H50T | 1.00 | 4.00 | 2.00 | 0.10 | 6.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| EC-A2 010-20/6C4R020H50T | 1.00 | 4.00 | 2.00 | 0.20 | 6.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| EC-A2 010-20/6C4R030H50T | 1.00 | 4.00 | 2.00 | 0.30 | 6.0 | 50.00 | 0.97 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| EC-A2 010-20/8C4R005H50T | 1.00 | 4.00 | 2.00 | 0.05 | 8.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| EC-A2 010-20/8C4R010H50T | 1.00 | 4.00 | 2.00 | 0.10 | 8.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| EC-A2 010-20/8C4R020H50T | 1.00 | 4.00 | 2.00 | 0.20 | 8.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| EC-A2 010-20/8C4R030H50T | 1.00 | 4.00 | 2.00 | 0.30 | 8.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0090-0.0180 |
| EC-A2 012-22/10C4R010H50T | 1.20 | 4.00 | 2.20 | 0.10 | 10.0 | 50.00 | 1.15 | 2 | 30.0 | C | ● | 0.0100-0.0190 |
| EC-A2 012-22/10C4R020H50T | 1.20 | 4.00 | 2.20 | 0.20 | 10.0 | 50.00 | 1.15 | 2 | 30.0 | C | ● | 0.0100-0.0190 |
| EC-A2 012-22/10C4R030H50T | 1.20 | 4.00 | 2.20 | 0.30 | 10.0 | 50.00 | 1.15 | 2 | 30.0 | C | ● | 0.0100-0.0190 |

New

- For user guide, see pages 211-218

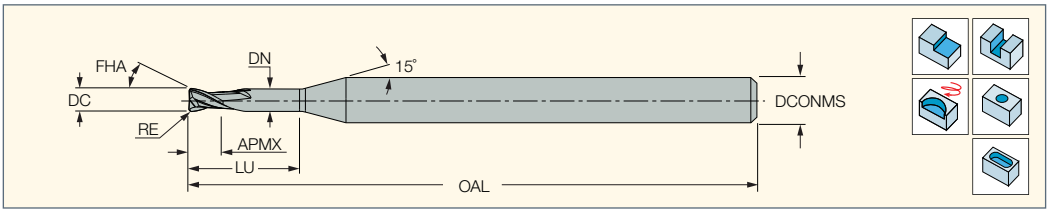
(1) Number of flutes

Continued

SOLIDMILL PREMIUM LINE

**EC-A2-R-T**

2 Flute Endmill with a Corner Radius for High Speed Machining Hardened Steel of Up to 65 HRc




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | RE | LU | OAL | DN | NOF(1) | FHA | Shank | IC602 | $f_z$ (mm/t) |
| EC-A2 012-22/4C4R010H50T | 1.20 | 4.00 | 2.20 | 0.10 | 4.0 | 50.00 | 1.17 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 012-22/4C4R020H50T | 1.20 | 4.00 | 2.20 | 0.20 | 4.0 | 50.00 | 1.17 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 012-22/4C4R030H50T | 1.20 | 4.00 | 2.20 | 0.30 | 4.0 | 50.00 | 1.17 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 012-22/6C4R010H50T | 1.20 | 4.00 | 2.20 | 0.10 | 6.0 | 50.00 | 1.17 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 012-22/6C4R020H50T | 1.20 | 4.00 | 2.20 | 0.20 | 6.0 | 50.00 | 1.17 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 012-22/6C4R030H50T | 1.20 | 4.00 | 2.20 | 0.30 | 6.0 | 50.00 | 1.17 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 012-22/8C4R010H50T | 1.20 | 4.00 | 2.20 | 0.10 | 8.0 | 50.00 | 1.15 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 012-22/8C4R020H50T | 1.20 | 4.00 | 2.20 | 0.20 | 8.0 | 50.00 | 1.15 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 012-22/8C4R030H50T | 1.20 | 4.00 | 2.20 | 0.30 | 8.0 | 50.00 | 1.15 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 015-25/10C4R005H50T | 1.50 | 4.00 | 2.50 | 0.05 | 10.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/10C4R010H50T | 1.50 | 4.00 | 2.50 | 0.10 | 10.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/10C4R020H50T | 1.50 | 4.00 | 2.50 | 0.20 | 10.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/10C4R030H50T | 1.50 | 4.00 | 2.50 | 0.30 | 10.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/10C4R050H50T | 1.50 | 4.00 | 2.50 | 0.50 | 10.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/12C4R005H50T | 1.50 | 4.00 | 2.50 | 0.05 | 12.0 | 50.00 | 1.43 | 2 | 30.0 | C | • | 0.0130-0.0250 |
| EC-A2 015-25/12C4R010H50T | 1.50 | 4.00 | 2.50 | 0.10 | 12.0 | 50.00 | 1.43 | 2 | 30.0 | C | • | 0.0130-0.0250 |
| EC-A2 015-25/12C4R020H50T | 1.50 | 4.00 | 2.50 | 0.20 | 12.0 | 50.00 | 1.43 | 2 | 30.0 | C | • | 0.0130-0.0250 |
| EC-A2 015-25/12C4R030H50T | 1.50 | 4.00 | 2.50 | 0.30 | 12.0 | 50.00 | 1.43 | 2 | 30.0 | C | • | 0.0130-0.0250 |
| EC-A2 015-25/12C4R050H50T | 1.50 | 4.00 | 2.50 | 0.50 | 12.0 | 50.00 | 1.43 | 2 | 30.0 | C | • | 0.0130-0.0250 |
| EC-A2 015-25/4C4R010H50T | 1.50 | 4.00 | 2.50 | 0.10 | 4.0 | 50.00 | 1.47 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/4C4R020H50T | 1.50 | 4.00 | 2.50 | 0.20 | 4.0 | 50.00 | 1.47 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/4C4R030H50T | 1.50 | 4.00 | 2.50 | 0.30 | 4.0 | 50.00 | 1.47 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/4C4R050H50T | 1.50 | 4.00 | 2.50 | 0.50 | 4.0 | 50.00 | 1.47 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/6C4R005H50T | 1.50 | 4.00 | 2.50 | 0.05 | 6.0 | 50.00 | 1.47 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/6C4R010H50T | 1.50 | 4.00 | 2.50 | 0.10 | 6.0 | 50.00 | 1.47 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/6C4R020H50T | 1.50 | 4.00 | 2.50 | 0.20 | 6.0 | 50.00 | 1.47 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/6C4R030H50T | 1.50 | 4.00 | 2.50 | 0.30 | 6.0 | 50.00 | 1.47 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/6C4R050H50T | 1.50 | 4.00 | 2.50 | 0.50 | 6.0 | 50.00 | 1.47 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/8C4R005H50T | 1.50 | 4.00 | 2.50 | 0.05 | 8.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/8C4R010H50T | 1.50 | 4.00 | 2.50 | 0.10 | 8.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/8C4R020H50T | 1.50 | 4.00 | 2.50 | 0.20 | 8.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/8C4R030H50T | 1.50 | 4.00 | 2.50 | 0.30 | 8.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 015-25/8C4R050H50T | 1.50 | 4.00 | 2.50 | 0.50 | 8.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0150-0.0250 |
| EC-A2 020-30/10C4R010H50T | 2.00 | 4.00 | 3.00 | 0.10 | 10.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |
| EC-A2 020-30/10C4R020H50T | 2.00 | 4.00 | 3.00 | 0.20 | 10.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |
| EC-A2 020-30/10C4R030H50T | 2.00 | 4.00 | 3.00 | 0.30 | 10.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |
| EC-A2 020-30/10C4R050H50T | 2.00 | 4.00 | 3.00 | 0.50 | 10.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |
| EC-A2 020-30/12C4R010H50T | 2.00 | 4.00 | 3.00 | 0.10 | 12.0 | 50.00 | 1.93 | 2 | 30.0 | C | • | 0.0160-0.0250 |
| EC-A2 020-30/12C4R020H50T | 2.00 | 4.00 | 3.00 | 0.20 | 12.0 | 50.00 | 1.93 | 2 | 30.0 | C | • | 0.0160-0.0250 |
| EC-A2 020-30/12C4R030H50T | 2.00 | 4.00 | 3.00 | 0.30 | 12.0 | 50.00 | 1.93 | 2 | 30.0 | C | • | 0.0160-0.0250 |
| EC-A2 020-30/12C4R050H50T | 2.00 | 4.00 | 3.00 | 0.50 | 12.0 | 50.00 | 1.93 | 2 | 30.0 | C | • | 0.0160-0.0250 |
| EC-A2 020-30/16C4R010H50T | 2.00 | 4.00 | 3.00 | 0.10 | 16.0 | 50.00 | 1.91 | 2 | 30.0 | C | • | 0.0150-0.0220 |
| EC-A2 020-30/16C4R020H50T | 2.00 | 4.00 | 3.00 | 0.20 | 16.0 | 50.00 | 1.91 | 2 | 30.0 | C | • | 0.0150-0.0220 |
| EC-A2 020-30/16C4R030H50T | 2.00 | 4.00 | 3.00 | 0.30 | 16.0 | 50.00 | 1.91 | 2 | 30.0 | C | • | 0.0150-0.0220 |
| EC-A2 020-30/16C4R050H50T | 2.00 | 4.00 | 3.00 | 0.50 | 16.0 | 50.00 | 1.91 | 2 | 30.0 | C | • | 0.0150-0.0220 |
| EC-A2 020-30/20C4R010H50T | 2.00 | 4.00 | 3.00 | 0.10 | 20.0 | 50.00 | 1.91 | 2 | 30.0 | C | • | 0.0130-0.0190 |
| EC-A2 020-30/20C4R020H50T | 2.00 | 4.00 | 3.00 | 0.20 | 20.0 | 50.00 | 1.91 | 2 | 30.0 | C | • | 0.0130-0.0190 |
| EC-A2 020-30/20C4R030H50T | 2.00 | 4.00 | 3.00 | 0.30 | 20.0 | 50.00 | 1.91 | 2 | 30.0 | C | • | 0.0130-0.0190 |
| EC-A2 020-30/20C4R050H50T | 2.00 | 4.00 | 3.00 | 0.50 | 20.0 | 50.00 | 1.91 | 2 | 30.0 | C | • | 0.0130-0.0190 |
| EC-A2 020-30/6C4R010H50T | 2.00 | 4.00 | 3.00 | 0.10 | 6.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |
| EC-A2 020-30/6C4R020H50T | 2.00 | 4.00 | 3.00 | 0.20 | 6.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |
| EC-A2 020-30/6C4R030H50T | 2.00 | 4.00 | 3.00 | 0.30 | 6.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |
| EC-A2 020-30/6C4R050H50T | 2.00 | 4.00 | 3.00 | 0.50 | 6.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |
| EC-A2 020-30/8C4R010H50T | 2.00 | 4.00 | 3.00 | 0.10 | 8.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |
| EC-A2 020-30/8C4R020H50T | 2.00 | 4.00 | 3.00 | 0.20 | 8.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |
| EC-A2 020-30/8C4R030H50T | 2.00 | 4.00 | 3.00 | 0.30 | 8.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |
| EC-A2 020-30/8C4R050H50T | 2.00 | 4.00 | 3.00 | 0.50 | 8.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0180-0.0400 |

**New**

- For user guide, see pages 211-218

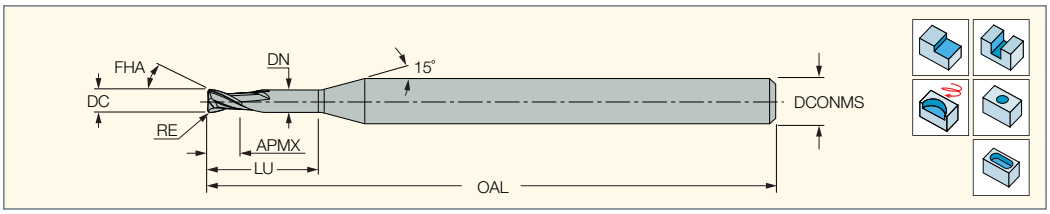
(1) Number of flutes

Continued

SOLIDMILL PREMIUM LINE

**EC-A2-R-T**

2 Flute Endmill with a Corner Radius for High Speed Machining Hardened Steel of Up to 65 HRc




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | RE | LU | OAL | DN | NOF(1) | FHA | Shank | IC602 | $f_z$ (mm/t) |
| EC-A2 025-35/10C4R020H55T | 2.50 | 4.00 | 3.50 | 0.20 | 10.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0190-0.0450 |
| EC-A2 025-35/10C4R030H55T | 2.50 | 4.00 | 3.50 | 0.30 | 10.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0190-0.0450 |
| EC-A2 025-35/10C4R050H55T | 2.50 | 4.00 | 3.50 | 0.50 | 10.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0190-0.0450 |
| EC-A2 025-35/12C4R020H55T | 2.50 | 4.00 | 3.50 | 0.20 | 12.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0170-0.0400 |
| EC-A2 025-35/12C4R030H55T | 2.50 | 4.00 | 3.50 | 0.30 | 12.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0170-0.0400 |
| EC-A2 025-35/12C4R050H55T | 2.50 | 4.00 | 3.50 | 0.50 | 12.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0170-0.0400 |
| EC-A2 025-35/16C4R020H55T | 2.50 | 4.00 | 3.50 | 0.20 | 16.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0150-0.0300 |
| EC-A2 025-35/16C4R030H55T | 2.50 | 4.00 | 3.50 | 0.30 | 16.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0150-0.0300 |
| EC-A2 025-35/16C4R050H55T | 2.50 | 4.00 | 3.50 | 0.50 | 16.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0150-0.0300 |
| EC-A2 025-35/8C4R020H55T | 2.50 | 4.00 | 3.50 | 0.20 | 8.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0190-0.0450 |
| EC-A2 025-35/8C4R030H55T | 2.50 | 4.00 | 3.50 | 0.30 | 8.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0190-0.0450 |
| EC-A2 025-35/8C4R050H55T | 2.50 | 4.00 | 3.50 | 0.50 | 8.0 | 55.00 | 2.40 | 2 | 30.0 | C | • | 0.0190-0.0450 |
| EC-A2 030-45/10C6R010H55T | 3.00 | 6.00 | 4.50 | 0.10 | 10.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0210-0.0600 |
| EC-A2 030-45/10C6R020H55T | 3.00 | 6.00 | 4.50 | 0.20 | 10.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0210-0.0600 |
| EC-A2 030-45/10C6R030H55T | 3.00 | 6.00 | 4.50 | 0.30 | 10.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0210-0.0600 |
| EC-A2 030-45/10C6R050H55T | 3.00 | 6.00 | 4.50 | 0.50 | 10.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0210-0.0600 |
| EC-A2 030-45/10C6R100H55T | 3.00 | 6.00 | 4.50 | 1.00 | 10.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0210-0.0600 |
| EC-A2 030-45/12C6R010H55T | 3.00 | 6.00 | 4.50 | 0.10 | 12.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0180-0.0500 |
| EC-A2 030-45/12C6R020H55T | 3.00 | 6.00 | 4.50 | 0.20 | 12.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0180-0.0500 |
| EC-A2 030-45/12C6R030H55T | 3.00 | 6.00 | 4.50 | 0.30 | 12.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0180-0.0500 |
| EC-A2 030-45/12C6R050H55T | 3.00 | 6.00 | 4.50 | 0.50 | 12.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0180-0.0500 |
| EC-A2 030-45/12C6R100H55T | 3.00 | 6.00 | 4.50 | 1.00 | 12.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0180-0.0500 |
| EC-A2 030-45/16C6R010H55T | 3.00 | 6.00 | 4.50 | 0.10 | 16.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0180-0.0450 |
| EC-A2 030-45/16C6R020H55T | 3.00 | 6.00 | 4.50 | 0.20 | 16.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0180-0.0450 |
| EC-A2 030-45/16C6R030H55T | 3.00 | 6.00 | 4.50 | 0.30 | 16.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0180-0.0450 |
| EC-A2 030-45/16C6R050H55T | 3.00 | 6.00 | 4.50 | 0.50 | 16.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0180-0.0450 |
| EC-A2 030-45/16C6R100H55T | 3.00 | 6.00 | 4.50 | 1.00 | 16.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0180-0.0450 |
| EC-A2 030-45/20C6R010H60T | 3.00 | 6.00 | 4.50 | 0.10 | 20.0 | 60.00 | 2.85 | 2 | 30.0 | C | • | 0.0150-0.0400 |
| EC-A2 030-45/20C6R020H60T | 3.00 | 6.00 | 4.50 | 0.20 | 20.0 | 60.00 | 2.85 | 2 | 30.0 | C | • | 0.0150-0.0400 |
| EC-A2 030-45/20C6R030H60T | 3.00 | 6.00 | 4.50 | 0.30 | 20.0 | 60.00 | 2.85 | 2 | 30.0 | C | • | 0.0150-0.0400 |
| EC-A2 030-45/20C6R050H60T | 3.00 | 6.00 | 4.50 | 0.50 | 20.0 | 60.00 | 2.85 | 2 | 30.0 | C | • | 0.0150-0.0400 |
| EC-A2 030-45/20C6R100H60T | 3.00 | 6.00 | 4.50 | 0.00 | 20.0 | 60.00 | 2.85 | 2 | 30.0 | C | • | 0.0150-0.0400 |
| EC-A2 030-45/25C6R010H60T | 3.00 | 6.00 | 4.50 | 0.10 | 25.0 | 60.00 | 2.85 | 2 | 30.0 | C | • | 0.0150-0.0400 |
| EC-A2 030-45/25C6R020H60T | 3.00 | 6.00 | 4.50 | 0.20 | 25.0 | 60.00 | 2.85 | 2 | 30.0 | C | • | 0.0150-0.0400 |
| EC-A2 030-45/25C6R030H60T | 3.00 | 6.00 | 4.50 | 0.30 | 25.0 | 60.00 | 2.85 | 2 | 30.0 | C | • | 0.0150-0.0400 |
| EC-A2 030-45/25C6R050H60T | 3.00 | 6.00 | 4.50 | 0.50 | 25.0 | 60.00 | 2.85 | 2 | 30.0 | C | • | 0.0150-0.0400 |
| EC-A2 030-45/8C6R010H55T | 3.00 | 6.00 | 4.50 | 0.10 | 8.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0210-0.0600 |
| EC-A2 030-45/8C6R020H55T | 3.00 | 6.00 | 4.50 | 0.20 | 8.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0210-0.0600 |
| EC-A2 030-45/8C6R030H55T | 3.00 | 6.00 | 4.50 | 0.30 | 8.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0210-0.0600 |
| EC-A2 030-45/8C6R050H55T | 3.00 | 6.00 | 4.50 | 0.50 | 8.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0210-0.0600 |
| EC-A2 030-45/8C6R100H55T | 3.00 | 6.00 | 4.50 | 1.00 | 8.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0210-0.0600 |
| EC-A2 040-60/10C6R010H55T | 4.00 | 6.00 | 6.00 | 0.10 | 10.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/10C6R020H55T | 4.00 | 6.00 | 6.00 | 0.20 | 10.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/10C6R030H55T | 4.00 | 6.00 | 6.00 | 0.30 | 10.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/10C6R050H55T | 4.00 | 6.00 | 6.00 | 0.50 | 10.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/10C6R100H55T | 4.00 | 6.00 | 6.00 | 1.00 | 10.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/12C6R010H55T | 4.00 | 6.00 | 6.00 | 0.10 | 12.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/12C6R020H55T | 4.00 | 6.00 | 6.00 | 0.20 | 12.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/12C6R030H55T | 4.00 | 6.00 | 6.00 | 0.30 | 12.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/12C6R050H55T | 4.00 | 6.00 | 6.00 | 0.50 | 12.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/12C6R100H55T | 4.00 | 6.00 | 6.00 | 1.00 | 12.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/16C6R010H55T | 4.00 | 6.00 | 6.00 | 0.10 | 16.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/16C6R020H55T | 4.00 | 6.00 | 6.00 | 0.20 | 16.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/16C6R030H55T | 4.00 | 6.00 | 6.00 | 0.30 | 16.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/16C6R050H55T | 4.00 | 6.00 | 6.00 | 0.50 | 16.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/16C6R100H55T | 4.00 | 6.00 | 6.00 | 1.00 | 16.0 | 55.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0750 |
| EC-A2 040-60/20C6R010H60T | 4.00 | 6.00 | 6.00 | 0.10 | 20.0 | 60.00 | 3.90 | 2 | 30.0 | C | • | 0.0300-0.0700 |

**New**

- For user guide, see pages 211-218

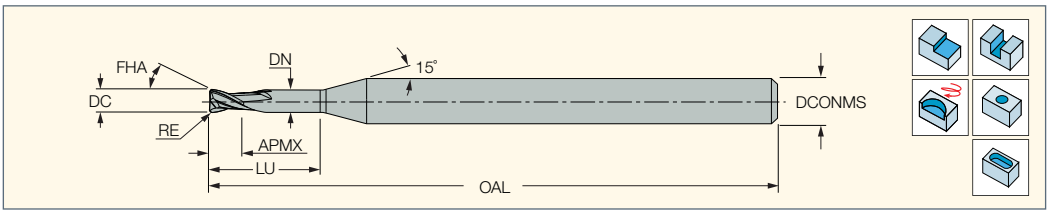
(1) Number of flutes

Continued

SOLIDMILL PREMIUM LINE

**EC-A2-R-T**

2 Flute Endmill with a Corner Radius for High Speed Machining Hardened Steel of Up to 65 HRc




| Designation | Dimensions DC | DCONMS | APMX | RE | LU | OAL | DN | NOF(1) | FHA | Shank | Tough ↔ Hard IC602 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC-A2 040-60/20C6R020H60T | 4.00 | 6.00 | 6.00 | 0.20 | 20.0 | 60.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/20C6R030H60T | 4.00 | 6.00 | 6.00 | 0.30 | 20.0 | 60.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/20C6R050H60T | 4.00 | 6.00 | 6.00 | 0.50 | 20.0 | 60.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/20C6R100H60T | 4.00 | 6.00 | 6.00 | 1.00 | 20.0 | 60.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/25C6R010H60T | 4.00 | 6.00 | 6.00 | 0.10 | 25.0 | 60.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/25C6R020H60T | 4.00 | 6.00 | 6.00 | 0.20 | 25.0 | 60.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/25C6R030H60T | 4.00 | 6.00 | 6.00 | 0.30 | 25.0 | 60.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/25C6R050H60T | 4.00 | 6.00 | 6.00 | 0.50 | 25.0 | 60.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/25C6R100H60T | 4.00 | 6.00 | 6.00 | 1.00 | 25.0 | 60.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/30C6R010H70T | 4.00 | 6.00 | 6.00 | 0.10 | 30.0 | 70.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/30C6R020H70T | 4.00 | 6.00 | 6.00 | 0.20 | 30.0 | 70.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/30C6R030H70T | 4.00 | 6.00 | 6.00 | 0.30 | 30.0 | 70.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |
| EC-A2 040-60/30C6R050H70T | 4.00 | 6.00 | 6.00 | 0.50 | 30.0 | 70.00 | 3.90 | 2 | 30.0 | C | ● | 0.0300-0.0700 |

**New**

- For user guide, see pages 211-218

(1) Number of flutes

SOLIDMILL PREMIUM LINE

**EC-A2-R/H (rib processing)**

2 Flute, 30° Helix and Corner Radii Solid Carbide Endmills for Rib Processing on Hard Materials up to 65 HRC

HARD MATERIALS

| Designation | Dimensions DC | DCONMS | APMX | RE | LU | OAL | DN | NOF(1) | FHA | Shank(2) | Tough ↔ Hard IC702 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC-A2 002-003/005C4H45 | 0.20 | 4.00 | 0.30 | - | 0.5 | 45.00 | 0.17 | 2 | 30.0 | C | ● | 0.0030-0.0030 |
| EC-A2 003-0045/01C4H45 | 0.30 | 4.00 | 0.45 | - | 1.0 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0030-0.0040 |
| EC-A2 003-0045/03C4H45 | 0.30 | 4.00 | 0.45 | - | 3.0 | 45.00 | 0.27 | 2 | 30.0 | C | ● | 0.0030-0.0040 |
| EC-A2 004-006/01C4H45 | 0.40 | 4.00 | 0.60 | - | 1.0 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0030-0.0050 |
| EC-A2 004-006/02C4H45 | 0.40 | 4.00 | 0.60 | - | 2.0 | 45.00 | 0.37 | 2 | 30.0 | C | ● | 0.0030-0.0050 |
| EC-A2 005-007/02C4H45 | 0.50 | 4.00 | 0.70 | - | 2.0 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0030-0.0050 |
| EC-A2 005-007/1.5C4R05H45 | 0.50 | 4.00 | 0.70 | 0.05 | 1.5 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0010-0.0020 |
| EC-A2 005-007/2.5C4R05H45 | 0.50 | 4.00 | 0.70 | 0.05 | 2.5 | 45.00 | 0.45 | 2 | 30.0 | C | ● | 0.0010-0.0020 |
| EC-A2 006-009/02C4H45 | 0.60 | 4.00 | 0.90 | - | 2.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0030-0.0070 |
| EC-A2 006-009/3C4R05H45 | 0.60 | 4.00 | 0.90 | 0.05 | 3.0 | 45.00 | 0.55 | 2 | 30.0 | C | ● | 0.0010-0.0020 |
| EC-A2 007-010/4C4R.1H45 | 0.70 | 4.00 | 1.00 | 0.10 | 4.0 | 45.00 | 0.65 | 2 | 30.0 | C | ● | 0.0010-0.0030 |
| EC-A2 008-012/04C4H45 | 0.80 | 4.00 | 1.20 | - | 4.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0030-0.0080 |
| EC-A2 008-012/06C4H45 | 0.80 | 4.00 | 1.20 | - | 6.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0030-0.0090 |
| EC-A2 008-012/4C4R.1H45 | 0.80 | 4.00 | 1.20 | 0.10 | 4.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0010-0.0030 |
| EC-A2 008-012/6C4R.1H45 | 0.80 | 4.00 | 1.20 | 0.10 | 6.0 | 45.00 | 0.75 | 2 | 30.0 | C | ● | 0.0010-0.0030 |
| EC-A2 010-015/04C4H45 | 1.00 | 4.00 | 1.50 | - | 4.0 | 45.00 | 0.97 | 2 | 30.0 | C | ● | 0.0040-0.0120 |
| EC-A2 010-015/06C4H45 | 1.00 | 4.00 | 1.50 | - | 6.0 | 45.00 | 0.97 | 2 | 30.0 | C | ● | 0.0040-0.0120 |
| EC-A2 010-015/08C4H45 | 1.00 | 4.00 | 1.50 | - | 8.0 | 45.00 | 0.95 | 2 | 30.0 | C | ● | 0.0040-0.0120 |
| EC-A2 010-015/10C4H45 | 1.00 | 4.00 | 1.50 | - | 10.0 | 45.00 | 0.95 | 2 | 30.0 | C | ● | 0.0040-0.0120 |
| EC-A2 010-015/12C4H45 | 1.00 | 4.00 | 1.50 | - | 12.0 | 45.00 | 0.93 | 2 | 30.0 | C | ● | 0.0040-0.0120 |
| EC-A2 010-015/20C4H55 | 1.00 | 4.00 | 1.50 | - | 20.0 | 55.00 | 0.93 | 2 | 30.0 | C | ● | 0.0040-0.0120 |
| EC-A2 010-015/4C6R.1H50 | 1.00 | 6.00 | 1.50 | 0.10 | 4.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0020-0.0060 |
| EC-A2 010-015/4C6R.2H50 | 1.00 | 6.00 | 1.50 | 0.20 | 4.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0020-0.0060 |
| EC-A2 010-015/4C6R.3H50 | 1.00 | 6.00 | 1.50 | 0.30 | 4.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0020-0.0060 |
| EC-A2 010-015/6C6R.1H50 | 1.00 | 6.00 | 1.50 | 0.10 | 6.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0020-0.0060 |
| EC-A2 010-015/6C6R.2H50 | 1.00 | 6.00 | 1.50 | 0.20 | 6.0 | 50.00 | 0.95 | 2 | 30.0 | C | ● | 0.0020-0.0060 |

- For user guide, see pages 211-218

(1) Number of flutes

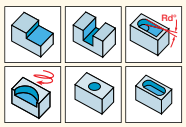
(2) C-Cylindrical

Continued

SOLIDMILL PREMIUM LINE

**EC-A2-R/H (rib processing)**

2 Flute, 30° Helix and Corner Radii Solid Carbide Endmills for Rib Processing on Hard Materials up to 65 HRC



HARD MATERIALS

| Designation | Dimensions DC | DCONMS | APMX | RE | LU | OAL | DN | NOF[1] | FHA | Shank[2] | Tough ↔ Hard IC702 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC-A2 010-015/6C6R.3H50 | 1.00 | 6.00 | 1.50 | 0.30 | 6.0 | 50.00 | 0.95 | 2 | 30.0 | C | • | 0.0020-0.0060 |
| EC-A2 010-015/8C6R.3H50 | 1.00 | 6.00 | 1.50 | 0.30 | 8.0 | 50.00 | 0.95 | 2 | 30.0 | C | • | 0.0020-0.0060 |
| EC-A2 012-018/06C4H45 | 1.20 | 4.00 | 1.80 | - | 6.0 | 45.00 | 1.17 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 015-023/06C4H45 | 1.50 | 4.00 | 2.30 | - | 6.0 | 45.00 | 1.47 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 015-023/08C4H45 | 1.50 | 4.00 | 2.30 | - | 8.0 | 45.00 | 1.45 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 015-023/10C4H45 | 1.50 | 4.00 | 2.30 | - | 10.0 | 45.00 | 1.45 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 015-023/12C4H45 | 1.50 | 4.00 | 2.30 | - | 12.0 | 45.00 | 1.41 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 015-025/10C6R.2H50 | 1.50 | 6.00 | 2.50 | 0.20 | 10.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0030-0.0080 |
| EC-A2 015-025/12C6R.2H50 | 1.50 | 6.00 | 2.50 | 0.20 | 12.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0030-0.0080 |
| EC-A2 015-025/4C6R.2H50 | 1.50 | 6.00 | 2.50 | 0.20 | 4.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0030-0.0080 |
| EC-A2 015-025/4C6R.3H50 | 1.50 | 6.00 | 2.50 | 0.30 | 4.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0030-0.0080 |
| EC-A2 015-025/6C6R.2H50 | 1.50 | 6.00 | 2.50 | 0.20 | 6.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0030-0.0080 |
| EC-A2 015-025/6C6R.3H50 | 1.50 | 6.00 | 2.50 | 0.30 | 6.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0030-0.0080 |
| EC-A2 015-025/8C6R.2H50 | 1.50 | 6.00 | 2.50 | 0.20 | 8.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0030-0.0080 |
| EC-A2 015-025/8C6R.3H50 | 1.50 | 6.00 | 2.50 | 0.30 | 8.0 | 50.00 | 1.45 | 2 | 30.0 | C | • | 0.0030-0.0080 |
| EC-A2 020-030/06C4H45 | 2.00 | 4.00 | 3.00 | - | 6.0 | 45.00 | 1.97 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 020-030/08C4H45 | 2.00 | 4.00 | 3.00 | - | 8.0 | 45.00 | 1.95 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 020-030/10C4H45 | 2.00 | 4.00 | 3.00 | - | 10.0 | 45.00 | 1.95 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 020-030/12C4H45 | 2.00 | 4.00 | 3.00 | - | 12.0 | 45.00 | 1.93 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 020-030/14C4H50 | 2.00 | 4.00 | 3.00 | - | 14.0 | 50.00 | 1.93 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 020-030/16C4H50 | 2.00 | 4.00 | 3.00 | - | 16.0 | 50.00 | 1.91 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 020-030/20C4H55 | 2.00 | 4.00 | 3.00 | - | 20.0 | 55.00 | 1.89 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 020-030/25C4H60 | 2.00 | 4.00 | 3.00 | - | 25.0 | 60.00 | 1.89 | 2 | 30.0 | C | • | 0.0100-0.0200 |
| EC-A2 020-030/10C6R.2H55 | 2.00 | 6.00 | 3.00 | 0.20 | 10.0 | 55.00 | 1.95 | 2 | 30.0 | C | • | 0.0040-0.0100 |
| EC-A2 020-030/10C6R.3H55 | 2.00 | 6.00 | 3.00 | 0.30 | 10.0 | 55.00 | 1.95 | 2 | 30.0 | C | • | 0.0040-0.0100 |
| EC-A2 020-030/10C6R.5H55 | 2.00 | 6.00 | 3.00 | 0.50 | 10.0 | 55.00 | 1.95 | 2 | 30.0 | C | • | 0.0040-0.0100 |
| EC-A2 020-030/16C6R.3H55 | 2.00 | 6.00 | 3.00 | 0.30 | 16.0 | 55.00 | 1.95 | 2 | 30.0 | C | • | 0.0040-0.0100 |
| EC-A2 020-030/6C6R.2H50 | 2.00 | 6.00 | 3.00 | 0.20 | 6.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0040-0.0100 |
| EC-A2 020-030/6C6R.3H50 | 2.00 | 6.00 | 3.00 | 0.30 | 6.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0040-0.0100 |
| EC-A2 020-030/6C6R.5H50 | 2.00 | 6.00 | 3.00 | 0.50 | 6.0 | 50.00 | 1.95 | 2 | 30.0 | C | • | 0.0040-0.0100 |
| EC-A2 030-040/10C6R.2H55 | 3.00 | 6.00 | 4.00 | 0.20 | 10.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 030-040/10C6R.5H55 | 3.00 | 6.00 | 4.00 | 0.50 | 10.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 030-040/12C6R.2H55 | 3.00 | 6.00 | 4.00 | 0.20 | 12.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 030-040/12C6R.3H55 | 3.00 | 6.00 | 4.00 | 0.30 | 12.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 030-040/12C6R.5H55 | 3.00 | 6.00 | 4.00 | 0.50 | 12.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 030-040/16C6R.5H55 | 3.00 | 6.00 | 4.00 | 0.50 | 16.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 030-040/20C6R.5H55 | 3.00 | 6.00 | 4.00 | 0.50 | 20.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 030-040/8C6R.2H55 | 3.00 | 6.00 | 4.00 | 0.20 | 8.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 030-040/8C6R.3H55 | 3.00 | 6.00 | 4.00 | 0.30 | 8.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0050-0.0150 |
| EC-A2 030-045/12C6H45 | 3.00 | 6.00 | 4.50 | - | 12.0 | 45.00 | 2.85 | 2 | 30.0 | C | • | 0.0150-0.0300 |
| EC-A2 030-045/16C6H55 | 3.00 | 6.00 | 4.50 | - | 16.0 | 55.00 | 2.85 | 2 | 30.0 | C | • | 0.0150-0.0300 |
| EC-A2 040-050/12C6R.2H55 | 4.00 | 6.00 | 5.00 | 0.20 | 12.0 | 55.00 | 3.85 | 2 | 30.0 | C | • | 0.0060-0.0200 |
| EC-A2 040-050/12C6R.5H55 | 4.00 | 6.00 | 5.00 | 0.50 | 12.0 | 55.00 | 3.85 | 2 | 30.0 | C | • | 0.0060-0.0200 |
| EC-A2 040-050/12C6R1.H55 | 4.00 | 6.00 | 5.00 | 1.00 | 12.0 | 55.00 | 3.85 | 2 | 30.0 | C | • | 0.0060-0.0200 |
| EC-A2 040-050/20C6R.2H55 | 4.00 | 6.00 | 5.00 | 0.20 | 20.0 | 55.00 | 3.85 | 2 | 30.0 | C | • | 0.0060-0.0200 |
| EC-A2 040-050/20C6R.3H55 | 4.00 | 6.00 | 5.00 | 0.30 | 20.0 | 55.00 | 3.85 | 2 | 30.0 | C | • | 0.0060-0.0200 |
| EC-A2 040-050/20C6R.5H55 | 4.00 | 6.00 | 5.00 | 0.50 | 20.0 | 55.00 | 3.85 | 2 | 30.0 | C | • | 0.0060-0.0200 |
| EC-A2 040-060/16C6H60 | 4.00 | 6.00 | 6.00 | - | 16.0 | 60.00 | 3.80 | 2 | 30.0 | C | • | 0.0200-0.0500 |
| EC-A2 060-070/20C6R.3H60 | 6.00 | 6.00 | 7.00 | 0.30 | 20.0 | 60.00 | 5.85 | 2 | 30.0 | C | • | 0.0080-0.0300 |
| EC-A2 060-070/20C6R.5H60 | 6.00 | 6.00 | 7.00 | 0.50 | 20.0 | 60.00 | 5.85 | 2 | 30.0 | C | • | 0.0080-0.0300 |
| EC-A2 060-070/20C6R1.H60 | 6.00 | 6.00 | 7.00 | 1.00 | 20.0 | 60.00 | 5.85 | 2 | 30.0 | C | • | 0.0080-0.0300 |
| EC-A2 060-070/20C6R1.5H60 | 6.00 | 6.00 | 7.00 | 1.50 | 20.0 | 60.00 | 5.85 | 2 | 30.0 | C | • | 0.0080-0.0300 |
| EC-A2 060-070/20C6R2.H60 | 6.00 | 6.00 | 7.00 | 2.00 | 20.0 | 60.00 | 5.85 | 2 | 30.0 | C | • | 0.0080-0.0300 |
| EC-A2 080-090/25C8R1.H60 | 8.00 | 8.00 | 9.00 | 1.00 | 25.0 | 60.00 | 7.70 | 2 | 30.0 | C | • | 0.0100-0.0350 |
| EC-A2 080-090/25C8R2.H60 | 8.00 | 8.00 | 9.00 | 2.00 | 25.0 | 60.00 | 7.70 | 2 | 30.0 | C | • | 0.0100-0.0350 |
| EC-A2 100-090/32C10R.3H70 | 10.00 | 10.00 | 9.00 | 0.30 | 32.0 | 70.00 | 9.70 | 2 | 30.0 | C | • | 0.0100-0.0400 |
| EC-A2 100-110/32C10R.5H70 | 10.00 | 10.00 | 11.00 | 0.50 | 32.0 | 70.00 | 9.70 | 2 | 30.0 | C | • | 0.0100-0.0400 |

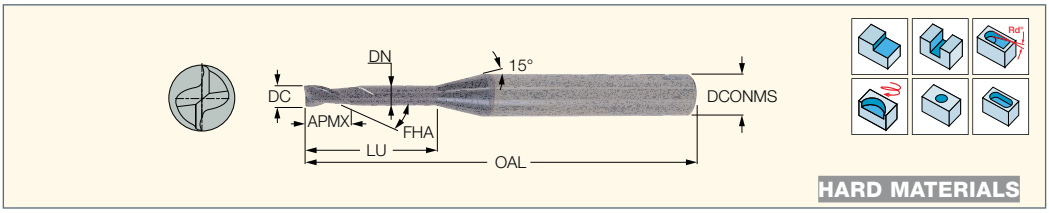
• For user guide, see pages 211-218

(1) Number of flutes

(2) C-Cylindrical

SOLIDMILL PREMIUM LINE

**EC-A2-M (rib processing)**
2 Flute, 30° Helix Solid Carbide Endmills for Rib Processing on Hard Materials up to 55 HRC




HARD MATERIALS

| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | OAL | DN | NOF(1) | FHA | RMPX°(2) | Shank(3) | IC903 | $f_z$ (mm/t) |
| EC-A2 004-006/02C4M45 | 0.40 | 4.00 | 0.60 | 2.0 | 45.00 | 0.37 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 004-006/04C4M45 | 0.40 | 4.00 | 0.60 | 4.0 | 45.00 | 0.37 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 004-006/05C4M45 | 0.40 | 4.00 | 0.60 | 5.0 | 45.00 | 0.37 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 005-007/02C4M45 | 0.50 | 4.00 | 0.70 | 2.0 | 45.00 | 0.45 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 005-007/04C4M45 | 0.50 | 4.00 | 0.70 | 4.0 | 45.00 | 0.45 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 005-007/06C4M45 | 0.50 | 4.00 | 0.70 | 6.0 | 45.00 | 0.45 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 005-007/08C4M45 | 0.50 | 4.00 | 0.70 | 8.0 | 45.00 | 0.45 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 006-009/02C4M45 | 0.60 | 4.00 | 0.90 | 2.0 | 45.00 | 0.55 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 006-009/04C4M45 | 0.60 | 4.00 | 0.90 | 4.0 | 45.00 | 0.55 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 006-009/06C4M45 | 0.60 | 4.00 | 0.90 | 6.0 | 45.00 | 0.55 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 006-009/08C4M45 | 0.60 | 4.00 | 0.90 | 8.0 | 45.00 | 0.55 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 006-009/10C4M45 | 0.60 | 4.00 | 0.90 | 10.0 | 45.00 | 0.55 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 007-010/02C4M45 | 0.70 | 4.00 | 1.00 | 2.0 | 45.00 | 0.65 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 007-010/08C4M45 | 0.70 | 4.00 | 1.00 | 8.0 | 45.00 | 0.65 | 2 | 30.0 | 3.0 | C | ● | 0.0010-0.0030 |
| EC-A2 008-012/04C4M45 | 0.80 | 4.00 | 1.20 | 4.0 | 45.00 | 0.75 | 2 | 30.0 | 3.0 | C | ● | 0.0020-0.0040 |
| EC-A2 008-012/06C4M45 | 0.80 | 4.00 | 1.20 | 6.0 | 45.00 | 0.75 | 2 | 30.0 | 3.0 | C | ● | 0.0020-0.0040 |
| EC-A2 008-012/08C4M45 | 0.80 | 4.00 | 1.20 | 8.0 | 45.00 | 0.75 | 2 | 30.0 | 3.0 | C | ● | 0.0020-0.0040 |
| EC-A2 008-012/10C4M45 | 0.80 | 4.00 | 1.20 | 10.0 | 45.00 | 0.75 | 2 | 30.0 | 3.0 | C | ● | 0.0020-0.0040 |
| EC-A2 009-0135/06C4M45 | 0.90 | 4.00 | 1.35 | 6.0 | 45.00 | 0.85 | 2 | 30.0 | 3.0 | C | ● | 0.0030-0.0050 |
| EC-A2 009-0135/10C4M45 | 0.90 | 4.00 | 1.35 | 10.0 | 45.00 | 0.85 | 2 | 30.0 | 3.0 | C | ● | 0.0030-0.0050 |
| EC-A2 009-0135/15C4M50 | 0.90 | 4.00 | 1.35 | 15.0 | 50.00 | 0.85 | 2 | 30.0 | 3.0 | C | ● | 0.0030-0.0050 |
| EC-A2 010-015/04C4M45 | 1.00 | 4.00 | 1.50 | 4.0 | 45.00 | 0.97 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0060 |
| EC-A2 010-015/06C4M45 | 1.00 | 4.00 | 1.50 | 6.0 | 45.00 | 0.97 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0060 |
| EC-A2 010-015/08C4M45 | 1.00 | 4.00 | 1.50 | 8.0 | 45.00 | 0.95 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0060 |
| EC-A2 010-015/10C4M45 | 1.00 | 4.00 | 1.50 | 10.0 | 45.00 | 0.95 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0060 |
| EC-A2 010-015/12C4M45 | 1.00 | 4.00 | 1.50 | 12.0 | 45.00 | 0.93 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0060 |
| EC-A2 010-015/16C4M50 | 1.00 | 4.00 | 1.50 | 16.0 | 50.00 | 0.93 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0060 |
| EC-A2 010-015/20C4M55 | 1.00 | 4.00 | 1.50 | 20.0 | 55.00 | 0.93 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0060 |
| EC-A2 012-018/06C4M45 | 1.20 | 4.00 | 1.80 | 6.0 | 45.00 | 1.17 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0075 |
| EC-A2 012-018/08C4M45 | 1.20 | 4.00 | 1.80 | 8.0 | 45.00 | 1.15 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0075 |
| EC-A2 012-018/10C4M45 | 1.20 | 4.00 | 1.80 | 10.0 | 45.00 | 1.15 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0075 |
| EC-A2 012-018/16C4M50 | 1.20 | 4.00 | 1.80 | 16.0 | 50.00 | 1.13 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0075 |
| EC-A2 014-021/06C4M45 | 1.40 | 4.00 | 2.10 | 6.0 | 45.00 | 1.35 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0080 |
| EC-A2 014-021/08C4M45 | 1.40 | 4.00 | 2.10 | 8.0 | 45.00 | 1.35 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0080 |
| EC-A2 014-021/10C4M45 | 1.40 | 4.00 | 2.10 | 10.0 | 45.00 | 1.35 | 2 | 30.0 | 3.0 | C | ● | 0.0040-0.0080 |
| EC-A2 015-023/06C4M45 | 1.50 | 4.00 | 2.30 | 6.0 | 45.00 | 1.47 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 015-023/08C4M45 | 1.50 | 4.00 | 2.30 | 8.0 | 45.00 | 1.45 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 015-023/10C4M45 | 1.50 | 4.00 | 2.30 | 10.0 | 45.00 | 1.45 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 015-023/12C4M45 | 1.50 | 4.00 | 2.30 | 12.0 | 45.00 | 1.41 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 015-023/14C4M50 | 1.50 | 4.00 | 2.30 | 14.0 | 50.00 | 1.41 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 015-023/16C4M50 | 1.50 | 4.00 | 2.30 | 16.0 | 50.00 | 1.41 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 015-023/20C4M55 | 1.50 | 4.00 | 2.30 | 20.0 | 55.00 | 1.41 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 016-024/06C4M45 | 1.60 | 4.00 | 2.40 | 6.0 | 45.00 | 1.57 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 016-024/08C4M45 | 1.60 | 4.00 | 2.40 | 8.0 | 45.00 | 1.55 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 016-024/10C4M45 | 1.60 | 4.00 | 2.40 | 10.0 | 45.00 | 1.55 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 016-024/18C4M55 | 1.60 | 4.00 | 2.40 | 18.0 | 55.00 | 1.53 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 016-024/26C4M60 | 1.60 | 4.00 | 2.40 | 26.0 | 60.00 | 1.53 | 2 | 30.0 | 3.0 | C | ● | 0.0050-0.0100 |
| EC-A2 018-027/06C4M45 | 1.80 | 4.00 | 2.70 | 6.0 | 45.00 | 1.77 | 2 | 30.0 | 3.0 | C | ● | 0.0060-0.0100 |
| EC-A2 018-027/08C4M45 | 1.80 | 4.00 | 2.70 | 8.0 | 45.00 | 1.75 | 2 | 30.0 | 3.0 | C | ● | 0.0060-0.0100 |
| EC-A2 018-027/10C4M45 | 1.80 | 4.00 | 2.70 | 10.0 | 45.00 | 1.75 | 2 | 30.0 | 3.0 | C | ● | 0.0060-0.0100 |
| EC-A2 018-027/12C4M45 | 1.80 | 4.00 | 2.70 | 12.0 | 45.00 | 1.73 | 2 | 30.0 | 3.0 | C | ● | 0.0060-0.0100 |
| EC-A2 018-027/14C4M50 | 1.80 | 4.00 | 2.70 | 14.0 | 50.00 | 1.73 | 2 | 30.0 | 3.0 | C | ● | 0.0060-0.0100 |
| EC-A2 020-030/06C4M45 | 2.00 | 4.00 | 3.00 | 6.0 | 45.00 | 1.97 | 2 | 30.0 | 3.0 | C | ● | 0.0080-0.0150 |
| EC-A2 020-030/08C4M45 | 2.00 | 4.00 | 3.00 | 8.0 | 45.00 | 1.95 | 2 | 30.0 | 3.0 | C | ● | 0.0080-0.0150 |
| EC-A2 020-030/10C4M45 | 2.00 | 4.00 | 3.00 | 10.0 | 45.00 | 1.95 | 2 | 30.0 | 3.0 | C | ● | 0.0080-0.0150 |
| EC-A2 020-030/12C4M45 | 2.00 | 4.00 | 3.00 | 12.0 | 45.00 | 1.93 | 2 | 30.0 | 3.0 | C | ● | 0.0080-0.0150 |
| EC-A2 020-030/14C4M50 | 2.00 | 4.00 | 3.00 | 14.0 | 50.00 | 1.93 | 2 | 30.0 | 3.0 | C | ● | 0.0080-0.0150 |

• The DC tolerance is: 0 - -0.015 mm • For user guide, see pages 211-218

(1) Number of flutes

(2) Maximum ramping angle

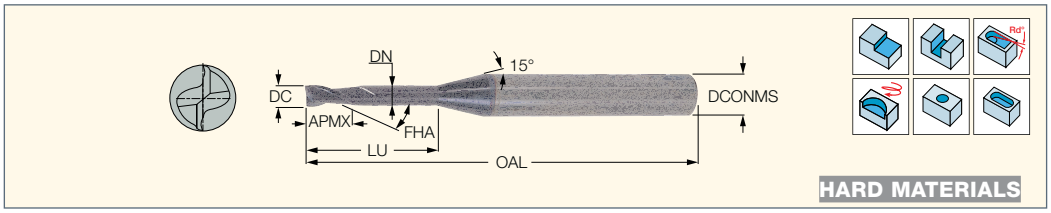
(3) C-Cylindrical

Continued

SOLIDMILL PREMIUM LINE

**EC-A2-M (rib processing)**

2 Flute, 30° Helix Solid Carbide Endmills for Rib Processing on Hard Materials up to 55 HRC




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | OAL | DN | NOF(1) | FHA | RMPX°(2) | Shank(3) | IC903 | $f_z$ (mm/t) |
| EC-A2 020-030/16C4M50 | 2.00 | 4.00 | 3.00 | 16.0 | 50.00 | 1.91 | 2 | 30.0 | 3.0 | C | ● | 0.0080-0.0150 |
| EC-A2 020-030/18C4M55 | 2.00 | 4.00 | 3.00 | 18.0 | 55.00 | 1.91 | 2 | 30.0 | 3.0 | C | ● | 0.0080-0.0150 |
| EC-A2 020-030/20C4M55 | 2.00 | 4.00 | 3.00 | 20.0 | 55.00 | 1.89 | 2 | 30.0 | 3.0 | C | ● | 0.0080-0.0150 |
| EC-A2 020-030/25C4M60 | 2.00 | 4.00 | 3.00 | 25.0 | 60.00 | 1.89 | 2 | 30.0 | 3.0 | C | ● | 0.0080-0.0150 |
| EC-A2 020-030/30C4M70 | 2.00 | 4.00 | 3.00 | 30.0 | 70.00 | 1.89 | 2 | 30.0 | 3.0 | C | ● | 0.0080-0.0150 |
| EC-A2 025-037/08C4M45 | 2.50 | 4.00 | 3.70 | 8.0 | 45.00 | 2.40 | 2 | 30.0 | 3.0 | C | ● | 0.0090-0.0180 |
| EC-A2 025-037/10C4M45 | 2.50 | 4.00 | 3.70 | 10.0 | 45.00 | 2.40 | 2 | 30.0 | 3.0 | C | ● | 0.0090-0.0180 |
| EC-A2 025-037/12C4M45 | 2.50 | 4.00 | 3.70 | 12.0 | 45.00 | 2.40 | 2 | 30.0 | 3.0 | C | ● | 0.0090-0.0180 |
| EC-A2 025-037/14C4M50 | 2.50 | 4.00 | 3.70 | 14.0 | 50.00 | 2.40 | 2 | 30.0 | 3.0 | C | ● | 0.0090-0.0180 |
| EC-A2 025-037/16C4M55 | 2.50 | 4.00 | 3.70 | 16.0 | 55.00 | 2.40 | 2 | 30.0 | 3.0 | C | ● | 0.0090-0.0180 |
| EC-A2 025-037/18C4M55 | 2.50 | 4.00 | 3.70 | 18.0 | 55.00 | 2.40 | 2 | 30.0 | 3.0 | C | ● | 0.0090-0.0180 |
| EC-A2 025-037/20C4M60 | 2.50 | 4.00 | 3.70 | 20.0 | 60.00 | 2.40 | 2 | 30.0 | 3.0 | C | ● | 0.0090-0.0180 |
| EC-A2 025-037/25C4M70 | 2.50 | 4.00 | 3.70 | 25.0 | 70.00 | 2.40 | 2 | 30.0 | 3.0 | C | ● | 0.0090-0.0180 |
| EC-A2 025-037/30C4M80 | 2.50 | 4.00 | 3.70 | 30.0 | 80.00 | 2.40 | 2 | 30.0 | 3.0 | C | ● | 0.0090-0.0180 |
| EC-A2 030-045/08C6M45 | 3.00 | 6.00 | 4.50 | 8.0 | 45.00 | 2.85 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0180 |
| EC-A2 030-045/10C6M45 | 3.00 | 6.00 | 4.50 | 10.0 | 45.00 | 2.85 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0180 |
| EC-A2 030-045/12C6M45 | 3.00 | 6.00 | 4.50 | 12.0 | 45.00 | 2.85 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0180 |
| EC-A2 030-045/14C6M50 | 3.00 | 6.00 | 4.50 | 14.0 | 50.00 | 2.85 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0180 |
| EC-A2 030-045/16C6M55 | 3.00 | 6.00 | 4.50 | 16.0 | 55.00 | 2.85 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0180 |
| EC-A2 030-045/18C6M55 | 3.00 | 6.00 | 4.50 | 18.0 | 55.00 | 2.85 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0180 |
| EC-A2 030-045/20C6M60 | 3.00 | 6.00 | 4.50 | 20.0 | 60.00 | 2.85 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0180 |
| EC-A2 030-045/25C6M65 | 3.00 | 6.00 | 4.50 | 25.0 | 65.00 | 2.85 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0180 |
| EC-A2 030-045/30C6M70 | 3.00 | 6.00 | 4.50 | 30.0 | 70.00 | 2.85 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0180 |
| EC-A2 030-045/35C6M80 | 3.00 | 6.00 | 4.50 | 35.0 | 80.00 | 2.85 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0180 |
| EC-A2 030-045/40C6M90 | 3.00 | 6.00 | 4.50 | 40.0 | 90.00 | 2.85 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0180 |
| EC-A2 040-060/12C6M50 | 4.00 | 6.00 | 6.00 | 12.0 | 50.00 | 3.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0200 |
| EC-A2 040-060/16C6M60 | 4.00 | 6.00 | 6.00 | 16.0 | 60.00 | 3.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0200 |
| EC-A2 040-060/20C6M60 | 4.00 | 6.00 | 6.00 | 20.0 | 60.00 | 3.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0200 |
| EC-A2 040-060/25C6M70 | 4.00 | 6.00 | 6.00 | 25.0 | 70.00 | 3.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0200 |
| EC-A2 040-060/30C6M70 | 4.00 | 6.00 | 6.00 | 30.0 | 70.00 | 3.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0200 |
| EC-A2 040-060/35C6M80 | 4.00 | 6.00 | 6.00 | 35.0 | 80.00 | 3.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0200 |
| EC-A2 040-060/40C6M90 | 4.00 | 6.00 | 6.00 | 40.0 | 90.00 | 3.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0200 |
| EC-A2 040-060/45C6M90 | 4.00 | 6.00 | 6.00 | 45.0 | 90.00 | 3.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0200 |
| EC-A2 040-060/50C6M100 | 4.00 | 6.00 | 6.00 | 50.0 | 100.00 | 3.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0200 |
| EC-A2 050-075/16C6M60 | 5.00 | 6.00 | 7.50 | 16.0 | 60.00 | 4.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0250 |
| EC-A2 050-075/20C6M60 | 5.00 | 6.00 | 7.50 | 20.0 | 60.00 | 4.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0250 |
| EC-A2 050-075/25C6M70 | 5.00 | 6.00 | 7.50 | 25.0 | 70.00 | 4.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0250 |
| EC-A2 050-075/30C6M80 | 5.00 | 6.00 | 7.50 | 30.0 | 80.00 | 4.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0250 |
| EC-A2 050-075/35C6M80 | 5.00 | 6.00 | 7.50 | 35.0 | 80.00 | 4.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0250 |
| EC-A2 050-075/40C6M80 | 5.00 | 6.00 | 7.50 | 40.0 | 80.00 | 4.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0250 |
| EC-A2 050-075/50C6M110 | 5.00 | 6.00 | 7.50 | 50.0 | 110.00 | 4.80 | 2 | 30.0 | 3.0 | C | ● | 0.0100-0.0250 |
| EC-A2 060-090/20C6M80 | 6.00 | 6.00 | 9.00 | 20.0 | 80.00 | 5.70 | 2 | 30.0 | 3.0 | C | ● | 0.0150-0.0300 |
| EC-A2 060-090/30C6M90 | 6.00 | 6.00 | 9.00 | 30.0 | 90.00 | 5.70 | 2 | 30.0 | 3.0 | C | ● | 0.0150-0.0300 |
| EC-A2 060-090/40C6M100 | 6.00 | 6.00 | 9.00 | 40.0 | 100.00 | 5.60 | 2 | 30.0 | 3.0 | C | ● | 0.0150-0.0300 |
| EC-A2 060-090/50C6M110 | 6.00 | 6.00 | 9.00 | 50.0 | 110.00 | 5.60 | 2 | 30.0 | 3.0 | C | ● | 0.0150-0.0300 |

• The DC tolerance is: 0 - -0.015 mm • For user guide, see pages 211-218

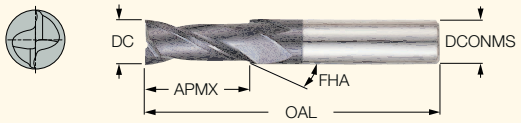
(1) Number of flutes

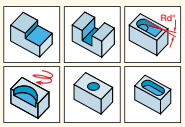
(2) Maximum ramping angle

(3) C-Cylindrical

SOLIDMILL PREMIUM LINE

**EC-A2 (medium length)**
2 Flute, 30° Helix Medium Length Solid Carbide Endmills for Hard Materials up to 65 HRC



HARD MATERIALS

| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | IC903 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| EC-A2 010-025C06-40 | 1.00 | 6.00 | 2.50 | 40.00 | 2 | 30.0 | 5.0 | C | ● | 0.0050-0.0100 |
| EC-A2 015-040C06-40 | 1.50 | 6.00 | 4.00 | 40.00 | 2 | 30.0 | 5.0 | C | ● | 0.0050-0.0200 |
| EC-A2 020-060C06-40 | 2.00 | 6.00 | 6.00 | 40.00 | 2 | 30.0 | 5.0 | C | ● | 0.0100-0.0300 |
| EC-A2 025-080C06-40 | 2.50 | 6.00 | 8.00 | 40.00 | 2 | 30.0 | 5.0 | C | ● | 0.0100-0.0300 |
| EC-A2 030-080C06-45 | 3.00 | 6.00 | 8.00 | 45.00 | 2 | 30.0 | 5.0 | C | ● | 0.0100-0.0400 |
| EC-A2 035-10C06M45 | 3.50 | 6.00 | 10.00 | 45.00 | 2 | 30.0 | 5.0 | C | ● | 0.0100-0.0400 |
| EC-A2 040-11C06-45 | 4.00 | 6.00 | 11.00 | 45.00 | 2 | 30.0 | 5.0 | C | ● | 0.0200-0.0500 |
| EC-A2 045-11C06-45 | 4.50 | 6.00 | 11.00 | 45.00 | 2 | 30.0 | 5.0 | C | ● | 0.0200-0.0500 |
| EC-A2 050-13C06-50 | 5.00 | 6.00 | 13.00 | 50.00 | 2 | 30.0 | 5.0 | C | ● | 0.0200-0.0600 |
| EC-A2 055-13C06-50 | 5.50 | 6.00 | 13.00 | 50.00 | 2 | 30.0 | 5.0 | C | ● | 0.0200-0.0600 |
| EC-A2 060-13C06-50 | 6.00 | 6.00 | 13.00 | 50.00 | 2 | 30.0 | 5.0 | C | ● | 0.0300-0.0700 |
| EC-A2 065-16C08-60 | 6.50 | 8.00 | 16.00 | 60.00 | 2 | 30.0 | 5.0 | C | ● | 0.0300-0.0700 |
| EC-A2 070-16C08-60 | 7.00 | 8.00 | 16.00 | 60.00 | 2 | 30.0 | 5.0 | C | ● | 0.0300-0.0800 |
| EC-A2 075-16C08-60 | 7.50 | 8.00 | 16.00 | 60.00 | 2 | 30.0 | 5.0 | C | ● | 0.0300-0.0800 |
| EC-A2 080-19C08-60 | 8.00 | 8.00 | 19.00 | 60.00 | 2 | 30.0 | 5.0 | C | ● | 0.0300-0.0900 |
| EC-A2 085-19C10-70 | 8.50 | 10.00 | 19.00 | 70.00 | 2 | 30.0 | 5.0 | C | ● | 0.0300-0.0900 |
| EC-A2 090-19C10-70 | 9.00 | 10.00 | 19.00 | 70.00 | 2 | 30.0 | 5.0 | C | ● | 0.0300-0.0900 |
| EC-A2 095-19C10-70 | 9.50 | 10.00 | 19.00 | 70.00 | 2 | 30.0 | 5.0 | C | ● | 0.0300-0.0900 |
| EC-A2 100-22C10-70 | 10.00 | 10.00 | 22.00 | 70.00 | 2 | 30.0 | 5.0 | C | ● | 0.0300-0.1000 |
| EC-A2 110-22C12-75 | 11.00 | 12.00 | 22.00 | 75.00 | 2 | 30.0 | 5.0 | C | ● | 0.0300-0.1000 |
| EC-A2 120-26C12-75 | 12.00 | 12.00 | 26.00 | 75.00 | 2 | 30.0 | 5.0 | C | ● | 0.0400-0.1100 |
| EC-A2 150-26C16-90 | 15.00 | 16.00 | 26.00 | 90.00 | 2 | 30.0 | 5.0 | C | ● | 0.0400-0.1200 |
| EC-A2 160-32C16-100 | 16.00 | 16.00 | 32.00 | 100.00 | 2 | 30.0 | 5.0 | C | ● | 0.0500-0.1300 |
| EC-A2 180-32C18-100 | 18.00 | 18.00 | 32.00 | 100.00 | 2 | 30.0 | 5.0 | C | ● | 0.0500-0.1300 |
| EC-A2 200-38C20-105 | 20.00 | 20.00 | 38.00 | 105.00 | 2 | 30.0 | 5.0 | C | ● | 0.0500-0.1300 |
| EC-A2 220-38C20-105 | 22.00 | 20.00 | 38.00 | 105.00 | 2 | 30.0 | 5.0 | C | ● | 0.0500-0.1300 |

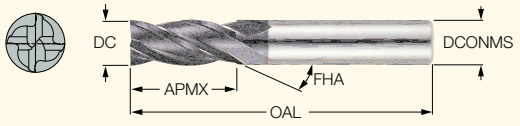
• For user guide, see pages 211-218

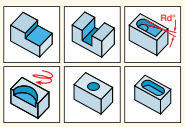
(1) Number of flutes
(2) Maximum ramping angle
(3) C-Cylindrical

SOLIDMILL PREMIUM LINE

**EC-A4**

4 Flute, 30° Helix Medium Length Solid Carbide Endmills for Hard Materials up to 65 HRC



HARD MATERIALS

| Designation | Dimensions | | | | | | | | IC903 | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF[1] | FHA | RMPX°[2] | Shank[3] | | $f_z$ (mm/t) |
| **EC-A4 020-060C06-50** | 2.00 | 6.00 | 6.00 | 50.00 | 4 | 30.0 | 5.0 | C | ● | 0.01-0.03 |
| **EC-A4 025-080C06-50** | 2.50 | 6.00 | 8.00 | 50.00 | 4 | 30.0 | 5.0 | C | ● | 0.01-0.03 |
| **EC-A4 030-080C06-50** | 3.00 | 6.00 | 8.00 | 50.00 | 4 | 30.0 | 5.0 | C | ● | 0.01-0.04 |
| **EC-A4 035-10C06-50** | 3.50 | 6.00 | 10.00 | 50.00 | 4 | 30.0 | 5.0 | C | ● | 0.01-0.04 |
| **EC-A4 040-11C06-50** | 4.00 | 6.00 | 11.00 | 50.00 | 4 | 30.0 | 5.0 | C | ● | 0.02-0.05 |
| **EC-A4 045-11C06-50** | 4.50 | 6.00 | 11.00 | 50.00 | 4 | 30.0 | 5.0 | C | ● | 0.02-0.05 |
| **EC-A4 050-13C06-50** | 5.00 | 6.00 | 13.00 | 50.00 | 4 | 30.0 | 5.0 | C | ● | 0.02-0.06 |
| **EC-A4 055-13C06-50** | 5.50 | 6.00 | 13.00 | 50.00 | 4 | 30.0 | 5.0 | C | ● | 0.02-0.06 |
| **EC-A4 060-13C06-50** | 6.00 | 6.00 | 13.00 | 50.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.07 |
| **EC-A4 065-16C08-63** | 6.50 | 8.00 | 16.00 | 63.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.07 |
| **EC-A4 070-16C08-63** | 7.00 | 8.00 | 16.00 | 63.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.08 |
| **EC-A4 075-16C08-63** | 7.50 | 8.00 | 16.00 | 63.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.08 |
| **EC-A4 080-19C08-63** | 8.00 | 8.00 | 19.00 | 63.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.09 |
| **EC-A4 085-19C10-72** | 8.50 | 10.00 | 19.00 | 72.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.09 |
| **EC-A4 090-19C10-72** | 9.00 | 10.00 | 19.00 | 72.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.09 |
| **EC-A4 095-19C10-70** | 9.50 | 10.00 | 19.00 | 70.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.09 |
| **EC-A4 100-22C10-72** | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.10 |
| **EC-A4 105-22C12-75** | 10.50 | 12.00 | 22.00 | 75.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.10 |
| **EC-A4 110-22C12-75** | 11.00 | 12.00 | 22.00 | 75.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.10 |
| **EC-A4 115-22C12-75** | 11.50 | 12.00 | 22.00 | 75.00 | 4 | 30.0 | 5.0 | C | ● | 0.03-0.10 |
| **EC-A4 120-26C12-73** | 12.00 | 12.00 | 26.00 | 73.00 | 4 | 30.0 | 5.0 | C | ● | 0.04-0.11 |
| **EC-A4 140-26C14-83** | 14.00 | 14.00 | 26.00 | 83.00 | 4 | 30.0 | 5.0 | C | ● | 0.04-0.12 |
| **EC-A4 150-26C16-92** | 15.00 | 16.00 | 26.00 | 92.00 | 4 | 30.0 | 5.0 | C | ● | 0.04-0.12 |
| **EC-A4 160-32C16-92** | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 30.0 | 5.0 | C | ● | 0.05-0.13 |
| **EC-A4 180-32C18-100** | 18.00 | 18.00 | 32.00 | 100.00 | 4 | 30.0 | 5.0 | C | ● | 0.05-0.13 |
| **EC-A4 190-32C20-100** | 19.00 | 20.00 | 32.00 | 100.00 | 4 | 30.0 | 5.0 | C | ● | 0.05-0.13 |
| **EC-A4 200-38C20-104** | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 30.0 | 5.0 | C | ● | 0.05-0.13 |
| **EC-A4 250-45C25-120** | 25.00 | 25.00 | 45.00 | 120.00 | 4 | 30.0 | 5.0 | C | ● | 0.05-0.13 |

• The DC tolerance is: 0 - -0.03 mm • For user guide, see pages 211-218

(1) Number of flutes

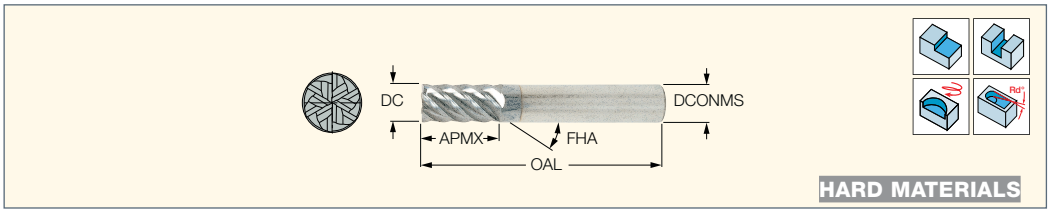
(2) Maximum ramping angle

(3) C-Cylindrical

SOLIDMILL PREMIUM LINE

## ECH-B-6

6 Flute, 45° Helix Medium Length Solid Carbide Endmills for Finishing Hard Materials up to 65 HRC




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | RMPX°(3) | Tough ↔ Hard IC900 | IC903 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ECH060B16-6C06 | 6.00 | 6.00 | 16.00 | 57.00 | 6 | 45.0 | C | 5.0 | ● | ● | 0.03-0.07 |
| ECH060B16-6W06 | 6.00 | 6.00 | 16.00 | 57.00 | 6 | 45.0 | W | 5.0 | ● | | 0.03-0.07 |
| ECH080B20-6C08 | 8.00 | 8.00 | 20.00 | 63.00 | 6 | 45.0 | C | 5.0 | ● | ● | 0.03-0.09 |
| ECH080B20-6W08 | 8.00 | 8.00 | 20.00 | 63.00 | 6 | 45.0 | W | 5.0 | ● | | 0.03-0.09 |
| ECH100B22-6C10 | 10.00 | 10.00 | 22.00 | 72.00 | 6 | 45.0 | C | 5.0 | ● | ● | 0.03-0.10 |
| ECH100B22-6W10 | 10.00 | 10.00 | 22.00 | 72.00 | 6 | 45.0 | W | 5.0 | ● | | 0.03-0.10 |
| ECH120B25-6C12 | 12.00 | 12.00 | 25.00 | 83.00 | 6 | 45.0 | C | 5.0 | ● | ● | 0.04-0.11 |
| ECH120B25-6W12 | 12.00 | 12.00 | 25.00 | 83.00 | 6 | 45.0 | W | 5.0 | ● | | 0.04-0.11 |
| ECH160B32-6C16 | 16.00 | 16.00 | 32.00 | 92.00 | 6 | 45.0 | C | 5.0 | ● | ● | 0.05-0.13 |
| ECH160B32-6W16 | 16.00 | 16.00 | 32.00 | 92.00 | 6 | 45.0 | W | 5.0 | ● | | 0.05-0.13 |
| ECH200B38-6C20 | 20.00 | 20.00 | 38.00 | 104.00 | 6 | 45.0 | C | 5.0 | ● | ● | 0.05-0.13 |
| ECH200B38-6W20 | 20.00 | 20.00 | 38.00 | 104.00 | 6 | 45.0 | W | 5.0 | ● | | 0.05-0.13 |

• Use IC903 for machining hardened steel up to 65 HRC • For user guide, see pages 211-218

(1) Number of flutes

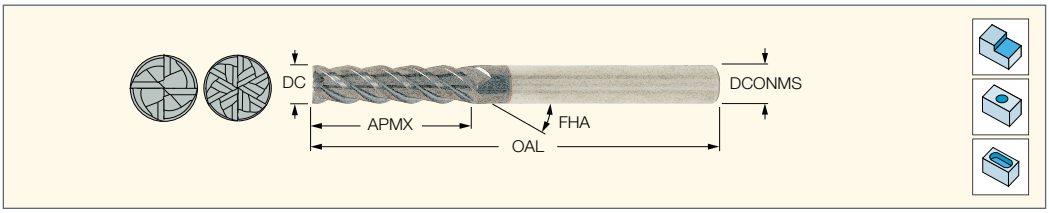
(2) C-Cylindrical, W-Weldon

(3) Maximum ramping angle

SOLIDMILL PREMIUM LINE

## ECL-B-4/6

4 & 6 Flute, 45° Helix Long Solid Carbide Endmills




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(2) | FHA | Shank(3) | IC900 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| ECL060B24-4C06 | 6.00 | 6.00 | 24.00 | 65.00 | 4 | 45.0 | C | ● | 0.03-0.07 |
| ECL060B24-4W06 | 6.00 | 6.00 | 24.00 | 65.00 | 4 | 45.0 | W | ● | 0.03-0.07 |
| ECL080B32-4C08 | 8.00 | 8.00 | 32.00 | 79.00 | 4 | 45.0 | C | ● | 0.03-0.09 |
| ECL080B32-4W08 | 8.00 | 8.00 | 32.00 | 79.00 | 4 | 45.0 | W | ● | 0.03-0.09 |
| ECL100B40-4C10 | 10.00 | 10.00 | 40.00 | 100.00 | 4 | 45.0 | C | ● | 0.03-0.10 |
| ECL100B40-4W10 | 10.00 | 10.00 | 40.00 | 100.00 | 4 | 45.0 | W | ● | 0.03-0.10 |
| ECL120B48-4C12 | 12.00 | 12.00 | 48.00 | 100.00 | 4 | 45.0 | C | ● | 0.04-0.11 |
| ECL120B48-4W12 | 12.00 | 12.00 | 48.00 | 100.00 | 4 | 45.0 | W | ● | 0.04-0.11 |
| ECL140B50-4C14 | 14.00 | 14.00 | 50.00 | 100.00 | 4 | 45.0 | C | ● | 0.04-0.12 |
| ECL140B50-4W14 | 14.00 | 14.00 | 50.00 | 100.00 | 4 | 45.0 | W | ● | 0.04-0.12 |
| ECL160B56-6C16 (1) | 16.00 | 16.00 | 56.00 | 115.00 | 6 | 45.0 | C | ● | 0.05-0.13 |
| ECL160B56-6W16 (1) | 16.00 | 16.00 | 56.00 | 115.00 | 6 | 45.0 | W | ● | 0.05-0.13 |
| ECL200B60-6C20 (1) | 20.00 | 20.00 | 60.00 | 125.00 | 6 | 45.0 | C | ● | 0.05-0.13 |
| ECL200B60-6W20 (1) | 20.00 | 20.00 | 60.00 | 125.00 | 6 | 45.0 | W | ● | 0.05-0.13 |

• Smooth cutting in extra long depth • For user guide, see pages 211-218

(1) Cannot be used for plunging application

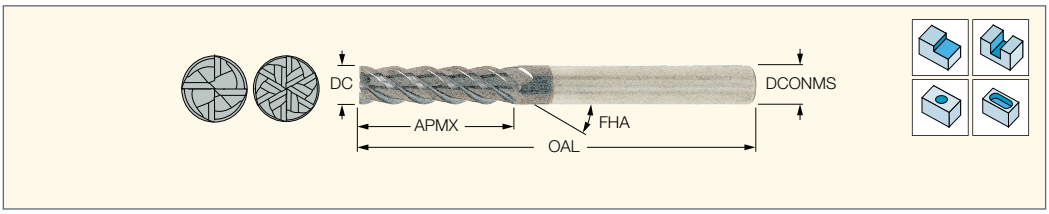
(2) Number of flutes

(3) C-Cylindrical, W-Weldon

SOLIDMILL PREMIUM LINE

**ECXL-B-4/6**

4 & 6 Flute, 45° Helix Extra Long Solid Carbide Endmills




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF[2] | FHA | Shank[3] | IC900 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| ECXL100B60-4C10 | 10.00 | 10.00 | 60.00 | 112.00 | 4 | 45.0 | C | ● | 0.03-0.10 |
| ECXL100B60-4W10 | 10.00 | 10.00 | 60.00 | 112.00 | 4 | 45.0 | W | ● | 0.03-0.10 |
| ECXL120B72-4C12 | 12.00 | 12.00 | 72.00 | 150.00 | 4 | 45.0 | C | ● | 0.04-0.11 |
| ECXL120B72-4W12 | 12.00 | 12.00 | 72.00 | 150.00 | 4 | 45.0 | W | ● | 0.04-0.11 |
| ECXL160B80-6C16 [1] | 16.00 | 16.00 | 80.00 | 150.00 | 6 | 45.0 | C | ● | 0.05-0.13 |
| ECXL160B80-6W16 [1] | 16.00 | 16.00 | 80.00 | 150.00 | 6 | 45.0 | W | ● | 0.05-0.13 |
| ECXL200B80-6C20 [1] | 20.00 | 20.00 | 80.00 | 150.00 | 6 | 45.0 | C | ● | 0.05-0.13 |

• Smooth cutting in extra long depth. • For user guide, see pages 211-218

[1] Cannot be used for plunging application

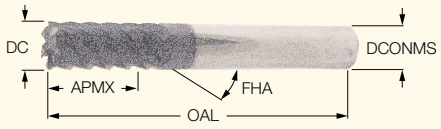
[2] Number of flutes

[3] C-Cylindrical, W-Weldon

SOLIDMILL PREMIUM LINE

**EC-D6**

6 Flute, 50° Helix Medium Length Solid Carbide Endmills for Finishing of Hard Materials up to 65 HRC




HARD MATERIALS

| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF[1] | FHA | Shank[2] | RMPX°[3] | IC903 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| EC-D6 06-13C06H57 | 6.00 | 6.00 | 13.00 | 57.00 | 6 | 50.0 | C | 5.0 | ● | 0.03-0.07 |
| EC-D6 08-20C08H63 | 8.00 | 8.00 | 20.00 | 63.00 | 6 | 50.0 | C | 5.0 | ● | 0.03-0.09 |
| EC-D6 10-22C10H72 | 10.00 | 10.00 | 22.00 | 72.00 | 6 | 50.0 | C | 5.0 | ● | 0.03-0.10 |
| EC-D6 12-25C12H83 | 12.00 | 12.00 | 25.00 | 83.00 | 6 | 50.0 | C | 5.0 | ● | 0.04-0.11 |
| EC-D6 12-25W12H83 | 12.00 | 12.00 | 25.00 | 83.00 | 6 | 50.0 | W | 5.0 | ● | 0.04-0.11 |
| EC-D6 14-30C14H83 | 14.00 | 14.00 | 30.00 | 83.00 | 6 | 50.0 | C | 5.0 | ● | 0.04-0.12 |
| EC-D6 16-32C16H92 | 16.00 | 16.00 | 32.00 | 92.00 | 6 | 50.0 | C | 5.0 | ● | 0.05-0.13 |
| EC-D6 20-38C20H104 | 20.00 | 20.00 | 38.00 | 104.00 | 6 | 50.0 | C | 5.0 | ● | 0.05-0.13 |

• For user guide, see pages 211-218

[1] Number of flutes

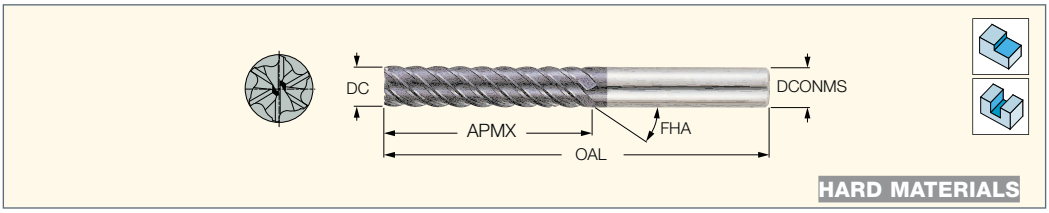
[2] C-Cylindrical, W-Weldon

[3] Maximum ramping angle

SOLIDMILL PREMIUM LINE

## EC-B6

6 Flute, 45° Helix Extra Long Solid Carbide Endmills for Finishing Hard Materials up to 65 HRC




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | IC903 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| EC-B6 060-026C06-70 | 6.00 | 6.00 | 26.00 | 70.00 | 6 | 45.0 | C | ● | 0.03-0.07 |
| EC-B6 080-036C08-90 | 8.00 | 8.00 | 36.00 | 90.00 | 6 | 45.0 | C | ● | 0.03-0.09 |
| EC-B6 100-46C10-100 | 10.00 | 10.00 | 46.00 | 100.00 | 6 | 45.0 | C | ● | 0.03-0.10 |
| EC-B6 120-56C12-110 | 12.00 | 12.00 | 56.00 | 110.00 | 6 | 45.0 | C | ● | 0.04-0.11 |
| EC-B6 160-66C16-130 | 16.00 | 16.00 | 66.00 | 130.00 | 6 | 45.0 | C | ● | 0.05-0.13 |
| EC-B6 200-76C20-140 | 20.00 | 20.00 | 76.00 | 140.00 | 6 | 45.0 | C | ● | 0.05-0.13 |
| EC-B6 250-92C25-180 | 25.00 | 25.00 | 92.00 | 180.00 | 6 | 45.0 | C | ● | 0.05-0.13 |

- For user guide, see pages 211-218

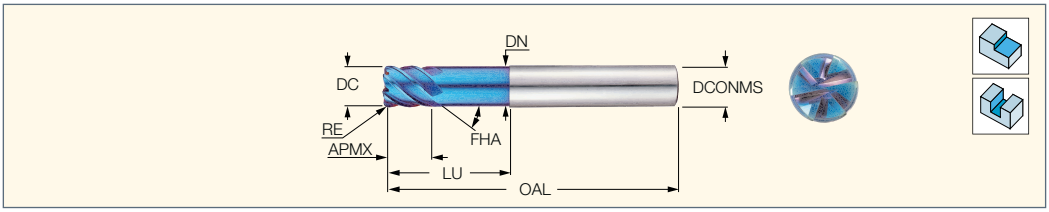
(1) Number of flutes

(2) C-Cylindrical

SOLIDMILL PREMIUM LINE

## EC-B6-H

6 Flute, 45° Helix Extra Long Solid Carbide Endmills for Finishing Hard Materials up to 65 HRC




| Designation | Dimensions DC | DCONMS | APMX | RE | DN | LU | OAL | NOF(1) | FHA | Shank(2) | IC702 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC-B6 06-06/14C06R.25H50 | 6.00 | 6.00 | 6.00 | 0.25 | 5.85 | 14.00 | 50.00 | 6 | 45.0 | C | ● | 0.03-0.07 |
| EC-B6 06-06/14C06R.5H50 | 6.00 | 6.00 | 6.00 | 0.50 | 5.70 | 14.00 | 50.00 | 6 | 45.0 | C | ● | 0.03-0.07 |
| EC-B6 06-13C06R.5H70 | 6.00 | 6.00 | 13.00 | 0.50 | 6.00 | - | 70.00 | 6 | 45.0 | C | ● | 0.03-0.07 |
| EC-B6 06-26C06R.5H70 | 6.00 | 6.00 | 26.00 | 0.50 | 6.00 | - | 70.00 | 6 | 45.0 | C | ● | 0.03-0.07 |
| EC-B6 08-08/24C08R.5H60 | 8.00 | 8.00 | 8.00 | 0.50 | 7.70 | 24.00 | 60.00 | 6 | 45.0 | C | ● | 0.03-0.09 |
| EC-B6 08-19C08R.5H90 | 8.00 | 8.00 | 19.00 | 0.50 | 8.00 | - | 90.00 | 6 | 45.0 | C | ● | 0.03-0.09 |
| EC-B6 08-36C08R.5H90 | 8.00 | 8.00 | 36.00 | 0.50 | 8.00 | - | 90.00 | 6 | 45.0 | C | ● | 0.03-0.09 |
| EC-B6 10-22C10R.5H100 | 10.00 | 10.00 | 22.00 | 0.50 | 10.00 | - | 100.00 | 6 | 45.0 | C | ● | 0.03-0.10 |
| EC-B6 10-22C10R1H100 | 10.00 | 10.00 | 22.00 | 1.00 | 10.00 | - | 100.00 | 6 | 45.0 | C | ● | 0.03-0.10 |
| EC-B6 10-46C10R1H100 | 10.00 | 10.00 | 46.00 | 1.00 | 10.00 | - | 100.00 | 6 | 45.0 | C | ● | 0.03-0.10 |
| EC-B6 12-26C12R.5H110 | 12.00 | 12.00 | 26.00 | 0.50 | 12.00 | - | 110.00 | 6 | 45.0 | C | ● | 0.04-0.11 |
| EC-B6 12-26C12R1H110 | 12.00 | 12.00 | 26.00 | 1.00 | 12.00 | - | 110.00 | 6 | 45.0 | C | ● | 0.04-0.11 |
| EC-B6 12-56C12R1H110 | 12.00 | 12.00 | 56.00 | 1.00 | 12.00 | - | 110.00 | 6 | 45.0 | C | ● | 0.04-0.11 |
| EC-B6 20-38C20R2H140 | 20.00 | 20.00 | 38.00 | 2.00 | 20.00 | - | 140.00 | 6 | 45.0 | C | ● | 0.05-0.13 |
| EC-B6 20-76C20R2H140 | 20.00 | 20.00 | 76.00 | 2.00 | 20.00 | - | 140.00 | 6 | 45.0 | C | ● | 0.05-0.13 |

- For user guide, see pages 211-218

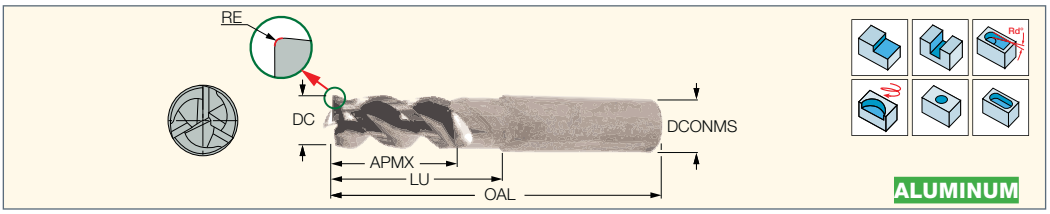
(1) Number of flutes

(2) C-Cylindrical

**CHATTERFREE** SOLID MILL LINE

## ECA-H3-CF

Solid Carbide Endmills with Different Helix, Variable Pitch, and Relieved Neck for Machining Aluminum




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | LU | RMPX°(2) | Shank(3) | CSP(4) | RE | IC08 | IC1508 | $f_z$ (mm/t) |
| ECA-H3 01-04C06CF-R.05 | 1.00 | 6.00 | 4.00 | 57.00 | 3 | 5.40 | 5.0 | wC | 0 | 0.05 | • | | 0.01-0.01 |
| ECA-H3 015-04/06C06CF-R01 | 1.50 | 6.00 | 4.00 | 57.00 | 3 | 6.00 | 5.0 | C | 0 | 0.10 | • | | 0.01-0.01 |
| ECA-H3 02-05/08C06CF-R01 | 2.00 | 6.00 | 5.00 | 57.00 | 3 | 8.00 | 5.0 | C | 0 | 0.10 | • | | 0.01-0.02 |
| ECA-H3 025-05/08C06CF-R01 | 2.50 | 6.00 | 5.00 | 57.00 | 3 | 8.00 | 5.0 | C | 0 | 0.10 | • | | 0.01-0.02 |
| ECA-H3 03-07/12C06CF-R01 | 3.00 | 6.00 | 7.00 | 57.00 | 3 | 12.00 | 5.0 | C | 0 | 0.10 | • | | 0.03-0.05 |
| ECA-H3 04-10/16C06CF-R02 | 4.00 | 6.00 | 10.00 | 57.00 | 3 | 16.00 | 5.0 | C | 0 | 0.20 | • | | 0.03-0.05 |
| ECA-H3 05-12/20C06CF-R02 | 5.00 | 6.00 | 12.00 | 57.00 | 3 | 20.00 | 5.0 | C | 0 | 0.20 | • | | 0.03-0.06 |
| ECA-H3 06-09/18C06CF-R02 | 6.00 | 6.00 | 9.00 | 57.00 | 3 | 18.00 | 5.0 | C | 0 | 0.20 | • | | 0.03-0.07 |
| ECA-H3 06-09/18C06CF-R02D | 6.00 | 6.00 | 9.00 | 57.00 | 3 | 18.00 | 5.0 | C | 0 | 0.20 | | • | 0.03-0.07 |
| ECA-H3 06-09/18C06CF-R04 | 6.00 | 6.00 | 9.00 | 57.00 | 3 | 18.00 | 5.0 | C | 0 | 0.40 | • | | 0.03-0.07 |
| ECA-H3 06-09/18C06CF-R08 | 6.00 | 6.00 | 9.00 | 57.00 | 3 | 18.00 | 5.0 | C | 0 | 0.80 | • | | 0.03-0.07 |
| ECA-H3 06-09/30C06CF-R02 | 6.00 | 6.00 | 9.00 | 65.00 | 3 | 30.00 | 5.0 | C | 0 | 0.20 | • | | 0.03-0.07 |
| ECA-H3 06-09/30C06CF-R02D | 6.00 | 6.00 | 9.00 | 65.00 | 3 | 30.00 | 5.0 | C | 0 | 0.20 | | • | 0.03-0.07 |
| ECA-H3 06-09/30C06CF-R04 | 6.00 | 6.00 | 9.00 | 65.00 | 3 | 30.00 | 5.0 | C | 0 | 0.40 | • | | 0.03-0.07 |
| ECA-H3 06-09/30C06CF-R08 | 6.00 | 6.00 | 9.00 | 65.00 | 3 | 30.00 | 5.0 | C | 0 | 0.80 | • | | 0.03-0.07 |
| ECA-H3 06-09C06CF-R02-57 | 6.00 | 6.00 | 9.00 | 57.00 | 3 | - | 5.0 | C | 0 | 0.20 | • | | 0.03-0.07 |
| ECA-H3 06-12/18C06CF-R02C | 6.00 | 6.00 | 12.00 | 57.00 | 3 | 18.00 | 5.0 | C | 1 | 0.20 | • | | 0.03-0.07 |
| ECA-H3 06-12/30C06CF-R02C | 6.00 | 6.00 | 12.00 | 64.00 | 3 | 30.00 | 5.0 | C | 1 | 0.20 | • | | 0.03-0.07 |
| ECA-H3 06-14/24C06CF-R02 | 6.00 | 6.00 | 14.00 | 60.00 | 3 | 24.00 | 5.0 | C | 0 | 0.20 | • | | 0.03-0.07 |
| ECA-H3 06-14/24C06CF-R02D | 6.00 | 6.00 | 14.00 | 60.00 | 3 | 24.00 | 5.0 | C | 0 | 0.20 | | • | 0.03-0.07 |
| ECA-H3 08-12/24C08CF-R02 | 8.00 | 8.00 | 12.00 | 63.00 | 3 | 24.00 | 5.0 | C | 0 | 0.20 | • | | 0.03-0.09 |
| ECA-H3 08-12/24C08CF-R02D | 8.00 | 8.00 | 12.00 | 63.00 | 3 | 24.00 | 5.0 | C | 0 | 0.20 | | • | 0.03-0.09 |
| ECA-H3 08-12/24C08CF-R04 | 8.00 | 8.00 | 12.00 | 63.00 | 3 | 24.00 | 5.0 | C | 0 | 0.40 | • | | 0.03-0.09 |
| ECA-H3 08-12/24C08CF-R08 | 8.00 | 8.00 | 12.00 | 63.00 | 3 | 24.00 | 5.0 | C | 0 | 0.80 | • | | 0.03-0.09 |
| ECA-H3 08-12/24C08CF-R30 | 8.00 | 8.00 | 12.00 | 63.00 | 3 | 24.00 | 5.0 | C | 0 | 3.00 | • | | 0.03-0.09 |
| ECA-H3 08-12/40C08CF-R02 | 8.00 | 8.00 | 12.00 | 79.00 | 3 | 40.00 | 5.0 | C | 0 | 0.20 | • | | 0.03-0.09 |
| ECA-H3 08-12/40C08CF-R02D | 8.00 | 8.00 | 12.00 | 79.00 | 3 | 40.00 | 5.0 | C | 0 | 0.20 | | • | 0.03-0.09 |
| ECA-H3 08-12/40C08CF-R04 | 8.00 | 8.00 | 12.00 | 79.00 | 3 | 40.00 | 5.0 | C | 0 | 0.40 | • | | 0.03-0.09 |
| ECA-H3 08-12/40C08CF-R08 | 8.00 | 8.00 | 12.00 | 79.00 | 3 | 40.00 | 5.0 | C | 0 | 0.80 | • | | 0.03-0.09 |
| ECA-H3 08-12C08CF-R02-63 | 8.00 | 8.00 | 12.00 | 63.00 | 3 | - | 5.0 | C | 0 | 0.20 | • | | 0.03-0.09 |
| ECA-H3 08-16/24C08CF-R02C | 8.00 | 8.00 | 16.00 | 63.00 | 3 | 24.00 | 5.0 | C | 1 | 0.20 | • | | 0.03-0.09 |
| ECA-H3 08-16/40C08CF-R02C | 8.00 | 8.00 | 16.00 | 78.00 | 3 | 40.00 | 5.0 | C | 1 | 0.20 | • | | 0.03-0.09 |
| ECA-H3 08-18/32C08CF-R02 | 8.00 | 8.00 | 18.00 | 68.00 | 3 | 32.00 | 5.0 | C | 0 | 0.20 | • | | 0.03-0.09 |
| ECA-H3 08-18/32C08CF-R02D | 8.00 | 8.00 | 18.00 | 68.00 | 3 | 32.00 | 5.0 | C | 0 | 0.20 | | • | 0.03-0.09 |
| ECA-H3 10-15/30C10CF-R02 | 10.00 | 10.00 | 15.00 | 72.00 | 3 | 30.00 | 5.0 | C | 0 | 0.20 | • | | 0.03-0.10 |
| ECA-H3 10-15/30C10CF-R02D | 10.00 | 10.00 | 15.00 | 72.00 | 3 | 30.00 | 5.0 | C | 0 | 0.20 | | • | 0.03-0.10 |
| ECA-H3 10-15/30C10CF-R04 | 10.00 | 10.00 | 15.00 | 72.00 | 3 | 30.00 | 5.0 | C | 0 | 0.40 | • | | 0.03-0.10 |
| ECA-H3 10-15/30C10CF-R08 | 10.00 | 10.00 | 15.00 | 72.00 | 3 | 30.00 | 5.0 | C | 0 | 0.80 | • | | 0.03-0.10 |
| ECA-H3 10-15/30C10CF-R16 | 10.00 | 10.00 | 15.00 | 72.00 | 3 | 30.00 | 5.0 | C | 0 | 1.60 | • | | 0.03-0.10 |
| ECA-H3 10-15/30C10CF-R30 | 10.00 | 10.00 | 15.00 | 72.00 | 3 | 30.00 | 5.0 | C | 0 | 3.00 | • | | 0.03-0.10 |
| ECA-H3 10-15/50C10CF-R02 | 10.00 | 10.00 | 15.00 | 92.00 | 3 | 50.00 | 5.0 | C | 0 | 0.20 | • | | 0.03-0.10 |
| ECA-H3 10-15/50C10CF-R02D | 10.00 | 10.00 | 15.00 | 92.00 | 3 | 50.00 | 5.0 | C | 0 | 0.20 | | • | 0.03-0.10 |
| ECA-H3 10-15/50C10CF-R04 | 10.00 | 10.00 | 15.00 | 92.00 | 3 | 50.00 | 5.0 | C | 0 | 0.40 | • | | 0.03-0.10 |
| ECA-H3 10-15/50C10CF-R08 | 10.00 | 10.00 | 15.00 | 92.00 | 3 | 50.00 | 5.0 | C | 0 | 0.80 | • | | 0.03-0.10 |
| ECA-H3 10-15/50C10CF-R16 | 10.00 | 10.00 | 15.00 | 92.00 | 3 | 50.00 | 5.0 | C | 0 | 1.60 | • | | 0.03-0.10 |
| ECA-H3 10-15/50C10CF-R20 | 10.00 | 10.00 | 15.00 | 92.00 | 3 | 50.00 | 5.0 | C | 0 | 2.00 | • | | 0.03-0.10 |
| ECA-H3 10-15/50C10CF-R30 | 10.00 | 10.00 | 15.00 | 92.00 | 3 | 50.00 | 5.0 | C | 0 | 3.00 | • | | 0.03-0.10 |
| ECA-H3 10-15C10CF-R02-72 | 10.00 | 10.00 | 15.00 | 72.00 | 3 | - | 5.0 | C | 0 | 0.20 | • | | 0.03-0.10 |
| ECA-H3 10-20/30C10CF-R02C | 10.00 | 10.00 | 20.00 | 72.00 | 3 | 30.00 | 5.0 | C | 1 | 0.20 | • | | 0.03-0.10 |
| ECA-H3 10-20/50C10CF-R02C | 10.00 | 10.00 | 20.00 | 100.00 | 3 | 50.00 | 5.0 | C | 1 | 0.20 | • | | 0.03-0.10 |
| ECA-H3 10-22/40C10CF-R02 | 10.00 | 10.00 | 22.00 | 80.00 | 3 | 40.00 | 5.0 | C | 0 | 0.20 | • | | 0.03-0.10 |
| ECA-H3 10-22/40C10CF-R02D | 10.00 | 10.00 | 22.00 | 80.00 | 3 | 40.00 | 5.0 | C | 0 | 0.20 | | • | 0.03-0.10 |
| ECA-H3 10-22/40C10CF-R30 | 10.00 | 10.00 | 22.00 | 80.00 | 3 | 40.00 | 5.0 | C | 0 | 3.00 | • | | 0.03-0.10 |
| ECA-H3 12-18/36C12CF-R02 | 12.00 | 12.00 | 18.00 | 83.00 | 3 | 36.00 | 5.0 | C | 0 | 0.20 | • | | 0.04-0.11 |
| ECA-H3 12-18/36C12CF-R02D | 12.00 | 12.00 | 18.00 | 83.00 | 3 | 36.00 | 5.0 | C | 0 | 0.20 | | • | 0.04-0.11 |
| ECA-H3 12-18/36C12CF-R04 | 12.00 | 12.00 | 18.00 | 83.00 | 3 | 36.00 | 5.0 | C | 0 | 0.40 | • | | 0.04-0.11 |
| ECA-H3 12-18/36C12CF-R08 | 12.00 | 12.00 | 18.00 | 83.00 | 3 | 36.00 | 5.0 | C | 0 | 0.80 | • | | 0.04-0.11 |
| ECA-H3 12-18/36C12CF-R16 | 12.00 | 12.00 | 18.00 | 83.00 | 3 | 36.00 | 5.0 | C | 0 | 1.60 | • | | 0.04-0.11 |
| ECA-H3 12-18/36C12CF-R20 | 12.00 | 12.00 | 18.00 | 83.00 | 3 | 36.00 | 5.0 | C | 0 | 2.00 | • | | 0.04-0.11 |

• For user guide, see pages 211-218 • Grade IC1508 - DLC Coating

(1) Number of flutes

(2) Maximum ramping angle

(3) C-Cylindrical

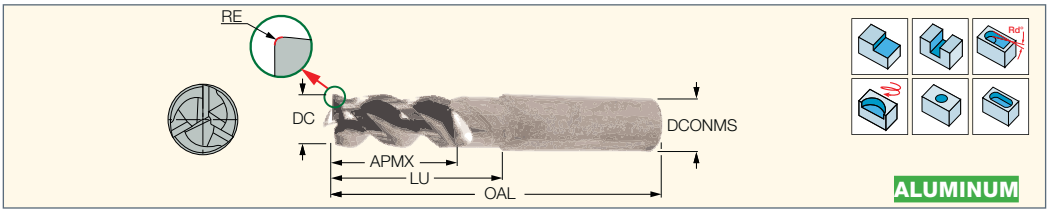
(4) 0 - Without coolant supply, 1 - With coolant supply

Continued

CHATTERFREE SOLID MILL LINE

## ECA-H3-CF

Solid Carbide Endmills with Different Helix, Variable Pitch, and Relieved Neck for Machining Aluminum




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF[1] | LU | RMPX°[2] | Shank[3] | CSP[4] | RE | IC08 | IC1508 | $f_z$ (mm/t) |
| ECA-H3 12-18/36C12CF-R25 | 12.00 | 12.00 | 18.00 | 83.00 | 3 | 36.00 | 5.0 | C | 0 | 2.50 | • | | 0.04-0.11 |
| ECA-H3 12-18/36C12CF-R30 | 12.00 | 12.00 | 18.00 | 83.00 | 3 | 36.00 | 5.0 | C | 0 | 3.00 | • | | 0.04-0.11 |
| ECA-H3 12-18/60C12CF-R02 | 12.00 | 12.00 | 18.00 | 100.00 | 3 | 60.00 | 5.0 | C | 0 | 0.20 | • | | 0.04-0.11 |
| ECA-H3 12-18/60C12CF-R02D | 12.00 | 12.00 | 18.00 | 100.00 | 3 | 60.00 | 5.0 | C | 0 | 0.20 | | • | 0.04-0.11 |
| ECA-H3 12-18/60C12CF-R04 | 12.00 | 12.00 | 18.00 | 100.00 | 3 | 60.00 | 5.0 | C | 0 | 0.40 | • | | 0.04-0.11 |
| ECA-H3 12-18/60C12CF-R08 | 12.00 | 12.00 | 18.00 | 100.00 | 3 | 60.00 | 5.0 | C | 0 | 0.80 | • | | 0.04-0.11 |
| ECA-H3 12-18/60C12CF-R16 | 12.00 | 12.00 | 18.00 | 100.00 | 3 | 60.00 | 5.0 | C | 0 | 1.60 | • | | 0.04-0.11 |
| ECA-H3 12-18/60C12CF-R20 | 12.00 | 12.00 | 18.00 | 100.00 | 3 | 60.00 | 5.0 | C | 0 | 2.00 | • | | 0.04-0.11 |
| ECA-H3 12-18/60C12CF-R25 | 12.00 | 12.00 | 18.00 | 100.00 | 3 | 60.00 | 5.0 | C | 0 | 2.50 | • | | 0.04-0.11 |
| ECA-H3 12-18/60C12CF-R30 | 12.00 | 12.00 | 18.00 | 100.00 | 3 | 60.00 | 5.0 | C | 0 | 3.00 | • | | 0.04-0.11 |
| ECA-H3 12-18C12CF-R02-83 | 12.00 | 12.00 | 18.00 | 83.00 | 3 | - | 5.0 | C | 0 | 0.20 | • | | 0.04-0.11 |
| ECA-H3 12-24/36C12CF-R02C | 12.00 | 12.00 | 24.00 | 83.00 | 3 | 36.00 | 5.0 | C | 1 | 0.20 | • | | 0.04-0.11 |
| ECA-H3 12-24/60C12CF-R02C | 12.00 | 12.00 | 24.00 | 100.00 | 3 | 60.00 | 5.0 | C | 1 | 0.20 | • | | 0.04-0.11 |
| ECA-H3 12-26/48C12CF-R02 | 12.00 | 12.00 | 26.00 | 93.00 | 3 | 48.00 | 5.0 | C | 0 | 0.20 | • | | 0.04-0.11 |
| ECA-H3 12-26/48C12CF-R02D | 12.00 | 12.00 | 26.00 | 93.00 | 3 | 48.00 | 5.0 | C | 0 | 0.20 | | • | 0.04-0.11 |
| ECA-H3 16-24/48C16CF-R02 | 16.00 | 16.00 | 24.00 | 92.00 | 3 | 48.00 | 5.0 | C | 0 | 0.20 | • | | 0.05-0.13 |
| ECA-H3 16-24/48C16CF-R02D | 16.00 | 16.00 | 24.00 | 92.00 | 3 | 48.00 | 5.0 | C | 0 | 0.20 | | • | 0.05-0.13 |
| ECA-H3 16-24/48C16CF-R04 | 16.00 | 16.00 | 24.00 | 92.00 | 3 | 48.00 | 5.0 | C | 0 | 0.40 | • | | 0.05-0.13 |
| ECA-H3 16-24/48C16CF-R08 | 16.00 | 16.00 | 24.00 | 92.00 | 3 | 48.00 | 5.0 | C | 0 | 0.80 | • | | 0.05-0.13 |
| ECA-H3 16-24/48C16CF-R16 | 16.00 | 16.00 | 24.00 | 92.00 | 3 | 48.00 | 5.0 | C | 0 | 1.60 | • | | 0.05-0.13 |
| ECA-H3 16-24/48C16CF-R20 | 16.00 | 16.00 | 24.00 | 92.00 | 3 | 48.00 | 5.0 | C | 0 | 2.00 | • | | 0.05-0.13 |
| ECA-H3 16-24/48C16CF-R25 | 16.00 | 16.00 | 24.00 | 92.00 | 3 | 48.00 | 5.0 | C | 0 | 2.50 | • | | 0.05-0.13 |
| ECA-H3 16-24/48C16CF-R30 | 16.00 | 16.00 | 24.00 | 92.00 | 3 | 48.00 | 5.0 | C | 0 | 3.00 | • | | 0.05-0.13 |
| ECA-H3 16-24/48C16CF-R32 | 16.00 | 16.00 | 24.00 | 92.00 | 3 | 48.00 | 5.0 | C | 0 | 3.20 | • | | 0.05-0.13 |
| ECA-H3 16-24/48C16CF-R40 | 16.00 | 16.00 | 24.00 | 92.00 | 3 | 48.00 | 5.0 | C | 0 | 4.00 | • | | 0.05-0.13 |
| ECA-H3 16-24/48C16CF-R50 | 16.00 | 16.00 | 24.00 | 92.00 | 3 | 48.00 | 5.0 | C | 0 | 5.00 | • | | 0.05-0.13 |
| ECA-H3 16-24/80C16CF-R02 | 16.00 | 16.00 | 24.00 | 128.00 | 3 | 80.00 | 5.0 | C | 0 | 0.20 | • | | 0.05-0.13 |
| ECA-H3 16-24/80C16CF-R04 | 16.00 | 16.00 | 24.00 | 128.00 | 3 | 80.00 | 5.0 | C | 0 | 0.40 | • | | 0.05-0.13 |
| ECA-H3 16-24/80C16CF-R08 | 16.00 | 16.00 | 24.00 | 128.00 | 3 | 80.00 | 5.0 | C | 0 | 0.80 | • | | 0.05-0.13 |
| ECA-H3 16-24/80C16CF-R16 | 16.00 | 16.00 | 24.00 | 128.00 | 3 | 80.00 | 5.0 | C | 0 | 1.60 | • | | 0.05-0.13 |
| ECA-H3 16-24/80C16CF-R20 | 16.00 | 16.00 | 24.00 | 128.00 | 3 | 80.00 | 5.0 | C | 0 | 2.00 | • | | 0.05-0.13 |
| ECA-H3 16-24/80C16CF-R25 | 16.00 | 16.00 | 24.00 | 128.00 | 3 | 80.00 | 5.0 | C | 0 | 2.50 | • | | 0.05-0.13 |
| ECA-H3 16-24/80C16CF-R30 | 16.00 | 16.00 | 24.00 | 128.00 | 3 | 80.00 | 5.0 | C | 0 | 3.00 | • | | 0.05-0.13 |
| ECA-H3 16-24/80C16CF-R32 | 16.00 | 16.00 | 24.00 | 128.00 | 3 | 80.00 | 5.0 | C | 0 | 3.20 | • | | 0.05-0.13 |
| ECA-H3 16-24/80C16CF-R40 | 16.00 | 16.00 | 24.00 | 128.00 | 3 | 80.00 | 5.0 | C | 0 | 4.00 | • | | 0.05-0.13 |
| ECA-H3 16-24/80C16CF-R50 | 16.00 | 16.00 | 24.00 | 128.00 | 3 | 80.00 | 5.0 | C | 0 | 5.00 | • | | 0.05-0.13 |
| ECA-H3 16-32/48C16CF-R02C | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 48.00 | 5.0 | C | 1 | 0.20 | • | | 0.05-0.13 |
| ECA-H3 16-32/80C16CF-R02C | 16.00 | 16.00 | 32.00 | 127.00 | 3 | 80.00 | 5.0 | C | 1 | 0.20 | • | | 0.05-0.13 |
| ECA-H3 16-34/64C16CF-R02 | 16.00 | 16.00 | 34.00 | 115.00 | 3 | 64.00 | 5.0 | C | 0 | 0.20 | • | | 0.05-0.13 |
| ECA-H3 16-34/64C16CF-R02D | 16.00 | 16.00 | 34.00 | 115.00 | 3 | 64.00 | 5.0 | C | 0 | 0.20 | | • | 0.05-0.13 |
| ECA-H3 20-30/100C20CF-R02 | 20.00 | 20.00 | 30.00 | 150.00 | 3 | 100.00 | 5.0 | C | 0 | 0.20 | • | | 0.05-0.14 |
| ECA-H3 20-30/100C20CF-R04 | 20.00 | 20.00 | 30.00 | 150.00 | 3 | 100.00 | 5.0 | C | 0 | 0.40 | • | | 0.05-0.14 |
| ECA-H3 20-30/100C20CF-R08 | 20.00 | 20.00 | 30.00 | 150.00 | 3 | 100.00 | 5.0 | C | 0 | 0.80 | • | | 0.05-0.14 |
| ECA-H3 20-30/100C20CF-R32 | 20.00 | 20.00 | 30.00 | 150.00 | 3 | 100.00 | 5.0 | C | 0 | 3.20 | • | | 0.05-0.14 |
| ECA-H3 20-30/100C20CF-R40 | 20.00 | 20.00 | 30.00 | 150.00 | 3 | 100.00 | 5.0 | C | 0 | 4.00 | • | | 0.05-0.14 |
| ECA-H3 20-30/100C20CF-R50 | 20.00 | 20.00 | 30.00 | 150.00 | 3 | 100.00 | 5.0 | C | 0 | 5.00 | • | | 0.05-0.14 |
| ECA-H3 20-30/60C20CF-R02 | 20.00 | 20.00 | 30.00 | 110.00 | 3 | 60.00 | 5.0 | C | 0 | 0.20 | • | | 0.05-0.14 |
| ECA-H3 20-30/60C20CF-R02D | 20.00 | 20.00 | 30.00 | 110.00 | 3 | 60.00 | 5.0 | C | 0 | 0.20 | | • | 0.05-0.14 |
| ECA-H3 20-30/60C20CF-R04 | 20.00 | 20.00 | 30.00 | 110.00 | 3 | 60.00 | 5.0 | C | 0 | 0.40 | • | | 0.05-0.14 |
| ECA-H3 20-30/60C20CF-R08 | 20.00 | 20.00 | 30.00 | 110.00 | 3 | 60.00 | 5.0 | C | 0 | 0.80 | • | | 0.05-0.14 |
| ECA-H3 20-30/60C20CF-R16 | 20.00 | 20.00 | 30.00 | 110.00 | 3 | 60.00 | 5.0 | C | 0 | 1.60 | • | | 0.05-0.14 |
| ECA-H3 20-30/60C20CF-R20 | 20.00 | 20.00 | 30.00 | 110.00 | 3 | 60.00 | 5.0 | C | 0 | 2.00 | • | | 0.05-0.14 |
| ECA-H3 20-30/60C20CF-R32 | 20.00 | 20.00 | 30.00 | 110.00 | 3 | 60.00 | 5.0 | C | 0 | 3.20 | • | | 0.05-0.14 |
| ECA-H3 20-30/60C20CF-R40 | 20.00 | 20.00 | 30.00 | 110.00 | 3 | 60.00 | 5.0 | C | 0 | 4.00 | • | | 0.05-0.14 |
| ECA-H3 20-30/60C20CF-R50 | 20.00 | 20.00 | 30.00 | 110.00 | 3 | 60.00 | 5.0 | C | 0 | 5.00 | • | | 0.05-0.14 |
| ECA-H3 20-40/60C20CF-R02C | 20.00 | 20.00 | 40.00 | 109.00 | 3 | 60.00 | 5.0 | C | 1 | 0.20 | • | | 0.05-0.14 |
| ECA-H3 20-42/80C20CF-R02 | 20.00 | 20.00 | 42.00 | 130.00 | 3 | 80.00 | 5.0 | C | 0 | 0.20 | • | | 0.05-0.14 |

• For user guide, see pages 211-218 • Grade IC1508 - DLC Coating

(1) Number of flutes

(2) Maximum ramping angle

(3) C-Cylindrical

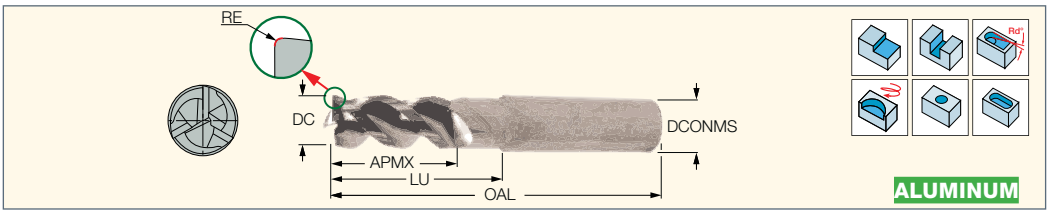
(4) 0 - Without coolant supply, 1 - With coolant supply

Continued

CHATTERFREE SOLID MILL LINE

**ECA-H3-CF**

Solid Carbide Endmills with Different Helix, Variable Pitch, and Relieved Neck for Machining Aluminum




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | LU | RMPX°(2) | Shank(3) | CSP(4) | RE | IC08 | IC1508 | $f_z$ (mm/t) |
| ECA-H3 20-42/80C20CF-R02D | 20.00 | 20.00 | 42.00 | 130.00 | 3 | 80.00 | 5.0 | C | 0 | 0.20 | | • | 0.05-0.14 |
| ECA-H320-40/100C20CF-R02C | 20.00 | 20.00 | 40.00 | 149.00 | 3 | 100.00 | 5.0 | C | 1 | 0.20 | • | | 0.05-0.14 |
| ECA-H3 25-38/125C25CF-R02 | 25.00 | 25.00 | 38.00 | 185.00 | 3 | 125.00 | 5.0 | C | 0 | 0.20 | • | | 0.05-0.15 |
| ECA-H3 25-38/125C25CF-R08 | 25.00 | 25.00 | 38.00 | 185.00 | 3 | 125.00 | 5.0 | C | 0 | 0.80 | • | | 0.05-0.15 |
| ECA-H3 25-38/125C25CF-R16 | 25.00 | 25.00 | 38.00 | 185.00 | 3 | 125.00 | 5.0 | C | 0 | 1.60 | • | | 0.05-0.15 |
| ECA-H3 25-38/125C25CF-R20 | 25.00 | 25.00 | 38.00 | 185.00 | 3 | 125.00 | 5.0 | C | 0 | 2.00 | • | | 0.05-0.15 |
| ECA-H3 25-38/125C25CF-R40 | 25.00 | 25.00 | 38.00 | 185.00 | 3 | 125.00 | 5.0 | C | 0 | 4.00 | • | | 0.05-0.15 |
| ECA-H3 25-38/125C25CF-R50 | 25.00 | 25.00 | 38.00 | 185.00 | 3 | 125.00 | 5.0 | C | 0 | 5.00 | • | | 0.05-0.15 |
| ECA-H3 25-38/75C25CF-R02 | 25.00 | 25.00 | 38.00 | 130.00 | 3 | 75.00 | 5.0 | C | 0 | 0.20 | • | | 0.05-0.15 |
| ECA-H3 25-38/75C25CF-R04 | 25.00 | 25.00 | 38.00 | 130.00 | 3 | 75.00 | 5.0 | C | 0 | 0.40 | • | | 0.05-0.15 |
| ECA-H3 25-38/75C25CF-R16 | 25.00 | 25.00 | 38.00 | 130.00 | 3 | 75.00 | 5.0 | C | 0 | 1.60 | • | | 0.05-0.15 |
| ECA-H3 25-38/75C25CF-R20 | 25.00 | 25.00 | 38.00 | 130.00 | 3 | 75.00 | 5.0 | C | 0 | 2.00 | • | | 0.05-0.15 |
| ECA-H3 25-38/75C25CF-R32 | 25.00 | 25.00 | 38.00 | 130.00 | 3 | 75.00 | 5.0 | C | 0 | 3.20 | • | | 0.05-0.15 |
| ECA-H3 25-38/75C25CF-R50 | 25.00 | 25.00 | 38.00 | 130.00 | 3 | 75.00 | 5.0 | C | 0 | 5.00 | • | | 0.05-0.15 |
| ECA-H3 25-50/75C25CF-R02C | 25.00 | 25.00 | 50.00 | 128.00 | 3 | 75.00 | 5.0 | C | 1 | 0.20 | • | | 0.05-0.15 |
| ECA-H3 25-52/100C25CF-R02 | 25.00 | 25.00 | 52.00 | 156.00 | 3 | 100.00 | 5.0 | C | 0 | 0.20 | • | | 0.05-0.15 |
| ECA-H325-50/125C25CF-R02C | 25.00 | 25.00 | 50.00 | 183.00 | 3 | 125.00 | 5.0 | C | 1 | 0.20 | • | | 0.05-0.15 |

• For user guide, see pages 211-218 • Grade IC1508 - DLC Coating

(1) Number of flutes

(2) Maximum ramping angle

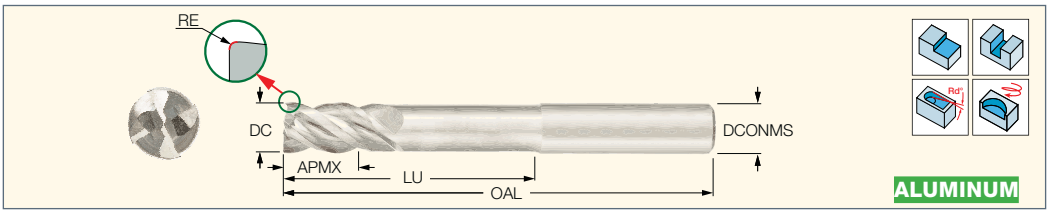
(3) C-Cylindrical

(4) 0 - Without coolant supply, 1 - With coolant supply

CHATTERFREE SOLID MILL LINE

**ECA-H4-CF**

Solid Carbide Endmills with Different Helix and Long Neck Relief for Machining Aluminum




| Designation | Dimensions | | | | | | | | | IC08 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | APMX | LU | OAL | DCONMS | RE | NOF(1) | RMPX°(2) | Shank(3) | | |
| ECA-H4 06-09/30C06CFR02 | 6.00 | 9.00 | 30.00 | 65.00 | 6.00 | 0.20 | 4 | 5.0 | C | • | 0.03-0.07 |
| ECA-H4 06-12/18C06CFR02 | 6.00 | 12.00 | 18.00 | 57.00 | 6.00 | 0.20 | 4 | 5.0 | C | • | 0.03-0.07 |
| ECA-H4 08-12/40C08CFR02 | 8.00 | 12.00 | 40.00 | 79.00 | 8.00 | 0.20 | 4 | 5.0 | C | • | 0.03-0.09 |
| ECA-H4 08-16/24C08CFR02 | 8.00 | 16.00 | 24.00 | 63.00 | 8.00 | 0.20 | 4 | 5.0 | C | • | 0.03-0.09 |
| ECA-H4 10-15/50C10CFR02 | 10.00 | 15.00 | 50.00 | 92.00 | 10.00 | 0.20 | 4 | 5.0 | C | • | 0.04-0.10 |
| ECA-H4 10-20/30C10CFR02 | 10.00 | 20.00 | 30.00 | 72.00 | 10.00 | 0.20 | 4 | 5.0 | C | • | 0.04-0.10 |
| ECA-H4 12-18/60C12CFR02 | 12.00 | 18.00 | 60.00 | 100.00 | 12.00 | 0.20 | 4 | 5.0 | C | • | 0.04-0.11 |
| ECA-H4 12-24/36C12CFR02 | 12.00 | 24.00 | 36.00 | 83.00 | 12.00 | 0.20 | 4 | 5.0 | C | • | 0.04-0.11 |
| ECA-H4 16-24/80C16CFR02 | 16.00 | 24.00 | 80.00 | 128.00 | 16.00 | 0.20 | 4 | 5.0 | C | • | 0.05-0.13 |
| ECA-H4 16-32/48C16CFR02 | 16.00 | 32.00 | 48.00 | 100.00 | 16.00 | 0.20 | 4 | 5.0 | C | • | 0.05-0.13 |
| ECA-H4 20-30/100C20CFR02 | 20.00 | 30.00 | 100.00 | 150.00 | 20.00 | 0.20 | 4 | 5.0 | C | • | 0.05-0.14 |
| ECA-H4 20-40/60C20CFR02 | 20.00 | 40.00 | 60.00 | 110.00 | 20.00 | 0.20 | 4 | 5.0 | C | • | 0.05-0.14 |
| ECA-H4 25-38/125C25CFR02 | 25.00 | 38.00 | 125.00 | 185.00 | 25.00 | 0.20 | 4 | 5.0 | C | • | 0.08-0.14 |
| ECA-H4 25-50/75C25CFR02 | 25.00 | 50.00 | 75.00 | 130.00 | 25.00 | 0.20 | 4 | 5.0 | C | • | 0.08-0.14 |

• For user guide, see pages 211-218

(1) Number of flutes

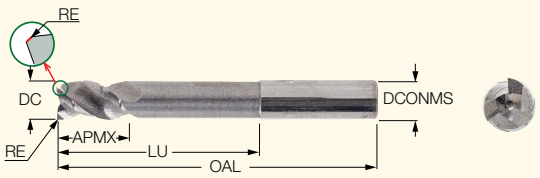
(2) Maximum ramping angle

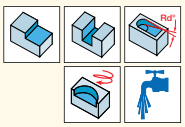
(3) C-Cylindrical

CHATTERFREE SOLID MILL LINE

## ECAP-H3-CF

Solid Carbide Endmills with Different Helix, Variable Pitch, Chip Splitters, and Coolant Holes for Machining Aluminum



ALUMINUM

| Designation | Dimensions DC | APMX | LU | OAL | DCONMS | RE | NOF(1) | RMPX°(2) | Shank(3) | IC08 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ECAP-H3 10-15/50C10CFR02C | 10.00 | 15.00 | 50.0 | 92.00 | 10.00 | 0.20 | 3 | 5.0 | C | ● | 0.03-0.10 |
| ECAP-H3 10-22/40C10CFR02C | 10.00 | 22.00 | 40.0 | 80.00 | 10.00 | 0.20 | 3 | 5.0 | C | ● | 0.03-0.10 |
| ECAP-H3 12-18/60C12CFR02C | 12.00 | 18.00 | 60.0 | 100.00 | 12.00 | 0.20 | 3 | 5.0 | C | ● | 0.04-0.11 |
| ECAP-H3 12-26/48C12CFR02C | 12.00 | 26.00 | 48.0 | 93.00 | 12.00 | 0.20 | 3 | 5.0 | C | ● | 0.04-0.11 |
| ECAP-H3 16-24/80C16CFR02C | 16.00 | 24.00 | 80.0 | 128.00 | 16.00 | 0.20 | 3 | 5.0 | C | ● | 0.05-0.13 |
| ECAP-H3 16-34/64C16CFR02C | 16.00 | 34.00 | 64.0 | 115.00 | 16.00 | 0.20 | 3 | 5.0 | C | ● | 0.05-0.13 |
| ECAP-H320-30/100C20CFR02C | 20.00 | 30.00 | 100.0 | 150.00 | 20.00 | 0.20 | 3 | 5.0 | C | ● | 0.05-0.14 |
| ECAP-H3 20-42/80C20CFR02C | 20.00 | 42.00 | 80.0 | 130.00 | 20.00 | 0.20 | 3 | 5.0 | C | ● | 0.05-0.14 |
| ECAP-H325-38/125C25CFR02C | 25.00 | 38.00 | 125.0 | 185.00 | 25.00 | 0.20 | 3 | 5.0 | C | ● | 0.05-0.14 |
| ECAP-H325-52/100C25CFR02C | 25.00 | 52.00 | 100.0 | 158.00 | 25.00 | 0.20 | 3 | 5.0 | C | ● | 0.05-0.14 |

- For user guide, see pages 211-218

(1) Number of flutes

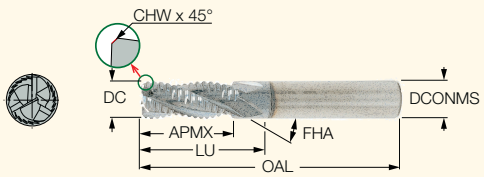
(2) Maximum ramping angle

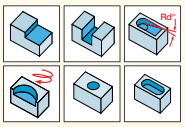
(3) C-Cylindrical

SOLIDSHRED

## ERC-E-3

3 Flute, 38° Helix Medium Length Solid Carbide Roughing Endmills with 3xD Relieved Necks for Machining Aluminum



ALUMINUM

| Designation | Dimensions DC | DCONMS | APMX | LU | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | CHW | KCH | Tough ↔ Hard IC08 | IC1508 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ERC060E13-3C06 | 6.00 | 6.00 | 13.00 | 21.00 | 57.00 | 3 | 38.0 | 5.0 | C | 0.50 | 45.0 | ● | | 0.03-0.07 |
| ERC060E13-3C06CH05DA57 | 6.00 | 6.00 | 13.00 | 21.00 | 57.00 | 3 | 38.0 | 5.0 | C | 0.50 | 45.0 | | ● | 0.03-0.07 |
| ERC060E13-3W06 | 6.00 | 6.00 | 13.00 | 21.00 | 57.00 | 3 | 38.0 | 5.0 | W | 0.50 | 45.0 | ● | | 0.03-0.07 |
| ERC080E20-3C08 | 8.00 | 8.00 | 20.00 | 28.00 | 63.00 | 3 | 38.0 | 5.0 | C | 0.50 | 45.0 | ● | | 0.03-0.15 |
| ERC080E20-3C08CH05DA63 | 8.00 | 8.00 | 20.00 | 28.00 | 63.00 | 3 | 38.0 | 5.0 | C | 0.50 | 45.0 | | ● | 0.03-0.15 |
| ERC080E20-3W08 | 8.00 | 8.00 | 20.00 | 28.00 | 63.00 | 3 | 38.0 | 5.0 | W | 0.50 | 45.0 | ● | | 0.03-0.15 |
| ERC100E22-3C10 | 10.00 | 10.00 | 22.00 | 30.00 | 72.00 | 3 | 38.0 | 5.0 | C | 0.60 | 45.0 | ● | | 0.05-0.20 |
| ERC100E22-3C10CH06DA72 | 10.00 | 10.00 | 22.00 | 30.00 | 72.00 | 3 | 38.0 | 5.0 | C | 0.60 | 45.0 | | ● | 0.05-0.20 |
| ERC100E22-3W10 | 10.00 | 10.00 | 22.00 | 30.00 | 72.00 | 3 | 38.0 | 5.0 | W | 0.60 | 45.0 | ● | | 0.05-0.20 |
| ERC120E25-3C12 | 12.00 | 12.00 | 25.00 | 37.00 | 83.00 | 3 | 38.0 | 5.0 | C | 0.60 | 45.0 | ● | | 0.07-0.22 |
| ERC120E25-3C12CH06DA83 | 12.00 | 12.00 | 25.00 | 37.00 | 83.00 | 3 | 38.0 | 5.0 | C | 0.60 | 45.0 | | ● | 0.07-0.22 |
| ERC120E25-3W12 | 12.00 | 12.00 | 25.00 | 37.00 | 83.00 | 3 | 38.0 | 5.0 | W | 0.60 | 45.0 | ● | | 0.07-0.22 |
| ERC160E32-3C16 | 16.00 | 16.00 | 32.00 | 44.00 | 92.00 | 3 | 38.0 | 5.0 | C | 0.60 | 45.0 | ● | | 0.07-0.25 |
| ERC160E32-3C16CH06DA92 | 16.00 | 16.00 | 32.00 | 44.00 | 92.00 | 3 | 38.0 | 5.0 | C | 0.60 | 45.0 | | ● | 0.07-0.25 |
| ERC160E32-3W16 | 16.00 | 16.00 | 32.00 | 44.00 | 92.00 | 3 | 38.0 | 5.0 | W | 0.60 | 45.0 | ● | | 0.07-0.25 |
| ERC200E38-3C20 | 20.00 | 20.00 | 38.00 | 55.00 | 104.00 | 3 | 38.0 | 5.0 | C | 0.70 | 45.0 | ● | | 0.07-0.25 |
| ERC200E38-3W20 | 20.00 | 20.00 | 38.00 | 55.00 | 104.00 | 3 | 38.0 | 5.0 | W | 0.70 | 45.0 | ● | | 0.07-0.25 |
| ERC250E45-3C25 | 25.00 | 25.00 | 45.00 | 64.00 | 121.00 | 3 | 38.0 | 5.0 | C | 0.70 | 45.0 | ● | | 0.07-0.25 |

- For user guide, see pages 211-218
- Grade IC1508 - DLC Coating

(1) Number of flutes

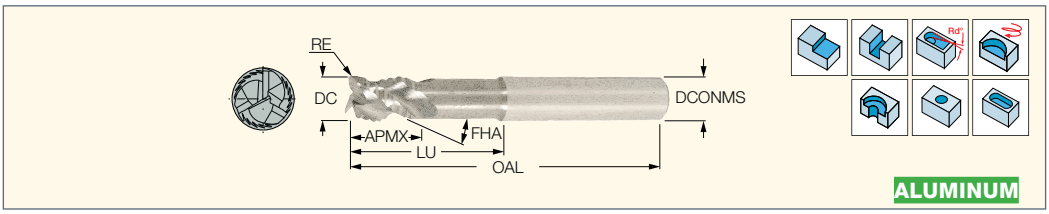
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

SOLIDSHRED

**ECR-B3-R**

3 Flute, 45° Helix Solid Carbide Roughing Endmills with 3xD Relieved Necks for High Stock Removal Rates of Aluminum




| Designation | Dimensions DC | DCONMS | LU | OAL | NOF(1) | FHA | RMPX°(2) | APMX | Shank(3) | RE | Tough ↔ Hard IC08 | IC1508 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECR-B3 06-09/21C06R02A57 | 6.00 | 6.00 | 21.00 | 57.00 | 3 | 45.0 | 5.0 | 9.00 | C | 0.20 | • | | 0.03-0.07 |
| ECR-B3 06-09/21C06R02DA57 | 6.00 | 6.00 | 21.00 | 57.00 | 3 | 45.0 | 5.0 | 9.00 | C | 0.20 | | • | 0.03-0.07 |
| ECR-B3 06-09/21W06R02A57 | 6.00 | 6.00 | 21.00 | 57.00 | 3 | 45.0 | 5.0 | 9.00 | W | 0.20 | • | | 0.03-0.07 |
| ECR-B3 06-09/30C06R02A65 | 6.00 | 6.00 | 30.00 | 65.00 | 3 | 45.0 | 5.0 | 9.00 | C | 0.20 | • | | 0.03-0.07 |
| ECR-B3 06-09/30W06R02A65 | 6.00 | 6.00 | 30.00 | 65.00 | 3 | 45.0 | 5.0 | 9.00 | W | 0.20 | • | | 0.03-0.07 |
| ECR-B3 08-12/27C08R02A63 | 8.00 | 8.00 | 27.00 | 63.00 | 3 | 45.0 | 5.0 | 12.00 | C | 0.20 | • | | 0.03-0.15 |
| ECR-B3 08-12/27C08R02DA63 | 8.00 | 8.00 | 27.00 | 63.00 | 3 | 45.0 | 5.0 | 12.00 | C | 0.20 | | • | 0.03-0.15 |
| ECR-B3 08-12/27W08R02A63 | 8.00 | 8.00 | 27.00 | 63.00 | 3 | 45.0 | 5.0 | 12.00 | W | 0.20 | • | | 0.03-0.15 |
| ECR-B3 08-12/40C08R02A78 | 8.00 | 8.00 | 40.00 | 78.50 | 3 | 45.0 | 5.0 | 12.00 | C | 0.20 | • | | 0.03-0.15 |
| ECR-B3 08-12/40W08R02A78 | 8.00 | 8.00 | 40.00 | 78.50 | 3 | 45.0 | 5.0 | 12.00 | W | 0.20 | • | | 0.03-0.15 |
| ECR-B3 10-12/31C10R02A72 | 10.00 | 10.00 | 31.00 | 72.00 | 3 | 45.0 | 5.0 | 12.00 | C | 0.20 | • | | 0.05-0.20 |
| ECR-B3 10-12/31C10R02DA72 | 10.00 | 10.00 | 31.00 | 72.00 | 3 | 45.0 | 5.0 | 12.00 | C | 0.20 | | • | 0.05-0.20 |
| ECR-B3 10-12/31W10R02A72 | 10.00 | 10.00 | 31.00 | 72.00 | 3 | 45.0 | 5.0 | 12.00 | W | 0.20 | • | | 0.05-0.20 |
| ECR-B3 10-12/50C10R02A100 | 10.00 | 10.00 | 50.00 | 100.00 | 3 | 45.0 | 5.0 | 12.00 | C | 0.20 | • | | 0.05-0.20 |
| ECR-B3 10-12/50W10R02A100 | 10.00 | 10.00 | 50.00 | 100.00 | 3 | 45.0 | 5.0 | 12.00 | W | 0.20 | • | | 0.05-0.20 |
| ECR-B3 12-12/37C12R02A83 | 12.00 | 12.00 | 37.00 | 83.00 | 3 | 45.0 | 5.0 | 12.00 | C | 0.20 | • | | 0.07-0.22 |
| ECR-B3 12-12/37C12R02DA83 | 12.00 | 12.00 | 37.00 | 83.00 | 3 | 45.0 | 5.0 | 12.00 | C | 0.20 | | • | 0.07-0.22 |
| ECR-B3 12-12/37W12R02A83 | 12.00 | 12.00 | 37.00 | 83.00 | 3 | 45.0 | 5.0 | 12.00 | W | 0.20 | • | | 0.07-0.22 |
| ECR-B3 12-14/55C12R02A100 | 12.00 | 12.00 | 55.00 | 100.00 | 3 | 45.0 | 5.0 | 14.00 | C | 0.20 | • | | 0.07-0.22 |
| ECR-B3 12-14/55W12R02A100 | 12.00 | 12.00 | 55.00 | 100.00 | 3 | 45.0 | 5.0 | 14.00 | W | 0.20 | • | | 0.07-0.22 |
| ECR-B3 16-14/43C16R02A92 | 16.00 | 16.00 | 43.00 | 92.00 | 3 | 45.0 | 5.0 | 14.00 | C | 0.20 | • | | 0.07-0.25 |
| ECR-B3 16-14/43C16R02DA92 | 16.00 | 16.00 | 43.00 | 92.00 | 3 | 45.0 | 5.0 | 14.00 | C | 0.20 | | • | 0.07-0.25 |
| ECR-B3 16-14/43W16R02A92 | 16.00 | 16.00 | 43.00 | 92.00 | 3 | 45.0 | 5.0 | 14.00 | W | 0.20 | • | | 0.07-0.25 |
| ECR-B3 16-18/80C16R02A150 | 16.00 | 16.00 | 80.00 | 150.00 | 3 | 45.0 | 5.0 | 18.00 | C | 0.20 | • | | 0.07-0.25 |
| ECR-B3 16-18/80W16R02A150 | 16.00 | 16.00 | 80.00 | 150.00 | 3 | 45.0 | 5.0 | 18.00 | W | 0.20 | • | | 0.07-0.25 |
| ECR-B3 20-17/53C20R02A104 | 20.00 | 20.00 | 53.00 | 104.00 | 3 | 45.0 | 5.0 | 17.00 | C | 0.20 | • | | 0.07-0.25 |
| ECR-B3 20-17/53W20R02A104 | 20.00 | 20.00 | 53.00 | 104.00 | 3 | 45.0 | 5.0 | 17.00 | W | 0.20 | • | | 0.07-0.25 |
| ECR-B3 20-22/80C20R02A150 | 20.00 | 20.00 | 80.00 | 150.00 | 3 | 45.0 | 5.0 | 22.00 | C | 0.20 | • | | 0.07-0.25 |
| ECR-B3 20-22/80W20R02A150 | 20.00 | 20.00 | 80.00 | 150.00 | 3 | 45.0 | 5.0 | 22.00 | W | 0.20 | • | | 0.07-0.25 |

• For user guide, see pages 211-218 • Grade IC1508 - DLC Coating

(1) Number of flutes

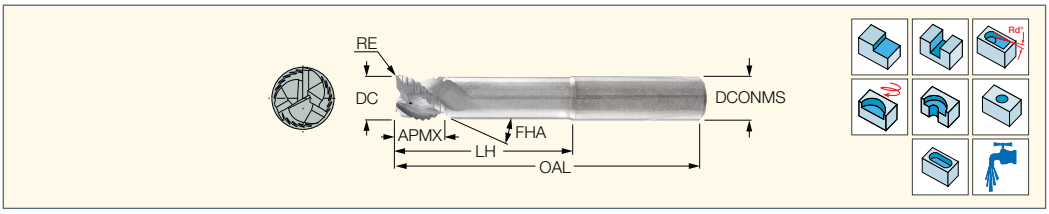
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

SOLIDSHRED

**ECR-B3-R-C**

3 Flute, 45° Helix Solid Carbide Roughing Endmills with 3xD Relieved Necks and Coolant Channels for Aluminum




| Designation | Dimensions DC | DCONMS | LH | OAL | NOF(1) | FHA | RMPX°(2) | APMX | Shank(3) | RE | IC08 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECR-B3 08-12/41C08R02A83C | 8.00 | 8.00 | 41.0 | 83.00 | 3 | 45.0 | 20.0 | 12.00 | C | 0.20 | • | 0.05-0.15 |
| ECR-B3 08-12/41C08R20A83C | 8.00 | 8.00 | 41.0 | 83.00 | 3 | 45.0 | 20.0 | 12.00 | C | 2.00 | • | 0.05-0.15 |
| ECR-B3 10-12/41C10R.2A83C | 10.00 | 10.00 | 41.0 | 83.00 | 3 | 45.0 | 20.0 | 12.00 | C | 0.20 | • | 0.07-0.20 |
| ECR-B3 10-12/41C10R20A83C | 10.00 | 10.00 | 41.0 | 83.00 | 3 | 45.0 | 20.0 | 12.00 | C | 2.00 | • | 0.07-0.20 |
| ECR-B3 12-12/41C12R.2A87C | 12.00 | 12.00 | 41.0 | 87.00 | 3 | 45.0 | 20.0 | 12.00 | C | 0.20 | • | 0.10-0.22 |
| ECR-B3 16-14/60C16R2A109C | 16.00 | 16.00 | 60.0 | 109.00 | 3 | 45.0 | 20.0 | 14.00 | C | 2.00 | • | 0.10-0.25 |
| ECR-B316-14/60C16R.2A109C | 16.00 | 16.00 | 60.0 | 109.00 | 3 | 45.0 | 20.0 | 14.00 | C | 0.20 | • | 0.10-0.25 |
| ECR-B316-14/60C16R40A109C | 16.00 | 16.00 | 60.0 | 109.00 | 3 | 45.0 | 20.0 | 14.00 | C | 4.00 | • | 0.10-0.25 |
| ECR-B320-17/60C20R40A111C | 20.00 | 20.00 | 60.0 | 111.00 | 3 | 45.0 | 20.0 | 17.00 | C | 4.00 | • | 0.10-0.25 |
| ECR-B320-30/100C25R4A150C | 20.00 | 20.00 | 100.0 | 150.00 | 3 | 45.0 | 20.0 | 30.00 | C | 4.00 | • | 0.10-0.25 |
| ECR-B325-25/74C25R40A130C | 25.00 | 25.00 | 74.0 | 130.00 | 3 | 45.0 | 20.0 | 25.00 | C | 4.00 | • | 0.10-0.25 |

• For user guide, see pages 211-218

(1) Number of flutes

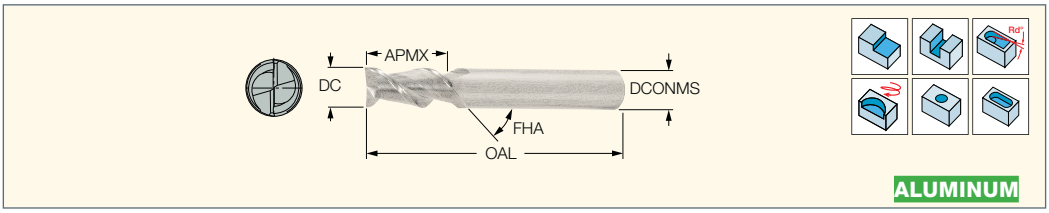
(2) Maximum ramping angle

(3) C-Cylindrical

SOLIDMILL PREMIUM LINE

## ECA-B-2

2 Flute, 45° Helix Medium Length Solid Carbide Endmills for Machining Aluminum




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | IC08 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| ECA040B12-2C06 | 4.00 | 6.00 | 12.00 | 57.00 | 2 | 45.0 | 5.0 | C | ● | 0.02-0.05 |
| ECA050B14-2C06 | 5.00 | 6.00 | 14.00 | 57.00 | 2 | 45.0 | 5.0 | C | ● | 0.02-0.06 |
| ECA060B16-2C06 | 6.00 | 6.00 | 16.00 | 57.00 | 2 | 45.0 | 5.0 | C | ● | 0.03-0.07 |
| ECA080B20-2C08 | 8.00 | 8.00 | 20.00 | 63.00 | 2 | 45.0 | 5.0 | C | ● | 0.03-0.09 |
| ECA100B22-2C10 | 10.00 | 10.00 | 22.00 | 72.00 | 2 | 45.0 | 5.0 | C | ● | 0.03-0.10 |
| ECA120B25-2C12 | 12.00 | 12.00 | 25.00 | 83.00 | 2 | 45.0 | 5.0 | C | ● | 0.04-0.11 |
| ECA160B32-2C16 | 16.00 | 16.00 | 32.00 | 92.00 | 2 | 45.0 | 5.0 | C | ● | 0.05-0.13 |
| ECA200B38-2C20 | 20.00 | 20.00 | 38.00 | 104.00 | 2 | 45.0 | 5.0 | C | ● | 0.05-0.13 |

• For user guide, see pages 211-218

(1) Number of flutes

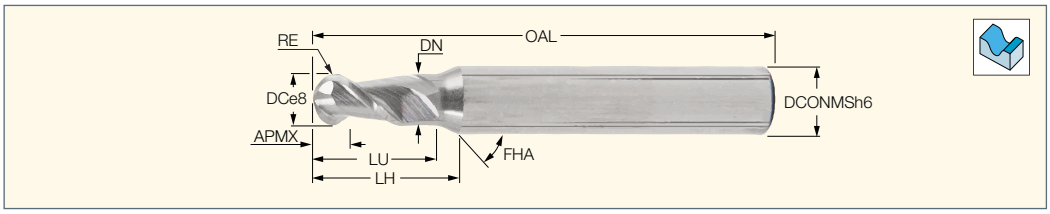
(2) Maximum ramping angle

(3) C-Cylindrical

SOLIDMILL PREMIUM LINE

## EBA-B2

2 Flute High Precision Solid Carbide Ball Nose Endmills for Machining Aluminum




| Designation | Dimensions DC | DCONMS | APMX | OAL | LU | LH | DN | RE | NOF(1) | FHA | Shank(2) | RETOLL(3) | RETOLU(4) | IC08 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EBA-B2 010-010/02C6-57 | 1.00 | 6.00 | 1.00 | 57.00 | 2.0 | 12.0 | 0.95 | 0.50 | 2 | 45.0 | C | 0.000 | 0.004 | ● |
| EBA-B2 020-020/04C6-57 | 2.00 | 6.00 | 2.00 | 57.00 | 4.0 | 12.0 | 1.80 | 1.00 | 2 | 45.0 | C | 0.000 | 0.005 | ● |
| EBA-B2 030-030/06C6-57 | 3.00 | 6.00 | 3.00 | 57.00 | 6.0 | 12.0 | 2.70 | 1.49 | 2 | 45.0 | C | -0.010 | 0.010 | ● |
| EBA-B2 040-040/08C6-57 | 4.00 | 6.00 | 4.00 | 57.00 | 8.0 | 12.0 | 3.70 | 1.99 | 2 | 45.0 | C | -0.010 | 0.010 | ● |
| EBA-B2 050-050/10C6-57 | 5.00 | 6.00 | 5.00 | 57.00 | 10.0 | 12.0 | 4.70 | 2.49 | 2 | 45.0 | C | -0.010 | 0.010 | ● |
| EBA-B2 060-060/12C6-57 | 6.00 | 6.00 | 6.00 | 57.00 | 12.0 | 13.0 | 5.50 | 2.99 | 2 | 45.0 | C | -0.010 | 0.010 | ● |

• For user guide, see pages 211-218

(1) Number of flutes

(2) C-Cylindrical

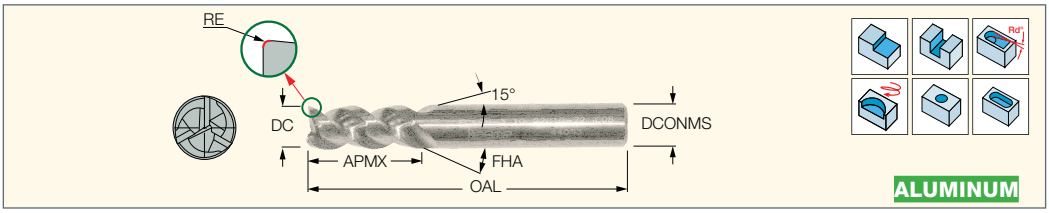
(3) Corner radius tolerance lower

(4) Corner radius tolerance upper

SOLIDMILL PREMIUM LINE

**ECA-B-3**

3 Flute, 45° Helix Medium Length Solid Carbide Endmills for Machining Aluminum




| Designation | Dimensions | | | | | | | | | Tough ↔ Hard | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | RE | IC08 | IC1508 | $f_z$ (mm/t) |
| **ECA-B-3 04-12C06-57** | 4.00 | 6.00 | 12.00 | 57.00 | 3 | 45.0 | 5.0 | C | 0.10 | ● | | 0.02-0.05 |
| **ECA-B-3 04-12C06-57 R02D** | 4.00 | 6.00 | 12.00 | 57.00 | 3 | 45.0 | 5.0 | C | 0.20 | | ● | 0.02-0.05 |
| **ECA-B-3 04-12W06-57** | 4.00 | 6.00 | 12.00 | 57.00 | 3 | 45.0 | 5.0 | W | 0.10 | ● | | 0.02-0.05 |
| **ECA-B-3 05-14C06-57** | 5.00 | 6.00 | 14.00 | 57.00 | 3 | 45.0 | 5.0 | C | 0.20 | ● | | 0.02-0.06 |
| **ECA-B-3 05-14C06-57 R02D** | 5.00 | 6.00 | 14.00 | 57.00 | 3 | 45.0 | 5.0 | C | 0.20 | | ● | 0.02-0.06 |
| **ECA-B-3 05-14W06-57** | 5.00 | 6.00 | 14.00 | 57.00 | 3 | 45.0 | 5.0 | W | 0.20 | ● | | 0.02-0.06 |
| **ECA-B-3 06-16C06-57** | 6.00 | 6.00 | 16.00 | 57.00 | 3 | 45.0 | 5.0 | C | 0.20 | ● | | 0.03-0.07 |
| **ECA-B-3 06-16C06-57 R02D** | 6.00 | 6.00 | 16.00 | 57.00 | 3 | 45.0 | 5.0 | C | 0.20 | | ● | 0.03-0.07 |
| **ECA-B-3 06-16W06-57** | 6.00 | 6.00 | 16.00 | 57.00 | 3 | 45.0 | 5.0 | W | 0.20 | ● | | 0.03-0.07 |
| **ECA-B-3 06-24C06-65** | 6.00 | 6.00 | 24.00 | 65.00 | 3 | 45.0 | 3.0 | C | 0.20 | ● | | 0.03-0.07 |
| **ECA-B-3 08-20C08-63** | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 45.0 | 5.0 | C | 0.20 | ● | | 0.03-0.09 |
| **ECA-B-3 08-20C08-63 R02D** | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 45.0 | 5.0 | C | 0.20 | | ● | 0.03-0.09 |
| **ECA-B-3 08-20C08R3-63** | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 45.0 | 5.0 | C | 3.00 | ● | | 0.03-0.09 |
| **ECA-B-3 08-20W08-63** | 8.00 | 8.00 | 20.00 | 63.00 | 3 | 45.0 | 5.0 | W | 0.20 | ● | | 0.03-0.09 |
| **ECA-B-3 08-32C08-79** | 8.00 | 8.00 | 32.00 | 79.00 | 3 | 45.0 | 3.0 | C | 0.20 | ● | | 0.03-0.08 |
| **ECA-B-3 10-22C10-72** | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 45.0 | 5.0 | C | 0.20 | ● | | 0.03-0.10 |
| **ECA-B-3 10-22C10-72 R02D** | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 45.0 | 5.0 | C | 0.20 | | ● | 0.03-0.10 |
| **ECA-B-3 10-22W10-72** | 10.00 | 10.00 | 22.00 | 72.00 | 3 | 45.0 | 5.0 | W | 0.20 | ● | | 0.03-0.10 |
| **ECA-B-3 10-25C10R3-72** | 10.00 | 10.00 | 25.00 | 72.00 | 3 | 45.0 | 5.0 | C | 3.00 | ● | | 0.03-0.10 |
| **ECA-B-3 10-25C10R4-72** | 10.00 | 10.00 | 25.00 | 72.00 | 3 | 45.0 | 5.0 | C | 4.00 | ● | | 0.03-0.10 |
| **ECA-B-3 10-40C10-92** | 10.00 | 10.00 | 40.00 | 92.00 | 3 | 45.0 | 3.0 | C | 0.20 | ● | | 0.03-0.09 |
| **ECA-B-3 12-25C12-83** | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | C | 0.20 | ● | | 0.04-0.11 |
| **ECA-B-3 12-25C12-83 R02D** | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | C | 0.20 | | ● | 0.04-0.11 |
| **ECA-B-3 12-25W12-83** | 12.00 | 12.00 | 25.00 | 83.00 | 3 | 45.0 | 5.0 | W | 0.20 | ● | | 0.04-0.11 |
| **ECA-B-3 12-30C12R3-83** | 12.00 | 12.00 | 30.00 | 83.00 | 3 | 45.0 | 5.0 | C | 3.00 | ● | | 0.04-0.11 |
| **ECA-B-3 12-30C12R4-83** | 12.00 | 12.00 | 30.00 | 83.00 | 3 | 45.0 | 5.0 | C | 4.00 | ● | | 0.04-0.11 |
| **ECA-B-3 12-48C12-100** | 12.00 | 12.00 | 48.00 | 100.00 | 3 | 45.0 | 3.0 | C | 0.20 | ● | | 0.03-0.11 |
| **ECA-B-3 14-30C14-83** | 14.00 | 14.00 | 30.00 | 83.00 | 3 | 45.0 | 5.0 | C | 0.20 | ● | | 0.04-0.12 |
| **ECA-B-3 14-30W14-83** | 14.00 | 14.00 | 30.00 | 83.00 | 3 | 45.0 | 5.0 | W | 0.20 | ● | | 0.04-0.12 |
| **ECA-B-3 16-32C16-92** | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 45.0 | 5.0 | C | 0.20 | ● | | 0.05-0.13 |
| **ECA-B-3 16-32C16-92 R02D** | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 45.0 | 5.0 | C | 0.20 | | ● | 0.05-0.13 |
| **ECA-B-3 16-32W16-92** | 16.00 | 16.00 | 32.00 | 92.00 | 3 | 45.0 | 5.0 | W | 0.20 | ● | | 0.05-0.13 |
| **ECA-B-3 20-38C20-104** | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 45.0 | 5.0 | C | 0.20 | ● | | 0.05-0.13 |
| **ECA-B-3 20-38C20-104 R02D** | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 45.0 | 5.0 | C | 0.20 | | ● | 0.05-0.13 |
| **ECA-B-3 20-38W20-104** | 20.00 | 20.00 | 38.00 | 104.00 | 3 | 45.0 | 5.0 | W | 0.20 | ● | | 0.05-0.13 |

• For user guide, see pages 211-218 • Grade IC1508 - DLC Coating

(1) Number of flutes

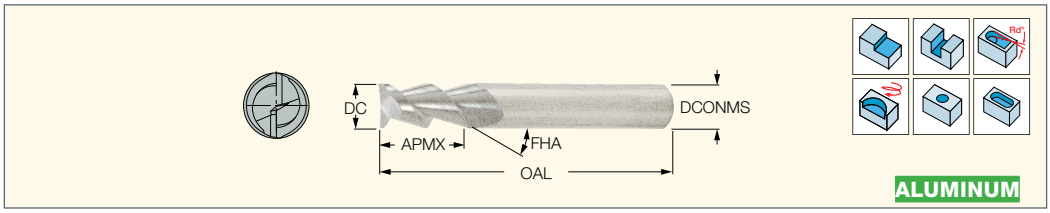
(2) Maximum ramping angle

(3) C-Cylindrical, W-Weldon

SOLIDMILL PREMIUM LINE

## ECA-F-2

2 Flute, 55° Helix Medium Length Solid Carbide Endmills for Machining Aluminum




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(1) | FHA | RMPX°(2) | Shank(3) | IC08 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| ECA040F11-2C04 | 4.00 | 4.00 | 11.00 | 50.00 | 2 | 55.0 | 5.0 | C | ● | 0.02-0.05 |
| ECA060F13-2C06 | 6.00 | 6.00 | 13.00 | 57.00 | 2 | 55.0 | 5.0 | C | ● | 0.03-0.07 |
| ECA080F20-2C08 | 8.00 | 8.00 | 20.00 | 63.00 | 2 | 55.0 | 5.0 | C | ● | 0.03-0.09 |
| ECA100F22-2C10 | 10.00 | 10.00 | 22.00 | 72.00 | 2 | 55.0 | 5.0 | C | ● | 0.03-0.10 |
| ECA120F25-2C12 | 12.00 | 12.00 | 25.00 | 83.00 | 2 | 55.0 | 5.0 | C | ● | 0.04-0.11 |
| ECA160F32-2C16 | 16.00 | 16.00 | 32.00 | 92.00 | 2 | 55.0 | 5.0 | C | ● | 0.05-0.13 |
| ECA200F38-2C20 | 20.00 | 20.00 | 38.00 | 104.00 | 2 | 55.0 | 5.0 | C | ● | 0.05-0.13 |
| ECA250F45-2C25 | 25.00 | 25.00 | 45.00 | 121.00 | 2 | 55.0 | 5.0 | C | ● | 0.05-0.13 |

• For user guide, see pages 211-218

(1) Number of flutes

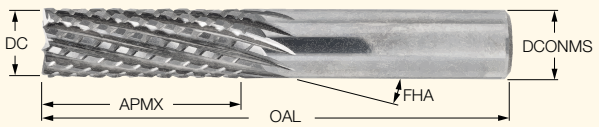
(2) Maximum ramping angle

(3) C-Cylindrical

SOLIDMILL PREMIUM LINE

## EPN-F

Solid Endmills with a Special Edge Configuration for Machining Different Types of Composite Materials




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(2) | FHA | Shank(3) | IC02 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| EPN-F10 03-12C03F55 | 3.00 | 3.00 | 12.00 | 55.00 | 10 | 15.0 | C | ● | 0.01-0.02 |
| EPN-F10 04-16C04F55 | 4.00 | 4.00 | 16.00 | 55.00 | 10 | 15.0 | C | ● | 0.01-0.02 |
| EPN-F10 06-19C06F57 | 6.00 | 6.00 | 19.00 | 57.00 | 10 | 15.0 | C | ● | 0.02-0.03 |
| EPNF060S15-3L/9C06F57 (1) | 6.00 | 6.00 | 15.00 | 57.00 | 9 | 15.0 | C | ● | 0.02-0.04 |
| EPN-F12 08-25C08F63 | 8.00 | 8.00 | 25.00 | 63.00 | 12 | 15.0 | C | ● | 0.02-0.03 |
| EPNF080S25-3L/10C8F72 (1) | 8.00 | 8.00 | 25.00 | 72.00 | 10 | 15.0 | C | ● | 0.02-0.04 |
| EPN-F12 10-25C10F72 | 10.00 | 10.00 | 25.00 | 72.00 | 12 | 15.0 | C | ● | 0.02-0.03 |
| EPNF100S25-3L/12C10F72 (1) | 10.00 | 10.00 | 25.00 | 72.00 | 12 | 15.0 | C | ● | 0.02-0.04 |
| EPN-F12 12-25C12F83 | 12.00 | 12.00 | 25.00 | 83.00 | 12 | 15.0 | C | ● | 0.02-0.03 |

• Coated tools available on request • For user guide, see pages 211-218

(1) Deep chip gullets for eliminating chip jamming.

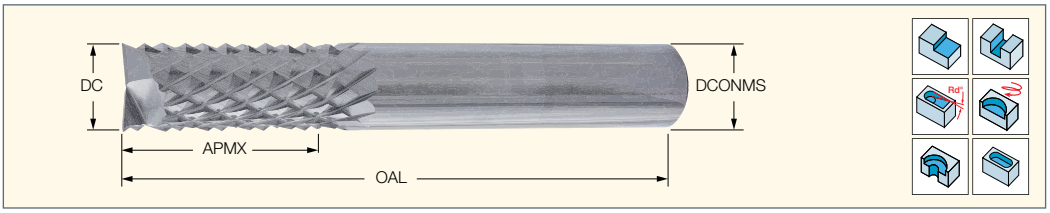
(2) Number of flutes

(3) C-Cylindrical

SOLIDMILL PREMIUM LINE

**EPNC**

Solid Carbide Endmill with Special Cutting Edges, for Machining Different Types of Composite Materials




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(1) | RMPX°(2) | Shank(3) | IC02 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| EPNC-C10 08-25C08F63 | 8.00 | 8.00 | 25.00 | 63.00 | 10 | 5.0 | C | ● | 0.02-0.08 |
| EPNC-C10 10-25C10F72 | 10.00 | 10.00 | 25.00 | 72.00 | 10 | 5.0 | C | ● | 0.02-0.08 |
| EPNC-C10 12-25C12F83 | 12.00 | 12.00 | 25.00 | 83.00 | 10 | 5.0 | C | ● | 0.02-0.08 |

- For user guide, see pages 211-218

(1) Number of flutes

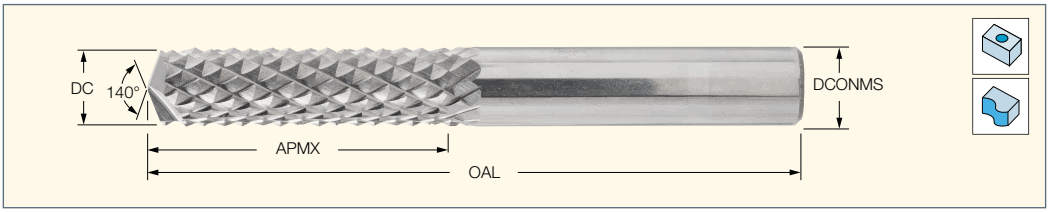
(2) Maximum ramping angle

(3) C-Cylindrical

SOLIDMILL PREMIUM LINE

**EPND**

Solid Carbide Endmills with Special Cutting Edges, also for Drill Mill Applications




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(1) | Shank(2) | IC02 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| EPND-C6 016-5C03F55 | 1.60 | 3.00 | 5.00 | 55.00 | 6 | C | ● | 0.0050-0.0100 |
| EPND-C6 024-10C03F55 | 2.40 | 3.00 | 10.00 | 55.00 | 6 | C | ● | 0.0050-0.0100 |
| EPND-C8 03-12C03F55 | 3.00 | 3.00 | 12.00 | 55.00 | 8 | C | ● | 0.0050-0.0120 |
| EPND-C8 04-16C04F60 | 4.00 | 4.00 | 16.00 | 60.00 | 8 | C | ● | 0.0050-0.0120 |
| EPND-C10 06-19C06F65 | 6.00 | 6.00 | 19.00 | 65.00 | 10 | C | ● | 0.0200-0.0800 |
| EPND-C10 08-25C08F63 | 8.00 | 8.00 | 25.00 | 63.00 | 10 | C | ● | 0.0200-0.0800 |
| EPND-C10 10-25C10F72 | 10.00 | 10.00 | 25.00 | 72.00 | 10 | C | ● | 0.0200-0.0800 |
| EPND-C10 12-25C12F83 | 12.00 | 12.00 | 25.00 | 83.00 | 10 | C | ● | 0.0200-0.0800 |

- For user guide, see pages 211-218

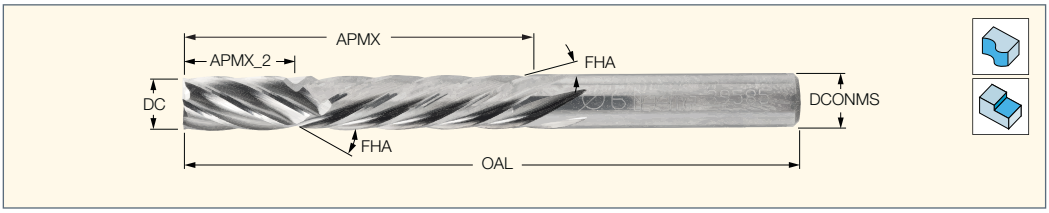
(1) Number of flutes

(2) C-Cylindrical

SOLIDMILL PREMIUM LINE

**EPX**

Solid Carbide Endmills with Right-and Left-Hand Helix Flutes Enables Changing Direction at Mid Cutting Height

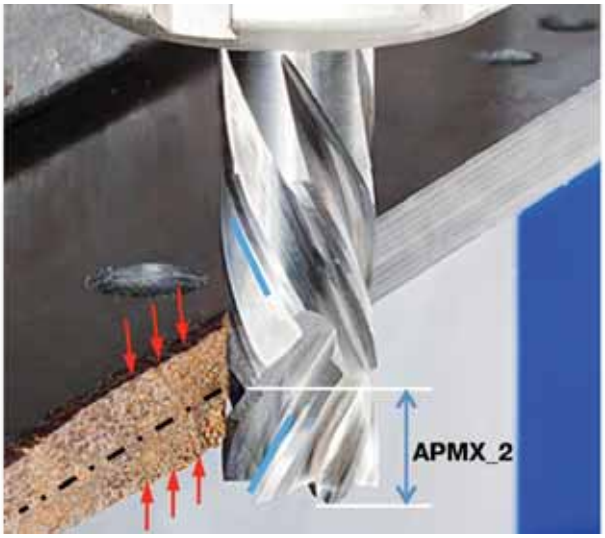



| Designation | Dimensions DC | DCONMS | APMX | APMX_2 | OAL | NOF(1) | FHA | Shank(2) | IC02 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| EPX-F6 06-12C06F57 | 6.00 | 6.00 | 12.00 | 5.30 | 57.00 | 6 | 30.0 | C | ● | 0.02-0.06 |
| EPX-F6 08-16C08F63 | 8.00 | 8.00 | 16.00 | 6.60 | 63.00 | 6 | 30.0 | C | ● | 0.02-0.06 |
| EPX-F6 10-20C10F72 | 10.00 | 10.00 | 20.00 | 8.70 | 72.00 | 6 | 30.0 | C | ● | 0.02-0.06 |
| EPX-F8 12-24C12F83 | 12.00 | 12.00 | 24.00 | 10.60 | 83.00 | 8 | 30.0 | C | ● | 0.02-0.06 |

• Important: For best results, the intersection of the alternating flute directions (APMX_2) should be positioned in the middle of the workpiece height • Coated tools available on request • For user guide, see pages 211-218

(1) Number of flutes

(2) C-Cylindrical



CHATTERFREE SOLID MILL LINE

**EB-H-CF**

3/5 Flute Solid Carbide Ball Nose Endmills with Different Helix and Variable Pitch for Materials up to 65 HRC

| Designation | Dimensions | | | | | | | | | IC902 |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | RE | NOF[1] | FHA | Shank[2] | RETOL[3] | |
| EB-H3 06-12C06CFH57 | 6.00 | 6.00 | 12.00 | 57.00 | 3.00 | 3 | 38.0 | C | 0.010 | ● |
| EB-H3 08-16C08CFH63 | 8.00 | 8.00 | 16.00 | 63.00 | 4.00 | 3 | 38.0 | C | 0.010 | ● |
| EB-H3 10-20C10CFH72 | 10.00 | 10.00 | 20.00 | 72.00 | 5.00 | 3 | 38.0 | C | 0.010 | ● |
| EB-H3 12-24C12CFH83 | 12.00 | 12.00 | 24.00 | 83.00 | 6.00 | 3 | 38.0 | C | 0.012 | ● |
| EB-H5 16-32C16CFH92 | 16.00 | 16.00 | 32.00 | 92.00 | 8.00 | 5 | 38.0 | C | 0.012 | ● |
| EB-H5 20-40C20CFH104 | 20.00 | 20.00 | 40.00 | 104.00 | 10.00 | 5 | 38.0 | C | 0.012 | ● |

• For user guide, see pages 211-218

(1) Number of flutes

(2) C-Cylindrical

(3) Corner radius tolerance (+/-)

## Effective Cutting Diameter As a Function of Depth of Cut

| $a_p$(mm) \ Tool DC(mm) | 8 | 10 | 12 |
|---|---|---|---|
| 0.2 | 2.1 | 2.5 | 2.8 | 3.1 |
| 0.3 | 2.6 | 3 | 3.4 | 3.7 |
| 0.5 | 3.3 | 3.9 | 4.3 | 4.8 |
| 0.7 | 3.8 | 4.5 | 5.1 | 5.6 |
| 1 | 4.5 | 5.3 | 6 | 6.6 |
| 2 | 5.6 | 6.9 | 8 | 8.9 |
| 3 | 6 | 7.7 | 9.1 | 10.4 |
| 4 | - | 8 | 9.8 | 11.3 |
| 5 | - | - | 10 | 11.8 |
| 6 | - | - | - | 12 |

## Feed Recommendations

| ISO Class DIN/ISO 513 | Material Group | $f_z$ (mm/tooth) for DC | | | |
|---|---|---|---|---|---|
| | | 6 | 8 | 10 | 12 |
| P | 1-4 | 0.055 | 0.062 | 0.07 | 0.08 |
| | 5 | 0.043 | 0.05 | 0.06 | 0.068 |
| | 6-7 | 0.04 | 0.048 | 0.057 | 0.062 |
| | 8-9 | 0.035 | 0.038 | 0.045 | 0.05 |
| | 10 | 0.03 | 0.032 | 0.038 | 0.042 |
| | 11 | 0.025 | 0.028 | 0.035 | 0.038 |
| | 12-13 | 0.03 | 0.032 | 0.038 | 0.042 |
| K | 15-16 | 0.058 | 0.065 | 0.073 | 0.085 |
| | 17-18 | 0.058 | 0.065 | 0.073 | 0.085 |
| H | 38.1 | 0.021 | 0.025 | 0.027 | 0.03 |
| | 38.2 | 0.008 | 0.009 | 0.01 | 0.013 |
| | 39 | 0.007 | 0.007 | 0.008 | 0.009 |

The table refers to rough and semi-finish milling applications
For semi-finish and finishing applications, the table values should be reduced by 10-20%.

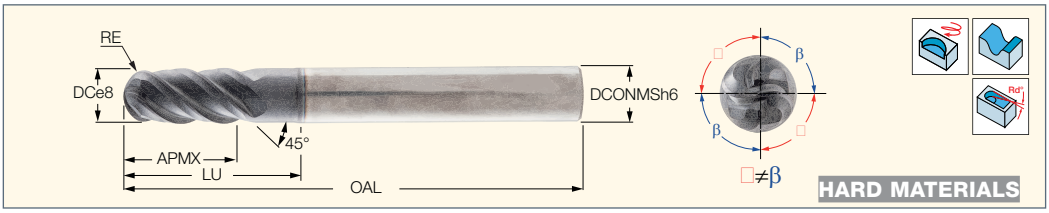
## Cutting Speed Recommendations (IC902)

| ISO Class DIN/ISO 513 | Material Group | $V_c$ (m/min) | | |
|---|---|---|---|---|
| | | Roughing | Semi-Finishing | Finishing |
| P | 1 | 180 | 220 | 280 |
| | 2-4 | 150 | 170 | 200 |
| | 5 | 125 | 140 | 170 |
| | 6 | 130 | 150 | 190 |
| | 7-9 | 120 | 135 | 170 |
| | 10 | 115 | 130 | 165 |
| | 11 | 100 | 110 | 120 |
| | 12-13 | 110 | 110 | 150 |
| K | 15-16 | 160 | 180 | 220 |
| | 17-18 | 150 | 170 | 200 |
| H | 38.1 | 70 | 80 | 100 |
| | 38.2 | | 40 | 50 |
| | 39 | | 30 | 40 |

CHATTERFREE SOLID MILL LINE

## EB-E4L-CF

4 Flute, 45° Helix Ball Nose Endmills with 3xD Relieved Necks and Variable Pitch for Chatter Dampening on Hard Materials



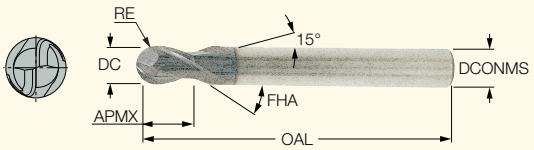

| Designation | Dimensions | | | | | | | | | IC902 |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | LU | OAL | RMPX°(1) | NOF(2) | RE | Shank(3) | |
| EB-E4L 03-06/09C06CFH57 | 3.00 | 6.00 | 6.00 | 9.00 | 57.00 | 5.0 | 4 | 1.50 | C | ● |
| EB-E4L 04-08/12C06CFH57 | 4.00 | 6.00 | 8.00 | 12.00 | 57.00 | 5.0 | 4 | 2.00 | C | ● |
| EB-E4L 05-10/15C06CFH57 | 5.00 | 6.00 | 10.00 | 15.00 | 57.00 | 5.0 | 4 | 2.50 | C | ● |
| EB-E4L 06-12/18C06CFH57 | 6.00 | 6.00 | 12.00 | 18.00 | 57.00 | 5.0 | 4 | 3.00 | C | ● |
| EB-E4L 08-16/24C08CFH63 | 8.00 | 8.00 | 16.00 | 24.00 | 63.00 | 5.0 | 4 | 4.00 | C | ● |
| EB-E4L 10-20/30C10CFH72 | 10.00 | 10.00 | 20.00 | 30.00 | 72.00 | 5.0 | 4 | 5.00 | C | ● |
| EB-E4L 12-24/36C12CFH83 | 12.00 | 12.00 | 24.00 | 36.00 | 83.00 | 5.0 | 4 | 6.00 | C | ● |
| EB-E4L 16-32/48C16CFH92 | 16.00 | 16.00 | 32.00 | 48.00 | 92.00 | 5.0 | 4 | 8.00 | C | ● |

• For user guide, see pages 211-218
(1) Maximum ramping angle
(2) Number of flutes
(3) C-Cylindrical

SOLIDMILL PREMIUM LINE

## EB-A-2

2 Flute, 30° Helix Short Solid Carbide Ball Nose Endmills

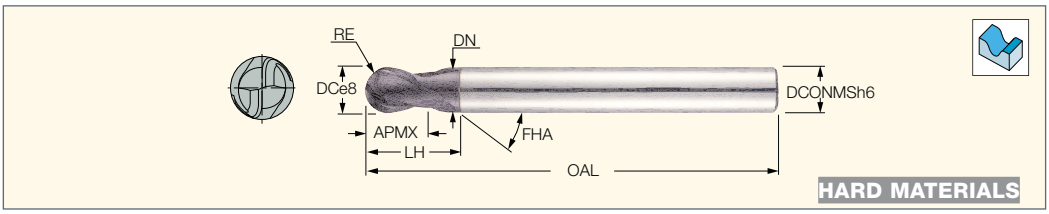



| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | RE | RETOLL(3) | RETOLU(4) | IC08 | IC900 | IC903 |
| EB020A04-2C03 | 2.00 | 3.00 | 4.00 | 38.00 | 2 | 30.0 | C | 1.00 | 0.000 | 0.005 | | ● | ● |
| EB030A05-2C03 | 3.00 | 3.00 | 5.00 | 38.00 | 2 | 30.0 | C | 1.50 | -0.010 | 0.010 | | ● | |
| EB030A05-2C06 | 3.00 | 6.00 | 5.00 | 57.00 | 2 | 30.0 | C | 1.50 | -0.010 | 0.010 | ● | ● | ● |
| EB040A07-2C04 | 4.00 | 4.00 | 7.00 | 50.00 | 2 | 30.0 | C | 2.00 | -0.010 | 0.010 | | ● | |
| EB040A07-2C06 | 4.00 | 6.00 | 7.00 | 57.00 | 2 | 30.0 | C | 2.00 | -0.010 | 0.010 | ● | ● | ● |
| EB050A08-2C05 | 5.00 | 5.00 | 8.00 | 50.00 | 2 | 30.0 | C | 2.50 | -0.010 | 0.010 | | ● | |
| EB050A08-2C06 | 5.00 | 6.00 | 8.00 | 57.00 | 2 | 30.0 | C | 2.50 | -0.010 | 0.010 | ● | ● | ● |
| EB060A08-2C06 | 6.00 | 6.00 | 8.00 | 57.00 | 2 | 30.0 | C | 3.00 | -0.010 | 0.010 | ● | ● | ● |
| EB080A11-2C08 | 8.00 | 8.00 | 11.00 | 63.00 | 2 | 30.0 | C | 4.00 | -0.010 | 0.010 | ● | ● | ● |
| EB100A13-2C10 | 10.00 | 10.00 | 13.00 | 72.00 | 2 | 30.0 | C | 5.00 | -0.010 | 0.010 | ● | ● | ● |
| EB120A14-2C12 | 12.00 | 12.00 | 14.00 | 83.00 | 2 | 30.0 | C | 6.00 | -0.012 | 0.012 | | ● | ● |
| EB160A16-2C16 | 16.00 | 16.00 | 16.00 | 92.00 | 2 | 30.0 | C | 8.00 | -0.012 | 0.012 | | ● | ● |
| EB200A20-2C20 | 20.00 | 20.00 | 20.00 | 104.00 | 2 | 30.0 | C | 10.00 | -0.012 | 0.012 | | ● | |

• Short and stable design for profiling (roughing). • For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical
(3) Corner radius tolerance lower
(4) Corner radius tolerance upper

SOLIDMILL PREMIUM LINE

**EB-A2 (stub cut length)**
2 Flute, 30° Helix Stub Cut Length Ball Nose Solid Carbide Endmills for Materials up to 55-70 HRC



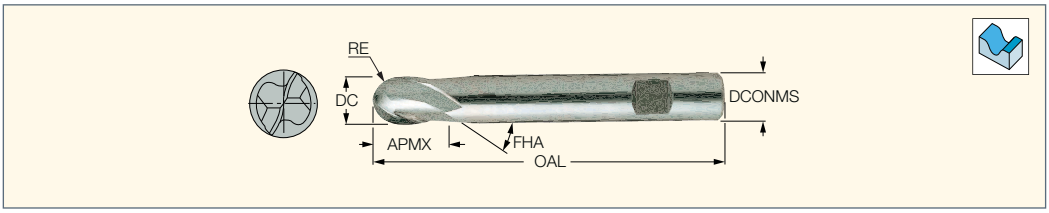

| Designation | Dimensions | | | | | | | | | | | | IC903 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | RE | DCONMS | APMX | OAL | LH | DN | NOF(1) | FHA | Shank(2) | RETOLL(3) | RETOLU(4) | |
| **EB-A2 01-01/02C04H50** | 1.00 | 0.50 | 4.00 | 1.00 | 50.00 | 2.2 | 0.95 | 2 | 30.0 | C | 0.000 | 0.004 | ● |
| **EB-A2 012-012/02C04H50** | 1.20 | 0.60 | 4.00 | 1.20 | 50.00 | 2.6 | 1.10 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| **EB-A2 015-015/03C04H50** | 1.50 | 0.75 | 4.00 | 1.50 | 50.00 | 3.0 | 1.40 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| **EB-A2 02-02/04C06H50** | 2.00 | 1.00 | 6.00 | 2.00 | 50.00 | 4.0 | 1.90 | 2 | 30.0 | C | 0.000 | 0.005 | ● |
| **EB-A2 03-03/06C06H60** | 3.00 | 1.50 | 6.00 | 3.00 | 60.00 | 6.0 | 2.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| **EB-A2 04-04/08C06H70** | 4.00 | 2.00 | 6.00 | 4.00 | 70.00 | 8.0 | 3.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| **EB-A2 05-05/10C06H80** | 5.00 | 2.50 | 6.00 | 5.00 | 80.00 | 10.0 | 4.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| **EB-A2 06-06/12C06H90** | 6.00 | 3.00 | 6.00 | 6.00 | 90.00 | 12.0 | 5.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| **EB-A2 07-07/14C08H90** | 7.00 | 3.50 | 8.00 | 7.00 | 90.00 | 14.0 | 6.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| **EB-A2 08-08/16C08H100** | 8.00 | 4.00 | 8.00 | 8.00 | 100.00 | 16.0 | 7.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| **EB-A2 10-10/20C10H100** | 10.00 | 5.00 | 10.00 | 10.00 | 100.00 | 20.0 | 9.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| **EB-A2 12-12/24C12H110** | 12.00 | 6.00 | 12.00 | 12.00 | 110.00 | 24.0 | 11.90 | 2 | 30.0 | C | -0.012 | 0.012 | ● |
| **EB-A2 14-14/28C14H110** | 14.00 | 7.00 | 14.00 | 14.00 | 110.00 | 28.0 | 13.80 | 2 | 30.0 | C | -0.012 | 0.012 | ● |
| **EB-A2 20-20/40C20H160** | 20.00 | 10.00 | 20.00 | 20.00 | 160.00 | 40.0 | 19.80 | 2 | 30.0 | C | -0.012 | 0.012 | ● |

• For user guide, see pages 211-218

(1) Number of flutes
(2) C-Cylindrical
(3) Lower tolerance corner radius
(4) Upper tolerance corner radius

SOLIDMILL TEC LINE

**EB-A2 (economical)**
Economical Type 2 Flute, 30° Helix Ball Nose Solid Carbide Endmills

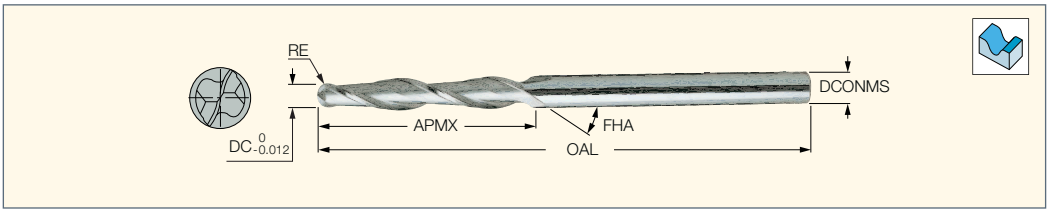



| Designation | Dimensions | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | RE | IC08 | IC900 |
| EB-A2 02-06C03E38 | 2.00 | 3.00 | 6.00 | 38.00 | 2 | 30.0 | C | 1.00 | ● | ● |
| EB-A2 02-04C06E48 | 2.00 | 6.00 | 4.00 | 48.00 | 2 | 30.0 | C | 1.00 | ● | ● |
| EB-A2 025-04C06E48 | 2.50 | 6.00 | 4.00 | 48.00 | 2 | 30.0 | C | 1.25 | ● | ● |
| EB-A2 03-04C06E48 | 3.00 | 6.00 | 4.00 | 48.00 | 2 | 30.0 | C | 1.50 | ● | ● |
| EB-A2 03-07W06E57 | 3.00 | 6.00 | 7.00 | 57.00 | 2 | 30.0 | W | 1.50 | ● | ● |
| EB-A2 04-06C06E50 | 4.00 | 6.00 | 6.00 | 50.00 | 2 | 30.0 | C | 2.00 | ● | ● |
| EB-A2 04-08W06E57 | 4.00 | 6.00 | 8.00 | 57.00 | 2 | 30.0 | W | 2.00 | ● | ● |
| EB-A2 05-07C06E51 | 5.00 | 6.00 | 7.00 | 51.00 | 2 | 30.0 | C | 2.50 | ● | |
| EB-A2 05-10W06E57 | 5.00 | 6.00 | 10.00 | 57.00 | 2 | 30.0 | W | 2.50 | ● | ● |
| EB-A2 06-07C06E51 | 6.00 | 6.00 | 7.00 | 51.00 | 2 | 30.0 | C | 3.00 | ● | ● |
| EB-A2 06-10W06E57 | 6.00 | 6.00 | 10.00 | 57.00 | 2 | 30.0 | W | 3.00 | ● | ● |
| EB-A2 08-09C08E63 | 8.00 | 8.00 | 9.00 | 63.00 | 2 | 30.0 | C | 4.00 | ● | ● |
| EB-A2 08-16W08E63 | 8.00 | 8.00 | 16.00 | 63.00 | 2 | 30.0 | W | 4.00 | ● | ● |
| EB-A2 10-10C10E66 | 10.00 | 10.00 | 10.00 | 66.00 | 2 | 30.0 | C | 5.00 | ● | ● |
| EB-A2 10-19W10E72 | 10.00 | 10.00 | 19.00 | 72.00 | 2 | 30.0 | W | 5.00 | ● | ● |
| EB-A2 12-14C12E71 | 12.00 | 12.00 | 14.00 | 71.00 | 2 | 30.0 | C | 6.00 | ● | ● |
| EB-A2 12-22W12E83 | 12.00 | 12.00 | 22.00 | 83.00 | 2 | 30.0 | W | 6.00 | ● | ● |
| EB-A2 16-26W16E92 | 16.00 | 16.00 | 26.00 | 92.00 | 2 | 30.0 | W | 8.00 | ● | |
| EB-A2 18-26W18E92 | 18.00 | 18.00 | 26.00 | 92.00 | 2 | 30.0 | W | 9.00 | ● | |
| EB-A2 20-20C20E82 | 20.00 | 20.00 | 20.00 | 82.00 | 2 | 30.0 | C | 10.00 | ● | ● |
| EB-A2 20-32W20E104 | 20.00 | 20.00 | 32.00 | 104.00 | 2 | 30.0 | W | 10.00 | ● | ● |

• For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical, W-Weldon

SOLIDMILL TEC LINE

**EB-A2 (economical-extra long)**
Economical Type 2 Flute, 30° Helix Ball Nose Extra Long Solid Carbide Endmills

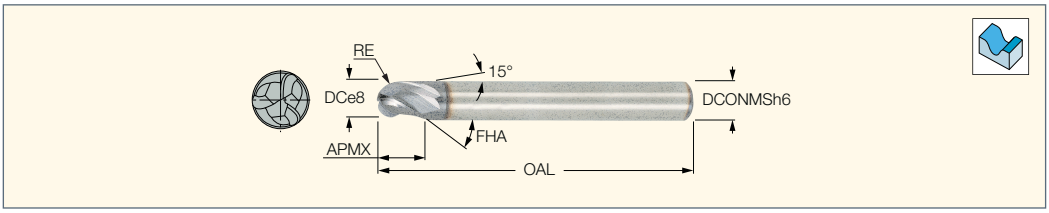



| Designation | Dimensions | | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | RE | RETOL(3) | IC08 | IC900 |
| EB-A2 03-30C03E75 | 3.00 | 3.00 | 30.00 | 75.00 | 2 | 30.0 | C | 1.50 | 0.020 | ● | ● |
| EB-A2 04-30C04E75 | 4.00 | 4.00 | 30.00 | 75.00 | 2 | 30.0 | C | 2.00 | 0.020 | ● | ● |
| EB-A2 05-40C05E100 | 5.00 | 5.00 | 40.00 | 100.00 | 2 | 30.0 | C | 2.50 | 0.020 | ● | ● |
| EB-A2 06-50C06E150 | 6.00 | 6.00 | 50.00 | 150.00 | 2 | 30.0 | C | 3.00 | 0.020 | ● | ● |
| EB-A2 08-50C08E150 | 8.00 | 8.00 | 50.00 | 150.00 | 2 | 30.0 | C | 4.00 | 0.020 | ● | ● |
| EB-A2 10-60C10E150 | 10.00 | 10.00 | 60.00 | 150.00 | 2 | 30.0 | C | 5.00 | 0.020 | ● | ● |
| EB-A2 12-75C12E150 | 12.00 | 12.00 | 75.00 | 150.00 | 2 | 30.0 | C | 6.00 | 0.020 | ● | ● |
| EB-A2 16-75C16E150 | 16.00 | 16.00 | 75.00 | 150.00 | 2 | 30.0 | C | 8.00 | 0.020 | ● | ● |

• For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical
(3) Corner radius tolerance (+/-)

SOLIDMILL PREMIUM LINE

**EB-A-3**
3 Flute, 30° Helix Short Solid Carbide Ball Nose Endmills

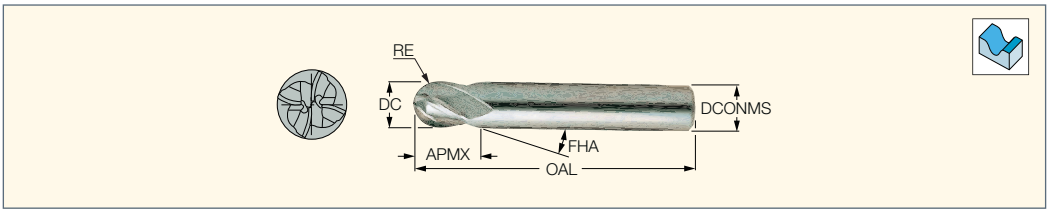



| Designation | Dimensions | | | | | | | | | IC900 |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | RE | RETOL(3) | |
| EB016A020-3C03 | 1.60 | 3.00 | 2.00 | 38.00 | 3 | 30.0 | C | 0.80 | 0.006 | ● |
| EB030A05-3C03 | 3.00 | 3.00 | 5.00 | 38.00 | 3 | 30.0 | C | 1.50 | 0.010 | ● |
| EB030A05-3C06 | 3.00 | 6.00 | 5.00 | 57.00 | 3 | 30.0 | C | 1.50 | 0.010 | ● |
| EB040A07-3C04 | 4.00 | 4.00 | 7.00 | 50.00 | 3 | 30.0 | C | 2.00 | 0.010 | ● |
| EB040A07-3C06 | 4.00 | 6.00 | 7.00 | 57.00 | 3 | 30.0 | C | 2.00 | 0.010 | ● |
| EB050A08-3C05 | 5.00 | 5.00 | 8.00 | 50.00 | 3 | 30.0 | C | 2.50 | 0.010 | ● |
| EB050A08-3C06 | 5.00 | 6.00 | 8.00 | 57.00 | 3 | 30.0 | C | 2.50 | 0.010 | ● |
| EB060A08-3C06 | 6.00 | 6.00 | 8.00 | 57.00 | 3 | 30.0 | C | 3.00 | 0.010 | ● |
| EB080A11-3C08 | 8.00 | 8.00 | 11.00 | 63.00 | 3 | 30.0 | C | 4.00 | 0.010 | ● |
| EB100A13-3C10 | 10.00 | 10.00 | 13.00 | 72.00 | 3 | 30.0 | C | 5.00 | 0.010 | ● |
| EB120A14-3C12 | 12.00 | 12.00 | 14.00 | 83.00 | 3 | 30.0 | C | 6.00 | 0.012 | ● |

• Short and stable design for profiling (roughing). • For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical
(3) Corner radius tolerance (+/-)

SOLIDMILL TEC LINE

**EB-A4 (economical-short)**
Economical Type 4 Flute, 30° Helix Ball Nose Short Solid Carbide Endmills

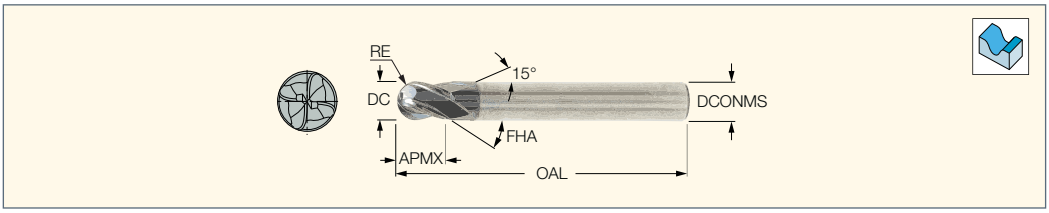



| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | RE | Shank(2) | RETOLL(3) | RETOLU(4) | IC08 | IC900 |
| EB-A4 02-04C06E50 | 2.00 | 6.00 | 4.00 | 50.00 | 4 | 30.0 | 1.00 | C | 0.000 | 0.005 | ● | ● |
| EB-A4 03-04C06E50 | 3.00 | 6.00 | 4.00 | 50.00 | 4 | 30.0 | 1.50 | C | -0.010 | 0.010 | | ● |
| EB-A4 04-06C06E50 | 4.00 | 6.00 | 6.00 | 50.00 | 4 | 30.0 | 2.00 | C | -0.010 | 0.010 | | ● |
| EB-A4 05-07C06E51 | 5.00 | 6.00 | 7.00 | 51.00 | 4 | 30.0 | 2.50 | C | -0.010 | 0.010 | ● | ● |
| EB-A4 06-07C06E50 | 6.00 | 6.00 | 7.00 | 50.00 | 4 | 30.0 | 3.00 | C | -0.010 | 0.010 | ● | |
| EB-A4 06-07C06E51 | 6.00 | 6.00 | 7.00 | 51.00 | 4 | 30.0 | 3.00 | C | -0.010 | 0.010 | | ● |
| EB-A4 08-09C08E59 | 8.00 | 8.00 | 9.00 | 59.00 | 4 | 30.0 | 4.00 | C | -0.010 | 0.010 | ● | ● |
| EB-A4 10-10C10E66 | 10.00 | 10.00 | 10.00 | 66.00 | 4 | 30.0 | 5.00 | C | -0.010 | 0.010 | ● | ● |
| EB-A4 12-14C12E71 | 12.00 | 12.00 | 14.00 | 71.00 | 4 | 30.0 | 6.00 | C | -0.012 | 0.012 | ● | ● |
| EB-A4 16-16C16E76 | 16.00 | 16.00 | 16.00 | 76.00 | 4 | 30.0 | 8.00 | C | -0.012 | 0.012 | ● | ● |
| EB-A4 18-18C18E76 | 18.00 | 18.00 | 18.00 | 76.00 | 4 | 30.0 | 9.00 | C | -0.012 | 0.012 | ● | ● |
| EB-A4 20-20C20E82 | 20.00 | 20.00 | 20.00 | 82.00 | 4 | 30.0 | 10.00 | C | -0.012 | 0.012 | ● | ● |

• For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical
(3) Lower tolerance limit
(4) Upper tolerance limit

SOLIDMILL PREMIUM LINE

**EB-A-4 (short length)**
4 Flute, 30° Helix Short Solid Carbide Ball Nose Endmills




| Designation | Dimensions | | | | | | | | | IC900 |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | RE | RETOL(3) | |
| EB020A03/06-4C03L38 | 2.00 | 3.00 | 3.00 | 38.00 | 4 | 30.0 | C | 1.00 | 0.006 | ● |
| EB030A05-4C03 | 3.00 | 3.00 | 5.00 | 38.00 | 4 | 30.0 | C | 1.50 | 0.010 | ● |
| EB030A05-4C06 | 3.00 | 6.00 | 5.00 | 57.00 | 4 | 30.0 | C | 1.50 | 0.010 | ● |
| EB040A07-4C04 | 4.00 | 4.00 | 7.00 | 50.00 | 4 | 30.0 | C | 2.00 | 0.010 | ● |
| EB040A07-4C06 | 4.00 | 6.00 | 7.00 | 57.00 | 4 | 30.0 | C | 2.00 | 0.010 | ● |
| EB050A08-4C06 | 5.00 | 6.00 | 8.00 | 57.00 | 4 | 30.0 | C | 2.50 | 0.010 | ● |
| EB060A08-4C06 | 6.00 | 6.00 | 8.00 | 57.00 | 4 | 30.0 | C | 3.00 | 0.010 | ● |
| EB080A11-4C08 | 8.00 | 8.00 | 11.00 | 63.00 | 4 | 30.0 | C | 4.00 | 0.010 | ● |
| EB100A13-4C10 | 10.00 | 10.00 | 13.00 | 72.00 | 4 | 30.0 | C | 5.00 | 0.010 | ● |
| EB120A14-4C12 | 12.00 | 12.00 | 14.00 | 83.00 | 4 | 30.0 | C | 6.00 | 0.012 | ● |
| EB140A14-4C14 | 14.00 | 14.00 | 14.00 | 83.00 | 4 | 30.0 | C | 7.00 | 0.012 | ● |
| EB160A16-4C16 | 16.00 | 16.00 | 16.00 | 92.00 | 4 | 30.0 | C | 8.00 | 0.012 | ● |
| EB200A20-4C20 | 20.00 | 20.00 | 20.00 | 104.00 | 4 | 30.0 | C | 10.00 | 0.012 | ● |

• Short and stable design for profiling (finishing). • For user guide, see pages 211-218

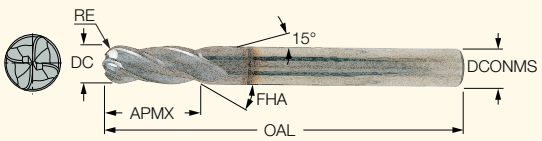
(1) Number of flutes

(2) C-Cylindrical

(3) Corner radius tolerance (+/-)

SOLIDMILL PREMIUM LINE

**EB-A-4 (medium length)**
4 Flute, 30° Helix Medium Length Solid Carbide Ball Nose Endmills




| Designation | Dimensions | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | RE | IC900 | IC902 |
| EB030A08-4C04 | 3.00 | 4.00 | 8.00 | 50.00 | 4 | 30.0 | C | 1.50 | ● | |
| EB040A12-4C04 | 4.00 | 4.00 | 12.00 | 50.00 | 4 | 30.0 | C | 2.00 | ● | ● |
| EB050A14-4C05 | 5.00 | 5.00 | 14.00 | 50.00 | 4 | 30.0 | C | 2.50 | ● | |
| EB060A16-4C06 | 6.00 | 6.00 | 16.00 | 57.00 | 4 | 30.0 | C | 3.00 | ● | ● |
| EB080A20-4C08 | 8.00 | 8.00 | 20.00 | 63.00 | 4 | 30.0 | C | 4.00 | ● | |
| EB090A11-4C09 | 9.00 | 9.00 | 11.00 | 67.00 | 4 | 30.0 | C | 4.50 | ● | |
| EB100A22-4C10 | 10.00 | 10.00 | 22.00 | 72.00 | 4 | 30.0 | C | 5.00 | ● | |
| EB120A25-4C12 | 12.00 | 12.00 | 25.00 | 83.00 | 4 | 30.0 | C | 6.00 | ● | |
| EB160A32-4C16 | 16.00 | 16.00 | 32.00 | 92.00 | 4 | 30.0 | C | 8.00 | ● | |
| EB200A38-4C20 | 20.00 | 20.00 | 38.00 | 104.00 | 4 | 30.0 | C | 10.00 | ● | |

• For user guide, see pages 211-218

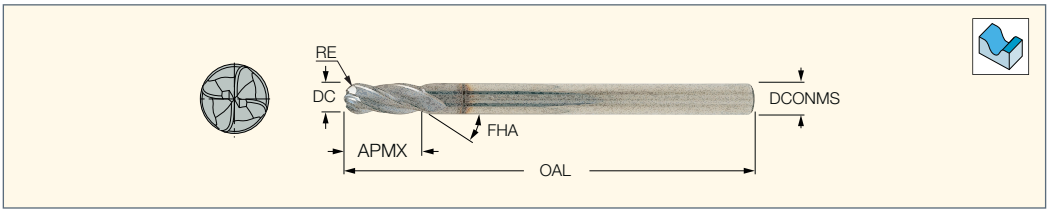
(1) Number of flutes

(2) C-Cylindrical

SOLIDMILL PREMIUM LINE

**EBL-A-4**

4 Flute, 30° Helix Long Solid Carbide Ball Nose Endmills




| Designation | Dimensions DC | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | RE | RETOL(3) | IC900 |
|---|---|---|---|---|---|---|---|---|---|---|
| EBL040A12-4C04 | 4.00 | 4.00 | 12.00 | 80.00 | 4 | 30.0 | C | 2.00 | 0.010 | ● |
| EBL060A16-4C06 | 6.00 | 6.00 | 16.00 | 100.00 | 4 | 30.0 | C | 3.00 | 0.010 | ● |
| EBL070A16-4C07 | 7.00 | 7.00 | 16.00 | 100.00 | 4 | 30.0 | C | 3.50 | 0.010 | ● |
| EBL080A20-4C08 | 8.00 | 8.00 | 20.00 | 100.00 | 4 | 30.0 | C | 4.00 | 0.010 | ● |
| EBL090A20-4C09 | 9.00 | 9.00 | 20.00 | 100.00 | 4 | 30.0 | C | 4.50 | 0.010 | ● |
| EBL100A22-4C10 | 10.00 | 10.00 | 22.00 | 100.00 | 4 | 30.0 | C | 5.00 | 0.010 | ● |
| EBL120A25-4C12 | 12.00 | 12.00 | 25.00 | 100.00 | 4 | 30.0 | C | 6.00 | 0.012 | ● |
| EBL160A32-4C16 | 16.00 | 16.00 | 32.00 | 125.00 | 4 | 30.0 | C | 8.00 | 0.012 | ● |

• Profiling in deep cavities • For user guide, see pages 211-218

(1) Number of flutes

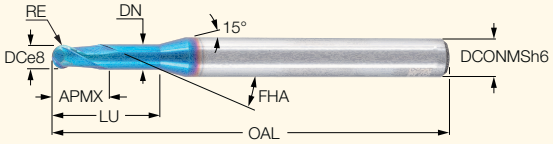
(2) C-Cylindrical

(3) Corner radius tolerance (+/-)

SOLIDMILL PREMIUM LINE

**EB-A2-H (rib processing)**

2 Flute, 30° Helix Rib Processing Solid Carbide Ball Nose Endmills for Materials up to 65 HRC




| Designation | Dimensions DC | DCONMS | APMX | OAL | LU | DN | RE | NOF(1) | FHA | Shank(2) | RETOL(3) | IC702 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EB-A2 004-004/03C4H45 | 0.40 | 4.00 | 0.40 | 45.00 | 3.0 | 0.37 | 0.20 | 2 | 30.0 | C | 0.005 | ● | 0.0100-0.0150 |
| EB-A2 005-004/04C4H45 | 0.50 | 4.00 | 0.40 | 45.00 | 4.0 | 0.45 | 0.25 | 2 | 30.0 | C | 0.005 | ● | 0.0100-0.0150 |
| EB-A2 005-004/08C4H45 | 0.50 | 4.00 | 0.40 | 45.00 | 8.0 | 0.45 | 0.25 | 2 | 30.0 | C | 0.005 | ● | 0.0100-0.0150 |
| EB-A2 006-005/02C4H45 | 0.60 | 4.00 | 0.50 | 45.00 | 2.0 | 0.55 | 0.30 | 2 | 30.0 | C | 0.005 | ● | 0.0100-0.0150 |
| EB-A2 006-005/04C4H45 | 0.60 | 4.00 | 0.50 | 45.00 | 4.0 | 0.55 | 0.30 | 2 | 30.0 | C | 0.005 | ● | 0.0100-0.0150 |
| EB-A2 006-005/08C4H45 | 0.60 | 4.00 | 0.50 | 45.00 | 8.0 | 0.55 | 0.30 | 2 | 30.0 | C | 0.005 | ● | 0.0100-0.0150 |
| EB-A2 008-006/02C4H45 | 0.80 | 4.00 | 0.60 | 45.00 | 2.0 | 0.75 | 0.40 | 2 | 30.0 | C | 0.005 | ● | 0.0150-0.0250 |
| EB-A2 008-006/04C4H45 | 0.80 | 4.00 | 0.60 | 45.00 | 4.0 | 0.75 | 0.40 | 2 | 30.0 | C | 0.005 | ● | 0.0150-0.0250 |
| EB-A2 008-006/06C4H45 | 0.80 | 4.00 | 0.60 | 45.00 | 6.0 | 0.75 | 0.40 | 2 | 30.0 | C | 0.005 | ● | 0.0150-0.0250 |
| EB-A2 010-008/03C4H45 | 1.00 | 4.00 | 0.80 | 45.00 | 3.0 | 0.95 | 0.50 | 2 | 30.0 | C | 0.005 | ● | 0.0200-0.0350 |
| EB-A2 010-008/04C4H45 | 1.00 | 4.00 | 0.80 | 45.00 | 4.0 | 0.95 | 0.50 | 2 | 30.0 | C | 0.005 | ● | 0.0200-0.0350 |
| EB-A2 010-008/06C4H45 | 1.00 | 4.00 | 0.80 | 45.00 | 6.0 | 0.95 | 0.50 | 2 | 30.0 | C | 0.005 | ● | 0.0200-0.0350 |
| EB-A2 010-008/08C4H45 | 1.00 | 4.00 | 0.80 | 45.00 | 8.0 | 0.95 | 0.50 | 2 | 30.0 | C | 0.005 | ● | 0.0200-0.0350 |
| EB-A2 010-008/10C4H45 | 1.00 | 4.00 | 0.80 | 45.00 | 10.0 | 0.95 | 0.50 | 2 | 30.0 | C | 0.005 | ● | 0.0200-0.0350 |
| EB-A2 010-008/20C4M55 | 1.00 | 4.00 | 0.80 | 55.00 | 20.0 | 0.95 | 0.50 | 2 | 30.0 | C | 0.005 | ● | 0.0200-0.0350 |
| EB-A2 012-010/08C4H45 | 1.20 | 4.00 | 1.00 | 45.00 | 8.0 | 1.15 | 0.60 | 2 | 30.0 | C | 0.005 | ● | 0.0200-0.0450 |
| EB-A2 015-012/06C4H45 | 1.50 | 4.00 | 1.20 | 45.00 | 6.0 | 1.45 | 0.75 | 2 | 30.0 | C | 0.005 | ● | 0.0200-0.0450 |
| EB-A2 015-012/10C4H45 | 1.50 | 4.00 | 1.20 | 45.00 | 10.0 | 1.45 | 0.75 | 2 | 30.0 | C | 0.005 | ● | 0.0200-0.0450 |
| EB-A2 015-012/12C4H45 | 1.50 | 4.00 | 1.20 | 45.00 | 12.0 | 1.45 | 0.75 | 2 | 30.0 | C | 0.005 | ● | 0.0200-0.0450 |
| EB-A2 015-012/20C4H55 | 1.50 | 4.00 | 1.20 | 55.00 | 20.0 | 1.45 | 0.75 | 2 | 30.0 | C | 0.005 | ● | 0.0200-0.0450 |
| EB-A2 020-016/04C4H45 | 2.00 | 4.00 | 1.60 | 45.00 | 4.0 | 1.95 | 1.00 | 2 | 30.0 | C | 0.005 | ● | 0.0300-0.0700 |
| EB-A2 020-016/06C4H45 | 2.00 | 4.00 | 1.60 | 45.00 | 6.0 | 1.95 | 1.00 | 2 | 30.0 | C | 0.005 | ● | 0.0300-0.0700 |
| EB-A2 020-016/10C4H45 | 2.00 | 4.00 | 1.60 | 45.00 | 10.0 | 1.95 | 1.00 | 2 | 30.0 | C | 0.005 | ● | 0.0300-0.0700 |
| EB-A2 020-016/12C4H50 | 2.00 | 4.00 | 1.60 | 50.00 | 12.0 | 1.95 | 1.00 | 2 | 30.0 | C | 0.005 | ● | 0.0300-0.0700 |
| EB-A2 020-016/14C4H50 | 2.00 | 4.00 | 1.60 | 50.00 | 14.0 | 1.95 | 1.00 | 2 | 30.0 | C | 0.005 | ● | 0.0300-0.0700 |
| EB-A2 020-016/16C4H50 | 2.00 | 4.00 | 1.60 | 50.00 | 16.0 | 1.95 | 1.00 | 2 | 30.0 | C | 0.005 | ● | 0.0300-0.0700 |
| EB-A2 020-016/20C4H55 | 2.00 | 4.00 | 1.60 | 55.00 | 20.0 | 1.95 | 1.00 | 2 | 30.0 | C | 0.005 | ● | 0.0300-0.0700 |
| EB-A2 030-024/12C6H50 | 3.00 | 6.00 | 2.40 | 50.00 | 12.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.005 | ● | 0.0500-0.1000 |
| EB-A2 030-024/16C6H55 | 3.00 | 6.00 | 2.40 | 55.00 | 16.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.005 | ● | 0.0500-0.1000 |
| EB-A2 030-024/20C6H60 | 3.00 | 6.00 | 2.40 | 60.00 | 20.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.005 | ● | 0.0500-0.1000 |
| EB-A2 030-024/25C6H65 | 3.00 | 6.00 | 2.40 | 65.00 | 25.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.005 | ● | 0.0500-0.1000 |
| EB-A2 040-032/16C6H60 | 4.00 | 6.00 | 3.20 | 60.00 | 16.0 | 3.85 | 2.00 | 2 | 30.0 | C | 0.005 | ● | 0.0600-0.1500 |
| EB-A2 040-032/20C6H65 | 4.00 | 6.00 | 3.20 | 65.00 | 20.0 | 3.85 | 2.00 | 2 | 30.0 | C | 0.005 | ● | 0.0600-0.1500 |
| EB-A2 040-032/25C6H70 | 4.00 | 6.00 | 3.20 | 70.00 | 25.0 | 3.85 | 2.00 | 2 | 30.0 | C | 0.005 | ● | 0.0600-0.1500 |

• For user guide, see pages 211-218

(1) Number of flutes

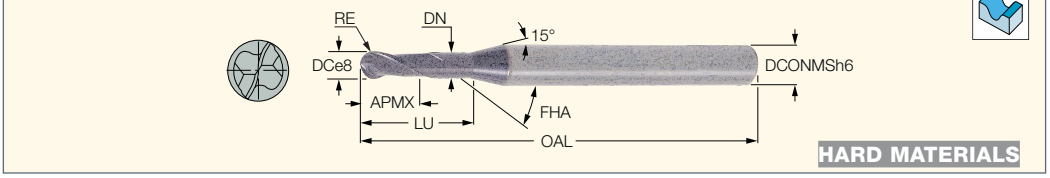
(2) C-Cylindrical

(3) Corner radius tolerance (+/-)

SOLIDMILL PREMIUM LINE

**EB-A2 (rib processing)**

2 Flute, 30° Helix Rib Processing Solid Carbide Ball Nose Endmills for Materials up to 55 HRC




HARD MATERIALS

| Designation | Dimensions | | | | | | | | | | | Tough ↔ Hard IC903 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | LU | DN | RE | NOF[1] | FHA | Shank[2] | RETOL[3] | | |
| EB-A2 004-006/01C4M45 | 0.40 | 4.00 | 0.60 | 45.00 | 1.0 | 0.36 | 0.20 | 2 | 30.0 | C | 0.010 | • | 0.0030-0.0060 |
| EB-A2 004-006/02C4M45 | 0.40 | 4.00 | 0.60 | 45.00 | 2.0 | 0.36 | 0.20 | 2 | 30.0 | C | 0.010 | • | 0.0030-0.0060 |
| EB-A2 004-006/03C4M45 | 0.40 | 4.00 | 0.60 | 45.00 | 3.0 | 0.36 | 0.20 | 2 | 30.0 | C | 0.010 | • | 0.0030-0.0060 |
| EB-A2 005-007/02C4M45 | 0.50 | 4.00 | 0.70 | 45.00 | 2.0 | 0.45 | 0.25 | 2 | 30.0 | C | 0.010 | • | 0.0030-0.0060 |
| EB-A2 005-007/04C4M45 | 0.50 | 4.00 | 0.70 | 45.00 | 4.0 | 0.45 | 0.25 | 2 | 30.0 | C | 0.010 | • | 0.0030-0.0060 |
| EB-A2 005-007/06C4M45 | 0.50 | 4.00 | 0.70 | 45.00 | 6.0 | 0.45 | 0.25 | 2 | 30.0 | C | 0.010 | • | 0.0030-0.0060 |
| EB-A2 005-007/08C4M45 | 0.50 | 4.00 | 0.70 | 45.00 | 8.0 | 0.45 | 0.25 | 2 | 30.0 | C | 0.010 | • | 0.0030-0.0060 |
| EB-A2 006-009/02C4M45 | 0.60 | 4.00 | 0.90 | 45.00 | 2.0 | 0.55 | 0.30 | 2 | 30.0 | C | 0.010 | • | 0.0040-0.0080 |
| EB-A2 006-009/04C4M45 | 0.60 | 4.00 | 0.90 | 45.00 | 4.0 | 0.55 | 0.30 | 2 | 30.0 | C | 0.010 | • | 0.0040-0.0080 |
| EB-A2 008-012/02C4M45 | 0.80 | 4.00 | 1.20 | 45.00 | 2.0 | 0.75 | 0.40 | 2 | 30.0 | C | 0.010 | • | 0.0040-0.0080 |
| EB-A2 008-012/04C4M45 | 0.80 | 4.00 | 1.20 | 45.00 | 4.0 | 0.75 | 0.40 | 2 | 30.0 | C | 0.010 | • | 0.0040-0.0080 |
| EB-A2 008-012/06C4M45 | 0.80 | 4.00 | 1.20 | 45.00 | 6.0 | 0.75 | 0.40 | 2 | 30.0 | C | 0.010 | • | 0.0040-0.0080 |
| EB-A2 008-012/10C4M45 | 0.80 | 4.00 | 1.20 | 45.00 | 10.0 | 0.75 | 0.40 | 2 | 30.0 | C | 0.010 | • | 0.0040-0.0080 |
| EB-A2 010-015/03C4M45 | 1.00 | 4.00 | 1.50 | 45.00 | 3.0 | 0.97 | 0.50 | 2 | 30.0 | C | 0.010 | • | 0.0050-0.0100 |
| EB-A2 010-015/04C4M45 | 1.00 | 4.00 | 1.50 | 45.00 | 4.0 | 0.97 | 0.50 | 2 | 30.0 | C | 0.010 | • | 0.0050-0.0100 |
| EB-A2 010-015/05C4M45 | 1.00 | 4.00 | 1.50 | 45.00 | 5.0 | 0.97 | 0.50 | 2 | 30.0 | C | 0.010 | • | 0.0050-0.0100 |
| EB-A2 010-015/06C4M45 | 1.00 | 4.00 | 1.50 | 45.00 | 6.0 | 0.97 | 0.50 | 2 | 30.0 | C | 0.010 | • | 0.0050-0.0100 |
| EB-A2 010-015/07C4M45 | 1.00 | 4.00 | 1.50 | 45.00 | 7.0 | 0.95 | 0.50 | 2 | 30.0 | C | 0.010 | • | 0.0050-0.0100 |
| EB-A2 010-015/08C4M45 | 1.00 | 4.00 | 1.50 | 45.00 | 8.0 | 0.95 | 0.50 | 2 | 30.0 | C | 0.010 | • | 0.0050-0.0100 |
| EB-A2 010-015/10C4M45 | 1.00 | 4.00 | 1.50 | 45.00 | 10.0 | 0.95 | 0.50 | 2 | 30.0 | C | 0.010 | • | 0.0050-0.0100 |
| EB-A2 010-015/12C4M45 | 1.00 | 4.00 | 1.50 | 45.00 | 12.0 | 0.93 | 0.50 | 2 | 30.0 | C | 0.010 | • | 0.0050-0.0100 |
| EB-A2 010-015/14C4M50 | 1.00 | 4.00 | 1.50 | 50.00 | 14.0 | 0.93 | 0.50 | 2 | 30.0 | C | 0.010 | • | 0.0050-0.0100 |
| EB-A2 010-015/16C4M50 | 1.00 | 4.00 | 1.50 | 50.00 | 16.0 | 0.93 | 0.50 | 2 | 30.0 | C | 0.010 | • | 0.0050-0.0100 |
| EB-A2 010-015/20C4M55 | 1.00 | 4.00 | 1.50 | 55.00 | 20.0 | 0.93 | 0.50 | 2 | 30.0 | C | 0.010 | • | 0.0050-0.0100 |
| EB-A2 012-018/08C4M45 | 1.20 | 4.00 | 1.80 | 45.00 | 8.0 | 1.17 | 0.60 | 2 | 30.0 | C | 0.010 | • | 0.0060-0.0150 |
| EB-A2 012-018/12C4M45 | 1.20 | 4.00 | 1.80 | 45.00 | 12.0 | 1.13 | 0.60 | 2 | 30.0 | C | 0.010 | • | 0.0060-0.0150 |
| EB-A2 014-021/08C4M45 | 1.40 | 4.00 | 2.10 | 45.00 | 8.0 | 1.35 | 0.70 | 2 | 30.0 | C | 0.010 | • | 0.0060-0.0150 |
| EB-A2 014-021/16C4M50 | 1.40 | 4.00 | 2.10 | 50.00 | 16.0 | 1.31 | 0.70 | 2 | 30.0 | C | 0.010 | • | 0.0060-0.0150 |
| EB-A2 015-015/03C04M50 | 1.50 | 4.00 | 1.50 | 50.00 | 3.0 | 1.47 | 0.75 | 2 | 30.0 | C | 0.010 | • | 0.0070-0.0160 |
| EB-A2 015-023/06C4M45 | 1.50 | 4.00 | 2.30 | 45.00 | 6.0 | 1.47 | 0.75 | 2 | 30.0 | C | 0.010 | • | 0.0070-0.0160 |
| EB-A2 015-023/08C4M45 | 1.50 | 4.00 | 2.30 | 45.00 | 8.0 | 1.45 | 0.75 | 2 | 30.0 | C | 0.010 | • | 0.0070-0.0160 |
| EB-A2 015-023/10C4M45 | 1.50 | 4.00 | 2.30 | 45.00 | 10.0 | 1.45 | 0.75 | 2 | 30.0 | C | 0.010 | • | 0.0070-0.0160 |
| EB-A2 015-023/12C4M45 | 1.50 | 4.00 | 2.30 | 45.00 | 12.0 | 1.43 | 0.75 | 2 | 30.0 | C | 0.010 | • | 0.0070-0.0160 |
| EB-A2 015-023/20C4M55 | 1.50 | 4.00 | 2.30 | 55.00 | 20.0 | 1.39 | 0.75 | 2 | 30.0 | C | 0.010 | • | 0.0070-0.0160 |
| EB-A2 016-024/08C4M45 | 1.60 | 4.00 | 2.40 | 45.00 | 8.0 | 1.55 | 0.80 | 2 | 30.0 | C | 0.010 | • | 0.0080-0.0170 |
| EB-A2 016-024/12C4M45 | 1.60 | 4.00 | 2.40 | 45.00 | 12.0 | 1.53 | 0.80 | 2 | 30.0 | C | 0.010 | • | 0.0080-0.0170 |
| EB-A2 018-027/08C4M45 | 1.80 | 4.00 | 2.70 | 45.00 | 8.0 | 1.75 | 0.90 | 2 | 30.0 | C | 0.010 | • | 0.0080-0.0180 |
| EB-A2 018-027/12C4M45 | 1.80 | 4.00 | 2.70 | 45.00 | 12.0 | 1.73 | 0.90 | 2 | 30.0 | C | 0.010 | • | 0.0080-0.0180 |
| EB-A2 018-027/16C4M50 | 1.80 | 4.00 | 2.70 | 50.00 | 16.0 | 1.71 | 0.90 | 2 | 30.0 | C | 0.010 | • | 0.0080-0.0180 |
| EB-A2 020-030/04C4M45 | 2.00 | 4.00 | 3.00 | 45.00 | 4.0 | 1.97 | 1.00 | 2 | 30.0 | C | 0.010 | • | 0.0100-0.0210 |
| EB-A2 020-030/06C4M45 | 2.00 | 4.00 | 3.00 | 45.00 | 6.0 | 1.97 | 1.00 | 2 | 30.0 | C | 0.010 | • | 0.0100-0.0210 |
| EB-A2 020-030/10C4M45 | 2.00 | 4.00 | 3.00 | 45.00 | 10.0 | 1.93 | 1.00 | 2 | 30.0 | C | 0.010 | • | 0.0100-0.0210 |
| EB-A2 020-030/12C4M50 | 2.00 | 4.00 | 3.00 | 50.00 | 12.0 | 1.93 | 1.00 | 2 | 30.0 | C | 0.010 | • | 0.0100-0.0210 |
| EB-A2 020-030/14C4M50 | 2.00 | 4.00 | 3.00 | 50.00 | 14.0 | 1.93 | 1.00 | 2 | 30.0 | C | 0.010 | • | 0.0100-0.0210 |
| EB-A2 020-030/16C4M50 | 2.00 | 4.00 | 3.00 | 50.00 | 16.0 | 1.91 | 1.00 | 2 | 30.0 | C | 0.010 | • | 0.0100-0.0210 |
| EB-A2 020-030/20C4M55 | 2.00 | 4.00 | 3.00 | 55.00 | 20.0 | 1.89 | 1.00 | 2 | 30.0 | C | 0.010 | • | 0.0100-0.0210 |
| EB-A2 020-030/25C4M60 | 2.00 | 4.00 | 3.00 | 60.00 | 25.0 | 1.89 | 1.00 | 2 | 30.0 | C | 0.010 | • | 0.0100-0.0210 |
| EB-A2 020-030/30C4M70 | 2.00 | 4.00 | 3.00 | 70.00 | 30.0 | 1.89 | 1.00 | 2 | 30.0 | C | 0.010 | • | 0.0100-0.0210 |
| EB-A2 030-045/08C6M50 | 3.00 | 6.00 | 4.50 | 50.00 | 8.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.010 | • | 0.0120-0.0300 |
| EB-A2 030-045/10C6M50 | 3.00 | 6.00 | 4.50 | 50.00 | 10.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.010 | • | 0.0120-0.0300 |
| EB-A2 030-045/12C6M50 | 3.00 | 6.00 | 4.50 | 50.00 | 12.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.010 | • | 0.0120-0.0300 |
| EB-A2 030-045/16C6M55 | 3.00 | 6.00 | 4.50 | 55.00 | 16.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.010 | • | 0.0120-0.0300 |
| EB-A2 030-045/20C6M60 | 3.00 | 6.00 | 4.50 | 60.00 | 20.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.010 | • | 0.0120-0.0300 |
| EB-A2 030-045/25C6M65 | 3.00 | 6.00 | 4.50 | 65.00 | 25.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.010 | • | 0.0120-0.0300 |
| EB-A2 030-045/30C6M70 | 3.00 | 6.00 | 4.50 | 70.00 | 30.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.010 | • | 0.0120-0.0300 |
| EB-A2 030-045/35C6M80 | 3.00 | 6.00 | 4.50 | 80.00 | 35.0 | 2.85 | 1.50 | 2 | 30.0 | C | 0.010 | • | 0.0120-0.0300 |
| EB-A2 040-060/10C6M60 | 4.00 | 6.00 | 6.00 | 60.00 | 10.0 | 3.80 | 2.00 | 2 | 30.0 | C | 0.010 | • | 0.0150-0.0350 |

• For user guide, see pages 211-218

(1) Number of flutes

(2) C-Cylindrical

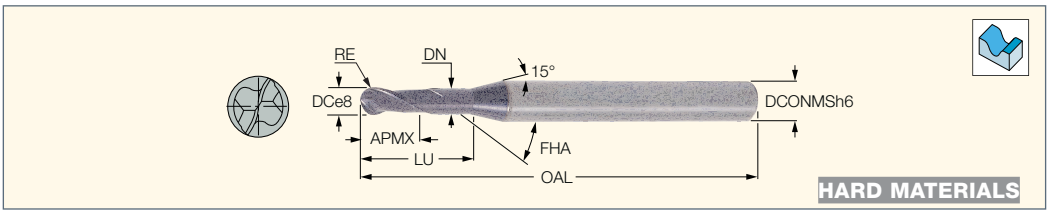
(3) Corner radius tolerance (+/-)

Continued

SOLIDMILL PREMIUM LINE

**EB-A2 (rib processing)**

2 Flute, 30° Helix Rib Processing Solid Carbide Ball Nose Endmills for Materials up to 55 HRC




| Designation | Dimensions DC | DCONMS | APMX | OAL | LU | DN | RE | NOF(1) | FHA | Shank(2) | RETOL(3) | Tough ↔ Hard IC903 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EB-A2 040-060/12C6M60 | 4.00 | 6.00 | 6.00 | 60.00 | 12.0 | 3.80 | 2.00 | 2 | 30.0 | C | 0.010 | ● | 0.0150-0.0350 |
| EB-A2 040-060/16C6M60 | 4.00 | 6.00 | 6.00 | 60.00 | 16.0 | 3.80 | 2.00 | 2 | 30.0 | C | 0.010 | ● | 0.0150-0.0350 |
| EB-A2 040-060/20C6M65 | 4.00 | 6.00 | 6.00 | 65.00 | 20.0 | 3.80 | 2.00 | 2 | 30.0 | C | 0.010 | ● | 0.0150-0.0350 |
| EB-A2 040-060/25C6M70 | 4.00 | 6.00 | 6.00 | 70.00 | 25.0 | 3.80 | 2.00 | 2 | 30.0 | C | 0.010 | ● | 0.0150-0.0350 |
| EB-A2 040-060/30C6M70 | 4.00 | 6.00 | 6.00 | 70.00 | 30.0 | 3.80 | 2.00 | 2 | 30.0 | C | 0.010 | ● | 0.0150-0.0350 |
| EB-A2 040-060/35C6M80 | 4.00 | 6.00 | 6.00 | 80.00 | 35.0 | 3.80 | 2.00 | 2 | 30.0 | C | 0.010 | ● | 0.0150-0.0350 |
| EB-A2 040-060/45C6M90 | 4.00 | 6.00 | 6.00 | 90.00 | 45.0 | 3.80 | 2.00 | 2 | 30.0 | C | 0.010 | ● | 0.0150-0.0350 |
| EB-A2 050-075/20C6M60 | 5.00 | 6.00 | 7.50 | 60.00 | 20.0 | 4.80 | 2.50 | 2 | 30.0 | C | 0.010 | ● | 0.0180-0.0440 |
| EB-A2 050-075/25C6M70 | 5.00 | 6.00 | 7.50 | 70.00 | 25.0 | 4.80 | 2.50 | 2 | 30.0 | C | 0.010 | ● | 0.0180-0.0440 |
| EB-A2 050-075/30C6M80 | 5.00 | 6.00 | 7.50 | 80.00 | 30.0 | 4.80 | 2.50 | 2 | 30.0 | C | 0.010 | ● | 0.0180-0.0440 |
| EB-A2 050-075/35C6M80 | 5.00 | 6.00 | 7.50 | 80.00 | 35.0 | 4.80 | 2.50 | 2 | 30.0 | C | 0.010 | ● | 0.0180-0.0440 |
| EB-A2 060-090/20C6M80 | 6.00 | 6.00 | 9.00 | 80.00 | 20.0 | 5.80 | 3.00 | 2 | 30.0 | C | 0.010 | ● | 0.0200-0.0500 |
| EB-A2 060-090/30C6M90 | 6.00 | 6.00 | 9.00 | 90.00 | 30.0 | 5.80 | 3.00 | 2 | 30.0 | C | 0.010 | ● | 0.0200-0.0500 |
| EB-A2 060-090/40C6M100 | 6.00 | 6.00 | 9.00 | 100.00 | 40.0 | 5.80 | 3.00 | 2 | 30.0 | C | 0.010 | ● | 0.0200-0.0500 |

• For user guide, see pages 211-218

(1) Number of flutes

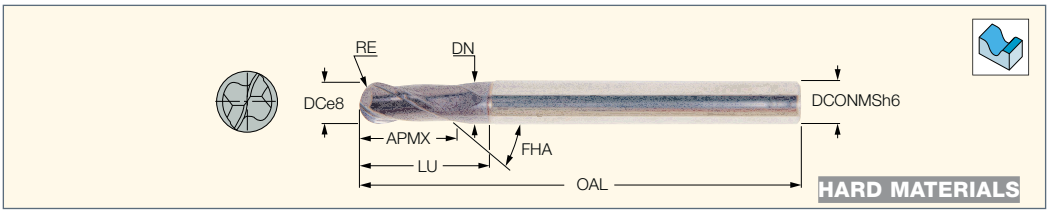
(2) C-Cylindrical

(3) Corner radius tolerance (+/-)

SOLIDMILL PREMIUM LINE

**EB-A2 (long with neck)**

2 Flute, 30° Helix Long Solid Carbide Ball Nose Endmills with Relieved Necks for Materials up to 65 HRC




| Designation | Dimensions DC | RE | DCONMS | APMX | OAL | LU | DN | NOF(1) | FHA | Shank(2) | RETOL(3) | IC903 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EB-A2 03-08C06M70 | 3.00 | 1.50 | 6.00 | 8.00 | 70.00 | - | - | 2 | 30.0 | C | 0.010 | ● |
| EB-A2 04-08C06M70 | 4.00 | 2.00 | 6.00 | 8.00 | 70.00 | - | - | 2 | 30.0 | C | 0.010 | ● |
| EB-A2 05-12C06M80 | 5.00 | 2.50 | 6.00 | 12.00 | 80.00 | - | - | 2 | 30.0 | C | 0.010 | ● |
| EB-A2 06-12/22C06M80 | 6.00 | 3.00 | 6.00 | 12.00 | 80.00 | 22.00 | 5.80 | 2 | 30.0 | C | 0.010 | ● |
| EB-A2 07-14C08M90 | 7.00 | 3.50 | 8.00 | 14.00 | 90.00 | - | - | 2 | 30.0 | C | 0.020 | ● |
| EB-A2 08-14/27C08M90 | 8.00 | 4.00 | 8.00 | 14.00 | 90.00 | 27.00 | 7.80 | 2 | 30.0 | C | 0.020 | ● |
| EB-A2 10-18/31C10M100 | 10.00 | 5.00 | 10.00 | 18.00 | 100.00 | 31.00 | 9.80 | 2 | 30.0 | C | 0.020 | ● |
| EB-A2 12-22/35C12M110 | 12.00 | 6.00 | 12.00 | 22.00 | 110.00 | 35.00 | 11.80 | 2 | 30.0 | C | 0.020 | ● |
| EB-A2 16-30/50C16M140 | 16.00 | 8.00 | 16.00 | 30.00 | 140.00 | 50.00 | 15.80 | 2 | 30.0 | C | 0.020 | ● |

• For user guide, see pages 211-218

(1) Number of flutes

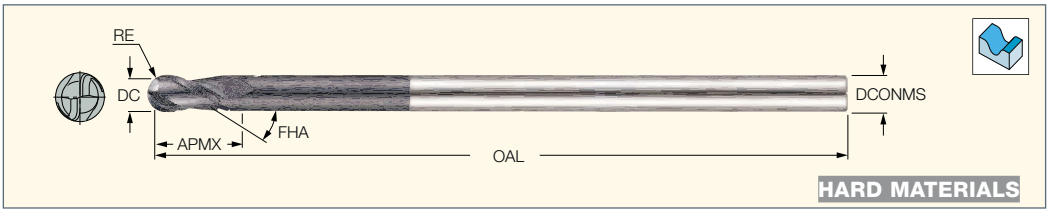
(2) C-Cylindrical

(3) Corner radius tolerance (+/-)

SOLIDMILL PREMIUM LINE

## EB-A2 (extra long)

2 Flute, 30° Helix Extra Long Solid Carbide Ball Nose Endmills for Materials up to 65 HRC




| Designation | Dimensions DC | RE | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | IC903 |
|---|---|---|---|---|---|---|---|---|---|
| EB-A2 02-06C03M80 | 2.00 | 1.00 | 3.00 | 6.00 | 80.00 | 2 | 30.0 | C | ● |
| EB-A2 03-08C03M100 | 3.00 | 1.50 | 3.00 | 8.00 | 100.00 | 2 | 30.0 | C | ● |
| EB-A2 04-08C04M100 | 4.00 | 2.00 | 4.00 | 8.00 | 100.00 | 2 | 30.0 | C | ● |
| EB-A2 06-10C06M120 | 6.00 | 3.00 | 6.00 | 10.00 | 120.00 | 2 | 30.0 | C | ● |
| EB-A2 08-14C08M140 | 8.00 | 4.00 | 8.00 | 14.00 | 140.00 | 2 | 30.0 | C | ● |
| EB-A2 10-18C10M180 | 10.00 | 5.00 | 10.00 | 18.00 | 180.00 | 2 | 30.0 | C | ● |
| EB-A2 12-22C12M200 | 12.00 | 6.00 | 12.00 | 22.00 | 200.00 | 2 | 30.0 | C | ● |
| EB-A2 16-30C16M250 | 16.00 | 8.00 | 16.00 | 30.00 | 250.00 | 2 | 30.0 | C | ● |
| EB-A2 20-38C20M250 | 20.00 | 10.00 | 20.00 | 38.00 | 250.00 | 2 | 30.0 | C | ● |

• The DC tolerance is: 0 - -0.030 mm • For user guide, see pages 211-218

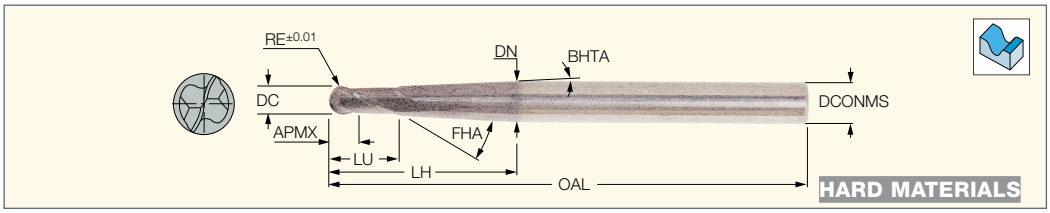
(1) Number of flutes

(2) C-Cylindrical

SOLIDMILL PREMIUM LINE

## EB-A2 (tapered flute & neck)

2 Tapered Flutes, 30° Helix Solid Carbide Ball Nose Endmills with Relieved Necks for Materials up to 65 HRC




| Designation | Dimensions DC | RE | DCONMS | APMX | LU | LH | DN | BHTA | OAL | NOF(1) | FHA | Shank(2) | IC903 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EB-A2 01-02/04/1.5C06M60 | 1.00 | 0.50 | 6.00 | 2.00 | 4.0 | 23.0 | 2.00 | 1.5 | 60.00 | 2 | 30.0 | C | ● |
| EB-A2 01-02/04/3.0C06M80 | 1.00 | 0.50 | 6.00 | 2.00 | 4.0 | 42.0 | 5.00 | 3.0 | 80.00 | 2 | 30.0 | C | ● |
| EB-A2 01-02/04/5.0C06M60 | 1.00 | 0.50 | 6.00 | 2.00 | 4.0 | 23.0 | 4.30 | 5.0 | 60.00 | 2 | 30.0 | C | ● |
| EB-A2 02-04/06/1.5C06M60 | 2.00 | 1.00 | 6.00 | 4.00 | 6.0 | 23.0 | 2.90 | 1.5 | 60.00 | 2 | 30.0 | C | ● |
| EB-A2 02-04/06/3.0C06M80 | 2.00 | 1.00 | 6.00 | 4.00 | 6.0 | 41.0 | 5.70 | 3.0 | 80.00 | 2 | 30.0 | C | ● |
| EB-A2 02-04/06/5.0C06M60 | 2.00 | 1.00 | 6.00 | 4.00 | 6.0 | 23.0 | 5.00 | 5.0 | 60.00 | 2 | 30.0 | C | ● |
| EB-A2 03-06/08/1.5C06M90 | 3.00 | 1.50 | 6.00 | 6.00 | 8.0 | 52.0 | 5.30 | 1.5 | 90.00 | 2 | 30.0 | C | ● |
| EB-A2 03-06/08/3.0C06M70 | 3.00 | 1.50 | 6.00 | 6.00 | 8.0 | 32.0 | 5.60 | 3.0 | 70.00 | 2 | 30.0 | C | ● |
| EB-A2 04-08/10/1.5C06M90 | 4.00 | 2.00 | 6.00 | 8.00 | 10.0 | 49.0 | 6.00 | 1.5 | 90.00 | 2 | 30.0 | C | ● |
| EB-A2 04-08/10/3.0C06M70 | 4.00 | 2.00 | 6.00 | 8.00 | 10.0 | 28.0 | 6.00 | 3.0 | 70.00 | 2 | 30.0 | C | ● |
| EB-A2 05-10/12/1.5C08M110 | 5.00 | 2.50 | 8.00 | 10.00 | 12.0 | 61.0 | 7.60 | 1.5 | 110.00 | 2 | 30.0 | C | ● |
| EB-A2 06-12/15/1.5C08M110 | 6.00 | 3.00 | 8.00 | 12.00 | 15.0 | 53.0 | 8.00 | 1.5 | 110.00 | 2 | 30.0 | C | ● |
| EB-A2 06-12/15/3.0C08M90 | 6.00 | 3.00 | 8.00 | 12.00 | 15.0 | 34.0 | 8.00 | 3.0 | 90.00 | 2 | 30.0 | C | ● |
| EB-A2 08-14/17/1.5C10M120 | 8.00 | 4.00 | 10.00 | 14.00 | 17.0 | 55.0 | 10.00 | 1.5 | 120.00 | 2 | 30.0 | C | ● |
| EB-A2 08-14/17/3.0C10M100 | 8.00 | 4.00 | 10.00 | 14.00 | 17.0 | 36.0 | 10.00 | 3.0 | 100.00 | 2 | 30.0 | C | ● |
| EB-A2 10-18/21/1.5C12M130 | 10.00 | 5.00 | 12.00 | 18.00 | 21.0 | 59.0 | 12.00 | 1.5 | 130.00 | 2 | 30.0 | C | ● |
| EB-A2 10-18/21/3.0C12M110 | 10.00 | 5.00 | 12.00 | 18.00 | 21.0 | 40.0 | 12.00 | 3.0 | 110.00 | 2 | 30.0 | C | ● |

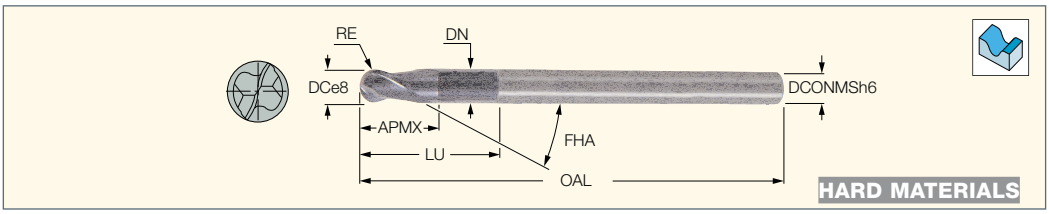
• For user guide, see pages 211-218

(1) Number of flutes

(2) C-Cylindrical

SOLIDMILL PREMIUM LINE

**EB-A2 (precision stub cut)**
2 Flute, 30° Helix Stub Cut Length High Precision Ball Nose Endmills with Relieved Necks for Materials up to 65 HRC

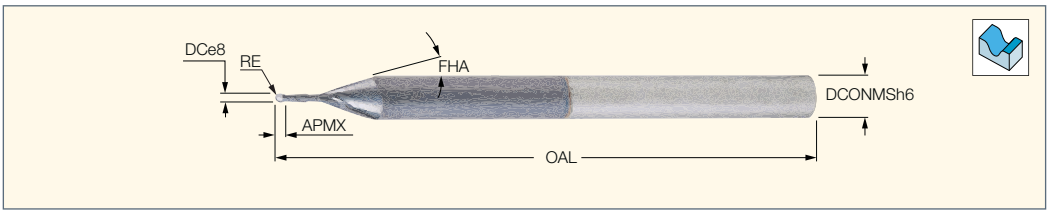



| Designation | Dimensions | | | | | | | | | | | | IC903 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | RE | DCONMS | APMX | LU | OAL | DN | NOF(1) | FHA | Shank(2) | RETOLL(3) | RETOLU(4) | |
| EB-A2 01-01/02C04M50 | 1.00 | 0.50 | 4.00 | 1.00 | 2.20 | 50.00 | 0.95 | 2 | 30.0 | C | 0.000 | 0.004 | ● |
| EB-A2 01-01/02C06M50 | 1.00 | 0.50 | 6.00 | 1.00 | 2.20 | 50.00 | 0.95 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| EB-A2 012-012/02C04M50 | 1.20 | 0.60 | 4.00 | 1.20 | 2.60 | 50.00 | 1.10 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| EB-A2 02-02/04C06M50 | 2.00 | 1.00 | 6.00 | 2.00 | 4.00 | 50.00 | 1.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| EB-A2 025-025/05C06M60 | 2.50 | 1.25 | 6.00 | 2.50 | 5.00 | 60.00 | 2.40 | 2 | 30.0 | C | 0.000 | 0.006 | ● |
| EB-A2 03-03/06C06M60 | 3.00 | 1.50 | 6.00 | 3.00 | 6.00 | 60.00 | 2.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| EB-A2 04-04/08C06M70 | 4.00 | 2.00 | 6.00 | 4.00 | 8.00 | 70.00 | 3.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| EB-A2 05-05/10C06M80 | 5.00 | 2.50 | 6.00 | 5.00 | 10.00 | 80.00 | 4.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| EB-A2 06-06/12C06M90 | 6.00 | 3.00 | 6.00 | 6.00 | 12.00 | 90.00 | 5.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| EB-A2 07-07/14C08M90 | 7.00 | 3.50 | 8.00 | 7.00 | 14.00 | 90.00 | 6.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| EB-A2 08-08/16C08M100 | 8.00 | 4.00 | 8.00 | 8.00 | 16.00 | 100.00 | 7.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| EB-A2 09-09/18C10M100 | 9.00 | 4.50 | 10.00 | 9.00 | 18.00 | 100.00 | 8.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| EB-A2 10-10/20C10M100 | 10.00 | 5.00 | 10.00 | 10.00 | 20.00 | 100.00 | 9.90 | 2 | 30.0 | C | -0.010 | 0.010 | ● |
| EB-A2 12-12/24C12M110 | 12.00 | 6.00 | 12.00 | 12.00 | 24.00 | 110.00 | 11.90 | 2 | 30.0 | C | -0.012 | 0.012 | ● |
| EB-A2 14-14/28C14M110 | 14.00 | 7.00 | 14.00 | 14.00 | 28.00 | 110.00 | 13.80 | 2 | 30.0 | C | -0.012 | 0.012 | ● |
| EB-A2 16-16/32C16M140 | 16.00 | 8.00 | 16.00 | 16.00 | 32.00 | 140.00 | 15.80 | 2 | 30.0 | C | -0.012 | 0.012 | ● |
| EB-A2 25-25/50C25M180 | 25.00 | 12.50 | 25.00 | 25.00 | 50.00 | 180.00 | 24.80 | 2 | 30.0 | C | -0.015 | 0.015 | ● |

• For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical
(3) Corner radius tolerance lower
(4) Corner radius tolerance upper

SOLIDMILL PREMIUM LINE

**EBM-A-2**
2 Flute, 30° Helix Medium Length Solid Carbide Miniature Ball Nose Endmills




| Designation | Dimensions | | | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | RE | DCONMS | APMX | OAL | NOF(1) | FHA | Shank(2) | RETOLL(3) | RETOLU(4) | IC08 | IC900 |
| EBM004A008-2C03 | 0.40 | 0.20 | 3.00 | 0.80 | 38.00 | 2 | 30.0 | C | 0.000 | 0.004 | ● | ● |
| EBM005A010-2C03 | 0.50 | 0.25 | 3.00 | 1.00 | 38.00 | 2 | 30.0 | C | 0.000 | 0.004 | ● | ● |
| EBM006A012-2C03 | 0.60 | 0.30 | 3.00 | 1.20 | 38.00 | 2 | 30.0 | C | 0.000 | 0.004 | ● | ● |
| EBM007A014-2C03 | 0.70 | 0.35 | 3.00 | 1.40 | 38.00 | 2 | 30.0 | C | 0.000 | 0.004 | ● | |
| EBM008A016-2C03 | 0.80 | 0.40 | 3.00 | 1.60 | 38.00 | 2 | 30.0 | C | 0.000 | 0.004 | ● | ● |
| EBM010A025-2C04 | 1.00 | 0.50 | 4.00 | 2.50 | 50.00 | 2 | 30.0 | C | 0.000 | 0.004 | ● | ● |
| EBM012A030-2C04 | 1.20 | 0.60 | 4.00 | 3.00 | 50.00 | 2 | 30.0 | C | 0.000 | 0.004 | ● | ● |
| EBM016A040-2C04 | 1.60 | 0.80 | 4.00 | 4.00 | 50.00 | 2 | 30.0 | C | 0.000 | 0.004 | ● | ● |
| EBM020A060-2C04 | 2.00 | 1.00 | 4.00 | 6.00 | 50.00 | 2 | 30.0 | C | 0.000 | 0.004 | ● | ● |

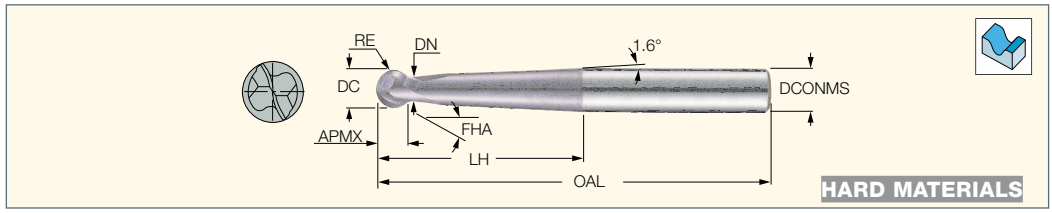
• Short and stable design for profiling (roughing). • For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical
(3) Corner radius tolerance lower
(4) Corner radius tolerance upper

| DC | Tolerance | |
|---|---|---|
| DC≤0.6 | DC | 0.000<br>-0.010 |
| 0.6<DC≤2 | DC | 0.000<br>-0.012 |

SOLIDMILL PREMIUM LINE

## ESB-A2

2 Flute, 30° Helix Spherical Long Solid Carbide Ball Nose Endmills for Materials up to 65 HRC



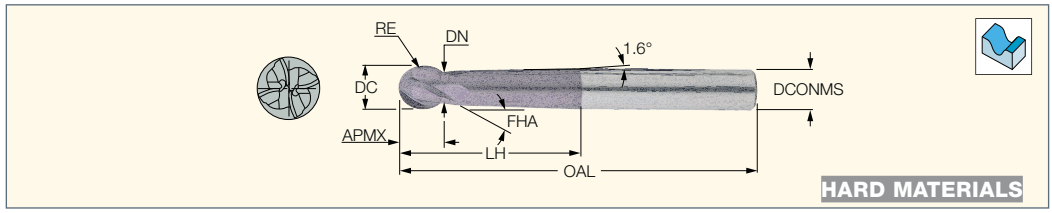

| Designation | Dimensions | | | | | | | | | | IC903 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | RE | DCONMS | APMX | LH | DN | OAL | NOF(1) | FHA | Shank(2) | |
| ESB-A2 03 02/30C06M80 | 3.00 | 1.50 | 6.00 | 2.30 | 30.0 | 2.50 | 80.00 | 2 | 30.0 | C | • |
| ESB-A2 04 03/30C06M80 | 4.00 | 2.00 | 6.00 | 3.10 | 30.0 | 3.30 | 80.00 | 2 | 30.0 | C | • |
| ESB-A2 05 03/38C06M80 | 5.00 | 2.50 | 6.00 | 3.90 | 38.0 | 4.10 | 80.00 | 2 | 30.0 | C | • |
| ESB-A2 06 04/28C06M100 | 6.00 | 3.00 | 6.00 | 4.90 | 28.0 | 4.70 | 100.00 | 2 | 30.0 | C | • |
| ESB-A2 08 06/33C08M100 | 8.00 | 4.00 | 8.00 | 6.30 | 33.0 | 6.50 | 100.00 | 2 | 30.0 | C | • |
| ESB-A2 10 07/40C10M100 | 10.00 | 5.00 | 10.00 | 7.90 | 40.0 | 8.20 | 100.00 | 2 | 30.0 | C | • |
| ESB-A2 16 12/59C16M150 | 16.00 | 8.00 | 16.00 | 12.40 | 59.0 | 13.40 | 150.00 | 2 | 30.0 | C | • |

• For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical

SOLIDMILL PREMIUM LINE

## ESB-A4

4 Flute, 30° Helix Spherical Long Solid Carbide Ball Nose Endmills for Materials up to 65 HRC



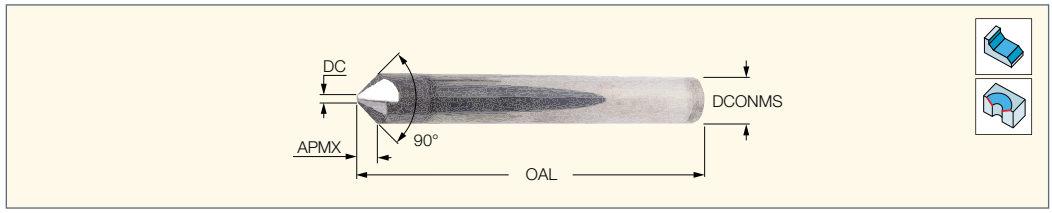

| Designation | Dimensions | | | | | | | | | | IC903 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | RE | DCONMS | APMX | LH | DN | OAL | NOF(1) | FHA | Shank(2) | |
| ESB-A4 05 3/38C06M80 | 5.00 | 2.50 | 6.00 | 3.90 | 38.0 | 4.10 | 80.00 | 4 | 30.0 | C | • |
| ESB-A4 06 4/28C06M100 | 6.00 | 3.00 | 6.00 | 4.90 | 28.0 | 4.70 | 100.00 | 4 | 30.0 | C | • |
| ESB-A4 08 6/33C08M100 | 8.00 | 4.00 | 8.00 | 6.30 | 33.0 | 6.30 | 100.00 | 4 | 30.0 | C | • |
| ESB-A4 10 7/40C10M100 | 10.00 | 5.00 | 10.00 | 7.90 | 40.0 | 8.20 | 100.00 | 4 | 30.0 | C | • |
| ESB-A4 12 9/49C12M100 | 12.00 | 6.00 | 12.00 | 9.50 | 49.0 | 9.80 | 100.00 | 4 | 30.0 | C | • |

• For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical

SOLIDMILL PREMIUM LINE

## ECF../45

45° Chamfering and Countersinking Solid Carbide Endmills




| Designation | Dimensions | | | | | | IC900 |
|---|---|---|---|---|---|---|---|
| | DC | DCONMS | APMX | OAL | NOF(1) | Shank(2) | |
| ECF D-1.5/45-4C04 | 1.00 | 4.00 | 1.50 | 50.00 | 4 | C | • |
| ECF D-2/45-4C06 | 2.00 | 6.00 | 2.00 | 57.00 | 4 | C | • |
| ECF D-3/45-4C08 | 2.00 | 8.00 | 3.00 | 63.00 | 4 | C | • |
| ECF D-4/45-4C10 | 2.00 | 10.00 | 4.00 | 72.00 | 4 | C | • |
| ECF D-5/45-4C12 | 2.00 | 12.00 | 5.00 | 83.00 | 4 | C | • |

• For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical

SOLIDMILL PREMIUM LINE

**ECD-S2**

Chamfering and Spot Drilling
Solid Carbide Tools

| Designation | Dimensions | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | OAL | APMX | LU | Shank(1) | SIG | IC08 | IC900 |
| ECD-S2 030/90C03-38 | 3.00 | 3.00 | 38.00 | 1.37 | 6.00 | C | 90 | • | • |
| ECD-S2 04/120C04-50 | 4.00 | 4.00 | 50.00 | 1.02 | 8.00 | C | 120 | • | • |
| ECD-S2 040/60C04-50 | 4.00 | 4.00 | 50.00 | 2.75 | 7.80 | C | 60 | • | • |
| ECD-S2 040/90C04-50 | 4.00 | 4.00 | 50.00 | 1.79 | 8.00 | C | 90 | • | • |
| ECD-S2 05/120C05-50 | 5.00 | 5.00 | 50.00 | 1.28 | 10.00 | C | 120 | • | • |
| ECD-S2 050/60C05-50 | 5.00 | 5.00 | 50.00 | 3.61 | 9.30 | C | 60 | • | • |
| ECD-S2 050/90C05-50 | 5.00 | 5.00 | 50.00 | 2.24 | 10.00 | C | 90 | • | • |
| ECD-S2 06/120C06-57 | 6.00 | 6.00 | 57.00 | 1.54 | 12.00 | C | 120 | • | • |
| ECD-S2 060/60C06-57 | 6.00 | 6.00 | 57.00 | 4.34 | 10.70 | C | 60 | • | • |
| ECD-S2 060/90C06-57 | 6.00 | 6.00 | 57.00 | 2.71 | 12.00 | C | 90 | • | • |
| ECD-S2 08/120C08-63 | 8.00 | 8.00 | 63.00 | 2.05 | 16.00 | C | 120 | • | • |
| ECD-S2 080/60C08-63 | 8.00 | 8.00 | 63.00 | 5.92 | 16.80 | C | 60 | • | • |
| ECD-S2 080/90C08-63 | 8.00 | 8.00 | 63.00 | 3.63 | 16.00 | C | 90 | • | • |
| ECD-S2 10/120C10-72 | 10.00 | 10.00 | 72.00 | 2.56 | 20.00 | C | 120 | • | • |
| ECD-S2 100/60C10-72 | 10.00 | 10.00 | 72.00 | 7.21 | 19.30 | C | 60 | • | • |
| ECD-S2 100/90C10-72 | 10.00 | 10.00 | 72.00 | 4.55 | 20.00 | C | 90 | • | • |
| ECD-S2 12/120C12-73 | 12.00 | 12.00 | 73.00 | 3.08 | 24.00 | C | 120 | • | • |
| ECD-S2 120/60C12-73 | 12.00 | 12.00 | 73.00 | 8.93 | 21.60 | C | 60 | • | • |
| ECD-S2 120/90C12-73 | 12.00 | 12.00 | 73.00 | 5.47 | 24.00 | C | 90 | • | • |

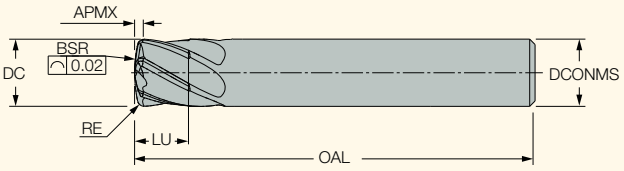
• For user guide, see pages 211-218

(1) C-Cylindrical

NEOBARREL PROFILE MILLING

**ELB**

Solid Carbide Lens-Shaped
(Barrel) Endmills for 3D Profiling




| Designation | Dimensions | | | | | | | | | IC902 |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | BSR | RE | LU | APMX | DCONMS | NOF(1) | OAL | Shank(2) | |
| ELB-R0.75R16A5-6C8-63 | 8.00 | 15.00 | 0.75 | 5.00 | 1.10 | 8.00 | 6 | 63.00 | C | • |
| ELB-R1R20A7-6C10-72 | 10.00 | 20.00 | 1.00 | 7.00 | 1.43 | 10.00 | 6 | 72.00 | C | • |
| ELB-R1R25A9-6C12-83 | 12.00 | 25.00 | 1.00 | 9.00 | 1.53 | 12.00 | 6 | 83.00 | C | • |

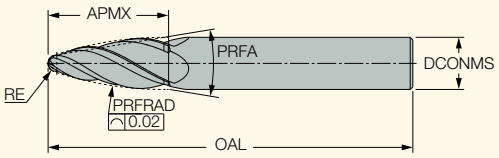
• For user guide, see pages 211-218

(1) Number of flutes

(2) C-Cylindrical

**NEOBARREL** PROFILE MILLING

**EOB**
Solid Carbide Oval-Shaped (Barrel) Endmills for 3D Profiling




| Designation | Dimensions | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCONMS | RE | PRFRAD | APMX | PRFA | NOF(1) | OAL | Shank(2) | IC08 | IC902 |
| EOB-R1.5R85A17/5-8C06-57 | 6.00 | 1.50 | 85.00 | 17.00 | 10.82 | 8 | 57.00 | C | | |
| EOB-R1R90A24/7-4C08-63 | 8.00 | 1.00 | 90.00 | 24.50 | 14.88 | 4 | 63.00 | C | | • |
| EOB-R2R90A20/7-4C08-63 | 8.00 | 2.00 | 90.00 | 21.50 | 12.18 | 4 | 63.00 | C | | • |
| EOB-AL-R2R85A20/9-4C10-72 | 10.00 | 2.00 | 85.00 | 21.00 | 18.68 | 4 | 72.00 | C | • | |
| EOB-R2R85A24/8-4C10-72 | 10.00 | 2.00 | 85.00 | 24.50 | 15.46 | 4 | 72.00 | C | | • |
| EOB-R3R85A21/6-4C10-72 | 10.00 | 3.00 | 85.00 | 21.30 | 12.62 | 4 | 72.00 | C | | • |
| EOB-R2R80A27/9-4C12-83 | 12.00 | 2.00 | 80.00 | 27.10 | 18.38 | 4 | 83.00 | C | | • |
| EOB-AL-R3R85A24/8-4C12-83 | 12.00 | 3.00 | 85.00 | 25.00 | 16.12 | 4 | 83.00 | C | • | |
| EOB-R3R80A24/8-4C12-83 | 12.00 | 3.00 | 80.00 | 24.50 | 15.98 | 4 | 83.00 | C | | • |
| EOB-R4R80A21/6-8C12-83 | 12.00 | 4.00 | 80.00 | 21.50 | 13.10 | 8 | 83.00 | C | | • |
| EOB-R4R80A21/7-4C12-83 | 12.00 | 4.00 | 80.00 | 21.50 | 13.10 | 4 | 83.00 | C | | • |
| EOB-R4R1000A28/10-4C16-92 | 16.00 | 4.00 | 1000.00 | 27.00 | 20.00 | 4 | 92.00 | C | | • |

• For user guide, see pages 211-218
(1) Number of flutes
(2) C-Cylindrical

## Recommended initial metric cutting parameters

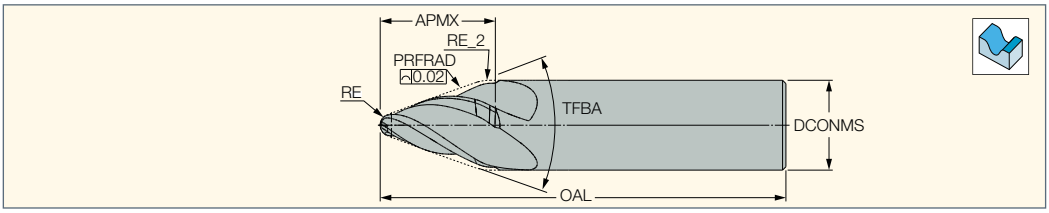
| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Material No.(1) | Cutting Parameters $v_c$ [m/min] | $f_z$ [mm/t] | $f_z$ start [mm/t] |
|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %C | annealed | 420 | 125 | 1 | 210 - 300 | 0.005 - 0.01xD | 0.006xD |
| | | >= 0.25 %C | annealed | 650 | 190 | 2 | 200 - 250 | 0.005 - 0.01xD | 0.006xD |
| | | < 0.55 %C | quenched and tempered | 850 | 250 | 3 | 160 - 240 | 0.004 - 0.009xD | 0.005xD |
| | | >= 0.55 %C | annealed | 750 | 220 | 4 | 160 - 240 | 0.003 - 0.008xD | 0.004xD |
| | | | quenched and tempered | 1000 | 300 | 5 | 140 - 200 | 0.004 - 0.009xD | 0.005xD |
| | low alloy steel and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | 160 - 240 | 0.003 - 0.008xD | 0.004xD |
| | | | quenched and tempered | 930 | 275 | 7 | 120 - 200 | 0.003 - 0.008xD | 0.004xD |
| | | | | 1000 | 300 | 8 | 130 - 200 | 0.003 - 0.008xD | 0.004xD |
| | | | | 1200 | 350 | 9 | 140 - 200 | 0.003 - 0.008xD | 0.004xD |
| | high alloyed steel, cast steel, and tool steel | | annealed | 680 | 200 | 10 | 130 - 200 | 0.003 - 0.008xD | 0.004xD |
| | | | quenched and tempered | 1100 | 325 | 11 | 70 - 130 | 0.002 - 0.007xD | 0.003xD |
| | stainless steel and cast steel | | ferritic/martensitic | 680 | 200 | 12 | 80 - 175 | 0.002 - 0.007xD | 0.003xD |
| | | | martensitic | 820 | 240 | 13 | 60 - 165 | 0.002 - 0.007xD | 0.003xD |
| M | stainless steel and cast steel | | austenitic | 600 | 180 | 14 | 60 - 110 | 0.002 - 0.007xD | 0.003xD |
| K | grey cast iron (GG) | | ferritic/pearlitic | | 180 | 15 | 150 - 275 | 0.005 - 0.01xD | 0.006xD |
| | | | pearlitic | | 260 | 16 | 150 - 265 | 0.005 - 0.01xD | 0.006xD |
| | cast iron nodular (GGG) | | ferritic | | 160 | 17 | 150 - 200 | 0.005 - 0.01xD | 0.006xD |
| | | | pearlitic | | 250 | 18 | 90 - 150 | 0.004 - 0.009xD | 0.005xD |
| | malleable cast iron | | ferritic | | 130 | 19 | 150 - 200 | 0.005 - 0.01xD | 0.006xD |
| | | | pearlitic | | 230 | 20 | 90 - 150 | 0.004 - 0.009xD | 0.005xD |
| S | high temp. alloys | Fe based | annealed | | 200 | 31 | 20 - 45 | 0.002 - 0.004xD | 0.003xD |
| | | | cured | | 280 | 32 | 20 - 35 | 0.002 - 0.004xD | 0.003xD |
| | | Ni or Co based | annealed | | 250 | 33 | 20 - 35 | 0.002 - 0.004xD | 0.003xD |
| | | | cured | | 350 | 34 | 20 - 35 | 0.002 - 0.004xD | 0.003xD |
| | | | cast | | 320 | 35 | 60 - 90 | 0.002 - 0.004xD | 0.003xD |
| | titanium alloys | | pure | Rm = 400 | | 36 | 60 - 90 | 0.002 - 0.004xD | 0.003xD |
| | | | alpha+beta alloys cured | Rm = 1050 | | 37 | 60 - 90 | 0.002 - 0.004xD | 0.003xD |
| H | hardened steel | | hardened | | 55 HRC | 38 | 40 - 80 | 0.001 - 0.003xD | 0.002xD |
| | | | hardened | | 60 HRC | 39 | | | |
| | chilled cast iron | | cast | | 400 | 40 | 40 - 80 | 0.001 - 0.003xD | 0.002xD |
| | cast iron | | hardened | | 55 HRC | 41 | 40 - 80 | 0.001 - 0.003xD | 0.002xD |

(1) Based on ISO 513 and VDI 3323 Standards

NEOBARREL PROFILE MILLING

**ETB**

Solid Carbide Taper-Shaped (Barrel) Endmills for 3D Profiling




| Designation | Dimensions | | | | | | | | | IC902 |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRFRAD | RE_2 | RE | APMX | TFBA | DCONMS | NOF(1) | OAL | Shank(2) | |
| ETB-R1R250A10/20-4C08-63 | 250.00 | 4.00 | 1.00 | 10.00 | 40.00 | 8.00 | 4 | 63.00 | C | ● |
| ETB-R2R250A11/20-4C10-72 | 250.00 | 5.00 | 2.00 | 11.00 | 40.00 | 10.00 | 4 | 72.00 | C | ● |
| ETB-R3R250A12/20-4C12-83 | 250.00 | 6.00 | 3.00 | 12.00 | 40.00 | 12.00 | 4 | 83.00 | C | ● |

• For user guide, see pages 211-218

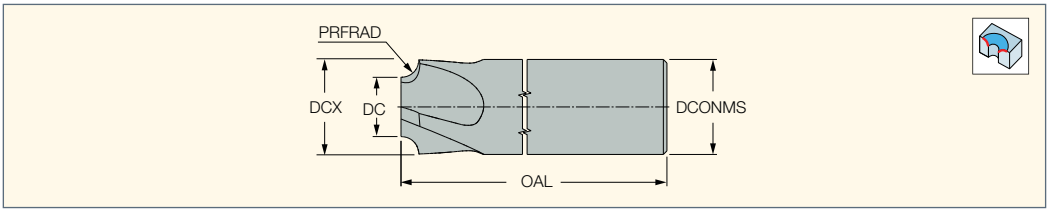
(1) Number of flutes

(2) C-Cylindrical

SOLIDMILL TEC LINE

**ER-S4 R**

4 Flutes Corner Rounding Solid Carbide Endmills




| Designation | Dimensions | | | | | | IC900 |
|---|---|---|---|---|---|---|---|
| | PRFRAD | DC | DCX(1) | DCONMS | NOF(2) | OAL | |
| ER-S4 R0.5D5.0C06-50 | 0.50 | 5.00 | 6.00 | 6.00 | 4 | 50.00 | ● |
| ER-S4 R.75D4.5C06-50 | 0.75 | 4.50 | 6.00 | 6.00 | 4 | 50.00 | ● |
| ER-S4 R1.0D4.0C06-50 | 1.00 | 4.00 | 6.00 | 6.00 | 4 | 50.00 | ● |
| ER-S4 R1.5D5.0C08-63 | 1.50 | 5.00 | 8.00 | 8.00 | 4 | 63.00 | ● |
| ER-S4 R2.0D6.0C10-66 | 2.00 | 6.00 | 10.00 | 10.00 | 4 | 66.00 | ● |
| ER-S4 R2.5D5.0C10-66 | 2.50 | 5.00 | 10.00 | 10.00 | 4 | 66.00 | ● |
| ER-S4 R3.0D6.0C12-73 | 3.00 | 6.00 | 12.00 | 12.00 | 4 | 73.00 | ● |

New

• For user guide, see pages 211-218

(1) Cutting diameter maximum

(2) Number of flutes

## Table of Contents

Grade Priorities for Solid Carbide Endmills

| Material Groups | | ISO P | | ISO M | ISO K | ISO N | ISO S | ISO H |
|---|---|---|---|---|---|---|---|---|
| | | 1 - 11 | 12 - 13 | 14 | 15 - 20 | 21 - 28 | 31 - 37 | 38 - 41 |
| | | Steel | Stainless Steel Ferritic & Martensitic | Stainless Steel Austenitic & Duplex (Ferritic-Austenitic) | Cast Iron | Nonferrous | High Temp Alloys | Hard Steel & Hardened Cast Iron |
| Solid & MULTI-MASTER Endmills | Harder | IC702 | IC702 | IC902 | IS6* | | IS6* | IC702 |
| | | IC902 | IC902 | IC903 | IC902 | | IS902** | IC903 |
| | | IC903 | IC903 | | **IC903** | | IC903 | |
| | | IC608 | IC608 | **IC608** | IC608 | | **IC900 (908)** | IC608 |
| | | **IC900 (908)** | **IC900 (908)** | IC900 (908) | **IC900 (908)** | | | **IC900 (908)** |
| Roughing/ Semi-Finishing | | | | | | **IC08** | IC08 | |
| | Tougher | | | | | | | |
| Coolant | | N | Y | Y | N | Y | Y | N |
| Solid & MULTI-MASTER Endmills | Harder | **IC702** **IC902** | **IC702** **IC902** | IC902 | IS6* | | **IC902** **IC903** | **IC702** **IC902** |
| | | | | IC608 | IC902 | | | |
| | | IC903 | IC903 | | **IC903** | | IC900 (908) | IC903 |
| | | IC608 | IC608 | | IC608 | | | IC608 |
| | | IC900 (908) | IC900 (908) | IC900 (908) | IC900 (908) | | | IC900 (908) |
| Finishing | | | | | | **IC08** | IC08 | |
| | Tougher | | | | | | | |
| Coolant | | N | Y | Y | N | Y | Y | N |

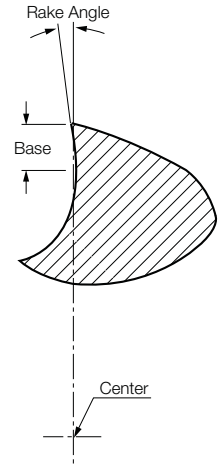
First choice
* SiAiON grade
** First choice for trochoidal milling

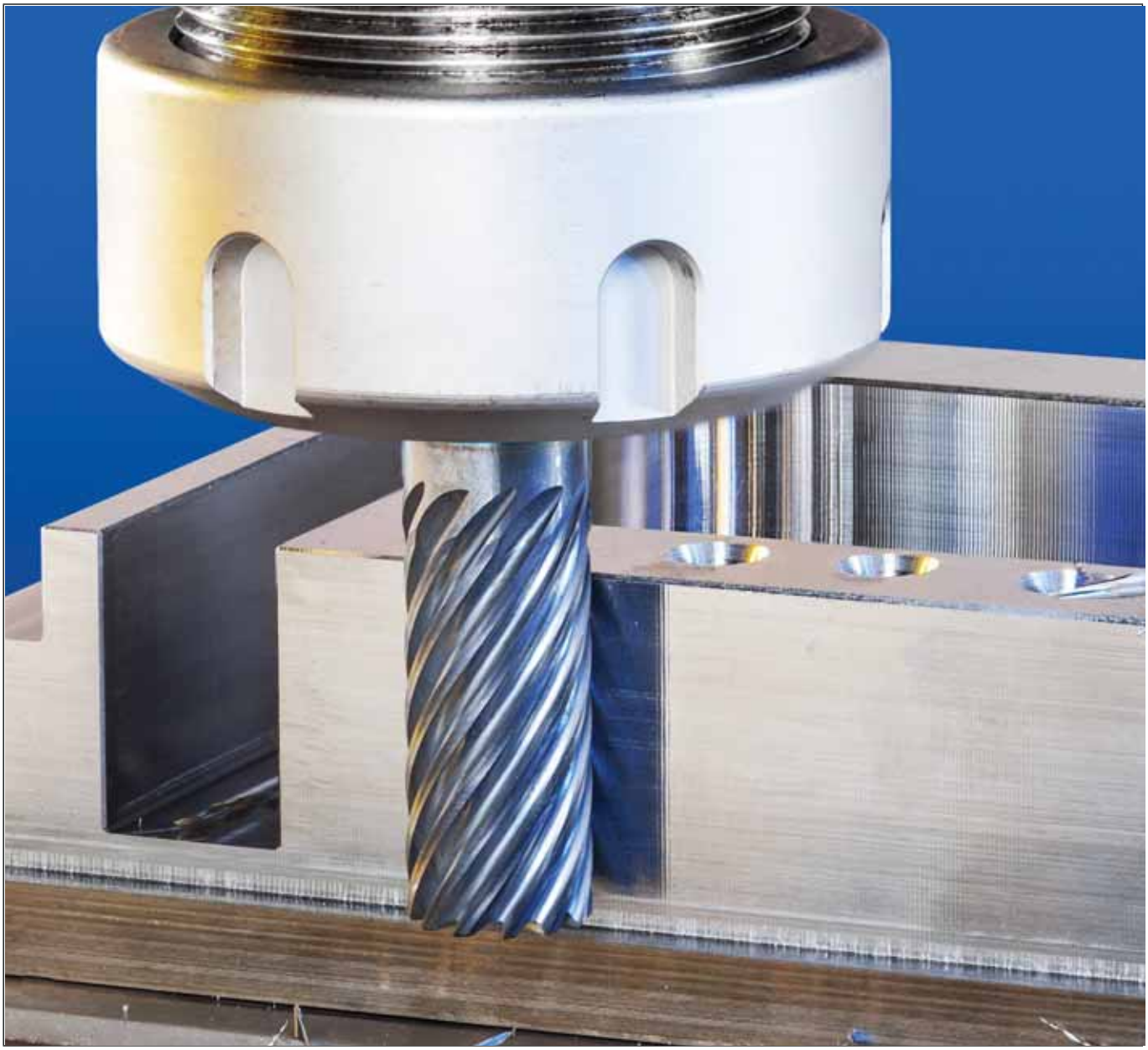
## Machining Data for Solid Carbide and MULTI-MASTER Endmills

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Material No. | Cutting Speed (m/min) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | IC900/ IC608 | IC903 | IC08 |
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %C | annealed | 420 | 125 | 1 | 260-280 | 260-280 | 180-200 |
| | | >= 0.25 %C | annealed | 650 | 190 | 2 | 200-230 | 200-230 | 140-160 |
| | | < 0.55 %C | quenched and tempered | 850 | 250 | 3 | 160-220 | 160-220 | 110-150 |
| | | >= 0.55 %C | annealed | 750 | 220 | 4 | 160-220 | 160-220 | 110-150 |
| | | | quenched and tempered | 1000 | 300 | 5 | 140-180 | 140-180 | 100-130 |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | 160-220 | 160-220 | 110-150 |
| | | | quenched and tempered | 930 | 275 | 7 | 120-180 | 120-180 | 80-130 |
| | | | | 1000 | 300 | 8 | 130-180 | 130-180 | 90-130 |
| | | | | 1200 | 350 | 9 | 140-180 | 140-180 | 100-130 |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 200 | 10 | 130-180 | 130-180 | 90-130 |
| | | | quenched and tempered | 1100 | 325 | 11 | 70-120 | 70-120 | 50-80 |
| | stainless steel and cast steel | | ferritic/martensitic. | 680 | 200 | 12 | 80-160 | 80-160 | 60-110 |
| | | | martensitic | 820 | 240 | 13 | 60-150 | 60-150 | 40-100 |
| M | stainless steel and cast steel | | austenitic | 600 | 180 | 14 | 60-120 | 60-120 | 40-80 |
| K | grey cast iron (GG) | | ferritic/pearlitic | | 180 | 15 | 80-260 | 80-250 | 60-180 |
| | | | pearlitic/martensitic | | 260 | 16 | 130-240 | 130-240 | 90-170 |
| | cast iron nodular (GGG) | | ferritic | | 160 | 17 | 150-280 | 150-270 | 100-200 |
| | | | pearlitic | | 250 | 18 | 90-280 | 90-270 | 60-200 |
| | malleable cast iron | | ferritic | | 130 | 19 | 150-280 | 150-270 | 100-200 |
| | | | pearlitic | | 230 | 20 | 140-240 | 140-240 | 100-170 |
| N | aluminum-wrought alloys | | not cureable | | 60 | 21 | | | 800-900 |
| | | | cured | | 100 | 22 | | | 700-800 |
| | aluminum-cast-alloys | <=12% Si | not cureable | | 75 | 23 | | | 800-900 |
| | | | cured | | 90 | 24 | | | 750-850 |
| | | >12% Si | high temperature | | 130 | 25 | | | 400-450 |
| | copper alloys | >1% Pb | free cutting | | 110 | 26 | | | 500-550 |
| | | | brass | | 90 | 27 | | | 500-550 |
| | | | electrolitic copper | | 100 | 28 | | | 350-380 |
| | non-metallic | | duroplastics, fiber plastics | | | 29 | | | |
| | | | hard rubber | | | 30 | | | |
| S | high temp. alloys | Fe based | annealed | | 200 | 31 | 20-40 | 20-40 | 10-20 |
| | | | cured | | 280 | 32 | 20-40 | 20-30 | 10-20 |
| | | Ni or Co based | annealed | | 250 | 33 | 20-50 | 20-30 | 20-50 |
| | | | cured | | 350 | 34 | 20-70 | 20-30 | 20-50 |
| | | | cast | | 320 | 35 | 30-70 | 30-80 | 20-50 |
| | titanium ti alloys | | | RM 400 | | 36 | 30-70 | 30-80 | 20-30 |
| | | | alpha+beta alloys cured | RM 1050 | | 37 | 30-70 | 30-80 | 20-30 |
| H | hardened steel | | hardened | | 55 HRC | 38 | 30-50 | 30-60 | 40-60 |
| | | | hardened | | 60 HRC | 39 | 30-40 | 30-40 | 20-30 |
| | chilled cast iron | | cast | | 400 | 40 | 60-80 | 70-90 | 65-75 |
| | cast iron | | hardened | | 55 HRC | 41 | 30-50 | 30-60 | 40-45 |

## Regrinding Instructions for Solid Carbide Endmills (Continued)
## Base Distance for Rake Angle Measurement

| Tool Diameter Base Distance | | Tool Diameter Base Distance | |
|---|---|---|---|
| mm | In | mm | In |
| 0.5<d1≤0.7 | .02<d1≤.03 | 0.03 | .001181 |
| 0.7<d1≤0.8 | .03<d1≤.032 | 0.04 | .001574 |
| 0.8<d1≤1.0 | .032<d1≤.04 | 0.05 | .001968 |
| 1.0<d1≤1.2 | .04<d1≤.05 | 0.065 | .002559 |
| 1.2<d1≤1.4 | .05<d1≤.055 | 0.075 | .002952 |
| 1.4<d1≤1.6 | .055<d1≤.063 | 0.085 | .003346 |
| 1.6<d1≤2 | .063<d1≤.08 | 0.1 | .003937 |
| 2<d1≤4 | .08<d1≤.158 | 0.2 | .007874 |
| 4<d1≤6.35 | .158<d1≤.25 | 0.3 | .01181 |
| 6.35<d1≤8 | .25<d1≤.315 | 0.4 | .01574 |
| 8<d1≤13 | .315<d1≤.512 | 0.5 | .01968 |
| 13<d1≤21 | .512<d1≤.827 | 0.6 | .02362 |
| 21<d1≤27 | .827<d1≤1.063 | 0.7 | .02755 |
| 27<d1≤ | 1.063<d1 | 0.8 | .03149 |



## Circle Segment Lines for Advanced Finish Milling Operations

### Barrel Endmill

**ISCAR**'s Barrel line comprises a variety of solid carbide endmills and **MULTI-MASTER** heads in different shapes: Oval, Taper & Lens.
For more information, refer to NPA 22-2020

### Solid Carbide Endmills

**Oval Barrel** – EOB
**Taper Barrel** – ETB
**Lens Barrel** – ELB

### MULTI-MASTER Heads

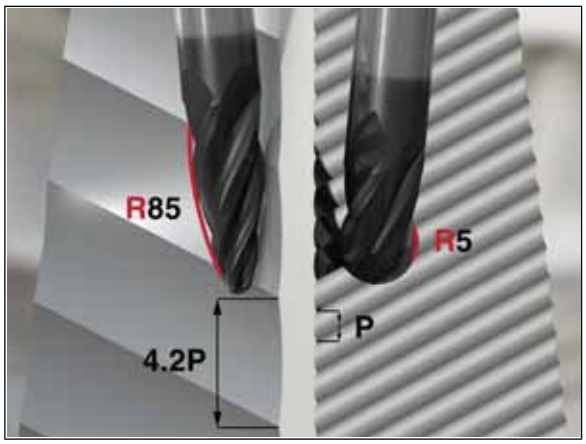
**Oval Barrel** – MM EOB
**Lens Barrel** – MM ELB

### Barrel Endmills Are Intended for Finish and Semi-Finish Machining of 3D Surfaces

| Blade Rough | Blade Finish |
|---|---|
| | |

A prominent advantage of a Barrel endmill over a Ball-Nose is the number of stepovers and, subsequent, machining time can be significantly reduced without degradation of the surface finish parameters.

The large-diameter arc of the endmill cutting edge results in a substantial reduction of the cusp height.

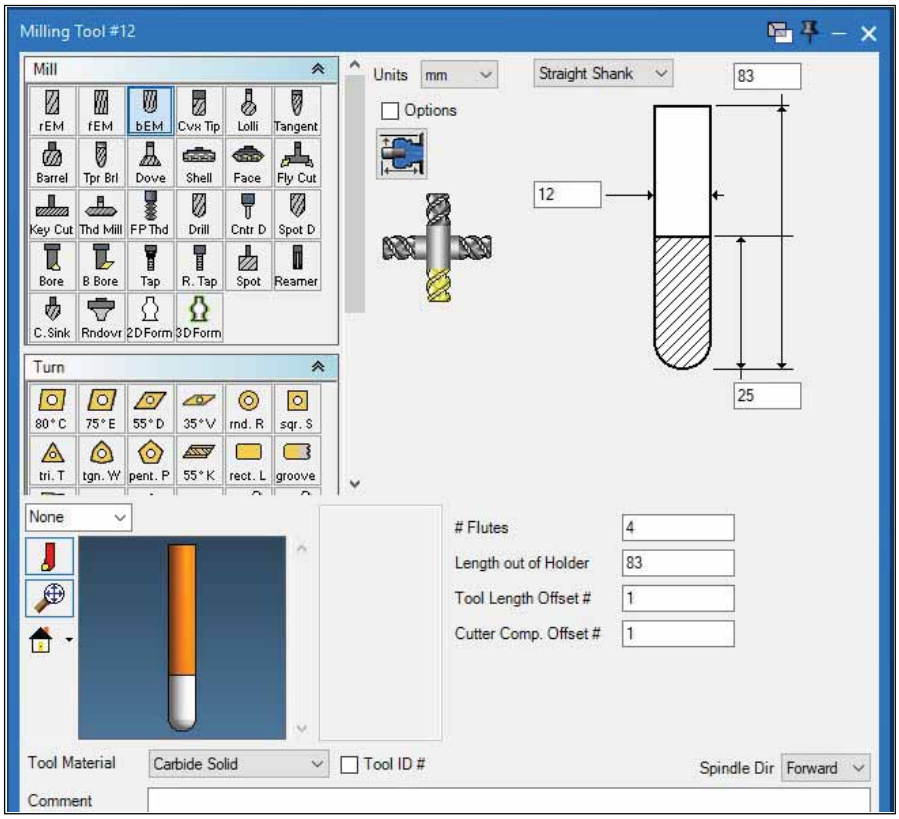


## Machining Guidelines

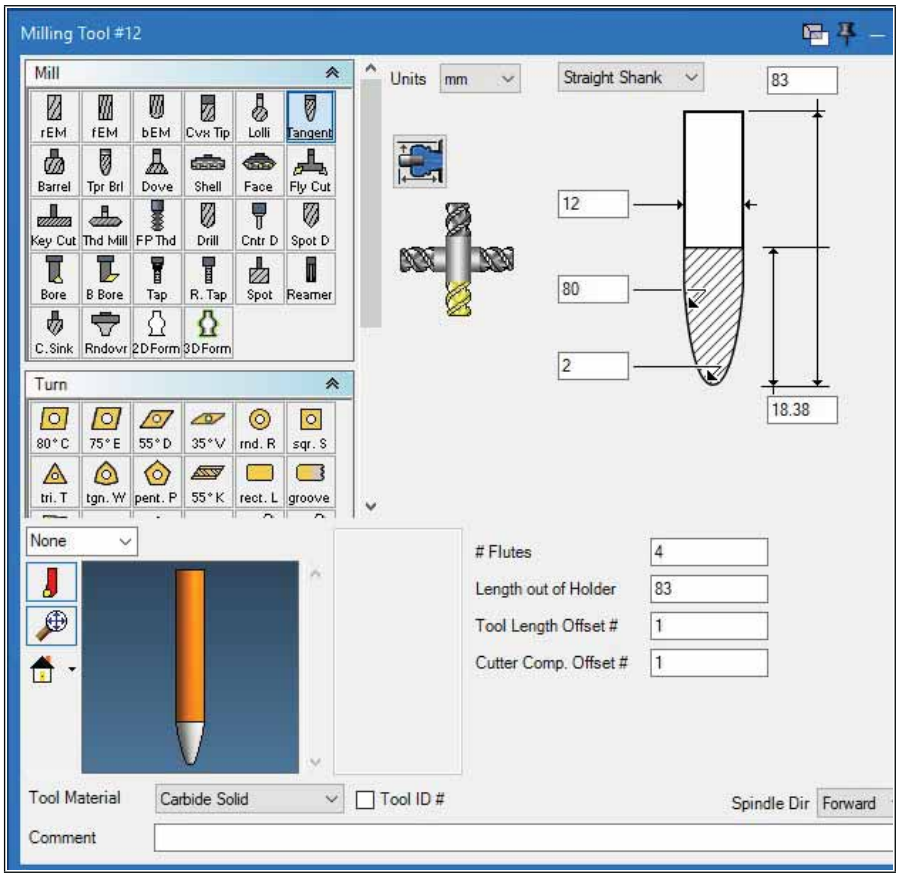
### The Most Important Thing to Remember

Programming circle segment tooling requires a supporting CAM system

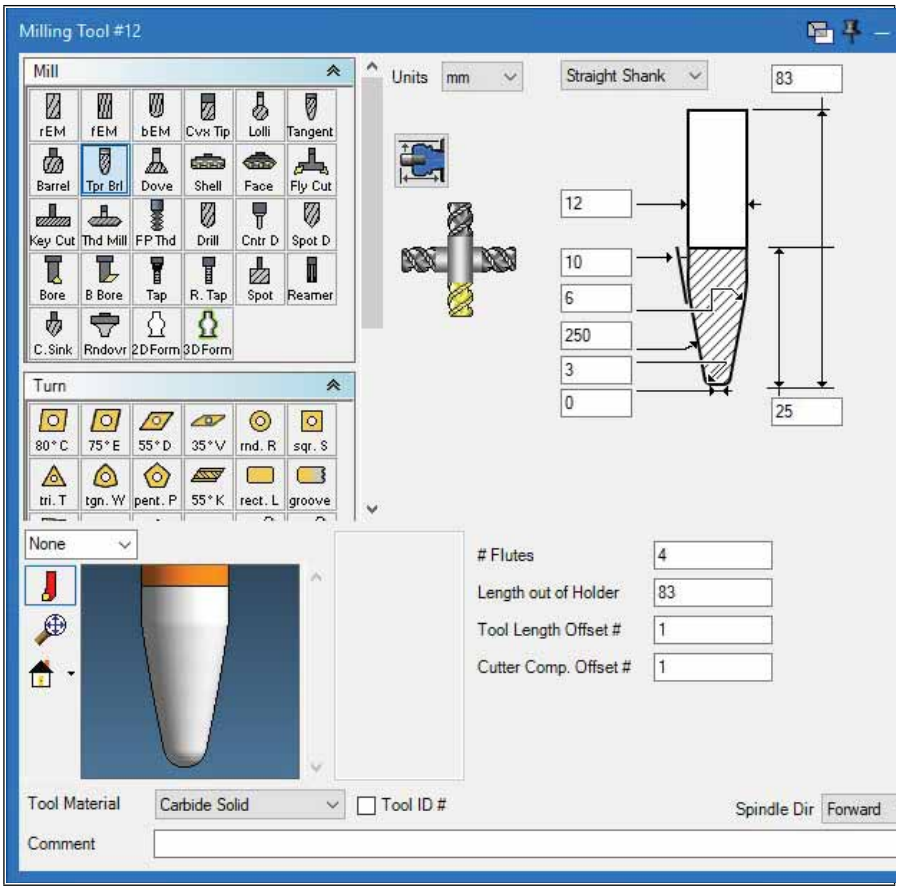
- **Step #1 – for Ball-Nose**
  Select a Ball-Nose tool configuration and define its parameters.



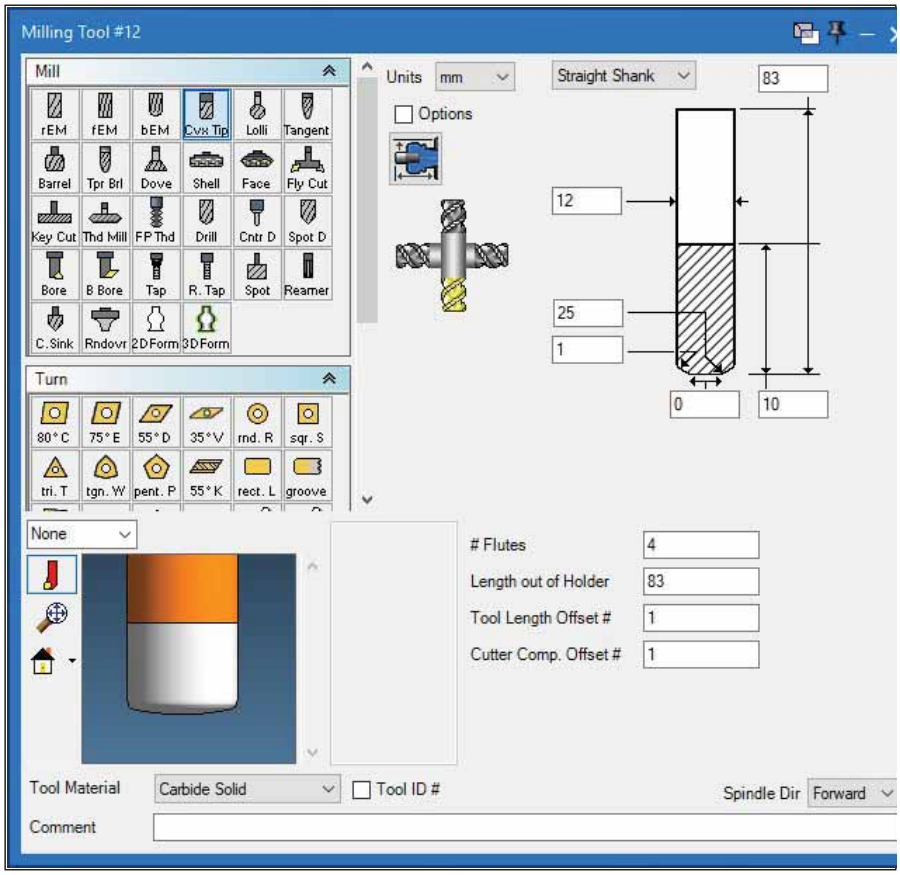

- **Step #1 – for Oval Shape**
  Select a Barrel tool configuration and define its parameters.



- **Step #1 – for Taper Shape**
  Select a Taper tool configuration and set its parameters.



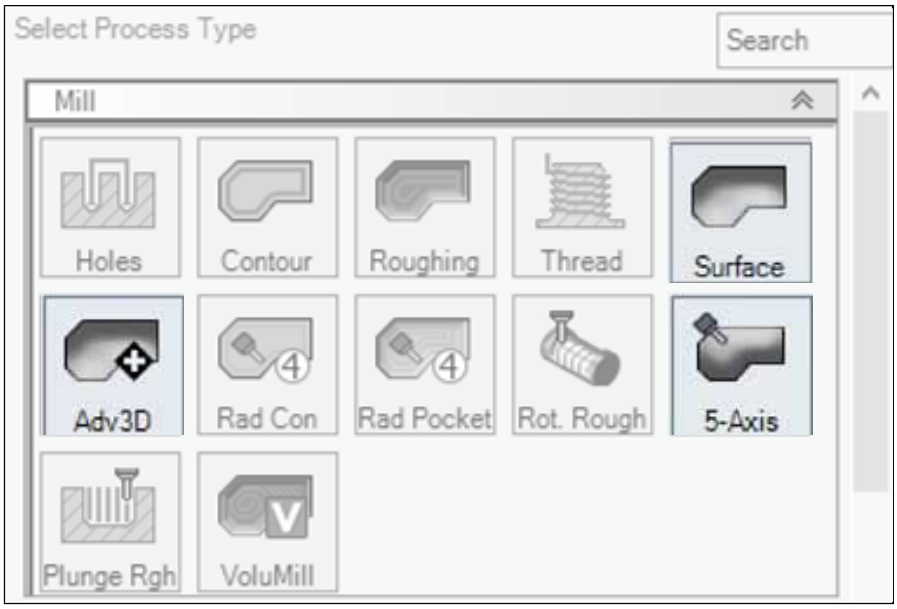

- **Step #1 – for Lens Shape**
  Select a Lens tool configuration and set its parameters.



- **Step #2**
  Select the process. Each CAM defines different relevant processes, for example:
  Surface, 5-Axis, Adv3D, etc.

**Remember:**

The advantage of barrel endmills is realized when used for 5 axis, finish milling operations



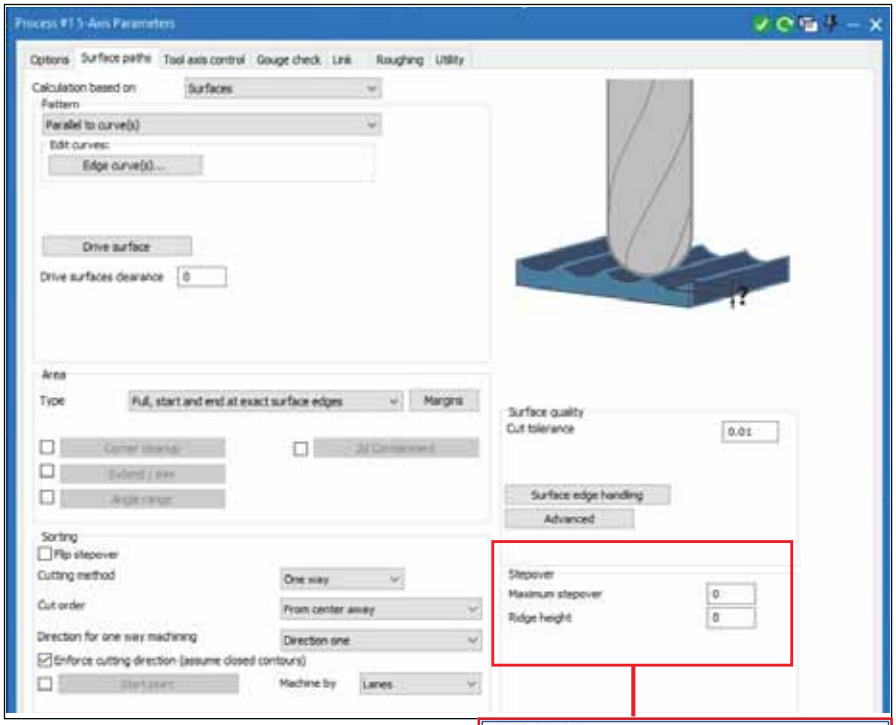

## Important

Each CAM software has its own features to configure the tools and their machining processes, but the definitions are similar.

The following example demonstrates only one way to define a Surface Finish (Ra) and is process dependent. In this example you will notice how many stepovers are required in order to obtain the same Ra with different tools.

There are many different options to define the required results from a tool.

**Example**
Same Ra – Different stepovers




| | |
|---|---|
| Ball Nose Ø12 R6 [Ø.472" R.236"] | Stepover<br>Maximum stepover 2 |
| Oval Ø12 R80 [Ø.472" R3.15"] | Stepover<br>Maximum stepover 7.4 |
| Taper Ø12 R250 [Ø.472" R9.84"] | Stepover<br>Maximum stepover 13.5 |
| Lens Ø12 R25 [Ø.472" R.98"] | Stepover<br>Maximum stepover 4.09 |

## Take Into Consideration

Barrel milling should not always be considered the answer to finishing all 3D machined surfaces. Some part shapes are not conducive to Barrel milling operations. Sometimes, the blend radii of the machined part or the kinetics of the machine result in a complicated CAM tool path which may increase the cycle time compared to using a conventional Ball-Nose milling approach. This is where the need for a highly skilled programmer to make good and effective decisions comes into play.

## Recommended Cutting Parameters to Start

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Material No. (1) | Cutting Parameters | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | $V_c$ m/min | $F_z$ mm/t | $F_z$ Start |
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %C | annealed | 420 | 125 | 1 | 210-300 | 0.005-0.01xD | 0.006xD |
| | | >= 0.25 %C | annealed | 650 | 190 | 2 | 200-250 | 0.005-0.01xD | 0.006xD |
| | | < 0.55 %C | quenched and tempered | | | | | | |
| | | | | 850 | 250 | 3 | 160-240 | 0.004-0.009xD | 0.005xD |
| | | >= 0.55 %C | annealed | 750 | 220 | 4 | 160-240 | 0.003-0.008xD | 0.004xD |
| | | | quenched and tempered | 1000 | 300 | 5 | 140-200 | 0.004-0.009xD | 0.005xD |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | 160-240 | 0.003-0.008xD | 0.004xD |
| | | | quenched and tempered | 930 | 275 | 7 | 120-200 | 0.003-0.008xD | 0.004xD |
| | | | | 1000 | 300 | 8 | 130-200 | 0.003-0.008xD | 0.004xD |
| | | | | 1200 | 350 | 9 | 140-200 | 0.003-0.008xD | 0.004xD |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 200 | 10 | 130-200 | 0.003-0.008xD | 0.004xD |
| | | | quenched and tempered | 1100 | 325 | 11 | 70-130 | 0.002-0.007xD | 0.003xD |
| | | | ferritic/martensitic | 680 | 200 | 12 | 80-175 | 0.002-0.007xD | 0.003xD |
| | stainless steel and cast steel | | martensitic | 820 | 240 | 13 | 60-165 | 0.002-0.007xD | 0.003xD |
| M | stainless steel and cast steel | | austenitic | 600 | 180 | 14 | 60-110 | 0.002-0.007xD | 0.003xD |
| K | grey cast iron (GG) | | ferritic/pearlitic | | 180 | 15 | 150-275 | 0.005-0.01xD | 0.006xD |
| | | | pearlitic | | 260 | 16 | 150-265 | 0.005-0.01xD | 0.006xD |
| | cast iron nodular (GGG) | | ferritic | | 160 | 17 | 150-200 | 0.005-0.01xD | 0.006xD |
| | | | pearlitic | | 250 | 18 | 90-150 | 0.004-0.009xD | 0.005xD |
| | malleable cast iron | | ferritic | | 130 | 19 | 150-200 | 0.005-0.01xD | 0.006xD |
| | | | pearlitic | | 230 | 20 | 90-150 | 0.004-0.009xD | 0.005xD |
| S | high temp. alloys | Fe based | annealed | | 200 | 31 | 20-45 | 0.002-0.004xD | 0.003xD |
| | | | cured | | 280 | 32 | 20-35 | 0.002-0.004xD | 0.003xD |
| | | Ni or Co based | annealed | | 250 | 33 | 20-35 | 0.002-0.004xD | 0.003xD |
| | | | cured | | 350 | 34 | 20-35 | 0.002-0.004xD | 0.003xD |
| | | | cast | | 320 | 35 | 60-90 | 0.002-0.004xD | 0.003xD |
| | titanium alloys | | pure | Rm = 400 | | 36 | 60-90 | 0.002-0.004xD | 0.003xD |
| | | | alpha+beta alloys cured | Rm = 1050 | | 37 | 60-90 | 0.002-0.004xD | 0.003xD |
| H | hardened steel | | hardened | | 55 HRC | 38 | 40-80 | 0.001-0.003xD | 0.002xD |
| | | | hardened | | 60 HRC | 39 | | | |
| | chilled cast iron | | cast | | 400 | 40 | 40-80 | 0.001-0.003xD | 0.002xD |
| | cast iron | | hardened | | 55 HRC | 41 | 40-80 | 0.001-0.003xD | 0.002xD |

# FACE MILLS

## Face Mills 90°

**HELI-PLUS**
**HP F90AN-07**
page 229

**HELI-TANG**
**T490 FM/FLN**
pages 226,231,238,244,250

**HELI-QUAD**
**F90SP-10**
page 234

**HELI-2000**
**HM90 F90AP**
pages 236-237

**TANG-MILL**
**F90LN-N11**
page 240

**HELI-QUAD**
**F90SD-12**
page 241

**HELI-3-MILL**
**HM390 FT**
pages 227,235,246,250

**HELI-DO**
**H690 FWN**
pages 227,230

**HELI-DO**
**H690 F90AX**
pages 238,252

**HELI-DO**
**H490 F90A**
pages 232,243,251

**TANG-MILL**
**F90LN-N15**
page 245

**SUMO-MILL**
**T290 FLN**
pages 234,244

**HELI-2000**
**HM90 F90A**
pages 236-237

**ISCAR-MILL**
**F90**
page 252

**MILL-SHRED**
**P290 FPW/FCT**
page 253

**HELI-PLUS**
**HP F90AT**
pages 253-254

**LOGIQ-8-TANG**
**T890HT-R13**
page 239

**NEO-DO**
**S890 FSZ-R08**
page 228

## Face Mills 88°, 75°, 65°, 45°

**HELI-DO**
**S890 FSN-13**
page 242

**ISCAR-MILL**
**F75-M**
page 254

**HELI-DO**
**S865 FSN-13**
page 255

**HELI-OCTO**
**HOF/HOE...R06**
page 256

**HELI-OCTO**
**HOF...R07**
page 257

**16-MILL**
**F45WG**
page 258

**16-MILL**
**F45NM**
page 259

**ISCAR-MILL**
**F45E**
page 263

**ISCAR-MILL**
**F45ST**
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**HELI-DO**
**S845 F45SX**
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**DOVE-IQ-MILL**
**IQ845**
pages 257,258,264

**HELI-DO**
**SOF45**
pages 260-261

**HELI-DO**
**SOF45-R18**
page 267

**HELI-DO**
**SOF45-26**
page 266

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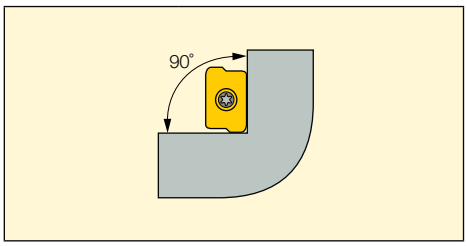
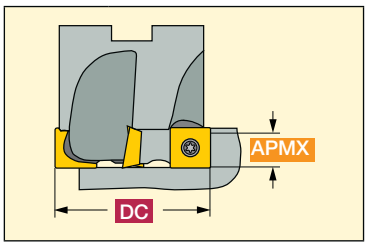
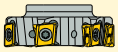
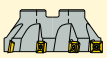
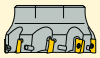
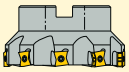
## 90° Face Mills Selection Guide




| Tools | | Pages | DC / APMX | 25 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 315 | Inserts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Number of Teeth (Effective) | | | | | | | | | | | | | |
| | H690 FWN | 227<br>230 | 4<br>7 | | 6 | 5<br>7 | 4<br>5<br>7<br>9 | 5<br>6<br>7<br>8<br>10 | 7<br>9 | 8<br>11 | 10 | | | | | | H690 WN..04../07.. |
|  | T490 FM-05 | 226 | 4 | 6 | 8 | 10 | 12 | | | | | | | | | | T490 LNMT 0502 |
| | S890 FSZ-R08 | 228 | 5 | | | 5<br>6 | 6<br>8 | 7<br>10 | 8<br>12 | 10<br>14 | 12<br>18 | | | | | | S890 SZMU-08... |
| | HM390 FTC-07 | 227 | 5 | | 4<br>5 | 5<br>6 | | | | | | | | | | | HM390 TCKT 07.. |
| | HP F90AN-07 | 229 | 7.7 | | 6 | 8<br>10 | | | | | | | | | | | HP AN..0702.. |
| | T490 FLN-08 | 231 | 8 | | 3<br>5 | 4<br>6 | 5<br>7<br>10 | 6<br>9 | 10 | | | | | | | | T490 LN..08.. |
| | H490 F90AX-09 | 232 | 8 | | 4<br>5 | 5<br>6 | 6<br>7 | 8<br>9 | | | | | | | | | H490 AN..09.. |
| | HM390 FTP-10 | 235 | 8 | | | 3<br>5 | 4<br>6 | 6<br>7 | 11 | 13 | | | | | | | HM390 TP.. 10.. |
| | T290 FLN-10 | 234 | 9 | | 5 | 6 | | | | | | | | | | | T290 LNMT 10 |
|  | F90SP-10 | 234 | 9.6 | | | 4 | 4<br>6 | 6<br>7 | 6<br>9 | | | | | | | | SPMT/R 10...<br>QPMT/R 10..<br>XPMT 10..<br>SPCT 10... |
|  | HM90 F90AP-10 | 236 | 10 | | 3<br>5 | 5<br>6 | 4<br>6<br>7 | 6<br>7<br>9 | 8 | 9 | | | | | | | HM90 AP..10<br>AP...10 |
| | H690 F90AX-10 | 238 | 8 | | 4<br>5 | 5<br>6 | 6<br>7 | 8 | | | | | | | | | H690 TN.. 10.. |
|  | F90LN-N11 | 240 | 10 | | | 4<br>6 | 5<br>7 | 6<br>9 | 8<br>11 | 9<br>14 | 10<br>18 | | | | | | LN.. 11... |
| | T490 FLN-11 | 238 | 10 | | | 4<br>5 | 5<br>6 | 6<br>9 | 7<br>11 | 8<br>13 | | | | | | | T490 LN.. 11... |

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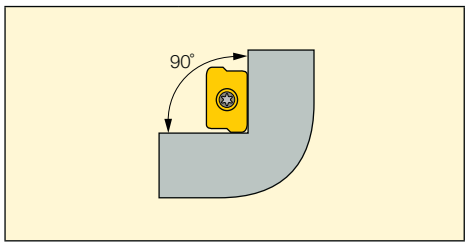
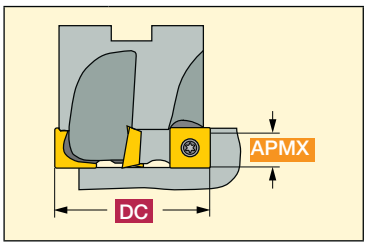
## 90° Face Mills Selection Guide




| Tools | Pages | DC / APMX | Number of Teeth (Effective) 25 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 315 | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F90SD-12 | 241 | 11.8 | | | | 3<br>5 | 4<br>6 | 5 | 6<br>8 | 7<br>9 | 11 | 13 | | | SDMT 12...<br>SDMR 12...<br>QDMT 12...<br>QDCT 12... |
| H490 F90AX-12 | 243 | 12 | | | 4 | 3<br>5 | 4<br>6 | 5<br>7 | 6<br>9 | | 9 | | | | H490 AN.. 12... |
| T490 FLN-13 | 244 | 12.5 | | | 4<br>5 | 5<br>6 | 6<br>8 | 7<br>10 | 8<br>13 | 9<br>17 | 12 | 15 | | | T490 LNMT 13.. |
| T890HT FLN-R13 | 239 | | | | 3<br>4<br>5 | 4<br>5<br>6 | 6<br>7<br>8 | 6<br>7<br>9 | 8<br>12 | 9<br>15 | 12<br>20 | | | | T890 LN.T 1306 |
| T290 FLN-15 | 244 | 14 | | | 4 | 5 | 6 | | | | | | | | T290 LN.. 15... |
| F90LN-N15 | 245 | 14 | | | | 5 | 5<br>8 | 7<br>10 | 8<br>12 | 9<br>15 | 10<br>20 | 12<br>25 | 15 | | LN.. 15... |
| HM390 FTD-15 | 246 | 13 | | | 3<br>4 | 3<br>4<br>5 | 4<br>5<br>6 | 5<br>6<br>7 | 6<br>8 | 7<br>9 | 8<br>10 | 9 | | | HM390 TD... 1505... |
| HM90 F90A-15 | 247 | 14.3 | | | 3<br>4 | 3<br>5 | 4<br>6 | 5<br>7 | 6<br>8 | 9 | | | | | HM90 AD.. 15... |
| T490FLN-16 | 250 | 16 | | | | 3<br>4 | 4<br>6 | 5<br>7 | 6<br>8 | 7<br>10 | 12 | 12 | | | T490 LNMT 16... |
| HM390 FTD-19 | 250 | 16 | | | | | 5 | | | | 10 | | | | HM390 TDKT 1907 |
| H490 F90AX-17 | 251 | 16.3 | | | 3 | 3<br>4 | 4<br>6 | 5<br>7 | 5<br>8 | 7<br>10 | 8<br>12 | 10 | 12 | | H490 AN.. 17... |
| H690 F90AX-16 | 252 | 13.5 | | | | 3<br>4 | 4<br>5 | 5<br>6 | 6<br>8 | 7<br>9 | 8<br>10 | 11 | | | HM690 TNKX 1606 |
| F90 | 252 | 18 | | | | | | 6 | 8 | 8 | 10 | 12 | | | TPK...22 |
| P290 FPW/FCT | 253 | 12<br>18 | | 4 | 4<br>5 | 5<br>6 | 6 | 8 | 9 | | | | | | P290 ACCT<br>P290 ACKT |
| HP F90AT-19 | 253 | 18 | | | | 4 | | | | | | | | | HP AD.. 19... |
| HP F90AT-22 | 254 | 21 | | | | 3<br>4 | | | | | | | | | HP AD.. 22... |

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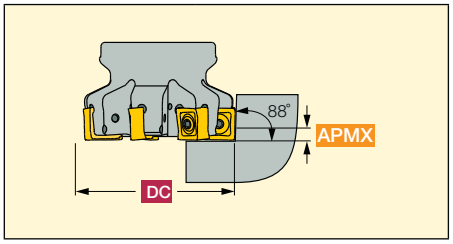
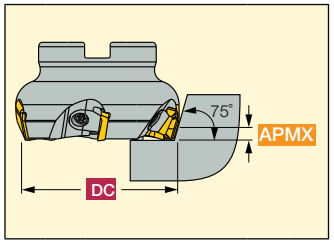
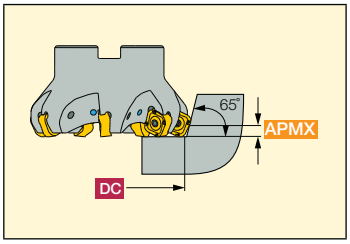
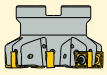
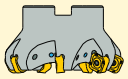
## 88°, 75°, 65° Endmills and Face Mills Selection Guide

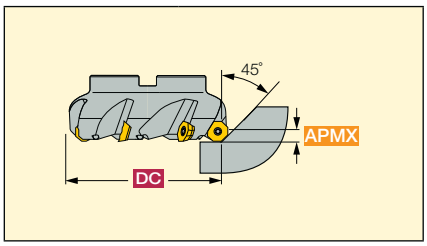


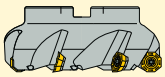
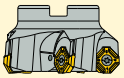
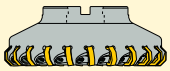
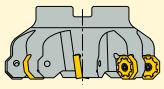
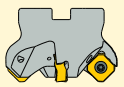




| Tools | | Pages | DC / APMX | 25 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 315 | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Number of Teeth (Effective) | | | | | | | | | | | | |
|  | S890 FSN-13 | 242 | 9<br>88° | | | 4 | 4<br>5 | 5<br>7 | 7<br>9 | 8<br>11 | 9<br>14 | 10 | | | | S890 SN.. 13... |
| | F75-M | 254 | 9.5<br>75° | | | | 4 | 5 | 6 | 7 | 8 | | | | | SPKN/SPKR 12... |
|  | S865 FSN-13 | 255 | 8<br>65° | | | | 4<br>6 | 6<br>8 | 7<br>10 | 8<br>12 | 10<br>16 | | | | | S865 SNMU 13... |

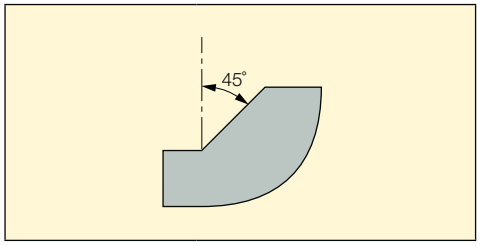
## 45° Endmills and Face Mills Selection Guide

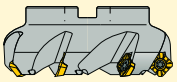
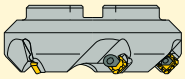
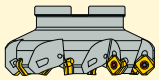
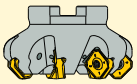
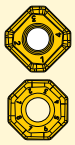
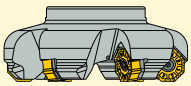
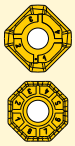



| Tools | | Pages | DC / APMX | 25 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 315 | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Number of Teeth (Effective) | | | | | | | | | | | | |
|  | HOE / HOF | 256<br>257 | 2.5<br>5.5 | | 3 | 4 | 3<br>4 | 4<br>5 | 5<br>6 | 6<br>7 | 8 | 10 | 12 | 15 | 18 | OE.. 06..<br>OF.. 07...<br>RF.. 19... |
|  | IQ845 | 257<br>258<br>264 | 2.6<br>4.6 | 3<br>4 | 4<br>5 | 4<br>5<br>6<br>7 | 4<br>5<br>9 | 5<br>7<br>11 | 6<br>8 | 7<br>10 | 9<br>12 | 11<br>15 | 14 | 17 | 20 | IQ845 SYHU 05,07... |
|  | F45WG | 258 | 5.5 | | | | | | 10 | 14 | 18 | 22 | | | | ON.. 08... |
|  | F45NM | 259 | 5.5 | | | | | 5 | 6<br>8 | 7<br>10 | 8<br>12 | 10<br>15 | 12 | 14 | | ON.. 08... |
|  | SOF45 | 260 | 3.5<br>6.0 | | | 4 | 3<br>4<br>6 | 4<br>6<br>8 | 7<br>10 | 8<br>12 | 10<br>16 | 12 | 14 | 16 | 20 | ON.. 05...<br>S845 SN.. 13... |

ISCARMILL

## 45° Face Mills Selection Guide

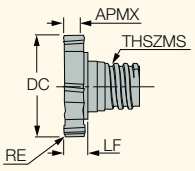



| Tools | Pages | DC / APMX | 25 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 315 | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number of Teeth (Effective) | | | | | | | | | | | | |
|  F45ST | 263 | 6.5 | | | 3 | 4 | 5 | 6 | 6 | 7 | 7 | | | | SE.T 12... |
|  F45E | 263 | 6.5 | | | | 4 | 5 | 6 | 6 | 6 | 8 | | | | SE.. 12... |
|  S845 F45SX-16 | 265 | 7.1 | | | 4 | 4<br>5 | 5<br>7 | 9 | 7<br>11 | 8<br>14 | 10<br>18 | 12 | 15 | | S845 SX.. 16... |
|  SOF45-R18 | 267 | 5<br>8 | | | | 4 | 5 | 6<br>7 | 7<br>9 | 8<br>12 | 10<br>15 | 12<br>18 | 14<br>21 | 18<br>24 |  SNMU 18<br>ONMU 07 |
|  SOF45-R26 | 266 | 7<br>11 | | | | | | 4 | 5<br>6 | 6<br>8 | 8<br>10 | 10<br>12 | 12<br>14 | 14<br>16 |  SNMU 26<br>ONMU 07 |

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM FM

Interchangeable Solid Carbide Face Milling Heads with MULTI-MASTER Threaded Connections




| Designation | Dimensions DC | APMX | RE | NOF(1) | THSZMS | LF | | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| MM FM100-36R0.2-06T05 | 10.00 | 3.60 | 0.20 | 6 | T05 | 4.40 | T-20/3* | ● | 0.04-0.10 |
| MM FM120-36R0.2-06T05 | 12.00 | 3.60 | 0.20 | 6 | T05 | 4.40 | T-20/3* | ● | 0.04-0.10 |
| MM FM160-48R0.4-06T06 | 16.00 | 4.80 | 0.40 | 6 | T06 | 5.60 | T-25/3* | ● | 0.05-0.10 |
| MM FM200-60R0.4-06T08 | 20.00 | 6.00 | 0.40 | 6 | T08 | 6.80 | T-40/3 L* | ● | 0.05-0.10 |
| MM FM250-75R0.4-06T10 | 25.00 | 7.50 | 0.40 | 6 | T10 | 8.40 | T-50/3 L* | ● | 0.05-0.10 |

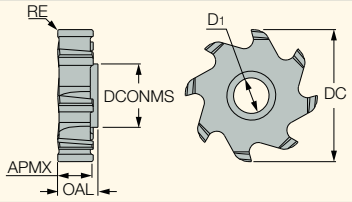
(1) Number of flutes

* Optional, to be ordered separately

T-FACE
FACEMILL

## SD FM

Interchangeable Solid Carbide Face Milling Heads




| Designation | Dimensions DC | APMX | NOF(1) | RE | D1 | DCONMS | OAL | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| SD FM D32-8-R0.4-SP15 | 31.25 | 8.00 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | ● | 0.04-0.15 |
| SD FM D40-10-R0.4SP17 | 39.25 | 10.00 | 10 | 0.40 | 9.80 | 17.00 | 10.00 | ● | 0.04-0.15 |
| SD FM D50-12-R0.4SP19 | 49.25 | 12.00 | 12 | 0.40 | 9.80 | 19.00 | 14.00 | ● | 0.04-0.15 |

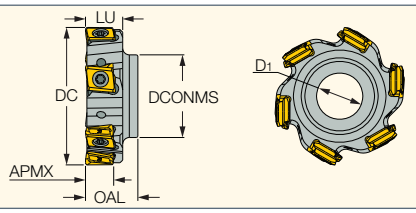
• For shanks, see page 227 • For user guide, see pages 616-621

(1) Number of flutes

HELITANG
T490 LINE

## T490 FM-05

90° Face Mills with a SP Connection Carrying Tangentially Clamped Inserts with 4 Helical 4.6 mm Long Cutting Edges




| Designation | DC | CICT(1) | APMX | OAL | LU | DCONMS | D1 | MIID(2) |
|---|---|---|---|---|---|---|---|---|
| T490 FM D025-06-SP15-05 | 25.00 | 6 | 4.00 | 9.50 | 6.75 | 15.00 | 8.40 | T490 LNMT 0502PNR-RD |
| T490 FM D032-08-SP17-05 | 32.00 | 8 | 4.00 | 10.50 | 6.75 | 17.00 | 9.80 | T490 LNMT 0502PNR-RD |
| T490 FM D040-10-SP19-05 | 40.00 | 10 | 4.00 | 14.10 | 6.75 | 19.00 | 9.80 | T490 LNMT 0502PNR-RD |
| T490 FM D050-12-SP19-05 | 50.00 | 12 | 4.00 | 14.10 | 6.75 | 19.00 | 9.80 | T490 LNMT 0502PNR-RD |

New

• For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) Master insert identification

**For inserts, see pages:** T490 LNMT 0502 (543)

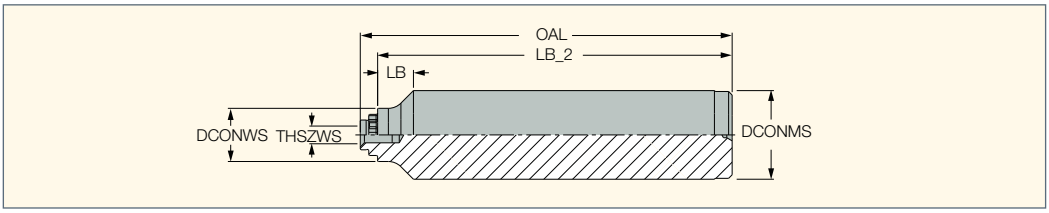
### Spare Parts

| Designation | | |
|---|---|---|
| T490 FM-05 | SR M2X0.4-4.8 IP6 | T-6IP/51 |

T-FACE FACEMILL

## SD FM-S-A-SP

Stepped Cylindrical Shanks for Interchangeable Solid Carbide Face Milling Heads




| Designation | DCONMS | DCONWS | THSZWS | LB | LB_2 | OAL | Shank(1) | kg |
|---|---|---|---|---|---|---|---|---|
| SD FM-S-A-L100-C25-SP15 | 25.00 | 15.00 | M5x0.5 | 10.10 | 100.00 | 104.90 | C | 0.37 |
| SD FM-S-A-L120-W25-SP15 | 25.00 | 15.00 | M5x0.5 | 10.10 | 120.00 | 124.90 | W | 0.44 |
| SD FM-S-A-L125-W32-SP17 | 32.00 | 17.00 | M6x0.5 | 12.50 | 125.00 | 131.00 | W | 0.75 |
| SD FM-S-A-L140-C32 SP17 | 32.00 | 17.00 | M6x0.5 | 12.50 | 140.00 | 146.00 | C | 0.85 |
| SD FM-S-A-L140-C32-SP19 | 32.00 | 19.00 | M6x0.5 | 10.00 | 140.00 | 148.50 | C | 1.41 |
| SD FM-S-A-L130-W40-SP19 | 40.00 | 19.00 | M6x0.5 | 14.00 | 130.00 | 138.50 | W | 1.21 |

- Apply lubricant to the clamping screw

(1) C-Cylindrical, W-Weldon

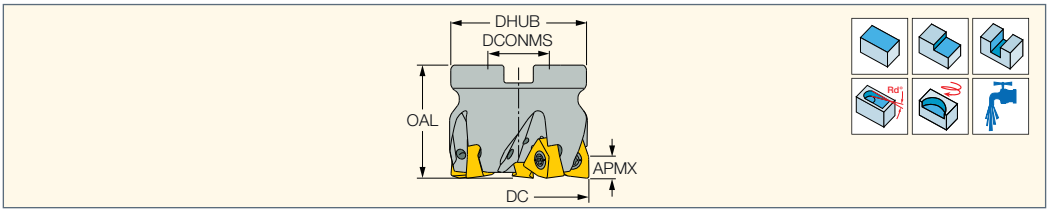
### Spare Parts

| Designation | | | |
|---|---|---|---|
| SD FM-S-A-L100-C25-SP15 | SR M5X0.5-SP15-IP20-HG | BLD IP20/S7 | SW6-T-SH |
| SD FM-S-A-L120-W25-SP15 | SR M5X0.5-SP15-IP20-HG | BLD IP20/S7 | SW6-T-SH |
| SD FM-S-A-L125-W32-SP17 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T |
| SD FM-S-A-L140-C32 SP17 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T |
| SD FM-S-A-L140-C32-SP19 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T |
| SD FM-S-A-L130-W40-SP19 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T |

HELIDO TRIGON LINE

## H690 FWN-04

90° Face Mills Carrying H690 WNMU 0403 Double-Sided Trigonal Inserts with 6 Helical Cutting Edges




| Designation | DC | CICT(1) | APMX | DHUB | DCONMS | OAL | Arbor(2) | RMPX°(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H690 FWN D32-06-16-R04 | 32.00 | 6 | 4.00 | 30.40 | 16.00 | 35.00 | A | 0.8 | 0.16 | SR M8X27-CSH50 | SR M2.5X6-T7-60 | T-7/51 |
| H690 FWN D40-05-16-R04 | 40.00 | 5 | 4.00 | 38.00 | 16.00 | 35.00 | A | 0.6 | 0.20 | SR M8X25DIN912 | SR M2.5X6-T7-60 | T-7/51 |
| H690 FWN D40-07-16-R04 | 40.00 | 7 | 4.00 | 38.00 | 16.00 | 35.00 | A | 0.6 | 0.21 | SR M8X25DIN912 | SR M2.5X6-T7-60 | T-7/51 |
| H690 FWN D50-07-22-R04 | 50.00 | 7 | 4.00 | 48.00 | 22.00 | 40.00 | A | 0.5 | 0.37 | SR M10X25 DIN912 | SR M2.5X6-T7-60 | T-7/51 |
| H690 FWN D50-09-22-R04 | 50.00 | 9 | 4.00 | 48.00 | 22.00 | 40.00 | A | 0.5 | 0.38 | SR M10X25 DIN912 | SR M2.5X6-T7-60 | T-7/51 |
| H690 FWN D63-08-27-R04 | 63.00 | 8 | 4.00 | 60.00 | 27.00 | 40.00 | B | 0.2 | 0.39 | | SR M2.5X6-T7-60 | T-7/51 |
| H690 FWN D63-10-27-R04 | 63.00 | 10 | 4.00 | 60.00 | 27.00 | 40.00 | B | 0.2 | 0.39 | | SR M2.5X6-T7-60 | T-7/51 |

- Insert clamping screw must be lubricated every indexing. • Tightening torque 0.9 Nxm. • For user guide see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) For adaptation options, see page 622

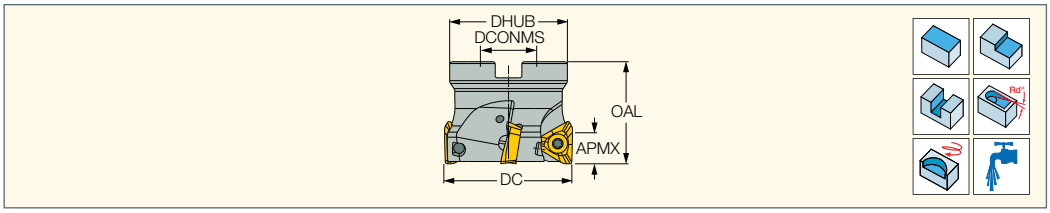
(3) Maximum ramping angle

**For inserts, see pages:** H690 WNMU 0403 (536)

HELI3MILL HM390 LINE

## HM390 FTC-07

90° Face Mills Carrying HM390 TCKT 0703 Triangular Inserts with 3 Helical Cutting Edges




| Designation | DC | CICT(1) | APMX | OAL | DHUB | DCONMS | Arbor(2) | RMPX°(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 FTC D032-4-16-07 | 32.00 | 4 | 5.00 | 35.00 | 30.40 | 16.00 | A | 0.8 | 0.11 | SR M2.5X6-T7-60 | T-7/51 | SR M8X25DIN912 |
| HM390 FTC D032-5-16-07 | 32.00 | 5 | 5.00 | 35.00 | 30.40 | 16.00 | A | 0.8 | 0.10 | SR M2.5X6-T7-60 | T-7/51 | SR M8X25DIN912 |
| HM390 FTC D040-5-16-07 | 40.00 | 5 | 5.00 | 35.00 | 38.00 | 16.00 | A | 0.6 | 0.20 | SR M2.5X6-T7-60 | T-7/51 | SR M8X25DIN912 |
| HM390 FTC D040-6-16-07 | 40.00 | 6 | 5.00 | 35.00 | 38.00 | 16.00 | A | 0.6 | 0.20 | SR M2.5X6-T7-60 | T-7/51 | SR M8X25DIN912 |

- Insert clamping screw must be lubricated every indexing • Tightening torque 0.9 Nxm • For user guide see pages 616-621

(1) Number of inserts (or edges for solid tool)

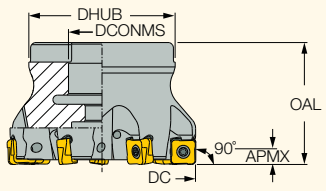
(2) For adaptation options, see page 622

(3) Maximum ramping angle

**For inserts, see pages:** HM390 TCKT/CT 0703 (512)

NEODO S90° LINE

**S890 FSZ-R08**
Face Mills Carrying
Double-Sided Square Inserts
with 8 Cutting Edges




| Designation | DC | APMX | OAL | CICT(1) | DCONMS | DHUB | Arbor | MIID(2) | kg |
|---|---|---|---|---|---|---|---|---|---|
| S890 FSZ D032-04-16-R08 | 32.00 | 5.00 | 32.00 | 4 | 16.00 | 30.00 | A | S890 SZMU 0804... | 0.20 |
| S890 FSZ D040-05-16-R08 | 40.00 | 5.00 | 35.00 | 5 | 16.00 | 38.00 | A | S890 SZMU 0804... | 0.24 |
| S890 FSZ D040-06-16-R08 | 40.00 | 5.00 | 35.00 | 6 | 16.00 | 38.00 | A | S890 SZMU 0804... | 0.34 |
| S890 FSZ D050-06-22-R08 | 50.00 | 5.00 | 40.00 | 6 | 22.00 | 48.00 | A | S890 SZMU 0804... | 0.35 |
| S890 FSZ D050-08-22-R08 | 50.00 | 5.00 | 40.00 | 8 | 22.00 | 48.00 | A | S890 SZMU 0804... | 0.39 |
| S890 FSZ D063-07-22-R08 | 63.00 | 5.00 | 40.00 | 7 | 22.00 | 48.00 | A | S890 SZMU 0804... | 0.60 |
| S890 FSZ D063-10-22-R08 | 63.00 | 5.00 | 40.00 | 10 | 22.00 | 48.00 | A | S890 SZMU 0804... | 0.58 |
| S890 FSZ D080-08-27-R08 | 80.00 | 5.00 | 50.00 | 8 | 27.00 | 60.00 | B | S890 SZMU 0804... | 0.98 |
| S890 FSZ D080-12-27-R08 | 80.00 | 5.00 | 50.00 | 12 | 27.00 | 60.00 | B | S890 SZMU 0804... | 0.93 |
| S890 FSZ D100-10-32-R08 | 100.00 | 5.00 | 50.00 | 10 | 32.00 | 78.00 | B | S890 SZMU 0804... | 1.52 |
| S890 FSZ D100-14-32-R08 | 100.00 | 5.00 | 50.00 | 14 | 32.00 | 78.00 | B | S890 SZMU 0804... | 1.50 |
| S890 FSZ D125-12-40-R08 | 125.00 | 5.00 | 50.00 | 12 | 40.00 | 92.00 | B | S890 SZMU 0804... | 2.29 |
| S890 FSZ D125-18-40-R08 | 125.00 | 5.00 | 50.00 | 18 | 40.00 | 92.00 | B | S890 SZMU 0804... | 2.32 |

• For user guide, see pages 616-621
(1) Number of inserts (or edges for solid tool)
(2) Master insert identification
**For inserts, see pages:** S890 SZMU-0804PN (503)

## When stepdown milling is performed by use of passes, the depth of cut per pass should not exceed the depth of cut as recommended in the ISCAR catalog.

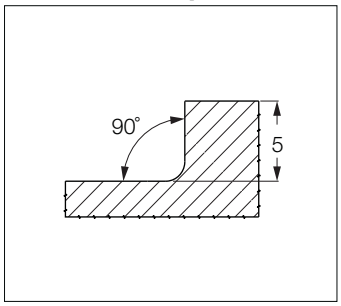



Fig. 1- Generated profile for a depth of cut of up to 5mm

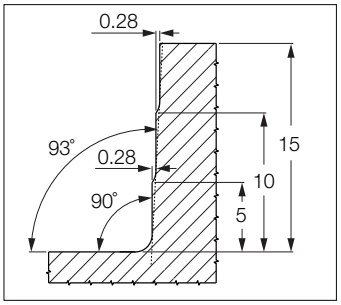



Fig. 2- Generated profile for a depth of cut in stepdown milling

## Starting feed per tooth $F_z$ for S890 face mills with inserts S890 SZMU 08...

| ISO Class DIN/ISO 513 | Description | Workpiece Material: Typical Representstive AISI/SAE/ASTM | Workpiece Material: Typical Representstive DIN W.-Nr. | Hardness, HB | ISCAR Mat. Group** | $F_z$, mm/Tooth for Grades*: IC 5100 | IC810 | IC808 | IC845 | IC5400 |
|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel | 1020 | 1.044 | 130-180 | 1 | | | 0.1-0.25 | 0.1-0.25 | 0.1-0.25 |
| | alloy steel | 4340 | 1.658 | 260-300 | 8 | | | 0.1-0.2 | 0.1-0.2 | 0.1-0.2 |
| | | 4340 | 1.658 | HRC 35-42* | 9 | | | 0.1-0.2 | 0.1-0.2 | 0.1-0.2 |
| | high alloy steel | H13 | 1.234 | 200-220 | 10 | | | 0.08-0.15 | 0.08-0.15 | 0.08-0.15 |
| | martensitic S.S | 420 | 1.402 | 200 | 12 | | | 0.08-0.15 | 0.08-0.15 | 0.08-0.15 |
| M | austenitic S.S. | 304L | 1.431 | 200 | 14 | | | 0.1-0.15 | 0.1-0.15 | 0.1-0.15 |
| | | 316L | 1.440 | 140 | 14 | | | 0.1-0.15 | 0.1-0.15 | 0.1-0.15 |
| K | grey cast iron | class 40 | 0.6025 (GG25) | 250 | 16 | 0.15-0.25 | 0.15-0.25 | | | |
| | nodular cast iron | class 65-45-12 | 0.7050 (GGG50) | 200 | 17 | 0.12-0.2 | 0.12-0.2 | | | |
| H | hard steel and cast iron | H11 | 1.234 | HRC 45-49 | 38.1 | | | 0.06-0.12 | 0.06-0.12 | 0.06-0.12 |
| | | P20 | 1.2330 | HRC 50-55 | 38.2 | | | 0.05-0.1 | 0.05-0.1 | 0.05-0.1 |

* Quenched and tempered
** ISCAR material group in accordance with VDI 3323 standard

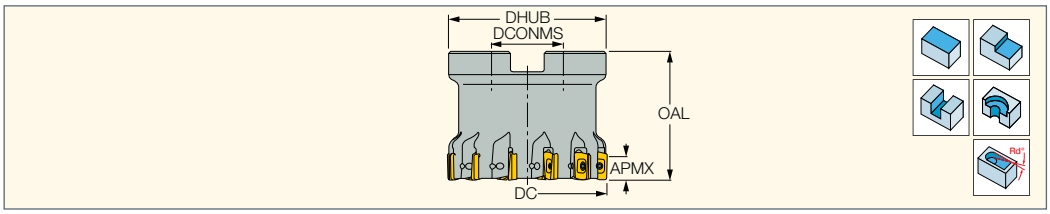
## Spare Parts

| Designation | | | |
|---|---|---|---|
| S890 FSZ D032-04-16-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | SR M8X32 D11-C50-H6 |
| S890 FSZ D040-05-16-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | SR M8X25DIN912 |
| S890 FSZ D040-06-16-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | SR M8X25DIN912 |
| S890 FSZ D050-06-22-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | SR M10X25 DIN912 |
| S890 FSZ D050-08-22-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | SR M10X25 DIN912 |
| S890 FSZ D063-07-22-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | SR M10X25 DIN912 |
| S890 FSZ D063-10-22-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | SR M10X25 DIN912 |
| S890 FSZ D080-08-27-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | |
| S890 FSZ D080-12-27-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | |
| S890 FSZ D100-10-32-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | |
| S890 FSZ D100-14-32-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | |
| S890 FSZ D125-12-40-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | |
| S890 FSZ D125-18-40-R08 | SR M3X0.5-L7.4 IP9(a) | IP-9/151(b) | |

(a) Recommended tightening torque:2 N*m
(b) For limiting torque, use optional 7007382 BLD 4 IP09-2.0NM blade & 7007320 HSD 4-2.0NM handle.

HELIPLUS

**HP F90AN-07**
90° Face Mills Carrying HP ANKT 0702.. Inserts




| Designation | DC | CICT[1] | APMX | OAL | DHUB | DCONMS | RMPX°[2] | Arbor[3] | RPMX[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **HP F90AN D32-06-16-07** | 32.00 | 6 | 7.70 | 35.00 | 30.40 | 16.00 | 1.4 | A | 26610 | 0.10 |
| **HP F90AN D40-08-22-07** | 40.00 | 8 | 7.70 | 40.00 | 38.00 | 22.00 | 1.0 | A | 23800 | 0.16 |
| **HP F90AN D40-10-22-07** | 40.00 | 10 | 7.70 | 40.00 | 38.00 | 22.00 | 1.0 | A | 23800 | 0.17 |

• Insert tightening torque: 0.62 Nxm • For user guide, see pages 616-621
[1] Number of inserts (or edges for solid tool)
[2] Maximum ramping angle
[3] For adaptation options, see page 622
[4] Maximum RPM

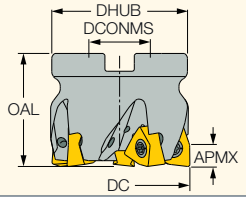
**For inserts, see pages:** HP ANCR 0702PNFR (509) • HP ANKT 0702-FF (510) • HP ANKT/ANCT 0702 PN-R/PNTR (508) • HP ANKW 070204PNTR (509)

## Spare Parts

| Designation | | | |
|---|---|---|---|
| **HP F90AN D32-06-16-07** | SR 34-533/L/HG | T-6/51 | SR M8X20DIN912 |
| **HP F90AN D40-08-22-07** | SR 34-533/L/HG | T-6/51 | SR M10X25 DIN912 |
| **HP F90AN D40-10-22-07** | SR 34-533/L/HG | T-6/51 | SR M10X25 DIN912 |

HELIDO TRIGON LINE

**H690 FWN-07**
90° Face Mills Carrying
H690 WNMU 0705
Double-Sided Trigonal Inserts
with 6 Helical Cutting Edges




| Designation | DC | CICT(1) | APMX | DHUB | DCONMS | OAL | Arbor(2) | RMPX°(3) | kg |
|---|---|---|---|---|---|---|---|---|---|
| H690 FWN D050-04-22-R07 | 50.00 | 4 | 7.00 | 48.00 | 22.00 | 40.00 | A | 1.2 | 0.33 |
| H690 FWN D050-05-22-R07 | 50.00 | 5 | 7.00 | 48.00 | 22.00 | 40.00 | A | 1.2 | 0.33 |
| H690 FWN D063-05-22-R07 | 63.00 | 5 | 7.00 | 48.00 | 22.00 | 40.00 | A | 1.1 | 0.50 |
| H690 FWN D063-06-27-R07 | 63.00 | 6 | 7.00 | 60.00 | 27.00 | 50.00 | A | 1.1 | 0.72 |
| H690 FWN D063-07-22-R07 | 63.00 | 7 | 7.00 | 48.00 | 22.00 | 40.00 | A | 1.1 | 0.50 |
| H690 FWN D080-07-27-R07 | 80.00 | 7 | 7.00 | 60.00 | 27.00 | 50.00 | B | 1.0 | 1.00 |
| H690 FWN D080-09-27-R07 | 80.00 | 9 | 7.00 | 60.00 | 27.00 | 50.00 | B | 1.0 | 0.98 |
| H690 FWN D100-08-32-R07 | 100.00 | 8 | 7.00 | 70.00 | 32.00 | 50.00 | B | 0.8 | 1.57 |
| H690 FWN D100-11-32-R07 | 100.00 | 11 | 7.00 | 70.00 | 32.00 | 50.00 | B | 0.8 | 1.62 |
| H690 FWN D125-10-40-R07 | 125.00 | 10 | 7.00 | 82.00 | 40.00 | 63.00 | B | 0.5 | 2.82 |

- For cutting speed recommendations, see pages 616-621

(1) Number of inserts (or edges for solid tool)
(2) For adaptation options, see page 622
(3) Maximum ramping angle

**For inserts, see pages:** H690 WNHU/WNMU 0705 (537)

## Examples of Cutting Speed for H690 FWN/EWN...07 Cutters

| ISO Class DIN/ ISO 513 | Workpiece Material | | | | | Cutting Speed $V_c$, SFM, for Grades | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Description | ISCAR Mat. Group* | Typical Materials AISI/SAE/ ASTM | Typical Materials DIN W.-Nr. | Hardness HB | IC808 | IC5100 | IC810 | IC5400 | IC830 | IC330 |
| P | non-alloy steel | 1 | 1020 | 1.044 | 130-180 | 180-250 | | 150-220 | 150-220 | 130-200 | 120-180 |
| P | alloy steel | 8 | 4340 | 1.6582 | 260-300 | 150-200 | | 130-180 | 130-180 | 120-170 | 100-140 |
| P | alloy steel | 9 | 4340 | 1.6582 | HRC 35-42** | 100-170 | | 100-150 | 100-150 | 100-130 | 100-120 |
| P | high alloy steel | 10 | H13 | 1.2344 | 200-220 | 100-170 | | 100-150 | 100-150 | 100-130 | 100-120 |
| P | martensitic S.S. | 12 | 420 | 1.4021 | 200 | 100-150 | | | | 100-130 | 100-120 |
| K | grey cast iron | 16 | class 40 | 0.6025 (GG25) | 250 | 200-250 | 220-300 | 220-300 | | 180-230 | |
| K | nodular cast iron | 17 | class 65-45-12 | 0.7050 (GGG50) | 200 | 160-220 | 180-250 | 180-250 | | 150-200 | |

* ISCAR material group in accordance with VDI 3323 standard
** Quenched and tempered
- First choice for grades

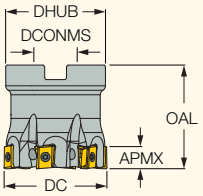
### Spare Parts

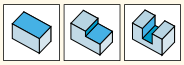
| Designation | | | | |
|---|---|---|---|---|
| H690 FWN D050-04-22-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| H690 FWN D050-05-22-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| H690 FWN D063-05-22-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| H690 FWN D063-06-27-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | SR M12X30 DIN912 |
| H690 FWN D063-07-22-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| H690 FWN D080-07-27-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| H690 FWN D080-09-27-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| H690 FWN D100-08-32-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| H690 FWN D100-11-32-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| H690 FWN D125-10-40-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |

HELITANG T490 LINE

## T490 FLN-08

90° Face Mills with Tangentially Clamped Inserts



| Designation | DC | CICT[1] | APMX | OAL | DHUB | DCONMS | Arbor[2] | CSP[3] | kg |
|---|---|---|---|---|---|---|---|---|---|
| T490 FLN D032-03-16-08 | 32.00 | 3 | 8.00 | 35.00 | 30.40 | 16.00 | A | 1 | 0.11 |
| T490 FLN D032-05-16-08 | 32.00 | 5 | 8.00 | 35.00 | 30.40 | 16.00 | A | 1 | 0.11 |
| T490 FLN D040-04-16-08 | 40.00 | 4 | 8.00 | 40.00 | 38.40 | 16.00 | A | 1 | 0.23 |
| T490 FLN D040-06-16-08 | 40.00 | 6 | 8.00 | 40.00 | 38.40 | 16.00 | A | 1 | 0.32 |
| T490 FLN D050-05-22-08 | 50.00 | 5 | 8.00 | 40.00 | 48.00 | 22.00 | A | 1 | 0.36 |
| T490 FLN D050-07-22-08 | 50.00 | 7 | 8.00 | 40.00 | 48.00 | 22.00 | A | 1 | 0.37 |
| T490 FLN D050-10-22-08 | 50.00 | 10 | 8.00 | 40.00 | 48.00 | 22.00 | A | 0 | 0.39 |
| T490 FLN D063-06-27-08 | 63.00 | 6 | 8.00 | 40.00 | 60.00 | 27.00 | A | 1 | 0.60 |
| T490 FLN D063-09-27-08 | 63.00 | 9 | 8.00 | 40.00 | 60.00 | 27.00 | A | 1 | 0.62 |
| T490 FLN D080-10-27-08 | 80.00 | 10 | 8.00 | 50.00 | 60.00 | 27.00 | B | 0 | 0.84 |

• When machining slots, regular pitch cutters should be used • For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) For adaptation options, see page 622

(3) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT/LNHT 0804 (544)

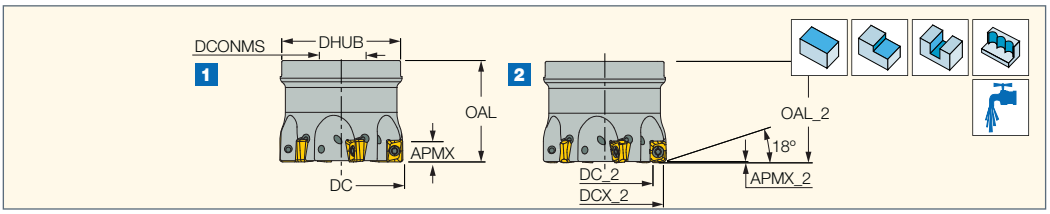
### Spare Parts

| Designation | | | |
|---|---|---|---|
| T490 FLN D032-03-16-08 | SR 10502813-HG-M | IP-7/51 | SR M8X20DIN912 |
| T490 FLN D032-05-16-08 | SR 10502813-HG-M | IP-7/51 | SR M8X20DIN912 |
| T490 FLN D040-04-16-08 | SR 10502813-HG-M | IP-7/51 | SR M8X30DIN912 |
| T490 FLN D040-06-16-08 | SR 10502813-HG-M | IP-7/51 | SR M8X30DIN912 |
| T490 FLN D050-05-22-08 | SR 10502813-HG-M | IP-7/51 | SR M10X25 DIN912 |
| T490 FLN D050-07-22-08 | SR 10502813-HG-M | IP-7/51 | SR M10X25 DIN912 |
| T490 FLN D050-10-22-08 | SR 10502813-HG-M | IP-7/51 | SR M10X20DIN912 |
| T490 FLN D063-06-27-08 | SR 10502813-HG-M | IP-7/51 | SR M12X25 DIN 912 |
| T490 FLN D063-09-27-08 | SR 10502813-HG-M | IP-7/51 | SR M12X25 DIN 912 |
| T490 FLN D080-10-27-08 | SR 10502813-HG-M | IP-7/51 | |

HELIDO 490 LINE

**H490 F90AX-09**

90° Face Mills Carrying H490 ANKX 09.. Double-Sided Rectangular Inserts with 4 Helical Cutting Edges




| Designation | DC | DCX_2 | DC_2 | CICT(1) | APMX | APMX_2 | AE(2) | DHUB | DCONMS | OAL | OAL_2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H490 F90AX D032-4-16-09 | 32.00 | 32.10 | 26.60 | 4 | 8.00 | 0.70 | 5.5 | 30.40 | 16.00 | 35.00 | 35.00 |
| H490 F90AX D032-5-16-09 | 32.00 | 32.10 | 26.60 | 5 | 8.00 | 0.70 | 5.5 | 30.40 | 16.00 | 35.00 | 35.00 |
| H490 F90AX D040-5-16-09 | 40.00 | 40.10 | 34.60 | 5 | 8.00 | 0.70 | 5.5 | 38.40 | 16.00 | 40.00 | 40.00 |
| H490 F90AX D040-6-16-09 | 40.00 | 40.10 | 34.60 | 6 | 8.00 | 0.70 | 5.5 | 38.40 | 16.00 | 40.00 | 40.00 |
| H490 F90AX D050-6-22-09 | 50.00 | 50.10 | 44.60 | 6 | 8.00 | 0.70 | 5.5 | 48.00 | 22.00 | 40.00 | 40.00 |
| H490 F90AX D050-7-22-09 | 50.00 | 50.10 | 44.60 | 7 | 8.00 | 0.70 | 5.5 | 48.00 | 22.00 | 40.00 | 40.00 |
| H490 F90AX D063-8-22-09 | 63.00 | 63.10 | 57.60 | 8 | 8.00 | 0.70 | 5.5 | 60.00 | 22.00 | 40.00 | 40.00 |
| H490 F90AX D063-9-22-09 | 63.00 | 63.10 | 57.60 | 9 | 8.00 | 0.70 | 5.5 | 60.00 | 22.00 | 40.00 | 40.00 |

| Designation | RMPX°_2(3) | MDN | MDX | Arbor(4) | MIID(5) | MIID_2(6) | kg |
|---|---|---|---|---|---|---|---|
| H490 F90AX D032-4-16-09 | 1.4 | 58.70 | 63.20 | A | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 0.10 |
| H490 F90AX D032-5-16-09 | 1.4 | 58.70 | 63.20 | A | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 0.10 |
| H490 F90AX D040-5-16-09 | 1.0 | 74.70 | 79.20 | A | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 0.22 |
| H490 F90AX D040-6-16-09 | 1.0 | 74.70 | 79.20 | A | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 0.22 |
| H490 F90AX D050-6-22-09 | 0.6 | 94.70 | 99.20 | A | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 0.36 |
| H490 F90AX D050-7-22-09 | 0.6 | 94.70 | 99.20 | A | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 0.37 |
| H490 F90AX D063-8-22-09 | 0.5 | 120.70 | 125.20 | A | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 0.62 |
| H490 F90AX D063-9-22-09 | 0.5 | 120.70 | 125.20 | A | H490 ANCX 090404PDR | H490 ANKX 0904..-FF | 0.64 |

- For user guide, see pages 616-621 • 1- with standard square insert, 2- with FF (fast feed) insert
- Ramping angle is valid only when H490 ANKX 0904R12T-FF insert is used
- When assembled the H490 ANKX 0904R12T-FF insert, tool diameter enlarges by 0.1 mm

(1) Number of inserts (or edges for solid tool)
(2) Maximum side plunge
(3) Maximum ramping angle when using FF inserts
(4) For adaptation options, see page 622
(5) Master insert identification
(6) Master insert identification 2

**For inserts, see pages:** H490 ANKX 0904-FF (538) • H490 ANKX/ANCX-09 (537)

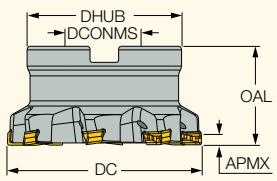
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| H490 F90AX D032-4-16-09 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M8X20DIN912 |
| H490 F90AX D032-5-16-09 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M8X20DIN912 |
| H490 F90AX D040-5-16-09 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M8X30DIN912 |
| H490 F90AX D040-6-16-09 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M8X30DIN912 |
| H490 F90AX D050-6-22-09 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M10X25 DIN912 |
| H490 F90AX D050-7-22-09 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M10X25 DIN912 |
| H490 F90AX D063-8-22-09 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M10X25 DIN912 |
| H490 F90AX D063-9-22-09 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M10X25 DIN912 |

TANGFIN FINISH MILLING

**HTF-R-LN10**

Face Mills Carrying Tangentially Clamped Inserts with 4 Cutting Edges for Extra Fine Milling Applications




| Designation | DC | APMX | CICT(1) | OAL | DHUB | DCONMS | Arbor(2) | CSP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|
| HTF D050-05-22-R-LN10 | 50.00 | 0.25 | 5 | 40.00 | 48.00 | 22.00 | A | 1 | 0.31 |
| HTF D063-06-22-R-LN10 | 63.00 | 0.30 | 6 | 40.00 | 48.00 | 22.00 | A | 1 | 0.43 |
| HTF D080-07-27-R-LN10 | 80.00 | 0.35 | 7 | 50.00 | 60.00 | 27.00 | B | 1 | 0.81 |
| HTF D100-08-32-R-LN10 | 100.00 | 0.40 | 8 | 50.00 | 78.00 | 32.00 | B | 1 | 1.44 |
| HTF D125-09-40-R-LN10 | 125.00 | 0.45 | 9 | 63.00 | 92.00 | 40.00 | B | 1 | 2.55 |
| HTF D160-10-40-R-LN10 | 160.00 | 0.50 | 10 | 63.00 | 95.00 | 40.00 | C | 0 | 3.75 |

• For best surface finish it is highly recommended to operate the cutter at maximal depth of cut • For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) For adaptation see page 622

(3) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** HTP LN.. 1006 (611)

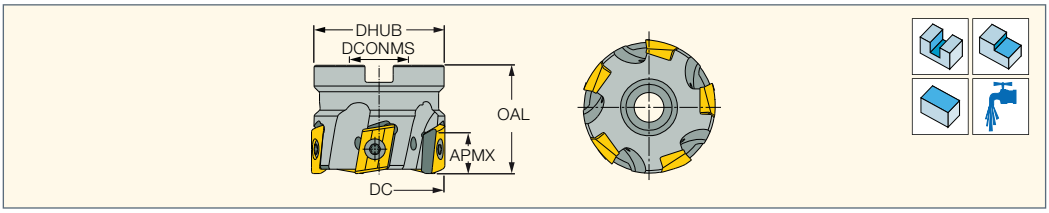
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HTF D050-05-22-R-LN10 | SR 34-550 | BLD T10/S7 | SW6-SD | SR M10X25 DIN912 |
| HTF D063-06-22-R-LN10 | SR 34-550 | BLD T10/S7 | SW6-SD | SR M10X25 DIN912 |
| HTF D080-07-27-R-LN10 | SR 34-550 | BLD T10/S7 | SW6-SD | |
| HTF D100-08-32-R-LN10 | SR 34-550 | BLD T10/S7 | SW6-SD | |
| HTF D125-09-40-R-LN10 | SR 34-550 | BLD T10/S7 | SW6-SD | |
| HTF D160-10-40-R-LN10 | SR 34-550 | BLD T10/S7 | SW6-SD | |

SUMOMILL 290 LINE

## T290 FLN-10

90° Face Mills Carrying T290 LNMT/LNHT 1004... Tangentially Clamped Inserts




| Designation | DC | CICT[1] | APMX | OAL | DHUB | DCONMS | Arbor[2] | kg |
|---|---|---|---|---|---|---|---|---|
| T290 FLN D32-05-16-10 | 32.00 | 5 | 9.00 | 35.00 | 30.00 | 16.00 | A | 0.09 |
| T290 FLN D40-06-16-10 | 40.00 | 6 | 9.00 | 35.00 | 34.00 | 16.00 | A | 0.16 |
| T290 FLN D50-07-22-10 | 50.00 | 7 | 9.00 | 40.00 | 46.00 | 22.00 | A | 0.29 |

- For user guide, see pages 616-621

[1] Number of inserts (or edges for solid tool)

[2] For adaptation options, see page 622

**For inserts, see pages:** T290 LNMT/LNHT 1004 (542)

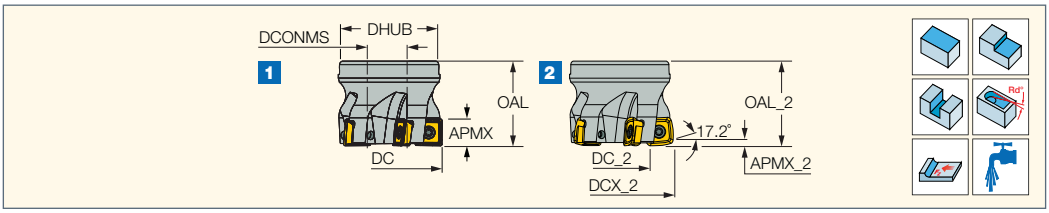
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| T290 FLN D32-05-16-10 | SR 10504970 | BLD IP15/M7 | SW6-T-SH | SR M8X20DIN912 |
| T290 FLN D40-06-16-10 | SR 10504970 | BLD IP15/M7 | SW6-T-SH | SR M8X20DIN912 |
| T290 FLN D50-07-22-10 | SR 10504970 | BLD IP15/M7 | SW6-T-SH | SR M10X25 DIN912 |

HELIQUAD

## F90SP-10

Face Mills Carrying Square Inserts




| Designation | DC[1] | CICT[2] | DCONMS | DHUB | APMX | OAL | RMPX°[3] | DC_2 | DCX_2 | APMX_2 | OAL_2 | RMPX°_2[4] | Arbor[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F90SP D40-04-16-10 | 40.00 | 4 | 16.00 | 38.00 | 9.60 | 40.00 | 1.5 | 23.30 | 40.45 | 1.27 | 40.26 | 3.5 | A | 0.42 |
| F90SP D40-05-16-10 | 40.00 | 5 | 16.00 | 38.00 | 9.60 | 40.00 | 1.5 | 23.30 | 40.45 | 1.27 | 40.26 | 3.5 | A | 0.22 |
| F90SP D50-04-22-10 | 50.00 | 4 | 22.00 | 48.00 | 9.60 | 40.00 | 1.0 | 33.30 | 50.45 | 1.27 | 40.26 | 3.0 | A | 0.37 |
| F90SP D50-06-22-10 | 50.00 | 6 | 22.00 | 48.00 | 9.60 | 40.00 | 1.0 | 33.30 | 50.45 | 1.27 | 40.26 | 3.0 | A | 0.39 |
| F90SP D63-06-22-10 | 63.00 | 6 | 22.00 | 48.00 | 9.60 | 40.00 | 0.8 | 46.30 | 63.45 | 1.27 | 40.26 | 2.8 | A | 0.48 |
| F90SP D63-07-22-10 | 63.00 | 7 | 22.00 | 48.00 | 9.60 | 40.00 | 0.8 | 46.30 | 63.45 | 1.27 | 40.26 | 2.8 | A | 0.42 |
| F90SP D80-06-27-10 | 80.00 | 6 | 27.00 | 60.00 | 9.60 | 50.00 | 0.8 | 63.30 | 80.45 | 1.27 | 50.26 | 2.8 | B | 0.88 |
| F90SP D80-09-27-10 | 80.00 | 9 | 27.00 | 60.00 | 9.60 | 50.00 | 0.8 | 63.30 | 80.45 | 1.27 | 50.26 | 2.8 | B | 1.50 |

- 1- with standard square insert
- 2- with FF (fast feed) insert
- For user guide, see pages 616-621

[1] D is 0.2 mm larger when QPMT inserts are used

[2] Number of inserts (or edges for solid tool)

[3] Maximum ramping angle when using 90° inserts

[4] Maximum ramping angle when using FF inserts

[5] For adaptation options, see page 622

**For inserts, see pages:** QPMR 1004-HQ-M (561) • QPMT 100408PDTN (561) • SPCT/SPMR PDR (563) • SPMT-FF (562) • SPMT-HP (562) • SPMT-HQ (562) • XPMT-HQ (563)

### Spare Parts

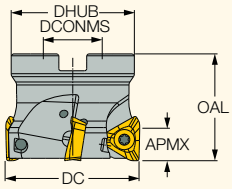
| Designation | | | | |
|---|---|---|---|---|
| F90SP D40-04-16-10 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH | SR M8X30DIN912 |
| F90SP D40-05-16-10 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH | SR M8X30DIN912 |
| F90SP D50-04-22-10 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH | SR M10X25 DIN912 |
| F90SP D50-06-22-10 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH | SR M10X25 DIN912 |
| F90SP D63-06-22-10 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH | SR M10X25 DIN912 |
| F90SP D63-07-22-10 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH | SR M10X25 DIN912 |
| F90SP D80-06-27-10 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH | |
| F90SP D80-09-27-10 | SR 10514114[a] | BLD IP15/M7 | SW6-T-SH | |

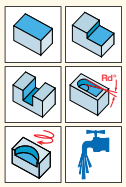
[a] Recommended tightening torque:4.8 N*m

HELI 3 MILL HM390 LINE

## HM390 FTP-10

90° Face Mills Carrying HM390 TPKT 1003 Triangular Inserts with 3 Helical Cutting Edges



| Designation | DC | CICT(1) | APMX | OAL | DHUB | DCONMS | Arbor(2) | RMPX°(3) | kg |
|---|---|---|---|---|---|---|---|---|---|
| HM390 FTP D040-3-16-10 | 40.00 | 3 | 8.00 | 40.00 | 38.40 | 16.00 | A | 1.6 | 0.50 |
| HM390 FTP D040-5-16-10 | 40.00 | 5 | 8.00 | 40.00 | 38.40 | 16.00 | A | 1.6 | 0.23 |
| HM390 FTP D050-4-22-10 | 50.00 | 4 | 8.00 | 40.00 | 48.00 | 22.00 | A | 1.2 | 0.33 |
| HM390 FTP D050-6-22-10 | 50.00 | 6 | 8.00 | 40.00 | 48.00 | 22.00 | A | 1.2 | 0.34 |
| HM390 FTP D050-7-22-10 | 50.00 | 7 | 8.00 | 40.00 | 48.00 | 22.00 | A | 1.2 | 0.35 |
| HM390 FTP D063-6-22-10 | 63.00 | 6 | 8.00 | 45.00 | 59.00 | 22.00 | A | 0.9 | 0.69 |
| HM390 FTP D063-6-27-10 | 63.00 | 6 | 8.00 | 45.00 | 61.00 | 27.00 | A | 0.9 | 0.63 |
| HM390 FTP D063-7-22-10 | 63.00 | 7 | 8.00 | 45.00 | 61.00 | 22.00 | A | 0.9 | 0.69 |
| HM390 FTP D063-7-27-10 | 63.00 | 7 | 8.00 | 45.00 | 61.00 | 27.00 | A | 0.9 | 0.68 |
| HM390 FTP D080-11-27-10 | 80.00 | 11 | 8.00 | 50.00 | 60.00 | 27.00 | A | 0.8 | 0.98 |
| HM390 FTP D100-13-27-10 | 100.00 | 13 | 8.00 | 50.00 | 60.00 | 27.00 | A | 0.8 | 1.38 |

- For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) For adaptation see page 622

(3) Maximum ramping angle

**For inserts, see pages:** HM390 TPCR 1003 (513) • HM390 TPKT/CT 1003 (512)

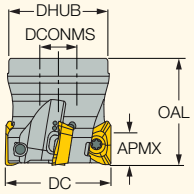
### Spare Parts

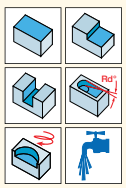
| Designation | | | | |
|---|---|---|---|---|
| HM390 FTP D040-3-16-10 | SR 14-562/S | BLD T10/S7 | SW6-SD | SR M8X25DIN912 |
| HM390 FTP D040-5-16-10 | SR 14-562/S | BLD T10/S7 | SW6-SD | SR M8X25DIN912 |
| HM390 FTP D050-4-22-10 | SR 14-562/S | BLD T10/S7 | SW6-SD | SR M10X25 DIN912 |
| HM390 FTP D050-6-22-10 | SR 14-562/S | BLD T10/S7 | SW6-SD | SR M10X25 DIN912 |
| HM390 FTP D050-7-22-10 | SR 14-562/S | BLD T10/S7 | SW6-SD | SR M10X25 DIN912 |
| HM390 FTP D063-6-22-10 | SR 14-562/S | BLD T10/S7 | SW6-SD | SR M10X25 DIN912 |
| HM390 FTP D063-6-27-10 | SR 14-562/S | BLD T10/S7 | SW6-SD | SR M12X35DIN912 |
| HM390 FTP D063-7-22-10 | SR 14-562/S | BLD T10/S7 | SW6-SD | SR M10X25 DIN912 |
| HM390 FTP D063-7-27-10 | SR 14-562/S | BLD T10/S7 | SW6-SD | SR M12X35DIN912 |
| HM390 FTP D080-11-27-10 | SR 14-562/S | BLD T10/S7 | SW6-SD | SR M12X35DIN912 |
| HM390 FTP D100-13-27-10 | SR 14-562/S | BLD T10/S7 | SW6-SD | SR M12X35DIN912 |

HELI 3 MILL HM390 LINE

## HM390 FTP/C/D-JHP

90° JHP Face Mill with HM390 Triangular Inserts



| Designation | DC | CICT(1) | APMX | OAL | DHUB | DCONMS | Arbor | RMPX°(2) | MIID(3) |
|---|---|---|---|---|---|---|---|---|---|
| HM390 FTC D32-5-16-07-JHP | 32.00 | 5 | 5.00 | 35.00 | 30.40 | 16.00 | A | 2.1 | HM390 TCKT 0703 |
| HM390 FTP D40-5-16-10-JHP | 40.00 | 5 | 8.00 | 40.00 | 38.00 | 16.00 | A | 1.6 | HM390 TPKT 1003 |
| HM390 FTP D50-6-22-10-JHP | 50.00 | 6 | 8.00 | 40.00 | 48.00 | 22.00 | A | 1.2 | HM390 TPKT 1003 |
| HM390 FTP D63-7-27-10-JHP | 63.00 | 7 | 8.00 | 45.00 | 60.00 | 27.00 | A | 0.9 | HM390 TPKT 1003 |
| HM390 FTD D40-4-16-15-JHP | 40.00 | 4 | 13.00 | 40.00 | 38.00 | 16.00 | A | 2.0 | HM390 TDKT 1505 |
| HM390 FTD D50-5-22-15-JHP | 50.00 | 5 | 13.00 | 40.00 | 48.00 | 22.00 | A | 1.6 | HM390 TDKT 1505 |
| HM390 FTD D63-6-27-15-JHP | 63.00 | 6 | 13.00 | 45.00 | 60.00 | 27.00 | A | 1.2 | HM390 TDKT 1505 |

**New**

- When assembled the HM390 TDKT 1505PDR-FW insert, tool diameter enlarges by 1.0 mm • For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) Maximum ramping angle

(3) Master insert identification

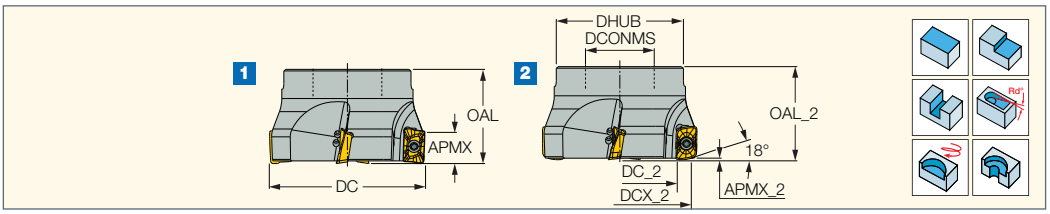
**For inserts, see pages:** HM390 TCKT/CT 0703 (512) • HM390 TDCR 1505 (514) • HM390 TDKT/CT 1505 (513) • HM390 TPCR 1003 (513)
• HM390 TPKT/CT 1003 (512)

### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| HM390 FTC D32-5-16-07-JHP | SR M2.5X6-T7-60 | T-7/51 | | | SR M8X25DIN912 |
| HM390 FTP D40-5-16-10-JHP | SR 14-562/S | | SW6-SD | BLD T10/S7 | SR M8X37-1515 |
| HM390 FTP D50-6-22-10-JHP | SR 14-562/S | | SW6-SD | BLD T10/S7 | SR M10X25 DIN912 |
| HM390 FTP D63-7-27-10-JHP | SR 14-562/S | | SW6-SD | BLD T10/S7 | SR M12X35DIN912 |
| HM390 FTD D40-4-16-15-JHP | SR 10511869 | | SW6-T | BLD IP20/S7 | SR M8X37-1515 |
| HM390 FTD D50-5-22-15-JHP | SR 10511869 | | SW6-T | BLD IP20/S7 | SR M10X37-50DEG |
| HM390 FTD D63-6-27-15-JHP | SR 10505427 | | SW6-T | BLD IP20/S7 | SR M12X35DIN912 |

HELI2000

**HM90 F90AP-10**
90° Face Mills Carrying HM90 APKT 1003... Inserts




| Designation | DC | DC_2 | DCX_2 | CICT[2] | APMX | APMX_2 | OAL | OAL_2 | MDN | MDX | DHUB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 F90AP D32-3-16 | 32.00 | 23.00 | 32.10 | 3 | 9.80 | 1.00 | 35.00 | 34.63 | 55.10 | 63.20 | 30.40 |
| HM90 F90AP D32-5-16 | 32.00 | 23.00 | 32.10 | 5 | 9.80 | 1.00 | 35.00 | 34.63 | 55.10 | 63.20 | 30.40 |
| HM90 F90AP D40-5-22 | 40.00 | 31.00 | 40.10 | 5 | 9.80 | 1.00 | 40.00 | 39.63 | 71.10 | 79.20 | 38.40 |
| HM90 F90AP D40-6-22 | 40.00 | 31.00 | 40.10 | 6 | 9.80 | 1.00 | 40.00 | 39.63 | 71.10 | 79.20 | 38.40 |
| HM90 F90AP D50-6-22 | 50.00 | 41.00 | 50.10 | 6 | 9.80 | 1.00 | 40.00 | 39.63 | 91.10 | 99.20 | 48.40 |
| HM90 F90AP D50-7-22 | 50.00 | 41.00 | 50.10 | 7 | 9.80 | 1.00 | 40.00 | 39.63 | 91.10 | 99.20 | 48.40 |
| HM90 F90AP D63-7-22 [1] | 63.00 | 54.00 | 63.10 | 7 | 9.80 | 1.00 | 40.00 | 39.63 | 117.10 | 125.20 | 59.00 |
| HM90 F90AP D63-9-22 | 63.00 | 54.00 | 63.10 | 9 | 9.80 | 1.00 | 40.00 | 39.63 | 117.10 | 125.20 | 59.00 |
| HM90 F90AP D80-8-27 [1] | 80.00 | 71.00 | 80.10 | 8 | 9.80 | 1.00 | 50.00 | 49.63 | 151.10 | 159.20 | 70.00 |
| HM90 F90AP D100-9-32 [1] | 100.00 | 91.00 | 100.10 | 9 | 9.80 | 1.00 | 50.00 | 49.63 | 191.10 | 199.20 | 78.00 |

| Designation | MIID[3] | MIID_2[4] | RPMX[5] | DCONMS | RMPX°[6] | RMPX°_2 | Arbor[7] | kg |
|---|---|---|---|---|---|---|---|---|
| HM90 F90AP D32-3-16 | APKT 1003PDR-HM | APKT 1003R8T-FF | 35355 | 16.00 | 2.2 | 2.2 | A | 0.10 |
| HM90 F90AP D32-5-16 | APKT 1003PDR-HM | APKT 1003R8T-FF | 35355 | 16.00 | 2.2 | 2.2 | A | 0.10 |
| HM90 F90AP D40-5-22 | APKT 1003PDR-HM | APKT 1003R8T-FF | 31623 | 22.00 | 1.9 | 1.9 | A | 0.19 |
| HM90 F90AP D40-6-22 | APKT 1003PDR-HM | APKT 1003R8T-FF | 31623 | 22.00 | 1.9 | 1.9 | A | 0.18 |
| HM90 F90AP D50-6-22 | APKT 1003PDR-HM | APKT 1003R8T-FF | 28284 | 22.00 | 1.4 | 1.4 | A | 0.34 |
| HM90 F90AP D50-7-22 | APKT 1003PDR-HM | APKT 1003R8T-FF | 28284 | 22.00 | 1.4 | 1.4 | A | 0.35 |
| HM90 F90AP D63-7-22 [1] | APKT 1003PDR-HM | APKT 1003R8T-FF | 25198 | 22.00 | 1.0 | 1.0 | B | 0.52 |
| HM90 F90AP D63-9-22 | APKT 1003PDR-HM | APKT 1003R8T-FF | 25198 | 22.00 | 1.0 | 1.0 | B | 0.52 |
| HM90 F90AP D80-8-27 [1] | APKT 1003PDR-HM | APKT 1003R8T-FF | 22361 | 27.00 | 0.9 | 0.9 | B | 0.94 |
| HM90 F90AP D100-9-32 [1] | APKT 1003PDR-HM | APKT 1003R8T-FF | 20100 | 32.00 | 0.7 | 0.7 | B | 1.51 |

• 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-621

[1] For internal coolant through the holder, use a matching coolant set (should be ordered separately)

[2] Number of inserts (or edges for solid tool)

[3] Master insert identification

[4] Master insert identification 2

[5] Maximum RPM

[6] Maximum ramping angle

[7] For adaptation options, see page 622

**For inserts, see pages:** APCR 1003PDFR-P (517) • APCT 1003PDR-HM (516) • APKR 1003PDR (517) • APKT 1003-FF (520) • APKT 1003..R (519) • APKT 1003..TR-RM (519) • APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • APKT 1003PDTR/L-RM (518) • APKW 100304 PDR (PCD) (516) • HM90 APCR 100304PDFR-P/DP (515) • HM90 APCT 1003 (514) • HM90 APKT 1003 (515) • HM90 APKT 1003PD-W (520) • HM90 APKW 1003PDR (519)

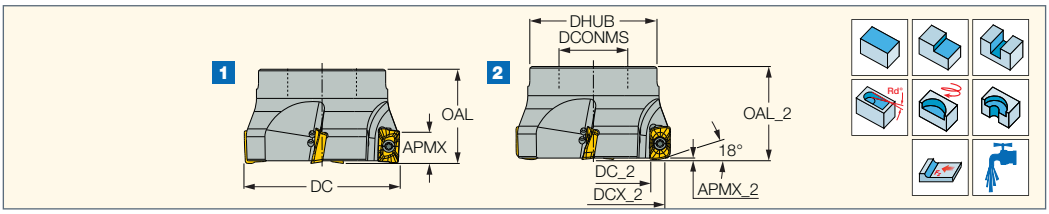
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM90 F90AP D32-3-16 | SR 34-505/HG | SW4-SD | BLD T08/M7 | SR M8X20DIN912 |
| HM90 F90AP D32-5-16 | SR 34-505/HG | SW4-SD | BLD T08/M7 | SR M8X20DIN912 |
| HM90 F90AP D40-5-22 | SR 34-505/HG | SW4-SD | BLD T08/M7 | SR M10X25 DIN912 |
| HM90 F90AP D40-6-22 | SR 34-505/HG | SW4-SD | BLD T08/M7 | SR M10X25 DIN912 |
| HM90 F90AP D50-6-22 | SR 34-505/HG | SW4-SD | BLD T08/M7 | SR M10X25 DIN912 |
| HM90 F90AP D50-7-22 | SR 34-505/HG | SW4-SD | BLD T08/M7 | SR M10X25 DIN912 |
| HM90 F90AP D63-7-22 | SR 34-505/HG | SW4-SD | BLD T08/M7 | |
| HM90 F90AP D63-9-22 | SR 34-505/HG | SW4-SD | BLD T08/M7 | |
| HM90 F90AP D80-8-27 | SR 34-505/HG | SW4-SD | BLD T08/M7 | |
| HM90 F90AP D100-9-32 | SR 34-505/HG | SW4-SD | BLD T08/M7 | |

HELI2000

## HM90 F90AP-AMT

90° Light Weight Face Cutters Carrying HM90 AP...T 1003 inserts




| Designation | DC | DC_2 | DCX_2 | CICT(1) | APMX | APMX_2 | OAL | OAL_2 | DHUB | DCONMS |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 F90AP D50-4-22-AMT | 50.00 | 41.00 | 50.10 | 4 | 9.80 | 1.00 | 30.00 | 29.63 | 42.00 | 22.00 |
| HM90 F90AP D63-6-22-AMT | 63.00 | 54.00 | 63.10 | 6 | 9.80 | 1.00 | 31.00 | 30.63 | 48.00 | 22.00 |

| Designation | RMPX°(2) | RMPX°_2 | MDN | MDX | MIID(3) | MIID_2(4) | Arbor | kg |
|---|---|---|---|---|---|---|---|---|
| HM90 F90AP D50-4-22-AMT | 1.4 | 1.4 | 91.10 | 99.20 | HM90 APCT 100302R-PDR | APKT 1003R8T-FF | A | 0.13 |
| HM90 F90AP D63-6-22-AMT | 1.0 | 1.0 | 117.10 | 125.20 | HM90 APCT 100302R-PDR | APKT 1003R8T-FF | A | 0.20 |

New

- 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) Master insert identification
(4) Master insert identification 2

**For inserts, see pages:** APCR 1003PDFR-P (517) • APCT 1003PDR-HM (516) • APKR 1003PDR (517) • APKT 1003-FF (520) • APKT 1003..R (519) • APKT 1003..TR-RM (519) • APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • APKT 1003PDTR/L-RM (518) • APKW 100304 PDR (PCD) (516) • HM90 APCR 100304PDFR-P/DP (515) • HM90 APCT 1003 (514) • HM90 APKT 1003 (515) • HM90 APKT 1003PD-W (520) • HM90 APKW 1003PDR (519)

### Spare Parts

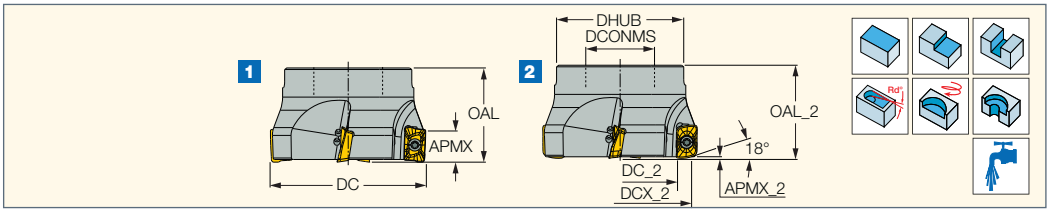
| Designation | | | |
|---|---|---|---|
| HM90 F90AP-AMT | SR 34-505/HG(a) | SW4-SD | BLD T08/M7 |

(a) Recommended tightening torque: 1.2 Nxm

HELI2000 JET LINE

## HM90 F90AP-10-JHP

90° JHP Face Mills Carrying HELI-2000 and HELI-MILL Inserts




| Designation | DC | DC_2 | DCX_2 | CICT(1) | APMX | APMX_2 | OAL | OAL_2 | DHUB | DCONMS | MDN | MDX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 F90AP D032-5-16-JHP | 32.00 | 23.00 | 32.10 | 5 | 9.80 | 1.00 | 45.00 | 44.63 | 30.40 | 16.00 | 55.10 | 63.20 |
| HM90 F90AP D040-6-16-JHP | 40.00 | 31.00 | 40.10 | 6 | 9.80 | 1.00 | 40.00 | 39.63 | 38.40 | 16.00 | 71.10 | 79.20 |
| HM90 F90AP D040-6-22-JHP | 40.00 | 31.00 | 40.10 | 6 | 9.80 | 1.00 | 40.00 | 39.63 | 38.00 | 22.00 | 71.10 | 79.20 |
| HM90 F90AP D050-7-22-JHP | 50.00 | 41.00 | 50.10 | 7 | 9.80 | 1.00 | 50.00 | 49.63 | 48.00 | 22.00 | 91.10 | 99.20 |

| Designation | RPMX(2) | MIID(3) | MIID_2(4) | RMPX°(5) | RMPX°_2 | Arbor | kg |
|---|---|---|---|---|---|---|---|
| HM90 F90AP D032-5-16-JHP | 35300 | APKT 1003PDR-HM | APKT 1003R8T-FF | 2.2 | 2.2 | A | 0.17 |
| HM90 F90AP D040-6-16-JHP | 31600 | APKT 1003PDR-HM | APKT 1003R8T-FF | 1.9 | 1.9 | A | 0.29 |
| HM90 F90AP D040-6-22-JHP | 31600 | APKT 1003PDR-HM | APKT 1003R8T-FF | 1.9 | 1.9 | A | 0.27 |
| HM90 F90AP D050-7-22-JHP | 28200 | APKT 1003PDR-HM | APKT 1003R8T-FF | 1.4 | 1.4 | A | 0.49 |

- 1- with standard square insert • 2- with FF (fast feed) insert • Use adaptation only with face coolant outlets
- For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)
(2) Maximum RPM
(3) Master insert identification
(4) Master insert identification 2
(5) Maximum ramping angle

**For inserts, see pages:** APCR 1003PDFR-P (517) • APCT 1003PDR-HM (516) • APKR 1003PDR (517) • APKT 1003-FF (520) • APKT 1003..R (519) • APKT 1003..TR-RM (519) • APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • APKT 1003PDTR/L-RM (518) • APKW 100304 PDR (PCD) (516) • HM90 APCR 100304PDFR-P/DP (515) • HM90 APCT 1003 (514) • HM90 APKT 1003 (515) • HM90 APKT 1003PD-W (520) • HM90 APKW 1003PDR (519)

### Spare Parts

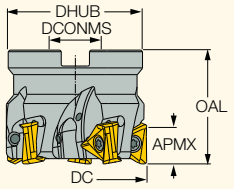
| Designation | | | | |
|---|---|---|---|---|
| HM90 F90AP D032-5-16-JHP | SR 34-505/HG(a) | SR PS 118-0416 | BLD T08/M7 | SW4-SD |
| HM90 F90AP D040-6-16-JHP | SR 34-505/HG | SR M8X25DIN912 | BLD T08/M7 | SW4-SD |
| HM90 F90AP D040-6-22-JHP | SR 34-505/HG(a) | SR PS 118-0273 | BLD T08/M7 | SW4-SD |
| HM90 F90AP D050-7-22-JHP | SR 34-505/HG(a) | SR PS 118-0271C | BLD T08/M7 | SW4-SD |

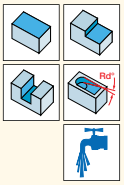
(a) Recommended tightening torque for this item: 1.2 Nxm

HELIDO 690 LINE

**H690 F90AX-10**

90° Face Mills Carrying H690 TNKX 1005.. Triangular Inserts with 6 Helical Cutting Edges



| Designation | DC | CICT(1) | APMX | DHUB | DCONMS | OAL | Arbor(2) | RMPX°(3) | kg |
|---|---|---|---|---|---|---|---|---|---|
| H690 F90AX D032-4-16-10 | 32.00 | 4 | 8.00 | 30.40 | 16.00 | 35.00 | A | 1.6 | 0.10 |
| H690 F90AX D032-5-16-10 | 32.00 | 5 | 8.00 | 30.40 | 16.00 | 35.00 | A | 1.6 | 0.10 |
| H690 F90AX D040-5-16-10 | 40.00 | 5 | 8.00 | 38.00 | 16.00 | 40.00 | A | 1.1 | 0.22 |
| H690 F90AX D040-6-16-10 | 40.00 | 6 | 8.00 | 38.00 | 16.00 | 40.00 | A | 1.1 | 0.21 |
| H690 F90AX D050-6-22-10 | 50.00 | 6 | 8.00 | 48.00 | 22.00 | 40.00 | A | 1.0 | 0.35 |
| H690 F90AX D050-7-22-10 | 50.00 | 7 | 8.00 | 48.00 | 22.00 | 40.00 | A | 1.0 | 0.36 |
| H690 F90AX D063-8-22-10 | 63.00 | 8 | 8.00 | 48.00 | 22.00 | 40.00 | A | 0.7 | 0.47 |

(1) Number of inserts (or edges for solid tool)

(2) For adaptation options, see page 622

(3) Maximum ramping angle

**For inserts, see pages:** H690 TNKX/TNCX 1005 (540)

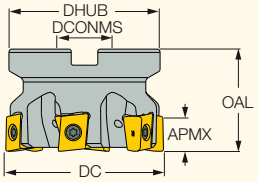
## Spare Parts

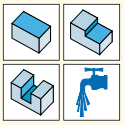
| Designation | | | | |
|---|---|---|---|---|
| H690 F90AX D032-4-16-10 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M8X38-1515 |
| H690 F90AX D032-5-16-10 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M8X38-1515 |
| H690 F90AX D040-5-16-10 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M8X30DIN912 |
| H690 F90AX D040-6-16-10 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M8X30DIN912 |
| H690 F90AX D050-6-22-10 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M10X25 DIN912 |
| H690 F90AX D050-7-22-10 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M10X25 DIN912 |
| H690 F90AX D063-8-22-10 | SR 10508082-HG | BLD T08/M7 | SW4-SD | SR M10X25 DIN912 |

HELITANG T490 LINE

**T490 FLN-11**

90° Face Mills Carrying T490 LNMT/LNHT 1106... Tangentially Clamped Inserts



| Designation | DC | CICT(1) | APMX | OAL | DHUB | DCONMS | Arbor(2) | RMPX°(3) | kg |
|---|---|---|---|---|---|---|---|---|---|
| T490 FLN D040-04-16-R-11 | 40.00 | 4 | 9.00 | 40.00 | 38.00 | 16.00 | A | 1.4 | 0.23 |
| T490 FLN D040-05-16-R-11 | 40.00 | 5 | 9.00 | 40.00 | 38.00 | 16.00 | A | 1.4 | 0.22 |
| T490 FLN D050-05-22-R-11 | 50.00 | 5 | 9.00 | 40.00 | 48.00 | 22.00 | A | 1.1 | 0.33 |
| T490 FLN D050-06-22-R-11 | 50.00 | 6 | 9.00 | 40.00 | 48.00 | 22.00 | A | 1.1 | 0.33 |
| T490 FLN D063-06-22-R-11 | 63.00 | 6 | 9.00 | 40.00 | 59.20 | 22.00 | A | 0.7 | 0.55 |
| T490 FLN D063-09-22-R-11 | 63.00 | 9 | 9.00 | 40.00 | 59.20 | 22.00 | A | 0.7 | 0.55 |
| T490 FLN D080-07-27-R-11 | 80.00 | 7 | 9.00 | 50.00 | 70.00 | 27.00 | A | - | 1.01 |
| T490 FLN D080-11-27-R-11 | 80.00 | 11 | 9.00 | 50.00 | 70.00 | 27.00 | A | - | 1.04 |
| T490 FLN D100-08-32-R-11 | 100.00 | 8 | 9.00 | 50.00 | 78.00 | 32.00 | B | - | 1.48 |
| T490 FLN D100-13-32-R-11 | 100.00 | 13 | 9.00 | 50.00 | 78.00 | 32.00 | B | - | 1.55 |

- For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) For adaptation options, see page 622

(3) Maximum ramping angle - valid only with T490 LNHT 1106PNTR-RD insert

**For inserts, see pages:** T490 LNMT/LNHT 1106 (545)

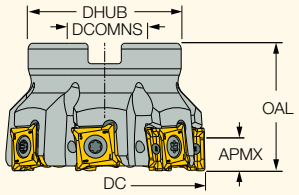
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| T490 FLN D040-04-16-R-11 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD | SR M8X30DIN912 |
| T490 FLN D040-05-16-R-11 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD | SR M8X30DIN912 |
| T490 FLN D050-05-22-R-11 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD | SR M10X25 DIN912 |
| T490 FLN D050-06-22-R-11 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD | SR M10X25 DIN912 |
| T490 FLN D063-06-22-R-11 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD | SR M10X25 DIN912 |
| T490 FLN D063-09-22-R-11 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD | SR M10X25 DIN912 |
| T490 FLN D080-07-27-R-11 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD | |
| T490 FLN D080-11-27-R-11 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD | |
| T490 FLN D100-08-32-R-11 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD | |
| T490 FLN D100-13-32-R-11 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD | |

(a) Recommended key handle for limiting torque to 3.2 N*m for this item is HSD 4-3.2NM (to be used with BLD 4 T15-4.8 blade)

LOGIQ8TANG
T890 MILLING LINE

**T890HT FLN-R13**
90° Face Mills Carrying T890 LNHT/LNAT 1306...
Tangentially Clamped Inserts with 8 Cutting Edges




| Designation | DC | APMX | CICT(1) | DCONMS | DHUB | OAL | Arbor | kg |
|---|---|---|---|---|---|---|---|---|
| T890HT FLN D040-03-16-R13 | 40.00 | 9.50 | 3 | 16.00 | 38.00 | 40.00 | A | 0.22 |
| T890HT FLN D040-04-16-R13 | 40.00 | 9.50 | 4 | 16.00 | 38.00 | 40.00 | A | 0.21 |
| T890HT FLN D040-05-16-R13 | 40.00 | 9.50 | 5 | 16.00 | 38.00 | 40.00 | A | 0.21 |
| T890HT FLN D050-04-22-R13 | 50.00 | 9.50 | 4 | 22.00 | 48.00 | 40.00 | A | 0.33 |
| T890HT FLN D050-05-22-R13 | 50.00 | 9.50 | 5 | 22.00 | 48.00 | 40.00 | A | 0.33 |
| T890HT FLN D050-06-22-R13 | 50.00 | 9.50 | 6 | 22.00 | 48.00 | 40.00 | A | 0.35 |
| T890HT FLN D063-06-22-R13 | 63.00 | 9.50 | 6 | 22.00 | 48.00 | 40.00 | A | 0.48 |
| T890HT FLN D063-07-22-R13 | 63.00 | 9.50 | 7 | 22.00 | 48.00 | 40.00 | A | 0.48 |
| T890HT FLN D063-08-22-R13 | 63.00 | 9.50 | 8 | 22.00 | 48.00 | 40.00 | A | 0.50 |
| T890HT FLN D080-06-27-R13 | 80.00 | 9.50 | 6 | 27.00 | 60.00 | 50.00 | B | 0.88 |
| T890HT FLN D080-07-27-R13 | 80.00 | 9.50 | 7 | 27.00 | 60.00 | 50.00 | B | 0.89 |
| T890HT FLN D080-09-27-R13 | 80.00 | 9.50 | 9 | 27.00 | 60.00 | 50.00 | B | 0.91 |
| T890HT FLN D100-08-32-R13 | 100.00 | 9.50 | 8 | 32.00 | 78.00 | 50.00 | B | 1.49 |
| T890HT FLN D100-12-32-R13 | 100.00 | 9.50 | 12 | 32.00 | 78.00 | 50.00 | B | 1.62 |
| T890HT FLN D125-09-40-R13 | 125.00 | 9.50 | 9 | 40.00 | 92.00 | 63.00 | B | 2.83 |
| T890HT FLN D125-15-40-R13 | 125.00 | 9.50 | 15 | 40.00 | 92.00 | 63.00 | B | 2.93 |
| T890HT FLN D160-12-40-R13 | 160.00 | 9.50 | 12 | 40.00 | 95.00 | 63.00 | C | 3.24 |
| T890HT FLN D160-20-40-R13 | 160.00 | 9.50 | 20 | 40.00 | 95.00 | 63.00 | C | 3.53 |

• For user guide, see pages 616-621
(1) Number of inserts (or edges for solid tool)

**For inserts, see pages:** T890 LN.. 1306 (543)

## Spare Parts

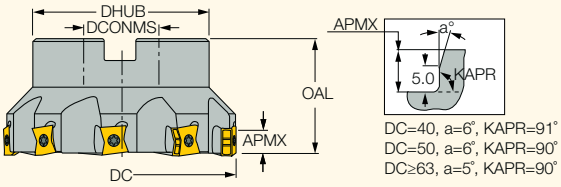
| Designation | | | | |
|---|---|---|---|---|
| T890HT FLN D040-03-16-R13 | SR 10513105-L10.5(a) | BLD IP20/M7 | SW6-T-SH | SR M8X30DIN912 |
| T890HT FLN D040-04-16-R13 | SR 10513105-L10.5(a) | BLD IP20/M7 | SW6-T-SH | SR M8X30DIN912 |
| T890HT FLN D040-05-16-R13 | SR 10513105-L10.5(a) | BLD IP20/M7 | SW6-T-SH | SR M8X30DIN912 |
| T890HT FLN D050-04-22-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | SR M10X25 DIN912 |
| T890HT FLN D050-05-22-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | SR M10X25 DIN912 |
| T890HT FLN D050-06-22-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | SR M10X25 DIN912 |
| T890HT FLN D063-06-22-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | SR M10X25 DIN912 |
| T890HT FLN D063-07-22-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | SR M10X25 DIN912 |
| T890HT FLN D063-08-22-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | SR M10X25 DIN912 |
| T890HT FLN D080-06-27-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | |
| T890HT FLN D080-07-27-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | |
| T890HT FLN D080-09-27-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | |
| T890HT FLN D100-08-32-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | |
| T890HT FLN D100-12-32-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | |
| T890HT FLN D125-09-40-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | |
| T890HT FLN D125-15-40-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | |
| T890HT FLN D160-12-40-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | |
| T890HT FLN D160-20-40-R13 | SR 10513105 | BLD IP20/M7 | SW6-T-SH | |

(a) Recommended tightening torque: 9.0 N*m

TANGMILL TANGENTIAL LINE

**F90LN-N11**

90° Face Mills Carrying LN..1106... Tangentially Clamped Inserts




| Designation | DC | CICT[2] | APMX | OAL | DHUB | DCONMS | Arbor[3] | kg |
|---|---|---|---|---|---|---|---|---|
| F90LN D040-04-16-R/L-N11 | 40.00 | 4 | 10.00 | 40.00 | 38.40 | 16.00 | A | 0.22 |
| F90LN D040-06-16-L-N11 | 40.00 | 6 | 10.00 | 40.00 | 38.40 | 16.00 | A | 0.04 |
| F90LN D040-06-16-R-N11 | 40.00 | 6 | 10.00 | 40.00 | 38.40 | 16.00 | A | 0.21 |
| F90LN D050-05-22-R/L-N11 | 50.00 | 5 | 10.00 | 40.00 | 47.00 | 22.00 | A | 0.32 |
| F90LN D050-07-22-L-N11 | 50.00 | 7 | 10.00 | 40.00 | 47.00 | 22.00 | A | 0.32 |
| F90LN D050-07-22-R-N11 | 50.00 | 7 | 10.00 | 40.00 | 47.00 | 22.00 | A | 0.33 |
| F90LN D063-06-22-R/L-N11 | 63.00 | 6 | 10.00 | 40.00 | 59.20 | 22.00 | B | 0.47 |
| F90LN D063-09-22-R/L-N11 | 63.00 | 9 | 10.00 | 40.00 | 59.20 | 22.00 | B | 0.50 |
| F90LN D080-08-27-R/L-N11 (1) | 80.00 | 8 | 10.00 | 50.00 | 70.00 | 27.00 | B | 0.98 |
| F90LN D080-11-27-R-N11 (1) | 80.00 | 11 | 10.00 | 50.00 | 70.00 | 27.00 | B | 1.02 |
| F90LN D100-09-32-L-N11 (1) | 100.00 | 9 | 10.00 | 50.00 | 77.00 | 32.00 | B | 1.40 |
| F90LN D100-09-32-R-N11 (1) | 100.00 | 9 | 10.00 | 50.00 | 77.00 | 32.00 | B | 1.41 |
| F90LN D100-14-32-R-N11 (1) | 100.00 | 14 | 10.00 | 50.00 | 77.00 | 32.00 | B | 1.48 |
| F90LN D125-10-40-L-N11 (1) | 125.00 | 10 | 10.00 | 63.00 | 95.00 | 40.00 | B | 2.73 |
| F90LN D125-10-40-R-N11 (1) | 125.00 | 10 | 10.00 | 63.00 | 95.00 | 40.00 | B | 2.67 |
| F90LN D125-18-40-R-N11 (1) | 125.00 | 18 | 10.00 | 63.00 | 95.00 | 40.00 | B | 2.88 |

• For user guide, see pages 616-621

(1) For internal coolant through the holder, use a matching coolant set (should be ordered separately)

(2) Number of inserts (or edges for solid tool)

(3) For adaptation options, see page 622

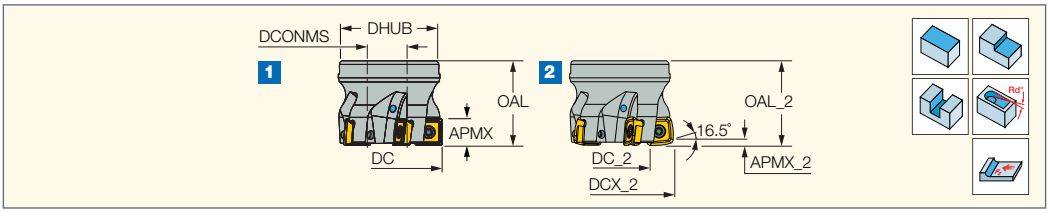
**For inserts, see pages:** LNAR 1106 (550) • LNAR 1106 (PCD) (551) • LNAR 1106PN-R-S-W (PCD) (551) • LNAT 1106-W (550) • LNAW-11 (CBN) (552) • LNHT 1106 PN-N HT (550) • LNHT 1106 PN-R HT (549) • LNKX/LNMT 1106 (549)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| F90LN D040-04-16-R/L-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | SR M8X30DIN912 |
| F90LN D040-06-16-R/L-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | SR M8X30DIN912 |
| F90LN D050-05-22-R/L-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | SR M10X25 DIN912 |
| F90LN D050-07-22-R/L-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | SR M10X25 DIN912 |
| F90LN D063-06-22-R/L-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | |
| F90LN D063-09-22-R/L-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | |
| F90LN D080-08-27-R/L-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | |
| F90LN D080-11-27-R-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | |
| F90LN D100-09-32-R/L-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | |
| F90LN D100-14-32-R-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | |
| F90LN D125-10-40-R/L-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | |
| F90LN D125-18-40-R-N11 | SR 34-550 | SW6-SD | BLD T10/S7 | |

HELIQUAD

**F90SD-12**
Face Mills Carrying
Square Inserts




| Designation | DC | CICT(1) | DCONMS | DHUB | APMX | OAL | DC_2 | DCX_2 | APMX_2 | OAL_2 | RMPX°_2(2) | Arbor(3) | CSP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F90SD D50-03-22-12 | 50.00 | 3 | 22.00 | 48.00 | 11.80 | 40.00 | 29.40 | 51.10 | 1.00 | 40.35 | 0.5 | A | 1 | 0.27 |
| F90SD D50-05-22-12 | 50.00 | 5 | 22.00 | 48.00 | 11.80 | 40.00 | 29.40 | 51.10 | 1.00 | 40.35 | 0.5 | A | 1 | 0.28 |
| F90SD D63-04-22-12 | 63.00 | 4 | 22.00 | 48.00 | 11.80 | 40.00 | 42.40 | 64.10 | 1.00 | 40.35 | 0.8 | A | 1 | 0.41 |
| F90SD D63-06-22-12 | 63.00 | 6 | 22.00 | 48.00 | 11.80 | 40.00 | 42.40 | 64.40 | 1.00 | 40.35 | 0.8 | A | 1 | 0.43 |
| F90SD D80-05-27-12 | 80.00 | 5 | 27.00 | 60.00 | 11.80 | 50.00 | 59.40 | 81.10 | 1.00 | 50.35 | 1.5 | B | 1 | 0.79 |
| F90SD D100-06-32-12 | 100.00 | 6 | 32.00 | 78.00 | 11.80 | 50.00 | 79.40 | 101.10 | 1.00 | 50.35 | 1.1 | B | 1 | 1.44 |
| F90SD D100-08-32-12 | 100.00 | 8 | 32.00 | 78.00 | 11.80 | 50.00 | 79.40 | 101.10 | 1.00 | 50.35 | 1.1 | B | 1 | 1.43 |
| F90SD D125-07-40-12 | 125.00 | 7 | 40.00 | 92.00 | 11.80 | 50.00 | 104.40 | 126.10 | 1.00 | 50.35 | 0.8 | B | 1 | 2.13 |
| F90SD D125-09-40-12 | 125.00 | 9 | 40.00 | 92.00 | 11.80 | 50.00 | 104.40 | 126.10 | 1.00 | 50.35 | 0.8 | B | 1 | 2.16 |
| F90SD D160-11-40-12 | 160.00 | 11 | 40.00 | 95.00 | 11.80 | 50.00 | 139.40 | 161.10 | 1.00 | 50.35 | 0.6 | C | 0 | 2.95 |
| F90SD D200-13-60-12 | 200.00 | 13 | 60.00 | 135.00 | 11.80 | 55.00 | 179.40 | 201.10 | 1.00 | 55.35 | 0.6 | C | 0 | 5.40 |

• 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) Maximum ramping angle (FF inserts only)

(3) For adaptation options, see page 622

(4) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** QDCT-PDN (565) • QDMT 1205..PDTN-M (565) • SDMR-HQ (564) • SDMT-FF (564) • SDMT-PDR-HQ (563) • SDMT-PDR-RM (564)

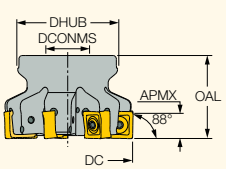
## Spare Parts

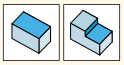
| Designation | | | | |
|---|---|---|---|---|
| F90SD D50-03-22-12 | SR M4X0.7-L9.6 IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| F90SD D50-05-22-12 | SR M4X0.7-L9.6 IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| F90SD D63-04-22-12 | SR M4X0.7-L9.6 IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| F90SD D63-06-22-12 | SR M4X0.7-L9.6 IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| F90SD D80-05-27-12 | SR M4X0.7-L9.6 IP15 | BLD IP15/M7 | SW6-T-SH | |
| F90SD D100-06-32-12 | SR M4X0.7-L9.6 IP15 | BLD IP15/M7 | SW6-T-SH | |
| F90SD D100-08-32-12 | SR M4X0.7-L9.6 IP15 | BLD IP15/M7 | SW6-T-SH | |
| F90SD D125-07-40-12 | SR M4X0.7-L9.6 IP15 | BLD IP15/M7 | SW6-T-SH | |
| F90SD D125-09-40-12 | SR M4X0.7-L9.6 IP15 | BLD IP15/M7 | SW6-T-SH | |
| F90SD D160-11-40-12 | SR M4X0.7-L9.6 IP15 | BLD IP15/L7 | SW6-T-SH | |
| F90SD D200-13-60-12 | SR M4X0.7-L9.6 IP15 | BLD IP15/L7 | SW6-T-SH | |

HELIDO 890 LINE

**S890 FSN-13**

Face Mills Carrying Double Sided Square Inserts with 8 Cutting Edges



| Designation | DC | APMX | OAL | CICT(1) | DCONMS | DHUB | Arbor(2) | CSP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|
| S890 FSN D040-04-16-R13 | 40.00 | 9.00 | 40.00 | 4 | 16.00 | 38.00 | A | 1 | 0.19 |
| S890 FSN D050-04-22-R13 | 50.00 | 9.00 | 40.00 | 4 | 22.00 | 48.00 | A | 1 | 0.28 |
| S890 FSN D050-05-22-R13 | 50.00 | 9.00 | 40.00 | 5 | 22.00 | 48.00 | A | 1 | 0.29 |
| S890 FSN D063-05-22-R13 | 63.00 | 9.00 | 40.00 | 5 | 22.00 | 48.00 | A | 1 | 0.39 |
| S890 FSN D063-07-22-R13 | 63.00 | 9.00 | 40.00 | 7 | 22.00 | 48.00 | A | 1 | 0.39 |
| S890 FSN D080-07-27-R13 | 80.00 | 9.00 | 50.00 | 7 | 27.00 | 60.00 | B | 1 | 0.74 |
| S890 FSN D080-09-27-R13 | 80.00 | 9.00 | 50.00 | 9 | 27.00 | 60.00 | B | 1 | 0.74 |
| S890 FSN D100-08-32-R13 | 100.00 | 9.00 | 50.00 | 8 | 32.00 | 70.00 | B | 1 | 1.25 |
| S890 FSN D100-11-32-R13 | 100.00 | 9.00 | 50.00 | 11 | 32.00 | 70.00 | B | 1 | 1.27 |
| S890 FSN D125-09-40-R13 | 125.00 | 9.00 | 63.00 | 9 | 40.00 | 82.00 | B | 1 | 2.29 |
| S890 FSN D125-14-40-R13 | 125.00 | 9.00 | 63.00 | 14 | 40.00 | 82.00 | B | 1 | 2.30 |
| S890 FSN D160-10-40-R13 | 160.00 | 9.00 | 63.00 | 10 | 40.00 | 106.00 | C | 0 | 4.28 |

• Use only Torx Plus keys • For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) For adaptation options, see page 622

(3) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** S890 SNMU 1305PN (573)

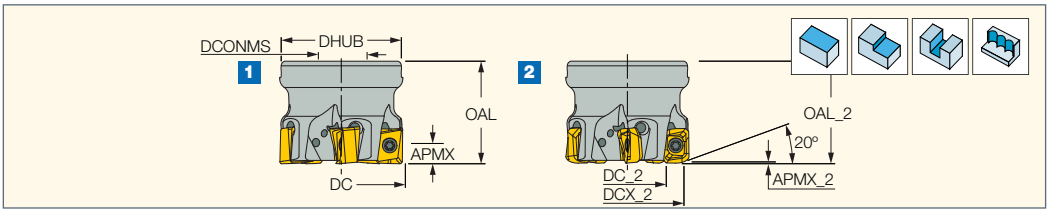
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| S890 FSN D040-04-16-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | SR M8X38-1515 |
| S890 FSN D050-04-22-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| S890 FSN D050-05-22-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| S890 FSN D063-05-22-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| S890 FSN D063-07-22-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| S890 FSN D080-07-27-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |
| S890 FSN D080-09-27-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |
| S890 FSN D100-08-32-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |
| S890 FSN D100-11-32-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |
| S890 FSN D125-09-40-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |
| S890 FSN D125-14-40-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |
| S890 FSN D160-10-40-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |

HELIDO 490 LINE

## H490 F90AX-12

90° Face Mills Carrying H490 ANKX 12.. Double-Sided Rectangular Inserts with 4 Helical Cutting Edges




| Designation | DC | DCX_2 | DC_2 | CICT[1] | APMX | APMX_2 | AE[2] | OAL | OAL_2 | DHUB | DCONMS | Arbor[3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H490 F90AX D040-4-16-12 | 40.00 | 40.50 | 30.20 | 4 | 12.00 | 1.40 | 8.5 | 40.00 | 39.77 | 38.00 | 16.00 | A |
| H490 F90AX D050-3-22-12 | 50.00 | 50.50 | 40.20 | 3 | 12.00 | 1.40 | 8.5 | 40.00 | 39.77 | 48.00 | 22.00 | A |
| H490 F90AX D050-5-22-12 | 50.00 | 50.50 | 40.20 | 5 | 12.00 | 1.40 | 8.5 | 40.00 | 39.77 | 48.00 | 22.00 | A |
| H490 F90AX D063-4-27-12 | 63.00 | 63.50 | 53.20 | 4 | 12.00 | 1.40 | 8.5 | 50.00 | 49.77 | 59.20 | 27.00 | A |
| H490 F90AX D063-6-27-12 | 63.00 | 63.50 | 53.20 | 6 | 12.00 | 1.40 | 8.5 | 50.00 | 49.77 | 59.20 | 27.00 | A |
| H490 F90AX D080-5-27-12 | 80.00 | 80.50 | 70.20 | 5 | 12.00 | 1.40 | 8.5 | 50.00 | 49.77 | 63.00 | 27.00 | B |
| H490 F90AX D080-7-27-12 | 80.00 | 80.50 | 70.20 | 7 | 12.00 | 1.40 | 8.5 | 50.00 | 49.77 | 63.00 | 27.00 | B |
| H490 F90AX D100-6-32-12 | 100.00 | 100.50 | 90.20 | 6 | 12.00 | 1.40 | 8.5 | 50.00 | 49.77 | 80.00 | 32.00 | B |
| H490 F90AX D100-9-32-12 | 100.00 | 100.50 | 90.20 | 9 | 12.00 | 1.40 | 8.5 | 50.00 | 49.77 | 80.00 | 32.00 | B |
| H490 F90AX D160-9-40-12 | 160.00 | 160.50 | 150.20 | 9 | 12.00 | 1.40 | 8.5 | 63.00 | 62.77 | 105.00 | 40.00 | C |

| Designation | RMPX°_2[4] | MDN | MDX | CSP[5] | MIID[6] | MIID_2[7] | kg |
|---|---|---|---|---|---|---|---|
| H490 F90AX D040-4-16-12 | 2.3 | 70.70 | 80.00 | 1 | H490 ANKX 1205PNTR-R | H490 ANCX 1205..-FF | 0.20 |
| H490 F90AX D050-3-22-12 | 1.6 | 90.70 | 100.00 | 1 | H490 ANKX 1205PNTR-R | H490 ANCX 1205..-FF | 0.33 |
| H490 F90AX D050-5-22-12 | 1.6 | 90.70 | 100.00 | 1 | H490 ANKX 1205PNTR-R | H490 ANCX 1205..-FF | 0.32 |
| H490 F90AX D063-4-27-12 | 1.2 | 116.70 | 126.00 | 1 | H490 ANKX 1205PNTR-R | H490 ANCX 1205..-FF | 0.68 |
| H490 F90AX D063-6-27-12 | 1.2 | 116.70 | 126.00 | 1 | H490 ANKX 1205PNTR-R | H490 ANCX 1205..-FF | 0.65 |
| H490 F90AX D080-5-27-12 | 0.9 | 150.70 | 160.00 | 1 | H490 ANKX 1205PNTR-R | H490 ANCX 1205..-FF | 0.83 |
| H490 F90AX D080-7-27-12 | 0.9 | 150.70 | 160.00 | 1 | H490 ANKX 1205PNTR-R | H490 ANCX 1205..-FF | 0.85 |
| H490 F90AX D100-6-32-12 | 0.6 | 190.70 | 200.00 | 1 | H490 ANKX 1205PNTR-R | H490 ANCX 1205..-FF | 1.41 |
| H490 F90AX D100-9-32-12 | 0.6 | 190.70 | 200.00 | 1 | H490 ANKX 1205PNTR-R | H490 ANCX 1205..-FF | 1.47 |
| H490 F90AX D160-9-40-12 | 0.3 | 310.70 | 320.00 | 0 | H490 ANKX 1205PNTR-R | H490 ANCX 1205..-FF | 3.87 |

- For user guide, see pages 616-621 • 1- with standard square insert, 2- with FF (fast feed) insert
- Ramping angle is valid only when H490 ANCX 1205R15T-FF insert is used
- When assembled the H490 ANCX 1205R15T-FF insert, tool diameter enlarges by 0.5 mm

[1] Number of inserts (or edges for solid tool)
[2] Maximum side plunge
[3] For adaptation options, see page 622
[4] Maximum ramping angle when using FF inserts
[5] 0 - Without coolant supply, 1 - With coolant supply
[6] Master insert identification
[7] Master insert identification 2

**For inserts, see pages:** H490 ANKX/ANCX 1205-FF (539) • H490 ANKX/ANCX-12 (538)

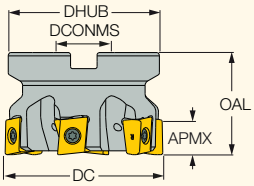
### Spare Parts

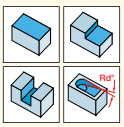
| Designation | | | | |
|---|---|---|---|---|
| H490 F90AX D040-4-16-12 | SR 14-544 | BLD T15/M7 | SW6-T | SR M8X30DIN912 |
| H490 F90AX D050-3-22-12 | SR 14-544 | BLD T15/M7 | SW6-T | SR M10X30 DIN912 |
| H490 F90AX D050-5-22-12 | SR 14-544 | BLD T15/M7 | SW6-T | SR M10X30 DIN912 |
| H490 F90AX D063-4-27-12 | SR 14-544 | BLD T15/M7 | SW6-T | SR M12X35DIN912 |
| H490 F90AX D063-6-27-12 | SR 14-544 | BLD T15/M7 | SW6-T | SR M12X35DIN912 |
| H490 F90AX D080-5-27-12 | SR 14-544 | BLD T15/M7 | SW6-T | |
| H490 F90AX D080-7-27-12 | SR 14-544 | BLD T15/M7 | SW6-T | |
| H490 F90AX D100-6-32-12 | SR 14-544 | BLD T15/M7 | SW6-T | |
| H490 F90AX D100-9-32-12 | SR 14-544 | BLD T15/M7 | SW6-T | |
| H490 F90AX D160-9-40-12 | SR 14-544 | BLD T15/M7 | SW6-T | |

HELITANG T490 LINE

## T490 FLN-13

90° Face Mills Carrying Tangentially Clamped Inserts with 4 Helical 13mm Long Cutting Edges



| Designation | DC | CICT(1) | APMX | OAL | DHUB | DCONMS | Arbor(2) | RMPX°(3) | CSP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| T490 FLN D040-04-16-R-13 | 40.00 | 4 | 12.50 | 40.00 | 38.00 | 16.00 | A | 2.1 | 1 | 0.22 |
| T490 FLN D040-05-16-R-13 | 40.00 | 5 | 12.50 | 40.00 | 38.00 | 16.00 | A | 2.1 | 1 | 0.22 |
| T490 FLN D050-05-22-R-13 | 50.00 | 5 | 12.50 | 40.00 | 47.00 | 22.00 | A | 1.1 | 1 | 0.31 |
| T490 FLN D050-06-22-R-13 | 50.00 | 6 | 12.50 | 40.00 | 47.00 | 22.00 | A | 1.1 | 1 | 0.31 |
| T490 FLN D063-06-22-R-13 | 63.00 | 6 | 12.50 | 40.00 | 59.20 | 22.00 | A | 0.8 | 1 | 0.55 |
| T490 FLN D063-08-22-R-13 | 63.00 | 8 | 12.50 | 40.00 | 59.20 | 22.00 | A | 0.8 | 1 | 0.56 |
| T490 FLN D080-07-27-R-13 | 80.00 | 7 | 12.50 | 50.00 | 70.00 | 27.00 | B | 0.4 | 1 | 0.98 |
| T490 FLN D080-10-27-R-13 | 80.00 | 10 | 12.50 | 50.00 | 70.00 | 27.00 | B | 0.4 | 1 | 1.00 |
| T490 FLN D100-08-32-R-13 | 100.00 | 8 | 12.50 | 50.00 | 78.00 | 32.00 | B | 0.3 | 1 | 1.45 |
| T490 FLN D100-13-32-R-13 | 100.00 | 13 | 12.50 | 50.00 | 78.00 | 32.00 | B | 0.3 | 1 | 1.49 |
| T490 FLN D125-09-40-R-13 | 125.00 | 9 | 12.50 | 63.00 | 82.00 | 40.00 | B | 0.2 | 1 | 2.16 |
| T490 FLN D125-17-40-R-13 | 125.00 | 17 | 12.50 | 63.00 | 82.00 | 40.00 | B | 0.2 | 1 | 2.30 |
| T490 FLN D160-12-40-R-13 | 160.00 | 12 | 12.50 | 63.00 | 120.00 | 40.00 | C | - | 0 | 4.32 |
| T490 FLN D200-15-60-R-13 | 200.00 | 15 | 12.50 | 63.00 | 135.00 | 60.00 | C | - | 0 | 5.84 |

- When machining slots, coarse pitch cutters should be used
- For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) For adaptation options, see page 622

(3) Maximum ramping angle - valid only when the T490 LNHT 1306 PNTR-RD insert is used. For the -FF insert, refer to -FF insert information

(4) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNR-FF (547) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

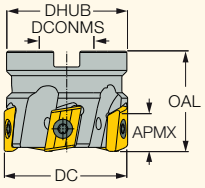
### Spare Parts

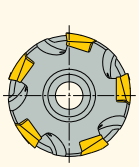
| Designation | | | | |
|---|---|---|---|---|
| T490 FLN D040-04-16-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M8X30DIN912 |
| T490 FLN D040-05-16-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M8X30DIN912 |
| T490 FLN D050-05-22-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| T490 FLN D050-06-22-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| T490 FLN D063-06-22-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| T490 FLN D063-08-22-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| T490 FLN D080-07-27-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | |
| T490 FLN D080-10-27-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | |
| T490 FLN D100-08-32-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | |
| T490 FLN D100-13-32-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | |
| T490 FLN D125-09-40-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | |
| T490 FLN D125-17-40-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | |
| T490 FLN D160-12-40-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | |
| T490 FLN D200-15-60-R-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | |

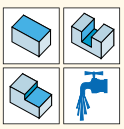
SUMOMILL 290 LINE

## T290 FLN-15

90° Face Mills Carrying T290 LNMT 1506... Tangentially Clamped Inserts





| Designation | DC | CICT(1) | APMX | OAL | DHUB | DCONMS | Arbor(2) | kg | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T290 FLN D040-04-16-15 | 40.00 | 4 | 14.00 | 40.00 | 36.00 | 16.00 | A | 0.20 | SR 10505427 | BLD IP20/S7 | SW6-T | SR M8X25DIN912 |
| T290 FLN D050-05-22-15 | 50.00 | 5 | 14.00 | 40.00 | 48.00 | 22.00 | A | 0.33 | SR 10505427 | BLD IP20/S7 | SW6-T | SR M10X25DIN7984 |

- For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

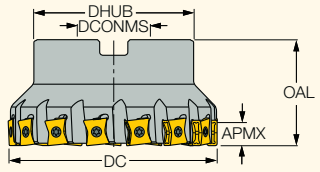
(2) For adaptation options, see page 622

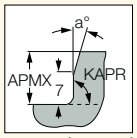
**For inserts, see pages:** T290 LNMT 1506 (542)

TANGMILL TANGENTIAL LINE

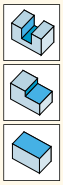
**F90LN-N15**

90° Face Mills Carrying LN..1506... Tangentially Clamped Inserts




DC=50, a=8°, KAPR=91°
DC=63, a=6°, KAPR=90°
DC≥100, a=4.5°, KAPR=90°



| Designation | DC | CICT[2] | APMX | OAL | DHUB | DCONMS | Arbor[3] | kg |
|---|---|---|---|---|---|---|---|---|
| F90LN D050-05-22-R/L-N15 | 50.00 | 5 | 14.00 | 40.00 | 47.00 | 22.00 | A | 0.33 |
| F90LN D063-05-22-R/L-N15 | 63.00 | 5 | 14.00 | 40.00 | 59.20 | 22.00 | B | 0.48 |
| F90LN D063-08-22-R/L-N15 | 63.00 | 8 | 14.00 | 40.00 | 59.20 | 22.00 | B | 0.50 |
| F90LN D080-07-27-L-N15 [1] | 80.00 | 7 | 14.00 | 50.00 | 70.00 | 27.00 | B | 1.01 |
| F90LN D080-07-27-R-N15 [1] | 80.00 | 7 | 14.00 | 50.00 | 70.00 | 27.00 | B | 1.02 |
| F90LN D080-10-27-L-N15 [1] | 80.00 | 10 | 14.00 | 50.00 | 70.00 | 27.00 | B | 1.05 |
| F90LN D080-10-27-R-N15 [1] | 80.00 | 10 | 14.00 | 50.00 | 70.00 | 27.00 | B | 1.06 |
| F90LN D100-08-32-L-N15 [1] | 100.00 | 8 | 14.00 | 50.00 | 78.00 | 32.00 | B | 0.50 |
| F90LN D100-08-32-R-N15 [1] | 100.00 | 8 | 14.00 | 50.00 | 78.00 | 32.00 | B | 1.52 |
| F90LN D100-12-32-L-N15 [1] | 100.00 | 12 | 14.00 | 50.00 | 78.00 | 32.00 | B | 1.59 |
| F90LN D100-12-32-R-N15 [1] | 100.00 | 12 | 14.00 | 50.00 | 78.00 | 32.00 | B | 1.60 |
| F90LN D125-09-40-R/L-N15 [1] | 125.00 | 9 | 14.00 | 63.00 | 95.00 | 40.00 | B | 2.95 |
| F90LN D125-15-40-L-N15 [1] | 125.00 | 15 | 14.00 | 63.00 | 95.00 | 40.00 | B | 3.06 |
| F90LN D125-15-40-R-N15 [1] | 125.00 | 15 | 14.00 | 63.00 | 95.00 | 40.00 | B | 3.07 |
| F90LN D160-10-40-L-N15 | 160.00 | 10 | 14.00 | 63.00 | 120.00 | 40.00 | C | 4.30 |
| F90LN D160-10-40-R-N15 | 160.00 | 10 | 14.00 | 63.00 | 120.00 | 40.00 | C | 4.29 |
| F90LN D160-20-40-L-N15 | 160.00 | 20 | 14.00 | 63.00 | 120.00 | 40.00 | C | 4.48 |
| F90LN D160-20-40-R-N15 | 160.00 | 20 | 14.00 | 63.00 | 120.00 | 40.00 | C | 4.50 |
| F90LN D200-12-60-L-N15 | 200.00 | 12 | 14.00 | 63.00 | 135.00 | 60.00 | C | 6.67 |
| F90LN D200-12-60-R-N15 | 200.00 | 12 | 14.00 | 63.00 | 135.00 | 60.00 | C | 6.64 |
| F90LN D250-15-60-R-N15 | 250.00 | 15 | 14.00 | 63.00 | 150.00 | 60.00 | C | 10.39 |
| F90LN D250-30-60-R-N15 | 250.00 | 30 | 14.00 | 63.00 | 150.00 | 60.00 | C | 10.83 |

- Left-hand cutters are designated by a red groove
- For user guide, see pages 616-621

[1] For internal coolant through the holder, use a matching coolant set (should be ordered separately)

[2] Number of inserts (or edges for solid tool)

[3] For adaptation options, see page 622

**For inserts, see pages:** LNAR 1506 (555) • LNAR 1506 PN-R-S (PCD) (556) • LNAT 1506-W (557) • LNAT 1506..PN-N MM (556) • LNAW-15 (CBN) (552) • LNHW 1506 PNTN (CER) (556) • LNKX 1506 1.5X45 PN-N (554) • LNKX 1506PN-N PL (554) • LNMT 1506PN-R-TS (553) • LNMT/LNHT 1506...-N HT (555) • LNMT/LNHT 1506PN-R HT (554) • LNMW 1506 PNTN (553)

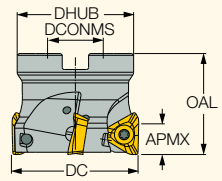
## Spare Parts

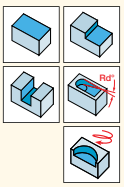
| Designation | | | | |
|---|---|---|---|---|
| F90LN D050-05-22-L-N15 | SR 34-535 | SW6-T | BLD T15/M7 | SR M10X25 DIN912 |
| F90LN D050-05-22-R-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | SR M10X25 DIN912 |
| F90LN D063-05-22-R/L-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D063-08-22-R/L-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D080-07-27-R/L-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D080-10-27-R/L-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D100-08-32-R/L-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D100-12-32-R/L-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D125-09-40-R/L-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D125-15-40-L-N15 | SR 34-535 | SW6-T | BLD T15/M7 | |
| F90LN D125-15-40-R-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D160-10-40-R/L-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D160-20-40-R/L-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D200-12-60-R/L-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D250-15-60-R-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |
| F90LN D250-30-60-R-N15 | SR 34-535 | SW6-T-SH | BLD T15/M7 | |

HELI3MILL HM390 LINE

## HM390 FTD-15

90° Face Mills Carrying HM390 TDKT 1505 Triangular Inserts with 3 Helical Cutting Edges



| Designation | DC | CICT[2] | APMX | OAL | DHUB | DCONMS | Arbor[3] | RMPX°[4] | CSP[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM390 FTD D040-3-16-15 | 40.00 | 3 | 13.00 | 40.00 | 38.40 | 16.00 | A | 2.0 | 1 | 0.20 |
| HM390 FTD D040-4-16-15 | 40.00 | 4 | 13.00 | 40.00 | 38.40 | 16.00 | A | 2.0 | 1 | 0.19 |
| HM390 FTD D050-3-22-15 | 50.00 | 3 | 13.00 | 40.00 | 46.00 | 22.00 | A | 1.6 | 1 | 0.25 |
| HM390 FTD D050-4-22-15 | 50.00 | 4 | 13.00 | 40.00 | 46.00 | 22.00 | A | 1.6 | 1 | 0.28 |
| HM390 FTD D050-5-22-15 | 50.00 | 5 | 13.00 | 40.00 | 46.00 | 22.00 | A | 1.6 | 1 | 0.28 |
| HM390 FTD D063-4-27-15 | 63.00 | 4 | 13.00 | 45.00 | 59.00 | 27.00 | A | 1.2 | 1 | 0.53 |
| HM390 FTD D063-5-22-15 | 63.00 | 5 | 13.00 | 45.00 | 59.00 | 22.00 | A | 1.2 | 1 | 0.58 |
| HM390 FTD D063-5-27-15 | 63.00 | 5 | 13.00 | 45.00 | 59.00 | 27.00 | A | 1.2 | 1 | 0.53 |
| HM390 FTD D063-6-22-15 | 63.00 | 6 | 13.00 | 45.00 | 59.00 | 22.00 | A | 1.2 | 1 | 0.62 |
| HM390 FTD D063-6-27-15 | 63.00 | 6 | 13.00 | 45.00 | 59.00 | 27.00 | A | 1.2 | 1 | 0.57 |
| HM390 FTD D080-5-27-15 | 80.00 | 5 | 13.00 | 50.00 | 74.00 | 27.00 | A | 0.9 | 1 | 1.11 |
| HM390 FTD D080-6-27-15 | 80.00 | 6 | 13.00 | 50.00 | 74.00 | 27.00 | A | 0.9 | 1 | 0.14 |
| HM390 FTD D080-7-27-15 | 80.00 | 7 | 13.00 | 50.00 | 74.00 | 27.00 | A | 0.9 | 1 | 1.18 |
| HM390 FTD D100-6-32-15 | 100.00 | 6 | 13.00 | 50.00 | 80.00 | 32.00 | B | 0.7 | 1 | 1.31 |
| HM390 FTD D100-8-32-15 | 100.00 | 8 | 13.00 | 50.00 | 80.00 | 32.00 | B | 0.7 | 1 | 1.46 |
| HM390 FTD D125-7-40-15 | 125.00 | 7 | 13.00 | 63.00 | 82.00 | 40.00 | B | 0.5 | 1 | 2.12 |
| HM390 FTD D125-9-40-15 | 125.00 | 9 | 13.00 | 63.00 | 82.00 | 40.00 | B | 0.5 | 1 | 2.29 |
| HM390 FTD D160-8-40-15 [1] | 160.00 | 8 | 13.00 | 63.00 | 105.00 | 40.00 | C | 0.3 | 0 | 3.57 |
| HM390 FTD D160-10-40-15 [1] | 160.00 | 10 | 13.00 | 63.00 | 105.00 | 40.00 | C | 0.3 | 0 | 4.02 |
| HM390 FTD D200-9-60-15 | 200.00 | 9 | 13.00 | 63.00 | 135.00 | 60.00 | C | 0.2 | 0 | 5.23 |

• When assembled the HM390 TDKT 1505PDR-FW insert, tool diameter enlarges by 1.0 mm • For user guide, see pages 616-621

[1] For internal coolant through the holder, use a matching coolant set (should be ordered separately)

[2] Number of inserts (or edges for solid tool)

[3] For adaptation options, see page 622

[4] Maximum ramping angle

[5] 0 - Without coolant supply, 1 - With coolant supply

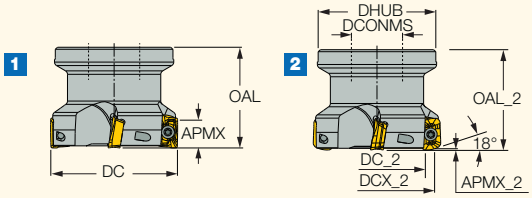
**For inserts, see pages:** HM390 TDCR 1505 (514) • HM390 TDKT/CT 1505 (513)

### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM390 FTD D040-3-16-15 | SR 10511869 | BLD IP20/S7 | SW6-T | SR M8X37-1515 |
| HM390 FTD D040-4-16-15 | SR 10511869 | BLD IP20/S7 | SW6-T | SR M8X37-1515 |
| HM390 FTD D050-3-22-15 | SR 10505427 | BLD IP20/S7 | SW6-T | SR M10X30 DIN912 |
| HM390 FTD D050-4-22-15 | SR 10505427 | BLD IP20/S7 | SW6-T | SR M10X30 DIN912 |
| HM390 FTD D050-5-22-15 | SR 10511869 | BLD IP20/S7 | SW6-T | SR M10X30 DIN912 |
| HM390 FTD D063-4-27-15 | SR 10505427 | BLD IP20/S7 | SW6-T | SR M12X35DIN912 |
| HM390 FTD D063-5-22-15 | SR 10511869 | BLD IP20/S7 | SW6-T | SR M10X30 DIN912 |
| HM390 FTD D063-5-27-15 | SR 10505427 | BLD IP20/S7 | SW6-T | SR M12X35DIN912 |
| HM390 FTD D063-6-22-15 | SR 10511869 | BLD IP20/S7 | SW6-T | SR M10X30 DIN912 |
| HM390 FTD D063-6-27-15 | SR 10505427 | BLD IP20/S7 | SW6-T | SR M12X35DIN912 |
| HM390 FTD D080-5-27-15 | SR 10505427 | BLD IP20/S7 | SW6-T | SR M12X40DIN912 |
| HM390 FTD D080-6-27-15 | SR 10505427 | BLD IP20/S7 | SW6-T | SR M12X40DIN912 |
| HM390 FTD D080-7-27-15 | SR 10505427 | BLD IP20/S7 | SW6-T | SR M12X40DIN912 |
| HM390 FTD D100-6-32-15 | SR 10505427 | BLD IP20/S7 | SW6-T | |
| HM390 FTD D100-8-32-15 | SR 10505427 | BLD IP20/S7 | SW6-T | |
| HM390 FTD D125-7-40-15 | SR 10505427 | BLD IP20/S7 | SW6-T | |
| HM390 FTD D125-9-40-15 | SR 10505427 | BLD IP20/S7 | SW6-T | |
| HM390 FTD D160-8-40-15 | SR 10505427 | BLD IP20/S7 | SW6-T | |
| HM390 FTD D160-10-40-15 | SR 10505427 | BLD IP20/S7 | SW6-T | |
| HM390 FTD D200-9-60-15 | SR 10505427 | BLD IP20/S7 | SW6-T | |

HELI2000

**HM90 F90A-15**
90° Face Mills Carrying HM90
ADKT 1505... Inserts




| Designation | DC | DC_2 | DCX_2 | APMX | APMX_2 | OAL | OAL_2 | DHUB | DCONMS | RMPX°(2) | RMPX°_2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 F90A D 40-3-16 | 40.00 | 27.30 | 40.50 | 14.30 | 1.50 | 40.00 | 39.74 | 38.60 | 16.00 | 4.0 | 4.0 |
| HM90 F90A D 40-4-16 | 40.00 | 27.30 | 40.50 | 14.30 | 1.50 | 40.00 | 39.74 | 38.60 | 16.00 | 4.0 | 4.0 |
| HM90 F90A D 50-3-22 | 50.00 | 37.30 | 50.50 | 14.30 | 1.50 | 40.00 | 39.74 | 48.00 | 22.00 | 2.6 | 2.6 |
| HM90 F90A D 50-5-22 | 50.00 | 37.30 | 50.50 | 14.30 | 1.50 | 40.00 | 39.74 | 48.00 | 22.00 | 2.6 | 2.6 |
| HM90 F90A D 63-4-22 | 63.00 | 50.30 | 63.50 | 14.30 | 1.50 | 40.00 | 39.74 | 59.20 | 22.00 | 2.0 | 2.0 |
| HM90 F90A D 63-6-22 | 63.00 | 50.30 | 63.50 | 14.30 | 1.50 | 40.00 | 39.74 | 59.20 | 22.00 | 2.0 | 2.0 |
| HM90 F90A D 80-5-27 (1) | 80.00 | 67.30 | 80.50 | 14.30 | 1.50 | 50.00 | 49.74 | 70.00 | 27.00 | 0.8 | 0.8 |
| HM90 F90A D 80-7-27 (1) | 80.00 | 67.30 | 80.50 | 14.30 | 1.50 | 50.00 | 49.74 | 70.00 | 27.00 | 0.8 | 0.8 |
| HM90 F90A D100-6-32 (1) | 100.00 | 87.30 | 100.50 | 14.30 | 1.50 | 50.00 | 49.74 | 78.00 | 32.00 | 0.7 | 0.7 |
| HM90 F90A D100-8-32 (1) | 100.00 | 87.30 | 100.50 | 14.30 | 1.50 | 50.00 | 49.74 | 78.00 | 32.00 | 0.7 | 0.7 |
| HM90 F90A D125-9-40 (1) | 125.00 | 112.30 | 125.50 | 14.30 | 1.50 | 63.00 | 62.74 | 90.00 | 40.00 | 0.5 | 0.5 |

| Designation | Arbor(3) | MDN | MDX | RPMX(4) | MIID(5) | MIID_2(6) | kg |
|---|---|---|---|---|---|---|---|
| HM90 F90A D 40-3-16 | A | 67.80 | 80.00 | 25870 | ADKT 1505PDTR | ADKT 1505R8T-FF | 0.20 |
| HM90 F90A D 40-4-16 | A | 67.80 | 80.00 | 25870 | ADKT 1505PDTR | ADKT 1505R8T-FF | 0.19 |
| HM90 F90A D 50-3-22 | A | 87.80 | 100.00 | 23139 | ADKT 1505PDTR | ADKT 1505R8T-FF | 0.32 |
| HM90 F90A D 50-5-22 | A | 87.80 | 100.00 | 23139 | ADKT 1505PDTR | ADKT 1505R8T-FF | 0.30 |
| HM90 F90A D 63-4-22 | A | 113.80 | 126.00 | 20614 | ADKT 1505PDTR | ADKT 1505R8T-FF | 0.55 |
| HM90 F90A D 63-6-22 | A | 113.80 | 126.00 | 20614 | ADKT 1505PDTR | ADKT 1505R8T-FF | 0.52 |
| HM90 F90A D 80-5-27 (1) | B | 147.80 | 160.00 | 18293 | ADKT 1505PDTR | ADKT 1505R8T-FF | 0.91 |
| HM90 F90A D 80-7-27 (1) | B | 147.80 | 160.00 | 19293 | ADKT 1505PDTR | ADKT 1505R8T-FF | 0.88 |
| HM90 F90A D100-6-32 (1) | B | 187.80 | 200.00 | 16362 | ADKT 1505PDTR | ADKT 1505R8T-FF | 1.54 |
| HM90 F90A D100-8-32 (1) | B | 187.80 | 200.00 | 16362 | ADKT 1505PDTR | ADKT 1505R8T-FF | 1.49 |
| HM90 F90A D125-9-40 (1) | B | 237.80 | 250.00 | 14635 | ADKT 1505PDTR | ADKT 1505R8T-FF | 2.95 |

• 1- with standard square insert • 2- with FF (fast feed) insert • For user guide, see pages 616-621
(1) For internal coolant through the holder, use a matching coolant set (should be ordered separately)
(2) Maximum ramping angle
(3) For adaptation options, see page 622
(4) Maximum RPM
(5) Master insert identification
(6) Master insert identification 2

**For inserts, see pages:** ADCR 1505PDFR (523) • ADCT 1505PDFR-HM (523) • ADKR 1505PDR/L (523) • ADKT 1505-FF (527) • ADKT 1505..R/L-HM (526) • ADKT 1505PD-W (527) • ADKT 1505PDR/L-HM (525) • ADKT 1505PDTR-76 (526) • ADKT 1505PDTR/L-RM (525) • ADKW (CBN) (524) • ADKW (PCD) (524) • ADMT 1505PDR-HS (525) • HM90 ADCR 1505PDFR-P (522) • HM90 ADCT 1505 (521) • HM90 ADCT 1505PDR-CF (522) • HM90 ADKT 1505 (521) • HM90 ADKT 1505PD-W (527) • HM90 ADKW 1505PDR (530)

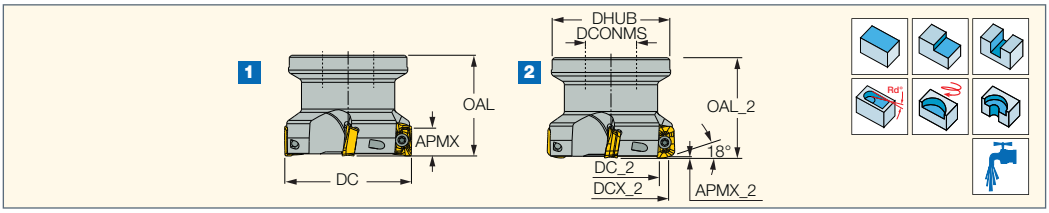
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM90 F90A D 40-3-16 | SR 14-544/S | BLD T15/M7 | SW6-T-SH | SR M8X25DIN912 |
| HM90 F90A D 40-4-16 | SR 14-544/S | BLD T15/M7 | SW6-T-SH | SR M8X25DIN912 |
| HM90 F90A D 50-3-22 | SR 14-544/S | BLD T15/M7 | SW6-T-SH | SR M10X25 DIN912 |
| HM90 F90A D 50-5-22 | SR 14-544/S | BLD T15/M7 | SW6-T-SH | SR M10X25 DIN912 |
| HM90 F90A D 63-4-22 | SR 14-544 | BLD T15/M7 | SW6-T-SH | SR M10X25 DIN912 |
| HM90 F90A D 63-6-22 | SR 14-544 | BLD T15/M7 | SW6-T-SH | SR M10X25 DIN912 |
| HM90 F90A D 80-5-27 | SR 14-544 | BLD T15/M7 | SW6-T-SH | |
| HM90 F90A D 80-7-27 | SR 14-544 | BLD T15/M7 | SW6-T-SH | |
| HM90 F90A D100-6-32 | SR 14-544 | BLD T15/M7 | SW6-T-SH | |
| HM90 F90A D100-8-32 | SR 14-544 | BLD T15/M7 | SW6-T-SH | |
| HM90 F90A D125-9-40 | SR 14-544 | BLD T15/M7 | SW6-T-SH | |

HELI2000 JET LINE

**HM90 F90A-15-JHP**

90° JHP Face Mills Carrying HELI-2000 and HELI-MILL Inserts




| Designation | DC | DC_2 | DCX_2 | CICT(1) | APMX | APMX_2 | OAL | OAL_2 | DHUB | DCONMS | RPMX(2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 F90A D050-5-22-JHP | 50.00 | 37.30 | 50.50 | 5 | 14.30 | 1.50 | 50.00 | 39.74 | 48.00 | 22.00 | 23100 |
| HM90 F90A D063-6-22-JHP | 63.00 | 50.30 | 63.50 | 6 | 14.30 | 1.50 | 50.00 | 49.74 | 48.00 | 22.00 | 20600 |

| Designation | MDN | MDX | MIID(3) | MIID_2(4) | RMPX°(5) | RMPX°_2 | Arbor | kg |
|---|---|---|---|---|---|---|---|---|
| HM90 F90A D050-5-22-JHP | 87.80 | 100.00 | ADKT 1505PDTR | ADKT 1505R8T-FF | 2.6 | 2.6 | A | 0.50 |
| HM90 F90A D063-6-22-JHP | 113.80 | 126.00 | ADKT 1505PDTR | ADKT 1505R8T-FF | 2.0 | 2.0 | A | 0.76 |

• 1- with standard square insert • 2- with FF (fast feed) insert • Use adaptation only with face coolant outlets

• For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) Maximum RPM

(3) Master insert identification

(4) Master insert identification 2

(5) Maximum ramping angle

**For inserts, see pages:** ADCR 1505PDFR (523) • ADCT 1505PDFR-HM (523) • ADKR 1505PDR/L (523) • ADKT 1505-FF (527) • ADKT 1505..R/L-HM (526) • ADKT 1505PD-W (527) • ADKT 1505PDR/L-HM (525) • ADKT 1505PDTR-76 (526) • ADKT 1505PDTR/L-RM (525) • ADKW (CBN) (524) • ADKW (PCD) (524) • ADMT 1505PDR-HS (525) • HM90 ADCR 1505PDFR-P (522) • HM90 ADCT 1505 (521) • HM90 ADCT 1505PDR-CF (522) • HM90 ADKT 1505 (521) • HM90 ADKT 1505PD-W (527) • HM90 ADKW 1505PDR (530)

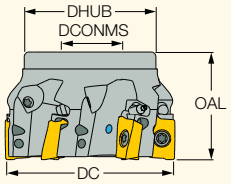
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM90 F90A D050-5-22-JHP | SR 14-544/S(a) | SR PS 118-0273 | BLD T15/M7 | SW6-T-SH |
| HM90 F90A D063-6-22-JHP | SR 14-544(a) | SR PS 118-0273 | BLD T15/M7 | SW6-T-SH |

(a) Recommended tightening torque for this item: 4.8 Nxm

HELI2000

**F90AD-SFR**
Adjustable Face Mills (used mainly for PCD/CBN inserts)




| Designation | DC | CICT(1) | OAL | DHUB | DCONMS | Arbor(2) | RPMX(3) | kg |
|---|---|---|---|---|---|---|---|---|
| F90AD D050-04-22-SFR | 50.00 | 4 | 40.00 | 49.00 | 22.00 | A | 23000 | 0.31 |
| F90AD D063-04-22-SFR | 63.00 | 4 | 40.00 | 50.00 | 22.00 | A | 20600 | 0.43 |
| F90AD D063-06-22-SFR | 63.00 | 6 | 40.00 | 50.00 | 22.00 | A | 20600 | 0.49 |
| F90AD D080-06-27-SFR | 80.00 | 6 | 50.00 | 60.00 | 27.00 | B | 18200 | 0.89 |

- These tools may also be used for regular HELI-2000 AD.. 1505... inserts, for applications that require precise frontal edge adjustment
- For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)
(2) For adaptation options, see page 622
(3) Maximum RPM

**For inserts, see pages:** ADKW (CBN) (524) • ADKW (PCD) (524) • ADCR 1505PDFR (523) • ADCT 1505PDFR-HM (523) • ADKR 1505PDR/L (523) • ADKT 1505-FF (527) • ADKT 1505..R/L-HM (526) • ADKT 1505PD-W (527) • ADKT 1505PDR/L-HM (525) • ADKT 1505PDTR-76 (526) • ADKT 1505PDTR/L-RM (525) • ADMT 1505PDR-HS (525) • HM90 ADCR 1505PDFR-P (522) • HM90 ADCT 1505 (521) • HM90 ADCT 1505PDR-CF (522) • HM90 ADKT 1505 (521) • HM90 ADKT 1505PD-W (527) • HM90 ADKW 1505PDR (530)

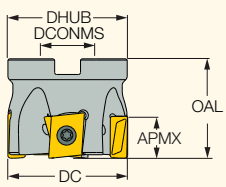
## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| F90AD D050-04-22-SFR | SR 14-544/S | SR 11800782 | BLD T15/S7 | SW6-T-SH | SR M10X20DIN912 |
| F90AD D063-04-22-SFR | SR 14-544/S | SR 11800782 | BLD T15/S7 | SW6-T-SH | SR M10X20DIN912 |
| F90AD D063-06-22-SFR | SR 14-544/S | SR 11800782 | BLD T15/S7 | SW6-T-SH | SR M10X20DIN912 |
| F90AD D080-06-27-SFR | SR 14-544/S | SR 11800782 | BLD T15/S7 | SW6-T-SH | |

HELITANG T490 LINE

## T490 FLN-16

90° Face Mills Carrying Tangentially Clamped Inserts with 4 Helical 16mm Long Cutting Edges



| Designation | DC | CICT(1) | APMX | OAL | DHUB | DCONMS | Arbor(2) | CSP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|
| T490 FLN D050-03-22-16 | 50.00 | 3 | 16.00 | 40.00 | 48.00 | 22.00 | A | 1 | 0.30 |
| T490 FLN D050-04-22-16 | 50.00 | 4 | 16.00 | 40.00 | 48.00 | 22.00 | A | 1 | 0.32 |
| T490 FLN D063-06-27-16 | 63.00 | 6 | 16.00 | 45.00 | 60.00 | 27.00 | A | 1 | 0.62 |
| T490 FLN D080-05-27-16 | 80.00 | 5 | 16.00 | 50.00 | 63.00 | 27.00 | B | 1 | 0.84 |
| T490 FLN D080-07-27-16 | 80.00 | 7 | 16.00 | 50.00 | 63.00 | 27.00 | B | 1 | 0.91 |
| T490 FLN D100-06-32-16 | 100.00 | 6 | 16.00 | 50.00 | 80.00 | 32.00 | B | 1 | 1.44 |
| T490 FLN D100-08-32-16 | 100.00 | 8 | 16.00 | 50.00 | 80.00 | 32.00 | B | 1 | 1.50 |
| T490 FLN D125-07-40-16 | 125.00 | 7 | 16.00 | 63.00 | 82.00 | 40.00 | B | 1 | 2.42 |
| T490 FLN D125-10-40-16 | 125.00 | 10 | 16.00 | 63.00 | 82.00 | 40.00 | B | 1 | 2.46 |
| T490 FLN D160-12-40-16 | 160.00 | 12 | 16.00 | 63.00 | 105.00 | 40.00 | C | 0 | 4.28 |
| T490 FLN D200-12-60-16 | 200.00 | 12 | 16.00 | 63.00 | 135.00 | 60.00 | C | 0 | 5.40 |

• When machining slots, regular pitch cutters should be used. • For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) For adaptation options, see page 622

(3) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT/LNHT 1607 (548)

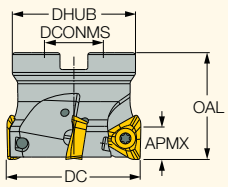
### Spare Parts

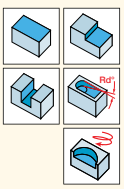
| Designation | | | | |
|---|---|---|---|---|
| T490 FLN D050-03-22-16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M10X25DIN7984 |
| T490 FLN D050-04-22-16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M10X25DIN7984 |
| T490 FLN D063-06-27-16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M12X30DIN912 |
| T490 FLN D080-05-27-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| T490 FLN D080-07-27-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| T490 FLN D100-06-32-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| T490 FLN D100-08-32-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| T490 FLN D125-07-40-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| T490 FLN D125-10-40-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| T490 FLN D160-12-40-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| T490 FLN D200-12-60-16 | SR 14-591 | BLD T20/M7 | SW6-T | |

HELI3MILL HM390 LINE

## HM390 FTD-19

90° Face Mills Carrying HM390 TDKT 1907 Triangular Inserts with 3 Helical Cutting Edges



| Designation | DC | CICT(1) | APMX | OAL | DHUB | DCONMS | Arbor(2) | CSP(3) | RMPX°(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM390 FTD D063-5-27-19 | 63.00 | 5 | 16.00 | 50.00 | 60.00 | 27.00 | A | 1 | 1.1 | 0.63 |
| HM390 FTD D160-10-40-19 | 160.00 | 10 | 16.00 | 63.00 | 105.00 | 40.00 | C | 0 | 0.4 | 4.22 |

• For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) For adaptation options, see page 622

(3) 0 - Without coolant supply, 1 - With coolant supply

(4) Maximum ramping angle

**For inserts, see pages:** HM390 TDKT 1907 (514)

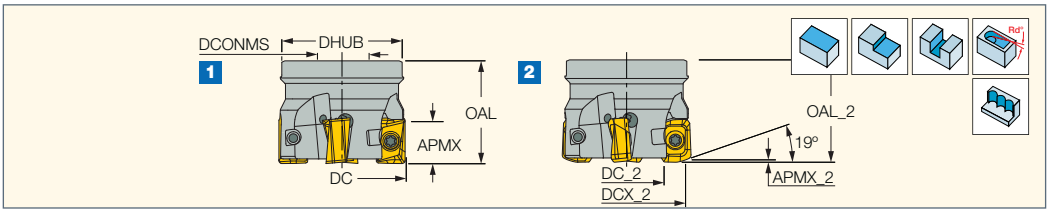
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM390 FTD D063-5-27-19 | SR 14-591/H | BLD T20/S7 | SW6-T | SR M12X25 DIN 912 |
| HM390 FTD D160-10-40-19 | SR 14-591/H | BLD T20/M7 | SW6-T | |

HELIDO 490 LINE

## H490 F90AX-17

90° Face Mills Carrying H490 ANKX 17.. Double-Sided Rectangular Inserts with 4 Helical Cutting Edges




| Designation | DC | DCX_2 | DC_2 | CICT(2) | APMX | APMX_2 | AE(3) | OAL | OAL_2 | DHUB | DCONMS | Arbor(4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H490 F90AX D040-3-16-17 | 40.00 | 41.50 | 29.70 | 3 | 16.30 | 1.60 | 9.5 | 40.00 | 39.86 | 36.00 | 16.00 | A |
| H490 F90AX D050-3-22-17 | 50.00 | 51.50 | 39.70 | 3 | 16.30 | 1.60 | 9.5 | 40.00 | 39.86 | 48.00 | 22.00 | A |
| H490 F90AX D050-4-22-17 | 50.00 | 51.50 | 39.70 | 4 | 16.30 | 1.60 | 9.5 | 40.00 | 39.86 | 48.00 | 22.00 | A |
| H490 F90AX D050-5-22-17 | 50.00 | 51.50 | 39.70 | 5 | 16.30 | 1.60 | 9.5 | 40.00 | 39.86 | 48.00 | 22.00 | A |
| H490 F90AX D063-4-27-17 | 63.00 | 64.50 | 52.70 | 4 | 16.30 | 1.60 | 9.5 | 50.00 | 49.86 | 59.20 | 27.00 | A |
| H490 F90AX D063-6-27-17 | 63.00 | 64.50 | 52.70 | 6 | 16.30 | 1.60 | 9.5 | 50.00 | 49.86 | 59.20 | 27.00 | A |
| H490 F90AX D080-5-27-17 | 80.00 | 81.50 | 69.70 | 5 | 16.30 | 1.60 | 9.5 | 50.00 | 49.86 | 63.00 | 27.00 | B |
| H490 F90AX D080-7-27-17 | 80.00 | 81.50 | 69.70 | 7 | 16.30 | 1.60 | 9.5 | 50.00 | 49.86 | 63.00 | 27.00 | B |
| H490 F90AX D100-5-32-17 | 100.00 | 101.50 | 189.70 | 5 | 16.30 | 1.60 | 9.5 | 50.00 | 49.86 | 80.00 | 32.00 | B |
| H490 F90AX D100-8-32-17 | 100.00 | 101.50 | 89.70 | 8 | 16.30 | 1.60 | 9.5 | 50.00 | 49.86 | 80.00 | 32.00 | B |
| H490 F90AX D125-10-40-17 | 125.00 | 126.50 | 114.70 | 10 | 16.30 | 1.60 | 9.5 | 63.00 | 62.86 | 82.00 | 40.00 | B |
| H490 F90AX D125-7-40-17 | 125.00 | 126.50 | 114.70 | 7 | 16.30 | 1.60 | 9.5 | 63.00 | 62.86 | 82.00 | 40.00 | B |
| H490 F90AX D160-12-40-17 (1) | 160.00 | 161.50 | 149.70 | 12 | 16.30 | 1.60 | 9.5 | 63.00 | 62.86 | 105.00 | 40.00 | C |
| H490 F90AX D160-8-40-17 (1) | 160.00 | 161.50 | 149.70 | 8 | 16.30 | 1.60 | 9.5 | 63.00 | 62.86 | 105.00 | 40.00 | C |
| H490 F90AX D200-10-60-17 | 200.00 | 201.50 | 189.70 | 10 | 16.30 | 1.60 | 9.5 | 63.00 | 62.86 | 135.00 | 60.00 | C |
| H490 F90AX D250-12-60-17 | 250.00 | 251.50 | 239.70 | 12 | 16.30 | 1.60 | 9.5 | 63.00 | 62.86 | 144.00 | 60.00 | C |

| Designation | RMPX°_2(5) | MDN | MDX | CSP(6) | MIID(7) | MIID_2(8) | kg |
|---|---|---|---|---|---|---|---|
| H490 F90AX D040-3-16-17 | 3.7 | 71.20 | 82.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.18 |
| H490 F90AX D050-3-22-17 | 2.5 | 91.20 | 102.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.32 |
| H490 F90AX D050-4-22-17 | 2.5 | 91.20 | 102.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.30 |
| H490 F90AX D050-5-22-17 | 2.5 | 91.20 | 102.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.48 |
| H490 F90AX D063-4-27-17 | 1.7 | 117.20 | 128.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.63 |
| H490 F90AX D063-6-27-17 | 1.7 | 117.20 | 128.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.67 |
| H490 F90AX D080-5-27-17 | 1.3 | 151.20 | 162.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.79 |
| H490 F90AX D080-7-27-17 | 1.3 | 151.20 | 162.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 0.80 |
| H490 F90AX D100-5-32-17 | 1.0 | 191.20 | 202.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 1.39 |
| H490 F90AX D100-8-32-17 | 1.0 | 191.20 | 202.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 1.47 |
| H490 F90AX D125-10-40-17 | 0.8 | 241.20 | 252.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 5.41 |
| H490 F90AX D125-7-40-17 | 0.8 | 241.20 | 252.00 | 1 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 2.24 |
| H490 F90AX D160-12-40-17 (1) | 0.6 | 311.20 | 322.00 | 0 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 4.09 |
| H490 F90AX D160-8-40-17 (1) | 0.6 | 311.20 | 322.00 | 0 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 3.64 |
| H490 F90AX D200-10-60-17 | 0.5 | 391.20 | 402.00 | 0 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 5.99 |
| H490 F90AX D250-12-60-17 | 0.4 | 491.20 | 502.00 | 0 | H490 ANKX 170604PNTR | H490 ANKX 1706..-FF | 9.36 |

- For user guide, see pages 616-621 • 1- with standard square insert, 2- with FF (fast feed) insert
- Ramping angle is valid only when H490 ANKX 1706R15T-FF insert is used
- When assembled the H490 ANKX 1706R15T-FF insert, tool diameter enlarges by 1.5 mm

(1) For internal coolant through the holder, use a matching coolant set (should be ordered separately)
(2) Number of inserts (or edges for solid tool)
(3) Maximum side plunge
(4) For adaptation options, see page 622
(5) Maximum ramping angle when using FF inserts
(6) 0 - Without coolant supply, 1 - With coolant supply
(7) Master insert identification
(8) Master insert identification 2

**For inserts, see pages:** H490 ANKX 1706-FF (540) • H490 ANKX/ANCX-17 (539)

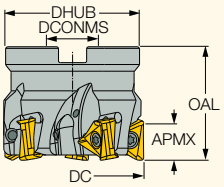
### Spare Parts

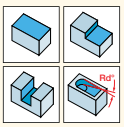
| Designation | | | | |
|---|---|---|---|---|
| H490 F90AX D040-3-16-17 | SR 14-591 | BLD T20/M7 | SW6-T | SR M8X25DIN912 |
| H490 F90AX D050-3-22-17 | SR 14-591 | BLD T20/M7 | SW6-T | SR M10X25 DIN912 |
| H490 F90AX D050-4-22-17 | SR 14-591 | BLD T20/M7 | SW6-T | SR M10X25 DIN912 |
| H490 F90AX D050-5-22-17 | SR 14-591 | BLD T20/M7 | SW6-T | SR M10X25 DIN912 |
| H490 F90AX D063-4-27-17 | SR 14-591 | BLD T20/M7 | SW6-T | SR M12X30DIN912 |
| H490 F90AX D063-6-27-17 | SR 14-591 | BLD T20/M7 | SW6-T | SR M12X30DIN912 |
| H490 F90AX D080-5-27-17 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H490 F90AX D080-7-27-17 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H490 F90AX D100-5-32-17 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H490 F90AX D100-8-32-17 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H490 F90AX D125-10-40-17 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H490 F90AX D125-7-40-17 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H490 F90AX D160-12-40-17 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H490 F90AX D160-8-40-17 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H490 F90AX D200-10-60-17 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H490 F90AX D250-12-60-17 | SR 14-591 | BLD T20/M7 | SW6-T | |

HELIDO 690 LINE

**H690 F90AX-16**

90° Face Mills Carrying H690 TNKX 1606.. Triangular Inserts with 6 Helical Cutting Edges



| Designation | DC | CICT[1] | APMX | OAL | DHUB | DCONMS | Arbor[2] | RMPX°[3] | CSP[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| H690 F90AX D050-3-22-16 | 50.00 | 3 | 13.50 | 40.00 | 48.00 | 22.00 | A | 3.0 | 1 | 0.31 |
| H690 F90AX D050-4-22-16 | 50.00 | 4 | 13.50 | 40.00 | 48.00 | 22.00 | A | 3.0 | 1 | 0.30 |
| H690 F90AX D063-4-27-16 | 63.00 | 4 | 13.50 | 50.00 | 59.00 | 27.00 | A | 2.0 | 1 | 0.63 |
| H690 F90AX D063-5-27-16 | 63.00 | 5 | 13.50 | 50.00 | 59.00 | 27.00 | A | 2.0 | 1 | 0.64 |
| H690 F90AX D080-5-27-16 | 80.00 | 5 | 13.50 | 50.00 | 76.00 | 27.00 | A | 1.0 | 1 | 1.20 |
| H690 F90AX D080-6-27-16 | 80.00 | 6 | 13.50 | 50.00 | 76.00 | 27.00 | A | 1.0 | 1 | 1.21 |
| H690 F90AX D100-6-32-16 | 100.00 | 6 | 13.50 | 50.00 | 80.00 | 32.00 | B | 1.0 | 1 | 1.29 |
| H690 F90AX D100-8-32-16 | 100.00 | 8 | 13.50 | 50.00 | 80.00 | 32.00 | B | 1.0 | 1 | 1.41 |
| H690 F90AX D125-7-40-16 | 125.00 | 7 | 13.50 | 63.00 | 82.00 | 40.00 | B | 0.5 | 1 | 2.14 |
| H690 F90AX D125-9-40-16 | 125.00 | 9 | 13.50 | 63.00 | 82.00 | 40.00 | B | 0.5 | 1 | 2.29 |
| H690 F90AX D160-8-40-16 | 160.00 | 8 | 13.50 | 63.00 | 105.00 | 40.00 | C | - | 0 | 3.03 |
| H690 F90AX D160-10-40-16 | 160.00 | 10 | 13.50 | 63.00 | 105.00 | 40.00 | C | - | 0 | 3.46 |
| H690 F90AX D200-11-60-16 | 200.00 | 11 | 13.50 | 63.00 | 135.00 | 60.00 | C | - | 0 | 5.09 |

- For cutting speed recommendations, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) For adaptation options, see page 622

(3) Maximum ramping angle

(4) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** H690 TNKX 1606 (540)

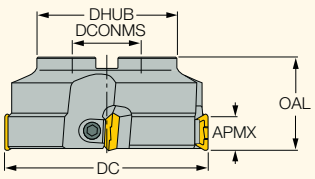
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| H690 F90AX D050-3-22-16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M10X40-1638 |
| H690 F90AX D050-4-22-16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M10X40-1638 |
| H690 F90AX D063-4-27-16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M12X30DIN912 |
| H690 F90AX D063-5-27-16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M12X30DIN912 |
| H690 F90AX D080-5-27-16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M12X35DIN912 |
| H690 F90AX D080-6-27-16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M12X35DIN912 |
| H690 F90AX D100-6-32-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H690 F90AX D100-8-32-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H690 F90AX D125-7-40-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H690 F90AX D125-9-40-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H690 F90AX D160-8-40-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H690 F90AX D160-10-40-16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| H690 F90AX D200-11-60-16 | SR 14-591 | BLD T20/M7 | SW6-T | |

ISCARMILL

**F90**

90° Face Mills Carrying TPKN/R Inserts



| Designation | DC | CICT[1] | OAL | APMX | DHUB | DCONMS | Arbor[2] | kg |
|---|---|---|---|---|---|---|---|---|
| F90 D080-27 | 80.00 | 6 | 50.00 | 18.00 | 55.00 | 27.00 | B | 1.05 |
| F90 D100-32 | 100.00 | 8 | 50.00 | 18.00 | 70.00 | 32.00 | B | 1.57 |

- For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) For adaptation options, see page 622

**For inserts, see pages:** TPKN/TPKR (536)

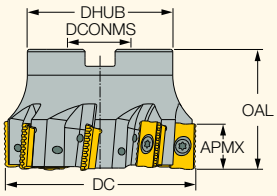
## Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| F90 D080-27 | NTP 43-R | SR 35-342.3 | HW 4P | LW 35-342 T | SR 35-343.4 | HW 2.0 |
| F90 D100-32 | NTP 43-R | SR 35-342.3 | HW 4P | LW 35-342 T | SR 35-403 | HW 2.0 |

MILLSHRED P290 LINE

## P290 FPW/FCT

90° Face Mills Carrying 12 and 18mm Long Edged Inserts




| Designation | DC | APMX | CICT[2] | OAL | DHUB | DCONMS | Arbor[3] | RMPX°[4] | kg |
|---|---|---|---|---|---|---|---|---|---|
| P290 FPW D032-04-16-12 | 32.00 | 12.00 | 4 | 50.00 | 30.40 | 16.00 | A | 1.0 | 0.16 |
| P290 FPW D040-05-16-12 | 40.00 | 12.00 | 5 | 35.00 | 38.00 | 16.00 | A | 0.7 | 0.17 |
| P290 FPW D050-06-22-12 | 50.00 | 12.00 | 6 | 40.00 | 48.00 | 22.00 | A | 0.5 | 0.31 |
| P290 FPW D040-04-16-18 | 40.00 | 18.00 | 4 | 40.00 | 35.00 | 16.00 | A | 1.5 | 0.15 |
| P290 FPW D050-05-22-18 | 50.00 | 18.00 | 5 | 40.00 | 45.00 | 22.00 | A | 1.0 | 0.27 |
| P290 FCT D050-05-22-18 [1] | 50.00 | 18.00 | 5 | 40.00 | 45.00 | 22.00 | A | 1.0 | 0.27 |
| P290 FPW D063-06-22-18 | 63.00 | 18.00 | 6 | 40.00 | 48.00 | 22.00 | A | 0.8 | 0.47 |
| P290 FPW D080-08-27-18 | 80.00 | 18.00 | 8 | 50.00 | 60.00 | 27.00 | B | 0.5 | 1.02 |
| P290 FPW D100-09-32-18 | 100.00 | 18.00 | 9 | 55.00 | 78.00 | 32.00 | B | 0.3 | 1.87 |

- For user guide, see pages 616-621

[1] To be used only with P290 ACCT 1806PDR-HL/TL straight-edged inserts
[2] Number of inserts (or edges for solid tool)
[3] For adaptation options, see page 622
[4] Maximum ramping angle

**For inserts, see pages:** P290 ACCT/KT (529) • P290 ACKT (529)

### Spare Parts

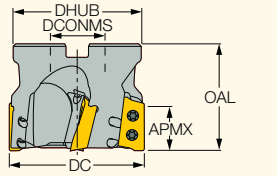
| Designation | | | | | |
|---|---|---|---|---|---|
| P290 FPW D032-04-16-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | | SR M8X40-D11.5 DIN912 |
| P290 FPW D040-05-16-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | | SR M8X25DIN912 |
| P290 FPW D050-06-22-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | | SR M10X25 DIN912 |
| P290 FPW D040-04-16-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M8X30DIN912 |
| P290 FPW D050-05-22-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M10X25 DIN912 |
| P290 FCT D050-05-22-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M10X25 DIN912 |
| P290 FPW D063-06-22-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M10X25 DIN912 |
| P290 FPW D080-08-27-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M12X30DIN912 |
| P290 FPW D100-09-32-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M16X40DIN912 |

[a] Recommended tightening torque:2.0 N*m

HELIPLUS

## HP F90AT-19

90° Face Mills Carrying HP AD.. 1906... Long Edged Inserts




| Designation | DC | CICT[1] | APMX | OAL | DHUB | DCONMS | RMPX°[2] | RPMX[3] | Arbor[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HP F90AT D50-4-22-19 | 50.00 | 4 | 18.10 | 50.00 | 46.50 | 22.00 | 5.0 | 14665 | A | 0.33 |

- Insert clamping/unclamping procedure: First loosely attach the rear clamping screw, then the face screw. In the same order, tighten them both.
- For user guide, see pages 616-621

[1] Number of inserts (or edges for solid tool)
[2] Maximum ramping angle
[3] Maximum RPM
[4] For adaptation options, see page 622

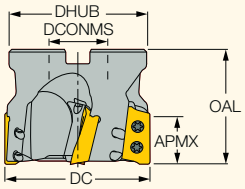
**For inserts, see pages:** HP ADCR 1906 (532) • HP ADKT/ADCT 1906 (532)

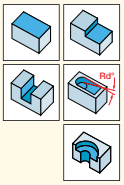
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HP F90AT-19 | SR 14-571/L | BLD T10/S7 | SW6-SD | SR M10X30 DIN912 |

HELIPLUS

**HP F90AT-22**
90° Face Mills Carrying HP AD..
2207... Long Edged Inserts



| Designation | DC | CICT(1) | APMX | OAL | DHUB | DCONMS | RMPX°(2) | RPMX(3) | Arbor(4) | CSP(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HP F90AT D50-3-22-22 | 50.00 | 3 | 21.00 | 50.00 | 48.00 | 22.00 | 5.0 | 13990 | A | 1 | 0.36 |
| HP F90AT D50-4-22-22 | 50.00 | 4 | 21.00 | 50.00 | 48.00 | 22.00 | 5.0 | 13990 | A | 0 | 0.33 |

- Insert clamping/unclamping procedure: First loosely attach the rear clamping screw, then the face screw. In the same order, tighten them both.
- For user guide,see pages 616-621

(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) Maximum RPM
(4) For adaptation options, see page 622
(5) 0 - Without coolant supply, 1 - With coolant supply

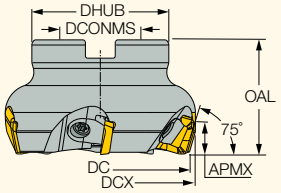
**For inserts, see pages:** HP ADCR 2207 (533) • HP ADKT/ADCT 2207 (532)

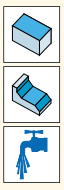
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HP F90AT-22 | SR 14-544 | BLD T15/M7 | SW6-T-SH | SR M10X30 DIN912 |

ISCARMILL

**F75-M**
75° Face Mills with
SPKN/SPKR 1203.. Inserts



| Designation | DC | DCX(1) | CICT(2) | APMX | OAL | DHUB | DCONMS | Arbor | MIID(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| F75 D050-04-16-M | 50.00 | 55.70 | 4 | 9.50 | 40.00 | 38.00 | 16.00 | A | SPKN 1203EDTR | 0.50 |
| F75 D063-05-22-M | 63.00 | 68.70 | 5 | 9.50 | 40.00 | 48.00 | 22.00 | A | SPKN 1203EDTR | 0.62 |
| F75 D080-06-27-M | 80.00 | 83.20 | 6 | 9.50 | 45.00 | 60.00 | 27.00 | B | SPKN 1203EDTR | 1.09 |
| F75 D100-07-32-M | 100.00 | 105.70 | 7 | 9.50 | 50.00 | 78.00 | 32.00 | B | SPKN 1203EDTR | 2.20 |
| F75 D125-08-40-M | 125.00 | 130.70 | 8 | 9.50 | 63.00 | 92.00 | 40.00 | B | SPKN 1203EDTR | 4.10 |

- For user guide see pages 616-621

(1) Cutting diameter maximum
(2) Cutting item count
(3) Master insert identification

**For inserts, see pages:** SPKN ED.. (583) • SPKR ED..-76 (584) • SPKR EDTR-HS (583)

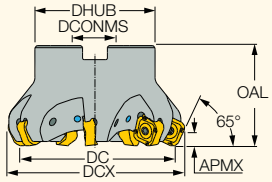
## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| F75 D050-04-16-M | SR M8X30DIN912 | BLD IP20/S7 | SW6-T | LW35-475/8M | SR-118-069-CH |
| F75 D063-05-22-M | SR M10X25 DIN912 | BLD IP20/S7 | SW6-T | LW35-475/8M | SR-118-069-CH |
| F75 D080-06-27-M | | BLD IP20/S7 | SW6-T | LW35-475/8M | SR-118-069-CH |
| F75 D100-07-32-M | | BLD IP20/S7 | SW6-T | LW35-475/8M | SR-118-069-CH |
| F75 D125-08-40-M | | BLD IP20/S7 | SW6-T | LW35-475/8M | SR-118-069-CH |

HELIDO 865 LINE

## S865 FSN-13

65° Face Mills Carrying Inserts with 8 Cutting Edges




| Designation | DC | DCX[1] | CICT[2] | OAL | DHUB | DCONMS | APMX[3] | Arbor[4] | kg |
|---|---|---|---|---|---|---|---|---|---|
| S865 FSN D050-04-22-R13 | 50.00 | 59.70 | 4 | 40.00 | 48.00 | 22.00 | 6.00 | A | 0.36 |
| S865 FSN D050-06-22-R13 | 50.00 | 59.70 | 6 | 40.00 | 48.00 | 22.00 | 6.00 | A | 0.36 |
| S865 FSN D063-06-22-R13 | 63.00 | 72.70 | 6 | 40.00 | 48.00 | 22.00 | 6.00 | A | 0.51 |
| S865 FSN D063-08-22-R13 | 63.00 | 72.70 | 8 | 40.00 | 48.00 | 22.00 | 6.00 | A | 0.50 |
| S865 FSN D080-07-27-R13 | 80.00 | 89.70 | 7 | 50.00 | 60.00 | 27.00 | 6.00 | B | 0.92 |
| S865 FSN D080-10-27-R13 | 80.00 | 89.70 | 10 | 50.00 | 60.00 | 27.00 | 6.00 | B | 0.93 |
| S865 FSN D100-08-32-R13 | 100.00 | 109.70 | 8 | 50.00 | 70.00 | 32.00 | 6.00 | B | 1.37 |
| S865 FSN D100-12-32-R13 | 100.00 | 109.70 | 12 | 50.00 | 70.00 | 32.00 | 6.00 | B | 1.37 |
| S865 FSN D125-10-40-R13 | 125.00 | 134.70 | 10 | 63.00 | 82.00 | 40.00 | 6.00 | B | 2.58 |
| S865 FSN D125-16-40-R13 | 125.00 | 134.70 | 16 | 63.00 | 82.00 | 40.00 | 6.00 | B | 2.59 |

- For user guide, see pages 616-621

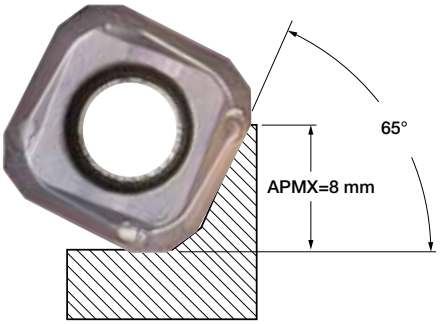
[1] Cutting diameter maximum

[2] Number of inserts (or edges for solid tool)

[3] Depth of cut on steel with coarse pitch cutters and on cast iron with fine pitch cutters may be increased to 8 mm.

[4] For adaptation options, see page 622

**For inserts, see pages:** S865 SNMU 1305ZNTR (571)

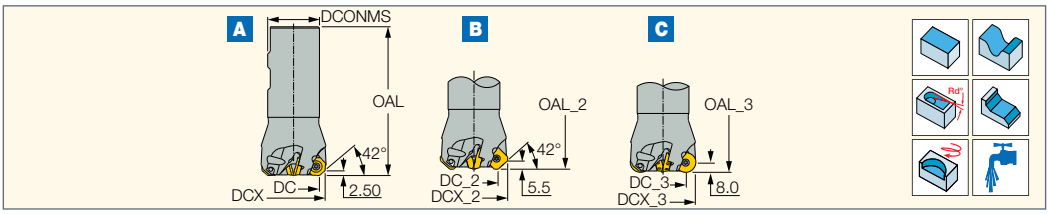



### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| S865 FSN D050-04-22-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | SR M10X20DIN912 |
| S865 FSN D050-06-22-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | SR M10X20DIN912 |
| S865 FSN D063-06-22-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | SR M10X20DIN912 |
| S865 FSN D063-08-22-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | SR M10X20DIN912 |
| S865 FSN D080-07-27-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |
| S865 FSN D080-10-27-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |
| S865 FSN D100-08-32-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |
| S865 FSN D100-12-32-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |
| S865 FSN D125-10-40-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |
| S865 FSN D125-16-40-R13 | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |

HELIOCTO

**HOE-R06**
Endmills Carrying Octagonal, Square and Round Inserts




| Designation | DC | DCX[1] | OAL | RMPX°[2] | DC_2 | DCX_2 | OAL_2 | RMPX°_2 | DC_3 | DCX_3 | OAL_3 | RMPX°_3 | DCONMS | CICT[3] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOE D32-03-W32-R06 | 32.00 | 41.40 | 95.00 | 5.9 | 29.40 | 44.10 | 96.2 | 9.0 | 26.80 | 42.70 | 95.50 | 7.6 | 32.00 | 3 | 0.54 |
| HOE D40-04-W40-R06 | 40.00 | 49.40 | 115.00 | 5.0 | 37.40 | 52.10 | 116.2 | 6.8 | 34.80 | 50.70 | 115.50 | 5.0 | 40.00 | 4 | 1.09 |
| HOE D50-04-W40-R06 | 50.00 | 59.40 | 115.00 | 4.2 | 47.40 | 62.10 | 116.2 | 5.0 | 44.80 | 60.70 | 115.50 | 5.7 | 40.00 | 4 | 1.23 |

• A - with OEM. 060405... insert • B - with SECT/SEMT 1404... insert • C - with REM. 1505... round insert
(1) Cutting diameter maximum
(2) Maximum ramping angle
(3) Number of inserts (or edges for solid tool)

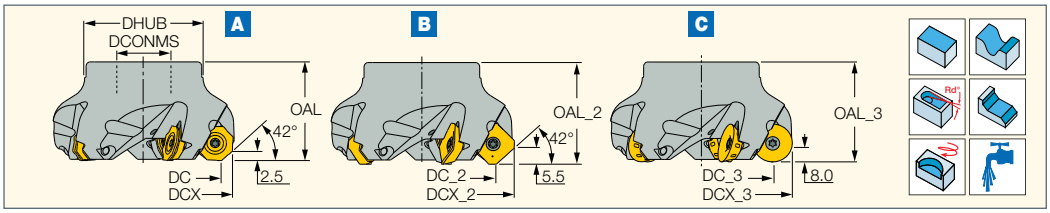
**For inserts, see pages:** OECR (575) • OEMT/OEKT 060405 (575) • OEMW-AETN (576) • REMT-76 (602) • SECT/SEMT 1404 (583)

## Spare Parts

| Designation | | | |
|---|---|---|---|
| HOE D32-03-W32-R06 | SR 14-544/S | BLD T15/S7 | SW6-T-SH |
| HOE D40-04-W40-R06 | SR 14-544/S | BLD T15/S7 | SW6-T-SH |
| HOE D50-04-W40-R06 | SR 14-544 | BLD T15/S7 | SW6-T-SH |

HELIOCTO

**HOF-R06**
Face Mills Carrying Octagonal, Square, and Round Inserts




| Designation | DC | DCX[1] | OAL | RMPX°[2] | DC_2 | DCX_2 | OAL_2 | RMPX°_2 | DC_3 | DCX_3 | OAL_3 | RMPX°_3 | CICT[3] | DHUB | DCONMS | Arbor[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOF D040-04-22-R06 | 40.00 | 49.40 | 40.00 | 5.0 | 37.40 | 52.10 | 41.2 | 6.8 | 34.80 | 50.70 | 40.50 | 5.0 | 4 | 48.00 | 22.00 | A | 0.33 |
| HOF D050-04-22-R06 | 50.00 | 59.40 | 40.00 | 4.2 | 47.40 | 62.10 | 41.2 | 5.0 | 44.80 | 60.70 | 40.50 | 5.7 | 4 | 48.00 | 22.00 | A | 0.44 |
| HOF D063-05-22-R06 | 63.00 | 72.40 | 40.00 | 3.2 | 60.40 | 75.10 | 41.2 | 4.0 | 57.80 | 73.70 | 40.50 | 4.0 | 5 | 52.00 | 22.00 | A | 0.58 |
| HOF D080-06-27-R06 | 80.00 | 89.40 | 50.00 | 2.5 | 77.40 | 92.10 | 51.2 | 3.0 | 74.80 | 90.70 | 50.50 | 3.0 | 6 | 60.00 | 27.00 | B | 1.13 |
| HOF D100-07-32-R06 | 100.00 | 109.40 | 50.00 | 1.9 | 97.40 | 112.10 | 51.2 | 2.3 | 94.80 | 110.70 | 50.50 | 2.2 | 7 | 70.00 | 32.00 | B | 1.65 |
| HOF D125-08-40-R06 | 125.00 | 134.40 | 63.00 | 1.4 | 122.40 | 137.10 | 64.2 | 1.8 | 119.80 | 135.70 | 63.50 | 1.6 | 8 | 82.00 | 40.00 | B | 3.19 |

• A - with OEM. 060405...\ OECR 06.. inserts • B - with SECT/SEMT 1404... inserts • C - with REM. 1505... round insert
(1) Cutting diameter maximum
(2) Maximum ramping angle
(3) Number of inserts (or edges for solid tool)
(4) For adaptation options, see page 622

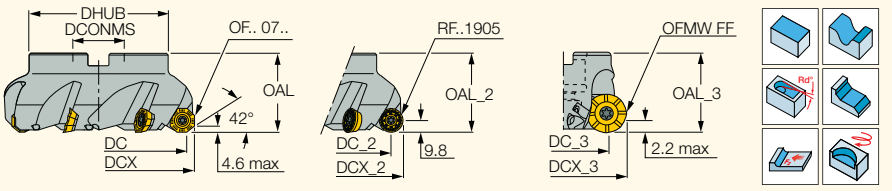
**For inserts, see pages:** OECR (575) • OEMT/OEKT 060405 (575) • OEMW-AETN (576) • REMT-76 (602) • SECT/SEMT 1404 (583)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HOF D040-04-22-R06 | SR 14-544/S | BLD T15/S7 | SW6-T-SH | SR M10X25DIN7984 |
| HOF D050-04-22-R06 | SR 14-544 | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| HOF D063-05-22-R06 | SR 14-544 | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| HOF D080-06-27-R06 | SR 14-544 | BLD T15/M7 | SW6-T-SH | |
| HOF D100-07-32-R06 | SR 14-544 | BLD T15/M7 | SW6-T-SH | |
| HOF D125-08-40-R06 | SR 14-544 | BLD T15/M7 | SW6-T-SH | |

HELIOCTO

**HOF-R07**
Face Mills Carrying Octagonal Round and Fast Feed Segmented Round Inserts




| Designation | DC | DCX[2] | OAL | RMPX°[3] | DCX_2 | DC_2 | OAL_2 | RMPX°_2[4] | DC_3 | DCX_3 | OAL_3 | RMPX°_3[5] | CICT[6] | DHUB | DCONMS | Arbor[7] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOF D050-03-22-R07 | 50.00 | 62.50 | 40.00 | 6.5 | 63.30 | 43.56 | 40.50 | 9.0 | 44.80 | 64.00 | 40.60 | 9.0 | 3 | 48.00 | 22.00 | A | 0.30 |
| HOF D063-04-22-R07 | 63.00 | 75.50 | 40.00 | 5.0 | 76.30 | 56.56 | 40.50 | 6.0 | 57.80 | 77.00 | 40.60 | 6.0 | 4 | 48.00 | 22.00 | A | 0.48 |
| HOF D080-05-27-R07 [1] | 80.00 | 92.50 | 50.00 | 3.5 | 93.30 | 73.56 | 50.50 | 4.5 | 92.50 | 94.00 | 50.60 | 4.5 | 5 | 60.00 | 27.00 | B | 0.91 |
| HOF D100-06-32-R07 [1] | 100.00 | 112.50 | 50.00 | 2.5 | 113.30 | 93.56 | 50.50 | 3.0 | 94.80 | 114.00 | 50.60 | 3.0 | 6 | 70.00 | 32.00 | B | 1.33 |
| HOF D125-08-40-R07 [1] | 125.00 | 137.50 | 63.00 | 2.5 | 138.30 | 118.56 | 63.50 | 2.5 | 119.80 | 139.00 | 63.60 | 2.5 | 8 | 82.00 | 40.00 | B | 2.70 |
| HOF D160-10-40-R07 | 160.00 | 172.50 | 63.00 | 1.9 | 173.30 | 153.56 | 63.50 | 1.9 | 154.80 | 174.00 | 63.60 | - | 10 | 92.00 | 40.00 | C | 3.83 |
| HOF D200-12-60-R07 | 200.00 | 212.50 | 63.00 | 1.5 | 213.30 | 193.56 | 63.50 | 1.5 | 194.80 | 214.00 | 63.60 | - | 12 | 150.00 | 60.00 | C | 7.03 |
| HOF D250-15-60-R07 | 250.00 | 262.50 | 63.00 | 1.2 | 263.30 | 243.56 | 63.50 | 1.2 | 244.80 | 264.00 | 63.60 | - | 15 | 150.00 | 60.00 | C | 10.08 |
| HOF D315-18-60-R07 | 315.00 | 327.50 | 80.00 | 0.9 | 328.30 | 308.56 | 80.50 | 0.9 | 309.80 | 329.00 | 80.60 | - | 18 | 215.00 | 60.00 | C | 21.00 |

• Helical interpolation is applicable up to and including 100 mm diameter • For user guide, see pages 616-621

[1] For internal coolant through the holder, use a matching coolant set (should be ordered separately)

[2] Cutting diameter maximum

[3] Maximum ramping angle with OF..07.. inserts

[4] Dimensions with RF.. 1905 round inserts

[5] Dimensions with OFMW FF inserts

[6] Number of inserts (or edges for solid tool)

[7] For adaptation options, see page 622

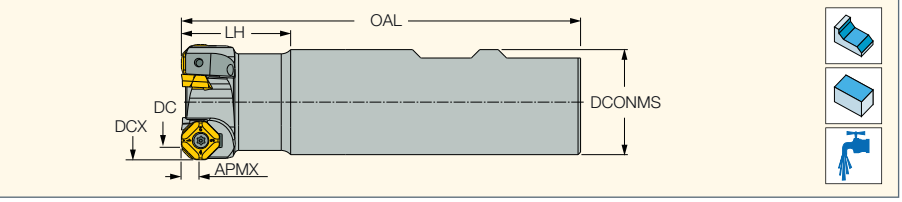
**For inserts, see pages:** OFCR/OFCT-AEN/AETN (577) • OFCR/OFCT-RW/AER (wiper) (577) • OFMT 07 (576) • OFMW-AETN (576) • OFMW-FF (578) • RFMT 1905-76 (604)

## Spare Parts

| Designation | | | | | | | |
|---|---|---|---|---|---|---|---|
| HOF D050-03-22-R07 | SR 14-591/H | BLD T20/S7 | SW6-T | THOF-07R | SR M2.5X8 DIN912 TUFLOK | HW 2.0 | SR M10X25 DIN912 |
| HOF D063-04-22-R07 | SR 14-591/H | BLD T20/S7 | SW6-T | THOF-07R | SR M2.5X10 DIN912 TUFLOK | HW 2.0 | SR M10X25 DIN912 |
| HOF D080-05-27-R07 | SR 14-591/H | BLD T20/S7 | SW6-T | THOF-07R | SR M2.5X8 DIN912 TUFLOK | HW 2.0 | |
| HOF D100-06-32-R07 | SR 14-591/H | BLD T20/M7 | SW6-T | THOF-07R | SR M2.5X10 DIN912 TUFLOK | HW 2.0 | |
| HOF D125-08-40-R07 | SR 14-591/H | BLD T20/M7 | SW6-T | THOF-07R | SR M2.5X10 DIN912 TUFLOK | HW 2.0 | |
| HOF D160-10-40-R07 | SR 14-591/H | BLD T20/L7 | SW6-T | THOF-07R | SR M2.5X10 DIN912 TUFLOK | HW 2.0 | |
| HOF D200-12-60-R07 | SR 14-591/H | BLD T20/L7 | SW6-T | THOF-07R | SR M2.5X10 DIN912 TUFLOK | HW 2.0 | |
| HOF D250-15-60-R07 | SR 14-591/H | BLD T20/L7 | SW6-T | THOF-07R | SR M2.5X10 DIN912 TUFLOK | HW 2.0 | |
| HOF D315-18-60-R07 | SR 14-591/H | BLD T20/L7 | SW6-T | THOF-07R | SR M2.5X10 DIN912 TUFLOK | HW 2.0 | |

DOVEIQMILL 845 LINE

**IQ845 ESY-R05**
50° Endmills Carrying Square Inserts with 8 Cutting Edges




| Designation | DC | DCX[1] | CICT[2] | APMX | OAL | LH | DCONMS | Shank[3] | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IQ845 ESY D016-03-W20-R05 | 16.00 | 21.40 | 3 | 2.60 | 85.00 | 26.0 | 20.00 | W | 0.16 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 ESY D020-03-W20-R05 | 20.00 | 25.50 | 3 | 2.60 | 90.00 | 26.0 | 20.00 | W | 0.19 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 ESY D025-03-W25-R05 | 25.00 | 30.60 | 3 | 2.60 | 95.00 | 26.0 | 25.00 | W | 0.32 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 ESY D025-04-W25-R05 | 25.00 | 30.60 | 4 | 2.60 | 95.00 | 26.0 | 25.00 | W | 0.31 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 ESY D032-04-W32-R05 | 32.00 | 37.70 | 4 | 2.60 | 100.00 | 26.0 | 32.00 | W | 0.56 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 ESY D032-05-W32-R05 | 32.00 | 37.70 | 5 | 2.60 | 100.00 | 26.0 | 32.00 | W | 0.56 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 ESY D040-05-W40-R05 | 40.00 | 45.70 | 5 | 2.60 | 110.00 | 26.0 | 40.00 | W | 0.97 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 ESY D040-06-W40-R05 | 40.00 | 45.70 | 6 | 2.60 | 110.00 | 26.0 | 40.00 | W | 1.05 | SR M2.5X6-T7-60 | T-7/51 |

• For user guide, see pages 616-621

[1] Cutting diameter maximum

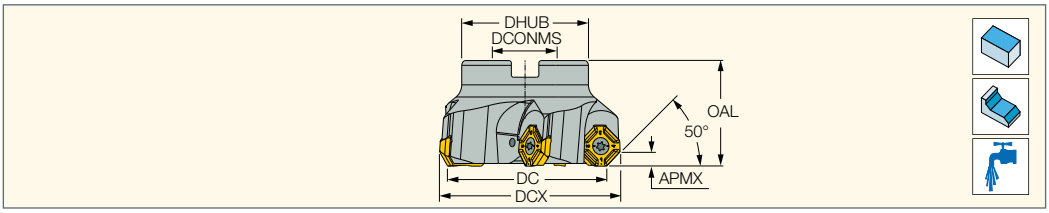
[2] Number of inserts (or edges for solid tool)

[3] W-Weldon

**For inserts, see pages:** IQ845 SYHU-05 (567)

DOVE IQ MILL 845 LINE

**IQ845 FSY-R05**
50° Face Mills Carrying Square Inserts with 8 Cutting Edges




| Designation | DC | DCX(1) | CICT(2) | APMX | OAL | DHUB | DCONMS | Arbor(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IQ845 FSY D040-04-16-R05 | 40.00 | 45.70 | 4 | 2.60 | 40.00 | 38.00 | 16.00 | A | 0.28 | SR M8X25DIN912 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 FSY D040-07-16-R05 | 40.00 | 45.70 | 7 | 2.60 | 40.00 | 38.00 | 16.00 | A | 0.26 | SR M8X25DIN912 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 FSY D050-05-22-R05 | 50.00 | 55.80 | 5 | 2.60 | 40.00 | 48.00 | 22.00 | A | 0.44 | SR M10X20DIN912 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 FSY D050-09-22-R05 | 50.00 | 55.80 | 9 | 2.60 | 40.00 | 48.00 | 22.00 | A | 0.41 | SR M10X20DIN912 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 FSY D063-07-22-R05 | 63.00 | 68.80 | 7 | 2.60 | 40.00 | 48.00 | 22.00 | B | 0.57 | SR M10X20DIN912 | SR M2.5X6-T7-60 | T-7/51 |
| IQ845 FSY D063-11-22-R05 | 63.00 | 68.80 | 11 | 2.60 | 40.00 | 48.00 | 22.00 | B | 0.55 | SR M10X20DIN912 | SR M2.5X6-T7-60 | T-7/51 |

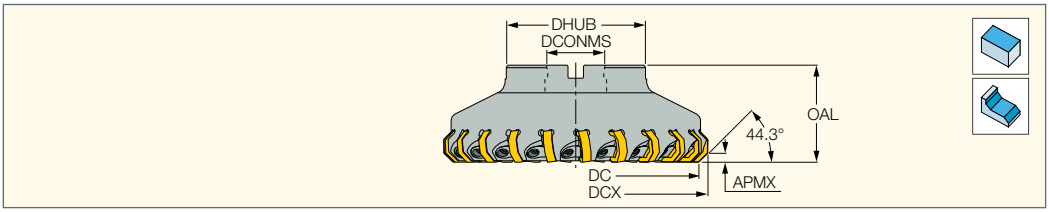
- For user guide, see pages 616-621

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) For adaptation options, see page 622

**For inserts, see pages:** IQ845 SYHU-05 (567)

16MILL

**F45WG**
45° Face Mills Carrying Octagonal ONHU/MU 0806... Inserts with 16 Cutting Edges




| Designation | DC | DCX(2) | CICT(3) | APMX | OAL | DHUB | DCONMS | Arbor(4) | kg |
|---|---|---|---|---|---|---|---|---|---|
| F45WG D080-10-27-FX-R08 (1) | 80.00 | 92.00 | 10 | 5.50 | 50.00 | 60.00 | 27.00 | B | 1.11 |
| F45WG D100-14-32-FX-R08 (1) | 100.00 | 112.00 | 14 | 5.50 | 50.00 | 70.00 | 32.00 | B | 1.64 |
| F45WG D125-18-40-FX-R08 (1) | 125.00 | 137.00 | 18 | 5.50 | 63.00 | 82.00 | 40.00 | B | 3.00 |
| F45WG D160-22-40-FX-R08 | 160.00 | 172.00 | 22 | 5.50 | 63.00 | 92.00 | 40.00 | C | 4.58 |

- Note: Recommended wedge clamping torque: 8.5-9.0 Nxm
- For user guide, see pages 616-621

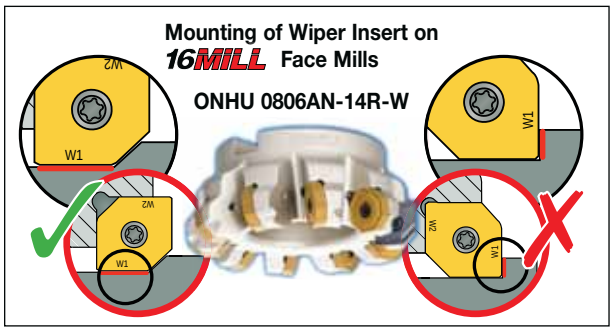
(1) For internal coolant through the holder, use a matching coolant set (should be ordered separately)
(2) Cutting diameter maximum
(3) Number of inserts (or edges for solid tool)
(4) For adaptation options, see page 622

**For inserts, see pages:** ONHQ-TN (587) • ONHU 0806-N-PL (588) • ONHU 0806AN-W (588) • ONHU/ONMU 080608 AN-N-HP (588) • ONHU/ONMU-08-TN-MM (587) • ONHU/ONMU-08-TN/HL (587)

## Wiper Inserts

Wiper inserts are used on face mill cutters, providing improved surface finish and thus eliminating the use of other finishing cutters.
**ONHU 0806AN-14R-W** mounted on **F45WG** and **F45NM** milling cutters. This insert provides 4 right-hand wiper edges.

Mounting instructions have been included in each insert package to avoid incorrect clamping orientation. Only correct mounting will provide high surface finish!

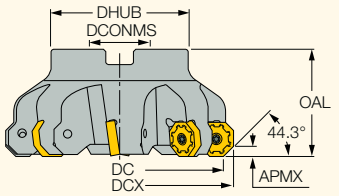



## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| F45WG | SR 118-069 | BLD IP20/S7 | SW6-T | LW 35-475/M |

16MILL

**F45NM**
45° Face Mills Carrying
Octagonal ONHU/MU 0806...
Inserts with 16 Cutting Edges




| Designation | DC | DCX[2] | CICT[3] | APMX | OAL | DHUB | DCONMS | Arbor[4] | kg |
|---|---|---|---|---|---|---|---|---|---|
| **F45NM D063-05-22-R08** | 63.00 | 75.00 | 5 | 5.50 | 40.00 | 48.00 | 22.00 | A | 0.46 |
| **F45NM D080-06-27-R08** [1] | 80.00 | 92.00 | 6 | 5.50 | 50.00 | 60.00 | 27.00 | B | 0.95 |
| **F45NM D080-08-27-R08** [1] | 80.00 | 92.00 | 8 | 5.50 | 50.00 | 60.00 | 27.00 | B | 0.92 |
| **F45NM D100-07-32-R08** [1] | 100.00 | 112.00 | 7 | 5.50 | 50.00 | 70.00 | 32.00 | B | 1.40 |
| **F45NM D100-10-32-R08** [1] | 100.00 | 112.00 | 10 | 5.50 | 50.00 | 70.00 | 32.00 | B | 1.39 |
| **F45NM D125-08-40-R08** [1] | 125.00 | 137.00 | 8 | 5.50 | 63.00 | 82.00 | 40.00 | B | 2.68 |
| **F45NM D125-12-40-R08** [1] | 125.00 | 137.00 | 12 | 5.50 | 63.00 | 82.00 | 40.00 | B | 2.63 |
| **F45NM D160-10-40-R08** | 160.00 | 172.00 | 10 | 5.50 | 63.00 | 92.00 | 40.00 | C | 4.10 |
| **F45NM D160-15-40-R08** | 160.00 | 172.00 | 15 | 5.50 | 63.00 | 92.00 | 40.00 | C | 4.17 |
| **F45NM D200-12-60-R08** | 200.00 | 212.00 | 12 | 5.50 | 63.00 | 150.00 | 60.00 | C | 7.12 |
| **F45NM D250-14-60-R08** | 250.00 | 262.00 | 14 | 5.50 | 63.00 | 137.00 | 60.00 | C | 8.95 |

- Wiper inserts are used on face mill cutters, providing improved surface finish, thus eliminating the use of other finishing cutters
- For user guide, see pages 616-621

[1] For internal coolant through the holder, use a matching coolant set (should be ordered separately)
[2] Cutting diameter maximum
[3] Number of inserts (or edges for solid tool)
[4] For adaptation options, see page 622

**For inserts, see pages:** ONHQ-TN (587) • ONHU 0806-N-PL (588) • ONHU 0806AN-W (588) • ONHU/ONMU 080608 AN-N-HP (588) • ONHU/ONMU-08-TN-MM (587) • ONHU/ONMU-08-TN/HL (587)

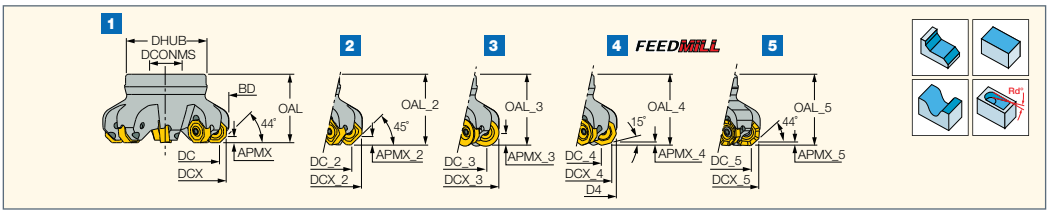
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| **F45NM D063-05-22-R08** | SR 14-591/H | BLD T20/S7 | SW6-T | SR M10X25 DIN912 |
| **F45NM D080-06-27-R08** | SR 14-591/H | BLD T20/S7 | SW6-T | |
| **F45NM D080-08-27-R08** | SR 11800771 | BLD IP15/S7 | SW6-T-SH | |
| **F45NM D100-07-32-R08** | SR 14-591/H | BLD T20/S7 | SW6-T | |
| **F45NM D100-10-32-R08** | SR 11800771 | BLD IP15/S7 | SW6-T-SH | |
| **F45NM D125-08-40-R08** | SR 14-591/H | BLD T20/S7 | SW6-T | |
| **F45NM D125-12-40-R08** | SR 11800771 | BLD IP15/S7 | SW6-T-SH | |
| **F45NM D160-10-40-R08** | SR 14-591/H | BLD T20/L7 | SW6-T | |
| **F45NM D160-15-40-R08** | SR 11800771 | BLD IP15/M7 | SW6-T-SH | |
| **F45NM D200-12-60-R08** | SR 14-591/H | BLD T20/L7 | SW6-T | |
| **F45NM D250-14-60-R08** | SR 14-591/H | BLD T20/L7 | SW6-T | |

HELIDO 800 LINE

## SOF45

Multifunction Face Mills for Octagonal, Square and Round Insert Contours with Various Entry Angles




| Designation | BD | DC | DCX[1] | DC_2 | DCX_2 | DC_3 | DCX_3 | DC_4 | DCX_4 | D4 | DC_5 | DCX_5 | APMX | APMX_2 | APMX_3 | APMX_4 | APMX_5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOF45 8/16-D040-04-22R | 50.40 | 40.00 | 48.00 | 37.65 | 50.40 | 35.40 | 51.20 | 34.50 | 44.00 | 50.50 | 40.30 | 50.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D050-04-22R | 60.40 | 50.00 | 58.00 | 47.65 | 60.40 | 45.40 | 61.20 | 44.50 | 54.00 | 60.50 | 50.30 | 60.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D050-06-22R | 60.40 | 50.00 | 58.00 | 47.65 | 60.40 | 45.40 | 61.20 | 44.50 | 54.00 | 60.50 | 50.30 | 60.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 D050-04-22-R13 | 62.75 | 52.35 | 60.35 | 50.00 | 62.75 | 47.75 | 63.55 | 46.95 | 56.35 | 62.90 | 52.65 | 62.4 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D063-04-22R | 73.40 | 63.00 | 71.00 | 60.65 | 73.40 | 58.40 | 74.20 | 57.50 | 67.00 | 73.50 | 63.30 | 73.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D063-06-22R | 73.40 | 63.00 | 71.00 | 60.65 | 73.40 | 58.40 | 74.20 | 57.50 | 67.00 | 73.50 | 63.30 | 73.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D063-08-22R | 73.40 | 63.00 | 71.00 | 60.65 | 73.40 | 58.40 | 74.20 | 57.50 | 67.00 | 73.50 | 63.30 | 73.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 D063-06-22-R13 | 75.75 | 65.35 | 72.35 | 63.00 | 75.75 | 60.75 | 76.55 | 59.95 | 69.35 | 75.90 | 63.65 | 75.3 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D080-07-27R | 90.40 | 80.00 | 88.00 | 77.65 | 90.40 | 65.40 | 91.20 | 74.50 | 84.00 | 90.50 | 80.30 | 90.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D080-10-27R | 90.40 | 80.00 | 88.00 | 77.65 | 90.40 | 65.40 | 91.20 | 74.50 | 84.00 | 90.50 | 80.30 | 90.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 D080-07-27-R13 | 92.75 | 82.35 | 90.35 | 80.00 | 92.75 | 77.60 | 93.40 | 76.95 | 86.35 | 92.90 | 82.65 | 92.3 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D100-08-32R | 110.40 | 100.00 | 108.00 | 97.65 | 110.40 | 95.40 | 111.20 | 94.50 | 104.00 | 110.50 | 100.30 | 110.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D100-12-32R | 110.40 | 100.00 | 108.00 | 97.65 | 110.40 | 95.40 | 111.20 | 94.50 | 104.00 | 110.50 | 100.30 | 110.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 D100-08-32-R13 | 112.75 | 102.35 | 110.35 | 100.00 | 112.75 | 97.75 | 113.55 | 96.95 | 106.35 | 112.90 | 102.65 | 112.3 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D125-10-40R | 135.40 | 125.00 | 133.00 | 122.65 | 135.40 | 120.40 | 136.20 | 119.50 | 129.00 | 135.50 | 125.30 | 135.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D125-16-40R | 135.40 | 125.00 | 133.00 | 122.65 | 135.40 | 120.40 | 136.20 | 119.50 | 129.00 | 135.50 | 125.30 | 135.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 D125-10-40-R13 | 137.75 | 127.35 | 135.35 | 125.00 | 137.75 | 122.75 | 138.55 | 121.95 | 131.35 | 137.90 | 127.65 | 137.3 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D160-12-40R | 170.40 | 160.00 | 168.00 | 157.65 | 170.40 | 155.40 | 171.20 | 154.50 | 164.00 | 171.50 | 160.30 | 170.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D200-14-60R | 210.40 | 200.00 | 208.00 | 197.65 | 210.40 | 195.40 | 211.20 | 194.50 | 204.00 | 211.50 | 200.50 | 210.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D250-16-60R | 260.40 | 250.00 | 258.00 | 247.65 | 260.40 | 245.40 | 261.20 | 244.50 | 254.00 | 261.50 | 250.30 | 260.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |
| SOF45 8/16-D315-20-60R | 325.40 | 315.00 | 323.00 | 312.65 | 325.40 | 310.40 | 326.20 | 309.50 | 319.00 | 326.50 | 315.30 | 325.0 | 3.50 | 6.00 | 7.90 | 1.20 | 2.90 |

| Designation | OAL | OAL_2 | OAL_3 | OAL_4 | OAL_5 | CICT[2] | DHUB | DCONMS | RMPX°_3[3] | Arbor[4] | CSP[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SOF45 8/16-D040-04-22R | 40.00 | 41.2 | 41.60 | 41.30 | 41.20 | 4 | 45.00 | 22.00 | 3.7 | A | 1 |
| SOF45 8/16-D050-04-22R | 40.00 | 41.2 | 41.60 | 41.30 | 41.20 | 4 | 48.00 | 22.00 | 5.6 | A | 1 |
| SOF45 8/16-D050-06-22R | 40.00 | 41.2 | 41.60 | 41.30 | 41.20 | 6 | 48.00 | 22.00 | 5.6 | A | 1 |
| SOF45 D050-04-22-R13 | 38.80 | 40.0 | 40.40 | 40.10 | 40.20 | 4 | 48.00 | 22.00 | 5.4 | A | 1 |
| SOF45 8/16-D063-04-22R | 40.00 | 41.2 | 41.60 | 41.30 | 41.20 | 4 | 48.00 | 22.00 | 6.3 | A | 1 |
| SOF45 8/16-D063-06-22R | 40.00 | 41.2 | 41.60 | 41.30 | 41.20 | 6 | 48.00 | 22.00 | 6.3 | B | 0 |
| SOF45 8/16-D063-08-22R | 40.00 | 41.2 | 41.60 | 41.30 | 41.20 | 8 | 48.00 | 22.00 | 6.3 | B | 0 |
| SOF45 D063-06-22-R13 | 38.80 | 40.0 | 40.40 | 40.10 | 40.20 | 6 | 48.00 | 22.00 | 5.7 | B | 1 |
| SOF45 8/16-D080-07-27R | 50.00 | 51.2 | 51.60 | 51.30 | 51.20 | 7 | 60.00 | 27.00 | 6.2 | B | 0 |
| SOF45 8/16-D080-10-27R | 50.00 | 51.2 | 51.60 | 51.30 | 51.20 | 10 | 60.00 | 27.00 | 6.2 | B | 0 |
| SOF45 D080-07-27-R13 | 48.80 | 50.0 | 50.40 | 50.10 | 50.20 | 7 | 60.00 | 27.00 | 6.0 | B | 1 |
| SOF45 8/16-D100-08-32R | 50.00 | 51.2 | 51.60 | 51.30 | 51.20 | 8 | 70.00 | 32.00 | 4.7 | B | 0 |
| SOF45 8/16-D100-12-32R | 50.00 | 51.2 | 51.60 | 51.30 | 51.20 | 12 | 70.00 | 32.00 | 4.7 | B | 0 |
| SOF45 D100-08-32-R13 | 48.80 | 50.0 | 50.40 | 50.10 | 50.00 | 8 | 70.00 | 32.00 | 4.6 | B | 1 |
| SOF45 8/16-D125-10-40R | 63.00 | 64.2 | 64.60 | 64.30 | 64.20 | 10 | 82.00 | 40.00 | 3.6 | B | 0 |
| SOF45 8/16-D125-16-40R | 63.00 | 64.2 | 64.60 | 64.30 | 64.20 | 16 | 82.00 | 40.00 | 3.6 | B | 0 |
| SOF45 D125-10-40-R13 | 61.80 | 63.0 | 63.40 | 63.10 | 63.20 | 10 | 82.00 | 40.00 | 3.5 | B | 1 |
| SOF45 8/16-D160-12-40R | 63.00 | 64.2 | 64.60 | 64.30 | 64.20 | 12 | 92.00 | 40.00 | 2.6 | C | 0 |
| SOF45 8/16-D200-14-60R | 63.00 | 64.2 | 64.60 | 64.30 | 64.20 | 14 | 135.00 | 60.00 | 2.0 | C | 0 |
| SOF45 8/16-D250-16-60R | 63.00 | 64.2 | 64.60 | 64.30 | 64.20 | 16 | 137.00 | 60.00 | 1.5 | C | 0 |
| SOF45 8/16-D315-20-60R | 80.00 | 81.2 | 81.60 | 81.30 | 81.20 | 20 | 222.00 | 60.00 | 1.0 | C | 0 |

- 1- with ONMU 0505... insert
- 2- with S845 SNMU 1305... insert
- 3- with RXMT 1607N insert
- 4- with OXMT 0507R08-FF insert
- 5- with OXMT 050705-R-HP insert
- Use only Torx Plus keys
- For user guide, see pages 616-621

[1] Cutting diameter maximum
[2] Number of inserts (or edges for solid tool)
[3] Valid only with RXMT 1607N insert
[4] For adaptation options, see page 622
[5] 0 - Without coolant supply, 1 - With coolant supply
[6] Master insert identification
[7] Master insert identification 2
[8] Master insert identification 3
[9] Master insert identification 4
[10] Master insert identification 5

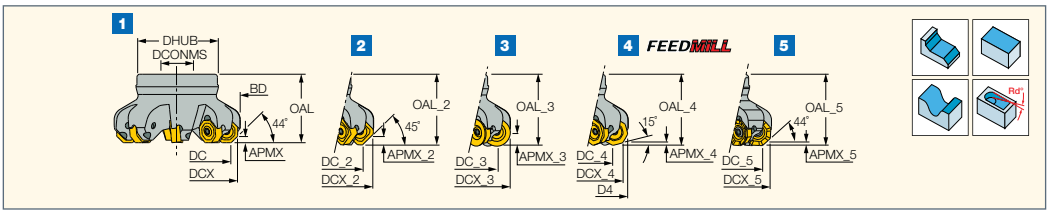
**For inserts, see pages:** ONHU 0505-W (574) • ONHU/ONMU-05 (574) • OXMT 0507 (575) • RXMT 1607 (602) • S845 SNHU 1305-W (569) • S845 SNMU/SNHU-13 (569)

Continued

HELIDO 800 LINE

## SOF45

Multifunction Face Mills for Octagonal, Square and Round Insert Contours with Various Entry Angles




| Designation | MIID[6] | MIID_2[7] | MIID_3[8] | MIID_4[9] | MIID_5[10] | kg |
|---|---|---|---|---|---|---|
| SOF45 8/16-D040-04-22R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 0.29 |
| SOF45 8/16-D050-04-22R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 0.39 |
| SOF45 8/16-D050-06-22R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 0.38 |
| SOF45 D050-04-22-R13 | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 0.38 |
| SOF45 8/16-D063-04-22R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 0.54 |
| SOF45 8/16-D063-06-22R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 0.47 |
| SOF45 8/16-D063-08-22R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 0.46 |
| SOF45 D063-06-22-R13 | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 0.50 |
| SOF45 8/16-D080-07-27R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 1.01 |
| SOF45 8/16-D080-10-27R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 0.96 |
| SOF45 D080-07-27-R13 | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 1.00 |
| SOF45 8/16-D100-08-32R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 1.39 |
| SOF45 8/16-D100-12-32R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 1.35 |
| SOF45 D100-08-32-R13 | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 1.47 |
| SOF45 8/16-D125-10-40R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 2.63 |
| SOF45 8/16-D125-16-40R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 2.53 |
| SOF45 D125-10-40-R13 | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 2.63 |
| SOF45 8/16-D160-12-40R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 3.35 |
| SOF45 8/16-D200-14-60R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 5.77 |
| SOF45 8/16-D250-16-60R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 7.98 |
| SOF45 8/16-D315-20-60R | ONHU 050500-PL | S845 SNHU 1305ANR-M | RXMT 1607N | OXMT 0507R08-FF | OXMT 050705-R-HP | 18.97 |

• 1- with ONMU 0505... insert • 2- with S845 SNMU 1305... insert • 3- with RXMT 1607N insert • 4- with OXMT 0507R08-FF insert
• 5- with OXMT 050705-R-HP insert • Use only Torx Plus keys • For user guide, see pages 616-621

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Valid only with RXMT 1607N insert
(4) For adaptation options, see page 622
(5) 0 - Without coolant supply, 1 - With coolant supply
(6) Master insert identification
(7) Master insert identification 2
(8) Master insert identification 3
(9) Master insert identification 4
(10) Master insert identification 5

**For inserts, see pages:** ONHU 0505-W (574) • ONHU/ONMU-05 (574) • OXMT 0507 (575) • RXMT 1607 (602) • S845 SNHU 1305-W (569) • S845 SNMU/SNHU-13 (569)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| SOF45 8/16-D040-04-22R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | SR M10X25 DIN912 |
| SOF45 8/16-D050-04-22R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | SR M10X20DIN912 |
| SOF45 8/16-D050-06-22R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | SR M10X20DIN912 |
| SOF45 D050-04-22-R13 | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | SR M10X20DIN912 |
| SOF45 8/16-D063-04-22R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | SR M10X25 DIN912 |
| SOF45 8/16-D063-06-22R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 8/16-D063-08-22R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 D063-06-22-R13 | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 8/16-D080-07-27R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 8/16-D080-10-27R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 D080-07-27-R13 | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 8/16-D100-08-32R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 8/16-D100-12-32R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 D100-08-32-R13 | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 8/16-D125-10-40R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 8/16-D125-16-40R | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 D125-10-40-R13 | SR 11800745 | BLD IP15/S7[a] | SW6-T-SH | |
| SOF45 8/16-D160-12-40R | SR 11800745 | BLD IP15/M7[a] | SW6-T-SH | |
| SOF45 8/16-D200-14-60R | SR 11800745 | BLD IP15/M7[a] | SW6-T-SH | |
| SOF45 8/16-D250-16-60R | SR 11800745 | BLD IP15/M7[a] | SW6-T-SH | |
| SOF45 8/16-D315-20-60R | SR 11800745 | BLD IP15/M7[a] | SW6-T-SH | |

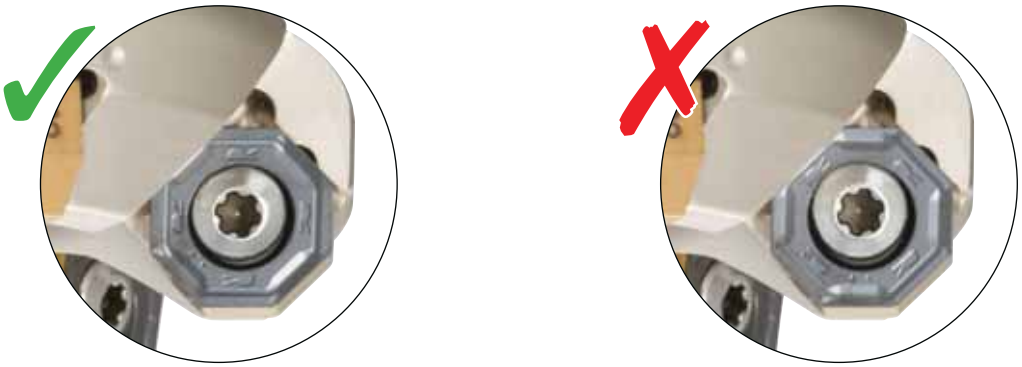
(a) IMPORTANT: Use only Torx Plus keys.

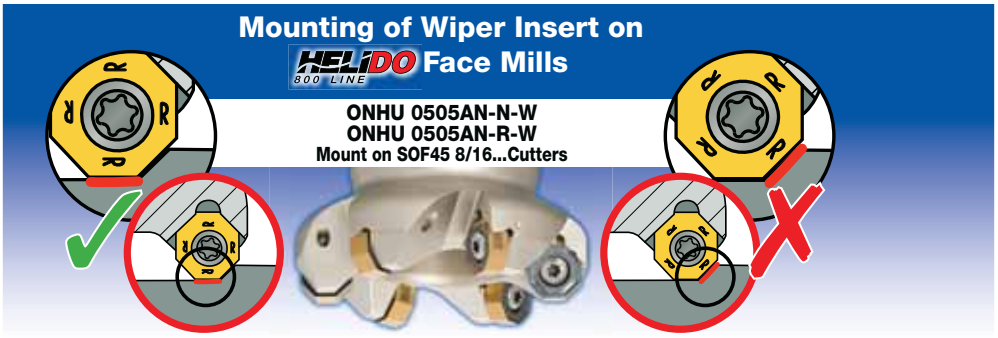
## Wiper Inserts

Wiper inserts are used on face mill cutters, providing improved surface finish and thus eliminating the use of other finishing cutters.

ONHU 0505AN-R-W mounted on standard SOF45 milling cutters. This insert provides 8 right-hand wiper edges.

ONHU 0505AN-N-W mounted on SOF45 milling cutters. This insert provides 4 right-hand wiper edges to be used on standard tools and 4 left-hand wiper edges to be used on special left-hand SOF45 cutters.

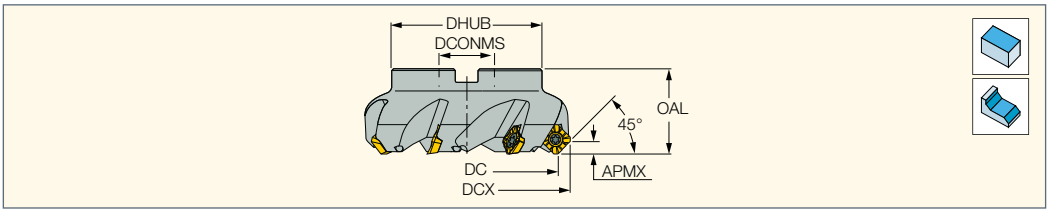





S845 SNHU 1305AN-N-W mounted on SOF45 milling cutters when the square S845 SNMU/HU 1305AN... inserts are used. This insert provides 2 right-hand and 2 left-hand wiper edges.

ISCARMILL

**F45ST**
45° Screw Clamped Face Mills
Carrying SEK/MT 12... Inserts




| Designation | DC | DCX[2] | CICT[3] | APMX | OAL | DHUB | DCONMS | Arbor[4] | kg |
|---|---|---|---|---|---|---|---|---|---|
| F45ST D040-22 | 40.00 | 50.00 | 3 | 6.50 | 40.00 | 44.00 | 22.00 | A | 0.30 |
| F45ST D050-22 | 50.00 | 62.70 | 4 | 6.50 | 40.00 | 41.80 | 22.00 | A | 0.35 |
| F45ST D063-22 | 63.00 | 75.00 | 5 | 6.50 | 40.00 | 50.00 | 22.00 | A | 0.57 |
| F45ST D080-27 [1] | 80.00 | 90.90 | 6 | 6.50 | 50.00 | 63.00 | 27.00 | B | 1.08 |
| F45ST D100-32 [1] | 100.00 | 110.00 | 6 | 6.50 | 50.00 | 72.00 | 32.00 | B | 1.61 |
| F45ST D125-40 [1] | 125.00 | 135.00 | 7 | 6.50 | 62.50 | 75.00 | 40.00 | B | 2.70 |
| F45ST D160-40 [1] | 160.00 | 170.70 | 7 | 6.50 | 63.00 | 92.00 | 40.00 | C | 4.06 |

- SE..1204 inserts are mounted directly on the cutter • SE..12T3 optional thinner inserts are mounted on a seat - TSE 12T3-N
- For user guide, see pages 616-621

[1] For internal coolant through the holder, use a matching coolant set (should be ordered separately)
[2] Cutting diameter maximum
[3] Number of inserts (or edges for solid tool)
[4] For adaptation options, see page 622

**For inserts, see pages:** SEHT-AFN (581) • SEHW-AFTN (580) • SEKT-AF-R (579) • SEKT-AFTN (580) • SEMT 12..AFTN-76 (581) • SEMT 1204AF-R-HS (580)

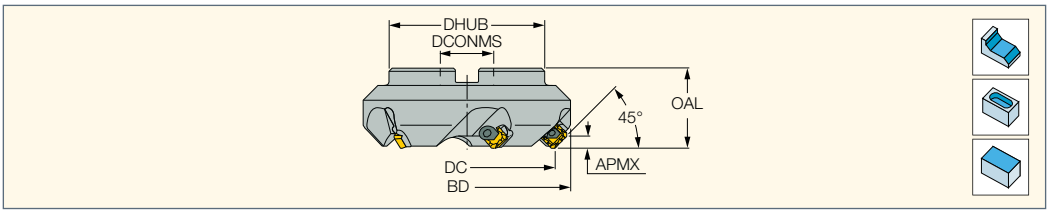
## Spare Parts

| Designation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| F45ST D040-22 | SR 14-536/S | BLD T20/M7 | SW6-T-SH | SR M10X25DIN7984 | HW 7.0 | | | | |
| F45ST D050-22 | SR 34-523 | BLD T15/M7 | SW6-T | SR M10X25DIN7984 | HW 7.0 | SR 14-601[a]* | TSE 12T3-N[a]* | SR TC-606[a]* | HW 3.5[a]* |
| F45ST D063-22 | SR 34-523 | BLD T15/M7 | SW6-T | SR M10X25DIN7984 | HW 7.0 | SR 14-601[a]* | TSE 12T3-N[a]* | SR TC-606[a]* | HW 3.5[a]* |
| F45ST D080-27 | SR 34-523 | BLD T15/M7 | SW6-T-SH | | | SR 14-601[a]* | TSE 12T3-N[a]* | SR TC-606[a]* | HW 3.5[a]* |
| F45ST D100-32 | SR 34-523 | BLD T15/M7 | SW6-T | | | SR 14-601[a]* | TSE 12T3-N[a]* | SR TC-606[a]* | |
| F45ST D125-40 | SR 34-523 | BLD T15/M7 | SW6-T | | | SR 14-601[a]* | TSE 12T3-N[a]* | SR TC-606[a]* | HW 3.5[a]* |
| F45ST D160-40 | SR 34-523 | BLD T15/M7 | SW6-T | | | SR 14-601[a]* | TSE 12T3-N[a]* | SR TC-606[a]* | HW 3.5[a]* |

* Optional, to be ordered separately
[a] Optional for insert SE..12T3

ISCARMILL

**F45E**
45° Face Mills Carrying
SEKN/R 12... Inserts




| Designation | DC | BD | APMX | CICT[2] | OAL | DHUB | DCONMS | Arbor[3] | kg |
|---|---|---|---|---|---|---|---|---|---|
| F45E D 50-22 | 50.00 | 67.30 | 6.50 | 4 | 43.00 | 42.00 | 22.00 | A | 0.59 |
| F45E D 63-22 | 63.00 | 81.20 | 6.50 | 5 | 40.00 | 42.50 | 22.00 | A | 0.81 |
| F45E D 80-27 [1] | 80.00 | 98.20 | 6.50 | 6 | 50.00 | 63.00 | 27.00 | B | 1.43 |
| F45E D100-32 [1] | 100.00 | 118.00 | 6.50 | 6 | 50.00 | 72.00 | 32.00 | B | 2.31 |
| F45E D125-40 [1] | 125.00 | 143.00 | 6.50 | 6 | 63.00 | 75.00 | 40.00 | B | 3.40 |
| F45E D160-40 | 160.00 | 178.00 | 6.50 | 8 | 63.00 | 92.00 | 40.00 | C | 5.28 |

- For user guide, see pages 616-621

[1] For internal coolant through the holder, use a matching coolant set (should be ordered separately)
[2] Number of inserts (or edges for solid tool)
[3] For adaptation options, see page 622

**For inserts, see pages:** SEKN-AF.. (581) • SEKR-AF-N-42 (582) • SEKR-AF..-76 (582) • SEKR-AFTR-HS (582)

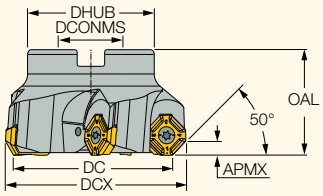
## Spare Parts

| Designation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| F45E D 50-22 | NSE 42-R | SR 35-343.4 | HW 2.0 | LW 35-2620-S | SR 35-2011 | HW 3P | SR M10X25DIN7984 | HW 7.0 |
| F45E D 63-22 | NSE 42-R | SR 35-343.4 | HW 2.0 | LW 35-2620-S | SR 35-2011 | HW 3P | SR M10X25DIN7984 | HW 7.0 |
| F45E D 80-27 | NSE 42-R | SR 35-343.4 | HW 2.0 | LW 35-2620-S | SR 35-2011 | HW 3P | | |
| F45E D100-32 | NSE 42-R | SR 35-343.4 | HW 2.0 | LW 35-2620-S | SR 35-2011 | HW 3P | | |
| F45E D125-40 | NSE 42-R | SR 35-343.4 | HW 2.0 | LW 35-2620-S | SR 35-2011 | HW 3P | | |
| F45E D160-40 | NSE 42-R | SR 35-343.4 | HW 2.0 | LW 35-2620-S | SR 35-2011 | HW 3P | | |

DOVE IQ MILL 845 LINE

**IQ845 FSY-R07**

50° Face Mills Carrying Square Inserts with 8 Cutting Edges




| Designation | DC | DCX[1] | CICT[2] | APMX | OAL | DHUB | DCONMS | Arbor[3] | CSP[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| IQ845 FSY D050-04-22-R07 | 50.00 | 59.40 | 4 | 4.60 | 40.00 | 48.00 | 22.00 | A | 1 | 0.39 |
| IQ845 FSY D050-05-22-R07 | 50.00 | 59.40 | 5 | 4.60 | 40.00 | 48.00 | 22.00 | A | 1 | 0.38 |
| IQ845 FSY D063-05-22-R07 | 63.00 | 72.40 | 5 | 4.60 | 40.00 | 48.00 | 22.00 | A | 1 | 0.51 |
| IQ845 FSY D063-07-22-R07 | 63.00 | 72.40 | 7 | 4.60 | 40.00 | 48.00 | 22.00 | A | 1 | 0.47 |
| IQ845 FSY D080-06-27-R07 | 80.00 | 89.40 | 6 | 4.60 | 50.00 | 60.00 | 27.00 | B | 1 | 1.00 |
| IQ845 FSY D080-08-27-R07 | 80.00 | 89.40 | 8 | 4.60 | 50.00 | 60.00 | 27.00 | B | 1 | 0.95 |
| IQ845 FSY D100-07-32-R07 | 100.00 | 109.40 | 7 | 4.60 | 50.00 | 70.00 | 32.00 | B | 1 | 1.36 |
| IQ845 FSY D100-10-32-R07 | 100.00 | 109.40 | 10 | 4.60 | 50.00 | 70.00 | 32.00 | B | 1 | 1.34 |
| IQ845 FSY D125-09-40-R07 | 125.00 | 134.40 | 9 | 4.60 | 63.00 | 82.00 | 40.00 | B | 1 | 2.52 |
| IQ845 FSY D125-12-40-R07 | 125.00 | 134.40 | 12 | 4.60 | 63.00 | 82.00 | 40.00 | B | 1 | 2.49 |
| IQ845 FSY D160-11-40-R07 | 160.00 | 169.40 | 11 | 4.60 | 63.00 | 92.00 | 40.00 | C | 0 | 3.31 |
| IQ845 FSY D160-15-40-R07 | 160.00 | 169.40 | 15 | 4.60 | 63.00 | 92.00 | 40.00 | C | 0 | 3.28 |
| IQ845 FSY D200-14-60-R07 | 200.00 | 209.40 | 14 | 4.60 | 63.00 | 135.00 | 60.00 | C | 0 | 5.80 |
| IQ845 FSY D250-17-60-R07 | 250.00 | 259.40 | 17 | 4.60 | 63.00 | 135.00 | 60.00 | C | 0 | 8.18 |
| IQ845 FSY D315-20-60-R07 | 315.00 | 324.40 | 20 | 4.60 | 80.00 | 220.00 | 60.00 | D | 0 | 16.87 |

- For user guide, see pages 616-621

(1) Cutting diameter maximum

(2) Number of inserts (or edges for solid tool)

(3) For adaptation options, see page 622

(4) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** IQ845 SYHU-07 (567)

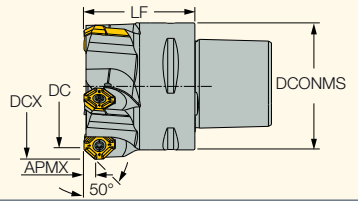
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| IQ845 FSY D050-04-22-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X20DIN912 |
| IQ845 FSY D050-05-22-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X20DIN912 |
| IQ845 FSY D063-05-22-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| IQ845 FSY D063-07-22-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| IQ845 FSY D080-06-27-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| IQ845 FSY D080-08-27-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| IQ845 FSY D100-07-32-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| IQ845 FSY D100-10-32-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| IQ845 FSY D125-09-40-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| IQ845 FSY D125-12-40-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| IQ845 FSY D160-11-40-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| IQ845 FSY D160-15-40-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| IQ845 FSY D200-14-60-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| IQ845 FSY D250-17-60-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |
| IQ845 FSY D315-20-60-R07 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH | |

DOVE IQ MILL 845 LINE

**IQ845 FSY-C#-R07**

50° Face Mills Carrying Square Inserts with 8 Cutting Edges




| Designation | DC | DCX[1] | CICT[2] | APMX | LF | SS | DCP[3] | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IQ845 FSY D063-05-C6-R07 | 63.00 | 72.40 | 5 | 4.60 | 55.00 | 63 | 1 | 1.53 | SR M4X0.7IP15 | BLD IP15/S7 | SW6-T-SH |

- For user guide, see pages 616-621

(1) Cutting diameter maximum

(2) Number of inserts (or edges for solid tool)

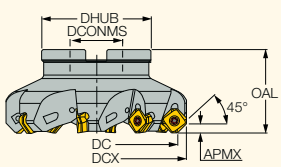
(3) 1 - Slot for data chip, 0 - Without slot for data chip

**For inserts, see pages:** IQ845 SYHU-07 (567)

HELIDO 845 LINE

## S845 F45SX-16

45° Face Mills Carrying Economical Inserts with 8 Helical Right-Hand Cutting Edges




| Designation | DC | DCX[2] | CICT[3] | APMX | OAL | DHUB | DCONMS | Arbor[4] | CSP[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| S845 F45SX D040-04-16-R16 [1] | 40.00 | 54.80 | 4 | 7.15 | 45.00 | 48.00 | 16.00 | A | 1 | 0.39 |
| S845 F45SX D050-04-22-R16 | 50.00 | 64.80 | 4 | 7.15 | 45.00 | 48.00 | 22.00 | A | 1 | 0.46 |
| S845 F45SX D050-05-22-R16 [1] | 50.00 | 64.80 | 5 | 7.15 | 45.00 | 48.00 | 22.00 | A | 1 | 0.44 |
| S845 F45SX D063-05-22-R16 | 63.00 | 77.80 | 5 | 7.15 | 45.00 | 60.00 | 22.00 | A | 1 | 0.72 |
| S845 F45SX D063-07-22-R16 [1] | 63.00 | 77.90 | 7 | 7.15 | 45.00 | 60.00 | 22.00 | A | 1 | 0.72 |
| S845 F45SX D080-09-27-R16 [1] | 80.00 | 93.10 | 9 | 7.15 | 50.00 | 63.00 | 27.00 | B | 1 | 1.01 |
| S845 F45SX D100-11-32-R16 [1] | 100.00 | 114.60 | 11 | 7.15 | 50.00 | 80.00 | 32.00 | B | 1 | 1.65 |
| S845 F45SX D100-07-32-R16 | 100.00 | 114.80 | 7 | 7.15 | 50.00 | 80.00 | 32.00 | B | 1 | 1.62 |
| S845 F45SX D125-08-40-R16 | 125.00 | 139.80 | 8 | 7.15 | 63.00 | 82.00 | 40.00 | B | 1 | 2.68 |
| S845 F45SX D125-14-40-R16 [1] | 125.00 | 139.80 | 14 | 7.15 | 63.00 | 82.00 | 40.00 | B | 1 | 2.72 |
| S845 F45SX D160-10-40-R16 | 160.00 | 174.80 | 10 | 7.15 | 63.00 | 105.00 | 40.00 | C | 0 | 4.16 |
| S845 F45SX D160-18-40-R16 [1] | 160.00 | 174.80 | 18 | 7.15 | 63.00 | 105.00 | 40.00 | C | 0 | 4.30 |
| S845 F45SX D200-12-60-R16 | 200.00 | 214.80 | 12 | 7.15 | 63.00 | 135.00 | 60.00 | C | 0 | 5.82 |
| S845 F45SX D250-15-60-R16 | 250.00 | 264.80 | 15 | 7.15 | 63.00 | 144.00 | 60.00 | C | 0 | 8.58 |

- Wiper inserts are used on face mill cutters, provide improved surface finish, eliminate the use of other finishing cutters.
- For user guide, see pages 616-621

[1] Fine pitch cutters, recommended for machining cast iron and for machining steel - up to 4 mm D.O.C.
[2] Cutting diameter maximum
[3] Number of inserts (or edges for solid tool)
[4] For adaptation options, see page 622
[5] 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** S845 SXHU 1606-W (570) • S845 SXMU/SXCU-16 (569)

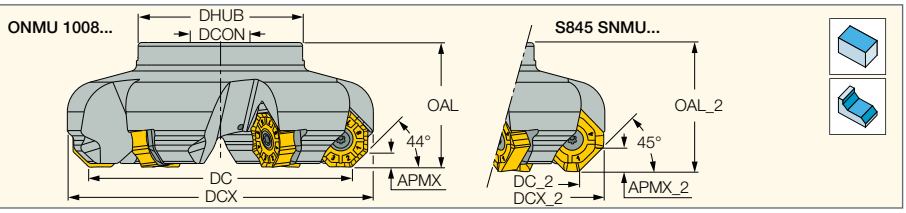
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| S845 F45SX D040-04-16-R16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M8X25DIN912 |
| S845 F45SX D050-04-22-R16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M10X25DIN7984 |
| S845 F45SX D050-05-22-R16 | SR 14-591-M | BLD T20/M7 | SW6-T | SR M10X25DIN7984 |
| S845 F45SX D063-05-22-R16 | SR 14-591 | BLD T20/M7 | SW6-T | SR M10X25DIN7984 |
| S845 F45SX D063-07-22-R16 | SR 14-591-M | BLD T20/M7 | SW6-T | SR M10X25DIN7984 |
| S845 F45SX D080-09-27-R16 | SR 14-591-M | BLD T20/M7 | SW6-T | |
| S845 F45SX D100-11-32-R16 | SR 14-591-M | BLD T20/M7 | SW6-T | |
| S845 F45SX D100-07-32-R16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| S845 F45SX D125-08-40-R16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| S845 F45SX D125-14-40-R16 | SR 14-591-M | BLD T20/M7 | SW6-T | |
| S845 F45SX D160-10-40-R16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| S845 F45SX D160-18-40-R16 | SR 14-591-M | BLD T20/M7 | SW6-T | |
| S845 F45SX D200-12-60-R16 | SR 14-591 | BLD T20/M7 | SW6-T | |
| S845 F45SX D250-15-60-R16 | SR 14-591 | BLD T20/M7 | SW6-T | |

HELIDO 800 HD LINE

## SOF45-26

Heavy Duty 45° Face Mills Carrying Square or Octagonal Double-Sided Inserts with 8/16 Cutting Edges




| Designation | DC | DCX[1] | APMX | OAL | DC_2 | APMX_2 | OAL_2 | CICT[2] | DHUB | DCONMS | Arbor[3] | CSP[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOF45 D080-04-32-R26 | 84.10 | 104.50 | 7.00 | 60.80 | 80.00 | 11.00 | 63.0 | 4 | 70.00 | 32.00 | A | 1 | 1.68 |
| SOF45 D100-05-32-R26 | 104.10 | 124.50 | 7.00 | 60.80 | 100.00 | 11.00 | 63.0 | 5 | 70.00 | 32.00 | B | 1 | 2.25 |
| SOF45 D125-06-40-R26 | 129.10 | 149.50 | 7.00 | 60.80 | 125.00 | 11.00 | 63.0 | 6 | 82.00 | 40.00 | B | 1 | 3.08 |
| SOF45 D160-08-40-R26 | 164.10 | 184.50 | 7.00 | 60.80 | 160.00 | 11.00 | 63.0 | 8 | 92.00 | 40.00 | C | 0 | 4.05 |
| SOF45 D200-10-60-R26 | 204.10 | 224.50 | 7.00 | 60.80 | 200.00 | 11.00 | 63.0 | 10 | 135.00 | 60.00 | C | 0 | 9.10 |
| SOF45 D250-12-60-R26 | 254.10 | 274.50 | 7.00 | 60.80 | 250.00 | 11.00 | 63.0 | 12 | 135.00 | 60.00 | C | 0 | 13.50 |
| SOF45 D315-14-60-R26 | 319.10 | 339.50 | 7.00 | 77.80 | 315.00 | 11.00 | 80.0 | 14 | 220.00 | 60.00 | C | 0 | 19.73 |

- For user guide, see pages 616-621

(1) Cutting diameter maximum

(2) Number of inserts (or edges for solid tool)

(3) For adaptation options, see page 622

(4) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** ONMU 1008 (579) • S845 SNMU 2608 (571)

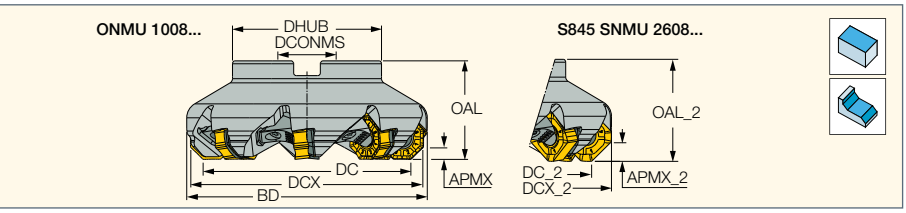
### Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| SOF45 D080-04-32-R26 | SR 1/4-28XIP25 | TSOF 26-N | SR M3.5X0.6-6.5 T10 | BLD IP25/S7 | SW6-T | SR M16-40C |
| SOF45 D100-05-32-R26 | SR 1/4-28XIP25 | TSOF 26-N | SR M3.5X0.6-6.5 T10 | BLD IP25/S7 | SW6-T | SR M16-40C |
| SOF45 D125-06-40-R26 | SR 1/4-28XIP25 | TSOF 26-N | SR M3.5X0.6-6.5 T10 | BLD IP25/S7 | SW6-T | |
| SOF45 D160-08-40-R26 | SR 1/4-28XIP25 | TSOF 26-N | SR M3.5X0.6-6.5 T10 | BLD IP25/M7 | SW6-T | |
| SOF45 D200-10-60-R26 | SR 1/4-28XIP25 | TSOF 26-N | SR M3.5X0.6-6.5 T10 | BLD IP25/M7 | SW6-T | |
| SOF45 D250-12-60-R26 | SR 1/4-28XIP25 | TSOF 26-N | SR M3.5X0.6-6.5 T10 | BLD IP25/L7 | SW6-T | |
| SOF45 D315-14-60-R26 | SR 1/4-28XIP25 | TSOF 26-N | SR M3.5X0.6-6.5 T10 | BLD IP25/L7 | SW6-T | |

HELIDO 800 HD LINE

## SOF45WG-R26

Heavy Duty 45° Face Mills Carrying Wedge Clamped Square or Octagonal Double-Sided Inserts with 8/16 Cutting Edges




| Designation | DC | BD | DCX[1] | APMX | OAL | DC_2 | DCX_2 | APMX_2 | OAL_2 | DCONMS | DHUB | Arbor | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOF45WG D100-05-32-R26 | 104.10 | 123.50 | 118.80 | 7.00 | 60.80 | 100.00 | 123.50 | 11.00 | 63.00 | 32.00 | 78.00 | B | 2.46 |
| SOF45WG D100-06-32-R26 | 104.10 | 123.50 | 118.80 | 7.00 | 60.80 | 100.00 | 123.50 | 11.00 | 63.00 | 32.00 | 78.00 | B | 2.33 |
| SOF45WG D125-08-40-R26 | 129.10 | 148.50 | 143.80 | 7.00 | 60.80 | 125.00 | 148.50 | 11.00 | 63.00 | 40.00 | 92.00 | B | 3.41 |
| SOF45WG D160-08-40-R26 | 164.10 | 183.80 | 178.80 | 7.00 | 60.80 | 160.00 | 183.80 | 11.00 | 63.00 | 40.00 | 95.00 | C | 4.84 |
| SOF45WG D160-10-40-R26 | 164.10 | 183.80 | 178.80 | 7.00 | 60.80 | 160.00 | 183.80 | 11.00 | 63.00 | 40.00 | 95.00 | C | 4.58 |
| SOF45WG D200-10-60-R26 | 204.10 | 223.50 | 218.80 | 7.00 | 60.80 | 200.00 | 223.50 | 11.00 | 63.00 | 60.00 | 180.00 | C | 9.47 |
| SOF45WG D200-12-60-R26 | 204.10 | 223.50 | 218.80 | 7.00 | 60.80 | 200.00 | 223.50 | 11.00 | 63.00 | 60.00 | 180.00 | C | 9.20 |
| SOF45WG D250-12-60-R26 | 254.10 | 273.30 | 268.80 | 7.00 | 60.80 | 250.00 | 273.30 | 11.00 | 63.00 | 60.00 | 180.00 | C | 12.68 |
| SOF45WG D250-14-60-R26 | 254.10 | 273.30 | 268.80 | 7.00 | 60.80 | 250.00 | 273.30 | 11.00 | 63.00 | 60.00 | 180.00 | C | 12.44 |

- For user guide see pages 616-621

(1) Cutting diameter maximum

**For inserts, see pages:** ONMU 1008 (579) • S845 SNMU 2608 (571)

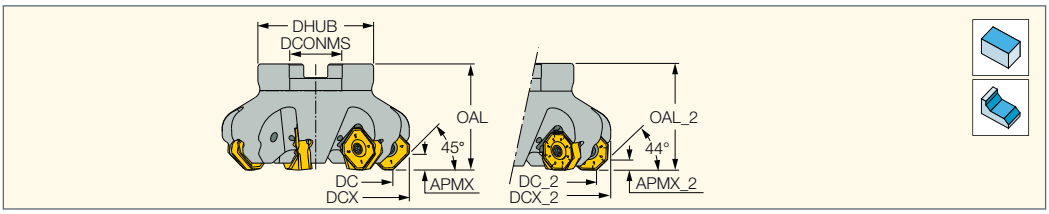
### Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| SOF45WG-R26 | TSOF 26-N | SR M3.5X0.6-6.5 T10 | LW CL-13 INJ | SR UNC 5/16-18X1 L/R | BLD IP25/S7 | SW6-T |

HELIDO 800 LINE

## SOF45-R18

45° Face Mills Carrying Square or Octagonal Double-Sided Inserts with 8/16 Cutting Edges




| Designation | DC | DCX[1] | APMX | OAL | DC_2 | DCX_2 | APMX_2 | OAL_2 | CICT[2] | DHUB | DCONMS | Arbor | CSP[3] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOF45 D050-04-22-R18 | 50.00 | 67.00 | 8.00 | 50.00 | 52.80 | 67.00 | 5.00 | 48.5 | 4 | 48.00 | 22.00 | A | 1 | 0.55 |
| SOF45 D063-05-22-R18 | 63.00 | 80.00 | 8.00 | 50.00 | 65.80 | 80.00 | 5.00 | 48.5 | 5 | 52.00 | 22.00 | A | 1 | 0.80 |
| SOF45 D063-05-27-R18 | 63.00 | 80.00 | 8.00 | 50.00 | 65.80 | 80.00 | 5.00 | 48.5 | 5 | 60.00 | 27.00 | A | 1 | 0.83 |
| SOF45 D080-06-27-R18 | 80.00 | 97.00 | 8.00 | 55.00 | 82.80 | 97.00 | 5.00 | 53.5 | 6 | 60.00 | 27.00 | A | 1 | 1.29 |
| SOF45 D080-07-27-R18 | 80.00 | 97.00 | 8.00 | 55.00 | 82.80 | 97.00 | 5.00 | 53.5 | 7 | 60.00 | 27.00 | A | 1 | 1.29 |
| SOF45 D100-07-32-R18 | 100.00 | 117.00 | 8.00 | 55.00 | 102.80 | 117.00 | 5.00 | 53.5 | 7 | 78.00 | 32.00 | B | 1 | 1.95 |
| SOF45 D100-09-32-R18 | 100.00 | 117.00 | 8.00 | 55.00 | 102.80 | 117.00 | 5.00 | 53.5 | 9 | 78.00 | 32.00 | B | 1 | 1.94 |
| SOF45 D125-08-40-R18 | 125.00 | 142.00 | 8.00 | 63.00 | 127.80 | 142.00 | 5.00 | 61.5 | 8 | 92.00 | 40.00 | B | 1 | 3.38 |
| SOF45 D125-12-40-R18 | 125.00 | 142.00 | 8.00 | 63.00 | 127.80 | 142.00 | 5.00 | 61.5 | 12 | 92.00 | 40.00 | B | 1 | 3.35 |
| SOF45 D160-10-40-R18 | 160.00 | 177.00 | 8.00 | 63.00 | 162.80 | 177.00 | 5.00 | 61.5 | 10 | 95.00 | 40.00 | C | 0 | 4.20 |
| SOF45 D160-15-40-R18 | 160.00 | 177.00 | 8.00 | 63.00 | 162.80 | 177.00 | 5.00 | 61.5 | 15 | 95.00 | 40.00 | C | 0 | 4.30 |
| SOF45 D200-12-60-R18 | 200.00 | 217.00 | 8.00 | 63.00 | 202.80 | 217.00 | 5.00 | 61.5 | 12 | 135.00 | 60.00 | C | 0 | 6.88 |
| SOF45 D200-18-60-R18 | 200.00 | 217.00 | 8.00 | 63.00 | 202.80 | 217.00 | 5.00 | 61.5 | 18 | 135.00 | 60.00 | C | 0 | 6.99 |
| SOF45 D250-14-60-R18 | 250.00 | 267.00 | 8.00 | 63.00 | 252.80 | 267.00 | 5.00 | 61.5 | 14 | 135.00 | 60.00 | C | 0 | 10.50 |
| SOF45 D250-21-60-R18 | 250.00 | 267.00 | 8.00 | 63.00 | 252.80 | 267.00 | 5.00 | 61.5 | 21 | 135.00 | 60.00 | C | 0 | 11.35 |
| SOF45 D315-18-60-R18 | 315.00 | 332.00 | 8.00 | 80.00 | 317.80 | 332.00 | 5.00 | 78.5 | 18 | 230.00 | 60.00 | C | 0 | 22.36 |
| SOF45 D315-24-60-R18 | 315.00 | 332.00 | 8.00 | 80.00 | 317.80 | 332.00 | 5.00 | 78.5 | 24 | 230.00 | 60.00 | C | 0 | 22.22 |

• For user guide, see pages 616-621

[1] Cutting diameter maximum

[2] Number of inserts (or edges for solid tool)

[3] 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** ONHU 0706AN-R-W (579) • ONMU/ONHU 0706 (578) • S845 SNHU 1806AN-N-W (570) • S845 SNMU/SNHU 1806 (570)

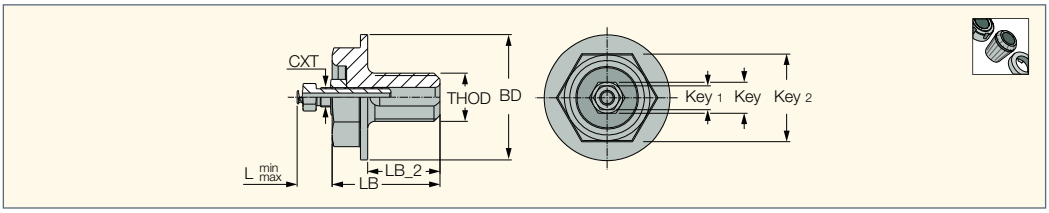
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| SOF45 D050-04-22-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/S7 | SW6-T | SR M10X25 DIN912 |
| SOF45 D063-05-22-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/S7 | SW6-T | SR M10X25 DIN912 |
| SOF45 D063-05-27-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/S7 | SW6-T | SR M12X25 DIN 912 |
| SOF45 D080-06-27-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/S7 | SW6-T | SR M12X25 DIN 912 |
| SOF45 D080-07-27-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/S7 | SW6-T | SR M12X25 DIN 912 |
| SOF45 D100-07-32-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/S7 | SW6-T | |
| SOF45 D100-09-32-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/S7 | SW6-T | |
| SOF45 D125-08-40-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/S7 | SW6-T | |
| SOF45 D125-12-40-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/S7 | SW6-T | |
| SOF45 D160-10-40-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/M7 | SW6-T | |
| SOF45 D160-15-40-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/M7 | SW6-T | |
| SOF45 D200-12-60-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/M7 | SW6-T | |
| SOF45 D200-18-60-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/M7 | SW6-T | |
| SOF45 D250-14-60-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/M7 | SW6-T | |
| SOF45 D250-21-60-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/M7 | SW6-T | |
| SOF45 D315-18-60-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/M7 | SW6-T | |
| SOF45 D315-24-60-R18 | SR M5X0.8 16 IP20[a] | BLD IP20/M7 | SW6-T | |

[a] Recommended tightening torque: 9 N*m

## *Accessories*

**COOLANT SET**
Clamping Screws with Adjustable Protruding Nozzles for Shell-Type Face Mills




| Designation | BD | THOD | CXT | LB | LB_2 | L min | L max | Key(1) | Key 1(2) | DRVS(3) |
|---|---|---|---|---|---|---|---|---|---|---|
| COOLANT SET SR M10X1.5-22 | 28.00 | M10 | M4 | 25.00 | 18.00 | 2.0 | 17.0 | 7.00 | 6.00 | 21.00 |
| COOLANT SET SRM12X1.75-27 | 35.00 | M12 | M4 | 31.00 | 22.00 | 2.0 | 17.0 | 7.00 | 6.00 | 27.00 |
| COOLANT SET SR M16X2-32 | 42.00 | M16 | M8 | 37.00 | 26.00 | 3.0 | 25.0 | 13.00 | 10.00 | 30.00 |
| COOLANT SET SR M20X2.5-40 | 52.00 | M20 | M8 | 45.00 | 30.00 | 3.0 | 25.0 | 13.00 | 10.00 | 36.00 |

(1) For the nut
(2) For the nozzle
(3) For the screw

### Clamping Screws with Adjustable Protrusion Nozzles for Shell-Type Face Mills

The protrusion of the nozzle screw can be easily adjusted according to countersink depth, insert size or any other application requirement. The nozzle screw position can be secured by a locking nut.

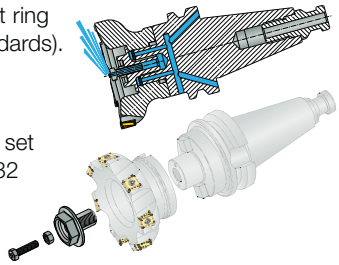
Tests show that cutting fluid supplied through the axis of a tool and directed radially at the bottom of the tool dramatically improves both the cooling effect and chip evacuation.

The screws are offered as sets, comprising a nozzle screw, locking screw, a locking nut and washers.

The locking nut can be tightened by a standard open-ended wrench, or preferably by an offset ring wrench (ISO 10104, DIN 838 or DIN 897 standards).

If desired, the following ring wrenches can also be ordered from **ISCAR**:

- 7000783 Ring Wrench 10X13 mm for coolant set SR M20X2.5-40 and Coolant set SR M16X2-32
- 7000788 Ring Wrench 6X7 mm for coolant set SRM12X1.75-27 and coolant set SR M10X1.5-22.



**Assembly with a Lock Nut**

**Assembly without a Lock Nut**

## Spare Parts

| Designation | | | |
|---|---|---|---|
| COOLANT SET SR M10X1.5-22 | WASHER FLAT M4 DIN 433 | SPRING PLUNGER | |
| COOLANT SET SRM12X1.75-27 | WASHER FLAT M4 DIN 433 | SPRING PLUNGER | |
| COOLANT SET SR M16X2-32 | WASHER M8 DIN 433 A2 | NOZZLE M8 | NUT M8 DIN 934 A2 |
| COOLANT SET SR M20X2.5-40 | WASHER M8 DIN 433 A2 | NOZZLE M8 | NUT M8 DIN 934 A2 |

# EXTENDED FLUTE CUTTERS

## Extended Flute Mills

**HELI-PLUS**
HP ANK
page 274

**HELI-DO**
H490 ANK
page 274

**HELI-3-MILL**
HM390 TPK/SM
pages 274-275

**SUMO-MILL**
T290 LNK
page 275

**HELI-TANG**
T490 LNK/LNM
pages 276-278,283-285

**HELI-SLOT**
XNK-XN13
page 279

**HELI-MILL**
APK-FE
page 279

**HELI-QUAD**
SPK
page 279

**MILL-SHRED**
P290 ACK/SM
pages 280-282

**HELI-TANG**
T490 SM
pages 283-284,289

**HELI-DO**
H490 SM
pages 283,290

**HELI-SLOT**
SM-XN13
page 286

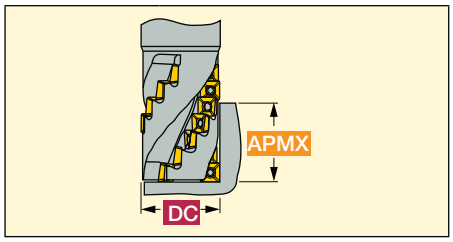
**QUICK-X-FLUTE**
S890 SM
page 290

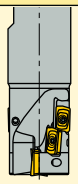
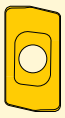
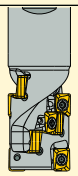
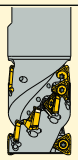
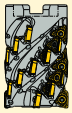
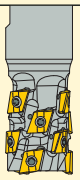
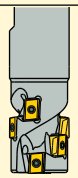
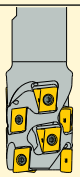
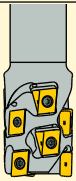
**X-QUAD**
SDK-C/HP
pages 290-291

**HELI-MILL**
SM
page 291

ISCARMILL

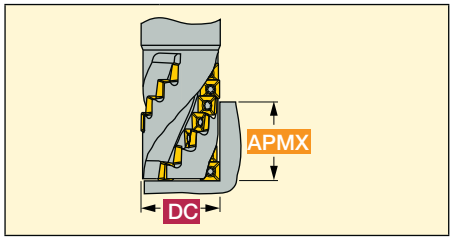
## 90° Extended Flute Mills Selection Guide

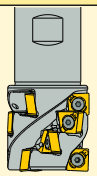
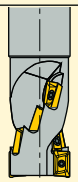
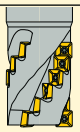
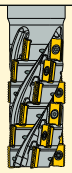
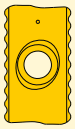
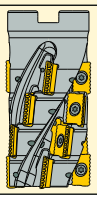
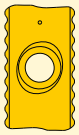



| Tools | | Pages | APMX / Flutes DC 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 | Inserts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | HP ANK-07 | 274 | 28/2 | | | | | | | |  | HP AN.. 07... |
|  | H490 ANK-09 | 274 | | 35/2 | 42/3 | | | | | | | H490 AN..09.. |
|  | HM390 TPK-10 | 274 | | 28/2 | 42/2 | 49/4 | | | | | | HM390 TP.. 10.. |
|  | HM390 SM-10 | 275 | | | | 49/4 | 49/5 | | | | | HM390 TP.. 10.. |
|  | T290 LNK-10 | 275 | | 29/2 | 39/3 | 39/3<br>48/4 | | | | | | T290 LN..10.. |
|  | T490 LNM-08 | 276 | 15/2 | 30/2<br>30/3 | 36/3 | 44/4 | | | | | | T490 LN.T 08... |
|  | T490 LNK-11 | 277 | | | 34/2 | 51/3 | 51/4 | | | | | T490 LN..T1106 |
|  | T490 LNK-13 | 277 | | | | 36/2<br>36/3<br>48/3 | 47/3<br>59/4<br>82/3<br>105/3 | 81/4<br>117/4 | 82/4<br>128/4 | | | T490 LN.. 13... |

ISCARMILL

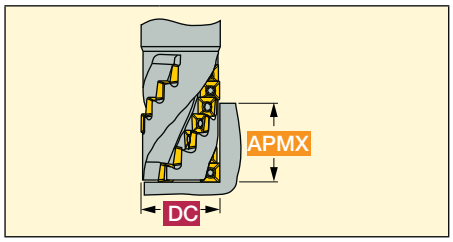
## 90° Extended Flute Mills Selection Guide

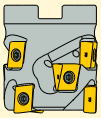
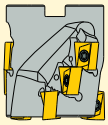
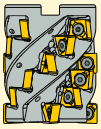
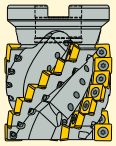
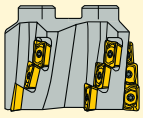



| Tools | Pages | APMX / Flutes<br>DC<br>20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
|  XNK-XN13 | 279 | | | | | 46/3 | | | | XNMU 13... |
|  APK-FE | 279 | 29/1 | 37/2 | 46/2 | 55/3 | | | | | AP.. 10...<br>FPKT 10... |
|  SPK | 279 | | | | 43/3 | | | | | SPMT 10...<br>XPMT 10..<br>QPMT 10.. |
|  P290 ACK | 281 | | 24/3<br>36/3 | 24/3<br>36/3<br>48/3<br>60/3<br>84/3 | 53/3<br>71/3<br>87/3<br>90/3<br>125/3 | 53/4<br>105/4<br>160/3 | 87/5 | | |  P290 AC...T |
|  P290 SM | 282 | | | 24/3 | 24/4<br>36/4<br>48/4 | 36/4<br>53/4<br>71/4 | 53/5<br>71/5 | 71/6 | 36/6<br>71/7 |  P290 AC...T |

ISCARMILL

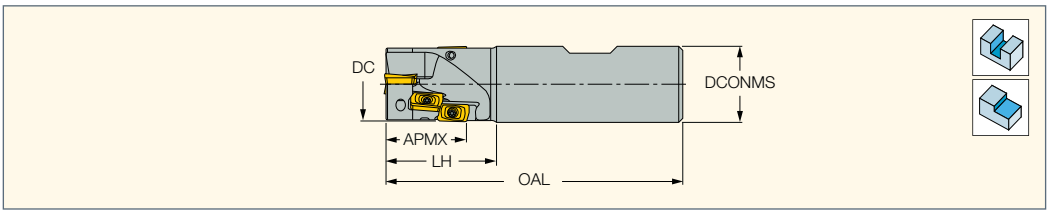
## 90° Extended Flute Mills Selection Guide




| Tools | Pages | APMX / Flutes DC 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
|  T490 SM | 283<br>284 | | | 36/3 | 24/2<br>36/3<br>44/4<br>51/3 | 36/2<br>36/3<br>44/5<br>47/4<br>51/3<br>59/4 | 36/4<br>47/4<br>59/4<br>59/5<br>68/5 | 58/5<br>70/5 | 59/6 | T490 LN.. |
|  H490 SM | 283<br>290 | | | | | 35/3 | 46/3<br>47/4<br>58/3 | 46/4 | | H490 AN.. |
|  SM-XN13 | 286 | | | | | | 69/3<br>69/4 | 69/5 | | XNMU 13 |
| S890 SM | 290 | | | | | | 71/4 | 83/5 | | S890 SNMU 1306.. |
|  SDK-C/HP | 290<br>291 | | | | | 48/3<br>48/4 | 55/5<br>56/4<br>66/4<br>98/4 | 64/5<br>66/5<br>109/5 | 76/6<br>130/6 | SD.. 10<br>SD..12<br>QD..12 |
|  SM | 291 | | | | | 25/3 | 38/4 | | | HM AD.. 15...<br>AD.. 15... |

HELIPLUS

**HP ANK-07**
Extended Flute Endmills
Carrying HP ANK-07... Inserts



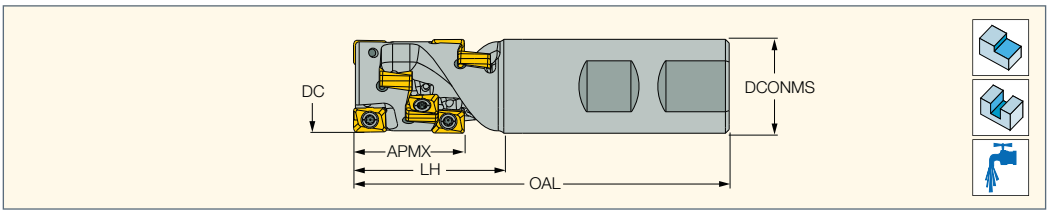

| Designation | DC | APMX | NOF(1) | CICT(2) | LH | OAL | DCONMS | Shank(3) | RPMX(4) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP ANK D20-28-02-W20-7 | 20.00 | 28.60 | 2 | 8 | 40.0 | 90.00 | 20.00 | W | 999 | 0.18 | SR 34-533/L/HG | T-6/51 |

(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) W-Weldon
(4) Maximum RPM

**For inserts, see pages:** HP ANCR 0702PNFR (509) • HP ANKT/ANCT 0702 PN-R/PNTR (508) • HP ANKW 070204PNTR (509)

HELIDO 490 LINE

**H490 ANK-09**
Extended Flute Endmills Carrying
H490 ANKX 09...
Double-Sided Rectangular Inserts
with 4 Helical Cutting Edges



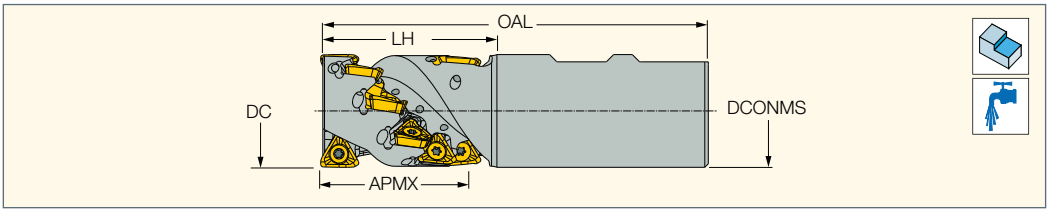

| Designation | DC | APMX | NOF(1) | CICT(2) | LH | OAL | DCONMS | Shank(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H490 ANK D25-35-2-W25-09C | 25.00 | 35.00 | 2 | 10 | 38.0 | 100.00 | 25.00 | W | 0.30 | SR 10508082-HG | BLD T08/M7 | SW4-SD |
| H490 ANK D32-42-3-W32-09C | 32.00 | 42.00 | 3 | 18 | 50.0 | 115.00 | 32.00 | W | 0.52 | SR 10508082-HG | BLD T08/M7 | SW4-SD |

• AE(max)=0.25xDC
(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) W-Weldon

**For inserts, see pages:** H490 ANKX/ANCX-09 (537)

HELI3MILL HM390 LINE

**HM390 TPK-10**
Extended Flute Endmills
Carrying HM390 TPKT
1003 Triangular Inserts with
3 Helical Cutting Edges

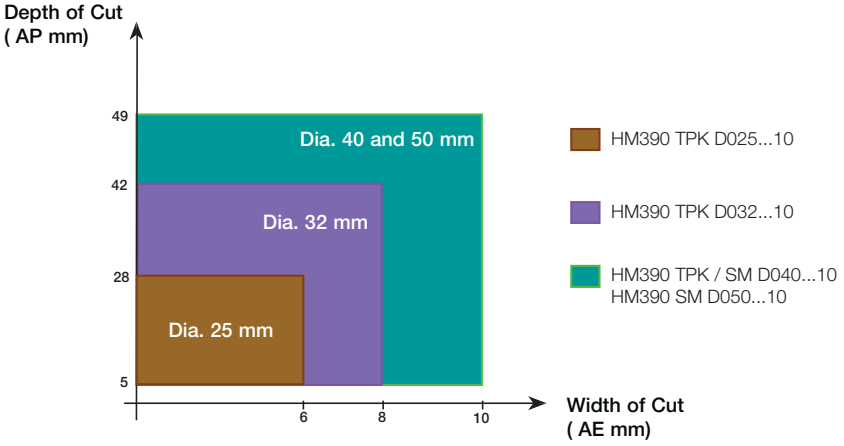



| Designation | DC | APMX | NOF(1) | CICT(2) | LH | OAL | DCONMS | Shank(3) | RMPX°(4) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 TPK D25-28-2-W25-10 | 25.00 | 28.00 | 2 | 8 | 35.0 | 95.00 | 25.00 | W | 2.9 | 0.30 | SR 14-562/S[a] | BLD T10/S7 | SW6-SD |
| HM390 TPK D32-42-2-W32-10 | 32.00 | 42.00 | 2 | 12 | 50.0 | 110.00 | 32.00 | W | 2.1 | 0.53 | SR 14-562/S[a] | BLD T10/S7 | SW6-SD |
| HM390 TPK D40-49-4-W32-10 | 40.00 | 49.00 | 4 | 28 | 59.0 | 125.00 | 32.00 | W | 1.6 | 0.75 | SR 14-562/S[a] | BLD T10/S7 | SW6-SD |

(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) W-Weldon
(4) Maximum ramping angle
[a] Recommended tightening torque:3.2 Nxm

**For inserts, see pages:** HM390 TPCR 1003 (513) • HM390 TPKT/CT 1003 (512)

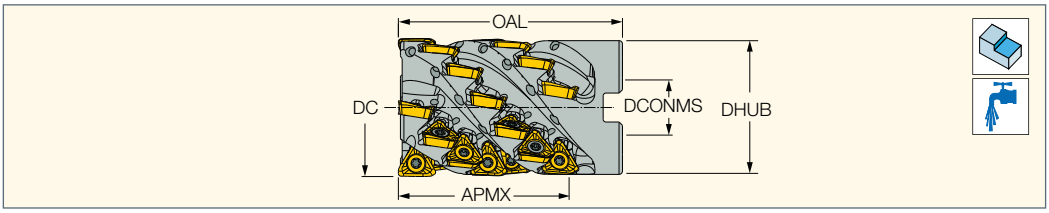
## AP/AE Application Range for Extended Flute HELI-3-MILL HM390-10 Cutters with HM390 TPKT 1003... Inserts



HELI3MILL HM390 LINE

## HM390 SM-10

Extended Flute Shell Mills
Carrying HM390 TPKT
1003 Triangular Inserts with
3 Helical Cutting Edges




| Designation | DC | APMX | NOF(1) | CICT(2) | OAL | DHUB | DCONMS | Arbor(3) | RMPX°(4) | kg | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 SM D040-49-4-16-10 | 40.00 | 49.00 | 4 | 28 | 65.00 | 38.80 | 16.00 | A | 1.6 | 0.30 | SR 14-562/S(a) | SR M8X55DIN912 | BLD T10/S7 | SW6-SD |
| HM390 SM D050-49-5-22-10 | 50.00 | 49.00 | 5 | 35 | 66.00 | 48.80 | 22.00 | A | 1.2 | 0.58 | SR 14-562/S(a) | SR M10X60DIN912 | BLD T10/S7 | SW6-SD |

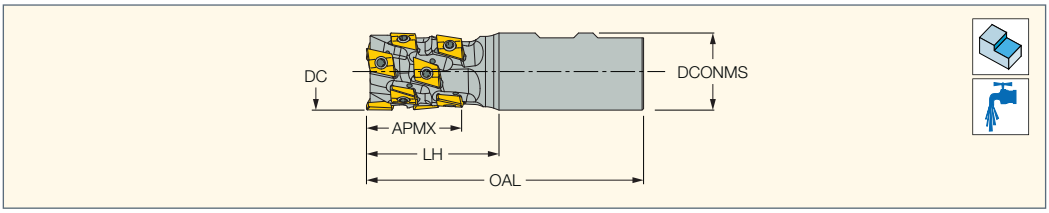
(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) For adaptation options, see page 622
(4) Maximum ramping angle
(a) Recommended tightening torque:3.2 Nxm

**For inserts, see pages:** HM390 TPCR 1003 (513) • HM390 TPKT/CT 1003 (512)

SUMOMILL 290 LINE

## T290 LNK-10

Extended Flute Endmills
with T290 LNMT/HT 1004...
Tangentially Clamped Inserts




| Designation | DC | CICT(2) | NOF(3) | APMX | LH | OAL | DCONMS | Shank | kg | MIID(4) |
|---|---|---|---|---|---|---|---|---|---|---|
| T290 LNK D25-29-02-W25-10 | 25.00 | 6 | 2 | 29.00 | 40.0 | 96.00 | 25.00 | W | 0.26 | T290 LNMT 100405TR |
| T290 LNK D32-39-03-W32-10 | 32.00 | 12 | 3 | 39.00 | 55.0 | 115.00 | 32.00 | W | 0.54 | T290 LNMT 100405TR |
| T290 LNK D40-39-03-W32-10 (1) | 40.00 | 12 | 3 | 39.00 | 60.0 | 120.00 | 32.00 | W | 0.71 | T290 LNMT 100405TR |
| T290 LNK D40-48-04-W32-10 | 40.00 | 20 | 4 | 48.00 | 67.0 | 127.00 | 32.00 | W | 0.73 | T290 LNMT 100405TR |

New

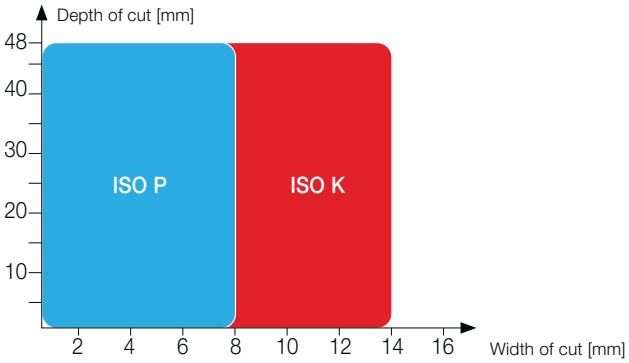
(1) High pressure coolant
(2) Number of inserts (or edges for solid tool)
(3) Number of flutes
(4) Master insert identification

**For inserts, see pages:** T290 LNMT/LNHT 1004 (542)

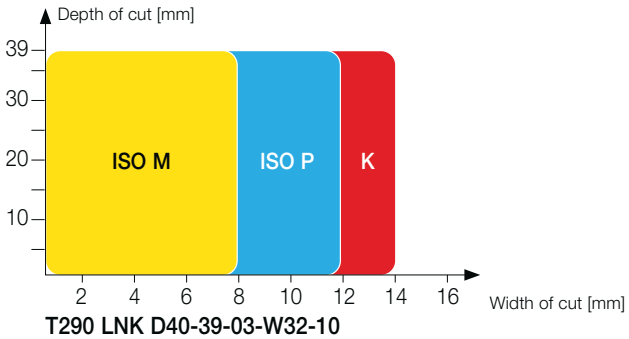
### Spare Parts

| Designation | | | |
|---|---|---|---|
| T290 LNK-10 | SR 10504970 | BLD IP15/M7 | SW6-T-SH |

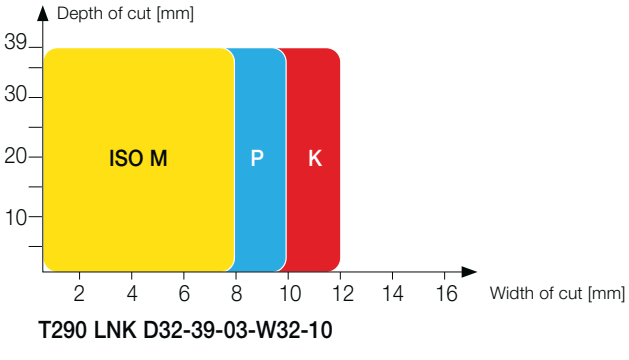
### $a_p/a_e$ Application Range for T290 LNK... Extended Flute Endmills



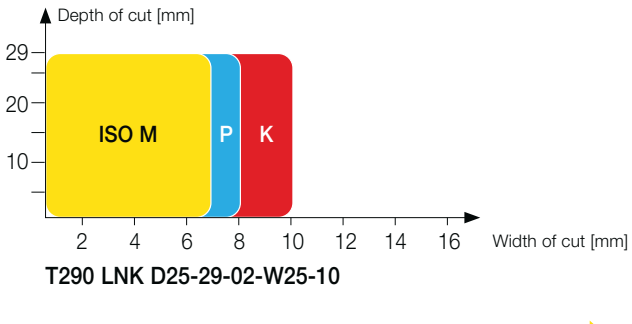

T290 LNK D40-48-04-W32-10




T290 LNK D40-39-03-W32-10




T290 LNK D32-39-03-W32-10

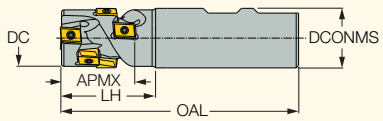



T290 LNK D25-29-02-W25-10

HELITANG T490 LINE

## T490 LNM-08

Extended Flute Endmills
Carrying T490 LNMT/HT 08...
Tangentially Clamped Inserts

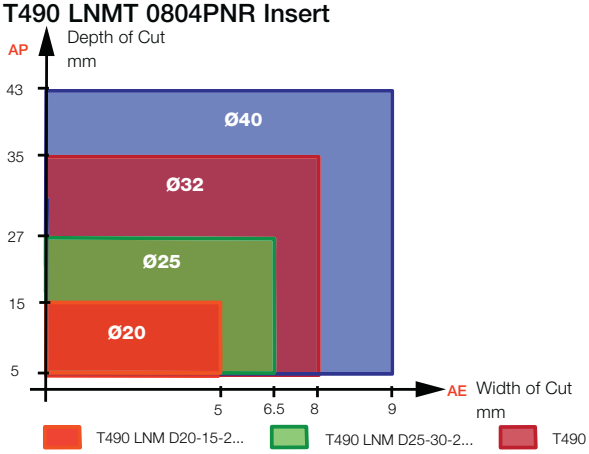



| Designation | DC | APMX | NOF(1) | CICT(2) | LH | OAL | DCONMS | Shank(3) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 LNM D20-15-2-C20-08C | 20.00 | 15.00 | 2 | 4 | 30.0 | 80.00 | 20.00 | C | 0.16 | SR 10502813-HG-M | IP-7/51 |
| T490 LNM D20-15-2-W20-08C | 20.00 | 15.00 | 2 | 4 | 30.0 | 80.00 | 20.00 | W | 0.16 | SR 10502813-HG-M | IP-7/51 |
| T490 LNM D25-30-2-C25-08C | 25.00 | 30.00 | 2 | 8 | 40.0 | 100.00 | 25.00 | C | 0.31 | SR 10502813-HG-M | IP-7/51 |
| T490 LNM D25-30-2-W25-08C | 25.00 | 30.00 | 2 | 8 | 40.0 | 100.00 | 25.00 | W | 0.30 | SR 10502813-HG-M | IP-7/51 |
| T490 LNM D32-36-3-C32-08C | 32.00 | 36.00 | 3 | 15 | 45.0 | 110.00 | 32.00 | C | 0.55 | SR 10502813-HG-M | IP-7/51 |
| T490 LNM D32-36-3-W32-08C | 32.00 | 36.00 | 3 | 15 | 45.0 | 110.00 | 32.00 | W | 0.55 | SR 10502813-HG-M | IP-7/51 |
| T490 LNM D40-44-4-W32-08C | 40.00 | 44.00 | 4 | 24 | 53.0 | 120.00 | 32.00 | W | 0.73 | SR 10502813-HG-M | IP-7/51 |

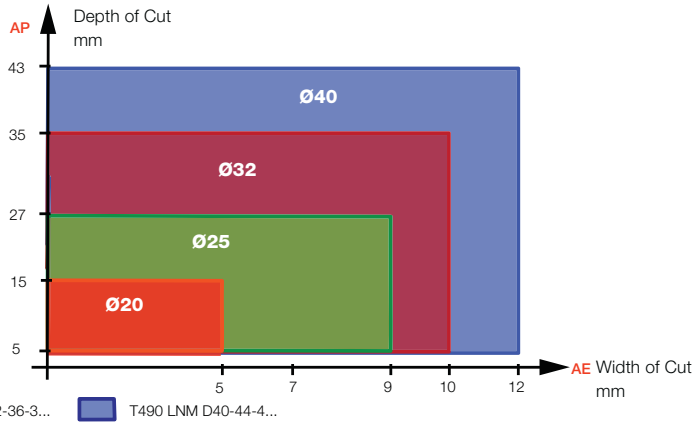
(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) W-Weldon, C-Cylindrical

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT/LNHT 0804 (544)

### AP/AE Application Range with T490 LNMT 0804PNR Insert



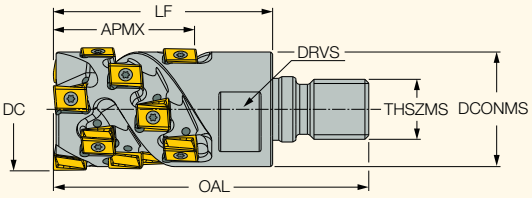

### AP/AE Application Range with T490 LNMT080404-CS Chip Splitting Insert




HELITANG T490 LINE

## T490 LNM-M-08

Extended Flute Endmills
with a FLEX-FIT Threaded
Adaptation Carrying
Tangentially Clamped Inserts




| Designation | DC | APMX | NOF(1) | CICT(2) | LF | OAL | DCONMS | THSZMS | DRVS(3) | kg | TQ_3(4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 LNM D25-30-2-M12-08 | 25.00 | 30.00 | 2 | 8 | 52.00 | 74.00 | 21.00 | M12 | 17.0 | 0.12 | 33 | SR 10502813-HG-M | IP-7/51 |
| T490 LNM D32-36-3-M16-08 | 32.00 | 36.00 | 3 | 15 | 57.00 | 82.00 | 30.00 | M16 | 25.0 | 0.26 | 40 | SR 10502813-HG-M | IP-7/51 |

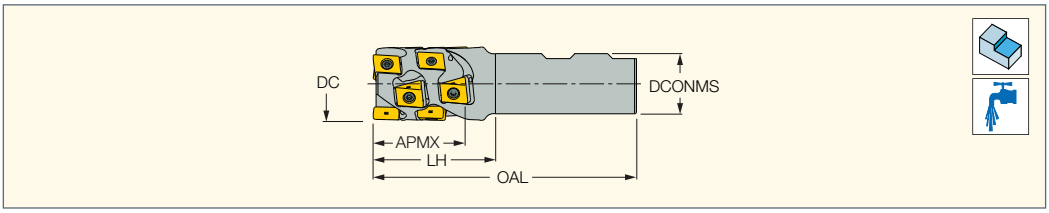
• For adaptation options, see page 356 • For user guide see pages 616-621
(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) Clamping wrench size
(4) Tool tightening torque Nxm (lbfxin)

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT/LNHT 0804 (544)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

HELITANG T490 LINE

## T490 LNK-11

Extended Flute Endmills
Carrying T490 LN#T 11...
Tangentially Clamped Inserts




| Designation | DC | APMX | NOF(1) | CICT(2) | LH | OAL | DCONMS | Shank(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 LNK-D32-34-2-W32-11 | 32.00 | 34.00 | 2 | 8 | 45.0 | 105.00 | 32.00 | W | 0.49 | SR 34-535/L10.5-SN | BLD T15/S7(a) | SW6-SD |
| T490 LNK-D40-51-3-C32-11 | 40.00 | 51.00 | 3 | 18 | 60.0 | 120.00 | 32.00 | C | 0.66 | SR 34-535/L10.5-SN | BLD T15/S7(a) | SW6-SD |
| T490 LNK-D40-51-3-W32-11 | 40.00 | 51.00 | 3 | 18 | 60.0 | 120.00 | 32.00 | W | 0.66 | SR 34-535/L10.5-SN | BLD T15/S7(a) | SW6-SD |
| T490 LNK-D50-51-4-C40-11 | 50.00 | 51.00 | 4 | 24 | 60.0 | 130.00 | 40.00 | C | 1.18 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD |
| T490 LNK-D50-51-4-W40-11 | 50.00 | 51.00 | 4 | 24 | 60.0 | 130.00 | 40.00 | W | 1.18 | SR 34-535-SN | BLD T15/S7(a) | SW6-SD |

- Important: Maximum clamping torque 3.2 Nxm

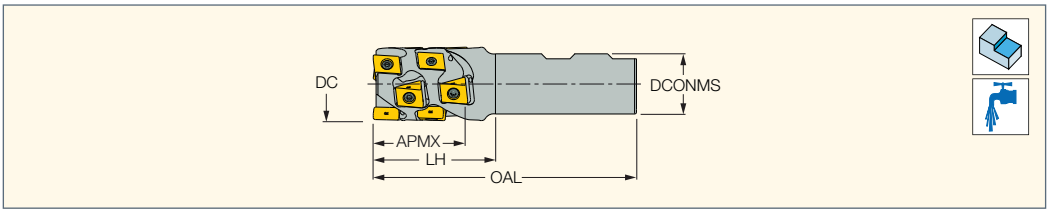
(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) C-Cylindrical, W-Weldon
(a) Recommended key handle for limiting torque to 3.2 Nxm for this item is HSD 4-3.2NM (to be used with BLD 4 T15-4.8 blade)

**For inserts, see pages:** T490 LNMT/LNHT 1106 (545)

HELITANG T490 LINE

## T490 LNK-13

Extended Flute Endmills
Carrying T490 LNMT/HT 13...
Tangentially Clamped Inserts




| Designation | DC | APMX | NOF(1) | CICT(2) | LH | OAL | DCONMS | Shank(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 LNK-D40-36-2-W32-13 | 40.00 | 36.00 | 2 | 6 | 50.0 | 115.00 | 32.00 | W | 0.68 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490 LNK-D40-48-3-C32-13 | 40.00 | 48.00 | 3 | 12 | 65.0 | 140.00 | 32.00 | C | 0.80 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490 LNK-D40-48-3-W32-13 | 40.00 | 48.00 | 3 | 12 | 65.0 | 125.00 | 32.00 | W | 0.70 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490 LNK-D50-47-3-W40-13 | 50.00 | 47.00 | 3 | 12 | 65.0 | 135.00 | 40.00 | W | 1.24 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490 LNK-D50-59-4-W40-13 | 50.00 | 59.00 | 4 | 20 | 65.0 | 135.00 | 40.00 | W | 1.21 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |

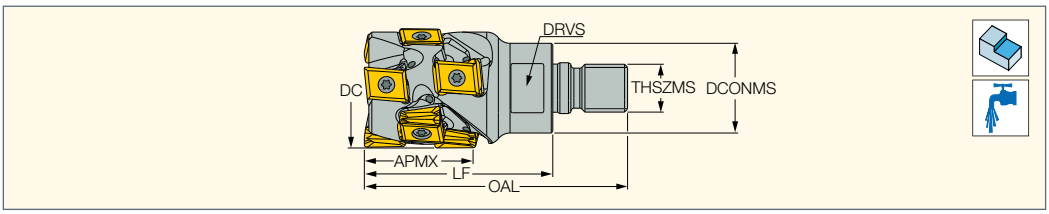
(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) C-Cylindrical, W-Weldon

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

HELITANG T490 LINE

## T490 LNK-M-13

Endmills with a FLEX-FIT
Threaded Adaptation Carrying
Tangentially Clamped Inserts




| Designation | DC | APMX | NOF(1) | CICT(2) | LF | OAL | DCONMS | THSZMS | DRVS(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 LNK-D40-36-3-M16-13 | 40.00 | 36.00 | 3 | 9 | 63.00 | 88.00 | 30.00 | M16 | 25.0 | 0.37 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |

• For adaptation options, see page 356 • For user guide, see pages 616-621

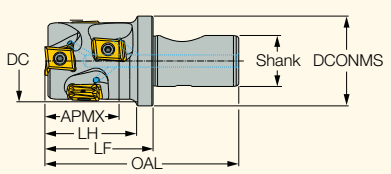
(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) Clamping wrench size

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360)
• HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

HELITANG T490 LINE

## T490 LNK-13-CF

Extended Flute Endmills with CLICK-FIT Shanks Carrying T490 LNMT/HT 1306... Tangentially Clamped Inserts




| Designation | DC | APMX | NOF(1) | CICT(2) | LH | LF | OAL | DCONMS | Shank | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 LNK-D50-59-4-CF4-13 | 50.00 | 59.00 | 4 | 20 | - | 73.00 | 115.00 | 44.00 | CF4 | 0.82 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |

(1) Number of flutes

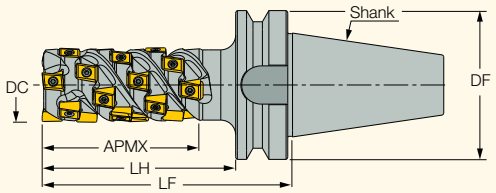
(2) Number of inserts (or edges for solid tool)

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

HELITANG T490 LINE

## T490 LNK-13-BT

Extended Flute Endmills with BT-MAS-403 Tapered Shanks Carrying T490 LNMT/HT 13... Tangentially Clamped Inserts




| Designation | DC | APMX | NOF(1) | CICT(2) | LH | LF | Shank | DF | CSP(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490LNK-D50-059-4-BT50-13 | 50.00 | 59.00 | 4 | 20 | 80.5 | 120.00 | BT-MAS-403 | 100.00 | 1 | 4.34 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490LNK-D50-105-3-BT50-13 | 50.00 | 105.00 | 3 | 27 | 130.0 | 168.00 | BT-MAS-403 | 100.00 | 0 | 4.99 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490LNK-D63-117-4-BT50-13 | 63.00 | 117.00 | 4 | 40 | 150.0 | 188.00 | BT-MAS-403 | 100.00 | 1 | 6.07 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490LNK-D80-082-4-BT50-13 | 80.00 | 82.00 | 4 | 28 | 135.0 | 173.00 | BT-MAS-403 | 100.00 | 1 | 7.65 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490LNK-D80-128-4-BT50-13 | 80.00 | 128.00 | 4 | 44 | 162.0 | 200.00 | BT-MAS-403 | 100.00 | 1 | 8.25 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |

(1) Number of flutes

(2) Number of inserts (or edges for solid tool)

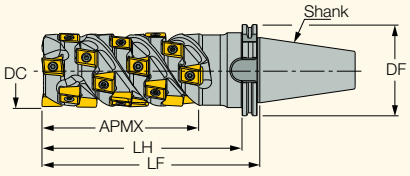
(3) 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

HELITANG T490 LINE

## T490 LNK-13-INT

Extended Flute Endmills with DIN69871 Tapered Shanks Carrying T490 LNMT/HT 13... Tangentially Clamped Inserts




| Designation | DC | APMX | NOF(1) | CICT(2) | LH | LF | Shank | DF | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490LNKD50-082-3-INT50-13 | 50.00 | 82.00 | 3 | 21 | 126.0 | 145.00 | DIN 69871 | 97.50 | 3.85 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490LNKD63-117-4-INT50-13 | 63.00 | 117.00 | 4 | 40 | 169.0 | 188.00 | DIN 69871 | 97.50 | 5.46 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490LNKD80-082-4-INT50-13 | 80.00 | 82.00 | 4 | 28 | 154.0 | 173.00 | DIN 69871 | 97.50 | 7.61 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |
| T490LNKD80-128-4-INT50-13 | 80.00 | 128.00 | 4 | 44 | 180.9 | 200.00 | DIN 69871 | 97.50 | 7.92 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH |

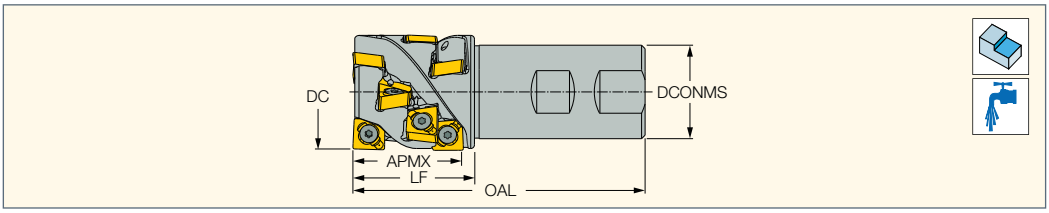
(1) Number of flutes

(2) Number of inserts (or edges for solid tool)

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

HELISLOT

**XNK-XN13**
Extended Flute Endmills
Carrying XNMU 1306... Inserts




| Designation | DC | APMX | LF | NOF(1) | CICT(2) | OAL | DCONMS | Shank(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XNK D050-46-3-W40 XN13 | 50.00 | 46.00 | 85.00 | 3 | 12 | 125.00 | 40.00 | W | 1.09 | SR M4-L15-D4.5 | BLD IP15/S7 | SW6-T-SH |

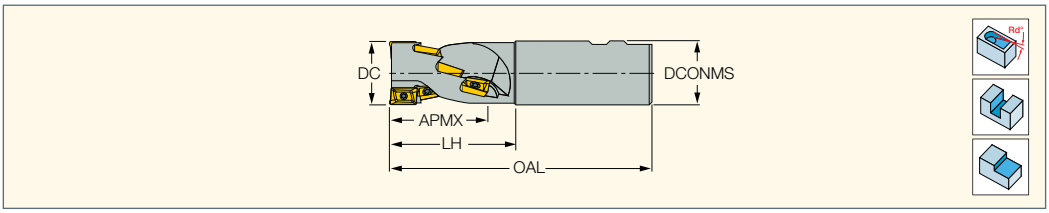
- Radial W.O.C. < 0.3xDC

(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) W-Weldon

**For inserts, see pages:** XNMU 13 (586)

HELIMILL

**APK-FE**
Extended Flute Endmills
Carrying APKT/R-10... Inserts




| Designation | DC | APMX | NOF(1) | CICT(2) | LH | OAL | DCONMS | Shank(3) | RMPX°(4) | kg | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APK D20-28-W20-FE | 20.00 | 29.00 | 1 | 4 | 36.0 | 87.00 | 20.00 | W | 4.0 | 0.17 | SR 34-505/HG | | SW4-SD | BLD T08/M7 |
| APK D25-36-W25-FE | 25.00 | 37.00 | 2 | 8 | 47.0 | 105.00 | 25.00 | W | 4.0 | 0.31 | SR 34-505/MHG | T-8/53 | | |
| APK D32-45-W32-FE | 32.00 | 46.00 | 2 | 12 | 55.0 | 115.00 | 32.00 | W | 1.4 | 0.57 | SR 34-505/LHG | T-8/53 | | |
| APK D40-50-W32-FE | 40.00 | 55.00 | 3 | 18 | 65.0 | 130.00 | 32.00 | W | 1.3 | 0.80 | SR 34-505/LHG | T-8/53 | | |

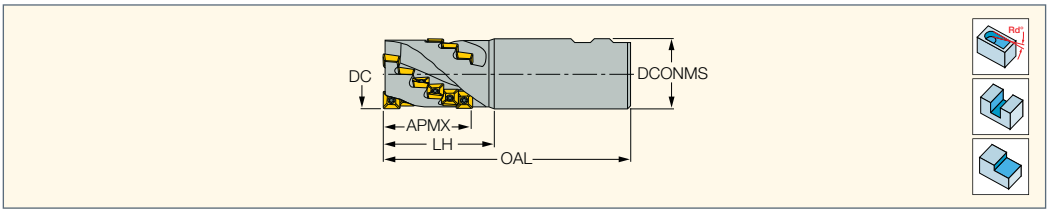
- Inserts with large corner radii can only be mounted in the face position of the cutter

(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) W-Weldon
(4) Maximum ramping angle

**For inserts, see pages:** APCR 1003PDFR-P (517) • APCT 1003PDR-HM (516) • APKR 1003PDR (517) • APKT 1003..R (519) • APKT 1003..TR-RM (519)
• APKT 1003PDR-HM (517) • APKT 1003PDR-HM-CS (518) • APKT 1003PDTR-76 (518) • APKT 1003PDTR/L-RM (518) • HM90 APCR 100304PDFR-P/DP (515)
• HM90 APKT 1003 (515) • HM90 APKW 1003PDR (519)

HELIQUAD

**SPK**
Extended Flute Endmills
Carrying Square Inserts



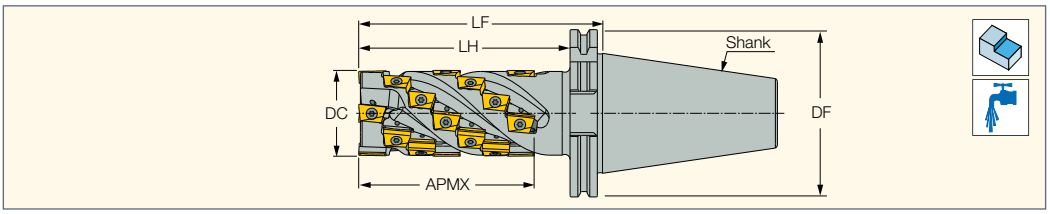

| Designation | DC | APMX | NOF(1) | CICT(2) | LH | OAL | DCONMS | Shank(3) | RMPX°(4) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPK D40-42-W32-10 | 40.00 | 43.00 | 3 | 15 | 55.0 | 125.00 | 32.00 | W | 1.5 | 0.70 | SR 14-544/S | BLD T15/M7 | SW6-SD |

(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) W-Weldon
(4) Maximum ramping angle

**For inserts, see pages:** QPMR 1004-HQ-M (561) • QPMT 100408PDTN (561) • SPCT/SPMR PDR (563) • SPMT-HP (562) • SPMT-HQ (562)
• XPMT-HQ (563)

HELITANG

**FIN LNK-INT**
Extended Flute Endmills with Tangentially Clamped Inserts and DIN69871 Shanks for Semi-Finishing Long Shoulders



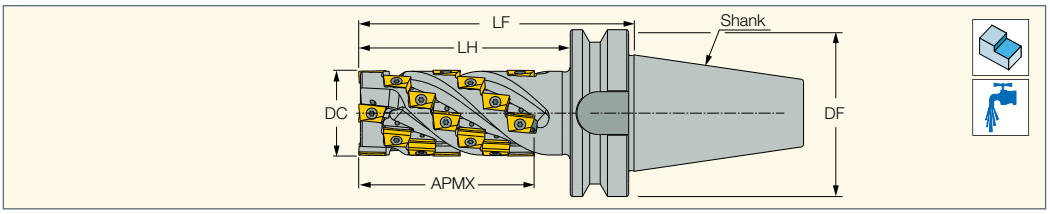

| Designation | DC | APMX | NOF(1) | CICT(2) | LH | LF | DF | Shank | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FIN LNK D050-100-4-INT50 | 50.00 | 102.00 | 4 | 28 | 123.2 | 142.30 | 97.50 | DIN 69871 | 3.73 | SR 34-535 | BLD T15/M7 | SW6-T |
| FIN LNK D063-130-4-INT50 | 63.00 | 130.00 | 4 | 36 | 157.0 | 176.10 | 97.50 | DIN 69871 | 5.21 | SR 34-535 | BLD T15/M7 | SW6-T |

(1) Number of flutes
(2) Number of inserts (or edges for solid tool)

**For inserts, see pages:** FIN LNAT 1607PN-R (557)

HELITANG

**FIN LNK-BT**
Extended Flute Endmills with Tangentially Clamped Inserts and BT-MAS-403 Shanks for Semi-Finishing Long Shoulders



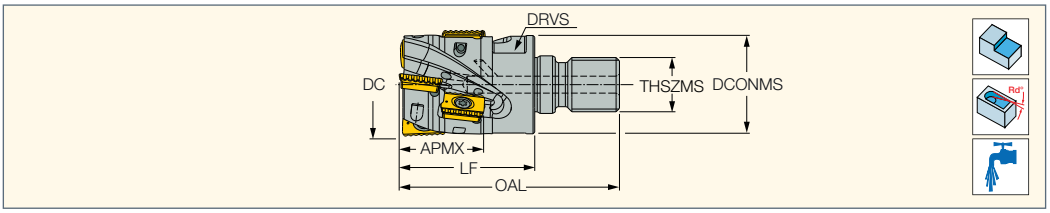

| Designation | DC | APMX | NOF(1) | CICT(2) | LH | LPR | DF | Shank | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FIN LNK D050-100-4-BT50 | 50.00 | 102.00 | 4 | 28 | 123.2 | 161.20 | 100.00 | BT-MAS-403 | 4.72 | SR 34-535 | BLD T15/M7 | SW6-T |

(1) Number of flutes
(2) Number of inserts (or edges for solid tool)

**For inserts, see pages:** FIN LNAT 1607PN-R (557)

MILLSHRED P290 LINE

**P290 ACK-M**
Extended Flute Endmills with FLEX-FIT Threaded Adaptation Carrying 12 mm Long Edged Inserts




| Designation | DC | APMX | NOF(1) | CICT(2) | LF | DCONMS | THSZMS | OAL | DRVS(3) | RMPX°(4) | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P290 ACK D32-3-24-M16-12 | 32.00 | 24.00 | 3 | 6 | 40.00 | 29.00 | M16 | 65.00 | 25.0 | 1.0 | 40 | 0.17 |

• For adaptation options, see page 356 • For user guide, see pages 616-621 • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) Clamping wrench size
(4) Maximum ramping angle
(5) Tool tightening torque Nxm

**For inserts, see pages:** P290 ACCT/KT (529) • P290 ACKT (529)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

## Spare Parts

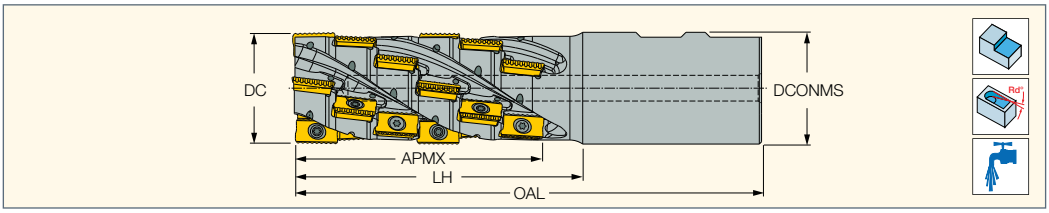
| Designation | | |
|---|---|---|
| P290 ACK-M | SR M3X0.5-L7.4 IP9(a) | IP-9/151 |

(a) Recommended tightening torque:2.0 N*m

MILLSHRED P290 LINE

## P290 ACK

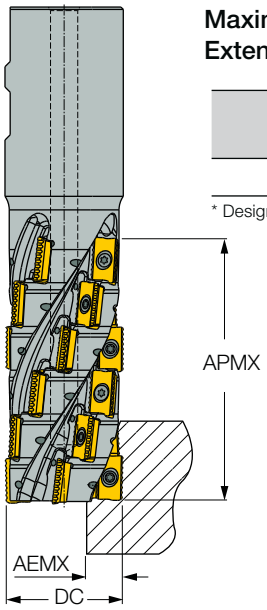
Extended Flute Endmills
Carrying 12 and 18 mm
Long Edged Inserts




| Designation | DC | APMX | NOF(2) | CICT(3) | LH | OAL | DCONMS | RMPX°(4) | Shank(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| P290 ACK D25-3-24-W20-12 | 25.00 | 24.00 | 3 | 6 | 40.0 | 95.00 | 20.00 | 1.4 | W | 0.20 |
| P290 ACK D25-3-36-W25-12 | 25.00 | 36.00 | 3 | 9 | 50.0 | 110.00 | 25.00 | 1.4 | W | 0.29 |
| P290 ACK D32-3-36-W32-12 | 32.00 | 36.00 | 3 | 9 | 50.0 | 110.00 | 32.00 | 1.0 | W | 0.50 |
| P290 ACK D32-3-48-W32-12 | 32.00 | 48.00 | 3 | 12 | 65.0 | 125.00 | 32.00 | 1.0 | W | 0.55 |
| P290 ACK D32-3-60-W32-12 | 32.00 | 60.00 | 3 | 15 | 80.0 | 140.00 | 32.00 | 1.0 | W | 0.59 |
| P290 ACK D32-3-84-W32-12 | 32.00 | 84.00 | 3 | 21 | 100.0 | 160.00 | 32.00 | 1.0 | W | 0.66 |
| P290 ACK D32-3-36-W25-18 (1) | 32.00 | 36.00 | 3 | 6 | 55.0 | 115.00 | 25.00 | 2.0 | W | 0.36 |
| P290 ACK D40-3-53-W32-18 | 40.00 | 53.00 | 3 | 9 | 80.0 | 140.00 | 32.00 | 1.5 | W | 0.77 |
| P290 ACK D40-3-71-W40-18 | 40.00 | 71.00 | 3 | 12 | 95.0 | 165.00 | 40.00 | 1.5 | W | 1.14 |
| P290 ACK D40-3-90-W40-18 | 40.00 | 90.00 | 3 | 15 | 115.0 | 185.00 | 40.00 | 1.5 | W | 1.23 |
| P290 ACK D40-3-125-W40-18 | 40.00 | 125.00 | 3 | 21 | 150.0 | 220.00 | 40.00 | 1.5 | W | 1.39 |
| P290 ACK D50-4-53-W40-18 | 50.00 | 53.00 | 4 | 12 | 80.0 | 150.00 | 40.00 | 1.0 | W | 1.33 |
| P290 ACK D50-4-105-W50-18 | 50.00 | 105.00 | 4 | 24 | 130.0 | 210.00 | 50.00 | 1.0 | W | 2.23 |
| P290 ACK D50-3-160-W50-18 | 50.00 | 160.00 | 3 | 27 | 185.0 | 265.00 | 50.00 | 1.0 | W | 2.82 |

(1) Do not use with P290 ACKT...-FWR insert
(2) Number of flutes
(3) Number of inserts (or edges for solid tool)
(4) Maximum ramping angle
(5) W-Weldon

**For inserts, see pages:** P290 ACCT/KT (529) • P290 ACKT (529)




### Maximum Width of Cut AE Max (AEMX)* for P290 ACK...
### Extended Flute Cutters

| APMX / DC | Up to 1.5 | Over 1.5 up to 2.5 | Over 2.5 |
|---|---|---|---|
| AEMX | 0.2xDC | 0.15xDC | 0.1xDC |

* Designation in accordance with standard ISO 13399 are given in parentheses

## Spare Parts

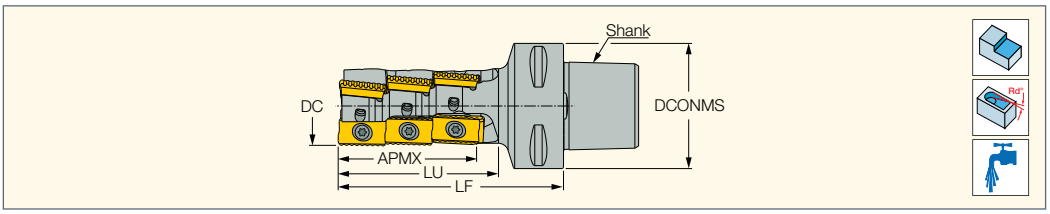
| Designation | | | | |
|---|---|---|---|---|
| P290 ACK D25-3-24-W20-12 | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | | |
| P290 ACK D25-3-36-W25-12 | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | | |
| P290 ACK D32-3-36-W32-12 | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | | |
| P290 ACK D32-3-48-W32-12 | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | | |
| P290 ACK D32-3-60-W32-12 | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | | |
| P290 ACK D32-3-84-W32-12 | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | | |
| P290 ACK D32-3-36-W25-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH |
| P290 ACK D40-3-53-W32-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH |
| P290 ACK D40-3-71-W40-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH |
| P290 ACK D40-3-90-W40-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH |
| P290 ACK D40-3-125-W40-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH |
| P290 ACK D50-4-53-W40-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH |
| P290 ACK D50-4-105-W50-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH |
| P290 ACK D50-3-160-W50-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH |

(a) Recommended tightening torque:2.0 N*m

MILLSHRED P290 LINE

## P290 ACK-C#-18

Extended Flute Endmills with CAMFIX Shanks Carrying 18 mm Long Edged Inserts




| Designation | DC | APMX | NOF[2] | CICT[3] | LU | LF | RMPX°[4] | DCONMS | Shank | DCP[5] | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P290 ACK D32-3-36-C5-18 [1] | 32.00 | 36.00 | 3 | 6 | 64.0 | 90.00 | 2.0 | 50.00 | CAMFIX | 1 | 0.79 | SR 14-544/S | BLD T15/M7 | SW6-T-SH |
| P290 ACK D40-3-87-C6-18 | 40.00 | 87.00 | 3 | 15 | 106.0 | 134.60 | 1.5 | 63.00 | CAMFIX | 1 | 1.66 | SR 14-544/S | BLD T15/M7 | SW6-T-SH |
| P290 ACK D63-5-87-C8-18 | 63.00 | 87.00 | 5 | 25 | 104.0 | 140.00 | 0.8 | 80.00 | CAMFIX | 1 | 4.00 | SR 14-544/S | BLD T15/M7 | SW6-T-SH |

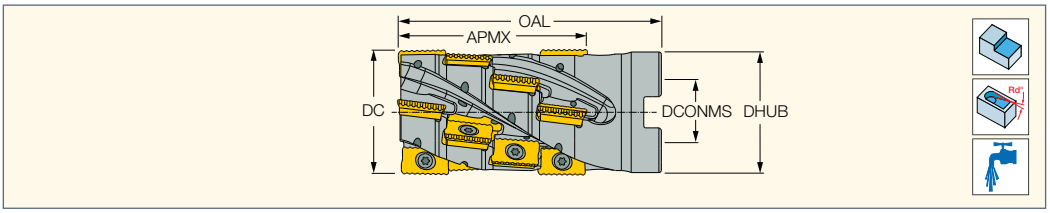
[1] Do not use with P290 ACKT...-FWR insert
[2] Number of flutes
[3] Number of inserts (or edges for solid tool)
[4] Maximum ramping angle
[5] 1 - Slot for data chip, 0 - Without slot for data chip

**For inserts, see pages:** P290 ACCT/KT (529) • P290 ACKT (529)

MILLSHRED P290 LINE

## P290 SM

Extended Flute Shell Mills Carrying 12 and 18 mm Long Edged Inserts




| Designation | DC | APMX | NOF[1] | CICT[2] | OAL | DHUB | DCONMS | RMPX°[3] | Arbor[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| P290 SM D032-03-24-16-12 | 32.00 | 24.00 | 3 | 6 | 65.00 | 38.00 | 16.00 | 1.0 | A | 0.27 |
| P290 SM D040-04-24-16-12 | 40.00 | 24.00 | 4 | 8 | 45.00 | 38.00 | 16.00 | 0.7 | A | 0.23 |
| P290 SM D040-04-36-16-12 | 40.00 | 36.00 | 4 | 12 | 60.00 | 38.00 | 16.00 | 0.7 | A | 0.30 |
| P290 SM D040-04-48-22-12 | 40.00 | 48.00 | 4 | 16 | 85.00 | 48.00 | 22.00 | 0.7 | A | 0.47 |
| P290 SM D050-04-36-22-18 | 50.00 | 36.00 | 4 | 8 | 65.00 | 46.40 | 22.00 | 1.0 | A | 0.47 |
| P290 SM D050-04-53-22-18 | 50.00 | 53.00 | 4 | 12 | 80.00 | 46.40 | 22.00 | 1.0 | A | 0.57 |
| P290 SM D050-04-71-27-18 | 50.00 | 71.00 | 4 | 16 | 105.00 | 48.00 | 27.00 | 1.0 | A | 0.73 |
| P290 SM D063-05-53-27-18 | 63.00 | 53.00 | 5 | 15 | 80.00 | 55.00 | 27.00 | 0.8 | A | 1.00 |
| P290 SM D063-05-71-27-18 | 63.00 | 71.00 | 5 | 20 | 100.00 | 55.00 | 27.00 | 0.8 | A | 1.30 |
| P290 SM D080-06-71-32-18 | 80.00 | 71.00 | 6 | 24 | 100.00 | 74.00 | 32.00 | 0.5 | A | 2.21 |
| P290 SM D100-06-36-32-18 | 100.00 | 36.00 | 6 | 12 | 70.00 | 78.00 | 32.00 | 0.3 | A | 2.48 |
| P290 SM D100-07-71-40-18 | 100.00 | 71.00 | 7 | 28 | 100.00 | 85.00 | 40.00 | 0.3 | A | 3.50 |

• Note: recommended $a_e$ up to 0.2xDC
[1] Number of flutes
[2] Number of inserts (or edges for solid tool)
[3] Maximum ramping angle
[4] For adaptation options, see page 622

**For inserts, see pages:** P290 ACCT/KT (529) • P290 ACKT (529)

### Spare Parts

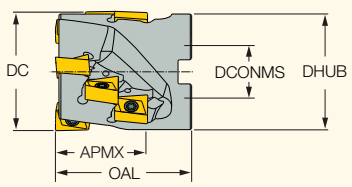
| Designation | | | | | |
|---|---|---|---|---|---|
| P290 SM D032-03-24-16-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | | SR M8X55-D11.5 DIN912 |
| P290 SM D040-04-24-16-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | | SR M8X35 DIN912 |
| P290 SM D040-04-36-16-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | | SR M8X45DIN912 |
| P290 SM D040-04-48-22-12 | SR M3X0.5-L7.4 IP9[a] | IP-9/151 | | | SR M10X70DIN912 |
| P290 SM D050-04-36-22-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M10X50 DIN 912 |
| P290 SM D050-04-53-22-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M10X60DIN912 |
| P290 SM D050-04-71-27-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M12X70DIN912 |
| P290 SM D063-05-53-27-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M12X70DIN912 |
| P290 SM D063-05-71-27-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M12X70DIN912 |
| P290 SM D080-06-71-32-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M16X80 DIN 912 |
| P290 SM D100-06-36-32-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M16X50 DIN912 |
| P290 SM D100-07-71-40-18 | SR 14-544/S | | BLD T15/M7 | SW6-T-SH | SR M20X80DIN912 |

[a] Recommended tightening torque:2.0 N*m

HELIDO 490 LINE

## H490 SM-12

Extended Flute Shell Mills
Carrying H490 ANKX 12..
Double-Sided Rectangular Inserts
with 4 Helical Cutting Edges




| Designation | DC | CICT[1] | NOF[2] | APMX | OAL | DHUB | DCONMS | Arbor[3] | CSP[4] | kg | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H490 SM D050-36-3-22-12 | 50.00 | 9 | 3 | 35.00 | 60.00 | 48.00 | 22.00 | A | 1 | 0.45 | SR 14-544 | BLD T15/M7 | SW6-T | SR M10X40DIN912 |
| H490 SM D050-47-4-22-12 | 50.00 | 16 | 4 | 47.00 | 68.00 | 48.00 | 22.00 | A | 0 | 0.54 | SR 14-544/S | BLD T15/M7 | SW6-T | SR M10X50 DIN 912 |
| H490 SM D063-48-4-27-12 | 63.00 | 16 | 4 | 47.00 | 70.00 | 60.00 | 27.00 | A | 1 | 0.89 | SR 14-544 | BLD T15/M7 | SW6-T | SR M12X50DIN912 |

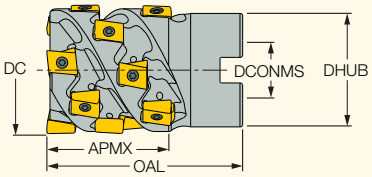
[1] Number of inserts (or edges for solid tool)
[2] Number of flutes
[3] For adaptation see page 622
[4] 0 - Without coolant supply, 1 - With coolant supply

**For inserts, see pages:** H490 ANKX/ANCX-12 (538)

HELITANG T490 LINE

## T490 SM-08

Extended Flute Shell Mills
Carrying T490 LNMT/HT 0804...
Tangentially Clamped Inserts




| Designation | DC | APMX | NOF[1] | CICT[2] | OAL | DHUB | DCONMS | Arbor[3] | kg | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 SM D032-36-3-16-08 | 32.00 | 36.00 | 3 | 15 | 58.00 | 38.00 | 16.00 | A | 0.23 | SR 10502813-HG-M | IP-7/51 | SR M8X45DIN912 | |
| T490 SM D040-44-4-16-08 | 40.00 | 44.00 | 4 | 24 | 65.00 | 38.00 | 16.00 | A | 0.38 | SR 10502813-HG-M | IP-7/51 | SR M8X55DIN912 | |
| T490 SM D050-44-5-22-08 | 50.00 | 44.00 | 5 | 30 | 65.00 | 47.00 | 22.00 | A | 0.61 | SR 10502813-HG-M | IP-7/51 | SR M10X50 DIN 912 | |

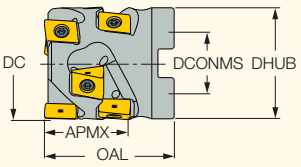
[1] Number of flutes
[2] Number of inserts (or edges for solid tool)
[3] For adaptation options, see page 622

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT/LNHT 0804 (544)

HELITANG T490 LINE

## T490 SM-11

Extended Flute Shell Mills
Carrying T490 LN#T 11...
Tangentially Clamped Inserts




| Designation | DC | APMX | NOF[1] | CICT[2] | OAL | DHUB | DCONMS | Arbor[3] | kg | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 SM-D40-51-3-22-11 | 40.00 | 51.00 | 3 | 18 | 72.00 | 38.00 | 22.00 | A | 0.31 | SR 34-535/L10.5-SN | BLD T15/S7[a] | SW6-SD | SR M10X60DIN912 |
| T490 SM-D50-51-3-22-11 | 50.00 | 51.00 | 3 | 18 | 71.00 | 48.00 | 22.00 | A | 0.59 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD | SR M10X60DIN912 |
| T490 SM-D50-59-4-22-11 | 50.00 | 59.00 | 4 | 28 | 80.00 | 48.00 | 22.00 | A | 0.66 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD | SR M10X70DIN912 |
| T490 SM-D63-59-4-27-11 | 63.00 | 59.00 | 4 | 28 | 81.00 | 60.00 | 27.00 | A | 1.16 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD | SR M12X70DIN912 |
| T490 SM-D63-68-5-27-11 | 63.00 | 68.00 | 5 | 40 | 90.00 | 60.00 | 27.00 | A | 1.30 | SR 34-535-SN | BLD T15/S7[a] | SW6-SD | SR M12X80DIN912 |

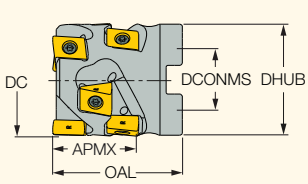
• Important: Maximum clamping torque 3.2 Nxm
[1] Number of flutes
[2] Number of inserts (or edges for solid tool)
[3] For adaptation see page 622
[a] Recommended key handle for limiting torque to 3.2 Nxm for this item is HSD 4-3.2NM (to be used with BLD 4 T15-4.8 blade)

**For inserts, see pages:** T490 LNMT/LNHT 1106 (545)

HELITANG T490 LINE

## T490 SM-13

Extended Flute Shell Mills
Carrying T490 LNMT/HT 1306...
Tangentially Clamped Inserts




| Designation | DC | APMX | NOF[2] | CICT[3] | OAL | DHUB | DCONMS | Arbor[4] | kg |
|---|---|---|---|---|---|---|---|---|---|
| T490 SM-D40-24-2-22-13 [1] | 40.00 | 24.00 | 2 | 4 | 50.00 | 38.00 | 22.00 | A | 0.24 |
| T490 SM-D40-36-3-22-13 | 40.00 | 36.00 | 3 | 9 | 62.00 | 38.00 | 22.00 | A | 0.29 |
| T490 SM-D50-36-2-27-13 [1] | 50.00 | 36.00 | 2 | 6 | 56.00 | 48.00 | 27.00 | A | 0.38 |
| T490 SM-D50-36-3-22-13 [1] | 50.00 | 36.00 | 3 | 9 | 56.00 | 48.00 | 22.00 | A | 0.43 |
| T490 SM-D50-36-3-27-13 [1] | 50.00 | 36.00 | 3 | 9 | 56.00 | 48.00 | 27.00 | A | 0.39 |
| T490 SM-D50-47-4-22-13 | 50.00 | 47.00 | 4 | 16 | 68.00 | 48.00 | 22.00 | A | 0.54 |
| T490 SM-D50-47-4-27-13 | 50.00 | 47.00 | 4 | 16 | 68.00 | 48.00 | 27.00 | A | 0.49 |
| T490 SM-D63-36-4-27-13 | 63.00 | 36.00 | 4 | 12 | 60.00 | 58.00 | 27.00 | A | 0.79 |
| T490 SM-D63-59-5-27-13 | 63.00 | 59.00 | 5 | 25 | 80.00 | 58.00 | 27.00 | A | 1.09 |
| T490 SM-D80-58-5-32-13 | 80.00 | 58.00 | 5 | 25 | 75.00 | 74.00 | 32.00 | A | 1.73 |
| T490 SM-D80-70-5-32-13 | 80.00 | 70.00 | 5 | 30 | 111.00 | 74.00 | 32.00 | A | 2.65 |
| T490 SM-D100-59-6-40-13 | 100.00 | 59.00 | 6 | 30 | 86.00 | 88.00 | 40.00 | A | 3.11 |

[1] Can be applied for full slot applications
[2] Number of flutes
[3] Number of inserts (or edges for solid tool)
[4] For adaptation options, see page 622

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

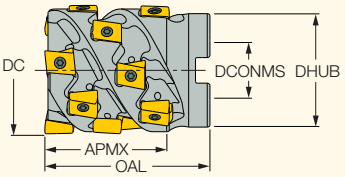
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| T490 SM-D40-24-2-22-13 | SR 34-535/L10.5-SN | BLD T15/S7 | SW6-T-SH | SR M10X40DIN912 |
| T490 SM-D40-36-3-22-13 | SR 34-535/L10.5-SN | BLD T15/S7 | SW6-T-SH | SR M10X50 DIN 912 |
| T490 SM-D50-36-2-27-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M12X45DIN912 |
| T490 SM-D50-36-3-22-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M10X40DIN912 |
| T490 SM-D50-36-3-27-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M12X45DIN912 |
| T490 SM-D50-47-4-22-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M10X50 DIN 912 |
| T490 SM-D50-47-4-27-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M12X50DIN912 |
| T490 SM-D63-36-4-27-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M12X50DIN912 |
| T490 SM-D63-59-5-27-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M12X70DIN912 |
| T490 SM-D80-58-5-32-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M16X55DIN912 |
| T490 SM-D80-70-5-32-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M16X90DIN912 |
| T490 SM-D100-59-6-40-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M20X60DIN912 |

HELITANG T490 LINE

## T490 SM-13FT

Basic Units for Modular
Extended Flute Shell Mills




| Designation | DC | APMX | NOF[1] | CICT[2] | OAL | DHUB | DCONMS | Arbor[3] | kg |
|---|---|---|---|---|---|---|---|---|---|
| T490 SM-D50-47-2-27-13FT | 50.00 | 47.00 | 2 | 8 | 66.50 | 58.00 | 27.00 | A | 0.59 |
| T490 SM-D63-59-3-27-13FT | 63.00 | 59.00 | 3 | 15 | 80.00 | 58.00 | 27.00 | A | 1.10 |
| T490 SM-D80-70-4-32-13FT | 80.00 | 70.00 | 4 | 24 | 95.00 | 74.00 | 32.00 | A | 2.23 |

• Assembly screw should be ordered separately
[1] Number of flutes
[2] Number of inserts (or edges for solid tool)
[3] For adaptation options, see page 622

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

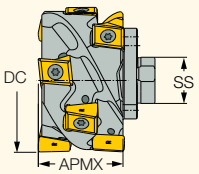
### Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| T490 SM-D50-47-2-27-13FT | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | | | SR M12X50DIN912 |
| T490 SM-D63-59-3-27-13FT | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M3X0.5X10DIN7991 10.9 | PG D63 | SR M12X60DIN912 |
| T490 SM-D80-70-4-32-13FT | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M3X0.5X10DIN7991 10.9 | PG D63 | SR M16X70DIN912 |

HELITANG T490 LINE

## T490 CAP-13FT

Extension Units for Modular Extended Flute Shell Mills




| Designation | DC | APMX | NOF(1) | CICT(2) | SS | kg | | |
|---|---|---|---|---|---|---|---|---|
| T490 CAP-D50-24-2-20-13FT | 50.00 | 24.00 | 2 | 4 | 20 | 0.21 | SR 34-535-SN | |
| T490 CAP-D50-36-2-20-13FT | 50.00 | 36.00 | 2 | 6 | 20 | 0.32 | SR 34-535-SN | |
| T490 CAP-D63-24-3-20-13FT | 63.00 | 24.00 | 3 | 6 | 20 | 0.33 | SR 34-535-SN | |
| T490 CAP-D63-24-4-20-13FT | 63.00 | 24.00 | 4 | 8 | 20 | 0.34 | SR 34-535-SN | SR M6X6 DIN916 |
| T490 CAP-D63-36-3-20-13FT | 63.00 | 36.00 | 3 | 9 | 20 | 0.51 | SR 34-535-SN | |
| T490 CAP-D63-36-4-20-13FT | 63.00 | 36.00 | 4 | 12 | 20 | 0.50 | SR 34-535-SN | SR M6X6 DIN916 |
| T490 CAP-D80-24-4-25-13FT | 80.00 | 24.00 | 4 | 8 | 25 | 0.59 | SR 34-535-SN | SR M6X8 DIN916 |
| T490 CAP-D80-36-4-25-13FT | 80.00 | 36.00 | 4 | 12 | 25 | 0.88 | SR 34-535-SN | SR M6X8 DIN916 |

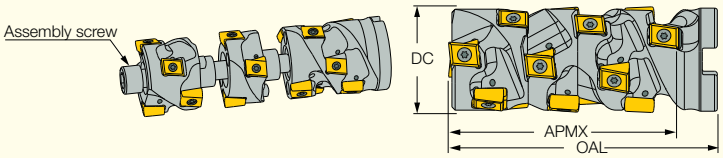
- Assembly screw should be ordered separately

(1) Number of flutes

(2) Number of inserts (or edges for solid tool)

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

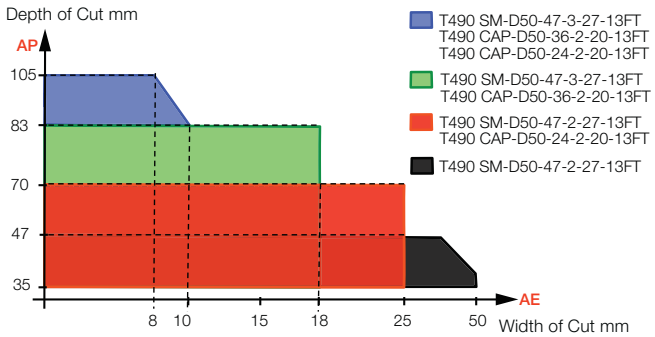
### Modular Extended Flute Assembly



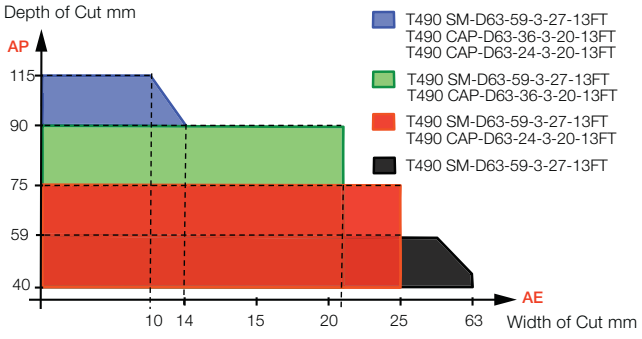

| Shell Base Unit | Extension 1 | Extension 2 | DC | APMX | OAL | NOF | CICT | Assembly Screw |
|---|---|---|---|---|---|---|---|---|
| T490 SM-D50-47-2-27-13FT | | | | 47 | 66.5 | 2 | 8 | SR M12x50 DIN912* |
| | T490 CAP-D50-24-2-20-13FT | | 50 | 71 | 90 | | 12 | SR M12x70 DIN912* |
| | T490 CAP-D50-36-2-20-13FT | | 50 | 83 | 102 | | 14 | SR M12x80 DIN912* |
| | T490 CAP-D50-24-2-20-13FT | T490 CAP-D50-24-2-20-13FT | 50 | 94 | 113 | | 16 | SR M12x100 DIN912* |
| | T490 CAP-D50-24-2-20-13FT | T490 CAP-D50-36-2-20-13FT | 50 | 106 | 125 | | 18 | SR M12x110 DIN912* |
| T490 SM-D63-59-3-27-13FT | | | | 59 | 80 | 3 | 15 | SR M12x60 DIN912* |
| | T490 CAP-D63-24-3-20-13FT | | 63 | 82 | 103 | | 21 | SR M12x80 DIN912* |
| | T490 CAP-D63-36-3-20-13FT | | 63 | 94 | 115 | | 24 | SR M12x100 DIN912* |
| | T490 CAP-D63-24-3-20-13FT | T490 CAP-D63-24-3-20-13FT | 63 | 106 | 127 | | 27 | SR M12x110 DIN912* |
| | T490 CAP-D63-24-3-20-13FT | T490 CAP-D63-36-3-20-13FT | 63 | 117 | 138 | | 30 | SR M12x120 DIN912* |
| T490 SM-D80-70-4-32-13FT | | | | 70 | 95 | 4 | 24 | SR M16x70 DIN912* |
| | T490 CAP-D80-24-4-25-13FT | | 80 | 94 | 118.4 | | 32 | SR M16x100 DIN912* |
| | T490 CAP-D80-36-4-25-13FT | | 80 | 106 | 130 | | 36 | SR M16x100 DIN912* |
| | T490 CAP-D80-24-4-25-13FT | T490 CAP-D80-24-4-25-13FT | 80 | 118 | 143.2 | | 40 | SR M16x120 DIN912* |
| | T490 CAP-D80-24-4-25-13FT | T490 CAP-D80-36-4-25-13FT | 80 | 130 | 154.8 | | 44 | SR M16x130 DIN912* |

* Should be ordered separately.

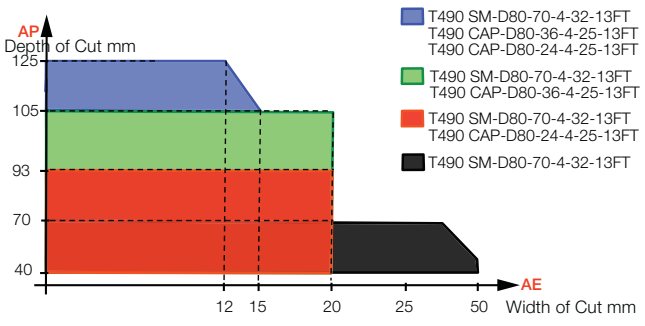
### AP/AE Application Range for 50 mm Modular Extended Flute Cutters



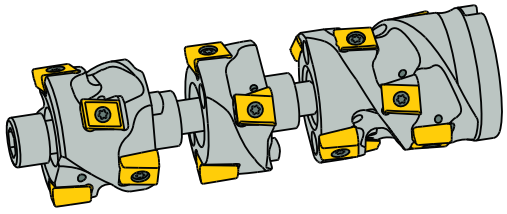

### AP/AE Application Range for 63 mm Modular Extended Flute Cutters




### AP/AE Application Range for 80 mm Modular Extended Flute Cutters

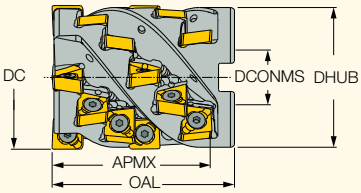



### Workpiece: Alloy Steel



HELISLOT

**SM-XN13**
Extended Flute Shell Mills
Carrying XNMU 1306... Inserts




| Designation | DC | APMX | NOF(1) | DCONMS | CICT(2) | LF | DHUB | Arbor | kg | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SM D063-69-3-27R XN13 | 63.00 | 69.00 | 3 | 27.00 | 18 | 80.00 | 61.30 | A | 1.05 | SR M4-L15-D4.5 | BLD IP15/S7 | SW6-T-SH | SR M12X70DIN912 |
| SM D063-69-4-27R XN13 | 63.00 | 69.00 | 4 | 27.00 | 24 | 80.00 | 61.30 | A | 0.95 | SR M4-L15-D4.5 | BLD IP15/S7 | SW6-T-SH | SR M12X70DIN912 |
| SM D080-69-5-32R XN13 | 80.00 | 69.00 | 5 | 32.00 | 30 | 85.00 | 78.30 | A | 1.81 | SR M4-L15-D4.5 | BLD IP15/M7 | SW6-T-SH | SR M16X70DIN912 |

- Radial W.O.C. < 0.3xDC

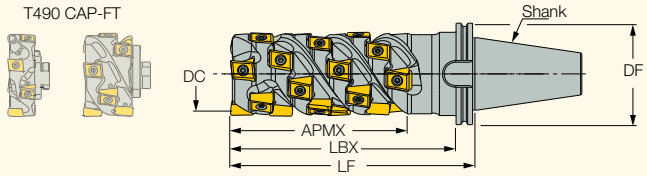
(1) Number of flutes

(2) Number of inserts (or edges for solid tool)

**For inserts, see pages:** XNMU 13 (586)

HELITANG T490 LINE

**T490 LNK-INT50-FT**
Basic Units of Modular Extended
Flute Endmills with DIN 69871
Tapered Shanks Carrying
T490 LNMT/HT 1306 Inserts




| Designation | DC | APMX | LBX | LF | DF | NOF(1) | CICT(2) | Shank | kg |
|---|---|---|---|---|---|---|---|---|---|
| T490LNKD63-082-4-INT50-FT | 63.00 | 82.00 | 125.9 | 145.00 | 97.50 | 4 | 28 | DIN69871 | 5.15 |
| T490LNK-D80-82-5-INT50-FT | 80.00 | 82.00 | 125.5 | 144.60 | 97.50 | 5 | 35 | DIN69871 | 6.08 |
| T490LNKD80-105-4-INT50-FT | 80.00 | 105.00 | 154.1 | 173.20 | 97.50 | 4 | 36 | DIN69871 | 7.04 |

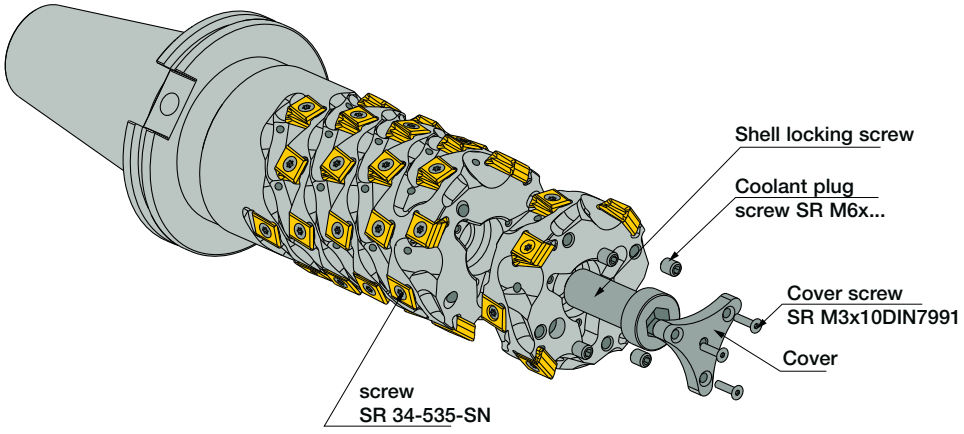
- Remove coolant plug screws (SR M6X..DIN916) prior to attaching extension units

(1) Number of flutes

(2) Number of inserts (or edges for solid tool)

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

| Shell Base Unit | Extension | DC | APMX | OAL | NOF | CICT | Assembly Screw |
|---|---|---|---|---|---|---|---|
| T490 LNK-D63-082-4-INT50-FT | | 63 | 82 | 126 | 4 | 28 | |
| | T490 CAP-24-4-20-13FT | | 106 | 150 | | 36 | SR M12x30 DIN912 |
| | T490 CAP-36-4-20-13FT | | 118 | 162 | | 40 | SR M12X45DIN912 12.9 |
| T490 LNK-D80-082-5-INT50-FT | | 80 | 82 | 125 | 5 | 45 | |
| | T490 CAP-D80-24-25-13FT | | 106 | 149 | | 55 | SR M16x40 DIN912 |
| | | | 105 | 135 | | 36 | |
| T490 LNK-D80-105-4-INT50-FT | T490 CAP-D80-24-4-25-13FT | 80 | 129 | 159 | 4 | 44 | SR M16x40 DIN912 |
| | T490 CAP-D80-36-4-25-13FT | | 141 | 171 | | 48 | SR M16x40 DIN912 |



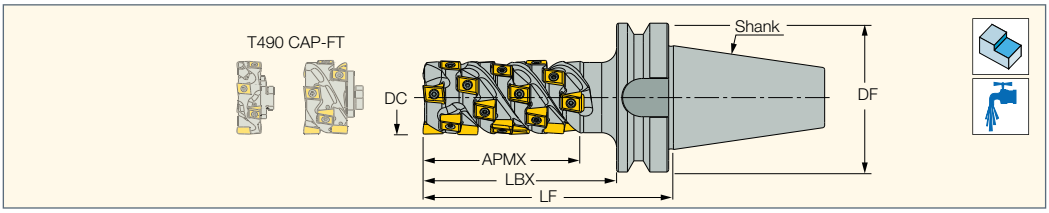

## Spare Parts

| Designation | | | | | | | |
|---|---|---|---|---|---|---|---|
| T490LNKD63-082-4-INT50-FT | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M6X6 DIN916 | SR M12X12 DIN912 | | |
| T490LNK-D80-82-5-INT50-FT | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | | | PG D63 | SR M3X0.5X10DIN7991 10.9 |
| T490LNKD80-105-4-INT50-FT | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M6X8 DIN916 | | PG D63 | SR M3X0.5X10DIN7991 10.9 |

HELITANG T490 LINE

## T490 LNK-BT-FT

Basic Units of Modular Extended Flute Endmills with BT-MAS-403 Tapered Shanks Carrying T490 LNMT/HT 1306 Inserts




| Designation | DC | APMX | LBX | LF | DF | NOF(1) | CICT(2) | Shank | kg |
|---|---|---|---|---|---|---|---|---|---|
| T490LNK-D63-082-4-BT50-FT | 63.00 | 82.00 | 107.0 | 145.00 | 100.00 | 4 | 28 | BT-MAS-403 | 5.32 |
| T490LNK-D80-105-4-BT50-FT | 80.00 | 105.00 | 135.2 | 173.20 | 100.00 | 4 | 36 | BT-MAS-403 | 7.35 |

- Remove coolant plug screws (SR M6X..DIN916) prior to attaching extension units

(1) Number of flutes

(2) Number of inserts (or edges for solid tool)

**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

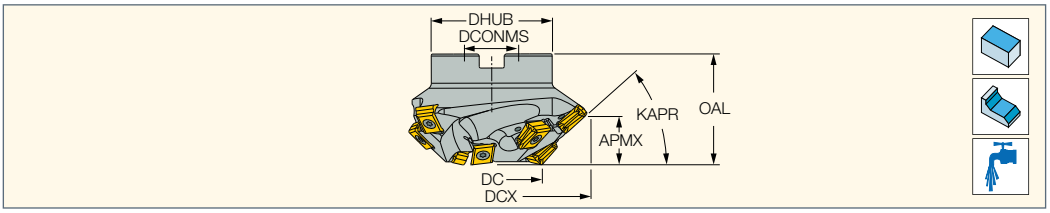
| Shell Base Unit | Extension | DC | APMX | OAL | NOF | CICT | NOFAssembly Screw |
|---|---|---|---|---|---|---|---|
| T490 LNK-D63-082-4-BT50-FT | | 63 | 82 | 107 | 4 | 28 | |
| | T490 CAP-D63-24-4-20-13FT | | 106 | 131 | | 36 | SR M12x30 DIN912 |
| | T490 CAP-D63-36-4-20-13FT | | 118 | 143 | | 40 | SR M12X45DIN912 12.9 |
| T490 LNK-D80-105-4-BT50-FT | | 80 | 105 | 135 | 4 | 36 | |
| | T490 CAP-D80-24-4-25-13FT | | 129 | 159 | | 44 | SR M16x40 DIN912 |
| | T490 CAP-D80-36-4-25-13FT | | 141 | 171 | | 48 | SR M16x40 DIN912 |

## Spare Parts

| Designation | | | | | | | |
|---|---|---|---|---|---|---|---|
| T490LNK-D63-082-4-BT50-FT | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M6X6 DIN916 | SR M12X12 DIN912 | | |
| T490LNK-D80-105-4-BT50-FT | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M6X8 DIN916 | | PG D63 | SR M3X0.5X10DIN7991 10.9 |

HELITANG

**T4..-SM Conical Shell Mills**
Conical Extended Flute Shell Mills
Carrying T490 LNMT/LNHT 13...
Tangentially Clamped Inserts




| Designation | DC | KAPR[2] | APMX | DCX[3] | NOF[4] | ZNP[5] | OAL | DHUB | DCONMS | Arbor[6] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T422 SM-D050-12-3-32-13 | 50.00 | 22.5 | 12.20 | 110.10 | 3 | 9 | 60.00 | 78.00 | 32.00 | A | 1.92 |
| T425 SM-D050-13-3-32-13 | 50.00 | 25.0 | 13.55 | 109.20 | 3 | 9 | 60.00 | 78.00 | 32.00 | A | 1.85 |
| T430 SM-D050-16-3-32-13 | 50.00 | 30.0 | 16.00 | 107.20 | 3 | 9 | 60.00 | 78.00 | 32.00 | A | 1.81 |
| T440 SM-D050-28-3-27-13 | 50.00 | 40.0 | 28.88 | 118.80 | 3 | 12 | 65.00 | 60.00 | 27.00 | A | 1.99 |
| T445 SM-D050-23-3-27-13 | 50.00 | 45.0 | 23.50 | 98.20 | 3 | 9 | 55.00 | 60.00 | 27.00 | A | 1.17 |
| T445 SM-D050-47-3-32-13 | 50.00 | 45.0 | 47.50 | 145.60 | 3 | 18 | 76.00 | 80.00 | 32.00 | A | 3.41 |
| T450 SM-D050-25-3-27-13 | 50.00 | 50.0 | 26.12 | 94.30 | 3 | 9 | 55.00 | 60.00 | 27.00 | A | 0.13 |
| T460 SM-D050-30-3-27-13 | 50.00 | 60.0 | 30.00 | 85.20 | 3 | 9 | 55.00 | 60.00 | 27.00 | A | 0.96 |
| T470 SM-D050-33-3-27-13 | 50.00 | 70.0 | 33.20 | 74.30 | 3 | 9 | 60.00 | 58.00 | 27.00 | A | 0.86 |
| T475 SM-D050-34-3-27-13 | 50.00 | 75.0 | 34.50 | 68.60 | 3 | 9 | 55.00 | 60.00 | 27.00 | A | 0.73 |
| T475 SM-D050-56-3-32-13 | 50.00 | 75.0 | 57.70 | 81.00 | 3 | 15 | 83.50 | 78.00 | 32.00 | A | 1.52 |

- Note: RPM should be considered according to the recommended speed applied on the outer diameter obtained by the specific D.O.C.
- For user guide, see pages 616-621

(1) Tool cutting edge angle
(2) Cutting diameter maximum
(3) Number of flutes
(4) Number of peripheral inserts
(5) For adaptation options, see page 622

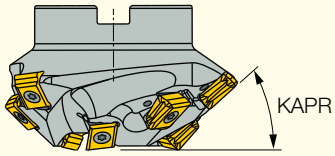
**For inserts, see pages:** T490 LNAR-P (548) • T490 LNMT 1306PNTR-FW (547) • T490 LNMT/LNHT/LNAR 1306 (546)

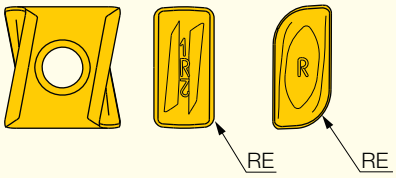
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| T422 SM-D050-12-3-32-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M16X40DIN912 |
| T425 SM-D050-13-3-32-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M16X40DIN912 |
| T430 SM-D050-16-3-32-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M16X40DIN912 |
| T440 SM-D050-28-3-27-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M12X45DIN912 |
| T445 SM-D050-23-3-27-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M12X35DIN912 |
| T445 SM-D050-47-3-32-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M16X50 DIN912 |
| T450 SM-D050-25-3-27-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M12X35DIN912 |
| T460 SM-D050-30-3-27-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M12X35DIN912 |
| T470 SM-D050-33-3-27-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M12X50DIN912 |
| T475 SM-D050-34-3-27-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M12X35DIN912 |
| T475 SM-D050-56-3-32-13 | SR 34-535-SN | BLD T15/S7 | SW6-T-SH | SR M16X60DIN912 |

## Recommended Applications

The table and figures below show the applicability of the conical extended flute cutters carrying inserts with different corner radii.




| Description | KAPR | Application Fig. for RE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.8 | 1.2 | 1.6 | 2.4 | 3.1 | 4.0 | 5.0 | 6.0 | 6.4 |
| T422 SM-D050-12-3-32-13 | 22.5 | Fig. 1 & 2 | Fig. 2 | Fig. 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 2 | Fig. 2 | Fig. 2 | Fig. 2 |
| T425 SM-D050-13-3-32-13 | 25 | Fig. 1 & 2 | Fig. 2 | Fig. 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 |
| T430 SM-D050-16-3-32-13 | 30 | Fig. 1 & 2 | Fig. 2 | Fig. 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 |
| T440 SM-D050-28-3-27-13 | 40 | Fig. 2 | Fig. 2 | Fig. 2 | Fig. 2 | Fig. 2 | Fig. 2 | Fig. 2 | Fig. 2 | Fig. 2 |
| T445 SM-D050-23-3-27-13 | 45 | Fig. 1 & 2 | Fig. 2 | Fig. 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 2 | Fig. 2 | Fig. 2 | Fig. 2 |
| T450 SM-D050-25-3-27-13 | 50 | Fig. 1 & 2 | Fig. 2 | Fig. 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 2 | Fig. 2 | Fig. 2 | Fig. 2 |
| T460 SM-D050-30-3-27-13 | 60 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 |
| T470 SM-D050-33-3-27-13 | 70 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 |
| T475 SM-D050-34-3-27-13 | 75 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 | Fig. 1 & 2 |

KAPR - Tool cutting edge angle

Required to make a modification in the tool body

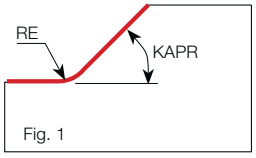



Fig. 1

Machined surface

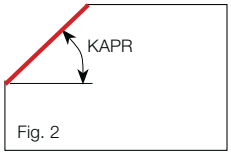



Fig. 2

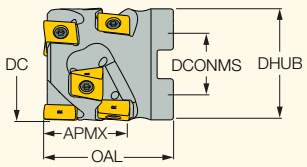
Fig. 3

For indexable inserts T490 LNHT 1306… with a corner radius of 4 mm and more, the tool body mast be modified according to Fig. 3.

HELITANG T490 LINE

### T490 SM-16

Extended Flute Shell Mills
Carrying T490 LNMT/HT 1607...
Tangentially Clamped Inserts




| Designation | DC | APMX | OAL | NOF(1) | CICT(2) | DHUB | DCONMS | Arbor(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 SM D63-47-3-27-16 | 63.00 | 47.00 | 68.00 | 3 | 9 | 58.00 | 27.00 | A | 0.93 | SR 14-591 | BLD T20/M7 | SW6-T |

(1) Number of flutes

(2) Number of inserts (or edges for solid tool)

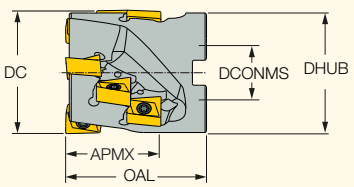
(3) For adaptation options, see page 622

**For inserts, see pages:** T490 LNAR-P (480) • T490 LNMT/LNHT 1607 (480)

HELIDO 490 LINE

**H490 SM-17**

Extended Flute Shell Mills Carrying H490 ANKX 17.. Double-Sided Rectangular Inserts with 4 Helical Cutting Edges




| Designation | DC | APMX | NOF(1) | CICT(2) | OAL | DHUB | DCONMS | Arbor(3) | kg | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H490 SM D063-48-3-27-17C | 63.00 | 46.50 | 3 | 9 | 70.00 | 59.40 | 27.00 | A | 1.93 | SR 14-591 | BLD T20/M7 | SW6-T | SR M12X50DIN912 |
| H490 SM D063-60-3-27-17C | 63.00 | 58.50 | 3 | 12 | 85.00 | 59.40 | 27.00 | A | 1.13 | SR 14-591 | BLD T20/M7 | SW6-T | SR M12X60DIN912 |
| H490 SM D080-48-4-32-17C | 80.00 | 46.50 | 4 | 12 | 70.00 | 76.40 | 32.00 | A | 1.56 | SR 14-591 | BLD T20/M7 | SW6-T | SR M16X40DIN912 |

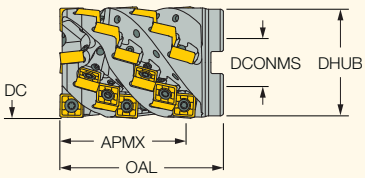
(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) For adaptation options, see page 622

**For inserts, see pages:** H490 ANKX/ANCX-17 (539)

QUICKXFLUTE

**S890 SM**

Extended Flute Cutters Carrying Double-Sided Square Inserts with 8 Cutting Edges




| Designation | DC | APMX | NOF(1) | DCONMS | CICT(2) | OAL | DHUB | Arbor | kg |
|---|---|---|---|---|---|---|---|---|---|
| S890 SM D63-71-4-27-13 | 63.00 | 71.00 | 4 | 27.00 | 28 | 92.00 | 60.00 | A | 1.50 |
| S890 SM D80-83-5-32-13 | 80.00 | 83.00 | 5 | 32.00 | 40 | 100.00 | 78.00 | A | 1.89 |

New

- When using inserts with a corner radius of above 3.2mm, the pockets in the first row of the tool body should be modified to accommodate larger insert corners.

(1) Number of flutes
(2) Number of inserts (or edges for solid tool)

**For inserts, see pages:** S890 SNMU 1306HP (573)

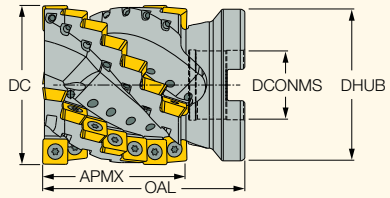
## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| S890 SM D63-71-4-27-13 | SR 10513105-L10.5 | BLD IP20/S7-4MM | SW6-T-SH | SR M12X80DIN912 | NOZZLE 1.2 569102604 L5.5 |
| S890 SM D80-83-5-32-13 | SR 10513105-L10.5 | BLD IP20/S7-4MM | SW6-T-SH | SR M16X84DIN912 | NOZZLE 1.2 569102604 L5.5 |

XQUAD EXTENDED FLUTE

**SDK-10-C/HP**

Extended Flute Shell Mills Carrying SDHW/T 100408... Inserts



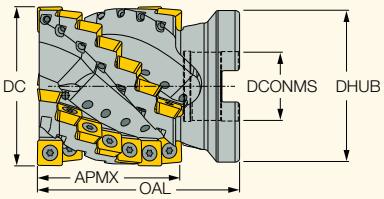

| Designation | DC | APMX | NOF(2) | DCONMS | CICT(3) | OAL | DHUB | Arbor(4) | kg | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SDK D050-48-03-22-10-C | 50.00 | 48.00 | 3 | 22.00 | 18 | 75.00 | 48.00 | A | 0.54 | SR M3.5X0.6-L8.5 IP10 | BLD IP10/S7 | SW6-SD | SR M10X60DIN912 |
| SDK D050-48-03-27-10-C | 50.00 | 48.00 | 3 | 27.00 | 18 | 80.00 | 49.00 | A | 0.57 | SR M3.5X0.6-L8.5 IP10 | BLD IP10/S7 | SW6-SD | SR M12X65 DIN912 |
| SDK D050-48-04-27-10-C | 50.00 | 48.00 | 4 | 27.00 | 24 | 75.90 | 49.00 | A | 0.56 | SR M3.5X0.6-L8.5 IP10 | BLD IP10/S7 | SW6-SD | SR M12X60DIN912 |
| SDK D050-48-04-27-10-HP (1) | 50.00 | 48.00 | 4 | 27.00 | 24 | 80.00 | 49.00 | A | 0.57 | SR M3.5X0.6-L8.5 IP10 | BLD IP10/S7 | SW6-SD | SR M12X65 DIN912 |
| SDK D063-56-04-27-10-C | 63.00 | 56.00 | 4 | 27.00 | 28 | 80.00 | 60.00 | A | 0.90 | SR M3.5X0.6-L8.5 IP10 | BLD IP10/S7 | SW6-SD | SR M12X65 DIN912 |
| SDK D080-64-05-32-10-C | 80.00 | 64.00 | 5 | 32.00 | 40 | 85.00 | 78.00 | A | 1.61 | SR M3.5X0.6-L8.5 IP10 | BLD IP10/S7 | SW6-SD | SR M16X65 DIN912 |

(1) Designed with coolant nozzles for high pressure coolant
(2) Number of flutes
(3) Number of inserts (or edges for solid tool)
(4) For adaptation see page 622

**For inserts, see pages:** SDHT/HW/MT 1004 (566)

XQUAD EXTENDED FLUTE

**SDK-12-C/HP**
Extended Flute Shell Mills
Carrying SDHT 1205... Inserts




| Designation | DC | APMX | NOF(2) | DCONMS | CICT(3) | OAL | DHUB | Arbor(4) | kg |
|---|---|---|---|---|---|---|---|---|---|
| SDK D63-55-05-27-12-C | 63.00 | 55.00 | 5 | 27.00 | 25 | 80.00 | 60.00 | A | 0.94 |
| SDK D63-55-05-27-12-HP (1) | 63.00 | 55.00 | 5 | 27.00 | 25 | 80.00 | 60.00 | A | 0.94 |
| SDK D63-66-04-27-12-C | 63.00 | 66.00 | 4 | 27.00 | 24 | 93.00 | 60.00 | A | 1.07 |
| SDK D63-98-04-27-12-C | 63.00 | 98.00 | 4 | 27.00 | 36 | 125.00 | 60.00 | A | 1.38 |
| SDK D80-66-05-32-12-C | 80.00 | 66.00 | 5 | 32.00 | 30 | 95.00 | 77.60 | A | 2.06 |
| SDK D80-109-05-32-12-C | 80.00 | 109.00 | 5 | 32.00 | 50 | 143.00 | 77.60 | A | 3.06 |
| SDK D100-76-06-40-12-C | 100.00 | 76.00 | 6 | 40.00 | 42 | 110.00 | 92.00 | A | 3.97 |
| SDK D100-130-06-40-12-C | 100.00 | 130.00 | 6 | 40.00 | 72 | 165.00 | 92.00 | A | 5.87 |

(1) With coolant nozzles for high pressure coolant
(2) Number of flutes
(3) Number of inserts (or edges for solid tool)
(4) For adaptation see page 622

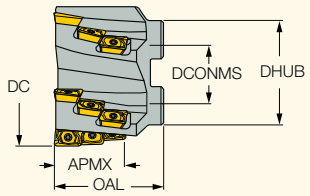
**For inserts, see pages:** QDCT-PDN (565) • QDMT 1205..PDTN-M (565) • SDHT/X 120508 (566) • SDMT-PDR-HQ (563) • SDMT-PDR-RM (564)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| SDK D63-55-05-27-12-C | SR M4X0.7-L9.5 IP15-4623 | BLD IP15/M7 | SW6-T-SH | SR M12X65 DIN912 |
| SDK D63-55-05-27-12-HP | SR M4X0.7-L9.5 IP15-4623 | BLD IP15/M7 | SW6-T | SR M12X65 DIN912 |
| SDK D63-66-04-27-12-C | SR M4X0.7-L9.5 IP15-4623 | BLD IP15/M7 | SW6-T-SH | SR M12X80DIN912 |
| SDK D63-98-04-27-12-C | SR M4X0.7-L9.5 IP15-4623 | BLD IP15/M7 | SW6-T-SH | SR M12X110DIN912 |
| SDK D80-66-05-32-12-C | SR M4X0.7-L9.5 IP15-4623 | BLD IP15/M7 | SW6-T-SH | SR M16X70DIN912 |
| SDK D80-109-05-32-12-C | SR M4X0.7-L9.5 IP15-4623 | BLD IP15/M7 | SW6-T-SH | SR M16X120 DIN912 |
| SDK D100-76-06-40-12-C | SR M4X0.7-L9.5 IP15-4623 | BLD IP15/M7 | SW6-T-SH | SR M20X85 DIN912 |
| SDK D100-130-06-40-12-C | SR M4X0.7-L9.5 IP15-4623 | BLD IP15/M7 | SW6-T-SH | SR M20X140 DIN912 |

HELIMILL

**SM**
Extended Flute Shell
Mills Carrying HM90
ADKT 1505... Inserts




| Designation | DC | APMX | NOF(1) | CICT(2) | OAL | DHUB | DCONMS | Arbor(3) | RMPX°(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| SM D50-25-27-M | 50.00 | 25.00 | 3 | 6 | 56.00 | 47.70 | 27.00 | A | 0.9 | 0.43 |
| SM D63-38-27-M | 63.00 | 38.00 | 4 | 12 | 60.00 | 55.00 | 27.00 | A | 0.7 | 0.67 |

(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) For adaptation options, see page 622
(4) Maximum ramping angle

**For inserts, see pages:** ADCR 1505PDFR (523) • ADCT 1505PDFR-HM (523) • ADKR 1505PDR/L (523) • ADKT 1505..R/L-HM (526) • ADKT 1505PDR/L-HM (525) • ADKT 1505PDTR-76 (526) • ADKT 1505PDTR/L-RM (525) • ADMT 1505PDR-HS (525) • HM90 ADCT 1505 (521) • HM90 ADCT 1505PDR-CF (522) • HM90 ADKT 1505 (521) • HM90 ADKW 1505PDR (530)

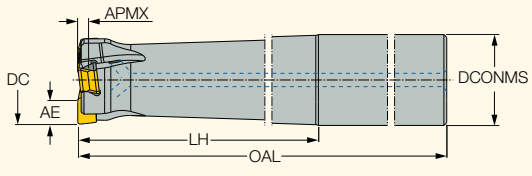
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| SM D50-25-27-M | SR 14-544/S | BLD T15/M7 | SW6-T-SH | SR M12X50DIN912 |
| SM D63-38-27-M | SR 14-544/S | BLD T15/M7 | SW6-T-SH | |

# PLUNGING CUTTERS

TANGPLUNGE PLUNGING LINE

**HTP-LN06**
Side Plungers Carrying Tangentially Clamped Inserts with 4 Cutting Edges

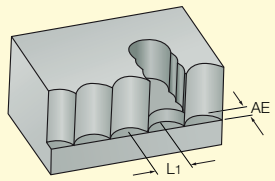



| Designation | DC | AE | APMX | CICT(1) | LH | OAL | DCONMS | Shank(2) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HTP D016-2-L120-C16-LN06 | 16.00 | 4.5 | 2.50 | 2 | 32.0 | 120.00 | 16.00 | C | 0.17 | SR 14-560-HG | T-8/53 |
| HTP D020-3-L150-C20-LN06 | 20.00 | 5.0 | 2.50 | 3 | 40.0 | 150.00 | 20.00 | C | 0.33 | SR 14-560-HG | T-8/53 |
| HTP D025-3-L150-C25-LN06 | 25.00 | 5.0 | 2.50 | 3 | 50.0 | 150.00 | 25.00 | C | 0.51 | SR 14-560-HG | T-8/53 |
| HTP D025-4-L130-C25-LN06 | 25.00 | 5.0 | 2.50 | 4 | 50.0 | 130.00 | 25.00 | C | 0.44 | SR 14-560-HG | T-8/53 |

• 5 mm side plunging capacity and 2.5 mm maximum face milling DOC • For user guide, see pages 296-298
(1) Number of inserts (or edges for solid tool)
(2) C-Cylindrical

**For inserts, see pages:** HTP LN.. 0604 (610)

## Side Step as a Function of the Width of the Plunge




| AE - Width of plunge (mm) | Cutter Diameter (mm) 16 | 20 | 25 |
|---|---|---|---|
| | L1 max - Step (effective diameter) | | |
| 1 | 7.75 | 8.72 | 9.80 |
| 2 | 10.58 | 12.00 | 13.56 |
| 3 | 12.49 | 1428 | 16.25 |
| 4 | 13.86 | 16.00 | 18.33 |
| 5 | 14.83 | 17.32 | 20.00 |

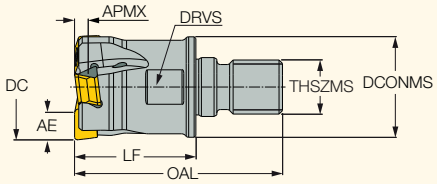
The relationship between the maximal step L1 max and the width of plunge AE is given by the following formula:

$L1\ max = 2x \sqrt{DC \times AE - AE^2}$

DC: cutter diameter

TANGPLUNGE PLUNGING LINE

**HTP-M-LN06**
Side Plungers with FLEX-FIT Threaded Connection Carrying Tangentially Clamped Inserts with 4 Cutting Edges




| Designation | DC | AE | APMX | NOF(1) | LF | OAL | DCONMS | THSZMS | DRVS(2) | TQ_3(3) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HTP D16/.62-2-M08-LN06 | 15.95 | 4.5 | 2.50 | 2 | 30.00 | 47.50 | 13.00 | M08 | 10.0 | 20 | 0.03 | SR 14-560-HG | T-8/53 |
| HTP D20-3-M10-LN06 | 20.00 | 5.0 | 2.50 | 3 | 30.00 | 50.00 | 18.00 | M10 | 15.0 | 29 | 0.06 | SR 14-560-HG | T-8/53 |
| HTP D25/1.00-3-M12-LN06 | 25.20 | 5.0 | 2.50 | 3 | 35.00 | 57.00 | 21.00 | M12 | 17.0 | 33 | 0.10 | SR 14-560-HG | T-8/53 |

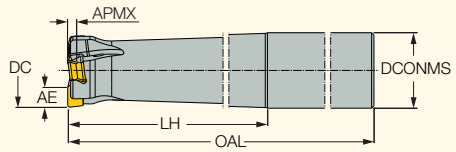
• 5 mm side plunging capacity and 2.5 mm maximum face milling DOC • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter • For user guide, see pages 296-298
(1) Number of flutes
(2) Clamping wrench size
(3) Tool tightening torque Nxm

**For inserts, see pages:** HTP LN.. 0604 (610)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

TANGPLUNGE PLUNGING LINE

## HTP-LN10

Side Plungers Carrying Tangentially Clamped Inserts with 4 Cutting Edges




| Designation | DC | AE | APMX | CICT(1) | LH | OAL | DCONMS | Shank(2) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HTP D025-2-L200-C25-LN10 | 25.00 | 7.0 | 3.00 | 2 | 120.0 | 200.00 | 25.00 | C | 0.64 | SR 34-550 | BLD T10/S7 | SW6-SD |
| HTP D032-3-L190-C25-LN10 | 32.00 | 8.0 | 3.00 | 3 | 50.0 | 190.00 | 25.00 | C | 0.68 | SR 34-550 | BLD T10/S7 | SW6-SD |
| HTP D032-3-L210-C32-LN10 | 32.00 | 8.0 | 3.00 | 3 | 120.0 | 210.00 | 32.00 | C | 1.09 | SR 34-550 | BLD T10/S7 | SW6-SD |
| HTP D032-3-L210-W32-LN10 | 32.00 | 8.0 | 3.00 | 3 | 120.0 | 210.00 | 32.00 | W | 1.09 | SR 34-550 | BLD T10/S7 | SW6-SD |
| HTP D040-4-L250-C32-LN10 | 40.00 | 8.0 | 3.00 | 4 | 50.0 | 250.00 | 32.00 | C | 1.49 | SR 34-550 | BLD T10/S7 | SW6-SD |

• 8 mm side plunging capacity and 3 mm maximum face milling DOC • For user guide, see pages 296-298

(1) Number of inserts (or edges for solid tool)

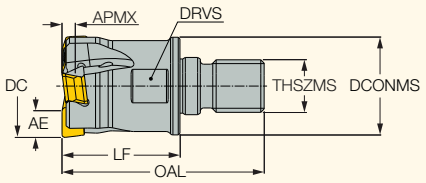
(2) C-Cylindrical, W-Weldon

**For inserts, see pages:** HTP LN.. 1006 (611)

TANGPLUNGE PLUNGING LINE

## HTP-M-LN10

Side Plungers with FLEX-FIT Threaded Connection Carrying Tangentially Clamped Inserts with 4 Cutting Edges




| Designation | DC | AE | APMX | CICT(1) | LF | OAL | DCONMS | THSZMS | DRVS(2) | TQ_3(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HTP D025-2-M12-LN10 | 25.00 | 7.0 | 3.00 | 2 | 35.00 | 57.00 | 21.00 | M12 | 17.0 | 33 | 0.09 | SR 34-550 | BLD T10/S7 | SW6-SD |
| HTP D032-3-M16-LN10 | 32.00 | 8.0 | 3.00 | 3 | 35.00 | 60.00 | 29.00 | M16 | 25.0 | 40 | 0.16 | SR 34-550 | BLD T10/S7 | SW6-SD |
| HTP D035-3-M16-LN10 | 35.00 | 8.0 | 3.00 | 3 | 43.00 | 68.00 | 29.00 | M16 | 25.0 | 40 | 0.22 | SR 34-550 | BLD T10/S7 | SW6-SD |
| HTP D042-4-M16-LN10 | 42.00 | 8.0 | 3.00 | 4 | 43.00 | 68.00 | 29.00 | M16 | 25.0 | 40 | 0.26 | SR 34-550 | BLD T10/S7 | SW6-SD |

• 8 mm side plunging capacity and 3 mm maximum face milling DOC • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter • For user guide, see pages 296-298

(1) Number of inserts (or edges for solid tool)

(2) Clamping wrench size

(3) Tool tightening torque Nxm

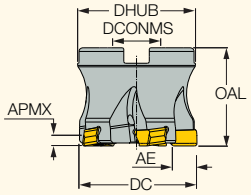
**For inserts, see pages:** HTP LN.. 1006 (611)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

TANGPLUNGE PLUNGING LINE

## HTP-R-LN10

Shell Mill Plungers Carrying Tangentially Clamped Inserts with 4 Cutting Edges

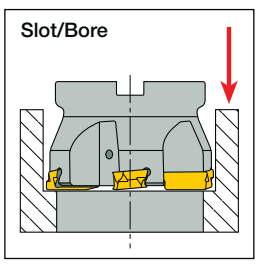


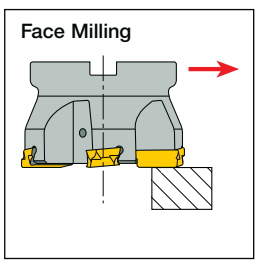

| Designation | DC | APMX | AE | CICT(1) | OAL | DHUB | DCONMS | Arbor(2) | kg | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HTP D040-4-16-R-LN10 | 40.00 | 3.00 | 8.0 | 4 | 40.00 | 38.00 | 16.00 | A | 0.20 | SR 34-550 | BLD T10/S7 | SW6-SD | SR M8X30DIN912 |
| HTP D050-5-22-R-LN10 | 50.00 | 3.00 | 8.0 | 5 | 40.00 | 48.00 | 22.00 | A | 0.31 | SR 34-550 | BLD T10/S7 | SW6-SD | SR M10X25C |
| HTP D052-5-22-R-LN10 | 52.00 | 3.00 | 8.0 | 5 | 40.00 | 48.00 | 22.00 | A | 0.34 | SR 34-550 | BLD T10/S7 | SW6-SD | SR M10X25C |

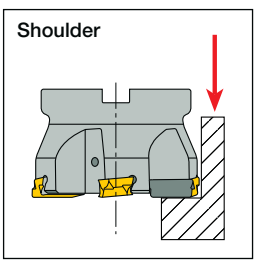
• 8 mm side plunging capacity and 3 mm maximum face milling DOC • For user guide, see pages 296-298

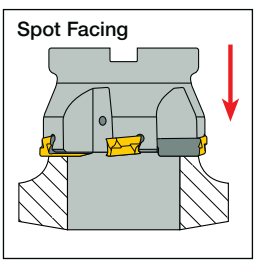
(1) Number of inserts (or edges for solid tool)

**For inserts, see pages:** HTP LN.. 1006 (611)



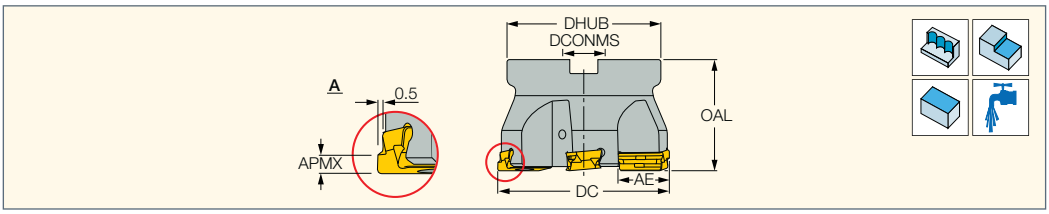



TANGPLUNGE
PLUNGING LINE

**HTP-R-LN16**
Shell Mill Plungers Carrying Tangentially Clamped Inserts with 4 Cutting Edges

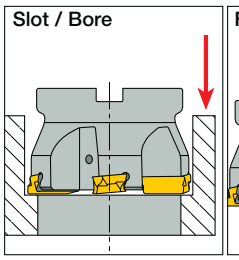


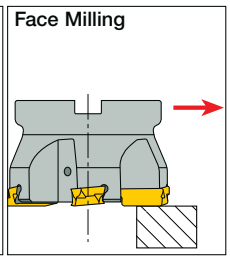

| Designation | DC | AE | APMX | CICT(1) | OAL | DHUB | DCONMS | Arbor(2) | kg | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HTP D050-04-22-R-LN16** | 50.00 | 13.0 | 3.00 | 4 | 50.00 | 48.00 | 22.00 | A | 0.37 | SR 34-535 | BLD T15/S7 | SW6-T-SH | SR PS 118-0271C |
| **HTP D052-04-22-R-LN16** | 52.00 | 13.0 | 3.00 | 4 | 50.00 | 48.00 | 22.00 | A | 0.39 | SR 34-535 | BLD T15/S7 | SW6-T-SH | SR PS 118-0271C |
| **HTP D063-05-27-R-LN16** | 63.00 | 14.0 | 3.00 | 5 | 50.00 | 59.00 | 27.00 | A | 0.53 | SR 34-535 | BLD T15/S7 | SW6-T-SH | SR M12X30C |
| **HTP D066-05-27-R-LN16** | 66.00 | 14.0 | 3.00 | 5 | 50.00 | 62.00 | 27.00 | A | 0.60 | SR 34-535 | BLD T15/S7 | SW6-T-SH | SR M12X30C |
| **HTP D080-06-27-R-LN16** | 80.00 | 14.0 | 3.00 | 6 | 50.00 | 65.00 | 27.00 | A | 0.81 | SR 34-535 | BLD T15/S7 | SW6-T-SH | SR M12X30C |
| **HTP D080-06-31.75-R-LN16** | 80.00 | 14.0 | 3.00 | 6 | 63.00 | 76.00 | 31.75 | A | 1.20 | SR 34-535 | BLD T15/S7 | SW6-T-SH | SR M16X40C |
| **HTP D080-06-32-R-LN16** | 80.00 | 14.0 | 3.00 | 6 | 50.00 | 72.00 | 32.00 | A | 0.90 | SR 34-535 | BLD T15/S7 | SW6-T-SH | SR M16X40C |
| **HTP D100-07-31.75-R-LN16** | 100.00 | 14.0 | 3.00 | 7 | 63.00 | 96.00 | 31.75 | B | 2.23 | SR 34-535 | BLD T15/S7 | SW6-T-SH | SR M16X40C |
| **HTP D100-07-32-R-LN16** | 100.00 | 14.0 | 3.00 | 7 | 50.00 | 78.00 | 32.00 | B | 1.28 | SR 34-535 | BLD T15/S7 | SW6-T-SH | |

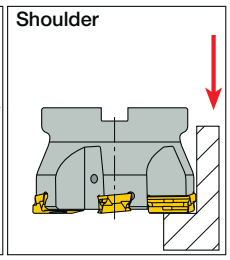
• 14 mm side plunging capacity and 3 mm maximum face milling DOC • For user guide, see pages 296-298

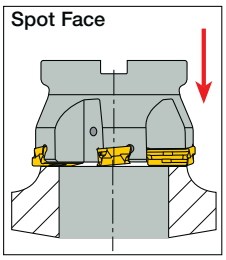
(1) Number of inserts (or edges for solid tool)

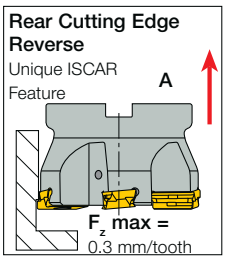
**For inserts, see pages:** HTP LN.. 1606 (611)



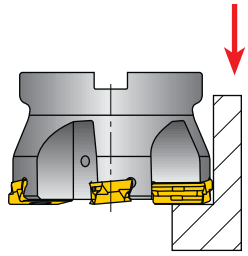



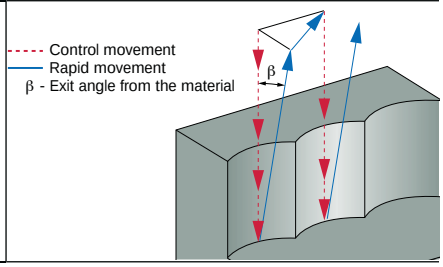
TANGPLUNGE
PLUNGING LINE

## Recommended Cutting Conditions For Side Plunging

Plunging Cycle:

| Step 1 | Step 2 | Step 3 |
|---|---|---|
| Plunge in (axially-Z direction) | Back stroke (rapid) at an angle b≥2° | Move to the next cycle |






### TANG-PLUNGE - SIDE PLUNGING

| Workpiece Material | | | | | | Insert HTP LN... Type | Carbide Grade for Inserts | Cutting Speed $V_c$, m/min | Feed $F_z$, mm/t | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|
| ISO Class / DIN/ ISO 513 | Description | ISCAR Mat. Group* | Typical Representative: AISI/SAE/ ASTM | Typical Representative: DIN W.-Nr. | Hardness HB | | | | | |
| P | non-alloy steel and cast steel, free cutting steel | 4 | 1060 | 1.1221 | 180-200 | ...ER | IC830/ IC928 | 80-130 | 0.12-0.15 | air blow |
| P | low alloy and cast steel (less than 5% of alloying elements) | 8 | 4340 | 1.6582 | 260-300 | ...ER | IC830/ IC928 | 80-120 | 0.1-0.15 | air blow |
| P | low alloy and cast steel (less than 5% of alloying elements) | 9 | 3135 | 1.571 | HRC 35-40** | ...ER | IC830/ IC928 | 80-120 | 0.08-0.15 | air blow |
| P | high alloy steel | 10 | H13 | 1.2344 | 200-220 | ...ER | IC830/ IC928 | 80-100 | 0.08-0.12 | air blow |
| P | martensitic S.S. | 12 | 420 | 1.4021 | 200 | ...ER | IC830/ IC330/ IC328 | 80-100 | 0.08-0.12 | air blow/wet |
| M | austenitic S.S. | 14 | 304L | 1.4306 | 200 | ...ER | IC830/ IC330/ IC328 | 60-80 | 0.08-0.1 | wet (emulsion) |
| K | grey cast iron | 16 | class 40 | 0.6025 (GG25) | 250 | ...ER | IC810/ IC910 | 150-200 | 0.12-0.2 | air blow |
| K | nodular cast iron | 17 | class 65-45-12 | 0.7050 (GGG50) | 200 | ...ER | IC810/ IC910 | 100-180 | 0.1-0.17 | air blow |
| S | ni-based HTSA | 34 | Inconel 718 | 2.4668 | 350 | ...ER | IC328/ IC330 | 20-25 | 0.07-0.1 | wet (emulsion) |
| S | ti alloys | 37 | Ti6Al4V (grade 5) | 3.7164 | HRC 34-36 | ...ER | IC328/ IC330 | 35-40 | 0.07-0.1 | wet (emulsion) |
| H | hardened steel | 38 | 4340 | 1.6582 | HRC 45 max | ...ETR | IC808/ IC908 | 70-100 | 0.08-0.1 | air blow |

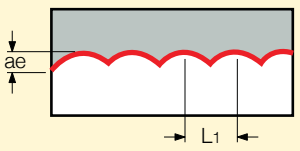
the table data refers to a cutter overhang of up to 4D (D-the diameter of a cutter)

* ISCAR material group in accordance with VDI 3323 standard

** Quenched and tempered

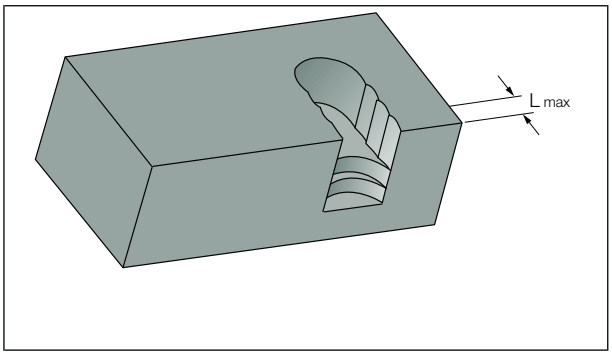
Table 1: $L_1$ as a Function of the Width of Cut and Cutter Diameter

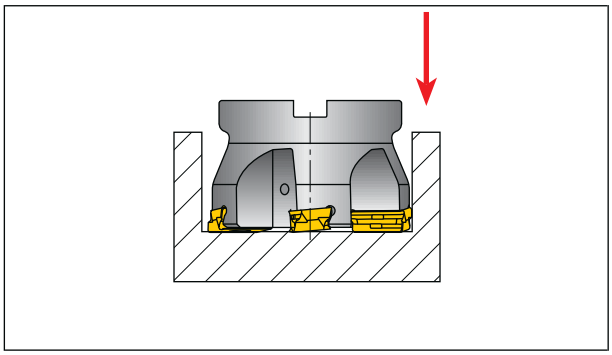
| L1max = 2x Dxae-Ae2 | $A_e$ - Width of Plunge (mm) | Cutter Diameter (mm) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 50 | 52 | 63 | 66 | 80 | 100 |
| | | L1max - Step (effective Diameter) | | | | | |
| | 1 | 14.0 | 14.3 | 15.75 | 16.1 | 17.8 | 19.9 |
| | 3 | 23.8 | 24.3 | 26.8 | 27.5 | 30.4 | 34.1 |
| | 5 | 30.0 | 30.6 | 34.0 | 34.9 | 38.7 | 43.6 |
| | 6 | 32.5 | 33.2 | 37.0 | 37.9 | 42.1 | 47.5 |
| | 7 | 34.7 | 35.5 | 39.6 | 40.6 | 45.2 | 51.0 |
| | 8 | 36.6 | 37.5 | 41.9 | 43.0 | 48.0 | 54.3 |
| | 9 | 38.5 | 39.3 | 43.10 | 45.3 | 50.5 | 57.2 |
| | 10 | 40.0 | 41.0 | 46.0 | 47.3 | 52.9 | 60.0 |
| | 11 | 41.4 | 42.5 | 47.8 | 49.2 | 55.1 | 62.6 |
| | 12 | 42.7 | 43.8 | 49.5 | 50.9 | 57.1 | 65.0 |
| | 13 | 43.8 | 45.0 | 51.0 | 52.5 | 59.0 | 67.3 |
| | 14 | - | - | 52.4 | 53.9 | 60.8 | 69.4 |




**L1- Side Step Over**
**$A_e$- Width of Plunge**

## Recommended Cutting Conditions for Slot Plunging



L- Width of Cut (mm)

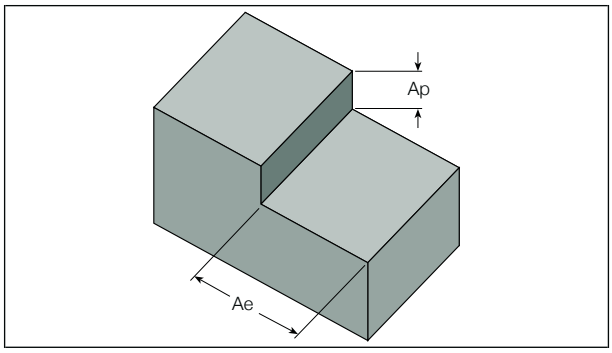
### TANG-PLUNGE - SLOT PLUNGING

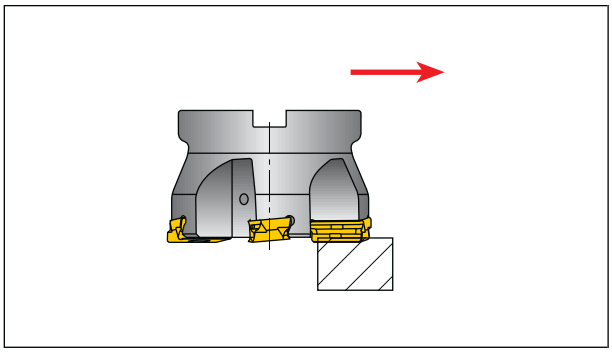
| Workpiece Material | | | | | | Insert HTP LN... Type | Carbide Grade for Inserts | Cutting Speed $V_c$, m/min | Feed $F_z$, mm/t | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|
| ISO Class DIN/ ISO 513 | Description | ISCAR Mat. Group* | Typical Representative AISI/SAE/ ASTM | Typical Representative DIN W.-Nr. | Hardness HB | | | | | |
| P | non-alloy steel and cast steel, free cutting steel | 4 | 1060 | 1.1221 | 180-200 | ...ER | IC830/ IC928 | 80-120 | 0.1-0.15 | air blow |
| P | low alloy and cast steel (less than 5% of alloying elements) | 8 | 4340 | 1.6582 | 260-300 | ...ER | IC830/ IC928 | 80-120 | 0.1-0.12 | air blow |
| P | low alloy and cast steel (less than 5% of alloying elements) | 9 | 3135 | 1.571 | HRC 35-40** | ...ER | IC830/ IC928 | 80-120 | 0.08-0.12 | air blow |
| P | high alloy steel | 10 | H13 | 1.2344 | 200-220 | ...ER | IC830/ IC928 | 80-100 | 0.08-0.1 | air blow |
| P | martensitic S.S. | 12 | 420 | 1.4021 | 200 | ...ER | IC830/ IC330/ IC328 | 80-100 | 0.08-0.1 | air blow/ wet |
| M | austenitic S.S. | 14 | 304L | 1.4306 | 200 | ...ER | IC830/ IC330/ IC328 | 60-80 | 0.08-0.1 | wet (emulsion) |
| K | grey cast iron | 16 | class 40 | 0.6025 (GG25) | 250 | ...ER | IC810/ IC910 | 150-200 | 0.12-0.18 | air blow |
| K | nodular cast iron | 17 | cass 65-45-12 | 0.7050 (GGG50) | 200 | ...ER | IC810/ IC910 | 100-180 | 0.1-0.15 | air blow |
| S | ni-based HTSA | 34 | Inconel 718 | 2.4668 | 350 | ...ER | IC328/ IC330 | 20-25 | 0.07-0.09 | wet (emulsion) |
| S | ti alloys | 37 | Ti6Al4V (grade 5) | 3.7164 | HRC 34-36 | ...ER | IC328/ IC330 | 35-40 | 0.07-0.09 | wet (emulsion) |
| H | hardened steel | 38 | 4340 | 1.6582 | HRC 45 max | ...ETR | IC808/ IC908 | 70-100 | 0.08-0.09 | air blow |

the table data refers to a cutter overhang of up to 4D (D-the diameter of a cutter)
* ISCAR material group in accordance with VDI 3323 standard
** Quenched and tempered

TANGPLUNGE
PLUNGING LINE

## Recommended Cutting Conditions For Face Milling



### TANG-PLUNGE - FACE MILLING

| Workpiece Material | | | | | | Insert HTP LN... Type | Carbide Grade for Inserts | Cutting Speed $V_c$, m/min | Feed $F_z$, mm/t | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|
| ISO Class DIN/ ISO 513 | Description | ISCAR Mat. Group* | Typical Representative AISI/SAE/ ASTM | Typical Representative DIN W.-Nr. | Hardness HB | | | | | |
| P | non-alloy steel and cast steel, free cutting steel | 4 | 1060 | 1.1221 | 180-200 | ...ER | IC830/ IC928 | 80-120 | 0.1-0.2 | air blow |
| P | low alloy and cast steel (less than 5% of alloying elements) | 8 | 4340 | 1.6582 | 260-300 | ...ER | IC830/ IC928 | 80-120 | 0.1-0.18 | air blow |
| P | low alloy and cast steel (less than 5% of alloying elements) | 9 | 3135 | 1.571 | HRC 35-40** | ...ER | IC830/ IC928 | 80-120 | 0.1-0.15 | air blow |
| P | high alloy steel | 10 | H13 | 1.2344 | 200-220 | ...ER | IC830/ IC928 | 80-100 | 0.08-0.15 | air blow |
| P | martensitic S.S. | 12 | 420 | 1.4021 | 200 | ...ER | IC830/ IC330/ IC328 | 80-100 | 0.08-0.15 | air blow/ wet |
| M | austenitic S.S. | 14 | 304L | 1.4306 | 200 | ...ER | IC830/ IC330/ IC328 | 60-80 | 0.08-0.1 | wet (emulsion) |
| K | grey cast iron | 16 | class 40 | 0.6025 (GG25) | 250 | ...ER | IC810/ IC910 | 150-200 | 0.12-0.2 | air blow |
| K | nodular cast iron | 17 | class 65-45-12 | 0.7050 (GGG50) | 200 | ...ER | IC810/ IC910 | 100-180 | 0.1-0.18 | air blow |
| S | ni-based HTSA | 34 | Inconel 718 | 2.4668 | 350 | ...ER | IC328/ IC330 | 20-25 | 0.08-0.12 | wet (emulsion) |
| S | ti alloys | 37 | Ti6Al4V (Grade 5) | 3.7164 | HRC 34-36 | ...ER | IC328/ IC330 | 35-40 | 0.08-0.12 | wet (emulsion) |
| H | hardened steel | 38 | 4340 | 1.6582 | HRC 45 max | ...ETR | IC808/ IC908 | 70-100 | 0.08-0.1 | air blow |

the table data refers to a cutter overhang of up to 4xD and the maximal width of cut Ae=0.7xD (D-the diameter of a cutter)
The maximal depth of cut Ap is 2.5 mm for hardened steel and 3 mm for other material groups
* ISCAR material group in accordance with VDI 3323 standard
** Quenched and tempered

# PROFILING TOOLS

# CONTENTS

Ball Nose Endmills ..... 304
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**TOR-6-MILL** - Multifunction Cutters ..... 313
Round Cornered Cutters ..... 318
**MILL-SHRED** ..... 321
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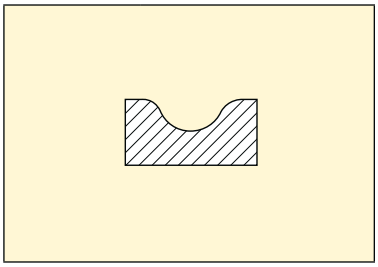
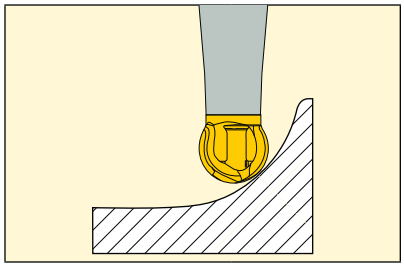
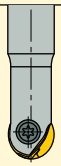
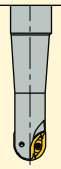
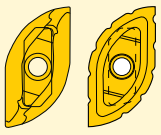
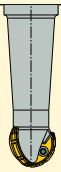
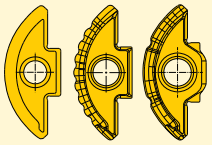
**Ball Nose Selection Guide**

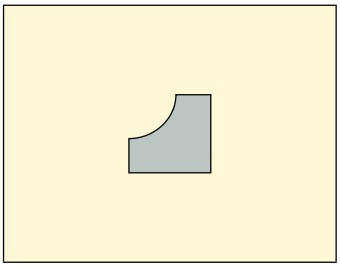


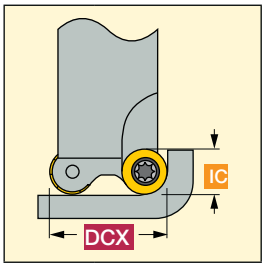


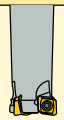
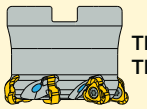
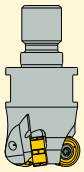
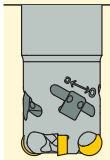
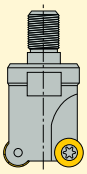
| Tools | Pages | DCX | | | | | | | | | | | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.4-7 | 8 | 9 | 10 | 12 | 16 | 20 | 25 | 30 | 32 | 40 | 50 | |
| EB... Solid Carbide Multi-Master | 196 86 | • | • | • | • | • | • | • | • | | | | | |
|  HCM D.. HCM-M HCM-MM | 304 306 307 | | | | • | • | • | • | • | | | | | HCT HLB HBR HBF HTR HCD HCC HCR |
|  BCM BCM-M BCM-MM | 309 310 | | | | | • | • | • | • | • | • | • | • |  BCR D...-QT BCR D...-CS |
|  BLP BLP-M BLP-SM | 307 308 | | | | | | • | • | • | • | • | • | • |  BLR D...-QT BLR D...-MFW BLR D...-QCS |

ISCARMILL

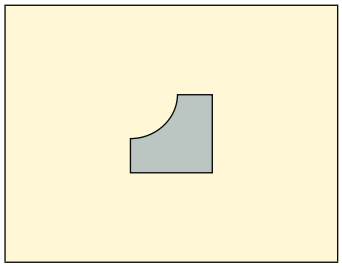
## 90° Face Mills Selection Guide

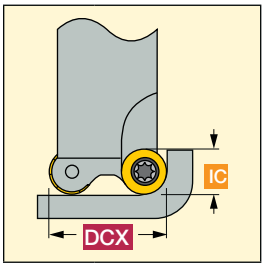


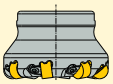
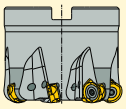
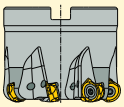
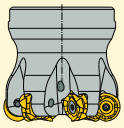
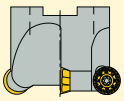
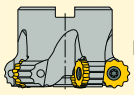



| Tools | Pages | DCX / IC | 10 | 12 | 15 | 16 | 20 | 25 | 32 | 35 | 40 | 42 | 50 | 52 | 63 | 66 | 80 | 100 | 125 | 160 | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Toroidal | | | | | | | | | | | | | | | | | | |
|  E93CN<br>F93CN | 311<br>312 | | | | | • | • | • | | • | | • | | • | | • | • | | | | CNHT<br>ENHT |
|  TR6 ER<br>TR6 FR | 313<br>316 | 5-7 | | | | • | • | • | • | • | • | • | • | • | • | • | • | | | | TR6 TNCU<br>TR90 TXMT<br>TRFF TXMT<br>TR45 TXMT |
|  RDS ER-M<br>RDS FR | 318 | 12 | | | | | | | • | | • | | • | • | • | • | • | | | | RDS RNMU/<br>RNMW |
|  ERP | 319 | 6.35 | | | | • | • | • | | | | | | | | | | | | | RPGN (CER) |
|  ER | 319 | 5-8 | • | • | • | • | • | • | • | • | • | • | | | | | | | | | RXCR...<br>RXCW... |
| ERMT<br>FRMT | 320<br>321 | 10-12 | | | | | | • | | | • | | • | • | • | | | | | | RPHX/RPMX |

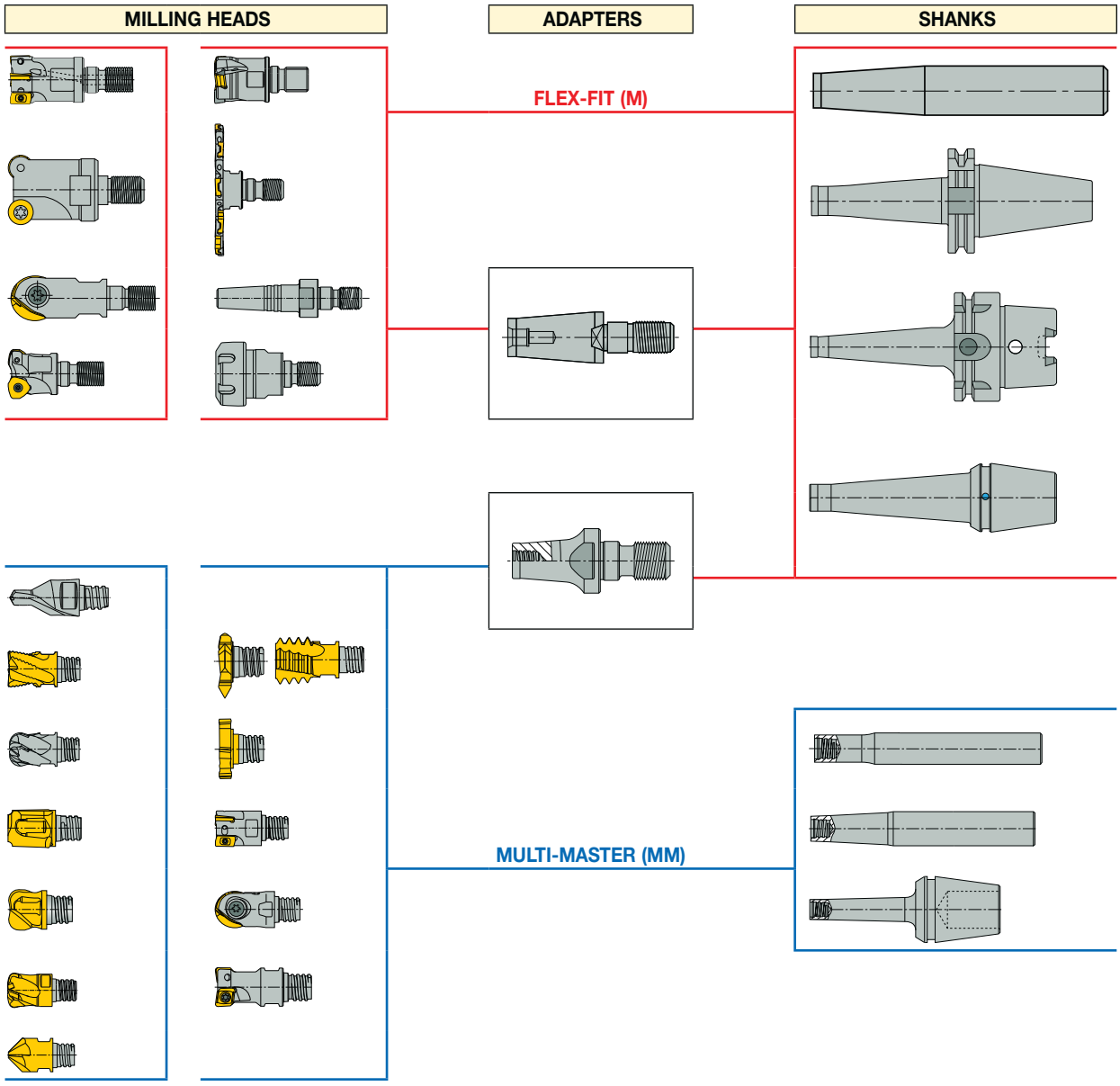
## 90° Face Mills Selection Guide






| Tools | Pages | DCX / IC | 10 | 12 | 15 | 16 | 20 | 25 | 32 | 35 | 40 | 42 | 50 | 52 | 63 | 66 | 80 | 100 | 125 | 160 | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Toroidal | | | | | | | | | | | | | | | | | | |
|  FRN | 320 | 12 | | | | | | | | | | | • | | • | | • | | | | RNGN |
|  H400 ER-10<br>H400 FR-10<br>ERW-10<br>FRW-10<br>ER-10 | 324<br>325<br>321<br>323<br>319 | 10 | | | | | • | • | • | • | • | | • | | | | | | | | H400 RNHU 10...<br>RXCW 10...<br>RXCR 10...<br>RXMT 10...<br>RCMT<br>RCCW-FW<br>RCMW<br>RCCT-MO |
|  H400 ER-12<br>H400 FR-12<br>ERW-12<br>FRW-12 | 324<br>326<br>321<br>323 | 12 | | | | | | • | • | | • | | • | • | • | • | • | | | | RCMT 12...<br>RCCW 12...<br>RCCT 12...<br>H400 RNHU 12... |
|  H606 ER-M<br>H606 FR-12 | 328 | 12 | | | | | | | • | | • | | • | • | • | | • | | | | H606 RXCU 1206 |
|  H400 FR-16<br>FRW-16<br>ER-16 | 327<br>323<br>319 | 16 | | | | | | | | | • | | • | • | • | • | • | • | • | | H400 RNHU 16...<br>RCMW 16...<br>RCCW 16... |
|  FRW-20 | 323 | 20 | | | | | | | | | | | | | | | • | • | • | • | RCCW 20...<br>RCMW 20... |

## MULTI-MASTER and FLEX-FIT Connection Options

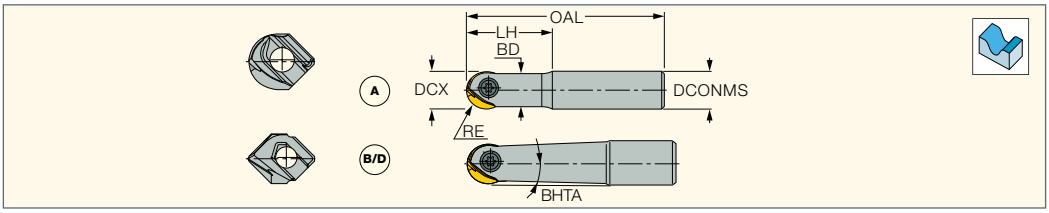



Features

Modular system reduces stock cost by using the same head with different shank options, enables machining with larger overhang, and the same head can be mounted on metric and inch combinations.

BALLPLUS

**HCM D10**
Ball Nose Multifunction
Endmills D=10 mm



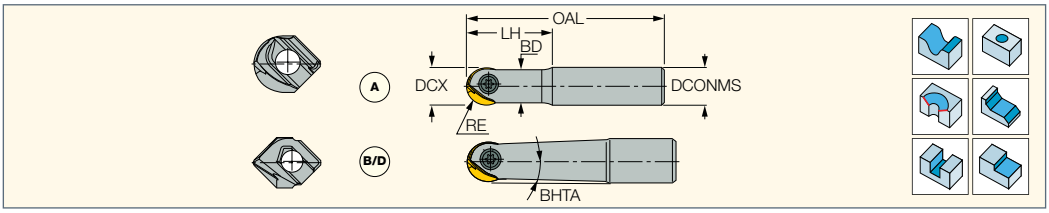

| Designation | DCX(1) | RE | LH(2) | OAL(3) | DCONMS | Shank(4) | BHTA | BD | Type | TQ(5) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCM D10-A-L090-C10 | 10.00 | 5.00 | 25.0 | 90.00 | 10.00 | C | - | 9.20 | A | 5.3 | 0.05 | SR 10504694 | BLD T15/S7 | SW6-T-SH |
| HCM D10-B-L125-C16 | 10.00 | 5.00 | 40.0 | 125.00 | 16.00 | C | 6.0 | - | B | 5.3 | 0.16 | SR 10504694 | BLD T15/S7 | SW6-T-SH |
| HCM D10-D-L150-C12 | 10.00 | 5.00 | 50.0 | 150.00 | 12.00 | C | 1.8 | - | D | 5.3 | 0.12 | SR 10504694 | BLD T15/S7 | SW6-T-SH |

• The dimensions are for HBR inserts • For user guide, see pages 616-622
(1) Cutting diameter maximum
(2) Refers to HBR inserts
(3) Refers to HBR inserts
(4) C-Cylindrical
(5) Screw Tightening Torque

**For inserts, see pages:** HBR-QF (607) • HCR (607)

BALLPLUS

**HCM D12**
Ball Nose Multifunction
Endmills D=12 mm



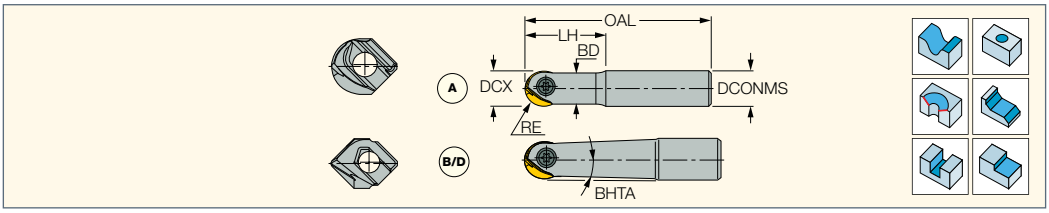

| Designation | DCX(1) | RE | LH(2) | OAL(3) | DCONMS | Shank(4) | BHTA | BD | Type | TQ(5) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCM D12-A-L120-C12 | 12.00 | 6.00 | 30.0 | 120.00 | 12.00 | C | - | 10.60 | A | 6.0 | 0.10 | SR 34-540 | BLD T15/S7 | SW6-T |
| HCM D12-B-L160-C20 | 12.00 | 6.00 | 50.0 | 160.00 | 20.00 | C | 5.0 | - | B | 6.0 | 0.32 | SR 34-540 | BLD T15/S7 | SW6-T |
| HCM D12-D-L160-C16 | 12.00 | 6.00 | 60.0 | 160.00 | 16.00 | C | 1.0 | - | D | 6.0 | 0.21 | SR 34-540 | BLD T15/S7 | SW6-T |

• The dimensions are for HBR inserts • For user guide, see pages 616-622
(1) Cutting diameter maximum
(2) Refers to HBR inserts
(3) Refers to HBR inserts
(4) C-Cylindrical
(5) Screw Tightening Torque

**For inserts, see pages:** HBF-QF (607) • HBR-QF (607) • HCC-QF (608) • HCD-QF (608) • HCR (607) • HCT-QF (609) • HLB-QF (609)

BALLPLUS

**HCM D16**
Ball Nose Multifunction
Endmills D=16 mm



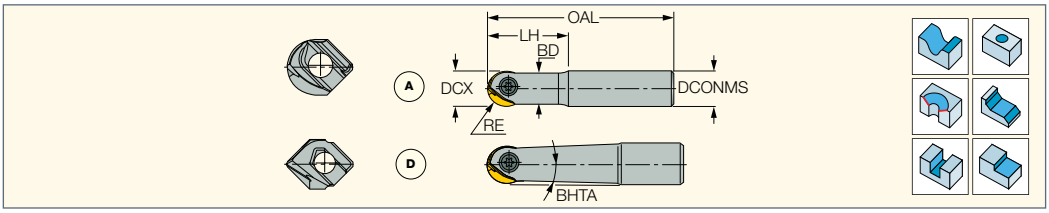

| Designation | DCX(1) | LH(2) | OAL(3) | DCONMS | Shank(4) | BHTA | BD | Type | TQ(5) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCM D16-A-L130-C16 | 16.00 | 36.0 | 130.00 | 16.00 | C | - | 14.40 | A | 7.8 | 0.18 | SR 10503579 | BLD T20/S7 | SW6-T |
| HCM D16-B-L160-C25 | 16.00 | 60.0 | 160.00 | 25.00 | C | 5.0 | - | B | 7.8 | 0.49 | SR 10503579 | BLD T20/S7 | SW6-T |
| HCM D16-D-L160-C20 | 16.00 | 65.0 | 160.00 | 20.00 | C | 1.0 | - | D | 7.8 | 0.32 | SR 10503579 | BLD T20/S7 | SW6-T |

• The dimensions are for HBR inserts • For user guide, see pages 616-622
(1) Cutting diameter maximum
(2) Refers to HBR inserts
(3) Refers to HBR inserts
(4) C-Cylindrical
(5) Screw Tightening Torque

**For inserts, see pages:** HBF-QF (607) • HBR-QF (607) • HCC-QF (608) • HCD-QF (608) • HCR (607) • HCT-QF (609) • HLB-QF (609)

BALLPLUS

**HCM D20**
Ball Nose Multifunction
Endmills D=20 mm



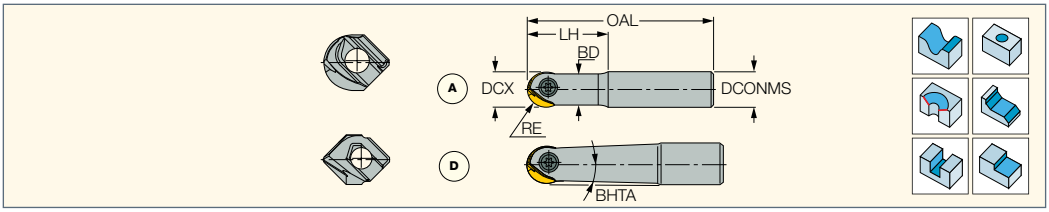

| Designation | DCX(1) | LH(2) | OAL(3) | DCONMS | Shank(4) | BHTA | BD | Type | TQ(5) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HCM D20-A-L150-C20** | 20.00 | 60.0 | 150.00 | 20.00 | C | - | 18.00 | A | 12.0 | 0.32 | SR 1052964 | BLD T25/S7 | SW6-T |
| **HCM D20-D-L200-C25** | 20.00 | 90.0 | 200.00 | 25.00 | C | 1.0 | - | D | 12.0 | 0.61 | SR 1052964 | BLD T25/S7 | SW6-T |

• The dimensions are for HBR inserts • For user guide, see pages 616-622
(1) Cutting diameter maximum
(2) Refers to HBR inserts
(3) Refers to HBR inserts
(4) C-Cylindrical
(5) Screw Tightening Torque

**For inserts, see pages:** HBF-QF (607) • HBR-QF (607) • HCC-QF (608) • HCD-QF (608) • HCR (607) • HCT-QF (609) • HLB-QF (609)

BALLPLUS

**HCM D25**
Ball Nose Multifunction
Endmills D=25 mm



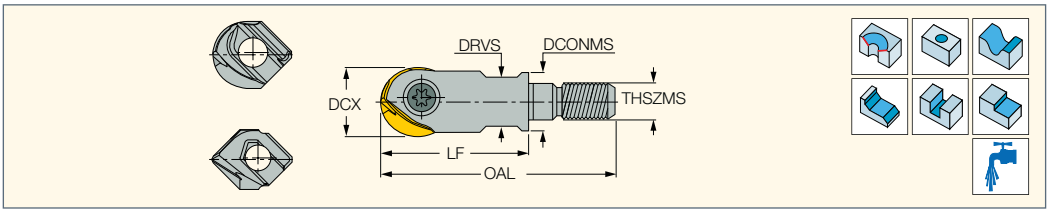

| Designation | DCX(1) | LH(2) | OAL(3) | DCONMS | Shank(4) | BHTA | BD | Type | TQ(5) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HCM D25-A-L170-C25** | 25.00 | 70.0 | 170.00 | 25.00 | C | - | 22.00 | A | 12.0 | 0.55 | SR 1051666 | BLD T25/S7 | SW6-T |
| **HCM D25-D-L250-C32** | 25.00 | 125.0 | 250.00 | 32.00 | C | 1.8 | - | D | 12.0 | 1.20 | SR 1051666 | BLD T25/S7 | SW6-T |

• The dimensions are for HBR inserts • For user guide, see pages 616-622
(1) Cutting diameter maximum
(2) Refers to HBR inserts
(3) Refers to HBR inserts
(4) C-Cylindrical
(5) Screw Tightening Torque

**For inserts, see pages:** HBF-QF (607) • HBR-QF (607) • HCC-QF (608) • HCD-QF (608) • HCR (607) • HCT-QF (609) • HLB-QF (609)

**BALLPLUS**

**HCM-M**
Ball Nose Multifunction Endmills with FLEX-FIT Threaded Adaptation




| Designation | DCX(1) | LF(2) | OAL(3) | DCONMS | DRVS(4) | THSZMS | TQ_3(5) | TQ(6) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCM D12/.50-M08 | 12.00 | 26.00 | 43.50 | 14.40 | 11.0 | M08 | 20 | 6.0 | 0.03 | SR 34-540 | BLD T15/S7 | SW6-T |
| HCM D16/.62-M08 | 16.00 | 30.00 | 47.50 | 14.40 | 11.0 | M08 | 20 | 7.8 | 0.03 | SR 10503579 | BLD T20/S7 | SW6-T |
| HCM D16/.62-M10 | 16.00 | 35.00 | 55.00 | 18.00 | 15.0 | M10 | 29 | 7.8 | 0.05 | SR 10503579 | BLD T20/S7 | SW6-T |
| HCM D20/.75-M10 | 20.00 | 37.00 | 57.00 | 18.00 | 15.0 | M10 | 29 | 12.0 | 0.06 | SR 1052964 | BLD T25/S7 | SW6-T |
| HCM D20/.75-M12 | 20.00 | 37.00 | 59.00 | 22.50 | 17.0 | M12 | 33 | 12.0 | 0.07 | SR 1052964 | BLD T25/S7 | SW6-T |
| HCM D25/1.0-M12 | 25.00 | 46.00 | 68.00 | 21.00 | 19.0 | M12 | 33 | 12.0 | 0.11 | SR 1051666 | BLD T25/S7 | SW6-T |
| HCM D25/1.0-M16 | 25.00 | 46.00 | 71.00 | 29.00 | 25.0 | M16 | 40 | 12.0 | 0.16 | SR 1051666 | BLD T25/S7 | SW6-T |

• The dimensions are for HBR inserts • For user guide, see pages 616-621 • When mounting items with FLEX-FIT threaded adaptation, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Cutting diameter maximum
(2) Refers to HBR inserts
(3) Refers to HBR inserts
(4) Clamping wrench size
(5) Tool tightening torque Nxm
(6) Screw Tightening Torque

**For inserts, see pages:** HBF-QF (607) • HBR-QF (607) • HCC-QF (608) • HCD-QF (608) • HCR (607) • HCT-QF (609) • HLB-QF (609)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

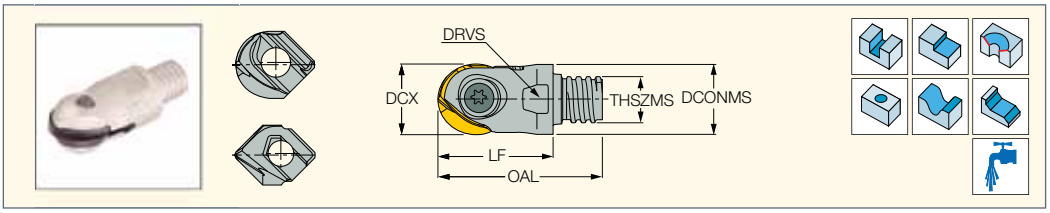
## Parts for Assembly

| Milling Head | Adapter | Shank | Assembly Dimensions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | DCX | LH | OAL | BHTA | DCONMS | Shank | Inserts |
| HCM D12/.50-M8 | — | S M08-L73-C16 | 12 | 51 | 99 | 4 | 16 | C | |
| | | S M08-L128-C16 | 12 | 106 | 154 | 4 | 16 | C | |
| | | S M08-L170-C20 | 12 | 93 | 196 | 4 | 20 | C | |
| HCM D12/.50-M8 | CAB M08M10 | S M10-L80-C20 | 12 | 96 | 146 | 4 | 20 | C | |
| | | S M10-L130-C20 | 12 | 146 | 196 | 4 | 20 | C | |
| | | S M10-L200-C25 | 12 | 123 | 266 | 4 | 25 | C | |
| HCM D16/.62-M8 | — | S M8-L73-C16 | 16 | 55 | 103 | — | 16 | C | |
| | | S M8-L128-C16 | 16 | 110 | 158 | — | 16 | C | |
| | | S M8-L170-C20 | 16 | 97 | 200 | 0.96 | 20 | C | |
| HCM D16/.62-M8 | CAB M08M10 | S M10-L80-C20 | 16 | 100 | 150 | 1.24 | 20 | C | |
| | | S M10-L130-C20 | 16 | 150 | 200 | 0.8 | 20 | C | HCT |
| | | S M10-L200-C25 | 16 | 127 | 270 | 2.16 | 25 | C | HLB |
| HCM D16/.62-M10 | | S M10-L80-C20 | 16 | 60 | 110 | 2.5 | 20 | C | HBR |
| | | S M10-L130-C20 | 16 | 110 | 160 | 2.5 | 20 | C | HBF |
| | | S M10-L200-C25 | 16 | 87 | 230 | 3.26 | 25 | C | HTR |
| HCM D16/.62-M10 | CAB M10M12 | S M12-L86-C25 | 16 | 105 | 161 | 2.65 | 25 | C | HCD |
| | | S M12-C32-L200 | 16 | 153 | 275 | 3.157 | 32 | C | HCC |
| HCM D20/.75-M10 | — | S M10-L80-C20 | 20 | 67 | 117 | – | 20 | C | HCR |
| | | S M10-L130-C20 | 20 | 117 | 167 | – | 20 | C | |
| | | S M10-L200-C25 | 20 | 94 | 237 | 1.7 | 25 | C | |
| HCM D20/.75-M10 | CAB M10M12 | S M12-L86-C25 | 20 | 112 | 168 | 1.4 | 25 | C | |
| | | S M12-L200-C32 | 20 | 160 | 282 | 2.3 | 32 | C | |
| HCM D20/.75-M12 | — | S M12-L86-C25 | 20 | 67 | 123 | 3.0 | 25 | C | |
| | | S M12-L200-C32 | 20 | 115 | 237 | 3.3 | 32 | C | |
| HCM D25/1.0-M12 | CAB M12M16 | S M16-L95 C32 | 25 | 131 | 191 | 1.8 | 32 | C | |
| | | S M16-L230 C32 | 25 | 146 | 326 | 1.5 | 32 | C | |
| HCM D25/1.0-M16 | — | S M16-L95 C32 | 25 | 81 | 141 | 3.5 | 32 | C | |
| | | S M16-L230 C32 | 25 | 96 | 276 | 3.5 | 32 | C | |

**BALLPLUS**

## HCM-MM

Ball Nose Multifunction Endmills with a MULTI-MASTER Threaded Adaptation




| Designation | DCX(1) | OAL(2) | LF(3) | DCONMS | THSZMS | DRVS(4) | TQ(5) | TQ_3(6) | kg | MIID(7) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCM D12/.50-MMT08 | 12.00 | 28.00 | 20.00 | 11.50 | T08 | 10.0 | 6.0 | 20 | 0.01 | HBR D120-QF | SR 34-540 | BLD T15/S7 | SW6-T |
| HCM D16/.62-MMT10 | 16.00 | 36.30 | 25.00 | 15.20 | T10 | 13.0 | 7.8 | 40 | 0.03 | HBR D160-QF | SR 10503579 | BLD T20/S7 | SW6-T |
| HCM D20/.75-MMT12 | 20.00 | 48.30 | 35.00 | 18.50 | T12 | 15.0 | 12.0 | 20 | 0.06 | HBR D200-QF | SR 1052964 | BLD T25/S7 | SW6-T |
| HCM D25/1.0-MMT15 | 25.00 | 63.00 | 46.00 | 24.00 | T15 | 20.0 | 12.0 | 33 | 0.13 | HBR D250-QF | SR 1051666 | BLD T25/S7 | SW6-T |

- The dimensions are for HBR inserts • Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation options, see page 303
- For user guide, see pages 616-621

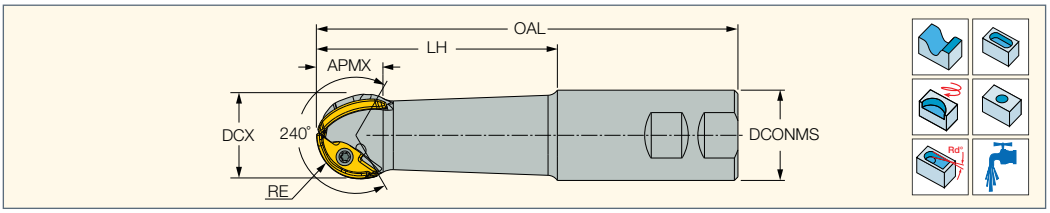
(1) Cutting diameter maximum
(2) Refers to HBR inserts
(3) Refers to HBR inserts
(4) Width across flats (wrench should be ordered separately)
(5) Screw tightening torque
(6) Tool tightening torque Nxm
(7) Master insert identification

**For inserts, see pages:** HBF-QF (607) • HBR-QF (607) • HCC-QF (608) • HCD-QF (608) • HCR (607) • HCT-QF (609) • HLB-QF (609)
**For holders, see pages:** MM CAB (110) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

**DROPMILL**
3 FLUTE BALL NOSE

## BLP Endmills

Three Flute 240° Ball Nose Endmills Carrying Double-Sided Inserts




| Designation | DCX(1) | RE | APMX | NOF(2) | OAL | LH | DCONMS | Shank(3) | MIID(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| BLP D16-40-100-C16 | 16.00 | 8.00 | 12.00 | 3 | 100.00 | 40.0 | 16.00 | C | BLR D160-MFW | 0.12 |
| BLP D20-70-130-C20 | 20.00 | 10.00 | 15.00 | 3 | 130.00 | 70.0 | 20.00 | C | BLR D200-MFW | 0.24 |
| BLP D25-90-170-W25 | 25.00 | 12.50 | 18.75 | 3 | 170.00 | 90.0 | 25.00 | W | BLR D250-MFW | 0.49 |
| BLP D30-90-150-W32 | 30.00 | 15.00 | 22.50 | 3 | 150.00 | 90.0 | 32.00 | W | BLR D300-QCS | 0.60 |
| BLP D32-80-160-W32 | 32.00 | 16.00 | 24.00 | 3 | 160.00 | 80.0 | 32.00 | W | BLR D320-QCS | 0.74 |
| BLP D40-100-180-W40 | 40.00 | 20.00 | 30.00 | 3 | 180.00 | 100.0 | 40.00 | W | BLR D400-QCS | 1.25 |
| BLP D50-140-210-W40 | 50.00 | 25.00 | 37.50 | 3 | 210.00 | 140.0 | 40.00 | W | BLR D500-QCS | 2.00 |
| BLP D50-320-400-W50 | 50.00 | 25.00 | 37.50 | 3 | 400.00 | 320.0 | 50.00 | W | BLR D500-QCS | 4.62 |

- For user guide, see pages 616-622

(1) Cutting diameter maximum
(2) Number of flutes
(3) C-Cylindrical, W-Weldon
(4) Master insert identification

**For inserts, see pages:** BLR (609)

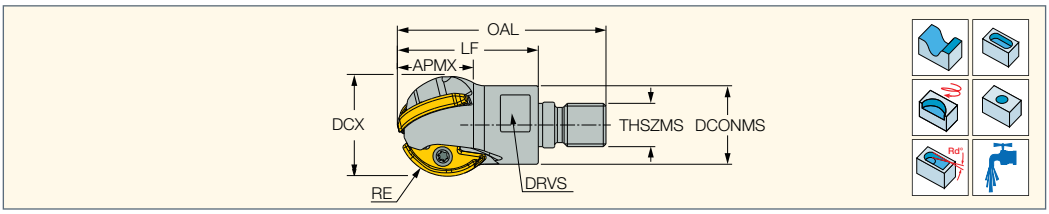
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| BLP D16-40-100-C16 | SR M2.5X0.45-L6 IP7 | IP-7/51 | | |
| BLP D20-70-130-C20 | SR M3X0.5-L7.4 IP9 | IP-9/151 | | |
| BLP D25-90-170-W25 | SR M3.5X0.6-L8.5 IP10 | | BLD IP10/S7 | SW6-SD |
| BLP D30-90-150-W32 | SR M4X0.7-L11.5 IP15 | | BLD IP15/S7 | SW6-T-SH |
| BLP D32-80-160-W32 | SR M4X0.7-L9.6 IP15 | | BLD IP15/S7 | SW6-T-SH |
| BLP D40-100-180-W40 | SR M5-14 IP20 | | BLD IP20/S7 | SW6-T |
| BLP D50-140-210-W40 | SR M6X1-L18 IP25 | | BLD IP25/S7 | SW6-T |
| BLP D50-320-400-W50 | SR M6X1-L18 IP25 | | BLD IP25/S7 | SW6-T |

DROPMILL 3 FLUTE BALL NOSE

**BLP-M**

Three Flute Fully Effective 240° Ball Nose Endmills with FLEX-FIT Threaded Adaptation




| Designation | DCX(1) | RE | NOF(2) | APMX | LF | OAL | THSZMS | DCONMS | DRVS(3) | MIID(4) | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BLP D16/.62-M08 | 16.00 | 8.00 | 3 | 12.00 | 24.00 | 41.50 | M08 | 13.00 | 10.0 | BLR D160-MFW | 20 | 0.02 |
| BLP D20-M08 | 20.00 | 10.00 | 3 | 16.00 | 28.00 | 45.50 | M08 | 13.00 | 11.0 | BLR D200-MFW | 20 | 0.03 |
| BLP D25/1.0-M12 | 25.00 | 12.50 | 3 | 19.00 | 35.00 | 57.00 | M12 | 21.00 | 17.0 | BLR D250-MFW | 33 | 0.03 |
| BLP D30-M12 | 30.00 | 15.00 | 3 | 22.50 | 40.00 | 62.00 | M12 | 21.00 | 17.0 | BLR D300-MFW | 33 | 0.10 |
| BLP D30-M16 | 30.00 | 15.00 | 3 | 15.00 | 40.00 | 65.00 | M16 | 28.00 | 24.0 | BLR D300-MFW | 40 | 0.14 |
| BLP D32/1.25-M12 | 32.00 | 16.00 | 3 | 24.00 | 40.00 | 62.00 | M12 | 23.00 | 17.0 | BLR D320-MFW | 33 | 0.10 |
| BLP D32/1.25-M16 | 32.00 | 16.00 | 3 | 24.00 | 40.00 | 65.00 | M16 | 29.00 | 25.0 | BLR D320-MFW | 40 | 0.14 |
| BLP D40-M16 | 40.00 | 20.00 | 3 | 31.00 | 53.00 | 78.00 | M16 | 29.00 | 24.0 | BLR D400-MFW | 40 | 0.25 |

• For user guide, see pages 616-621 • When mounting items with FLEX-FIT threaded adaptation, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Cutting diameter maximum

(2) Number of flutes

(3) Torque key size

(4) Master insert identification

(5) Tool tightening torque Nxm

**For inserts, see pages:** BLR (609)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

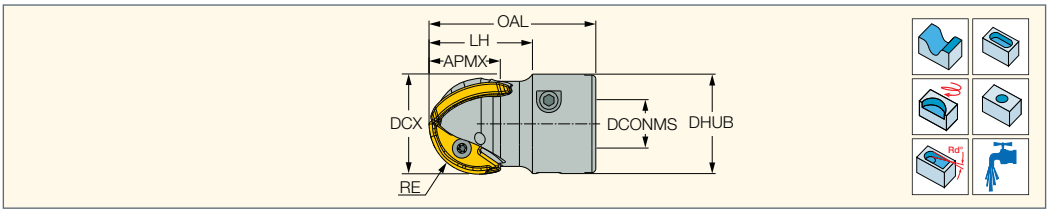
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| BLP D16/.62-M08 | SR M2.5X0.45-L6 IP7 | IP-7/51 | | |
| BLP D20-M08 | SR M3X0.5-L7.4 IP9 | IP-9/151 | | |
| BLP D25/1.0-M12 | SR M3.5X0.6-L8.5 IP10 | | BLD IP10/S7 | SW6-SD |
| BLP D30-M12 | SR M4X0.7-L11.5 IP15 | | BLD IP15/S7 | |
| BLP D30-M16 | SR M4X0.7-L11.5 IP15 | | BLD IP15/S7 | |
| BLP D32/1.25-M12 | SR M4X0.7-L9.6 IP15 | | BLD IP15/S7 | SW6-T-SH |
| BLP D32/1.25-M16 | SR M4X0.7-L9.6 IP15 | | BLD IP15/S7 | SW6-T-SH |
| BLP D40-M16 | SR M5-14 IP20 | | BLD IP20/S7 | SW6-T |

DROPMILL 3 FLUTE BALL NOSE

**BLP Shell Mill**

Three Flute Fully Effective 240° Ball Nose Cutters with Shell Hole Adaptation




| Designation | DCX(1) | RE | NOF(2) | APMX | LH | OAL | DHUB | DCONMS | MIID(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| BLP D50-22 | 50.00 | 25.00 | 3 | 37.50 | 50.0 | 83.00 | 47.00 | 22.00 | BLR D500-MFW | 0.61 |

• Use on face mill adapters with the supplied retention screw • For user guide, see pages 616-621

(1) Cutting diameter maximum

(2) Number of flutes

(3) Master insert identification

**For inserts, see pages:** BLR (609)

## Spare Parts

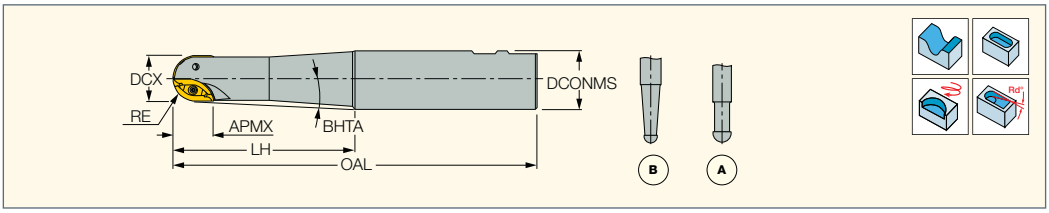
| Designation | | | | | | |
|---|---|---|---|---|---|---|
| BLP D50-22 | SR M6X1-L18 IP25 | BLD IP25/S7 | SW6-T | SR M10X1X14-10700(a) | HW 5.0 | SR M10X20-10600(b) |

(a) Recommended tightening torque:22 Nxm

(b) Retaining knob for adapters

**DROPMILL**

**BCM**
Ball Nose Endmills with Tangent Straight Edge Inserts for Finish Profiling




| Designation | DCX[2] | RE | APMX | CICT[3] | OAL | LH | DCONMS | a° | BHTA | Shank[4] | Type | CSP[5] | MIID[6] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BCM D12-A-C12** | 12.00 | 6.00 | 11.40 | 2 | 120.00 | 30.0 | 12.00 | - | - | C | A | 0 | BCR D120-QT | 0.10 |
| **BCM D12-B-C16** | 12.00 | 6.00 | 11.40 | 2 | 160.00 | 60.0 | 16.00 | 2.0 | 2.0 | C | B | 0 | BCR D120-QT | 0.22 |
| **BCM D16-A-C16-C** | 16.00 | 8.00 | 13.00 | 2 | 130.00 | 36.0 | 16.00 | - | - | C | A | 1 | BCR D160-QT | 0.54 |
| **BCM D16-B-C20-C** | 16.00 | 8.00 | 13.00 | 2 | 160.00 | 60.0 | 20.00 | 2.2 | 2.2 | C | B | 1 | BCR D160-QT | 0.30 |
| **BCM D20-A-C20-CC** [1] | 20.00 | 10.00 | 17.00 | 2 | 160.00 | 65.0 | 20.00 | - | - | C | A | 1 | BCR D200-QT | 0.31 |
| **BCM D20-B-C25-CC** [1] | 20.00 | 10.00 | 17.00 | 2 | 200.00 | 90.0 | 25.00 | 1.5 | 1.5 | C | B | 1 | BCR D200-QT | 0.60 |
| **BCM D25-A-W25-C** | 25.00 | 12.50 | 20.00 | 2 | 170.00 | 70.0 | 25.00 | - | - | W | A | 1 | BCR D250-QT | 0.51 |
| **BCM D25-B-C32-C** | 25.00 | 12.50 | 20.00 | 2 | 220.00 | 95.0 | 32.00 | 2.4 | 2.4 | C | B | 1 | BCR D250-QT | 1.05 |
| **BCM D30-A-W32-C** | 30.00 | 15.00 | 26.00 | 2 | 160.00 | 67.0 | 32.00 | - | - | W | A | 1 | BCR D300-QT | 0.73 |
| **BCM D32-A-W32-C** | 32.00 | 16.00 | 27.00 | 2 | 160.00 | 65.0 | 32.00 | - | - | W | A | 1 | BCR D320-CS | 0.76 |
| **BCM D32-B-W40-C** | 32.00 | 16.00 | 27.00 | 2 | 250.00 | 125.0 | 40.00 | 2.1 | 2.1 | W | B | 1 | BCR D320-CS | 1.75 |
| **BCM D40-A-W32-C** | 40.00 | 20.00 | 36.00 | 2 | 160.00 | 88.0 | 32.00 | - | - | W | A | 1 | BCR D400-CS | 0.92 |
| **BCM D40-B-W40-C** | 40.00 | 20.00 | 36.00 | 2 | 250.00 | 125.0 | 40.00 | - | - | W | B | 1 | BCR D400-CS | 1.95 |
| **BCM D50-A-W50-C** | 50.00 | 25.00 | 43.00 | 2 | 212.00 | 132.0 | 50.00 | - | - | W | A | 1 | BCR D500-CS | 2.42 |

- For user guide, see pages 616-622

[1] Center Cutting
[2] Cutting diameter maximum
[3] Number of inserts (or edges for solid tool)
[4] C-Cylindrical, W-Weldon
[5] 0 - Without coolant supply, 1 - With coolant supply
[6] Master insert identification

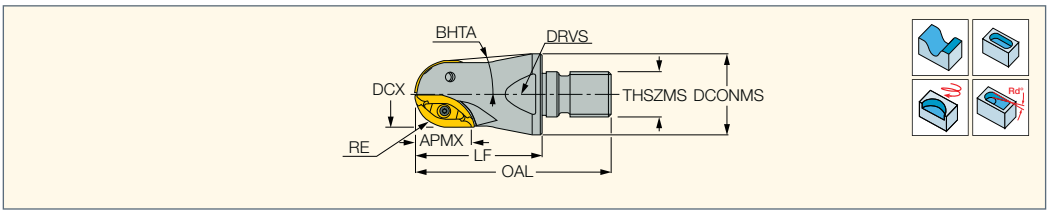
**For inserts, see pages:** BCR (610)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| **BCM D12-A-C12** | SR 10503457 | | | T-6/51 |
| **BCM D12-B-C16** | SR 10503457 | | | T-6/51 |
| **BCM D16-A-C16-C** | SR 34-505/1 MHG 2.5X7.2 | | | T-8/53 |
| **BCM D16-B-C20-C** | SR 34-505/1 MHG 2.5X7.2 | | | T-8/53 |
| **BCM D20-A-C20-CC** | SR 34-506/L | | | T-9/51 |
| **BCM D20-B-C25-CC** | SR 34-506/L | | | T-9/51 |
| **BCM D25-A-W25-C** | SR 14-601 | BLD T15/S7 | SW6-T-SH | |
| **BCM D25-B-C32-C** | SR 14-601 | BLD T15/S7 | SW6-T-SH | |
| **BCM D30-A-W32-C** | SR 14-544 | BLD T15/S7 | SW6-T-SH | |
| **BCM D32-A-W32-C** | SR 14-544 | BLD T15/S7 | SW6-T-SH | |
| **BCM D32-B-W40-C** | SR 14-544 | BLD T15/S7 | SW6-T-SH | |
| **BCM D40-A-W32-C** | SR 14-591/L | BLD T20/S7 | SW6-T | |
| **BCM D40-B-W40-C** | SR 14-591/L | BLD T20/S7 | SW6-T | |
| **BCM D50-A-W50-C** | SR 10503750 | BLD T25/S7 | SW6-T | |

DROPMILL

**BCM-M**
Ball Nose Endmills with FLEX-FIT Threaded Adaptation Carrying Tangent Straight Edge Inserts for Finish Profiling




| Designation | DCX(1) | RE | CICT(2) | APMX | LF | OAL | THSZMS | DCONMS | DRVS(3) | kg | MIID(4) | TQ_3(5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BCM D25-M12 | 25.00 | 12.50 | 2 | 20.00 | 46.00 | 68.00 | M12 | 23.00 | 19.0 | 0.12 | BCR D250-QT | 33 |
| BCM D25-M16 | 25.00 | 12.50 | 2 | 20.00 | 46.00 | 71.00 | M16 | 29.00 | 25.0 | 0.16 | BCR D250-QT | 40 |
| BCM D32-M16 | 32.00 | 16.00 | 2 | 26.00 | 53.00 | 78.00 | M16 | 29.00 | 25.0 | 0.22 | BCR D320-CS | 40 |

• For user guide, see pages 616-621 • When mounting items with FLEX-FIT threaded adaptation, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Clamping wrench size
(4) Master insert identification
(5) Tool tightening torque Nxm

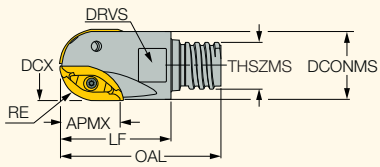
**For inserts, see pages:** BCR (610)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

## Spare Parts

| Designation | | | |
|---|---|---|---|
| BCM D25-M12 | SR 14-601 | BLD T15/S7 | SW6-T-SH |
| BCM D25-M16 | SR 14-601 | BLD T15/S7 | SW6-T |
| BCM D32-M16 | SR 14-544 | BLD T15/S7 | SW6-T-SH |

DROPMILL

**BCM-MM**
Ball Nose Endmills with MULTI-MASTER Threaded Adaptation with Tangentially Mounted Straight Edge Inserts for Finish Profiling




| Designation | DCX(2) | RE | APMX | CICT(3) | LF | OAL | DRVS(4) | DCONMS | THSZMS | CSP(5) | MIID(6) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BCM D12-MMT08 | 12.00 | 6.00 | 9.60 | 2 | 20.00 | 28.00 | 10.0 | 11.50 | T08 | 0 | BCR D120-QT | 0.01 |
| BCM D16-MMT10 | 16.00 | 8.00 | 12.70 | 2 | 25.00 | 36.80 | 13.0 | 15.20 | T10 | 0 | BCR D160-QT | 0.03 |
| BCM D20-MMT12-CC (1) | 20.00 | 10.00 | 17.00 | 2 | 35.00 | 48.80 | 15.0 | 18.50 | T12 | 0 | BCR D200.. | 0.10 |
| BCM D25-MMT15-C | 25.00 | 12.50 | 20.00 | 2 | 40.00 | 57.00 | 19.0 | 24.00 | T15 | 1 | BCR D250-QT | 0.11 |

• Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation options, see page 303 • For user guide, see pages 616-621

(1) Center Cutting
(2) Cutting diameter maximum
(3) Number of inserts (or edges for solid tool)
(4) Clamping wrench size
(5) 0 - Without coolant supply, 1 - With coolant supply
(6) Master insert identification

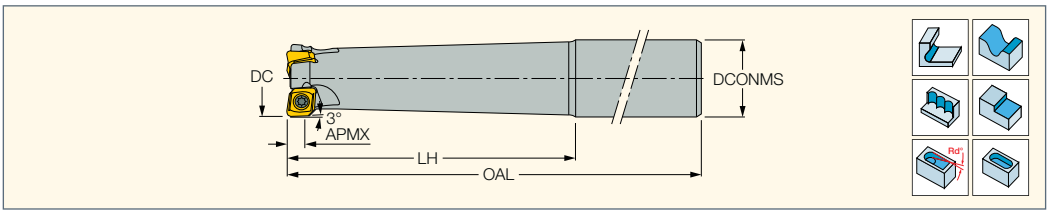
**For inserts, see pages:** BCR (610)
**For holders, see pages:** MM CAB (110) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| BCM D12-MMT08 | SR 10503457 | T-6/51 | | |
| BCM D16-MMT10 | SR 34-505/1 MHG 2.5X7.2 | T-8/53 | | |
| BCM D20-MMT12-CC | SR 34-506/L | T-9/51 | | |
| BCM D25-MMT15-C | SR 14-601 | | BLD T15/S7 | SW6-T-SH |

TORMILL

**E93CN-07**
Toroidal Bull Nose Endmills
with CNHT...Inserts



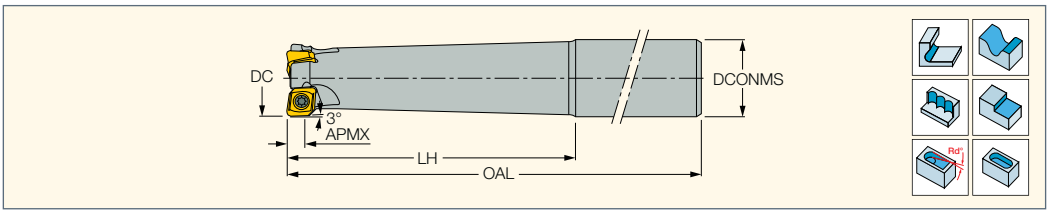

| Designation | DC[1] | APMX | CICT[2] | LH | OAL | RMPX°[3] | DCONMS | Shank[4] | MIID[5] | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E93CN D16-2-L100-C15-07 | 16.00 | 5.00 | 2 | 20.0 | 100.00 | 4.0 | 15.00 | C | CNHT 070315 | 0.13 | SR 34-505/LHG | T-8/53 |
| E93CN D16-2-L110-C16-07 | 16.00 | 5.00 | 2 | 50.0 | 110.00 | 4.0 | 16.00 | C | CNHT 070315 | 0.15 | SR 34-505/LHG | T-8/53 |
| E93CN D20-3-L140-C19-07 | 20.00 | 5.00 | 3 | 20.0 | 140.00 | 3.0 | 19.00 | C | CNHT 070315 | 0.29 | SR 34-505/LHG | T-8/53 |
| E93CN D20-3-L160-C20-07 | 20.00 | 5.00 | 3 | 75.0 | 160.00 | 3.0 | 20.00 | C | CNHT 070315 | 0.34 | SR 34-505/LHG | T-8/53 |
| E93CN D25-4-L160-C24-07 | 25.00 | 5.00 | 4 | 20.0 | 160.00 | 2.0 | 24.00 | C | CNHT 070315 | 0.54 | SR 34-505/LHG | T-8/53 |
| E93CN D25-4-L180-C25-07 | 25.00 | 5.00 | 4 | 100.0 | 180.00 | 2.0 | 25.00 | C | CNHT 070315 | 0.60 | SR 34-505/LHG | T-8/53 |

[1] The specified diameter is for inserts with a 1.0 mm radius.
[2] Number of inserts (or edges for solid tool)
[3] Maximum ramping angle
[4] C-Cylindrical
[5] Master insert identification

**For inserts, see pages:** CNHT/MT 07 (611)

TORMILL

**E93CN-10**
Toroidal Bull Nose Endmills
with ENHT... Inserts



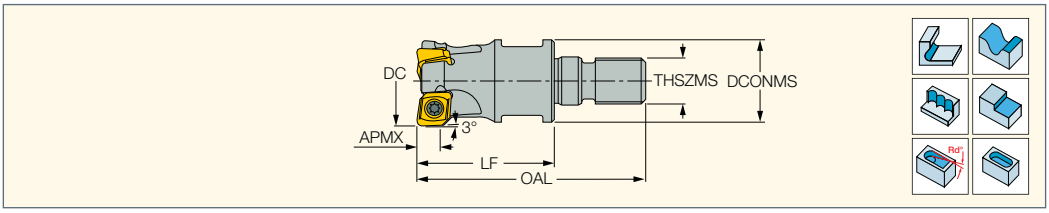

| Designation | DC | APMX | CICT[1] | LH | OAL | RMPX°[2] | DCONMS | Shank | MIID[3] | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E93CN D25-2-L180-C25-10 | 25.00 | 8.00 | 2 | 100.0 | 180.00 | 7.0 | 25.00 | C | ENHT 100430 | 0.57 | SR 34-506/L | T-9/51 |
| E93CN D35-3-L200-C32-10 | 35.00 | 8.00 | 3 | 50.0 | 200.00 | 4.0 | 32.00 | C | ENHT 100430 | 1.18 | SR 34-506/L | T-9/51 |

[1] Number of inserts (or edges for solid tool)
[2] Maximum ramping angle
[3] Master insert identification

**For inserts, see pages:** ENHT (612)

TORMILL

**E93CN-M-07**
Bull Nose Endmills with
FLEX-FIT Threaded Adaptation
Carrying Toroidal Shaped Inserts



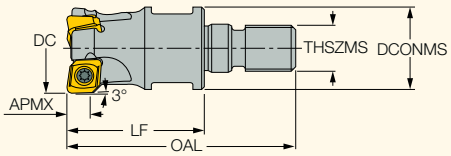

| Designation | DC[1] | APMX | CICT[2] | LF | OAL | THSZMS | RMPX°[3] | DCONMS | DRVS[4] | MIID[5] | TQ_3[6] | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E93CN D16-2-M08-07 | 16.00 | 5.00 | 2 | 30.00 | 47.50 | M08 | 4.0 | 13.00 | 10.0 | CNHT 070315 | 20 | 0.03 | SR 34-505/LHG | T-8/53 |
| E93CN D20-3-M10-07 | 20.00 | 5.00 | 3 | 30.00 | 50.00 | M10 | 3.0 | 18.00 | 15.0 | CNHT 070315 | 29 | 0.05 | SR 34-505/LHG | T-8/53 |
| E93CN D25-4-M12-07 | 25.00 | 5.00 | 4 | 35.00 | 57.00 | M12 | 2.0 | 21.00 | 17.0 | CNHT 070315 | 33 | 0.09 | SR 34-505/LHG | T-8/53 |

• When mounting items with FLEX-FIT threaded adaptation, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter
[1] The specified diameter is for inserts with a 1.0 mm radius.
[2] Number of inserts (or edges for solid tool)
[3] Maximum ramping angle
[4] Clamping wrench size
[5] Master insert identification
[6] Tool tightening torque Nxm

**For inserts, see pages:** CNHT/MT 07 (611)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

TORMILL

**E93CN-M-10**
Bull Nose Endmills with FLEX-FIT Threaded Adaptation Carrying Toroidal Inserts




| Designation | DC | APMX | CICT(1) | LF | OAL | THSZMS | RMPX°(2) | DCONMS | DRVS(3) | MIID(4) | TQ_3(5) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E93CN D25-2-M12-10 | 25.00 | 7.00 | 2 | 35.00 | 57.00 | M12 | 7.0 | 21.00 | 17.0 | ENHT 100430 | 33 | 0.09 | SR 34-506/L | T-9/51 | |
| E93CN D35-3-M16-10 | 35.00 | 8.50 | 3 | 43.00 | 68.00 | M16 | 4.0 | 29.00 | 25.0 | ENHT 100430 | 40 | 0.21 | SR 34-506/L | T-9/51 | |
| E93CN D42-5-M16-10 | 42.00 | 8.50 | 5 | 43.00 | 68.00 | M16 | 3.0 | 29.00 | 25.0 | ENHT 100430 | 40 | 0.24 | SR 34-506/L | T-9/51 | |

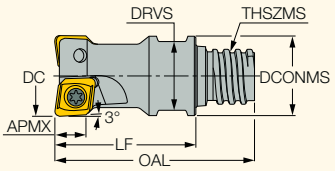
• When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) Torque key size
(4) Master insert identification
(5) Tool tightening torque Nxm

**For inserts, see pages:** ENHT (612)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

TORMILL

**E93CN-MM-07**
Bull Nose Endmills with MULTI-MASTER Threaded Adaptation Carrying Toroidal Inserts




| Designation | DC(1) | APMX | CICT(2) | LF | OAL | RMPX°(3) | THSZMS | DCONMS | DRVS(4) | MIID(5) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E93CN D16-2-MMT10-07 | 16.00 | 5.00 | 2 | 27.00 | 38.64 | 4.0 | T10 | 15.00 | 13.0 | CNHT 070315 | 0.03 | SR 34-505/LHG | T-8/53 | |
| E93CN D20-3-MMT12-07 | 20.00 | 5.00 | 3 | 27.00 | 40.36 | 3.0 | T12 | 19.00 | 16.0 | CNHT 070315 | 0.05 | SR 34-505/LHG | T-8/53 | |

• Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation options, see page 303 • For user guide, see pages 616-621

(1) The specified diameter is for inserts with a 1.0 mm radius. For other radii options, see diameter change in the table below
(2) Number of inserts (or edges for solid tool)
(3) Maximum ramping angle
(4) Clamping wrench size
(5) Master insert identification

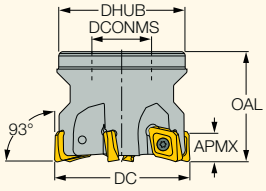
**For inserts, see pages:** CNHT/MT 07 (611)
**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109)• MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

## Diameter Change According to Insert Radius

| R | 0.5 | 1.0 | 1.5 |
|---|---|---|---|
| ΔD | +0.07 | 0.0 | -0.07 |

TORMILL

**F93CN-10**
93° Face Mills with Toroidal Inserts




| Designation | DC(1) | CICT(2) | APMX | OAL | DHUB | DCONMS | RMPX°(3) | Arbor(4) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F93CN D52-6-22-R-10 | 52.00 | 6 | 8.00 | 40.00 | 47.00 | 22.00 | 2.5 | A | 0.28 | SR 34-506/L | BLD T09/M7 | SW6-SD |
| F93CN D66-7-22-R-10 | 66.00 | 7 | 8.00 | 40.00 | 52.00 | 22.00 | 1.8 | A | 0.51 | SR 34-506/L | BLD T09/M7 | SW6-SD |
| F93CN D80-8-27-R-10 | 80.00 | 8 | 8.00 | 50.00 | 60.00 | 27.00 | 1.5 | B | 0.81 | SR 34-506/L | BLD T09/M7 | SW6-SD |

(1) The specified diameter is for inserts with a 1.0 mm radius. For other radii options, see diameter change in the table below
(2) Number of inserts (or edges for solid tool)
(3) Maximum ramping angle
(4) For adaptation options, see page 622

**For inserts, see pages:** ENHT (612)

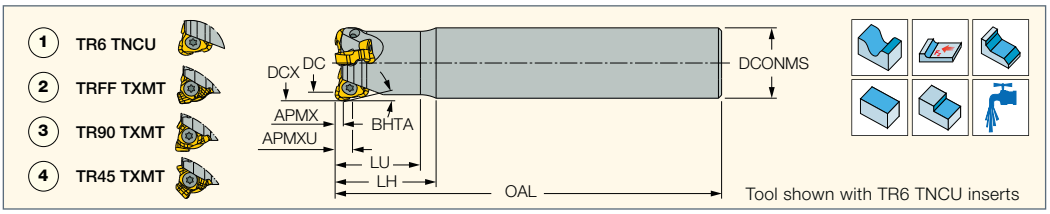
## Diameter Change According to Insert Radius

| R | 0.8 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 |
|---|---|---|---|---|---|---|
| ΔD | +0.03 | 0.0 | -0.07 | -0.14 | -0.21 | -0.28 |

TOR6MILL PROFILING

## TR6 ER

Multifunction Endmills That Carry Four Different Insert Geometries




| Designation | DCX[1] | DCX_2 | DCX_3 | DCX_4 | DC | DC_2 | DC_4 | APMX | APMX_2 | APMX_3 | APMX_4 | APMXU[2] | BHTA[3] | CICT[4] | LU | LU_2 | LU_3 | LU_4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TR6 ER D16-50-2-C16-07 | 16.00 | 16.00 | 16.00 | - | 14.00 | 12.10 | - | 1.00 | 0.60 | 2.50 | - | 2.00 | 18.0 | 2 | 46.50 | 46.70 | 46.80 | - |
| TR6 ER D20-60-4-C20-07 | 20.00 | 20.00 | 20.00 | - | 18.00 | 16.10 | - | 1.00 | 0.60 | 2.50 | - | 2.00 | 18.0 | 4 | 56.50 | 56.70 | 56.80 | - |
| TR6 ER D25-70-5-C25-07 | 25.00 | 25.00 | 25.00 | - | 23.00 | 21.10 | - | 1.00 | 0.60 | 2.50 | - | 2.00 | 18.0 | 5 | 65.50 | 65.70 | 65.80 | - |
| TR6 ER D32-80-6-C32-07 | 32.00 | 32.00 | 32.00 | - | 30.00 | 28.10 | - | 1.00 | 0.60 | 2.50 | - | 2.00 | 18.0 | 6 | 75.50 | 75.70 | 75.80 | - |
| TR6 ER D25-70-3-C25-10 | 25.00 | 24.60 | 25.00 | 26.80 | 20.00 | 19.00 | 20.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 3 | 65.00 | 65.15 | 64.91 | 65.12 |
| TR6 ER D32-80-4-C32-10 | 32.00 | 31.60 | 32.00 | 33.80 | 27.00 | 26.00 | 27.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 4 | 75.00 | 75.15 | 74.91 | 75.12 |

| Designation | LH | LH_2 | LH_3 | LH_4 | RMPX° _2 | OAL | OAL_2 | OAL_3 | OAL_4 | DCONMS | MIID[5] | MIID_2[6] | MIID_3[7] | MIID_4[8] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TR6 ER D16-50-2-C16-07 | 50.0 | 50.2 | 50.3 | - | 1.3 | 100.00 | 100.20 | 100.30 | - | 16.00 | TR6 TNCU 070210 | TRFF TXMT 0702 | TR90 TXMT 070204 | - | 0.12 |
| TR6 ER D20-60-4-C20-07 | 60.0 | 60.2 | 60.3 | - | 1.0 | 120.00 | 120.20 | 120.30 | - | 20.00 | TR6 TNCU 070210 | TRFF TXMT 0702 | TR90 TXMT 070204 | - | 0.22 |
| TR6 ER D25-70-5-C25-07 | 70.0 | 70.2 | 70.3 | - | 0.7 | 140.00 | 140.20 | 140.30 | - | 25.00 | TR6 TNCU 070210 | TRFF TXMT 0702 | TR90 TXMT 070204 | - | 0.42 |
| TR6 ER D32-80-6-C32-07 | 80.0 | 80.2 | 80.3 | - | 0.5 | 160.00 | 160.20 | 160.30 | - | 32.00 | TR6 TNCU 070210 | TRFF TXMT 0702 | TR90 TXMT 070204 | - | 0.82 |
| TR6 ER D25-70-3-C25-10 | 70.0 | 70.2 | 69.9 | 70.1 | 1.7 | 140.00 | 140.15 | 139.91 | 140.12 | 25.00 | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 0.41 |
| TR6 ER D32-80-4-C32-10 | 80.0 | 80.2 | 79.9 | 80.1 | 1.2 | 160.00 | 160.15 | 159.91 | 160.12 | 32.00 | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 0.81 |

- Note: The data refers to master inserts , for other insert radii and geometries refer to the table below

[1] Cutting diameter maximum
[2] For undercutting with TR6 TNCU/TNMU inserts only
[3] For undercutting with TR6 TNCU/TNMU inserts only
[4] Number of inserts (or edges for solid tool)
[5] Master insert identification
[6] Master insert identification 2
[7] Master insert identification 3
[8] Master insert identification 4

**For inserts, see pages:** TR45 TXMT (540) • TR6 TNCU/MU (539) • TR90 TXMT (539) • TRFF TXMT (539)

| | | | | | | | | For undercutting | |
|---|---|---|---|---|---|---|---|---|---|
| Tool | Insert | DCX | DC | APMX | LU | LH | OAL | RMPX[1] | APMX_2 | BHTA |
| TR6 ER D16-50-2-C16-07 | TR6 TNCU 070205 | 16.00 | 15.00 | 0.50 | 46.40 | 49.90 | 99.90 | - | 1.60 | 17.0 |
| | TR6 TNMU 070215 | | 13.00 | 1.50 | 45.60 | 50.10 | 100.10 | - | 2.40 | 21.0 |
| | TRFF TXMT 0702 | | 12.10 | 0.60 | 46.70 | 50.20 | 100.20 | 1.1 | - | - |
| | TR90 TXMT 070204 | | - | 2.50 | 46.80 | 50.30 | 100.30 | 1.6 | - | - |
| TR6 ER D20-60-4-C20-07 | TR6 TNCU 070205 | 20.00 | 19.00 | 0.50 | 56.40 | 59.90 | 119.90 | - | 1.60 | 17.0 |
| | TR6 TNMU 070215 | | 17.00 | 1.50 | 56.60 | 60.10 | 120.10 | - | 2.40 | 21.0 |
| | TRFF TXMT 0702 | | 16.10 | 0.60 | 56.70 | 60.20 | 120.20 | 0.8 | - | - |
| | TR90 TXMT 070204 | | - | 2.50 | 56.80 | 60.30 | 120.30 | 1.2 | - | - |
| TR6 ER D25-70-5-C25-07 | TR6 TNCU 070205 | 25.00 | 24.00 | 0.50 | 65.40 | 69.90 | 139.90 | - | 1.60 | 17.0 |
| | TR6 TNMU 070215 | | 22.00 | 1.50 | 65.60 | 70.10 | 140.10 | - | 2.40 | 21.0 |
| | TRFF TXMT 0702 | | 21.10 | 0.60 | 65.70 | 70.20 | 140.20 | 0.6 | - | - |
| | TR90 TXMT 070204 | | - | 2.50 | 65.80 | 70.30 | 140.30 | 0.9 | - | - |
| TR6 ER D32-80-6-C32-07 | TR6 TNCU 070205 | 32.00 | 31.00 | 0.50 | 75.40 | 79.90 | 159.90 | - | 1.60 | 17.0 |
| | TR6 TNMU 070215 | | 29.00 | 1.50 | 75.60 | 80.10 | 160.10 | - | 2.40 | 21.0 |
| | TRFF TXMT 0702 | | 28.10 | 0.60 | 75.70 | 80.20 | 160.20 | 0.4 | - | - |
| | TR90 TXMT 070204 | | - | 2.50 | 75.80 | 80.30 | 160.30 | 0.7 | - | - |
| TR6 ER D25-70-3-C25-10 | TR6 TNCU 100405 | 25.00 | 24.00 | 0.50 | 64.52 | 69.52 | 139.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 23.00 | 1.00 | 64.64 | 69.64 | 139.65 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 22.00 | 1.50 | 64.76 | 69.76 | 139.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 21.00 | 2.00 | 64.88 | 69.88 | 139.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 19.00 | 3.00 | 65.12 | 70.12 | 140.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 19.00 | 0.80 | 65.15 | 70.15 | 140.15 | 1.7 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 64.91 | 69.91 | 139.91 | 1.6 | - | - |
| | TR45 TXMT 1004 | 26.80 | 20.60 | 3.00 | 65.12 | 70.12 | 140.12 | 1.4 | - | - |
| TR6 ER D32-80-4-C32-10 | TR6 TNCU 100405 | 32.00 | 31.00 | 0.50 | 75.52 | 79.52 | 159.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 30.00 | 1.00 | 74.64 | 79.65 | 159.64 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 29.00 | 1.50 | 76.76 | 79.76 | 159.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 28.00 | 2.00 | 74.88 | 79.88 | 159.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 26.00 | 3.00 | 75.12 | 80.12 | 160.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 26.00 | 0.80 | 75.15 | 80.15 | 160.15 | 1.2 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 74.91 | 79.91 | 159.91 | 1.2 | - | - |
| | TR45 TXMT 1004 | 33.80 | 27.60 | 3.00 | 75.12 | 80.12 | 160.12 | 1.0 | - | - |

[1] Maximum ramp down angle

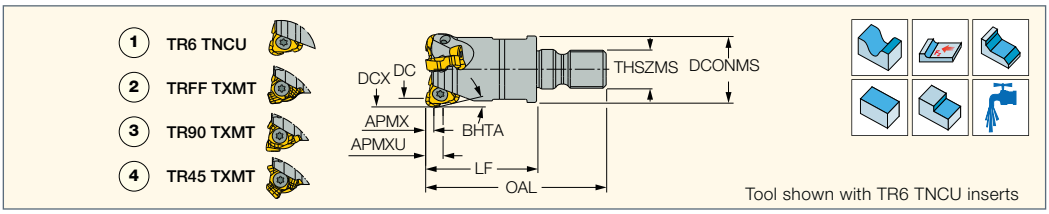
## Spare Parts

| Designation | | |
|---|---|---|
| TR6 ER D16-50-2-C16-07 | SR M2.5X0.45-L6 IP7 | IP-7/51 |
| TR6 ER D20-60-4-C20-07 | SR M2.5X0.45-L6 IP7 | IP-7/51 |
| TR6 ER D25-70-5-C25-07 | SR M2.5X0.45-L6 IP7 | IP-7/51 |
| TR6 ER D32-80-6-C32-07 | SR M2.5X0.45-L6 IP7 | IP-7/51 |
| TR6 ER D25-70-3-C25-10 | SR 10508600 | T-9/51 |
| TR6 ER D32-80-4-C32-10 | SR 10508600 | T-9/51 |

TOR6MILL PROFILING

**TR6 ER-M**

Multifunction Endmills with FLEX-FIT Threaded Adaptation That Carry Four Different Insert Geometries




Tool shown with TR6 TNCU inserts

| Designation | DCX[1] | DCX_2 | DCX_3 | DCX_4 | DC | DC_2 | DC_4 | APMX | APMX_2 | APMX_3 | APMX_4 | APMXU[2] | BHTA[3] | CICT[4] | LF | LF_2 | LF_3 | LF_4 | RMPX°_2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TR6 ER D16/0.63-2-M08-07** | 16.00 | 16.00 | 16.00 | - | 14.00 | 12.10 | - | 1.00 | 0.60 | 2.50 | - | 2.00 | 18.0 | 2 | 24.64 | 24.90 | 25.00 | - | 1.3 |
| **TR6 ER D20/0.79-4-M10-07** | 20.00 | 20.00 | 20.00 | - | 18.00 | 16.10 | - | 1.00 | 0.60 | 2.50 | - | 2.00 | 18.0 | 4 | 24.64 | 24.90 | 25.00 | - | 1.0 |
| **TR6 ER D25/0.98-5-M12-07** | 25.00 | 25.00 | 25.00 | - | 23.00 | 21.10 | - | 1.00 | 0.60 | 2.50 | - | 2.00 | 18.0 | 5 | 29.64 | 29.90 | 30.00 | - | 0.7 |
| **TR6 ER D32/1.26-6-M16-07** | 32.00 | 32.00 | 32.00 | - | 30.00 | 28.10 | - | 1.00 | 0.60 | 2.50 | - | 2.00 | 18.0 | 6 | 34.64 | 34.90 | 35.00 | - | 0.5 |
| **TR6 ER D35/1.38-6-M16-07** | 35.00 | 35.00 | 35.00 | - | 33.00 | 31.10 | - | 1.00 | 0.60 | 2.50 | - | 2.00 | 18.0 | 6 | 34.64 | 34.90 | 35.00 | - | 0.5 |
| **TR6 ER D25/0.98-3-M12-10** | 25.00 | 24.60 | 25.00 | 26.80 | 20.00 | 20.60 | 20.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 3 | 24.97 | 25.15 | 25.12 | 25.12 | 1.7 |
| **TR6 ER D32/1.26-4-M16-10** | 32.00 | 31.60 | 32.00 | 33.80 | 27.00 | 27.60 | 27.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 4 | 34.97 | 35.15 | 35.12 | 35.12 | 1.2 |
| **TR6 ER D35/1.38-5-M16-10** | 35.00 | 34.60 | 35.00 | 36.80 | 30.00 | 30.60 | 30.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 5 | 34.97 | 35.15 | 35.12 | 35.12 | 1.1 |

| Designation | OAL | OAL_2 | OAL_3 | OAL_4 | DCONMS | THSZMS | MIID[5] | MIID_2[6] | MIID_3[7] | MIID_4[8] | DRVS[9] | TQ_3[10] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TR6 ER D16/0.63-2-M08-07** | 42.20 | 42.40 | 42.50 | - | 13.00 | M08 | TR6 TNCU 070210 | TRFF TXMT 0702 | TR90 TXMT 070204 | - | 11.0 | 20 | 0.03 |
| **TR6 ER D20/0.79-4-M10-07** | 44.70 | 44.90 | 45.00 | - | 18.00 | M10 | TR6 TNCU 070210 | TRFF TXMT 0702 | TR90 TXMT 070204 | - | 15.0 | 29 | 0.05 |
| **TR6 ER D25/0.98-5-M12-07** | 51.70 | 51.90 | 52.00 | - | 21.00 | M12 | TR6 TNCU 070210 | TRFF TXMT 0702 | TR90 TXMT 070204 | - | 17.0 | 33 | 0.08 |
| **TR6 ER D32/1.26-6-M16-07** | 59.70 | 59.90 | 60.00 | - | 29.00 | M16 | TR6 TNCU 070210 | TRFF TXMT 0702 | TR90 TXMT 070204 | - | 25.0 | 40 | 0.18 |
| **TR6 ER D35/1.38-6-M16-07** | 59.70 | 59.90 | 60.00 | - | 29.00 | M16 | TR6 TNCU 070210 | TRFF TXMT 0702 | TR90 TXMT 070204 | - | 25.0 | 40 | 0.19 |
| **TR6 ER D25/0.98-3-M12-10** | 47.00 | 47.15 | 46.91 | 47.12 | 21.00 | M12 | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 19.0 | 33 | 0.06 |
| **TR6 ER D32/1.26-4-M16-10** | 60.00 | 60.15 | 59.91 | 60.12 | 29.00 | M16 | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 25.0 | 40 | 0.17 |
| **TR6 ER D35/1.38-5-M16-10** | 60.00 | 60.15 | 59.91 | 60.12 | 29.00 | M16 | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 25.0 | 40 | 0.18 |

• Note: The data refers to master inserts, for other insert radii and geometries refer to the table below • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

[1] Cutting diameter maximum

[2] For undercutting with TR6 TNCU/TNMU inserts only

[3] For undercutting with TR6 TNCU/TNMU inserts only

[4] Number of inserts (or edges for solid tool)

[5] Master insert identification

[6] Master insert identification 2

[7] Master insert identification 3

[8] Master insert identification 4

[9] Torque key size

[10] Tool tightening torque Nxm

**For inserts, see pages:** TR45 TXMT (613) • TR6 TNCU/MU (612) • TR90 TXMT (613) • TRFF TXMT (613)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

| | | | | | | | | For undercutting | |
|---|---|---|---|---|---|---|---|---|---|
| **Tool** | **Insert** | **DCX** | **DC** | **APMX** | **LF** | **OAL** | **RMPX** | **APMX_2** | **BHTA** |
| **TR6 ER D16/0.63-2-M08-07** | TR6 TNCU 070205 | 16.00 | 15.00 | 0.50 | 24.6 | 42.1 | - | 1.60 | 17.0 |
| | TR6 TNMU 070215 | | 13.00 | 1.50 | 24.8 | 42.3 | - | 2.40 | 21.0 |
| | TRFF TXMT 0702 | | 12.10 | 0.60 | 24.9 | 42.4 | 1.1 | - | - |
| | TR90 TXMT 070204 | | - | 2.50 | 25.0 | 42.5 | 1.6 | - | - |
| **TR6 ER D20/0.79-4-M10-07** | TR6 TNCU 070205 | 20.00 | 19.00 | 0.50 | 24.6 | 44.6 | - | 1.60 | 17.0 |
| | TR6 TNMU 070215 | | 17.00 | 1.50 | 24.8 | 44.8 | - | 2.40 | 21.0 |
| | TRFF TXMT 0702 | | 16.10 | 0.60 | 24.9 | 44.9 | 0.8 | - | - |
| | TR90 TXMT 070204 | | - | 2.50 | 25.0 | 45.0 | 1.2 | - | - |
| **TR6 ER D25/0.98-5-M12-07** | TR6 TNCU 070205 | 25.00 | 24.00 | 0.50 | 29.6 | 51.6 | - | 1.60 | 17.0 |
| | TR6 TNMU 070215 | | 22.00 | 1.50 | 29.8 | 51.8 | - | 2.40 | 21.0 |
| | TRFF TXMT 0702 | | 21.10 | 0.60 | 29.9 | 51.9 | 0.6 | - | - |
| | TR90 TXMT 070204 | | - | 2.50 | 30.0 | 52.0 | 0.9 | - | - |
| **TR6 ER D32/1.26-6-M16-07** | TR6 TNCU 070205 | 32.00 | 31.00 | 0.50 | 34.6 | 59.6 | - | 1.60 | 17.0 |
| | TR6 TNMU 070215 | | 29.00 | 1.50 | 34.8 | 59.8 | - | 2.40 | 21.0 |
| | TRFF TXMT 0702 | | 28.10 | 0.60 | 34.9 | 59.9 | 0.4 | - | - |
| | TR90 TXMT 070204 | | - | 2.50 | 35.0 | 60.0 | 0.7 | - | - |
| **TR6 ER D35/1.38-6-M16-07** | TR6 TNCU 070205 | 35.00 | 34.00 | 0.50 | 34.6 | 59.6 | - | 1.60 | 17.0 |
| | TR6 TNMU 070215 | | 32.00 | 1.50 | 34.8 | 59.8 | - | 2.40 | 21.0 |
| | TRFF TXMT 0702 | | 31.10 | 0.60 | 34.9 | 59.9 | 0.4 | - | - |
| | TR90 TXMT 070204 | | - | 2.50 | 35 | 60 | 0.4 | - | - |
| **TR6 ER D25/0.98-3-M12-10** | TR6 TNCU 100405 | 25.00 | 24.00 | 0.50 | 24.52 | 46.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 23.00 | 1.00 | 24.64 | 46.64 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 22.00 | 1.50 | 24.76 | 46.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 21.00 | 2.00 | 24.88 | 46.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 19.00 | 3.00 | 25.12 | 47.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 20.60 | 0.80 | 25.15 | 47.15 | 1.7 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 24.91 | 46.91 | 1.6 | - | - |
| | TR45 TXMT 1004 | 26.80 | 20.60 | 3.00 | 25.12 | 47.12 | 1.4 | - | - |
| **TR6 ER D32/1.26-4-M16-10** | TR6 TNCU 100405 | 32.00 | 31.00 | 0.50 | 34.52 | 59.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 30.00 | 1.00 | 34.64 | 59.64 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 29.00 | 1.50 | 34.76 | 59.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 28.00 | 2.00 | 34.88 | 59.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 26.00 | 3.00 | 35.12 | 60.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 27.60 | 0.80 | 35.15 | 60.15 | 1.2 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 34.91 | 59.91 | 1.1 | - | - |
| | TR45 TXMT 1004 | 33.80 | 27.60 | 3.00 | 35.12 | 60.12 | 0.9 | - | - |
| **TR6 ER D35/1.38-5-M16-10** | TR6 TNCU 100405 | 35.00 | 34.00 | 0.50 | 34.52 | 59.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 33.00 | 1.00 | 34.64 | 59.64 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 32.00 | 1.50 | 34.76 | 59.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 31.00 | 2.00 | 34.88 | 59.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 29.00 | 3.00 | 35.12 | 60.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 30.60 | 0.80 | 35.15 | 60.15 | 1.2 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 34.91 | 59.91 | 1.1 | - | - |
| | TR45 TXMT 1004 | 36.80 | 30.60 | 3.00 | 35.12 | 60.12 | 0.9 | - | - |

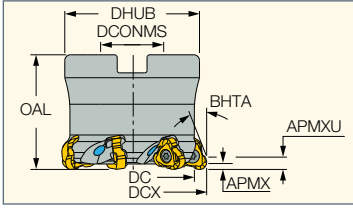
## Spare Parts

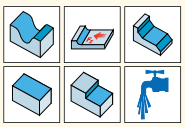
| **Designation** | | |
|---|---|---|
| **TR6 ER D16/0.63-2-M08-07** | SR M2.5X0.45-L6 IP7 | IP-7/51 |
| **TR6 ER D20/0.79-4-M10-07** | SR M2.5X0.45-L6 IP7 | IP-7/51 |
| **TR6 ER D25/0.98-5-M12-07** | SR M2.5X0.45-L6 IP7 | IP-7/51 |
| **TR6 ER D32/1.26-6-M16-07** | SR M2.5X0.45-L6 IP7 | IP-7/51 |
| **TR6 ER D35/1.38-6-M16-07** | SR M2.5X0.45-L6 IP7 | IP-7/51 |
| **TR6 ER D25/0.98-3-M12-10** | SR 10508600 | T-9/51 |
| **TR6 ER D32/1.26-4-M16-10** | SR 10508600 | T-9/51 |
| **TR6 ER D35/1.38-5-M16-10** | SR 10508600 | T-9/51 |

TOR6MILL PROFILING

## TR6 FR

Multifunction Face Mills That Carry Four Different Insert Geometries





Tool shown with TR6 TNCU inserts

| Designation | DCX[1] | DCX_2 | DCX_3 | DCX_4 | DC | DC_2 | DC_4 | APMX | APMX_2 | APMX_3 | APMX_4 | APMXU[2] | BHTA[3] | CICT[4] | RMPX°_2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TR6 FR D40-06-16-10 | 40.00 | 39.60 | 40.00 | 41.80 | 35.00 | 34.00 | 35.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 6 | 0.9 |
| TR6 FR D42-06-16-10 | 42.00 | 41.60 | 42.00 | 43.80 | 37.00 | 36.00 | 37.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 6 | 0.9 |
| TR6 FR D50-07-22-10 | 50.00 | 49.60 | 50.00 | 51.80 | 45.00 | 44.00 | 45.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 7 | 0.7 |
| TR6 FR D52-07-22-10 | 52.00 | 51.60 | 52.00 | 53.80 | 47.00 | 46.00 | 53.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 7 | 0.7 |
| TR6 FR D63-08-22-10 | 63.00 | 62.60 | 63.00 | 64.80 | 58.00 | 57.00 | 56.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 8 | 0.5 |
| TR6 FR D66-08-22-10 | 66.00 | 65.60 | 66.00 | 67.80 | 61.00 | 60.00 | 61.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 8 | 0.5 |
| TR6 FR D80-10-27-10 | 80.00 | 79.60 | 80.00 | 81.80 | 75.00 | 74.00 | 75.60 | 2.50 | 0.80 | 4.00 | 3.00 | 4.20 | 17.0 | 10 | 0.4 |

| Designation | OAL | OAL_2 | OAL_3 | OAL_4 | DCONMS | DHUB | Arbor | MIID[5] | MIID_2[6] | MIID_3[7] | MIID_4[8] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TR6 FR D40-06-16-10 | 37.00 | 37.15 | 36.91 | 37.12 | 16.00 | 32.00 | A | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 0.14 |
| TR6 FR D42-06-16-10 | 37.00 | 37.15 | 36.91 | 37.12 | 16.00 | 32.00 | A | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 0.15 |
| TR6 FR D50-07-22-10 | 40.00 | 40.15 | 39.91 | 40.12 | 22.00 | 47.00 | A | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 0.29 |
| TR6 FR D52-07-22-10 | 40.00 | 40.15 | 39.91 | 40.12 | 22.00 | 47.00 | A | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 0.33 |
| TR6 FR D63-08-22-10 | 40.00 | 40.15 | 39.91 | 40.12 | 22.00 | 48.00 | A | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 0.42 |
| TR6 FR D66-08-22-10 | 40.00 | 40.15 | 39.91 | 40.12 | 22.00 | 48.00 | A | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 0.46 |
| TR6 FR D80-10-27-10 | 50.00 | 50.15 | 49.91 | 50.12 | 27.00 | 60.00 | A | TR6 TNCU 100425 | TRFF TXMT 1004 | TR90 TXMT 100408 | TR45 TXMT 1004 | 0.91 |

- Note: The data refers to master inserts, for other insert radii and geometries refer to the table below

[1] Cutting diameter maximum
[2] For undercutting with TR6 TNCU/TNMU inserts only
[3] For undercutting with TR6 TNCU/TNMU inserts only
[4] Number of inserts (or edges for solid tool)
[5] Master insert identification
[6] Master insert identification 2
[7] Master insert identification 3
[8] Master insert identification 4

**For inserts, see pages:** TR45 TXMT (613) • TR6 TNCU/MU (612) • TR90 TXMT (613) • TRFF TXMT (613)

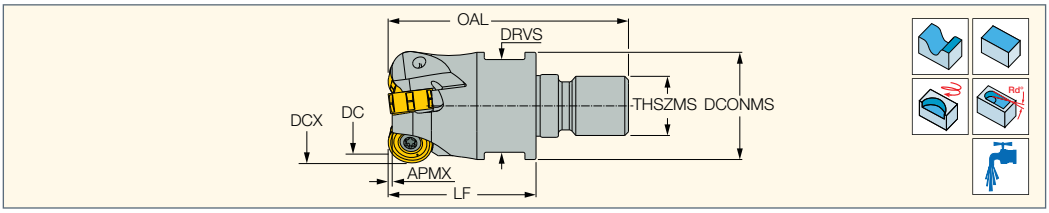
| | | | | | | | For undercutting | |
|---|---|---|---|---|---|---|---|---|
| **Tool** | **Insert** | **DCX** | **DC** | **APMX** | **OAL** | **RMPX** | **APMX_2** | **BHTA** |
| **TR6 FR D40-06-16-10** | TR6 TNCU 100405 | 40.00 | 39.00 | 0.50 | 36.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 38.00 | 1.00 | 36.64 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 37.00 | 1.50 | 36.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 36.00 | 2.00 | 36.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 34.00 | 3.00 | 37.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 34.00 | 0.80 | 37.15 | 0.9 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 36.91 | 0.9 | - | - |
| | TR45 TXMT 1004 | 41.80 | 35.60 | 3.00 | 37.12 | 0.7 | - | - |
| **TR6 FR D42-06-16-10** | TR6 TNCU 100405 | 42.00 | 41.00 | 0.50 | 36.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 40.00 | 1.00 | 36.64 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 39.00 | 1.50 | 36.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 38.00 | 2.00 | 36.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 36.00 | 3.00 | 37.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 36.00 | 0.80 | 37.15 | 0.90 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 36.91 | 0.90 | - | - |
| | TR45 TXMT 1004 | 43.80 | 37.60 | 3.00 | 37.12 | 0.70 | - | - |
| **TR6 FR D50-07-22-10** | TR6 TNCU 100405 | 50.00 | 49.00 | 0.50 | 39.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 48.00 | 1.00 | 39.64 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 47.00 | 1.50 | 39.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 46.00 | 2.00 | 39.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 44.00 | 3.00 | 40.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 44.00 | 0.80 | 40.15 | 0.70 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 39.91 | 0.70 | - | - |
| | TR45 TXMT 1004 | 51.80 | 45.60 | 3.00 | 40.12 | 0.60 | - | - |
| **TR6 FR D52-07-22-10** | TR6 TNCU 100405 | 52.00 | 51.00 | 0.50 | 39.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 50.00 | 1.00 | 39.64 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 49.00 | 1.50 | 39.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 48.00 | 2.00 | 39.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 46.00 | 3.00 | 40.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 46.00 | 0.80 | 40.15 | 0.70 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 39.91 | 0.70 | - | - |
| | TR45 TXMT 1004 | 53.80 | 53.80 | 3.00 | 40.12 | 0.60 | - | - |
| **TR6 FR D63-08-22-10** | TR6 TNCU 100405 | 63.00 | 62.00 | 0.50 | 39.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 61.00 | 1.00 | 39.64 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 60.00 | 1.50 | 39.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 59.00 | 2.00 | 39.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 57.00 | 3.00 | 40.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 57.00 | 0.80 | 40.15 | 0.50 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 39.91 | 0.50 | - | - |
| | TR45 TXMT 1004 | 64.80 | 58.60 | 3.00 | 40.12 | 0.40 | - | - |
| **TR6 FR D66-08-22-10** | TR6 TNCU 100405 | 66.00 | 65.00 | 0.50 | 39.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 64.00 | 1.00 | 39.64 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 63.00 | 1.50 | 39.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 62.00 | 2.00 | 39.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 60.00 | 3.00 | 40.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 60.00 | 0.80 | 40.15 | 0.50 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 39.91 | 0.50 | - | - |
| | TR45 TXMT 1004 | 67.80 | 61.60 | 3.00 | 40.12 | 0.40 | - | - |
| **TR6 FR D80-10-27-10** | TR6 TNCU 100405 | 80.00 | 79.00 | 0.50 | 49.52 | - | 1.80 | 17.5 |
| | TR6 TNCU 100410 | | 78.00 | 1.00 | 49.64 | - | 2.30 | 20.5 |
| | TR6 TNCU/MU 100415 | | 77.00 | 1.50 | 49.76 | - | 2.70 | 20.5 |
| | TR6 TNCU 100420 | | 76.00 | 2.00 | 49.88 | - | 3.50 | 20.5 |
| | TR6 TNCU 100430 | | 74.00 | 3.00 | 50.12 | - | 4.50 | 20.5 |
| | TRFF TXMT 1004 | | 74.00 | 0.80 | 50.15 | 0.40 | - | - |
| | TR90 TXMT 100408 | | - | 4.00 | 49.91 | 0.40 | - | - |
| | TR45 TXMT 1004 | 81.80 | 75.60 | 3.00 | 50.12 | 0.30 | - | - |

## Spare Parts

| **Designation** | | | |
|---|---|---|---|
| **TR6 FR D40-06-16-10** | SR 10508600 | T-9/51 | SR M8X25DIN912 |
| **TR6 FR D42-06-16-10** | SR 10508600 | T-9/51 | SR M8X25DIN912 |
| **TR6 FR D50-07-22-10** | SR 10508600 | T-9/51 | SR M10X25 DIN912 |
| **TR6 FR D52-07-22-10** | SR 10508600 | T-9/51 | SR M10X25 DIN912 |
| **TR6 FR D63-08-22-10** | SR 10508600 | T-9/51 | SR M10X25 DIN912 |
| **TR6 FR D66-08-22-10** | SR 10508600 | T-9/51 | SR M10X25 DIN912 |
| **TR6 FR D80-10-27-10** | SR 10508600 | T-9/51 | SR M12X30DIN912 |

ROUNDMILL

**RDS ER-M**
Endmills with FLEX-FIT Threaded Connection Carrying Double-Sided Round Inserts with 12 Cutting Edges




| Designation | DCX(1) | DC | DCONMS | CICT(2) | APMX | LF | OAL | DRVS(3) | RMPX°(4) | THSZMS | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RDS ER D32/1.26-3-M16-12 | 32.00 | 20.06 | 29.00 | 3 | 2.50 | 40.00 | 65.00 | 25.0 | 0.9 | M16 | 40 | 0.27 |

New

• When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Torque key size
(4) Maximum ramping angle
(5) Tool tightening torque Nxm

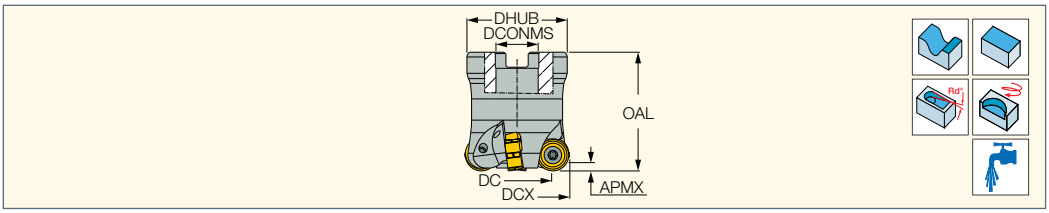
**For inserts, see pages:** RDS RNMU/RNMW (605)

## Spare Parts

| Designation | | | |
|---|---|---|---|
| RDS ER-M | SR M4X0.7-R-L9.5 IP15 | SW6-T-SH | BLD IP15/S7 |

ROUNDMILL

**RDS FR-12**
Face Mills Carrying Double-Sided Round Inserts with 12 Cutting Edges




| Designation | DCX(1) | DC | CICT(2) | APMX | OAL | DHUB | DCONMS | RMPX°(3) | Arbor | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| RDS FR D040-04-16-12 | 40.00 | 27.90 | 4 | 2.50 | 45.00 | 38.00 | 16.00 | 0.9 | A | 0.24 |
| RDS FR D050-05-22-12 | 50.00 | 37.90 | 5 | 2.50 | 40.00 | 48.00 | 22.00 | 0.8 | A | 0.39 |
| RDS FR D050-06-22-12 | 50.00 | 37.90 | 6 | 2.50 | 40.00 | 48.00 | 22.00 | 0.8 | A | 0.31 |
| RDS FR D052-06-22-12 | 52.00 | 39.90 | 6 | 2.50 | 40.00 | 48.00 | 22.00 | 0.7 | A | 0.33 |
| RDS FR D063-07-22-12 | 63.00 | 50.90 | 7 | 2.50 | 40.00 | 48.00 | 22.00 | 0.5 | A | 0.43 |
| RDS FR D066-07-22-12 | 66.00 | 53.90 | 7 | 2.50 | 40.00 | 48.00 | 22.00 | 0.5 | A | 0.46 |
| RDS FR D080-08-27-12 | 80.00 | 67.90 | 8 | 2.50 | 50.00 | 60.00 | 27.00 | 0.4 | A | 1.12 |

New

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Maximum ramping angle

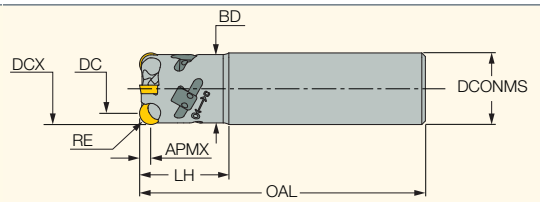
**For inserts, see pages:** RDS RNMU/RNMW (605)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| RDS FR D040-04-16-12 | SR M4X0.7-R-L9.5 IP15 | SW6-T | BLD IP15/S7 | SR PS 118-0416 |
| RDS FR D050-05-22-12 | SR M4X0.7-R-L9.5 IP15 | SW6-T-SH | BLD IP15/S7 | SR M10X25 DIN912 |
| RDS FR D050-06-22-12 | SR M4X0.7-R-L9.5 IP15 | SW6-T-SH | BLD IP15/S7 | SR M10X25 DIN912 |
| RDS FR D052-06-22-12 | SR M4X0.7-R-L9.5 IP15 | SW6-T-SH | BLD IP15/S7 | SR M10X25 DIN912 |
| RDS FR D063-07-22-12 | SR M4X0.7-R-L9.5 IP15 | SW6-T | BLD IP15/S7 | SR M10X25 DIN912 |
| RDS FR D066-07-22-12 | SR M4X0.7-R-L9.5 IP15 | SW6-T-SH | BLD IP15/S7 | SR M10X25 DIN912 |
| RDS FR D080-08-27-12 | SR M4X0.7-R-L9.5 IP15 | SW6-T-SH | BLD IP15/S7 | SR M12X35DIN912 |

## CERMILL

**ERP**
Endmills Carrying Single-Sided Ceramic Round Inserts




| Designation | DCX[1] | DC | RE | APMX | CICT[2] | LH | OAL | BD | DCONMS | RMPX°[3] | Shank[4] | MIID[5] | d |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ERP D010A016-03-C16-06 | 16.00 | 9.65 | 3.18 | 3.17 | 3 | 25.0 | 80.00 | 15.00 | 16.00 | 2.5 | C | RPGN 06 | 16.00 |
| ERP D014A020-04-C20-06 | 20.00 | 13.65 | 3.18 | 3.17 | 4 | 30.0 | 80.00 | 19.00 | 20.00 | 4.0 | C | RPGN 06 | 20.00 |
| ERP D019A025-05-C25-06 | 25.00 | 18.65 | 3.18 | 3.17 | 5 | 40.0 | 100.00 | 24.00 | 25.00 | 3.5 | C | RPGN 06 | 25.00 |

- For adaptation see page 622

[1] Cutting diameter maximum
[2] Number of inserts (or edges for solid tool)
[3] Maximum ramping angle
[4] C-Cylindrical
[5] Master insert identification

**For inserts, see pages:** RPGN (CER) (605)

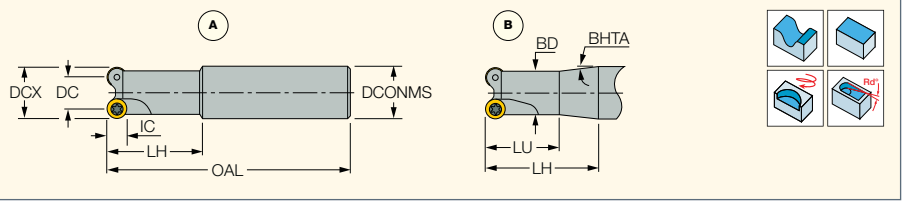
### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| ERP | CL-D4-L9-M3X0.5 | NUT-D4.5-L6-M3X0.5 | CW 1.7-L20 | ERP BIT D4-30* | T.WRENCH TBN 0.7NM* |

* Optional, to be ordered separately

## ROUNDMILL

**ER**
Endmills with Round Inserts for Profiling and Milling Round Corners




| Designation | DCX[1] | DC | IC | BD | CICT[2] | LH | DCONMS | Shank[3] | RMPX°[4] | BHTA | OAL | LU | Type | MIID[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ER D07A12-3-C12-05 | 12.00 | 7.00 | 5.00 | 11.70 | 3 | 40.0 | 12.00 | C | 6.0 | - | 100.00 | - | A | RXCR 05T1 | 0.08 |
| ER D08A15-2-C20-07 | 15.00 | 8.00 | 7.00 | 13.50 | 2 | 40.0 | 20.00 | C | 15.0 | 5.0 | 140.00 | 40.0 | B | RXCR 0702 | 0.26 |
| ER D08A16-2-C16-08 | 16.00 | 8.00 | 8.00 | 13.50 | 2 | 40.0 | 16.00 | C | 27.0 | - | 120.00 | - | A | RXCR 0802 | 0.16 |
| ER D17A25-3-C32-08 | 25.00 | 17.00 | 8.00 | 22.50 | 3 | 60.0 | 32.00 | C | 5.4 | - | 160.00 | - | A | RXCR 0802 | 0.80 |
| ER D10A20-2-C20-10 | 20.00 | 10.00 | 10.00 | 17.90 | 2 | 60.0 | 20.00 | C | 13.0 | - | 160.00 | - | A | RXCR 10T3 | 0.34 |
| ER D15A25-2-C25-10 | 25.00 | 15.00 | 10.00 | 22.80 | 2 | 60.0 | 25.00 | C | 6.0 | - | 160.00 | - | A | RXCR 10T3 | 0.55 |
| ER D22A32-4-C25-10 | 32.00 | 22.00 | 10.00 | 29.90 | 4 | 40.0 | 25.00 | C | 4.0 | - | 160.00 | - | A | RXCR 10T3 | 0.62 |
| ER D24A40-3-C32-16 | 40.00 | 24.00 | 16.00 | 30.00 | 3 | 50.0 | 32.00 | C | 20.0 | - | 160.00 | - | A | RCCW 1605 | 0.90 |

[1] Cutting diameter maximum
[2] Number of inserts (or edges for solid tool)
[3] C-Cylindrical
[4] Maximum ramping angle
[5] Master insert identification

**For inserts, see pages:** RXCR (601) • RXCW (601) • RXMT 10 (601)

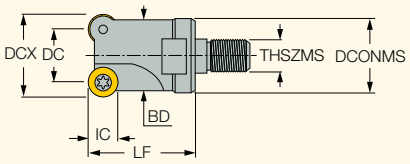
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| ER D07A12-3-C12-05 | SR 34-533 | T-6/51 | | |
| ER D08A15-2-C20-07 | SR 14-560/S M2.5X0.45 | T-8/53 | | |
| ER D08A16-2-C16-08 | SR 14-560/S M2.5X0.45 | T-8/53 | | |
| ER D17A25-3-C32-08 | SR 14-560 | T-8/53 | | |
| ER D10A20-2-C20-10 | SR 14-562/S | T-10/51 | | |
| ER D15A25-2-C25-10 | SR 14-562/S | T-10/51 | | |
| ER D22A32-4-C25-10 | SR 14-562 | T-10/51 | | |
| ER D24A40-3-C32-16 | SR 14-536 | | BLD T20/M7 | SW6-T-SH |

ROUNDMILL

## ER-M

Endmills with FLEX-FIT Threaded Adaptation Carrying Round Inserts for Profiling and Milling Round Corners




| Designation | DCX(1) | DC | IC | BD | CICT(2) | DCONMS | LF | DRVS(3) | THSZMS | RMPX°(4) | TQ_3(5) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ER D10A15-4-M08-05 | 15.00 | 10.00 | 5.00 | 13.00 | 4 | 13.00 | 23.00 | 10.0 | M08 | 13.0 | 20 | 0.03 | SR 34-533 | T-6/51 |
| ER D15A20-5-M10-05 | 20.00 | 15.00 | 5.00 | 18.00 | 5 | 18.00 | 30.00 | 15.0 | M10 | 4.3 | 29 | 0.06 | SR 34-533 | T-6/51 |
| ER D08A15-3-M08-07 | 15.00 | 8.00 | 7.00 | 13.50 | 3 | 13.50 | 23.00 | 9.6 | M08 | 15.0 | 20 | 0.03 | SR 14-560/S M2.5X0.45 | T-8/53 |
| ER D13A20-4-M10-07 | 20.00 | 13.00 | 7.00 | 18.00 | 4 | 18.00 | 30.00 | 15.1 | M10 | 5.0 | 29 | 0.06 | SR 14-560/S M2.5X0.45 | T-8/53 |
| ER D08A16-2-M08-08 | 16.00 | 8.00 | 8.00 | 13.50 | 2 | 13.00 | 25.00 | 10.0 | M08 | 27.0 | 20 | 0.02 | SR 14-560/S M2.5X0.45 | T-8/53 |
| ER D12A20-2-M10-08 | 20.00 | 12.00 | 8.00 | 17.20 | 2 | 18.00 | 32.00 | 15.1 | M10 | 6.5 | 29 | 0.05 | SR 14-560/S M2.5X0.45 | T-8/53 |
| ER D10A20-2-M10-10 | 20.00 | 10.00 | 10.00 | 18.00 | 2 | 18.00 | 30.00 | 15.1 | M10 | 28.0 | 29 | 0.05 | SR 14-562/S | T-10/51 |
| ER D15A25-2-M12-10 | 25.00 | 15.00 | 10.00 | 21.00 | 2 | 21.00 | 35.00 | 17.1 | M12 | 12.0 | 33 | 0.09 | SR 14-562/S | T-10/51 |
| ER D15A25-3-M12-10 | 25.00 | 15.00 | 10.00 | 29.00 | 3 | 21.00 | 35.00 | 18.1 | M12 | 12.0 | 33 | 0.09 | SR 14-562/S | T-10/51 |
| ER D22A32-4-M16-10 | 32.00 | 22.00 | 10.00 | 29.00 | 4 | 29.00 | 43.00 | 25.1 | M16 | 7.3 | 40 | 0.20 | SR 14-562 | T-10/51 |
| ER D25A35-4-M16-10 | 35.00 | 25.00 | 10.00 | 29.00 | 4 | 29.00 | 43.00 | 25.1 | M16 | 5.5 | 40 | 0.22 | SR 14-562 | T-10/51 |
| ER D32A42-5-M16-10 | 42.00 | 32.00 | 10.00 | 29.00 | 5 | 29.00 | 43.00 | 25.1 | M16 | 4.5 | 40 | 0.25 | SR 14-562 | T-10/51 |

- When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

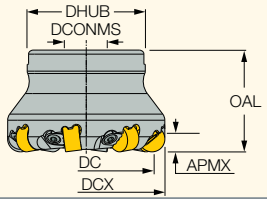
(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Torque key size
(4) Maximum ramping angle
(5) Tool tightening torque

**For inserts, see pages:** R90CW (602) • RXCR (601) • RXCW (601) • RXMT 10 (601)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

ISCAR CER LINE

## FRN

Face Mill for Wedge-Clamped Double-Sided Round Inserts




| Designation | DCX(1) | DC | APMX | OAL | DCONMS | DHUB | Arbor | CICT(2) | MDN(3) | MDX(4) | RMPX°(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FRN D038A050-05-22-12 | 50.00 | 37.30 | 3.00 | 40.00 | 22.00 | 45.00 | A | 5 | 87.30 | 99.00 | 0.4 | 0.46 |
| FRN D051A063-06-22-12 | 63.00 | 50.30 | 3.00 | 40.00 | 22.00 | 47.00 | A | 6 | 113.30 | 125.00 | 0.3 | 0.63 |
| FRN D068A080-07-27-12 | 80.00 | 67.30 | 3.00 | 50.00 | 27.00 | 58.00 | A | 7 | 147.30 | 159.00 | 0.3 | 0.85 |

- Radius for programing: 6.35

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Machinable diameter minimum for interpolation
(4) Machinable diameter maximum for interpolation
(5) Maximum ramping angle

**For inserts, see pages:** RNGN (CER) (606)

### Spare Parts

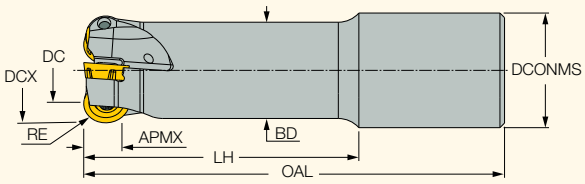
| Designation | | | |
|---|---|---|---|
| FRN | WEDGE SCREW(a) | LW 1207C | T-W3 |

(a) Recommended tightening torque:4.8 Nm

ROUNDMILL

## ERMT

End Mills for Productive Machining of 3D Surfaces of Blades in Turbomachinery




| Designation | DCX(1) | DC | RE | APMX | CICT(2) | LH | OAL | BD | DCONMS | RMPX°(3) | Shank(4) | MIID(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ERMT D15A25-3-060-C25-10 | 25.00 | 15.00 | 5.00 | 3.10 | 3 | 60.0 | 120.00 | 21.00 | 25.00 | 1.0 | C | RPHX 1003MO-MT5 | 0.33 |

New

- For adaptation see page 622

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Maximum ramping angle
(4) C-Cylindrical
(5) Master insert identification

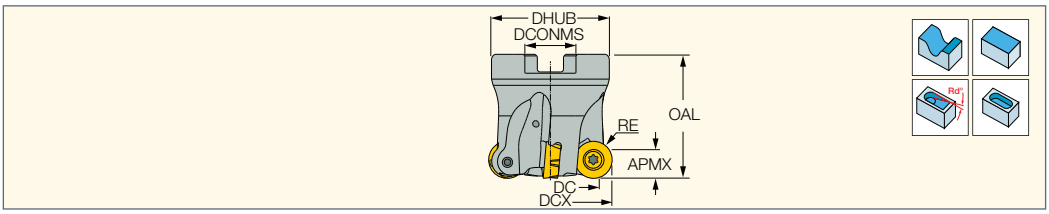
**For inserts, see pages:** RPHX/RPMX (605)

### Spare Parts

| Designation | | | |
|---|---|---|---|
| ERMT | SR 10504970 | BLD IP15/S7 | SW6-SD |

**ROUNDMILL**

## FRMT
Face Mills for Machining 3D Surfaces of Turbomachinery Blades




| Designation | DCX[1] | DC | RE | APMX | CICT[2] | OAL | DCONMS | RMPX°[3] | Arbor[4] | DHUB | MIID[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FRMT D030A040-05-16-10 | 40.00 | 30.00 | 5.00 | 3.10 | 5 | 40.00 | 16.00 | 1.0 | A | 38.00 | RP...X 1003M0 ... | 0.20 |
| FRMT D028A040-04-16-12 | 40.00 | 28.00 | 6.00 | 3.80 | 4 | 40.00 | 16.00 | 1.0 | A | 38.00 | RP...X 1204M0 ... | 0.20 |
| FRMT D038A050-05-22-12 | 50.00 | 38.00 | 6.00 | 3.80 | 5 | 40.00 | 22.00 | 2.5 | A | 48.00 | RP...X 1204M0 ... | 0.29 |
| FRMT D038A050-06-22-12 | 50.00 | 38.00 | 6.00 | 3.80 | 6 | 40.00 | 22.00 | 1.0 | A | 48.00 | RP...X 1204M0 ... | 0.29 |
| FRMT D040A052-05-22-12 | 52.00 | 40.00 | 6.00 | 3.80 | 5 | 40.00 | 22.00 | 2.5 | A | 48.00 | RP...X 1204M0 ... | 0.31 |
| FRMT D040A052-06-22-12 | 52.00 | 40.00 | 6.00 | 3.80 | 6 | 40.00 | 22.00 | 1.0 | A | 48.00 | RP...X 1204M0 ... | 0.30 |
| FRMT D051A063-06-22-12 | 63.00 | 51.00 | 6.00 | 3.80 | 6 | 40.00 | 22.00 | 4.0 | A | 48.00 | RP...X 1204M0 ... | 0.54 |
| FRMT D051A063-07-22-12 | 63.00 | 51.00 | 6.00 | 3.80 | 7 | 40.00 | 22.00 | 1.5 | A | 48.00 | RP...X 1204M0 ... | 0.39 |

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Maximum ramping angle
(4) For adaptation see page 622
(5) Insert identification

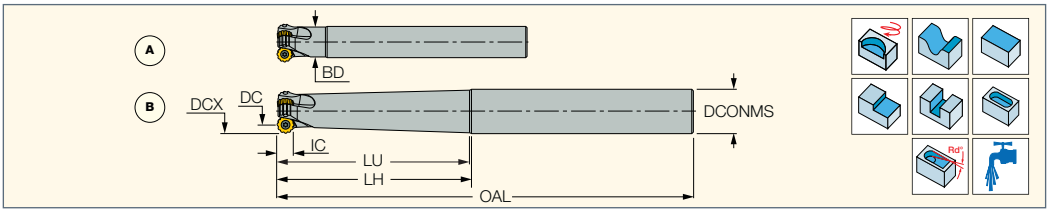
**For inserts, see pages:** RPHX/RPMX (605)

### Spare Parts

| Designation | | | |
|---|---|---|---|
| FRMT D030A040-05-16-10 | SR 10504970 | SW6-SD | BLD IP15/S7 |
| FRMT D028A040-04-16-12 | SR 76-2067 | SW6-T | BLD T15/S7 |
| FRMT D038A050-05-22-12 | SR 76-2067 | SW6-T-SH | BLD T15/S7 |
| FRMT D038A050-06-22-12 | SR 76-2067 | SW6-T-SH | BLD T15/S7 |
| FRMT D040A052-05-22-12 | SR 76-2067 | SW6-T-SH | BLD T15/S7 |
| FRMT D040A052-06-22-12 | SR 76-2067 | SW6-T | BLD T15/S7 |
| FRMT D051A063-06-22-12 | SR 76-2067 | SW6-T-SH | BLD T15/S7 |
| FRMT D051A063-07-22-12 | SR 76-2067 | SW6-T-SH | BLD T15/S7 |

**MILLSHRED** ROUND LINE

## ERW
Rough Profiling Endmills with Serrated or Regular Round Inserts




| Designation | DCX[1] | DC | IC | CICT[2] | LU | LH | OAL | DCONMS | Shank[3] | BD | RMPX°[4] | APMX | Type | MIID[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ERW D015A025-B-3-C25-10 | 25.00 | 15.00 | 10.00 | 3 | 49.20 | 50.0 | 150.00 | 25.00 | C | - | 3.0 | 5.00 | B | RCCT 1004MO | 0.47 |
| ERW D022A032-A-4-C25-10 | 32.00 | 22.00 | 10.00 | 4 | - | - | 170.00 | 25.00 | C | - | 4.0 | 5.00 | A | RCCT 1004MO | 0.59 |
| ERW D030A040-A-5-C32-10 | 40.00 | 30.00 | 10.00 | 5 | - | - | 200.00 | 32.00 | C | - | 3.0 | 5.00 | A | RCCT 1004MO | 1.16 |
| ERW D013A025-B-2-C25-12 | 25.00 | 13.00 | 12.00 | 2 | 48.70 | 50.0 | 180.00 | 25.00 | C | - | 2.0 | 6.00 | B | RCCT 1206MO | 0.58 |
| ERW D020A032-A-3-C25-12 | 32.00 | 20.00 | 12.00 | 3 | 38.90 | 40.0 | 200.00 | 25.00 | C | 24.00 | 7.0 | 6.00 | A | RCCT 1206MO | 0.68 |
| ERW D020A032-B-3-C32-12 | 32.00 | 20.00 | 12.00 | 3 | 138.70 | 140.0 | 300.00 | 32.00 | C | - | 7.0 | 6.00 | B | RCCT 1206MO | 1.53 |
| ERW D028A040-A-4-C32-12 | 40.00 | 28.00 | 12.00 | 4 | 48.70 | 50.0 | 250.00 | 32.00 | C | 31.00 | 5.0 | 6.00 | A | RCCT 1206MO | 1.45 |

• For user guide, see pages 329-332
(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) C-Cylindrical
(4) Maximum ramping angle
(5) Master insert identification

**For inserts, see pages:** RCMT/RCCT-MO (603) • RCMT/RCMW/RCCW-FW (604) • RCMW/RCCW-MO (603)

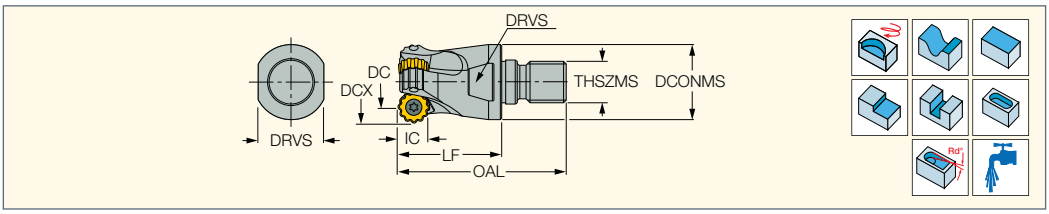
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| ERW D015A025-B-3-C25-10 | SR 34-506/L | T-9/51 | | |
| ERW D022A032-A-4-C25-10 | SR 34-506/L | T-9/51 | | |
| ERW D030A040-A-5-C32-10 | SR 34-506/L | T-9/51 | | |
| ERW D013A025-B-2-C25-12 | SR 14-601 | | BLD T15/S7 | |
| ERW D020A032-A-3-C25-12 | SR 14-601 | | BLD T15/S7 | |
| ERW D020A032-B-3-C32-12 | SR 14-601 | | BLD T15/S7 | |
| ERW D028A040-A-4-C32-12 | SR 14-601 | | BLD T15/S7 | SW6-T |

MILLSHRED ROUND LINE

## ERW-M

Rough Profiling Tools with a FLEX-FIT Adaptation




| Designation | DCX(1) | DC | IC | APMX | CICT(2) | DCONMS | OAL | LF | DRVS(3) | THSZMS | RMPX°(4) | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ERW D015A025-3-M12-10 | 25.00 | 15.00 | 10.00 | 5.00 | 3 | 21.00 | 52.00 | 30.00 | 17.0 | M12 | 3.0 | 33 | 0.06 |
| ERW D022A032-4-M16-10 | 32.00 | 22.00 | 10.00 | 5.00 | 4 | 29.00 | 55.00 | 30.00 | 25.0 | M16 | 4.0 | 40 | 0.12 |
| ERW D013A025-2-M12-12 | 25.00 | 13.00 | 12.00 | 6.00 | 2 | 21.00 | 57.00 | 35.00 | 17.0 | M12 | 2.0 | 33 | 0.08 |
| ERW D020A032-3-M16-12 | 32.00 | 20.00 | 12.00 | 6.00 | 3 | 29.00 | 65.00 | 40.00 | 25.0 | M16 | 7.0 | 40 | 0.15 |
| ERW D028A040-4-M16-12 | 40.00 | 28.00 | 12.00 | 6.00 | 4 | 29.00 | 65.00 | 40.00 | 25.0 | M16 | 5.0 | 40 | 0.19 |

• For user guide, see pages 329-332 • When mounting items with FLEX-FIT threaded adaptation, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Cutting diameter maximum

(2) Number of inserts (or edges for solid tool)

(3) Clamping wrench size

(4) Maximum ramping angle

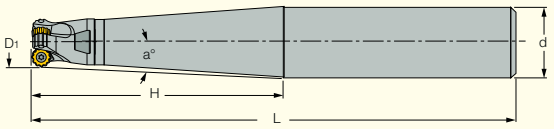
(5) Tool tightening torque Nxm

**For inserts, see pages:** RCMT/RCCT-MO (603) • RCMT/RCMW/RCCW-FW (604) • RCMW/RCCW-MO (603)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

## ERW-M

Button and Shred Type Inserts for Endmills with a FKEX-FIT Connection




| Milling Head | Adapter | Shank | Assembly Dimensions | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | D1 | H | L | a° | d | Rd° | Inserts |
| ERW D015A025-3-M12-10 | S M12-L086-C25 | 25 | 60 | 116 | - | 25 | 3 | |
| | S M12-L200-C32 | 25 | 108 | 230 | 1.9 | 32 | 3 | RCMT 1004... |
| ERW D022A032-4-M16-10 | S M16-L95-C32 | 32 | 65 | 125 | - | 32 | 4 | RCCT 1004... |
| | S M16-L230-C32 | 32 | 80 | 260 | - | 32 | 4 | |
| ERW D013A025-2-M12-12 | S M12-L086-C25 | 25 | 70 | 126 | - | 25 | 2 | |
| | S M12-L200-C32 | 25 | 118 | 240 | 1.8 | 32 | 2 | RCMT 1206... |
| ERW D020A032-3-M16-12 | S M16-L95-C32 | 32 | 75 | 85 | - | 32 | 7 | RCCW 1206... |
| | S M16-L230-C32 | 32 | 90 | 220 | - | 32 | 7 | RCCT 1206... |
| ERW D028A040-4-M16-12 | S M16-L95-C32 | 40 | 75 | 85 | - | 32 | 5 | |
| | S M16-L230-C32 | 40 | 90 | 220 | - | 32 | 5 | |

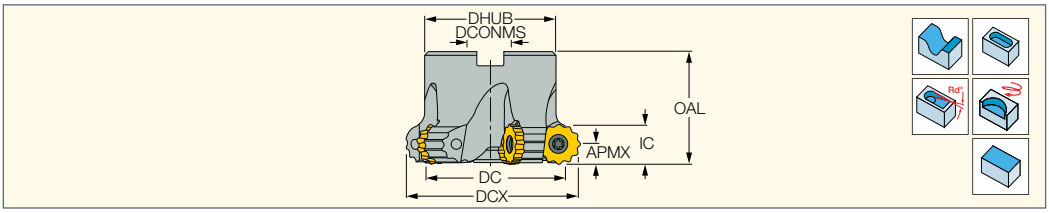
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| ERW D015A025-3-M12-10 | SR 34-506/L | T-9/51 | | |
| ERW D022A032-4-M16-10 | SR 34-506/L | T-9/51 | | |
| ERW D013A025-2-M12-12 | SR 14-601 | | BLD T15/S7 | SW6-T-SH |
| ERW D020A032-3-M16-12 | SR 14-601 | | BLD T15/S7 | SW6-T-SH |
| ERW D028A040-4-M16-12 | SR 14-601 | | BLD T15/S7 | SW6-T |

MILLSHRED ROUND LINE

**FRW**

Rough Profiling Face Mills with Serrated or Regular Round Inserts




| Designation | DCX[1] | DC | IC | APMX | CICT[2] | OAL | DHUB | DCONMS | RMPX°[3] | CSP[4] | Arbor[5] | MIID[6] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FRW D030A040-05-16-10 | 40.00 | 30.00 | 10.00 | 5.00 | 5 | 35.00 | 35.00 | 16.00 | 3.0 | 1 | A | RCCT 1004MO | 0.16 |
| FRW D028A040-04-16-12 | 40.00 | 28.00 | 12.00 | 6.00 | 4 | 40.00 | 35.00 | 16.00 | 6.5 | 1 | A | RCCT 1206MO | 0.15 |
| FRW D038A050-05-22-12 | 50.00 | 38.00 | 12.00 | 6.00 | 5 | 45.00 | 45.00 | 22.00 | 5.0 | 1 | A | RCCT 1206MO | 0.29 |
| FRW D040A052-05-22-12 | 52.00 | 40.00 | 12.00 | 6.00 | 5 | 45.00 | 45.00 | 22.00 | 5.0 | 1 | A | RCCT 1206MO | 0.31 |
| FRW D051A063-06-22-12 | 63.00 | 51.00 | 12.00 | 6.00 | 6 | 45.00 | 48.00 | 22.00 | 4.0 | 1 | A | RCCT 1206MO | 0.46 |
| FRW D054A066-06-27-12 | 66.00 | 54.00 | 12.00 | 6.00 | 6 | 50.00 | 50.00 | 27.00 | 4.0 | 1 | A | RCCT 1206MO | 0.54 |
| FRW D068A080-07-27-12 | 80.00 | 68.00 | 12.00 | 6.00 | 7 | 50.00 | 58.50 | 27.00 | 3.0 | 0 | B | RCCT 1206MO | 0.71 |
| FRW D034A050-04-22-16 | 50.00 | 34.00 | 16.00 | 8.00 | 4 | 54.00 | 42.00 | 22.00 | 11.0 | 1 | A | RCMT 1607MO | 0.26 |
| FRW D036A052-04-22-16 | 52.00 | 36.00 | 16.00 | 8.00 | 4 | 50.00 | 42.00 | 22.00 | 10.0 | 1 | A | RCMT 1607MO | 0.26 |
| FRW D047A063-05-22-16 | 63.00 | 47.00 | 16.00 | 8.00 | 5 | 45.00 | 48.00 | 22.00 | 7.0 | 1 | A | RCMT 1607MO | 0.40 |
| FRW D050A066-05-22-16 | 66.00 | 50.00 | 16.00 | 8.00 | 5 | 45.00 | 48.00 | 22.00 | 6.0 | 1 | A | RCMT 1607MO | 0.42 |
| FRW D050A066-05-27-16 | 66.00 | 50.00 | 16.00 | 8.00 | 5 | 50.00 | 50.00 | 27.00 | 6.0 | 1 | A | RCMT 1607MO | 0.46 |
| FRW D064A080-06-27-16 | 80.00 | 64.00 | 16.00 | 8.00 | 6 | 50.00 | 58.50 | 27.00 | 5.0 | 0 | B | RCMT 1607MO | 0.65 |
| FRW D084A100-07-32-16 | 100.00 | 84.00 | 16.00 | 8.00 | 7 | 50.00 | 70.00 | 32.00 | 4.0 | 0 | B | RCMT 1607MO | 1.11 |
| FRW D109A125-07-40-16 | 125.00 | 109.00 | 16.00 | 8.00 | 7 | 63.00 | 90.00 | 40.00 | 3.0 | 0 | B | RCMT 1607MO | 2.33 |
| FRW D060A080-05-27-20 | 80.00 | 60.00 | 20.00 | 10.00 | 5 | 50.00 | 58.50 | 27.00 | 7.0 | 0 | B | RCMT 2009MO | 0.61 |
| FRW D080A100-06-32-20 | 100.00 | 80.00 | 20.00 | 10.00 | 6 | 50.00 | 70.00 | 32.00 | 5.0 | 0 | B | RCMT 2009MO | 0.98 |
| FRW D105A125-07-40-20 | 125.00 | 105.00 | 20.00 | 10.00 | 7 | 63.00 | 82.00 | 40.00 | 4.0 | 0 | B | RCMT 2009MO | 1.98 |
| FRW D140A160-08-40-20 | 160.00 | 140.00 | 20.00 | 10.00 | 8 | 63.00 | 116.00 | 40.00 | 3.0 | 0 | C | RCMT 2009MO | 3.55 |

- For user guide, see pages 329-332

(1) Cutting diameter maximum

(2) Number of inserts (or edges for solid tool)

(3) Maximum ramping angle

(4) 0 - Without coolant supply, 1 - With coolant supply

(5) For adaptation options, see page 622

(6) Master insert identification

**For inserts, see pages:** RCMT/RCCT-MO (603) • RCMT/RCMW/RCCW-FW (604) • RCMW/RCCW-MO (603)

## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| FRW D030A040-05-16-10 | SR 34-506/L | | | T-9/51 | SR M8X25DIN912 |
| FRW D028A040-04-16-12 | SR 14-601 | BLD T15/S7 | SW6-T-SH | | SR M8X25DIN912 |
| FRW D038A050-05-22-12 | SR 14-601 | BLD T15/S7 | SW6-T-SH | | SR M10X25 DIN912 |
| FRW D040A052-05-22-12 | SR 14-601 | BLD T15/M7 | SW6-T-SH | | SR M10X25 DIN912 |
| FRW D051A063-06-22-12 | SR 14-601 | BLD T15/M7 | SW6-T-SH | | SR M10X25 DIN912 |
| FRW D054A066-06-27-12 | SR 14-601 | BLD T15/M7 | SW6-T-SH | | SR M12X30DIN912 |
| FRW D068A080-07-27-12 | SR 14-601 | BLD T15/M7 | SW6-T-SH | | |
| FRW D034A050-04-22-16 | SR 14-536/M | BLD T20/M7 | SW6-T-SH | | SR M10X30 DIN912 |
| FRW D036A052-04-22-16 | SR 14-536/M | BLD T20/M7 | SW6-T-SH | | SR M10X30 DIN912 |
| FRW D047A063-05-22-16 | SR 14-536/M | BLD T20/M7 | SW6-T-SH | | SR M10X25 DIN912 |
| FRW D050A066-05-22-16 | SR 14-536/M | BLD T20/M7 | SW6-T-SH | | SR M10X25 DIN912 |
| FRW D050A066-05-27-16 | SR 14-536/M | BLD T20/M7 | SW6-T-SH | | SR M12X30DIN912 |
| FRW D064A080-06-27-16 | SR 14-536/M | BLD T20/M7 | SW6-T-SH | | |
| FRW D084A100-07-32-16 | SR 14-536/M | BLD T20/M7 | SW6-T-SH | | |
| FRW D109A125-07-40-16 | SR 14-536/M | BLD T20/L7 | SW6-T-SH | | |
| FRW D060A080-05-27-20 | SR 14-2120[a] | BLD IP25/M7[b] | SW6-T | | |
| FRW D080A100-06-32-20 | SR 14-2120[a] | BLD IP25/M7[b] | SW6-T | | |
| FRW D105A125-07-40-20 | SR 14-2120[a] | BLD IP25/L7[b] | SW6-T | | |
| FRW D140A160-08-40-20 | SR 14-2120[a] | BLD IP25/L7[b] | SW6-T | | |

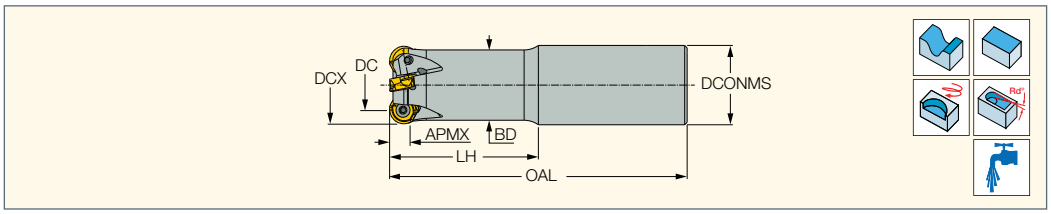
[a] Recommended tightening torque:9 N*m

[b] Torx Plus

HELIDO ROUND H400 LINE

## H400 ER-10

Endmills Carrying
Double-Sided Inserts with Four
5 mm Radius Cutting Edges

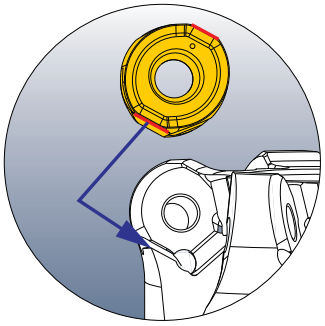



| Designation | DCX[1] | DC | BD | CICT[2] | APMX | LH | OAL | DCONMS | Shank[3] | RMPX°[4] | MIID[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H400 ER D20-2-060-C20-10 | 20.00 | 10.00 | 17.50 | 2 | 7.50 | 60.0 | 160.00 | 20.00 | C | - | H400 RNHU 1004-ML | 0.33 |
| H400 ER D25-3-060-C25-10 | 25.00 | 15.00 | 21.60 | 3 | 7.50 | 60.0 | 120.00 | 25.00 | C | 5.8 | H400 RNHU 1004-ML | 0.35 |
| H400 ER D32-5-060-C32-10 | 32.00 | 22.00 | 29.60 | 5 | 7.50 | 60.0 | 120.00 | 32.00 | C | 3.8 | H400 RNHU 1004-ML | 0.59 |

[1] Cutting diameter maximum
[2] Number of inserts (or edges for solid tool)
[3] C-Cylindrical
[4] Maximum ramping angle
[5] Master insert identification

**For inserts, see pages:** H400 RNHU (606)

**Insert Clamping Orientation**



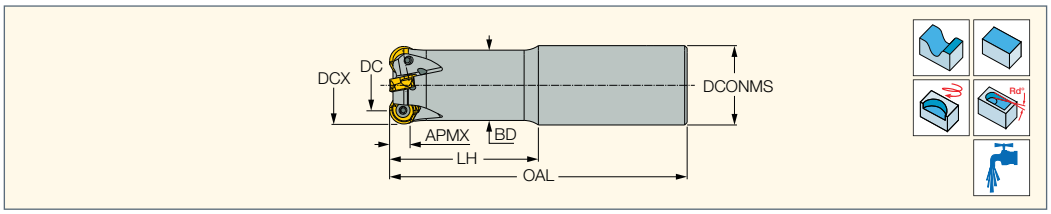
### Spare Parts

| Designation | | |
|---|---|---|
| H400 ER-10 | SR 10508600 | T-9/51 |

HELIDO ROUND H400 LINE

## H400 ER-12

Endmills Carrying
Double-Sided Inserts with Four
6 mm Radius Cutting Edges




| Designation | DCX[1] | DC | BD | CICT[2] | APMX | LH | OAL | DCONMS | Shank[3] | RMPX°[4] | MIID[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H400 ER D25-2-060-C25-12 | 25.00 | 13.00 | 21.60 | 2 | 8.70 | 60.0 | 120.00 | 25.00 | C | 5.6 | H400 RNHU 1205-AX | 0.34 |
| H400 ER D32-4-060-C32-12 | 32.00 | 20.00 | 28.40 | 4 | 8.70 | 60.0 | 120.00 | 32.00 | C | 5.6 | H400 RNHU 1205-AX | 0.58 |
| H400 ER D40-5-060-C32-12 | 40.00 | 28.00 | 31.50 | 5 | 8.70 | 60.0 | 150.00 | 32.00 | C | 3.7 | H400 RNHU 1205-AX | 0.80 |

[1] Cutting diameter maximum
[2] Number of inserts (or edges for solid tool)
[3] C-Cylindrical
[4] Maximum ramping angle
[5] Master insert identification

**For inserts, see pages:** H400 RNHU (606)

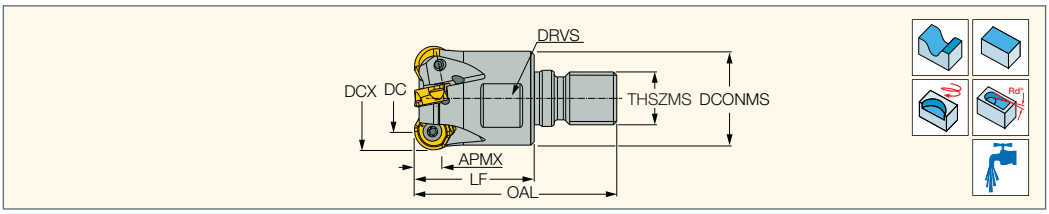
### Spare Parts

| Designation | | |
|---|---|---|
| H400 ER-12 | SR 14-571 | T-10/51 |

HELIDO ROUND H400 LINE

## H400 ER-M

Endmills with FLEX-FIT Threaded Connection Carrying Double-Sided Inserts with Four Radius Cutting Edges




| Designation | DCX(1) | DC | DCONMS | CICT(2) | APMX | LF | OAL | DRVS(3) | RMPX°(4) | THSZMS | MIID(5) | TQ_3(6) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H400 ER D20-2-M10-10 | 20.00 | 10.00 | 16.60 | 2 | 7.50 | 25.00 | 45.00 | 15.0 | - | M10 | H400 RNHU 1004-ML | 29 | 0.04 |
| H400 ER D25-3-M12-10 | 25.00 | 15.00 | 21.00 | 3 | 7.50 | 28.00 | 50.00 | 19.0 | 5.8 | M12 | H400 RNHU 1004-ML | 33 | 0.07 |
| H400 ER D32-5-M16-10 | 32.00 | 22.00 | 29.60 | 5 | 7.50 | 35.00 | 60.00 | 25.0 | 3.8 | M16 | H400 RNHU 1004-ML | 40 | 0.17 |
| H400 ER D25-2-M12-12 | 25.00 | 13.00 | 21.60 | 2 | 8.70 | 28.00 | 50.00 | 19.0 | 5.6 | M12 | H400 RNHU 1205-AX | 33 | 0.07 |
| H400 ER D32-4-M16-12 | 32.00 | 20.00 | 28.40 | 4 | 8.70 | 35.00 | 60.00 | 25.0 | 5.6 | M16 | H400 RNHU 1205-AX | 40 | 0.15 |
| H400 ER D40-5-M16-12 | 40.00 | 28.00 | 29.00 | 5 | 8.70 | 35.00 | 60.00 | 25.0 | 3.7 | M16 | H400 RNHU 1205-AX | 40 | 0.19 |

• When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Cutting diameter maximum

(2) Number of inserts (or edges for solid tool)

(3) Clamping wrench size

(4) Maximum ramping angle

(5) Master insert identification

(6) Tool tightening torque Nxm

**For inserts, see pages:** H400 RNHU (606)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

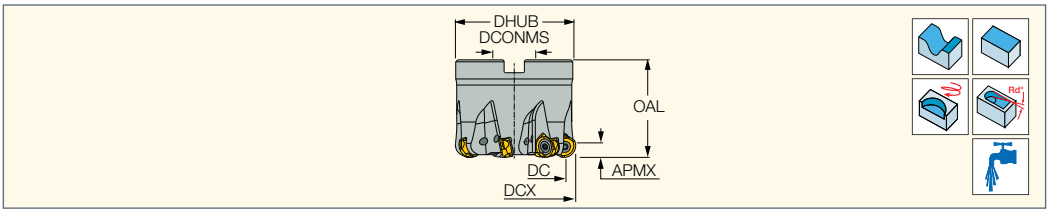
### Spare Parts

| Designation | | |
|---|---|---|
| H400 ER D20-2-M10-10 | SR 10508600 | T-9/51 |
| H400 ER D25-3-M12-10 | SR 10508600 | T-9/51 |
| H400 ER D32-5-M16-10 | SR 10508600 | T-9/51 |
| H400 ER D25-2-M12-12 | SR 14-571 | T-10/51 |
| H400 ER D32-4-M16-12 | SR 14-571 | T-10/51 |
| H400 ER D40-5-M16-12 | SR 14-571 | T-10/51 |

HELIDO ROUND H400 LINE

## H400 FR-10

Face Mills Carrying Double-Sided Inserts with Four 5 mm Radius Cutting Edges




| Designation | DCX(1) | DC | CICT(2) | APMX | OAL | DHUB | DCONMS | RMPX°(3) | Arbor(4) | MIID(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H400 FR D040-06-16-10 | 40.00 | 30.00 | 6 | 7.50 | 35.00 | 37.60 | 16.00 | 2.6 | A | H400 RNHU 1004-ML | 0.18 |
| H400 FR D050-07-22-10 | 50.00 | 40.00 | 7 | 7.50 | 40.00 | 47.00 | 22.00 | 1.9 | A | H400 RNHU 1004-ML | 0.33 |

(1) Cutting diameter maximum

(2) Number of inserts (or edges for solid tool)

(3) Maximum ramping angle

(4) For adaptation options, see page 622

(5) Master insert identification

**For inserts, see pages:** H400 RNHU (606)

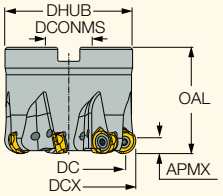
### Spare Parts

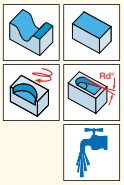
| Designation | | | |
|---|---|---|---|
| H400 FR D040-06-16-10 | SR 10508600 | T-9/51 | SR M8X25DIN912 |
| H400 FR D050-07-22-10 | SR 10508600 | T-9/51 | SR M10X25 DIN912 |

HELIDO ROUND H400 LINE

## H400 FR-12

Face Mills Carrying Double-Sided Inserts with Four 6 mm Radius Cutting Edges



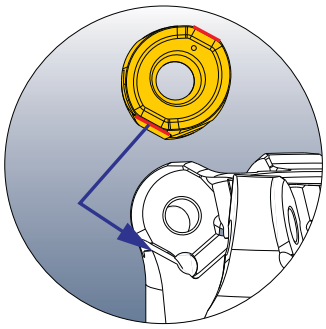



| Designation | DCX[1] | DC | CICT[2] | APMX | OAL | DHUB | DCONMS | RMPX°[3] | Arbor[4] | MIID[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H400 FR D040-05-16-12 | 40.00 | 28.00 | 5 | 8.70 | 40.00 | 38.00 | 16.00 | 3.7 | A | H400 RNHU 1205-AX | 0.20 |
| H400 FR D050-06-22-12 | 50.00 | 38.00 | 6 | 8.70 | 50.00 | 45.00 | 22.00 | 2.6 | A | H400 RNHU 1205-AX | 0.39 |
| H400 FR D052-06-22-12 | 52.00 | 40.00 | 6 | 8.70 | 50.00 | 45.00 | 22.00 | 2.5 | A | H400 RNHU 1205-AX | 0.42 |
| H400 FR D063-07-22-12 | 63.00 | 51.00 | 7 | 8.70 | 50.00 | 60.00 | 22.00 | 1.9 | A | H400 RNHU 1205-AX | 0.79 |
| H400 FR D066-07-27-12 | 66.00 | 54.00 | 7 | 8.70 | 50.00 | 61.00 | 27.00 | 1.8 | A | H400 RNHU 1205-AX | 0.78 |
| H400 FR D080-08-27-12 | 80.00 | 68.00 | 8 | 8.70 | 50.00 | 62.00 | 27.00 | 1.5 | A | H400 RNHU 1205-AX | 1.03 |

[1] Cutting diameter maximum
[2] Number of inserts (or edges for solid tool)
[3] Maximum ramping angle
[4] For adaptation options, see page 622
[5] Master insert identification

**For inserts, see pages:** H400 RNHU (606)

### Insert Clamping Orientation



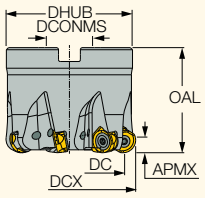
### Spare Parts

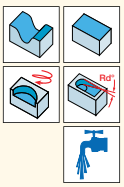
| Designation | | | |
|---|---|---|---|
| H400 FR D040-05-16-12 | SR 14-571 | T-10/51 | SR M8X25DIN912 |
| H400 FR D050-06-22-12 | SR 14-571 | T-10/51 | SR M10X25 DIN912 |
| H400 FR D052-06-22-12 | SR 14-571 | T-10/51 | SR M10X25 DIN912 |
| H400 FR D063-07-22-12 | SR 14-571 | T-10/51 | SR M10X25 DIN912 |
| H400 FR D066-07-27-12 | SR 14-571 | T-10/51 | SR M12X30DIN912 |
| H400 FR D080-08-27-12 | SR 14-571 | T-10/51 | SR M12X30DIN912 |

HELIDO ROUND H400 LINE

## H400 FR-16

Face Mills Carrying Double-Sided Inserts with Four 8 mm Radius Cutting Edges



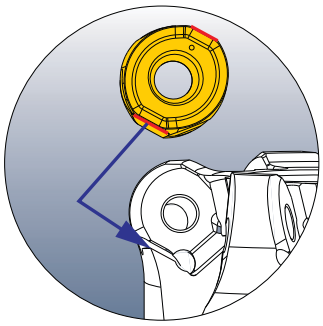



| Designation | DCX[1] | DC | CICT[2] | APMX | OAL | DHUB | DCONMS | RMPX°[3] | Arbor[4] | MIID[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H400 FR D050-05-22-16 | 50.00 | 34.00 | 5 | 12.00 | 50.00 | 47.00 | 22.00 | 3.3 | A | H400 RNHU 1606-AX | 0.41 |
| H400 FR D063-06-22-16 | 63.00 | 47.00 | 6 | 12.00 | 50.00 | 60.60 | 22.00 | 2.5 | A | H400 RNHU 1606-AX | 0.74 |
| H400 FR D066-06-27-16 | 66.00 | 50.00 | 6 | 12.00 | 50.00 | 60.60 | 27.00 | 2.3 | A | H400 RNHU 1606-AX | 0.79 |
| H400 FR D080-07-27-16 | 80.00 | 64.00 | 7 | 12.00 | 50.00 | 63.60 | 27.00 | 1.8 | A | H400 RNHU 1606-AX | 1.09 |
| H400 FR D100-09-32-16 | 100.00 | 84.00 | 9 | 12.00 | 49.60 | 84.00 | 32.00 | 1.3 | A | H400 RNHU 1606-AX | 0.00 |
| H400 FR D125-11-40-16 | 125.00 | 109.00 | 11 | 12.00 | 55.00 | 84.00 | 40.00 | 1.0 | A | H400 RNHU 1606-AX | 3.02 |

[1] Cutting diameter maximum
[2] Number of inserts (or edges for solid tool)
[3] Maximum ramping angle
[4] For adaptation options, see page 622
[5] Master insert identification

**For inserts, see pages:** H400 RNHU (606)

### Insert Clamping Orientation



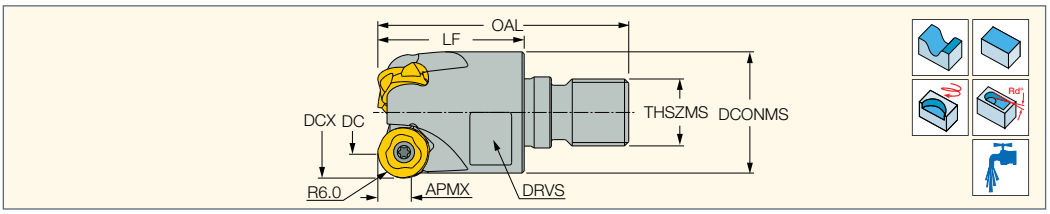
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| H400 FR D050-05-22-16 | SR 14-591/H | BLD T20/M7 | SW6-T | SR M10X25 DIN912 |
| H400 FR D063-06-22-16 | SR 14-591/H | BLD T20/M7 | SW6-T | SR M10X25 DIN912 |
| H400 FR D066-06-27-16 | SR 14-591/H | BLD T20/M7 | SW6-T | SR M12X30DIN912 |
| H400 FR D080-07-27-16 | SR 14-591/H | BLD T20/M7 | SW6-T | SR M12X30DIN912 |
| H400 FR D100-09-32-16 | SR 14-591/H | BLD T20/M7 | SW6-T | |
| H400 FR D125-11-40-16 | SR 14-591/H | BLD T20/M7 | SW6-T | |

HELIDO ROUND H606 LINE

## H606 ER-M

Endmills with FLEX-FIT Threaded Connection Carrying Double-Sided Inserts with Six Cutting Edges




| Designation | DCX[1] | DC | DCONMS | CICT[2] | APMX | LF | OAL | DRVS[3] | RMPX°[4] | THSZMS | TQ_3[5] | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H606 ER D032-03-M16-12 | 32.00 | 20.00 | 29.00 | 3 | 6.00 | 35.00 | 60.00 | 25.0 | 2.5 | M16 | 40 | 0.15 | SR 14-571 | T-10/51[a] |

• When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

[1] Cutting diameter maximum

[2] Number of inserts (or edges for solid tool)

[3] Clamping wrench size

[4] Maximum ramping angle

[5] Tool tightening torque Nxm

[a] For limiting torque, use optional 7007383 BLD 4 T10-3.2NM blade & 7007321 HSD 4-3.2NM handle

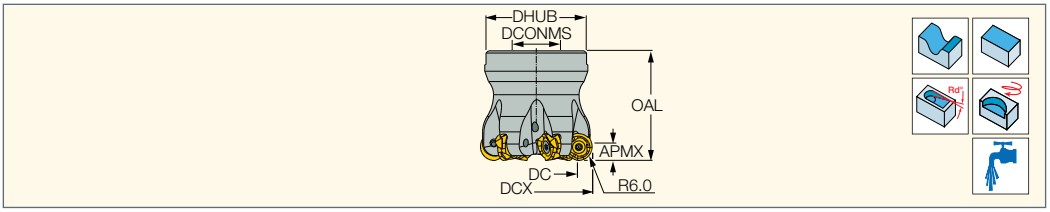
**For inserts, see pages:** H606 RXCU 1206 (606)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

HELIDO ROUND H606 LINE

## H606 FR-12

Face Mills Carrying Double-Sided Round Inserts with Six Cutting Edges




| Designation | DCX[1] | DC | CICT[2] | APMX | OAL | DHUB | DCONMS | RMPX°[3] | Arbor[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| H606 FR D040-04-16-12 | 40.00 | 28.00 | 4 | 6.00 | 45.00 | 38.00 | 16.00 | 2.0 | A | 0.22 |
| H606 FR D050-06-22-12 | 50.00 | 38.00 | 6 | 6.00 | 50.00 | 47.00 | 22.00 | 1.3 | A | 0.38 |
| H606 FR D052-06-22-12 | 52.00 | 40.00 | 6 | 6.00 | 50.00 | 47.00 | 22.00 | 1.3 | A | 0.39 |
| H606 FR D063-07-22-12 | 63.00 | 51.00 | 7 | 6.00 | 50.00 | 48.00 | 22.00 | 1.0 | A | 0.52 |
| H606 FR D080-08-27-12 | 80.00 | 68.00 | 8 | 6.00 | 50.00 | 58.00 | 27.00 | 0.7 | A | 0.83 |

[1] Cutting diameter maximum

[2] Number of inserts (or edges for solid tool)

[3] Maximum ramping angle

[4] For adaptation options, see page 622

**For inserts, see pages:** H606 RXCU 1206 (606)

### Spare Parts

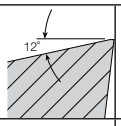
| Designation | | | |
|---|---|---|---|
| H606 FR D040-04-16-12 | SR 14-571 | T-10/51[a] | SR PS 118-0416 |
| H606 FR D050-06-22-12 | SR 14-571 | T-10/51[a] | SR M10X25 DIN912 |
| H606 FR D052-06-22-12 | SR 14-571 | T-10/51[a] | SR M10X25 DIN912 |
| H606 FR D063-07-22-12 | SR 14-571 | T-10/51[a] | SR M10X25 DIN912 |
| H606 FR D080-08-27-12 | SR 14-571 | T-10/51[a] | SR M12X30DIN912 |

[a] For limiting torque, use optional 7007383 BLD 4 T10-3.2NM blade & 7007321 HSD 4-3.2NM handle

## Machining Recommendations

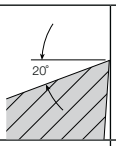
- Excellent tool stability
- Chips split into small pieces
- Optimal chip flow with easy evacuation, even from deep cavities
- High tooth load capability, up to 8 mm depth-of-cut, which will significantly reduce machining time
- Small cutting forces, therefore the required machining power is low

RCMT 1607-FW



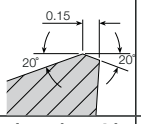
| Material Group | Hardness (HB) | Typical Materials | Depth Ap (mm) | $V_c$ (m/min) | $F_z$ (mm/tooth) | Recommended |
|---|---|---|---|---|---|---|
| Low Carbon Steel | 125-180 | C15, ST37, 1.0401 | 4 | 150 | 0.3 | ✓✓ |
| Low Alloy Steel | 170-220 | CK45,1.1231,16MnCr5 | 4 | 150 | 0.3 | ✓✓ |
| High Alloy Steel | 200-260 | X20Cr13,1.4923 | 4 | 150 | 0.3 | ✓✓ |
| Tool & Die Steel | 280-370 | 1.2379,1.2311 | 3 | 150 | 0.3 | ✓✓ |
| Stainless Steel | 150-270 | 1.4404,316,321 | - | - | - | - |
| Grey Cast Iron | 200-250 | GG25,GRADE220 | 5 | 150-180 | 0.3 | ✓ |
| S.G. Iron | 180-250 | GGG60,SNG600/3 | 5 | 110-150 | 0.3 | ✓ |
| Titanium | 450-500 | TiAl4Mo4Sn4Si0.5 | 4 | 50 | 0.2 | ✓ |
| Aluminum | 75-130 | G-AlSi12 | - | - | - | - |
| Hardened Die Steel | 38-42 HRc | 1.2344,1.2379 | 3 | 120 | 0.2 | ✓ |
| Hardened Die Steel | 48-52 HRc | 1.2762,1.1545 | - | - | - | - |

RCMT 1607-FW-F20



| Material Group | Hardness (HB) | Typical Materials | Depth Ap (mm) | $V_c$ (m/min) | $F_z$ (mm/tooth) | Recommended |
|---|---|---|---|---|---|---|
| Low Carbon Steel | 125-180 | C15,ST37,1.0401 | 3 | 150 | 0.3 | ✓ |
| Low Alloy Steel | 170-220 | CK45,1.1231,16MnCr5 | - | - | - | - |
| High Alloy Steel | 200-260 | X20Cr13,1.4923 | - | - | - | - |
| Tool & Die Steel | 280-370 | 1.2379,1.2311 | - | - | - | - |
| Stainless Steel | 150-270 | 1.4306,304, 1.4404,316 | 6 | 100 | 0.1 | ✓✓ |
| Grey Cast Iron | 200-250 | GG25,GRADE220 | - | - | - | - |
| S.G. Iron | 180-250 | GGG60,SNG600/3 | - | - | - | - |
| Titanium | 450-500 | TiAl4Mo4Sn4Si0.5 | - | - | - | - |
| Aluminum | 75-130 | G-AlSi12 | 6 | 850 | 0.4 | ✓✓ |
| Hardened Die Steel | 38-42 HRc | 1.2344,1.2379 | - | - | - | ✓ |
| Hardened Die Steel | 48-52 HRc | 1.2762,1.1545 | - | - | - | - |

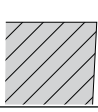
RCMT 1607 FW-T20



| Material Group | Hardness (HB) | Typical Materials | Depth Ap (mm) | $V_c$ (m/min) | $F_z$ (mm/tooth) | Recommended |
|---|---|---|---|---|---|---|
| Low Carbon Steel | 125-180 | C15,ST37,1.0401 | 3 | 150 | 0.3 | ✓ |
| Low Alloy Steel | 170-220 | CK45,1.1231,16MnCr5 | 3 | 150 | 0.3 | ✓ |
| High Alloy Steel | 200-260 | X20Cr13,1.4923 | - | - | - | - |
| Tool & Die Steel | 280-370 | 1.2379,1.2311 | - | - | - | - |
| Stainless Steel | 150-270 | 1.4031, 420 | 6 | 120 | 0.2 | ✓✓ |
| Grey Cast Iron | 200-250 | GG25,GRADE220 | - | - | - | - |
| S.G. Iron | 180-250 | GGG60,SNG600/3 | - | - | - | - |
| Titanium | 450-500 | TiAl4Mo4Sn4Si0.5 | - | - | - | - |
| Aluminum | 75-130 | G-AlSi12 | - | - | - | - |
| Hardened Die Steel | 38-42 HRc | 1.2344,1.2379 | - | - | - | - |
| Hardened Die Steel | 48-52 HRc | 1.2762,1.1545 | - | - | - | - |

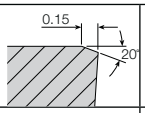
✓✓ Most Recommended
✓ Second option

RCCW 1607-FW



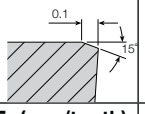
| Material Group | Hardness (HB) | Typical Materials | Depth Ap (mm) | $V_c$ (m/min) | $F_z$ (mm/tooth) | Recommended |
|---|---|---|---|---|---|---|
| Low Carbon Steel | 125-180 | C15,ST37,1.0401 | 4 | 150 | 0.3 | ✓ |
| Low Alloy Steel | 170-220 | CK45,1.1231,16MnCr5 | 4 | 150 | 0.3 | ✓✓ |
| High Alloy Steel | 200-260 | X20Cr13,1.4923 | 4 | 150 | 0.3 | ✓✓ |
| Tool & Die Steel | 280-370 | 1.2379,1.2311 | 4 | 150 | 0.3 | ✓✓ |
| Stainless Steel | 150-270 | 1.4404,316,321 | - | - | - | - |
| Grey Cast Iron | 200-250 | GG25,GRADE220 | - | - | - | - |
| S.G. Iron | 180-250 | GGG60,SNG600/3 | - | - | - | - |
| Titanium | 450-500 | TiAl4Mo4Sn4Si0.5 | - | - | - | - |
| Aluminum | 75-130 | G-AlSi12 | - | - | - | - |
| Hardened Die Steel | 38-42 HRc | 1.2344,1.2379 | 4 | 120 | 0.2 | ✓ |
| Hardened Die Steel | 48-52 HRc | 1.2762,1.1545 | - | - | - | - |

RCMW 1607-T-FW



| Material Group | Hardness (HB) | Typical Materials | Depth Ap (mm) | $V_c$ (m/min) | $F_z$ (mm/tooth) | Recommended |
|---|---|---|---|---|---|---|
| Low Carbon Steel | 125-180 | C15,ST37,1.0401 | - | - | - | - |
| Low Alloy Steel | 170-220 | CK45,1.1231,16MnCr5 | 4 | 150 | 0.3 | ✓ |
| High Alloy Steel | 200-260 | X20Cr13,1.4923 | 4 | 150 | 0.3 | ✓✓ |
| Tool & Die Steel | 280-370 | 1.2379,1.2311 | 3 | 150 | 0.3 | ✓✓ |
| Stainless Steel | 150-270 | 1.4404,316,321 | - | - | - | - |
| Grey Cast Iron | 200-250 | GG25,GRADE220 | 5 | 150-180 | 0.3 | ✓✓ |
| S.G. Iron | 180-250 | GGG60,SNG600/3 | 5 | 110-150 | 0.3 | ✓✓ |
| Titanium | 450-500 | TiAl4Mo4Sn4Si0.5 | - | - | - | - |
| Alumnum | 75-130 | G-AlSi12 | - | - | - | - |
| Hardened Die Steel | 38-42 HRc | 1.2344,1.2379 | - | - | - | - |
| Hardened Die Steel | 48-52 HRc | 1.2762,1.1545 | - | - | - | - |

RCMW 1607-T-FPW



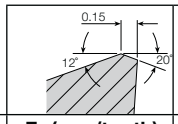
| Material Group | Hardness (HB) | Typical Materials | Depth Ap (mm) | $V_c$ (m/min) | $F_z$ (mm/tooth) | Recommended |
|---|---|---|---|---|---|---|
| Low Carbon Steel | 125-180 | C15,ST37,1.0401 | 4 | 150 | 0.3 | ✓ |
| Low Alloy Steel | 170-220 | CK45,1.1231,16MnCr5 | 4 | 150 | 0.3 | ✓✓ |
| High Alloy Steel | 200-260 | X20Cr13,1.4923 | 4 | 150 | 0.3 | ✓✓ |
| Tool & Die Steel | 280-370 | 1.2379,1.2311 | 4 | 150 | 0.3 | ✓✓ |
| Stainless Steel | 150-270 | 1.4404,316,321 | - | - | - | - |
| Grey Cast Iron | 200-250 | GG25,GRADE220 | - | - | - | - |
| S.G. Iron | 180-250 | GGG60,SNG600/3 | - | - | - | - |
| Titanium | 450-500 | TiAl4Mo4Sn4Si0.5 | - | - | - | - |
| Aluminum | 75-130 | G-AlSi12 | - | - | - | - |
| Hardened Die Steel | 38-42 HRc | 1.2344,1.2379 | 4 | 120 | 0.25 | ✓✓ |
| Hardened Die Steel | 48-52 HRc | 1.2762,1.1545 | 4 | 80 | 0.1 | ✓✓ |

✓✓ Most Recommended

✓ Second option

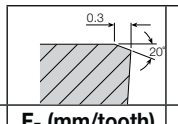
## Machining Recommendations

RCMT 1607MO



| Material Group | Hardness (HB) | Typical Materials | Depth Ap (mm) | $V_c$ (m/min) | $F_z$ (mm/tooth) | Recommended |
|---|---|---|---|---|---|---|
| Low Carbon Steel | 125-180 | C15,ST37,1.0401 | 4 | 180 | 0.3 | ✓ |
| Low Alloy Steel | 170-220 | CK45,1.1231,16MnCr5 | 4 | 180 | 0.3 | ✓✓ |
| High Alloy Steel | 200-260 | X20Cr13,1.4923 | 4 | 180 | 0.3 | ✓✓ |
| Tool & Die Steel | 280-370 | 1.2379,1.2311 | - | - | - | - |
| Stainless Steel | 150-270 | 1.4031, 420 | 6 | 120 | 0.3 | ✓✓ |
| Grey Cast Iron | 200-250 | GG25,GRADE220 | - | - | - | - |
| S.G. Iron | 180-250 | GGG60,SNG600/3 | - | - | - | - |
| Titanium | 450-500 | TiAl4Mo4Sn4Si0.5 | - | - | - | - |
| Aluminum | 75-130 | G-AlSi12 | - | - | - | - |
| Hardened Die Steel | 38-42 HRc | 1.2344,1.2379 | - | - | - | - |
| Hardened Die Steel | 48-52 HRc | 1.2762,1.1545 | - | - | - | - |

RCMW 1607MO

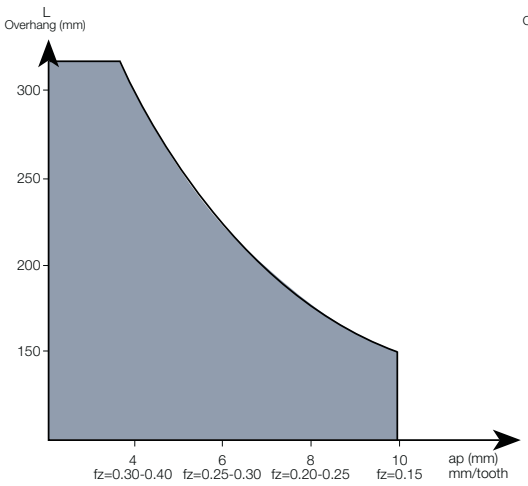


| Material Group | Hardness (HB) | Typical Materials | Depth Ap (mm) | $V_c$ (m/min) | $F_z$ (mm/tooth) | Recommended |
|---|---|---|---|---|---|---|
| Low Carbon Steel | 125-180 | C15,ST37,1.0401 | - | - | - | - |
| Low Alloy Steel | 170-220 | CK45,1.1231,16MnCr5 | 2 | 180 | 0.7 | ✓✓ |
| High Alloy Steel | 200-260 | X20Cr13,1.4923 | 2 | 180 | 0.7 | ✓✓ |
| Tool & Die Steel | 280-370 | 1.2379,1.2311 | 2 | 150 | 0.5 | ✓✓ |
| Stainless Steel | 150-270 | 1.4404,316,321 | - | - | - | - |
| Grey Cast Iron | 200-250 | GG25,GRADE220 | 2 | 300 | 0.7 | ✓✓ |
| S.G. Iron | 180-250 | GGG60,SNG600/3 | 2 | 220 | 0.5 | ✓✓ |
| Titanium | 450-500 | TiAl4Mo4Sn4Si0.5 | - | - | - | - |
| Aluminum | 75-130 | G-AlSi12 | - | - | - | - |
| Hardened Die Steel | 38-42 HRc | 1.2344,1.2379 | 2 | 150 | 0.4 | ✓ |
| Hardened Die Steel | 48-52 HRc | 1.2762,1.1545 | - | - | - | - |

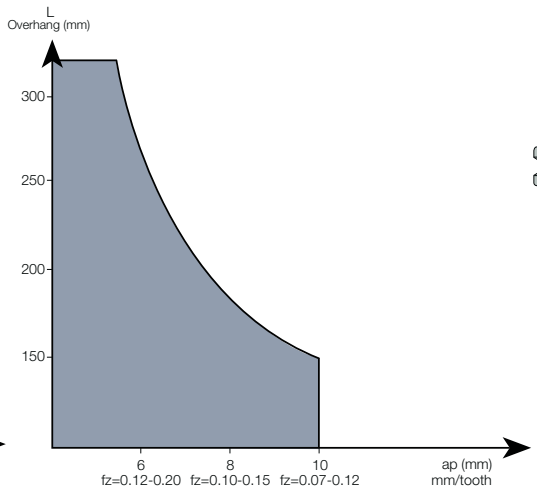
✓✓ Most Recommended
✓ Second option

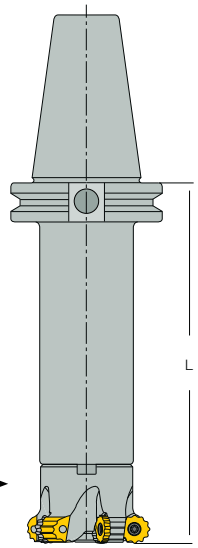
Feed Limit Recommendations as a Function of Overhang and Depth of Cut

**Carbon and Alloy Steel**

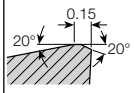
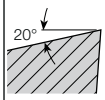
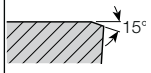



**Stainless Steel**




Insert Selection Guide

| Insert Designation | RCMT...FW | RCMT...FW-T20 | RCMT...FW-F20 | RCCT...MO | RCCW...MO |
|---|---|---|---|---|---|
| RC...1206 | | | | | |
| Workpiece | |   |   | |   |
| Geometry | Positive Rake Face | Positive Rake Face With T-Land | Positive Rake Face Sharp Edge | Positive Rake Face | Flat Top Face With a T-Land |
| Alloy Steel | VVV | V | V | V | VVV |
| Mold Steel | VVV | V | V | V | VVV |
| Stainless Steel | | VVV(1) | VVV(2) | VVV | |
| Grey Cast Iron | VV | | | | VVV |
| Aluminum | | | VVV | VV | |
| High Temp. Alloys | V | | VV | VVV | |
| Hardened Mold Steel (45 HRc Max) | V | | | | V |

| Applications | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Helical Interpolation | Shouldering | Contour Milling | Ramping Down | Plunging | Profiling | Pocket Milling |

(1) Recommended for martensitic stainless steel

(2) Recommended for austenitic stainless steel

V Least recommended

VV Second option

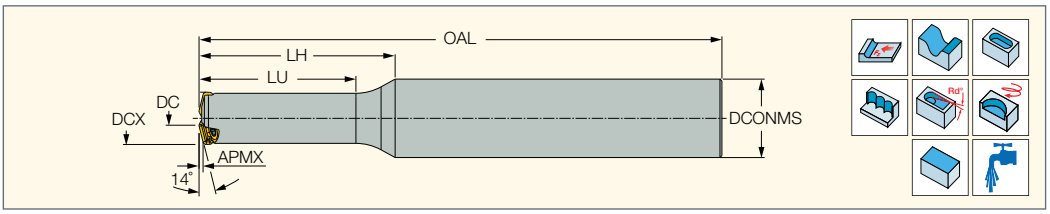
VVV Most recommended

# FAST FEED MILLING TOOLS

NANO FEED MILL

## FFT3 EFM-02

Small Diameter Endmills Carrying Single-Sided Triangular Inserts for Fast Feed Milling




| Designation | DCX(1) | DC | APMX | AE(2) | CICT(3) | LU | LH | OAL | DCONMS | Shank(4) | RMPX°(5) | MDN(6) | MDX(7) | MIID(8) | TQ(9) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFT3 EFM D08-2-060-C10-02 | 8.00 | 2.20 | 0.60 | 2.9 | 2 | 17.00 | 20.0 | 60.00 | 10.00 | C | 10.8 | 10.20 | 15.00 | FFT3 TXMT 0201205T | 0.5 | 0.03 |
| FFT3 EFM D08-2-080-C12-02 | 8.00 | 2.20 | 0.60 | 2.9 | 2 | 26.00 | 30.0 | 80.00 | 12.00 | C | 10.8 | 10.20 | 15.00 | FFT3 TXMT 0201205T | 0.5 | 0.05 |
| FFT3 EFM D10-3-070-C10-02 | 10.00 | 4.20 | 0.60 | 2.9 | 3 | 19.50 | 20.0 | 70.00 | 10.00 | C | 4.7 | 14.20 | 19.00 | FFT3 TXMT 0201205T | 0.5 | 0.04 |
| FFT3 EFM D10-3-090-C12-02 | 10.00 | 4.20 | 0.60 | 2.9 | 3 | 30.00 | 33.0 | 90.00 | 12.00 | C | 4.7 | 14.20 | 19.00 | FFT3 TXMT 0201205T | 0.5 | 0.06 |

• Radius for programming 1.1 mm • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) C-Cylindrical
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) Master insert identification
(9) Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** FFT3 TXMT 02 (510)

### Spare Parts

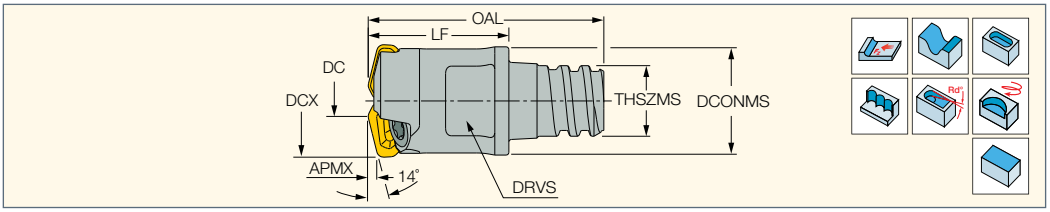
| Designation | | |
|---|---|---|
| FFT3 EFM-02 | SR M2X0.4-2.9 T6-HG(a) | T-6/5 MAGNET 3X3 |

(a) Recommended tightening torque:0.5 N*m

NANO FEED MILL

## FFT3 EFM-MM 02

Small Diameter Endmills with a MULTI-MASTER Threaded Adaptation that Mount Triangular Inserts for Fast Feed Milling




| Designation | DCX(1) | DC | APMX | AE(2) | CICT(3) | LF | DCONMS | THSZMS | OAL | DRVS(4) | RMPX°(5) | MDN(6) | MDX(7) | MIID(8) | TQ(9) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFT3 EFMD08/.31-2MMT05-02 | 8.00 | 2.20 | 0.60 | 2.9 | 2 | 10.00 | 7.60 | T05 | 16.75 | 5.5 | 10.8 | 10.20 | 15.00 | FFT3 TXMT 0201205T | 0.5 | 0.01 |
| FFT3 EFMD10/.39-3MMT06-02 | 10.00 | 4.20 | 0.60 | 2.9 | 3 | 10.00 | 9.70 | T06 | 16.30 | 8.0 | 4.7 | 14.20 | 19.00 | FFT3 TXMT 0201205T | 0.5 | 0.01 |

• For adaptation, see page 303 • For user guide, see pages 616-621 • Radius for programing 1.1 mm • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Torque key size
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) Master insert identification
(9) Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** FFT3 TXMT 02 (510)

**For holders, see pages:** MM CAB (110) • MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

### Spare Parts

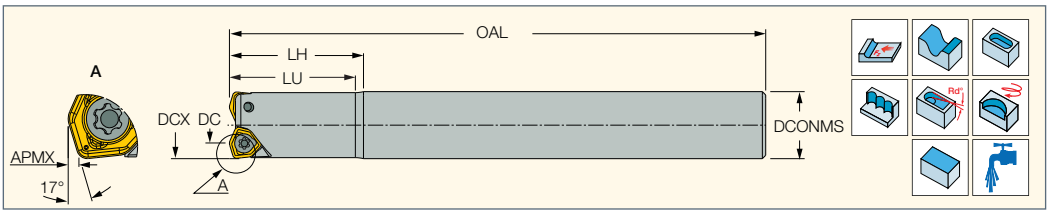
| Designation | | |
|---|---|---|
| FFT3 EFM-MM 02 | SR M2X0.4-2.9 T6-HG(a) | T-6/5 MAGNET 3X3 |

(a) Recommended tightening torque:0.5 N*m

MICRO 3 FEED
MF 300 ENDMILL

## FFT3 EFM-03

Endmills Carrying
Single-Sided Small Trigon
Inserts for Fast Feed Milling




| Designation | DCX(1) | DC | APMX | AE(2) | CICT(3) | LU | LH | DCONMS | OAL | Shank(4) | RMPX°(5) | MDN(6) | MDX(7) | MIID(8) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFT3 EFM D08-1-080-C12-03 | 8.00 | 3.60 | 0.60 | 2.2 | 1 | 15.70 | 20.0 | 12.00 | 80.00 | C | 1.1 | 11.60 | 15.00 | FFT3 WXMT 030206T | 0.00 |
| FFT3 EFM D10-2-080-C10-03 | 10.00 | 5.60 | 0.60 | 2.2 | 2 | 18.00 | 20.0 | 10.00 | 80.00 | C | 6.9 | 15.60 | 19.00 | FFT3 WXMT 030206T | 0.11 |
| FFT3 EFM D12-3-120-C12-03 | 12.00 | 7.60 | 0.60 | 2.2 | 3 | 23.00 | 25.0 | 12.00 | 120.00 | C | 4.7 | 19.60 | 23.00 | FFT3 WXMT 030206T | 0.10 |
| FFT3 EFM D16-4-140-C16-03 | 16.00 | 11.60 | 0.60 | 2.2 | 4 | 32.80 | 35.0 | 16.00 | 140.00 | C | 2.9 | 27.60 | 31.00 | FFT3 WXMT 030206T | 0.18 |
| FFT3 EFM D20-5-160-C20-03 | 20.00 | 15.60 | 0.60 | 2.2 | 5 | 40.80 | 43.0 | 20.00 | 160.00 | C | 2.0 | 35.60 | 39.00 | FFT3 WXMT 030206T | 0.37 |
| FFT3 EFM D25-6-180-C25-03 | 25.00 | 20.60 | 0.60 | 2.2 | 6 | 50.80 | 53.0 | 25.00 | 180.00 | C | 1.5 | 45.60 | 49.00 | FFT3 WXMT 030206T | 0.62 |

• Radius for programming 1.1 mm • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) C-Cylindrical
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) Master insert identification

**For inserts, see pages:** FFT3 WXMT 03 (596)

### Spare Parts

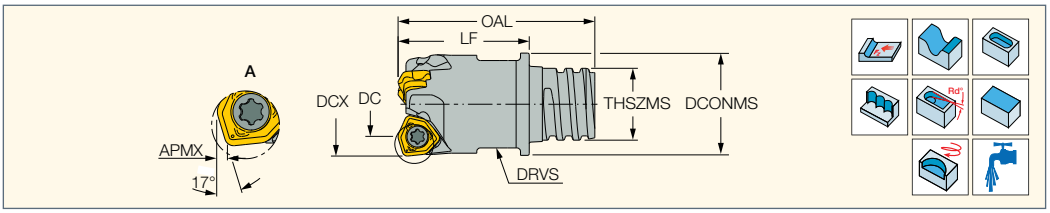
| Designation | | |
|---|---|---|
| FFT3 EFM-03 | TS 18041I/HG(a) | T-6IP/51 |

(a) Recommended tightening torque:0.5 Nxm

MICRO 3 FEED
MF 300 ENDMILL

## FFT3 EFM-MM 03

Endmills with a MULTI-MASTER
Threaded Adaptation Carrying
Single-Sided Small Trigon
Inserts for Fast Feed Milling




| Designation | DCX(1) | DC | APMX | AE(2) | CICT(3) | LF | DCONMS | THSZMS | OAL | DRVS(4) | RMPX°(5) | MDN(6) | MDX(7) | MIID(8) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFT3 EFMD10/.39-2MMT06-03 | 10.00 | 5.60 | 0.60 | 2.2 | 2 | 10.00 | 9.70 | T06 | 16.30 | 8.0 | 6.9 | 15.60 | 19.00 | FFT3 WXMT 030206T | 0.02 |
| FFT3 EFMD12/.47-3MMT08-03 | 12.00 | 7.60 | 0.60 | 2.2 | 3 | 15.00 | 11.70 | T08 | 22.50 | 10.0 | 4.7 | 19.60 | 23.00 | FFT3 WXMT 030206T | 0.03 |
| FFT3 EFMD16/.63-4MMT10-03 | 16.00 | 11.60 | 0.60 | 2.2 | 4 | 20.00 | 15.30 | T10 | 31.30 | 13.0 | 2.9 | 27.60 | 31.00 | FFT3 WXMT 030206T | 0.05 |
| FFT3 EFMD20/.78-5MMT12-03 | 20.00 | 15.60 | 0.60 | 2.2 | 5 | 25.00 | 19.00 | T12 | 38.30 | 16.0 | 2.0 | 35.60 | 39.00 | FFT3 WXMT 030206T | 0.07 |
| FFT3 EFMD25/.98-6MMT15-03 | 25.00 | 20.60 | 0.60 | 2.2 | 6 | 30.00 | 24.00 | T15 | 47.00 | 20.0 | 1.5 | 45.60 | 49.00 | FFT3 WXMT 030206T | 0.16 |

• Radius for programming 1.1 mm • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Torque key size
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) Master insert identification

**For inserts, see pages:** FFT3 WXMT 03 (596)
**For holders, see pages:** MM CAB (110) • MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102)
• MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109)
• MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

### Spare Parts

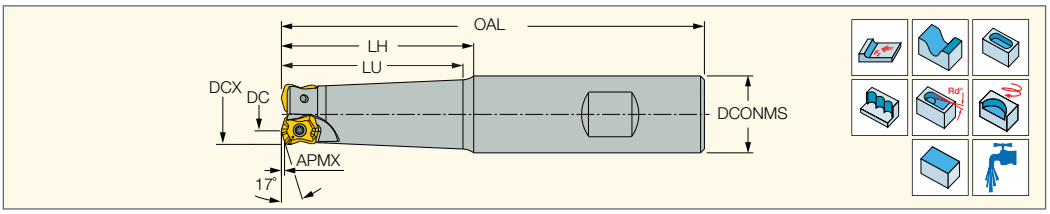
| Designation | | |
|---|---|---|
| FFT3 EFM-MM 03 | TS 18041I/HG(a) | T-6IP/51 |

(a) Recommended tightening torque: 0.5 Nxm

LOGIQ4FEED HIGH FEED MILLING

## FFX4 ED

Endmills Carrying Small Double-Sided "Bone Shaped" Inserts with 4 Cutting Edges for Fast Feed Milling




| Designation | DCX(1) | DC | APMX | AE(2) | CICT(3) | LU | LH | DCONMS | OAL | Shank(4) | KAPR(5) | RMPX°(6) | MDN(7) | MDX(8) | MIID(9) | kg | TQ(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFX4 ED12-1-030-C12-04 | 12.00 | 4.60 | 0.80 | 3.7 | 1 | 28.90 | 30.0 | 12.00 | 90.00 | C | 17.0 | 1.5 | 16.60 | 23.00 | FFX4 XNMU 040310T | 0.07 | 0.9 |
| FFX4 ED16-2-030-C16-04 | 16.00 | 8.60 | 0.80 | 3.7 | 2 | 28.30 | 30.0 | 16.00 | 120.00 | C | 17.0 | 4.3 | 24.60 | 31.00 | FFX4 XNMU 040310T | 0.16 | 0.9 |
| FFX4 ED16-2-050-W20-04 | 16.00 | 8.60 | 0.80 | 3.7 | 2 | 44.00 | 50.0 | 20.00 | 110.00 | W | 17.0 | 4.3 | 24.60 | 31.00 | FFX4 XNMU 040310T | 0.20 | 0.9 |
| FFX4 ED20-3-050-C20-04 | 20.00 | 12.60 | 0.80 | 3.7 | 3 | 47.60 | 50.0 | 20.00 | 140.00 | C | 17.0 | 2.7 | 32.60 | 39.00 | FFX4 XNMU 040310T | 0.29 | 0.9 |
| FFX4 ED20-3-060-W20-04 | 20.00 | 12.60 | 0.80 | 3.7 | 3 | 57.60 | 60.0 | 20.00 | 120.00 | W | 17.0 | 2.7 | 32.60 | 39.00 | FFX4 XNMU 040310T | 0.24 | 0.9 |
| FFX4 ED25-4-060-C25-04 | 25.00 | 17.60 | 0.80 | 3.7 | 4 | 57.40 | 60.0 | 25.00 | 150.00 | C | 17.0 | 1.8 | 42.60 | 49.00 | FFX4 XNMU 040310T | 0.50 | 0.9 |
| FFX4 ED25-4-080-W25-04 | 25.00 | 17.60 | 0.80 | 3.7 | 4 | 77.40 | 80.0 | 25.00 | 140.00 | W | 17.0 | 1.8 | 42.60 | 49.00 | FFX4 XNMU 040310T | 0.45 | 0.9 |
| FFX4 ED32-5-080-W32-04 | 32.00 | 24.60 | 0.80 | 3.7 | 5 | 77.40 | 80.0 | 32.00 | 150.00 | W | 17.0 | 1.2 | 56.60 | 63.00 | FFX4 XNMU 040310T | 0.80 | 0.9 |
| FFX4 ED32-5-120-C32-04 | 32.00 | 24.60 | 0.80 | 3.7 | 5 | 117.30 | 120.0 | 32.00 | 205.00 | C | 17.0 | 1.2 | 56.60 | 63.00 | FFX4 XNMU 040310T | 1.02 | 0.9 |

- To generate a straight surface without cusps, the width of cut must not exceed DC
- Radius for programming: for insert XNMU 1.8 mm, for insert XNMW 1.72 mm

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) C-Cylindrical, W-Weldon
(5) Tool cutting edge angle
(6) Maximum ramping angle
(7) Machinable diameter minimum for interpolation
(8) Machinable diameter maximum for interpolation
(9) Master insert identification
(10) Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** FFX4 XNMU/W-04 (598)

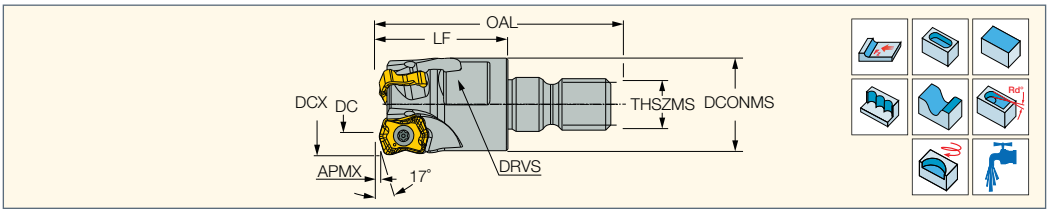
### Spare Parts

| Designation | | |
|---|---|---|
| FFX4 ED | SR M2.5X6-T7-60 | T-7/51 |

LOGIQ4FEED HIGH FEED MILLING

## FFX4 ED-M

Endmills with FLEX-FIT Adaptation Carrying Small "Bone Shaped" Inserts with 4 Cutting Edges for Fast Feed Milling




| Designation | DCX(1) | DC | CICT(2) | APMX | AE(3) | THSZMS | LF | OAL | DCONMS | RMPX°(4) | MDN(5) | MDX(6) | DRVS(7) | MIID(8) | TQ(9) | TQ_3(10) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFX4 ED20/.78-3-M10-04 | 20.00 | 12.60 | 3 | 0.80 | 3.7 | M10 | 25.00 | 45.00 | 18.00 | 2.7 | 32.60 | 39.00 | 15.0 | FFX4 XNMU 040310T | 0.9 | 29 | 0.04 |
| FFX4 ED25/.98-4-M12-04 | 25.00 | 17.60 | 4 | 0.80 | 3.7 | M12 | 30.00 | 52.00 | 21.00 | 1.8 | 42.60 | 49.00 | 17.0 | FFX4 XNMU 040310T | 0.9 | 33 | 0.08 |
| FFX4 ED32/1.26-5-M16-04 | 32.00 | 24.60 | 5 | 0.80 | 3.7 | M16 | 35.00 | 60.00 | 29.00 | 1.2 | 56.60 | 63.00 | 27.0 | FFX4 XNMU 040310T | 0.9 | 40 | 0.18 |
| FFX4 ED35/1.38-5-M16-04 | 35.00 | 27.60 | 5 | 0.80 | 3.7 | M16 | 35.00 | 60.00 | 29.00 | 1.1 | 62.60 | 69.00 | 25.0 | FFX4 XNMU 040310T | 0.9 | 40 | 0.20 |
| FFX4 ED42/1.65-6-M16-04 | 42.00 | 34.60 | 6 | 0.80 | 3.7 | M16 | 40.00 | 65.00 | 29.00 | 0.8 | 76.60 | 83.00 | 25.0 | FFX4 XNMU 040310T | 0.9 | 40 | 0.30 |

- To generate a straight surface without cusps, the width of cut must not exceed DC
- When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter
- Radius for programming: for insert XNMU 1.8 mm, for insert XNMW 1.72 mm

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Maximum plunging width
(4) Maximum ramping angle
(5) Machinable diameter minimum for interpolation
(6) Machinable diameter maximum for interpolation
(7) Torque key size
(8) Master insert identification
(9) Recommended tightening torque (N*m) for insert screw
(10) Tool tightening torque Nxm

**For inserts, see pages:** FFX4 XNMU/W-04 (598)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

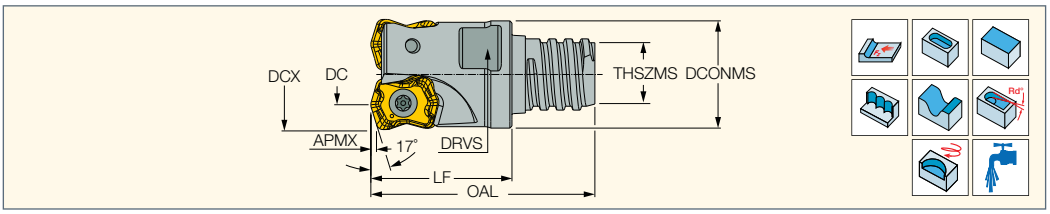
### Spare Parts

| Designation | | |
|---|---|---|
| FFX4 ED-M | SR M2.5X6-T7-60 | T-7/51 |

LOGIQ4FEED HIGH FEED MILLING

## FFX4 ED-MM

Endmills with MULTI-MASTER Adaptation that Mount Small "Bone Shaped" Inserts with 4 Cutting Edges for Fast Feed Milling




| Designation | DCX[1] | DC | CICT[2] | APMX | AE[3] | THSZMS | LF | OAL | DCONMS | RMPX°[4] | MDN[5] | MDX[6] | DRVS[7] | MIID[8] | TQ[9] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFX4 ED16/.63-2-MMT10-04 | 16.00 | 8.60 | 2 | 0.80 | 3.7 | T10 | 20.00 | 31.30 | 15.20 | 4.3 | 24.60 | 31.00 | 13.0 | FFX4 XNMU 040310T | 0.9 | 0.02 |
| FFX4 ED20/.78-3-MMT12-04 | 20.00 | 12.60 | 3 | 0.80 | 3.7 | T12 | 25.00 | 38.30 | 18.80 | 2.7 | 32.60 | 39.00 | 15.0 | FFX4 XNMU 040310T | 0.9 | 0.04 |
| FFX4 ED25/.98-4-MMT15-04 | 25.00 | 17.60 | 4 | 0.80 | 3.7 | T15 | 30.00 | 47.00 | 24.00 | 1.8 | 42.60 | 49.00 | 19.0 | FFX4 XNMU 040310T | 0.9 | 0.14 |
| FFX4 ED32/1.26-5-MMT21-04 | 32.00 | 24.60 | 5 | 0.80 | 3.7 | T21 | 35.00 | 58.10 | 29.00 | 1.2 | 56.60 | 63.00 | 24.0 | FFX4 XNMU 040310T | 0.9 | 0.19 |
| FFX4 ED040-6-MMT21-04 | 40.00 | 32.60 | 6 | 0.80 | 3.7 | T21 | 40.00 | 63.10 | 30.00 | 0.9 | 72.60 | 79.00 | 24.0 | FFX4 XNMU 040310T | 0.9 | 0.27 |

• To generate a straight surface without cusps,the width of cut must not exceed DC • Radius for programming: for insert XNMU 1.8 mm, for insert XNMW 1.72 mm

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Maximum plunging width
(4) Maximum ramping angle
(5) Machinable diameter minimum for interpolation
(6) Machinable diameter maximum for interpolation
(7) Torque key size
(8) Master insert identification
(9) Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** FFX4 XNMU/W-04 (598)
**For holders, see pages:** MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

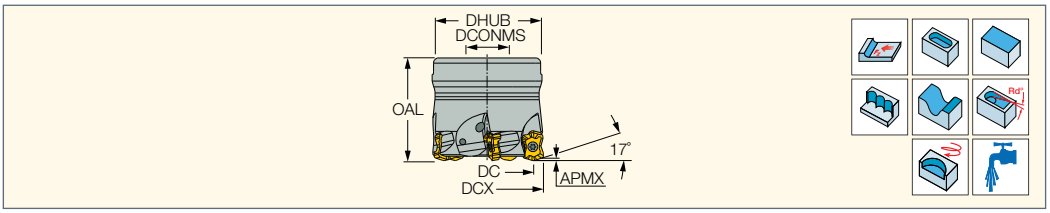
### Spare Parts

| Designation | | |
|---|---|---|
| FFX4 ED-MM | SR M2.5X6-T7-60 | T-7/51 |

LOGIQ4FEED HIGH FEED MILLING

## FFX4 FD-04

Face Mills Carrying "Bone Shaped" Inserts with 4 Cutting Edges for Fast Feed Milling




| Designation | DCX[1] | DC | CICT[2] | APMX | AE[3] | OAL | DCONMS | DHUB | RMPX°[4] | MDN[5] | MDX[6] | Arbor | MIID[7] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFX4 FD032-5-16-04 | 32.00 | 24.60 | 5 | 0.80 | 3.7 | 40.00 | 16.00 | 38.00 | 1.2 | 56.60 | 63.00 | A | FFX4 XNMU 040310T | 0.12 |
| FFX4 FD040-6-16-04 | 40.00 | 32.60 | 6 | 0.80 | 3.7 | 40.00 | 16.00 | 38.00 | 0.9 | 72.60 | 79.00 | A | FFX4 XNMU 040310T | 0.23 |
| FFX4 FD042-6-16-04 | 42.00 | 34.60 | 6 | 0.80 | 3.7 | 40.00 | 16.00 | 38.00 | 0.8 | 76.60 | 83.00 | A | FFX4 XNMU 040310T | 0.50 |
| FFX4 FD050-7-22-04 | 50.00 | 42.60 | 7 | 0.80 | 3.7 | 40.00 | 22.00 | 48.00 | 0.7 | 92.60 | 99.00 | A | FFX4 XNMU 040310T | 0.39 |
| FFX4 FD052-7-22-04 | 52.00 | 44.60 | 7 | 0.80 | 3.7 | 40.00 | 22.00 | 48.00 | 0.7 | 96.60 | 103.00 | A | FFX4 XNMU 040310T | 0.44 |

• To generate a straight surface without cusps, the width of cut must not exceed DC • Radius for programming: for insert XNMU 1.8 mm, for insert XNMW 1.72 mm

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Maximum plunging width
(4) Maximum ramping angle
(5) Machinable diameter minimum for interpolation
(6) Machinable diameter maximum for interpolation
(7) Master insert identification

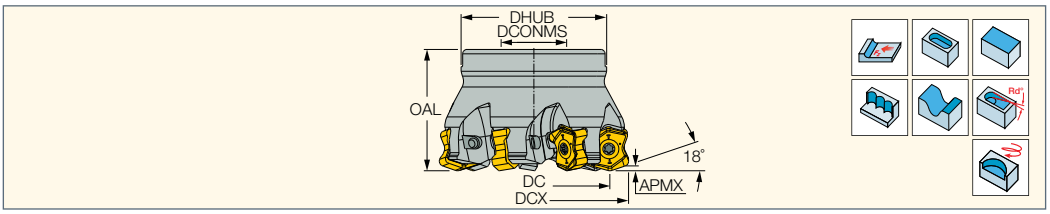
**For inserts, see pages:** FFX4 XNMU/W-04 (598)

### Spare Parts

| Designation | | | |
|---|---|---|---|
| FFX4 FD032-5-16-04 | SR M2.5X6-T7-60 | T-7/51 | SR M8X25-D11.5 |
| FFX4 FD040-6-16-04 | SR M2.5X6-T7-60 | T-7/51 | SR M8X25DIN912 |
| FFX4 FD042-6-16-04 | SR M2.5X6-T7-60 | T-7/51 | SR M8X25DIN912 |
| FFX4 FD050-7-22-04 | SR M2.5X6-T7-60 | T-7/51 | SR M10X25 DIN912 |
| FFX4 FD052-7-22-04 | SR M2.5X6-T7-60 | T-7/51 | SR M10X25 DIN912 |

LOGIQ4FEED
HIGH FEED MILLING

**FFX4 FD-08**
Face Mills Carrying "Bone Shaped" Inserts with 4 Cutting Edges for Fast Feed Milling




| Designation | DCX(1) | DC | CICT(2) | APMX | AE | OAL | DCONMS | DHUB | Rd° | MDN(3) | MDX(4) | Arbor | MIID(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FFX4 FD050-4-22-08** | 50.00 | 34.40 | 4 | 2.00 | 7.8 | 50.00 | 22.00 | 48.00 | 3.3 | 84.40 | 99.00 | A | FFX4 XNMU 080620 | 0.58 |
| **FFX4 FD063-5-22-08** | 63.00 | 47.40 | 5 | 2.00 | 7.8 | 45.00 | 22.00 | 48.00 | 2.3 | 110.40 | 125.00 | A | FFX4 XNMU 080620T | 0.48 |
| **FFX4 FD080-7-27-08** | 80.00 | 64.40 | 7 | 2.00 | 7.8 | 50.00 | 27.00 | 60.00 | 1.6 | 144.40 | 159.00 | B | FFX4 XNMU 080620T | 0.95 |
| **FFX4 FD100-8-32-08** | 100.00 | 84.40 | 8 | 2.00 | 7.8 | 50.00 | 32.00 | 78.00 | 1.2 | 184.40 | 199.00 | B | FFX4 XNMU 080620T | 1.24 |
| **FFX4 FD125-10-40-08** | 125.00 | 109.40 | 10 | 2.00 | 7.8 | 63.00 | 40.00 | 92.00 | 0.9 | 234.40 | 249.00 | B | FFX4 XNMU 080620T | 2.40 |

• To generate a straight surface without cusps, the width of cut must not exceed DC • Radius programming for insert XNMU 3.9 mm

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Machinable diameter minimum for interpolation
(4) Machinable diameter maximum for interpolation
(5) Master insert identification

**For inserts, see pages:** FFX4 XNMU-08 (599)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| **FFX4 FD050-4-22-08** | SR M5-14 IP20 | SW6-T | BLD IP20/S7 | SR PS 118-0273 |
| **FFX4 FD063-5-22-08** | SR M5-14 IP20 | SW6-T | BLD IP20/S7 | SR M10X25 DIN912 |
| **FFX4 FD080-7-27-08** | SR M5-14 IP20 | SW6-T | BLD IP20/S7 | SR M12X30DIN912 |
| **FFX4 FD100-8-32-08** | SR M5-14 IP20 | SW6-T | BLD IP20/S7 | |
| **FFX4 FD125-10-40-08** | SR M5-14 IP20 | SW6-T | BLD IP20/S7 | |

HELI6FEED UPFEED LINE

**FF EWX**

Fast Feed Endmills Carrying Double-Sided Inserts with 6 Cutting Edges

Fig. 1

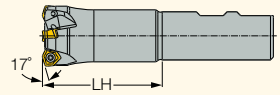
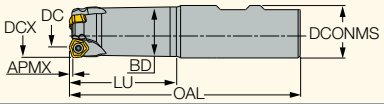
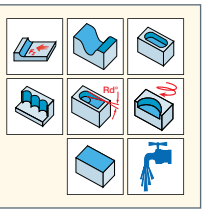



Fig. 2



| Designation | DCX[1] | DC | APMX | CICT[2] | BD | LU | LH | OAL | DCONMS | Shank[3] | RMPX°[4] | MDN[5] | MDX[6] | Fig. | MIID[7] | TQ[8] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FF EWX D16-2-030-C16-04 | 16.00 | 8.60 | 0.80 | 2 | 14.90 | 30.0 | - | 113.00 | 16.00 | C | 5.0 | 24.60 | 31.00 | 2 | H600 WXCU 040310T | 0.9 | 0.15 |
| FF EWX D16-2-030-W16-04 | 16.00 | 8.60 | 0.80 | 2 | 14.90 | 30.0 | - | 81.00 | 16.00 | W | 5.0 | 24.60 | 31.00 | 2 | H600 WXCU 040310T | 0.9 | 0.10 |
| FF EWX D16-2-050-W20-04 | 16.00 | 8.60 | 0.80 | 2 | 14.90 | 50.0 | - | 109.00 | 20.00 | W | 5.0 | 24.60 | 31.00 | 2 | H600 WXCU 040310T | 0.9 | 0.19 |
| FF EWX D16-2-070-C20-04 | 16.00 | 8.60 | 0.80 | 2 | 14.90 | 70.0 | - | 159.00 | 20.00 | C | 5.0 | 24.60 | 31.00 | 2 | H600 WXCU 040310T | 0.9 | 0.28 |
| FF EWX D16-2-080-W20-04 | 16.00 | 8.60 | 0.80 | 2 | 14.90 | 80.0 | - | 139.00 | 20.00 | W | 5.0 | 24.60 | 31.00 | 2 | H600 WXCU 040310T | 0.9 | 0.22 |
| FF EWX D20-3-040-W20-04 | 20.00 | 12.60 | 0.80 | 3 | 18.90 | 40.0 | - | 93.00 | 20.00 | W | 4.8 | 32.60 | 39.00 | 2 | H600 WXCU 040310T | 0.9 | 0.19 |
| FF EWX D20-3-050-C20-04 | 20.00 | 12.60 | 0.80 | 3 | 18.90 | 50.0 | - | 133.00 | 20.00 | C | 4.8 | 32.60 | 39.00 | 2 | H600 WXCU 040310T | 0.9 | 0.28 |
| FF EWX D20-3-060-W20-04 | 20.00 | 12.60 | 0.80 | 3 | 18.90 | 60.0 | - | 113.00 | 20.00 | W | 4.8 | 32.60 | 39.00 | 2 | H600 WXCU 040310T | 0.9 | 0.23 |
| FF EWX D20-3-100-C20-04 | 20.00 | 12.60 | 0.80 | 3 | 18.90 | 100.0 | - | 183.00 | 20.00 | C | 4.8 | 32.60 | 39.00 | 2 | H600 WXCU 040310T | 0.9 | 0.38 |
| FF EWX D20-3-100-W20-04 | 20.00 | 12.60 | 0.80 | 3 | 18.90 | 100.0 | - | 153.00 | 20.00 | W | 4.8 | 32.60 | 39.00 | 2 | H600 WXCU 040310T | 0.9 | 0.31 |
| FF EWX D25-3-050-W25-05 | 25.00 | 15.00 | 1.00 | 3 | 23.60 | 50.0 | 53.0 | 110.00 | 25.00 | W | 5.0 | 40.00 | 49.00 | 2 | H600 WXCU 05T312T | 2.0 | 0.34 |
| FF EWX D25-3-060-C25-05 | 25.00 | 15.00 | 1.00 | 3 | 23.60 | 60.0 | 63.0 | 145.00 | 25.00 | C | 5.0 | 40.00 | 49.00 | 2 | H600 WXCU 05T312T | 2.0 | 0.47 |
| FF EWX D25-3-080-W25-05 | 25.00 | 15.00 | 1.00 | 3 | 23.60 | 80.0 | 83.0 | 140.00 | 25.00 | W | 5.0 | 40.00 | 49.00 | 2 | H600 WXCU 05T312T | 2.0 | 0.44 |
| FF EWX D25-3-120-C25-05 | 25.00 | 15.00 | 1.00 | 3 | 23.60 | 120.0 | 123.0 | 205.00 | 25.00 | C | 5.0 | 40.00 | 49.00 | 2 | H600 WXCU 05T312T | 2.0 | 0.66 |
| FF EWX D25-3-120-W25-05 | 25.00 | 15.00 | 1.00 | 3 | 23.60 | 120.0 | 123.0 | 180.00 | 25.00 | W | 5.0 | 40.00 | 49.00 | 2 | H600 WXCU 05T312T | 2.0 | 0.56 |
| FF EWX D32-4-040-C25-05 | 32.00 | 22.00 | 1.00 | 4 | 27.00 | - | 40.0 | 180.00 | 25.00 | C | 4.0 | 54.00 | 63.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.63 |
| FF EWX D32-4-060-W25-05 | 32.00 | 22.00 | 1.00 | 4 | 27.00 | 60.0 | 63.0 | 120.00 | 25.00 | W | 4.0 | 54.00 | 63.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.43 |
| FF EWX D32-4-060-W32-05 | 32.00 | 22.00 | 1.00 | 4 | 27.00 | - | 63.0 | 125.00 | 32.00 | W | 4.0 | 54.00 | 63.00 | 2 | H600 WXCU 05T312T | 2.0 | 0.64 |
| FF EWX D32-4-070-C32-05 | 32.00 | 22.00 | 1.00 | 4 | 30.60 | 70.0 | 73.0 | 155.00 | 32.00 | C | 4.0 | 54.00 | 63.00 | 2 | H600 WXCU 05T312T | 2.0 | 0.81 |
| FF EWX D32-4-100-W25-05 | 32.00 | 22.00 | 1.00 | 4 | 27.00 | - | 100.0 | 160.00 | 25.00 | W | 4.0 | 54.00 | 63.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.60 |
| FF EWX D32-4-100-W32-05 | 32.00 | 22.00 | 1.00 | 4 | 30.60 | 100.0 | 103.0 | 165.00 | 32.00 | W | 4.0 | 54.00 | 63.00 | 2 | H600 WXCU 05T312T | 2.0 | 0.84 |
| FF EWX D32-4-120-C32-05 | 32.00 | 22.00 | 1.00 | 4 | 30.60 | 120.0 | 123.0 | 205.00 | 32.00 | C | 4.0 | 54.00 | 63.00 | 2 | H600 WXCU 05T312T | 2.0 | 1.06 |
| FF EWX D32-4-150-W32-05 | 32.00 | 22.00 | 1.00 | 4 | 30.60 | 150.0 | 153.0 | 215.00 | 32.00 | W | 4.0 | 54.00 | 63.00 | 2 | H600 WXCU 05T312T | 2.0 | 1.08 |
| FF EWX D40-5-L50-C32-05 | 40.00 | 30.00 | 1.00 | 5 | 34.00 | - | 50.0 | 250.00 | 32.00 | C | 2.8 | 70.00 | 79.00 | 1 | H600 WXCU 05T312T | 2.0 | 1.40 |
| FF EWX D40-5-S50-C32-05 | 40.00 | 30.00 | 1.00 | 5 | 34.00 | - | 50.0 | 150.00 | 32.00 | C | 2.8 | 70.00 | 79.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.85 |
| FF EWX D40-5-060-W32-05 | 40.00 | 30.00 | 1.00 | 5 | 34.00 | - | 60.0 | 125.00 | 32.00 | W | 2.8 | 70.00 | 79.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.72 |
| FF EWX D40-5-200-W40-05 | 40.00 | 30.00 | 1.00 | 5 | 38.60 | 200.0 | 203.0 | 275.00 | 40.00 | W | 2.8 | 70.00 | 79.00 | 2 | H600 WXCU 05T312T | 2.0 | 2.08 |
| FF EWX D32-3-060-W32-07 | 32.00 | 19.00 | 1.50 | 3 | 30.70 | 60.0 | 63.0 | 125.00 | 32.00 | W | 6.3 | 51.00 | 63.00 | 2 | H600 WXCU 070515T | 4.8 | 0.60 |
| FF EWX D32-3-070-C32-07 | 32.00 | 19.00 | 1.50 | 3 | 30.70 | 70.0 | 73.0 | 155.00 | 32.00 | C | 6.3 | 51.00 | 63.00 | 2 | H600 WXCU 070515T | 4.8 | 0.76 |
| FF EWX D32-3-100-W32-07 | 32.00 | 19.00 | 1.50 | 3 | 30.70 | 100.0 | 103.0 | 165.00 | 32.00 | W | 6.3 | 51.00 | 63.00 | 2 | H600 WXCU 070515T | 4.8 | 0.78 |
| FF EWX D32-3-120-C32-07 | 32.00 | 19.00 | 1.50 | 3 | 30.70 | 120.0 | 123.0 | 205.00 | 32.00 | C | 6.3 | 51.00 | 63.00 | 2 | H600 WXCU 070515T | 4.8 | 0.99 |
| FF EWX D40-4-S50-C32-07 | 40.00 | 27.00 | 1.50 | 4 | - | 50.0 | 52.2 | 150.00 | 32.00 | C | 4.2 | 77.00 | 79.00 | 1 | H600 WXCU 070515T | 4.8 | 0.84 |

- For machining recommendations and radius for programming, see table on page 597 • To generate a straight surface without cusps, the width of cut must not exceed DC
- For user guide, see pages 616-622

[1] Cutting diameter maximum
[2] Number of inserts (or edges for solid tool)
[3] C-Cylindrical, W-Weldon
[4] Maximum ramping angle
[5] Machinable diameter minimum for interpolation
[6] Machinable diameter maximum for interpolation
[7] Master insert identification
[8] Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** H600 WXCU (597)

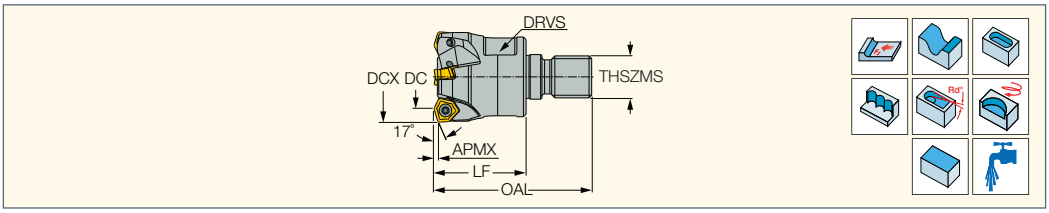
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| FF EWX D...-04 | SR M2.5X6-T7-60 | T-7/51 | | |
| FF EWX D...-05 | SR 10508600 | T-9/51 | | |
| FF EWX D...-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH |

HELI6FEED UPFEED LINE

**FF EWX-M**

Fast Feed Endmills with FLEX-FIT Threaded Connection Carrying Double-Sided Inserts with 6 Cutting Edges




| Designation | DCX[1] | DC | APMX | CICT[2] | LF | OAL | THSZMS | RMPX°[3] | MDN[4] | MDX[5] | DRVS[6] | MIID[7] | TQ[8] | TQ_3[9] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FF EWX D20-3-M10-04 | 20.00 | 12.60 | 0.80 | 3 | 25.00 | 45.00 | M10 | 4.8 | 32.60 | 39.00 | 15.0 | H600 WXCU 040310HP | 0.9 | 29 | 0.05 |
| FF EWX D25-4-M12-04 | 25.00 | 17.60 | 0.80 | 4 | 30.00 | 52.00 | M12 | 3.3 | 42.60 | 49.00 | 19.0 | H600 WXCU 040310HP | 0.9 | 33 | 0.09 |
| FF EWX D25-3-M12-05 | 25.00 | 15.00 | 1.00 | 3 | 30.00 | 52.00 | M12 | 5.0 | 40.00 | 49.00 | 19.0 | H600 WXCU 05T312T | 2.0 | 33 | 0.09 |
| FF EWX D32-4-M16-05 | 32.00 | 22.00 | 1.00 | 4 | 35.00 | 60.00 | M16 | 4.0 | 54.00 | 63.00 | 25.0 | H600 WXCU 05T312T | 2.0 | 40 | 0.17 |
| FF EWX D35-4-M16-05 | 35.00 | 25.00 | 1.00 | 4 | 35.00 | 60.00 | M16 | 3.5 | 60.00 | 69.00 | 25.0 | H600 WXCU 05T312T | 2.0 | 40 | 0.19 |
| FF EWX D40-5-M16-05 | 40.00 | 30.00 | 1.00 | 5 | 40.00 | 65.00 | M16 | 2.8 | 70.00 | 79.00 | 25.0 | H600 WXCU 05T312T | 2.0 | 40 | 0.26 |
| FF EWX D32-3-M16-07 | 32.00 | 19.00 | 1.50 | 3 | 35.00 | 60.00 | M16 | 6.3 | 51.00 | 63.00 | 25.0 | H600 WXCU 070515HP | 4.8 | 40 | 0.16 |
| FF EWX D40-4-M16-07 | 40.00 | 27.00 | 1.50 | 4 | 40.00 | 65.00 | M16 | 4.2 | 67.00 | 79.00 | 25.0 | H600 WXCU 070515HP | 4.8 | 40 | 0.24 |

- For machining recommendations and radius for programming, see table on page 597 • To generate a straight surface without cusps, the width of cut must not exceed DC
- For user guide, see pages 616-621

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Maximum ramping angle
(4) Machinable diameter minimum for interpolation
(5) Machinable diameter maximum for interpolation
(6) Clamping wrench size
(7) Master insert identification
(8) Recommended tightening torque (N*m) for insert screw
(9) Tool tightening torque Nxm

**For inserts, see pages:** H600 WXCU (597)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

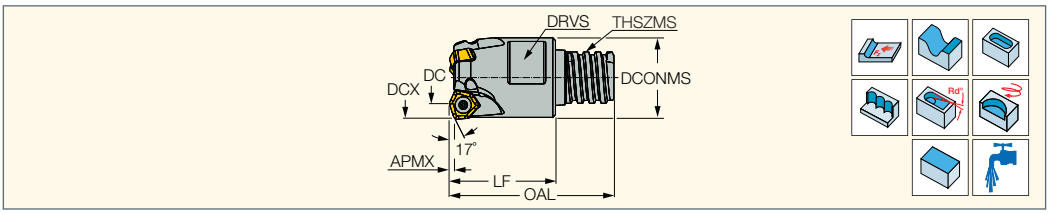
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| FF EWX D20-3-M10-04 | SR M2.5X6-T7-60 | T-7/51 | | |
| FF EWX D25-4-M12-04 | SR M2.5X6-T7-60 | T-7/51 | | |
| FF EWX D25-3-M12-05 | SR 10508600 | T-9/51 | | |
| FF EWX D32-4-M16-05 | SR 10508600 | T-9/51 | | |
| FF EWX D35-4-M16-05 | SR 10508600 | T-9/51 | | |
| FF EWX D40-5-M16-05 | SR 10508600 | T-9/51 | | |
| FF EWX D32-3-M16-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH |
| FF EWX D40-4-M16-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH |

HELI6FEED UPFEED LINE

## FF EWX-MM

Fast Feed Endmills with MULTI-MASTER Threaded Connection That Mount Double-Sided Inserts with 6 Cutting Edges




| Designation | DCX(1) | DC | APMX | CICT(2) | THSZMS | LF | OAL | DCONMS | DRVS(3) | RMPX°(4) | MDN(5) | MDX(6) | MIID(7) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FF EWX D16-2-MMT10-04 | 16.00 | 8.60 | 0.80 | 2 | T10 | 19.50 | 30.81 | 15.20 | 12.0 | 5.0 | 24.60 | 31.00 | H600 WXCU 040310HP | 0.02 |
| FF EWX D20-3-MMT12-04 | 20.00 | 12.60 | 0.80 | 3 | T12 | 25.00 | 38.80 | 18.80 | 15.0 | 4.8 | 32.60 | 39.00 | H600 WXCU 040310HP | 0.05 |
| FF EWX D25-4-MMT15-04 | 25.00 | 17.60 | 0.80 | 4 | T15 | 30.00 | 47.00 | 23.90 | 19.0 | 3.3 | 42.60 | 49.00 | H600 WXCU 040310HP | 0.10 |
| FF EWX D25-3-MMT15-05 | 25.00 | 15.00 | 1.00 | 3 | T15 | 30.00 | 47.00 | 23.90 | 19.0 | 5.0 | 40.00 | 49.00 | H600 WXCU 05T312T | 0.09 |

- For machining recommendations and radius for programming, see table on page 597 • Do not apply lubricant to the MULTI-MASTER threaded connection.
- To generate a straight surface without cusps, the width of cut must not exceed DC • For adaptation options, see page 303
- For user guide, see pages 616-621

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Width across flats (wrench should be ordered separately)
(4) Maximum ramping angle
(5) Machinable diameter minimum for interpolation
(6) Machinable diameter maximum for interpolation
(7) Master insert identification

**For inserts, see pages:** H600 WXCU (597)
**For holders, see pages:** MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

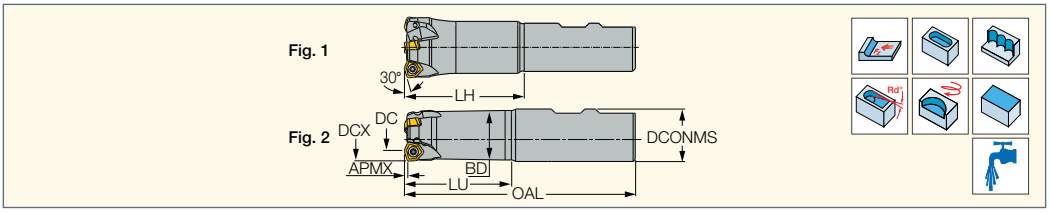
### Spare Parts

| Designation | | |
|---|---|---|
| FF EWX D16-2-MMT10-04 | SR M2.5X6-T7-60 | T-7/51 |
| FF EWX D20-3-MMT12-04 | SR M2.5X6-T7-60 | T-7/51 |
| FF EWX D25-4-MMT15-04 | SR M2.5X6-T7-60 | T-7/51 |
| FF EWX D25-3-MMT15-05 | SR 10508600 | T-9/51 |

HELI6FEED UPFEED LINE

## MF EWX

Moderate Feed Endmills Carrying Double-Sided Inserts with 6 Cutting Edges




| Designation | DCX(1) | DC | APMX | CICT(2) | LU | LH | OAL | DCONMS | Shank(3) | BD | RMPX°(4) | MDN(5) | MDX(6) | Fig. | MIID(7) | TQ(8) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MF EWX D16-2-040-W20-04 | 16.00 | 9.00 | 1.50 | 2 | 40.0 | 47.0 | 99.00 | 20.00 | W | 14.90 | 3.8 | 25.00 | 31.00 | 2 | H600 WXCU 040310T | 0.9 | 0.16 |
| MF EWX D20-3-050-C20-04 | 20.00 | 13.00 | 1.50 | 3 | 50.0 | 52.7 | 134.00 | 20.00 | C | 18.90 | 2.4 | 33.00 | 39.00 | 2 | H600 WXCU 040310T | 0.9 | 0.24 |
| MF EWX D20-3-050-W20-04 | 20.00 | 13.00 | 1.50 | 3 | 50.0 | 52.7 | 104.00 | 20.00 | W | 18.90 | 2.4 | 33.00 | 39.00 | 2 | H600 WXCU 040310T | 0.9 | 0.18 |
| MF EWX D25-3-060-W25-05 | 25.00 | 15.50 | 2.00 | 3 | 60.0 | 63.0 | 120.00 | 25.00 | W | 23.60 | 3.0 | 40.50 | 49.00 | 2 | H600 WXCU 05T312T | 2.0 | 0.33 |
| MF EWX D32-4-080-W32-05 | 32.00 | 22.50 | 2.00 | 4 | 80.0 | 83.0 | 145.00 | 32.00 | W | 30.60 | 1.9 | 54.50 | 63.00 | 2 | H600 WXCU 05T312T | 2.0 | 0.70 |
| MF EWX D32-3-080-C32-07 | 32.00 | 19.70 | 2.70 | 3 | 80.0 | 83.0 | 165.00 | 32.00 | C | 30.70 | 3.0 | 51.70 | 63.00 | 2 | H600 WXCU 070515T | 4.8 | 0.80 |
| MF EWX D32-3-080-W32-07 | 32.00 | 19.70 | 2.70 | 3 | 80.0 | 83.0 | 145.00 | 32.00 | W | 30.70 | 3.0 | 51.70 | 63.00 | 2 | H600 WXCU 070515T | 4.8 | 0.70 |
| MF EWX D40-4-090-C32-07 | 40.00 | 27.70 | 2.70 | 4 | 90.0 | 92.0 | 190.00 | 32.00 | C | 36.80 | 2.0 | 67.70 | 79.00 | 1 | H600 WXCU 070515T | 4.8 | 1.16 |

- For machining recommendations and radius for programming, see table on page 597 • To generate a straight surface without cusps, the width of cut must not exceed DC
- For user guide, see pages 616-622

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) C-Cylindrical, W-Weldon
(4) Maximum ramping angle
(5) Machinable diameter minimum for interpolation
(6) Machinable diameter maximum for interpolation
(7) Master insert identification
(8) Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** H600 WXCU (597)

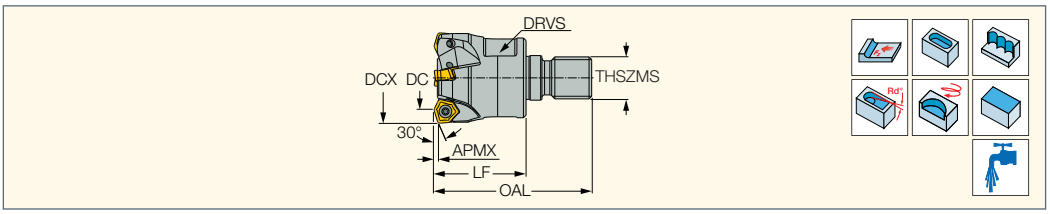
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| MF EWX D16-2-040-W20-04 | SR M2.5X6-T7-60 | T-7/51 | | |
| MF EWX D20-3-050-C20-04 | SR M2.5X6-T7-60 | T-7/51 | | |
| MF EWX D20-3-050-W20-04 | SR M2.5X6-T7-60 | T-7/51 | | |
| MF EWX D25-3-060-W25-05 | SR 10508600 | T-9/51 | | |
| MF EWX D32-4-080-W32-05 | SR 10508600 | T-9/51 | | |
| MF EWX D32-3-080-C32-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH |
| MF EWX D32-3-080-W32-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH |
| MF EWX D40-4-090-C32-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH |

HELI6FEED UPFEED LINE

## MF EWX-M

Moderate Feed Endmills with FLEX-FIT Threaded Connection Carrying Double-Sided Inserts with 6 Cutting Edges




| Designation | DCX[1] | DC | APMX | CICT[2] | LF | OAL | THSZMS | DRVS[3] | RMPX°[4] | MDN[5] | MDX[6] | MIID[7] | TQ[8] | TQ_3[9] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MF EWX D20-3-M10-04 | 20.00 | 13.00 | 1.50 | 3 | 28.00 | 48.00 | M10 | 14.0 | 2.4 | 33.00 | 39.00 | H600 WXCU 040310T | 0.9 | 29 | 0.05 |
| MF EWX D25-4-M12-04 | 25.00 | 18.00 | 1.50 | 4 | 32.00 | 54.00 | M12 | 17.0 | 1.7 | 43.00 | 49.00 | H600 WXCU 040310T | 0.9 | 33 | 0.09 |
| MF EWX D25-3-M12-05 | 25.00 | 15.50 | 2.00 | 3 | 30.00 | 52.00 | M12 | 17.0 | 3.0 | 40.50 | 49.00 | H600 WXCU 05T312T | 2.0 | 33 | 0.07 |
| MF EWX D32-4-M16-05 | 32.00 | 22.50 | 2.00 | 4 | 35.00 | 60.00 | M16 | 24.0 | 1.9 | 54.50 | 63.00 | H600 WXCU 05T312T | 2.0 | 40 | 0.16 |
| MF EWX D32-3-M16-07 | 32.00 | 19.70 | 2.70 | 3 | 35.00 | 60.00 | M16 | 24.0 | 3.0 | 51.70 | 63.00 | H600 WXCU 070515HP | 4.8 | 40 | 0.15 |

- For machining recommendations and radius for programming, see table on page 597 • To generate a straight surface without cusps, the width of cut must not exceed DC
- For user guide, see pages 616-621

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Clamping wrench size
(4) Maximum ramping angle
(5) Machinable diameter minimum for interpolation
(6) Machinable diameter maximum for interpolation
(7) Master insert identification
(8) Recommended tightening torque (N*m) for insert screw
(9) Tool tightening torque Nxm

**For inserts, see pages:** H600 WXCU (597)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358)
• DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

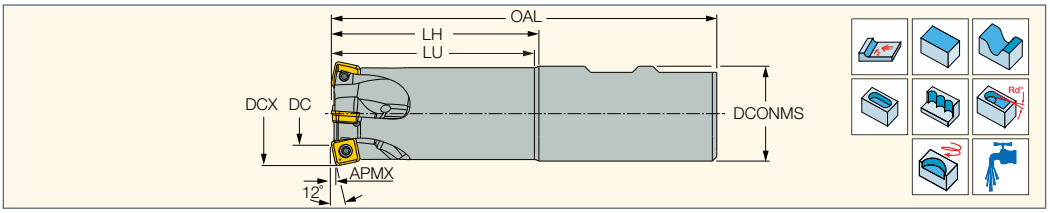
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| MF EWX D20-3-M10-04 | SR M2.5X6-T7-60 | T-7/51 | | |
| MF EWX D25-4-M12-04 | SR M2.5X6-T7-60 | T-7/51 | | |
| MF EWX D25-3-M12-05 | SR 10508600 | T-9/51 | | |
| MF EWX D32-4-M16-05 | SR 10508600 | T-9/51 | | |
| MF EWX D32-3-M16-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH |

MILL4FEED

## FFQ4 D-C/W-06

Fast Feed Endmills Carrying Single-Sided Square Inserts with 4 Cutting Edges




| Designation | DCX[1] | DC | APMX | AE[2] | CICT[3] | LU | LH | DCONMS | OAL | Shank | RMPX°[4] | MDN | MDX | MIID[5] | kg | TQ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFQ4 D16-03-C16-06 | 16.00 | 7.20 | 0.70 | 4.4 | 3 | 24.50 | 26.0 | 16.00 | 90.00 | C | 6.0 | 23.20 | 31.00 | FFQ4 SOMT 060210T | 0.11 | 0.9 |
| FFQ4 D20-04-C20-06 | 20.00 | 11.20 | 0.70 | 4.4 | 4 | 40.00 | 42.0 | 20.00 | 130.00 | C | 3.5 | 31.20 | 39.00 | FFQ4 SOMT 060210T | 0.27 | 0.9 |
| FFQ4 D25-05-W25-06 | 25.00 | 16.20 | 0.70 | 4.4 | 5 | 50.00 | 52.0 | 25.00 | 110.00 | W | 2.2 | 41.20 | 49.00 | FFQ4 SOMT 060210T | 0.33 | 0.9 |
| FFQ4 D32-07-W32-06 | 32.00 | 23.20 | 0.70 | 4.4 | 7 | 64.00 | 66.0 | 32.00 | 130.00 | W | 1.4 | 55.20 | 63.00 | FFQ4 SOMT 060210T | 0.68 | 0.9 |

**New**

- To generate a straight surface without cusps, the width of cut must not exceed DC • Radius for programming: for insert SOMT 1.7 mm, for insert SOMW 1.9 mm
- When mounting insert SOMW, APMX=0.6 mm • For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 50%
- For user guide, see pages 616-622

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Maximum ramping angle
(5) Master insert identification

**For inserts, see pages:** FFQ4 SOMT/W 0602 (589)

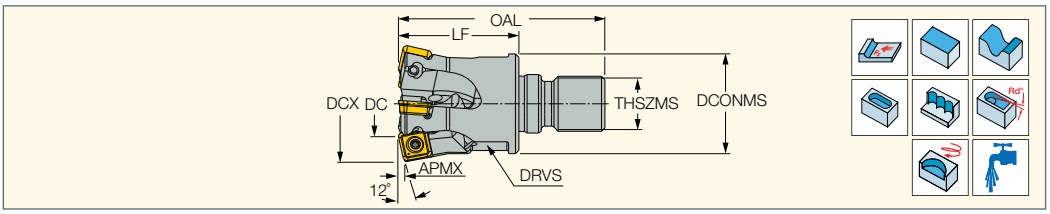
### Spare Parts

| Designation | | |
|---|---|---|
| FFQ4 D-C/W-06 | SR 10516050-L4.6 | IP-7/51 |

MILL4FEED

## FFQ4 D-M-06

Fast Feed Endmills with FLEX-FIT Threaded Adaptation Carrying Single-Sided Square Inserts with 4 Cutting Edges




| Designation | DCX[1] | DC | APMX | AE[2] | CICT[3] | LF | OAL | DCONMS | THSZMS | RMPX°[4] | MDN | MDX | DRVS[5] | MIID[6] | kg | TQ | TQ_3[7] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFQ4 D20-04-M10-06 | 20.00 | 11.20 | 0.70 | 4.4 | 4 | 25.00 | 45.00 | 18.00 | M10 | 3.5 | 31.20 | 39.00 | 15.1 | FFQ4 SOMT 060210T | 0.04 | 0.9 | 29 |
| FFQ4 D25-05-M12-06 | 25.00 | 16.20 | 0.70 | 4.4 | 5 | 30.00 | 52.00 | 21.00 | M12 | 2.2 | 41.20 | 49.00 | 17.1 | FFQ4 SOMT 060210T | 0.18 | 0.9 | 33 |
| FFQ4 D32-07-M16-06 | 32.00 | 23.20 | 0.70 | 4.4 | 7 | 30.00 | 55.00 | 29.40 | M16 | 1.4 | 55.20 | 63.00 | 25.1 | FFQ4 SOMT 060210T | 0.16 | 0.9 | 40 |

**New**

- To generate a straight surface without cusps, the width of cut must not exceed DC • Radius for programming: for insert SOMT 1.7 mm, for insert SOMW 1.9 mm
- When mounting insert SOMW, APMX=0.6 mm • For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 50%
- For user guide, see pages 616-621

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Maximum ramping angle
(5) Torque key size
(6) Master insert identification
(7) Tool tightening torque Nxm

**For inserts, see pages:** FFQ4 SOMT/W 0602 (589)
**For holders, see pages:** ER-ODP (360) • DIN69871-ODP (360) • CAB M-M (FLEX-FIT) (358) • BT-ODP (FLEX-FIT) (359)
• HSK A-ODP (FLEX-FIT) (361) • C#-ODP (FLEX-FIT) (359) • S M (357) • S M-C-H (357)

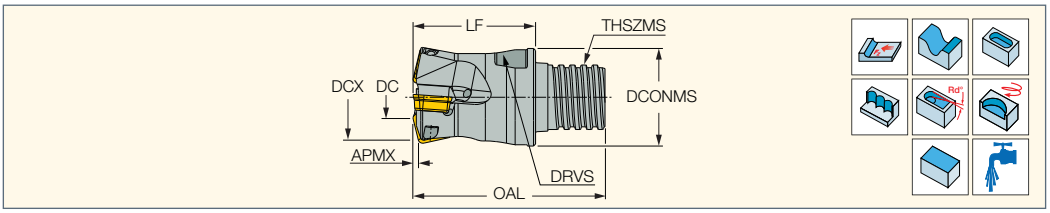
### Spare Parts

| Designation | | |
|---|---|---|
| FFQ4 D-M-06 | SR 10516050-L4.6 | IP-7/51 |

MILL4FEED

## FFQ4 D-MM-06

Fast Feed Endmills with MULTI-MASTER Threaded Adaptation Carrying Single-Sided Square Inserts with 4 Cutting Edges




| Designation | DCX[1] | DC | APMX | AE[2] | CICT[3] | THSZMS | LF | OAL | DCONMS | DRVS[4] | RMPX°[5] | MDN | MDX | MIID[6] | kg | TQ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFQ4 D16/.63-03-MMT10-06 | 16.00 | 7.20 | 0.70 | 4.4 | 3 | T10 | 16.00 | 27.30 | 15.20 | 13.0 | 6.0 | 23.20 | 31.00 | FFQ4 SOMT 060210T | 0.02 | 0.9 |
| FFQ4 D20-04-MMT12-06 | 20.00 | 11.20 | 0.70 | 4.4 | 4 | T12 | 25.00 | 38.30 | 18.80 | 16.0 | 3.5 | 31.20 | 39.00 | FFQ4 SOMT 060210T | 0.05 | 0.9 |
| FFQ4 D25/.98-05-MMT15-06 | 25.00 | 16.20 | 0.70 | 4.4 | 5 | T15 | 30.00 | 47.00 | 24.00 | 20.0 | 2.2 | 41.20 | 49.00 | FFQ4 SOMT 060210T | 0.09 | 0.9 |
| FFQ4 D32/1.26-07-MMT21-06 | 32.00 | 23.20 | 0.70 | 4.4 | 7 | T21 | 30.00 | 53.10 | 29.40 | 24.0 | 1.4 | 55.20 | 63.00 | FFQ4 SOMT 060210T | 0.17 | 0.9 |

**New**

- Do not apply lubricant to the MULTI-MASTER threaded connection. • To generate a straight surface without cusps, the width of cut must not exceed DC.
- Radius for programing: for insert SOMT 1.7 mm, for insert SOMW 1.9 mm. • When mounting insert SOMW, APMX=0.6 mm
- For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 50%. • For user guide, see pages 616-621

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Torque key size
(5) Maximum ramping angle
(6) Master insert identification

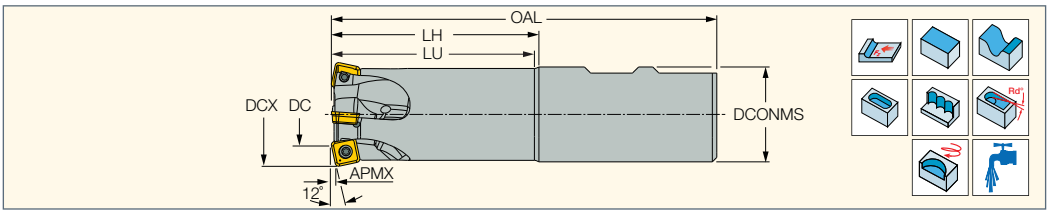
**For inserts, see pages:** FFQ4 SOMT/W 0602 (589)
**For holders, see pages:** MM S-A-AV (101) • MM S-A-BT (109) • MM TS2-A (105) • MM S-A (stepped shanks) (102) • MM S-B (85° conical shanks) (106)
• MM S-A (straight shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM S-A-N (104)
• MM S-A-HSK (109) • MM S-A-SK (109) • MM S-A-C# (104) • MM CAB-T-T (110) • MM CAB-T-T-W (111)

### Spare Parts

| Designation | | |
|---|---|---|
| FFQ4 D-MM-06 | SR 10516050-L4.6 | IP-7/51 |

MILL4FEED

**FFQ4 D-W-09**
Fast Feed Endmills Carrying Single-Sided Square Inserts with 4 Cutting Edges




| Designation | DCX(1) | DC | APMX | AE(2) | CICT(3) | LU | LH | DCONMS | OAL | Shank | RMPX°(4) | MDN(5) | MDX(6) | MIID(7) | kg | TQ(8) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFQ4 D022-2-044-W20-09 | 22.00 | 7.70 | 1.20 | 7.1 | 2 | 40.54 | 44.0 | 20.00 | 94.00 | W | 8.2 | 29.70 | 43.00 | FFQ4 SOMT 090412T | 0.19 | 2.0 |
| FFQ4 D025-3-050-W25-09 | 25.00 | 10.70 | 1.20 | 7.1 | 3 | 45.19 | 50.0 | 25.00 | 110.00 | W | 5.5 | 35.70 | 49.00 | FFQ4 SOMT 090412T | 0.25 | 2.0 |
| FFQ4 D032-4-064-W25-09 | 32.00 | 17.70 | 1.20 | 7.1 | 4 | 62.25 | 64.0 | 25.00 | 120.00 | W | 3.2 | 49.70 | 63.00 | FFQ4 SOMT 090412T | 0.50 | 2.0 |
| FFQ4 D035-5-070-W32-09 | 35.00 | 20.70 | 1.20 | 7.1 | 5 | 65.67 | 70.0 | 32.00 | 130.00 | W | 2.7 | 55.70 | 69.00 | FFQ4 SOMT 090412T | 0.70 | 2.0 |

- To generate a straight surface without cusps, the width of cut must not exceed DC • Radius for programming: for insert SOMT 2.5 mm, for insert SOMW 3 mm
- When mounting insert SOMW, APMX=1.0 mm • For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 50%
- For user guide, see pages 616-622

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Maximum ramping angle
(5) Machinable diameter minimum for interpolation
(6) Machinable diameter maximum for interpolation
(7) Master insert identification
(8) Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** FFQ4 SOMT/W 0904 (590)

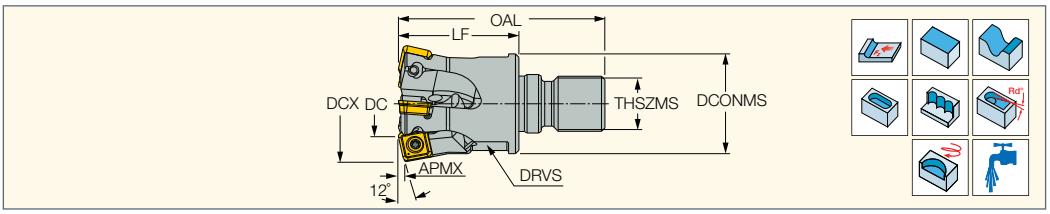
## Spare Parts

| Designation | | |
|---|---|---|
| FFQ4 D-W-09 | SR M3X0.5-L7.4 IP9(a) | IP-9/151 |

(a) Recommended tightening torque:2.0 N*m

MILL4FEED

**FFQ4 D-M-09**
Fast Feed Endmills with FLEX-FIT Threaded Adaptation Carrying Single-Sided Square Inserts with 4 Cutting Edges




| Designation | DC | DCX(1) | APMX | AE(2) | CICT(3) | LF | OAL | DCONMS | THSZMS | RMPX°(4) | MDN(5) | MDX(6) | DRVS(7) | MIID(8) | TQ(9) | TQ_3(10) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFQ4 D022-02-M10-09 | 7.70 | 22.00 | 1.20 | 7.1 | 2 | 25.00 | 45.00 | 18.00 | M10 | 8.2 | 29.70 | 43.00 | 15.0 | FFQ4 SOMT 090412T | 2.0 | 29 | 0.04 |
| FFQ4 D025-02-M12-09 | 10.70 | 25.00 | 1.20 | 7.1 | 2 | 30.00 | 52.00 | 21.00 | M12 | 5.5 | 35.70 | 49.00 | 17.0 | FFQ4 SOMT 090412T | 2.0 | 33 | 0.05 |
| FFQ4 D025-03-M12-09 | 10.70 | 25.00 | 1.20 | 7.1 | 3 | 30.00 | 52.00 | 21.00 | M12 | 5.5 | 35.70 | 49.00 | 17.0 | FFQ4 SOMT 090412T | 2.0 | 33 | 0.07 |
| FFQ4 D032-03-M16-09 | 17.70 | 32.00 | 1.20 | 7.1 | 3 | 35.00 | 60.00 | 29.00 | M16 | 3.2 | 49.70 | 63.00 | 25.0 | FFQ4 SOMT 090412T | 2.0 | 40 | 0.14 |
| FFQ4 D032-04-M16-09 | 17.70 | 32.00 | 1.20 | 7.1 | 4 | 35.00 | 60.00 | 29.00 | M16 | 3.2 | 49.70 | 63.00 | 25.0 | FFQ4 SOMT 090412T | 2.0 | 40 | 0.14 |
| FFQ4 D035-05-M16-09 | 20.70 | 35.00 | 1.20 | 7.1 | 5 | 35.00 | 60.00 | 29.00 | M16 | 2.7 | 55.70 | 69.00 | 25.0 | FFQ4 SOMT 090412T | 2.0 | 40 | 0.16 |
| FFQ4 D040-05-M16-09 | 25.70 | 40.00 | 1.20 | 7.1 | 5 | 35.00 | 60.00 | 29.00 | M16 | 2.0 | 65.70 | 79.00 | 25.0 | FFQ4 SOMT 090412T | 2.0 | 40 | 0.18 |

- To generate a straight surface without cusps, the width of cut must not exceed DC • Radius for programming: for insert SOMT 2.5 mm, for insert SOMW 3 mm
- When mounting insert SOMW, APMX=1.0 mm • For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 50%
- For user guide, see pages 616-621

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Maximum ramping angle
(5) Machinable diameter minimum for interpolation
(6) Machinable diameter maximum for interpolation
(7) Torque key size
(8) Master insert identification
(9) Recommended tightening torque (N*m) for insert screw
(10) Tool tightening torque Nxm

**For inserts, see pages:** FFQ4 SOMT/W 0904 (590)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358)
• DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

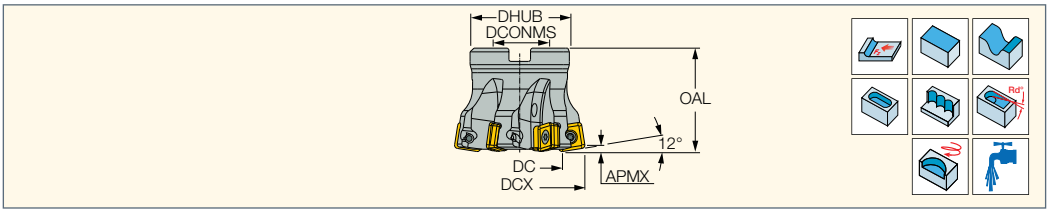
## Spare Parts

| Designation | | |
|---|---|---|
| FFQ4 D-M-09 | SR M3X0.5-L7.4 IP9(a) | IP-9/151 |

(a) Recommended tightening torque:2.0 N*m

MILL4FEED

**FFQ4 D-09**
Fast Feed Face Mills Carrying Single-Sided Square Inserts with 4 Cutting Edges




| Designation | DC | DCX(1) | APMX | AE(2) | CICT(3) | OAL | DCONMS | DHUB | RMPX°(4) | MDN(5) | MDX(6) | Arbor | kg | MIID(7) | TQ(8) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FFQ4 D40-05-16-09** | 25.70 | 40.00 | 1.20 | 7.1 | 5 | 35.00 | 16.00 | 38.00 | 2.0 | 65.70 | 79.00 | A | 0.17 | FFQ4 SOMT 090412T | 2.0 |
| **FFQ4 D50-07-22-09** | 35.70 | 50.00 | 1.20 | 7.1 | 7 | 40.00 | 22.00 | 48.00 | 1.5 | 85.70 | 99.00 | A | 0.36 | FFQ4 SOMT 090412T | 2.0 |
| **FFQ4 D52-07-22-09** | 37.70 | 52.00 | 1.20 | 7.1 | 7 | 40.00 | 22.00 | 48.00 | 1.4 | 89.70 | 103.00 | A | 0.34 | FFQ4 SOMT 090412T | 2.0 |
| **FFQ4 D63-08-22-09** | 48.70 | 63.00 | 1.20 | 7.1 | 8 | 45.00 | 22.00 | 48.00 | 1.1 | 111.70 | 125.00 | A | 0.49 | FFQ4 SOMT 090412T | 2.0 |

- To generate a straight surface without cusps, the width of cut must not exceed DC
- Radius for programming: for insert SOMT 2.5 mm, for insert SOMW 3 mm
- When mounting insert SOMW, APMX=1.0 mm
- For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 50%
- For user guide, see pages 616-622

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Maximum ramping angle
(5) Machinable diameter minimum for interpolation
(6) Machinable diameter maximum for interpolation
(7) Master insert identification
(8) Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** FFQ4 SOMT/W 0904 (590)

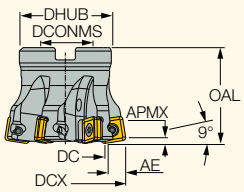
## Spare Parts

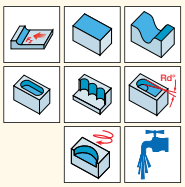
| Designation | | | |
|---|---|---|---|
| **FFQ4 D40-05-16-09** | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | SR M8X25DIN912 |
| **FFQ4 D50-07-22-09** | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | SR M10X25 DIN912 |
| **FFQ4 D52-07-22-09** | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | SR M10X25 DIN912 |
| **FFQ4 D63-08-22-09** | SR M3X0.5-L7.4 IP9(a) | IP-9/151 | SR M10X30 DIN912 |

(a) Recommended tightening torque:2.0 N*m

MILL4FEED

**FFQ4 D-12**
Fast Feed Face Mills Carrying Single-Sided Square Inserts with 4 Cutting Edges



| Designation | DC | DCX(1) | APMX | AE(2) | CICT(3) | OAL | DHUB | DCONMS | Arbor | RMPX°(4) | MDN(5) | MDX(6) | MIID(7) | TQ(8) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FFQ4 D040-3-16-12** | 18.00 | 40.00 | 1.50 | 10.0 | 3 | 45.00 | 38.00 | 16.00 | A | 4.3 | 58.00 | 79.00 | FFQ4 SOMT 120516HP | 4.8 | 0.23 |
| **FFQ4 D040-4-16-12** | 18.00 | 40.00 | 1.50 | 10.0 | 4 | 45.00 | 38.00 | 16.00 | A | 4.3 | 58.00 | 79.00 | FFQ4 SOMT 120516HP | 4.8 | 0.22 |
| **FFQ4 D050-4-22-12** | 28.00 | 50.00 | 1.50 | 10.0 | 4 | 50.00 | 48.00 | 22.00 | A | 2.7 | 78.00 | 99.00 | FFQ4 SOMT 120516HP | 4.8 | 0.38 |
| **FFQ4 D050-5-22-12** | 28.00 | 50.00 | 1.50 | 10.0 | 5 | 50.00 | 48.00 | 22.00 | A | 2.7 | 78.00 | 99.00 | FFQ4 SOMT 120516HP | 4.8 | 0.37 |
| **FFQ4 D052-5-22-12** | 29.00 | 52.00 | 1.50 | 10.0 | 5 | 50.00 | 48.00 | 22.00 | A | 2.5 | 81.00 | 103.00 | FFQ4 SOMT 120516HP | 4.8 | 0.39 |
| **FFQ4 D063-6-22-12** | 41.00 | 63.00 | 1.50 | 10.0 | 6 | 50.00 | 48.00 | 22.00 | A | 1.8 | 104.00 | 125.00 | FFQ4 SOMT 120516HP | 4.8 | 0.50 |
| **FFQ4 D066-6-27-12** | 43.00 | 66.00 | 1.50 | 10.0 | 6 | 50.00 | 60.00 | 27.00 | A | 1.6 | 109.00 | 131.00 | FFQ4 SOMT 120516HP | 4.8 | 0.65 |
| **FFQ4 D080-7-27-12** | 58.00 | 80.00 | 1.50 | 10.0 | 7 | 50.00 | 60.00 | 27.00 | A | 1.2 | 138.00 | 159.00 | FFQ4 SOMT 120516HP | 4.8 | 0.84 |
| **FFQ4 D100-8-32-12** | 78.00 | 100.00 | 1.50 | 10.0 | 8 | 50.00 | 78.00 | 32.00 | B | 0.9 | 178.00 | 199.00 | FFQ4 SOMT 120516HP | 4.8 | 1.30 |
| **FFQ4 D125-10-40-12** | 103.00 | 125.00 | 1.50 | 10.0 | 10 | 63.00 | 92.00 | 40.00 | B | 0.7 | 228.00 | 249.00 | FFQ4 SOMT 120516HP | 4.8 | 2.17 |

- To generate a straight surface without cusps, the width of cut must not exceed DC • Radius for programming: for insert SOMT 3 mm, for insert SOMW 4 mm
- When mounting insert SOMW, APMX=1.2 mm • For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 50%
- For user guide, see pages 616-622

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Maximum ramping angle
(5) Machinable diameter minimum for interpolation
(6) Machinable diameter maximum for interpolation
(7) Master insert identification
(8) Recommended tightening torque (N*m) for insert screw

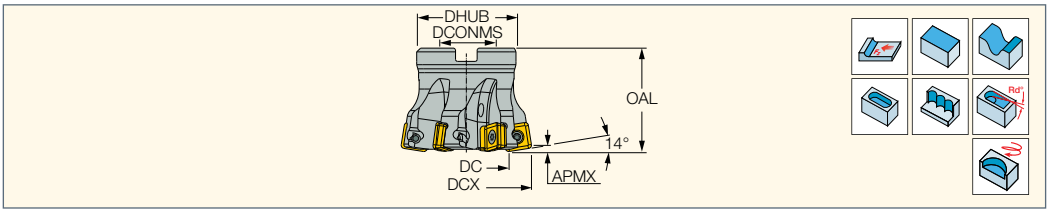
**For inserts, see pages:** FFQ4 SOMT/W 1205 (591)

## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| **FFQ4 D040-3-16-12** | SR M4X0.7-L9.6 IP15 | SW6-T-SH | BLD IP15/S7 | | SR PS 118-0416 |
| **FFQ4 D040-4-16-12** | SR M4X0.7-L9.6 IP15 | SW6-T-SH | BLD IP15/S7 | | SR PS 118-0416 |
| **FFQ4 D050-4-22-12** | SR M4X0.7-L9.6 IP15 | SW6-T-SH | BLD IP15/S7 | SR M10X35 DIN912 | |
| **FFQ4 D050-5-22-12** | SR M4X0.7-L9.6 IP15 | SW6-T-SH | BLD IP15/S7 | SR M10X35 DIN912 | |
| **FFQ4 D052-5-22-12** | SR M4X0.7-L9.6 IP15 | SW6-T-SH | BLD IP15/S7 | SR M10X35 DIN912 | |
| **FFQ4 D063-6-22-12** | SR M4X0.7-L9.6 IP15 | SW6-T-SH | BLD IP15/S7 | SR M10X35 DIN912 | |
| **FFQ4 D066-6-27-12** | SR M4X0.7-L9.6 IP15 | SW6-T-SH | BLD IP15/S7 | SR M12X30DIN912 | |
| **FFQ4 D080-7-27-12** | SR M4X0.7-L9.6 IP15 | SW6-T-SH | BLD IP15/S7 | SR M12X30DIN912 | |
| **FFQ4 D100-8-32-12** | SR M4X0.7-L9.6 IP15 | SW6-T-SH | BLD IP15/S7 | | |
| **FFQ4 D125-10-40-12** | SR M4X0.7-L9.6 IP15 | SW6-T-SH | BLD IP15/S7 | | |

MILL4FEED

**FFQ4 D-17**
Fast Feed Face Mills Carrying Single-Sided Square Inserts with 4 Cutting Edges




| Designation | DCX(1) | DC | APMX | AE(2) | CICT(3) | OAL | DCONMS | Da | DHUB | RMPX°(4) | MDN(5) | MDX(6) | CSP(7) | Arbor | MIID(8) | TQ(9) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FFQ4 D080-06-27-17** | 80.00 | 50.80 | 3.00 | 14.6 | 6 | 50.00 | 27.00 | 27.00 | 60.00 | 1.2 | 130.80 | 159.00 | 1 | A | FFQ4 SOMT 170625T | 9.0 | 0.78 |
| **FFQ4 D100-07-32-17** | 100.00 | 70.80 | 3.00 | 14.6 | 7 | 63.00 | 32.00 | 32.00 | 78.00 | 0.8 | 170.80 | 199.00 | 1 | A | FFQ4 SOMT 170625T | 9.0 | 1.18 |
| **FFQ4 D125-08-40-17** | 125.00 | 95.80 | 3.00 | 14.6 | 8 | 63.00 | 40.00 | 40.00 | 92.00 | 0.6 | 220.80 | 249.00 | 1 | B | FFQ4 SOMT 170625T | 9.0 | 2.48 |
| **FFQ4 D160-10-40-17** | 160.00 | 130.80 | 3.00 | 14.6 | 10 | 63.00 | 40.00 | 40.00 | 95.00 | 0.2 | 290.80 | 319.00 | 0 | C | FFQ4 SOMT 170625T | 9.0 | 2.90 |

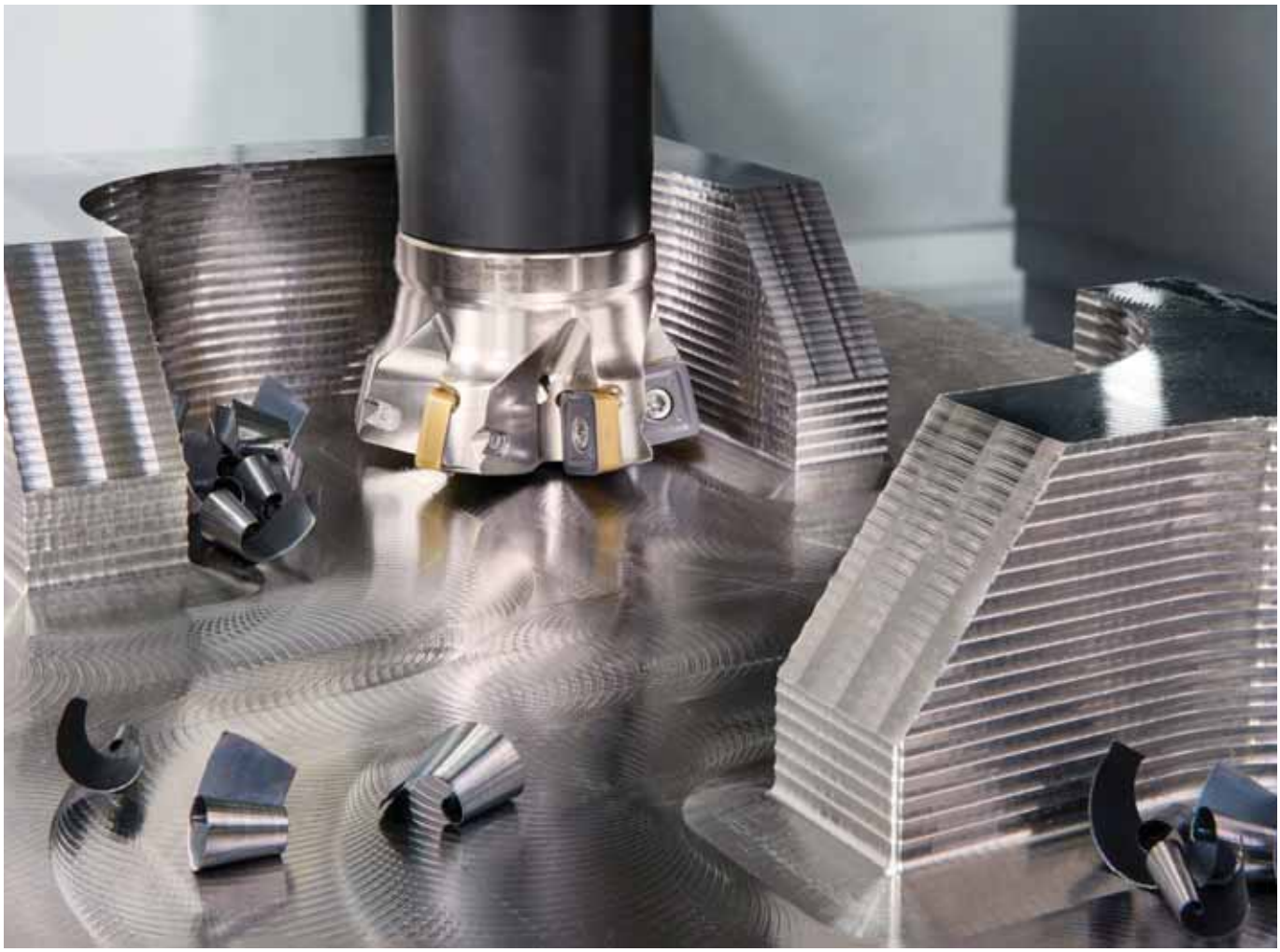
- To generate a straight surface without cusps, the width of cut must not exceed DC • Radius for programming: for insert SOMT 5.5 mm, for insert SOMW 6.4 mm
- When mounting insert SOMW, APMX=2.5 mm • For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 50%
- For user guide, see pages 616-622

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Maximum ramping angle
(5) Machinable diameter minimum for interpolation
(6) Machinable diameter maximum for interpolation
(7) 0 - Without coolant supply, 1 - With coolant supply
(8) Master insert identification
(9) Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** FFQ4 SOMT/W 1706 (592)

## Spare Parts

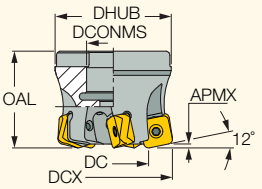
| Designation | | | | |
|---|---|---|---|---|
| **FFQ4 D080-06-27-17** | SR M5-14 IP20 | SW6-T | BLD IP20/S7 | SR M12X30DIN912 |
| **FFQ4 D100-07-32-17** | SR M5-14 IP20 | SW6-T | BLD IP20/S7 | SR M16X30 DIN912 |
| **FFQ4 D125-08-40-17** | SR M5-14 IP20 | SW6-T | BLD IP20/S7 | |
| **FFQ4 D160-10-40-17** | SR M5-14 IP20 | SW6-T | BLD IP20/S7 | |

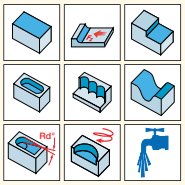


NEOFEED HIGH FEED LINE

**FFQ8-12**

Fast Feed Face Mills Carrying Double-Sided Square Inserts with 8 Cutting Edges



| Designation | DC | DCX(1) | APMX | CICT(2) | OAL | DHUB | DCONMS | Arbor | RMPX°(3) | MDN(4) | MDX(5) | TQ(6) | MIID(7) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FFQ8 D050-05-22-12** | 30.60 | 50.00 | 1.50 | 5 | 40.00 | 48.00 | 22.00 | A | 0.3 | 80.60 | 99.00 | 4.8 | FFQ8 SZMU 120520 | 0.46 |
| **FFQ8 D063-06-22-12** | 43.60 | 63.00 | 1.50 | 6 | 40.00 | 48.00 | 22.00 | A | 0.2 | 106.60 | 125.00 | 4.8 | FFQ8 SZMU 120520 | 0.60 |
| **FFQ8 D066-06-27-12** | 46.60 | 66.00 | 1.50 | 6 | 50.00 | 60.00 | 27.00 | A | 0.2 | 112.60 | 131.00 | 4.8 | FFQ8 SZMU 120520 | 0.83 |
| **FFQ8 D080-07-27-12** | 60.60 | 80.00 | 1.50 | 7 | 50.00 | 60.00 | 27.00 | A | 0.2 | 140.60 | 159.00 | 4.8 | FFQ8 SZMU 120520 | 1.98 |
| **FFQ8 D100-08-32-12** | 80.60 | 100.00 | 1.50 | 8 | 50.00 | 78.00 | 32.00 | B | 0.1 | 180.60 | 199.00 | 4.8 | FFQ8 SZMU 120520 | 3.03 |

- Radius for programming 3.6 mm • For user guide, see pages 616-622 • To generate a straight surface without cusps, the width of cut must not exceed DC
- For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 30%.

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Maximum ramping angle
(4) Machinable diameter minimum for interpolation
(5) Machinable diameter maximum for interpolation
(6) Recommended tightening torque (N*m) for insert screw
(7) Master insert identification

**For inserts, see pages:** FFQ8 SZMU (594)

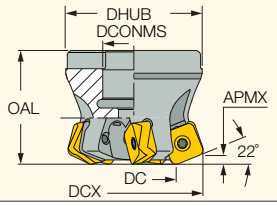
## Spare Parts

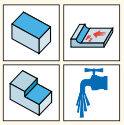
| Designation | | | | |
|---|---|---|---|---|
| **FFQ8 D050-05-22-12** | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| **FFQ8 D063-06-22-12** | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| **FFQ8 D066-06-27-12** | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | SR M12X30DIN912 |
| **FFQ8 D080-07-27-12** | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | SR M12X30DIN912 |
| **FFQ8 D100-08-32-12** | SR M4X0.7-L11.5 IP15 | BLD IP15/M7 | SW6-T-SH | |

NEOFEED HIGH FEED LINE

**MFQ8-12**

Moderate Feed Face Mills Carrying Double-Sided Square Inserts with 8 Cutting Edges



| Designation | DC | DCX(1) | APMX | CICT(2) | OAL | DHUB | DCONMS | Arbor | TQ(3) | MIID(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MFQ8 D050-05-22-12** | 31.60 | 50.00 | 3.00 | 5 | 40.00 | 48.00 | 22.00 | A | 4.8 | FFQ8 SZMU 120520 | 0.44 |
| **MFQ8 D063-06-22-12** | 44.60 | 63.00 | 3.00 | 6 | 40.00 | 48.00 | 22.00 | A | 4.8 | FFQ8 SZMU 120520 | 0.84 |
| **MFQ8 D080-07-27-12** | 61.60 | 80.00 | 3.00 | 7 | 50.00 | 60.00 | 27.00 | A | 4.8 | FFQ8 SZMU 120520 | 1.84 |
| **MFQ8 D100-08-32-12** | 81.60 | 100.00 | 3.00 | 8 | 50.00 | 78.00 | 32.00 | B | 4.8 | FFQ8 SZMU 120520 | 2.95 |

- Radius for programming 5.0 mm • For user guide, see pages 616-622 • To generate a straight surface without cusps, the width of cut must not exceed DC
- For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 30%.

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Recommended tightening torque (N*m) for insert screw
(4) Master insert identification

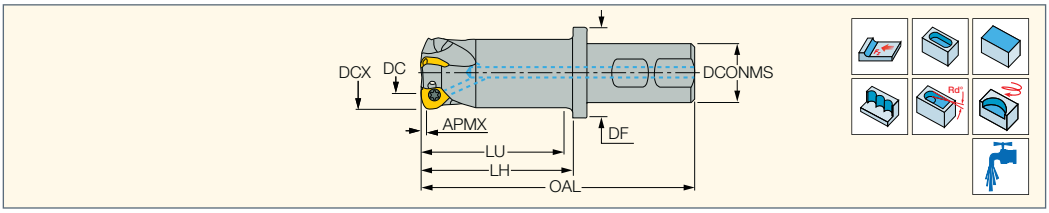
**For inserts, see pages:** FFQ8 SZMU (594)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| **MFQ8 D050-05-22-12** | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X40-1638 |
| **MFQ8 D063-06-22-12** | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| **MFQ8 D080-07-27-12** | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | SR M12X30DIN912 |
| **MFQ8 D100-08-32-12** | SR M4X0.7-L11.5 IP15 | BLD IP15/M7 | SW6-T-SH | |

FEEDMILL

**FF EW**
Fast Feed Endmills with
FF WOMT... Inserts

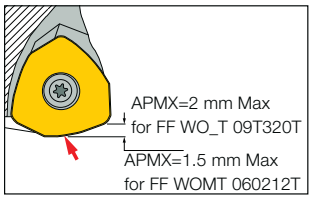



| Designation | DCX(1) | DC | APMX | CICT(2) | LH | LU | OAL | DF | DCONMS | Shank(3) | RMPX°(4) | TQ(5) | MIID(6) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FF EW D25-050-W25-06-C | 25.00 | 11.00 | 1.20 | 2 | 53.0 | - | 118.00 | - | 25.00 | W | 5.0 | 2.0 | FF WOMT0602 | 0.37 |
| FF EW D25-080-C25-06-C | 25.00 | 11.00 | 1.20 | 2 | 83.0 | - | 180.00 | - | 25.00 | C | 5.0 | 2.0 | FF WOMT0602 | 0.58 |
| FF EW D25-080-W25-06-C | 25.00 | 11.00 | 1.20 | 2 | 83.0 | - | 148.00 | - | 25.00 | W | 5.0 | 2.0 | FF WOMT0602 | 0.46 |
| FF EW D25-120-C24-06-C | 25.00 | 11.00 | 1.20 | 2 | 121.4 | - | 220.00 | - | 24.00 | C | 5.0 | 2.0 | FF WOMT0602 | 0.68 |
| FF EW D32-060-W25-06-C | 32.00 | 18.00 | 1.20 | 3 | 63.0 | - | 128.00 | 30.40 | 25.00 | W | 4.0 | 2.0 | FF WOMT0602 | 0.52 |
| FF EW D32-100-C32-06-C | 32.00 | 18.00 | 1.20 | 3 | 103.0 | - | 230.00 | - | 32.00 | C | 4.0 | 2.0 | FF WOMT0602 | 1.28 |
| FF EW D32-100-W25-06-C | 32.00 | 18.00 | 1.20 | 3 | 103.0 | - | 168.00 | 30.40 | 25.00 | W | 4.0 | 2.0 | FF WOMT0602 | 0.73 |
| FF EW D40-150-W32-09-C | 40.00 | 19.20 | 2.00 | 3 | 150.0 | 147.0 | 217.50 | 50.00 | 32.00 | W | 5.0 | 4.8 | FF WOMT09T3 | 1.56 |

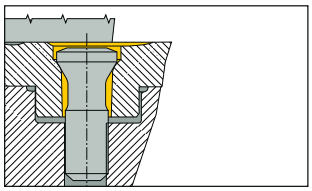
- For user guide, see pages 616-622

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) C-Cylindrical, W-Weldon
(4) Maximum ramping angle
(5) Insert tightening torque
(6) Master insert identification

**For inserts, see pages:** FF WOCT/WOMT/WOMW (595)




Cutting forces are directed axially towards the spindle, enabling cutting at very high feeds with high stability and no vibrations.



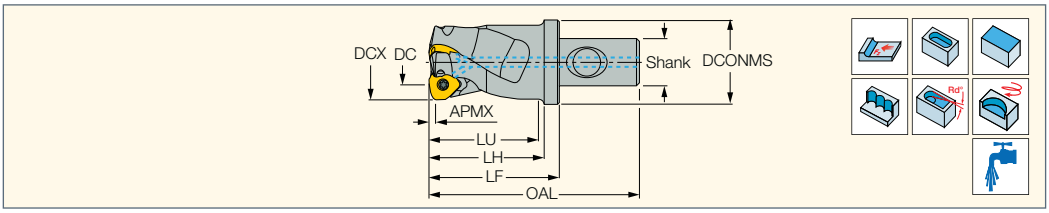
A cylinder at the bottom of the insert provides very rigid clamping, absorbing most of the forces usually exerted on the clamping screw.

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| FF EW D25-050-W25-06-C | SR 34-506/M | T-9/51 | | |
| FF EW D25-080-C25-06-C | SR 34-506/M | T-9/51 | | |
| FF EW D25-080-W25-06-C | SR 34-506/M | T-9/51 | | |
| FF EW D25-120-C24-06-C | SR 34-506/M | T-9/51 | | |
| FF EW D32-060-W25-06-C | SR 34-506/M | T-9/51 | | |
| FF EW D32-100-C32-06-C | SR 34-506/M | T-9/51 | | |
| FF EW D32-100-W25-06-C | SR 34-506/M | T-9/51 | | |
| FF EW D40-150-W32-09-C | SR 34-535 | | BLD T15/S7 | SW6-T |

FEEDMILL

**FF EW-CF**
Fast Feed Endmills with
CLICK-FIT Shanks




| Designation | DCX(1) | DC | CICT(2) | APMX | LU | LH | LF | OAL | DCONMS | RMPX°(3) | Shank | TQ(4) | MIID(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FF EW D32-060-CF4-06-C | 32.00 | 18.00 | 3 | 1.20 | 60.0 | 64.00 | 72.00 | 114.00 | 44.00 | 4.0 | CF4 | 2.0 | FF WOMT0602 | 0.54 |
| FF EW D32-100-CF4-06-C | 32.00 | 18.00 | 3 | 1.20 | 100.0 | 104.00 | 112.00 | 154.00 | 44.00 | 4.0 | CF4 | 2.0 | FF WOMT0602 | 0.74 |

- For user guide, see pages 616-621

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Maximum ramping angle
(4) Insert tightening torque
(5) Master insert identification

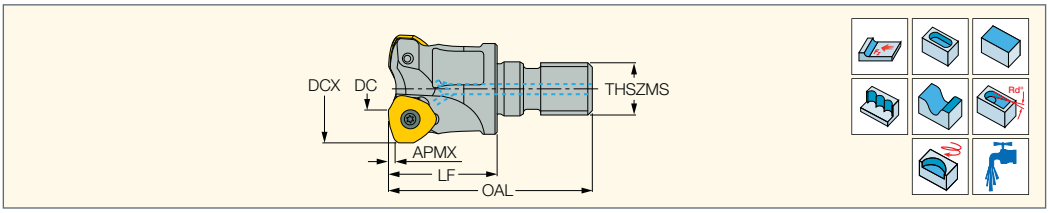
**For inserts, see pages:** FF WOCT/WOMT/WOMW (595)

## Spare Parts

| Designation | | |
|---|---|---|
| FF EW-CF | SR 34-506/M | T-9/51 |

FEEDMILL

**FF EW-M**
Fast Feed Endmills with
FLEX-FIT Threaded Adaptation




| Designation | DCX[1] | DC | CICT[2] | APMX | THSZMS | LF | OAL | RMPX°[3] | TQ[4] | MIID[5] | TQ_3[6] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FF EW D25-M12-06-C | 25.00 | 11.00 | 2 | 1.20 | M12 | 25.00 | 47.00 | 5.0 | 2.0 | FF WOMT0602 | 33 | 0.06 |
| FF EW D32-M16-06-C | 32.00 | 18.00 | 3 | 1.20 | M16 | 35.00 | 60.00 | 4.0 | 2.0 | FF WOMT0602 | 40 | 0.16 |
| FF EW D40-M16-06-C | 40.00 | 26.00 | 4 | 1.20 | M16 | 40.00 | 65.00 | 2.5 | 2.0 | FF WOMT0602 | 40 | 0.23 |

• For user guide, see pages 616-621 • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Maximum ramping angle
(4) Insert tightening torque
(5) Master insert identification
(6) Tool tightening torque Nxm

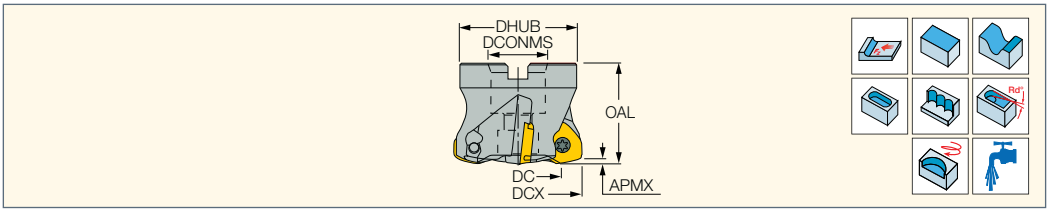
**For inserts, see pages:** FF WOCT/WOMT/WOMW (595)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

## Spare Parts

| Designation | | |
|---|---|---|
| FF EW-M | SR 34-506/M | T-9/51 |

FEEDMILL

**FF FW**
Fast Feed Face Mills




| Designation | DCX[1] | DC | APMX | CICT[2] | OAL | DHUB | DCONMS | RMPX°[3] | Arbor[4] | MIID[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FF FW D40-16-06-C | 40.00 | 26.00 | 1.20 | 4 | 35.00 | 38.00 | 16.00 | 2.5 | A | FF WOMT0602 | 0.17 |
| FF FW D50-22-06-C | 50.00 | 36.00 | 1.20 | 5 | 40.00 | 48.00 | 22.00 | 2.0 | A | FF WOMT0602 | 0.31 |
| FF FW D50-22-09-C | 50.00 | 29.20 | 2.00 | 4 | 50.00 | 47.00 | 22.00 | 4.0 | A | FF WOMT09T3 | 0.34 |
| FF FW D52-22-09-C | 52.00 | 31.20 | 2.00 | 4 | 40.00 | 47.00 | 22.00 | 4.0 | A | FF WOMT09T3 | 0.27 |
| FF FW D63-22-09-C | 63.00 | 42.20 | 2.00 | 5 | 40.00 | 58.00 | 22.00 | 3.0 | A | FF WOMT09T3 | 0.47 |
| FF FW D63-27-09-C | 63.00 | 42.20 | 2.00 | 5 | 50.00 | 61.00 | 27.00 | 3.0 | A | FF WOMT09T3 | 0.57 |
| FF FW D66-22-09-C | 66.00 | 45.20 | 2.00 | 5 | 40.00 | 61.00 | 22.00 | 2.8 | A | FF WOMT09T3 | 0.56 |
| FF FW D66-27-09-C | 66.00 | 45.20 | 2.00 | 5 | 50.00 | 61.00 | 27.00 | 2.8 | A | FF WOMT09T3 | 0.64 |
| FF FW D80-32-09-C | 80.00 | 59.20 | 2.00 | 5 | 50.00 | 75.00 | 32.00 | 2.0 | A | FF WOMT09T3 | 0.97 |
| FF FW D100-32-09-C | 100.00 | 79.20 | 2.00 | 6 | 50.00 | 78.00 | 32.00 | 1.5 | B | FF WOMT09T3 | 1.32 |

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Maximum ramping angle
(4) For adaptation options, see page 622
(5) Master insert identification

**For inserts, see pages:** FF WOCT/WOMT/WOMW (595)

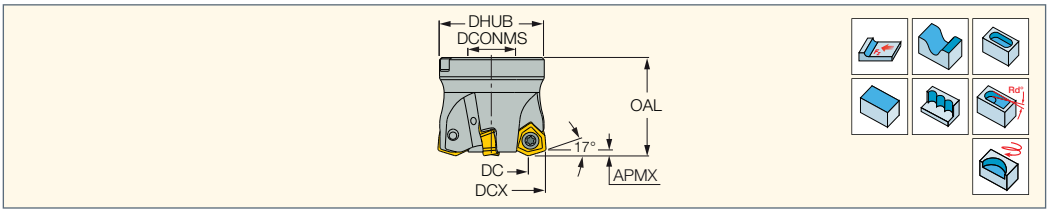
## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| FF FW D40-16-06-C | SR 34-506/M | | | T-9/51 | SR M8X25DIN912 |
| FF FW D50-22-06-C | SR 34-506/M | | | T-9/51 | SR M10X25 DIN912 |
| FF FW D50-22-09-C | SR 34-535 | BLD T15/S7 | SW6-T-SH | | SR PS 118-0273 |
| FF FW D52-22-09-C | SR 34-535 | BLD T15/S7 | SW6-T-SH | | SR M10X25 DIN912 |
| FF FW D63-22-09-C | SR 34-535 | BLD T15/S7 | SW6-T-SH | | SR M10X25 DIN912 |
| FF FW D63-27-09-C | SR 34-535 | BLD T15/S7 | SW6-T-SH | | SR M12X30DIN912 |
| FF FW D66-22-09-C | SR 34-535 | BLD T15/S7 | SW6-T | | SR M10X25 DIN912 |
| FF FW D66-27-09-C | SR 34-535 | BLD T15/S7 | SW6-T | | SR M12X30DIN912 |
| FF FW D80-32-09-C | SR 34-535 | BLD T15/S7 | SW6-T-SH | | SR M16X30 DIN912 |
| FF FW D100-32-09-C | SR 34-535 | BLD T15/M7 | SW6-T-SH | | |

HELI6FEED UPFEED LINE

## FF FWX

Fast Feed Face Mills Carrying Double-Sided Inserts with 6 Cutting Edges




| Designation | DC | DCX[1] | APMX | CICT[2] | OAL | DHUB | DCONMS | Arbor[3] | RMPX°[4] | MDN[5] | MDX[6] | CSP[7] | MIID[8] | TQ[9] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FF FWX D040-05-16-05 | 30.10 | 40.00 | 1.00 | 5 | 35.00 | 38.00 | 16.00 | A | 2.8 | 70.10 | 79.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.20 |
| FF FWX D050-06-22-05 | 40.10 | 50.00 | 1.00 | 6 | 40.00 | 48.00 | 22.00 | A | 2.0 | 90.10 | 99.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.36 |
| FF FWX D052-06-22-05 | 42.10 | 52.00 | 1.00 | 6 | 40.00 | 48.00 | 22.00 | A | 1.9 | 94.10 | 103.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.37 |
| FF FWX D040-04-16-07 | 27.00 | 40.00 | 1.50 | 4 | 35.00 | 38.00 | 16.00 | A | 4.2 | 67.00 | 79.00 | 1 | H600 WXCU 070515HP | 4.8 | 0.18 |
| FF FWX D050-05-22-07 | 37.00 | 50.00 | 1.50 | 5 | 40.00 | 48.00 | 22.00 | A | 2.9 | 87.00 | 99.00 | 1 | H600 WXCU 070515HP | 4.8 | 0.33 |
| FF FWX D052-05-22-07 | 39.00 | 52.00 | 1.50 | 5 | 40.00 | 48.00 | 22.00 | A | 2.8 | 91.00 | 103.00 | 1 | H600 WXCU 070515HP | 4.8 | 0.33 |
| FF FWX D063-06-22-07 | 50.00 | 63.00 | 1.50 | 6 | 40.00 | 61.00 | 22.00 | A | 2.1 | 113.00 | 125.00 | 1 | H600 WXCU 070515HP | 4.8 | 0.58 |
| FF FWX D080-07-32-07 | 67.00 | 80.00 | 1.50 | 7 | 55.00 | 76.00 | 32.00 | A | 1.6 | 147.00 | 159.00 | 1 | H600 WXCU 070515HP | 4.8 | 1.38 |
| FF FWX D100-08-32-07 | 87.00 | 100.00 | 1.50 | 8 | 50.00 | 78.00 | 32.00 | B | 1.2 | 187.00 | 199.00 | 1 | H600 WXCU 070515HP | 4.8 | 1.47 |
| FF FWX D050-04-22-08 | 34.00 | 50.00 | 2.00 | 4 | 45.00 | 48.00 | 22.00 | A | 4.8 | 84.00 | 99.00 | 1 | H600 WXCU 080612T | 9.0 | 0.34 |
| FF FWX D052-04-22-08 | 36.00 | 52.00 | 2.00 | 4 | 45.00 | 48.00 | 22.00 | A | 4.5 | 88.00 | 103.00 | 1 | H600 WXCU 080612T | 9.0 | 0.37 |
| FF FWX D063-05-22-08 | 47.00 | 63.00 | 2.00 | 5 | 45.00 | 61.00 | 22.00 | A | 3.3 | 110.00 | 125.00 | 1 | H600 WXCU 080612T | 9.0 | 0.61 |
| FF FWX D063-05-27-08 | 47.00 | 63.00 | 2.00 | 5 | 50.00 | 61.00 | 27.00 | A | 3.3 | 110.00 | 125.00 | 1 | H600 WXCU 080612T | 9.0 | 0.65 |
| FF FWX D066-05-22-08 | 50.00 | 66.00 | 2.00 | 5 | 45.00 | 61.00 | 22.00 | A | 3.1 | 116.00 | 131.00 | 1 | H600 WXCU 080612T | 9.0 | 0.68 |
| FF FWX D066-05-27-08 | 50.00 | 66.00 | 2.00 | 5 | 50.00 | 61.00 | 27.00 | A | 3.1 | 116.00 | 131.00 | 1 | H600 WXCU 080612T | 9.0 | 0.72 |
| FF FWX D080-06-32-08 | 64.00 | 80.00 | 2.00 | 6 | 55.00 | 76.00 | 32.00 | A | 2.3 | 144.00 | 159.00 | 1 | H600 WXCU 080612T | 9.0 | 1.24 |
| FF FWX D100-07-32-08 | 84.00 | 100.00 | 2.00 | 7 | 50.00 | 78.00 | 32.00 | B | 1.7 | 184.00 | 199.00 | 1 | H600 WXCU 080612T | 9.0 | 1.42 |
| FF FWX D125-09-40-08 | 109.00 | 125.00 | 2.00 | 9 | 55.00 | 90.00 | 40.00 | B | 1.3 | 234.00 | 249.00 | 1 | H600 WXCU 080612T | 9.0 | 2.37 |
| FF FWX D160-11-40-08 | 144.00 | 160.00 | 2.00 | 11 | 55.00 | 95.00 | 40.00 | C | 1.0 | 304.00 | 319.00 | 0 | H600 WXCU 080612T | 9.0 | 3.44 |

- For machining recommendations and radius for programming, see table on page 597
- To generate a straight surface without cusps, the width of cut must not exceed DC
- For user guide, see pages 616-621

[1] Cutting diameter maximum
[2] Number of inserts (or edges for solid tool)
[3] For adaptation options, see page 622
[4] Maximum ramping angle
[5] Machinable diameter minimum for interpolation
[6] Machinable diameter maximum for interpolation
[7] 0 - Without coolant supply, 1 - With coolant supply
[8] Master insert identification
[9] Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** H600 WXCU (597)

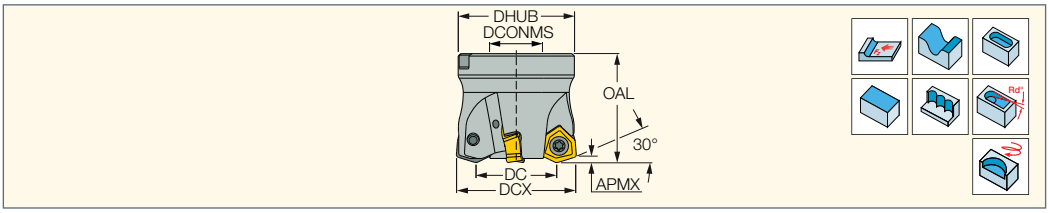
### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| FF FWX D040-05-16-05 | SR 10508600 | T-9/51 | | | SR M8X25DIN912 |
| FF FWX D050-06-22-05 | SR 10508600 | T-9/51 | | | SR M10X25 DIN912 |
| FF FWX D052-06-22-05 | SR 10508600 | T-9/51 | | | SR M10X25 DIN912 |
| FF FWX D040-04-16-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH | SR M8X25-D11.5 |
| FF FWX D050-05-22-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| FF FWX D052-05-22-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| FF FWX D063-06-22-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| FF FWX D080-07-32-07 | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH | SR M16X30 DIN912 |
| FF FWX D100-08-32-07 | SR 34-535-SN | | BLD T15/M7 | SW6-T-SH | |
| FF FWX D050-04-22-08 | SR 14-591/H | | BLD T20/S7 | SW6-T | SR M10X25 DIN912 |
| FF FWX D052-04-22-08 | SR 14-591/H | | BLD T20/S7 | SW6-T | SR M10X25 DIN912 |
| FF FWX D063-05-22-08 | SR 14-591/H | | BLD T20/S7 | SW6-T | SR M10X25 DIN912 |
| FF FWX D063-05-27-08 | SR 14-591/H | | BLD T20/S7 | SW6-T | SR M12X30DIN912 |
| FF FWX D066-05-22-08 | SR 14-591/H | | BLD T20/S7 | SW6-T | SR M10X25 DIN912 |
| FF FWX D066-05-27-08 | SR 14-591/H | | BLD T20/S7 | SW6-T | SR M12X30DIN912 |
| FF FWX D080-06-32-08 | SR 14-591/H | | BLD T20/S7 | SW6-T | SR M16X30 DIN912 |
| FF FWX D100-07-32-08 | SR 14-591/H | | BLD T20/M7 | SW6-T | |
| FF FWX D125-09-40-08 | SR 14-591/H | | BLD T20/L7 | SW6-T | |
| FF FWX D160-11-40-08 | SR 14-591/H | | BLD T20/L7 | SW6-T | |

HELI6FEED UPFEED LINE

**MF FWX**

Moderate Feed Face Mills Carrying Double-Sided Inserts with 6 Cutting Edges




| Designation | DC | DCX[1] | APMX | CICT[2] | OAL | DHUB | DCONMS | Arbor[3] | RMPX°[4] | MDN[5] | MDX[6] | CSP[7] | MIID[8] | TQ[9] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MF FWX D040-05-16-05** | 30.60 | 40.00 | 2.00 | 5 | 35.00 | 38.00 | 16.00 | A | 1.4 | 70.60 | 79.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.17 |
| **MF FWX D050-06-22-05** | 40.50 | 50.00 | 2.00 | 6 | 40.00 | 48.00 | 22.00 | A | 1.0 | 90.50 | 99.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.30 |
| **MF FWX D052-06-22-05** | 42.50 | 52.00 | 2.00 | 6 | 40.00 | 48.00 | 22.00 | A | 1.0 | 94.50 | 103.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.32 |
| **MF FWX D063-08-22-05** | 53.50 | 63.00 | 2.00 | 8 | 40.00 | 48.00 | 22.00 | A | 0.8 | 116.50 | 125.00 | 1 | H600 WXCU 05T312T | 2.0 | 0.41 |
| **MF FWX D040-04-16-07** | 27.70 | 40.00 | 2.70 | 4 | 35.00 | 38.00 | 16.00 | A | 2.0 | 67.70 | 79.00 | 1 | H600 WXCU 070515HP | 4.8 | 0.17 |
| **MF FWX D050-05-22-07** | 37.70 | 50.00 | 2.70 | 5 | 40.00 | 48.00 | 22.00 | A | 1.4 | 87.70 | 99.00 | 1 | H600 WXCU 070515HP | 4.8 | 0.31 |
| **MF FWX D052-05-22-07** | 39.70 | 52.00 | 2.70 | 5 | 40.00 | 48.00 | 22.00 | A | 1.3 | 91.70 | 103.00 | 1 | H600 WXCU 070515HP | 4.8 | 0.32 |
| **MF FWX D063-06-22-07** | 50.70 | 63.00 | 2.70 | 6 | 40.00 | 48.00 | 22.00 | A | 1.0 | 113.70 | 125.00 | 1 | H600 WXCU 070515HP | 4.8 | 0.42 |
| **MF FWX D080-07-32-07** | 67.70 | 80.00 | 2.70 | 7 | 55.00 | 76.00 | 32.00 | A | 0.8 | 147.70 | 159.00 | 1 | H600 WXCU 070515HP | 4.8 | 1.21 |
| **MF FWX D100-08-32-07** | 87.70 | 100.00 | 2.70 | 8 | 50.00 | 78.00 | 32.00 | B | 0.6 | 187.70 | 199.00 | 1 | H600 WXCU 070515HP | 4.8 | 1.46 |
| **MF FWX D050-04-22-08** | 34.70 | 50.00 | 3.50 | 4 | 45.00 | 48.00 | 22.00 | A | 2.5 | 84.70 | 99.00 | 1 | H600 WXCU 080612T | 9.0 | 0.32 |
| **MF FWX D063-05-27-08** | 47.70 | 63.00 | 3.50 | 5 | 50.00 | 61.00 | 27.00 | A | 1.7 | 110.70 | 125.00 | 1 | H600 WXCU 080612T | 9.0 | 0.63 |
| **MF FWX D066-05-27-08** | 50.70 | 66.00 | 3.50 | 5 | 50.00 | 61.00 | 27.00 | A | 1.7 | 116.70 | 131.00 | 1 | H600 WXCU 080612T | 9.0 | 0.64 |
| **MF FWX D080-06-32-08** | 64.70 | 80.00 | 3.50 | 6 | 55.00 | 76.00 | 32.00 | A | 1.2 | 144.70 | 159.00 | 1 | H600 WXCU 080612T | 9.0 | 1.13 |
| **MF FWX D100-07-32-08** | 84.70 | 100.00 | 3.50 | 7 | 50.00 | 78.00 | 32.00 | B | 0.9 | 184.70 | 199.00 | 1 | H600 WXCU 080612T | 9.0 | 1.37 |
| **MF FWX D125-09-40-08** | 109.70 | 125.00 | 3.50 | 9 | 55.00 | 90.00 | 40.00 | B | 0.7 | 234.70 | 249.00 | 1 | H600 WXCU 080612T | 9.0 | 2.36 |
| **MF FWX D160-11-40-08** | 144.70 | 160.00 | 3.50 | 11 | 55.00 | 95.00 | 40.00 | C | 0.5 | 304.70 | 319.00 | 0 | H600 WXCU 080612T | 9.0 | 3.63 |

- For machining recommendations and radius for programming, see table on page 597 • To generate a straight surface without cusps, the width of cut must not exceed DC
- For user guide, see pages 616-621

[1] Cutting diameter maximum
[2] Number of inserts (or edges for solid tool)
[3] For adaptation options, see page 622
[4] Maximum ramping angle
[5] Machinable diameter minimum for interpolation
[6] Machinable diameter maximum for interpolation
[7] 0 - Without coolant supply, 1 - With coolant supply
[8] Master insert identification
[9] Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** H600 WXCU (597)

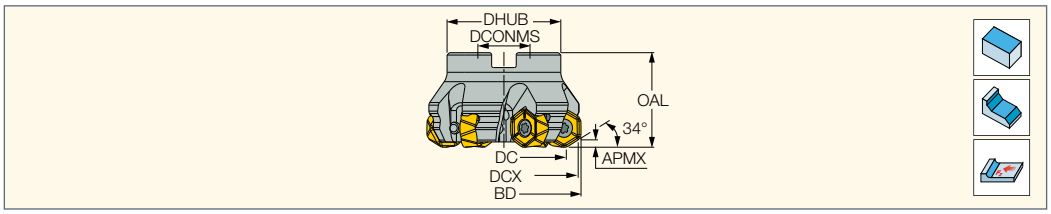
## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| **MF FWX D040-05-16-05** | SR 10508600 | T-9/51 | | | SR M8X25DIN912 |
| **MF FWX D050-06-22-05** | SR 10508600 | T-9/51 | | | SR M10X25 DIN912 |
| **MF FWX D052-06-22-05** | SR 10508600 | T-9/51 | | | SR M10X25 DIN912 |
| **MF FWX D063-08-22-05** | SR 10508600 | T-9/51 | | | SR M10X25 DIN912 |
| **MF FWX D040-04-16-07** | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH | SR M8X25-D11.5 |
| **MF FWX D050-05-22-07** | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| **MF FWX D052-05-22-07** | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| **MF FWX D063-06-22-07** | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| **MF FWX D080-07-32-07** | SR 34-535-SN | | BLD T15/S7 | SW6-T-SH | SR M16X30 DIN912 |
| **MF FWX D100-08-32-07** | SR 34-535-SN | | BLD T15/M7 | SW6-T-SH | |
| **MF FWX D050-04-22-08** | SR 14-591/H | | BLD T20/S7 | SW6-T | SR M10X25 DIN912 |
| **MF FWX D063-05-27-08** | SR 14-591/H | | BLD T20/S7 | SW6-T | SR M12X30DIN912 |
| **MF FWX D066-05-27-08** | SR 14-591/H | | BLD T20/S7 | SW6-T | SR M12X30DIN912 |
| **MF FWX D080-06-32-08** | SR 14-591/H | | BLD T20/S7 | SW6-T | SR M16X30 DIN912 |
| **MF FWX D100-07-32-08** | SR 14-591/H | | BLD T20/M7 | SW6-T | |
| **MF FWX D125-09-40-08** | SR 14-591/H | | BLD T20/L7 | SW6-T | |
| **MF FWX D160-11-40-08** | SR 14-591/H | | BLD T20/L7 | SW6-T | |

HELI12FEED UPFEED LINE

**MF FHX-R06**

34° Face Mills Carrying Hexagonal Inserts with 12 Cutting Edges




| Designation | DCX(1) | BD | DC | CICT(2) | APMX | OAL | DHUB | DCONMS | Arbor(3) | CSP(4) | MIID(5) | TQ(6) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MF FHX D063-06-22-R06 | 63.00 | 65.40 | 53.40 | 6 | 3.00 | 40.00 | 48.00 | 22.00 | A | 1 | H1200 HXCU 0606-HPR | 9.0 | 0.46 |
| MF FHX D080-07-27-R06 | 80.00 | 82.40 | 70.40 | 7 | 3.00 | 50.00 | 60.00 | 27.00 | A | 1 | H1200 HXCU 0606-HPR | 9.0 | 0.98 |
| MF FHX D080-07-32-R06 | 80.00 | 82.40 | 70.40 | 7 | 3.00 | 50.00 | 66.00 | 32.00 | A | 1 | H1200 HXCU 0606-HPR | 9.0 | 0.86 |
| MF FHX D100-09-32-R06 | 100.00 | 102.40 | 90.40 | 9 | 3.00 | 50.00 | 78.00 | 32.00 | B | 1 | H1200 HXCU 0606-HPR | 9.0 | 1.57 |
| MF FHX D125-11-40-R06 | 125.00 | 127.40 | 115.40 | 11 | 3.00 | 50.00 | 92.00 | 40.00 | B | 1 | H1200 HXCU 0606-HPR | 9.0 | 2.44 |
| MF FHX D160-13-40-R06 | 160.00 | 162.40 | 150.40 | 13 | 3.00 | 55.00 | 95.00 | 40.00 | C | 0 | H1200 HXCU 0606-HPR | 9.0 | 3.48 |
| MF FHX D052-05-22-R06 | 999.00 | 999.00 | 999.00 | 999 | 999.00 | 999.00 | 999.00 | 999.00 | | | | 999.0 | 0.60 |

- Radius for programming according to D1 diameter is 5.4 mm
- When machining next to shoulders, maximum width of cut should be 0.3xD
- To generate a straight surface without cusps, the width of cut must not exceed DC
- For cutting speed recommendations, see pages 616-621

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) For adaptation options, see page 622
(4) 0 - Without coolant supply, 1 - With coolant supply
(5) Master insert identification
(6) Recommended tightening torque (N*m) for insert screw

**For inserts, see pages:** H1200 HXCU 0606 (599)

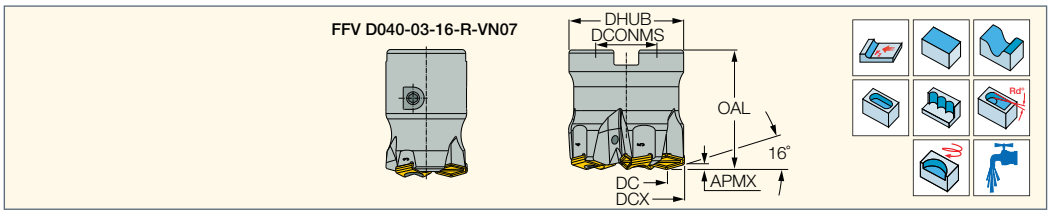
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| MF FHX D063-06-22-R06 | SR 14-591/H | BLD T20/S7 | SW6-T | SR M10X25 DIN912 |
| MF FHX D080-07-27-R06 | SR 14-591/H | BLD T20/S7 | SW6-T | SR M12X30DIN912 |
| MF FHX D080-07-32-R06 | SR 14-591/H | BLD T20/S7 | SW6-T | SR M16X30 DIN912 |
| MF FHX D100-09-32-R06 | SR 14-591/H | BLD T20/M7 | SW6-T | |
| MF FHX D125-11-40-R06 | SR 14-591/H | BLD T20/M7 | SW6-T | |
| MF FHX D160-13-40-R06 | SR 14-591/H | BLD T20/M7 | SW6-T | |
| MF FHX D052-05-22-R06 | SR 14-591/H | BLD T20/S7 | SW6-T | |

TANG4FEED HI-FEED MILLING

**FFV-D-R-VN07**

Fast Feed Shell Mill Carrying Tangentially Clamped Inserts with 4 Cutting Edges




| Designation | DCX(2) | DC | APMX | AE(3) | CICT(4) | OAL | DCONMS | DHUB | RMPX°(5) | MDN(6) | MDX(7) | Arbor | MIID(8) | TQ(9) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFV D040-03-16-R-VN07 (1) | 40.00 | 25.00 | 1.50 | 7.5 | 3 | 60.00 | 16.00 | 25.00 | 3.0 | 65.00 | 79.00 | Special | FF VNMT 0706ZN-ER | 4.8 | 0.36 |
| FFV D050-05-22-R-VN07 | 50.00 | 35.00 | 1.50 | 7.5 | 5 | 50.00 | 22.00 | 48.00 | 3.2 | 85.00 | 99.00 | A | FF VNMT 0706ZN-ER | 4.8 | 0.47 |
| FFV D063-06-22-R-VN07 | 63.00 | 48.00 | 1.50 | 7.5 | 6 | 40.00 | 22.00 | 48.00 | 2.2 | 111.00 | 125.00 | A | FF VNMT 0706ZN-ER | 4.8 | 0.00 |
| FFV D080-07-27-R-VN07 | 80.00 | 65.00 | 1.50 | 7.5 | 7 | 50.00 | 27.00 | 60.00 | 1.5 | 145.00 | 159.00 | B | FF VNMT 0706ZN-ER | 4.8 | 0.81 |
| FFV D100-08-32-R-VN07 | 100.00 | 85.00 | 1.50 | 7.5 | 8 | 50.00 | 32.00 | 78.00 | 1.2 | 185.00 | 199.00 | B | FF VNMT 0706ZN-ER | 4.8 | 1.61 |

- Radius for programming 2.8 mm
- To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Use with the supplied retention screw this screw was designed to be used instead of the standard cutter's frontal screw
(2) Cutting diameter maximum
(3) Maximum plunging width
(4) Number of inserts (or edges for solid tool)
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) Master insert identification
(9) Recommended tightening torque (N*m) for insert screw

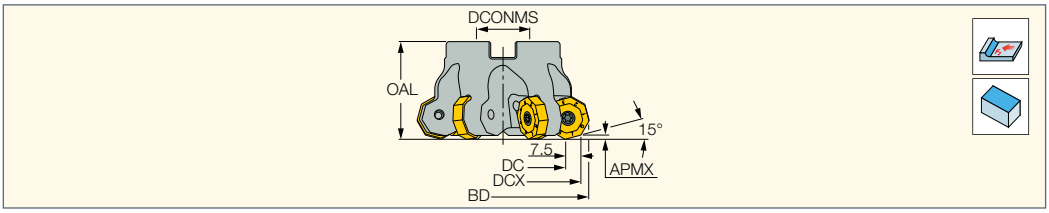
**For inserts, see pages:** FF VNMT 0706 (600)

## Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| FFV D040-03-16-R-VN07 | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | SR M8X17-13685 | | HW 4.0 |
| FFV D050-05-22-R-VN07 | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | | SR PS 118-0271C | |
| FFV D063-06-22-R-VN07 | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 | | |
| FFV D080-07-27-R-VN07 | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | | | |
| FFV D100-08-32-R-VN07 | SR M4X0.7-L11.5 IP15 | BLD IP15/S7 | SW6-T-SH | | | |

16FEEDMILL

**FF NM**
Fast Feed Face Mills Carrying Octagonal ONHU/MU 0806... Inserts with 16 Cutting Edges

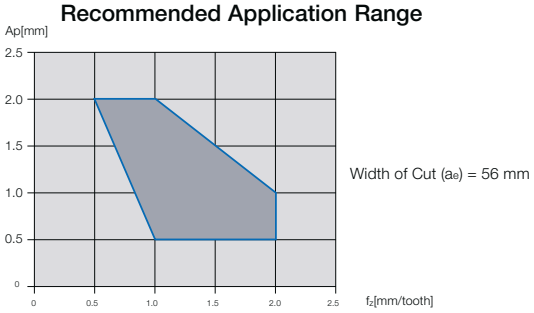



| Designation | DCX[1] | DC | CICT[2] | APMX | OAL | Rg[3] | DCONMS | Arbor[4] | MIID[5] | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FF NM D080-06-27-R08** | 80.00 | 64.50 | 6 | 2.00 | 50.00 | 8.00 | 27.00 | A | ONHU 080608-TN | 0.84 | SR 14-591/H | BLD T20/S7 | SW6-T |

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Radius for programming
(4) For adaptation options, see page 622
(5) Master insert identification

**For inserts, see pages:** ONHU/ONMU-08-TN-MM (587) • ONHU/ONMU-08-TN/HL (587)

## Recommended Application Range




Width of Cut ($a_e$) = 56 mm

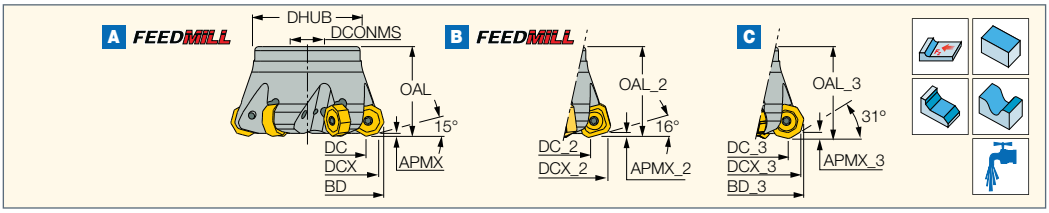
## Cutting Data Recommendation

| Material | $V_c$ [m/min] |
|---|---|
| **Steel AISI 4340/34CrNiMO6** | 120-150 |
| **Nodular cast iron GGG 50** | 170 |

HELIDO 800 LINE

## FF SOF

Multifunction Fast Feed Milling Cutter for Octagonal and Square Insert Contours with Various Entry Angles




| Designation | DC | DCX[1] | BD | APMX | OAL | DC_2 | DCX_2 | APMX_2 | OAL_2 | DC_3 | DCX_3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FF SOF 8/16-D063-06-22R | 52.60 | 63.00 | 68.40 | 1.20 | 40.00 | 49.50 | 69.20 | 2.20 | 40.40 | 56.60 | 66.80 |
| FF SOF 8/16 D080-07-27R | 69.60 | 80.00 | 85.40 | 1.20 | 40.00 | 66.50 | 86.20 | 2.20 | 40.40 | 73.60 | 83.80 |
| FF SOF 8/16 D100-08-32R | 89.60 | 100.00 | 105.40 | 1.20 | 50.00 | 86.50 | 106.20 | 2.20 | 50.40 | 93.60 | 103.80 |

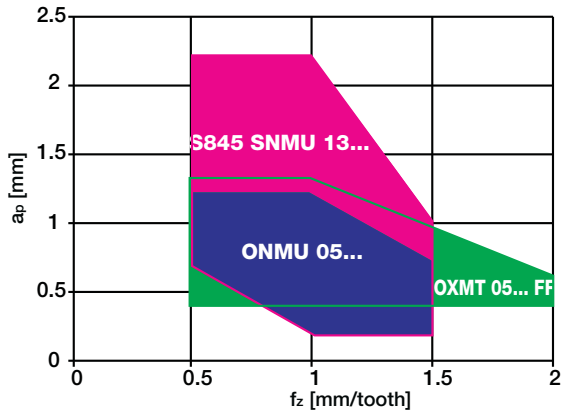
| Designation | BD_3 | APMX_3 | OAL_3 | CICT[2] | DHUB | DCONMS | Arbor[3] | MIID[4] | kg |
|---|---|---|---|---|---|---|---|---|---|
| FF SOF 8/16-D063-06-22R | 70.40 | 2.70 | 40.90 | 6 | 65.60 | 22.00 | B | ONHU 050500-N-HP | 0.48 |
| FF SOF 8/16 D080-07-27R | 87.40 | 2.70 | 40.90 | 7 | 82.60 | 27.00 | B | ONHU 050500-N-HP | 1.04 |
| FF SOF 8/16 D100-08-32R | 107.40 | 2.70 | 50.90 | 8 | 102.60 | 32.00 | B | ONHU 050500-N-HP | 1.47 |

- A- with ONMU 0505... insert
- B- with S845 SNMU 1305... insert
- C- with OXMT 0507R08-FF insert
- Use only Torx Plus keys
- For user guide, see pages 616-621

[1] Cutting diameter maximum
[2] Number of inserts (or edges for solid tool)
[3] For adaptation options, see page 622
[4] Master insert identification

**For inserts, see pages:** ONHU/ONMU-05 (504) • OXMT 0507 (505) • S845 SNMU/SNHU-13 (500)

### Application Range According to Insert Type




**Material: SAE 4340**
**$a_e$: 0.7xD**
**$V_c$: 150-170 m/min**

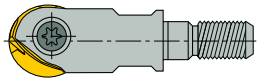
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| FF SOF 8/16-D063-06-22R | SR 11800745 | BLD IP15/S7 | SW6-T-SH | SR M10X25 DIN912 |
| FF SOF 8/16 D080-07-27R | SR 11800745 | BLD IP15/S7 | SW6-T-SH | SR M12X30DIN912 |
| FF SOF 8/16 D100-08-32R | SR 11800745 | BLD IP15/S7 | SW6-T-SH | |

FLEXFIT

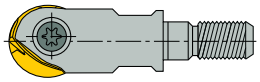
Milling Heads

M12



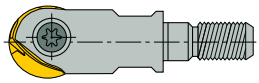
D20/.75

M12



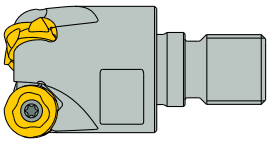
D25/1.00

M16



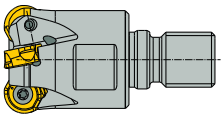
D25/1.00

M16



ERCM D32-...

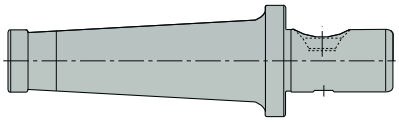
M16



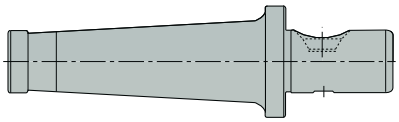
ERCM D40-...

Extensions

M12...CF4

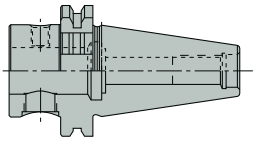


M16...CF4



CLICKFIT

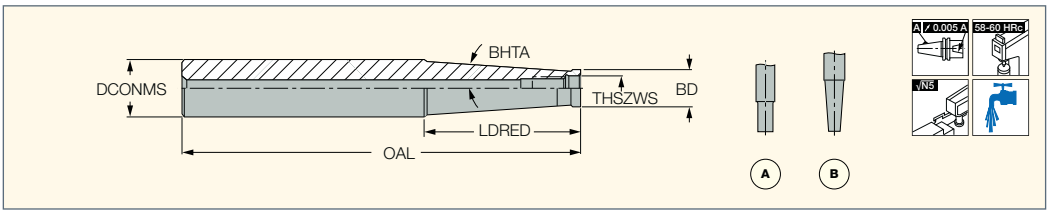
Adapter



FLEXFIT

## Straight Shank

**S M**
Shanks for Tools with
FLEX-FIT Threaded Connection

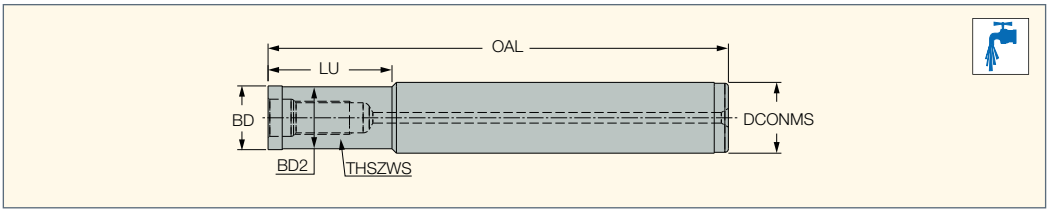



| Designation | OAL | LDRED | DCONMS | Shank | BD | BHTA | THSZWS | Type | kg |
|---|---|---|---|---|---|---|---|---|---|
| S M06-L60 C10 | 60.00 | 20.0 | 10.00 | C | 9.70 | - | M06 | A | 0.03 |
| S M06-L105-C12 | 105.00 | 60.0 | 12.00 | C | 9.70 | 1.2 | M06 | B | 0.06 |
| S M06-L125-C16 | 125.00 | 60.0 | 16.00 | C | 9.70 | 3.3 | M06 | B | 0.13 |
| S M08-L73 C16 | 73.00 | 25.0 | 16.00 | C | 13.00 | - | M08 | A | 0.09 |
| S M08-L128-C16 | 128.00 | 80.0 | 16.00 | C | 13.00 | 0.9 | M08 | B | 0.15 |
| S M08-L170-C20 | 170.00 | 66.8 | 20.00 | C | 13.00 | 3.3 | M08 | B | 0.33 |
| S M10-L80 C20 | 80.00 | 30.0 | 20.00 | C | 18.00 | - | M10 | A | 0.16 |
| S M10-L130-C20 | 130.00 | 80.0 | 20.00 | C | 18.00 | 0.6 | M10 | B | 0.25 |
| S M10-L200-C25 | 200.00 | 57.2 | 25.00 | C | 19.00 | 3.3 | M10 | B | 0.65 |
| S M12-L86-C25 | 86.00 | 30.0 | 25.00 | C | 21.00 | 5.1 | M12 | A | 0.27 |
| S M12-L200-C32 | 200.00 | 78.0 | 32.00 | C | 21.00 | 4.4 | M12 | B | 1.02 |
| S M16-L95-C32 | 95.00 | 35.0 | 32.00 | C | 29.00 | 1.7 | M16 | A | 0.50 |
| S M16-L230-C32 | 230.00 | 50.0 | 32.00 | C | 29.00 | 1.8 | M16 | B | 1.27 |

FLEXFIT

## Straight Shank

**S M-C-H**
Carbide Shanks with Coolant
Channels for Tools with
FLEX-FIT Threaded Connection

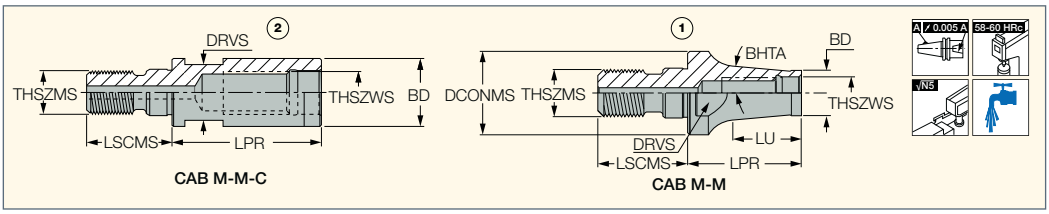



| Designation | DCONMS | THSZWS | OAL | LU | BD | BD_2 | kg |
|---|---|---|---|---|---|---|---|
| S M08-L150-C16-C-H | 16.00 | M08 | 150.00 | 80.0 | 15.30 | 15.30 | 0.39 |
| S M08-L200-C16-C-H | 16.00 | M08 | 200.00 | 140.0 | 15.30 | 15.30 | 0.59 |
| S M08-L250-C16-C-H | 16.00 | M08 | 250.00 | 180.0 | 15.30 | 15.30 | 0.84 |
| S M10-L150-C20-C-H | 20.00 | M10 | 150.00 | 80.0 | 18.50 | 18.50 | 0.73 |
| S M10-L200-C20-C-H | 20.00 | M10 | 200.00 | 140.0 | 18.00 | 17.50 | 0.91 |
| S M10-L250-C20-C-H | 20.00 | M10 | 250.00 | 180.0 | 18.00 | 17.50 | 1.04 |
| S M12-L200-C25-C-H | 25.00 | M12 | 200.00 | 100.0 | 21.00 | 20.50 | 1.41 |
| S M12-L250-C25-C-H | 25.00 | M12 | 250.00 | 180.0 | 24.00 | 24.00 | 1.78 |
| S M12-L300-C25-C-H | 25.00 | M12 | 300.00 | 180.0 | 21.00 | 20.50 | 2.04 |
| S M16-L200-C32-C-H | 32.00 | M16 | 200.00 | 100.0 | 29.00 | 29.00 | 2.11 |
| S M16-L250-C32-C-H | 32.00 | M16 | 250.00 | 180.0 | 29.00 | 29.00 | 2.36 |
| S M16-L300-C32-C-H | 32.00 | M16 | 300.00 | 180.0 | 29.00 | 29.00 | 2.81 |

• For adaptation options, see page 356

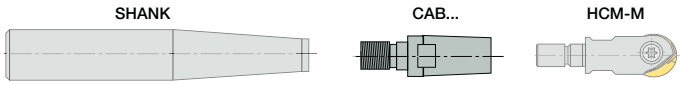
FLEXFIT

**CAB M-M (FLEX-FIT)**
Reducers and Extensions with Coolant Holes for the Modular FLEX-FIT System



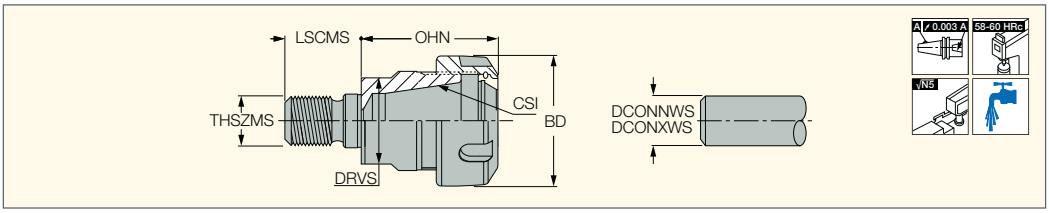

| Designation | THSZWS | THSZMS | BD | LPR | LU | DCONMS | LSCMS | DRVS[1] | Fig. | BHTA | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **CAB M06M08** | M06 | M08 | 9.70 | 30.00 | 24.80 | 13.00 | 17.50 | 9.5 | 1. | 5.7 | 0.02 |
| **CAB M08M08-C** | M08 | M08 | 13.00 | 30.00 | - | - | 17.50 | 9.6 | 2. | - | 0.02 |
| **CAB M08M10** | M08 | M10 | 13.00 | 40.00 | 33.40 | 18.00 | 20.20 | 15.0 | 1. | 5.2 | 0.07 |
| **CAB M10M10-C** | M10 | M10 | 18.00 | 35.00 | - | - | 20.00 | 15.0 | 2. | - | 0.06 |
| **CAB M10M12** | M10 | M12 | 18.00 | 45.00 | 36.40 | 21.00 | 22.00 | 17.0 | 1. | 2.5 | 0.09 |
| **CAB M12M12-C** | M12 | M12 | 21.00 | 40.00 | - | - | 22.00 | 17.0 | 2. | - | 0.08 |
| **CAB M12M16** | M12 | M16 | 21.00 | 50.00 | 42.50 | 29.00 | 25.00 | 25.0 | 1. | 6.3 | 0.18 |
| **CAB M16M16-C** | M16 | M16 | 29.00 | 40.00 | - | - | 25.00 | 25.0 | 2. | - | 0.16 |

(1) Clamping wrench size




FLEXFIT

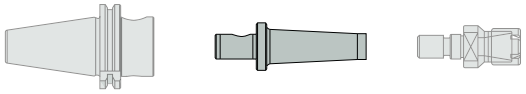
**CDP ER-M**
DIN 6499 ER Collet Chucks with Threaded FLEX-FIT Adaptations




| Designation | CSI | THSZMS | DCONNWS[1] | DCONXWS[2] | OHN[3] | LSCMS | BD | DRVS[4] | TQ_3[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **CDP ER11 M10 M** | ER11 | M10 | 0.5 | 7.0 | 27.0 | 20.00 | 16.00 | 15.0 | 40 | 0.03 |
| **CDP ER11 M12 M** | ER11 | M12 | 0.5 | 7.0 | 27.0 | 22.00 | 16.00 | 17.0 | 40 | 0.04 |
| **CDP ER16 M10 M** | ER16 | M10 | 0.5 | 10.0 | 38.1 | 20.00 | 22.00 | 17.0 | 40 | 0.05 |
| **CDP ER16 M12 M** | ER16 | M12 | 0.5 | 10.0 | 37.1 | 22.00 | 22.00 | 17.0 | 40 | 0.06 |
| **CDP ER16 M16** | ER16 | M16 | 0.5 | 10.0 | 36.6 | 25.00 | 28.00 | 25.0 | 40 | 0.10 |
| **CDP ER20 M16** | ER20 | M16 | 1.0 | 13.0 | 45.5 | 25.00 | 34.00 | 25.0 | 40 | 0.19 |
| **CDP ER25 M16** | ER25 | M16 | 1.0 | 16.0 | 44.5 | 25.00 | 42.00 | 28.0 | 40 | 0.15 |

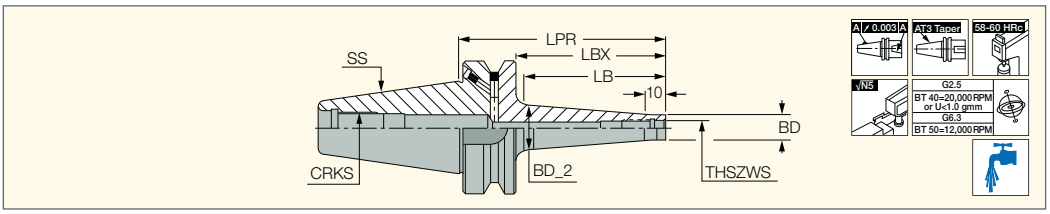
• When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Minimum diameter
(2) Maximum diameter
(3) Minimum overhang
(4) Torque key size
(5) Tool tightening torque Nxm (lbfxin)



## BT MAS FLEXFIT

**BT-ODP (FLEX-FIT)**
FLEX-FIT Threaded Adaptation with Integral BT MAS-403 Tapered Shanks (ADB type)



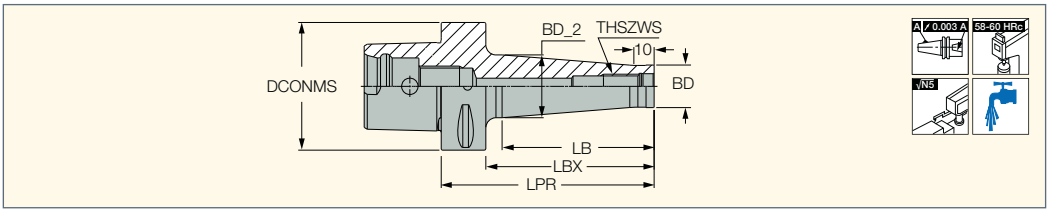

| Designation | SS | THSZWS | BD | BD_2 | LPR | LBX | LB | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| BT40 ODP 6X 66 | 40 | M06 | 9.80 | 13.00 | 66.00 | 39.0 | 30.00 | M16 | 0 | 0.98 |
| BT40 ODP 6X106 | 40 | M06 | 9.80 | 23.00 | 106.00 | 79.0 | 70.00 | M16 | 0 | 0.14 |
| BT40 ODP 8X 66 | 40 | M08 | 13.00 | 15.00 | 66.00 | 30.0 | 30.00 | M16 | 0 | 0.99 |
| BT40 ODP10X 66 | 40 | M10 | 18.00 | 20.00 | 66.00 | 30.0 | 30.00 | M16 | 0 | 1.03 |
| BT40 ODP10X106 | 40 | M10 | 18.00 | 28.00 | 106.00 | 79.0 | 70.00 | M16 | 0 | 1.24 |
| BT40 ODP12X 66 | 40 | M12 | 21.00 | 24.00 | 66.00 | 39.0 | 30.00 | M16 | 0 | 1.05 |
| BT40 ODP12X106 | 40 | M12 | 21.00 | 31.00 | 106.00 | 79.0 | 70.00 | M16 | 0 | 1.23 |
| BT40 ODP16X 66 | 40 | M16 | 29.00 | 28.60 | 66.00 | 39.0 | 35.00 | M16 | 0 | 1.06 |
| BT40 ODP16X106 | 40 | M16 | 29.00 | 34.00 | 106.00 | 79.0 | 70.00 | M16 | 0 | 1.32 |
| BT50 ODP 12X 94 | 50 | M12 | 23.00 | 30.00 | 94.00 | 56.0 | 50.00 | M24 | 0 | 3.85 |
| BT50 ODP 12X144 | 50 | M12 | 23.00 | 40.00 | 144.00 | 106.0 | 100.00 | M24 | 0 | 4.27 |
| BT50 ODP 12X194 | 50 | M12 | 23.00 | 40.00 | 194.00 | 156.0 | 150.00 | M24 | 0 | 4.61 |
| BT50 ODP 16X 94 | 50 | M16 | 29.00 | 34.00 | 94.00 | 56.0 | 50.00 | M24 | 0 | 3.75 |
| BT50 ODP 16X144 | 50 | M16 | 29.00 | 40.00 | 144.00 | 106.0 | 100.00 | M24 | 0 | 4.19 |
| BT50 ODP 16X194 | 50 | M16 | 29.00 | 55.00 | 194.00 | 156.0 | 150.00 | M24 | 0 | 5.27 |
| BT50 ODP 16X244 | 50 | M16 | 29.00 | 60.00 | 244.00 | 206.0 | 200.00 | M24 | 0 | 5.60 |

- The coolant passages in the B-type flange are blocked with screws which can be removed when required.

(1) 1 - Slot for data chip, 0 - Without slot for data chip

## CAMFIX FLEXFIT

**C#-ODP (FLEX-FIT)**
FLEX-FIT Threaded Connection Shanks with CAMFIX (ISO 26623-1) Adaptation



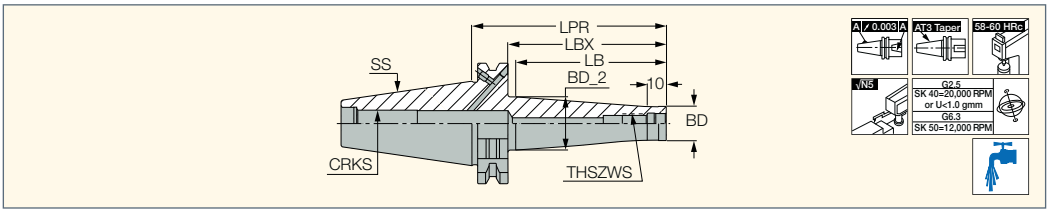

| Designation | DCONMS | THSZWS | BD | BD_2 | LPR | LBX | LB | DCP(1) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C3 ODP 12X53 | 32.00 | M12 | 21.00 | 26.00 | 53.00 | 38.0 | 23.00 | 0 | 0.32 | | |
| C4 ODP 10X53 | 40.00 | M10 | 18.00 | 23.00 | 53.00 | 33.0 | 23.00 | 1 | 0.33 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 ODP 12X53 | 40.00 | M12 | 21.00 | 26.00 | 53.00 | 33.0 | 23.00 | 1 | 0.33 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 ODP 16X53 | 40.00 | M16 | 29.00 | 34.00 | 53.00 | 33.0 | 23.00 | 1 | 0.40 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C5 ODP 10X53 | 50.00 | M10 | 18.00 | 19.50 | 53.00 | 33.0 | 25.00 | 1 | 0.49 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 ODP 12X103 | 50.00 | M12 | 21.00 | 31.00 | 103.00 | 83.0 | 75.00 | 1 | 0.72 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 ODP 12X53 | 50.00 | M12 | 21.00 | 23.50 | 53.00 | 33.0 | 25.00 | 1 | 0.50 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 ODP 16X103 | 50.00 | M16 | 29.00 | 36.00 | 103.00 | 83.0 | 75.00 | 1 | 0.85 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 ODP 16X53 | 50.00 | M16 | 29.00 | 34.00 | 53.00 | 33.0 | 25.00 | 1 | 0.57 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C6 ODP 10X105 | 63.00 | M10 | 18.00 | 28.00 | 105.00 | 83.0 | 75.00 | 1 | 1.00 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 10X130 | 63.00 | M10 | 18.00 | 32.00 | 130.00 | 108.0 | 100.00 | 1 | 0.80 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 10X55 | 63.00 | M10 | 18.00 | 19.50 | 55.00 | 33.0 | 25.00 | 1 | 0.82 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 12X105 | 63.00 | M12 | 21.00 | 31.00 | 105.00 | 83.0 | 75.00 | 1 | 1.07 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 12X130 | 63.00 | M12 | 21.00 | 36.00 | 130.00 | 108.0 | 100.00 | 1 | 1.26 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 12X55 | 63.00 | M12 | 21.00 | 23.50 | 55.00 | 33.0 | 25.00 | 1 | 0.84 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 16X105 | 63.00 | M16 | 29.00 | 34.00 | 105.00 | 83.0 | 75.00 | 1 | 1.20 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 16X130 | 63.00 | M16 | 29.00 | 41.00 | 130.00 | 108.0 | 100.00 | 1 | 1.49 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 16X55 | 63.00 | M16 | 29.00 | 34.00 | 55.00 | 33.0 | 25.00 | 1 | 0.89 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

* Optional, to be ordered separately

## DIN69871 FLEXFIT

**DIN69871-ODP**
FLEX-FIT Threaded Connection Shanks with Integral DIN 69871 Form ADB Taper Adaptation

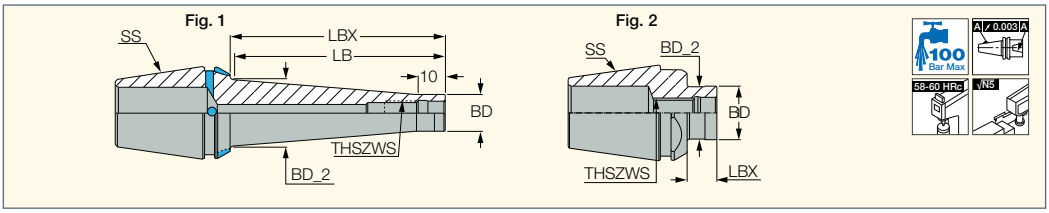



| Designation | SS | THSZWS | BD | BD_2 | LPR | LBX | LB | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 40 ODP 6X58 | 40 | M06 | 9.80 | 13.00 | 58.00 | 38.9 | 30.00 | M16 | 0 | 0.82 |
| DIN69871 40 ODP 6X98 | 40 | M06 | 9.80 | 23.00 | 98.00 | 78.9 | 70.00 | M16 | 0 | 0.91 |
| DIN69871 40 ODP 8X58 | 40 | M08 | 13.10 | 15.00 | 58.00 | 38.9 | 30.00 | M16 | 0 | 0.82 |
| DIN69871 40 ODP 8X98 | 40 | M08 | 13.10 | 23.00 | 98.00 | 78.9 | 70.00 | M16 | 0 | 0.92 |
| DIN69871 40 ODP10X58 | 40 | M10 | 18.00 | 20.00 | 58.00 | 38.9 | 30.00 | M16 | 0 | 0.84 |
| DIN69871 40 ODP10X98 | 40 | M10 | 18.00 | 28.00 | 98.00 | 78.9 | 70.00 | M16 | 0 | 1.00 |
| DIN69871 40 ODP12X58 | 40 | M12 | 21.00 | 24.00 | 58.00 | 38.9 | 30.00 | M16 | 0 | 0.88 |
| DIN69871 40 ODP12X98 | 40 | M12 | 21.00 | 31.00 | 98.00 | 78.9 | 70.00 | M16 | 0 | 1.07 |
| DIN69871 40 ODP16X58 | 40 | M16 | 29.00 | 28.60 | 58.00 | 38.9 | 35.00 | M16 | 0 | 0.91 |
| DIN69871 40 ODP16X98 | 40 | M16 | 29.00 | 34.00 | 98.00 | 78.9 | 70.00 | M16 | 0 | 1.15 |
| DIN69871 50 ODP12X 78 | 50 | M12 | 23.00 | 30.00 | 78.00 | 58.9 | 50.00 | M24 | 0 | 2.74 |
| DIN69871 50 ODP12X128 | 50 | M12 | 23.00 | 40.00 | 128.00 | 108.9 | 100.00 | M24 | 0 | 3.14 |
| DIN69871 50 ODP12X178 | 50 | M12 | 23.00 | 40.00 | 178.00 | 158.9 | 150.00 | M24 | 0 | 3.38 |
| DIN69871 50 ODP12X228 | 50 | M12 | 23.00 | 46.00 | 228.00 | 208.9 | 200.00 | M24 | 0 | 4.19 |
| DIN69871 50 ODP16X 78 | 50 | M16 | 29.00 | 34.00 | 78.00 | 58.9 | 50.00 | M24 | 0 | 2.95 |
| DIN69871 50 ODP16X128 | 50 | M16 | 29.00 | 40.00 | 128.00 | 108.9 | 100.00 | M24 | 0 | 3.20 |
| DIN69871 50 ODP16X178 | 50 | M16 | 29.00 | 55.00 | 178.00 | 158.9 | 150.00 | M24 | 0 | 4.08 |
| DIN69871 50 ODP16X228 | 50 | M16 | 29.00 | 55.00 | 228.00 | 208.9 | 200.00 | M24 | 0 | 4.64 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

## FLEXFIT

**ER-ODP**
FLEX-FIT Threaded Adaptation with Integral ER Collet for ER Collet Chucks

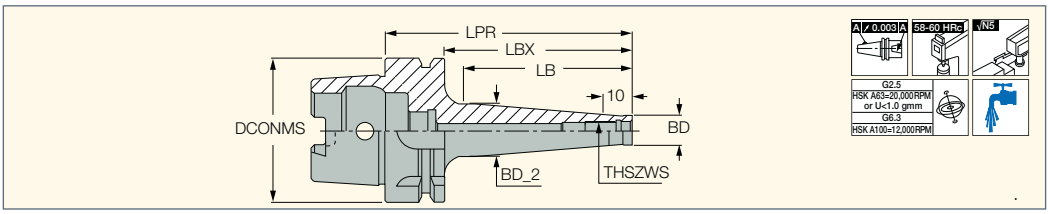



| Designation | SS | THSZWS | LB | LBX | BD | BD_2 | Fig. | kg |
|---|---|---|---|---|---|---|---|---|
| ER16 ODP M08X02 | ER16 | M08 | 2.50 | 2.50 | 12.00 | 12.00 | 2 | 0.04 |
| ER16 ODP M08X10 | ER16 | M08 | 10.50 | 10.50 | 12.00 | 12.00 | 2 | 0.04 |
| ER20 ODP M08X02 | ER20 | M08 | 2.00 | 2.00 | 13.00 | 13.00 | 2 | 0.05 |
| ER20 ODP M08X10 | ER20 | M08 | 10.00 | 10.00 | 13.00 | 12.60 | 2 | 0.05 |
| ER25 ODP M08X02 | ER25 | M08 | 2.00 | 2.00 | 13.00 | 13.00 | 2 | 0.05 |
| ER25 ODP M08X10 | ER25 | M08 | 10.00 | 10.00 | 13.00 | 12.60 | 2 | 0.09 |
| ER25 ODP M10X02 | ER25 | M10 | 2.00 | 2.00 | 18.00 | 18.00 | 2 | 0.05 |
| ER25 ODP M10X25 | ER25 | M10 | 23.00 | 25.00 | 18.00 | 17.60 | 1 | 0.11 |
| ER25 ODP M12X02 | ER25 | M12 | 2.70 | 2.70 | 20.60 | 19.20 | 2 | 0.08 |
| ER25 ODP M12X10 | ER25 | M12 | 10.00 | 10.00 | 20.00 | 20.00 | 2 | 0.10 |
| ER32 ODP M08X25 | ER32 | M08 | 22.00 | 25.00 | 13.10 | 15.00 | 1 | 0.15 |
| ER32 ODP M08X50 | ER32 | M08 | 49.00 | 50.00 | 13.10 | 23.00 | 1 | 0.21 |
| ER32 ODP M08X75 | ER32 | M08 | 74.00 | 75.00 | 13.10 | 23.00 | 1 | 0.26 |
| ER32 ODP M08X02 | ER32 | M08 | 2.00 | 2.00 | 13.00 | 13.00 | 2 | 0.15 |
| ER32 ODP M08X10 | ER32 | M08 | 10.00 | 10.00 | 13.00 | 12.60 | 2 | 0.14 |
| ER32 ODP M10X02 | ER32 | M10 | 2.00 | 2.00 | 18.00 | 18.00 | 2 | 0.15 |
| ER32 ODP M10X10 | ER32 | M10 | 10.00 | 10.00 | 18.00 | 17.60 | 2 | 0.15 |
| ER32 ODP M10X25 | ER32 | M10 | 23.00 | 25.00 | 18.00 | 20.00 | 1 | 0.17 |
| ER32 ODP M10X50 | ER32 | M10 | 49.00 | 50.00 | 18.00 | 24.00 | 1 | 0.24 |
| ER32 ODP M12X02 | ER32 | M12 | 2.00 | 2.00 | 21.00 | 21.00 | 2 | 0.15 |
| ER32 ODP M12X10 | ER32 | M12 | 10.00 | 10.00 | 21.00 | 20.60 | 2 | 0.17 |
| ER32 ODP M12X25 | ER32 | M12 | 24.00 | 25.00 | 21.00 | 24.00 | 1 | 0.18 |
| ER32 ODP M12X50 | ER32 | M12 | 49.00 | 50.00 | 21.00 | 24.00 | 1 | 0.26 |
| ER32 ODP M16X02 | ER32 | M16 | 2.50 | 2.50 | 27.00 | 27.00 | 2 | 0.15 |
| ER32 ODP M16X10 | ER32 | M16 | 10.50 | 10.50 | 27.00 | 27.00 | 2 | 0.18 |
| ER32 ODP M16X25 | ER32 | M16 | 25.50 | 25.50 | 27.00 | 27.00 | 2 | 0.20 |

**FLEXFIT HSK**

## HSK A-ODP (FLEX-FIT)

FLEX-FIT Threaded Adaptation with HSK DIN 69893/A Tapered Shanks




| Designation | DCONMS | THSZWS | BD | BD_2 | LPR | LBX | LB | DCP(1) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **HSK A32 ODP12X42** | 32.00 | M12 | 21.00 | 20.60 | 42.00 | 22.0 | - | 1 | 0.17 | COOLING TUBE HSK A32* | WRENCH COOL TUBE HSK32* |
| **HSK A50 ODP12X48** | 50.00 | M12 | 21.00 | 20.60 | 48.00 | 22.0 | - | 1 | 0.46 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A63 ODP6X109** | 63.00 | M06 | 9.80 | 23.00 | 109.00 | 83.0 | 75.00 | 1 | 0.74 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ODP8X109** | 63.00 | M08 | 13.10 | 23.00 | 109.00 | 83.0 | 75.00 | 1 | 0.77 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ODP8X59** | 63.00 | M08 | 13.10 | 15.00 | 59.00 | 33.0 | 25.00 | 1 | 0.68 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ODP10X109** | 63.00 | M10 | 18.00 | 28.00 | 109.00 | 83.0 | 75.00 | 1 | 0.87 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ODP10X59** | 63.00 | M10 | 18.00 | 20.00 | 59.00 | 33.0 | 25.00 | 1 | 0.70 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ODP12X109** | 63.00 | M12 | 21.00 | 31.00 | 109.00 | 83.0 | 75.00 | 1 | 0.93 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ODP12X59** | 63.00 | M12 | 21.00 | 23.50 | 59.00 | 33.0 | 25.00 | 1 | 0.71 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ODP16X109** | 63.00 | M16 | 29.00 | 34.00 | 109.00 | 83.0 | 75.00 | 1 | 1.05 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ODP16X59** | 63.00 | M16 | 29.00 | 34.60 | 59.00 | 33.0 | 25.00 | 1 | 0.79 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A100 ODP12X137** | 100.00 | M12 | 23.00 | 30.00 | 137.00 | 108.0 | 100.00 | 1 | 2.58 | COOLING TUBE HSK A100 | WRENCH COOL TUBE HSK100 |
| **HSK A100 ODP12X187** | 100.00 | M12 | 23.00 | 40.00 | 187.00 | 158.0 | 150.00 | 1 | 2.86 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ODP12X237** | 100.00 | M12 | 23.00 | 46.00 | 237.00 | 208.0 | 200.00 | 1 | 3.40 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ODP12X87** | 100.00 | M12 | 23.00 | 30.00 | 87.00 | 58.0 | 50.00 | 1 | 2.23 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ODP16X137** | 100.00 | M16 | 29.00 | 41.50 | 137.00 | 108.0 | 100.00 | 1 | 2.68 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ODP16X187** | 100.00 | M16 | 29.00 | 55.00 | 187.00 | 158.0 | 150.00 | 1 | 3.58 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ODP16X237** | 100.00 | M16 | 29.00 | 55.00 | 237.00 | 208.0 | 200.00 | 1 | 4.07 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ODP16X87** | 100.00 | M16 | 29.00 | 31.50 | 87.00 | 58.0 | 50.00 | 1 | 2.20 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

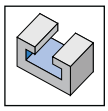
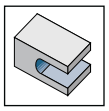
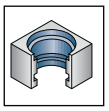
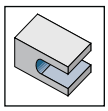
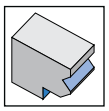
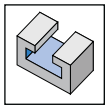
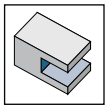
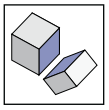
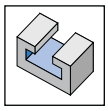
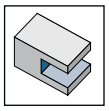
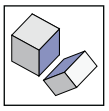
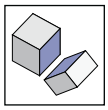
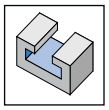
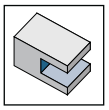
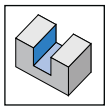
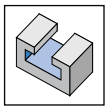
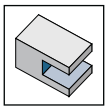
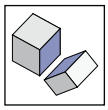
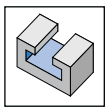
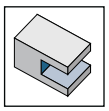
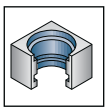
- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).

(1) 1 - Slot for data chip, 0 - Without slot for data chip

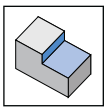
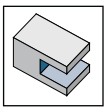
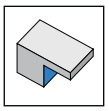
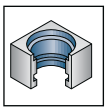
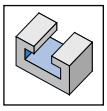
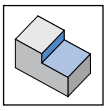
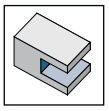
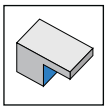
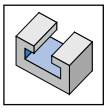
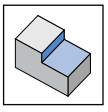
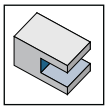
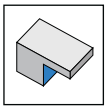
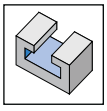
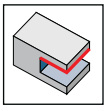
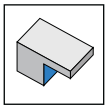
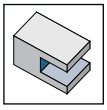
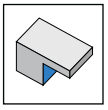
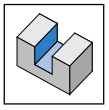
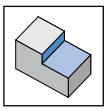
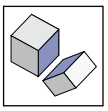
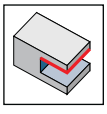
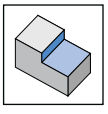
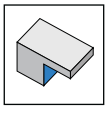
* Optional, to be ordered separately

# SLOTTING & SLITTING CUTTERS

## Application Range

| | | | | | | |
|---|---|---|---|---|---|---|
| **MM TS/GRIT- Pages 366-369** | | | | | | |
| | ↕ | 0.7-13.0 |  |  |  | |
| | ∅ | 7.7-27.7 | | | | |
| **MM GRIT Dovetail - Page 370** | | | | | | |
| | ↕ | 5.0-10.1 |  |  | | |
| | ∅ | 27.7 | | | | |
| **DGSM-M/MM-JHP- Page 379** | | | | | | |
| | ↕ | 2.0-3.0 |  |  |  | |
| | ∅ | 16.0-22.0 | | | | |
| **TGSF-M/MM-JHP- Pages 413-414** | | | | | | |
| | ↕ | 2.0-3.0 |  |  |  | |
| | ∅ | 50.0 | | | | |
| **SGSF/A-M/MM-JHP- Page 420** | | | | | | |
| | ↕ | 2.0-3.0 |  |  |  | |
| | ∅ | 32.0-40.0 | | | | |
| **SGSF-W- Page 417** | | | | | | |
| | ↕ | 1.5-2.7 |  |  |  |  |
| | ∅ | 32.0-40.00 | | | | |
| **SD-SP- Pages 371-372** | | | | | | |
| | ↕ | 1.0-12.0 |  |  |  | |
| | ∅ | 24.7-49.7 | | | | |

## Application Range

| | | | | | | |
|---|---|---|---|---|---|---|
| **TRIB- Pages 377-378** | | | | | | |
| | ↕ | 1.2-6.5 |  |  |  |  |
| | ∅ | 32.2-80 | | | | |
| **ETS T-SLOT - Pages 380-389** | | | | | | |
| | ↕ | 3.0-22 |  |  |  |  |
| | ∅ | 21-63 | | | | |
| **FDN - Pages 390-400** | | | | | | |
| | ↕ | 3-25 |  |  |  |  |
| | ∅ | 50-250 | | | | |
| **FST - Page 409** | | | | | | |
| | ↕ | 9.0 |  |  |  | |
| | ∅ | 100-125 | | | | |
| **SDN - Pages 401-409** | | | | | | |
| | ↕ | 3-25 |  |  |  | |
| | ∅ | 63-250 |  |  | | |
| **SSB...R/L - Page 410** | | | | | | |
| | ↕ | 12-24 |  |  |  | |
| | ∅ | 100-200 | | | | |

## Application Range

| TGSF - Pages 412-414 | | |
|---|---|---|
| | | 1.6-4 |
| | ∅ | 50-160 |
| | | |

| SGSF With Drive Flange | | |
|---|---|---|
| | | 2.4-6.4 |
| | ∅ | 50-425 |
| | | |

| SGSF - Pages 418-420 | | |
|---|---|---|
| | | 1.3-6.5 |
| | ∅ | 32-425 |
| | | |

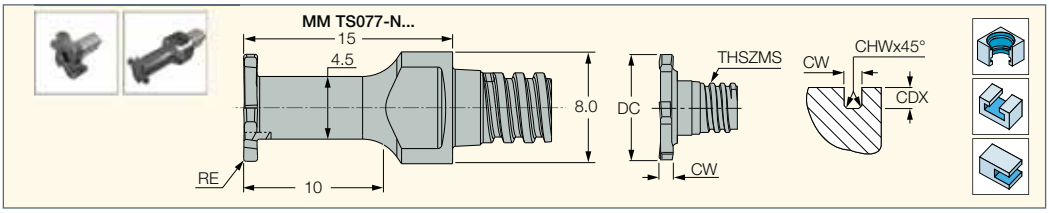
| SGSF With Drive Shank S, SW | | |
|---|---|---|
| | | 1.5-6.4 |
| | ∅ | 50-125 |
| | | |

| SGSA - Page 420 | | |
|---|---|---|
| | | 2.7-4 |
| | ∅ | 32-100 |
| | | |

| GM-DG - Page 423 | | |
|---|---|---|
| | | 2.7-4.35 |
| | ∅ | 100-200 |
| | | |

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TS-N**
Interchangeable Solid Carbide T-SLOT Milling Heads

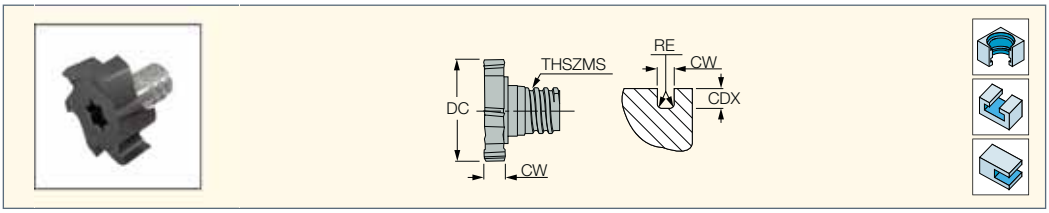



| Designation | Dimensions DC | DCTOLL | CW | NOF(1) | THSZMS | CDX(2) | RE | CHW | | | Tough ↔ Hard IC928 | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM TS077-N07A-4T05 | 7.70 | -0.0500 | 0.70 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS077-N08A-4T05 | 7.70 | -0.0500 | 0.80 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS077-N09A-4T05 | 7.70 | -0.0500 | 0.90 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS077-N10A-4T05 | 7.70 | -0.0500 | 1.00 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS077-N15A-4T05 | 7.70 | -0.0500 | 1.50 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS077-N20A-4T05 | 7.70 | -0.0500 | 2.00 | 4 | T05 | 1.20 | 0.20 | - | MM KEY 6X4* | | | ● |
| MM TS105-N20D-06T04 | 10.50 | -0.0500 | 2.00 | 6 | T04 | 2.00 | 0.40 | - | | T-15/3* | ● | |
| MM TS.500-N062P-06T05 | 12.70 | -0.0500 | 1.58 | 6 | T05 | 2.25 | - | 0.15 | | T-20/3* | | ● |
| MM TS.500-N078P-06T05 | 12.70 | -0.0500 | 1.98 | 6 | T05 | 2.25 | - | 0.15 | | T-20/3* | | ● |
| MM TS135-N20P-06T05 | 13.50 | -0.0500 | 2.00 | 6 | T05 | 2.65 | - | 0.20 | | T-20/3* | | ● |
| MM TS135-N25P-06T05 | 13.50 | -0.0500 | 2.50 | 6 | T05 | 2.65 | - | 0.20 | | T-20/3* | | ● |

• For shanks, see pages 101-111 • For tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection
• For user guide, see pages 426-432
(1) Number of flutes
(2) Cutting depth maximum
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TS-H**
Interchangeable Solid Carbide T-SLOT Milling Heads with Diverse Corner Radii



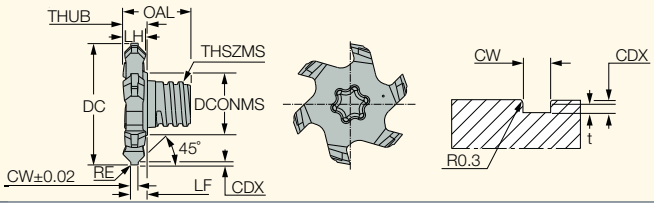

| Designation | Dimensions DC | DCTOLL | CW | CDX(1) | NOF(2) | RE | THSZMS | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| MM TS135-H30D-06T05 | 13.50 | -0.0500 | 3.00 | 2.65 | 6 | 0.40 | T05 | T-20/3* | ● |
| MM TS135-H40D-06T05 | 13.50 | -0.0500 | 4.00 | 2.65 | 6 | 0.40 | T05 | T-20/3* | ● |
| MM TS165-H40A-06T05 | 16.50 | -0.0500 | 4.00 | 4.25 | 6 | 0.20 | T05 | T-20/3* | ● |
| MM TS160-H20D-06T06 | 16.00 | -0.0500 | 2.00 | 3.00 | 6 | 0.40 | T06 | T-20/3* | ● |
| MM TS160-H30D-06T06 | 16.00 | -0.0500 | 3.00 | 3.00 | 6 | 0.40 | T06 | T-25/3* | ● |
| MM TS160-H40D-06T06 | 16.00 | -0.0500 | 4.00 | 3.00 | 6 | 0.40 | T06 | T-25/3* | ● |
| MM TS165-H20D-06T06 | 16.50 | -0.0500 | 2.00 | 3.25 | 6 | 0.40 | T06 | T-20/3* | ● |
| MM TS165-H30D-06T06 | 16.50 | -0.0500 | 3.00 | 3.25 | 6 | 0.40 | T06 | T-25/3* | ● |
| MM TS165-H40D-06T06 | 16.50 | -0.0500 | 4.00 | 3.25 | 6 | 0.40 | T06 | T-25/3* | ● |
| MM TS195-H60A-06T06 | 19.50 | -0.0500 | 6.00 | 4.45 | 6 | 0.20 | T06 | T-25/3* | ● |
| MM TS225-H60A-06T06 | 22.50 | -0.0500 | 6.00 | 5.95 | 6 | 0.20 | T06 | T-25/3* | ● |
| MM TS195-H40D-06T08 | 19.50 | -0.0500 | 4.00 | 3.45 | 6 | 0.40 | T08 | T-30/3 L* | ● |
| MM TS195-H50D-06T08 | 19.50 | -0.0500 | 5.00 | 3.45 | 6 | 0.40 | T08 | T-30/3 L* | ● |
| MM TS195-H60D-06T08 | 19.50 | -0.0500 | 6.00 | 3.45 | 6 | 0.40 | T08 | T-30/3 L* | ● |
| MM TS225-H40D-06T08 | 22.50 | -0.0500 | 4.00 | 4.90 | 6 | 0.40 | T08 | T-40/3 L* | ● |
| MM TS225-H50D-06T08 | 22.50 | -0.0500 | 5.00 | 4.95 | 6 | 0.40 | T08 | T-40/3 L* | ● |
| MM TS225-H60D-06T08 | 22.50 | -0.0500 | 6.00 | 4.95 | 6 | 0.40 | T08 | | ● |
| MM TS225-H80D-06T08 | 22.50 | -0.0500 | 8.00 | 4.95 | 6 | 0.40 | T08 | T-40/3 L* | ● |
| MM TS250-H50D-06T08 | 25.00 | -0.0500 | 5.00 | 5.90 | 6 | 0.40 | T08 | T-50/3 L* | ● |
| MM TS250-H60D-06T08 | 25.00 | -0.0500 | 6.00 | 5.90 | 6 | 0.40 | T08 | T-50/3 L* | ● |
| MM TS250-H80D-06T08 | 25.00 | -0.0500 | 8.00 | 5.90 | 6 | 0.40 | T08 | T-50/3 L* | ● |
| MM TS250-H50D-06T10 | 25.00 | -0.0500 | 5.00 | 4.30 | 6 | 0.40 | T10 | T-50/3 L* | ● |
| MM TS250-H60D-06T10 | 25.00 | -0.0500 | 6.00 | 4.30 | 6 | 0.40 | T10 | T-50/3 L* | ● |
| MM TS250-H80D-06T10 | 25.00 | -0.0500 | 8.00 | 4.30 | 6 | 0.40 | T10 | T-50/3 L* | ● |

• Inserts in 5 mm and wider feature chip splitting edges • For tightening torques and clamping instructions, see pages 111-112
• Do not apply lubricant to the threaded connection • For shanks, see pages 101-111 • For user guide, see pages 426-432
(1) Cutting depth maximum
(2) Number of flutes
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TS-C**

Interchangeable Solid Carbide Circlip Groove Milling Heads Conform to DIN 471/472



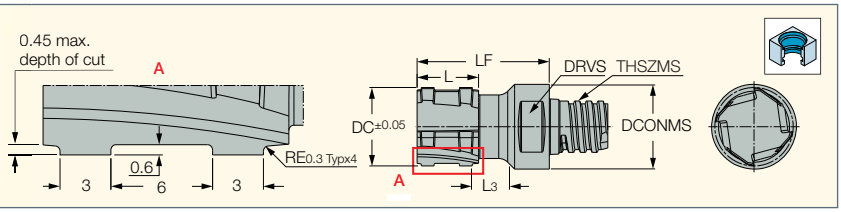

| Designation | Dimensions | | | | | | | | | | | | | IC928 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | CW | CDX | LF | t | RE | THUB | LH | OAL | DCONMS | NOF(1) | THSZMS | | |
| MM TS127C118T035-6T05 | 12.70 | 1.18 | 0.35 | 2.23 | 0.27 | 0.05 | 3.00 | 2.7 | 8.43 | 7.70 | 6 | T05 | T-20/3* | ● |
| MM TS127C118T040-6T05 | 12.70 | 1.18 | 0.40 | 2.23 | 0.32 | 0.05 | 3.00 | 2.7 | 8.43 | 7.70 | 6 | T05 | T-20/3* | ● |
| MM TS127C118T050-6T05 | 12.70 | 1.18 | 0.50 | 2.23 | 0.42 | 0.05 | 3.00 | 2.7 | 8.43 | 7.70 | 6 | T05 | T-20/3* | ● |
| MM TS127C138T050-6T05 | 12.70 | 1.38 | 0.50 | 2.23 | 0.42 | 0.05 | 3.00 | 2.7 | 8.63 | 7.70 | 6 | T05 | T-20/3* | ● |
| MM TS225C138T060-6T08 | 22.50 | 1.38 | 0.60 | 3.08 | 0.50 | 0.05 | 4.50 | 4.2 | 9.48 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C138T070-6T08 | 22.50 | 1.38 | 0.70 | 3.08 | 0.60 | 0.05 | 4.50 | 4.2 | 9.48 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C138T085-6T08 | 22.50 | 1.38 | 0.85 | 3.08 | 0.74 | 0.05 | 4.50 | 4.2 | 9.48 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C168T070-6T08 | 22.50 | 1.68 | 0.70 | 3.23 | 0.60 | 0.10 | 4.50 | 4.2 | 9.78 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C168T085-6T08 | 22.50 | 1.68 | 0.85 | 3.23 | 0.74 | 0.10 | 4.50 | 4.2 | 9.78 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C168T100-6T08 | 22.50 | 1.68 | 1.00 | 3.23 | 0.89 | 0.10 | 4.50 | 4.2 | 9.78 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C193T100-6T08 | 22.50 | 1.93 | 1.00 | 3.35 | 0.89 | 0.10 | 4.50 | 4.2 | 10.03 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C193T125-6T08 | 22.50 | 1.93 | 1.25 | 3.35 | 1.13 | 0.10 | 4.50 | 4.2 | 10.03 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C223T150-6T08 | 22.50 | 2.23 | 1.50 | 3.50 | 1.38 | 0.10 | 4.50 | 4.2 | 10.33 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C273T150-6T08 | 22.50 | 2.73 | 1.50 | 3.77 | 1.39 | 0.20 | 4.50 | 4.1 | 10.83 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C273T175-6T08 | 22.50 | 2.73 | 1.75 | 3.77 | 1.64 | 0.20 | 4.40 | 3.9 | 10.83 | 11.70 | 6 | T08 | T-40/3 L* | ● |
| MM TS225C325T175-6T08 | 22.50 | 3.25 | 1.75 | 4.40 | 1.64 | 0.20 | 5.10 | 4.6 | 11.35 | 11.70 | 6 | T08 | T-40/3 L* | ● |

• For shanks, see pages 101-111 • For tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection
• For user guide, see pages 426-432
(1) Number of flutes
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TS-DG**

Double Groove Internal Grooving Heads with a Threaded Connection for Heat Exchanger Tube Sheets

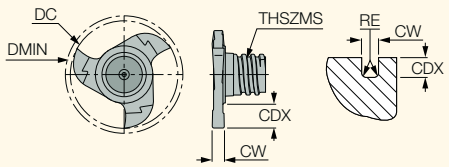



| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCONMS | PHD(1) | THSZMS | NOF(2) | LF | L3 | L | DRVS(3) | | |
| MM TS155-04T10-8238 | 15.50 | 16.00 | 15.88 | T10 | 4 | 33.70 | 17.80 | 14.20 | 10.0 | MM KEY 10X7* | ● |
| MM TS185-04T12-8239 | 18.50 | 18.45 | 19.05 | T12 | 4 | 34.50 | 18.30 | 14.50 | 13.0 | MM KEY 13X8* | ● |
| MM TS245-04T15-8240 | 24.50 | 23.80 | 25.40 | T15 | 4 | 37.20 | 11.00 | 14.40 | 20.0 | MM KEY 20* | ● |

• For shanks, see pages 101-111 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112
• Do not apply lubricant to the threaded connection • For user guide, see pages 426-432
(1) For minimum tube outer diameter
(2) Number of flutes
(3) Clamping wrench size
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM GRIT-3T6**
Interchangeable Solid Carbide Small Diameter Groove Milling Heads



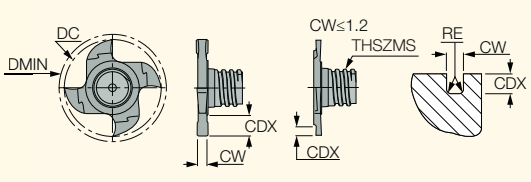
| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | DC | CW | CDX[1] | NOF[2] | RE | DMIN[3] | THSZMS | ∠ | |
| **MM GRIT16K150-010-3T6** | 15.70 | 1.50 | 2.80 | 3 | 0.10 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16P150-010-3T6** | 15.70 | 1.50 | 2.80 | 3 | 0.10 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16K157-020-3T6** | 15.70 | 1.57 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16K200-020-3T6** | 15.70 | 2.00 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16P220-110-3T6** | 15.70 | 2.20 | 2.80 | 3 | 1.10 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16K239-020-3T6** | 15.70 | 2.39 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16K250-020-3T6** | 15.70 | 2.50 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-20/3* | ● |
| **MM GRIT16K300-020-3T6** | 15.70 | 3.00 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-25/3* | ● |
| **MM GRIT16P300-020-3T6** | 15.70 | 3.00 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-25/3* | ● |
| **MM GRIT16K317-020-3T6** | 15.70 | 3.17 | 2.80 | 3 | 0.20 | 16.00 | T06 | T-25/3* | ● |
| **MM GRIT18K120-005-3T6** | 17.70 | 1.20 | 3.80 | 3 | 0.05 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18P120-060-3T6** | 17.70 | 1.20 | 3.80 | 3 | 0.60 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K140-005-3T6** | 17.70 | 1.40 | 3.80 | 3 | 0.05 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K150-010-3T6** | 17.70 | 1.50 | 3.80 | 3 | 0.10 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K157-020-3T6** | 17.70 | 1.57 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K170-005-3T6** | 17.70 | 1.70 | 3.80 | 3 | 0.05 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K200-020-3T6** | 17.70 | 2.00 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18P200-100-3T6** | 17.70 | 2.00 | 3.80 | 3 | 1.00 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18P220-110-3T6** | 17.70 | 2.20 | 3.80 | 3 | 1.10 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K239-020-3T6** | 17.70 | 2.39 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K250-020-3T6** | 17.70 | 2.50 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-20/3* | ● |
| **MM GRIT18K300-020-3T6** | 17.70 | 3.00 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-25/3* | ● |
| **MM GRIT18P300-150-3T6** | 17.70 | 3.00 | 3.80 | 3 | 1.50 | 18.00 | T06 | T-25/3* | ● |
| **MM GRIT18K317-020-3T6** | 17.70 | 3.17 | 3.80 | 3 | 0.20 | 18.00 | T06 | T-25/3* | ● |

- Recommended for O-rings and retaining rings • Modification options on request • Do not apply lubricant to the threaded connection
- For clamping instructions, see pages 111-112 • For user guide, see pages 426-432 • For shanks, see pages 101-111 • K-Type - For general steel machining
- P-Type - Positive geometry for soft and gummy materials

(1) Cutting depth maximum
(2) Number of flutes
(3) Minimum bore diameter
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM GRIT-4T8/6T10**
Interchangeable Solid Carbide Small Diameter Groove Milling Heads



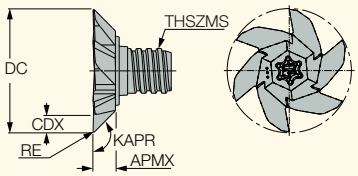

| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | DC | CW | CDX(1) | NOF(2) | RE | DMIN(3) | THSZMS | | |
| MM GRIT22K076-000-4T8 | 21.70 | 0.76 | 1.50 | 4 | 0.00 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K086-000-4T8 | 21.70 | 0.86 | 1.70 | 4 | 0.00 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K096-000-4T8 | 21.70 | 0.96 | 1.90 | 4 | 0.00 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K100-005-4T8 | 21.70 | 1.00 | 2.00 | 4 | 0.05 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22P100-005-4T8 | 21.70 | 1.00 | 2.00 | 4 | 0.05 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K120-005-4T8 | 21.70 | 1.20 | 4.50 | 4 | 0.05 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K140-005-4T8 | 21.70 | 1.40 | 4.50 | 4 | 0.05 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K157-000-4T8 | 21.70 | 1.57 | 4.50 | 4 | 0.00 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K170-010-4T8 | 21.70 | 1.70 | 4.50 | 4 | 0.10 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22P170-010-4T8 | 21.70 | 1.70 | 4.50 | 4 | 0.10 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K195-020-4T8 | 21.70 | 1.95 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K200-020-4T8 | 21.70 | 2.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22P200-020-4T8 | 21.70 | 2.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K225-020-4T8 | 21.70 | 2.25 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K239-020-4T8 | 21.70 | 2.39 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K250-020-4T8 | 21.70 | 2.50 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22P250-020-4T8 | 21.70 | 2.50 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K275-020-4T8 | 21.70 | 2.75 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-25/3* | • |
| MM GRIT22K300-020-4T8 | 21.70 | 3.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22P300-020-4T8 | 21.70 | 3.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K317-020-4T8 | 21.70 | 3.17 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K325-020-4T8 | 21.70 | 3.25 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22P381-020-4T8 | 21.70 | 3.81 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K400-020-4T8 | 21.70 | 4.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22P400-020-4T8 | 21.70 | 4.00 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22P400-200-4T8 | 21.70 | 4.00 | 4.50 | 4 | 2.00 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K425-020-4T8 | 21.70 | 4.25 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K425-120-4T8 | 21.70 | 4.25 | 4.50 | 4 | 1.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K475-020-4T8 | 21.70 | 4.75 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K525-020-4T8 | 21.70 | 5.25 | 4.50 | 4 | 0.20 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT22K600-300-4T8 | 21.70 | 6.00 | 4.50 | 4 | 3.00 | 22.00 | T08 | T-30/3 L* | • |
| MM GRIT28K250-020-6T10 | 27.70 | 2.50 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28K525-020-6T10 | 27.70 | 5.25 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28P700-350-6T10 | 27.70 | 7.00 | 6.00 | 6 | 3.50 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28K1000-020-6T10 | 27.70 | 10.00 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28K1100-020-6T10 | 27.70 | 11.00 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28K1200-020-6T10 | 27.70 | 12.00 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |
| MM GRIT28K1300-020-6T10 | 27.70 | 13.00 | 6.00 | 6 | 0.20 | 28.00 | T10 | T-40/3 L* | • |

- Recommended for Orings and retaining rings • K - for general steel & cast iron machining P - for soft and gummy materials
- Modification options on request
- Do not apply lubricant to the threaded connection • For clamping instructions, see pages 111-112 • For user guide, see pages 426-432
- For shanks, see pages 101-111

(1) Cutting depth maximum
(2) Number of flutes
(3) Minimum bore diameter
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM Dovetail**
Interchangeable Solid Carbide Heads




| Designation | Dimensions DC | KAPR[1] | CDX[2] | APMX | RE | THSZMS | NOF[3] | ∠ | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| **MM TS105-45D-06T04** | 10.50 | 135.0 | 1.33 | 1.60 | 0.20 | T04 | 6 | T-15/3* | ● |
| **MM TS135-45D-06T05** | 13.50 | 135.0 | 1.75 | 2.00 | 0.20 | T05 | 6 | T-20/3* | ● |
| **MM TS165-45D-06T06** | 16.50 | 135.0 | 1.75 | 2.00 | 0.20 | T06 | 6 | T-25/3* | ● |
| **MM TS195-45D-06T08** | 19.50 | 135.0 | 2.55 | 2.80 | 0.20 | T08 | 6 | T-30/3 L* | ● |
| **MM TS225-45D-06T08** | 22.50 | 135.0 | 3.48 | 3.70 | 0.20 | T08 | 6 | T-40/3 L* | ● |
| **MM TS250-45D-06T10** | 25.00 | 135.0 | 3.68 | 3.90 | 0.20 | T10 | 6 | T-50/3 L* | ● |
| **MM GRIT 28K-45D-6T10** | 27.70 | 135.0 | 4.00 | 4.20 | 0.20 | T10 | 6 | T-40/3 L* | ● |
| **MM TS105-60D-06T04** | 10.50 | 120.0 | 0.84 | 1.70 | 0.20 | T04 | 6 | T-15/3* | ● |
| **MM TS135-60D-06T05** | 13.50 | 120.0 | 1.67 | 3.10 | 0.20 | T05 | 6 | T-20/3* | ● |
| **MM TS165-60D-06T06** | 16.50 | 120.0 | 2.02 | 3.70 | 0.20 | T06 | 6 | T-25/3* | ● |
| **MM TS195-60D-06T08** | 19.50 | 120.0 | 2.70 | 4.80 | 0.20 | T08 | 6 | T-30/3 L* | ● |
| **MM TS225-60D-06T08** | 22.50 | 120.0 | 3.79 | 6.70 | 0.20 | T08 | 6 | T-40/3 L* | ● |
| **MM TS250-60D-06T10** | 25.00 | 120.0 | 3.85 | 6.80 | 0.20 | T10 | 6 | T-50/3 L* | ● |
| **MM GRIT 28K-60D-6T10** | 27.70 | 120.0 | 4.00 | 7.08 | 0.20 | T10 | 6 | T-40/3 L* | ● |
| **MM GRIT 28K-75D-6T10** | 27.70 | 105.0 | 2.20 | 8.39 | 0.20 | T10 | 6 | T-40/3 L* | ● |

• Use carbide shanks for groove milling heads • For user guide, see pages 426-432

[1] Tool cutting edge angle

[2] Cutting depth maximum

[3] Number of flutes

* Optional, to be ordered separately

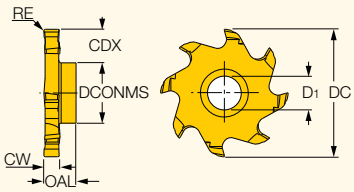
MM GRIT 28K-45D-6T10

MM GRIT 28K-60D-6T10

MM GRIT 28K-75D-6T10

**T-SLOT**

**SD-SP**
Interchangeable Solid Carbide
T-SLOT Milling Heads




| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | DC | CW | CDX(3) | NOF(4) | RE | D1 | DCONMS | OAL | |
| SD D25-1.5-R0.2-SP11 | 24.70 | 1.50 | 6.50 | 6 | 0.20 | 7.50 | 11.00 | 6.60 | • |
| SD D25-2.0-R0.2-SP11 | 24.70 | 2.00 | 6.50 | 6 | 0.20 | 7.50 | 11.00 | 6.60 | • |
| SD D25-2.5-R0.4-SP11 | 24.70 | 2.50 | 6.50 | 6 | 0.40 | 7.50 | 11.00 | 6.60 | • |
| SD D25-3.0-R0.4-SP11 | 24.70 | 3.00 | 6.50 | 6 | 0.40 | 7.50 | 11.00 | 6.60 | • |
| SD D25-3.5-R0.4-SP11 | 24.70 | 3.50 | 6.50 | 6 | 0.40 | 7.50 | 11.00 | 6.60 | • |
| SD D25-4.0-R0.4-SP11 | 24.70 | 4.00 | 6.50 | 6 | 0.40 | 7.50 | 11.00 | 6.75 | • |
| SD D25-1.0-R0.2-SP13 | 24.70 | 1.00 | 5.50 | 6 | 0.20 | 7.50 | 13.00 | 7.15 | • |
| SD D25-2.0-R0.2-SP13 | 24.70 | 2.00 | 5.50 | 6 | 0.20 | 7.50 | 13.00 | 7.30 | • |
| SD D25-3.0-R0.4-SP13 | 24.70 | 3.00 | 5.50 | 6 | 0.40 | 7.50 | 13.00 | 7.30 | • |
| SD D25-3.5-R0.4-SP13 | 24.70 | 3.50 | 5.50 | 6 | 0.40 | 7.50 | 13.00 | 7.30 | • |
| SD D25-4.0-R0.4-SP13 | 24.70 | 4.00 | 5.50 | 6 | 0.40 | 7.50 | 13.00 | 8.30 | • |
| SD D25-4.5-R0.4-SP13 | 24.70 | 4.50 | 5.50 | 6 | 0.40 | 7.50 | 13.00 | 8.30 | • |
| SD D25-5.0-R0.4-SP13 | 24.70 | 5.00 | 5.50 | 6 | 0.40 | 7.50 | 13.00 | 8.30 | • |
| SD D25-5.5-R0.4-SP13 | 24.70 | 5.50 | 5.50 | 6 | 0.40 | 7.50 | 13.00 | 8.30 | • |
| SD D25-6.0-R0.4-SP13 | 24.70 | 6.00 | 5.50 | 6 | 0.40 | 7.50 | 13.00 | 8.30 | • |
| SD D25-6.5-R0.4-SP13 | 24.70 | 6.50 | 5.50 | 6 | 0.40 | 7.50 | 13.00 | 8.30 | • |
| SD D25-7.0-R0.4-SP13 | 24.70 | 7.00 | 5.50 | 6 | 0.40 | 7.50 | 13.00 | 8.30 | • |
| SD D25-7.5-R0.4-SP13 | 24.70 | 7.50 | 5.50 | 6 | 0.40 | 7.50 | 13.00 | 8.30 | • |
| SD D25-8.0-R0.4-SP13 | 24.70 | 8.00 | 5.50 | 6 | 0.40 | 7.50 | 13.00 | 8.30 | • |
| SD D32-1.0-R0.2-SP15 | 31.70 | 1.00 | 8.00 | 8 | 0.20 | 8.40 | 15.00 | 8.00 | • |
| SD D32-1.5-R0.2-SP15 | 31.70 | 1.50 | 8.00 | 8 | 0.20 | 8.40 | 15.00 | 8.00 | • |
| SD D32-2.0-R0.2-SP11 | 31.70 | 2.00 | 10.00 | 8 | 0.20 | 7.20 | 11.00 | 6.75 | • |
| SD D32-2.0-R0.2-SP15 | 31.70 | 2.00 | 8.00 | 8 | 0.20 | 8.40 | 15.00 | 8.00 | • |
| SD D32-2.5-R0.4-SP15 | 31.70 | 2.50 | 8.00 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-3.0-R0.4-SP11 | 31.70 | 3.00 | 10.00 | 8 | 0.40 | 7.20 | 11.00 | 6.75 | • |
| SD D32-3.0-R0.4-SP15 | 31.70 | 3.00 | 8.00 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-3.5-R0.4-SP15 | 31.70 | 3.50 | 8.00 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-4.0-R0.4-SP15 | 31.70 | 4.00 | 8.00 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-4.0-R1.6-SP15 | 31.70 | 4.00 | 8.00 | 8 | 1.60 | 8.40 | 15.00 | 8.00 | • |
| SD D32-4.5-R0.4-SP15 | 31.70 | 4.50 | 8.00 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-5.0-R0.4-SP15 | 31.70 | 5.00 | 8.00 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-5.0-R1.6-SP15 | 31.70 | 5.00 | 8.00 | 8 | 1.60 | 8.40 | 15.00 | 8.00 | • |
| SD D32-5.5-R0.4-SP15 | 31.70 | 5.50 | 8.00 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-6.0-R0.4-SP15 | 31.70 | 6.00 | 8.00 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-6.0-R1.6-SP15 | 31.70 | 6.00 | 8.00 | 8 | 1.60 | 8.40 | 15.00 | 8.00 | • |
| SD D32-6.5-R0.4-SP15 | 31.70 | 6.50 | 8.00 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-7.0-R0.4-SP15 | 31.25 | 7.00 | 7.75 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-7.0-R1.6-SP15 | 31.70 | 7.00 | 7.75 | 8 | 1.60 | 8.40 | 15.00 | 8.00 | • |
| SD D32-7.5-R0.4-SP15 | 31.25 | 7.50 | 7.75 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-8.0-R0.4-SP15 | 31.25 | 8.00 | 7.75 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D32-8.0-R1.6-SP15 | 31.70 | 8.00 | 7.75 | 8 | 1.60 | 8.40 | 15.00 | 8.00 | • |
| SD D32-8.5-R0.4-SP15 | 31.25 | 8.50 | 7.75 | 8 | 0.40 | 8.40 | 15.00 | 8.00 | • |
| SD D40-1.0-R0.2SP11 (1) | 39.70 | 1.00 | 14.00 | 10 | 0.20 | 7.20 | 11.00 | 6.70 | • |
| SD D40-1.0-R0.2SP13 | 39.70 | 1.00 | 13.00 | 10 | 0.20 | 7.50 | 13.00 | 7.30 | • |
| SD D40-1.5-R0.2SP13 | 39.70 | 1.50 | 13.00 | 10 | 0.20 | 7.50 | 13.00 | 7.30 | • |
| SD D40-2.0-R0.2SP13 | 39.70 | 2.00 | 13.00 | 10 | 0.20 | 7.50 | 13.00 | 7.30 | • |
| SD D40-2.5-R0.4SP13 | 39.70 | 2.50 | 13.00 | 10 | 0.40 | 7.50 | 13.00 | 7.30 | • |
| SD D40-3.0-R0.4SP13 | 39.70 | 3.00 | 13.00 | 10 | 0.40 | 7.50 | 13.00 | 7.30 | • |
| SD D40-3.5-R0.4SP13 | 39.70 | 3.50 | 13.00 | 10 | 0.40 | 7.50 | 13.00 | 7.30 | • |
| SD D40-4.0-R0.4SP13 (2) | 39.70 | 4.00 | 13.00 | 10 | 0.40 | 7.50 | 13.00 | 7.30 | • |
| SD D40-4.0-R0.4SP17 | 39.70 | 4.00 | 11.00 | 10 | 0.40 | 7.50 | 17.00 | 10.00 | • |
| SD D40-5.0-R0.4SP13 | 39.70 | 5.00 | 13.00 | 10 | 0.40 | 7.50 | 13.00 | 7.30 | • |
| SD D40-5.0-R0.4SP17 | 39.70 | 5.00 | 11.00 | 10 | 0.40 | 9.80 | 17.00 | 10.00 | • |
| SD D40-6.0-R0.4SP17 | 39.70 | 6.00 | 11.00 | 10 | 0.40 | 9.80 | 17.00 | 10.00 | • |
| SD D40-7.0-R0.4SP17 | 39.70 | 7.00 | 11.00 | 10 | 0.40 | 9.80 | 17.00 | 10.00 | • |
| SD D40-8.0-R0.4SP17 | 39.70 | 8.00 | 11.00 | 10 | 0.40 | 9.80 | 17.00 | 10.00 | • |
| SD D40-9.0-R0.4SP17 | 39.70 | 9.00 | 11.00 | 10 | 0.40 | 9.80 | 17.00 | 10.00 | • |
| SD D40-10-R0.4SP17 | 39.70 | 10.00 | 11.00 | 10 | 0.40 | 9.80 | 17.00 | 10.00 | • |

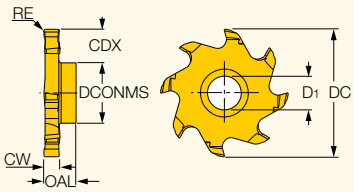
• For shanks, see pages 373-375 • For user guide, see pages 426-432

(1) Maximum feed: 0.04 mm/tooth
(2) Maximum feed: 0.1 mm/tooth
(3) Cutting depth maximum
(4) Number of flutes

Continued

T-SLOT

**SD-SP**
Interchangeable Solid Carbide T-SLOT Milling Heads

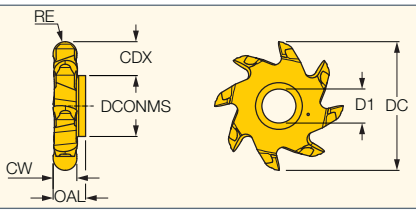



| Designation | Dimensions DC | CW | CDX(3) | NOF(4) | RE | D1 | DCONMS | OAL | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| SD D50-2.0-R0.4-SP19 | 49.70 | 2.00 | 15.00 | 12 | 0.40 | 9.80 | 19.00 | 14.00 | • |
| SD D50-3.0-R0.4-SP19 | 49.70 | 3.00 | 15.00 | 12 | 0.40 | 9.80 | 19.00 | 14.00 | • |
| SD D50-4.0-R0.4-SP19 | 49.70 | 4.00 | 15.00 | 12 | 0.40 | 9.80 | 19.00 | 14.00 | • |
| SD D50-5.0-R0.4-SP19 | 49.70 | 5.00 | 15.00 | 12 | 0.40 | 9.80 | 19.00 | 14.00 | • |
| SD D50-6.0-R0.4-SP19 | 49.70 | 6.00 | 15.00 | 12 | 0.40 | 9.80 | 19.00 | 14.00 | • |
| SD D50-7.0-R0.4-SP19 | 49.70 | 7.00 | 15.00 | 12 | 0.40 | 9.80 | 19.00 | 14.00 | • |
| SD D50-8.0-R0.4-SP19 | 49.70 | 8.00 | 15.00 | 12 | 0.40 | 9.80 | 19.00 | 14.00 | • |
| SD D50-9.0-R0.4-SP19 | 49.70 | 9.00 | 15.00 | 12 | 0.40 | 9.80 | 19.00 | 14.00 | • |
| SD D50-10-R0.4-SP19 | 49.70 | 10.00 | 15.00 | 12 | 0.40 | 9.80 | 19.00 | 14.00 | • |
| SD D50-12-R0.4-SP19 | 49.70 | 12.00 | 15.00 | 12 | 0.40 | 9.80 | 19.00 | 14.00 | • |

• For shanks, see pages 373-375 • For user guide, see pages 426-432
(1) Maximum feed: 0.04 mm/tooth
(2) Maximum feed: 0.1 mm/tooth
(3) Cutting depth maximum
(4) Number of flutes

T-SLOT

**SD-R-SP**
Interchangeable Solid Carbide T-Slot Milling Heads with Full Radius




| Designation | Dimensions DC | CW | CDX | CICT(1) | RE | D1 | DCONMS | OAL | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| SD D32-03-R1.5-SP15 | 31.70 | 3.00 | 8.00 | 8 | 1.50 | 8.40 | 15.00 | 8.00 | • |
| SD D32-04-R2.0-SP15 | 31.70 | 4.00 | 8.00 | 8 | 2.00 | 8.40 | 15.00 | 8.00 | • |
| SD D32-05-R2.5-SP15 | 31.70 | 5.00 | 8.00 | 8 | 2.50 | 8.40 | 15.00 | 8.00 | • |
| SD D32-06-R3.0-SP15 | 31.70 | 6.00 | 8.00 | 8 | 3.00 | 8.40 | 15.00 | 8.00 | • |

New

• For shanks, see pages 373-375 • For user guide, see pages 426-432
(1) Number of inserts (or edges for solid tool)

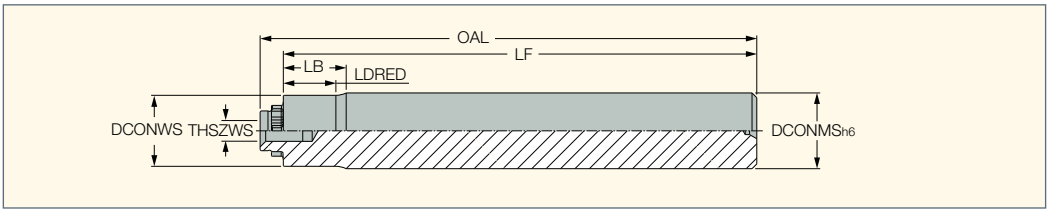
## Cutting Data for SD-SP Milling Heads

| ISO class DIN/ ISO 513 | Description | ISCAR mat. group* | Workpiece Material: Typical Representative AISI/SAE/ ASTM | DIN W.-Nr. | Hardness HB | Cutting Speed $V_c$ m/min | Feed for SP11 $f_z$ mm/tooth | Feed for SP13 $f_z$ mm/tooth | Feed for SP15 $f_z$ mm/tooth | Feed for SP17 $f_z$ mm/tooth | Feed for SP19 $f_z$ mm/tooth |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel | 1 | 1020 | 1.0402 | 130-180 | 130-200 | 0.06-0.12 | 0.06-0.12 | 0.07-0.15 | 0.07-0.15 | 0.07-0.15 |
| | low alloy steel | 8 | 4340 | 1.6511 | 260-300 | 120-170 | 0.06-0.12 | 0.06-0.12 | 0.07-0.15 | 0.07-0.15 | 0.07-0.15 |
| | low alloy steel | 9 | 3135 | 1.5710 | HRC 35-40* | 80-120 | 0.02-0.06 | 0.02-0.06 | 0.03-0.12 | 0.04-0.12 | 0.04-0.13 |
| | high alloy steel | 10 | H13 | 1.2344 | 200-220 | 100-140 | 0.04-0.07 | 0.04-0.07 | 0.04-0.12 | 0.04-0.12 | 0.05-0.13 |
| | martensitic S.S. | 12 | 420 | 1.4021 | 200 | 100-140 | 0.03-0.06 | 0.03-0.06 | 0.04-0.12 | 0.04-0.12 | 0.04-0.13 |
| M | austenitic S.S. | 14 | 304L | 1.4306 | 200 | 80-120 | 0.02-0.06 | 0.02-0.06 | 0.03-0.10 | 0.03-0.12 | 0.03-0.12 |
| K | grey cast iron | 16 | class 40 | 0.6025 (GG25) | 250 | 160-200 | 0.05-0.12 | 0.05-0.12 | 0.05-0.20 | 0.06-0.20 | 0.06-0.20 |
| | nodular cast iron | 17 | class 65-45-12 | 0.7050 (GGG50) | 200 | 140-180 | 0.05-0.11 | 0.05-0.11 | 0.05-0.18 | 0.06-0.18 | 0.06-0.20 |
| S | high temperature alloys | 34 | inconel 718 | 2.4668 | HRC 36-40 | 20-30 | 0.02-0.12 | 0.02-0.12 | 0.02-0.12 | 0.02-0.12 | 0.02-0.13 |
| | | 37 | AMS R56400 | 3.7165 (Ti6Al4V) | HRC 40-45 | 35-45 | 0.02-0.06 | 0.02-0.06 | 0.02-0.12 | 0.02-0.12 | 0.02-0.13 |

* ISCAR material group in accordance with VDI 3323 standard
** Quenched and tempered
When machining in unstable conditions, the table values should be reduced by 20-30%.

T-SLOT

**SD S-A-SP**
Stepped Cylindrical Shanks for Interchangeable Solid Carbide Milling Heads




| Designation | DCONMS | DCONWS | THSZWS | LDRED | LB | LF | OAL | Shank m.(1) | kg |
|---|---|---|---|---|---|---|---|---|---|
| SD S-A-L90-C12-SP11 | 12.00 | 11.00 | M4x0.5 | 10.50 | 12.7 | 90.00 | 94.00 | S | 0.08 |
| SD S-A-L100-C16 SP13 | 16.00 | 13.00 | M4x0.5 | 13.00 | 16.6 | 100.00 | 104.00 | S | 0.15 |
| SD S-A-L100-C16-SP15 | 16.00 | 15.00 | M5x0.5 | 16.00 | 18.2 | 100.00 | 105.00 | S | 0.16 |
| SD S-A-L130-C16-SP15 | 16.00 | 15.00 | M5x0.5 | 16.00 | 18.2 | 130.00 | 135.00 | S | 0.20 |
| SD S-A-L130-C16-SP15-C | 16.00 | 15.00 | M5x0.5 | 16.00 | 18.2 | 130.00 | 135.00 | C | 0.36 |
| SD S-A-L150-C16-SP15-C | 16.00 | 15.00 | M5x0.5 | 16.00 | 18.2 | 150.00 | 155.00 | C | 0.41 |
| SD S-A-L140-C20 SP17 | 20.00 | 17.00 | M6x0.5 | 20.20 | 23.8 | 140.00 | 146.00 | S | 0.00 |
| SD S-A-L150-C25-SP19 | 25.00 | 19.00 | M6x0.5 | 20.00 | 27.9 | 150.00 | 158.50 | S | 0.55 |

- Apply lubricant to the clamping screw

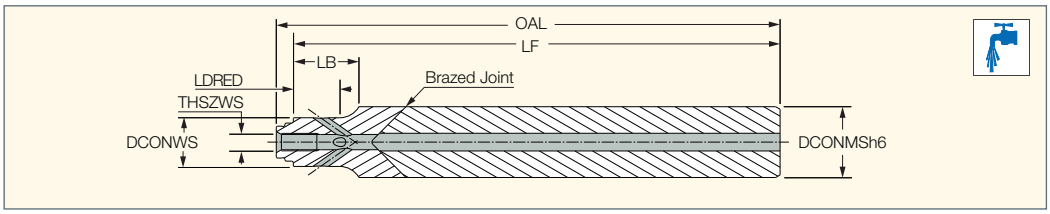
(1) S-steel C-solid carbide

## Spare Parts

| Designation | | | |
|---|---|---|---|
| SD S-A-L90-C12-SP11 | SR M4X0.5-SP11 HG | BLD T15/S7 | SW6-T-SH |
| SD S-A-L100-C16 SP13 | SR M4X0.5-SP13-IP15-HG | BLD IP15/S7 | SW6-T-SH |
| SD S-A-L100-C16-SP15 | SR M5X0.5-SP15-IP20-HG | BLD IP20/S7 | SW6-T-SH |
| SD S-A-L130-C16-SP15 | SR M5X0.5-SP15-IP20-HG | BLD IP20/S7 | SW6-T-SH |
| SD S-A-L130-C16-SP15-C | SR M5X0.5-SP15-IP20-HG | BLD IP20/S7 | SW6-T-SH |
| SD S-A-L150-C16-SP15-C | SR M5X0.5-SP15-IP20-HG | BLD IP20/S7 | SW6-T-SH |
| SD S-A-L140-C20 SP17 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T |
| SD S-A-L150-C25-SP19 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T |

T-SLOT

**SD S-A-C-H-SP**
Stepped Cylindrical Carbide Shanks with Brazed Steel Segment for Interchangeable Solid Carbide Milling Heads




| Designation | DCONMS | DCONWS | THSZWS | LDRED | LB | LF | OAL | Shank m. | kg |
|---|---|---|---|---|---|---|---|---|---|
| SD S-A-L110-C16-C-H-SP11 | 16.00 | 11.00 | M4x0.5 | 10.5 | 14.83 | 110.00 | 113.85 | C | 0.30 |
| SD S-A-L130-C16-C-H-SP13 | 16.00 | 13.00 | M4x0.5 | 13.0 | 16.57 | 130.00 | 134.35 | C | 0.35 |
| SD S-A-L130-C16-C-H-SP15 | 16.00 | 15.00 | M5x0.5 | 16.0 | 18.18 | 130.00 | 134.90 | C | 0.35 |
| SD S-A-L140-C20-C-H-SP17 | 20.00 | 17.00 | M6x0.5 | 20.2 | 23.77 | 140.00 | 146.00 | C | 0.60 |
| SD S-A-L160-C25-C-H-SP19 | 25.00 | 19.00 | M6x0.5 | 20.0 | 24.58 | 160.00 | 168.50 | C | 1.10 |

New

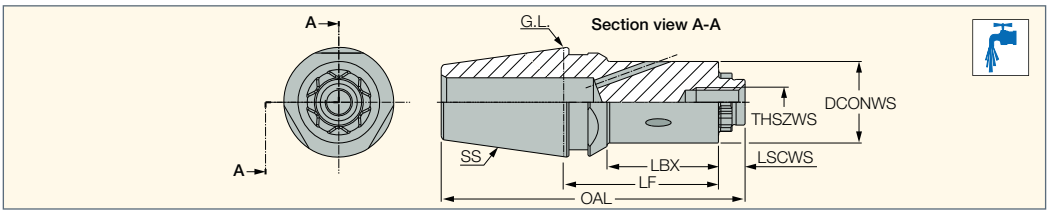
- Apply lubricant to the clamping screw

## Spare Parts

| Designation | | | |
|---|---|---|---|
| SD S-A-L110-C16-C-H-SP11 | SR M4X0.5-SP11 HG | BLD T15/S7 | SW6-T-SH |
| SD S-A-L130-C16-C-H-SP13 | SR M4X0.5-SP13-IP15-HG | BLD IP15/S7 | SW6-T-SH |
| SD S-A-L130-C16-C-H-SP15 | SR M5X0.5-SP15-IP20-HG | BLD IP20/S7 | SW6-T-SH |
| SD S-A-L140-C20-C-H-SP17 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T |
| SD S-A-L160-C25-C-H-SP19 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T |

NEOCOLLET
INTEGRAL COLLET

**SD-S-A-ER-SP**
Solid ER Collets with SD Spline Connection (SP)




| Designation | SS | LBX[1] | LF | DCONWS | THSZWS | LSCWS | OAL | kg |
|---|---|---|---|---|---|---|---|---|
| SD-S-A-H05-ER16-SP11-C | ER16 | 5.00 | 12.60 | 11.00 | M4X0.5 | 3.85 | 36.35 | 0.03 |
| SD-S-A-H20-ER16-SP11-C | ER16 | 20.00 | 27.60 | 11.00 | M4X0.5 | 3.85 | 51.35 | 0.04 |
| SD-S-A-H05-ER20-SP11-C | ER20 | 5.00 | 13.60 | 11.00 | M4X0.5 | 3.85 | 39.85 | 0.05 |
| SD-S-A-H05-ER20-SP13-C | ER20 | 5.00 | 13.60 | 13.00 | M4X0.5 | 4.35 | 40.35 | 0.05 |
| SD-S-A-H05-ER20-SP15-C | ER20 | 5.00 | 13.60 | 15.00 | M5X0.5 | 4.90 | 40.90 | 0.05 |
| SD-S-A-H20-ER20-SP11-C | ER20 | 20.00 | 28.60 | 11.00 | M4X0.5 | 3.85 | 54.85 | 0.06 |
| SD-S-A-H20-ER20-SP13-C | ER20 | 20.00 | 28.60 | 13.00 | M4X0.5 | 4.35 | 55.35 | 0.07 |
| SD-S-A-H20-ER20-SP15-C | ER20 | 20.00 | 28.60 | 15.00 | M5X0.5 | 4.90 | 55.90 | 0.08 |
| SD-S-A-H05-ER25-SP11-C | ER25 | 5.00 | 14.10 | 11.00 | M4X0.5 | 3.85 | 42.85 | 0.09 |
| SD-S-A-H05-ER25-SP13-C | ER25 | 5.00 | 14.10 | 13.00 | M4X0.5 | 4.35 | 43.35 | 0.09 |
| SD-S-A-H05-ER25-SP15-C | ER25 | 5.00 | 14.10 | 15.00 | M5X0.5 | 4.90 | 43.90 | 0.09 |
| SD-S-A-H05-ER25-SP17-C | ER25 | 5.00 | 14.10 | 17.00 | M6X0.5 | 6.00 | 45.00 | 0.09 |
| SD-S-A-H05-ER25-SP19-C | ER25 | 5.00 | 14.10 | 19.00 | M6X0.5 | 8.50 | 47.50 | 0.09 |
| SD-S-A-H20-ER25-SP11-C | ER25 | 20.00 | 29.10 | 11.00 | M4X0.5 | 3.85 | 57.85 | 0.10 |
| SD-S-A-H20-ER25-SP13-C | ER25 | 20.00 | 29.10 | 13.00 | M4X0.5 | 4.35 | 58.35 | 0.10 |
| SD-S-A-H20-ER25-SP15-C | ER25 | 20.00 | 29.10 | 15.00 | M5X0.5 | 4.90 | 58.90 | 0.11 |
| SD-S-A-H20-ER25-SP17-C | ER25 | 20.00 | 29.10 | 17.00 | M6X0.5 | 6.00 | 60.00 | 0.12 |
| SD-S-A-H20-ER25-SP19-C | ER25 | 20.00 | 29.10 | 19.00 | M6X0.5 | 8.50 | 62.50 | 0.13 |
| SD-S-A-H05-ER32-SP13-C | ER32 | 5.00 | 15.10 | 13.00 | M4X0.5 | 4.35 | 49.35 | 0.14 |
| SD-S-A-H05-ER32-SP15-C | ER32 | 5.00 | 15.10 | 15.00 | M5X0.5 | 4.90 | 49.90 | 0.15 |
| SD-S-A-H05-ER32-SP17-C | ER32 | 5.00 | 15.10 | 17.00 | M6X0.5 | 6.00 | 51.00 | 0.15 |
| SD-S-A-H05-ER32-SP19-C | ER32 | 5.00 | 15.10 | 19.00 | M6X0.5 | 8.50 | 53.50 | 0.15 |
| SD-S-A-H20-ER32-SP13-C | ER32 | 20.00 | 30.10 | 13.00 | M4X0.5 | 4.35 | 64.35 | 0.16 |
| SD-S-A-H20-ER32-SP15-C | ER32 | 20.00 | 30.10 | 15.00 | M5X0.5 | 4.90 | 64.90 | 0.16 |
| SD-S-A-H20-ER32-SP17-C | ER32 | 20.00 | 30.10 | 17.00 | M6X0.5 | 6.00 | 66.00 | 0.17 |
| SD-S-A-H20-ER32-SP19-C | ER32 | 20.00 | 30.10 | 19.00 | M6X0.5 | 8.50 | 68.50 | 0.18 |
| SD-S-A-H05-ER40-SP17-C | ER40 | 5.00 | 17.20 | 17.00 | M6X0.5 | 6.00 | 57.00 | 0.26 |
| SD-S-A-H05-ER40-SP19-C | ER40 | 5.00 | 17.20 | 19.00 | M6X0.5 | 8.50 | 59.20 | 0.27 |
| SD-S-A-H20-ER40-SP17-C | ER40 | 20.00 | 32.20 | 17.00 | M6X0.5 | 6.00 | 72.00 | 0.29 |
| SD-S-A-H20-ER40-SP19-C | ER40 | 20.00 | 32.20 | 19.00 | M6X0.5 | 8.50 | 74.50 | 0.30 |

- Apply lubricant to the slotting head and its clamping screw

[1] After the nut is mounted

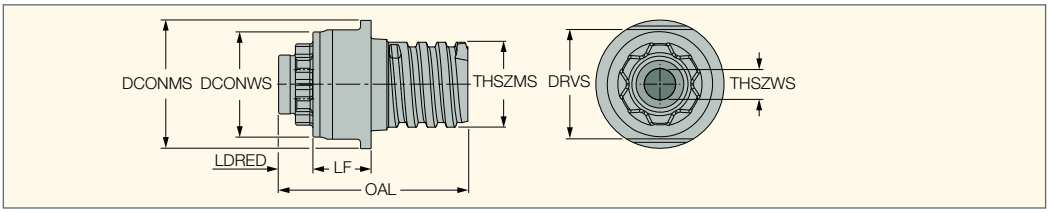
## Spare Parts

| Designation | | | |
|---|---|---|---|
| SD-S-A-H05-ER16-SP11-C | SR M4X0.5-SP11 HG | SW6-T-SH | BLD T15/S7 |
| SD-S-A-H20-ER16-SP11-C | SR M4X0.5-SP11 HG | SW6-T-SH | BLD T15/S7 |
| SD-S-A-H05-ER20-SP11-C | SR M4X0.5-SP11 HG | SW6-T-SH | BLD T15/S7 |
| SD-S-A-H05-ER20-SP13-C | SR M4X0.5-SP13-IP15-HG | SW6-T-SH | BLD IP15/S7 |
| SD-S-A-H05-ER20-SP15-C | SR M5X0.5-SP15-IP20-HG | SW6-T-SH | BLD IP20/S7 |
| SD-S-A-H20-ER20-SP11-C | SR M4X0.5-SP11 HG | SW6-T-SH | BLD T15/S7 |
| SD-S-A-H20-ER20-SP13-C | SR M4X0.5-SP13-IP15-HG | SW6-T-SH | BLD IP15/S7 |
| SD-S-A-H20-ER20-SP15-C | SR M5X0.5-SP15-IP20-HG | SW6-T-SH | BLD IP20/S7 |
| SD-S-A-H05-ER25-SP11-C | SR M4X0.5-SP11 HG | SW6-T-SH | BLD T15/S7 |
| SD-S-A-H05-ER25-SP13-C | SR M4X0.5-SP13-IP15-HG | SW6-T-SH | BLD IP15/S7 |
| SD-S-A-H05-ER25-SP15-C | SR M5X0.5-SP15-IP20-HG | SW6-T-SH | BLD IP20/S7 |
| SD-S-A-H05-ER25-SP17-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |
| SD-S-A-H05-ER25-SP19-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |
| SD-S-A-H20-ER25-SP11-C | SR M4X0.5-SP11 HG | SW6-T-SH | BLD T15/S7 |
| SD-S-A-H20-ER25-SP13-C | SR M4X0.5-SP13-IP15-HG | SW6-T-SH | BLD IP15/S7 |
| SD-S-A-H20-ER25-SP15-C | SR M5X0.5-SP15-IP20-HG | SW6-T-SH | BLD IP20/S7 |
| SD-S-A-H20-ER25-SP17-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |
| SD-S-A-H20-ER25-SP19-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |
| SD-S-A-H05-ER32-SP13-C | SR M4X0.5-SP13-IP15-HG | SW6-T-SH | BLD IP15/S7 |
| SD-S-A-H05-ER32-SP15-C | SR M5X0.5-SP15-IP20-HG | SW6-T-SH | BLD IP20/S7 |
| SD-S-A-H05-ER32-SP17-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |
| SD-S-A-H05-ER32-SP19-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |
| SD-S-A-H20-ER32-SP13-C | SR M4X0.5-SP13-IP15-HG | SW6-T-SH | BLD IP15/S7 |
| SD-S-A-H20-ER32-SP15-C | SR M5X0.5-SP15-IP20-HG | SW6-T-SH | BLD IP20/S7 |
| SD-S-A-H20-ER32-SP17-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |
| SD-S-A-H20-ER32-SP19-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |
| SD-S-A-H05-ER40-SP17-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |
| SD-S-A-H05-ER40-SP19-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |
| SD-S-A-H20-ER40-SP17-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |
| SD-S-A-H20-ER40-SP19-C | SR M6X0.5-SP1719-IP25-HG | SW6-T | BLD IP25/S7 |

[a] Recommended tightening torque:10.0 N*m

## MULTI-MASTER

**SD CAB**
Adapters for Connecting SD Solid Carbide T-SLOT Milling Heads and MULTI-MASTER Shanks




| Designation | THSZWS | THSZMS | LF | LDRED | OAL | DCONWS | DCONMS | DRVS[1] | kg |
|---|---|---|---|---|---|---|---|---|---|
| SD CAB T10-14/0.55-SP11 | M4x0.5 | T10 | 14.00 | 3.9 | 29.15 | 11.00 | 15.20 | 13.0 | 0.02 |
| SD CAB T12-14/0.55-SP13 | M4x0.5 | T12 | 14.00 | 4.3 | 31.65 | 13.00 | 18.30 | 16.0 | 0.04 |
| SD CAB T12-14/0.55-SP15 | M5x0.5 | T12 | 14.00 | 4.9 | 32.70 | 15.00 | 18.30 | 16.0 | 0.04 |
| SD CAB T15-14/0.55-SP17 | M6x0.5 | T15 | 14.00 | 6.0 | 37.00 | 17.00 | 23.90 | 20.0 | 0.11 |
| SD CAB T15-14/0.55-SP19 | M6x0.5 | T15 | 14.00 | 8.5 | 39.50 | 19.00 | 23.90 | 20.0 | 0.07 |

- Apply Lubricant to the Screw Head and Threads

(1) Clamping wrench size

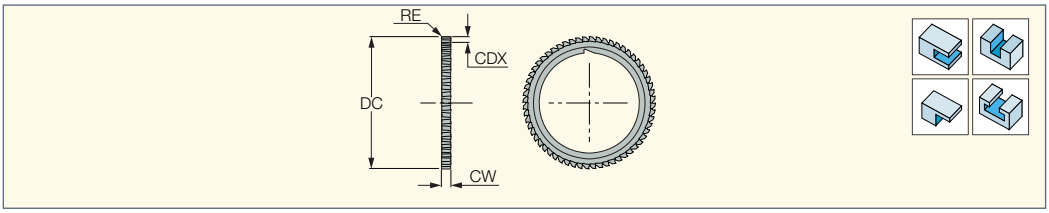
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| SD CAB T10-14/0.55-SP11 | SR M4X0.5-SP11 HG | BLD T15/S7 | SW6-T-SH | MM KEY 13X8* |
| SD CAB T12-14/0.55-SP13 | SR M4X0.5-SP13-IP15-HG | BLD IP15/S7 | SW6-T-SH | |
| SD CAB T12-14/0.55-SP15 | SR M5X0.5-SP15-IP20-HG | BLD IP20/S7 | SW6-T-SH | |
| SD CAB T15-14/0.55-SP17 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T | |
| SD CAB T15-14/0.55-SP19 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T | |

* Optional, to be ordered separately

## DISCMILL

**SD-P**
Interchangeable Solid Carbide T-SLOT Milling Rings




| Designation | DC | CDX | CW | RE | CICT[1] | ZEFP |
|---|---|---|---|---|---|---|
| SD D125-8.85-R0.3-C100-P | 125.00 | 5.50 | 8.85 | 0.30 | 60 | 60 |

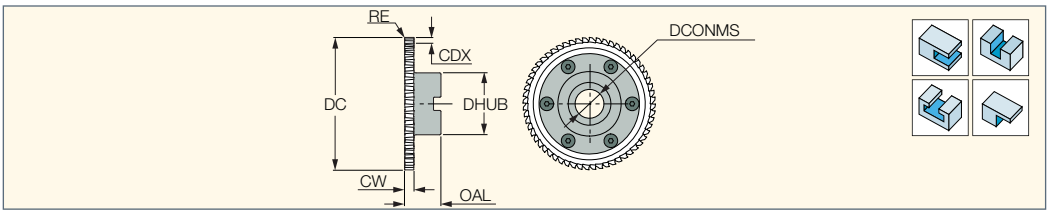
New

- For user guide, see pages 426-432

(1) Number of inserts (or edges for solid tool)

## DISCMILL

**MP F**
Driver Holder for T-SLOT Ring




| Designation | DC | CW | CDX | OAL | DHUB | DCONMS | Arbor | kg |
|---|---|---|---|---|---|---|---|---|
| MP F-D125-27-C100 | 125.00 | 8.85 | 5.50 | 33.85 | 58.00 | 27.00 | B | 0.87 |

New

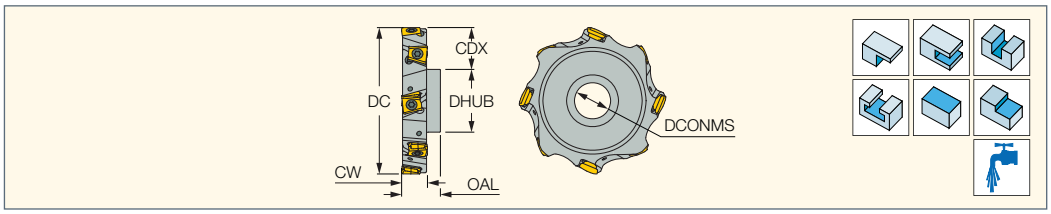
- For user guide, see pages 426-432

### Spare Parts

| Designation | | | |
|---|---|---|---|
| MP F | CAP D125-C100 | SR M3X5.5 | HW 4.0 |

## TANGDISC

**SD-T490**
Interchangeable T-SLOT with SP Connection Carrying T490 0502 PNTN Inserts with 2 Right- and 2 Left-Hand Cutting Edges




| Designation | DC | DHUB | CW | NOF(1) | ZEFP | CDX(2) | DCONMS | OAL | MIID(3) |
|---|---|---|---|---|---|---|---|---|---|
| SD D025-07-SP13-T490-05 | 24.70 | 13.00 | 7.00 | 6 | 3 | 5.75 | 7.50 | 8.25 | T490 LNHT 0502-PNTN |
| SD D032-07-SP15-T490-05 | 31.70 | 15.00 | 7.00 | 8 | 4 | 8.25 | 8.40 | 9.50 | T490 LNHT 0502-PNTN |
| SD D040-07-SP17-T490-05 | 39.70 | 17.00 | 7.00 | 10 | 5 | 11.25 | 9.80 | 10.50 | T490 LNHT 0502-PNTN |
| SD D050-07-SP19-T490-05 | 49.70 | 19.00 | 7.00 | 12 | 6 | 15.25 | 9.80 | 14.10 | T490 LNHT 0502-PNTN |

New

- For user guide, see pages 426-432

(1) Number of flutes
(2) Cutting depth maximum
(3) Master insert identification

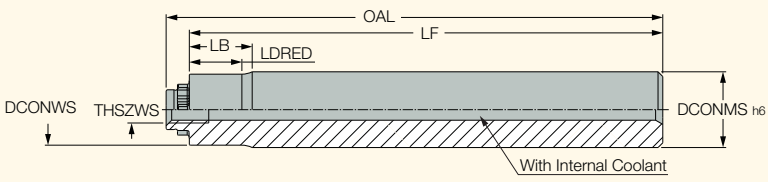
**For inserts, see pages:** T490 LNHT 05-PNTN (544)
**For holders, see pages:** SD S-A-C-SP (376)

### Spare Parts

| Designation | | |
|---|---|---|
| SD-T490 | SR M2X0.4-4.8 IP6 | T-6IP/51 |

## TANGDISC

**SD S-A-C-SP**
Stepped Cylindrical Shanks for Interchangeable Milling Cutter Heads




| Designation | DCONMS | DCONWS | THSZWS | LDRED | LB | LF | OAL | Shank m. |
|---|---|---|---|---|---|---|---|---|
| SD S-A-L090-C16-CH-SP13 | 16.00 | 13.00 | M4x0.5 | 13.00 | 16.6 | 90.00 | 94.00 | S |
| SD S-A-L090-C16-CH-SP15 | 16.00 | 15.00 | M5x0.5 | 16.00 | 18.2 | 90.00 | 94.00 | S |
| SD S-A-L130-C20-CH-SP17 | 20.00 | 17.00 | M6x0.5 | 20.20 | 23.8 | 13.00 | 13.00 | S |
| SD S-A-L150-C25-CH-SP19 | 25.00 | 19.00 | M6x0.5 | 20.00 | 27.9 | 15.00 | 15.00 | S |

New

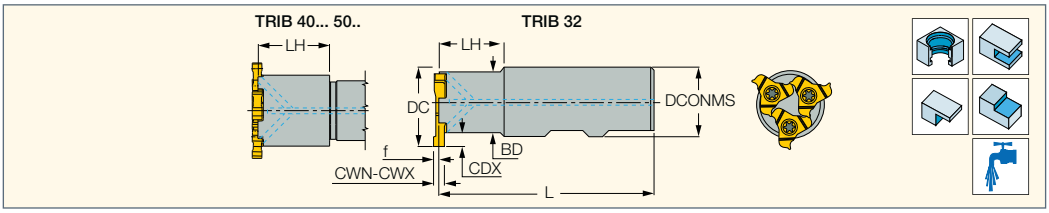
- Apply lubricant to the clamping screw

### Spare Parts

| Designation | | | |
|---|---|---|---|
| SD S-A-L090-C16-CH-SP13 | SR M4X0.5-SP13-IP15-HG | BLD IP15/S7 | SW6-T-SH |
| SD S-A-L090-C16-CH-SP15 | SR M5X0.5-SP15-IP20-HG | BLD IP20/S7 | SW6-T-SH |
| SD S-A-L130-C20-CH-SP17 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T |
| SD S-A-L150-C25-CH-SP19 | SR M6X0.5-SP1719-IP25-HG | BLD IP25/S7 | SW6-T |

**CHAMSLIT**

**TRIB**
Slitting Shanks Carrying Triple-Edged Precision Ground Inserts




| Designation | DC | CWN[2] | CWX[3] | CDX[4] | CICT[5] | BD | LH | L | DCONMS | Shank[6] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TRIB 32-25W-3Z [1] | 32.20 | 1.20 | 4.00 | 4.80 | 3 | 21.70 | 52.3 | 110.00 | 25.00 | W | 0.35 |
| TRIB 32-25W-3Z-B [1] | 32.20 | 4.01 | 6.50 | 4.80 | 3 | 21.70 | 52.3 | 110.00 | 25.00 | W | 0.34 |
| TRIB 40-25W-4Z | 40.00 | 1.20 | 4.00 | 4.80 | 4 | 29.70 | 30.0 | 110.00 | 25.00 | W | 0.44 |
| TRIB 40-25W-4Z-B | 40.00 | 4.01 | 6.50 | 4.80 | 4 | 29.70 | 30.0 | 110.00 | 25.00 | W | 0.44 |
| TRIB 50-32W-6Z | 50.00 | 1.20 | 4.00 | 4.80 | 6 | 39.70 | 30.0 | 110.00 | 32.00 | W | 0.75 |

• W, Tmax, f, Refer to insert data • For inserts with W=4.01-6.50 mm, order tools with -B suffix (deeper pockets). For example: TRIB 50-32W-6Z-B

[1] Minimum bore diameter = 33 mm

[2] Minimum cutting width

[3] Maximum cutting width

[4] Refer to insert data

[5] Number of inserts (or edges for solid tool)

[6] W-Weldon

**For inserts, see pages:** TRI (558)

## Dimensions Related to Inserts

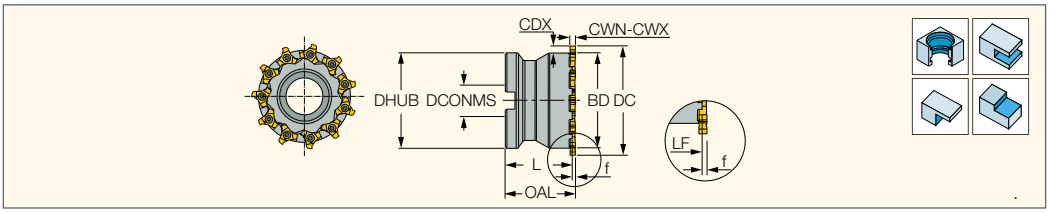
| Insert | Tmax | TRIB ...Z f | TRIB ...Z-B f |
|---|---|---|---|
| TRI 16RK-1.2-0.05 | 4.6 | 0.5 | |
| TRI 16RK-1.4-0.1 | 4.8 | 0.5 | |
| TRI 16RK-1.5-0.1 | 4.8 | 0.5 | |
| TRI 16RK-1.7-0.1 | 4.8 | 0.5 | |
| TRI 16RK-1.95-0.15 | 4.8 | 0.5 | |
| TRI 16RK-2.0-0.2 | 4.8 | 0.5 | |
| TRI 16RK-2.25-0.15 | 4.8 | 0.75 | |
| TRI 16RK-2.75-0.15 | 4.8 | 1.39 | |
| TRI 16RK-3.0-0.2 | 4.8 | 1.39 | |
| TRI 16RK-3.25-0.15 | 4.8 | 1.39 | |
| TRI 16RK-4.0-0.2 | 4.8 | 2.43 | |
| TRI 16RK-4.25-0.15 | 4.8 | | 0.95 |
| TRI 16RK-5.0-0.2 | 4.8 | | 2.15 |
| TRI 16RK-5.25-0.15 | 4.8 | | 2.15 |
| TRI 16RK-6.0-0.2 | 4.8 | | 3.15 |

## Spare Parts

| Designation | | | |
|---|---|---|---|
| TRIB 32-25W-3Z | SR 16-236 08223 | BLD T15/S7 | SW6-T |
| TRIB 32-25W-3Z-B | SR 16-236 | BLD T15/S7 | SW6-T |
| TRIB 40-25W-4Z | SR 16-236 08223 | BLD T15/S7 | SW6-T |
| TRIB 40-25W-4Z-B | SR 16-236 | BLD T15/S7 | SW6-T |
| TRIB 50-32W-6Z | SR 16-236 08223 | BLD T15/S7 | SW6-T |

**CHAMSLIT**

**TRIB-SM**
Grooving Shell Mills with Triple-Edged Precision Ground Inserts




| Designation | DC | CWN[1] | CWX[2] | CDX[3] | CICT[4] | BD | DHUB | DCONMS | L | Arbor[5] | kg | OAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TRIB 50-22SM 6Z | 50.00 | 1.20 | 4.00 | 4.80 | 6 | 39.70 | 39.70 | 22.00 | 39.00 | B | 0.24 | 39.50 |
| TRIB 50-22SM 6Z-B | 50.00 | 4.00 | 6.50 | 4.80 | 6 | 39.70 | 39.70 | 22.00 | 39.00 | B | 0.24 | 41.15 |
| TRIB 63-22SM 8Z | 63.00 | 1.20 | 4.00 | 4.80 | 8 | 52.70 | 40.00 | 22.00 | 39.00 | B | 0.40 | 39.50 |
| TRIB 63-22SM 8Z-B | 63.00 | 4.01 | 6.50 | 4.80 | 8 | 52.70 | 40.00 | 22.00 | 39.00 | B | 0.39 | 41.15 |
| TRIB 80-27SM 11Z | 80.00 | 1.20 | 4.00 | 4.80 | 11 | 69.70 | 69.70 | 27.00 | 49.00 | B | 0.92 | 49.50 |
| TRIB 80-27SM 11Z-B | 80.00 | 4.01 | 6.50 | 4.80 | 11 | 69.70 | 69.70 | 27.00 | 49.00 | B | 0.91 | 51.15 |

• CWN,CWX, CDX, f, Refer to insert data • For inserts with CW=4.01-6.50 mm, order tools with -B suffix (deeper pockets) for example: TRIB 63-22SM-8Z-B

(1) Minimum cutting width

(2) Maximum cutting width

(3) Cutting depth maximum

(4) Number of inserts (or edges for solid tool)

(5) For adaptation options, see page 432

**For inserts, see pages:** TRI (558)

## Dimensions Related to Inserts

| Insert | Tmax | TRIB ...Z f | TRIB ...Z-B f |
|---|---|---|---|
| TRI 16RK-1.2-0.05 | 4.6 | 0.5 | |
| TRI 16RK-1.4-0.1 | 4.8 | 0.5 | |
| TRI 16RK-1.5-0.1 | 4.8 | 0.5 | |
| TRI 16RK-1.7-0.1 | 4.8 | 0.5 | |
| TRI 16RK-1.95-0.15 | 4.8 | 0.5 | |
| TRI 16RK-2.0-0.2 | 4.8 | 0.5 | |
| TRI 16RK-2.25-0.15 | 4.8 | 0.75 | |
| TRI 16RK-2.75-0.15 | 4.8 | 1.39 | |
| TRI 16RK-3.0-0.2 | 4.8 | 1.39 | |
| TRI 16RK-3.25-0.15 | 4.8 | 1.39 | |
| TRI 16RK-4.0-0.2 | 4.8 | 2.43 | |
| TRI 16RK-4.25-0.15 | 4.8 | | 0.95 |
| TRI 16RK-5.0-0.2 | 4.8 | | 2.15 |
| TRI 16RK-5.25-0.15 | 4.8 | | 2.15 |
| TRI 16RK-6.0-0.2 | 4.8 | | 3.15 |

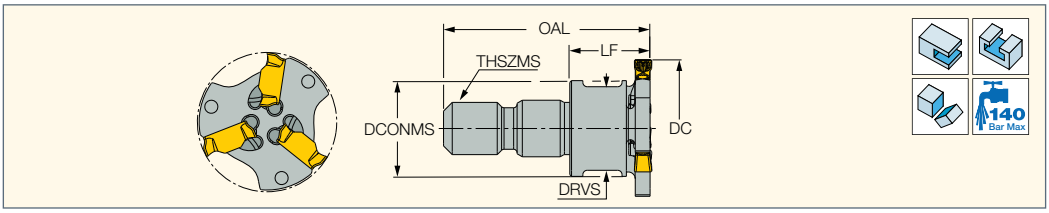
## Spare Parts

| Designation | | | |
|---|---|---|---|
| TRIB 50-22SM 6Z | SR 16-236 08223 | BLD T15/S7 | SW6-T |
| TRIB 50-22SM 6Z-B | SR 16-236 | BLD T15/S7 | SW6-T |
| TRIB 63-22SM 8Z | SR 16-236 08223 | BLD T15/S7 | SW6-T |
| TRIB 63-22SM 8Z-B | SR 16-236 | BLD T15/S7 | SW6-T |
| TRIB 80-27SM 11Z | SR 16-236 08223 | BLD T15/S7 | SW6-T |
| TRIB 80-27SM 11Z-B | SR 16-236 | BLD T15/S7 | SW6-T |

MINSLIT SMALL DIA SLIT

## DGSM-M-JHP

Groove Milling and Slitting Small Diameter Cutters with FLEX-FIT Threaded Adaptation




| Designation | DC | CW | CDX | CICT(1) | DCONMS | THSZMS | LF | OAL | DRVS(2) | Insert | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DGSM 16-2-M06-3Z-JHP | 16.00 | 2.00 | 3.70 | 3 | 10.00 | M06 | 9.65 | 24.15 | 8.0 | DGM 2002V | ESM 2-3 | MM KEY 8X5 |
| DGSM 16-3-M06-3Z-JHP | 16.00 | 3.00 | 3.70 | 3 | 10.00 | M06 | 8.30 | 22.50 | 8.0 | DGM 3002V | ESM 2-3 | MM KEY 8X5 |
| DGSM 18-2-M06-3Z-JHP | 18.00 | 2.00 | 4.70 | 3 | 10.00 | M06 | 9.65 | 24.15 | 8.0 | DGM 2002V | ESM 2-3 | MM KEY 8X5 |
| DGSM 18-3-M06-3Z-JHP | 18.00 | 3.00 | 4.70 | 3 | 10.00 | M06 | 9.80 | 24.00 | 8.0 | DGM 3002V | | |
| DGSM 22-2-M08-4Z-JHP | 22.00 | 2.00 | 5.70 | 4 | 12.00 | M08 | 8.65 | 26.15 | 10.0 | DGM 2002V | | |
| DGSM 22-3-M08-4Z-JHP | 22.00 | 3.00 | 5.70 | 4 | 12.00 | M08 | 9.30 | 26.50 | 10.0 | DGM 3002V | | |

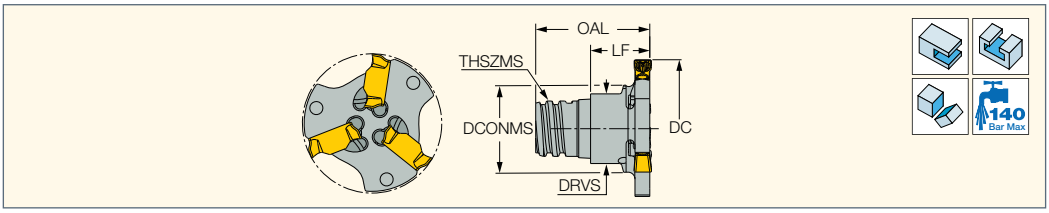
(1) Number of inserts (or edges for solid tool)
(2) Torque key size

**For inserts, see pages:** DGM-V (379)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

MINSLIT SMALL DIA SLIT

## DGSM-MM-JHP

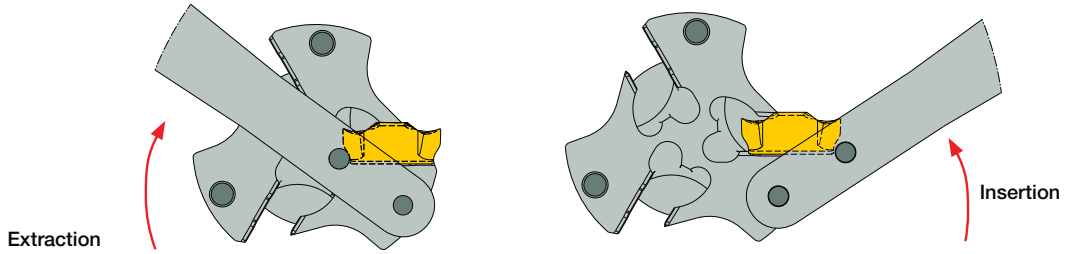
Groove Milling and Slitting Small Diameter Cutters with MULTI-MASTER Threaded Adaptation




| Designation | DC | CW | CDX | CICT(1) | DCONMS | THSZMS | LF | OAL | DRVS(2) | Insert | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DGSM 16-2-MMT06-3Z-JHP | 16.00 | 2.00 | 3.70 | 3 | 10.00 | T06 | 9.65 | 15.95 | 8.0 | DGM 2002V | | |
| DGSM 16-3-MMT06-3Z-JHP | 16.00 | 3.00 | 3.70 | 3 | 10.00 | T06 | 9.70 | 14.30 | 8.0 | DGM 3002V | ESM 2-3 | MM KEY 8X5 |
| DGSM 18-2-MMT06-3Z-JHP | 18.00 | 2.00 | 4.70 | 3 | 10.00 | T06 | 9.65 | 15.95 | 8.0 | DGM 2002V | | |
| DGSM 18-3-MMT06-3Z-JHP | 18.00 | 3.00 | 4.70 | 3 | 10.00 | T06 | 9.90 | 16.25 | 8.0 | DGM 3002V | | |
| DGSM 22-2-MMT08-4Z-JHP | 22.00 | 2.00 | 5.70 | 4 | 12.00 | T08 | 8.50 | 15.80 | 10.0 | DGM 2002V | | |
| DGSM 22-3-MMT08-4Z-JHP | 22.00 | 3.00 | 5.70 | 4 | 12.00 | T08 | 9.15 | 16.40 | 10.0 | DGM 3002V | | |

(1) Number of inserts (or edges for solid tool)
(2) Torque key size

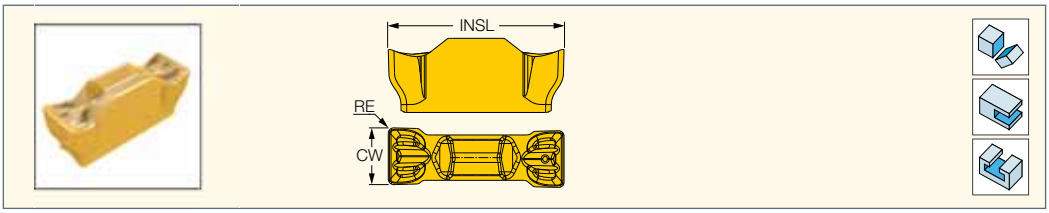
**For inserts, see pages:** DGM-V (379)
**For holders, see pages:** MM CAB (110) • MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)




MINSLIT SMALL DIA SLIT

## DGM-V

Miniature Double-Sided Inserts with Ridged Positive Chipformer for Slitting and Grooving a Wide Range of Materials

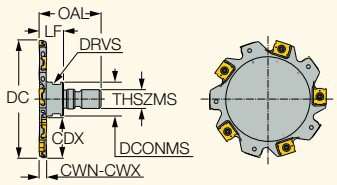


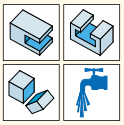

| Designation | Dimensions CW | RE | INSL | IC1008 | Recommended Machining Data f groove (mm/t) |
|---|---|---|---|---|---|
| DGM 2002V | 2.00 | 0.20 | 6.20 | • | 0.03-0.10 |
| DGM 3002V | 3.00 | 0.20 | 6.20 | • | 0.04-0.15 |

**For tools, see pages:** DGSM-M-JHP (379) • DGSM-MM-JHP (379)

## MINI-TANGSLOT

**ETS-LN08-M**
Grooving and Slitting Cutters with FLEX-FIT Threaded Adaptation



| Designation | DC | CWN[1] | CWX[2] | CDX[3] | NOF[4] | ZEFP | DCONMS | THSZMS | LF | OAL | DRVS[5] | TQ_3[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ETS D032-03-LN08-M08 | 32.00 | 3.00 [7] | 3.00 [7] | 9.30 | 4 | 2 | 13.00 | M08 | 13.00 | 30.50 | 10.0 | 20 |
| ETS D032-04-LN08-M08 | 32.00 | 4.00 [8] | 4.50 [11] | 9.30 | 4 | 2 | 13.00 | M08 | 13.00 | 30.50 | 10.0 | 20 |
| ETS D032-05-LN08-M10 | 32.00 | 5.00 [9] | 5.50 [12] | 7.00 | 4 | 2 | 18.00 | M10 | 13.00 | 33.00 | 16.0 | 29 |
| ETS D032-06-LN08-M10 | 32.00 | 6.00 [10] | 6.50 [13] | 7.00 | 4 | 2 | 18.00 | M10 | 13.00 | 33.00 | 16.0 | 29 |
| ETS D040-03-LN08-M08 | 40.00 | 3.00 [7] | 3.00 [7] | 13.00 | 6 | 3 | 13.00 | M08 | 13.00 | 30.50 | 10.0 | 20 |
| ETS D040-04-LN08-M08 | 40.00 | 4.00 [8] | 4.50 [11] | 13.00 | 6 | 3 | 13.00 | M08 | 13.00 | 30.50 | 10.0 | 20 |
| ETS D040-05-LN08-M10 | 40.00 | 5.00 [9] | 5.50 [12] | 11.00 | 6 | 3 | 18.00 | M10 | 13.00 | 33.00 | 16.0 | 29 |
| ETS D040-06-LN08-M10 | 40.00 | 6.00 [10] | 6.50 [13] | 11.00 | 6 | 3 | 18.00 | M10 | 13.00 | 33.00 | 16.0 | 29 |
| ETS D050-03-LN08-M10 | 50.00 | 3.00 [7] | 3.00 [7] | 15.50 | 8 | 4 | 18.00 | M10 | 13.00 | 33.00 | 16.0 | 29 |
| ETS D050-04-LN08-M10 | 50.00 | 4.00 [8] | 4.50 [11] | 15.50 | 8 | 4 | 18.00 | M10 | 13.00 | 33.00 | 16.0 | 29 |
| ETS D050-05-LN08-M12 | 50.00 | 5.00 [9] | 5.50 [12] | 14.50 | 8 | 4 | 21.00 | M12 | 13.00 | 35.00 | 17.0 | 33 |
| ETS D050-06-LN08-M12 | 50.00 | 6.00 [10] | 6.50 [13] | 14.50 | 8 | 4 | 21.00 | M12 | 13.00 | 35.00 | 17.0 | 33 |
| ETS D063-03-LN08-M10 | 63.00 | 3.00 [7] | 3.00 [7] | 22.00 | 10 | 5 | 18.00 | M10 | 13.00 | 33.00 | 16.0 | 29 |
| ETS D063-04-LN08-M10 | 63.00 | 4.00 [8] | 4.50 [11] | 22.00 | 10 | 5 | 18.00 | M10 | 13.00 | 33.00 | 16.0 | 29 |
| ETS D063-05-LN08-M12 | 63.00 | 5.00 [9] | 5.50 [12] | 21.00 | 10 | 5 | 21.00 | M12 | 13.00 | 35.00 | 17.0 | 33 |
| ETS D063-06-LN08-M12 | 63.00 | 6.00 [10] | 6.50 [13] | 21.00 | 10 | 5 | 21.00 | M12 | 13.00 | 35.00 | 17.0 | 33 |

• For user guide, see pages 383-385 • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

**(1)** Minimum cutting width
**(2)** Maximum cutting width
**(3)** Cutting depth maximum
**(4)** Number of flutes
**(5)** Clamping wrench size
**(6)** Tool tightening torque Nxm (lbfxin)
**(7)** Use LNET 0818.. insert with SR 114-018-L2.50 screw
**(8)** Use LNET 0826.. insert with SR 114-018-L3.40 screw
**(9)** Use LNET 0830.. insert with SR 114-018-L4.40 screw
**(10)** Use LNET 0835.. insert with SR 114-018-L5.30 screw
**(11)** Use LNET 0828.. insert with SR 114-018-L3.40 screw
**(12)** Use LNET 0832.. insert with SR 114-018-L4.40 screw
**(13)** Use LNET 0837.. insert with SR 114-018-L5.30

**For inserts, see pages:** LNET 08 (558)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

| Cutter Designation | CWN-CWX | Inserts |
|---|---|---|
| ETS D...-03-..-LN08 | 3 | LNET 081804-TN-N |
| ETS D...-04-..-LN08 | 4 | LNET 082604-TN-N |
| | 4.5 | LNET 082804-TN-N |
| ETS D...-05-..-LN08 | 5 | LNET 0830-TN-N |
| | 5.5 | LNET 0832-TN-N |
| ETS D...-06-..-LN08 | 6 | LNET 0835-TN-N |
| | 6.5 | LNET 0837-TN-N |

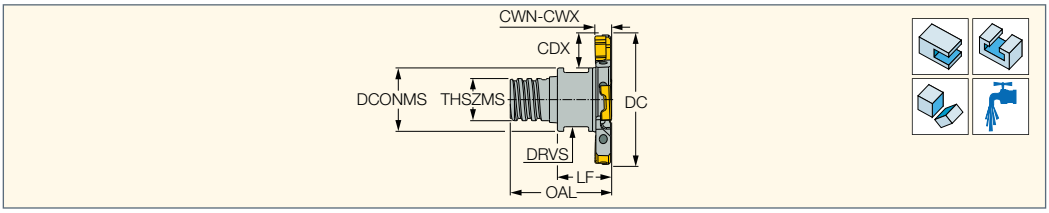
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| ETS D032-03-LN08-M08 | SR 114-018-L2.50 | T-6/3-L | T-6/5 | |
| ETS D032-04-LN08-M08 | SR 114-018-L3.40 | T-6/3-L | T-6/5 | |
| ETS D032-05-LN08-M10 | SR 114-018-L4.40 | T-6/3-L | T-6/5 | MM KEY 16X9* |
| ETS D032-06-LN08-M10 | SR 114-018-L5.30 | T-6/3-L | T-6/5 | MM KEY 16X9* |
| ETS D040-03-LN08-M08 | SR 114-018-L2.50 | T-6/3-L | T-6/5 | |
| ETS D040-04-LN08-M08 | SR 114-018-L3.40 | T-6/3-L | T-6/5 | |
| ETS D040-05-LN08-M10 | SR 114-018-L4.40 | T-6/3-L | T-6/5 | MM KEY 16X9* |
| ETS D040-06-LN08-M10 | SR 114-018-L5.30 | T-6/3-L | T-6/5 | MM KEY 16X9* |
| ETS D050-03-LN08-M10 | SR 114-018-L2.50 | T-6/3-L | T-6/5 | |
| ETS D050-04-LN08-M10 | SR 114-018-L3.40 | T-6/3-L | T-6/5 | |
| ETS D050-05-LN08-M12 | SR 114-018-L4.40 | T-6/3-L | T-6/5 | WRENCH ER11* |
| ETS D050-06-LN08-M12 | SR 114-018-L5.30 | T-6/3-L | T-6/5 | WRENCH ER11* |
| ETS D063-03-LN08-M10 | SR 114-018-L2.50 | T-6/3-L | T-6/5 | |
| ETS D063-04-LN08-M10 | SR 114-018-L3.40 | T-6/3-L | T-6/5 | |
| ETS D063-05-LN08-M12 | SR 114-018-L4.40 | T-6/3-L | T-6/5 | WRENCH ER11* |
| ETS D063-06-LN08-M12 | SR 114-018-L5.30 | T-6/3-L | T-6/5 | WRENCH ER11* |

* Optional, to be ordered separately

**MINI-TANGSLOT**

**ETS-LN08-MM**
Grooving and Slitting Cutters
with MULTI-MASTER
Threaded Adaptator




| Designation | DC | CWN(1) | CWX(2) | CDX(3) | NOF(4) | ZEFP | DCONMS | THSZMS | LF | OAL | DRVS(5) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ETS D32/1.26-4-LN08-MMT10 | 32.00 | 4.00 (6) | 4.50 (7) | 8.20 | 4 | 2 | 15.20 | T10 | 13.00 | 24.30 | 13.0 |
| ETS D40/1.57-4-LN08-MMT12 | 40.00 | 4.00 (6) | 4.50 (7) | 10.40 | 6 | 3 | 18.20 | T12 | 13.00 | 26.30 | 16.0 |

• For user guide, see pages 383-385
(1) Minimum cutting width
(2) Maximum cutting width
(3) Cutting depth maximum
(4) Number of flutes
(5) Torque key size
(6) Use LNET 0826.. insert with SR 114-018-L3.40 screw
(7) Use LNET 0828.. insert with SR 114-018-L3.40 screw

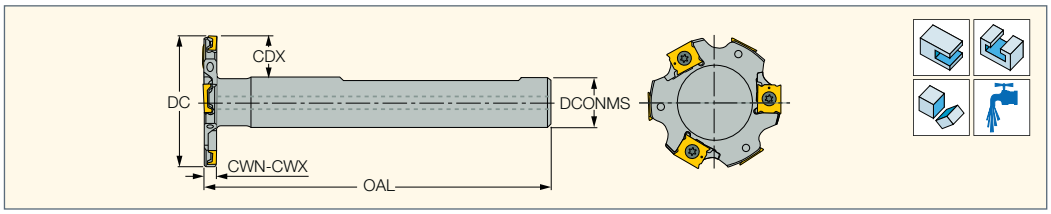
**For inserts, see pages:** LNET 08 (558)
**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

## Spare Parts

| Designation | | | |
|---|---|---|---|
| ETS-LN08-MM | SR 114-018-L3.40 | T-6/5 | T-6/3-L |

**MINI-TANGSLOT**

**ETS-LN08**
Grooving and Slitting Cutters




| Designation | DC | CWN[2] | CWX[3] | CDX[4] | NOF[5] | ZEFP | DCONMS | Shank[6] | OAL | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| ETS D032-03-W16-LN08 | 32.00 | 3.00 [7] | 3.00 [7] | 7.90 | 4 | 2 | 16.00 | W | 90.00 | 0.14 |
| ETS D032-04-W16-LN08 | 32.00 | 4.00 [8] | 4.50 [12] | 7.90 | 4 | 2 | 16.00 | W | 90.00 | 0.14 |
| ETS D032-05-W16-LN08 | 32.00 | 5.00 [9] | 5.50 [13] | 7.90 | 4 | 2 | 16.00 | W | 90.00 | 0.14 |
| ETS D032-06-W16-LN08 | 32.00 | 6.00 [10] | 6.50 [14] | 7.90 | 4 | 2 | 16.00 | W | 90.00 | 0.14 |
| ETS D032-07-W16-LN08 [1] | 32.00 | 7.00 [11] | 8.00 [15] | 7.90 | 4 | 2 | 16.00 | W | 90.00 | 0.14 |
| ETS D040-03-W16-LN08 | 40.00 | 3.00 [7] | 3.00 [7] | 11.90 | 6 | 3 | 16.00 | W | 104.00 | 0.16 |
| ETS D040-04-W16-LN08 | 40.00 | 4.00 [8] | 4.50 [12] | 11.90 | 6 | 3 | 16.00 | W | 104.00 | 0.16 |
| ETS D040-05-W16-LN08 | 40.00 | 5.00 [9] | 5.50 [13] | 11.90 | 6 | 3 | 16.00 | W | 104.00 | 0.16 |
| ETS D040-06-W16-LN08 | 40.00 | 6.00 [10] | 6.50 [14] | 11.90 | 6 | 3 | 16.00 | W | 104.00 | 0.17 |
| ETS D040-07-W16-LN08 [1] | 40.00 | 7.00 [11] | 8.00 [15] | 11.70 | 6 | 3 | 16.00 | W | 104.00 | 0.17 |
| ETS D050-03-W20-LN08 | 50.00 | 3.00 [7] | 3.00 [7] | 14.90 | 8 | 4 | 20.00 | W | 110.00 | 0.26 |
| ETS D050-04-W20-LN08 | 50.00 | 4.00 [8] | 4.50 [12] | 14.90 | 8 | 4 | 20.00 | W | 110.00 | 0.27 |
| ETS D050-05-W20-LN08 | 50.00 | 5.00 [9] | 5.50 [13] | 14.90 | 8 | 4 | 20.00 | W | 110.00 | 0.28 |
| ETS D050-06-W20-LN08 | 50.00 | 6.00 [10] | 6.50 [14] | 14.90 | 8 | 4 | 20.00 | W | 110.00 | 0.28 |
| ETS D050-07-W20-LN08 [1] | 50.00 | 7.00 [11] | 8.00 [15] | 14.70 | 8 | 4 | 20.00 | W | 110.00 | 0.29 |
| ETS D063-03-W20-LN08 | 63.00 | 3.00 [7] | 3.00 [7] | 21.40 | 10 | 5 | 20.00 | W | 110.00 | 0.28 |
| ETS D063-04-W20-LN08 | 63.00 | 4.00 [8] | 4.50 [12] | 21.40 | 10 | 5 | 20.00 | W | 110.00 | 0.29 |
| ETS D063-05-W20-LN08 | 63.00 | 5.00 [9] | 5.50 [13] | 21.40 | 10 | 5 | 20.00 | W | 110.00 | 0.31 |
| ETS D063-06-W20-LN08 | 63.00 | 6.00 [10] | 6.50 [14] | 21.40 | 10 | 5 | 20.00 | W | 110.00 | 0.32 |
| ETS D063-07-W20-LN08 [1] | 63.00 | 7.00 [11] | 8.00 [15] | 21.20 | 10 | 5 | 20.00 | W | 110.00 | 0.34 |

- Adjustable overhang design
- For user guide, see pages 383-385

[1] For $a_p$=7.5 use LNET 084204-TN-N insert with SR 114-018-L5.30-HG screw
[2] Minimum cutting width
[3] Maximum cutting width
[4] Cutting depth maximum
[5] Number of flutes
[6] W-Weldon
[7] Use LNET 0818.. insert with SR 114-018-L2.50 screw
[8] Use LNET 0826.. insert with SR 114-018-L3.40 screw
[9] Use LNET 0830.. insert with SR 114-018-L4.40 screw
[10] Use LNET 0835.. insert with SR 114-018-L5.30 screw
[11] Use LNET 0840.. insert with SR 114-018-L5.30-HG
[12] Use LNET 0828.. insert with SR 114-018-L3.40 screw
[13] Use LNET 0832.. insert with SR 114-018-L4.40 screw
[14] Use LNET 0837.. insert with SR 114-018-L5.30
[15] Use LNET 0845.. insert with SR 114-018-L5.30-HG

**For inserts, see pages:** LNET 08 (492)

## Spare Parts

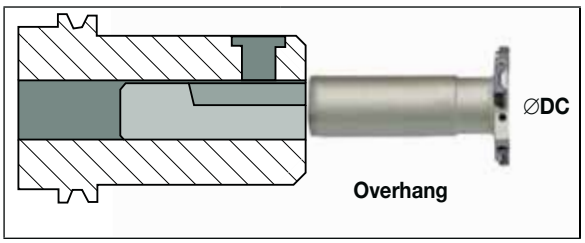
| Designation | | | |
|---|---|---|---|
| ETS D032-03-W16-LN08 | SR 114-018-L2.50 | T-6/3-L | T-6/5 |
| ETS D032-04-W16-LN08 | SR 114-018-L3.40 | T-6/3-L | T-6/5 |
| ETS D032-05-W16-LN08 | SR 114-018-L4.40 | T-6/3-L | T-6/5 |
| ETS D032-06-W16-LN08 | SR 114-018-L5.30 | T-6/3-L | T-6/5 |
| ETS D032-07-W16-LN08 | SR 114-018-L5.30-HG | T-6/3-L | T-6/5 |
| ETS D040-03-W16-LN08 | SR 114-018-L2.50 | T-6/3-L | T-6/5 |
| ETS D040-04-W16-LN08 | SR 114-018-L3.40 | T-6/3-L | T-6/5 |
| ETS D040-05-W16-LN08 | SR 114-018-L4.40 | T-6/3-L | T-6/5 |
| ETS D040-06-W16-LN08 | SR 114-018-L5.30 | T-6/3-L | T-6/5 |
| ETS D040-07-W16-LN08 | SR 114-018-L5.30-HG | T-6/3-L | T-6/5 |
| ETS D050-03-W20-LN08 | SR 114-018-L2.50 | T-6/3-L | T-6/5 |
| ETS D050-04-W20-LN08 | SR 114-018-L3.40 | T-6/3-L | T-6/5 |
| ETS D050-05-W20-LN08 | SR 114-018-L4.40 | T-6/3-L | T-6/5 |
| ETS D050-06-W20-LN08 | SR 114-018-L5.30 | T-6/3-L | T-6/5 |
| ETS D050-07-W20-LN08 | SR 114-018-L5.30-HG | T-6/3-L | T-6/5 |
| ETS D063-03-W20-LN08 | SR 114-018-L2.50 | T-6/3-L | T-6/5 |
| ETS D063-04-W20-LN08 | SR 114-018-L3.40 | T-6/3-L | T-6/5 |
| ETS D063-05-W20-LN08 | SR 114-018-L4.40 | T-6/3-L | T-6/5 |
| ETS D063-06-W20-LN08 | SR 114-018-L5.30 | T-6/3-L | T-6/5 |
| ETS D063-07-W20-LN08 | SR 114-018-L5.30-HG | T-6/3-L | T-6/5 |

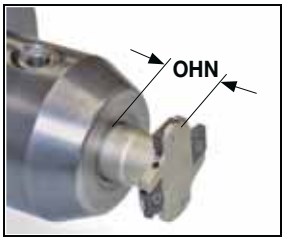
| Cutter Designation | CWN-CWX | Insert |
|---|---|---|
| ...D...-03-..-LN08 | 3 | LNET 081804-TN-N |
| ...D...-04-..-LN08 | 4 | LNET 082604-TN-N |
| | 4.5 | LNET 082804-TN-N |
| ...D...-05-..-LN08 | 5 | LNET 083004-TN-N |
| | 5.5 | LNET 083204-TN-N |
| ...D...-06-..-LN 08 | 6 | LNET 083504-TN-N |
| | 6.5 | LNET 083704-TN-N |
| ...D...-07..-LN08 | 7 | LNET 084004-TN-N |
| | 7.5 | LNET 084204-TN-N |
| | 8.0 | LNET 084504-TN-N |

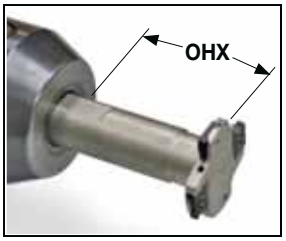
## 1

## 2 Setting the Overhang

| ETS..- T-Type Slotting Cutters | | | |
|---|---|---|---|
| Designation | DC | Overhang | |
| | | OHN (min) | OHX (max) |
| ETS D32 | 32 | 20 | 49 |
| ETS D40 | 40 | 34 | 63 |
| ETS D50 | 50 | 27 | 66 |
| ETS D63 | 63 | 27 | 66 |



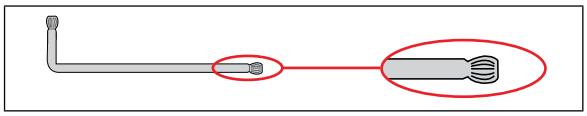




## 3 Lubrication - Important!

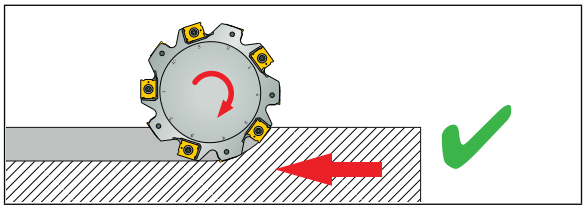
For every indexing, lubricate screws before mounting.
Grease should cover the screw's thread and cone head.

## 4 Indexing

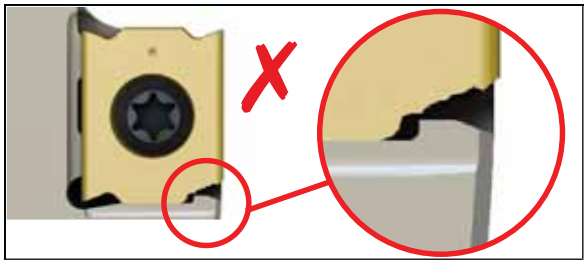
L -type key is added to the cutter package.
It has a ball shape on the end of its longer side.



Feed Direction:
Down (climb) milling is recommended.



Do not clamp insert with a broken corner
in the outer bottom position.



## 5 Tightening Torque

60-70 N x cm

## 6 Tightening

Use the short side for tightening and initial release

Use the long side for quick driving and release

**Important note: To avoid indexing problems, insert clamping screws and replace keys on a regular basis according to their wear.**

## 7 Width of Cut

for $a_p$=3 - 6.5mm - use the following table

| $A_p$ | Insert | Screw | Key |
|---|---|---|---|
| 3.00 | LNET 081804-TN-N | SR 114-018-L2.50 | **T-6**/5 **T-6**/5-L |
| 4.00 | LNET 082604-TN-N | SR 114-018-L3.40 | |
| 4.50 | LNET 082804-TN-N | | |
| 5.00 | LNET 083004-TN-N | SR 114-018-L4.40 | |
| 5.50 | LNET 083204-TN-N | SR 114-018-L4.40 | |
| 6.00 | LNET 083504-TN-N | SR 114-018-L5.30 | |
| 6.50 | LNET 083704-TN-N | | |

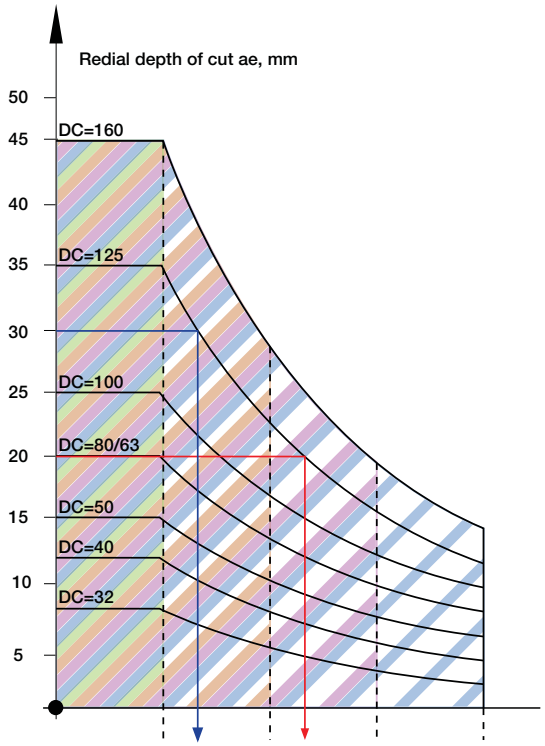
## 8 Recommended Cutting Speed

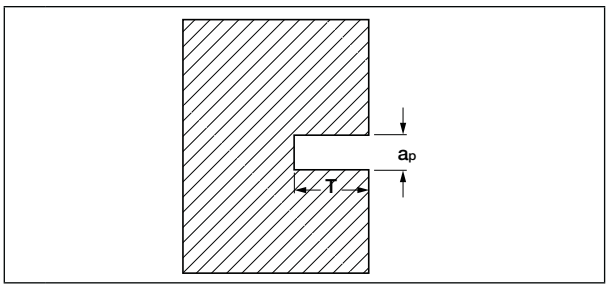
| ISO Class DIN/ISO 513 | Description | Workpiece Material: Typical Example AISI/SAE/ ASTM | DIN W.-Nr. | Hardness HB | ISCAR Mat. Group** | Cutting Speed $V_c$, M/min | Insert | Grade | Coolant |
|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel and cast steel, free cutting steel | 1020 | 1.0402 | 130-180 | 1 | 130-200 | LN....08 | IC928 | air blow |
| | alloy steel | 4340 | 1.6582 | 260-300 | 8 | 120-170 | LN....08 | IC928 | |
| | alloy steel | 3135 | 1.5710 | HRC 35-40* | 9 | 100-120 | LN....08 | IC928 | |
| | high alloy steel | H13 | 1.2344 | 200-220 | 10 | 100-150 | LN....08 | IC928 | |
| | martensitic S.S. | 420 | 1.4021 | 200 | 12 | 100-140 | LN....08 | IC928 | |
| M | austenitic S.S. | 304L | 1.4306 | 200 | 14 | 70-120 | LN....08 | IC928 | wet (emulsion) |
| | austenitic S.S. | 316L | 1.4404 | 140 | 14 | 80-120 | LN....08 | IC928 | |
| K | grey cast iron | class 40 | 0.6025 (GG25) | 250 | 16 | 180-230 | LN....08 | IC910 | air blow |
| | nodular cast iron | class 65-45-12 | 0.7050 (GGG50) | 200 | 17 | 150-200 | LN....08 | IC910 | |
| S | high temp. alloys | AMS R56400 | 3.7165 (Ti6Al4V) | HRC 40-45 | 37 | 35-45 | LN....08 | IC928 | wet (emulsion) |

* Quenched and tempered

** ISCAR material group in accordance with VDI 3323 standard

### Recommended Feed Per Tooth for MINI-TANG-SLOT Cutters Carrying LN..08... Inserts for 3 Mm ≤$a_p$<7 Mm




**Example**

Material - Alloy steel DIN 40NiCrMo6, W.-Nr.16565

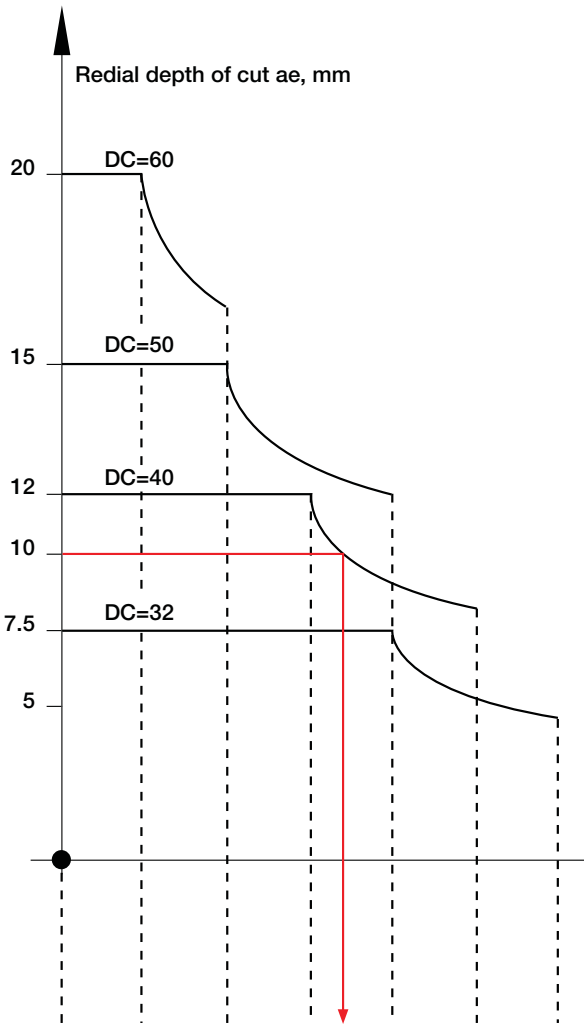
| | |
|---|---|
| D = 125 mm | D = 125 mm |
| $A_e$ = 30 mm | $A_e$ = 20 mm |
| $A_p$ = 4 mm | $A_p$ = 6 mm |
| $F_z$ = 0.2x0.75* | $F_z$ = 0.25x1=0.25 mm/tooth |
| = 0.15 mm/tooth | |

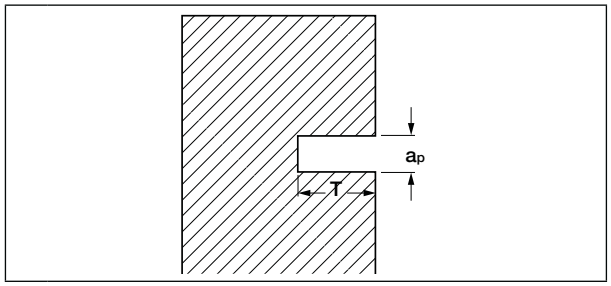
**$F_z$= Fz0xK**

| $A_p$ mm | K |
|---|---|
| from 3 to 4 | 0.60 |
| from 4 up to 5 | 0.75 |
| over 5 to 7 | 1 |

| Basic Feed $Fz_0$, mm/tooth | | | | Description | AISI / SAE / ASTM (DIN W.-Nr.) | ISCAR Mat. Group | DIN/ ISO |
|---|---|---|---|---|---|---|---|
| | | | | Workpiece Material | | | |
| 0.17 | 0.22 | 0.27 | 0.32 | non-alloy steel and cast steel, free cutting steel | 1020 (DIN 1.0402) | 1 | P |
| 0.15 | 0.2 | 0.25 | 0.3 | alloy steel | 4340 (DIN 1.6582) | 8 | |
| 0.1 | 0.13 | 0.15 | 0.2 | alloy steel | 3135 (DIN 1.5710) | 9 | |
| 0.1 | 0.13 | 0.16 | 0.22 | high alloy steel | H13 (DIN 1.2344) | 10 | |
| 0.13 | 0.16 | 0.2 | 0.25 | martensitic S.S. | 420 (DIN 1.4021) | 12 | |
| 0.1 | 0.13 | 0.16 | 0.22 | austenitic S.S. | 316L (DIN 1.4404) | 14 | M |
| 0.2 | 0.25 | 0.3 | 0.35 | grey cast iron | class 40 (DIN 0.6025) (GG25) | 16 | K |
| 0.15 | 0.2 | 0.25 | 0.3 | nodular cast iron | class 65-45-12 (DIN 0.7050) (GGG50) | 17 | |
| 0.1 | 0.13 | 0.16 | 0.22 | high temp. alloys | AMS R56400 (DIN 3.7165) | 37 | S |

## 9 Recommended feed per tooth for MINI-TANG-SLOT cutters carrying LN..08... inserts for $a_p$=7-8 mm




**Example**

Material - Alloy steel DIN 40NiCrMo6, W.-Nr.16565

**D** = 40 mm
**$A_e$** = 10 mm
**$A_p$** = 8 mm
**$F_z$** = 0.09x0.8=0.072 mm/tooth

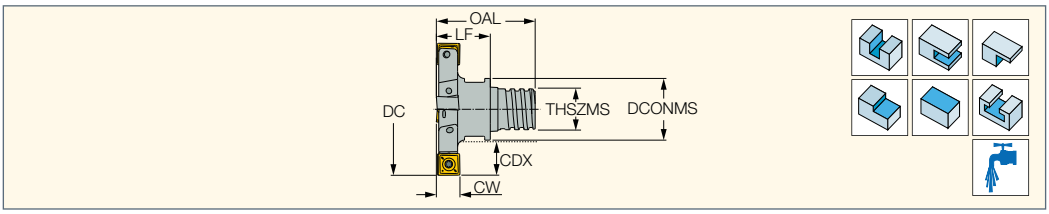
**$F_z$= Fz0xK**

| $A_p$ mm | K |
|---|---|
| from 7 up to 7.5 | 1 |
| over 7.5 up to 8 | 0.80 |

| Basic Feed $Fz_0$ mm/tooth | | | | | | Description | AISI / SAE / ASTM / DIN | ISCAR Mat. Group | DIN/ ISO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Workpiece Material | | | |
| 0.045 | 0.060 | 0.090 | 0.105 | 0.120 | 0.135 | non-alloy steel and cast steel, free cutting steel | 1020 (DIN 1.0402) | 1 | P |
| 0.045 | 0.060 | 0.075 | 0.090 | 0.105 | 0.120 | alloy steel | 4340 (DIN 1.6582) | 8 | |
| 0.030 | 0.045 | 0.052 | 0.060 | 0.068 | 0.075 | alloy steel | 3135 (DIN 1.5710) | 9 | |
| 0.030 | 0.045 | 0.052 | 0.060 | 0.075 | 0.090 | high alloy steel | H13 (DIN 1.2344) | 10 | |
| 0.030 | 0.052 | 0.068 | 0.082 | 0.090 | 0.105 | martensitic S.S. | 420 (DIN 1.4021) | 12 | |
| 0.030 | 0.045 | 0.052 | 0.068 | 0.075 | 0.090 | austenitic S.S. | 316L (DIN 1.4404) | 14 | M |
| 0.068 | 0.090 | 0.105 | 0.120 | 0.135 | 0.150 | grey cast iron | class 40 (DIN 0.6025) (GG25) | 16 | K |
| 0.045 | 0.075 | 0.090 | 0.105 | 0.120 | 0.135 | nodular cast iron | class 65-45-12 (DIN 0.7050) (GGG50) | 17 | |
| 0.030 | 0.045 | 0.052 | 0.060 | 0.075 | 0.090 | high temp. alloys | AMS R56400 (DIN 3.7165) | 37 | S |

HELISLOT

**ETS-XN06-MM**
T-SLOT Endmills with a MULTI-MASTER Threaded Connection, Mount XNMU 0603 Square Inserts




| Designation | DC | CICT(1) | ZEFP | CW | CDX | DCONMS | THSZMS | LF | OAL | DRVS(2) |
|---|---|---|---|---|---|---|---|---|---|---|
| ETS D032-07-XN06-MMT10 | 31.70 | 4 | 4 | 7.00 | 7.70 | 15.30 | T10 | 16.00 | 27.30 | 13.0 |
| ETS D040-07-XN06-MMT12 | 39.80 | 4 | 4 | 7.00 | 10.00 | 18.30 | T12 | 16.00 | 29.30 | 16.0 |
| ETS D050-07-XN06-MMT15 | 49.80 | 6 | 6 | 7.00 | 12.50 | 23.90 | T15 | 19.00 | 36.00 | 20.0 |

New

- For user guide, see pages 426-432

(1) Number of inserts (or edges for solid tool)
(2) Torque key size

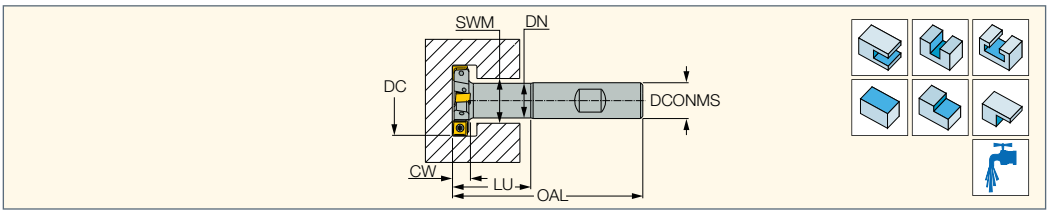
**For inserts, see pages:** XNMU 06 (585)
**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

## Spare Parts

| Designation | | |
|---|---|---|
| ETS-XN06-MM | SR M2.5X6-T7-60 | T-7/51 |

**HELISLOT**

**ETS-XN06**
T-SLOT Endmills Carrying
XNMU 0603 Square Inserts
with 4 Right- and
4 Left-Hand Cutting Edges




| Designation | DC | CICT(1) | ZEFP | DN | SWM | CW | LU | OAL | DCONMS | Shank(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ETS D032-07-W16-XN06 | 32.00 | 4 | 4 | 15.50 | 17.00 | 7.00 | 30.00 | 80.00 | 16.00 | W | 0.20 |
| ETS D032-08-W16-XN06 | 32.00 | 4 | 2 | 15.50 | 17.00 | 8.00 | 35.00 | 85.00 | 16.00 | W | 0.13 |
| ETS D040-07-W16-XN06 | 40.00 | 4 | 4 | 15.50 | 17.00 | 7.00 | 30.00 | 80.00 | 16.00 | W | 0.14 |
| ETS D040-08-W16-XN06 | 40.00 | 4 | 2 | 15.50 | 17.00 | 8.00 | 35.00 | 85.00 | 16.00 | W | 0.15 |
| ETS D050-07-W20-XN06 | 50.00 | 6 | 6 | 19.50 | 21.00 | 7.00 | 33.00 | 85.00 | 20.00 | W | 0.22 |
| ETS D050-10-W20-XN06 | 50.00 | 6 | 3 | 19.50 | 21.00 | 10.00 | 38.00 | 90.00 | 20.00 | W | 0.25 |

New

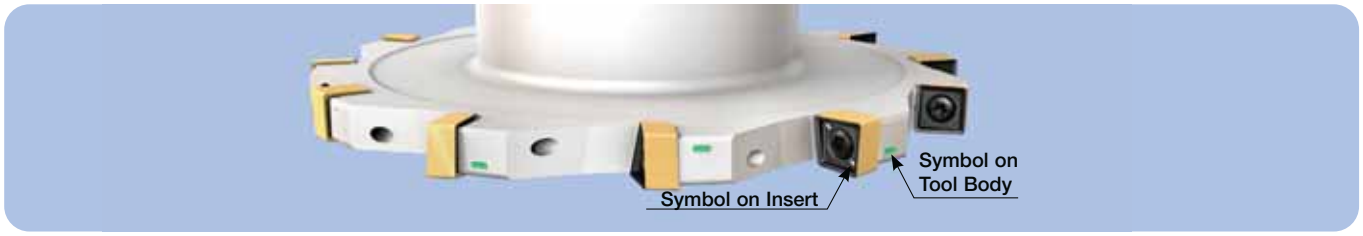
- For user guide, see pages 426-432

(1) Number of inserts (or edges for solid tool)
(2) W-Weldon

**For inserts, see pages:** XNMU 06 (585)

## Mounting an XNMU 0603... Insert on Slot Milling Cutters

## The Symbol on the Insert and Tool Body Must Align




## Starting Feed Per Tooth $f_z$ for HELI-SLOT 06 Slotting Mills with Inserts XNMU 06...

| ISO Class DIN/ISO 513 | Description | ISCAR Material Group** | Typical Representstive | | Hardness, HB | Feed $f_z$ mm/tooth Grades | |
|---|---|---|---|---|---|---|---|
| | | | AISI/SAE/ASTM | DIN W.-Nr. | | IC808 | IC830 |
| P | non-alloy steel | 1 | 1020 | 1.0044 | 130-180 | 0.10-0.20 | 0.10-0.20 |
| | alloy steel | 8 | 4340 | 1.6582 | 260-300 | 0.08-0.12 | 0.08-0.12 |
| | alloy steel | 9 | 4340 | 1.6582 | HRC 35-42* | 0.08-0.12 | 0.08-0.12 |
| | high alloy steel | 10 | H13 | 1.2344 | 200-220 | 0.08-0.12 | 0.08-0.12 |
| | martensitic S.S. | 12 | 420 | 1.4021 | 200 | 0.08-0.12 | 0.08-0.12 |
| M | austenitic S.S. | 14 | 304L | 1.4306 | 200 | 0.08-0.12 | 0.08-0.12 |
| | austenitic S.S. | 14 | 316L | 1.4404 | 140 | 0.08-0.12 | 0.08-0.12 |
| K | grey cast iron | 16 | class 40 | 0.6025 (GG25) | 250 | 0.10-0.20 | |
| | nodular cast iron | 17 | class 65-45-12 | 0.7050 (GGG50) | 200 | 0.08-0.15 | |
| H | hard steel and cast iron | 38.1 | H11 | 1.2343 | HRC 45-49 | 0.06-0.12 | |
| | | 38.2 | P20 | 1.2330 | HRC 50-55 | 0.05-0.10 | |

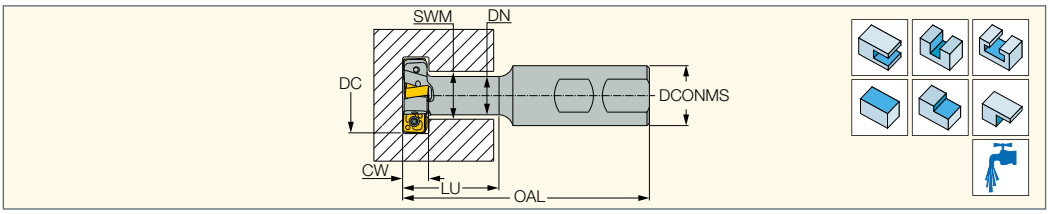
* Quenched and tempered
** ISCAR material group in accordance with VDI 3323 standard

## Spare Parts

| Designation | | |
|---|---|---|
| ETS-XN06 | SR M2.5X6-T7-60 | T-7/51 |

HELISLOT

**ETS-XN09**
T-SLOT Endmills Carrying XNMU 0904 Square Inserts with 4 Right- and 4 Left-Hand Cutting Edges




| Designation | DC | CICT(1) | ZEFP | DN | SWM | CW | LU | OAL | DCONMS | Shank(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ETS D32-10-W16-XN09 | 31.70 | 4 | 2 | 15.50 | 18.00 | 9.90 | 35.00 | 85.00 | 16.00 | W | 0.02 |
| ETS D32-11-W20-XN09 | 31.70 | 4 | 2 | 16.00 | 18.00 | 10.80 | 41.00 | 95.00 | 20.00 | W | 0.27 |
| ETS D32-11-W25-XN09 | 31.70 | 4 | 2 | 16.00 | 18.00 | 10.80 | 41.00 | 105.00 | 25.00 | W | 0.62 |
| ETS D32-14-W25-XN09 | 31.70 | 4 | 2 | 16.00 | 18.00 | 13.80 | 41.00 | 105.00 | 25.00 | W | 0.27 |
| ETS D32-14-W32-XN09 | 31.70 | 4 | 2 | 16.00 | 18.00 | 13.80 | 45.00 | 110.00 | 32.00 | W | 0.88 |

- For user guide, see pages 426-432

(1) Number of inserts (or edges for solid tool)
(2) W-Weldon

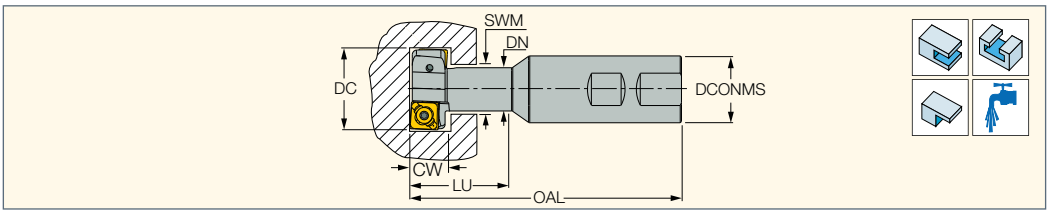
**For inserts, see pages:** XNMU 09 (586)

## Spare Parts

| Designation | | |
|---|---|---|
| ETS-XN09 | SR 10508600 | T-9/51 |

HELISLOT

**ETS-XN13**
T-SLOT Endmills Carrying XNMU 1306 Square Inserts with 4 Right- and 4 Left-Hand Cutting Edges




| Designation | DC | NOF(1) | ZEFP | DN | SWM | CW | LU | OAL | DCONMS | Shank(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ETS D40-18-W32-XN13 | 40.00 | 2 | 1 | 21.00 | 22.00 | 18.00 | 47.0 | 120.00 | 32.00 | W | 0.55 |
| ETS D48-22-W32-XN13 | 48.00 | 4 | 2 | 27.00 | 28.00 | 22.00 | 58.0 | 130.00 | 32.00 | W | 0.70 |

- For user guide, see pages 426-432

(1) Number of flutes
(2) W-Weldon

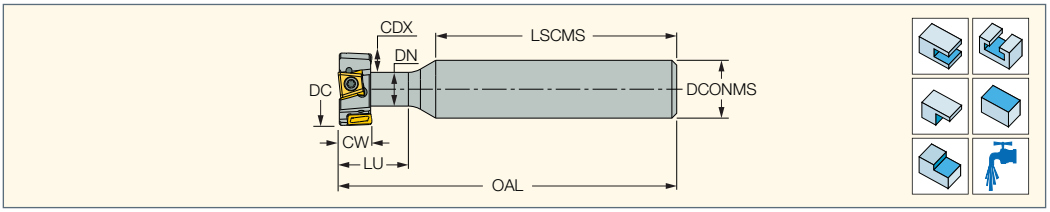
**For inserts, see pages:** XNMU 13 (586)

## Spare Parts

| Designation | | | |
|---|---|---|---|
| ETS-XN13 | SR M4-L15-D4.5 | BLD IP15/S7 | SW6-T-SH |

TANGDISC

**ETS-T490**
T-SLOT Endmills Sloting Cutters Carrying T490 0502 PNTN Inserts with 2 Right- and 2 Left-Hand Cutting Edges




| Designation | DC | NOF(1) | ZEFP | DN | LSCMS | CW | CDX | LU | OAL | DCONMS | Shank | MIID(2) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ETS D016-07-C12-T490-05 | 15.70 | 4 | 2 | 8.00 | 50.00 | 7.00 | 3.50 | 11.5 | 65.00 | 12.00 | C | T490 LNHT 0502-PNTN |
| ETS D020-07-C12-T490-05 | 19.70 | 4 | 2 | 10.00 | 50.00 | 7.00 | 4.50 | 12.8 | 65.00 | 12.00 | C | T490 LNHT 0502-PNTN |
| ETS D025-07-C16-T490-05 | 24.70 | 6 | 3 | 14.00 | 60.00 | 7.00 | 5.20 | 13.2 | 75.00 | 16.00 | C | T490 LNHT 0502-PNTN |
| ETS D032-07-C16-T490-05 | 31.70 | 8 | 4 | 15.70 | 60.00 | 7.00 | 7.80 | 19.0 | 80.00 | 16.00 | C | T490 LNHT 0502-PNTN |

New

- For user guide, see pages 426-432

(1) Number of flutes
(2) Master insert identification

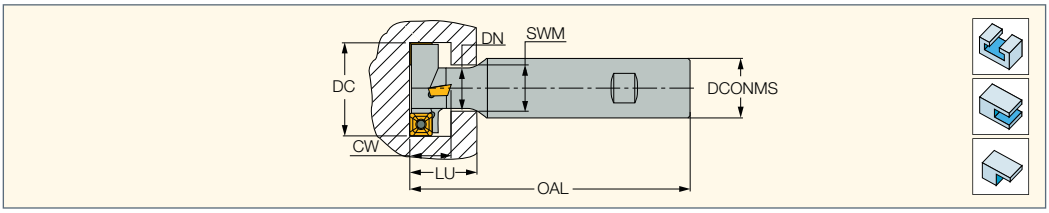
**For inserts, see pages:** T490 LNHT 05-PNTN (544)

## Spare Parts

| Designation | | |
|---|---|---|
| ETS-T490 | SR M2X0.4-4.8 IP6 | T-6IP/51 |

**ISCARMILL**

**ETS**
T-SLOT Endmills




| Designation | DC | NOF[1] | ZEFP | DN | SWM | CW | LU | OAL | DCONMS | Shank[2] | kg | MIID[3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ETS D21-9-W16-06** | 21.10 | 2 | 1 | 10.80 | 12.00 | 8.85 | 26.9 | 90.00 | 16.00 | W | 0.11 | XOMT 060204-HQ |
| **ETS D25-11-W16-06** | 24.80 | 4 | 2 | 12.80 | 14.00 | 10.80 | 30.8 | 90.00 | 16.00 | W | 0.12 | XOMT 060204-HQ |
| **ETS D25-11-W25-06** | 24.80 | 4 | 2 | 12.80 | 14.00 | 10.80 | 24.4 | 120.00 | 25.00 | W | 0.36 | XOMT 060204-HQ |
| **ETS D32-14-W32-10** | 31.70 | 2 | 1 | 16.70 | 18.00 | 13.85 | 40.0 | 120.00 | 32.00 | W | 0.54 | XPMT 100408-HQ |
| **ETS D32-14-W16-10** | 31.70 | 4 | 2 | 16.00 | 18.00 | 13.85 | 52.0 [4] | 90.00 | 16.00 | W | 0.14 | XPMT 100408-HQ |
| **ETS D32-16-W32-A10** | 31.70 | 4 | 2 | 16.80 | 18.00 | 15.85 | 39.0 | 110.00 | 32.00 | W | 0.48 | APKT 1003PDTR/L-RM |
| **ETS D40-18-W32-10** | 39.70 | 4 | 2 | 20.70 | 22.00 | 17.85 | 50.0 | 130.00 | 32.00 | W | 0.62 | XPMT 100408-HQ |
| **ETS D48-22-W32-15** | 48.50 | 4 | 2 | 26.00 | 27.00 | 21.85 | 51.3 | 130.00 | 32.00 | W | 0.73 | ADKT 1505...R/L... |

• For user guide, see pages 426-432

[1] Number of flutes

[2] W-Weldon

[3] Master insert identification

[4] Adjustable overhang design: LUmin=19, LUmax=52

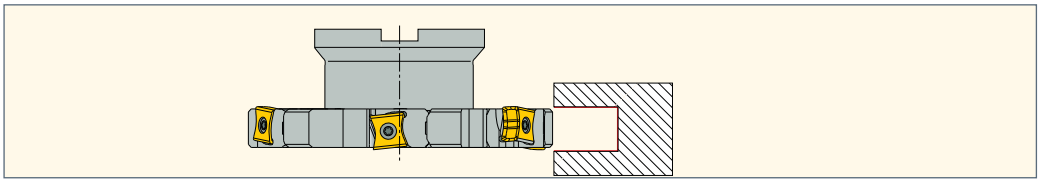
**For inserts, see pages:** ADKR 1505PDR/L (523) • ADKT 1505..R/L-HM (526) • ADKT 1505PDR/L-HM (525) • ADKT 1505PDTR/L-RM (525) • APKT 1003PDTR/L-RM (518) • QOMT-HQ (560) • XOMT-HQ (561) • XPMT-HQ (563)

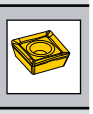
## Spare Parts

| Designation | | |
|---|---|---|
| **ETS D21-9-W16-06** | SR 34-508/L | T-7/51 |
| **ETS D25-11-W16-06** | SR 34-508/L | T-7/51 |
| **ETS D25-11-W25-06** | SR 34-508/L | T-7/51 |
| **ETS D32-14-W32-10** | SR 14-544/S | T-15/51 |
| **ETS D32-14-W16-10** | SR 14-506 M4X0.7 | T-15/51 |
| **ETS D32-16-W32-A10** | SR 34-505/LHG | T-8/53 |
| **ETS D40-18-W32-10** | SR 14-544/S | T-15/51 |
| **ETS D48-22-W32-15** | SR 14-544/S | T-15/51 |

ISCARMILL

**FDN**
Full Slot Flange Type

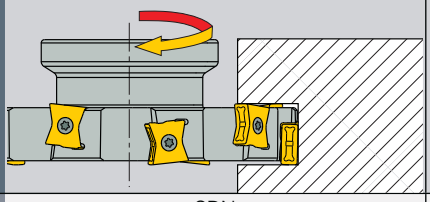
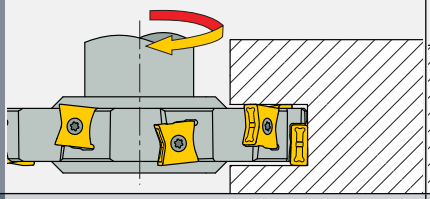
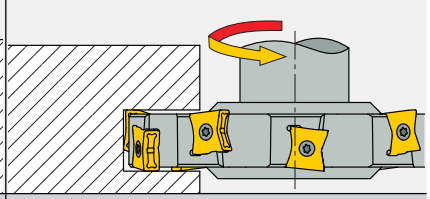
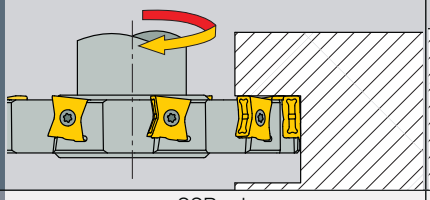
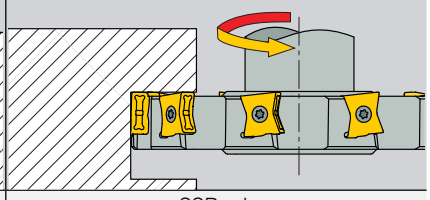
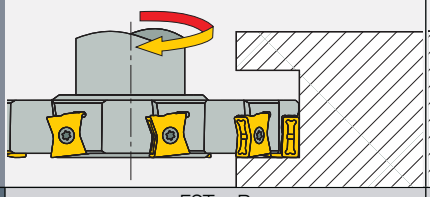
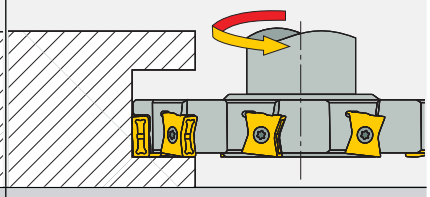
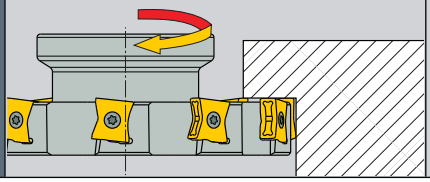


| Tool Diameter | | | | | | | Width of Cutter | | | | | | | | | | | | | | | | | | | | | Type of Insert | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 63 | 80 | 100 | 125 | 160 | 200 | 250 | 3 | 4 | 4.5 | 5 | 5.5 | 6 | 6.5 | 7 | 8 | 8.5 | 9 | 10 | 10.5 | 12 | 13 | 14 | 14.6 | 16 | 17 | 18 | 19 | 20 | 23 | 25.6 | | |
| ● | ● | ● | | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | LNET 081804 | |
| ● | ● | ● | | | | | | 3 | | | | | | | | | | | | | | | | | | | | | | LNET 082604 | |
| ● | ● | ● | | | | | | | 3 | | | | | | | | | | | | | | | | | | | | | LNET 082804 | |
| ● | ● | ● | | | | | | | | 3 | | | | | | | | | | | | | | | | | | | | LNET 083004 | |
| ● | ● | ● | | | | | | | | | 3 | | | | | | | | | | | | | | | | | | | LNET 083204 | |
| ● | ● | ● | | | | | | | | | | 3 | | | | | | | | | | | | | | | | | | LNET 083504 | |
| ● | ● | ● | | | | | | | | | | | 3 | | | | | | | | | | | | | | | | | LNET 083704 | |
| | ● | ● | ● | | | | | | | | | | | 3 | | | | | | | | | | | | | | | | LNET 1240 | |
| | ● | ● | ● | | ● | | | | | | | | | | 3 | | | | | | | | | | | | | | | LNET 1245 | |
| | ● | ● | ● | | ● | | | | | | | | | | | 3 | | | | | | | | | | | | | | LNET 1248 | |
| | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | 3 | | | | | | | | | | | | LNET 1255 | |
| | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | 3 | | | | | | | | | | | LNET 1257 | |
| | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | 3 | | | | | | | | | | LNET 1265 | |
| | | ● | ● | ● | | ● | | | | | | | | | | | | | | | | | | | | | | | | LNET 12... | |
| | ● | ● | ● | ● | | | | | | | | | | | | | | 3 | | | | | | | | | | | | XNMU 09.. | |
| | ● | ● | ● | ● | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | |
| | | ● | ● | | | | | | | | | | | | | | | | | | | 3 | | | | | | | | | XNMU 13.. | |
| | | | ● | | | | | | | | | | | | | | | | | | | | | 3 | | | | | | | |
| | | | | ● | | | | | | | | | | | | | | | | | | | | | 3 | | | | | | |
| | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | 3 | | | |
| ● | ● | ● | | | | | | | | | | | | | 3 | | | | | | | | | | | | | | | XOMT 0602..<br>QOMT 060208 | |
| | | ● | ● | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | | |
| | | | ● | ● | | | | | | | | | | | | | | | | 3 | | | | | | | | | | XPMT 1004...<br>QPMT 1004... |  |
| | | | ● | ● | | | | | | | | | | | | | | | | | | | | 3 | | | | | | QPMT 1004... | |
| | | | | ● | | | | | | | | | | | | | | | | | | | | 3 | | | | | | QDMT 1205...<br>QDCT 1205 | |
| | | | | ● | | | | | | | | | | | | | | | | | | | | | | 3 | | | | | |
| | | | | | ● | ● | | | | | | | | | | | | | | | | | | | | | 3 | | | | |
| | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | LN...11 | |
| | | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | LN...13 | |
| | | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | LN...15 | |

● With adjustable cartridges

## Face and Slot Milling Cutters

Cutter Types for Right and Left-Hand, Top and Bottom Milling

| | Right-Hand Spindle Rotation | Left-Hand Spindle Rotation |
|---|---|---|
| **Full Side - Flange Type (Pages 393-400)** | FDN...-R  | |
| **Full Side - Disk Type (Pages 402-409)** | SDN  | SDN  |
| **Half Side - Top Disk Type (Page 410)** | SSB...-R  | SSB...-R  |
| **Half Side - Bottom Disk Type (Page 410)** | SSB...-L  | SSB...-L  |
| **Half Side - Top Flange Type (Page 409)** | FST...-R  | |

| Ordering Examples | | |
|---|---|---|
| **Integral Pocket Cutter**<br>FDN D125-10-27-LN12<br>Cutter diameter: 125 mm<br>Slot width: 10.00 mm | **Adjustable Cutter with Cartridges**<br>FDN D100-0810-32-CALN12<br>Cutter diameter: 100 mm<br>Slot width range: 8.00-10.5 mm | **Pre-Adjusted Specific Width**<br>(the cutter will be set to 9.52 mm).<br>FDN D125-09.52-40-CALN12<br>Cutter diameter: 125 mm<br>Slot width: 9.52 mm (The cutter can be adjusted to a width of 8.0-10.5 mm) |

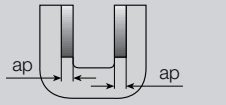
## Single Or Double-Face Milling Configuration Guide

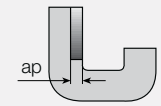
Configuration Guide for FDN/SDN/SSB/FST/FSB... CALN15 Cutters

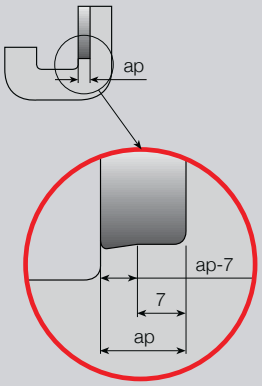
| Designation | Number of Cutting Edges(1) | Bottom Flatness $A_p \leq 7$ H (mm) | Bottom Flatness $A_p$=14 H (mm) | Application | Half Side Tools Axial Depth of Cut $A_p$ (mm) |
|---|---|---|---|---|---|
| LNKX 1506... | 4R+4L | Flat | 0.65 | Double Face Mllling | Stock=0-14 |
| LNMT 1506... | 4R+4L | Flat | 0.65 | | Stock=0-14 |
| LNAT 1506... | 4R+4L | Flat | 0.4-0.65 | | Stock=0-14(2) |
| LNHT 1506...-N(3) | 2R+2L | Flat | Flat | | Stock=0-14 |
| LNKX 1506... | 4R | Flat | 0.65 | Half Side Milling | Stock=0-14 |
| LNMT 1506... | 4R | Flat | 0.65 | | Stock=0-14 |
| LNAT 1506... | 4R | Flat | 0.4-0.65 | | Stock=0-14(2) |
| LNHT 1506...-R(4) | 4R | Flat | Flat | | Stock=0-14(2) |
| LNKX 1506... | 4L | Flat | 0.65 | Half Side Milling | Stock=0-14 |
| LNMT 1506... | 4L | Flat | 0.65 | | Stock=0-14 |
| LNAT 1506... | 4L | Flat | 0.4-0.65 | | Stock=0-14(2) |
| LNHT 1506...-N(3) | 4L | Flat | Flat | | Stock=0-14(2) |

(1) Use of 8 cutting edges (4R+4L) is possible only when $a_p \leq 7$ mm, otherwise 4 cutting edges (2R+2L) can be used.

(2) Max $a_p$ for radius inserts
LNAT 150616..=12.80
LNAT 150625..=12.25
LNAT 150632..=11.60
LNAT 150640..=14.00

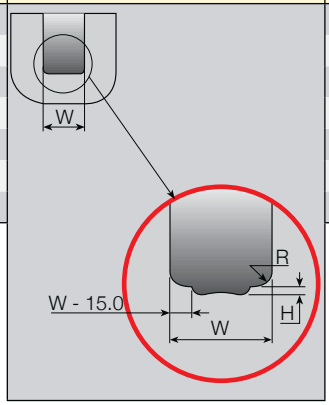



Configuration Guide for Full Slot FDN/SDN... CALN15 Cutters

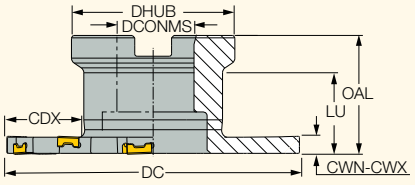
| Designation | Number of Cutting Edges | Bottom Slot Flatness H (mm) | Insert Radius R (mm) | Application | Half Side Tools Axial Depth of Cut W (mm) |
|---|---|---|---|---|---|
| LNKX 1506... | 2R+2L | 0.65 | 0.8 | | W=18.9-25.6 |
| LNMT 1506... | 2R+2L | 0.65 | 0.8 | | W=18.9-25.6 |
| LNAT 150616PN-N-HM | 2R+2L | 0.55 | 1.6 | | W=18.9-25.6 |
| LNAT 150625PN-N-NM | 2R+2L | 0.45 | 2.5 | | W=18.9-24.5 |
| LNAT 150632PN-N-NM | 2R+2L | 0.40 | 3.2 | | W=18.9-23.2 |
| LNAT 150640PN-N-NM | 2R+2L | 0.65 | 4.0 | | W=18.9-25.6 |
| LNHT 1506...-N(3) | 2R+2L | Flat | 0.8 | | W=18.9-25.6 |




| LNHT 1506...-N R.H./L.H | 1506...-N R.H./L.H | LNKX 1506... LNMT 1506... R.H./L.H. | LNHT 1506...-R R.H. Only |
|---|---|---|---|
| | | | |
| Page 555 | | Pages 554-555 | Page 554 |

**MINI-TANGSLOT**

**FDN-LN08**
Full Slot Shell Mill Cutters
Carrying LNET 08...
Tangentially Mounted Inserts




| Designation | DC | CWN[1] | CWX[2] | CDX[3] | CICT[4] | ZEFP | DHUB | DCONMS | LU | OAL | Arbor[5] | kg | MIID[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN D063-03-16-LN08 | 63.00 | 3.00 [7] | 3.00 [7] | 14.50 | 8 | 4 | 38.40 | 16.00 | 25.0 | 35.00 | A | 0.22 | LNET 081804-TN-N |
| FDN D063-04-16-LN08 | 63.00 | 4.00 [8] | 4.50 [11] | 14.50 | 8 | 4 | 38.40 | 16.00 | 25.0 | 35.00 | A | 0.23 | LNET 082604-TN-N |
| FDN D063-05-16-LN08 | 63.00 | 5.00 [9] | 5.50 [12] | 14.50 | 8 | 4 | 38.40 | 16.00 | 25.0 | 35.00 | A | 0.25 | LNET 083004-TN-N |
| FDN D063-06-16-LN08 | 63.00 | 6.00 [10] | 6.50 [13] | 14.50 | 8 | 4 | 38.40 | 16.00 | 25.0 | 35.00 | A | 0.26 | LNET 083504-TN-N |
| FDN D080-03-22-LN08 | 80.00 | 3.00 [7] | 3.00 [7] | 22.50 | 10 | 5 | 45.00 | 22.00 | 28.0 | 40.00 | A | 0.28 | LNET 081804-TN-N |
| FDN D080-04-22-LN08 | 80.00 | 4.00 [8] | 4.50 [11] | 22.50 | 10 | 5 | 45.00 | 22.00 | 28.0 | 40.00 | A | 0.31 | LNET 082604-TN-N |
| FDN D080-05-22-LN08 | 80.00 | 5.00 [9] | 5.50 [12] | 22.50 | 10 | 5 | 45.00 | 22.00 | 28.0 | 40.00 | A | 0.33 | LNET 083004-TN-N |
| FDN D080-06-22-LN08 | 80.00 | 6.00 [10] | 6.50 [13] | 22.50 | 10 | 5 | 45.00 | 22.00 | 28.0 | 40.00 | A | 0.36 | LNET 083504-TN-N |
| FDN D100-03-27-LN08 | 100.00 | 3.00 [7] | 3.00 [7] | 26.00 | 12 | 6 | 55.00 | 27.00 | 28.5 | 40.00 | B | 0.43 | LNET 081804-TN-N |
| FDN D100-04-27-LN08 | 100.00 | 4.00 [8] | 4.50 [11] | 26.00 | 12 | 6 | 55.00 | 27.00 | 28.5 | 40.00 | B | 0.47 | LNET 082604-TN-N |
| FDN D100-05-27-LN08 | 100.00 | 5.00 [9] | 5.50 [12] | 26.00 | 12 | 6 | 55.00 | 27.00 | 28.5 | 40.00 | B | 0.50 | LNET 083004-TN-N |
| FDN D100-06-27-LN08 | 100.00 | 6.00 [10] | 6.50 [13] | 26.00 | 12 | 6 | 55.00 | 27.00 | 28.5 | 40.00 | B | 0.54 | LNET 083504-TN-N |

[1] Minimum cutting width
[2] Maximum cutting width
[3] Cutting depth maximum
[4] Number of inserts (or edges for solid tool)
[5] For adaptation options, see page 432
[6] Master insert identification
[7] Use LNET 0818.. insert with SR 114-018-L2.50 screw
[8] Use LNET 0826.. insert with SR 114-018-L3.40 screw
[9] Use LNET 0830.. insert with SR 114-018-L4.40 screw
[10] Use LNET 0835.. insert with SR 114-018-L5.30 screw
[11] Use LNET 0828.. insert with SR 114-018-L3.40 screw
[12] Use LNET 0832.. insert with SR 114-018-L4.40 screw
[13] Use LNET 0837.. insert with SR 114-018-L5.30 screw

**For inserts, see pages:** LNET 08 (558)

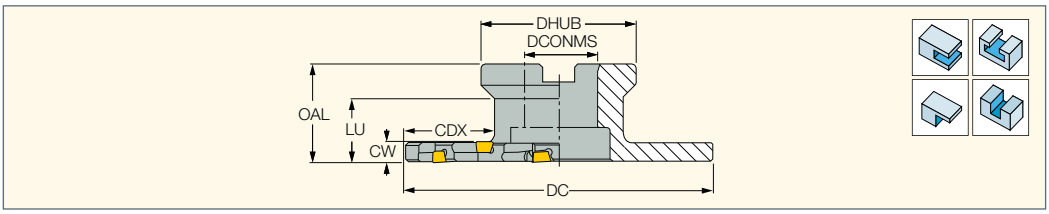
| Cutter Designation | CWN-CWX | Inserts |
|---|---|---|
| FDN D...-03-...LN08 | 3 | LNET 081804-TN-N |
| FDN D...-04-...LN08 | 4 | LNET 082604-TN-N |
| | 4.5 | LNET 082804-TN-N |
| FDN D...-05-...LN08 | 5 | LNET 083004-TN-N |
| | 5.5 | LNET 083204-TN-N |
| FDN D...-06-...LN08 | 6 | LNET 083504-TN-N |
| | 6.5 | LNET 083704-TN-N |

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| FDN D063-03-16-LN08 | SR 114-018-L2.50 | T-6/5 | T-6/3-L | SR M8X25DIN912 |
| FDN D063-04-16-LN08 | SR 114-018-L3.40 | T-6/5 | T-6/3-L | SR M8X25DIN912 |
| FDN D063-05-16-LN08 | SR 114-018-L4.40 | T-6/5 | T-6/3-L | SR M8X25DIN912 |
| FDN D063-06-16-LN08 | SR 114-018-L5.30 | T-6/5 | T-6/3-L | SR M8X25DIN912 |
| FDN D080-03-22-LN08 | SR 114-018-L2.50 | T-6/5 | T-6/3-L | SR M10X25 DIN912 |
| FDN D080-04-22-LN08 | SR 114-018-L3.40 | T-6/5 | T-6/3-L | SR M10X25 DIN912 |
| FDN D080-05-22-LN08 | SR 114-018-L4.40 | T-6/5 | T-6/3-L | SR M10X25 DIN912 |
| FDN D080-06-22-LN08 | SR 114-018-L5.30 | T-6/5 | T-6/3-L | SR M10X25 DIN912 |
| FDN D100-03-27-LN08 | SR 114-018-L2.50 | T-6/5 | T-6/3-L | |
| FDN D100-04-27-LN08 | SR 114-018-L3.40 | T-6/5 | T-6/3-L | |
| FDN D100-05-27-LN08 | SR 114-018-L4.40 | T-6/5 | T-6/3-L | |
| FDN D100-06-27-LN08 | SR 114-018-L5.30 | T-6/5 | T-6/3-L | |

**TANGSLOT**

**FDN-LN12**
Full Slot Cutters Carrying LNET 12... Tangentially Mounted Inserts




| Designation | DC | CICT(4) | ZEFP | DCONMS | DHUB | CDX | LU | OAL | Arbor(5) | kg | CW | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FDN D080-07-22-LN12(1)** | 80.00 | 8 | 4 | 22.00 | 45.00 | 22.00 | 28.20 | 40.00 | A | 0.40 | 7.0<br>8.0<br>8.5 | LNET 1240..<br>LNET 1245...<br>LNET 1248.. |
| **FDN D080-10-22-LN12(2)** | 80.00 | 8 | 4 | 22.00 | 45.00 | 22.00 | 28.20 | 40.00 | A | 0.40 | 10.0<br>10.5<br>12.0 | LNET 1255..<br>LNET 1257..<br>LNET 1265... |
| **FDN D100-07-27-LN12(1)** | 100.00 | 10 | 5 | 27.00 | 55.00 | 25.00 | 28.50 | 40.00 | B | 0.44 | 7.0<br>8.0<br>8.5 | LNET 1240..<br>LNET 1245..<br>LNET 1248... |
| **FDN D100-10-27-LN12(2)** | 100.00 | 10 | 5 | 27.00 | 55.00 | 25.00 | 28.50 | 40.00 | B | 0.61 | 10.0<br>10.5<br>12.0 | LNET 1255..<br>LNET 1257..<br>LNET 1265... |
| **FDN D125-07-32-LN12(1)** | 125.00 | 12 | 6 | 32.00 | 65.00 | 34.50 | 32.00 | 45.00 | B | 0.60 | 7.0<br>8.0<br>8.5 | LNET 1240..<br>LNET 1245..<br>LNET 1248... |
| **FDN D125-10-32-LN12(2)** | 125.00 | 12 | 6 | 32.00 | 65.00 | 34.50 | 32.00 | 45.00 | B | 1.30 | 10.0<br>10.5<br>12.0 | LNET 1255..<br>LNET 1257..<br>LNET 1265... |
| **FDN D160-10-40-LN12(2)** | 160.00 | 16 | 8 | 40.00 | 80.00 | 44.00 | 33.50 | 50.00 | B | 1.76 | 10.0<br>10.5<br>12.0 | LNET 1255..<br>LNET 1257..<br>LNET 1265... |
| **FDN D200-08-40-LN12(3)** | 200.00 | 20 | 10 | 40.00 | 92.00 | 51.50 | 49.50 | 50.00 | C | 2.63 | 8.0<br>8.5<br>9.0<br>10.0 | LNET 1245..<br>LNET 1248..<br>LNET 1250...<br>LNET 1255.. |
| **FDN D200-10-40-LN12(2)** | 200.00 | 20 | 10 | 40.00 | 92.00 | 51.50 | 49.50 | 50.00 | C | 2.95 | 10.0<br>10.5<br>12.0 | LNET 1255..<br>LNET 1257..<br>LNET 1265... |
| **FDN D250-10-60-LN12(2)** | 250.00 | 26 | 13 | 40.00 | 132.00 | 56.50 | 62.50 | 63.00 | C | 5.91 | 10.0<br>10.5<br>12.0 | LNET 1255..<br>LNET 1257..<br>LNET 1265... |

- Slot width depends on the selected insert width • Each tool is supplied with screws for the thinnest specified insert
- Verify use of correct screw for the insert being used • For user guide, see pages 426-431

(1) For $a_p$=7.0 use screw SR 14-500-L5.9 • For $a_p$=8.0 use screw SR 14-500-L6.5 • For $a_p$=8.5 use screw SR 14-500-L7.0
(2) For $a_p$=10.0 and 10.5 use screw SR 14-500-L8.5 • For $a_p$=12.0 use screw SR 14-500-L10.0
(3) For $a_p$=8.0 and 8.5 use screw SR 14-500-L7.0 • For $a_p$=9.0 use screw SR 14-500-L8.0 • For $a_p$=10.0 use screw SR 14-500-L8.5
(4) Cutting depth maximum
(5) Number of inserts (or edges for solid tool)
(6) For adaptation options, see page 432

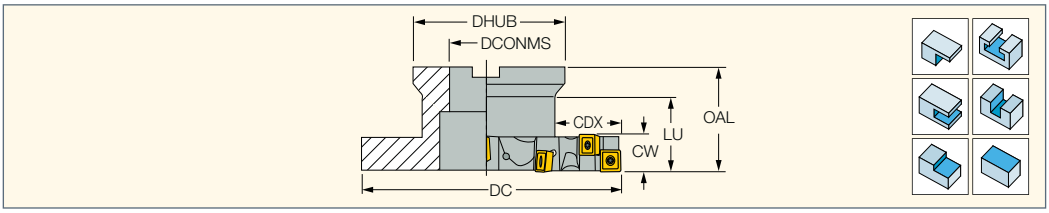
**For inserts, see pages:** LNET 12-TN (493) • LNET 12-TN-MM (493)

## Spare Parts

| Designation | | | |
|---|---|---|---|
| **FDN D080-07-22-LN12** | SR 14-500-L5.9 | RATCHET WRENCH KEY | T-15/51-BE |
| **FDN D080-10-22-LN12** | SR 14-500-L8.5 | RATCHET WRENCH KEY | T-15/51-BE |
| **FDN D100-07-27-LN12** | SR 14-500-L5.9 | RATCHET WRENCH KEY | T-15/51-BE |
| **FDN D100-10-27-LN12** | SR 14-500-L8.5 | RATCHET WRENCH KEY | T-15/51-BE |
| **FDN D125-07-32-LN12** | SR 14-500-L5.9 | RATCHET WRENCH KEY | T-15/51-BE |
| **FDN D125-10-32-LN12** | SR 14-500-L8.5 | RATCHET WRENCH KEY | T-15/51-BE |
| **FDN D160-10-40-LN12** | SR 14-500-L8.5 | RATCHET WRENCH KEY | T-15/51-BE |
| **FDN D200-08-40-LN12** | SR 14-500-L7.0 | RATCHET WRENCH KEY | T-15/51-BE |
| **FDN D200-10-40-LN12** | SR 14-500-L8.5 | RATCHET WRENCH KEY | T-15/51-BE |
| **FDN D250-10-60-LN12** | SR 14-500-L8.5 | RATCHET WRENCH KEY | T-15/51-BE |

HELIQUAD

**FDN**
Full Slot Flange-Type
Slotting Cutters




| Designation | DC | CW | CDX(1) | CICT(2) | ZEFP | DHUB | DCONMS | LU | OAL | Arbor(3) | kg | MIID(4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN D080-08-22-R06 | 80.00 | 8.00 | 22.70 | 14 | 7 | 45.00 | 22.00 | 28.1 | 40.00 | A | 0.34 | XOMT 060204-HQ |
| FDN D100-08-27-R06 | 100.00 | 8.00 | 26.40 | 16 | 8 | 55.00 | 27.00 | 28.8 | 40.00 | B | 0.53 | XOMT 060204-HQ |
| FDN D100-10-27-R06 | 100.00 | 10.00 | 26.50 | 16 | 8 | 55.00 | 27.00 | 29.5 | 40.00 | B | 0.59 | XOMT 060204-HQ |
| FDN D125-10-32-R06 | 125.00 | 10.00 | 35.50 | 20 | 10 | 65.00 | 32.00 | 32.0 | 45.00 | B | 0.94 | XOMT 060204-HQ |
| FDN D125-12-32-R10 | 125.00 | 12.00 | 35.50 | 14 | 7 | 65.00 | 32.00 | 32.0 | 45.00 | B | 1.00 | XPMT 100408-HQ |
| FDN D125-16-32-R10 | 125.00 | 16.00 | 34.00 | 14 | 7 | 65.00 | 32.00 | 37.0 | 50.00 | B | 1.25 | XPMT 100408-HQ |
| FDN D160-12-40-R10 | 160.00 | 12.00 | 46.90 | 16 | 8 | 80.00 | 40.00 | 33.5 | 50.00 | B | 1.77 | XPMT 100408-HQ |
| FDN D160-16-40-R10 | 160.00 | 16.00 | 46.50 | 16 | 8 | 80.00 | 40.00 | 43.5 | 60.00 | B | 2.13 | XPMT 100408-HQ |
| FDN D160-16-40-R12 | 160.00 | 16.00 | 46.90 | 14 | 7 | 80.00 | 40.00 | 43.5 | 60.00 | B | 2.08 | QDMT 1205PDN-RM |
| FDN D200-20-40-R12 | 200.00 | 20.00 | 62.00 | 16 | 8 | 92.00 | 40.00 | 41.0 | 63.00 | E | 3.57 | QDMT 1205PDN-RM |
| FDN D250-20-60-R12 | 250.00 | 20.00 | 60.00 | 18 | 9 | 130.00 | 60.00 | 50.0 | 63.00 | C | 7.13 | QDMT 1205PDN-RM |

- For user guide, see pages 426-431

(1) Cutting depth maximum
(2) Number of inserts (or edges for solid tool)
(3) For adaptation options, see page 432
(4) Master insert identification

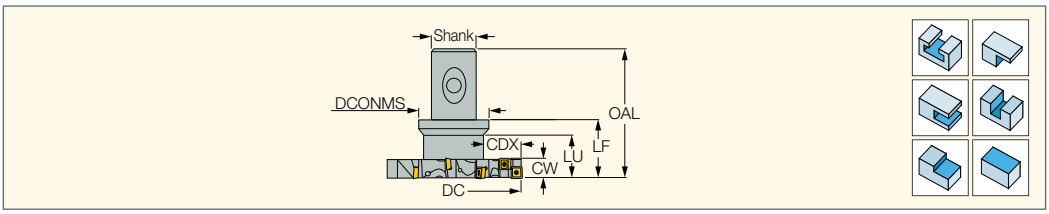
**For inserts, see pages:** QDCT-PDN (565) • QDMT 1205..PDTN-M (565) • QOMT-HQ (560) • QPMT 100408PDTN (561) • XOMT-HQ (561) • XPMT-HQ (563)

## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| FDN D080-08-22-R06 | SR 34-514 | T-7/51 | | | |
| FDN D100-08-27-R06 | SR 34-514 | T-7/51 | | | |
| FDN D100-10-27-R06 | SR 34-514 | T-7/51 | | | |
| FDN D125-10-32-R06 | SR 34-514 | T-7/51 | | | |
| FDN D125-12-32-R10 | SR 14-544/S | T-15/51 | | | |
| FDN D125-16-32-R10 | SR 14-544/S | T-15/51 | | | |
| FDN D160-12-40-R10 | SR 14-544/S | T-15/51 | | | |
| FDN D160-16-40-R10 | SR 14-544/S | T-15/51 | | | |
| FDN D160-16-40-R12 | SR 14-544 | | BLD T15/M7 | SW6-T | PN 3-4 |
| FDN D200-20-40-R12 | SR 34-510 | | BLD T15/L7 | SW6-T | PN 3-4 |
| FDN D250-20-60-R12 | SR 34-510 | | BLD T15/L7 | SW6-T | PN 3-4 |

HELIQUAD

**FDN-CF4**
Full Slot Flange-Type
Slotting Cutters with
CLICK-FIT Adaptation




| Designation | DC | CICT(1) | CW | CDX(2) | OAL | LF | LU | DCONMS | Shank | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN D050-08-CF4-06 | 50.00 | 8 | 8.00 | 13.90 | 90.00 | 48.00 | 32.0 | 44.00 | CF4 | 0.44 | SR 34-514 | T-7/51 |
| FDN D063-08-CF4-06 | 63.00 | 10 | 8.00 | 18.90 | 90.00 | 48.00 | 33.0 | 44.00 | CF4 | 0.51 | SR 34-514 | T-7/51 |

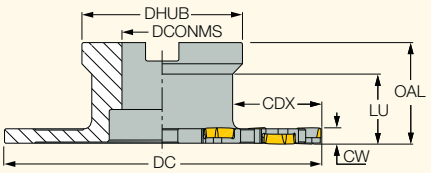
- For user guide, see pages 426-431

(1) Number of inserts (or edges for solid tool)
(2) Cutting depth maximum

**For inserts, see pages:** QOMT-HQ (560) • XOMT-HQ (561)

**TANGSLOT**

**FDN-CALN12**
Full Slot Adjustable Slotting Cutters with Cartridges Carrying LNET 12 Inserts




| Designation | DC | CICT(4) | ZEFP | DCONMS | DHUB | CDX | LUmin | LUmax | OALmin | OALmax | kg | Inserts | Width of Range [$a_p$] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN D100-0608-27R-CALN12(1) | 100.00 | 6 | 3 | 27.00 | 55.00 | 26.00 | 28.4 | 29.5 | 40.0 | 41.1 | 0.48 | LNET 1235... | 6.0-6.5 |
| | | | | | | | | | | | | LNET 1240... | 6.5-7.2 |
| | | | | | | | | | | | | LNET 1245... | 7.0-8.2 |
| FDN D100-0810-27R-CALN12(2) | 100.00 | 6 | 3 | 27.00 | 55.00 | 26.00 | 30.2 | 31.5 | 42.0 | 43.2 | 0.54 | LNET 1248... | 8.0-8.7 |
| | | | | | | | | | | | | LNET 1250... | 8.4-9.2 |
| | | | | | | | | | | | | LNET 1255... | 8.9-10.5 |
| FDN D100-1014-27R-CALN12(3) | 100.00 | 6 | 3 | 27.00 | 55.00 | 26.00 | 32.0 | 34.0 | 44.5 | 46.5 | 0.47 | LNET 1265... | 10.5-12.2 |
| | | | | | | | | | | | | LNET 1277... | 11.9-14.6 |
| FDN D125-0608-32R-CALN12(1) | 125.00 | 8 | 4 | 32.00 | 65.00 | 34.00 | 30.2 | 31.3 | 45.0 | 46.1 | 0.80 | LNET 1235... | 6.0-6.5 |
| | | | | | | | | | | | | LNET 1240... | 6.5-7.2 |
| | | | | | | | | | | | | LNET 1245... | 7.0-8.2 |
| FDN D125-0810-32R-CALN12(2) | 125.00 | 8 | 4 | 32.00 | 65.00 | 34.00 | 32.0 | 33.3 | 47.0 | 48.2 | 1.36 | LNET 1248... | 8.0-8.7 |
| | | | | | | | | | | | | LNET 1250... | 8.4-9.2 |
| | | | | | | | | | | | | LNET 1255... | 8.9-10.5 |
| FDN D160-0608-40R-CALN12(1) | 160.00 | 12 | 6 | 40.00 | 80.00 | 44.00 | 29.6 | 30.7 | 45.0 | 46.1 | 1.29 | LNET 1235... | 6.0-6.5 |
| | | | | | | | | | | | | LNET 1240... | 6.5-7.2 |
| | | | | | | | | | | | | LNET 1245... | 7.0-8.2 |
| FDN D160-0810-40R-CALN12(2) | 160.00 | 12 | 6 | 40.00 | 80.00 | 44.00 | 29.5 | 30.7 | 45.0 | 46.2 | 1.46 | LNET 1248... | 8.0-8.7 |
| | | | | | | | | | | | | LNET 1250... | 8.4-9.2 |
| | | | | | | | | | | | | LNET 1255... | 8.9-10.5 |
| FDN D160-1014-40R-CALN12(3) | 160.00 | 12 | 6 | 40.00 | 80.00 | 44.00 | 31.2 | 33.2 | 47.5 | 49.5 | 2.15 | LNET 1265... | 10.5-12.2 |
| | | | | | | | | | | | | LNET 1277... | 11.9-14.6 |

- Slot width depends on the selected insert width; verify use of correct screw for the insert being used • For adaptation options, see page 432
- For cartridges see page 411

(1) For $a_p$=6.0 use screw SR 14-500-L4.9 • For $a_p$=6.5 use screw SR 14-500-L5.3 • For $a_p$=7.0 use screw=SR 14-500-L5.9
(2) For $a_p$=8.0 use screw SR 14-500-L6.7 • For $a_p$=8.4 use screw SR 14-500-L7.0 • For $a_p$=8.9 use screw SR 14-500-L7.5
(3) For $a_p$=10.5 use screw SR 14-500-L9.0 • For $a_p$=11.9 use screw SR 14-500-L9.0
(4) Number of inserts (or edges for solid tool)
(5) Cutting depth maximum

**For inserts, see pages:** LNET 12-TN (493) • LNET 12-TN-MM (493)

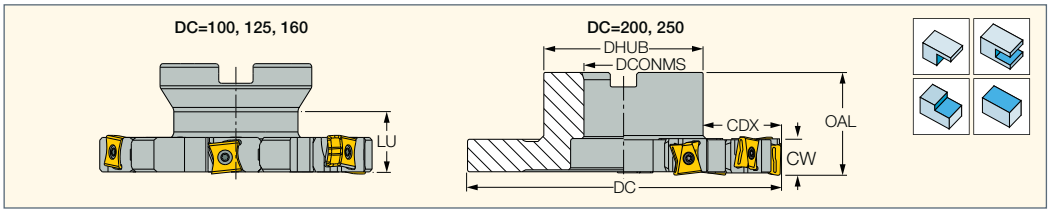
## Spare Parts

| Designation | |
|---|---|
| FDN D100-0608-27R-CALN12 | CA 0608-R/L-LNET12 |
| FDN D100-0810-27R-CALN12 | CA 0810-R/L-LNET12 |
| FDN D100-1014-27R-CALN12 | CA 1014-R/L-LNET12 |
| FDN D125-0608-32R-CALN12 | CA 0608-R/L-LNET12 |
| FDN D125-0810-32R-CALN12 | CA 0810-R/L-LNET12 |
| FDN D160-0608-40R-CALN12 | CA 0608-R/L-LNET12 |
| FDN D160-0810-40R-CALN12 | CA 0810-R/L-LNET12 |
| FDN D160-1014-40R-CALN12 | CA 1014-R/L-LNET12 |

TANGMILL TANGENTIAL LINE

## FDN-CALN11

Full Slot Flange Type Slotting Cutters with Cartridges Carrying Tangentially Mounted LN.. 1106.. Inserts




| Designation | CWN(1) | CWX(2) | CDX(3) | OAL | LU | DC | DHUB | DCONMS | CICT(4) | ZEFP | Arbor(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN D100-1419-27R-CALN11 | 14.00 | 19.50 | 27.00 | 40.00 | 23.4 | 100.00 | 55.00 | 27.00 | 6 | 3 | B | 0.83 |
| FDN D125-1419-32R-CALN11 | 14.00 | 19.50 | 34.00 | 40.00 | 28.2 | 125.00 | 65.00 | 32.00 | 8 | 4 | B | 1.18 |
| FDN D160-1419-40R-CALN11 | 14.00 | 19.50 | 44.00 | 50.00 | 28.9 | 160.00 | 80.00 | 40.00 | 10 | 5 | B | 2.14 |
| FDN D200-1419-40R-CALN11 | 14.00 | 19.50 | 54.00 | 50.00 | - | 200.00 | 92.00 | 40.00 | 14 | 7 | C | 3.39 |
| FDN D250-1419-60R-CALN11 | 14.00 | 19.50 | 58.00 | 50.00 | - | 250.00 | 132.00 | 60.00 | 16 | 8 | C | 5.85 |

- The cutter will be set to the minimum width range, unless a specific width is requested by the user
- Half of the inserts are used on right-hand cartridges and half on left-hand cartridges • For cartridge details, see page 411

(1) Minimum cutting width
(2) Maximum cutting width
(3) Cutting depth maximum
(4) Number of inserts (or edges for solid tool)
(5) For adaptation, see page 432

**For inserts, see pages:** LNAR 1106 (550) • LNHT 1106 PN-N HT (550) • LNHT 1106 PN-R HT (549) • LNKX/LNMT 1106 (549)

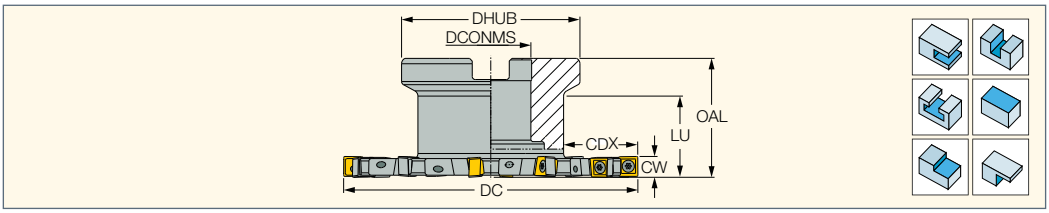
### Spare Parts

| Designation | |
|---|---|
| FDN-CALN11 | CA90 1419-R/L-LN11 |

HELISLOT

## FDN-XN06

Full Slot Flange Type Slotting Cutters Carrying XNMU 0603 Square Inserts with 4 Right- and 4 Left-Hand Cutting Edges




| Designation | DC | CW | CICT(1) | ZEFP | CDX | DHUB | DCONMS | LU | OAL | Arbor | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN D063-07-16-XN06 | 63.00 | 7.00 | 8 | 8 | 17.00 | 38.00 | 16.00 | 28.5 | 40.00 | A | 0.18 |
| FDN D080-07-22-XN06 | 80.00 | 7.00 | 10 | 10 | 20.00 | 48.00 | 22.00 | 28.5 | 40.00 | A | 0.55 |
| FDN D080-08-22-XN06 | 80.00 | 8.00 | 10 | 5 | 20.00 | 48.00 | 22.00 | 28.5 | 40.00 | A | 0.39 |
| FDN D100-07-27-XN06 | 100.00 | 7.00 | 12 | 12 | 23.00 | 60.00 | 27.00 | 28.5 | 40.00 | B | 0.18 |
| FDN D100-08-27-XN06 | 100.00 | 8.00 | 12 | 6 | 23.00 | 60.00 | 27.00 | 28.5 | 40.00 | B | 0.64 |
| FDN D125-07-32-XN06 | 125.00 | 7.00 | 14 | 14 | 27.00 | 65.00 | 32.00 | 31.5 | 45.00 | B | 0.00 |
| FDN D125-09-32-XN06 | 125.00 | 9.00 | 14 | 7 | 27.00 | 65.00 | 32.00 | 31.5 | 45.00 | B | 1.04 |
| FDN D160-10-40-XN06 | 160.00 | 10.00 | 18 | 9 | 30.00 | 80.00 | 40.00 | 45.0 | 60.00 | B | 1.99 |

New

- For user guide, see pages 426-431

(1) Number of inserts (or edges for solid tool)

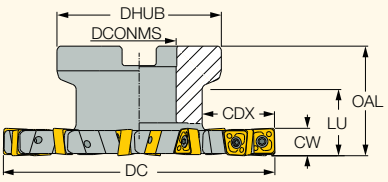
**For inserts, see pages:** XNMU 06 (585)

### Spare Parts

| Designation | | | |
|---|---|---|---|
| FDN D063-07-16-XN06 | SR M2.5X6-T7-60 | T-7/51 | SR M8X25DIN912 |
| FDN D080-07-22-XN06 | SR M2.5X6-T7-60 | T-7/51 | |
| FDN D080-08-22-XN06 | SR M2.5X6-T7-60 | T-7/51 | SR M10X25 DIN912 |
| FDN D100-07-27-XN06 | SR M2.5X6-T7-60 | T-7/51 | |
| FDN D100-08-27-XN06 | SR M2.5X6-T7-60 | T-7/51 | |
| FDN D125-07-32-XN06 | SR M2.5X6-T7-60 | T-7/51 | |
| FDN D125-09-32-XN06 | SR M2.5X6-T7-60 | T-7/51 | |
| FDN D160-10-40-XN06 | SR M2.5X6-T7-60 | T-7/51 | |

HELISLOT

**FDN-XN09**
Full Slot Flange Type Slotting Cutters Carrying XNMU 0904 Square Inserts with 4 Right- and 4 Left-Hand Cutting Edges




| Designation | DC | CW | CICT(1) | ZEFP | CDX | DHUB | DCONMS | LU | OAL | Arbor(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN D080-10-22-XN09 | 80.00 | 10.00 | 10 | 10 | 22.50 | 48.00 | 22.00 | 27.0 | 40.00 | A | 0.40 |
| FDN D080-12-22-XN09 | 80.00 | 12.00 | 10 | 5 | 22.50 | 48.00 | 22.00 | 27.0 | 40.00 | A | 0.43 |
| FDN D100-10-27-XN09 | 100.00 | 10.00 | 12 | 12 | 26.00 | 60.00 | 27.00 | 25.0 | 40.00 | B | 0.64 |
| FDN D100-12-27-XN09 | 100.00 | 12.00 | 12 | 6 | 26.00 | 60.00 | 27.00 | 25.0 | 40.00 | B | 0.92 |
| FDN D125-10-32-XN09 | 125.00 | 10.00 | 14 | 14 | 33.00 | 65.00 | 32.00 | 31.0 | 45.00 | B | 1.19 |
| FDN D125-12-32-XN09 | 125.00 | 12.00 | 14 | 7 | 33.00 | 65.00 | 32.00 | 31.0 | 45.00 | B | 1.08 |
| FDN D160-10-40-XN09 | 160.00 | 10.00 | 18 | 18 | 45.00 | 80.00 | 40.00 | 35.0 | 50.00 | B | 1.45 |
| FDN D160-12-40-XN09 | 160.00 | 12.00 | 18 | 9 | 45.00 | 80.00 | 40.00 | 35.0 | 50.00 | B | 1.78 |

- For user guide, see pages 426-431

(1) Number of inserts (or edges for solid tool)

(2) For adaptation options, see page 432

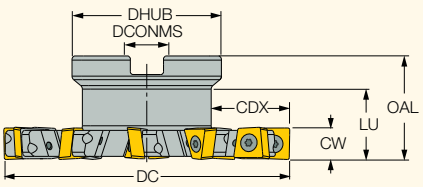
**For inserts, see pages:** XNMU 09 (586)

## Spare Parts

| Designation | | |
|---|---|---|
| FDN-XN09 | SR 10508600 | T-9/51 |

HELISLOT

**FDN-XN13**
Full Slot Flange Type Slotting Cutters Carrying XNMU 1306 Square Inserts with 4 Right- and 4 Left-Hand Cutting Edges




| Designation | DC | CW | CICT(1) | ZEFP | CDX(2) | DHUB | DCONMS | LU | OAL | Arbor(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN D100-14-27-XN13 | 100.00 | 14.00 | 10 | 10 | 26.00 | 55.00 | 27.00 | 26.5 | 40.00 | B | 0.61 |
| FDN D125-14-32-XN13 | 125.00 | 14.00 | 12 | 12 | 33.00 | 65.00 | 32.00 | 30.5 | 45.00 | B | 1.04 |
| FDN D125-16-32-XN13 | 125.00 | 16.00 | 12 | 6 | 33.00 | 65.00 | 32.00 | 30.5 | 45.00 | B | 1.13 |
| FDN D160-18-40-XN13 | 160.00 | 18.00 | 14 | 7 | 45.00 | 80.00 | 40.00 | 44.0 | 60.00 | B | 2.24 |
| FDN D200-20-40-XN13 | 200.00 | 20.00 | 16 | 8 | 53.00 | 92.00 | 40.00 | - | 63.00 | C | 3.81 |

- For user guide, see pages 426-431

(1) Number of inserts (or edges for solid tool)

(2) Cutting depth maximum

(3) For adaptation options, see page 432

**For inserts, see pages:** XNMU 13 (586)

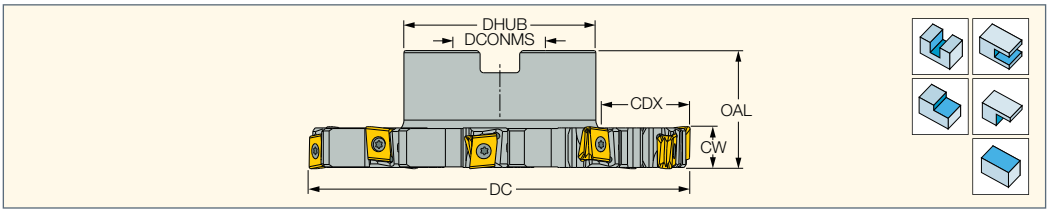
## Spare Parts

| Designation | | | |
|---|---|---|---|
| FDN-XN13 | SR M4-L15-D4.5 | BLD IP15/S7 | SW6-T-SH |

HELITANG T490 LINE

## FDN-CALN13

Full Slot Adjustable Slotting Cutters with Cartridges Carrying T490 LNHT 1306PNTR/L Inserts (17.5-23.0 mm width range)




| Designation | CWN[1] | CWX[2] | CDX[3] | DC | DHUB | DCONMS | CICT[4] | ZEFP | OAL | Arbor[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN D125-1723-32R-CALN13 | 17.50 | 23.00 | 30.00 | 126.00 | 65.00 | 32.00 | 8 | 4 | 39.25 | B | 1.43 |
| FDN D160-1723-40R-CALN13 | 17.50 | 23.00 | 39.00 | 161.00 | 80.00 | 40.00 | 10 | 5 | 49.25 | B | 2.61 |
| FDN D200-1723-40R-CALN13 | 17.50 | 23.00 | 53.00 | 201.00 | 92.00 | 40.00 | 14 | 7 | 49.25 | C | 3.82 |
| FDN D250-1723-60R-CALN13 | 17.50 | 23.00 | 59.00 | 251.00 | 132.00 | 60.00 | 16 | 8 | 49.25 | C | 6.55 |

- Half of the inserts are used on right-hand cartridges and half on left-hand cartridges • For cartridge details, see page 411
- The cutter will be set to the minimum width range unless a specific width is requested by the user

(1) Minimum cutting width
(2) Maximum cutting width
(3) Cutting depth maximum
(4) Number of inserts (or edges for solid tool)
(5) For adaptation options, see page 432

**For inserts, see pages:** T490 LNMT/LNHT/LNAR 1306 (546)

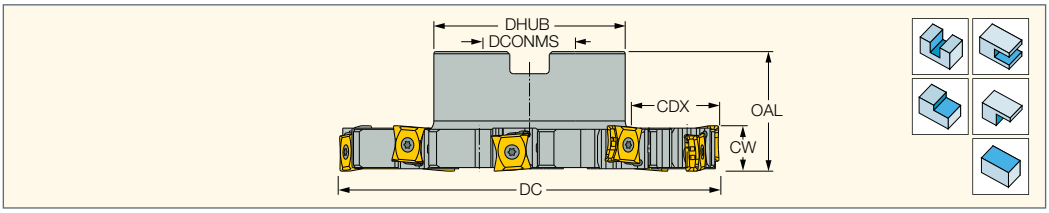
### Spare Parts

| Designation | |
|---|---|
| FDN-CALN13 | CA90 1723-R/L-T490-13 |

TANGMILL TANGENTIAL LINE

## FDN-CAPM15

Full Slot Adjustable Slotting Cutters with Cartridges Carrying LNAT 1506...-PM Inserts (18.9-25.6 mm width range)




| Designation | CWN[1] | CWX[2] | CDX[3] | DC | DHUB | DCONMS | CICT[4] | ZEFP | OAL | Arbor[5] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN D125-1925-32R-CAPM15 | 18.90 | 25.60 | 29.00 | 125.00 | 65.00 | 32.00 | 8 | 4 | 40.00 | B | 1.42 |
| FDN D160-1925-40R-CAPM15 | 18.90 | 25.60 | 39.00 | 160.00 | 80.00 | 40.00 | 10 | 5 | 50.00 | B | 2.59 |
| FDN D200-1925-40R-CAPM15 | 18.90 | 25.60 | 53.00 | 200.00 | 92.00 | 40.00 | 14 | 7 | 50.00 | C | 3.79 |
| FDN D250-1925-60R-CAPM15 | 18.90 | 25.60 | 58.00 | 250.00 | 132.00 | 60.00 | 16 | 8 | 50.00 | C | 6.55 |

- Use A type cartridges for inserts with 0.8-1.6 mm radii, B type cartridges for inserts with 2.5-3.2 mm radii and C type cartridges for inserts with 4.0 mm radius
- For cartridge details, see page 411

(1) Minimum cutting width • The cutter will be set to the minimum width range, unless a specific width is requested by the user
(2) Maximum cutting width
(3) Cutting depth maximum
(4) Number of inserts (or edges for solid tool)
(5) For adaptation options, see page 432

**For inserts, see pages:** LNAT 1506-PM (557)

### Spare Parts

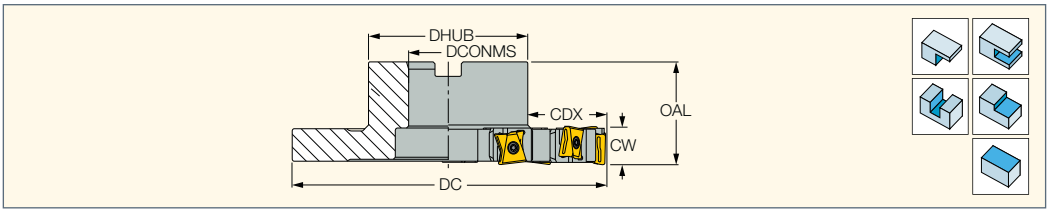
| Designation | | | |
|---|---|---|---|
| FDN-CAPM15 | CA90 1928-R/L-PM15-A | CA90 1928-R/L-PM15-B* | CA90 1928-R/L-PM15-C* |

* Optional, to be ordered separately

TANGMILL TANGENTIAL LINE

## FDN-CALN15

Full Slot Adjustable Slotting Cutters with Cartridges Carrying LN.. 1506... Inserts (18.9-25.6 mm width range)




| Designation | CWN[1] | CWX[2] | CDX[3] | CICT[4] | ZEFP | DC | DHUB | DCONMS | Arbor[5] | OAL | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN D125-1925-32R-CALN15 | 18.90 | 25.60 | 30.00 | 8 | 4 | 125.00 | 65.00 | 32.00 | B | 40.00 | 1.43 |
| FDN D160-1925-40R-CALN15 | 18.90 | 25.60 | 40.00 | 10 | 5 | 160.00 | 80.00 | 40.00 | B | 50.00 | 2.61 |
| FDN D200-1925-40R-CALN15 | 18.90 | 25.60 | 54.00 | 14 | 7 | 200.00 | 92.00 | 40.00 | C | 50.00 | 0.38 |
| FDN D250-1925-60R-CALN15 | 18.90 | 25.60 | 59.00 | 16 | 8 | 250.00 | 132.00 | 60.00 | C | 50.00 | 6.59 |

- Each cutter body can be changed into full slot, bottom or top milling configuration by mounting the cartridges accordingly
- For cartridge details, see page 411

[1] Minimum cutting width • The cutter will be set to the minimum width range, unless a specific width is requested by the user
[2] Maximum cutting width
[3] Cutting depth maximum
[4] Number of inserts (or edges for solid tool)
[5] For adaptation options, see page 432

**For inserts, see pages:** LNKX 1506PN-N PL (554) • LNKX/LNMT 1506PNTN/PN-N MM (553) • LNMT/LNHT 1506...-N HT (555) • LNMW 1506 PNTN (553)

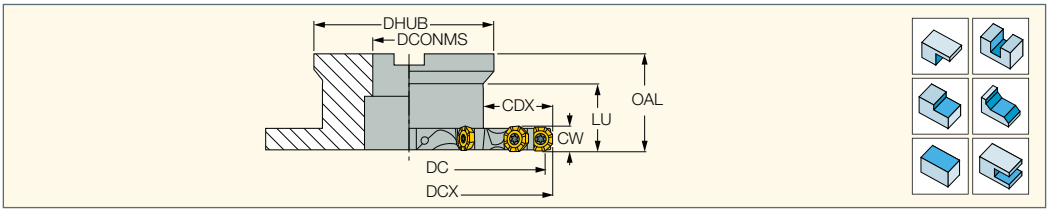
### Spare Parts

| Designation | |
|---|---|
| FDN-CALN15 | CA90 1928-R/L-LN15 |

ISCARMILL

## FDN-CM

Flange Type Full Width Slotting Cutters Carrying Round and Octagonal Inserts




| Designation | CICT[2] | ZEFP | | Dimensions DCX | DC | CW | CDX | DCONMS | DHUB | LU | OAL | Arbor[3] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FDN CM-D080-12-22-FE[1] | 6 | 6 | ● | 80.51 | 68.60 | 12.15 | 23.25 | | | | | | |
| | | | ● | 80.00 | 72.77 | 11.70 | 23.00 | 22 | 45 | 28.2 | 40 | A | 0.35 |
| | | | ● | 81.20 | 68.50 | 12.85 | 23.60 | | | | | | |
| FDN CM-D100-12-27-FE[1] | 8 | 8 | ● | 100.51 | 88.60 | 12.15 | 26.75 | | | | | | |
| | | | ● | 100.00 | 92.77 | 11.70 | 26.50 | 27 | 55 | 28.5 | 40 | B | 0.57 |
| | | | ● | 101.20 | 88.50 | 12.85 | 27.10 | | | | | | |
| FDN CM-D125-12-32-FE[1] | 10 | 10 | ● | 125.51 | 113.60 | 12.15 | 35.25 | | | | | | |
| | | | ● | 125.00 | 117.77 | 11.70 | 35.00 | 32 | 65 | 32.0 | 45 | B | 0.94 |
| | | | ● | 126.20 | 113.50 | 12.85 | 35.60 | | | | | | |

● R90MT 1205 ● O45MT 050505 ● R90MT 43

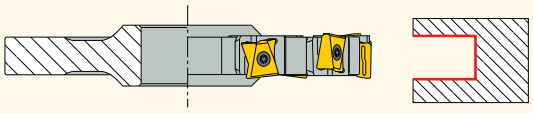
[1] Fully effective cutter
[2] Cutting diameter maximum
[3] Cutting depth maximum
[4] Number of inserts (or edges for solid tool)
[5] For adaptation options, see page 432

### Spare Parts

| Designation | | | |
|---|---|---|---|
| FDN-CM | SR 14-544/S | BLD T15/M7 | SW6-T |

TANGMILL
TANGENTIAL LINE

**SDN**
Full Slot Disk Type

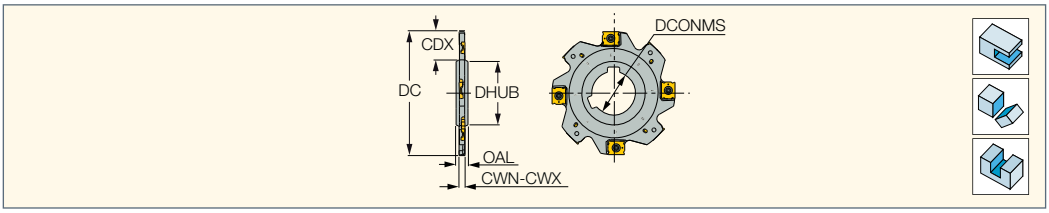


| Tool Diameter | | | | | | | Width of Cutter | | | | | | | | | | | | | | | | | | | | | Type of Insert | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 63 | 80 | 100 | 125 | 160 | 200 | 250 | 3 | 4 | 4.5 | 5 | 5.5 | 6 | 6.5 | 7 | 8 | 8.5 | 9 | 10 | 10.5 | 12 | 13 | 14 | 14.6 | 16 | 17 | 18 | 19 | 20 | 23 | 25.6 | | |
| ● | ● | ● | ● | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | LNET 081804 | |
| ● | ● | ● | ● | ● | | | | 3 | | | | | | | | | | | | | | | | | | | | | | LNET 082604 | |
| ● | ● | ● | ● | ● | | | | | 3 | | | | | | | | | | | | | | | | | | | | | LNET 082804 | |
| ● | ● | ● | ● | | | | | | | 3 | | | | | | | | | | | | | | | | | | | | LNET 083004 | |
| ● | ● | ● | ● | | | | | | | | 3 | | | | | | | | | | | | | | | | | | | LNET 083204 | |
| ● | ● | ● | ● | | | | | | | | | 3 | | | | | | | | | | | | | | | | | | LNET 083504 | |
| ● | ● | ● | ● | | | | | | | | | | 3 | | | | | | | | | | | | | | | | | LNET 083704 | |
| | ● | ● | ● | | | | | | | | | | | 3 | | | | | | | | | | | | | | | | LNET 1240 | |
| | ● | ● | ● | | ● | ● | | | | | | | | | 3 | | | | | | | | | | | | | | | LNET 1245 | |
| | ● | ● | ● | | ● | ● | | | | | | | | | | 3 | | | | | | | | | | | | | | LNET 1248 | |
| | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | 3 | | | | | | | | | | | | LNET 1255 | |
| | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | 3 | | | | | | | | | | | LNET 1257 | |
| | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | 3 | | | | | | | | | | LNET 1265 | |
| | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | | LNET 12... | |
| | ● | ● | ● | ● | | | | | | | | | | | | | | 3 | | | | | | | | | | | | XNMU 09.. | |
| | ● | ● | ● | ● | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | |
| | | ● | ● | | | | | | | | | | | | | | | | | | | 3 | | | | | | | | XNMU 13.. | |
| | | | ● | | | | | | | | | | | | | | | | | | | | | 3 | | | | | | | |
| | | | | ● | | | | | | | | | | | | | | | | | | | | 3 | | | | | | | |
| | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | 3 | | | |
| | ● | ● | | | | | | | | | | | | | 3 | | | | | | | | | | | | | | | XOMT 0602..<br>QOMT 060208 | |
| | | ● | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | | |
| | | | ● | | | | | | | | | | | | | | | | | 3 | | | | | | | | | | XPMT 1004...<br>QPMT 1004... | |
| | | | | ● | ● | | | | | | | | | | | | | | | | | | | 3 | | | | | | QPMT 1004... | |
| | | | | ● | ● | | | | | | | | | | | | | | | | | | | 3 | | | | | | QDMT 1205...<br>QDCT 1205 | |
| | | | | | ● | | | | | | | | | | | | | | | | | | | | | 3 | | | | | |
| | | | | | ● | | | | | | | | | | | | | | | | | | | | | | 3 | | | | |
| | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | LN...11 | |
| | | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | LN...13 | |
| | | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | LN...15 | |

● With adjustable cartridges

**MINI-TANGSLOT**

**SDN-LN08**
Disk Type Grooving
and Slitting Cutters




| Designation | DC | CWN(1) | CWX(2) | CDX(3) | CICT(4) | ZEFP | DHUB | DCONMS | THUB |
|---|---|---|---|---|---|---|---|---|---|
| SDN D063-03-22-LN08 | 63.00 | 3.00 (5) | 3.00 (5) | 14.80 | 8 | 4 | 32.00 | 22.00 | 6.00 |
| SDN D063-04-22-LN08 | 63.00 | 4.00 (6) | 4.50 (9) | 14.80 | 8 | 4 | 32.00 | 22.00 | 6.00 |
| SDN D063-05-22-LN08 | 63.00 | 5.00 (7) | 5.50 (10) | 14.80 | 8 | 4 | 32.00 | 22.00 | 7.00 |
| SDN D063-06-22-LN08 | 63.00 | 6.00 (8) | 6.50 (11) | 14.80 | 8 | 4 | 32.00 | 22.00 | 7.00 |
| SDN D080-04-22-LN08 | 80.00 | 4.00 (6) | 4.50 (9) | 22.00 | 10 | 5 | 34.00 | 22.00 | 6.00 |
| SDN D080-05-22-LN08 | 80.00 | 5.00 (7) | 5.50 (10) | 22.00 | 10 | 5 | 34.00 | 22.00 | 7.00 |
| SDN D080-06-22-LN08 | 80.00 | 6.00 (8) | 6.50 (11) | 22.00 | 10 | 5 | 34.00 | 22.00 | 7.00 |
| SDN D100-03-27-LN08 | 100.00 | 3.00 (5) | 3.00 (5) | 27.00 | 12 | 6 | 42.00 | 27.00 | 8.00 |
| SDN D100-04-27-LN08 | 100.00 | 4.00 (6) | 4.50 (9) | 27.00 | 12 | 6 | 42.00 | 27.00 | 8.00 |
| SDN D100-05-27-LN08 | 100.00 | 5.00 (7) | 5.50 (10) | 26.50 | 12 | 6 | 42.00 | 27.00 | 10.00 |
| SDN D125-03-32-LN08 | 125.00 | 3.00 (5) | 3.00 (5) | 36.50 | 16 | 8 | 48.00 | 32.00 | 8.00 |
| SDN D125-04-32-LN08 | 125.00 | 4.00 (6) | 4.50 (9) | 36.00 | 16 | 8 | 48.00 | 32.00 | 8.00 |
| SDN D125-05-32-LN08 | 125.00 | 5.00 (7) | 5.50 (10) | 36.00 | 16 | 8 | 48.00 | 32.00 | 10.00 |
| SDN D160-04-40-LN08 | 160.00 | 4.00 (6) | 4.50 (9) | 48.60 | 20 | 10 | 56.00 | 40.00 | 10.00 |

• For user guide, see pages 426-432

(1) Minimum cutting width
(2) Maximum cutting width
(3) Cutting depth maximum
(4) Number of inserts (or edges for solid tool)
(5) Use LNET 0818.. insert with SR 114-018-L2.50 screw
(6) Use LNET 0826.. insert with SR 114-018-L3.40 screw
(7) Use LNET 0830.. insert with SR 114-018-L4.40 screw
(8) Use LNET 0835.. insert with SR 114-018-L5.30 screw
(9) Use LNET 0828.. insert with SR 114-018-L3.40 screw
(10) Use LNET 0832.. insert with SR 114-018-L4.40 screw
(11) Use LNET 0837.. insert with SR 114-018-L5.30 screw

**For inserts, see pages:** LNET 08 (558)

## SDN-LN08

| Cutter Designation | CWN-CWX | Insert | | | |
|---|---|---|---|---|---|
| SDN D...-03...-LN08 | 3.0 | LNET 081804-TN-N | SR 114-018-L2.50 | T-6/3-L | T-6/51 |
| SDN D...-04...-LN08 | 4.0 | LNET 082604-TN-N | SR 114-018-L3.40 | T-6/3-L | T-6/51 |
| | 4.5 | LNET 082804-TN-N | SR 114-018-L3.40 | T-6/3-L | T-6/51 |
| SDN D...-05...-LN08 | 5.0 | LNET 083004-TN-N | SR 114-018-L4.40 | T-6/3-L | T-6/51 |
| | 5.5 | LNET 083204-TN-N | SR 114-018-L4.40 | T-6/3-L | T-6/51 |
| SDN D...-06...-LN08 | 6.0 | LNET 083504-TN-N | SR 114-018-L5.30 | T-6/3-L | T-6/51 |
| | 6.5 | LNET 083704-TN-N | SR 114-018-L5.30 | T-6/3-L | T-6/51 |

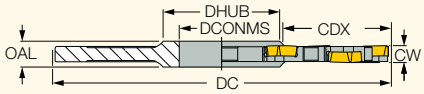
## Spare Parts

| Designation | | | |
|---|---|---|---|
| SDN D063-03-22-LN08 | SR 114-018-L2.50 | T-6/3-L | T-6/51 |
| SDN D063-04-22-LN08 | SR 114-018-L3.40 | T-6/3-L | T-6/51 |
| SDN D063-05-22-LN08 | SR 114-018-L4.40 | T-6/3-L | T-6/51 |
| SDN D063-06-22-LN08 | SR 114-018-L5.30 | T-6/3-L | T-6/51 |
| SDN D080-04-22-LN08 | SR 114-018-L3.40 | T-6/3-L | T-6/51 |
| SDN D080-05-22-LN08 | SR 114-018-L4.40 | T-6/3-L | T-6/51 |
| SDN D080-06-22-LN08 | SR 114-018-L5.30 | T-6/3-L | T-6/51 |
| SDN D100-03-27-LN08 | SR 114-018-L2.50 | T-6/3-L | T-6/51 |
| SDN D100-04-27-LN08 | SR 114-018-L3.40 | T-6/3-L | T-6/51 |
| SDN D100-05-27-LN08 | SR 114-018-L4.40 | T-6/3-L | T-6/51 |
| SDN D125-03-32-LN08 | SR 114-018-L2.50 | T-6/3-L | T-6/51 |
| SDN D125-04-32-LN08 | SR 114-018-L3.40 | T-6/3-L | T-6/51 |
| SDN D125-05-32-LN08 | SR 114-018-L4.40 | T-6/3-L | T-6/51 |
| SDN D160-04-40-LN08 | SR 114-018-L3.40 | T-6/3-L | T-6/51 |

**TANGSLOT**

## SDN-LN12

Full Slot Disk Type Slotting Cutters Carrying LNET 12 Tangentially Mounted Inserts



| Designation | CICT(4) | ZEFP | DC | DCONMS | CDX | DHUB | CW | kg | OAL | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| SDN D080-07-27-LN12(1) | 8 | 4 | 80.00 | 27.00 | 17.00 | 41.0 | 12.0 | 0.78 | 7.0 | LNET 1240.. |
| | | | | | | | | | 8.0 | LNET 1245.. |
| | | | | | | | | | 8.5 | LNET 1248.. |
| SDN D080-10-27-LN12(2) | 8 | 4 | 80.00 | 27.00 | 17.00 | 41.0 | 12.0 | 0.21 | 10.0 | LNET 1255.. |
| | | | | | | | | | 10.5 | LNET 1257.. |
| | | | | | | | | | 12.0 | LNET 1265.. |
| SDN D100-07-32-LN12(1) | 10 | 5 | 100.00 | 32.00 | 24.00 | 47.0 | 12.0 | 0.51 | 7.0 | LNET 1240.. |
| | | | | | | | | | 8.0 | LNET 1245.. |
| | | | | | | | | | 8.5 | LNET 1248.. |
| SDN D100-10-32-LN12(2) | 10 | 5 | 100.00 | 32.00 | 24.00 | 47.0 | 12.0 | 0.50 | 10.0 | LNET 1255.. |
| | | | | | | | | | 10.5 | LNET 1257.. |
| | | | | | | | | | 12.0 | LNET 1265.. |
| SDN D125-07-40-LN12(1) | 12 | 6 | 125.00 | 40.00 | 31.00 | 55.0 | 14.0 | 0.49 | 7.0 | LNET 1240.. |
| | | | | | | | | | 8.0 | LNET 1245.. |
| | | | | | | | | | 8.5 | LNET 1248.. |
| SDN D125-10-40-LN12(2) | 12 | 6 | 125.00 | 40.00 | 31.00 | 55.0 | 14.0 | 0.60 | 10.0 | LNET 1255.. |
| | | | | | | | | | 10.5 | LNET 1257.. |
| | | | | | | | | | 12.0 | LNET 1265.. |
| SDN D160-10-40-LN12(2) | 16 | 8 | 160.00 | 40.00 | 50.00 | 55.0 | 14.0 | 1.10 | 10.0 | LNET 1255.. |
| | | | | | | | | | 10.5 | LNET 1257.. |
| | | | | | | | | | 12.0 | LNET 1265.. |
| SDN D200-08-50-LN12(3) | 20 | 10 | 200.00 | 50.00 | 62.50 | 70.0 | 12.0 | 1.75 | 8.0 | LNET 1245.. |
| | | | | | | | | | 8.5 | LNET 1248.. |
| | | | | | | | | | 9.0 | LNET 1250.. |
| | | | | | | | | | 10.0 | LNET 1255.. |
| SDN D200-10-50-LN12(2) | 20 | 10 | 200.00 | 50.00 | 62.50 | 69.0 | 14.0 | 1.90 | 10.0 | LNET 1255.. |
| | | | | | | | | | 10.5 | LNET 1257.. |
| | | | | | | | | | 12.0 | LNET 1265.. |
| SDN D250-08-50-LN12(3) | 26 | 13 | 250.00 | 60.00 | 84.00 | 87.0 | 12.0 | 3.06 | 8.0 | LNET 1245.. |
| | | | | | | | | | 8.5 | LNET 1248.. |
| | | | | | | | | | 9.0 | LNET 1250.. |
| | | | | | | | | | 10.0 | LNET 1255.. |
| SDN D250-08-60-LN12(3) | 26 | 13 | 250.00 | 60.00 | 80.30 | 84.0 | 12.0 | 2.22 | 8.0 | LNET 1245.. |
| | | | | | | | | | 8.5 | LNET 1248.. |
| | | | | | | | | | 9.0 | LNET 1250.. |
| | | | | | | | | | 10.0 | LNET 1255.. |
| SDN D250-10-50-LN12(2) | 26 | 13 | 250.00 | 60.00 | 87.00 | 84.0 | 14.0 | 2.13 | 10.0 | LNET 1255.. |
| | | | | | | | | | 10.5 | LNET 1257.. |
| | | | | | | | | | 12.0 | LNET 1265.. |
| SDN D250-10-60-LN12(2) | 26 | 13 | 250.00 | 60.00 | 80.00 | 84.0 | 14.0 | 2.83 | 10.0 | LNET 1255.. |
| | | | | | | | | | 10.5 | LNET 1257.. |
| | | | | | | | | | 12.0 | LNET 1265.. |

- Each tool is supplied with screws for the thinnest specified insert; verify use of the correct screw for the insert being used
- For more than one insert option, slot width depends on the selected insert width • Gang-mill assembly SDN and left-hand SSB cutters feature two keyways
- To reduce vibration, it is recommended to assemble gang-mills with alternating keyway position. • For user guide, see pages 426-432

(1) For $a_p$=7.0 use screw SR 14-500-L5.9 • For $a_p$=8.0 use screw SR 14-500-L6.5 • For $a_p$=8.5 use screw SR 14-500-L7.0

(2) For $a_p$=10.0 and 10.5 use screw SR 14-500-L8.5 • For $a_p$=12.0 use screw SR 14-500-L10.0

(3) For $a_p$=8.0 and 8.5 use screw SR 14-500-L7.0 • For $a_p$=9.0 use screw SR 14-500-L8.0 • For $a_p$=10.0 use screw SR 14-500-L8.5

(4) Cutting depth maximum

(5) Number of inserts (or edges for solid tool)

**For inserts, see pages:** LNET 12-TN (493) • LNET 12-TN-MM (493)

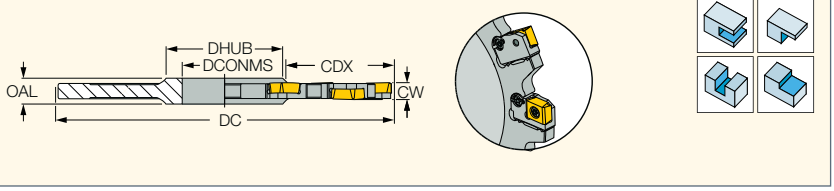
| Designation | Insert | | | (1) |
|---|---|---|---|---|
| SDN-LN12 | LNET 1240... | SR 14-500-L5.9 | T-15/51-BE | ratchet wrench key |
| | LNET 1245 D=80-125 | SR 14-500-L6.5 | T-15/51-BE | |
| | LNET 1245 D=160-250 | SR 14-500-L7.0 | T-15/51-BE | |
| | LNET 1248... | SR 14-500-L7.0 | T-15/51-BE | |
| | LNET 1250... | SR 14-500-L8.0 | T-15/51-BE | |
| | LNET 1255... | SR 14-500-L8.5 | T-15/51-BE | |
| | LNET 1257... | SR 14-500-L8.5 | T-15/51-BE | |
| | LNET 1265... | SR 14-500-L10 | T-15/51-BE | |

(1) Should be ordered separately, not supplied with the tool

**TANGSLOT**

## SDN-CALN12

Full Slot Disk Type Slotting Cutters with Cartridges Carrying LNET 12... Tangentially Mounted Inserts




| Designation | DC | CICT[4] | ZEFP | DCONMS | DHUB | CDX | OAL | kg | Inserts | Width of Range [CW] |
|---|---|---|---|---|---|---|---|---|---|---|
| SDN D100-0608-27-CALN12[1] | 100.00 | 6 | 3 | 27.00 | 42.0 | 25.00 | 16.0 | 0.63 | LNET 1235...<br>LNET 1240...<br>LNET 1245... | 6.0-6.5<br>6.5-7.2<br>7.0-8.2 |
| SDN D100-0810-27-CALN12[2] | 100.00 | 6 | 3 | 27.00 | 42.0 | 25.00 | 18.0 | 0.82 | LNET 1248...<br>LNET 1250...<br>LNET 1255... | 8.0-8.7<br>8.4-9.2<br>8.9-10.5 |
| SDN D100-1014-27-CALN12[3] | 100.00 | 6 | 3 | 27.00 | 42.0 | 25.00 | 20.0 | 0.48 | LNET 1265...<br>LNET 1277... | 10.5-12.2<br>11.9-14.6 |
| SDN D125-0608-40-CALN12[1] | 125.00 | 8 | 4 | 40.00 | 55.0 | 32.00 | 12.0 | 0.48 | LNET 1235...<br>LNET 1240...<br>LNET 1245... | 6.0-6.5<br>6.5-7.2<br>7.0-8.2 |
| SDN D125-0810-40-CALN12[2] | 125.00 | 8 | 4 | 40.00 | 55.0 | 32.00 | 14.0 | 0.95 | LNET 1248...<br>LNET 1250...<br>LNET 1255... | 8.0-8.7<br>8.4-9.2<br>8.9-10.5 |
| SDN D125-1014-40-CALN12[3] | 125.00 | 8 | 4 | 40.00 | 55.0 | 32.00 | 18.0 | 0.48 | LNET 1265...<br>LNET 1277... | 10.5-12.2<br>11.9-14.6 |
| SDN D160-0608-40-CALN12[1] | 160.00 | 12 | 6 | 40.00 | 55.0 | 50.00 | 12.0 | 1.11 | LNET 1235...<br>LNET 1240...<br>LNET 1245... | 6.0-6.5<br>6.5-7.2<br>7.0-8.2 |
| SDN D160-0810-40-CALN12[2] | 160.00 | 12 | 6 | 40.00 | 55.0 | 50.00 | 14.0 | 0.48 | LNET 1248...<br>LNET 1250...<br>LNET 1255... | 8.0-8.7<br>8.4-9.2<br>8.9-10.5 |
| SDN D160-1014-40-CALN12[3] | 160.00 | 12 | 6 | 40.00 | 55.0 | 50.00 | 18.0 | 1.61 | LNET 1265...<br>LNET 1277... | 10.5-12.2<br>11.9-14.6 |
| SDN D200-0608-50-CALN12[1] | 200.00 | 16 | 8 | 50.00 | 70.0 | 63.00 | 12.0 | 1.50 | LNET 1235...<br>LNET 1240...<br>LNET 1245... | 6.0-6.5<br>6.5-7.2<br>7.0-8.2 |
| SDN D200-0810-50-CALN12[2] | 200.00 | 16 | 8 | 50.00 | 70.0 | 63.00 | 14.0 | 1.70 | LNET 1248...<br>LNET 1250...<br>LNET 1255... | 8.0-8.7<br>8.4-9.2<br>8.9-10.5 |

• For user guide, see pages 426-432 • For cartridge details, see page 411

[1] For $a_p$=6.0 use screw SR 14-500-L4.9 • For $a_p$=6.5 use screw SR 14-500-L5.3 • For $a_p$=7.0 use screw SR 14-500-L5.9

[2] For $a_p$=8.0 use screw SR 14-500-L6.7 • For $a_p$=8.4 use screw SR 14-500-L7.0 • For $a_p$=8.9 use screw SR 14-500-L7.5

[3] For $a_p$=10.5 use screw SR 14-500-L9.0 • For $a_p$=11.9 use screw SR 14-500-L9.0

[4] For $a_p$=8.0 use screw SR 14-500-L6.7 • For $a_p$=8.4 use screw SR 14-500-L7.0 • For $a_p$=8.9 use screw SR 14-500-L7.5.

[5] Cutting depth maximum

[6] Number of inserts (or edges for solid tool)

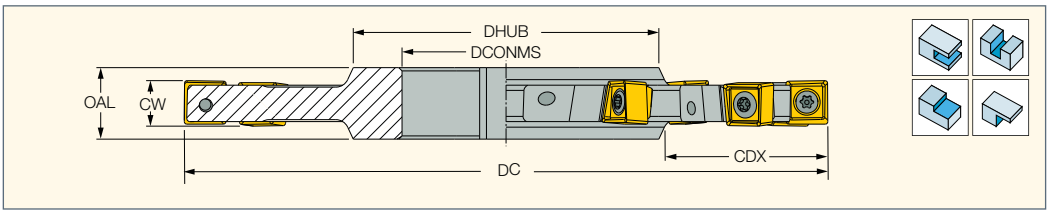
**For inserts, see pages:** LNET 12-TN (493) • LNET 12-TN-MM (493)

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| SDN-CALN12 | LNET 1235... | SR 14-500-L4.9 | CA 0608 R/L-LNET12 | T-15/51-BE | SR 14-500-L4.5 | ratchet wrench key |
| | LNET 1240... | SR 14-500-L5.3 | CA 0608 R/L-LNET12 | T-15/51-BE | SR 14-500-L4.5 | |
| | LNET 1245... | SR 14-500-L5.9 | CA 0608 R/L-LNET12 | T-15/51-BE | SR 14-500-L4.5 | |
| | LNET 1248... | SR 14-500-L6.7 | CA 0810 R/L-LNET12 | T-15/51-BE | SR 14-500-L6.1 | |
| | LNET 1250... | SR 14-500-L7.0 | CA 0810 R/L-LNET12 | T-15/51-BE | SR 14-500-L6.1 | |
| | LNET 1255... | SR 14-500-L7.5 | CA 0810 R/L-LNET12 | T-15/51-BE | SR 14-500-L6.1 | |
| | LNET 1265.. | SR 14-500-L10 | CA 1014 R/L-LNET12 | T-15/51-BE | SR 14-500-L8.5 | |
| | LNET 1277.. | SR 14-500-L10 | CA 1014 R/L-LNET12 | T-15/51-BE | SR 14-500-L8.5 | |

### Spare Parts

HELISLOT

**SDN-XN06**
Full Slot Disk Type Slotting Cutters Carrying XNMU 0603 Square Inserts with 4 Right- and 4 Left-Hand Cutting Edges




| Designation | DC | CW | CICT(1) | ZEFP | CDX | DHUB | DCONMS | OAL |
|---|---|---|---|---|---|---|---|---|
| SDN D063-07-22-XN06 | 63.00 | 7.00 | 8 | 8 | 15.00 | 30.00 | 22.00 | 11.00 |
| SDN D080-07-27-XN06 | 80.00 | 7.00 | 10 | 10 | 19.00 | 38.00 | 27.00 | 11.00 |
| SDN D080-08-27-XN06 | 80.00 | 8.00 | 10 | 5 | 19.00 | 38.00 | 27.00 | 11.00 |
| SDN D100-07-32-XN06 | 100.00 | 7.00 | 12 | 12 | 23.00 | 47.00 | 32.00 | 11.00 |
| SDN D125-07-40-XN06 | 125.00 | 7.00 | 14 | 14 | 27.00 | 55.00 | 40.00 | 11.00 |

New

- For user guide, see pages 426-432

(1) Number of inserts (or edges for solid tool)

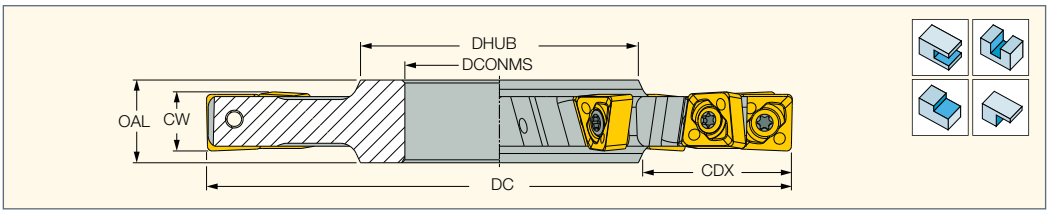
**For inserts, see pages:** XNMU 06 (585)

## Spare Parts

| Designation | | |
|---|---|---|
| SDN-XN06 | SR M2.5X6-T7-60 | T-7/51 |

HELISLOT

**SDN-XN09**
Full Slot Disk Type Slotting Cutters Carrying XNMU 0904 Square Inserts with 4 Right- and 4 Left-Hand Cutting Edges




| Designation | DC | CW | CICT(1) | ZEFP | CDX | DHUB | DCONMS | OAL | kg |
|---|---|---|---|---|---|---|---|---|---|
| SDN D080-10-27-XN09 | 80.00 | 10.00 | 10 | 10 | 20.00 | 38.00 | 27.00 | 14.00 | 0.20 |
| SDN D080-12-27-XN09 | 80.00 | 12.00 | 10 | 5 | 20.00 | 38.00 | 27.00 | 16.00 | 0.24 |
| SDN D100-10-32-XN09 | 100.00 | 10.00 | 12 | 12 | 25.00 | 47.00 | 32.00 | 14.00 | 0.34 |
| SDN D100-12-32-XN09 | 100.00 | 12.00 | 12 | 6 | 25.00 | 47.00 | 32.00 | 16.00 | 0.42 |
| SDN D125-10-40-XN09 | 125.00 | 10.00 | 14 | 14 | 34.00 | 55.00 | 40.00 | 14.00 | 0.61 |
| SDN D125-12-40-XN09 | 125.00 | 12.00 | 14 | 7 | 34.00 | 55.00 | 40.00 | 16.00 | 0.69 |
| SDN D160-10-40-XN09 | 160.00 | 10.00 | 18 | 18 | 51.00 | 55.00 | 40.00 | 14.00 | 0.61 |
| SDN D160-12-40-XN09 | 160.00 | 12.00 | 18 | 9 | 51.00 | 55.00 | 40.00 | 16.00 | 1.10 |

- For user guide, see pages 426-432

(1) Number of inserts (or edges for solid tool)

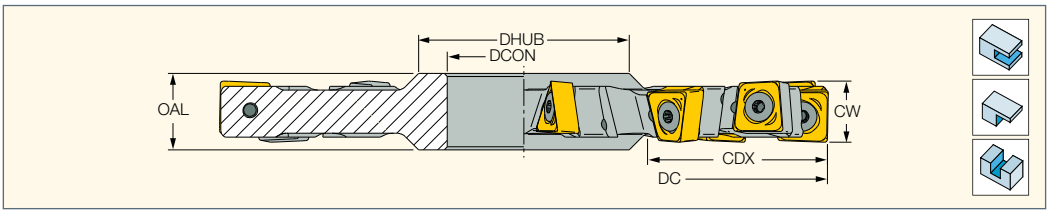
**For inserts, see pages:** XNMU 09 (586)

## Spare Parts

| Designation | | |
|---|---|---|
| SDN-XN09 | SR 10508600 | T-9/51 |

HELISLOT

**SDN-XN13**
Full Slot Disk Type Slotting Cutters Carrying XNMU 1306 Square Inserts with 4 Right- and 4 Left-Hand Cutting Edges




| Designation | DC | CICT(1) | ZEFP | CW | CDX(2) | DHUB | DCONMS | OAL | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SDN D100-14-32-XN13 | 100.00 | 10 | 10 | 14.00 | 23.00 | 47.00 | 32.00 | 18.00 | 0.42 | SR M4-L15-D4.5 | BLD IP15/S7 | SW6-T-SH |
| SDN D125-14-40-XN13 | 125.00 | 12 | 12 | 14.00 | 33.00 | 55.00 | 40.00 | 18.00 | 0.66 | SR M4-L15-D4.5 | BLD IP15/S7 | SW6-T-SH |
| SDN D125-16-40-XN13 | 125.00 | 12 | 6 | 16.00 | 33.00 | 55.00 | 40.00 | 20.00 | 0.79 | SR M4-L15-D4.5 | BLD IP15/S7 | SW6-T-SH |
| SDN D160-16-40-XN13 | 160.00 | 14 | 7 | 16.00 | 50.50 | 55.00 | 40.00 | 20.00 | 1.44 | SR M4-L15-D4.5 | BLD IP15/S7 | SW6-T-SH |
| SDN D200-20-50-XN13 | 200.00 | 16 | 8 | 20.00 | 59.00 | 69.00 | 50.00 | 26.00 | 2.61 | SR M4-L15-D4.5 | BLD IP15/S7 | SW6-T-SH |

- For user guide, see pages 426-432

(1) Number of inserts (or edges for solid tool)

(2) Cutting depth maximum

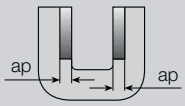
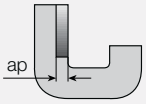
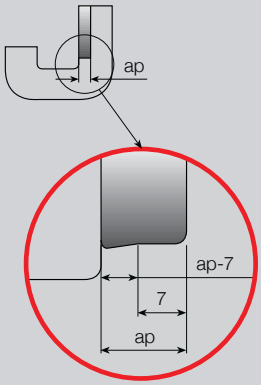
**For inserts, see pages:** XNMU 13 (586)

Inserts

LNHT 1106...HT inserts should be used if a straight groove or shoulder are needed.

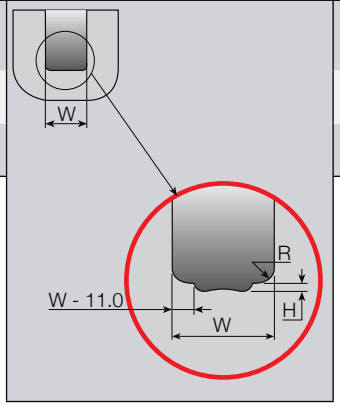
When using the other inserts, the machined surface is grooved due to the butterfly insert shape.

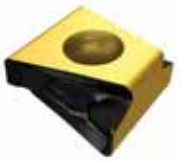
**Side Wall Flatness Depending on the Inserts Being Used**

| Designation | Number of Cutting Edges | Side Flatness Ap5 H (mm) | Side Flatness $A_p$=10 H (mm) | Application | Half Side Tools Axial Depth of Cut $A_p$ (mm) |
|---|---|---|---|---|---|
| LNKX 1106... | 4R+4L | Flat | 0.45 | Double Face MIlling | Stock=0-10 |
| LNMT 1106... | 4R+4L | Flat | 0.45 |  | Stock=0-10 |
| LNHT 1106 - N(1) | 2R+2L | Flat | Flat | | Stock=0-10 |
| LNKX 1106... | 4R | Flat | 0.45 | Half side Milling | Stock=0-10 |
| LNMT 1106... | 4R | Flat | 0.45 |  | Stock=0-10 |
| LNHT 1106 - R(2) | 4R | Flat | Flat | | Stock=0-10 |
| LNKX 1106... | 4L | Flat | 0.45 | Half side milling | Stock=0-10 |
| LNMT 1106... | 4L | Flat | 0.45 |  | Stock=0-10 |
| LNHT 1106 - N(1) | 2L | Flat | Flat | | Stock=0-10 |

(1) Use of 8 cutting edges (4R+4L) is possible only when $a_p \leq 5$ mm, otherwise 4 cutting edges (2R+2L) can be used

**Configuration Guide for Full Slot FDN/SDN... CALN11 Cutters**

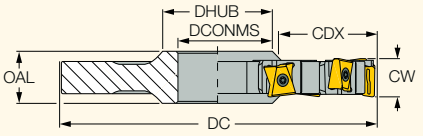
| Designation | Number of Cutting Edges | Bottom Slot Flatness H (mm) | Insert Radius R (mm) | Application | Half Side Tools Axial Depth of Cut W (mm) |
|---|---|---|---|---|---|
| LNHT 1106...<br>LNKX 1106... | 2R+2L | 0.45 | 0.8 |  | W=14-19.5 |
| LNMT 1106... | 2R+2L | 0.45 | 0.8 | | W=14-19.5 |
| LNHT 1106 - N(1) | 2R+2L | Flat | 0.8 | | W=14-19.5 |

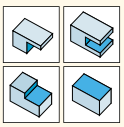
| LNHT 1106... - N R.H./L.H. | LNKX 1106... LNMT 1106... R.H./L.H. | LNHT 1106... - R R.H. Only |
|---|---|---|
|  | | |
| Page 550 | Page 549 | Page 549 |

TANGMILL TANGENTIAL LINE

## SDN-CALN11

Full Slot Disk Type Slotting Cutters with Cartridges Carrying Tangentially Mounted LN.. 1106.. Inserts



| Designation | CWN(1) | CWX(2) | CDX(3) | DC | DHUB | DCONMS | CICT(4) | ZEFP | OAL | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| SDN D100-1419-27-CALN11 | 14.00 | 19.50 | 26.80 | 100.00 | 42.00 | 27.00 | 6 | 3 | 20.00 | 0.58 |
| SDN D125-1419-40-CALN11 | 14.00 | 19.50 | 31.50 | 125.00 | 56.00 | 40.00 | 8 | 4 | 20.00 | 0.90 |
| SDN D160-1419-40-CALN11 | 14.00 | 19.50 | 48.00 | 160.00 | 56.00 | 40.00 | 10 | 5 | 22.00 | 1.51 |
| SDN D200-1419-50-CALN11 | 14.00 | 19.50 | 61.00 | 200.00 | 70.00 | 50.00 | 14 | 7 | 22.00 | 2.38 |
| SDN D250-1419-60-CALN11 | 14.00 | 19.50 | 78.00 | 250.00 | 85.00 | 60.00 | 16 | 8 | 26.00 | 3.88 |

- Each cutter body can be changed into full slot, bottom or top milling configuration by mounting the cartridges accordingly
- Half of the inserts are used on right-hand cartridges and half on left-hand cartridges • Gang-mill assembly SDN and left-hand SSB cutters feature two keyways
- To reduce vibration, it is recommended to assemble gang-mills with alternating keyway position. • For cartridge details, see page 411

(1) Minimum cutting width • The cutter will be set to the minimum width range, unless a specific width is requested by the user
(2) Maximum cutting width
(3) Cutting depth maximum
(4) Number of inserts (or edges for solid tool)

**For inserts, see pages:** LNAR 1106 (550) • LNHT 1106 PN-N HT (550) • LNHT 1106 PN-R HT (549) • LNKX/LNMT 1106 (549)

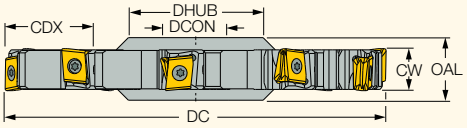
### Spare Parts

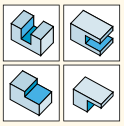
| Designation | |
|---|---|
| SDN-CALN11 | CA90 1419-R/L-LN11 |

HELITANG T490 LINE

## SDN-CALN13

Full Slot Adjustable Slotting Cutters with Cartridges Carrying T490 LNHT 1306PNTR/L Inserts



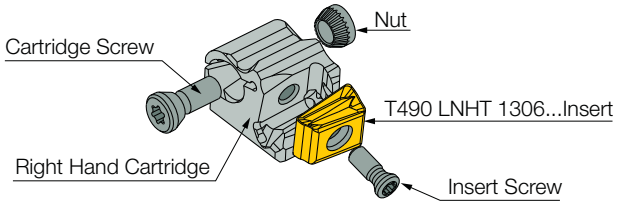



| Designation | DC | OAL | CWN(1) | CWX(2) | CDX(3) | CICT(4) | ZEFP | DHUB | DCON | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| SDN D125-1723-40-CALN13 | 126.00 | 26.00 | 17.50 | 23.00 | 32.00 | 8 | 4 | 56.00 | 40.00 | 1.13 |
| SDN D160-1723-40-CALN13 | 161.00 | 26.00 | 17.50 | 23.00 | 49.50 | 10 | 5 | 56.00 | 40.00 | 1.90 |
| SDN D200-1723-50-CALN13 | 201.00 | 26.00 | 17.50 | 23.00 | 61.00 | 14 | 7 | 70.00 | 50.00 | 3.01 |
| SDN D250-1723-50-CALN13 | 251.00 | 26.00 | 17.50 | 23.00 | 86.00 | 16 | 8 | 70.00 | 50.00 | 4.82 |
| SDN D250-1723-60-CALN13 | 251.00 | 26.00 | 17.50 | 23.00 | 78.00 | 16 | 8 | 85.00 | 60.00 | 4.83 |

- Each cutter body can be changed into full slot, bottom or top milling configuration by mounting the cartridges accordingly
- Half of the inserts are used on right-hand cartridges and half on left-hand cartridges • Gang-mill assembly SDN and left-hand SSB cutters feature two keyways
- To reduce vibration, it is recommended to assemble gang-mills with alternating keyway position. • For cartridge details, see page 412

(1) Minimum cutting width • The cutter will be set to the minimum width range, unless a specific width is requested by the user
(2) Maximum cutting width
(3) Cutting depth maximum
(4) Number of inserts (or edges for solid tool)

**For inserts, see pages:** T490 LNMT/LNHT/LNAR 1306 (546)



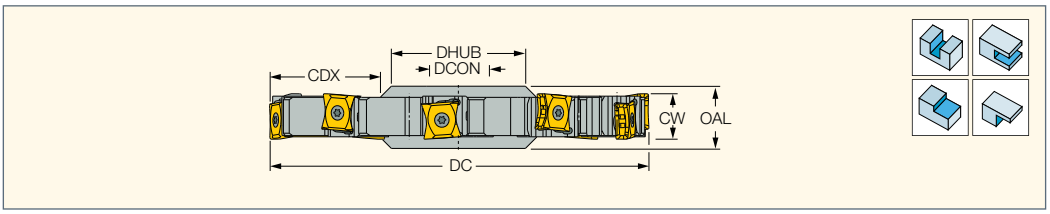

### Spare Parts

| Designation | |
|---|---|
| SDN-CALN13 | CA90 1723-R/L-T490-13 |

TANGMILL TANGENTIAL LINE

**SDN-CAPM15**

Full Slot Adjustable Slotting Cutters with Cartridges Carrying LNAT 1506...-PM Inserts




| Designation | DC | OAL | CWN(1) | CWX(2) | CDX(3) | CICT(4) | ZEFP | DHUB | DCON | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| SDN D125-1925-40-CAPM15 | 125.00 | 26.00 | 18.90 | 25.60 | 32.50 | 8 | 4 | 56.00 | 40.00 | 1.30 |
| SDN D160-1925-40-CAPM15 | 160.00 | 26.00 | 18.90 | 25.60 | 48.50 | 10 | 5 | 56.00 | 40.00 | 1.90 |
| SDN D250-1925-60-CAPM15 | 250.00 | 26.00 | 18.90 | 25.60 | 79.00 | 16 | 8 | 85.00 | 60.00 | 4.81 |

• Each cutter can be changed into full slot, bottom or top milling configuration • Use A type cartridges for inserts with 0.8-1.6 mm radii, B type cartridges for inserts with 2.5-3.2 mm radii and C type cartridges for insertswith 4.0 mm radius

• Each cutter features two keyways. • To reduce vibration, it is recommended to assemble gang-mills with alternating keyway position.

• For cartridge details, see page 411

(1) Minimum cutting width • The cutter will be set to the minimum width range, unless a specific width is requested by the user

(2) Maximum cutting width

(3) Cutting depth maximum

(4) Number of inserts (or edges for solid tool)

**For inserts, see pages:** LNAT 1506-PM (557)

## Spare Parts

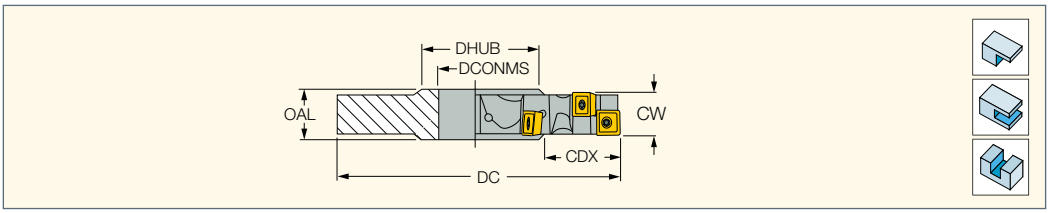
| Designation | | | |
|---|---|---|---|
| SDN-CAPM15 | CA90 1928-R/L-PM15-A | CA90 1928-R/L-PM15-B* | CA90 1928-R/L-PM15-C* |

* Optional, to be ordered separately

HELIQUAD

**SDN**

Full Slot Disk Type Slotting Cutters




| Designation | DC | CW | CICT(1) | ZEFP | CDX(2) | DHUB | DCONMS | OAL |
|---|---|---|---|---|---|---|---|---|
| SDN D080-08-27-06 | 80.00 | 8.00 | 12 | 6 | 17.00 | 41.00 | 27.00 | 12.00 |
| SDN D100-08-32-06 | 100.00 | 8.00 | 14 | 7 | 24.00 | 47.00 | 32.00 | 12.00 |
| SDN D100-10-32-06 | 100.00 | 10.00 | 14 | 7 | 24.00 | 47.00 | 32.00 | 14.00 |
| SDN D125-12-40-10 | 125.00 | 12.00 | 12 | 6 | 33.00 | 55.00 | 40.00 | 16.00 |
| SDN D160-12-40-10 | 160.00 | 12.00 | 14 | 7 | 50.00 | 55.00 | 40.00 | 16.00 |
| SDN D160-16-40-10 | 160.00 | 16.00 | 14 | 7 | 50.00 | 55.00 | 40.00 | 20.00 |
| SDN D160-16-40-12 | 160.00 | 16.00 | 12 | 6 | 50.00 | 55.00 | 40.00 | 20.00 |
| SDN D200-18-50-12 | 200.00 | 18.00 | 14 | 7 | 50.00 | 69.00 | 50.00 | 24.00 |
| SDN D200-20-50-12 | 200.00 | 20.00 | 14 | 7 | 63.00 | 69.00 | 50.00 | 26.00 |

• For user guide, see pages 426-432

(1) Number of inserts (or edges for solid tool)

(2) Cutting depth maximum

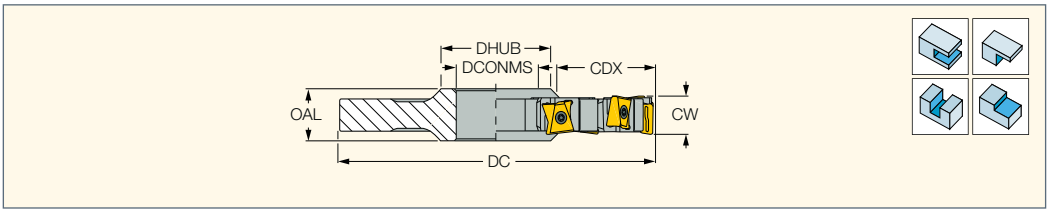
**For inserts, see pages:** QDCT-PDN (565) • QDMT 1205..PDTN-M (565) • QOMT-HQ (560) • QPMT 100408PDTN (561) • XOMT-HQ (561) • XPMT-HQ (563)

## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| SDN D080-08-27-06 | SR 34-514 | T-7/51 | | | |
| SDN D100-08-32-06 | SR 34-514 | T-7/51 | | | |
| SDN D100-10-32-06 | SR 34-514 | T-7/51 | | | |
| SDN D125-12-40-10 | SR 14-544/S | T-15/51 | | | |
| SDN D160-12-40-10 | SR 14-544/S | T-15/51 | | | |
| SDN D160-16-40-10 | SR 14-544/S | T-15/51 | | | |
| SDN D160-16-40-12 | SR 34-510 | | PN 3-4 | BLD T15/M7 | SW6-T |
| SDN D200-18-50-12 | SR 34-510 | | PN 3-4 | BLD T15/M7 | SW6-T |
| SDN D200-20-50-12 | SR 34-510 | | PN 3-4 | BLD T15/M7 | SW6-T |

TANGMILL TANGENTIAL LINE

**SDN-CALN15**
Full Slot Disk Type Slotting Cutters with Cartridges Carrying Tangentially Mounted LN.. 1506.. Inserts

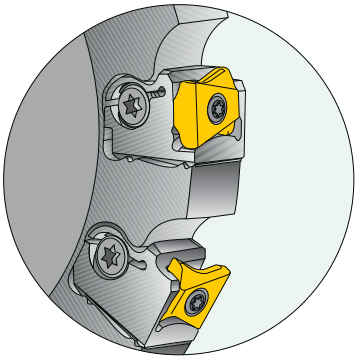



| Designation | CWN[1] | CWX[2] | CDX[3] | CICT[4] | ZEFP | DC | DHUB | DCONMS | OAL | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| SDN D125-1925-40-CALN15 | 18.90 | 25.60 | 32.50 | 8 | 4 | 125.00 | 56.00 | 40.00 | 26.00 | 0.39 |
| SDN D160-1925-40-CALN15 | 18.90 | 25.60 | 48.50 | 10 | 5 | 160.00 | 56.00 | 40.00 | 26.00 | 0.00 |
| SDN D200-1925-50-CALN15 | 18.90 | 25.60 | 61.50 | 14 | 7 | 200.00 | 70.00 | 50.00 | 26.00 | 3.03 |
| SDN D250-1925-60-CALN15 | 18.90 | 25.60 | 79.00 | 16 | 8 | 250.00 | 85.00 | 60.00 | 26.00 | 4.80 |

- Each cutter body can be changed into full slot, bottom or top milling configuration by mounting the cartridges accordingly
- Half of the inserts are used on right-hand cartridges and half on left-hand cartridges • Gang-mill assembly SDN and left-hand SSB cutters feature two keyways.
- To reduce vibration, it is recommended to assemble gang-mills with alternating keyway position. • For cartridge details, see page 411

[1] Minimum cutting width • The cutter will be set to the minimum width range, unless a specific width is requested by the user
[2] Maximum cutting width
[3] Cutting depth maximum
[4] Number of inserts (or edges for solid tool)

**For inserts, see pages:** LNKX 1506PN-N PL (554) • LNKX/LNMT 1506PNTN/PN-N MM (553) • LNMT/LNHT 1506...-N HT (555) • LNMW 1506 PNTN (553)



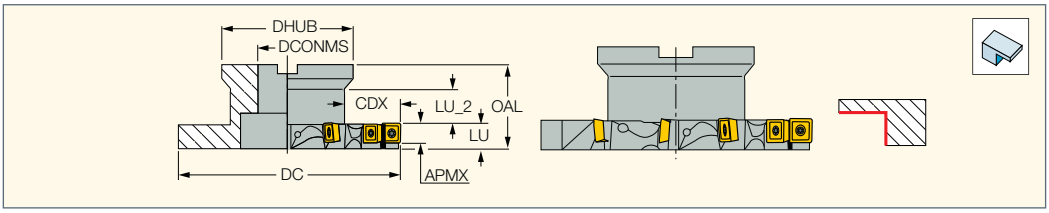
SDN-CALN

## Spare Parts

| Designation | |
|---|---|
| SDN-CALN15 | CA90 1928-R/L-LN15 |

ISCARMILL

**FST**
Top-Side Cutting, Flanged Type Slotting Cutters



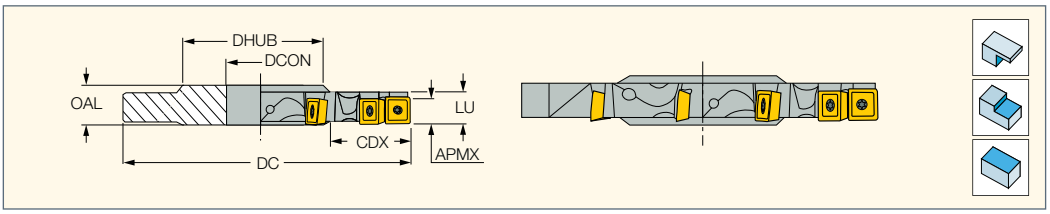

| Designation | DC | APMX | CICT[1] | CDX[2] | DHUB | DCONMS | LU_2 | LU | OAL | Arbor[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FST D100-12-27-R10 | 100.00 | 9.00 | 11 | 25.00 | 55.00 | 27.00 | 17.5 | 12.00 | 40.00 | B | SR 14-544/S | T-15/51 |
| FST D125-12-32-R10 | 125.00 | 9.00 | 13 | 34.00 | 65.00 | 32.00 | 20.0 | 12.00 | 45.00 | B | SR 14-544/S | T-15/51 |

[1] Number of inserts (or edges for solid tool)
[2] Cutting depth maximum
[3] For adaptation options, see page 432

**For inserts, see pages:** QDCT-PDN (565) • QDMT 1205..PDTN-M (565) • QPMT 100408PDTN (561) • XPMT-HQ (563)

ISCARMILL

**SSB**
Single-Side Cutting, Disk Type Slotting Cutters



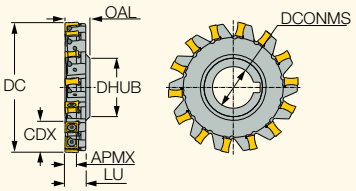

| Designation | APMX | DC | CICT(1) | CDX(2) | DHUB | DCONMS | LU | OAL | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SSB D100-12-32-R/L10 | 9.00 | 100.00 | 9 | 26.00 | 47.00 | 32.00 | 12.00 | 16.00 | SR 14-544/S | T-15/51 |
| SSB D125-12-40-R/L10 | 9.00 | 125.00 | 11 | 35.00 | 55.00 | 40.00 | 12.00 | 16.00 | SR 14-544/S | T-15/51 |
| SSB D160-16-40-R/L10 | 9.00 | 160.00 | 13 | 52.00 | 55.00 | 40.00 | 16.00 | 20.00 | SR 14-544/S | T-15/51 |

(1) Number of inserts (or edges for solid tool)
(2) Cutting depth maximum

**For inserts, see pages:** QDCT-PDN (565) • QDMT 1205..PDTN-M (565) • QPMT 100408PDTN (561) • SPCT/SPMR PDR (563) • SPMT-HP (562) • SPMT-HQ (562) • XPMT-HQ (563)

HELIDO 890 LINE

**S890 SSB-13**
Half Side / Face Disk Milling Cutters Carrying HELI-DO S890 SNMU 1305 Inserts



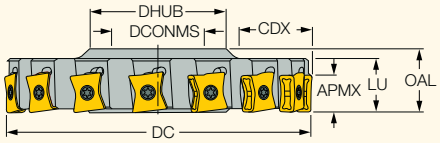

| Designation | DC | APMX | NOF(1) | CDX(2) | DHUB | DCONMS | LU | OAL | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S890 SSB D125-20-40-R/L13 | 125.00 | 9.00 | 14 | 33.00 | 56.00 | 40.00 | 20.00 | 24.00 | 1.20 | SR 11800745 | BLD IP15/S7 | SW6-T-SH |

(1) Number of flutes
(2) Cutting depth maximum

**For inserts, see pages:** S890 SNMU 1305PN (573)

TANGMILL TANGENTIAL LINE

**SSB-LN15-R/L**
Single-Side Cutting, Disk Type Slotting Cutters

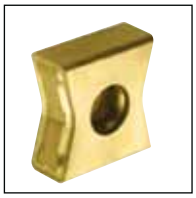



| Designation | DC | CICT(1) | CDX(2) | APMX | DHUB | DCONMS | LU | OAL | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SSB D080-22-27-LN15-R/L | 80.00 | 10 | 18.00 | 14.00 | 42.00 | 27.00 | 22.00 | 24.00 | 0.56 | SR 34-535 | BLD T15/M7 | SW6-T-SH |
| SSB D100-22-32-LN15-R/L | 100.00 | 12 | 26.00 | 14.00 | 48.00 | 32.00 | 22.00 | 26.00 | 0.95 | SR 34-535 | BLD T15/M7 | SW6-T-SH |
| SSB D125-22-40-LN15-R/L | 125.00 | 15 | 35.00 | 14.00 | 56.00 | 40.00 | 22.00 | 26.00 | 1.51 | SR 34-535 | BLD T15/M7 | SW6-T-SH |
| SSB D160-22-40-LN15-R/L | 160.00 | 20 | 52.00 | 14.00 | 56.00 | 40.00 | 22.00 | 26.00 | 2.64 | SR 34-535 | BLD T15/M7 | SW6-T-SH |
| SSB D200-24-50-LN15-R/L | 200.00 | 25 | 65.00 | 14.00 | 70.00 | 50.00 | 24.00 | 28.00 | 4.66 | SR 34-535 | BLD T15/M7 | SW6-T-SH |

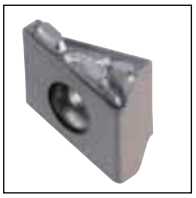
• Note: Left-hand cutters are designated by a yellow groove
(1) Number of inserts (or edges for solid tool)
(2) Cutting depth maximum

**For inserts, see pages:** LNAT 1506-W (557) • LNAT 1506..PN-N MM (556) • LNAW-15 (CBN) (552) • LNHW 1506 PNTN (CER) (556) • LNKX 1506 1.5X45 PN-N (554) • LNKX 1506PN-N PL (554) • LNKX/LNMT 1506PNTN/PN-N MM (553) • LNMT/LNHT 1506...-N HT (555) • LNMT/LNHT 1506PN-R HT (554) • LNMW 1506 PNTN (553)

**LNMT 1506PTNT-HT R.H./L.H.**



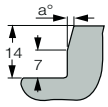
**LNKX 1506... LNMT 1506... R.H./L.H.**

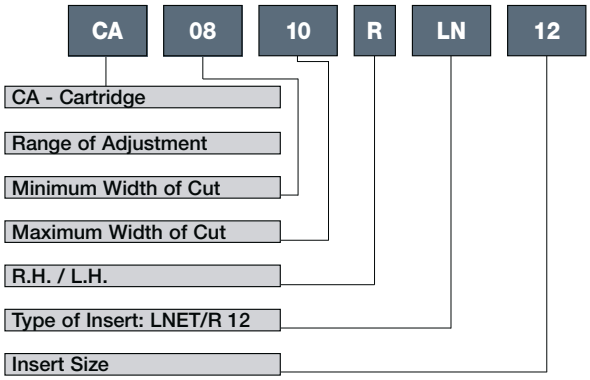


**LNMT 1506PN-R-HT R.H. only**

**Gang-Mill Assembly**
SDN and left-hand SSB cutters feature two keyways. It is recommended to assemble gang-mills with alternating keyway position. This practice reduces vibration.

90º lead angle cutter
For DC=80 lead angle cutter a=6º
For DC≥100 lead angle cutter a=4.5º

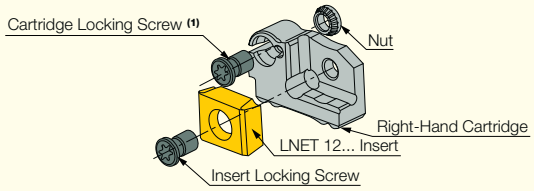





TANGSLOT

## CA-R/L-LNET 12

Adjustable Cartridge for FDN/ SDN-CALN 12 Full Slot Adjustable Slotting Cutters



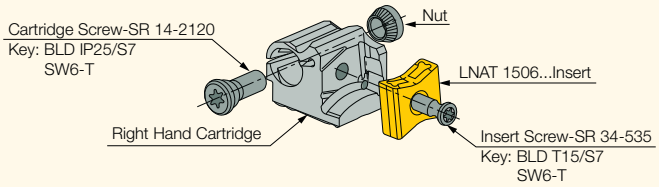

| Cartridge | Cartridge Locking Screw | Nut | Width of Cut Min. | Insert Max. | Insert Designation | Clamping Screw |
|---|---|---|---|---|---|---|
| CA 0608-R/L-LNET 12 | SR 14-500-L4.5 | NUT M4-2.2 | 6.00 | 6.50 | LNET 1235... | SR 14-500/L4.9 |
| | | | 6.50 | 7.20 | LNET 1240... | SR 14-500/L5.3 |
| | | | 7.00 | 8.20 | LNET 1245.. | SR 14-500/L5.9 |
| CA 0810-R/L-LNET 12 | SR 14-500-L6.1 | NUT M4-2.2 | 8.00 | 8.70 | LNET 1248.. | SR 14-500/L6.7 |
| | | | 8.40 | 9.20 | LNET 1250.. | SR 14-500/L7.0 |
| | | | 8.90 | 10.5 | LNET 1255.. | SR 14-500/L7.5 |
| CA 1014-R/L-LNET 12 | SR 14-500-L8.5 | NUT M4-2.2 | 10.5 | 12.2 | LNET 1265.. | SR 14-500/L9.0 |
| | | | 11.9 | 14.6 | LNET 1277.. | |

Each insert size should be ordered with its appropriate screw. When changing insert size, a new screw has to be ordered
Keys:Torx T-15/51-BE Ratchet wrench key
(1) Tightening torque: 4.5 ÷ 5Nxm

TANGMILL TANGENTIAL LINE

## CA90 1928-R/L-PM15

Adjustable Cartridge for SDN and FDN-CAPM15 Slotting Cutters



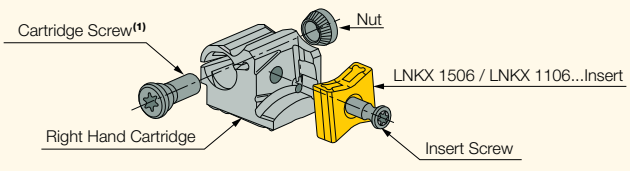

| Designation | $a_p$ min | $a_p$ max | | | |
|---|---|---|---|---|---|
| CA90 1928-R/L-PM15-A (1) | 18.90 | 25.60 | SR 34-535 | NUT M5-4.5 | SR 14-2120 |
| CA90 1928-R/L-PM15-B (2) | 18.90 | 25.60 | SR 34-535 | NUT M5-4.5 | SR 14-2120 |
| CA90 1928-R/L-PM15-C (3) | 18.90 | 25.60 | SR 34-535 | NUT M5-4.5 | SR 14-2120 |

(1) For inserts with 0.8-1.6 mm radii
(2) For inserts with 2.5-3.2 mm radii
(3) For inserts with 4.0 mm radius

TANGMILL TANGENTIAL LINE

## CA90-R/L-LN11/15

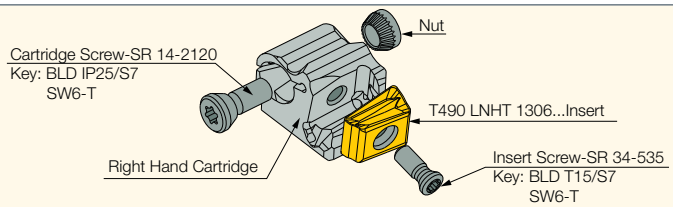
Adjustable Cartridge for SDN and FDN-CALN11/CALN15




| Designation | $a_p$ min | $a_p$ max | | | |
|---|---|---|---|---|---|
| CA90 1419-R/L-LN11 | 14.00 | 19.50 | SR 34-550 | SR 14-2120/L11.2 | NUT M5-4.5 |
| CA90 1928-R/L-LN15 | 18.90 | 25.60 | SR 34-535 | SR 14-2120 | NUT M5-4.5 |

HELITANG T490 LINE

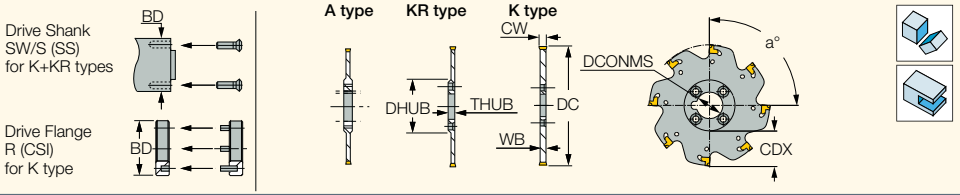
**CA90 1723-R/L-T490-13**
Adjustable Cartridge for
SDN and FDN-CALN13




| Designation | $a_p$ min | $a_p$ max | | | |
|---|---|---|---|---|---|
| CA90 1723-R/L-T490-13 | 17.50 | 23.00 | SR 34-535-SN | SR 14-2120 | NUT M5-4.5 |

TANGSLIT

**TGSF**
Slitting Cutters Carrying
TANG-GRIP Inserts



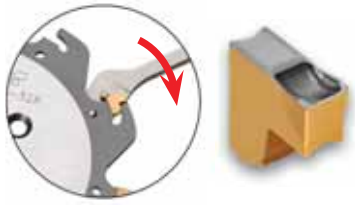

| Designation | DC | CICT(2) | CWN(3) | CWX(4) | WB | BD | DCONMS | CDX(5) | RPMX(6) | a°(7) | MIID(8) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TGSF 50-3-8K | 50.00 | 4 | 3.00 | 3.05 | 2.50 | - | 8.00 | 10.00 | 6300 | 90 | TAG N3C | ETG 3-4-SH* |
| TGSF 50-1.6-8KR | 50.00 | 5 | 1.60 | 1.65 | 1.30 | 28.00 | 8.00 | 10.00 | 1600 | 90 | TAG N1.6C | ETG 2-SH-T* |
| TGSF 50-2-8KR | 50.00 | 5 | 2.00 | 2.05 | 1.65 | 28.00 | 8.00 | 10.00 | 1600 | 90 | TAG N2C | ETG 2-SH-T* |
| TGSF 63-3-10K | 63.00 | 5 | 3.00 | 3.05 | 2.50 | - | 10.00 | 14.50 | 5000 | 90 | TAG N3C | ETG 3-4-SH* |
| TGSF 63-4-10K | 63.00 | 5 | 4.00 | 4.05 | 3.30 | - | 10.00 | 14.50 | 5000 | 90 | TAG N4C | ETG 3-4-SH* |
| TGSF 63-1.6-10KR | 63.00 | 6 | 1.60 | 1.65 | 1.30 | 32.00 | 10.00 | 15.00 | 1200 | 90 | TAG N1.6C | ETG 1.4/1.6* |
| TGSF 63-2-10KR | 63.00 | 6 | 2.00 | 2.05 | 1.65 | 32.00 | 10.00 | 14.50 | 1260 | 90 | TAG N2C | ETG 2* |
| TGSF 76-1.6-22A | 76.00 | 8 | 1.60 | 1.65 | 1.30 | 39.00 | 22.00 | 18.00 | 1050 | 90 | TAG N1.6C | ETG 1.4/1.6* |
| TGSF 80-3-22K | 80.00 | 7 | 3.00 | 3.05 | 2.50 | - | 22.00 | 19.00 | 3900 | 90 | TAG N3C | ETG 3-4-SH* |
| TGSF 80-4-22K | 80.00 | 7 | 4.00 | 4.05 | 3.30 | - | 22.00 | 19.00 | 3900 | 90 | TAG N4C | ETG 3-4-SH* |
| TGSF 80-2-22KR | 80.00 | 8 | 2.00 | 2.05 | 1.65 | 40.00 | 22.00 | 19.00 | 1000 | 90 | TAG N2C | ETG 2* |
| TGSF 100-3-22K (1) | 100.00 | 8 | 3.00 | 3.05 | 2.50 | - | 22.00 | 29.00 | 4770 | 90 | TAG N3C | ETG 3-4-SH* |
| TGSF 100-4-22K (1) | 100.00 | 8 | 4.00 | 4.05 | 3.30 | - | 22.00 | 29.00 | 4770 | 90 | TAG N4C | ETG 3-4-SH* |
| TGSF 100-1.6-22A | 100.00 | 10 | 1.60 | 1.65 | 1.30 | 39.00 | 22.00 | 30.00 | 800 | 90 | TAG N1.6C | ETG 1.4/1.6* |
| TGSF 100-2-22KR | 100.00 | 11 | 2.00 | 2.05 | 1.65 | 40.00 | 22.00 | 29.00 | 800 | 90 | TAG N2C | ETG 2* |
| TGSF 125-3-32K | 125.00 | 10 | 3.00 | 3.05 | 2.50 | - | 32.00 | 34.00 | 3820 | 90 | TAG N3C | ETG 3-4-SH* |
| TGSF 125-4-32K | 125.00 | 10 | 4.00 | 4.05 | 3.30 | - | 32.00 | 34.00 | 3820 | 90 | TAG N4C | ETG 3-4-SH* |
| TGSF 125-1.6-27A | 125.00 | 12 | 1.60 | 1.65 | 1.30 | 64.00 | 27.00 | 30.00 | 640 | 90 | TAG N1.6C | ETG 1.4/1.6* |
| TGSF 125-2-32KR | 125.00 | 13 | 2.00 | 2.05 | 1.65 | 55.00 | 32.00 | 34.00 | 640 | 90 | TAG N2C | ETG 2* |
| TGSF 160-3-32K | 160.00 | 12 | 3.00 | 3.05 | 2.50 | - | 32.00 | 52.00 | 2980 | 90 | TAG N3C | ETG 3-4-SH* |
| TGSF 160-4-40K | 160.00 | 12 | 4.00 | 4.05 | 3.30 | - | 40.00 | 39.00 | 2980 | 90 | TAG N4C | ETG 3-4-SH* |

• ETG extractor should be ordered separately • For drive flange set dimensions, refer to Drive Flange R

(1) CDX=26 and BD=46 when used with drive flange
(2) Number of inserts (or edges for solid tool)
(3) Minimum cutting width
(4) Maximum cutting width
(5) Cutting depth maximum
(6) Maximum RPM
(7) Angle between the key slots
(8) Master insert identification
* Optional, to be ordered separately

**For inserts, see pages:** TAG N-A (415) • TAG N-C/W/M (414) • TAG N-J/JS/JT (415)
**For holders, see pages:** BT-SEMC (730) • C#-SEMC (704) • C#-SW (419) • DIN2080-SEMC (738) • DIN69871-SEMC (653) • HSK A-SEMC (684) • SW/S (419)

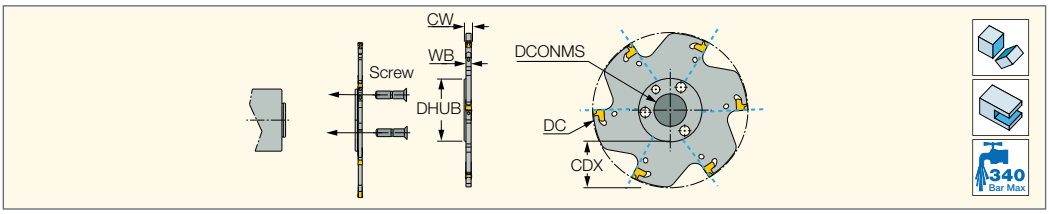
Insert
Insertion



Insert
Extraction

TANGSLIT

**TGSF-JHP**
Slitting Cutters with
Coolant Channels Carrying
TANG-GRIP Inserts




| Designation | CW | DC | CICT(1) | WB | DHUB | DCONMS | CDX | RPMX(2) | MIID(3) | |
|---|---|---|---|---|---|---|---|---|---|---|
| TGSF 63-3-10K-JHP | 3.00 | 63.00 | 6 | 2.50 | 32.00 | 10.00 | 14.00 | 5000 | TAG N3C | ETG 3-4-SH* |
| TGSF 80-3-22K-JHP | 3.00 | 80.00 | 6 | 2.50 | 40.00 | 22.00 | 19.00 | 3900 | TAG N3C | ETG 3-4-SH* |
| TGSF 100-3-22K-JHP | 3.00 | 100.00 | 6 | 2.50 | 40.00 | 22.00 | 29.00 | 3820 | TAG N3C | ETG 3-4-SH* |
| TGSF 125-3-32K-JHP | 3.00 | 125.00 | 8 | 2.50 | 55.00 | 32.00 | 34.00 | 3820 | TAG N3C | ETG 3-4-SH* |
| TGSF 63-4-10K-JHP | 4.00 | 63.00 | 6 | 3.30 | 32.00 | 10.00 | 14.00 | 5000 | TAG N4C | ETG 3-4-SH* |
| TGSF 80-4-22K-JHP | 4.00 | 80.00 | 6 | 3.30 | 40.00 | 22.00 | 19.00 | 3900 | TAG N4C | ETG 3-4-SH* |
| TGSF 100-4-22K-JHP | 4.00 | 100.00 | 6 | 3.30 | 40.00 | 22.00 | 29.00 | 3820 | TAG N4C | ETG 3-4-SH* |
| TGSF 125-4-32K-JHP | 4.00 | 125.00 | 8 | 3.30 | 55.00 | 32.00 | 34.00 | 3820 | TAG N4C | ETG 3-4-SH* |

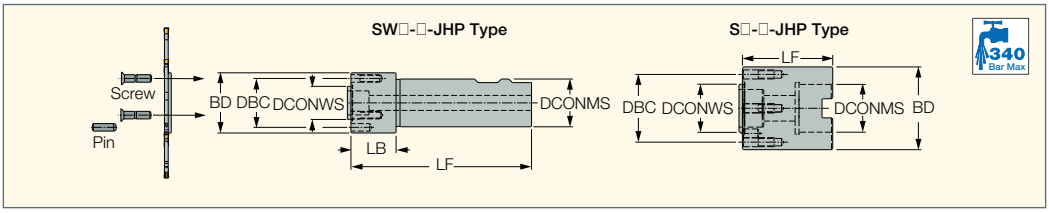
- ETG extractor should be ordered separately

(1) Number of inserts (or edges for solid tool)
(2) Maximum RPM
(3) Master insert identification
* Optional, to be ordered separately

**For inserts, see pages:** TAG N-A (415) • TAG N-C/W/M (414) • TAG N-J/JS/JT (415)
**For holders, see pages:** SW/S-JHP (413)

TANGSLIT

**SW/S-JHP**
Drive Shanks with
Coolant Channels for
TANG-GRIP Slitting Cutters

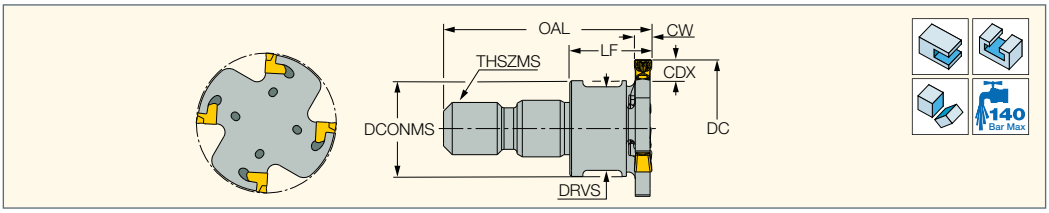



| Designation | DCONMS | BD | DBC | DCONWS | LB | LF | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SW 25-32-JHP | 25.00 | 32.00 | 25.40 | 10.00 | 25.00 | 110.00 | 0.43 | SR 76-961 | | T-15/5 |
| SW 32-40-JHP | 32.00 | 40.00 | 32.50 | 22.00 | 30.00 | 120.00 | 0.77 | SR 76-963 | | T-15/5 |
| S 32-55-JHP | 32.00 | 55.00 | 45.00 | 32.00 | - | 60.00 | 0.83 | SR 76-943 | SR M16X40-JHP | T-20/5 |

**For tools, see pages:** TGSF-JHP (413)

TANGSLIT

**TGSF-M-JHP**
Grooving and Slitting Small
Diameter Cutters with
FLEX-FIT Threaded Adaptation




| Designation | DC | CW | CDX | CICT(1) | DCONMS | THSZMS | LF | OAL | DRVS(2) | Insert | TQ_3(3) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TGSF 50-2-M12 5Z-JHP | 50.00 | 2.00 | 13.00 | 5 | 21.00 | M12 | 10.80 | 24.00 | 17.0 | TAG 2 | 33 | ETG 2* |
| TGSF 50-3-M12 5Z-JHP | 50.00 | 3.00 | 13.00 | 5 | 21.00 | M12 | 10.70 | 24.70 | 17.0 | TAG 3 | 33 | ETG 3-4-SH* |

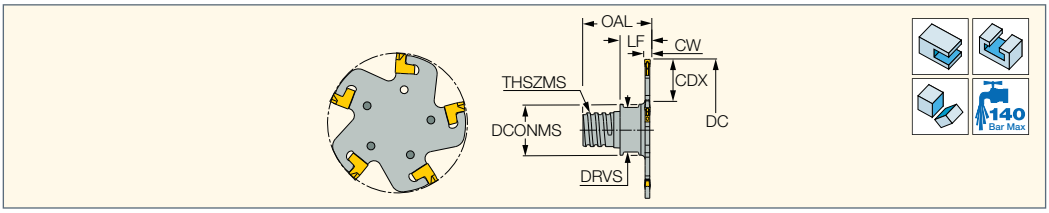
- For best performance use internal coolant with “CH” type shanks • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Number of inserts (or edges for solid tool)
(2) Torque key size
(3) Tool tightening torque Nxm (lbfxin)
* Optional, to be ordered separately

**For inserts, see pages:** TAG N-A (415) • TAG N-C/W/M (414) • TAG N-J/JS/JT (415)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

## TANGSLIT

**TGSF-MM-JHP**
Grooving and Slitting Small Diameter Cutters with MULTI-MASTER Threaded Adaptor




| Designation | DC | CW | CDX | CICT[1] | DCONMS | THSZMS | LF | OAL | DRVS[2] | Insert | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TGSF 50-2-MMT12-5Z-JHP | 50.00 | 2.00 | 14.00 | 5 | 19.00 | T12 | 10.70 | 24.00 | 16.0 | TAG 2 | ETG 2* |
| TGSF 50-3-MMT12-5Z-JHP | 50.00 | 3.00 | 14.00 | 5 | 19.00 | T12 | 11.50 | 24.70 | 16.0 | TAG 3 | ETG 3-4-SH* |

- For best performance use internal coolant with "CH" type shanks

(1) Number of inserts (or edges for solid tool)

(2) Torque key size

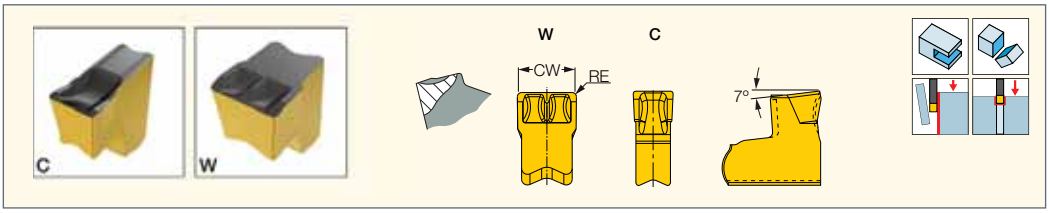
* Optional, to be ordered separately

**For inserts, see pages:** TAG N-A (415) • TAG N-C/W/M (414) • TAG N-J/JS/JT (415)

**For holders, see pages:** MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

## TANGGRIP PARTING LINE

**TAG N-C/W/M**
Single-Ended Inserts for Parting, Grooving and Slitting Bars, Hard Materials and Tough Applications




| Designation | Dimensions | | | Tough ↔ Hard | | | | | | | | | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CW | CWTOL[3] | RE | IC830 | IC928 | IC1030 | IC1010 | IC808 | IC908 | IC30N | IC5400 | IC20 | IC807 | f groove (mm/rev) |
| TAG N1.4C | 1.40 | 0.040 | 0.16 | | | | | | | | | | • | 0.04-0.10 |
| TAG N1.6C | 1.60 | 0.040 | 0.16 | • | | | | • | | | | | | 0.04-0.14 |
| TAG N2C | 2.00 | 0.040 | 0.20 | • | | • | • | • | | • | • | • | | 0.05-0.16 |
| TAG N2.4C | 2.40 | 0.040 | 0.16 | • | | | | • | | | | | | 0.06-0.18 |
| TAG N3CB (1) | 3.00 | 0.040 | 0.35 | • | | | | • | | | | | | 0.12-0.30 |
| TAG N3C | 3.05 | 0.040 | 0.20 | • | • | • | • | • | • | • | • | • | • | 0.10-0.25 |
| TAG N3M (2) | 3.05 | 0.040 | 0.20 | • | | | | | • | | | | | 0.06-0.18 |
| TAG N3W | 3.05 | 0.040 | 0.20 | • | | | | | • | | | | | 0.10-0.25 |
| TAG N4C | 4.00 | 0.040 | 0.24 | • | • | • | • | • | • | | • | • | • | 0.10-0.30 |
| TAG N4CB (1) | 4.00 | 0.040 | 0.40 | • | | | | | • | | | | | 0.10-0.33 |
| TAG N4M (2) | 4.00 | 0.040 | 0.24 | • | | | | | • | | | | | 0.06-0.20 |
| TAG N4W | 4.00 | 0.040 | 0.24 | • | | | | | • | | | | | 0.10-0.30 |
| TAG N4.8C | 4.80 | 0.040 | 0.30 | • | | | | • | | | | | | 0.10-0.35 |
| TAG N5C | 5.05 | 0.040 | 0.25 | • | | | | • | | | | • | | 0.10-0.35 |
| TAG N6.3C | 6.30 | 0.040 | 0.35 | • | | | | • | | | | | | 0.15-0.40 |
| TAG N7W | 7.00 | 0.080 | 0.50 | • | | | | • | | | | | | 0.18-0.40 |
| TAG N8C | 8.00 | 0.100 | 0.50 | • | | | | • | | | | | | 0.20-0.70 |
| TAG N9.5W | 9.50 | 0.050 | 0.50 | • | | | | • | | | | | | 0.22-0.80 |
| TAG N9.5C | 9.50 | 0.100 | 0.50 | • | | | | • | | | | | | 0.25-0.80 |
| TAG N12.7W | 12.70 | 0.100 | 0.85 | • | | | | • | | | | | | 0.30-0.80 |

- Feed values for grade IC20 should be decreased by 50% • For cutting speed recommendations and user guide, see pages 616-621

(1) Larger corner radii for interrupted cut and high feed applications

(2) Similar to C-type, but with a modified edge; improved chip control at medium feeds

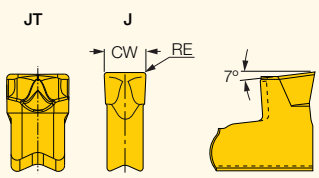
(3) Cutting width tolerance (+/-)

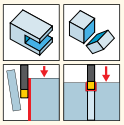
**For tools, see pages:** TGSF (412) • TGSF-JHP (413) • TGSF-M-JHP (413) • TGSF-MM-JHP (414)

TANG-GRIP PARTING LINE

## TAG N-J/JS/JT

Single-Ended Inserts for Parting, Grooving and Slitting Soft Materials



| Designation | Dimensions CW | RE | CWTOL[2] | RETOL[3] | Tough ↔ Hard IC830 | IC928 | IC1030 | IC1010 | IC808 | IC908 | IC5400 | IC20 | IC807 | Recommended Machining Data f groove (mm/rev) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TAG N1.4J | 1.40 | 0.16 | 0.040 | 0.030 | ● | | | | ● | | | | ● | 0.03-0.10 |
| TAG N1.6J | 1.60 | 0.16 | 0.040 | 0.030 | ● | | | | ● | | | | | 0.03-0.12 |
| TAG N2JS [1] | 2.00 | 0.02 | 0.040 | 0.020 | ● | | | | ● | | | | | 0.03-0.08 |
| TAG N2J | 2.00 | 0.20 | 0.040 | 0.040 | ● | | ● | ● | ● | | ● | ● | | 0.04-0.12 |
| TAG N2JT | 2.00 | 0.20 | 0.040 | 0.040 | ● | ● | | ● | ● | ● | ● | | | 0.04-0.14 |
| TAG N3JS [1] | 3.05 | 0.02 | 0.040 | 0.020 | ● | | | | ● | | | | | 0.04-0.10 |
| TAG N3J | 3.05 | 0.20 | 0.040 | 0.030 | ● | ● | ● | ● | ● | ● | ● | ● | ● | 0.04-0.16 |
| TAG N3JT | 3.05 | 0.20 | 0.040 | 0.030 | ● | | | | ● | ● | ● | | | 0.05-0.18 |
| TAG N3.2JT | 3.25 | 0.20 | 0.040 | 0.030 | ● | | | | ● | | | | | 0.05-0.18 |
| TAG N4J | 4.00 | 0.24 | 0.040 | 0.030 | ● | ● | ● | ● | ● | ● | ● | | ● | 0.04-0.18 |
| TAG N4JT | 4.05 | 0.24 | 0.040 | 0.030 | ● | | | | ● | ● | ● | | | 0.06-0.20 |
| TAG N5J | 5.05 | 0.25 | 0.040 | 0.040 | ● | | | ● | ● | | | | | 0.05-0.20 |
| TAG N5JT | 5.05 | 0.25 | 0.040 | 0.040 | ● | | | | ● | ● | | | | 0.06-0.22 |
| TAG N6.3J | 6.35 | 0.34 | 0.040 | 0.040 | ● | | | | ● | | | | | 0.06-0.22 |
| TAG N6.3JT | 6.35 | 0.34 | 0.040 | 0.040 | ● | | | | | ● | | | | 0.08-0.25 |
| TAG N7JT | 7.05 | 0.50 | 0.040 | 0.040 | ● | | | | ● | | | | | 0.10-0.28 |

- JT chipformer has the basic positive configuration of the J-type and a reinforced negative front edge; most suitable for soft materials at low to medium feeds.
- For cutting speed recommendations and user guide, see pages 616-621

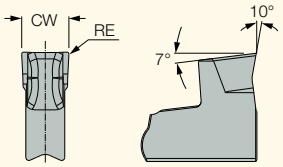
[1] Sharp corners cannot be used on TGSF slitting cutters
[2] Cutting width tolerance (+/-)
[3] Corner radius tolerance (+/-)

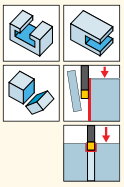
**For tools, see pages:** TGSF (412) • TGSF-JHP (413) • TGSF-M-JHP (413) • TGSF-MM-JHP (414)

TANG-GRIP PARTING LINE

## TAG N-A

Single-Ended Inserts for Parting, Grooving, and Slitting Aluminum



| Designation | Dimensions CW | RE | CWTOL[1] | RETOL[2] | IC20 | Recommended Machining Data f groove (mm/rev) |
|---|---|---|---|---|---|---|
| TAG N2A | 2.00 | 0.20 | 0.040 | 0.040 | ● | 0.02-0.10 |
| TAG N3A | 3.07 | 0.20 | 0.040 | 0.040 | ● | 0.03-0.14 |
| TAG N4A | 4.05 | 0.24 | 0.040 | 0.030 | ● | 0.03-0.16 |

- For cutting speed recommendations and user guide, see pages 616-621

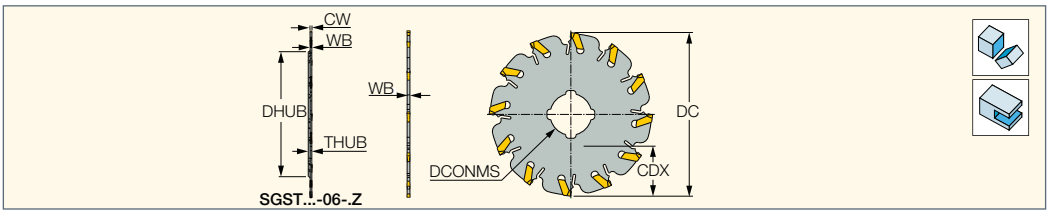
[1] Cutting width tolerance (+/-)
[2] Corner radius tolerance (+/-)

**For tools, see pages:** TGSF (412) • TGSF-JHP (413) • TGSF-M-JHP (413) • TGSF-MM-JHP (414)

SLIMSLIT NARROW SLITTING

**SGST**

Thin Slitting Cutters Carrying SLIM-GRIP Inserts




| Designation | DC | CW | CICT[1] | WB | DCONMS | CDX | RPMX[2] | DHUB | THUB | Insert | MIID[3] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SGST 32-8-0.6-4Z** | 32.00 | 0.60 | 4 | 0.50 | 8.00 | 6.00 | 2490 | 19.00 | 1.06 | GFT 0.6 | | ESG-SLM* |
| **SGST 32-8-0.8-4Z** | 32.00 | 0.80 | 4 | 0.69 | 8.00 | 8.00 | 2490 | - | - | GFT 0.8J-0.1 | GFT 0.8J-0.1 | ESG-SLM* |
| **SGST 32-8-1.0-4Z** | 32.00 | 1.00 | 4 | 0.90 | 8.00 | 8.00 | 2490 | - | - | GFT 1.0J-0.1 | GFT 1.0J-0.1 | ESG-SLM* |
| **SGST 32-8-1.2-4Z** | 32.00 | 1.20 | 4 | 1.06 | 8.00 | 8.00 | 2490 | - | - | GFT 1.2J-0.14 | GFT 1.2J-0.14 | ESG-SLM* |
| **SGST 40-10-0.6-6Z** | 40.00 | 0.60 | 6 | 0.50 | 10.00 | 6.00 | 1990 | 27.00 | 1.06 | GFT 0.6 | | ESG-SLM* |
| **SGST 40-10-0.8-6Z** | 40.00 | 0.80 | 6 | 0.69 | 10.00 | 12.00 | 1990 | - | - | GFT 0.8J-0.1 | GFT 0.8J-0.1 | ESG-SLM* |
| **SGST 40-10-1.0-6Z** | 40.00 | 1.00 | 6 | 0.90 | 10.00 | 12.00 | 1990 | - | - | GFT 1.0J-0.1 | GFT 1.0J-0.1 | ESG-SLM* |
| **SGST 40-10-1.2-6Z** | 40.00 | 1.20 | 6 | 1.06 | 10.00 | 12.00 | 1990 | - | - | GFT 1.2J-0.14 | GFT 1.2J-0.14 | ESG-SLM* |
| **SGST 50-13-0.6-9Z** | 50.00 | 0.60 | 9 | 0.50 | 13.00 | 6.00 | 1590 | 37.00 | 1.06 | GFT 0.6 | | ESG-SLM* |
| **SGST 50-13-0.8-9Z** | 50.00 | 0.80 | 9 | 0.69 | 13.00 | 12.50 | 1590 | - | - | GFT 0.8J-0.1 | GFT 0.8J-0.1 | ESG-SLM* |
| **SGST 50-13-1.0-9Z** | 50.00 | 1.00 | 9 | 0.90 | 13.00 | 12.50 | 1590 | - | - | GFT 1.0J-0.1 | GFT 1.0J-0.1 | ESG-SLM* |
| **SGST 50-13-1.2-9Z** | 50.00 | 1.20 | 9 | 1.06 | 13.00 | 12.50 | 1590 | - | - | GFT 1.2J-0.14 | GFT 1.2J-0.14 | ESG-SLM* |
| **SGST 63-16-1.0-12Z** | 63.00 | 1.00 | 12 | 0.90 | 16.00 | 19.00 | 1260 | - | - | GFT 1.0J-0.1 | GFT 1.0J-0.1 | ESG-SLM* |
| **SGST 63-16-1.2-12Z** | 63.00 | 1.20 | 12 | 1.06 | 16.00 | 19.00 | 1260 | - | - | GFT 1.2J-0.14 | GFT 1.2J-0.14 | ESG-SLM* |

[1] Number of inserts (or edges for solid tool)

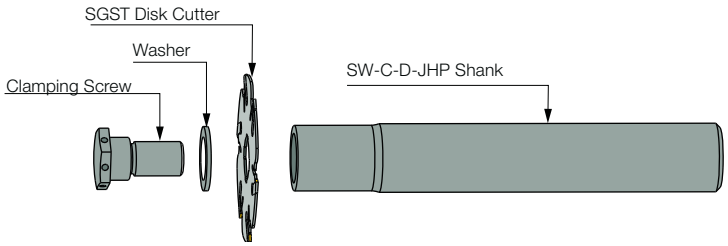
[2] Maximum RPM

[3] Master insert identification

* Optional, to be ordered separately

**For inserts, see pages:** GFT-J (417)

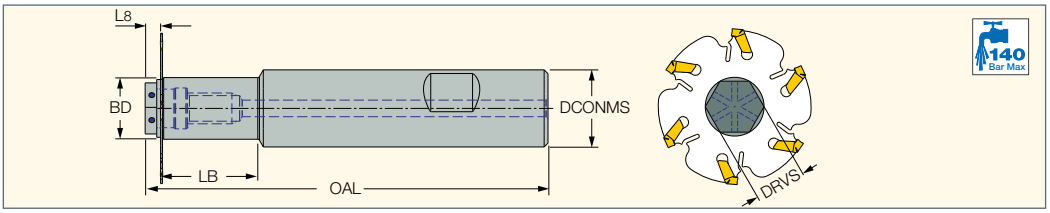
**For holders, see pages:** SW-C-D-JHP (416)




SLIMSLIT NARROW SLITTING

**SW-C-D-JHP**

Shanks for SGST Slim Slot Milling Disk Cutters




| Designation | DCONMS | BD | LB | OAL | L8 | DRVS[1] | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SW 16C-D32-JHP** | 16.00 | 15.00 | 25.00 | 104.00 | 4.00 | 13.0 | SCREW CLAMP-D32-JHP | MM KEY 13X8* | WASHER 8X14.5-D32 |
| **SW 20C-D40-JHP** | 20.00 | 16.00 | 25.00 | 104.00 | 4.00 | 13.0 | SCREW CLAMP-D40-JHP | MM KEY 13X8* | WASHER 10X15-D40 |
| **SW 25C-D50-JHP** | 25.00 | 25.00 | - | 115.00 | 5.00 | 20.0 | SCREW CLAMP-D50-JHP | | WASHER 13X24-D50 |
| **SW 25C-D63-JHP** | 25.00 | 25.00 | - | 115.00 | 5.00 | 20.0 | SCREW CLAMP-D63-JHP | MM KEY 20* | WASHER 16X24-D63 |

[1] Clamping wrench size

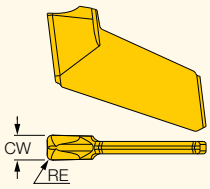
* Optional, to be ordered separately

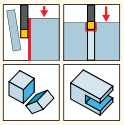
**For tools, see pages:** SGST (416)

SLIMGRIP NARROW INSERTS

**GFT-J**

Thin Parting, Grooving and Slitting Single-Ended Inserts for Soft Materials



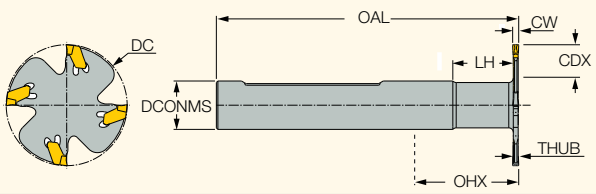
| Designation | Dimensions CW | RE | Tough ↔ Hard IC1028 | IC1008 | Recommended Machining Data f groove (mm/rev) |
|---|---|---|---|---|---|
| **GFT 0.6J-0.1** | 0.60 | 0.10 | ● | ● | 0.03-0.05 |
| **GFT 0.8J-0.1** | 0.80 | 0.10 | ● | ● | 0.03-0.07 |
| **GFT 1.0J-0.1** | 1.00 | 0.10 | ● | ● | 0.03-0.09 |
| **GFT 1.2J-0.14** | 1.20 | 0.14 | ● | ● | 0.03-0.10 |
| **GFT 1.6J-0.16** | 1.60 | 0.16 | ● | ● | 0.03-0.12 |

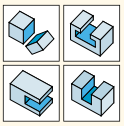
**For tools, see pages:** SGST (416)

SELFGRIP

**SGSF-W**

Grooving and Slitting Cutters with Integral Weldon Shanks



| Designation | CWN[2] | CWX[3] | DC | DCONMS | CDX[4] | NOF[5] | THUB | LH[6] | OHX[7] | OAL | MIID[8] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SGSF 32-1.6-W16** | 1.50 | 1.79 | 32.00 | 16.00 | 7.00 | 3 | 1.32 | 20.0 | 49.0 | 100.00 | GSFN 1.6 | ESG 1.4-2 |
| **SGSF 32-2-W16** [1] | 1.80 | 2.69 | 32.00 | 16.00 | 7.00 | 3 | 1.62 | 20.0 | 49.0 | 100.00 | GSFN 2 | ESG 1.4-2 |
| **SGSF 40-1.6-W16** | 1.50 | 1.79 | 40.00 | 16.00 | 11.00 | 4 | 1.32 | 34.0 | 63.0 | 100.00 | GSFN 1.6 | ESG 1.4-2 |
| **SGSF 40-2-W16** [1] | 1.80 | 2.69 | 40.00 | 16.00 | 11.00 | 4 | 1.62 | 34.0 | 63.0 | 100.00 | GSFN 2 | ESG 1.4-2 |

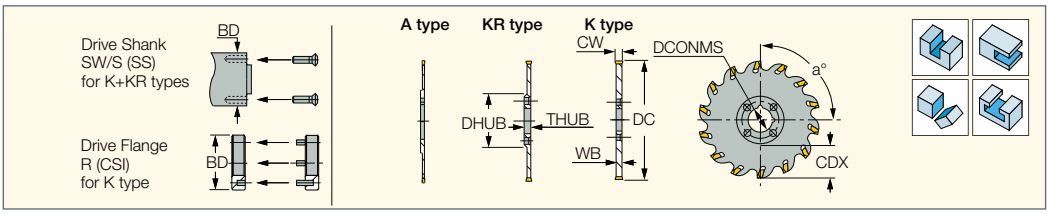
- For user guide, see pages 426-432

[1] Standard GSFN 2.4 mm inserts are not suitable for this tool; for suitable tool, see specific pocket size.
[2] Minimum cutting width
[3] Maximum cutting width
[4] Cutting depth maximum
[5] Number of flutes
[6] Minimum overhang range
[7] Maximum overhang range
[8] Master insert identification

**For inserts, see pages:** GSFN (421) • GSFU (422)

SELFGRIP

**SGSF**
Slitting Cutters Carrying
Self-Clamped Inserts




| Designation | DC | CWN[4] | CWX[5] | CDX[6] | CICT[7] | WB | THUB | DHUB | DCONMS | RPMX[8] | a° | MIID[9] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SGSF 76-1.4-22A** | 76.00 | 1.34 | 1.34 | 18.00 | 8 | 1.10 | 2.4 | 39.00 | 22.00 | 1050 | 112.5 | GSFU 1.4 | ESG 1.4-2 |
| **SGSF 100-1.4-22A** | 100.00 | 1.34 | 1.34 | 25.00 | 10 | 1.10 | 2.4 | 49.00 | 22.00 | 800 | 90 | GSFU 1.4 | ESG 1.4-2 |
| **SGSF 125-1.4-27A** | 125.00 | 1.34 | 1.34 | 25.00 | 12 | 1.10 | 2.4 | 74.00 | 27.00 | 640 | 75 | GSFU 1.4 | ESG 1.4-2 |
| **SGSF 50-1.6-8KR** | 50.00 | 1.50 | 1.79 | 10.00 | 5 | 1.24 | 2.4 | 28.00 | 8.00 | 1600 | - | GSFN 1.6 | ESG 1.4-2 |
| **SGSF 63-1.6-10KR** | 63.00 | 1.50 | 1.79 | 14.00 | 6 | 1.24 | 2.4 | 32.00 | 10.00 | 1260 | - | GSFN 1.6 | ESG 1.4-2 |
| **SGSF 76-1.6-22A** | 76.00 | 1.50 | 1.79 | 18.00 | 8 | 1.24 | 2.4 | 39.00 | 22.00 | 1050 | 112.5 | GSFN 1.6 | ESG 1.4-2 |
| **SGSF 100-1.6-22A** | 100.00 | 1.50 | 1.79 | 30.00 | 10 | 1.24 | 2.4 | 39.00 | 22.00 | 800 | 90 | GSFN 1.6 | ESG 1.4-2 |
| **SGSF 125-1.6-27A** | 125.00 | 1.50 | 1.79 | 29.00 | 12 | 1.24 | 2.4 | 60.00 | 27.00 | 640 | 75 | GSFN 1.6 | ESG 1.4-2 |
| **SGSF 50-2-8KR** [1] | 50.00 | 1.80 | 2.69 | 10.00 | 5 | 1.60 | 2.4 | 28.00 | 8.00 | 1600 | - | GSFN 2 | ESG 1.4-2 |
| **SGSF 63-2-10KR** [1] | 63.00 | 1.80 | 2.69 | 15.00 | 6 | 1.60 | 2.4 | 32.00 | 10.00 | 1260 | - | GSFN 2 | ESG 1.4-2 |
| **SGSF 76-2-22A** [1] | 76.00 | 1.80 | 2.69 | 18.00 | 8 | 1.60 | 2.4 | 39.00 | 22.00 | 1050 | 112.5 | GSFN 2 | ESG 1.4-2 |
| **SGSF 80-2-22KR** [1] | 80.00 | 1.80 | 2.69 | 20.00 | 8 | 1.60 | 2.4 | 40.00 | 22.00 | 1000 | - | GSFN 2 | ESG 1.4-2 |
| **SGSF 100-2-22A** [1] | 100.00 | 1.80 | 2.69 | 30.00 | 10 | 1.60 | 2.4 | 39.00 | 22.00 | 800 | 90 | GSFN 2 | ESG 1.4-2 |
| **SGSF 100-2-22KR** [1] | 100.00 | 1.80 | 2.69 | 29.00 | 10 | 1.60 | 2.4 | 40.00 | 22.00 | 800 | - | GSFN 2 | ESG 1.4-2 |
| **SGSF 125-2-27A** [1] | 125.00 | 1.80 | 2.69 | 32.00 | 12 | 1.60 | 2.4 | 60.00 | 27.00 | 640 | 75 | GSFN 2 | ESG 1.4-2 |
| **SGSF 125-2-32KR** [1] | 125.00 | 1.80 | 2.69 | 34.00 | 12 | 1.60 | 2.4 | 55.00 | 32.00 | 640 | - | GSFN 2 | ESG 1.4-2 |
| **SGSF 80-2.4-22A** | 80.00 | 2.38 | 2.42 | 20.00 | 6 | 1.90 | 2.4 | 39.00 | 22.00 | 1000 | 90 | GSFN 2.4 | ESG 11 |
| **SGSF 100-2.4-22K** | 100.00 | 2.38 | 2.42 | 26.00 | 6 | 1.90 | 2.4 | 46.00 | 22.00 | 800 | 90 | GSFN 2.4 | ESG 11 |
| **SGSF 125-2.4-32K** | 125.00 | 2.38 | 2.42 | 34.00 | 8 | 1.90 | 2.4 | 55.00 | 32.00 | 640 | - | GSFN 2.4 | ESG 11 |
| **SGSF 160-2.4-32K** | 160.00 | 2.38 | 2.42 | 52.00 | 10 | 1.90 | 2.4 | 55.00 | 32.00 | 500 | 90 | GSFN 2.4 | ESG 11 |
| **SGSF 50-3-8K** | 50.00 | 2.70 | 3.53 | 10.00 | 4 | 2.40 | 2.4 | 28.00 | 8.00 | 1600 | - | GSFN 3 | ESG 11 |
| **SGSF 63-3-10K** | 63.00 | 2.70 | 3.53 | 15.00 | 5 | 2.40 | 2.4 | 32.00 | 10.00 | 1260 | - | GSFN 3 | ESG 11 |
| **SGSF 80-3-22K** [2] | 80.00 | 2.70 | 3.53 | 19.00 | 6 | 2.40 | 2.4 | 40.00 | 22.00 | 1000 | - | GSFN 3 | ESG 11 |
| **SGSF 100-3-22K** [3] | 100.00 | 2.70 | 3.53 | 29.00 | 6 | 2.40 | 2.4 | 40.00 | 22.00 | 800 | 90 | GSFN 3 | ESG 11 |
| **SGSF 125-3-27K** | 125.00 | 2.70 | 3.53 | 34.00 | 8 | 2.40 | 2.4 | 0.00 | 27.00 | 640 | - | GSFN 3 | ESG 11 |
| **SGSF 125-3-32K** | 125.00 | 2.70 | 3.53 | 34.00 | 8 | 2.40 | 2.4 | 55.00 | 32.00 | 640 | - | GSFN 3 | ESG 11 |
| **SGSF 160-3-32K** | 160.00 | 2.70 | 3.53 | 52.00 | 10 | 2.40 | 2.4 | 55.00 | 32.00 | 500 | 90 | GSFN 3 | ESG 11 |
| **SGSF 160-3-40K** | 160.00 | 2.70 | 3.53 | 39.00 | 10 | 2.40 | 2.4 | 80.00 | 40.00 | 500 | 90 | GSFN 3 | ESG 11 |
| **SGSF 200-3-40K** | 200.00 | 2.70 | 3.54 | 59.00 | 14 | 2.40 | 2.4 | 80.00 | 40.00 | 400 | 90 | GSFN 3 | ESG 11 |
| **SGSF 250-3-40K** | 250.00 | 2.70 | 3.53 | 84.00 | 18 | 2.40 | 2.4 | 80.00 | 40.00 | 320 | 90 | GSFN 3 | ESG 11 |
| **SGSF 50-4-8K** | 50.00 | 3.54 | 4.52 | 10.00 | 4 | 3.20 | 3.2 | 28.00 | 8.00 | 1600 | - | GSFN 4 | ESG 11 |
| **SGSF 63-4-10K** | 63.00 | 3.54 | 4.52 | 15.00 | 5 | 3.20 | 3.2 | 32.00 | 10.00 | 1260 | - | GSFN 4 | ESG 11 |
| **SGSF 80-4-22K** [2] | 80.00 | 3.54 | 4.52 | 19.00 | 6 | 3.20 | 3.2 | 40.00 | 22.00 | 1000 | - | GSFN 4 | ESG 11 |
| **SGSF 100-4-22K** [3] | 100.00 | 3.54 | 4.52 | 26.00 | 6 | 3.20 | 3.2 | 40.00 | 22.00 | 800 | 90 | GSFN 4 | ESG 11 |
| **SGSF 125-4-32K** | 125.00 | 3.54 | 4.52 | 34.00 | 8 | 3.20 | 3.2 | 55.00 | 32.00 | 640 | - | GSFN 4 | ESG 11 |
| **SGSF 160-4-40K** | 160.00 | 3.54 | 4.52 | 39.00 | 10 | 3.20 | 3.2 | 80.00 | 40.00 | 500 | 90 | GSFN 4 | ESG 11 |
| **SGSF 200-4-40K** | 200.00 | 3.54 | 4.52 | 59.00 | 14 | 3.20 | 3.2 | 80.00 | 40.00 | 400 | 90 | GSFN 4 | ESG 11 |
| **SGSF 250-4-40K** | 250.00 | 3.54 | 4.52 | 84.00 | 18 | 3.20 | 3.2 | 80.00 | 40.00 | 320 | 90 | GSFN 4 | ESG 11 |
| **SGSF 350-4M-50K-38Z** | 350.00 | 3.54 | 4.52 | 119.00 | 38 | 3.20 | 3.2 | 110.00 | 50.00 | 230 | 90 | GSFN 4 | ESG 11 |
| **SGSF 425-4M-50K-38Z** | 425.00 | 3.54 | 4.52 | 140.00 | 38 | 3.20 | 3.2 | 110.00 | 50.00 | 190 | 90 | GSFN 4 | ESG 11 |
| **SGSF 80-5-22K** [2] | 80.00 | 4.53 | 5.50 | 19.00 | 6 | 4.00 | 4.0 | 40.00 | 22.00 | 1000 | 90 | GSFN 5 | ESG 11 |
| **SGSF 100-5-22K** [3] | 100.00 | 4.53 | 5.50 | 29.00 | 6 | 4.00 | 5.0 | 40.00 | 22.00 | 800 | 90 | GSFN 5 | ESG 11 |
| **SGSF 125-5-32K** | 125.00 | 4.53 | 5.50 | 34.00 | 8 | 4.00 | 4.0 | 55.00 | 32.00 | 640 | - | GSFN 5 | ESG 11 |
| **SGSF 160-5-40K** | 160.00 | 4.53 | 5.50 | 39.00 | 10 | 4.00 | 4.0 | 80.00 | 40.00 | 500 | 90 | GSFN 5 | ESG 11 |
| **SGSF 200-5-40K** | 200.00 | 4.53 | 5.50 | 59.00 | 14 | 4.00 | 4.0 | 80.00 | 40.00 | 400 | 90 | GSFN 5 | ESG 11 |
| **SGSF 250-5-40K** | 250.00 | 4.53 | 5.50 | 84.00 | 18 | 4.00 | 4.0 | 80.00 | 40.00 | 320 | 90 | GSFN 5 | ESG 11 |
| **SGSF 125-6-32K** | 125.00 | 5.51 | 6.50 | 34.00 | 8 | 5.20 | 5.2 | 55.00 | 32.00 | 640 | - | GSFN 6C | ESG 1 |
| **SGSF 160-6-40K** | 160.00 | 5.51 | 6.50 | 39.00 | 10 | 5.20 | 5.2 | 80.00 | 40.00 | 500 | 90 | GSFN 6C | ESG 1 |
| **SGSF 200-6-40K** | 200.00 | 5.51 | 6.50 | 59.00 | 14 | 5.20 | 5.2 | 80.00 | 40.00 | 400 | 90 | GSFN 6C | ESG 1 |
| **SGSF 250-6-40K** | 250.00 | 5.51 | 6.50 | 84.00 | 18 | 5.20 | 5.2 | 80.00 | 40.00 | 320 | 90 | GSFN 6C | ESG 1 |
| **SGSF 315-6-40K** | 315.00 | 5.51 | 6.50 | 117.00 | 22 | 5.20 | 5.2 | 80.00 | 40.00 | 250 | 90 | GSFN 6C | ESG 1 |
| **SGSF 350-6-50K** | 350.00 | 5.51 | 6.50 | 119.00 | 26 | 5.20 | 5.2 | 110.00 | 50.00 | 230 | 90 | GSFN 6 | ESG 1 |

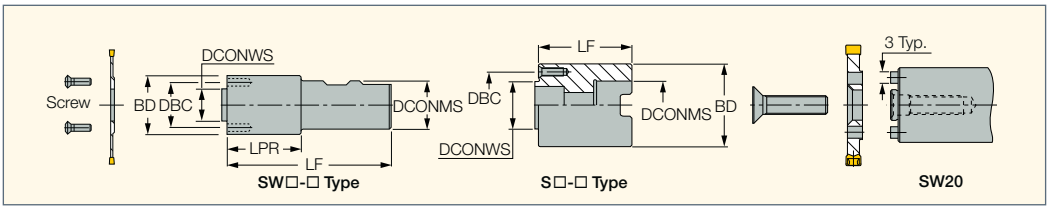
- Only the K type cutters feature 4 driving holes around the central hole; can be driven by the R drive shanks • Refer to SW/S drive shanks and R driving flange set
- Maximum RPM may not be exceeded • For user guide, see pages 426-432

[1] Standard GSFN 2.4 inserts are not suitable for this tool; for suitable tool, see specific pocket size.
[2] CDX=16, DHUB=46 when used with drive flange
[3] CDX=26, DHUB=46 when used with drive flange
[4] Minimum cutting width
[5] Maximum cutting width
[6] Cutting depth maximum
[7] Number of inserts (or edges for solid tool)
[8] Maximum RPM
[9] Master insert identification

**For inserts, see pages:** GSFN (421) • GSFU (422)
**For holders, see pages:** BT-SEMC (730) • C#-SEMC (704) • C#-SW (419) • DIN2080-SEMC (738) • DIN69871-SEMC (653) • HSK A-SEMC (684) • SW/S (419)

SELF-GRIP

**SW/S**
Drive Shanks for
SELF-GRIP Slitting Cutters




| Designation | DCONMS | BD | DBC | DCONWS | LPR | LF | kg |
|---|---|---|---|---|---|---|---|
| SW 20 | 20.00 | 20.00 | 14.40 | 8.00 | - | 100.00 | 0.24 |
| SW 25-23 | 25.00 | 23.00 | 13.60 | 6.00 | 25.0 | 110.00 | 0.00 |
| SW 25-28 | 25.00 | 28.00 | 18.00 | 8.00 | 25.0 | 110.00 | 0.43 |
| SW 25-32 | 25.00 | 32.00 | 22.00 | 10.00 | 25.0 | 110.00 | 0.51 |
| SW 32-40 | 32.00 | 40.00 | 32.00 | 22.00 | 30.0 | 120.00 | 0.60 |
| S 32-55 | 32.00 | 55.00 | 45.00 | 32.00 | - | 60.00 | 2.22 |
| S 40-80 | 40.00 | 80.00 | 63.00 | 40.00 | - | 60.00 | 1.78 |

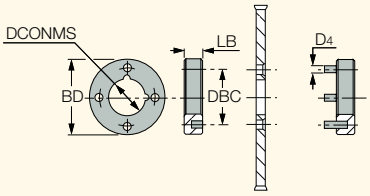
**For tools, see pages:** GM-DG (423) • SGSA (420) • SGSF (418) • TGSF (412)

## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| SW 20 | SR M5X20 DIN7991 | | HW 3.0 | | |
| SW 25-23 | SR 34-510 | T-15/5 | | | |
| SW 25-28 | SR 76-961 | T-15/5 | | | |
| SW 25-32 | SR 76-961 | T-15/5 | | | |
| SW 32-40 | SR 76-963 | T-15/5 | | | |
| S 32-55 | SR 76-943 | | | BLD T20/M7 | SW6-T |
| S 40-80 | SR 76-944 | | HW 6.0 | | |

SELF-GRIP

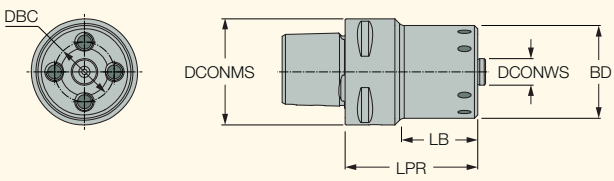
**R (drive flange set)**
Drive Flange Set for
Slitting Cutters




| Designation | DCONMS | BD | DBC | D4 | LB |
|---|---|---|---|---|---|
| R 22-46 | 22.00 | 46.00 | 32.00 | 5.00 | 10.00 |
| R 32-55 | 32.00 | 55.00 | 45.00 | 6.00 | 10.00 |
| R 40-80 | 40.00 | 80.00 | 63.00 | 11.00 | 12.00 |
| R 50-110 | 50.00 | 110.00 | 80.00 | 14.00 | 14.00 |

CAMFIX

**C#-SW**
Holders with CAMFIX
Exchangeable Shanks for SELF/
TANG-GRIP Slitting Cutters

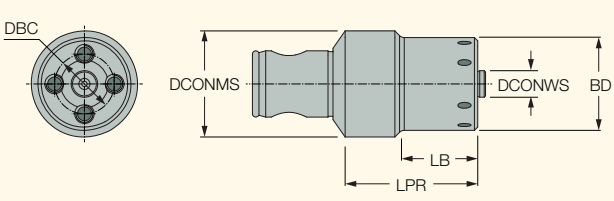



| Designation | DCONMS | DCONWS | BD | DBC | LPR | LB |
|---|---|---|---|---|---|---|
| C3 S8-28-40 | 32.00 | 8.00 | 28.00 | 18.00 | 40.0 | 23.00 |
| C4 S22-40-50 | 40.00 | 22.00 | 40.00 | 32.00 | 50.0 | - |
| C5 S32-55-50 | 50.00 | 32.00 | 55.00 | 45.00 | 50.0 | 28.10 |
| C8 S40-80-50 | 80.00 | 40.00 | 80.00 | 63.00 | 50.0 | - |

**For tools, see pages:** GM-DG (423) • SGSA (420) • SGSF (418) • TGSF (412)

ITSBORE

**MB-SW**
MB Modular Connection
System for SELF/TANG-GRIP
Slitting Cutters

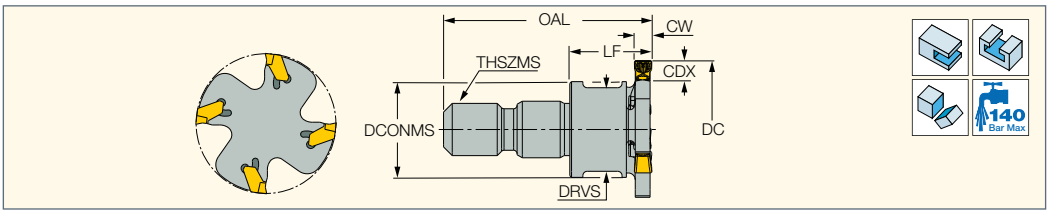



| Designation | DCONMS | DCONWS | BD | DBC | LPR | LF |
|---|---|---|---|---|---|---|
| STH S8-28-40 MB32 | 32.00 | 8.00 | 28.00 | 18.00 | 40.0 | 23.00 |
| STH S10-32-40 MB32 | 32.00 | 10.00 | 32.00 | 22.00 | 40.0 | - |
| STH S22-40-50 MB40 | 40.00 | 22.00 | 40.00 | 32.00 | 50.0 | - |
| STH S32-55-50 MB50 | 50.00 | 32.00 | 55.00 | 45.00 | 50.0 | 27.50 |
| STH S40-80-50 MB80 | 80.00 | 40.00 | 80.00 | 63.00 | 50.0 | - |

**For tools, see pages:** GM-DG (423) • SGSA (420) • SGSF (418) • TGSF (412)

SELFGRIP

**SGSF/A-M-JHP**
Grooving and Slitting Small Diameter Cutters with FLEX-FIT Threaded Adaptation



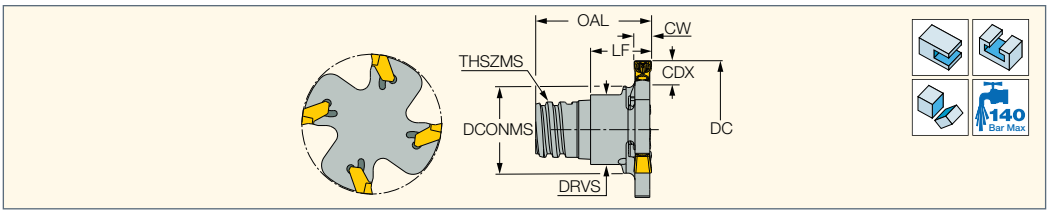

| Designation | DC | CW | CDX | CICT(1) | DCONMS | THSZMS | LF | OAL | DRVS(2) | Insert | TQ_3(3) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGSF 32-2-M08-3Z-JHP | 32.00 | 2.00 | 7.80 | 3 | 13.00 | M08 | 12.00 | 29.50 | 9.6 | GSFN 2/GSFU 2.2 | 20 | ESG 1.4-2* |
| SGSA 32-3-M08-4Z-JHP | 32.00 | 3.00 | 7.80 | 4 | 13.00 | M08 | 12.87 | 30.37 | 9.6 | GSAN 3... | 20 | ESG 1.4-2* |
| SGSF 40-2-M10-4Z-JHP | 40.00 | 2.00 | 10.00 | 4 | 18.00 | M10 | 11.00 | 29.50 | 15.0 | GSFN 2/GSFU 2.2 | 29 | ESG 1.4-2* |
| SGSA 40-3-M10-6Z-JHP | 40.00 | 3.00 | 10.00 | 6 | 18.00 | M10 | 12.10 | 32.10 | 15.0 | GSAN 3... | 29 | ESG 1.4-2* |

• For best performance use internal coolant with "CH" type shanks • When mounting items with FLEX-FIT threaded adaptation, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter
(1) Number of inserts (or edges for solid tool)
(2) Torque key size
(3) Tool tightening torque Nxm (lbfxin)
* Optional, to be ordered separately

**For inserts, see pages:** GSAN (421) • GSFN (421) • GSFU (422)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

SELFGRIP

**SGSF/A-MM-JHP**
Grooving and Slitting Small Diameter Cutters with the MULTI-MASTER Threaded Adaptor



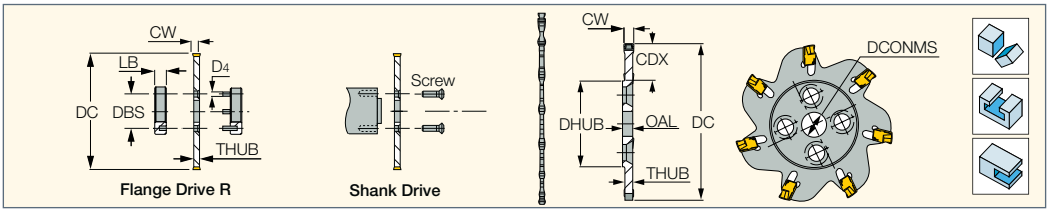

| Designation | DC | CW | CDX | CICT(1) | DCONMS | THSZMS | LF | OAL | DRVS(2) | Insert | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SGSF 32-2-MMT08-3Z-JHP | 32.00 | 2.00 | 9.00 | 3 | 11.70 | T08 | 10.60 | 18.10 | 10.0 | GSFN 2... | ESG 1.4-2* |
| SGSA 32-3-MMT08-4Z-JHP | 32.00 | 3.00 | 9.00 | 4 | 11.70 | T08 | 11.60 | 19.20 | 10.0 | GSAN 3... | ESG 1.4-2* |
| SGSF 40-2-MMT10-4Z-JHP | 40.00 | 2.00 | 11.30 | 4 | 15.30 | T10 | 10.60 | 21.90 | 13.0 | GSFN 2... | ESG 1.4-2* |
| SGSA 40-3-MMT10-6Z-JHP | 40.00 | 3.00 | 11.30 | 6 | 15.30 | T10 | 11.40 | 22.70 | 13.0 | GSAN 3... | ESG 1.4-2* |

• For best performance use internal coolant with "CH" type shanks
(1) Number of inserts (or edges for solid tool)
(2) Torque key size
* Optional, to be ordered separately

**For inserts, see pages:** GSAN (421) • GSFN (421) • GSFU (422)
**For holders, see pages:** MM CAB (110) • MM CAB-T-T (110) • MM CAB-T-T-W (111) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

SELFGRIP

**SGSA**
Slitting Cutters Carrying GSAN Self-Clamped Inserts



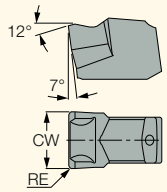

| Designation | CWN(1) | CWX(2) | DC | CICT(3) | DHUB | DCONMS | OAL | THUB | CDX(4) | RPMX(5) | MIID(6) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGSA 32-3 | 2.70 | 3.53 | 32.00 | 4 | 18.20 | 8.00 | 4.0 | 2.40 | 5.50 | 2400 | GSAN 3 | ESG 1.4-2 |
| SGSA 40-3-6K | 2.70 | 3.53 | 40.00 | 5 | 21.00 | 6.00 | 3.2 | 2.40 | 8.00 | 2000 | GSAN 3 | ESG 1.4-2 |
| SGSA 50-3-8K | 2.70 | 3.53 | 50.00 | 7 | 27.00 | 8.00 | 3.2 | 2.40 | 10.50 | 1600 | GSAN 3 | ESG 1.4-2 |
| SGSA 100-3-22K-12Z-FP | 2.70 | 3.53 | 100.00 | 12 | - | 22.00 | 2.4 | 2.40 | 20.00 | 795 | GSAN 3 | ESG 1.4-2 |
| SGSA 125-3-32K-16Z-FP | 2.70 | 3.53 | 125.00 | 16 | - | 32.00 | 2.4 | 2.40 | 25.00 | 635 | GSAN 3 | ESG 1.4-2 |
| SGSA 32-4 | 3.54 | 4.52 | 32.00 | 4 | 18.20 | 8.00 | 4.0 | 3.20 | 5.50 | 2400 | GSAN 4 | ESG 1.4-2 |
| SGSA 40-4-6K | 3.54 | 4.52 | 40.00 | 5 | 21.00 | 6.00 | 3.2 | 3.20 | 8.00 | 2000 | GSAN 4 | ESG 1.4-2 |
| SGSA 50-4-8K | 3.54 | 4.52 | 50.00 | 7 | - | 8.00 | 3.2 | 3.20 | 10.50 | 1600 | GSAN 4 | ESG 1.4-2 |
| SGSA 80-4-22K-10Z-FP | 3.54 | 4.52 | 80.00 | 10 | - | 22.00 | 3.2 | 3.20 | 16.00 | 995 | GSAN 4 | ESG 1.4-2 |
| SGSA 100-4-22K-12Z-FP | 3.54 | 4.52 | 100.00 | 12 | - | 22.00 | 3.2 | 3.20 | 20.00 | 795 | GSAN 4 | ESG 1.4-2 |

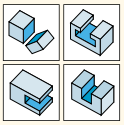
• For LB,DBS,D4 refer to SW/S drive shanks and R drive flange set • Maximum RPM may not be exceeded • For user guide, see pages 426-432
(1) Minimum cutting width
(2) Maximum cutting width
(3) Number of inserts (or edges for solid tool)
(4) Cutting depth maximum
(5) Maximum RPM
(6) Master insert identification

**For inserts, see pages:** GSAN (421)
**For holders, see pages:** C#-SW (419) • SW/S (419)

SELF-GRIP

**GSAN**
SELF-GRIP Slitting Inserts



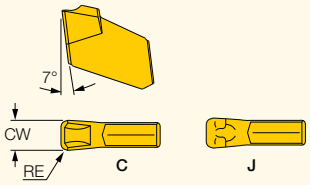



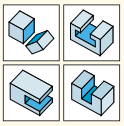
| Designation | Dimensions CW | RE | Tough ↔ Hard IC328 | IC908 |
|---|---|---|---|---|
| GSAN 3 | 3.00 | 0.20 | ● | ● |
| GSAN 4 | 4.00 | 0.24 | ● | |

**For tools, see pages:** SGSA (420) • SGSF/A-M-JHP (420) • SGSF/A-MM-JHP (420)

SELF-GRIP

**GSFN**
SELF-GRIP Slitting Inserts



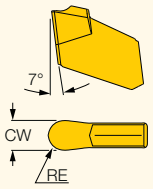
| Designation | Dimensions CW | RE | Tough ↔ Hard IC328 | IC928 | IC908 | IC20 |
|---|---|---|---|---|---|---|
| GSFN 1.6 | 1.60 | 0.16 | ● | ● | ● | ● |
| GSFN 2 | 2.00 | 0.20 | ● | ● | ● | ● |
| GSFN 2.4J | 2.39 | 0.20 | ● | ● | ● | |
| GSFN 2.4 | 2.41 | 0.20 | ● | ● | ● | ● |
| GSFN 3J | 3.00 | 0.25 | ● | ● | ● | ● |
| GSFN 3 | 3.02 | 0.20 | ● | ● | ● | ● |
| GSFN 3.2 | 3.20 | 0.22 | ● | ● | ● | ● |
| GSFN 4J | 4.02 | 0.30 | | ● | ● | |
| GSFN 4 | 4.04 | 0.30 | ● | ● | ● | ● |
| GSFN 4.8J | 4.78 | 0.25 | ● | | ● | |
| GSFN 4.8 | 4.80 | 0.25 | ● | | ● | ● |
| GSFN 4.8-1.52 | 4.80 | 1.52 | ● | | | |
| GSFN 5 | 4.98 | 0.26 | ● | ● | ● | ● |
| GSFN 5J | 5.00 | 0.25 | ● | | | |
| GSFN 5.2-1.5 | 5.22 | 1.50 | ● | | | |
| GSFN 5.78 | 5.77 | 0.40 | ● | | | |
| GSFN 5.98 | 5.98 | 0.20 | ● | | | |
| GSFN 6C | 6.35 | 0.50 | ● | ● | ● | |
| GSFN 6 | 6.37 | 0.50 | ● | | | ● |

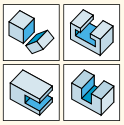
• Tolerance:W$^{\pm 0.05}$

**For tools, see pages:** SGSF (418) • SGSF-W (417) • SGSF/A-M-JHP (420) • SGSF/A-MM-JHP (420)

SELFGRIP

**GSFU**
Slitting and Grooving
Full Radius Inserts



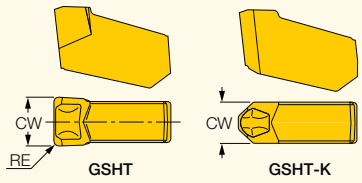
| Designation | Dimensions CW | RE | Tough ↔ Hard IC328 | IC20 |
|---|---|---|---|---|
| GSFU 1.4 | 1.34 | 0.67 | ● | |
| GSFU 1.6 | 1.61 | 0.80 | ● | |
| GSFU 1.7 | 1.73 | 0.85 | | ● |
| GSFU 2.2 | 2.16 | 1.11 | ● | ● |
| GSFU 3 | 3.02 | 1.50 | ● | ● |

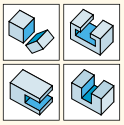
• Tolerance:W$^{\pm 0.05}$

**For tools, see pages:** SGSF (418) • SGSF-W (417) • SGSF/A-M-JHP (420) • SGSF/A-MM-JHP (420)

SELFGRIP

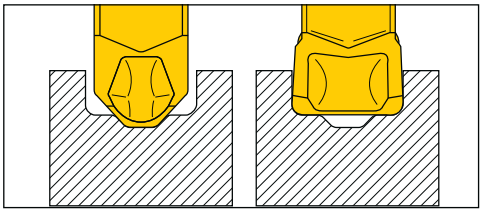
**GSHT**
Slitting Inserts for
Specially Tailored Heavy
Duty Slitting Cutters



| Designation | Dimensions CW | RE | Tough ↔ Hard IC328 | IC928 | IC908 |
|---|---|---|---|---|---|
| GSHT 6K [1] | 5.40 | 0.00 | ● | | ● |
| GSHT 6 | 6.35 | 0.50 | ● | | ● |
| GSHT 7 | 7.00 | 0.50 | | ● | |
| GSHT 8 | 8.00 | 0.50 | | ● | |

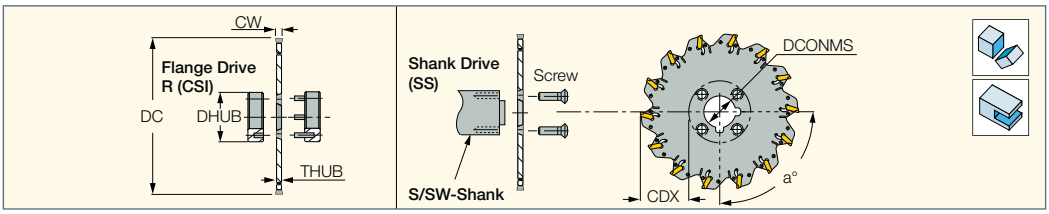
[1] To be used in combination with GSHT regular inserts (6-8 mm) for half-effective cutter configuration



Inserts for **heavy duty** applications for use on **specially tailored** cutters, diameter range: **425-810 mm.** GSHT-6K chamfered inserts, can be used in a half-effective configuration to reduce overload, eliminate chatter, and improve chip flow.

CUTGRIP

**GM-DG**
Slitting Cutters Carrying
Self-Clamped Inserts




| Designation | CWN(2) | CWX(3) | DC | CICT(4) | DCONMS | THUB | CDX | RPMX(5) | a° | SS | CSI | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GM D100-3DG-22K | 2.70 | 3.35 | 100.00 | 6 | 22.00 | 2.40 | 29.00 | 800 | 90 | SW 32-40 | R 22-46 | Single-ended: GIM 3C/3/3J/3.2, GIMY.. Double ended: for Tmax=12.5mm |
| GM D125-3DG-32K(1) | 2.70 | 3.35 | 125.00 | 8 | 32.00 | 2.40 | 34.00 | 640 | - | S 32-55 | R 32-55 | |
| GM D160-3DG-32K | 2.70 | 3.35 | 160.00 | 10 | 32.00 | 2.40 | 39.00 | 500 | 90 | S 32-55 | R 32-55 | |
| GM D200-3DG-40K | 2.70 | 3.35 | 200.00 | 14 | 40.00 | 2.40 | 59.00 | 400 | 90 | S 40-80 | R 40-80 | |
| GM D100-4DG-22K | 3.36 | 4.35 | 100.00 | 6 | 22.00 | 3.20 | 29.00 | 800 | 90 | SW 32-40 | R 22-46 | Single-ended: GIM 4C/4/4J, GIMY.. Double ended: for Tmax=12.5mm |
| GM D125-4DG-32K(1) | 3.36 | 4.35 | 125.00 | 8 | 32.00 | 3.20 | 34.00 | 640 | - | S 32-55 | R 32-55 | |
| GM D200-4DG-40K | 3.36 | 4.35 | 200.00 | 14 | 40.00 | 3.20 | 59.00 | 400 | 90 | S 40-80 | R 40-80 | |

• DHUB refers to SW/S drive shanks and R drive flange set • Maximum RPM may not be exceeded • For user guide, see pages 426-432
(1) Only one key slot
(2) Minimum cutting width
(3) Maximum cutting width
(4) Number of inserts (or edges for solid tool)
(5) Cutting depth maximum
(6) Maximum RPM

**For inserts, see pages:** GIM-C (375) • GIM-J (375) • GIM-W (375)
**For holders, see pages:** BT-SEMC (647) • C#-SEMC (623) • DIN2080-SEMC (655) • DIN69871-SEMC (578) • HSK A-SEMC (605) • SW/S (371)

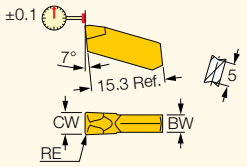
## Spare Parts

| Designation | |
|---|---|
| GM-DG | EDG 44A* |

* Optional, to be ordered separately

CUTGRIP

**GIM-J**
Utility Single-Sided Inserts
for Parting and Grooving
Soft Materials, Tubes
and Small Diameters




| Designation | Dimensions CW | RE | CWTOL(1) | BW | Tough ↔ Hard IC328 | IC630 | IC54 | IC354 | IC908 | IC20 | Recommended Machining Data f groove (mm/rev) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GIM 2.2J | 2.20 | 0.17 | 0.050 | 1.70 | ● | ● | ● | ● | ● | ● | 0.06-0.13 |
| GIM 3J | 3.00 | 0.25 | 0.050 | 2.40 | ● | ● | | ● | ● | ● | 0.08-0.15 |
| GIM 4J | 4.00 | 0.25 | 0.050 | 3.20 | ● | ● | | ● | ● | ● | 0.08-0.18 |

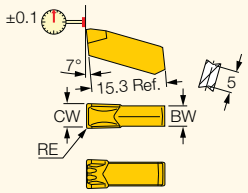
• For cutting speed recommendations and user guide, see pages 616-621
(1) Cutting width tolerance (+/-)

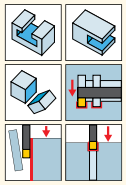
**For tools, see pages:** GM-DG (423)

CUTGRIP

**GIM-C**

Parting and Grooving Single-Sided Inserts for Parting Bars, Hard Materials and Tough Applications



| Designation | Dimensions CW | RE | CWTOL(1) | BW | Tough ↔ Hard IC328 | IC830 | IC354 | IC908 | IC20 | Recommended Machining Data f groove (mm/rev) |
|---|---|---|---|---|---|---|---|---|---|---|
| GIM 3C | 3.00 | 0.22 | 0.050 | 2.40 | ● | ● | ● | ● | ● | 0.15-0.25 |
| GIM 4C | 4.00 | 0.25 | 0.050 | 3.40 | | | | ● | | 0.15-0.25 |
| GIM 5C | 5.00 | 0.40 | 0.050 | 4.00 | ● | ● | ● | ● | ● | 0.15-0.30 |
| GIM 6C | 6.00 | 0.40 | 0.050 | 4.80 | ● | | ● | ● | ● | 0.15-0.30 |

• For cutting speed recommendations and user guide, see pages 616-621

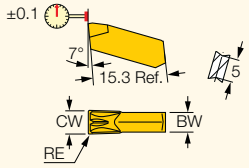
(1) Cutting width tolerance (+/-)

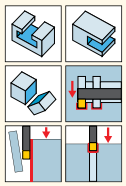
**For tools, see pages:** GM-DG (423)

CUTGRIP

**GIM-W**

Single-Sided Inserts with Center Ridged Chipformer and Reinforced Edge for Parting and Grooving Alloy Steel



| Designation | Dimensions CW | RE | CWTOL(1) | BW | Tough ↔ Hard IC328 | IC830 | IC54 | IC354 | IC908 | IC20 | Recommended Machining Data f groove (mm/rev) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GIM 2.4 | 2.40 | 0.18 | 0.050 | 2.40 | | | | ● | ● | ● | 0.10-0.18 |
| GIM 3 | 3.00 | 0.22 | 0.050 | 2.40 | ● | ● | ● | ● | ● | ● | 0.10-0.18 |
| GIM 3.2 | 3.20 | 0.22 | 0.050 | 2.54 | ● | ● | ● | ● | ● | ● | 0.10-0.20 |
| GIM 4 | 4.00 | 0.25 | 0.050 | 3.20 | ● | ● | ● | ● | ● | ● | 0.15-0.20 |

• For cutting speed recommendations and user guide, see pages 616-621

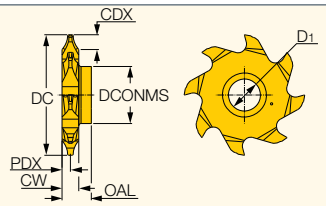
(1) Cutting width tolerance (+/-)

**For tools, see pages:** GM-DG (423)

T-GEAR GEAR MILLING

## SD-M-N-SP

Interchangeable Solid Carbide Heads for Involute Gear Profile Milling According to DIN 3972 Basic Profile II




| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Module | T range(1) | DC | PDX | CW | CDX | CEDC(2) | DCONMS | D1 | OAL | |
| SD D32-M0.50-NO8-SP15 | 0.50 | >134 | 32.00 | 1.20 | 2.40 | 2.00 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M1.00-NO1-SP15 | 1.00 | 12-13 | 32.00 | 2.20 | 4.40 | 2.50 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M1.00-NO2-SP15 | 1.00 | 14-16 | 32.00 | 2.20 | 4.40 | 2.50 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M1.25-NO3-SP15 | 1.25 | 17-20 | 32.00 | 2.20 | 4.40 | 3.00 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M1.25-NO4-SP15 | 1.25 | 21-25 | 32.00 | 2.20 | 4.40 | 3.00 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M1.50-NO5-SP15 | 1.50 | 26-34 | 32.00 | 2.20 | 4.40 | 3.50 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M1.50-NO6-SP15 | 1.50 | 35-54 | 32.00 | 2.20 | 4.40 | 3.50 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M1.75-NO6-SP15 | 1.75 | 35-54 | 32.00 | 2.70 | 5.40 | 4.25 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M1.75-NO7-SP15 | 1.75 | 55-134 | 32.00 | 2.70 | 5.40 | 4.25 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M1.75-NO8-SP15 | 1.75 | >134 | 32.00 | 2.70 | 5.40 | 4.25 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M2.00-NO4-SP15 | 2.00 | 21-25 | 32.00 | 3.20 | 6.40 | 4.50 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M2.00-NO5-SP15 | 2.00 | 26-34 | 32.00 | 3.20 | 6.40 | 4.50 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M2.00-NO6-SP15 | 2.00 | 35-54 | 32.00 | 3.20 | 6.40 | 4.50 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M2.25-NO6-SP15 | 2.25 | 35-54 | 32.00 | 3.20 | 6.40 | 5.00 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M2.25-NO7-SP15 | 2.25 | 55-134 | 32.00 | 3.20 | 6.40 | 5.00 | 8 | 15.00 | 8.40 | 7.70 | ● |
| SD D32-M2.50-NO6-SP15 | 2.50 | 35-54 | 32.00 | 3.70 | 7.40 | 5.50 | 8 | 15.00 | 8.40 | 7.70 | ● |

• Tightening torque 4 Nxm • For user guide, see pages 426-432 • For shanks, see pages 373-375

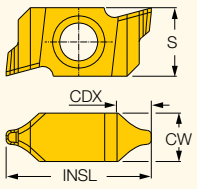
(1) Gear teeth range

(2) Number of cutting edges

MODUGEAR INDEXABLE GEAR MILLING

## LNET 18-M

Indexable Inserts for Involute Gear Profile Milling According to DIN 3972 Basic Profile ||




| Designation | Dimensions | | | | | | IC908 |
|---|---|---|---|---|---|---|---|
| | Module | T range(1) | CW | CDX | INSL | S | |
| LNET 18-M1.50-NO3-C-CL10 | 1.50 | 17-20 | 6.00 | 4.00 | 18.00 | 8.50 | ● |

• Other gear profiles within module 1.0-1.75 mm range can be provided on request

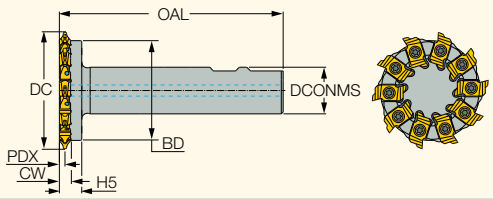
(1) Gear teeth range

**For tools, see pages:** ETS Gear Mill (425)

MODUGEAR INDEXABLE GEAR MILLING

## ETS Gear Mill

Tools for Milling Gear Profile Carrying Tangentially Clamped Inserts




| Designation | DC | PDX | CW | BD | CICT(1) | H5 | DCONMS | OAL | MIID(2) |
|---|---|---|---|---|---|---|---|---|---|
| ETS D63-M1-1.75-W25-C | 63.00 | 3.00 | 6.00 | 53.50 | 10 | 12.00 | 25.00 | 120.00 | LNET 18 |

• Other cutter diameters with alternative connection options (shank or arbor-type) can be provided on request

(1) Number of inserts (or edges for solid tool)

(2) Master insert identification

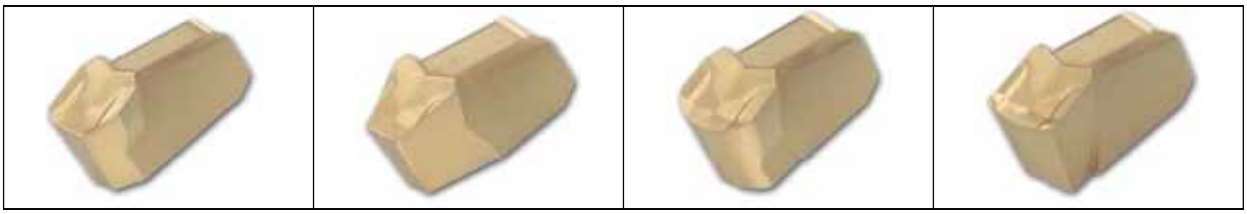
**For inserts, see pages:** LNET 18-M (425)

### Spare Parts

| Designation | | | |
|---|---|---|---|
| ETS Gear Mill | SR 14-500-L11.5 | BLD T15/S7 | SW6-T |

## Specially Tailored Inserts for Grooving

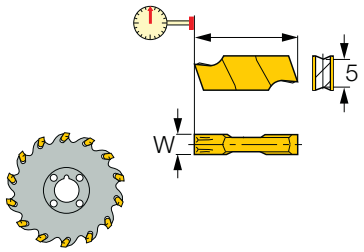
### Possible Insert Width for Each Cutter's Seat Size

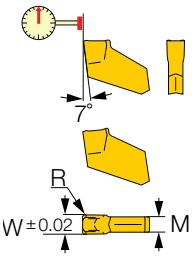


### Possible Insert Width for Each Cutter's Seat Size

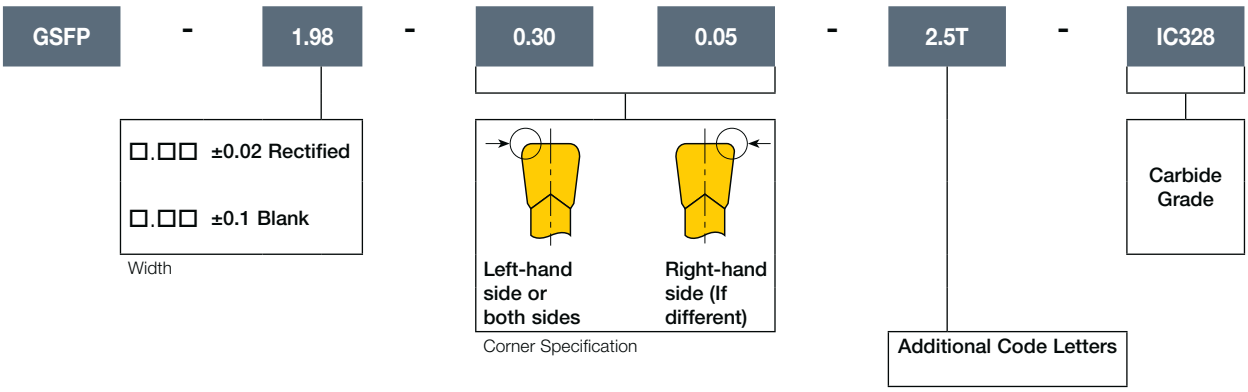
| W$^{\pm 0.02}$ Range | Seat GSFN | M |
|---|---|---|
| 1.50-1.79 | 1.6 | 1.1 |
| 1.80-2.69 | 2 | 1.6 |
| 2.70-3.53 | 3 | 2.4 |
| 3.54-4.52 | 4 | 3.2 |
| 4.53-5.50 | 5 | 4.1 |
| 5.51-6.50 | 6 | 5.2 |

| GIPI | GSFP |
|---|---|
| Repeatability ±0.025 | Repeatability ±0.025 |

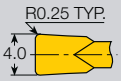
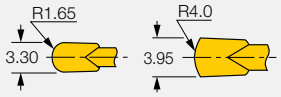
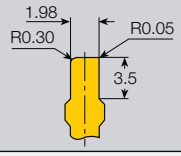
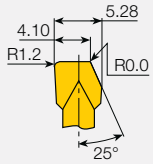
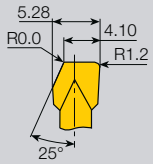
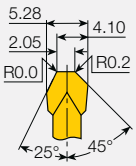
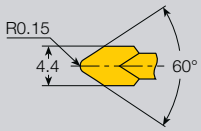
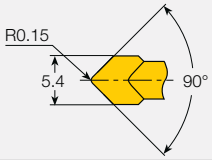
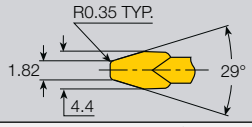
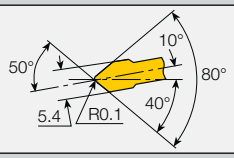
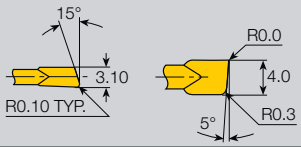
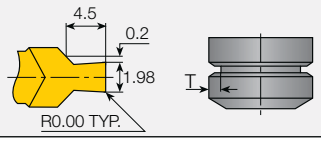



### Designation for Specially Tailored Inserts



## Specially Tailored Inserts for Grooving

| Examples | Designation | |
|---|---|---|
|  | E1<br>GSFP-4.00-0.25 | |
|  | E2<br>GSFP-3.95-4.00 | |
|  | E3<br>GSFP-1.98-0.3-0.05-3.5T | |
|  | E4A<br>GSFP-5.28-1.20-0.00-25A4.10 | A–Chamfer<br>Preceding digits:<br>Chamfer angle to center line<br><br>A–Followed by digits - representing the nominal width location of chamfer |
|  | E4B<br>GSFP-5.28-25A4.10-0.00-1.20 | |
|  | E5<br>GSFP-5.28A4.10-0.00-0.20-45A2.05 | |
|  | E7<br>GIP-4.4-MT-0.15 | MT – Metric thread 60°<br>MT□ – With corner radius □<br>WT – Whitworth thread 55°<br>WT□ – With corner radius □ |
|  | E8<br>GSFP-5.4-90V0.15 | V – V shape inclusive angle<br>(Blank width 5.4 not rectified) |
|  | E9<br>GSFP-4.40-29V1.82K-0.35 | K – Frontal straight width of trapezoid<br>(Width 4.40 rectified) |
|  | E10<br>GIP-5.4-80V0.10-10RS | V shape 80° at 10° slant angle<br>(Blank width 5.4 not recitifed) |
|  | E13<br>GSFP-4.00-0.00-0.30-5LA | LA – Lead angle Lefthand<br><br>RA – Lead angle Righthand |
|  | E14<br>GIP-1.98-0.00-4.50T0.20B<br>GFP-1.98-0.00-4.50T0.20B | T – Depth of groove (nominal)<br>B – Break corners width of chamfers, 45°<br>Note: Blank width > 2B+W |

When ordering inserts, include carbide grade with designation.

## Machining Data for MULTI-MASTER Groove Milling Heads

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Group No. | MM-TS | | | MM-GRIT K-TYPE | | | MM-GRIT P-TYPE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Speed | Fee | | Speed | Feed mm/t | | Speed | Feed mm/t | |
| | | | | | | | V m/min | $F_{z\ (min)}$ | $F_{z\ (max)}$ | V m/min | $F_{z\ (min)}$ | $F_{z\ (max)}$ | V m/min | $F_{z\ (min)}$ | $F_{z\ (max)}$ |
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %c | annealed | 420 | 125 | 1 | 110-140 | 0.08 | 0.20 | 110-160 | 0.05 | 0.15 | - | - | - |
| | | >= 0.25 %c | annealed | 650 | 190 | 2 | 100-120 | 0.08 | 0.18 | 100-150 | 0.05 | 0.15 | - | - | - |
| | | < 0.55 %c | quenched and tempered | 850 | 250 | 3 | 70-100 | 0.08 | 0.15 | 80-100 | 0.05 | 0.15 | - | - | - |
| | | >= 0.55 %c | annealed | 750 | 220 | 4 | 70-100 | 0.08 | 0.15 | 80-100 | 0.05 | 0.15 | - | - | - |
| | | | quenched and tempered | 1000 | 300 | 5 | 60-80 | 0.08 | 0.15 | 60-80 | 0.05 | 0.15 | - | - | - |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | 100-120 | 0.08 | 0.15 | 110-150 | 0.05 | 0.15 | - | - | - |
| | | | quenched and tempered | 930 | 275 | 7 | 90-120 | 0.08 | 0.15 | 100-120 | 0.05 | 0.15 | - | - | - |
| | | | | 1000 | 300 | 8 | 80-110 | 0.08 | 0.15 | 70-110 | 0.05 | 0.15 | - | - | - |
| | | | | 1200 | 350 | 9 | 70-100 | 0.05 | 0.12 | 70-100 | 0.05 | 0.15 | - | - | - |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 200 | 10 | 60-80 | 0.05 | 0.18 | 60-80 | 0.05 | 0.15 | - | - | - |
| | | | quenched and tempered | 1100 | 325 | 11 | 55-70 | 0.08 | 0.15 | 55-70 | 0.05 | 0.15 | - | - | - |
| | stainless steel and cast steel | | ferritic/ martensitic | 680 | 200 | 12 | 100-130 | 0.06 | 0.12 | 100-130 | 0.03 | 0.15 | 100-130 | 0.03 | 0.10 |
| | | | martensitic | 820 | 240 | 13 | 100-120 | 0.08 | 0.15 | 100-130 | 0.03 | 0.15 | 100-130 | 0.03 | 0.10 |
| M | stainless steel | | austenitic | 600 | 180 | 14 | 80-120 | 0.05 | 0.10 | 90-120 | 0.03 | 0.12 | 90-120 | 0.03 | 0.10 |
| K | grey cast iron (GG) | | ferritic/pearlitic | | 180 | 15 | 160-220 | 0.10 | 0.20 | 160-220 | 0.03 | 0.12 | - | - | - |
| | | | pearlitic | | 260 | 16 | 120-200 | 0.10 | 0.15 | 120-200 | 0.03 | 0.12 | - | - | - |
| | cast iron nodular (GGG) | | ferritic | | 160 | 17 | 100-140 | 0.10 | 0.20 | - | - | - | - | - | - |
| | | | pearlitic | | 250 | 18 | 80-100 | 0.10 | 0.15 | - | - | - | - | - | - |
| | malleable cast iron | | ferritic | | 130 | 19 | 180-250 | 0.10 | 0.20 | 180-250 | 0.03 | 0.15 | - | - | - |
| | | | pearlitic | | 230 | 20 | 160-220 | 0.10 | 0.15 | 160-220 | 0.03 | 0.15 | - | - | - |
| N | aluminum-wrought alloy | | not cureable | | 60 | 21 | 800-1200 | 0.10 | 0.20 | - | - | - | 800-1200 | 0.05 | 0.15 |
| | | | cured | | 100 | 22 | 800-1200 | 0.10 | 0.20 | - | - | - | 800-1200 | 0.05 | 0.15 |
| | aluminum-cast alloys | <=12% si | not cureable | | 75 | 23 | - | - | - | - | - | - | 600-1000 | 0.05 | 0.15 |
| | | | cured | | 90 | 24 | - | - | - | - | - | - | 500-1000 | 0.05 | 0.15 |
| | | >12% si | high temperature | | 130 | 25 | - | - | - | - | - | - | 200-400 | 0.05 | 0.15 |
| | copper alloys | >1% pb | free cutting | | 110 | 26 | - | - | - | - | - | - | - | - | - |
| | | | brass | | 90 | 27 | - | - | - | - | - | - | - | - | - |
| | | | electrolitic copper | | 100 | 28 | - | - | - | - | - | - | - | - | - |
| | non-metallic | | duroplastics, fiber plastics | | | 29 | - | - | - | - | - | - | - | - | - |
| | | | hard rubber | | | 30 | - | - | - | - | - | - | - | - | - |
| S | high temp. alloys | Fe based | annealed | | 200 | 31 | - | - | - | 30-40 | 0.02 | 0.12 | - | - | - |
| | | | cured | | 280 | 32 | 25-35 | 0.05 | 0.12 | 25-40 | 0.02 | 0.12 | - | - | - |
| | | Ni or Co based | annealed | | 250 | 33 | 25-35 | 0.05 | 0.12 | 25-40 | - | - | - | 0.01 | 0.12 |
| | | | cured | | 350 | 34 | 25-35 | 0.05 | 0.12 | 25-40 | - | - | - | 0.01 | 0.12 |
| | | | cast | | 320 | 35 | 40-60 | 0.05 | 0.12 | 25-40 | - | - | - | 0.01 | 0.12 |
| | titanium ti alloys | | | RM 400 | | 36 | 40-60 | 0.05 | 0.12 | 40-60 | - | - | - | 0.05 | 0.12 |
| | | | alpha+beta alloys cured | RM 1050 | | 37 | 40-60 | 0.05 | 0.10 | 40-60 | - | - | - | 0.05 | 0.10 |
| H | hardened steel | | hardened | | 55 HRC | 38 | | | | | | | | | |
| | | | hardened | | 60 HRC | 39 | | | | | | | | | |
| | chilled cast iron | | cast | | 400 | 40 | | | | | | | | | |
| | cast iron | | hardened | | 55 HRC | 41 | | | | | | | | | |

## Feed Direction

Down (climb) milling is recommended.
Up milling or plunging are possible.
(In down milling or plunging, backlash should be eliminated.)

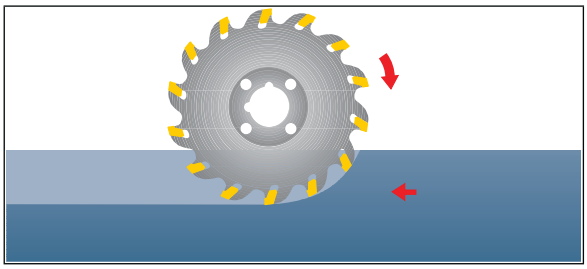
### Defining Actual Feed

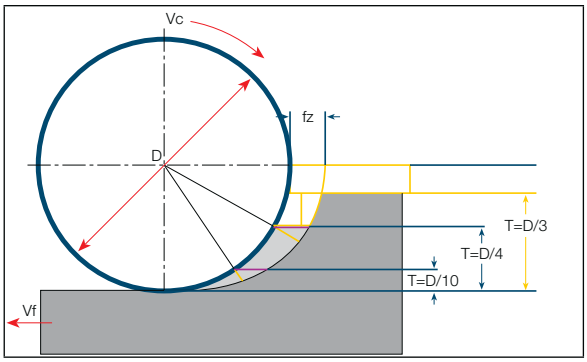
Chip thickness decreases as the depth of cut decreases. Therefore, recommended feed ($f_z$) can be increased as shown in the table.

| T/D Increase | | 1/6 | 1/8 | 1/10 | 1/20 |
|---|---|---|---|---|---|
| Recommended Feed by | 15% | 30% | 45% | 100% | |

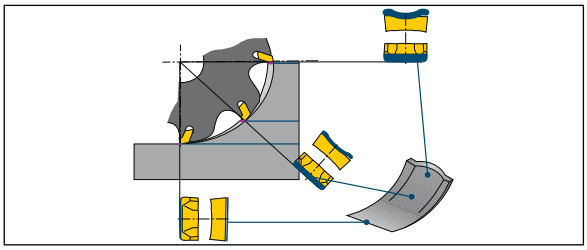
### Chip Formation in Slot Milling

Chip shape is a function of the depth of cut.
Down milling starts with large chip selection and exits with reduced chip selection. Down milling is recommended for improved tool life under stable conditions.






Chip Thickness as a Function of D.O.C. to Diameter Ratio



## Stacked Cutters[1]

### Milling Wider Slots with Two Stacked Cutters

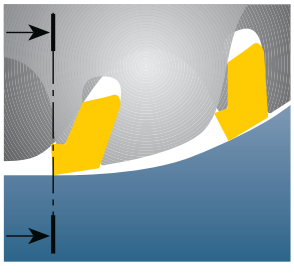
1 In accordance with the required width of cut (**W1+W2**), choose the recommended **SGSF** cutter combination (**A, B,** or **C**) from the table on the next page.
2 The diameters and coupling holes must fit properly.
3 All cutters (with the exception of ø125 mm type) have two key slots enabling staggered stacking.
4 Maximum value of shim **ΔS** (see table below) refers to maximum size of **ΔS1+ΔS2** defined for a complete overlap of radii. When a projection is allowed at the bottom of the groove, **ΔS1** and **ΔS2** may be increased theoretically up to the corner size of the insert.
5 Pins of the driving flange set should be lengthened to ensure contact length of at least 8 mm into one flange and 3 mm into the other.
6 When coupling cutters **W**=6.35, a shim (**S**) of 0.16 mm minimum thickness must be used.
7 The tolerance of effective widths is up to ± 0.2 mm. Due to the accumulation of tolerances, a step of 0.1 mm may occur at the groove bottom.

## Insert Width and Possible Modification

See sketches on next page

| W | A | R | ΔA Max | ΔS Max |
|---|---|---|---|---|
| 2.40 | 2.40 | 0.16 | 0.33 | — |
| 3.00 | 2.40 | 0.20 | 0.24 | 0.10 |
| 3.18 | 2.40 | 0.22 | 0.24 | 0.17 |
| 4.05 | 3.20 | 0.24 | 0.32 | 0.19 |
| 4.78 | 4.00 | 0.28 | 0.40 | 0.11 |
| 5.00 | 4.00 | 0.28 | 0.40 | 0.22 |
| 5.20 | 4.00 | 1.50 | 0.40 | — |
| 6.35 | 5.20 | 0.50 | —[1] | 0.13 |

**ΔA max** - Maximum possible side ground for each cutter
**ΔS max** - Maximum possible shim width for each cutter
**W, W1, W2** - Normal width of insert



Milling Wider Slots with Stacked, Double Cutters

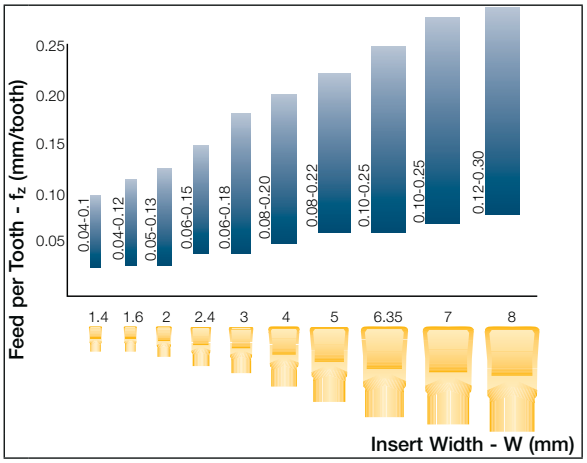
[1] Only cutters with 160-250 diameter sizes can be stacked.

## Stacked Cutters(1)

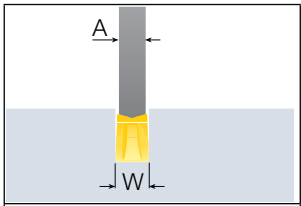
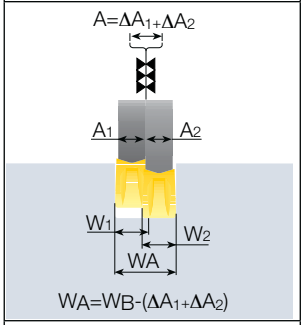
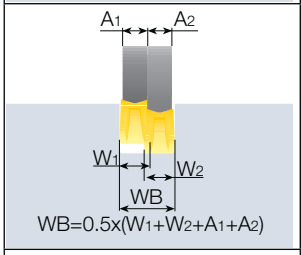
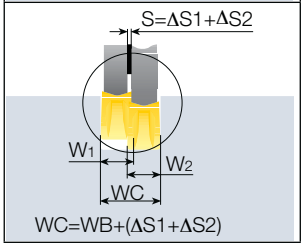
Requires modification of the cutter.

Note: Tables on this page and the next apply only to standard **SELF-GRIP** inserts which appear in this catalog. The number of options increases with the use of specially tailored inserts.

### Feed Range Per Insert Size



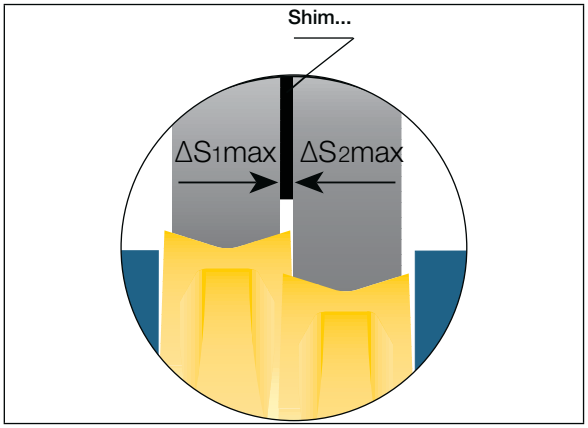

The recommended values refer to C-type chipformer. For J-type, reduce feed by 30%.

| | |
|---|---|
|  | **Single cutter, standard** |
|  | **A - Double cutters with modified body thicknesses stacked for smaller widths** |
|  | **B - Unmodified, stacked double cutters of nominal width** |
|  | **C - Stacked, double cutters with spacer for larger widths** |

### Table 1: Effective Width of Cut

| W1 | W2 | WA | | | WB | Wc(1) |
|---|---|---|---|---|---|---|
| 2.40 | 2.40 | 4.14 | - | 4.48 | — | — |
| 3.00 | 2.40 | 4.53 | - | 5.04 | — | — |
| 3.00 | 3.00 | 4.92 | - | 5.39 | 5.40 | 5.43-5.60 |
| 3.18 | 2.40 | 4.62 | - | 5.18 | 5.19 | — |
| 3.18 | 3.00 | 5.01 | - | 5.48 | 5.49 | 5.52-5.76 |
| 3.18 | 3.18 | 5.10 | - | 5.57 | 5.58 | 5.61-5.92 |
| 4.05 | 2.40 | 5.38 | - | 6.02 | 6.03 | — |
| 4.05 | 3.00 | 5.77 | - | 6.32 | 6.33 | 6.36-6.62 |
| 4.05 | 3.18 | 5.86 | - | 6.41 | 6.42 | 6.45-6.78 |
| 4.05 | 4.05 | 6.61 | - | 7.24 | 7.25 | 7.28-7.63 |
| 4.78 | 2.40 | 6.06 | - | 6.74 | — | — |
| 4.78 | 3.00 | 6.45 | - | 7.08 | 7.09 | 7.12-7.30 |
| 4.78 | 3.18 | 6.54 | - | 7.17 | 7.18 | 7.21-7.46 |
| 4.78 | 4.05 | 7.30 | - | 8.01 | 8.02 | 8.05-8.32 |
| 4.78 | 4.78 | 7.98 | - | 8.77 | 8.78 | 8.81-9.00 |
| 5.00 | 2.40 | 6.17 | - | 6.89 | 6.90 | 6.93-7.12 |
| 5.00 | 3.00 | 6.56 | - | 7.19 | 7.20 | 7.23-7.52 |
| 5.00 | 3.18 | 6.65 | - | 7.28 | 7.29 | 7.32-7.68 |
| 5.00 | 4.05 | 7.41 | - | 8.12 | 8.13 | 8.**16-8**.54 |
| 5.00 | 4.78 | 8.09 | - | 8.88 | 8.89 | 8.92-9.22 |
| 5.00 | 5.00 | 8.2 | - | 8.99 | 9.00 | 9.03-9.44 |
| 5.20 | 5.00 | 8.3 | - | 8.42 | — | — |
| 6.35 | 3.00 | — | — | | 8.64-8.71 | |
| 6.35 | 3.18 | — | — | | 8.73-8.87 | |
| 6.35 | 4.05 | — | — | | 9.56-9.72 | |
| 6.35 | 4.78 | — | — | | 10.33-10.41 | |
| 6.35 | 5.00 | — | — | | 10.44-10.63 | |
| 6.35 | 6.35 | — | — | | 11.71-11.81 | |

(1) Only cutters with 160-250 diameter sizes can be stacked.




1 The higher values in the width-of-cut range shown provide complete overlap of corner radii.
**ΔA max** - Maximum possible side ground for each cutter
**ΔS max** - Maximum possible shim width for each cutter
**W, W1, W2** - Normal width of insert

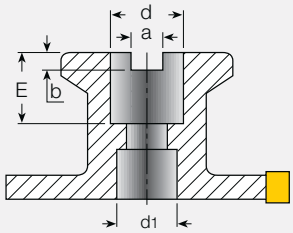
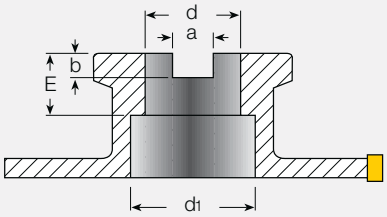
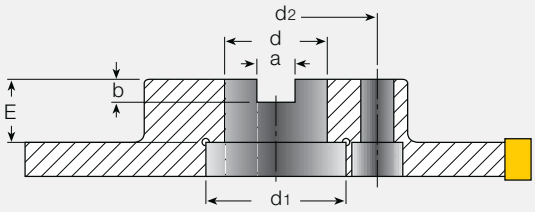
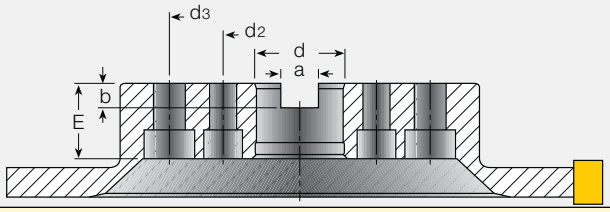
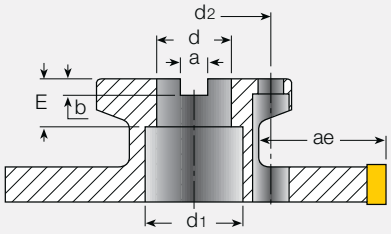
## Machining Data for Slitting with SELF-GRIP and TANG-SLIT Cutters & Recommended Cutting Speed (M/min)

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Group No.(1) | Coated | | | Uncoated |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | IC328 | IC928 / IC830 | IC908 / IC808 | IC20 |
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %C | annealed | 420 | 125 | 1 | A 80-150 | A 80-160 | B 120-220 | |
| | | >= 0.25 %C | annealed | 650 | 190 | 2 | A 80-130 | A 80-180 | B 120-200 | |
| | | < 0.55 %C | quenched and tempered | 850 | 250 | 3 | A 80-130 | A 80-180 | B 120-200 | |
| | | >= 0.55 %C | annealed | 750 | 220 | 4 | A 60-110 | A 70-150 | B 100-170 | |
| | | | quenched and tempered | 1000 | 300 | 5 | A 60-100 | A 70-160 | B 100-180 | |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | A 80-140 | A 70-160 | B 120-190 | |
| | | | quenched and tempered | 930 | 275 | 7 | A 60-120 | A 70-140 | B 100-180 | |
| | | | | 1000 | 300 | 8 | A 60-120 | A 70-140 | B 100-180 | |
| | | | | 1200 | 350 | 9 | A 60-110 | A 70-110 | B 80-120 | |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 200 | 10 | A 60-80 | A 70-90 | B 80-120 | |
| | | | quenched and tempered | 1100 | 325 | 11 | A 50-70 | A 50-80 | B 60-100 | |
| | stainless steel and cast steel | | ferritic/martensitic | 680 | 200 | 12 | 50-110 | 60-140 | 70-180 | |
| | | | martensitic | 820 | 240 | 13 | 50-100 | 60-120 | 60-160 | |
| M | stainless steel | | austenitic | 600 | 180 | 14 | 50-100 | 60-120 | 60-160 | |
| K | grey cast iron (GG) | | ferritic/pearlitic | | 180 | 15 | | | 115-140 | 95-110 |
| | | | pearlitic | | 260 | 16 | | | 90-120 | 70-100 |
| | cast iron nodular (GGG) | | ferritic | | 160 | 17 | | | 90-140 | 70-110 |
| | | | pearlitic | | 250 | 18 | | | 70-100 | 55-80 |
| | malleable cast iron | | ferritic | | 130 | 19 | | | 115-140 | 95-110 |
| | | | pearlitic | | 230 | 20 | | | 90-120 | 70-100 |
| N | aluminum-wrought alloys | | not cureable | | 60 | 21 | | | | 250max |
| | | | cured | | 100 | 22 | | | | 250max |
| | aluminum-cast alloys | <=12% Si | not cureable | | 75 | 23 | | | | 250max |
| | | | cured | | 90 | 24 | | | | 250max |
| | | >12% Si | high temperature | | 130 | 25 | | | | 250max |
| | copper alloys | >1% Pb | free cutting | | 110 | 26 | | | | 250max |
| | | | brass | | 90 | 27 | | | | 250max |
| | | | electrolitic copper | | 100 | 28 | | | | 250max |
| | non-metallic | | duroplastics, fiber plastics | | | 29 | | | | |
| | | | hard rubber | | | 30 | | | | |
| S | high temp. alloys | Fe based | annealed | | 200 | 31 | | | 40-50 | 30-40 |
| | | | cured | | 280 | 32 | | | 30-40 | 20-30 |
| | | Ni or Co based | annealed | | 250 | 33 | | | 30-40 | 20-30 |
| | | | cured | | 350 | 34 | | | 30-40 | 20-30 |
| | | | cast | | 320 | 35 | | | 20-30 | 15-25 |
| | titanium ti alloys | | | RM 400 | | 36 | | | 30-40 | 15-25 |
| | | | alpha+beta alloys cured | RM 1050 | | 37 | | | 30-40 | 20-30 |
| H | hardened steel | | hardened | | 55 HRC | 38 | | | 25-50 | |
| | | | hardened | | 60 HRC | 39 | | | 30-40 | |
| | chilled cast iron | | cast | | 400 | 40 | | | 50-60 | 10-20 |
| | cast iron | | hardened | | 55 HRC | 41 | | | 30-50 | |

For machining aluminum, use IC20, maximum cutting speed corresponds to the maximum RPM indicated on the cutter A - First choice B - Second choice
Recommendations are for normal machining conditions
If excessive wear occurs, select insert with higher hardness
If chipping or breakage occurs, select insert with more toughness
(1) For workpiece materials list, see pages 820-910

## Slot Milling Cutters

Arbor Hole Styles and Dimensions

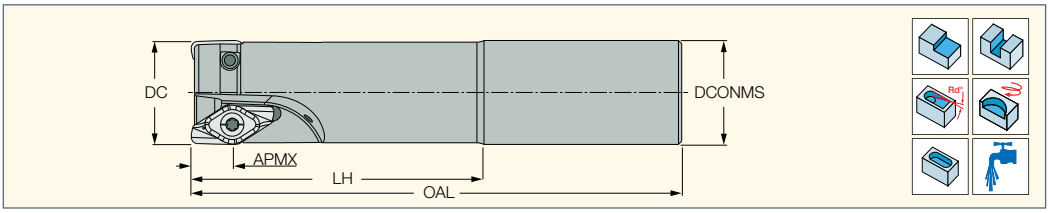
| Style A | D [DCONMS] | E | D1 | | A | B |
|---|---|---|---|---|---|---|
|  | 16 | 18 | 14 | | 8.4 | 5.6 |
| | 22 | 20 | 18 | | 10.4 | 6.5 |
| | 27 | 22 | 20 | | 12.4 | 7.0 |
| | 32 | 25 | 27 | | 14.4 | 8.1 |
| **Style B** | **D [DCONMS]** | **E** | **D1** | | **A** | **B** |
|  | 22 | 20 | 29 | | 10.9 | 6.5 |
| | 27 | 28 | 36 | | 12.4 | 7.0 |
| | 32 | 30 | 43 | | 14.4 | 8.0 |
| | 40 | 33 | 53 | | 16.4 | 8.0 |
| **Style C** | **D [DCONMS]** | **E** | **D1** | **D2** | **A** | **B** |
|  | 40 | 33 | 55 | 66.7 | 16.4 | 9.0 |
| | 60 | 45 | 90 | 101.6 | 25.7 | 14.0 |
| **Style D** | **D [DCONMS]** | **E** | **D1** | **D3** | **A** | **B** |
|  | 60 | 45 | 101.6 | 177.8 | 25.7 | 14.0 |
| **Style E** | **D [DCONMS]** | **E** | **D1** | **D3** | **A** | **B** |
|  | 40 | 33 | 55 | 66.7 | 16.4 | 9.0 |
| | 60 | 45 | 63 | 101.6 | 25.7 | 14.0 |

# CUTTERS FOR ALUMINUM

HELIALU

## HSM90S EAL-14

Long Reach Endmills Carrying HSM90S APCR 1405... Inserts for Machining Aluminum

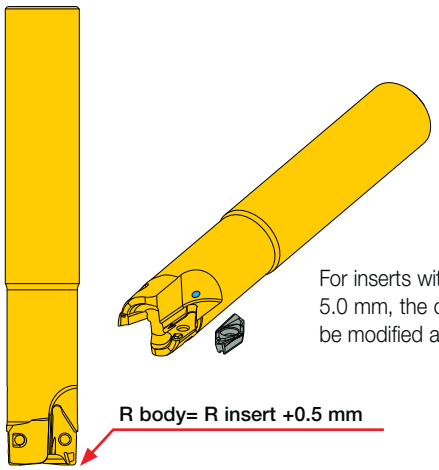



| Designation | DC | APMX(1) | CICT(2) | LH | OAL | DCONMS | RPMX(3) | RMPX°(4) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSM90S EAL-D32-2-C32-14 | 32.00 | 13.50 | 2 | 80.0 | 200.00 | 32.00 | 37500 | 10.0 | 1.02 | SR M5X0.8IP20-1S | BLD IP20/M7 | SW6-T-SH |

- Important: When machining at very high cutting speeds it is recommended to replace the screw when replacing the insert
- Insert tightening torque: 6 (Nxm)

(1) D.O.C. changes according to insert radius. APMX 13.5 is the value for HSM90S APCR 140550R-P insert
(2) Number of inserts (or edges for solid tool)
(3) Maximum RPM
(4) Maximum ramping angle

**For inserts, see pages:** HSM90S APCR 1405 (533)

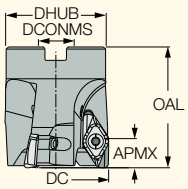



For inserts with a corner radius larger than 5.0 mm, the corner of the pocket must be modified according to the drawing.

HELIALU

## HSM90S FAL-14

90° Face Mills Carrying Super Positive and Polished Rake Inserts for Machining Aluminum at High Rotation Speeds

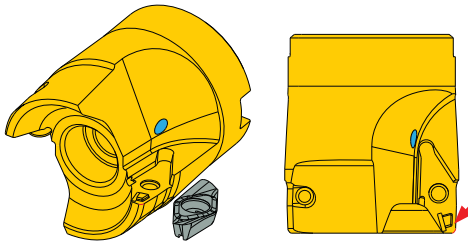



| Designation | DC | CICT(1) | APMX(2) | OAL | DHUB | DCONMS | Arbor(3) | RMPX°(4) | RPMX(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HSM90S FAL-D050-3-22-14 | 50.00 | 3 | 13.50 | 57.00 | 47.00 | 22.00 | A | 8.0 | 38000 | 0.42 |
| HSM90S FAL-D050-4-22-14 | 50.00 | 4 | 13.50 | 57.00 | 47.00 | 22.00 | A | 7.0 | 33000 | 0.43 |

- Important: When machining at very high cutting speeds it is recommended to replace the screw when replacing the insert
- Insert tightening torque: 6 (Nxm)

(1) Number of inserts (or edges for solid tool)
(2) D.O.C. changes according to insert radius. APMX 13.5 is the value for HSM90S APCR 140550R-P insert
(3) For adaptation options, see page 622
(4) Maximum ramping angle
(5) Maximum RPM

**For inserts, see pages:** HSM90S APCR 1405 (533)




For inserts with a corner radius larger than 5.0 mm, the corner of the pocket must be modified according to the drawing.

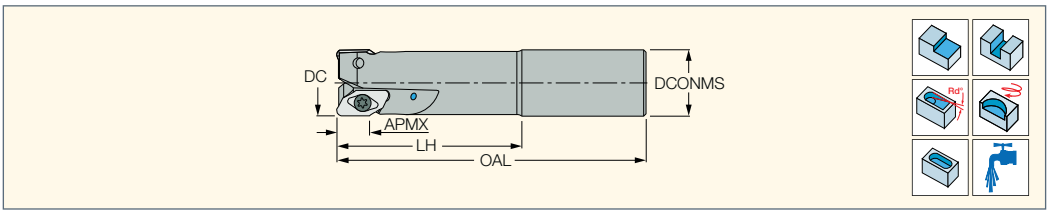
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HSM90S FAL-14 | SR M5X0.8IP20-1 | BLD IP20/M7 | SW6-T-SH | SR M10X40DIN912 |

HELIALU

## HM90 EAL-16

Long Reach Endmills Carrying HM90 APCR 1605 Inserts for Machining Aluminum




| Designation | DC | CICT(1) | APMX(2) | LH | OAL | DCONMS | Shank(3) | RPMX(4) | RMPX°(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 EAL-D25-C24L180-16 | 25.00 | 1 | 15.50 | - | 180.00 | 24.00 | C | 43862 | 25.9 | 0.56 |
| HM90 EAL-D25-C25L125-16 | 25.00 | 1 | 15.50 | 69.0 | 125.00 | 25.00 | C | 43862 | 25.9 | 0.38 |
| HM90 EAL-D25-C25L200-16 | 25.00 | 1 | 15.50 | 65.0 | 200.00 | 25.00 | C | 43862 | 25.9 | 0.62 |
| HM90 EAL-D32-C32L150-16 | 32.00 | 2 | 15.50 | 90.0 | 150.00 | 32.00 | C | 29930 | 22.4 | 0.74 |
| HM90 EAL-D32-C32L200-16 | 32.00 | 2 | 15.50 | 80.0 | 200.00 | 32.00 | C | 29930 | 22.4 | 1.02 |
| HM90 EAL-D40-C32L220-16 | 40.00 | 2 | 15.50 | 45.0 | 220.00 | 32.00 | C | 26770 | 16.9 | 1.28 |

• Insert tightening torque: 600 Nxcm • HM90 APCR 1605..R-P inserts with corner radii 3.2 and 4.0 mm require pocket modification, corners larger than 4.5 mm should be used only on BR tools.

• For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) D.O.C. changes according to insert radius. APMX 15.5 is the value for HM90 APCR 160520R-P insert

(3) C-Cylindrical

(4) Maximum RPM

(5) Maximum ramping angle

**For inserts, see pages:** HM90 APCR 1605..R-P (534)

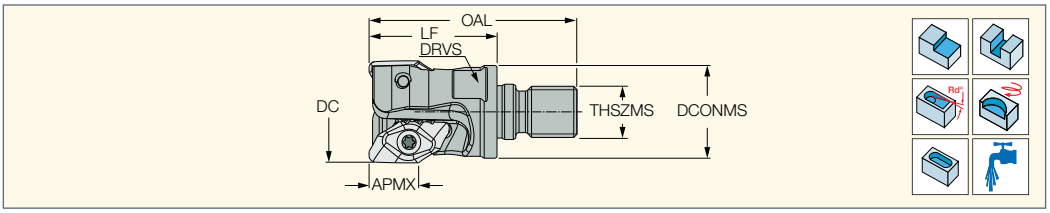
### Spare Parts

| Designation | | | |
|---|---|---|---|
| HM90 EAL-D25-C24L180-16 | SR 14-592SM | BLD T20/M7 | SW6-T |
| HM90 EAL-D25-C25L125-16 | SR 14-592SM | BLD T20/S7 | SW6-T |
| HM90 EAL-D25-C25L200-16 | SR 14-592SM | BLD T20/M7 | SW6-T |
| HM90 EAL-D32-C32L150-16 | SR 14-0180 | BLD T20/M7 | SW6-T |
| HM90 EAL-D32-C32L200-16 | SR 14-0180 | BLD T20/M7 | SW6-T |
| HM90 EAL-D40-C32L220-16 | SR 14-0180 | BLD T20/M7 | SW6-T |

HELIALU JET LINE

## HM90 EAL-M-16-JHP

90° Endmills with a FLEX-FIT Threaded Adaptation Carrying HM90 APCR 1605... Inserts for Machining Aluminum




| Designation | DC | CICT(1) | APMX | DCONMS | THSZMS | LF | OAL | RMPX°(2) | RPMX(3) | DRVS(4) | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 EAL D32-2-M16-16-JHP | 32.00 | 2 | 15.50 | 29.00 | M16 | 40.00 | 65.00 | 22.4 | 45643 | 25.0 | 40 | 0.13 |
| HM90 EAL D40-2-M16-16-JHP | 40.00 | 2 | 15.50 | 29.00 | M16 | 40.00 | 65.00 | 16.9 | 36809 | 25.0 | 40 | 0.18 |

**New**

• For adaptation, see page 303 • For user guide, see pages 616-621 • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Number of inserts (or edges for solid tool)

(2) Maximum ramping angle

(3) Maximum RPM

(4) Torque key size

(5) Tool tightening torque (Nxm)

**For inserts, see pages:** HM90 APCR 1605..R-P (534)

**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

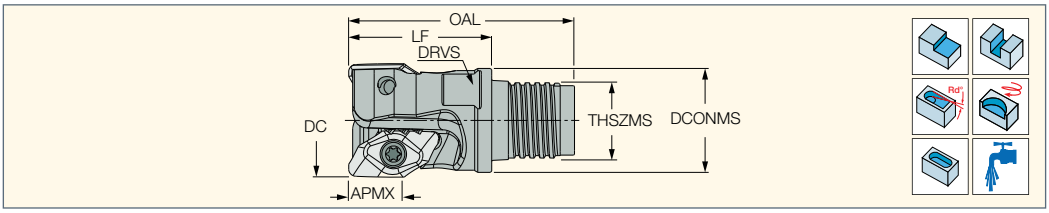
### Spare Parts

| Designation | | | |
|---|---|---|---|
| HM90 EAL-M-16-JHP | SR 14-0180 | BLD T20/M7 | SW6-T |

HELIALU JET LINE

**HM90 EAL-MM-16-JHP**

90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying HM90 APCR 1605... Inserts for Machining Aluminum




| Designation | DC | CICT(1) | APMX | DCONMS | THSZMS | LF | OAL | RMPX°(2) | RPMX(3) | DRVS(4) | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 EALD125-2MMT21-16JHP | 31.75 | 2 | 15.50 | 29.00 | T21 | 39.90 | 63.00 | 22.4 | 45643 | 24.0 | 43 | 0.16 |
| HM90 EALD150-2MMT21-16JHP | 38.10 | 2 | 15.50 | 30.00 | T21 | 39.90 | 63.00 | 16.9 | 36809 | 24.0 | 43 | 0.20 |

New

• For adaptation, see page 303 • For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)

(2) Maximum ramping angle

(3) Maximum RPM

(4) Torque key size

(5) Tool tightening torque Nxm (lbfxin)

**For inserts, see pages:** HM90 APCR 1605..R-P (534)

**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-HSK (109) • MM S-B (85° conical shanks) (106)

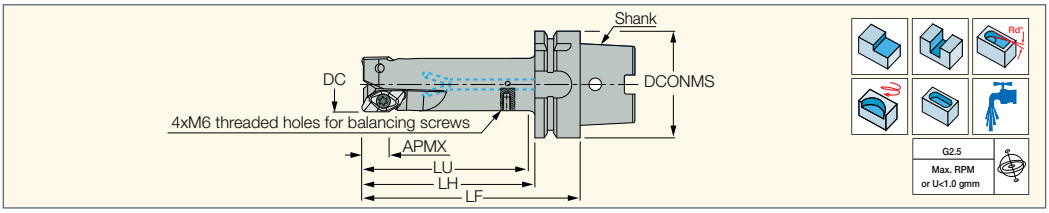
## Spare Parts

| Designation | | | |
|---|---|---|---|
| HM90 EAL-MM-16-JHP | SR 14-0180 | BLD T20/M7 | SW6-T |

HELIALU HSK

**HM90 EAL-HSK63A-16**

Long Reach Endmills with Integral HSK Adaptation Carrying HM90 APCR 1605... Inserts for Machining Aluminum




| Designation | DC | APMX(1) | LU | LH | LF | ZEFP | RPMX(2) | RMPX°(3) | DCONMS | Shank | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 EAL32-L100-HSK63A-16 | 32.00 | 15.50 | 97.0 | 100.00 | 126.00 | 2 | 45600 | 22.0 | 63.00 | HSK A 63 | 1 | 1.06 |

• Insert tightening torque: 600 Nxcm • HM90 APCR 1605..R-P inserts with corner radii 3.2 and 4.0 mm require pocket modification, corners larger than 4.5 mm should be used only on BR tools

• A cooling tube must be used with all internal coolant HSK spindles (should be ordered separately)

• Kit balancing screws should be ordered separately • For user guide, see pages 616-621

(1) D.O.C. changes according to insert radius. APMX 15.5 is the value for HM90 APCR 160520R-P insert

(2) Maximum RPM

(3) Maximum ramping angle

(4) 1 - Slot for data chip, 0 - Without slot for data chip

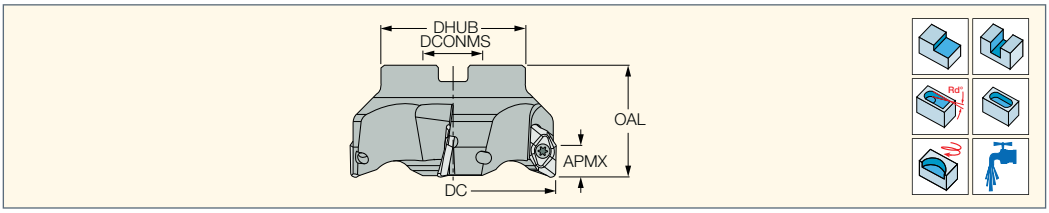
**For inserts, see pages:** HM90 APCR 1605..R-P (534)

## Spare Parts

| Designation | | | |
|---|---|---|---|
| HM90 EAL-HSK63A-16 | SR 14-0180 | BLD T20/M7 | SW6-T |

HELIALU

**HM90 FAL-16**
Face Mills Carrying HM90 APCR 1605... Inserts for Machining Aluminum




| Designation | DC | CICT(1) | APMX(2) | OAL | DHUB | DCONMS | RPMX(3) | RMPX°(4) | Arbor(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 FAL-D050-22-16 | 50.00 | 3 | 15.50 | 45.00 | 47.00 | 22.00 | 23944 | 10.0 | A | 0.26 |
| HM90 FAL-D063-27-16 | 63.00 | 3 | 15.50 | 50.00 | 58.00 | 27.00 | 21331 | 7.0 | A | 0.55 |
| HM90 FAL-D080-27-16 | 80.00 | 3 | 15.50 | 50.00 | 60.00 | 27.00 | 18930 | 6.0 | A | 0.89 |
| HM90 FAL-D100-32-16 | 100.00 | 4 | 15.50 | 55.00 | 70.00 | 32.00 | 16931 | 4.0 | B | 1.44 |
| HM90 FAL-D125-40-16 | 125.00 | 5 | 15.50 | 63.00 | 84.00 | 40.00 | 15144 | 3.0 | B | 2.36 |

• Insert tightening torque: 600 Nxcm • HM90 APCR 1605..R-P inserts with corner radii 3.2 and 4.0 mm require pocket modification, corners larger than 4.5 mm should be used only on BR tools
• For user guide, see pages 616-621
(1) Number of inserts (or edges for solid tool)
(2) D.O.C. changes according to insert radius. APMX 15.5 is the value for HM90 APCR 160520R-P insert
(3) Maximum RPM
(4) Maximum ramping angle
(5) For adaptation options, see page 622

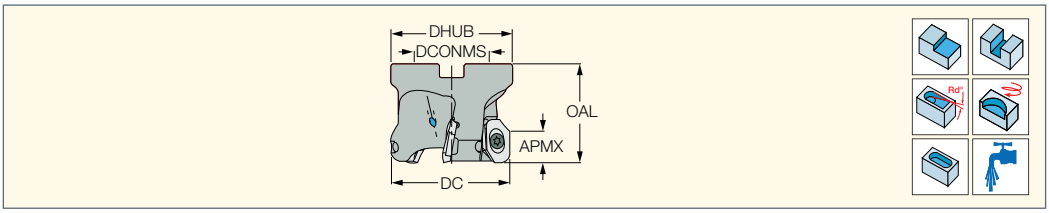
**For inserts, see pages:** HM90 APCR 1605..R-P (534)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM90 FAL-D050-22-16 | SR 14-0180 | BLD T20/M7 | SW6-T | SR M10X25 DIN912 |
| HM90 FAL-D063-27-16 | SR 14-0180 | BLD T20/M7 | SW6-T | SR M12X25 DIN 912 |
| HM90 FAL-D080-27-16 | SR 14-0180 | BLD T20/M7 | SW6-T | SR M12X25 DIN 912 |
| HM90 FAL-D100-32-16 | SR 14-0180 | BLD T20/M7 | SW6-T | SR M4X5 DIN916 |
| HM90 FAL-D125-40-16 | SR 14-0180 | BLD T20/M7 | SW6-T | SR M4X5 DIN916 |

HELIALU

**HM90 FAL-16BR**
Face Mills Carrying HM90 APCR 1605... Inserts with Corner Radii Equal to or Larger Than 5 mm for Machining Aluminum




| Designation | DC | CICT(1) | APMX | OAL | DHUB | DCONMS | RPMX(2) | RMPX°(3) | Arbor(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 FAL-D050-22-16BR | 50.00 | 3 | 15.50 | 45.00 | 49.00 | 22.00 | 23944 | 11.0 | A | 0.28 |

• Note: HM90 APCR 1605..R-P inserts with corner radii smaller than 5 mm should not be used on BR tools • Insert tightening torque: 6Nxm
(1) Number of inserts (or edges for solid tool)
(2) Maximum RPM
(3) Maximum ramping angle
(4) For adaptation options, see page 622

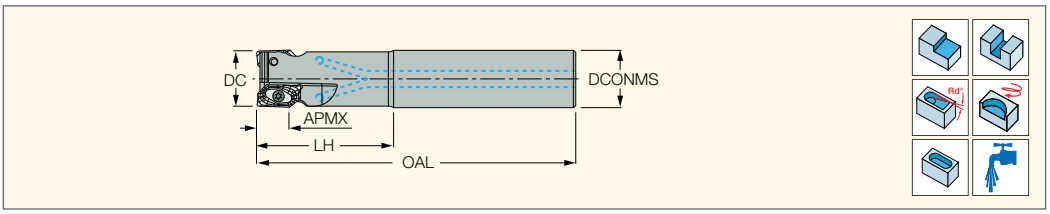
**For inserts, see pages:** HM90 APCR 1605..R-P (534)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM90 FAL-16BR | SR 14-0180 | BLD T20/M7 | SW6-T | SR M10X25 DIN912 |

HELIALU

**HM90 EAL-15**
Long Reach Endmills Carrying HM90 AXCR 1505... Inserts for Machining Aluminum




| Designation | DC | CICT(1) | APMX | LH | OAL | DCONMS | Shank(2) | RPMX(3) | RMPX°(4) | kg | SR 14-562 | SW6-SD | BLD T10/S7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 EAL-D25-C25-L140-15 | 25.00 | 2 | 14.00 | 60.0 | 140.00 | 25.00 | C | 37500 | 21.0 | 0.44 | SR 14-562 | SW6-SD | BLD T10/S7 |
| HM90 EAL-D32-C32-L150-15 | 32.00 | 3 | 14.00 | 70.0 | 150.00 | 32.00 | C | 31250 | 13.0 | 0.75 | SR 14-562 | SW6-SD | BLD T10/S7 |
| HM90 EAL-D40-C32-L160-15 | 40.00 | 3 | 14.00 | 70.0 | 160.00 | 32.00 | C | 26040 | 9.0 | 0.99 | SR 14-562 | SW6-SD | BLD T10/S7 |

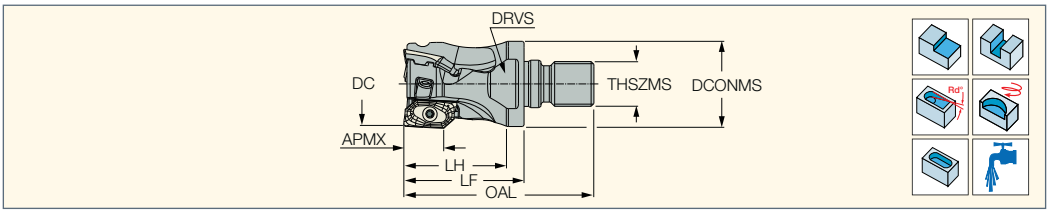
- HM90 AXCR 150540R-P insert with a 4.0 mm or larger corner radius requires pocket modification

(1) Number of inserts (or edges for solid tool)
(2) C-Cylindrical
(3) Maximum RPM
(4) Maximum ramping angle

**For inserts, see pages:** HM90 AXCR 1505 (533)

HELIALU JET LINE

**HM90 EAL-M-15-JHP**
90° Endmills with a FLEX-FIT Threaded Adaptation Carrying HM90 AXCR 1505... Inserts for Machining Aluminum




| Designation | DC | CICT(1) | APMX | DCONMS | THSZMS | LH | LF | OAL | RMPX°(2) | RPMX(3) | DRVS(4) | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 EAL D25-2-M12-15-JHP | 25.00 | 2 | 14.00 | 21.00 | M12 | 29.3 | 39.30 | 61.30 | 21.0 | 37500 | 17.0 | 40 | 0.08 |
| HM90 EAL D32-3-M16-15-JHP | 32.00 | 3 | 14.00 | 30.50 | M16 | 34.5 | 41.90 | 66.90 | 13.0 | 31250 | 25.0 | 40 | 0.17 |

New

- For adaptation, see page 303 • For user guide, see pages 616-621 • When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) Maximum RPM
(4) Torque key size
(5) Tool tightening torque (Nxm)

**For inserts, see pages:** HM90 AXCR 1505 (533)
**For holders, see pages:** BT-ODP (FLEX-FIT) (359) • C#-ODP (FLEX-FIT) (359) • CAB M-M (FLEX-FIT) (358) • DIN69871-ODP (360) • ER-ODP (360) • HSK A-ODP (FLEX-FIT) (361) • S M (357) • S M-C-H (357)

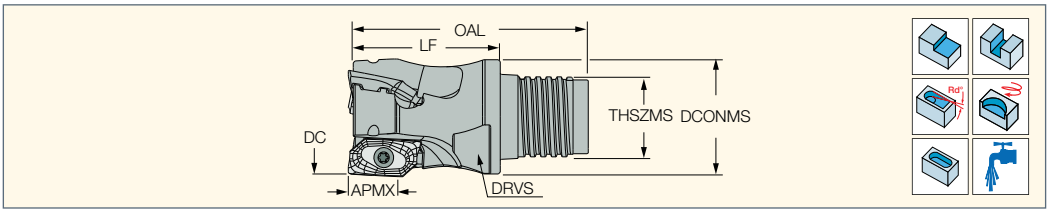
## Spare Parts

| Designation | | | |
|---|---|---|---|
| HM90 EAL-M-15-JHP | SR 14-562 | SW6-SD | BLD T10/S7 |

HELIALU JET LINE

## HM90 EAL-MM-15-JHP

90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying HM90 AXCR 1505... Inserts for Machining Aluminum




| Designation | DC | CICT(1) | APMX | DCONMS | THSZMS | LF | OAL | RMPX°(2) | RPMX(3) | DRVS(4) | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 EALD100-2MMT15-15JHP | 25.40 | 2 | 14.00 | 24.00 | T15 | 39.50 | 56.50 | 25.0 | 37500 | 20.0 | 43 | 0.10 |
| HM90 EALD125-3MMT21-15JHP | 31.75 | 3 | 14.00 | 30.00 | T21 | 39.90 | 63.00 | 13.0 | 31250 | 24.0 | 43 | 0.17 |

New

- For adaptation, see page 303 • For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) Maximum RPM
(4) Torque key size
(5) Tool tightening torque (Nxm)

**For inserts, see pages:** HM90 AXCR 1505 (533)
**For holders, see pages:** MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER-H (108) • MM TS-A (105)

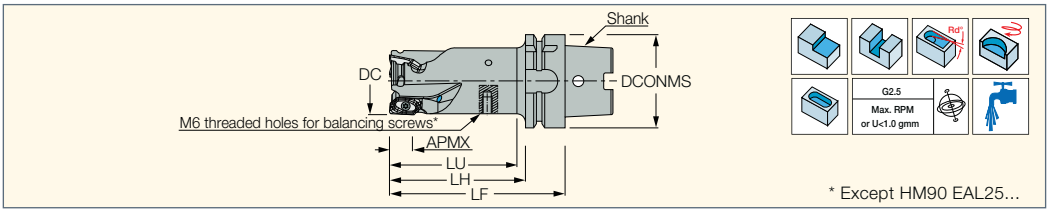
### Spare Parts

| Designation | | | |
|---|---|---|---|
| HM90 EAL-MM-15-JHP | SR 14-562 | SW6-SD | BLD T10/S7 |

HELIALU HSK

## HM90 EAL-HSK63A-15

Long Reach Endmills with Integral HSK Adaptation Carrying HM90 AXCR 1505... Inserts for Machining Aluminum




| Designation | DC | LU | ZEFP | APMX | LH | LF | RPMX(2) | RMPX°(3) | DCONMS | Shank | DCP(4) | MIID(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 EAL25-L75-HSK63A-15 (1) | 25.00 | 70.00 | 2 | 14.00 | 75.00 | 101.00 | 31250 | 21.0 | 63.00 | HSK 63A | 1 | HM90 AXCR 150504R-P | 0.82 |
| HM90 EAL32-L65-HSK63A-15 | 32.00 | 60.00 | 3 | 14.00 | 65.00 | 91.00 | 31250 | 13.0 | 63.00 | HSK 63A | 1 | HM90 AXCR 150504R-P | 0.90 |
| HM90 EAL32-L100-HSK63A-15 | 32.00 | 95.00 | 3 | 14.00 | 100.00 | 126.00 | 31250 | 13.0 | 63.00 | HSK 63A | 1 | HM90 AXCR 150504R-P | 1.08 |
| HM90 EAL40-L80-HSK63A-15 | 40.00 | 75.00 | 3 | 14.00 | 80.00 | 106.00 | 26040 | 9.0 | 63.00 | HSK 63A | 1 | HM90 AXCR 150504R-P | 1.17 |
| HM90 EAL40-L120-HSK63A-15 | 40.00 | 115.00 | 3 | 14.00 | 120.00 | 146.00 | 26040 | 9.0 | 63.00 | HSK 63A | 1 | HM90 AXCR 150504R-P | 1.52 |

- 32 and 40 mm diameter tools feature balancing adjustment screws • A cooling tube must be used with all internal coolant HSK spindles (should be ordered separately)
- Kit balancing screws should be ordered separately • Insert tightening torque: 3.2 Nxm
- HM90 AXCR 150540R-P insert with a 4.0 mm or larger corner radius requires pocket modification

(1) Without threaded holes for balancing screws
(2) Maximum RPM
(3) Maximum ramping angle
(4) 1 - Slot for data chip, 0 - Without slot for data chip
(5) Master insert identification

**For inserts, see pages:** HM90 AXCR 1505 (533)

### Spare Parts

| Designation | | | |
|---|---|---|---|
| HM90 EAL-HSK63A-15 | SR 14-562 | SW6-SD | BLD T10/S7 |

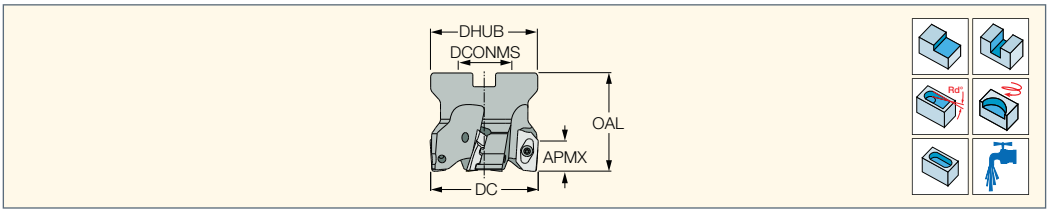
## HM90 EAL...15

**HM90 EAL...15** For indexable inserts with a corner radius larger than 4.0 mm, the basic body of the tool must be modified according to the drawing above (can be done by **ISCAR**).

F - The cutting force in ramping applications

HELIALU

**HM90 FAL-15**
Face Mills Carrying HM90 AXCR 1505.. Inserts for Machining Aluminum




| Designation | DC | CICT(1) | APMX | OAL | DHUB | DCONMS | Arbor(2) | RPMX(3) | RMPX°(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 FAL-D050-4-22-15 | 50.00 | 4 | 14.00 | 45.00 | 49.00 | 22.00 | A | 23000 | 6.5 | 0.30 |
| HM90 FAL-D063-5-27-15 | 63.00 | 5 | 14.00 | 50.00 | 53.00 | 27.00 | A | 20000 | 5.5 | 0.57 |

- HM90 AXCR 150540R-P insert with a 4.0 mm or larger corner radius requires pocket modification

(1) Number of inserts (or edges for solid tool)
(2) For adaptation options, see page 622
(3) Maximum RPM
(4) Maximum ramping angle

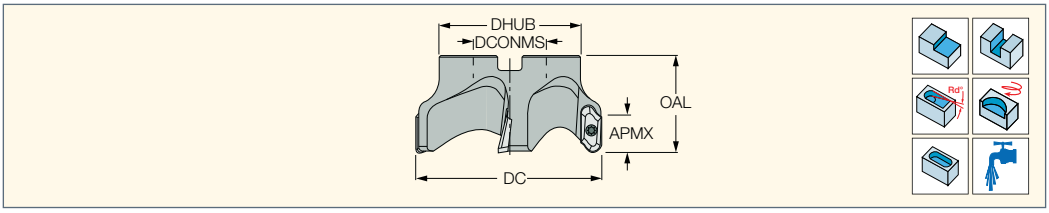
**For inserts, see pages:** HM90 AXCR 1505 (533)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM90 FAL-D050-4-22-15 | SR 14-562 | BLD T10/S7 | SW6-SD | SR M10X25 DIN912 |
| HM90 FAL-D063-5-27-15 | SR 14-562 | BLD T10/S7 | SW6-SD | SR M12X25 DIN 912 |

HELIALU

**HM90 FAL-22**
Face Mills Carrying HM90 APCR 2206... Inserts for Machining Aluminum




| Designation | DC | APMX | CICT(1) | OAL | DHUB | DCONMS | Arbor(2) | RMPX°(3) | RPMX(4) | MIID(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 FAL-D063-27-22 | 63.00 | 20.00 | 3 | 50.00 | 62.00 | 27.00 | A | 7.0 | 16000 | HM90 APCR 220605R-P | 0.48 |
| HM90 FAL-D080-27-22 | 80.00 | 20.00 | 3 | 50.00 | 70.00 | 27.00 | A | 5.0 | 14000 | HM90 APCR 220605R-P | 0.81 |

- D.O.C. changes according to insert radius • APMX 20.5 is the value for HM90 APCR220650 • Insert tightening torque: 6 Nxm
- When using this cutter with a 6.4 mm radius insert, the seat must be changed to assure the insert's compatibility with the tool
- For user guide, see pages 616-621

(1) Number of inserts (or edges for solid tool)
(2) For adaptation options, see page 622
(3) Maximum ramping angle
(4) Maximum RPM
(5) Master insert identification

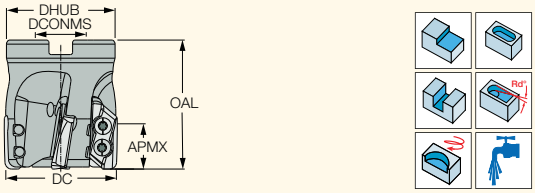
**For inserts, see pages:** HM90 APCR 2206..R-P (535) • HM90 APCR 220605-CS (535)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HM90 FAL-22 | SR 14-0180 | BLD T20/M7 | SW6-T | SR M12X25 DIN 912 |

HELIALU

**HSM90S FAL-22**
90° Face Mills Carrying Super Positive and Polished Rake Inserts for Machining Aluminum at High Rotation Speeds




| Designation | DC | APMX | CICT(1) | DCONMS | DHUB | OAL | Arbor(2) | RMPX°(3) | RPMX(4) | MIID(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HSM90S FAL-D050-3-22-22 | 50.00 | 22.00 | 3 | 22.00 | 48.00 | 57.00 | A | 7.0 | 31000 | HSM90S APCR 2207 | 0.40 |
| HSM90S FAL-D050-4-22-22 | 50.00 | 22.00 | 4 | 22.00 | 48.00 | 57.00 | A | 7.0 | 31000 | HSM90S APCR 2207 | 0.41 |

- Important: When machining at very high cutting speeds it is recommended to replace the screw when replacing the insert
- Insert tightening torque: 6 (Nxm)

(1) Number of inserts (or edges for solid tool)
(2) For adaptation options, see page 622
(3) Maximum ramping angle
(4) Maximum RPM
(5) Master insert identification

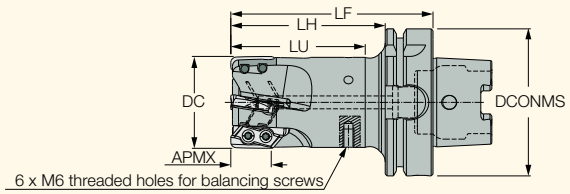
**For inserts, see pages:** HSM90S APCR 2207 (535)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HSM90S FAL-22 | SR M5x0.8 20IP-13343 | BLD IP20/M7 | SW6-T-SH | SR M10X40DIN912 |

HELIALU HSK

**HSM90SFD-HSK A63/80-22**
90° Endmills with Integral HSK Adaptation Carrying Super Positive Inserts for Machining Aluminum at High Rotation Speeds




| Designation | DC | APMX | LU | LH | LF | CICT(1) | DCONMS | Shank | RMPX°(2) | RPMX(3) | DCP(4) | kg | MIID(5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSM90SFD50-3-63A/80MQL-22 | 50.00 | 22.00 | 73.10 | 84.0 | 110.00 | 3 | 80.00 | HSK A63/80 | 7.0 | 31000 | 1 | 1.93 | HSM90S APCR 220708R |
| HSM90SFD50-4-63A/80MQL-22 | 50.00 | 22.00 | 73.10 | 84.0 | 110.00 | 4 | 80.00 | HSK A63/80 | 7.0 | 31000 | 1 | 1.93 | HSM90S APCR 220708R |

- A cooling tube must be used with all internal coolant HSK spindles (to be order separately
- Important: When machining at very high cutting speeds and the insert needs replacing, it is also recommended to replace the screws
- Kit balancing screws to be order separately • Insert tightening torque: 6 (Nxm)

(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) Maximum RPM
(4) 1 - Slot for data chip, 0 - Without slot for data chip
(5) Master insert identification

**For inserts, see pages:** HSM90S APCR 2207 (535)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HSM90SFD-HSK A63/80-22 | SR M5x0.8 20IP-13343 | BLD IP20/M7 | SW6-T-SH | COOLING TUBE HSK A63 |

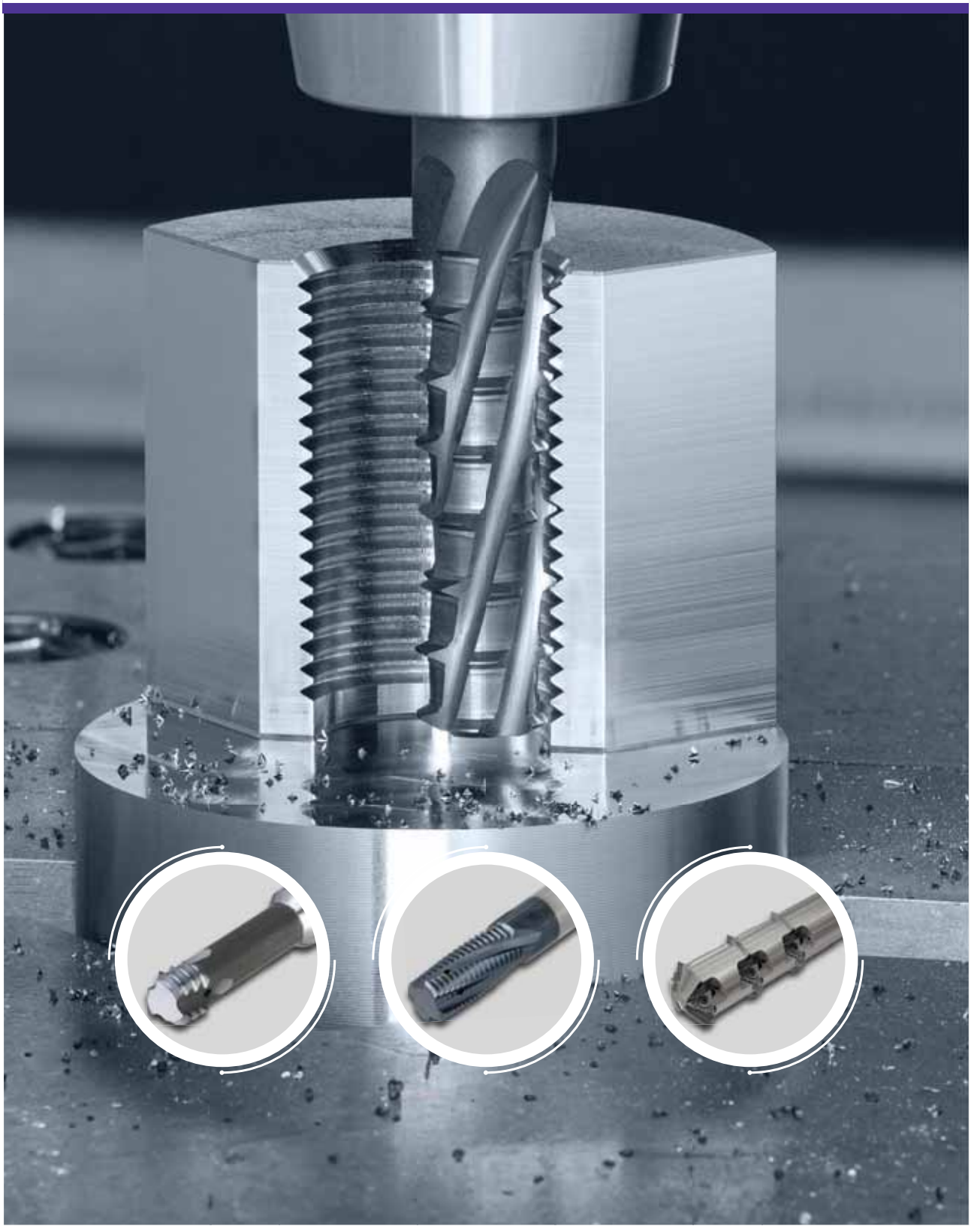
## Following is a Reference List of Additional Inserts For Machining Aluminum Using General Use Milling Cutters

| | Insert for Aluminum Designation | Insert Page | Milling Cutters Designation | Tool Page |
|---|---|---|---|---|
| | HP ANCR | 509 | HP E90AN HP F90AN<br>HP ANK | 21-22<br>229<br>274 |
| | HM90 ADCR 1505PDFR-P<br>ADCR 1505PDFR | 522<br>523 | E90AC HM90 F90A<br>HM90 E90AD SM | 50 247-248<br>43-46 291 |
| | HM90 APCR 100304PDFR-P/DP<br>APCR 1003PDFR-P | 515<br>517 | APK HM90 F90AP<br>HM90 E90A | 279<br>236-237<br>32 37-38 |
| | HP ADCR 1906<br>HP ADCR 2207 | 532<br>533 | HP E90AT HP F90AT | 49 253-254 |
| | P290 ACCT...-HL-P<br>P290 ACKT...FWE-P | 529 | P290 ACK/EPW/FPW/SM | 280-282<br>48-49 253 |
| | HM390 TPCR 1003<br>HM390 TDCR 1505 | 513<br>514 | HM390 ETP/FTP<br>HM390 ETD/FTD | 29-31 235<br>42 246 |
| | LNAR 1106 | 550<br>551 | F90LN-R/L-N11 | 240 |
| | LNAR 1506 | 555<br>556 | F90LN-R/L-N15 | 245 |
| | T490 LNAR-P | 548 | T490 ELN T490 FLN<br>T490 LNK T490 SM | 24-25 231 244<br>250 277-278<br>283-284 286-287 |
| | OECR 060405AER-P | 575 | HOE-R06<br>HOF-R06 | 256 |

## Following is a Reference List of Additional Inserts For Machining Aluminum Using General Use Milling Cutters

| | Insert for Aluminum Designation | Insert Page | Milling Cutters Designation | Tool Page |
|---|---|---|---|---|
| | OFCR 07T3-AEN<br>OFCR 07T3-AEN-P<br>OFCR 07T3-RW-P | 577 | HOF-R07 | 257 |
| | IQ845 SYHU... ADN-P | 567 | IQ845 FSY | 264 |
| | SEHT-AFN | 581 | F45ST | 263 |
| | SDMR 1205 PDR-HQ-M | 564 | F90SD | 241 |
| | FFQ4 SOMT...HP-P | 591 | FFQ4 12 | 346 |
| | RCMT... -FW-F20-P<br>RCCT... -MO-P | 604<br>603 | ERW, FRW | 321-323 |
| **MULTI-MASTER and Solid Carbide Endmills for Machining Aluminum** | | | | |
| | MM EA MM EA-CF<br>MM EBA | 98-99<br>87-88 | MM S... MM TS-A<br>MM GRT TS CAB MM CAB<br>MM S-ER... | 101-111 |
| **Solid Carbide Endmills for Aluminum** | | | | |
| | ECA-H3-CF ECA-B-2<br>ECA-B-3 ECA-F-2 | 186-188 191<br>192 193 | | |
| | ERC-E-3 ECR-B3-R | 189 190 | | |

# THREAD MILLING TOOLS



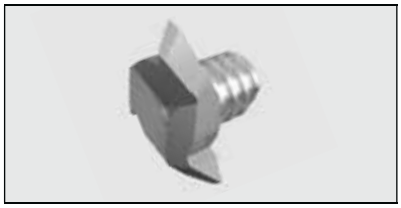
## ISCAR Thread

**SOLID-THREAD**
**MTEC, MTECB, MTECZ, MTECQ,MTECH**
pages 446-449,453-455,459-461,462-465

**SOLID-THREAD**
**MTECS, MTECD, MTECSH**
pages 450-451,456-458,459,461-462

**SOLID-M-THREAD**
**MTECK, MTECM**
pages 452,458-459

**SOLID-THREAD**
**MTECI**
page 466



**MULTI-MASTER**
**MM TRD**
page 470

**MULTI-MASTER**
**MM TRF**
pages 468-469

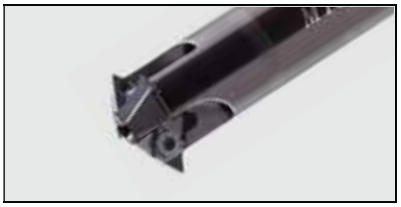
**MULTI-MASTER**
**MT-...-MM**
pages 471-472

**T-SLOT**
**SD TRD**
page 467

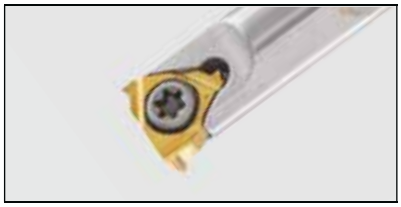
**MILL-THREAD Endmill**
**MTE**
pages 473-475

**MILL-THREAD Endmill**
**MTSRH**
page 476

**MILL-THREAD Endmill**
**MTSR M.I. S.P**
page 479



**MILL-THREAD Endmill**
**MTSR M.I. S.P.-U**
page 479



**MILL-THREAD Endmill**
**MTET**
page 477

**QUICK-M-THREAD**
**MTET Step Release**
page 478

**MILL-THREAD Shell Mill**
**MTF-MULTI**
page 475

**MILL-THREAD Shell Mill**
**MTSRH**
page 477

**MILL-THREAD Shell Mill**
**MTFLE**
page 476

## ISCAR THREAD - Solid Carbide Endmills Designation Code Key

**MTEC□** — Mill Thread endmill carbide

- (blank) - without coolant hole
- B - central coolant hole
- Z - coolant holes in flutes
- Q - central coolant hole and reduced neck diameter
- S - for small internal threads for general use
- SH - for small internal threads in hard materials
- I - single point design of cutting head

**06** — shank diameter

**04** — cutting diameter

**C** — no. of flutes
- C = 3 flutes
- D = 4 flutes
- E = 5 flutes
- F = 6 flutes

**14** — APMX

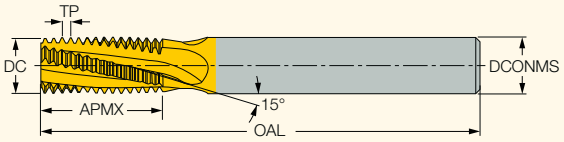
**1.0** — thread pitch

**ISO** — thread standard

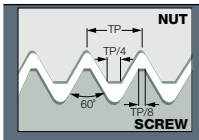
**IC908** — carbide grade

**SOLIDTHREAD**

**MTEC-ISO**
Solid Carbide Internal Threading Endmills for ISO Thread Profile



Application: General engineering




| Designation | Dimensions TP[1] | M Coarse | M Fine | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| MTEC 06022C5 0.5ISO | 0.500 | M3 | =>4 | 6.00 | 2.20 | 3 | 5.30 | 58.00 | C | ● |
| MTEC 06038C10 0.5ISO | 0.500 | - | =>5 | 6.00 | 3.80 | 3 | 10.30 | 58.00 | C | ● |
| MTEC 06031C7 0.7ISO | 0.700 | M4 | =>5 | 6.00 | 3.10 | 3 | 7.40 | 58.00 | C | ● |
| MTEC 06045C10 0.75ISO | 0.750 | - | =>6 | 6.00 | 4.50 | 3 | 10.00 | 58.00 | C | ● |
| MTEC 06036C9 0.8ISO | 0.800 | M5 | =>6 | 6.00 | 3.60 | 3 | 9.20 | 58.00 | C | ● |
| MTEC 0604C10 1.0ISO | 1.000 | M6 | =>7 | 6.00 | 4.00 | 3 | 10.50 | 58.00 | C | ● |
| MTEC 0604C14 1.0ISO | 1.000 | M6 | =>7 | 6.00 | 4.00 | 3 | 14.50 | 58.00 | C | ● |
| MTEC 0606C12 1.0ISO | 1.000 | - | =>9 | 6.00 | 6.00 | 3 | 12.50 | 58.00 | C | ● |
| MTEC 0808D16 1.0ISO | 1.000 | - | =>10 | 8.00 | 8.00 | 4 | 16.50 | 64.00 | C | ● |
| MTEC 0605C14 1.25ISO | 1.250 | M8 | =>10 | 6.00 | 5.00 | 3 | 14.40 | 58.00 | C | ● |
| MTEC 0605C19 1.25ISO | 1.250 | M8 | =>10 | 6.00 | 5.00 | 3 | 19.40 | 58.00 | C | ● |
| MTEC 0807C17 1.5ISO | 1.500 | M10 | =>12 | 8.00 | 7.00 | 3 | 17.30 | 64.00 | C | ● |
| MTEC 0807C24 1.5ISO | 1.500 | M10 | =>12 | 8.00 | 7.00 | 3 | 24.80 | 76.00 | C | ● |
| MTEC 1010D21 1.5ISO | 1.500 | - | =>14 | 10.00 | 10.00 | 4 | 21.80 | 73.00 | C | ● |
| MTEC 1616F33 1.5ISO | 1.500 | - | =>20 | 16.00 | 16.00 | 6 | 33.80 | 100.00 | C | ● |
| MTEC 0808C20 1.75ISO | 1.750 | M12 | =>14 | 8.00 | 8.00 | 3 | 20.10 | 64.00 | C | ● |
| MTEC 0808C28 1.75ISO | 1.750 | M12 | =>14 | 8.00 | 8.00 | 3 | 28.90 | 76.00 | C | ● |
| MTEC 1010C27 2.0ISO | 2.000 | M14 | =>15 | 10.00 | 10.00 | 3 | 27.00 | 73.00 | C | ● |
| MTEC 1010C39 2.0ISO | 2.000 | M14 | =>15 | 10.00 | 10.00 | 3 | 39.00 | 100.00 | C | ● |
| MTEC 1212D27 2.0ISO | 2.000 | - | =>18 | 12.00 | 12.00 | 4 | 27.00 | 84.00 | C | ● |
| MTEC 2020F41 2.0ISO | 2.000 | - | =>26 | 20.00 | 20.00 | 6 | 41.00 | 105.00 | C | ● |
| MTEC 1414D33 2.5ISO | 2.500 | M20 | =>22 | 14.00 | 14.00 | 4 | 33.80 | 84.00 | C | ● |
| MTEC 1414D48 2.5ISO | 2.500 | M20 | =>22 | 14.00 | 14.00 | 4 | 48.80 | 107.00 | C | ● |
| MTEC 1616C40 3.0ISO | 3.000 | M24 | =>25 | 16.00 | 16.00 | 3 | 40.50 | 100.00 | C | ● |
| MTEC 1616C58 3.0ISO | 3.000 | M24 | =>25 | 16.00 | 16.00 | 3 | 58.50 | 120.00 | C | ● |

• For user guide, see pages 497-506

(1) Thread pitch

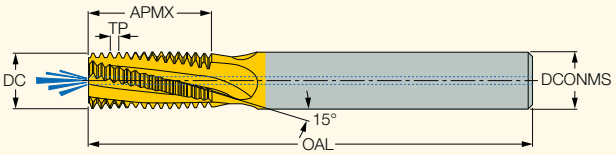
(2) Number of flutes

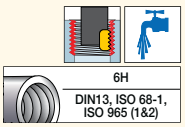
(3) C-Cylindrical

**SOLIDTHREAD**

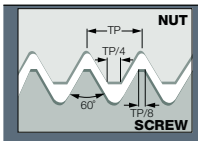
## MTECB-ISO

Solid Carbide Internal Threading Endmills with Coolant Hole for ISO Thread Profile




Application: General engineering




| Designation | Dimensions | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | TP[1] | M Coarse | M Fine | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | |
| **MTECB 06038C10 0.5ISO** | 0.500 | - | =>5 | 6.00 | 3.80 | 3 | 10.30 | 58.00 | C | ● |
| **MTECB 06031C7 0.7ISO** | 0.700 | M4 | =>5 | 6.00 | 3.10 | 3 | 7.40 | 58.00 | C | ● |
| **MTECB 06045C10 0.75ISO** | 0.750 | - | =>6 | 6.00 | 4.50 | 3 | 10.10 | 58.00 | C | ● |
| **MTECB 1010D24 0.75ISO** | 0.750 | - | =>12 | 10.00 | 10.00 | 4 | 24.40 | 73.00 | C | ● |
| **MTECB 06038C9 0.8ISO** | 0.800 | M5 | =>6 | 6.00 | 3.80 | 3 | 9.20 | 58.00 | C | ● |
| **MTECB 06046C10 1.0ISO** | 1.000 | M6 | =>7 | 6.00 | 4.60 | 3 | 10.50 | 58.00 | C | ● |
| **MTECB 06046C14 1.0ISO** | 1.000 | M6 | =>6 | 6.00 | 4.60 | 3 | 14.50 | 58.00 | C | ● |
| **MTECB 0606C12 1.0ISO** | 1.000 | - | =>9 | 6.00 | 6.00 | 3 | 12.50 | 58.00 | C | ● |
| **MTECB 0808D16 1.0ISO** | 1.000 | - | =>10 | 8.00 | 8.00 | 4 | 16.50 | 64.00 | C | ● |
| **MTECB 1010D24 1.0ISO** | 1.000 | - | =>12 | 10.00 | 10.00 | 4 | 24.50 | 73.00 | C | ● |
| **MTECB 0606C14 1.25ISO** | 1.250 | M8 | =>10 | 6.00 | 6.00 | 3 | 14.40 | 58.00 | C | ● |
| **MTECB 0606C19 1.25ISO** | 1.250 | M8 | =>10 | 6.00 | 6.00 | 3 | 19.40 | 58.00 | C | ● |
| **MTECB 1212D26 1.5ISO** | 1.500 | | =>16 | 12.00 | 12.00 | 4 | 26.30 | 84.00 | C | ● |
| **MTECB 08078C17 1.5ISO** | 1.500 | M10 | =>12 | 8.00 | 7.80 | 3 | 17.00 | 64.00 | C | ● |
| **MTECB 08078C24 1.5ISO** | 1.500 | M10 | =>12 | 8.00 | 7.80 | 3 | 24.80 | 76.00 | C | ● |
| **MTECB 1010D21 1.5ISO** | 1.500 | - | =>14 | 10.00 | 10.00 | 4 | 21.80 | 73.00 | C | ● |
| **MTECB 1616F33 1.5ISO** | 1.500 | - | =>20 | 16.00 | 16.00 | 6 | 33.80 | 105.00 | C | ● |
| **MTECB 1009C20 1.75ISO** | 1.750 | M12 | =>12 | 10.00 | 9.00 | 3 | 20.10 | 73.00 | C | ● |
| **MTECB 1009C28 1.75ISO** | 1.750 | M12 | =>12 | 10.00 | 9.00 | 3 | 28.90 | 73.00 | C | ● |
| **MTECB 1010C27 2.0ISO** | 2.000 | M14 | =>15 | 10.00 | 10.00 | 3 | 27.00 | 73.00 | C | ● |
| **MTECB 12118D27 2.0ISO** | 2.000 | M16 | =>17 | 12.00 | 11.80 | 4 | 27.00 | 84.00 | C | ● |
| **MTECB 12118D39 2.0ISO** | 2.000 | M16 | =>17 | 12.00 | 11.80 | 4 | 39.00 | 105.00 | C | ● |
| **MTECB 1615E33 2.5ISO** | 2.500 | M20 | =>22 | 16.00 | 15.00 | 5 | 33.80 | 105.00 | C | ● |
| **MTECB 1615E48 2.5ISO** | 2.500 | M20 | =>22 | 16.00 | 15.00 | 5 | 48.80 | 105.00 | C | ● |
| **MTECB 2018D58 3.0ISO** | 3.000 | M24 | =>25 | 20.00 | 18.00 | 4 | 58.50 | 120.00 | C | ● |

• With internal coolant hole • For user guide, see pages 497-506

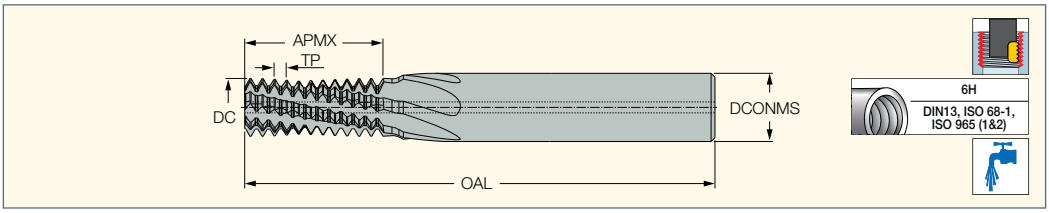
(1) Thread pitch

(2) Number of flutes

(3) C-Cylindrical

## SOLIDMTHREAD

**MTECBF-ISO**
Solid Carbide Internal Threading Endmills with a Coolant Hole. Intended for ISO Thread Profiles.




| Designation | Dimensions | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | TP(1) | M Coarse | M Fine | DCONMS | DC | NOF(2) | APMX | OAL | Shank | |
| MTECBF06048F10 1.0ISO | 1.000 | M6 | =>7 | 6.00 | 4.80 | 6 | 10.20 | 58.00 | C | ● |
| MTECBF08064G14 1.25ISO | 1.250 | M8 | =>10 | 8.00 | 6.40 | 7 | 14.00 | 64.00 | C | ● |
| MTECBF 1008G16 1.5ISO | 1.500 | M10 | =>12 | 10.00 | 8.00 | 7 | 16.70 | 73.00 | C | ● |
| MTECBF12095G20 1.75ISO | 1.750 | M12 | =>12 | 12.00 | 9.50 | 7 | 20.00 | 84.00 | C | ● |

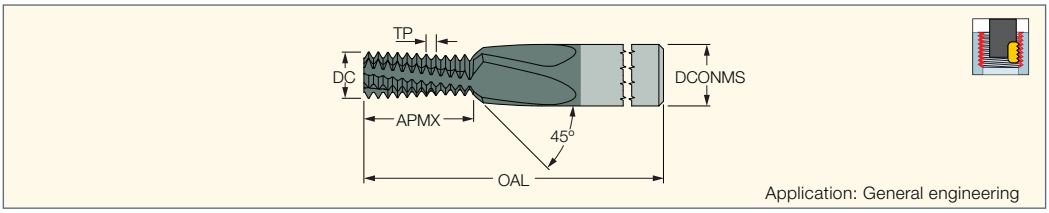
New

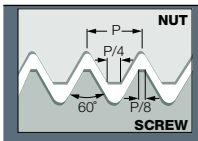
- For user guide, see pages 497-506 • Internal & External tolerance: ISO 228-1 - Medium class

(1) Thread pitch
(2) Number of flutes

## SOLIDTHREAD

**MTECH-ISO**
Small Diameter Solid Carbide Internal ISO Profile Threading and Chamfering Endmills, for Hard Materials




| Designation | Dimensions | | | | | | | | | IC902 |
|---|---|---|---|---|---|---|---|---|---|---|
| | TP(1) | M Coarse | M Fine | DCONMS | DC | NOF(2) | APMX | OAL | Shank(3) | |
| MTECH 0604C9 0.8ISO 902 | 0.800 | M5 | >5.9 | 6.00 | 4.00 | 3 | 9.20 | 58.00 | C | ● |
| MTECH 08048D10 1.0ISO 902 | 1.000 | M6 | >6.9 | 8.00 | 4.80 | 4 | 10.50 | 64.00 | C | ● |
| MTECH 0806D14 1.25ISO 902 | 1.250 | M8 | M10 | 8.00 | 6.00 | 4 | 13.70 | 64.00 | C | ● |
| MTECH 12095D20 1.75ISO 92 | 1.750 | M12 | - | 12.00 | 9.50 | 4 | 20.10 | 84.00 | C | ● |

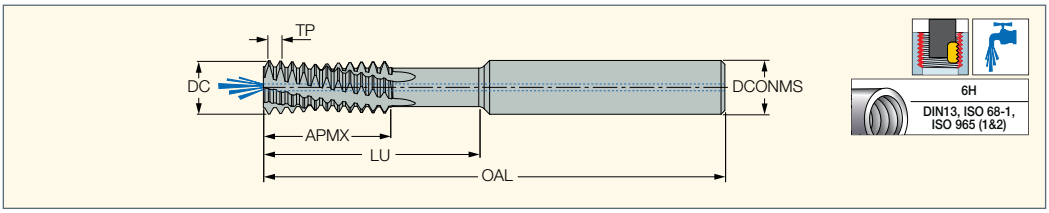
New

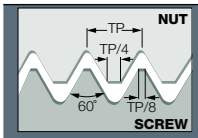
- For user guide, see pages 497-506

(1) Thread pitch
(2) Number of flutes
(3) C-Cylindrical

## SOLIDTHREAD

**MTECQ-ISO**
Endmills with Through Tool Coolant and Reduced Neck Diameter for Deep Internal ISO Profile Threading




| Designation | Dimensions | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | TP(1) | TDZ | DCONMS | DC | NOF(2) | APMX | LU | OAL | Shank(3) | |
| MTECQ 1010D32 1.0ISO | 1.000 | =>12 | 10.00 | 10.00 | 4 | 18.00 | 32.0 | 73.00 | C | ● |
| MTECQ 1212D38 1.0ISO | 1.000 | =>14 | 12.00 | 12.00 | 4 | 21.00 | 38.0 | 84.00 | C | ● |
| MTECQ 1010D30 1.5ISO | 1.500 | =>13 | 10.00 | 10.00 | 4 | 18.00 | 30.0 | 73.00 | C | ● |
| MTECQ 2020F60 1.5ISO | 1.500 | =>24 | 20.00 | 20.00 | 6 | 36.00 | 60.0 | 105.00 | C | ● |
| MTECQ 1212D42 2.0ISO | 2.000 | =>16 | 12.00 | 12.00 | 4 | 24.00 | 42.0 | 84.00 | C | ● |
| MTECQ 2020F56 2.0ISO | 2.000 | =>24 | 20.00 | 20.00 | 6 | 34.00 | 56.0 | 105.00 | C | ● |
| MTECQ 2020D45 3.5ISO | 3.500 | =>26 | 20.00 | 20.00 | 4 | 28.00 | 45.5 | 105.00 | C | ● |

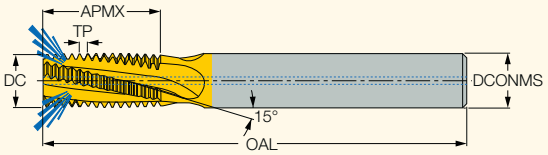
- For user guide, see pages 497-506

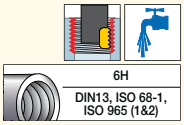
(1) Thread pitch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

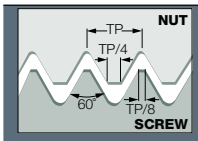
## MTECZ-ISO

Solid Carbide Internal Threading Endmills with Coolant Holes




Application: General engineering




| Designation | Dimensions | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | TP[1] | M Coarse | M Fine | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | |
| MTECZ 06048C10 1.0ISO | 1.000 | M6 | =>7 | 6.00 | 4.80 | 3 | 10.50 | 58.00 | C | ● |
| MTECZ 0606C12 1.0ISO | 1.000 | - | =>9 | 6.00 | 6.00 | 3 | 12.50 | 58.00 | C | ● |
| MTECZ 0808D16 1.0ISO | 1.000 | - | =>10 | 8.00 | 8.00 | 4 | 16.50 | 64.00 | C | ● |
| MTECZ 0606C14 1.25ISO | 1.250 | M8 | =>10 | 6.00 | 6.00 | 3 | 14.40 | 58.00 | C | ● |
| MTECZ 0606C19 1.25ISO | 1.250 | M8 | =>10 | 6.00 | 6.00 | 3 | 19.40 | 58.00 | C | ● |
| MTECZ 08078C17 1.5ISO | 1.500 | M10 | =>12 | 8.00 | 7.80 | 3 | 17.00 | 64.00 | C | ● |
| MTECZ 1010D21 1.5ISO | 1.500 | - | =>14 | 10.00 | 10.00 | 4 | 21.80 | 73.00 | C | ● |
| MTECZ 1212D26 1.5ISO | 1.500 | - | =>16 | 12.00 | 12.00 | 4 | 26.30 | 84.00 | C | ● |
| MTECZ 1616E33 1.5ISO | 1.500 | - | =>20 | 16.00 | 16.00 | 5 | 33.80 | 101.00 | C | ● |
| MTECZ 1009C20 1.75ISO | 1.750 | M12 | =>12 | 10.00 | 9.00 | 3 | 20.10 | 73.00 | C | ● |
| MTECZ 1009C28 1.75ISO | 1.750 | M12 | =>12 | 10.00 | 9.00 | 3 | 28.90 | 73.00 | C | ● |
| MTECZ 1010C27 2.0ISO | 2.000 | M14 | =>15 | 10.00 | 10.00 | 3 | 27.00 | 73.00 | C | ● |
| MTECZ 12118D27 2.0ISO | 2.000 | M16 | =>17 | 12.00 | 11.80 | 4 | 27.00 | 84.00 | C | ● |

• With internal coolant hole • For user guide, see pages 497-506

(1) Thread pitch

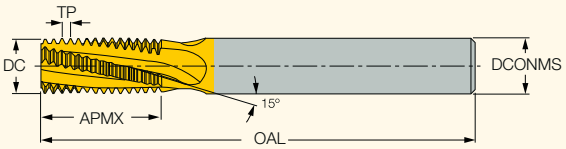
(2) Number of flutes

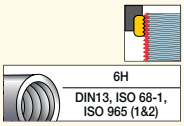
(3) C-Cylindrical

SOLIDTHREAD

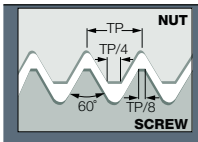
## MTEC E-ISO

Solid Carbide External Threading Endmills for an ISO Thread Profile




Application: General engineering




| Designation | Dimensions | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|
| | TP[1] | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | |
| MTEC E 1010D16 1.0ISO | 1.000 | 10.00 | 10.00 | 4 | 16.50 | 73.00 | C | ● |
| MTEC E 1212E20 1.0ISO | 1.000 | 12.00 | 12.00 | 5 | 20.50 | 84.00 | C | ● |
| MTEC E 1010D16 1.25ISO | 1.250 | 10.00 | 10.00 | 4 | 16.90 | 73.00 | C | ● |
| MTEC E 1010D15 1.5ISO | 1.500 | 10.00 | 10.00 | 4 | 15.80 | 73.00 | C | ● |
| MTEC E 1212D20 1.5ISO | 1.500 | 12.00 | 12.00 | 4 | 20.30 | 84.00 | C | ● |
| MTEC E 1212D20 1.75ISO | 1.750 | 12.00 | 12.00 | 4 | 20.10 | 84.00 | C | ● |
| MTEC E 1010C17 2.0ISO | 2.000 | 10.00 | 10.00 | 3 | 17.00 | 73.00 | C | ● |
| MTEC E 1212D21 2.0ISO | 2.000 | 12.00 | 12.00 | 4 | 21.00 | 84.00 | C | ● |

• For user guide, see pages 497-506

(1) Thread pitch

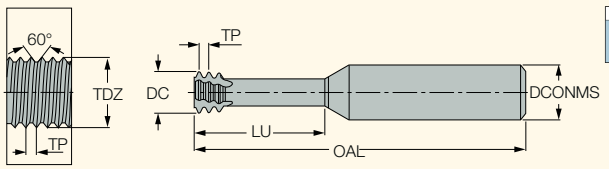
(2) Number of flutes

(3) C-Cylindrical

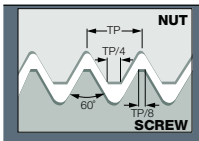
**SOLIDTHREAD**

## MTECS-ISO

Small Diameter Solid Carbide Threading Endmills for an Internal ISO Profile




Application: General engineering




| Designation | Dimensions | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | TP[2] | LU | OAL | DCONMS | TDZ | NOF[3] | Shank[4] | IC908 | IC903 |
| MTECS 03007C2 0.25ISO | 0.72 | 0.250 | 2.5 | 39.00 | 3.00 | M1 | 3 | C | • | |
| MTECS 03009C3 0.25ISO | 0.90 | 0.250 | 3.0 | 39.00 | 3.00 | M1.2 | 3 | C | • | |
| MTECS 03011C4 0.3ISO [1] | 1.05 | 0.300 | 4.0 | 39.00 | 3.00 | M1.4 | 3 | C | • | |
| MTECS 03012C5 0.35ISO [1] | 1.20 | 0.350 | 4.8 | 39.00 | 3.00 | M1.6 | 3 | C | • | • |
| MTECS 03016C6 0.4ISO [1] | 1.53 | 0.400 | 6.0 | 39.00 | 3.00 | M2 | 3 | C | • | |
| MTECS 06016C4 0.4ISO | 1.53 | 0.400 | 4.5 | 58.00 | 6.00 | M2 | 3 | C | • | |
| MTECS 03017C7 0.45ISO [1] | 1.65 | 0.450 | 7.0 | 39.00 | 3.00 | M2.2 | 3 | C | • | |
| MTECS 06017C5 0.45ISO | 1.65 | 0.450 | 5.0 | 58.00 | 6.00 | M2.2 | 3 | C | • | |
| MTECS 0602C5 0.45ISO | 1.95 | 0.450 | 5.5 | 58.00 | 6.00 | M2.5 | 3 | C | • | |
| MTECS 0602C5 0.45ISO-L | 1.95 | 0.450 | 5.5 | 100.00 | 6.00 | M2.5 | 3 | C | • | |
| MTECS 0602C7 0.45ISO | 1.95 | 0.450 | 7.5 | 58.00 | 6.00 | M2.5 | 3 | C | • | |
| MTECS 06024C6 0.5ISO | 2.37 | 0.500 | 6.5 | 58.00 | 6.00 | M3 | 3 | C | • | |
| MTECS 06024C9 0.5ISO | 2.37 | 0.500 | 9.5 | 58.00 | 6.00 | M3 | 3 | C | • | |
| MTECS 06024C9 0.5ISO-L | 2.37 | 0.500 | 9.5 | 100.00 | 6.00 | M3 | 3 | C | • | |
| MTECS 03024C12 0.5ISO | 2.40 | 0.500 | 12.5 | 39.00 | 3.00 | M3 | 3 | C | • | |
| MTECS 03024C15 0.5ISO | 2.40 | 0.500 | 15.5 | 39.00 | 3.00 | M3 | 3 | C | • | |
| MTECS 06028C10 0.6ISO | 2.75 | 0.600 | 10.5 | 58.00 | 6.00 | M3.5 | 3 | C | • | |
| MTECS 06028C7 0.6ISO | 2.75 | 0.600 | 7.5 | 58.00 | 6.00 | M3.5 | 3 | C | • | |
| MTECS 06031C12 0.7ISO | 3.10 | 0.700 | 12.5 | 58.00 | 6.00 | M4 | 3 | C | • | |
| MTECS 06031C120.7ISO-L | 3.10 | 0.700 | 12.5 | 100.00 | 6.00 | M4 | 3 | C | • | |
| MTECS 06031C16 0.7ISO | 3.10 | 0.700 | 16.7 | 58.00 | 6.00 | M4 | 3 | C | • | |
| MTECS 06031C9 0.7ISO | 3.10 | 0.700 | 9.0 | 58.00 | 6.00 | M4 | 3 | C | • | |
| MTECS 06038C12 0.8ISO | 3.80 | 0.800 | 12.5 | 58.00 | 6.00 | M5 | 3 | C | • | |
| MTECS 06038C16 0.8ISO | 3.80 | 0.800 | 16.0 | 58.00 | 6.00 | M5 | 3 | C | • | • |
| MTECS 06038C160.8ISO-L | 3.80 | 0.800 | 16.0 | 100.00 | 6.00 | M5 | 3 | C | • | |
| MTECS 0604C20 0.8ISO | 4.00 | 0.800 | 20.8 | 58.00 | 6.00 | M5 | 3 | C | • | |
| MTECS 06047C14 1.0ISO | 4.65 | 1.000 | 14.0 | 58.00 | 6.00 | M6 | 3 | C | • | |
| MTECS 06047C20 1.0ISO | 4.65 | 1.000 | 20.0 | 58.00 | 6.00 | M6 | 3 | C | • | |
| MTECS 06047C201.0ISO-L | 4.65 | 1.000 | 20.0 | 100.00 | 6.00 | M6 | 3 | C | • | |
| MTECS 06048C25 1.0ISO | 4.80 | 1.000 | 25.0 | 58.00 | 6.00 | M6 | 3 | C | • | |
| MTECS 06054D20 0.5ISO | 5.35 | 0.500 | 20.0 | 58.00 | 6.00 | M6 | 4 | C | • | |
| MTECS 0606C18 1.25ISO | 6.00 | 1.250 | 18.0 | 58.00 | 6.00 | M8 | 3 | C | • | |
| MTECS 0606C24 1.25ISO | 6.00 | 1.250 | 24.0 | 58.00 | 6.00 | M8 | 3 | C | • | |
| MTECS0606C24 1.25ISO-L | 6.00 | 1.250 | 24.6 | 100.00 | 6.00 | M8 | 3 | C | • | |
| MTECS 08078C23 1.5ISO | 7.80 | 1.500 | 23.0 | 64.00 | 8.00 | M10 | 3 | C | • | |
| MTECS 08078C31 1.5ISO | 7.80 | 1.500 | 31.5 | 64.00 | 8.00 | M10 | 3 | C | • | |
| MTECS 0808D25 0.75ISO | 8.00 | 0.750 | 25.0 | 64.00 | 8.00 | M10 | 4 | C | • | |
| MTECS 1009C26 1.75ISO | 9.00 | 1.750 | 26.0 | 73.00 | 10.00 | M12 | 3 | C | • | |
| MTECS 1009C37 1.75ISO | 9.00 | 1.750 | 37.8 | 73.00 | 10.00 | M12 | 3 | C | • | |
| MTECS 12118D35 2.0ISO | 11.80 | 2.000 | 35.0 | 84.00 | 12.00 | M16 | 4 | C | • | |
| MTECS 12118D50 2.0ISO | 11.80 | 2.000 | 50.0 | 100.00 | 12.00 | M16 | 4 | C | • | |
| MTECS 1615E43 2.5ISO | 15.00 | 2.500 | 43.0 | 100.00 | 16.00 | M20 | 5 | C | • | |

• For user guide, see pages 497-506

[1] Specially designed for the production of dental implants

[2] Thread pitch

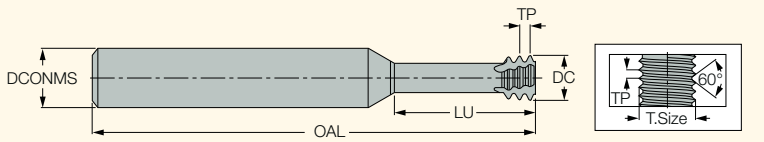
[3] Number of flutes

[4] C-Cylindrical

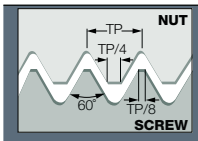
SOLIDTHREAD

## MTECSH-ISO

Small Diameter Short Left-Hand Cut. Internal ISO Profile Threading Endmills for Hardened Steel




Left-hand tools (CNC code M04) • Application: General engineering




| Designation | Dimensions DC | TP(1) | LU | OAL | DCONMS | TDZ | NOF(2) | Shank(3) | IC903 |
|---|---|---|---|---|---|---|---|---|---|
| MTECSH 03011C4 0.3ISO | 1.05 | 0.300 | 4.0 | 39.00 | 3.00 | M1.4 | 3 | C | • |
| MTECSH 03012C5 0.35ISO | 1.20 | 0.350 | 4.8 | 39.00 | 3.00 | M1.6, M1.8 | 3 | C | • |
| MTECSH 03016C6 0.4ISO | 1.55 | 0.400 | 6.0 | 39.00 | 3.00 | M2 | 3 | C | • |
| MTECSH 06016C4 0.4ISO | 1.55 | 0.400 | 4.5 | 58.00 | 6.00 | M2 | 3 | C | • |
| MTECSH 06017C5 0.45ISO | 1.65 | 0.450 | 5.0 | 58.00 | 6.00 | M2.2 | 3 | C | • |
| MTECSH 0602C5 0.45ISO | 1.95 | 0.450 | 5.5 | 58.00 | 6.00 | M2.5 | 3 | C | • |
| MTECSH 0602C7 0.45ISO | 1.95 | 0.450 | 7.5 | 58.00 | 6.00 | M2.5 | 3 | C | • |
| MTECSH 06024C6 0.5ISO | 2.35 | 0.500 | 6.5 | 58.00 | 6.00 | M3 | 3 | C | • |
| MTECSH 06024C9 0.5ISO | 2.35 | 0.500 | 9.5 | 58.00 | 6.00 | M3 | 3 | C | • |
| MTECSH 06028C7 0.6ISO | 2.75 | 0.600 | 7.5 | 58.00 | 6.00 | M3.5 | 3 | C | • |
| MTECSH06028C10 0.6ISO | 2.75 | 0.600 | 10.0 | 58.00 | 6.00 | M3.5 | 3 | C | • |
| MTECSH 06031C9 0.7ISO | 3.10 | 0.700 | 9.0 | 58.00 | 6.00 | M4 | 3 | C | • |
| MTECSH 06031C12 0.7ISO | 3.10 | 0.700 | 12.5 | 58.00 | 6.00 | M4 | 3 | C | • |
| MTECSH 06038C12 0.8ISO | 3.80 | 0.800 | 12.5 | 58.00 | 6.00 | M5 | 3 | C | • |
| MTECSH 06038C16 0.8ISO | 3.80 | 0.800 | 16.0 | 58.00 | 6.00 | M5 | 3 | C | • |
| MTECSH 06047C14 1.0ISO | 4.65 | 1.000 | 14.0 | 58.00 | 6.00 | M6 | 3 | C | • |
| MTECSH 06047C20 1.0ISO | 4.65 | 1.000 | 20.0 | 58.00 | 6.00 | M6 | 3 | C | • |
| MTECSH 0606C18 1.25ISO | 5.95 | 1.250 | 18.0 | 58.00 | 6.00 | M8 | 3 | C | • |
| MTECSH 0606C24 1.25ISO | 5.95 | 1.250 | 24.0 | 58.00 | 6.00 | M8 | 3 | C | • |
| MTECSH 08078C23 1.5ISO | 7.80 | 1.500 | 23.0 | 64.00 | 8.00 | M10 | 3 | C | • |
| MTECSH 1009C26 1.75ISO | 9.00 | 1.750 | 26.0 | 73.00 | 10.00 | M12 | 3 | C | • |
| MTECSH 12118D35 2.0ISO | 11.80 | 2.000 | 35.0 | 84.00 | 12.00 | M16 | 4 | C | • |

• For user guide, see pages 497-506

(1) Thread pitch

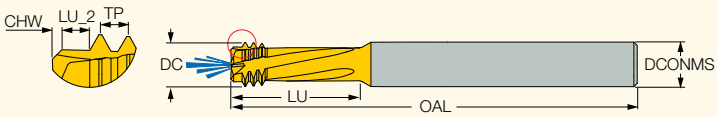
(2) Number of flutes

(3) C-Cylindrical

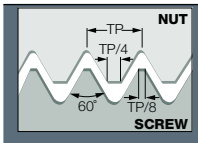
SOLIDTHREAD

## MTECD-ISO

Small Diameter Short Left-Hand Cut. Solid Carbide Endmills for Internal ISO Profile Drilling, Threading and Chamfering




Left-hand tools (CNC code M04) • Application: General engineering • Coolant holes only in 1.0-2.0 pitch tools




| Designation | Dimensions TP(1) | TDZ | DCONMS | DC | NOF(2) | LU | OAL | CHW | LU_2 | Shank(3) | CSP(4) | Tough ↔ Hard IC908 | IC903 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MTECD 06032C11 0.7ISO | 0.700 | M4 | 6.00 | 3.15 | 3 | 11.6 | 58.00 | 0.20 | 0.7 | C | 0 | • | |
| MTECDH06032C11 0.7ISO | 0.700 | M4 | 6.00 | 3.15 | 3 | 11.6 | 58.00 | 0.20 | 0.7 | C | 0 | | • |
| MTECD 0604C14 0.8ISO | 0.800 | M5 | 6.00 | 4.00 | 3 | 14.4 | 58.00 | 0.30 | 0.8 | C | 0 | • | |
| MTECD 08047C14 1.0ISO | 1.000 | M6-M9 | 8.00 | 4.70 | 3 | 14.0 | 64.00 | 0.40 | 1.0 | C | 1 | • | |
| MTECD 08061D18 1.25ISO | 1.250 | M8-M12 | 8.00 | 6.10 | 4 | 18.0 | 64.00 | 0.50 | 1.3 | C | 1 | • | |
| MTECD 08078D23 1.5ISO | 1.500 | M10-M15 | 8.00 | 7.80 | 4 | 23.0 | 64.00 | 0.60 | 1.5 | C | 1 | • | |
| MTECD 1009D26 1.75ISO | 1.750 | M12 | 10.00 | 9.00 | 4 | 26.0 | 73.00 | 0.60 | 1.8 | C | 1 | • | |
| MTECD 12118D35 2.0ISO | 2.000 | M16-M23 | 12.00 | 11.80 | 4 | 35.0 | 84.00 | 0.60 | 2.0 | C | 1 | • | |

• Thread hole, thread and chamfer by circular interpolation • For user guide, see pages 497-506

(1) Thread pitch

(2) Number of flutes

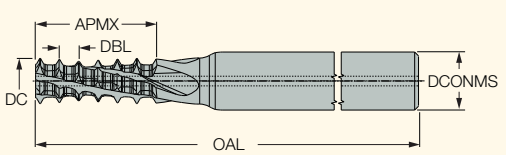
(3) C-Cylindrical

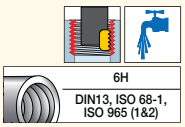
(4) 0 - Without coolant supply, 1 - With coolant supply

SOLIDMTHREAD

**MTECK-ISO**

Solid Carbide Internal Threading Endmill Step Release, Lead x2 With Coolant Hole, Used for ISO Thread Profile




| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pitch | M Coarse | M Fine | DBL | APMX | OAL | NOF(1) | DCONMS | DC | Shank | |
| MTECK 06032D8 0.5ISO | 0.500 | - | M4 | 1.00 | 8.20 | 58.00 | 4 | 6.00 | 3.20 | C | ● |
| MTECK 06031C9 0.7ISO | 0.700 | M4 | - | 1.40 | 8.70 | 58.00 | 3 | 6.00 | 3.10 | C | ● |
| MTECK 06039C10 0.8ISO | 0.800 | M5 | - | 1.60 | 10.80 | 58.00 | 3 | 6.00 | 3.90 | C | ● |
| MTECK 06047D12 1.0ISO | 1.000 | M6 | - | 2.00 | 12.50 | 58.00 | 4 | 6.00 | 4.70 | C | ● |
| MTECK 08063D16 1.25ISO | 1.250 | M8 | - | 2.50 | 16.90 | 64.00 | 4 | 8.00 | 6.30 | C | ● |
| MTECK 08079D21 1.5ISO | 1.500 | M11 | - | 3.00 | 21.70 | 64.00 | 4 | 8.00 | 7.90 | C | ● |
| MTECK 120117E28 1.5ISO | 1.500 | - | M16 | 3.00 | 29.30 | 94.00 | 5 | 12.00 | 11.70 | C | ● |
| MTECK 160125F33 1.5ISO | 1.500 | - | M16 | 3.00 | 33.70 | 93.00 | 6 | 16.00 | 12.50 | C | ● |
| MTECK10098E24 1.5ISO | 1.500 | - | M13 | 3.00 | 24.80 | 73.00 | 5 | 10.00 | 9.80 | C | ● |
| MTECK 10096D24 1.75ISO | 1.750 | M12 | - | 3.50 | 25.30 | 73.00 | 4 | 10.00 | 9.60 | C | ● |
| MTECK 12112D28 2.0ISO | 2.000 | M16 | - | 4.00 | 28.90 | 84.00 | 4 | 12.00 | 11.20 | C | ● |
| MTECK 16131E32 2.0ISO | 2.000 | M16 | - | 4.00 | 32.90 | 93.00 | 5 | 16.00 | 13.10 | C | ● |

New

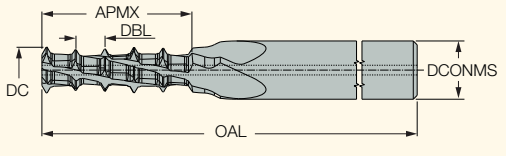
- For user guide, see pages 497-506

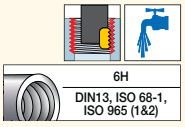
(1) Number of flutes

SOLIDMTHREAD

**MTECM-ISO**

Solid Carbide Internal Threading Endmill Step Release, Lead x3 With Coolant Holes, Used for ISO Thread Profile




| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pitch | M Coarse | M Fine | DBL | APMX | OAL | NOF(1) | DCONMS | DC | Shank | |
| MTECM 06031C11 0.7ISO | 0.700 | M4 | - | 2.10 | 10.80 | 58.00 | 3 | 6.00 | 3.10 | C | ● |
| MTECM 06039C12 0.8ISO | 0.800 | M5 | - | 2.40 | 13.20 | 58.00 | 3 | 6.00 | 3.90 | C | ● |
| MTECM 06047D14 1.0ISO | 1.000 | M6 | - | 3.00 | 15.40 | 58.00 | 4 | 6.00 | 4.70 | C | ● |
| MTECM 08079E21 1.0ISO | 1.000 | - | M10 | 3.00 | 21.40 | 64.00 | 5 | 8.00 | 7.90 | C | ● |
| MTECM 10096D32 1.75ISO | 1.750 | M12 | - | 5.25 | 32.30 | 81.00 | 4 | 10.00 | 9.60 | C | ● |
| MTECM 16131E42 2.0ISO | 2.000 | M16 | - | 6.00 | 42.90 | 105.00 | 5 | 16.00 | 13.10 | C | ● |

New

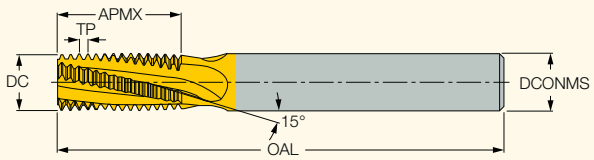
- For user guide, see pages 497-506

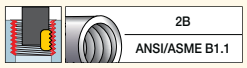
(1) Number of flutes

**SOLIDTHREAD**

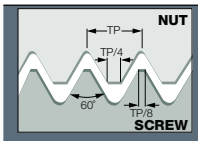
## MTEC-UN

Solid Carbide Threading Endmills for Internal UN Thread Profile




Application: General engineering



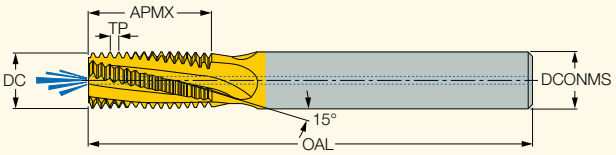

| Designation | TPI(1) | UNC | UNF | UNEF | DCONMS | DC | NOF(2) | APMX | OAL | Shank(3) | TP(4) | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dimensions | | | | | | | | | | | |
| MTEC 06025C6 40UN | 40.0 | 5 | - | - | 6.00 | 2.50 | 3 | 6.00 | 57.00 | C | 0.635 | • |
| MTEC 06032C6 32UN | 32.0 | 8 | 10 | 12 | 6.00 | 3.20 | 3 | 6.80 | 57.00 | C | 0.794 | • |
| MTEC 0604C11 28UN | 28.0 | - | 1/4 | - | 6.00 | 4.00 | 3 | 11.30 | 57.00 | C | 0.907 | • |
| MTEC 0606C14 28UN | 28.0 | - | - | 7/16,1/2 | 6.00 | 6.00 | 3 | 14.50 | 57.00 | C | 0.907 | • |
| MTEC 0605C14 24UN | 24.0 | - | 5/16 | - | 6.00 | 5.00 | 3 | 14.30 | 57.00 | C | 1.058 | • |
| MTEC 0807C21 24UN | 24.0 | - | 3/8 | 9/16,5/8 | 8.00 | 7.00 | 3 | 20.00 | 63.00 | C | 1.058 | • |
| MTEC 06045C12 20UN | 20.0 | 1/4 | - | - | 6.00 | 4.50 | 3 | 12.10 | 57.00 | C | 1.270 | • |
| MTEC 0807C21 20UN | 20.0 | - | 7/16,1/2 | - | 8.00 | 7.00 | 3 | 20.00 | 63.00 | C | 1.270 | • |
| MTEC 1212E27 20UN | 20.0 | - | - | 3/4,1 | 12.00 | 12.00 | 5 | 27.30 | 83.00 | C | 1.270 | • |
| MTEC 0605C14 18UN | 18.0 | 5/16 | - | - | 6.00 | 5.00 | 3 | 14.80 | 57.00 | C | 1.411 | • |
| MTEC 1010D26 18UN | 18.0 | - | 9/16,5/8 | 1-1/8,1-5/8 | 10.00 | 10.00 | 4 | 26.10 | 72.00 | C | 1.411 | • |
| MTEC 0606C16 16UN | 16.0 | 3/8 | - | - | 6.00 | 6.00 | 3 | 16.70 | 57.00 | C | 1.588 | • |
| MTEC 1212D31 16UN | 16.0 | - | 3/4 | - | 12.00 | 12.00 | 4 | 30.00 | 83.00 | C | 1.588 | • |
| MTEC 1615E37 14UN | 14.0 | - | 7/8 | - | 16.00 | 15.00 | 5 | 37.20 | 100.00 | C | 1.814 | • |
| MTEC 0808C22 13UN | 13.0 | 1/2 | - | - | 8.00 | 8.00 | 3 | 22.50 | 63.00 | C | 1.954 | • |
| MTEC 1010C26 12UN | 12.0 | 9/16 | - | - | 10.00 | 10.00 | 3 | 26.50 | 72.00 | C | 2.117 | • |
| MTEC 1616E41 12UN | 12.0 | - | 1,1-1/2 | - | 16.00 | 16.00 | 5 | 41.30 | 100.00 | C | 2.117 | • |
| MTEC 1010C28 11UN | 11.0 | 5/8 | - | - | 10.00 | 10.00 | 3 | 28.90 | 72.00 | C | 2.309 | • |
| MTEC 1212C34 10UN | 10.0 | 3/4 | - | - | 12.00 | 12.00 | 3 | 34.30 | 83.00 | C | 2.540 | • |
| MTEC 1615C38 9UN | 9.0 | 7/8 | - | - | 16.00 | 15.00 | 3 | 38.10 | 100.00 | C | 2.822 | • |
| MTEC 1616C42 8UN | 8.0 | 1.0 | - | - | 16.00 | 16.00 | 3 | 42.90 | 100.00 | C | 3.175 | • |

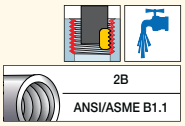
• For user guide, see pages 497-506
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

**SOLIDTHREAD**

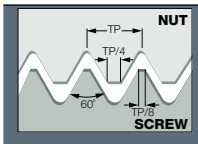
## MTECB-UN

Solid Carbide Threading Endmills with Coolant Hole for Internal UN Thread Profile




Application: General engineering



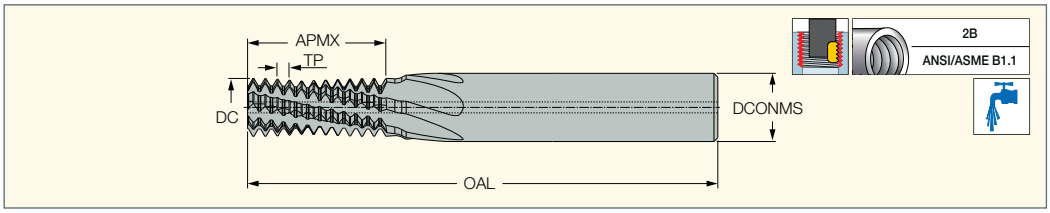

| Designation | TPI(1) | UNC | UNF | UNEF | DCONMS | DC | NOF(2) | APMX | OAL | Shank(3) | TP(4) | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dimensions | | | | | | | | | | | |
| MTECB 06032C6 32UN | 32.0 | 8 | 10 | 12 | 6.00 | 3.20 | 3 | 6.80 | 58.00 | C | 0.794 | • |
| MTECB 0606C14 32UN | 32.0 | - | - | 7/16-1/2 | 6.00 | 6.00 | 3 | 16.00 | 58.00 | C | 0.794 | • |
| MTECB 0808D18 32UN | 32.0 | - | - | 3/8 | 8.00 | 8.00 | 4 | 18.70 | 64.00 | C | 0.794 | • |
| MTECB 0605C11 28UN | 28.0 | - | 1/4 | - | 6.00 | 5.00 | 3 | 11.30 | 58.00 | C | 0.907 | • |
| MTECB 08066C14 24UN | 24.0 | - | 5/16 | - | 8.00 | 6.60 | 3 | 14.30 | 64.00 | C | 1.058 | • |
| MTECB 0808D21 24UN | 24.0 | - | - | 9/16-5/8 | 8.00 | 8.00 | 4 | 20.60 | 64.00 | C | 1.058 | • |
| MTECB 0808C21 20UN | 20.0 | - | 7/16 | - | 8.00 | 8.00 | 3 | 21.00 | 64.00 | C | 1.270 | • |
| MTECB 1010D22 20UN | 20.0 | - | 1/2 | - | 10.00 | 10.00 | 4 | 22.30 | 73.00 | C | 1.270 | • |
| MTECB 06056C14 18UN | 18.0 | 5/16 | - | - | 6.00 | 5.60 | 3 | 14.80 | 58.00 | C | 1.411 | • |
| MTECB 12113D26 18UN | 18.0 | - | 9/16-5/8 | 1-1/8_1-5/8 | 12.00 | 11.30 | 4 | 26.10 | 84.00 | C | 1.411 | • |
| MTECB 08067C16 16UN | 16.0 | 3/8 | - | - | 8.00 | 6.70 | 3 | 16.70 | 64.00 | C | 1.588 | • |
| MTECB 1212D31 16UN | 16.0 | - | 3/4 | - | 12.00 | 12.00 | 4 | 31.00 | 84.00 | C | 1.588 | • |
| MTECB 08077C20 14UN | 14.0 | 7/16 | - | - | 8.00 | 7.70 | 3 | 20.90 | 64.00 | C | 1.814 | • |
| MTECB 1616E37 14UN | 14.0 | - | 7/8 | - | 16.00 | 16.00 | 5 | 37.20 | 105.00 | C | 1.814 | • |
| MTECB 10092C22 13UN | 13.0 | 1/2 | - | - | 10.00 | 9.20 | 3 | 22.50 | 73.00 | C | 1.954 | • |
| MTECB 12114C28 11UN | 11.0 | 5/8 | - | - | 12.00 | 11.40 | 3 | 28.90 | 84.00 | C | 2.309 | • |
| MTECB 16144D34 10UN | 10.0 | 3/4 | - | - | 16.00 | 14.40 | 4 | 34.30 | 105.00 | C | 2.540 | • |
| MTECB 20195D42 8UN | 8.0 | 1 | - | - | 20.00 | 19.50 | 4 | 42.90 | 105.00 | C | 3.175 | • |

• For user guide, see pages 497-506
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

## SOLIDMTHREAD

**MTECBF-UN**

Solid Carbide Internal Threading Endmills with a Coolant Hole. Intended for UN Thread Profile




| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | UNC | UNF | UNEF | DCONMS | DC | NOF[2] | APMX | OAL | Shank | |
| MTECBF 16116F26 12UN | 12.0 | 5/8 | 1/1-1/2 | - | 16.00 | 11.60 | 6 | 26.40 | 105.00 | C | ● |
| MTECBF 12098F24 13UN | 13.0 | 1/2 | - | - | 12.00 | 9.80 | 6 | 24.30 | 84.00 | C | ● |
| MTECBF 10085F20 14UN | 14.0 | 7/16 | - | - | 10.00 | 8.50 | 6 | 20.80 | 73.00 | C | ● |
| MTECBF 10074F16 16UN | 16.0 | 3/8 | - | - | 10.00 | 7.40 | 6 | 16.60 | 73.00 | C | ● |
| MTECBF 16125H26 18UN | 18.0 | - | 9/16, 5/8 | 11/16 | 16.00 | 12.50 | 8 | 26.00 | 105.00 | C | ● |
| MTECBF 0806F14 18UN | 18.0 | 5/16 | - | - | 8.00 | 6.00 | 6 | 14.70 | 64.00 | C | ● |
| MTECBF 10092H21 20UN | 20.0 | - | 7/16 | - | 10.00 | 9.20 | 8 | 20.90 | 73.00 | C | ● |
| MTECBF 12092H21 20UN | 20.0 | - | 7/16 | - | 12.00 | 9.20 | 8 | 20.90 | 84.00 | C | ● |
| MTECBF 06048E12 20UN | 20.0 | 1/4 | - | - | 6.00 | 4.80 | 5 | 12.00 | 58.00 | C | ● |
| MTECBF 08066G14 24UN | 24.0 | - | 5/16 | - | 8.00 | 6.60 | 7 | 14.20 | 64.00 | C | ● |
| MTECBF 10066G14 24UN | 24.0 | - | 5/16 | - | 10.00 | 6.60 | 7 | 14.20 | 73.00 | C | ● |

New

- For user guide, see pages 497-506 • Internal & External tolerance: ISO 228-1 - Medium class

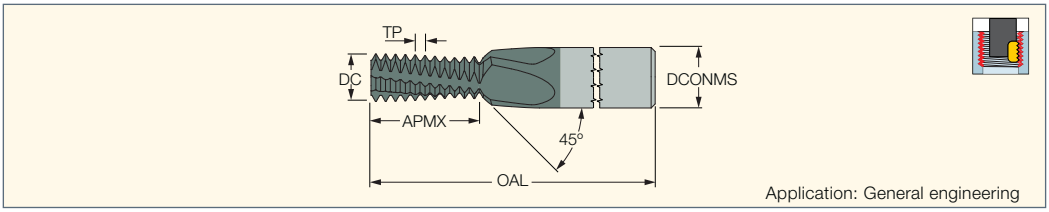
(1) Threads per inch

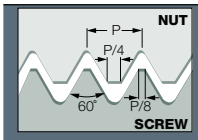
(2) Number of flutes

## SOLIDTHREAD

**MTECH-UN**

Small Diameter Solid Carbide Internal UN Profile Threading and Chamfering Endmills, for Hard Materials




| Designation | Dimensions | | | | | | | | | | IC902 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | UNC | UNF | UNEF | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | |
| MTECH 06026C5 32UN 902 | 32.0 | 6 | 999 | 999 | 6.00 | 2.60 | 3 | 6.70 | 58.00 | C | ● |
| MTECH 06048C12 20UN 902 | 20.0 | 1/4 | - | - | 6.00 | 4.80 | 3 | 12.10 | 58.00 | C | ● |
| MTECH 08057C14 18UN 902 | 18.0 | 5/16 | 9/16, 5/8 | 11/16 | 8.00 | 5.70 | 3 | 14.80 | 64.00 | C | ● |
| MTECH 10074C16 16UN 902 | 16.0 | 3/8 | 3/4 | - | 10.00 | 7.40 | 3 | 16.70 | 73.00 | C | ● |
| MTECH 12094D22 13UN 902 | 13.0 | 1/2 | - | - | 12.00 | 9.40 | 4 | 22.50 | 84.00 | C | ● |

New

- For user guide, see pages 497-506

(1) Threads per inch

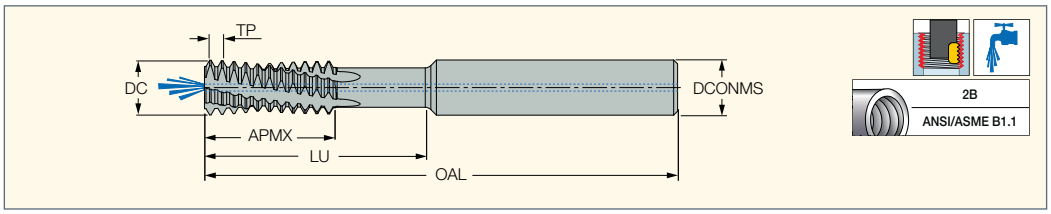
(2) Number of flutes

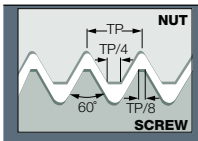
(3) C-Cylindrical

SOLIDTHREAD

## MTECQ-UN

Solid Carbide Endmills with Internal Coolant Holes and a Reduced Diameter Neck, for Deep Internal UN Profile Threading




| Designation | TPI[1] | TDZ | DCONMS | DC | NOF[2] | APMX | LU | OAL | Shank[3] | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| MTECQ 1010D30 20UN | 20.0 | >=12 | 10.00 | 10.00 | 4 | 17.80 | 30.5 | 73.00 | C | ● |
| MTECQ 1616F43 20UN | 20.0 | >=18 | 16.00 | 16.00 | 6 | 25.40 | 43.2 | 105.00 | C | ● |
| MTECQ 1616E42 16UN | 16.0 | >=19 | 16.00 | 16.00 | 5 | 25.40 | 42.9 | 105.00 | C | ● |
| MTECQ 1212D42 12UN | 12.0 | >=16 | 12.00 | 12.00 | 4 | 25.40 | 42.3 | 84.00 | C | ● |

New

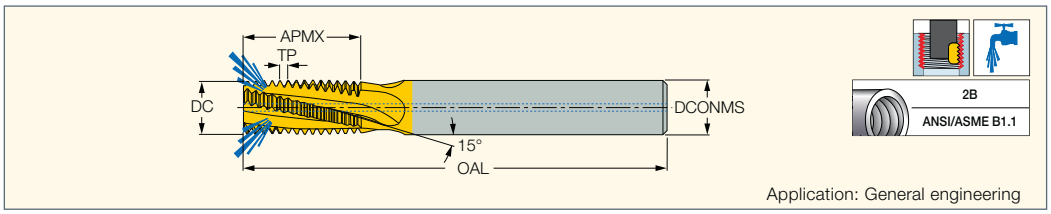
- For user guide, see pages 497-506

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

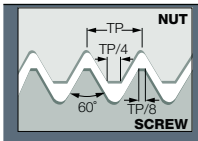
SOLIDTHREAD

## MTECZ-UN

Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes for Internal UN Thread Profiles




Application: General engineering




| Designation | TPI[1] | UNC | UNF | UNEF | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | TP[4] | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MTECZ 1010D22 20UN | 20.0 | - | 1/2 | - | 10.00 | 10.00 | 4 | 22.30 | 73.00 | C | 1.270 | ● |
| MTECZ 1212E27 20UN | 20.0 | - | - | 3/4_1 | 12.00 | 12.00 | 5 | 27.30 | 84.00 | C | 1.270 | ● |
| MTECZ 12113D26 18UN | 18.0 | - | 9/16-5/8 | 1_1/8-1_5/8 | 12.00 | 11.30 | 4 | 26.10 | 84.00 | C | 1.411 | ● |
| MTECZ 08067C16 16UN | 16.0 | 3/8 | - | - | 8.00 | 6.70 | 3 | 16.70 | 64.00 | C | 1.588 | ● |
| MTECZ 1212D31 16UN | 16.0 | - | 3/4 | - | 12.00 | 12.00 | 4 | 31.00 | 84.00 | C | 1.588 | ● |
| MTECZ 12114C28 11UN | 11.0 | 5/8 | - | - | 12.00 | 11.40 | 3 | 28.90 | 84.00 | C | 2.309 | ● |
| MTECZ 16144D34 10UN | 10.0 | 3/4 | - | - | 16.00 | 14.40 | 4 | 34.30 | 101.00 | C | 2.540 | ● |

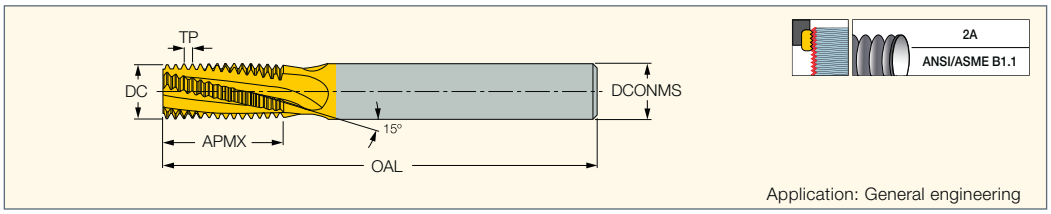
- With internal coolant hole
- For user guide, see pages 497-506

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

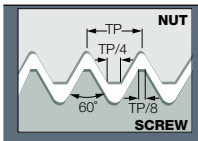
SOLIDTHREAD

## MTEC E-UN

Solid Carbide Threading Endmills with UN Form for External Threading




Application: General engineering




| Designation | TPI[1] | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | IC908 |
|---|---|---|---|---|---|---|---|---|
| MTEC E 1010D16 24UN | 24.0 | 10.00 | 10.00 | 4 | 16.40 | 73.00 | C | ● |
| MTEC E 1212E21 20UN | 20.0 | 12.00 | 12.00 | 5 | 21.00 | 84.00 | C | ● |
| MTEC E 1212D20 12UN | 12.0 | 12.00 | 12.00 | 4 | 20.10 | 84.00 | C | ● |

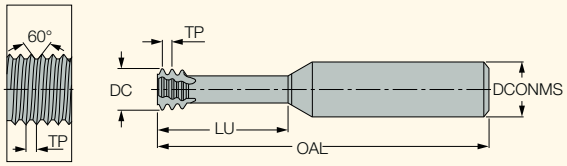
- For user guide, see pages 497-506

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

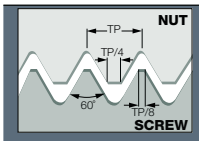
**SOLIDTHREAD**

## MTECS-UN

Small Diameter Solid Carbide UN Profile Threading Endmills for Steel



Application: General engineering




| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | TPI[2] | TP[3] | LU | OAL | DCONMS | UNC | UNF | NOF[4] | Shank[5] | |
| MTECS 03012C8 80UN | 1.15 | 80.0 | 0.318 | 8.0 | 39.00 | 3.00 | - | 0 | 3 | C | ● |
| MTECS 03015C6 72UN [1] | 1.45 | 72.0 | 0.353 | 6.0 | 39.00 | 3.00 | - | 1 | 3 | C | ● |
| MTECS 03016C6 56UN | 1.65 | 56.0 | 0.454 | 6.6 | 39.00 | 3.00 | 2 | 3 | 3 | C | ● |
| MTECS 03016C9 56UN | 1.65 | 56.0 | 0.454 | 9.2 | 39.00 | 3.00 | 2 | 3 | 3 | C | ● |
| MTECS 03016C11 56UN | 1.65 | 56.0 | 0.454 | 11.4 | 39.00 | 3.00 | 2 | 3 | 3 | C | ● |
| MTECS 06016C4 56UN | 1.65 | 56.0 | 0.454 | 4.4 | 58.00 | 6.00 | 2 | 3 | 3 | C | ● |
| MTECS 06016C6 56UN | 1.65 | 56.0 | 0.454 | 6.6 | 58.00 | 6.00 | 2 | 3 | 3 | C | ● |
| MTECS 06016C6 56UN-L | 1.65 | 56.0 | 0.454 | 6.6 | 100.00 | 6.00 | 2 | 3 | 3 | C | ● |
| MTECS 06019C5 48UN | 1.90 | 48.0 | 0.529 | 5.2 | 58.00 | 6.00 | 3 | 4 | 3 | C | ● |
| MTECS 03021C8 40UN | 2.10 | 40.0 | 0.635 | 8.0 | 39.00 | 3.00 | 4 | - | 3 | C | ● |
| MTECS 03021C12 40UN | 2.10 | 40.0 | 0.635 | 12.0 | 39.00 | 3.00 | 4 | - | 3 | C | ● |
| MTECS 06021C8 40UN | 2.10 | 40.0 | 0.635 | 8.0 | 58.00 | 6.00 | 4 | - | 3 | C | ● |
| MTECS 06021C8 40UN-L | 2.10 | 40.0 | 0.635 | 8.0 | 100.00 | 6.00 | 4 | - | 3 | C | ● |
| MTECS 06024C9 40UN | 2.45 | 40.0 | 0.635 | 9.6 | 58.00 | 6.00 | 5 | 6 | 3 | C | ● |
| MTECS 06021C6 40UN | 2.10 | 40.0 | 0.635 | 6.3 | 58.00 | 6.00 | 4 | - | 3 | C | ● |
| MTECS 06021C6 40UN-L | 2.10 | 40.0 | 0.635 | 6.3 | 100.00 | 6.00 | 4 | - | 3 | C | ● |
| MTECS 06033C9 36UN | 3.30 | 36.0 | 0.706 | 9.0 | 58.00 | 6.00 | - | 8 | 3 | C | ● |
| MTECS 03025C14 32UN | 2.55 | 32.0 | 0.794 | 14.8 | 39.00 | 3.00 | 6 | - | 3 | C | ● |
| MTECS 06025C7 32UN | 2.55 | 32.0 | 0.794 | 7.1 | 58.00 | 6.00 | 6 | - | 3 | C | ● |
| MTECS 06025C10 32UN | 2.55 | 32.0 | 0.794 | 10.5 | 58.00 | 6.00 | 6 | - | 3 | C | ● |
| MTECS 06025C10 32UN-L | 2.55 | 32.0 | 0.794 | 10.5 | 100.00 | 6.00 | 6 | - | 3 | C | ● |
| MTECS 06032C9 32UN | 3.20 | 32.0 | 0.794 | 9.5 | 58.00 | 6.00 | 8 | 10 | 3 | C | ● |
| MTECS 06032C12 32UN | 3.20 | 32.0 | 0.794 | 12.5 | 58.00 | 6.00 | 8 | 10 | 3 | C | ● |
| MTECS 06037C10 32UN | 3.70 | 32.0 | 0.794 | 10.5 | 58.00 | 6.00 | - | 10 | 3 | C | ● |
| MTECS 06037C15 32UN | 3.70 | 32.0 | 0.794 | 15.0 | 58.00 | 6.00 | - | 10 | 3 | C | ● |
| MTECS 06037C15 32UN-L | 3.70 | 32.0 | 0.794 | 15.0 | 101.00 | 6.00 | - | 10 | 3 | C | ● |
| MTECS 06042C11 28UN | 4.20 | 28.0 | 0.907 | 11.0 | 58.00 | 6.00 | - | 12 | 3 | C | ● |
| MTECS 0605C14 28UN | 5.00 | 28.0 | 0.907 | 14.5 | 58.00 | 6.00 | - | 1/4 | 3 | C | ● |
| MTECS 0605C19 28UN | 5.00 | 28.0 | 0.907 | 19.0 | 58.00 | 6.00 | - | 1/4 | 3 | C | ● |
| MTECS 06035C10 24UN | 3.50 | 24.0 | 1.058 | 10.6 | 58.00 | 6.00 | 10,12 | - | 3 | C | ● |
| MTECS 06035C15 24UN | 3.50 | 24.0 | 1.058 | 15.5 | 58.00 | 6.00 | 10,12 | - | 3 | C | ● |
| MTECS 08066C17 24UN | 6.60 | 24.0 | 1.058 | 17.0 | 64.00 | 8.00 | - | 5/16 | 3 | C | ● |
| MTECS 08066C24 24UN | 6.60 | 24.0 | 1.058 | 24.0 | 64.00 | 8.00 | - | 5/16 | 3 | C | ● |
| MTECS 06047C14 20UN | 4.75 | 20.0 | 1.270 | 14.0 | 58.00 | 6.00 | 1/4 | - | 3 | C | ● |
| MTECS 06047C19 20UN | 4.75 | 20.0 | 1.270 | 19.0 | 58.00 | 6.00 | 1/4 | - | 3 | C | ● |
| MTECS 06047C19 20UN-L | 4.75 | 20.0 | 1.270 | 19.0 | 100.00 | 6.00 | 1/4 | - | 3 | C | ● |
| MTECS 0808C25 20UN | 8.00 | 20.0 | 1.270 | 25.0 | 64.00 | 8.00 | - | 7/16 | 3 | C | ● |
| MTECS 0808C34 20UN | 8.00 | 20.0 | 1.270 | 34.6 | 64.00 | 8.00 | - | 7/16 | 3 | C | ● |
| MTECS 0606C17 18UN | 6.00 | 18.0 | 1.411 | 17.0 | 58.00 | 6.00 | 5/16 | - | 3 | C | ● |
| MTECS 0606C23 18UN | 6.00 | 18.0 | 1.411 | 23.0 | 58.00 | 6.00 | 5/16 | - | 3 | C | ● |
| MTECS 1212D35 18UN | 12.00 | 18.0 | 1.411 | 35.0 | 84.00 | 12.00 | - | 5/8 | 4 | C | ● |
| MTECS 08067C22 16UN | 6.70 | 16.0 | 1.588 | 22.0 | 64.00 | 8.00 | 3/8 | - | 3 | C | ● |
| MTECS 08067C30 16UN | 6.70 | 16.0 | 1.588 | 30.2 | 64.00 | 8.00 | 3/8 | - | 3 | C | ● |
| MTECS 08077C25 14UN | 7.70 | 14.0 | 1.814 | 25.0 | 64.00 | 8.00 | 7/16 | - | 3 | C | ● |
| MTECS 08077C35 14UN | 7.70 | 14.0 | 1.814 | 35.2 | 64.00 | 8.00 | 7/16 | - | 3 | C | ● |
| MTECS 10092C27 13UN | 9.20 | 13.0 | 1.954 | 27.5 | 73.00 | 10.00 | 1/2 | - | 3 | C | ● |
| MTECS 12114C34 11UN | 11.40 | 11.0 | 2.309 | 34.5 | 84.00 | 12.00 | 5/8 | - | 3 | C | ● |
| MTECS 12114C50 11UN | 11.40 | 11.0 | 2.309 | 50.0 | 101.00 | 12.00 | 5/8 | - | 3 | C | ● |
| MTECS 16144D41 10UN | 14.40 | 10.0 | 2.540 | 41.5 | 105.00 | 16.00 | 3/4 | - | 4 | C | ● |

• For user guide, see pages 497-506

[1] Specially designed for the production of dental implants

[2] Threads per inch

[3] Thread pitch

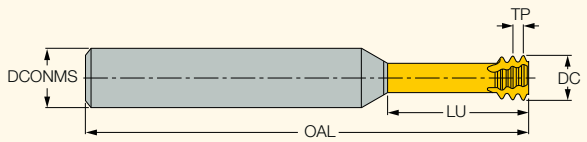
[4] Number of flutes

[5] C-Cylindrical

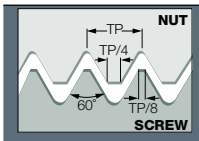
**SOLIDTHREAD**

## MTECSH-UN

Small Diameter Short Left-Hand Cut Solid Carbide UN Profile Threading Endmills for Hardened Steel




Left-hand tools (CNC code M04) • Application: General engineering




| Designation | Dimensions | | | | | | | | | | IC903 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | TPI[1] | UNC | UNF | LU | OAL | DCONMS | NOF[2] | Shank[3] | TP[4] | |
| MTECSH 03015C6 72UN | 1.45 | 72.0 | - | 1 | 6.0 | 39.00 | 3.00 | 3 | C | 0.353 | ● |
| MTECSH 06012C4 80UN | 1.15 | 80.0 | - | 0 | 4.0 | 58.00 | 6.00 | 3 | C | 0.318 | ● |
| MTECSH 06016C6 56UN | 1.65 | 56.0 | 2 | 3 | 6.6 | 58.00 | 6.00 | 3 | C | 0.454 | ● |
| MTECSH 06019C5 48UN | 1.90 | 48.0 | 3 | 4 | 5.2 | 58.00 | 6.00 | 3 | C | 0.529 | ● |
| MTECSH 06021C6 40UN | 2.10 | 40.0 | 4 | - | 6.3 | 58.00 | 6.00 | 3 | C | 0.635 | ● |
| MTECSH 06024C7 40UN | 2.45 | 40.0 | 5 | 6 | 7.0 | 58.00 | 6.00 | 3 | C | 0.635 | ● |
| MTECSH 06021C8 40UN | 2.10 | 40.0 | 4 | - | 8.0 | 58.00 | 6.00 | 3 | C | 0.635 | ● |
| MTECSH 06024C9 40UN | 2.45 | 40.0 | 5 | 6 | 9.6 | 58.00 | 6.00 | 3 | C | 0.635 | ● |
| MTECSH 06025C7 32UN | 2.55 | 32.0 | 6 | - | 7.1 | 58.00 | 6.00 | 3 | C | 0.794 | ● |
| MTECSH 06025C10 32UN | 2.55 | 32.0 | 6 | - | 10.5 | 58.00 | 6.00 | 3 | C | 0.794 | ● |
| MTECSH 06032C9 32UN | 3.20 | 32.0 | 8 | - | 9.5 | 58.00 | 6.00 | 3 | C | 0.794 | ● |
| MTECSH 06037C10 32UN | 3.70 | 32.0 | - | 10 | 10.5 | 58.00 | 6.00 | 3 | C | 0.794 | ● |
| MTECSH 06032C12 32UN | 3.20 | 32.0 | 8 | - | 12.5 | 58.00 | 6.00 | 3 | C | 0.794 | ● |
| MTECSH 06037C15 32UN | 3.70 | 32.0 | - | 10 | 15.0 | 58.00 | 6.00 | 3 | C | 0.794 | ● |
| MTECSH 06042C11 28UN | 4.20 | 28.0 | - | 12 | 11.0 | 58.00 | 6.00 | 3 | C | 0.907 | ● |
| MTECSH 0605C14 28UN | 5.00 | 28.0 | - | 1/4 | 14.5 | 58.00 | 6.00 | 3 | C | 0.907 | ● |
| MTECSH 0605C19 28UN | 5.00 | 28.0 | - | 1/4 | 19.0 | 58.00 | 6.00 | 3 | C | 0.907 | ● |
| MTECSH 06035C10 24UN | 3.50 | 24.0 | 10,12 | - | 10.6 | 58.00 | 6.00 | 3 | C | 1.058 | ● |
| MTECSH 08066C17 24UN | 6.60 | 24.0 | - | 5/16 | 17.0 | 64.00 | 8.00 | 3 | C | 1.058 | ● |
| MTECSH 08066C24 24UN | 6.60 | 24.0 | - | 5/16 | 24.0 | 64.00 | 8.00 | 3 | C | 1.058 | ● |
| MTECSH 06047C14 20UN | 4.75 | 20.0 | 1/4 | - | 14.0 | 58.00 | 6.00 | 3 | C | 1.270 | ● |
| MTECSH 06047C19 20UN | 4.75 | 20.0 | 1/4 | - | 19.0 | 58.00 | 6.00 | 3 | C | 1.270 | ● |
| MTECSH 0808C25 20UN | 8.00 | 20.0 | - | 7/16 | 25.0 | 64.00 | 8.00 | 3 | C | 1.270 | ● |
| MTECSH 0606C17 18UN | 6.00 | 18.0 | 5/16 | - | 17.0 | 58.00 | 6.00 | 3 | C | 1.411 | ● |
| MTECSH 0606C23 18UN | 6.00 | 18.0 | 5/16 | - | 23.0 | 58.00 | 6.00 | 3 | C | 1.411 | ● |
| MTECSH 08067C22 16UN | 6.70 | 16.0 | 3/8 | - | 22.0 | 64.00 | 8.00 | 3 | C | 1.588 | ● |
| MTECSH 08077C25 14UN | 7.70 | 14.0 | 7/16 | - | 25.0 | 64.00 | 8.00 | 3 | C | 1.814 | ● |
| MTECSH 10092C27 13UN | 9.20 | 13.0 | 1/2 | - | 27.5 | 73.00 | 10.00 | 3 | C | 1.954 | ● |
| MTECSH 12114C34 11UN | 11.40 | 11.0 | 5/8 | - | 34.5 | 84.00 | 12.00 | 3 | C | 2.309 | ● |

• For user guide, see pages 497-506

(1) Threads per inch

(2) Number of flutes

(3) C-Cylindrical

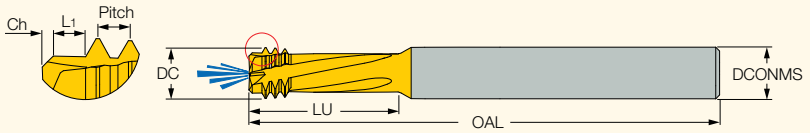
(4) Thread pitch

## Machining Data for Solid Carbide Thread Mills for Small Internal Threads in Hard Materials

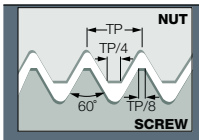
| ISO | Material | Hardness HRC | Cutting Speed m/min | Feed mm/tooth for Cutting Diameter (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1.5 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| H | hardened steels | 45-50 | 60-70 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.06 | 0.07 | 0.07 | 0.08 |
| | | 51-55 | 50-60 | 0.03 | 0.03 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.06 | 0.07 |
| | | 56-62 | 40-50 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 |

## SOLIDTHREAD

**MTECD-UN**
Small Diameter, Short, Left Hand, Internal UN Profile Endmills for Drilling, Threading and Chamfering




Left-hand tools (CNC code M04) • Application: General engineering • Coolant holes only in 28-16 TPI tools




| Designation | TPI[1] | CNT | DCONMS | DC | NOF[2] | LU | OAL | Ch | L1 | Shank[3] | CSP[4] | ULDR[5] | THFT | Tough ↔ Hard IC908 | IC903 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MTECD 06033C12 36UN** | 36.0 | 8 | 6.00 | 3.30 | 3 | 12.0 | 58.00 | 0.2 | 0.7 | C | 0 | 999.0 | UN60 | ● | |
| **MTECD 06032C12 32UN** | 32.0 | 8 | 6.00 | 3.20 | 3 | 12.3 | 58.00 | 0.3 | 0.8 | C | 0 | 999.0 | UN60 | ● | |
| **MTECD 06038C14 32UN** | 32.0 | 10 | 6.00 | 3.80 | 3 | 14.0 | 58.00 | 0.3 | 0.8 | C | 0 | 999.0 | UN60 | ● | |
| **MTECD 0805C14 28UN** | 28.0 | 1/4-3/8 | 8.00 | 5.00 | 3 | 14.5 | 64.00 | 0.4 | 0.9 | C | 1 | 999.0 | UN60 | ● | |
| **MTECD 08065D17 24UN** | 24.0 | 5/16-1/2 | 8.00 | 6.50 | 4 | 17.0 | 64.00 | 0.5 | 1.1 | C | 1 | 999.0 | UN60 | ● | |
| **MTECD 08048C14 20UN** | 20.0 | 1/4-3/8 | 8.00 | 4.80 | 3 | 14.0 | 64.00 | 0.4 | 1.3 | C | 1 | 999.0 | UN60 | ● | |
| **MTECD 0806D17 18UN** | 18.0 | 5/16-7/16 | 8.00 | 6.00 | 4 | 17.0 | 64.00 | 0.5 | 1.4 | C | 1 | 999.0 | UN60 | ● | |
| **MTECD 08067C22 16UN** | 16.0 | 3/8-1/2 | 8.00 | 6.70 | 3 | 22.0 | 64.00 | 0.5 | 1.6 | C | 1 | 999.0 | UN60 | ● | |
| **MTECDH 08067C22 16UN** | 16.0 | 3/8-1/2 | 8.00 | 6.70 | 3 | 22.0 | 64.00 | 0.5 | 1.6 | C | 1 | 999.0 | UN60 | | ● |

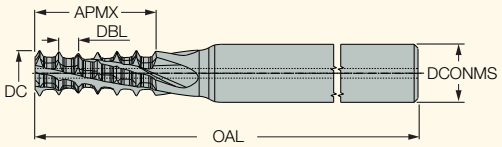
**New**

- Thread hole, thread and chamfer are made by circular interpolation
- For user guide, see pages 497-506

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) 0 - Without coolant supply, 1 - With coolant supply
(5) Usable length diameter ratio

## SOLIDMTHREAD

**MTECK-UN**
Solid Carbide Internal Threading Endmill Step Release, Lead x2 With Coolant Hole, Used for UN Thread Profiles




| Designation | TPI[1] | UNC | UNF | DBL | APMX | OAL | DCONMS | DC | Shank | NOF[2] | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MTECK 1298D25 13UN** | 13.0 | 1/2 | | 3.91 | 26.30 | 84.00 | 12.00 | 9.80 | C | 4 | ● |
| **MTECK 08074D19 16UN** | 16.0 | 3/8 | | 3.17 | 19.80 | 64.00 | 8.00 | 7.40 | C | 4 | ● |
| **MTECK 12011E29 18UN** | 18.0 | | 9/16 | 2.82 | 30.40 | 84.00 | 12.00 | 11.00 | C | 5 | ● |
| **MTECK 0250D67 18UN** | 18.0 | 5/16 | | 2.82 | 17.60 | 63.50 | 6.35 | 6.10 | C | 4 | ● |
| **MTECK 08061D17 18UN** | 18.0 | 5/16 | | 2.82 | 17.60 | 64.00 | 8.00 | 6.10 | C | 4 | ● |
| **MTECK 08061D22 18UN** | 18.0 | 5/16 | | 2.82 | 23.20 | 76.00 | 8.00 | 6.10 | C | 4 | ● |
| **MTECK 0250C50 20UN** | 20.0 | 1/4 | | 2.54 | 13.30 | 63.50 | 6.35 | 4.70 | C | 3 | ● |
| **MTECK 06035C10 24UN** | 24.0 | #10 | | 2.12 | 11.00 | 58.00 | 6.00 | 3.50 | C | 3 | ● |
| **MTECK 0250D50 28UN** | 28.0 | | 1/4 | 1.81 | 13.10 | 63.50 | 6.35 | 5.00 | C | 4 | ● |
| **MTECK 0250C34 32UN** | 32.0 | #8 | | 1.59 | 9.10 | 63.50 | 6.35 | 3.10 | C | 3 | ● |

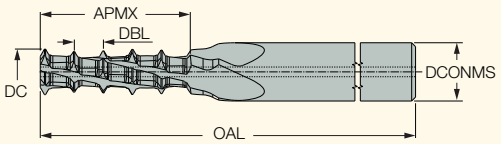
**New**

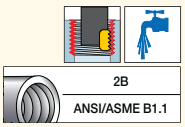
- For user guide, see pages 497-506

(1) Threads per inch
(2) Number of flutes

## SOLIDMTHREAD

**MTECM-UN**
Solid Carbide Internal Threading Endmill Step Release, Lead x3 With Coolant Hole, Used for UN Thread Profiles




| Designation | Dimensions | | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | UNC | UNF | UNEF | DBL | APMX | OAL | DCONMS | DC | Shank | NOF[2] | |
| MTECM 0312D09 16UN | 16.0 | 3/8 | - | - | 4.76 | 24.50 | 63.50 | 7.94 | 7.40 | C | 4 | ● |
| MTECM 0250C65 20UN | 20.0 | 1/4 | - | - | 3.81 | 17.10 | 63.50 | 6.35 | 4.70 | C | 3 | ● |
| MTECM 06047C16 20UN | 20.0 | 1/4 | - | - | 3.81 | 17.10 | 58.00 | 6.00 | 4.70 | C | 3 | ● |
| MTECM 0250C50 24UN | 24.0 | #10 | - | - | 3.17 | 13.20 | 63.50 | 6.35 | 3.50 | C | 3 | ● |
| MTECM 0250C28 32UN | 32.0 | #8 | - | - | 2.38 | 7.50 | 63.50 | 6.35 | 3.10 | C | 3 | ● |

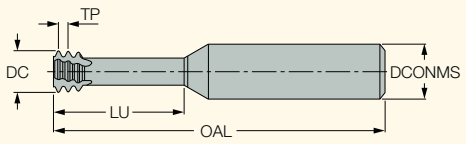
New

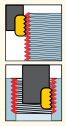
- For user guide, see pages 497-506

(1) Threads per inch
(2) Number of flutes

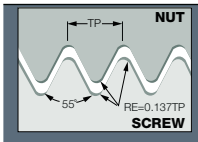
## SOLIDTHREAD

**MTECS-W**
Short Solid Carbide Threading Endmills for Internal or External BSP and BSF Thread Profiles



Application: General engineering fittings and pipe couplings



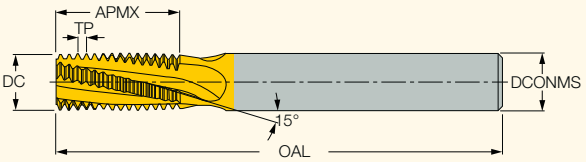

| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | DC | TPI[1] | LU | OAL | DCONMS | TDZ | NOF[2] | Shank[3] | |
| MTECS 08078C19 28W | 7.80 | 28.0 | 19.5 | 64.00 | 8.00 | G 1/8 | 3 | C | ● |
| MTECS 1010D30 19W | 10.00 | 19.0 | 30.0 | 73.00 | 10.00 | G 1/4-3/8 | 4 | C | ● |
| MTECS 1212D37 14W | 12.00 | 14.0 | 37.0 | 84.00 | 12.00 | G 1/2-7/8 | 4 | C | ● |
| MTECS 1616D44 11W | 16.00 | 11.0 | 44.0 | 105.00 | 16.00 | G>1 | 4 | C | ● |

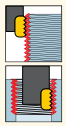
- For user guide, see pages 497-506 • Internal & External tolerance: ISO 228-1 - Medium class

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

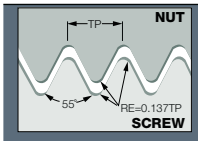
## SOLIDTHREAD

**MTEC-W**
Solid Carbide Threading Endmills for Internal or External BSF/BSP Thread Profiles



Application: General engineering fittings and pipe couplings



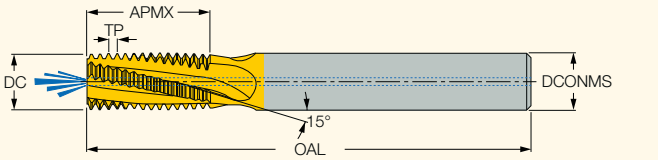

| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | TDZ | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | |
| MTEC 0606C9 28W | 28.0 | G1/8 | 6.00 | 6.00 | 3 | 9.50 | 58.00 | C | ● |
| MTEC 0808C14 19W | 19.0 | G1/4,G3/8 | 8.00 | 8.00 | 3 | 14.00 | 64.00 | C | ● |
| MTEC 1212D19 14W | 14.0 | G1/2,G7/8 | 12.00 | 12.00 | 4 | 19.30 | 84.00 | C | ● |
| MTEC 1212D26 14W | 14.0 | G1/2,G7/8 | 12.00 | 12.00 | 4 | 26.30 | 84.00 | C | ● |
| MTEC 1212C24 11W | 11.0 | G1,-G1-1/2 | 12.00 | 12.00 | 3 | 24.20 | 84.00 | C | ● |
| MTEC 1616D38 11W | 11.0 | G1,G3 | 16.00 | 16.00 | 4 | 38.10 | 101.00 | C | ● |

- For user guide, see pages 497-506 • Internal & External tolerance: ISO 228-1 - Medium class

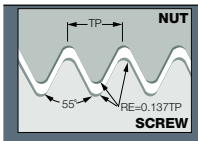
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

## SOLIDTHREAD

**MTECB-W**
Solid Carbide Internal or External Threading Endmills with Coolant Hole for BSF/BSP Thread Profiles




Application: General engineering fittings and pipe couplings

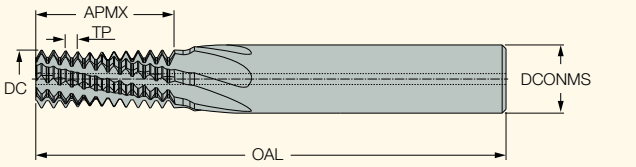



| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | TDZ | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | |
| MTECB 08078C14 28W | 28.0 | G1/8 | 8.00 | 7.80 | 3 | 14.10 | 64.00 | C | ● |
| MTECB 1010D16 19W | 19.0 | G1/4-3/8 | 10.00 | 10.00 | 4 | 16.70 | 73.00 | C | ● |
| MTECB 1616E26 14W | 14.0 | G1/2-7/8 | 16.00 | 16.00 | 5 | 26.30 | 105.00 | C | ● |
| MTECB 1616D38 11W | 11.0 | G=>1 | 16.00 | 16.00 | 4 | 38.10 | 105.00 | C | ● |
| MTECB 2020E47 11W | 11.0 | G=>1 | 20.00 | 20.00 | 5 | 47.30 | 105.00 | C | ● |

• For user guide, see pages 497-506 • Internal & External tolerance: ISO 228-1 - Medium class
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

## SOLIDMTHREAD

**MTECBF-W**
Solid Carbide Internal or External Threading Endmills with a Coolant Hole. Intended for BSF/BSP Thread Profiles

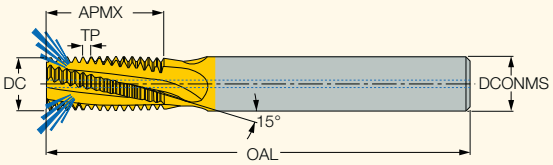



| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | TDZ | DCONMS | DC | NOF[2] | APMX | OAL | Shank | |
| MTECBF 1616H38 11W | 11.0 | 7/18 | 16.00 | 16.00 | 8 | 37.90 | 105.00 | C | ● |
| MTECBF 1614H26 14W | 14.0 | 1/2-7/8 | 16.00 | 14.00 | 8 | 26.20 | 105.00 | C | ● |
| MTECBF 1010G16 19W | 19.0 | 1/4-3/8 | 10.00 | 10.00 | 7 | 16.00 | 73.00 | C | ● |
| MTECBF 08078H14 28W | 28.0 | 1/8 | 8.00 | 7.80 | 8 | 14.00 | 64.00 | C | ● |

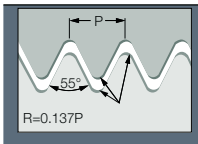
New
• For user guide, see pages 497-506 • Internal & External tolerance: B.S.84 - Medium class
(1) Threads per inch
(2) Number of flutes

## SOLIDTHREAD

**MTECZ-Whitworth**
Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes, for Internal or External Whitworth Thread




Application: General engineering fittings and pipe couplings



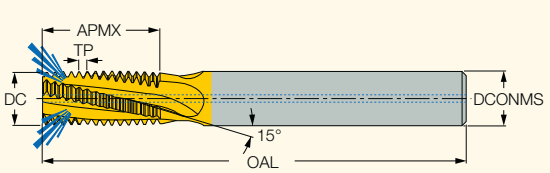

| Designation | Dimensions | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | BSW | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | THFT | |
| MTECZ 10092D24 16W | 16.0 | 1/2 | 10.00 | 9.20 | 4 | 24.60 | 73.00 | C | WH55 | ● |
| MTECZ 10086D24 12W | 12.0 | 1/2 | 10.00 | 8.60 | 4 | 24.40 | 73.00 | C | WH55 | ● |
| MTECZ 12109D28 11W | 11.0 | 5/8 | 12.00 | 10.90 | 4 | 28.90 | 84.00 | C | WH55 | ● |

New
• With internal coolant hole • For user guide, see pages 497-506 • Internal & External tolerance: B.S.84 - Medium class
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

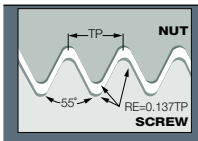
SOLIDTHREAD

## MTECZ-BSF/BSP

Solid Carbide Threading Endmills with Coolant Holes for Internal or External BSF/BSP Thread




Application: General engineering fittings and pipe couplings




| Designation | TPI[1] | TDZ | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | Dimensions | | | | | | | | |
| MTECZ 08078C14 28W | 28.0 | G1/8 | 8.00 | 7.80 | 3 | 14.10 | 64.00 | C | ● |
| MTECZ 1010D16 19W | 19.0 | G1/4-3/8 | 10.00 | 10.00 | 4 | 16.70 | 73.00 | C | ● |
| MTECZ 1616E26 14W | 14.0 | G1/2-7/8 | 16.00 | 16.00 | 5 | 26.30 | 101.00 | C | ● |
| MTECZ 1616D38 11W | 11.0 | G>1 | 16.00 | 16.00 | 4 | 38.10 | 101.00 | C | ● |

• With internal coolant hole • For user guide, see pages 497-506 • Internal & External tolerance: ISO 228-1 - Medium class

(1) Threads per inch

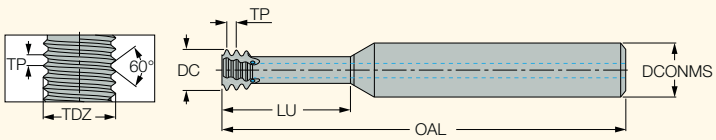
(2) Number of flutes

(3) C-Cylindrical

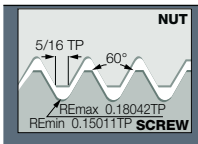
SOLIDTHREAD

## MTECS-MJ

Small Diameter Short Solid Carbide MJ-Type Profile Threading Endmills




Aerospace and automotive industries, for applications requiring high fatigue strength




| Designation | DC | TP[2] | LU | OAL | DCONMS | TDZ | NOF[3] | Shank[4] | CSP[5] | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Dimensions | | | | | | | | | |
| MTECS 06032C10 0.7MJ [1] | 3.20 | 0.700 | 10.0 | 58.00 | 6.00 | MJ4 | 3 | C | 0 | ● |
| MTECS 06039C12 0.8MJ [1] | 3.90 | 0.800 | 12.5 | 58.00 | 6.00 | MJ5 | 3 | C | 0 | ● |
| MTECS 06048C15 1.0MJ [1] | 4.80 | 1.000 | 15.0 | 58.00 | 6.00 | MJ6 | 3 | C | 0 | ● |
| MTECS 08061C20 1.25MJ | 6.10 | 1.250 | 20.0 | 64.00 | 8.00 | MJ8 | 3 | C | 1 | ● |
| MTECS 0808C25 1.5MJ | 8.00 | 1.500 | 25.0 | 64.00 | 8.00 | MJ10 | 3 | C | 1 | ● |
| MTECS 10092C30 1.75MJ | 9.20 | 1.750 | 30.0 | 73.00 | 10.00 | MJ12 | 3 | C | 1 | ● |
| MTECS 1010C35 2.0MJ | 10.00 | 2.000 | 35.0 | 73.00 | 10.00 | MJ14, MJ16 | 3 | C | 1 | ● |

• For user guide, see pages 497-506

(1) Without coolant holes

(2) Thread pitch

(3) Number of flutes

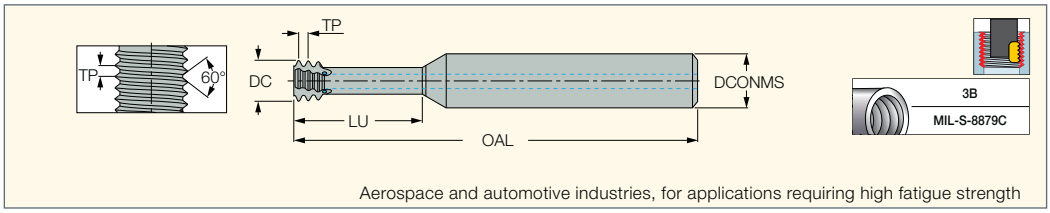
(4) C-Cylindrical

(5) 0 - Without coolant supply, 1 - With coolant supply

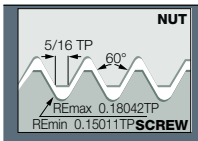
SOLIDTHREAD

## MTECS-UNJ

Small Diameter Short Solid Carbide UNJ-Type Profile Threading Endmills




Aerospace and automotive industries, for applications requiring high fatigue strength




| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | TPI[2] | UNJC | UNJF | LU | OAL | DCONMS | NOF[3] | Shank[4] | CSP[5] | |
| MTECS 06033C10 32UNJ [1] | 3.30 | 32.0 | 8 | 10 | 10.5 | 58.00 | 6.00 | 3 | C | 0 | ● |
| MTECS 08051C16 28UNJ | 5.10 | 28.0 | - | 1/4 | 16.0 | 64.00 | 8.00 | 3 | C | 1 | ● |
| MTECS 08067C20 24UNJ | 6.70 | 24.0 | - | 5/16, 3/8 | 20.0 | 64.00 | 8.00 | 3 | C | 1 | ● |
| MTECS 06049C16 20UNJ [1] | 4.90 | 20.0 | 1/4 | - | 16.0 | 58.00 | 6.00 | 3 | C | 0 | ● |
| MTECS 0808C28 20UNJ | 8.00 | 20.0 | - | 7/16 | 28.0 | 64.00 | 8.00 | 3 | C | 1 | ● |
| MTECS 08061C20 18UNJ | 6.15 | 18.0 | 5/16 | 9/16 | 20.0 | 64.00 | 8.00 | 3 | C | 1 | ● |
| MTECS 08069C24 16UNJ | 6.90 | 16.0 | 3/8 | - | 24.0 | 64.00 | 8.00 | 3 | C | 1 | ● |
| MTECS 08079C25 14UNJ | 7.90 | 14.0 | 7/16 | - | 25.0 | 64.00 | 8.00 | 3 | C | 1 | ● |
| MTECS 10094C27 13UNJ | 9.40 | 13.0 | 1/2 | - | 27.5 | 73.00 | 10.00 | 3 | C | 1 | ● |

• For user guide, see pages 497-506

[1] Without coolant holes

[2] Threads per inch

[3] Number of flutes

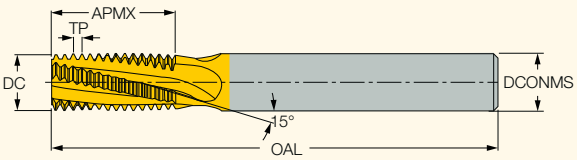
[4] C-Cylindrical

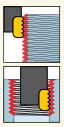
[5] 0 - Without coolant supply, 1 - With coolant supply

SOLIDTHREAD

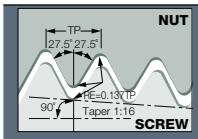
## MTEC-BSPT

Solid Carbide Threading Endmills for an External or Internal BSPT Thread Profile



Application: General engineering fittings and pipe couplings




| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | TDZ | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | |
| MTEC 0606C9 28BSPT | 28.0 | RC1/8 | 6.00 | 5.40 | 3 | 8.16 | 57.00 | C | ● |
| MTEC 0808C14 19BSPT | 19.0 | RC1/4,RC3/8 | 8.00 | 7.16 | 3 | 12.03 | 64.00 | C | ● |
| MTEC 1212D19 14BSPT | 14.0 | RC1/2,RC7/8 | 12.00 | 10.88 | 4 | 16.33 | 84.00 | C | ● |
| MTEC 1616D28 11BSPT | 11.0 | RC1,RC2 | 16.00 | 14.17 | 4 | 25.40 | 101.00 | C | ● |

• For user guide, see pages 497-506 • Internal & External tolerance: ISO 7-1, EN 10226 (1&2) - Standard BSPT

[1] Threads per inch

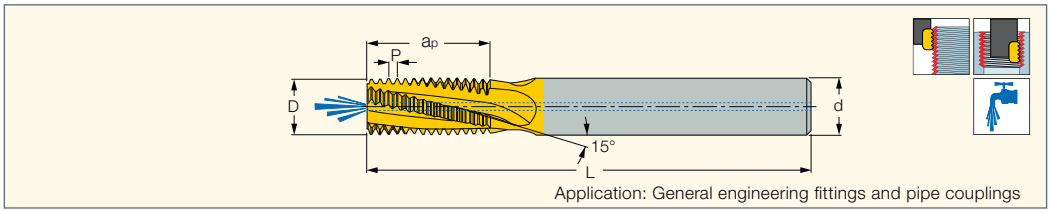
[2] Number of flutes

[3] C-Cylindrical

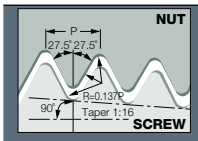
SOLIDTHREAD

## MTECB-BSPT

Solid Carbide External or Internal Threading Endmills with Coolant Holes, for BSPT Thread Profile




Application: General engineering fittings and pipe couplings




| Designation | Dimensions | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPI(1) | BSPT | DCONMS | DC | NOF(2) | APMX | OAL | Shank(3) | THFT | TP(4) | |
| MTECB 08078C14 28BSPT | 28.0 | RC1/8 | 8.00 | 7.80 | 3 | 14.10 | 64.00 | C | BSPT55 | 0.907 | ● |
| MTECB 1010D16 19BSPT | 19.0 | RC1/4-3/8 | 10.00 | 10.00 | 4 | 16.70 | 73.00 | C | BSPT55 | 1.337 | ● |
| MTECB 1616E26 14BSPT | 14.0 | RC1/2-7/8 | 16.00 | 16.00 | 5 | 26.30 | 105.00 | C | BSPT55 | 1.814 | ● |

New

• With internal coolant hole • For user guide, see pages 497-506

(1) Threads per inch

(2) Number of flutes

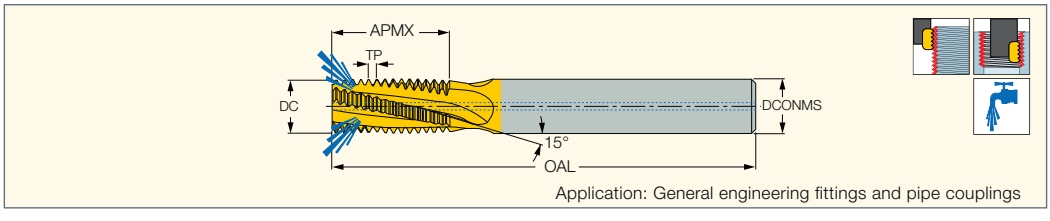
(3) C-Cylindrical

(4) Thread pitch

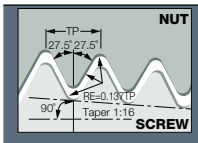
SOLIDTHREAD

## MTECZ-BSPT

Solid Carbide Threading Endmills with Coolant Holes for an Internal or External BSPT Thread Profile




Application: General engineering fittings and pipe couplings




| Designation | Dimensions | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPI(1) | BSPT | DCONMS | DC | NOF(2) | APMX | OAL | Shank(3) | TP(4) | |
| MTECZ 08078C14 28BSPT | 28.0 | RC1/8 | 8.00 | 7.80 | 3 | 14.10 | 64.00 | C | 0.907 | ● |
| MTECZ 1010D16 19BSPT | 19.0 | RC1/4-3/8 | 10.00 | 10.00 | 4 | 16.70 | 73.00 | C | 1.337 | ● |

• With internal coolant hole • For user guide, see pages 497-506 • Internal & External tolerance: ISO 7-1, EN 10226 (1&2) - Standard BSPT

(1) Threads per inch

(2) Number of flutes

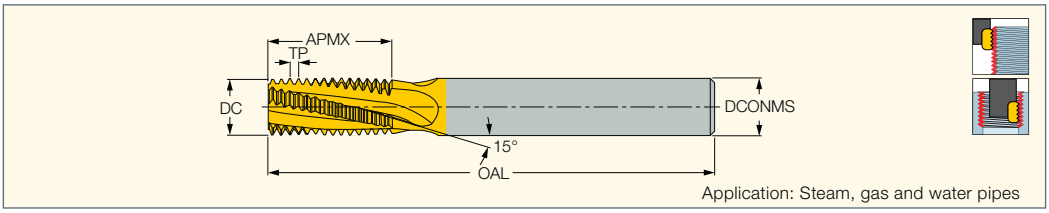
(3) C-Cylindrical

(4) Thread pitch

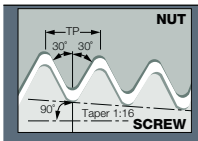
SOLIDTHREAD

## MTEC-NPT

Solid Carbide Threading Endmills for an External or Internal NPT Thread Profile




Application: Steam, gas and water pipes




| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | TDZ | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | |
| MTEC 0606C9 27NPT | 27.0 | 1/16,1/8 | 6.00 | 5.36 | 3 | 9.90 | 58.00 | C | ● |
| MTEC 0808C14 18NPT | 18.0 | 1/4,3/8 | 8.00 | 7.12 | 3 | 14.80 | 64.00 | C | ● |
| MTEC 1212D20 14NPT | 14.0 | 1/2,3/4 | 12.00 | 10.77 | 4 | 20.90 | 84.00 | C | ● |
| MTEC 1616D27 11.5NPT | 11.5 | 1,2 | 16.00 | 14.24 | 4 | 27.60 | 101.00 | C | ● |
| MTEC 2020D39 8NPT | 8.0 | =>2-1/2 | 20.00 | 20.00 | 4 | 39.70 | 105.00 | C | ● |

• For user guide, see pages 497-506 • Internal & External tolerance: ANSI/ASME B1.20.1 - Standard NPT

[1] Threads per inch

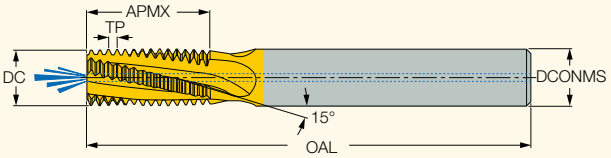
[2] Number of flutes

[3] C-Cylindrical

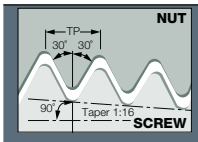
SOLIDTHREAD

## MTECB-NPT

Solid Carbide Threading Endmills with Coolant Hole for an External or Internal NPT Thread Profile




Application: Steam, gas and water pipes




| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | TDZ | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | |
| MTECB 08076C10 27NPT | 27.0 | 1/8 | 8.00 | 7.60 | 3 | 10.80 | 64.00 | C | ● |
| MTECB 1010D16 18NPT | 18.0 | 1/4,3/8 | 10.00 | 10.00 | 4 | 16.20 | 73.00 | C | ● |
| MTECB 16155D22 14NPT | 14.0 | 1/2,3/4 | 16.00 | 15.50 | 4 | 22.70 | 105.00 | C | ● |

• For user guide, see pages 497-506 • Internal & External tolerance: ANSI/ASME B1.20.1 - Standard NPT

[1] Threads per inch

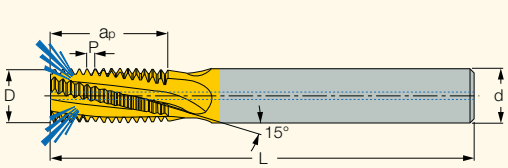
[2] Number of flutes

[3] C-Cylindrical

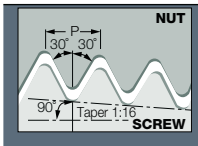
SOLIDTHREAD

## MTECZ-NPT

Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes, for Internal or External NPT Thread Profile




Application: General engineering fittings and pipe couplings




| Designation | Dimensions | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | NPT | DCONMS | DC | NOF[2] | APMX | OAL | Shank[3] | THFT | |
| MTECZ 08076C10 27NPT | 27.0 | 1/8 | 8.00 | 7.60 | 3 | 10.80 | 64.00 | C | NPT60 | ● |
| MTECZ 1010D16 18NPT | 18.0 | 1/4-3/8 | 10.00 | 10.00 | 4 | 16.20 | 73.00 | C | NPT60 | ● |
| MTECZ 16155D22 14NPT | 14.0 | 1/2-3/4 | 16.00 | 15.50 | 4 | 22.70 | 101.00 | C | NPT60 | ● |

New

• For user guide, see pages 497-506

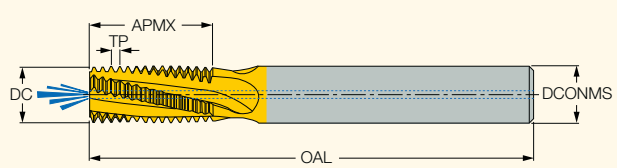
[1] Threads per inch

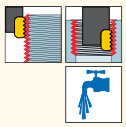
[2] Number of flutes

[3] C-Cylindrical

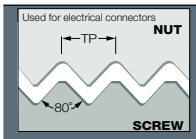
SOLIDTHREAD

**MTECB-PG**
Solid Carbide Threading Endmills with a Coolant Hole for External and Internal PG Full Profile (DIN 40430)



Application: Electrical connectors

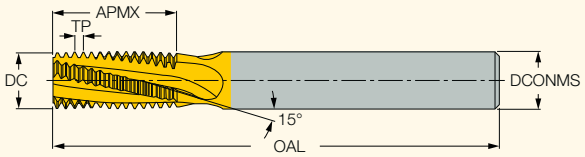


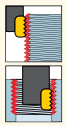

| Designation | TPI(1) | THOD | DCONMS | DC | NOF(2) | APMX | OAL | Shank(3) | TP(4) | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Dimensions | | | | | | | | | |
| MTECB 1212D20 18PG | 18.0 | Pg 9, 11, 13.5, 16 | 12.00 | 12.00 | 4 | 20.50 | 84.00 | C | 1.411 | ● |
| MTECB 1212D23 16PG | 16.0 | Pg 21, 29,36, 42, 48 | 12.00 | 12.00 | 4 | 23.00 | 84.00 | C | 1.588 | ● |

• With internal coolant hole • For user guide, see pages 497-506 • Internal & External tolerance: DIN 40430 - Standard PG
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

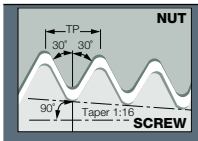
SOLIDTHREAD

**MTEC-NPTF**
Solid Carbide Threading Endmills for an External or Internal NPTF Thread Profile



Application: Steam, gas and water pipes

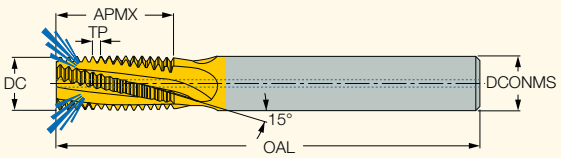


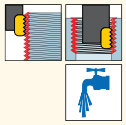

| Designation | TPI(1) | TDZ | DCONMS | DC | NOF(2) | APMX | OAL | Shank(3) | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | Dimensions | | | | | | | | |
| MTEC 0606C9 27NPTF | 27.0 | 1/16,1/8 | 6.00 | 6.00 | 3 | 9.90 | 58.00 | C | ● |
| MTEC 0808C14 18NPTF | 18.0 | 1/4,3/8 | 8.00 | 8.00 | 3 | 14.80 | 64.00 | C | ● |
| MTEC 1212D20 14NPTF | 14.0 | 1/2,3/4 | 12.00 | 12.00 | 4 | 20.90 | 84.00 | C | ● |

• For user guide, see pages 497-506 • Internal & External tolerance: ANSI/ASME B1.20.3 - Standard NPTF
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

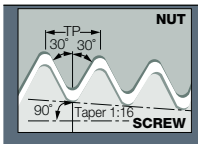
SOLIDTHREAD

**MTECZ-NPTF**
Solid Carbide Threading Endmills with Coolant Holes for Internal or External NPTF Thread Profile



Application: General engineering fittings and pipe couplings



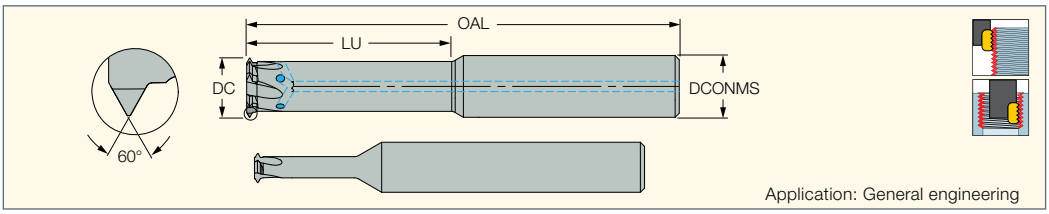

| Designation | TPI(1) | TDZ | DCONMS | DC | NOF(2) | APMX | OAL | Shank(3) | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | Dimensions | | | | | | | | |
| MTECZ 08076C10 27NPTF | 27.0 | 1/8 | 8.00 | 7.60 | 3 | 10.80 | 64.00 | C | ● |
| MTECZ 1010D16 18NPTF | 18.0 | 1/4-3/8 | 10.00 | 10.00 | 4 | 16.20 | 73.00 | C | ● |

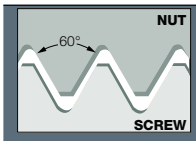
• For user guide, see pages 497-506 • Internal & External tolerance: ANSI/ASME B1.20.3 - Standard NPTF
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

**SOLIDTHREAD**

## MTECI-A60

60° Partial Profile Solid Carbide Thread Mills for Internal and External Threads




| Designation | Dimensions | | | | | | | | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TPN[1] | TPX[2] | TPN_ DF2[3] | TPX_ DF2[4] | TPIN[5] | TPIX[6] | TPIN_ DF2[7] | TPIX_ DF2[8] | Th | DCONMS | DC | NOF[9] | LU | OAL | Shank[10] | CSP[11] | IC908 | IC902 |
| MTECI 03019C5 A60 | 0.350 | 0.600 | 0.350 | 0.600 | 40.00 | 72.00 | 40.00 | 72.00 | [a] Several Sizes | 3.00 | 1.90 | 3 | 5.2 | 39.00 | C | 0 | | ● |
| MTECI 03024C7 A60 | 0.500 | 0.800 | 0.500 | 0.800 | 32.00 | 48.00 | 32.00 | 48.00 | [a] Several Sizes | 3.00 | 2.40 | 3 | 7.1 | 38.00 | C | 0 | | ● |
| MTECI 06032C9 A60 | 0.500 | 1.000 | 0.500 | 1.000 | 24.00 | 48.00 | 24.00 | 48.00 | [a] Several Sizes | 6.00 | 3.20 | 3 | 9.5 | 57.00 | C | 0 | | ● |
| MTECI 0604C12 A60 | 0.500 | 1.000 | 0.500 | 1.000 | 24.00 | 48.00 | 24.00 | 48.00 | [a] Several Sizes | 6.00 | 4.00 | 3 | 12.5 | 58.00 | C | 0 | | ● |
| MTECI 0605D20 A60 | 0.500 | 0.800 | 0.400 | 0.800 | 28.00 | 56.00 | 32.00 | 64.00 | =>6 | 6.00 | 5.00 | 4 | 20.0 | 58.00 | C | 1 | ● | |
| MTECI 0808D28 A60 | 0.500 | 0.800 | 0.400 | 0.800 | 28.00 | 56.00 | 32.00 | 64.00 | =>9 | 8.00 | 8.00 | 4 | 28.0 | 64.00 | C | 1 | ● | |
| MTECI 0808D30 A60 | 1.000 | 1.750 | 0.800 | 1.500 | 14.00 | 28.00 | 16.00 | 32.00 | =>10 | 8.00 | 8.00 | 4 | 30.0 | 64.00 | C | 1 | ● | |
| MTECI 1010D35 A60 | 1.000 | 1.750 | 0.800 | 1.500 | 14.00 | 28.00 | 16.00 | 32.00 | =>12 | 10.00 | 10.00 | 4 | 35.0 | 73.00 | C | 1 | ● | |
| MTECI 1212E39 A60 | 1.000 | 1.750 | 0.800 | 1.500 | 14.00 | 28.00 | 16.00 | 32.00 | =>14 | 12.00 | 12.00 | 5 | 39.0 | 84.00 | C | 1 | ● | |
| MTECI 1212E40 A60 | 2.000 | 3.000 | 1.750 | 2.500 | 8.00 | 13.00 | 10.00 | 15.00 | =>16 | 12.00 | 12.00 | 5 | 40.0 | 84.00 | C | 1 | ● | |
| MTECI 1614E45 A60 | 2.000 | 3.000 | 1.750 | 2.500 | 8.00 | 13.00 | 10.00 | 15.00 | =>18 | 16.00 | 14.00 | 5 | 45.0 | 101.00 | C | 1 | ● | |
| MTECI 1616E50 A60 | 2.000 | 3.000 | 1.750 | 2.500 | 8.00 | 13.00 | 10.00 | 15.00 | =>20 | 16.00 | 16.00 | 5 | 50.0 | 101.00 | C | 1 | ● | |

- (a)See table below
- For user guide, see pages 497-506
- DIN13 , ISO 68-1, ISO 965 (1&2) - Internal tolerance: 6H, External tolerance: 6g
- ANSI/ASME B1.1 - Internal tolerance: 2B, External tolerance: 2A

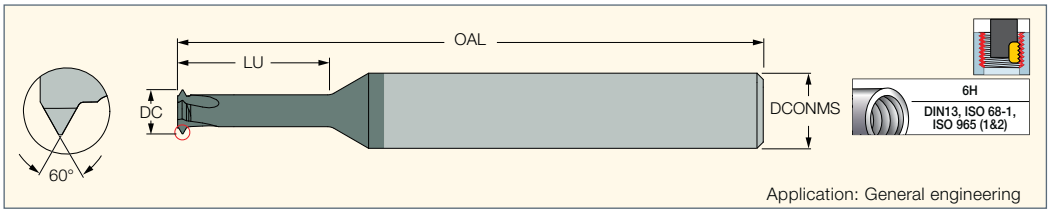
(1) Internal thread pitch minimum
(2) Internal thread pitch maximum
(3) External thread pitch minimum
(4) External thread pitch maximum
(5) Internal threads per inch minimum
(6) Internal threads per inch maximum
(7) External threads per inch minimum
(8) External threads per inch maximum
(9) Number of flutes
(10) C-Cylindrical
(11) 0 - Without coolant supply, 1 - With coolant supply

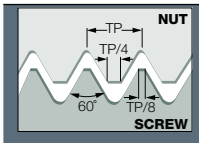
| Designation | Possible Thread Sizes | | |
|---|---|---|---|
| | M Coarse | M Fine | UN, UNC, UNS,UNF, UNEF |
| MTECI 03019C5 A60 | M2.5x0.45 | M2.5x0.35, M3x0.35, | 3-48UNC, 3-56UNF, 4-40UNC, 4-48UNF |
| MTECI 06032C9 A60 | M4x0.7 M4.5x0.75 | M4x0.5 | 8-32UNC, 8-36UNF, 10-24UNC, 10-28UNS, 10-32UNF |
| MTECI 0604C12 A60 | M5x0.8 M6x1.0 | M5x0.5, M5.5x0.5, M5x0.75 | 10-36UNS, 10-40UNS, 10-48UNS, 12-24UNC, 12-28UNF |

**SOLIDTHREAD**

## MTECI-ISO

Small Diameter Single Point Internal ISO Profile Solid Carbide Thread Mills




| Designation | Dimensions | | | | | | | | | IC902 |
|---|---|---|---|---|---|---|---|---|---|---|
| | TP[1] | M Coarse | M Fine | DCONMS | DC | NOF[2] | LU | OAL | Shank[3] | |
| MTECI 03009C4 0.25ISO | 0.250 | M1.2X0.25 | M1.4X0.25, M1.6X0.25 | 3.00 | 0.90 | 3 | 4.3 | 39.00 | C | ● |
| MTECI 03007C3 0.25ISO | 0.250 | M1X0.25 | - | 3.00 | 0.72 | 3 | 3.6 | 39.00 | C | ● |
| MTECI 03011C5 0.3ISO | 0.300 | M1.4X0.3 | - | 3.00 | 1.05 | 3 | 5.0 | 39.00 | C | ● |
| MTECI 03012C6 0.35ISO | 0.350 | M1.6X0.35 | M2X0.35, M2.2X0.35 | 3.00 | 1.20 | 3 | 5.7 | 39.00 | C | ● |
| MTECI 03016C7 0.4ISO | 0.400 | M2X0.4 | - | 3.00 | 1.55 | 3 | 7.1 | 39.00 | C | ● |
| MTECI 03024C10 0.5ISO | 0.500 | M3X0.5 | M3.5X0.5, M4X0.5 | 3.00 | 2.37 | 3 | 10.6 | 39.00 | C | ● |

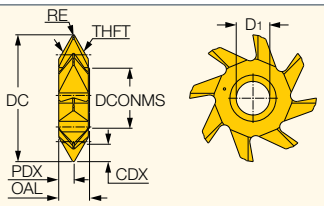
- For user guide, see pages 497-506

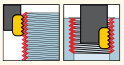
(1) Thread pitch
(2) Number of flutes
(3) C-Cylindrical

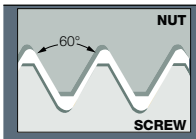
**SOLIDTHREAD**

## SD TRD-M-SP

Interchangeable Solid Carbide Heads for 60° Partial Profile Thread Milling





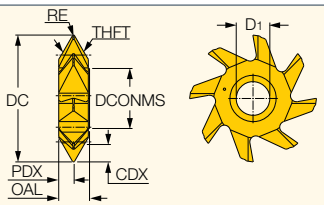

| Designation | Dimensions | | | | | | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DMIN | DIOUT(1) | THFT(2) | TPN(3) | TPX(4) | TPIN(5) | TPIX(6) | PDX | RE | D1 | CDX | OAL | ZEFP(7) | DCONMS | |
| SD TRD32-M60-6P-SP15 | 31.70 | 42.00 | 36.00 | VP60 | 4.000 | 6.000 | 4.00 | 6.00 | 3.70 | 0.30 | 8.40 | 4.70 | 7.70 | 8 | 15.00 | ● |
| SD TRD40-M60-8P-SP17 | 39.70 | 57.00 | 64.00 | VP60 | 6.000 | 8.000 | 3.00 | 4.00 | 4.50 | 0.40 | 9.80 | 6.20 | 9.50 | 10 | 17.00 | ● |

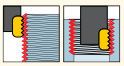
• For shanks, see pages 373-375 • For user guide, see pages 497-506 • DIN13 , ISO 68-1, ISO 965 (1&2) - Internal tolerance: 6H, External tolerance: 6g
• ANSI/ASME B1.1 - Internal tolerance: 2B, External tolerance: 2A
(1) Minimum diameter for external threading
(2) VP60=60° partial thread form
(3) Thread pitch minimum (mm)
(4) Thread pitch maximum (mm)
(5) Threads per inch minimum
(6) Threads per inch maximum
(7) Num. of cutting edges

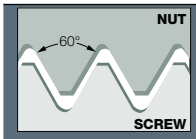
**SOLIDTHREAD**

## SD TRD-W-SP

Interchangeable Solid Carbide Heads for 55° Partial Profile Thread Milling



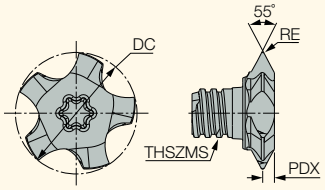


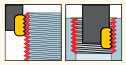

| Designation | Dimensions | | | | | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DMIN | DIOUT(1) | THFT(2) | THFT_2 | TPIN(3) | TPIX(4) | PDX | D1 | CDX | OAL | ZEFP(5) | RE | DCONMS | |
| SD TRD32-W55-4T-SP15 | 31.70 | 46.00 | 35.00 | VP55 | WH55 | 4.00 | 6.00 | 3.70 | 8.40 | 4.70 | 7.70 | 8 | 0.50 | 15.00 | ● |
| SD TRD40-W55-3T-SP17 | 39.70 | 57.00 | 57.00 | VP55 | WH55 | 3.00 | 4.00 | 4.50 | 9.80 | 6.20 | 9.50 | 10 | 0.80 | 17.00 | ● |

• For shanks, see pages 373-375 • For user guide, see pages 497-506 • B.S.84 Internal & External tolerance: Medium class
(1) Minimum diameter for external threading
(2) VP55=55° partial thread forms
(3) Threads per inch minimum
(4) Threads per inch maximum
(5) Num. of cutting edges

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TRF 55°**
Interchangeable Solid Carbide Milling Heads for 55° Partial Profile Thread Milling



| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | NOF(1) | TPIN(2) | TPIX(3) | RE | PDX | THSZMS | TDZ(4) | DMIN | TQ(5) | |
| **MM TRF12-W55-P11-5T05** | 11.94 | 5 | 11.00 | 14.00 | 0.23 | 1.15 | T05 | 15.875 | 13.60 | 7.0 | ● |
| **MM TRF12-W55-P19-5T05** | 11.94 | 5 | 19.00 | 28.00 | 0.11 | 0.75 | T05 | 14.287 | 13.10 | 10.0 | ● |
| **MM TRF16-W55-P8-5T06** | 15.94 | 5 | 8.00 | 14.00 | 0.23 | 1.55 | T06 | 20.637 | 18.30 | 15.0 | ● |
| **MM TRF20-W55-P6-6T08** | 19.94 | 6 | 6.00 | 8.00 | 0.40 | 1.95 | T08 | 25.4 | 21.30 | 28.0 | ● |

• For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 101-111 • For clamping instructions, see pages 111-112
• Do not apply lubricant to the threaded connection.
(1) Number of flutes
(2) Threads per inch minimum
(3) Threads per inch maximum
(4) Smallest possible thread
(5) Tightening torque

| Thread Size | Tightening Torque (Nxcm) |
|---|---|
| T05 | 700 |
| T06 | 1000 |
| T08 | 1500 |
| T10 | 2800 |

(1) Order separately

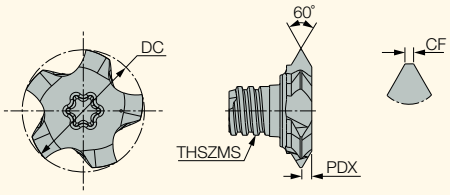
## Spare Parts

| Designation | |
|---|---|
| **MM TRF12-W55-P11-5T05** | BIT SOCKET T20 3/8" DRIVE* |
| **MM TRF12-W55-P19-5T05** | BIT SOCKET T20 3/8" DRIVE* |
| **MM TRF16-W55-P8-5T06** | BIT SOCKET T25 3/8" DRIVE* |
| **MM TRF20-W55-P6-6T08** | BIT SOCKET T40 3/8" DRIVE* |

* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MM TRF 60°**
Interchangeable Solid Carbide Milling Heads for 60° Partial Profile Thread Milling




| Designation | Dimensions | | | | | | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | NOF(1) | TPN(2) | TPX(3) | TPN_ DF2(4) | TPX_ DF2(5) | TPIN(6) | TPIX(7) | TPIN_ DF2(8) | TPIX_ DF2(9) | CF | PDX | THSZMS | TDZ(10) | TQ | DMIN | |
| **MM TRF12A60-P080-5T05** | 11.94 | 5 | 0.500 | 0.800 | 0.400 | 0.800 | 28.00 | 56.00 | 32.00 | 64.00 | 0.05 | 0.55 | T05 | M14 | 7.0 | 13.50 | ● |
| **MM TRF12A60-P175-5T05** | 11.94 | 5 | 1.000 | 1.750 | 0.800 | 1.500 | 14.00 | 28.00 | 16.00 | 32.00 | 0.11 | 0.96 | T05 | M14 | 7.0 | 13.00 | ● |
| **MM TRF12A60-P250-5T05** | 11.94 | 5 | 2.000 | 2.500 | 1.750 | 2.000 | 10.00 | 13.00 | 11.00 | 15.00 | 0.22 | 1.21 | T05 | M16 | 7.0 | 14.00 | ● |
| **MM TRF16A60-P080-5T06** | 15.94 | 5 | 0.500 | 0.800 | 0.400 | 0.800 | 28.00 | 56.00 | 32.00 | 64.00 | 0.05 | 0.55 | T06 | M18 | 10.0 | 17.50 | ● |
| **MM TRF16A60-P175-5T06** | 15.94 | 5 | 1.000 | 1.750 | 0.800 | 1.500 | 14.00 | 28.00 | 16.00 | 32.00 | 0.10 | 1.00 | T06 | M18 | 10.0 | 17.00 | ● |
| **MM TRF16A60-P300-5T06** | 15.94 | 5 | 2.000 | 3.000 | 1.750 | 2.500 | 8.00 | 13.00 | 10.00 | 15.00 | 0.22 | 1.41 | T06 | M20 | 10.0 | 18.00 | ● |
| **MM TRF20A60-P200-6T08** | 19.94 | 6 | 1.000 | 2.000 | 0.800 | 1.750 | 13.00 | 28.00 | 15.00 | 32.00 | 0.11 | 0.95 | T08 | M24 | 10.0 | 23.00 | ● |
| **MM TRF20A60-P300-6T08** | 19.94 | 6 | 2.000 | 3.000 | 1.750 | 2.500 | 8.00 | 13.00 | 10.00 | 15.00 | 0.22 | 1.41 | T08 | M24 | 15.0 | 22.00 | ● |
| **MM TRF20A60-P400-6T08** | 19.94 | 6 | 3.000 | 4.000 | 2.500 | 3.500 | 6.00 | 9.00 | 7.00 | 10.00 | 0.31 | 1.86 | T08 | M25 | 15.0 | 22.00 | ● |
| **MM TRF28A60-P600-5T10** | 27.70 | 5 | 5.000 | 6.000 | 4.500 | 5.000 | 4.00 | 5.00 | 5.00 | 6.00 | 0.57 | 2.49 | T10 | M38 | 28.0 | 33.00 | ● |
| **MM TRF28A60-P500-6T10** | 27.70 | 6 | 3.000 | 5.000 | 2.500 | 4.500 | 6.00 | 8.00 | 6.00 | 10.00 | 0.34 | 2.17 | T10 | M33 | 28.0 | 30.00 | ● |

• For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 101-111 • For clamping instructions, see pages 111-112
• Do not apply lubricant to the threaded connection.
(1) Number of flutes
(2) Thread pitch minimum (mm)-internal
(3) Thread pitch maximum (mm)-internal
(4) Thread pitch minimum (mm)-external
(5) Thread pitch maximum (mm)-external
(6) Threads per inch minimum-internal
(7) Threads per inch maximum-internal
(8) Threads per inch minimum-external
(9) Threads per inch maximum-external
(10) Smallest possible thread

## Spare Parts

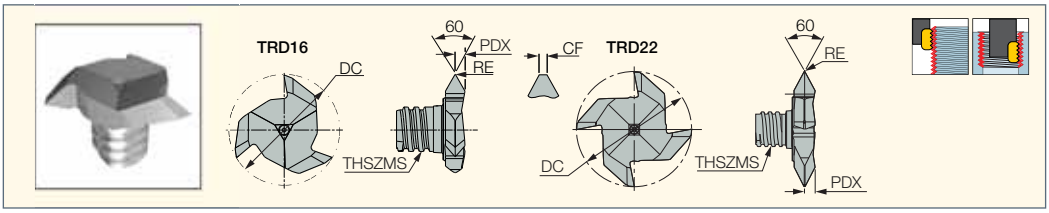
| Designation | |
|---|---|
| **MM TRF12A60-P080-5T05** | BIT SOCKET T20 3/8" DRIVE* |
| **MM TRF12A60-P175-5T05** | BIT SOCKET T20 3/8" DRIVE* |
| **MM TRF12A60-P250-5T05** | BIT SOCKET T20 3/8" DRIVE* |
| **MM TRF16A60-P080-5T06** | BIT SOCKET T20 3/8" DRIVE* |
| **MM TRF16A60-P175-5T06** | BIT SOCKET T25 3/8" DRIVE* |
| **MM TRF16A60-P300-5T06** | BIT SOCKET T25 3/8" DRIVE* |
| **MM TRF20A60-P200-6T08** | BIT SOCKET T40 3/8" DRIVE* |
| **MM TRF20A60-P300-6T08** | BIT SOCKET T40 3/8" DRIVE* |
| **MM TRF20A60-P400-6T08** | BIT SOCKET T40 3/8" DRIVE* |
| **MM TRF28A60-P600-5T10** | BIT SOCKET T40 3/8" DRIVE* |
| **MM TRF28A60-P500-6T10** | BIT SOCKET T40 3/8" DRIVE* |

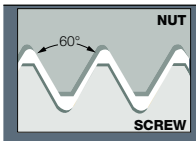
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM TRD-M

Interchangeable Solid Carbide Milling Heads for 60° Partial Profile Thread Milling




| Designation | Dimensions | | | | | | | | | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | NOF(1) | TPN(2) | TPX(3) | TPN_ DF2(4) | TPX_ DF2(5) | TPIN(6) | TPIX(7) | TPIN_ DF2(8) | TPIX_ DF2(9) | RE | CF | PDX | THSZMS | TDZ(10) | DMIN | IC528 | IC908 |
| MM TRD16-M60-05P-3T06 | 15.70 | 3 | 0.500 | 2.000 | 0.400 | 2.000 | 13.00 | 48.00 | 16.00 | 56.00 | - (11) | 0.05 | 1.4 | T06 | M20 | 19.05 | ● | ● |
| MM TRD16-M60-15P-3T06 | 15.70 | 3 | 1.500 | 2.000 | 1.000 | 1.500 | 13.00 | 16.00 | 16.00 | 28.00 | 0.05 | - | 1.4 | T06 | M22 | 19.05 | ● | ● |
| MM TRD22-M60-30P-4T08 | 21.70 | 4 | 3.000 | 4.500 | 2.500 | 4.000 | 6.00 | 9.00 | 7.00 | 10.00 | 0.20 | - | 2.4 | T08 | M36 | 31.00 | ● | ● |

- For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 101-111 • For clamping instructions, see pages 111-112
- Do not apply lubricant to the threaded connection. • DIN13 , ISO 68-1, ISO 965 (1&2) - Internal tolerance: 6H, External tolerance: 6g
- ANSI/ASME B1.1 - Internal tolerance: 2B, External tolerance: 2A

(1) Number of flutes
(2) Thread pitch minimum (mm)-internal
(3) Thread pitch maximum (mm)-internal
(4) Thread pitch minimum (mm)-external
(5) Thread pitch maximum (mm)-external
(6) Threads per inch minimum-internal
(7) Threads per inch maximum-internal
(8) Threads per inch minimum-external
(9) Threads per inch maximum-external
(10) Smallest possible thread
(11) Flat

### Spare Parts

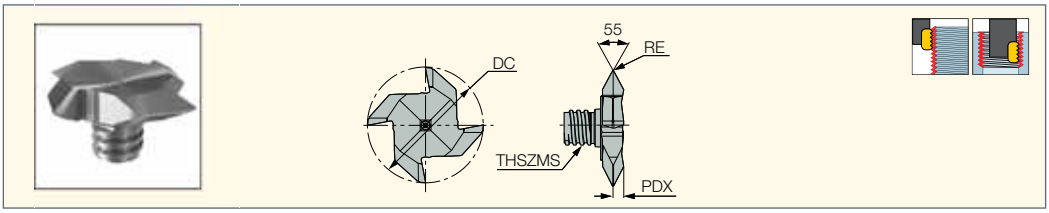
| Designation | | |
|---|---|---|
| MM TRD16-M60-05P-3T06 | MM EGR 16-18* | T-25/3* |
| MM TRD16-M60-15P-3T06 | MM EGR 16-18* | T-25/3* |
| MM TRD22-M60-30P-4T08 | MM EGR 20-22* | T-30/3 L* |

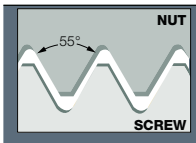
* Optional, to be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MM TRD-W

Interchangeable Solid Carbide Milling Heads for 55° Partial Profile Thread Milling




| Designation | Dimensions | | | | | | | | | | | | Tough ↔ Hard | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | NOF(1) | RE | PDX | TPIN(2) | TPIX(3) | TPIN_ DF2(4) | TPIX_ DF2(5) | THSZMS | TDZ(6) | DMIN | Standard | IC528 | IC908 |
| MM TRD22-W55-14P-4T08 | 21.70 | 4 | 0.20 | 2.0 | 11.00 | 14.00 | 11.50 | 16.00 | T08 | G3/4 | 24.20 | DIN ISO 228, B.S. 84 | ● | ● |

- For shanks, see pages 101-111 • For clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection.
- B.S.84 Internal & External tolerance: Medium class

(1) Number of flutes
(2) Threads per inch minimum-internal
(3) Threads per inch maximum-internal
(4) Threads per inch minimum-external
(5) Threads per inch maximum-external
(6) Thread diameter size

### Spare Parts

| Designation | | |
|---|---|---|
| MM TRD-W | T-30/3 L* | MM EGR 20-22* |

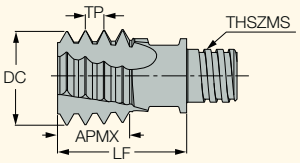
* Optional, to be ordered separately

## Identification Code

| MT | 10 | D | 6 | 0.75 | ISO | MMT/MMTT |
|---|---|---|---|---|---|---|
| MULTI-MASTER thread mill | cutting dia. | no. of flutes | cutting length | pitch | thread profile iso un G (55°) | connection size |

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

**MT-ISO-MM**
Carbide Milling Heads with a Threaded Connection for Internal ISO Metric Thread



Application: General engineering

| Designation | Dimensions TP[1] | M Coarse | M Fine | DC | NOF[2] | APMX | LF | THSZMS | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MT10D7.5 0.5ISO-MMT05 | 0.500 | - | =>14 | 10.00 | 4 | 7.50 | 12.75 | T05 | MM KEY 6X4* | | | ● |
| MT 10D6 0.75ISO-MMT05 | 0.750 | - | =>12 | 10.00 | 4 | 6.00 | 12.75 | T05 | MM KEY 6X4* | | | ● |
| MT 10D6 1.0ISO-MMT05 | 1.000 | - | =>12 | 10.00 | 4 | 6.00 | 12.75 | T05 | MM KEY 6X4* | | | ● |
| MT 10D5 1.25ISO-MMT05 | 1.250 | - | =>14 | 10.00 | 4 | 5.00 | 12.75 | T05 | MM KEY 6X4* | | | ● |
| MT 10D6 1.5ISO-MMT05 | 1.500 | - | =>14 | 10.00 | 4 | 6.00 | 12.75 | T05 | MM KEY 6X4* | | | ● |
| MT 12D8 0.5ISO-MMT06 | 0.500 | - | =>16 | 12.00 | 4 | 8.00 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 12E8 0.75ISO-MMT06 | 0.750 | - | =>16 | 12.00 | 5 | 8.30 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 12E8 1.0ISO-MMT06 | 1.000 | - | =>16 | 12.00 | 5 | 8.00 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 12D8 1.25ISO-MMT06 | 1.250 | - | =>16 | 12.00 | 4 | 7.50 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 12D7 1.5ISO-MMT06 | 1.500 | - | =>16 | 12.00 | 4 | 7.60 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 12D7 1.75ISO-MMT06 | 1.750 | - | =>16 | 12.00 | 4 | 7.10 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT12D8 2.0ISO-MMT06 | 2.000 | M16 | =>17 | 12.00 | 4 | 8.00 | 14.30 | T06 | MM KEY 8X5* | | | ● |
| MT 16F12 1.0ISO-MMT08 | 1.000 | - | =>22 | 16.00 | 6 | 12.00 | 20.00 | T08 | MM KEY 10X7* | | | ● |
| MT 16F12 1.5ISO-MMT08 | 1.500 | - | =>20 | 16.00 | 6 | 12.00 | 20.00 | T08 | MM KEY 10X7* | | | ● |
| MT 16E12 2.0ISO-MMT08 | 2.000 | - | =>19 | 16.00 | 5 | 12.00 | 20.00 | T08 | MM KEY 10X7* | | | ● |
| MT15.4E13 2.5ISO-MMT08 | 2.500 | M20 | =>22 | 15.40 | 5 | 12.70 | 20.00 | T08 | MM KEY 10X7* | | | ● |
| MT 16C12 3.0ISO-MMT08 | 3.000 | M24 | =>25 | 16.00 | 3 | 12.10 | 20.00 | T08 | MM KEY 10X7* | | | ● |
| MT20F14 2.0ISO-MMTT10 | 2.000 | - | =>27 | 20.00 | 6 | 12.00 | 21.00 | T10 | | BIT SOCKET T30 3/8" DRIVE* | T-40/3 L* | ● |
| MT20D12 3.0ISO-MMTT10 | 3.000 | - | =>27 | 20.00 | 4 | 12.20 | 21.00 | T10 | | BIT SOCKET T40 3/8" DRIVE* | T-40/3 L* | ● |
| MT20D14 3.5ISO-MMTT10 | 3.500 | - | =>30 | 20.00 | 4 | 10.60 | 21.00 | T10 | | BIT SOCKET T40 3/8" DRIVE* | T-40/3 L* | ● |

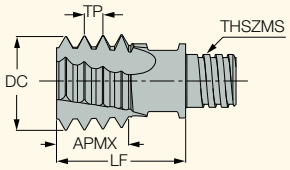
- Note: Description and dimensions relate to the new products with clamping flats. • For shanks, see pages 101-111
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection

(1) Thread pitch
(2) Number of flutes
* Optional, to be ordered separately

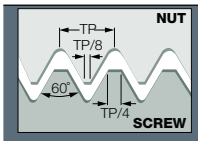
MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

## MT-UN-MM

Carbide Milling Heads with a Threaded Connection for Internal UN Thread Profile



Application: General engineering




| Designation | Dimensions | | | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | UNC | UNF | UNEF | DC | NOF[2] | APMX | LF | THSZMS | TP[3] | |
| MT 10D7 32UN-MMT05 | 32.0 | - | - | - | 10.00 | 4 | 6.40 | 12.75 | T05 | 0.794 | ● |
| MT 10D6 28UN-MMT05 | 28.0 | - | - | 1/2 | 10.00 | 4 | 5.50 | 12.75 | T05 | 0.907 | ● |
| MT 10D6 24UN-MMT05 | 24.0 | - | - | 9/16-5/8 | 10.00 | 4 | 5.30 | 12.75 | T05 | 1.058 | ● |
| MT 10D6 20UN-MMT05 | 20.0 | - | 1/2 | - | 10.00 | 4 | 5.10 | 12.75 | T05 | 1.270 | ● |
| MT 10D5 18UN-MMT05 | 18.0 | - | 9/16-5/8 | 1 1/8-1 5/8 | 10.00 | 4 | 5.60 | 12.75 | T05 | 1.411 | ● |
| MT 10D7 16UN-MMT05 | 16.0 | - | 3/4 | - | 10.00 | 4 | 6.40 | 12.75 | T05 | 1.588 | ● |
| MT 12D8 24UN-MMT06 | 24.0 | - | - | 5/8- 11/16 | 12.00 | 4 | 7.40 | 14.30 | T06 | 1.058 | ● |
| MT 12D8 20UN-MMT06 | 20.0 | - | - | 3/4 - 1 | 12.00 | 4 | 7.70 | 14.30 | T06 | 1.270 | ● |
| MT 12D8 18UN-MMT06 | 18.0 | - | 5/8 | =>1 11/16 | 12.00 | 4 | 7.10 | 14.30 | T06 | 1.411 | ● |
| MT 12D8 16UN-MMT06 | 16.0 | - | 3/4 | - | 12.00 | 4 | 8.00 | 14.30 | T06 | 1.588 | ● |
| MT 12D8 14UN-MMT06 | 14.0 | - | 7/8 | - | 12.00 | 4 | 7.30 | 14.30 | T06 | 1.814 | ● |
| MT 16E11 18UN-MMT08 | 18.0 | - | 5/8 | =>1 11/16 | 16.00 | 5 | 11.30 | 20.00 | T08 | 1.411 | ● |
| MT 16E13 14UN-MMT08 | 14.0 | - | 7/8 | - | 16.00 | 5 | 12.70 | 20.00 | T08 | 1.814 | ● |
| MT 16E13 12UN-MMT08 | 12.0 | - | 1-1 1/2 | - | 16.00 | 5 | 12.70 | 20.00 | T08 | 2.117 | ● |
| MT 15.3D13 10UN-MMT08 | 10.0 | 3/4 | - | - | 15.30 | 4 | 12.70 | 20.00 | T08 | 2.540 | ● |
| MT 16C11 9UN-MMT08 | 9.0 | 7/8 | - | - | 16.00 | 3 | 11.30 | 20.00 | T08 | 2.822 | ● |
| MT 16C13 8UN-MMT08 | 8.0 | 1.0 | - | - | 16.00 | 3 | 12.70 | 20.00 | T08 | 3.175 | ● |
| MT20F13 12UN-MMTT10 | 12.0 | - | =>1 | - | 20.00 | 6 | 12.70 | 21.00 | T10 | 2.117 | ● |
| MT20D13 8UN-MMTT10 | 8.0 | 1 | | - | 20.00 | 4 | 12.70 | 21.00 | T10 | 3.175 | ● |
| MT20D15 7UN-MMTT10 | 7.0 | - | 1 1/8 - 1 1/4 | - | 20.00 | 4 | 10.90 | 21.00 | T10 | 3.629 | ● |

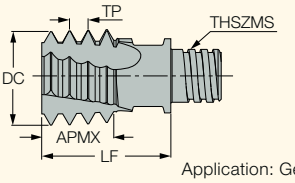
- Note: Description and dimensions relate to the new products with clamping flats • For shanks, see pages 101-111
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection

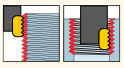
(1) Threads per inch
(2) Number of flutes
(3) Thread pitch

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

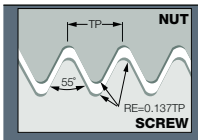
## MT-W-MM

Carbide Milling Heads with a Threaded Connection for Internal and External 55° BSW Thread Profile



Application: General engineering fittings and pipe couplings




| Designation | Dimensions | | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|---|
| | TPI[1] | TDZ | DC | NOF[2] | APMX | LF | THSZMS | TP[3] | |
| MT 10D6 19W-MMT05 | 19.0 | G1/4-3/8 | 10.00 | 4 | 5.30 | 12.75 | T05 | 1.337 | ● |
| MT 16D13 14W-MMT08 | 14.0 | G1/2-7/8 | 16.00 | 4 | 12.70 | 20.00 | T08 | 1.814 | ● |
| MT 16D11 11W-MMT08 | 11.0 | G=>1 | 16.00 | 4 | 11.50 | 20.00 | T08 | 2.309 | ● |
| MT20F15 14W-MMTT10 | 14.0 | G3/4-7/8 | 20.00 | 6 | 12.70 | 21.00 | T10 | 1.814 | ● |
| MT20F14 11W-MMTT10 | 11.0 | G=>1 | 20.00 | 6 | 11.50 | 21.00 | T10 | 2.309 | ● |

- Note: Description and dimensions relate to the new products with clamping flats • For shanks, see pages 101-111
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 111-112 • Do not apply lubricant to the threaded connection
- B.S.84 Internal & External tolerance: Medium class

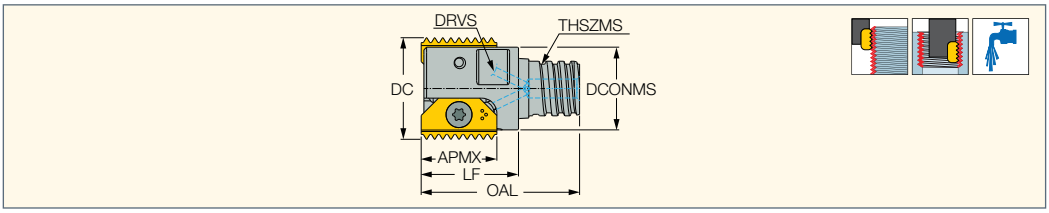
(1) Threads per inch
(2) Number of flutes
(3) Thread pitch

| Thread Size | Key[1] | Torque Wrench[1] | Wrench[1] | Tightening Torque (N×cm) |
|---|---|---|---|---|
| T05 | MM KEY 6x4 | TORQUE WRENCH 5-50Nm 9X12 | MM WRENCH 6-05 | 700 |
| T06 | MM KEY 8x5 | TORQUE WRENCH 5-50Nm 9X12 | MM WRENCH 8-06 | 1000 |
| T08 | MM KEY 10x7 | TORQUE WRENCH 5-50Nm 9X12 | MM WRENCH 10-08 | 1500 |
| T10 | MM KEY 13x8 | TORQUE WRENCH 5-50Nm 9X12 | MM WRENCH 13-10 | 2800 |

(1) Order separately

MILLTHREAD

**MTE-MM**
Indexable Threading Endmills with a MULTI-MASTER Shank Connection




| Designation | DC | APMX | CICT(1) | LF | THSZMS | DCONMS | OAL | DRVS(2) | TQ(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **MTE D9.9-1-MMT05-12** | 9.90 | 12.00 | 1 | 16.20 | T05 | 7.70 | 32.30 | 5.5 | 1.2 | 0.01 |
| **MTE D13.7-1-MMT06-14** | 13.70 | 14.00 | 1 | 17.00 | T06 | 9.60 | 23.30 | 8.0 | 1.2 | 0.03 |
| **MTE D15.8-1-MMT08-14** | 15.80 | 14.00 | 1 | 17.00 | T08 | 11.70 | 24.50 | 10.0 | 1.2 | 0.02 |
| **MTE D20/D0.79-2-MMT10-14** | 20.00 | 14.00 | 2 | 18.00 | T10 | 15.30 | 29.30 | 13.0 | 1.2 | 0.03 |
| **MTE D20/D0.79-3-MMT10-14** | 20.00 | 14.00 | 3 | 24.00 | T10 | 15.30 | 35.30 | 13.0 | 1.2 | 0.02 |
| **MTE D21/D0.82-1-MMT10-21** | 21.00 | 21.00 | 1 | 25.00 | T10 | 15.30 | 36.30 | 13.0 | 4.8 | 0.12 |
| **MTE D30.4/D1.2-2-MMT15-21** | 30.40 | 21.00 | 2 | 25.00 | T15 | 23.90 | 42.00 | 20.0 | 4.8 | 0.13 |
| **MTE D30.4/D1.2-3-MMT15-21** | 30.40 | 21.00 | 3 | 34.00 | T15 | 23.90 | 51.00 | 20.0 | 4.8 | 0.10 |
| **MTE D27-1-MMT12-30** | 27.00 | 30.00 | 1 | 38.20 | T12 | 18.30 | 52.00 | 16.0 | 9.0 | 0.06 |

• Tool cutting diameter should not exceed 2/3 of thread bore diameter • For user guide, see pages 497-506

(1) Number of inserts (or edges for solid tool)

(2) Torque key size

(3) Recommended clamping torque

**For inserts, see pages:** MT LNH#-ACME (Internal) (488) • MT LNH#-ISO (Internal) (480) • MT LNH#-NPS (487) • MT LNH#-NPSF (487) • MT LNH#-UN (Internal) (482) • MT LNH#-W (485) • MT LNHT-ABUT (488) • MT LNHT-BSPT (486) • MT LNHT-NPT (485) • MT LNHT-NPTF (486) • MT LNHU-ISO (External) (481) • MT LNHU-NPSM (Int.&Ext.) (484) • MT LNHU-PG (489) • MT LNHU-UN (External) (483) • MT LNHU-UNJ (External) (484) • MT LNHU-UNJ (Internal) (484)

**For holders, see pages:** MM CAB (110) • MM GRT (shanks) (105) • MM S-A (stepped shanks) (102) • MM S-A (straight shanks) (106) • MM S-A-AV (101) • MM S-A-BT (109) • MM S-A-C# (104) • MM S-A-HSK (109) • MM S-A-N (104) • MM S-A-SK (109) • MM S-B (85° conical shanks) (106) • MM S-D (89° conical shanks) (107) • MM S-ER (108) • MM S-ER-H (108) • MM TS-A (105) • MM TS2-A (105)

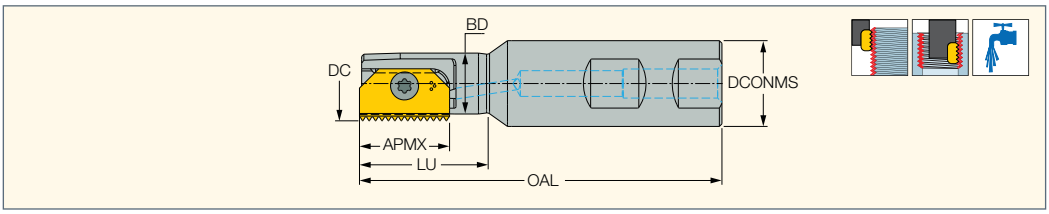
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| **MTE D9.9-1-MMT05-12** | SR M2.5-T8-MT | BLD T08/M7 | SW4-SD | MM KEY 6X4* |
| **MTE D13.7-1-MMT06-14** | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD | MM KEY 8X5* |
| **MTE D15.8-1-MMT08-14** | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD | MM KEY 10X7* |
| **MTE D20/D0.79-2-MMT10-14** | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD | MM KEY 13X8* |
| **MTE D20/D0.79-3-MMT10-14** | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD | MM KEY 13X8* |
| **MTE D21/D0.82-1-MMT10-21** | SR M4-IP15-MT | BLD IP15/S7 | SW6-SD | MM KEY 13X8* |
| **MTE D30.4/D1.2-2-MMT15-21** | SR M4-IP15-MT | BLD IP15/S7 | SW6-SD | MM KEY 20* |
| **MTE D30.4/D1.2-3-MMT15-21** | SR M4-IP15-MT | BLD IP15/S7 | SW6-SD | MM KEY 20* |
| **MTE D27-1-MMT12-30** | SR M5-IP25-MT-S | BLD IP25/S7 | SW6-T | MM KEY 16X9* |

* Optional, to be ordered separately

MILLTHREAD

## MTE D
Indexable Threading Endmills




| Designation | APMX | DC | NOF[4] | DCONMS | BD | LU | OAL | Shank[5] | TQ[6] | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MTE D09.5-1-W20-12 [1] | 12.00 | 9.50 | 1 | 20.00 | 7.50 | 15.5 | 85.00 | W | 1.2 | 0.16 | SR M2.5-T8-MT | BLD T08/M7 | SW4-SD |
| MTE D09.9-1-W20-12 | 12.00 | 9.90 | 1 | 20.00 | 7.50 | 16.0 | 85.00 | W | 1.2 | 0.16 | SR M2.5-T8-MT | BLD T08/M7 | SW4-SD |
| MTE D12.2-1-W20-14 | 14.00 | 12.20 | 1 | 20.00 | 8.75 | 20.0 | 75.00 | W | 1.2 | 0.15 | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD |
| MTE D14.5-1-W20-14 | 14.00 | 14.50 | 1 | 20.00 | 10.80 | 27.1 | 85.00 | W | 1.2 | 0.14 | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD |
| MTE D17.0-1-W20-14 | 14.00 | 17.00 | 1 | 20.00 | 12.80 | 30.0 | 85.00 | W | 1.2 | 0.23 | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD |
| MTE D18-1-W20-21 [2] | 21.00 | 18.50 | 1 | 20.00 | 14.20 | 30.0 | 85.00 | W | 4.8 | 0.16 | SR M4-IP15-MT | BLD IP15/S7 | SW6-SD |
| MTE D21-1-W20-21 | 21.00 | 21.00 | 1 | 20.00 | 15.90 | 40.0 | 94.00 | W | 4.8 | 0.23 | SR M4-IP15-MT | BLD IP15/S7 | SW6-SD |
| MTE D25-1-W20-21 | 21.00 | 25.00 | 1 | 20.00 | 20.00 | 61.0 | 115.00 | W | 4.8 | 0.24 | SR M4-IP15-MT | BLD IP15/S7 | SW6-SD |
| MTE D29-1-W25-30 [3] | 30.00 | 29.00 | 1 | 25.00 | 22.20 | 50.0 | 110.00 | W | 9.0 | 0.32 | SR M5-IP25-MT | BLD IP25/S7 | SW6-T |
| MTE D31-1-W25-30 | 30.00 | 31.00 | 1 | 25.00 | 25.00 | 90.0 | 150.00 | W | 9.0 | 0.60 | SR M5-IP25-MT | BLD IP25/S7 | SW6-T |
| MTE D38-1-W32-30 | 30.00 | 38.00 | 1 | 32.00 | 32.00 | 86.0 | 150.00 | W | 9.0 | 0.90 | SR M5-IP25-MT | BLD IP25/S7 | SW6-T |
| MTE D48-1-W40-40 | 40.00 | 48.00 | 1 | 40.00 | 35.00 | 78.0 | 153.00 | W | 9.0 | 1.30 | SR M5-IP25-MT | BLD IP25/S7 | SW6-T |
| MTE D48-1-W40-40-B | 40.00 | 48.00 | 1 | 40.00 | 36.50 | 138.0 | 210.00 | W | 9.0 | 1.50 | SR M5-IP25-MT | BLD IP25/S7 | SW6-T |

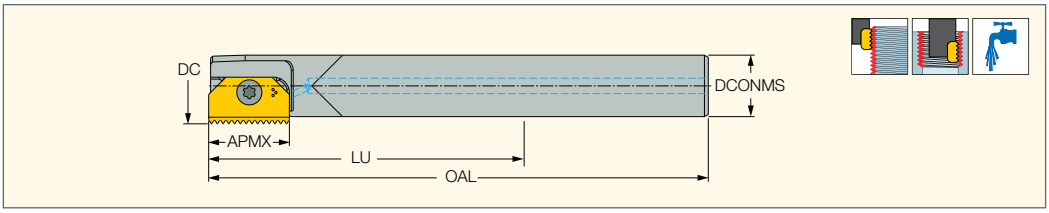
- Tool cutting diameter should not exceed 2/3 of thread bore diameter • All endmills are equipped with a bore for internal coolant
- For user guide, see pages 497-506

[1] Not suitable for inserts: MT LNHT 1202 18NPTF, MT LNHT 1202 18NPT, MT LNHT 1202 19BSPT, MT LNHT 1202 I1.75ISO
[2] Not suitable for inserts:MT LNHT 2104 11.5NPT, 11.5NPTF, 8ABUT and MT LNHU 2104 I3.50ISO, I7UN
[3] Not suitable for MT LNHT 3005 4ABUT inserts
[4] Number of flutes
[5] W-Weldon
[6] Recommended clamping torque

**For inserts, see pages:** MT LNH#-ACME (Internal) (488) • MT LNH#-ISO (Internal) (480) • MT LNH#-NPS (487) • MT LNH#-NPSF (487) • MT LNH#-UN (Internal) (482) • MT LNH#-W (485) • MT LNHT-ABUT (488) • MT LNHT-BSPT (486) • MT LNHT-NPT (485) • MT LNHT-NPTF (486) • MT LNHU-ISO (External) (481) • MT LNHU-PG (489) • MT LNHU-UN (External) (483) • MT LNHU-UNJ (External) (484)

MILLTHREAD

## MTE D-C
Indexable Threading Endmills with Cylindrical Carbide Shanks




| Designation | APMX | DC | DCONMS | LU | OAL | Shank[1] | TQ[2] | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MTE D09.9-1-C08C-12 | 12.00 | 9.90 | 8.00 | 94.00 | 127.00 | C | 1.2 | 0.12 | SR M2.5-T8-MT | BLD T08/M7 | SW4-SD |
| MTE D13.7-1-C10C-14 | 14.00 | 13.70 | 10.00 | 77.00 | 110.00 | C | 1.2 | 0.10 | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD |
| MTE D13.7-1-C10C-14-B | 14.00 | 13.70 | 10.00 | 120.00 | 153.50 | C | 1.2 | 0.17 | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD |
| MTE D15.2-1-C12C-14 | 14.00 | 15.20 | 12.00 | 139.00 | 182.30 | C | 1.2 | 0.12 | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD |
| MTE D21-1-C16C-21 | 21.00 | 21.00 | 16.00 | 86.60 | 130.00 | C | 4.8 | 0.28 | SR M4-IP15-MT | BLD IP15/S7 | SW6-SD |
| MTE D21-1-C16C-21-B | 21.00 | 21.00 | 16.00 | 163.00 | 206.30 | C | 4.8 | 0.60 | SR M4-IP15-MT | BLD IP15/S7 | SW6-SD |
| MTE D27-1-C20C-30 | 30.00 | 27.00 | 20.00 | 204.00 | 263.00 | C | 9.0 | 0.99 | SR M5-IP25-MT-S | BLD IP25/S7 | SW6-T |

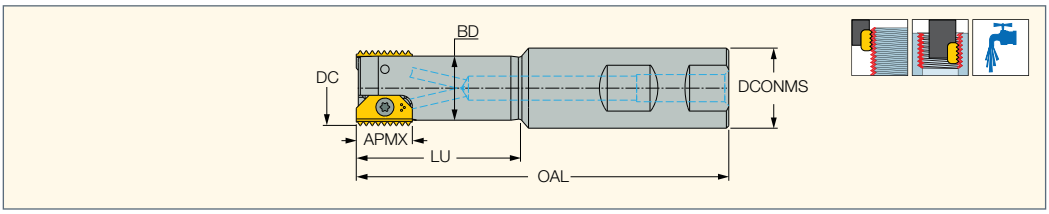
- For holders with a long overhang, reduce the cutting speed and feed rate, between 20 to 40% (depending on workpiece, material, pitch and overhang)
- For user guide, see pages 497-506

[1] C-Cylindrical
[2] Recommended clamping torque

**For inserts, see pages:** MT LNH#-ACME (Internal) (488) • MT LNH#-ISO (Internal) (480) • MT LNH#-NPS (487) • MT LNH#-NPSF (487) • MT LNH#-UN (Internal) (482) • MT LNH#-W (485) • MT LNHT-ABUT (488) • MT LNHT-BSPT (486) • MT LNHT-NPT (485) • MT LNHT-NPTF (486) • MT LNHU-ISO (External) (481) • MT LNHU-NPSM (Int.&Ext.) (484) • MT LNHU-PG (489) • MT LNHU-UN (External) (483) • MT LNHU-UNJ (External) (484) • MT LNHU-UNJ (Internal) (484)

MILLTHREAD

**MTE D (Multi Insert)**
Multi Insert Threading Endmills
with Weldon Shanks




| Designation | APMX | DC | DCONMS | BD | CICT(1) | LU | OAL | Shank(2) | TQ(3) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MTE D20.0-2-W20-14 | 14.00 | 20.00 | 20.00 | 16.00 | 2 | 41.0 | 93.00 | W | 1.2 | 0.20 | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD |
| MTE D20.0-3-W20-14 | 14.00 | 20.00 | 20.00 | 16.00 | 3 | 41.0 | 93.00 | W | 1.2 | 0.15 | SR M2.6-L6.7-S11 | BLD T08/M7 | SW4-SD |
| MTE D30-2-W25-21 | 21.00 | 30.00 | 25.00 | - | 2 | - | 108.00 | W | 4.8 | 0.40 | SR M4-IP15-MT | BLD IP15/S7 | SW6-SD |
| MTE D40-2-W32-30 | 30.00 | 40.00 | 32.00 | 30.00 | 2 | 70.0 | 130.00 | W | 9.0 | 0.70 | SR M5-IP25-MT | BLD IP25/S7 | SW6-T |
| MTE D50-2-W40-40 | 40.00 | 50.00 | 40.00 | 38.00 | 2 | 78.0 | 153.00 | W | 9.0 | 0.80 | SR M5-IP25-MT | BLD IP25/S7 | SW6-T |

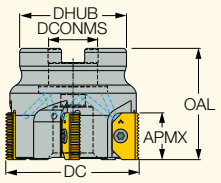
- Tool cutting diameter should not exceed 2/3 of thread bore diameter • All endmills are equipped with a bore for internal coolant
- For user guide, see pages 497-506

(1) Number of inserts (or edges for solid tool)
(2) W-Weldon
(3) Recommended clamping torque

**For inserts, see pages:** MT LNH#-ACME (Internal) (488) • MT LNH#-ISO (Internal) (480) • MT LNH#-NPS (487) • MT LNH#-NPSF (487)
• MT LNH#-UN (Internal) (482) • MT LNH#-W (485) • MT LNHT-ABUT (488) • MT LNHT-BSPT (486) • MT LNHT-NPT (485) • MT LNHT-NPTF (486)
• MT LNHU-ISO (External) (481) • MT LNHU-NPSM (Int.&Ext.) (484) • MT LNHU-PG (489) • MT LNHU-UN (External) (483) • MT LNHU-UNJ (External) (484)
• MT LNHU-UNJ (Internal) (484)

MILLTHREAD

**MTF D (Shell Mill)**
Thread Milling
Multi-Insert Shell Mills




| Designation | DC | APMX | CICT(1) | DHUB | DCONMS | OAL | TQ(2) | kg |
|---|---|---|---|---|---|---|---|---|
| MTF D063-5-22-21 | 63.00 | 21.00 | 5 | 40.00 | 22.00 | 50.00 | 4.8 | 0.70 |
| MTF D063-4-22-30 | 63.00 | 30.00 | 4 | 48.00 | 22.00 | 50.00 | 9.0 | 0.56 |
| MTF D080-4-27-30 | 80.00 | 30.00 | 4 | 60.00 | 27.00 | 50.00 | 9.0 | 1.18 |
| MTF D080-4-27-40 | 80.00 | 40.00 | 4 | 60.00 | 27.00 | 60.00 | 9.0 | 1.04 |
| MTF D100-4-32-30 | 100.00 | 30.00 | 4 | 78.00 | 32.00 | 50.00 | 9.0 | 1.89 |
| MTF D100-8-32-30 | 100.00 | 30.00 | 8 | 78.00 | 32.00 | 50.00 | 9.0 | 1.90 |
| MTF D100-4-32-40 | 100.00 | 40.00 | 4 | 78.00 | 32.00 | 60.00 | 9.0 | 0.20 |

- For user guide, see pages 497-506

(1) Number of inserts (or edges for solid tool)
(2) Recommended clamping moment

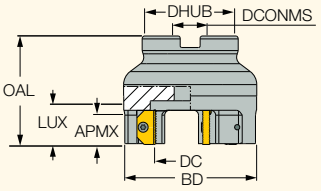
**For inserts, see pages:** MT LNH#-ACME (Internal) (488) • MT LNH#-ISO (Internal) (480) • MT LNH#-NPS (487) • MT LNH#-NPSF (487)
• MT LNH#-UN (Internal) (482) • MT LNH#-W (485) • MT LNHT-ABUT (488) • MT LNHT-BSPT (486) • MT LNHT-NPT (485) • MT LNHT-NPTF (486)
• MT LNHU-ISO (External) (481) • MT LNHU-NPSM (Int.&Ext.) (484) • MT LNHU-PG (489) • MT LNHU-UN (External) (483)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| MTF D063-5-22-21 | SR M4-IP15-MT | SR M10X25 DIN912 | BLD IP15/S7 | SW6-SD |
| MTF D063-4-22-30 | SR M5-IP25-MT | SR M10X25 DIN912 | BLD IP25/S7 | SW6-T |
| MTF D080-4-27-30 | SR M5-IP25-MT | SR M12X25 DIN 912 | BLD IP25/S7 | SW6-T |
| MTF D080-4-27-40 | SR M5-IP25-MT | SR M12X25 DIN 912 | BLD IP25/S7 | SW6-T |
| MTF D100-4-32-30 | SR M5-IP25-MT | SR M16X30 DIN912 | BLD IP25/S7 | SW6-T |
| MTF D100-8-32-30 | SR M5-IP25-MT | SR M16X30 DIN912 | BLD IP25/S7 | SW6-T |
| MTF D100-4-32-40 | SR M5-IP25-MT | SR M16X30 DIN912 | BLD IP25/S7 | SW6-T |

MILLTHREAD

**MTFLE**
External Multi-Tooth
Threading Shell Mills




Left-hand tools (CNC code M04)

| Designation | DC | BD | DHUB | DCONMS | OAL | LUX | APMX | CICT(1) | TQ(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| MTFLE D20-3-22-21 | 20.00 | 58.20 | 48.00 | 22.00 | 63.00 | 27.0 | 21.00 | 3 | 4.8 | 0.70 |
| MTFLE D20-4-22-21 | 20.00 | 58.20 | 48.00 | 22.00 | 63.00 | 27.0 | 21.00 | 4 | 4.8 | 0.70 |
| MTFLE D30-3-22-21 | 30.00 | 68.20 | 48.00 | 22.00 | 63.00 | 27.0 | 21.00 | 3 | 4.8 | 0.90 |
| MTFLE D45-4-27-21 | 45.00 | 83.20 | 60.00 | 27.00 | 67.00 | 27.0 | 21.00 | 4 | 4.8 | 1.40 |

- For user guide, see pages 497-506

(1) Number of inserts (or edges for solid tool)
(2) Recommended clamping torque

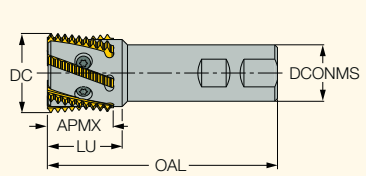
**For inserts, see pages:** MT LNH#-NPS (487) • MT LNH#-NPSF (487) • MT LNH#-W (485) • MT LNHT-ABUT (488) • MT LNHT-BSPT (486) • MT LNHT-NPT (485) • MT LNHT-NPTF (486) • MT LNHU-ISO (External) (481) • MT LNHU-PG (489) • MT LNHU-UN (External) (483)

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| MTFLE D20-3-22-21 | SR M10X25 DIN912 | BLD IP15/S7 | SW6-SD | SR M4-IP15-MT |
| MTFLE D20-4-22-21 | SR M10X25 DIN912 | BLD IP15/S7 | SW6-SD | SR M4-IP15-MT |
| MTFLE D30-3-22-21 | SR M10X25 DIN912 | BLD IP15/S7 | SW6-SD | SR M4-IP15-MT |
| MTFLE D45-4-27-21 | SR M12X25 DIN 912 | BLD IP15/S7 | SW6-SD | SR M4-IP15-MT |

MILLTHREAD

**MTSRH (endmills)**
Endmills with Coolant Holes
for Helical Threading Inserts



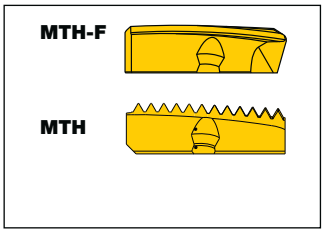

| Designation | DC | APMX | DCONMS | OAL | LU | NOF(1) | Shank(2) | kg | MIID(3) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MTSRH 23-2-N | 23.00 | 27.00 | 25.00 | 110.00 | 50.0 | 2 | W | 0.26 | MTH 23 I 4.0 ISO | S23 | | | T-15/5 |
| MTSRH 32-5-N | 32.00 | 32.00 | 32.00 | 130.00 | 60.0 | 5 | W | 0.60 | MTH 32 E 1.5 ISO | S32 | | | T-20/5 |
| MTSRH 45-6-N | 45.00 | 37.00 | 32.00 | 130.00 | - | 6 | W | 0.75 | MTH 45 E 1.5 ISO | | K40 | SR M5X0.8-MTH45 | |

- Note: ISCAR can provide special contour inserts on request

(1) Number of flutes
(2) W-Weldon
(3) Master insert identification

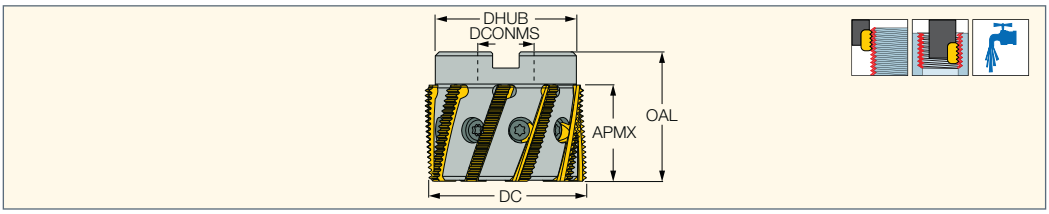
**For inserts, see pages:** MTH-BSPT (int. & ext.) (493) • MTH-F (495) • MTH-ISO (external) (489) • MTH-ISO (internal) (490) • MTH-NPT (int. & ext.) (494) • MTH-NPTF (int. & ext.) (494) • MTH-UN (external) (491) • MTH-UN (internal) (492) • MTH-W (int. & ext.) (493)

**MTSRH with MTH-F**
**Finishing Inserts**



MILLTHREAD

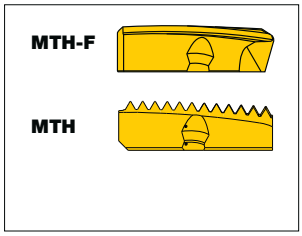
**MTSRH (helical shell mill)**
Shell Mills with Coolant Holes
for Helical Threading Inserts




| Designation | DC | APMX | DHUB | DCONMS | OAL | NOF(1) | kg | MIID(2) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MTSRH 32-5M-N | 32.00 | 32.00 | 26.00 | 16.00 | 52.00 | 5 | 0.12 | MTH 32 E 1.5 ISO | S32S | | |
| MTSRH 45-6M-N | 45.00 | 37.00 | 38.00 | 22.00 | 60.00 | 6 | 0.43 | MTH 45 E 1.5 ISO | | K40 | SR M5X0.8-MTH45 |
| MTSRH 63-9-N | 63.00 | 38.00 | 51.70 | 22.00 | 50.00 | 9 | 0.71 | MTH 63 11 W | | K40 | SR M5X0.8-MTH63 |

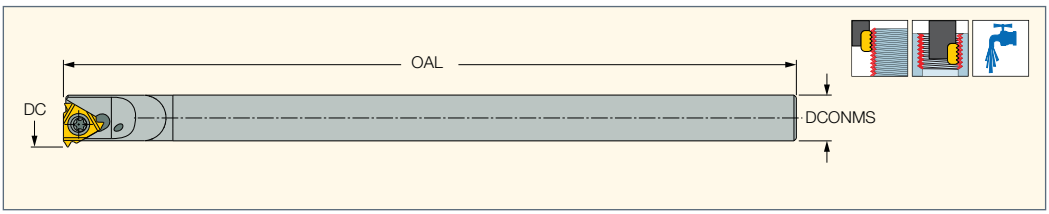
• Note: ISCAR can provide special contour inserts on request • For user guide, see pages 497-506
(1) Number of flutes
(2) Master insert identification

**For inserts, see pages:** MTH-BSPT (int. & ext.) (493) • MTH-F (495) • MTH-ISO (external) (489) • MTH-ISO (internal) (490) • MTH-NPT (int. & ext.) (494) • MTH-NPTF (int. & ext.) (494) • MTH-UN (external) (491) • MTH-UN (internal) (492) • MTH-W (int. & ext.) (493)




MILLTHREAD

**MTET Single Point**
Indexable Threading Endmills
with Cylindrical Shanks
for Single Point Inserts




| Designation | Dimensions | | | | | | | | | | | kg | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TPN(2) | TPX(3) | TPIX(4) | TPIN(5) | DC | DCONMS | OAL | Shank(6) | Shank m.(7) | Insert | CSP(8) | | $f_z$ (mm/rev) |
| MTET D7.0-1-C5C-06 | 0.500 | 1.250 | 48.00 | 20.00 | 7.00 | 5.00 | 63.00 | C | C | 06IR/EL | 0 | 0.06 | 0.05-0.15 |
| MTET D8.8-1-C6C-08 | 0.500 | 1.750 | 48.00 | 14.00 | 8.80 | 6.00 | 100.00 | C | C | 08IR/EL | 1 | 0.04 | 0.05-0.15 |
| MTET D13.2-1-C10C-11 (1) | 0.500 | 2.000 | 48.00 | 11.00 | 13.20 | 10.00 | 150.00 | C | C | 11IR/EL | 1 | 0.13 | 0.05-0.15 |

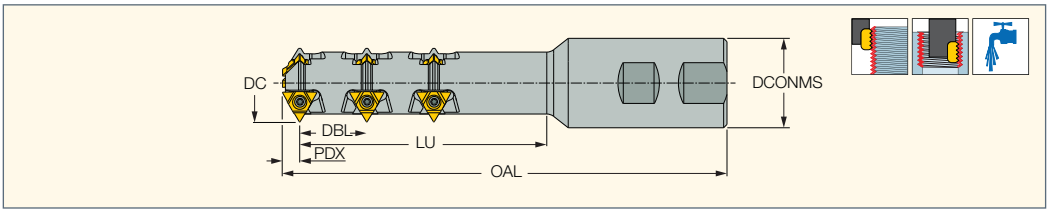
• For user guide, see pages 497-506 • For inserts, refer to ISCAR Turning Lines catalog • Tool cutting diameter should not exceed 2/3 of thread bore diameter
(1) For internal threading use internal R.H insert, for external threading use external L.H insert
(2) Thread pitch minimum (mm)
(3) Thread pitch maximum (mm)
(4) Threads per inch maximum
(5) Threads per inch minimum
(6) C-Cylindrical
(7) Shank material C-carbide
(8) 0 - Without coolant supply, 1 - With coolant supply

## Spare Parts

| Designation | | |
|---|---|---|
| MTET D7.0-1-C5C-06 | SR 14-552 | T-6/5 |
| MTET D8.8-1-C6C-08 | SR 14-558-S | T-6/5 |
| MTET D13.2-1-C10C-11 | SR M2.6-L6.7-S11 | T-8/5 |

QUICKMTHREAD

**MTET Step Release**
Indexable Threading Endmills
with Cylindrical Shanks
for Single Point Inserts




| Designation | DC | PDX | NOF(1) | CICT(2) | DBL | DCONMS | OAL | LU | Shank(3) | MIID(4) |
|---|---|---|---|---|---|---|---|---|---|---|
| **MTET D20-1-12-5-W25-11U** | 20.00 | 5.20 | 1 | 5 | 12.00 | 25.00 | 124.60 | 60.00 | W | MT TNCT 11U |
| **MTET D25-3-21-3-W25-11U** | 25.00 | 5.20 | 3 | 9 | 21.00 | 25.00 | 144.60 | 79.50 | W | MT TNCT 11U |
| **MTET D30-3-36-3-W32-11U** | 30.00 | 5.20 | 3 | 9 | 36.00 | 32.00 | 179.70 | 110.00 | W | MT TNCT 11U |
| **MTET D36-3-30-3-W40-16U** | 36.00 | 7.90 | 3 | 9 | 30.00 | 40.00 | 192.90 | 110.50 | W | MT TNCT 16U |
| **MTET D42-3-60-2-W40-16U** | 42.00 | 7.90 | 3 | 6 | 60.00 | 40.00 | 212.20 | 127.00 | W | MT TNCT 16U |

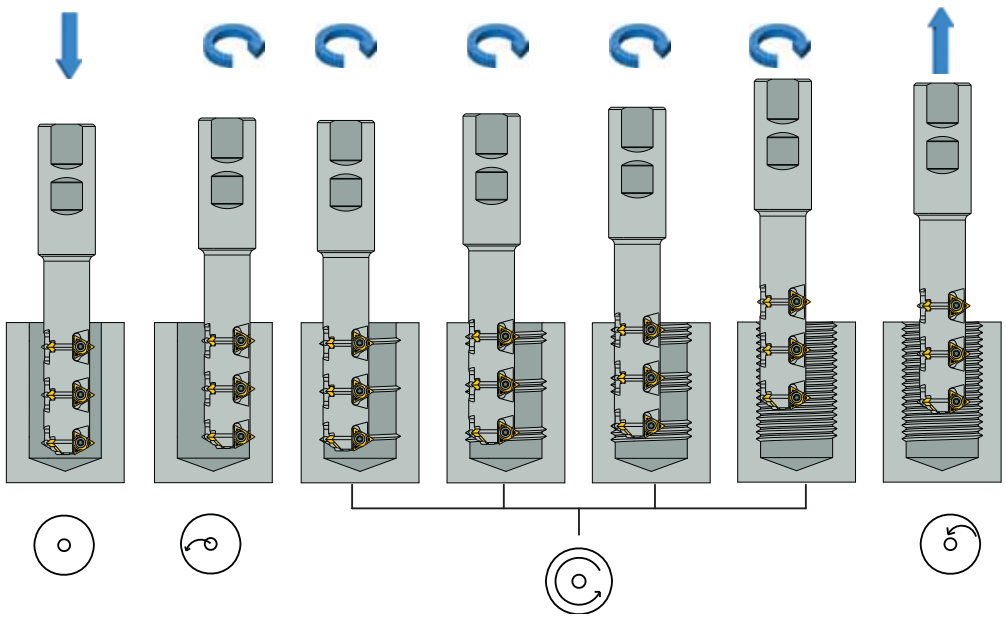
**New**

- For user guide, see pages 497-506 • Tool cutting diameter should not exceed 2/3 of thread bore diameter

(1) Number of flutes
(2) Number of inserts (or edges for solid tool)
(3) W-Weldon
(4) Master insert identification

**For inserts, see pages:** MT TNCT-U55 (496) • MT TNCT-U60 (496)

| Tool with Inserts | Suitable Pitches INT [mm] | | | Suitable Pitches EXT [mm] | | |
|---|---|---|---|---|---|---|
| MTET D20-1-12-5-W25-11U+MT TNCT 11U 60D | 3 | | | 2 | 3 | |
| MTET D25-3-21-3-W25-11U+MT TNCT 11U 60D | 3 | 3.5 | | 3 | | |
| MTET D30-3-36-3-W32-11U+MT TNCT 11U 60D | 3 | 4 | | 2 | 3 | |
| MTET D36-3-30-3-W40-16U+MT TNCT 16U 60D | 5 | 6 | | 3 | 5 | |
| MTET D42-3-60-2-W40-16U+MT TNCT 16U 60D | 4 | 5 | 6 | 3 | 4 | 5 |

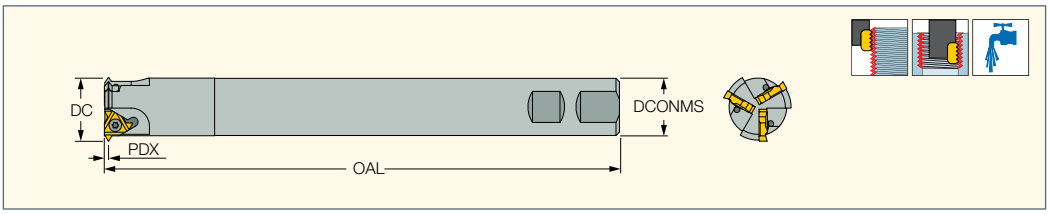


## Spare Parts

| Designation | | |
|---|---|---|
| **MTET D20-1-12-5-W25-11U** | SR M2.6-L6.7-S11 | T-8/5 |
| **MTET D25-3-21-3-W25-11U** | SR M2.6-L6.7-S11 | T-8/5 |
| **MTET D30-3-36-3-W32-11U** | SR M2.6-L6.7-S11 | T-8/5 |
| **MTET D36-3-30-3-W40-16U** | SR 14-562 | T-10/5 |
| **MTET D42-3-60-2-W40-16U** | SR 14-562 | T-10/5 |

MILLTHREAD

**MTSR M.I. S.P.**
Indexable Multi-Insert Threading Endmills with Weldon Shanks for Single Point Inserts



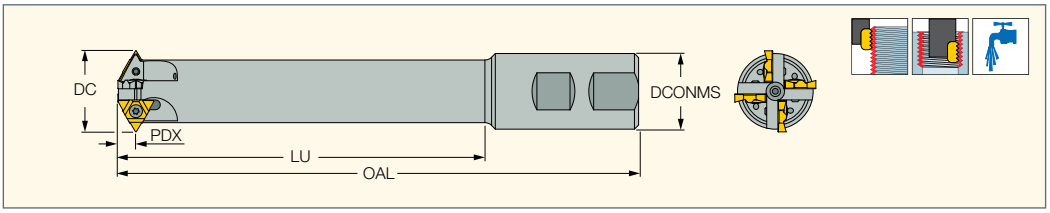

| Designation | DC | PDX | NOF(1) | DCONMS | OAL | Shank(2) | Shank m.(3) | Insert | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MTSR 0023 Q11** | 23.50 | 1.0 | 3 | 20.00 | 190.00 | W | S | MT3 11..D | 0.41 | SR M2.6-L6.7-S11 | T-8/5 |
| **MTSR 0031 R16** | 31.00 | 1.8 | 3 | 25.00 | 225.00 | W | S | MT3 16..D | 0.76 | SR 5-40-L9.7-S16S | |

• Minimum bore should be one-third larger than D • For user guide, see pages 497-506
(1) Number of flutes
(2) W-Weldon
(3) S-Steel shanks

**For inserts, see pages:** MT3-55D (496) • MT3-60D (495)

MILLTHREAD

**MTSR M.I. S.P.-U**
Indexable Multi-Insert Threading Endmills with Weldon Shanks for Single Point U-Type Inserts



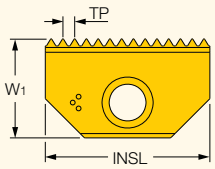

| Designation | DC | PDX | NOF(1) | DCONMS | LU | OAL | Shank(2) | Shank m.(3) | Insert | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MTSR 0023 M11U** | 23.00 | 5.0 | 3 | 25.00 | 88.0 | 150.00 | W | S | MT3 11U..D | 0.32 | SR M2.6-L6.7-S11 | T-8/5 |
| **MTSR 0035 R16U** | 35.50 | 7.6 | 4 | 32.00 | 155.0 | 220.00 | W | S | MT3 16U..D | 0.95 | SR 5-40-L9.7-S16S | |

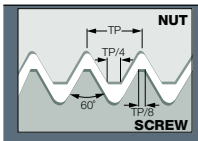
• Minimum bore should be one-third larger than D • For user guide, see pages 497-506
(1) Number of flutes
(2) W-Weldon
(3) S-Steel shanks

**For inserts, see pages:** MT TNCT-U55 (496) • MT TNCT-U60 (496)

MILLTHREAD

**MT LNH#-ISO (Internal)**
Thread Milling Inserts for Internal ISO Metric Profile






| Designation | Dimensions TP(1) | INSL | W1 | S1 | IC908 |
|---|---|---|---|---|---|
| MT LNHT 1202 I0.50ISO | 0.500 | 12.00 | 6.50 | 2.90 | • |
| MT LNHU 1403 I0.50ISO | 0.500 | 14.00 | 7.90 | 3.20 | • |
| MT LNHT 1202 I0.75ISO | 0.750 | 12.00 | 6.50 | 2.90 | • |
| MT LNHU 1403 I0.75ISO | 0.750 | 14.00 | 7.90 | 3.20 | • |
| MT LNHT 1202 I1.00ISO | 1.000 | 12.00 | 6.50 | 2.90 | • |
| MT LNHU 1403 I1.00ISO | 1.000 | 14.00 | 7.90 | 3.20 | • |
| MT LNHU 2104 I1.00ISO | 1.000 | 21.00 | 12.60 | 4.80 | • |
| MT LNHT 1202 I1.25ISO | 1.250 | 12.00 | 6.50 | 2.90 | • |
| MT LNHU 1403 I1.25ISO | 1.250 | 14.00 | 7.90 | 3.20 | • |
| MT LNHT 1202 I1.50ISO | 1.500 | 12.00 | 6.50 | 2.90 | • |
| MT LNHU 1403 I1.50ISO | 1.500 | 14.00 | 7.90 | 3.20 | • |
| MT LNHU 2104 I1.50ISO | 1.500 | 21.00 | 12.60 | 4.80 | • |
| MT LNHU 3005 I1.50ISO | 1.500 | 30.00 | 16.70 | 5.60 | • |
| MT LNHU 4006 I1.50ISO | 1.500 | 40.00 | 20.80 | 6.40 | • |
| MT LNHT 1202 I1.75ISO | 1.750 | 12.00 | 6.50 | 2.90 | • |
| MT LNHU 1403 I1.75ISO | 1.750 | 14.00 | 7.90 | 3.20 | • |
| MT LNHU 2104 I1.75ISO | 1.750 | 21.00 | 12.60 | 4.80 | • |
| MT LNHU 1403 I2.00ISO | 2.000 | 14.00 | 7.90 | 3.20 | • |
| MT LNHU 2104 I2.00ISO | 2.000 | 21.00 | 12.60 | 4.80 | • |
| MT LNHU 3005 I2.00ISO | 2.000 | 30.00 | 16.70 | 5.60 | • |
| MT LNHU 4006 I2.00ISO | 2.000 | 40.00 | 20.80 | 6.40 | • |
| MT LNHU 1403 I2.50ISO | 2.500 | 14.00 | 7.90 | 3.20 | • |
| MT LNHU 2104 I2.50ISO | 2.500 | 21.00 | 12.60 | 4.80 | • |
| MT LNHU 2104 I3.00ISO | 3.000 | 21.00 | 12.60 | 4.80 | • |
| MT LNHU 3005 I3.00ISO | 3.000 | 30.00 | 16.70 | 5.60 | • |
| MT LNHU 4006 I3.00ISO | 3.000 | 40.00 | 20.80 | 6.40 | • |
| MT LNHU 2104 I3.50ISO | 3.500 | 21.00 | 12.60 | 4.80 | • |
| MT LNHU 3005 I3.50ISO | 3.500 | 30.00 | 16.70 | 5.60 | • |
| MT LNHU 4006 I3.50ISO | 3.500 | 40.00 | 20.80 | 6.40 | • |
| MT LNHU 3005 I4.00ISO | 4.000 | 30.00 | 16.70 | 5.60 | • |
| MT LNHU 4006 I4.00ISO | 4.000 | 40.00 | 20.80 | 6.40 | • |
| MT LNHU 3005 I4.50ISO | 4.500 | 30.00 | 16.70 | 5.60 | • |
| MT LNHU 4006 I4.50ISO | 4.500 | 40.00 | 20.80 | 6.40 | • |
| MT LNHU 3005 I5.00ISO | 5.000 | 30.00 | 16.70 | 5.60 | • |
| MT LNHU 4006 I5.00ISO | 5.000 | 40.00 | 20.80 | 6.40 | • |
| MT LNHU 4006 I5.50ISO | 5.500 | 40.00 | 20.80 | 6.40 | • |
| MT LNHU 4006 I6.00ISO | 6.000 | 40.00 | 20.80 | 6.40 | • |

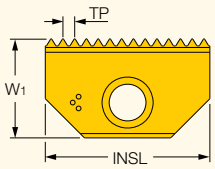
• For cutting speed recommendations, see page 497

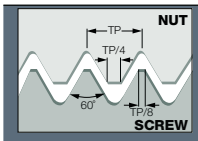
(1) Thread pitch

**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475)

MILLTHREAD

**MT LNHU-ISO (External)**
Thread Milling Inserts for
External ISO Metric Profile






| Designation | Dimensions TP[1] | INSL | W1 | S1 | IC908 |
|---|---|---|---|---|---|
| MT LNHU 1403 E0.75ISO | 0.750 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 1403 E1.00ISO | 1.000 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 2104 E1.00ISO | 1.000 | 21.00 | 12.60 | 4.80 | ● |
| MT LNHU 1403 E1.25ISO | 1.250 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 1403 E1.50ISO | 1.500 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 2104 E1.50ISO | 1.500 | 21.00 | 12.60 | 4.80 | ● |
| MT LNHU 3005 E1.50ISO | 1.500 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 4006 E1.50ISO | 1.500 | 40.00 | 20.80 | 6.40 | ● |
| MT LNHU 1403 E1.75ISO | 1.750 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 1403 E2.00ISO | 2.000 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 2104 E2.00ISO | 2.000 | 21.00 | 12.60 | 4.80 | ● |
| MT LNHU 3005 E2.00ISO | 2.000 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 4006 E2.00ISO | 2.000 | 40.00 | 20.80 | 6.40 | ● |
| MT LNHU 1403 E2.50ISO | 2.500 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 2104 E2.50ISO | 2.500 | 21.00 | 12.80 | 4.80 | ● |
| MT LNHU 2104 E3.00ISO | 3.000 | 21.00 | 12.80 | 4.80 | ● |
| MT LNHU 3005 E3.00ISO | 3.000 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 4006 E3.00ISO | 3.000 | 40.00 | 20.80 | 6.40 | ● |
| MT LNHU 3005 E3.50ISO | 3.500 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 3005 E4.00ISO | 4.000 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 4006 E4.00ISO | 4.000 | 40.00 | 20.80 | 6.40 | ● |
| MT LNHU 4006 E5.00ISO | 5.000 | 40.00 | 20.80 | 6.40 | ● |
| MT LNHU 4006 E6.00ISO | 6.000 | 40.00 | 20.80 | 6.40 | ● |

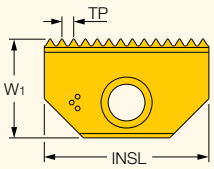
• For cutting speed recommendations, see page 497

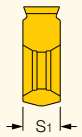
[1] Thread pitch

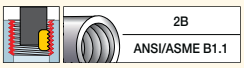
**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475) • MTFLE (476)

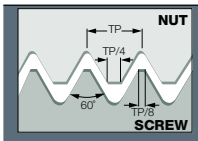
MILLTHREAD

**MT LNH#-UN (Internal)**
Thread Milling Inserts for American (UN, UNC, UNF, UNEF, UNS) Full Profile Threads for General Applications




| Designation | Dimensions | | | | | IC908 |
|---|---|---|---|---|---|---|
| | TPI[1] | INSL | W1 | S1 | TP[2] | |
| MT LNHT 1202 I32UN | 32.0 | 12.00 | 6.50 | 2.90 | 0.794 | • |
| MT LNHT 1202 I28UN | 28.0 | 12.00 | 6.50 | 2.90 | 0.907 | • |
| MT LNHT 1202 I24UN | 24.0 | 12.00 | 6.50 | 2.90 | 1.058 | • |
| MT LNHT 1202 I20UN | 20.0 | 12.00 | 6.50 | 2.90 | 1.270 | • |
| MT LNHT 1202 I18UN | 18.0 | 12.00 | 6.50 | 2.90 | 1.411 | • |
| MT LNHT 1202 I16UN | 16.0 | 12.00 | 6.50 | 2.90 | 1.588 | • |
| MT LNHU 1403 I32UN | 32.0 | 14.00 | 7.90 | 3.20 | 0.794 | • |
| MT LNHU 1403 I28UN | 28.0 | 14.00 | 7.90 | 3.20 | 0.907 | • |
| MT LNHU 1403 I27UN | 27.0 | 14.00 | 7.90 | 3.20 | 0.941 | • |
| MT LNHU 1403 I24UN | 24.0 | 14.00 | 7.90 | 3.20 | 1.058 | • |
| MT LNHU 1403 I20UN | 20.0 | 14.00 | 7.90 | 3.20 | 1.270 | • |
| MT LNHU 1403 I18UN | 18.0 | 14.00 | 7.90 | 3.20 | 1.411 | • |
| MT LNHU 1403 I16UN | 16.0 | 14.00 | 7.90 | 3.20 | 1.588 | • |
| MT LNHU 1403 I14UN | 14.0 | 14.00 | 7.90 | 3.20 | 1.814 | • |
| MT LNHU 1403 I12UN | 12.0 | 14.00 | 7.90 | 3.20 | 2.117 | • |
| MT LNHU 1403 I11UN | 11.0 | 14.00 | 7.90 | 3.20 | 2.309 | • |
| MT LNHU 1403 I10UN | 10.0 | 14.00 | 7.90 | 3.20 | 2.540 | • |
| MT LNHU 2104 I24UN | 24.0 | 21.00 | 12.60 | 4.80 | 1.058 | • |
| MT LNHU 2104 I20UN | 20.0 | 21.00 | 12.60 | 4.80 | 1.270 | • |
| MT LNHU 2104 I18UN | 18.0 | 21.00 | 12.60 | 4.80 | 1.411 | • |
| MT LNHU 2104 I16UN | 16.0 | 21.00 | 12.60 | 4.80 | 1.588 | • |
| MT LNHU 2104 I14UN | 14.0 | 21.00 | 12.60 | 4.80 | 1.814 | • |
| MT LNHU 2104 I12UN | 12.0 | 21.00 | 12.60 | 4.80 | 2.117 | • |
| MT LNHU 2104 I10UN | 10.0 | 21.00 | 12.60 | 4.80 | 2.540 | • |
| MT LNHU 2104 I8UN | 8.0 | 21.00 | 12.60 | 4.80 | 3.175 | • |
| MT LNHU 2104 I7UN | 7.0 | 21.00 | 12.60 | 4.80 | 3.629 | • |
| MT LNHU 3005 I20UN | 20.0 | 30.00 | 16.70 | 5.60 | 1.270 | • |
| MT LNHU 3005 I18UN | 18.0 | 30.00 | 16.70 | 5.60 | 1.411 | • |
| MT LNHU 3005 I16UN | 16.0 | 30.00 | 16.70 | 5.60 | 1.588 | • |
| MT LNHU 3005 I14UN | 14.0 | 30.00 | 16.70 | 5.60 | 1.814 | • |
| MT LNHU 3005 I12UN | 12.0 | 30.00 | 16.70 | 5.60 | 2.117 | • |
| MT LNHU 3005 I10UN | 10.0 | 30.00 | 16.70 | 5.60 | 2.540 | • |
| MT LNHU 3005 I8UN | 8.0 | 30.00 | 16.70 | 5.60 | 3.175 | • |
| MT LNHU 3005 I6UN | 6.0 | 30.00 | 16.70 | 5.60 | 4.233 | • |
| MT LNHU 3005 I5UN | 5.0 | 30.00 | 16.70 | 5.60 | 5.080 | • |
| MT LNHU 4006 I16UN | 16.0 | 40.00 | 20.80 | 6.40 | 1.588 | • |
| MT LNHU 4006 I14UN | 14.0 | 40.00 | 20.80 | 6.40 | 1.814 | • |
| MT LNHU 4006 I12UN | 12.0 | 40.00 | 20.80 | 6.40 | 2.117 | • |
| MT LNHU 4006 I10UN | 10.0 | 40.00 | 20.80 | 6.40 | 2.540 | • |
| MT LNHU 4006 I8UN | 8.0 | 40.00 | 20.80 | 6.40 | 3.175 | • |
| MT LNHU 4006 I6UN | 6.0 | 40.00 | 20.80 | 6.40 | 4.233 | • |
| MT LNHU 4006 I4.5UN | 4.5 | 40.00 | 20.80 | 6.40 | 5.644 | • |
| MT LNHU 4006 I4UN | 4.0 | 40.00 | 20.80 | 6.40 | 6.350 | • |

• For cutting speed recommendations, see page 497

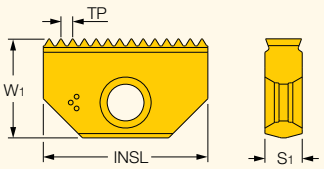
(1) Threads per inch

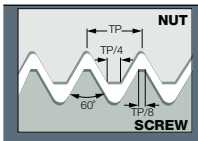
(2) Thread pitch

**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475)

MILLTHREAD

**MT LNHU-UN (External)**
External (UN, UNC, UNF, UNEF, UNS) Full Profile Thread Milling Inserts for General Industries






| Designation | Dimensions | | | | | IC908 |
|---|---|---|---|---|---|---|
| | TPI[1] | TP[2] | INSL | W1 | S1 | |
| MT LNHU 1403 E32UN | 32.0 | 0.794 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 1403 E28UN | 28.0 | 0.907 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 1403 E24UN | 24.0 | 1.058 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 1403 E20UN | 20.0 | 1.270 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 1403 E18UN | 18.0 | 1.411 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 1403 E16UN | 16.0 | 1.588 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 1403 E14UN | 14.0 | 1.814 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 1403 E12UN | 12.0 | 2.117 | 14.00 | 7.90 | 3.20 | ● |
| MT LNHU 2104 E24UN | 24.0 | 1.058 | 21.00 | 12.60 | 4.80 | ● |
| MT LNHU 2104 E20UN | 20.0 | 1.270 | 21.00 | 12.60 | 4.80 | ● |
| MT LNHU 2104 E18UN | 18.0 | 1.411 | 21.00 | 12.60 | 4.80 | ● |
| MT LNHU 2104 E16UN | 16.0 | 1.588 | 21.00 | 12.60 | 4.80 | ● |
| MT LNHU 2104 E14UN | 14.0 | 1.814 | 21.00 | 12.60 | 4.80 | ● |
| MT LNHU 2104 E12UN | 12.0 | 2.117 | 21.00 | 12.60 | 4.80 | ● |
| MT LNHU 2104 E10UN | 10.0 | 2.540 | 21.00 | 12.60 | 4.80 | ● |
| MT LNHU 3005 E20UN | 20.0 | 1.270 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 3005 E18UN | 18.0 | 1.411 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 3005 E16UN | 16.0 | 1.588 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 3005 E14UN | 14.0 | 1.814 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 3005 E12UN | 12.0 | 2.117 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 3005 E10UN | 10.0 | 2.540 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 3005 E8UN | 8.0 | 3.175 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 3005 E6UN | 6.0 | 4.233 | 30.00 | 16.70 | 5.60 | ● |
| MT LNHU 4006 E16UN | 16.0 | 1.588 | 40.00 | 20.80 | 6.40 | ● |
| MT LNHU 4006 E14UN | 14.0 | 1.814 | 40.00 | 20.80 | 6.40 | ● |
| MT LNHU 4006 E12UN | 12.0 | 2.117 | 40.00 | 20.80 | 6.40 | ● |
| MT LNHU 4006 E10UN | 10.0 | 2.540 | 40.00 | 20.80 | 6.40 | ● |
| MT LNHU 4006 E8UN | 8.0 | 3.175 | 40.00 | 20.80 | 6.40 | ● |
| MT LNHU 4006 E6UN | 6.0 | 4.233 | 40.00 | 20.80 | 6.40 | ● |

• For cutting speed recommendations, see page 497

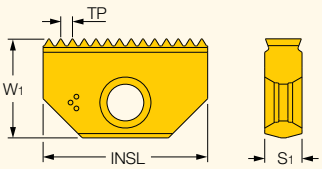
[1] Threads per inch

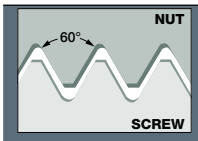
[2] Thread pitch

**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475) • MTFLE (476)

MILLTHREAD

**MT LNHU-UNJ (Internal)**
UNJ Internal Full Profile Thread Milling Inserts for the Aviation and Aerospace Industries






| Designation | Dimensions TPI(1) | TP(2) | INSL | W1 | S1 | IC908 |
|---|---|---|---|---|---|---|
| MT LNHU 1403 I12UNJ | 12.0 | 2.117 | 14.00 | 7.91 | 3.18 | ● |

New

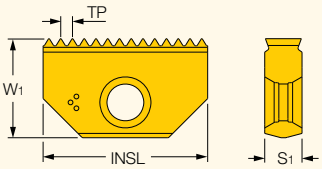
- For cutting speed recommendations, see page 497

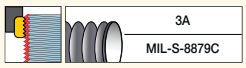
(1) Threads per inch
(2) Thread pitch

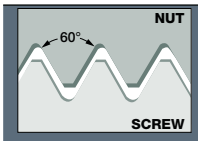
**For tools, see pages:** MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473)

MILLTHREAD

**MT LNHU-UNJ (External)**
UNJ External Full Profile Thread Milling Inserts for the Aviation and Aerospace Industries




| Designation | Dimensions TPI(1) | TP(2) | INSL | W1 | S1 | IC908 |
|---|---|---|---|---|---|---|
| MT LNHU 1403 E20UNJ | 20.0 | 1.270 | 14.00 | 7.91 | 3.18 | ● |

New

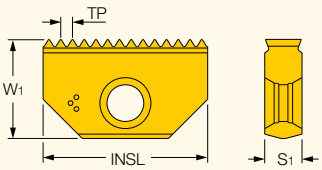
- For cutting speed recommendations, see page 497

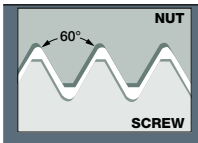
(1) Threads per inch
(2) Thread pitch

**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473)

MILLTHREAD

**MT LNHU-NPSM (Int.&Ext.)**
External and Internal NPSM (National Pipe Straight Mechanical Fittings) Full Profile Thread Milling Inserts






| Designation | Dimensions TPI(1) | TP(2) | INSL | W1 | S1 | IC908 |
|---|---|---|---|---|---|---|
| MT LNHU 1403 I14NPSM | 14.0 | 1.814 | 14.00 | 7.91 | 3.18 | ● |
| MT LNHU 3005 I8NPSM | 8.0 | 3.175 | 30.00 | 16.68 | 5.56 | ● |

New

- For cutting speed recommendations, see page 497

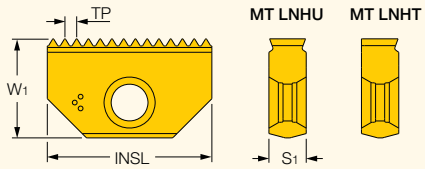
(1) Threads per inch
(2) Thread pitch

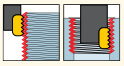
**For tools, see pages:** MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475)

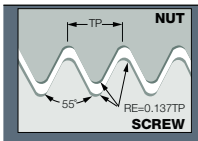
MILLTHREAD

## MT LNH#-W

External & Internal Whitworth (BSW, BSF, BSP) Full Profile Thread Milling Inserts for Fittings and Pipe Couplings






| Designation | Dimensions TPI(1) | INSL | W1 | S1 | TP(2) | IC908 |
|---|---|---|---|---|---|---|
| MT LNHT 1202 19W | 19.0 | 12.00 | 6.50 | 2.90 | 1.337 | ● |
| MT LNHU 1403 24W | 24.0 | 14.00 | 7.90 | 3.20 | 1.058 | ● |
| MT LNHU 1403 20W | 20.0 | 14.00 | 7.90 | 3.20 | 1.270 | ● |
| MT LNHU 1403 19W | 19.0 | 14.00 | 7.90 | 3.20 | 1.337 | ● |
| MT LNHU 1403 16W | 16.0 | 14.00 | 7.90 | 3.20 | 1.588 | ● |
| MT LNHU 1403 14W | 14.0 | 14.00 | 7.90 | 3.20 | 1.814 | ● |
| MT LNHU 2104 20W | 20.0 | 21.00 | 12.60 | 4.80 | 1.270 | ● |
| MT LNHU 2104 19W | 19.0 | 21.00 | 12.60 | 4.80 | 1.337 | ● |
| MT LNHU 2104 16W | 16.0 | 21.00 | 12.60 | 4.80 | 1.588 | ● |
| MT LNHU 2104 14W | 14.0 | 21.00 | 12.60 | 4.80 | 1.814 | ● |
| MT LNHU 2104 11W | 11.0 | 21.00 | 12.60 | 4.80 | 2.309 | ● |
| MT LNHU 3005 16W | 16.0 | 30.00 | 16.70 | 5.60 | 1.588 | ● |
| MT LNHU 3005 14W | 14.0 | 30.00 | 16.70 | 5.60 | 1.814 | ● |
| MT LNHU 3005 11W | 11.0 | 30.00 | 16.70 | 5.60 | 2.309 | ● |
| MT LNHU 4006 11W | 11.0 | 40.00 | 20.80 | 6.40 | 2.309 | ● |
| MT LNHU 4006 8W | 8.0 | 40.00 | 20.80 | 6.40 | 3.175 | ● |

• For cutting speed recommendations, see page 497 • Internal tolerance: ISO 228-1 Medium class • External tolerance: ISO 228-1 Medium class

(1) Threads per inch

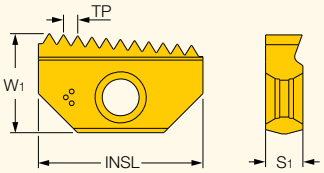
(2) Thread pitch

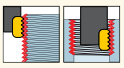
**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475) • MTFLE (476)

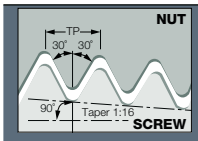
MILLTHREAD

## MT LNHT-NPT

External and Internal NPT Full Profile Thread Milling Inserts for Steam, Gas and Water Pipes






| Designation | Dimensions TPI(1) | INSL | W1 | S1 | TP(2) | IC908 |
|---|---|---|---|---|---|---|
| MT LNHT 1202 18NPT | 18.0 | 12.00 | 6.50 | 2.90 | 1.411 | ● |
| MT LNHT 1403 18NPT | 18.0 | 14.00 | 7.90 | 3.20 | 1.411 | ● |
| MT LNHT 1403 14NPT | 14.0 | 14.00 | 7.90 | 3.20 | 1.814 | ● |
| MT LNHT 2104 14NPT | 14.0 | 21.00 | 12.60 | 4.80 | 1.814 | ● |
| MT LNHT 2104 11.5NPT | 11.5 | 21.00 | 12.60 | 4.80 | 2.209 | ● |
| MT LNHT 3005 11.5NPT | 11.5 | 30.00 | 16.70 | 5.60 | 2.209 | ● |
| MT LNHT 3005 8NPT | 8.0 | 30.00 | 16.70 | 5.60 | 3.175 | ● |
| MT LNHT 4006 11.5NPT | 11.5 | 40.00 | 20.80 | 6.40 | 2.209 | ● |
| MT LNHT 4006 8NPT | 8.0 | 40.00 | 20.80 | 6.40 | 3.175 | ● |

• For cutting speed recommendations, see page 497 • Internal tolerance: ANSI/ASME B1.20.1 Standard NPT • External tolerance: ANSI/ASME B1.20.1 Standard NPT

(1) Threads per inch

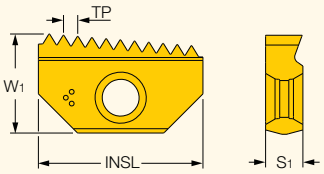
(2) Thread pitch

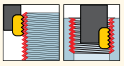
**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475) • MTFLE (476)

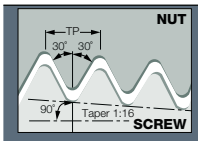
MILLTHREAD

**MT LNHT-NPTF**

External and Internal NPTF Full Profile Thread Milling Inserts for Steam, Gas and Water Pipes






| Designation | Dimensions TPI[1] | INSL | W1 | S1 | TP[2] | IC908 |
|---|---|---|---|---|---|---|
| MT LNHT 1202 18NPTF | 18.0 | 12.00 | 6.50 | 2.90 | 1.411 | ● |
| MT LNHT 1403 18NPTF | 18.0 | 14.00 | 7.90 | 3.20 | 1.411 | ● |
| MT LNHT 1403 14NPTF | 14.0 | 14.00 | 7.90 | 3.20 | 1.814 | ● |
| MT LNHT 2104 14NPTF | 14.0 | 21.00 | 12.60 | 4.80 | 1.814 | ● |
| MT LNHT 2104 11.5NPTF | 11.5 | 21.00 | 12.60 | 4.80 | 2.209 | ● |
| MT LNHT 3005 11.5NPTF | 11.5 | 30.00 | 16.70 | 5.60 | 2.209 | ● |
| MT LNHT 3005 8NPTF | 8.0 | 30.00 | 16.70 | 5.60 | 3.175 | ● |
| MT LNHT 4006 11.5NPTF | 11.5 | 40.00 | 20.80 | 6.40 | 2.209 | ● |
| MT LNHT 4006 8NPTF | 8.0 | 40.00 | 20.80 | 6.40 | 3.175 | ● |

• For cutting speed recommendations, see page 497 • Internal tolerance: ANSI/ASME B1.20.3 Standard NPTF • External tolerance: ANSI/ASME B1.20.3 Standard NPTF

(1) Threads per inch

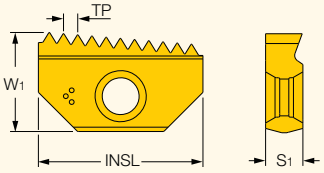
(2) Thread pitch

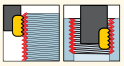
**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475) • MTFLE (476)

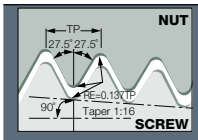
MILLTHREAD

**MT LNHT-BSPT**

External and Internal Thread Milling Inserts for BSPT Full Profile






| Designation | Dimensions TPI[1] | INSL | W1 | S1 | TP[2] | IC908 |
|---|---|---|---|---|---|---|
| MT LNHT 1202 19BSPT | 19.0 | 12.00 | 6.50 | 2.90 | 1.337 | ● |
| MT LNHT 1403 19BSPT | 19.0 | 14.00 | 7.90 | 3.20 | 1.337 | ● |
| MT LNHT 1403 14BSPT | 14.0 | 14.00 | 7.90 | 3.20 | 1.814 | ● |
| MT LNHT 2104 14BSPT | 14.0 | 21.00 | 12.60 | 4.80 | 1.814 | ● |
| MT LNHT 2104 11BSPT | 11.0 | 21.00 | 12.60 | 4.80 | 2.309 | ● |
| MT LNHT 3005 11BSPT | 11.0 | 30.00 | 16.70 | 5.60 | 2.309 | ● |
| MT LNHT 4006 11BSPT | 11.0 | 40.00 | 20.80 | 6.40 | 2.309 | ● |

• For cutting speed recommendations, see page 497 • Internal tolerance: ISO 7-1, EN 10226 (1&2) Standard BSPT • External tolerance: ISO 7-1, EN 10226 (1&2) Standard BSPT

(1) Threads per inch

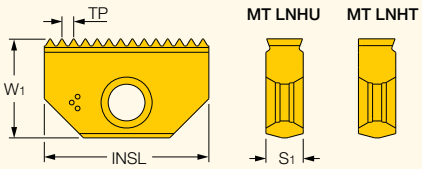
(2) Thread pitch

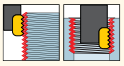
**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475) • MTFLE (476)

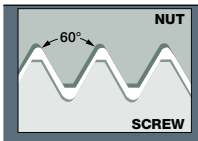
MILLTHREAD

## MT LNH#-NPS

External and Internal NPS Full Profile Thread Milling Inserts for Mechanical Joints and Pipe Fittings






| Designation | Dimensions TPI(1) | INSL | W1 | S1 | TP(2) | IC908 |
|---|---|---|---|---|---|---|
| MT LNHT 1202 18NPS | 18.0 | 12.00 | 6.30 | 2.90 | 1.411 | ● |
| MT LNHU 1403 18NPS | 18.0 | 14.00 | 7.50 | 3.10 | 1.411 | ● |
| MT LNHU 1403 14NPS | 14.0 | 14.00 | 7.50 | 3.10 | 1.814 | ● |
| MT LNHU 2104 14NPS | 14.0 | 21.00 | 12.00 | 4.70 | 1.814 | ● |
| MT LNHU 2104 11.5NPS | 11.5 | 21.00 | 12.00 | 4.70 | 2.209 | ● |
| MT LNHU 3005 11.5NPS | 11.5 | 30.00 | 16.70 | 5.60 | 2.209 | ● |
| MT LNHU 3005 8NPS | 8.0 | 30.00 | 16.70 | 5.60 | 3.175 | ● |
| MT LNHU 4006 11.5NPS | 11.5 | 40.00 | 20.00 | 6.30 | 2.209 | ● |
| MT LNHU 4006 8NPS | 8.0 | 40.00 | 20.00 | 6.30 | 3.175 | ● |

• The same insert for external & internal threading • For cutting speed recommendations, see page 497

(1) Threads per inch

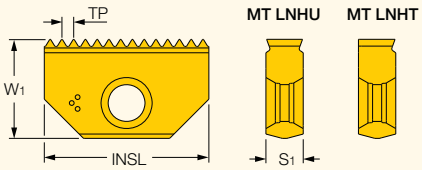
(2) Thread pitch

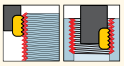
**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475) • MTFLE (476)

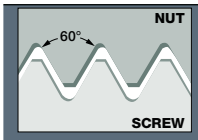
MILLTHREAD

## MT LNH#-NPSF

External and Internal NPSF Full Profile Thread Milling Inserts






| Designation | Dimensions TPI(1) | INSL | W1 | S1 | TP(2) | IC908 |
|---|---|---|---|---|---|---|
| MT LNHT 1202 18NPSF | 18.0 | 12.00 | 6.50 | 2.90 | 1.411 | ● |
| MT LNHU 1403 18NPSF | 18.0 | 14.00 | 7.90 | 3.20 | 1.411 | ● |
| MT LNHU 1403 14NPSF | 14.0 | 14.00 | 7.90 | 3.20 | 1.814 | ● |
| MT LNHU 2104 14NPSF | 14.0 | 21.00 | 12.60 | 4.75 | 1.814 | ● |
| MT LNHU 2104 11.5NPSF | 11.5 | 21.00 | 12.60 | 4.75 | 2.209 | ● |
| MT LNHU 3005 11.5NPSF | 11.5 | 30.00 | 16.70 | 5.60 | 2.209 | ● |
| MT LNHU 3005 8NPSF | 8.0 | 30.00 | 16.70 | 5.60 | 3.175 | ● |
| MT LNHU 4006 11.5NPSF | 11.5 | 40.00 | 20.80 | 6.35 | 2.209 | ● |
| MT LNHU 4006 8NPSF | 8.0 | 40.00 | 20.80 | 6.35 | 3.175 | ● |

• The same insert for external & internal threading • For cutting speed recommendations, see page 497 • ANSI/ASME B1.20.1 Internal & External tolerance: Standard NPS

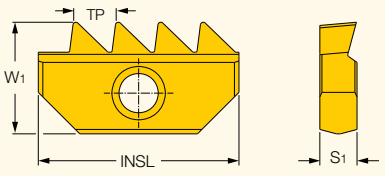
(1) Threads per inch

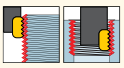
(2) Thread pitch

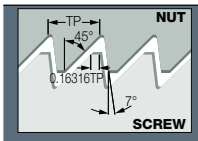
**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475) • MTFLE (476)

MILLTHREAD

**MT LNHT-ABUT**
External & Internal
Single-Sided American Buttress
Thread Milling Inserts






| Designation | Dimensions TPI[2] | INSL | W1 | S1 | TP[3] | IC908 |
|---|---|---|---|---|---|---|
| MT LNHT 2104 16ABUT | 16.0 | 21.00 | 12.00 | 4.70 | 1.588 | ● |
| MT LNHT 2104 12ABUT | 12.0 | 21.00 | 12.00 | 4.70 | 2.117 | ● |
| MT LNHT 2104 10ABUT | 10.0 | 21.00 | 12.00 | 4.70 | 2.540 | ● |
| MT LNHT 2104 8ABUT | 8.0 | 21.00 | 12.00 | 4.70 | 3.175 | ● |
| MT LNHT 3005 16ABUT | 16.0 | 30.00 | 16.70 | 5.60 | 1.588 | ● |
| MT LNHT 3005 12ABUT | 12.0 | 30.00 | 16.70 | 5.60 | 2.117 | ● |
| MT LNHT 3005 10ABUT | 10.0 | 30.00 | 16.70 | 5.60 | 2.540 | ● |
| MT LNHT 3005 8ABUT | 8.0 | 30.00 | 16.70 | 5.60 | 3.175 | ● |
| MT LNHT 3005 6ABUT | 6.0 | 30.00 | 16.70 | 5.60 | 4.233 | ● |
| MT LNHT 3005 4ABUT [1] | 4.0 | 30.00 | 16.70 | 5.60 | 6.350 | ● |
| MT LNHT 4006 4ABUT | 4.0 | 40.00 | 20.00 | 6.30 | 6.350 | ● |

• For cutting speed recommendations, see page 497 • Internal tolerance: ANSI/ASME B1.9 Class 2B • External tolerance: ANSI/ASME B1.9 Class 2A

[1] Due to deep thread profile, the tool should be modified

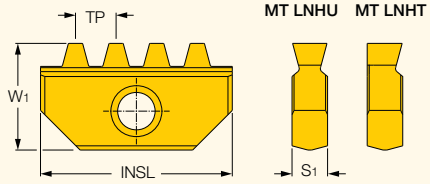
[2] Threads per inch

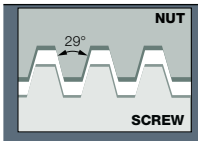
[3] Thread pitch

**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475) • MTFLE (476)

MILLTHREAD

**MT LNH#-ACME (Internal)**
Internal ACME Profile Thread
Milling Inserts for Feed Screws






| Designation | Dimensions TPI[1] | INSL | W1 | S1 | TP[2] | IC908 |
|---|---|---|---|---|---|---|
| MT LNHU 2104 I12ACME | 12.0 | 21.00 | 12.00 | 4.70 | 2.117 | ● |
| MT LNHU 2104 I10ACME | 10.0 | 21.00 | 12.00 | 4.70 | 2.540 | ● |
| MT LNHU 3005 I12ACME | 12.0 | 30.00 | 16.70 | 5.60 | 2.117 | ● |
| MT LNHU 3005 I10ACME | 10.0 | 30.00 | 16.70 | 5.60 | 2.540 | ● |
| MT LNHU 3005 I8ACME | 8.0 | 30.00 | 16.70 | 5.60 | 3.175 | ● |
| MT LNHU 3005 I6ACME | 6.0 | 30.00 | 16.70 | 5.60 | 4.233 | ● |
| MT LNHU 3005 I5ACME | 5.0 | 30.00 | 16.70 | 5.60 | 5.080 | ● |
| MT LNHU 3005 I4ACME | 4.0 | 30.00 | 16.70 | 5.60 | 6.350 | ● |
| MT LNHU 4006 I4ACME | 4.0 | 40.00 | 20.00 | 6.30 | 6.350 | ● |
| MT LNHT 4006 I3.5ACME | 3.5 | 40.00 | 20.00 | 6.30 | 7.257 | ● |

• For cutting speed recommendations, see page 497

[1] Threads per inch

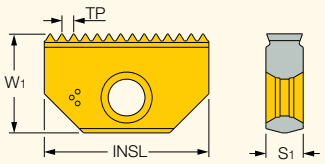
[2] Thread pitch

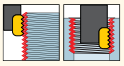
**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475)

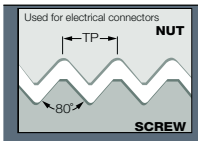
MILLTHREAD

## MT LNHU-PG

External and Internal PG Full Profile Thread Milling Inserts (DIN 40430) for Electrical Connectors






| Designation | TPI[1] | Dimensions INSL | W1 | S1 | PG | TP[2] | IC908 |
|---|---|---|---|---|---|---|---|
| MT LNHU 1403 18PG | 18.0 | 14.00 | 7.90 | 3.20 | PG9,11,13.5,16 | 1.411 | ● |
| MT LNHU 2104 18PG | 18.0 | 21.00 | 12.60 | 4.80 | PG16 | 1.411 | ● |
| MT LNHU 2104 16PG | 16.0 | 21.00 | 12.60 | 4.80 | PG21,29,36,42,48 | 1.588 | ● |
| MT LNHU 3005 16PG | 16.0 | 30.00 | 16.70 | 5.60 | PG36,42,48 | 1.588 | ● |

• For cutting speed recommendations, see page 497

(1) Threads per inch

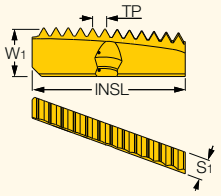
(2) Thread pitch

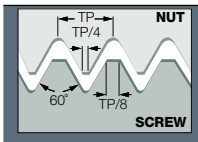
**For tools, see pages:** MTE D (474) • MTE D(Multi Insert) (475) • MTE D-C (474) • MTE-MM (473) • MTF D (Shell Mill) (475) • MTFLE (476)

MILLTHREAD

## MTH-ISO (external)

Helical Thread Milling Inserts for ISO Metric External Threading






| Designation | TP[1] | Dimensions INSL | W1 | S1 | IC908 |
|---|---|---|---|---|---|
| MTH 23 E 1.0 ISO | 1.000 | 27.00 | 8.00 | 3.50 | ● |
| MTH 23 E 1.5 ISO | 1.500 | 27.00 | 8.00 | 3.50 | ● |
| MTH 32 E 1.5 ISO | 1.500 | 32.00 | 9.00 | 4.00 | ● |
| MTH 45 E 1.5 ISO | 1.500 | 37.00 | 11.90 | 5.00 | ● |
| MTH 23 E 2.0 ISO | 2.000 | 27.00 | 8.00 | 3.50 | ● |
| MTH 32 E 2.0 ISO | 2.000 | 32.00 | 9.00 | 4.00 | ● |
| MTH 45 E 2.0 ISO | 2.000 | 37.00 | 11.90 | 5.00 | ● |
| MTH 23 E 3.0 ISO | 3.000 | 27.00 | 8.00 | 3.50 | ● |
| MTH 32 E 3.0 ISO | 3.000 | 32.00 | 9.00 | 4.00 | ● |
| MTH 32 E 4.0 ISO | 4.000 | 32.00 | 9.00 | 4.00 | ● |

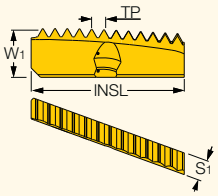
• For cutting speed recommendations, see page 497

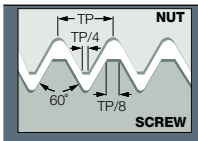
(1) Thread pitch

**For tools, see pages:** MTSRH (endmills) (476) • MTSRH (helical shell mill) (477)

MILLTHREAD

**MTH-ISO (internal)**
Helical Thread Milling Inserts for ISO Metric Internal Threading






| Designation | Dimensions TP[1] | INSL | W1 | S1 | THID[2] | IC908 |
|---|---|---|---|---|---|---|
| MTH 23 I 1.0 ISO | 1.000 | 27.00 | 8.00 | 3.50 | =>M26 | ● |
| MTH 32 I 1.0 ISO | 1.000 | 32.00 | 9.00 | 4.00 | =>M34 | ● |
| MTH 23 I 1.5 ISO | 1.500 | 27.00 | 8.00 | 3.50 | =>M27 | ● |
| MTH 32 I 1.5 ISO | 1.500 | 32.00 | 9.00 | 4.00 | =>M35 | ● |
| MTH 45 I 1.5 ISO | 1.500 | 37.00 | 11.90 | 5.00 | =>M50 | ● |
| MTH 63 I 1.5 ISO | 1.500 | 38.00 | 11.90 | 5.00 | =>M70 | ● |
| MTH 23 I 2.0 ISO | 2.000 | 27.00 | 8.00 | 3.50 | =>M28 | ● |
| MTH 32 I 2.0 ISO | 2.000 | 32.00 | 9.00 | 4.00 | =>M36 | ● |
| MTH 45 I 2.0 ISO | 2.000 | 37.00 | 11.90 | 5.00 | =>M50 | ● |
| MTH 63 I 2.0 ISO | 2.000 | 38.00 | 11.90 | 5.00 | =>M70 | ● |
| MTH 23 I 3.0 ISO | 3.000 | 27.00 | 8.00 | 3.50 | =>M30 | ● |
| MTH 32 I 3.0 ISO | 3.000 | 32.00 | 9.00 | 4.00 | =>M38 | ● |
| MTH 45 I 3.0 ISO | 3.000 | 37.00 | 11.90 | 5.00 | =>M56 | ● |
| MTH 63 I 3.0 ISO | 3.000 | 38.00 | 11.90 | 5.00 | =>M75 | ● |
| MTH 23 I 3.5 ISO | 3.500 | 27.00 | 8.00 | 3.50 | =>M33 | ● |
| MTH 32 I 3.5 ISO | 3.500 | 32.00 | 9.00 | 4.00 | - | ● |
| MTH 45 I 3.5 ISO | 3.500 | 37.00 | 11.90 | 5.00 | - | ● |
| MTH 23 I 4.0 ISO | 4.000 | 27.00 | 8.00 | 3.50 | =>M36 | ● |
| MTH 32 I 4.0 ISO | 4.000 | 32.00 | 9.00 | 4.00 | =>M40 | ● |
| MTH 45 I 4.0 ISO | 4.000 | 37.00 | 11.90 | 5.00 | =>M56 | ● |
| MTH 63 I 4.0 ISO | 4.000 | 38.00 | 11.90 | 5.00 | =>M75 | ● |
| MTH 32 I 4.5 ISO | 4.500 | 32.00 | 9.00 | 4.00 | =>M42 | ● |
| MTH 45 I 4.5 ISO | 4.500 | 37.00 | 11.90 | 5.00 | - | ● |
| MTH 32 I 5.0 ISO | 5.000 | 32.00 | 9.00 | 4.00 | =>M48 | ● |
| MTH 45 I 5.0 ISO | 5.000 | 37.00 | 11.90 | 5.00 | - | ● |
| MTH 45 I 5.5 ISO | 5.500 | 37.00 | 11.90 | 5.00 | =>M56 | ● |
| MTH 45 I 6.0 ISO | 6.000 | 37.00 | 11.90 | 5.00 | =>M64 | ● |
| MTH 63 I 6.0 ISO | 6.000 | 38.00 | 11.90 | 5.00 | =>M78 | ● |

• For cutting speed recommendations, see page 497

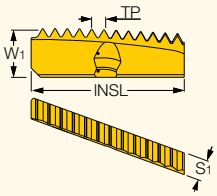
(1) Thread pitch

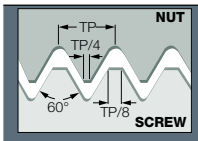
(2) Internal thread designation

**For tools, see pages:** MTSRH (endmills) (476) • MTSRH (helical shell mill) (477)

MILLTHREAD

**MTH-UN (external)**
Helical Thread Milling Inserts for American Full Profile External Threading Intended for General Applications






| Designation | Dimensions TPI[1] | INSL | W1 | S1 | IC908 |
|---|---|---|---|---|---|
| **MTH 23 E 20 UN** | 20.0 | 27.00 | 8.00 | 3.50 | ● |
| **MTH 23 E 18 UN** | 18.0 | 27.00 | 8.00 | 3.50 | ● |
| **MTH 23 E 16 UN** | 16.0 | 27.00 | 8.00 | 3.50 | ● |
| **MTH 23 E 14 UN** | 14.0 | 27.00 | 8.00 | 3.50 | ● |
| **MTH 23 E 12 UN** | 12.0 | 27.00 | 8.00 | 3.50 | ● |
| **MTH 23 E 10 UN** | 10.0 | 27.00 | 8.00 | 3.50 | ● |
| **MTH 23 E 8 UN** | 8.0 | 27.00 | 8.00 | 3.50 | ● |
| **MTH 23 E 7 UN** | 7.0 | 27.00 | 8.00 | 3.50 | ● |
| **MTH 32 E 24 UN** | 24.0 | 32.00 | 9.00 | 4.00 | ● |
| **MTH 32 E 20 UN** | 20.0 | 32.00 | 9.00 | 4.00 | ● |
| **MTH 32 E 18 UN** | 18.0 | 32.00 | 9.00 | 4.00 | ● |
| **MTH 32 E 16 UN** | 16.0 | 32.00 | 9.00 | 4.00 | ● |
| **MTH 32 E 12 UN** | 12.0 | 32.00 | 9.00 | 4.00 | ● |
| **MTH 32 E 8 UN** | 8.0 | 32.00 | 9.00 | 4.00 | ● |
| **MTH 32 E 6 UN** | 6.0 | 32.00 | 9.00 | 4.00 | ● |

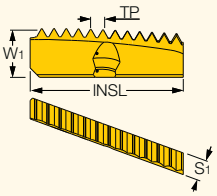
• Used for UN, UNC, UNF, UNEF and UNS thread profiles • For cutting speed recommendations, see page 497

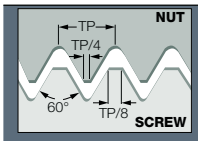
[1] Threads per inch

**For tools, see pages:** MTSRH (endmills) (476) • MTSRH (helical shell mill) (477)

MILLTHREAD

**MTH-UN (internal)**
Helical Thread Milling Inserts for American Full Profile Internal Threading Intended for General Applications






| Designation | Dimensions | | | | | | IC908 |
|---|---|---|---|---|---|---|---|
| | TPI[1] | INSL | W1 | S1 | THID[2] | TP[3] | |
| MTH 23 I 32 UN | 32.0 | 27.00 | 8.00 | 3.50 | =>1" | 0.794 | ● |
| MTH 23 I 24 UN | 24.0 | 27.00 | 8.00 | 3.50 | =>1" | 1.058 | ● |
| MTH 23 I 20 UN | 20.0 | 27.00 | 8.00 | 3.50 | =>1" | 1.270 | ● |
| MTH 23 I 18 UN | 18.0 | 27.00 | 8.00 | 3.50 | =>1_1/16" | 1.411 | ● |
| MTH 23 I 16 UN | 16.0 | 27.00 | 8.00 | 3.50 | =>1_1/16" | 1.588 | ● |
| MTH 23 I 14 UN | 14.0 | 27.00 | 8.00 | 3.50 | =>1_1/8" | 1.814 | ● |
| MTH 23 I 12 UN | 12.0 | 27.00 | 8.00 | 3.50 | =>1_1/8" | 2.117 | ● |
| MTH 23 I 10 UN | 10.0 | 27.00 | 8.00 | 3.50 | =>1_1/8" | 2.540 | ● |
| MTH 23 I 8 UN | 8.0 | 27.00 | 8.00 | 3.50 | =>1_3/16" | 3.175 | ● |
| MTH 23 I 7 UN | 7.0 | 27.00 | 8.00 | 3.50 | =>1_1/4" | 3.629 | ● |
| MTH 32 I 20 UN | 20.0 | 32.00 | 9.00 | 4.00 | =>1_3/8" | 1.270 | ● |
| MTH 32 I 18 UN | 18.0 | 32.00 | 9.00 | 4.00 | =>1_3/8" | 1.411 | ● |
| MTH 32 I 16 UN | 16.0 | 32.00 | 9.00 | 4.00 | =>1_3/8" | 1.588 | ● |
| MTH 32 I 12 UN | 12.0 | 32.00 | 9.00 | 4.00 | =>1_7/16" | 2.117 | ● |
| MTH 32 I 8 UN | 8.0 | 32.00 | 9.00 | 4.00 | =>1_1/2" | 3.175 | ● |
| MTH 32 I 6 UN | 6.0 | 32.00 | 9.00 | 4.00 | =>1_5/8" | 4.233 | ● |
| MTH 32 I 5 UN | 5.0 | 32.00 | 9.00 | 4.00 | =>1_3/4" | 5.080 | ● |
| MTH 45 I 16 UN | 16.0 | 37.00 | 11.90 | 5.00 | =>2" | 1.588 | ● |
| MTH 45 I 12 UN | 12.0 | 37.00 | 11.90 | 5.00 | =>2" | 2.117 | ● |
| MTH 45 I 8 UN | 8.0 | 37.00 | 11.90 | 5.00 | =>2_1/4" | 3.175 | ● |
| MTH 45 I 6 UN | 6.0 | 37.00 | 11.90 | 5.00 | =>2_1/4" | 4.233 | ● |
| MTH 45 I 4.5 UN | 4.5 | 37.00 | 11.90 | 5.00 | =>2_1/4" | 5.644 | ● |
| MTH 45 I 4 UN | 4.0 | 37.00 | 11.90 | 5.00 | =>2_1/2" | 6.350 | ● |
| MTH 63 I 16 UN | 16.0 | 38.00 | 11.90 | 5.00 | =>2_3/4" | 1.588 | ● |
| MTH 63 I 12 UN | 12.0 | 38.00 | 11.90 | 5.00 | =>2_3/4" | 2.117 | ● |
| MTH 63 I 8 UN | 8.0 | 38.00 | 11.90 | 5.00 | =>3" | 3.175 | ● |
| MTH 63 I 6 UN | 6.0 | 38.00 | 11.90 | 5.00 | =>3" | 4.233 | ● |
| MTH 63 I 4 UN | 4.0 | 38.00 | 11.90 | 5.00 | =>3" | 6.350 | ● |

• Used for UN, UNC, UNF, UNEF and UNS thread profiles • For cutting speed recommendations, see page 497

[1] Threads per inch

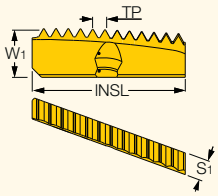
[2] Internal thread designation

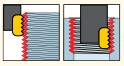
[3] Thread pitch

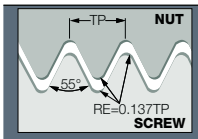
**For tools, see pages:** MTSRH (endmills) (476) • MTSRH (helical shell mill) (477)

MILLTHREAD

**MTH-W (int. & ext.)**
External & Internal Whitworth (BSW, BSF, BSP) Helical Thread Milling Inserts for Fittings and Pipe Couplings






| Designation | Dimensions | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|
| | TPI[1] | INSL | W1 | S1 | THID[2] | THOD[3] | TP[4] | |
| MTH 23 14 W | 14.0 | 27.00 | 8.00 | 3.50 | =>G7/8" | >G1/2" | 1.814 | ● |
| MTH 23 11 W | 11.0 | 27.00 | 8.00 | 3.50 | =>G1" | >G1" | 2.309 | ● |
| MTH 32 14 W | 14.0 | 32.00 | 9.00 | 4.00 | - | =>G1/2" | 1.814 | ● |
| MTH 32 11 W | 11.0 | 32.00 | 9.00 | 4.00 | =>G1_1/8" | >G1" | 2.309 | ● |
| MTH 45 11 W | 11.0 | 37.00 | 11.90 | 5.00 | =>G1_3/4" | >G1" | 2.309 | ● |
| MTH 63 11 W | 11.0 | 38.00 | 11.90 | 5.00 | =>G2_1/2" | >G1" | 2.309 | ● |

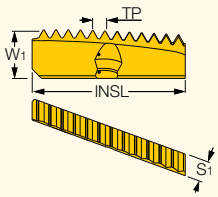
• For cutting speed recommendations, see page 497 • Internal tolerance: ISO 228-1 Medium class • External tolerance: ISO 228-1 Medium class

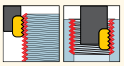
(1) Threads per inch
(2) Internal thread designation
(3) External thread designation
(4) Thread pitch

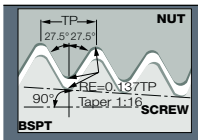
**For tools, see pages:** MTSRH (endmills) (476) • MTSRH (helical shell mill) (477)

MILLTHREAD

**MTH-BSPT (int. & ext.)**
Helical External & Internal Thread Milling Inserts for BSPT Thread for Steam, Gas and Water Pipes






| Designation | Dimensions | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|
| | TPI[1] | INSL | W1 | S1 | THID[2] | THOD[3] | TP[4] | |
| MTH 23 11 BSPT | 11.0 | 27.00 | 8.00 | 3.50 | >1" BSPT | >1" BSPT | 2.309 | ● |
| MTH 32 11 BSPT | 11.0 | 32.00 | 9.00 | 4.00 | >1_1/8" BSPT | >1" BSPT | 2.309 | ● |
| MTH 45 11 BSPT | 11.0 | 37.00 | 11.90 | 5.00 | >1_3/4" BSPT | >1" BSPT | 2.309 | ● |
| MTH 63 11 BSPT | 11.0 | 38.00 | 11.90 | 5.00 | >2_1/2 BSPT | >1" BSPT | 2.309 | ● |

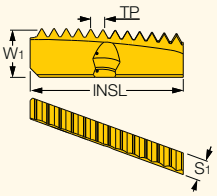
• For cutting speed recommendations, see page 497

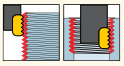
(1) Threads per inch
(2) Internal thread designation
(3) External thread designation
(4) Thread pitch

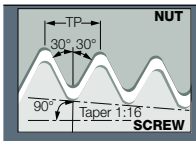
**For tools, see pages:** MTSRH (endmills) (476) • MTSRH (helical shell mill) (477)

MILLTHREAD

**MTH-NPT (int. & ext.)**
External & Internal NPT Helical Thread Milling Inserts for Steam, Gas and Water Pipes





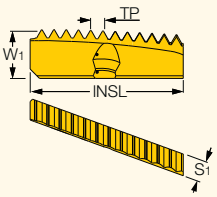

| Designation | TPI[1] | INSL | W1 | S1 | THID[2] | THOD[3] | TP[4] | IC908 |
|---|---|---|---|---|---|---|---|---|
| | Dimensions | | | | | | | |
| MTH 23 11.5 NPT | 11.5 | 27.00 | 8.00 | 3.50 | 1-2" NPT | 1-2" NPT | 2.209 | ● |
| MTH 32 11.5 NPT | 11.5 | 32.00 | 9.00 | 4.00 | 1_1/4"-2" NPT | 1-2" NPT | 2.209 | ● |
| MTH 45 11.5 NPT | 11.5 | 37.00 | 11.90 | 5.00 | 2" NPT | 1-2" NPT | 2.209 | ● |
| MTH 45 8 NPT | 8.0 | 37.00 | 11.90 | 5.00 | 2_1/2"-3" NPT | - | 3.175 | ● |
| MTH 63 11.5 NPT | 11.5 | 38.00 | 11.90 | 5.00 | - | 1-2" NPT | 2.209 | ● |
| MTH 63 8 NPT | 8.0 | 38.00 | 11.90 | 5.00 | 2_1/2"-3" NPT | - | 3.175 | ● |

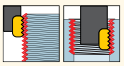
• For cutting speed recommendations, see page 497
(1) Threads per inch
(2) Internal thread designation
(3) External thread designation
(4) Thread pitch

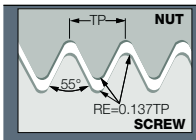
**For tools, see pages:** MTSRH (endmills) (476) • MTSRH (helical shell mill) (477)

MILLTHREAD

**MTH-NPTF (int. & ext.)**
External & Internal NPTF Helical Thread Milling Inserts for Steam, Gas and Water Pipes





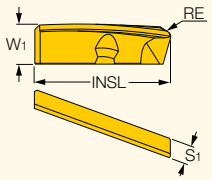

| Designation | TPI[1] | INSL | W1 | S1 | THID[2] | THOD[3] | TP[4] | IC908 |
|---|---|---|---|---|---|---|---|---|
| | Dimensions | | | | | | | |
| MTH 23 11.5 NPTF | 11.5 | 27.00 | 8.00 | 3.50 | 1"-2" NPTF | 1"-2" NPTF | 2.209 | ● |
| MTH 32 11.5 NPTF | 11.5 | 32.00 | 9.00 | 4.00 | 1_1/4"-2" NPTF | 1"-2" NPTF | 2.209 | ● |

• For cutting speed recommendations, see page 497
(1) Threads per inch
(2) Internal thread designation
(3) External thread designation
(4) Thread pitch

**For tools, see pages:** MTSRH (endmills) (476) • MTSRH (helical shell mill) (477)

ISCARMILL

**MTH-F**
Helical Long Edge
Finishing Inserts

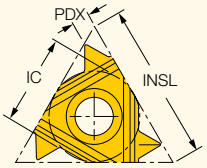


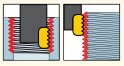

| Designation | Dimensions INSL | W1 | S | RE | IC908 |
|---|---|---|---|---|---|
| MTH 23F R0.2 | 27.00 | 8.00 | 3.50 | 0.20 | ● |
| MTH 23F R0.5 | 27.00 | 8.00 | 3.50 | 0.50 | ● |
| MTH 23F R1.0 | 27.00 | 8.00 | 3.50 | 1.00 | ● |
| MTH 32F R0.2 | 32.00 | 9.00 | 4.00 | 0.20 | ● |
| MTH 32F R0.5 | 32.00 | 9.00 | 4.00 | 0.50 | ● |
| MTH 32F R1.0 | 32.00 | 9.00 | 4.00 | 1.00 | ● |
| MTH 45F R0.2 | 37.00 | 11.90 | 5.00 | 0.20 | ● |
| MTH 45F R0.5 | 37.00 | 11.90 | 5.00 | 0.50 | ● |
| MTH 45F R1.0 | 37.00 | 11.90 | 5.00 | 1.00 | ● |
| MTH 45F R1.5 | 37.00 | 11.90 | 5.00 | 1.50 | ● |
| MTH 45F R2.0 | 37.00 | 11.90 | 5.00 | 2.00 | ● |
| MTH 63F R0.2 | 38.00 | 11.90 | 5.00 | 0.20 | ● |
| MTH 63F R0.5 | 38.00 | 11.90 | 5.00 | 0.50 | ● |
| MTH 63F R1.0 | 38.00 | 11.90 | 5.00 | 1.00 | ● |
| MTH 63F R1.5 | 38.00 | 11.90 | 5.00 | 1.50 | ● |
| MTH 63F R2.0 | 38.00 | 11.90 | 5.00 | 2.00 | ● |

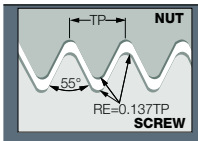
**For tools, see pages:** MTSRH (endmills) (476) • MTSRH (helical shell mill) (477)

MILLTHREAD

**MT3-60D**
60° Partial Profile Laydown
Thread Milling Inserts
for General Industry






| Designation | Dimensions IC | TPN(1) | TPX(2) | TPN_ DF2(3) | TPX_ DF2(4) | TPIN(5) | TPIX(6) | TPIN_ DF2(7) | TPIX_ DF2(8) | INSL | PDX | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MT3 1160D | 6.35 | 1.000 | 2.000 | 0.750 | 1.500 | 12.00 | 24.00 | 14.00 | 32.00 | 11.00 | 1.0 | ● |
| MT3 1660D | 9.52 | 2.500 | 3.500 | 2.000 | 3.000 | 7.00 | 10.00 | 8.00 | 12.00 | 16.49 | 1.8 | ● |

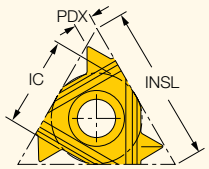
• For technical information and detailed cutting data, see pages 497-506 • DIN13 , ISO 68-1, ISO 965 (1&2) - Internal tolerance: 6H, External tolerance: 6g
• ANSI/ASME B1.1 - Internal tolerance: 2B, External tolerance: 2A

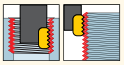
(1) Internal thread pitch minimum
(2) Internal thread pitch maximum
(3) External thread pitch minimum
(4) External thread pitch maximum
(5) Internal threads per inch minimum
(6) Internal threads per inch maximum
(7) External threads per inch minimum
(8) External threads per inch maximum

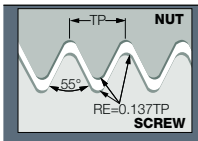
**For tools, see pages:** MTSR M.I. S.P. (479)

MILLTHREAD

**MT3-55D**
55° Partial Profile Laydown
Thread Milling Inserts
for General Industry





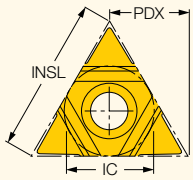

| Designation | Dimensions IC | TPIX(1) | TPIN(2) | INSL | PDX | IC908 |
|---|---|---|---|---|---|---|
| MT3 1155D | 6.35 | 24.00 | 14.00 | 11.00 | 1.0 | ● |
| MT3 1655D | 9.52 | 12.00 | 8.00 | 16.49 | 1.8 | ● |

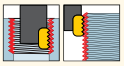
• For detailed cutting data, see pages 497-506 • B.S.84 Internal & External tolerance: Medium class
(1) Threads per inch maximum
(2) Threads per inch minimum

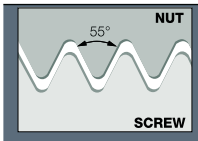
**For tools, see pages:** MTSR M.I. S.P. (479)

MILLTHREAD

**MT TNCT-U55**
55° Partial Profile Laydown
U-Type Thread Milling Inserts,
for General Industry






| Designation | Dimensions IC | INSL | TPIN(1) | TPIX(2) | PDX | IC908 |
|---|---|---|---|---|---|---|
| MT TNCT 11U 55D 908 | 6.35 | 11.00 | 7.00 | 12.00 | 5.00 | ● |
| MT TNCT 16U 55D 908 | 9.52 | 16.49 | 4.50 | 6.00 | 7.60 | ● |

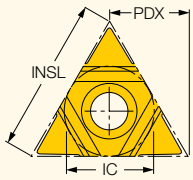
**New**

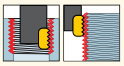
• For detailed cutting data, see pages 497-506
(1) Threads per inch minimum
(2) Threads per inch maximum

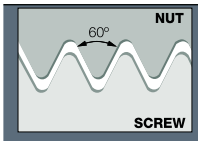
**For tools, see pages:** MTET Step Release (478) • MTSR M.I. S.P.-U (479)

MILLTHREAD

**MT TNCT-U60**
60° Partial Profile Laydown
U-Type Thread Milling Inserts,
for General Industry






| Designation | Dimensions IC | INSL | TPN(1) | TPX(2) | TPIN(3) | TPIX(4) | PDX | TPIN_DF2 | TPIX_DF2 | TPN_DF2 | TPX_DF2 | IC908 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MT TNCT 11U 60D 908 | 6.35 | 11.00 | 2.500 | 4.000 | 6.00 | 10.00 | 0.00 | 8.00 | 12.00 | 2.000 | 3.000 | ● |
| MT TNCT 16U 60D 908 | 9.52 | 16.49 | 4.000 | 6.000 | 4.00 | 6.00 | 0.00 | 5.00 | 8.00 | 3.000 | 5.000 | ● |

**New**

• For technical information and detailed cutting data, see pages 497-506
(1) Thread pitch minimum (mm)
(2) Thread pitch maximum (mm)
(3) Threads per inch minimum
(4) Threads per inch maximum

**For tools, see pages:** MTET Step Release (478) • MTSR M.I. S.P.-U (479)

## Machining Data for Indexable Threading Tools

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Material No. | Indexable Cutting Speed for IC908 M/min |
|---|---|---|---|---|---|---|---|
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %C | annealed | 420 | 125 | 1 | 100-200 |
| | | ≥ 0.25 %C | annealed | 650 | 190 | 2 | 95-190 |
| | | < 0.55 %C | quenched and tempered | 850 | 250 | 3 | 90-180 |
| | | ≥ 0.55 %C | annealed | 750 | 220 | 4 | 90-170 |
| | | | quenched and tempered | 1000 | 300 | 5 | 80-150 |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | 120-170 |
| | | | quenched and tempered | 930 | 275 | 7 | 115-160 |
| | | | | 1000 | 300 | 8 | 105-150 |
| | | | | 1200 | 350 | 9 | 90-140 |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 200 | 10 | 90-170 |
| | | | quenched and tempered | 1100 | 325 | 11 | 75-145 |
| | stainless steel and cast steel | | ferritic/martensitic | 680 | 200 | 12 | 110-170 |
| | | | martensitic | 820 | 240 | 13 | 100-160 |
| M | stainless steel | | austenitic, duplex | 600 | 180 | 14 | 90-145 |
| K | grey cast iron (GG) | | ferritic/pearlitic | | 160 | 17 | 65-135 |
| | | | pearlitic /martensitic | | 250 | 18 | 65-110 |
| | cast iron nodular (GGG) | | ferritic | | 180 | 15 | 65-135 |
| | | | pearlitic | | 260 | 16 | 60-100 |
| | malleable cast iron | | ferritic | | 130 | 19 | 65-135 |
| | | | pearlitic | | 230 | 20 | 60-120 |
| N | aluminum- wrought alloy | | not hardenable | | 60 | 21 | 110-260 |
| | | | hardenable | | 100 | 22 | 110-200 |
| | aluminum- cast, alloyed | =<12% Si | not hardenable | | 75 | 23 | 145-350 |
| | | | hardenable | | 90 | 24 | 145-275 |
| | | >12% Si | high temperature | | 130 | 25 | 95-225 |
| | copper alloys | >1% Pb | free cutting | | 110 | 26 | 145-350 |
| | | | brass | | 90 | 27 | 145-350 |
| | | | electrolytic copper | | 100 | 28 | 145-350 |
| | non-metallic | | duroplastics, fiber plastics | | | 29 | 90-370 |
| | | | hard rubber | | | 30 | 80-330 |
| S | high temperature alloys | Fe based | annealed | | 200 | 31 | 20-60 |
| | | | hardened | | 280 | 32 | 20-50 |
| | | Ni or Co based | annealed | | 250 | 33 | 20-30 |
| | | | hardened | | 350 | 34 | 10-20 |
| | | | cast | | 320 | 35 | 15-25 |
| | titanium alloys | | | 400 | | 36 | 30-90 |
| | | | alpha+beta alloys, hardened | 1050 | | 37 | 20-70 |
| H | hardened steel | | hardened | | 55 HRC | 38 | 25-60 |
| | | | hardened | | 60 HRC | 39 | 20-40 |
| | chilled cast iron | | cast | | 400 | 40 | 25-60 |
| | cast iron | | hardened | | 55 HRC | 41 | 20-50 |

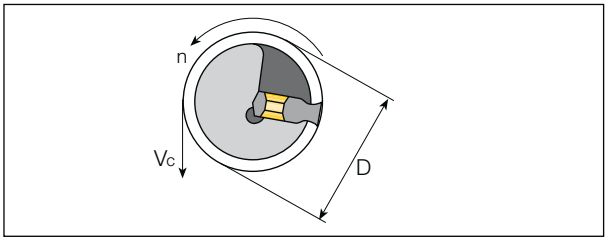
Calculating RPM:

Metric Example: V=120 m/min, D=30 mm

$$n = \frac{Vc \times 1000}{\pi \times D} = \frac{120 \times 1000}{3.14 \times 30} = 1274 \text{ RPM}$$

Inch Example: V= 410 SFM, D=1.5 inch

$$n = \frac{Vc \times 12}{\pi \times D} = \frac{410 \times 12}{3.14 \times 1.5} = 1045 \text{ RPM}$$




| Feed: | 0.05-0.15 mm/tooth<br>0.002-0.006 Inch/tooth |
|---|---|

## Solid Carbide Threading Endmills Machining Data for General-Use

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Material No. | Cutting Speed (m/min) | Cutting Diameter Feed mm/tooth | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | IC908 | 2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 20 | 25 | 30 |
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %C | annealed | 420 | 125 | 1 | 100-250 | 0.03 | 0.04 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 | 0.15 | 0.18 | 0.21 |
| | | ≥ 0.25 %C | annealed | 650 | 190 | 2 | 80-210 | 0.03 | 0.04 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 | 0.15 | 0.18 | 0.21 |
| | | < 0.55 %C | quenched and tempered | 850 | 250 | 3 | 65-170 | | | | | | | | | | | | |
| | | ≥ 0.55 %C | annealed | 750 | 220 | 4 | 110-180 | 0.02 | 0.03 | 0.03 | 0.05 | 0.06 | 0.07 | 0.08 | 0.09 | 0.1 | 0.12 | 0.15 | 0.18 |
| | | | quenched and tempered | 1000 | 300 | 5 | 95-160 | 0.02 | 0.03 | 0.03 | 0.05 | 0.06 | 0.07 | 0.08 | 0.09 | 0.1 | 0.12 | 0.15 | 0.18 |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | 90-160 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.08 | 0.1 | 0.11 |
| | | | quenched and tempered | 930 | 275 | 7 | 65-200 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.08 | 0.1 | 0.11 |
| | | | | 1000 | 300 | 8 | 70-210 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.08 | 0.1 | 0.11 |
| | | | | 1200 | 350 | 9 | 95-160 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.08 | 0.1 | 0.11 |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 200 | 10 | 130-170 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.08 | 0.1 | 0.11 |
| | | | quenched and tempered | 1100 | 325 | 11 | 75-100 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.08 | 0.1 | 0.11 |
| | stainless steel and cast steel | | ferritic/ martensitic | 680 | 200 | 12 | 110-170 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.08 | 0.1 | 0.11 |
| | | | martensitic | 820 | 240 | 13 | 70-155 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.08 | 0.1 | 0.11 |
| M | stainless steel | | austenitic, duplex | 600 | 180 | 14 | 85-100 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.08 | 0.1 | 0.11 |
| K | grey cast iron (GG) | | ferritic/pearlitic | | 160 | 17 | 120-160 | 0.03 | 0.04 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 | 0.15 | 0.18 | 0.21 |
| | | | pearlitic / martensitic | | 250 | 18 | 75-160 | 0.03 | 0.04 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 | 0.15 | 0.18 | 0.21 |
| | cast iron nodular (GGG) | | ferritic | | 180 | 15 | 70-150 | 0.03 | 0.04 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 | 0.15 | 0.18 | 0.21 |
| | | | pearlitic | | 260 | 16 | 110-140 | 0.03 | 0.04 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 | 0.15 | 0.18 | 0.21 |
| | malleable cast iron | | ferritic | | 130 | 19 | 120-160 | 0.03 | 0.04 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 | 0.15 | 0.18 | 0.21 |
| | | | pearlitic | | 230 | 20 | 110-140 | 0.03 | 0.04 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.11 | 0.21 | 0.15 | 0.18 | 0.21 |
| N | aluminum- wrought alloy | | not hardenable | | 60 | 21 | 160-300 | 0.03 | 0.04 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 | 0.15 | 0.18 | 0.21 |
| | | | hardenable | | 100 | 22 | | | | | | | | | | | | | |
| | aluminum-cast, alloyed | =<12% Si | not hardenable | | 75 | 23 | 150-350 | 0.03 | 0.04 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 | 0.15 | 0.18 | 0.21 |
| | | | hardenable | | 90 | 24 | | | | | | | | | | | | | |
| | | >12% Si | high temperature | | 130 | 25 | 100-250 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.08 | 0.10 | 0.12 |
| | copper alloys | >1% Pb | free cutting | | 110 | 26 | | | | | | | | | | | | | |
| | | | brass | | 90 | 27 | | | | | | | | | | | | | |
| | | | electrolytic copper | | 100 | 28 | | | | | | | | | | | | | |
| | non-metallic | | duroplastics, fiber plastics | | | 29 | 100-400 | 0.05 | 0.06 | 0.07 | 0.09 | 0.1 | 0.11 | 0.12 | 0.13 | 0.15 | 0.18 | 0.22 | 0.25 |
| | | | hard rubber | | | 30 | | | | | | | | | | | | | |
| S | high temperature alloys | Fe based | annealed | | 200 | 31 | | | | | | | | | | | | | |
| | | | hardened | | 280 | 32 | | | | | | | | | | | | | |
| | | Ni or Co based | annealed | | 250 | 33 | 20-80 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.04 | 0.04 | 0.04 | 0.05 | 0.05 |
| | | | hardened | | 350 | 34 | | | | | | | | | | | | | |
| | | | cast | | 320 | 35 | | | | | | | | | | | | | |
| | titanium ti alloys | | | 400 | | 36 | | | | | | | | | | | | | |
| | | | alpha+beta alloys, hardened | 1050 | | 37 | 20-80 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.04 | 0.04 | 0.04 | 0.05 | 0.05 |
| H | hardened steel | | hardened | | 55 HRC | 38 | 55-65 | | | | | | | | | | | | |
| | | | hardened | | 60 HRC | 39 | 45-55 | | | | | | | | | | | | |
| | chilled cast iron | | cast | | 400 | 40 | 90-105 | | | | | | | | | | | | |
| | cast iron | | hardened | | 55 HRC | 41 | 55-65 | | | | | | | | | | | | |

* For cutters with long cutting flute, reduce feed rate by 40%.

## Solid Carbide Threading Endmills Cutting Conditions for Fast Machining (MTECK,MTECM,MTECBF)

Recommended initial cutting conditions are shown in the tables below.
Use the **ISCAR** MillThread Advisor, for correct process and cutting condition re-considerations (https://www.iscar.com/mts/).
See machining data for solid carbide threading endmills with small diameters and short solid carbide thread mills.

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Material Group No. | Cutting Speed [m/min] | Feed [mm/tooth] for Diameter [mm] | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Ø1.5 | Ø2 | Ø3 | Ø4 | Ø5 | Ø6 | Ø7 | Ø8 | Ø9 | Ø10 | Ø12 | Ø14 | Ø15 |
| P | non-alloy steel and cast steel, free cutting steel | <0.25% C | annealed | 420 | 125 | 1 | 70-120 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | | ≥0.25% C | annealed | 650 | 190 | 2 | 65-115 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | | <0.55% C | quenched and tempered | 850 | 250 | 3 | 60-110 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | | ≥0.55% C | annealed | 750 | 220 | 4 | 70-90 | 0.04 | 0.05 | 0.06 | 0.08 | 0.09 | 0.1 | 0.12 | 0.13 | 0.14 | 0.14 | 0.16 | 0.17 | 0.18 |
| | | | quenched and tempered | 1000 | 300 | 5 | 60-85 | 0.04 | 0.05 | 0.06 | 0.08 | 0.09 | 0.1 | 0.12 | 0.13 | 0.14 | 0.14 | 0.16 | 0.17 | 0.18 |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | 60-80 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.07 | 0.08 | 0.09 | 0.1 | 0.12 | 0.13 | 0.14 |
| | | | quenched and tempered | 930 | 275 | 7 | 60-75 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.07 | 0.08 | 0.09 | 0.1 | 0.12 | 0.13 | 0.14 |
| | | | | 1000 | 300 | 8 | 55-75 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.07 | 0.08 | 0.09 | 0.1 | 0.12 | 0.13 | 0.14 |
| | | | | 1200 | 350 | 9 | 55-70 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.07 | 0.08 | 0.09 | 0.1 | 0.12 | 0.13 | 0.14 |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 200 | 10 | 50-65 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.07 | 0.08 | 0.09 | 0.1 | 0.12 | 0.13 | 0.14 |
| | | | quenched and tempered | 1100 | 325 | 11 | 50-63 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.07 | 0.08 | 0.09 | 0.1 | 0.12 | 0.13 | 0.14 |
| | stainless steel and cast steel | | ferritic / martensitic | 680 | 200 | 12 | 50-60 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.07 | 0.08 | 0.09 | 0.1 | 0.12 | 0.13 | 0.14 |
| | | | martensitic | 820 | 240 | 13 | 50-70 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.07 | 0.08 | 0.09 | 0.1 | 0.12 | 0.13 | 0.14 |
| M | stainless steel and cast steel | | austenitic, duplex | 600 | 180 | 14 | 60-90 | 0.03 | 0.03 | 0.04 | 0.05 | 0.06 | 0.06 | 0.07 | 0.08 | 0.09 | 0.1 | 0.11 | 0.12 | 0.13 |
| K | gray cast iron (GG) | | ferritic / pearlitic | | 180 | 15 | 60-80 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | | | pearlitic / martensitic | | 260 | 16 | 60-75 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | nodular cast iron (GGG) | | ferritic | | 160 | 17 | 50-70 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | | | pearlitic | | 250 | 18 | 40-65 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | malleable cast iron | | ferritic | | 130 | 19 | 50-70 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | | | pearlitic | | 230 | 20 | 40-65 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| N | aluminum-wrought alloys | | not hardenable | | 60 | 21 | 120-150 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | | | hardenable | | 100 | 22 | 110-130 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | aluminum-cast alloys | ≤12% Si | not hardenable | | 75 | 23 | 120-150 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | | | hardenable | | 90 | 24 | 120-160 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | | >12% Si | high temperature | | 130 | 25 | 80-110 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | copper alloys | >1% Pb | free cutting | | 110 | 26 | 85-120 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | | | brass | | 90 | 27 | 85-120 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | | | electrolytic copper | | 100 | 28 | 70-100 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.18 | 0.18 |
| | non metallic | | duroplastics, fiber plastics | | 70 Shore D | 29 | 120-200 | 0.1 | 0.11 | 0.12 | 0.14 | 0.16 | 0.18 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.2 | 0.2 |
| | | | hard rubber | | 55 Shore D | 30 | 120-200 | 0.1 | 0.11 | 0.12 | 0.14 | 0.16 | 0.18 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.2 | 0.2 |
| S | high temperature alloys | Fe based | annealed | | 200 | 31 | 40-60 | 0.03 | 0.03 | 0.04 | 0.04 | 0.05 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 |
| | | | hardened | | 280 | 32 | 30-50 | 0.03 | 0.03 | 0.04 | 0.04 | 0.05 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 |
| | | Ni or Co based | annealed | | 250 | 33 | 25-40 | 0.03 | 0.03 | 0.04 | 0.04 | 0.05 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 |
| | | | hardened | | 350 | 34 | 20-35 | 0.03 | 0.03 | 0.04 | 0.04 | 0.05 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 |
| | | | cast | | 320 | 35 | 20-40 | 0.03 | 0.03 | 0.04 | 0.04 | 0.05 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 |
| | titanium alloys | | pure | 400 | 190 | 36 | 30-45 | 0.03 | 0.03 | 0.04 | 0.04 | 0.05 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 |
| | | | alpha+beta alloys, hardened | 1050 | 310 | 37 | 30-40 | 0.03 | 0.03 | 0.04 | 0.04 | 0.05 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 |

## Cutting Conditions for MTET Step Release Indexable Threading Endmills

| ISO | Material | | Condition | Hardness HB | Tensile Strength [N/mm²] | Material Group No. | Cutting Conditions | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | $F_z$ mm/tooth | |
| | | | | | | | | Insert Designation | |
| | | | | | | | $V_c$ (m/min) | MT TNCT 11U | MT TNCT 16U |
| P | non-alloy steel and cast steel, free cutting steel | <0.25% C | annealed | 125 | 428 | 1 | 200 | 0.3 | 0.4 |
| | | ≥0.25% C | annealed | 190 | 639 | 2 | 200 | 0.3 | 0.4 |
| | | <0.55% C | quenched and tempered | 210 | 708 | 3 | 200 | 0.3 | 0.4 |
| | | ≥0.55% C | annealed | 190 | 639 | 4 | 200 | 0.3 | 0.4 |
| | | | quenched and tempered | 300 | 1013 | 5 | 200 | 0.3 | 0.4 |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 220 | 745 | 6 | 200 | 0.3 | 0.4 |
| | | | quenched and tempered | 175 | 591 | 7 | 200 | 0.3 | 0.4 |
| | | | | 285 | 960 | 8 | 200 | 0.3 | 0.4 |
| | | | | 380 | 1282 | 9 | 150 | 0.35 | 0.35 |
| | high alloyed steel, cast steel and tool steel | | annealed | 430 | 1477 | 10 | 100 | 0.2 | 0.3 |
| | | | quenched and tempered | 200 | 675 | 11 | 200 | 0.3 | 0.4 |
| | stainless steel and cast steel | | ferritic / martensitic | 200 | 675 | 12 | 200 | 0.25 | 0.35 |
| | | | martensitic | 330 | 1114 | 13 | 150 | 0.25 | 0.35 |
| M | stainless steel and cast steel | | austenitic, duplex | 230 | 778 | 14 | 80 | 0.2 | 0.3 |
| K | gray cast iron (GG) | | ferritic / pearlitic | 200 | 400 | 19 | 200 | 0.3 | 0.4 |
| | | | pearlitic / martensitic | 260 | 700 | 20 | 200 | 0.3 | 0.4 |
| | nodular cast iron (GGG) | | ferritic | 180 | 200 | 17 | 250 | 0.3 | 0.4 |
| | | | pearlitic | 245 | 350 | 18 | 200 | 0.3 | 0.4 |
| | malleable cast iron | | ferritic | 155 | 400 | 15 | 200 | 0.3 | 0.4 |
| | | | pearlitic | 265 | 700 | 16 | 200 | 0.3 | 0.4 |
| N | aluminum-wrought alloys | | not hardenable | 30 | – | 21 | – | – | – |
| | | | hardenable | 100 | 343 | 22 | – | – | – |
| | aluminum-cast alloys | ≤12% Si | not hardenable | 75 | 260 | 23 | – | – | – |
| | | | hardenable | 130 | 447 | 24 | 300 | 0.3 | 0.4 |
| | | >12% Si | high temperature | 70 | 250 | 27 | 250 | 0.3 | 0.4 |
| | copper alloys | >1% Pb | free cutting | 100 | 343 | 28 | – | – | – |
| | | | brass | 90 | 314 | 27 | – | – | – |
| | | | cu-alloys, short-chipping | 110 | 382 | 28 | – | – | – |
| | non metallic | | high-strength, ampco | 300 | 1013 | 28 | – | – | – |
| | | | duroplastics, fiber plastics | 70 Shore D | | 29 | 300 | 0.4 | 0.5 |
| | | | hard rubber | 55 Shore D | | 30 | 300 | 0.35 | 0.45 |
| S | high temperature alloys | Fe based | annealed | 200 | 675 | 31 | 40 | 0.25 | 0.25 |
| | | | hardened | 280 | 943 | 32 | 25 | 0.15 | 0.15 |
| | | Ni or Co based | annealed | 250 | 839 | 33 | 40 | 0.25 | 0.25 |
| | | | hardened | 350 | 1177 | 34 | 25 | 0.15 | 0.15 |
| | | | cast | 320 | 1076 | 35 | 30 | 0.2 | 0.2 |
| | titanium alloys | | pure titanium | 200 | 675 | 36 | 40 | 0.25 | 0.25 |
| | | | α and β alloys, hardened | 375 | 1262 | 37 | 40 | 0.25 | 0.25 |
| | | | β alloys | 410 | 1396 | 38 | 30 | 0.2 | 0.2 |
| H | hardened steel | | hardened | 50 HRC | – | 38 | 45 | 0.2 | 0.3 |
| | | | hardened | 55 HRC | – | 39 | – | – | – |
| | chilled cast iron | | cast | 60 HRC | – | 40 | – | – | – |
| | cast iron | | hardened | 55 HRC | – | 41 | 45 | 0.2 | 0.3 |

### Thread Milling CNC Program for Internal Thread

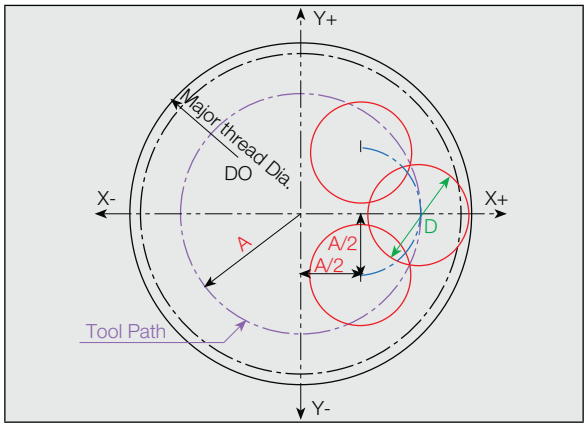
Right-hand thread (climb milling) from bottom up.
Program is based on tool center.
This method of programming needs no tool radius compensation value other than an offset for wear.

$$A = \frac{Do - D}{2}$$

**A** = Radius of tool path
**Do** = Major thread diameter
**D** = Cutting diameter

### General Program

**G90** G00 G54 G43 H1X0 Y0 Z10 S...
**G00** Z-(to thread depth)
**G01** G91 G41 D1 X(A/2) Y-(A/2) Z0 F...
**G03** X(A/2) Y(A/2) R(A/2) Z(1/8 pitch)
**G03** X0 Y0 I-(A) J0 Z(pitch)
**G03** X-(A/2) Y(A/2) R(A/2) Z(1/8 pitch)
**G01** G40 X-(A/2) Y-(A/2) Z0
**G90** X0 Y0 Z0




### Internal Thread

**Example:** M 48x2.0 IN-RH
(Thread depth 25 mm)
Toolholder: MTSR0029 J30
(Cutting dia. 29 mm)
Insert: MT30 I2.0ISO
**A** =(Do-D)/2=(48-29)/2=9.5
**A/2** =4.75
(Tool compensation of radius=0)
**G90** G0 G54 G43 G17 H1X0 Y0 Z10 S1320
**G0** Z-25
**G01** G91 G41 D1X 4.75 Y-4.75 Z0 F41
**G03** X4.75 Y4.75 R4.75 Z0.25
**G03** X0 Y0 I-9.5 J0 Z2.0
**G03** X-4.75 Y4.75 R4.75 Z0.25
**G01** G40 X-4.75 Y-4.75 Z0
**G90** G0 X0 Y0 Z0
**M30**
%

### Number of Radial Passes

In order to produce a thread, in some cases one radial pass is sufficient but other times a number of radial passes are required.

The table below presents **ISCAR**'s recommendations for the number of radial passes depending on the material and lead.

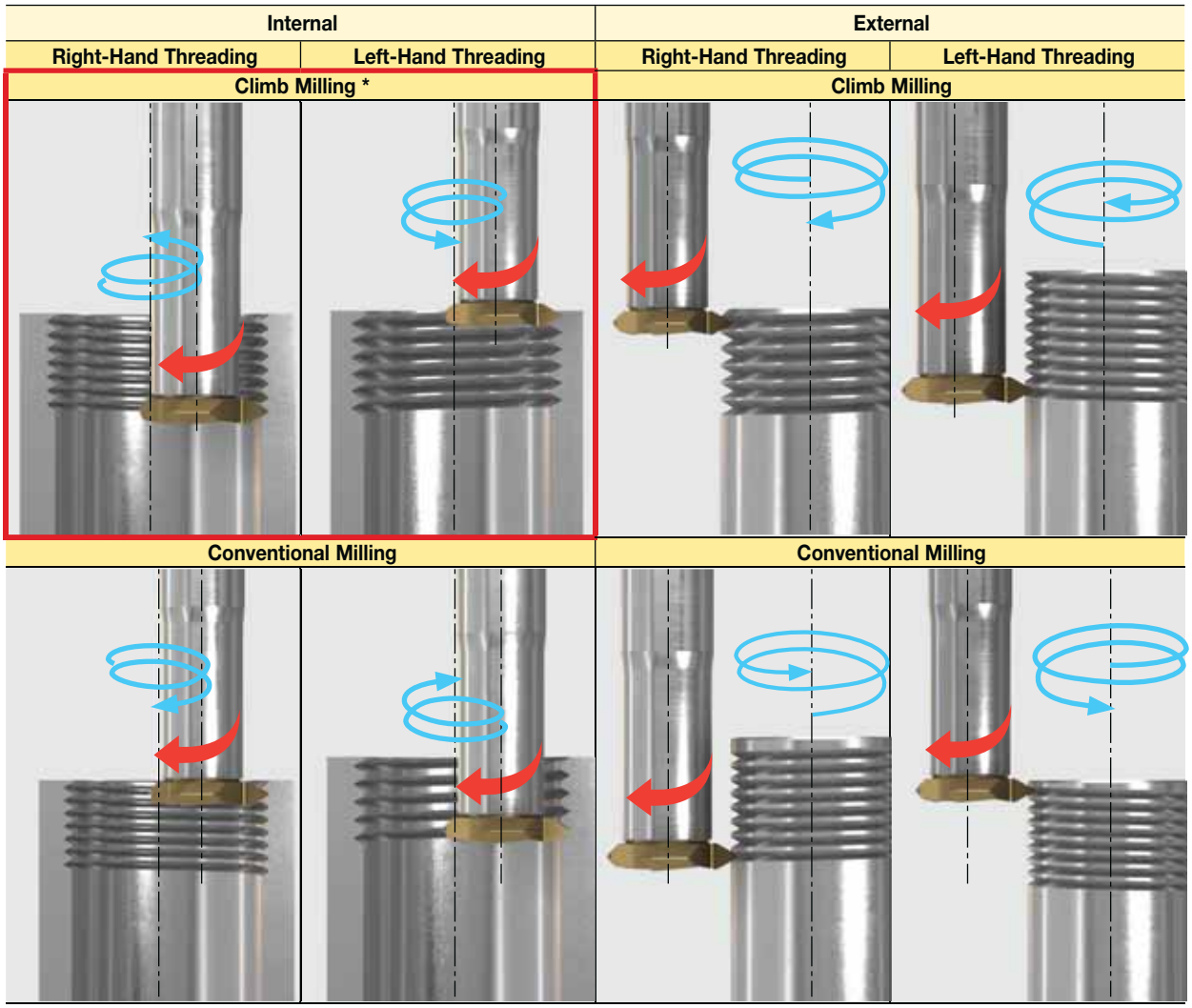
## Number of Radial Passes

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Material No. | Lead (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.25-1.00 | 1.25-1.50 | 1.75-2.00 | 2.50-6.00 |
| | | | | | | | Number of Passes | | | |
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %C | annealed | 420 | 125 | 1 | 1 | 1 | 2 | 3 |
| | | >= 0.25 %C | annealed | 650 | 190 | 2 | | | | |
| | | < 0.55 %C | quenched and tempered | 850 | 250 | 3 | | | | |
| | | >= 0.55 %C | annealed | 750 | 220 | 4 | | | | |
| | | | quenched and tempered | 1000 | 300 | 5 | | | | |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | | | | |
| | | | quenched and tempered | 930 | 275 | 7 | | | | |
| | | | | 1000 | 300 | 8 | | | | |
| | | | | 1200 | 350 | 9 | | | | |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 200 | 10 | | | | |
| | | | quenched and tempered | 1100 | 325 | 11 | | | | |
| | stainless steel and cast steel | | ferritic/martensitic | 680 | 200 | 12 | | | | |
| | | | martensitic | 820 | 240 | 13 | | | | |
| M | stainless steel | | austenitic, duplex | 600 | 180 | 14 | 1 | 1 | 2 | 3 |
| K | grey cast iron (GG) | | ferritic/pearlitic | | 180 | 15 | 1 | 1 | 2 | 3 |
| | | | pearlitic /martensitic | | 260 | 16 | | | | |
| | nodular cast iron (GGG) | | ferritic | | 160 | 17 | | | | |
| | | | pearlitic | | 250 | 18 | | | | |
| | malleable cast iron | | ferritic | | 130 | 19 | | | | |
| | | | pearlitic | | 230 | 20 | | | | |
| N | aluminum- wrought alloy | | not hardenable | | 60 | 21 | 1 | 1 | 1 | 1 |
| | | | hardenable | | 100 | 22 | | | | |
| | aluminum-cast, alloyed | <=12% Si | not hardenable | | 75 | 23 | | | | |
| | | | hardenable | | 90 | 24 | | | | |
| | | >12% Si | high temperature | | 130 | 25 | 1 | 1 | 2 | 3 |
| | copper alloys | >1% Pb | free cutting | | 110 | 26 | 1 | 1 | 1 | 1 |
| | | | brass | | 90 | 27 | | | | |
| | | | electrolytic copper | | 100 | 28 | | | | |
| | non metallic | | duroplastics, fiber plastics | | | 29 | | | | |
| | | | hard rubber | | | 30 | | | | |
| S | high temperature alloys | Fe based | annealed | | 200 | 31 | 2 | 2 | 2 | 3 |
| | | | hardened | | 280 | 32 | | | | |
| | | Ni or Co based | annealed | | 250 | 33 | | | | |
| | | | hardened | | 350 | 34 | | | | |
| | | | cast | | 320 | 35 | | | | |
| | titanium alloys | | pure | 400 | | 36 | | | | |
| | | | alpha+ beta alloys, hardened | 1050 | | 37 | | | | |
| H | hardened steel | | hardened | | 55 HRC | 38 | | | | |
| | | | hardened | | 60 HRC | 39 | | | | |
| | chilled cast iron | | cast | | 400 | 40 | 3 | 3 | 3 | 3 |
| | cast iron | | hardened | | 55 HRC | 41 | 2 | 2 | 2 | 3 |

Rm - ultimate tensile strength, MPa

## Thread Milling Methods

There are several methods used for thread milling operations. The cutter usually rotates clockwise, except in special cases where the tool rotates counterclockwise. The spiral movement of the cutter can be clockwise or counterclockwise, and the tool can produce a thread by top-down or bottom-up. The combination of these movements depends on the type of thread required to produce, left-hand or right-hand threads.




* First choice

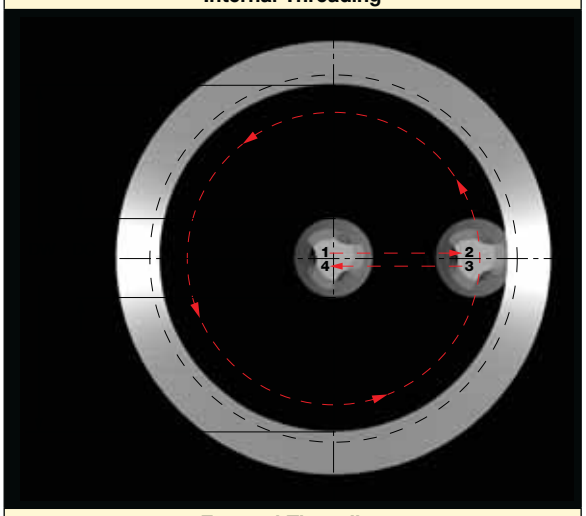
## Entering the Workpiece

A sudden load is applied to the cutter when it enters the workpiece and as a result the cutter may be broken, or a mark will remain. If entering is smooth, then the load on the tool will increase gradually and the surface will remain "clean".
There are three ways to initially enter the workpiece: radial entering, tangential entering by arc, tangential entering by line.

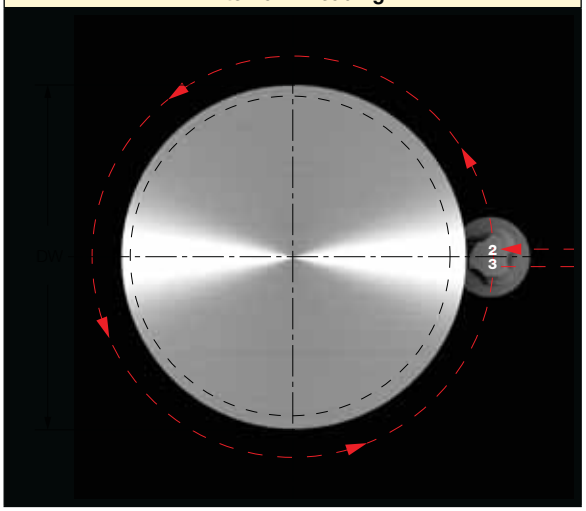
### Radial Entering

The cutter enters the workpiece in a straight line to the center workpiece axis.
This is the simplest method, but also the least recommended because the angle of the hugging is too large.

**Internal Threading**



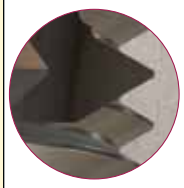
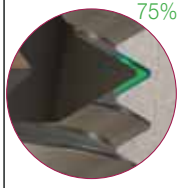

**External Threading**




DW - Workpiece diameter
DC - Cutter Diameter
1-2: Straight line entry
2-3: Helical movement during one full orbit (360°)
3-4: Straight line exit

### Depth Per Pass

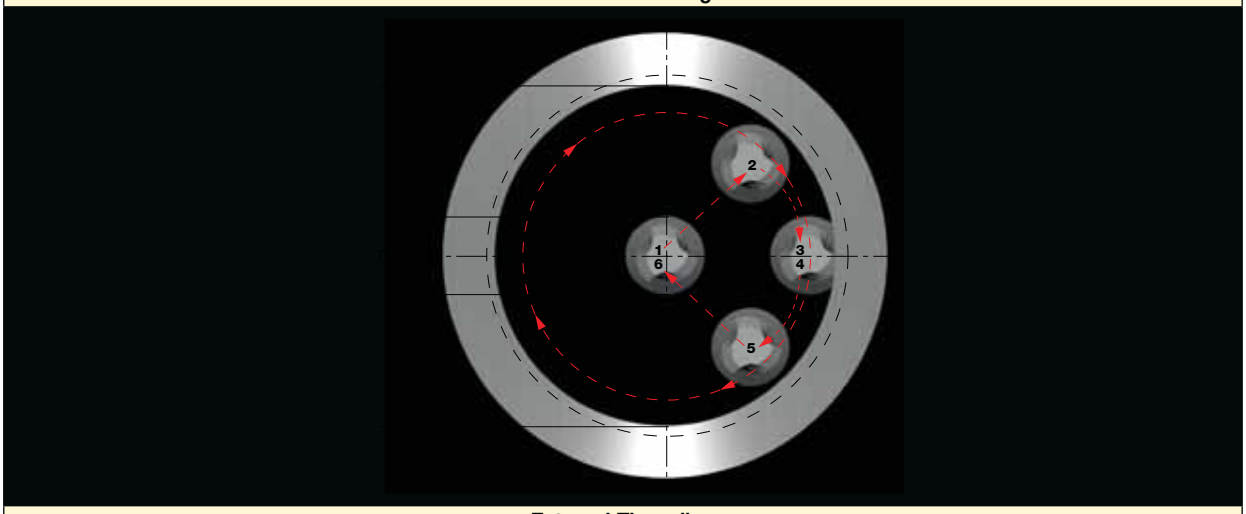
Based on the number of passes, the table below presents **ISCAR**'s recommendations for depth per pass, which is expressed as a percentage according to the total depth that is required to be removed.

| Depth Per Pass | Number of Radial Passes | | |
|---|---|---|---|
| | 1 pass | 2 passes | 3 passes |
| |  100% | 75% 100% |  65% 75% 100% |

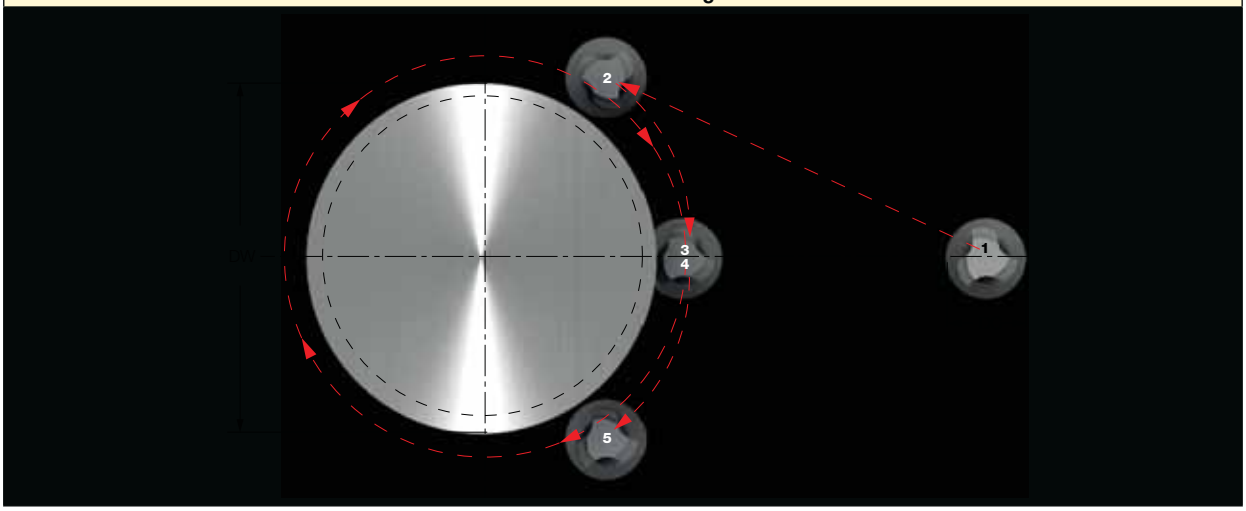
## Tangential Entering by Arc (Recommended)

The tool enters the material in an arc movement. At the end of the thread, the tool also extends in an arc movement from the material. This method is recommended because the cutter gradually enters the material and the load on the tool increases gradually.

**Internal Threading**




**External Threading**




DW - Workpiece diameter
DC - Cutter Diameter
1-2: Rapid approach
2-3: Tangential entry by arc
3-4: Helical movement during one full orbit (360°)
4-5: Tangential exit by arc
5-6: Rapid return

## MTECS Small Diameter, Short Solid Carbide Thread Mills

The **MTECS** (Mill Thread Endmills Carbide Short) solid carbide thread mills are used for the production of small internal threads. These thread mills feature a short 3-tooth cutting zone with 3 flutes and a released neck between the cutting zone and the shank.

This unique tool design offers very precise profiles and a high performance **IC908** submicron carbide grade with **PVD** titanium aluminum nitride coating.

The very short profile exerts a low force which minimizes tool bending. This facilitates parallel and high thread precision for the entire length.

Compared to taps, the **SOLID-THREAD** is more accurate, thread machining is substantially faster and there is no danger of a broken tap being stuck in the hole.

**Features**

- Minimum thread size: M1.4x0.3 (1.1 mm bore diameter) up to M20x2.50
- 2xD and 3xD threading lengths
- High cutting speeds
- Short cycle time
- Low cutting forces due to the short contact profile resulting in accurate and parallel thread
- Prevents oval threads near thin walls
- No more dealing with broken taps
- Reliable threading in blind holes
- Excellent performance on hardened steel, high temperature alloys and titanium

**Thread Mill Vs. Tap**

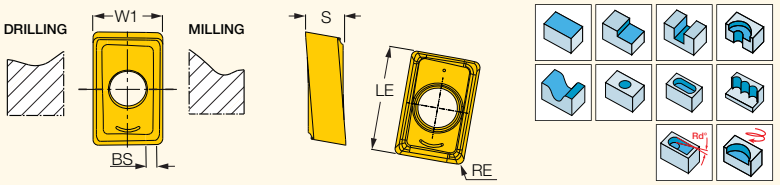
| Features | Solid Carbide Thread Mills | Taps |
|---|---|---|
| Thread Surface Quality | High | Medium |
| Thread Geometry | Very accurate | Medium |
| Thread Tolerance | 4H, 5H, 6H with std. cutter | 6H with standard tap, 4H with special tap |
| Machining Time | Shorter or same as tap | Short |
| Machining Load | Very low | High |
| Range of Thread Diameters | Wide range of diameters | Specific tap for each thread size |
| Right-/Left-Hand Threading | Same cutter | Specific tap for right- and left-hand |
| Geometric Shape | Full profile | Partial profile |

# MILLING INSERTS

QUICK D MILL

**MDR ANMU PNTR**

Double-Sided Rectangle Inserts with 2 Center Cutting Edges for Drilling and 2 Peripheral Cutting Edges for Milling



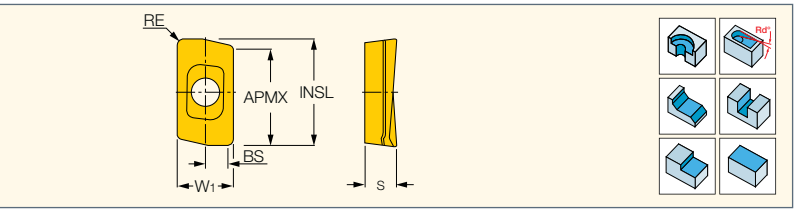

| Designation | Dimensions W1 | LE | S | BS | RE | Tough ↔ Hard IC830 | IC808 | IC810 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| MDR ANMU 070304PNTR | 5.20 | 7.80 | 2.70 | 0.80 | 0.40 | ● | ● | ● | 0.05-0.20 |
| MDR ANMU 090305PNTR | 6.30 | 9.40 | 3.15 | 0.80 | 0.50 | ● | ● | ● | 0.05-0.23 |
| MDR ANMU 120408PNTR | 7.50 | 12.40 | 4.07 | 0.80 | 0.80 | ● | ● | ● | 0.05-0.23 |

**For tools, see pages:** MDR D-C-AN (12) • MDR MMT-JHP (12)

HELIPLUS

**HP ANKT/ANCT 0702 PN-R/ PNTR**

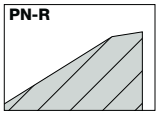
Inserts with a 7 mm Helical Edge and Various Corner Radii for General Use

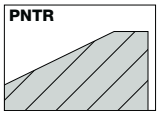



| Designation | Dimensions W1 | APMX | BS | RE | INSL | S | Tough ↔ Hard IC328 | IC830 | IC928 | IC950 | IC808 | IC908 | IC30N | IC810 | IC910 | IC5400 | DT7150 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP ANCT 070202 PN-R | 4.50 | 7.70 | 1.50 | 0.20 | 8.70 | 2.60 | | | | | | | | | ● | | | | 0.60-7.70 | 0.05-0.10 |
| HP ANCT 070204PN-R | 4.50 | 7.70 | 1.40 | 0.40 | 8.70 | 2.60 | ● | | ● | | ● | | | | ● | | | | 0.80-7.70 | 0.05-0.10 |
| HP ANKT 0702 PN-R | 4.50 | 7.70 | 1.30 | 0.50 | 8.70 | 2.60 | ● | ● | ● | | ● | ● | | ● | ● | ● | | | 0.90-7.70 | 0.06-0.10 |
| HP ANKT 070202PNTR | 4.50 | 7.70 | 1.60 | 0.20 | 8.70 | 2.60 | ● | | ● | | | | | | | | | | 0.70-7.70 | 0.08-0.15 |
| HP ANKT 0702PNTR | 4.50 | 7.70 | 1.30 | 0.50 | 8.70 | 2.60 | ● | ● | ● | ● | | ● | ● | | ● | | ● | ● | 0.90-7.70 | 0.08-0.12 |
| HP ANKT 070208PNTR | 4.50 | 7.70 | 1.00 | 0.80 | 8.70 | 2.60 | | ● | ● | | ● | ● | | | | | | | 1.20-7.70 | 0.08-0.15 |
| HP ANKT 070212PNTR | 4.50 | 7.70 | 0.70 | 1.20 | 8.70 | 2.60 | | | ● | | | ● | | | | | | | 1.60-7.70 | 0.08-0.15 |
| HP ANKT 070216PNTR | 4.50 | 7.70 | 0.20 | 1.60 | 8.70 | 2.60 | | | ● | | | ● | | | | | | | 2.00-7.70 | 0.08-0.15 |

• For cutting speed recommendations, see pages 616-620

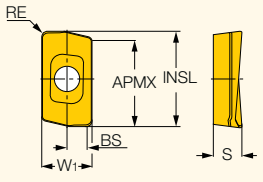
**For tools, see pages:** HP ANK-07 (274) • HP E90AN-07 (21) • HP E90AN-M-07 (21) • HP E90AN-MM-07 (22) • HP F90AN-07 (229)

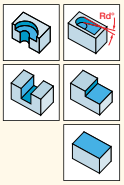


HELIPLUS

**HP ANKW 070204PNTR**
Insert with a 7 mm Helical Edge and Flat Rake for Rough Machining and Hardened Steel



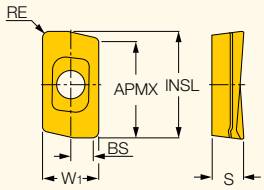
| Designation | Dimensions | | | | | | Tough ↔ Hard | | Recommended Machining Data | |
|---|---|---|---|---|---|---|---|---|---|---|
| | INSL | APMX | S | RE | BS | W1 | IC928 | IC910 | $a_p$ (mm) | $f_z$ (mm/t) |
| **HP ANKW 070204PNTR** | 8.70 | 7.70 | 2.60 | 0.40 | 1.20 | 4.50 | ● | ● | 0.80-7.70 | 0.08-0.15 |

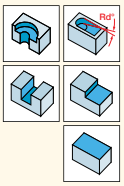
• Reinforced flat rake for machining cast iron. For cutting speed recommendations, see pages 616-620

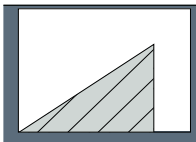
**For tools, see pages:** HP ANK-07 (274) • HP E90AN-07 (21) • HP E90AN-M-07 (21) • HP E90AN-MM-07 (22) • HP F90AN-07 (229)

HELIPLUS

**HP ANCR 0702PNFR**
Peripherally Ground Inserts with a Super Positive Chipformer for Machining Aluminum, Titanium and Magnesium





| Designation | Dimensions | | | | | | Tough ↔ Hard | | | | Recommended Machining Data | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INSL | APMX | S | RE | BS | W1 | IC28 | IC328 | IC928 | IC908 | $a_p$ (mm) | $f_z$ (mm/t) |
| **HP ANCR 070204PNFR** | 8.70 | 7.70 | 2.60 | 0.40 | 1.20 | 4.50 | | ● | ● | ● | 0.80-7.70 | 0.07-0.20 |
| **HP ANCR 070204PNFR-P** (1) | 8.70 | 7.70 | 2.60 | 0.40 | 1.20 | 4.50 | ● | | | | 0.80-7.70 | 0.07-0.20 |

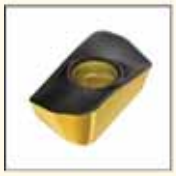
• For cutting speed recommendations, see pages 616-620

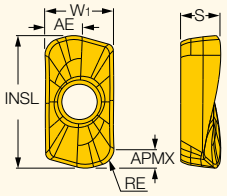
(1) Polished rake

**For tools, see pages:** HP ANK-07 (274) • HP E90AN-07 (21) • HP E90AN-M-07 (21) • HP E90AN-MM-07 (22) • HP F90AN-07 (229)

HELIPLUS

**HP ANKT 0702-FF**
Inserts for Fast Feed Milling

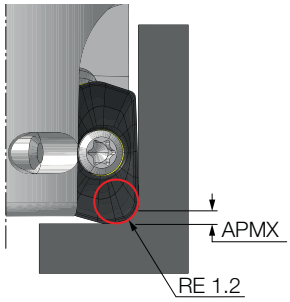





| Designation | Dimensions W1 | RE | S | INSL | APMX | AE | Tough ↔ Hard IC830 | IC808 | IC5600 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| HP ANKT 0702R12T-FF | 4.40 | 1.20 | 2.60 | 8.55 | 0.70 | 1.9 | ● | ● | | 0.30-1.00 |
| HP ANKT 0702R12GT-FF (1) | 4.40 | 1.20 | 2.60 | 8.55 | 0.70 | 1.9 | | ● | ● | 0.30-1.00 |

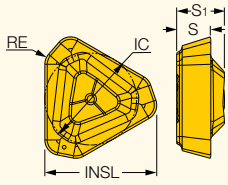
• Can be used on 12 mm and larger tools • For cutting speed recommendations, see pages 616-620
(1) Reinforced cutting-edge geometry for Fast Feed (FF) hardened materials up to 60 HRC

**For tools, see pages:** HP E90AN-07 (21) • HP E90AN-M-07 (21) • HP E90AN-MM-07 (22) • HP F90AN-07 (229)




NANO FEED MILL

**FFT3 TXMT 02**
Triangular Miniature Inserts
for Fast Feed Milling at
Small Depths of Cut




| Designation | Dimensions INSL | IC | RE | S | S1 | Tough ↔ Hard IC830 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| FFT3 TXMT 020105T | 3.66 | 2.00 | 0.50 | 1.10 | 1.56 | ● | ● | 0.20-0.60 | 0.20-0.45 |

• For side plunging, the initial cutting feed is 0.06 mm/t

**For tools, see pages:** FFT3 EFM-02 (334) • FFT3 EFM-MM 02 (334)

## Recommended Machining Conditions for FFT3-02 Fast Feed Endmills

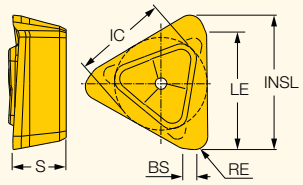
| ISO class DIN/ ISO 513 | Workpiece material Description | ISCAR mat. group* | Hardness, HB | Typical representative AISI/SAE/ASTM | DIN W.-Nr. | D.O.C. $a_p$ (mm) | Cutting speed $v_c$, (m/min) | Feed $f_z$ (mm/tooth) | Coolant |
|---|---|---|---|---|---|---|---|---|---|
| P | Non-alloy steel | 1-5 | 130-180 | 1020 | 1.0402 | 0.20-0.60 | 120-200 | 0.20-0.70 | Dry/Wet |
| | Low alloy steel | 6-8 | 260-300 | 4340 | 1.6582 | | 100-180 | 0.20-0.70 | Dry/Wet |
| | | 9 | HRC 35-42** | 3135 | 1.5710 | | 100-130 | 0.20-0.60 | Dry/Wet |
| | High alloy steel | 10-11 | 200-220 | H13 | 1.2344 | | 80-150 | 0.20-0.60 | Dry/Wet |
| | Ferritic/martensitic stainless steel | 12-13 | 200 | 420 | 1.4021 | | 80-150 | 0.20-0.60 | Dry/Wet |

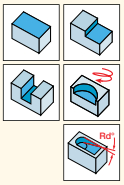
* ISCAR material group in accordance with VDI 3323 standard ** Quenched and tempered
For machining under unstable conditions, the recommended cutting data should be reduced by 20-30%

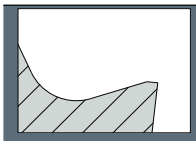
NANMILL
NANO ENDMILL

## HM390 TPKR 0401

Triangular Miniature Inserts with 3 Helical Cutting Edges for 90° Shoulders





| Designation | Dimensions INSL | IC | S | LE | RE | BS | Tough ↔ Hard IC830 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| HM390 TPKR 0401-PCTR | 4.00 | 2.80 | 1.60 | 3.00 | 0.40 | 0.40 | ● | ● | 0.80-3.00 | 0.04-0.10 |

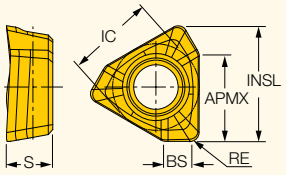
• For cutting speed recommendations, see pages 616-620

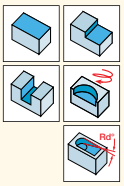
**For tools, see pages:** HM390 ETP-04 (15) • HM390 ETP-MM-04 (15)

HELI3MILL
HM390 LINE

## HM390 TPKT/CT 0502

Triangular Inserts with 3 Helical Cutting Edges for 90° Shoulder Accuracy

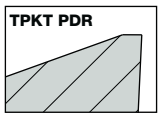


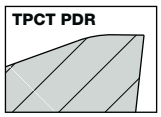



| Designation | Dimensions INSL | IC | S | APMX | RE | BS | Tough ↔ Hard IC830 | IC808 | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 TPCT 0502PDR | 5.26 | 3.94 | 2.10 | 3.50 | 0.40 | 1.00 | ● | | | 0.80-3.50 | 0.05-0.10 |
| HM390 TPKT 0502PDR | 5.26 | 3.94 | 2.10 | 3.50 | 0.40 | 1.00 | ● | ● | ● | 0.80-3.50 | 0.05-0.15 |
| HM390 TPKT 050202PDR | 5.26 | 3.94 | 2.10 | 3.50 | 0.20 | 1.20 | | ● | | 0.60-3.50 | 0.05-0.15 |
| HM390 TPKT 050208PDR | 5.26 | 3.94 | 2.10 | 3.50 | 0.80 | 0.60 | | ● | | 1.20-3.50 | 0.05-0.15 |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HM390 ETP-05 (16) • HM390 ETP-MM-05 (16) • HM390 ETP/C/D-MM-JHP (17)

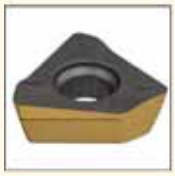


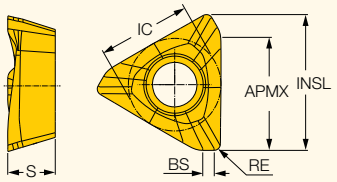



HELI3MILL HM390 LINE

## HM390 TCKT/CT 0703

Triangular Inserts with 3 Helical Cutting Edges for 90° Shoulder Accuracy

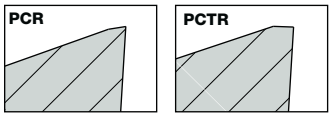





| Designation | Dimensions | | | | | | Tough ↔ Hard | | | | | | | | Recommended Machining Data | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INSL | IC | S | APMX | RE | BS | IC330 | IC845 | IC830 | IC380 | IC808 | IC810 | IC5400 | IC5600 | $a_p$ (mm) | $f_z$ (mm/t) |
| HM390 TCCT 0703PCR | 7.80 | 5.80 | 3.15 | 5.00 | 0.50 | 0.80 | ● | | ● | ● | | | | | 0.50-5.00 | 0.08-0.15 |
| HM390 TCKT 0703PCTR | 7.80 | 5.80 | 3.15 | 5.00 | 0.50 | 0.80 | ● | ● | ● | | ● | ● | ● | ● | 0.50-5.00 | 0.08-0.15 |
| HM390 TCKT 070308PCTR | 7.80 | 5.80 | 3.15 | 5.00 | 0.80 | 0.50 | | | | | ● | | | | 0.80-5.00 | 0.08-0.15 |
| HM390 TCKT 070312PCTR | 7.80 | 5.80 | 3.15 | 5.00 | 1.20 | 0.10 | | | | | ● | | | | 1.00-5.00 | 0.08-0.15 |

- For cutting speed recommendations, see pages 616-620

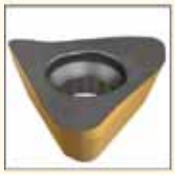
**For tools, see pages:** HM390 E10-80-07 (54) • HM390 ETC-07 (22) • HM390 ETC-MM (23) • HM390 ETP/C/D-MM-JHP (17) • HM390 FTC-07 (227) • HM390 FTP/C/D-JHP (235)

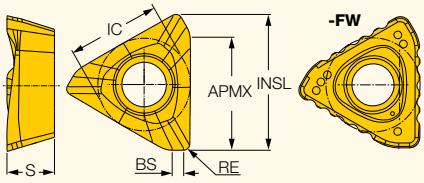



HELI3MILL HM390 LINE

## HM390 TPKT/CT 1003

Triangular Inserts with 3 Helical Cutting Edges for 90° Shoulder Accuracy






| Designation | Dimensions | | | | | | Tough ↔ Hard | | | | | | | | | | | Recommended Machining Data | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INSL | IC | S | APMX | RE | BS | IC882 | IC330 | IC845 | IC716 | IC830 | IC380 | IC808 | IC30N | IC810 | IC5400 | IC5600 | $a_p$ (mm) | $f_z$ (mm/t) |
| HM390 TPCT 1003PDR | 10.90 | 7.50 | 4.00 | 8.00 | 0.80 | 1.10 | | | | | ● | | ● | | ● | | | 1.20-8.00 | 0.08-0.12 |
| HM390 TPCT 100302PDR | 10.90 | 7.50 | 3.95 | 8.00 | 0.20 | 1.50 | | | | | ● | | ● | | | | | 0.60-8.00 | 0.08-0.15 |
| HM390 TPKR 100304PDRHM (1) | 10.90 | 7.50 | 4.00 | 8.00 | 0.40 | 1.50 | | | | | ● | | | | | | | 1.20-8.00 | 0.08-0.15 |
| HM390 TPKT 1003PDR | 10.90 | 7.50 | 3.85 | 8.00 | 0.80 | 0.70 | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | 1.20-8.00 | 0.08-0.15 |
| HM390 TPKT 1003PDR-FW (2) | 10.90 | 7.50 | 4.00 | 8.00 | 0.80 | 1.50 | | | | | ● | | | | | | | 1.20-8.00 | 0.08-0.15 |
| HM390 TPKT 1003PDR-HS | 10.90 | 7.50 | 4.00 | 8.00 | 0.80 | 1.00 | | | | | ● | | | | | | | 1.20-8.00 | 0.08-0.12 |
| HM390 TPKT 1003PDR-MP | 10.90 | 7.50 | 4.10 | 8.00 | 0.80 | 1.20 | | | | | ● | | | | | | | 1.20-8.00 | 0.08-0.12 |
| HM390 TPKT 100304PDR | 10.90 | 7.50 | 3.85 | 8.00 | 0.40 | 1.00 | | ● | | | ● | | ● | | | | | 0.80-8.00 | 0.08-0.15 |
| HM390 TPKT 100304R-GW (3) | 10.90 | 7.50 | 3.85 | 8.00 | 0.40 | 1.25 | | | | | | | | ● | | | | 0.80-8.00 | 0.08-0.15 |
| HM390 TPKT 100310PDR | 10.90 | 7.50 | 3.85 | 8.00 | 1.00 | 0.90 | | ● | | | ● | | ● | | | | | 1.40-8.00 | 0.08-0.15 |
| HM390 TPKT 100312PDR | 10.90 | 7.50 | 3.85 | 8.00 | 1.20 | 0.70 | | ● | | | ● | | ● | | | | | 1.60-8.00 | 0.08-0.15 |
| HM390 TPKT 100316PDR | 10.90 | 7.50 | 3.85 | 8.00 | 1.60 | 0.60 | | ● | | | ● | | ● | | | | | 2.00-8.00 | 0.08-0.15 |
| HM390 TPKT 100320PDR (4) | 10.90 | 7.50 | 3.85 | 8.00 | 2.00 | 0.60 | | ● | | | ● | | ● | | | | | 2.40-8.00 | 0.08-0.15 |
| HM390 TPKT 100324PDR | 10.90 | 7.50 | 3.87 | 6.60 | 2.40 | 0.40 | | | | | | | ● | | | | | 2.80-6.50 | 0.08-0.15 |

- For cutting speed recommendations, see pages 616-620

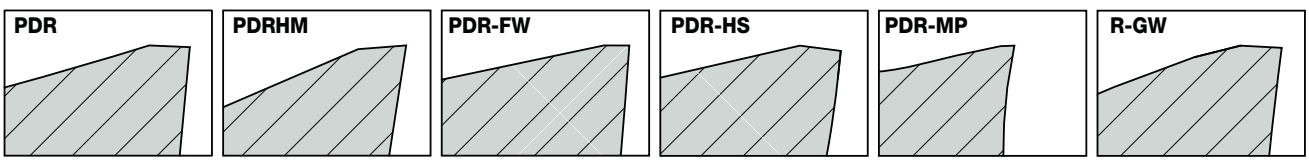
(1) Super positive insert for machining aluminum, stainless steel and high temperature alloys

(2) Insert with a serrated wavy cutting edge crushes chips into small segments

(3) A ground wiper

(4) Tool's pocket corners should be rounded to 1.5 mm radius

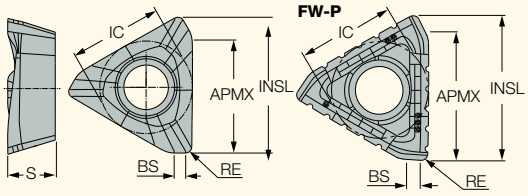
**For tools, see pages:** HM390 ETP-10 (29) • HM390 ETP-C#-10 (31) • HM390 ETP-M (30) • HM390 ETP/C/D-MM-JHP (17) • HM390 FTP-10 (235) • HM390 FTP/C/D-JHP (235) • HM390 SM-10 (275) • HM390 TPK-10 (274)

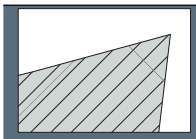


HELI3MILL HM390 LINE

## HM390 TPCR 1003

Triangular Inserts with 3 Helical Cutting Edges Feature Positive and Polished Rake for Machining Non-Ferrous Materials



| Designation | Dimensions INSL | IC | S | APMX | RE | BS | IC28 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| HM390 TPCR1003PDFR-P | 10.90 | 7.50 | 4.00 | 8.00 | 0.80 | 1.00 | • | 1.20-8.00 | 0.05-0.20 |
| HM390 TPCR100308FW-P | 10.90 | 7.50 | 4.25 | 8.00 | 0.80 | 1.00 | • | 1.20-8.00 | 0.05-0.20 |

**New**

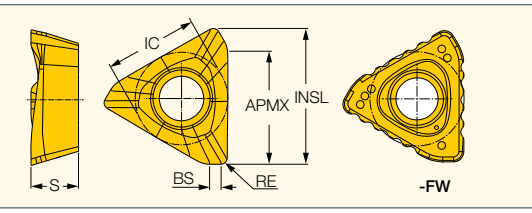
- Peripherally ground inserts, feature super positive and polished rake face for milling non-ferrous materials
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HM390 ETP-10 (29) • HM390 ETP-C#-10 (31) • HM390 ETP-M (30) • HM390 ETP/C/D-MM-JHP (17) • HM390 FTP-10 (235) • HM390 FTP/C/D-JHP (235) • HM390 SM-10 (275) • HM390 TPK-10 (274)

HELI3MILL HM390 LINE

## HM390 TDKT/CT 1505

Triangular Inserts with 3 Helical Cutting Edges for 90° Shoulder Accuracy

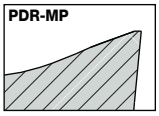


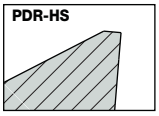

| Designation | Dimensions INSL | IC | S | APMX | RE | BS | Tough ↔ Hard IC882 | IC330 | IC845 | IC716 | IC830 | IC380 | IC808 | IC30N | IC810 | IC5400 | IC5600 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 TDKT 1505PDR-MP (1) | 15.97 | 11.40 | 6.45 | 13.00 | 0.80 | 2.90 | | | | | • | | | | | | | 1.20-13.00 | 0.08-0.15 |
| HM390 TDKT 1505PDR-HS (2) | 16.70 | 11.40 | 6.24 | 13.00 | 0.80 | 1.35 | | | | | • | | | | | | | 1.20-13.00 | 0.08-0.15 |
| HM390 TDKT 1505PDR | 16.71 | 11.39 | 5.85 | 13.00 | 0.80 | 1.40 | • | • | • | • | • | • | • | | • | • | • | 1.20-13.00 | 0.08-0.15 |
| HM390 TDKT 1505PDR-GW | 16.50 | 11.40 | 5.80 | 13.00 | 0.80 | 1.70 | | | | | | | | • | | | | 1.20-13.00 | 0.08-0.15 |
| HM390 TDKT 1505PDR-FW (3) | 17.06 | 12.30 | 6.42 | 11.00 | 1.40 | 1.40 | | | | | • | | | | | | | 1.80-11.00 | 0.10-0.15 |
| HM390 TDCT 150504PDR | 16.80 | 11.40 | 6.08 | 12.00 | 0.40 | 1.90 | | | | | | | • | | | | | 1.20-12.00 | 0.08-0.15 |
| HM390 TDKT 150504PDR | 16.93 | 11.40 | 6.07 | 13.00 | 0.40 | 1.40 | | | | | • | | • | | | | | 1.20-13.00 | 0.08-0.15 |
| HM390 TDKT 150512-PDR | 16.56 | 11.40 | 5.85 | 12.70 | 1.20 | 1.00 | | • | | | • | | • | | | | | 1.60-12.70 | 0.08-0.15 |
| HM390 TDKT 150516-PDR | 16.40 | 11.40 | 5.82 | 12.50 | 1.60 | 1.00 | | • | | | • | | • | | | | | 2.00-12.50 | 0.08-0.15 |
| HM390 TDKT 150520-PDR | 16.20 | 11.50 | 5.85 | 12.50 | 2.00 | 0.70 | | • | | | • | | • | | | | | 2.40-12.50 | 0.08-0.15 |
| HM390 TDKT 150524-PDR | 15.90 | 11.40 | 5.85 | 12.00 | 2.40 | 0.60 | | • | | | • | | • | | | | | 2.80-12.00 | 0.08-0.15 |
| HM390 TDKT 150532-PDR (4) | 15.20 | 11.40 | 5.85 | 12.00 | 3.20 | 0.60 | | • | | | • | | • | | | | | 3.60-12.00 | 0.08-0.15 |
| HM390 TDCT 150540PDR | 13.78 | 11.40 | 5.61 | 10.00 | 4.00 | 1.05 | | | | | | | • | | | | | 4.40-10.00 | 0.08-0.15 |
| HM390 TDKT 150540-PDR (5) | 14.25 | 11.40 | 5.75 | 11.00 | 4.00 | 0.60 | | • | | | • | | • | | | | | 4.40-11.00 | 0.08-0.15 |
| HM390 TDKR 150508PDRHM (6) | 16.70 | 11.40 | 5.85 | 13.00 | 0.80 | 1.70 | | | | | • | | | | | | | 1.20-13.00 | 0.08-0.15 |
| HM390 TDCT 1505PDR (7) | 16.80 | 11.40 | 6.08 | 12.00 | 0.80 | 1.70 | • | | | | • | • | • | | • | | | 1.20-12.00 | 0.08-0.15 |

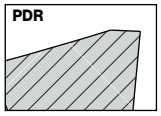
- For cutting speed recommendations, see pages 616-620

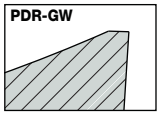
(1) General-duty inserts with new medium positive cutting geometry
(2) Insert with a serrated chip splitting for roughing applications and for long overhang
(3) Chip splitting cutting edge, enlarges tool diameter by 1 mm
(4) Tools should be modified by rounding the insert pocket corners to 2 mm
(5) Tools should be modified by rounding the pocket corners to 4 mm
(6) Super positive inserts for machining aluminum, stainless steel and high temperature alloys
(7) Peripherally ground

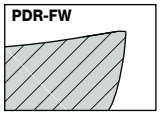
**For tools, see pages:** HM390 ETD-15 (42) • HM390 ETD-M (42) • HM390 ETP/C/D-MM-JHP (17) • HM390 FTD-15 (246) • HM390 FTP/C/D-JHP (235)

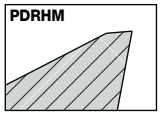


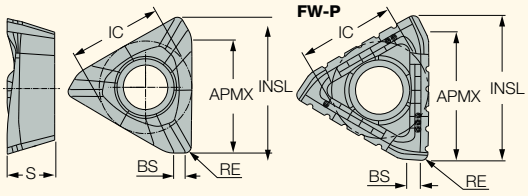



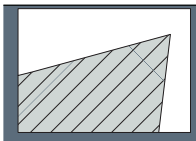



HELI3MILL HM390 LINE

## HM390 TDCR 1505

Triangular Inserts with 3 Helical Cutting Edges Feature Positive and Polished Rake for Machining Non-Ferrous Materials



| Designation | Dimensions INSL | IC | S | APMX | RE | BS | IC28 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| HM390 TDCR 150502PDFR-P | 16.80 | 11.40 | 6.00 | 13.00 | 0.20 | 2.40 | ● | 0.60-13.00 | 0.08-0.20 |
| HM390 TDCR 150504PDFR-P | 16.80 | 11.40 | 6.00 | 13.00 | 0.40 | 2.35 | ● | 0.80-13.00 | 0.08-0.20 |
| HM390 TDCR 1505PDFR-P | 16.70 | 11.40 | 6.00 | 13.00 | 0.80 | 1.60 | ● | 1.20-13.00 | 0.08-0.20 |
| HM390 TDCR 150520PDFR-P | 16.00 | 11.40 | 6.00 | 13.00 | 2.00 | 1.00 | ● | 2.40-13.00 | 0.08-0.20 |
| HM390 TDCR 150532PDFR-P (1) | 15.00 | 11.40 | 6.00 | 13.00 | 3.20 | 0.50 | ● | 3.60-13.00 | 0.08-0.20 |
| HM390 TDCR 150540PDFR-P (1) | 14.00 | 11.40 | 6.00 | 13.00 | 4.00 | 0.70 | ● | 4.40-13.00 | 0.08-0.20 |
| HM390 TDCR 150508 FW-P (2) | 17.10 | 11.40 | 6.40 | 13.00 | 0.80 | 2.30 | ● | 1.20-13.00 | 0.08-0.22 |
| HM390 TDCR 150532 FW-P (3) | 17.10 | 11.40 | 6.40 | 13.00 | 3.20 | 0.50 | ● | 3.60-13.00 | 0.08-0.22 |

• Peripherally ground inserts, feature super positive and polished rake face for milling non-ferrous materials • For cutting speed recommendations, see pages 616-620

(1) Tools should be modified by rounding the insert pocket corners to 2.0 mm

(2) Insert with serrated cutting edge

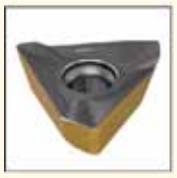
(3) Tools should be modified by rounding the insert pocket corners to 2.0 mm. Insert with serrated cutting edge

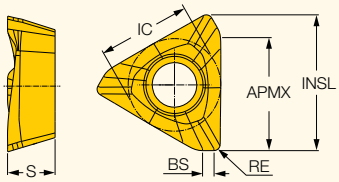
**For tools, see pages:** HM390 ETD-15 (42) • HM390 ETD-M (42) • HM390 ETP/C/D-MM-JHP (17) • HM390 FTD-15 (246) • HM390 FTP/C/D-JHP (235)

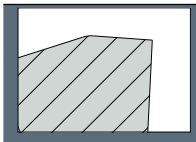
HELI3MILL HM390 LINE

## HM390 TDKT 1907

Triangular Inserts with 3 Helical Cutting Edges for 90° Shoulder Accuracy





| Designation | Dimensions INSL | IC | S | APMX | RE | BS | Tough ↔ Hard IC330 | IC845 | IC830 | IC808 | IC810 | IC5400 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM390 TDKT 1907PDTR | 21.00 | 14.00 | 7.00 | 16.00 | 0.80 | 2.50 | ● | ● | ● | ● | ● | ● | 1.20-16.00 | 0.10-0.20 |

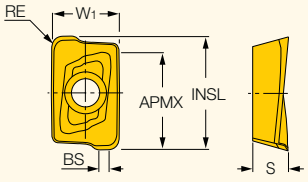
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HM390 ETD-19 (46) • HM390 FTD-19 (250)

HELI2000

## HM90 APCT 1003

Inserts with a Sharp Cutting Edge for Semi-Finish and Finishing

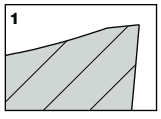


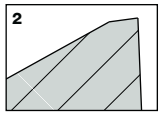

| Designation | Dimensions W1 | RE | INSL | S | BS | APMX | Fig. | Tough ↔ Hard IC28 | IC328 | IC928 | IC380 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 APCT 100302R-PDR | 6.96 | 0.20 | 11.66 | 3.53 | 1.90 | 9.80 | 1 | ● | ● | ● | | ● | 0.60-8.00 | 0.06-0.12 |
| HM90 APCT 100308-HP (1) | 6.80 | 0.80 | 11.46 | 3.53 | 1.40 | 9.80 | 2 | | | | ● | ● | 1.20-8.00 | 0.06-0.12 |

• For cutting speed recommendations, see pages 616-620

(1) Sharp cutting edges, high positive rake angle, excellent for milling PH high temperature alloys

**For tools, see pages:** HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

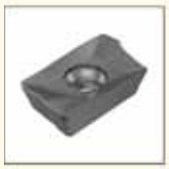


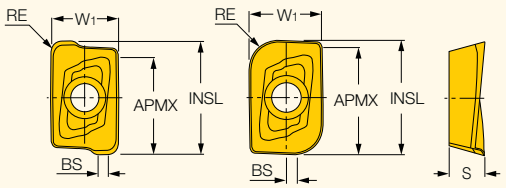



HELI2000

## HM90 APKT 1003

Inserts for General Use with 2 Helical Cutting Edges for High 90° Shoulder Accuracy

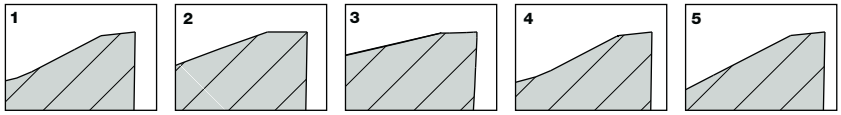





| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Fig. | Tough ↔ Hard IC882 | IC28 | IC330 | IC328 | IC716 | IC830 | IC928 | IC950 | IC380 | IC808 | IC908 | IC810 | IC910 | IC5400 | IC5600 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 APKT 1003PDR | 6.76 | 11.45 | 9.80 | 3.53 | 0.80 | 1.40 | 1 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 1.20-8.00 | 0.08-0.15 |
| HM90 APKT 100304PDR-SC | 6.80 | 11.60 | 9.80 | 4.00 | 0.40 | 1.80 | 2 | | | | | | ● | | | | | | | | | | 0.80-8.00 | 0.08-0.15 |
| HM90 APKT 1003PDR-MM | 6.70 | 11.50 | 9.80 | 3.50 | 0.80 | 1.60 | 3 | | | | | | ● | | | | | | | | | | 1.20-8.00 | 0.08-0.15 |
| HM90 APKT 1003PDTR-8M | 6.76 | 11.45 | 9.80 | 3.53 | 0.80 | 1.40 | 4 | | | | | | | ● | | | | | | ● | | | 1.20-8.00 | 0.08-0.20 |
| HM90 APKT 100304PDR | 6.76 | 11.45 | 9.80 | 3.53 | 0.40 | 1.78 | 1 | | ● | | ● | | | ● | | | ● | ● | | | | ● | 0.80-8.00 | 0.08-0.15 |
| HM90 APKT 100308R | 6.76 | 11.45 | 9.80 | 3.53 | 0.80 | 1.00 | 5 | | | | | | ● | | | | | | | | | | 1.20-8.00 | 0.08-0.15 |
| HM90 APKT 100310PDR | 6.76 | 11.45 | 9.80 | 3.53 | 1.00 | 1.00 | 1 | | | | | | | | | | ● | | | | | | 1.40-8.00 | 0.08-0.15 |
| HM90 APKT 100312PDR | 6.76 | 11.45 | 9.20 | 3.53 | 1.20 | 1.00 | 1 | | | | ● | | | ● | | | | ● | | | | ● | 1.60-8.00 | 0.08-0.15 |
| HM90 APKT 100316PDR | 6.76 | 11.45 | 9.20 | 3.53 | 1.60 | 0.58 | 1 | | | | ● | | | ● | | | | ● | | | | ● | 2.00-8.00 | 0.08-0.15 |
| HM90 APKT 100325PDR | 6.76 | 10.40 | 9.20 | 3.53 | 2.50 | - | 1 | | | | ● | | | ● | | | | ● | | | | ● | 2.90-8.00 | 0.08-0.15 |
| HM90 APKT 100330PDR | 6.76 | 10.40 | 9.20 | 3.53 | 3.00 | - | 1 | | | | ● | | | ● | | | | ● | | | | ● | 3.40-8.00 | 0.08-0.15 |

• For inserts with corner radii larger than 1.5 mm, the cutter body should be modified • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** APK-FE (279) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)




**HM90 APKT 1003PDR-MM**

- Cutting edge geometry with low axial angle
- Reinforced cutting edge geometry, which provides better chipping resistance
- Wide frontal wiper that leaves excellent surface finish with low mismatch on the workpiece
- Used for unfavorable conditions and high feeds

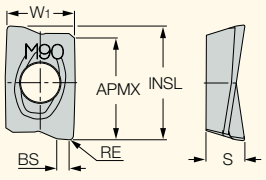
**HM90 APKT 1003PDR-SC**

- Larger axial effective angle up to the middle of the insert length
- Reduced cutting forces, effective up to 5 mm – the middle of insert's cutting edge length
- Used for machining ductile high strength materials. Parts such as shafts, gears, crankshafts, connection rods, camshafts, etc.

HELI2000

## HM90 APCR 100304PDFR-P/DP

Inserts with Positive Helical Cutting Edges and Polished Rake for Machining Aluminum and High Temperature Alloys

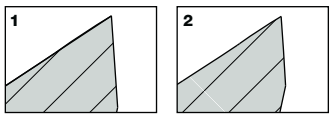



| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Fig. | Tough ↔ Hard IC28 | IC928 | IC08 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 APCR 100304PDFR-P | 6.52 | 11.25 | 9.80 | 3.85 | 0.40 | 1.52 | 1 | ● | ● | ● | ● | 0.80-8.00 | 0.07-0.25 |
| HM90 APCR 100304PDFRDP | 6.52 | 11.25 | 9.80 | 3.85 | 0.40 | 1.52 | 2 | ● | | | | 0.80-8.00 | 0.07-0.25 |

• Super positive peripherally ground chipformer • P - Polished rake DP- Polished rake and flank • Used for machining aluminum ($f_z$ 0.07-0.25), titanium ($f_z$ 0.05-0.08) and magnesium ($f_z$ 0.05-0.10)

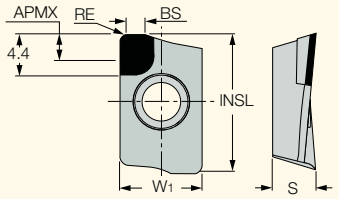
• Recommended for coarse pitch cutters • For cutting speed recommendations, see pages

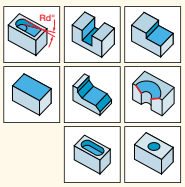
**For tools, see pages:** APK-FE (279) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

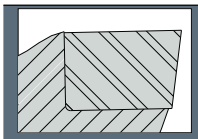


HELIMILL

**APKW 100304 PDR (PCD)**
Single R.H. PCD Tipped
Insert for Milling Aluminum





| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Tough ↔ Hard ID8 | ID5 |
|---|---|---|---|---|---|---|---|---|
| APKW 100304 PDR (1) | 6.76 | 11.47 | 3.50 | 3.50 | 0.40 | 1.52 | ● | ● |

• Use ID5 for aluminum alloys with <12% silicon. • The inserts are supplied with spare screws.
(1) Important: use only on tools with diameters of 25 mm and larger

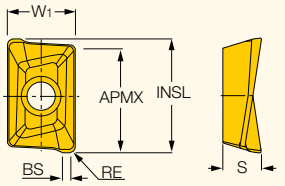
**For tools, see pages:** HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

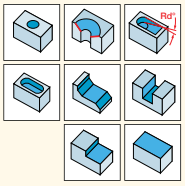
## PCD
## Recommended Machining Conditions

| | Grade | D.O.C. ($a_p$) mm | Material | $V_c$ m/min | Feed mm/tooth | Cutting Edge |
|---|---|---|---|---|---|---|
| N | ID5 | <2.0 | Aluminum alloys <12% silicon | 300-3000 | 0.05-0.25 | Sharp |
| | | <2.0 | Chipboard, fiberboard and plastics | 2000-3000 | | |
| | | <2.0 | Copper alloys and brass | 500-1500 | | |
| N | ID8 | <2.0 | Aluminum>12% silicon | 250-1000 | | |
| | | <2.0 | Aluminum<12% silicon | 300-3000 | | |
| | | <2.0 | Chipboard, fiberboard and plastics | 2000-3000 | | |
| | | | MMC | 200-600 | | |

HELIMILL

**APCT 1003PDR-HM**
Inserts with 2 Helical Precision
Ground Cutting Edges for
High Accuracy Finishing

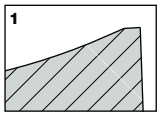


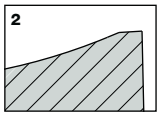



| Designation | Dimensions W1 | RE | INSL | S | APMX | BS | Fig. | Tough ↔ Hard IC28 | IC328 | IC250 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APCT 100302R-HM | 6.70 | 0.25 | 10.95 | 3.51 | 9.80 | 1.20 | 1 | | ● | | 0.65-8.00 | 0.06-0.12 |
| APCT 100304R-HM | 6.70 | 0.45 | 10.95 | 3.51 | 9.80 | 1.20 | 1 | | ● | | 0.85-8.00 | 0.07-0.12 |
| APCT 1003PDR-HM | 6.70 | 0.50 | 10.95 | 3.51 | 9.80 | 1.20 | 2 | ● | | ● | 0.90-8.00 | 0.07-0.15 |

• For cutting speed recommendations, see pages 616-620

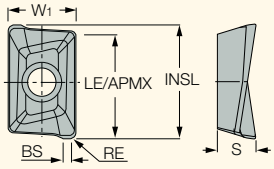
**For tools, see pages:** APK-FE (279) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

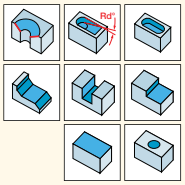


HELIMILL

**APCR 1003PDFR-P**
Super Positive Insert with a Polished Rake for Machining Aluminum



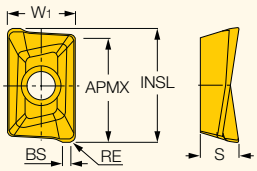
| Designation | Dimensions W1 | INSL | S | RE | BS | APMX | Tough ↔ Hard IC28 | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| APCR 1003PDFR-P | 6.70 | 11.20 | 3.76 | 0.50 | 1.20 | 9.80 | ● | ● | 0.90-8.00 | 0.07-0.25 |

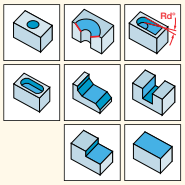
- Super positive rake sharp ground helical cutting edge, for finishing on aluminum, stainless steel and high temperature alloys
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** APK-FE (279) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

HELIMILL

**APKR 1003PDR**
High Positive Inserts for Machining Stainless Steel and High Temperature Alloys

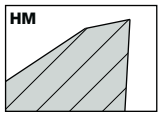


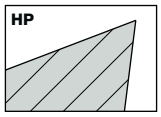



| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Tough ↔ Hard IC28 | IC330 | IC328 | IC716 | IC840 | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APKR 1003PDR-HM | 6.70 | 11.20 | 9.80 | 3.76 | 0.50 | 1.20 | ● | ● | ● | | | ● | 0.90-8.00 | 0.07-0.15 |
| APKR 1003PDR-HP | 6.70 | 11.50 | 9.80 | 3.80 | 0.80 | 1.90 | | | | ● | ● | | 0.90-8.00 | 0.07-0.15 |

- For cutting speed recommendations, see pages 616-620

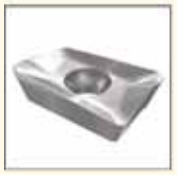
**For tools, see pages:** APK-FE (279) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

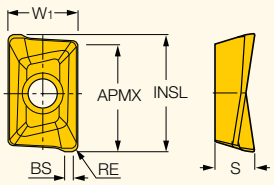


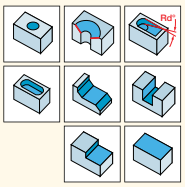



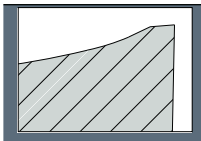

HELIMILL

**APKT 1003PDR-HM**
Inserts with 2 Helical Cutting Edges for General Use







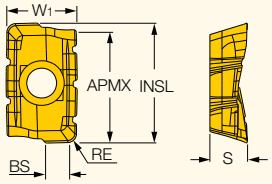
| Designation | Dimensions W1 | INSL | S | APMX | RE | BS | Tough ↔ Hard IC28 | IC330 | IC328 | IC830 | IC928 | IC635 | IC50M | IC250 | IC950 | IC30N | IC910 | IC520M | IC20 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APKT 1003PDR-HM | 6.70 | 10.95 | 3.55 | 9.80 | 0.50 | 1.20 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 0.90-8.00 | 0.08-0.15 |

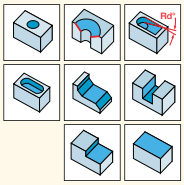
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** APK-FE (279) • E90AC (50) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

HELIMILL

**APKT 1003PDR-HM-CS**
Chip Splitting Insert for Rough Steel Milling, Specially Made for Extended Flute Tools or Long Overhang Applications



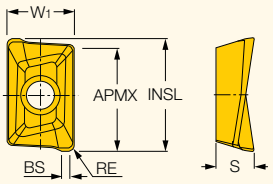
| Designation | Dimensions W1 | INSL | S | APMX | RE | BS | IC830 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| APKT 1003PDR-HM-CS | 6.70 | 10.95 | 3.55 | 9.80 | 0.80 | 1.20 | ● | 8.00-8.00 (1) | 0.08-0.15 |

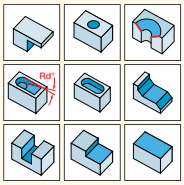
• For cutting speed recommendations, see pages 616-620
(1) Machine with maximum depth of cut

**For tools, see pages:** APK-FE (279) • E90AC (50) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

HELIMILL

**APKT 1003PDTR/L-RM**
Inserts with Reinforced Helical Cutting Edge for Interrupted Cut and Heavy Machining



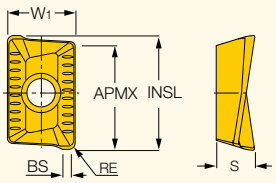
| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Tough ↔ Hard IC28 | IC328 | IC928 | IC250 | IC950 | IC910 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APKT 1003PDTL-RM (1) | 6.70 | 11.00 | 9.80 | 3.47 | 0.50 | 1.20 | | ● | | | | | | 0.90-8.00 | 0.10-0.20 |
| APKT 1003PDTR-RM | 6.70 | 11.00 | 9.80 | 3.47 | 0.50 | 1.20 | ● | ● | ● | ● | ● | ● | ● | 0.90-8.00 | 0.10-0.20 |

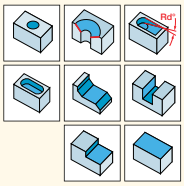
• APKT...L should be used only on left-hand tools. • For cutting speed recommendations, see pages 616-620
(1) PDTL-Left-hand inserts are used only for special tools.

**For tools, see pages:** APK-FE (279) • ETS (389) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

HELIMILL

**APKT 1003PDTR-76**
Inserts with 2 Helical Cutting Edges with Ribs Along the Edge for Interrupted Cuts



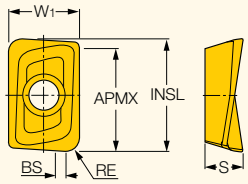
| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Tough ↔ Hard IC330 | IC328 | IC830 | IC928 | IC950 | IC910 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APKT 1003PDTR-76 | 6.70 | 11.00 | 9.80 | 3.47 | 0.50 | 1.20 | ● | ● | ● | ● | ● | ● | ● | 0.90-8.00 | 0.08-0.15 |

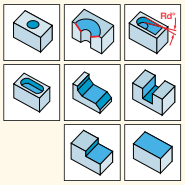
• Reinforced helical cutting edge with ribs on rake face to reduce heat transfer. Used for interrupted cuts and heavy machining
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** APK-FE (279) • E90AC (50) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

HELIMILL

**APKT 1003..TR-RM**
Inserts with Various Corner Radii and a Reinforced Cutting Edge for Interrupted Cut and Heavy Machining

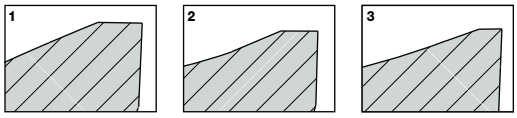


| Designation | Dimensions RE | INSL | W1 | APMX | S | BS | Fig. | Tough ↔ Hard IC28 | IC330 | IC328 | IC928 | IC950 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APKT 100308PDTR-RM | 0.80 | 11.00 | 6.70 | 9.80 | 3.47 | 0.90 | 2 | | ● | ● | ● | | ● | 1.20-8.00 | 0.08-0.15 |
| APKT 100310PDR-RM | 1.00 | 10.75 | 6.70 | 9.80 | 3.47 | 0.60 | 1 | ● | | ● | | | | 1.40-8.00 | 0.08-0.15 |
| APKT 100312TR-RM | 1.20 | 10.50 | 6.70 | 9.20 | 3.47 | - | 3 | ● | | ● | ● | | ● | 1.60-8.00 | 0.08-0.15 |
| APKT 100316PDTR-RM | 1.60 | 10.90 | 6.70 | 9.20 | 3.47 | 0.80 | 2 | | | ● | ● | | | 2.00-8.00 | 0.08-0.15 |
| APKT 100320PDTR-RM | 2.00 | 10.90 | 6.70 | 9.20 | 3.47 | 0.80 | 2 | | | ● | ● | ● | | 2.40-8.00 | 0.08-0.15 |
| APKT 100332TR-RM | 3.20 | 10.70 | 6.70 | 9.20 | 3.47 | - | 3 | | | ● | ● | | | 3.60-8.00 | 0.08-0.15 |
| APKT 100340TR-RM | 4.00 | 10.55 | 6.70 | 9.20 | 3.47 | - | 3 | | | ● | | | | 4.40-8.00 | 0.08-0.15 |

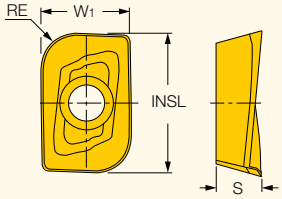
• For cutting speed recommendations, see pages 616-620

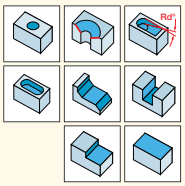
**For tools, see pages:** APK-FE (279) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

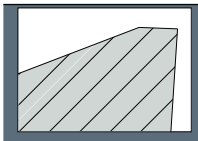



HELIMILL

**APKT 1003..R**
Inserts with Ground Large Corner Radii





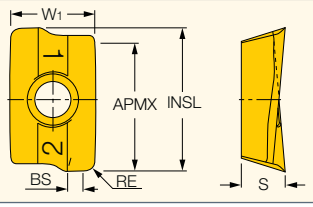
| Designation | Dimensions W1 | INSL | S | RE | IC328 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| APKT 100325R | 6.70 | 10.10 | 3.50 | 2.50 | ● | 2.90-9.20 | 0.08-0.15 |
| APKT 100330R | 6.70 | 10.10 | 3.50 | 3.00 | ● | 3.40-9.20 | 0.08-0.15 |
| APKT 100340R | 6.75 | 10.65 | 3.40 | 4.00 | ● | 4.40-9.20 | 0.08-0.15 |

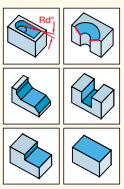
• Standard tool pocket radius should be increased to 0.5 mm larger than the insert radius • For cutting speed recommendations, see pages 616-620

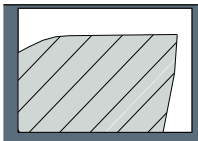
**For tools, see pages:** APK-FE (279) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

HELI2000

**HM90 APKW 1003PDR**
Inserts with a Reinforced Edge and Flat Rake for Hardened Steel and Milling Heavy Interrupted Cut





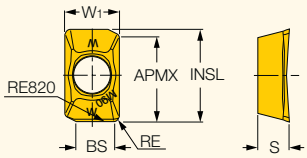
| Designation | Dimensions W1 | INSL | S | RE | BS | APMX | Tough ↔ Hard IC928 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 APKW 1003PDR | 6.76 | 11.47 | 3.50 | 0.80 | 1.40 | 9.80 | ● | ● | 1.20-8.00 | 0.08-0.15 |

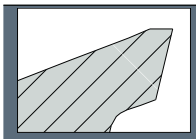
• Reinforced cutting edge, resistant to edge breakage and chipping • Recommended for milling at unfavorable conditions and heavy interrupted cut
• Different corner radii can be ground • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** APK-FE (279) • HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

HELI2000

**HM90 APKT 1003PD-W**
Wiper Insert





| Designation | Dimensions W1 | INSL | S | RE | BS | APMX | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| HM90 APKT 1003PD-W | 6.69 | 11.65 | 3.55 | 0.80 | 4.40 | 9.80 | ● | 0.10-1.00 | 0.15-0.30 |

• Must be used together with HM90 APKT 1003PDR inserts • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)

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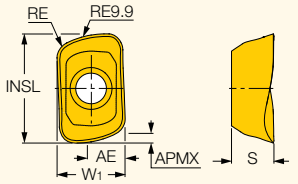
**APKT 1003-FF**
Insert for Fast Feed Milling

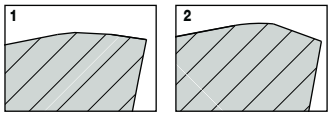


| Designation | Dimensions W1 | INSL | APMX | AE | S | RE | Rg(2) | Fig. | Tough ↔ Hard IC830 | IC808 | IC5600 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APKT 1003R8T-FF | 6.60 | 10.80 | 1.00 | 4.5 | 3.50 | 1.90 | 2.20 | 1 | ● | ● | | 0.50-1.00 | 0.50-1.50 |
| APKT 1003R8GT-FF (1) | 6.60 | 10.80 | 1.00 | 4.5 | 3.50 | 1.90 | 2.20 | 2 | | ● | ● | 0.50-1.00 | 0.50-1.50 |

• The actual diameter of the tool is 0.1 mm larger than the nominal diameter when using this insert • Tool corner should be modified by rounding to 2.0 mm.
• Should be used on tools of 12 mm diameter and up • At D.O.C. larger than $a_p$ max, regular insert feed should be applied
• For cutting speed recommendations, see pages 616-620

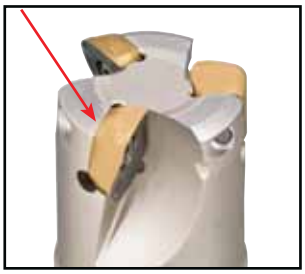
(1) Reinforced cutting-edge geometry for Fast Feed (FF) hardened materials up to 60 HRC
(2) Radius for programming

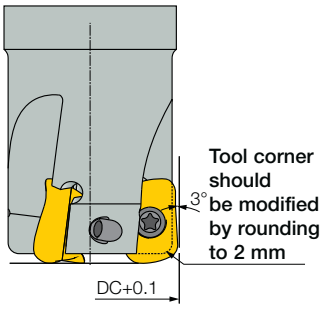
**For tools, see pages:** HM90 E90A-10 (32) • HM90 E90A-M-10 (39) • HM90 E90A-MM-10 (37) • HM90 E90A-MM-10-JHP (38) • HM90 F90AP-10 (236) • HM90 F90AP-10-JHP (237) • HM90 F90AP-AMT (237)




Standard Tool

Tool with a Modified Corner





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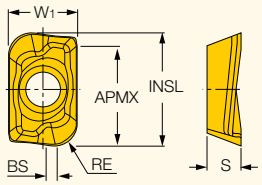
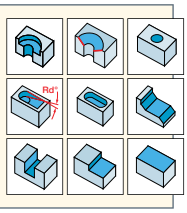
## HM90 ADKT 1505

Inserts with 2 Helical Cutting Edges for General Use

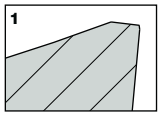


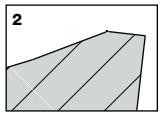



| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Fig. | Tough ↔ Hard IC882 | IC330 | IC328 | IC830 | IC928 | IC950 | IC380 | IC808 | IC908 | IC810 | IC910 | IC5400 | IC5600 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 ADKT 1505PDR | 9.65 | 16.18 | 12.00 | 5.85 | 0.80 | 2.16 | 2 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 1.20-12.00 | 0.08-0.15 |
| HM90 ADKT 1505PDR-MM | 9.60 | 16.00 | 12.00 | 5.80 | 0.80 | 2.70 | 1 | | | | ● | | | | | | | | | | 1.20-12.00 | 0.08-0.15 |
| HM90 ADKT 150516PDR | 9.65 | 15.60 | 12.00 | 5.92 | 1.60 | 1.37 | 2 | | | | | | | | | ● | | | | ● | 2.00-12.00 | 0.08-0.15 |
| HM90 ADKT 150520PDR | 9.65 | 15.60 | 12.00 | 5.90 | 2.00 | 0.79 | 2 | | | | | | | | | ● | | | | ● | 2.40-12.00 | 0.08-0.15 |
| HM90 ADKT 150524PDR | 9.65 | 15.60 | 12.00 | 5.80 | 2.40 | 0.52 | 2 | | | | | | | | | ● | | | | | 2.80-12.00 | 0.08-0.15 |
| HM90 ADKT 150532PDR | 9.65 | 15.20 | 12.00 | 5.85 | 3.20 | - | 2 | | | | | | | | | ● | | | | ● | 3.60-12.00 | 0.08-0.15 |
| HM90 ADKT 150540PDR | 9.65 | 14.83 | 12.00 | 5.80 | 4.00 | - | 2 | | | | | | | | | ● | | | | ● | 4.40-12.00 | 0.08-0.15 |
| HM90 ADKT 150550PDR | 9.65 | 14.85 | 12.00 | 5.75 | 5.00 | - | 2 | | | | | | | | | ● | | | | ● | 5.40-12.00 | 0.08-0.15 |
| HM90 ADKT 150564PDR | 9.65 | 14.85 | 12.00 | 5.65 | 6.40 | - | 2 | | | | | | | | | ● | | | | ● | 6.80-12.00 | 0.08-0.15 |

• For inserts with corner radii larger than 2.0 mm, the cutter body and seats should be modified • Inserts with corner radii larger than 0.8 mm should be used on ADK & SM tools only on the face of the cutter. • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)




**HM90 ADKT 1505PDR-MM**

- Cutting edge geometry with low axial angle
- Reinforced cutting edge geometry, which provides better chipping resistance
- Wide frontal wiper that leaves excellent surface finish on the workpiece
- Used for unfavorable conditions and high feeds

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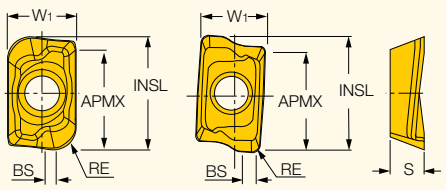
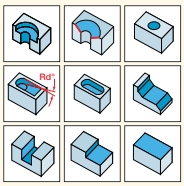
## HM90 ADCT 1505

General Use Inserts with 2 Helical Cutting Edges for High 90° Shoulder Accuracy

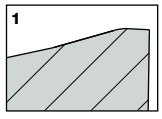


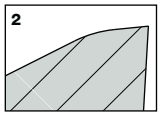



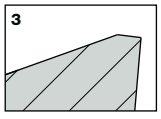
| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Fig. | Tough ↔ Hard IC882 | IC830 | IC380 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM90 ADCT 150508 PDTR | 9.50 | 15.70 | 12.00 | 6.40 | 0.80 | 4.10 | 3 | | ● | | | 1.20-12.00 | 0.08-0.15 |
| HM90 ADCT 1505PDR-PL | 9.65 | 16.18 | 12.00 | 5.85 | 0.80 | 2.16 | 2 | | ● | | ● | 1.20-12.00 | 0.08-0.12 |
| HM90 ADCT 150508R-T | 9.65 | 16.18 | 12.00 | 5.85 | 0.80 | 2.16 | 1 | ● | | ● | | 1.20-12.00 | 0.08-0.10 |
| HM90 ADCT 150516R-T | 9.65 | 16.18 | 12.00 | 5.85 | 1.60 | 1.37 | 1 | | | ● | | 2.00-12.00 | 0.08-0.10 |
| HM90 ADCT 150540R-T | 9.65 | 16.18 | 12.00 | 5.85 | 4.00 | - | 1 | | | ● | | 4.40-12.00 | 0.08-0.10 |

• For inserts with corner radii larger than 2.0 mm, the cutter body and seats should be modified • Inserts with corner radii larger than 0.8 mm should be used on ADK & SM tools only on the face of the cutter. • For a more economical insert refer to ADKT 1505PDR-HM in the ADKT 1505PDR family
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)




**HM90 ADCT 150508 PDTR**

- Sharp ground cutting edge with a special edge preparation
- Ground all around, including clamping surfaces
- Low axial angle edge geometry
- Wide sharp-edged wiper for high surface finish
- High perpendicularity and mismatch accuracy when using tool diameters of up to 50 mm

**HM90 ADCT 1505..R-T**

- For machining titanium and super alloys
- Excellent surface finish
- Smoother cut
- Reduces edge burrs
- Reduces vibration and noise

**HM90 ADCT 1505..PDR-PL**

- Designed for optimal machining of stainless steel and high temperature alloys
- Sharp cutting edge and a positive rake geometry are optimized to avoid built-up edge
- Wiper bottom edge leaves an excellent surface finish
- Helical axial positive edge geometry

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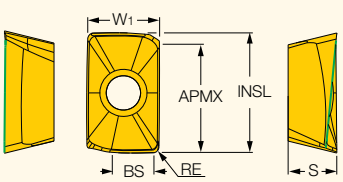
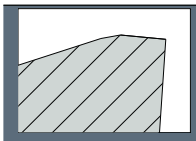
**HM90 ADCT 1505PDR-CF**
Inserts with 2 Different Cutting Edge Configurations Designed for Chatter Dampening



| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | IC830 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| HM90 ADCT 1505PDR-CF | 9.30 | 15.70 | 14.00 | 6.40 | 0.80 | 4.20 | ● | 1.20-14.00 | 0.08-0.15 |

- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)

**Edge helix angle is identified by different colors. Each cutting edge has a different axial angle, which is identified by either a yellow or black colored flank surface.**

**The inserts should be mounted in alternating edge configuration order (yellow followed by black) on the cutter.**

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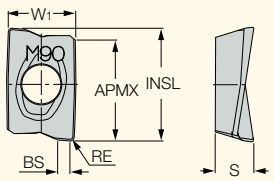
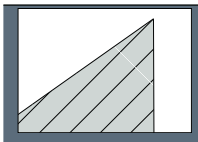
**HM90 ADCR 1505PDFR-P**
Peripherally Ground Insert with a Super Positive Polished Rake for Machining Aluminum and High Temperature Alloys



| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Tough ↔ Hard IC28 | IC08 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 ADCR 1505PDFR-P | 9.55 | 16.50 | 12.00 | 6.90 | 0.80 | 4.00 | ● | ● | 1.20-12.00 | 0.08-0.25 |

- Super positive chipformer peripherally ground (P - Polished rake) • Used for machining aluminum, titanium and magnesium
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248)

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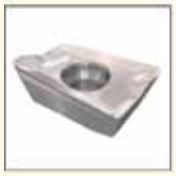
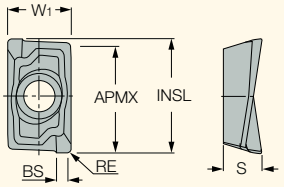
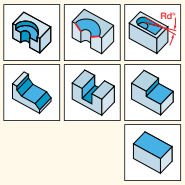
## ADCR 1505PDFR

Super Positive Precision Inserts for Aluminum, Stainless Steel and High Temperature Alloys





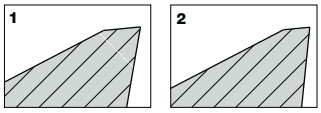



| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Fig. | Tough ↔ Hard IC28 | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ADCR 1505PDFR | 9.50 | 15.95 | 12.00 | 5.64 | 0.80 | 1.60 | 1 | | ● | 1.20-12.00 | 0.15-0.25 |
| ADCR 1505PDFR-P (1) | 9.50 | 15.95 | 12.00 | 5.64 | 0.80 | 1.60 | 2 | ● | | 1.20-12.00 | 0.07-0.25 |

• For cutting speed recommendations, see pages 616-620

(1) Polished rake, used on titanium magnesium and aluminum

**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)

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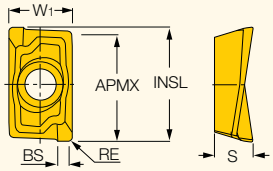
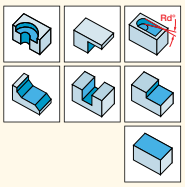
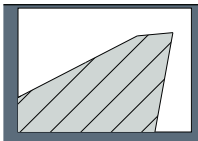
## ADKR 1505PDR/L

High Positive Inserts for Machining Steel, Stainless Steel and High Temperature Alloys





| Designation | Dimensions INSL | W1 | APMX | S | RE | BS | Tough ↔ Hard IC882 | IC28 | IC328 | IC716 | IC840 | IC928 | IC5820 | IC950 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADKR 150504PDR-HM | 16.30 | 9.60 | 12.00 | 5.63 | 0.40 | 1.60 | | ● | ● | | | | | ● | 0.80-12.00 | 0.07-0.15 |
| ADKR 1505PDL-HM (1) | 15.95 | 9.60 | 12.00 | 6.00 | 0.80 | 1.60 | | | ● | | | | | | 1.20-12.00 | 0.07-0.15 |
| ADKR 1505PDR-HM | 15.95 | 9.60 | 12.00 | 6.00 | 0.80 | 1.60 | | ● | ● | | | ● | | | 1.20-12.00 | 0.07-0.15 |
| ADKR 1505PDR-HP (2) | 16.18 | 9.60 | 14.00 | 6.48 | 0.80 | 2.50 | ● | | | ● | ● | | ● | | 1.20-14.00 | 0.07-0.15 |
| ADKR 150532PDR-HP | 15.40 | 9.60 | 12.00 | 6.20 | 3.20 | 1.60 | | | | ● | ● | | | | 3.60-12.00 | 0.07-0.15 |
| ADKR 150540PDR-HP | 15.40 | 9.60 | 12.00 | 6.20 | 4.00 | 1.60 | | | | ● | | | | | 4.00-12.00 | 0.07-0.15 |
| ADKR 150560PDR-HP | 15.10 | 9.60 | 12.00 | 6.00 | 6.00 | 2.50 | | | | ● | | | | | 6.00-12.00 | 0.07-0.15 |

• For cutting speed recommendations, see pages 616-620

(1) PDL - Left-hand inserts are used only for special tools

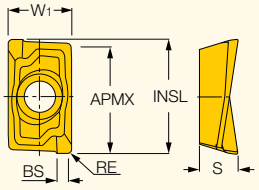
(2) IC840 grade inserts are not suitable for machining steel • Tool diameter increases by 0.1 when this insert is clamped

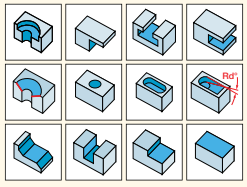
**For tools, see pages:** ETS (389) • F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)

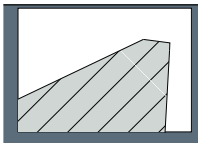
HELIMILL

## ADCT 1505PDFR-HM

Peripherally Ground Milling Inserts for Finishing and General Use



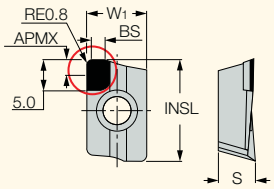


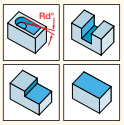
| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Tough ↔ Hard IC28 | IC328 | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ADCT 1505PDFR-HM | 9.57 | 15.65 | 12.00 | 5.64 | 0.80 | 1.60 | ● | ● | ● | 1.20-12.00 | 0.06-0.12 |

**For tools, see pages:** E90AC (50) • F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)

HELI2000

**ADKW (CBN)**
Single Corner R.H. Inserts with an IB85 PCBN Brazed Tip for Machining Hard Materials

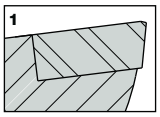


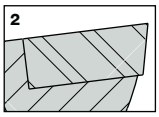



| Designation | Dimensions W1 | INSL | S | BS | APMX | Fig. | IB85 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| ADKW 1505 PDER | 9.60 | 16.18 | 5.83 | 1.45 | 4.50 | 2 | ● | 0.10-2.00 | 0.10-0.25 |
| ADKW 1505 PDTR | 9.60 | 16.18 | 5.83 | 1.45 | 4.50 | 1 | ● | 0.10-2.00 | 0.10-0.25 |

• Inserts are supplied with spare screws. • For cutting speed recommendations, see pages 616-620

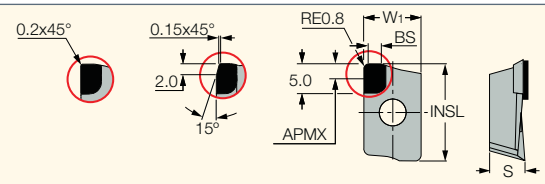
**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248)

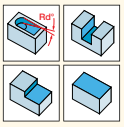


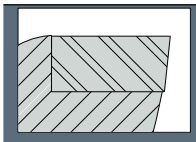




HELI2000

**ADKW (PCD)**
Single Corner R.H. PCD Tipped Inserts for Milling Aluminum





| Designation | Dimensions W1 | INSL | S | APMX | BS | Tough ↔ Hard ID8 | ID5 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| ADKW 1505-75RM PDR | 9.60 | 16.18 | 5.83 | 4.50 | 2.00 | | ● | 0.10-2.00 | 0.10-0.25 |
| ADKW 150502X45 PDR | 9.60 | 16.18 | 5.83 | 4.50 | 2.00 | | ● | 0.10-2.00 | 0.10-0.25 |
| ADKW 150508 PDR | 9.60 | 16.18 | 5.83 | 4.50 | 1.52 | ● | ● | 0.10-2.00 | 0.10-0.25 |

• The inserts are supplied with spare screws.

**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248)

## PCD
## Recommended Machining Conditions

| | Grade | D.O.C. ($a_p$) mm | Material | $V_c$ m/min | Feed mm/tooth | Cutting Edge |
|---|---|---|---|---|---|---|
| N | ID5 | <2.0 | Aluminum alloys <12% silicon | 300-3000 | 0.05-0.25 | Sharp |
| | | <2.0 | Chipboard, fiberboard and plastics | 2000-3000 | | |
| | | <2.0 | Copper alloys and brass | 500-1500 | | |
| N | ID8 | <2.0 | Aluminum>12% silicon | 250-1000 | | |
| | | <2.0 | Aluminum<12% silicon | 300-3000 | | |
| | | <2.0 | Chipboard, fiberboard and plastics | 2000-3000 | | |
| | | | MMC | 200-600 | | |

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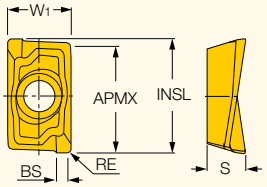
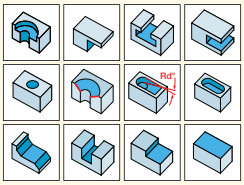
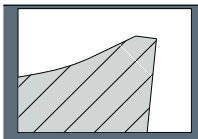
## ADKT 1505PDR/L-HM

Inserts with 2 Helical Cutting Edges for General Use





| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Tough ↔ Hard IC28 | IC328 | IC928 | IC950 | IC908 | IC30N | IC910 | IC520M | IC5100 | IC20 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADKT 1505PDR-HM | 9.57 | 15.65 | 12.00 | 5.64 | 0.80 | 1.60 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 1.20-12.00 | 0.08-0.15 |
| ADKT 1505PDL-HM (1) | 9.57 | 15.70 | 12.00 | 5.64 | 0.80 | 1.60 | | ● | | | | | | | | | 1.20-12.00 | 0.08-0.15 |

- For cutting speed recommendations, see pages 616-620

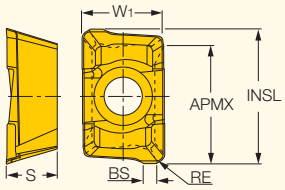
(1) PDL - Left-hand inserts are used only for special tools.

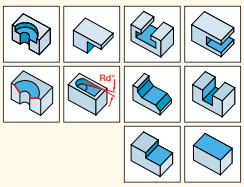
**For tools, see pages:** E90AC (50) • ETS (389) • F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)

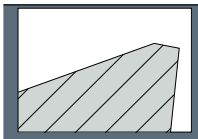
HELISHRED

## ADMT 1505PDR-HS

Inserts with a Chip Splitting Serrated Cutting Edge for Roughing





| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Tough ↔ Hard IC328 | IC928 | IC250 | IC950 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADMT 1505PDR-HS | 9.60 | 15.85 | 12.00 | 5.92 | 0.80 | 2.00 | ● | ● | ● | ● | 12.00-12.00 (1) | 0.10-0.20 |

- Self-balanced forces on rake face. Use for long overhang and extended flute cutters for reduced chattering. • For cutting speed recommendations, see pages 616-620

(1) Machine with maximum depth of cut

**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)

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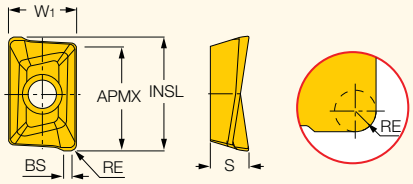
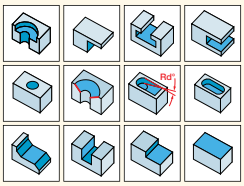
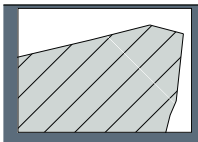
## ADKT 1505PDTR/L-RM

Inserts with Reinforced Helical Cutting Edge for Interrupted Cut and Heavy Machining





| Designation | Dimensions W1 | INSL | S | BS | RE | APMX | Tough ↔ Hard IC328 | IC928 | IC250 | IC950 | IC910 | IC520M | DT7150 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADKT 1505PDTR-RM | 9.54 | 15.75 | 5.63 | 1.60 | 1.00 | 12.00 | ● | ● | ● | ● | ● | ● | ● | ● | 1.40-12.00 | 0.10-0.20 |
| ADKT 1505PDTL-RM (1) | 9.54 | 15.80 | 5.63 | 1.60 | 1.00 | 12.00 | ● | | | | | | | | 1.40-12.00 | 0.10-0.20 |

- For cutting speed recommendations, see pages 616-620

(1) PDTL-Left-hand inserts are used only for special tools.

**For tools, see pages:** ETS (389) • F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)

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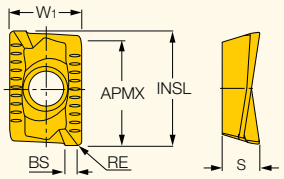
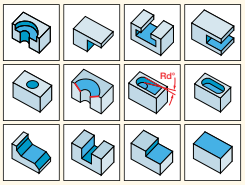
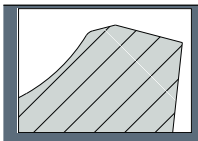
**ADKT 1505PDTR-76**
Inserts with 2 Helical Cutting Edges with Ribs Along the Edge for Interrupted Cuts





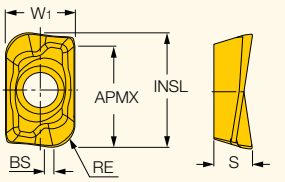
| Designation | Dimensions W1 | INSL | S | RE | BS | APMX | Tough ↔ Hard IC330 | IC328 | IC830 | IC928 | IC950 | IC910 | IC520M | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADKT 1505PDTR-76 | 9.54 | 15.75 | 5.63 | 1.00 | 1.60 | 12.00 | ● | ● | ● | ● | ● | ● | ● | 2.00-12.00 | 0.08-0.15 |

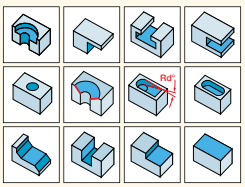
- Reinforced helical cutting edge with ribs on rake face reducing heat transfer, for interrupted cuts and medium to heavy machining.
- For cutting speed recommendations, see pages 616-620

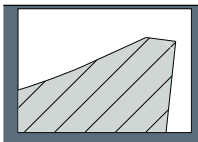
**For tools, see pages:** E90AC (50) • F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)

HELIMILL

**ADKT 1505..R/L-HM**
Inserts with 2 Helical Cutting Edges and Various Corner Radii for General Use





| Designation | Dimensions RE | W1 | BS | INSL | APMX | S | Tough ↔ Hard IC28 | IC328 | IC830 | IC928 | IC950 | IC908 | IC30N | IC910 | IC520M | IC20 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADKT 150516L-HM (1) | 1.60 | 9.57 | 1.37 | 15.60 | 12.00 | 5.60 | | ● | | | | | | | | | 2.00-12.00 | 0.08-0.15 |
| ADKT 150516R-HM | 1.60 | 9.57 | 1.37 | 15.60 | 12.00 | 5.60 | ● | ● | ● | ● | ● | ● | | ● | ● | | 2.00-12.00 | 0.08-0.15 |
| ADKT 150520R-HM | 2.00 | 9.57 | 1.00 | 15.50 | 12.00 | 5.20 | | ● | | | | | | | | | 2.40-12.00 | 0.08-0.15 |
| ADKT 150524L-HM (1) | 2.50 | 9.57 | 0.52 | 15.60 | 12.00 | 5.60 | | ● | | | | | | | | | 2.80-12.00 | 0.08-0.15 |
| ADKT 150524R-HM | 2.50 | 9.57 | 0.52 | 15.60 | 12.00 | 5.60 | | ● | ● | ● | | | | ● | | | 2.80-12.00 | 0.08-0.15 |
| ADKT 150532L-HM (1) | 3.20 | 9.57 | - | 15.50 | 12.00 | 5.60 | | ● | | | | | | | | | 3.60-12.00 | 0.08-0.15 |
| ADKT 150532R-HM | 3.20 | 9.57 | - | 15.50 | 12.00 | 5.60 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 3.60-12.00 | 0.08-0.15 |
| ADKT 150540L-HM (1) | 4.00 | 9.57 | - | 15.40 | 12.00 | 5.60 | | ● | | | | | | | | | 4.40-12.00 | 0.08-0.15 |
| ADKT 150540R-HM | 4.00 | 9.57 | - | 15.40 | 12.00 | 5.60 | | ● | | ● | | | | | | | 4.40-12.00 | 0.08-0.15 |
| ADKT 150550L-HM (1) | 5.00 | 9.57 | - | 15.10 | 12.00 | 5.30 | | ● | | | | | | | | | 5.40-12.00 | 0.08-0.15 |
| ADKT 150550R-HM | 5.00 | 9.57 | - | 15.10 | 12.00 | 5.30 | | ● | | ● | ● | | | | ● | | 5.40-12.00 | 0.08-0.15 |
| ADKT 150564L-HM (1) | 6.20 | 9.57 | - | 14.80 | 13.00 | 5.30 | | ● | | | | | | | | | 6.80-12.00 | 0.08-0.15 |
| ADKT 150564R-HM | 6.20 | 9.57 | - | 14.80 | 13.00 | 5.30 | | | ● | ● | ● | | | | | | 6.80-12.00 | 0.08-0.15 |

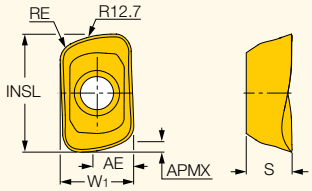
- For inserts with corner radii larger than 2.0 mm, the cutter body and seats should be modified tools only on the face of the cutter.
- Inserts with corner radii larger than 0.8 mm should be used on ADK & SM
- For cutting speed recommendations, see pages 616-620

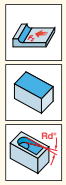
(1) L - Left-hand inserts are used only for special tools.

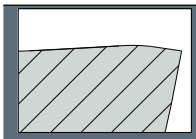
**For tools, see pages:** E90AC (50) • ETS (389) • F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)

HELIMILL

## ADKT 1505-FF
Inserts for Fast Feed Milling





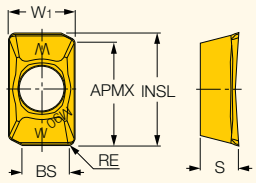
| Designation | Dimensions W1 | INSL | APMX | AE | S | RE | Rg(1) | Tough ↔ Hard IC330 | IC928 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADKT 1505R8T-FF | 9.90 | 15.90 | 1.50 | 6.6 | 6.20 | 2.70 | 3.50 | ● | ● | ● | 0.50-1.00 | 0.50-1.50 |

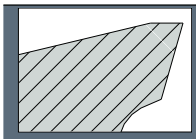
• The cutting diameter of the tool is 0.5 mm larger than the nominal diameter when using this insert. • Tool corner should be modified to 2.0 mm.
• At D.O.C. larger than apmax, regular insert feed should be applied.
(1) Radius for programming

**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248)

HELI2000

## HM90 ADKT 1505PD-W
Wiper Insert for High Surface Finish





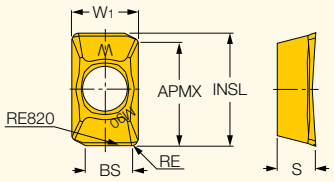
| Designation | Dimensions W1 | INSL | APMX | S | BS | RE | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| HM90 ADKT 1505PD-W | 9.52 | 16.75 | 15.00 | 5.83 | 5.92 | 0.80 | ● | 0.10-1.00 | 0.15-0.30 |

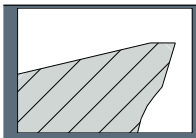
• Must be used together with HM90 ADKT 1505PDR inserts. • Use a single wiper insert per tool. • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248)

HELIMILL

## ADKT 1505PD-W
Wiper Insert for High Surface Finish





| Designation | Dimensions W1 | INSL | APMX | S | BS | RE | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| ADKT 1505PD-W | 9.57 | 16.00 | 14.63 | 5.60 | 6.53 | 1.00 | ● | 0.10-1.00 | 0.15-0.30 |

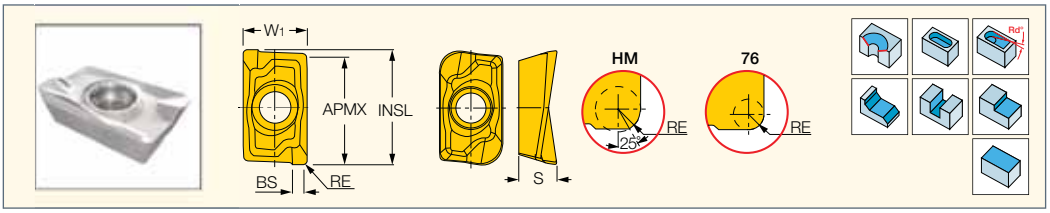
• Must be used together with ADKT 1505PDR inserts. • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248)

HELIMILL

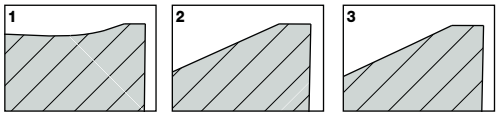
**APKT 1604**

Milling Inserts with a 16 mm Cutting Edge Length and Positive Rake Angle for General Use




| Designation | Dimensions RE | W1 | INSL | S | BS | APMX | Fig. | Tough ↔ Hard IC328 | IC928 | IC635 | IC250 | IC950 | IC30N | IC910 | IC520M | IC5100 | IC20 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APKT 1604PDL-HM** | 0.80 | 9.45 | 17.20 | 5.25 | 1.70 | 14.00 | 3 | ● | | | | | | | | | | 1.20-14.00 | 0.08-0.15 |
| **APKT 1604PDR-HM** | 0.80 | 9.45 | 17.20 | 5.25 | 1.78 | 14.00 | 3 | ● | | | ● | | ● | ● | ● | ● | ● | 1.20-14.00 | 0.08-0.15 |
| **APKT 1604PDR-76** | 0.80 | 9.45 | 17.30 | 5.30 | 1.80 | 14.00 | 1 | ● | ● | | | ● | | | | | | 1.20-14.00 | 0.10-0.20 |
| **APKT 160416R-HM** | 1.70 | 9.45 | 16.70 | 5.30 | 0.00 | 14.00 | 2 | ● | | | | ● | | | | | | 2.00-14.00 | 0.08-0.15 |
| **APKT 160424R-HM** | 2.40 | 9.45 | 16.70 | 5.30 | 0.00 | 14.00 | 2 | ● | | | | | | | ● | | | 2.80-14.00 | 0.08-0.15 |
| **APKT 160432R/L-HM** | 3.40 | 9.45 | 16.60 | 5.30 | 0.00 | 14.00 | 2 | ● | | | | | | | | | | 3.60-14.00 | 0.08-0.15 |
| **APKT 160448R-HM** | 4.88 | 9.45 | 16.40 | 5.20 | 0.00 | 14.00 | 2 | | | | ● | | | | | | | 5.20-14.00 | 0.08-0.15 |
| **APKT 160464L-HM** | 6.40 | 9.45 | 16.00 | 4.90 | 0.00 | 15.15 | 2 | | | | | | | | ● | | | 8.00-14.00 | 0.08-0.15 |
| **APKT 160464R-HM** | 6.40 | 9.45 | 16.00 | 4.90 | 0.00 | 15.15 | 2 | | | ● | | | | | ● | | | 8.00-14.00 | 0.08-0.15 |

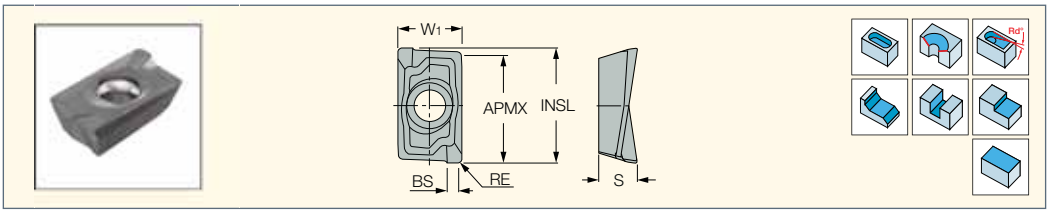
- For cutting speed recommendations, see pages 616-620




HELIMILL

**APCR 1604**

Super Positive and Polished Rake Insert for Machining Aluminum and High Temperature Alloys



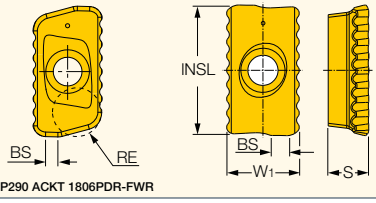

| Designation | Dimensions INSL | APMX | W1 | RE | BS | S | IC28 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| **APCR 1604PDFR-P** | 17.92 | 14.00 | 9.45 | 0.80 | 1.80 | 5.70 | ● | 1.20-14.00 | 0.15-0.25 |

- For cutting speed recommendations, see pages 616-620

MILLSHRED P290 LINE

## P290 ACKT

Single-Sided Rectangular Inserts with 2 Serrated Cutting Edges




P290 ACKT 1806PDR-FWR

| Designation | Dimensions W1 | INSL | S | RE(6) | BS | Tough ↔ Hard IC882 | IC28 | IC330 | IC840 | IC830 | IC380 | IC808 | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P290 ACKT 1204PDR-FW | 8.20 | 12.80 | 4.40 | 0.90 | 1.50 | ● | | ● | | ● | | ● | | 3.00-12.00 | 0.08-0.12 |
| P290 ACKT 1204PDR-FWP | 8.20 | 12.80 | 4.40 | 0.90 | 1.50 | | | | ● | | | | | 3.00-12.00 | 0.08-0.12 |
| P290 ACKT 1806PDR-FW | 10.70 | 18.50 | 6.00 | 1.20 | 2.00 | ● | | ● | | ● | | ● | ● | 5.00-18.00 | 0.08-0.12 |
| P290 ACKT 1806PDR-FWE (1) | 10.70 | 18.50 | 6.00 | 1.20 | 2.00 | | | ● | | ● | ● | | | 5.00-18.00 | 0.08-0.12 |
| P290 ACKT 1806PDR-FWE-P (2) | 10.70 | 18.50 | 6.00 | 1.20 | 2.00 | | ● | | | | | | | 5.00-18.00 | 0.08-0.12 |
| P290 ACKT 1806PDR-FWP (3) | 10.70 | 18.50 | 6.00 | 1.20 | 2.00 | | | | ● | | | | | 5.00-18.00 | 0.08-0.12 |
| P290 ACKT 1806PDR-FWR (4) | 10.70 | 20.20 | 6.00 | 3.80 | 1.90 | ● | | | | ● | | | | 5.00-18.00 | 0.08-0.12 |
| P290 ACKT 1806PDR-FWW (5) | 10.80 | 19.00 | 5.73 | 1.20 | 2.00 | | | | | | | ● | | 5.00-18.00 | 0.08-0.12 |

- For cutting speed recommendations, see pages 616-620

(1) A sharp edged insert, for long overhang applications or when machine power is limited

(2) Polished rake, used for rough milling of aluminum

(3) For titanium and austenitic stainless steel

(4) To be used only on the tool's first row for rough cutting when the required final corner radius should be up to 4 mm

(5) For unstable cutting condition

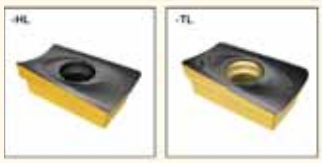
(6) Radius for programming

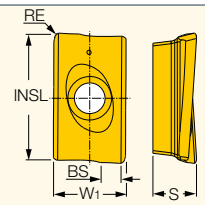
**For tools, see pages:** P290 ACK (281) • P290 ACK-C#-18 (282) • P290 ACK-M (280) • P290 EPW (48) • P290 EPW-M (49) • P290 FPW/FCT (253) • P290 SM (282)

MILLSHRED P290 LINE

## P290 ACCT/KT

Single-Sided Rectangular Inserts with Two 12 and 18mm Straight Cutting Edges






| Designation | Dimensions W1 | INSL | S | RE | BS | Tough ↔ Hard IC28 | IC830 | IC808 | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P290 ACCT 1204PDR-TL | 8.20 | 12.90 | 4.80 | 0.90 | 1.50 | | ● | | | 1.00-12.00 | 0.06-0.10 |
| P290 ACCT 1204PDR-HL | 8.20 | 13.00 | 4.80 | 0.40 | 2.20 | | ● | | | 1.00-12.00 | 0.06-0.10 |
| P290 ACCT 1806PDR-HL | 10.75 | 19.40 | 6.50 | 0.80 | 2.50 | | ● | ● | ● | 5.00-18.00 | 0.08-0.12 |
| P290 ACCT 1806PDR-HL-P | 10.75 | 19.40 | 6.50 | 0.80 | 2.50 | ● | | | | 5.00-18.00 | 0.08-0.12 |
| P290 ACCT 1806PDR-TL | 10.75 | 19.40 | 6.50 | 1.20 | 2.00 | | ● | ● | | 5.00-18.00 | 0.08-0.12 |
| P290 ACKT 1806PDR-HL (1) | 10.75 | 19.40 | 6.50 | 0.80 | 2.50 | | ● | | | 5.00-18.00 | 0.08-0.12 |

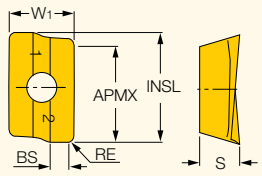
- HL - For finishing applications ($a_e$ max=1 mm) • HL-P - Polished rake, used for aluminum • TL- Reinforced straight cutting edges, designed for rough and semi-finishmilling
- For cutting speed recommendations, see pages 616-620

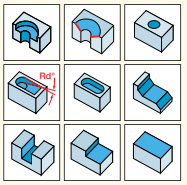
(1) Economic insert

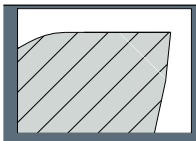
**For tools, see pages:** P290 ACK (281) • P290 ACK-C#-18 (282) • P290 ACK-M (280) • P290 EPW (48) • P290 EPW-M (49) • P290 FPW/FCT (253) • P290 SM (282)

HELI2000

**HM90 ADKW 1505PDR**
Milling Inserts for Unfavorable Conditions and Heavy Interrupted Cut on Hardened Steel





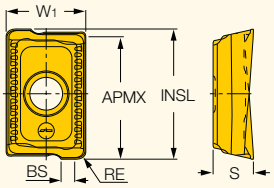
| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Tough ↔ Hard IC928 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 ADKW 1505PDR | 9.59 | 16.15 | 12.00 | 5.83 | 0.80 | 2.45 | ● | ● | 1.20-12.00 | 0.08-0.15 |

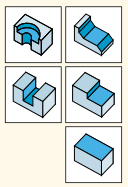
- Reinforced cutting edge, resistant to edge breakage and chipping
- Recommended for milling at unfavorable conditions and heavy interrupted cut
- Different corner radii can be ground
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90AD-SFR (249) • HM90 E90AD-15 (43) • HM90 E90AD-M-15 (44) • HM90 E90AD-M-15-JHP (45) • HM90 E90AD-MM-15-JHP (46) • HM90 F90A-15 (247) • HM90 F90A-15-JHP (248) • SM (291)

MILL2000

**3M AXKT 1304**
High Durability Inserts for Heavy Milling

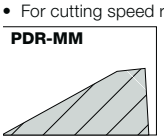


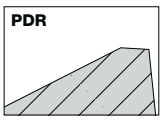
| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Tough ↔ Hard IC330 | IC328 | IC830 | IC928 | IC950 | IC808 | IC908 | IC810 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3M AXKT 1304PDR | 8.40 | 14.12 | 12.00 | 4.55 | 0.60 | 2.10 | ● | ● | ● | | ● | ● | ● | ● | | 1.00-12.00 | 0.15-0.35 |
| 3M AXKT 1304PDR-MM | 8.40 | 14.12 | 12.00 | 4.55 | 0.60 | 2.10 | | ● | | ● | ● | | ● | | ● | 1.00-12.00 | 0.10-0.22 |

- For cutting speed recommendations, see pages 616-620

**PDR-MM**

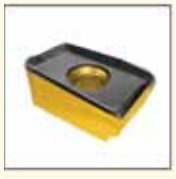


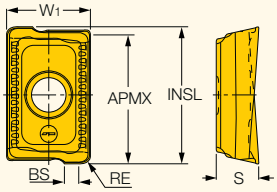
**PDR**

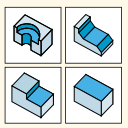


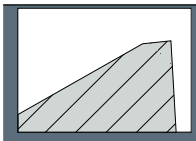
MILL2000

**3M AXKT 1304..R-PDRMM**
High Durability Inserts with a Variety of Corner Radii for Heavy Milling





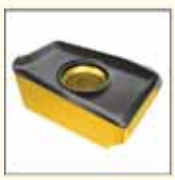


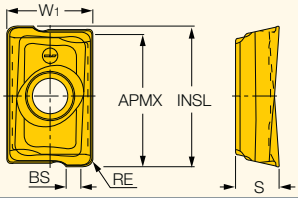
| Designation | Dimensions W1 | RE | INSL | APMX | S | BS | Tough ↔ Hard IC328 | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| 3M AXKT 130408R-PDRMM | 8.40 | 0.80 | 14.12 | 12.00 | 4.54 | 1.40 | ● | ● | 1.20-12.00 | 0.10-0.22 |
| 3M AXKT 130412R-PDRMM | 8.40 | 1.20 | 13.50 | 12.00 | 4.42 | 1.20 | ● | ● | 1.60-12.00 | 0.15-0.30 |
| 3M AXKT 130416R-PDRMM | 8.40 | 1.60 | 13.50 | 12.00 | 4.36 | 0.80 | ● | ● | 2.00-12.00 | 0.15-0.30 |
| 3M AXKT 130424R-PDRMM | 8.40 | 2.40 | 13.50 | 12.00 | 4.18 | - | | ● | 2.80-12.00 | 0.15-0.30 |

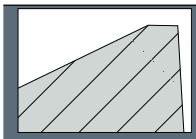
- Reduce feed by 50% during engagement and exit from the workpiece; this practice will substantially increase insert life
- Inserts with corner radii larger than 0.8 mm should be used on 3M SM-13 and 3M AXK tools only on the face of the cutter
- For cutting speed recommendations, see pages 616-620

MILL2000

**3M AXKT 2006..R-PDR**
High Durability Inserts with a Variety of Corner Radii for Heavy Milling





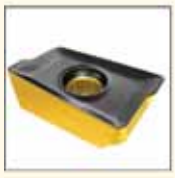



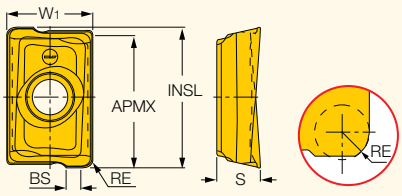
| Designation | Dimensions W1 | RE | INSL | APMX | S | BS | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| 3M AXKT 200612R-PDR | 13.50 | 1.20 | 22.00 | 20.00 | 6.75 | 2.20 | ● | 1.60-20.00 | 0.15-0.30 |
| 3M AXKT 200616R-PDR | 13.50 | 1.60 | 21.80 | 20.00 | 6.62 | 2.00 | ● | 2.00-20.00 | 0.15-0.30 |
| 3M AXKT 200624R-PDR | 13.50 | 2.40 | 22.00 | 20.00 | 6.55 | 1.55 | ● | 2.80-20.00 | 0.15-0.30 |
| 3M AXKT 200632R-PDR | 13.50 | 3.20 | 22.00 | 20.00 | 6.46 | 0.90 | ● | 3.60-20.00 | 0.15-0.30 |

- Reduce feed by 50% during engagement and exit from the workpiece. This practice will substantially increase insert life.
- Inserts with corner radii larger than 0.8 mm should be used on 3M SM-20 tools only on the face of the cutter. • For cutting speed recommendations, see pages 616-620

MILL2000

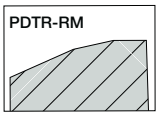
**3M AXKT-2006**
High Durability Inserts for Heavy Milling Applications

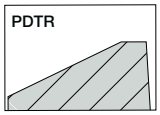




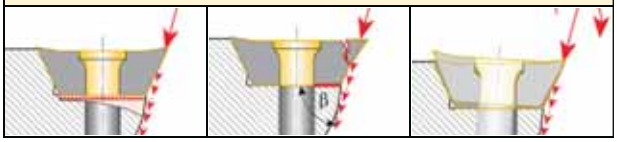

| Designation | Dimensions W1 | INSL | APMX | S | RE | BS | Tough ↔ Hard IC328 | IC830 | IC928 | IC4050 | IC950 | IC808 | IC908 | IC810 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3M AXKT 2006PDTR-RM | 13.50 | 22.40 | 20.00 | 6.80 | 1.00 | 3.34 | ● | | ● | | ● | | | | ● | 1.40-20.00 | 0.20-0.40 |
| 3M AXKT 2006PDTR | 13.50 | 22.50 | 20.00 | 6.80 | 1.00 | 3.05 | ● | ● | ● | ● | ● | ● | ● | ● | ● | 1.40-20.00 | 0.15-0.30 |

- Reduce feed by 50% during engagement and exit from the workpiece; this practice will substantially increase insert life
- For cutting speed recommendations, see pages 616-620

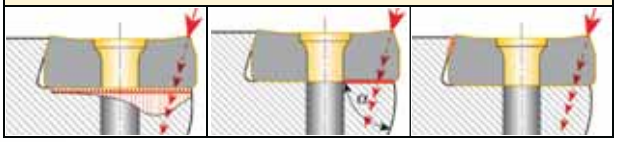



**Conventional**



**MILL2000**



Dovetail side shape gives better support, eliminates possible pullout from seat

Ground wiper controls surface finish at high feeds

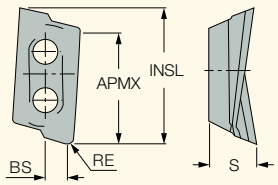
Helical cutting edge for a smooth cut

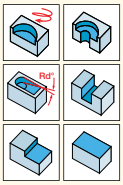
Thick insert for improved strength and rigidity

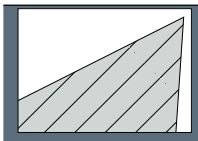
Positive rake angle for low cutting forces

HELIPLUS

**HP ADCR 1906**
Milling Inserts with 19 mm Cutting Edge for Machining Aluminum





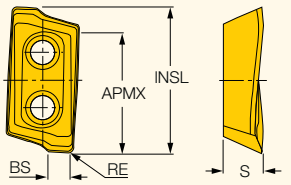
| Designation | Dimensions RE | INSL | APMX | S | BS | IC28 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| HP ADCR 190604PDFR-P | 0.40 | 22.50 | 19.50 | 7.40 | 3.50 | ● | 0.80-19.50 | 0.15-0.25 |

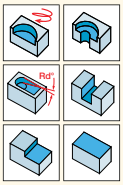
• Super positive rake angle, polished sharp cutting edge • For aluminum and high temperature alloys • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HP E90AT-19 (49) • HP F90AT-19 (253)

HELIPLUS

**HP ADKT/ADCT 1906**
Milling Inserts with 19 mm Cutting Edge for General Use

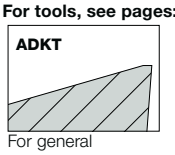


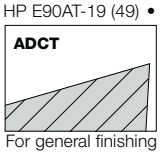
| Designation | Dimensions INSL | APMX | RE | S | BS | Tough ↔ Hard IC328 | IC928 | IC950 | IC908 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP ADCT 1906PDR | 22.30 | 18.10 | 1.00 | 6.83 | 2.70 | ● | ● | | ● | | 1.40-18.10 | 0.08-0.15 |
| HP ADKT 190608PDTR | 22.30 | 18.10 | 0.80 | 6.85 | 2.60 | ● | ● | | ● | ● | 1.20-18.10 | 0.08-0.15 |
| HP ADKT 190610PDTR | 22.30 | 18.10 | 1.00 | 6.85 | 2.50 | | ● | ● | | ● | 1.40-18.10 | 0.08-0.15 |
| HP ADKT 190612PDTR | 22.30 | 18.10 | 1.20 | 6.87 | 2.20 | ● | | | ● | ● | 1.60-18.10 | 0.08-0.15 |
| HP ADKT 190616PDTR | 22.30 | 18.10 | 1.60 | 6.87 | 1.80 | ● | ● | | ● | | 2.00-18.10 | 0.08-0.15 |
| HP ADKT 190624PDTR | 22.20 | 18.10 | 2.40 | 6.87 | 1.00 | ● | ● | | ● | ● | 2.80-18.10 | 0.08-0.15 |
| HP ADKT 190631PDTR | 22.10 | 18.10 | 3.10 | 6.90 | 0.60 | | | | ● | | 3.50-18.10 | 0.08-0.18 |
| HP ADKT 190640PDTR | 20.40 | 17.30 | 4.00 | 6.89 | 0.50 | | ● | | ● | ● | 4.40-17.30 | 0.08-0.18 |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HP E90AT-19 (49) • HP F90AT-19 (253)



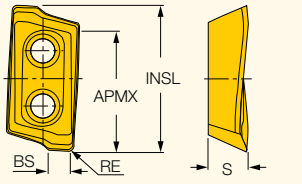
For general applications

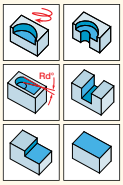


For general finishing and high temp. alloys

HELIPLUS

**HP ADKT/ADCT 2207**
Inserts with Two 22 mm Long Cutting Edges for General High Shoulder Milling

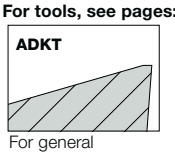


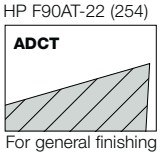
| Designation | Dimensions INSL | APMX | S | RE | BS | Tough ↔ Hard IC328 | IC928 | IC950 | IC908 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP ADCT 2207PDR | 25.73 | 22.60 | 7.50 | 1.00 | 3.43 | ● | ● | | ● | | 1.40-22.60 | 0.07-0.15 |
| HP ADKT 2207PDTR | 25.73 | 22.60 | 7.50 | 0.80 | 3.43 | ● | ● | ● | ● | ● | 1.20-22.60 | 0.10-0.20 |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HP F90AT-22 (254)



For general applications

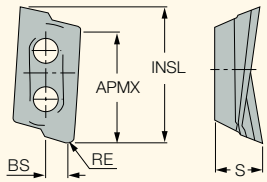


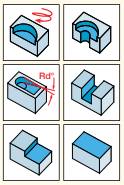
For general finishing and high temp. alloys

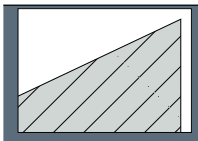
HELiPLUS

## HP ADCR 2207

Milling Inserts with a Very Positive and Polished Rake for Machining Aluminum





| Designation | Dimensions INSL | RE | APMX | S | BS | IC28 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| HP ADCR 220704PDFR-P | 27.70 | 0.40 | 22.00 | 9.60 | 4.88 | ● | 0.80-22.00 | 0.08-0.25 |
| HP ADCR 220704PDFR-P LM | 26.14 | 0.40 | 22.00 | 7.52 | 3.81 | ● | 0.80-22.00 | 0.08-0.25 |
| HP ADCR 220720PDFR-P LM | 25.90 | 2.00 | 22.00 | 7.40 | 2.50 | ● | 2.40-22.00 | 0.08-0.25 |
| HP ADCR 220732PDFR-P LM | 25.70 | 3.20 | 22.00 | 7.49 | 1.20 | ● | 3.60-22.00 | 0.08-0.25 |
| HP ADCR 220750PDFR-P LM | 24.30 | 5.00 | 22.00 | 7.49 | 0.47 | ● | 5.40-22.00 | 0.08-0.25 |

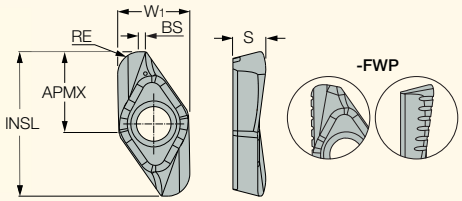
• LM insert provides high 90° shoulder accuracy, especially when using the 32-50 mm cutters • For cutting speed recommendations, see pages 616-620

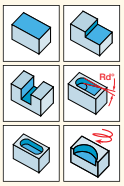
**For tools, see pages:** HP F90AT-22 (254)

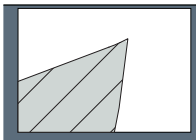
HELiALU

## HSM90S APCR 1405

Super Positive Inserts with a Polished Rake for Machining Aluminum at High Rotation Speed





| Designation | Dimensions W1 | RE | APMX | INSL | BS | S | Tough ↔ Hard IC28 | IC08 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| HSM90S APCR 140508R-P | 12.50 | 0.80 | 13.50 | 25.00 | 1.10 | 6.05 | ● | ● | 1.20-13.50 | 0.10-0.30 |
| HSM90S APCR 140516R-P | 12.50 | 1.60 | 13.50 | 25.00 | 1.10 | 6.00 | ● | | 2.00-13.50 | 0.10-0.30 |
| HSM90S APCR 140520R-P | 12.50 | 2.00 | 13.50 | 25.00 | 1.10 | 5.95 | ● | ● | 2.40-13.50 | 0.10-0.30 |
| HSM90S APCR 140530R-P | 12.50 | 3.00 | 13.50 | 25.00 | 1.10 | 5.85 | ● | ● | 3.40-13.50 | 0.10-0.30 |
| HSM90S APCR 140532R-P | 12.50 | 3.20 | 13.50 | 25.00 | 1.10 | 5.80 | ● | ● | 3.60-13.50 | 0.10-0.30 |
| HSM90S APCR 140540R-P | 12.50 | 4.00 | 13.50 | 25.00 | 1.10 | 5.70 | ● | ● | 4.40-13.50 | 0.10-0.30 |
| HSM90S APCR 140550R-P (1) | 12.50 | 5.00 | 13.50 | 25.00 | 0.20 | 5.50 | ● | ● | 5.40-13.50 | 0.10-0.30 |
| HSM90S APCR 140564R-P (1) | 12.50 | 6.40 | 11.00 | 25.00 | 0.40 | 5.50 | ● | | 6.80-11.00 | 0.10-0.30 |
| HSM90S APCR 140520R-FWP (2) | 12.50 | 2.00 | 13.50 | 25.00 | 1.10 | 5.95 | ● | | 2.40-13.50 | 0.10-0.30 |

• When machining at very high cutting speeds and replacing the insert, it is also recommended to replace the screw. • The inserts should be mounted on the cutter in an alternating edge configuration order when using -FWP geometry. • For cutting speed recommendations, see pages 616-620

(1) Tool's pocket should be modified by rounding its corners to R=2.5 mm

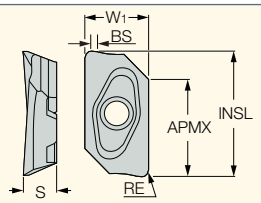
(2) Sharp, polished and serrated insert for rough aluminum machining

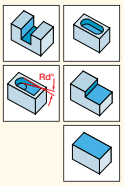
**For tools, see pages:** HSM90S EAL-14 (434) • HSM90S FAL-14 (434)

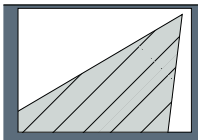
HELiALU

## HM90 AXCR 1505

Super Positive Inserts with a Polished Rake for Machining Aluminum





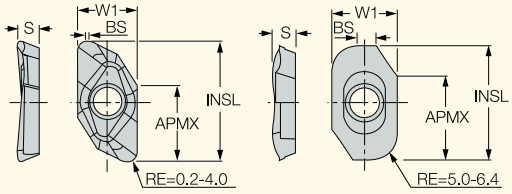
| Designation | Dimensions W1 | RE | APMX | INSL | BS | S | Tough ↔ Hard IC28 | IC08 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 AXCR 150502R-P | 10.00 | 0.20 | 14.00 | 19.20 | 1.55 | 5.00 | ● | ● | 0.60-14.00 | 0.10-0.20 |
| HM90 AXCR 150504R-P | 10.00 | 0.40 | 14.00 | 19.20 | 1.55 | 5.00 | ● | ● | 0.80-14.00 | 0.10-0.20 |
| HM90 AXCR 150508R-P | 10.00 | 0.80 | 14.00 | 19.20 | 1.55 | 5.00 | ● | ● | 1.20-14.00 | 0.10-0.20 |
| HM90 AXCR 150520R-P | 10.00 | 2.00 | 14.00 | 19.20 | 1.55 | 5.00 | ● | ● | 2.40-14.00 | 0.10-0.20 |
| HM90 AXCR 150525R-P | 10.00 | 2.50 | 14.00 | 19.20 | 1.55 | 5.00 | ● | ● | 2.90-14.00 | 0.10-0.20 |
| HM90 AXCR 150530R-P | 10.00 | 3.00 | 14.00 | 19.20 | 1.55 | 5.00 | ● | ● | 3.40-14.00 | 0.10-0.20 |
| HM90 AXCR 150532R-P | 10.00 | 3.20 | 14.00 | 19.20 | 1.55 | 5.00 | ● | ● | 3.60-14.00 | 0.10-0.20 |
| HM90 AXCR 150540R-P | 10.00 | 4.00 | 14.00 | 19.20 | 1.45 | 5.00 | ● | ● | 4.40-14.00 | 0.10-0.20 |

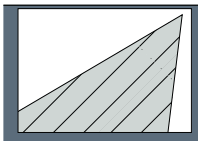
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HM90 EAL-15 (438) • HM90 EAL-HSK63A-15 (439) • HM90 EAL-M-15-JHP (438) • HM90 EAL-MM-15-JHP (439) • HM90 FAL-15 (440)

HELIALU

**HM90 APCR 1605..R-P**
Super Positive Inserts with a Polished Rake for Machining Aluminum



| Designation | Dimensions W1 | RE | APMX | INSL | BS | S | Tough ↔ Hard IC28 | IC08 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 APCR 160502R-P | 12.80 | 0.20 | 15.50 | 25.20 | 1.00 | 4.80 | ● | ● | 0.60-15.50 | 0.15-0.25 |
| HM90 APCR 160504R-P | 12.80 | 0.40 | 15.50 | 25.20 | 1.00 | 4.80 | ● | ● | 0.80-15.50 | 0.15-0.25 |
| HM90 APCR 160505R-P | 12.80 | 0.50 | 15.50 | 25.50 | 1.00 | 4.80 | ● | ● | 0.90-15.50 | 0.15-0.25 |
| HM90 APCR 160508R-P | 12.80 | 0.80 | 15.50 | 25.20 | 1.00 | 4.80 | ● | ● | 1.20-15.50 | 0.15-0.25 |
| HM90 APCR 160516R-P | 12.80 | 1.60 | 15.50 | 25.50 | 1.00 | 4.80 | ● | ● | 2.00-15.50 | 0.15-0.25 |
| HM90 APCR 160520R-P | 12.80 | 2.00 | 15.50 | 25.40 | 1.00 | 4.80 | ● | ● | 2.40-15.50 | 0.15-0.25 |
| HM90 APCR 160525R-P | 12.80 | 2.50 | 15.50 | 25.40 | 1.00 | 4.80 | ● | ● | 2.90-15.50 | 0.15-0.25 |
| HM90 APCR 160530R-P | 12.80 | 3.00 | 15.50 | 24.40 | 1.00 | 4.80 | ● | ● | 3.40-15.50 | 0.15-0.25 |
| HM90 APCR 160532R-P | 12.80 | 3.20 | 15.50 | 24.40 | 1.00 | 4.80 | ● | ● | 3.60-15.50 | 0.15-0.25 |
| HM90 APCR 160540R-P | 12.80 | 4.00 | 15.50 | 23.40 | 1.00 | 4.80 | ● | ● | 4.40-15.50 | 0.15-0.25 |
| HM90 APCR 160550R-P (1) | 12.70 | 5.00 | 16.00 | 22.70 | 2.20 | 4.80 | ● | ● | 5.40-16.00 | 0.15-0.25 |
| HM90 APCR 160560R-P (1) | 12.70 | 6.00 | 16.00 | 22.70 | 1.90 | 4.80 | ● | | 6.40-16.00 | 0.15-0.25 |
| HM90 APCR 160564R-P (1) | 12.70 | 6.40 | 16.00 | 22.70 | 1.70 | 4.80 | ● | | 6.80-16.00 | 0.15-0.25 |

• It is recommended to use the insert and screw set when machining at very high cutting speeds. • For cutting speed recommendations, see pages 616-620

(1) Use with HM90 ....16BR tools only.

**For tools, see pages:** HM90 EAL-16 (435) • HM90 EAL-HSK63A-16 (436) • HM90 EAL-M-16-JHP (435) • HM90 EAL-MM-16-JHP (436) • HM90 FAL-16 (437) • HM90 FAL-16BR (437)

## Insert and Screw Set (5+5) for High Speed Machining Applications

In order to maintain high machining reliability, we strongly recommend that when replacing the worn out insert, the clamping screw is replaced as well. Available are packages that contain 5 **HM90 APCR 1605..R-P IC28** or **HM90 AXCR 1505..R-P IC28** inserts and 5 matching screws.

These packages contain inserts with a weight tolerance of 0.02 gm. This tight tolerance ensures the dynamic balance of the tool is maintained after insert indexing.

### HM90 SET APCR-P

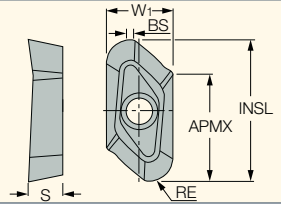
| Set Designation | | 5 Included Inserts | | 5 Included Screws |
|---|---|---|---|---|
| HSM90 Set APCR 160502RP IC28 | = | HM90 APCR 160502R-P IC28 | + | SR 14-0180 |
| HSM90 Set APCR 160504RP IC28 | = | HM90 APCR 160504R-P IC28 | + | SR 14-0180 |
| HSM90 Set APCR 160508RP IC28 | = | HM90 APCR 160508R-P IC28 | + | SR 14-0180 |
| HSM90 Set APCR 160516RP IC28 | = | HM90 APCR 160516R-P IC28 | + | SR 14-0180 |
| HSM90 Set APCR 160520RP IC28 | = | HM90 APCR 160520R-P IC28 | + | SR 14-0180 |
| HSM90 Set APCR 160525RP IC28 | = | HM90 APCR 160525R-P IC28 | + | SR 14-0180 |
| HSM90 Set APCR 160532RP IC28 | = | HM90 APCR 160532R-P IC28 | + | SR 14-0180 |
| HSM90 Set APCR 160540RP IC28 | = | HM90 APCR 160540R-P IC28 | + | SR 14-0180 |
| HSM90 Set APCR 160564RP IC28 | = | HM90 APCR 160564R-P IC28 | + | SR 14-0180 |

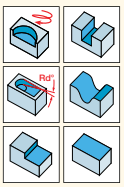
### HM90 SET AXCR-P

| Set Designation | | 5 Included Inserts | | 5 Included Screws |
|---|---|---|---|---|
| HSM90 Set AXCR 150504RP IC28 | = | HM90 AXCR 150504R-P IC28 | + | SR 14-562 |
| HSM90 Set AXCR 150520RP IC28 | = | HM90 AXCR 150520R-P IC28 | + | SR 14-562 |

HELIALU

**HM90 APCR 2206..R-P**
Super Positive Inserts with a Polished Rake for Machining Aluminum



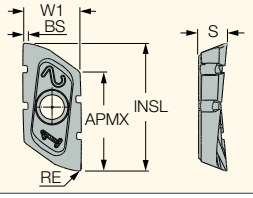
| Designation | Dimensions W1 | RE | APMX | INSL | BS | S | Tough ↔ Hard IC28 | IC08 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| HM90 APCR 220605R-P | 13.90 | 0.50 | 22.00 | 30.50 | 0.20 | 6.90 | ● | | 0.90-22.00 | 0.07-0.30 |
| HM90 APCR 220608R-P | 13.72 | 0.80 | 22.00 | 29.70 | 0.20 | 6.90 | ● | ● | 1.20-22.00 | 0.07-0.30 |
| HM90 APCR 220616R-P | 13.72 | 1.60 | 22.00 | 29.70 | 0.20 | 6.90 | ● | ● | 2.00-22.00 | 0.07-0.30 |
| HM90 APCR 220623R-P | 13.72 | 2.30 | 22.00 | 29.70 | 0.20 | 6.60 | ● | ● | 2.70-22.00 | 0.07-0.30 |
| HM90 APCR 220632R-P | 13.72 | 3.20 | 22.00 | 29.40 | 0.20 | 6.60 | ● | ● | 3.60-22.00 | 0.07-0.30 |
| HM90 APCR 220640R-P | 13.72 | 4.00 | 22.00 | 29.00 | 0.20 | 6.60 | ● | ● | 4.40-22.00 | 0.07-0.30 |
| HM90 APCR 220650R-P | 13.72 | 5.00 | 22.00 | 28.20 | 0.20 | 6.10 | ● | | 5.40-22.00 | 0.07-0.30 |
| HM90 APCR 220664R-P | 13.72 | 6.40 | 22.00 | 26.80 | 0.20 | 6.00 | ● | ● | 6.80-22.00 | 0.07-0.30 |

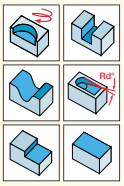
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HM90 FAL-22 (440)

HELIALU

**HM90 APCR 220605-CS**
Chip Splitting Insert for Rough Milling of Aluminum



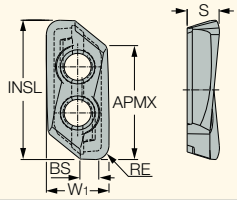
| Designation | Dimensions W1 | RE | APMX | INSL | BS | S | IC28 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| HM90 APCR 220605-CS | 14.60 | 0.50 | 22.00 | 30.90 | 0.30 | 6.90 | ● | 22.00-22.00 (1) | 0.25-0.35 |

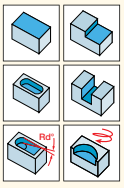
• To avoid incorrect mounting of the inserts, insert one pin into each tool pocket in an alternating order. As there is only one cavity at the insert bottom, this will prevent incorrect insert orientation. • To be used only on even number flute tools, when the "1" and "2" digits appear in an alternating order.
• For cutting speed recommendations, see pages 616-620
(1) Machine with maximum depth of cut

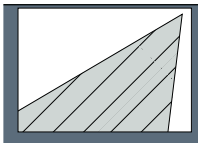
**For tools, see pages:** HM90 FAL-22 (440)

HELIALU

**HSM90S APCR 2207**
Super Positive Inserts with a Polished Rake for Machining Aluminum at High Rotational Speed





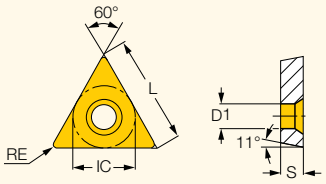
| Designation | Dimensions W1 | RE(1) | APMX | BS | INSL | S | IC08 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| HSM90S APCR 220708R-P | 13.10 | 0.80 | 22.00 | 5.00 | 29.20 | 6.90 | ● | 1.20-22.00 | 0.15-0.30 |
| HSM90S APCR 220716R-P | 13.10 | 1.60 | 22.00 | 4.20 | 29.10 | 6.90 | ● | 2.00-22.00 | 0.15-0.30 |
| HSM90S APCR 220720R-P | 13.10 | 2.00 | 22.00 | 3.90 | 29.10 | 6.80 | ● | 2.40-22.00 | 0.15-0.30 |
| HSM90S APCR 220730R-P | 13.10 | 3.00 | 22.00 | 2.90 | 29.00 | 6.70 | ● | 3.40-22.00 | 0.15-0.30 |
| HSM90S APCR 220732R-P | 13.10 | 3.20 | 22.00 | 2.70 | 29.00 | 6.70 | ● | 3.60-22.00 | 0.15-0.30 |
| HSM90S APCR 220740R-P | 13.10 | 4.00 | 22.00 | 1.90 | 29.00 | 6.60 | ● | 4.40-22.00 | 0.15-0.30 |
| HSM90S APCR 220750R-P | 13.10 | 5.00 | 22.00 | 0.90 | 28.90 | 6.50 | ● | 5.40-22.00 | 0.15-0.30 |

• When machining at very high cutting speed it is recommended to replace the screw when replacing the insert • For cutting speed recommendations, see pages 616-620
(1) Measured on the cutter

**For tools, see pages:** HSM90S FAL-22 (441) • HSM90SFD-HSK A63/80-22 (441)

## ISOTURN

**TPMT**
Triangular 11° Positive Inserts with a Positive Chipformer Exerts Low Cutting Forces for Internal Finish Turning



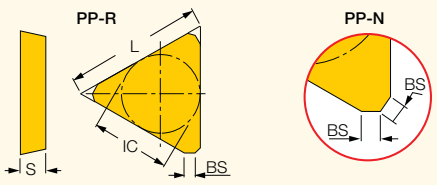

| Designation | Dimensions L | IC | S | RE | D1 | Tough ↔ Hard IC830 | IC635 | IC50M | IC8350 | IC8250 | IC8150 | IC520M | IC20 | IC70 | IC806 | IC807 | IC907 | Recommended Machining Data $a_p$ (mm)(1) | f (mm/rev)(2) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TPMT 110202 | 11.00 | 6.35 | 2.38 | 0.20 | 3.00 | • | | | | | | | | | | • | • | 0.20-2.00 | 0.05-0.25 |
| TPMT 110204 | 11.00 | 6.35 | 2.38 | 0.40 | 3.00 | • | | | | | • | | • | • | | • | • | 1.00-3.00 | 0.12-0.30 |
| TPMT 110208 | 11.00 | 6.35 | 2.38 | 0.80 | 3.00 | • | | | | | • | | • | | | | | 1.00-4.00 | 0.15-0.30 |
| TPMT 160304 | 16.50 | 9.52 | 3.18 | 0.40 | 4.30 | • | | | • | • | | | • | • | | • | • | 1.00-4.00 | 0.12-0.30 |
| TPMT 160308 | 16.50 | 9.52 | 3.18 | 0.80 | 4.30 | • | • | • | | | | • | • | | • | • | • | 5.00-12.00 | 0.15-0.35 |

• For cutting speed recommendations, see pages 616-620
(1) For turning
(2) For turning

**For tools, see pages:** E30 / T230 (51) • E45 / T245 (53) • E60 / T260 (53)

## ISCARMILL

**TPKN/TPKR**
11° Positive Triangular Milling Inserts for General Use



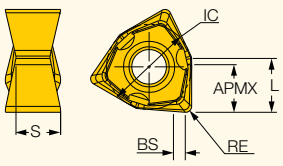

| Designation | Dimensions IC | L | S | BS | Tough ↔ Hard IC328 | IC928 | IC50M | IC250 | IC950 | IC910 | IC520M | IC20 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TPKN 1603PP-R-42 | 9.52 | 16.50 | 3.18 | 1.40 | | | | | | | | • | 3.00-10.00 | 0.10-0.15 |
| TPKN 1603PPFR | 9.52 | 16.50 | 3.18 | 1.40 | | | | | | | | • | 3.00-10.00 | 0.10-0.15 |
| TPKN 1603PPTR | 9.52 | 16.50 | 3.18 | 1.40 | | | • | | | | • | | 3.00-10.00 | 0.10-0.15 |
| TPKN 1603PPTR-42 | 9.52 | 16.50 | 3.18 | 1.47 | • | | • | • | | | | | 3.00-10.00 | 0.10-0.15 |
| TPKR 1603PPTR-HS | 9.52 | 16.50 | 3.50 | 1.45 | • | • | | | | | | | 3.00-10.00 | 0.12-0.20 |
| TPKN 2204PDFR | 12.70 | 22.00 | 4.76 | 1.40 | | | | | | | | • | 3.00-15.00 | 0.10-0.15 |
| TPKN 2204PDTR | 12.70 | 22.00 | 4.76 | 1.45 | | | • | | | | • | | 3.00-15.00 | 0.10-0.15 |
| TPKN 2204PDTR-42 | 12.70 | 22.00 | 4.76 | 1.80 | • | | • | • | • | • | • | | 3.00-15.00 | 0.10-0.15 |
| TPKR 2204PD-R-76 | 12.70 | 22.00 | 4.76 | 1.80 | • | | | | • | | | | 3.00-15.00 | 0.10-0.15 |
| TPKR 2204PDTR-HS | 12.70 | 22.00 | 4.76 | 1.88 | • | • | | • | | | • | | 3.00-15.00 | 0.12-0.20 |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90 (252)

## HELIDO TRIGON LINE

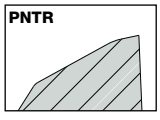
**H690 WNMU 0403**
Trigonal Inserts with 6 Helical Cutting Edges for 90° Shoulder Milling

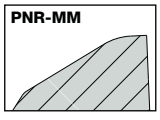



| Designation | Dimensions L | APMX | IC | S | RE | BS | Tough ↔ Hard IC830 | IC808 | IC810 | IC5400 | IC5600 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H690 WNMU 0403-PNTR | 4.20 | 4.00 | 6.70 | 3.50 | 0.40 | 0.80 | | | • | | | • | 0.80-4.00 | 0.08-0.16 |
| H690 WNMU 0403PNR-MM | 4.20 | 4.00 | 6.70 | 3.50 | 0.40 | 0.80 | • | • | | | • | | 0.80-4.00 | 0.04-0.16 |
| H690 WNMU040308PNR-MM | 4.20 | 4.00 | 6.70 | 3.50 | 0.80 | 0.40 | • | • | | • | • | | 1.20-4.00 | 0.04-0.16 |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** H690 EWN-04 (14) • H690 EWN-MM-04 (14) • H690 FWN-04 (227)

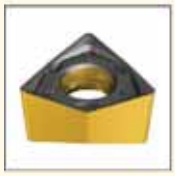


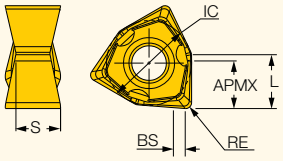



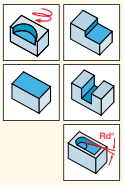
HELIDO TRIGON LINE

## H690 WNHU/WNMU 0705

Trigonal Inserts with 6 Helical Cutting Edges for 90° Shoulder Milling





| Designation | Dimensions L | APMX | IC | S | RE | BS | Tough ↔ Hard IC330 | IC845 | IC830 | IC808 | IC810 | IC5400 | IC5600 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **H690 WNHU 0705PNTR** (1) | 7.30 | 7.00 | 11.50 | 5.80 | 0.80 | 1.20 | | | | ● | | | | | 1.20-7.00 | 0.10-0.20 |
| **H690 WNMU 0705-PNTR** (2) | 7.30 | 7.00 | 11.50 | 5.90 | 0.80 | 1.20 | | | | | ● | | | ● | 1.20-7.00 | 0.10-0.35 |
| **H690 WNMU 070512PNTR** | 7.30 | 7.00 | 11.50 | 5.80 | 1.20 | 1.00 | | ● | | | | | | | 1.60-7.00 | 0.10-0.35 |
| **H690 WNMU 070516PNTR** | 7.30 | 7.00 | 11.50 | 5.80 | 1.60 | 0.60 | | ● | | | | | | | 2.00-7.00 | 0.10-0.35 |
| **H690 WNMU 070520PNTR** | 7.30 | 7.00 | 11.50 | 5.70 | 2.00 | - | | ● | | | | | | | 2.40-7.00 | 0.10-0.35 |
| **H690 WNMU 0705PNN-MM** (3) | 7.30 | 7.00 | 11.50 | 5.90 | 0.80 | - | ● | | ● | | | ● | | | 1.20-7.00 | 0.10-0.25 |
| **H690 WNMU 070512PNN-MM** (3) | 7.30 | 7.00 | 11.50 | 5.80 | 1.20 | - | | | | ● | | | | | 1.60-7.00 | 0.10-0.25 |
| **H690 WNMU070516PNN-MM** (3) | 7.30 | 7.00 | 11.50 | 5.70 | 1.60 | - | | | | ● | | | | | 2.00-7.00 | 0.10-0.25 |
| **H690 WNMU 070520PNN-MM** (3) | 7.30 | 7.00 | 11.50 | 5.70 | 2.00 | - | | | | ● | | | | | 2.40-7.00 | 0.10-0.25 |
| **H690 WNMU 0705PNR-MM** (4) | 7.30 | 7.00 | 11.50 | 5.90 | 0.80 | 1.20 | | | ● | ● | ● | | ● | | 1.20-7.00 | 0.10-0.25 |
| **H690 WNMU 0705PNR-RM** (5) | 7.30 | 7.00 | 11.50 | 5.80 | 0.80 | 1.20 | | | | | ● | | | | 1.20-7.00 | 0.15-0.40 |

- For cutting speed recommendations, see pages 616-620

(1) Peripherally ground

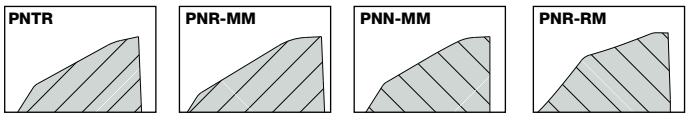
(2) General use insert with 6 right-hand cutting edges for milling a variety of cast iron and steel grades.

(3) 6 neutral cutting edges, for machining steel, can be used also for left-hand specially tailored milling tools.

(4) 6 right-hand cutting edges, used mainly for milling steel

(5) For heavy roughing applications

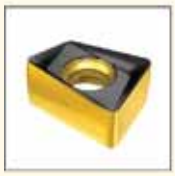
**For tools, see pages:** H690 EWN-07 (20) • H690 FWN-07 (230)

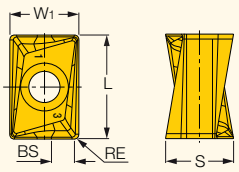


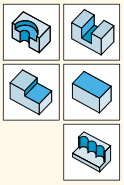

HELIDO 490 LINE

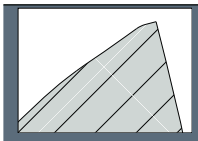
## H490 ANKX/ANCX-09

Double-Sided Rectangular Inserts with 4 Helical Cutting Edges







| Designation | Dimensions W1 | APMX | L | S | RE | BS | Tough ↔ Hard IC330 | IC830 | IC380 | IC808 | IC810 | IC5400 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **H490 ANCX 090404PDR** | 6.50 | 8.00 | 8.52 | 5.20 | 0.40 | 4.80 | | ● | | ● | | | | 0.80-8.00 | 0.08-0.15 |
| **H490 ANCX 090408PDR** | 6.50 | 8.00 | 8.52 | 5.20 | 0.80 | 4.40 | ● | ● | ● | ● | ● | | | 1.20-8.00 | 0.08-0.15 |
| **H490 ANCX 090412PDR** | 6.50 | 8.00 | 8.52 | 4.80 | 1.20 | 4.20 | | ● | | ● | ● | | | 1.60-8.00 | 0.08-0.15 |
| **H490 ANCX 090416PDR** | 6.50 | 8.00 | 8.52 | 4.70 | 1.60 | 3.60 | | ● | | ● | ● | | | 2.00-8.00 | 0.08-0.15 |
| **H490 ANKX 090408PNTR** | 6.50 | 8.00 | 8.52 | 5.20 | 0.80 | 5.00 | ● | ● | | ● | ● | ● | ● | 1.20-8.00 | 0.10-0.18 |

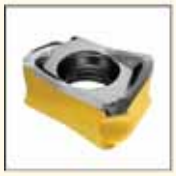
- ANKX-Utility inserts, ANCX-Precision inserts • For cutting speed recommendations, see pages 616-620

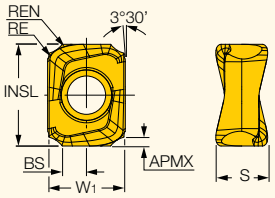
**For tools, see pages:** H490 ANK-09 (274) • H490 E90AX-09 (26) • H490 E90AX-M (27) • H490 E90AX-MM (27) • H490 F90AX-09 (232)

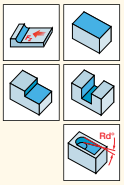
HELIDO 490 LINE

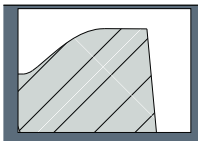
## H490 ANKX 0904-FF

Double-Sided Rectangular Inserts with 4 Helical Cutting Edges for Fast Feed Milling at Small Depths of Cut







| Designation | Dimensions W1 | BS | APMX | INSL | S | RE | Rg(1) | REN | Tough ↔ Hard IC830 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H490 ANKX 0904R12T-FF | 6.20 | 2.30 | 0.70 | 8.50 | 4.30 | 1.00 | 1.20 | 5.00 | ● | ● | 0.50-1.00 | 0.50-1.50 |

- The cutting diameter of the tool is 0.12 mm larger than the nominal diameter when using this insert
- At D.O.C. larger than APMX, regular insert feed should be applied
- Enables ramping down at 1° maximum on 16 to 40 tool diameters

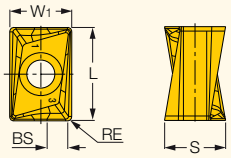
(1) Radius for programming

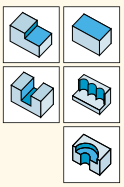
**For tools, see pages:** H490 E90AX-09 (26) • H490 E90AX-M (27) • H490 E90AX-MM (27) • H490 F90AX-09 (232)

HELIDO 490 LINE

## H490 ANKX/ANCX-12

Double-Sided Rectangular Inserts with 4 Helical Cutting Edges



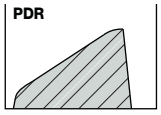
| Designation | Dimensions W1 | APMX | RE | S | L | BS | Tough ↔ Hard IC330 | IC830 | IC380 | IC808 | IC810 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H490 ANCX 120508PDR | 10.00 | 11.00 | 0.80 | 9.45 | 13.67 | 3.50 | | ● | | ● | | | 1.20-11.00 | 0.08-0.15 |
| H490 ANKX 120504PNTR | 10.00 | 11.00 | 0.40 | 9.15 | 13.70 | 3.80 | | ● | | | | | 0.80-11.00 | 0.10-0.30 |
| H490 ANKX 120508PNTR | 10.00 | 11.00 | 0.80 | 9.15 | 13.67 | 3.50 | ● | ● | ● | ● | ● | ● | 1.20-11.00 | 0.10-0.30 |
| H490 ANKX 120510PNTR | 10.00 | 11.00 | 1.00 | 8.90 | 13.70 | 3.40 | | ● | | | | | 1.40-11.00 | 0.10-0.30 |
| H490 ANKX 120512PNTR | 10.00 | 11.00 | 1.20 | 8.90 | 13.70 | 3.20 | | ● | | | | | 1.60-11.00 | 0.10-0.30 |
| H490 ANKX 120516PNTR | 10.00 | 11.00 | 1.60 | 8.60 | 13.70 | 2.80 | | ● | | | | | 2.00-11.00 | 0.10-0.30 |
| H490 ANKX 120520PNTR | 10.00 | 11.00 | 2.00 | 8.70 | 13.60 | 2.80 | | ● | | | | | 2.40-11.00 | 0.10-0.30 |
| H490 ANKX 120524PNTR | 10.00 | 11.00 | 2.40 | 8.60 | 13.70 | 2.80 | | ● | | | | | 2.80-11.00 | 0.10-0.30 |
| H490 ANKX 1205PNTR-CS (1) | 10.00 | 11.00 | 0.80 | 9.15 | 13.70 | 3.50 | | ● | | | | | 1.20-11.00 | 0.15-0.20 |
| H490 ANKX 1205PNTR-RM | 10.00 | 11.00 | 0.80 | 9.15 | 13.70 | 3.50 | | ● | | ● | | | 1.20-11.00 | 0.20-0.30 |

- ANKX-utility inserts, ANCX-precision inserts
- For cutting speed recommendations, see pages 616-620

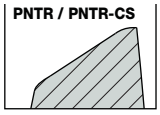
(1) The maximum feed per tooth for chip splitting effect is up to 0.20 mm/t.

**For tools, see pages:** H490 E90AX-12 (41) • H490 F90AX-12 (243) • H490 SM-12 (283)

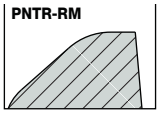
**PDR**



**PNTR / PNTR-CS**



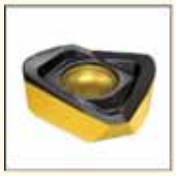
**PNTR-RM**

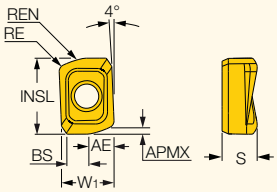


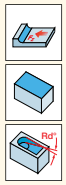
HELIDO 490 LINE

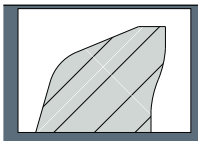
## H490 ANKX/ANCX 1205-FF

Single-Sided Rectangular Inserts with 2 Helical Cutting Edges for Fast Feed Milling at Small Depths of Cut





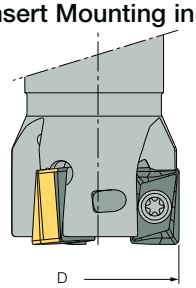


| Designation | Dimensions | | | | | | | | | IC830 | Recommended Machining Data | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INSL | S | W1 | BS | RE | Rg(1) | REN | APMX | AE | | $a_p$ (mm) | $f_z$ (mm/t) |
| **H490 ANKX 1205R15T-FF** | 13.50 | 6.40 | 10.20 | 3.50 | 1.50 | 2.50 | 6.00 | 1.40 | 5.1 | ● | 0.50-2.00 | 1.00-2.00 |

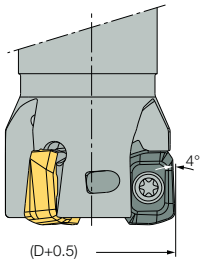
• The cutting diameter of the tool is 0.5 mm larger than the nominal diameter when using this insert • Tool corner should be modified by rounding to R2.0 mm
• At D.O.C. larger than APMX, regular insert feed should be applied. • For cutting speed recommendations, see pages 616-620
(1) Radius for programming

**For tools, see pages:** H490 E90AX-12 (41) • H490 F90AX-12 (243)

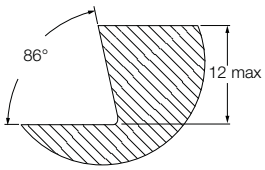
### Insert Mounting in a Standard Tool




Tool with regular inserts




Tool with H490 ANKX 1205... FF inserts

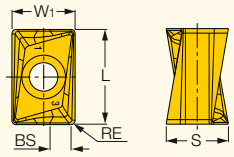


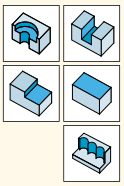

Shoulder angle when H490 ANKX 1205...-FF inserts are used

HELIDO 490 LINE

## H490 ANKX/ANCX-17

Double-Sided Rectangular Inserts with 4 Helical Cutting Edges

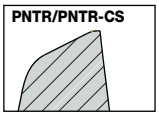


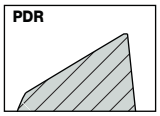



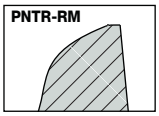
| Designation | Dimensions | | | | | | Tough ↔ Hard | | | | | | | | | Recommended Machining Data | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | L | APMX | RE | S | W1 | BS | IC330 | IC845 | IC830 | IC380 | IC808 | IC810 | IC5400 | DT7150 | IC5100 | $a_p$ (mm) | $f_z$ (mm/t) |
| **H490 ANKX 170604PNTR** | 16.70 | 16.00 | 0.40 | 10.40 | 11.20 | 4.70 | | | ● | | | | | | | 0.80-15.00 | 0.15-0.30 |
| **H490 ANCX 170608PDR** | 16.70 | 16.00 | 0.80 | 10.40 | 11.20 | 4.70 | ● | | ● | ● | ● | ● | | | | 1.20-15.00 | 0.10-0.18 |
| **H490 ANKX 1706PNTR-CS** (1) | 16.70 | 16.00 | 0.80 | 10.40 | 11.20 | 4.70 | | | ● | | | | | | | 1.20-15.00 | 0.15-0.22 |
| **H490 ANKX 1706PNTR-RM** | 16.70 | 16.00 | 0.80 | 10.40 | 11.20 | 4.70 | | | ● | | ● | ● | | | | 1.20-15.00 | 0.20-0.40 |
| **H490 ANKX 170608PNTR** | 16.70 | 16.00 | 0.80 | 10.40 | 11.20 | 4.70 | ● | ● | ● | | ● | ● | ● | ● | ● | 1.20-15.00 | 0.15-0.30 |
| **H490 ANKX 170612PNTR** | 16.90 | 16.00 | 1.20 | 10.50 | 11.00 | 3.50 | | | ● | | ● | | | | | 1.60-15.00 | 0.15-0.30 |
| **H490 ANKX 170616PNTR** | 16.90 | 16.00 | 1.60 | 10.50 | 11.00 | 3.10 | | | ● | | ● | | | | | 2.00-15.00 | 0.15-0.30 |
| **H490 ANKX 170620PNTR** | 16.90 | 16.00 | 2.00 | 10.50 | 11.00 | 2.70 | | | ● | | ● | | | | | 2.40-15.00 | 0.15-0.30 |
| **H490 ANKX 170624PNTR** | 16.90 | 16.00 | 2.40 | 10.50 | 11.00 | 2.30 | | | ● | | ● | | | | | 2.80-15.00 | 0.15-0.30 |

• ANKX-utility inserts. ANCX-precision inserts • For cutting speed recommendations, see pages 616-620
(1) The maximum feed per tooth for chip splitting effect is up to 0.22 mm/t.

**For tools, see pages:** H490 E90AX-17 (47) • H490 F90AX-17 (251) • H490 SM-17 (290)



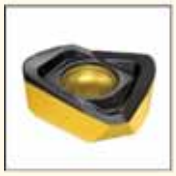



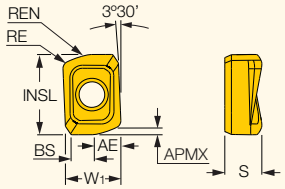



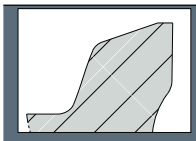
HELIDO 490 LINE

## H490 ANKX 1706-FF

Single-Sided Rectangular Inserts with 2 Helical Cutting Edges for Fast Feed Milling at Small Depths of Cut







| Designation | Dimensions | | | | | | | | | IC830 | Recommended Machining Data | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INSL | S | W1 | BS | RE | Rg(1) | REN | APMX | AE | | $a_p$ (mm) | $f_z$ (mm/t) |
| H490 ANKX 1706R15T-FF | 16.80 | 7.80 | 11.70 | 4.60 | 1.60 | 2.85 | 15.00 | 1.60 | 6.1 | ● | 0.50-2.00 | 1.00-2.00 |

- The cutting diameter of the tool is 1.5 mm larger than the nominal diameter when using this insert
- No tool radius modifications is required
- At D.O.C. larger than APMX, regular insert feed should be applied
- For cutting speed recommendations, see pages 616-620

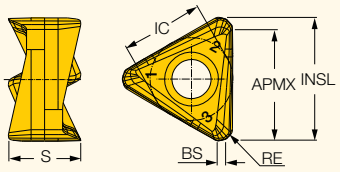
(1) Radius for programming

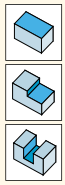
**For tools, see pages:** H490 E90AX-17 (47) • H490 F90AX-17 (251)

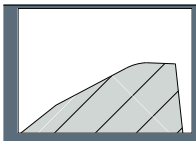
HELIDO 690 LINE

## H690 TNKX/TNCX 1005

Triangular Inserts with 6 Helical Cutting Edges for 90° Shoulder Accuracy





| Designation | Dimensions | | | | | | Tough ↔ Hard | | | | | | Recommended Machining Data | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INSL | APMX | IC | S | RE | BS | IC330 | IC830 | IC808 | IC810 | IC5400 | IC5600 | $a_p$ (mm) | $f_z$ (mm/t) |
| H690 TNKX 100504PNTR | 8.48 | 8.00 | 6.20 | 4.70 | 0.40 | 0.80 | ● | ● | ● | ● | ● | | 0.80-8.00 | 0.08-0.15 |
| H690 TNCX 100504 PDR (1) | 8.60 | 8.00 | 6.20 | 4.70 | 0.40 | 0.70 | | ● | ● | ● | | | 0.80-8.00 | 0.08-0.13 |
| H690 TNKX 100508PNTR | 8.60 | 8.00 | 6.20 | 4.70 | 0.80 | 0.40 | | ● | ● | ● | | ● | 1.20-8.00 | 0.08-0.15 |

- For cutting speed recommendations, see pages 541,616-620

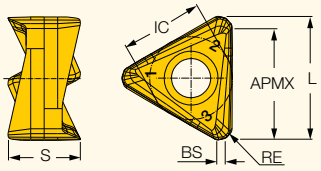
(1) Peripherally ground

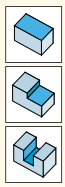
**For tools, see pages:** H690 E90AX-10 (39) • H690 F90AX-10 (238)

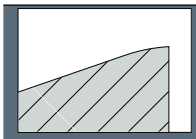
HELIDO 690 LINE

## H690 TNKX 1606

Triangular Inserts with 6 Helical Cutting Edges for 90° Shoulders





| Designation | Dimensions | | | | | | Tough ↔ Hard | | | | | | | Recommended Machining Data | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | L | APMX | IC | S | RE | BS | IC330 | IC845 | IC830 | IC808 | IC810 | IC5600 | IC5100 | $a_p$ (mm) | $f_z$ (mm/t) |
| H690 TNKX 1606PNTR-CS (1) | 17.50 | 13.50 | 12.00 | 10.00 | 0.80 | 0.70 | | | ● | | | | | 1.20-13.50 | 0.15-0.30 |
| H690 TNKX 160610PNTR | 17.50 | 13.50 | 12.00 | 10.00 | 1.00 | 0.70 | ● | ● | ● | ● | ● | ● | ● | 1.40-13.50 | 0.15-0.30 |

- For cutting speed recommendations, see pages 616-620

(1) The maximum feed per tooth for chip splitting effect is up to 0.22 mm/t

**For tools, see pages:** H690 F90AX-16 (252)

## Cutting Data

The attached tables provide cutting data recommendations for H690 TNKX 100504PNTR inserts.
For machining in unstable conditions, the recommended tooth load should be reduced by 20-30%.

Cutting Speed Recommendations for H690 TNKX 100504PNTR Inserts

| ISO Class DIN/ISO 513 | Workpiece Material | | | | | $V_c$, m/min, for Grades | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Description | Typical Representative AISI/SAE/ASTM | Typical Representative DIN W.-Nr. | Hardness HB | ISCAR Mat. Group*** | IC330 | IC830 | IC5400 | IC808 | IC810 |
| P | non-alloy steel | 1020 | 1.044 | 130-180 | 1 | 150-180 | 150-180 | 150-200 | 150-200 | 150-200 |
| | alloy steel | 4340 | 1.6582 | 260-300 | 8 | 100-120 | 140-150 | 120-170 | 140-170 | 140-170 |
| | alloy steel | 4340 | 1.6582 | HRC 35-42** | 9 | 80-100 | 80-100 | | 120-150 | |
| | high alloy steel | H13 | 1.2344 | 200-220 | 10 | 100-120 | 140-170 | | 140-170 | |
| | martensitic S.S. | 420 | 1.4021 | 200 | 12 | 150-180 | 150-150 | 120-200 | 150-200 | |
| M | austenitic S.S. | 304L | 1.4306 | 200 | 14 | 100-140 | 120-140 | | 120-140 | |
| | austenitic S.S. | 316L | 1.4404 | 140 | 14 | 100-140 | 120-140 | | 120-140 | |
| K | grey cast iron | class 40 | 0.6025 (GG25) | 250 | 16 | | 150-200 | | | 250-300 |
| | nodular cast iron | class 65-45-12 | 0.7050 (GGG50) | 200 | 17 | | 150-180 | | | 200-250 |
| H | hard steel | H11 | 1.2343 | HRC 45-49 | 38.1 | | | | 60-80 | |
| | cast iron | P20 | 1.2330 | HRC 50-55 | 38.2 | | | | 40-60 | |

** Quenched and tempered
*** ISCAR material group in accordance with VDI 3323 standard

Feed Recommendations for H690 TNKX 100504PNTR Inserts

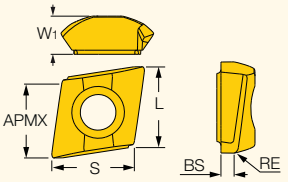
| ISO Class DIN/ISO 513 | Workpiece Material | | | | | $F_z$, mm/tooth, for Grades | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Description | Typical Representative AISI/SAE/ASTM | Typical Representative DIN W.-Nr. | Hardness HB | ISCAR Mat. Group** | IC808 | IC5400 | IC810 | IC830 | IC330 |
| P | non-alloy steel | 1020 | 1.044 | 130-180 | 1 | 0.08-0.15 | 0.08-0.15 | | 0.08-0.15 | 0.08-0.15 |
| | alloy steel | 4340 | 1.6582 | 260-300 | 8 | 0.08-0.15 | 0.08-0.15 | 0.08-0.15 | 0.08-0.15 | 0.08-0.15 |
| | alloy steel | 4340 | 1.6582 | HRC 35-42* | 9 | 0.08-0.12 | 0.08-0.12 | | 0.08-0.12 | 0.08-0.12 |
| | high alloy steel | H13 | 1.2344 | 200-220 | 10 | 0.08-0.15 | 0.08-0.15 | | 0.08-0.15 | 0.08-0.12 |
| | martensitic S.S. | 420 | 1.4021 | 200 | 12 | 0.08-0.15 | | | 0.08-0.15 | 0.08-0.12 |
| M | austenitic S.S. | 304L | 1.4306 | 200 | 14 | 0.08-0.12 | | | 0.08-0.12 | 0.08-0.12 |
| | austenitic S.S. | 316L | 1.4404 | 140 | 14 | 0.08-0.12 | | | 0.08-0.12 | 0.08-0.12 |
| K | grey cast iron | class 40 | 0.6025 (GG25) | 250 | 16 | | | 0.08-0.12 | 0.08-0.12 | |
| | nodular cast iron | class 65-45-12 | 0.7050 (GGG50) | 200 | 17 | | | 0.08-0.12 | 0.08-0.12 | |
| S | htsa | inconel 718 | 2.4668 | HRC 36 | 34 | | | | | |
| | titanium alloys | AMS R56400 | 3.7165 (Ti6Al4V) | HRC 34 | 37 | | | | | |
| H | hard steel | H11 | 1.2343 | HRC 45-49 | 38.1 | 0.06-0.1 | | | | |
| | cast iron | P20 | 1.2330 | HRC 50-55 | 38.2 | 0.05-0.08 | | | | |

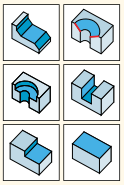
* Quenched and tempered
** ISCAR material group in accordance with VDI 3323 standard

SUMOMILL 290 LINE

## T290 LNMT/LNHT 0502

Tangential Inserts with
2 Cutting Edges



| Designation | Dimensions W1 | L | APMX | S | BS | RE | Tough ↔ Hard IC330 | IC830 | IC808 | IC810 | IC5400 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T290 LNHT 050202TR | 2.70 | 5.75 | 5.00 | 5.85 | 1.20 | 0.20 | | ● | ● | | | 2.00-5.00 | 0.03-0.07 |
| T290 LNHT 050204TR | 2.70 | 5.75 | 5.00 | 5.85 | 1.00 | 0.40 | | ● | | | | 2.00-5.00 | 0.03-0.07 |
| T290 LNHT 050208TR | 2.70 | 5.75 | 5.00 | 5.85 | 1.00 | 0.80 | | ● | | | | 2.00-5.00 | 0.03-0.07 |
| T290 LNHT 050210TR | 2.70 | 5.75 | 5.00 | 5.85 | 1.00 | 1.00 | | ● | | | | 2.00-5.00 | 0.03-0.07 |
| T290 LNMT 050204TR | 2.70 | 5.75 | 5.00 | 5.85 | 1.00 | 0.40 | ● | ● | ● | ● | ● | 2.00-5.00 | 0.04-0.08 |

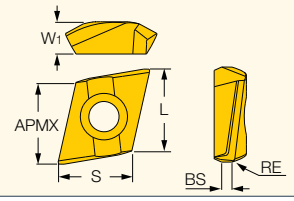
• LNMT-utility inserts. LNHT-precision inserts • For cutting speed recommendations, see pages 616-620

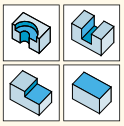
**For tools, see pages:** E30 / T230 (51) • E45 / T245 (53) • E60 / T260 (53) • T290 ELN-05 (18) • T290 ELN-MM-05 (18)

SUMOMILL 290 LINE

## T290 LNMT/LNHT 1004

Tangential Insert with
2 Cutting Edges



| Designation | Dimensions W1 | L | APMX | S | BS | RE | Tough ↔ Hard IC330 | IC830 | IC808 | IC810 | IC5400 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T290 LNHT 100405TR | 4.10 | 10.40 | 10.00 | 8.90 | 1.30 | 0.50 | | ● | | | | | 3.00-9.00 | 0.08-0.20 |
| T290 LNMT 100405TR | 4.10 | 10.40 | 10.00 | 8.90 | 1.30 | 0.50 | ● | ● | ● | ● | ● | ● | 3.00-9.00 | 0.08-0.20 |

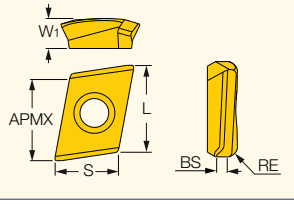
• LNMT-utility inserts, LNHT-precision inserts • For cutting speed recommendations, see pages 616-620

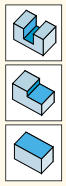
**For tools, see pages:** T290 ELN-10 (29) • T290 FLN-10 (234) • T290 LNK-10 (275)

SUMOMILL 290 LINE

## T290 LNMT 1506

Tangential Insert with
2 Cutting Edges



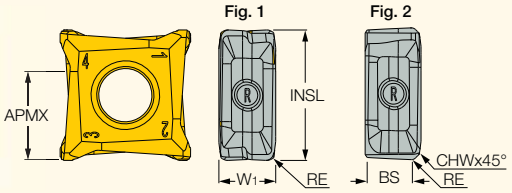
| Designation | Dimensions W1 | L | APMX | S | BS | RE | Tough ↔ Hard IC830 | IC808 | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T290 LNMT 150608TR | 5.60 | 15.90 | 15.00 | 11.50 | 2.00 | 0.80 | ● | ● | ● | 5.00-15.00 | 0.10-0.22 |

• LNMT-utility inserts • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** T290 FLN-15 (244)

LOGIQ8TANG
T890 MILLING LINE

**T890 LN.. 1306**
Tangentially Clamped Inserts
with 4 or 8 Cutting Edges




| Designation | Dimensions APMX | INSL | W1 | BS | RE | CHW | CEDC[2] | Fig. | Tough ↔ Hard IC845 | IC830 | IC5500 | IC808 | IC810 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **T890 LNHT 1306PNTR** | 9.50 | 13.78 | 6.00 | 1.00 | 0.80 | - | 8 | 1 | ● | ● | ● | ● | ● | ● | 1.00-9.50 | 0.10-0.20 |
| **T890 LNAT 1306PN-W [1]** | 9.50 | 13.92 | 5.90 | 4.30 | 0.60 | 0.60 | 4 | 2 | | | | | ● | | 0.50-1.00 | 0.10-0.20 |

[1] A wiper insert for finishing only
[2] Cutting edge count

**For tools, see pages:** T890HT ELN-R13 (40) • T890HT FLN-R13 (239)

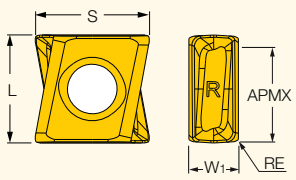
## Machining Recommendations for T890HT-13 Cutters

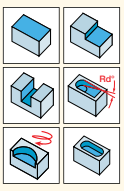
| Workpiece Material: ISO class DIN/ISO 513 | Description | ISCAR mat. group* | Hardness HB | Typical Representative: AISI/SAE/ASTM | DIN W.-Nr. | Carbide grade | Depth of cut [mm] | Cutting speed [m/min] | Feed per tooth mm/tooth] | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloyed steel | 1-5 | 130-180 | 1020 | 1.0402 | IC830 | 1.0-9.5 | 140-170 | 0.12-0.20 | dry/wet |
| | | | | | | IC5400 | | 140-180 | 0.12-0.18 | dry |
| | | | | | | IC808 | | 150-180 | 0.12-0.18 | dry |
| | low alloy steel | 6-8 | 260-300 | 4340 | 1.6565 | IC830 | 1.0-9.5 | 120-150 | 0.12-0.16 | dry/wet |
| | | | | | | IC808 | | 130-160 | 0.10-0.14 | dry |
| | | | | | | IC5400 | | 150-170 | 0.10-0.13 | dry |
| | | | | | | IC845 | 1.0-4.5 | 120-150 | 0.12-0.18 | dry/wet |
| | | 9 | HRC 35-42** | 3135 | 1.5710 | IC830 | 1.0-9.5 | 100-130 | 0.12-0.15 | dry/wet |
| | | | | | | IC808 | | 120-150 | 0.10-0.13 | dry |
| | | | | | | IC5400 | | 130-160 | 0.10-0.12 | dry |
| | | | | | | IC845 | 1.0-4.5 | 120-150 | 0.12-0.15 | dry/wet |
| | ferritic/ martensitic stainless steel | 12-13 | 200 | 420 | 1.4021 | IC830 | 1.0-9.5 | 100-120 | 0.10-0.15 | dry/wet |
| | | | | | | IC808 | | 100-130 | 0.10-0.13 | dry |
| | | | | | | IC5500 | 1.0-4.5 | 110-150 | 0.10-0.15 | dry |
| K | grey cast iron | 15-16 | 250 | class 40 | 0.6025 (GG25) | IC810 | 1.0-9.5 | 200-250 | 0.10-0.20 | dry |
| | nodular cast iron | 17-18 | 200 | class 65-45-12 | 0.7050 (GGG50) | IC810 | | 180-200 | 0.10-0.20 | |

* ISCAR material group in accordance with VDI 3323 standard
** Quenched and tempered
For machining in unstable conditions, the recommended cutting data should be reduced by 20-30%
IC830 is a general purpose grade and it may be considered as the first-choice grade
IC845 is recommended for milling at relatively small depths of cut and for interrupted cutting applications
IC5500 is intended mainly for milling ferritic and martensitic stainless steel at increased speed

HELITANG
T490 LINE

**T490 LNMT 0502**
Tangentially Clamped Inserts
with 4 Helical Cutting Edges



| Designation | Dimensions W1 | L | APMX | RE | S | Tough ↔ Hard IC830 | IC808 | IC810 | IC5600 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| **T490 LNMT 0502PNR-RD** | 2.30 | 5.00 | 4.60 | 0.40 | 5.30 | ● | ● | ● | ● | 0.08-0.12 |

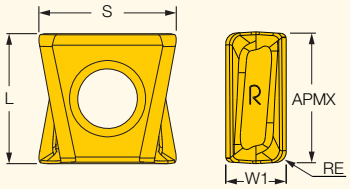
**New**

- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** T490 ELN-05 (23) • T490 ELN-MM-05 (23) • T490 FM-05 (226)

TANGDISC

**T490 LNHT 05-PNTN**
HELI-TANG - Tangentially Clamped Inserts for Slotting and Precision Grooving



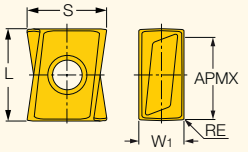

| Designation | Dimensions W1 | L | APMX | RE | S | Tough ↔ Hard IC830 | IC808 | IC810 |
|---|---|---|---|---|---|---|---|---|
| T490 LNHT 0502-PNTN | 2.30 | 5.00 | 4.60 | 0.40 | 5.30 | ● | ● | ● |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** ETS-T490 (388) • SD-T490 (376)

HELITANG T490 LINE

**T490 LNMT/LNHT 0804**
Tangentially Clamped Inserts with 4 Helical Cutting Edges




| Designation | Dimensions W1 | L | APMX | RE(4) | S | Tough ↔ Hard IC330 | IC845 | IC830 | IC808 | IC810 | IC5400 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 LNMT 0804PNR | 4.24 | 8.59 | 8.00 | 0.40 | 7.43 | ● | | ● | ● | ● | ● | ● | 1.50-5.00 | 0.10-0.18 |
| T490 LNHT 080404PNR | 4.24 | 8.59 | 8.00 | 0.40 | 7.51 | ● | ● | ● | ● | ● | | | 1.50-5.00 | 0.08-0.15 |
| T490 LNMT 080408PNR | 4.24 | 8.59 | 8.00 | 0.80 | 7.43 | | | ● | ● | ● | | | 1.50-5.00 | 0.10-0.18 |
| T490 LNHT 080408PNR | 4.24 | 8.59 | 8.00 | 0.80 | 7.16 | ● | | ● | ● | ● | | | 1.50-5.00 | 0.08-0.15 |
| T490 LNHT 080412PNR | 4.24 | 8.59 | 8.00 | 1.20 | 7.32 | ● | | ● | ● | ● | | | 1.50-5.00 | 0.08-0.15 |
| T490 LNMT 080412PNR | 4.24 | 8.59 | 8.00 | 1.20 | 6.87 | | | ● | | | | | 1.50-5.00 | 0.08-0.18 |
| T490 LNHT 080416PNR | 4.24 | 8.59 | 8.00 | 1.60 | 7.24 | ● | | ● | ● | ● | | | 1.50-5.00 | 0.08-0.15 |
| T490 LNMT 080416PNR | 4.24 | 8.59 | 8.00 | 1.60 | 7.29 | | | | ● | | | | 1.50-5.00 | 0.10-0.18 |
| T490 LNMT 0804PNR-CS (1) | 4.24 | 8.59 | 8.00 | 0.40 | 7.43 | | | ● | ● | | | | 2.50-7.00 | 0.10-0.15 |
| T490 LNHT 080404PNR-RD (2) | 4.24 | 8.59 | 8.00 | 0.40 | 7.51 | | | ● | | | | | 1.50-5.00 | 0.08-0.15 |
| T490 LNMT 080404PNR-RD (2) | 4.24 | 8.59 | 8.00 | 0.40 | 7.51 | | | ● | | | | | 1.50-5.00 | 0.08-0.15 |
| T490 LNHT080404PNR-PLS (3) | 4.24 | 8.59 | 8.00 | 0.40 | 7.51 | | | ● | | | | | 1.50-5.00 | 0.08-0.15 |

• LNMT-utility inserts, LNHT-precision inserts • For cutting speed recommendations, see pages 616-620

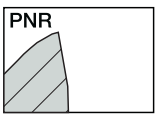
(1) Chip splitting cutting edge

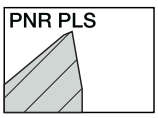
(2) Used for ramping down applications

(3) Positive rake angle for soft and gummy materials

(4) Radius obtained on workpiece

**For tools, see pages:** T490 ELN-08 (24) • T490 ELN-M (25) • T490 ELN-MM-08 (25) • T490 FLN-08 (231) • T490 LNM-08 (276) • T490 LNM-M-08 (276) • T490 SM-08 (283)



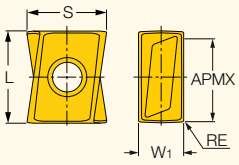

**T490 LN... 080404PNR-RD**

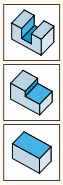
| Tool Diameter | Rampdown LNHT | LNMT |
|---|---|---|
| 16 | 2° | 1.10° |
| 18 | 1.85° | 0.95° |
| 20 | 1.70° | 0.80° |
| 25 | - | 0.55° |
| 32 | - | 0.40° |
| 40 | - | 0.30° |

HELITANG T490 LINE

## T490 LNMT/LNHT 1106

Tangentially Clamped Inserts
with 4 Helical Cutting Edges



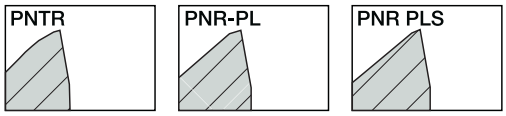



| Designation | Dimensions W1 | L | APMX | RE[8] | S | Tough ↔ Hard IC845 | IC840 | IC830 | IC5500 | IC808 | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **T490 LNHT 1106PNTR** | 6.00 | 10.50 | 9.00 | 0.80 | 11.30 | | | ● | ● | | ● | 1.50-9.00 | 0.10-0.20 |
| **T490 LNMT 1106PNTR** [1] | 6.00 | 10.50 | 9.00 | 0.80 | 11.30 | | | ● | | ● | ● | 1.50-9.00 | 0.10-0.20 |
| **T490 LNMT 1106PNR-PLS** [2] | 6.00 | 10.50 | 9.00 | 0.80 | 11.30 | ● | | | | | | 1.50-9.00 | 0.10-0.20 |
| **T490 LNHT 1106PNR-PL** [3] | 6.00 | 10.50 | 9.00 | 0.80 | 11.30 | | ● | | | | | 1.50-9.00 | 0.10-0.20 |
| **T490 LNHT 1106PNR-PLS** [4] | 6.00 | 10.50 | 9.00 | 0.80 | 11.30 | ● | ● | | | | ● | 1.50-9.00 | 0.10-0.20 |
| **T490 LNMT 1106PNTR-FW** [5] | 6.00 | 10.50 | 9.00 | 0.80 | 11.30 | | | ● | | | | 1.50-9.00 | 0.10-0.20 |
| **T490 LNHT 1106PNTR-RD** [6] | 6.00 | 10.50 | 9.00 | 0.80 | 11.30 | | | ● | | | | 1.50-9.00 | 0.10-0.20 |
| **T490 LNMT 1106PNTR-CS** [7] | 6.00 | 10.50 | 9.00 | 0.80 | 11.30 | | | ● | | | | 1.50-9.00 | 0.10-0.20 |
| **T490 LNMT 1106PNTR-CSG** [7] | 6.00 | 10.50 | 9.00 | 0.80 | 11.30 | | | | | | ● | 1.50-9.00 | 0.10-0.20 |

- For cutting speed recommendations, see pages 616-620

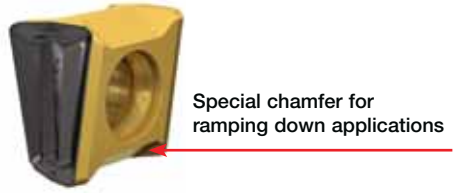
[1] Mounting this insert increases tool diameter up to 0.2 mm
[2] Positive rake angle for soft and gummy materials, mounting this insert increases tool diameter up to 0.2 mm
[3] Positive rake face, for stainless steel and high temperature alloys
[4] Positive rake angle for soft and gummy materials
[5] Chip splitting serrated cutting edge
[6] Used for ramping down applications with 25 mm and larger tools, see table below
[7] Chip splitting cutting edge
[8] Radius obtained on workpiece

**For tools, see pages:** T490 ELN-11 (40) • T490 FLN-11 (238) • T490 LNK-11 (277) • T490 SM-11 (283)




### T490 LNHT 1106PNTR-RD

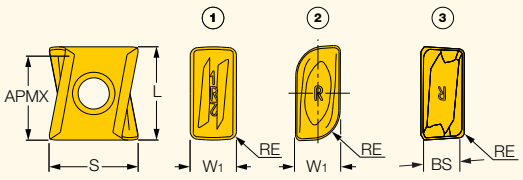
| Tool Diameter | a - Rampdown |
|---|---|
| 25 | 1.7° |
| 32 | 1.5° |
| 40 | 1.4° |
| 50 | 1.1° |
| 63 | 0.7° |

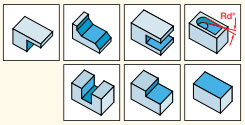


HELITANG T490 LINE

## T490 LNMT/LNHT/LNAR 1306

Tangentially Clamped Inserts with 4 Helical Cutting Edges



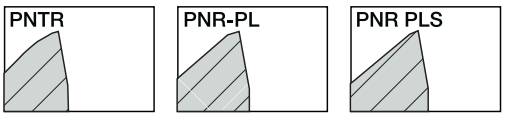



Right-hand shown

| Designation | Dimensions W1 | L | APMX | RE[12] | BS | S | Fig. | Tough ↔ Hard IC882 | IC330 | IC845 | IC716 | IC840 | IC830 | IC5820 | IC5500 | IC380 | IC808 | IC810 | IC5400 | DT7150 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 LNAT 1306 PN-W [1] | 6.65 | 14.20 | 0.50 | 1.00 | 4.80 | 13.10 | 3. | | | | | | | | | | ● | | | | | 0.50-0.50 | 0.12-0.18 |
| T490 LNAR 1306PN-R [2] | 6.65 | 13.81 | 12.77 | 0.80 | 2.57 | 13.00 | 1. | | ● | | | | | | | | | | | | | 4.00-12.00 | 0.08-0.20 |
| T490 LNMT 1306PNTR | 6.65 | 13.74 | 12.50 | 0.80 | 2.57 | 13.05 | 1. | | ● | ● | | ● | ● | | ● | ● | ● | ● | ● | ● | ● | 4.00-12.00 | 0.10-0.25 |
| T490 LNHT 1306PNTR | 6.65 | 13.80 | 12.50 | 0.85 | 2.57 | 13.05 | 1. | | ● | | | | ● | | | | ● | ● | | ● | ● | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 1306PNTL [3] | 6.65 | 13.81 | 12.50 | 0.85 | 2.57 | 13.05 | 1. | | | | | | ● | | | | ● | ● | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT 1306PNTL [3] | 6.65 | 13.80 | 12.50 | 0.85 | 2.57 | 13.05 | 1. | | | | | | ● | | | | | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT 1306PNTR-CS [4] | 6.65 | 13.74 | 12.50 | 0.85 | 2.57 | 13.05 | 1. | | ● | | | | ● | | | | | ● | ● | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 1306PN-R-PL [5] | 6.65 | 13.81 | 12.50 | 0.85 | 2.57 | 13.05 | 1. | ● | ● | | ● | | ● | ● | | | ● | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 1306PNR-PLS [6] | 6.65 | 13.81 | 12.50 | 0.85 | 2.57 | 13.05 | 1. | | | | | | ● | | | | | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 1306PNTR-RD [7] | 6.65 | 13.81 | 12.50 | 0.85 | 2.57 | 13.05 | 1. | | | | | | ● | | | | ● | ● | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT1306PNR-RD-CS [8] | 6.65 | 13.74 | 12.50 | 0.85 | 2.57 | 13.05 | 1. | | | | | | ● | | | | | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT1306PNR-RDPCS [9] | 6.65 | 13.75 | 12.50 | 0.85 | 1.20 | 13.05 | 1. | | | | | ● | | | | | | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT1306PNR-RDPL [10] | 6.44 | 13.74 | 12.50 | 0.85 | 1.20 | 13.05 | 1. | | | | | ● | | | | | | | | | | 1.00-12.50 | 0.10-0.20 |
| T490 LNHT 130604PNTR | 6.65 | 13.81 | 12.50 | 0.40 | 3.05 | 12.88 | 1. | | | | | | ● | | | | | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 130612PNTR | 6.65 | 13.81 | 12.50 | 1.20 | 1.90 | 13.00 | 1. | | | | | | | | | | | ● | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 130616PNTL [3] | 6.65 | 13.81 | 12.50 | 1.60 | 1.73 | 12.88 | 1. | | | | | | ● | | | | | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 130616PNTR | 6.65 | 13.81 | 12.50 | 1.60 | 1.73 | 12.88 | 1. | | ● | | | | ● | | | | ● | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT 130616PNTR | 6.65 | 13.75 | 12.50 | 1.60 | 1.82 | 12.88 | 1. | | | | | | ● | | | | | ● | | | | 4.00-12.00 | 0.10-0.25 |
| T490 LNHT 130624PNTL [3] | 6.65 | 13.80 | 12.50 | 2.40 | 1.30 | 12.50 | 1. | | | | | | ● | | | | | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 130624PNTR | 6.65 | 13.80 | 12.50 | 2.40 | 1.30 | 12.50 | 1. | | ● | | | | ● | | | | ● | ● | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT 130624PNTR | 6.65 | 13.74 | 12.50 | 2.40 | 1.13 | 12.66 | 1. | | | | | | ● | | | | | ● | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 130631PNTL [3] | 6.65 | 13.81 | 12.50 | 3.10 | 0.62 | 12.37 | 1. | | | | | | ● | | | | | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 130631PNTR | 6.65 | 13.81 | 12.50 | 3.10 | 0.62 | 12.37 | 1. | | ● | | | | ● | | | | ● | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT 130631PNTR | 6.65 | 13.75 | 12.50 | 3.10 | 0.60 | 12.45 | 1. | | ● | | | | ● | | | | | | | | | 4.00-12.00 | 0.10-0.25 |
| T490 LNHT 130640PNTR [11] | 6.65 | 13.63 | 12.50 | 4.00 | 0.40 | 12.60 | 2. | | ● | | | | ● | | | | ● | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT 130640PNTR [11] | 6.65 | 13.63 | 12.50 | 4.00 | 1.80 | 12.60 | 2. | | | | | | ● | | | | | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 130650PNTR [11] | 6.65 | 13.63 | 12.50 | 5.00 | 0.40 | 12.45 | 2. | | ● | | | | ● | | | | | ● | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT 130650PNTR [11] | 6.65 | 13.63 | 12.50 | 5.00 | 0.80 | 12.36 | 2. | | | | | | ● | | | | | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNHT 130660PNTR [11] | 6.65 | 13.63 | 12.50 | 6.00 | 0.70 | 12.30 | 2. | | | | | | ● | | | | ● | | | | | 4.00-12.00 | 0.10-0.25 |
| T490 LNHT 130664PNTR [11] | 6.65 | 13.63 | 12.50 | 6.35 | 0.43 | 12.28 | 2. | | ● | | | | ● | | | | ● | | | | | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT 130664PNTR [11] | 6.65 | 13.63 | 12.50 | 6.40 | 0.60 | 12.28 | 2. | | | | | | ● | | | | | | | | | 4.00-12.00 | 0.10-0.20 |

**For tools, see pages:** FDN-CALN13 (350) • SDN-CALN13 (359) • T4..-SM Conical Shell Mills (247) • T490 CAP-13FT (245) • T490 ELN-13 (30)
• T490 ELN-M (19)
• T490 FLN-13 (207) • T490 LNK-13 (237) • T490 LNK-13-BT (238) • T490 LNK-13-CF (238) • T490 LNK-13-INT (238) • T490 LNK-BT-FT (247)
• T490 LNK-INT50-FT (246) • T490 LNK-M-13 (238) • T490 SM-13 (244) • T490 SM-13FT (244)• LNMT-utility inserts, LNHT-precision inserts
• For cutting speed recommendations, see pages 616-620

[1] A wiper insert with 2 cutting edges, for finishing only.
[2] For low carbon steel (ISO P, ISCAR mat. Group No. 1 and 2)
[3] Left-hand insert used on left-hand cartridges or on special left-hand cutters
[4] Chip splitting insert
[5] Positive rake face, for stainless steel and high temperature alloys
[6] Positive rake angle for soft and gummy materials
[7] Used for ramping down applications with 32 mm and larger tools, see table below
[8] Used for ramping down and chip splitting applications with 40 mm and larger tools, see table below
[9] Positive rake face, for stainless steel and high temp. alloys; used for ramping down and chip splitting applications.
[10] Positive rake face, for stainless steel and high temperature alloys with limited ramp down capability
[11] With 2 cutting edges
[12] Radius obtained on workpiece




### T490 LNHT 1306PNTR-RD

| Tool Diameter | a - Rampdown |
|---|---|
| 32 | 2.8° |
| 40 | 2.0° |
| 50 | 1.5° |
| 63 | 1.1° |
| 80 | 0.9° |
| 100 | 0.7° |
| 125 | 0.5° |

Special chamfer for ramping down applications

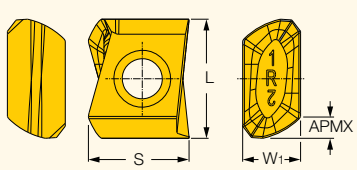
### T490 LNMT1306PNR-RD-CS
### T490 LNMT1306PNR-RDPCS
### T490 LNMT1306PNR-RDPL

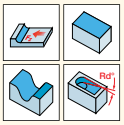
| Tool Diameter | a - Rampdown |
|---|---|
| 40 | 0.9° |
| 50 | 0.7° |
| 63 | 0.5° |

HELITANG T490 LINE

## T490 LNMT 1306PNR-FF

Tangentially Clamped
Inserts with 2 Cutting Edges
for Fast Feed Milling



| Designation | Dimensions W1 | L | APMX | Rg(1) | S | RMPX°(2) | IC830 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| T490 LNMT 1306PNR-FF | 6.65 | 13.68 | 1.00 | 1.95 | 11.56 | - | ● | 0.60-1.00 | 0.50-1.50 |

- You can machine also at up to 12 mm D.O.C. but in this case a regular corner radius insert feed recommendations should be applied.
- For cutting speed recommendations, see pages 616-620

(1) Corner radius for CNC programming

(2) For possible ramping angle vs. tool diameter, see table below.

**For tools, see pages:** T490 ELN-13 (41) • T490 ELN-M (25) • T490 FLN-13 (244)

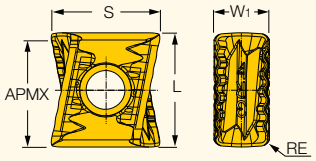
### Ramp Down Application as Function of Cutter Diameter

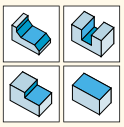
| Tool Diameter | a° - Rampdown |
|---|---|
| 25 | 4.8° |
| 32 | 3.3° |
| 40 | 2.5° |
| 50 | 1.8° |
| 63 | 1.3° |
| 80 | 1.0° |
| 100 | 0.8° |

HELITANG T490 LINE

## T490 LNMT 1306PNTR-FW

Tangentially Clamped
Inserts with 4 Serrated and
Helical Cutting Edges



Right-hand shown

| Designation | Dimensions W1 | L | APMX | RE(2) | S | Tough ↔ Hard IC840 | IC830 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| T490 LNMT 1306PNTR-FW | 6.65 | 13.73 | 12.70 | 0.80 | 13.06 | | ● | 4.00-12.00 | 0.10-0.20 |
| T490 LNMT1306PNR-RDPFW (1) | 6.65 | 13.73 | 12.70 | 0.80 | 13.06 | ● | | 4.00-12.00 | 0.10-0.18 |

- T490 LNMT 1306PNTR-FW cannot be used for ramping down and on full slot cutters • T490 LNMT1306PNR-RDPFW can be used for ramping down
- For cutting speed recommendations, see pages 616-620

(1) Positive rake face, to be used in long overhang applications and low power machines

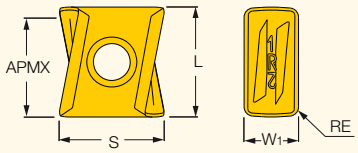
(2) Radius obtained on workpiece

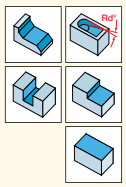
**For tools, see pages:** T4..-SM Conical Shell Mills (288) • T490 CAP-13FT (285) • T490 ELN-13 (41) • T490 ELN-M (25) • T490 FLN-13 (244)
• T490 LNK-13 (277) • T490 LNK-13-BT (278) • T490 LNK-13-CF (278) • T490 LNK-13-INT (278) • T490 LNK-BT-FT (287) • T490 LNK-INT50-FT (286)
• T490 LNK-M-13 (277) • T490 SM-13 (284) • T490 SM-13FT (284)

HELITANG T490 LINE

## T490 LNAR-P

Tangentially Clamped Precision Ground Inserts with a Super Positive Rake for Machining Aluminum



| Designation | Dimensions W1 | L | APMX | RE | S | IC07 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| T490 LNAR 0804PN-R-P | 4.25 | 8.60 | 8.00 | 0.40 | 7.50 | ● | 1.00-5.00 | 0.08-0.15 |
| T490 LNAR 1306PN-R-P | 6.65 | 13.81 | 12.50 | 0.80 | 13.00 | ● | 4.00-12.00 | 0.08-0.20 |
| T490 LNAR 1306PNR-P-RD (1) | 6.65 | 13.75 | 12.50 | 0.80 | 13.05 | ● | 4.00-12.00 | 0.10-0.20 |
| T490 LNAR 1607PN-R-P | 7.05 | 17.05 | 16.00 | 0.80 | 15.90 | ● | 5.00-14.00 | 0.15-0.25 |

• For T490 ELN-13 on diameter 25 mm at $a_p$=5, $f_z$=0.15 at $a_p$=10, $f_z$=0.1 • For cutting speed recommendations, see pages 616-620

(1) Used for ramping down applications on aluminum with 32 mm and larger tools, see table below

**For tools, see pages:** T4..-SM Conical Shell Mills (288) • T490 CAP-13FT (285) • T490 ELN-08 (24) • T490 ELN-13 (41) • T490 ELN-M (25) • T490 ELN-MM-08 (25) • T490 FLN-08 (231) • T490 FLN-13 (244) • T490 FLN-16 (250) • T490 LNK-13 (277) • T490 LNK-13-BT (278) • T490 LNK-13-CF (278) • T490 LNK-13-INT (278) • T490 LNK-BT-FT (287) • T490 LNK-INT50-FT (286) • T490 LNK-M-13 (277) • T490 LNM-08 (276) • T490 LNM-M-08 (276) • T490 SM-08 (283) • T490 SM-13 (284) • T490 SM-13FT (284)

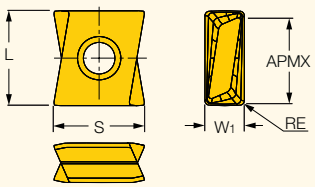
### T490 LNAR 1306PNR-P-RD

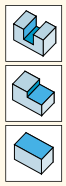
| Tool Diameter | a - Rampdown |
|---|---|
| 32 | 2.8° |
| 40 | 2.0° |
| 50 | 1.5° |
| 63 | 1.1° |
| 80 | 0.9° |
| 100 | 0.7° |

HELITANG T490 LINE

## T490 LNMT/LNHT 1607

Tangentially Clamped Inserts with 4 Helical Cutting Edges



| Designation | Dimensions W1 | L | APMX | RE | S | Tough ↔ Hard IC330 | IC830 | IC808 | IC810 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T490 LNHT 160708PNR | 7.00 | 17.05 | 16.00 | 0.80 | 15.90 | | ● | ● | ● | | 5.00-15.00 | 0.10-0.20 |
| T490 LNHT 160712PNR | 7.00 | 17.05 | 16.00 | 1.20 | 15.83 | | | | ● | | 5.00-15.00 | 0.10-0.20 |
| T490 LNHT 160716PNR | 7.00 | 17.05 | 16.00 | 1.60 | 15.70 | | ● | ● | ● | | 5.00-15.00 | 0.10-0.20 |
| T490 LNHT 160724PNR | 7.00 | 17.05 | 16.00 | 2.40 | 15.40 | | ● | ● | ● | | 5.00-15.00 | 0.10-0.20 |
| T490 LNHT 160732PNR | 7.00 | 17.05 | 16.00 | 3.20 | 15.10 | | ● | ● | ● | | 5.00-15.00 | 0.10-0.20 |
| T490 LNMT 1607PN-R | 7.00 | 17.05 | 16.00 | 0.80 | 15.83 | ● | ● | ● | ● | ● | 5.00-15.00 | 0.15-0.25 |
| T490 LNMT 1607PN-R-CS (1) | 7.00 | 17.05 | 16.00 | 0.80 | 15.83 | | ● | | | | 5.00-15.00 | 0.15-0.25 |

• LNMT-utility inserts, LNHT-precision inserts • For cutting speed recommendations, see pages 616-620

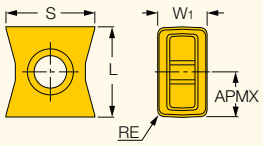
(1) Chip splitting insert

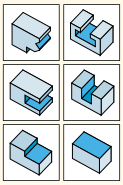
**For tools, see pages:** T490 FLN-16 (250)

TANGMILL TANGENTIAL LINE

## LNKX/LNMT 1106

Tangentially Clamped Inserts with a Very Positive Chipformer and Reinforced Cutting Edge



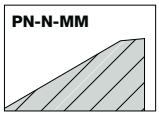



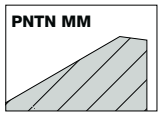
| Designation | Dimensions W1 | L | S | RE | APMX(1) | Tough ↔ Hard IC328 | IC928 | IC950 | IC808 | IC908 | IC910 | DT7150 | IC5100 | IC4100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LNKX 1106PN-N MM | 6.00 | 11.16 | 11.00 | 0.80 | 5.00 | ● | ● | ● | | | ● | ● | | ● | 1.50-5.00 | 0.15-0.20 |
| LNKX 1106PNTN MM | 6.00 | 11.16 | 11.00 | 0.80 | 5.00 | | ● | | | | ● | | | ● | 1.50-5.00 | 0.17-0.25 |
| LNMT 1106PN-N MM | 6.00 | 11.16 | 11.00 | 0.80 | 5.00 | ● | ● | | ● | ● | ● | ● | ● | | 1.50-5.00 | 0.17-0.25 |

• Molded chipformer to produce positive cutting • Reduced cutting forces enable higher feed capability • LNKX... is peripherally ground for accuracy and improved surface finish • LNMT... is an economical utility insert • LNKX1106PNTN MM insert has a reinforced chamfered land • 4 R.H. and 4 L.H. cutting edges when used on F90LN... cutters • For cutting speed recommendations, see pages 616-620

(1) DOC when the insert is on the cutter

**For tools, see pages:** F90LN-N11 (240) • FDN-CALN11 (397) • SDN-CALN11 (407)

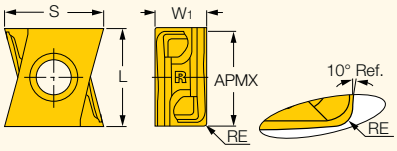


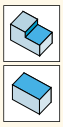



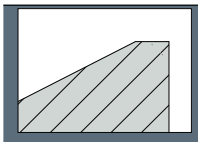

TANGMILL TANGENTIAL LINE

## LNHT 1106 PN-R HT

Tangentially Clamped Inserts with 4 Straight Right-Hand Cutting Edges





| Designation | Dimensions W1 | L | S | RE | APMX(1) | Tough ↔ Hard IC928 | IC908 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| LNHT 1106PN-R HT | 5.97 | 11.16 | 11.00 | 0.80 | 10.00 | ● | ● | ● | 2.00-7.00 | 0.15-0.25 |

• Right-hand insert with 4 cutting edges • Can machine a 90° shoulder according to the table below • For cutting speed recommendations, see pages 616-620

(1) APMX=10 mm for cast iron applications (for each pass), APMX=8 mm for steel applications

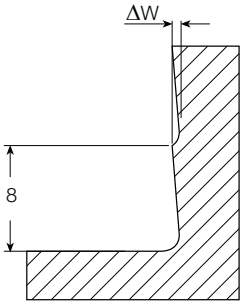
**For tools, see pages:** F90LN-N11 (240) • FDN-CALN11 (397) • SDN-CALN11 (407)

### Mismatch as a function of tool diameter

**LNHT 11..**

**Δh=8**

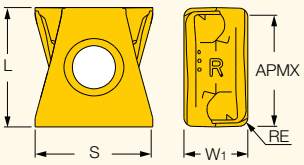
| **D**tool | ΔW |
|---|---|
| 40 | 0.12 |
| 50 | 0.06 |
| 63 | 0.03 |
| 80 | 0.04 |
| 100 | 0.01 |
| 125 | 0.02 |

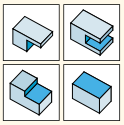


TANGMILL TANGENTIAL LINE

## LNHT 1106 PN-N HT

Tangentially Clamped Inserts with Straight, Right- and Left-Hand Cutting Edges



| Designation | Dimensions W1 | L | S | RE | APMX(1) | Tough ↔ Hard IC928 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| LNHT 1106PN-N HT | 5.97 | 11.16 | 11.00 | 0.80 | 10.00 | ● | ● | 2.00-7.00 | 0.15-0.25 |

• 2 right- and 2 left-hand cutting edges • Can machine 90° shoulders, see table below • For cutting speed recommendations, see pages 616-620

(1) APMX=10 mm for cast iron applications (for each pass), APMX=8 mm for steel applications

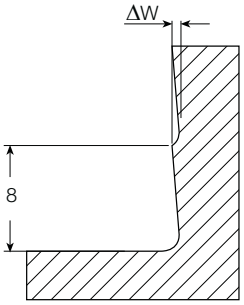
**For tools, see pages:** F90LN-N11 (240) • FDN-CALN11 (397) • SDN-CALN11 (407)

### Mismatch as a function of tool diameter

**LNHT 11..**

**Δh=8**

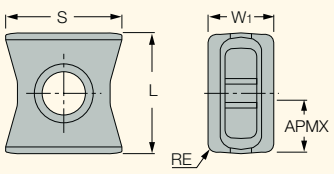
| Dtool | ΔW |
|---|---|
| 40 | 0.12 |
| 50 | 0.06 |
| 63 | 0.03 |
| 80 | 0.04 |
| 100 | 0.01 |
| 125 | 0.02 |

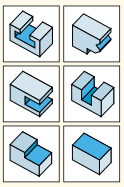



TANGMILL TANGENTIAL LINE

## LNAR 1106

Tangentially Clamped Inserts with Positive Polished Rake



| Designation | Dimensions W1 | L | S | RE | APMX(1) | Tough ↔ Hard IC07 | IC907 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| LNAR 1106 PN-N | 6.00 | 11.16 | 10.72 | 0.50 | 5.00 | | ● | 1.50-5.00 | 0.15-0.20 |
| LNAR 1106 PN-N-P | 6.00 | 11.16 | 10.72 | 0.50 | 5.00 | ● | | 1.50-5.00 | 0.15-0.20 |

• Polished rake and sharp cutting edge • Recommended for machining high silicon and cast aluminum, titanium and magnesium

• 4 R.H. and 4 L.H. cutting edges • For cutting speed recommendations, see pages 616-620

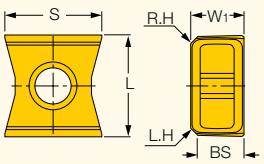
(1) D.O.C. when the insert is on the cutter

**For tools, see pages:** F90LN-N11 (240) • FDN-CALN11 (397) • SDN-CALN11 (407)

TANGMILL TANGENTIAL LINE

## LNAT 1106-W

Tangentially Clamped Wiper Inserts



| Designation | Dimensions W1 | L | S | BS | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| LNAT 1106PN-W (1) | 5.97 | 11.38 | 10.94 | 4.90 | ● | 0.50-2.00 | 0.10-0.15 |

• When feed per revolution is less than 4 mm it is recommended to use only one wiper insert. When feed per revolution is greater than 4 mm, it is recommended to use two wiper inserts. • For cutting speed recommendations, see pages 616-620

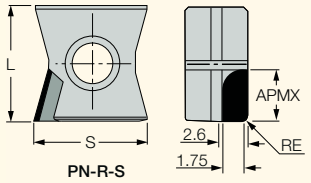
(1) Wiper insert with two right- and two left-hand cutting edges, for 90° lead angle in F90LN cutters.

**For tools, see pages:** F90LN-N11 (240)

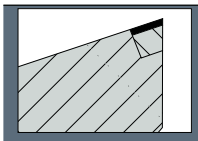
TANGMILL TANGENTIAL LINE

## LNAR 1106 (PCD)

Tangentially Clamped Milling Inserts with a Brazed PCD Tip for Machining Aluminum




Single R.H. cutting edge PCD insert



| Designation | Dimensions W1 | L | S | RE | Ch | a° | APMX | Tough ↔ Hard ID8 | ID5 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LNAR 110604PN-R-S | 6.00 | 11.11 | 10.76 | 0.40 | - | 90 | 5.00 | ● | ● | 0.10-2.00 | 0.10-0.25 |
| LNAR 110604X45PN-R-S | 6.00 | 11.11 | 10.70 | - | 0.4 | 45 | 5.00 | ● | ● | 0.10-2.00 | 0.10-0.25 |
| LNAR 110620X75PN-R-S | 6.00 | 11.11 | 10.72 | - | 0.15 | 75 | 5.00 | | ● | 0.10-2.00 | 0.10-0.25 |

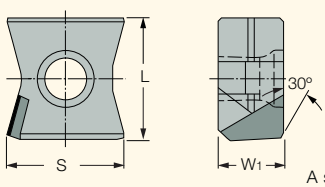
- The chamfered corner used for reduced chipping on the machined component edges
- Use ID5 for aluminum alloys with <12% silicon
- Use ID8 for aluminum alloys with >12% silicon
- The inserts are supplied with spare screws
- For D.O.C., cutting speed recommendations and grade data, see pages 616-620

**For tools, see pages:** F90LN-N11 (240)

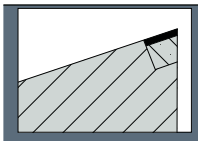
TANGMILL TANGENTIAL LINE

## LNAR 1106PN-R-S-W (PCD)

Tangentially Clamped Wiper Milling Inserts with a Brazed PCD Tip for Machining Aluminum



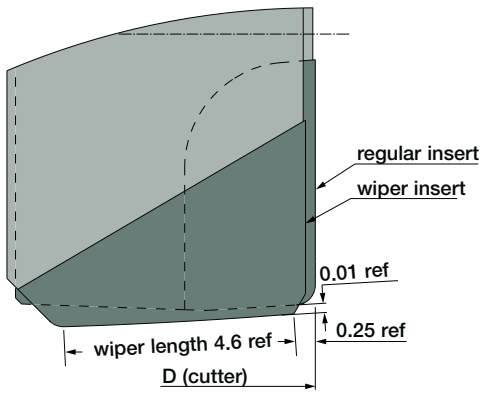

A single R.H. cutting edge PCD insert



| Designation | Dimensions W1 | L | S | ID5 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|
| LNAR 1106PN-R-S-W | 5.98 | 11.26 | 10.75 | ● | 0.10-0.25 |

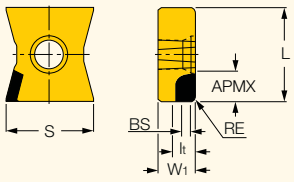
- The chamfered corner is used for reduced chipping on the machined component edges.
- The wiper insert should not be used with LNAR 110620x75PN-R-S inserts
- For D.O.C., cutting speed recommendations and grade data, see pages 616-620

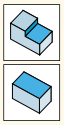
**For tools, see pages:** F90LN-N11 (240)



TANGMILL TANGENTIAL LINE

**LNAW-11 (CBN)**
Tangentially Clamped Inserts with a PCBN Brazed Tip for Machining Hard Materials



Single R.H. cutting edge insert

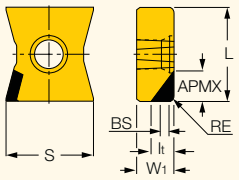
| Designation | Dimensions W1 | S | RE | L | APMX | BS | lt | IB85 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| LNAW 1106PNTR-S | 6.00 | 11.80 | 0.80 | 11.17 | 5.00 | 1.20 | 2.8 | ● | 0.05-2.00 | 0.10-0.25 |
| LNAW 1106PN-R-S | 6.00 | 11.90 | 0.80 | 11.17 | 5.00 | 1.20 | 2.8 | ● | 0.05-2.00 | 0.10-0.25 |

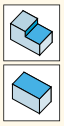
- LNAW PN-R.. is 0.03 mm edge-honed for finishing applications, while the LNAW PNTR... has a chamfered edge for rough milling applications.
- The inserts are supplied with spare screws.

**For tools, see pages:** F90LN-N11 (240)

TANGMILL TANGENTIAL LINE

**LNAW-15 (CBN)**
Tangentially Clamped Inserts with a PCBN Brazed Tip for Machining Hard Materials



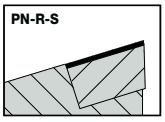



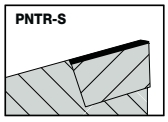
Single R.H. cutting edge insert

| Designation | Dimensions W1 | S | RE | L | APMX | BS | lt | IB85 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| LNAW 1506PN-R-S | 6.00 | 14.00 | 0.80 | 15.00 | 5.00 | 1.60 | 3.8 | ● | 0.05-2.00 | 0.10-0.25 |
| LNAW 1506PNTR-S | 6.00 | 13.90 | 0.80 | 15.00 | 5.00 | 1.60 | 3.8 | ● | 0.05-2.00 | 0.10-0.25 |

- LNAW PN-R.. is 0.03 mm edge-honed for finishing applications, while the LNAW PNTR... has a chamfered edge for rough milling applications.
- The inserts are supplied with spare screws.

**For tools, see pages:** F90LN-N15 (245) • SSB-LN15-R/L (410)

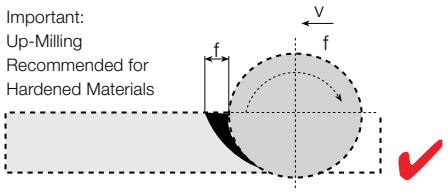



## CBN Recommended Machining Conditions

| | Grade | | IB85 | | |
|---|---|---|---|---|---|
| | DOC mm | Material | $V_c$ m/min | Feed mm/tooth | Cutting Edge |
| K | <0.5 | Grey cast iron 200-280 HBN | 500-1500 | 0.1-0.3 | Chamfer Hone |
| | 0.5-2.0 | | 500-1100 | 0.1-0.25 | Chamfer |
| | <0.5 | CGI | 400-600 | 0.1-0.2 | Hone |
| S | 0.5-2.0 | Co based > 35 HRc<br>Ni based > 35 HRc<br>Fe based > 35 HRc<br>Cr based > 35 HRc | 150-200<br>120-150<br>60-120<br>50-75 | 0.05-0.15 | Chamfer |
| H | <0.5 | Hard steels > 45 HRc | 80-180 | 0.1-0.25 | Chamfer |
| | <2 | Hard cast iron Ni hard | 80-200 | 0.1-0.15 | Chamfer |
| P | <2 | Bearing steel | 180-220 | 0.05-0.25 | Chamfer |
| | <2 | Ferrous powder metal | 150-300 | 0.1-0.15 | Chamfer |

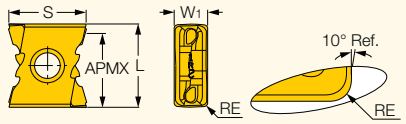
Important:
Up-Milling
Recommended for
Hardened Materials

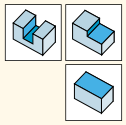


TANGMILL TANGENTIAL LINE

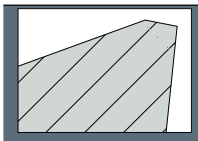
## LNMT 1506PN-R-TS

Tangentially Clamped Inserts with a Serrated Cutting Edge for Chip Splitting



For R.H. tools



| Designation | Dimensions W1 | L | S | RE | APMX(1) | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| LNMT 1506PN-R TS | 6.00 | 15.00 | 13.90 | 0.80 | 12.00 | ● | 4.00-9.00 | 0.10-0.20 |

- Self balanced forces on rake face
- Used for long overhang and extended flute cutters, reduces chattering
- For cutting speed recommendations, see pages 616-620

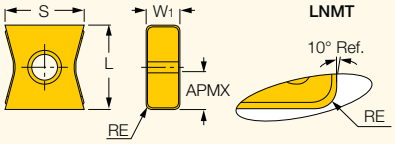
(1) apmax=8 mm for steel and 12 mm for cast iron

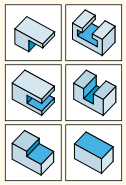
**For tools, see pages:** F90LN-N15 (245)

TANGMILL TANGENTIAL LINE

## LNKX/LNMT 1506PNTN/PN-N MM

Tangentially Clamped Inserts with a Reinforced Negative Land for Unfavorable Conditions



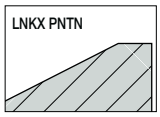



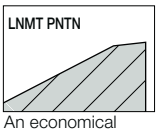
| Designation | Dimensions W1 | L | S | RE | APMX(1) | Tough ↔ Hard IC328 | IC928 | IC908 | IC810 | IC910 | IC5400 | DT7150 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LNKX 1506PN-N MM | 6.00 | 15.00 | 13.88 | 0.80 | 7.00 | ● | ● | ● | | | ● | | | 2.00-7.00 | 0.10-0.20 |
| LNKX 1506PNTN | 6.00 | 15.00 | 13.88 | 0.80 | 7.00 | | | | ● | ● | | | ● | 2.00-7.00 | 0.10-0.20 |
| LNKX 150612-PNTN | 6.00 | 15.00 | 13.88 | 1.20 | 7.00 | | | | | ● | | | | 2.00-7.00 | 0.10-0.20 |
| LNMT 1506PN-N MM | 6.00 | 15.00 | 13.95 | 0.80 | 7.00 | ● | ● | ● | | | | | | 2.00-7.00 | 0.10-0.20 |
| LNMT 1506PNTN | 6.00 | 15.00 | 13.95 | 0.80 | 7.00 | | | | | ● | | ● | ● | 2.00-7.00 | 0.10-0.20 |
| LNMT 150616PN-N MM | 6.00 | 15.00 | 13.95 | 1.60 | 7.00 | | ● | | | | | | | 2.00-7.00 | 0.10-0.20 |

- For cutting speed recommendations, see pages 616-620

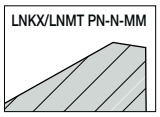
(1) D.O.C. when the insert is on the cutter.

**For tools, see pages:** F90LN-N15 (245) • FDN-CALN15 (400) • SDN-CALN15 (409) • SSB-LN15-R/L (410)



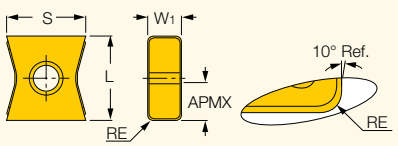

An economical class insert

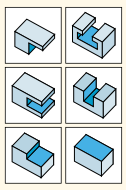


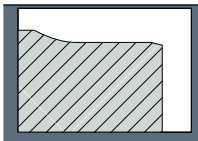

TANGMILL TANGENTIAL LINE

## LNMW 1506 PNTN

Tangentially Clamped Insert for Machining Gray and Nodular Cast Iron





| Designation | Dimensions W1 | L | S | RE | APMX(1) | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| LNMW 1506 PNTN | 6.00 | 15.00 | 13.98 | 0.80 | 7.00 | ● | 2.00-7.00 | 0.20-0.30 |

- Flat rake, used for grey cast iron e.g. GG25 170-240 HBR
- For cutting speed recommendations, see pages 616-620

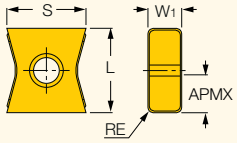
(1) DOC when the insert is on the cutter.

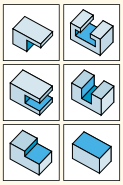
**For tools, see pages:** F90LN-N15 (245) • FDN-CALN15 (400) • SDN-CALN15 (409) • SSB-LN15-R/L (410)

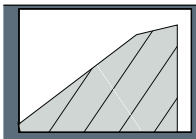
TANGMILL TANGENTIAL LINE

## LNKX 1506PN-N PL

Tangentially Clamped Inserts with a Positive Land for Alloyed Steel, Stainless Steel and Cast Iron





| Designation | Dimensions W1 | L | S | RE | APMX(1) | Tough ↔ Hard IC328 | IC928 | IC908 | IC910 | DT7150 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LNKX 1506PN-N PL | 6.00 | 15.00 | 13.88 | 0.80 | 7.00 | ● | ● | ● | ● | ● | 2.00-7.00 | 0.10-0.15 |

- Positive land (PL), leaves sharp edges without chipping on cast iron components
- High shear rake for steel and stainless steel
- For cutting speed recommendations, see pages 616-620

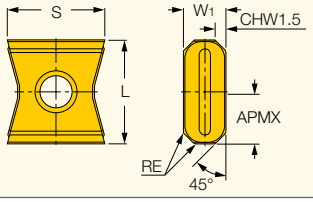
(1) D.O.C. when the insert is on the cutter.

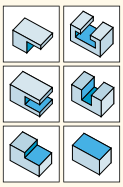
**For tools, see pages:** F90LN-N15 (245) • FDN-CALN15 (400) • SDN-CALN15 (409) • SSB-LN15-R/L (410)

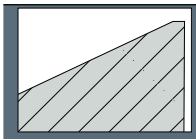
TANGMILL TANGENTIAL LINE

## LNKX 1506 1.5X45 PN-N

Tangentially Clamped Chamfered Insert for 90° Cutters





| Designation | Dimensions W1 | L | S | RE | APMX | Tough ↔ Hard IC328 | IC928 | IC908 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LNKX 1506 1.5X45PN-N | 6.00 | 15.00 | 13.88 | 0.80 | 7.00 | ● | ● | ● | ● | 1.50-5.00 | 0.15-0.20 |

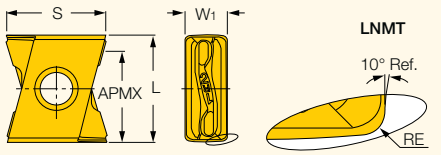
- A chamfered insert, used only on 90° cutters for smooth engagement
- Chatter reduction and elimination of chipping on material edge during exit
- 4 R.H. and 4 L.H. cutting edges when used on F90LN.. cutters
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90LN-N15 (245) • SSB-LN15-R/L (410)

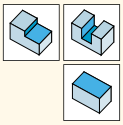
TANGMILL TANGENTIAL LINE

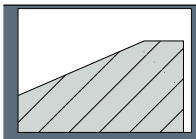
## LNMT/LNHT 1506PN-R HT

Tangentially Clamped Inserts with 4 Straight Right-Hand Cutting Edges




The radius is not tangent to the cutting edge on the LNMT insert.





| Designation | Dimensions W1 | L | S | RE | APMX(1) | Tough ↔ Hard IC928 | IC908 | IC910 | DT7150 | IC4100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LNHT 1506PN-R HT | 6.00 | 15.00 | 13.94 | 0.80 | 12.00 | ● | ● | ● | | | 3.00-12.00 | 0.15-0.25 |
| LNMT 1506PN-R HT | 6.00 | 15.00 | 13.93 | 0.80 | 12.00 | ● | | ● | ● | ● | 3.00-12.00 | 0.15-0.20 |

- A right-hand insert, with 4 cutting edges, for high 90° shoulders
- LNMT-utility inserts, LNHT-precision inserts
- For cutting speed recommendations, see pages 616-620

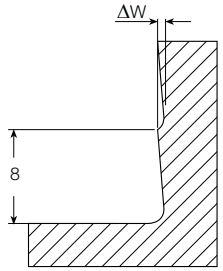
(1) APMX=9 mm for steel and 12 mm for cast iron

**For tools, see pages:** F90LN-N15 (245) • SSB-LN15-R/L (410)

## Mismatch as a Function of Tool Diameter

**LNMT 15..**
**Δh=8**

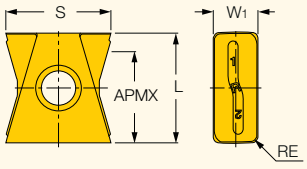
| Cutting Dia. | ΔW |
|---|---|
| 63 | 0.07 |
| 80 | 0.04 |
| 100 | 0.01 |
| 125 | 0.015 |



TANGMILL TANGENTIAL LINE

## LNMT/LNHT 1506...-N HT

Tangentially Clamped Inserts with 4 Straight Cutting Edges: 2 L.H. and 2 R.H.



| Designation | W1 | L | S | RE | APMX[1] | Tough ↔ Hard IC928 | Tough ↔ Hard IC910 | Recommended Machining Data $a_p$ (mm) | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| LNMT 1506PN-N HT | 6.00 | 15.00 | 14.03 | 0.80 | 14.00 | ● | | 3.00-12.00 | 0.15-0.25 |
| LNMT 1506PNTN-HT | 6.00 | 15.00 | 14.03 | 0.80 | 14.00 | | ● | 3.00-12.00 | 0.15-0.25 |
| LNHT 1506PNTN HT | 6.00 | 15.00 | 14.03 | 0.80 | 14.00 | | ● | 3.00-12.00 | 0.15-0.25 |

- A neutral insert, with 2 L.H. and 2 R.H. cutting edges • Can machine a 90° shoulder according to the table below
- For cutting speed recommendations, see pages 616-620

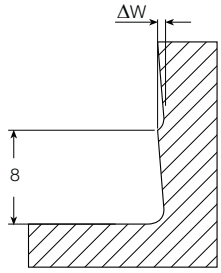
(1) APMX=9 mm for steel and 14 mm for cast iron

**For tools, see pages:** F90LN-N15 (245) • FDN-CALN15 (400) • SDN-CALN15 (409) • SSB-LN15-R/L (410)

### Mismatch as a Function of Tool Diameter

**LNMT 15..**
**Δh=8**

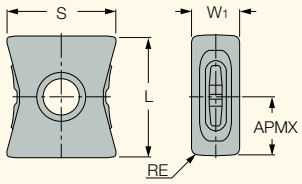
| Cutting Dia. | ΔW |
|---|---|
| 63 | 0.07 |
| 80 | 0.04 |
| 100 | 0.01 |
| 125 | 0.015 |

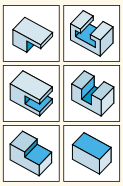



TANGMILL TANGENTIAL LINE

## LNAR 1506

Tangentially Clamped Insert with a Positive Polished Land and Sharp Cutting Edge



| Designation | W1 | L | S | RE | APMX | IC07 | Recommended Machining Data $a_p$ (mm) | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| LNAR 1506 PN-N-P | 6.00 | 15.00 | 13.56 | 0.80 | 7.00 | ● | 2.00-7.00 | 0.10-0.15 |

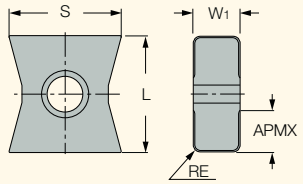
- Note: Do not use this insert on F86LNX tools • Recommended for machining high silicon aluminum, titanium and magnesium
- 4 R.H. and 4 L.H. cutting edges when used on F90LN.. cutters • For cutting speed recommendations, see pages 616-620

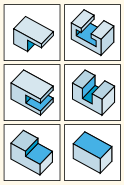
**For tools, see pages:** F90LN-N15 (245)

ISCAR CER LINE

## LNHW 1506 PNTN (CER)

Tangentially Clamped Ceramic Insert for High Speed Machining of Gray and Nodular Cast Iron



| Designation | Dimensions W1 | L | S | RE | APMX(1) | Tough ↔ Hard IS8 | IS26 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| LNHW 1506 PNTN | 6.00 | 15.00 | 14.47 | 0.80 | 5.00 | ● | ● | 1.00-5.00 | 0.15-0.25 |

- Ceramic peripherally ground inserts for high speed machining of grey and nodular cast iron providing high surface finish
- Feature 4 L.H. and 4 R.H. cutting edges when used on F90LN.. cutters • For cutting speed recommendations, see pages 616-620

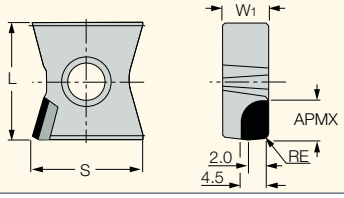
(1) D.O.C. when the insert is on the cutter

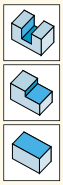
**For tools, see pages:** F90LN-N15 (245) • SSB-LN15-R/L (410)

TANGMILL TANGENTIAL LINE

## LNAR 1506 PN-R-S (PCD)

Tangentially Clamped Insert with a Brazed PCD Tip for Machining Aluminum



| Designation | Dimensions W1 | L | S | RE | APMX | Tough ↔ Hard ID8 | ID5 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| LNAR 150604PN-R-S | 6.00 | 15.06 | 14.00 | 0.40 | 5.00 | ● | ● | 0.05-2.00 | 0.10-0.25 |

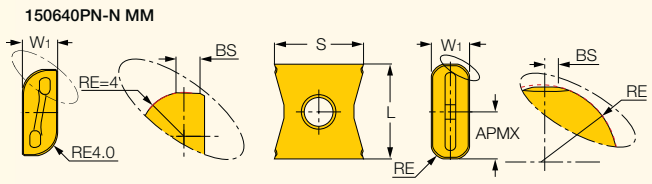
- The insert features a single R.H. cutting edge • Use ID5 for aluminum alloys with less than 12% silicon and ID8 for aluminum alloys with more than 12% silicon
- The inserts are supplied with spare screws • For D.O.C., cutting speed recommendations and grade data, see pages 616-620

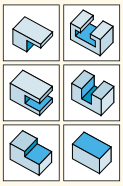
**For tools, see pages:** F90LN-N15 (245)

TANGMILL TANGENTIAL LINE

## LNAT 1506..PN-N MM

Tangentially Clamped Precision Ground Inserts with Various Corner Radii for Corner Rounding



| Designation | Dimensions W1 | L | BS | S | RE | APMX | Tough ↔ Hard IC928 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| LNAT 150616PN-N MM | 6.00 | 15.00 | 1.39 | 13.88 | 1.60 | 7.00 | ● | ● | 4.00-8.00 | 0.08-0.15 |
| LNAT 150625PN-N MM | 6.00 | 15.00 | 0.60 | 13.88 | 2.50 | 7.00 | ● | ● | 4.00-8.00 | 0.08-0.15 |
| LNAT 150632PN-N MM | 6.00 | 15.00 | 0.53 | 13.88 | 3.20 | 7.00 | ● | ● | 4.00-8.00 | 0.08-0.15 |
| LNAT 150640PN-N MM (1) | 6.00 | 14.98 | 0.00 | 13.96 | 4.00 | 7.00 | ● | | 4.00-8.00 | 0.08-0.15 |

- Precision ground inserts • Various corner radii for square shoulder applications requiring larger corner radii • For cutting speed recommendations, see pages 616-620

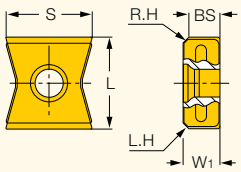
(1) Insert has 2 R.H. and 2 L.H. cutting edges.

**For tools, see pages:** F90LN-N15 (245) • SSB-LN15-R/L (410)

TANGMILL TANGENTIAL LINE

## LNAT 1506-W

Tangentially Clamped
Wiper Inserts




| Designation | Dimensions W1 | L | S | BS | Tough ↔ Hard IC908 | IC910 | IC4100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| LNAT 1506PN-W | 5.97 | 15.18 | 13.85 | 4.80 | ● | ● | ● | 0.50-2.00 | 0.10-0.15 |

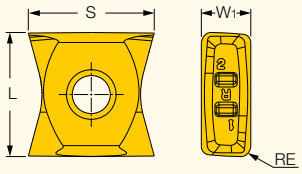
- Wiper insert with two right- and two left-hand wipers for 90° lead angle in F90LN cutters
- When feed per revolution is less than 4 mm, it is recommended to use only one wiper insert. For feed per revolution greater than 4 mm, use two wiper inserts
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90LN-N15 (245) • SSB-LN15-R/L (410)

TANGMILL TANGENTIAL LINE

## LNAT 1506-PM

Tangentially Clamped
Inserts with 4 Cutting Edges
for Slotting Cutters




| Designation | Dimensions W1 | L | S | RE | Tough ↔ Hard IC830 | IC810 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| LNAT 150608-N-MM-PM | 6.00 | 15.00 | 15.30 | 0.80 | ● | | 0.10-0.25 |
| LNAT 150608-TN-PM | 6.00 | 15.00 | 15.30 | 0.80 | ● | | 0.10-0.25 |
| LNAT 150616-TN-PM | 6.00 | 15.00 | 15.30 | 1.60 | ● | ● | 0.10-0.25 |
| LNAT 150625-TN-PM | 6.00 | 15.00 | 15.30 | 2.50 | ● | ● | 0.10-0.25 |
| LNAT 150640-TN-PM | 6.00 | 15.00 | 15.30 | 4.00 | ● | | 0.10-0.25 |

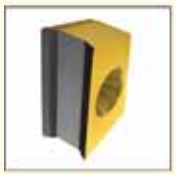
- For cutting speed recommendations, see pages 616-620

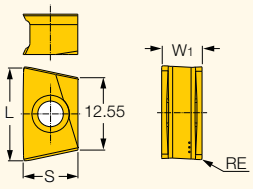
**For tools, see pages:** FDN-CAPM15 (399) • SDN-CAPM15 (408)

HELITANG

## FIN LNAT 1607PN-R

Tangentially Clamped
Peripherally Ground Inserts with
2 Positive Rake Cutting Edges
for Finishing Applications





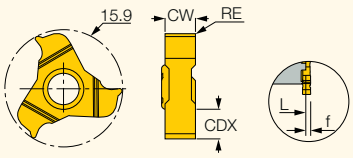

| Designation | Dimensions W1 | L | S | RE | Tough ↔ Hard IC830 | IC808 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| FIN LNAT 1607 PN-R | 7.00 | 16.10 | 9.50 | 0.30 | ● | ● | 0.08-0.15 |

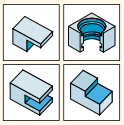
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** FIN LNK-BT (280) • FIN LNK-INT (280)

## CHAMSLIT

**TRI**
Triple-Edged Groove Milling Inserts



| Designation | Dimensions CW | CWTOL[1] | RE | CDX[2] | f | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| TRI 16RK-1.2-0.05 | 1.20 | 0.020 | 0.05 | 4.60 | 0.50 | ● | 0.02-0.08 |
| TRI 16RK-1.4-0.1 | 1.40 | 0.020 | 0.10 | 4.80 | 0.50 | ● | 0.02-0.10 |
| TRI 16RK-1.5-0.1 | 1.50 | 0.020 | 0.10 | 4.80 | 0.50 | ● | 0.03-0.12 |
| TRI 16RK-1.7-0.1 | 1.70 | 0.020 | 0.10 | 4.80 | 0.50 | ● | 0.03-0.12 |
| TRI 16RK-1.95-0.15 | 1.95 | 0.020 | 0.15 | 4.80 | 0.50 | ● | 0.04-0.15 |
| TRI 16RK-2.0-0.2 | 2.00 | 0.020 | 0.20 | 4.80 | 0.50 | ● | 0.04-0.15 |
| TRI 16RK-2.25-0.15 | 2.25 | 0.020 | 0.15 | 4.80 | 0.75 | ● | 0.04-0.15 |
| TRI 16RK-2.75-0.15 | 2.75 | 0.020 | 0.15 | 4.80 | 1.39 | ● | 0.04-0.20 |
| TRI 16RK-3.0-0.2 | 3.00 | 0.020 | 0.20 | 4.80 | 1.39 | ● | 0.04-0.20 |
| TRI 16RK-3.25-0.15 | 3.25 | 0.020 | 0.15 | 4.80 | 1.39 | ● | 0.04-0.20 |
| TRI 16RK-4.0-0.2 | 4.00 | 0.020 | 0.20 | 4.80 | 2.43 | ● | 0.05-0.25 |
| TRI 16RK-4.25-0.15 | 4.25 | 0.020 | 0.15 | 4.80 | 0.95 | ● | 0.05-0.25 |
| TRI 16RK-5.0-0.2 | 5.00 | 0.020 | 0.20 | 4.80 | 2.15 | ● | 0.05-0.30 |
| TRI 16RK-5.25-0.15 | 5.25 | 0.020 | 0.15 | 4.80 | 2.15 | ● | 0.05-0.30 |
| TRI 16RK-6.0-0.2 | 6.00 | 0.020 | 0.20 | 4.80 | 3.15 | ● | 0.05-0.30 |

• Inserts in width range of 6.0 to 6.5 mm can be supplied on request • For cutting speed recommendations, see pages 616-620

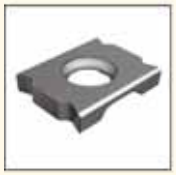
[1] Cutting width tolerance (+/-)

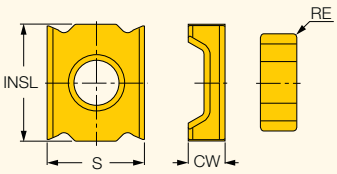
[2] Cutting depth maximum

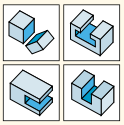
**For tools, see pages:** TRIB (377) • TRIB-SM (378)

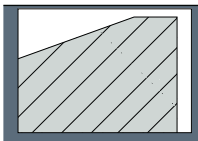
## MINI-TANGSLOT

**LNET 08**
Tangentially Clamped Inserts for Slotting and Grooving Cutters







| Designation | Dimensions INSL | S | CW | RE | CEDC | Tough ↔ Hard IC928 | IC910 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| LNET 081808-TL [1] | 8.40 | 6.85 | 1.80 | 0.80 | 2 | ● | | 0.08-0.12 |
| LNET 081808-TR [2] | 8.40 | 6.85 | 1.80 | 0.80 | 2 | ● | | 0.08-0.12 |
| LNET 081804-TN-N | 8.40 | 6.85 | 1.80 | 0.40 | 4 | ● | ● | 0.08-0.12 |
| LNET 082604-TN-N | 8.40 | 6.85 | 2.60 | 0.40 | 4 | ● | ● | 0.08-0.12 |
| LNET 082608-TN-N | 8.40 | 6.85 | 2.60 | 0.80 | 4 | ● | | 0.08-0.12 |
| LNET 082804-TN-N | 8.40 | 6.85 | 2.85 | 0.40 | 4 | ● | | 0.08-0.12 |
| LNET 083004-TN-N | 8.40 | 6.85 | 3.00 | 0.40 | 4 | ● | ● | 0.08-0.12 |
| LNET 083008-TN-N | 8.40 | 6.85 | 3.00 | 0.80 | 4 | ● | | 0.08-0.12 |
| LNET 083204-TN-N | 8.40 | 6.85 | 3.25 | 0.40 | 4 | ● | | 0.08-0.12 |
| LNET 083504-TN-N | 8.40 | 6.85 | 3.50 | 0.40 | 4 | ● | ● | 0.08-0.12 |
| LNET 083508-TN-N | 8.40 | 6.85 | 3.50 | 0.80 | 4 | ● | | 0.08-0.12 |
| LNET 083704-TN-N | 8.40 | 6.85 | 3.75 | 0.40 | 4 | ● | | 0.08-0.12 |
| LNET 084004-TN-N | 8.40 | 6.85 | 4.00 | 0.40 | 4 | ● | | 0.08-0.12 |
| LNET 084008-TN-N | 8.40 | 6.85 | 4.00 | 0.80 | 4 | ● | | 0.08-0.12 |
| LNET 084204-TN-N | 8.40 | 6.85 | 4.25 | 0.40 | 4 | ● | | 0.08-0.12 |
| LNET 084504-TN-N | 8.40 | 6.85 | 4.50 | 0.40 | 4 | ● | ● | 0.08-0.12 |

• For cutting speed recommendations, see pages 616-620

[1] Left hand insert

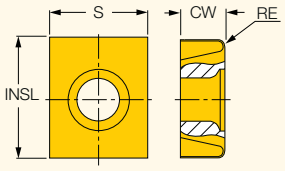
[2] Right hand insert

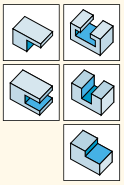
**For tools, see pages:** ETS-LN08 (382) • ETS-LN08-M (380) • ETS-LN08-MM (381) • FDN-LN08 (393) • SDN-LN08 (402)

**TANGSLOT**

## LNET 12-TN

Tangentially Clamped
Inserts with 4 Cutting Edges
for Slotting Cutters



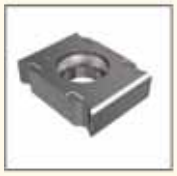
| Designation | Dimensions CW | RE | S | INSL | Tough ↔ Hard IC328 | IC928 | IC910 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| LNET 123504-TN | 3.50 | 0.40 | 9.52 | 12.70 | ● | ● | ● | 0.06-0.15 |
| LNET 123508-TN | 3.50 | 0.80 | 9.52 | 12.70 | | ● | ● | 0.06-0.15 |
| LNET 123516-TN | 3.50 | 1.60 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 123520-TN | 3.50 | 2.00 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 124004-TN | 4.00 | 0.40 | 9.52 | 12.70 | | ● | ● | 0.06-0.15 |
| LNET 124008-TN | 4.00 | 0.80 | 9.52 | 12.70 | | ● | ● | 0.06-0.15 |
| LNET 124016-TN | 4.00 | 1.60 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 124020-TN | 4.00 | 2.00 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 124504-TN | 4.50 | 0.40 | 9.52 | 12.70 | ● | ● | ● | 0.06-0.15 |
| LNET 124508-TN | 4.50 | 0.80 | 9.52 | 12.70 | ● | ● | ● | 0.06-0.15 |
| LNET 124516-TN | 4.50 | 1.60 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 124520-TN | 4.50 | 2.00 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 124804-TN | 4.76 | 0.40 | 9.52 | 12.70 | ● | ● | ● | 0.06-0.15 |
| LNET 124808-TN | 4.76 | 0.80 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 124816-TN | 4.76 | 1.60 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 124820-TN | 4.76 | 2.00 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 125004-TN | 5.00 | 0.40 | 9.52 | 12.70 | | ● | ● | 0.06-0.15 |
| LNET 125008-TN | 5.00 | 0.80 | 9.52 | 12.70 | | ● | ● | 0.06-0.15 |
| LNET 125016-TN | 5.00 | 1.60 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 125020-TN | 5.00 | 2.00 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 125504-TN | 5.50 | 0.40 | 9.52 | 12.70 | | ● | ● | 0.06-0.15 |
| LNET 125508-TN | 5.50 | 0.80 | 9.52 | 12.70 | | ● | ● | 0.06-0.15 |
| LNET 125516-TN | 5.50 | 1.60 | 9.52 | 12.70 | ● | ● | ● | 0.06-0.15 |
| LNET 125520-TN | 5.50 | 2.00 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 125708-TN | 5.75 | 0.80 | 9.52 | 12.70 | | ● | ● | 0.06-0.15 |
| LNET 125716-TN | 5.75 | 1.60 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 125720-TN | 5.75 | 2.00 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 126504-TN | 6.50 | 0.40 | 9.52 | 12.70 | | | ● | 0.06-0.15 |
| LNET 126508-TN | 6.50 | 0.80 | 9.52 | 12.70 | | | ● | 0.06-0.15 |
| LNET 126516-TN | 6.50 | 1.60 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 126520-TN | 6.50 | 2.00 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 127704-TN | 7.70 | 0.40 | 9.52 | 12.70 | | | ● | 0.06-0.15 |
| LNET 127708-TN | 7.70 | 0.80 | 9.52 | 12.70 | | | ● | 0.06-0.15 |
| LNET 127716-TN | 7.70 | 1.60 | 9.52 | 12.70 | | ● | | 0.06-0.15 |
| LNET 127720-TN | 7.70 | 2.00 | 9.52 | 12.70 | | ● | | 0.06-0.15 |

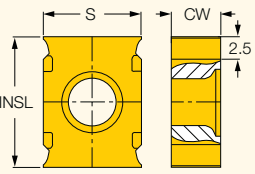
• For cutting speed recommendations, see pages 616-620

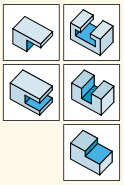
**For tools, see pages:** FDN-CALN12 (396) • FDN-LN12 (394) • SDN-CALN12 (404) • SDN-LN12 (403)

## TANGSLOT

**LNET 12-TN-MM**
Tangentially Clamped Inserts with 4 Cutting Edges for Milling Deep and Long Slots on Steel





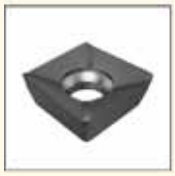
| Designation | Dimensions CW | S | INSL | IC928 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|
| LNET 123508-TN-MM | 3.50 | 9.52 | 12.70 | ● | 0.06-0.15 |
| LNET 124008-TN-MM | 4.00 | 9.52 | 12.70 | ● | 0.06-0.15 |
| LNET 124508-TN-MM | 4.50 | 9.52 | 12.70 | ● | 0.06-0.15 |
| LNET 124808-TN-MM | 4.77 | 9.52 | 12.70 | ● | 0.06-0.15 |
| LNET 125008-TN-MM | 5.00 | 9.52 | 12.70 | ● | 0.06-0.15 |
| LNET 125508-TN-MM | 5.50 | 9.52 | 12.70 | ● | 0.06-0.15 |
| LNET 126504-TN-MM | 6.50 | 9.52 | 12.70 | ● | 0.06-0.15 |
| LNET 126508-TN-MM | 6.50 | 9.52 | 12.70 | ● | 0.06-0.15 |
| LNET 127704-TN-MM | 7.70 | 9.52 | 12.70 | ● | 0.06-0.15 |
| LNET 127708-TN-MM | 7.70 | 9.52 | 12.70 | ● | 0.06-0.15 |

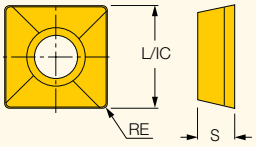
• Excellent chip evacuation • For cutting speed recommendations, see pages 616-620

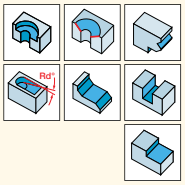
**For tools, see pages:** FDN-CALN12 (396) • FDN-LN12 (394) • SDN-CALN12 (404) • SDN-LN12 (403)

## HELIQUAD

**SOMT-HQ**
Square Milling Inserts for General Use



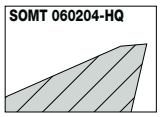


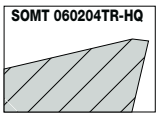



| Designation | Dimensions L | S | RE | Tough ↔ Hard IC28 | IC328 | IC928 | IC250 | IC950 | IC908 | IC30N | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOMT 060204-HQ | 6.16 | 2.56 | 0.40 | ● | ● | ● | ● | ● | ● | | | 0.80-5.80 | 0.07-0.10 |
| SOMT 060204TR-HQ | 6.16 | 2.56 | 0.40 | | | | | | | ● | ● | 0.80-5.80 | 0.08-0.12 |

• For cutting speed recommendations, see pages 616-620

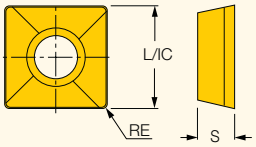
**For tools, see pages:** E45X (53) • E90X (20) • E90XC (50)

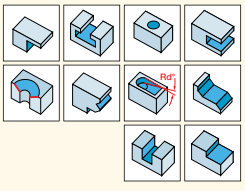



## QUAD2000

**QOMT-HQ**
Insert with 4 Right- or Left-Hand Cutting Edges for General Use



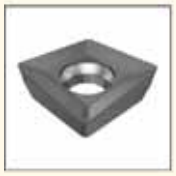
| Designation | Dimensions L | S | RE | Tough ↔ Hard IC328 | IC928 | IC950 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| QOMT 060208TN-HQ | 6.16 | 2.56 | 0.80 | ● | ● | ● | ● | 1.20-5.80 | 0.08-0.12 |

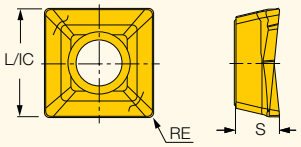
• For cutting speed recommendations, see pages 616-620

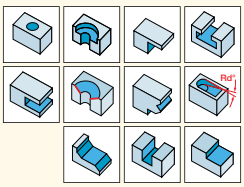
**For tools, see pages:** E45X (53) • E90X (20) • ETS (389) • FDN (390) • FDN-CF4 (395) • SDN (401)

HELiQUAD

**XOMT-HQ**
Square Inserts for Milling, Drilling and Boring with 2 Right- and 2 Left-Hand Cutting Edges for General Use



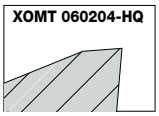


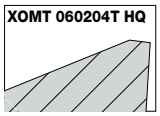



| Designation | Dimensions L | S | RE | Tough ↔ Hard IC28 | IC328 | IC928 | IC250 | IC950 | IC908 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XOMT 060204-HQ | 6.16 | 2.56 | 0.40 | ● | ● | ● | ● | ● | ● | | 0.80-5.80 | 0.07-0.10 |
| XOMT 060204T-HQ | 6.16 | 2.56 | 0.40 | | | | | | | ● | 0.80-5.80 | 0.10-0.15 |

• For cutting speed recommendations, see pages 616-620

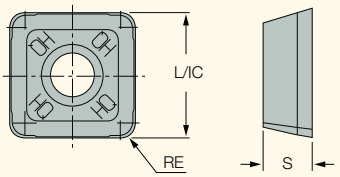
**For tools, see pages:** E45X (53) • E90X (20) • E90XC (50) • ETS (389) • FDN (390) • FDN-CF4 (395) • SDN (401)

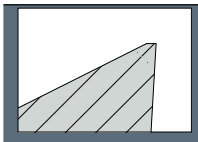



QUAD2000

**QPMR 1004-HQ-M**
Super Positive Square Milling Inserts for Machining Aluminum, Stainless Steel and High Temperature Alloys





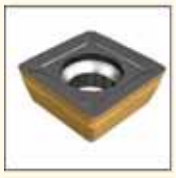
| Designation | Dimensions L | S | RE | Tough ↔ Hard IC28 | IC330 | IC328 | IC830 | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| QPMR 100404PDN-HQ-M | 10.35 | 4.48 | 0.40 | ● | ● | ● | ● | ● | 0.80-9.60 | 0.08-0.15 |

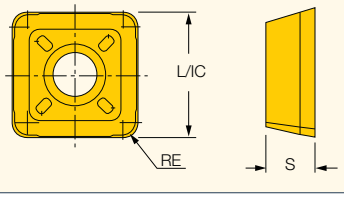
• Performs 90° Milling limited to a 2mm depth of cut • For cutting speed recommendations, see pages 616-620

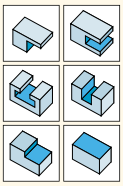
**For tools, see pages:** E90SP (28) • F90SP-10 (234) • SPK (279)

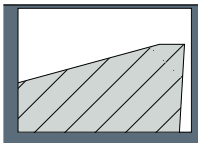
QUAD2000

**QPMT 100408PDTN**
Neutral Insert with Reinforced Land for Slotting







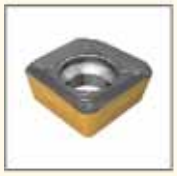
| Designation | Dimensions L | S | RE | Tough ↔ Hard IC330 | IC328 | IC830 | IC928 | IC950 | IC810 | IC910 | IC5400 | IC5600 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QPMT 100408PDTN-M | 10.35 | 4.12 | 0.70 | ● | ● | ● | ● | ● | ● | ● | ● | ● | 1.10-9.60 | 0.08-0.15 |

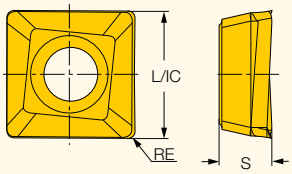
• For cutting speed recommendations, see pages 616-620

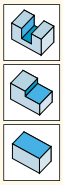
**For tools, see pages:** E90SP (28) • F90SP-10 (234) • FDN (390) • FST (409) • SDN (401) • SPK (279) • SSB (410)

HELiQUAD

**SPMT-HQ**
Square Positive Inserts for
Right-Hand Tools for General Use



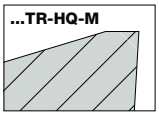


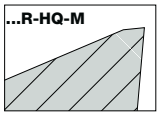



| Designation | Dimensions L | S | RE | Tough ↔ Hard IC330 | IC328 | IC830 | IC928 | IC950 | IC808 | IC810 | IC910 | IC5400 | IC5600 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPMT 100404R-HQ-M | 10.20 | 4.23 | 0.40 | ● | ● | ● | ● | | | ● | ● | | | | 0.80-9.60 | 0.08-0.20 |
| SPMT 100408R-HQ-M | 10.20 | 4.23 | 0.60 | ● | ● | ● | ● | ● | | ● | ● | | | | 1.00-9.60 | 0.08-0.20 |
| SPMT 100412R-HQ-M | 10.20 | 4.23 | 1.20 | | | ● | | | | | | | | | 1.60-9.60 | 0.08-0.20 |
| SPMT 100416R-HQ-M | 10.20 | 4.23 | 1.60 | | ● | ● | | | | | | | | | 2.00-9.60 | 0.08-0.20 |
| SPMT 100420R-HQ-M | 10.20 | 4.23 | 2.00 | | | ● | | | | | | | | | 2.40-9.60 | 0.08-0.20 |
| SPMT 100408TR-HQ-M | 10.20 | 4.23 | 0.80 | ● | | ● | | ● | ● | ● | | ● | ● | ● | 1.20-9.60 | 0.08-0.20 |

• For cutting speed recommendations, see pages 616-620

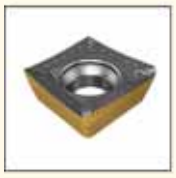
**For tools, see pages:** E90SP (28) • F90SP-10 (234) • SPK (279) • SSB (410)

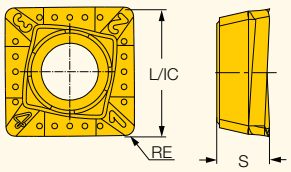


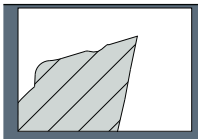




HELiQUAD

**SPMT-HP**
High Positive Inserts for
Machining Stainless Steel and
High Temperature Alloys







| Designation | Dimensions L | S | RE | Tough ↔ Hard IC716 | IC840 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| SPMT 100408R-HP | 10.20 | 4.23 | 0.80 | ● | ● | 1.20-9.60 | 0.08-0.20 |

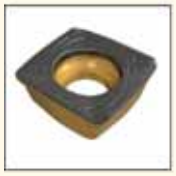
New

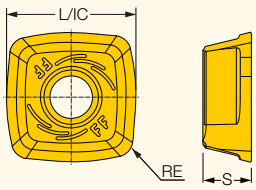
• For cutting speed recommendations, see pages 616-620

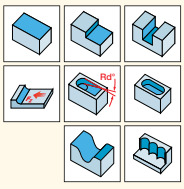
**For tools, see pages:** E90SP (28) • F90SP-10 (234) • SPK (279) • SSB (410)

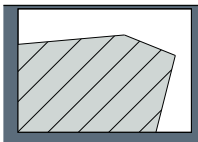
HELiQUAD

**SPMT-FF**
Insert with 4 Cutting Edges
for Fast Feed Milling







| Designation | Dimensions L | S | RE | Rg(1) | Tough ↔ Hard IC808 | IC5600 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| SPMT 1004R15T-FF | 6.00 | 3.56 | 1.50 | 2.00 | ● | ● | 0.10-1.40 |

New

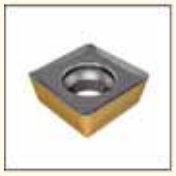
• For cutting speed recommendations, see pages 616-620

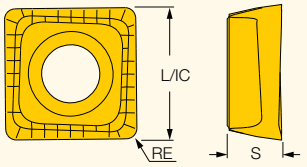
(1) Radius for programming

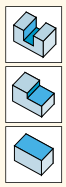
**For tools, see pages:** E90SP (28) • F90SP-10 (234)

HELIQUAD

**SPCT/SPMR PDR**
Precision Insert Used for Semi-Finishing and Finishing Applications





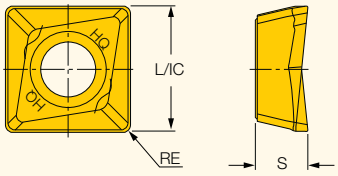
| Designation | Dimensions L | S | RE | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|
| SPCT 100408PDR | 10.20 | 4.13 | 0.80 | • | 1.20-9.60 | 0.08-0.12 |
| SPMR 100408PDR | 10.20 | 4.13 | 0.80 | • | 1.20-9.60 | 0.05-0.10 |

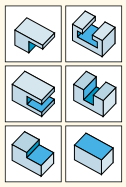
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** E90SP (28) • F90SP-10 (234) • SPK (279) • SSB (410)

HELIQUAD

**XPMT-HQ**
Insert with 2 Right- or Left-Hand Cutting Edges with Positive Land



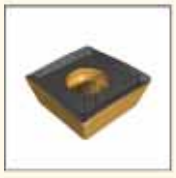
| Designation | Dimensions L | S | RE | Tough ↔ Hard IC28 | IC328 | IC928 | IC950 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| XPMT 100408-HQ | 10.20 | 4.12 | 0.60 | • | • | • | • | • | 1.00-9.60 | 0.07-0.12 |

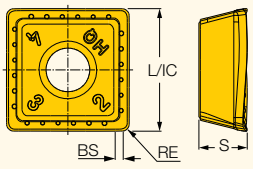
• For cutting speed recommendations, see pages 616-620

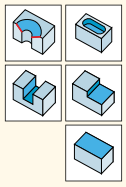
**For tools, see pages:** E90AC (50) • E90SP (28) • ETS (389) • F90SP-10 (234) • FDN (390) • FST (409) • SDN (401) • SPK (279) • SSB (410)

HELIQUAD

**SDMT-PDR-HQ**
General Use Inserts with Four Helical Cutting Edges for 90° Shoulder Milling





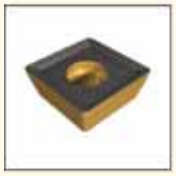
| Designation | Dimensions L | S | RE | BS | Tough ↔ Hard IC28 | IC330 | IC328 | IC845 | IC830 | IC928 | IC5500 | IC4050 | IC950 | IC808 | IC908 | IC810 | IC910 | IC5400 | IC5600 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SDMT 1205PDR-HQ-HS | 12.60 | 5.40 | 0.60 | 0.80 | | | | | • | | | | | | | | | | | 1.00-11.80 | 0.08-0.15 |
| SDMT 1205PDR-HQ-M | 12.70 | 5.00 | 0.80 | 1.60 | | | | | | | • | | • | | | • | • | | | 1.20-11.80 | 0.08-0.15 |
| SDMT 1205PDR-HQ-MM | 12.70 | 5.00 | 0.80 | 0.80 | • | • | • | • | • | • | | • | | • | • | | | • | • | 1.20-11.80 | 0.07-0.20 |

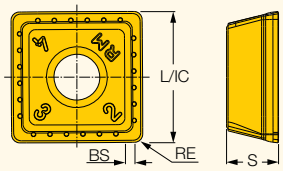
• For cutting speed recommendations, see pages 616-620

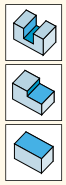
**For tools, see pages:** F90SD-12 (241) • SDK-12-C/HP (291)

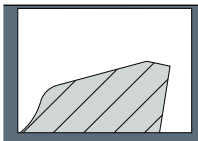
HELIQUAD

**SDMT-PDR-RM**
Insert with Helical Cutting Edges for 90° Shoulder Milling







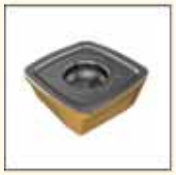
| Designation | Dimensions L | S | RE | BS | Tough ↔ Hard IC328 | IC830 | IC928 | IC808 | IC910 | IC5400 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SDMT 1205PDN-RM-M | 12.70 | 5.00 | 0.80 | 1.60 | | | | | ● | | 1.20-11.80 | 0.08-0.15 |
| SDMT 1205PDR-RM-MM | 12.70 | 5.00 | 0.80 | 1.60 | ● | ● | ● | ● | | ● | 1.20-11.80 | 0.07-0.20 |
| SDMT 120516PDR-RM-MM | 12.70 | 5.00 | 1.60 | 0.80 | | ● | | ● | | | 2.00-11.80 | 0.07-0.20 |

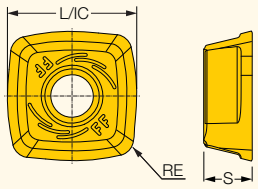
• For cutting speed recommendations, see pages 616-620

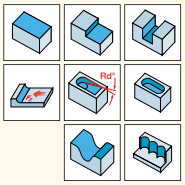
**For tools, see pages:** F90SD-12 (241) • SDK-12-C/HP (291)

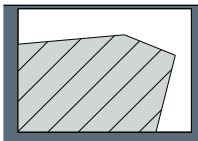
HELIQUAD

**SDMT-FF**
Insert with 4 Cutting Edges for Fast Feed Milling







| Designation | Dimensions L | S | RE | Rg(1) | Tough ↔ Hard IC808 | IC5600 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| SDMT 1205R16T-FF | 13.70 | 5.10 | 1.60 | 2.60 | ● | ● | 0.10-1.40 |

**New**

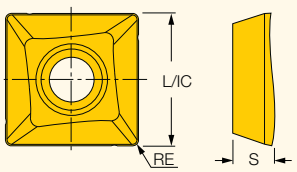
• For cutting speed recommendations, see pages 616-620

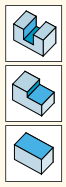
(1) Radius for programming

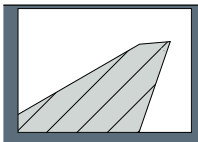
**For tools, see pages:** F90SD-12 (241)

HELIQUAD

**SDMR-HQ**
Super Positive Square Insert for Aluminum, Stainless Steel and High Temperature Alloys





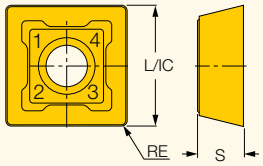
| Designation | Dimensions L | S | RE | Tough ↔ Hard IC28 | IC330 | IC328 | IC840 | IC830 | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SDMR 1205PDR-HQ-M | 12.70 | 5.10 | 1.00 | ● | ● | ● | ● | ● | ● | 1.40-11.80 | 0.07-0.12 |

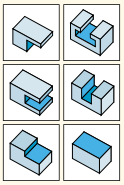
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90SD-12 (241)

HELiQUAD

**QDCT-PDN**
Precision Ground Neutral insert for General Use



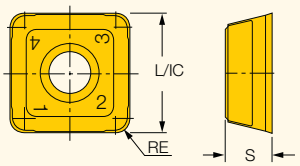
| Designation | Dimensions L | S | RE | Tough ↔ Hard IC330 | IC328 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| QDCT 120508-PDN | 12.70 | 4.92 | 0.80 | • | | 1.20-11.80 | 0.08-0.12 |
| QDCT 120516-PDN | 12.70 | 4.92 | 1.60 | | • | 2.00-11.80 | 0.08-0.12 |
| QDCT 120524-PDN | 12.70 | 4.92 | 2.40 | | • | 2.80-11.80 | 0.08-0.12 |
| QDCT 120532-PDN | 12.70 | 4.92 | 3.20 | | • | 3.60-11.80 | 0.08-0.12 |
| QDCT 120508-PDN-F | 12.70 | 4.92 | 0.80 | | • | 1.20-11.80 | 0.08-0.12 |
| QDCT 120516-PDN-F | 12.70 | 4.92 | 1.60 | • | | 2.00-11.80 | 0.08-0.12 |
| QDCT 120524-PDN-F | 12.70 | 4.92 | 2.40 | • | | 2.80-11.80 | 0.08-0.12 |
| QDCT 120532-PDN-F | 12.70 | 4.92 | 3.20 | • | | 3.60-11.80 | 0.08-0.12 |

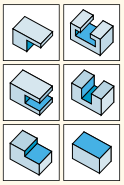
• Inserts with corner radii larger than 0.8 mm should be used only on the face of the SDK cutter • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90SD-12 (241) • FDN (390) • FST (409) • SDK-12-C/HP (291) • SDN (401) • SSB (410)

HELiQUAD

**QDMT 1205..PDTN-M**
Neutral Inserts for Slotting



| Designation | Dimensions L | S | RE | Tough ↔ Hard IC330 | IC328 | IC830 | IC928 | IC950 | IC808 | IC908 | IC810 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QDMT 1205PDTN-M | 12.70 | 5.00 | 0.80 | • | • | • | • | | • | • | • | • | 1.20-11.80 | 0.07-0.20 |
| QDMT 120516PDTN-M | 12.70 | 5.00 | 1.60 | • | • | • | • | • | | • | • | • | 2.00-11.80 | 0.07-0.20 |
| QDMT 120520PDTN-M | 12.70 | 5.00 | 2.00 | • | • | • | • | • | • | • | • | • | 2.40-11.80 | 0.07-0.20 |
| QDMT 120524PDTN-M | 12.70 | 5.00 | 2.40 | • | • | • | • | • | | • | | • | 2.80-11.80 | 0.07-0.20 |
| QDMT 120532PDTN-M | 12.70 | 5.00 | 3.20 | • | • | • | • | | | • | • | • | 3.60-11.80 | 0.07-0.20 |

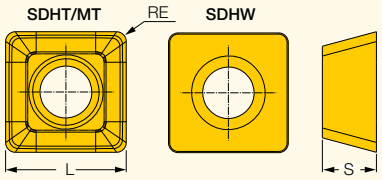
• Inserts with corner radii larger than 0.8 mm should be used only on the face of the SDK cutter • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F90SD-12 (241) • FDN (390) • FST (409) • SDK-12-C/HP (291) • SDN (401) • SSB (410)

XQUAD EXTENDED FLUTE

## SDHT/HW/MT 1004

Square Inserts for General Use Applications Carried On SDK Extended Flute Cutters.




| Designation | Dimensions L | S | RE | Tough ↔ Hard IC882 | IC328 | IC716 | IC5820 | IC380 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| SDMT 100408-PDEN (1) | 10.00 | 4.50 | 0.80 | | ● | | | | 0.08-0.15 |
| SDHT 100408-PDEN (2) | 10.00 | 4.50 | 0.80 | ● | | | ● | | 0.05-0.10 |
| SDHW 100408-TN (3) | 10.00 | 4.50 | 0.80 | ● | | ● | ● | ● | 0.05-0.12 |
| SDHW 100408-TN-CS (4) | 10.00 | 4.50 | 0.80 | | | | ● | | 0.05-0.12 |
| SDHW 100440-TN | 10.00 | 4.50 | 4.00 | | | | ● | | 0.05-0.12 |

- For cutting speed recommendations, see pages 616-620

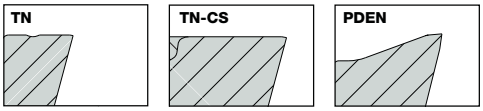
(1) First choice for machining steels

(2) First choice for machining stainless steel

(3) First choice for machining titanium

(4) Chip splitting cutting edge

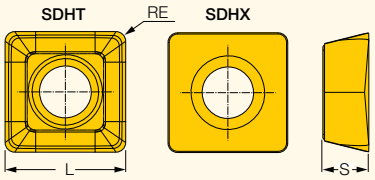
**For tools, see pages:** SDK-10-C/HP (290)




XQUAD EXTENDED FLUTE

## SDHT/X 120508

Square Inserts for Machining Titanium, High Temperature Alloys and Stainless Steel



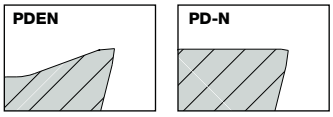

| Designation | Dimensions L | S | RE | Tough ↔ Hard IC882 | IC716 | IC5820 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| SDHT 120508-PDEN (1) | 12.70 | 4.90 | 0.80 | | | ● | 0.05-0.15 |
| SDHX 120508-PD-N (2) | 12.70 | 4.94 | 0.80 | ● | ● | ● | 0.05-0.15 |

- For cutting speed recommendations, see pages 616-620

(1) First choice for machining stainless steel

(2) First choice for machining titanium

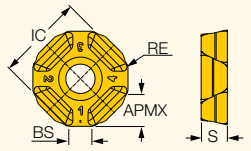
**For tools, see pages:** SDK-12-C/HP (291)

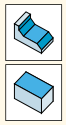


DOVEIQMILL 845 LINE

## IQ845 SYHU-05

Square Inserts with 8 Cutting Edges



| Designation | Dimensions APMX | BS | RE | IC | S | Tough ↔ Hard IC330 | IC830 | IC808 | IC810 | IC5400 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IQ845 SYHU 0503ADN-ML (1) | 2.60 | 2.00 | 0.80 | 8.30 | 3.00 | ● | ● | | | | | 0.10-2.60 | 0.08-0.25 |
| IQ845 SYHU 0503ADN-MM (2) | 2.60 | 2.00 | 0.80 | 8.30 | 3.00 | | ● | ● | | ● | | 0.10-2.60 | 0.08-0.25 |
| IQ845 SYHU 0503ADTN (3) | 2.60 | 2.00 | 0.80 | 8.30 | 3.00 | | | | ● | | ● | 0.10-2.60 | 0.08-0.25 |

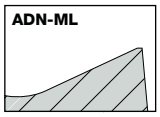
• For cutting recommendations, see pages 616-620

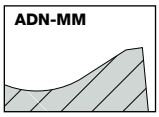
(1) For soft non-alloy and low-alloy steel

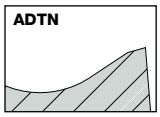
(2) For general applications

(3) For cast iron

**For tools, see pages:** IQ845 ESY-R05 (257) • IQ845 FSY-R05 (258)



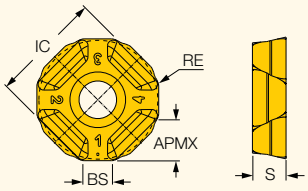



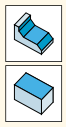




DOVEIQMILL 845 LINE

## IQ845 SYHU-07

Square Inserts with 8 Cutting Edges



| Designation | Dimensions APMX | BS | RE | IC | S | Tough ↔ Hard IC882 | IC28 | IC330 | IC840 | IC830 | IC5500 | IC808 | IC810 | IC5400 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IQ845 SYHU 0704ADN (1) | 4.60 | 3.40 | 0.80 | 13.80 | 4.20 | | | ● | ● | ● | ● | | | | | 1.00-4.00 | 0.10-0.20 |
| IQ845 SYHU 070400ADN (1) | 4.60 | 3.40 | - | 13.80 | 4.20 | | | | | ● | | | | | | 0.20-2.00 | 0.10-0.20 |
| IQ845 SYHU 070400AD | 4.60 | 3.40 | - | 13.80 | 4.20 | ● | | | | | | | | | | 0.20-2.00 | 0.10-0.20 |
| IQ845 SYHU 0704ADN-MM (2) | 4.60 | 3.40 | 0.80 | 13.80 | 4.20 | | | | | ● | | ● | | ● | | 1.00-4.00 | 0.15-0.30 |
| IQ845 SYHU 070400N-MM (2) | 4.60 | 3.40 | - | 13.80 | 4.20 | | | | | ● | | | | | | 0.20-2.00 | 0.15-0.30 |
| IQ845 SYHU 0704ADTN (3) | 4.60 | 3.40 | 0.80 | 13.80 | 4.20 | | | | | | | | ● | | ● | 1.00-4.00 | 0.15-0.30 |
| IQ845 SYHU 070400ADTN (3) | 4.60 | 3.40 | - | 13.80 | 4.20 | | | | | | | | ● | | ● | 0.20-2.00 | 0.15-0.30 |
| IQ845 SYHU 0704ADN-P (4) | 4.60 | 3.40 | 0.80 | 13.80 | 4.20 | | ● | | | | | | | | | 1.00-4.00 | 0.10-0.25 |

• For cutting recommendations, see pages 616-620

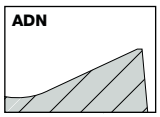
(1) For stainless steel and high temperature alloys

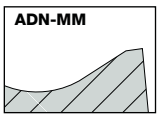
(2) For general applications

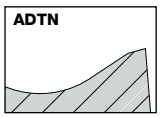
(3) For cast iron

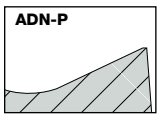
(4) For aluminum

**For tools, see pages:** IQ845 FSY-C#-R07 (264) • IQ845 FSY-R07 (264)



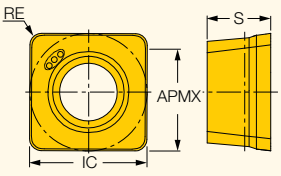



HELI4MILL

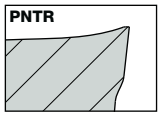
**SOMT/CT 0402**
Square Milling Inserts
for General Use

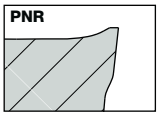


| Designation | Dimensions APMX | RE | IC | S | Tough ↔ Hard IC830 | IC808 | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| **SOCT 040204 PNR** | 3.50 | 0.40 | 4.07 | 2.20 | ● | ● | | 0.50-3.50 | 0.04-0.10 |
| **SOMT 040204 PNTR** | 3.50 | 0.40 | 4.07 | 2.20 | ● | ● | ● | 0.50-3.50 | 0.04-0.10 |
| **SOMT 040208 PNTR** | 3.50 | 0.80 | 4.07 | 2.20 | | ● | | 1.10-3.50 | 0.04-0.10 |
| **SOMT 040212 PNTR** | 3.50 | 1.20 | 4.07 | 2.20 | | ● | | 1.50-3.50 | 0.04-0.10 |

• For cutting speed recommendations, see pages 616-620 • For left or right hand machining

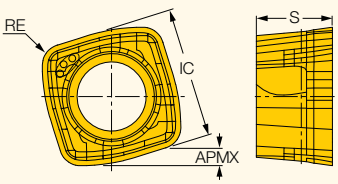
**For tools, see pages:** E90SO-04 (13) • E90SO-MM-04 (13)

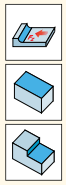


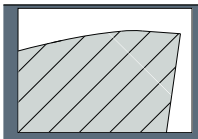




HELI4MILL

**SOMT 0402-FF**
Square Milling Inserts
for Fast Feed Milling





| Designation | Dimensions IC | APMX | RE | Rg(1) | S | Tough ↔ Hard IC830 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| **SOMT 040208 PNR-FF** | 4.08 | 0.50 | 0.80 | 1.10 | 2.20 | ● | ● | 0.10-0.50 | 0.10-0.50 |

• For cutting speed recommendations, see pages 616-620

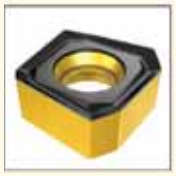
(1) Radius for programming

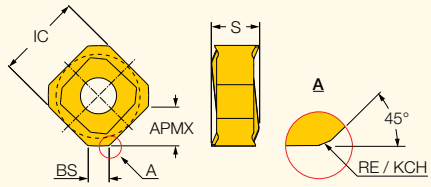
**For tools, see pages:** E90SO-04 (13) • E90SO-MM-04 (13)

HELIDO 800 LINE

## S845 SNMU/SNHU-13

Double-Sided Square Inserts with 8 Cutting Edges






| Designation | Dimensions IC | APMX | S | BS | RE | KCH | Tough ↔ Hard IC330 | IC830 | IC5500 | IC808 | IC810 | IC5400 | DT7150 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S845 SNMU 1305ANTR (1) | 13.00 | 6.00 | 6.20 | 3.00 | 0.80 | - | | | | | ● | | ● | ● | 2.00-6.00 | 0.20-0.40 |
| S845 SNMU 1305ANR-MM | 13.00 | 6.00 | 6.20 | 3.00 | 0.80 | - | ● | ● | | ● | | ● | | | 2.00-6.00 | 0.20-0.40 |
| S845 SNMU 1305ANR-RM | 13.00 | 6.00 | 6.12 | 3.00 | 1.20 | - | | | | | ● | | | | 2.00-6.00 | 0.20-0.40 |
| S845 SNHU 1305ANTR (1) | 13.00 | 6.00 | 6.20 | 3.00 | 0.80 | - | | | | | ● | | | | 2.00-6.00 | 0.15-0.30 |
| S845 SNHU 1305ANR-MM | 13.00 | 6.00 | 6.20 | 3.00 | 0.80 | - | ● | ● | ● | ● | | ● | | | 2.00-6.00 | 0.15-0.30 |
| S845 SNHU 1305ANR-PL (2) | 13.00 | 6.00 | 6.00 | 2.20 | - | 45.0 (3) | ● | ● | | | | | | | 2.00-6.00 | 0.15-0.30 |

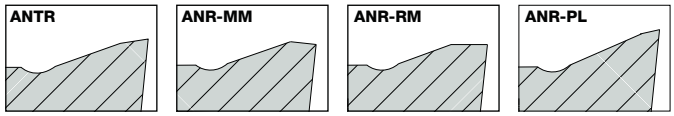
• S845 SNHU - Precision ground • S845 SNMU - Utility • For cutting speed recommendations, see pages 616-620

(1) For cast iron

(2) For high temperature alloys and stainless steel

(3) See drawing A

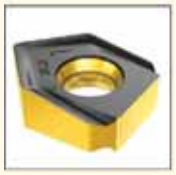
**For tools, see pages:** FF SOF (355) • SOE45 8/16 (52) • SOF45 (260)

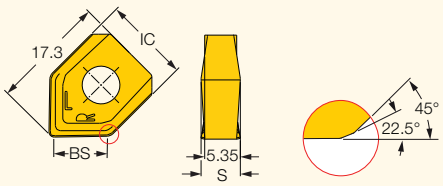



HELIDO 800 LINE

## S845 SNHU 1305-W

Double-Sided Wiper Inserts with 4 Cutting Edges






| Designation | Dimensions IC | S | BS | Tough ↔ Hard IC808 | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| S845 SNHU 1305AN-N-W | 13.00 | 5.90 | 8.10 | ● | ● | 0.80-3.00 | 0.10-0.20 |

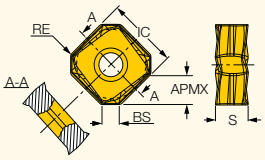
• Wiper insert with 4 cutting edges: 2 right- and 2 left-hand to be used with S845 SNMU/SNHU 13.. inserts • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** SOE45 8/16 (52) • SOF45 (260)

HELIDO 845 LINE

## S845 SXMU/SXCU-16

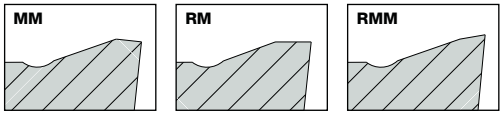
Square Thick Inserts with 8 Helical Right-Hand Cutting Edges




| Designation | Dimensions L | S | BS | RE | APMX | Tough ↔ Hard IC330 | IC328 | IC830 | IC928 | IC808 | IC908 | IC810 | IC910 | IC5400 | DT7150 | IC5100 | IC4100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S845 SXMU 1606ADTR-MM | 16.35 | 7.45 | 2.84 | 0.80 | 7.15 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 3.00-7.00 | 0.30-0.50 |
| S845 SXMU 1606ADTR-RM | 16.35 | 7.45 | 2.84 | 0.80 | 7.15 | | | | | | | ● | | | ● | | | 3.00-7.00 | 0.30-0.50 |
| S845 SXCU 160608AD-RMM | 16.35 | 7.45 | 2.84 | 0.80 | 7.15 | ● | | ● | | ● | | | | | | | | 3.00-7.00 | 0.20-0.35 |

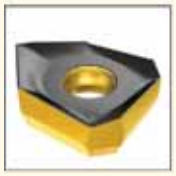
• When a wiper insert is being used, recommended $a_p$=0.8-3.0 mm, $f_z$=0.1-0.25 mm/t . • For cutting speed recommendations, see pages 616-620

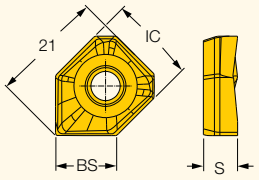
**For tools, see pages:** S845 F45SX-16 (265)

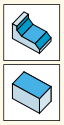


HELIDO 845 LINE

**S845 SXHU 1606-W**
HELI-DO Wiper Insert with a Single Cutting Edge





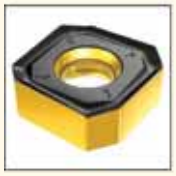
| Designation | Dimensions IC | S | BS | APMX | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| S845 SXHU 1606AD-R-W | 16.20 | 6.44 | 10.00 | 3.00 | ● | 0.80-3.00 | 0.20-0.35 |

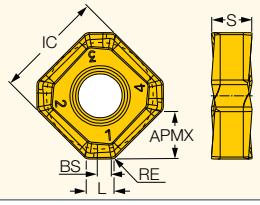
• When a wiper insert is being used, recommended $a_p$=0.8-3.0 mm, $f_z$=0.1-0.25 mm/t • For cutting speed recommendations, see pages 616-620

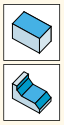
**For tools, see pages:** S845 F45SX-16 (265)

HELIDO 800 HD LINE

**S845 SNMU/SNHU 1806**
Square Inserts with 8 Helical Right-Hand Cutting Edges



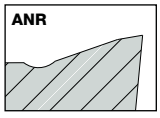


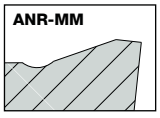



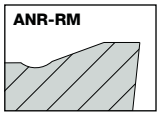
| Designation | Dimensions IC | BS | CW | RE | APMX | S | Tough ↔ Hard IC330 | IC845 | IC830 | IC808 | IC810 | IC5400 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S845 SNMU 1806ANR | 18.80 | 2.40 | 3.50 | 1.00 | 8.00 | 7.00 | | | | | ● | | | 1.50-8.00 | 0.15-0.30 |
| S845 SNMU 1806ANR-MM | 18.80 | 2.40 | 3.50 | 1.00 | 8.00 | 7.00 | ● | ● | ● | ● | | ● | | 1.50-8.00 | 0.15-0.30 |
| S845 SNMU 1806ANR-RM | 18.80 | 2.30 | 3.50 | 1.60 | 8.00 | 7.00 | | | | | ● | | ● | 1.50-8.00 | 0.20-0.40 |
| S845 SNHU 1806ANR | 18.80 | 2.40 | 3.50 | 1.00 | 8.00 | 7.00 | | | | | ● | | ● | 1.50-8.00 | 0.15-0.30 |
| S845 SNHU 1806ANR-MM | 18.80 | 2.40 | 3.50 | 1.00 | 8.00 | 7.00 | | | ● | | | | | 1.50-8.00 | 0.15-0.30 |
| S845 SNMU 1806ANR-HP | 18.00 | 2.40 | 3.50 | 1.00 | 8.00 | 7.00 | ● | | ● | | | | | 1.50-8.00 | 0.15-0.30 |

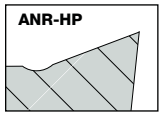
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** SOF45-R18 (267)



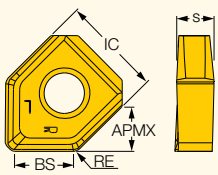



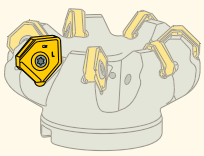




HELIDO 845 LINE

**S845 SNHU 1806AN-N-W**
Wiper Insert with 2 R.H. and 2 L.H. Cutting Edges



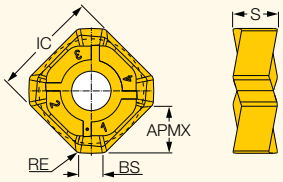
| Designation | Dimensions IC | S | BS | APMX | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| S845 SNHU 1806AN-N-W | 18.80 | 7.00 | 10.00 | 8.00 | ● | 0.50-2.00 | 0.10-0.25 |

**For tools, see pages:** SOF45-R18 (267)

HELIDO 800 HD LINE

## S845 SNMU 2608

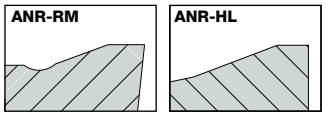
Heavy Duty Thick Square Inserts with 8 Helical Right-Hand Cutting Edges




| Designation | Dimensions IC | BS | RE | APMX | S | Tough ↔ Hard IC830 | IC808 | IC810 | IC5400 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S845 SNMU 2608ANR-HL | 26.30 | 2.60 | 1.60 | 11.00 | 10.90 | | | ● | | 2.00-11.00 | 0.25-0.40 |
| S845 SNMU 2608ANR-RM | 26.30 | 2.60 | 1.60 | 11.00 | 10.90 | ● | ● | | ● | 2.00-11.00 | 0.25-0.40 |

- For cutting speed recommendations, see pages 616-620

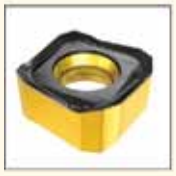
**For tools, see pages:** SOF45-26 (266) • SOF45WG-R26 (266)

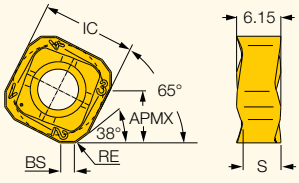



HELIDO 865 LINE

## S865 SNMU 1305ZNTR

Double-Sided Square Inserts with 8 Cutting Edges

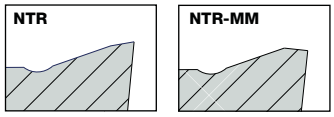





| Designation | Dimensions L | S | APMX | BS | RE | Tough ↔ Hard IC330 | IC830 | IC808 | IC810 | IC5400 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S865 SNMU 1305ZNTR | 13.00 | 5.50 | 8.00 | 2.00 | 0.50 | | | | ● | | ● | 2.00-6.00 | 0.15-0.25 |
| S865 SNMU 1305ZNTR-MM | 13.00 | 5.50 | 8.00 | 2.00 | 0.50 | ● | ● | ● | ● | ● | | 2.00-6.00 | 0.15-0.25 |

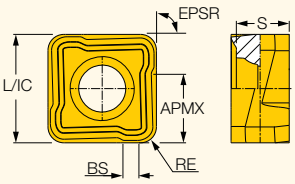
- Recommended $a_p$ max on steel applications with coarse pitch cutters and cast iron with fine pitch cutters may be increased by up to 8 mm
- For cutting speed recommendations, see pages 616-620

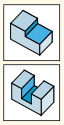
**For tools, see pages:** S865 FSN-13 (255)



NEODO S90° LINE

**S890 SZMU-0804PN**
Double-Sided Square Inserts
with 8 Cutting Edges

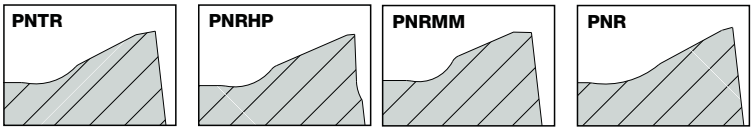


| Designation | Dimensions IC | S | APMX | BS | RE | EPSR | Tough ↔ Hard IC882 | IC845 | IC830 | IC808 | IC810 | IC5400 | IC5600 | IC5100 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **S890 SZMU 080408PNTR** | 8.20 | 4.00 | 5.00 | 1.60 | 0.80 | 88.4 | | | | | ● | | | ● | 0.10-0.25 |
| **S890 SZMU 080412PNTR** | 8.20 | 4.00 | 5.00 | 1.20 | 1.20 | 88.4 | | | | | ● | | | ● | 0.12-0.25 |
| **S890 SZMU 080408PNRMM** | 8.20 | 4.00 | 5.00 | 1.60 | 0.80 | 88.4 | | | ● | ● | | | ● | | 0.08-0.20 |
| **S890 SZMU 080412PNRMM** | 8.20 | 4.00 | 5.00 | 1.20 | 1.20 | 88.4 | | ● | ● | ● | | ● | ● | | 0.10-0.25 |
| **S890 SZMU 080408PNRHP** | 8.20 | 4.00 | 5.00 | 1.60 | 0.80 | 88.4 | | | ● | | | | | | 0.08-0.20 |
| **S890 SZHU 080408PNR** | 8.20 | 4.00 | 5.00 | 1.60 | 0.80 | 88.4 | ● | | | | | | | | 0.08-0.20 |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** S890 ESZ-MMT15-R08 (19) • S890 ESZ-R08 (18) • S890 FSZ-R08 (228)




**When stepdown milling is performed using passes, the depth of cut per pass should not exceed the depth of cut recommended in the ISCAR catalog.**

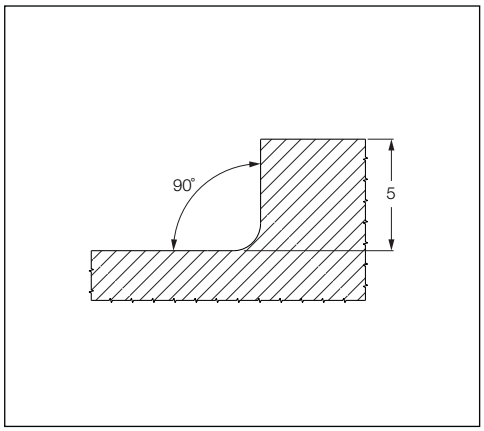



Fig. 1- Generated profile for a depth of cut of up to 5 mm

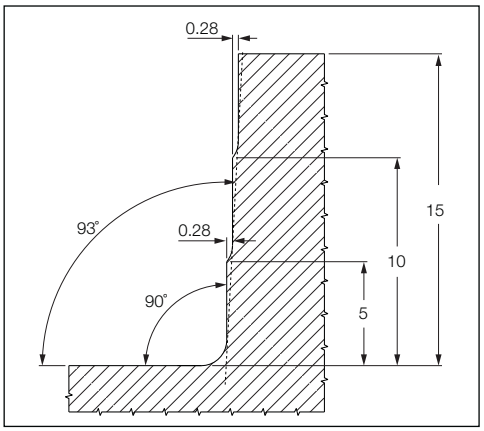
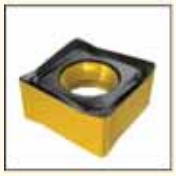


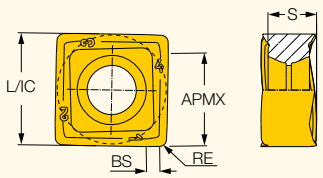

Fig. 2- Generated profile for a depth of cut in stepdown milling

HELIDO 890 LINE

## S890 SNMU 1305PN

Double-Sided Square Inserts
with 8 Cutting Edges



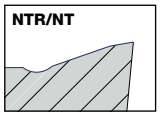


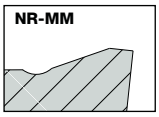

| Designation | Dimensions IC | S | APMX | BS | RE[5] | Tough ↔ Hard IC330 | IC830 | IC808 | IC810 | IC5400 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S890 SNMU 1305PNTR [1] | 13.00 | 5.60 | 9.00 | 1.80 | 0.80 | ● | ● | ● | ● | ● | ● | 2.00-9.00 | 0.10-0.20 |
| S890 SNMU 1305PNTN [2] | 13.00 | 5.70 | 9.00 | 1.80 | 0.80 | | | ● | ● | | | 2.00-9.00 | 0.10-0.20 |
| S890 SNMU 1305PNR-MM [3] | 13.00 | 5.60 | 9.00 | 1.80 | 0.80 | | ● | ● | | | ● | 2.00-9.00 | 0.18-0.30 |
| S890 SNHU 1305PN-R-W [4] | 13.00 | 5.15 | 5.00 | 10.40 | 0.80 | | | | ● | | | 0.50-2.00 | 0.10-0.20 |

- For cutting speed recommendations, see pages 616-620

[1] General use, 8 right-hand cutting edges, for milling a variety of cast iron and steel workpiece materials.
[2] 8 neutral cutting edges, used for machining cast iron. Can be used for left-hand specially tailored milling cutters.
[3] 8 right-hand cutting edges, used mainly for milling steel (R.H. helix).
[4] Wiper insert with 4 right-hand cutting edges that provides substantially improved surface finish
[5] 1.2 & 2.0 corner radii - on request.

**For tools, see pages:** S890 FSN-13 (242) • S890 SSB-13 (410)

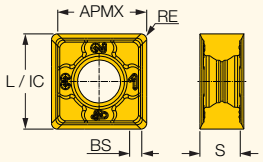


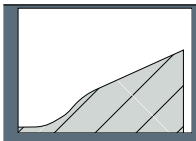




QUICKXFLUTE

## S890 SNMU 1306HP

Double-Sided Square Inserts
with 8 Cutting Edges



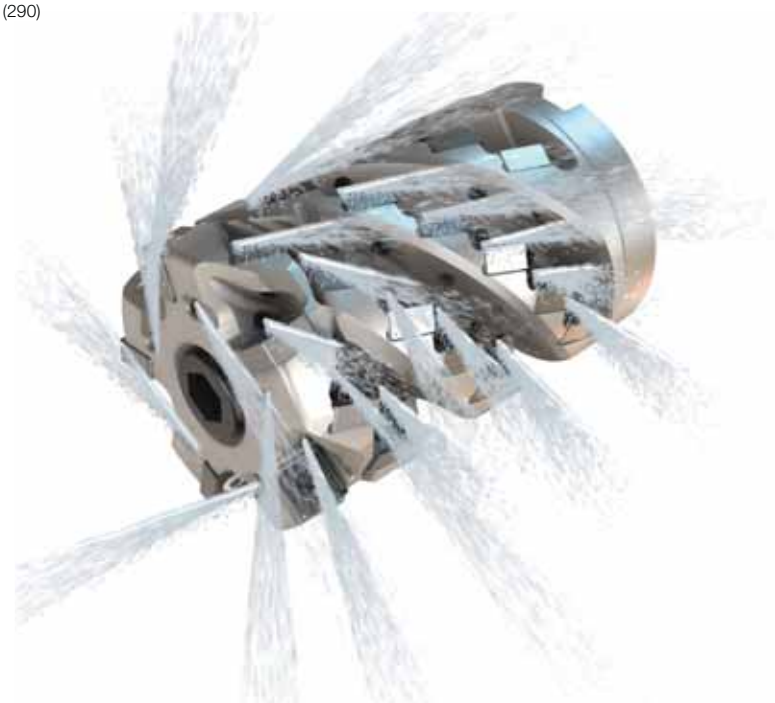



| Designation | Dimensions IC | S | APMX | BS | RE | CEDC | Tough ↔ Hard IC882 | IC716 | IC840 | IC830 | IC5820 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S890 SNMU 130608HP | 13.00 | 5.00 | 12.20 | 11.40 | 0.80 | 8 | ● | ● | ● | ● | ● | 1.00-12.20 | 0.07-0.20 |
| S890 SNMU 130632HP | 13.00 | 5.00 | 12.20 | 9.00 | 3.20 | 4 | | ● | ● | | | 3.40-12.20 | 0.07-0.20 |
| S890 SNMU 130640HP | 13.00 | 5.00 | 12.20 | 8.20 | 4.00 | 4 | | ● | ● | | | 4.20-12.20 | 0.07-0.20 |

New

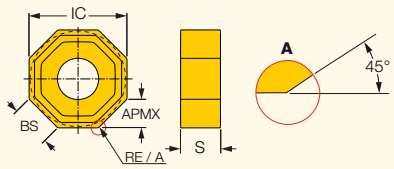
- For cutting speed recommendations, see pages 616-620

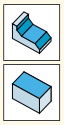
**For tools, see pages:** S890 SM (290)



HELIDO 800 LINE

**ONHU/ONMU-05**
Octagonal Double-Sided
Inserts with 16 Cutting Edges



| Designation | Dimensions BS | IC | APMX | S | RE | Tough ↔ Hard IC330 | IC830 | IC808 | IC810 | IC5400 | DT7150 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ONHU 050500-PL** (1) | 4.50 | 13.00 | 3.50 | 5.08 | - | ● | ● | | | | | | 1.50-3.00 | 0.15-0.20 |
| **ONHU 050500-R-HP** | 4.50 | 13.00 | 3.50 | 5.08 | - | | ● | | | | | | 1.50-3.00 | 0.20-0.25 |
| **ONHU 050505-TN** (2) | 5.00 | 13.00 | 3.50 | 5.08 | 0.50 | ● | ● | ● | ● | | | | 1.50-3.00 | 0.15-0.30 |
| **ONHU 050505-TN-MM** (3) | 5.00 | 13.00 | 3.50 | 5.08 | 0.50 | ● | ● | ● | | | | | 1.50-3.00 | 0.20-0.30 |
| **ONMU 050505-TN** (2) | 5.00 | 13.00 | 3.50 | 5.08 | 0.50 | | | | ● | | ● | ● | 1.50-3.00 | 0.20-0.30 |
| **ONMU 050505-TN-MM** (3) | 5.00 | 13.00 | 3.50 | 5.08 | 0.50 | ● | ● | ● | | ● | | | 1.50-3.00 | 0.20-0.30 |

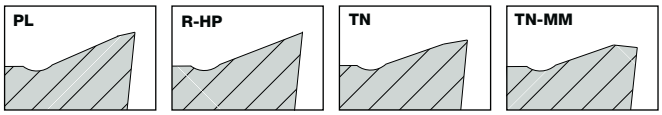
• ONHU - Precision ground • ONMU - Utility • For cutting speed recommendations, see pages 616-620

(1) For stainless steel and high temperature alloys

(2) For cast iron

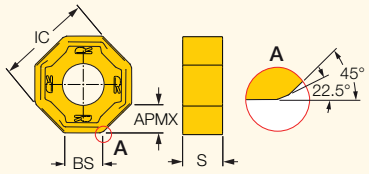
(3) For general applications

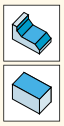
**For tools, see pages:** FF SOF (355) • SOE45 8/16 (52) • SOF45 (260)




HELIDO 800 LINE

**ONHU 0505-W**
Double-Sided Octagonal Wiper
Inserts with 4 or 8 Cutting Edges



| Designation | Dimensions IC | APMX | S | BS | Tough ↔ Hard IC808 | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| **ONHU 0505AN-N-W** (1) | 13.00 | 2.00 | 4.90 | 4.70 | | ● | 0.50-2.00 | 0.15-0.30 |
| **ONHU 0505AN-R-W** (2) | 13.00 | 2.00 | 4.90 | 4.50 | ● | ● | 0.50-2.00 | 0.15-0.30 |

• To be used with ONMU/ONHU 05 inserts • For cutting speed recommendations, see pages 616-620

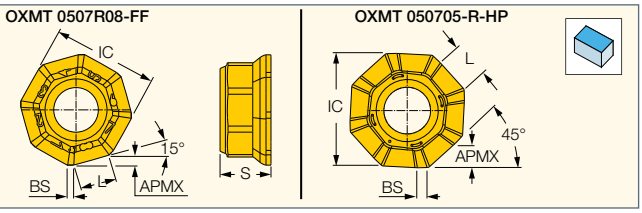
(1) Wiper insert with 4 right- and 4 left-hand cutting edges

(2) Wiper insert with 8 right-hand cutting edges

**For tools, see pages:** SOE45 8/16 (52) • SOF45 (260)

HELIDO 800 LINE

## OXMT 0507
Octagonal High Feed 45° Inserts



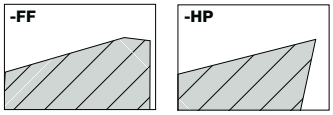

| Designation | Dimensions APMX | IC | BS | S | L | Tough ↔ Hard IC830 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| OXMT 0507R08-FF (1) | 1.20 | 14.50 | 0.80 | 7.00 | 5.00 | | • | 0.50-1.20 | 0.50-1.80 |
| OXMT 050705-R-HP (2) | 2.70 | 15.10 | 1.24 | 7.00 | 4.30 | • | | 0.50-2.50 | 0.12-0.30 |

• To be used without a seat • For cutting speed recommendations, see pages 616-620

(1) For high feed milling

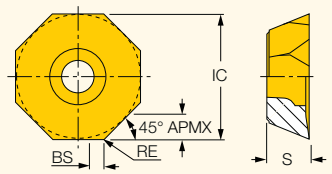
(2) 45° edge for austenitic stainless steel and high temperature alloys

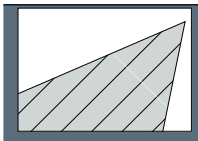
**For tools, see pages:** FF SOF (355) • SOE45 8/16 (52) • SOF45 (260)




HELIOCTO

## OECR
Octagonal Milling Inserts with Positive Rake and Sharp Cutting Edges



| Designation | Dimensions IC | APMX | BS | RE | S | Tough ↔ Hard IC28 | IC830 | IC928 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| OECR 060405AER | 14.45 | 3.70 | 1.60 | 0.50 | 4.90 | | | | • | 1.00-3.70 | 0.12-0.20 |
| OECR 060405AER-P (1) | 14.45 | 3.70 | 1.60 | 0.50 | 4.90 | • | • | • | | 1.00-3.70 | 0.08-0.20 |

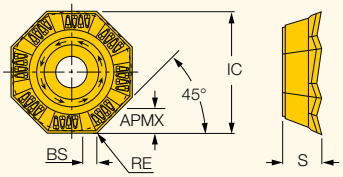
• For cutting speed recommendations, see pages 616-620

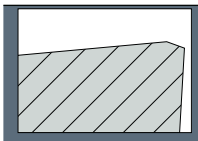
(1) Polished rake used for aluminum and titanium

**For tools, see pages:** HOE-R06 (256) • HOF-R06 (256)

HELIOCTO

## OEMT/OEKT 060405
Octagonal Milling Inserts for General Use



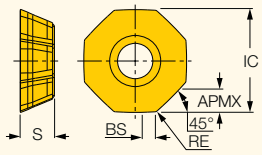
| Designation | Dimensions IC | APMX | BS | RE | S | Tough ↔ Hard IC28 | IC330 | IC830 | IC808 | IC810 | IC5400 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OEMT 060405AER-76 | 14.27 | 2.50 | 1.60 | 0.50 | 4.74 | • | • | • | • | • | • | • | 1.00-2.45 | 0.15-0.25 |

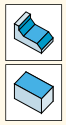
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HOE-R06 (256) • HOF-R06 (256)

HELIOCTO

**OEMW-AETN**
Octagonal Flat Rake Inserts for Cast Iron



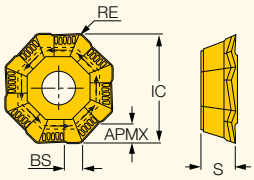
| Designation | Dimensions IC | APMX | BS | RE | S | Tough ↔ Hard IC928 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| OEMW 060405-AETN | 14.27 | 2.45 | 1.05 | 0.50 | 4.74 | ● | ● | 1.00-2.45 | 0.15-0.30 |

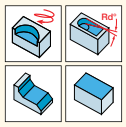
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HOE-R06 (256) • HOF-R06 (256)

HELIOCTO

**OFMT 07**
Octagonal Milling Inserts for General Use



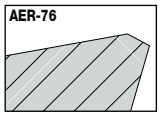
ECONOMICAL SOLUTION

| Designation | Dimensions IC | APMX | BS | RE | S | Tough ↔ Hard IC28 | IC330 | IC328 | IC830 | IC928 | IC5500 | IC808 | IC910 | IC5400 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OFMT 07T3-AER-76 | 17.80 | 3.40 | 1.75 | 0.60 | 4.55 | ● | ● | | ● | | | | | | 1.00-3.00 | 0.15-0.25 |
| OFMT 07T3-AEN | 18.07 | 3.90 | 1.60 | 0.60 | 4.54 | | | ● | | ● | | | | | 1.00-3.00 | 0.15-0.25 |
| OFMT 07T3-AETN (1) | 18.07 | 3.90 | 1.75 | 1.00 | 4.54 | | | | | ● | | | ● | | 1.00-3.00 | 0.20-0.35 |
| OFMT 07T3-AEN-MS | 18.05 | 4.00 | 1.60 | 0.80 | 4.55 | | | | ● | | ● | ● | | ● | 1.00-3.00 | 0.10-0.30 |

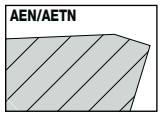
• For cutting speed recommendations, see pages 616-620

(1) Reinforced cutting edge

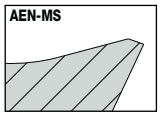
**For tools, see pages:** HOF-R07 (257)



For general use

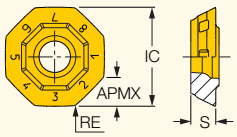


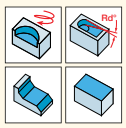
For general use
Reinforced cutting edge



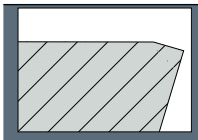

HELIOCTO

**OFMW-AETN**
Octagonal Milling Inserts for Heavy Duty Applications



ECONOMICAL SOLUTION



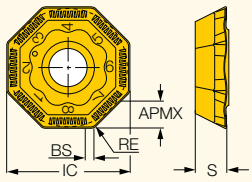
| Designation | Dimensions IC | APMX | RE | S | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| OFMW 07T3-AETN | 18.07 | 4.00 | 1.00 | 4.54 | ● | 1.00-3.00 | 0.20-0.35 |

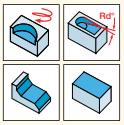
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HOF-R07 (257)

HELIOCTO

**OFCR/OFCT-AEN/AETN**
Octagonal Milling Inserts with Positive Rake and Sharp Cutting Edges



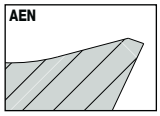



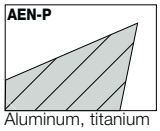
**ECONOMICAL SOLUTION**

| Designation | Dimensions IC | APMX | BS | RE | S | Tough ↔ Hard IC882 | IC28 | IC928 | IC380 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **OFCR 07T3-AEN** (1) | 17.80 | 4.60 | 1.60 | 0.60 | 4.35 | ● | | ● | ● | ● | 1.00-3.00 | 0.10-0.20 |
| **OFCR 07T3-AEN-P** (2) | 17.80 | 4.60 | 1.60 | 0.60 | 4.35 | | ● | | | | 1.00-3.00 | 0.10-0.20 |
| **OFCT 07T3 AETN-16** (3) | 18.00 | 4.60 | 1.60 | 1.00 | 4.50 | | | | | ● | 1.00-3.00 | 0.15-0.25 |

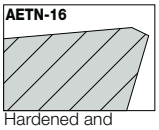
• For cutting speed recommendations, see pages 616-620
(1) For aluminum, titanium and stainless steel
(2) For aluminum, titanium and stainless steel, polished rake.
(3) For hardened and molded steel.

**For tools, see pages:** HOF-R07 (257)



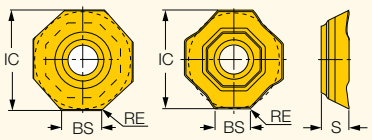
Aluminum, titanium and stainless steel



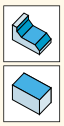
Hardened and molded steel

HELIOCTO

**OFCR/OFCT-RW/AER (wiper)**
Octagonal Milling Inserts with Four Wiper Cutting Edges



OFCT 07T3-RW-16
OFCR 07T3-RW-P
OFCT 07T3-AER

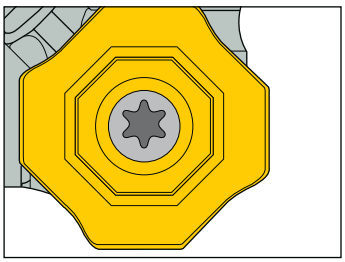


| Designation | Dimensions IC | BS | S | RE | Tough ↔ Hard IC28 | IC328 | IC908 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| **OFCT 07T3-RW-16** | 18.35 | 7.00 | 4.50 | 0.80 | | | ● | | 0.50-1.00 | 0.10-0.15 |
| **OFCR 07T3-RW-P** | 18.45 | 6.80 | 4.58 | 0.60 | ● | | | | 0.50-1.00 | 0.10-0.15 |
| **OFCT 07T3-AER** | 18.90 | 7.20 | 5.30 | 1.60 | | ● | | ● | 0.50-1.00 | 0.10-0.15 |

• For cutting speed recommendations, see pages 616-620

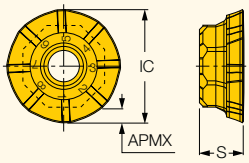
**For tools, see pages:** HOF-R07 (257)

A single wiper insert mounted on the HOF D..R07 cutter does the required job.
The wiper insert protrudes less than 0.1 mm axially. Wiper inserts have only 4 cutting edges. There are 4 marks engraved on the wiper inserts. Pay attention when mounting the insert in the pocket that the marked cutting edges are parallel to the bottom of the cutter (see sketch).
Maximum depth of cut when using the wiper insert is 2.5 mm. It is recommended to use wiper inserts in $a_p$=0.5-1.0 mm to achieve the best results. The criterion for indexing the wiper insert should be the decreased quallity of the surface finish.
Recommended machining conditions for finishing operations:
$V_c$ (finishing)= $V_c$ (roughing) x 1.25 m/min $f_z$=0.10-0.15 mm/t



HELIOCTO

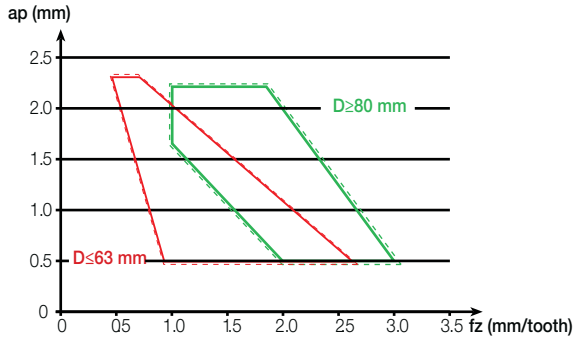
**OFMW-FF**
Inserts with 8 FEED-MILL Large Radii Segmented Cutting Edges for Fast Feed on HELI-OCTO Cutters




| Designation | Dimensions APMX | IC | S | Tough ↔ Hard IC928 | IC908 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| OFMW 0706R10-FF | 2.20 | 20.40 | 8.00 | ● | ● | ● | 1.00-2.20 | 0.40-1.50 |

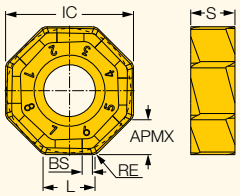
• To be used without a seat • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HOF-R07 (257)




HELIDO 800 LINE

**ONMU/ONHU 0706**
Double-Sided Octagonal Inserts with 16 Cutting Edges




| Designation | Dimensions IC | BS | L | APMX | S | RE | Tough ↔ Hard IC330 | IC845 | IC830 | IC808 | IC810 | IC5400 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ONHU 070600-PL-R | 18.80 | 1.30 | 7.00 | 5.00 | 6.50 | 0.00 | | | ● | | | | | 1.50-5.00 | 0.15-0.30 |
| ONHU 070610-TL (1) | 18.80 | 1.50 | 7.00 | 5.00 | 6.50 | 1.00 | | | | | ● | | | 1.50-5.00 | 0.15-0.30 |
| ONHU 070610-TR (2) | 18.80 | 1.50 | 7.00 | 5.00 | 6.50 | 1.00 | | | | | ● | | ● | 1.50-5.00 | 0.15-0.30 |
| ONHU 070610-TR-MM | 18.80 | 1.50 | 7.00 | 5.00 | 6.50 | 1.00 | | | ● | | | | | 1.50-5.00 | 0.15-0.30 |
| ONMU 070610 AR-HP | 18.80 | 1.00 | 7.00 | 5.00 | 6.80 | 1.00 | ● | | ● | | | | | 1.50-5.00 | 0.15-0.30 |
| ONMU 070610-TR (2) | 18.80 | 1.50 | 7.00 | 5.00 | 6.50 | 1.00 | | | | | ● | | ● | 1.50-5.00 | 0.15-0.30 |
| ONMU 070610-TR-MM | 18.80 | 1.50 | 7.00 | 5.00 | 6.50 | 1.00 | ● | ● | ● | ● | | ● | | 1.50-5.00 | 0.15-0.30 |
| ONMU 070616-RM (3) | 18.80 | 1.20 | 7.00 | 5.00 | 6.50 | 1.60 | | | | | ● | | ● | 1.50-5.00 | 0.15-0.40 |

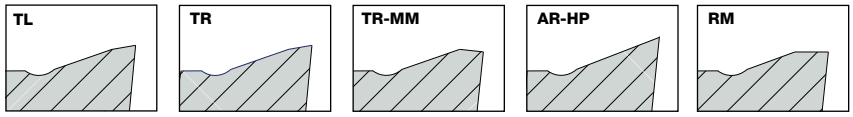
• For cutting speed recommendations, see pages 616-620

(1) For cast iron (left-hand)

(2) For cast iron

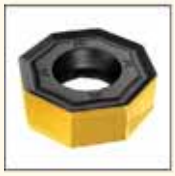
(3) Reinforced land for heavy machining

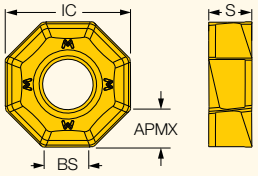
**For tools, see pages:** SOF45-R18 (267)



HELIDO 845 LINE

**ONHU 0706AN-R-W**
Double-Sided Octagonal Wiper Inserts with 8 Right-Hand Cutting Edges





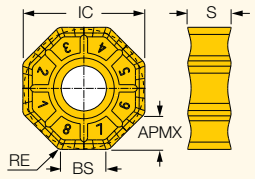

| Designation | Dimensions IC | S | BS | APMX | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| ONHU 0706AN-R-W | 18.80 | 6.50 | 6.80 | 5.00 | ● | 0.50-2.00 | 0.10-0.20 |

• Note : this insert is not intended to be mounted on a cutter carrying inserts ONHU 070600-PL-R • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** SOF45-R18 (267)

HELIDO 800 HD LINE

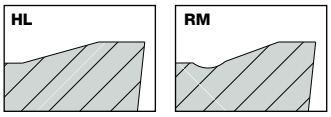
**ONMU 1008**
Double-Sided Heavy Duty Octagonal Inserts with 16 Cutting Edges




| Designation | Dimensions IC | BS | APMX | S | RE | Tough ↔ Hard IC830 | IC808 | IC810 | IC5400 | IC5100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ONMU 100816-N-HL | 26.30 | 9.60 | 7.00 | 9.30 | 1.60 | | | ● | | ● | 2.00-7.00 | 0.25-0.40 |
| ONMU 100816-N-RM | 26.30 | 9.60 | 7.00 | 9.30 | 1.60 | ● | ● | | ● | | 2.00-7.00 | 0.25-0.40 |

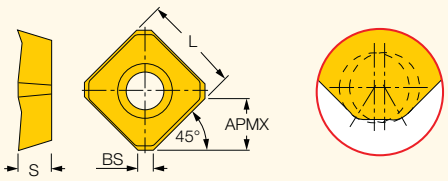
• For cutting speed recommendations, see pages 616-620

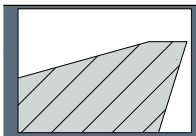
**For tools, see pages:** SOF45-26 (266) • SOF45WG-R26 (266)




ISCARMILL

**SEKT-AF-R**
Super Positive Square Milling Inserts for 45° Finishing and Medium Machining Soft Materials



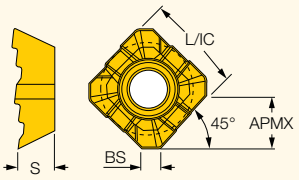
| Designation | Dimensions S | BS | APMX | L | Tough ↔ Hard IC28 | IC328 | IC928 | IC250 | IC950 | IC30N | IC520M | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEKT 1204AFR-HM | 5.16 | 2.16 | 6.40 | 12.90 | ● | ● | ● | ● | ● | ● | ● | 2.00-6.00 | 0.10-0.15 |

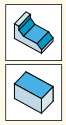
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F45ST (263)

ISOSHRED

**SEMT 1204AF-R-HS**
Square Milling Inserts with a Chip Splitting Serrated Cutting Edge for 45° Roughing



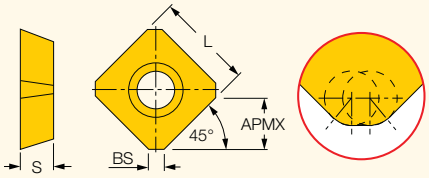
| Designation | Dimensions L | S | BS | APMX | Tough ↔ Hard IC328 | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| SEMT 1204AF-R-HS | 12.65 | 4.76 | 2.26 | 6.00 | ● | ● | 2.00-6.00 | 0.20-0.30 |

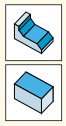
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F45ST (263)

ISCARMILL

**SEHW-AFTN**
Precision Ground Sharp Cutting Edge Milling Inserts for General Use



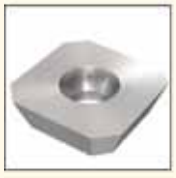
| Designation | Dimensions L | S | BS | APMX | Tough ↔ Hard IC328 | IC520M | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| SEHW 1204AFTN | 12.70 | 4.76 | 2.20 | 6.50 | ● | ● | 2.00-6.00 | 0.12-0.20 |

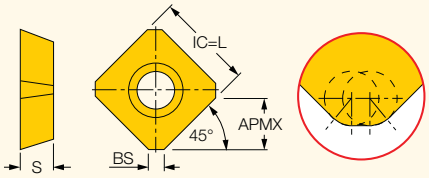
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F45ST (263)

ISCARMILL

**SEKT-AFTN**
Square Screw-Clamped Inserts for Medium Machining





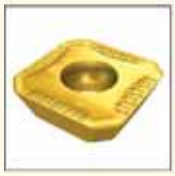
| Designation | Dimensions L | S | BS | APMX | IC328 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| SEKT 12T3AFTN | 13.15 | 3.70 | 2.18 | 6.50 | ● | 2.00-6.00 | 0.12-0.20 |

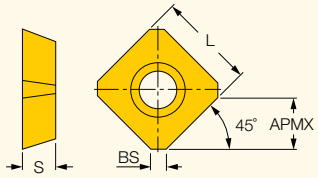
- For cutting speed recommendations, see pages 616-620

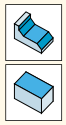
**For tools, see pages:** F45ST (263)

ISCARMILL

**SEMT 12..AFTN-76**
Milling Inserts with Ribs Along Edges for Heavy Machining





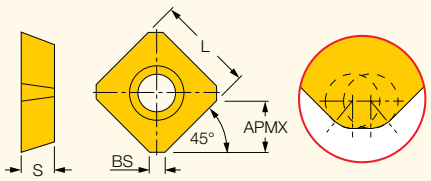
| Designation | Dimensions L | S | BS | APMX | Tough ↔ Hard IC328 | IC950 | IC908 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| **SEMT 1204AFTN-76** | 12.70 | 4.76 | 2.20 | 6.50 | ● | ● | | | 2.00-6.00 | 0.12-0.20 |
| **SEMT 12T3AFTN-76** | 13.15 | 3.70 | 2.20 | 6.50 | ● | | ● | ● | 2.00-6.00 | 0.12-0.20 |

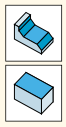
• Use optional TSE 12T3-N seat on F45ST cutters • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F45ST (263)

ISCARMILL

**SEHT-AFN**
Precision Ground Sharp Cutting Edged General Use Milling Inserts for 45° Milling Cutters



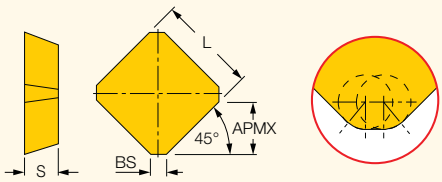
| Designation | Dimensions L | S | BS | APMX | Tough ↔ Hard IC28 | IC328 | IC928 | IC20 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| **SEHT 1204AFN** | 12.70 | 4.76 | 1.90 | 6.50 | ● | ● | ● | | 2.00-6.00 | 0.12-0.20 |
| **SEHT 1204AFN-P** | 12.70 | 4.76 | 1.90 | 6.50 | | | | ● | 2.00-6.00 | 0.12-0.20 |

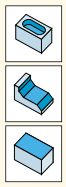
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F45ST (263)

ISCARMILL

**SEKN-AF..**
Flat Rake Face Milling Inserts for General Use



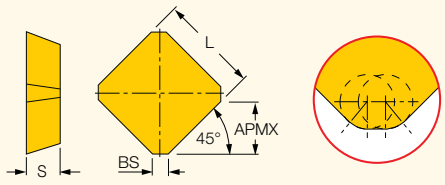
| Designation | Dimensions L | S | BS | APMX | Tough ↔ Hard IC28 | IC328 | IC928 | IC50M | IC250 | IC950 | IC30N | IC910 | IC520M | IC20 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SEKN 1203AF-N** | 12.70 | 3.18 | 1.80 | 6.50 | | ● | | | | | | | | | 2.00-6.00 | 0.12-0.20 |
| **SEKN 1203AFFN** | 12.70 | 3.18 | 1.80 | 6.50 | ● | | | | | | | | | ● | 2.00-6.00 | 0.12-0.20 |
| **SEKN 1203AFTN** | 12.70 | 3.18 | 1.80 | 6.50 | | ● | ● | ● | ● | ● | ● | ● | ● | | 2.00-6.00 | 0.12-0.20 |
| **SEKN 1203AFTN-42** | 12.70 | 3.18 | 1.80 | 6.50 | | ● | | | | ● | | ● | | | 2.00-6.00 | 0.12-0.20 |
| **SEKN 1504AFTN** | 15.88 | 4.76 | 1.80 | 6.50 | | ● | | | | | | | | | 2.00-6.00 | 0.12-0.20 |

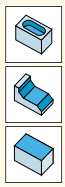
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F45E (263)

ISCARMILL

**SEKR-AF-N-42**
Super Positive Square Milling Inserts for 45° Finishing and Medium Machining Soft Materials



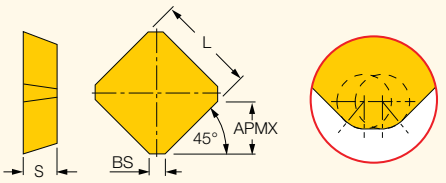
| Designation | Dimensions L | S | BS | APMX | IC328 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| SEKR 1203AF-N-42 | 12.70 | 3.18 | 1.80 | 6.50 | ● | 2.00-6.00 | 0.10-0.15 |

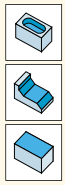
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F45E (263)

ISCARMILL

**SEKR-AF..-76**
Square Milling Inserts with Ribs Along Edges for 45° Roughing Applications



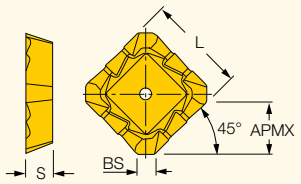
| Designation | Dimensions L | S | BS | APMX | Tough ↔ Hard IC328 | IC928 | IC950 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| SEKR 1203AFN-76 | 12.70 | 3.18 | 1.80 | 6.50 | ● | ● | ● | 2.00-6.00 | 0.12-0.20 |
| SEKR 1204AFN-76 | 12.70 | 4.76 | 1.80 | 6.22 | ● | | | 2.00-6.00 | 0.08-0.15 |
| SEKR 1504AFTN-76 | 15.88 | 4.76 | 1.80 | 8.43 | ● | | | 2.00-6.00 | 0.12-0.17 |

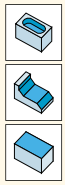
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F45E (263)

ISCARMILL

**SEKR-AFTR-HS**
Square Milling Inserts with Chip Splitting Serrated Cutting Edge for 45° Roughing Applications



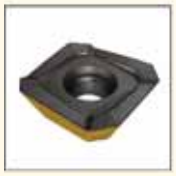
| Designation | Dimensions L | S | BS | APMX | Tough ↔ Hard IC328 | IC250 | IC520M | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| SEKR 1203AFTR-HS | 12.70 | 3.18 | 1.80 | 6.50 | ● | ● | ● | 2.00-6.00 | 0.15-0.25 |
| SEKR 1204AFTR-HS | 12.63 | 4.76 | 1.80 | 6.27 | ● | | | 2.00-6.00 | 0.15-0.25 |
| SEKR 1504AFTR-HS | 15.88 | 4.76 | 1.80 | 8.30 | ● | | | 2.00-6.00 | 0.15-0.25 |

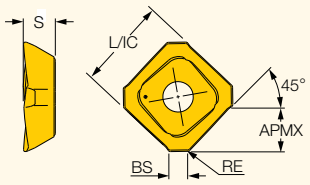
- For cutting speed recommendations, see pages 616-620

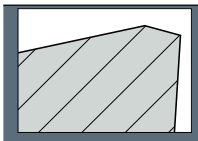
**For tools, see pages:** F45E (263)

## HELIOCTO

**SECT/SEMT 1404**
Positive Square Inserts for
General Soft and Clean Cutting





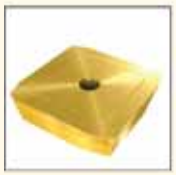
| Designation | Dimensions L | S | BS | APMX | RE | Tough ↔ Hard IC330 | IC840 | IC830 | IC808 | IC810 | IC5400 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SECT 140420AR** | 14.04 | 4.50 | 3.70 | 5.50 | 2.00 | | ● | ● | | | | 2.00-5.50 | 0.12-0.20 |
| **SEMT 140405ATR** | 14.20 | 4.95 | 2.75 | 5.50 | 0.50 | ● | | ● | ● | ● | ● | 2.00-5.50 | 0.12-0.20 |

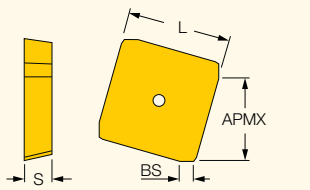
• SECT - Precision ground insert • SEMT - Utility insert • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HOE-R06 (256) • HOF-R06 (256)

## ISCARMILL

**SPKN ED..**
Flat Rake Milling Inserts
for General Use





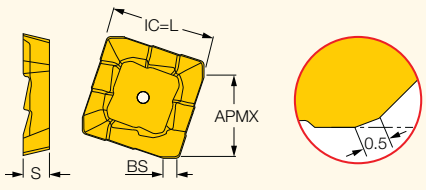

| Designation | Dimensions L | S | BS | APMX | Tough ↔ Hard IC328 | IC50M | IC250 | IC950 | IC910 | IC520M | IC20 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SPKN 1203EDFR** | 12.70 | 3.18 | 1.54 | 9.50 | | | | | | | ● | 3.00-8.00 | 0.08-0.15 |
| **SPKN 1203EDTR** | 12.70 | 3.18 | 1.40 | 9.50 | | ● | | | ● | ● | | 3.00-8.00 | 0.08-0.15 |
| **SPKN 1504EDTR** | 15.88 | 4.76 | 1.40 | 11.50 | | ● | | | | ● | | 3.00-8.00 | 0.08-0.15 |
| **SPKN 1203EDTL** | 12.70 | 3.18 | 1.70 | 9.50 | | ● | | | | | | 3.00-8.00 | 0.08-0.15 |
| **SPKN 1203EDR-42** | 12.70 | 3.18 | 1.40 | 9.50 | | | | | | | ● | 3.00-8.00 | 0.08-0.15 |
| **SPKN 1203EDTR-42** | 12.70 | 3.18 | 1.40 | 9.50 | ● | ● | ● | ● | | | | 3.00-8.00 | 0.08-0.15 |
| **SPKN 1504EDTR-42** | 15.88 | 4.76 | 1.40 | 11.50 | ● | ● | | | | | | 3.00-8.00 | 0.08-0.15 |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F75-M (254)

## ISOSHRED

**SPKR EDTR-HS**
Square Positive Inserts with Chip
Splitting Serrated Cutting Edges



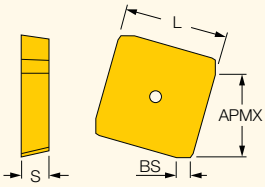

| Designation | Dimensions L | S | BS | APMX | Tough ↔ Hard IC328 | IC928 | IC520M | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| **SPKR 1203EDTR-HS** | 12.70 | 3.18 | 1.60 | 9.50 | ● | ● | ● | 3.00-9.00 | 0.10-0.20 |
| **SPKR 1504EDTR-HS** | 15.82 | 4.80 | 2.00 | 12.24 | ● | ● | | 3.00-9.00 | 0.10-0.20 |

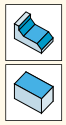
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F75-M (254)

ISCARMILL

**SPKR ED..-76**
Square Milling Inserts with Ribs Along the Edges for 45° Roughing



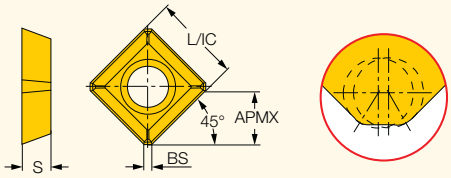
| Designation | Dimensions L | S | BS | APMX | Tough ↔ Hard IC328 | IC950 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| SPKR 1203EDL-76 | 12.70 | 3.18 | 1.80 | 9.50 | ● | | 3.00-9.00 | 0.08-0.15 |
| SPKR 1203EDR-76 | 12.70 | 3.18 | 1.80 | 9.50 | ● | ● | 3.00-9.00 | 0.08-0.15 |
| SPKR 1504EDTR-76 | 15.88 | 4.76 | 1.73 | 12.65 | ● | ● | 3.00-9.00 | 0.08-0.15 |

- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F75-M (254)

ISCARMILL

**SDMT-AD-N**
Inserts for General Use on 45° Endmills



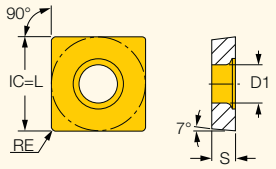
| Designation | Dimensions L | S | APMX | BS | Tough ↔ Hard IC50M | IC520M | IC20 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| SDMT 0903AD-N | 9.52 | 3.18 | 5.60 | 0.90 | ● | ● | ● | 2.00-4.00 | 0.12-0.15 |

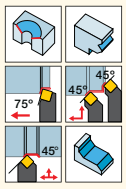
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** E45 / T245 (53)

ISOTURN

**SCMT-19**
Square Inserts with a 7° Positive Flank for Semi-Roughing at Medium to High Feeds



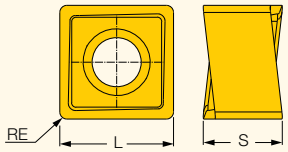

| Designation | Dimensions L | S | RE | D1 | Tough ↔ Hard IC830 | IC20 | IC5005 | IC807 | IC907 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/rev) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SCMT 120408-19 | 12.70 | 4.76 | 0.80 | 5.50 | ● | ● | ● | ● | ● | 3.00-8.00 | 0.08-0.15 |
| SCMT 120412-19 | 12.70 | 4.76 | 1.20 | 5.50 | | ● | | | | 3.00-8.00 | 0.08-0.15 |

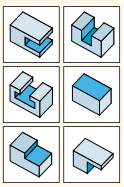
- For user guide and cutting speed recommendations, see pages 616-620

**For tools, see pages:** E45 / T245 (53)

**HELISLOT**

**XNMU 06**
Square Inserts with 4 Right-and 4 Left-Hand Cutting Edges



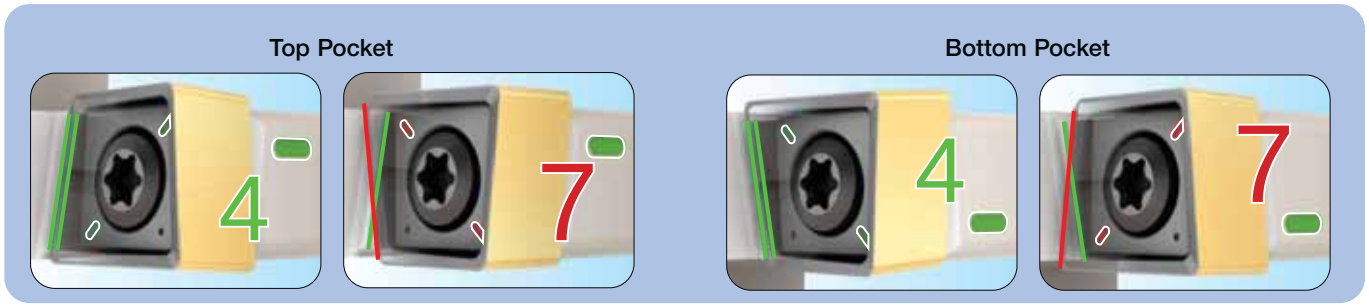



| Designation | Dimensions APMX | L | S | RE | Tough ↔ Hard IC830 | IC808 | IC810 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| XNMU 060304-PNTN | 6.00 | 6.40 | 4.40 | 0.40 | ● | ● | ● | 0.05-0.12 |

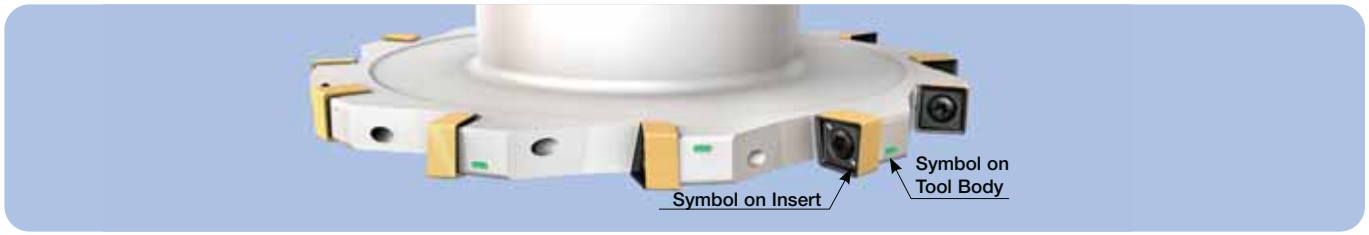
New

**For tools, see pages:** ETS-XN06 (387) • ETS-XN06-MM (386) • FDN-XN06 (397) • SDN-XN06 (405)

## Mounting an XNMU 0603... Insert on Slot Milling Cutters




The Symbol on the Insert and Tool Body Must Align



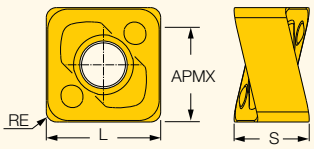

## Starting Feed Per Tooth fz for HELI-SLOT 06 Slotting Mills with Inserts XNMU 06...

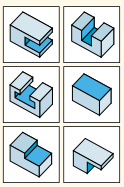
| ISO Class DIN/ISO 513 | Description | ISCAR Material Group** | Typical Representstive AISI/SAE/ASTM | Typical Representstive DIN W.-Nr. | Hardness, HB | Feed $f_z$ mm/tooth Grades IC808 | IC830 |
|---|---|---|---|---|---|---|---|
| P | non-alloy steel | 1 | 1020 | 1.0044 | 130-180 | 0.10-0.20 | 0.10-0.20 |
| | alloy steel | 8 | 4340 | 1.6582 | 260-300 | 0.08-0.12 | 0.08-0.12 |
| | alloy steel | 9 | 4340 | 1.6582 | HRC 35-42* | 0.08-0.12 | 0.08-0.12 |
| | high alloy steel | 10 | H13 | 1.2344 | 200-220 | 0.08-0.12 | 0.08-0.12 |
| | martensitic S.S. | 12 | 420 | 1.4021 | 200 | 0.08-0.12 | 0.08-0.12 |
| M | austenitic S.S. | 14 | 304L | 1.4306 | 200 | 0.08-0.12 | 0.08-0.12 |
| | austenitic S.S. | 14 | 316L | 1.4404 | 140 | 0.08-0.12 | 0.08-0.12 |
| K | grey cast iron | 16 | class 40 | 0.6025 (GG25) | 250 | 0.10-0.20 | |
| | nodular cast iron | 17 | class 65-45-12 | 0.7050 (GGG50) | 200 | 0.08-0.15 | |
| H | hard steel and cast iron | 38.1 | H11 | 1.2343 | HRC 45-49 | 0.06-0.12 | |
| | | 38.2 | P20 | 1.2330 | HRC 50-55 | 0.05-0.10 | |

* Quenched and tempered
** ISCAR material group in accordance with VDI 3323 standard

HELISLOT

**XNMU 09**
Square Inserts with 4 Right- and 4 Left-Hand Cutting Edges



| TN | Dimensions | | | | Tough ↔ Hard | | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|
| Designation | APMX | L | S | RE | IC830 | IC808 | IC5400 | $f_z$ (mm/t) |
| XNMU 090408-PNTN | 8.20 | 9.10 | 5.95 | 0.80 | ● | ● | ● | 0.05-0.15 |

**For tools, see pages:** ETS-XN09 (388) • FDN-XN09 (398) • SDN-XN09 (405)

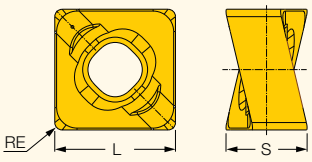
## Starting feed per tooth $f_z$ for HELI-SLOT 09 slotting mills with inserts XNMU 09...

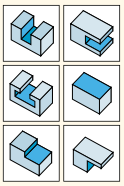
| Workpiece Material | | | | | | $f_z$ (mm/t) | | |
|---|---|---|---|---|---|---|---|---|
| | | Typical representative | | | | Grades | | |
| ISO class DIN/ISO 513 | Description | AISI/SAE/ASTM | DIN W.-Nr. | Hardness, HB | ISCAR mat. group** | IC808 | IC5400 | IC830 |
| P | non-alloy steel | 1020 | 1.0402 | 130-180 | 1 | 0.1-0.25 | 0.1-0.25 | 0.1-0.25 |
| | alloy steel | 4340 | 1.6582 | 260-300 | 8 | 0.1-0.2 | 0.1-0.2 | 0.1-0.2 |
| | alloy steel | 4340 | 1.6582 | HRC 35-42* | 9 | 0.1-0.15 | 0.1-0.15 | 0.1-0.18 |
| | high alloy steel | H13 | 1.2344 | 200-220 | 10 | 0.1-0.2 | 0.1-0.2 | 0.1-0.2 |
| | martensitic S.S. | 420 | 1.4021 | 200 | 12 | 0.1-0.2 | 0.1-0.2 | 0.1-0.2 |
| M | austenitic S.S. | 304L | 1.4306 | 200 | 14 | 0.1-0.15 | 0.1-0.15 | 0.1-0.15 |
| | austenitic S.S. | 316L | 1.4404 | 140 | 14 | 0.1-0.15 | 0.1-0.15 | 0.1-0.2 |
| K | grey cast iron | class 40 | 0.6025 (GG25) | 250 | 16 | 0.1-0.3 | | |
| | nodular cast iron | class 65-45-12 | 0.7050 (GGG50) | 200 | 17 | 0.1-0.25 | | |
| H | hardened steel | H11 | 1.2343 | HRC 45-49 | 38.1 | 0.06-0.12 | 0.06-0.12 | 0.06-0.12 |
| | | P20 | 1.2330 | HRC 50-55 | 38.2 | 0.05-0.1 | 0.05-0.1 | 0.05-0.1 |

* Quenched and tempered
** ISCAR material group in accordance with VDI 3323 standard
*** Recommendation for side slotting

HELISLOT

**XNMU 13**
Square Inserts with 4 Right- and 4 Left-Hand Cutting Edges

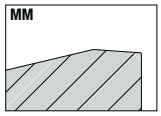


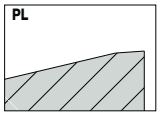



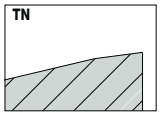
| | Dimensions | | | Tough ↔ Hard | | | | | | | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Designation | L | S | RE | IC330 | IC845 | IC830 | IC380 | IC808 | IC810 | IC5400 | IC5100 | $f_z$ (mm/t) |
| XNMU 130608PNN-MM | 13.00 | 8.50 | 0.80 | ● | | ● | ● | ● | | ● | | 0.08-0.20 |
| XNHU 130608PNN-PL | 13.00 | 8.80 | 0.80 | | | | | ● | | | | 0.08-0.20 |
| XNMU 130608PNN-PL | 13.00 | 8.80 | 0.80 | | ● | | | | | | | 0.08-0.20 |
| XNMU 130608PNTN | 13.00 | 8.80 | 0.80 | | | | | | ● | | ● | 0.08-0.20 |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** ETS-XN13 (388) • FDN-XN13 (398) • SDN-XN13 (405) • SM-XN13 (286) • XNK-XN13 (279)

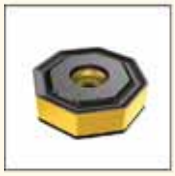


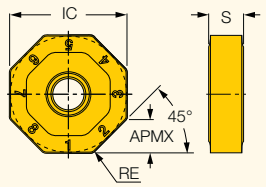



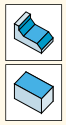



16MILL

**ONHU/ONMU-08-TN/HL**
Double-Sided Octagonal Face Milling Inserts for Cast Iron and Rough Applications





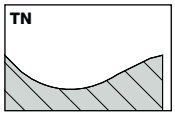



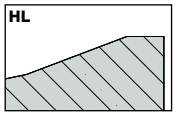
| Designation | Dimensions IC | RE | S | APMX | Tough ↔ Hard IC908 | IC810 | IC910 | DT7150 | IC5100 | IC4100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t)(1) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ONHU 080608-TN | 20.20 | 0.80 | 6.00 | 5.50 | | | ● | ● | | ● | 2.00-5.50 | 0.20-0.30 |
| ONMU 080608-TN | 20.20 | 0.80 | 6.00 | 5.50 | | ● | ● | ● | ● | ● | 2.00-5.50 | 0.20-0.30 |
| ONMU 080612-HL | 20.20 | 1.20 | 6.00 | 5.50 | ● | | ● | | | | 2.00-5.50 | 0.25-0.40 |

• TN - For cast iron • HL - For rough applications and inhomogeneous surfaces • For cutting speed recommendations, see pages 616-620

(1) For FEED-MILL tools, see the feed conditions for the FF NM tools

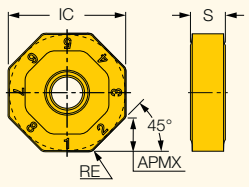
**For tools, see pages:** F45NM (259) • F45WG (258) • FF NM (354)

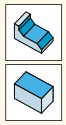


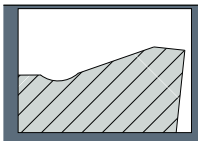




16MILL

**ONHU/ONMU-08-TN-MM**
Double-Sided Octagonal Face Milling Inserts for General Steel Machining





| Designation | Dimensions IC | RE | S | APMX | Tough ↔ Hard IC330 | IC328 | IC830 | IC928 | IC808 | IC908 | IC910 | IC5400 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t)(1) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ONHU 080608-TN-MM | 20.20 | 0.80 | 6.00 | 5.50 | | ● | | ● | | ● | ● | | 2.00-5.50 | 0.20-0.30 |
| ONMU 080608-TN-MM | 20.20 | 0.80 | 6.00 | 5.50 | ● | ● | ● | ● | ● | ● | | ● | 2.00-5.50 | 0.20-0.30 |

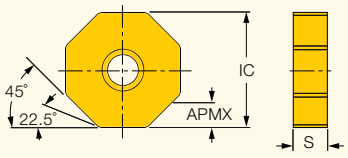
• For cutting speed recommendations, see pages 616-620

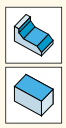
(1) For FEED-MILL tools, see the feed conditions for the FF NM tools

**For tools, see pages:** F45NM (259) • F45WG (258) • FF NM (354)

16MILL

**ONHQ-TN**
Octagonal Double-Sided Ceramic Face Milling Inserts



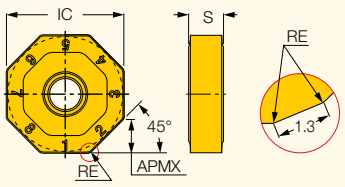
| Designation | Dimensions IC | S | APMX | $Fzm_{(min)}$ | $Fzm_{(max)}$ | IS8 | Recommended Machining Data $a_p$ (mm) |
|---|---|---|---|---|---|---|---|
| ONHQ 0806-TN | 20.20 | 6.00 | 5.50 | 0.15 | 0.25 | ● | 1.00- |

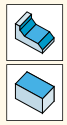
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F45NM (259) • F45WG (258)

16MILL

**ONHU 0806-N-PL**
Octagonal Inserts with a Sharp Edge and Positive Land for Cast Iron



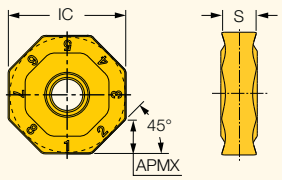
| Designation | Dimensions IC | RE | S | APMX | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| ONHU 080600-N-PL | 20.20 | 0.40 | 6.00 | 5.50 | ● | 2.00-5.50 | 0.25-0.40 |

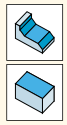
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F45NM (259) • F45WG (258)

16MILL

**ONHU/ONMU 080608 AN-N-HP**
16MILL Double-Sided Octagonal Face Milling Inserts for High Temperature Alloys, Stainless Steel and Steels



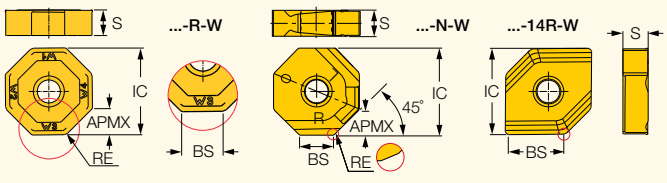
| Designation | Dimensions IC | RE | S | APMX | Tough ↔ Hard IC328 | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| ONHU 080608 AN-N-HP | 20.20 | 0.80 | 6.00 | 5.50 | ● | | 2.00-5.50 | 0.25-0.40 |
| ONMU 080608 AN-N-HP | 20.20 | 0.80 | 6.00 | 5.50 | ● | ● | 2.00-5.50 | 0.25-0.40 |

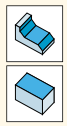
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** F45NM (259) • F45WG (258)

16MILL

**ONHU 0806AN-W**
Double-Sided Octagonal Wiper Inserts



| Designation | Dimensions IC | RE | S | APMX | BS | Tough ↔ Hard IC910 | IC4100 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| ONHU 0806AN-N-W (1) | 20.30 | 0.50 | 6.00 | 3.50 | 7.40 | ● | ● | 1.50-3.50 | 0.08-0.25 |
| ONHU 0806AN-14R-W (2) | 20.35 | 0.50 | 5.50 | 3.50 | 13.20 | ● | | 1.50-3.50 | 0.08-0.25 |
| ONHU 0806AN-R-W (3) | 20.40 | 0.40 | 6.00 | 3.50 | 7.20 | ● | | 1.50-3.50 | 0.08-0.25 |

• For cutting speed recommendations, see pages 616-620

(1) Wiper insert with 4 cutting edges, 2 right- and 2 left-hand

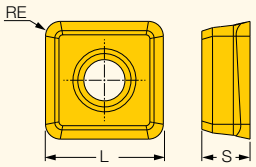
(2) Wiper insert with 4 cutting edges, recommended for fine pitch cutters; cutter diameters >160 mm

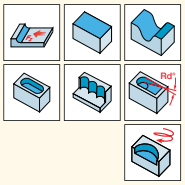
(3) Wiper insert with 4 cutting edges, recommended for fine pitch cutters; cutter diameters <125 mm

**For tools, see pages:** F45NM (259) • F45WG (258)

MILL4FEED

**FFQ4 SOMT/W 0602**
Single-Sided Square Inserts
with 4 Cutting Edges
for Fast Feed Milling



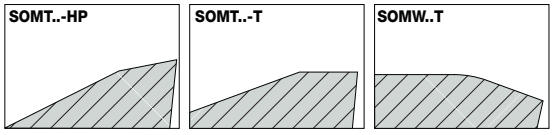



| Designation | Dimensions L | S | RE | Tough ↔ Hard IC882 | IC840 | IC830 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| FFQ4 SOMT 060210HP | 5.50 | 2.00 | 1.00 | ● | ● | | | 0.20-0.70 | 0.20-0.90 |
| FFQ4 SOMT 060210T | 5.50 | 2.04 | 1.00 | | | ● | ● | 0.20-0.70 | 0.20-1.00 |
| FFQ4 SOMW 060213T | 5.60 | 2.11 | 1.30 | | | | ● | 0.20-0.60 | 0.20-1.00 |

**New**

- For side plunging, the initial cutting feed is 0.1 mm/t
- T type for steel, ferritic and martensitic stainless steel and cast iron
- HP type for austenitic stainless steel and high temperature alloys
- SOMW- flat insert for hard material (up to 60 HRC) and uneven surface

**For tools, see pages:** FFQ4 D-C/W-06 (342) • FFQ4 D-M-06 (343) • FFQ4 D-MM-06 (343)




## Average Cutting Data for FFQ4 Size 06 Fast Feed Cutters

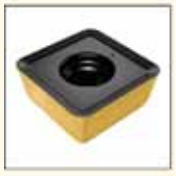
| ISO | Material Group No. | Material | | Condition | Hardness HB | Type of Insert | Depth of cut (mm) | Cutting Speed vc (m/min) for Grades IC808 | IC830 | IC840 | IC882 | Feed fz (mm/tooth) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | non-alloy steel and cast steel, free cutting steel | <0.25% C | annealed | 125 | T | 0.2-0.7 | 150-220 | 140-210 | - | - | 0.4-1.0 |
| P | 2 | | ≥0.25% C | annealed | 190 | | | 130-210 | 120-200 | - | - | |
| P | 3 | | <0.55% C | quenched and tempered | 250 | | | 120-200 | 110-190 | - | - | |
| P | 4 | | ≥0.55% C | annealed | 220 | | | 120-190 | 110-180 | - | - | |
| P | 5 | | | quenched and tempered | 300 | | | 110-180 | 100-170 | - | - | |
| P | 6 | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 200 | | | 120-190 | 110-180 | - | - | |
| P | 7 | | | quenched and tempered | 275 | | | 110-180 | 100-170 | - | - | |
| P | 8 | | | | 300 | | | 115-170 | 100-160 | - | - | |
| P | 9 | | | | 350 | | | 110-170 | 100-160 | - | - | |
| P | 10 | high alloyed steel, cast steel and tool steel | | annealed | 200 | | | 120-170 | 110-160 | - | - | |
| P | 11 | | | quenched and tempered | 325 | | | 100-150 | 90-140 | - | - | |
| P | 12 | stainless steel and cast steel | | ferritic / martensitic | 200 | | | 110-160 | 100-150 | - | - | |
| P | 13 | | | martensitic | 240 | | | 100-150 | 90-135 | - | - | |
| M | 14 | stainless steel and cast steel | | austenitic, duplex | 180 | HP | 0.2-0.7 | - | - | 90-160 | 90-160 | 0.4-0.8 |
| K | 15 | gray cast iron (GG) | | ferritic / pearlitic | 180 | T | 0.2-0.7 | 150-220 | 140-210 | - | - | 0.4-1.0 |
| K | 16 | | | pearlitic / martensitic | 260 | | | | | - | - | |
| K | 17 | nodular cast iron (GGG) | | ferritic | 160 | | | 120-200 | 120-190 | - | - | |
| K | 18 | | | pearlitic | 250 | | | | | - | - | |
| K | 19 | malleable cast iron | | ferritic | 130 | | | 130-210 | 115-200 | - | - | |
| K | 20 | | | pearlitic | 230 | | | | | - | - | |
| S | 31 | high temperature alloys | Fe based | annealed | 200 | HP | 0.2-0.5 | - | - | 55-70 | 50-65 | 0.4-0.6 |
| S | 32 | | | hardened | 280 | | | - | - | 50-60 | 45-55 | |
| S | 33 | | Ni or Co based | annealed | 250 | | | - | - | 35-45 | 30-40 | 0.4-0.7 |
| S | 34 | | | hardened | 350 | | | - | - | 30-35 | 25-35 | |
| S | 35 | | | cast | 320 | | | - | - | 25-35 | 25-35 | |
| S | 36 | titanium alloys | | pure | 190 | | | - | - | 60-70 | 50-60 | |
| S | 37 | | | alpha+beta alloys, hardened | 310 | | | - | - | 35-50 | 35-45 | 0.4-0.6 |
| H | 38 | hardened steel | | hardened | 55 HRC | SOMW | 0.2-0.5 | 60-80 | - | - | - | 0.3-0.4 |
| H | 39 | | | hardened | 60 HRC | | | 40-50 | - | - | - | |
| H | 40 | chilled cast iron | | cast | 400 | | | 80-100 | - | - | - | |
| H | 41 | cast iron | | hardened | 55 HRC | | | 40-60 | - | - | - | |

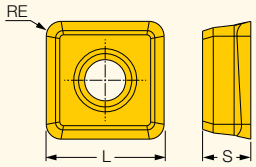
steel
stainless steel
cast iron
non-ferrous metals
superalloys and titanium
hard materials

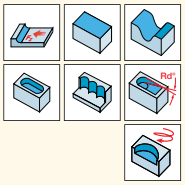
(1) Specific cutting force for 1 mm² chip section
(2) Chip thickness factor

MILL4FEED

**FFQ4 SOMT/W 0904**
Single-Sided Square Inserts
with 4 Cutting Edges
for Fast Feed Milling



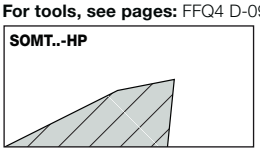


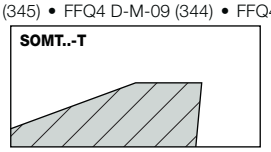



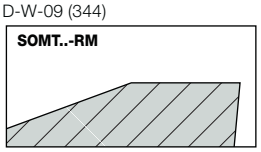
| Designation | Dimensions L | S | RE | Tough ↔ Hard IC882 | IC716 | IC830 | IC5820 | IC808 | IC810 | IC5600 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FFQ4 SOMT 090412T** | 8.50 | 3.90 | 1.20 | | | ● | | ● | ● | ● | 0.50-1.20 | 0.40-1.50 |
| **FFQ4 SOMT 0904RM-T** | 8.60 | 3.80 | 1.20 | | | | | ● | | | 0.50-1.20 | 0.40-1.50 |
| **FFQ4 SOMT 0904RM-HP** | 8.60 | 3.80 | 1.20 | ● | ● | | | | | | 0.50-1.20 | 0.40-1.50 |
| **FFQ4 SOMT 090412HP** | 8.50 | 3.80 | 1.20 | ● | ● | ● | ● | ● | | | 0.50-1.20 | 0.40-1.40 |
| **FFQ4 SOMW 090420T** | 8.80 | 3.90 | 2.00 | | | | | ● | | | 0.30-1.00 | 0.20-1.00 |

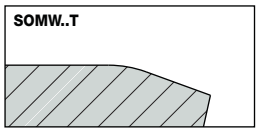
- For side plunging, the initial cutting feed is 0.1 mm/t • T type for steel, ferritic and martensitic stainless steel and cast iron
- RM-.. reinforced radius type for machining near straight shoulder walls • HP type for austenitic stainless steel and high temperature alloys
- SOMW- flat insert for hard material (up to 60 HRC) and uneven surface

**For tools, see pages:** FFQ4 D-09 (345) • FFQ4 D-M-09 (344) • FFQ4 D-W-09 (344)



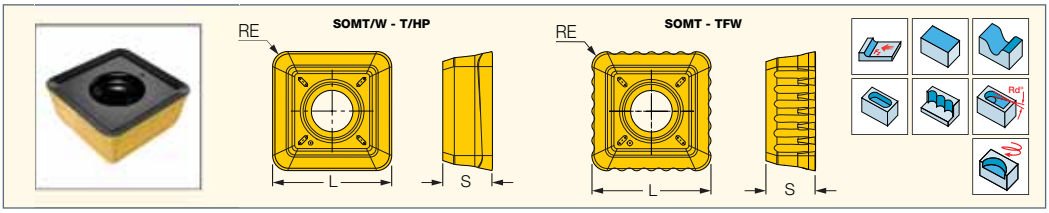

## Average Cutting Data for FFQ4 Size 09 Fast Feed Cutters

| Workpiece Material: ISO class DIN/ ISO 513 | Description | ISCAR mat. group* | Hardness HB | Typical representative: AISI/SAE/ ASTM | DIN W.-Nr. | Insert type | Carbide grade | D.O.C. $a_p$ (mm): Recom-mended | Range | Cutting speed $v_c$, (m/min) | Feed $f_z$ (mm/tooth): Recom-mended | Range | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel | 1-5 | 130-180 | 1020 | 1.0402 | T/ RM-T | IC808 | 1.0 | 0.4-1.2 | 150-220 | 1.2 | 0.5-1.5 | dry |
| | | | | | | | IC830 | | | 140-200 | 1.3 | 0.5-1.5 | dry/wet |
| | low alloy steel | 6-8 | 260-300 | 4340 | 1.6582 | | IC808 | | | 140-200 | 1.2 | 0.5-1.5 | dry |
| | | | | | | | IC830 | | | 120-180 | 1.3 | 0.5-1.5 | dry/wet |
| | | 9 | HRC 35-42 | 3135 | 1.5710 | | IC808 | | | 130-180 | 1.2 | 0.5-1.4 | dry |
| | | | | | | | IC830 | | | 120-160 | 1.2 | 0.5-1.4 | dry/wet |
| | high alloy steel | 10-11 | 200-220 | H13 | 1.2344 | | IC808 | | | 120-170 | 1.2 | 0.5-1.4 | dry |
| | | | | | | | IC830 | | | 100-150 | 1.3 | 0.5-1.4 | dry/wet |
| | ferritic/martensitic | 12-13 | 200 | 420 | 1.4021 | | IC808 | | | 110-160 | 1.2 | 0.5-1.4 | dry |
| | | | | | | | IC830 | | | 100-150 | 1.3 | 0.5-1.4 | dry/wet |
| M | austenitic stainless steel | 14 | 200 | 304L | 1.4306 | HP/ RM-HP | IC830 | 1.0 | 0.4-1.2 | 80-120 | 1.0 | 0.5-1.2 | wet |
| | | | | | | | IC808 | | | 100-160 | | 0.5-1.2 | |
| | | | | | | | IC5820 | | | 100-160 | | 0.5-1.3 | |
| | | | | | | | IC882 | | | 80-130 | | 0.5-1.4 | |
| K | gray cast iron | 15-16 | 250 | class 40 | 0.6025 (GG25) | T/ RM-T | IC810 | 1.2 | 0.4-1.2 | 150-220 | 1.2 | 0.5-1.5 | dry |
| | nodular cast iron | 17-18 | 200 | class 65-45-12 | 0.7050 (GGG50) | | IC810 | | | 120-200 | | 0.5-1.5 | |
| S | high temperature alloys and titanium | 33-35 | 340 | inconel 718 | 2.4668 | HP/ RM-HP | IC830 | 1.0 | 0.4-1.2 | 25-30 | 0.5 | 0.5-1.0 | wet |
| | | | | | | | IC808 | | | 25-35 | | 0.5-1.0 | |
| | | | | | | | IC5820 | | | 25-35 | | 0.5-1.0 | |
| | | | | | | | IC882 | | | 20-30 | | 0.5-1.0 | |
| | | 36-37 | HRC 35-40 | AMS R56400 | 3.7165 (Ti6Al4V ELI) | | IC830 | | | 20-30 | 0.6 | 0.5-1.0 | |
| | | | | | | | IC808 | | | 35-60 | | 0.5-1.0 | |
| | | | | | | | IC5820 | | | 25-40 | | 0.5-1.0 | |
| | | | | | | | IC882 | | | 25-35 | | 0.5-1.0 | |
| H | hardened steel | 38 | HRC 45-49 | HARDOX 450 plate | | SOMW | IC808 | 0.6 | 0.3-1.0 | 45-65 | 0.5 | 0.3-1.0 | dry |
| | | | HRC 58-62 | D2 | 1.2379 | | | 0.4 | 0.3-0.5 | 40-60 | 0.4 | 0.3-0.5 | |

* ISCAR material group in accordance with VDI 3323 standard ** Quenched and tempered
For machining under unstable conditions, the recommended cutting data should be reduced by 20-30%

MILL4FEED

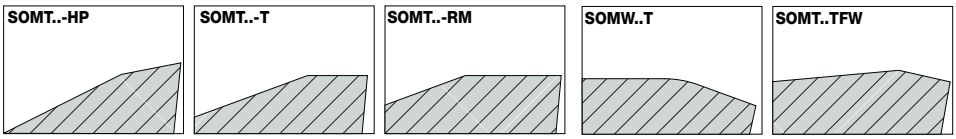
**FFQ4 SOMT/W 1205**
Single-Sided Square Inserts
with 4 Cutting Edges
for Fast Feed Milling




| Designation | Dimensions L | S | RE | Tough ↔ Hard IC882 | IC28 | IC716 | IC830 | IC5820 | IC808 | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FFQ4 SOMT 1205RM-HP** | 12.70 | 5.20 | 1.60 | • | | | • | | | | 0.50-1.50 | 0.40-1.80 |
| **FFQ4 SOMT 1205RM-T** | 12.70 | 5.20 | 1.60 | | | | | | • | | 0.50-1.50 | 0.40-2.00 |
| **FFQ4 SOMT 120516HP** | 12.70 | 5.20 | 1.60 | • | | • | • | • | • | | 0.50-1.50 | 0.40-1.80 |
| **FFQ4 SOMT 120516HP-P** | 12.70 | 5.20 | 1.60 | | • | | | | | | 0.50-1.50 | 0.40-1.80 |
| **FFQ4 SOMT 120516T** | 12.70 | 5.20 | 1.60 | | | | • | | • | | 0.50-1.50 | 0.40-2.00 |
| **FFQ4 SOMT 120516TFW** | 12.70 | 5.20 | 1.60 | | | | | | • | | 0.50-1.50 | 0.20-1.20 |
| **FFQ4 SOMT 120516T20** | 12.70 | 5.20 | 1.60 | | | | | | | • | 0.50-1.50 | 0.40-2.00 |
| **FFQ4 SOMW 120530T** | 13.00 | 5.30 | 3.00 | | | | | | • | | 0.50-1.50 | 0.40-1.50 |

- For side plunging, the initial cutting feed is 0.1 mm/t • T for steel, ferritic and martensitic stainless steel and cast iron
- RM-.. for interrupted cut and machining near straight shoulder walls • HP for austenitic stainless steel and high temperature alloys
- HP-P for aluminum (positive rake face) • T20 for grey and nodular cast iron • TFW for unstable cutting conditions
- SOMW flat insert for hard material (up to 60 HRC) and uneven surface

**For tools, see pages:** FFQ4 D-12 (346)




## Average Cutting Data for FFQ4 Size 12 Fast Feed Cutters

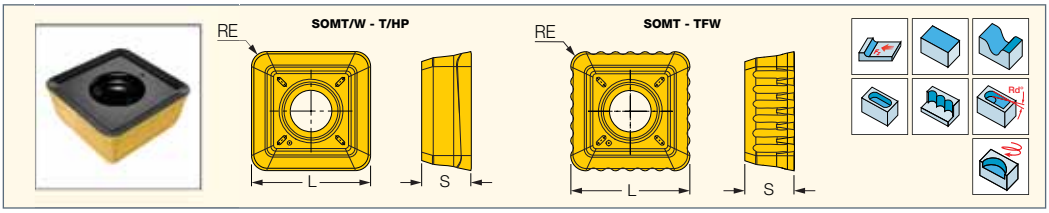
| ISO class DIN/ ISO 513 | Description | Material Group No. | Hardness HB | Typical materials AISI/SAE/ ASTM/AA | Typical materials W.-Nr./DIN | Insert type | Carbide grade | D.O.C. $a_p$ (mm) Recommended | D.O.C. $a_p$ (mm) Range | Cutting speed $v_c$ (m/min) | Feed $f_z$ (mm/tooth) Recommended | Feed $f_z$ (mm/tooth) Range | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel and cast steel, free cutting steel | 1-5 | 130-180 | 1020 | 1.0402 | T / RM-T | IC808 | 1.2 | 0.4-1.5 | 150-220 | 1.5 | 0.5-2.0 | dry |
| | | | | | | | IC830 | | | 140-200 | 1.6 | 0.5-2.0 | dry/ wet |
| | low alloy and cast steel (less than 5% of alloying elements) | 6-8 | 260-300 | 4340 | 1.6582 | | IC808 | | | 140-200 | 1.5 | 0.5-2.0 | dry |
| | | | | | | | IC830 | | | 120-180 | 1.6 | 0.5-2.0 | dry/ wet |
| | | 9 | HRC 35-42* | 3135 | 1.5710 | | IC808 | | | 130-180 | 1.5 | 0.5-1.8 | dry |
| | | | | | | | IC830 | | | 120-160 | 1.5 | 0.5-1.8 | dry/ wet |
| | high alloyed steel, cast steel and tool steel | 10-11 | 200-220 | H13 | 1.2344 | | IC808 | | | 120-170 | 1.3 | 0.5-1.8 | dry |
| | | | | | | | IC830 | | | 100-150 | 1.4 | 0.5-1.8 | dry/ wet |
| | stainless steel and cast steel | 12-13 | 200 | 420 | 1.4021 | | IC808 | | | 110-160 | 1.3 | 0.5-1.8 | dry |
| | | | | | | | IC830 | | | 100-150 | 1.4 | 0.5-1.8 | dry/ wet |
| M | stainless steel and cast steel | 14 | 200 | 304L | 1.4306 | HP/ RM-HP | IC830 | 1.0 | 0.4-1.5 | 80-120 | 1.0 | 0.5-1.5 | wet |
| | | | | | | | IC808 | | | 100-160 | | 0.5-1.5 | |
| | | | | | | | IC5820 | | | 100-160 | | 0.5-1.6 | |
| | | | | | | | IC882 | | | 80-130 | | 0.5-1.8 | |
| K | gray cast iron (GG) | 15-16 | 250 | class 40 | 0.6025 (GG25) | T20 / T | IC810 | 1.5 | 0.4-1.5 | 150-220 | 1.5 | 0.5-2.0 | dry |
| | nodular cast iron (GGG) | 17-18 | 200 | class 65-45-12 | 0.7050 (GGG50) | | | | | 120-200 | | 0.5-2.0 | |
| N | wrought and cast aluminum alloys | 21-24 | 60-100 | 7075 | 3.4365 | HP-P | IC28 | 1.2 | 0.4-1.5 | 250-450 | 1.0 | 0.5-2.0 | wet |
| | hight temperature | 25 | 130 | A03930 | G-AlSi20MgNi | | | | | 180-280 | | 0.5-2.0 | |
| S | high temperature alloys and titanium alloys | 33-35 | 340 | inconel 718 | 2.4668 | HP/ RM-HP | IC830 | 1.0 | 0.4-1.5 | 25-30 | 0.5 | 0.5-1.0 | wet |
| | | | | | | | IC808 | | | 25-35 | | 0.5-1.0 | |
| | | | | | | | IC5820 | | | 25-35 | | 0.5-1.0 | |
| | | | | | | | IC882 | | | 20-30 | | 0.5-1.0 | |
| | | 36-37 | HRC 35-40 | AMS R56400 | 3.7165 (Ti6Al4V ELI) | | IC830 | | | 20-30 | 0.6 | 0.5-1.0 | |
| | | | | | | | IC808 | | | 35-60 | | 0.5-1.0 | |
| | | | | | | | IC5820 | | | 25-40 | | 0.5-1.0 | |
| | | | | | | | IC882 | | | 25-35 | | 0.5-1.0 | |
| H | hardened steel | 38 | HRC 45-49 | HARDOX 450 plate | | SOMW | IC808 | 0.8 | 0.4-1.2 | 45-65 | 0.5 | 0.4-0.5 | dry |
| | | | HRC 58-62 | D2 | 1.2379 | | | 0.4 | 0.4-1.2 | 40-60 | 0.45 | 0.4-0.5 | |

* Quenched and tempered

For machining in unstable conditions, the recommended cutting data should be reduced by 20-30%

MILL4FEED

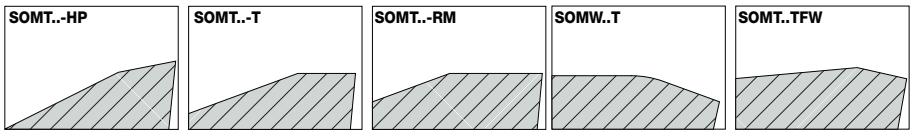
**FFQ4 SOMT/W 1706**
Single-Sided Square Inserts
with 4 Cutting Edges
for Fast Feed Milling




| Designation | Dimensions L | S | RE | Tough ↔ Hard IC882 | IC830 | IC808 | IC810 | IC5600 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| **FFQ4 SOMT 1706RM-HP** | 17.50 | 6.00 | 2.50 | | ● | | | | 1.20-2.50 | 0.40-1.20 |
| **FFQ4 SOMT 1706RM-T** | 17.50 | 6.00 | 2.50 | | | ● | | | 1.20-3.00 | 0.40-2.00 |
| **FFQ4 SOMT 170625HP** | 17.50 | 6.00 | 2.50 | ● | ● | ● | | | 1.20-3.00 | 0.40-1.50 |
| **FFQ4 SOMT 170625T** | 17.50 | 6.00 | 2.50 | | ● | ● | ● | ● | 1.20-3.00 | 0.40-2.00 |
| **FFQ4 SOMT 170625TFW** | 17.50 | 6.00 | 2.50 | | | ● | | | 1.20-3.00 | 0.20-1.20 |
| **FFQ4 SOMW 170640T** | 18.00 | 6.10 | 4.00 | | | ● | | | 1.20-3.00 | 0.40-1.50 |

- For side plunging, the initial cutting feed is 0.1 mm/t • T type for steel, ferritic and martensitic stainless steel and cast iron
- RM-.. type for interrupted cut and machining near straight shoulder walls • HP type for austenitic stainless steel and high temperature alloys
- TFW type for unstable cutting conditions • SOMW- flat insert for hard material (up to 60 HRC) and uneven surface

**For tools, see pages:** FFQ4 D-17 (347)




## Average Cutting Data for FFQ4 Size 17 Fast Feed Cutters

| ISO Class DIN/ISO 513 | Workpiece Material: Description | ISCAR Mat. Group* | Hardness, HB | Typical Representstive: AISI/SAE/ASTM | DIN W.-Nr. | Insert Type | Carbide Grade | D.O.C. Ap [mm]: Recommended | Range | Cutting Speed $V_c$ [m/min] | Feed $F_z$ [mm/tooth]: Recommended | Range | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel and cast steel, free cutting steel | 1-5 | 130-180 | 1020 | 1.0402 | T / RM-T | IC808 | 2.5 | 0.4-3.0 | 150-220 | 1.5 | 0.5-2.0 | dry |
| | | | | | | | IC830 | | | 140-200 | 1.6 | 0.5-2.0 | dry/wet |
| | low alloy and cast steel (less than 5% of alloying elements) | 6-8 | 260-300 | 4340 | 1.6582 | | IC808 | | | 140-200 | 1.5 | 0.5-2.0 | dry |
| | | | | | | | IC830 | | | 120-180 | 1.6 | 0.5-2.0 | dry/wet |
| | | 9 | HRC 35-42** | 3135 | 1.5710 | | IC808 | | | 130-180 | 1.5 | 0.5-1.8 | dry |
| | | | | | | | IC830 | | | 120-160 | 1.5 | 0.5-1.8 | dry/wet |
| | high alloyed steel, cast steel and tool steel | 10-11 | 200-220 | H13 | 1.2344 | | IC808 | | | 120-170 | 1.3 | 0.5-1.8 | dry |
| | | | | | | | IC830 | | | 100-150 | 1.4 | 0.5-1.8 | dry/wet |
| | stainless steel and cast steel | 12-13 | 200 | 420 | 1.4021 | | IC808 | | | 110-160 | 1.3 | 0.5-1.8 | dry |
| | | | | | | | IC830 | | | 100-150 | 1.4 | 0.5-1.8 | dry/wet |
| M | stainless steel and cast steel | 14 | 200 | 304L | 1.4306 | HP/ RM-HP | IC830 | 2.0 | 0.4-3.0 | 80-120 | 1.0 | 0.5-1.5 | wet |
| | | | | | | | IC808 | | | 100-160 | | 0.5-1.5 | |
| | | | | | | | IC5820 | | | 100-160 | | 0.5-1.6 | |
| | | | | | | | IC882 | | | 80-130 | | 0.5-1.8 | |
| K | gray cast iron (GG) | 15-16 | 250 | class 40 | 0.6025 (GG25) | T | IC810 | 3.0 | 0.4-3.0 | 150-220 | 1.5 | 0.5-2.0 | dry |
| | nodular cast iron (GGG) | 17-18 | 200 | class 65-45-12 | 0.7050 (GGG50) | | IC810 | | | 120-200 | | 0.5-2.0 | |
| S | high temperature alloys and titanium alloys | 33-35 | 340 | inconel 718 | 2.4668 | HP/ RM-HP | IC830 | 1.5 | 0.4-3.0 | 25-30 | 0.5 | 0.5-1.0 | wet |
| | | | | | | | IC808 | | | 25-35 | | 0.5-1.0 | |
| | | | | | | | IC5820 | | | 25-35 | | 0.5-1.0 | |
| | | | | | | | IC882 | | | 20-30 | | 0.5-1.0 | |
| | | 36-37 | HRC 35-40 | AMS R56400 | 3.7165 (Ti6Al4V ELI) | | IC830 | | | 20-30 | 0.6 | 0.5-1.0 | |
| | | | | | | | IC808 | | | 35-60 | | 0.5-1.0 | |
| | | | | | | | IC5820 | | | 25-40 | | 0.5-1.0 | |
| | | | | | | | IC882 | | | 25-35 | | 0.5-1.0 | |
| H | hardened steel | 38 | HRC 45-49 | HARDOX 450 plate | | SOMW | IC808 | 1.0 | 0.4-2.5 | 45-65 | 0.5 | 0.4-1.0 | dry |
| | | | HRC 58-62 | D2 | 1.2379 | | | 0.5 | 0.4-2.5 | 40-60 | 0.4 | 0.4-0.5 | |

* ISCAR material group in accordance with VDI 3323 standard
** Quenched and tempered
For machining in unstable conditions, the recommended cutting data should be reduced by 20-30%

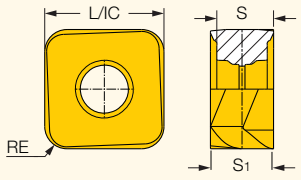
## Recommended Cutting Conditions for Milling Inserts FFQ4 SOMT/W – TFW Type

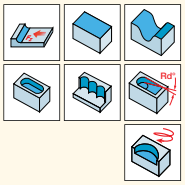
| ISO | Material | | Condition | Hardness HB | Type of Insert | Depth of Cut (mm) Insert Size 12 (mm) | Depth of Cut (mm) Insert Size 17 (mm) | Cutting Speed $V_c$ (m/min) | Feed $F_z$ (mm/tooth) | Material Group No. |
|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel and cast steel, free cutting steel | <0.25% C | annealed | 125 | TFW | 0.7-1.5 | 1.5-3.0 | 150-220 | 0.4-1.2 | 1 |
| | | ≥0.25% C | annealed | 190 | | | | 130-210 | | 2 |
| | | <0.55% C | quenched and tempered | 250 | | | | 120-200 | | 3 |
| | | ≥0.55% C | annealed | 220 | | | | 120-190 | | 4 |
| | | | quenched and tempered | 300 | | | | 110-180 | | 5 |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 200 | | | | 120-190 | | 6 |
| | | | quenched and tempered | 275 | | | | 110-180 | | 7 |
| | | | | 300 | | | | 115-170 | | 8 |
| | | | | 350 | | | | 110-170 | | 9 |
| | high alloyed steel, cast steel and tool steel | | annealed | 200 | | | | 120-170 | | 10 |
| | | | quenched and tempered | 325 | | | | 100-150 | | 11 |
| | stainless steel and cast steel | | ferritic / martensitic | 200 | | | | 110-160 | | 12 |
| | | | martensitic | 240 | | | | 100-150 | | 13 |
| K | gray cast iron (GG) | | ferritic / pearlitic | 180 | TFW | 0.7-1.4 | 1.5-3.0 | 150-220 | 0.4-1.2 | 15 |
| | | | pearlitic / martensitic | 260 | | | | | | 16 |
| | nodular cast iron (GGG) | | ferritic | 160 | | | | 120-200 | | 17 |
| | | | pearlitic | 250 | | | | | | 18 |
| | malleable cast iron | | ferritic | 130 | | | | 130-210 | | 19 |
| | | | pearlitic | 230 | | | | | | 20 |
| H | chilled cast iron | | cast | 400 | TFW | 0.7-1.4 | 1.5-3.0 | 80-100 | 0.4-1.2 | 40 |

steel
cast iron
hard materials

NEOFEED HIGH FEED LINE

**FFQ8 SZMU**
Double-Sided Square Inserts with 8 Cutting Edges for High Feed Milling

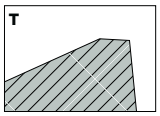


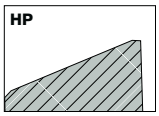



| Designation | Dimensions L | S | S1 | RE | Tough ↔ Hard IC882 | IC830 | IC808 | IC810 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| FFQ8 SZMU 120520HP | 12.00 | 5.85 | 6.50 | 2.00 | ● | ● | ● | | 0.20-1.50 |
| FFQ8 SZMU 120520T | 12.00 | 5.85 | 6.50 | 2.00 | | ● | ● | ● | 0.40-1.50 |

- For side plunging, the initial cutting feed is 0.1 mm/t
- T- for steel, ferritic and martensitic stainless steel, cast iron and hardened steel
- HP - for austenitic stainless steel and high temperature alloys

**For tools, see pages:** FFQ8-12 (348) • MFQ8-12 (348)



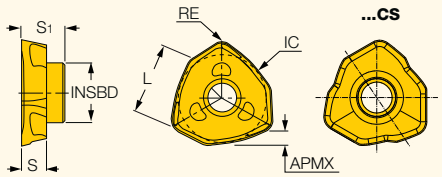

## Average Cutting Data for FFQ8 Fast Feed Cutters

| ISO class DIN/ ISO 513 | Workpiece material: Description | ISCAR mat. group* | Hardness HB | Typical representative: AISI/SAE/ ASTM | Typical representative: DIN W.-Nr. | Insert type | Carbide grade | Cutting speed $v_c$ (m/min) | Fast feed (FF): D.O.C $a_p$ (mm) | Fast feed (FF): Feed $f_z$ (mm/tooth) | Moderate feed (MF): D.O.C $a_p$ (mm) | Moderate feed (MF): Feed $f_z$ (mm/tooth) | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel | 1-5 | 130-180 | 1020 | 1.0402 | T | IC808 | 150-220 | 0.5-1.5 | 0.40-1.5 | 0.5-3.0 | 0.20-1.0 | dry |
| | | | | | | | IC830 | 140-200 | | 0.40-1.5 | | 0.20-1.0 | dry/wet |
| | low alloy steel | 6-8 | 260-300 | 4340 | 1.6582 | | IC808 | 140-200 | | 0.40-1.5 | | 0.20-1.0 | dry/wet |
| | | | | | | | IC830 | 120-180 | | 0.40-1.5 | | 0.20-1.0 | dry/wet |
| | | 9 | 35-42** HRC | 3135 | 1.5710 | | IC808 | 130-180 | | 0.40-1.5 | | 0.20-1.0 | dry |
| | | | | | | | IC830 | 120-160 | | 0.40-1.5 | | 0.20-1.0 | dry/wet |
| | high alloy steel | 10-11 | 200-220 | H13 | 1.2344 | | IC808 | 120-170 | | 0.40-1.5 | | 0.20-1.0 | dry |
| | | | | | | | IC830 | 100-150 | | 0.40-1.5 | | 0.20-1.0 | dry/wet |
| | ferritic/martensitic stainless steel | 12-13 | 200 | 420 | 1.4021 | | IC808 | 110-160 | | 0.40-1.5 | | 0.20-1.0 | dry |
| | | | | | | | IC830 | 100-150 | | 0.40-1.5 | | 0.20-1.0 | dry/wet |
| M | austenitic stainless steel | 14 | 200 | 304L | 1.4306 | HP | IC882 | 70-130 | 0.5-1.5 | 0.20-0.8 | 0.5-3.0 | 0.20-0.5 | wet |
| | | | | | | | IC808 | 100-160 | | 0.20-0.8 | | 0.20-0.5 | |
| | | | | | | | IC830 | 80-140 | | 0.20-0.8 | | 0.20-0.5 | |
| K | gray cast iron | 15-16 | 250 | class 40 | 0.6025 (GG25) | T | IC810 | 150-220 | 0.5-1.5 | 0.40-1.5 | 0.5-3.0 | 0.40-1.0 | dry |
| | nodular cast iron | 17-18 | 200 | class 65-45-12 | 0.7050 (GGG50) | | IC810 | 120-200 | | 0.40-1.5 | | 0.40-1.0 | |
| S | high temperature alloys and titanium alloys | 31-32 | 220 | 330 | 1.4864 | HP | IC882 | 40-60 | 0.5-1.5 | 0.20-0.8 | 0.5-3.0 | 0.20-0.5 | wet |
| | | | | | | | IC808 | 40-80 | | 0.20-0.8 | | 0.20-0.5 | |
| | | | | | | | IC830 | 40-75 | | 0.20-0.8 | | 0.20-0.5 | |
| | | 33-35 | 340 | inconel 718 | 2.4668 | | IC882 | 20-30 | | 0.20-0.8 | | 0.20-0.5 | |
| | | | | | | | IC808 | 25-40 | | 0.20-0.8 | | 0.20-0.5 | |
| | | | | | | | IC830 | 25-35 | | 0.20-0.8 | | 0.20-0.5 | |
| | | 36-37 | 30-32 HRC | AMS R56400 | 3.7165 | | IC882 | 30-50 | | 0.20-0.8 | | 0.20-0.5 | |
| | | | | | | | IC808 | 40-60 | | 0.20-0.8 | | 0.20-0.5 | |
| | | | | | | | IC830 | 35-55 | | 0.20-0.8 | | 0.20-0.5 | |
| H | hardened steel | 38 | 45-49 HRC | HARDOX 450 plate | | T | IC808 | 50-75 | 0.5-1.5 | 0.20-0.5 | 0.5-3.0 | 0.20-0.5 | dry |

* ISCAR material group in accordance with VDI 3323 standard
** Quenched and tempered
For machining under unstable conditions, the recommended cutting data should be reduced by 20-30%

FEEDMILL

**FF WOCT/WOMT/WOMW**
Arc Cutting Edge Inserts
for Fast Feed Machining
at Small Depths of Cut




| Designation | Dimensions IC | L | S | S1 | INSBD | RE | Rg[3] | APMX | Tough ↔ Hard IC882 | IC328 | IC928 | IC908 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FF WOCT 060212T** | 9.86 | 7.00 | 2.70 | 4.20 | 5.60 | 2.00 | 3.00 | 1.20 | | ● | ● | ● | | 0.20-1.20 | 0.30-1.00 |
| **FF WOMT 060212T-M** | 9.86 | 7.00 | 2.70 | 4.20 | 5.60 | 2.00 | 3.00 | 1.20 | | | ● | ● | | 0.20-1.20 | 0.70-1.50 |
| **FF WOMW 060212T-M** [1] | 9.86 | 7.00 | 2.70 | 4.70 | 5.60 | 2.00 | 3.00 | 1.20 | | | ● | | | 0.20-1.20 | 0.50-3.50 |
| **FF WOCT 09T320T** | 14.50 | 10.60 | 3.95 | 6.50 | 9.30 | 2.00 | 4.00 | 2.00 | ● | ● | ● | | | 0.20-2.00 | 0.30-1.00 |
| **FF WOMT 09T320-CS** [2] | 14.50 | 10.60 | 3.95 | 6.50 | 9.30 | 2.00 | 4.20 | 2.00 | | | | ● | | 0.20-2.00 | 0.70-1.20 |
| **FF WOMT 09T320T** | 14.50 | 10.60 | 3.95 | 6.50 | 9.30 | 2.00 | 4.00 | 2.00 | | | ● | ● | ● | 0.20-2.00 | 0.70-2.00 |
| **FF WOMW 09T320T** [1] | 14.50 | 10.60 | 4.00 | 6.50 | 9.30 | 2.00 | 4.00 | 2.00 | | | ● | | | 0.20-2.00 | 0.50-3.50 |

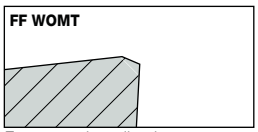
• For cutting speed recommendations, see pages 616-620

[1] Used for heavy machining, interrupted cuts and for hardened steel.

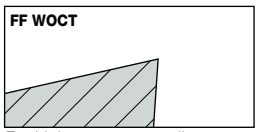
[2] Chip splitting insert - effective at depths of cut larger than 0.75 mm.

[3] Radius for programming

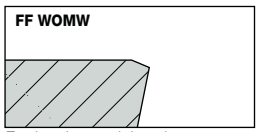
**For tools, see pages:** FF EW (349) • FF EW-CF (349) • FF EW-M (350) • FF FW (350)



For general applications



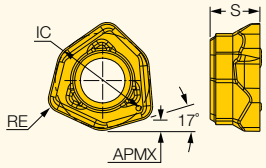
For high temperature alloys
and stainless steel

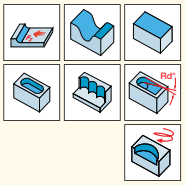


For hard material and
interrupted cut

MICRO 3 FEED
MF 300 ENDMILL

**FFT3 WXMT 03**
Single-Sided Small Trigon
Inserts for Fast Feed Milling



| Designation | Dimensions IC | S | RE | APMX | Tough ↔ Hard IC882 | IC830 | IC5820 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| FFT3 WXMT 030206T | 4.20 | 2.20 | 0.60 | 0.60 | ● | ● | ● | ● | 0.20-0.60 | 0.20-0.80 |

• For side plunging, the initial cutting feed is 0.08 mm/t

**For tools, see pages:** FFT3 EFM-03 (335) • FFT3 EFM-MM 03 (335)

## Recommended Machining Conditions for FFT3-03 Fast Feed Endmills

| ISO Class DIN/ ISO 513 | Workpiece Material Description | ISCAR Mat. Group* | Hardness, HB | Typical Materials AISI/SAE/ ASTM | DIN W.-Nr. | Carbide Grade | D.O.C. $a_p$ (mm) | Cutting Speed $v_c$ (m/min) | Feed $f_z$ (mm/tooth) | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel and cast steel, free cutting steel | 1-5 | 130-180 | 1020 | 1.0402 | IC808 | 0.20-0.60 | 120-200 | 0.30-0.80 | dry/wet |
| | | | | | | IC830 | | 110-180 | 0.30-0.80 | |
| | low alloy and cast steel (less than 5% of alloying elements) | 6-8 | 260-300 | 4340 | 1.6582 | IC808 | | 100-180 | 0.30-0.70 | |
| | | | | | | IC830 | | 90-160 | 0.30-0.70 | |
| | | 9 | HRC 35-42** | 3135 | 1.5710 | IC808 | | 100-160 | 0.30-0.60 | |
| | | | | | | IC830 | | 90-150 | 0.30-0.60 | |
| | high alloyed steel, cast steel and tool steel | 10-11 | 200-220 | H13 | 1.2344 | IC808 | | 80-150 | 0.30-0.60 | |
| | | | | | | IC830 | | 70-140 | 0.30-0.60 | |
| | stainless steel and cast steel | 12-13 | 200 | 420 | 1.4021 | IC808 | | 80-150 | 0.30-0.60 | |
| | | | | | | IC830 | | 70-140 | 0.30-0.60 | |
| M | stainless steel and cast steel | 14 | 200 | 304L | 1.4306 | IC830 | 0.20-0.60 | 80-120 | 0.20-0.60 | dry |
| | | | | | | IC5820 | | 100-160 | 0.20-0.50 | |
| | | | | | | IC882 | | 80-130 | 0.20-0.50 | |
| K | gray cast iron (GG) | 15-16 | 250 | class 40 | 0.6025 (GG25) | IC808 | 0.20-0.60 | 150-200 | 0.30-0.60 | dry |
| | nodular cast iron (GGG) | 17-18 | 200 | class 65-45-12 | 0.7050 (GGG50) | IC808 | | 140-180 | 0.30-0.60 | |
| S | high temperature alloys and titanium | 33-35 | 340 | inconel 718 | 2.4668 | IC882 | 0.2-0.50 | 20-30 | 0.20-0.40 | wet |
| | | | | | | IC5820 | | 25-35 | 0.20-0.40 | |
| | | | | | | IC808 | | 25-35 | 0.20-0.40 | |
| | | | | | | IC830 | | 25-30 | 0.20-0.40 | |
| | | 36-37 | HRC 30-32 | AMS R56400 | 3.7165 (Ti6Al4V ELI) | IC882 | | 25-35 | 0.20-0.50 | |
| | | | | | | IC5820 | | 25-40 | 0.20-0.50 | |
| | | | | | | IC808 | | 25-35 | 0.20-0.50 | |
| | | | | | | IC830 | | 20-30 | 0.20-0.50 | |
| H | hardened steel | 38 | HRC 45-49 | HARDOX 450 plate | | IC808 | 0.20-0.50 | 50-75 | 0.20-0.40 | dry/wet |
| | chilled cast iron | 40 | 400 | Ni-hard 1 | 0.9625 | | | 80-100 | 0.20-0.50 | |
| | cast iron | 41 | 500 | A532 IID | 0.9645 | | | 50-75 | 0.20-0.40 | |

* ISCAR material group in accordance with VDI 3323 standard

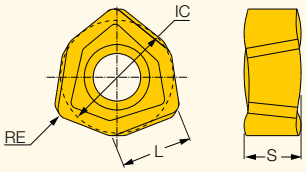
** Quenched and tempered

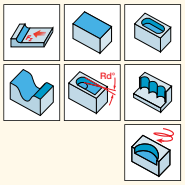
For machining under unstable conditions, the recommended cutting data should be reduced by 20-30%

HELI6FEED UPFEED LINE

## H600 WXCU

Double-Sided Inserts with 6 Cutting Edges for Fast Feed Machining

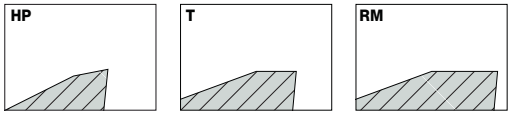


| Designation | Dimensions IC | L | S | RE | Tough ↔ Hard IC882 | IC330 | IC830 | IC5820 | IC380 | IC808 | IC810 | IC5600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H600 WXCU 040310HP | 6.25 | 4.13 | 3.10 | 0.96 | ● | ● | ● | | | | | |
| H600 WXCU 040310T | 6.25 | 4.13 | 3.10 | 0.96 | | | ● | | | ● | | ● |
| H600 WXCU 05T312HP | 8.33 | 5.50 | 4.20 | 1.20 | ● | ● | ● | ● | | | | |
| H600 WXCU 05T312T | 8.33 | 5.50 | 4.20 | 1.20 | | | ● | | | ● | ● | |
| H600 WXCU 070515HP | 11.14 | 7.16 | 5.90 | 1.50 | ● | ● | ● | ● | ● | | | |
| H600 WXCU 070515T | 11.14 | 7.16 | 5.90 | 1.50 | | | ● | | | ● | ● | ● |
| H600 WXCU 080612HP | 13.65 | 8.80 | 6.80 | 1.20 | ● | ● | ● | | ● | ● | | |
| H600 WXCU 080612T | 13.65 | 8.80 | 6.80 | 1.20 | | | ● | | | ● | ● | |
| H600 WXCU 080616RM | 13.65 | 8.80 | 6.80 | 1.60 | | | ● | | | ● | | |

- HP - for stainless steel and high temperature alloys • T - for alloy steel and cast iron ("I" mark on top rake face for identification)
- RM - for interrupted cut and hard materials

**For tools, see pages:** FF EWX (339) • FF EWX-M (340) • FF EWX-MM (341) • FF FWX (351) • MF EWX (341) • MF EWX-M (342) • MF FWX (352)

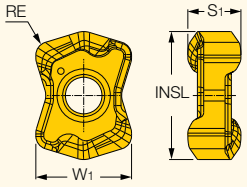


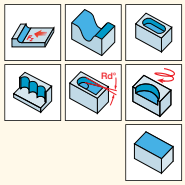
| Inserts | Cutting Recommendations for FF Tools $a_p$ (mm) | $f_z$ (mm/t) | Radius for Programming on FF Tools | Cutting Recommendations for MF Tools $a_p$ (mm) | $f_z$ (mm/t) | Radius for Programming on MF Tools |
|---|---|---|---|---|---|---|
| H600 WXCU 040310HP | 0.5-0.8 | 0.34-0.68 | 1.9 | 0.5-1.5 | 0.2-0.4 | 2.6 |
| H600 WXCU 040310T | 0.5-0.8 | 0.68-1.03 | 1.9 | 0.5-1.5 | 0.4-0.6 | 2.6 |
| H600 WXCU 05T312HP | 0.7-1.0 | 0.34-0.68 | 2.3 | 0.8-2.0 | 0.2-0.4 | 3.3 |
| H600 WXCU 05T312T | 0.7-1.0 | 0.68-1.03 | 2.3 | 0.8-2.0 | 0.4-0.6 | 3.3 |
| H600 WXCU 070515HP | 1.0-1.5 | 0.34-0.86 | 3.1 | 1-2.7 | 0.2-0.5 | 4.1 |
| H600 WXCU 070515T | 1.0-1.5 | 0.68-1.37 | 3.1 | 1-2.7 | 0.4-0.8 | 4.1 |
| H600 WXCU 080612HP | 1.5-2.0 | 0.34-0.86 | 3.3 | 1.8-3.5 | 0.2-0.5 | 4.8 |
| H600 WXCU 080612T | 1.5-2.0 | 0.68-1.37 | 3.3 | 1.8-3.5 | 0.4-0.8 | 4.8 |
| H600 WXCU 080616RM | 1.5-2.0 | 0.68-1.37 | 3.7 | 1.8-3.5 | 0.4-0.8 | 5.2 |

| Inserts | Cutting Recommendations for FF Tools in plunging $a_e$ (mm) | $f_z$ (mm/t) | Radius for Programming on FF Tools | Cutting Recommendations for MF Tools in plunging $a_e$ (mm) | $f_z$ (mm/t) | Radius for Programming on MF Tools |
|---|---|---|---|---|---|---|
| H600 WXCU 040310HP | 3.7 | 0.04-0.08 | 1.9 | 3.5 | 0.04-0.08 | 2.6 |
| H600 WXCU 040310T | 3.7 | 0.04-0.10 | 1.9 | 3.5 | 0.04-0.10 | 2.6 |
| H600 WXCU 05T312HP | 5 | 0.04-0.08 | 2.3 | 4.75 | 0.04-0.08 | 3.3 |
| H600 WXCU 05T312T | 5 | 0.04-0.10 | 2.3 | 4.75 | 0.04-0.10 | 3.3 |
| H600 WXCU 070515HP | 6.5 | 0.04-0.10 | 3.1 | 6.15 | 0.04-0.10 | 4.1 |
| H600 WXCU 070515T | 6.5 | 0.04-0.12 | 3.1 | 6.15 | 0.04-0.12 | 4.1 |
| H600 WXCU 080612HP | 8 | 0.04-0.10 | 3.3 | 7.65 | 0.04-0.10 | 4.8 |
| H600 WXCU 080612T | 8 | 0.04-0.12 | 3.3 | 7.65 | 0.04-0.12 | 4.8 |
| H600 WXCU 080616RM | 8 | 0.04-0.12 | 3.7 | 7.65 | 0.04-0.12 | 5.2 |

LOGIQ4FEED HIGH FEED MILLING

**FFX4 XNMU/W-04**
"Bone Shaped" Inserts
with 4 Cutting Edges
for Fast Feed Milling

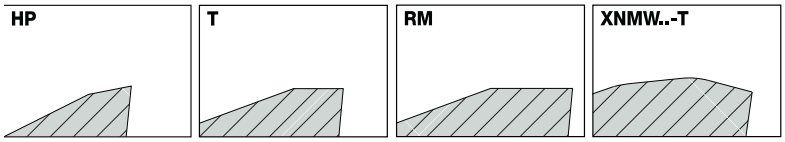


| Designation | Dimensions INSL | S1 | RE | W1 | Tough ↔ Hard IC882 | IC716 | IC840 | IC830 | IC5820 | IC808 | IC810 | IC5600 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FFX4 XNMU 040310HP** | 9.58 | 3.97 | 1.00 | 7.16 | ● | ● | ● | ● | ● | | | | 0.20-0.80 | 0.20-0.80 |
| **FFX4 XNMU 040310RM-HP** | 9.58 | 3.97 | 1.00 | 7.16 | ● | | | | | ● | | | 0.20-0.80 | 0.20-0.80 |
| **FFX4 XNMU 040310RM-T** | 9.58 | 3.95 | 1.00 | 7.16 | | | | | | ● | | | 0.20-0.80 | 0.40-1.20 |
| **FFX4 XNMU 040310T** | 9.58 | 3.95 | 1.00 | 7.16 | | | | ● | | ● | ● | ● | 0.20-0.80 | 0.40-1.20 |
| **FFX4 XNMW 040310T** | 9.27 | 3.97 | 1.14 | 7.16 | | | | | | ● | | | 0.20-0.60 | 0.20-1.20 |

- For side plunging, the initial cutting feed is 0.1 mm/t • HP- for austenitic stainless steel, titanium and high temperature alloys
- RM-reinforced type insert
- T- for steel, ferritic and martensitic stainless steel and cast iron • XNMW-T- for hard material (up to 49 HRC) and uneven surfaces

**For tools, see pages:** FFX4 ED (336) • FFX4 ED-M (336) • FFX4 ED-MM (337) • FFX4 FD-04 (337)




## Average Cutting Data for FFX4 Fast Feed Cutters Size 04

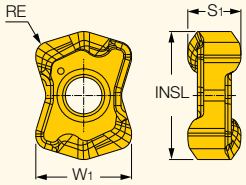
| ISO class DIN/ ISO 513 | Description | Workpiece material: ISCAR mat. group* | Hardness HB | Typical materials: AISI/SAE/ASTM | DIN W.-Nr. | Insert type | Carbide grade | D.O.C. $a_p$ (mm) | Cutting Speed & Feed: $v_c$ (m/min) | $f_z$ (mm/tooth) | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel | 1-5 | 130-180 | 1020 | 1.040 | T/RM-T | IC808 | 0.20-0.80 | 150-220 | 0.40-1.00 | dry |
| | | | | | | | IC830 | | 150-200 | 0.40-1.20 | dry/wet |
| | low alloy steel | 6-8 | 260-300 | 4340 | 1.658 | | IC808 | | 150-200 | 0.40-0.90 | dry |
| | | | | | | | IC830 | | 120-180 | 0.40-1.10 | dry/wet |
| | | 9 | HRC 35-42** | 3135 | 1.5710 | | IC808 | | 130-180 | 0.40-0.80 | dry |
| | | | | | | | IC830 | | 120-160 | 0.40-1.00 | dry/wet |
| | high alloy steel | 10-11 | 200-220 | H13 | 1.234 | | IC808 | | 120-170 | 0.40-0.80 | dry |
| | | | | | | | IC830 | | 100-150 | 0.40-0.90 | dry/wet |
| | ferritic/martensitic stainless steel | 12-13 | 200 | 420 | 1.402 | | IC808 | | 110-160 | 0.40-0.80 | dry |
| | | | | | | | IC830 | | 100-150 | 0.40-0.90 | dry/wet |
| M | austenitic stainless steel | 14 | 200 | 304L | 1.431 | HP/ RM-HP | IC830 | 0.20-0.80 | 80-120 | 0.20-0.80 | wet |
| | | | | | | | IC840 | | 80-140 | 0.20-0.80 | |
| | | | | | | | IC5820 | | 100-160 | 0.20-0.80 | |
| | | | | | | | IC882 | | 80-130 | 0.20-0.80 | |
| K | grey cast iron | 15-16 | 250 | class 40 | 0.6025 (GG25) | T/RM-T | IC810 | 0.20-0.80 | 150-220 | 0.40-1.20 | dry |
| | nodular cast iron | 17-18 | 200 | class 65-45-12 | 0.7050 (GGG50) | | IC810 | | 120-200 | 0.40-1.20 | |
| S | high temperature alloys and titanium | 31-32 | 220 | 330 | 1.486 | HP/ RM-HP | IC882 | 0.20-0.80 | 40-60 | 0.20-0.70 | wet |
| | | | | | | | IC5820 | | 40-80 | 0.20-0.70 | |
| | | | | | | | IC840 | | 40-80 | 0.20-0.70 | |
| | | | | | | | IC830 | | 40-75 | 0.20-0.70 | |
| | | 33-35 | 340 | inconel 718 | 2.467 | | IC882 | | 20-30 | 0.20-0.70 | |
| | | | | | | | IC5820 | | 25-35 | 0.20-0.70 | |
| | | | | | | | IC840 | | 25-35 | 0.20-0.70 | |
| | | | | | | | IC830 | | 25-30 | 0.20-0.70 | |
| | | 36-37 | 30-32 | AMS R56400 | (Ti6Al4V ELI) | | IC882 | | 25-35 | 0.20-0.70 | |
| | | | | | | | IC5820 | | 25-40 | 0.20-0.70 | |
| | | | | | | | IC840 | | 25-35 | 0.20-0.70 | |
| | | | | | | | IC830 | | 20-30 | 0.20-0.70 | |
| H | hardened steel | 38 | HRC 45-49 | HARDOX 450 plate | | XNMW | IC808 | 0.20-0.60 | 45-65 | 0.20-0.70 | dry |

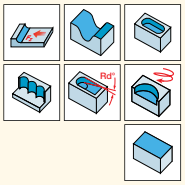
* ISCAR material group in accordance with VDI 3323 standard ** Quenched and tempered

For machining under unstable conditions, the recommended cutting data should be reduced by 20-30%

LOGIQ4FEED HIGH FEED MILLING

**FFX4 XNMU-08**
"Bone Shaped" Inserts
with 4 Cutting Edges
for Fast Feed Milling

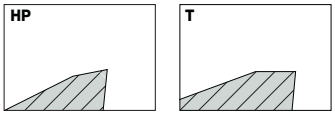


| Designation | Dimensions INSL | S1 | RE | W1 | Tough ↔ Hard IC882 | IC830 | IC808 | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| FFX4 XNMU 080620HP | 17.90 | 7.80 | 2.00 | 15.60 | ● | ● | ● | | 0.20-2.00 | 0.20-0.80 |
| FFX4 XNMU 080620T | 17.90 | 7.80 | 2.00 | 15.60 | | ● | ● | ● | 0.20-2.00 | 0.40-1.20 |

- For side plunging, the initial cutting feed is 0.1 mm/t
- T-for steel, ferritic and martensitic stainless steel, cast iron and hardened steel
- HP-for austenitic stainless steel and high temperature alloys

**For tools, see pages:** FFX4 FD-08 (338)



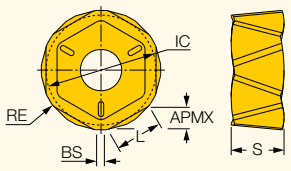

## Average Cutting Data for FFX4 Fast Feed Cutters Size 08

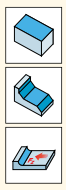
| ISO class DIN/ISO 513 | Workpiece material Description | ISCAR mat. group* | Hardness HB | Typical representative AISI/SAE/ASTM | DIN W.-Nr. | Insert type | Carbide grade | D.O.C. $a_p$ (mm) | Cutting speed $v_c$ (m/min) | Feed $f_z$ (mm/tooth) | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel | 1-5 | 130-180 | 1020 | 1.0402 | T | IC808 | 0.50-2.0 | 150-180 | 0.40-1.20 | dry |
| | | | | | | | IC830 | | 150-180 | 0.40-1.20 | dry/wet |
| | low alloy steel | 6-8 | 260-300 | 4340 | 1.6582 | | IC808 | | 150-180 | 0.40-1.20 | dry |
| | | | | | | | IC830 | | 120-180 | 0.40-1.10 | dry/wet |
| | | 9 | HRC 35-42** | 3135 | 1.5710 | | IC808 | | 130-180 | 0.40-1.10 | dry |
| | | | | | | | IC830 | | 120-160 | 0.40-1.00 | dry/wet |
| | high alloy steel | 10-11 | 200-220 | H13 | 1.2344 | | IC808 | | 120-170 | 0.40-0.80 | dry |
| | | | | | | | IC830 | | 100-150 | 0.40-0.90 | dry/wet |
| | ferritic/martensitic stainless steel | 12-13 | 200 | 420 | 1.4021 | | IC808 | | 110-160 | 0.40-0.80 | dry |
| | | | | | | | IC830 | | 100-150 | 0.40-0.90 | dry/wet |
| M | austenitic stainless steel | 14 | 200 | 304L | 1.4306 | HP | IC830 | 0.50-2.0 | 70-130 | 0.20-0.80 | wet |
| | | | | | | | IC808 | | 100-160 | 0.20-0.80 | |
| | | | | | | | IC882 | | 80-140 | 0.20-0.80 | |
| K | gray cast iron | 15-16 | 250 | class 40 | 0.6025 (GG25) | T | IC810 | 0.50-2.0 | 150-220 | 0.40-1.20 | dry |
| | nodular cast iron | 17-18 | 200 | class 65-45-12 | 0.7050 (GGG50) | | IC810 | | 120-200 | 0.40-1.20 | |
| S | high temperature alloys and titanium | 31-32 | 220 | 330 | 1.4864 | HP | IC882 | 0.50-2.0 | 40-60 | 0.20-0.70 | wet |
| | | | | | | | IC808 | | 40-80 | 0.20-0.70 | |
| | | | | | | | IC830 | | 40-75 | 0.20-0.70 | |
| | | 33-35 | 340 | inconel 718 | 2.4668 | | IC882 | | 20-30 | 0.20-0.70 | |
| | | | | | | | IC808 | | 25-40 | 0.20-0.70 | |
| | | | | | | | IC830 | | 25-35 | 0.20-0.70 | |
| | | 36-37 | 30-32 | AMS R56400 | 3.7165 (Ti6Al4V ELI) | | IC882 | | 30-50 | 0.20-0.70 | |
| | | | | | | | IC808 | | 40-60 | 0.20-0.70 | |
| | | | | | | | IC830 | | 35-55 | 0.20-0.70 | |
| H | hardened steel | 38 | HRC 45-49 | HARDOX 450 plate | | T | IC808 | 0.50-2.0 | 50-75 | 0.20-0.50 | dry |

* ISCAR material group in accordance with VDI 3323 standard ** Quenched and tempered
For machining under unstable conditions, the recommended cutting data should be reduced by 20-30%

HELI12FEED UPFEED LINE

**H1200 HXCU 0606**
Double-Sided Hexagonal
Inserts with 12 Cutting Edges

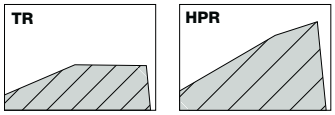


| Designation | Dimensions APMX | L | BS | RE | IC | S | Tough ↔ Hard IC845 | IC840 | IC830 | IC5500 | IC808 | IC810 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H1200 HXCU 0606-HPR | 3.00 | 6.43 | 1.06 | 1.60 | 14.88 | 7.15 | | ● | ● | | ● | | 0.20-3.00 | 0.08-0.40 |
| H1200 HXCU 0606-TR | 3.00 | 6.43 | 1.06 | 1.60 | 14.88 | 7.15 | ● | | ● | ● | ● | ● | 0.20-3.00 | 0.25-0.65 |

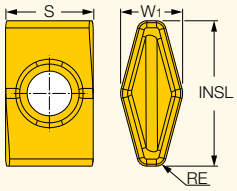
- TR-for steel and cast iron, HPR-for stainless steel and high temperature alloys
- For cutting speed recommendations, see pages 616-620

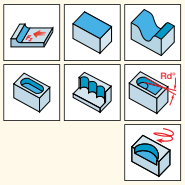
**For tools, see pages:** MF FHX-R06 (353)



TANG4FEED HI-FEED MILLING

**FF VNMT 0706**
Tangentially Clamped Inserts with 4 Cutting Edges for Fast Feed Milling



| Designation | Dimensions W1 | INSL | RE | S | Tough ↔ Hard IC882 | IC845 | IC840 | IC830 | IC5820 | IC5500 | IC808 | IC810 | IC5400 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FF VNMT 0706ZN-ER (1) | 6.40 | 15.00 | 1.00 | 9.05 | ● | ● | ● | ● | ● | | ● | ● | ● | 0.50-1.50 | 0.40-1.80 |
| FF VNMT 0706ZN-ETR (2) | 6.40 | 15.00 | 1.00 | 9.05 | | | | ● | | ● | ● | ● | | 0.50-1.50 | 0.40-1.80 |

• For side plunging, the initial cutting feed is 0.1 mm/t
(1) For general applications
(2) Reinforced cutting edges for interrupted cut and unfavorable conditions

**For tools, see pages:** FFV-D-R-VN07 (353)

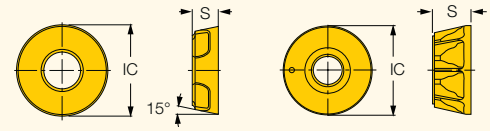
## Average Cutting Data for FFV Size 07 Fast Feed Cutters

| ISO class DIN/ ISO 513 | Workpiece material: Description | ISCAR mat. group* | Hardness HB | Typical material: AISI/SAE/ ASTM | Typical material: DIN W.-Nr. | Insert type | Carbide grade | D.O.C. $a_p$ (mm) | Cutting speed $v_c$ (m/min) | Feed $f_z$ (mm/tooth) | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel | 1-5 | 130-180 | 1020 | 1.0402 | ER / ETR | IC808 | 0.5-1.5 | 150-220 | 0.50-1.30 | dry |
| | | | | | | | IC830 | | 140-200 | 0.60-1.60 | dry/wet |
| | | | | | | | IC845 | | 130-180 | 0.70-1.80 | dry/wet |
| | | | | | | | IC5400 | | 150-250 | 0.50-1.10 | dry |
| | low alloy steel | 6-8 | 260-300 | 4340 | 1.6582 | | IC808 | | 140-200 | 0.50-1.20 | dry |
| | | | | | | | IC830 | | 120-180 | 0.50-1.50 | dry/wet |
| | | | | | | | IC845 | | 100-160 | 0.60-1.60 | dry/wet |
| | | | | | | | IC5400 | | 140-220 | 0.50-1.30 | dry |
| | | 9 | HRC 35-42** | 3135 | 1.5710 | | IC808 | | 130-180 | 0.50-1.20 | dry |
| | | | | | | | IC830 | | 120-160 | 0.50-1.40 | dry/wet |
| | | | | | | | IC845 | | 100-150 | 0.50-1.50 | dry/wet |
| | | | | | | | IC5400 | | 130-190 | 0.50-1.10 | dry |
| | high alloy steel | 10-11 | 200-220 | H13 | 1.2344 | | IC808 | | 120-170 | 0.50-1.20 | dry |
| | | | | | | | IC830 | | 100-150 | 0.50-1.30 | dry/wet |
| | | | | | | | IC845 | | 90-140 | 0.50-1.40 | dry/wet |
| | | | | | | | IC5400 | | 120-180 | 0.50-1.10 | dry |
| | ferritic/martensitic stainless steel | 12-13 | 200 | 420 | 1.4021 | | IC808 | | 110-160 | 0.50-1.20 | dry |
| | | | | | | | IC830 | | 100-150 | 0.50-1.30 | dry/wet |
| | | | | | | | IC845 | | 100-140 | 0.50-1.40 | dry/wet |
| | | | | | | | IC5400 | | 110-160 | 0.50-1.10 | dry |
| M | austenitic stainless steel | 14 | 200 | 304L | 1.4306 | ER | IC840 | 0.5-1.5 | 80-140 | 0.40-0.60 | wet |
| | | | | | | | IC830 | | 80-120 | 0.40-0.70 | |
| | | | | | | | IC882 | | 80-130 | 0.40-0.90 | |
| | | | | | | | IC5820 | | 100-160 | 0.40-0.80 | |
| | | | | | | | IC808 | | 100-160 | 0.40-0.70 | |
| K | gray cast iron | 15-16 | 250 | class 40 class | 0.6025 (GG25) | ER / ETR | IC810 | 0.5-1.5 | 150-220 | 0.50-1.80 | dry |
| | nodular cast iron | 17-18 | 200 | 65-45-12 | 0.7050 (GGG50) | | IC810 | | 120-200 | 0.50-1.80 | |
| S | high temperature alloys and titanium | 33-35 | 340 | inconel 718 | 2.4668 | ER | IC808 | 0.5-1.5 | 25-40 | 0.40-0.60 | wet |
| | | | | | | | IC840 | | 25-35 | 0.40-0.50 | |
| | | | | | | | IC882 | | 20-30 | 0.50-0.80 | |
| | | | | | | | IC5820 | | 25-35 | 0.50-0.70 | |
| | | | | | | | IC830 | | 20-30 | 0.40-0.60 | |
| | | 36-37 | HRC30-32 | AMS R56400 | 3.7165 (Ti6Al4V ELI) | | IC808 | | 30-60 | 0.40-0.70 | |
| | | | | | | | IC840 | | 25-35 | 0.40-0.60 | |
| | | | | | | | IC882 | | 25-35 | 0.40-0.90 | |
| | | | | | | | IC5820 | | 20-30 | 0.40-0.80 | |
| | | | | | | | IC830 | | 20-30 | 0.40-0.70 | |
| H | hardened steel | 38.1 | HRC 45-49 | HARDOX 450 plate | | ETR | IC808 | 0.5-1.5 | 75-90 | 0.40-0.80 | dry |

* ISCAR material group in accordance with VDI 3323 standard
** Quenched and tempered
For machining under unstable conditions, the recommended cutting data should be reduced by 20-30%

ISCARMILL

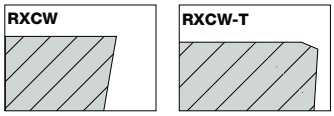
## RXCW
Precision Ground Flat Rake Round Milling Inserts




| Designation | Dimensions IC | S | Tough ↔ Hard IC328 | IC928 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| RXCW 0702 | 7.00 | 2.40 | • | • | • | 1.00-2.50 | 0.05-0.20 |
| RXCW 0702-T | 7.00 | 2.40 | | | • | 1.00-2.50 | 0.05-0.20 |
| RXCW 0802 | 8.00 | 2.40 | • | • | • | 1.00-2.50 | 0.05-0.20 |
| RXCW 0802-T | 8.00 | 2.40 | | | • | 1.00-2.50 | 0.05-0.20 |
| RXCW 10T3 | 10.00 | 3.97 | • | • | • | 1.00-5.00 | 0.10-0.25 |
| RXCW 10T3-T | 10.00 | 3.97 | | | • | 1.00-5.00 | 0.10-0.25 |

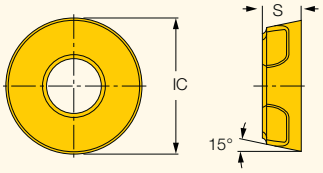
• For cutting speed recommendations, see pages 616-620

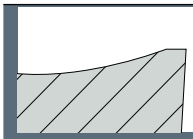
**For tools, see pages:** ER (319) • ER-M (320)




ISCARMILL

## RXCR
Precision Ground Positive Rake Round Milling Inserts



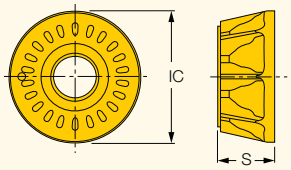
| Designation | Dimensions IC | S | Tough ↔ Hard IC328 | IC928 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| RXCR 05T1 | 5.00 | 1.50 | • | | • | 1.00-2.00 | 0.05-0.10 |
| RXCR 0702 | 7.00 | 2.40 | • | | | 1.00-2.00 | 0.05-0.10 |
| RXCR 0802 | 8.00 | 2.40 | • | | | 1.00-2.00 | 0.05-0.10 |
| RXCR 10T3 | 10.00 | 3.97 | | • | | 1.00-5.00 | 0.10-0.25 |

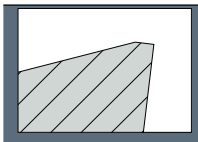
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** ER (319) • ER-M (320)

ISCARMILL

## RXMT 10
Positive Rake Round Milling Inserts for Rough Operations



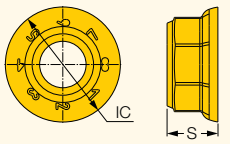
| Designation | Dimensions IC | S | Tough ↔ Hard IC328 | IC950 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|
| RXMT 10T3-RM | 10.00 | 3.97 | • | • | 1.00-5.00 | 0.10-0.25 |

• Star-shaped bottom for indexing and to prevent insert rotation • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** ER (319) • ER-M (320)

HELIDO 800 LINE

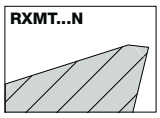
**RXMT 1607**
Round Milling Inserts

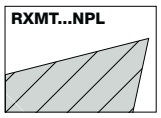


| Designation | Dimensions IC | S | IC830 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|
| RXMT 1607N | 16.00 | 7.00 | ● | 0.50-8.00 | 0.08-0.30 |
| RXMT 1607NPL | 16.00 | 7.00 | ● | 0.50-8.00 | 0.08-0.30 |

• For cutting speed recommendations, see pages 616-620

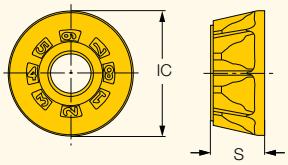
**For tools, see pages:** SOE45 8/16 (52) • SOF45 (260)

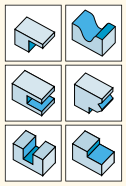



CHAMMILL

**R90CW**
Round Flat Rake Inserts
for Profile Milling



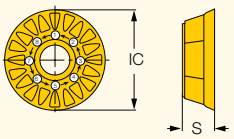
| Designation | Dimensions IC | S | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|
| R90CW 1205-T | 12.00 | 5.00 | ● | 2.00-6.00 | 0.12-0.20 |
| R90CW 43-T | 12.70 | 5.40 | ● | 2.00-6.00 | 0.12-0.20 |

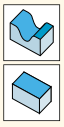
• For cutting speed recommendations, see pages 616-620

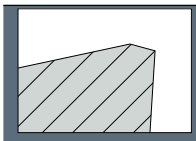
**For tools, see pages:** ER-M (320)

HELIOCTO

**REMT-76**
Round Milling Inserts with
Ribs on the Rake Face





| Designation | Dimensions IC | S | Tough ↔ Hard IC330 | IC830 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|
| REMT 1505-LM-76 | 15.87 | 5.24 | ● | ● | 3.00-7.00 | 0.12-0.20 |

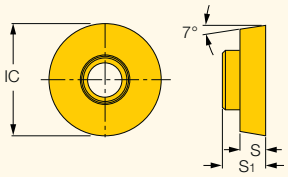
• For cutting speed recommendations, see pages 616-620

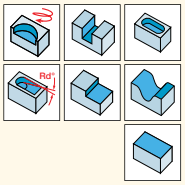
**For tools, see pages:** HOE-R06 (256) • HOF-R06 (256)

MILLSHRED ROUND LINE

## RCMW/RCCW-MO

Round Flat Rake Milling Inserts




| Designation | Dimensions IC | S | S1 | Tough ↔ Hard IC928 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| RCCW 1206MO | 12.00 | 4.00 | 6.40 | | • | 2.50-5.00 | 0.15-0.40 |
| RCMW 1607MO | 16.00 | 5.00 | 7.90 | | • | 3.00-6.00 | 0.20-0.75 |
| RCMW 2009MO | 20.00 | 6.00 | 9.40 | • | | 4.00-8.00 | 0.20-0.75 |

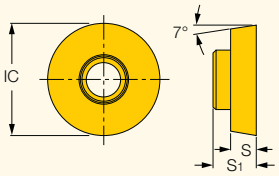
• For cutting speed recommendations, see pages 616-620

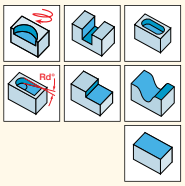
**For tools, see pages:** ERW (321) • ERW-M (322) • FRW (323)

MILLSHRED ROUND LINE

## RCMT/RCCT-MO

Round Positive Rake Milling Inserts



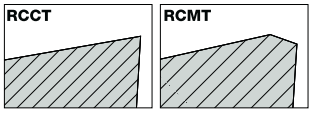

| Designation | Dimensions IC | S | S1 | Tough ↔ Hard IC882 | IC28 | IC328 | IC928 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| RCCT 1004MO-P (1) | 10.00 | 3.20 | 4.75 | | • | | | | 2.00-4.00 | 0.12-0.30 |
| RCCT 1206MO | 12.00 | 4.00 | 6.40 | • | | • | • | • | 2.50-5.00 | 0.15-0.40 |
| RCCT 1206MO-P (1) | 12.00 | 4.00 | 6.40 | | • | | | | 2.50-5.00 | 0.15-0.40 |
| RCCT 1206MO-T | 12.00 | 4.00 | 6.40 | • | | | • | | 2.50-5.00 | 0.15-0.40 |
| RCCT 1607MO-P (1) | 16.00 | 5.00 | 7.90 | | • | | | | 3.00-6.00 | 0.15-0.40 |
| RCMT 1607MO | 16.00 | 5.00 | 7.90 | | | | • | • | 3.00-6.00 | 0.15-0.40 |
| RCCT 2009MO-P (1) | 20.00 | 6.00 | 9.40 | | • | | | | 4.00-8.00 | 0.15-0.40 |
| RCMT 2009MO | 20.00 | 6.00 | 9.40 | | | | • | • | 4.00-8.00 | 0.15-0.40 |

• RCMT - Positive rake and reinforced cutting edge • RCCT - Positive rake and sharp cutting edge • Both used mainly on stainless steel

• For cutting speed recommendations, see pages 616-620

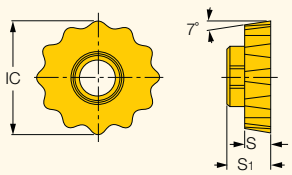
(1) Polish insert for aluminum

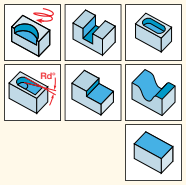
**For tools, see pages:** ERW (321) • ERW-M (322) • FRW (323)



MILLSHRED ROUND LINE

**RCMT/RCMW/RCCW-FW**
Fully Effective Serrated Inserts with Four Options for Indexing Orientation



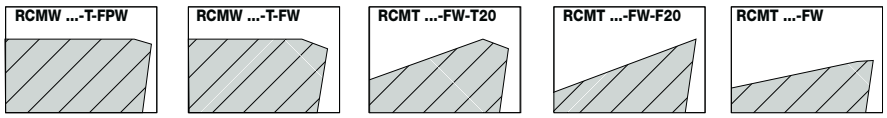



| Designation | Dimensions IC | S | S1 | Tough ↔ Hard IC28 | IC830 | IC928 | IC808 | IC908 | IC910 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RCMT 1004-FW (1) | 10.00 | 3.20 | 4.80 | | ● | | | | | 2.00-4.00 | 0.15-0.30 |
| RCMT 1004-FW-F20 (2) | 10.00 | 3.20 | 4.80 | | ● | | | | | 2.00-4.00 | 0.15-0.30 |
| RCMT 1004-FW-F20-P (3) | 10.00 | 3.20 | 4.80 | ● | | | | | | 2.00-4.00 | 0.15-0.30 |
| RCMT 1206-FW (1) | 12.00 | 4.00 | 6.40 | | | ● | | | | 2.50-5.00 | 0.20-0.35 |
| RCMT 1206-FW-F20 (2) | 12.00 | 4.00 | 6.40 | | | ● | | ● | | 2.50-5.00 | 0.20-0.35 |
| RCMT 1206-FW-F20-P (3) | 12.00 | 4.00 | 6.40 | ● | | | | | | 2.50-5.00 | 0.20-0.35 |
| RCMT 1206-FW-T20 (4) | 12.00 | 4.00 | 6.40 | | | ● | | | | 2.50-5.00 | 0.20-0.35 |
| RCMT 1607-FW (1) | 16.00 | 5.00 | 7.90 | | ● | ● | ● | ● | | 3.00-6.00 | 0.20-0.35 |
| RCMT 1607-FW-F20 (2) | 16.00 | 5.00 | 7.90 | | | ● | | ● | | 3.00-6.00 | 0.20-0.35 |
| RCMT 1607-FW-F20-P (3) | 16.00 | 5.00 | 7.90 | ● | | | | | | 3.00-6.00 | 0.20-0.35 |
| RCMT 1607-FW-T20 (4) | 16.00 | 5.00 | 7.90 | | | ● | | ● | | 3.00-6.00 | 0.20-0.35 |
| RCMW 1607-T-FPW (5) | 16.00 | 5.00 | 7.90 | | | | | ● | | 3.00-6.00 | 0.20-0.35 |
| RCMW 1607-T-FW (6) | 16.00 | 5.00 | 7.90 | | | ● | | ● | ● | 3.00-6.00 | 0.20-0.35 |
| RCMT 2009-FW (1) | 20.00 | 6.00 | 9.40 | | | ● | | ● | | 4.00-8.00 | 0.20-0.35 |
| RCMT 2009-FW-F20 (2) | 20.00 | 6.00 | 9.40 | | | ● | | | | 4.00-8.00 | 0.20-0.35 |
| RCMT 2009-FW-F20-P (3) | 20.00 | 6.00 | 9.40 | ● | | | | | | 4.00-8.00 | 0.20-0.35 |
| RCMT 2009-FW-T20 (4) | 20.00 | 6.00 | 9.40 | | | ● | | | | 4.00-8.00 | 0.20-0.35 |
| RCMW 2009-T-FW (6) | 20.00 | 6.00 | 9.40 | | | ● | | | | 4.00-8.00 | 0.20-0.35 |

- For cutting speed recommendations, see pages 616-620

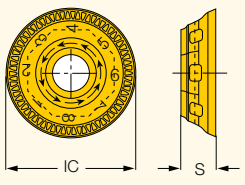
(1) For alloyed and stainless steel and exotic materials.
(2) For austenitic stainless steel, exotic materials and aluminum.
(3) Polish insert for aluminum
(4) For martensitic stainless steel
(5) For hardened steel
(6) For tool and die steel and cast iron

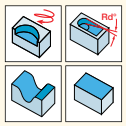
**For tools, see pages:** ERW (321) • ERW-M (322) • FRW (323)




HELIOCTO

**RFMT 1905-76**
Round Milling Inserts



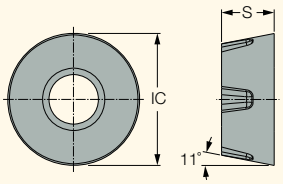
| Designation | Dimensions IC | S | Tough ↔ Hard IC328 | IC928 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|
| RFMT 1905-LM-76 | 19.74 | 5.48 | ● | ● | 3.00-8.00 | 0.15-0.25 |

- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HOF-R07 (257)

ROUNDMILL

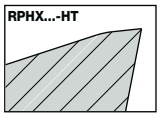
**RPHX/RPMX**
Round Milling Inserts with Specially Shaped Indexing Grooves

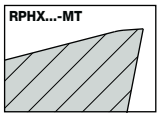



| Designation | Dimensions IC | S | Tough ↔ Hard IC5820 | IC5500 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|
| RPHX 1003M0-MT5 | 10.00 | 3.30 | ● | ● | 0.50-3.10 | 0.15-0.35 |
| RPMX 1003M0-HT5 | 10.00 | 3.30 | ● | | 0.50-3.10 | 0.15-0.25 |
| RPHX 1204M0-MT5 | 12.00 | 4.78 | | ● | 0.50-3.80 | 0.20-0.45 |
| RPHX 1204M0-HT5 | 12.00 | 4.78 | ● | ● | 0.50-3.80 | 0.15-0.40 |
| RPMX 1204M0 | 12.00 | 4.78 | | ● | 0.50-5.60 | 0.20-0.45 |

- MT - Recommended mainly for steel, ferritic and martensitic stainless steel (ISO P group)
- HT - Intended mostly for austenitic, duplex stainless steel and high temperature alloys (ISO M and S groups)

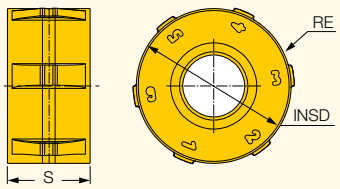
**For tools, see pages:** ERMT (320) • FRMT (321)




ROUNDMILL

**RDS RNMU/RNMW**
Double-Sided Round Inserts with 12 Cutting Edges for Profile Milling

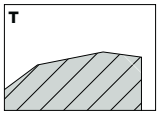


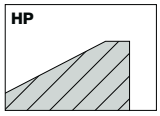

| Designation | Dimensions INSD | RE | S | Tough ↔ Hard IC882 | IC830 | IC5500 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| RDS RNMU1255EN-HP | 12.00 | 6.00 | 5.43 | ● | ● | ● | | 0.20-2.50 | 0.10-0.35 |
| RDS RNMW1255EN-T | 12.00 | 6.00 | 5.43 | | | | ● | 0.20-2.50 | 0.10-0.35 |

**New**

- HP- for austenitic stainless steel, titanium and high temperature alloys and soft steel
- T- for steel, ferritic and martensitic stainless steel, cast iron and hardened steel
- For cutting speed recommendations, see pages 616-620

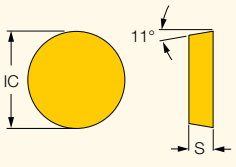
**For tools, see pages:** RDS ER-M (318) • RDS FR-12 (318)




ISCAR CER-LINE

**RPGN (CER)**
Positive Round Ceramic Inserts for Machining Cast Iron and Heat-Resistant Alloys




| Designation | Dimensions IC | S | Tough ↔ Hard IS45 | IS15 | IS14 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| RPGN 060200 E004 | 6.35 | 2.38 | ● | ● | ● | 0.50-1.50 | 0.10-0.30 |
| RPGN 060200 T00520 | 6.35 | 2.38 | ● | | | 0.50-1.50 | 0.08-0.15 |
| RPGN 060200 T01020 | 6.35 | 2.38 | ● | ● | ● | 0.50-1.50 | 0.08-0.15 |

**New**

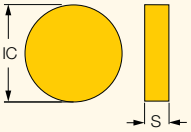
- For user guide and cutting speed recommendations, see pages 616-620

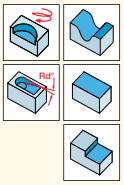
**For tools, see pages:** ERP (319)

ISCAR CER LINE

## RNGN (CER)

Negative Round Double-Sided Ceramic Inserts for Machining Cast Iron, Hardened Steel, and Heat-Resistant Alloys



| Designation | Dimensions IC | S | Tough ↔ Hard IS55 | IS45 | IS45C | IS26 | IS15 | IS14 | IW10 | IN20 | IN16 | IN16C | IN10 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RNGN 120700 E004 | 12.70 | 7.94 | • | • | | | • | • | • | | | | | 0.05-3.00 | 0.05-0.50 |
| RNGN 120700 T01020 | 12.70 | 7.94 | • | | | • | • | • | • | | | | | 0.10-4.50 | 0.05-0.50 |
| RNGN 120700 T00520 | 12.70 | 7.94 | | • | | | | | • | | | | | 0.05-3.00 | 0.05-0.50 |
| RNGN 120700 P20015 | 12.70 | 7.94 | | | | | | | | • | • | | • | 0.05-3.00 | 0.05-0.50 |

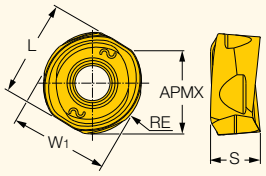
• For user guide and cutting speed recommendations, see pages 616-620

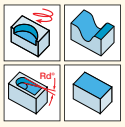
**For tools, see pages:** FRN (320)

HELIDO ROUND H400 LINE

## H400 RNHU

Double-Sided Inserts with Four 5, 6 and 8 mm Radii Cutting Edges for Profile Milling



| Designation | Dimensions RE | L | W1 | APMX | S | Tough ↔ Hard IC330 | IC830 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| H400 RNHU 1004-AX (1) | 5.00 | 9.20 | 9.30 | 7.50 | 4.70 | | • | • | 1.00-5.00 | 0.10-0.30 |
| H400 RNHU 1004-HP (2) | 5.00 | 9.20 | 9.30 | 7.50 | 4.05 | | • | | 1.00-5.00 | 0.10-0.30 |
| H400 RNHU 1004-ML (3) | 5.00 | 9.20 | 9.30 | 7.50 | 4.05 | | • | • | 1.00-5.00 | 0.10-0.30 |
| H400 RNHU 1205-AX (1) | 6.00 | 11.00 | 11.20 | 8.70 | 5.20 | | • | • | 2.00-6.00 | 0.15-0.30 |
| H400 RNHU 1205-HP (2) | 6.00 | 11.00 | 11.20 | 8.70 | 4.75 | • | • | | 2.00-6.00 | 0.15-0.30 |
| H400 RNHU 1205-ML (3) | 6.00 | 11.00 | 11.20 | 8.70 | 4.75 | | • | • | 2.00-6.00 | 0.15-0.30 |
| H400 RNHU 1606-AX (1) | 8.00 | 14.70 | 13.90 | 12.00 | 7.80 | • | • | • | 3.00-8.00 | 0.15-0.40 |
| H400 RNHU 1606-HP (2) | 8.00 | 14.70 | 13.90 | 12.00 | 7.80 | | • | | 3.00-8.00 | 0.15-0.40 |
| H400 RNHU 1606-ML (3) | 8.00 | 14.70 | 13.90 | 12.00 | 7.80 | | • | • | 3.00-8.00 | 0.15-0.40 |

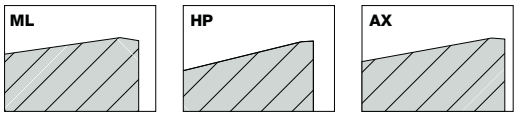
• For cutting speed recommendations, see pages 616-620

(1) First priority for austenitic stainless steel, second priority for steel, ferritic and martensitic stainless

(2) First priority for titanium and high temperature alloys, second priority for austenitic stainless steel

(3) First priority for steel, ferritic and martensitic stainless steel, second priority for austenitic stainless steel

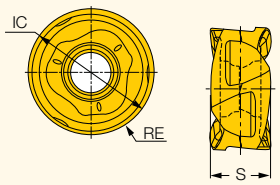
**For tools, see pages:** H400 ER-10 (324) • H400 ER-12 (324) • H400 ER-M (325) • H400 FR-10 (325) • H400 FR-12 (326) • H400 FR-16 (327)

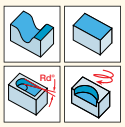



HELIDO ROUND H606 LINE

## H606 RXCU 1206

Double-Sided Round Inserts with Six Cutting Edges for Profile Milling



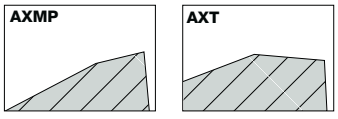
| Designation | Dimensions INSD | RE | S | Tough ↔ Hard IC330 | IC830 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| H606 RXCU 1206-AXMP (1) | 12.20 | 6.00 | 5.90 | • | • | • | 2.00-6.00 | 0.10-0.40 |
| H606 RXCU 1206-AXT (2) | 12.20 | 6.00 | 5.90 | | • | • | 2.00-6.00 | 0.10-0.40 |

• For cutting speed recommendations, see pages 616-620

(1) For stainless steel and high temperature alloys

(2) For steel and cast iron applications

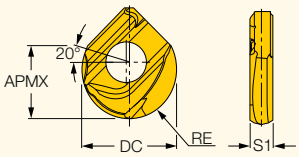
**For tools, see pages:** H606 ER-M (328) • H606 FR-12 (328)

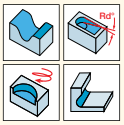


**BALLPLUS**

## HBR-QF

220° Spherical Profile Inserts for Roughing and Semi-Finishing, Up and Down Ramping and Undercutting



| Designation | Dimensions DC | APMX | RE | S1 | Tough ↔ Hard IC328 | IC928 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| HBR D100-QF | 10.00 | 6.70 | 5.00 | 2.30 | | | ● | 1.50-5.00 | 0.08-0.15 |
| HBR D120-QF | 12.00 | 8.00 | 6.00 | 2.60 | ● | | ● | 2.00-6.00 | 0.08-0.15 |
| HBR D160-QF | 16.00 | 10.30 | 8.00 | 3.37 | ● | ● | ● | 2.50-8.00 | 0.08-0.15 |
| HBR D200-QF | 20.00 | 13.40 | 10.00 | 4.65 | ● | | ● | 3.00-10.00 | 0.08-0.15 |
| HBR D250-QF | 25.00 | 16.70 | 12.50 | 5.40 | | | ● | 4.00-12.50 | 0.08-0.15 |

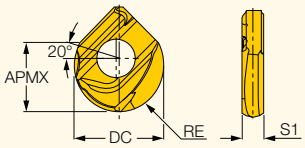
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HCM D10 (304) • HCM D12 (304) • HCM D16 (304) • HCM D20 (305) • HCM D25 (305) • HCM-M (306) • HCM-MM (307)

**BALLPLUS**

## HBF-QF

220° Spherical Profile Inserts for Accurate Finishing, Up and Down Ramping and Undercutting



| Designation | Dimensions DC | APMX | RE | S1 | Tough ↔ Hard IC928 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| HBF D120-QF | 12.00 | 8.00 | 6.00 | 2.60 | ● | ● | 2.00-6.00 | 0.03-0.15 |
| HBF D160-QF | 16.00 | 10.30 | 8.00 | 3.37 | | ● | 2.50-8.00 | 0.03-0.15 |
| HBF D200-QF | 20.00 | 13.40 | 10.00 | 4.65 | ● | ● | 3.00-10.00 | 0.03-0.15 |
| HBF D250-QF | 25.00 | 17.00 | 12.50 | 5.40 | ● | ● | 4.00-12.50 | 0.03-0.15 |

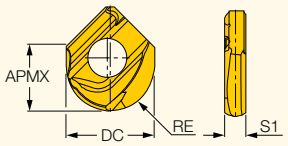
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HCM D12 (304) • HCM D16 (304) • HCM D20 (305) • HCM D25 (305) • HCM-M (306) • HCM-MM (307)

**BALLPLUS**

## HCR

Ball Nose Inserts with 2 Straight Tangent Cutting Edges (Fully Effective) for Cavity Profiling and Shouldering



| Designation | Dimensions DC | APMX | RE | S1 | Tough ↔ Hard IC328 | IC928 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|
| HCR D100-QF | 10.00 | 7.00 | 5.00 | 2.30 | | | ● | 1.50-5.00 | 0.08-0.15 |
| HCR D120-QF | 12.00 | 9.00 | 6.00 | 2.60 | | | ● | 2.00-8.50 | 0.08-0.15 |
| HCR D120-QP | 12.00 | 9.80 | 6.00 | 2.60 | ● | ● | | 2.00-8.50 | 0.08-0.15 |
| HCR D160-QF | 16.00 | 11.30 | 8.00 | 3.37 | ● | | ● | 2.50-11.00 | 0.08-0.15 |
| HCR D200-QF | 20.00 | 14.70 | 10.00 | 4.65 | | | ● | 3.00-14.00 | 0.08-0.15 |
| HCR D250-QF | 25.00 | 18.40 | 12.50 | 5.40 | | | ● | 4.00-17.50 | 0.08-0.15 |

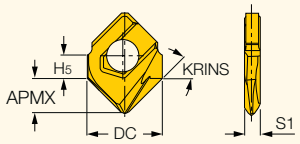
- QF - For general use applications • QP - Positive chipformer for low cutting forces. Recommended for machining aluminum, titanium and other exotic materials
- For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HCM D10 (304) • HCM D12 (304) • HCM D16 (304) • HCM D20 (305) • HCM D25 (305) • HCM-M (306) • HCM-MM (307)

**BALLPLUS**

## HCD-QF

90° V-Shaped Inserts with 2 Cutting Edges for Chamfering, Countersinking and Spot Drilling



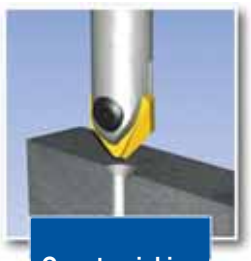
| Designation | Dimensions DC | APMX | KRINS(1) | S1 | H5 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| HCD D120-090-QF | 12.00 | 5.00 | 45.0 | 2.60 | 4.00 | ● | 1.50-4.00 | 0.08-0.15 |
| HCD D124-090-QF | 12.40 | 5.10 | 45.0 | 2.60 | 4.00 | ● | 1.50-4.00 | 0.08-0.15 |
| HCD D160-090-QF | 16.00 | 7.50 | 45.0 | 3.37 | 4.50 | ● | 2.00-6.00 | 0.08-0.15 |
| HCD D205-090-QF | 20.50 | 9.50 | 45.0 | 4.65 | 6.00 | ● | 2.50-7.00 | 0.08-0.15 |
| HCD D250-090-QF | 25.00 | 12.00 | 45.0 | 5.40 | 7.00 | ● | 3.00-9.00 | 0.08-0.15 |

• For cutting speed recommendations, see pages 616-620

(1) Edge angle related to the wiper

**For tools, see pages:** HCM D12 (304) • HCM D16 (304) • HCM D20 (305) • HCM D25 (305) • HCM-M (306) • HCM-MM (307)

Chamfering and Deburring

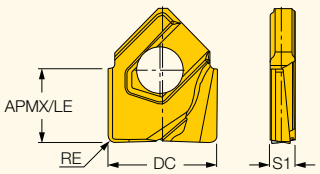


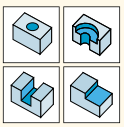
Countersinking

**BALLPLUS**

## HCC-QF

Inserts with 2 Cutting Edges (Fully Effective) for Shouldering, Slotting, Drilling and Countersinking



| Designation | Dimensions DC | APMX | RE | S1 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| HCC D120-R0.5-QF | 12.00 | 8.10 | 0.50 | 2.60 | ● | 3.50-7.50 | 0.08-0.15 |
| HCC D120-R1.0-QF | 12.00 | 8.10 | 1.00 | 2.60 | ● | 3.50-7.50 | 0.08-0.15 |
| HCC D120-R2.0-QF | 12.00 | 8.10 | 2.00 | 2.60 | ● | 3.50-7.50 | 0.08-0.15 |
| HCC D160-R0.5-QF | 16.00 | 10.30 | 0.50 | 3.37 | ● | 5.00-10.00 | 0.08-0.15 |
| HCC D160-R1.0-QF | 16.00 | 10.30 | 1.00 | 3.37 | ● | 5.00-10.00 | 0.08-0.15 |
| HCC D160-R2.0-QF | 16.00 | 10.30 | 2.00 | 3.37 | ● | 5.00-10.00 | 0.08-0.15 |
| HCC D200-R0.5-QF | 20.00 | 12.80 | 0.50 | 4.65 | ● | 6.00-12.00 | 0.08-0.15 |
| HCC D200-R1.0-QF | 20.00 | 12.80 | 1.00 | 4.65 | ● | 6.00-12.00 | 0.08-0.15 |
| HCC D200-R2.0-QF | 20.00 | 12.80 | 2.00 | 4.65 | ● | 6.00-12.00 | 0.08-0.15 |
| HCC D200-R3.0-QF | 20.00 | 12.80 | 3.00 | 4.65 | ● | 6.00-12.00 | 0.08-0.15 |
| HCC D250-R1.0-QF | 25.00 | 14.70 | 1.00 | 5.40 | ● | 7.50-15.50 | 0.08-0.15 |
| HCC D250-R2.0-QF | 25.00 | 14.70 | 2.00 | 5.40 | ● | 7.50-15.50 | 0.08-0.15 |
| HCC D250-R3.0-QF | 25.00 | 14.70 | 3.00 | 5.40 | ● | 7.50-15.50 | 0.08-0.15 |
| HCC D250-R4.0-QF | 25.00 | 14.70 | 4.00 | 5.40 | ● | 7.50-15.50 | 0.08-0.15 |

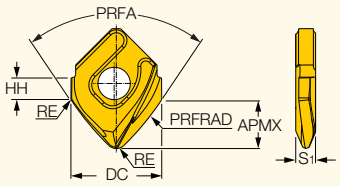
• For cutting speed recommendations, see pages 616-620

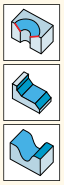
**For tools, see pages:** HCE (31) • HCE-MM (31) • HCM D12 (304) • HCM D16 (304) • HCM D20 (305) • HCM D25 (305) • HCM-M (306) • HCM-MM (307)

NEOBARREL PROFILE MILLING

## HCT-QF

Taper Barrel-Shaped Inserts with 2 Cutting Edges



| Designation | Dimensions | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|
| | DC | APMX | S1 | RE | PRFRAD | PRFA | HH | |
| HCT D120-QF | 12.00 | 6.65 | 2.60 | 1.20 | 30.00 | 80.00 | 2.8 | ● |
| HCT D160-QF | 16.00 | 8.50 | 3.37 | 1.60 | 45.00 | 80.00 | 3.3 | ● |
| HCT D200-QF | 20.00 | 10.50 | 4.65 | 2.00 | 60.00 | 80.00 | 5.5 | ● |
| HCT D250-QF | 25.00 | 12.50 | 5.40 | 3.00 | 75.00 | 80.00 | 5.9 | ● |

New

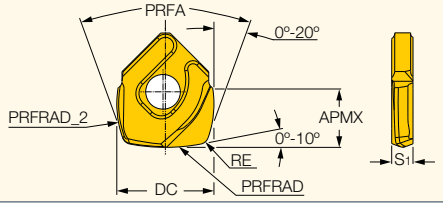
- For cutting speed recommendations, see pages 616-620

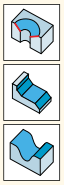
**For tools, see pages:** HCM D12 (304) • HCM D16 (304) • HCM D20 (305) • HCM D25 (305) • HCM-M (306) • HCM-MM (307)

NEOBARREL PROFILE MILLING

## HLB-QF

Combined Barrel and Lens-shaped Inserts with 2 Cutting Edges



| Designation | Dimensions | | | | | | | IC908 |
|---|---|---|---|---|---|---|---|---|
| | DC | APMX | S1 | RE | PRFRAD | PRFRAD_2 | PRFA | |
| HLB D120-QF | 12.00 | 5.00 | 2.60 | 1.20 | 24.00 | 12.00 | 20.00 | ● |
| HLB D160-QF | 16.00 | 7.00 | 3.37 | 1.50 | 32.00 | 16.00 | 20.00 | ● |
| HLB D200-QF | 20.00 | 9.00 | 4.65 | 2.00 | 40.00 | 20.00 | 20.00 | ● |
| HLB D250-QF | 25.00 | 11.00 | 5.40 | 2.50 | 50.00 | 25.00 | 20.00 | ● |

New

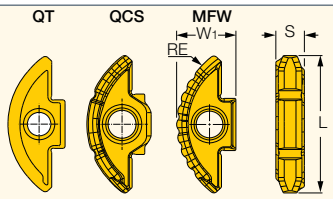
- For cutting speed recommendations, see pages 616-620

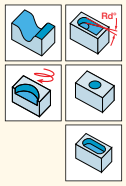
**For tools, see pages:** HCE (31) • HCE-MM (31) • HCM D12 (304) • HCM D16 (304) • HCM D20 (305) • HCM D25 (305) • HCM-M (306) • HCM-MM (307)

DROPMILL 3 FLUTE BALL NOSE

## BLR

Round Segment Double-Sided Inserts for Ball Nose Milling Cutters



| Designation | Dimensions | | | | Tough ↔ Hard | | | | Recommended Machining Data |
|---|---|---|---|---|---|---|---|---|---|
| | RE[1] | L | W1 | S | IC882 | IC330 | IC830 | IC808 | $f_z$ (mm/t) |
| BLR D160-MFW | 8.00 | 13.10 | 6.10 | 2.55 | | | ● | | 0.08-0.15 |
| BLR D160-QCS | 8.00 | 13.10 | 6.10 | 2.55 | | ● | | ● | 0.08-0.15 |
| BLR D160-QT | 8.00 | 13.10 | 6.10 | 2.55 | ● | | | | 0.08-0.15 |
| BLR D200-MFW | 10.00 | 16.40 | 7.60 | 3.40 | | | ● | | 0.08-0.15 |
| BLR D200-QCS | 10.00 | 16.40 | 7.60 | 3.40 | | ● | | ● | 0.08-0.15 |
| BLR D200-QT | 10.00 | 16.40 | 7.60 | 3.40 | ● | | | | 0.08-0.15 |
| BLR D250-MFW | 12.50 | 20.50 | 8.90 | 3.80 | | | ● | | 0.08-0.15 |
| BLR D250-QCS | 12.50 | 20.50 | 8.90 | 3.80 | | ● | | ● | 0.08-0.15 |
| BLR D250-QT | 12.50 | 20.50 | 8.90 | 3.80 | ● | | | | 0.08-0.15 |
| BLR D300-QCS | 15.00 | 24.50 | 10.75 | 4.60 | | | ● | ● | 0.08-0.15 |
| BLR D300-QT | 15.00 | 24.50 | 10.75 | 4.60 | ● | | | | 0.08-0.15 |
| BLR D320-MFW | 16.00 | 26.30 | 11.00 | 4.60 | | | ● | | 0.08-0.25 |
| BLR D320-QCS | 16.00 | 26.30 | 11.00 | 4.60 | | | ● | ● | 0.08-0.25 |
| BLR D320-QT | 16.00 | 26.30 | 11.00 | 4.60 | ● | | | | 0.08-0.25 |
| BLR D400-MFW | 20.00 | 32.70 | 14.20 | 5.50 | | | ● | | 0.08-0.25 |
| BLR D400-QCS | 20.00 | 32.70 | 14.20 | 5.50 | | ● | | ● | 0.08-0.25 |
| BLR D500-MFW | 25.00 | 40.90 | 17.80 | 7.40 | | ● | | | 0.08-0.25 |
| BLR D500-QCS | 25.00 | 40.90 | 17.80 | 7.40 | | ● | | ● | 0.08-0.25 |

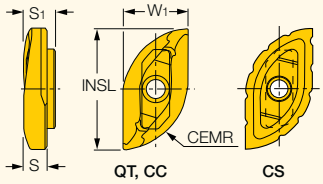
- MFW - Serrated cutting edge for roughing operations • QCS - Chip splitting cutting edge for semi-finish applications • QT - Round edge for finishinging applications
- For cutting speed recommendations, see pages 616-620

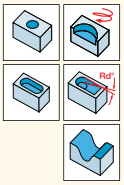
[1] Radius generated on workpiece

**For tools, see pages:** BLP Endmills (307) • BLP Shell Mill (308) • BLP-M (308)

## DROPMILL

**BCR**
Ball Nose Inserts with a Straight Cutting Edge Tangent to a Round Corner



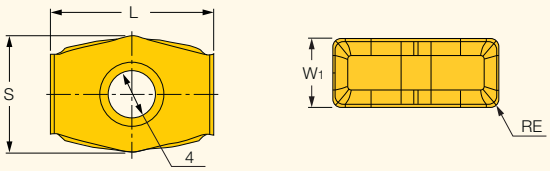
| Designation | Dimensions CEMR[3] | INSL | W1 | S1 | S | Tough ↔ Hard IC328 | IC928 | IC808 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BCR D120-QT | 6.00 | 10.60 | 5.80 | 2.80 | 2.10 | ● | | | ● | 1.20-4.20 | 0.20-0.25 |
| BCR D160-QT | 8.00 | 12.70 | 7.70 | 4.40 | 3.30 | | ● | | ● | 1.60-5.60 | 0.20-0.25 |
| BCR D200-CC [1] | 10.00 | 17.00 | 9.20 | 4.70 | 3.60 | | | ● | | 2.00-7.00 | 0.20-0.25 |
| BCR D200-QT | 10.00 | 17.00 | 9.60 | 4.70 | 3.60 | | | | ● | 2.00-7.00 | 0.20-0.25 |
| BCR D250-QT | 12.50 | 20.00 | 11.80 | 5.70 | 4.20 | ● | ● | | ● | 2.50-8.75 | 0.20-0.25 |
| BCR D300-QT | 15.00 | 27.30 | 14.70 | 7.00 | 5.30 | ● | ● | | | 3.00-10.50 | 0.20-0.25 |
| BCR D320-CS [2] | 16.00 | 28.00 | 15.00 | 7.00 | 5.30 | | | | ● | 3.20-11.20 | 0.20-0.25 |
| BCR D320-QT | 16.00 | 28.00 | 15.10 | 7.00 | 5.30 | ● | ● | | ● | 3.20-11.20 | 0.20-0.25 |
| BCR D400-CS [2] | 20.00 | 35.40 | 18.80 | 9.40 | 6.30 | | | | ● | 4.00-14.00 | 0.20-0.25 |
| BCR D400-QT | 20.00 | 35.40 | 18.80 | 9.74 | 7.00 | ● | | | | 4.00-14.00 | 0.20-0.25 |
| BCR D500-CS [2] | 25.00 | 44.00 | 24.00 | 11.70 | 9.00 | | | | ● | 5.00-17.50 | 0.20-0.25 |

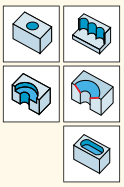
• For cutting speed recommendations, see pages 616-620
[1] Center Cutting
[2] Not recommended for stainless steel and high temperature alloys
[3] Radius generated on workpiece

**For tools, see pages:** BCM (309) • BCM-M (310) • BCM-MM (310)

## ISCARPLUNGER

**PLHT**
Tangentially Clamped Inserts with 4 Cutting Edges for Plungers



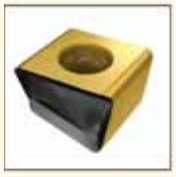



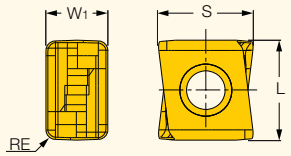
| Designation | Dimensions W1 | L | RE | S | Tough ↔ Hard IC328 | IC908 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| PLHT 1305-PDX | 5.45 | 13.70 | 0.60 | 9.95 | ● | ● | 0.12-0.12 |

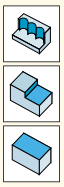
• For cutting speed recommendations, see pages 616-620

## TANGPLUNGE
PLUNGING LINE

**HTP LN.. 0604**
Tangentially Clamped Inserts with 4 Cutting Edges for Plungers



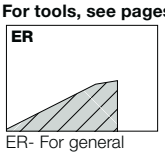


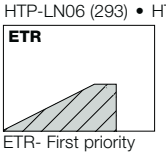
| Designation | Dimensions W1 | L | S | RE | Tough ↔ Hard IC330 | IC830 | IC808 | IC810 | IC07 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| HTP LNAR 0604 FR-P | 4.06 | 6.50 | 6.77 | 0.80 | | | | | ● | 0.05-0.15 |
| HTP LNHT 0604 ER | 4.06 | 6.50 | 6.77 | 0.80 | ● | ● | ● | ● | | 0.08-0.12 |
| HTP LNHT 0604 ETR | 4.06 | 6.50 | 6.77 | 0.80 | ● | ● | ● | | | 0.08-0.12 |
| HTP LNMT 0604 ER [1] | 4.06 | 6.50 | 6.84 | 0.60 | | ● | ● | | | 0.08-0.15 |

• FR-P-For machining aluminum, ER- For general applications, ETR- First priority for hardened steel • For cutting speed recommendations, see pages 616-620
[1] Mounting this insert increases tool diameter by 0.2 mm

**For tools, see pages:** HTP-LN06 (293) • HTP-M-LN06 (293)



ER- For general applications

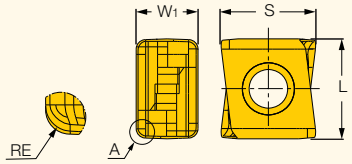


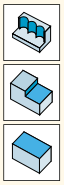
ETR- First priority for hardened steel

TANGPLUNGE
PLUNGING LINE

## HTP LN.. 1006

Tangentially Clamped Inserts with 4 Cutting Edges for Plungers



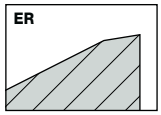
| Designation | Dimensions W1 | L | S | RE | Tough ↔ Hard IC330 | IC830 | IC808 | IC810 | IC07 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| HTP LNAR 1006 FR (1) | 6.50 | 10.50 | 10.13 | 1.00 | | | ● | | | 0.05-0.15 |
| HTP LNAR 1006 FR-P | 6.50 | 10.50 | 10.13 | 1.00 | | | | | ● | 0.05-0.15 |
| HTP LNHT 1006 ER | 6.50 | 10.50 | 9.93 | 1.00 | ● | ● | ● | ● | | 0.10-0.15 |
| HTP LNHT 1006 ETR | 6.50 | 10.50 | 9.93 | 1.00 | ● | ● | ● | | | 0.12-0.20 |
| HTP LNMT 1006 ER (2) | 6.50 | 10.50 | 9.96 | 1.00 | ● | ● | ● | | | 0.08-0.15 |

• FR-P - For machining aluminum, ER- For general applications, ETR- First priority for hardened steel • For cutting speed recommendations, see pages 616-620

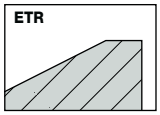
(1) FR - Sharp cutting edge for unstable conditions and for ISO S material

(2) Mounting this insert increases tool diameter by 0.1 mm

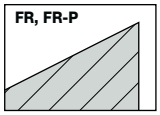
**For tools, see pages:** HTF-R-LN10 (233) • HTP-LN10 (294) • HTP-M-LN10 (294) • HTP-R-LN10 (294)




ER- for general applications




ETR- first priority for hardened steel

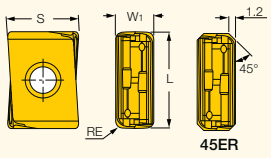


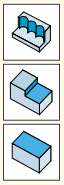

FR-P- for machining aluminum

TANGPLUNGE
PLUNGING LINE

## HTP LN.. 1606

Tangentially Clamped Inserts with 4 Cutting Edges for Plungers

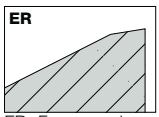


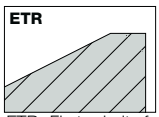
| Designation | Dimensions W1 | L | S | RE | Tough ↔ Hard IC328 | IC928 | IC908 | IC810 | IC910 | IC07 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HTP LNAR 1606 FR-P | 6.50 | 16.50 | 12.28 | 1.20 | | | | | | ● | 0.05-0.15 |
| HTP LNHT 1606 ER | 6.50 | 16.50 | 12.07 | 1.20 | ● | ● | ● | | ● | | 0.10-0.20 |
| HTP LNHT 1606 ETR | 6.50 | 16.50 | 12.03 | 1.20 | | ● | ● | | | | 0.10-0.20 |
| HTP LNHT 16061.2X45ER | 6.50 | 16.50 | 12.04 | - | | ● | | | | | 0.10-0.20 |
| HTP LNMT 1606 ETR | 6.50 | 16.50 | 12.04 | 1.20 | | | | ● | | | 0.08-0.15 |

• FR-P-For machining aluminum, ER- For general applications, ETR- First priority for hardened steel • For cutting speed recommendations, see pages 616-620

**For tools, see pages:** HTP-R-LN16 (295)




ER- For general applications

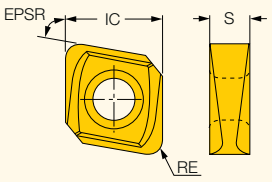


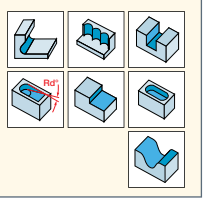

ETR- First priority for hardened steel

TORMILL

## CNHT/MT 07

Toroidal Bull Nose Peripherally Ground Inserts with 4 Cutting Edges



| Designation | Dimensions IC | RE | S | EPSR | Tough ↔ Hard IC808 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| CNHT 070305 | 7.00 | 0.50 | 3.60 | 80.0 | | ● | 0.10-1.50 | 0.10-0.25 |
| CNMT 070308-MM (1) | 7.00 | 0.80 | 4.00 | 80.0 | ● | | 0.80-4.00 | 0.12-0.30 |
| CNHT 070310 | 7.00 | 1.00 | 3.60 | 80.0 | | ● | 0.10-1.50 | 0.10-0.25 |
| CNHT 070315 | 7.00 | 1.50 | 3.60 | 80.0 | | ● | 0.10-1.50 | 0.10-0.25 |

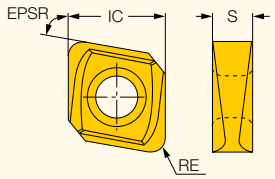
• For cutting speed recommendations, see pages 616-620

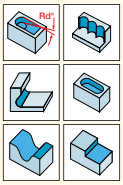
(1) Do not use on E93CN tools

**For tools, see pages:** E90CN (19) • E90CN-M (19) • E93CN-07 (311) • E93CN-M-07 (311) • E93CN-MM-07 (312)

TORMILL

**ENHT**
Toroidal Bull Nose
Peripherally Ground Inserts
with 4 Cutting Edges



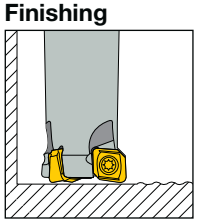
| Designation | Dimensions IC | RE | S | EPSR | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|
| ENHT 100408 | 10.50 | 0.80 | 4.20 | 75.0 | ● | 0.10-1.50 | 0.10-0.25 |
| ENHT 100410 | 10.50 | 1.00 | 4.20 | 75.0 | ● | 0.10-1.50 | 0.10-0.25 |
| ENHT 100415 | 10.50 | 1.50 | 4.20 | 75.0 | ● | 0.10-1.50 | 0.10-0.25 |
| ENHT 100420 | 10.50 | 2.00 | 4.20 | 75.0 | ● | 0.10-1.50 | 0.10-0.25 |
| ENHT 100425 | 10.50 | 2.50 | 4.20 | 75.0 | ● | 0.10-1.50 | 0.10-0.25 |
| ENHT 100430 | 10.50 | 3.00 | 4.20 | 75.0 | ● | 0.10-1.50 | 0.10-0.25 |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** E93CN-10 (311) • E93CN-M-10 (312) • F93CN-10 (312)

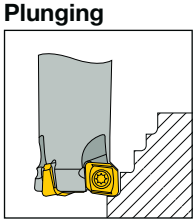
## Machining Recommendations

### Finishing



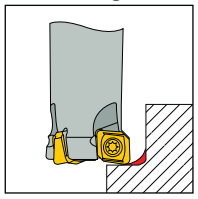
| | Light | Medium | Heavy |
|---|---|---|---|
| $a_p$ | 0.1 | 0.5 | 1-1.5 |
| f mm/t | 0.25 | 0.15 | 0.1 |

### Plunging



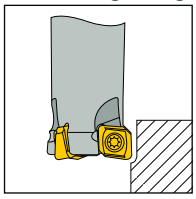
| | | Light | Medium | Heavy |
|---|---|---|---|---|
| $a_e$ | CNHT | 1 | 3 | 4.5 |
| | ENHT | 1 | 4 | 8.5 |
| f mm/t | | 0.12 | 0.1 | 0.08 |

### Machining Small Corner Radii



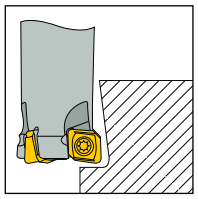
| | Light | Medium | Heavy |
|---|---|---|---|
| $a_p$ | 0.1 | 0.5 | 1-2 |
| $a_e$ | 0.1 | 0.5 | 1-2 |
| f mm/t | 0.25 | 0.15 | 0.1 |

### Machining Long Unsupported Parts



| | Light | Medium | Heavy |
|---|---|---|---|
| $a_p$ | 0.1 | 0.5 | 2 |
| $a_e$ | 0.1 | 0.5 | 0.5 |
| f mm/t | 0.25 | 0.15 | 0.1 |

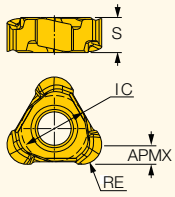
### Undercut



| | Light | Medium | Heavy |
|---|---|---|---|
| $a_p$ | 2 | 4 | 6 |
| $a_e$ | 0.1 | 0.2 | 0.3 |
| f mm/t | 0.25 | 0.15 | 0.1 |

TOR6MILL PROFILING

**TR6 TNCU/MU**
Double-Sided Inserts with Six
Round Cutting Edges, Available
in 0.5 up to 3.0 mm Corner Radii



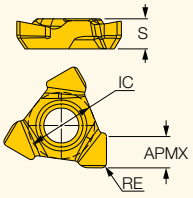
| Designation | Dimensions RE | APMX | IC | S | Tough ↔ Hard IC882 | IC830 | IC808 | IC908 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| TR6 TNCU 070205 | 0.50 | 0.50 | 5.30 | 2.50 | | ● | ● | | 0.20-0.50 | 0.10-0.30 |
| TR6 TNCU 070210 | 1.00 | 1.00 | 5.30 | 2.50 | | ● | ● | | 0.20-1.00 | 0.10-0.30 |
| TR6 TNMU 070215 | 1.50 | 1.50 | 5.30 | 2.50 | | ● | ● | | 0.20-1.50 | 0.10-0.30 |
| TR6 TNCU 100405 | 0.50 | 0.50 | 7.30 | 4.20 | ● | ● | ● | | 0.20-0.50 | 0.10-0.30 |
| TR6 TNCU 100410 | 1.00 | 1.00 | 7.30 | 4.20 | ● | ● | ● | | 0.20-1.00 | 0.10-0.30 |
| TR6 TNCU 100415 | 1.50 | 1.50 | 7.30 | 4.20 | ● | ● | ● | | 0.20-1.50 | 0.10-0.30 |
| TR6 TNMU 100415 | 1.50 | 1.50 | 7.30 | 4.20 | ● | ● | | | 0.20-1.50 | 0.10-0.30 |
| TR6 TNCU 100420 | 2.00 | 2.00 | 7.30 | 4.20 | ● | ● | ● | | 0.20-2.00 | 0.10-0.30 |
| TR6 TNCU 100425 | 2.50 | 2.50 | 7.30 | 4.20 | ● | ● | ● | ● | 0.20-2.50 | 0.10-0.30 |
| TR6 TNCU 100430 | 3.00 | 3.00 | 7.30 | 4.20 | ● | ● | ● | | 0.20-3.00 | 0.10-0.30 |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** TR6 ER (313) • TR6 ER-M (314) • TR6 FR (316)

TOR6MILL PROFILING

**TR90 TXMT**
Single-Sided Insert with Three Cutting Edges for 90° Shoulder and Face Milling



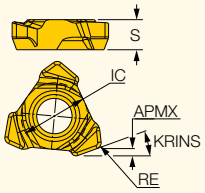
| Designation | Dimensions APMX | RE | IC | S | Tough ↔ Hard IC830 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| TR90 TXMT 070204 | 2.50 | 0.40 | 5.30 | 2.40 | ● | ● | 0.50-2.50 | 0.10-0.20 |
| TR90 TXMT 100408 | 4.00 | 0.80 | 7.30 | 3.90 | ● | ● | 0.90-4.00 | 0.10-0.20 |

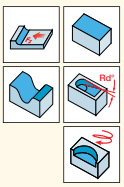
• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** TR6 ER (313) • TR6 ER-M (314) • TR6 FR (316)

TOR6MILL PROFILING

**TRFF TXMT**
Single-Sided Insert with Three Cutting Edges for High Feed Machining



| Designation | Dimensions APMX | RE | Rg(1) | IC | S | KRINS(2) | Tough ↔ Hard IC830 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| TRFF TXMT 0702 | 0.60 | 0.50 | 1.00 | 5.30 | 2.40 | 18.0 | ● | ● | 0.20-0.60 | 0.50-0.80 |
| TRFF TXMT 1004 | 0.80 | 0.70 | 1.40 | 7.30 | 3.90 | 17.0 | ● | ● | 0.20-0.80 | 0.70-1.20 |

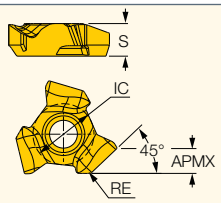
(1) Radius for programming

(2) Edge angle related to the wiper

**For tools, see pages:** TR6 ER (313) • TR6 ER-M (314) • TR6 FR (316)

TOR6MILL PROFILING

**TR45 TXMT**
Single-Sided Inserts with Three Cutting Edges for 45° Chamfering and Face Milling

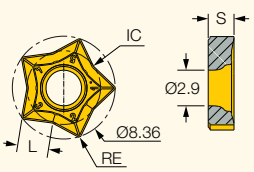


| Designation | Dimensions APMX | RE | IC | S | Tough ↔ Hard IC830 | IC808 | Recommended Machining Data $a_p$ (mm) | $f_z$ (mm/t) |
|---|---|---|---|---|---|---|---|---|
| TR45 TXMT 1004 | 3.00 | 0.40 | 7.30 | 3.90 | ● | ● | 1.00-3.00 | 0.20-0.40 |

**For tools, see pages:** TR6 ER (313) • TR6 ER-M (314) • TR6 FR (316)

CHAMFMILL CHAMFERING LINE

**PNMT 0602-TN**
Pentagonal Inserts for Upper and Bottom Chamfering



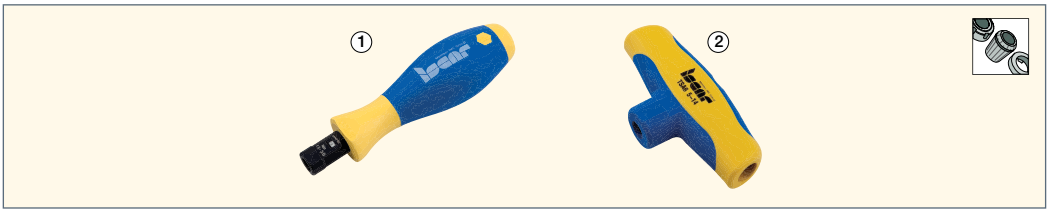
| Designation | Dimensions L | RE | IC | S | IC830 | Recommended Machining Data $f_z$ (mm/t) |
|---|---|---|---|---|---|---|
| PNMT 0602-TN | 2.30 | 0.20 | 6.00 | 2.10 | ● | 0.07-0.12 |

• For cutting speed recommendations, see pages 616-620

**For tools, see pages:** CH45-MM-PN06 (51) • CH45-PN06 (51)

## Accessories

**Adjustable Torque Handles**
Adjustable Torque Handles
for Screw Drivers




| Designation | Range[1] | SSC[2] | Fig. |
|---|---|---|---|
| **HSA 4 0.8-2NM** | 0.8-2 | 4.0 | 1 |
| **HSA 4 1-5NM** | 1-5 | 4.0 | 1 |
| **TSA 6 5-14NM** | 5-14 | 6.0 | 2 |

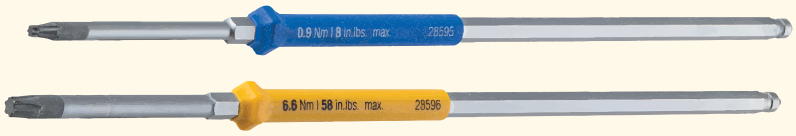
[1] Torque range N*m
[2] Blade's hexagonal driving size

| Blades | | | Upper torque limit for adjusting an assembly with handles in Nm | | |
|---|---|---|---|---|---|
| | | | HSA 4 0.8-2NM | HSA 4 1-5NM | TSA 6 5-14NM |
| Designation | Tip[1] | Hex size, mm | (Port size 4 mm) | | (Port size 6 mm) |
| BLD 4 T07-0.9NM | T07 | 4 | 0.9 | – | – |
| BLD 4 IP07-0.9NM | 7IP | | 1.3 | | |
| BLD 4 IP07-1.2NM | 7IP | | | | |
| BLD 4 T08-1.2NM | T08 | | | | |
| BLD 4 IP08-1.2NM | 8IP | | 2 | | |
| BLD 4 T09-2.0NM | T09 | | 2 | 2.5 | |
| BLD 4 IP09-2.0NM | 9IP | | | 3 | |
| BLD 4 T10-3.2NM | T10 | | | 3.8 | |
| BLD 4 IP10-3.2NM | 10IP | | | 4.5 | |
| BLD 4 T15-4.8NM | T15 | | | 5 | |
| BLD 4 IP15-4.8NM | IP15 | | | | |
| BLD 4 HEX4 | SW4 | | | | 8 |
| BLD 6 T20 | T20 | 6 | – | | 10 |
| BLD 6 T20IP | 20IP | | | | 13 |
| BLD 6 T25 | T25 | | | | 14 |
| BLD 6 T25IP | 25IP | | | | |
| BLD 6 HEX4 | SW4 | | | | |
| BLD 6 HEX5 | SW5 | | | | |
| BLD 6 HEX6 | SW6 | | | | |

[1] **Tip designation:**
T... - Torx (hexalobular internal)
...IP - Torx Plus (Internal Plus)
SW... - Hex (Allen)
For handles with an inserted blade, the torque should not exceed the maximum value shown in the table.

## Accessories

**Torx/Hex Blades**
Blades for Adjustable
Torque Handles




| Designation | TQ[1] | SSC[2] | Key[3] |
|---|---|---|---|
| **BLD 4 HEX4** | 8.0 | 4.0 | HEX4 |
| **BLD 6 T20** | 10.0 | 6.0 | T20 |
| **BLD 6 T20IP** | 13.0 | 6.0 | IP20 |
| **BLD 6 HEX4** | 15.0 | 6.0 | HEX4 |
| **BLD 6 HEX5** | 15.0 | 6.0 | HEX5 |
| **BLD 6 HEX6** | 15.0 | 6.0 | HEX6 |
| **BLD 6 T25** | 15.0 | 6.0 | T25 |
| **BLD 6 T25IP** | 15.0 | 6.0 | IP25 |

[1] Maximum tightening torque
[2] Blade's hexagonal driving size
[3] IP-TORX PLUS Tip

## Accessories

**HSD Fixed Torque Handles**
Fixed Torque Handles
for Screw Drivers

| Designation | TQ(1) | Color |
|---|---|---|
| HSD 4-0.65NM | 0.6 | Orange |
| HSD 4-0.9NM | 0.9 | Black |
| HSD 4-1.2NM | 1.2 | Green |
| HSD 4-2.0NM | 2.0 | Blue |
| HSD 4-3.2NM | 3.2 | Yellow |
| HSD 4-4.8NM | 4.8 | Grey |

- For tightening torque of insert clamping screws, refer to table on page 621

(1) Torque N*m

## Accessories

**Key Blades**
Key Blades for Fixed
Torque Handles

| Designation | TQ(1) | Color |
|---|---|---|
| BLD 4 IP06-0.65NM | 0.7 | Orange |
| BLD 4 T06-0.65NM | 0.7 | Orange |
| BLD 4 IP07-0.9NM | 0.9 | Black |
| BLD 4 T07-0.9NM | 0.9 | Black |
| BLD 4 IP07-1.2NM | 1.2 | Green |
| BLD 4 IP08-1.2NM | 1.2 | Green |
| BLD 4 T08-1.2NM | 1.2 | Green |
| BLD 4 IP09-2.0NM | 2.0 | Blue |
| BLD 4 T09-2.0NM | 2.0 | Blue |
| BLD 4 IP10-3.2NM | 3.2 | Yellow |
| BLD 4 T10-3.2NM | 3.2 | Yellow |
| BLD 4 IP15-6.6NM | 4.8 | Grey |
| BLD 4 T15-4.8NM | 4.8 | Grey |

- For tightening torque of insert clamping screws, refer to a table on page 621

(1) Maximum tightening torque

## Cutting Speed Recommendations for Indexable Milling Cutters

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Material Group No. (1) | CUTTING SPEED $V_c$ (m/min) COATED | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | IC330/ 328 | IC380 | IC808/ 908 | IC810/ 910 | IC830/ 928 | IC840 | IC845 | IC882 |
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %C | annealed | 420 | 125 | 1 | 140-200 | | 210-300 | 190-260 | 150-240 | | 130-220 | |
| | | >= 0.25 %C | annealed | 650 | 190 | 2 | 130-190 | | 200-280 | 170-240 | 140-230 | | 120-200 | |
| | | < 0.55 %C | quenched and tempered | 850 | 250 | 3 | 130-190 | | 200-260 | 160-230 | 140-230 | | 120-190 | |
| | | >= 0.55 %C | annealed | 750 | 220 | 4 | 120-180 | | 180-250 | 140-220 | 130-220 | | 120-180 | |
| | | | quenched and tempered | 1000 | 300 | 5 | 120-170 | | 180-240 | 140-210 | 130-200 | | 110-180 | |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | 120-160 | | 170-240 | 130-210 | 120-190 | | 100-170 | |
| | | | quenched and tempered | 930 | 275 | 7 | 110-150 | | 160-230 | 120-200 | 120-170 | | 100-160 | |
| | | | | 1000 | 300 | 8 | 100-140 | | 150-230 | 110-200 | 110-170 | | 100-150 | |
| | | | | 1200 | 350 | 9 | 90-150 | | 140-220 | 100-190 | 100-160 | | 90-150 | |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 200 | 10 | 80-130 | | 120-210 | 90-180 | 90-150 | | 80-140 | |
| | | | quenched and tempered | 1100 | 325 | 11 | 80-120 | | 110-170 | 80-160 | 90-140 | | 80-130 | |
| | stainless steel and cast steel | | ferritic/ martensitic | 680 | 200 | 12 | 100-140 | | 150-230 | | 110-160 | | 110-160 | |
| | | | martensitic | 820 | 240 | 13 | 90-130 | | 140-220 | | 100-150 | | 100-150 | |
| M | stainless steel and cast steel | | austenitic, duplex | 600 | 180 | 14 | 80-120 | | 100-160 | | 100-150 | 90-160 | | 70-140 |
| K | grey cast iron (GG) | | ferritic/pearlitic | | 180 | 15 | | | | 220-320 | | | | |
| | | | pearlitic / martensitic | | 260 | 16 | | | | 200-300 | | | | |
| | cast iron nodular (GGG) | | ferritic | | 160 | 17 | | | | 180-250 | | | | |
| | | | pearlitic | | 250 | 18 | | | | 160-220 | | | | |
| | malleable cast iron | | ferritic | | 130 | 19 | | | | 200-300 | | | | |
| | | | pearlitic | | 230 | 20 | | | | 170-280 | | | | |
| N | aluminum wrought alloys | | not cureable | | 60 | 21 | | | | | | | | |
| | | | cured | | 100 | 22 | | | | | | | | |
| | aluminum cast alloys | <=12% Si | not cureable | | 75 | 23 | | | | | | | | |
| | | | cured | | 90 | 24 | | | | | | | | |
| | | >12% Si | high temperature | | 130 | 25 | | | | | | | | |
| | copper alloys | >1% Pb | free cutting | | 110 | 26 | | | | | | | | |
| | | | brass | | 90 | 27 | | | | | | | | |
| | | | electrolytic copper | | 100 | 28 | | | | | | | | |
| | non metallic | | duroplastics, fiber plastics | | | 29 | | | | | | | | |
| | | | hard rubber | | | 30 | | | | | | | | |
| S | high temp. alloys | Fe based | annealed | | 200 | 31 | 35-50 | 45-55 | 50-60 | | 35-55 | 40-55 | | 35-50 |
| | | | cured | | 280 | 32 | 30-40 | 35-45 | 40-50 | | 30-45 | 30-45 | | 30-40 |
| | | Ni or Co based | annealed | | 250 | 33 | 25-35 | 30-45 | 35-50 | | 30-45 | 30-40 | | 25-35 |
| | | | cured | | 350 | 34 | 20-25 | 25-35 | 25-35 | | 25-35 | 25-30 | | 20-25 |
| | | | cast | | 320 | 35 | 25-30 | 30-35 | 30-40 | | 30-35 | 30-35 | | 25-30 |
| | titanium alloys | | pure | Rm = 400 | | 36 | 45-80 | 55-100 | 65-110 | | 50-90 | 50-90 | | 45-80 |
| | | | alpha+beta alloys cured | Rm = 1050 | | 37 | 30-65 | 35-65 | 35-70 | | 30-65 | 30-60 | | 30-65 |
| H | hardened steel | | hardened | | 55 HRC | 38 | | 60-80 | 55-75 | | | | | |
| | | | hardened | | 60 HRC | 39 | | 50-70 | 45-65 | | | | | |
| | chilled cast iron | | cast | | 400 | 40 | | 100-110 | 90-105 | | | | | |
| | cast iron | | hardened | | 55 HRC | 41 | | 60-80 | 55-75 | | | | | |

Rm - ultimate tensile strength, MPa

(1) For ISCAR material group numbers and workpiece material list, see pages 820-910

| CUTTING SPEED $V_c$ (m/min) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COATED | | | | | | CERMET | UNCOATED | | CBN | | PCD | | CERAMIC |
| IC950 | IC5100 a-TEC | IC5400 | IC5500 | IC5820 | DT7150 DO-TEC | IC30N | IC08 | IC28 | IB55 | IB85 | ID5 | ID8 | IS8 |
| 180-230 | | 230-320 | 180-280 | | | 250-350 | | | | | | | |
| 160-190 | | 210-300 | 160-260 | | | 200-300 | | | | | | | |
| 130-160 | | 200-280 | 150-240 | | | 150-250 | | | | | | | |
| 120-140 | | 200-260 | 130-240 | | | 135-200 | | | | | | | |
| 100-130 | | 180-260 | 130-220 | | | 120-180 | | | | | | | |
| 160-210 | | 170-250 | 130-210 | | | 180-240 | | | | | | | |
| 120-180 | | 160-240 | 110-210 | | | 135-210 | | | | | | | |
| 100-160 | | 150-240 | 110-200 | | | 120-200 | | | | | | | |
| 90-140 | | 150-230 | 100-200 | | | 110-220 | | | | | | | |
| 80-100 | | 120-220 | 100-190 | | | 110-160 | | | | | | | |
| 70-160 | | 110-180 | 90-160 | | | 80-100 | | | | | | | |
| | | 150-240 | 150-280 | | | 120-200 | | | | | | | |
| | | 140-230 | 140-270 | | | 100-160 | | | | | | | |
| | | | | 100-160 | | | | | | | | | |
| 70-180 | 230-350 | | | | 140-270 | | | | 500-900 | 500-1500 | | | 350-800 |
| 120-170 | 210-320 | | | | 125-220 | | | | 500-700 | 500-1200 | | | 250-600 |
| 130-240 | 200-300 | | | | 190-330 | | | | 500-700 | 500-1200 | | | 400-900 |
| 80-240 | 170-250 | | | | 160-300 | | | | 400-600 | 400-1000 | | | 250-600 |
| 130-240 | 220-320 | | | | 180-350 | | | | 500-900 | 500-1500 | | | 360-540 |
| 120-210 | 180-300 | | | | 160-330 | | | | 500-700 | 500-1200 | | | 300-440 |
| | | | | | | | 800-900 | 480-640 | | | 600-3000 | 500-2500 | |
| | | | | | | | 700-800 | 400-560 | | | 600-2500 | 500-2200 | |
| | | | | | | | 800-900 | 480-640 | | | 600-3000 | 500-2500 | |
| | | | | | | | 750-850 | 400-560 | | | 600-2800 | 500-2300 | |
| | | | | | | | 400-450 | 240-320 | | | 500-1200 | 400-1000 | |
| | | | | | | | 500-550 | 240-320 | | | 600-1500 | 500-1100 | |
| | | | | | | | 500-550 | 240-320 | | | 500-1000 | 400-800 | |
| | | | | | | | 350-380 | 160-240 | | | 700-2000 | 600-1800 | |
| | | | | | | | | | | | 1800-3000 | 1500-2500 | |
| | | | | | | | | | | | 1800-3000 | 1500-2500 | |
| | | | | 45-55 | | | | | | 150-200 | | | |
| | | | | 35-45 | | | | | | 120-150 | | | |
| | | | | 35-45 | | | | | | 70-120 | | | |
| | | | | 25-35 | | | | | | 60-90 | | | |
| | | | | 30-35 | | | | | | 70-100 | | | |
| | | | | 55-95 | | | | | | | | | |
| | | | | 30-65 | | | | | | | | | |
| | | | | | 50 -75 | 60-70 | | | 90-170 | 110-200 | | | |
| | | | | | 40-65 | 50-60 | | | 80-140 | 90-170 | | | |
| | | | | | 80-105 | 90-110 | | | 100-190 | 120-220 | | | |
| | | | | | 50-75 | 60-70 | | | 90-170 | 110-200 | | | |

## PCD Recommended Machining Conditions

| ISO | Grade | D.O.C. mm | Material | $V_c$ m/min | Feed mm/tooth | Cutting Edge |
|---|---|---|---|---|---|---|
| N | ID5 | <2.0 | aluminum alloys <12% silicon | 300-3000 | 0.05-0.25 | sharp |
| | | <2.0 | chipboard fiberboard plastics | 2000-3000 | 0.05-0.25 | |
| | | <2.0 | copper brass alloys | 500-1500 | 0.05-0.25 | |

## CBN Recommended Machining Conditions

| ISO | D.O.C. mm | Material | Grade | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | IB85 | | | IB55 | | |
| | | | $V_c$ m/min | Feed mm/ tooth | Cutting Edge | $V_c$ m/min | Feed mm/ tooth | Cutting Edge |
| K | <0.5 | grey cast iron HB 200-280 | 500-1500 | 0.1-0.3 | chamfer hone | | | |
| | 0.5-2.0 | | 500-1100 | 0.1-0.25 | chamfer | | | |
| | <0.5 | compacted graphite iron GCI | 400-600 | 0.1-0.2 | hone | | | |
| S | 0.5-2.0 | Co based > 35 HRc Ni based > 35 HRc<br>Fe based > 35 HRc Cr based > 35 HRc | 150-200<br>120-150<br>60-120<br>50-75 | 0.05-0.15 | chamfer | | | |
| H | <0.5 | hardened steels > 45 HRc | 80-180 | 0.1-0.25 | chamfer | 80-220 | 0.1-0.25 | chamfer |
| | <2 | hardened cast iron | 80-200 | 0.1-0.15 | chamfer | | | |
| P | <2 | bearing steel | 180-220 | 0.05-0.25 | chamfer | 180-220 | 0.1-0.15 | chamfer |
| | <2 | ferrous powder metal | 150-300 | 0.1-0.15 | chamfer | 250-360 | 0.1-0.15 | chamfer |

## Recommended Cutting Conditions for ADKT 1505R8T-FF Inserts

| ISO Class DIN/ ISO 513 | Workpiece Material: Description | ISCAR Mat. Group* | Typical AISI/SAE/ ASTM | Representative DIN W.-Nr. | Hardness, HB | Carbide Grade | D.O.C. Ap [mm] | Cutting Speed $V_c$, [m/min] | Feed Per Tooth $F_z$, [mm/tooth] | Coolant |
|---|---|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel and cast steel, free cutting steel | 1 | 1020 | 1.0402 | 130-180 | IC928 | 1-1.5 | 100-150 | 0.8-1.5 | air |
| | | | | | | IC808 | 1.5-2 | 100-170 | 0.7-1.3 | |
| | low alloy and cast steel (less than 5% of alloying elements) | 8 | 4340 | 1.6582 | 260-300 | IC928 | 1-1.5 | 100-150 | 0.8-1.5 | air |
| | | | | | | IC808 | 1.5-2 | | 0.5-1 | |
| | | 9 | 3135 | 1.571 | HRC 35-42** | IC928 | 0.5-1.1 | 80-120 | 0.4-1 | air |
| | | | | | | IC808 | 0.5-0.7 | | 0.2-0.7 | |
| | high alloyed steel, cast steel and tool steel | 10 | H13 | 1.2344 | 200-220 | IC928 | 0.7-1.5 | 100-150 | 0.6-1.1 | air |
| | | | | | | IC808 | | | | |
| | martensitic stainless steel | 12 | 420 | 1.4021 | 200 | IC928 | 0.5-1.5 | 80-120 | 0.4-0.8 | air |
| | | | | | | IC330 | | | | |
| M | austenitic stainless steel | 14 | 304L | 1.4306 | 200 | IC928 | 0.5-1 | 80-100 | 0.3-0.7 | air |
| | | | | | | IC330 | | | | |
| | | | 316L | 1.4404 | 140 | IC928 | 0.5-1 | 80-100 | 0.3-0.6 | |
| | | | | | | IC330 | | | | |
| K | grey cast iron | 16 | class 40 | 0.6025 (GG25) | 250 | IC928 | 1-1.5 | 150-220 | 1-1.5 | air |
| | nodular cast iron | 17 | cass 65-45-12 | 0.7050 (GGG50) | 200 | IC928 | 1-1.5 | 100-160 | 1-1.5 | |
| S | high temperature alloys | 34 | inconel 718 | 2.4668 | 340 | IC928 | 0.5-1 | 20-30 | 0.1-0.2 | wet (emulsion) |
| | | 37 | AMS R56400 | 3.7165 (Ti6Al4V) | HRC 40-45 | IC928 | 0.5-1 | 22-45 | 0.4-0.6 | |

* ISCAR material grpoup in accordance with VDI 3323 standard

** Quenched and tempered

The data refer to W.O.C. no more than 0.7×DC and a cutter overhang to 2×DC, where DC - the cutter diameter

## Cutting Recommendations for the HELI-QUAD-12 Complete Line

- The table below defines initial feed rates
- For initial cutting speeds, refer to **ISCAR**'s recommendations for carbide grades

Calculating cutting feed rate:
**$f_z = f_{z0} \times Kef \times Ks$ where**

fz0 - Basic feed (Table 1),
Kef - Engagement factor ( Table 2),
Ks - Stability factor (Table 3)

### Table 1 - Basic Feed, $f_z0$, Mm/tooth

| ISO | Material | | Condition | Tensile Strength [N/mm²] | Hardness HB | Material No. (1) | fz0 for Insrt SIze/Geometry | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | SDMT 1205... PDR...-MM | SDMT 1205PDR-HQ-M | SDMT 1205PDN-RM-M | SDMT 1205PDR-HQ-HS | SDMR 1205... HQ-M | QDMT 1205... PDTN-M | QDCT 1205... PDN/-F |
| P | non-alloy steel and cast steel, free cutting steel | < 0.25 %C | annealed | 420 | 125 | 1 | 0.2 | 0.15 | - | 0.15 | 0.12 | 0.2 | 0.12 |
| | | >= 0.25 %C | annealed | 650 | 190 | 2 | | | | | | | |
| | | < 0.55 %C | quenched and tempered | 850 | 250 | 3 | | | | | | | |
| | | >= 0.55 %C | annealed | 750 | 220 | 4 | | | | | | | |
| | | | quenched and tempered | 1000 | 300 | 5 | | | | | | | |
| | low alloy steel and cast steel (less than 5% of alloying elements) | | annealed | 600 | 200 | 6 | 0.2 | 0.15 | - | 0.15 | 0.10 | 0.2 | 0.10 |
| | | | quenched and tempered | 930 | 275 | 7 | | | | | | | |
| | | | | 1000 | 300 | 8 | | | | | | | |
| | | | | 1200 | 350 | 9 | 0.18 | 0.13 | - | 0.13 | 0.10 | 0.18 | 0.10 |
| | high alloyed steel, cast steel, and tool steel | | annealed | 680 | 200 | 10 | | | | | | | |
| | | | quenched and tempered | 1100 | 325 | 11 | | | | | | | |
| | stainless steel and cast steel | | ferritic/ martensitic | 680 | 200 | 12 | | | | | | | |
| | | | martensitic | 820 | 240 | 13 | | | | | | | |
| M | stainless steel and cast steel | | austenitic | 600 | 180 | 14 | - | - | - | - | 0.10 | - | 0.10 |
| K | grey cast iron (GG) | | ferritic/pearlitic | | 180 | 15 | - | 0.15 | 0.15 | - | - | 0.2 | - |
| | | | pearlitic | | 260 | 16 | | | | | | | |
| | cast iron nodular (GGG) | | ferritic | | 160 | 17 | | | | | | | |
| | | | pearlitic | | 250 | 18 | | | | | | | |
| | malleable cast iron | | ferritic | | 130 | 19 | | | | | | | |
| | | | pearlitic | | 230 | 20 | | | | | | | |
| N | aluminum wrought alloys | | not cureable | | 60 | 21 | - | - | - | - | 0.15 | - | 0.15 |
| | | | cured | | 100 | 22 | | | | | | | |
| | aluminum cast alloys | <=12% Si | not cureable | | 75 | 23 | | | | | | | |
| | | | cured | | 90 | 24 | | | | | | | |
| | | >12% Si | high temperature | | 130 | 25 | | | | | | | |
| | copper alloys | >1% Pb | free cutting | | 110 | 26 | | | | | | | |
| | | | brass | | 90 | 27 | | | | | | | |
| | | | electrolytic copper | | 100 | 28 | | | | | | | |
| | non metallic | | duroplastics, fiber plastics | | | 29 | | | | | | | |
| | | | hard rubber | | | 30 | | | | | | | |
| S | high temp. alloys | Fe based | annealed | | 200 | 31 | - | - | - | - | 0.07 | - | 0.07 |
| | | | cured | | 280 | 32 | | | | | | | |
| | | Ni or Co based | annealed | | 250 | 33 | | | | | | | |
| | | | cured | | 350 | 34 | | | | | | | |
| | | | cast | | 320 | 35 | | | | | | | |
| | titanium alloys | | pure | Rm = 400 (2) | | 36 | | | | | 0.09 | | 0.09 |
| | | | alpha+beta alloys cured | Rm = 1050 | | 37 | | | | | | | |
| H | hardened steel | | hardened | | 55 HRC | 38 | 0.07 | - | - | - | - | 0.07 | - |
| | chilled cast iron | | cast | | 400 | 40 | 0.07 | - | - | - | - | 0.07 | - |
| | cast iron | | hardened | | 55 HRC | 41 | 0.07 | - | - | - | - | 0.07 | - |

(1) in accordance with VDI3323 standard
(2) Rm - ultimate tensile strength, MPa

### Table 2 - Engagement Factor Kef

| $a_e$/D | 0.5...1 | 0.25 up to 0.5 | less than 0.25 |
|---|---|---|---|
| Ke | 1 | 1.1 | 1.3 |

$a_e$ - Width of cut
D - cutting diameter

### Table 3 - Stability Factor Ks

| Stability | High | Moderate | Poor |
|---|---|---|---|
| Ks | 1 | 0.9 | 0.7 |

## GRADES for APPLICATIONS and MATERIALS

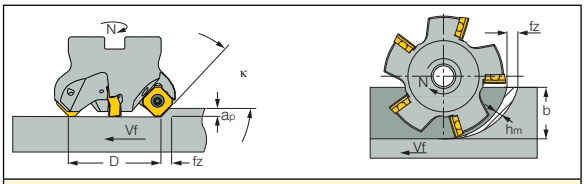
| Material Groups | | ISO P | | ISO M | ISO K | ISO N | ISO S | ISO H |
|---|---|---|---|---|---|---|---|---|
| | | 1 - 11 | 12 - 13 | 14 | 15 - 20 | 21 - 28 | 31 - 37 | 38 - 41 |
| | | Steel | Stainless Steel Ferritic & Martensitic | Stainless Steel Austenitic & Duplex (Ferritic-Austenitic) | Cast Iron | Nonferrous | High Temp. Alloys | Hard Steel & Hardened Cast Iron |
| MILLING Indexable | Harder | IC5400 | IC808 (908) | IC808 (908) | IS8 | ID5 | IC808 (908) | IB55 |
| | | IC30N | | | | | **IC840** | IB85 |
| | | IC808 (908) | IC5500 | **IC840** | IC5100 (4100) | | IC380 | IC30N |
| | | IC810 (910)* | | IC830 (928) | DT7150 | IC04 | IC5820** | **IC808 (908)** |
| | | **IC830 (928)** | **IC830 (928)** | **IC330 (328)** | **IC810 (910)** | IC08 | **IC882** | DT7150 |
| | Tougher | IC845 | IC330 (328) | IC882 | | **IC28** | IC330 (328) | |
| Coolant | | N | N | Y | N | Y | Y | N |

First choice

* for steel castings

** for milling with high pressure coolant (HPC) supply

## Milling Calculations




| Calculations | |
|---|---|
| Cutting 4 | $V_c = \frac{\pi \cdot D \cdot N}{1000min}$ [m/min] |
| Spindle speed | $N = \frac{V_c \cdot 1000}{\pi \cdot D}$ [rev/min] |
| Feed speed | $V_f = f_z \cdot Z \cdot N$ [mm/min] |
| Feed per tooth | $f_z = \frac{V_n}{N \cdot Z}$ [mm/tooth] |
| Feed per revolution | $f_N = f_z \cdot Z$ [mm/rev] |
| Metal removal rate | $Q = \frac{ap \cdot b \cdot V_f}{1000}$ [cm³/min] |
| Machining time | $Th = \frac{Lw}{V_f}$ [min] |
| Specific cutting force | $K_c = K_{c1} \cdot hm^{-mc}$ [N/mm²] |
| Average chip thickness in shoulder milling for b/D≤0.1 | $hm \approx f_z \cdot \sqrt{\frac{b}{D}}$ [mm] |
| Average chip thickness in shoulder milling for b/D>0.1 | $hm = \frac{(sink \cdot 180 \cdot b \cdot f_z)}{\pi \cdot D \cdot \arcsin(b/D)}$ [mm] |
| Machining power | $P = \frac{(ap \cdot b \cdot V_f \cdot k_c)}{6 \cdot 107 \cdot h}$ [kW] |

| | | |
|---|---|---|
| $V_c$ | [m/min] | Cutting speed |
| D | [mm] | Tool diameter |
| N | [rev/min] | Spindle speed |
| $V_f$ | [mm/min] | Feed speed |
| $f_z$ | [mm/tooth] | Feed per tooth |
| Z | | Number of teeth |
| fN | [mm/rev] | Feed per revolution |
| Q | [cm³/ min] | Metal removal rate |
| $a_p$ | [mm] | Depth of cut |
| b | [mm] | Width of cut |
| Th | [min] | Machining time |
| Lw | [mm] | Machining length |
| $K_c$ | [N/mm²] | Specific cutting force |
| Kc1(1) | [N/mm²] | Specific cutting force for 1 mm² chip section |
| hm | [mm] | Average chip thickness |
| mc(1) | | Chip thickness factor |
| k | [degrees] | Cutting edge angle |
| P | [kW] | Machining power |
| h | | Machine efficiency |
| P | = | Pc + Pm |
| P | - | Total Machining Power |
| Pc | - | Net Power=Cutting Power |
| Pm | - | Motor Power (while not cutting) |

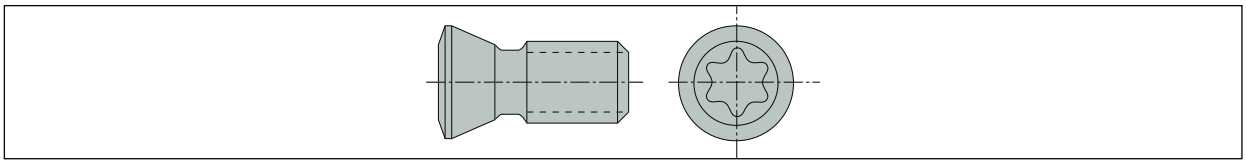
(1) See page 818

### Values for Motor Power Pm

| Max. Machine Power [kW] | Motor Power Pm [kW] |
|---|---|
| 5.5 | 0.4 |
| 7.5 | 0.4-0.6 |
| 11.0 | 1.0 |
| 15.0 | 1.5 |
| 18.0 | 2.2 |
| 22.0 | 2.5 |

Motor Power Pm has a value of approximately 7 to 12% of Maximum Machine Power

## Tightening Torque by Screw

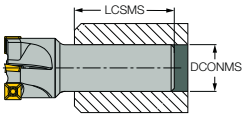
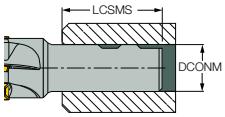
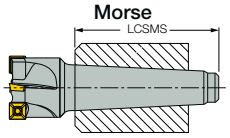


| Screw | Thread | Overall Length [mm] | TORX Recess | Tightening Torque [Nxm] | Tightening Torque [lbfxin] |
|---|---|---|---|---|---|
| TS 18041I/HG | M1.8 | 4.1 | IP 6 | 0.5 | 4.4 |
| SR M2X0.4-2.9 T6-HG | M2 | 2.9 | T 6 | 0.5 | 4.4 |
| SR M2X0.4-3 T6 | M2 | 2.9 | T 6 | 0.5 | 4.4 |
| SR M2X0.4-3.5 T6 | M2 | 3.55 | T 6 | 0.5 | 4.4 |
| SR 34-533/L | M2 | 4.8 | T 6 | 0.6 | 5.3 |
| SR 34-533/L/HG | M2 | 4.8 | T 6 | 0.6 | 5.3 |
| SR 34-508 | M2.2 | 4.6 | T 7 | 0.9 | 8 |
| SR 34-508/S-HG | M2.2 | 3.8 | T 7 | 0.9 | 8 |
| SR 34-508/L | M2.2 | 5.2 | T 7 | 0.9 | 8 |
| SR 14-548 | M2.2 | 5.3 | T 7 | 0.9 | 8 |
| SR 14-505 | M2.2 | 6.5 | T 7 | 0.9 | 8 |
| SR 114-018-L2.50 | M2.5 | 2.5 | T 6 | 0.6 | 5.3 |
| SR 114-018-L3.40 | M2.5 | 3.4 | T 6 | 0.6 | 5.3 |
| SR 114-018-L4.40 | M2.5 | 4.4 | T 6 | 0.6 | 5.3 |
| SR 114-018-L5.30 | M2.5 | 5.3 | T 6 | 0.6 | 5.3 |
| SR 10503833 | M2.5 | 4.6 | T 7 | 0.9 | 8 |
| SR M2.5X5-T7-60 | M2.5 | 5 | T 7 | 0.9 | 8 |
| SR 10503457 | M2.5 | 5.2 | T 6 | 0.9 | 8 |
| SR 34-514 | M2.5 | 5.2 | T 7 | 0.9 | 8 |
| SR 34-513 | M2.5 | 5.5 | T 8 | 1.2 | 10.6 |
| SR M2.5-T8-MT | M2.5 | 5.5 | T 8 | 1.2 | 10.6 |
| SR 34-505 | M2.5 | 5.5 | T 8 | 1.2 | 10.6 |
| SR 34-505/HG | M2.5 | 5.5 | T 8 | 1.2 | 10.6 |
| SR 34-505/L | M2.5 | 7.5 | T 8 | 1.2 | 10.6 |
| SR 34-505/LHG | M2.5 | 7.5 | T 8 | 1.2 | 10.6 |
| SR M2.5x6-T7-60 | M2.5 | 6 | T 7 | 0.9 | 8 |
| SR M2.5X0.45-L6 IP7 | M2.5 | 6 | IP 7 | 0.9 | 8 |
| SR 14-560 | M2.5 | 6.4 | T 8 | 1.2 | 10.6 |
| SR 14-560-HG | M2.5 | 6.4 | T 8 | 1.2 | 10.6 |
| SR 14-560/S | M2.5 | 5.3 | T 8 | 1.2 | 10.6 |
| SR M2.6-L6.7-S11 | M2.6x0.45 | 6.7 | T 8 | 1.2 | 10.6 |
| SR 10508082-HG | M3 | 6.8 | T 8 | 1.2 | 10.6 |
| SR 34-506 | M3 | 6.5 | T 9 | 2 | 17.7 |
| SR 34-506/M | M3 | 7.4 | T 9 | 2 | 17.7 |
| SR 34-506/L | M3 | 8 | T 9 | 2 | 17.7 |
| SR M3×0.5-L7.4 IP9 | M3 | 7.4 | IP 9 | 2 | 17.7 |
| SR 14-513 | M3 | 8 | T 9 | 2 | 17.7 |
| SR 10508600 | M3 | 8.1 | T 9 | 2 | 17.7 |
| SR 14-551 | M3 | 8.2 | T 9 | 2 | 17.7 |
| SR 10504970 | M3.5 | 8.1 | IP15 | 3.2 | 28.3 |
| SR 14-562 | M3.5 | 8.7 | T10 | 3.2 | 28.3 |
| SR M3.5X0.6-L8.5 IP10 | M3.5 | 8.5 | IP15 | 3.2 | 28.36 |
| SR 14-562/S | M3.5 | 6.5 | T10 | 3.2 | 28.3 |
| SR 14-562XL | M3.5 | 10.7 | T10 | 3.2 | 28.3 |
| SR 14-571 | M3.5 | 8.7 | T10 | 3.2 | 28.3 |
| SR 14-571/L | M3.5 | 10 | T10 | 3.2 | 28.3 |
| SR 14-601 | M3.5 | 11 | T15 | 3.2 | 28.3 |
| SR 34-550 | M3.5 | 11.5 | T10 | 3.2 | 28.3 |
| SR 14-541 | M4 | 7.9 | T15 | 4.8 | 42.5 |
| SR 14-506 | M4 | 8.2 | T15 | 4.8 | 42.5 |
| SR M4X0.7-L9.5 IP15 | M4 | 9.5 | IP15 | 4.8 | 42.5 |
| SR M4X0.7-L9.6 IP15 | M4 | 9.65 | IP15 | 4.8 | 42.5 |
| SR M4X0.7-L11.5 IP15 | M4 | 11.5 | IP15 | 4.8 | 42.5 |

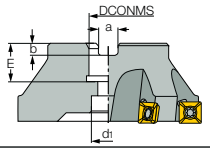
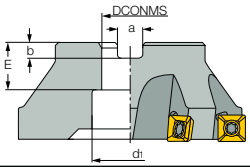
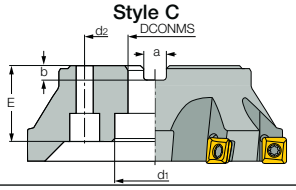
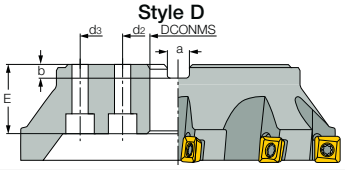
| Screw | Thread | Overall Length [mm] | TORX Recess | Tightening Torque [Nxm] | Tightening Torque [lbfxin] |
|---|---|---|---|---|---|
| SR 16-236 | M4 | 9.7 | T15 | 5.3 | 47 |
| SR 16-236/P | M4 | 11.3 | T15 | 5.3 | 47 |
| SR M4x0.7IP15 | M4 | 10.5 | IP15 | 4.8 | 42.5 |
| SR 34-535 | M4 | 11.5 | T15 | 4.8 | 42,5 |
| SR 34-535-SN | M4 | 11.5 | T15 | 4.8 (3.2*) | 42.5 (28.3*) |
| SR 34-535/L9.5-SN | M4 | 9.5 | T15 | 4.8 (3.2*) | 42.5 (28.3*) |
| SR 14-500 -L | M4x0.5 | - | T15 | 4.8 | 42.5 |
| SR 14-536 | M4 | 12 | T20 | 6 | 53 |
| SR 14-536/S | M4 | 10.5 | T20 | 6 | 53 |
| SR M4-IP15-MT | M4 | 10.5 | IP15 | 4.8 | 42.5 |
| SR 14-536/M | M4 | 14.1 | T20 | 6 | 53 |
| SR 14-544 | M4 | 12 | T15 | 4.8 | 42.5 |
| SR 14-544/S | M4 | 9.3 | T15 | 4.8 | 42.5 |
| SR 34-501 | M4 | 7.4 | T15 | 4.8 | 42.5 |
| SR 11800745 | M4 | 12.5 | IP15 | 4.8 | 42.5 |
| SR 34-510 | M4 | 14.4 | T15 | 4.8 | 42.5 |
| SR 34-510/L... | M4 | 10... 11.7 | T15 | 4.8 | 42.5 |
| SR M4-L15-D4.5 | M4 | 15 | IP15 | 4.8 | 42.5 |
| SR 14-592M | M5 | 8.7 | T20 | 9 | 80 |
| SR 14-592SM | M5 | 9 | T20 | 9 | 80 |
| SR 14-592XLM | M5 | 10.4 | T20 | 9 | 80 |
| SR 34-523 | M5 | 9.5 | T20 | 9 | 80 |
| SR 14-0180 | M5 | 10.4 | T20 | 6 | 53 |
| SR M5x0.8IP20-1 | M5 | 10.8 | IP20 | 6 | 53 |
| SR 14-590 | M5 | 11.2 | T20 | 9 | 80 |
| SR 10505427 | M5 | 12 | IP20 | 9 | 80 |
| SR 10513105 | M5 | 13 | IP20 | 8 | 70.8 |
| SR 10513105-L10.5 | M5 | 10.5 | IP20 | 8 | 70.8 |
| SR 14-591 | M5 | 13.5 | T20 | 9 | 80 |
| SR 14-591/H | M5 | 13.5 | T20 | 9 | 80 |
| SR 14-591/L | M5 | 16.2 | T20 | 9 | 80 |
| SR 34-511 | M5 | 14 | T20 | 9 | 80 |
| SR M5X0.8 16 IP20 | M5 | 16 | IP20 | 9 | 80 |
| SR M5-IP25-MT | M5 | 16.5 | IP25 | 9 | 80 |
| SR 14-519 | M5 | 17 | T20 | 9 | 80 |
| SR 14-542 | M5 | 18.3 | T20 | 9 | 80 |
| SR 16-212 | M5 | 12.5 | T20 | 9 | 80 |
| SR 10503750 | M6 | 18 | T25 | 12 | 106 |
| SR 10507547 | M6 | 22.5 | IP25 | 9 | 80 |
| SR 34-516 | M7x1 | 15.5 | T25 | 12 | 106 |
| SR 34-515 | M8x1 | 17.2 | T25 | 12 | 106 |
| SR 10502813-HG-M | 4-48 UNF | 8.2 | IP7 | 1.2 | 10.6 |
| SR 10502813-HGSM | 4-48 UNF | 7 | IP7 | 1.2 | 10.6 |
| SR 11800866 | 12-28 UNF-RH/LH | 18 | IP15 | 6 | 53 |
| SR 118-069 | NF 1/4-28 NF | 13.3 | IP20 | 9 | 80 |
| SR 1/4-28xIP25 | 1/4-48 UNF | 18.7 | IP25 | 9 | 80 |

* For T490...-11 cutters only

Endmill Shank Styles

| | Shank Diameter DCONMS | LSCMS Min. Recommended |
|---|---|---|
| **Cylindrical**   | 10<br>16<br>20<br>25<br>32<br>40 | 1.5xd<br>1.5xd<br>1.5xd<br>1.5xd<br>1.5xd<br>1.5xd |
| **Weldon**   | 12<br>16<br>20<br>25<br>32<br>40<br>50 | 45<br>48<br>50<br>56<br>60<br>70<br>80 |
| **Morse**   | CM 2<br>CM 3<br>CM 4 | 64.0<br>81.0<br>102.5 |

Face Mill Arbor Hole Styles

| | DCONMS | E | D1 | D2 | D3 | A | B |
|---|---|---|---|---|---|---|---|
| **Style A**   | 16<br>22<br>27 | 19<br>20<br>23 | 13.5<br>18<br>38 | — | — | 8.4<br>10.4<br>12.4 | 5.6<br>6.5<br>7.0 |
| **Style B**   | 22<br>27<br>32<br>40 | 20<br>25<br>25<br>33 | 31<br>38<br>46<br>56 | — | — | 10.9<br>12.4<br>14.4<br>16.4 | 6.5<br>7.0<br>8.0<br>9.0 |
| **Style C**   | 40<br>60 | 33<br>38 | 65<br>— | 66.7<br>101.6 | — | 16.4<br>25.7 | 9.0<br>14.0 |
| **Style D**   | 60 | 38 | — | 101.6 | 177.8 | 25.7 | 14.0 |

# TOOLING SYSTEMS

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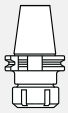
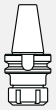
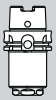
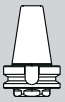
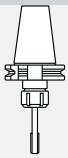
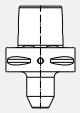
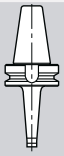
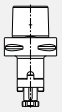
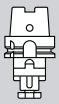
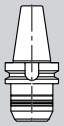
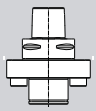
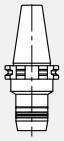
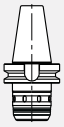
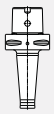
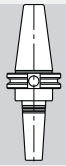
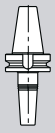
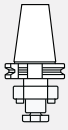
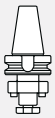
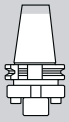
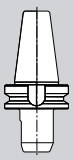
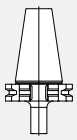
| ER COLLET CHUCK pages 640-641  | ER COLLET CHUCK pages 660-664 | ER COLLET CHUCK pages 710-712  | ER COLLET CHUCK pages 693-695 |
| SHORTIN page 642 | SHORTIN page 665  | SHORTIN page 712  | MAXIN POWER CHUCK page 695 |
| TAPPING page 656  | ENDMILL pages 671-673 | TAPPING page 733 | ENDMILL pages 697-699  |
| CLICK-FIT page 656 | CLICK-FIT page 688 | FLEX-FIT page 734  | SRKIN THERMAL CHUCK pages 700-701 |
| FLEX-FIT page 657 | SHELL & FACE pages 682-683, 686 | CLICK-FIT page 733 | SHELL COMBI pages 702-704  |
| MAXIN POWER CHUCK page 642 | SHELL COMBI page 684  | HYDRO-FIT pages 714-716  | FACE MILL page 704  |
| HYDRO-FIT pages 643-644  | MORSE TAPER page 685 | MAXIN POWER CHUCK page 713  | FLEX-FIT page 705  |
| SRKIN THERMAL CHUCK pages 647-649  | BLANK page 689 | SRKIN THERMAL CHUCK pages 720-725  | ADJ FINE-FIT page 705 |
| SHELL MILL pages 650-651  | HYDRO-FIT pages 666-670 | SHELL MILL pages 726-728  | BLANK page 707 |
| FACE MILL page 652  | | ENDMILL pages 716-719  | HYDRO-FIT page 696 |
| MULTI-MASTER page 657  | | | EXTENSION REDUCTION page 706 |

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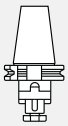
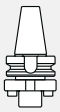
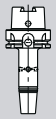
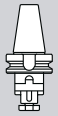
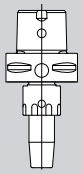
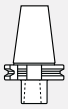
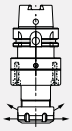
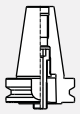
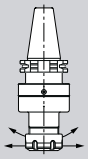
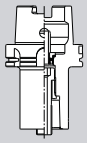
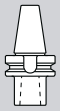
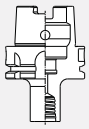
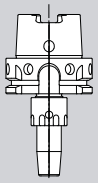
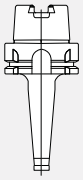
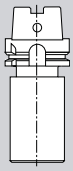
| SHELL COMBI  page 653 | MAXIN POWER CHUCK page 665 | FACE MILL  page 729 | |
| CAMFIX page 654 | SRKIN THERMAL CHUCK  pages 674-681 | SHELL COMBI  page 730 | QUICK-CLAMP  page 702 |
| MORSE TAPER  page 654 | ADJ FINE-FIT  page 687 | CAMFIX  page 731 | |
| ADJ FINE-FIT  page 655 | CAMFIX  page 685 | MORSE TAPER  page 732 | |
| | MULTI-MASTER  page 688 | ADJ FINE-FIT pages 732-733 | |
| | QUICK-CLAMP  page 681 | | |
| | FLEX-FIT  page 689 | | |
| | BLANK  page 689 | | |

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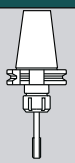
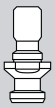
| **DIN69871**<br>page 656  | **STRAIGHT ER COLLET**<br>page 758 | pages 803-805  | page 801 | **ISO, BT-MAS, DIN69871**<br>page 800 |
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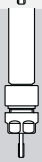
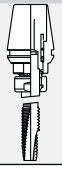
| **STRAIGHT**<br>page 757  | | | | **CAMFIX C3, 4, 5, 6, 8**<br>pages 799-800 |
| **GTIN-ER**<br>pages 760-761  | | | | **UNIVERSAL**<br>page 803 |

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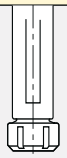
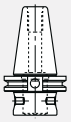
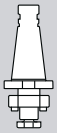
| ER COLLET CHUCK page 737 | ER COLLET CHUCK pages 740-744  | DIN69871 page 747 | DIN69871 page 656  |
| SHELL MILL page 737  | SHRINK-IN page 744 | HSK pages 689 | HSK page 688 |
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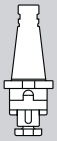
| SHELL COMBI page 738  | | STRAIGHT SHANK page 747 | |
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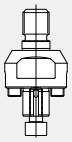
| | | SHELL MILL page 748  | |

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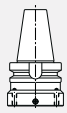
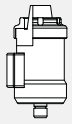
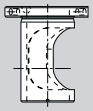
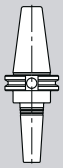
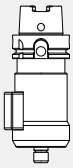
| ADJ FINE-FIT<br>pages 732, 751-754  | SPR SPRING COLLET<br>page 766 | DIN 69871-SRKIN<br>pages 647-648 | ER32-SPIN-JET<br>pages 793, 795  | NUT<br>pages 805-806 |
| ECCENTER SLEEVE<br>page 754  | SPR AA SPRING COLLET<br>page 768 | DIN 69871-SRK<br>page 649  | BT- SPIN-JET<br>pages 793, 795 | WRENCH<br>pages 807, 809, 811 |
| | SPR SEAL SPRING COLLETS<br>page 771 | HSK-SRK/ SRKIN<br>pages 674-681 | HSK- SPIN-JET<br>pages 793, 796  | PRESET & LOCK SCREW<br>pages 806-807, 811-812 |
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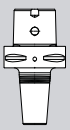
| | SC HYDRO-FIT<br>page 776 | SHRINK-IN CAMFIX<br>pages 700-701  | | |
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## Balancing Elements

### Balancing Definitions

#### Introduction

Balancing is the process of equalizing the mass distribution of a body so it rotates in its bearing without unbalanced centrifugal forces.

Balancing causes reduced vibration, lower spindle strain and improved machining qualities, and allows for higher cutting parameters.

The measuring equipment available today enables unbalance to be reduced to low limits. However, it would be uneconomical to exaggerate the quality requirements. It has therefore become necessary to determine to what extent the unbalance should be reduced and where the optimum economic and technical compromise on balance quality requirements would be struck.

#### Definition

**G** - Balance quality (mm/s)
**e** - Specific unbalance (gxmm/Kg)
**Ω** - Speed (rad/s)
**N** - Speed (rpm)
**M** - Mass of the body (kg)
**m** - Mass of the unbalance (g)
**r** - Radius of the unbalance (mm)
**U** - Residual unbalance (gxmm)

$$e = \frac{U}{M} \Rightarrow U = M \cdot e$$

$$\Omega = \frac{2\pi N}{60} = \frac{\pi N}{30}$$

#### Operation

Residual unbalance equals the tool's mass (M) times its eccentricity (e). Eccentricity measures the extent to which the tool's weight is off-center.

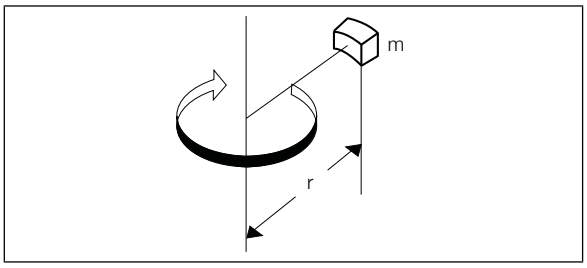
It is defined as the distance from the tool's center of the rotation to its true center of mass.
If eccentricity is measured in microns and tool mass is measured in kilograms, this unit yields residual unbalance in gram-millimeters.

Any two sets of mass and eccentricity that yield the same unbalance value will have the same effect on the tools, so long as the residual unbalance is in the same plane perpendicular to the rotation axis.

$$U = r \cdot m$$

The residual unbalance is independent of the speed. This value reflects the unbalance mass and its distance from the true center of mass. The residual unbalance value is measured on balancing machines.

### Balancing Coolent Chucks




**Example 1**
U=2 g x mm can be treated as an unbalance mass of m=2 g in radial distance of r=1 mm or as a mass of m=0.1 g in radial distance of r=20 mm, etc.

**Example 2**
The residual unbalance is independent of the speed. This value reflects the unbalance mass and its distance from the true center of mass. The residual unbalance value is measured on balancing machines.

$$U = m \cdot r \Rightarrow m = \frac{U}{r} = \frac{4}{20} = 0.2g$$

G value reflects the balancing quality of a toolholder according to its rotational speed (N)

$$G = \Omega \cdot e = \frac{\pi \cdot N}{30} \cdot \frac{U}{M} = \frac{U \cdot N \cdot \pi}{M \cdot 30}$$

$$e = \frac{G \cdot 30}{\pi \cdot N}$$

**Example 3**
G value reflects the balancing quality of a toolholder according to its rotational speed (N).

$$G = \frac{\pi}{30} \cdot N \cdot \frac{U}{M} = \frac{\pi}{30} \cdot 15,000 \cdot \frac{8}{2,000} \approx 6.3 \text{ (mm/s)}$$

$$e = \frac{U}{M} = e = \frac{8}{2} = 4 \text{ (g} \cdot \text{mm/kg)}$$

The G value will change to G=2.5 mm/s when using the same toolholder at a rotational speed N=6, 000 rpm and to G=1.0 mm/s at N=2, 500 rpm.

Balance quality grades for various groups of representative rotors:

- General machine tool parts - G6.3
- General toolholders and machine drivers - G2.5
- Grinding machine drivers - G1.0
- Spindles of precision grinders - G0.4

## Power Chucks

With this tool, only a small tightening torque compresses the frontal nose, providing an extremely high gripping force. It is designed for roughing and finishing applications in milling where high torque transmission, maximum accuracy, compactness and easy operation are required.

**Features**

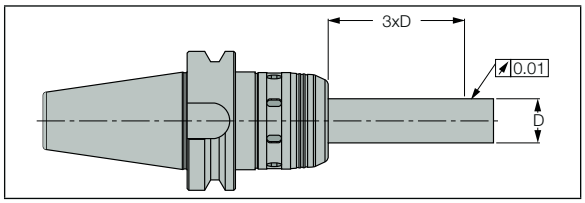
- The clamping nut is not threaded (as in ER collet chucks)
- Designed for direct chucking of the tool shank – no need for intermediate collet for maximum gripping force
- Sealed nut construction
- No axial drawback of the tool shank as chuck is tightened
- Thick wall construction to withstand greater side loading forces

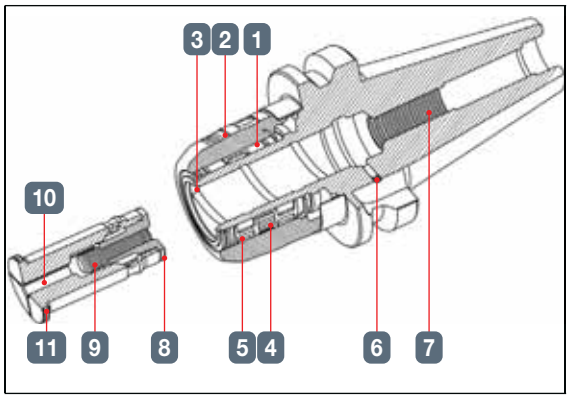
The high gripping force achieved by the **MAXIN** POWER CHUCK results from the shallow nose tapered cone (1) with helical slot (3) inside the internal chuck bore. It exerts a very high clamping force when the clamping nut (2) is rotated in the axial direction.The shallow taper of the tool nose (1) and the angled position of the needle bearing (4) that sit in the cage create the axial movement of the clamping nut (2).

This unique clamping mechanism eliminates axial movement of the shank while clamping, simplifying the preset process.

**Runout Accuracy**

Maximum runout at 3XD overhang is less 0.01 mm



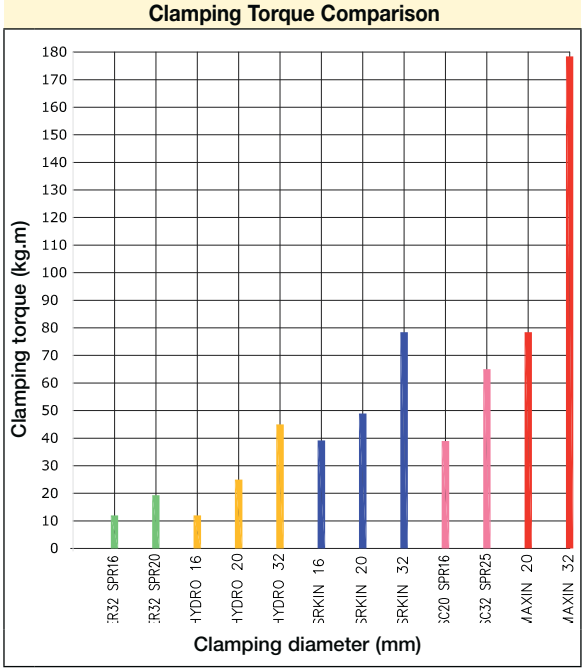

1. Shallow tapered front end cone
2. Clamping nut
3. Helical slot
4. Needle bearing cage
5. Front seal
6. Ventilation bore (thread M4)
7. Preset screw thread
8. Cap screw (for the preset screw)
9. Preset screw
10. Ground bore
11. Grip groove (for collet release)

## Power Chucks

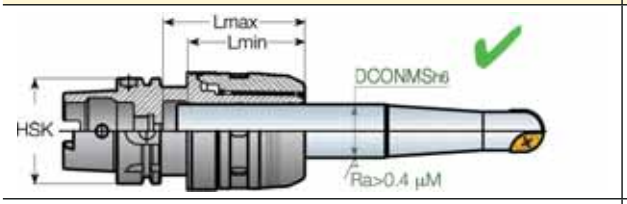
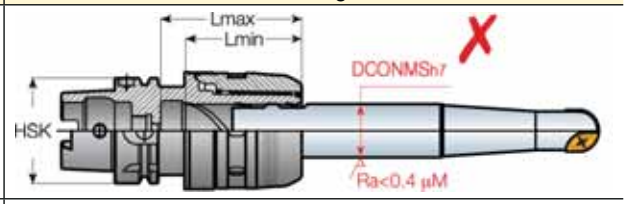
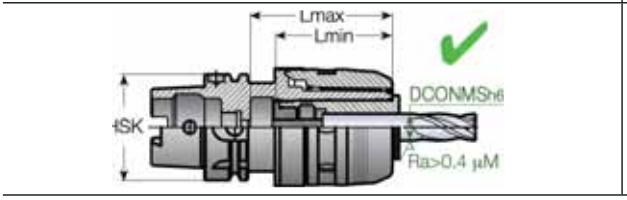
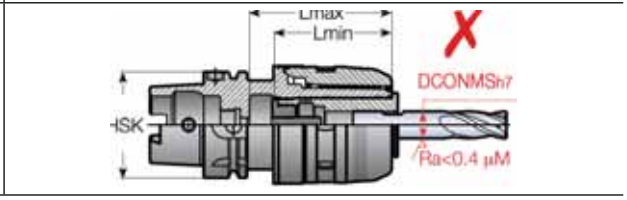
### Assembly and Disassembly of Shank Cutter with Wrench

- Tighten the nut with the spanner wrench until clamping is achieved. Loosen the nut with the spanner wrench to remove the cutting tool.
- Instructions for proper use to avoid damage to the **MAXIN** mechanism, never tighten the clamping nut unless there is a shank inside the bore. After removing the cutting tool from the **MAXIN**, the clamping nut must be unscrewed one extra turn to prevent reduction of the clamping power and to ensure maximum gripping force.
- Preset screw in order to adjust the projection length of the cutting tool you can use a preset screw inside the **MAXIN** internal bore part #9. This is supplied as an optional accessory.
- Insertion of SC collets and shanks. The cutting tool should be inserted into the collet before inserting it into the **MAXIN** chuck. Insert the collet into the **MAXIN** chuck until the collet reaches the front end of the chuck. For maximum rigidity and accuracy insert the shank cutters to the full ground area of the collet.
- Preset Screw in order to adjust the length of the cutting tool, use a preset screw inside the collet (optional). When using SC collet inside the **MAXIN** chuck, the runout accuracy may be affected. In case of cutting tool damage or crash during machining, the **MAXIN** chuck has to be inspected for cracks and that proper runout is maintained.

**Clamping Torque Comparison**




ER Collent chuck
Hydraulic chuck
SRKIN
Power chuck & collet
Power chuck

| Correct | Wrong |
|---|---|
|  |  |
|  |  |



Do not use Weldon type shanks.

Insert shank at least Lmin into the chuck.

In order to maintain a firm grip, the shank's surface finish should have a roughness of at least N5.

## ADJ Operating Instructions

### Radial and Angular Alignment Toolholder

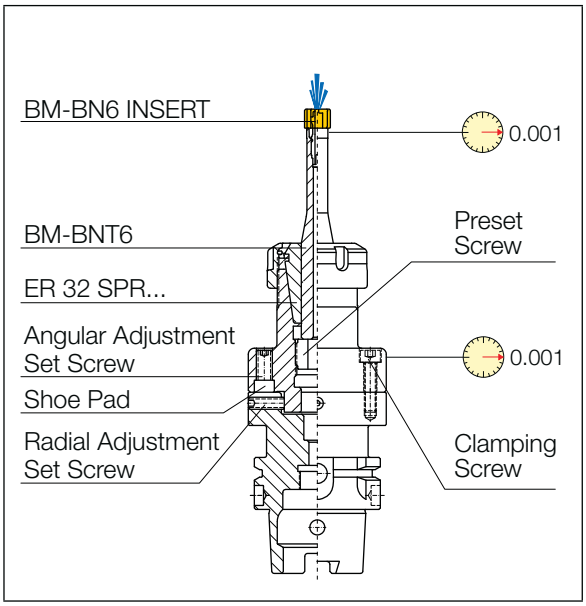
**Tighten the Cutting Tool**
Clamp the cutting tool into the chuck and make sure that screws no. **1** & **3** are tightened until a slight resistance is felt.

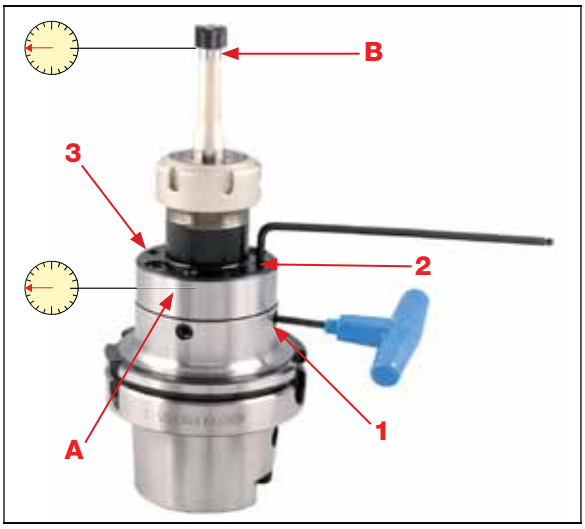
**Radial Adjustment**
Place the dial indicator (with a resolution of 0.001 mm) on the ground area **A** and adjust the runout to 0.001 mm. The adjustment should be made with the 4 screws (no. 1) located on the outer diameter of the toolholder.

**Angular Adjustment**
Place the dial indicator on the ground area **B**. Adjust the axial runout to 0.001 mm with 4 adjustment screws (no. 2) located on the face of the chuck.

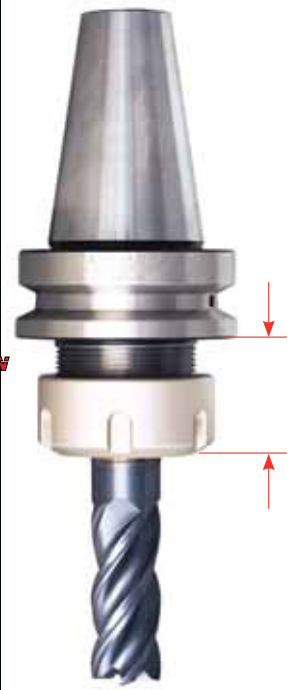
**Final Clamping**
Slightly tighten the 4 clamping screws (no. **3**) located on the face of the chuck, and then the 4 screws on the outer diameter.

**Final Runout Check**
After adjusting and tightening, recheck the axial and radial runout to make sure that runout of 0.001 mm is maintained. If necessary, do fine tuning.



## Short Collet Chucks

| SHORTIN | STANDARD |
|---|---|
| |  |

| BT MAS-403 | HSK DIN 69893 | DIN 69871 |
|---|---|---|
| | | |
| Page 712 | Page 665 | Page 642 |

**Advantages**

- Shortest overhang
- Suitable for regular and shrink collets
- High gripping force
- Reduces vibration
- Better runout and repeatability
- Balanced to G2.5, 20, 000 rpm
- Symmetric design for high speed machining
- Cost effective

**Short Collet Chuck ER**

Short holder for ER spring and shrink collets for maximum rigidity and better cutting conditions.

## ER - Collet Chuck Features

### ER-TOP™ NUT

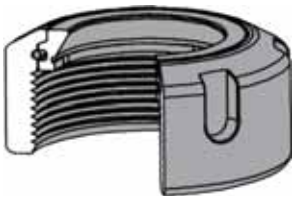
Perfect balance and accuracy

Exclusive anti-friction mechanism

Powerful gripping force, 50-100% higher than conventional design

Compact design, standard size, DIN 6499

HARD TOUCH protective coating



### ER-COOLIT™ JET

Ultra precision runout 0.005 mm

Worldwide patented sealing system

Special Corrosion protection

Super-finished execution

Collapsibility: 0.1 mm

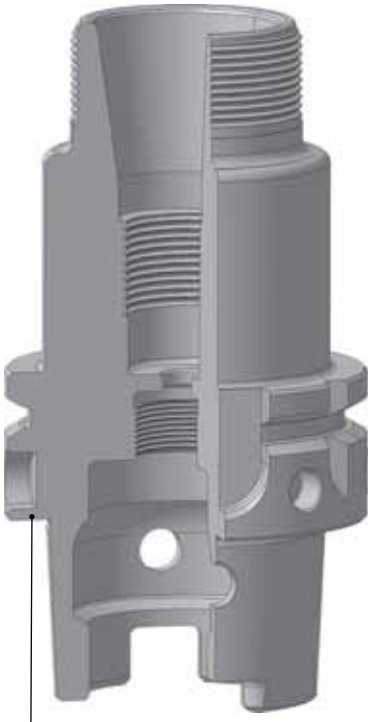
### ER-COLLET CHUCK

Runout O.D. - I.D. Max. 0.003

Two hole for symmetrical design for high spindle speed from 20, 000 RPM

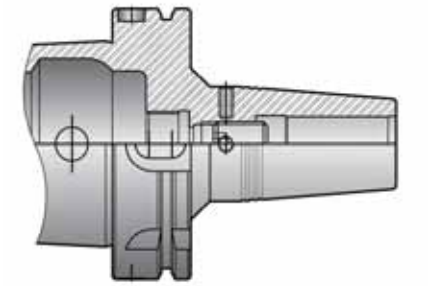
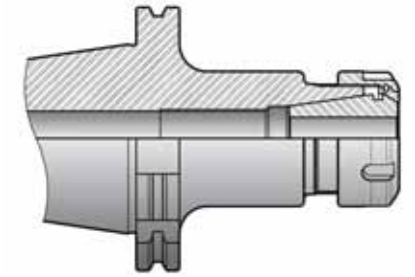
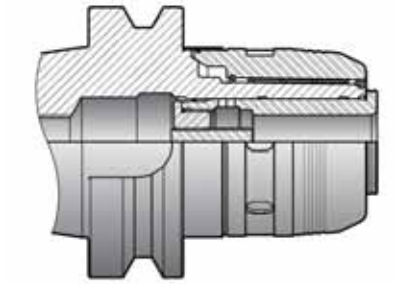
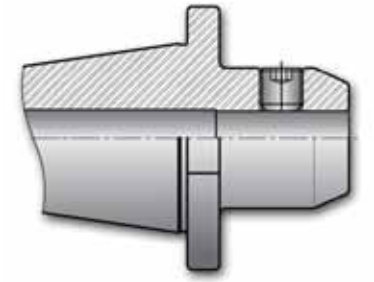
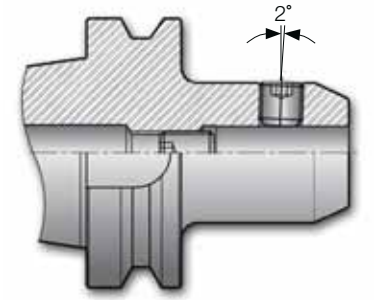
Superior surface finish Ra 0.4

Taper accuracy DIN standard



Hole for DATA chip

## Recommmended Toolholder for Different Shank Types

| | |
|---|---|
| SRK/SRKIN | CYLINDRICAL SHANK |
|  | |
| ER COLLET CHUCK DIN 6499 | CYLINDRICAL SHANK |
|  | |
| MAXIN POWER CHUCK | CYLINDRICAL SHANK |
|  | |
| EM (DIN1835 FORM A/B) | WELDON SHANK |
|  | |
| EM E (DIN1835 FORM E) | WHISTLE NOTCH SHANK |
|   | |

## Hydraulic Chucks

**ISCAR** has expanded its toolholder clamping options by adding hydraulic chucks. These hydraulic chucks range from 6-32 mm. This type of chucking system is used for rotating and stationary applications.

### Main Applications

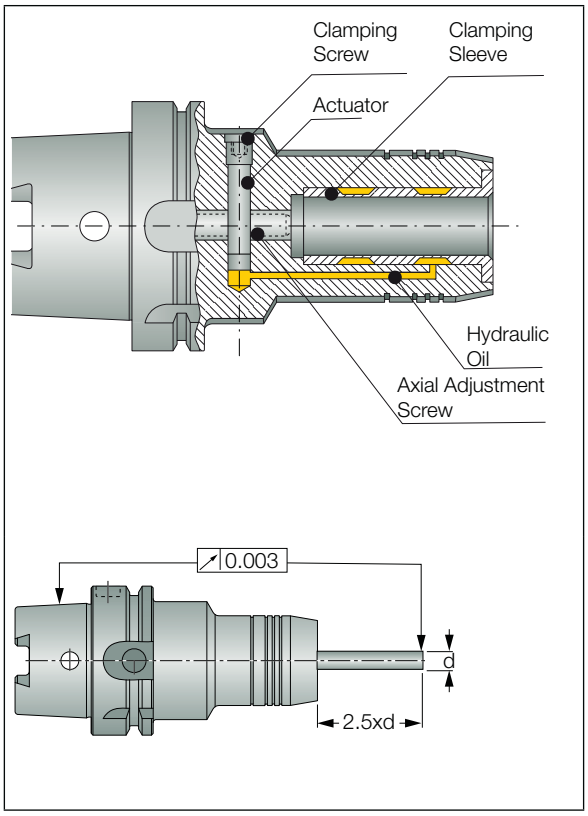
- Fine and accurate machining
- Reaming
- Drilling
- Finish milling
- Internal turning

### Features

- High runout accuracy of less than 0.003 mm
- Very low torque required to activate the clamping mechanism, by using a 4 mm Allen key
- Prolongs cutting tool life and improves surface finish due to vibration damping
- Easy presetting by using an internal preset screw
- All rotating chucks feature a symmetrical and balanced design for high speed machining of up to 25, 000 $min^{-1}$
- Consistent and secure clamping force when used within the recommended speed range
- Suitable for both Weldon and cylindrical shank clamping
- Very convenient and safe tool change on the machine

### Two Main HYDRO-FIT Chuck Types Are Available

- Taper shanks for rotating applications
- VDI DIN 69880 in sizes 30 and 40 for stationary applications on CNC lathes




### Operating Instructions

**To Ensure Correct Functioning of the Hydraulic Chuck, the Following Instructions Should Be Followed:**
Tools with cylindrical shanks and shanks Type AB with one Weldon flat (DIN 1835 part 1 and DIN 6535 HB) should have h6 tolerance. Tools with accordance to DIN 6535 HE (whistle notch) and Type B with two Weldon flats (DIN 1835 part 1) should be used in reduction sleeves, to avoid damaging the chucking bore.

- The tool shank must be burr-free and free of dirt. Insert the tool shank up to the stopper. Make sure that the minimum chucking length (L min) is maintained. If the minimum clamping depth is not met, there will be a loss of accuracy, the maximum admissible torque will be reduced, and the tool holder might get damaged.
- The clamping screw must be turned in manually with an Allen key to the limit stop. DO NOT APPLY EXCESSIVE FORCE. Tightening torque: Max.10Nm

**Never Actuate the Actuation Screw with a Power Screwdriver! Do Not Attempt to Clamp the Chuck without a Shank Inside As This Will Damage the Expansion Clamping Sleeve.**

- Do not combine several extensions
- To release the tool, turn the clamping screw in a counter-clockwise direction until tool can be removed.

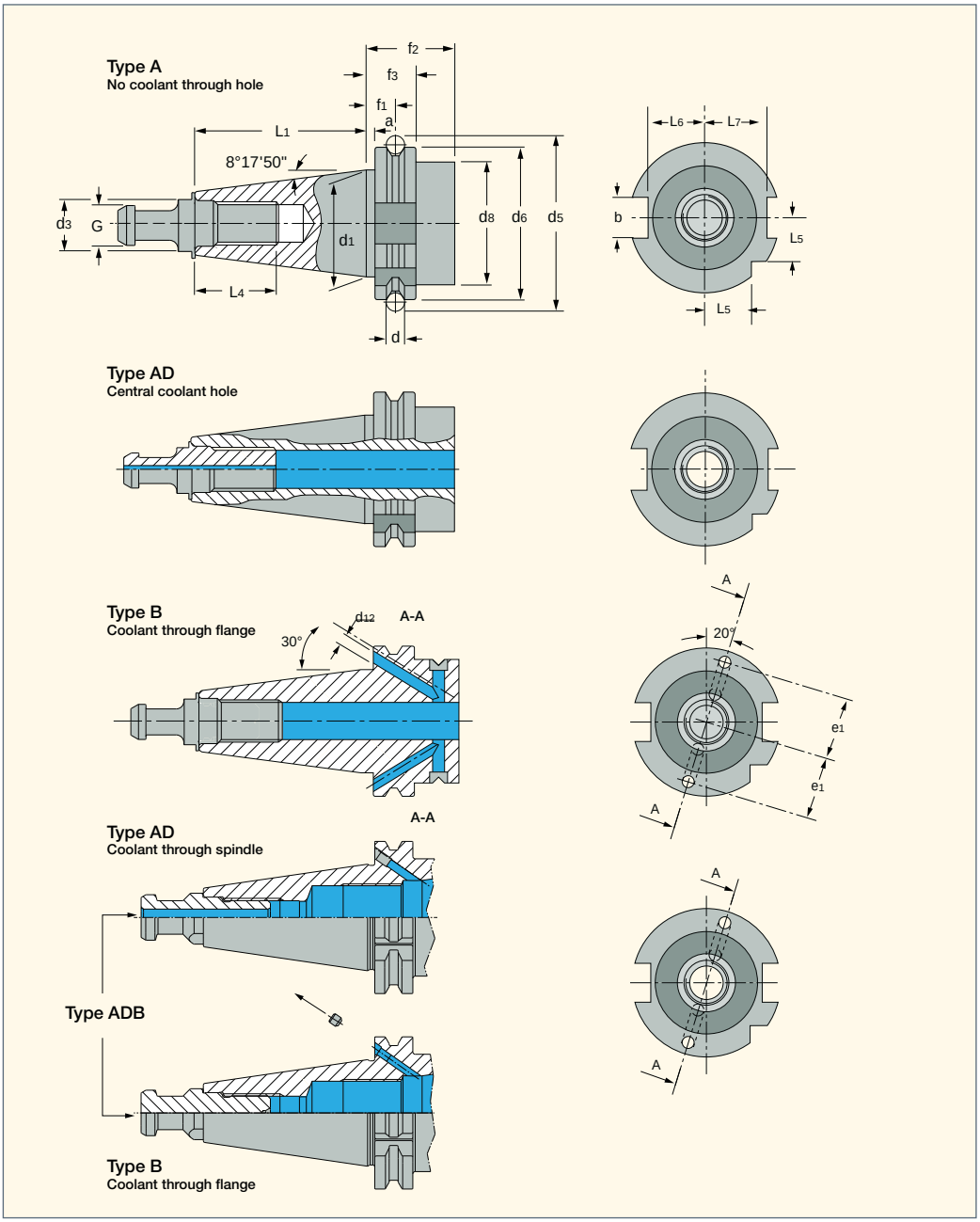
**The Clamping Screw Is Not Secured Against Dropping Out! The Vent Screw of the Hydraulic System Is Protected with a Resin. Don't Remove It!**

# DIN69871-A/B

## *DIN69871*

**Toolholder Standard**

DIN69871 Form A/AD/B/ADB

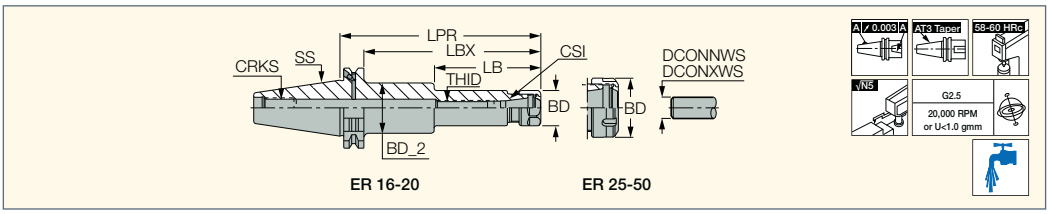



| Shank | a±0.1 | b (H12) | d | d1 | G | d3 (H7) | d5 ±0.05 | d6 | d8 max | f1 ±0.1 |
|---|---|---|---|---|---|---|---|---|---|---|
| SK 30 | 3.2 | 16.1 | 7 | 31.75 | M12 | 13 | 59.30 | 50 | 45 | 11.1 |
| SK 40 | 3.2 | 16.1 | 7 | 44.45 | M16 | 17 | 72.30 | 63.55 | 50 | 11.1 |
| SK 50 | 3.2 | 25.7 | 7 | 69.85 | M24 | 25 | 107.25 | 97.50 | 80 | 11.1 |

| Shank | f2 min. | f3 -0.1 | L1 -0.3 | L4 min. | L5 -0.3 | L6 -0.4 | L7 -0.4 | e1 ±0.1 | d12 | TAPER AT3 |
|---|---|---|---|---|---|---|---|---|---|---|
| SK 30 | 35 | 19.1 | 47.80 | 24 | 15.0 | 16.4 | 19.0 | 21 | 4 | 0.002 |
| SK 40 | 35 | 19.1 | 68.40 | 32 | 18.5 | 22.8 | 25.0 | 27 | 4 | 0.003 |
| SK 50 | 35 | 19.1 | 101.75 | 47 | 30.0 | 35.5 | 37.7 | 42 | 6 | 0.004 |

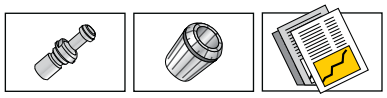
## *DIN69871*

**DIN69871-ER (form ADB)**
DIN 6499 ER Collet Chucks with a DIN 69871 Form ADB Taper Shanks



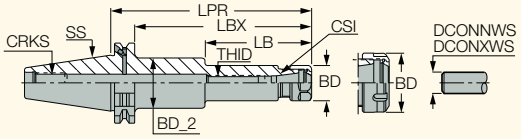

| Designation | SS | CSI | DCONNWS[2] | DCONXWS[3] | LPR | LBX | LB | BD | BD_2 | CRKS | THID | DCP[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DIN69871 30 ER16X 63** | 30 | ER16 | 0.5 | 10.0 | 63.00 | 43.9 | 28.00 | 28.00 | - | M12 | M10X1.5 | 0 | 0.46 |
| **DIN69871 40 ER16X 63** | 40 | ER16 | 0.5 | 10.0 | 63.00 | 43.9 | - | 28.00 | - | M16 | M12X1.75 | 0 | 0.86 |
| **DIN69871 40 ER16X100** | 40 | ER16 | 0.5 | 10.0 | 100.00 | 80.9 | - | 28.00 | - | M16 | M12X1.75 | 0 | 1.05 |
| **DIN69871 40 ER16X160** [1] | 40 | ER16 | 0.5 | 10.0 | 160.00 | 140.9 | 85.00 | 28.00 | 40.00 | M16 | M12X1.75 | 0 | 1.52 |
| **DIN69871 40 ER20X 63** | 40 | ER20 | 1.0 | 13.0 | 63.00 | 43.9 | - | 34.00 | - | M16 | M12X1.75 | 0 | 0.91 |
| **DIN69871 40 ER20X100** | 40 | ER20 | 1.0 | 13.0 | 100.00 | 80.9 | - | 34.00 | - | M16 | M12X1.75 | 0 | 1.16 |
| **DIN69871 40 ER20X160** [1] | 40 | ER20 | 1.0 | 13.0 | 160.00 | 140.9 | 91.00 | 34.00 | 44.00 | M16 | M12X1.75 | 0 | 1.72 |
| **DIN69871 40 ER25X 65** | 40 | ER25 | 1.0 | 16.0 | 65.00 | 45.9 | 28.00 | 42.00 | - | M16 | M16X2 | 0 | 0.90 |
| **DIN69871 40 ER25X100** | 40 | ER25 | 1.0 | 16.0 | 100.00 | 80.9 | - | 42.00 | - | M16 | M16X2 | 0 | 1.29 |
| **DIN69871 40 ER25X150** | 40 | ER25 | 1.0 | 16.0 | 150.00 | 130.9 | - | 42.00 | - | M16 | M16X2 | 0 | 1.81 |
| **DIN69871 40 ER32X 65** | 40 | ER32 | 2.0 | 20.0 | 65.00 | 45.9 | 32.00 | 50.00 | 40.40 | M16 | M22X1.5 | 0 | 0.85 |
| **DIN69871 40 ER32X100** | 40 | ER32 | 2.0 | 20.0 | 100.00 | 80.9 | 35.00 | 50.00 | 49.00 | M16 | M22X1.5 | 0 | 1.20 |
| **DIN69871 40 ER32X150** | 40 | ER32 | 2.0 | 20.0 | 150.00 | 130.9 | 35.00 | 50.00 | 49.00 | M16 | M22X1.5 | 0 | 2.17 |
| **DIN69871 40 ER40X 70** | 40 | ER40 | 3.0 | 26.0 | 70.00 | 50.9 | 32.00 | 63.00 | 50.40 | M16 | M28X1.5 | 0 | 0.89 |
| **DIN69871 40 ER40X100** | 40 | ER40 | 3.0 | 26.0 | 100.00 | 80.9 | 32.00 | 63.00 | 50.40 | M16 | M28X1.5 | 0 | 1.28 |
| **DIN69871 50 ER16X100** | 50 | ER16 | 0.5 | 10.0 | 100.00 | 80.9 | - | 28.00 | - | M24 | M12X1.75 | 0 | 2.76 |
| **DIN69871 50 ER16X160** [1] | 50 | ER16 | 0.5 | 10.0 | 160.00 | 140.9 | 85.00 | 28.00 | 40.00 | M24 | M12X1.75 | 0 | 3.29 |
| **DIN69871 50 ER16X200** [1] | 50 | ER16 | 0.5 | 10.0 | 200.00 | 180.9 | 110.00 | 28.00 | 40.00 | M24 | M10X1.5 | 0 | 3.52 |
| **DIN69871 50 ER20X100** | 50 | ER20 | 1.0 | 13.0 | 100.00 | 80.9 | - | 34.00 | - | M24 | M16X2 | 0 | 2.86 |
| **DIN69871 50 ER20X160** [1] | 50 | ER20 | 1.0 | 13.0 | 160.00 | 140.9 | 86.00 | 34.00 | 45.00 | M24 | M16X2 | 0 | 3.50 |
| **DIN69871 50 ER25X100** | 50 | ER25 | 1.0 | 16.0 | 100.00 | 80.9 | - | 42.00 | - | M24 | M16X2 | 0 | 3.08 |
| **DIN69871 50 ER25X150** | 50 | ER25 | 1.0 | 16.0 | 150.00 | 130.9 | 80.90 | 42.00 | 50.00 | M24 | M16X2 | 0 | 3.71 |
| **DIN69871 50 ER25X200** [1] | 50 | ER25 | 1.0 | 16.0 | 200.00 | 180.9 | 85.00 | 42.00 | 55.00 | M24 | M16X2 | 0 | 4.70 |
| **DIN69871 50 ER32X100** | 50 | ER32 | 2.0 | 20.0 | 100.00 | 80.9 | - | 50.00 | - | M24 | M22X1.5 | 0 | 3.20 |
| **DIN69871 50 ER32X150** | 50 | ER32 | 2.0 | 20.0 | 150.00 | 130.9 | - | 50.00 | - | M24 | M22X1.5 | 0 | 3.83 |
| **DIN69871 50 ER32X200** [1] | 50 | ER32 | 2.0 | 20.0 | 200.00 | 180.9 | - | 50.00 | - | M24 | M22X1.5 | 0 | 4.51 |
| **DIN69871 50 ER40X100** | 50 | ER40 | 3.0 | 26.0 | 100.00 | 80.9 | - | 63.00 | - | M24 | M28X1.5 | 0 | 3.45 |
| **DIN69871 50 ER40X150** | 50 | ER40 | 3.0 | 26.0 | 150.00 | 130.9 | - | 63.00 | - | M24 | M28X1.5 | 0 | 4.51 |
| **DIN69871 50 ER40X200** [1] | 50 | ER40 | 3.0 | 26.0 | 200.00 | 180.9 | - | 63.00 | - | M24 | M28X1.5 | 0 | 5.60 |
| **DIN69871 50 ER50X100** | 50 | ER50 | 10.0 | 34.0 | 100.00 | 80.9 | - | 78.00 | - | M24 | M36X1.5 | 0 | 3.51 |
| **DIN69871 50 ER50X150** | 50 | ER50 | 10.0 | 34.0 | 150.00 | 130.9 | - | 78.00 | - | M24 | M36X1.5 | 0 | 5.22 |

[1] Balanced to G6.3/12,000 RPM
[2] Minimum diameter
[3] Maximum diameter
[4] 1 - Slot for data chip, 0 - Without slot for data chip

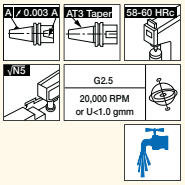

802-805 763-773 763-765

# *DIN69871*

**DIN69871-ER (form ADB)**
DIN 6499 ER Collet Chucks with a DIN 69871 Form ADB Taper Shanks




ER 16-20 ER 25-50



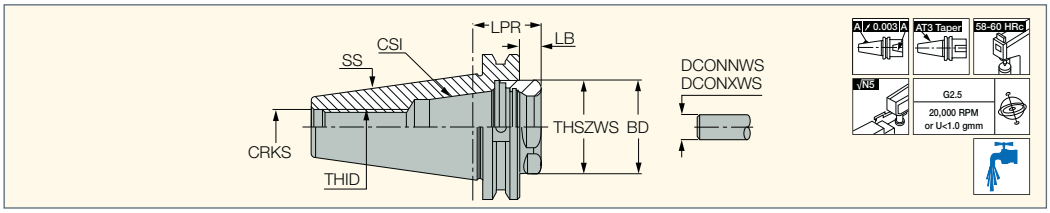

## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| **DIN69871 30 ER16X 63** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | |
| **DIN69871 40 ER16X 63** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **DIN69871 40 ER16X100** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | |
| **DIN69871 40 ER16X160** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | |
| **DIN69871 40 ER20X 63** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **DIN69871 40 ER20X100** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **DIN69871 40 ER20X160** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **DIN69871 40 ER25X 65** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **DIN69871 40 ER25X100** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **DIN69871 40 ER25X150** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **DIN69871 40 ER32X 65** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| **DIN69871 40 ER32X100** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| **DIN69871 40 ER32X150** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| **DIN69871 40 ER40X 70** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | |
| **DIN69871 40 ER40X100** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | |
| **DIN69871 50 ER16X100** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **DIN69871 50 ER16X160** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **DIN69871 50 ER16X200** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | |
| **DIN69871 50 ER20X100** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **DIN69871 50 ER20X160** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **DIN69871 50 ER25X100** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **DIN69871 50 ER25X150** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **DIN69871 50 ER25X200** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **DIN69871 50 ER32X100** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| **DIN69871 50 ER32X150** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| **DIN69871 50 ER32X200** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| **DIN69871 50 ER40X100** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | |
| **DIN69871 50 ER40X150** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | |
| **DIN69871 50 ER40X200** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | |
| **DIN69871 50 ER50X100** | NUT ER50 UM | WRENCH ER50* | | |
| **DIN69871 50 ER50X150** | NUT ER50 UM | WRENCH ER50* | | |

* Optional, to be ordered separately

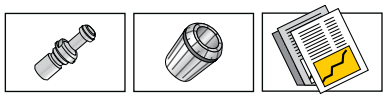
## DIN69871 SHORTIN

**DIN69871-ER-SHORT**
Short Front End ER Collet Chucks with DIN 69871 Form AD Tapered Shanks




| Designation | SS | CSI | DCONNWS(1) | DCONXWS(2) | LPR | LB | BD | THSZWS | CRKS | THID | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 40 ER32 SHORT | 40 | ER32 | 2.0 | 20.0 | 25.10 | 6.0 | 40.00 | M40X1.5 | M16 | - | 0 | 0.58 |
| DIN69871 50 ER32 SHORT | 50 | ER32 | 2.0 | 20.0 | 28.60 | 9.5 | 40.00 | M40X1.5 | M24 | M22X1.5 | 0 | 2.38 |
| DIN69871 50 ER40 SHORT | 50 | ER40 | 3.0 | 26.0 | 28.60 | 9.5 | 50.00 | M50X1.5 | M24 | M28X1.5 | 0 | 2.14 |

(1) Minimum diameter
(2) Maximum diameter
(3) 1 - Slot for data chip, 0 - Without slot for data chip


802-805 763-773 763-765

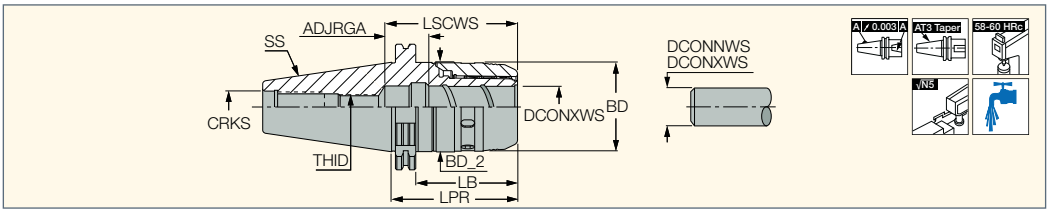
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| DIN69871 40 ER32 SHORT | NUT ER32 SHORT | WRENCH ER32 SHORT* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| DIN69871 50 ER32 SHORT | NUT ER32 SHORT | WRENCH ER32 SHORT* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| DIN69871 50 ER40 SHORT | NUT ER40 SHORT | WRENCH ER40 SHORT* | PRESET ER-JET 28X1.5* | |

* Optional, to be ordered separately

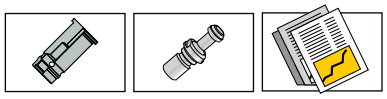
## DIN69871 MAXIN

**DIN69871-MAXIN**
Power Chucks with DIN 69871 Form AD/B Taper Shanks




| Designation | SS | DCONNWS(1) | DCONXWS(2) | BD | BD_2 | LPR | LB | ADJRGA | LSCWS | THID | CRKS | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 40 MAXIN 20X 95 | 40 | 6.0 | 20.0 | 51.00 | 53.00 | 95.00 | 76.0 | 13.00 | 69.0 | M16 | M16 | 0 | 1.20 |
| DIN69871 40 MAXIN 32X106 | 40 | 6.0 | 32.0 | 69.00 | 70.00 | 106.00 | 87.0 | 13.00 | 83.0 | M16 | M16 | 0 | 1.42 |
| DIN69871 50 MAXIN 20X105 | 50 | 6.0 | 20.0 | 51.00 | 53.00 | 105.00 | 86.0 | 13.00 | 69.0 | M16 | M24 | 0 | 3.20 |
| DIN69871 50 MAXIN 32X100 | 50 | 6.0 | 32.0 | 69.00 | 70.00 | 100.00 | 81.0 | 14.00 | 84.0 | M20X2 | M24 | 0 | 3.17 |
| DIN69871 50 MAXIN 32X135 | 50 | 6.0 | 32.0 | 69.00 | 70.00 | 135.00 | 116.0 | 14.00 | 85.0 | M20X2 | M24 | 0 | 4.20 |

• Use of DCONXWS diameter tools provides best performance, as collets reduce the gripping force. • B is the designation for coolant through flange .
(1) Min. diameter by using a reduction collet
(2) Max. diameter without a collet
(3) 1 - Slot for data chip, 0 - Without slot for data chip


773-774 802-805 556-557

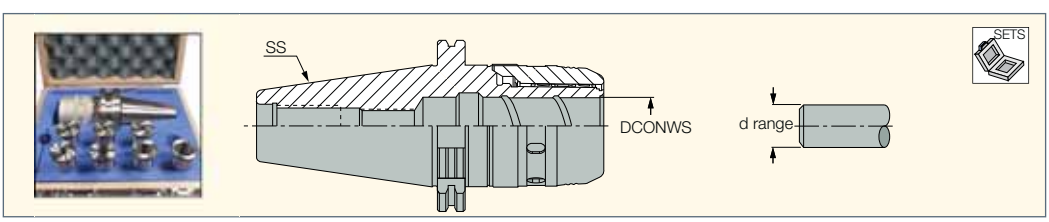
### Spare Parts

| Designation | | |
|---|---|---|
| DIN69871 40 MAXIN 20X 95 | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* |
| DIN69871 40 MAXIN 32X106 | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* |
| DIN69871 50 MAXIN 20X105 | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* |
| DIN69871 50 MAXIN 32X100 | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* |
| DIN69871 50 MAXIN 32X135 | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* |

* Optional, to be ordered separately

## DIN69871

**KIT SK-MAXIN**
Contains a DIN 69871 Holder with MAXIN Power Chuck and a Set of Collets with Various Bore Sizes




| Designation | SS | DCONWS | Qty | d Range |
|---|---|---|---|---|
| KIT SK40 MAXIN 20X95 6 | SK40 | 20.00 | 6 | 6,8,10,12,14,16 |
| KIT SK40 MAXIN 32X106 7 | SK40 | 32.00 | 7 | 6,8,10,12,16,20,25 |
| KIT SK50 MAXIN 32X100 7 | SK50 | 32.00 | 7 | 6,8,10,12,16,20,25 |

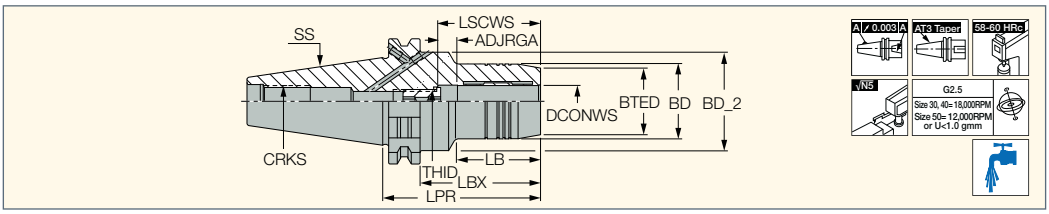
• Each kit contains one power chuck, a set of SC-SPR collets, extraction hook and wrench.

## DIN69871

**HYDROFIT** HOLDING LINE

### DIN69871-HYDRO

Hydraulic Chucks with DIN69871 Form ADB Shanks, for Semi-Finish and Finish Applications




| Designation | SS | DCONWS | BTED | BD | BD_2 | LPR | LBX | LB | ADJRGA | LSCWS | THID | CRKS | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 30 HYDRO 6X60 (1) | 30 | 6.00 | 23.00 | 26.00 | 45.00 | 60.00 | 41.0 | 25.00 | 10.00 | 37.0 | M5 | M12 | 1 | 0.63 |
| DIN69871 30 HYDRO 16X90 (1) | 30 | 16.00 | 34.00 | 38.00 | 45.00 | 90.00 | 71.0 | 43.00 | 10.00 | 52.0 | M12X1 | M12 | 1 | 0.96 |
| DIN69871 30 HYDRO 20X90 (1) | 30 | 20.00 | 38.00 | 42.00 | - | 90.00 | 71.0 | - | 10.00 | 52.0 | M12X1 | M12 | 1 | 0.90 |
| DIN69871 40 HYDRO 6X68 (1) | 40 | 6.00 | 23.00 | 26.00 | 50.00 | 68.00 | 49.0 | 33.00 | 11.00 | 38.0 | M5 | M16 | 1 | 1.09 |
| DIN69871 40 HYDRO 8X68 (1) | 40 | 8.00 | 25.00 | 28.00 | 50.00 | 68.00 | 49.0 | 33.00 | 10.00 | 37.0 | M6 | M16 | 1 | 1.11 |
| DIN69871 40 HYDRO 10X72 (1) | 40 | 10.00 | 27.00 | 30.00 | 50.00 | 72.00 | 53.0 | 37.00 | 10.00 | 42.0 | M8X1 | M16 | 1 | 1.14 |
| DIN69871 40 HYDRO 12X77 (1) | 40 | 12.00 | 29.00 | 32.00 | 50.00 | 77.00 | 58.0 | 42.00 | 10.00 | 47.0 | M10X1 | M16 | 1 | 1.20 |
| DIN69871 40 HYDRO 14X77 (1) | 40 | 14.00 | 30.00 | 34.00 | 50.00 | 77.00 | 58.0 | 42.00 | 10.00 | 47.0 | M10X1 | M16 | 1 | 1.20 |
| DIN69871 40 HYDRO 16X80 (1) | 40 | 16.00 | 34.00 | 38.00 | 50.00 | 80.00 | 61.0 | 43.00 | 10.00 | 52.0 | M12X1 | M16 | 1 | 1.28 |
| DIN69871 40 HYDRO 18X80 (1) | 40 | 18.00 | 36.00 | 40.00 | 50.00 | 80.00 | 61.0 | 43.00 | 10.00 | 52.0 | M12X1 | M16 | 1 | 1.30 |
| DIN69871 40 HYDRO 20X82 (1) | 40 | 20.00 | 38.00 | 42.00 | 50.00 | 82.00 | 63.0 | 47.00 | 10.00 | 52.0 | M12X1 | M16 | 1 | 1.34 |
| DIN69871 40 HYDRO 25X117 (1) | 40 | 25.00 | 46.00 | 50.00 | 63.00 | 117.00 | 98.0 | 51.00 | 10.00 | 58.0 | M16X1 | M16 | 1 | 2.01 |
| DIN69871 40 HYDRO 32X117 (1) | 40 | 32.00 | 56.00 | 60.00 | 63.00 | 117.00 | 98.0 | 56.00 | 10.00 | 62.0 | M16X1 | M16 | 1 | 2.44 |
| DIN69871 50 HYDRO 6X68 (2) | 50 | 6.00 | 23.00 | 26.00 | 80.00 | 68.00 | 49.0 | 33.00 | 10.00 | 37.0 | M5 | M24 | 1 | 3.10 |
| DIN69871 50 HYDRO 8X68 (2) | 50 | 8.00 | 25.00 | 28.00 | 80.00 | 68.00 | 49.0 | 33.00 | 10.00 | 37.0 | M6 | M24 | 1 | 3.10 |
| DIN69871 50 HYDRO 10X72 (2) | 50 | 10.00 | 27.00 | 30.00 | 80.00 | 72.00 | 53.0 | 37.00 | 10.00 | 42.0 | M8X1 | M24 | 1 | 3.20 |
| DIN69871 50 HYDRO 12X77 (2) | 50 | 12.00 | 29.00 | 32.00 | 80.00 | 77.00 | 58.0 | 42.00 | 10.00 | 47.0 | M10X1 | M24 | 1 | 3.20 |
| DIN69871 50 HYDRO 14X77 (2) | 50 | 14.00 | 30.00 | 34.00 | 80.00 | 77.00 | 58.0 | 42.00 | 10.00 | 47.0 | M10X1 | M24 | 1 | 3.34 |
| DIN69871 50 HYDRO 16X80 (2) | 50 | 16.00 | 34.00 | 38.00 | 80.00 | 80.00 | 61.0 | 45.00 | 10.00 | 52.0 | M12X1 | M24 | 1 | 3.41 |
| DIN69871 50 HYDRO 18X80 (2) | 50 | 18.00 | 36.00 | 40.00 | 80.00 | 80.00 | 61.0 | 45.00 | 10.00 | 52.0 | M12X1 | M24 | 1 | 2.57 |
| DIN69871 50 HYDRO 20X82 (2) | 50 | 20.00 | 38.00 | 42.00 | 80.00 | 82.00 | 63.0 | 47.00 | 10.00 | 52.0 | M16X1 | M24 | 1 | 3.50 |
| DIN69871 50 HYDRO 25X87 (2) | 50 | 25.00 | 46.00 | 50.00 | 80.00 | 87.00 | 68.0 | 52.00 | 10.00 | 58.0 | M16X1 | M24 | 1 | 3.73 |
| DIN69871 50 HYDRO 32X91 (2) | 50 | 32.00 | 56.00 | 60.00 | 80.00 | 91.00 | 72.0 | 56.00 | 10.00 | 64.0 | M16X1 | M24 | 1 | 4.01 |

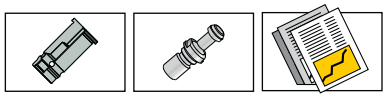
• Chucking forces will be reduced by 25% if reduction sleeves are used. • Note: Reduction sleeves are available for 12, 20, 25 and 32 mm bore diameters (ordered separately).

• The coolant passages in the B type flange are blocked with screws which can be removed when required. • Clamping wrench (wrench HYDRO HEX 4) and test bar should be ordered separately.

(1) Balanced to G2.5/18,000 RPM.

(2) Balanced to G2.5/12,000 RPM.

(3) Chip data inset



776 802-805 637

## Spare Parts

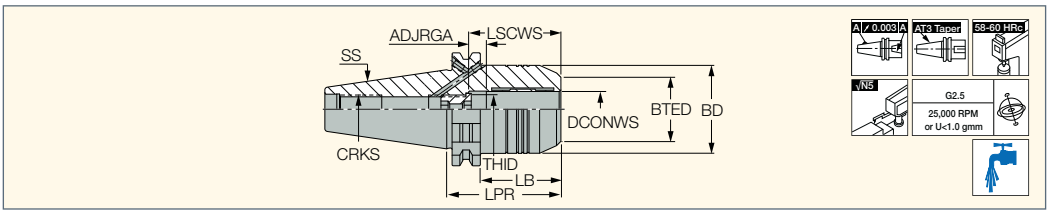
| Designation | | | |
|---|---|---|---|
| DIN69871 30 HYDRO 6X60 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 6* | WRENCH HYDRO HEX 4* |
| DIN69871 30 HYDRO 16X90 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 16* | WRENCH HYDRO HEX 4* |
| DIN69871 30 HYDRO 20X90 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 20* | WRENCH HYDRO HEX 4* |
| DIN69871 40 HYDRO 6X68 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 6* | WRENCH HYDRO HEX 4* |
| DIN69871 40 HYDRO 8X68 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 8* | WRENCH HYDRO HEX 4* |
| DIN69871 40 HYDRO 10X72 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 10* | WRENCH HYDRO HEX 4* |
| DIN69871 40 HYDRO 12X77 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 12* | WRENCH HYDRO HEX 4* |
| DIN69871 40 HYDRO 14X77 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 14* | WRENCH HYDRO HEX 4* |
| DIN69871 40 HYDRO 16X80 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 16* | WRENCH HYDRO HEX 4* |
| DIN69871 40 HYDRO 18X80 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 18* | WRENCH HYDRO HEX 4* |
| DIN69871 40 HYDRO 20X82 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 20* | WRENCH HYDRO HEX 4* |
| DIN69871 40 HYDRO 25X117 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 25* | WRENCH HYDRO HEX 4* |
| DIN69871 40 HYDRO 32X117 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 32* | WRENCH HYDRO HEX 4* |
| DIN69871 50 HYDRO 6X68 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 6* | WRENCH HYDRO HEX 4* |
| DIN69871 50 HYDRO 8X68 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 8* | WRENCH HYDRO HEX 4* |
| DIN69871 50 HYDRO 10X72 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 10* | WRENCH HYDRO HEX 4* |
| DIN69871 50 HYDRO 12X77 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 12* | WRENCH HYDRO HEX 4* |
| DIN69871 50 HYDRO 14X77 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 14* | WRENCH HYDRO HEX 4* |
| DIN69871 50 HYDRO 16X80 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 16* | WRENCH HYDRO HEX 4* |
| DIN69871 50 HYDRO 18X80 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 18* | WRENCH HYDRO HEX 4* |
| DIN69871 50 HYDRO 20X82 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 20* | WRENCH HYDRO HEX 4* |
| DIN69871 50 HYDRO 25X87 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 25* | WRENCH HYDRO HEX 4* |
| DIN69871 50 HYDRO 32X91 | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 32* | WRENCH HYDRO HEX 4* |

* Optional, to be ordered separately

## DIN69871

HYDROFIT HOLDING LINE

**DIN69871-HYDRO HD**
Heavy Duty, Short Hydraulic Chucks With DIN69871 form ADB shanks




| Designation | SS | DCONWS | BTED | BD | LPR | LB | ADJRGA | LSCWS | THID | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SK40 HYDRO 12X50 HD | 40 | 12.00 | 32.00 | 42.00 | 50.00 | 31.0 | 10.00 | 46.0 | M8X1 | M16 | 0 | 1.10 |
| SK40 HYDRO 16X64.5 HD | 40 | 16.00 | 38.00 | 49.25 | 64.50 | 45.5 | 8.00 | 51.0 | M8X1 | M16 | 0 | 1.20 |
| SK40 HYDRO 20X64.5 HD | 40 | 20.00 | 38.00 | 49.25 | 64.50 | 45.5 | 8.00 | 51.0 | M8X1 | M16 | 0 | 1.30 |
| SK50 HYDRO 20X64.5 HD | 50 | 20.00 | 38.00 | 49.25 | 64.50 | 45.5 | 8.00 | 51.0 | M8X1 | M24 | 0 | 3.10 |
| SK50 HYDRO 32X81 HD | 50 | 32.00 | 58.50 | 72.00 | 81.00 | 62.0 | 9.00 | 61.0 | M8X1 | M24 | 0 | 4.10 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

### Spare Parts

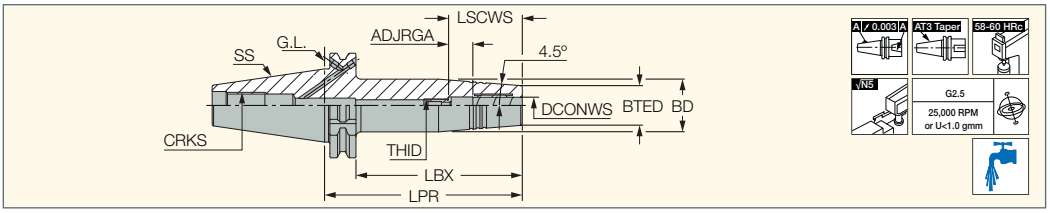
| Designation | |
|---|---|
| SK40 HYDRO 12X50 HD | ALLEN KEY SW5X100* |
| SK40 HYDRO 16X64.5 HD | ALLEN KEY SW5X100* |
| SK40 HYDRO 20X64.5 HD | ALLEN KEY SW5X100* |
| SK50 HYDRO 20X64.5 HD | ALLEN KEY SW5X100* |
| SK50 HYDRO 32X81 HD | ALLEN KEY SW6X100* |

* Optional, to be ordered separately

## DIN69871

HYDROFIT HOLDING LINE

**DIN69871-HYDRO SF**
Slim Design, Hydraulic Chucks with DIN69871 Shanks



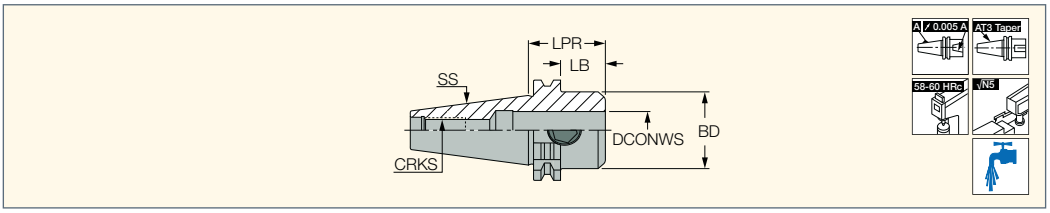

| Designation | SS | DCONWS | BTED | BD | LPR | LBX | ADJRGA | LSCWS | THID | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SK40 HYDRO 6X120 SF | 40 | 6.00 | 21.00 | 27.00 | 120.00 | 100.90 | 10.00 | 36.00 | M5 | M16 | 0 | 1.28 |
| SK40 HYDRO 6X80 SF | 40 | 6.00 | 21.00 | 27.00 | 80.00 | 60.90 | 10.00 | 36.00 | M5 | M16 | 0 | 1.08 |
| SK40 HYDRO 8X120 SF | 40 | 8.00 | 21.00 | 27.00 | 120.00 | 100.90 | 10.00 | 36.00 | M6 | M16 | 0 | 1.27 |
| SK40 HYDRO 8X80 SF | 40 | 8.00 | 21.00 | 27.00 | 80.00 | 60.90 | 10.00 | 36.00 | M6 | M16 | 0 | 1.06 |
| SK40 HYDRO 10X120 SF | 40 | 10.00 | 24.00 | 32.00 | 120.00 | 100.90 | 10.00 | 42.00 | M8x1 | M16 | 0 | 1.39 |
| SK40 HYDRO 10X80 SF | 40 | 10.00 | 24.00 | 32.00 | 80.00 | 60.90 | 10.00 | 42.00 | M8x1 | M16 | 0 | 1.11 |
| SK40 HYDRO 12X120 SF | 40 | 12.00 | 24.00 | 32.00 | 120.00 | 100.90 | 10.00 | 47.00 | M10x1 | M16 | 0 | 1.36 |
| SK40 HYDRO 12X80 SF | 40 | 12.00 | 24.00 | 32.00 | 80.00 | 60.90 | 10.00 | 47.00 | M10x1 | M16 | 0 | 1.09 |
| SK40 HYDRO 16X120 SF | 40 | 16.00 | 27.00 | 34.00 | 120.00 | 100.90 | 10.00 | 50.00 | M12x1 | M16 | 0 | 1.41 |
| SK40 HYDRO 16X80 SF | 40 | 16.00 | 27.00 | 34.00 | 80.00 | 60.90 | 10.00 | 50.00 | M12x1 | M16 | 0 | 1.11 |
| SK40 HYDRO 20X120 SF | 40 | 20.00 | 33.00 | 42.00 | 120.00 | 100.90 | 10.00 | 52.00 | M16x1 | M16 | 0 | 1.64 |
| SK40 HYDRO 20X80 SF | 40 | 20.00 | 33.00 | 42.00 | 80.00 | 60.90 | 10.00 | 52.00 | M16x1 | M16 | 0 | 1.22 |

New

(1) 1 - Slot for data chip, 0 - Without slot for data chip

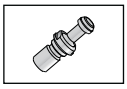
## DIN69871

**DIN69871-EM**
**(DIN 6359 short)**
Short Side Clamp Endmill Holders (DIN 6359-HB) with DIN 69871 Form AD Taper Shanks for DIN 1835 Form B Weldon Shanks




| Designation | SS | DCONWS | BD | LPR | LB | CRKS | DCP(1) | kg | |
|---|---|---|---|---|---|---|---|---|---|
| DIN69871 40 EM10X 45 | 40 | 10.00 | 35.00 | 45.00 | 25.9 | M16 | 0 | 0.93 | SR M10X12 DIN1835-B |
| DIN69871 40 EM12X 45 | 40 | 12.00 | 42.00 | 45.00 | 25.9 | M16 | 0 | 0.99 | SR M12X16 DIN1835-B |
| DIN69871 40 EM14X 45 | 40 | 14.00 | 44.00 | 45.00 | 25.9 | M16 | 0 | 1.02 | SR M12X16 DIN1835-B |
| DIN69871 40 EM16X 45 | 40 | 16.00 | 48.00 | 45.00 | 25.9 | M16 | 0 | 1.05 | SR M14X16 DIN1835-B |
| DIN69871 40 EM18X 45 | 40 | 18.00 | 49.00 | 45.00 | 25.9 | M16 | 0 | 1.04 | SR M14X16 DIN1835-B |
| DIN69871 40 EM20X 45 | 40 | 20.00 | 49.00 | 45.00 | 25.9 | M16 | 0 | 1.00 | SR M16X16 DIN1835-B |
| DIN69871 40 EM25X 45 | 40 | 25.00 | 49.00 | 45.00 | 25.9 | M16 | 0 | 0.93 | SR M18X2X10 EM SHORT |

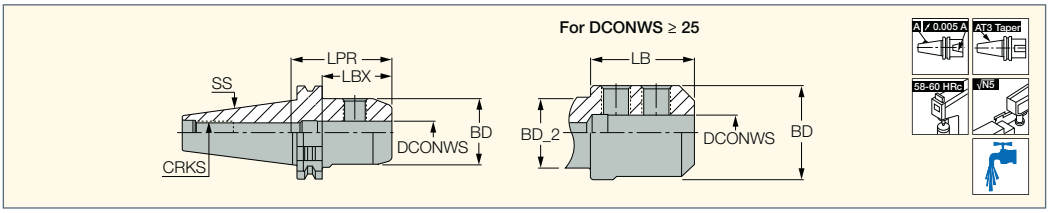
(1) 1 - Slot for data chip, 0 - Without slot for data chip



802-805

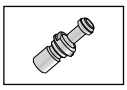
## *DIN69871*

**DIN69871-EM (DIN 6359-HB)**
DIN 69871 Form AD Taper Shanks Holders with DIN 6359-HB for DIN 1835 Form B Weldon Shanks



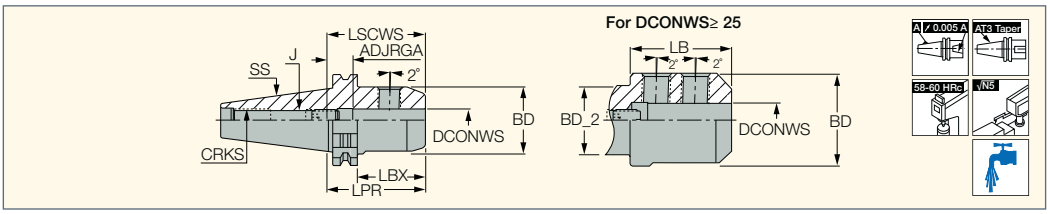

| Designation | SS | DCONWS | BD | BD_2 | LPR | LBX | LB | CRKS | DCP(1) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DIN69871 30 EM 8X 50** | 30 | 8.00 | 28.00 | - | 50.00 | 30.9 | - | M12 | 0 | 0.49 | SR M8X10 DIN1835-B |
| **DIN69871 30 EM10X 50** | 30 | 10.00 | 35.00 | - | 50.00 | 30.9 | - | M12 | 0 | 0.55 | SR M10X12 DIN1835-B |
| **DIN69871 30 EM16X 63** | 30 | 16.00 | 48.00 | - | 63.00 | 43.9 | - | M12 | 0 | 0.81 | SR M14X16 DIN1835-B |
| **DIN69871 30 EM18X 72** | 30 | 18.00 | 50.00 | - | 72.00 | 52.9 | - | M12 | 0 | 0.96 | SR M14X16 DIN1835-B |
| **DIN69871 30 EM20X70** | 30 | 20.00 | 52.00 | - | 72.00 | 52.9 | - | M12 | 0 | 0.96 | SR M16X16 DIN1835-B |
| **DIN69871 40 EM 6X 50** | 40 | 6.00 | 25.00 | - | 50.00 | 30.9 | - | M16 | 0 | 0.89 | SR M6X10 DIN1835B |
| **DIN69871 40 EM 8X 50** | 40 | 8.00 | 28.00 | - | 50.00 | 30.9 | - | M16 | 0 | 0.91 | SR M8X10 DIN1835-B |
| **DIN69871 40 EM10X 50** | 40 | 10.00 | 35.00 | - | 50.00 | 30.9 | - | M16 | 0 | 0.96 | SR M10X12 DIN1835-B |
| **DIN69871 40 EM12X 50** | 40 | 12.00 | 42.00 | - | 50.00 | 30.9 | - | M16 | 0 | 1.04 | SR M12X16 DIN1835-B |
| **DIN69871 40 EM14X 63** | 40 | 14.00 | 44.00 | - | 63.00 | 43.9 | - | M16 | 0 | 1.20 | SR M12X16 DIN1835-B |
| **DIN69871 40 EM16X 63** | 40 | 16.00 | 48.00 | - | 63.00 | 43.9 | - | M16 | 0 | 1.20 | SR M14X16 DIN1835-B |
| **DIN69871 40 EM18X 63** | 40 | 18.00 | 50.00 | - | 63.00 | 43.9 | - | M16 | 0 | 1.29 | SR M14X16 DIN1835-B |
| **DIN69871 40 EM20X 63** | 40 | 20.00 | 52.00 | - | 63.00 | 43.9 | - | M16 | 0 | 1.26 | SR M16X16 DIN1835-B |
| **DIN69871 40 EM25X100** | 40 | 25.00 | 65.00 | 49.00 | 100.00 | 80.9 | 65.00 | M16 | 0 | 2.23 | SR M18X2X20 DIN1835-B |
| **DIN69871 40 EM32X100** | 40 | 32.00 | 71.00 | 49.00 | 100.00 | 80.9 | 65.00 | M16 | 0 | 2.42 | SR M20X2X20 DIN1835-B |
| **DIN69871 50 EM 6X 63** | 50 | 6.00 | 25.00 | - | 63.00 | 43.9 | - | M24 | 0 | 2.70 | SR M6X10 DIN1835B |
| **DIN69871 50 EM 8X 63** | 50 | 8.00 | 28.00 | - | 63.00 | 43.9 | - | M24 | 0 | 2.73 | SR M8X10 DIN1835-B |
| **DIN69871 50 EM10X 63** | 50 | 10.00 | 35.00 | - | 63.00 | 43.9 | - | M24 | 0 | 2.83 | SR M10X12 DIN1835-B |
| **DIN69871 50 EM12X 63** | 50 | 12.00 | 42.00 | - | 63.00 | 43.9 | - | M24 | 0 | 2.93 | SR M12X16 DIN1835-B |
| **DIN69871 50 EM14X 63** | 50 | 14.00 | 44.00 | - | 63.00 | 43.9 | - | M24 | 0 | 2.91 | SR M12X16 DIN1835-B |
| **DIN69871 50 EM16X 63** | 50 | 16.00 | 48.00 | - | 63.00 | 43.9 | - | M24 | 0 | 3.02 | SR M14X16 DIN1835-B |
| **DIN69871 50 EM18X 63** | 50 | 18.00 | 50.00 | - | 63.00 | 43.9 | - | M24 | 0 | 3.08 | SR M14X16 DIN1835-B |
| **DIN69871 50 EM20X 63** | 50 | 20.00 | 52.00 | - | 63.00 | 43.9 | - | M24 | 0 | 3.07 | SR M16X16 DIN1835-B |
| **DIN69871 50 EM25X 80** | 50 | 25.00 | 65.00 | - | 80.00 | 60.9 | - | M24 | 0 | 3.70 | SR M18X2X20 DIN1835-B |
| **DIN69871 50 EM32X100** | 50 | 32.00 | 72.00 | - | 100.00 | 80.9 | - | M24 | 0 | 4.44 | SR M20X2X20 DIN1835-B |
| **DIN69871 50 EM40X100** | 50 | 40.00 | 90.00 | 79.90 | 100.00 | 80.9 | 43.00 | M24 | 0 | 5.05 | SR M20X2X20 DIN1835-B |
| **DIN69871 50 EM50X125** | 50 | 50.00 | 98.00 | 79.90 | 125.00 | 105.9 | 90.00 | M24 | 0 | 6.80 | SR M24X2X25 DIN1835-B |

(1) 1 - Slot for data chip, 0 - Without slot for data chip


802-805

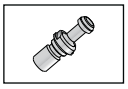
## *DIN69871*

**DIN69871-EM (DIN 6359-HE)**
DIN 69871 Form AD Taper Shank Drill Holders with DIN 6359-HE for DIN 1835 Form E Whistle Notch Shanks




| Designation | SS | DCONWS | BD | BD_2 | LPR | LBX | LB | LSCWS | ADJRGA | THID[1] | Key[2] | CRKS | DCP[3] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 40 EM 8X 50E | 40 | 8.00 | 28.00 | 28.00 | 50.00 | 30.9 | - | 45.0 | 10.00 | M6 | 3.00 | M16 | 0 | 0.94 |
| DIN69871 40 EM10X 50E | 40 | 10.00 | 35.00 | 35.00 | 50.00 | 30.9 | - | 49.0 | 10.00 | M8 | 4.00 | M16 | 0 | 1.00 |
| DIN69871 40 EM12X 50E | 40 | 12.00 | 42.00 | 42.00 | 50.00 | 30.9 | - | 54.0 | 10.00 | M10 | 5.00 | M16 | 0 | 1.07 |
| DIN69871 40 EM16X 63E | 40 | 16.00 | 48.00 | 48.00 | 63.00 | 43.9 | - | 57.0 | 10.00 | M12 | 6.00 | M16 | 0 | 1.28 |
| DIN69871 40 EM18X 63E | 40 | 18.00 | 50.00 | 50.00 | 63.00 | 43.9 | - | 57.0 | 10.00 | M12 | 6.00 | M16 | 0 | 1.31 |
| DIN69871 40 EM20X 63E | 40 | 20.00 | 52.00 | 52.00 | 63.00 | 43.9 | - | 59.0 | 10.00 | M16 | 8.00 | M16 | 0 | 1.25 |
| DIN69871 40 EM25X100E | 40 | 25.00 | 64.00 | 49.00 | 100.00 | 80.9 | 65.00 | 64.0 | 10.00 | M20X1.5 | 10.00 | M16 | 0 | 2.18 |
| DIN69871 40 EM32X100E | 40 | 32.00 | 71.00 | 49.00 | 100.00 | 80.9 | 65.00 | 68.0 | 10.00 | M20X1.5 | 10.00 | M16 | 0 | 2.40 |
| DIN69871 50 EM12X 63E | 50 | 12.00 | 42.00 | 42.00 | 63.00 | 43.9 | - | 54.0 | 10.00 | M10 | 5.00 | M24 | 0 | 2.98 |
| DIN69871 50 EM14X 63E | 50 | 14.00 | 44.00 | 44.00 | 63.00 | 43.9 | - | 54.0 | 10.00 | M10 | 5.00 | M24 | 0 | 3.02 |
| DIN69871 50 EM16X 63E | 50 | 16.00 | 48.00 | 48.00 | 63.00 | 43.9 | - | 57.0 | 10.00 | M12 | 6.00 | M24 | 0 | 3.07 |
| DIN69871 50 EM20X 63E | 50 | 20.00 | 52.00 | 52.00 | 63.00 | 43.9 | - | 59.0 | 10.00 | M16 | 8.00 | M24 | 0 | 3.11 |
| DIN69871 50 EM25X 80E | 50 | 25.00 | 65.00 | 65.00 | 80.00 | 60.9 | - | 64.0 | 10.00 | M20X1.5 | 10.00 | M24 | 0 | 3.67 |
| DIN69871 50 EM32X100E | 50 | 32.00 | 72.00 | 72.00 | 100.00 | 80.9 | - | 68.0 | 10.00 | M20X1.5 | 10.00 | M24 | 0 | 4.50 |
| DIN69871 50 EM40X100E | 50 | 40.00 | 90.00 | 79.90 | 100.00 | 80.9 | 43.00 | 78.0 | 10.00 | M20X1.5 | 10.00 | M24 | 0 | 5.05 |

(1) Adjustment screw has an internal coolant hole.
(2) Adjustment screw hexagon key size.
(3) 1 - Slot for data chip, 0 - Without slot for data chip


802-805

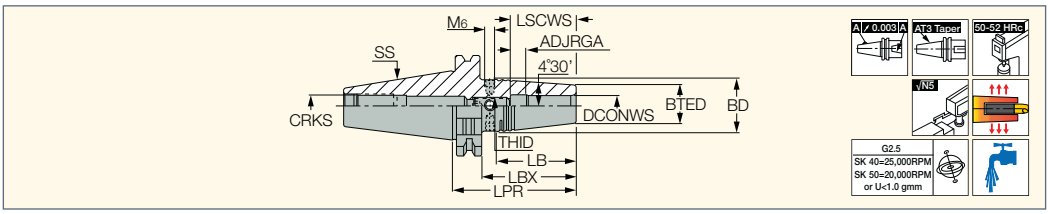
### Spare Parts

| Designation | | |
|---|---|---|
| DIN69871 40 EM 8X 50E | SR M8X10 DIN1835-B | PRESET M6X20B |
| DIN69871 40 EM10X 50E | SR M10X12 DIN1835-B | PRESET M8X20B |
| DIN69871 40 EM12X 50E | SR M12X16 DIN1835-B | PRESET M10X18B |
| DIN69871 40 EM16X 63E | SR M14X16 DIN1835-B | PRESET M12X18B |
| DIN69871 40 EM18X 63E | SR M14X16 DIN1835-B | PRESET M12X18B |
| DIN69871 40 EM20X 63E | SR M16X16 DIN1835-B | PRESET M16X20B |
| DIN69871 40 EM25X100E | SR M18X2X20 DIN1835-B | PRESET M20X20E |
| DIN69871 40 EM32X100E | SR M20X2X20 DIN1835-B | PRESET M20X20E |
| DIN69871 50 EM12X 63E | SR M12X16 DIN1835-B | PRESET M10X18B |
| DIN69871 50 EM14X 63E | SR M12X16 DIN1835-B | PRESET M10X18B |
| DIN69871 50 EM16X 63E | SR M14X16 DIN1835-B | PRESET M12X18B |
| DIN69871 50 EM20X 63E | SR M16X16 DIN1835-B | PRESET M16X20B |
| DIN69871 50 EM25X 80E | SR M18X2X20 DIN1835-B | PRESET M20X20E |
| DIN69871 50 EM32X100E | SR M20X2X20 DIN1835-B | PRESET M20X20E |
| DIN69871 50 EM40X100E | SR M20X2X20 DIN1835-B | PRESET M20X20E |

## DIN69871

SHRINKIN

**DIN69871-SRKIN**
Thermal Shrink Chucks with DIN 69871 Form AD Taper Shanks for Solid Carbide HSS and Steel Tools




| Designation | SS | DCONWS | BTED | BD | LPR | LBX | LB | ADJRGA | LSCWS | THID | Key(3) | CRKS | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 40 SRKIN 6X80 (1) | 40 | 6.00 | 21.00 | 27.00 | 80.00 | 60.9 | 38.00 | 11.00 | 36.0 | M5 | 2.50 | M16 | 0 | 0.99 |
| DIN69871 40 SRKIN 8X80 (1) | 40 | 8.00 | 21.00 | 27.00 | 80.00 | 60.9 | 38.00 | 11.00 | 36.0 | M6 | 3.00 | M16 | 0 | 1.00 |
| DIN69871 40 SRKIN 10X80 (1) | 40 | 10.00 | 24.00 | 32.00 | 80.00 | 60.9 | 50.50 | 11.00 | 42.0 | M8 | 4.00 | M16 | 0 | 1.05 |
| DIN69871 40 SRKIN 12X80 (1) | 40 | 12.00 | 24.00 | 32.00 | 80.00 | 60.9 | 50.80 | 16.00 | 47.0 | M10 | 5.00 | M16 | 0 | 1.04 |
| DIN69871 40 SRKIN 14X80 (1) | 40 | 14.00 | 27.00 | 34.00 | 80.00 | 60.9 | 44.20 | 11.00 | 47.0 | M10 | 5.00 | M16 | 0 | 1.15 |
| DIN69871 40 SRKIN 16X80 (1) | 40 | 16.00 | 27.00 | 34.00 | 80.00 | 60.9 | 44.20 | 11.00 | 50.0 | M12 | 6.00 | M16 | 0 | 1.07 |
| DIN69871 40 SRKIN 18X80 (1) | 40 | 18.00 | 33.00 | 42.00 | 80.00 | 60.9 | 57.00 | 11.00 | 50.0 | M12 | 6.00 | M16 | 0 | 1.21 |
| DIN69871 40 SRKIN 20X80 (1) | 40 | 20.00 | 33.00 | 42.00 | 80.00 | 60.9 | 57.00 | 11.00 | 52.0 | M16 | 8.00 | M16 | 0 | 1.16 |
| DIN69871 40 SRKIN 25X100 (1) | 40 | 25.00 | 44.00 | 53.00 | 100.00 | 80.9 | 57.00 | 11.00 | 58.0 | M16 | 8.00 | M16 | 0 | 1.71 |
| DIN69871 50 SRKIN 6X 80 (2) | 50 | 6.00 | 21.00 | 27.00 | 80.00 | 60.9 | 38.00 | 11.00 | 36.0 | M5 | 2.50 | M24 | 0 | 2.72 |
| DIN69871 50 SRKIN 8X 80 (2) | 50 | 8.00 | 21.00 | 27.00 | 80.00 | 60.9 | 38.00 | 11.00 | 36.0 | M6 | 3.00 | M24 | 0 | 2.71 |
| DIN69871 50 SRKIN 10X 80 (2) | 50 | 10.00 | 24.00 | 32.00 | 80.00 | 60.9 | 51.00 | 11.00 | 42.0 | M8 | 4.00 | M24 | 0 | 2.81 |
| DIN69871 50 SRKIN 12X 80 (2) | 50 | 12.00 | 24.00 | 32.00 | 80.00 | 60.9 | 51.00 | 11.00 | 47.0 | M10 | 5.00 | M24 | 0 | 2.79 |
| DIN69871 50 SRKIN 14X 80 (2) | 50 | 14.00 | 27.00 | 34.00 | 80.00 | 60.9 | 45.00 | 11.00 | 47.0 | M10 | 5.00 | M24 | 0 | 2.84 |
| DIN69871 50 SRKIN 16X 80 (2) | 50 | 16.00 | 27.00 | 34.00 | 80.00 | 60.9 | 45.00 | 11.00 | 50.0 | M12 | 6.00 | M24 | 0 | 2.76 |
| DIN69871 50 SRKIN 18X 80 (2) | 50 | 18.00 | 33.00 | 42.00 | 80.00 | 60.9 | 57.00 | 11.00 | 50.0 | M12 | 6.00 | M24 | 0 | 2.90 |
| DIN69871 50 SRKIN 20X 80 (2) | 50 | 20.00 | 33.00 | 42.00 | 80.00 | 60.9 | 57.00 | 11.00 | 52.0 | M16 | 8.00 | M24 | 0 | 2.92 |
| DIN69871 50 SRKIN 25X100 (2) | 50 | 25.00 | 44.00 | 53.00 | 100.00 | 80.9 | 57.00 | 11.00 | 58.0 | M16 | 8.00 | M24 | 0 | 3.51 |
| DIN69871 50 SRKIN 32X100 (2) | 50 | 32.00 | 44.00 | 53.00 | 100.00 | 80.9 | 57.00 | 11.00 | 58.0 | M18 | 8.00 | M24 | 0 | 3.36 |

- Use only inductive heating device for SRKIN holders

(1) Balanced to G2.5/25.000 RPM
(2) Balanced to G2.5/20.000 RPM
(3) Hex key size for the rear stopper screw
(4) 1 - Slot for data chip, 0 - Without slot for data chip

802-805 778-780, 639 784-786

### Spare Parts

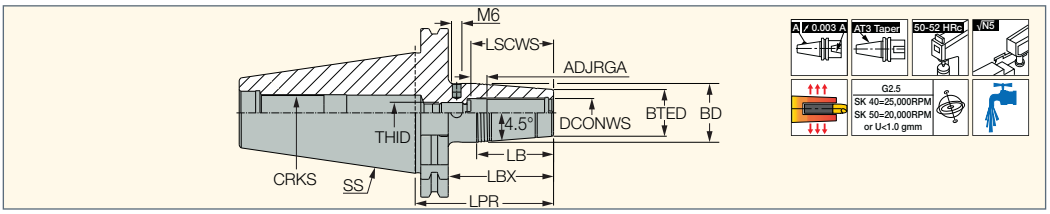
| Designation | |
|---|---|
| DIN69871 40 SRKIN 6X80 | PRESET M5X18B |
| DIN69871 40 SRKIN 8X80 | PRESET M6X20B |
| DIN69871 40 SRKIN 10X80 | PRESET M8X20B |
| DIN69871 40 SRKIN 12X80 | PRESET M10X18B |
| DIN69871 40 SRKIN 14X80 | PRESET M10X18B |
| DIN69871 40 SRKIN 16X80 | PRESET M12X18B |
| DIN69871 40 SRKIN 18X80 | PRESET M12X18B |
| DIN69871 40 SRKIN 20X80 | PRESET M16X20B |
| DIN69871 40 SRKIN 25X100 | PRESET M16X25B |
| DIN69871 50 SRKIN 6X 80 | PRESET M5X18B |
| DIN69871 50 SRKIN 8X 80 | PRESET M6X20B |
| DIN69871 50 SRKIN 10X 80 | PRESET M8X20B |
| DIN69871 50 SRKIN 12X 80 | PRESET M10X18B |
| DIN69871 50 SRKIN 14X 80 | PRESET M10X18B |
| DIN69871 50 SRKIN 16X 80 | PRESET M12X18B |
| DIN69871 50 SRKIN 18X 80 | PRESET M12X18B |
| DIN69871 50 SRKIN 20X 80 | PRESET M16X20B |
| DIN69871 50 SRKIN 25X100 | PRESET M16X25B |
| DIN69871 50 SRKIN 32X100 | PRESET M16X25B |

## *DIN69871*

**X-STREAM** JET TOOLHOLDING

**DIN69871-SRKIN-CX**

Thermal Shrink Chucks with DIN69871 Form AD Tapered Shank and Jet Coolant Grooves along the Shank Bore




| Designation | SS | DCONWS | BTED | BD | LPR | LBX | LB | LSCWS | ADJRGA | THID | Key(1) | CRKS | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 40 SRKIN 6X80 CX | 40 | 6.00 | 21.00 | 27.00 | 80.00 | 60.90 | 38.00 | 34.00 | 9.50 | M5 | 2.50 | M16 | 0 | 0.99 |
| DIN69871 40 SRKIN 8X80 CX | 40 | 8.00 | 21.00 | 27.00 | 80.00 | 60.90 | 38.00 | 34.00 | 9.50 | M6 | 3.00 | M16 | 0 | 1.00 |
| DIN69871 40 SRKIN 10X80CX | 40 | 10.00 | 24.00 | 32.00 | 80.00 | 60.90 | 51.00 | 39.80 | 9.30 | M8 | 4.00 | M16 | 0 | 1.05 |
| DIN69871 40 SRKIN 12X80CX | 40 | 12.00 | 24.00 | 32.00 | 80.00 | 60.90 | 51.00 | 44.80 | 9.30 | M10 | 5.00 | M16 | 0 | 1.05 |
| DIN69871 40 SRKIN 14X80CX | 40 | 14.00 | 27.00 | 34.00 | 80.00 | 60.90 | 45.00 | 44.80 | 9.30 | M10 | 5.00 | M16 | 0 | 1.15 |
| DIN69871 40 SRKIN 16X80CX | 40 | 16.00 | 27.00 | 34.00 | 80.00 | 60.90 | 45.00 | 47.80 | 9.30 | M12 | 6.00 | M16 | 0 | 1.07 |
| DIN69871 40 SRKIN 20X80CX | 40 | 20.00 | 33.00 | 42.00 | 80.00 | 60.90 | 57.00 | 49.00 | 8.50 | M16 | 8.00 | M16 | 0 | 1.16 |
| DIN69871 40 SRKIN25X100CX | 40 | 25.00 | 44.00 | 53.00 | 100.00 | 80.90 | 57.00 | 55.00 | 8.50 | M16 | 8.00 | M16 | 0 | 1.71 |
| DIN69871 50 SRKIN 6X80 CX | 50 | 6.00 | 21.00 | 27.00 | 80.00 | 61.00 | 38.00 | 34.00 | 9.50 | M5 | 2.50 | M24 | 0 | 2.72 |
| DIN69871 50 SRKIN 8X80 CX | 50 | 8.00 | 21.00 | 27.00 | 80.00 | 60.90 | 38.00 | 34.00 | 9.50 | M6 | 3.00 | M24 | 0 | 2.71 |
| DIN69871 50 SRKIN 10X80CX | 50 | 10.00 | 24.00 | 32.00 | 80.00 | 60.90 | 51.00 | 39.80 | 9.30 | M8 | 4.00 | M24 | 0 | 2.81 |
| DIN69871 50 SRKIN 12X80CX | 50 | 12.00 | 24.00 | 32.00 | 80.00 | 60.90 | 51.00 | 44.80 | 9.30 | M10 | 5.00 | M24 | 0 | 2.79 |
| DIN69871 50 SRKIN 14X80CX | 50 | 14.00 | 27.00 | 34.00 | 80.00 | 60.90 | 45.00 | 44.80 | 9.30 | M10 | 5.00 | M24 | 0 | 2.84 |
| DIN69871 50 SRKIN 16X80CX | 50 | 16.00 | 27.00 | 34.00 | 80.00 | 60.90 | 45.00 | 47.80 | 9.30 | M12 | 6.00 | M24 | 0 | 2.76 |
| DIN69871 50 SRKIN 18X80CX | 50 | 18.00 | 33.00 | 42.00 | 80.00 | 60.90 | 57.00 | 47.80 | 9.30 | M12 | 6.00 | M24 | 0 | 2.90 |
| DIN69871 50 SRKIN 20X80CX | 50 | 20.00 | 33.00 | 42.00 | 80.00 | 60.90 | 57.00 | 49.00 | 8.50 | M16 | 8.00 | M24 | 0 | 2.92 |
| DIN69871 50 SRKIN25X100CX | 50 | 25.00 | 44.00 | 53.00 | 100.00 | 80.90 | 57.00 | 55.00 | 8.50 | M16 | 8.00 | M24 | 0 | 3.51 |
| DIN69871 50 SRKIN32X100CX | 50 | 32.00 | 44.00 | 53.00 | 100.00 | 80.90 | 57.00 | 59.00 | 8.50 | M16 | 8.00 | M24 | 0 | 3.36 |

- Use only inductive heating device for SRKIN holders
- Preset screw CX allows supply of coolant via JET channels - do not remove

(1) Hex key size for the rear stopper screw

(2) 1 - Slot for data chip, 0 - Without slot for data chip

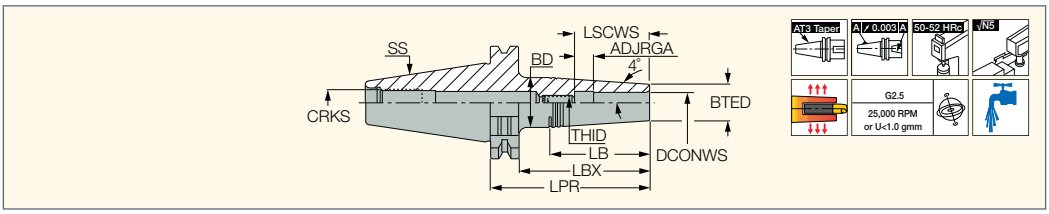
### Spare Parts

| Designation | |
|---|---|
| DIN69871 40 SRKIN 6X80 CX | PRESET CX M5X13 |
| DIN69871 40 SRKIN 8X80 CX | PRESET CX M6X12 |
| DIN69871 40 SRKIN 10X80CX | PRESET CX M8X16 |
| DIN69871 40 SRKIN 12X80CX | PRESET CX M10X16 |
| DIN69871 40 SRKIN 14X80CX | PRESET CX M10X16 |
| DIN69871 40 SRKIN 16X80CX | PRESET CX M12X16 |
| DIN69871 40 SRKIN 20X80CX | PRESET CX M16X14 |
| DIN69871 40 SRKIN25X100CX | PRESET CX M16X14 |
| DIN69871 50 SRKIN 6X80 CX | PRESET CX M5X13 |
| DIN69871 50 SRKIN 8X80 CX | PRESET CX M6X12 |
| DIN69871 50 SRKIN 10X80CX | PRESET CX M8X16 |
| DIN69871 50 SRKIN 12X80CX | PRESET CX M10X16 |
| DIN69871 50 SRKIN 14X80CX | PRESET CX M10X16 |
| DIN69871 50 SRKIN 16X80CX | PRESET CX M12X16 |
| DIN69871 50 SRKIN 18X80CX | PRESET CX M12X16 |
| DIN69871 50 SRKIN 20X80CX | PRESET CX M16X14 |
| DIN69871 50 SRKIN25X100CX | PRESET CX M16X14 |
| DIN69871 50 SRKIN32X100CX | PRESET CX M16X14 |

## DIN69871

## SHRINKiN

**DIN69871-SRK**
Thermal SHRINK-INg Chucks with DIN 69871 Form AD Taper Shanks




| Designation | SS | DCONWS | BTED | BD | LPR | LBX | LB | ADJRGA | LSCWS | THID | Key(1) | CRKS | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 40 SRK 3X50 | 40 | 3.00 | 10.00 | 15.00 | 69.10 | 50.0 | 35.50 | 6.00 | 16.0 | M6 | 3.00 | M16 | 0 | 0.83 |
| DIN69871 40 SRK 3X85 | 40 | 3.00 | 10.00 | 19.00 | 104.10 | 85.0 | 64.10 | 6.00 | 16.0 | M6 | 3.00 | M16 | 0 | 0.89 |
| DIN69871 40 SRK 4X50 | 40 | 4.00 | 10.00 | 15.00 | 69.10 | 50.0 | 35.50 | 6.00 | 18.0 | M6 | 3.00 | M16 | 0 | 0.82 |
| DIN69871 40 SRK 4X85 | 40 | 4.00 | 10.00 | 19.00 | 104.10 | 85.0 | 64.10 | 6.00 | 18.0 | M6 | 3.00 | M16 | 0 | 0.90 |
| DIN69871 40 SRK 5X50 | 40 | 5.00 | 10.00 | 15.00 | 69.10 | 50.0 | 35.50 | 6.00 | 21.0 | M6 | 3.00 | M16 | 0 | 0.84 |
| DIN69871 40 SRK 5X85 | 40 | 5.00 | 10.00 | 19.00 | 104.10 | 85.0 | 64.10 | 6.00 | 21.0 | M6 | 3.00 | M16 | 0 | 0.89 |
| DIN69871 40 SRK 6X50 | 40 | 6.00 | 11.00 | 16.00 | 69.10 | 50.0 | 35.50 | 6.00 | 24.0 | M8 | 4.00 | M16 | 0 | 0.84 |
| DIN69871 40 SRK 6X85 | 40 | 6.00 | 11.00 | 20.00 | 104.10 | 85.0 | 64.10 | 6.00 | 24.0 | M8 | 4.00 | M16 | 0 | 0.82 |
| DIN69871 40 SRK 8X50 | 40 | 8.00 | 14.00 | 20.00 | 69.10 | 50.0 | 42.50 | 6.00 | 31.0 | M10 | 5.00 | M16 | 0 | 0.84 |
| DIN69871 40 SRK 8X85 | 40 | 8.00 | 14.00 | 23.00 | 104.10 | 85.0 | 63.90 | 6.00 | 31.0 | M10 | 5.00 | M16 | 0 | 0.94 |
| DIN69871 40 SRK 10X50 | 40 | 10.00 | 16.00 | 22.00 | 69.10 | 50.0 | 42.40 | 6.00 | 36.0 | M12 | 6.00 | M16 | 0 | 0.87 |
| DIN69871 40 SRK 10X85 | 40 | 10.00 | 16.00 | 24.50 | 104.10 | 85.0 | 60.30 | 6.00 | 36.0 | M12 | 6.00 | M16 | 0 | 0.94 |
| DIN69871 40 SRK 12X50 | 40 | 12.00 | 20.00 | 26.00 | 69.10 | 50.0 | 42.30 | 10.00 | 42.0 | M10 | 5.00 | M16 | 0 | 0.92 |
| DIN69871 40 SRK 12X85 | 40 | 12.00 | 20.00 | 28.00 | 104.10 | 85.0 | 56.60 | 10.00 | 42.0 | M10 | 5.00 | M16 | 0 | 1.05 |

• To be used for carbide tools only. • Preset sco G2.5/25,000 RPM. • For through tool coolant, preset screw must be removed

(1) Hex key size for the rear stopper screw

(2) 1 - Slot for data chip, 0 - Without slot for data chip

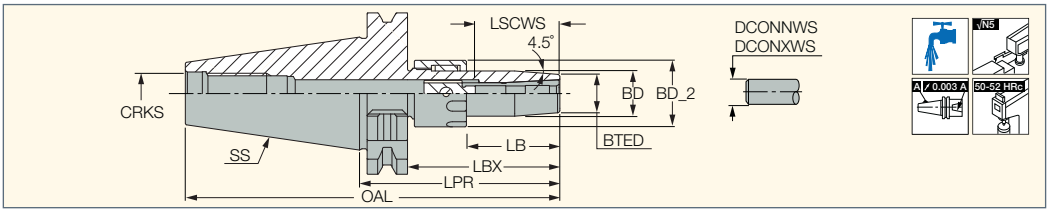
### Spare Parts

| Designation | |
|---|---|
| DIN69871 40 SRK 3X50 | SR M6X10 DIN916 |
| DIN69871 40 SRK 3X85 | SR M6X10 DIN916 |
| DIN69871 40 SRK 4X50 | SR M6X10 DIN916 |
| DIN69871 40 SRK 4X85 | SR M6X10 DIN916 |
| DIN69871 40 SRK 5X50 | SR M6X10 DIN916 |
| DIN69871 40 SRK 5X85 | SR M6X10 DIN916 |
| DIN69871 40 SRK 6X50 | SR M8X12 DIN916 |
| DIN69871 40 SRK 6X85 | SR M8X12 DIN916 |
| DIN69871 40 SRK 8X50 | SR M10X10 DIN913 |
| DIN69871 40 SRK 8X85 | SR M10X10 DIN913 |
| DIN69871 40 SRK 10X50 | SR M12X10 DIN913 |
| DIN69871 40 SRK 10X85 | SR M12X10 DIN913 |
| DIN69871 40 SRK 12X50 | SR M10X18 DIN913 |
| DIN69871 40 SRK 12X85 | SR M10X18 DIN913 |

## DIN69871

## QUICKCLAMP

**DIN69871-MS**
QUICK-CLAMP System for Small Cutting Tools with DIN69871 Form AD Shank




| Designation | DCONNWS(1) | DCONXWS(2) | SS | BTED | BD | BD_2 | LPR | LBX | LB | OAL | LSCWS | CRKS | DCP(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 40 MS6X60 | 3.00 | 6.00 | 40 | 15.00 | 17.80 | 26.20 | 79.10 | 60.00 | 36.00 | 147.50 | 33.00 | M16 | 0 |

New

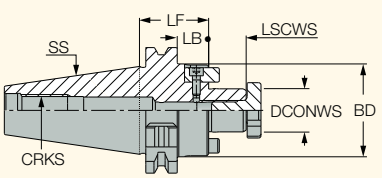
(1) Minimum diameter

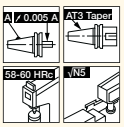
(2) Maximum diameter

(3) 1 - Slot for data chip, 0 - Without slot for data chip

## *DIN69871*

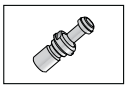
**DIN69871-SEM**
ISO 3937 Shell Mill Holders with
DIN 69871 Form AD
Taper Shanks




| Designation | SS | DCONWS | BD | LF | LSCWS | LB | CRKS | DCP[1] | kg |
|---|---|---|---|---|---|---|---|---|---|
| **DIN69871 30 SEM22X 50** | 30 | 22.00 | 47.00 | 50.00 | 19.00 | 30.9 | M12 | 0 | 0.80 |
| **DIN69871 30 SEM27X 50** | 30 | 27.00 | 58.00 | 50.00 | 21.00 | 30.9 | M12 | 0 | 0.92 |
| **DIN69871 40 SEM16X35** | 40 | 16.00 | 38.00 | 35.00 | 17.00 | 15.9 | M16 | 0 | 0.92 |
| **DIN69871 40 SEM22X 35** | 40 | 22.00 | 47.00 | 35.00 | 19.00 | 15.9 | M16 | 0 | 1.02 |
| **DIN69871 40 SEM27X 60** | 40 | 27.00 | 58.00 | 60.00 | 21.00 | 40.9 | M16 | 0 | 1.60 |
| **DIN69871 40 SEM32X 60** | 40 | 32.00 | 66.00 | 60.00 | 24.00 | 40.9 | M16 | 0 | 1.78 |
| **DIN69871 40 SEM40X 60** | 40 | 40.00 | 82.00 | 60.00 | 27.00 | 40.9 | M16 | 0 | 2.16 |
| **DIN69871 50 SEM16X35** | 50 | 16.00 | 38.00 | 35.00 | 17.00 | 15.9 | M24 | 0 | 2.70 |
| **DIN69871 50 SEM22X 35** | 50 | 22.00 | 47.00 | 35.00 | 19.00 | 15.9 | M24 | 0 | 2.80 |
| **DIN69871 50 SEM22X50X200** | 50 | 22.00 | 50.00 | 200.00 | 19.00 | 180.9 | M24 | 0 | 5.21 |
| **DIN69871 50 SEM27X 35** | 50 | 27.00 | 58.00 | 35.00 | 21.00 | 15.9 | M24 | 0 | 2.94 |
| **DIN69871 50 SEM32X 35** | 50 | 32.00 | 66.00 | 35.00 | 24.00 | 15.9 | M24 | 0 | 3.16 |
| **DIN69871 50 SEM32X78X370** | 50 | 32.00 | 78.00 | 370.00 | 24.00 | 350.9 | M24 | 0 | 15.76 |
| **DIN69871 50 SEM40X 50** | 50 | 40.00 | 82.00 | 50.00 | 27.00 | 30.9 | M24 | 0 | 3.81 |
| **DIN69871 50 SEM50X 60** | 50 | 50.00 | 81.00 | 60.00 | 30.00 | 40.9 | M24 | 0 | 4.85 |

• For internal coolant through the holder, the related COOLANT SET should be ordered via Accessories (applicable to certain tools only)
**(1)** 1 - Slot for data chip, 0 - Without slot for data chip



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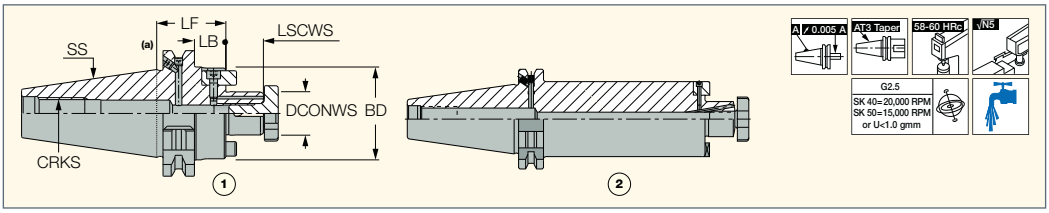
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| **DIN69871 30 SEM22X 50** | M10 CLAMP SCREW SEM22 | SR M4X10DIN912 | DR.DOG 10S | WRENCH M10 SEMC 22* |
| **DIN69871 30 SEM27X 50** | M12 CLAMP SCREW SEM27 | SR M5X14DIN912 | DR.DOG 12S | WRENCH M12 SEMC 27* |
| **DIN69871 40 SEM16X35** | M8 CLAMP SCREW SEM16 | SR M3X10DIN912 | DR.DOG 8S | WRENCH M8 SEMC16* |
| **DIN69871 40 SEM22X 35** | M10 CLAMP SCREW SEM22 | SR M4X10DIN912 | DR.DOG 10S | WRENCH M10 SEMC 22* |
| **DIN69871 40 SEM27X 60** | M12 CLAMP SCREW SEM27 | SR M5X14DIN912 | DR.DOG 12S | WRENCH M12 SEMC 27* |
| **DIN69871 40 SEM32X 60** | M16 CLAMP SCREW SEM32 | SR M5X14DIN912 | DR.DOG 14X13S | WRENCH M16 SEMC 32* |
| **DIN69871 40 SEM40X 60** | M20 CLAMP SCREW SEM40 | SR M6X20 DIN912 | DR.DOG 16X18S | WRENCH M20 SEMC 40* |
| **DIN69871 50 SEM16X35** | M8 CLAMP SCREW SEM16 | SR M3X10DIN912 | DR.DOG 8S | WRENCH M8 SEMC16* |
| **DIN69871 50 SEM22X 35** | M10 CLAMP SCREW SEM22 | SR M4X10DIN912 | DR.DOG 10S | WRENCH M10 SEMC 22* |
| **DIN69871 50 SEM22X50X200** | M10 CLAMP SCREW SEM22 | SR M4X10DIN912 | DR.DOG 10S | WRENCH M10 SEMC 22* |
| **DIN69871 50 SEM27X 35** | M12 CLAMP SCREW SEM27 | SR M5X14DIN912 | DR.DOG 12S | WRENCH M12 SEMC 27* |
| **DIN69871 50 SEM32X 35** | M16 CLAMP SCREW SEM32 | SR M5X14DIN912 | DR.DOG 14X13S | WRENCH M16 SEMC 32* |
| **DIN69871 50 SEM32X78X370** | M16 CLAMP SCREW SEM32 | SR M5X20DIN912 | DR.DOG 14X16S | WRENCH M16 SEMC 32* |
| **DIN69871 50 SEM40X 50** | M20 CLAMP SCREW SEM40 | SR M6X20 DIN912 | DR.DOG 16X18S | WRENCH M20 SEMC 40* |
| **DIN69871 50 SEM50X 60** | M24 CLAMP SCREW SEM50 | SR M6X16 DIN912 | | WRENCH M24 SEMC 50* |

* Optional, to be ordered separately

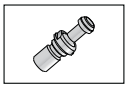
## *DIN69871*

**DIN69871-SEM-C**
ISO 3937 Shell Mill Holders with Coolant Holes and DIN 69871 Form ADB Tapered Shanks




| Designation | SS | DCONWS | BD | LF | LSCWS | LB | CRKS | Fig. | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 40 SEM16X 35 C | 40 | 16.00 | 38.00 | 35.00 | 17.00 | 15.9 | M16 | 1. | 0 | 0.94 |
| DIN69871 40 SEM16X100 C | 40 | 16.00 | 38.00 | 100.00 | 17.00 | 80.9 | M16 | 1. | 0 | 1.48 |
| DIN69871 40 SEM22X 35 C | 40 | 22.00 | 47.00 | 35.00 | 19.00 | 15.9 | M16 | 1. | 0 | 1.02 |
| DIN69871 40 SEM22X100 C | 40 | 22.00 | 47.00 | 100.00 | 19.00 | 80.9 | M16 | 1. | 0 | 0.94 |
| DIN69871 40 SEM27X 60 C | 40 | 27.00 | 58.00 | 60.00 | 21.00 | 40.9 | M16 | 1. | 0 | 1.20 |
| DIN69871 40 SEM27X100 C | 40 | 27.00 | 58.00 | 100.00 | 21.00 | 80.9 | M16 | 1. | 0 | 2.32 |
| DIN69871 40 SEM32X 60 C | 40 | 32.00 | 66.00 | 60.00 | 24.00 | 40.9 | M16 | 1. | 0 | 1.69 |
| DIN69871 40 SEM32X78X50C | 40 | 32.00 | 78.00 | 50.00 | 24.00 | 30.9 | M16 | 1. | 0 | 1.75 |
| DIN69871 40 SEM32X78X100C | 40 | 32.00 | 78.00 | 100.00 | 24.00 | 80.9 | M16 | 1. | 0 | 3.58 |
| DIN69871 50 SEM16X 35 C | 50 | 16.00 | 38.00 | 35.00 | 17.00 | 15.9 | M24 | 1. | 0 | 2.68 |
| DIN69871 50 SEM16X100 C | 50 | 16.00 | 38.00 | 100.00 | 17.00 | 80.9 | M24 | 1. | 0 | 3.24 |
| DIN69871 50 SEM22X 35 C | 50 | 22.00 | 47.00 | 35.00 | 19.00 | 15.9 | M24 | 1. | 0 | 2.77 |
| DIN69871 50 SEM22X100 C | 50 | 22.00 | 47.00 | 100.00 | 19.00 | 80.9 | M24 | 1. | 0 | 3.59 |
| DIN69871 50 SEM22X48X200C (1) | 50 | 22.00 | 48.00 | 200.00 | 19.00 | 181.0 | M24 | 2. | 0 | 5.00 |
| DIN69871 50 SEM22X61X300C (1) | 50 | 22.00 | 61.00 | 300.00 | 19.00 | 281.0 | M24 | 2. | 0 | 8.75 |
| DIN69871 50 SEM27X 35 C | 50 | 27.00 | 58.00 | 35.00 | 21.00 | 15.9 | M24 | 1. | 0 | 2.88 |
| DIN69871 50 SEM27X100 C | 50 | 27.00 | 58.00 | 100.00 | 21.00 | 80.9 | M24 | 1. | 0 | 4.15 |
| DIN69871 50 SEM27X61X300C (1) | 50 | 27.00 | 61.00 | 300.00 | 21.00 | 281.0 | M24 | 2. | 0 | 8.70 |
| DIN69871 50 SEM32X 35 C | 50 | 32.00 | 66.00 | 35.00 | 24.00 | 15.9 | M24 | 1. | 0 | 3.00 |
| DIN69871 50 SEM32X100 C | 50 | 32.00 | 66.00 | 100.00 | 24.00 | 80.9 | M24 | 1. | 0 | 4.64 |
| DIN69871 50 SEM32X78X50C | 50 | 32.00 | 78.00 | 50.00 | 24.00 | 30.9 | M24 | 1. | 0 | 3.85 |
| DIN69871 50 SEM32X78X100C | 50 | 32.00 | 78.00 | 100.00 | 24.00 | 80.9 | M24 | 1. | 0 | 5.61 |
| DIN69871 50 SEM32X78X370C (1) | 50 | 32.00 | 78.00 | 370.00 | 24.00 | 351.0 | M24 | 2. | 0 | 15.42 |

• (a) If the B type coolant option is required, the plug screw must be removed from the flange cooling hole (use a 2 mm hex key)
(1) Symmetrical design. However, the family's balance values are not guaranteed for this tool
(2) 1 - Slot for data chip, 0 - Without slot for data chip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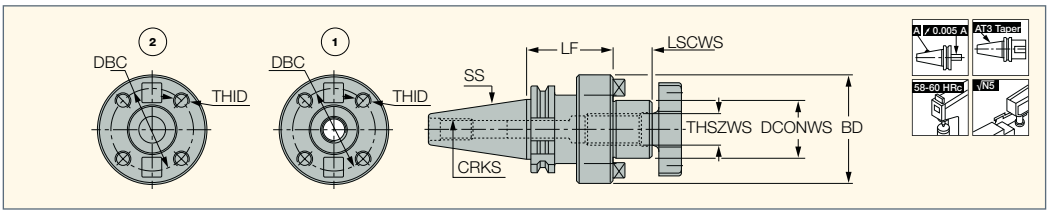
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| DIN69871 40 SEM16X 35 C | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 |
| DIN69871 40 SEM16X100 C | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 |
| DIN69871 40 SEM22X 35 C | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 |
| DIN69871 40 SEM22X100 C | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 |
| DIN69871 40 SEM27X 60 C | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X12 DIN912 |
| DIN69871 40 SEM27X100 C | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X12 DIN912 |
| DIN69871 40 SEM32X 60 C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 |
| DIN69871 40 SEM32X78X50C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 |
| DIN69871 40 SEM32X78X100C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 |
| DIN69871 50 SEM16X 35 C | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 |
| DIN69871 50 SEM16X100 C | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 |
| DIN69871 50 SEM22X 35 C | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 |
| DIN69871 50 SEM22X100 C | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 |
| DIN69871 50 SEM22X48X200C | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 |
| DIN69871 50 SEM22X61X300C | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 |
| DIN69871 50 SEM27X 35 C | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X12 DIN912 |
| DIN69871 50 SEM27X100 C | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X12 DIN912 |
| DIN69871 50 SEM27X61X300C | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27 | DR.DOG 12S | SR M5X12 DIN912 |
| DIN69871 50 SEM32X 35 C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 |
| DIN69871 50 SEM32X100 C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 |
| DIN69871 50 SEM32X78X50C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 |
| DIN69871 50 SEM32X78X100C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 |
| DIN69871 50 SEM32X78X370C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X16S | SR M5X20DIN912 |

* Optional, to be ordered separately

## *DIN69871*

**DIN69871-FM**
DIN 6357 Face Mill Holders with
DIN 69871 Form A/AD
Taper Shanks



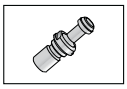

| Designation | SS | DCONWS | BD | DBC | LF | LSCWS | THID | THSZWS | CRKS | Fig. | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DIN69871 40 FM 40** (1) | 40 | 40.00 | 88.00 | 66.70 | 60.00 | 27.00 | M12 | M20 | M16 | 1. | 0 | 2.25 |
| **DIN69871 50 FM 40X70** (1) | 50 | 40.00 | 88.00 | 66.70 | 70.00 | 27.00 | M12 | M20 | M24 | 1. | 0 | 4.87 |
| **DIN69871 50 FM 60** (2) | 50 | 60.00 | 128.00 | 101.60 | 70.00 | 40.00 | M16 | - | M24 | 2. | 0 | 7.32 |

- Peripheral clamping screws are not supplied.

(1) Form AD

(2) Form A

(3) 1 - Slot for data chip, 0 - Without slot for data chip



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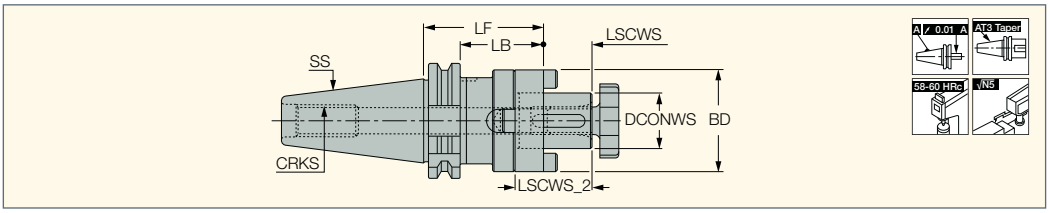
### Spare Parts

| Designation | | | |
|---|---|---|---|
| **DIN69871 40 FM 40** | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | DR. DOG 16 E |
| **DIN69871 50 FM 40X70** | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | DR. DOG 16 E |
| **DIN69871 50 FM 60** | | | DR. DOG 1E |

* Optional, to be ordered separately

## *DIN69871*

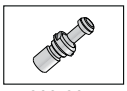
**DIN69871-SEMC**
DIN 6358 COMBI Shell Mill Holders with DIN 69871 Form AD Taper Shanks




| Designation | SS | DCONWS | LF | LSCWS | LB | LSCWS_2 | BD | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 30 SEMC 16X 50 | 30 | 16.00 | 50.00 | 17.00 | 30.9 | 27.00 | 32.00 | M12 | 0 | 0.53 |
| DIN69871 30 SEMC 22X 50 | 30 | 22.00 | 50.00 | 19.00 | 30.9 | 31.00 | 40.00 | M12 | 0 | 0.61 |
| DIN69871 40 SEMC 16X 55 | 40 | 16.00 | 55.00 | 17.00 | 35.9 | 27.00 | 32.00 | M16 | 0 | 1.01 |
| DIN69871 40 SEMC 16X100 | 40 | 16.00 | 100.00 | 17.00 | 80.9 | 27.00 | 32.00 | M16 | 0 | 1.30 |
| DIN69871 40 SEMC 22X 55 | 40 | 22.00 | 55.00 | 19.00 | 35.9 | 31.00 | 40.00 | M16 | 0 | 1.05 |
| DIN69871 40 SEMC 22X100 | 40 | 22.00 | 100.00 | 19.00 | 80.9 | 31.00 | 40.00 | M16 | 0 | 1.47 |
| DIN69871 40 SEMC 27X 55 | 40 | 27.00 | 55.00 | 21.00 | 35.9 | 33.00 | 48.00 | M16 | 0 | 1.25 |
| DIN69871 40 SEMC 27X100 | 40 | 27.00 | 100.00 | 21.00 | 80.9 | 33.00 | 48.00 | M16 | 0 | 1.89 |
| DIN69871 40 SEMC 32X 60 | 40 | 32.00 | 60.00 | 24.00 | 40.9 | 38.00 | 58.00 | M16 | 0 | 1.41 |
| DIN69871 40 SEMC 32X100 | 40 | 32.00 | 100.00 | 24.00 | 80.9 | 38.00 | 58.00 | M16 | 0 | 2.24 |
| DIN69871 40 SEMC 40X 60 | 40 | 40.00 | 60.00 | 27.00 | 40.9 | 41.00 | 70.00 | M16 | 0 | 1.63 |
| DIN69871 50 SEMC 16X 55 | 50 | 16.00 | 55.00 | 17.00 | 35.9 | 27.00 | 32.00 | M24 | 0 | 2.80 |
| DIN69871 50 SEMC 16X100 | 50 | 16.00 | 100.00 | 17.00 | 80.9 | 27.00 | 32.00 | M24 | 0 | 3.54 |
| DIN69871 50 SEMC 22X 55 | 50 | 22.00 | 55.00 | 19.00 | 35.9 | 31.00 | 40.00 | M24 | 0 | 2.82 |
| DIN69871 50 SEMC 22X100 | 50 | 22.00 | 100.00 | 19.00 | 80.9 | 31.00 | 40.00 | M24 | 0 | 3.60 |
| DIN69871 50 SEMC 27X 55 | 50 | 27.00 | 55.00 | 21.00 | 35.9 | 33.00 | 48.00 | M24 | 0 | 3.06 |
| DIN69871 50 SEMC 27X100 | 50 | 27.00 | 100.00 | 21.00 | 80.9 | 33.00 | 48.00 | M24 | 0 | 3.82 |
| DIN69871 50 SEMC 32X 55 | 50 | 32.00 | 55.00 | 24.00 | 35.9 | 38.00 | 58.00 | M24 | 0 | 3.23 |
| DIN69871 50 SEMC 32X100 | 50 | 32.00 | 100.00 | 24.00 | 80.9 | 38.00 | 58.00 | M24 | 0 | 4.32 |
| DIN69871 50 SEMC 40X 55 | 50 | 40.00 | 55.00 | 27.00 | 35.9 | 41.00 | 70.00 | M24 | 0 | 3.43 |
| DIN69871 50 SEMC 40X100 | 50 | 40.00 | 100.00 | 27.00 | 80.9 | 41.00 | 70.00 | M24 | 0 | 5.24 |
| DIN69871 50 SEMC 50X 70 | 50 | 50.00 | 70.00 | 30.00 | 50.9 | 46.00 | 90.00 | M24 | 0 | 4.58 |

- For internal coolant through the holder, the related COOLANT SET should be ordered via Accessories (applicable to certain tools only)

(1) 1 - Slot for data chip, 0 - Without slot for data chip



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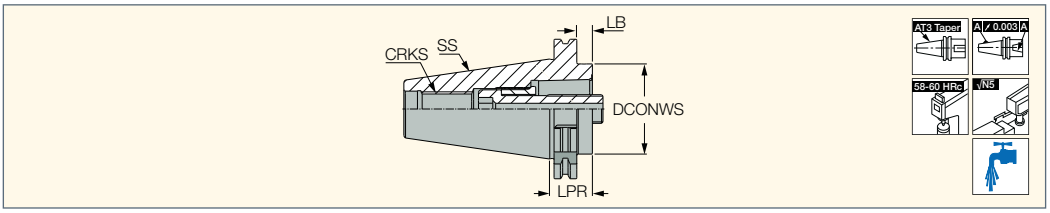
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| DIN69871 30 SEMC 16X 50 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | KEY SEMC 16 4X4X20 |
| DIN69871 30 SEMC 22X 50 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | KEY SEMC 22 6X6X25 |
| DIN69871 40 SEMC 16X 55 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | KEY SEMC 16 4X4X20 |
| DIN69871 40 SEMC 16X100 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | KEY SEMC 16 4X4X20 |
| DIN69871 40 SEMC 22X 55 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | KEY SEMC 22 6X6X25 |
| DIN69871 40 SEMC 22X100 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | KEY SEMC 22 6X6X25 |
| DIN69871 40 SEMC 27X 55 | 27 D.RING SEMC | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | KEY SEMC 27 7X7X25 |
| DIN69871 40 SEMC 27X100 | 27 D.RING SEMC | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | KEY SEMC 27 7X7X25 |
| DIN69871 40 SEMC 32X 60 | 32 D.RING SEMC | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | KEY SEMC 32 8X7X28 |
| DIN69871 40 SEMC 32X100 | 32 D.RING SEMC | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | KEY SEMC 32 8X7X28 |
| DIN69871 40 SEMC 40X 60 | 40 D.RING SEMC | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | KEY SEMC 40 10X8X32 |
| DIN69871 50 SEMC 16X 55 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | KEY SEMC 16 4X4X20 |
| DIN69871 50 SEMC 16X100 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | KEY SEMC 16 4X4X20 |
| DIN69871 50 SEMC 22X 55 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | KEY SEMC 22 6X6X25 |
| DIN69871 50 SEMC 22X100 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | KEY SEMC 22 6X6X25 |
| DIN69871 50 SEMC 27X 55 | 27 D.RING SEMC | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | KEY SEMC 27 7X7X25 |
| DIN69871 50 SEMC 27X100 | 27 D.RING SEMC | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | KEY SEMC 27 7X7X25 |
| DIN69871 50 SEMC 32X 55 | 32 D.RING SEMC | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | KEY SEMC 32 8X7X28 |
| DIN69871 50 SEMC 32X100 | 32 D.RING SEMC | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | KEY SEMC 32 8X7X28 |
| DIN69871 50 SEMC 40X 55 | 40 D.RING SEMC | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | KEY SEMC 40 10X8X32 |
| DIN69871 50 SEMC 40X100 | 40 D.RING SEMC | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | KEY SEMC 40 10X8X32 |
| DIN69871 50 SEMC 50X 70 | 50 D.RING SEMC | M24 CLAMP SCREW SEM50 | WRENCH M24 SEMC 50* | KEY SEMC 50 12X8X36 |

* Optional, to be ordered separately

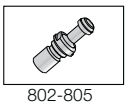
## DIN69871 CAMFIX

**DIN69871-C#**
CAMFIX (ISO 26623-1)
Holders with DIN 69871
Form AD Tape red Shanks




| Designation | SS | DCONWS | LPR | LB | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|
| C4 AD SKA 40X30 | 40 | 40.00 | 30.00 | 11.00 | M16 | 0 | 0.83 |
| C5 AD SKA 40X40 | 40 | 50.00 | 40.00 | 21.00 | M16 | 0 | 0.90 |
| C5 AD SKA 50X30 | 50 | 50.00 | 30.00 | 11.00 | M24 | 0 | 2.61 |
| C6 AD SKA 50X30 | 50 | 63.00 | 30.00 | 11.00 | M24 | 0 | 2.55 |
| C8 AD SKA 50X70 | 50 | 80.00 | 70.00 | 51.00 | M24 | 0 | 3.77 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip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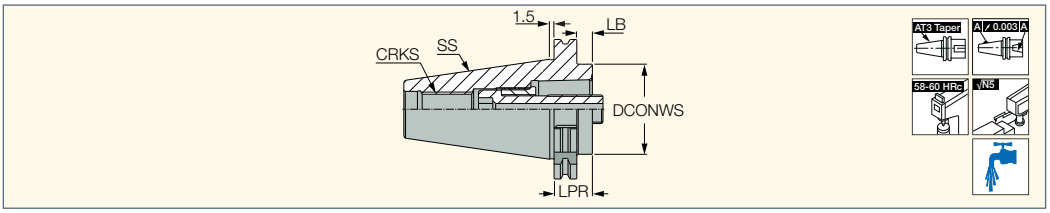
### Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| C4 AD SKA 40X30 | SR M14X58 C4 | HW 8.0* | MT RING M22X17XC4 | | | WRENCH C4 DRW NUT* |
| C5 AD SKA 40X40 | SR M16X70 C5 | HW 10.0 | MT RING M25X20XC5 | | | WRENCH C5 DRW NUT |
| C5 AD SKA 50X30 | SR M16X70 C5 | HW 10.0* | MT RING M25X20XC5 | SR M4X4 DIN913 | HW 2.0* | WRENCH C5 DRW NUT* |
| C6 AD SKA 50X30 | SR M20X87 C6/8 | HW 14.0* | MT RING M30X24XC6/8 | | | WRENCH C6-8 DRW NUT* |
| C8 AD SKA 50X70 | SR M20X87 C6/8 | HW 14.0* | MT RING M30X24XC6/8 | SR M4X4 DIN913 | HW 2.0* | WRENCH C6-8 DRW NUT* |

* Optional, to be ordered separately

## DIN69871 CAMFIX

**DIN69871-C#-FC**
CAMFIX (ISO 26623-1)
Holders with DIN 69871 Face
Contact AD Tapered Shanks



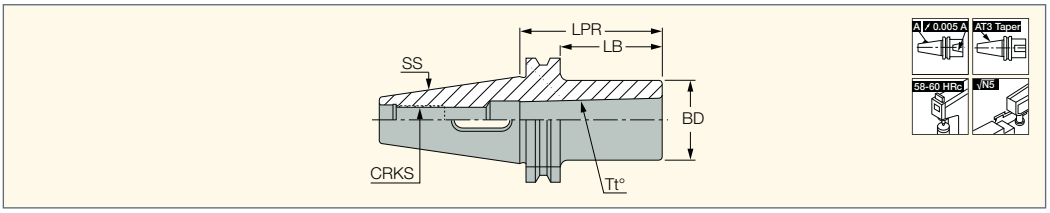

| Designation | SS | DCONWS | LPR | LB | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|
| C5 AD SK50FC X30 | 50 | 50.00 | 28.50 | 11.00 | M24x3 | 0 | 3.30 |
| C6 AD SK50FC X50 | 50 | 63.00 | 48.50 | 31.00 | M24x3 | 0 | 3.45 |

New

(1) 1 - Slot for data chip, 0 - Without slot for data chip

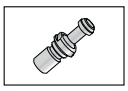
## DIN69871

**DIN69871-MT**
DIN 6383 Morse Taper Adapters
with DIN 228-2 Form D Tang and
DIN 69871 Form A Taper Shanks



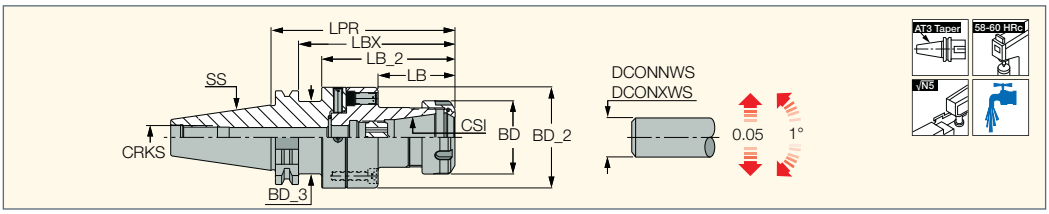

| Designation | SS | Tt° | LPR | LB | BD | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|
| DIN69871 40 MT1X 50 | 40 | MT1 | 50.00 | 30.9 | 25.00 | M16 | 0 | 0.88 |
| DIN69871 40 MT2X 50 | 40 | MT2 | 50.00 | 30.9 | 32.00 | M16 | 0 | 0.90 |
| DIN69871 40 MT3X 70 | 40 | MT3 | 70.00 | 50.9 | 40.00 | M16 | 0 | 1.04 |
| DIN69871 40 MT4X 95 | 40 | MT4 | 95.00 | 75.9 | 48.00 | M16 | 0 | 1.30 |
| DIN69871 50 MT1X 45 | 50 | MT1 | 45.00 | 25.9 | 25.00 | M24 | 0 | 2.65 |
| DIN69871 50 MT2X 60 | 50 | MT2 | 60.00 | 40.9 | 32.00 | M24 | 0 | 2.72 |
| DIN69871 50 MT3X 65 | 50 | MT3 | 65.00 | 45.9 | 40.00 | M24 | 0 | 2.75 |
| DIN69871 50 MT4X 95 | 50 | MT4 | 95.00 | 75.9 | 48.00 | M24 | 0 | 3.04 |
| DIN69871 50 MT5X105 | 50 | MT5 | 105.00 | 85.9 | 63.00 | M24 | 0 | 3.20 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip


802-805

## DIN69871 FINEFIT

**ADJ DIN69871-ER**
Center Alignment DIN 6499 ER
Collet Chucks with DIN 69871
Form AD/B Taper Shanks

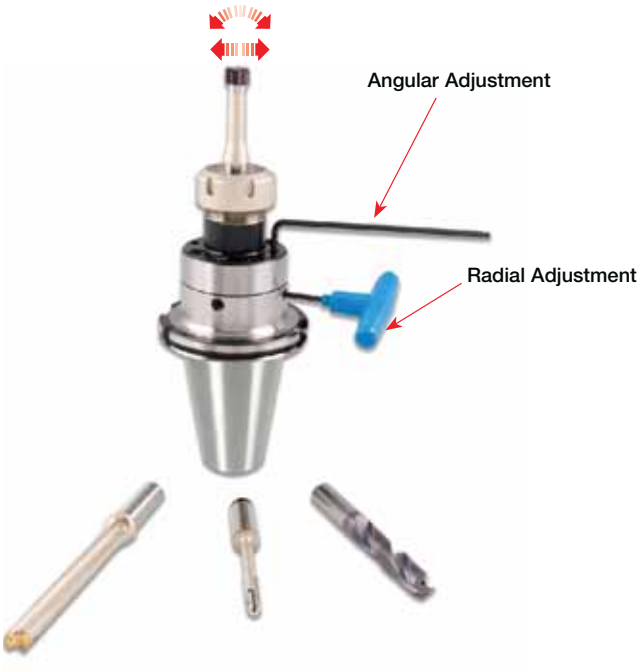



| Designation | SS | CSI | DCONNWS(1) | DCONXWS(2) | LPR | LB | LBX | LB_2 | BD | BD_2 | BD_3 | CRKS | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADJ DIN69871 40 D70 ER32 | 40 | ER32 | 2.0 | 20.0 | 124.50 | 52.50 | 105.4 | 89.50 | 50.00 | 70.00 | 46.00 | M16 | 2.36 |
| ADJ DIN69871 50 D70 ER32 | 50 | ER32 | 2.0 | 20.0 | 124.50 | 52.50 | 105.4 | - | 50.00 | 70.00 | - | M24 | 4.29 |

- Radial adjustment 0.05 mm Angular adjustment 1°

(1) Minimum diameter

(2) Maximum diameter



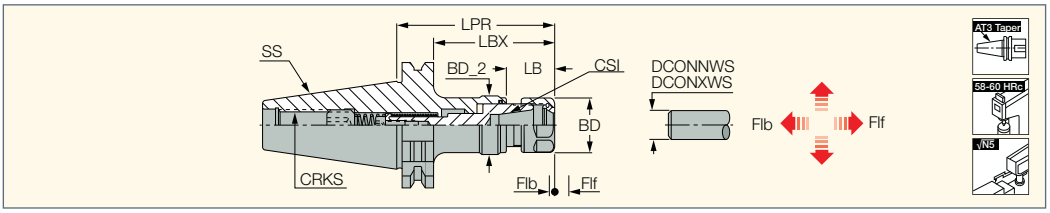
802-805 | 805-806 | 766-773 | 763-765, 635

## Spare Parts

| Designation | |
|---|---|
| ADJ DIN69871-ER | ADJ ER32 NOSE |

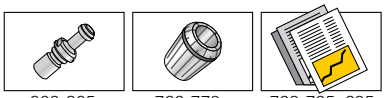
## *DIN69871 GTI*

**GTI DIN69871-ER (tapping)**
DIN 6499 ER Tapping Attachments with DIN 69871 Form A Tapered Shanks




| Designation | SS | CSI | Tap min | Tap max | DCONNWS(1) | DCONXWS(2) | LPR | LBX | LB | BD | BD_2 | Flf | Flb | CRKS | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GTI DIN69871 40 ER16 | 40 | ER16 | M3 | M10 | 0.5 | 10.0 | 81.20 | 62.1 | 24.60 | 28.00 | 29.50 | 8.0 | 3.0 | M16 | 0 | 2.40 |
| GTI DIN69871 40 ER32 | 40 | ER32 | M6 | M20 | 2.0 | 20.0 | 111.40 | 92.3 | 33.00 | 50.00 | 56.50 | 9.0 | 4.0 | M16 | 0 | 2.28 |
| GTI DIN69871 40 ER40 | 40 | ER40 | M6 | M28 | 3.0 | 26.0 | 129.40 | 110.3 | 51.00 | 63.00 | 56.50 | 9.0 | 4.0 | M16 | 0 | 2.40 |
| GTI DIN69871 50 ER16 | 50 | ER16 | M3 | M10 | 0.5 | 10.0 | 104.80 | 85.7 | 24.60 | 28.00 | 29.50 | 8.0 | 3.0 | M24 | 0 | 2.95 |
| GTI DIN69871 50 ER32 | 50 | ER32 | M6 | M20 | 2.0 | 20.0 | 113.30 | 94.4 | 33.00 | 50.00 | 56.50 | 9.0 | 4.0 | M24 | 0 | 3.90 |
| GTI DIN69871 50 ER40 | 50 | ER40 | M6 | M28 | 3.0 | 26.0 | 132.40 | 113.3 | 51.00 | 63.00 | 56.50 | 9.0 | 4.0 | M24 | 0 | 4.39 |

(1) Minimum diameter
(2) Maximum diameter
(3) 1 - Slot for data chip, 0 - Without slot for data chip


802-805 766-773 763-765, 635

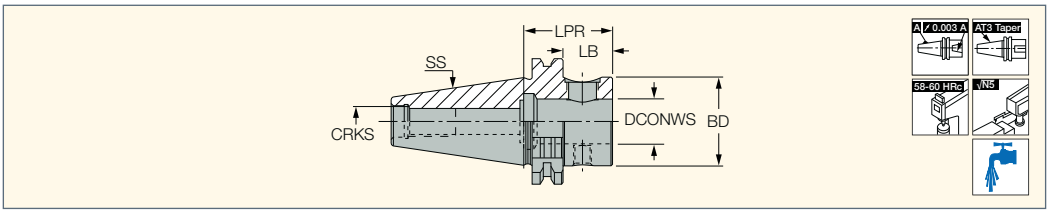
### Spare Parts

| Designation | | |
|---|---|---|
| GTI DIN69871 40 ER16 | NUT ER16 TOP | WRENCH ER16* |
| GTI DIN69871 40 ER32 | NUT ER32 TOP | WRENCH ER32* |
| GTI DIN69871 40 ER40 | NUT ER40 TOP | WRENCH ER40* |
| GTI DIN69871 50 ER16 | NUT ER16 TOP | WRENCH ER16* |
| GTI DIN69871 50 ER32 | NUT ER32 TOP | WRENCH ER32* |
| GTI DIN69871 50 ER40 | NUT ER40 TOP | WRENCH ER40* |

* Optional, to be ordered separately

## *DIN69871 CLICKFIT*

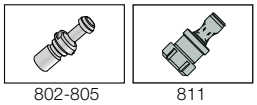
**DIN69871-CF**
DIN69871 Form ADB Tapered Shanks to CLICK-FIT Adapters




| Designation | SS | DCONWS | LPR | LB | BD | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|
| DIN69871 40 CF4-S | 40 | 25.00 | 44.10 | 25.0 | 44.50 | M16 | 0 | 0.93 |
| DIN69871 40 CF4-L | 40 | 25.00 | 100.00 | 80.9 | 44.50 | M16 | 0 | 1.55 |
| DIN69871 50 CF4-S | 50 | 25.00 | 44.10 | 25.0 | 44.50 | M24 | 0 | 2.70 |
| DIN69871 50 CF4-L | 50 | 25.00 | 100.00 | 80.9 | 44.50 | M24 | 0 | 3.54 |

- Tightening torque: 6 Kgxm

(1) 1 - Slot for data chip, 0 - Without slot for data chip


802-805 811

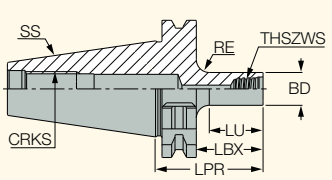
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| DIN69871-CF | SCREW M16X1.5 FOR CF4 | WRENCH HW 8 200X36 DIN911 | OR 15X3N | WRENCH REAL C.F M8 |

## DIN69871

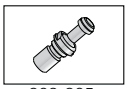
### MULTI-MASTER

**MM S-A-SK**
DIN 69871 Integral Tapered Shanks Mount MULTI-MASTER Milling Heads



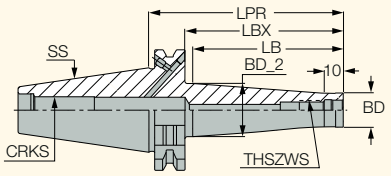

| Designation | SS | CRKS | THSZWS | BD | LPR | LBX | LU | RE | kg |
|---|---|---|---|---|---|---|---|---|---|
| MM S-A-H040-SK 40-T06 | 40 | M16 | T06 | 9.25 | 40.00 | 21.0 | 15.00 | 6.0 | 0.86 |
| MM S-A-H045-SK 40-T08 | 40 | M16 | T08 | 11.60 | 45.00 | 26.0 | 20.00 | 6.0 | 0.87 |
| MM S-A-H050-SK 40-T10 | 40 | M16 | T10 | 15.30 | 50.00 | 31.0 | 25.00 | 6.0 | 0.83 |
| MM S-A-H050-SK 40-T12 | 40 | M16 | T12 | 18.30 | 50.00 | 31.0 | 25.00 | 6.0 | 0.90 |
| MM S-A-H050-SK 40-T15 | 40 | M16 | T15 | 23.90 | 50.00 | 31.0 | 25.00 | 6.0 | 0.09 |

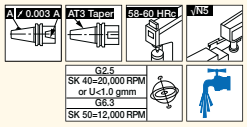
• Do not apply lubricant to the threaded connection • For adaptation, see page 746


802-805

## DIN69871 FLEXFIT

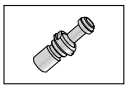
**DIN69871-ODP**
FLEX-FIT Threaded Connection Shanks with Integral DIN 69871 Form ADB Taper Adaptation

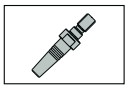



| Designation | SS | THSZWS | BD | BD_2 | LPR | LBX | LB | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| DIN69871 40 ODP 6X58 | 40 | M06 | 9.80 | 13.00 | 58.00 | 38.9 | 30.00 | M16 | 0 | 0.82 |
| DIN69871 40 ODP 6X98 | 40 | M06 | 9.80 | 23.00 | 98.00 | 78.9 | 70.00 | M16 | 0 | 0.91 |
| DIN69871 40 ODP 8X58 | 40 | M08 | 13.10 | 15.00 | 58.00 | 38.9 | 30.00 | M16 | 0 | 0.82 |
| DIN69871 40 ODP 8X98 | 40 | M08 | 13.10 | 23.00 | 98.00 | 78.9 | 70.00 | M16 | 0 | 0.92 |
| DIN69871 40 ODP10X58 | 40 | M10 | 18.00 | 20.00 | 58.00 | 38.9 | 30.00 | M16 | 0 | 0.84 |
| DIN69871 40 ODP10X98 | 40 | M10 | 18.00 | 28.00 | 98.00 | 78.9 | 70.00 | M16 | 0 | 1.00 |
| DIN69871 40 ODP12X58 | 40 | M12 | 21.00 | 24.00 | 58.00 | 38.9 | 30.00 | M16 | 0 | 0.88 |
| DIN69871 40 ODP12X98 | 40 | M12 | 21.00 | 31.00 | 98.00 | 78.9 | 70.00 | M16 | 0 | 1.07 |
| DIN69871 40 ODP16X58 | 40 | M16 | 29.00 | 28.60 | 58.00 | 38.9 | 35.00 | M16 | 0 | 0.91 |
| DIN69871 40 ODP16X98 | 40 | M16 | 29.00 | 34.00 | 98.00 | 78.9 | 70.00 | M16 | 0 | 1.15 |
| DIN69871 50 ODP12X 78 | 50 | M12 | 23.00 | 30.00 | 78.00 | 58.9 | 50.00 | M24 | 0 | 2.74 |
| DIN69871 50 ODP12X128 | 50 | M12 | 23.00 | 40.00 | 128.00 | 108.9 | 100.00 | M24 | 0 | 3.14 |
| DIN69871 50 ODP12X178 | 50 | M12 | 23.00 | 40.00 | 178.00 | 158.9 | 150.00 | M24 | 0 | 3.38 |
| DIN69871 50 ODP12X228 | 50 | M12 | 23.00 | 46.00 | 228.00 | 208.9 | 200.00 | M24 | 0 | 4.19 |
| DIN69871 50 ODP16X 78 | 50 | M16 | 29.00 | 34.00 | 78.00 | 58.9 | 50.00 | M24 | 0 | 2.95 |
| DIN69871 50 ODP16X128 | 50 | M16 | 29.00 | 40.00 | 128.00 | 108.9 | 100.00 | M24 | 0 | 3.20 |
| DIN69871 50 ODP16X178 | 50 | M16 | 29.00 | 55.00 | 178.00 | 158.9 | 150.00 | M24 | 0 | 4.08 |
| DIN69871 50 ODP16X228 | 50 | M16 | 29.00 | 55.00 | 228.00 | 208.9 | 200.00 | M24 | 0 | 4.64 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip


802-805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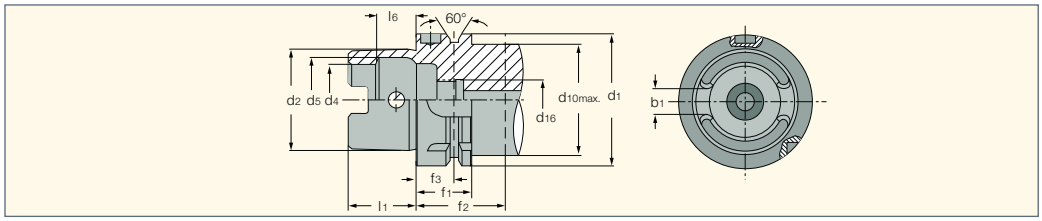
746

# DIN 69893 HSK A / E

## HSK DIN 69893 (ISO 12164-1 Standard)

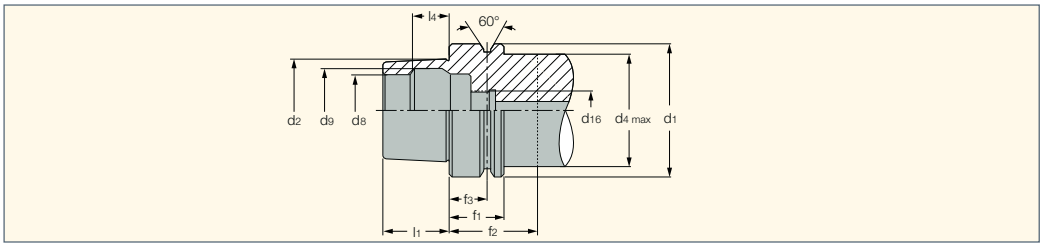
### DIN 69893 Form A




| HSK-A | d1 h10 | d2 | d4 H10 | d5 H11 | d10 max | d16 | l1-0.2 | l6 Js10 | b1±0.04(1) | f1 -0.1 | f2 min | f3 ±0.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | 40 | 30 | 21 | 25.5 | 34 | M12x1 | 20 | 11.42 | 8.05 | 20 | 35 | 16 |
| 50 | 50 | 38 | 26 | 32.0 | 42 | M16x1 | 25 | 14.13 | 10.54 | 26 | 42 | 18 |
| 63 | 63 | 48 | 34 | 40.0 | 53 | M18x1 | 32 | 18.13 | 12.54 (12.42) | 26 | 42 | 18 |
| 80 | 80 | 60 | 42 | 50.0 | 67 | M20x1.5 | 40 | 22.85 | 16.04 | 26 | 42 | 18 |
| 100 | 100 | 75 | 53 | 63.0 | 85 | M24x1.5 | 50 | 28.56 | 20.02 (19.9) | 29 | 45 | 20 |

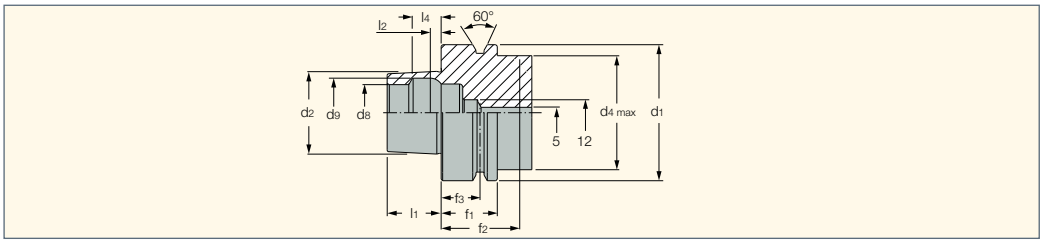
(1) The dimensions in parentheses refer to dimension b1 only for HSK A...WH tools. These tools feature key slot gap and tolerance, used on turning tools for accurate cutting edge height position, (according to Japanese ICTM standard and ISO 12164/3 standard).

### DIN 69893 Form E




| HSK-E | d1 h10 | d2 | d4 max | d8 H10 | d9 H11 | d16 | l1-0.2 | L4 Js10 | f1-0.1 | f2 min | f3±0.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 32 | 24 | 26 | 17 | 19 | M10X1 | 16 | 8.92 | 20 | 35 | 16 |
| 40 | 40 | 30 | 34 | 21 | 25.5 | M12X1 | 20 | 11.42 | 20 | 35 | 16 |
| 50 | 50 | 38 | 42 | 26 | 32.0 | M16X1 | 25 | 14.13 | 26 | 42 | 18 |
| 63 | 63 | 48 | 53 | 34 | 40.0 | M18X1 | 32 | 18.13 | 26 | 42 | 18 |

### DIN 69893 Form F (1)

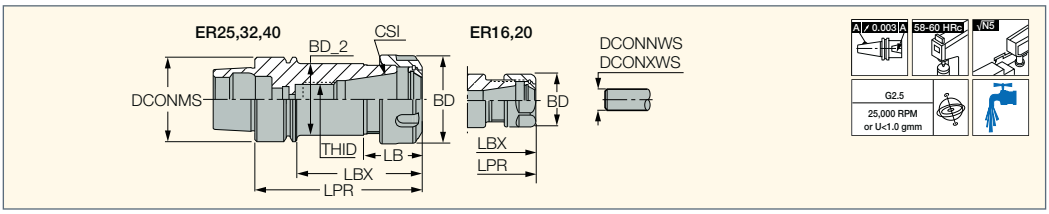



| HSK-F | d1 h10 | d2 | d4 max | d8 H10 | d9 H11 | l1-0.2 | l2 | l4 Js10 | f1-0.1 | f2 min | f3±0.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 63 | 63 | 38 | 53 | 26 | 32 | 25 | 5.0 | 14.13 | 26 | 42 | 18 |

(1) Without crosshole.

## *HSK*

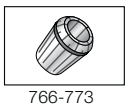
**HSK E-ER**
DIN6499 ER Collet Chucks with
HSK DIN69893 Form E
Tapered Shanks




| Designation | DCONMS | CSI | DCONNWS[2] | DCONXWS[3] | BD | BD_2 | LPR | LBX | LB | THID | DCP[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HSK E32 ER16X60** | 32.00 | ER16 | 0.5 | 10.0 | 28.00 | 22.40 | 60.00 | 40.0 | 21.50 | M10x1-6H | 0 | 0.22 |
| **HSK E32 ER20X60** | 32.00 | ER20 | 1.0 | 13.0 | 34.00 | 25.40 | 60.00 | 40.0 | 26.00 | M10x1-6H | 0 | 0.18 |
| **HSK E32 ER25X65** | 32.00 | ER25 | 1.0 | 16.0 | 42.00 | 25.80 | 65.00 | 45.0 | 30.00 | M10x1-6H | 0 | 0.20 |
| **HSK E40 ER16X60** | 40.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 60.00 | 40.0 | 27.10 | M12X1-6H | 0 | 0.28 |
| **HSK E40 ER16X80** | 40.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 80.00 | 60.0 | 27.10 | M10x1.5-6H | 0 | 0.36 |
| **HSK E40 ER20X80** | 40.00 | ER20 | 1.0 | 13.0 | 34.00 | 33.80 | 80.00 | 60.0 | 28.00 | M12 | 0 | 0.44 |
| **HSK E40 ER25X80** | 40.00 | ER25 | 1.0 | 16.0 | 42.00 | 33.80 | 80.00 | 60.0 | 28.00 | M18X1.5 | 0 | 0.42 |
| **HSK E40 ER32X80** | 40.00 | ER32 | 2.0 | 20.0 | 50.00 | 40.10 | 80.00 | 60.0 | 31.00 | M22X1.5 | 0 | 0.41 |
| **HSK E50 ER16X100** | 50.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 100.00 | 74.0 | 27.00 | M10 | 0 | 0.64 |
| **HSK E50 ER16X100M** [1] | 50.00 | ER16 | 0.5 | 10.0 | 22.00 | 22.00 | 100.00 | 74.0 | 25.60 | M10 | 0 | 0.55 |
| **HSK E50 ER16X80** | 50.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 80.00 | 54.0 | 27.10 | M10 | 0 | 0.55 |
| **HSK E50 ER20X80** | 50.00 | ER20 | 1.0 | 13.0 | 34.00 | 34.00 | 80.00 | 54.0 | 28.00 | M12 | 0 | 0.60 |
| **HSK E50 ER25X80** | 50.00 | ER25 | 1.0 | 16.0 | 42.00 | 32.40 | 80.00 | 54.0 | 28.00 | M16 | 0 | 0.60 |
| **HSK E50 ER32X100** | 50.00 | ER32 | 2.0 | 20.0 | 50.00 | 40.00 | 100.00 | 74.0 | 31.00 | M22X1.5 | 0 | 0.78 |
| **HSK E50 ER32X80** | 50.00 | ER32 | 2.0 | 20.0 | 50.00 | 40.00 | 80.00 | 54.0 | 31.00 | M16X1-6H | 0 | 0.63 |
| **HSK E63 ER16X100** | 63.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 100.00 | 74.0 | 27.10 | M10 | 0 | 0.91 |
| **HSK E63 ER16X80** | 63.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 80.00 | 54.0 | 27.10 | M10 | 0 | 0.92 |
| **HSK E63 ER20X75** | 63.00 | ER20 | 1.0 | 13.0 | 34.00 | 34.00 | 75.00 | 49.0 | 28.00 | M18X1-6H | 0 | 0.90 |
| **HSK E63 ER32X100** | 63.00 | ER32 | 2.0 | 20.0 | 50.00 | 50.00 | 100.00 | 75.0 | 36.00 | M22X1.5 | 0 | 1.28 |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).

[1] Equipped with nut ER 16 MINI
[2] Minimum diameter
[3] Maximum diameter
[4] 1 - Slot for data chip, 0 - Without slot for data chip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763-765

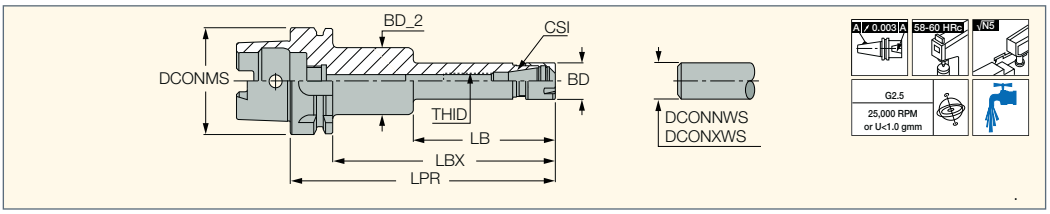
## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| **HSK E32 ER16X60** | NUT ER16 TOP | WRENCH ER16* | | | |
| **HSK E32 ER20X60** | NUT ER20 TOP | WRENCH ER20* | | | |
| **HSK E32 ER25X65** | NUT ER25 TOP | WRENCH ER25* | | | |
| **HSK E40 ER16X60** | NUT ER16 TOP | WRENCH ER16* | | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 ER16X80** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 ER20X80** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 ER25X80** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 18X1.5* | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 ER32X80** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E50 ER16X100** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 ER16X100M** | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 ER16X80** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 ER20X80** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 ER25X80** | NUT ER25 TOP | WRENCH ER25* | | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 ER32X100** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 ER32X80** | NUT ER32 TOP | WRENCH ER32* | | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E63 ER16X100** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK E63 ER16X80** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK E63 ER20X75** | NUT ER20 TOP | WRENCH ER20* | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK E63 ER32X100** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |

* Optional, to be ordered separately

## *HSK*

**HSK A-ER-M (mini)**
DIN6499 ER Mini Collet
Chucks with HSK DIN69893
Form A Tapered Shanks



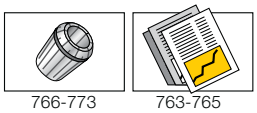

| Designation | DCONMS | CSI | DCONNWS(1) | DCONXWS(2) | BD | BD_2 | LPR | LBX | LB | THID | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HSK A50 ER16X100M** | 50.00 | ER16 | 0.5 | 10.0 | 22.00 | - | 100.00 | 74.0 | - | M10 | 1 | 0.50 |
| **HSK A50 ER20X100M*** | 50.00 | ER20 | 1.0 | 13.0 | 28.00 | - | 100.00 | 74.0 | - | M12 | 1 | 0.61 |
| **HSK A63 ER11X160M** | 63.00 | ER11 | 0.5 | 7.0 | 16.00 | 19.50 | 160.00 | 134.0 | 94.50 | M6 | 1 | 0.94 |
| **HSK A63 ER16X100M** | 63.00 | ER16 | 0.5 | 10.0 | 22.00 | - | 100.00 | 74.0 | - | M10 | 1 | 0.80 |
| **HSK A63 ER16X120M** | 63.00 | ER16 | 0.5 | 10.0 | 22.00 | 40.00 | 120.00 | 94.0 | 78.00 | M10 | 1 | 0.94 |
| **HSK A63 ER16X160M** | 63.00 | ER16 | 0.5 | 10.0 | 22.00 | 40.00 | 160.00 | 134.0 | 85.00 | M10 | 1 | 1.26 |
| **HSK A63 ER20X100M** | 63.00 | ER20 | 1.0 | 13.0 | 28.00 | - | 100.00 | 74.0 | - | M12 | 1 | 0.85 |
| **HSK A63 ER20X120M** | 63.00 | ER20 | 1.0 | 13.0 | 28.00 | - | 120.00 | 94.0 | - | M12 | 1 | 0.92 |
| **HSK A63 ER20X160M** | 63.00 | ER20 | 1.0 | 13.0 | 28.00 | 45.00 | 160.00 | 134.0 | 85.00 | M12 | 1 | 1.46 |
| **HSK A100 ER16X100M** | 100.00 | ER16 | 0.5 | 10.0 | 22.00 | - | 100.00 | 71.0 | - | M10 | 1 | 2.16 |
| **HSK A100 ER16X160M** | 100.00 | ER16 | 0.5 | 10.0 | 22.00 | 40.00 | 160.00 | 131.0 | 85.00 | M10 | 1 | 2.65 |
| **HSK A100 ER20X100M** | 100.00 | ER20 | 1.0 | 13.0 | 28.00 | - | 100.00 | 71.0 | - | M12 | 1 | 2.22 |
| **HSK A100 ER20X160M** | 100.00 | ER20 | 1.0 | 13.0 | 28.00 | 50.00 | 160.00 | 131.0 | 85.00 | M12 | 1 | 2.82 |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).

(1) Minimum diameter

(2) Maximum diameter

(3) 1 - Slot for data chip, 0 - Without slot for data chip



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### Spare Parts

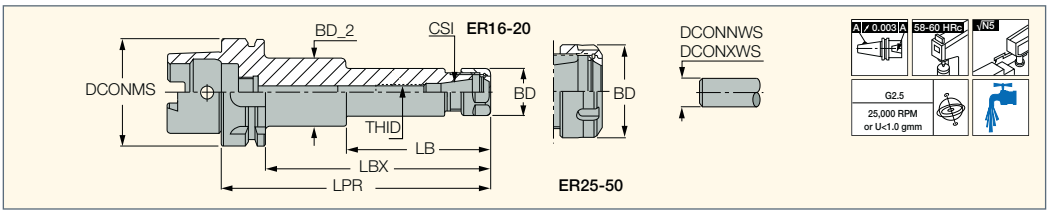
| Designation | | | | | |
|---|---|---|---|---|---|
| **HSK A50 ER16X100M** | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 ER20X100M*** | NUT ER20 MINI | WRENCH ER20 MINI* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A63 ER16X100M** | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER16X120M** | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER16X160M** | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER20X100M** | NUT ER20 MINI | WRENCH ER20 MINI* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER20X120M** | NUT ER20 MINI | WRENCH ER20 MINI* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER20X160M** | NUT ER20 MINI | WRENCH ER20 MINI* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A100 ER16X100M** | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER16X160M** | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER20X100M** | NUT ER20 MINI | WRENCH ER20 MINI* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER20X160M** | NUT ER20 MINI | WRENCH ER20 MINI* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

* Optional, to be ordered separately

## *HSK*

### HSK A-ER

DIN6499 ER Collet Chucks with HSK DIN69893 Form A Tapered Shanks




| Designation | DCONMS | CSI | DCONNWS[2] | DCONXWS[3] | BD | BD_2 | LPR | LBX | LB | THID | DCP[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A40 ER16X60 | 40.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 60.00 | 40.0 | 27.00 | M10X1.5-6H | 1 | 0.27 |
| HSK A40 ER16X80 | 40.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 80.00 | 60.0 | 27.00 | M10 | 1 | 0.36 |
| HSK A40 ER25X100 | 40.00 | ER25 | 1.0 | 16.0 | 42.00 | 32.40 | 100.00 | 80.0 | 28.00 | M16 | 1 | 0.49 |
| HSK A40 ER25X60 | 40.00 | ER25 | 1.0 | 16.0 | 42.00 | 32.40 | 60.00 | 40.0 | 28.00 | M16X2-6H | 1 | 0.41 |
| HSK A40 ER25X80 | 40.00 | ER25 | 1.0 | 16.0 | 42.00 | 32.40 | 80.00 | 60.0 | 28.00 | M18X1.5 | 1 | 0.50 |
| HSK A40 ER32X100 | 40.00 | ER32 | 2.0 | 20.0 | 50.00 | 40.40 | 100.00 | 80.0 | 31.00 | M22X1.5 | 1 | 0.58 |
| HSK A50 ER16X100 | 50.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 100.00 | 74.0 | 27.00 | M10 | 1 | 0.61 |
| HSK A50 ER20X100 | 50.00 | ER20 | 1.0 | 13.0 | 34.00 | 34.00 | 100.00 | 74.0 | 28.00 | M12 | 1 | 0.70 |
| HSK A50 ER25X100* | 50.00 | ER25 | 1.0 | 16.0 | 42.00 | 41.80 | 100.00 | 74.0 | 28.50 | M16 | 1 | 0.79 |
| HSK A50 ER25X80* | 50.00 | ER25 | 1.0 | 16.0 | 42.00 | 32.40 | 80.00 | 54.0 | 28.00 | M8 | 1 | 0.53 |
| HSK A50 ER32X100 | 50.00 | ER32 | 2.0 | 20.0 | 50.00 | 40.40 | 100.00 | 74.0 | 31.00 | M22X1.5 | 1 | 0.76 |
| HSK A50 ER32X160* | 50.00 | ER32 | 2.0 | 20.0 | 50.00 | 40.00 | 160.00 | 134.0 | - | M22X1.5 | 1 | 1.00 |
| HSK A63 ER16X80 | 63.00 | ER16 | 0.5 | 10.0 | 28.00 | - | 80.00 | 54.0 | - | M10 | 1 | 0.75 |
| HSK A63 ER16X100 | 63.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 100.00 | 74.0 | 27.00 | M10 | 1 | 0.86 |
| HSK A63 ER16X120 | 63.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 120.00 | 94.0 | 27.00 | M10 | 1 | 0.96 |
| HSK A63 ER16X160 | 63.00 | ER16 | 0.5 | 10.0 | 28.00 | 40.00 | 160.00 | 134.0 | 85.60 | M10 | 1 | 1.38 |
| HSK A63 ER16X180 [1] | 63.00 | ER16 | 0.5 | 10.0 | 28.00 | 44.20 | 180.00 | 154.0 | 84.00 | - | 1 | 1.45 |
| HSK A63 ER20X100 | 63.00 | ER20 | 1.0 | 13.0 | 34.00 | 34.00 | 100.00 | 74.0 | 28.00 | M12 | 1 | 0.94 |
| HSK A63 ER20X120 | 63.00 | ER20 | 1.0 | 13.0 | 34.00 | 34.00 | 120.00 | 94.0 | 28.00 | M12 | 1 | 1.09 |
| HSK A63 ER20X160 | 63.00 | ER20 | 1.0 | 13.0 | 34.00 | 45.00 | 160.00 | 134.0 | 85.00 | M12 | 1 | 1.59 |
| HSK A63 ER25X100 | 63.00 | ER25 | 1.0 | 16.0 | 42.00 | 42.00 | 100.00 | 74.0 | 28.50 | M16 | 1 | 1.10 |
| HSK A63 ER25X120 | 63.00 | ER25 | 1.0 | 16.0 | 42.00 | 42.00 | 120.00 | 94.0 | 28.50 | M16 | 1 | 3.70 |
| HSK A63 ER25X160 | 63.00 | ER25 | 1.0 | 16.0 | 42.00 | 42.00 | 160.00 | 134.0 | 28.50 | M16 | 1 | 4.50 |
| HSK A63 ER25X80 | 63.00 | ER25 | 1.0 | 16.0 | 42.00 | 42.00 | 80.00 | 54.0 | 28.50 | M8 | 1 | 0.92 |
| HSK A63 ER32X100 | 63.00 | ER32 | 2.0 | 20.0 | 50.00 | 50.00 | 100.00 | 74.0 | 36.00 | M22X1.5 | 1 | 1.18 |
| HSK A63 ER32X120 | 63.00 | ER32 | 2.0 | 20.0 | 50.00 | 50.00 | 120.00 | 94.0 | 36.00 | M22X1.5 | 1 | 1.46 |
| HSK A63 ER32X160 | 63.00 | ER32 | 2.0 | 20.0 | 50.00 | 50.00 | 160.00 | 134.0 | 36.00 | M22X1.5 | 1 | 1.99 |
| HSK A63 ER32X80 | 63.00 | ER32 | 2.0 | 20.0 | 50.00 | 40.00 | 80.00 | 54.0 | 31.00 | M18X1-6H | 1 | 0.84 |
| HSK A63 ER40X100 | 63.00 | ER40 | 3.0 | 26.0 | 63.00 | 50.40 | 100.00 | 74.0 | 34.00 | M28X1.5 | 1 | 1.16 |
| HSK A63 ER40X120 | 63.00 | ER40 | 3.0 | 26.0 | 63.00 | 50.40 | 120.00 | 94.0 | 34.00 | M28X1.5 | 1 | 1.38 |
| HSK A63 ER40X160 | 63.00 | ER40 | 3.0 | 26.0 | 63.00 | 50.40 | 160.00 | 134.0 | 34.00 | M28X1.5 | 1 | 1.99 |
| HSK A63 ER40X 80 | 63.00 | ER40 | 3.0 | 26.0 | 63.00 | 50.40 | 80.00 | 54.0 | 34.00 | M18X1-6H | 1 | 0.92 |
| HSK A100 ER16X100 | 100.00 | ER16 | 0.5 | 10.0 | 28.00 | 28.00 | 100.00 | 71.0 | 27.00 | M10 | 1 | 2.21 |
| HSK A100 ER16X160 | 100.00 | ER16 | 0.5 | 10.0 | 28.00 | 40.00 | 160.00 | 131.0 | 85.00 | M10 | 1 | 2.71 |
| HSK A100 ER20X100 | 100.00 | ER20 | 1.0 | 13.0 | 34.00 | 34.00 | 100.00 | 71.0 | 28.00 | M12 | 1 | 2.29 |
| HSK A100 ER20X160 | 100.00 | ER20 | 1.0 | 13.0 | 34.00 | 50.00 | 160.00 | 131.0 | 85.00 | M12 | 1 | 3.08 |
| HSK A100 ER25X100 | 100.00 | ER25 | 1.0 | 16.0 | 42.00 | 42.00 | 100.00 | 71.0 | 28.50 | M16 | 1 | 2.47 |
| HSK A100 ER25X120 | 100.00 | ER25 | 1.0 | 16.0 | 42.00 | 42.00 | 120.00 | 91.0 | 28.50 | M16 | 1 | 2.65 |
| HSK A100 ER25X160 | 100.00 | ER25 | 1.0 | 16.0 | 42.00 | 42.00 | 160.00 | 134.0 | 28.50 | M16 | 1 | 3.02 |
| HSK A100 ER32X100 | 100.00 | ER32 | 2.0 | 20.0 | 50.00 | 50.00 | 100.00 | 71.0 | 36.00 | M22X1.5 | 1 | 2.69 |
| HSK A100 ER32X120 | 100.00 | ER32 | 2.0 | 20.0 | 50.00 | 50.00 | 120.00 | 91.0 | 36.00 | M22X1.5 | 1 | 2.80 |
| HSK A100 ER32X160 | 100.00 | ER32 | 2.0 | 20.0 | 50.00 | 50.00 | 160.00 | 131.0 | 36.00 | M22X1.5 | 1 | 3.32 |
| HSK A100 ER40X100 | 100.00 | ER40 | 3.0 | 26.0 | 63.00 | 63.00 | 100.00 | 71.0 | 37.00 | - | 1 | 2.80 |
| HSK A100 ER40X120 | 100.00 | ER40 | 3.0 | 26.0 | 63.00 | 63.00 | 120.00 | 91.0 | 37.00 | M28X1.5 | 1 | 3.17 |
| HSK A100 ER40X160 | 100.00 | ER40 | 3.0 | 26.0 | 63.00 | 63.00 | 160.00 | 131.0 | 37.00 | M28X1.5 | 1 | 4.08 |
| HSK A100 ER50X100 | 100.00 | ER50 | 10.0 | 34.0 | 78.00 | 78.00 | 100.00 | 71.0 | 50.00 | M22X1.5 | 1 | 2.88 |

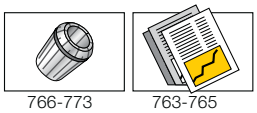
- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).

[1] Attention: different design

[2] Minimum diameter

[3] Maximum diameter

[4] 1 - Slot for data chip, 0 - Without slot for data chip



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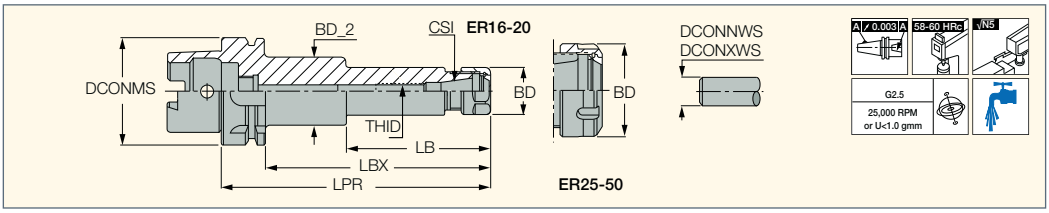
Continued

## *HSK*

**HSK A-ER**
DIN6499 ER Collet Chucks with
HSK DIN69893 Form A
Tapered Shanks




### Spare Parts

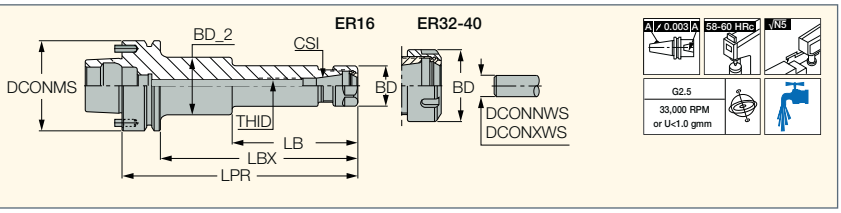
| Designation | | | | | |
|---|---|---|---|---|---|
| **HSK A40 ER16X60** | NUT ER16 TOP | WRENCH ER16* | | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK A40 ER16X80** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK A40 ER25X100** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK A40 ER25X60** | NUT ER25 TOP | WRENCH ER25* | | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK A40 ER25X80** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK A40 ER32X100** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK A50 ER16X100** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 ER20X100** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 ER25X100*** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 ER25X80*** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 ER32X100** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 ER32X160*** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A63 ER16X80** | NUT ER16 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER16X100** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER16X120** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER16X160** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER16X180** | NUT ER16 TOP | WRENCH ER16* | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER20X100** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER20X120** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER20X160** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER25X100** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER25X120** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER25X160** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER25X80** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 8X1.25* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER32X100** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER32X120** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER32X160** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER32X80** | NUT ER32 TOP | WRENCH ER32* | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER40X100** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER40X120** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER40X160** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 ER40X 80** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A100 ER16X100** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER16X160** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER20X100** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER20X160** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER25X100** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER25X120** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER25X160** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER32X100** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER32X120** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER32X160** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER40X100** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER40X120** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER40X160** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 ER50X100** | NUT ER50 UM | WRENCH ER50* | | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

* Optional, to be ordered separately

## *HSK*

### HSK FM-ER

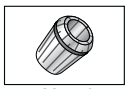
DIN6499 ER Collet Chucks with HSK DIN69893 FM Tapered Shanks with Two Pins for MAKINO Machine MAG Models




| Designation | DCONMS | CSI | LPR | DCONNWS(2) | DCONXWS(3) | BD | BD_2 | LBX | LB | THID | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HSK FM63 ER16X80** (1) | 63.00 | ER16 | 80.00 | 0.5 | 10.0 | 28.00 | - | 54.0 | - | M10 | 0 | 0.81 |
| **HSK FM63 ER16X100** (1) | 63.00 | ER16 | 100.00 | 0.5 | 10.0 | 28.00 | - | 74.0 | - | M10 | 0 | 0.87 |
| **HSK FM63 ER16X120** (1) | 63.00 | ER16 | 120.00 | 0.5 | 10.0 | 28.00 | - | 94.0 | - | M10 | 0 | 0.98 |
| **HSK FM63 ER16X160** (1) | 63.00 | ER16 | 160.00 | 0.5 | 10.0 | 28.00 | 40.00 | 134.0 | 85.60 | M10 | 0 | 1.32 |
| **HSK FM63 ER32X80** (1) | 63.00 | ER32 | 80.00 | 2.0 | 20.0 | 50.00 | - | 54.0 | - | - | 0 | 0.96 |
| **HSK FM63 ER32X100** (1) | 63.00 | ER32 | 100.00 | 2.0 | 20.0 | 50.00 | - | 74.0 | - | M22X1.5 | 0 | 1.22 |
| **HSK FM63 ER40X80** | 63.00 | ER40 | 80.00 | 3.0 | 26.0 | 63.00 | 50.00 | 54.0 | 32.00 | - | 0 | 0.94 |
| **HSK FM63 ER40X100** (1) | 63.00 | ER40 | 100.00 | 3.0 | 26.0 | 63.00 | 50.00 | 74.0 | 32.00 | M22X1.5 | 0 | 1.16 |
| **HSK FM80 ER16X85** | 80.00 | ER16 | 85.00 | 0.5 | 10.0 | 28.00 | - | 59.0 | - | M10 | 0 | 3.00 |
| **HSK FM80 ER16X120** | 80.00 | ER16 | 120.00 | 0.5 | 10.0 | 28.00 | - | 94.0 | - | M10 | 0 | 3.70 |
| **HSK FM80 ER32X85** | 80.00 | ER32 | 85.00 | 2.0 | 20.0 | 50.00 | - | 59.0 | - | M8 | 0 | 3.00 |
| **HSK FM80 ER32X120** | 80.00 | ER32 | 120.00 | 2.0 | 20.0 | 50.00 | - | 94.0 | - | M22X1.5 | 0 | 1.88 |

- Used on Makino machine models MAG
- The anti-slip pins can be removed, turning the toolholders into a standard HSK F63 type
- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately)

(1) Please check availbility
(2) Minimum diameter
(3) Maximum diameter
(4) 1 - Slot for data chip, 0 - Without slot for data chip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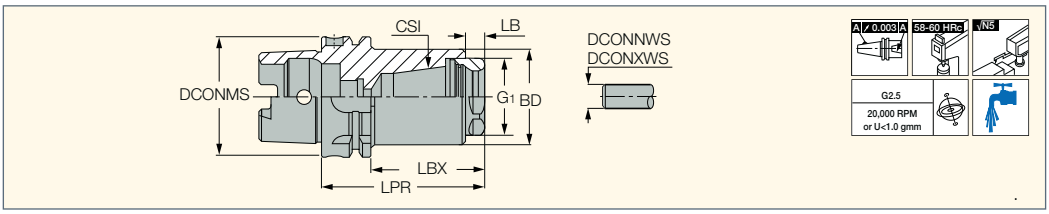
## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| **HSK FM63 ER16X80** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK FM63 ER16X100** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK FM63 ER16X120** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK FM63 ER16X160** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK FM63 ER32X80** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK FM63 ER32X100** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK FM63 ER40X80** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 16X2* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK FM63 ER40X100** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK FM80 ER16X85** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK FM80 ER16X120** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK FM80 ER32X85** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 8X1.25* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK FM80 ER32X120** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |

* Optional, to be ordered separately

## HSK SHORTIN

**HSK A-ER-SHORT**
Short DIN6499 ER Collet Chucks with HSK DIN69893 Form A Tapered Shanks




| Designation | DCONMS | CSI | DCONNWS(1) | DCONXWS(2) | BD | LPR | LBX | LB | G1 | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A63 ER32 SHORT | 63.00 | ER32 | 2.0 | 20.0 | 50.00 | 81.00 | 55.0 | 9.50 | M40X1.5 | 1 | 1.13 |
| HSK A100 ER32 SHORT | 100.00 | ER32 | 2.0 | 20.0 | 50.00 | 89.50 | 60.5 | 9.50 | M40X1.5 | 1 | 2.54 |
| HSK A100 ER40 SHORT | 100.00 | ER40 | 3.0 | 26.0 | 70.00 | 104.50 | 75.5 | 9.50 | M50X1.5 | 1 | 3.51 |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).

(1) Minimum diameter
(2) Maximum diameter
(3) 1 - Slot for data chip, 0 - Without slot for data chip

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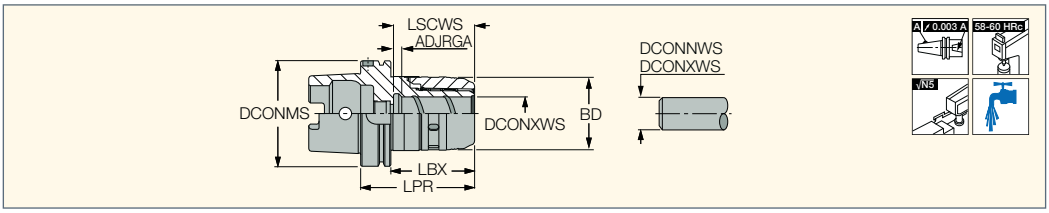
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| HSK A63 ER32 SHORT | NUT ER32 SHORT | WRENCH ER32 SHORT* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A100 ER32 SHORT | NUT ER32 SHORT | WRENCH ER32 SHORT* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 ER40 SHORT | NUT ER40 SHORT | WRENCH ER40 SHORT* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

* Optional, to be ordered separately

## HSK MAXIN

**HSK A-MAXIN**
Power Chucks with HSK DIN69893 Form A Tapered Shanks




| Designation | DCONMS | DCONNWS(1) | DCONXWS(2) | BD | LPR | LBX | ADJRGA | LSCWS | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HSK A63 MAXIN20X95 | 63.00 | 6.0 | 20.0 | 53.00 | 95.00 | 69.0 | 9.50 | 65.5 | 1 | 1.02 |
| HSK A63 MAXIN32X113 | 63.00 | 6.0 | 32.0 | 70.00 | 113.00 | 87.0 | 15.00 | 85.0 | 1 | 1.32 |
| HSK A100 MAXIN20X115 | 100.00 | 6.0 | 20.0 | 53.00 | 115.00 | 86.0 | 13.00 | 69.0 | 1 | 2.61 |
| HSK A100 MAXIN32X110 | 100.00 | 6.0 | 32.0 | 70.00 | 110.00 | 81.0 | 8.00 | 78.0 | 1 | 2.72 |
| HSK A100 MAXIN32X135 | 100.00 | 6.0 | 32.0 | 70.00 | 135.00 | 106.0 | 16.00 | 87.0 | 1 | 3.45 |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately). • Use of DCONXWS diameter tools provides best performance, as collets reduce the gripping force.

(1) Minimum diameter by using a reduction collet
(2) Max. diameter without a collet
(3) 1 - Slot for data chip, 0 - Without slot for data chip

773-774 807 631-632

### Spare Parts

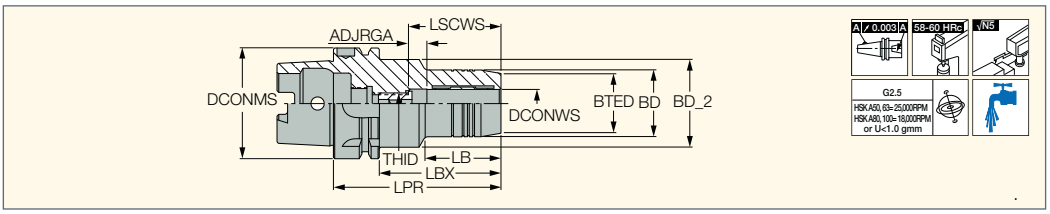
| Designation | | | | |
|---|---|---|---|---|
| HSK A63 MAXIN20X95 | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 MAXIN32X113 | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A100 MAXIN20X115 | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 MAXIN32X110 | WRENCH MAXIN 32 HOOK* | | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 MAXIN32X135 | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

* Optional, to be ordered separately

**HSK HYDROFIT** HOLDING LINE

## HSK A-HYDRO

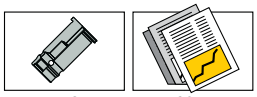
Hydraulic Chucks with HSK DIN69893 Form A Tapered Shanks, for Semi-Finish and Finish Applications




| Designation | DCONMS | DCONWS | BTED | BD | BD_2 | LPR | LBX | LB | ADJRGA | LSCWS | THID | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A50 HYDRO 6X80 | 50.00 | 6.00 | 23.00 | 26.00 | 42.00 | 80.00 | 54.0 | 35.00 | 10.00 | 37.0 | M5 | 1 | 0.75 |
| HSK A50 HYDRO 8X80 | 50.00 | 8.00 | 25.00 | 28.00 | 42.00 | 80.00 | 54.0 | 36.00 | 10.00 | 37.0 | M6 | 1 | 0.77 |
| HSK A50 HYDRO 10X85 | 50.00 | 10.00 | 27.00 | 30.00 | 42.00 | 85.00 | 59.0 | 41.00 | 10.00 | 42.0 | M8X1 | 1 | 0.80 |
| HSK A50 HYDRO 12X90 | 50.00 | 12.00 | 29.00 | 32.00 | 42.00 | 90.00 | 64.0 | 47.00 | 10.00 | 47.0 | M10X1 | 1 | 0.80 |
| HSK A50 HYDRO 14X90 | 50.00 | 14.00 | 30.00 | 34.00 | 42.00 | 90.00 | 64.0 | 49.00 | 10.00 | 47.0 | M10X1 | 1 | 0.80 |
| HSK A50 HYDRO 16X95 | 50.00 | 16.00 | 34.00 | 38.00 | 42.00 | 95.00 | 69.0 | 52.00 | 10.00 | 52.0 | M12X1 | 1 | 0.96 |
| HSK A50 HYDRO 18X95 | 50.00 | 16.00 | 36.00 | 40.00 | 42.00 | 95.00 | 69.0 | 52.00 | 10.00 | 52.0 | M12X1 | 1 | 0.98 |
| HSK A50 HYDRO 20X100 | 50.00 | 20.00 | 38.00 | 42.00 | 42.00 | 100.00 | 74.0 | 74.00 | 10.00 | 52.0 | M10X1 | 1 | 1.08 |
| HSK A63 HYDRO 6X80 | 63.00 | 6.00 | 23.00 | 26.00 | 50.00 | 80.00 | 54.0 | 33.00 | 10.00 | 37.0 | M5 | 1 | 1.09 |
| HSK A63 HYDRO 8X80 | 63.00 | 8.00 | 25.00 | 28.00 | 50.00 | 80.00 | 54.0 | 33.00 | 10.00 | 37.0 | M6 | 1 | 1.10 |
| HSK A63 HYDRO 10X85 | 63.00 | 10.00 | 27.00 | 30.00 | 50.00 | 85.00 | 59.0 | 39.00 | 10.00 | 42.0 | M8X1 | 1 | 1.13 |
| HSK A63 HYDRO 12X90 | 63.00 | 12.00 | 29.00 | 32.00 | 50.00 | 90.00 | 64.0 | 44.00 | 10.00 | 47.0 | M10X1 | 1 | 1.18 |
| HSK A63 HYDRO 14X90 | 63.00 | 14.00 | 30.00 | 34.00 | 50.00 | 90.00 | 64.0 | 46.00 | 10.00 | 47.0 | M10X1 | 1 | 1.13 |
| HSK A63 HYDRO 16X95 | 63.00 | 16.00 | 34.00 | 38.00 | 50.00 | 95.00 | 69.0 | 52.00 | 10.00 | 52.0 | M12X1 | 1 | 1.28 |
| HSK A63 HYDRO 18X95 | 63.00 | 18.00 | 36.00 | 40.00 | 50.00 | 95.00 | 69.0 | 52.00 | 10.00 | 52.0 | M12X1 | 1 | 1.32 |
| HSK A63 HYDRO 20X100 | 63.00 | 20.00 | 38.00 | 42.00 | 50.00 | 100.00 | 74.0 | 58.00 | 10.00 | 52.0 | M16X1 | 1 | 1.32 |
| HSK A63 HYDRO 25X120 | 63.00 | 25.00 | 46.00 | 50.00 | 50.00 | 120.00 | 94.0 | 94.00 | 10.00 | 58.0 | M16X1 | 1 | 1.83 |
| HSK A63 HYDRO 32X125 | 63.00 | 32.00 | 56.00 | 60.00 | 53.00 | 125.00 | 99.0 | 83.00 | 10.00 | 62.0 | M16X1 | 1 | 2.32 |
| HSK A80 HYDRO 6X85 | 80.00 | 6.00 | 23.00 | 26.00 | 50.00 | 85.00 | 59.0 | 37.00 | 10.00 | 37.0 | M5 | 1 | 1.71 |
| HSK A80 HYDRO 14X95 | 80.00 | 14.00 | 30.00 | 34.00 | 50.00 | 95.00 | 69.0 | 47.00 | 10.00 | 47.0 | M10X1 | 1 | 2.40 |
| HSK A80 HYDRO 16X100 | 80.00 | 16.00 | 34.00 | 38.00 | 56.00 | 100.00 | 74.0 | 52.00 | 10.00 | 52.0 | M12X1 | 1 | 1.91 |
| HSK A80 HYDRO 18X100 | 80.00 | 18.00 | 36.00 | 40.00 | 50.00 | 100.00 | 74.0 | 52.00 | 10.00 | 52.0 | M12X1 | 1 | 1.92 |
| HSK A80 HYDRO 20X105 | 80.00 | 20.00 | 38.00 | 42.00 | 50.00 | 105.00 | 79.0 | 52.00 | 10.00 | 52.0 | M16X1 | 1 | 2.09 |
| HSK A80 HYDRO 25X115 | 80.00 | 25.00 | 46.00 | 50.00 | 50.00 | 115.00 | 89.0 | 58.00 | 10.00 | 58.0 | M16X1 | 1 | 2.35 |
| HSK A80 HYDRO 32X120 | 80.00 | 32.00 | 56.00 | 60.00 | 50.00 | 120.00 | 94.0 | 62.00 | 10.00 | 62.0 | M16X1 | 1 | 2.65 |
| HSK A100 HYDRO 6X85 | 100.00 | 6.00 | 23.00 | 26.00 | 50.00 | 85.00 | 56.0 | 29.00 | 10.00 | 37.0 | M5 | 1 | 2.57 |
| HSK A100 HYDRO 8X85 | 100.00 | 8.00 | 25.00 | 28.00 | 50.00 | 85.00 | 56.0 | 29.00 | 10.00 | 37.0 | M6 | 1 | 2.54 |
| HSK A100 HYDRO 10X90 | 100.00 | 10.00 | 27.00 | 30.00 | 50.00 | 90.00 | 61.0 | 35.00 | 10.00 | 42.0 | M8X1 | 1 | 2.55 |
| HSK A100 HYDRO 12X95 | 100.00 | 12.00 | 29.00 | 32.00 | 50.00 | 95.00 | 66.0 | 40.00 | 10.00 | 47.0 | M10X1 | 1 | 2.60 |
| HSK A100 HYDRO 14X95 | 100.00 | 14.00 | 30.00 | 34.00 | 63.00 | 95.00 | 66.0 | 42.00 | 10.00 | 47.0 | M10X1 | 1 | 2.81 |
| HSK A100 HYDRO 16X100 | 100.00 | 16.00 | 34.00 | 38.00 | 50.00 | 100.00 | 71.0 | 47.00 | 10.00 | 52.0 | M12X1 | 1 | 2.73 |
| HSK A100 HYDRO 18X100 | 100.00 | 18.00 | 36.00 | 40.00 | 50.00 | 100.00 | 71.0 | 48.00 | 10.00 | 52.0 | M12X1 | 1 | 2.76 |
| HSK A100 HYDRO 20X105 | 100.00 | 20.00 | 38.00 | 42.00 | 63.00 | 105.00 | 76.0 | 54.00 | 10.00 | 52.0 | M16X1 | 1 | 2.83 |
| HSK A100 HYDRO 25X115 | 100.00 | 25.00 | 46.00 | 50.00 | 63.00 | 115.00 | 86.0 | 51.00 | 10.00 | 58.0 | M16X1 | 1 | 3.47 |
| HSK A100 HYDRO 32X120 | 100.00 | 32.00 | 56.00 | 60.00 | 63.00 | 120.00 | 91.0 | 59.00 | 10.00 | 62.0 | M16X1 | 1 | 3.73 |

- Chucking forces will be reduced by 25% if reduction sleeves are used.
- A cooling tube must be used with coolant through HSK spindles (order separately).
- Reduction sleeves are available for 12, 20, 25 and 32 mm bore diameters (must be ordered separately).
- Clamping wrench (wrench HYDRO HEX 4) and test bar to be ordered separately.

(1) 1 - Slot for data chip, 0 - Without slot for data chip



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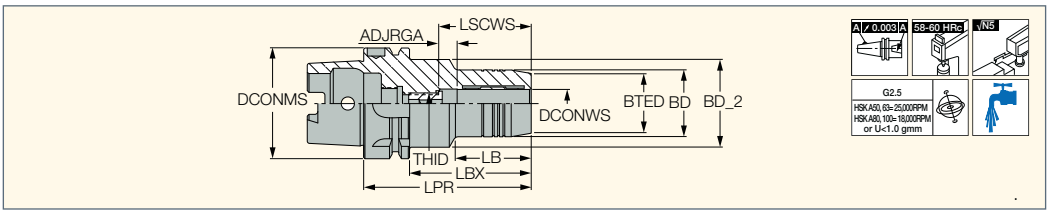
HSK HYDROFIT HOLDING LINE

**HSK A-HYDRO**

Hydraulic Chucks with HSK DIN69893 Form A Tapered Shanks, for Semi-Finish and Finish Applications



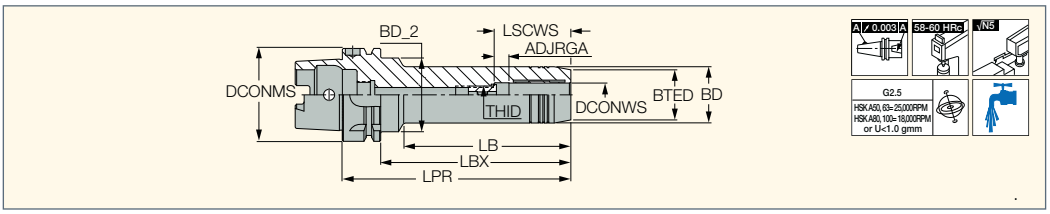

## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| **HSK A50 HYDRO 6X80** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 6* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 HYDRO 8X80** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 8* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 HYDRO 10X85** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 10* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 HYDRO 12X90** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 12* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 HYDRO 14X90** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 14* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 HYDRO 16X95** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 16* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 HYDRO 18X95** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 18* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A50 HYDRO 20X100** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 20* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A63 HYDRO 6X80** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 6* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 8X80** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 8* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 10X85** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 10* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 12X90** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 12* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 14X90** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 14* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 16X95** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 16* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 18X95** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 18* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 20X100** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 20* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 25X120** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 25* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 32X125** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 32* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A80 HYDRO 6X85** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 6* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A 80* | WRENCH COOL TUBE HSK80* |
| **HSK A80 HYDRO 14X95** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 14* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A 80* | WRENCH COOL TUBE HSK80* |
| **HSK A80 HYDRO 16X100** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 16* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A 80* | WRENCH COOL TUBE HSK80* |
| **HSK A80 HYDRO 18X100** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 18* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A 80* | WRENCH COOL TUBE HSK80* |
| **HSK A80 HYDRO 20X105** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 20* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A 80* | WRENCH COOL TUBE HSK80* |
| **HSK A80 HYDRO 25X115** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 25* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A 80* | WRENCH COOL TUBE HSK80* |
| **HSK A80 HYDRO 32X120** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 32* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A 80* | WRENCH COOL TUBE HSK80* |
| **HSK A100 HYDRO 6X85** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 6* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 8X85** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 8* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 10X90** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 10* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 12X95** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 12* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 14X95** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 14* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 16X100** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 16* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 18X100** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 18* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 20X105** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 20* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 25X115** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 25* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 32X120** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 32* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

* Optional, to be ordered separately

**HSK HYDROFIT** HOLDING LINE

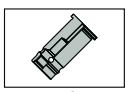
**HSK A-HYDRO (long)**
Long Projection Hydraulic Chucks with HSK DIN69893 Form A Tapered Shanks, for Semi-Finish and Finish Applications




| Designation | DCONMS | DCONWS | BTED | BD | BD_2 | LPR | LBX | LB | ADJRGA | LSCWS | THID | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A63 HYDRO 6X150 | 63.00 | 6.00 | 23.00 | 26.00 | 50.00 | 150.00 | 124.0 | 103.00 | 10.00 | 37.0 | M5 | 1 | 1.36 |
| HSK A63 HYDRO 6X200 | 63.00 | 6.00 | 23.00 | 26.00 | 50.00 | 200.00 | 174.0 | 153.00 | 10.00 | 37.0 | M5 | 1 | 1.57 |
| HSK A63 HYDRO 8X150 | 63.00 | 8.00 | 25.00 | 28.00 | 50.00 | 150.00 | 124.0 | 104.00 | 10.00 | 37.0 | M6 | 1 | 1.41 |
| HSK A63 HYDRO 8X200 | 63.00 | 8.00 | 25.00 | 28.00 | 50.00 | 200.00 | 174.0 | 154.00 | 10.00 | 37.0 | M6 | 1 | 1.68 |
| HSK A63 HYDRO 10X150 | 63.00 | 10.00 | 27.00 | 30.00 | 50.00 | 150.00 | 124.0 | 104.00 | 10.00 | 42.0 | M8X1 | 1 | 1.45 |
| HSK A63 HYDRO 10X200 | 63.00 | 10.00 | 27.00 | 30.00 | 50.00 | 200.00 | 174.0 | 154.00 | 10.00 | 42.0 | M8X1 | 1 | 1.74 |
| HSK A63 HYDRO 12X150 | 63.00 | 12.00 | 29.00 | 32.00 | 50.00 | 150.00 | 124.0 | 105.00 | 10.00 | 47.0 | M10X1 | 1 | 1.49 |
| HSK A63 HYDRO 12X200 | 63.00 | 12.00 | 29.00 | 32.00 | 50.00 | 200.00 | 174.0 | 155.00 | 10.00 | 47.0 | M10X1 | 1 | 1.83 |
| HSK A63 HYDRO 14X150 | 63.00 | 14.00 | 30.00 | 34.00 | 50.00 | 150.00 | 124.0 | 105.00 | 10.00 | 47.0 | M10X1 | 1 | 1.58 |
| HSK A63 HYDRO 14X200 | 63.00 | 14.00 | 30.00 | 34.00 | 50.00 | 200.00 | 174.0 | 155.00 | 10.00 | 47.0 | M10X1 | 1 | 1.95 |
| HSK A63 HYDRO 16X150 | 63.00 | 16.00 | 34.00 | 38.00 | 50.00 | 150.00 | 124.0 | 106.50 | 10.00 | 52.0 | M12X1 | 1 | 1.74 |
| HSK A63 HYDRO 16X200 | 63.00 | 16.00 | 34.00 | 38.00 | 50.00 | 200.00 | 174.0 | 156.50 | 10.00 | 52.0 | M12X1 | 1 | 2.17 |
| HSK A63 HYDRO 18X150 | 63.00 | 18.00 | 36.00 | 40.00 | 50.00 | 150.00 | 124.0 | 107.00 | 10.00 | 52.0 | M12X1 | 1 | 1.81 |
| HSK A63 HYDRO 18X200 | 63.00 | 18.00 | 36.00 | 40.00 | 50.00 | 200.00 | 174.0 | 157.00 | 10.00 | 52.0 | M12X1 | 1 | 2.30 |
| HSK A63 HYDRO 20X150 | 63.00 | 20.00 | 38.00 | 42.00 | 50.00 | 150.00 | 124.0 | 108.00 | 10.00 | 52.0 | M12X1 | 1 | 1.89 |
| HSK A63 HYDRO 20X200 | 63.00 | 20.00 | 38.00 | 42.00 | 50.00 | 200.00 | 174.0 | 158.00 | 10.00 | 52.0 | M12X1 | 1 | 2.43 |
| HSK A63 HYDRO 25X150 | 63.00 | 25.00 | 46.00 | 50.00 | 50.00 | 150.00 | 124.0 | - | 10.00 | 58.0 | M16X1 | 1 | 2.29 |
| HSK A63 HYDRO 25X200 | 63.00 | 25.00 | 46.00 | 50.00 | 50.00 | 200.00 | 174.0 | - | 10.00 | 58.0 | M16X1 | 1 | 3.05 |
| HSK A100 HYDRO 6X150 | 100.00 | 6.00 | 23.00 | 26.00 | 50.00 | 150.00 | 121.0 | 100.00 | 10.00 | 37.0 | M5 | 1 | 3.00 |
| HSK A100 HYDRO 6X200 | 100.00 | 6.00 | 23.00 | 26.00 | 63.00 | 200.00 | 171.0 | 144.00 | 10.00 | 37.0 | M5 | 1 | 3.29 |
| HSK A100 HYDRO 8X150 | 100.00 | 8.00 | 25.00 | 28.00 | 63.00 | 150.00 | 121.0 | 94.50 | 10.00 | 37.0 | M6 | 1 | 3.07 |
| HSK A100 HYDRO 8X200 | 100.00 | 8.00 | 25.00 | 28.00 | 63.00 | 200.00 | 171.0 | 144.50 | 10.00 | 37.0 | M6 | 1 | 3.29 |
| HSK A100 HYDRO 10X150 | 100.00 | 10.00 | 27.00 | 30.00 | 63.00 | 150.00 | 121.0 | 95.00 | 10.00 | 42.0 | M8X1 | 1 | 3.11 |
| HSK A100 HYDRO 10X200 | 100.00 | 10.00 | 27.00 | 30.00 | 50.00 | 200.00 | 171.0 | 151.00 | 10.00 | 42.0 | M8X1 | 1 | 3.27 |
| HSK A100 HYDRO 12X150 | 100.00 | 12.00 | 29.00 | 32.00 | 63.00 | 150.00 | 121.0 | 95.50 | 10.00 | 47.0 | M10X1 | 1 | 3.15 |
| HSK A100 HYDRO 12X200 | 100.00 | 12.00 | 29.00 | 32.00 | 63.00 | 200.00 | 171.0 | 145.50 | 10.00 | 47.0 | M10X1 | 1 | 3.46 |
| HSK A100 HYDRO 14X150 | 100.00 | 14.00 | 30.00 | 34.00 | 50.00 | 150.00 | 121.0 | 97.00 | 10.00 | 47.0 | M10X1 | 1 | 3.05 |
| HSK A100 HYDRO 14X200 | 100.00 | 14.00 | 30.00 | 34.00 | 50.00 | 200.00 | 171.0 | 147.00 | 10.00 | 47.0 | M10X1 | 1 | 3.56 |
| HSK A100 HYDRO 16X150 | 100.00 | 16.00 | 38.00 | 38.00 | 63.00 | 150.00 | 121.0 | 97.50 | 10.00 | 52.0 | M12X1 | 1 | 3.15 |
| HSK A100 HYDRO 16X200 | 100.00 | 16.00 | 38.00 | 38.00 | 63.00 | 200.00 | 171.0 | 147.50 | 10.00 | 52.0 | M12X1 | 1 | 3.73 |
| HSK A100 HYDRO 18X150 | 100.00 | 18.00 | 36.00 | 40.00 | 50.00 | 150.00 | 121.0 | 107.00 | 10.00 | 52.0 | M12X1 | 1 | 3.25 |
| HSK A100 HYDRO 18X200 | 100.00 | 18.00 | 36.00 | 40.00 | 63.00 | 200.00 | 171.0 | 148.00 | 10.00 | 52.0 | M12X1 | 1 | 3.86 |
| HSK A100 HYDRO 20X150 | 100.00 | 20.00 | 38.00 | 42.00 | 63.00 | 150.00 | 121.0 | 99.00 | 10.00 | 52.0 | M12X1 | 1 | 3.46 |
| HSK A100 HYDRO 20X200 | 100.00 | 20.00 | 38.00 | 42.00 | 63.00 | 200.00 | 171.0 | 149.00 | 10.00 | 52.0 | M12X1 | 1 | 4.01 |
| HSK A100 HYDRO 25X150 | 100.00 | 25.00 | 46.00 | 50.00 | 50.00 | 150.00 | 121.0 | - | 10.00 | 58.0 | M16X1 | 1 | 3.65 |
| HSK A100 HYDRO 25X200 | 100.00 | 25.00 | 46.00 | 50.00 | 63.00 | 200.00 | 171.0 | 136.00 | 10.00 | 58.0 | M16X1 | 1 | 4.67 |
| HSK A100 HYDRO 32X200 | 100.00 | 32.00 | 56.00 | 60.00 | 60.00 | 200.00 | 171.0 | - | 10.00 | 62.0 | M16X1 | 1 | 5.36 |

• Chucking forces will be reduced by 25% if reduction sleeves are used. • A cooling tube must be used with coolant through HSK spindles (order separately).
• Reduction sleeves are available for 12, 20, 25 and 32 mm bore diameters (must be ordered separately). • Clamping wrench (wrench HYDRO HEX4) and test bar to be ordered separately.

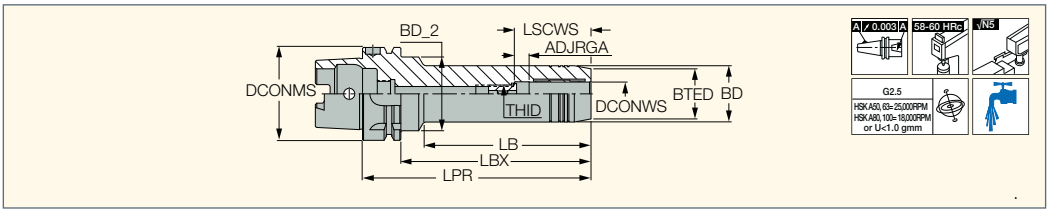
(1) 1 - Slot for data chip, 0 - Without slot for data chip


776

637

HSK HYDROFIT HOLDING LINE

**HSK A-HYDRO (long)**
Long Projection Hydraulic Chucks with HSK DIN69893 Form A Tapered Shanks, for Semi-Finish and Finish Applications




## Spare Parts

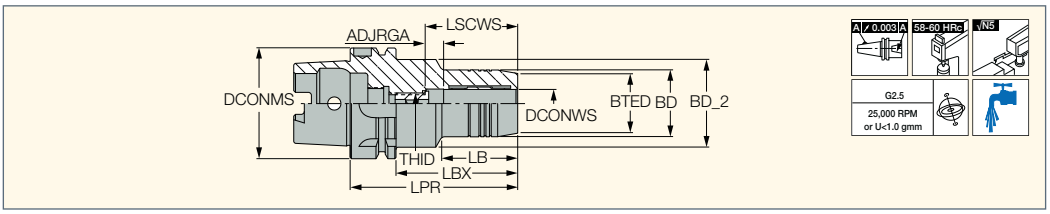
| Designation | | | | | |
|---|---|---|---|---|---|
| **HSK A63 HYDRO 6X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 6* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 6X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 6* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 8X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 8* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 8X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 8* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 10X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 10* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 10X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 10* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 12X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 12* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 12X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 12* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 14X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 14* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 14X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 14* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 16X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 16* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 16X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 16* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 18X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 18* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 18X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 18* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 20X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 20* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 20X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 20* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 25X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 25* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 HYDRO 25X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 25* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A100 HYDRO 6X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 6* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 6X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 6* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 8X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 8* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 8X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 8* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 10X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 10* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 10X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 10* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 12X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 12* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 12X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 12* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 14X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 14* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 14X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 14* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 16X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 16* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 16X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 16* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 18X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 18* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 18X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 18* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 20X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 20* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 20X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 20* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 25X150** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 25* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 25X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 25* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 HYDRO 32X200** | HYDRO CLAMP SCREW M8X14 | TEST BAR HYDRO 32* | WRENCH HYDRO HEX 4* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

* Optional, to be ordered separately

HSK HYDROFIT HOLDING LINE

**HSK A-HYDRO HD**

Heavy Duty, Short Hydraulic Chucks With HSK DIN69893 Form A Shanks




| Designation | DCONWS | BTED | BD_2 | BD | LPR | LB | ADJRGA | LSCWS | THID | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A63 HYDRO 12X80 HD | 12.00 | 32.00 | 52.50 | 42.00 | 80.00 | 34.50 | 10.00 | 46.0 | M8X1 | 1 | 1.25 |
| HSK A63 HYDRO 16X80 HD | 16.00 | 38.00 | - | 52.50 | 80.00 | - | 8.00 | 51.0 | M8X1 | 1 | 1.32 |
| HSK A63 HYDRO 20X80 HD | 20.00 | 38.00 | - | 52.50 | 80.00 | - | 8.00 | 51.0 | M8X1 | 1 | 1.45 |
| HSK A100 HYDRO 20X90 HD | 20.00 | 38.00 | - | 52.50 | 90.00 | - | 8.00 | 51.0 | M8X1 | 1 | 1.92 |
| HSK A100 HYDRO 32X100 HD | 32.00 | 58.50 | - | 72.00 | 100.00 | - | 9.00 | 61.0 | M8X1 | 1 | 3.80 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

## Spare Parts

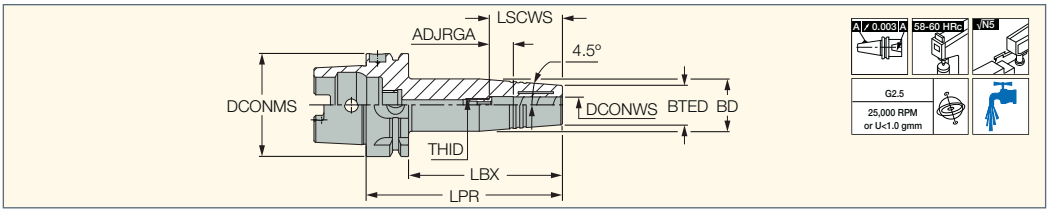
| Designation | | | |
|---|---|---|---|
| HSK A63 HYDRO 12X80 HD | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | ALLEN KEY SW5X100* |
| HSK A63 HYDRO 16X80 HD | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | ALLEN KEY SW5X100* |
| HSK A63 HYDRO 20X80 HD | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | ALLEN KEY SW5X100* |
| HSK A100 HYDRO 20X90 HD | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | ALLEN KEY SW5X100* |
| HSK A100 HYDRO 32X100 HD | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | ALLEN KEY SW6X100* |

* Optional, to be ordered separately

HSK HYDROFIT HOLDING LINE

**HSK A-HYDRO SF**

Slim Design, Hydraulic Chucks with HSK A Shanks



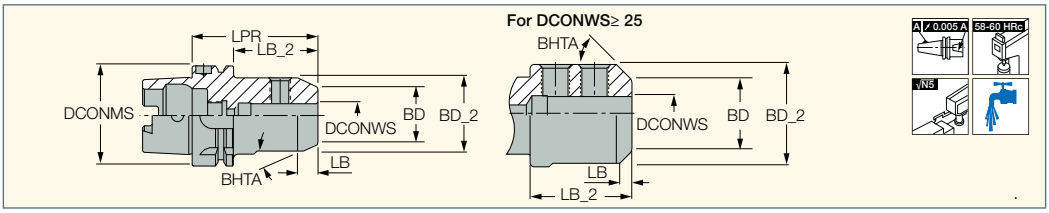

| Designation | DCONMS | DCONWS | BTED | BD | LPR | LBX | ADJRGA | LSCWS | THID | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A63 HYDRO 6X120 SF | 63.00 | 6.00 | 21.00 | 27.00 | 120.00 | 94.00 | 10.00 | 38.20 | M5x0.8 | 1 | 1.04 |
| HSK A63 HYDRO 6X80 SF | 63.00 | 6.00 | 21.00 | 27.00 | 80.00 | 54.00 | 10.00 | 38.20 | M10x1 | 1 | 0.87 |
| HSK A63 HYDRO 8X120 SF | 63.00 | 8.00 | 21.00 | 27.00 | 120.00 | 94.00 | 10.00 | 38.20 | M7x1 | 1 | 1.03 |
| HSK A63 HYDRO 8X80 SF | 63.00 | 8.00 | 21.00 | 27.00 | 80.00 | 54.00 | 10.00 | 38.20 | M10x1 | 1 | 0.86 |
| HSK A63 HYDRO 10X120 SF | 63.00 | 10.00 | 24.00 | 32.00 | 120.00 | 94.00 | 10.00 | 43.20 | M8x1 | 1 | 1.15 |
| HSK A63 HYDRO 10X85 SF | 63.00 | 10.00 | 24.00 | 32.00 | 85.00 | 59.00 | 10.00 | 42.70 | M10x1 | 1 | 0.94 |
| HSK A63 HYDRO 12X120 SF | 63.00 | 12.00 | 24.00 | 32.00 | 120.00 | 94.00 | 10.00 | 47.70 | M10x1 | 1 | 1.12 |
| HSK A63 HYDRO 12X90 SF | 63.00 | 12.00 | 24.00 | 32.00 | 90.00 | 64.00 | 10.00 | 47.70 | M10x1 | 1 | 0.95 |
| HSK A63 HYDRO 14X120 SF | 63.00 | 14.00 | 27.00 | 34.00 | 120.00 | 94.00 | 10.00 | 48.70 | M10x1 | 1 | 1.19 |
| HSK A63 HYDRO 14X90 SF | 63.00 | 14.00 | 27.00 | 34.00 | 90.00 | 64.00 | 10.00 | 64.00 | M10x1 | 1 | 0.99 |
| HSK A63 HYDRO 16X120 SF | 63.00 | 16.00 | 27.00 | 34.00 | 120.00 | 94.00 | 10.00 | 53.20 | M12x1 | 1 | 1.17 |
| HSK A63 HYDRO 16X95 SF | 63.00 | 16.00 | 27.00 | 34.00 | 95.00 | 69.00 | 10.00 | 53.20 | M12x1 | 1 | 1.00 |
| HSK A63 HYDRO 20X100 SF | 63.00 | 20.00 | 33.00 | 42.00 | 100.00 | 74.00 | 10.00 | 55.70 | M16x1 | 1 | 1.18 |
| HSK A63 HYDRO 20X120 SF | 63.00 | 20.00 | 33.00 | 42.00 | 120.00 | 94.00 | 10.00 | 55.70 | M16x1 | 1 | 1.39 |

New

(1) 1 - Slot for data chip, 0 - Without slot for data chip

## *HSK*

**HSK A-EM (DIN 1835 Form B)**
DIN6359 Side Clamp Holders
for DIN 1835 Form B Weldon
Shanks with HSK DIN69893
Form A Tapered Shanks




| Designation | DCONMS | DCONWS | BD | BD_2 | LPR | LB | LB_2 | BHTA | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **HSK A50 EM8X65*** | 50.00 | 8.00 | 20.00 | 28.00 | 65.00 | 8.6 | 39.00 | 25.0 | 1 | 0.56 |
| **HSK A50 EM10X80*** | 50.00 | 10.00 | 25.00 | 35.00 | 80.00 | 10.7 | 54.00 | 25.0 | 1 | 1.25 |
| **HSK A50 EM16X80*** | 50.00 | 16.00 | 36.00 | 48.00 | 80.00 | 12.9 | 54.00 | 25.0 | 1 | 1.00 |
| **HSK A50 EM20X80*** | 50.00 | 20.00 | 34.00 | 52.00 | 80.00 | 8.6 | 54.00 | 25.0 | 1 | 0.99 |
| **HSK A63 EM6X65** | 63.00 | 6.00 | 15.00 | 25.00 | 65.00 | 10.7 | 39.00 | 25.0 | 1 | 0.77 |
| **HSK A63 EM8X65** | 63.00 | 8.00 | 20.00 | 28.00 | 65.00 | 8.6 | 39.00 | 25.0 | 1 | 0.79 |
| **HSK A63 EM10X65** | 63.00 | 10.00 | 25.00 | 35.00 | 65.00 | 10.7 | 39.00 | 25.0 | 1 | 0.88 |
| **HSK A63 EM12X80** | 63.00 | 12.00 | 30.00 | 42.00 | 80.00 | 12.9 | 54.00 | 25.0 | 1 | 1.13 |
| **HSK A63 EM14X80** | 63.00 | 14.00 | 32.00 | 44.00 | 80.00 | 12.9 | 54.00 | 25.0 | 1 | 1.16 |
| **HSK A63 EM16X80** | 63.00 | 16.00 | 36.00 | 48.00 | 80.00 | 12.9 | 54.00 | 25.0 | 1 | 1.28 |
| **HSK A63 EM18X80** | 63.00 | 18.00 | 38.00 | 50.00 | 80.00 | 12.9 | 54.00 | 25.0 | 1 | 1.29 |
| **HSK A63 EM20X80** | 63.00 | 20.00 | 40.00 | 52.00 | 80.00 | 12.9 | 54.00 | 25.0 | 1 | 1.32 |
| **HSK A63 EM25X110** | 63.00 | 25.00 | 45.00 | 65.00 | 110.00 | 10.0 | 84.00 | 45.0 | 1 | 2.21 |
| **HSK A63 EM32X110** | 63.00 | 32.00 | 56.00 | 72.00 | 110.00 | 8.0 | 84.00 | 45.0 | 1 | 2.41 |
| **HSK A100 EM6X80** | 100.00 | 6.00 | 15.00 | 25.00 | 80.00 | 10.7 | 51.00 | 25.0 | 1 | 2.20 |
| **HSK A100 EM8X80** | 100.00 | 8.00 | 20.00 | 28.00 | 80.00 | 8.6 | 51.00 | 25.0 | 1 | 2.24 |
| **HSK A100 EM10X80** | 100.00 | 10.00 | 25.00 | 35.00 | 80.00 | 10.7 | 51.00 | 25.0 | 1 | 2.36 |
| **HSK A100 EM12X80** | 100.00 | 12.00 | 30.00 | 42.00 | 80.00 | 12.9 | 51.00 | 25.0 | 1 | 2.45 |
| **HSK A100 EM14X80** | 100.00 | 14.00 | 32.00 | 44.00 | 80.00 | 12.9 | 51.00 | 25.0 | 1 | 2.00 |
| **HSK A100 EM16X100** | 100.00 | 16.00 | 36.00 | 48.00 | 100.00 | 12.9 | 71.00 | 25.0 | 1 | 2.86 |
| **HSK A100 EM20X100** | 100.00 | 20.00 | 40.00 | 52.00 | 100.00 | 12.9 | 71.00 | 25.0 | 1 | 2.93 |
| **HSK A100 EM25X100** | 100.00 | 25.00 | 45.00 | 65.00 | 100.00 | 10.0 | 71.00 | 45.0 | 1 | 3.45 |
| **HSK A100 EM32X100** | 100.00 | 32.00 | 56.00 | 72.00 | 100.00 | 8.0 | 71.00 | 45.0 | 1 | 3.67 |
| **HSK A100 EM40X110** | 100.00 | 40.00 | 60.00 | 85.00 | 110.00 | 12.5 | 81.00 | 45.0 | 1 | 4.50 |

• A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).
**(1)** 1 - Slot for data chip, 0 - Without slot for data chip

### Spare Parts

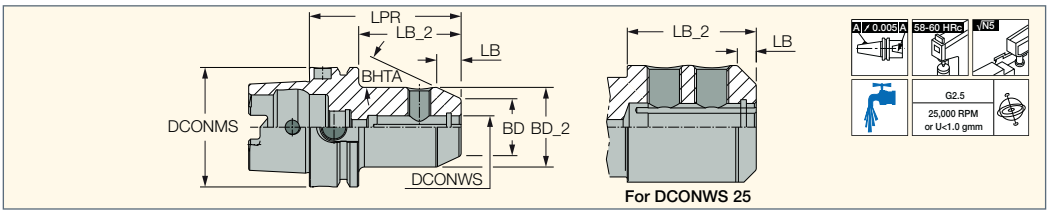
| Designation | | | |
|---|---|---|---|
| **HSK A50 EM8X65*** | SR M8X10 DIN1835-B | WRENCH COOL TUBE HSK50* | COOLING TUBE HSK A50* |
| **HSK A50 EM10X80*** | SR M10X12 DIN1835-B | WRENCH COOL TUBE HSK50* | COOLING TUBE HSK A50* |
| **HSK A50 EM16X80*** | SR M14X16 DIN1835-B | WRENCH COOL TUBE HSK50* | COOLING TUBE HSK A50* |
| **HSK A50 EM20X80*** | SR M16X16 DIN1835-B | WRENCH COOL TUBE HSK50* | COOLING TUBE HSK A50* |
| **HSK A63 EM6X65** | SR M6X10 DIN1835B | WRENCH COOL TUBE HSK63* | COOLING TUBE HSK A63* |
| **HSK A63 EM8X65** | SR M8X10 DIN1835-B | WRENCH COOL TUBE HSK63* | COOLING TUBE HSK A63* |
| **HSK A63 EM10X65** | SR M10X12 DIN1835-B | WRENCH COOL TUBE HSK63* | COOLING TUBE HSK A63* |
| **HSK A63 EM12X80** | SR M12X16 DIN1835-B | WRENCH COOL TUBE HSK63* | COOLING TUBE HSK A63* |
| **HSK A63 EM14X80** | SR M12X16 DIN1835-B | WRENCH COOL TUBE HSK63* | COOLING TUBE HSK A63* |
| **HSK A63 EM16X80** | SR M14X16 DIN1835-B | WRENCH COOL TUBE HSK63* | COOLING TUBE HSK A63* |
| **HSK A63 EM18X80** | SR M14X16 DIN1835-B | WRENCH COOL TUBE HSK63* | COOLING TUBE HSK A63* |
| **HSK A63 EM20X80** | SR M16X16 DIN1835-B | WRENCH COOL TUBE HSK63* | COOLING TUBE HSK A63* |
| **HSK A63 EM25X110** | SR M18X2X20 DIN1835-B | WRENCH COOL TUBE HSK63* | COOLING TUBE HSK A63* |
| **HSK A63 EM32X110** | SR M20X2X20 DIN1835-B | WRENCH COOL TUBE HSK63* | COOLING TUBE HSK A63* |
| **HSK A100 EM6X80** | SR M6X10 DIN1835B | WRENCH COOL TUBE HSK100* | COOLING TUBE HSK A100* |
| **HSK A100 EM8X80** | SR M8X10 DIN1835-B | WRENCH COOL TUBE HSK100* | COOLING TUBE HSK A100* |
| **HSK A100 EM10X80** | SR M10X12 DIN1835-B | WRENCH COOL TUBE HSK100* | COOLING TUBE HSK A100* |
| **HSK A100 EM12X80** | SR M12X16 DIN1835-B | WRENCH COOL TUBE HSK100* | COOLING TUBE HSK A100* |
| **HSK A100 EM14X80** | SR M12X16 DIN1835-B | WRENCH COOL TUBE HSK100* | COOLING TUBE HSK A100* |
| **HSK A100 EM16X100** | SR M14X16 DIN1835-B | WRENCH COOL TUBE HSK100* | COOLING TUBE HSK A100* |
| **HSK A100 EM20X100** | SR M16X16 DIN1835-B | WRENCH COOL TUBE HSK100* | COOLING TUBE HSK A100* |
| **HSK A100 EM25X100** | SR M18X2X20 DIN1835-B | WRENCH COOL TUBE HSK100* | COOLING TUBE HSK A100* |
| **HSK A100 EM32X100** | SR M20X2X20 DIN1835-B | WRENCH COOL TUBE HSK100* | COOLING TUBE HSK A100* |
| **HSK A100 EM40X110** | SR M20X2X20 DIN1835-B | WRENCH COOL TUBE HSK100* | COOLING TUBE HSK A100* |

* Optional, to be ordered separately

**HSK X-STREAM** JET TOOLHOLDING

**HSK A-EM-CX**

DIN6359 Side Clamp Holders for DIN 1835 Form B Weldon Shanks with Jet Coolant HSK DIN69893 Form A Tapered Shanks




| Designation | DCONMS | DCONWS | BD | BD_2 | LPR | LB | LB_2 | BHTA | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HSK A63 EM6X100 CX | 63.00 | 6.00 | 15.00 | 25.00 | 100.00 | 10.7 | 74.00 | 25.0 | 1 | 0.85 |
| HSK A63 EM6X65 CX | 63.00 | 6.00 | 15.00 | 25.00 | 65.00 | 10.7 | 39.00 | 25.0 | 1 | 0.77 |
| HSK A63 EM8X65 CX | 63.00 | 8.00 | 20.00 | 28.00 | 65.00 | 8.6 | 39.00 | 25.0 | 1 | 0.79 |
| HSK A63 EM10X65 CX | 63.00 | 10.00 | 25.00 | 35.00 | 65.00 | 10.7 | 39.00 | 25.0 | 1 | 0.79 |
| HSK A63 EM12X100 CX | 63.00 | 12.00 | 30.00 | 42.00 | 100.00 | 12.9 | 74.00 | 25.0 | 1 | 1.40 |
| HSK A63 EM12X80 CX | 63.00 | 12.00 | 30.00 | 42.00 | 80.00 | 12.9 | 54.00 | 25.0 | 1 | 0.81 |
| HSK A63 EM16X100 CX | 63.00 | 16.00 | 36.00 | 48.00 | 100.00 | 12.9 | 74.00 | 25.0 | 1 | 0.93 |
| HSK A63 EM16X80 CX | 63.00 | 16.00 | 36.00 | 48.00 | 80.00 | 12.9 | 54.00 | 25.0 | 1 | 0.87 |
| HSK A63 EM20X80 CX | 63.00 | 20.00 | 40.00 | 52.00 | 80.00 | 12.9 | 54.00 | 25.0 | 1 | 0.97 |
| HSK A63 EM25X110 CX | 63.00 | 25.00 | 45.00 | 65.00 | 110.00 | 10.0 | 68.00 | 45.0 | 1 | 1.15 |

**New**

- A cooling tube must be used with all coolant through HSK spindles (should be ordered separately).

(1) 1 - Slot for data chip, 0 - Without slot for data chip

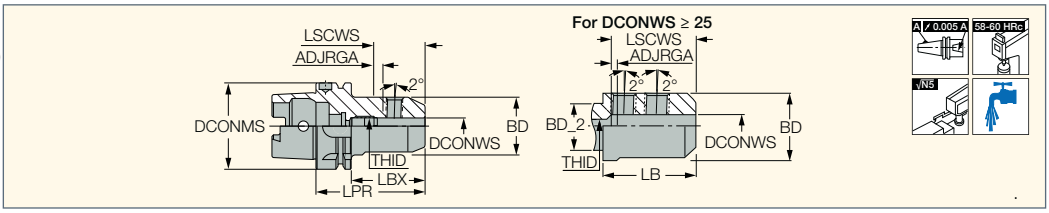
## Spare Parts

| Designation | | | |
|---|---|---|---|
| HSK A63 EM6X100 CX | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | SR M6X10 DIN1835B |
| HSK A63 EM6X65 CX | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | SR M6X10 DIN1835B |
| HSK A63 EM8X65 CX | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | SR M8X10 DIN1835-B |
| HSK A63 EM10X65 CX | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | SR M10X12 DIN1835-B |
| HSK A63 EM12X80 CX | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | SR M12X16 DIN1835-B |
| HSK A63 EM16X100 CX | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | SR M14X16 DIN1835-B |
| HSK A63 EM16X80 CX | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | SR M14X16 DIN1835-B |
| HSK A63 EM20X80 CX | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | SR M16X16 DIN1835-B |
| HSK A63 EM25X110 CX | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | SR M18X2X20 DIN1835-B |

* Optional, to be ordered separately

## *HSK*

**HSK A-EM (DIN 1835 Form E)**
DIN6359 Side Clamp Holders for DIN 1835 Form E Whistle Notch Shanks with HSK DIN69893 Form A Tapered Shanks




| Designation | DCONMS | DCONWS | BD | BD_2 | LPR | LBX | LB | ADJRGA | LSCWS | THID(1) | Key(2) | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HSK A63 EM6X80 E** | 63.00 | 6.00 | 25.00 | - | 80.00 | 54.0 | - | 8.00 | 40.0 | M5 | 2.50 | 1 | 0.82 |
| **HSK A63 EM8X80 E** | 63.00 | 8.00 | 28.00 | - | 80.00 | 54.0 | - | 5.00 | 40.0 | M6 | 3.00 | 1 | 0.86 |
| **HSK A63 EM10X80 E** | 63.00 | 10.00 | 35.00 | - | 80.00 | 54.0 | - | 5.00 | 44.0 | M8 | 4.00 | 1 | 1.00 |
| **HSK A63 EM12X90 E** | 63.00 | 12.00 | 42.00 | - | 90.00 | 64.0 | - | 5.00 | 49.0 | M10 | 5.00 | 1 | 1.23 |
| **HSK A63 EM14X90 E** | 63.00 | 14.00 | 44.00 | - | 90.00 | 64.0 | - | 5.00 | 49.0 | M10 | 5.00 | 1 | 1.29 |
| **HSK A63 EM16X100 E** | 63.00 | 16.00 | 48.00 | - | 100.00 | 74.0 | - | 5.00 | 52.0 | M12 | 6.00 | 1 | 1.51 |
| **HSK A63 EM18X100 E** | 63.00 | 18.00 | 50.00 | - | 100.00 | 74.0 | - | 8.00 | 55.0 | M12 | 6.00 | 1 | 1.60 |
| **HSK A63 EM20X100 E** | 63.00 | 20.00 | 52.00 | - | 100.00 | 74.0 | - | 5.00 | 54.0 | M16 | 8.00 | 1 | 1.65 |
| **HSK A63 EM25X110 E** | 63.00 | 25.00 | 65.00 | 52.80 | 110.00 | 84.0 | 65.50 | 7.00 | 61.0 | M16 | 8.00 | 1 | 2.23 |
| **HSK A63 EM32X110 E** | 63.00 | 32.00 | 72.00 | 52.80 | 110.00 | 84.0 | 65.50 | 5.00 | 63.0 | M20X1.5 | 10.00 | 1 | 2.43 |
| **HSK A100 EM8X90 E** | 100.00 | 8.00 | 28.00 | - | 90.00 | 61.0 | - | 5.00 | 40.0 | M6 | 3.00 | 1 | 2.29 |
| **HSK A100 EM12X100 E** | 100.00 | 12.00 | 42.00 | - | 100.00 | 71.0 | - | 10.00 | 54.0 | M10 | 5.00 | 1 | 2.74 |
| **HSK A100EM 14X100 E** | 100.00 | 14.00 | 44.00 | - | 100.00 | 71.0 | - | 10.00 | 54.0 | M10 | 5.00 | 1 | 2.71 |
| **HSK A100EM 16X100 E** | 100.00 | 16.00 | 48.00 | - | 100.00 | 71.0 | - | 5.00 | 52.0 | M12 | 6.00 | 1 | 2.88 |
| **HSK A100EM 18X100 E** | 100.00 | 18.00 | 50.00 | - | 100.00 | 71.0 | - | 5.00 | 52.0 | M12 | 6.00 | 1 | 2.93 |
| **HSK A100 EM20X110 E** | 100.00 | 20.00 | 52.00 | - | 110.00 | 81.0 | - | 5.00 | 54.0 | M16 | 8.00 | 1 | 3.10 |
| **HSK A100 EM25X120 E** | 100.00 | 25.00 | 65.00 | - | 120.00 | 91.0 | - | 7.00 | 61.0 | M20X1.5 | 10.00 | 1 | 3.88 |
| **HSK A100 EM32X120 E** | 100.00 | 32.00 | 72.00 | - | 120.00 | 91.0 | - | 5.00 | 63.0 | M20X2.5 | 10.00 | 1 | 4.32 |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).

(1) Adjustment screw has an internal coolant hole.

(2) Adjustment screw hexagon key size

(3) 1 - Slot for data chip, 0 - Without slot for data chip

### Spare Parts

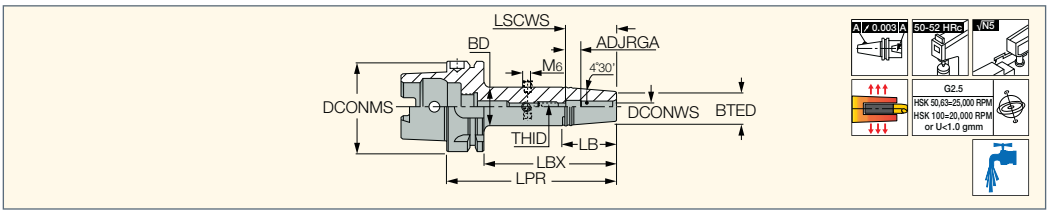
| Designation | | | | |
|---|---|---|---|---|
| **HSK A63 EM6X80 E** | SR M6X10 DIN1835B | PRESET M5X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 EM8X80 E** | SR M8X10 DIN1835-B | PRESET M6X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 EM10X80 E** | SR M10X12 DIN1835-B | PRESET CAP M8X12B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 EM12X90 E** | SR M12X16 DIN1835-B | PRESET M10X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 EM14X90 E** | SR M12X16 DIN1835-B | PRESET M10X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 EM16X100 E** | SR M14X16 DIN1835-B | PRESET M12X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 EM18X100 E** | SR M14X16 DIN1835-B | PRESET M12X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 EM20X100 E** | SR M16X16 DIN1835-B | PRESET M16X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 EM25X110 E** | SR M18X2X20 DIN1835-B | PRESET M16X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 EM32X110 E** | SR M20X2X20 DIN1835-B | PRESET M20X20E | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A100 EM8X90 E** | SR M8X10 DIN1835-B | PRESET M6X20B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 EM12X100 E** | SR M12X16 DIN1835-B | PRESET M10X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100EM 14X100 E** | SR M12X16 DIN1835-B | PRESET M10X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100EM 16X100 E** | SR M14X16 DIN1835-B | PRESET M12X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100EM 18X100 E** | SR M14X16 DIN1835-B | PRESET M12X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 EM20X110 E** | SR M16X16 DIN1835-B | PRESET M16X20B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 EM25X120 E** | SR M18X2X20 DIN1835-B | PRESET M20X20E | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 EM32X120 E** | SR M20X2X20 DIN1835-B | PRESET M20X20E | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

* Optional, to be ordered separately

**HSK SHRINKIN**

## HSK A-SRKIN

Thermal Shrink Chucks with HSK
DIN69893 Form A
Tapered Shanks



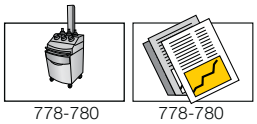

| Designation | DCONMS | DCONWS | BTED | BD | LPR | LBX | LB | ADJRGA | LSCWS | THID | Key(2) | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A50 SRKIN6X80* | 50.00 | 6.00 | 21.00 | 27.00 | 80.00 | 54.0 | 38.00 | 11.00 | 36.0 | M5 | 2.50 | 1 | 0.56 |
| HSK A63 SRKIN6X120 | 63.00 | 6.00 | 21.00 | 27.00 | 120.00 | 94.0 | 38.00 | 11.00 | 36.0 | M5 | 2.50 | 1 | 1.00 |
| HSK A63 SRKIN6X160 | 63.00 | 6.00 | 21.00 | 27.00 | 160.00 | 134.0 | 38.00 | 11.00 | 36.0 | M5 | 2.50 | 1 | 1.19 |
| HSK A63 SRKIN6X80 | 63.00 | 6.00 | 21.00 | 27.00 | 80.00 | 54.0 | 38.00 | 11.00 | 36.0 | M5 | 2.50 | 1 | 0.83 |
| HSK A63 SRKIN8X120 | 63.00 | 8.00 | 21.00 | 27.00 | 120.00 | 94.0 | 38.00 | 11.00 | 36.0 | M6 | 3.00 | 1 | 0.98 |
| HSK A63 SRKIN8X160 | 63.00 | 8.00 | 21.00 | 27.00 | 160.00 | 134.0 | 38.00 | 11.00 | 36.0 | M6 | 3.00 | 1 | 1.16 |
| HSK A63 SRKIN8X80 | 63.00 | 8.00 | 21.00 | 27.00 | 80.00 | 54.0 | 38.00 | 11.00 | 36.0 | M6 | 3.00 | 1 | 0.88 |
| HSK A63 SRKIN10X120 | 63.00 | 10.00 | 24.00 | 32.00 | 120.00 | 94.0 | 51.00 | 11.00 | 42.0 | M8 | 4.00 | 1 | 1.09 |
| HSK A63 SRKIN10X160 | 63.00 | 10.00 | 24.00 | 32.00 | 160.00 | 134.0 | 51.00 | 11.00 | 42.0 | M8 | 4.00 | 1 | 1.36 |
| HSK A63 SRKIN10X85 | 63.00 | 10.00 | 24.00 | 32.00 | 85.00 | 59.0 | 51.00 | 11.00 | 42.0 | M8 | 4.00 | 1 | 0.89 |
| HSK A63 SRKIN12X120 | 63.00 | 12.00 | 24.00 | 32.00 | 120.00 | 94.0 | 51.00 | 11.00 | 47.0 | M10 | 5.00 | 1 | 1.00 |
| HSK A63 SRKIN12X160 | 63.00 | 12.00 | 24.00 | 32.00 | 160.00 | 134.0 | 51.00 | 11.00 | 47.0 | M10 | 5.00 | 1 | 1.33 |
| HSK A63 SRKIN12X90 | 63.00 | 12.00 | 24.00 | 32.00 | 90.00 | 64.0 | 51.00 | 11.00 | 47.0 | M8 | 4.00 | 1 | 0.91 |
| HSK A63 SRKIN14X120 | 63.00 | 14.00 | 27.00 | 34.00 | 120.00 | 94.0 | 45.00 | 11.00 | 47.0 | M10 | 5.00 | 1 | 1.15 |
| HSK A63 SRKIN14X160 | 63.00 | 14.00 | 27.00 | 34.00 | 160.00 | 134.0 | 45.00 | 11.00 | 47.0 | M10 | 5.00 | 1 | 1.44 |
| HSK A63 SRKIN14X90 | 63.00 | 14.00 | 27.00 | 34.00 | 90.00 | 64.0 | 45.00 | 11.00 | 47.0 | M10 | 5.00 | 1 | 0.94 |
| HSK A63 SRKIN16X120 | 63.00 | 16.00 | 27.00 | 34.00 | 120.00 | 94.0 | 44.00 | 11.00 | 50.0 | M12 | 6.00 | 1 | 1.11 |
| HSK A63 SRKIN16X160 | 63.00 | 16.00 | 27.00 | 34.00 | 160.00 | 134.0 | 44.00 | 11.00 | 50.0 | M12 | 6.00 | 1 | 1.41 |
| HSK A63 SRKIN16X75 (1) | 63.00 | 16.00 | 27.00 | 34.00 | 75.00 | 49.0 | 44.00 | 11.00 | 50.0 | - | - | 1 | 0.85 |
| HSK A63 SRKIN16X95 | 63.00 | 16.00 | 27.00 | 34.00 | 95.00 | 69.0 | 44.00 | 11.00 | 50.0 | M12 | 6.00 | 1 | 0.96 |
| HSK A63 SRKIN18X120 | 63.00 | 18.00 | 33.00 | 42.00 | 120.00 | 94.0 | 57.00 | 11.00 | 50.0 | M12 | 6.00 | 1 | 1.39 |
| HSK A63 SRKIN18X160 | 63.00 | 18.00 | 33.00 | 42.00 | 160.00 | 134.0 | 57.00 | 11.00 | 50.0 | M12 | 6.00 | 1 | 1.82 |
| HSK A63 SRKIN18X95 | 63.00 | 18.00 | 33.00 | 42.00 | 95.00 | 69.0 | 57.00 | 11.00 | 50.0 | M12 | 6.00 | 1 | 1.14 |
| HSK A63 SRKIN20X100 | 63.00 | 20.00 | 33.00 | 42.00 | 100.00 | 74.0 | 57.00 | 11.00 | 52.0 | M16 | 8.00 | 1 | 1.11 |
| HSK A63 SRKIN20X120 | 63.00 | 20.00 | 33.00 | 42.00 | 120.00 | 94.0 | 57.00 | 11.00 | 52.0 | M16 | 8.00 | 1 | 1.33 |
| HSK A63 SRKIN20X160 | 63.00 | 20.00 | 33.00 | 42.00 | 160.00 | 134.0 | 57.00 | 11.00 | 52.0 | M16 | 8.00 | 1 | 1.77 |
| HSK A63 SRKIN20X75 (1) | 63.00 | 20.00 | 33.00 | 41.00 | 75.00 | 49.0 | - | 9.00 | 50.0 | - | - | 1 | 0.93 |
| HSK A63 SRKIN25X115 | 63.00 | 25.00 | 44.00 | 53.00 | 115.00 | 89.0 | 55.00 | 11.00 | 58.0 | M16 | 8.00 | 1 | 1.70 |
| HSK A63 SRKIN25X85 (1) | 63.00 | 25.00 | 44.00 | 53.00 | 85.00 | 59.0 | - | 11.00 | 58.0 | - | - | 1 | 1.27 |
| HSK A63 SRKIN32X120 | 63.00 | 32.00 | 44.00 | 53.00 | 120.00 | 94.0 | 55.00 | 11.00 | 58.0 | M16 | 8.00 | 1 | 1.68 |
| HSK A63 SRKIN32X85 | 63.00 | 32.00 | 44.00 | 53.00 | 85.00 | 59.0 | - | 11.00 | 58.0 | - | - | 1 | 1.11 |
| HSK A100 SRKIN6X120 | 100.00 | 6.00 | 21.00 | 27.00 | 120.00 | 91.0 | 38.00 | 11.00 | 36.0 | M5 | 2.50 | 1 | 2.32 |
| HSK A100 SRKIN6X160 | 100.00 | 6.00 | 21.00 | 27.00 | 160.00 | 131.0 | 38.00 | 11.00 | 36.0 | M6 | 3.00 | 1 | 2.54 |
| HSK A100 SRKIN6X85 | 100.00 | 6.00 | 21.00 | 27.00 | 85.00 | 56.0 | 38.00 | 11.00 | 36.0 | M5 | 2.50 | 1 | 2.18 |
| HSK A100 SRKIN8X120 | 100.00 | 8.00 | 21.00 | 27.00 | 120.00 | 91.0 | 38.00 | 11.00 | 36.0 | M6 | 3.00 | 1 | 2.36 |
| HSK A100 SRKIN8X160 | 100.00 | 8.00 | 21.00 | 27.00 | 160.00 | 131.0 | 38.00 | 11.00 | 36.0 | M6 | 3.00 | 1 | 2.55 |
| HSK A100 SRKIN8X85 | 100.00 | 8.00 | 21.00 | 27.00 | 85.00 | 56.0 | 38.00 | 11.00 | 36.0 | M6 | 3.00 | 1 | 2.16 |
| HSK A100 SRKIN10X120 | 100.00 | 10.00 | 24.00 | 32.00 | 120.00 | 91.0 | 51.00 | 11.00 | 42.0 | M8 | 4.00 | 1 | 2.43 |
| HSK A100 SRKIN10X160 | 100.00 | 10.00 | 24.00 | 32.00 | 160.00 | 131.0 | 51.00 | 11.00 | 42.0 | M8 | 4.00 | 1 | 2.71 |
| HSK A100 SRKIN10X90 | 100.00 | 10.00 | 24.00 | 32.00 | 90.00 | 61.0 | 51.00 | 11.00 | 42.0 | M8 | 4.00 | 1 | 2.24 |
| HSK A100 SRKIN12X120 | 100.00 | 12.00 | 24.00 | 32.00 | 120.00 | 91.0 | 51.00 | 11.00 | 47.0 | M10 | 5.00 | 1 | 2.47 |
| HSK A100 SRKIN12X160 | 100.00 | 12.00 | 24.00 | 32.00 | 160.00 | 131.0 | 51.00 | 11.00 | 47.0 | M10 | 5.00 | 1 | 2.70 |
| HSK A100 SRKIN12X95 | 100.00 | 12.00 | 24.00 | 32.00 | 95.00 | 66.0 | 51.00 | 11.00 | 47.0 | M10 | 5.00 | 1 | 2.28 |
| HSK A100 SRKIN14X120 | 100.00 | 14.00 | 27.00 | 34.00 | 120.00 | 91.0 | 45.00 | 11.00 | 47.0 | M10 | 5.00 | 1 | 2.51 |
| HSK A100 SRKIN14X160 | 100.00 | 14.00 | 27.00 | 34.00 | 160.00 | 131.0 | 45.00 | 11.00 | 47.0 | M10 | 5.00 | 1 | 2.79 |
| HSK A100 SRKIN14X95 | 100.00 | 14.00 | 27.00 | 34.00 | 95.00 | 66.0 | 45.00 | 11.00 | 47.0 | M10 | 5.00 | 1 | 2.27 |
| HSK A100 SRKIN16X100 | 100.00 | 16.00 | 27.00 | 34.00 | 100.00 | 71.0 | 45.00 | 11.00 | 50.0 | M12 | 6.00 | 1 | 2.35 |
| HSK A100 SRKIN16X120 | 100.00 | 16.00 | 27.00 | 34.00 | 120.00 | 91.0 | 45.00 | 11.00 | 50.0 | M12 | 6.00 | 1 | 2.50 |
| HSK A100 SRKIN16X160 | 100.00 | 16.00 | 27.00 | 34.00 | 160.00 | 131.0 | 45.00 | 11.00 | 50.0 | M12 | 6.00 | 1 | 2.74 |
| HSK A100 SRKIN18X100 | 100.00 | 18.00 | 33.00 | 42.00 | 100.00 | 71.0 | 57.00 | 11.00 | 50.0 | M12 | 6.00 | 1 | 2.50 |
| HSK A100 SRKIN20X105 | 100.00 | 20.00 | 33.00 | 42.00 | 105.00 | 76.0 | 57.00 | 11.00 | 52.0 | M16 | 8.00 | 1 | 2.50 |
| HSK A100 SRKIN20X120 | 100.00 | 20.00 | 33.00 | 42.00 | 120.00 | 91.0 | 57.00 | 11.00 | 52.0 | M16 | 8.00 | 1 | 1.20 |
| HSK A100 SRKIN20X160 | 100.00 | 20.00 | 33.00 | 42.00 | 160.00 | 131.0 | 57.00 | 11.00 | 52.0 | M16 | 8.00 | 1 | 3.21 |
| HSK A100 SRKIN25X115 | 100.00 | 25.00 | 44.00 | 53.00 | 115.00 | 86.0 | 57.00 | 11.00 | 58.0 | M16 | 8.00 | 1 | 3.04 |
| HSK A100 SRKIN32X120 | 100.00 | 32.00 | 44.00 | 53.00 | 120.00 | 91.0 | 57.00 | 11.00 | 58.0 | M16 | 8.00 | 1 | 2.99 |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately)
- Use only inductive heating device for SRKIN holders

(1) Shorter projection than DIN 69882-8, use special IND S DISC

(2) Adjustment screw hexagon key size

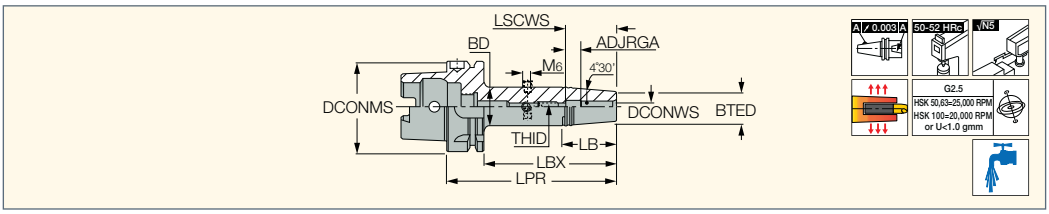
(3) 1 - Slot for data chip, 0 - Without slot for data chip



778-780 778-780

**HSK SHRINKIN**

**HSK A-SRKIN**
Thermal Shrink Chucks
with HSK DIN69893 Form A
Tapered Shanks




## Spare Parts

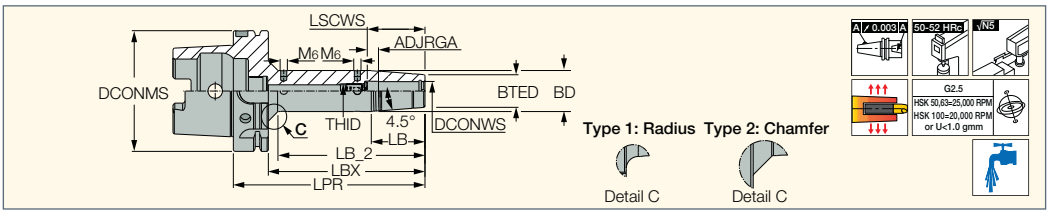
| Designation | | | |
|---|---|---|---|
| **HSK A50 SRKIN6X80*** | PRESET M5X18B | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK A63 SRKIN6X120** | PRESET M5X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN6X160** | PRESET M5X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN6X80** | PRESET M5X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN8X120** | PRESET M6X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN8X160** | PRESET M6X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN8X80** | PRESET M6X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN10X120** | PRESET M8X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN10X160** | PRESET M8X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN10X85** | PRESET M8X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN12X120** | PRESET M10X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN12X160** | PRESET M10X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN12X90** | PRESET M10X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN14X120** | PRESET M10X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN14X160** | PRESET M10X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN14X90** | PRESET M10X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN16X120** | PRESET M12X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN16X160** | PRESET M12X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN16X75** | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN16X95** | PRESET CX M12X16 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN18X120** | PRESET M12X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN18X160** | PRESET M12X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN18X95** | PRESET M12X18B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN20X100** | PRESET M16X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN20X120** | PRESET M16X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN20X160** | PRESET M16X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN20X75** | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN25X115** | PRESET M16X25B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN25X85** | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN32X120** | PRESET M16X25B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A63 SRKIN32X85** | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| **HSK A100 SRKIN6X120** | PRESET M5X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN6X160** | PRESET M5X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN6X85** | PRESET M5X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN8X120** | PRESET M6X20B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN8X160** | PRESET M6X20B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN8X85** | PRESET M6X20B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN10X120** | PRESET M8X20B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN10X160** | PRESET M8X20B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN10X90** | PRESET M8X20B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN12X120** | PRESET M10X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN12X160** | PRESET M10X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN12X95** | PRESET M10X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN14X120** | PRESET M10X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN14X160** | PRESET M10X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN14X95** | PRESET M10X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN16X100** | PRESET M12X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN16X120** | PRESET M12X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN16X160** | PRESET M12X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN18X100** | PRESET M12X18B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN20X105** | | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN20X120** | PRESET M16X20B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN20X160** | PRESET M16X20B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN25X115** | PRESET M16X20B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| **HSK A100 SRKIN32X120** | PRESET M16X25B | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

* Optional, to be ordered separately

**HSK X-STREAM** JET TOOLHOLDING

## HSK A-SRKIN-CX

Thermal Shrink Chucks with HSK DIN69893 Form A Tapered Shank and Jet Coolant Grooves along the Shank Bore




| Designation | DCONMS | DCONWS | BTED | BD | LB | LB_2 | LBX | LPR | ADJRGA | LSCWS | THID | Key(2) | Fig. | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A63 SRKIN6X80 CX | 63.00 | 6.00 | 21.00 | 27.00 | 38.10 | 49.00 | 54.00 | 80.00 | 9.40 | 34.00 | M5 | 2.50 | 1 | 1 | 0.83 |
| HSK A63 SRKIN6X120 CX | 63.00 | 6.00 | 21.00 | 27.00 | 38.10 | 89.00 | 94.00 | 120.00 | 9.40 | 34.00 | M5 | 2.50 | 1 | 1 | 1.00 |
| HSK A63 SRKIN8X80 CX | 63.00 | 8.00 | 21.00 | 27.00 | 38.10 | 49.00 | 54.00 | 80.00 | 9.50 | 34.00 | M6 | 3.00 | 1 | 1 | 0.85 |
| HSK A63 SRKIN8X120 CX | 63.00 | 8.00 | 21.00 | 27.00 | 38.10 | 89.00 | 94.00 | 120.00 | 9.50 | 34.00 | M6 | 3.00 | 1 | 1 | 1.05 |
| HSK A63 SRKIN10X85 CX | 63.00 | 10.00 | 24.00 | 32.00 | 50.80 | 57.50 | 59.00 | 85.00 | 9.30 | 39.80 | M8 | 4.00 | 1 | 1 | 0.87 |
| HSK A63 SRKIN10X120 CX | 63.00 | 10.00 | 24.00 | 32.00 | 50.80 | 89.00 | 94.00 | 120.00 | 9.30 | 39.80 | M8 | 4.00 | 1 | 1 | 1.07 |
| HSK A63 SRKIN12X90 CX | 63.00 | 12.00 | 24.00 | 32.00 | 50.80 | 59.00 | 64.00 | 90.00 | 9.30 | 44.80 | M10 | 5.00 | 1 | 1 | 0.90 |
| HSK A63 SRKIN12X120 CX | 63.00 | 12.00 | 24.00 | 32.00 | 50.80 | 89.00 | 94.00 | 120.00 | 9.30 | 44.80 | M10 | 5.00 | 1 | 1 | 1.15 |
| HSK A63 SRKIN14X90 CX | 63.00 | 14.00 | 27.00 | 34.00 | 44.50 | 59.00 | 64.00 | 90.00 | 9.30 | 44.80 | M10 | 5.00 | 1 | 1 | 1.02 |
| HSK A63 SRKIN16X75 CX (1) | 63.00 | 16.00 | 27.00 | 34.00 | 44.50 | 47.00 | 49.00 | 75.00 | 7.05 | 46.00 | M5 | 2.50 | 1 | 1 | 0.82 |
| HSK A63 SRKIN16X95 CX | 63.00 | 16.00 | 27.00 | 34.00 | 44.50 | 64.00 | 69.00 | 95.00 | 9.30 | 47.80 | M12 | 6.00 | 1 | 1 | 1.00 |
| HSK A63 SRKIN16X120 CX | 63.00 | 16.00 | 27.00 | 34.00 | 44.50 | 89.00 | 94.00 | 120.00 | 9.30 | 47.80 | M12 | 6.00 | 1 | 1 | 1.20 |
| HSK A63 SRKIN18X95 CX | 63.00 | 18.00 | 33.00 | 42.00 | 57.20 | 66.00 | 69.00 | 95.00 | 9.30 | 47.80 | M12 | 6.00 | 1 | 1 | 1.20 |
| HSK A63 SRKIN20X75 CX (1) | 63.00 | 20.00 | 33.00 | 41.00 | - | 47.00 | 49.00 | 75.00 | 5.05 | 46.00 | M5 | 2.50 | 1 | 1 | 0.92 |
| HSK A63 SRKIN20X100 CX | 63.00 | 20.00 | 33.00 | 42.00 | 57.20 | 69.00 | 74.00 | 100.00 | 8.50 | 49.00 | M16 | 8.00 | 1 | 1 | 1.18 |
| HSK A63 SRKIN20X120 CX | 63.00 | 20.00 | 33.00 | 42.00 | 57.20 | 89.00 | 94.00 | 120.00 | 8.50 | 49.00 | M16 | 8.00 | 1 | 1 | 1.38 |
| HSK A63 SRKIN25X85 CX (1) | 63.00 | 25.00 | 44.00 | 52.20 | 52.10 | 58.20 | 59.00 | 85.00 | 9.05 | 56.00 | M5 | 2.50 | 1 | 1 | 1.26 |
| HSK A63 SRKIN32X85 CX | 63.00 | 32.00 | 44.00 | 52.20 | 52.10 | 58.20 | 59.00 | 85.00 | 5.50 | 56.00 | M5 | 2.50 | 1 | 1 | 1.11 |
| HSK A100 SRKIN6X85 CX | 100.00 | 6.00 | 21.00 | 27.00 | 38.10 | 48.00 | 56.00 | 85.00 | 9.70 | 34.00 | M5 | 2.50 | 2 | 1 | 2.21 |
| HSK A100 SRKIN8X85 CX | 100.00 | 8.00 | 21.00 | 27.00 | 38.10 | 48.00 | 56.00 | 85.00 | 9.50 | 34.00 | M6 | 3.00 | 2 | 1 | 2.21 |
| HSK A100 SRKIN10X90 CX | 100.00 | 10.00 | 24.00 | 32.00 | 50.80 | 53.90 | 61.00 | 90.00 | 9.30 | 39.80 | M8 | 4.00 | 2 | 1 | 2.29 |
| HSK A100 SRKIN12X95 CX | 100.00 | 12.00 | 24.00 | 32.00 | 50.80 | 59.00 | 66.00 | 95.00 | 9.30 | 44.80 | M10 | 5.00 | 2 | 1 | 2.30 |
| HSK A100 SRKIN14X95 CX | 100.00 | 14.00 | 27.00 | 34.00 | 44.50 | 58.00 | 66.00 | 95.00 | 9.30 | 44.80 | M10 | 5.00 | 2 | 1 | 2.36 |
| HSK A100 SRKIN16X100 CX | 100.00 | 16.00 | 27.00 | 34.00 | 44.50 | 63.00 | 71.00 | 100.00 | 9.30 | 47.80 | M12 | 6.00 | 2 | 1 | 2.37 |
| HSK A100 SRKIN18X100 CX | 100.00 | 18.00 | 33.00 | 42.00 | 57.20 | 67.00 | 71.00 | 100.00 | 9.30 | 47.80 | M12 | 6.00 | 2 | 1 | 2.53 |
| HSK A100 SRKIN20X105 CX | 100.00 | 20.00 | 33.00 | 42.00 | 57.20 | 69.00 | 76.00 | 105.00 | 8.50 | 49.00 | M16 | 8.00 | 2 | 1 | 2.57 |
| HSK A100 SRKIN25X115 CX | 100.00 | 25.00 | 44.00 | 53.00 | 57.20 | 81.00 | 86.00 | 115.00 | 8.50 | 56.00 | M16 | 8.00 | 1 | 1 | 3.07 |
| HSK A100 SRKIN32X120 CX | 100.00 | 32.00 | 44.00 | 53.00 | 57.20 | 89.00 | 91.00 | 120.00 | 8.50 | 59.00 | M16 | 8.00 | 2 | 1 | 2.98 |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately)
- Use only inductive heating device for SRKIN holders
- Preset screw CX allows supply of coolant via JET channels - do not remove

(1) Shorter projection than DIN 69882-8, use special IND S DISC

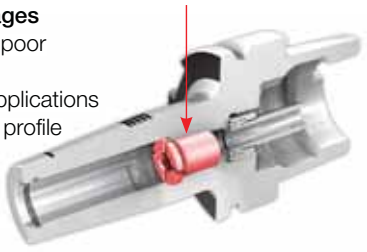
(2) Adjustment screw hexagon key size

(3) 1 - Slot for data chip, 0 - Without slot for data chip

### Features

- Increased coolant velocity is obtained due to flow rate conservation and a smaller coolant discharge area
- Coolant directed to cutting edges
- Prolonged tool life
- Eliminates chip sticking at the cutting edges
- Suitable for High Speed Milling
- Effective chip evacuation prevents chip re-cutting

### Applications and Advantages



- CNC milling machines with poor external coolant flow
- Cavity and pocket milling applications
- Semi-finishing and finishing profile milling titanium blisk blades
- Milling applications that generate high temperatures, such as very hard alloy steels, high temperature alloys etc.

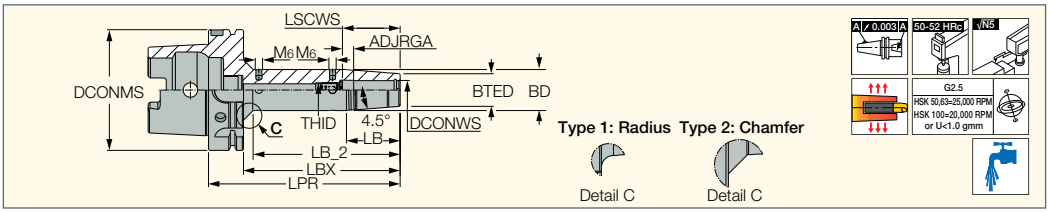
**Note: Preset CX screw allows coolant supply via jet channels - do not remove!**

Continued

HSK X-STREAM JET TOOLHOLDING

**HSK A-SRKIN-CX**

Thermal Shrink Chucks with HSK DIN69893 Form A Tapered Shank and Jet Coolant Grooves along the Shank Bore




## Spare Parts

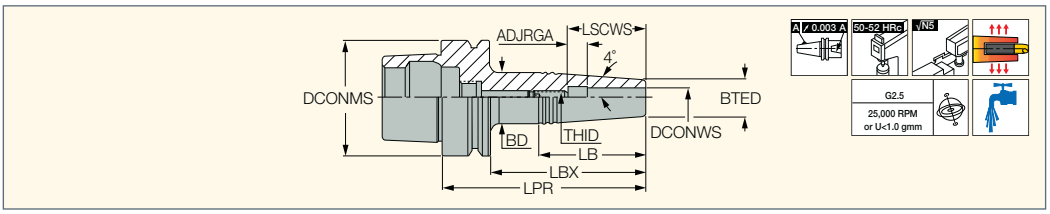
| Designation | | | |
|---|---|---|---|
| **HSK A63 SRKIN6X80 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M5X13 |
| **HSK A63 SRKIN6X120 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M5X13 |
| **HSK A63 SRKIN8X80 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M6X12 |
| **HSK A63 SRKIN8X120 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M6X12 |
| **HSK A63 SRKIN10X85 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M8X16 |
| **HSK A63 SRKIN10X120 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M8X16 |
| **HSK A63 SRKIN12X90 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M10X16 |
| **HSK A63 SRKIN12X120 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M10X16 |
| **HSK A63 SRKIN14X90 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M10X16 |
| **HSK A63 SRKIN16X75 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M5X5 |
| **HSK A63 SRKIN16X95 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M12X16 |
| **HSK A63 SRKIN16X120 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M12X16 |
| **HSK A63 SRKIN18X95 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M12X16 |
| **HSK A63 SRKIN20X75 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M5X5 |
| **HSK A63 SRKIN20X100 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M16X14 |
| **HSK A63 SRKIN20X120 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M16X14 |
| **HSK A63 SRKIN25X85 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M5X5 |
| **HSK A63 SRKIN32X85 CX** | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | PRESET CX M5X5 |
| **HSK A100 SRKIN6X85 CX** | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | PRESET CX M5X13 |
| **HSK A100 SRKIN8X85 CX** | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | PRESET CX M6X12 |
| **HSK A100 SRKIN10X90 CX** | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | PRESET CX M8X16 |
| **HSK A100 SRKIN12X95 CX** | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | PRESET CX M10X16 |
| **HSK A100 SRKIN14X95 CX** | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | PRESET CX M10X16 |
| **HSK A100 SRKIN16X100 CX** | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | PRESET CX M12X16 |
| **HSK A100 SRKIN18X100 CX** | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | PRESET CX M12X16 |
| **HSK A100 SRKIN20X105 CX** | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | PRESET CX M16X14 |
| **HSK A100 SRKIN25X115 CX** | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | PRESET CX M16X14 |
| **HSK A100 SRKIN32X120 CX** | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | PRESET CX M16X14 |

* Optional, to be ordered separately

**HSK SHRINKIN**

**HSK E-SRK**

Thermal Chuck Collets with HSK DIN69893 Form E Tapered Shanks for Solid Carbide Tools Only

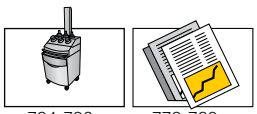



| Designation | DCONMS | DCONWS | BTED | BD | LPR | LBX | LB | ADJRGA | LSCWS | THID | Key(1) | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HSK E32 SRK3X45** | 32.00 | 3.00 | 10.00 | 13.00 | 65.00 | 45.0 | 30.00 | 6.00 | 16.0 | M4 | 2.00 | 0 | 0.17 |
| **HSK E32 SRK4X45** | 32.00 | 4.00 | 10.00 | 15.00 | 65.00 | 45.0 | 35.00 | 6.00 | 18.0 | M5 | 2.00 | 0 | 0.17 |
| **HSK E32 SRK6X45** | 32.00 | 6.00 | 11.00 | 16.00 | 65.00 | 45.0 | 35.00 | 10.00 | 28.0 | M4 | 2.00 | 0 | 0.17 |
| **HSK E32 SRK10X45** | 32.00 | 10.00 | 16.00 | 22.00 | 65.00 | 45.0 | 42.00 | 10.00 | 40.0 | M4 | 2.00 | 0 | 0.20 |
| **HSK E40 SRK3X45** | 40.00 | 3.00 | 10.00 | 13.00 | 65.00 | 45.0 | 30.00 | 6.00 | 16.0 | M5 | 2.50 | 0 | 0.24 |
| **HSK E40 SRK3X80** | 40.00 | 3.00 | 10.00 | 19.00 | 100.00 | 80.0 | 64.00 | 6.00 | 16.0 | M5 | 2.50 | 0 | 0.30 |
| **HSK E40 SRK4X45** | 40.00 | 4.00 | 10.00 | 15.00 | 65.00 | 45.0 | 35.00 | 6.00 | 18.0 | M5 | 2.50 | 0 | 0.24 |
| **HSK E40 SRK4X80** | 40.00 | 4.00 | 10.00 | 19.00 | 100.00 | 80.0 | 64.00 | 6.00 | 18.0 | M5 | 2.50 | 0 | 0.31 |
| **HSK E40 SRK5X45** | 40.00 | 5.00 | 10.00 | 15.00 | 65.00 | 45.0 | 35.00 | 10.00 | 25.0 | M4 | 2.00 | 0 | 0.24 |
| **HSK E40 SRK5X80** | 40.00 | 5.00 | 10.00 | 19.00 | 100.00 | 80.0 | 64.00 | 10.00 | 25.0 | M4 | 2.00 | 0 | 0.32 |
| **HSK E40 SRK6X45** | 40.00 | 6.00 | 11.00 | 16.00 | 65.00 | 45.0 | 35.00 | 10.00 | 28.0 | M5 | 2.50 | 0 | 0.23 |
| **HSK E40 SRK6X80** | 40.00 | 6.00 | 11.00 | 20.00 | 100.00 | 80.0 | 64.00 | 10.00 | 28.0 | M5 | 2.50 | 0 | 0.32 |
| **HSK E40 SRK8X45** | 40.00 | 8.00 | 14.00 | 20.00 | 65.00 | 45.0 | 42.00 | 10.00 | 35.0 | M5 | 2.50 | 0 | 0.27 |
| **HSK E40 SRK10X45** | 40.00 | 10.00 | 16.00 | 22.00 | 65.00 | 45.0 | 42.00 | 10.00 | 40.0 | M5 | 2.50 | 0 | 0.27 |
| **HSK E40 SRK10X80** | 40.00 | 10.00 | 16.00 | 24.50 | 100.00 | 80.0 | 60.00 | 10.00 | 40.0 | M8 | 4.00 | 0 | 0.39 |
| **HSK E40 SRK12X45** | 40.00 | 12.00 | 20.00 | 26.00 | 65.00 | 45.0 | 42.00 | 10.00 | 42.0 | M5 | 2.50 | 0 | 0.32 |
| **HSK E40 SRK12X80** | 40.00 | 12.00 | 20.00 | 28.00 | 100.00 | 80.0 | 56.00 | 10.00 | 42.0 | M10 | 5.00 | 0 | 0.46 |
| **HSK E50 SRK3X45** | 50.00 | 3.00 | 10.00 | 15.00 | 71.00 | 45.0 | 36.00 | 6.00 | 16.0 | M5 | 2.50 | 0 | 0.45 |
| **HSK E50 SRK3X80** | 50.00 | 3.00 | 10.00 | 19.00 | 106.00 | 80.0 | 64.00 | 6.00 | 16.0 | M5 | 2.50 | 0 | 0.51 |
| **HSK E50 SRK4X45** | 50.00 | 4.00 | 10.00 | 15.00 | 71.00 | 45.0 | 36.00 | 6.00 | 18.0 | M5 | 2.50 | 0 | 0.49 |
| **HSK E50 SRK4X80** | 50.00 | 4.00 | 10.00 | 19.00 | 106.00 | 80.0 | 64.00 | 6.00 | 18.0 | M5 | 2.50 | 0 | 0.50 |
| **HSK E50 SRK6X45** | 50.00 | 6.00 | 11.00 | 16.00 | 71.00 | 45.0 | 36.00 | 10.00 | 28.0 | M5 | 2.50 | 0 | 0.45 |
| **HSK E50 SRK6X80** | 50.00 | 6.00 | 11.00 | 20.00 | 106.00 | 80.0 | 64.00 | 10.00 | 28.0 | M5 | 2.50 | 0 | 0.51 |
| **HSK E50 SRK8X 45** | 50.00 | 8.00 | 14.00 | 20.00 | 71.00 | 45.0 | 43.00 | 10.00 | 35.0 | M6 | 3.00 | 0 | 0.47 |
| **HSK E50 SRK8X 80** | 50.00 | 8.00 | 14.00 | 23.00 | 106.00 | 80.0 | 64.00 | 10.00 | 35.0 | M6 | 3.00 | 0 | 0.56 |
| **HSK E50 SRK10X45** | 50.00 | 10.00 | 16.00 | 22.00 | 71.00 | 45.0 | 42.00 | 10.00 | 40.0 | M6 | 3.00 | 0 | 0.48 |
| **HSK E50 SRK10X80** | 50.00 | 10.00 | 16.00 | 24.50 | 106.00 | 80.0 | 60.00 | 10.00 | 40.0 | M8 | 4.00 | 0 | 0.60 |
| **HSK E50 SRK12X45** | 50.00 | 12.00 | 20.00 | 26.00 | 71.00 | 45.0 | 42.00 | 10.00 | 42.0 | M6 | 3.00 | 0 | 0.50 |

• A cooling tube must be used with all coolant through HSK spindles (to be ordered separately). • To be used for carbide tools only.

(1) Adjustment screw hexagon key size

(2) 1 - Slot for data chip, 0 - Without slot for data chip



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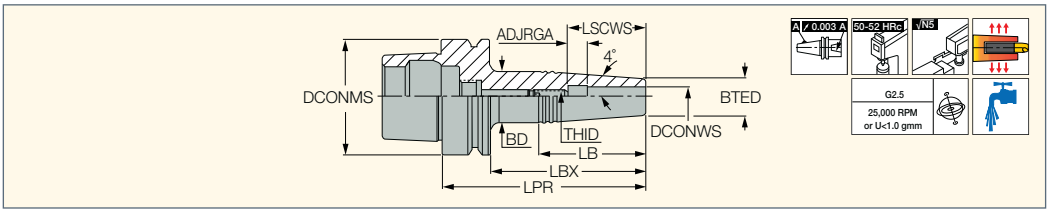
Continued

**HSK SHRINKIN**

**HSK E-SRK**
Thermal Chuck Collets with HSK DIN69893 Form E Tapered Shanks for Solid Carbide Tools Only




## Spare Parts

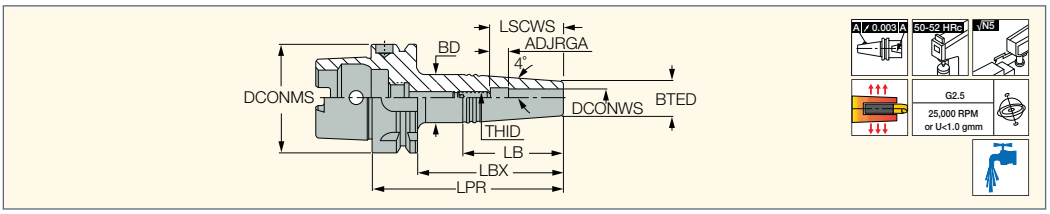
| Designation | | | |
|---|---|---|---|
| **HSK E32 SRK3X45** | SR M4X10 DIN913 | COOLING TUBE HSK A32* | WRENCH COOL TUBE HSK32* |
| **HSK E32 SRK4X45** | SR M5X20 DIN913 | COOLING TUBE HSK A32* | WRENCH COOL TUBE HSK32* |
| **HSK E32 SRK6X45** | SR M4X20 DIN916 | COOLING TUBE HSK A32* | WRENCH COOL TUBE HSK32* |
| **HSK E32 SRK10X45** | SR M4X20 DIN916 | COOLING TUBE HSK A32* | WRENCH COOL TUBE HSK32* |
| **HSK E40 SRK3X45** | SR M5X10 DIN913 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK3X80** | SR M5X10 DIN913 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK4X45** | SR M5X10 DIN913 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK4X80** | SR M5X10 DIN913 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK5X45** | SR M4X20 DIN916 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK5X80** | SR M4X20 DIN916 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK6X45** | SR M5X20 DIN913 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK6X80** | SR M5X20 DIN913 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK8X45** | SR M5X20 DIN913 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK10X45** | SR M5X10 DIN913 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK10X80** | SR M8X20 DIN913 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK12X45** | SR M5X10 DIN913 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E40 SRK12X80** | SR M10X18 DIN913 | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* |
| **HSK E50 SRK3X45** | SR M5X10 DIN913 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 SRK3X80** | SR M5X10 DIN913 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 SRK4X45** | SR M5X10 DIN913 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 SRK4X80** | SR M5X10 DIN913 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 SRK6X45** | SR M5X20 DIN913 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 SRK6X80** | SR M5X20 DIN913 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 SRK8X 45** | SR M6X10 DIN916 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 SRK8X 80** | PRESET M6X20B | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 SRK10X45** | SR M6X10 DIN916 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 SRK10X80** | SR M8X12 DIN916 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| **HSK E50 SRK12X45** | SR M6X10 DIN916 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |

* Optional, to be ordered separately

**HSK SHRINKIN**

## HSK A-SRK

Thermal Chuck Collets with HSK DIN69893 Form A Tapered Shanks for Solid Carbide Tools Only

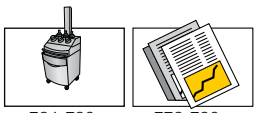



| Designation | DCONMS | DCONWS | BTED | BD | LPR | LBX | LB | ADJRGA | LSCWS | THID | Key(1) | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A63 SRK 3X50 | 63.00 | 3.00 | 10.00 | 17.00 | 76.00 | 50.0 | - | 6.00 | 16.0 | M6 | 3.00 | 1 | 0.68 |
| HSK A63 SRK 3X85 | 63.00 | 3.00 | 10.00 | 21.00 | 111.00 | 85.0 | 79.00 | 6.00 | 16.0 | M6 | 3.00 | 1 | 0.74 |
| HSK A63 SRK 4X50 | 63.00 | 4.00 | 10.00 | 17.00 | 76.00 | 50.0 | - | 6.00 | 18.0 | M6 | 3.00 | 1 | 0.68 |
| HSK A63 SRK 4X85 | 63.00 | 4.00 | 10.00 | 21.00 | 111.00 | 85.0 | 79.00 | 6.00 | 18.0 | M6 | 3.00 | 1 | 0.73 |
| HSK A63 SRK 5X50 | 63.00 | 5.00 | 10.00 | 17.00 | 76.00 | 50.0 | - | 6.00 | 21.0 | M6 | 3.00 | 1 | 0.68 |
| HSK A63 SRK 5X85 | 63.00 | 5.00 | 10.00 | 21.00 | 111.00 | 85.0 | 79.00 | 6.00 | 21.0 | M6 | 3.00 | 1 | 0.76 |
| HSK A63 SRK 6X50 | 63.00 | 6.00 | 11.00 | 18.00 | 76.00 | 50.0 | - | 6.00 | 24.0 | M8 | 4.00 | 1 | 0.67 |
| HSK A63 SRK 6X85 | 63.00 | 6.00 | 11.00 | 22.00 | 111.00 | 85.0 | 79.00 | 6.00 | 24.0 | M8 | 4.00 | 1 | 0.74 |
| HSK A63 SRK 8X50 | 63.00 | 8.00 | 14.00 | 20.00 | 76.00 | 50.0 | 43.00 | 11.00 | 36.0 | M6 | 3.00 | 1 | 0.71 |
| HSK A63 SRK 8X85 | 63.00 | 8.00 | 14.00 | 23.00 | 111.00 | 85.0 | 64.00 | 11.00 | 36.0 | M6 | 3.00 | 1 | 0.80 |
| HSK A63 SRK 10X50 | 63.00 | 10.00 | 16.00 | 23.00 | 76.00 | 50.0 | - | 11.00 | 41.0 | M8 | 4.00 | 1 | 0.72 |
| HSK A63 SRK 10X85 | 63.00 | 10.00 | 16.00 | 26.00 | 111.00 | 85.0 | 72.00 | 11.00 | 41.0 | M8 | 4.00 | 1 | 0.82 |
| HSK A63 SRK 12X50 | 63.00 | 12.00 | 20.00 | 27.00 | 76.00 | 50.0 | - | 11.00 | 43.0 | M8 | 4.00 | 1 | 0.75 |
| HSK A63 SRK 12X85 | 63.00 | 12.00 | 20.00 | 30.00 | 111.00 | 85.0 | 72.00 | 11.00 | 43.0 | M8 | 4.00 | 1 | 0.92 |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately). • To be used for carbide tools only.
- Remove preset screw for coolant through.

(1) Key for the adjustment screw.

(2) 1 - Slot for data chip, 0 - Without slot for data chip



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### Spare Parts

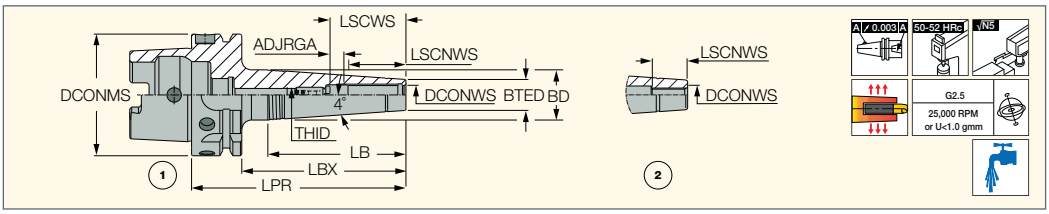
| Designation | | | |
|---|---|---|---|
| HSK A63 SRK 3X50 | SR M6X10 DIN916 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 3X85 | SR M6X10 DIN916 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 4X50 | SR M6X10 DIN916 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 4X85 | SR M6X10 DIN916 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 5X50 | SR M6X10 DIN916 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 5X85 | SR M6X10 DIN916 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 6X50 | SR M8X12 DIN916 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 6X85 | SR M8X12 DIN916 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 8X50 | PRESET M6X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 8X85 | PRESET M6X20B | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 10X50 | SR M8X12 DIN916 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 10X85 | SR M8X20 DIN913 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 12X50 | SR M8X12 DIN916 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 12X85 | SR M8X20 DIN913 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |

* Optional, to be ordered separately

## HSK X-STREAM JET TOOLHOLDING

### HSK A-SRK-CX

Thermal Shrink Chucks with HSK DIN69893 Form A Tapered Shank and Jet Coolant Grooves for Solid Carbide Tools Only




| Designation | DCONMS | DCONWS | BTED | BD | LPR | LBX | LB | ADJRGA | LSCWS | LSCNWS | THID | Key | DCP(2) | Fig. | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A63 SRK 3X50 CX (1) | 63.00 | 3.00 | 10.00 | 17.00 | 76.00 | 50.00 | - | - | - | 10.00 | - | - | 1 | 2 | 0.77 |
| HSK A63 SRK 3X85 CX (1) | 63.00 | 3.00 | 10.00 | 21.00 | 111.00 | 85.00 | 78.70 | - | - | 10.00 | - | - | 1 | 2 | 0.84 |
| HSK A63 SRK 4X50 CX (1) | 63.00 | 4.00 | 10.00 | 17.00 | 76.00 | 50.00 | - | - | - | 12.00 | - | - | 1 | 2 | 0.77 |
| HSK A63 SRK 4X85 CX (1) | 63.00 | 4.00 | 10.00 | 21.00 | 111.00 | 85.00 | 78.70 | - | - | 12.00 | - | - | 1 | 2 | 0.83 |
| HSK A63 SRK 5X50 CX (1) | 63.00 | 5.00 | 10.00 | 17.00 | 76.00 | 50.00 | - | - | - | 15.00 | - | - | 1 | 2 | 0.62 |
| HSK A63 SRK 5X85 CX (1) | 63.00 | 5.00 | 10.00 | 21.00 | 111.00 | 85.00 | 78.70 | - | - | 15.00 | - | - | 1 | 2 | 0.83 |
| HSK A63 SRK 6X50 CX | 63.00 | 6.00 | 11.00 | 18.00 | 76.00 | 50.00 | - | 8.90 | 26.90 | 18.00 | M5 | 2.50 | 1 | 1 | 0.68 |
| HSK A63 SRK 6X85 CX | 63.00 | 6.00 | 11.00 | 22.00 | 111.00 | 85.00 | 78.70 | 8.90 | 26.90 | 18.00 | M5 | 2.50 | 1 | 1 | 0.76 |
| HSK A63 SRK 8X50 CX | 63.00 | 8.00 | 14.00 | 20.00 | 76.00 | 50.00 | 42.90 | 9.50 | 34.50 | 25.00 | M6 | 3.00 | 1 | 1 | 0.69 |
| HSK A63 SRK 8X85 CX | 63.00 | 8.00 | 14.00 | 23.00 | 111.00 | 85.00 | 64.40 | 9.50 | 34.50 | 25.00 | M6 | 3.00 | 1 | 1 | 0.90 |
| HSK A63 SRK 10X50 CX | 63.00 | 10.00 | 16.00 | 23.00 | 76.00 | 50.00 | - | 9.50 | 39.50 | 30.00 | M6 | 3.00 | 1 | 1 | 0.81 |
| HSK A63 SRK 10X85 CX | 63.00 | 10.00 | 16.00 | 26.00 | 111.00 | 85.00 | 71.50 | 9.30 | 39.30 | 30.00 | M8 | 4.00 | 1 | 1 | 0.56 |
| HSK A63 SRK 12X50 CX | 63.00 | 12.00 | 20.00 | 27.00 | 76.00 | 50.00 | - | 9.50 | 41.50 | 32.00 | M6 | 3.00 | 1 | 1 | 0.85 |
| HSK A63 SRK 12X85 CX | 63.00 | 12.00 | 20.00 | 30.00 | 111.00 | 85.00 | 71.50 | 9.30 | 41.30 | 32.00 | M10 | 5.00 | 1 | 1 | 1.01 |

New

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).
- For solid carbide tools
- Preset screw CX allows supply of coolant via JET channels - not to be removed!

(1) Without preset screw

(2) 1 - Slot for data chip, 0 - Without slot for data chip

### Spare Parts

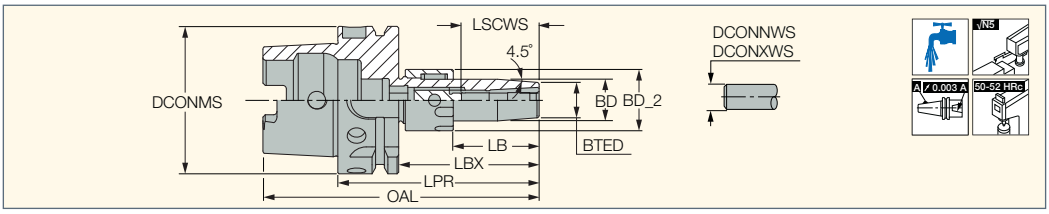
| Designation | | | |
|---|---|---|---|
| HSK A63 SRK 3X50 CX | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 3X85 CX | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 4X50 CX | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 4X85 CX | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 5X50 CX | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 5X85 CX | | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 6X50 CX | PRESET CX M5X13 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 6X85 CX | PRESET CX M5X13 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 8X50 CX | PRESET CX M6X12 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 8X85 CX | PRESET CX M6X12 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 10X50 CX | PRESET CX M6X12 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 10X85 CX | PRESET CX M8X16 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 12X50 CX | PRESET CX M6X12 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 SRK 12X85 CX | PRESET CX M10X16 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |

* Optional, to be ordered separately

## HSK QUICKCLAMP

### HSK-A-MS

QUICK-CLAMP System for Small Cutting Tools with HSK ISO12164-1 Shank




| Designation | DCONNWS(1) | DCONXWS(2) | BTED | BD | BD_2 | LB | LBX | LPR | OAL | DCONMS | LSCWS | DCP(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A63 MS6X60 | 3.00 | 6.00 | 15.00 | 17.80 | 26.20 | 36.00 | 60.00 | 86.00 | 118.00 | 63.00 | 33.00 | 1 |

New

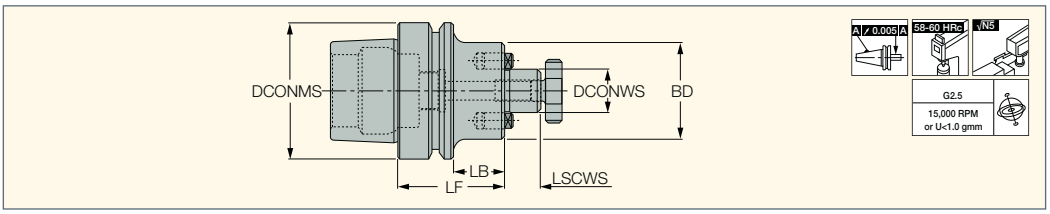
(1) Minimum diameter

(2) Maximum diameter

(3) 1 - Slot for data chip, 0 - Without slot for data chip

## *HSK*

### HSK E-SEM
ISO 3937 Shell Mill Holders
with HSK E DIN69893
Form E Tapered Shanks




| Designation | DCONMS | DCONWS | BD | LF | LB | LSCWS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|
| HSK E40 SEM 22X50 | 40.00 | 22.00 | 47.00 | 50.00 | 30.0 | 19.00 | 0 | 0.54 |

• A cooling tube must be used with all coolant through HSK spindles (to be ordered separately). • For internal coolant through the holder, the related COOLANT SET to be ordered via Accessories (applicable to certain tools only)

(1) 1 - Slot for data chip, 0 - Without slot for data chip

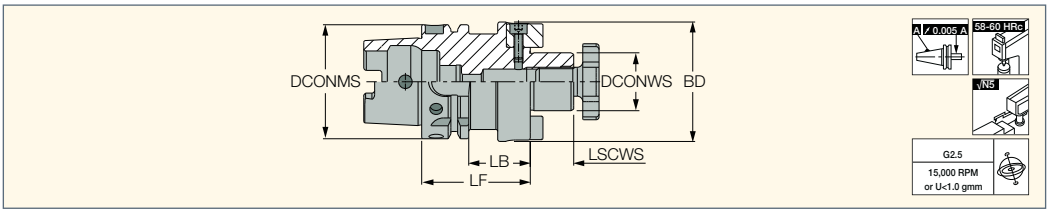
### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| HSK E40 SEM 22X50 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | COOLING TUBE HSK A40* | WRENCH COOL TUBE HSK40* | DR.DOG 10S |

* Optional, to be ordered separately

## *HSK*

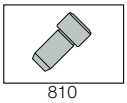
### HSK A-SEM
ISO 3937 Shell Mill Holders
with HSK DIN69893 Form A
Tapered Shanks




| Designation | DCONMS | DCONWS | BD | LF | LSCWS | LB | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|
| HSK A63 SEM16X50 | 63.00 | 16.00 | 38.00 | 50.00 | 17.00 | 24.0 | 1 | 0.86 |
| HSK A63 SEM22X50 | 63.00 | 22.00 | 47.00 | 50.00 | 19.00 | 24.0 | 1 | 0.60 |
| HSK A63 SEM27X60 | 63.00 | 27.00 | 58.00 | 60.00 | 21.00 | 34.0 | 1 | 1.30 |
| HSK A63 SEM32X60 | 63.00 | 32.00 | 66.00 | 60.00 | 24.00 | 34.0 | 1 | 1.41 |
| HSK A63 SEM40X60 | 63.00 | 40.00 | 82.00 | 60.00 | 27.00 | 24.0 | 1 | 1.76 |
| HSK A100 SEM22X50 | 100.00 | 22.00 | 47.00 | 50.00 | 19.00 | 21.0 | 1 | 2.30 |
| HSK A100 SEM27X50 | 100.00 | 27.00 | 58.00 | 50.00 | 21.00 | 21.0 | 1 | 2.48 |
| HSK A100 SEM32X50 | 100.00 | 32.00 | 66.00 | 50.00 | 24.00 | 21.0 | 1 | 2.63 |
| HSK A100 SEM40X60 | 100.00 | 40.00 | 82.00 | 60.00 | 27.00 | 31.0 | 1 | 3.37 |
| HSK A100 SEM50X70 | 100.00 | 50.00 | 81.00 | 70.00 | 30.00 | 41.0 | 1 | 4.29 |

• A cooling tube must be used with all coolant through HSK spindles (to be ordered separately). • For internal coolant through the holder, the related COOLANT SET to be ordered via Accessories (applicable to certain tools only)

(1) 1 - Slot for data chip, 0 - Without slot for data chip



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### Spare Parts

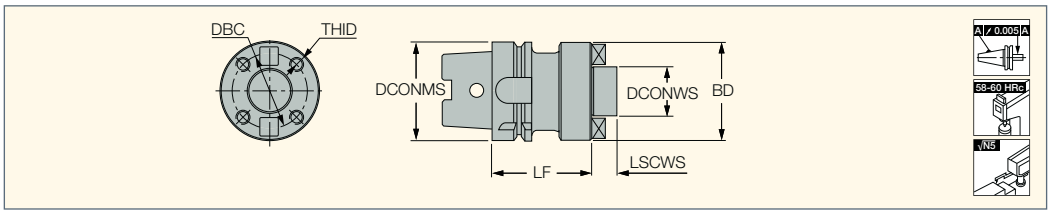
| Designation | | | | | | |
|---|---|---|---|---|---|---|
| HSK A63 SEM16X50 | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | DR.DOG 8S | SR M3X10DIN912 |
| HSK A63 SEM22X50 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | DR.DOG 10S | SR M4X10DIN912 |
| HSK A63 SEM27X60 | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | DR.DOG 12S | SR M5X14DIN912 |
| HSK A63 SEM32X60 | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | DR.DOG 14X13S | SR M5X14DIN912 |
| HSK A63 SEM40X60 | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | DR.DOG 16X18S | SR M6X20 DIN912 |
| HSK A100 SEM22X50 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | DR.DOG 10S | SR M4X10DIN912 |
| HSK A100 SEM27X50 | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | DR.DOG 12S | SR M5X14DIN912 |
| HSK A100 SEM32X50 | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | DR.DOG 14X13S | SR M5X14DIN912 |
| HSK A100 SEM40X60 | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | DR.DOG 16X18S | SR M6X20 DIN912 |
| HSK A100 SEM50X70 | M24 CLAMP SCREW SEM50 | WRENCH M12 SEMC 27* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | | SR M6X16 DIN912 |

* Optional, to be ordered separately

## *HSK*

### HSK A-FM

DIN 6357 Face Mill Holders with HSK DIN 69893 Form A Tapered Shanks




| Designation | DCONMS | DCONWS | BD | LF | LSCWS | DBC | THID | DCP(1) | kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A100 FM60X70 | 100.00 | 60.00 | 128.00 | 70.00 | 40.00 | 101.60 | M16 | 1 | 5.77 | DR. DOG 1E | SR M12X25 DIN 912 | SR M16X50 DIN912 |

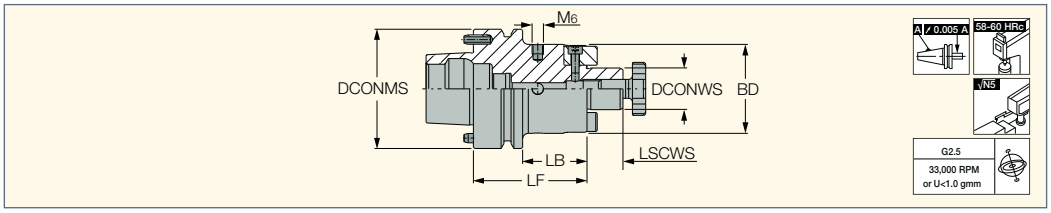
• A cooling tube must be used with all coolant through HSK spindles (to be ordered separately). • Peripheral clamping screws are not supplied.

(1) 1 - Slot for data chip, 0 - Without slot for data chip

## *HSK*

### HSK FM-SEM

Shell Mill Adapters with HSK DIN69893 FM Tapered Shanks with Two Pins for MAKINO Machine MAG Models

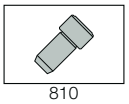



| Designation | DCONMS | DCONWS | LF | BD | LSCWS | LB | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|
| HSK FM63 SEM 22X60 | 63.00 | 22.00 | 60.00 | 47.00 | 19.00 | 34.0 | 0 | 1.13 |

• A cooling tube must be used with all coolant through HSK spindles (to be ordered separately) • The orientation pins can be removed, turning the toolholder into a standard HSK F63 type

• For internal coolant through the holder, the related COOLANT SET should be ordered via Accessories (select tools only)

(1) 1 - Slot for data chip, 0 - Without slot for data chip



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### Spare Parts

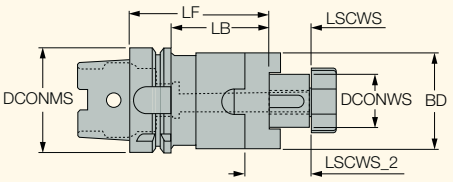
| Designation | | | | | |
|---|---|---|---|---|---|
| HSK FM63 SEM 22X60 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* | DR.DOG 10S |

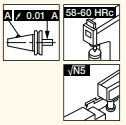
* Optional, to be ordered separately

## *HSK*

### HSK A-SEMC

DIN 6358 COMBI Shell Mill Holders with HSK DIN 69893 Form A Tapered Shanks



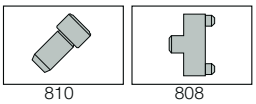




For internal coolant through the holder, the related COOLANT SET should be ordered via Accessories (applicable to certain tools only)

| Designation | DCONMS | DCONWS | BD | LF | LB | LSCWS | LSCWS_2 | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|
| HSK A63 SEMC16X60 | 63.00 | 16.00 | 32.00 | 60.00 | 34.0 | 17.00 | 27.00 | 1 | 0.82 |
| HSK A63 SEMC22X60 | 63.00 | 22.00 | 40.00 | 60.00 | 34.0 | 19.00 | 31.00 | 1 | 0.91 |
| HSK A63 SEMC27X60 | 63.00 | 27.00 | 48.00 | 60.00 | 34.0 | 21.00 | 33.00 | 1 | 1.00 |
| HSK A63 SEMC32X60 | 63.00 | 32.00 | 58.00 | 60.00 | 34.0 | 24.00 | 38.00 | 1 | 1.13 |
| HSK A63 SEMC40X70 | 63.00 | 40.00 | 70.00 | 70.00 | 44.0 | 27.00 | 41.00 | 1 | 1.52 |
| HSK A100 SEMC16X60 | 100.00 | 16.00 | 32.00 | 60.00 | 31.0 | 17.00 | 27.00 | 1 | 2.17 |
| HSK A100 SEMC22X60 | 100.00 | 22.00 | 40.00 | 60.00 | 31.0 | 19.00 | 31.00 | 1 | 2.24 |
| HSK A100 SEMC27X60 | 100.00 | 27.00 | 48.00 | 60.00 | 31.0 | 21.00 | 33.00 | 1 | 2.35 |
| HSK A100 SEMC32X60 | 100.00 | 32.00 | 58.00 | 60.00 | 31.0 | 24.00 | 38.00 | 1 | 2.50 |
| HSK A100 SEMC40X70 | 100.00 | 40.00 | 70.00 | 70.00 | 41.0 | 27.00 | 41.00 | 1 | 3.04 |
| HSK A100 SEMC50X80 | 100.00 | 50.00 | 90.00 | 80.00 | 51.0 | 30.00 | 46.00 | 1 | 4.03 |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).
- When mounting slitting cutters, remove the driving ring and use spacer rings.
- Verify that the weight of the entire tool as sembly does not exceed the machine spindle's carrying capability.

(1) 1 - Slot for data chip, 0 - Without slot for data chip



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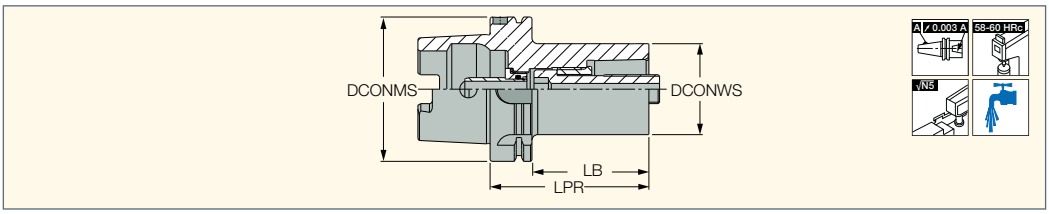
## Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| HSK A63 SEMC16X60 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | KEY SEMC 16 4X4X20 |
| HSK A63 SEMC22X60 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | KEY SEMC 22 6X6X25 |
| HSK A63 SEMC27X60 | 27 D.RING SEMC | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | KEY SEMC 27 7X7X25 |
| HSK A63 SEMC32X60 | 32 D.RING SEMC | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | KEY SEMC 32 8X7X28 |
| HSK A63 SEMC40X70 | 40 D.RING SEMC | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | KEY SEMC 40 10X8X32 |
| HSK A100 SEMC16X60 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | KEY SEMC 16 4X4X20 |
| HSK A100 SEMC22X60 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | KEY SEMC 22 6X6X25 |
| HSK A100 SEMC27X60 | 27 D.RING SEMC | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | KEY SEMC 27 7X7X25 |
| HSK A100 SEMC32X60 | 32 D.RING SEMC | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | KEY SEMC 32 8X7X28 |
| HSK A100 SEMC40X70 | 40 D.RING SEMC | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | KEY SEMC 40 10X8X32 |
| HSK A100 SEMC50X80 | 50 D.RING SEMC | M24 CLAMP SCREW SEM50 | WRENCH M24 SEMC 50* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | KEY SEMC 50 12X8X36 |

* Optional, to be ordered separately

## HSK CAMFIX

**HSK-C#**
CAMFIX (ISO 26623-1)
Holders with HSK ISO 12164-3
Form A Tapered Shanks




| Designation | DCONMS | DCONWS | LPR | LB | DCP(1) | kg |
|---|---|---|---|---|---|---|
| C4 AD HSK A63WHX080 | 63.00 | 40.00 | 80.00 | 54.00 | 1 | 1.10 |
| C5 AD HSK A63WHX90 | 63.00 | 50.00 | 90.00 | 64.00 | 1 | 1.44 |
| C5 AD HSK A100WHX100 | 100.00 | 50.00 | 100.00 | 71.00 | 1 | 2.90 |
| C6 AD HSK A100WHX110 | 100.00 | 63.00 | 110.00 | 81.00 | 1 | 3.61 |
| C8 AD HSK A100WHX120 | 100.00 | 80.00 | 120.00 | 91.00 | 1 | 4.79 |

- Note: To enable clamping the part to be attached, first remove the cooling tube

(1) 1 - Slot for data chip, 0 - Without slot for data chip

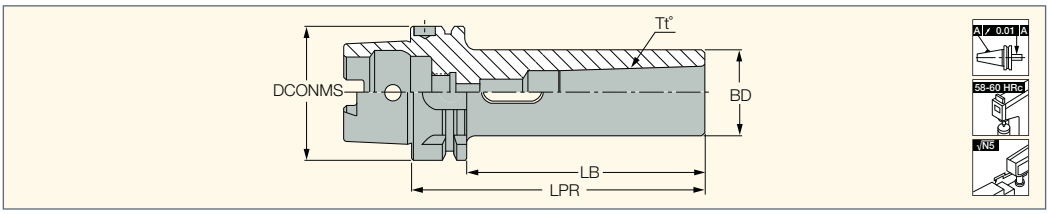
### Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| C4 AD HSK A63WHX080 | SR M14X58 C4 | HW 8.0* | MT RING M22X17XC4 | COOLING TUBE HSK A63 | WRENCH COOL TUBE HSK63* | WRENCH C4 DRW NUT* |
| C5 AD HSK A63WHX90 | SR M16X70 C5 | HW 10.0* | MT RING M25X20XC5 | COOLING TUBE HSK A63 | WRENCH COOL TUBE HSK63* | WRENCH C5 DRW NUT* |
| C5 AD HSK A100WHX100 | SR M16X70 C5 | HW 10.0* | MT RING M25X20XC5 | COOLING TUBE HSK A100 | WRENCH COOL TUBE HSK100* | WRENCH C5 DRW NUT* |
| C6 AD HSK A100WHX110 | SR M20X87 C6/8 | HW 14.0* | MT RING M30X24XC6/8 | COOLING TUBE HSK A100C6/8 | WRENCH COOL TUBE HSK100* | WRENCH C6-8 DRW NUT* |
| C8 AD HSK A100WHX120 | SR M20X87 C6/8 | HW 14.0* | MT RING M30X24XC6/8 | COOLING TUBE HSK A100C6/8 | WRENCH COOL TUBE HSK100* | WRENCH C6-8 DRW NUT* |

* Optional, to be ordered separately

## HSK

**HSK A-MT**
DIN 6383/DIN 228-2
Form D Tang Morse Taper
Adapters with DIN 69893/A
HSK Tapered Shanks

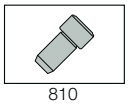



| Designation | DCONMS | Tt° | BD | LPR | LB | DCP(1) | kg | | |
|---|---|---|---|---|---|---|---|---|---|
| HSK A63 MT1X110 | 63.00 | MT1 | 25.00 | 110.00 | 84.0 | 1 | 0.92 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 MT2X120 | 63.00 | MT2 | 32.00 | 120.00 | 94.0 | 1 | 1.09 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 MT3X140 | 63.00 | MT3 | 40.00 | 140.00 | 114.0 | 1 | 1.45 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 MT4X160 | 63.00 | MT4 | 48.00 | 160.00 | 134.0 | 1 | 1.89 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A100 MT1X110 | 100.00 | MT1 | 25.00 | 110.00 | 81.0 | 1 | 2.27 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 MT2X120 | 100.00 | MT2 | 32.00 | 120.00 | 91.0 | 1 | 2.39 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 MT3X150 | 100.00 | MT3 | 40.00 | 150.00 | 121.0 | 1 | 2.83 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 MT4X170 | 100.00 | MT4 | 48.00 | 170.00 | 141.0 | 1 | 3.31 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 MT5X200 | 100.00 | MT5 | 63.00 | 200.00 | 171.0 | 1 | 4.60 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).

(1) 1 - Slot for data chip, 0 - Without slot for data chip

* Optional, to be ordered separately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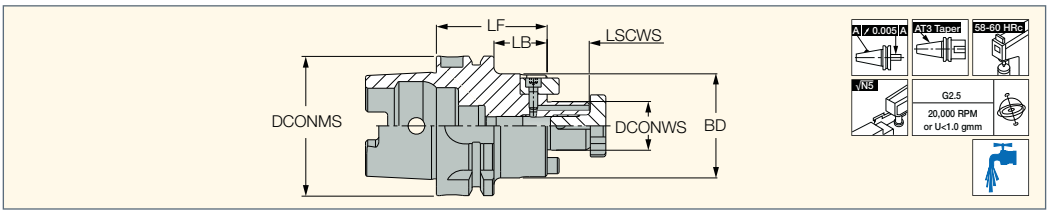
## *HSK*

**HSK A-SEM-C**
Shell Mill Holders with Coolant Holes and DIN69893 form A HSK Tapered Shanks



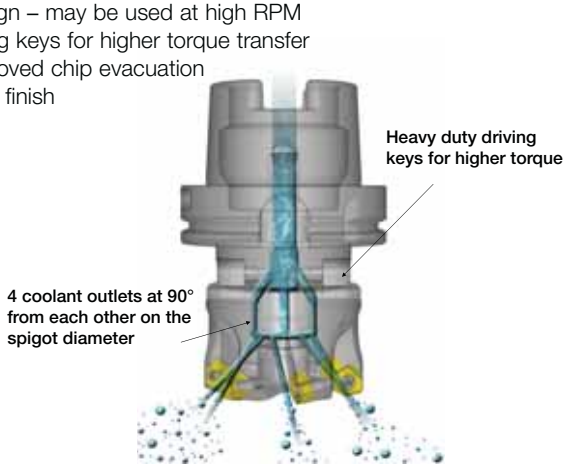

| Designation | DCONMS | DCONWS | BD | LF | LB | LSCWS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|
| HSK A63 SEM16X50C | 63.00 | 16.00 | 38.00 | 50.00 | 24.0 | 17.00 | 1 | 0.84 |
| HSK A63 SEM16X100C | 63.00 | 16.00 | 38.00 | 100.00 | 74.0 | 17.00 | 1 | 1.16 |
| HSK A63 SEM22X50C | 63.00 | 22.00 | 47.00 | 50.00 | 24.0 | 19.00 | 1 | 0.97 |
| HSK A63 SEM22X100C | 63.00 | 22.00 | 47.00 | 100.00 | 74.0 | 19.00 | 1 | 1.68 |
| HSK A63 SEM27X60C | 63.00 | 27.00 | 58.00 | 60.00 | 34.0 | 21.00 | 1 | 1.28 |
| HSK A63 SEM27X100C | 63.00 | 27.00 | 58.00 | 100.00 | 74.0 | 21.00 | 1 | 2.00 |
| HSK A63 SEM32X60C | 63.00 | 32.00 | 66.00 | 60.00 | 34.0 | 24.00 | 1 | 1.38 |
| HSK A63 SEM32X78X60C | 63.00 | 32.00 | 78.00 | 60.00 | 34.0 | 24.00 | 1 | 1.90 |
| HSK A63 SEM32X78X100C | 63.00 | 32.00 | 78.00 | 100.00 | 74.0 | 24.00 | 1 | 3.33 |
| HSK A100 SEM16X50C | 100.00 | 16.00 | 38.00 | 50.00 | 21.0 | 17.00 | 1 | 2.20 |
| HSK A100 SEM16X100C | 100.00 | 16.00 | 38.00 | 100.00 | 71.0 | 17.00 | 1 | 2.59 |
| HSK A100 SEM22X50C | 100.00 | 22.00 | 47.00 | 50.00 | 21.0 | 19.00 | 1 | 1.50 |
| HSK A100 SEM22X100C | 100.00 | 22.00 | 47.00 | 100.00 | 71.0 | 19.00 | 1 | 3.15 |
| HSK A100 SEM27X50C | 100.00 | 27.00 | 58.00 | 50.00 | 21.0 | 21.00 | 1 | 2.70 |
| HSK A100 SEM27X100C | 100.00 | 27.00 | 58.00 | 100.00 | 71.0 | 21.00 | 1 | 3.46 |
| HSK A100 SEM32X50C | 100.00 | 32.00 | 66.00 | 50.00 | 21.0 | 24.00 | 1 | 2.60 |
| HSK A100 SEM32X100C | 100.00 | 32.00 | 66.00 | 100.00 | 71.0 | 24.00 | 1 | 2.81 |
| HSK A100 SEM32X78X60C | 100.00 | 32.00 | 78.00 | 60.00 | 31.0 | 24.00 | 1 | 3.33 |
| HSK A100 SEM32X78X100C | 100.00 | 32.00 | 78.00 | 100.00 | 71.0 | 24.00 | 1 | 4.80 |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).

(1) 1 - Slot for data chip, 0 - Without slot for data chip

### Advantages

- Prolonged insert life (especially when milling titanium and aluminum)
- Symmetrical design – may be used at high RPM
- Heavy duty driving keys for higher torque transfer
- Dramatically improved chip evacuation
- Improved surface finish



### Spare Parts

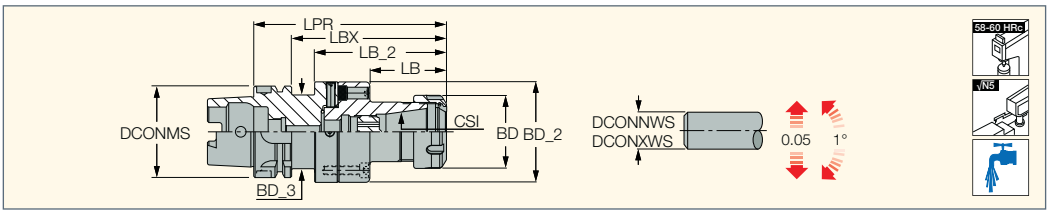
| Designation | | | | | | |
|---|---|---|---|---|---|---|
| HSK A63 SEM16X50C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | WRENCH M8 SEMC16* |
| HSK A63 SEM16X100C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | WRENCH M8 SEMC16* |
| HSK A63 SEM22X50C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | WRENCH M10 SEMC 22* |
| HSK A63 SEM22X100C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | WRENCH M10 SEMC 22* |
| HSK A63 SEM27X60C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X12 DIN912 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | WRENCH M12 SEMC 27* |
| HSK A63 SEM27X100C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X12 DIN912 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | WRENCH M12 SEMC 27* |
| HSK A63 SEM32X60C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | WRENCH M16 SEMC 32* |
| HSK A63 SEM32X78X60C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | WRENCH M16 SEMC 32* |
| HSK A63 SEM32X78X100C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | WRENCH M16 SEMC 32* |
| HSK A100 SEM16X50C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | WRENCH M8 SEMC16* |
| HSK A100 SEM16X100C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | WRENCH M8 SEMC16* |
| HSK A100 SEM22X50C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | WRENCH M10 SEMC 22* |
| HSK A100 SEM22X100C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | WRENCH M10 SEMC 22* |
| HSK A100 SEM27X50C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X12 DIN912 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | WRENCH M12 SEMC 27* |
| HSK A100 SEM27X100C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X12 DIN912 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | WRENCH M12 SEMC 27* |
| HSK A100 SEM32X50C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | WRENCH M16 SEMC 32* |
| HSK A100 SEM32X100C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | WRENCH M16 SEMC 32* |
| HSK A100 SEM32X78X60C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | WRENCH M16 SEMC 32* |
| HSK A100 SEM32X78X100C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | WRENCH M16 SEMC 32* |

* Optional, to be ordered separately

**HSK FINEFIT**

## ADJ HSK A-ER

DIN6499 ER Collet Chucks with Center Alignment (FINE-FIT) and HSK DIN69893/A Tapered Shanks



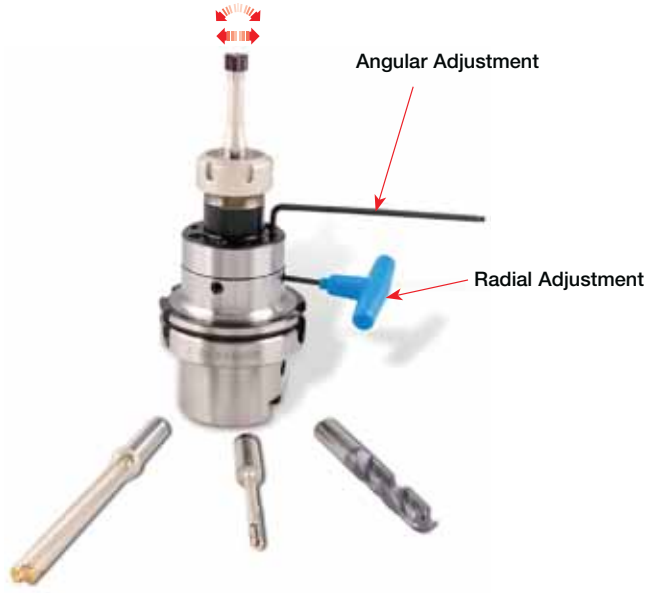

| Designation | DCONMS | CSI | DCONNWS(1) | DCONXWS(2) | BD_2 | BD_3 | BD | LPR | LBX | LB | LB_2 | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADJ HSK A63 D70 ER32 | 63.00 | ER32 | 2.0 | 20.0 | 70.00 | 46.00 | 50.00 | 134.50 | 108.5 | 52.50 | 92.50 | 1 | 2.25 |
| ADJ HSK A100 D70 ER32 | 100.00 | ER32 | 2.0 | 20.0 | 70.00 | - | 50.00 | 130.00 | 101.0 | 53.00 | - | 1 | 3.64 |

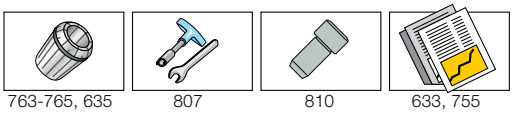
• A cooling tube must be used with all coolant through HSK spindles (to be ordered separately). • Radial adjustment 0.05 mm Angular adjustment 1°

(1) Minimum diameter

(2) Maximum diameter

(3) 1 - Slot for data chip, 0 - Without slot for data chip



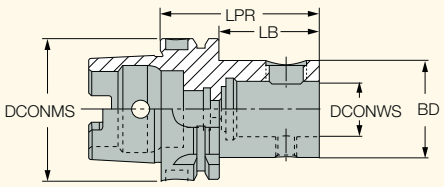
763-765, 635 | 807 | 810 | 633, 755

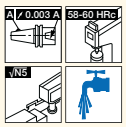
### Spare Parts

| Designation | |
|---|---|
| ADJ HSK A-ER | ADJ ER32 NOSE |

## HSK CLICKFIT

**HSK A-CF (CLICK-FIT)**
Modular Connections (CLICK-FIT) with HSK DIN69893/A Tapered Shanks




| Designation | DCONMS | DCONWS | LPR | LB | BD | DCP(1) | kg |
|---|---|---|---|---|---|---|---|
| HSK A63 CF4-S | 63.00 | 25.00 | 70.00 | 44.0 | 44.50 | 1 | 1.00 |
| HSK A100 CF4-S | 100.00 | 25.00 | 76.00 | 47.0 | 44.50 | 1 | 2.42 |

• Tightening torque: 6 Kgxm • A cooling tube must be used with all coolant through HSK spindles (to be ordered separately)
(1) 1 - Slot for data chip, 0 - Without slot for data chip

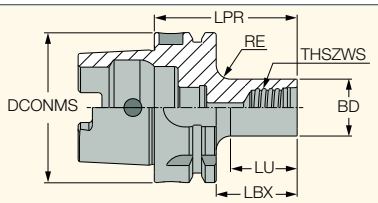
### Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| HSK A63 CF4-S | SCREW M16X1.5 FOR CF4 | WRENCH HW 8 200X36 DIN911 | OR 15X3N | WRENCH REAL C.F M8 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A100 CF4-S | SCREW M16X1.5 FOR CF4 | WRENCH HW 8 200X36 DIN911 | OR 15X3N | WRENCH REAL C.F M8 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

* Optional, to be ordered separately

## HSK MULTI-MASTER

**MM S-A-HSK**
MULTI-MASTER Threaded Connection Shanks with an Integral HSK DIN 69893 Form A Tapered Adaptation

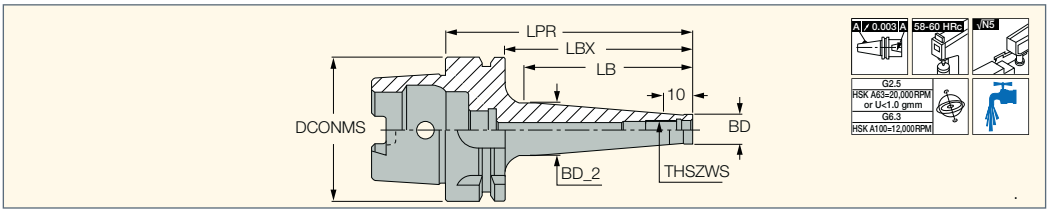


| Designation | DCONMS | THSZWS | BD | LPR | LBX | LU | RE | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|
| MM S-A-H035-HSK A40-T05 | 40.00 | T05 | 7.60 | 35.00 | 15.0 | 10.00 | 5.0 | 1 | 0.20 |
| MM S-A-H040-HSK A40-T06 | 40.00 | T06 | 9.25 | 40.00 | 20.0 | 15.00 | 5.0 | 1 | 0.28 |
| MM S-A-H045-HSK A40-T08 | 40.00 | T08 | 11.60 | 45.00 | 25.0 | 20.00 | 5.0 | 1 | 0.24 |
| MM S-A-H050-HSK A40-T10 | 40.00 | T10 | 15.30 | 50.00 | 30.0 | 25.00 | 5.0 | 1 | 0.23 |
| MM S-A-H050-HSK A40-T12 | 40.00 | T12 | 18.30 | 50.00 | 30.0 | 25.00 | 5.0 | 1 | 0.27 |
| MM S-A-H050-HSK A63-T06 | 63.00 | T06 | 9.25 | 50.00 | 24.0 | 18.00 | 6.0 | 1 | 0.70 |
| MM S-A-H050-HSK A63-T08 | 63.00 | T08 | 11.60 | 50.00 | 24.0 | 18.00 | 6.0 | 1 | 0.72 |
| MM S-A-H055-HSK A63-T10 | 63.00 | T10 | 15.30 | 55.00 | 29.0 | 23.00 | 6.0 | 1 | 0.73 |
| MM S-A-H055-HSK A63-T12 | 63.00 | T12 | 18.30 | 55.00 | 29.0 | 23.00 | 6.0 | 1 | 0.40 |
| MM S-A-H055-HSK A63-T21 | 63.00 | T21 | 30.00 | 55.00 | 29.0 | 19.00 | 10.0 | 1 | 0.83 |
| MM S-A-H060-HSK A63-T15 | 63.00 | T15 | 23.90 | 62.00 | 34.0 | 28.00 | 6.0 | 1 | 0.76 |
| MM S-A-H080-HSK A63-T21 | 63.00 | T21 | 30.00 | 80.00 | 54.0 | 44.00 | 10.0 | 1 | 0.94 |

• Do not apply lubricant to the threaded connection • For adaptation options, see page 746
(1) 1 - Slot for data chip, 0 - Without slot for data chip

## HSK FLEXFIT

**HSK A-ODP (FLEX-FIT)**
FLEX-FIT Threaded Adaptation with HSK DIN 69893/A Tapered Shanks

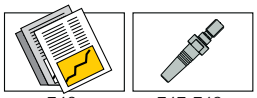



| Designation | DCONMS | THSZWS | BD | BD_2 | LPR | LBX | LB | DCP(1) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK A32 ODP12X42 | 32.00 | M12 | 21.00 | 20.60 | 42.00 | 22.0 | - | 1 | 0.17 | COOLING TUBE HSK A32* | WRENCH COOL TUBE HSK32* |
| HSK A50 ODP12X48 | 50.00 | M12 | 21.00 | 20.60 | 48.00 | 22.0 | - | 1 | 0.46 | COOLING TUBE HSK A50* | WRENCH COOL TUBE HSK50* |
| HSK A63 ODP6X109 | 63.00 | M06 | 9.80 | 23.00 | 109.00 | 83.0 | 75.00 | 1 | 0.74 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 ODP8X109 | 63.00 | M08 | 13.10 | 23.00 | 109.00 | 83.0 | 75.00 | 1 | 0.77 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 ODP8X59 | 63.00 | M08 | 13.10 | 15.00 | 59.00 | 33.0 | 25.00 | 1 | 0.68 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 ODP10X109 | 63.00 | M10 | 18.00 | 28.00 | 109.00 | 83.0 | 75.00 | 1 | 0.87 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 ODP10X59 | 63.00 | M10 | 18.00 | 20.00 | 59.00 | 33.0 | 25.00 | 1 | 0.70 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 ODP12X109 | 63.00 | M12 | 21.00 | 31.00 | 109.00 | 83.0 | 75.00 | 1 | 0.93 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 ODP12X59 | 63.00 | M12 | 21.00 | 23.50 | 59.00 | 33.0 | 25.00 | 1 | 0.71 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 ODP16X109 | 63.00 | M16 | 29.00 | 34.00 | 109.00 | 83.0 | 75.00 | 1 | 1.05 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A63 ODP16X59 | 63.00 | M16 | 29.00 | 34.60 | 59.00 | 33.0 | 25.00 | 1 | 0.79 | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* |
| HSK A100 ODP12X137 | 100.00 | M12 | 23.00 | 30.00 | 137.00 | 108.0 | 100.00 | 1 | 2.58 | COOLING TUBE HSK A100 | WRENCH COOL TUBE HSK100 |
| HSK A100 ODP12X187 | 100.00 | M12 | 23.00 | 40.00 | 187.00 | 158.0 | 150.00 | 1 | 2.86 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 ODP12X237 | 100.00 | M12 | 23.00 | 46.00 | 237.00 | 208.0 | 200.00 | 1 | 3.40 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 ODP12X87 | 100.00 | M12 | 23.00 | 30.00 | 87.00 | 58.0 | 50.00 | 1 | 2.23 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 ODP16X137 | 100.00 | M16 | 29.00 | 41.50 | 137.00 | 108.0 | 100.00 | 1 | 2.68 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 ODP16X187 | 100.00 | M16 | 29.00 | 55.00 | 187.00 | 158.0 | 150.00 | 1 | 3.58 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 ODP16X237 | 100.00 | M16 | 29.00 | 55.00 | 237.00 | 208.0 | 200.00 | 1 | 4.07 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |
| HSK A100 ODP16X87 | 100.00 | M16 | 29.00 | 31.50 | 87.00 | 58.0 | 50.00 | 1 | 2.20 | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

- A cooling tube must be used with all coolant through HSK spindles (to be ordered separately).

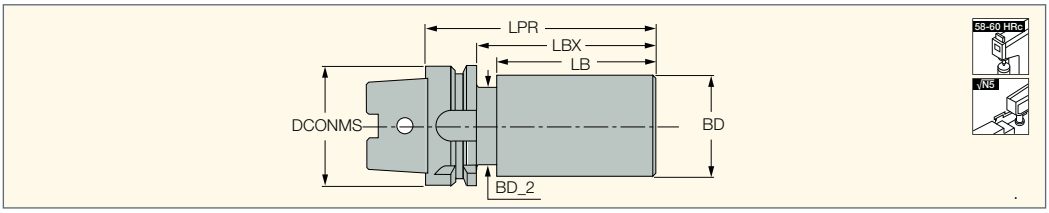
(1) 1 - Slot for data chip, 0 - Without slot for data chip

* Optional, to be ordered separately




## HSK

**HSK A-B-MN (blanks)**
Blanks with HSK DIN69893/A Tapered Shanks




| Designation | DCONMS | BD | BD_2 | LPR | LBX | LB | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|
| HSK A63 B16MN 100 | 63.00 | 63.00 | 52.80 | 100.00 | 74.0 | 55.50 | 1 | 2.31 |
| HSK A63 B16MN 200 | 63.00 | 63.00 | 52.80 | 200.00 | 174.0 | 155.50 | 1 | 4.75 |
| HSK A100 B16MN 100 | 100.00 | 102.00 | 85.00 | 100.00 | 71.0 | 54.80 | 1 | 6.22 |
| HSK A100 B16MN 200 | 100.00 | 102.00 | 85.00 | 200.00 | 171.0 | 154.80 | 1 | 12.90 |

- Material: Case hardened alloy steel, nose core hardness 22-30 HRC, nose surface hardness 57-60 HRC
- Tensile strength: min 760 Mpa

(1) 1 - Slot for data chip, 0 - Without slot for data chip

### Spare Parts

| Designation | | |
|---|---|---|
| HSK A-B-MN (blanks) | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* |

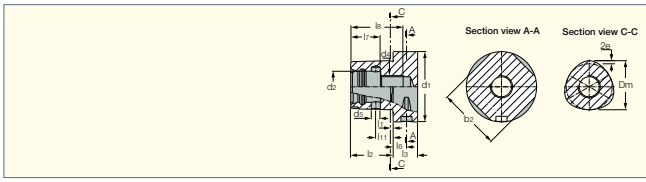
* Optional, to be ordered separately

# CAMFIX DIN 26623-1

CAMFIX

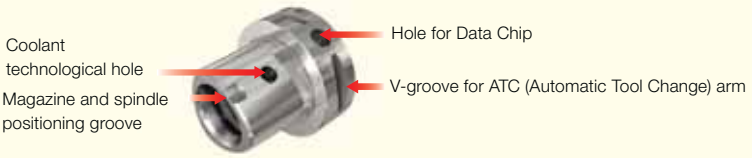
## CAMFIX ISO 26623-1

Toolholder Standard




| CAMFIX | b2 | d1 ±0.1 | d2 | d4 | d5 ±0.1 | Dm | e | l1 | l2 ±0.1 | l3 min | l6 ±0.15 | l7 ±0.15 | l8 min | l11 ±0.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C3 | 28.3 | 32 | 15 | M12x1.5 | 3.6 | 22 | 0.7 | 2.5 | 19 | 15 | 6 | 13 | 25 | 8 |
| C4 | 35.3 | 40 | 18 | M14x1.5 | 4.6 | 28 | 0.9 | 2.5 | 24 | 20 | 8 | 15 | 30 | 8 |
| C5 | 44.4 | 50 | 21 | M16x1.5 | 6.1 | 35 | 1.12 | 3 | 30 | 20 | 10 | 20 | 37 | 14 |
| C6 | 55.8 | 63 | 28 | M20x2 | 8.1 | 44 | 1.4 | 3 | 38 | 22 | 12 | 27 | 47 | 15.5 |
| C8 | 71.1 | 80 | 32 | M20x2 | 9.1 | 55 | 2 | 3 | 48 | 30 | 12 | 28 | 48 | 25 |
| C8X | 88.7 | 100 | 32 | M20x2 | 9.1 | 55 | 2 | 3 | 48 | 32 | 16 | 28 | 48 | 25 |
| C10 | 88.3 | 100 | 43 | M20x2 | 12 | 72 | 2.8 | 3 | 60 | 36 | 16 | 40 | 70 | 26.5 |

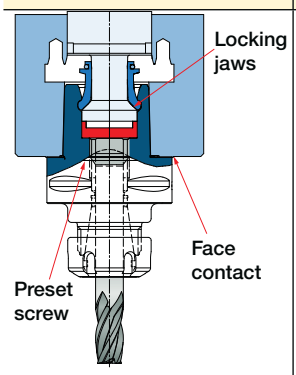
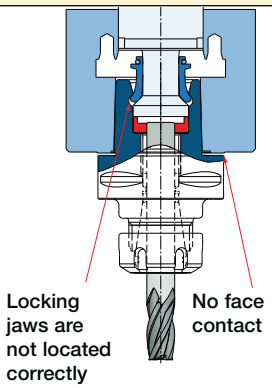
## CAMFIX - ISO 26623-1 Standard Quick Change Shanks



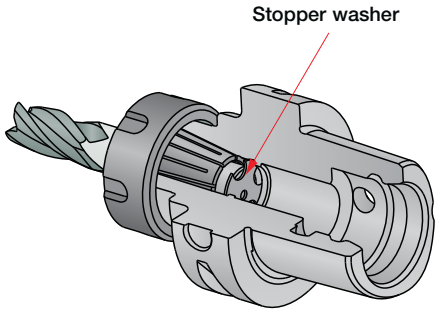

**Features**

- Symmetrical design: Due to the symmetrical design, the torque load is distributed on the polygon, providing a self-centering effect.
- Rigidity: The **CAMFIX** clamping mechanism is extremely rigid against bending forces.
- Accuracy: The taper and face contact ensure high repeatability within 2 microns, when operated with an automatic tool changer.

**CAMFIX** chucking Instructions please be careful when clamping cylindrical shank cutting tools into **CAMFIX** holders such as **ER collet** chucks or **EM holders**. In cases when the diameter of the shank is smaller than the **CAMFIX** through hole, it may penetrate into the drawbar mechanism area and prevent proper clamping.

| Correct Clamping | Wrong Clamping |
|---|---|
| ✔ | ✗ |
|  |  |
| Use a preset screw to prevent the cutter shank from entering into the clamping mechanism zone, so the drawbar locking jaws can function correctly. | The cutter shank enters into the locking mechanism zone, preventing the drawbar locking jaws to reach their correct clamping position. |

In order to prevent too deep insertion of the cutting tools, the short length ER16, 20, 25, 32, 40 collet chucks and EM 6-50 mm endmill holders are equipped with permanent stoppers.

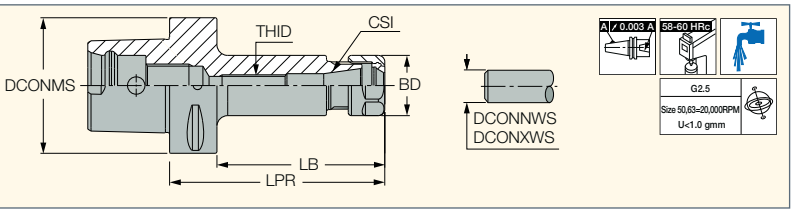



**ER Chucks**

A special washer is installed as a permanent stopper.

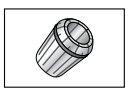
**CAMFIX**

**C#-ER**
DIN 6499 ER Collet Chucks
with CAMFIX (ISO 26623-1)
Exchangeable Tapered Shanks




| Designation | DCONMS | CSI | DCONNWS[2] | DCONXWS[3] | BD | LPR | LB | THID | CDI[4] | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| C3 ER16X45 | 32.00 | ER16 | 1.0 | 10.0 | 28.00 | 45.00 | 30.0 | - | 0 | 0.20 |
| C3 ER20X45 | 32.00 | ER20 | 1.0 | 13.0 | 34.00 | 45.00 | 30.0 | - | 0 | 0.22 |
| C4 ER16X70 | 40.00 | ER16 | 1.0 | 10.0 | 28.00 | 70.00 | 50.0 | M10 | 1 | 0.38 |
| C4 ER20X35 [1] | 40.00 | ER20 | 1.0 | 13.0 | 34.00 | 35.00 | 27.0 | - | 1 | 0.16 |
| C4 ER20X52 | 40.00 | ER20 | 1.0 | 13.0 | 34.00 | 52.00 | 32.0 | - | 1 | 0.29 |
| C4 ER25X38 [1] | 40.00 | ER25 | 1.0 | 16.0 | 42.00 | 38.00 | 30.0 | - | 1 | 0.18 |
| C4 ER25X52 | 40.00 | ER25 | 1.0 | 16.0 | 42.00 | 52.00 | 32.0 | - | 1 | 0.30 |
| C4 ER32X54 | 40.00 | ER32 | 2.0 | 20.0 | 50.00 | 54.00 | 34.0 | - | 1 | 0.48 |
| C5 ER16X100 | 50.00 | ER16 | 1.0 | 10.0 | 28.00 | 100.00 | 80.0 | M10 | 1 | 0.78 |
| C5 ER16X130 | 50.00 | ER16 | 1.0 | 10.0 | 28.00 | 130.00 | 110.0 | M10 | 1 | 0.79 |
| C5 ER20X055 | 50.00 | ER20 | 1.0 | 13.0 | 34.00 | 55.00 | 35.0 | - | 1 | 0.50 |
| C5 ER20X100 | 50.00 | ER20 | 1.0 | 13.0 | 34.00 | 100.00 | 80.0 | M12 | 1 | 0.79 |
| C5 ER20X130 | 50.00 | ER20 | 1.0 | 13.0 | 34.00 | 130.00 | 110.0 | M12 | 1 | 0.97 |
| C5 ER25X055 | 50.00 | ER25 | 1.0 | 16.0 | 42.00 | 55.00 | 35.0 | - | 1 | 0.52 |
| C5 ER25X100 | 50.00 | ER25 | 1.0 | 16.0 | 42.00 | 100.00 | 80.0 | M16 | 1 | 0.93 |
| C5 ER32X057 | 50.00 | ER32 | 2.0 | 20.0 | 50.00 | 57.00 | 36.0 | - | 1 | 0.50 |
| C5 ER32X100 | 50.00 | ER32 | 2.0 | 20.0 | 50.00 | 100.00 | 36.0 | M22X1.5 | 1 | 1.05 |
| C6 ER16X100 | 63.00 | ER16 | 1.0 | 10.0 | 28.00 | 100.00 | 78.0 | M10 | 1 | 0.99 |
| C6 ER16X130 | 63.00 | ER16 | 1.0 | 10.0 | 28.00 | 130.00 | 108.0 | M10 | 1 | 1.12 |
| C6 ER16X160 | 63.00 | ER16 | 1.0 | 10.0 | 28.00 | 160.00 | 138.0 | M10 | 1 | 1.24 |
| C6 ER20X060 | 63.00 | ER20 | 1.0 | 13.0 | 34.00 | 60.00 | 38.0 | - | 1 | 0.84 |
| C6 ER20X100 | 63.00 | ER20 | 1.0 | 13.0 | 34.00 | 100.00 | 78.0 | M12 | 1 | 1.09 |
| C6 ER20X130 | 63.00 | ER20 | 1.0 | 13.0 | 34.00 | 130.00 | 108.0 | M12 | 1 | 1.26 |
| C6 ER20X160 | 63.00 | ER20 | 1.0 | 13.0 | 34.00 | 160.00 | 138.0 | M12 | 1 | 1.47 |
| C6 ER25X060 | 63.00 | ER25 | 1.0 | 16.0 | 42.00 | 60.00 | 38.0 | - | 1 | 0.86 |
| C6 ER25X100 | 63.00 | ER25 | 1.0 | 16.0 | 42.00 | 100.00 | 78.0 | M16 | 1 | 1.39 |
| C6 ER25X130 | 63.00 | ER25 | 1.0 | 16.0 | 42.00 | 130.00 | 108.0 | M16 | 1 | 1.68 |
| C6 ER25X160 | 63.00 | ER25 | 1.0 | 16.0 | 42.00 | 160.00 | 138.0 | M16 | 1 | 1.83 |
| C6 ER32X060 | 63.00 | ER32 | 2.0 | 20.0 | 50.00 | 60.00 | 36.0 | - | 1 | 1.06 |
| C6 ER32X100 | 63.00 | ER32 | 2.0 | 20.0 | 50.00 | 100.00 | 78.0 | M22X1.5 | 1 | 1.38 |
| C6 ER32X130 | 63.00 | ER32 | 2.0 | 20.0 | 50.00 | 130.00 | 108.0 | M22X1.5 | 1 | 1.75 |
| C6 ER32X160 | 63.00 | ER32 | 2.0 | 20.0 | 50.00 | 160.00 | 138.0 | M22X1.5 | 1 | 2.21 |
| C6 ER40X065 | 63.00 | ER40 | 3.0 | 26.0 | 63.00 | 65.00 | 37.0 | - | 1 | 0.93 |
| C6 ER40X100 | 63.00 | ER40 | 3.0 | 26.0 | 63.00 | 100.00 | 78.0 | M28X1.5 | 1 | 1.59 |
| C6 ER40X130 | 63.00 | ER40 | 3.0 | 26.0 | 63.00 | 130.00 | 108.0 | M28X1.5 | 1 | 2.18 |
| C8 ER32X100 | 80.00 | ER32 | 2.0 | 20.0 | 50.00 | 100.00 | 70.0 | M22x1.5 | 1 | 2.20 |
| C8 ER32X160 | 80.00 | ER32 | 2.0 | 20.0 | 50.00 | 160.00 | 130.0 | M22x1.5 | 1 | 3.08 |
| C8 ER32X70 | 80.00 | ER32 | 2.0 | 20.0 | 50.00 | 70.00 | 40.0 | - | 1 | 1.81 |
| C8 ER40X100 | 80.00 | ER40 | 3.0 | 26.0 | 63.00 | 100.00 | 70.0 | M28x1.5 | 1 | 0.86 |
| C8 ER40X160 | 80.00 | ER40 | 3.0 | 26.0 | 63.00 | 160.00 | 130.0 | M28x1.5 | 1 | 3.80 |
| C8 ER40X70 | 80.00 | ER40 | 3.0 | 26.0 | 63.00 | 70.00 | 40.0 | - | 1 | 1.82 |

[1] Short adapter without gripper grooves: NOT for ATC.Cannot be used in CAMFIX modular system (Extension, Reduction atc.)
[2] Minimum diameter
[3] Maximum diameter [1] 1 - Slot for data chip, 0 - Without slot for data chip

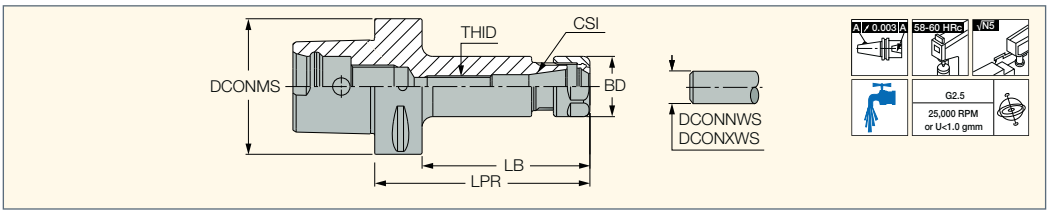

766-773

763-765, 635

Continued

**CAMFIX**

**C#-ER**
DIN 6499 ER Collet Chucks
with CAMFIX (ISO 26623-1)
Exchangeable Tapered Shanks



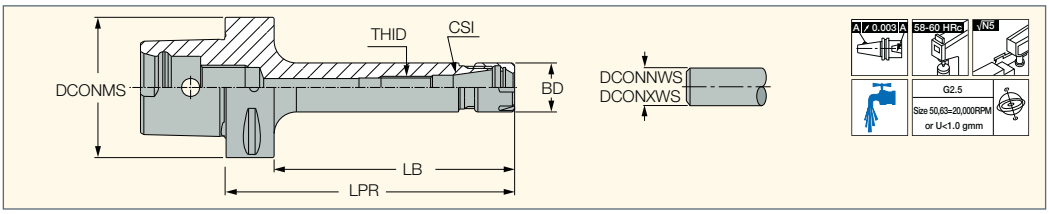

## Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| **C3 ER16X45** | NUT ER16 TOP | | WRENCH ER16* | COOLING TUBE C3* | WRENCH COOL TUBE C3* | |
| **C3 ER20X45** | NUT ER20 TOP | | WRENCH ER20* | COOLING TUBE C3* | WRENCH COOL TUBE C3* | |
| **C4 ER16X70** | NUT ER16 TOP | PRESET ER-JET 10X1.5* | WRENCH ER16* | COOLING TUBE C4* | WRENCH COOL TUBE C4* | |
| **C4 ER20X35** | NUT ER20 TOP | | WRENCH ER20* | COOLING TUBE C4* | WRENCH COOL TUBE C4* | |
| **C4 ER20X52** | NUT ER20 TOP | | WRENCH ER20* | COOLING TUBE C4* | WRENCH COOL TUBE C4* | |
| **C4 ER25X38** | NUT ER25 TOP | | WRENCH ER25* | COOLING TUBE C4* | WRENCH COOL TUBE C4* | |
| **C4 ER25X52** | NUT ER25 TOP | | WRENCH ER25* | COOLING TUBE C4* | WRENCH COOL TUBE C4* | |
| **C4 ER32X54** | NUT ER32 TOP | | WRENCH ER32* | COOLING TUBE C4* | WRENCH COOL TUBE C4* | |
| **C5 ER16X100** | NUT ER16 TOP | PRESET ER-JET 10X1.5* | WRENCH ER16* | COOLING TUBE C5* | WRENCH COOL TUBE C5* | |
| **C5 ER16X130** | NUT ER16 TOP | PRESET ER-JET 10X1.5* | WRENCH ER16* | COOLING TUBE C5* | WRENCH COOL TUBE C5* | |
| **C5 ER20X055** | NUT ER20 TOP | | WRENCH ER20* | COOLING TUBE C5* | WRENCH COOL TUBE C5* | |
| **C5 ER20X100** | NUT ER20 TOP | PRESET ER-JET 12X1.75* | WRENCH ER20* | COOLING TUBE C5* | WRENCH COOL TUBE C5* | PRESET ER-JET 12X1.75L* |
| **C5 ER20X130** | NUT ER20 TOP | PRESET ER-JET 12X1.75* | WRENCH ER20* | COOLING TUBE C5* | WRENCH COOL TUBE C5* | PRESET ER-JET 12X1.75L* |
| **C5 ER25X055** | NUT ER25 TOP | | WRENCH ER25* | COOLING TUBE C5* | WRENCH COOL TUBE C5* | |
| **C5 ER25X100** | NUT ER25 TOP | PRESET ER-JET 16X2* | WRENCH ER25* | COOLING TUBE C5* | WRENCH COOL TUBE C5* | PRESET ER-JET 16X2L* |
| **C5 ER32X057** | NUT ER32 TOP | | WRENCH ER32* | COOLING TUBE C5* | WRENCH COOL TUBE C5* | |
| **C5 ER32X100** | NUT ER32 TOP | PRESET ER-JET 22X1.5* | WRENCH ER32* | COOLING TUBE C5* | WRENCH COOL TUBE C5* | PRESET ER-JET 22X1.5L* |
| **C6 ER16X100** | NUT ER16 TOP | PRESET ER-JET 10X1.5* | WRENCH ER16* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | |
| **C6 ER16X130** | NUT ER16 TOP | PRESET ER-JET 10X1.5* | WRENCH ER16* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | |
| **C6 ER16X160** | NUT ER16 TOP | PRESET ER-JET 10X1.5* | WRENCH ER16* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | |
| **C6 ER20X060** | NUT ER20 TOP | | WRENCH ER20* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | |
| **C6 ER20X100** | NUT ER20 TOP | PRESET ER-JET 12X1.75* | WRENCH ER20* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | PRESET ER-JET 12X1.75L* |
| **C6 ER20X130** | NUT ER20 TOP | PRESET ER-JET 12X1.75* | WRENCH ER20* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | PRESET ER-JET 12X1.75L* |
| **C6 ER20X160** | NUT ER20 TOP | PRESET ER-JET 12X1.75* | WRENCH ER20* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | PRESET ER-JET 12X1.75L* |
| **C6 ER25X060** | NUT ER25 TOP | | WRENCH ER25* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | |
| **C6 ER25X100** | NUT ER25 TOP | PRESET ER-JET 16X2* | WRENCH ER25* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | PRESET ER-JET 16X2L* |
| **C6 ER25X130** | NUT ER25 TOP | PRESET ER-JET 16X2* | WRENCH ER25* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | PRESET ER-JET 16X2L* |
| **C6 ER25X160** | NUT ER25 TOP | PRESET ER-JET 16X2* | WRENCH ER25* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | PRESET ER-JET 16X2L* |
| **C6 ER32X060** | NUT ER32 TOP | | WRENCH ER32* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | |
| **C6 ER32X100** | NUT ER32 TOP | PRESET ER-JET 22X1.5* | WRENCH ER32* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | PRESET ER-JET 22X1.5L* |
| **C6 ER32X130** | NUT ER32 TOP | PRESET ER-JET 22X1.5* | WRENCH ER32* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | PRESET ER-JET 22X1.5L* |
| **C6 ER32X160** | NUT ER32 TOP | PRESET ER-JET 22X1.5* | WRENCH ER32* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | PRESET ER-JET 22X1.5L* |
| **C6 ER40X065** | NUT ER40 TOP | | WRENCH ER40* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | |
| **C6 ER40X100** | NUT ER40 TOP | PRESET ER-JET 28X1.5* | WRENCH ER40* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | |
| **C6 ER40X130** | NUT ER40 TOP | PRESET ER-JET 28X1.5* | WRENCH ER40* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | |
| **C8 ER32X100** | NUT ER32 TOP | PRESET ER-JET 22X1.5* | WRENCH ER32* | COOLING TUBE C8* | WRENCH COOL TUBE C8* | PRESET ER-JET 22X1.5L* |
| **C8 ER32X160** | NUT ER32 TOP | PRESET ER-JET 28X1.5* | WRENCH ER32* | COOLING TUBE C8* | WRENCH COOL TUBE C8* | |
| **C8 ER32X70** | NUT ER32 TOP | | WRENCH ER32* | COOLING TUBE C8* | WRENCH COOL TUBE C8* | |
| **C8 ER40X100** | NUT ER40 TOP | PRESET ER-JET 28X1.5* | WRENCH ER40* | COOLING TUBE C8* | WRENCH COOL TUBE C8* | |
| **C8 ER40X160** | NUT ER40 TOP | | WRENCH ER40* | COOLING TUBE C8* | WRENCH COOL TUBE C8* | |
| **C8 ER40X70** | NUT ER40 TOP | | WRENCH ER40* | COOLING TUBE C8* | WRENCH COOL TUBE C8* | |

* Optional, to be ordered separately

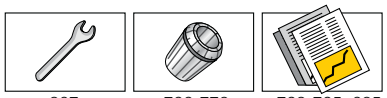
## CAMFIX

**C#-ER-M**
DIN 6499 ER Long Mini
Collet Chucks with CAMFIX
(ISO 26623-1 standard)
Exchangeable Tapered Shanks




| Designation | DCONMS | CSI | DCONNWS(1) | DCONXWS(2) | BD | LPR | LB | THID | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| C4 ER16X70 M | 40.00 | ER16 | 0.5 | 10.0 | 22.00 | 70.00 | 50.0 | M10 | 1 | 0.32 |
| C5 ER16X100 M | 50.00 | ER16 | 0.5 | 10.0 | 22.00 | 100.00 | 80.0 | M10 | 1 | 0.57 |
| C5 ER16X130 M | 50.00 | ER16 | 0.5 | 10.0 | 22.00 | 130.00 | 110.0 | M10 | 1 | 0.56 |
| C6 ER16X100 M | 63.00 | ER16 | 0.5 | 10.0 | 22.00 | 100.00 | 78.0 | M10 | 1 | 0.90 |
| C6 ER16X130 M | 63.00 | ER16 | 0.5 | 10.0 | 22.00 | 130.00 | 108.0 | M10 | 1 | 1.07 |
| C6 ER16X160 M | 63.00 | ER16 | 0.5 | 10.0 | 22.00 | 160.00 | 138.0 | M10 | 1 | 1.07 |

(1) Minimum diameter
(2) Maximum diameter
(3) 1 - Slot for data chip, 0 - Without slot for data chip


807 766-773 763-765, 635

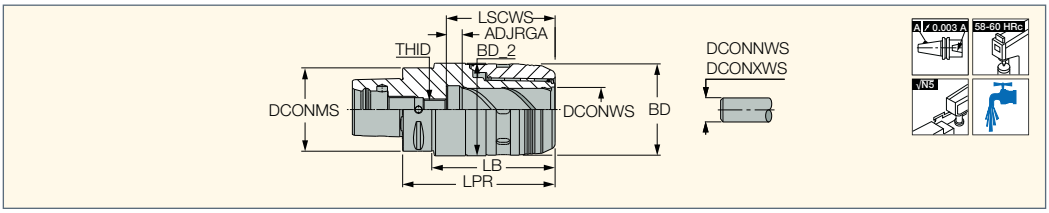
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| C4 ER16X70 M | NUT ER16 MINI | COOLING TUBE C4* | WRENCH COOL TUBE C4* | WRENCH ER16 MINI* |
| C5 ER16X100 M | NUT ER16 MINI | COOLING TUBE C5* | WRENCH COOL TUBE C5* | WRENCH ER16 MINI* |
| C5 ER16X130 M | NUT ER16 MINI | COOLING TUBE C5* | WRENCH COOL TUBE C5* | WRENCH ER16 MINI* |
| C6 ER16X100 M | NUT ER16 MINI | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH ER16 MINI* |
| C6 ER16X130 M | NUT ER16 MINI | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH ER16 MINI* |
| C6 ER16X160 M | NUT ER16 MINI | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH ER16 MINI* |

* Optional, to be ordered separately

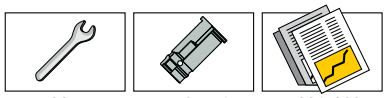
## CAMFIX MAXIN

**C#-MAXIN**
MAXIN Power Chucks with
CAMFIX (ISO 26623-1 standard)
Exchangeable Shanks




| Designation | DCONMS | DCONNWS(1) | DCONXWS(2) | BD | BD_2 | LPR | LB | ADJRGA | LSCWS | THID | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C5 MAXIN 20X100 | 50.00 | 6.0 | 20.0 | 51.00 | 53.00 | 96.00 | 75.0 | 12.00 | 67.0 | M16 | 1 | 0.87 |
| C6 MAXIN20X95 | 63.00 | 6.0 | 20.0 | 51.00 | 53.00 | 96.00 | 73.0 | 12.00 | 67.0 | M16 | 1 | 1.10 |
| C6 MAXIN32X115 | 63.00 | 6.0 | 32.0 | 69.00 | 70.00 | 115.00 | 93.0 | 12.00 | 82.0 | M16 | 1 | 1.86 |
| C8 MAXIN20X95 | 80.00 | 6.0 | 20.0 | 51.00 | 53.00 | 96.00 | 65.0 | 12.00 | 67.0 | M16 | 1 | 2.05 |
| C8 MAXIN32X115 | 80.00 | 6.0 | 32.0 | 69.00 | 70.00 | 115.00 | 85.0 | 12.00 | 82.0 | M16 | 1 | 2.83 |

• Can be used for carbide and HSS tools • The adjustment screw has an internal coolant hole • Use of DCONXWS diameter tools provides best performance, as collets reduce the gripping force.
(1) Minimum diameter by using a reduction collet
(2) Maximum diameter by using a reduction collet
(3) 1 - Slot for data chip, 0 - Without slot for data chip


807 773-774 631-632

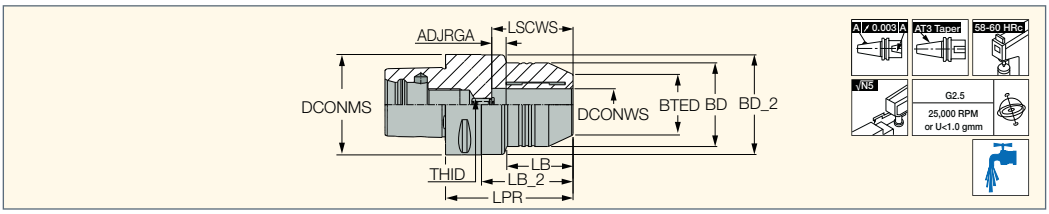
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| C5 MAXIN 20X100 | COOLING TUBE C5* | WRENCH COOL TUBE C5* | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* |
| C6 MAXIN20X95 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* |
| C6 MAXIN32X115 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* |
| C8 MAXIN20X95 | COOLING TUBE C8* | WRENCH COOL TUBE C8* | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* |
| C8 MAXIN32X115 | COOLING TUBE C8* | WRENCH COOL TUBE C8* | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* |

* Optional, to be ordered separately

CAMFIX HYDROFIT HOLDING LINE

**C#-HYDRO HD**
Hydraulic Chucks with CAMFIX Shanks




| Designation | DCONMS | DCONWS | BTED | BD | BD_2 | LB | LB_2 | LPR | ADJRGA | LSCWS | THID | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C4 HYDRO 12X65 HD | 40.00 | 12.00 | 32.00 | - | 39.50 | - | 44.00 | 65.00 | 10.00 | 46.00 | M8X1 | 0.66 |
| C4 HYDRO 20X83 HD | 40.00 | 20.00 | 38.00 | - | 45.50 | - | 62.40 | 83.00 | 10.00 | 51.00 | M8X1 | 0.67 |
| C5 HYDRO 12X70 HD | 50.00 | 12.00 | 32.00 | 42.00 | 49.50 | 33.00 | 50.00 | 70.00 | 10.00 | 46.00 | M8X1 | 1.44 |
| C5 HYDRO 20X75 HD | 50.00 | 20.00 | 38.00 | - | 49.50 | - | 54.00 | 75.00 | 10.00 | 51.00 | M8X1 | 1.44 |
| C6 HYDRO 12X75 HD | 63.00 | 12.00 | 32.00 | 42.00 | 62.50 | 33.00 | 53.00 | 75.00 | 10.00 | 51.00 | M8X1 | 1.44 |
| C6 HYDRO 20X80 HD | 63.00 | 20.00 | 38.00 | 53.00 | 62.50 | 41.00 | 57.40 | 80.00 | 10.00 | 51.00 | M8X1 | 1.59 |
| C6 HYDRO 20X120 HD | 63.00 | 20.00 | 38.00 | 52.50 | 62.50 | 41.00 | 97.40 | 120.00 | 10.00 | 51.00 | M8X1 | 2.51 |
| C6 HYDRO 32X90 HD | 63.00 | 32.00 | 58.50 | - | 62.50 | - | 67.00 | 90.00 | 10.00 | 61.00 | M8X1 | 1.94 |

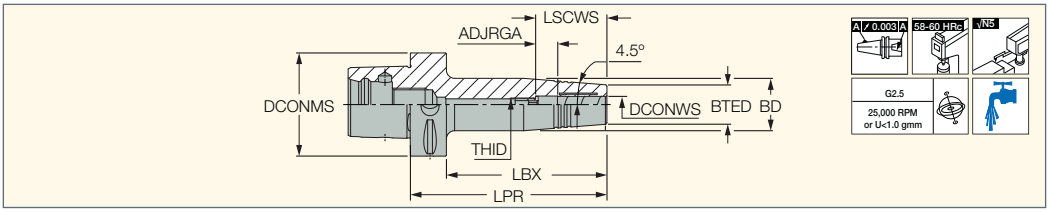
## Spare Parts

| Designation | | | |
|---|---|---|---|
| C4 HYDRO 12X65 HD | COOLING TUBE C4* | WRENCH COOL TUBE C4* | ALLEN KEY SW5X100* |
| C4 HYDRO 20X83 HD | COOLING TUBE C4* | WRENCH COOL TUBE C4* | ALLEN KEY SW5X100* |
| C5 HYDRO 12X70 HD | COOLING TUBE C5* | WRENCH COOL TUBE C5* | ALLEN KEY SW5X100* |
| C5 HYDRO 20X75 HD | COOLING TUBE C5* | WRENCH COOL TUBE C5* | ALLEN KEY SW5X100* |
| C6 HYDRO 12X75 HD | COOLING TUBE C6* | WRENCH COOL TUBE C6* | ALLEN KEY SW5X100* |
| C6 HYDRO 20X80 HD | COOLING TUBE C6* | WRENCH COOL TUBE C6* | ALLEN KEY SW5X100* |
| C6 HYDRO 20X120 HD | COOLING TUBE C6* | WRENCH COOL TUBE C6* | ALLEN KEY SW5X100* |
| C6 HYDRO 32X90 HD | COOLING TUBE C6* | WRENCH COOL TUBE C6* | ALLEN KEY SW5X100* |

* Optional, to be ordered separately

CAMFIX HYDROFIT HOLDING LINE

**C#-HYDRO SF**
Slim Design, Hydraulic Chucks with CAMFIX Shanks



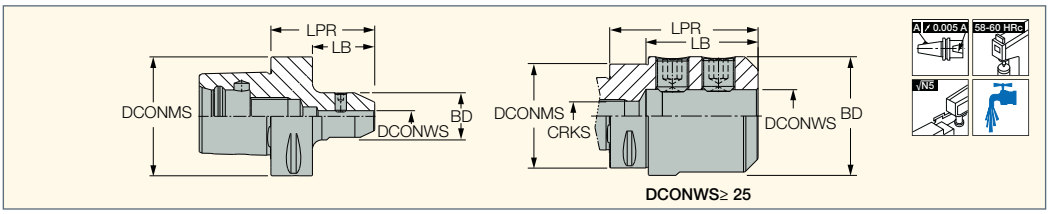

| Designation | DCONMS | DCONWS | BTED | BD | LBX | LPR | ADJRGA | LSCWS | THID | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C6 HYDRO 6X120 SF | 63.00 | 6.00 | 21.00 | 27.00 | 98.00 | 120.00 | 10.00 | 36.00 | M5 | 0 | 0.00 |
| C6 HYDRO 6X80 SF | 63.00 | 6.00 | 21.00 | 27.00 | 58.00 | 80.00 | 10.00 | 36.00 | M5 | 0 | 1.00 |
| C6 HYDRO 8X120 SF | 63.00 | 8.00 | 21.00 | 27.00 | 98.00 | 120.00 | 10.00 | 36.00 | M6 | 0 | 1.17 |
| C6 HYDRO 8X80 SF | 63.00 | 8.00 | 21.00 | 27.00 | 58.00 | 80.00 | 10.00 | 36.00 | M6 | 0 | 1.00 |
| C6 HYDRO 10X120 SF | 63.00 | 10.00 | 24.00 | 32.00 | 98.00 | 120.00 | 10.00 | 42.00 | M8x1 | 0 | 1.28 |
| C6 HYDRO 10X80 SF | 63.00 | 10.00 | 24.00 | 32.00 | 58.00 | 80.00 | 10.00 | 42.00 | M8x1 | 0 | 1.04 |
| C6 HYDRO 12X120 SF | 63.00 | 12.00 | 24.00 | 32.00 | 98.00 | 120.00 | 10.00 | 47.00 | M10x1 | 0 | 1.26 |
| C6 HYDRO 12X80 SF | 63.00 | 12.00 | 24.00 | 32.00 | 58.00 | 80.00 | 10.00 | 47.00 | M10x1 | 0 | 1.03 |
| C6 HYDRO 16X120 SF | 63.00 | 16.00 | 27.00 | 34.00 | 98.00 | 120.00 | 10.00 | 50.00 | M12x1 | 0 | 1.30 |
| C6 HYDRO 16X85 SF | 63.00 | 16.00 | 27.00 | 34.00 | 63.00 | 85.00 | 10.00 | 50.00 | M12x1 | 0 | 1.08 |
| C6 HYDRO 20X85 SF | 63.00 | 20.00 | 33.00 | 42.00 | 63.00 | 85.00 | 10.00 | 52.00 | M16x1 | 0 | 1.20 |

**New**

(1) 1 - Slot for data chip, 0 - Without slot for data chip

**CAMFIX**

**C#-EM**
DIN 1835 Form B Weldon Endmill Holders with CAMFIX (ISO 26623-1) Exchangeable Tapered Shanks



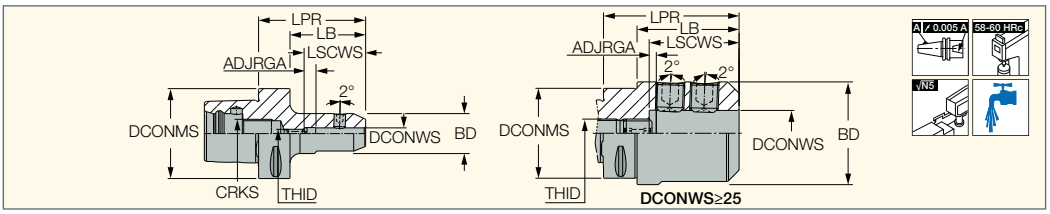

| Designation | DCONMS | DCONWS | BD | LPR | LB | CRKS | DCP(1) | kg | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C3 EM 6X45 | 32.00 | 6.00 | 25.00 | 45.00 | 30.0 | M12 | 0 | 0.23 | SR M6X10 DIN1835B | HW 3.0* | | |
| C3 EM 8X45 | 32.00 | 8.00 | 28.00 | 45.00 | 30.0 | M12 | 0 | 0.25 | SR M8X10 DIN1835-B | HW 4.0* | | |
| C3 EM10X50 | 32.00 | 10.00 | 35.00 | 50.00 | 35.0 | M12 | 0 | 0.35 | SR M10X12 DIN1835-B | HW 5.0* | | |
| C3 EM12X55 | 32.00 | 12.00 | 42.00 | 55.00 | 40.0 | M12 | 0 | 0.40 | SR M12X16 DIN1835-B | HW 6.0* | | |
| C4 EM10X50 | 40.00 | 10.00 | 35.00 | 50.00 | 30.0 | M14 | 1 | 0.42 | SR M10X12 DIN1835-B | HW 5.0* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 EM12X55 | 40.00 | 12.00 | 42.00 | 55.00 | 35.0 | M14 | 1 | 0.54 | SR M12X16 DIN1835-B | HW 6.0* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 EM14X55 | 40.00 | 14.00 | 44.00 | 55.00 | 35.0 | M14 | 1 | 0.57 | SR M12X16 DIN1835-B | HW 6.0* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 EM16X60 | 40.00 | 16.00 | 48.00 | 60.00 | 40.0 | M14 | 1 | 0.68 | SR M14X16 DIN1835-B | HW 6.0* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 EM6X50 | 40.00 | 6.00 | 25.00 | 50.00 | 30.0 | M14 | 1 | 0.35 | SR M6X10 DIN1835B | HW 3.0* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 EM8X50 | 40.00 | 8.00 | 28.00 | 50.00 | 30.0 | M14 | 1 | 0.37 | SR M8X10 DIN1835-B | HW 4.0* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C5 EM10X55 | 50.00 | 10.00 | 35.00 | 55.00 | 35.0 | M16 | 1 | 0.69 | SR M10X12 DIN1835-B | HW 5.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 EM12X60 | 50.00 | 12.00 | 42.00 | 60.00 | 40.0 | M16 | 1 | 0.83 | SR M12X16 DIN1835-B | HW 6.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 EM14X60 | 50.00 | 14.00 | 44.00 | 60.00 | 40.0 | M16 | 1 | 0.87 | SR M12X16 DIN1835-B | HW 6.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 EM16X60 | 50.00 | 16.00 | 48.00 | 60.00 | 40.0 | M16 | 1 | 0.85 | SR M14X16 DIN1835-B | HW 6.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 EM18X60 | 50.00 | 18.00 | 50.00 | 60.00 | 40.0 | M16 | 1 | 0.46 | SR M14X16 DIN1835-B | HW 6.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 EM20X60 | 50.00 | 20.00 | 52.00 | 60.00 | 40.0 | M16 | 1 | 0.90 | SR M16X16 DIN1835-B | HW 8.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 EM25X85 | 50.00 | 25.00 | 65.00 | 85.00 | 65.0 | M16 | 1 | 1.66 | SR M18X2X20 DIN1835-B | HW 10.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 EM6X50 | 50.00 | 6.00 | 25.00 | 50.00 | 30.0 | M16 | 1 | 0.52 | SR M6X10 DIN1835B | HW 3.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 EM8X50 | 50.00 | 8.00 | 28.00 | 50.00 | 30.0 | M16 | 1 | 0.54 | SR M8X10 DIN1835-B | HW 4.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C6 EM10X60 | 63.00 | 10.00 | 35.00 | 60.00 | 38.0 | M20 | 1 | 1.00 | SR M10X12 DIN1835-B | HW 5.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 EM12X60 | 63.00 | 12.00 | 42.00 | 60.00 | 38.0 | M20 | 1 | 1.08 | SR M12X16 DIN1835-B | HW 6.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 EM14X60 | 63.00 | 14.00 | 44.00 | 60.00 | 38.0 | M20 | 1 | 1.11 | SR M12X16 DIN1835-B | HW 6.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 EM16X65 | 63.00 | 16.00 | 48.00 | 65.00 | 43.0 | M20 | 1 | 1.25 | SR M14X16 DIN1835-B | HW 6.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 EM18X65 | 63.00 | 18.00 | 50.00 | 65.00 | 43.0 | M20 | 1 | 1.20 | SR M14X16 DIN1835-B | HW 6.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 EM20X65 | 63.00 | 20.00 | 52.00 | 65.00 | 43.0 | M20 | 1 | 1.26 | SR M16X16 DIN1835-B | HW 8.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 EM25X80 | 63.00 | 25.00 | 65.00 | 80.00 | 58.0 | M20 | 1 | 1.83 | SR M18X2X20 DIN1835-B | HW 10.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 EM32X90 | 63.00 | 32.00 | 72.00 | 90.00 | 68.0 | M20 | 1 | 2.28 | SR M20X2X20 DIN1835-B | HW 10.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 EM40X100 | 63.00 | 40.00 | 90.00 | 100.00 | 78.0 | M20 | 1 | 3.43 | SR M20X2X20 DIN1835-B | HW 10.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 EM6X55 | 63.00 | 6.00 | 25.00 | 55.00 | 33.0 | M20 | 1 | 0.86 | SR M6X10 DIN1835B | HW 3.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 EM8X55 | 63.00 | 8.00 | 28.00 | 55.00 | 33.0 | M20 | 1 | 0.89 | SR M8X10 DIN1835-B | HW 4.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C8 EM10X70 | 80.00 | 10.00 | 35.00 | 70.00 | 40.0 | M20 | 1 | 2.00 | SR M10X12 DIN1835-B | HW 5.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 EM12X70 | 80.00 | 12.00 | 42.00 | 70.00 | 40.0 | M20 | 1 | 2.20 | SR M12X16 DIN1835-B | HW 6.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 EM14X70 | 80.00 | 14.00 | 44.00 | 70.00 | 40.0 | M20 | 1 | 2.10 | SR M12X16 DIN1835-B | HW 6.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 EM16X70 | 80.00 | 16.00 | 48.00 | 70.00 | 40.0 | M20 | 1 | 2.16 | SR M14X16 DIN1835-B | HW 6.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 EM20X70 | 80.00 | 20.00 | 52.00 | 70.00 | 40.0 | M20 | 1 | 2.18 | SR M16X16 DIN1835-B | HW 8.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 EM25X90 | 80.00 | 25.00 | 65.00 | 90.00 | 60.0 | M20 | 1 | 2.89 | SR M18X2X20 DIN1835-B | HW 10.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 EM32X95 | 80.00 | 32.00 | 72.00 | 95.00 | 65.0 | M20 | 1 | 3.20 | SR M20X2X20 DIN1835-B | HW 10.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 EM40X110 | 80.00 | 40.00 | 90.00 | 110.00 | 80.0 | M20 | 1 | 4.73 | SR M20X2X20 DIN1835-B | HW 10.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 EM50X120 | 80.00 | 50.00 | 98.00 | 120.00 | 90.0 | M20 | 1 | 5.30 | SR M24X2X25 DIN1835-B | HW 12.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 EM6X70 | 80.00 | 6.00 | 25.00 | 70.00 | 40.0 | M20 | 1 | 1.86 | SR M6X10 DIN1835B | HW 3.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 EM8X70 | 80.00 | 8.00 | 28.00 | 70.00 | 40.0 | M20 | 1 | 1.90 | SR M8X10 DIN1835-B | HW 4.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

* Optional, to be ordered separately

**CAMFIX**

**C#-EM-E**
DIN 1835 Form E Drill Holders
with CAMFIX (ISO 26623-1)
Exchangeable Tapered Shanks



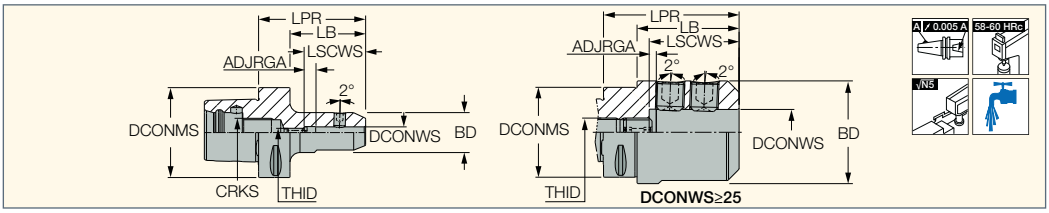

| Designation | DCONMS | DCONWS | BD | LPR | ADJRGA | LSCWS | LB | CRKS | THID | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **C3 EM 6X70 E** | 32.00 | 6.00 | 25.00 | 70.00 | 5.00 | 35.0 | 50.0 | M12 | M5 | 0 | 0.30 |
| **C4 EM8X70 E** | 40.00 | 8.00 | 28.00 | 70.00 | 8.00 | 43.0 | 50.0 | M14 | M6 | 1 | 0.46 |
| **C4 EM12X75 E** | 40.00 | 12.00 | 42.00 | 75.00 | 5.00 | 49.0 | 55.0 | M14 | M10 | 1 | 0.75 |
| **C4 EM14X75 E** | 40.00 | 14.00 | 44.00 | 75.00 | 5.00 | 49.0 | 55.0 | M14 | M10 | 1 | 0.79 |
| **C5 EM10X70 E** | 50.00 | 10.00 | 35.00 | 70.00 | 6.00 | 45.0 | 50.0 | M16 | M8 | 1 | 0.75 |
| **C5 EM12X75 E** | 50.00 | 12.00 | 42.00 | 75.00 | 5.00 | 49.0 | 55.0 | M16 | M10 | 1 | 1.01 |
| **C5 EM14X75 E** | 50.00 | 14.00 | 44.00 | 75.00 | 5.00 | 49.0 | 55.0 | M16 | M10 | 1 | 0.97 |
| **C5 EM16X80 E** | 50.00 | 16.00 | 48.00 | 80.00 | 5.00 | 52.0 | 60.0 | M16 | M12 | 1 | 1.21 |
| **C5 EM18X80 E** | 50.00 | 18.00 | 50.00 | 80.00 | 5.00 | 52.0 | 60.0 | M16 | M12 | 1 | 1.18 |
| **C5 EM20X85 E** | 50.00 | 20.00 | 52.00 | 85.00 | 6.00 | 55.0 | 65.0 | M16 | M16 | 1 | 1.29 |
| **C6 EM6X75 E** | 63.00 | 6.00 | 25.00 | 75.00 | 6.00 | 36.0 | 53.0 | M20 | M5 | 1 | 0.93 |
| **C6 EM8X75 E** | 63.00 | 8.00 | 28.00 | 75.00 | 8.00 | 43.0 | 53.0 | M20 | M6 | 1 | 1.00 |
| **C6 EM10X75 E** | 63.00 | 10.00 | 35.00 | 75.00 | 7.00 | 46.0 | 53.0 | M20 | M8 | 1 | 1.17 |
| **C6 EM12X80 E** | 63.00 | 12.00 | 42.00 | 80.00 | 5.00 | 49.0 | 58.0 | M20 | M10 | 1 | 1.37 |
| **C6 EM14X80 E** | 63.00 | 14.00 | 44.00 | 80.00 | 5.00 | 49.0 | 58.0 | M20 | M10 | 1 | 1.34 |
| **C6 EM16X85 E** | 63.00 | 16.00 | 48.00 | 85.00 | 5.00 | 52.0 | 63.0 | M20 | M12 | 1 | 1.49 |
| **C6 EM18X85 E** | 63.00 | 18.00 | 50.00 | 85.00 | 5.00 | 52.0 | 63.0 | M20 | M12 | 1 | 1.63 |
| **C6 EM20X85 E** | 63.00 | 20.00 | 52.00 | 85.00 | 6.00 | 55.0 | 63.0 | M20 | M16 | 1 | 1.57 |
| **C6 EM25X90 E** | 63.00 | 25.00 | 65.00 | 90.00 | 6.00 | 60.0 | 68.0 | M20 | M20 | 1 | 2.10 |
| **C6 EM32X95 E** | 63.00 | 32.00 | 72.00 | 95.00 | 5.00 | 63.0 | 73.0 | M20 | M20 | 1 | 2.50 |
| **C8 EM8X65E** | 80.00 | 8.00 | 28.00 | 65.00 | 8.00 | 43.0 | 35.0 | M20 | M6 | 1 | 1.90 |
| **C8 EM10X65E** | 80.00 | 10.00 | 35.00 | 65.00 | 7.00 | 46.0 | 35.0 | M20 | M8 | 1 | 1.96 |
| **C8 EM12X70E** | 80.00 | 12.00 | 42.00 | 70.00 | 5.00 | 49.0 | 40.0 | M20 | M10 | 1 | 2.10 |
| **C8 EM14X70E** | 80.00 | 14.00 | 44.00 | 70.00 | 5.00 | 49.0 | 40.0 | M20 | M10 | 1 | 2.12 |
| **C8 EM16X75E** | 80.00 | 16.00 | 48.00 | 75.00 | 5.00 | 52.0 | 45.0 | M20 | M12 | 1 | 2.10 |
| **C8 EM18X75E** | 80.00 | 18.00 | 50.00 | 75.00 | 5.00 | 52.0 | 45.0 | M20 | M12 | 1 | 2.26 |
| **C8 EM20X80E** | 80.00 | 20.00 | 52.00 | 80.00 | 8.00 | 57.0 | 50.0 | M20 | M16 | 1 | 2.36 |
| **C8 EM25X90E** | 80.00 | 25.00 | 65.00 | 90.00 | 6.00 | 60.0 | 60.0 | M20 | M20 | 1 | 2.89 |
| **C8 EM32X95E** | 80.00 | 32.00 | 72.00 | 95.00 | 6.00 | 64.0 | 65.0 | M20 | M20 | 1 | 3.24 |

- The adjustment screw has an internal coolant hole.

(1) 1 - Slot for data chip, 0 - Without slot for data chip

CAMFIX

**C#-EM-E**
DIN 1835 Form E Drill Holders
with CAMFIX (ISO 26623-1)
Exchangeable Tapered Shanks



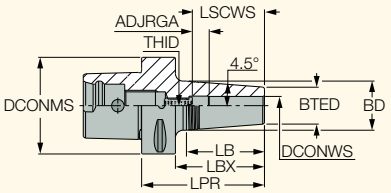

## Spare Parts

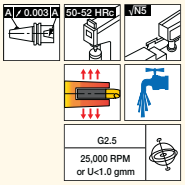
| Designation | | | | | | |
|---|---|---|---|---|---|---|
| **C3 EM 6X70 E** | SR M6X10 DIN1835B | PRESET M5X18B | HW 3.0* | HW 2.5* | | |
| **C4 EM8X70 E** | SR M8X10 DIN1835-B | PRESET CAP M6X12B | HW 3.0* | HW 4.0* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| **C4 EM12X75 E** | SR M12X16 DIN1835-B | PRESET CX M10X16 | HW 5.0* | HW 6.0* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| **C4 EM14X75 E** | SR M12X16 DIN1835-B | PRESET CX M10X16 | HW 5.0* | HW 6.0* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| **C5 EM10X70 E** | SR M10X12 DIN1835-B | PRESET CAP M8X12B | HW 4.0* | HW 5.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| **C5 EM12X75 E** | SR M12X16 DIN1835-B | PRESET CX M10X16 | HW 5.0* | HW 6.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| **C5 EM14X75 E** | SR M12X16 DIN1835-B | PRESET CX M10X16 | HW 5.0* | HW 6.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| **C5 EM16X80 E** | SR M14X16 DIN1835-B | PRESET CX M12X16 | HW 6.0* | | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| **C5 EM18X80 E** | SR M14X16 DIN1835-B | PRESET CX M12X16 | HW 6.0* | | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| **C5 EM20X85 E** | SR M16X16 DIN1835-B | PRESET CX M16X14 | HW 8.0* | | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| **C6 EM6X75 E** | SR M6X10 DIN1835B | PRESET M5X18B | HW 3.0* | HW 2.5* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| **C6 EM8X75 E** | SR M8X10 DIN1835-B | PRESET CAP M6X12B | HW 3.0* | HW 4.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| **C6 EM10X75 E** | SR M10X12 DIN1835-B | PRESET CAP M8X12B | HW 4.0* | HW 5.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| **C6 EM12X80 E** | SR M12X16 DIN1835-B | PRESET CX M10X16 | HW 5.0* | HW 6.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| **C6 EM14X80 E** | SR M12X16 DIN1835-B | PRESET CX M10X16 | HW 5.0* | HW 6.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| **C6 EM16X85 E** | SR M14X16 DIN1835-B | PRESET CX M12X16 | HW 6.0* | | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| **C6 EM18X85 E** | SR M14X16 DIN1835-B | PRESET CX M12X16 | HW 6.0* | | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| **C6 EM20X85 E** | SR M16X16 DIN1835-B | PRESET CX M16X14 | HW 8.0* | | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| **C6 EM25X90 E** | SR M18X2X20 DIN1835-B | PRESET M20X20E | HW 10.0* | HW 6.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| **C6 EM32X95 E** | SR M20X2X20 DIN1835-B | PRESET M20X20E | HW 10.0* | HW 6.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| **C8 EM8X65E** | SR M8X10 DIN1835-B | PRESET CAP M6X12B | HW 3.0* | HW 4.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| **C8 EM10X65E** | SR M10X12 DIN1835-B | PRESET CAP M8X12B | HW 4.0* | HW 5.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| **C8 EM12X70E** | SR M12X16 DIN1835-B | PRESET CX M10X16 | HW 5.0* | HW 6.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| **C8 EM14X70E** | SR M12X16 DIN1835-B | PRESET CX M10X16 | HW 5.0* | HW 6.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| **C8 EM16X75E** | SR M14X16 DIN1835-B | PRESET CX M12X16 | HW 6.0* | | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| **C8 EM18X75E** | SR M14X16 DIN1835-B | PRESET CX M12X16 | HW 6.0* | | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| **C8 EM20X80E** | SR M16X16 DIN1835-B | PRESET CX M16X14 | HW 8.0* | | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| **C8 EM25X90E** | SR M18X2X20 DIN1835-B | PRESET M20X20E | HW 10.0* | HW 6.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| **C8 EM32X95E** | SR M20X2X20 DIN1835-B | PRESET M20X20E | HW 10.0* | HW 6.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |

* Optional, to be ordered separately

**CAMFIX SHRINKIN**

**C#-SRKIN**
Thermal Shrink Chucks with Integral CAMFIX (ISO 26623-1) Tapered Shanks for Solid Carbide, HSS and Steel Tools




| Designation | DCONMS | DCONWS | BTED | BD | LPR | LBX | LB | ADJRGA | LSCWS | THID | Key(1) | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C4 SRKIN 6X75 | 40.00 | 6.00 | 21.00 | 27.00 | 75.00 | 55.0 | 38.10 | 11.00 | 36.0 | M5 | 2.50 | 1 | 0.00 |
| C4 SRKIN 8X75 | 40.00 | 8.00 | 21.00 | 27.00 | 75.00 | 55.0 | 38.10 | 11.00 | 36.0 | M6 | 3.00 | 1 | 0.46 |
| C4 SRKIN 10X75 | 40.00 | 10.00 | 24.00 | 32.00 | 75.00 | 55.0 | 50.80 | 11.00 | 42.0 | M8 | 4.00 | 1 | 0.49 |
| C4 SRKIN 12X75 | 40.00 | 12.00 | 24.00 | 32.00 | 75.00 | 55.0 | 50.80 | 11.00 | 47.0 | M10 | 5.00 | 1 | 0.48 |
| C4 SRKIN 14X80 | 40.00 | 14.00 | 27.00 | 34.00 | 80.00 | 60.0 | 44.50 | 11.00 | 47.0 | M10 | 5.00 | 1 | 0.55 |
| C4 SRKIN 16X80 | 40.00 | 16.00 | 27.00 | 34.00 | 80.00 | 60.0 | 44.50 | 11.00 | 50.0 | M12 | 6.00 | 1 | 0.53 |
| C4 SRKIN 18X80 | 40.00 | 18.00 | 33.00 | 42.00 | 80.00 | 60.0 | 57.20 | 11.00 | 50.0 | M12 | 6.00 | 1 | 0.66 |
| C4 SRKIN 20X85 | 40.00 | 20.00 | 33.00 | 42.00 | 85.00 | 65.0 | 57.20 | 11.00 | 52.0 | M16 | 8.00 | 1 | 0.13 |
| C5 SRKIN 6X75 | 50.00 | 6.00 | 21.00 | 27.00 | 75.00 | 55.0 | 38.10 | 11.00 | 36.0 | M5 | 2.50 | 1 | 0.62 |
| C5 SRKIN 8X75 | 50.00 | 8.00 | 21.00 | 27.00 | 75.00 | 55.0 | 38.10 | 11.00 | 36.0 | M6 | 3.00 | 1 | 0.63 |
| C5 SRKIN 10X75 | 50.00 | 10.00 | 24.00 | 32.00 | 75.00 | 55.0 | 51.30 | 11.00 | 42.0 | M8 | 4.00 | 1 | 0.67 |
| C5 SRKIN 12X75 | 50.00 | 12.00 | 24.00 | 32.00 | 75.00 | 55.0 | 51.30 | 11.00 | 47.0 | M10 | 5.00 | 1 | 0.64 |
| C5 SRKIN 14X80 | 50.00 | 14.00 | 27.00 | 34.00 | 80.00 | 60.0 | 44.50 | 11.00 | 47.0 | M10 | 5.00 | 1 | 0.73 |
| C5 SRKIN 16X80 | 50.00 | 16.00 | 27.00 | 34.00 | 80.00 | 60.0 | 44.50 | 11.00 | 50.0 | M12 | 6.00 | 1 | 0.68 |
| C5 SRKIN 18X80 | 50.00 | 18.00 | 33.00 | 42.00 | 80.00 | 60.0 | 57.20 | 11.00 | 50.0 | M12 | 6.00 | 1 | 0.84 |
| C5 SRKIN 20X85 | 50.00 | 20.00 | 33.00 | 42.00 | 85.00 | 65.0 | 57.20 | 11.00 | 52.0 | M16 | 8.00 | 1 | 0.85 |
| C5 SRKIN 25X90 | 50.00 | 25.00 | 44.00 | 53.00 | 90.00 | 70.0 | 57.20 | 11.00 | 58.0 | M16 | 8.00 | 1 | 1.13 |
| C6 SRKIN 6X80 | 63.00 | 6.00 | 21.00 | 27.00 | 80.00 | 58.0 | 38.10 | 11.00 | 36.0 | M5 | 2.50 | 1 | 0.95 |
| C6 SRKIN 8X80 | 63.00 | 8.00 | 21.00 | 27.00 | 80.00 | 58.0 | 38.10 | 11.00 | 36.0 | M6 | 3.00 | 1 | 0.94 |
| C6 SRKIN 10X80 | 63.00 | 10.00 | 24.00 | 32.00 | 80.00 | 58.0 | 50.80 | 11.00 | 42.0 | M8 | 4.00 | 1 | 1.07 |
| C6 SRKIN 12X80 | 63.00 | 12.00 | 24.00 | 32.00 | 80.00 | 58.0 | 50.80 | 11.00 | 47.0 | M10 | 5.00 | 1 | 1.01 |
| C6 SRKIN 14X85 | 63.00 | 14.00 | 27.00 | 34.00 | 85.00 | 63.0 | 44.50 | 11.00 | 47.0 | M10 | 5.00 | 1 | 1.08 |
| C6 SRKIN 16X85 | 63.00 | 16.00 | 27.00 | 34.00 | 85.00 | 63.0 | 44.50 | 11.00 | 50.0 | M12 | 6.00 | 1 | 1.06 |
| C6 SRKIN 18X85 | 63.00 | 18.00 | 33.00 | 42.00 | 85.00 | 63.0 | 57.20 | 11.00 | 50.0 | M12 | 6.00 | 1 | 1.21 |
| C6 SRKIN 20X85 | 63.00 | 20.00 | 33.00 | 42.00 | 85.00 | 63.0 | 57.20 | 11.00 | 52.0 | M16 | 8.00 | 1 | 1.16 |
| C6 SRKIN 25X90 | 63.00 | 25.00 | 44.00 | 53.00 | 90.00 | 68.0 | 57.20 | 11.00 | 58.0 | M16 | 8.00 | 1 | 1.50 |
| C6 SRKIN 32X95 | 63.00 | 32.00 | 44.00 | 53.00 | 95.00 | 73.0 | 57.20 | 11.00 | 58.0 | M16 | 8.00 | 1 | 1.46 |

• The adjustment screw has an internal coolant hole • Use only inductive heating device for SRKIN holders

(1) Hex key size for the rear stopper screw

(2) 1 - Slot for data chip, 0 - Without slot for data chip

778-780

784-786

## Spare Parts

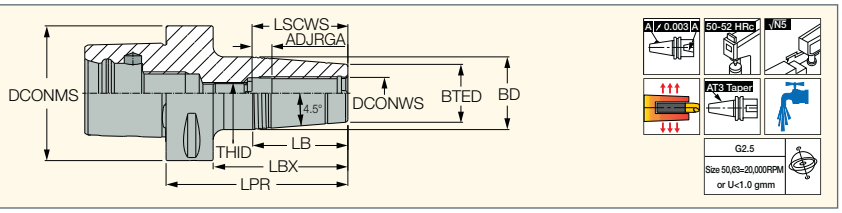
| Designation | | | |
|---|---|---|---|
| C4 SRKIN 6X75 | PRESET M5X18B | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 SRKIN 8X75 | PRESET M6X20B | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 SRKIN 10X75 | PRESET CX M8X16 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 SRKIN 12X75 | PRESET CX M10X16 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 SRKIN 14X80 | PRESET CX M10X16 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 SRKIN 16X80 | PRESET CX M12X16 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 SRKIN 18X80 | PRESET CX M12X16 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 SRKIN 20X85 | PRESET CX M16X14 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C5 SRKIN 6X75 | PRESET M5X18B | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SRKIN 8X75 | PRESET M6X20B | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SRKIN 10X75 | PRESET CX M8X16 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SRKIN 12X75 | PRESET CX M10X16 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SRKIN 14X80 | PRESET CX M10X16 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SRKIN 16X80 | PRESET CX M12X16 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SRKIN 18X80 | PRESET CX M12X16 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SRKIN 20X85 | PRESET CX M16X14 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SRKIN 25X90 | PRESET CX M16X14 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C6 SRKIN 6X80 | PRESET M5X18B | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 8X80 | PRESET M6X20B | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 10X80 | PRESET CX M8X16 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 12X80 | PRESET CX M10X16 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 14X85 | PRESET CX M10X16 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 16X85 | PRESET CX M12X16 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 18X85 | PRESET CX M12X16 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 20X85 | PRESET CX M16X14 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 25X90 | PRESET CX M16X14 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 32X95 | PRESET CX M16X14 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |

* Optional, to be ordered separately

CAMFIX X-STREAM JET TOOLHOLDING

**C#-SRKIN-CX**

Thermal Shrink Chucks with CAMFIX (ISO 26623-1) Tapered Shank and Jet Coolant Grooves along the Shank Bore




| Designation | DCONMS | DCONWS | BTED | BD | LPR | LBX | LB | LSCWS | ADJRGA | THID | Key(1) | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C6 SRKIN 6X80 CX | 63.00 | 6.00 | 21.00 | 27.00 | 80.00 | 58.00 | 38.10 | 34.00 | 9.50 | M5 | 2.50 | 1 | 0.95 |
| C6 SRKIN 8X80 CX | 63.00 | 8.00 | 21.00 | 27.00 | 80.00 | 58.00 | 38.10 | 34.00 | 9.50 | M6 | 3.00 | 1 | 0.94 |
| C6 SRKIN 10X80 CX | 63.00 | 10.00 | 24.00 | 32.00 | 80.00 | 58.00 | 50.80 | 39.80 | 9.30 | M8 | 4.00 | 1 | 1.07 |
| C6 SRKIN 12X80 CX | 63.00 | 12.00 | 24.00 | 32.00 | 80.00 | 58.00 | 50.80 | 44.80 | 9.30 | M10 | 5.00 | 1 | 1.01 |
| C6 SRKIN 14X85 CX | 63.00 | 14.00 | 27.00 | 34.00 | 85.00 | 63.00 | 44.50 | 44.80 | 9.30 | M10 | 5.00 | 1 | 1.08 |
| C6 SRKIN 16X85 CX | 63.00 | 16.00 | 27.00 | 34.00 | 85.00 | 63.00 | 44.50 | 47.80 | 9.30 | M12 | 6.00 | 1 | 1.06 |
| C6 SRKIN 18X85 CX | 63.00 | 18.00 | 33.00 | 42.00 | 85.00 | 63.00 | 57.20 | 47.80 | 9.30 | M12 | 6.00 | 1 | 1.21 |
| C6 SRKIN 20X85 CX | 63.00 | 20.00 | 33.00 | 42.00 | 85.00 | 63.00 | 57.20 | 49.00 | 8.50 | M16 | 8.00 | 1 | 1.16 |
| C6 SRKIN 25X90 CX | 63.00 | 25.00 | 44.00 | 53.00 | 90.00 | 68.00 | 57.20 | 55.00 | 8.50 | M16 | 8.00 | 1 | 1.50 |
| C6 SRKIN 32X95 CX | 63.00 | 32.00 | 44.00 | 53.00 | 95.00 | 73.00 | 57.20 | 59.00 | 8.50 | M16 | 8.00 | 1 | 1.46 |
| C8 SRKIN 6X90 CX | 80.00 | 6.00 | 21.00 | 27.00 | 90.00 | 60.00 | 38.10 | 33.90 | 9.40 | M5 | 2.50 | 1 | 2.05 |
| C8 SRKIN 8X90 CX | 80.00 | 8.00 | 21.00 | 27.00 | 90.00 | 60.00 | 38.10 | 34.00 | 9.50 | M6 | 3.00 | 1 | 2.05 |
| C8 SRKIN 10X90 CX | 80.00 | 10.00 | 24.00 | 32.00 | 90.00 | 60.00 | 50.80 | 39.80 | 9.30 | M8 | 4.00 | 1 | 2.10 |
| C8 SRKIN 12X90 CX | 80.00 | 12.00 | 24.00 | 32.00 | 90.00 | 60.00 | 50.80 | 44.80 | 9.30 | M10 | 5.00 | 1 | 2.08 |
| C8 SRKIN 12X120 CX | 80.00 | 12.00 | 24.00 | 32.00 | 120.00 | 90.00 | 50.80 | 44.80 | 9.30 | M10 | 5.00 | 1 | 0.00 |
| C8 SRKIN 12X160 CX | 80.00 | 12.00 | 24.00 | 32.00 | 160.00 | 130.00 | 50.80 | 44.80 | 9.30 | M10 | 5.00 | 1 | 2.60 |
| C8 SRKIN 16X95 CX | 80.00 | 16.00 | 27.00 | 34.00 | 95.00 | 65.00 | 44.50 | 47.80 | 9.30 | M12 | 6.00 | 1 | 0.00 |
| C8 SRKIN 16X120 CX | 80.00 | 16.00 | 27.00 | 34.00 | 120.00 | 90.00 | 44.50 | 47.80 | 9.30 | M12 | 6.00 | 1 | 2.32 |
| C8 SRKIN 16X160 CX | 80.00 | 16.00 | 27.00 | 34.00 | 160.00 | 130.00 | 44.50 | 47.80 | 9.30 | M12 | 6.00 | 1 | 2.66 |
| C8 SRKIN 20X95 CX | 80.00 | 20.00 | 33.00 | 42.00 | 95.00 | 65.00 | 57.20 | 49.00 | 8.50 | M16 | 8.00 | 1 | 2.24 |
| C8 SRKIN 25X100 CX | 80.00 | 25.00 | 44.00 | 53.00 | 100.00 | 70.00 | 57.20 | 55.00 | 8.50 | M16 | 8.00 | 1 | 2.49 |
| C8 SRKIN 32X115 CX | 80.00 | 32.00 | 44.00 | 53.00 | 115.00 | 85.00 | 57.20 | 59.00 | 8.50 | M16 | 8.00 | 1 | 2.70 |

- Use only inductive heating device for SRKIN holders
- Preset screw CX allows supply of coolant via JET channels - do not remove

(1) Hex key size for the rear stopper screw

(2) 1 - Slot for data chip, 0 - Without slot for data chip

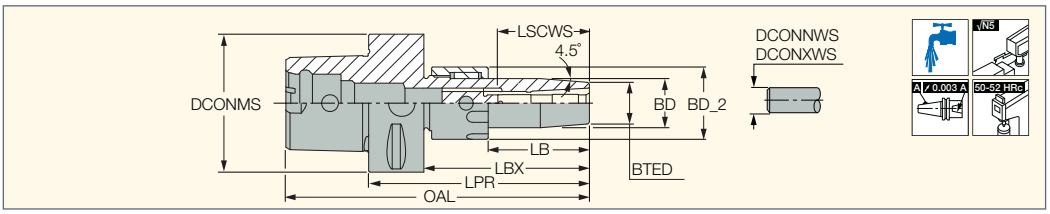
## Spare Parts

| Designation | | | |
|---|---|---|---|
| C6 SRKIN 6X80 CX | PRESET CX M5X13 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 8X80 CX | PRESET CX M6X12 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 10X80 CX | PRESET CX M8X16 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 12X80 CX | PRESET CX M10X16 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 14X85 CX | PRESET CX M10X16 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 16X85 CX | PRESET CX M12X16 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 18X85 CX | PRESET CX M12X16 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 20X85 CX | PRESET CX M16X14 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 25X90 CX | PRESET CX M16X14 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SRKIN 32X95 CX | PRESET CX M16X14 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C8 SRKIN 6X90 CX | PRESET CX M5X13 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SRKIN 8X90 CX | PRESET CX M6X12 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SRKIN 10X90 CX | PRESET CX M8X16 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SRKIN 12X90 CX | PRESET CX M10X16 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SRKIN 12X120 CX | PRESET CX M10X16 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SRKIN 12X160 CX | PRESET CX M10X16 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SRKIN 16X95 CX | PRESET CX M12X16 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SRKIN 16X120 CX | PRESET CX M12X16 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SRKIN 16X160 CX | PRESET CX M12X16 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SRKIN 20X95 CX | PRESET CX M16X14 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SRKIN 25X100 CX | PRESET CX M16X14 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SRKIN 32X115 CX | PRESET CX M16X14 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |

* Optional, to be ordered separately

**CAMFIX**
**QUICKCLAMP**

**C#-MS**
QUICK-CLAMP System for Small Cutting Tools with Camfix ISO26623-1 Shank



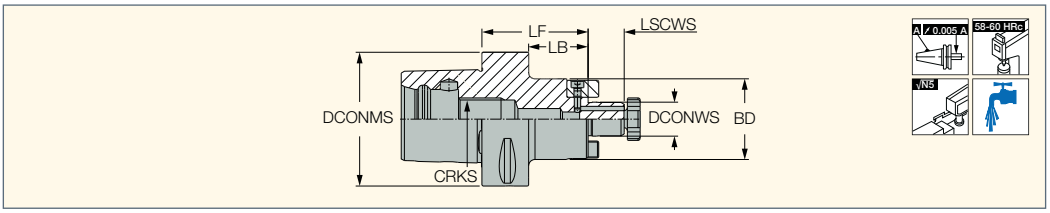

| Designation | DCONNWS(1) | DCONXWS(2) | BTED | BD | BD_2 | LPR | LBX | LB | DCONMS | LSCWS | OAL | DCP(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C5 MS6X60 | 3.00 | 6.00 | 15.00 | 17.80 | 26.20 | 80.00 | 60.00 | 36.00 | 50.00 | 33.00 | 110.00 | 1 |
| C6 MS6X60 | 3.00 | 6.00 | 15.00 | 17.80 | 26.20 | 82.00 | 60.00 | 36.00 | 63.00 | 33.00 | 120.00 | 1 |

New

(1) Minimum diameter
(2) Maximum diameter
(3) 1 - Slot for data chip, 0 - Without slot for data chip

**CAMFIX**

**C#-SEM-C**
ISO 3937 Shell Mill Holders with Coolant Holes and CAMFIX (ISO 26623-1) Exchangeable Tapered Shanks



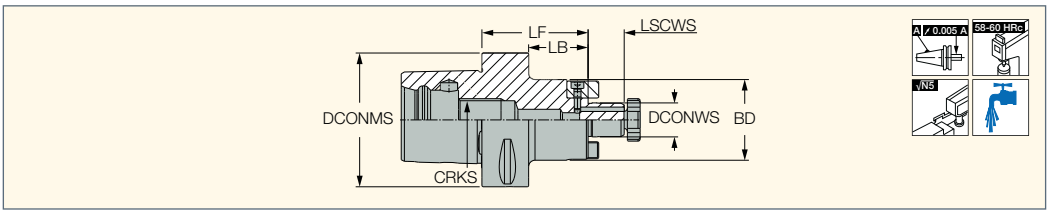

| Designation | DCONMS | DCONWS | BD | LSCWS | LB | LF | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|
| C3 SEM 16X30 C | 32.00 | 16.00 | 38.00 | 17.00 | 13.0 | 30.00 | M12 | 0 | 0.24 |
| C4 SEM16X32 C | 40.00 | 16.00 | 38.00 | 17.00 | 12.0 | 32.00 | M14 | 1 | 0.36 |
| C4 SEM16X55 C | 40.00 | 16.00 | 38.00 | 17.00 | 35.0 | 55.00 | M14 | 1 | 0.54 |
| C4 SEM22X40 C | 40.00 | 22.00 | 47.00 | 19.00 | 20.0 | 40.00 | M14 | 1 | 0.52 |
| C4 SEM22X55 C | 40.00 | 22.00 | 47.00 | 19.00 | 33.0 | 55.00 | M14 | 1 | 0.80 |
| C5 SEM16X35 C | 50.00 | 16.00 | 38.00 | 17.00 | 15.0 | 35.00 | M16 | 1 | 0.57 |
| C5 SEM16X70 C | 50.00 | 16.00 | 38.00 | 17.00 | 50.0 | 70.00 | M16 | 1 | 0.85 |
| C5 SEM22X35 C | 50.00 | 22.00 | 47.00 | 19.00 | 15.0 | 35.00 | M16 | 1 | 0.65 |
| C5 SEM22X70 C | 50.00 | 22.00 | 47.00 | 19.00 | 50.0 | 70.00 | M16 | 1 | 1.09 |
| C5 SEM27X40 C | 50.00 | 27.00 | 58.00 | 21.00 | 20.0 | 40.00 | M16 | 1 | 0.85 |
| C5 SEM32X40 C | 50.00 | 32.00 | 63.00 | 24.00 | 20.0 | 40.00 | M16 | 1 | 0.93 |
| C6 SEM16X100 C | 63.00 | 16.00 | 38.00 | 17.00 | 78.0 | 100.00 | M20 | 1 | 1.41 |
| C6 SEM16X50 C | 63.00 | 16.00 | 38.00 | 17.00 | 28.0 | 50.00 | M20 | 1 | 1.00 |
| C6 SEM22X100 C | 63.00 | 22.00 | 47.00 | 19.00 | 78.0 | 100.00 | M20 | 1 | 1.81 |
| C6 SEM22X50 C | 63.00 | 22.00 | 47.00 | 19.00 | 28.0 | 50.00 | M20 | 1 | 1.15 |
| C6 SEM27X100 C | 63.00 | 27.00 | 58.00 | 21.00 | 78.0 | 100.00 | M20 | 1 | 2.33 |
| C6 SEM27X60 C | 63.00 | 27.00 | 58.00 | 21.00 | 37.0 | 60.00 | M20 | 1 | 1.52 |
| C6 SEM32X60 C | 63.00 | 32.00 | 66.00 | 24.00 | 37.0 | 60.00 | M16 | 1 | 1.79 |
| C6 SEM40X60 C | 63.00 | 40.00 | 82.00 | 27.00 | 37.0 | 60.00 | M20 | 1 | 2.34 |
| C8 SEM16X100C | 80.00 | 16.00 | 38.00 | 17.00 | 70.0 | 100.00 | M20 | 1 | 2.32 |
| C8 SEM16X50 C | 80.00 | 16.00 | 38.00 | 17.00 | 20.0 | 50.00 | M20 | 1 | 1.90 |
| C8 SEM22X100C | 80.00 | 22.00 | 47.00 | 19.00 | 70.0 | 100.00 | M20 | 1 | 2.88 |
| C8 SEM22X50 C | 80.00 | 22.00 | 47.00 | 19.00 | 20.0 | 50.00 | M20 | 1 | 2.01 |
| C8 SEM27X100C | 80.00 | 27.00 | 58.00 | 21.00 | 70.0 | 100.00 | M20 | 1 | 3.14 |
| C8 SEM27X50 C | 80.00 | 27.00 | 58.00 | 21.00 | 20.0 | 50.00 | M20 | 1 | 2.18 |
| C8 SEM32X100C | 80.00 | 32.00 | 66.00 | 24.00 | 70.0 | 100.00 | M16 | 1 | 3.56 |
| C8 SEM32X50 C | 80.00 | 32.00 | 66.00 | 24.00 | 20.0 | 50.00 | M16 | 1 | 2.28 |
| C8 SEM32X78X100C | 80.00 | 32.00 | 78.00 | 24.00 | 70.0 | 100.00 | M20 | 1 | 4.50 |
| C8 SEM32X78X50C | 80.00 | 32.00 | 78.00 | 24.00 | 20.0 | 50.00 | M20 | 1 | 2.20 |
| C8 SEM40X60 C | 80.00 | 40.00 | 82.00 | 27.00 | 30.0 | 60.00 | M20 | 1 | 2.99 |

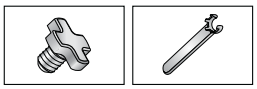
(1) 1 - Slot for data chip, 0 - Without slot for data chip

Continued

**CAMFIX**

**C#-SEM-C**
ISO 3937 Shell Mill Holders with Coolant Holes and CAMFIX (ISO 26623-1) Exchangeable Tapered Shanks





808 809

## Spare Parts

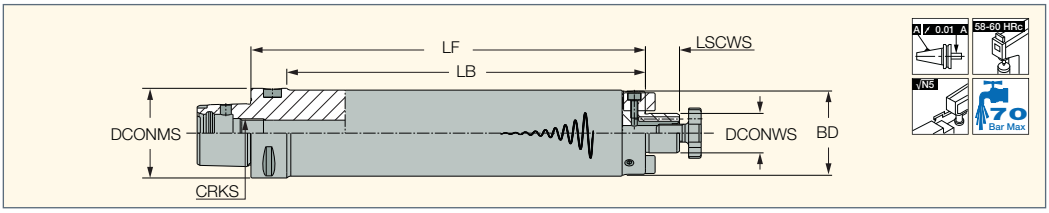
| Designation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| C3 SEM 16X30 C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | | WRENCH M8 SEMC16* | HW 2.5* | | |
| C4 SEM16X32 C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | | WRENCH M8 SEMC16* | HW 2.5* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 SEM16X55 C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | | WRENCH M8 SEMC16* | HW 2.5* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 SEM22X40 C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | | WRENCH M10 SEMC 22* | HW 3.0* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 SEM22X55 C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | | WRENCH M10 SEMC 22* | HW 3.0* | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C5 SEM16X35 C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | | WRENCH M8 SEMC16* | HW 2.5* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SEM16X70 C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | | WRENCH M8 SEMC16* | HW 2.5* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SEM22X35 C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | | WRENCH M10 SEMC 22* | HW 3.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SEM22X70 C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | | WRENCH M10 SEMC 22* | HW 3.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SEM27X40 C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X14DIN912 | | WRENCH M12 SEMC 27* | HW 4.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 SEM32X40 C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | | WRENCH M16 SEMC 32* | HW 4.0* | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C6 SEM16X100 C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | | WRENCH M8 SEMC16* | HW 2.5* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SEM16X50 C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | | WRENCH M8 SEMC16* | HW 2.5* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SEM22X100 C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | | WRENCH M10 SEMC 22* | HW 2.5* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SEM22X50 C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | | WRENCH M10 SEMC 22* | HW 3.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SEM27X100 C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X14DIN912 | | WRENCH M12 SEMC 27* | HW 4.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SEM27X60 C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X14DIN912 | | WRENCH M12 SEMC 27* | HW 4.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SEM32X60 C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | | WRENCH M16 SEMC 32* | HW 4.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 SEM40X60 C | M20 CLAMP SCREW SEM40 | DR.DOG 16X18S | SR M6X20 DIN912 | | WRENCH M20 SEMC 40* | HW 5.0* | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C8 SEM16X100C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | | WRENCH M8 SEMC16* | HW 2.5* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SEM16X50 C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | | WRENCH M8 SEMC16* | HW 2.5* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SEM22X100C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | | WRENCH M10 SEMC 22* | HW 3.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SEM22X50 C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | | WRENCH M10 SEMC 22* | HW 3.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SEM27X100C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X12 DIN912* | SR M5X14DIN912 | WRENCH M12 SEMC 27* | HW 4.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SEM27X50 C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X14DIN912 | | WRENCH M12 SEMC 27* | HW 4.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SEM32X100C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | | WRENCH M16 SEMC 32* | HW 4.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SEM32X50 C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | | WRENCH M16 SEMC 32* | HW 4.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SEM32X78X100C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | | WRENCH M16 SEMC 32* | HW 4.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SEM32X78X50C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | | WRENCH M16 SEMC 32* | HW 4.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 SEM40X60 C | M20 CLAMP SCREW SEM40 | DR.DOG 16X18S | SR M6X20 DIN912 | | WRENCH M20 SEMC 40* | HW 5.0* | COOLING TUBE C8* | WRENCH COOL TUBE C8* |

* Optional, to be ordered separately

**CAMFIX**

**WHISPERLINE**

**AV C#-SEM**
Anti-Vibration Shell Mill Holders with Coolant Holes and CAMFIX (ISO 26623-1) Shanks




| Designation | DCONMS | DCONWS | BD | LSCWS | LB | LF | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|
| AV C5 SEM22 48X220 | 50.00 | 22.00 | 48.00 | 19.00 | 200.0 | 220.00 | M16 | 1 | 3.80 |
| AV C5 SEM22 48X270 | 50.00 | 22.00 | 48.00 | 19.00 | 250.0 | 270.00 | M16 | 1 | 4.70 |
| AV C6 SEM22 48X270 | 63.00 | 22.00 | 48.00 | 19.00 | 248.0 | 270.00 | M20 | 1 | 4.60 |
| AV C6 SEM22 61X260 | 63.00 | 22.00 | 61.00 | 19.00 | 238.0 | 260.00 | M20 | 1 | 7.50 |
| AV C6 SEM22 61X310 | 63.00 | 22.00 | 61.00 | 19.00 | 288.0 | 310.00 | M20 | 1 | 8.70 |
| AV C6 SEM27 61X250 | 63.00 | 27.00 | 61.00 | 21.00 | 228.0 | 250.00 | M20 | 1 | 7.40 |
| AV C6 SEM27 61X300 | 63.00 | 27.00 | 61.00 | 21.00 | 278.0 | 300.00 | M20 | 1 | 8.50 |

New

(1) 1 - Slot for data chip, 0 - Without slot for data chip

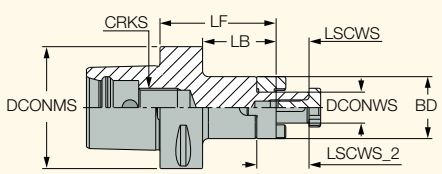
## Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| AV C5 SEM22 48X220 | SR M4X10DIN912 | DR.DOG 10S | M10 CLAMP SCREW SEM22 | COOLING TUBE C5* | WRENCH COOL TUBE C5* | WRENCH M10 SEMC 22* |
| AV C5 SEM22 48X270 | SR M4X10DIN912 | DR.DOG 10S | M10 CLAMP SCREW SEM22 | COOLING TUBE C5* | WRENCH COOL TUBE C5* | WRENCH M10 SEMC 22* |
| AV C6 SEM22 48X270 | SR M4X10DIN912 | DR.DOG 10S | M10 CLAMP SCREW SEM22 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH M10 SEMC 22* |
| AV C6 SEM22 61X260 | SR M4X10DIN912 | DR.DOG 10S | M10 CLAMP SCREW SEM22 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH M10 SEMC 22* |
| AV C6 SEM22 61X310 | SR M4X10DIN912 | DR.DOG 10S | M10 CLAMP SCREW SEM22 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH M10 SEMC 22* |
| AV C6 SEM27 61X250 | SR M5X14DIN912 | DR.DOG 12S | M12 CLAMP SCREW SEM27 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH M12 SEMC 27* |
| AV C6 SEM27 61X300 | SR M5X14DIN912 | DR.DOG 12S | M12 CLAMP SCREW SEM27 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH M12 SEMC 27* |

* Optional, to be ordered separately

**CAMFIX**

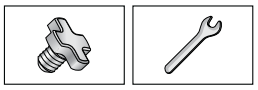
**C#-SEMC**
DIN 6358 COMBI Shell Mill Holders with CAMFIX (ISO 26623-1) Exchangeable Tapered Shanks




| Designation | DCONMS | DCONWS | LF | BD | LB | LSCWS | LSCWS_2 | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| C3 SEMC 16X30 | 32.00 | 16.00 | 30.00 | 32.00 | 10.0 | 17.00 | 27.00 | M12 | 0 | 0.40 |
| C4 SEMC16X45 | 40.00 | 16.00 | 45.00 | 32.00 | 25.0 | 17.00 | 27.00 | M14 | 1 | 0.36 |
| C4 SEMC22X45 | 40.00 | 22.00 | 45.00 | 40.00 | 25.0 | 19.00 | 31.00 | M14 | 1 | 0.40 |
| C5 SEMC16X55 | 50.00 | 16.00 | 55.00 | 32.00 | 35.0 | 17.00 | 27.00 | M16 | 1 | 0.60 |
| C5 SEMC22X65 | 50.00 | 22.00 | 65.00 | 40.00 | 45.0 | 19.00 | 31.00 | M16 | 1 | 0.79 |
| C5 SEMC27X85 | 50.00 | 27.00 | 85.00 | 48.00 | 65.0 | 21.00 | 33.00 | M16 | 1 | 1.22 |
| C6 SEMC16X60 | 63.00 | 16.00 | 60.00 | 32.00 | 38.0 | 17.00 | 27.00 | M20 | 1 | 0.95 |
| C6 SEMC16X100 | 63.00 | 16.00 | 100.00 | 32.00 | 78.0 | 17.00 | 27.00 | M20 | 1 | 1.28 |
| C6 SEMC22X60 | 63.00 | 22.00 | 60.00 | 40.00 | 38.0 | 19.00 | 31.00 | M20 | 1 | 1.25 |
| C6 SEMC22X100 | 63.00 | 22.00 | 100.00 | 40.00 | 78.0 | 19.00 | 31.00 | M20 | 1 | 1.40 |
| C6 SEMC27X60 | 63.00 | 27.00 | 60.00 | 48.00 | 38.0 | 21.00 | 33.00 | M20 | 1 | 1.21 |
| C6 SEMC27X100 | 63.00 | 27.00 | 100.00 | 48.00 | 78.0 | 21.00 | 33.00 | M20 | 1 | 1.69 |
| C6 SEMC32X60 | 63.00 | 32.00 | 60.00 | 58.00 | 38.0 | 24.00 | 38.00 | M20 | 1 | 1.35 |
| C6 SEMC40X70 | 63.00 | 40.00 | 70.00 | 70.00 | 48.0 | 27.00 | 41.00 | M20 | 1 | 1.95 |

- For internal coolant through the holder, the related COOLANT SET should be ordered via Accessories (applicable to certain tools only)

(1) 1 - Slot for data chip, 0 - Without slot for data chip



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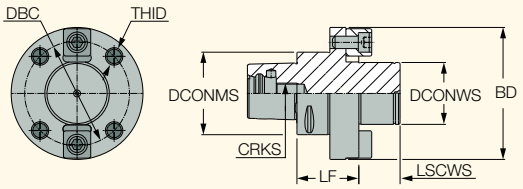
## Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| C3 SEMC 16X30 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | | | KEY SEMC 16 4X4X20 |
| C4 SEMC16X45 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | COOLING TUBE C4* | WRENCH COOL TUBE C4* | KEY SEMC 16 4X4X20 |
| C4 SEMC22X45 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22 | COOLING TUBE C4* | WRENCH COOL TUBE C4* | KEY SEMC 22 6X6X25 |
| C5 SEMC16X55 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16 | COOLING TUBE C5* | WRENCH COOL TUBE C5* | KEY SEMC 16 4X4X20 |
| C5 SEMC22X65 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | COOLING TUBE C5* | WRENCH COOL TUBE C5* | KEY SEMC 22 6X6X25 |
| C5 SEMC27X85 | 27 D.RING SEMC | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | COOLING TUBE C5* | WRENCH COOL TUBE C5* | KEY SEMC 27 7X7X25 |
| C6 SEMC16X60 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | KEY SEMC 16 4X4X20 |
| C6 SEMC16X100 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | KEY SEMC 16 4X4X20 |
| C6 SEMC22X60 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | KEY SEMC 22 6X6X25 |
| C6 SEMC22X100 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | KEY SEMC 22 6X6X25 |
| C6 SEMC27X60 | 27 D.RING SEMC | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | KEY SEMC 27 7X7X25 |
| C6 SEMC27X100 | 27 D.RING SEMC | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | KEY SEMC 27 7X7X25 |
| C6 SEMC32X60 | 32 D.RING SEMC | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | KEY SEMC 32 8X7X28 |
| C6 SEMC40X70 | 40 D.RING SEMC | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | COOLING TUBE C6* | WRENCH COOL TUBE C6* | KEY SEMC 40 10X8X32 |

* Optional, to be ordered separately

**CAMFIX**

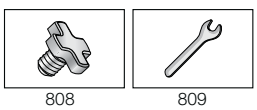
**C#-FM**
DIN 6357 Face Mill Holders with CAMFIX (ISO 26623-1) Tapered Shanks




| Designation | DCONMS | DCONWS | LSCWS | LF | BD | DBC | THID | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| C8 FM 60X60 | 80.00 | 60.00 | 40.00 | 60.00 | 128.00 | 101.60 | M16 | M20 | 1 | 5.22 |

- Peripheral clamping screws are not supplied.

(1) 1 - Slot for data chip, 0 - Without slot for data chip



808 809

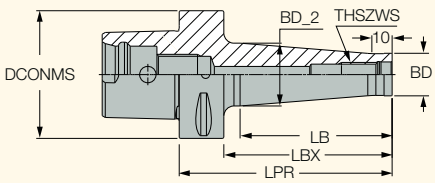
## Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| C8 FM 60X60 | COOLING TUBE C8* | WRENCH COOL TUBE C8* | SR M16X50 DIN912 | DR. DOG 1E | SR M12X25 DIN 912 |

* Optional, to be ordered separately

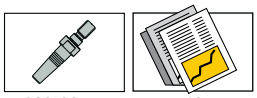
## CAMFIX FLEXFIT

**C#-ODP (FLEX-FIT)**
FLEX-FIT Threaded Connection Shanks with CAMFIX (ISO 26623-1) Adaptation



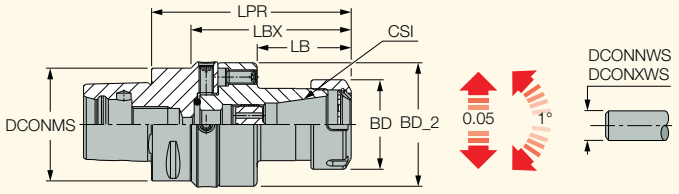

| Designation | DCONMS | THSZWS | BD | BD_2 | LPR | LBX | LB | DCP(1) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C3 ODP 12X53 | 32.00 | M12 | 21.00 | 26.00 | 53.00 | 38.0 | 23.00 | 0 | 0.32 | | |
| C4 ODP 10X53 | 40.00 | M10 | 18.00 | 23.00 | 53.00 | 33.0 | 23.00 | 1 | 0.33 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 ODP 12X53 | 40.00 | M12 | 21.00 | 26.00 | 53.00 | 33.0 | 23.00 | 1 | 0.33 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 ODP 16X53 | 40.00 | M16 | 29.00 | 34.00 | 53.00 | 33.0 | 23.00 | 1 | 0.40 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C5 ODP 10X53 | 50.00 | M10 | 18.00 | 19.50 | 53.00 | 33.0 | 25.00 | 1 | 0.49 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 ODP 12X103 | 50.00 | M12 | 21.00 | 31.00 | 103.00 | 83.0 | 75.00 | 1 | 0.72 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 ODP 12X53 | 50.00 | M12 | 21.00 | 23.50 | 53.00 | 33.0 | 25.00 | 1 | 0.50 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 ODP 16X103 | 50.00 | M16 | 29.00 | 36.00 | 103.00 | 83.0 | 75.00 | 1 | 0.85 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 ODP 16X53 | 50.00 | M16 | 29.00 | 34.00 | 53.00 | 33.0 | 25.00 | 1 | 0.57 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C6 ODP 10X105 | 63.00 | M10 | 18.00 | 28.00 | 105.00 | 83.0 | 75.00 | 1 | 1.00 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 10X130 | 63.00 | M10 | 18.00 | 32.00 | 130.00 | 108.0 | 100.00 | 1 | 0.80 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 10X55 | 63.00 | M10 | 18.00 | 19.50 | 55.00 | 33.0 | 25.00 | 1 | 0.82 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 12X105 | 63.00 | M12 | 21.00 | 31.00 | 105.00 | 83.0 | 75.00 | 1 | 1.07 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 12X130 | 63.00 | M12 | 21.00 | 36.00 | 130.00 | 108.0 | 100.00 | 1 | 1.26 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 12X55 | 63.00 | M12 | 21.00 | 23.50 | 55.00 | 33.0 | 25.00 | 1 | 0.84 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 16X105 | 63.00 | M16 | 29.00 | 34.00 | 105.00 | 83.0 | 75.00 | 1 | 1.20 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 16X130 | 63.00 | M16 | 29.00 | 41.00 | 130.00 | 108.0 | 100.00 | 1 | 1.49 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 ODP 16X55 | 63.00 | M16 | 29.00 | 34.00 | 55.00 | 33.0 | 25.00 | 1 | 0.89 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |

(1) 1 - Slot for data chip, 0 - Without slot for data chip
* Optional, to be ordered separately


802-805 746

## CAMFIX FINEFIT

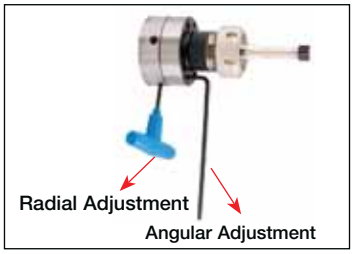
**ADJ C#-ER**
FINE-FIT Center Alignment Shank and Base with CAMFIX Adaptations for Specially Tailored Toolholders

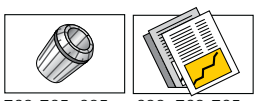



| Designation | DCONMS | CSI | DCONNWS(1) | DCONXWS(2) | BD_2 | BD | LPR | LBX | LB | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ADJ C4 ER32 | 40.00 | ER32 | 2.0 | 20.0 | 70.00 | 50.00 | 110.00 | 89.5 | 52.50 | 1 | 1.58 |
| ADJ C5 ER32 | 50.00 | ER32 | 2.0 | 20.0 | 70.00 | 50.00 | 115.00 | 95.0 | 52.50 | 1 | 2.12 |
| ADJ C6 ER32 | 63.00 | ER32 | 2.0 | 20.0 | 70.00 | 50.00 | 111.50 | 89.5 | 52.50 | 1 | 2.07 |

- Radial adjustment 0.05 mm, Angular adjustment 1°

(1) Minimum diameter
(2) Maximum diameter
(3) 1 - Slot for data chip, 0 - Without slot for data chip



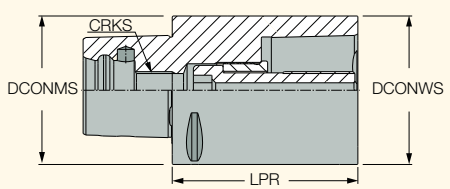


763-765, 635 633, 763-765

### Spare Parts

| Designation | |
|---|---|
| ADJ C#-ER | ADJ ER32 NOSE |

**CAMFIX**

**EX C# (CAMFIX extension)**
CAMFIX Extension Adapters




| Designation | DCONMS | DCONWS | LPR | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|
| C3 EX C3X080 | 32.00 | 32.00 | 80.00 | M12 | 0 | 0.50 |
| C4 EX C4X060 | 40.00 | 40.00 | 60.00 | M14 | 0 | 0.50 |
| C4 EX C4X080 | 40.00 | 40.00 | 80.00 | M14 | 0 | 0.70 |
| C5 EX C5X080 | 50.00 | 50.00 | 80.00 | M16 | 0 | 1.13 |
| C5 EX C5X100 | 50.00 | 50.00 | 100.00 | M16 | 0 | 1.42 |
| C6 EX C6X100 | 63.00 | 63.00 | 100.00 | M20 | 0 | 2.23 |
| C6 EX C6X140 | 63.00 | 63.00 | 140.00 | M20 | 0 | 3.13 |
| C8 EX C8X100 | 80.00 | 80.00 | 100.00 | M20 | 0 | 3.65 |
| C8 EX C8X125 | 80.00 | 80.00 | 125.00 | M20 | 0 | 4.60 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

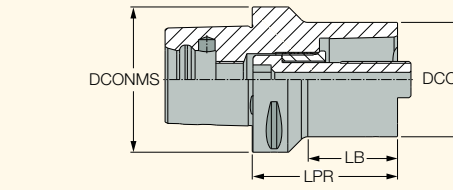
## Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| C3 EX C3X080 | SR M12X50 C3 | HW 7.0* | MT RING M18X15XC3 | COOLING TUBE C3* | WRENCH COOL TUBE C3* | WRENCH C3 DRW NUT* |
| C4 EX C4X060 | SR M14X58 C4 | HW 8.0* | MT RING M22X17XC4 | COOLING TUBE C4* | WRENCH COOL TUBE C4* | WRENCH C4 DRW NUT* |
| C4 EX C4X080 | SR M14X58 C4 | HW 8.0* | MT RING M22X17XC4 | COOLING TUBE C4* | WRENCH COOL TUBE C4* | WRENCH C4 DRW NUT* |
| C5 EX C5X080 | SR M16X70 C5 | HW 10.0* | MT RING M25X20XC5 | COOLING TUBE C5* | WRENCH COOL TUBE C5* | WRENCH C5 DRW NUT* |
| C5 EX C5X100 | SR M16X70 C5 | HW 10.0* | MT RING M25X20XC5 | COOLING TUBE C5* | WRENCH COOL TUBE C5* | WRENCH C5 DRW NUT* |
| C6 EX C6X100 | SR M20X87 C6/8 | HW 14.0* | MT RING M30X24XC6/8 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH C6-8 DRW NUT* |
| C6 EX C6X140 | SR M20X87 C6/8 | HW 14.0* | MT RING M30X24XC6/8 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH C6-8 DRW NUT* |
| C8 EX C8X100 | SR M20X87 C6/8 | HW 14.0* | MT RING M30X24XC6/8 | COOLING TUBE C8* | WRENCH COOL TUBE C8* | WRENCH C6-8 DRW NUT* |
| C8 EX C8X125 | SR M20X87 C6/8 | HW 14.0* | MT RING M30X24XC6/8 | COOLING TUBE C8* | WRENCH COOL TUBE C8* | WRENCH C6-8 DRW NUT* |

* Optional, to be ordered separately

**CAMFIX**

**RE-C#**
CAMFIX Reduction Adapters




| Designation | DCONMS | DCONWS | LPR | LB | DCP(1) | kg |
|---|---|---|---|---|---|---|
| C6 RE C3X070 | 63.00 | 32.00 | 70.00 | 39.00 | 0 | 1.10 |
| C8 RE C3X060 | 80.00 | 32.00 | 60.00 | 29.30 | 0 | 1.70 |
| C6 RE C4X080 | 63.00 | 40.00 | 80.00 | 51.40 | 0 | 1.20 |
| C8 RE C4X070 | 80.00 | 40.00 | 70.00 | 36.50 | 0 | 1.90 |
| C6 RE C5X080 | 63.00 | 50.00 | 80.00 | 51.50 | 0 | 1.50 |
| C8 RE C5X080 | 80.00 | 50.00 | 80.00 | 49.30 | 0 | 2.20 |
| C8 RE C6X080 | 80.00 | 63.00 | 80.00 | 53.10 | 0 | 2.50 |
| C8 RE C6X120 | 80.00 | 63.00 | 120.00 | 12.00 | 0 | 4.00 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

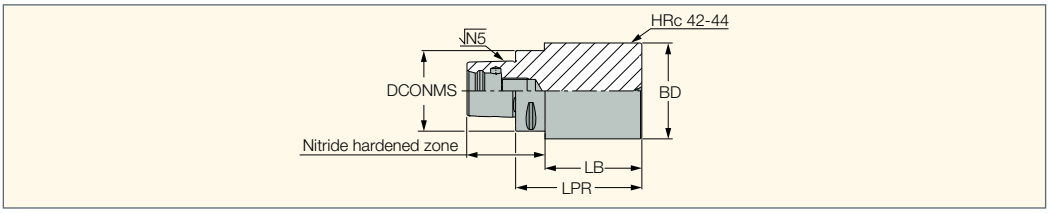
## Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| C6 RE C3X070 | SR M12X50 C3 | HW 7.0* | MT RING M18X15XC3 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH C3 DRW NUT* |
| C8 RE C3X060 | SR M12X50 C3 | HW 7.0* | MT RING M18X15XC3 | COOLING TUBE C8* | WRENCH COOL TUBE C8* | WRENCH C3 DRW NUT* |
| C6 RE C4X080 | SR M14X58 C4 | HW 8.0* | MT RING M22X17XC4 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH C4 DRW NUT* |
| C8 RE C4X070 | SR M14X58 C4 | HW 8.0* | MT RING M22X17XC4 | COOLING TUBE C8* | WRENCH COOL TUBE C8* | WRENCH C4 DRW NUT* |
| C6 RE C5X080 | SR M16X70 C5 | HW 10.0* | MT RING M25X20XC5 | COOLING TUBE C6* | WRENCH COOL TUBE C6* | WRENCH C5 DRW NUT* |
| C8 RE C5X080 | SR M16X70 C5 | HW 10.0* | MT RING M25X20XC5 | COOLING TUBE C8* | WRENCH COOL TUBE C8* | WRENCH C5 DRW NUT* |
| C8 RE C6X080 | SR M20X87 C6/8 | HW 14.0* | MT RING M30X24XC6/8 | COOLING TUBE C8* | WRENCH COOL TUBE C8* | WRENCH C6-8 DRW NUT* |
| C8 RE C6X120 | SR M20X87 C6/8 | HW 14.0* | MT RING M30X24XC6/8 | COOLING TUBE C8* | WRENCH COOL TUBE C8* | WRENCH C6-8 DRW NUT* |

* Optional, to be ordered separately

**CAMFIX**

**C#-B4340 (blank)**
Blanks with CAMFIX
(ISO 26623-1 Standard)
Exchangeable Tapered Shanks




| Designation | DCONMS | BD | LPR | LB | DCP(1) | kg | | |
|---|---|---|---|---|---|---|---|---|
| C3 B4340 032090 | 32.00 | 32.00 | 90.00 | - | 0 | 0.60 | COOLING TUBE C3* | WRENCH COOL TUBE C3* |
| C3 B4340 050125 | 32.00 | 50.00 | 125.00 | 108.2 | 0 | 1.81 | COOLING TUBE C3* | WRENCH COOL TUBE C3* |
| C3 B4340 060090 | 32.00 | 60.00 | 90.00 | 73.2 | 0 | 0.28 | COOLING TUBE C3* | WRENCH COOL TUBE C3* |
| C3 B4340 070060 | 32.00 | 70.00 | 60.00 | 43.2 | 0 | 0.00 | COOLING TUBE C3* | WRENCH COOL TUBE C3* |
| C3 B4340 090070 | 32.00 | 90.00 | 70.00 | 53.0 | 0 | 2.80 | COOLING TUBE C3* | WRENCH COOL TUBE C3* |
| C4 B4340 040055 | 40.00 | 40.00 | 55.00 | 35.0 | 1 | 1.02 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 B4340 040095 | 40.00 | 40.00 | 95.00 | 75.0 | 1 | 0.00 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 B4340 052065 | 40.00 | 52.00 | 65.00 | 44.0 | 1 | 0.00 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 B4340 060165 | 40.00 | 60.00 | 165.00 | 144.0 | 1 | 3.47 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 B4340 066055 | 40.00 | 66.00 | 55.00 | 35.0 | 1 | 1.16 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 B4340 080050 | 40.00 | 80.00 | 50.00 | 28.2 | 1 | 1.38 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 B4340 080075 | 40.00 | 80.00 | 75.00 | 54.0 | 1 | 2.38 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C4 B4340 100085 | 40.00 | 100.00 | 85.00 | 64.0 | 1 | 4.10 | COOLING TUBE C4* | WRENCH COOL TUBE C4* |
| C5 B4340 050125 | 50.00 | 50.00 | 125.00 | 105.0 | 1 | 2.06 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 B4340 075065 | 50.00 | 75.00 | 65.00 | 43.2 | 1 | 3.80 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 B4340 075175 | 50.00 | 75.00 | 175.00 | 154.0 | 1 | 5.79 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 B4340 090050 | 50.00 | 90.00 | 50.00 | 28.2 | 1 | 2.30 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 B4340 090065 | 50.00 | 90.00 | 65.00 | 43.2 | 1 | 1.95 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 B4340 090080 | 50.00 | 90.00 | 80.00 | 59.0 | 1 | 3.37 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C5 B4340 110090 | 50.00 | 110.00 | 90.00 | 69.0 | 1 | 5.61 | COOLING TUBE C5* | WRENCH COOL TUBE C5* |
| C6 B4340 063100 | 63.00 | 63.00 | 100.00 | 78.0 | 1 | 2.72 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 B4340 075195 | 63.00 | 75.00 | 195.00 | 172.0 | 1 | 6.78 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 B4340 095050 | 63.00 | 95.00 | 50.00 | 26.2 | 1 | 2.25 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 B4340 110085 | 63.00 | 110.00 | 85.00 | 62.0 | 1 | 5.38 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 B4340 120180 | 63.00 | 120.00 | 180.00 | 157.0 | 1 | 14.73 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C6 B4340 130095 | 63.00 | 130.00 | 95.00 | 72.0 | 1 | 8.24 | COOLING TUBE C6* | WRENCH COOL TUBE C6* |
| C8 B4340 080200 | 80.00 | 80.00 | 200.00 | 170.0 | 1 | 8.45 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 B4340 120160 | 80.00 | 120.00 | 160.00 | 129.0 | 1 | 13.21 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 B4340 130090 | 80.00 | 130.00 | 90.00 | 59.0 | 1 | 7.89 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |
| C8 B4340 145200 | 80.00 | 145.00 | 200.00 | 169.0 | 1 | 23.95 | COOLING TUBE C8* | WRENCH COOL TUBE C8* |

- Material SAE 4340

(1) 1 - Slot for data chip, 0 - Without slot for data chip

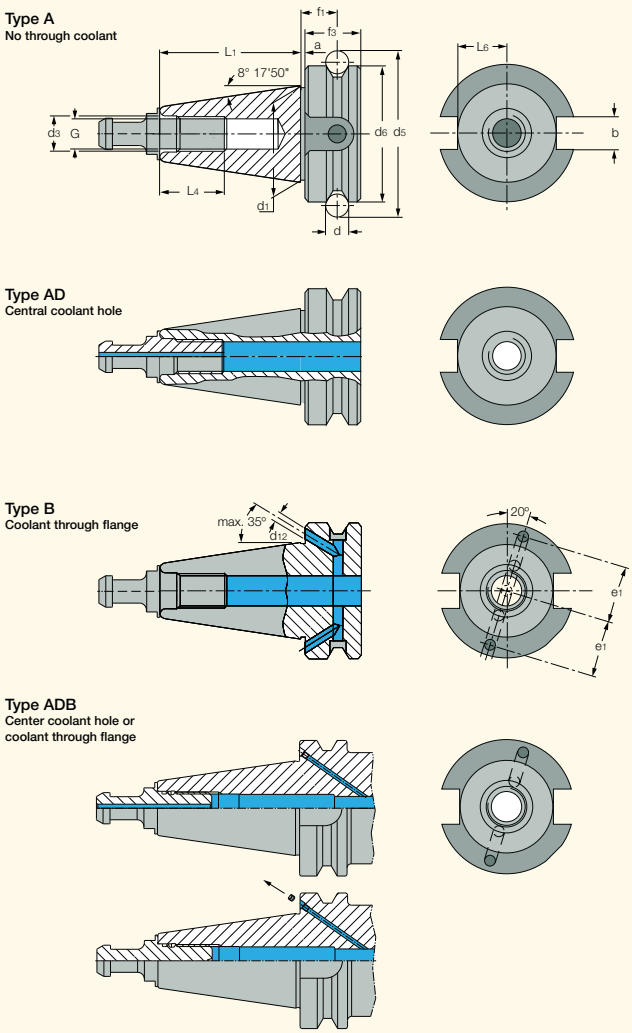
* Optional, to be ordered separately

# BT MAS-403

## *BT MAS*

### Toolholder Standard

"ADB" holders provide both "AD" and "B" type coolant flow options

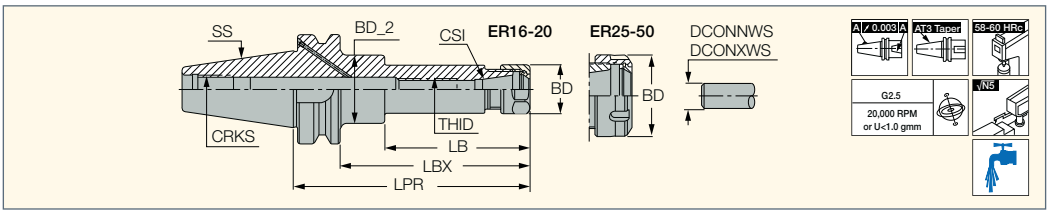



| Shank | a | b (H12) | d | d1 | G | d3 (H8) | d5 | d6 (H8) | f1 ±0.1 |
|---|---|---|---|---|---|---|---|---|---|
| BT 30 | 2 | 16.1 | 8 | 31.75 | M12 | 12.5 | 56.144 | 46 | 13.6 |
| BT 40 | 2 | 16.1 | 10 | 44.45 | M16 | 17.0 | 75.679 | 63 | 16.6 |
| BT 50 | 3 | 25.7 | 15 | 69.85 | M24 | 25.0 | 119.020 | 100 | 23.2 |

| Shank | f3 | L1 ±0.2 | L4 MIN | L6-0.2 | e1 ±0.1 | d12 | Taper AT3 |
|---|---|---|---|---|---|---|---|
| BT 30 | 20 | 48.4 | 24 | 16.3 | 21 | 4 | 0.002 |
| BT 40 | 25 | 65.4 | 30 | 22.6 | 27 | 4 | 0.003 |
| BT 50 | 35 | 101.8 | 45 | 35.4 | 42 | 6 | 0.004 |

## *BT MAS*

**BT-ER**
DIN6499 ER Collet Chucks
with BT MAS-403 ADB
Tapered Shanks



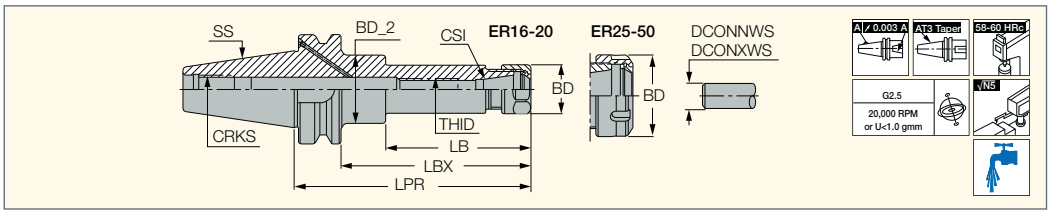

| Designation | SS | CSI | DCONNWS(3) | DCONXWS(4) | LPR | LBX | LB | BD | BD_2 | THID | CRKS | DCP(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BT30 ER16X 70 (1)** | 30 | ER16 | 0.5 | 10.0 | 70.00 | 48.0 | - | 28.00 | - | M10 | M12 | 0 | 0.47 |
| **BT30 ER16X100 (1)** | 30 | ER16 | 0.5 | 10.0 | 100.00 | 73.0 | - | 28.00 | - | M10 | M12 | 0 | 0.61 |
| **BT30 ER20X 70 (1)** | 30 | ER20 | 1.0 | 13.0 | 70.00 | 48.0 | - | 34.00 | - | M12 | M12 | 0 | 0.51 |
| **BT30 ER25X 60 (1)** | 30 | ER25 | 1.0 | 16.0 | 60.00 | 38.0 | - | 42.00 | - | M16 | M12 | 0 | 0.46 |
| **BT30 ER32X 60 (1)** | 30 | ER32 | 2.0 | 20.0 | 60.00 | 38.0 | - | 50.00 | - | M18X1.5 | M12 | 0 | 0.42 |
| **BT40 ER11X100 M** | 40 | ER11 | 0.5 | 7.0 | 100.00 | 73.0 | - | 16.00 | - | M6 | M16 | 0 | 1.06 |
| **BT40 ER16X 70** | 40 | ER16 | 0.5 | 10.0 | 70.00 | 43.0 | - | 28.00 | - | M12 | M16 | 0 | 1.06 |
| **BT40 ER16X100** | 40 | ER16 | 0.5 | 10.0 | 100.00 | 73.0 | - | 28.00 | - | M12 | M16 | 0 | 1.20 |
| **BT40 ER16X100 M** | 40 | ER16 | 0.5 | 10.0 | 100.00 | 73.0 | - | 22.00 | - | M10 | M16 | 0 | 1.16 |
| **BT40 ER16X150** | 40 | ER16 | 0.5 | 10.0 | 150.00 | 123.0 | 86.00 | 28.00 | 40.00 | M12 | M16 | 0 | 1.56 |
| **BT40 ER16X200 (2)** | 40 | ER16 | 0.5 | 10.0 | 200.00 | 173.0 | 110.00 | 28.00 | 40.00 | M10 | M16 | 0 | 1.84 |
| **BT40 ER20X 70** | 40 | ER20 | 1.0 | 13.0 | 70.00 | 43.0 | - | 34.00 | - | M12 | M16 | 0 | 1.07 |
| **BT40 ER20X100** | 40 | ER20 | 1.0 | 13.0 | 100.00 | 73.0 | - | 34.00 | - | M12 | M16 | 0 | 1.27 |
| **BT40 ER20X120** | 40 | ER20 | 1.0 | 13.0 | 120.00 | 93.0 | - | 34.00 | - | M12 | M16 | 0 | 1.39 |
| **BT40 ER20X150** | 40 | ER20 | 1.0 | 13.0 | 150.00 | 123.0 | - | 34.00 | - | M12 | M16 | 0 | 1.61 |
| **BT40 ER25X 60** | 40 | ER25 | 1.0 | 13.0 | 60.00 | 33.0 | - | 42.00 | - | M16 | M16 | 0 | 1.00 |
| **BT40 ER25X100** | 40 | ER25 | 1.0 | 16.0 | 100.00 | 73.0 | - | 42.00 | - | M16 | M16 | 0 | 1.40 |
| **BT40 ER25X150** | 40 | ER25 | 1.0 | 16.0 | 150.00 | 123.0 | - | 42.00 | - | M16 | M16 | 0 | 2.07 |
| **BT40 ER32X 60** | 40 | ER32 | 2.0 | 20.0 | 60.00 | 33.0 | - | 50.00 | - | M22X1.5 | M16 | 0 | 0.90 |
| **BT40 ER32X100** | 40 | ER32 | 2.0 | 20.0 | 100.00 | 73.0 | - | 50.00 | - | M22X1.5 | M16 | 0 | 1.45 |
| **BT40 ER32X120** | 40 | ER32 | 2.0 | 20.0 | 120.00 | 93.0 | - | 50.00 | - | M22X1.5 | M16 | 0 | 1.74 |
| **BT40 ER32X150** | 40 | ER32 | 2.0 | 20.0 | 150.00 | 123.0 | - | 50.00 | - | M22X1.5 | M16 | 0 | 2.19 |
| **BT40 ER32X200 (2)** | 40 | ER32 | 2.0 | 20.0 | 200.00 | 173.0 | 113.00 | 50.00 | 57.00 | M22X1.5 | M16 | 0 | 3.02 |
| **BT40 ER40X 80** | 40 | ER40 | 3.0 | 26.0 | 80.00 | 53.0 | - | 63.00 | - | M28X1.5 | M16 | 0 | 1.33 |
| **BT40 ER40X100** | 40 | ER40 | 3.0 | 26.0 | 100.00 | 73.0 | - | 63.00 | - | M28X1.5 | M16 | 0 | 1.32 |
| **BT40 ER40X150** | 40 | ER40 | 3.0 | 26.0 | 150.00 | 123.0 | - | 63.00 | - | M28X1.5 | M16 | 0 | 2.03 |
| **BT40 ER50X 90** | 40 | ER50 | 10.0 | 34.0 | 90.00 | 63.0 | - | 78.00 | - | M28X1.5 | M16 | 0 | 1.27 |
| **BT50 ER16X100** | 50 | ER16 | 0.5 | 10.0 | 100.00 | 62.0 | - | 28.00 | - | M12 | M24 | 0 | 3.70 |
| **BT50 ER16X125** | 50 | ER16 | 0.5 | 10.0 | 125.00 | 87.0 | - | 28.00 | - | M12 | M24 | 0 | 3.94 |
| **BT50 ER16X150** | 50 | ER16 | 0.5 | 10.0 | 150.00 | 112.0 | - | 28.00 | - | M12 | M24 | 0 | 3.99 |
| **BT50 ER16X200 (2)** | 50 | ER16 | 0.5 | 10.0 | 200.00 | 162.0 | 85.00 | 28.00 | 40.00 | M10 | M24 | 0 | 4.51 |
| **BT50 ER20X100** | 50 | ER20 | 1.0 | 10.0 | 100.00 | 62.0 | - | 34.00 | - | M12 | M24 | 0 | 3.81 |
| **BT50 ER20X125** | 50 | ER20 | 1.0 | 13.0 | 125.00 | 87.0 | - | 34.00 | - | M12 | M24 | 0 | 4.16 |
| **BT50 ER20X150** | 50 | ER20 | 1.0 | 13.0 | 150.00 | 112.0 | - | 34.00 | - | M12 | M24 | 0 | 4.06 |
| **BT50 ER20X200 (2)** | 50 | ER20 | 1.0 | 13.0 | 200.00 | 162.0 | 85.00 | 34.00 | 50.00 | M12 | M24 | 0 | 5.04 |
| **BT50 ER25X100** | 50 | ER25 | 1.0 | 16.0 | 100.00 | 62.0 | - | 42.00 | - | M16 | M24 | 0 | 3.90 |
| **BT50 ER25X150** | 50 | ER25 | 1.0 | 16.0 | 150.00 | 112.0 | - | 42.00 | - | M16 | M24 | 0 | 4.31 |
| **BT50 ER25X200 (2)** | 50 | ER25 | 1.0 | 16.0 | 200.00 | 162.0 | 87.00 | 42.00 | 55.00 | M16 | M24 | 0 | 5.29 |
| **BT50 ER32X100** | 50 | ER32 | 2.0 | 20.0 | 100.00 | 62.0 | - | 50.00 | - | M22X1.5 | M24 | 0 | 4.01 |
| **BT50 ER32X125** | 50 | ER32 | 2.0 | 20.0 | 125.00 | 87.0 | - | 50.00 | - | M12 | M24 | 0 | 4.24 |
| **BT50 ER32X150** | 50 | ER32 | 2.0 | 20.0 | 150.00 | 112.0 | - | 50.00 | - | M22X1.5 | M24 | 0 | 4.64 |
| **BT50 ER32X200 (2)** | 50 | ER32 | 2.0 | 20.0 | 200.00 | 162.0 | 88.00 | 50.00 | 63.00 | M22X1.5 | M24 | 0 | 5.80 |
| **BT50 ER40X100** | 50 | ER40 | 3.0 | 26.0 | 100.00 | 62.0 | - | 63.00 | - | M28X1.5 | M24 | 0 | 4.03 |
| **BT50 ER40X150** | 50 | ER40 | 3.0 | 26.0 | 150.00 | 112.0 | - | 63.00 | - | M28X1.5 | M24 | 0 | 5.05 |
| **BT50 ER40X200 (2)** | 50 | ER40 | 3.0 | 26.0 | 200.00 | 162.0 | - | 63.00 | - | M28X1.5 | M24 | 0 | 6.23 |
| **BT50 ER50X100** | 50 | ER50 | 3.0 | 26.0 | 100.00 | 62.0 | - | 78.00 | - | M36X1.5 | M24 | 0 | 0.01 |
| **BT50 ER50X150** | 50 | ER50 | 10.0 | 34.0 | 150.00 | 112.0 | - | 78.00 | - | M36X1.5 | M24 | 0 | 5.50 |

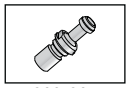
- B is the designation for coolant through flange.

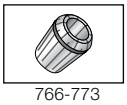
**(1)** AD TYPE
**(2)** Balanced to G6.3/12,000 RPM
**(3)** Minimum diameter
**(4)** Maximum diameter
**(5)** 1 - Slot for data chip, 0 - Without slot for data chip

# *BT MAS*

**BT-ER**
DIN6499 ER Collet Chucks
with BT MAS-403 ADB
Tapered Shanks





802-805


766-773

763-765, 635

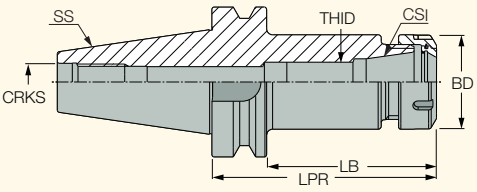
## Spare Parts

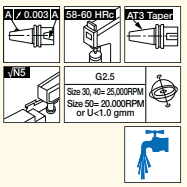
| Designation | | | | | | |
|---|---|---|---|---|---|---|
| **BT30 ER16X 70** | NUT ER16 TOP | | WRENCH ER16* | PRESET ER-JET 10X1.5* | | |
| **BT30 ER16X100** | NUT ER16 TOP | | WRENCH ER16* | PRESET ER-JET 10X1.5* | | |
| **BT30 ER20X 70** | NUT ER20 TOP | | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT30 ER25X 60** | NUT ER25 TOP | | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* | |
| **BT30 ER32X 60** | NUT ER32 TOP | | WRENCH ER32* | PRESET ER-JET 18X1.5* | PRESET ER-JET 18X1.5L* | |
| **BT40 ER11X100 M** | | NUT ER11 MINI | | | | WRENCH ER11 MINI* |
| **BT40 ER16X 70** | NUT ER16 TOP | | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT40 ER16X100** | NUT ER16 TOP | | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT40 ER16X150** | NUT ER16 TOP | | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT40 ER16X200** | NUT ER16 TOP | | WRENCH ER16* | PRESET ER-JET 10X1.5* | | |
| **BT40 ER20X 70** | NUT ER20 TOP | | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT40 ER20X100** | NUT ER20 TOP | | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT40 ER20X120** | NUT ER20 TOP | | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT40 ER20X150** | NUT ER20 TOP | | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT40 ER25X 60** | NUT ER25 TOP | | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* | |
| **BT40 ER25X100** | NUT ER25 TOP | | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* | |
| **BT40 ER25X150** | NUT ER25 TOP | | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* | |
| **BT40 ER32X 60** | NUT ER32 TOP | | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* | |
| **BT40 ER32X100** | NUT ER32 TOP | | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* | |
| **BT40 ER32X120** | NUT ER32 TOP | | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* | |
| **BT40 ER32X150** | NUT ER32 TOP | | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* | |
| **BT40 ER32X200** | NUT ER32 TOP | | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* | |
| **BT40 ER40X 80** | NUT ER40 TOP | | WRENCH ER40* | PRESET ER-JET 28X1.5* | | |
| **BT40 ER40X100** | NUT ER40 TOP | | WRENCH ER40* | PRESET ER-JET 28X1.5* | | |
| **BT40 ER40X150** | NUT ER40 TOP | | WRENCH ER40* | PRESET ER-JET 28X1.5* | | |
| **BT40 ER50X 90** | NUT ER50 UM | | WRENCH ER50* | PRESET ER-JET 28X1.5* | | |
| **BT50 ER16X100** | NUT ER16 TOP | | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT50 ER16X125** | NUT ER16 TOP | | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT50 ER16X150** | NUT ER16 TOP | | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT50 ER16X200** | NUT ER16 TOP | | WRENCH ER16* | PRESET ER-JET 10X1.5* | | |
| **BT50 ER20X100** | NUT ER20 TOP | | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT50 ER20X125** | NUT ER20 TOP | | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT50 ER20X150** | NUT ER20 TOP | | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT50 ER20X200** | NUT ER20 TOP | | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* | |
| **BT50 ER25X100** | NUT ER25 TOP | | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* | |
| **BT50 ER25X150** | NUT ER25 TOP | | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* | |
| **BT50 ER25X200** | NUT ER25 TOP | | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* | |
| **BT50 ER32X100** | NUT ER32 TOP | | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* | |
| **BT50 ER32X125** | NUT ER32 TOP | | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* | |
| **BT50 ER32X150** | NUT ER32 TOP | | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* | |
| **BT50 ER32X200** | NUT ER32 TOP | | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* | |
| **BT50 ER40X100** | NUT ER40 TOP | | WRENCH ER40* | PRESET ER-JET 28X1.5* | | |
| **BT50 ER40X150** | NUT ER40 TOP | | WRENCH ER40* | PRESET ER-JET 28X1.5* | | |
| **BT50 ER40X200** | NUT ER40 TOP | | WRENCH ER40* | PRESET ER-JET 28X1.5* | | |
| **BT50 ER50X100** | NUT ER50 UM | | WRENCH ER50* | PRESET ER-JET 28X1.5* | | |
| **BT50 ER50X150** | NUT ER50 UM | | WRENCH ER50* | PRESET ER-JET 28X1.5* | | |

* Optional, to be ordered separately

## BT MAS

**BT-FC-ER**
ER Collet Chucks with BT MAS-403 Face Contact AD Tapered Shanks

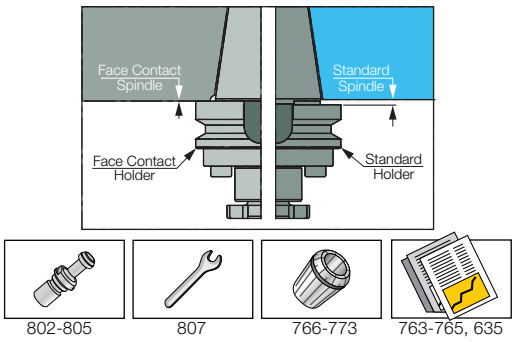



| Designation | SS | CSI | BD | LPR | LB | THID | CRKS | DCP(1) | kg | |
|---|---|---|---|---|---|---|---|---|---|---|
| BT30 FC ER16X70 | 30 | ER16 | 28.00 | 70.00 | 48.0 | M10 | M12 | 0 | 0.60 | NUT ER16 TOP |
| BT30 FC ER16X100 | 30 | ER16 | 28.00 | 100.00 | 79.0 | M10 | M12 | 0 | 0.61 | NUT ER16 TOP |
| BT30 FC ER20X70 | 30 | ER20 | 34.00 | 70.00 | 48.0 | M12 | M12 | 0 | 0.51 | NUT ER20 TOP |
| BT30 FC ER25X60 | 30 | ER25 | 42.00 | 60.00 | 38.0 | M16 | M12 | 0 | 0.47 | NUT ER25 TOP |
| BT30 FC ER32X60 | 30 | ER32 | 50.00 | 60.00 | 38.0 | M18 | M12 | 0 | 0.46 | NUT ER32 TOP |
| BT40 FC ER16X70 | 40 | ER16 | 28.00 | 70.00 | 44.0 | M12 | M16 | 0 | 1.05 | NUT ER16 TOP |
| BT40 FC ER16X100 | 40 | ER16 | 28.00 | 100.00 | 74.0 | M12 | M16 | 0 | 1.17 | NUT ER16 TOP |
| BT40 FC ER32X60 | 40 | ER32 | 50.00 | 60.00 | 34.0 | M22X1.5 | M16 | 0 | 0.92 | NUT ER32 TOP |
| BT40 FC ER32X100 | 40 | ER32 | 50.00 | 100.00 | 74.0 | M22X1.5 | M16 | 0 | 1.54 | NUT ER32 TOP |
| BT40 FC ER40X80 | 40 | ER40 | 63.00 | 80.00 | 54.0 | M28X1.5 | M16 | 0 | 1.09 | NUT ER40 TOP |
| BT50 FC ER16X100 | 50 | ER16 | 28.00 | 100.00 | 63.5 | M12 | M24 | 0 | 3.91 | NUT ER16 TOP |
| BT50 FC ER16X150 | 50 | ER16 | 28.00 | 150.00 | 113.5 | M12 | M24 | 0 | 3.96 | NUT ER16 TOP |
| BT50 FC ER32X100 | 50 | ER32 | 50.00 | 100.00 | 63.5 | M22X1.5 | M24 | 0 | 3.98 | NUT ER32 TOP |
| BT50 FC ER32X150 | 50 | ER32 | 50.00 | 150.00 | 113.5 | M22X1.5 | M24 | 0 | 4.65 | NUT ER32 TOP |
| BT50 FC ER40X100 | 50 | ER40 | 63.00 | 100.00 | 63.5 | M28X1.5 | M24 | 0 | 4.03 | NUT ER40 TOP |
| BT50 FC ER40X150 | 50 | ER40 | 63.00 | 150.00 | 113.5 | M28X1.5 | M24 | 0 | 5.60 | NUT ER40 TOP |

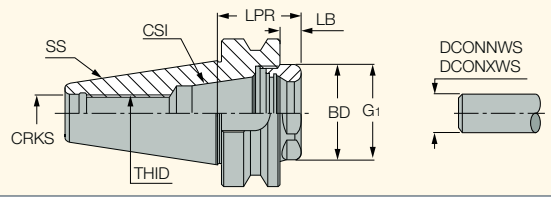
(1) 1 - Slot for data chip, 0 - Without slot for data chip

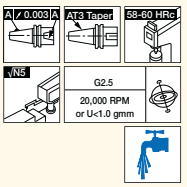
**BT-FC Face Contact Taper**




## BT MAS SHORTIN

**BT-ER-SHORT**
Short ER Collet Chucks with BT MAS-403 AD Tapered Shanks

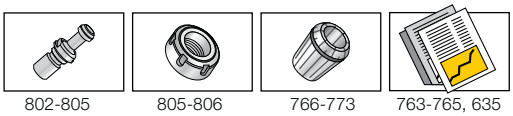



| Designation | SS | CSI | DCONNWS(1) | DCONXWS(2) | LPR | LB | BD | THID | CRKS | G1 | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT30 ER20 SHORT | 30 | ER20 | 1.0 | 13.0 | 23.70 | 5.2 | 25.00 | M12 | M12 | M25X1.5 | 0 | 0.30 |
| BT40 ER32 SHORT | 40 | ER32 | 2.0 | 20.0 | 36.50 | 6.0 | 40.00 | M16 | M16 | M40X1.5 | 0 | 0.74 |
| BT40 ER40 SHORT | 40 | ER40 | 3.0 | 26.0 | 43.00 | 6.0 | 50.00 | M16 | M16 | M50X1.5 | 0 | 0.78 |
| BT50 ER32 SHORT | 50 | ER32 | 2.0 | 20.0 | 44.00 | 6.0 | 40.00 | M22X1.5 | M24 | M40X1.5 | 0 | 3.36 |
| BT50 ER40 SHORT | 50 | ER40 | 3.0 | 26.0 | 44.00 | 6.0 | 50.00 | M28X1.5 | M24 | M50X1.5 | 0 | 3.09 |

- B is the designation for coolant through flange.

(1) Minimum diameter
(2) Maximum diameter
(3) 1 - Slot for data chip, 0 - Without slot for data chip



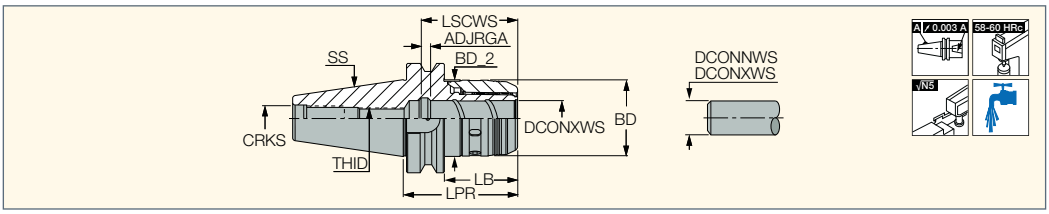

### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| BT30 ER20 SHORT | NUT ER20 SHORT | | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| BT40 ER32 SHORT | NUT ER32 SHORT | WRENCH ER32 SHORT* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| BT40 ER40 SHORT | NUT ER40 SHORT | WRENCH ER40 SHORT* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| BT50 ER32 SHORT | NUT ER32 SHORT | WRENCH ER32 SHORT* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| BT50 ER40 SHORT | NUT ER40 SHORT | WRENCH ER40 SHORT* | PRESET ER-JET 28X1.5* | |

* Optional, to be ordered separately

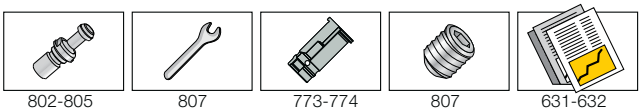
## BT MAS MAXIN

**BT-MAXIN**
Power Chucks with BT MAS-403
ADB Tapered Shanks




| Designation | SS | DCONNWS(1) | DCONXWS(2) | BD | BD_2 | LPR | LB | ADJRGA | LSCWS | THID | CRKS | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT40 MAXIN 20X 85 | 40 | 6.0 | 20.0 | 51.00 | 52.00 | 85.00 | 58.0 | 12.00 | 68.0 | M16 | M16 | 0 | 1.12 |
| BT40 MAXIN 32X108 | 40 | 6.0 | 32.0 | 69.00 | 70.00 | 108.00 | 81.0 | 13.00 | 83.0 | M16 | M16 | 0 | 1.60 |
| BT50 MAXIN 20X105 | 50 | 6.0 | 20.0 | 51.00 | 52.00 | 105.00 | 67.0 | 13.00 | 69.0 | M16 | M24 | 0 | 3.90 |
| BT50 MAXIN 20X105 ADB | 50 | 6.0 | 20.0 | 51.00 | 52.00 | 105.00 | 67.0 | 13.00 | 69.0 | M16 | M24 | 0 | 0.00 |
| BT50 MAXIN 32X106 | 50 | 6.0 | 32.0 | 69.00 | 70.00 | 106.00 | 68.0 | 14.00 | 83.0 | M20X2 | M24 | 0 | 3.80 |
| BT50 MAXIN 32X106 ADB | 50 | 6.0 | 32.0 | 69.00 | 70.00 | 106.00 | 68.0 | 14.00 | 83.0 | M20X2 | M24 | 0 | 0.00 |
| BT50 MAXIN 32X135 | 50 | 6.0 | 32.0 | 69.00 | 70.00 | 135.00 | 97.0 | 15.00 | 84.0 | M20X2 | M24 | 0 | 4.60 |

(1) Minimum diameter by using a reduction collet
(2) Max. diameter without a collet
(3) 1 - Slot for data chip, 0 - Without slot for data chip


802-805 807 773-774 807 631-632

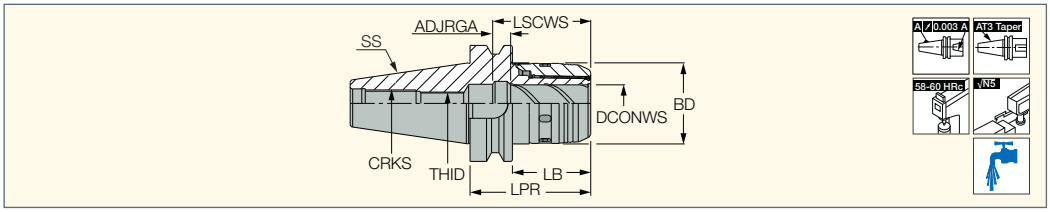
### Spare Parts

| Designation | | |
|---|---|---|
| BT40 MAXIN 20X 85 | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* |
| BT40 MAXIN 32X108 | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* |
| BT50 MAXIN 20X105 | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* |
| BT50 MAXIN 20X105 ADB | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* |
| BT50 MAXIN 32X106 | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* |
| BT50 MAXIN 32X106 ADB | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* |
| BT50 MAXIN 32X135 | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* |

* Optional, to be ordered separately

## BT MAS MAXIN

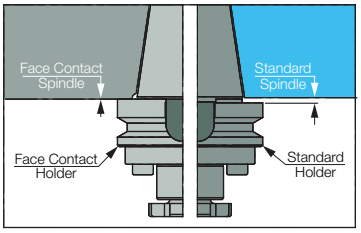
**BT-FC-MAXIN**
Power Chucks with BT
MAS-403 Face Contact
AD Tapered Shanks

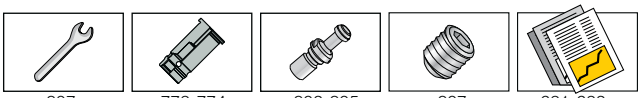



| Designation | SS | DCONNWS(1) | DCONXWS(2) | BD | LPR | LB | ADJRGA | LSCWS | THID | CRKS | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT40 FC MAXIN20X85 | 40 | 6.0 | 20.0 | 53.00 | 85.00 | 58.0 | 12.80 | 68.3 | M16 | M16 | 0 | 1.67 |
| BT40 FC MAXIN32X108 | 40 | 6.0 | 32.0 | 70.00 | 108.00 | 80.5 | 13.00 | 83.0 | M16 | M16 | 0 | 1.65 |
| BT50 FC MAXIN20X105 | 50 | 6.0 | 20.0 | 53.00 | 105.00 | 67.0 | 13.10 | 68.6 | M16 | M24 | 0 | 3.80 |
| BT50 FC MAXIN32X106 | 50 | 6.0 | 32.0 | 69.90 | 106.00 | 68.0 | 14.30 | 83.3 | M20X2 | M24 | 0 | 3.92 |

(1) By using a reduction collet
(2) Without a collet
(3) 1 - Slot for data chip, 0 - Without slot for data chip

**BT-FC Face Contact Taper**





807 773-774 802-805 807 631-632

### Spare Parts

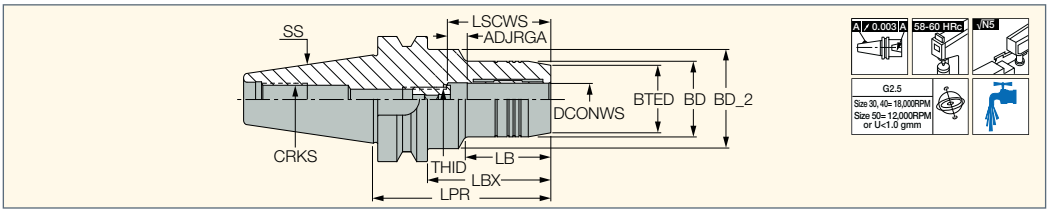
| Designation | | |
|---|---|---|
| BT40 FC MAXIN20X85 | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* |
| BT40 FC MAXIN32X108 | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* |
| BT50 FC MAXIN20X105 | WRENCH MAXIN 20 HOOK* | EXTRACTOR SC COLLETS* |
| BT50 FC MAXIN32X106 | WRENCH MAXIN 32 HOOK* | EXTRACTOR SC COLLETS* |

* Optional, to be ordered separately

## BT MAS HYDROFIT HOLDING LINE

**BT-HYDRO**

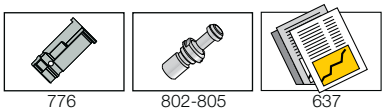
Hydraulic Chucks with MAS-BT Form AD Shanks,for Semi-Finish and Finish Applications




| Designation | SS | DCONWS | BTED | BD | BD_2 | LPR | LBX | LB | ADJRGA | LSCWS | THID | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT30 HYDRO 8X64 | 30 | 8.00 | 25.00 | 28.00 | 45.00 | 64.00 | 42.0 | 29.00 | 10.00 | 37.0 | M6 | M12 | 0 | 0.68 |
| BT30 HYDRO 10X64 | 30 | 10.00 | 27.00 | 30.00 | - | 64.00 | 42.0 | - | 10.00 | 42.0 | M8X1 | M12 | 0 | 0.59 |
| BT30 HYDRO 12X72 | 30 | 12.00 | 29.00 | 32.00 | - | 72.00 | 50.0 | - | 10.00 | 47.0 | M10X1 | M12 | 0 | 0.70 |
| BT30 HYDRO 14X70 | 30 | 14.00 | 30.00 | 34.00 | - | 70.00 | 48.0 | - | 10.00 | 47.0 | M10X1 | M12 | 0 | 0.69 |
| BT30 HYDRO 16X90 | 30 | 16.00 | 34.00 | 38.00 | 50.00 | 90.00 | 63.0 | 47.50 | 10.00 | 52.0 | M12X1 | M12 | 0 | 1.00 |
| BT30 HYDRO 18X90 | 30 | 18.00 | 36.00 | 40.00 | 42.00 | 90.00 | 68.0 | 52.00 | 10.00 | 52.0 | M12X1 | M12 | 0 | 0.97 |
| BT30 HYDRO 20X90 | 30 | 20.00 | 38.00 | 42.00 | - | 90.00 | 68.0 | - | 10.00 | 52.0 | M12X1 | M12 | 0 | 0.56 |
| BT40 HYDRO 6X90 | 40 | 6.00 | 23.00 | 26.00 | 50.00 | 90.00 | 63.0 | 43.00 | 10.00 | 37.0 | M5 | M16 | 0 | 1.39 |
| BT40 HYDRO 8X90 | 40 | 8.00 | 25.00 | 28.00 | 50.00 | 90.00 | 63.0 | 43.50 | 10.00 | 37.0 | M6 | M16 | 0 | 1.40 |
| BT40 HYDRO 10X90 | 40 | 10.00 | 27.00 | 30.00 | 50.00 | 90.00 | 63.0 | 44.00 | 10.00 | 42.0 | M8X1 | M16 | 0 | 1.44 |
| BT40 HYDRO 12X90 | 40 | 12.00 | 29.00 | 32.00 | 50.00 | 90.00 | 63.0 | 44.50 | 10.00 | 47.0 | M10X1 | M16 | 0 | 1.45 |
| BT40 HYDRO 14X90 | 40 | 14.00 | 30.00 | 34.00 | 50.00 | 90.00 | 63.0 | 47.50 | 10.00 | 47.0 | M10X1 | M16 | 0 | 1.35 |
| BT40 HYDRO 16X90 | 40 | 16.00 | 34.00 | 38.00 | 50.00 | 90.00 | 63.0 | 47.50 | 10.00 | 52.0 | M12X1 | M16 | 0 | 1.51 |
| BT40 HYDRO 18X90 | 40 | 18.00 | 36.00 | 40.00 | 50.00 | 90.00 | 63.0 | 47.50 | 10.00 | 52.0 | M12X1 | M16 | 0 | 1.54 |
| BT40 HYDRO 20X90 | 40 | 20.00 | 38.00 | 42.00 | 50.00 | 90.00 | 63.0 | 47.50 | 10.00 | 52.0 | M12X1 | M16 | 0 | 1.56 |
| BT40 HYDRO 25X90 | 40 | 25.00 | 46.00 | 50.00 | 63.00 | 90.00 | 55.0 | 55.00 | 10.00 | 58.0 | M12X1 | M16 | 0 | 1.67 |
| BT40 HYDRO 32X110 | 40 | 32.00 | 56.00 | 60.00 | 60.00 | 110.00 | 81.5 | 81.50 | 10.00 | 62.0 | M16X1 | M16 | 0 | 2.36 |
| BT50 HYDRO 6X110 | 50 | 6.00 | 23.00 | 26.00 | 80.00 | 110.00 | 72.0 | 43.00 | 10.00 | 37.0 | M5 | M24 | 0 | 4.73 |
| BT50 HYDRO 8X110 | 50 | 8.00 | 25.00 | 28.00 | 80.00 | 110.00 | 72.0 | 43.50 | 10.00 | 37.0 | M6 | M24 | 0 | 4.76 |
| BT50 HYDRO 10X110 | 50 | 10.00 | 27.00 | 30.00 | 80.00 | 110.00 | 72.0 | 44.00 | 10.00 | 42.0 | M8X1 | M24 | 0 | 4.77 |
| BT50 HYDRO 12X110 | 50 | 12.00 | 29.00 | 32.00 | 80.00 | 110.00 | 72.0 | 42.00 | 10.00 | 47.0 | M10X1 | M24 | 0 | 4.80 |
| BT50 HYDRO 14X110 | 50 | 14.00 | 30.00 | 34.00 | 80.00 | 110.00 | 72.0 | 42.00 | 10.00 | 47.0 | M10X1 | M24 | 0 | 4.69 |
| BT50 HYDRO 16X110 | 50 | 16.00 | 34.00 | 38.00 | 80.00 | 110.00 | 72.0 | 45.00 | 10.00 | 52.0 | M12X1 | M24 | 0 | 4.80 |
| BT50 HYDRO 18X110 | 50 | 18.00 | 36.00 | 40.00 | 80.00 | 110.00 | 72.0 | 45.00 | 10.00 | 52.0 | M12X1 | M24 | 0 | 4.89 |
| BT50 HYDRO 20X110 | 50 | 20.00 | 38.00 | 42.00 | 80.00 | 110.00 | 72.0 | 47.50 | 10.00 | 52.0 | M12X1 | M24 | 0 | 4.83 |
| BT50 HYDRO 25X110 | 50 | 25.00 | 46.00 | 50.00 | 80.00 | 110.00 | 72.0 | 47.50 | 10.00 | 58.0 | M12X1 | M24 | 0 | 4.95 |
| BT50 HYDRO 32X110 | 50 | 32.00 | 56.00 | 60.00 | 80.00 | 110.00 | 72.0 | 47.50 | 10.00 | 64.0 | M12X1 | M24 | 0 | 5.12 |

- Chucking forces will be reduced by 25% if reduction sleeves are used. • Reduction sleeves are available for 12, 20, 25 and 32 mm bore diameters (order separately).
- The coolant passages in the B type flange are blocked with screws which can be removed when required.
- Clamping wrench (wrench HYDRO HEX 4) and test bar to be ordered separately.

(1) 1 - Slot for data chip, 0 - Without slot for data chip


776 802-805 637

## Spare Parts

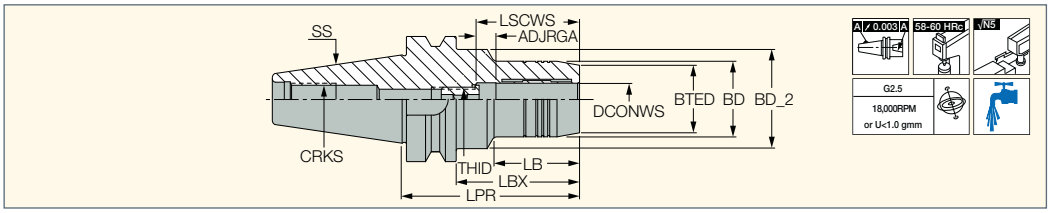
| Designation | | | |
|---|---|---|---|
| BT30 HYDRO 8X64 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 8* |
| BT30 HYDRO 10X64 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 10* |
| BT30 HYDRO 12X72 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 12* |
| BT30 HYDRO 14X70 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 14* |
| BT30 HYDRO 16X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 16* |
| BT30 HYDRO 18X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 18* |
| BT30 HYDRO 20X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 20* |
| BT40 HYDRO 6X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 6* |
| BT40 HYDRO 8X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 8* |
| BT40 HYDRO 10X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 10* |
| BT40 HYDRO 12X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 12* |
| BT40 HYDRO 14X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 14* |
| BT40 HYDRO 16X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 16* |
| BT40 HYDRO 18X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 18* |
| BT40 HYDRO 20X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 20* |
| BT40 HYDRO 25X90 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 25* |
| BT40 HYDRO 32X110 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 32* |
| BT50 HYDRO 6X110 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 6* |
| BT50 HYDRO 8X110 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 8* |
| BT50 HYDRO 10X110 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 10* |
| BT50 HYDRO 12X110 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 12* |
| BT50 HYDRO 14X110 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 14* |
| BT50 HYDRO 16X110 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 16* |
| BT50 HYDRO 18X110 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 18* |
| BT50 HYDRO 20X110 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 20* |
| BT50 HYDRO 25X110 | HYDRO CLAMP SCREW M8X14 | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 25* |
| BT50 HYDRO 32X110 | | WRENCH HYDRO HEX 4* | TEST BAR HYDRO 32* |

* Optional, to be ordered separately

**BT MAS HYDROFIT** HOLDING LINE

**BT-FC-HYDRO**

Hydraulic Chucks with MAS-BT Face Contact Form AD Shanks, for Semi-Finish and Finish Applications




| Designation | SS | DCONWS | LPR | BTED | BD | BD_2 | LBX | LB | ADJRGA | LSCWS | THID | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT30 FC HYDRO 6X60 | 30 | 6.00 | 60.00 | 23.00 | 26.00 | - | 38.0 | 33.00 | 10.00 | 37.0 | M5 | M12 | 0 | 0.50 |
| BT30 FC HYDRO 8X64 | 30 | 8.00 | 64.00 | 25.00 | 28.00 | 45.00 | 42.0 | 29.00 | 6.00 | 37.0 | M6 | M12 | 0 | 0.60 |
| BT30 FC HYDRO 10X64 | 30 | 10.00 | 64.00 | 27.00 | 30.00 | - | 42.0 | 37.00 | 10.00 | 42.0 | M8x1 | M12 | 0 | 0.50 |
| BT30 FC HYDRO 12X72 | 30 | 12.00 | 72.00 | 29.00 | 32.00 | - | 50.0 | 43.00 | 10.00 | 50.0 | M10x1 | M12 | 0 | 0.60 |
| BT30 FC HYDRO 14X70 | 30 | 14.00 | 70.00 | 30.00 | 34.00 | - | 48.0 | 33.00 | 10.00 | 48.0 | M8x1 | M12 | 0 | 0.70 |
| BT30 FC HYDRO 16X90 | 30 | 16.00 | 90.00 | 34.00 | 38.00 | - | 68.0 | 52.00 | 10.00 | 52.0 | M10x1 | M12 | 0 | 0.90 |
| BT30 FC HYDRO 18X90 | 30 | 18.00 | 90.00 | 36.00 | 40.00 | - | 68.0 | 52.00 | 10.00 | 52.0 | M10x1 | M12 | 0 | 0.90 |
| BT30 FC HYDRO 20X90 | 30 | 20.00 | 90.00 | 38.00 | 42.00 | 42.00 | 68.0 | - | 10.00 | 52.0 | M10x1 | M12 | 0 | 0.90 |

- Chucking forces will be reduced by 25% if reduction sleeves are used
- Reduction sleeves are available for 12, and 20 mm bore diameters (order separately)
- Clamping wrench (wrench HYDRO HEX 4) and test bar to be ordered separately

(1) 1 - Slot for data chip, 0 - Without slot for data chip

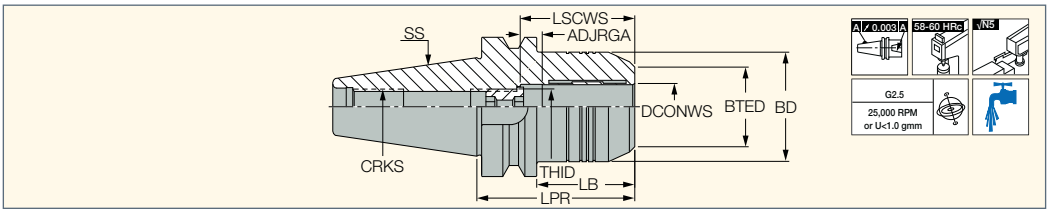
## Spare Parts

| Designation | |
|---|---|
| BT-FC-HYDRO | HYDRO CLAMP SCREW M8X14 |

**BT MAS HYDROFIT** HOLDING LINE

**BT-HYDRO HD**

Heavy Duty, Short Hydraulic Chucks With BT Form ADB Shanks




| Designation | SS | DCONWS | BTED | BD | LPR | LB | ADJRGA | LSCWS | THID | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT40 HYDRO 12X58 HD | 40.0 | 12.00 | 32.00 | 42.00 | 58.00 | 31.0 | 10.00 | 46.0 | M8X1 | M16 | 0 | 1.23 |
| BT40 HYDRO 16X72.5 HD | 40.0 | 16.00 | 38.00 | 49.25 | 72.50 | 45.5 | 8.00 | 51.0 | M8X1 | M16 | 0 | 1.30 |
| BT40 HYDRO 20X72.5 HD | 40.0 | 20.00 | 38.00 | 49.25 | 72.50 | 45.5 | 8.00 | 51.0 | M8X1 | M16 | 0 | 1.40 |
| BT50 HYDRO 20X83.5 HD | 50.0 | 20.00 | 38.00 | 49.25 | 83.50 | 45.5 | 8.00 | 51.0 | M8X1 | M24 | 0 | 4.10 |
| BT50 HYDRO 32X90 HD | 50.0 | 32.00 | 58.50 | 72.00 | 90.00 | 52.0 | 9.00 | 61.0 | M8X1 | M24 | 0 | 4.60 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

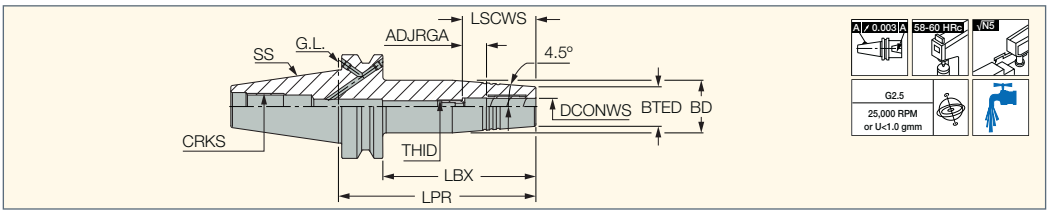
## Spare Parts

| Designation | |
|---|---|
| BT40 HYDRO 12X58 HD | ALLEN KEY SW5X100* |
| BT40 HYDRO 16X72.5 HD | ALLEN KEY SW5X100* |
| BT40 HYDRO 20X72.5 HD | ALLEN KEY SW5X100* |
| BT50 HYDRO 20X83.5 HD | ALLEN KEY SW5X100* |
| BT50 HYDRO 32X90 HD | ALLEN KEY SW6X100* |

* Optional, to be ordered separately

## BT MAS HYDROFIT HOLDING LINE

**BT-HYDRO SF**
Slim Design, Hydraulic Chucks with BT Shanks



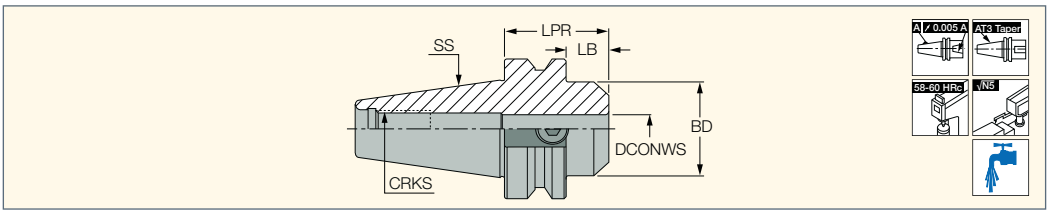

| Designation | SS | DCONWS | BTED | BD | LPR | LBX | ADJRGA | LSCWS | THID | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT30 HYDRO 6X80 SF | 30 | 6.00 | 21.00 | 27.00 | 80.00 | 58.00 | 10.00 | 36.00 | M5 | M12 | 0 | 0.00 |
| BT30 HYDRO 8X80 SF | 30 | 8.00 | 21.00 | 27.00 | 80.00 | 58.00 | 10.00 | 36.00 | M6 | M12 | 0 | 0.00 |
| BT30 HYDRO 10X80 SF | 30 | 10.00 | 24.00 | 32.00 | 80.00 | 58.00 | 10.00 | 43.20 | M8x1 | M12 | 0 | 0.68 |
| BT30 HYDRO 12X80 SF | 30 | 12.00 | 24.00 | 32.00 | 80.00 | 58.00 | 10.00 | 47.00 | M10x1 | M12 | 0 | 0.67 |
| BT30 HYDRO 16X80 SF | 30 | 16.00 | 27.00 | 34.00 | 80.00 | 58.00 | 10.00 | 50.00 | M12x1 | M12 | 0 | 0.00 |
| BT30 HYDRO 20X90 SF | 30 | 20.00 | 33.00 | 42.00 | 90.00 | 68.00 | 10.00 | 52.00 | M16x1 | M12 | 0 | 0.88 |
| BT40 HYDRO 6X120 SF | 40 | 6.00 | 21.00 | 27.00 | 120.00 | 93.00 | 10.00 | 36.00 | M5 | M16 | 0 | 1.41 |
| BT40 HYDRO 6X90 SF | 40 | 6.00 | 21.00 | 27.00 | 90.00 | 63.00 | 10.00 | 36.00 | M5 | M16 | 0 | 1.28 |
| BT40 HYDRO 8X120 SF | 40 | 8.00 | 21.00 | 27.00 | 120.00 | 93.00 | 10.00 | 36.00 | M6 | M16 | 0 | 1.39 |
| BT40 HYDRO 8X90 SF | 40 | 8.00 | 21.00 | 27.00 | 90.00 | 63.00 | 10.00 | 36.00 | M6 | M16 | 0 | 1.27 |
| BT40 HYDRO 10X120 SF | 40 | 10.00 | 24.00 | 32.00 | 120.00 | 93.00 | 10.00 | 43.20 | M8x1 | M16 | 0 | 1.49 |
| BT40 HYDRO 10X90 SF | 40 | 10.00 | 24.00 | 32.00 | 90.00 | 63.00 | 10.00 | 43.20 | M8x1 | M16 | 0 | 1.32 |
| BT40 HYDRO 12X120 SF | 40 | 12.00 | 24.00 | 32.00 | 120.00 | 93.00 | 10.00 | 47.00 | M10x1 | M16 | 0 | 1.47 |
| BT40 HYDRO 12X90 SF | 40 | 12.00 | 24.00 | 32.00 | 90.00 | 63.00 | 10.00 | 47.00 | M10x1 | M16 | 0 | 1.30 |
| BT40 HYDRO 16X120 SF | 40 | 16.00 | 27.00 | 34.00 | 120.00 | 93.00 | 10.00 | 50.00 | M12x1 | M16 | 0 | 1.51 |
| BT40 HYDRO 16X90 SF | 40 | 16.00 | 27.00 | 34.00 | 90.00 | 63.00 | 10.00 | 50.00 | M12x1 | M16 | 0 | 1.32 |
| BT40 HYDRO 20X120 SF | 40 | 20.00 | 33.00 | 42.00 | 120.00 | 93.00 | 10.00 | 52.00 | M16x1 | M16 | 0 | 1.72 |
| BT40 HYDRO 20X90 SF | 40 | 20.00 | 33.00 | 42.00 | 90.00 | 63.00 | 10.00 | 52.00 | M16x1 | M16 | 0 | 1.44 |

New

(1) 1 - Slot for data chip, 0 - Without slot for data chip

## BT MAS

**BT-EM (Short)**
Short DIN6359 / DIN 1835 Form B Weldon Endmill Holders with BT MAS-403 AD Tapered Shanks




| Designation | SS | DCONWS | LPR | LB | BD | CRKS | DCP(1) | kg | |
|---|---|---|---|---|---|---|---|---|---|
| BT40 EM 10X 45 | 40 | 10.00 | 45.00 | 18.0 | 35.00 | M16 | 0 | 1.05 | SR M10X12 DIN1835-B |
| BT40 EM 12X 45 | 40 | 12.00 | 45.00 | 18.0 | 42.00 | M16 | 0 | 1.08 | SR M12X16 DIN1835-B |
| BT40 EM 14X 45 | 40 | 14.00 | 45.00 | 18.0 | 44.00 | M16 | 0 | 1.06 | SR M12X16 DIN1835-B |
| BT40 EM 16X 45 | 40 | 16.00 | 45.00 | 18.0 | 48.00 | M16 | 0 | 1.16 | SR M14X16 DIN1835-B |
| BT40 EM 20X 45 | 40 | 20.00 | 45.00 | 18.0 | 52.00 | M16 | 0 | 1.13 | SR M16X10.3 EM SHORT |
| BT40 EM 25X 45 | 40 | 25.00 | 45.00 | - | 63.00 | M16 | 0 | 1.12 | SR M18X2X10 EM SHORT |

- B is the designation for coolant through flange.

(1) 1 - Slot for data chip, 0 - Without slot for data chip

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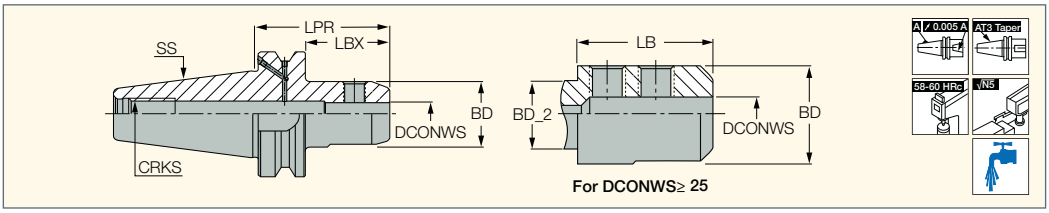
## *BT MAS*

**BT-EM (DIN 1835 Form B)**
DIN6359 / DIN 1835 Form B
Weldon Endmill Holders with BT MAS-403 ADB Tapered Shanks




| Designation | SS | DCONWS | LPR | BD | BD_2 | LBX | LB | CRKS | DCP(2) | kg | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **BT30 EM 6X 50 (1)** | 30 | 6.00 | 50.00 | 25.00 | - | 28.0 | - | M12 | 0 | 0.46 | SR M6X10 DIN1835B |
| **BT30 EM 8X 60 (1)** | 30 | 8.00 | 60.00 | 28.00 | - | 38.0 | - | M12 | 0 | 0.52 | SR M8X10 DIN1835-B |
| **BT30 EM 10X 60 (1)** | 30 | 10.00 | 60.00 | 35.00 | - | 38.0 | - | M12 | 0 | 0.61 | SR M10X12 DIN1835-B |
| **BT30 EM 12X 60 (1)** | 30 | 12.00 | 60.00 | 42.00 | - | 38.0 | - | M12 | 0 | 0.73 | SR M12X16 DIN1835-B |
| **BT30 EM 14X50 (1)** | 30 | 14.00 | 50.00 | 44.00 | - | 38.0 | - | M12 | 0 | 0.73 | SR M12X16 DIN1835-B |
| **BT30 EM 16X 60 (1)** | 30 | 16.00 | 60.00 | 46.00 | - | 38.0 | - | M12 | 0 | 0.79 | SR M14X16 DIN1835-B |
| **BT30 EM 18X 60 (1)** | 30 | 18.00 | 60.00 | 50.00 | - | 38.0 | - | M12 | 0 | 0.76 | SR M14X16 DIN1835-B |
| **BT30 EM 20X 80 (1)** | 30 | 20.00 | 80.00 | 52.00 | - | 58.0 | - | M12 | 0 | 1.04 | SR M16X16 DIN1835-B |
| **BT40 EM 6X 50 (1)** | 40 | 6.00 | 50.00 | 25.00 | - | 23.0 | - | M16 | 0 | 1.02 | SR M6X10 DIN1835B |
| **BT40 EM 8X 50** | 40 | 8.00 | 50.00 | 28.00 | - | 23.0 | - | M16 | 0 | 1.01 | SR M8X10 DIN1835-B |
| **BT40 EM 10X 65** | 40 | 10.00 | 65.00 | 35.00 | - | 38.0 | - | M16 | 0 | 1.17 | SR M10X12 DIN1835-B |
| **BT40 EM 12X 65** | 40 | 12.00 | 65.00 | 42.00 | - | 38.0 | - | M16 | 0 | 1.29 | SR M12X16 DIN1835-B |
| **BT40 EM 14X 63** | 40 | 14.00 | 65.00 | 44.00 | - | 38.0 | - | M16 | 0 | 1.30 | SR M12X16 DIN1835-B |
| **BT40 EM 16X 65** | 40 | 16.00 | 65.00 | 48.00 | - | 38.0 | - | M16 | 0 | 1.35 | SR M14X16 DIN1835-B |
| **BT40 EM 20X 75** | 40 | 20.00 | 75.00 | 52.00 | - | 48.0 | - | M16 | 0 | 1.54 | SR M16X16 DIN1835-B |
| **BT40 EM 20X120** | 40 | 20.00 | 120.00 | 52.00 | - | 93.0 | - | M16 | 0 | 2.25 | SR M16X16 DIN1835-B |
| **BT40 EM 25X105** | 40 | 25.00 | 105.00 | 65.00 | 61.00 | 78.0 | 68.00 | M16 | 0 | 2.61 | SR M18X2X20 DIN1835-B |
| **BT40 EM 32X110** | 40 | 32.00 | 110.00 | 71.00 | 61.00 | 83.0 | 73.00 | M16 | 0 | 2.84 | SR M20X2X20 DIN1835-B |
| **BT50 EM 6X 70 (1)** | 50 | 6.00 | 70.00 | 25.00 | - | 32.0 | - | M24 | 0 | 3.68 | SR M6X10 DIN1835B |
| **BT50 EM 8X 70 (1)** | 50 | 8.00 | 70.00 | 28.00 | - | 32.0 | - | M24 | 0 | 3.58 | SR M8X10 DIN1835-B |
| **BT50 EM 10X 70** | 50 | 10.00 | 70.00 | 35.00 | - | 32.0 | - | M24 | 0 | 3.68 | SR M10X12 DIN1835-B |
| **BT50 EM 12X100** | 50 | 12.00 | 100.00 | 42.00 | - | 62.0 | - | M24 | 0 | 4.01 | SR M12X16 DIN1835-B |
| **BT50 EM 14X100** | 50 | 14.00 | 100.00 | 44.00 | - | 62.0 | - | M24 | 0 | 4.13 | SR M12X16 DIN1835-B |
| **BT50 EM 16X100** | 50 | 16.00 | 100.00 | 48.00 | - | 62.0 | - | M24 | 0 | 4.17 | SR M14X16 DIN1835-B |
| **BT50 EM 18X100** | 50 | 18.00 | 100.00 | 50.00 | - | 62.0 | - | M24 | 0 | 4.29 | SR M14X16 DIN1835-B |
| **BT50 EM 20X100** | 50 | 20.00 | 100.00 | 52.00 | - | 62.0 | - | M24 | 0 | 4.28 | SR M16X16 DIN1835-B |
| **BT50 EM 25X115** | 50 | 25.00 | 115.00 | 65.00 | - | 77.0 | - | M24 | 0 | 5.06 | SR M18X2X20 DIN1835-B |
| **BT50 EM 32X115** | 50 | 32.00 | 115.00 | 71.00 | - | 77.0 | - | M24 | 0 | 5.28 | SR M20X2X20 DIN1835-B |
| **BT50 EM 40X115** | 50 | 40.00 | 115.00 | 90.00 | - | 77.0 | - | M24 | 0 | 6.17 | SR M20X2X20 DIN1835-B |
| **BT50 EM 50X125** | 50 | 50.00 | 125.00 | 98.00 | - | 87.0 | - | M24 | 0 | 6.94 | SR M24X2X25 DIN1835-B |

**(1)** Type AD

**(2)** 1 - Slot for data chip, 0 - Without slot for data chip

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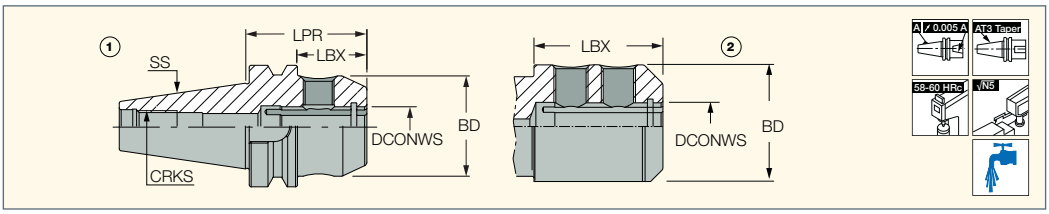
## BT MAS

**BT-EM-CX**
DIN6359 / DIN 1835 Form B Weldon Endmill Holders with Jet Coolant Grooves for BT MAS-403 Tapered Shanks

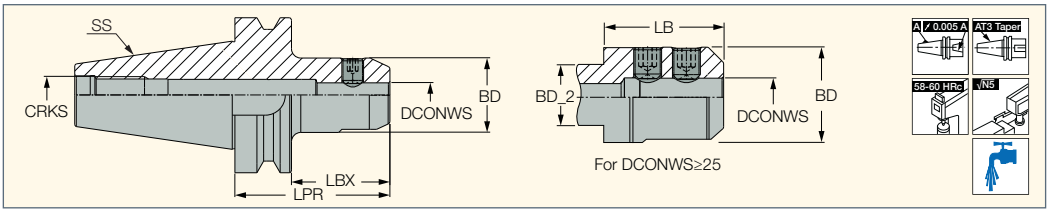



| Designation | SS | DCONWS | LPR | BD | LBX | CRKS | DCP(1) | Fig. | kg | |
|---|---|---|---|---|---|---|---|---|---|---|
| BT40 EM 6X50 CX | 40 | 6.00 | 50.00 | 25.00 | 23.0 | M16 | 0 | 1 | 1.07 | SR M6X10 DIN1835B |
| BT40 EM 8X50 CX | 40 | 8.00 | 50.00 | 28.00 | 23.0 | M16 | 0 | 1 | 1.09 | SR M8X10 DIN1835-B |
| BT40 EM 10X63 CX | 40 | 10.00 | 63.00 | 35.00 | 36.0 | M16 | 0 | 1 | 1.22 | SR M10X12 DIN1835-B |
| BT40 EM 12X63 CX | 40 | 12.00 | 63.00 | 42.00 | 36.0 | M16 | 0 | 1 | 1.26 | SR M12X16 DIN1835-B |
| BT40 EM 16X63 CX | 40 | 16.00 | 63.00 | 48.00 | 36.0 | M16 | 0 | 1 | 1.40 | SR M14X16 DIN1835-B |
| BT40 EM 20X63 CX | 40 | 20.00 | 63.00 | 52.00 | 36.0 | M16 | 0 | 1 | 1.40 | SR M16X16 DIN1835-B |
| BT40 EM 25X45 CX | 40 | 25.00 | 45.00 | 61.00 | 18.0 | M16 | 0 | 1 | 1.17 | SR M18X2X10 EM SHORT |
| BT40 EM 25X90 CX | 40 | 25.00 | 90.00 | 65.00 | 63.0 | M16 | 0 | 2 | 2.25 | SR M18X2X20 DIN1835-B |
| BT40 EM 32X100 CX | 40 | 32.00 | 100.00 | 72.00 | 65.0 | M16 | 0 | 2 | 2.70 | SR M20X2X20 DIN1835-B |
| BT50 EM 12X80 CX | 50 | 12.00 | 80.00 | 42.00 | 42.0 | M24 | 0 | 1 | 4.00 | SR M12X16 DIN1835-B |
| BT50 EM 16X80 CX | 50 | 16.00 | 80.00 | 48.00 | 42.0 | M24 | 0 | 1 | 4.10 | SR M14X16 DIN1835-B |
| BT50 EM 20X80 CX | 50 | 20.00 | 80.00 | 52.00 | 42.0 | M24 | 0 | 1 | 4.30 | SR M16X16 DIN1835-B |
| BT50 EM 25X100 CX | 50 | 25.00 | 100.00 | 65.00 | 62.0 | M24 | 0 | 2 | 5.60 | SR M18X2X20 DIN1835-B |
| BT50 EM 32X105 CX | 50 | 32.00 | 105.00 | 72.00 | 67.0 | M24 | 0 | 2 | 5.80 | SR M20X2X20 DIN1835-B |
| BT50 EM 40X110 CX | 50 | 40.00 | 110.00 | 80.00 | 72.0 | M24 | 0 | 2 | 5.20 | SR M20X2X20 DIN1835-B |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

## BT MAS

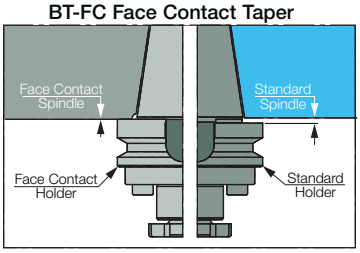
**BT-FC-EM**
DIN1835 Form B Endmills with BT MAS-403 Face Contact AD Tapered Shanks

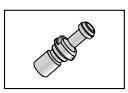



| Designation | SS | DCONWS | BD | BD_2 | LPR | LBX | LB | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| BT30 FC EM12X60 | 30 | 12.00 | 42.00 | - | 60.00 | 38.0 | - | M12 | 0 | 0.73 |
| BT30 FC EM16X60 | 30 | 16.00 | 45.90 | - | 60.00 | 38.0 | - | M12 | 0 | 0.80 |
| BT30 FC EM20X80 | 30 | 20.00 | 52.00 | 44.40 | 80.00 | 58.0 | 48.00 | M12 | 0 | 1.04 |
| BT40 FC EM10X65 | 40 | 10.00 | 35.00 | - | 65.00 | 39.0 | - | M16 | 0 | 1.25 |
| BT40 FC EM12X65 | 40 | 12.00 | 42.00 | - | 65.00 | 39.0 | - | M16 | 0 | 1.29 |
| BT40 FC EM16X65 | 40 | 16.00 | 48.00 | - | 65.00 | 39.0 | - | M16 | 0 | 1.37 |
| BT40 FC EM20X75 | 40 | 20.00 | 52.00 | - | 75.00 | 49.0 | - | M16 | 0 | 1.56 |
| BT40 FC EM25X105 | 40 | 25.00 | 65.00 | 61.00 | 105.00 | 79.0 | 68.00 | M16 | 0 | 2.54 |
| BT40 FC EM32X110 | 40 | 32.00 | 71.00 | 61.00 | 110.00 | 83.0 | 73.00 | M16 | 0 | 1.87 |
| BT50 FC EM12X100 | 50 | 12.00 | 42.00 | - | 100.00 | 62.0 | - | M24 | 0 | 4.25 |
| BT50 FC EM16X100 | 50 | 16.00 | 48.00 | - | 100.00 | 63.5 | - | M24 | 0 | 4.22 |
| BT50 FC EM20X100 | 50 | 20.00 | 52.00 | - | 100.00 | 63.5 | - | M24 | 0 | 4.33 |
| BT50 FC EM25X115 | 50 | 25.00 | 65.00 | - | 115.00 | 78.5 | - | M24 | 0 | 5.36 |
| BT50 FC EM32X115 | 50 | 32.00 | 71.00 | - | 115.00 | 78.5 | - | M24 | 0 | 5.38 |
| BT50 FC EM40X115 | 50 | 40.00 | 90.00 | - | 115.00 | 78.5 | - | M24 | 0 | 6.29 |
| BT50 FC EM50X125 | 50 | 50.00 | 100.00 | - | 125.00 | 87.0 | - | M24 | 0 | 7.32 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

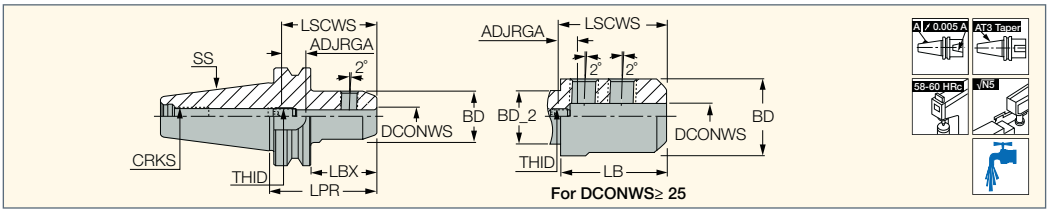
**BT-FC Face Contact Taper**





802-805

## *BT MAS*

**BT-EM (DIN 1835 Form E)**
DIN6359 / DIN 1835 Form E
Drill Holders with BT MAS-403
AD Tapered Shanks




| Designation | SS | DCONWS | BD | BD_2 | LPR | LBX | LB | ADJRGA | LSCWS | THID(1) | Key(2) | CRKS | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT40 EM 16X 65 E | 40 | 16.00 | 48.00 | - | 65.00 | 38.0 | - | 10.00 | 57.0 | M12 | 6.00 | M16 | 0 | 1.38 |
| BT40 EM 20X 75 E | 40 | 20.00 | 52.00 | - | 75.00 | 48.0 | - | 10.00 | 59.0 | M16 | 8.00 | M16 | 0 | 1.55 |
| BT40 EM 25X105 E | 40 | 25.00 | 65.00 | 61.00 | 105.00 | 78.0 | 68.00 | 10.00 | 64.0 | M20X1.5 | 10.00 | M16 | 0 | 2.45 |
| BT40 EM 32X110 E | 40 | 32.00 | 71.00 | 61.00 | 110.00 | 83.0 | 73.00 | 10.00 | 68.0 | M20X1.5 | 10.00 | M16 | 0 | 2.80 |
| BT50 EM 10X 70 E | 50 | 10.00 | 35.00 | - | 70.00 | 32.0 | - | 10.00 | 49.0 | M8 | 4.00 | M24 | 0 | 3.70 |
| BT50 EM 12X100 E | 50 | 12.00 | 42.00 | - | 100.00 | 62.0 | - | 10.00 | 54.0 | M10 | 5.00 | M24 | 0 | 4.06 |
| BT50 EM 14X100 E | 50 | 14.00 | 44.00 | - | 100.00 | 62.0 | - | 10.00 | 54.0 | M10 | 5.00 | M24 | 0 | 4.20 |
| BT50 EM 20X100 E | 50 | 20.00 | 52.00 | - | 100.00 | 62.0 | - | 10.00 | 59.0 | M16 | 8.00 | M24 | 0 | 4.36 |
| BT50 EM 25X115 E | 50 | 25.00 | 65.00 | - | 115.00 | 77.0 | - | 10.00 | 64.0 | M20X1.5 | 10.00 | M24 | 0 | 5.08 |
| BT50 EM 32X115 E | 50 | 32.00 | 71.00 | - | 115.00 | 77.0 | - | 10.00 | 68.0 | M20X1.5 | 10.00 | M24 | 0 | 5.25 |
| BT50 EM 40X115 E | 50 | 40.00 | 90.00 | - | 115.00 | 77.0 | - | 10.00 | 78.0 | M20X1.5 | 10.00 | M24 | 0 | 6.14 |
| BT50 EM 50X125 E | 50 | 50.00 | 98.00 | - | 125.00 | 67.0 | - | 10.00 | 88.0 | M20X1.5 | 10.00 | M24 | 0 | 6.94 |
| BT50 EM 6X 70 E | 50 | 6.00 | 25.00 | - | 70.00 | 32.0 | - | 10.00 | 45.0 | M5 | 2.50 | M24 | 0 | 3.70 |

- B is the designation for coolant through flange.

(1) Adjustment screw has an internal coolant hole.

(2) Adjustment screw hexagon key size

(3) 1 - Slot for data chip, 0 - Without slot for data chip

802-805

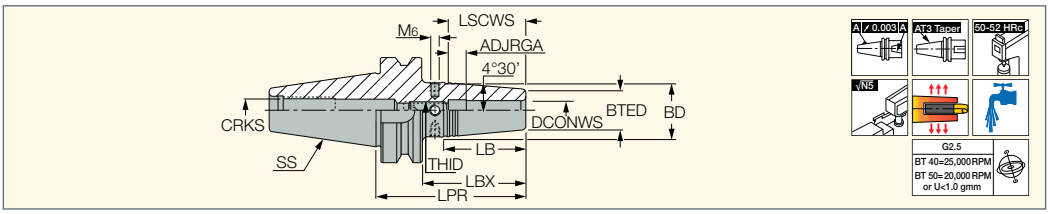
### Spare Parts

| Designation | | |
|---|---|---|
| BT40 EM 16X 65 E | SR M14X16 DIN1835-B | PRESET M12X18B |
| BT40 EM 20X 75 E | SR M16X16 DIN1835-B | PRESET M16X20B |
| BT40 EM 25X105 E | SR M18X2X20 DIN1835-B | PRESET M20X20E |
| BT40 EM 32X110 E | SR M20X2X20 DIN1835-B | PRESET M20X20E |
| BT50 EM 10X 70 E | SR M10X12 DIN1835-B | PRESET M8X20B |
| BT50 EM 12X100 E | SR M12X16 DIN1835-B | PRESET M10X18B |
| BT50 EM 14X100 E | SR M12X16 DIN1835-B | PRESET M10X18B |
| BT50 EM 20X100 E | SR M16X16 DIN1835-B | PRESET M16X20B |
| BT50 EM 25X115 E | SR M18X2X20 DIN1835-B | PRESET M20X20E |
| BT50 EM 32X115 E | SR M20X2X20 DIN1835-B | PRESET M20X20E |
| BT50 EM 40X115 E | SR M20X2X20 DIN1835-B | PRESET M20X20E |
| BT50 EM 50X125 E | SR M24X2X25 DIN1835-B | PRESET M20X20E |
| BT50 EM 6X 70 E | SR M6X10 DIN1835B | PRESET M5X18B |

## BT MAS SHRINKIN

**BT-SRKIN**

Thermal Shrink Chucks with BT MAS-403 AD Tapered Shanks for Carbide HSS and Steel Tools




| Designation | SS | DCONWS | BD | BTED | LPR | LBX | LB | ADJRGA | LSCWS | THID | Key(1) | CRKS | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT40 SRKIN 6X 90 | 40 | 6.00 | 27.00 | 21.00 | 90.00 | 63.0 | 38.00 | 11.00 | 36.0 | M5 | 2.50 | M16 | 0 | 1.13 |
| BT40 SRKIN 8X 90 | 40 | 8.00 | 27.00 | 21.00 | 90.00 | 63.0 | 38.00 | 11.00 | 36.0 | M6 | 3.00 | M16 | 0 | 1.07 |
| BT40 SRKIN 10X 90 | 40 | 10.00 | 32.00 | 24.00 | 90.00 | 63.0 | 50.50 | 11.00 | 42.0 | M8 | 4.00 | M16 | 0 | 1.23 |
| BT40 SRKIN 12X 90 | 40 | 12.00 | 32.00 | 24.00 | 90.00 | 63.0 | 50.50 | 11.00 | 47.0 | M10 | 5.00 | M16 | 0 | 1.13 |
| BT40 SRKIN 14X 90 | 40 | 14.00 | 34.00 | 27.00 | 90.00 | 63.0 | 44.50 | 11.00 | 47.0 | M10 | 5.00 | M16 | 0 | 1.26 |
| BT40 SRKIN 16X 90 | 40 | 16.00 | 34.00 | 27.00 | 90.00 | 63.0 | 44.50 | 11.00 | 50.0 | M12 | 6.00 | M16 | 0 | 1.23 |
| BT40 SRKIN 16X120 | 40 | 16.00 | 34.00 | 27.00 | 120.00 | 93.0 | 44.50 | 11.00 | 50.0 | M12 | 6.00 | M16 | 0 | 1.43 |
| BT40 SRKIN 18X 90 | 40 | 18.00 | 42.00 | 33.00 | 90.00 | 63.0 | 57.00 | 11.00 | 50.0 | M12 | 6.00 | M16 | 0 | 1.40 |
| BT40 SRKIN 20X 90 | 40 | 20.00 | 42.00 | 33.00 | 90.00 | 63.0 | 57.00 | 11.00 | 52.0 | M16 | 6.00 | M16 | 0 | 1.30 |
| BT40 SRKIN 25X110 | 40 | 25.00 | 53.00 | 44.00 | 110.00 | 83.0 | 57.00 | 11.00 | 58.0 | M16 | 6.00 | M16 | 0 | 1.84 |
| BT50 SRKIN 6X100 | 50 | 6.00 | 27.00 | 21.00 | 100.00 | 62.0 | 38.10 | 11.00 | 36.0 | M5 | 2.50 | M24 | 0 | 3.67 |
| BT50 SRKIN 8X100 | 50 | 8.00 | 27.00 | 21.00 | 100.00 | 62.0 | 38.00 | 11.00 | 36.0 | M6 | 3.00 | M24 | 0 | 3.78 |
| BT50 SRKIN 10X100 | 50 | 10.00 | 32.00 | 24.00 | 100.00 | 62.0 | 51.00 | 11.00 | 42.0 | M8 | 4.00 | M24 | 0 | 3.78 |
| BT50 SRKIN 12X100 | 50 | 12.00 | 32.00 | 24.00 | 100.00 | 62.0 | 51.00 | 11.00 | 47.0 | M10 | 5.00 | M24 | 0 | 3.74 |
| BT50 SRKIN 14X100 | 50 | 14.00 | 34.00 | 27.00 | 100.00 | 62.0 | 44.50 | 11.00 | 47.0 | M10 | 5.00 | M24 | 0 | 3.80 |
| BT50 SRKIN 16X100 | 50 | 16.00 | 34.00 | 27.00 | 100.00 | 62.0 | 44.50 | 11.00 | 50.0 | M12 | 6.00 | M24 | 0 | 3.70 |
| BT50 SRKIN 18X100 | 50 | 18.00 | 42.00 | 33.00 | 100.00 | 62.0 | 57.00 | 11.00 | 50.0 | M12 | 6.00 | M24 | 0 | 3.92 |
| BT50 SRKIN 20X100 | 50 | 20.00 | 42.00 | 33.00 | 100.00 | 62.0 | 57.00 | 11.00 | 52.0 | M16 | 6.00 | M24 | 0 | 3.77 |
| BT50 SRKIN 25X120 | 50 | 25.00 | 53.00 | 44.00 | 120.00 | 82.0 | 57.00 | 11.00 | 58.0 | M16 | 6.00 | M24 | 0 | 4.50 |
| BT50 SRKIN 32X120 | 50 | 32.00 | 53.00 | 44.00 | 120.00 | 82.0 | 57.00 | 11.00 | 58.0 | M16 | 6.00 | M24 | 0 | 4.34 |

- Use only inductive heating device for SRKIN holders

(1) Hex key size for the rear stopper screw

(2) 1 - Slot for data chip, 0 - Without slot for data chip

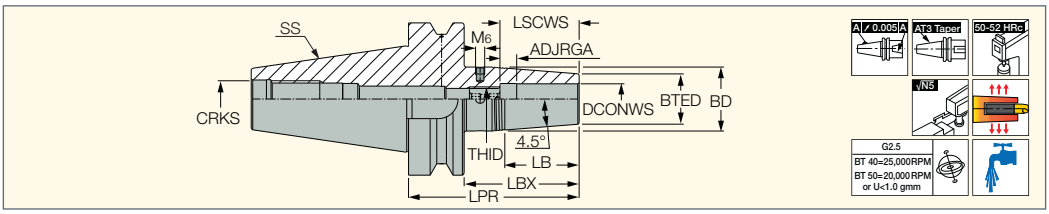
802-805 778-780 784-786

### Spare Parts

| Designation | |
|---|---|
| BT40 SRKIN 6X 90 | PRESET M5X18B |
| BT40 SRKIN 8X 90 | PRESET M6X20B |
| BT40 SRKIN 10X 90 | PRESET M8X20B |
| BT40 SRKIN 12X 90 | PRESET M10X18B |
| BT40 SRKIN 14X 90 | PRESET M10X18B |
| BT40 SRKIN 16X 90 | PRESET M12X18B |
| BT40 SRKIN 16X120 | PRESET M12X18B |
| BT40 SRKIN 18X 90 | PRESET M12X18B |
| BT40 SRKIN 20X 90 | PRESET M16X20B |
| BT40 SRKIN 25X110 | PRESET M16X25B |
| BT50 SRKIN 6X100 | PRESET M5X18B |
| BT50 SRKIN 8X100 | PRESET M6X20B |
| BT50 SRKIN 10X100 | PRESET M8X20B |
| BT50 SRKIN 12X100 | PRESET M10X18B |
| BT50 SRKIN 14X100 | PRESET M10X18B |
| BT50 SRKIN 16X100 | PRESET M12X18B |
| BT50 SRKIN 18X100 | PRESET M12X18B |
| BT50 SRKIN 20X100 | PRESET M16X20B |
| BT50 SRKIN 25X120 | PRESET M16X25B |
| BT50 SRKIN 32X120 | PRESET M16X25B |

**BT MAS SHRINKIN**

**BT-FC-SRKIN**
Thermal Shrink Chucks with
BT MAS-403 Face Contact
AD Tapered Shanks

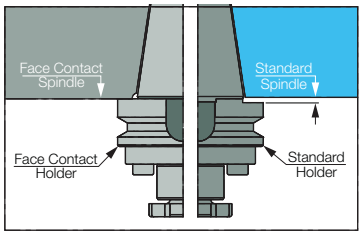



| Designation | SS | DCONWS | BTED | BD | LPR | LBX | LB | ADJRGA | LSCWS | THID | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT40 FC SRKIN 6X90 | 40 | 6.00 | 21.00 | 27.00 | 90.00 | 64.0 | 38.00 | 11.00 | 36.0 | M5 | M16 | 0 | 1.16 |
| BT40 FC SRKIN 8X90 | 40 | 8.00 | 21.00 | 27.00 | 90.00 | 64.0 | 38.00 | 11.00 | 36.0 | M6 | M16 | 0 | 1.14 |
| BT40 FC SRKIN10X90 | 40 | 10.00 | 24.00 | 32.00 | 90.00 | 64.0 | 50.80 | 11.00 | 42.0 | M8 | M16 | 0 | 1.29 |
| BT40 FC SRKIN12X90 | 40 | 12.00 | 24.00 | 32.00 | 90.00 | 64.0 | 50.80 | 11.00 | 47.0 | M10 | M16 | 0 | 1.28 |
| BT40 FC SRKIN14X90 | 40 | 14.00 | 27.00 | 34.00 | 90.00 | 64.0 | 44.50 | 11.00 | 47.0 | M10 | M16 | 0 | 1.32 |
| BT40 FC SRKIN16X90 | 40 | 16.00 | 27.00 | 34.00 | 90.00 | 64.0 | 44.50 | 11.00 | 50.0 | M12 | M16 | 0 | 1.31 |
| BT40 FC SRKIN18X90 | 40 | 18.00 | 33.00 | 42.00 | 90.00 | 64.0 | 57.20 | 11.00 | 50.0 | M12 | M16 | 0 | 3.00 |
| BT40 FC SRKIN20X90 | 40 | 20.00 | 33.00 | 42.00 | 90.00 | 64.0 | 57.20 | 11.00 | 52.0 | M16 | M16 | 0 | 1.43 |
| BT40 FC SRKIN25X110 | 40 | 25.00 | 44.00 | 53.00 | 110.00 | 84.0 | 57.20 | 11.00 | 58.0 | M16 | M16 | 0 | 2.03 |
| BT50 FC SRKIN 6X100 | 50 | 6.00 | 21.00 | 27.00 | 100.00 | 63.5 | 38.00 | 11.00 | 36.0 | M6 | M24 | 0 | 13.99 |
| BT50 FC SRKIN 8X100 | 50 | 8.00 | 21.00 | 27.00 | 100.00 | 63.5 | 38.00 | 11.00 | 36.0 | M5 | M24 | 0 | 3.86 |
| BT50 FC SRKIN10X100 | 50 | 10.00 | 24.00 | 32.00 | 100.00 | 63.5 | 50.80 | 11.00 | 42.0 | M8 | M24 | 0 | 10.00 |
| BT50 FC SRKIN12X100 | 50 | 12.00 | 24.00 | 32.00 | 100.00 | 63.5 | 50.80 | 11.00 | 47.0 | M10 | M24 | 0 | 3.73 |
| BT50 FC SRKIN14X100 | 50 | 14.00 | 27.00 | 34.00 | 100.00 | 63.5 | 44.50 | 11.00 | 47.0 | M10 | M24 | 0 | 10.00 |
| BT50 FC SRKIN16X100 | 50 | 16.00 | 27.00 | 34.00 | 100.00 | 63.5 | 44.50 | 11.00 | 50.0 | M12 | M24 | 0 | 3.76 |
| BT50 FC SRKIN20X100 | 50 | 20.00 | 33.00 | 42.00 | 100.00 | 63.5 | 57.20 | 11.00 | 52.0 | M16 | M24 | 0 | 3.87 |
| BT50 FC SRKIN25X120 | 50 | 25.00 | 44.00 | 53.00 | 120.00 | 83.5 | 57.20 | 11.00 | 58.0 | M16 | M24 | 0 | 4.47 |
| BT50 FC SRKIN32X120 | 50 | 32.00 | 44.00 | 53.00 | 120.00 | 83.5 | 57.20 | 11.50 | 62.0 | M16 | M24 | 0 | 10.00 |

- Use only inductive heating device for SRKIN holders

(1) 1 - Slot for data chip, 0 - Without slot for data chip

**BT-FC Face Contact Taper**



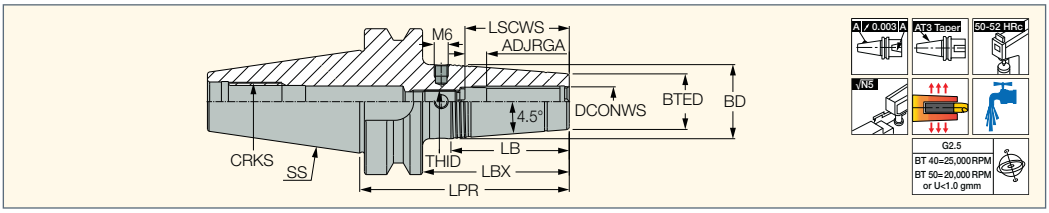
## Spare Parts

| Designation | |
|---|---|
| BT40 FC SRKIN 6X90 | PRESET M5X18B |
| BT40 FC SRKIN 8X90 | PRESET M6X20B |
| BT40 FC SRKIN10X90 | PRESET M8X20B |
| BT40 FC SRKIN12X90 | PRESET M10X18B |
| BT40 FC SRKIN14X90 | PRESET M10X18B |
| BT40 FC SRKIN16X90 | PRESET M12X18B |
| BT40 FC SRKIN18X90 | PRESET M12X18B |
| BT40 FC SRKIN20X90 | PRESET M16X20B |
| BT40 FC SRKIN25X110 | PRESET M16X25B |
| BT50 FC SRKIN 6X100 | PRESET M5X18B |
| BT50 FC SRKIN 8X100 | PRESET M6X20B |
| BT50 FC SRKIN10X100 | PRESET M8X20B |
| BT50 FC SRKIN12X100 | PRESET M10X18B |
| BT50 FC SRKIN14X100 | PRESET M10X18B |
| BT50 FC SRKIN16X100 | PRESET M12X18B |
| BT50 FC SRKIN20X100 | PRESET M16X20B |
| BT50 FC SRKIN25X120 | PRESET M16X25B |
| BT50 FC SRKIN32X120 | PRESET M16X25B |

**BT MAS X-STREAM** JET TOOLHOLDING

**BT-SRKIN-CX**

Thermal Shrink Chucks with BT MAS-403 Form AD Tapered Shank and Jet Coolant Grooves along the Shank Bore




| Designation | SS | DCONWS | BTED | BD | LPR | LBX | LB | LSCWS | ADJRGA | THID | Key(1) | CRKS | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BT40 SRKIN 6X90 CX** | 40 | 6.00 | 21.00 | 27.00 | 90.00 | 63.00 | 38.00 | 34.00 | 9.50 | M5 | 2.50 | M16 | 0 | 1.13 |
| **BT40 SRKIN 8X90 CX** | 40 | 8.00 | 21.00 | 27.00 | 90.00 | 63.00 | 38.00 | 34.00 | 9.50 | M6 | 3.00 | M16 | 0 | 1.07 |
| **BT40 SRKIN 10X90 CX** | 40 | 10.00 | 24.00 | 32.00 | 90.00 | 63.00 | 50.80 | 39.80 | 9.30 | M8 | 4.00 | M16 | 0 | 1.23 |
| **BT40 SRKIN 12X90 CX** | 40 | 12.00 | 24.00 | 32.00 | 90.00 | 63.00 | 50.80 | 44.80 | 9.30 | M10 | 5.00 | M16 | 0 | 1.13 |
| **BT40 SRKIN 14X90 CX** | 40 | 14.00 | 27.00 | 34.00 | 90.00 | 63.00 | 44.50 | 44.80 | 9.30 | M10 | 5.00 | M16 | 0 | 1.20 |
| **BT40 SRKIN 16X90 CX** | 40 | 16.00 | 27.00 | 34.00 | 90.00 | 63.00 | 44.50 | 47.80 | 9.30 | M12 | 6.00 | M16 | 0 | 1.23 |
| **BT40 SRKIN 20X90 CX** | 40 | 20.00 | 33.00 | 42.00 | 90.00 | 63.00 | 57.00 | 49.00 | 8.50 | M16 | 8.00 | M16 | 0 | 1.30 |
| **BT40 SRKIN 25X110 CX** | 40 | 25.00 | 44.00 | 53.00 | 110.00 | 83.00 | 57.00 | 55.00 | 8.50 | M16 | 8.00 | M16 | 0 | 1.84 |
| **BT50 SRKIN 6X100 CX** | 50 | 6.00 | 21.00 | 26.00 | 100.00 | 62.00 | 32.00 | 34.00 | 9.50 | M5 | 2.50 | M24 | 0 | 3.67 |
| **BT50 SRKIN 8X100 CX** | 50 | 8.00 | 21.00 | 27.00 | 100.00 | 62.00 | 38.00 | 34.00 | 9.50 | M6 | 3.00 | M24 | 0 | 3.78 |
| **BT50 SRKIN 10X100 CX** | 50 | 10.00 | 24.00 | 32.00 | 100.00 | 62.00 | 50.80 | 39.80 | 9.30 | M8 | 4.00 | M24 | 0 | 3.78 |
| **BT50 SRKIN 12X100 CX** | 50 | 12.00 | 24.00 | 32.00 | 100.00 | 62.00 | 50.80 | 44.80 | 9.30 | M10 | 5.00 | M24 | 0 | 3.74 |
| **BT50 SRKIN 14X100 CX** | 50 | 14.00 | 27.00 | 34.00 | 100.00 | 62.00 | 44.50 | 44.80 | 9.30 | M10 | 5.00 | M24 | 0 | 3.80 |
| **BT50 SRKIN 16X100 CX** | 50 | 16.00 | 27.00 | 34.00 | 100.00 | 62.00 | 44.50 | 47.80 | 9.30 | M12 | 6.00 | M24 | 0 | 3.70 |
| **BT50 SRKIN 20X100 CX** | 50 | 20.00 | 33.00 | 42.00 | 100.00 | 62.00 | 57.00 | 49.00 | 8.50 | M16 | 8.00 | M24 | 0 | 3.77 |
| **BT50 SRKIN 25X120 CX** | 50 | 25.00 | 44.00 | 53.00 | 120.00 | 82.00 | 57.00 | 55.00 | 8.50 | M16 | 8.00 | M24 | 0 | 4.50 |
| **BT50 SRKIN 32X120 CX** | 50 | 32.00 | 44.00 | 53.00 | 120.00 | 82.00 | 57.00 | 59.00 | 8.50 | M16 | 8.00 | M24 | 0 | 4.35 |

- Use only inductive heating device for SRKIN holders
- Preset screw CX allows supply of coolant via JET channels - do not remove

(1) Hex key size for the rear stopper screw

(2) 1 - Slot for data chip, 0 - Without slot for data chip

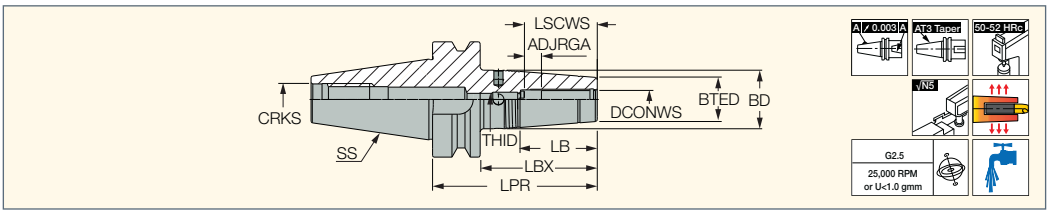
## Spare Parts

| Designation | |
|---|---|
| **BT40 SRKIN 6X90 CX** | PRESET CX M5X13 |
| **BT40 SRKIN 8X90 CX** | PRESET CX M6X12 |
| **BT40 SRKIN 10X90 CX** | PRESET CX M8X16 |
| **BT40 SRKIN 12X90 CX** | PRESET CX M10X16 |
| **BT40 SRKIN 14X90 CX** | PRESET CX M10X16 |
| **BT40 SRKIN 16X90 CX** | PRESET CX M12X16 |
| **BT40 SRKIN 20X90 CX** | PRESET CX M16X14 |
| **BT40 SRKIN 25X110 CX** | PRESET CX M16X14 |
| **BT50 SRKIN 6X100 CX** | PRESET CX M5X13 |
| **BT50 SRKIN 8X100 CX** | PRESET CX M6X12 |
| **BT50 SRKIN 10X100 CX** | PRESET CX M8X16 |
| **BT50 SRKIN 12X100 CX** | PRESET CX M10X16 |
| **BT50 SRKIN 14X100 CX** | PRESET CX M10X16 |
| **BT50 SRKIN 16X100 CX** | PRESET CX M12X16 |
| **BT50 SRKIN 20X100 CX** | PRESET CX M16X14 |
| **BT50 SRKIN 25X120 CX** | PRESET CX M16X14 |
| **BT50 SRKIN 32X120 CX** | PRESET CX M16X14 |

**BT MAS SHRINKIN**

**BT-FC-SRKIN-CX**

Thermal Shrink Chucks with BT-FC-SRKIN-CX Form AD Tapered Shank and Jet Coolant Grooves along the Shank Bore




| Designation | SS | DCONWS | BTED | BD | LPR | LBX | LB | ADJRGA | LSCWS | THID | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT40 FC SRKIN 6X90 CX | 40 | 6.00 | 21.00 | 27.00 | 90.00 | 64.0 | 30.10 | 9.40 | 33.9 | M5 | M16 | 0 | 1.26 |
| BT40 FC SRKIN 8X90 CX | 40 | 8.00 | 21.00 | 27.00 | 90.00 | 64.0 | 30.10 | 9.50 | 34.0 | M6 | M16 | 0 | 1.25 |
| BT40 FC SRKIN 10X90 CX | 40 | 10.00 | 24.00 | 32.00 | 90.00 | 64.0 | 42.80 | 9.30 | 39.8 | M8 | M16 | 0 | 1.30 |
| BT40 FC SRKIN 12X90 CX | 40 | 12.00 | 24.00 | 32.00 | 90.00 | 64.0 | 42.80 | 9.30 | 44.8 | M10 | M16 | 0 | 1.30 |
| BT40 FC SRKIN 14X90 CX | 40 | 14.00 | 27.00 | 34.00 | 90.00 | 64.0 | 36.50 | 9.30 | 44.8 | M10 | M16 | 0 | 1.40 |
| BT40 FC SRKIN 16X90 CX | 40 | 16.00 | 27.00 | 34.00 | 90.00 | 64.0 | 36.50 | 9.30 | 47.8 | M12 | M16 | 0 | 1.45 |
| BT40 FC SRKIN 20X90 CX | 40 | 20.00 | 33.00 | 42.00 | 90.00 | 64.0 | 49.20 | 8.50 | 49.0 | M16 | M16 | 0 | 1.50 |
| BT40 FC SRKIN 25X110 CX | 40 | 25.00 | 44.00 | 53.00 | 110.00 | 84.0 | 49.20 | 8.50 | 55.0 | M16 | M16 | 0 | 2.04 |

**New**

- Use only inductive heating device for SRKIN holders

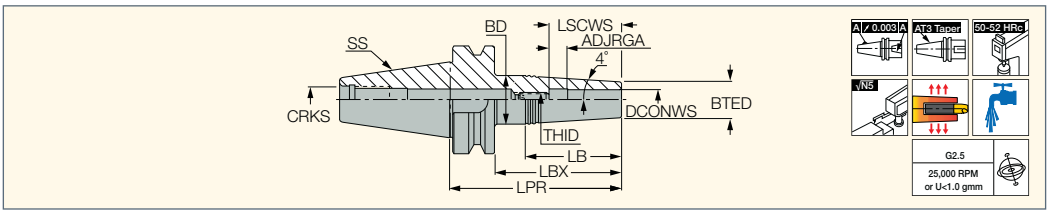
(1) 1 - Slot for data chip, 0 - Without slot for data chip

## Spare Parts

| Designation | |
|---|---|
| BT40 FC SRKIN 6X90 CX | PRESET CX M5X13 |
| BT40 FC SRKIN 8X90 CX | PRESET CX M6X12 |
| BT40 FC SRKIN 10X90 CX | PRESET CX M8X16 |
| BT40 FC SRKIN 12X90 CX | PRESET CX M10X16 |
| BT40 FC SRKIN 14X90 CX | PRESET CX M10X16 |
| BT40 FC SRKIN 16X90 CX | PRESET CX M12X16 |
| BT40 FC SRKIN 20X90 CX | PRESET CX M16X14 |
| BT40 FC SRKIN 25X110 CX | PRESET CX M16X14 |

## BT MAS SHRINKIN

**BT-SRK**
Thermal Shrink Chucks
with BT MAS-403 Tapered
Shanks for Carbide Tools




| Designation | SS | DCONWS | BTED | BD | LPR | LBX | LB | ADJRGA | LSCWS | THID | Key(1) | CRKS | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT30 SRK 3X50 | 30 | 3.00 | 10.00 | 15.00 | 72.00 | 50.0 | 36.30 | 6.00 | 16.0 | M6 | 3.00 | M12 | 0 | 0.43 |
| BT30 SRK 4X50 | 30 | 4.00 | 10.00 | 15.00 | 72.00 | 50.0 | 36.30 | 6.00 | 18.0 | M6 | 3.00 | M12 | 0 | 0.43 |
| BT30 SRK 5X50 | 30 | 5.00 | 10.00 | 15.00 | 72.00 | 50.0 | 36.30 | 6.00 | 21.0 | M6 | 3.00 | M12 | 0 | 0.42 |
| BT30 SRK 6X50 | 30 | 6.00 | 11.00 | 16.00 | 72.00 | 50.0 | 36.60 | 6.00 | 24.0 | M8 | 4.00 | M12 | 0 | 0.43 |
| BT30 SRK 8X50 | 30 | 8.00 | 14.00 | 20.00 | 72.00 | 50.0 | 43.30 | 6.00 | 31.0 | M10 | 5.00 | M12 | 0 | 0.45 |
| BT30 SRK10X50 | 30 | 10.00 | 16.00 | 22.00 | 72.00 | 50.0 | 42.80 | 10.00 | 40.0 | M8 | 4.00 | M12 | 0 | 0.47 |
| BT30 SRK12X50 | 30 | 12.00 | 20.00 | 26.00 | 72.00 | 50.0 | 42.70 | 10.00 | 42.0 | M10 | 5.00 | M12 | 0 | 0.51 |
| BT40 SRK 3X50 | 40 | 3.00 | 10.00 | 15.00 | 77.00 | 50.0 | 35.55 | 6.00 | 16.0 | M6 | 3.00 | M16 | 0 | 1.00 |
| BT40 SRK 3X85 | 40 | 3.00 | 10.00 | 19.00 | 112.00 | 85.0 | 64.15 | 6.00 | 16.0 | M6 | 3.00 | M16 | 0 | 1.00 |
| BT40 SRK 4X50 | 40 | 4.00 | 10.00 | 15.00 | 77.00 | 50.0 | 35.55 | 6.00 | 18.0 | M6 | 3.00 | M16 | 0 | 0.98 |
| BT40 SRK 4X85 | 40 | 4.00 | 10.00 | 19.00 | 112.00 | 85.0 | 64.15 | 6.00 | 18.0 | M6 | 3.00 | M16 | 0 | 1.06 |
| BT40 SRK 5X50 | 40 | 5.00 | 10.00 | 15.00 | 77.00 | 50.0 | 35.55 | 6.00 | 21.0 | M6 | 3.00 | M16 | 0 | 1.00 |
| BT40 SRK 5X85 | 40 | 5.00 | 10.00 | 19.00 | 112.00 | 85.0 | 64.15 | 6.00 | 21.0 | M6 | 3.00 | M16 | 0 | 1.00 |
| BT40 SRK 6X50 | 40 | 6.00 | 11.00 | 16.00 | 77.00 | 50.0 | 35.50 | 6.00 | 24.0 | M8 | 4.00 | M16 | 0 | 0.98 |
| BT40 SRK 6X85 | 40 | 6.00 | 11.00 | 20.00 | 112.00 | 85.0 | 64.15 | 6.00 | 24.0 | M8 | 4.00 | M16 | 0 | 1.00 |
| BT40 SRK 8X50 | 40 | 8.00 | 14.00 | 20.00 | 77.00 | 50.0 | 42.50 | 6.00 | 31.0 | M10 | 5.00 | M16 | 0 | 1.00 |
| BT40 SRK 8X85 | 40 | 8.00 | 14.00 | 23.00 | 112.00 | 85.0 | 63.95 | 6.00 | 31.0 | M10 | 5.00 | M16 | 0 | 1.15 |
| BT40 SRK 10X50 | 40 | 10.00 | 16.00 | 22.00 | 77.00 | 50.0 | 42.40 | 6.00 | 36.0 | M12 | 6.00 | M16 | 0 | 1.04 |
| BT40 SRK 10X85 | 40 | 10.00 | 16.00 | 24.50 | 112.00 | 85.0 | 60.28 | 6.00 | 36.0 | M12 | 6.00 | M16 | 0 | 1.12 |
| BT40 SRK 12X50 | 40 | 12.00 | 20.00 | 26.00 | 77.00 | 50.0 | 42.30 | 10.00 | 42.0 | M10 | 5.00 | M16 | 0 | 1.06 |
| BT40 SRK 12X85 | 40 | 12.00 | 20.00 | 28.00 | 112.00 | 85.0 | 56.60 | 10.00 | 42.0 | M10 | 5.00 | M16 | 0 | 1.22 |

• Preset screw without coolant hole • For through tool coolant, preset screw must be removed
(1) Hex key size for the rear stopper screw
(2) 1 - Slot for data chip, 0 - Without slot for data chip

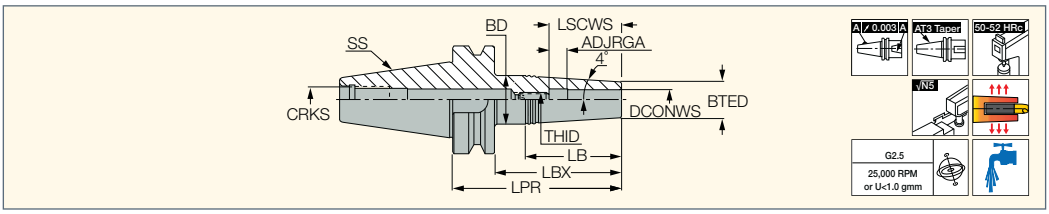
802-805 778-780 784-786

### Spare Parts

| Designation | | |
|---|---|---|
| BT30 SRK 3X50 | SR M6X10 DIN916 | |
| BT30 SRK 4X50 | SR M6X10 DIN916 | |
| BT30 SRK 5X50 | SR M6X10 DIN916 | |
| BT30 SRK 6X50 | SR M8X12 DIN916 | |
| BT30 SRK 8X50 | SR M10X10 DIN913 | |
| BT30 SRK10X50 | | PRESET M8X20B |
| BT30 SRK12X50 | | PRESET M10X18B |
| BT40 SRK 3X50 | SR M6X10 DIN916 | |
| BT40 SRK 3X85 | SR M6X10 DIN916 | |
| BT40 SRK 4X50 | SR M6X10 DIN916 | |
| BT40 SRK 4X85 | SR M6X10 DIN916 | |
| BT40 SRK 5X50 | SR M6X10 DIN916 | |
| BT40 SRK 5X85 | SR M6X10 DIN916 | |
| BT40 SRK 6X50 | SR M8X12 DIN916 | |
| BT40 SRK 6X85 | SR M8X12 DIN916 | |
| BT40 SRK 8X50 | SR M10X10 DIN913 | |
| BT40 SRK 8X85 | SR M10X10 DIN913 | |
| BT40 SRK 10X50 | SR M12X10 DIN913 | |
| BT40 SRK 10X85 | SR M12X10 DIN913 | |
| BT40 SRK 12X50 | SR M10X18 DIN913 | |
| BT40 SRK 12X85 | | PRESET M10X18B |

## BT MAS SHRINKIN

**BT-FC-SRK**
Thermal Shrink Chucks with BT MAS-403 Face Contact AD Tapered Shanks




| Designation | SS | DCONWS | BTED | BD | LPR | LBX | LB | ADJRGA | LSCWS | THID | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT30 FC SRK 3X50 | 30 | 3.00 | 9.93 | 15.00 | 72.00 | 50.0 | 36.30 | 0.00 | 10.0 | M6 | M12 | 0 | 0.32 |
| BT30 FC SRK 4X50 | 30 | 4.00 | 9.93 | 15.00 | 72.00 | 50.0 | 36.30 | 0.00 | 12.0 | M6 | M12 | 0 | 0.46 |
| BT30 FC SRK 6X50 | 30 | 6.00 | 10.88 | 16.00 | 72.00 | 50.0 | 36.60 | 0.00 | 18.0 | M8 | M12 | 0 | 0.52 |
| BT30 FC SRK 8X50 | 30 | 8.00 | 13.95 | 20.00 | 72.00 | 50.0 | 43.30 | 0.00 | 25.0 | M10 | M12 | 0 | 0.48 |
| BT30 FC SRK12X50 | 30 | 12.00 | 20.03 | 26.00 | 72.00 | 50.0 | 42.70 | 10.00 | 42.0 | M10 | M12 | 0 | 0.53 |

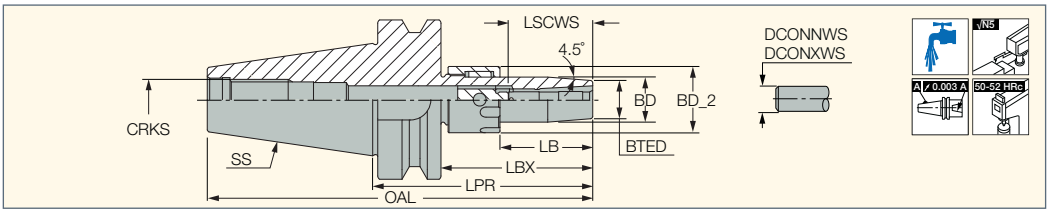
• Use only inductive heating device for SRKIN holders • For through tool coolant, preset screw must be removed
(1) 1 - Slot for data chip, 0 - Without slot for data chip

### Spare Parts

| Designation | | |
|---|---|---|
| BT30 FC SRK 3X50 | SR M6X10 DIN916 | |
| BT30 FC SRK 4X50 | SR M6X10 DIN916 | |
| BT30 FC SRK 6X50 | SR M8X12 DIN916 | |
| BT30 FC SRK 8X50 | SR M10X10 DIN913 | |
| BT30 FC SRK12X50 | | PRESET M10X18B |

## BT MAS QUICKCLAMP

**BT-MS**
QUICK-CLAMP System for Small Cutting Tools with BT MAS-403 Form AD Shank

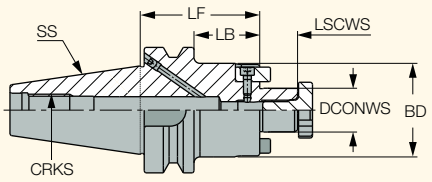


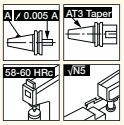

| Designation | DCONNWS(1) | DCONXWS(2) | SS | BTED | BD | BD_2 | LPR | LB | LBX | OAL | LSCWS | CRKS | DCP(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT40 MS6X60 | 3.00 | 6.00 | BT40 | 15.00 | 17.80 | 26.20 | 87.00 | 36.00 | 60.00 | 152.40 | 33.00 | M16 | 0 |

New
(1) Minimum diameter
(2) Maximum diameter
(3) 1 - Slot for data chip, 0 - Without slot for data chip

## *BT MAS*

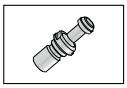
**BT-SEM**
ISO 3937 Shell Mill Holders
with BT MAS-403 ADB
Tapered Shanks




| Designation | SS | DCONWS | LF | BD | LSCWS | LB | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|
| **BT30 SEM 16X50** | 30 | 16.00 | 50.00 | 38.00 | 17.00 | 28.0 | M12 | 0 | 0.62 |
| **BT30 SEM 22X50** | 30 | 22.00 | 50.00 | 47.00 | 19.00 | 28.0 | M12 | 0 | 0.77 |
| **BT30 SEM 27X50** | 30 | 27.00 | 50.00 | 58.00 | 21.00 | 18.0 | M12 | 0 | 0.88 |
| **BT40 SEM 16X120** | 40 | 16.00 | 120.00 | 38.00 | 17.00 | 93.0 | M16 | 0 | 1.82 |
| **BT40 SEM 16X60** | 40 | 16.00 | 60.00 | 38.00 | 17.00 | 33.0 | M16 | 0 | 1.29 |
| **BT40 SEM 22X120** | 40 | 22.00 | 120.00 | 47.00 | 19.00 | 93.0 | M16 | 0 | 2.38 |
| **BT40 SEM 22X60** | 40 | 22.00 | 60.00 | 47.00 | 19.00 | 33.0 | M16 | 0 | 1.45 |
| **BT40 SEM 27X105** | 40 | 27.00 | 105.00 | 58.00 | 21.00 | 78.0 | M16 | 0 | 2.62 |
| **BT40 SEM 27X45** | 40 | 27.00 | 45.00 | 58.00 | 21.00 | 18.0 | M16 | 0 | 1.39 |
| **BT40 SEM 32X60** | 40 | 32.00 | 60.00 | 65.50 | 24.00 | 23.0 | M16 | 0 | 1.88 |
| **BT40 SEM 32X75** | 40 | 32.00 | 75.00 | 65.00 | 24.00 | 36.0 | M16 | 0 | 2.26 |
| **BT40 SEM 40X60** | 40 | 40.00 | 60.00 | 82.00 | 27.00 | 23.0 | M16 | 0 | 2.25 |
| **BT40 SEM 40X75** | 40 | 40.00 | 75.00 | 82.00 | 27.00 | 38.0 | M16 | 0 | 3.10 |
| **BT50 SEM 16X120** | 50 | 16.00 | 120.00 | 38.00 | 17.00 | 82.0 | M24 | 0 | 4.40 |
| **BT50 SEM 16X75** | 50 | 16.00 | 75.00 | 38.00 | 17.00 | 37.0 | M24 | 0 | 3.86 |
| **BT50 SEM 22X120** | 50 | 22.00 | 120.00 | 47.00 | 19.00 | 82.0 | M24 | 0 | 4.63 |
| **BT50 SEM 22X50X220** | 50 | 22.00 | 220.00 | 50.00 | 19.00 | 182.0 | M24 | 0 | 6.52 |
| **BT50 SEM 22X64X320** | 50 | 22.00 | 320.00 | 64.00 | 19.00 | 282.0 | M24 | 0 | 10.51 |
| **BT50 SEM 22X75** | 50 | 22.00 | 75.00 | 47.00 | 19.00 | 37.0 | M24 | 0 | 4.10 |
| **BT50 SEM 27X105** | 50 | 27.00 | 105.00 | 58.00 | 21.00 | 67.0 | M24 | 0 | 5.08 |
| **BT50 SEM 27X60** | 50 | 27.00 | 60.00 | 58.00 | 21.00 | 22.0 | M24 | 0 | 4.15 |
| **BT50 SEM 32X48** | 50 | 32.00 | 48.00 | 78.00 | 24.00 | 10.0 | M24 | 0 | 3.96 |
| **BT50 SEM 32X75** | 50 | 32.00 | 75.00 | 66.00 | 24.00 | 37.0 | M24 | 0 | 4.65 |
| **BT50 SEM 40X48** | 50 | 40.00 | 48.00 | 82.00 | 27.00 | 10.0 | M24 | 0 | 4.27 |
| **BT50 SEM 40X75** | 50 | 40.00 | 75.00 | 82.00 | 27.00 | 37.0 | M24 | 0 | 5.33 |

• For internal coolant through the holder, the related COOLANT SET should be ordered via Accessories (applicable to certain tools only)
**(1)** 1 - Slot for data chip, 0 - Without slot for data chip


802-805

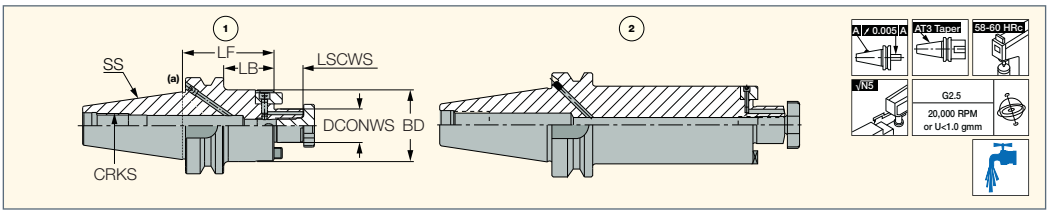
### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| **BT30 SEM 16X50** | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 | |
| **BT30 SEM 22X50** | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | |
| **BT30 SEM 27X50** | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X14DIN912 | |
| **BT40 SEM 16X120** | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 | SR M4X4 DIN913 |
| **BT40 SEM 16X60** | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 | SR M4X4 DIN913 |
| **BT40 SEM 22X120** | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| **BT40 SEM 22X60** | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| **BT40 SEM 27X105** | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X14DIN912 | SR M4X4 DIN913 |
| **BT40 SEM 27X45** | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X14DIN912 | SR M4X4 DIN913 |
| **BT40 SEM 32X60** | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 | SR M4X4 DIN913 |
| **BT40 SEM 32X75** | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 | SR M4X4 DIN913 |
| **BT40 SEM 40X60** | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | DR.DOG 16X18S | SR M6X20 DIN912 | SR M4X4 DIN913 |
| **BT40 SEM 40X75** | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | DR.DOG 16X18S | SR M6X20 DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 16X120** | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 16X75** | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 22X120** | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 22X50X220** | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 22X64X320** | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 22X75** | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 27X105** | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X14DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 27X60** | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X14DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 32X48** | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | | SR M5X14DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 32X75** | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 40X48** | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | DR. DOG 16 E | SR M5X16 DIN912 | SR M4X4 DIN913 |
| **BT50 SEM 40X75** | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | DR.DOG 16X18S | SR M6X20 DIN912 | SR M4X4 DIN913 |

* Optional, to be ordered separately

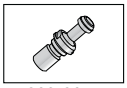
## *BT MAS*

**BT-SEM-C**
ISO 3937 Shell Mill Holders with Coolant Holes and BT MAS-403 ADB Tapered Shanks




| Designation | SS | DCONWS | BD | LF | LSCWS | LB | CRKS | DCP(2) | Fig. | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| BT40 SEM 16X60C | 40 | 16.00 | 38.00 | 60.00 | 17.00 | 33.0 | M16 | 0 | 1. | 1.21 |
| BT40 SEM 16X100C | 40 | 16.00 | 38.00 | 100.00 | 17.00 | 73.0 | M16 | 0 | 1. | 1.57 |
| BT40 SEM 22X60C | 40 | 22.00 | 47.00 | 60.00 | 19.00 | 33.0 | M16 | 0 | 1. | 1.10 |
| BT40 SEM 22X100C | 40 | 22.00 | 47.00 | 100.00 | 19.00 | 73.0 | M16 | 0 | 1. | 2.03 |
| BT40 SEM 27X45C | 40 | 27.00 | 58.00 | 45.00 | 21.00 | 18.0 | M16 | 0 | 1. | 1.32 |
| BT40 SEM 27X100C | 40 | 27.00 | 58.00 | 100.00 | 21.00 | 73.0 | M16 | 0 | 1. | 2.44 |
| BT40 SEM 32X60C | 40 | 32.00 | 66.00 | 60.00 | 24.00 | 33.0 | M16 | 0 | 1. | 1.84 |
| BT40 SEM32X78X60C | 40 | 32.00 | 78.00 | 60.00 | 24.00 | 33.0 | M16 | 0 | 1. | 2.20 |
| BT40 SEM32X78X100C | 40 | 32.00 | 78.00 | 100.00 | 24.00 | 73.0 | M16 | 0 | 1. | 3.36 |
| BT50 SEM 16X75C | 50 | 16.00 | 38.00 | 75.00 | 17.00 | 37.0 | M24 | 0 | 1. | 3.82 |
| BT50 SEM 16X100C | 50 | 16.00 | 38.00 | 100.00 | 17.00 | 62.0 | M24 | 0 | 1. | 4.00 |
| BT50 SEM 22X75C | 50 | 22.00 | 47.00 | 75.00 | 19.00 | 37.0 | M24 | 0 | 1. | 4.00 |
| BT50 SEM 22X100C | 50 | 22.00 | 47.00 | 100.00 | 19.00 | 62.0 | M24 | 0 | 1. | 4.30 |
| BT50 SEM 22X48X220C (1) | 50 | 22.00 | 48.00 | 220.00 | 19.00 | 182.0 | M24 | 0 | 2. | 5.98 |
| BT50 SEM 22X61X320C (1) | 50 | 22.00 | 61.00 | 320.00 | 19.00 | 282.0 | M24 | 0 | 2. | 9.91 |
| BT50 SEM 27X60C | 50 | 27.00 | 58.00 | 60.00 | 21.00 | 22.0 | M24 | 0 | 1. | 3.96 |
| BT50 SEM 27X100C | 50 | 27.00 | 58.00 | 100.00 | 21.00 | 62.0 | M24 | 0 | 1. | 4.72 |
| BT50 SEM 27X61X320C (1) | 50 | 27.00 | 61.00 | 320.00 | 21.00 | 282.0 | M24 | 0 | 2. | 9.78 |
| BT50 SEM 32X75C | 50 | 32.00 | 66.00 | 75.00 | 24.00 | 37.0 | M24 | 0 | 1. | 4.50 |
| BT50 SEM 32X100C | 50 | 32.00 | 66.00 | 100.00 | 24.00 | 62.0 | M24 | 0 | 1. | 5.04 |
| BT50 SEM32X78X50C | 50 | 32.00 | 78.00 | 50.00 | 24.00 | 12.0 | M24 | 0 | 1. | 4.16 |
| BT50 SEM32X78X100C | 50 | 32.00 | 78.00 | 100.00 | 24.00 | 62.0 | M24 | 0 | 1. | 5.99 |
| BT50 SEM 32X78X390C (1) | 50 | 32.00 | 78.00 | 390.00 | 24.00 | 352.0 | M24 | 0 | 2. | 16.66 |

• (a) For coolant through flange the plug screw must be removed from the flange cooling hole (use a 2 mm hex key)
(1) Symmetrical design. However, the family's balance values are not guaranteed for this tool
(2) 1 - Slot for data chip, 0 - Without slot for data chip


802-805

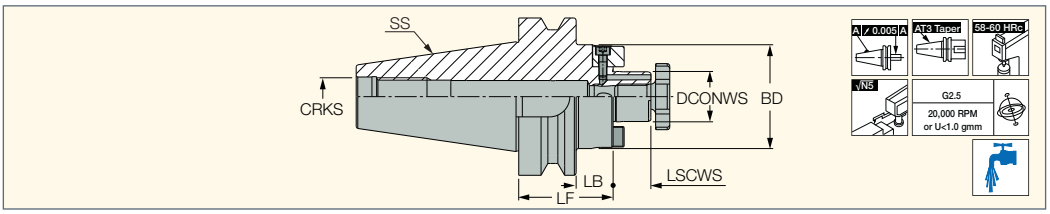
### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| BT40 SEM 16X60C | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 | SR M4X4 DIN913 |
| BT40 SEM 16X100C | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 | SR M4X4 DIN913 |
| BT40 SEM 22X60C | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| BT40 SEM 22X100C | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| BT40 SEM 27X45C | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X14DIN912 | SR M4X4 DIN913 |
| BT40 SEM 27X100C | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X14DIN912 | SR M4X4 DIN913 |
| BT40 SEM 32X60C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 | SR M4X4 DIN913 |
| BT40 SEM32X78X60C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 | SR M4X4 DIN913 |
| BT40 SEM32X78X100C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 | SR M4X4 DIN913 |
| BT50 SEM 16X75C | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 | SR M4X4 DIN913 |
| BT50 SEM 16X100C | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | DR.DOG 8S | SR M3X10DIN912 | SR M4X4 DIN913 |
| BT50 SEM 22X75C | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| BT50 SEM 22X100C | M10 CLAMP SCREW SEM22 | WRENCH M8 SEMC16* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| BT50 SEM 22X48X220C | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| BT50 SEM 22X61X320C | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | DR.DOG 10S | SR M4X10DIN912 | SR M4X4 DIN913 |
| BT50 SEM 27X60C | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X14DIN912 | SR M4X4 DIN913 |
| BT50 SEM 27X100C | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X14DIN912 | SR M4X4 DIN913 |
| BT50 SEM 27X61X320C | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | DR.DOG 12S | SR M5X12 DIN912 | SR M4X4 DIN913 |
| BT50 SEM 32X75C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 | SR M4X4 DIN913 |
| BT50 SEM 32X100C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 | SR M4X4 DIN913 |
| BT50 SEM32X78X50C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | | SR M5X14DIN912 | SR M4X4 DIN913 |
| BT50 SEM32X78X100C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X13S | SR M5X14DIN912 | SR M4X4 DIN913 |
| BT50 SEM 32X78X390C | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | DR.DOG 14X16S | SR M5X20DIN912 | SR M4X4 DIN913 |

* Optional, to be ordered separately

## *BT MAS*

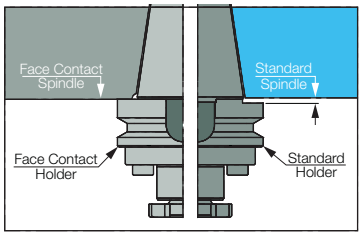
**BT-FC-SEM-C**
Shell Endmill Holders with Coolant Holes and BT MAS-403 Face Contact AD Tapered Shanks




| Designation | SS | DCONWS | BD | LF | LB | LSCWS | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|
| BT30 FC SEM16X50C | 30 | 16.00 | 38.00 | 50.00 | 28.0 | 17.00 | M12 | 0 | 0.62 |
| BT30 FC SEM22X50C | 30 | 22.00 | 47.00 | 50.00 | 28.0 | 19.00 | M12 | 0 | 0.77 |
| BT30 FC SEM27X50C | 30 | 27.00 | 58.00 | 50.00 | 28.0 | 21.00 | M12 | 0 | 0.88 |
| BT40 FC SEM16X60C | 40 | 16.00 | 38.00 | 60.00 | 34.0 | 17.00 | M16 | 0 | 1.24 |
| BT40 FC SEM22X60C | 40 | 22.00 | 47.00 | 60.00 | 34.0 | 19.00 | M16 | 0 | 1.42 |
| BT40 FC SEM22X120C | 40 | 22.00 | 47.00 | 120.00 | 94.0 | 19.00 | M16 | 0 | 2.35 |
| BT40 FC SEM27X45C | 40 | 27.00 | 58.00 | 45.00 | 19.0 | 21.00 | M16 | 0 | 1.45 |
| BT40 FC SEM32X60C | 40 | 32.00 | 66.00 | 60.00 | 34.0 | 24.00 | M16 | 0 | 1.88 |
| BT40 FC SEM32X78X60C | 40 | 32.00 | 78.00 | 60.00 | 34.0 | 24.00 | M16 | 0 | 2.25 |
| BT50 FC SEM16X75C | 50 | 16.00 | 38.00 | 75.00 | 38.5 | 17.00 | M24 | 0 | 4.08 |
| BT50 FC SEM16X120C | 50 | 16.00 | 38.00 | 120.00 | 83.5 | 17.00 | M24 | 0 | 4.42 |
| BT50 FC SEM22X75C | 50 | 22.00 | 47.00 | 75.00 | 38.5 | 19.00 | M24 | 0 | 4.30 |
| BT50 FC SEM22X120C | 50 | 22.00 | 47.00 | 120.00 | 83.5 | 19.00 | M24 | 0 | 4.87 |
| BT50 FC SEM27X60C | 50 | 27.00 | 58.00 | 60.00 | 23.5 | 21.00 | M24 | 0 | 4.27 |
| BT50 FC SEM27X105C | 50 | 27.00 | 58.00 | 105.00 | 68.5 | 21.00 | M24 | 0 | 5.21 |
| BT50 FC SEM32X60 C | 50 | 32.00 | 66.00 | 60.00 | 23.5 | 24.00 | M24 | 0 | 4.51 |
| BT50 FC SEM32X78X60C | 50 | 32.00 | 78.00 | 60.00 | 23.5 | 24.00 | M24 | 0 | 4.61 |
| BT50 FC SEM40X60 C | 50 | 40.00 | 82.00 | 60.00 | 11.5 | 27.00 | M24 | 0 | 4.98 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

**BT-FC Face Contact Taper**



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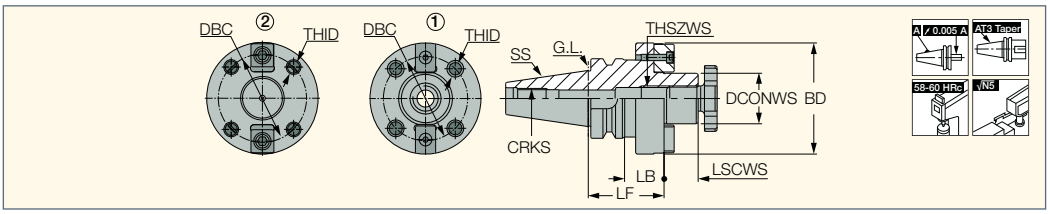
## Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| BT30 FC SEM16X50C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | WRENCH M8 SEMC16* |
| BT30 FC SEM22X50C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | WRENCH M10 SEMC 22* |
| BT30 FC SEM27X50C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X14DIN912 | WRENCH M12 SEMC 27* |
| BT40 FC SEM16X60C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | WRENCH M8 SEMC16* |
| BT40 FC SEM22X60C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | WRENCH M10 SEMC 22* |
| BT40 FC SEM22X120C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | WRENCH M10 SEMC 22* |
| BT40 FC SEM27X45C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X14DIN912 | WRENCH M12 SEMC 27* |
| BT40 FC SEM32X60C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | WRENCH M16 SEMC 32* |
| BT40 FC SEM32X78X60C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | WRENCH M16 SEMC 32* |
| BT50 FC SEM16X75C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | WRENCH M8 SEMC16* |
| BT50 FC SEM16X120C | M8 CLAMP SCREW SEM16 | DR.DOG 8S | SR M3X10DIN912 | WRENCH M8 SEMC16* |
| BT50 FC SEM22X75C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | WRENCH M10 SEMC 22* |
| BT50 FC SEM22X120C | M10 CLAMP SCREW SEM22 | DR.DOG 10S | SR M4X10DIN912 | WRENCH M10 SEMC 22* |
| BT50 FC SEM27X60C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X14DIN912 | WRENCH M12 SEMC 27* |
| BT50 FC SEM27X105C | M12 CLAMP SCREW SEM27 | DR.DOG 12S | SR M5X14DIN912 | WRENCH M12 SEMC 27* |
| BT50 FC SEM32X60 C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | WRENCH M16 SEMC 32* |
| BT50 FC SEM32X78X60C | M16 CLAMP SCREW SEM32 | DR.DOG 14X13S | SR M5X14DIN912 | WRENCH M16 SEMC 32* |
| BT50 FC SEM40X60 C | M20 CLAMP SCREW SEM40 | DR.DOG 16X18S | SR M6X20 DIN912 | WRENCH M20 SEMC 40* |

* Optional, to be ordered separately

## *BT MAS*

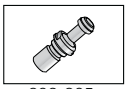
**BT-FM**
DIN 6357 Face Mill Holders
with BT MAS-403 A/AD
Tapered Shanks




| Designation | SS | DCONWS | LSCWS | LF | LB | BD | DBC | THID | THSZWS | CRKS | Fig. | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT40 FM 40X60 (1) | 40 | 40.00 | 27.00 | 60.00 | 33.0 | 88.00 | 66.70 | M12 | M20 | M16 | 1. | 0 | 2.33 |
| BT50 FM 40X50 (1) | 50 | 40.00 | 27.00 | 50.00 | 12.0 | 88.00 | 66.70 | M12 | M20 | M24 | 1. | 0 | 4.19 |
| BT50 FM 60X88 (2) | 50 | 60.00 | 38.00 | 88.00 | 40.0 | 128.00 | 101.60 | M16 | - | M24 | 2. | 0 | 8.60 |

- Peripheral clamping screws are not supplied.

(1) Form AD
(2) Form A
(3) 1 - Slot for data chip, 0 - Without slot for data chip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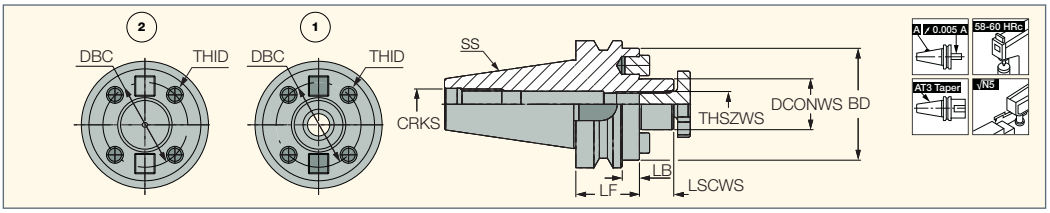
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| BT40 FM 40X60 | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | DR. DOG 16 E | SR M5X16 DIN912 |
| BT50 FM 40X50 | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | DR. DOG 16 E | SR M5X16 DIN912 |
| BT50 FM 60X88 | | | DR. DOG 1E | SR M12X25 DIN 912 |

* Optional, to be ordered separately

## *BT MAS*

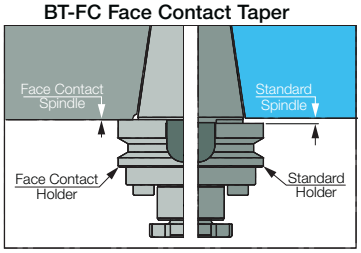
**BT-FC-FM**
Face Mill Holders with
BT MAS-403 Face Contact A/AD
Tapered Shanks




| Designation | SS | BD | DCONWS | DBC | LF | LSCWS | LB | CRKS | THSZWS | THID | CSP(3) | Fig. | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT40 FC FM40 (1) | 40 | 88.00 | 40.00 | 66.70 | 60.00 | 27.00 | 23.0 | M16 | M20 | M12 | 1 | 1. | 0 | 2.39 |
| BT50 FC FM40 (1) | 50 | 88.00 | 40.00 | 66.70 | 50.00 | 27.00 | 13.5 | M24 | M20 | M12 | 1 | 1. | 0 | 4.63 |
| BT50 FC FM60 (2) | 50 | 128.00 | 60.00 | 101.60 | 88.00 | 40.00 | 41.5 | M24 | - | M16 | 0 | 2. | 0 | 9.45 |

(1) Form AD
(2) Form A
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) 1 - Slot for data chip, 0 - Without slot for data chip

**BT-FC Face Contact Taper**



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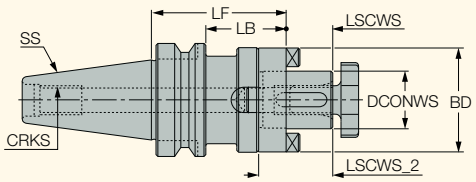
## *BT MAS*

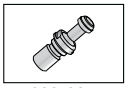
**BT-SEMC**
COMBI Shell Mill Holders with BT MAS-403 AD Tapered Shanks




| Designation | SS | DCONWS | LSCWS | BD | LF | LB | LSCWS_2 | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **BT40 SEMC 16X100** | 40 | 16.00 | 17.00 | 32.00 | 100.00 | 73.0 | 27.00 | M16 | 0 | 1.42 |
| **BT40 SEMC 16X50** | 40 | 16.00 | 17.00 | 32.00 | 50.00 | 23.0 | 27.00 | M16 | 0 | 1.09 |
| **BT40 SEMC 22X100** | 40 | 22.00 | 19.00 | 40.00 | 100.00 | 73.0 | 31.00 | M16 | 0 | 1.68 |
| **BT40 SEMC 22X53** | 40 | 22.00 | 19.00 | 40.00 | 53.00 | 26.0 | 31.00 | M16 | 0 | 1.18 |
| **BT40 SEMC 27X100** | 40 | 27.00 | 21.00 | 48.00 | 98.00 | 71.0 | 33.00 | M16 | 0 | 2.02 |
| **BT40 SEMC 27X55** | 40 | 27.00 | 21.00 | 48.00 | 55.00 | 28.0 | 33.00 | M16 | 0 | 1.29 |
| **BT40 SEMC 32X100** | 40 | 32.00 | 24.00 | 58.00 | 100.00 | 73.0 | 38.00 | M16 | 0 | 2.26 |
| **BT40 SEMC 32X60** | 40 | 32.00 | 24.00 | 58.00 | 60.00 | 33.0 | 38.00 | M16 | 0 | 1.51 |
| **BT40 SEMC 40X80** | 40 | 40.00 | 27.00 | 70.00 | 80.00 | 53.0 | 41.00 | M16 | 0 | 2.29 |
| **BT50 SEMC 16X100** | 50 | 16.00 | 17.00 | 32.00 | 100.00 | 62.0 | 27.00 | M24 | 0 | 3.86 |
| **BT50 SEMC 16X150** | 50 | 16.00 | 17.00 | 32.00 | 150.00 | 112.0 | 27.00 | M24 | 0 | 4.30 |
| **BT50 SEMC 22X100** | 50 | 22.00 | 19.00 | 40.00 | 100.00 | 62.0 | 31.00 | M24 | 0 | 4.14 |
| **BT50 SEMC 22X150** | 50 | 22.00 | 19.00 | 40.00 | 150.00 | 112.0 | 31.00 | M24 | 0 | 5.25 |
| **BT50 SEMC 22X68** | 50 | 22.00 | 19.00 | 40.00 | 68.00 | 30.0 | 31.00 | M24 | 0 | 2.80 |
| **BT50 SEMC 27X100** | 50 | 27.00 | 21.00 | 48.00 | 100.00 | 62.0 | 33.00 | M24 | 0 | 4.32 |
| **BT50 SEMC 27X150** | 50 | 27.00 | 21.00 | 48.00 | 150.00 | 112.0 | 33.00 | M24 | 0 | 5.48 |
| **BT50 SEMC 27X78** | 50 | 27.00 | 21.00 | 48.00 | 78.00 | 40.0 | 33.00 | M24 | 0 | 3.97 |
| **BT50 SEMC 32X100** | 50 | 32.00 | 24.00 | 58.00 | 100.00 | 62.0 | 38.00 | M24 | 0 | 4.60 |
| **BT50 SEMC 32X150** | 50 | 32.00 | 24.00 | 58.00 | 150.00 | 112.0 | 38.00 | M24 | 0 | 5.82 |
| **BT50 SEMC 32X78** | 50 | 32.00 | 24.00 | 58.00 | 78.00 | 40.0 | 38.00 | M24 | 0 | 4.50 |
| **BT50 SEMC 40X78** | 50 | 40.00 | 27.00 | 70.00 | 78.00 | 40.0 | 41.00 | M24 | 0 | 4.62 |
| **BT50 SEMC 40X100** | 50 | 40.00 | 27.00 | 70.00 | 100.00 | 62.0 | 41.00 | M24 | 0 | 5.06 |
| **BT50 SEMC 40X150** | 50 | 40.00 | 27.00 | 70.00 | 150.00 | 112.0 | 41.00 | M24 | 0 | 6.46 |
| **BT50 SEMC 50X79** | 50 | 50.00 | 30.00 | 90.00 | 79.00 | 41.0 | 46.00 | M24 | 0 | 6.40 |
| **BT50 SEMC 50X150** | 50 | 50.00 | 30.00 | 90.00 | 150.00 | 112.0 | 46.00 | M24 | 0 | 8.41 |

- For internal coolant through the holder, the related COOLANT SET should be ordered via Accessories (applicable to certain tools only)

(1) 1 - Slot for data chip, 0 - Without slot for data chip



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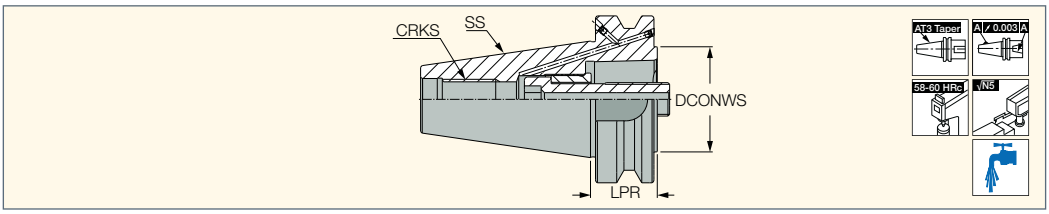
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| **BT40 SEMC 16X100** | KEY SEMC 16 4X4X20 | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | 16 D.RING SEMC |
| **BT40 SEMC 16X50** | KEY SEMC 16 4X4X20 | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | 16 D.RING SEMC |
| **BT40 SEMC 22X100** | KEY SEMC 22 6X6X25 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | 22 D.RING SEMC |
| **BT40 SEMC 22X53** | KEY SEMC 22 6X6X25 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | 22 D.RING SEMC |
| **BT40 SEMC 27X100** | KEY SEMC 27 7X7X25 | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | 27 D.RING SEMC |
| **BT40 SEMC 27X55** | KEY SEMC 27 7X7X25 | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | 27 D.RING SEMC |
| **BT40 SEMC 32X100** | KEY SEMC 32 8X7X28 | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | 32 D.RING SEMC |
| **BT40 SEMC 32X60** | KEY SEMC 32 8X7X28 | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | 32 D.RING SEMC |
| **BT40 SEMC 40X80** | KEY SEMC 40 10X8X32 | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | 40 D.RING SEMC |
| **BT50 SEMC 16X100** | KEY SEMC 16 4X4X20 | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | 16 D.RING SEMC |
| **BT50 SEMC 16X150** | KEY SEMC 16 4X4X20 | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | 16 D.RING SEMC |
| **BT50 SEMC 22X100** | KEY SEMC 22 6X6X25 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | 22 D.RING SEMC |
| **BT50 SEMC 22X150** | KEY SEMC 22 6X6X25 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | 22 D.RING SEMC |
| **BT50 SEMC 22X68** | KEY SEMC 22 6X6X25 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | 22 D.RING SEMC |
| **BT50 SEMC 27X100** | KEY SEMC 27 7X7X25 | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | 27 D.RING SEMC |
| **BT50 SEMC 27X150** | KEY SEMC 27 7X7X25 | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | 27 D.RING SEMC |
| **BT50 SEMC 27X78** | KEY SEMC 27 7X7X25 | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | 27 D.RING SEMC |
| **BT50 SEMC 32X100** | KEY SEMC 32 8X7X28 | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | 32 D.RING SEMC |
| **BT50 SEMC 32X150** | KEY SEMC 32 8X7X28 | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | 32 D.RING SEMC |
| **BT50 SEMC 32X78** | KEY SEMC 32 8X7X28 | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | 32 D.RING SEMC |
| **BT50 SEMC 40X78** | KEY SEMC 40 10X8X32 | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | 40 D.RING SEMC |
| **BT50 SEMC 40X100** | KEY SEMC 40 10X8X32 | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | 40 D.RING SEMC |
| **BT50 SEMC 40X150** | KEY SEMC 40 10X8X32 | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | 40 D.RING SEMC |
| **BT50 SEMC 50X79** | KEY SEMC 50 12X8X36 | M24 CLAMP SCREW SEM50 | WRENCH M24 SEMC 50* | 50 D.RING SEMC |
| **BT50 SEMC 50X150** | KEY SEMC 50 12X8X36 | M24 CLAMP SCREW SEM50 | WRENCH M24 SEMC 50* | 50 D.RING SEMC |

* Optional, to be ordered separately

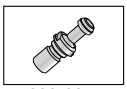
## BT MAS CAMFIX

**BT-C#**
CAMFIX (ISO 26623-1)
Holders with BT MAS-403
AD Tapered Shanks




| Designation | SS | DCONWS | LPR | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|
| C5 AD BT40X50 | 40 | 50.00 | 50.00 | M16 | 0 | 1.05 |
| C5 AD BT50X40 | 50 | 50.00 | 40.00 | M24 | 0 | 3.46 |
| C6 AD BT50X50 | 50 | 63.00 | 50.00 | M24 | 0 | 3.55 |
| C8 AD BT50X70 | 50 | 80.00 | 70.00 | M24 | 0 | 4.05 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip


802-805

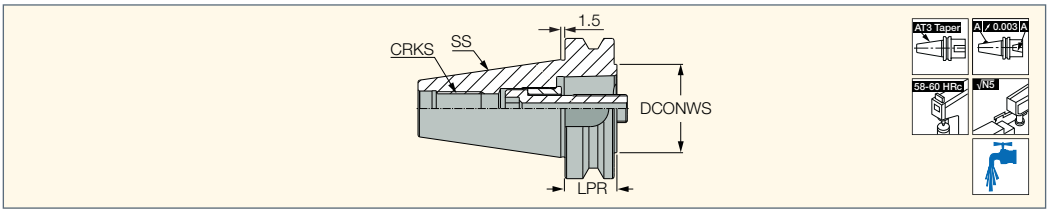
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| C5 AD BT40X50 | SR M16X70 C5 | HW 10.0 | MT RING M25X20XC5 | WRENCH C5 DRW NUT |
| C5 AD BT50X40 | SR M16X70 C5 | HW 10.0* | MT RING M25X20XC5 | WRENCH C5 DRW NUT |
| C6 AD BT50X50 | SR M20X87 C6/8 | HW 14.0 | MT RING M30X24XC6/8 | WRENCH C6-8 DRW NUT |
| C8 AD BT50X70 | SR M20X87 C6/8 | HW 14.0* | MT RING M30X24XC6/8 | WRENCH C6-8 DRW NUT |

* Optional, to be ordered separately

## BT MAS CAMFIX

**BT-C#-FC**
CAMFIX (ISO 26623-1) Holders
with BT MAS-403 Face
Contact AD Tapered Shanks



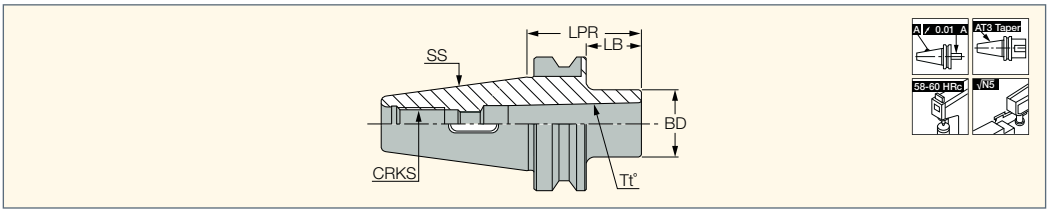

| Designation | SS | DCONWS | LPR | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|
| C5 AD BT50FC X40 | 50 | 50.00 | 38.50 | M24 | 0 | 3.46 |
| C6 AD BT50FC X50 | 50 | 63.00 | 48.50 | M24 | 0 | 3.55 |

New

(1) 1 - Slot for data chip, 0 - Without slot for data chip

## BT MAS

**BT-MT**
DIN 6383 / DIN 228-2 Form D
Tang Morse Tapered
Adapters with BT MAS-403 A
Tapered Shanks



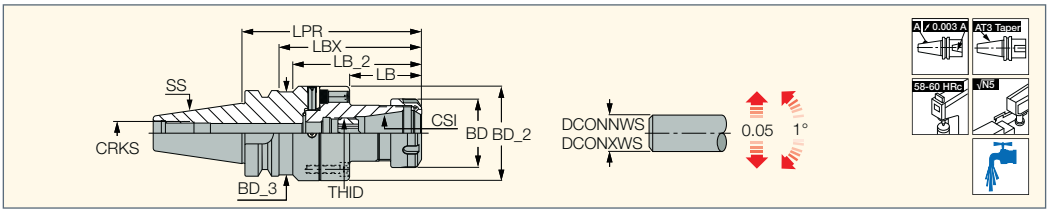

| Designation | SS | Tt° | LPR | LB | BD | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|
| BT30 MT1X 45 | 30 | MT1 | 45.00 | 23.0 | 25.00 | M12 | 0 | 0.43 |
| BT30 MT2X 60 | 30 | MT2 | 60.00 | 38.0 | 32.00 | M12 | 0 | 0.51 |
| BT40 MT1X 45 | 40 | MT1 | 45.00 | 18.0 | 25.00 | M16 | 0 | 1.00 |
| BT40 MT1X120 | 40 | MT1 | 120.00 | 93.0 | 25.00 | M16 | 0 | 1.28 |
| BT40 MT2X 60 | 40 | MT2 | 60.00 | 33.0 | 32.00 | M16 | 0 | 0.50 |
| BT40 MT2X120 | 40 | MT2 | 120.00 | 93.0 | 32.00 | M16 | 0 | 1.43 |
| BT40 MT3X 75 | 40 | MT3 | 75.00 | 48.0 | 40.00 | M16 | 0 | 1.15 |
| BT40 MT3X139 | 40 | MT3 | 139.00 | 112.0 | 40.00 | M16 | 0 | 1.78 |
| BT40 MT4X 95 | 40 | MT4 | 95.00 | 68.0 | 50.00 | M16 | 0 | 1.44 |
| BT50 MT1X 45 | 50 | MT1 | 45.00 | 7.0 | 25.00 | M24 | 0 | 3.59 |
| BT50 MT1X120 | 50 | MT1 | 120.00 | 82.0 | 25.00 | M24 | 0 | 3.94 |
| BT50 MT1X180 | 50 | MT1 | 180.00 | 142.0 | 25.00 | M24 | 0 | 4.18 |
| BT50 MT2X 45 | 50 | MT2 | 45.00 | 7.0 | 32.00 | M24 | 0 | 3.50 |
| BT50 MT2X135 | 50 | MT2 | 135.00 | 97.0 | 32.00 | M24 | 0 | 4.14 |
| BT50 MT2X180 | 50 | MT2 | 180.00 | 142.0 | 32.00 | M24 | 0 | 4.40 |
| BT50 MT3X 45 | 50 | MT3 | 45.00 | 7.0 | 40.00 | M24 | 0 | 3.49 |
| BT50 MT3X150 | 50 | MT3 | 150.00 | 112.0 | 40.00 | M24 | 0 | 4.46 |
| BT50 MT3X180 | 50 | MT3 | 180.00 | 142.0 | 40.00 | M24 | 0 | 4.79 |
| BT50 MT4X 75 | 50 | MT4 | 75.00 | 37.0 | 50.00 | M24 | 0 | 3.64 |
| BT50 MT4X180 | 50 | MT4 | 180.00 | 142.0 | 50.00 | M24 | 0 | 5.20 |
| BT50 MT5X105 | 50 | MT5 | 105.00 | 67.0 | 70.00 | M24 | 0 | 4.17 |

(1) 1 - Slot for data chip, 0 - Without slot for data chip

802-805

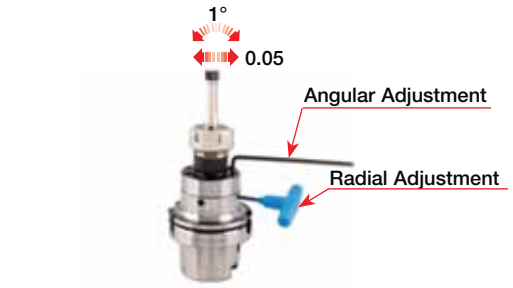
## BT MAS FINEFIT

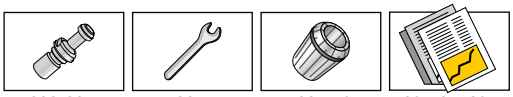
**ADJ BT-ER**
DIN 6499 ER Collet Chucks
with Center Alignment and BT
MAS-403 ADB Tapered Shanks




| Designation | SS | CSI | DCONNWS(1) | DCONXWS(2) | LPR | LBX | LB_2 | LB | BD | BD_2 | BD_3 | THID | CRKS | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADJ BT40 D70 ER32 | 40 | ER32 | 2.0 | 20.0 | 129.50 | 102.5 | 92.50 | 52.50 | 50.00 | 70.00 | 62.50 | M22X1.5 | M16 | 2.56 |
| ADJ BT50 D70 ER32 | 50 | ER32 | 2.0 | 20.0 | 144.50 | 106.5 | 106.50 | 52.50 | 50.00 | 70.00 | 70.00 | M22X1.5 | M24 | 5.90 |

• Radial adjustment 0.05 mm, Angular adjustment 1° • Add B to the designation for coolant through flange option.
(1) Minimum diameter
(2) Maximum diameter



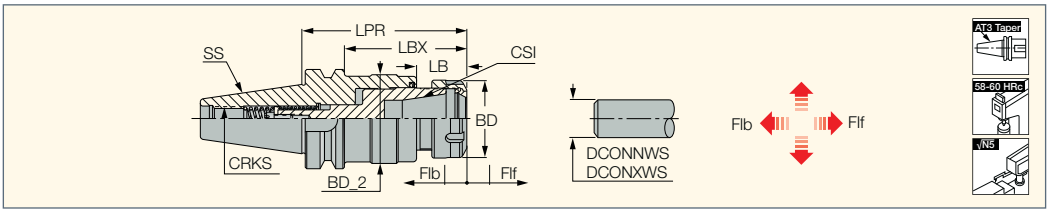


802-805 807 766-773 763-765, 635

### Spare Parts

| Designation | |
|---|---|
| ADJ BT-ER | ADJ ER32 NOSE |

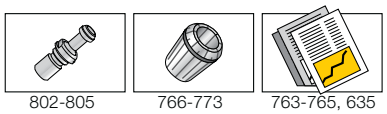
## BT MAS GTI

**GTI BT-ER (tapping)**
DIN 6499 ER Tapping
Attachments with BT MAS-403 A
Tapered Shanks




| Designation | SS | CSI | Tap min | Tap max | DCONNWS(1) | DCONXWS(2) | LPR | LBX | LB | BD | BD_2 | Flf | Flb | CRKS | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GTI BT40 ER16 | 40 | ER16 | M3 | M10 | 0.5 | 10.0 | 84.20 | 52.7 | 24.60 | 28.00 | 29.50 | 8.0 | 3.0 | M16 | 0 | 1.17 |
| GTI BT40 ER32 | 40 | ER32 | M6 | M20 | 2.0 | 20.0 | 106.80 | 79.8 | 33.00 | 50.00 | 56.50 | 9.0 | 4.0 | M16 | 0 | 2.52 |
| GTI BT40 ER40 | 40 | ER40 | M6 | M28 | 3.0 | 26.0 | 124.80 | 97.8 | 51.00 | 63.00 | 56.50 | 9.0 | 4.0 | M16 | 0 | 2.24 |
| GTI BT50 ER16 | 50 | ER16 | M3 | M10 | 0.5 | 10.0 | 106.80 | 68.8 | 24.60 | 28.00 | 29.50 | 8.0 | 3.0 | M24 | 0 | 3.85 |
| GTI BT50 ER32 | 50 | ER32 | M6 | M20 | 2.0 | 20.0 | 114.20 | 77.2 | 33.00 | 50.00 | 56.50 | 9.0 | 4.0 | M24 | 0 | 2.28 |
| GTI BT50 ER40 | 50 | ER40 | M6 | M28 | 3.0 | 26.0 | 133.20 | 95.2 | 51.00 | 63.00 | 56.50 | 9.0 | 4.0 | M24 | 0 | 2.28 |

(1) Minimum diameter
(2) Maximum diameter
(3) 1 - Slot for data chip, 0 - Without slot for data chip


802-805 766-773 763-765, 635

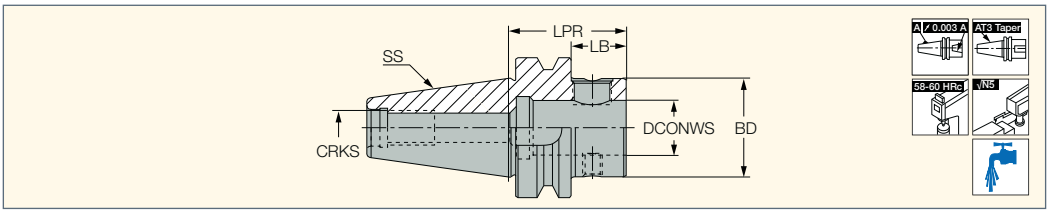
### Spare Parts

| Designation | | |
|---|---|---|
| GTI BT40 ER16 | NUT ER16 TOP | WRENCH ER16* |
| GTI BT40 ER32 | NUT ER32 TOP | WRENCH ER32* |
| GTI BT40 ER40 | NUT ER40 TOP | WRENCH ER40* |
| GTI BT50 ER16 | NUT ER16 TOP | WRENCH ER16* |
| GTI BT50 ER32 | NUT ER32 TOP | WRENCH ER32* |
| GTI BT50 ER40 | NUT ER40 TOP | WRENCH ER40* |

* Optional, to be ordered separately

## BT MAS CLICKFIT

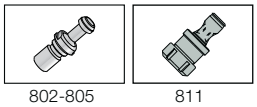
**BT-CF (CLICK-FIT)**
Modular System Connections
with BT MAS-403 AD
Tapered Shanks




| Designation | SS | DCONWS | LPR | LB | BD | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|
| BT40 CF4-L | 40 | 25.00 | 110.00 | 83.0 | 44.50 | M16 | 0 | 1.74 |
| BT40 CF4-S | 40 | 25.00 | 52.00 | 25.0 | 44.50 | M16 | 0 | 1.08 |
| BT50 CF4-L | 50 | 25.00 | 115.00 | 77.0 | 44.50 | M24 | 0 | 1.20 |
| BT50 CF4-S | 50 | 25.00 | 63.00 | 25.0 | 44.50 | M24 | 0 | 3.71 |

- Tightening torque: 6 Kgxm

(1) 1 - Slot for data chip, 0 - Without slot for data chip

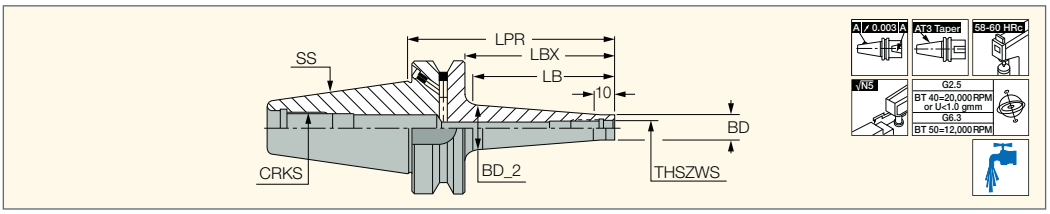

802-805 811

### Spare Parts

| Designation | | |
|---|---|---|
| BT-CF (CLICK-FIT) | SCREW M16X1.5 FOR CF4 | WRENCH HW 8 200X36 DIN911 |

## BT MAS FLEXFIT

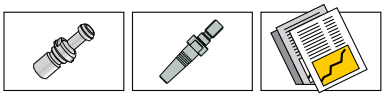
**BT-ODP (FLEX-FIT)**
FLEX-FIT Threaded Adaptation with Integral BT MAS-403 Tapered Shanks (ADB type)




| Designation | SS | THSZWS | BD | BD_2 | LPR | LBX | LB | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **BT40 ODP 6X 66** | 40 | M06 | 9.80 | 13.00 | 66.00 | 39.0 | 30.00 | M16 | 0 | 0.98 |
| **BT40 ODP 6X106** | 40 | M06 | 9.80 | 23.00 | 106.00 | 79.0 | 70.00 | M16 | 0 | 0.14 |
| **BT40 ODP 8X 66** | 40 | M08 | 13.00 | 15.00 | 66.00 | 30.0 | 30.00 | M16 | 0 | 0.99 |
| **BT40 ODP10X 66** | 40 | M10 | 18.00 | 20.00 | 66.00 | 30.0 | 30.00 | M16 | 0 | 1.03 |
| **BT40 ODP10X106** | 40 | M10 | 18.00 | 28.00 | 106.00 | 79.0 | 70.00 | M16 | 0 | 1.24 |
| **BT40 ODP12X 66** | 40 | M12 | 21.00 | 24.00 | 66.00 | 39.0 | 30.00 | M16 | 0 | 1.05 |
| **BT40 ODP12X106** | 40 | M12 | 21.00 | 31.00 | 106.00 | 79.0 | 70.00 | M16 | 0 | 1.23 |
| **BT40 ODP16X 66** | 40 | M16 | 29.00 | 28.60 | 66.00 | 39.0 | 35.00 | M16 | 0 | 1.06 |
| **BT40 ODP16X106** | 40 | M16 | 29.00 | 34.00 | 106.00 | 79.0 | 70.00 | M16 | 0 | 1.32 |
| **BT50 ODP 12X 94** | 50 | M12 | 23.00 | 30.00 | 94.00 | 56.0 | 50.00 | M24 | 0 | 3.85 |
| **BT50 ODP 12X144** | 50 | M12 | 23.00 | 40.00 | 144.00 | 106.0 | 100.00 | M24 | 0 | 4.27 |
| **BT50 ODP 12X194** | 50 | M12 | 23.00 | 40.00 | 194.00 | 156.0 | 150.00 | M24 | 0 | 4.61 |
| **BT50 ODP 16X 94** | 50 | M16 | 29.00 | 34.00 | 94.00 | 56.0 | 50.00 | M24 | 0 | 3.75 |
| **BT50 ODP 16X144** | 50 | M16 | 29.00 | 40.00 | 144.00 | 106.0 | 100.00 | M24 | 0 | 4.19 |
| **BT50 ODP 16X194** | 50 | M16 | 29.00 | 55.00 | 194.00 | 156.0 | 150.00 | M24 | 0 | 5.27 |
| **BT50 ODP 16X244** | 50 | M16 | 29.00 | 60.00 | 244.00 | 206.0 | 200.00 | M24 | 0 | 5.60 |

- The coolant passages in the B-type flange are blocked with screws which can be removed when required.

(1) 1 - Slot for data chip, 0 - Without slot for data chip

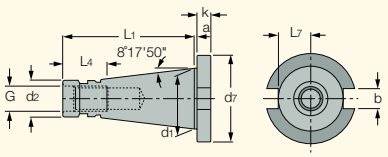


802-805 747-749 746

# DIN2080

## *DIN2080*

**DIN2080-ER**



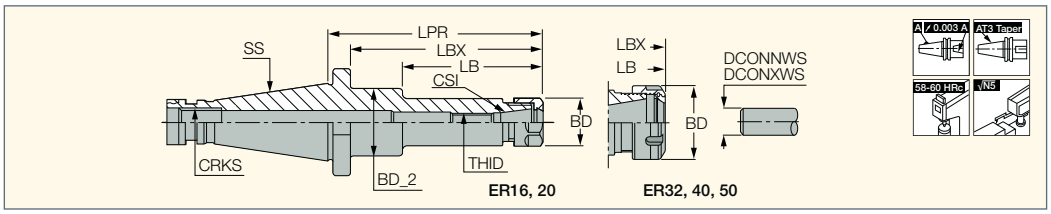

| Shank | $a^{\pm 0.2}$ | b (H12) | d1 | d2 | G | d7 | $K^{\pm 0.15}$ |
|---|---|---|---|---|---|---|---|
| SK 30 | 1.6 | 16.1 | 31.75 | 17.4 | M12 | 50 | 8 |
| SK 40 | 1.6 | 16.1 | 44.45 | 25.3 | M16 | 63 | 10 |
| SK 50 | 3.2 | 25.7 | 69.85 | 39.6 | M24 | 97.5 | 12 |

| Shank | L1 | L4 | L7 MAX | Taper AT3 |
|---|---|---|---|---|
| SK 30 | 68.4 | 24 | 16.2 | 0.002 |
| SK 40 | 93.4 | 32 | 22.5 | 0.003 |
| SK 50 | 126.8 | 47 | 35.3 | 0.004 |

## *DIN2080*

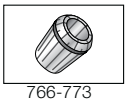
### DIN2080-ER

DIN 6499 ER Collet Chucks with
DIN 2080 AD Tapered Shanks




| Designation | SS | CSI | DCONNWS(1) | DCONXWS(2) | LPR | LBX | LB | BD | BD_2 | THID | CRKS | DCP(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN2080 30 ER16X 75 | 30 | ER16 | 0.5 | 10.0 | 75.00 | 65.4 | - | 28.00 | - | M10 | M12 | 0 | 0.48 |
| DIN2080 30 ER32X 55 | 30 | ER32 | 2.0 | 20.0 | 55.00 | 45.4 | - | 50.00 | - | M18X1.5 | M12 | 0 | 0.36 |
| DIN2080 30 ER40X 83 | 30 | ER40 | 3.0 | 26.0 | 83.00 | 69.4 | - | 63.00 | - | M22X1.5 | M12 | 0 | 0.79 |
| DIN2080 40 ER16X100 | 40 | ER16 | 0.5 | 10.0 | 100.00 | 88.4 | - | 28.00 | - | M12 | M16 | 0 | 0.99 |
| DIN2080 40 ER16X63 | 40 | ER16 | 0.5 | 10.0 | 63.00 | 51.4 | - | 28.00 | - | M12 | M16 | 0 | 0.85 |
| DIN2080 40 ER20X100 | 40 | ER20 | 1.0 | 13.0 | 100.00 | 88.4 | - | 34.00 | - | M12 | M16 | 0 | 1.12 |
| DIN2080 40 ER25X 50 | 40 | ER25 | 1.0 | 16.0 | 50.00 | 38.4 | - | 42.00 | - | M16X1.5 | M16 | 0 | 0.82 |
| DIN2080 40 ER25X 90 | 40 | ER25 | 1.0 | 16.0 | 90.00 | 78.4 | - | 42.00 | - | M16X1.5 | M16 | 0 | 1.21 |
| DIN2080 40 ER32X 50 | 40 | ER32 | 2.0 | 20.0 | 50.00 | 38.4 | - | 50.00 | - | M22X1.5 | M16 | 0 | 0.73 |
| DIN2080 40 ER40X 55 | 40 | ER40 | 3.0 | 26.0 | 55.00 | 43.4 | - | 63.00 | - | M22X1.5 | M16 | 0 | 0.80 |
| DIN2080 50 ER20X100 | 50 | ER20 | 1.0 | 13.0 | 100.00 | 84.8 | - | 34.00 | - | M16 | M24 | 0 | 2.89 |
| DIN2080 50 ER20X160 | 50 | ER20 | 1.0 | 13.0 | 160.00 | 144.8 | - | 34.00 | - | M12 | M24 | 0 | 3.30 |
| DIN2080 50 ER40X 58 | 50 | ER40 | 3.0 | 26.0 | 58.00 | 42.8 | - | 63.00 | - | M28X1.5 | M24 | 0 | 2.51 |
| DIN2080 50 ER50X 63 | 50 | ER50 | 10.0 | 34.0 | 63.00 | 47.8 | - | 78.00 | - | M36X1.5 | M24 | 0 | 2.40 |

(1) Minimum diameter
(2) Maximum diameter
(3) 1 - Slot for data chip, 0 - Without slot for data chip


766-773

### Spare Parts

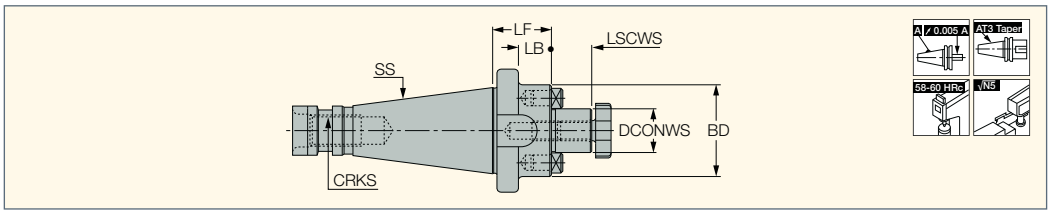
| Designation | | | | |
|---|---|---|---|---|
| DIN2080 30 ER16X 75 | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 10X1.5* | |
| DIN2080 30 ER32X 55 | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 18X1.5* | PRESET ER-JET 18X1.5L* |
| DIN2080 30 ER40X 83 | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| DIN2080 40 ER16X100 | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| DIN2080 40 ER16X63 | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| DIN2080 40 ER20X100 | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| DIN2080 40 ER25X 50 | | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| DIN2080 40 ER32X 50 | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| DIN2080 40 ER40X 55 | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| DIN2080 50 ER20X100 | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| DIN2080 50 ER20X160 | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| DIN2080 50 ER40X 58 | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | |
| DIN2080 50 ER50X 63 | NUT ER50 UM | WRENCH ER50* | | |

* Optional, to be ordered separately

## *DIN2080*

### DIN2080-SEM

DIN 3937 Shell Mill Holders with
DIN 2080 A Tapered Shanks




| Designation | SS | DCONWS | LSCWS | LF | LB | BD | CRKS | DCP(1) | kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN2080 30 SEM 22X 28 | 30 | 22.00 | 19.00 | 28.00 | 18.4 | 47.00 | M12 | 0 | 0.57 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* |
| DIN2080 40 SEM 16X 28 | 40 | 16.00 | 17.00 | 28.00 | 16.4 | 38.00 | M16 | 0 | 0.87 | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* |
| DIN2080 40 SEM 22X 27 | 40 | 22.00 | 19.00 | 27.00 | 15.4 | 47.00 | M16 | 0 | 0.94 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* |
| DIN2080 40 SEM 27X 26 | 40 | 27.00 | 21.00 | 26.00 | 14.4 | 58.00 | M16 | 0 | 1.08 | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* |
| DIN2080 40 SEM 32X 23 | 40 | 32.00 | 24.00 | 23.00 | 11.4 | 66.00 | M16 | 0 | 1.05 | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* |
| DIN2080 40 SEM 40X 34 | 40 | 40.00 | 27.00 | 34.00 | 22.4 | 82.00 | M16 | 0 | 1.65 | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* |
| DIN2080 50 SEM 16X 38 | 50 | 16.00 | 17.00 | 38.00 | 22.8 | 38.00 | M24 | 0 | 2.92 | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* |
| DIN2080 50 SEM 22X 38 | 50 | 22.00 | 19.00 | 38.00 | 22.8 | 47.00 | M24 | 0 | 2.90 | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* |
| DIN2080 50 SEM 27X 38 | 50 | 27.00 | 21.00 | 38.00 | 22.8 | 58.00 | M24 | 0 | 3.00 | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* |
| DIN2080 50 SEM 32X 36 | 50 | 32.00 | 24.00 | 36.00 | 20.8 | 66.00 | M24 | 0 | 3.28 | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* |
| DIN2080 50 SEM 40X 40 | 50 | 40.00 | 27.00 | 40.00 | 24.8 | 82.00 | M24 | 0 | 3.76 | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* |

• For internal coolant through the holder, the related COOLANT SET should be ordered via Accessories (applicable to certain tools only)
(1) 1 - Slot for data chip, 0 - Without slot for data chip
* Optional, to be ordered separately

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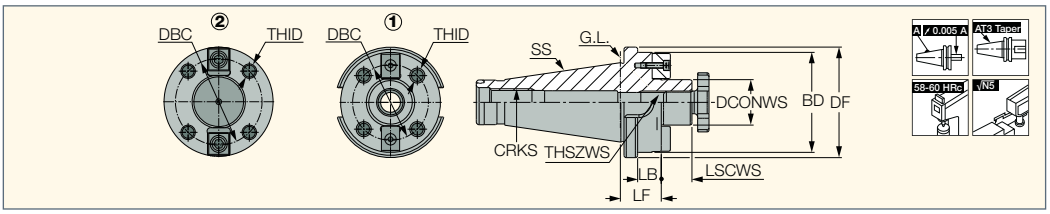
## *DIN2080*

**DIN2080-FM**
DIN6357 Face Mill Holders with DIN2080 A Tapered Shanks




| Designation | SS | DCONWS | LSCWS | LF | LB | DF | DBC | BD | THSZWS | THID | CRKS | Fig. | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN2080 50 FM 40 | 50 | 40.00 | 27.00 | 36.00 | 20.8 | 97.30 | 66.70 | 88.00 | M20 | M12 | M24 | 1. | 0 | 3.61 |
| DIN2080 50 FM 60 | 50 | 60.00 | 40.00 | 36.00 | - | 128.00 | 101.60 | - | - | M16 | M24 | 2. | 0 | 5.60 |

- Peripheral clamping screws are not supplied.

(1) 1 - Slot for data chip, 0 - Without slot for data chip

808-809

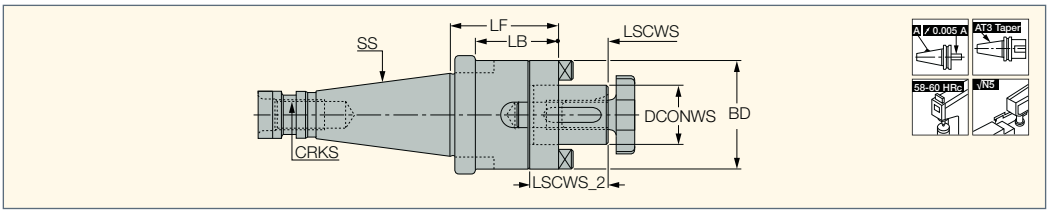
### Spare Parts

| Designation | | | |
|---|---|---|---|
| DIN2080 50 FM 40 | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | DR. DOG 16 E |
| DIN2080 50 FM 60 | | | DR. DOG 1E |

* Optional, to be ordered separately

## *DIN2080*

**DIN2080-SEMC**
DIN6358 COMBI Shell Mill Holders with DIN2080 A Tapered Shanks




| Designation | SS | DCONWS | LSCWS | LF | LB | LSCWS_2 | BD | CRKS | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| DIN2080 40 SEMC 22X 52 | 40 | 22.00 | 19.00 | 52.00 | 40.4 | 31.00 | 40.00 | M16 | 0 | 1.01 |
| DIN2080 40 SEMC 27X 52 | 40 | 27.00 | 21.00 | 52.00 | 40.4 | 33.00 | 48.00 | M16 | 0 | 1.26 |
| DIN2080 40 SEMC 32X 52 | 40 | 32.00 | 24.00 | 52.00 | 40.4 | 38.00 | 58.00 | M16 | 0 | 1.42 |
| DIN2080 40 SEMC 40X 52 | 40 | 40.00 | 27.00 | 52.00 | 40.4 | 41.00 | 70.00 | M16 | 0 | 1.76 |
| DIN2080 50 SEMC 16X 55 | 50 | 16.00 | 17.00 | 55.00 | 39.8 | 27.00 | 32.00 | M24 | 0 | 2.89 |
| DIN2080 50 SEMC 22X 55 | 50 | 22.00 | 19.00 | 55.00 | 39.8 | 31.00 | 40.00 | M24 | 0 | 3.12 |
| DIN2080 50 SEMC 27X 55 | 50 | 27.00 | 21.00 | 55.00 | 39.8 | 33.00 | 48.00 | M24 | 0 | 3.13 |
| DIN2080 50 SEMC 32X 55 | 50 | 32.00 | 24.00 | 55.00 | 39.8 | 38.00 | 58.00 | M24 | 0 | 3.35 |
| DIN2080 50 SEMC 50X 55 | 50 | 50.00 | 30.00 | 55.00 | 39.8 | 46.00 | 90.00 | M24 | 0 | 4.18 |

- For internal coolant through the holder, the related COOLANT SET should be ordered via Accessories (applicable to certain tools only)

(1) 1 - Slot for data chip, 0 - Without slot for data chip

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### Spare Parts

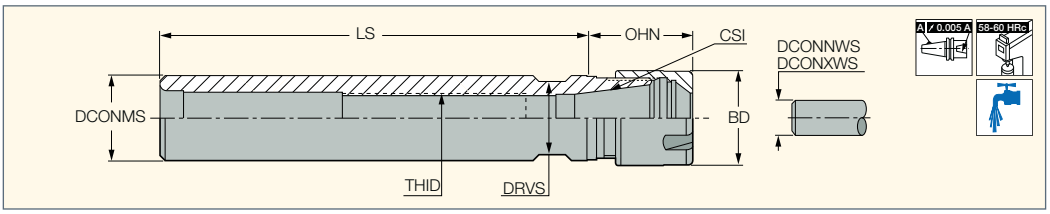
| Designation | | | | |
|---|---|---|---|---|
| DIN2080 40 SEMC 22X 52 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | KEY SEMC 22 6X6X25 |
| DIN2080 40 SEMC 27X 52 | 27 D.RING SEMC | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | KEY SEMC 27 7X7X25 |
| DIN2080 40 SEMC 32X 52 | 32 D.RING SEMC | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | KEY SEMC 32 8X7X28 |
| DIN2080 40 SEMC 40X 52 | 40 D.RING SEMC | M20 CLAMP SCREW SEM40 | WRENCH M20 SEMC 40* | KEY SEMC 40 10X8X32 |
| DIN2080 50 SEMC 16X 55 | 16 D.RING SEMC | M8 CLAMP SCREW SEM16 | WRENCH M8 SEMC16* | KEY SEMC 16 4X4X20 |
| DIN2080 50 SEMC 22X 55 | 22 D.RING SEMC | M10 CLAMP SCREW SEM22 | WRENCH M10 SEMC 22* | KEY SEMC 22 6X6X25 |
| DIN2080 50 SEMC 27X 55 | 27 D.RING SEMC | M12 CLAMP SCREW SEM27 | WRENCH M12 SEMC 27* | KEY SEMC 27 7X7X25 |
| DIN2080 50 SEMC 32X 55 | 32 D.RING SEMC | M16 CLAMP SCREW SEM32 | WRENCH M16 SEMC 32* | KEY SEMC 32 8X7X28 |
| DIN2080 50 SEMC 50X 55 | 50 D.RING SEMC | M24 CLAMP SCREW SEM50 | WRENCH M24 SEMC 50* | KEY SEMC 50 12X8X36 |

* Optional, to be ordered separately

# STRAIGHT SHANKS

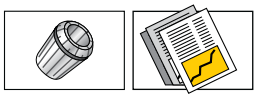
## *Straight Shank*

**ST-ER-M (mini)**
DIN 6499 ER Mini Collet Chucks with Cylindrical Shanks




| Designation | DCONMS | CSI | DCONNWS(1) | DCONXWS(2) | LS | OHN(3) | THID | BD | DRVS(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| ST 12X 80 ER11 M | 12.00 | ER11 | 0.5 | 7.0 | 80.00 | 26.50 | - | 16.00 | 11.0 | 0.06 |
| ST 16X100 ER11 M | 16.00 | ER11 | 0.5 | 7.0 | 100.00 | 18.50 | M8 | 16.00 | 13.0 | 0.10 |
| ST 16X150 ER11 M | 16.00 | ER11 | 0.5 | 7.0 | 150.00 | 18.50 | M8 | 16.00 | 13.0 | 0.19 |
| ST 12X 80 ER16 M | 12.00 | ER16 | 0.5 | 10.0 | 80.00 | 36.50 | - | 22.00 | 17.0 | 0.13 |
| ST 20X100 ER16 M | 20.00 | ER16 | 0.5 | 10.0 | 100.00 | 25.00 | M12 | 22.00 | 17.0 | 0.21 |
| ST 20X150 ER16 M | 20.00 | ER16 | 0.5 | 10.0 | 150.00 | 25.00 | M12 | 22.00 | 17.0 | 0.29 |
| ST 20X100 ER20 M | 20.00 | ER20 | 1.0 | 13.0 | 100.00 | 40.00 | M12 | 28.00 | 21.0 | 0.27 |
| ST 20X150 ER20 M | 20.00 | ER20 | 1.0 | 13.0 | 150.00 | 40.00 | M12 | 28.00 | 21.0 | 0.31 |

(1) Minimum diameter
(2) Maximum diameter
(3) Minimum overhang
(4) Torque key size



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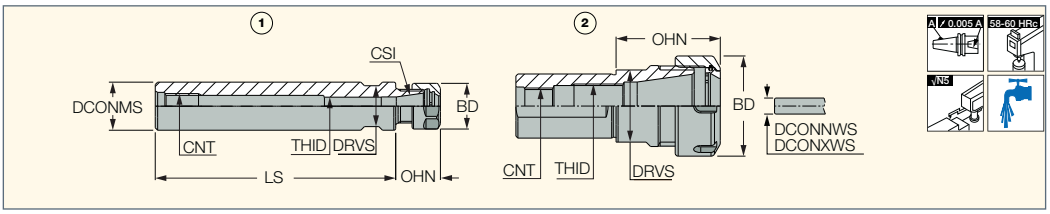
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| ST 12X 80 ER11 M | NUT ER11 MINI | WRENCH ER11 MINI | | |
| ST 16X100 ER11 M | NUT ER11 MINI | WRENCH ER11 MINI* | PRESET ER-JET 8X1.25* | |
| ST 16X150 ER11 M | NUT ER11 MINI | WRENCH ER11 MINI* | PRESET ER-JET 8X1.25* | |
| ST 12X 80 ER16 M | NUT ER16 MINI | WRENCH ER16 MINI* | | |
| ST 20X100 ER16 M | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| ST 20X150 ER16 M | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| ST 20X100 ER20 M | NUT ER20 MINI | WRENCH ER20 MINI* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| ST 20X150 ER20 M | NUT ER20 MINI | WRENCH ER20 MINI* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |

* Optional, should be ordered separately

## *Straight Shank*

**ST-ER**
DIN 6499 ER Collet Chucks
with Straight Shanks



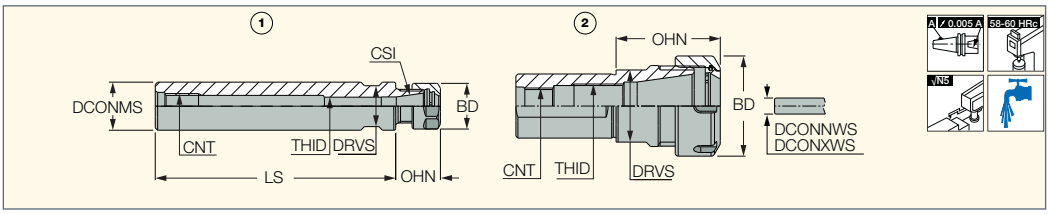

| Designation | DCONMS | CSI | DCONNWS(1) | DCONXWS(2) | LS | OHN(3) | CNT | THID | BD | DRVS(4) | Fig. | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ST 16X 50 ER11 F** | 16.00 | ER11 | 0.50 | 7.00 | 50.0 | 18.5 | G1/8 | M7.5X0.5 | 19.00 | 13.0 | 1. | 0.06 |
| **ST 20X 50 ER11 F** | 20.00 | ER11 | 0.50 | 7.00 | 50.0 | 18.5 | G1/8 | M7.5X0.5 | 19.00 | 17.0 | 1. | 0.10 |
| **ST 20X100 ER11** | 20.00 | ER11 | 0.50 | 7.00 | 100.0 | 18.5 | G1/8 | M7.5X0.5 | 19.00 | 17.0 | 1. | 0.20 |
| **ST 20X150 ER11** | 20.00 | ER11 | 0.50 | 7.00 | 150.0 | 18.5 | - | M10 | 19.00 | 17.0 | 1. | 0.25 |
| **ST 20X 50 ER16 F** | 20.00 | ER16 | 0.50 | 10.00 | 50.0 | 32.3 | - | M12 | 28.00 | 19.0 | 1. | 0.07 |
| **ST 20X100 ER16** | 20.00 | ER16 | 0.50 | 10.00 | 100.0 | 30.0 | - | M12 | 28.00 | 19.0 | 1. | 0.20 |
| **ST 20X100 ER16 F** | 20.00 | ER16 | 0.50 | 10.00 | 100.0 | 30.0 | - | M12 | 28.00 | 19.0 | 1. | 0.20 |
| **ST 20X150 ER16** | 20.00 | ER16 | 0.50 | 10.00 | 150.0 | 30.0 | - | M12 | 28.00 | 19.0 | 1. | 0.28 |
| **ST 20X 50 ER20 F** | 20.00 | ER20 | 1.00 | 13.00 | 50.0 | 42.5 | - | M12 | 34.00 | 22.0 | 1. | 0.15 |
| **ST 25X100 ER20** | 25.00 | ER20 | 1.00 | 13.00 | 100.0 | 36.0 | G1/4 | M14X1 | 34.00 | 22.0 | 1. | 0.30 |
| **ST 25X150 ER20** | 25.00 | ER20 | 1.00 | 13.00 | 150.0 | 36.0 | - | M16 | 34.00 | 22.0 | 1. | 0.39 |
| **ST 20X 50 ER25 F** | 20.00 | ER25 | 1.00 | 16.00 | 50.0 | 46.0 | G1/8 | M14X1 | 42.00 | 28.0 | 2. | 0.21 |
| **ST 20X100 ER25** | 20.00 | ER25 | 1.00 | 16.00 | 100.0 | 46.0 | - | M12 | 42.00 | 28.0 | 2. | 0.29 |
| **ST 20X100 ER25 F** | 20.00 | ER25 | 1.00 | 16.00 | 100.0 | 46.0 | - | M12 | 42.00 | 28.0 | 2. | 0.09 |
| **ST 25X 50 ER25 F** | 25.00 | ER25 | 1.00 | 16.00 | 50.0 | 46.0 | G1/4 | M18X1 | 42.00 | 28.0 | 2. | 0.22 |
| **ST 25X100 ER25** | 25.00 | ER25 | 1.00 | 16.00 | 100.0 | 46.0 | - | M16 | 42.00 | 28.0 | 2. | 0.36 |
| **ST 20X 50 ER32 F** | 20.00 | ER32 | 2.00 | 20.00 | 50.0 | 54.0 | G1/8 | M14X1 | 50.00 | 36.0 | 2. | 0.30 |
| **ST 20X100 ER32** | 20.00 | ER32 | 2.00 | 20.00 | 100.0 | 54.0 | G1/8 | M14X1 | 50.00 | 36.0 | 2. | 0.40 |
| **ST 25X 50 ER32 F** | 25.00 | ER32 | 2.00 | 20.00 | 50.0 | 52.0 | G1/4 | M18X1 | 50.00 | 36.0 | 2. | 0.32 |
| **ST 30X 50 ER32 F** | 30.00 | ER32 | 2.00 | 20.00 | 50.0 | 52.0 | G1/4 | M22X1.5 | 50.00 | 36.0 | 2. | 0.39 |
| **ST 32X 50 ER32 F** | 32.00 | ER32 | 2.00 | 20.00 | 50.0 | 52.0 | G1/4 | M22X1.5 | 50.00 | 36.0 | 2. | 0.42 |
| **ST 32X150 ER32** | 32.00 | ER32 | 2.00 | 20.00 | 150.0 | 52.0 | G1/4 | M22X1.5 | 50.00 | 36.0 | 2. | 0.88 |
| **ST 40X 75 ER32 F** | 40.00 | ER32 | 2.00 | 20.00 | 75.0 | 46.0 | - | M22X1.5 | 50.00 | 44.0 | 2. | 0.72 |
| **ST 25X 50 ER40 F** | 25.00 | ER40 | 3.00 | 26.00 | 50.0 | 60.0 | - | M16X2 | 63.00 | 45.0 | 2. | 0.52 |
| **ST 30X 50 ER40 F** | 30.00 | ER40 | 3.00 | 26.00 | 50.0 | 60.0 | - | M18X1.5 | 63.00 | 45.0 | 2. | 0.57 |
| **ST 32X 50 ER40 F** | 32.00 | ER40 | 3.00 | 26.00 | 50.0 | 60.0 | - | M18X1.5 | 63.00 | 45.0 | 2. | 0.60 |
| **ST 40X 75 ER40 F** | 40.00 | ER40 | 3.00 | 26.00 | 75.0 | 55.0 | - | M22X1.5 | 63.00 | 45.0 | 2. | 0.84 |
| **ST 50X 80 ER40 F** | 50.00 | ER40 | 3.00 | 26.00 | 80.0 | 60.0 | - | M28X1.5 | 63.00 | 54.0 | 2. | 1.30 |
| **ST 50X 80 ER50 F** | 50.00 | ER50 | 10.00 | 34.00 | 80.0 | 77.0 | - | M36X1.5 | 78.00 | 58.0 | 2. | 1.32 |

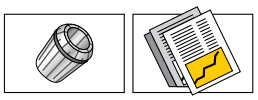
(1) Minimum diameter
(2) Maximum diameter
(3) Minimum overhang
(4) Torque key size

Continued

## *Straight Shank*

**ST-ER**
DIN 6499 ER Collet Chucks
with Straight Shanks



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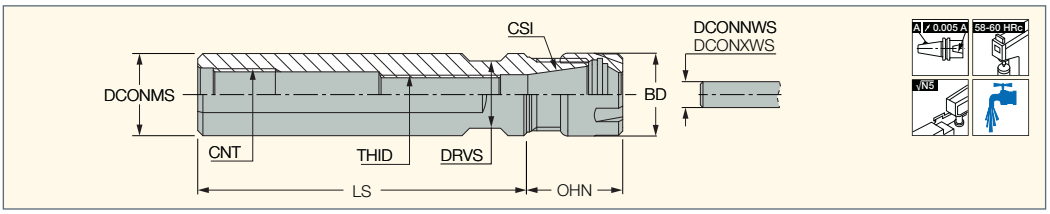
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| **ST 16X 50 ER11 F** | NUT ER11 UM | WRENCH ER11* | PRESET ER-JET 8X1.25* | |
| **ST 20X 50 ER11 F** | NUT ER11 UM | WRENCH ER11* | PRESET ER-JET 10X1.5* | |
| **ST 20X100 ER11** | NUT ER11 UM | WRENCH ER11* | PRESET ER-JET 10X1.5* | |
| **ST 20X150 ER11** | NUT ER11 UM | WRENCH ER11* | PRESET ER-JET 10X1.5* | |
| **ST 20X 50 ER16 F** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **ST 20X100 ER16** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **ST 20X100 ER16 F** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **ST 20X150 ER16** | NUT ER16 TOP | WRENCH ER16* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **ST 20X 50 ER20 F** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **ST 25X100 ER20** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **ST 25X150 ER20** | NUT ER20 TOP | WRENCH ER20* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **ST 20X 50 ER25 F** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **ST 20X100 ER25** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **ST 20X100 ER25 F** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **ST 25X 50 ER25 F** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **ST 25X100 ER25** | NUT ER25 TOP | WRENCH ER25* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **ST 20X 50 ER32 F** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **ST 20X100 ER32** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 12X1.75* | PRESET ER-JET 12X1.75L* |
| **ST 25X 50 ER32 F** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **ST 30X 50 ER32 F** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 18X1.5* | PRESET ER-JET 18X1.5L* |
| **ST 32X 50 ER32 F** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 18X1.5* | PRESET ER-JET 18X1.5L* |
| **ST 32X150 ER32** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 18X1.5* | PRESET ER-JET 18X1.5L* |
| **ST 40X 75 ER32 F** | NUT ER32 TOP | WRENCH ER32* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| **ST 25X 50 ER40 F** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 16X2* | PRESET ER-JET 16X2L* |
| **ST 30X 50 ER40 F** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 18X1.5* | PRESET ER-JET 18X1.5L* |
| **ST 32X 50 ER40 F** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 18X1.5* | PRESET ER-JET 18X1.5L* |
| **ST 40X 75 ER40 F** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 22X1.5* | PRESET ER-JET 22X1.5L* |
| **ST 50X 80 ER40 F** | NUT ER40 TOP | WRENCH ER40* | PRESET ER-JET 28X1.5* | |
| **ST 50X 80 ER50 F** | NUT ER50 UM | WRENCH ER50* | | |

* Optional, to be ordered separately

## *Straight Shank*

**ST-ER-MF (mini flat)**
DIN 6499 ER Mini Collet Chucks with Cylindrical Shanks and a Clamping Flat for Swiss-Type CNC Lathes




| Designation | DCONMS | CSI | LS | DCONNWS(6) | DCONXWS(7) | OHN(8) | CNT | THID | BD | DRVS(9) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ST 16X 38 ER11 MF (1) | 16.00 | ER11 | 38.00 | 0.5 | 7.0 | 18.50 | - | M8X1 | 16.00 | 14.0 | 0.05 |
| ST 16X 50 ER11 MF | 16.00 | ER11 | 50.00 | 0.5 | 7.0 | 18.50 | G1/8 | M7.5X0.5 | 16.00 | 13.0 | 0.07 |
| ST 16X140 ER11 MF | 16.00 | ER11 | 140.00 | 0.5 | 7.0 | 18.50 | G1/8 | M7.5X0.5 | 16.00 | 14.0 | 0.18 |
| ST 16X 35 ER16 MF (1) | 16.00 | ER16 | 35.00 | 0.5 | 10.0 | 36.00 | - | M8X1 | 22.00 | 17.0 | 0.08 |
| ST 20X 50 ER16 MF (2) | 20.00 | ER16 | 50.00 | 0.5 | 10.0 | 26.00 | G1/8 | M11X1 | 22.00 | 17.0 | 0.10 |
| ST 20X 70 ER16 MF (2) | 20.00 | ER16 | 70.00 | 0.5 | 10.0 | 26.00 | G1/8 | M11X1 | 22.00 | 17.0 | 0.17 |
| ST 20X120 ER16 MF (2) | 20.00 | ER16 | 120.00 | 0.5 | 10.0 | 26.00 | G1/8 | M11X1 | 22.00 | 17.0 | 0.19 |
| ST 20X140 ER16 MF (2) | 20.00 | ER16 | 140.00 | 0.5 | 10.0 | 26.00 | G1/8 | M11X1 | 22.00 | 17.0 | 0.40 |
| ST 22X 38 ER16 MF (1) | 22.00 | ER16 | 38.00 | 0.5 | 10.0 | 26.00 | - | M12X1 | 22.00 | 19.0 | 0.10 |
| ST 22X 70 ER16 MF (1) | 22.00 | ER16 | 70.00 | 0.5 | 10.0 | 26.00 | G1/4 | M11X1 | 22.00 | 19.0 | 0.16 |
| ST 22X100 ER16 MF (1) | 22.00 | ER16 | 100.00 | 0.5 | 10.0 | 28.00 | - | M12X1 | 22.00 | 19.0 | 0.23 |
| ST 22X 80 ER20 MF (1) | 22.00 | ER20 | 80.00 | 1.0 | 13.0 | 39.00 | - | M12X1 | 28.00 | 21.0 | 0.21 |
| ST 22X 70 ER25 MF (1) | 22.00 | ER25 | 70.00 | 1.0 | 16.0 | 47.00 | - | M12X1 | 35.00 | 27.0 | 0.25 |
| ST 25X 65 ER16 MF | 25.00 | ER16 | 65.00 | 0.5 | 10.0 | 28.00 | - | M12X1 | 22.00 | 22.0 | 0.22 |
| ST 25X100 ER20 MF (3) | 25.00 | ER20 | 100.00 | 1.0 | 13.0 | 28.00 | - | M14X1 | 28.00 | 22.0 | 0.15 |
| ST 25X154 ER20 MF (3) | 25.00 | ER20 | 154.00 | 1.0 | 13.0 | 28.00 | - | M14X1 | 28.00 | 22.0 | 0.40 |
| ST 25X 75 ER25 MF (4) | 25.00 | ER25 | 75.00 | 1.0 | 16.0 | 48.00 | - | M14X1 | 35.00 | 27.0 | 0.30 |
| ST 25X145 ER25 MF (3) | 25.00 | ER25 | 145.00 | 1.0 | 16.0 | 36.00 | - | M14X1 | 35.00 | 27.0 | 0.08 |
| ST 32X 70 ER25 MF (5) | 32.00 | ER25 | 70.00 | 1.0 | 16.0 | 30.00 | G1/4 | M18X1 | 35.00 | 27.0 | 0.35 |

(1) For Star machines
(2) For Citizen machines
(3) For Tornos-Bechler machines
(4) For Manurhin machines
(5) For Schutte machines
(6) Minimum diameter
(7) Maximum diameter
(8) Minimum overhang
(9) Torque key size

766-773 763-765, 635

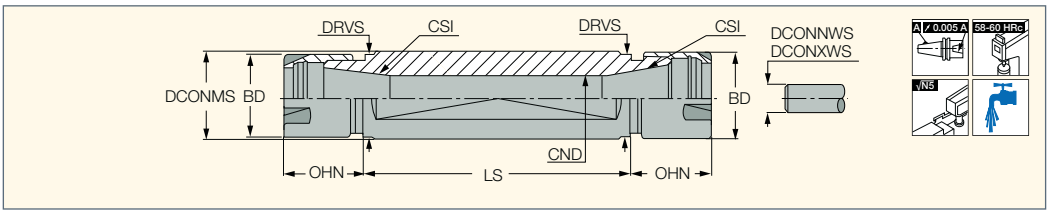
### Spare Parts

| Designation | | | |
|---|---|---|---|
| ST 16X 38 ER11 MF | NUT ER11 MINI | WRENCH ER11 MINI* | PRESET ER-JET 8X1* |
| ST 16X 50 ER11 MF | NUT ER11 MINI | WRENCH ER11 MINI* | PRESET ER-JET 8X1* |
| ST 16X140 ER11 MF | NUT ER11 MINI | WRENCH ER11 MINI* | PRESET ER-JET 8X1* |
| ST 16X 35 ER16 MF | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 8X1* |
| ST 20X 50 ER16 MF | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 12X1* |
| ST 20X 70 ER16 MF | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 12X1* |
| ST 20X120 ER16 MF | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 12X1* |
| ST 20X140 ER16 MF | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 12X1* |
| ST 22X 38 ER16 MF | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 12X1* |
| ST 22X 70 ER16 MF | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 12X1* |
| ST 22X100 ER16 MF | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 12X1* |
| ST 22X 80 ER20 MF | NUT ER20 MINI | WRENCH ER20 MINI* | PRESET ER-JET 12X1* |
| ST 22X 70 ER25 MF | NUT ER25 MINI | WRENCH ER25 MINI* | PRESET ER-JET 12X1* |
| ST 25X 65 ER16 MF | NUT ER16 MINI | WRENCH ER16 MINI* | PRESET ER-JET 12X1* |
| ST 25X100 ER20 MF | NUT ER20 MINI | WRENCH ER20 MINI* | PRESET ER-JET 14X1* |
| ST 25X154 ER20 MF | NUT ER20 MINI | WRENCH ER20 MINI* | PRESET ER-JET 14X1* |
| ST 25X 75 ER25 MF | NUT ER25 MINI | WRENCH ER25 MINI* | PRESET ER-JET 14X1* |
| ST 25X145 ER25 MF | NUT ER25 MINI | WRENCH ER25 MINI* | PRESET ER-JET 14X1* |
| ST 32X 70 ER25 MF | NUT ER25 MINI | WRENCH ER25 MINI* | PRESET ER-JET 18X1* |

* Optional, to be ordered separately

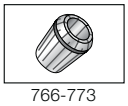
## Straight Shank

**ST-ER-MF-D (double-ended)**
Double-Ended Mini Collets
with Cylindrical Shanks
and a Clamping Flat




| Designation | DCONMS | LS | CSI | DCONNWS(3) | DCONXWS(4) | BD | CND(5) | OHN(6) | DRVS(7) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| ST 16X 50 ER11 MF D | 16.00 | 50.00 | ER11 | 0.5 | 7.0 | 16.00 | 7.5 | 18.50 | 14.0 | 0.07 |
| ST 20X 30 ER11 MF D (1) | 20.00 | 30.00 | ER11 | 0.5 | 7.0 | 16.00 | 7.5 | 18.50 | 17.0 | 0.09 |
| ST 20X 50 ER11 MF D (1) | 20.00 | 50.00 | ER11 | 0.5 | 7.0 | 16.00 | 7.5 | 18.50 | 17.0 | 0.13 |
| ST 20X 55 ER16 MF D (1) | 20.00 | 55.00 | ER16 | 0.5 | 10.0 | 22.00 | 10.5 | 25.00 | 17.0 | 0.12 |
| ST 22X 55 ER16 MF D (2) | 22.00 | 55.00 | ER16 | 0.5 | 10.0 | 22.00 | 10.5 | 28.00 | 19.0 | 0.17 |
| ST 22X 75 ER16 MF D (2) | 22.00 | 75.00 | ER16 | 0.5 | 10.0 | 22.00 | 10.5 | 28.00 | 19.0 | 0.21 |
| ST 25X 62 ER16 MF D | 25.00 | 62.00 | ER16 | 0.5 | 10.0 | 22.00 | 10.5 | 28.00 | 22.0 | 0.23 |
| ST 32X 55 ER20 MF D (2) | 32.00 | 55.00 | ER20 | 1.0 | 13.0 | 28.00 | 13.5 | 28.00 | 27.0 | 0.34 |
| ST 32X 75 ER20 MF D (2) | 32.00 | 75.00 | ER20 | 1.0 | 13.0 | 28.00 | 13.5 | 28.00 | 27.0 | 0.44 |

(1) For Citizen machines
(2) For Star machines
(3) Minimum diameter
(4) Maximum diameter
(5) Coolant entry diameter
(6) Minimum overhang
(7) Torque key size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### Spare Parts

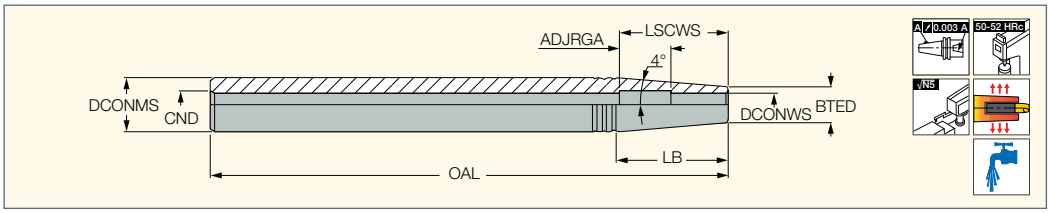
| Designation | | |
|---|---|---|
| ST 16X 50 ER11 MF D | NUT ER11 MINI | WRENCH ER11 MINI* |
| ST 20X 30 ER11 MF D | NUT ER11 MINI | WRENCH ER11 MINI* |
| ST 20X 50 ER11 MF D | NUT ER11 MINI | WRENCH ER11 MINI* |
| ST 20X 55 ER16 MF D | NUT ER16 MINI | WRENCH ER16 MINI* |
| ST 22X 55 ER16 MF D | NUT ER16 MINI | WRENCH ER16 MINI* |
| ST 22X 75 ER16 MF D | NUT ER16 MINI | WRENCH ER16 MINI* |
| ST 25X 62 ER16 MF D | NUT ER16 MINI | WRENCH ER16 MINI* |
| ST 32X 55 ER20 MF D | NUT ER20 MINI | WRENCH ER20 MINI* |
| ST 32X 75 ER20 MF D | NUT ER20 MINI | WRENCH ER20 MINI* |

* Optional, to be ordered separately

## Straight Shank

**SHRINKIN**

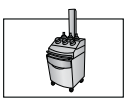
**ST-SRK**
Thermal Chuck Collets
with Cylindrical Shanks




| Designation | DCONWS | DCONMS | BTED | CND(1) | OAL | LB | ADJRGA | LSCWS | kg |
|---|---|---|---|---|---|---|---|---|---|
| ST 12X160 SRK 3 | 3.00 | 12.00 | 10.00 | 4.0 | 160.00 | 14.8 | - | 10.0 | 0.10 |
| ST 16X160 SRK 3 | 3.00 | 16.00 | 10.00 | 6.0 | 160.00 | 43.4 | - | 10.0 | 0.20 |
| ST 12X160 SRK 4 | 4.00 | 12.00 | 10.00 | 4.5 | 160.00 | 14.8 | - | 12.0 | 0.12 |
| ST 16X160 SRK 4 | 4.00 | 16.00 | 10.00 | 6.0 | 160.00 | 43.4 | - | 12.0 | 0.20 |
| ST 16X160 SRK 5 | 5.00 | 16.00 | 10.00 | 6.0 | 160.00 | 43.4 | - | 15.0 | 0.20 |
| ST 20X200 SRK 5 | 5.00 | 20.00 | 10.00 | 6.0 | 200.00 | 72.0 | - | 15.0 | 0.38 |
| ST 16X160 SRK 6 | 6.00 | 16.00 | 11.00 | 6.0 | 160.00 | 36.6 | 17.00 | 35.0 | 0.19 |
| ST 20X200 SRK 6 | 6.00 | 20.00 | 11.00 | 6.0 | 200.00 | 65.2 | 22.00 | 40.0 | 0.30 |
| ST 25X200 SRK 6 | 6.00 | 25.00 | 11.00 | 8.0 | 200.00 | 100.9 | 17.00 | 35.0 | 0.51 |
| ST 20X200 SRK 8 | 8.00 | 20.00 | 14.00 | 6.0 | 200.00 | 43.3 | 15.00 | 40.0 | 0.43 |
| ST 25X200 SRK 8 | 8.00 | 25.00 | 14.00 | 8.0 | 200.00 | 79.0 | 15.00 | 40.0 | 0.58 |
| ST 25X200 SRK10 | 10.00 | 25.00 | 16.00 | 8.0 | 200.00 | 64.3 | 20.00 | 50.0 | 0.61 |
| ST 25X200 SRK12 | 12.00 | 25.00 | 20.00 | 8.0 | 200.00 | 35.5 | 20.00 | 52.0 | 0.19 |

- To be used for carbide tools only.

(1) Coolant entry diameter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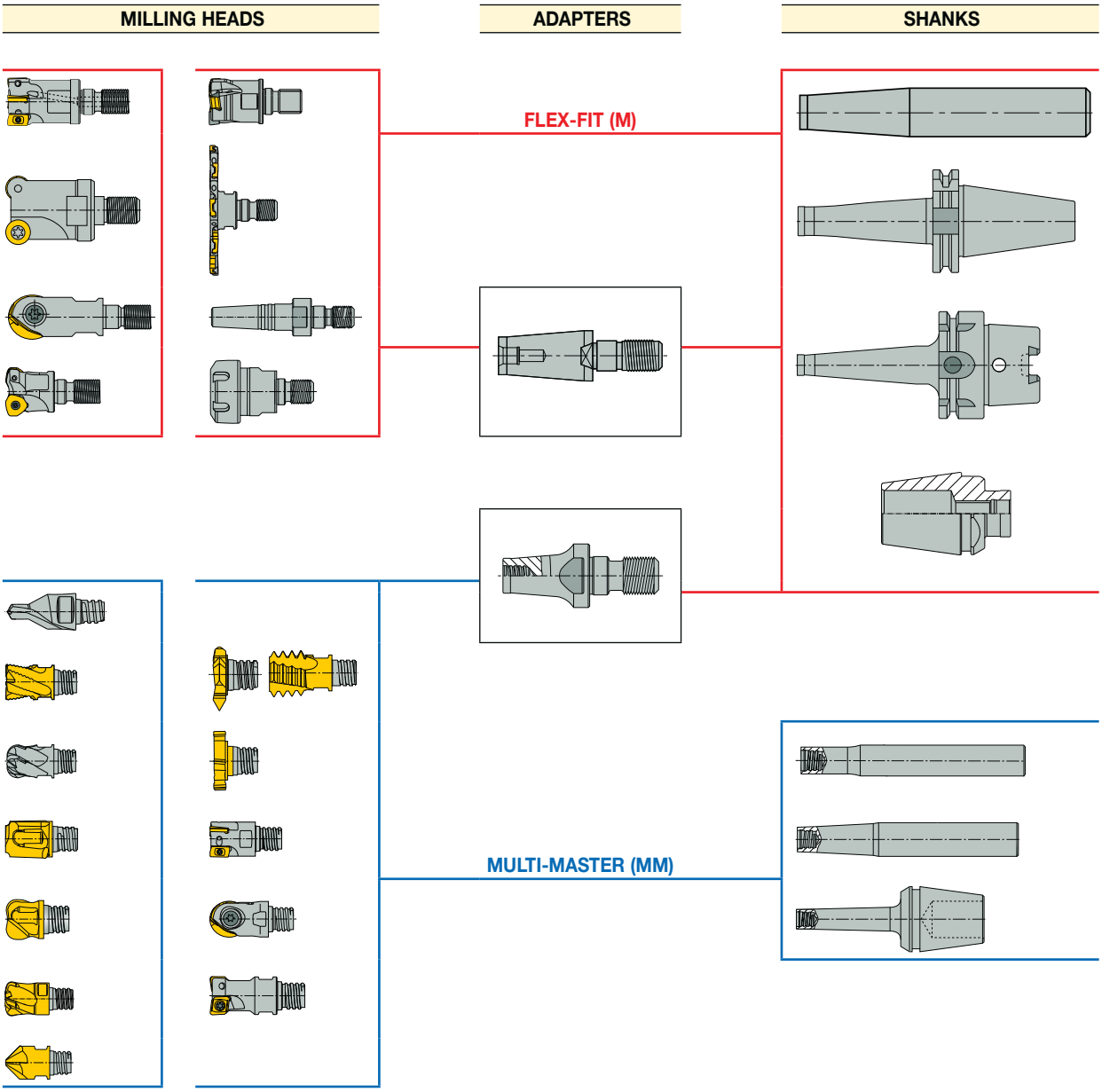
# FLEX-FIT

## MULTI-MASTER and FLEX-FIT Connection Options



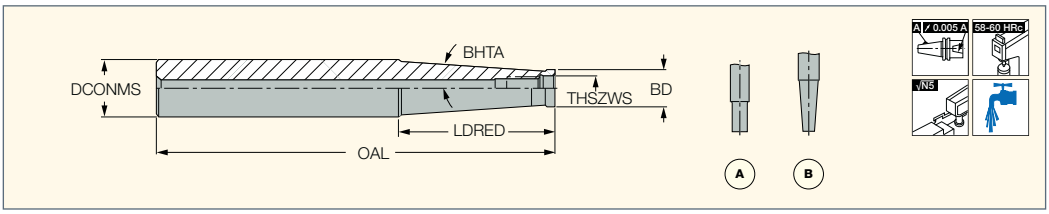

Features

Modular system reduces stock cost by using the same head with different shank options Enables machining with larger overhang. Same head can be mounted on metric and inch combinations.

## Straight Shank

**FLEXFIT**

**S M**
Shanks for Tools with
FLEX-FIT Threaded Connection




| Designation | OAL | LDRED | DCONMS | Shank | BD | BHTA | THSZWS | Type | kg |
|---|---|---|---|---|---|---|---|---|---|
| S M06-L60 C10 | 60.00 | 20.0 | 10.00 | C | 9.70 | - | M06 | A | 0.03 |
| S M06-L105-C12 | 105.00 | 60.0 | 12.00 | C | 9.70 | 1.2 | M06 | B | 0.06 |
| S M06-L125-C16 | 125.00 | 60.0 | 16.00 | C | 9.70 | 3.3 | M06 | B | 0.13 |
| S M08-L73 C16 | 73.00 | 25.0 | 16.00 | C | 13.00 | - | M08 | A | 0.09 |
| S M08-L128-C16 | 128.00 | 80.0 | 16.00 | C | 13.00 | 0.9 | M08 | B | 0.15 |
| S M08-L170-C20 | 170.00 | 66.8 | 20.00 | C | 13.00 | 3.3 | M08 | B | 0.33 |
| S M10-L80 C20 | 80.00 | 30.0 | 20.00 | C | 18.00 | - | M10 | A | 0.16 |
| S M10-L130-C20 | 130.00 | 80.0 | 20.00 | C | 18.00 | 0.6 | M10 | B | 0.25 |
| S M10-L200-C25 | 200.00 | 57.2 | 25.00 | C | 19.00 | 3.3 | M10 | B | 0.65 |
| S M12-L86-C25 | 86.00 | 30.0 | 25.00 | C | 21.00 | 5.1 | M12 | A | 0.27 |
| S M12-L200-C32 | 200.00 | 78.0 | 32.00 | C | 21.00 | 4.4 | M12 | B | 1.02 |
| S M16-L95-C32 | 95.00 | 35.0 | 32.00 | C | 29.00 | 1.7 | M16 | A | 0.50 |
| S M16-L230-C32 | 230.00 | 50.0 | 32.00 | C | 29.00 | 1.8 | M16 | B | 1.27 |

• For adaptation options, see page 746

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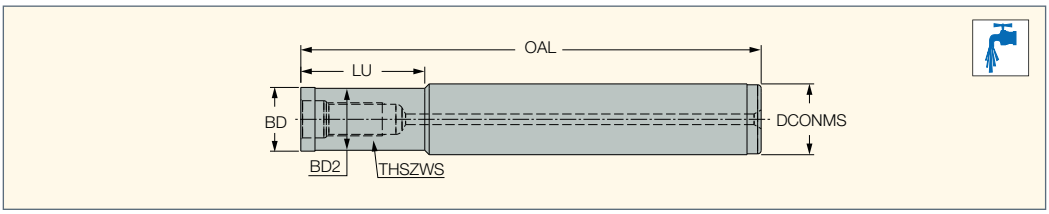
## Straight Shank

**FLEXFIT**

**S M-C-H**
Carbide Shanks with Coolant
Channels for Tools with
FLEX-FIT Threaded Connection

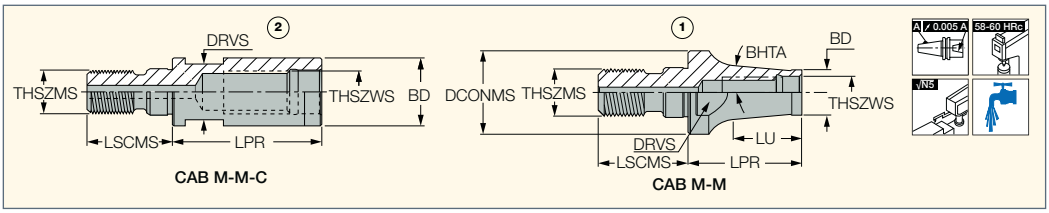



| Designation | DCONMS | THSZWS | OAL | LU | BD | BD_2 | kg |
|---|---|---|---|---|---|---|---|
| S M08-L150-C16-C-H | 16.00 | M08 | 150.00 | 80.0 | 15.30 | 15.30 | 0.39 |
| S M08-L200-C16-C-H | 16.00 | M08 | 200.00 | 140.0 | 15.30 | 15.30 | 0.59 |
| S M08-L250-C16-C-H | 16.00 | M08 | 250.00 | 180.0 | 15.30 | 15.30 | 0.84 |
| S M10-L150-C20-C-H | 20.00 | M10 | 150.00 | 80.0 | 18.50 | 18.50 | 0.73 |
| S M10-L200-C20-C-H | 20.00 | M10 | 200.00 | 140.0 | 18.00 | 17.50 | 0.91 |
| S M10-L250-C20-C-H | 20.00 | M10 | 250.00 | 180.0 | 18.00 | 17.50 | 1.04 |
| S M12-L200-C25-C-H | 25.00 | M12 | 200.00 | 100.0 | 21.00 | 20.50 | 1.41 |
| S M12-L250-C25-C-H | 25.00 | M12 | 250.00 | 180.0 | 24.00 | 24.00 | 1.78 |
| S M12-L300-C25-C-H | 25.00 | M12 | 300.00 | 180.0 | 21.00 | 20.50 | 2.04 |
| S M16-L200-C32-C-H | 32.00 | M16 | 200.00 | 100.0 | 29.00 | 29.00 | 2.11 |
| S M16-L250-C32-C-H | 32.00 | M16 | 250.00 | 180.0 | 29.00 | 29.00 | 2.36 |
| S M16-L300-C32-C-H | 32.00 | M16 | 300.00 | 180.0 | 29.00 | 29.00 | 2.81 |

• For adaptation options, see page 746

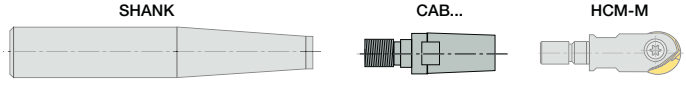
**FLEXFIT**

**CAB M-M (FLEX-FIT)**
Reducers and Extensions
with Coolant Holes for the
Modular FLEX-FIT System



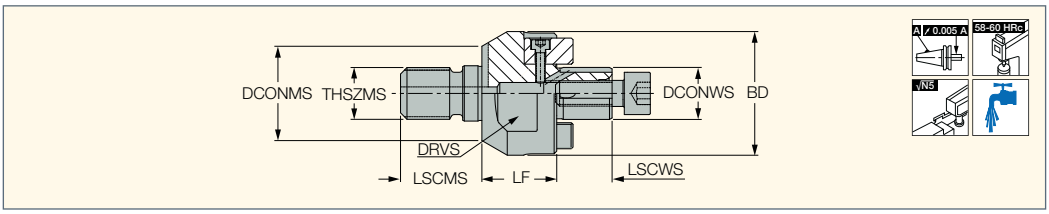

| Designation | THSZWS | THSZMS | BD | LPR | LU | DCONMS | LSCMS | DRVS(1) | Fig. | BHTA | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CAB M06M08 | M06 | M08 | 9.70 | 30.00 | 24.80 | 13.00 | 17.50 | 9.5 | 1. | 5.7 | 0.02 |
| CAB M08M08-C | M08 | M08 | 13.00 | 30.00 | - | - | 17.50 | 9.6 | 2. | - | 0.02 |
| CAB M08M10 | M08 | M10 | 13.00 | 40.00 | 33.40 | 18.00 | 20.20 | 15.0 | 1. | 5.2 | 0.07 |
| CAB M10M10-C | M10 | M10 | 18.00 | 35.00 | - | - | 20.00 | 15.0 | 2. | - | 0.06 |
| CAB M10M12 | M10 | M12 | 18.00 | 45.00 | 36.40 | 21.00 | 22.00 | 17.0 | 1. | 2.5 | 0.09 |
| CAB M12M12-C | M12 | M12 | 21.00 | 40.00 | - | - | 22.00 | 17.0 | 2. | - | 0.08 |
| CAB M12M16 | M12 | M16 | 21.00 | 50.00 | 42.50 | 29.00 | 25.00 | 25.0 | 1. | 6.3 | 0.18 |
| CAB M16M16-C | M16 | M16 | 29.00 | 40.00 | - | - | 25.00 | 25.0 | 2. | - | 0.16 |

(1) Clamping wrench size



**FLEXFIT**

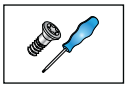
**CAB M-SEM**
FLEX-FIT Shell Mill Holder
Adaptation with Coolant Holes




| Designation | THSZMS | DCONWS | LF | BD | LSCWS | DCONMS | LSCMS | DRVS(1) | TQ_3(2) |
|---|---|---|---|---|---|---|---|---|---|
| CAB M16 SEM 16 C | M16 (3) | 16.00 | 23.00 | 38.00 | 17.0 | 29.00 | 25.00 | 32.0 | 40 |

- For internal coolant through the holder, the related COOLANT SET should be ordered via Accessories (applicable to certain tools only)
- When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Clamping wrench size
(2) Tool tightening torque Nxm (lbfxin)
(3) Tightening torque: 30 Nm Max

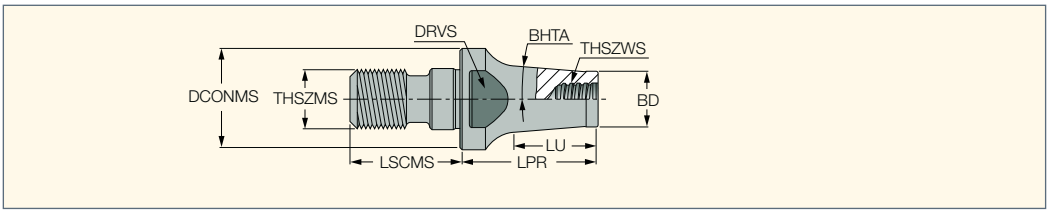

808-810

## Spare Parts

| Designation | | |
|---|---|---|
| CAB M16 SEM 16 C | SR M3X10DIN912 | SR M8X25DIN912 |

**MULTI-MASTER**

**MM CAB**
Adapters for Connecting
FLEX-FIT Shanks and
MULTI-MASTER Milling Heads




| Designation | THSZWS | THSZMS | LPR | LU | BD | DCONMS | LSCMS | DRVS(1) | BHTA | TQ_3(2) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM CAB T06M06-16/.63 | T06 | M06 | 16.00 | 11.60 | 9.30 | 9.70 | 14.50 | 8.0 | 1.5 | 15 | 0.01 |
| MM CAB T06M08-16/.63 | T06 | M08 | 16.00 | 13.70 | 9.60 | 13.00 | 17.50 | 11.0 | 6.0 | 20 | 0.02 |
| MM CAB T06M08-25/1.0 | T06 | M08 | 25.00 | 11.30 | 9.30 | 13.00 | 17.50 | 11.0 | 1.5 | 20 | 0.02 |
| MM CAB T06M10-25/1.0 | T06 | M10 | 25.00 | 16.60 | 9.60 | 18.00 | 20.00 | 11.0 | 5.0 | 29 | 0.04 |
| MM CAB T08M08-16/.63 | T08 | M08 | 16.00 | 5.40 | 11.70 | 13.00 | 17.50 | 11.0 | 11.4 | 20 | 0.02 |
| MM CAB T08M08-25/1.0 | T08 | M08 | 25.00 | 19.50 | 11.70 | 13.00 | 17.50 | 11.0 | 1.5 | 20 | 0.02 |
| MM CAB T08M10-20/.75 | T08 | M10 | 20.00 | 11.30 | 11.70 | 18.00 | 20.00 | 13.0 | 7.0 | 29 | 0.04 |
| MM CAB T08M10-25/1.0 | T08 | M10 | 25.00 | 14.20 | 11.70 | 18.00 | 20.00 | 11.0 | 1.5 | 29 | 0.03 |
| MM CAB T08M12-20/.75 | T08 | M12 | 20.00 | 9.30 | 11.70 | 21.00 | 22.00 | 13.0 | 7.0 | 33 | 0.05 |
| MM CAB T08M12-25/1.0 | T08 | M12 | 25.00 | 12.50 | 11.70 | 21.00 | 22.00 | 13.0 | 1.5 | 33 | 0.04 |

- Do not apply lubricant to the threaded connection
- When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

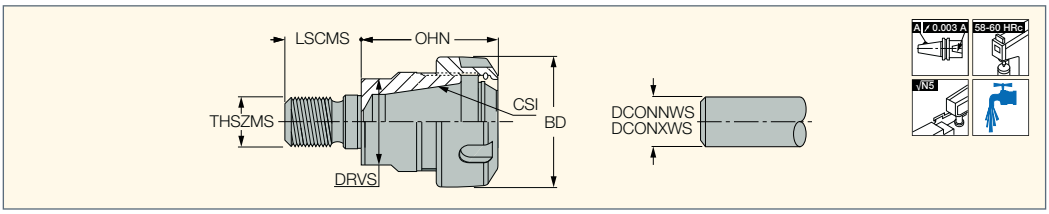
(1) Clamping wrench size
(2) Tool tightening torque Nxm (lbfxin)

746

FLEXFIT

## CDP ER-M

DIN 6499 ER Collet Chucks with Threaded FLEX-FIT Adaptations




| Designation | CSI | THSZMS | DCONNWS(1) | DCONXWS(2) | OHN(3) | LSCMS | BD | DRVS(4) | TQ_3(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| CDP ER11 M10 M | ER11 | M10 | 0.5 | 7.0 | 27.0 | 20.00 | 16.00 | 15.0 | 40 | 0.03 |
| CDP ER11 M12 M | ER11 | M12 | 0.5 | 7.0 | 27.0 | 22.00 | 16.00 | 17.0 | 40 | 0.04 |
| CDP ER16 M10 M | ER16 | M10 | 0.5 | 10.0 | 38.1 | 20.00 | 22.00 | 17.0 | 40 | 0.05 |
| CDP ER16 M12 M | ER16 | M12 | 0.5 | 10.0 | 37.1 | 22.00 | 22.00 | 17.0 | 40 | 0.06 |
| CDP ER16 M16 | ER16 | M16 | 0.5 | 10.0 | 36.6 | 25.00 | 28.00 | 25.0 | 40 | 0.10 |
| CDP ER20 M16 | ER20 | M16 | 1.0 | 13.0 | 45.5 | 25.00 | 34.00 | 25.0 | 40 | 0.19 |
| CDP ER25 M16 | ER25 | M16 | 1.0 | 16.0 | 44.5 | 25.00 | 42.00 | 28.0 | 40 | 0.15 |

• When mounting items with FLEX-FIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

(1) Minimum diameter

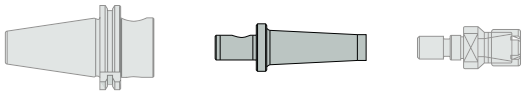
(2) Maximum diameter

(3) Minimum overhang

(4) Torque key size

(5) Tool tightening torque Nxm (lbfxin)

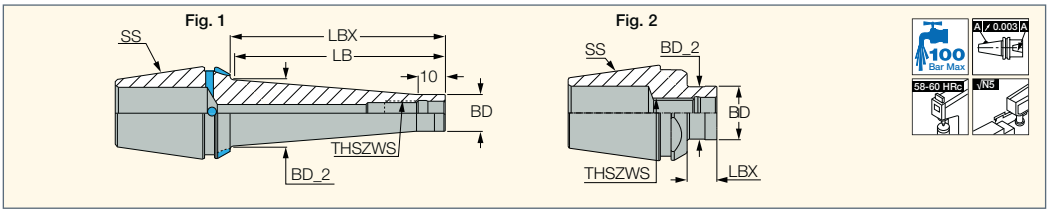
**SHANK** **SM...CF4** **CDP...**



FLEXFIT

## ER-ODP

FLEX-FIT Threaded Adaptation with Integral ER Collet for ER Collet Chucks



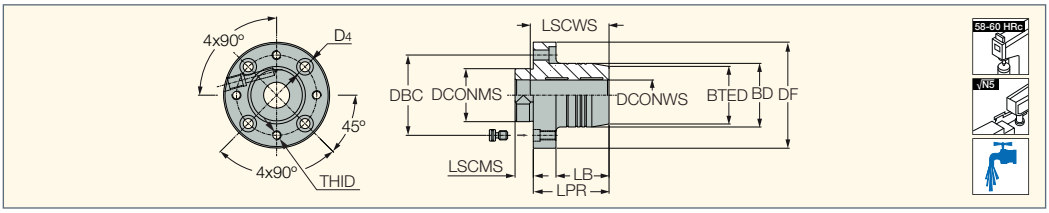

| Designation | SS | THSZWS | LB | LBX | BD | BD_2 | Fig. | kg |
|---|---|---|---|---|---|---|---|---|
| ER16 ODP M08X02 | ER16 | M08 | 2.50 | 2.50 | 12.00 | 12.00 | 2 | 0.04 |
| ER16 ODP M08X10 | ER16 | M08 | 10.50 | 10.50 | 12.00 | 12.00 | 2 | 0.04 |
| ER20 ODP M08X02 | ER20 | M08 | 2.00 | 2.00 | 13.00 | 13.00 | 2 | 0.05 |
| ER20 ODP M08X10 | ER20 | M08 | 10.00 | 10.00 | 13.00 | 12.60 | 2 | 0.05 |
| ER25 ODP M08X02 | ER25 | M08 | 2.00 | 2.00 | 13.00 | 13.00 | 2 | 0.05 |
| ER25 ODP M08X10 | ER25 | M08 | 10.00 | 10.00 | 13.00 | 12.60 | 2 | 0.09 |
| ER25 ODP M10X02 | ER25 | M10 | 2.00 | 2.00 | 18.00 | 18.00 | 2 | 0.05 |
| ER25 ODP M10X25 | ER25 | M10 | 23.00 | 25.00 | 18.00 | 17.60 | 1 | 0.11 |
| ER25 ODP M12X02 | ER25 | M12 | 2.70 | 2.70 | 20.60 | 19.20 | 2 | 0.08 |
| ER25 ODP M12X10 | ER25 | M12 | 10.00 | 10.00 | 20.00 | 20.00 | 2 | 0.10 |
| ER32 ODP M08X25 | ER32 | M08 | 22.00 | 25.00 | 13.10 | 15.00 | 1 | 0.15 |
| ER32 ODP M08X50 | ER32 | M08 | 49.00 | 50.00 | 13.10 | 23.00 | 1 | 0.21 |
| ER32 ODP M08X75 | ER32 | M08 | 74.00 | 75.00 | 13.10 | 23.00 | 1 | 0.26 |
| ER32 ODP M08X02 | ER32 | M08 | 2.00 | 2.00 | 13.00 | 13.00 | 2 | 0.15 |
| ER32 ODP M08X10 | ER32 | M08 | 10.00 | 10.00 | 13.00 | 12.60 | 2 | 0.14 |
| ER32 ODP M10X02 | ER32 | M10 | 2.00 | 2.00 | 18.00 | 18.00 | 2 | 0.15 |
| ER32 ODP M10X10 | ER32 | M10 | 10.00 | 10.00 | 18.00 | 17.60 | 2 | 0.15 |
| ER32 ODP M10X25 | ER32 | M10 | 23.00 | 25.00 | 18.00 | 20.00 | 1 | 0.17 |
| ER32 ODP M10X50 | ER32 | M10 | 49.00 | 50.00 | 18.00 | 24.00 | 1 | 0.24 |
| ER32 ODP M12X02 | ER32 | M12 | 2.00 | 2.00 | 21.00 | 21.00 | 2 | 0.15 |
| ER32 ODP M12X10 | ER32 | M12 | 10.00 | 10.00 | 21.00 | 20.60 | 2 | 0.17 |
| ER32 ODP M12X25 | ER32 | M12 | 24.00 | 25.00 | 21.00 | 24.00 | 1 | 0.18 |
| ER32 ODP M12X50 | ER32 | M12 | 49.00 | 50.00 | 21.00 | 24.00 | 1 | 0.26 |
| ER32 ODP M16X02 | ER32 | M16 | 2.50 | 2.50 | 27.00 | 27.00 | 2 | 0.15 |
| ER32 ODP M16X10 | ER32 | M16 | 10.50 | 10.50 | 27.00 | 27.00 | 2 | 0.18 |
| ER32 ODP M16X25 | ER32 | M16 | 25.50 | 25.50 | 27.00 | 27.00 | 2 | 0.20 |

# CENTER ALIGNMENT DEVICES

HYDROFIT HOLDING LINE

## ADJ HYDRO

Radial and Angular Adjustable Hydraulic Flanges,for Semi-Finish and Finish Applications

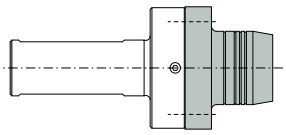



| Designation | DCONMS | DCONWS | BTED | BD | DF | LPR | LB | LSCWS | LSCMS | DBC | D4 | THID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADJ HYDRO 20 D70 | 35.00 | 20.00 | 38.00 | 42.00 | 70.00 | 50.00 | 35.0 | 52.0 | 10.00 | 53.00 | 11.00 | M6 |

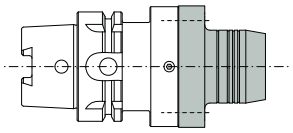
- Chucking forces will be reduced by 25% if reduction sleeves are used.
- Reduction sleeves are available for 3 to 16 mm bore diameters (order separately).

**Designation**

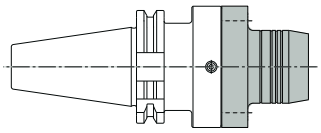
ADJ ST1 D2.756
ADJ ST25 D70
ADJ ST32 D70

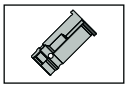


ADJ **HSK** A 63 D70
ADJ **HSK** A 100 D70



ADJ CAT40 D2.756
ADJ CAT50 D2.756
ADJ BT40 D70
ADJ BT50 D70




776

637

## Spare Parts

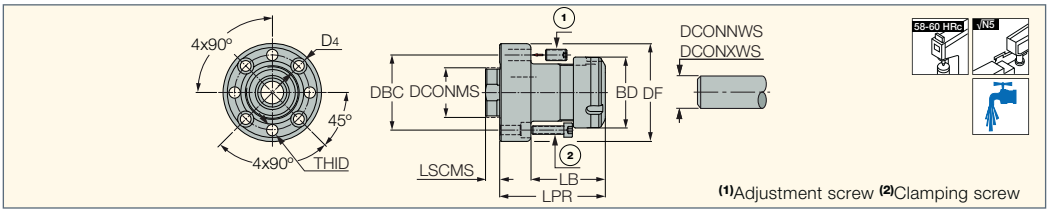
| Designation | | |
|---|---|---|
| ADJ HYDRO | WRENCH HYDRO HEX 4* | HYDRO CLAMP SCREW M8X14 |

* Optional, to be ordered separately

FINEFIT

## ADJ ER NOSE

Radial and Angular Adjustable Collet Chuck Flanges




| Designation | DCONNWS(1) | DCONXWS(2) | LPR | LB | LSCMS | BD | DF | DBC | DCONMS | D4 | THID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ADJ ER32 NOSE | 2.0 | 20.0 | 75.00 | 53.0 | 10.00 | 50.00 | 70.00 | 53.00 | 35.00 | 6.60 | M8x1 |

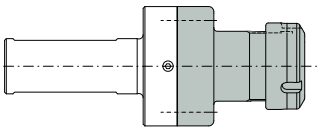
(1) Minimum diameter
(2) Maximum diameter

### Spare Parts

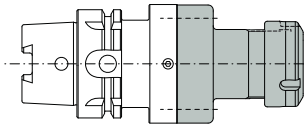
1 - Adjustment screw
2 - Clamping screw

### Designation

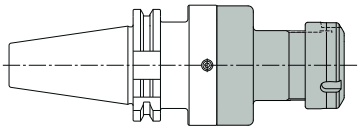
ADJ ST1 D2.756
ADJ ST25 D70
ADJ ST32 D70

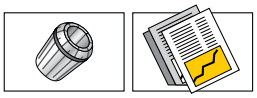


ADJ **HSK** A 63 D70
ADJ **HSK** A 100 D70



ADJ CAT40 D2.756
ADJ CAT50 D2.756
ADJ BT40 D70
ADJ BT50 D70





766-773 633, 755

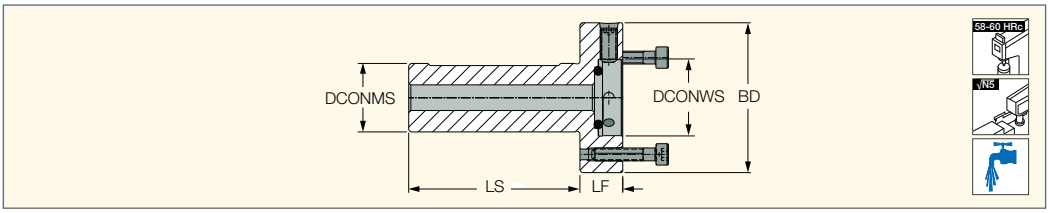
### Spare Parts

| Designation | | | | |
|---|---|---|---|---|
| ADJ ER NOSE | NUT ER32 TOP | ADJUST SPACER 9.5X5 | PRESET ER-JET 22X1.5 | SR M8X1X16 DIN916 |

## *Straight Shank*

### ADJ ST

FINE-FIT Center Alignment Shank and Base with Cylindrical Shanks with a Clamping Flat



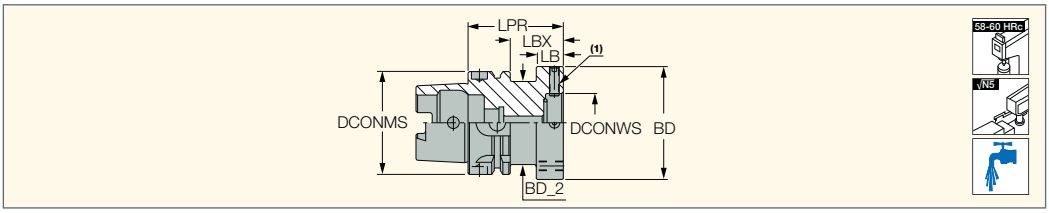

| Designation | DCONMS | LF | LS | BD | DCONWS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ADJ ST25 D70 | 25.00 | 20.00 | 80.00 | 70.00 | 35.00 | SR M8X1X16 DIN916 | SR M6X30 DIN912 | OR 21X4N | HW 4.0* | ADJUST SPACER 9.5X5* | HW 5.0* |
| ADJ ST32 D70 | 32.00 | 20.00 | 80.00 | 70.00 | 35.00 | SR M8X1X16 DIN916 | SR M6X30 DIN912 | OR 21X4N | HW 4.0* | ADJUST SPACER 9.5X5* | HW 5.0* |

* Optional, to be ordered separately

HSK FINEFIT

### ADJ HSK A

FINE-FIT Center Alignment Shank and Base with a DIN69893 HSK Tapered Shank for Specially Tailored Toolholders




| Designation | DCONMS | LPR | LBX | LB | DCONWS | BD | BD_2 | DCP(1) | kg |
|---|---|---|---|---|---|---|---|---|---|
| ADJ HSK A63 D70 | 63.00 | 60.00 | 34.0 | 18.00 | 35.00 | 70.00 | 46.00 | 1 | 1.24 |
| ADJ HSK A100 D70 | 100.00 | 55.00 | 26.0 | - | 35.00 | 70.00 | - | 1 | 2.63 |

• (1) Use 4 mm hex key for screw adjustment. • A cooling tube must be used with all coolant through HSK spindles (to be ordered separately)
(1) 1 - Slot for data chip, 0 - Without slot for data chip

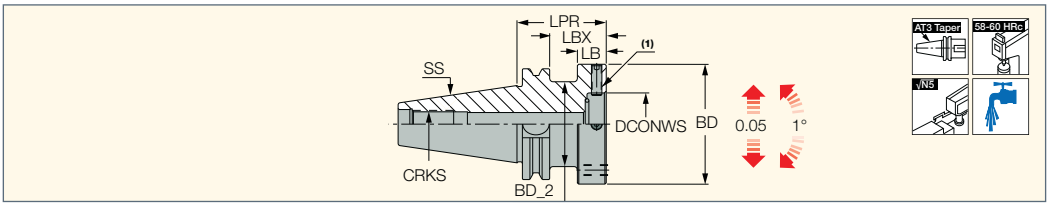
### Spare Parts

| Designation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ADJ HSK A63 D70 | SR M8X1X16 DIN916 | SR M6X30 DIN912 | OR 21X4N | ADJUST SPACER 9.5X5* | HW 4.0* | COOLING TUBE HSK A63* | WRENCH COOL TUBE HSK63* | HW 5.0* |
| ADJ HSK A100 D70 | SR M8X1X16 DIN916 | SR M6X30 DIN912 | OR 21X4N | ADJUST SPACER 9.5X5* | HW 4.0* | COOLING TUBE HSK A100* | WRENCH COOL TUBE HSK100* | HW 5.0* |

* Optional, to be ordered separately

## *DIN69871*

**ADJ DIN69871**
FINE-FIT Center Alignment Shank and Base with a DIN 69871 Form AD Taper Shank for Specially Tailored Toolholders




| Designation | SS | DCONWS | LPR | LBX | LB | BD | BD_2 | CRKS | kg |
|---|---|---|---|---|---|---|---|---|---|
| ADJ DIN69871 40 D70 | 40 | 35.00 | 50.00 | 30.9 | 15.00 | 70.00 | 46.00 | M16 | 1.28 |
| ADJ DIN69871 50 D70 | 50 | 35.00 | 50.00 | 30.9 | - | 70.00 | - | M24 | 3.32 |

• (1) Use 4 mm hex key for screw adjustment.

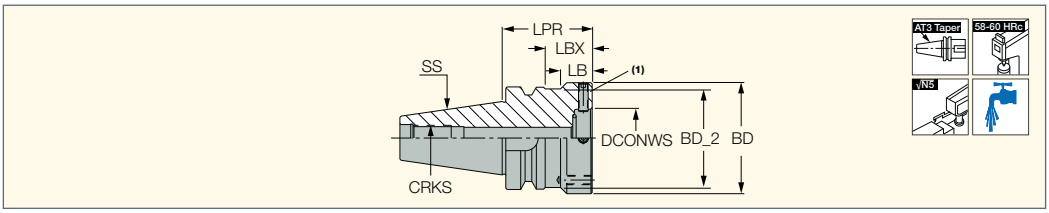
### Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| ADJ DIN69871 | SR M8X1X16 DIN916 | SR M6X30 DIN912 | OR 21X4N | HW 4.0* | ADJUST SPACER 9.5X5* | HW 5.0* |

* Optional, to be ordered separately

## *BT MAS*

**ADJ BT**
Center Alignment Shanks and Bases with BT MAS-403 ADB Tapered Shanks for Specially Tailored Toolholders




| Designation | SS | LPR | LBX | LB | BD | BD_2 | DCONWS | CRKS | kg |
|---|---|---|---|---|---|---|---|---|---|
| ADJ BT40 D70 | 40 | 55.00 | 28.0 | 18.00 | 70.00 | 62.50 | 35.00 | M16 | 1.56 |
| ADJ BT50 D70 | 50 | 70.00 | 32.0 | - | 70.00 | - | 35.00 | M24 | 4.34 |

• (1) Use 4 mm hex key for screw adjustment • Add B to the designation for coolant through flange option.

### Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| ADJ BT | SR M8X1X16 DIN916 | SR M6X30 DIN912 | OR 21X4N | HW 4.0* | ADJUST SPACER 9.5X5* | HW 5.0* |

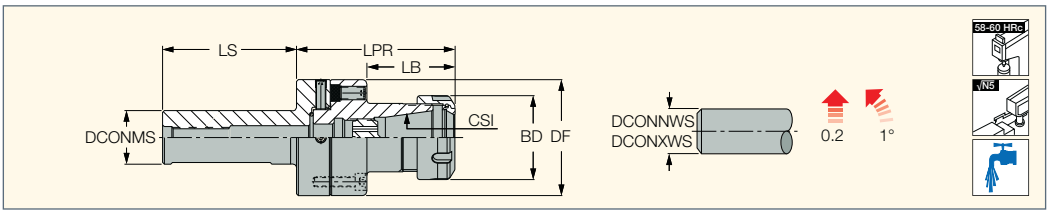
* Optional, to be ordered separately

## *Straight Shank*

**FINEFIT**

**ADJ ST-ER**

FINE-FIT DIN 6499 ER Collet Chucks with Center Alignment and Cylindrical Shanks with a Clamping Flat

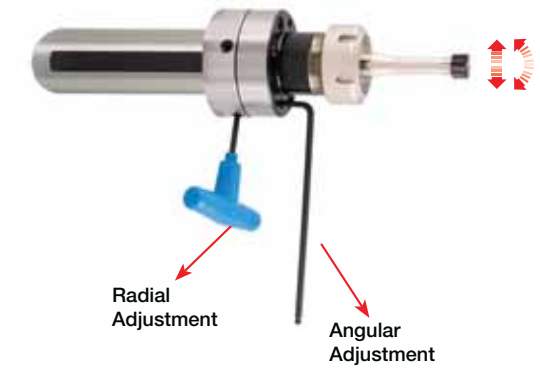


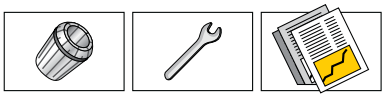

| Designation | DCONMS | CSI | DCONNWS(1) | DCONXWS(2) | LPR | LB | LS | BD | DF | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| ADJ ST25 D70 ER32 | 25.00 | ER32 | 2.0 | 20.0 | 94.50 | 52.5 | 80.00 | 50.00 | 70.00 | 1.74 |
| ADJ ST32 D70 ER32 | 32.00 | ER32 | 2.0 | 20.0 | 94.50 | 52.5 | 80.00 | 50.00 | 70.00 | 1.91 |

- Radial adjustment 0.2 mm Angular adjustment 1°

(1) Minimum diameter

(2) Maximum diameter



766-773 807 763-765, 635

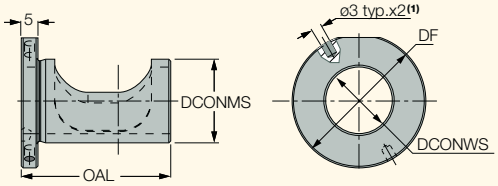
### Spare Parts

| Designation | |
|---|---|
| ADJ ST-ER | ADJ ER32 NOSE |

## *Accessories*

**Drilling Eccenter Sleeves**

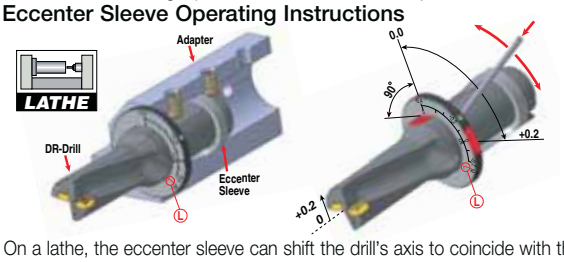
Bushings for Enlarging or Reducing DR Nominal Drilling Diameters by Shifting the Drill Off-Center




| Designation | DCONWS | DCONMS | DF | OAL |
|---|---|---|---|---|
| ECCENTER SLEEVE 20X25 | 20.00 | 25.00 | 40.00 | 44.00 |
| ECCENTER SLEEVE 25X32 | 25.00 | 32.00 | 50.00 | 46.00 |
| ECCENTER SLEEVE 32X40 | 32.00 | 40.00 | 65.00 | 55.00 |
| ECCENTER SLEEVE 40X50 | 40.00 | 50.00 | 75.00 | 62.00 |

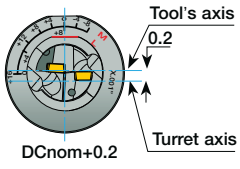
- (1) Holes for inserting a pin, used to facilitate radial adjustment of the sleeve (pin not supplied)

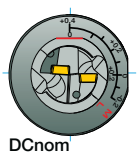
### Eccenter Sleeve Operating Instructions




On a lathe, the eccenter sleeve can shift the drill's axis to coincide with the spindle axis. The eccentric sleeve enables alignment of the drill's axis with the spindle axis within a 0.2 mm range (turn the sleeve counterclockwise to raise it).

### Operation on a Lathe

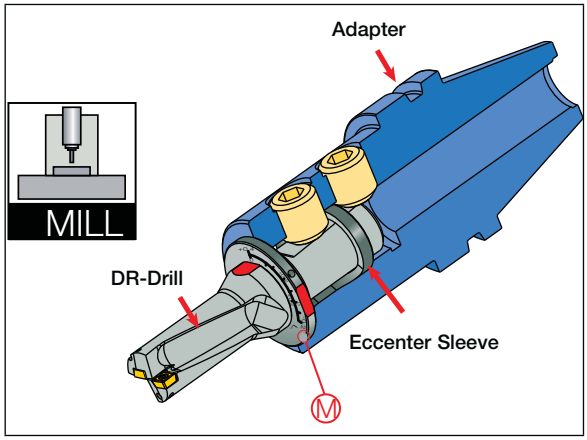


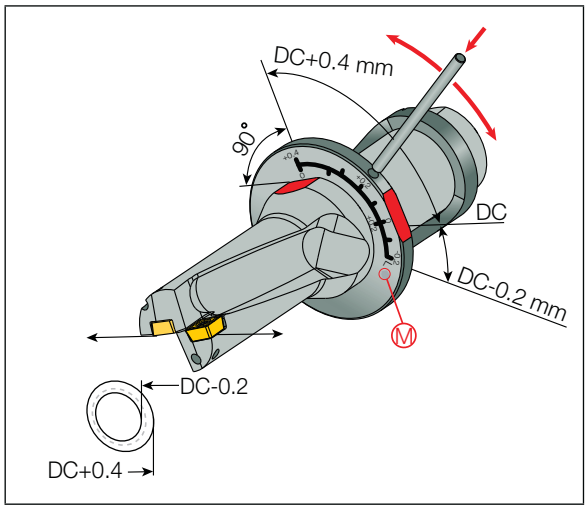
DCnom
Tool and turret axes coincide

## Operation on a Milling Machine

On a milling machine, the drill's nominal diameter can be changed by shifting the drill's axis out of the tool spindle.

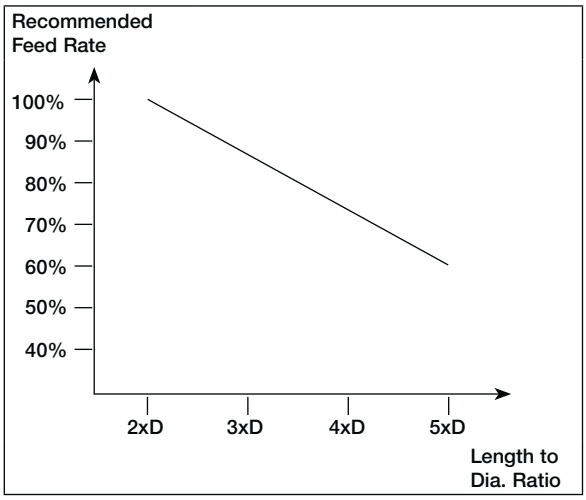



Radial adjustment pin (not supplied)



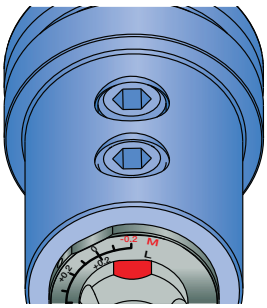
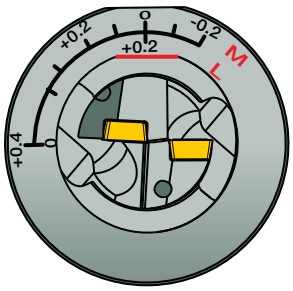
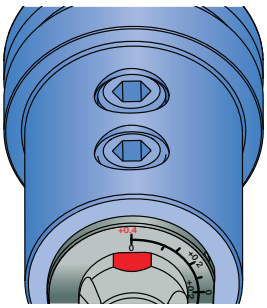
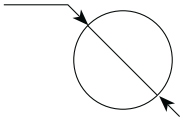
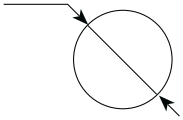
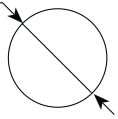

To enlarge the diameter, turn the sleeve clockwise.

### Recommended Feed When Using Eccenter Sleeves




The adjustment markings should be located perpendicular to the flat on the circumference of the **DR** flange. To facilitate the rotation of the sleeve, a metal rod or a screw key may be inserted into a hole on the eccentric sleeve flange. Unlock adapter screw before adjusting sleeve.

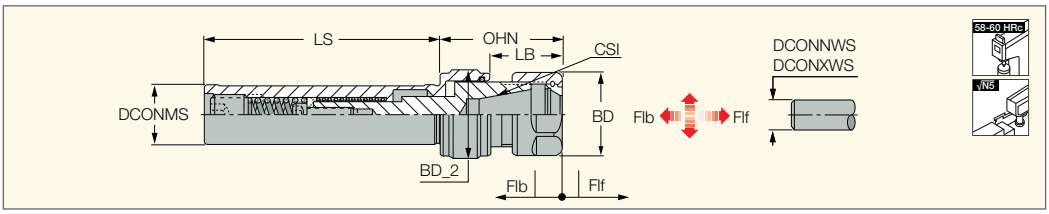
### Operation on a Milling Machine

| | | |
|---|---|---|
|  |  |  |
| Hole Diameter 29.8 mm  | Hole Diameter 30 mm  | Hole Diameter 30.4 mm  |
| Drill Diameter = 30 mm | | |

# TAPPING & REAMING DEVICES

## *Straight Shank GTI*

**GTI ER-ST (tapping)**
DIN 6499 ER Tapping Attachments with Straight Shanks




| Designation | DCONMS | CSI | Tap min | Tap max | DCONNWS(2) | DCONXWS(3) | BD | BD_2 | LB | OHN(4) | LS | Flf | Flb | DCP(5) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GTI ER11 ST16X150 M (1) | 16.00 | ER11 | M2 | M7 | 0.5 | 7.0 | 16.00 | - | 19.0 | - | 150.00 | 6.0 | 3.0 | 0 | 0.00 |
| GTI ER16 ST20X80 | 20.00 | ER16 | M3 | M10 | 0.5 | 10.0 | 28.00 | 29.50 | 24.6 | 41.60 | 80.00 | 8.0 | 3.0 | 0 | 0.00 |
| GTI ER20 ST20X80 | 20.00 | ER20 | M4 | M14 | 1.0 | 13.0 | 34.00 | 33.50 | 28.0 | 49.00 | 80.00 | 8.0 | 3.0 | 0 | 0.35 |
| GTI ER25 ST25X80 | 25.00 | ER25 | M5 | M16 | 1.0 | 16.0 | 42.00 | 40.50 | 32.0 | 53.00 | 80.00 | 9.0 | 4.0 | 0 | 0.55 |
| GTI ER32 ST25X80 | 25.00 | ER32 | M6 | M20 | 1.0 | 16.0 | 50.00 | 56.50 | 32.0 | 77.20 | 80.00 | 9.0 | 4.0 | 0 | 1.16 |
| GTI ER40 ST32X80 | 32.00 | ER40 | M6 | M27 | 2.0 | 20.0 | 63.00 | 56.50 | 51.0 | 95.20 | 80.00 | 9.0 | 4.0 | 0 | 1.66 |

(1) Without a clamping flat
(2) Minimum diameter
(3) Maximum diameter
(4) Minimum overhang
(5) 1 - Slot for data chip, 0 - Without slot for data chip

766-773 807 763-765, 635

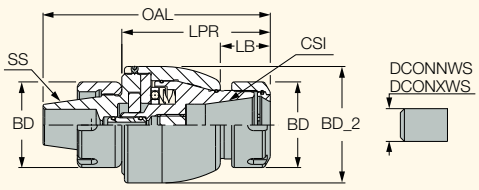
### Spare Parts

| Designation | | |
|---|---|---|
| GTI ER11 ST16X150 M | NUT ER11 MINI | |
| GTI ER16 ST20X80 | NUT ER16 TOP | WRENCH ER16* |
| GTI ER20 ST20X80 | NUT ER20 TOP | WRENCH ER20* |
| GTI ER25 ST25X80 | NUT ER25 TOP | WRENCH ER25* |
| GTI ER32 ST25X80 | NUT ER32 TOP | WRENCH ER32* |
| GTI ER40 ST32X80 | NUT ER40 TOP | WRENCH ER40* |

* Optional, to be ordered separately

## *GFI*

**GFIS ER-ER**
Floating Reamer ER Collet Chuck with ER Shank for High Speed Cutting Reamers




| Designation | CSI | DCONNWS(1) | DCONXWS(2) | OAL | LPR | LB | BD | BD_2 | SS | RFI(3) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GFIS ER32X70-ER32 | ER32 | 12.00 | 20.00 | 133.00 | 87.00 | 29.50 | 50.00 | 68.00 | ER32 | 0.22 | 1.69 |

• Maximum 10K RPM • Angular floating range 1.0° • For Reaming 12-20 mm shank diameter range only
(1) Minimum diameter
(2) Maximum diameter
(3) Radial floating range

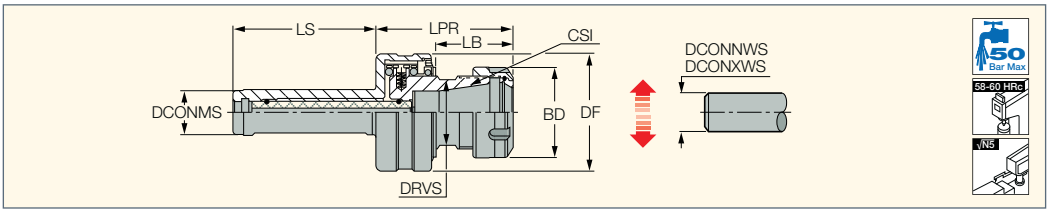
766-773 805-806 807

### Spare Parts

| Designation | | | |
|---|---|---|---|
| GFIS ER-ER | NUT ER32 TOP | PRESET ER-JET 12X1.75 | SR M4X4 DIN913 |

## *Straight Shank GFI*

**GFI ST-ER**
Floating Reamer DIN 6499
Collet Chucks and Cylindrical Shanks with a Clamping Flat



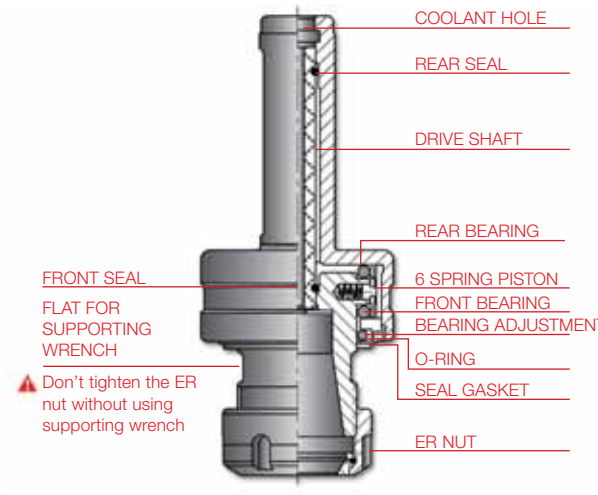

| Designation | DCONMS | CSI | DCONNWS(2) | DCONXWS(3) | LS | LPR | LB | BD | DF | RFI | DRVS(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GFI ST20 ER20** (1) | 20.00 | ER20 | 1.0 | 13.0 | 65.00 | 55.50 | 31.0 | 34.00 | 50.00 | 0.50 | 22.0 | 0.56 |
| **GFI ST25 ER32** (1) | 25.00 | ER32 | 2.0 | 20.0 | 80.00 | 76.90 | 45.9 | 50.00 | 65.00 | 0.80 | 36.0 | 1.20 |

- Maximum 2000 RPM!

(1) Radial float from center
(2) Minimum diameter
(3) Maximum diameter
(4) Torque key size

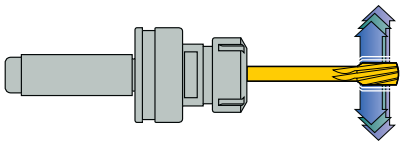
### GFI ER - Floating Reamer Collet Chuck

Floating chuck - adjusts the misalignment between the reamer and workpiece hole to ensure the same accuracy as the reamer itself.




### Application:

The **GFI** floating chuck is a unique holder that compensates for the radial misalignment existing in reaming operations carried out on vertical and horizontal machine tools.



### Features:

Radial self-floating mechanism compensates for misalignment between the reamer and workpiece to ensure the same tolerance as the reamer itself. The special self-centering mechanism eliminates tapered and oversized bores.

### Advantages:

Unique ball bearing and axle drive shaft structure enables vertical and horizontal machining.
Precise and efficient clamping with ER spring collets or ER Coolit collets.

### Spare Parts

| Designation | | |
|---|---|---|
| **GFI ST20 ER20** | NUT ER20 TOP | WRENCH ER20* |
| **GFI ST25 ER32** | NUT ER32 TOP | WRENCH ER32* |

* Optional, to be ordered separately

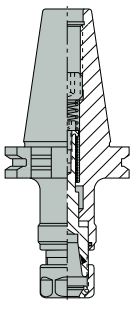
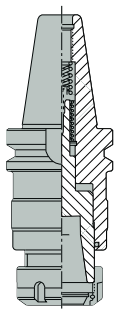
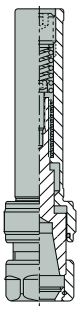
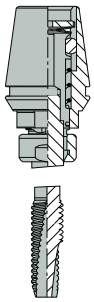
## GTI / GTIN - Tapping Attachment

### GTIN ER32 – Tapping Collet

Compact tapping collet with tension and compression floating mechanism for **ER32** collet chucks.
A tapping collet for standard and rigid tapping operations. **GTIN ER32** collet make tap removal and replacement easy, quick and reliable. Designed for stationary and rotating applications. **GTIN ER32** collets are economical and efficient due to the ability to use existing **ER32** collet chucks (with various shank sizes and types).

**Applications**
The **GTIN ER32** tapping collet is designed especially for CNC mill/turn centers using regular and rigid tapping.

**Advantages**
- Quick tap change by a front clamping nut
- Compact design for minimal clearance between the turret and chuck
- Fits every type of stationary and rotating **ER32** collet chuck
- Positive tap drive with internal square driver
- Compensates for machine feed and tap pitch variance, resulting in greater thread accuracy
- Floating mechanism compensates for misalignment between tap and workpiece
- High accuracy due to tension and compression mechanism
- Available for all tap shank standards (DIN, ISO, ANSI, JIS)
- Tapping range M1-M16 (#0 to 5/8")
- Saves setup time by quick tap changing without removing **GTIN** from the machine
- Optimal for machines that have limited space between the turret and workpiece

| GTI DIN69871 | BT MAS-403 | Straight Shank | GTIN |
|---|---|---|---|
|  |  |  |  |
| Page 656 | Page 733 | Page 757 | Page 757 |

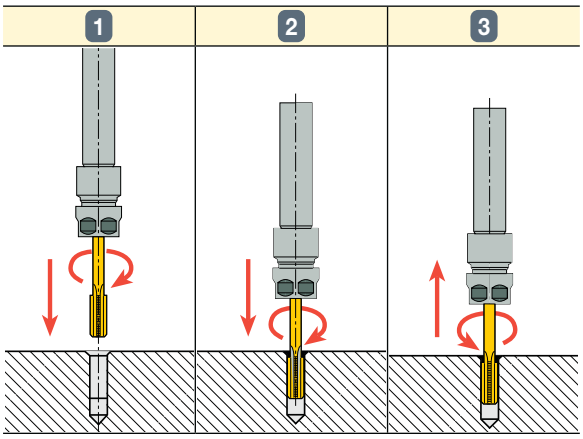
**Description**
Short tap chucks for **ER** collets.

**Applications**
Axial float/tension/compression type for CNC milling machines and lathes with reversing motors and rigid tapping.

**Features**
- Compensates for machine feed and tap pitch variance
- Floating mechanism compensates for misalignment between tap and workpiece
- Right- and left-hand tapping

**Advantages**
- Practical and efficient tap holding by the **ER** spring collet without using jaw drive
- Compact design for minimal clearance applications
- Heavy duty design for high torque drive ensures the same accuracy as the tap itself

**Operation**
For through- and blind-hole tapping:



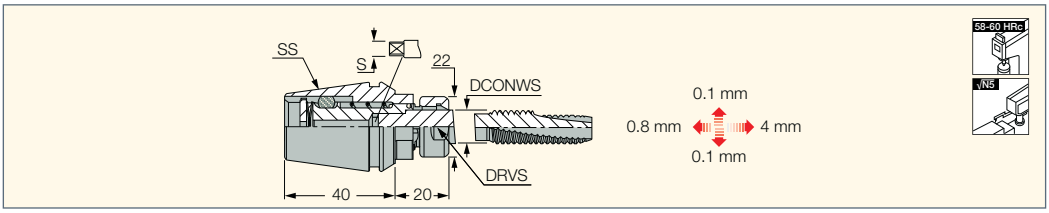

1 Enter feed rate according to thread pitch (or 1-2 % lower). Set spindle to starting point with 0.08 clearance.

2 Start spindle forward with right hand rotation until reaching desired depth.

3 Stop feed and rotation and reverse to starting point.

GTIN

**GTIN ER-ISO (tapping)**
ER Collet Tapping Attachments, Tension and Compression ISO Type for CNC Milling and Turret Lathe Machines




| Designation | SS | DCONWS | S | Tap min | Tap max | DRVS(1) | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|
| GTIN ER32 ISO 2.24X1.80 | ER32 | 2.24 | 1.80 | M3 | M3 | 20.0 | 0 | 0.22 |
| GTIN ER32 ISO 2.50X2.00 | ER32 | 2.50 | 2.00 | M3.5 | M3.5 | 20.0 | 0 | 0.26 |
| GTIN ER32 ISO 2.80X2.24 | ER32 | 2.80 | 2.24 | M2.2 | M2.5 | 20.0 | 0 | 0.22 |
| GTIN ER32 ISO 3.15X2.50 | ER32 | 3.15 | 2.50 | M3 | M4 | 20.0 | 0 | 0.23 |
| GTIN ER32 ISO 3.55X2.80 | ER32 | 3.55 | 2.80 | M3.5 | M4.5 | 20.0 | 0 | 0.22 |
| GTIN ER32 ISO 4.00X3.15 | ER32 | 4.00 | 3.15 | M4 | M5 | 20.0 | 0 | 0.22 |
| GTIN ER32 ISO 4.50X3.55 | ER32 | 4.50 | 3.55 | M6 | M6 | 20.0 | 0 | 0.22 |
| GTIN ER32 ISO 5.00X4.00 | ER32 | 5.00 | 4.00 | M5 | M5 | 20.0 | 0 | 0.22 |
| GTIN ER32 ISO 5.60X4.50 | ER32 | 5.60 | 4.50 | UNC#12-24 | UNC (ONLY) | 20.0 | 0 | 0.21 |
| GTIN ER32 ISO 6.30X5.00 | ER32 | 6.30 | 5.00 | M6 | M8 | 20.0 | 0 | 0.22 |
| GTIN ER32 ISO 7.10X5.60 | ER32 | 7.10 | 5.60 | UNC#3/8-16 | UNC (ONLY) | 20.0 | 0 | 0.20 |
| GTIN ER32 ISO 8.00X6.30 | ER32 | 8.00 | 6.30 | M8 | M10 | 20.0 | 0 | 0.21 |
| GTIN ER32 ISO 9.00X7.10 | ER32 | 9.00 | 7.10 | M12 | M12 | 20.0 | 0 | 0.21 |
| GTIN ER32 ISO 10.00X8.00 | ER32 | 10.00 | 8.00 | M10 | M10 | 20.0 | 0 | 0.20 |
| GTIN ER32 ISO 11.20X9.00 | ER32 | 11.20 | 9.00 | M14 | M14 | 20.0 | 0 | 0.21 |
| GTIN ER32 ISO 12.50X10.00 | ER32 | 12.50 | 10.00 | M16 | M16 | 20.0 | 0 | 0.20 |

- No coolant should be induced through the tapping collet as it will cause malfunction of the mechanism
- Compensates for machine feed and tap pitch variance
- Floating mechanism compensates for misalignment between tap and workpiece
- Hard start for rigid tapping
- When a rigid ER collet is assembled in an ER holder, the actual protruding length of the holder becomes shorter by 2.0 mm for ER20 and by 3.0 mm for ER25/ER32

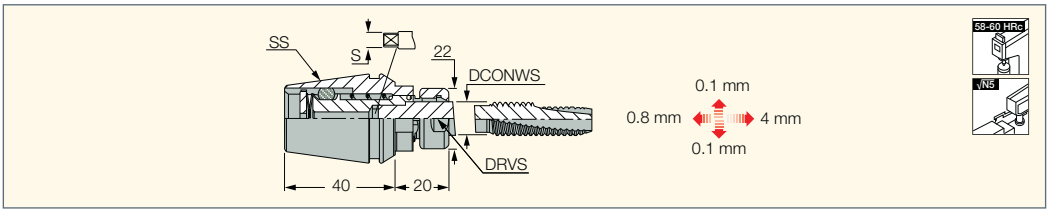
(1) Torque key size
(2) 1 - Slot for data chip, 0 - Without slot for data chip

## Spare Parts

| Designation | |
|---|---|
| GTIN ER-ISO (tapping) | GTIN ER32 NUT |

GTIN

**GTIN ER-DIN (tapping)**
ER Collet Tapping Attachments, Tension and Compression DIN Type for CNC Milling and Turret Lathe Machines




| Designation | SS | DCONWS | S | Tap min | Tap max | DRVS(1) | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|
| GTIN ER32 DIN 2.50X2.10 | ER32 | 2.50 | 2.10 | M1 | M1.8 | 20.0 | 0 | 0.20 |
| GTIN ER32 DIN 2.80X2.10 | ER32 | 2.80 | 2.10 | M2 | M4 | 20.0 | 0 | 0.22 |
| GTIN ER32 DIN 3.50X2.70 | ER32 | 3.50 | 2.70 | M3 | M5 | 20.0 | 0 | 0.22 |
| GTIN ER32 DIN 4.00X3.00 | ER32 | 4.00 | 3.00 | M3.5 | M3.5 | 20.0 | 0 | 0.21 |
| GTIN ER32 DIN 4.50X3.40 | ER32 | 4.50 | 3.40 | M4 | M6 | 20.0 | 0 | 0.20 |
| GTIN ER32 DIN 6.00X4.90 | ER32 | 6.00 | 4.90 | M5 | M8 | 20.0 | 0 | 0.20 |
| GTIN ER32 DIN 7.00X5.50 | ER32 | 7.00 | 5.50 | M7 | M10 | 20.0 | 0 | 0.20 |
| GTIN ER32 DIN 8.00X6.20 | ER32 | 8.00 | 6.20 | M8 | M8 | 20.0 | 0 | 0.20 |
| GTIN ER32 DIN 9.00X7.00 | ER32 | 9.00 | 7.00 | M12 | M12 | 20.0 | 0 | 0.22 |
| GTIN ER32 DIN 10.00X8.00 | ER32 | 10.00 | 8.00 | M10 | M10 | 20.0 | 0 | 0.22 |
| GTIN ER32 DIN 11.00X9.00 | ER32 | 11.00 | 9.00 | M14 | M14 | 20.0 | 0 | 0.21 |
| GTIN ER32 DIN 12.00X9.00 | ER32 | 12.00 | 9.00 | M16 | M16 | 20.0 | 0 | 0.20 |

- No coolant should be induced through the tapping collet as it will cause malfunction of the mechanism
- Compensates for machine feed and tap pitch variance
- Floating mechanism compensates for misalignment between tap and workpiece
- Hard start for rigid tapping
- When a rigid ER collet is assembled in an ER holder, the actual protruding length of the holder becomes shorter by 2.0 mm for ER20 and by 3.0 mm for ER25/ER32

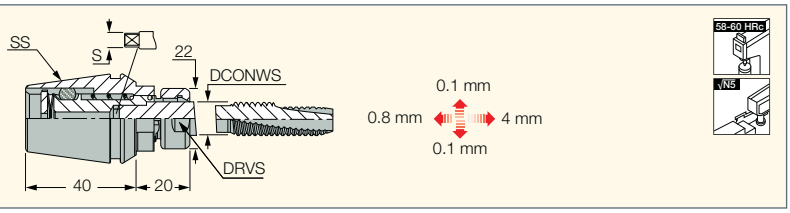
(1) Torque key size
(2) 1 - Slot for data chip, 0 - Without slot for data chip

## Spare Parts

| Designation | |
|---|---|
| GTIN ER-DIN (tapping) | GTIN ER32 NUT |

GTIN

**GTIN ER-JIS (tapping)**
ER Collet Tapping Attachments, Tension and Compression JIS Type for CNC Milling and Turret Lathe Machines




| Designation | SS | DCONWS | S | Tap min | Tap max | DRVS(1) | DCP(2) | kg |
|---|---|---|---|---|---|---|---|---|
| GTIN ER32 JIS 3.00X2.50 | ER32 | 3.00 | 2.50 | M1 | M2.6 | 20.0 | 0 | 0.21 |
| GTIN ER32 JIS 4.00X3.20 | ER32 | 4.00 | 3.20 | M3 | M3.5 | 20.0 | 0 | 0.21 |
| GTIN ER32 JIS 5.00X4.00 | ER32 | 5.00 | 4.00 | M4 | M4 | 20.0 | 0 | 0.21 |
| GTIN ER32 JIS 5.50X4.50 | ER32 | 5.50 | 4.50 | M5 | M5 | 20.0 | 0 | 0.12 |
| GTIN ER32 JIS 6.00X4.50 | ER32 | 6.00 | 4.50 | M6 | M6 | 20.0 | 0 | 0.22 |
| GTIN ER32 JIS 6.20X5.00 | ER32 | 6.20 | 5.00 | M8 | M8 | 20.0 | 0 | 0.22 |
| GTIN ER32 JIS 7.00X5.50 | ER32 | 7.00 | 5.50 | M10 | M10 | 20.0 | 0 | 0.21 |
| GTIN ER32 JIS 8.50X6.50 | ER32 | 8.50 | 6.50 | M12 | M12 | 20.0 | 0 | 0.20 |
| GTIN ER32 JIS 10.50X8.00 | ER32 | 10.50 | 8.00 | M14 | M14 | 20.0 | 0 | 0.20 |
| GTIN ER32 JIS 12.50X10.00 | ER32 | 12.50 | 10.00 | M16 | M16 | 20.0 | 0 | 0.20 |

- No coolant should be induced through the tapping collet as it will cause malfunction of the mechanism
- Compensates for machine feed and tap pitch variance
- Floating mechanism compensates for misalignment between tap and workpiece
- Hard start for rigid tapping
- When a rigid ER collet is assembled in an ER holder, the actual protruding length of the holder becomes shorter by 2.0 mm for ER20 and by 3.0 mm for ER25/ER32

(1) Torque key size

(2) 1 - Slot for data chip, 0 - Without slot for data chip

## Spare Parts

| Designation | |
|---|---|
| GTIN ER-JIS (tapping) | GTIN ER32 NUT |

# ER, SC & SHRINK COLLETS

## Shanks

HSK DIN 69893 Form A/E

CAMFIX DIN 26623-1

BT MAS-403

DIN 69871

ISO A.N.S.I B5.18-DIN 2080

ST Straight Shank

MT Morse Taper

## Collet Options

ER-SPR

ER-SEAL

ER-SEAL JET2

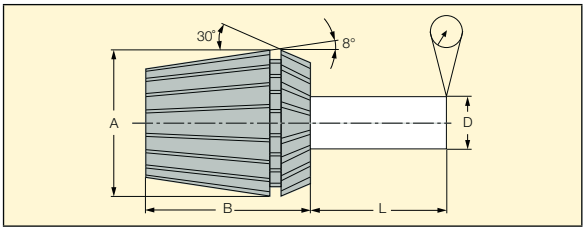
ER-SRK

GTIN ER32

ER-ODP

# Standard ER Collet Type DIN 6499

## Standard ER Collet




### Basic Dimensions

| Type | A | B |
|---|---|---|
| ER-11 | 11.5 | 18 |
| ER-16 | 17 | 27 |
| ER-20 | 21 | 31 |
| ER-25 | 26 | 35 |
| ER-32 | 33 | 40 |
| ER-40 | 41 | 46 |
| ER-50 | 52 | 60 |

### Concentricity Tolerances

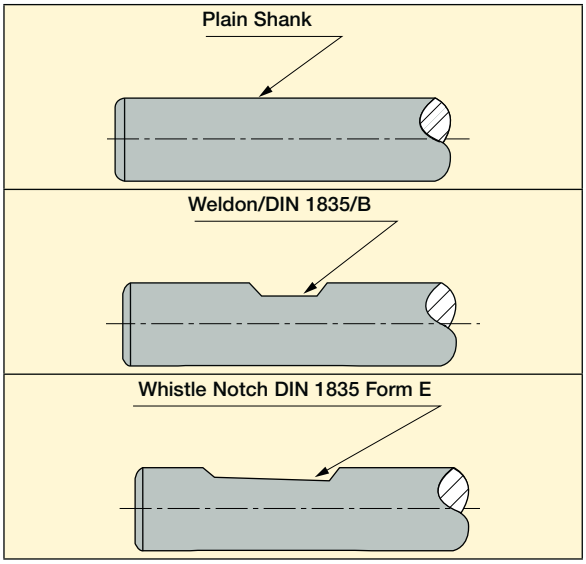
| L mm | D mm | Standard Precision | AA Ultra Precision | DIN 6499 |
|---|---|---|---|---|
| 6 | 1.0-1.6 | 0.01 | 0.005 | |
| 10 | 1.6-3.0 | 0.01 | 0.005 | 0.015 |
| 16 | 3.0-6.0 | 0.01 | 0.005 | 0.015 |
| 25 | 6.0-10.0 | 0.01 | 0.005 | 0.015 |
| 40 | 10.0-18.0 | 0.01 | 0.005 | 0.020 |
| 50 | 18.0-26.0 | 0.01 | 0.005 | 0.020 |
| 60 | 26.0-34.0 | | | 0.025 |

## ER - Coolit Sealed Collet

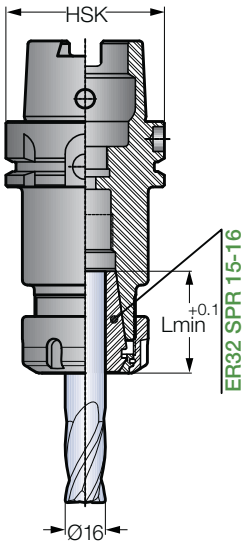
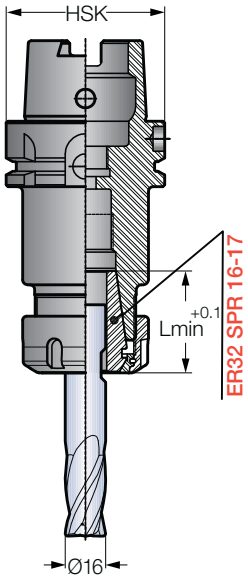
### Two Types

| Sealed Collet | Sealed Collet Jet |
|---|---|
| | |
| For straight shank cutting tools with internal coolant supply | With angular double nozzles. Coolant flow is direct to the cutting edge - for use with standard straight shank cutting tools (without coolant hole) |

## Standard Shank for Use in Sealed Collets




Note: The front end of the sealed collet should be located beyond the Weldon or the whistle notch.

| Correct | Wrong |
|---|---|
| ✔ | ✗ |
|  |  |

## ER - Top Clamping Nut for DIN 6499 Collets

### Description

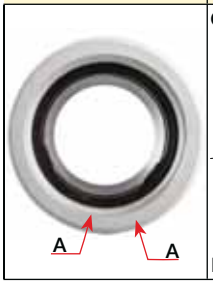
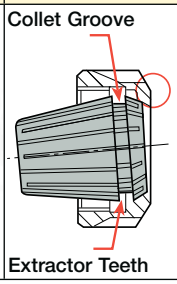
Friction bearing **ER** nut is a nut with a unique two-piece exclusive friction mechanism, combining radial and angular self-centering movements.

### Features

- Unique two-piece friction bearing
- Radial and angular float for better concentricity
- Powerful gripping force, 50-100% higher than the standard **ER** nut due to the friction bearing mechanism
- Balanced for higher spindle spin due to unique extractor teeth design
- Compact design - general dimensions and size range are the same as the standard nut
- Designed for use with sealed collets
  Always assemble the collet into the nut before mounting onto the collet chuck.

### Insertion Procedure

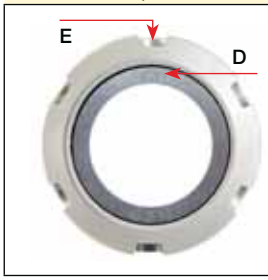
1 Insert the collet at an angle, fitting the two extractor teeth which protrude **(A)** into the collet's groove **(B)**.
2 Place the two parts on a clean and horizontal work surface.
3 Press down with your thumb on the back end of the collet until it clicks into place **(C)**.

| A | B | C |
|---|---|---|
|  |  | |

**Important:** Never insert the collet parallel to the extractor ring. Doing this will chip or break the extractor's teeth. When unclamping the nut, the collet will self-release from the chuck by means of extractor teeth.

### Extraction Procedure

1 Align the engraved diamond shape which is on the silver ring **(D)**, with any of the key slots **(E)** of the nut.
2 Place the nut with the collet facing down on a clean and horizontal work surface.
3 Insert a screwdriver vertically between the nut slots and the collet on the reverse side of the engraved diamond shape **(D)**.
4 Tilt the screwdriver outwards, while helping the extraction by pushing the collet's back end in the opposite direction **(F)**.

| E, D | F |
|---|---|
|  | |

| Nut Type | Kgxm |
|---|---|
| ER-11 | 5 |
| ER-11M | 3 |
| ER-16 | 7 |
| ER-16M | 4 |
| ER-20 | 12 |
| ER-20M | 8 |
| ER-25 | 20 |
| ER-32 | 22 |
| ER-40 | 25 |
| ER-50 | 35 |

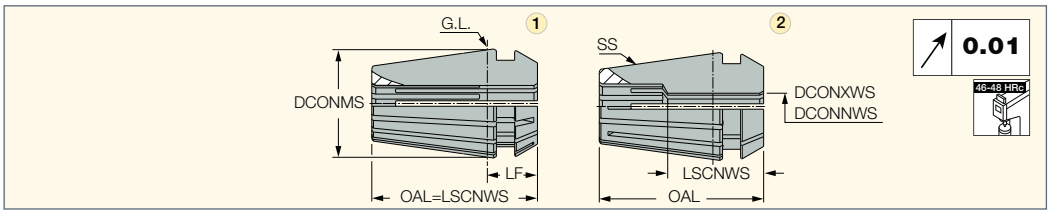
Note: For maximum performance, the clamping nut thread and collet taper must be cleaned and oiled before use.

⚠ Recommended Clamping Torque for Standard ER & ER-Top Clamping Nut

**Important:** This torque is calculated with the maximum diameter capacity per collet which should be gradually reduced when used with a smaller shank size.

**ERCOLLET**

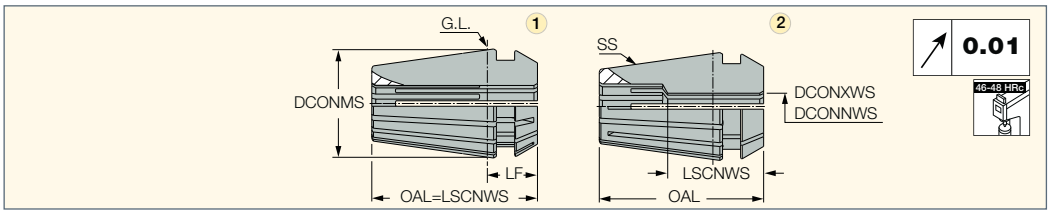
**ER-SPR**
DIN 6499/ ISO 15488-B
ER Spring Collet with Super Finish Surface and Special Anti-Corrosion Protection




| Designation | SS | DCONNWS(3) | DCONXWS(4) | DCONMS | LF | OAL | LSCNWS | Fig. | Kg |
|---|---|---|---|---|---|---|---|---|---|
| ER11 SPR 0.5-1.0 (1) | ER11 | 0.50 | 1.00 | 11.00 | 6.30 | 18.00 | 8.50 | 2 | 0.01 |
| ER11 SPR 1.0-1.5 | ER11 | 1.00 | 1.50 | 11.00 | 6.30 | 18.00 | 8.50 | 2 | 0.01 |
| ER11 SPR 1.5-2.0 | ER11 | 1.50 | 2.00 | 11.00 | 6.30 | 18.00 | 9.50 | 2 | 0.01 |
| ER11 SPR 2.0-2.5 | ER11 | 2.00 | 2.50 | 11.00 | 6.30 | 18.00 | 9.50 | 2 | 0.01 |
| ER11 SPR 2.5-3.0 | ER11 | 2.50 | 3.00 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 3.0-3.5 | ER11 | 3.00 | 3.50 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 3.5-4.0 | ER11 | 3.50 | 4.00 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 4.0-4.5 | ER11 | 4.00 | 4.50 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 4.5-5.0 | ER11 | 4.50 | 5.00 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 5.0-5.5 | ER11 | 5.00 | 5.50 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 5.5-6.0 | ER11 | 5.50 | 6.00 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 6.0-6.5 | ER11 | 6.00 | 6.50 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 6.5-7.0 | ER11 | 6.50 | 7.00 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER16 SPR 0.5-1 | ER16 | 0.50 | 1.00 | 16.00 | 10.26 | 27.50 | 10.50 | 2 | 0.02 |
| ER16 SPR 1-1.5 | ER16 | 1.00 | 1.50 | 16.00 | 10.26 | 27.50 | 10.50 | 2 | 0.02 |
| ER16 SPR 1.5-2 | ER16 | 1.50 | 2.00 | 16.00 | 10.26 | 27.50 | 14.20 | 2 | 0.02 |
| ER16 SPR 2-3 | ER16 | 2.00 | 3.00 | 16.00 | 10.26 | 27.50 | 15.50 | 2 | 0.02 |
| ER16 SPR 3-3.5 | ER16 | 3.00 | 3.50 | 16.00 | 10.26 | 27.50 | 18.50 | 2 | 0.02 |
| ER16 SPR 3.2-4 (2) | ER16 | 3.20 | 4.00 | 16.00 | 10.26 | 27.50 | 18.50 | 2 | 0.02 |
| ER16 SPR 4-5 | ER16 | 4.00 | 5.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SPR 5-6 | ER16 | 5.00 | 6.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SPR 6-7 | ER16 | 6.00 | 7.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SPR 7-8 | ER16 | 7.00 | 8.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SPR 8-9 | ER16 | 8.00 | 9.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SPR 9-10 | ER16 | 9.00 | 10.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.02 |
| ER20 SPR 1-1.5 | ER20 | 1.00 | 1.50 | 20.00 | 11.16 | 31.50 | 11.70 | 2 | 0.04 |
| ER20 SPR 1.5-2 | ER20 | 1.50 | 2.00 | 20.00 | 11.16 | 31.50 | 11.70 | 2 | 0.04 |
| ER20 SPR 2-3 | ER20 | 2.00 | 3.00 | 20.00 | 11.16 | 31.50 | 17.70 | 2 | 0.04 |
| ER20 SPR 3-4 | ER20 | 3.00 | 4.00 | 20.00 | 11.16 | 31.50 | 19.30 | 2 | 0.04 |
| ER20 SPR 4-5 | ER20 | 4.00 | 5.00 | 20.00 | 11.16 | 31.50 | 19.30 | 2 | 0.04 |
| ER20 SPR 5-6 | ER20 | 5.00 | 6.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SPR 6-7 | ER20 | 6.00 | 7.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SPR 7-8 | ER20 | 7.00 | 8.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SPR 8-9 | ER20 | 8.00 | 9.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SPR 9-10 | ER20 | 9.00 | 10.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.03 |
| ER20 SPR 10-11 | ER20 | 10.00 | 11.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.03 |
| ER20 SPR 11-12 | ER20 | 11.00 | 12.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.03 |
| ER20 SPR 12-13 | ER20 | 12.00 | 13.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.02 |
| ER25 SPR 1-1.5 | ER25 | 1.00 | 1.50 | 25.00 | 11.66 | 34.00 | 15.00 | 2 | 0.08 |
| ER25 SPR 1.5-2 | ER25 | 1.50 | 2.00 | 25.00 | 11.66 | 34.00 | 15.00 | 2 | 0.08 |
| ER25 SPR 2-3 | ER25 | 2.00 | 3.00 | 25.00 | 11.66 | 34.00 | 18.70 | 2 | 0.08 |
| ER25 SPR 3-4 | ER25 | 3.00 | 4.00 | 25.00 | 11.66 | 34.00 | 20.00 | 2 | 0.07 |
| ER25 SPR 4-5 | ER25 | 4.00 | 5.00 | 25.00 | 11.66 | 34.00 | 20.00 | 2 | 0.07 |
| ER25 SPR 5-6 | ER25 | 5.00 | 6.00 | 25.00 | 11.66 | 34.00 | 20.00 | 2 | 0.07 |
| ER25 SPR 6-7 | ER25 | 6.00 | 7.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.08 |
| ER25 SPR 7-8 | ER25 | 7.00 | 8.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.08 |
| ER25 SPR 8-9 | ER25 | 8.00 | 9.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SPR 9-10 | ER25 | 9.00 | 10.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SPR 10-11 | ER25 | 10.00 | 11.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SPR 11-12 | ER25 | 11.00 | 12.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.06 |
| ER25 SPR 12-13 | ER25 | 12.00 | 13.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.06 |
| ER25 SPR 13-14 | ER25 | 13.00 | 14.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.06 |
| ER25 SPR 14-15 | ER25 | 14.00 | 15.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.06 |
| ER25 SPR 15-16 | ER25 | 15.00 | 16.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.05 |
| ER32 SPR 2-3 | ER32 | 2.00 | 3.00 | 32.00 | 12.66 | 40.00 | 18.80 | 2 | 0.15 |
| ER32 SPR 3-4 | ER32 | 3.00 | 4.00 | 32.00 | 12.66 | 40.00 | 20.00 | 2 | 0.14 |
| ER32 SPR 4-5 | ER32 | 4.00 | 5.00 | 32.00 | 12.66 | 40.00 | 25.80 | 2 | 0.14 |
| ER32 SPR 5-6 | ER32 | 5.00 | 6.00 | 32.00 | 12.66 | 40.00 | 25.80 | 2 | 0.14 |
| ER32 SPR 6-7 | ER32 | 6.00 | 7.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.14 |
| ER32 SPR 7-8 | ER32 | 7.00 | 8.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.15 |
| ER32 SPR 8-9 | ER32 | 8.00 | 9.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.15 |
| ER32 SPR 9-10 | ER32 | 9.00 | 10.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.15 |

(1) The existing ER11 Collets with 1 mm clamping range will be phased out.
(2) For shank diameter 3-3.5 it is recommended to use collet type ER SPR 3-3.5
(3) Minimum diameter
(4) Maximum diameter

**ER-SPR**
DIN 6499/ ISO 15488-B
ER Spring Collet with Super Finish Surface and Special Anti-Corrosion Protection




| Designation | SS | DCONNWS(3) | DCONXWS(4) | DCONMS | LF | OAL | LSCNWS | Fig. | Kg |
|---|---|---|---|---|---|---|---|---|---|
| **ER32 SPR 10-11** | ER32 | 10.00 | 11.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.14 |
| **ER32 SPR 11-12** | ER32 | 11.00 | 12.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.14 |
| **ER32 SPR 12-13** | ER32 | 12.00 | 13.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.13 |
| **ER32 SPR 13-14** | ER32 | 13.00 | 14.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.13 |
| **ER32 SPR 14-15** | ER32 | 14.00 | 15.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.12 |
| **ER32 SPR 15-16** | ER32 | 15.00 | 16.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.12 |
| **ER32 SPR 16-17** | ER32 | 16.00 | 17.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.11 |
| **ER32 SPR 17-18** | ER32 | 17.00 | 18.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.11 |
| **ER32 SPR 18-19** | ER32 | 18.00 | 19.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.10 |
| **ER32 SPR 19-20** | ER32 | 19.00 | 20.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.09 |
| **ER40 SPR 3-4** | ER40 | 3.00 | 4.00 | 40.00 | 14.66 | 46.00 | 27.00 | 2 | 0.27 |
| **ER40 SPR 4-5** | ER40 | 4.00 | 5.00 | 40.00 | 14.66 | 46.00 | 31.00 | 2 | 0.27 |
| **ER40 SPR 5-6** | ER40 | 5.00 | 6.00 | 40.00 | 14.66 | 46.00 | 31.00 | 2 | 0.27 |
| **ER40 SPR 6-7** | ER40 | 6.00 | 7.00 | 40.00 | 14.66 | 46.00 | 31.00 | 2 | 0.28 |
| **ER40 SPR 7-8** | ER40 | 7.00 | 8.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.27 |
| **ER40 SPR 8-9** | ER40 | 8.00 | 9.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.27 |
| **ER40 SPR 9-10** | ER40 | 9.00 | 10.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.28 |
| **ER40 SPR 10-11** | ER40 | 10.00 | 11.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.27 |
| **ER40 SPR 11-12** | ER40 | 11.00 | 12.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.03 |
| **ER40 SPR 12-13** | ER40 | 12.00 | 13.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.27 |
| **ER40 SPR 13-14** | ER40 | 13.00 | 14.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.26 |
| **ER40 SPR 14-15** | ER40 | 14.00 | 15.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.26 |
| **ER40 SPR 15-16** | ER40 | 15.00 | 16.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.26 |
| **ER40 SPR 16-17** | ER40 | 16.00 | 17.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.24 |
| **ER40 SPR 17-18** | ER40 | 17.00 | 18.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.24 |
| **ER40 SPR 18-19** | ER40 | 18.00 | 19.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.23 |
| **ER40 SPR 19-20** | ER40 | 19.00 | 20.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.22 |
| **ER40 SPR 20-21** | ER40 | 20.00 | 21.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.21 |
| **ER40 SPR 21-22** | ER40 | 21.00 | 22.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.20 |
| **ER40 SPR 22-23** | ER40 | 22.00 | 23.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.19 |
| **ER40 SPR 23-24** | ER40 | 23.00 | 24.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.18 |
| **ER40 SPR 24-25** | ER40 | 24.00 | 25.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.17 |
| **ER40 SPR 25-26** | ER40 | 25.00 | 26.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.15 |
| **ER50 SPR 10-12** | ER50 | 10.00 | 12.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.56 |
| **ER50 SPR 12-14** | ER50 | 12.00 | 14.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.47 |
| **ER50 SPR 14-16** | ER50 | 14.00 | 16.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.50 |
| **ER50 SPR 16-18** | ER50 | 16.00 | 18.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.67 |
| **ER50 SPR 18-20** | ER50 | 18.00 | 20.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.33 |
| **ER50 SPR 20-22** | ER50 | 20.00 | 22.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.49 |
| **ER50 SPR 22-24** | ER50 | 22.00 | 24.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.47 |
| **ER50 SPR 24-26** | ER50 | 24.00 | 26.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.44 |
| **ER50 SPR 26-28** | ER50 | 26.00 | 28.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.42 |
| **ER50 SPR 28-30** | ER50 | 28.00 | 30.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.38 |
| **ER50 SPR 30-32** | ER50 | 30.00 | 32.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.35 |
| **ER50 SPR 32-34** | ER50 | 32.00 | 34.00 | 50.00 | 21.00 | 60.00 | 60.00 | 1 | 0.29 |

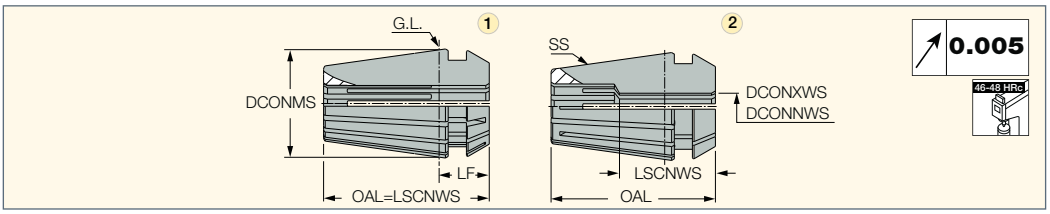
(1) The existing ER11 Collets with 1 mm clamping range will be phased out.
(2) For shank diameter 3-3.5 it is recommended to use collet type ER SPR 3-3.5
(3) Minimum diameter
(4) Maximum diameter

770

**ERCOLLET**

**ER-SPR-AA**

DIN 6499 'AA' Ultra Precise ER Spring Collets with Super Finish Surface and Special Anti-Corrosion Protection




| Designation | SS | DCONNWS(2) | DCONXWS(3) | DCONMS | LF | OAL | LSCNWS | Fig. | Kg |
|---|---|---|---|---|---|---|---|---|---|
| ER11 SPR 0.5-1.0 AA | ER11 | 0.50 | 1.00 | 11.00 | 6.30 | 18.00 | 8.50 | 2 | 0.01 |
| ER11 SPR 1.0-1.5 AA | ER11 | 1.00 | 1.50 | 11.00 | 6.30 | 18.00 | 8.50 | 2 | 0.01 |
| ER11 SPR 1.5-2.0 AA | ER11 | 1.50 | 2.00 | 11.00 | 6.30 | 18.00 | 9.50 | 2 | 0.01 |
| ER11 SPR 2.0-2.5 AA | ER11 | 2.00 | 2.50 | 11.00 | 6.30 | 18.00 | 9.50 | 2 | 0.01 |
| ER11 SPR 2.5-3.0 AA | ER11 | 2.50 | 3.00 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 3.0-3.5 AA | ER11 | 3.00 | 3.50 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 3.5-4.0 AA | ER11 | 3.50 | 4.00 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 4.0-4.5 AA | ER11 | 4.00 | 4.50 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 4.5-5.0 AA | ER11 | 4.50 | 5.00 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 5.0-5.5 AA | ER11 | 5.00 | 5.50 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 5.5-6.0 AA | ER11 | 5.50 | 6.00 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 6.0-6.5 AA | ER11 | 6.00 | 6.50 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SPR 6.5-7.0 AA | ER11 | 6.50 | 7.00 | 11.00 | 6.30 | 18.00 | 18.00 | 1 | 0.01 |
| ER16 SPR 0.5-1 AA | ER16 | 0.50 | 1.00 | 16.00 | 10.26 | 27.50 | 10.50 | 2 | 0.02 |
| ER16 SPR 1.5-2 AA | ER16 | 1.50 | 2.00 | 16.00 | 10.26 | 27.50 | 14.20 | 2 | 0.02 |
| ER16 SPR 2-3 AA | ER16 | 2.00 | 3.00 | 16.00 | 10.26 | 27.50 | 15.50 | 2 | 0.02 |
| ER16 SPR 3.2-4 AA (1) | ER16 | 3.20 | 4.00 | 16.00 | 10.26 | 27.50 | 18.50 | 2 | 0.03 |
| ER16 SPR 4-5 AA | ER16 | 4.00 | 5.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SPR 5-6 AA | ER16 | 5.00 | 6.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SPR 6-7 AA | ER16 | 6.00 | 7.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SPR 7-8 AA | ER16 | 7.00 | 8.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SPR 8-9 AA | ER16 | 8.00 | 9.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SPR 9-10 AA | ER16 | 9.00 | 10.00 | 16.00 | 10.26 | 27.50 | 27.50 | 1 | 0.01 |
| ER20 SPR 1.5-2 AA | ER20 | 1.50 | 2.00 | 20.00 | 11.16 | 31.50 | 11.70 | 2 | 0.04 |
| ER20 SPR 2-3 AA | ER20 | 2.00 | 3.00 | 20.00 | 11.16 | 31.50 | 17.70 | 2 | 0.04 |
| ER20 SPR 3-4 AA | ER20 | 3.00 | 4.00 | 20.00 | 11.16 | 31.50 | 19.30 | 2 | 0.04 |
| ER20 SPR 4-5 AA | ER20 | 4.00 | 5.00 | 20.00 | 11.16 | 31.50 | 19.30 | 2 | 0.04 |
| ER20 SPR 5-6 AA | ER20 | 5.00 | 6.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SPR 6-7 AA | ER20 | 6.00 | 7.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SPR 7-8 AA | ER20 | 7.00 | 8.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SPR 8-9 AA | ER20 | 8.00 | 9.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SPR 9-10 AA | ER20 | 9.00 | 10.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.03 |
| ER20 SPR 10-11 AA | ER20 | 10.00 | 11.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.03 |
| ER20 SPR 11-12 AA | ER20 | 11.00 | 12.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.03 |
| ER20 SPR 12-13 AA | ER20 | 12.00 | 13.00 | 20.00 | 11.16 | 31.50 | 31.50 | 1 | 0.02 |
| ER25 SPR 1.5-2 AA | ER25 | 1.50 | 2.00 | 25.00 | 11.66 | 34.00 | 15.00 | 2 | 0.08 |
| ER25 SPR 2-3 AA | ER25 | 2.00 | 3.00 | 25.00 | 11.66 | 34.00 | 18.70 | 2 | 0.08 |
| ER25 SPR 3-4 AA | ER25 | 3.00 | 4.00 | 25.00 | 11.66 | 34.00 | 20.00 | 2 | 0.08 |
| ER25 SPR 4-5 AA | ER25 | 4.00 | 5.00 | 25.00 | 11.66 | 34.00 | 20.00 | 2 | 0.07 |
| ER25 SPR 5-6 AA | ER25 | 5.00 | 6.00 | 25.00 | 11.66 | 34.00 | 20.00 | 2 | 0.07 |
| ER25 SPR 6-7 AA | ER25 | 6.00 | 7.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SPR 7-8 AA | ER25 | 7.00 | 8.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SPR 8-9 AA | ER25 | 8.00 | 9.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SPR 9-10 AA | ER25 | 9.00 | 10.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SPR 10-11 AA | ER25 | 10.00 | 11.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SPR 11-12 AA | ER25 | 11.00 | 12.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.06 |
| ER25 SPR 12-13 AA | ER25 | 12.00 | 13.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.06 |
| ER25 SPR 13-14 AA | ER25 | 13.00 | 14.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.06 |
| ER25 SPR 14-15 AA | ER25 | 14.00 | 15.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.05 |
| ER25 SPR 15-16 AA | ER25 | 15.00 | 16.00 | 25.00 | 11.66 | 34.00 | 34.00 | 1 | 0.05 |
| ER32 SPR 2-3 AA | ER32 | 2.00 | 3.00 | 32.00 | 12.66 | 40.00 | 18.80 | 2 | 0.14 |
| ER32 SPR 3-4 AA | ER32 | 3.00 | 4.00 | 32.00 | 12.66 | 40.00 | 20.00 | 2 | 0.14 |
| ER32 SPR 4-5 AA | ER32 | 4.00 | 5.00 | 32.00 | 12.66 | 40.00 | 25.80 | 2 | 0.14 |
| ER32 SPR 5-6 AA | ER32 | 5.00 | 6.00 | 32.00 | 12.66 | 40.00 | 25.80 | 2 | 0.14 |
| ER32 SPR 6-7 AA | ER32 | 6.00 | 7.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.14 |
| ER32 SPR 7-8 AA | ER32 | 7.00 | 8.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.15 |
| ER32 SPR 8-9 AA | ER32 | 8.00 | 9.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.15 |
| ER32 SPR 9-10 AA | ER32 | 9.00 | 10.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.15 |
| ER32 SPR 10-11 AA | ER32 | 10.00 | 11.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.14 |
| ER32 SPR 11-12 AA | ER32 | 11.00 | 12.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.14 |
| ER32 SPR 12-13 AA | ER32 | 12.00 | 13.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.14 |
| ER32 SPR 13-14 AA | ER32 | 13.00 | 14.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.13 |

(1) For shank diameter 3-3.1 use ER16 SPR 2-3

(2) Minimum diameter

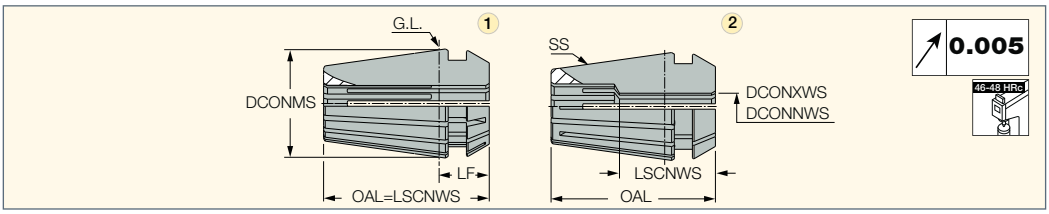
(3) Maximum diameter

Continued

ERCOLLET

**ER-SPR-AA**

DIN 6499 'AA' Ultra Precise ER Spring Collets with Super Finish Surface and Special Anti-Corrosion Protection




| Designation | SS | DCONNWS(2) | DCONXWS(3) | DCONMS | LF | OAL | LSCNWS | Fig. | Kg |
|---|---|---|---|---|---|---|---|---|---|
| **ER32 SPR 14-15 AA** | ER32 | 14.00 | 15.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.13 |
| **ER32 SPR 15-16 AA** | ER32 | 15.00 | 16.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.12 |
| **ER32 SPR 16-17 AA** | ER32 | 16.00 | 17.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.12 |
| **ER32 SPR 17-18 AA** | ER32 | 17.00 | 18.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.10 |
| **ER32 SPR 18-19 AA** | ER32 | 18.00 | 19.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.10 |
| **ER32 SPR 19-20 AA** | ER32 | 19.00 | 20.00 | 32.00 | 12.66 | 40.00 | 40.00 | 1 | 0.10 |
| **ER40 SPR 3-4 AA** | ER40 | 3.00 | 4.00 | 40.00 | 14.66 | 46.00 | 27.00 | 2 | 0.27 |
| **ER40 SPR 4-5 AA** | ER40 | 4.00 | 5.00 | 40.00 | 14.66 | 46.00 | 31.00 | 2 | 0.27 |
| **ER40 SPR 5-6 AA** | ER40 | 5.00 | 6.00 | 40.00 | 14.66 | 46.00 | 31.00 | 2 | 0.28 |
| **ER40 SPR 6-7 AA** | ER40 | 6.00 | 7.00 | 40.00 | 14.66 | 46.00 | 31.00 | 2 | 0.28 |
| **ER40 SPR 7-8 AA** | ER40 | 7.00 | 8.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.27 |
| **ER40 SPR 8-9 AA** | ER40 | 8.00 | 9.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.28 |
| **ER40 SPR 9-10 AA** | ER40 | 9.00 | 10.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.23 |
| **ER40 SPR 10-11 AA** | ER40 | 10.00 | 11.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.01 |
| **ER40 SPR 11-12 AA** | ER40 | 11.00 | 12.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.28 |
| **ER40 SPR 12-13 AA** | ER40 | 12.00 | 13.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.28 |
| **ER40 SPR 13-14 AA** | ER40 | 13.00 | 14.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.27 |
| **ER40 SPR 14-15 AA** | ER40 | 14.00 | 15.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.27 |
| **ER40 SPR 15-16 AA** | ER40 | 15.00 | 16.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.18 |
| **ER40 SPR 16-17 AA** | ER40 | 16.00 | 17.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.25 |
| **ER40 SPR 17-18 AA** | ER40 | 17.00 | 18.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.25 |
| **ER40 SPR 18-19 AA** | ER40 | 18.00 | 19.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.07 |
| **ER40 SPR 19-20 AA** | ER40 | 19.00 | 20.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.18 |
| **ER40 SPR 20-21 AA** | ER40 | 20.00 | 21.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.19 |
| **ER40 SPR 21-22 AA** | ER40 | 21.00 | 22.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.21 |
| **ER40 SPR 22-23 AA** | ER40 | 22.00 | 23.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.20 |
| **ER40 SPR 23-24 AA** | ER40 | 23.00 | 24.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.14 |
| **ER40 SPR 24-25 AA** | ER40 | 24.00 | 25.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.17 |
| **ER40 SPR 25-26 AA** | ER40 | 25.00 | 26.00 | 40.00 | 14.66 | 46.00 | 46.00 | 1 | 0.14 |

(1) For shank diameter 3-3.1 use ER16 SPR 2-3

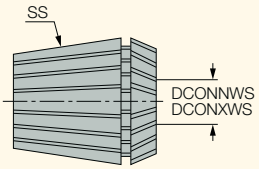
(2) Minimum diameter

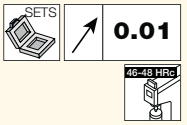
(3) Maximum diameter

770

## ERCOLLET

**SET ER-SPR**
DIN 6499 ER Spring Collet Set with Super Finish Surface and Special Anti-Corrosion Protection



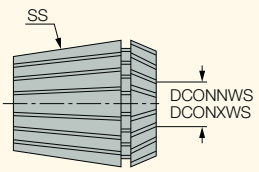



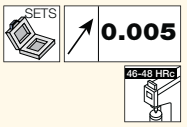

| Designation | SS | Qty | DCONNWS(2) | DCONXWS(3) |
|---|---|---|---|---|
| SET ER11 SPR 13 (1) | ER11 | 13 | 0.5 | 7.0 |
| SET ER16 SPR 10 | ER16 | 10 | 0.5 | 10.0 |
| SET ER20 SPR 12 | ER20 | 12 | 1.0 | 13.0 |
| SET ER25 SPR 15 | ER25 | 15 | 1.0 | 16.0 |
| SET ER32 SPR 18 | ER32 | 18 | 2.0 | 20.0 |
| SET ER40 SPR 23 | ER40 | 23 | 3.0 | 26.0 |
| SET ER50 SPR 12 | ER50 | 12 | 10.0 | 34.0 |

(1) Clamping range 0.5 mm
(2) Minimum diameter
(3) Maximum diameter

## ERCOLLET

**SET ER-SPR-AA**
Sets of DIN 6499 'AA' Ultra Precise ER Spring Collets with Super Finish Surface and Special Anti-Corrosion Protection



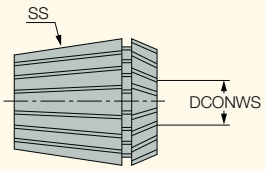




| Designation | SS | Qty | DCONNWS(2) | DCONXWS(3) |
|---|---|---|---|---|
| SET ER11 SPR 13 AA (1) | ER11 | 13 | 0.5 | 7.0 |
| SET ER16 SPR 10 AA | ER16 | 10 | 0.5 | 10.0 |
| SET ER20 SPR 12 AA | ER20 | 12 | 1.0 | 13.0 |
| SET ER25 SPR 15 AA | ER25 | 15 | 1.0 | 16.0 |
| SET ER32 SPR 18 AA | ER32 | 18 | 2.0 | 20.0 |
| SET ER40 SPR 23 AA | ER40 | 23 | 3.0 | 26.0 |

(1) Clamping range 0.5 mm
(2) Minimum diameter
(3) Maximum diameter

## ERCOLLET

**ER-AAA**
DIN 6499 'AAA' Ultra Precise ER Spring Collets with Super Finish Surface and Special Anti-Corrosion Protection

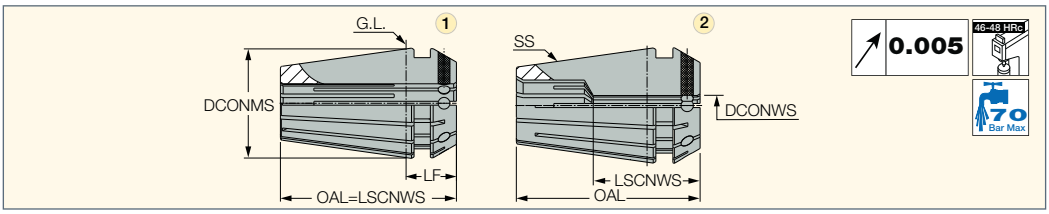


| Designation | SS | DCONWS |
|---|---|---|
| ER11 SPR EX3.0AAA (1) | ER11 | 3.00 |
| ER11 SPR EX4.0AAA (1) | ER11 | 4.00 |
| ER11 SPR EX6.0AAA (1) | ER11 | 6.00 |

New
(1) 0.002 mm runout accuracy

**ERCOLLET**

**ER-SEAL-AA-METRIC**
DIN 6499/ ISO 15488-B ER
Sealed Single Diameter Collet
with Super Finish Surface and
Special Anti-Corrosion Protection

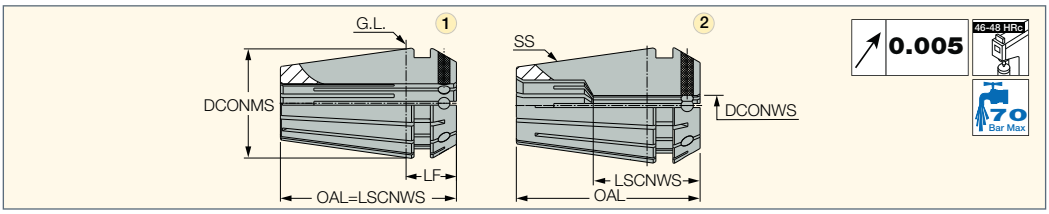



| Designation | SS | DCONWS | DCONMS | LF | OAL | LSCNWS | Fig. | Kg |
|---|---|---|---|---|---|---|---|---|
| ER11 SEAL 3 AA | ER11 | 3.00 | 11.00 | 4.50 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SEAL 4 AA | ER11 | 4.00 | 11.00 | 4.50 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SEAL 5 AA | ER11 | 5.00 | 11.00 | 4.50 | 18.00 | 18.00 | 1 | 0.01 |
| ER11 SEAL 6 AA | ER11 | 6.00 | 11.00 | 4.50 | 18.00 | 18.00 | 1 | 0.01 |
| ER16 SEAL 3 AA | ER16 | 3.00 | 16.00 | 6.30 | 27.50 | 15.50 | 2 | 0.02 |
| ER16 SEAL 4 AA | ER16 | 4.00 | 16.00 | 6.30 | 27.50 | 18.50 | 2 | 0.02 |
| ER16 SEAL 5 AA | ER16 | 5.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SEAL 6 AA | ER16 | 6.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SEAL 7 AA | ER16 | 7.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SEAL 8 AA | ER16 | 8.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SEAL 9 AA | ER16 | 9.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SEAL 10 AA | ER16 | 10.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.01 |
| ER20 SEAL 3 AA | ER20 | 3.00 | 20.00 | 7.20 | 31.50 | 17.70 | 2 | 0.04 |
| ER20 SEAL 4 AA | ER20 | 4.00 | 20.00 | 7.20 | 31.50 | 17.70 | 2 | 0.04 |
| ER20 SEAL 5 AA | ER20 | 5.00 | 20.00 | 7.20 | 31.50 | 19.30 | 2 | 0.04 |
| ER20 SEAL 6 AA | ER20 | 6.00 | 20.00 | 7.20 | 31.50 | 19.30 | 2 | 0.04 |
| ER20 SEAL 7 AA | ER20 | 7.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SEAL 8 AA | ER20 | 8.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SEAL 9 AA | ER20 | 9.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SEAL 10 AA | ER20 | 10.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.03 |
| ER20 SEAL 11 AA | ER20 | 11.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.03 |
| ER20 SEAL 12 AA | ER20 | 12.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.03 |
| ER25 SEAL 3 AA | ER25 | 3.00 | 25.00 | 7.50 | 34.00 | 18.70 | 2 | 0.08 |
| ER25 SEAL 4 AA | ER25 | 4.00 | 25.00 | 7.50 | 34.00 | 20.00 | 2 | 0.08 |
| ER25 SEAL 5 AA | ER25 | 5.00 | 25.00 | 7.50 | 34.00 | 20.00 | 2 | 0.08 |
| ER25 SEAL 6 AA | ER25 | 6.00 | 25.00 | 7.50 | 34.00 | 20.00 | 2 | 0.08 |
| ER25 SEAL 7 AA | ER25 | 7.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.08 |
| ER25 SEAL 8 AA | ER25 | 8.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.08 |
| ER25 SEAL 9 AA | ER25 | 9.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.08 |
| ER25 SEAL 10 AA | ER25 | 10.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SEAL 11 AA | ER25 | 11.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SEAL 12 AA | ER25 | 12.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SEAL 13 AA | ER25 | 13.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.06 |
| ER25 SEAL 14 AA | ER25 | 14.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.06 |
| ER25 SEAL 15 AA | ER25 | 15.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.05 |
| ER25 SEAL 16 AA | ER25 | 16.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.05 |
| ER32 SEAL 3 AA | ER32 | 3.00 | 32.00 | 8.20 | 40.00 | 18.80 | 2 | 0.17 |
| ER32 SEAL 4 AA | ER32 | 4.00 | 32.00 | 8.20 | 40.00 | 20.00 | 2 | 0.17 |
| ER32 SEAL 5 AA | ER32 | 5.00 | 32.00 | 8.20 | 40.00 | 22.00 | 2 | 0.17 |
| ER32 SEAL 6 AA | ER32 | 6.00 | 32.00 | 8.20 | 40.00 | 25.80 | 2 | 0.17 |
| ER32 SEAL 7 AA | ER32 | 7.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.17 |
| ER32 SEAL 8 AA | ER32 | 8.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.17 |
| ER32 SEAL 9 AA | ER32 | 9.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.17 |
| ER32 SEAL 10 AA | ER32 | 10.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.16 |
| ER32 SEAL 11 AA | ER32 | 11.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.16 |
| ER32 SEAL 12 AA | ER32 | 12.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.15 |
| ER32 SEAL 13 AA | ER32 | 13.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.14 |
| ER32 SEAL 14 AA | ER32 | 14.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.14 |
| ER32 SEAL 15 AA | ER32 | 15.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.14 |
| ER32 SEAL 16 AA | ER32 | 16.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.14 |
| ER32 SEAL 17 AA | ER32 | 17.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.12 |
| ER32 SEAL 18 AA | ER32 | 18.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.13 |
| ER32 SEAL 19 AA | ER32 | 19.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.11 |
| ER32 SEAL 20 AA | ER32 | 20.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.10 |
| ER40 SEAL 6 AA | ER40 | 6.00 | 40.00 | 10.50 | 46.00 | 31.00 | 2 | 0.31 |
| ER40 SEAL 8 AA | ER40 | 8.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.32 |
| ER40 SEAL 10 AA | ER40 | 10.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.31 |
| ER40 SEAL 12 AA | ER40 | 12.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.30 |
| ER40 SEAL 14 AA | ER40 | 14.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.29 |
| ER40 SEAL 16 AA | ER40 | 16.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.27 |
| ER40 SEAL 18 AA | ER40 | 18.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.26 |
| ER40 SEAL 20 AA | ER40 | 20.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.24 |
| ER40 SEAL 22 AA | ER40 | 22.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.22 |
| ER40 SEAL 25 AA | ER40 | 25.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.18 |

- Recommended for improved runout and clamping torque.

**ERCOLLET**

**ER-SEAL-AA-JET**
DIN 6499/ ISO 15488-B
ER Sealed Single Diameter Collet with Special Anti-Corrosion Protection Featuring 4 Coolant Jets

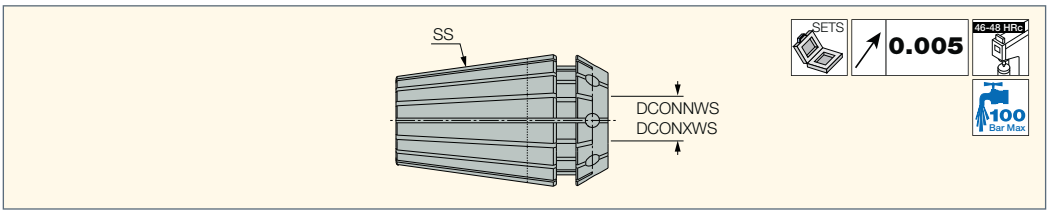



| Designation | SS | DCONWS | DCONMS | LF | OAL | LSCNWS | Fig. | kg |
|---|---|---|---|---|---|---|---|---|
| ER16 SEAL 3 AA JET | ER16 | 3.00 | 16.00 | 6.30 | 27.50 | 15.50 | 2 | 0.02 |
| ER16 SEAL 4 AA JET | ER16 | 4.00 | 16.00 | 6.30 | 27.50 | 18.50 | 2 | 0.02 |
| ER16 SEAL 5 AA JET | ER16 | 5.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SEAL 6 AA JET | ER16 | 6.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SEAL 7 AA JET | ER16 | 7.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SEAL 8 AA JET | ER16 | 8.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SEAL 9 AA JET | ER16 | 9.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.02 |
| ER16 SEAL 10 AA JET | ER16 | 10.00 | 16.00 | 6.30 | 27.50 | 27.50 | 1 | 0.01 |
| ER20 SEAL 3 AA JET | ER20 | 3.00 | 20.00 | 7.20 | 31.50 | 17.70 | 2 | 0.04 |
| ER20 SEAL 4 AA JET | ER20 | 4.00 | 20.00 | 7.20 | 31.50 | 17.70 | 2 | 0.04 |
| ER20 SEAL 5 AA JET | ER20 | 5.00 | 20.00 | 7.20 | 31.50 | 19.30 | 2 | 0.04 |
| ER20 SEAL 6 AA JET | ER20 | 6.00 | 20.00 | 7.20 | 31.50 | 19.30 | 2 | 0.04 |
| ER20 SEAL 7 AA JET | ER20 | 7.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SEAL 8 AA JET | ER20 | 8.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SEAL 9 AA JET | ER20 | 9.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.04 |
| ER20 SEAL 10 AA JET | ER20 | 10.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.03 |
| ER20 SEAL 11 AA JET | ER20 | 11.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.03 |
| ER20 SEAL 12 AA JET | ER20 | 12.00 | 20.00 | 7.20 | 31.50 | 31.50 | 1 | 0.03 |
| ER25 SEAL 4 AA JET | ER25 | 4.00 | 25.00 | 7.50 | 34.00 | 20.00 | 2 | 0.08 |
| ER25 SEAL 5 AA JET | ER25 | 5.00 | 25.00 | 7.50 | 34.00 | 20.00 | 2 | 0.08 |
| ER25 SEAL 6 AA JET | ER25 | 6.00 | 25.00 | 7.50 | 34.00 | 20.00 | 2 | 0.08 |
| ER25 SEAL 7 AA JET | ER25 | 7.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.08 |
| ER25 SEAL 8 AA JET | ER25 | 8.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.08 |
| ER25 SEAL 9 AA JET | ER25 | 9.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.08 |
| ER25 SEAL 10 AA JET | ER25 | 10.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SEAL 11 AA JET | ER25 | 11.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SEAL 12 AA JET | ER25 | 12.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.07 |
| ER25 SEAL 13 AA JET | ER25 | 13.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.06 |
| ER25 SEAL 14 AA JET | ER25 | 14.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.06 |
| ER25 SEAL 15 AA JET | ER25 | 15.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.05 |
| ER25 SEAL 16 AA JET | ER25 | 16.00 | 25.00 | 7.50 | 34.00 | 34.00 | 1 | 0.05 |
| ER32 SEAL 4 AA JET | ER32 | 4.00 | 32.00 | 8.20 | 40.00 | 20.00 | 2 | 0.17 |
| ER32 SEAL 5 AA JET | ER32 | 5.00 | 32.00 | 8.20 | 40.00 | 22.00 | 2 | 0.17 |
| ER32 SEAL 6 AA JET | ER32 | 6.00 | 32.00 | 8.20 | 40.00 | 25.80 | 2 | 0.17 |
| ER32 SEAL 7 AA JET | ER32 | 7.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.17 |
| ER32 SEAL 8 AA JET | ER32 | 8.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.17 |
| ER32 SEAL 9 AA JET | ER32 | 9.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.17 |
| ER32 SEAL 10 AA JET | ER32 | 10.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.16 |
| ER32 SEAL 11 AA JET | ER32 | 11.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.16 |
| ER32 SEAL 12 AA JET | ER32 | 12.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.15 |
| ER32 SEAL 13 AA JET | ER32 | 13.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.13 |
| ER32 SEAL 14 AA JET | ER32 | 14.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.14 |
| ER32 SEAL 15 AA JET | ER32 | 15.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.14 |
| ER32 SEAL 16 AA JET | ER32 | 16.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.13 |
| ER32 SEAL 17 AA JET | ER32 | 17.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.12 |
| ER32 SEAL 18 AA JET | ER32 | 18.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.13 |
| ER32 SEAL 19 AA JET | ER32 | 19.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.11 |
| ER32 SEAL 20 AA JET | ER32 | 20.00 | 32.00 | 8.20 | 40.00 | 40.00 | 1 | 0.10 |
| ER40 SEAL 6 AA JET | ER40 | 6.00 | 40.00 | 10.50 | 46.00 | 31.00 | 2 | 0.31 |
| ER40 SEAL 8 AA JET | ER40 | 8.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.32 |
| ER40 SEAL 10 AA JET | ER40 | 10.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.31 |
| ER40 SEAL 12 AA JET | ER40 | 12.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.30 |
| ER40 SEAL 14 AA JET | ER40 | 14.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.29 |
| ER40 SEAL 16 AA JET | ER40 | 16.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.37 |
| ER40 SEAL 18 AA JET | ER40 | 18.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.26 |
| ER40 SEAL 20 AA JET | ER40 | 20.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.24 |
| ER40 SEAL 22 AA JET | ER40 | 22.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.22 |
| ER40 SEAL 25 AA JET | ER40 | 25.00 | 40.00 | 10.50 | 46.00 | 46.00 | 1 | 0.18 |

• Recommended for improved runout and clamping torque.

## ERCOLLET

**SET ER-SEAL-AA**
DIN 6499/ ISO 15488-B ER Sealed Single Diameter Collet with Super Finish Surface and Special Anti-Corrosion Protection

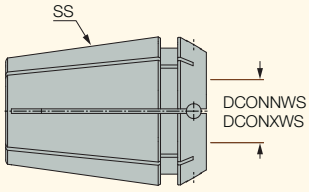


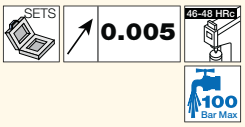

| Designation | SS | Qty | DCONNWS(1) | DCONXWS(2) |
|---|---|---|---|---|
| SET ER16 SEAL 7 AA | ER16 | 7 | 4.00 | 10.00 |
| SET ER20 SEAL 9 AA | ER20 | 9 | 4.00 | 12.00 |
| SET ER25 SEAL 13 AA | ER25 | 13 | 4.00 | 16.00 |
| SET ER32 SEAL 17 AA | ER32 | 17 | 4.00 | 20.00 |
| SET ER40 SEAL 10 AA | ER40 | 10 | 6.00 | 25.00 |

(1) Minimum diameter
(2) Maximum diameter

## ERCOLLET

**SET ER-SEAL-AA-JET**
DIN 6499/ ISO 15488-B ER Sealed Single Diameter Collet with Special Anti-Corrosion Protection Featuring 4 Coolant Jets



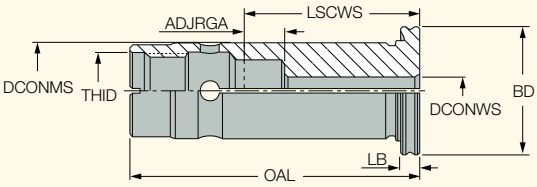



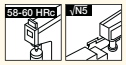

| Designation | SS | Qty | DCONNWS(1) | DCONXWS(2) |
|---|---|---|---|---|
| SET ER16 SEAL 7 AA JET | ER16 | 7 | 4.00 | 10.00 |
| SET ER20 SEAL 9 AA JET | ER20 | 9 | 4.00 | 12.00 |
| SET ER25 SEAL 13 AA JET | ER25 | 13 | 4.00 | 16.00 |
| SET ER32 SEAL 17 AA JET | ER32 | 17 | 4.00 | 20.00 |
| SET ER40 SEAL 10 AA JET | ER40 | 10 | 6.00 | 25.00 |

(1) Minimum diameter
(2) Maximum diameter

## MAXIN

**SC-SPR**
SC Straight Collets for MAXIN Power Chucks



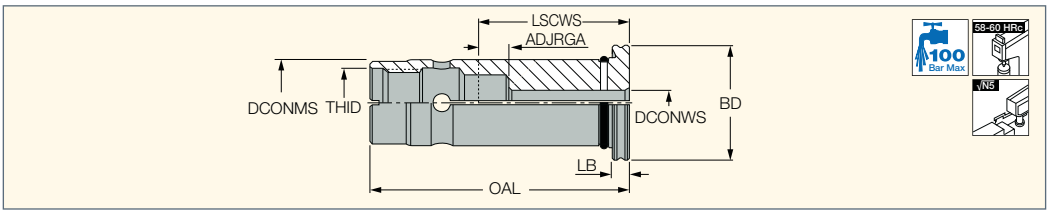




| Designation | DCONMS | DCONWS | BD | LB | OAL | LSCWS | ADJRGA(1) | THID |
|---|---|---|---|---|---|---|---|---|
| SC 20 SPR 6 | 20.00 | 6.00 | 27.00 | 4.00 | 60.00 | 35.00 | 7.00 | M16 |
| SC 20 SPR 8 | 20.00 | 8.00 | 27.00 | 4.00 | 60.00 | 35.00 | 7.00 | M16 |
| SC 20 SPR 10 | 20.00 | 10.00 | 27.00 | 4.00 | 60.00 | 48.00 | 13.00 | M16 |
| SC 20 SPR 12 | 20.00 | 12.00 | 27.00 | 4.00 | 60.00 | 48.00 | 8.00 | M16 |
| SC 20 SPR 14 | 20.00 | 14.00 | 27.00 | 4.00 | 60.00 | 48.00 | 8.00 | M16 |
| SC 20 SPR 15 | 20.00 | 15.00 | 27.00 | 4.00 | 60.00 | 48.00 | 8.00 | M16 |
| SC 20 SPR 16 | 20.00 | 16.00 | 27.00 | 4.00 | 60.00 | 48.00 | 9.00 | M16 |
| SC 32 SPR 6 | 32.00 | 6.00 | 38.00 | 4.00 | 72.00 | 45.00 | 17.00 | M24X1.5 |
| SC 32 SPR 8 | 32.00 | 8.00 | 38.00 | 4.00 | 72.00 | 45.00 | 17.00 | M24X1.5 |
| SC 32 SPR 10 | 32.00 | 10.00 | 38.00 | 4.00 | 72.00 | 48.00 | 13.00 | M24X1.5 |
| SC 32 SPR 12 | 32.00 | 12.00 | 38.00 | 4.00 | 72.00 | 45.00 | 5.00 | M24X1.5 |
| SC 32 SPR 14 | 32.00 | 14.00 | 38.00 | 4.00 | 72.00 | 45.00 | 5.00 | M24X1.5 |
| SC 32 SPR 15 | 32.00 | 15.00 | 38.00 | 4.00 | 72.00 | 59.50 | 19.50 | M24X1.5 |
| SC 32 SPR 16 | 32.00 | 16.00 | 38.00 | 4.00 | 72.00 | 61.50 | 17.50 | M24X1.5 |
| SC 32 SPR 18 | 32.00 | 18.00 | 38.00 | 4.00 | 72.00 | 61.50 | 17.50 | M24X1.5 |
| SC 32 SPR 19 | 32.00 | 19.00 | 38.00 | 4.00 | 72.00 | 61.50 | 17.50 | M24X1.5 |
| SC 32 SPR 20 | 32.00 | 20.00 | 38.00 | 4.00 | 72.00 | 61.50 | 15.50 | M24X1.5 |
| SC 32 SPR 24 | 32.00 | 24.00 | 38.00 | 4.00 | 72.00 | 55.50 | 10.50 | M24X1.5 |
| SC 32 SPR 25 | 32.00 | 25.00 | 38.00 | 4.00 | 72.00 | 61.50 | 10.50 | M24X1.5 |

(1) Preset range

**MAXIN**

**SC-SEAL**
Sealed Collets for MAXIN Power Chucks

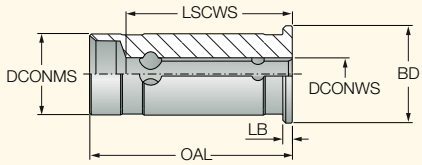



| Designation | DCONMS | DCONWS | LB | BD | OAL | LSCWS | ADJRGA | THID |
|---|---|---|---|---|---|---|---|---|
| **SC 20 SEAL 6** | 20.00 | 6.00 | 4.00 | 27.00 | 60.00 | 35.00 | 7.00 | M16 |
| **SC 20 SEAL 8** | 20.00 | 8.00 | 4.00 | 27.00 | 60.00 | 35.00 | 7.00 | M16 |
| **SC 20 SEAL 10** | 20.00 | 10.00 | 4.00 | 27.00 | 60.00 | 48.00 | 13.00 | M16 |
| **SC 20 SEAL 12** | 20.00 | 12.00 | 4.00 | 27.00 | 60.00 | 48.00 | 8.00 | M16 |
| **SC 20 SEAL 14** | 20.00 | 14.00 | 4.00 | 27.00 | 60.00 | 48.00 | 8.00 | M16 |
| **SC 20 SEAL 15** | 20.00 | 15.00 | 4.00 | 27.00 | 60.00 | 48.00 | 8.00 | M16 |
| **SC 20 SEAL 16** | 20.00 | 16.00 | 4.00 | 27.00 | 60.00 | 48.00 | 9.00 | M16 |
| **SC 32 SEAL 6** | 32.00 | 6.00 | 4.00 | 38.00 | 72.00 | 45.00 | 17.00 | M24X1.5 |
| **SC 32 SEAL 8** | 32.00 | 8.00 | 4.00 | 38.00 | 72.00 | 45.00 | 17.00 | M24X1.5 |
| **SC 32 SEAL 10** | 32.00 | 10.00 | 4.00 | 38.00 | 72.00 | 48.00 | 13.00 | M24X1.5 |
| **SC 32 SEAL 12** | 32.00 | 12.00 | 4.00 | 38.00 | 72.00 | 45.00 | 5.00 | M24X1.5 |
| **SC 32 SEAL 14** | 32.00 | 14.00 | 4.00 | 38.00 | 72.00 | 45.00 | 5.00 | M24X1.5 |
| **SC 32 SEAL 15** | 32.00 | 15.00 | 4.00 | 38.00 | 72.00 | 45.00 | 5.00 | M24X1.5 |
| **SC 32 SEAL 16** | 32.00 | 16.00 | 4.00 | 38.00 | 72.00 | 61.50 | 17.50 | M24X1.5 |
| **SC 32 SEAL 18** | 32.00 | 18.00 | 4.00 | 38.00 | 72.00 | 61.50 | 17.50 | M24X1.5 |
| **SC 32 SEAL 19** | 32.00 | 19.00 | 4.00 | 38.00 | 72.00 | 61.50 | 17.50 | M24X1.5 |
| **SC 32 SEAL 20** | 32.00 | 20.00 | 4.00 | 38.00 | 72.00 | 61.50 | 15.50 | M24X1.5 |
| **SC 32 SEAL 24** | 32.00 | 24.00 | 4.00 | 38.00 | 72.00 | 61.50 | 15.50 | M24X1.5 |
| **SC 32 SEAL 25** | 32.00 | 25.00 | 4.00 | 38.00 | 72.00 | 61.50 | 10.50 | M24X1.5 |

# HYDRO-FIT KITS & ACCESSORIES

HYDROFIT HOLDING LINE

**SC-HYDRO**
Sealed Reduction Sleeves
for Hydraulic Chucks

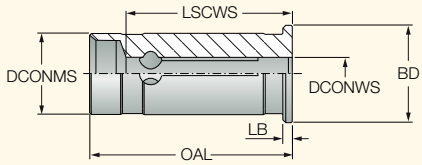


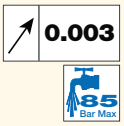

| Designation | DCONMS | DCONWS | LSCWS | OAL | BD | LB |
|---|---|---|---|---|---|---|
| SC 25 S HYDRO 6 | 25.00 | 6.00 | 25.5 | 57.00 | 29.00 | 2.5 |
| SC 25 S HYDRO 8 | 25.00 | 8.00 | 26.1 | 57.00 | 29.00 | 2.5 |
| SC 25 S HYDRO 10 | 25.00 | 10.00 | 32.7 | 57.00 | 29.00 | 2.5 |
| SC 25 S HYDRO 12 | 25.00 | 12.00 | 37.3 | 57.00 | 29.00 | 2.5 |
| SC 25 S HYDRO 14 | 25.00 | 14.00 | 32.9 | 57.00 | 29.00 | 2.5 |
| SC 25 S HYDRO 16 | 25.00 | 16.00 | 38.5 | 57.00 | 29.00 | 2.5 |
| SC 25 S HYDRO 18 | 25.00 | 18.00 | 39.1 | 57.00 | 29.00 | 2.5 |
| SC 25 S HYDRO 20 | 25.00 | 20.00 | 40.7 | 57.00 | 29.00 | 2.5 |

- Any cylindrical, Weldon shanks only 6-20 mm may be clamped to the sleeves

HYDROFIT HOLDING LINE

**SC-HYDRO-HP**
Sealed Reduction Sleeves
for Hydraulic Chucks



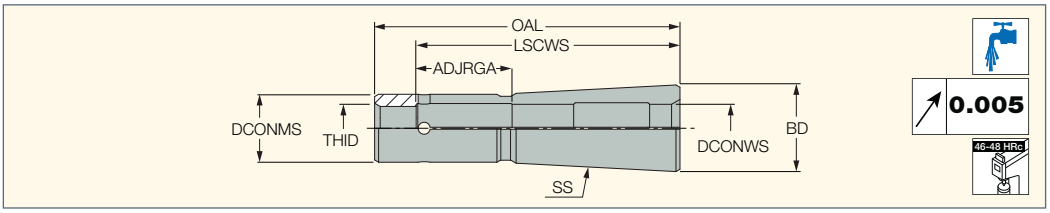

| Designation | DCONMS | DCONWS | LSCWS | OAL | BD | LB |
|---|---|---|---|---|---|---|
| SC 12 HYDRO 3 HP | 12.00 | 3.00 | 22.0 | 47.00 | 16.50 | 2.0 |
| SC 12 HYDRO 4 HP | 12.00 | 4.00 | 22.0 | 47.00 | 16.50 | 2.0 |
| SC 12 HYDRO 5 HP | 12.00 | 5.00 | 22.0 | 47.00 | 16.50 | 2.0 |
| SC 12 HYDRO 6 HP | 12.00 | 6.00 | 25.5 | 47.00 | 16.50 | 2.0 |
| SC 12 HYDRO 8 HP | 12.00 | 8.00 | 25.5 | 47.00 | 16.50 | 2.0 |
| SC 20 HYDRO 3 HP | 20.00 | 3.00 | 22.0 | 52.50 | 24.00 | 2.0 |
| SC 20 HYDRO 4 HP | 20.00 | 4.00 | 22.0 | 52.50 | 24.00 | 2.0 |
| SC 20 HYDRO 5 HP | 20.00 | 5.00 | 22.0 | 52.50 | 24.00 | 2.0 |
| SC 20 HYDRO 6 HP | 20.00 | 6.00 | 27.0 | 52.50 | 24.00 | 2.0 |
| SC 20 HYDRO 8 HP | 20.00 | 8.00 | 27.0 | 52.50 | 24.00 | 2.0 |
| SC 20 HYDRO 10 HP | 20.00 | 10.00 | 31.0 | 52.50 | 24.00 | 2.0 |
| SC 20 HYDRO 12 HP | 20.00 | 12.00 | 35.0 | 52.50 | 24.00 | 2.0 |
| SC 20 HYDRO 14 HP | 20.00 | 14.00 | 35.0 | 52.50 | 24.00 | 2.0 |
| SC 20 HYDRO 16 HP | 20.00 | 16.00 | 35.0 | 52.50 | 24.00 | 2.0 |
| SC 32 HYDRO 6 HP | 32.00 | 6.00 | 26.0 | 62.50 | 35.50 | 2.0 |
| SC 32 HYDRO 8 HP | 32.00 | 8.00 | 26.0 | 62.50 | 35.50 | 2.0 |
| SC 32 HYDRO 10 HP | 32.00 | 10.00 | 26.5 | 62.50 | 35.50 | 2.0 |
| SC 32 HYDRO 12 HP | 32.00 | 12.00 | 26.5 | 62.50 | 35.50 | 2.0 |
| SC 32 HYDRO 14 HP | 32.00 | 14.00 | 26.5 | 62.50 | 35.50 | 2.0 |
| SC 32 HYDRO 16 HP | 32.00 | 16.00 | 36.5 | 62.50 | 35.50 | 2.0 |
| SC 32 HYDRO 18 HP | 32.00 | 18.00 | 36.5 | 62.50 | 35.50 | 2.0 |
| SC 32 HYDRO 20 HP | 32.00 | 20.00 | 36.5 | 62.50 | 35.50 | 2.0 |
| SC 32 HYDRO 25 HP | 32.00 | 25.00 | 47.0 | 62.50 | 35.50 | 2.0 |

New

- Any cylindrical, Weldon shanks only 6-20 mm may be clamped to the sleeves

QUICKCLAMP

**MS-COLLET**
Collet for QUICK-CLAMP System

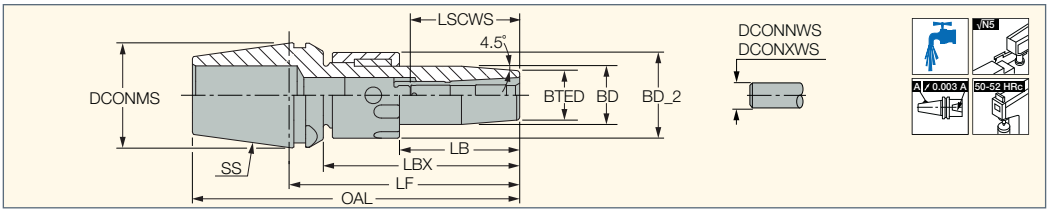



| Designation | DCONWS | DCONMS | THID | ADJRGA | LSCWS | SS | BD | OAL |
|---|---|---|---|---|---|---|---|---|
| MS6-3 COLLET | 3.00 | 8.50 | M6 | 12.00 | 33.00 | MS6 | 10.90 | 38.00 |
| MS6-4 COLLET | 4.00 | 8.50 | M6 | 12.00 | 33.00 | MS6 | 10.90 | 38.00 |
| MS6-5 COLLET | 5.00 | 8.50 | M6 | 12.00 | 33.00 | MS6 | 10.90 | 38.00 |
| MS6-6 COLLET | 6.00 | 8.50 | M6 | 12.00 | 33.00 | MS6 | 10.90 | 38.00 |

New

QUICKCLAMP

**ER-MS**
QUICK-CLAMP System for Small Cutting Tools with Integral Solid ER Shank

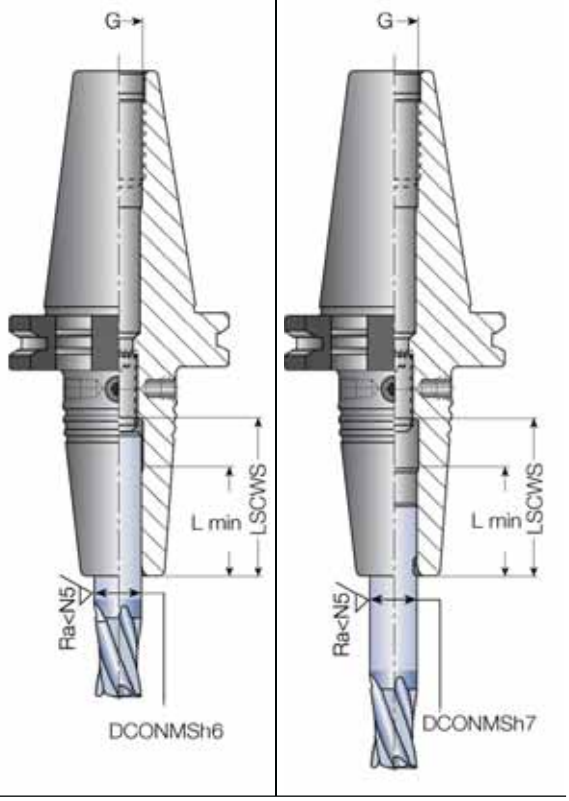



| Designation | DCONNWS(1) | DCONXWS(2) | SS | BD | BD_2 | LB | LBX | LF | OAL | DCONMS |
|---|---|---|---|---|---|---|---|---|---|---|
| ER32 MS6X60 | 3.00 | 6.00 | ER32 | 17.80 | 26.20 | 36.00 | 60.00 | 70.00 | 100.00 | 32.00 |

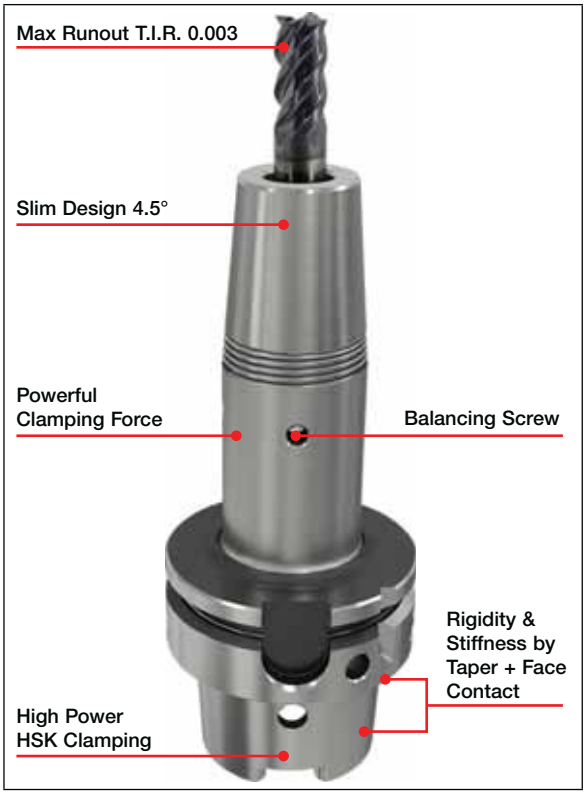
New

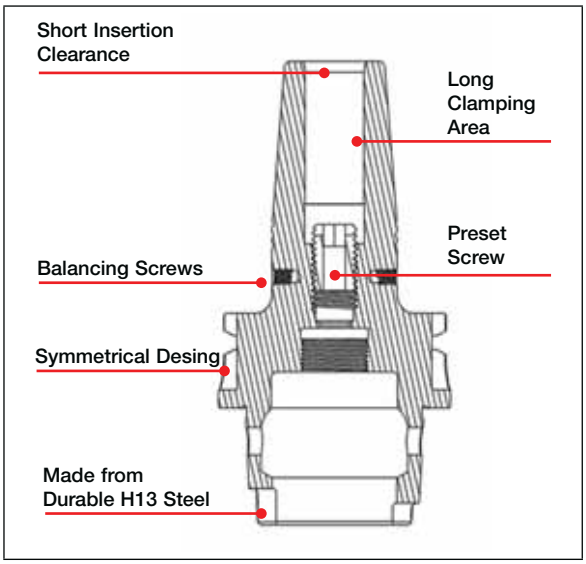
(1) Minimum diameter
(2) Maximum diameter

| Correct | Wrong |
|---|---|
| ✔ | ✗ |




5 Do not use Weldon type shanks.
6 Insert shank at least Lmin into the chuck.
7 In order to maintain a firm grip, shank's surface finish should have a roughness of at least N5.



## Thermal Shrink ER... SRK Chucking System

**Standard ER Collet Chuck**

DIN 69871 30, 40, 50

HSK 40, 50, 63, 100

BT 30, 40, 50

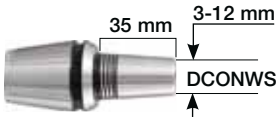
CAMFIX C4-C8

DIN 2080 30, 40, 50

SHORT-IN DIN69871 40, 50
BT 40, 50 HSK 63, 100

**SHRINKIN ER SRK Collet Compatible With Standard ER Collets DIN 6499**

ER20




ER25

ER32

HSK E SRK 32-40-50-63

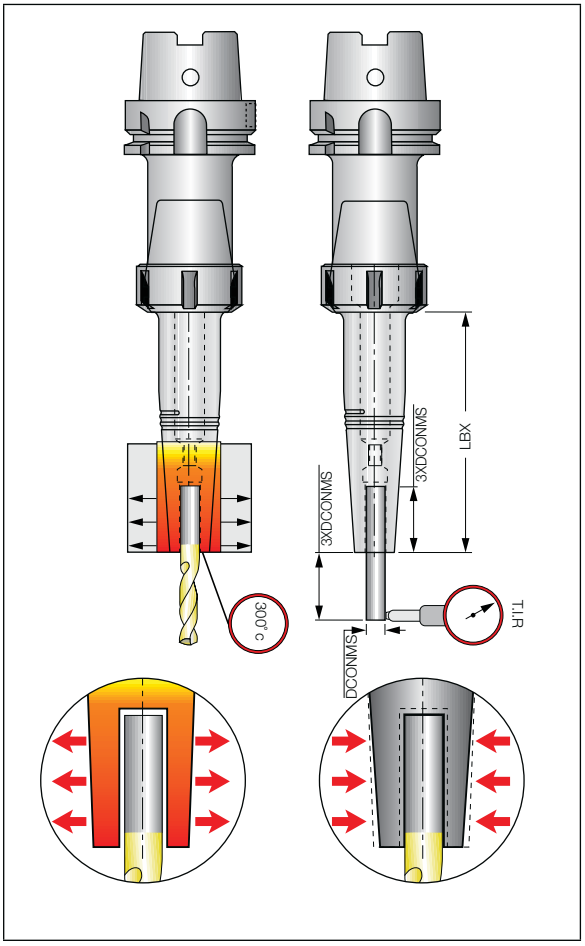
BT40-SRK DIN69871-40 SRK

SHRINKIN

## Thermal Shrink Chucking Systems

SHRINKIN thermal shrinking collets are an enhancement to the existing popular collet system. The SHRINKIN collets utilize the thermal expansion and shrink phenomenon for rigid clamping of steel, HSS and solid carbide tools. SHRINKIN collets provide high torque, precision runout and excellent repeatability.
The SHRINKIN collets with their slim design and various projection lengths allow the user to reach deep cavities and perform narrow milling applications.
**ISCAR** offers a complete system for the SHRINKIN collets with integral ER or other standard, integral tapered shanks.

The conventional, thermal shrink chucking unit can be used only for solid carbide tools, clamped into SRK ER collets. The induction thermal unit can be used for steel, HSS and solid carbide tools. It can be used for both SRK and SRKIN collets with ER or other integral tapered shanks.



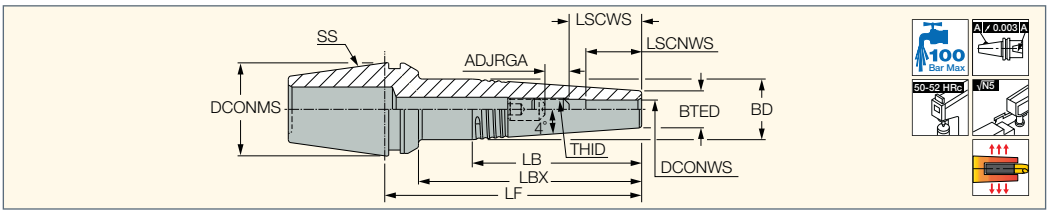

### Features

- Slim design with various projections
- Flexible - fits into standard ER chucks
- High torque transfer
- Rigid clamping of carbide tools
- Low runout
- Perfect repeatability
- Vibration damping
- Internal coolant
- Coolant Jet2 available
- Symmetrical design for high speed machining
- Quick and easy tool change

| LBX (mm) | Max T.I.R. |
|---|---|
| 35 | 7µm |
| 60 | 9µm |
| 85 | 10µm |

SHRINKIN

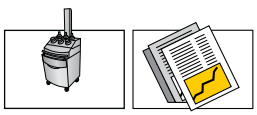
**ER-SRK**
Thermal Shrink Chucks with an Integral ER Collet




| Designation | SS | DCONWS | DCONMS | LB | LBX | LF | LSCNWS | LSCWS | ADJRGA | BD | BTED | THID | Key(1) | kg | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ER16 SRK 3X35** | ER16 | 3.00 | 16.00 | 14.30 | 36.00 | 43.10 | 10.00 | 16.00 | 6.00 | 12.00 | 10.00 | M6 | 3.00 | 0.05 | SR M6X10 DIN916 |
| **ER16 SRK 4X35** | ER16 | 4.00 | 16.00 | 14.30 | 36.00 | 43.10 | 12.00 | 18.00 | 6.00 | 12.00 | 10.00 | M6 | 3.00 | 0.05 | SR M6X10 DIN916 |
| **ER16 SRK 5X35** | ER16 | 5.00 | 16.00 | 14.30 | 36.00 | 43.10 | 15.00 | 21.00 | 6.00 | 12.00 | 10.00 | M6 | 3.00 | 0.06 | SR M6X10 DIN916 |
| **ER16 SRK 6X35** | ER16 | 6.00 | 16.00 | 7.20 | 36.00 | 43.10 | 18.00 | 22.00 | 6.00 | 12.00 | 11.00 | M6 | 3.00 | 0.06 | SR M6X10 DIN916 |
| **ER20 SRK 3X35** | ER20 | 3.00 | 20.00 | 24.50 | 35.00 | 43.50 | 10.00 | 16.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.07 | SR M6X10 DIN916 |
| **ER20 SRK 3X60** | ER20 | 3.00 | 20.00 | 24.50 | 60.00 | 68.50 | 10.00 | 16.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.09 | SR M6X10 DIN916 |
| **ER20 SRK 4X35** | ER20 | 4.00 | 20.00 | 24.50 | 35.00 | 43.50 | 12.00 | 18.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.07 | SR M6X10 DIN916 |
| **ER20 SRK 4X60** | ER20 | 4.00 | 20.00 | 24.50 | 60.00 | 68.50 | 12.00 | 18.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.10 | SR M6X10 DIN916 |
| **ER20 SRK 5X35** | ER20 | 5.00 | 20.00 | 24.50 | 35.00 | 43.50 | 15.00 | 21.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.07 | SR M6X10 DIN916 |
| **ER20 SRK 5X60** | ER20 | 5.00 | 20.00 | 24.50 | 60.00 | 68.50 | 15.00 | 21.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.10 | SR M6X10 DIN916 |
| **ER20 SRK 6X35** | ER20 | 6.00 | 20.00 | 25.50 | 35.00 | 43.50 | 18.00 | 24.00 | 6.00 | 13.50 | 11.00 | M8 | 4.00 | 0.07 | SR M8X12 DIN916 |
| **ER20 SRK 6X60** | ER20 | 6.00 | 20.00 | 29.50 | 60.00 | 68.50 | 18.00 | 24.00 | 6.00 | 13.50 | 11.00 | M8 | 4.00 | 0.09 | SR M8X12 DIN916 |
| **ER25 SRK 3X35** | ER25 | 3.00 | 25.00 | 24.50 | 35.00 | 44.00 | 10.00 | 16.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.10 | SR M6X10 DIN916 |
| **ER25 SRK 3X60** | ER25 | 3.00 | 25.00 | 44.50 | 60.00 | 69.00 | 10.00 | 16.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.13 | SR M6X10 DIN916 |
| **ER25 SRK 4X35** | ER25 | 4.00 | 25.00 | 24.50 | 35.00 | 44.00 | 12.00 | 18.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.10 | SR M6X10 DIN916 |
| **ER25 SRK 4X60** | ER25 | 4.00 | 25.00 | 44.50 | 60.00 | 69.00 | 12.00 | 18.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.14 | SR M6X10 DIN916 |
| **ER25 SRK 5X35** | ER25 | 5.00 | 25.00 | 24.50 | 35.00 | 44.00 | 15.00 | 21.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.10 | SR M6X10 DIN916 |
| **ER25 SRK 5X60** | ER25 | 5.00 | 25.00 | 44.50 | 60.00 | 69.00 | 15.00 | 21.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.14 | SR M6X10 DIN916 |
| **ER25 SRK 6X35** | ER25 | 6.00 | 25.00 | 26.00 | 35.00 | 44.00 | 18.00 | 24.00 | 6.00 | 14.70 | 11.00 | M8 | 4.00 | 0.10 | SR M8X12 DIN916 |
| **ER25 SRK 6X60** | ER25 | 6.00 | 25.00 | 44.50 | 60.00 | 69.00 | 18.00 | 24.00 | 6.00 | 17.30 | 11.00 | M8 | 4.00 | 0.14 | SR M8X12 DIN916 |
| **ER25 SRK 8X35** | ER25 | 8.00 | 25.00 | 26.50 | 35.00 | 44.00 | 25.00 | 30.00 | 5.00 | 17.80 | 14.00 | M10 | 5.00 | 0.12 | SR M10X10 DIN913 |
| **ER25 SRK 8X60** | ER25 | 8.00 | 25.00 | 39.50 | 60.00 | 69.00 | 25.00 | 31.00 | 6.00 | 17.90 | 14.00 | M10 | 5.00 | 0.15 | SR M10X10 DIN913 |
| **ER32 SRK 3X35** | ER32 | 3.00 | 32.00 | 22.50 | 35.00 | 45.00 | 10.00 | 16.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.16 | SR M6X10 DIN916 |
| **ER32 SRK 3X60** | ER32 | 3.00 | 32.00 | 44.50 | 60.00 | 70.00 | 10.00 | 16.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.20 | SR M6X10 DIN916 |
| **ER32 SRK 3X85** | ER32 | 3.00 | 32.00 | 70.00 | 85.00 | 95.00 | 10.00 | 16.00 | 6.00 | 19.80 | 10.00 | M6 | 3.00 | 0.25 | SR M6X10 DIN916 |
| **ER32 SRK 4X35** | ER32 | 4.00 | 32.00 | 23.50 | 35.00 | 45.00 | 12.00 | 18.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.17 | SR M6X10 DIN916 |
| **ER32 SRK 4X60** | ER32 | 4.00 | 32.00 | 44.50 | 60.00 | 70.00 | 12.00 | 18.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.19 | SR M6X10 DIN916 |
| **ER32 SRK 4X85** | ER32 | 4.00 | 32.00 | 70.00 | 85.00 | 95.00 | 12.00 | 18.00 | 6.00 | 19.80 | 10.00 | M6 | 3.00 | 0.24 | SR M6X10 DIN916 |
| **ER32 SRK 5X35** | ER32 | 5.00 | 32.00 | 24.50 | 35.00 | 45.00 | 15.00 | 21.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.16 | SR M6X10 DIN916 |
| **ER32 SRK 5X60** | ER32 | 5.00 | 32.00 | 44.50 | 60.00 | 70.00 | 15.00 | 21.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.20 | SR M6X10 DIN916 |
| **ER32 SRK 5X85** | ER32 | 5.00 | 32.00 | 70.00 | 85.00 | 95.00 | 15.00 | 21.00 | 6.00 | 19.80 | 10.00 | M6 | 3.00 | 0.24 | SR M6X10 DIN916 |
| **ER32 SRK 6X35** | ER32 | 6.00 | 32.00 | 25.50 | 35.00 | 45.00 | 18.00 | 24.00 | 6.00 | 14.70 | 11.00 | M8 | 4.00 | 0.16 | SR M8X12 DIN916 |
| **ER32 SRK 6X60** | ER32 | 6.00 | 32.00 | 45.00 | 60.00 | 70.00 | 18.00 | 24.00 | 6.00 | 17.30 | 11.00 | M8 | 4.00 | 0.19 | SR M8X12 DIN916 |
| **ER32 SRK 6X85** | ER32 | 6.00 | 32.00 | 69.50 | 85.00 | 95.00 | 18.00 | 26.00 | 8.00 | 20.80 | 11.00 | M8 | 4.00 | 0.26 | SR M8X12 DIN916 |
| **ER32 SRK 8X35** | ER32 | 8.00 | 32.00 | 33.00 | 35.00 | 45.00 | 25.00 | 31.00 | 6.00 | 18.95 | 14.00 | M10 | 5.00 | 0.18 | SR M10X10 DIN913 |
| **ER32 SRK 8X60** | ER32 | 8.00 | 32.00 | 45.00 | 60.00 | 70.00 | 25.00 | 31.00 | 6.00 | 20.40 | 14.00 | M10 | 5.00 | 0.21 | SR M10X10 DIN913 |
| **ER32 SRK 8X85** | ER32 | 8.00 | 32.00 | 65.00 | 85.00 | 95.00 | 25.00 | 31.00 | 6.00 | 23.20 | 14.00 | M10 | 5.00 | 0.28 | SR M10X10 DIN913 |
| **ER32 SRK 10X35** | ER32 | 10.00 | 32.00 | 34.00 | 35.00 | 45.00 | 30.00 | 35.00 | 5.00 | 20.80 | 16.00 | M12 | 6.00 | 0.18 | SR M12X10 DIN913 |
| **ER32 SRK 10X60** | ER32 | 10.00 | 32.00 | 44.50 | 60.00 | 70.00 | 30.00 | 36.00 | 6.00 | 22.40 | 16.00 | M12 | 6.00 | 0.24 | SR M12X10 DIN913 |
| **ER32 SRK 10X85** | ER32 | 10.00 | 32.00 | 49.50 | 85.00 | 95.00 | 30.00 | 36.00 | 6.00 | 23.00 | 16.00 | M12 | 6.00 | 0.29 | SR M12X10 DIN913 |
| **ER32 SRK 12X35** | ER32 | 12.00 | 32.00 | 28.00 | 35.00 | 45.00 | 32.00 | 32.00 | - | 24.00 | 20.00 | - | - | 0.21 | |
| **ER32 SRK 12X60** | ER32 | 12.00 | 32.00 | 28.00 | 60.00 | 70.00 | 32.00 | 38.00 | 6.00 | 24.00 | 20.00 | M14 | 6.00 | 0.27 | SR M14X12 DIN913 |
| **ER32 SRK 12X85** | ER32 | 12.00 | 32.00 | 28.00 | 85.00 | 95.00 | 32.00 | 38.00 | 6.00 | 24.00 | 20.00 | M14 | 6.00 | 0.33 | SR M14X12 DIN913 |

• For carbide tools only • For through tool coolant, preset screw must be removed

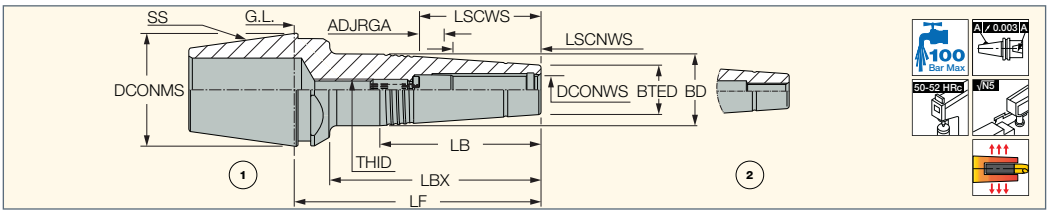
(1) Hex key size for the rear stopper screw



X-STREAM JET TOOLHOLDING

**ER-SRK-CX**

Thermal Shrink Chucks with an Integral ER Collet and Jet Coolant Grooves for Solid Carbide Tools Only




| Designation | SS | DCONWS | DCONMS | LB | LBX | LF | LSCNWS | LSCWS | ADJRGA | BD | BTED | THID | Key | Fig. | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ER32 SRK 3X35 CX** (1) | ER32 | 3.00 | 32.00 | 25.00 | 35.00 | 45.00 | 10.00 | - | - | 13.50 | 10.00 | - | - | 2 | 0.17 |
| **ER32 SRK 3X60 CX** (1) | ER32 | 3.00 | 32.00 | 45.00 | 60.00 | 70.00 | 10.00 | - | - | 16.30 | 10.00 | - | - | 2 | 0.22 |
| **ER32 SRK 4X35 CX** (1) | ER32 | 4.00 | 32.00 | 25.00 | 35.00 | 45.00 | 12.00 | - | - | 13.50 | 10.00 | - | - | 2 | 0.17 |
| **ER32 SRK 4X60 CX** (1) | ER32 | 4.00 | 32.00 | 45.00 | 60.00 | 70.00 | 12.00 | - | - | 16.30 | 10.00 | - | - | 2 | 0.20 |
| **ER32 SRK 5X35 CX** (1) | ER32 | 5.00 | 32.00 | 25.00 | 35.00 | 45.00 | 15.00 | - | - | 13.50 | 10.00 | - | - | 2 | 0.17 |
| **ER32 SRK 5X60 CX** (1) | ER32 | 5.00 | 32.00 | 45.00 | 60.00 | 70.00 | 15.00 | - | - | 16.30 | 10.00 | - | - | 2 | 0.20 |
| **ER32 SRK 6X35 CX** | ER32 | 6.00 | 32.00 | 26.50 | 35.00 | 45.00 | 18.00 | 27.40 | 7.00 | 14.70 | 11.00 | M5 | 2.50 | 1 | 0.17 |
| **ER32 SRK 6X60 CX** | ER32 | 6.00 | 32.00 | 45.00 | 60.00 | 70.00 | 18.00 | 27.40 | 7.00 | 17.30 | 11.00 | M5 | 2.50 | 1 | 0.22 |
| **ER32 SRK 8X35 CX** | ER32 | 8.00 | 32.00 | - | 35.00 | 45.00 | 25.00 | 34.50 | 7.00 | 18.90 | 14.00 | M6 | 3.00 | 1 | 0.20 |
| **ER32 SRK 8X60 CX** | ER32 | 8.00 | 32.00 | 45.80 | 60.00 | 70.00 | 25.00 | 34.50 | 7.00 | 20.40 | 14.00 | M6 | 3.00 | 1 | 0.25 |
| **ER32 SRK 10X35 CX** | ER32 | 10.00 | 32.00 | - | 35.00 | 45.00 | 30.00 | 39.30 | 7.00 | 20.90 | 16.00 | M8 | 4.00 | 1 | 0.22 |
| **ER32 SRK 10X60 CX** | ER32 | 10.00 | 32.00 | 45.80 | 60.00 | 70.00 | 30.00 | 39.30 | 7.00 | 22.40 | 16.00 | M8 | 4.00 | 1 | 0.26 |
| **ER32 SRK 12X35 CX** | ER32 | 12.00 | 32.00 | 28.60 | 35.00 | 45.00 | 32.00 | 41.30 | 7.00 | 24.00 | 20.00 | M10 | 5.00 | 1 | 0.24 |
| **ER32 SRK 12X60 CX** | ER32 | 12.00 | 32.00 | 28.60 | 60.00 | 70.00 | 32.00 | 41.30 | 7.00 | 24.00 | 20.00 | M10 | 5.00 | 1 | 0.29 |

**New**

- For carbide tools only
- For through tool coolant, preset screw must be removed

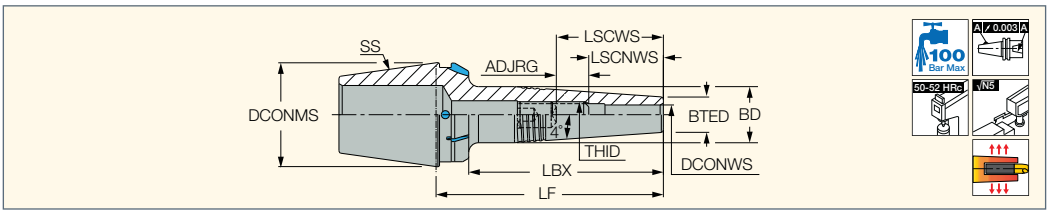
(1) Without preset screw

## Spare Parts

| Designation | |
|---|---|
| **ER32 SRK 6X35 CX** | PRESET CX M5X13 |
| **ER32 SRK 6X60 CX** | PRESET CX M5X13 |
| **ER32 SRK 8X35 CX** | PRESET CX M6X12 |
| **ER32 SRK 8X60 CX** | PRESET CX M6X12 |
| **ER32 SRK 10X35 CX** | PRESET CX M8X16 |
| **ER32 SRK 10X60 CX** | PRESET CX M8X16 |
| **ER32 SRK 12X35 CX** | PRESET CX M10X16 |
| **ER32 SRK 12X60 CX** | PRESET CX M10X16 |

SHRINKIN

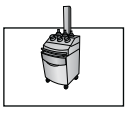
**ER-SRK-JET2**
Thermal Shrink Chuck with Three Internal Cooling Jets and an Integral ER Collet




| Designation | SS | DCONWS | LB | LBX | LF | LSCNWS | LSCWS | ADJRGA | BD | BTED | THID | Key(1) | kg | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ER20 SRK 3X35 JET2** | ER20 | 3.00 | 24.50 | 35.00 | 43.50 | 10.00 | 16.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.07 | SR M6X10 DIN916 |
| **ER20 SRK 4X35 JET2** | ER20 | 4.00 | 24.50 | 35.00 | 43.50 | 12.00 | 18.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.07 | |
| **ER20 SRK 5X35 JET2** | ER20 | 5.00 | 24.50 | 35.00 | 43.50 | 15.00 | 21.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.09 | |
| **ER20 SRK 6X35 JET2** | ER20 | 6.00 | 25.50 | 35.00 | 43.50 | 18.00 | 24.00 | 6.00 | 13.50 | 11.00 | M8 | 4.00 | 0.07 | SR M8X12 DIN916 |
| **ER25 SRK 3X35 JET2** | ER25 | 3.00 | 24.50 | 35.00 | 44.00 | 10.00 | 16.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.55 | SR M6X10 DIN916 |
| **ER25 SRK 3X60 JET2** | ER25 | 3.00 | 44.50 | 60.00 | 69.00 | 10.00 | 16.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.16 | SR M6X10 DIN916 |
| **ER25 SRK 4X35 JET2** | ER25 | 4.00 | 24.50 | 35.00 | 44.00 | 12.00 | 18.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.58 | SR M6X10 DIN916 |
| **ER25 SRK 4X60 JET2** | ER25 | 4.00 | 44.50 | 60.00 | 69.00 | 12.00 | 18.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.16 | SR M6X10 DIN916 |
| **ER25 SRK 5X35 JET2** | ER25 | 5.00 | 24.50 | 35.00 | 44.00 | 15.00 | 21.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.10 | |
| **ER25 SRK 5X60 JET2** | ER25 | 5.00 | 44.50 | 60.00 | 69.00 | 15.00 | 21.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.15 | SR M6X10 DIN916 |
| **ER25 SRK 6X35 JET2** | ER25 | 6.00 | 26.00 | 35.00 | 44.00 | 18.00 | 24.00 | 6.00 | 14.70 | 11.00 | M8 | 4.00 | 0.11 | SR M8X12 DIN916 |
| **ER25 SRK 6X60 JET2** | ER25 | 6.00 | 44.50 | 60.00 | 69.00 | 18.00 | 24.00 | 6.00 | 17.30 | 11.00 | M8 | 4.00 | 0.16 | SR M8X12 DIN916 |
| **ER25 SRK 8X35 JET2** | ER25 | 8.00 | 26.50 | 35.00 | 44.00 | 25.00 | 30.00 | 5.00 | 17.80 | 14.00 | M10 | 5.00 | 0.12 | SR M10X10 DIN913 |
| **ER25 SRK 8X60 JET2** | ER25 | 8.00 | 39.50 | 60.00 | 69.00 | 25.00 | 31.00 | 6.00 | 17.90 | 14.00 | M10 | 5.00 | 0.15 | SR M10X10 DIN913 |
| **ER32 SRK 3X35 JET2** | ER32 | 3.00 | 22.50 | 35.00 | 45.00 | 10.00 | 16.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.16 | SR M6X10 DIN916 |
| **ER32 SRK 3X60 JET2** | ER32 | 3.00 | 44.50 | 60.00 | 70.00 | 10.00 | 16.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.19 | SR M6X10 DIN916 |
| **ER32 SRK 3X85 JET2** | ER32 | 3.00 | 70.00 | 85.00 | 95.00 | 10.00 | 16.00 | 6.00 | 19.80 | 10.00 | M6 | 3.00 | 0.25 | SR M6X10 DIN916 |
| **ER32 SRK 4X35 JET2** | ER32 | 4.00 | 23.50 | 35.00 | 45.00 | 12.00 | 18.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.16 | SR M6X10 DIN916 |
| **ER32 SRK 4X60 JET2** | ER32 | 4.00 | 44.50 | 60.00 | 70.00 | 12.00 | 18.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.19 | SR M6X10 DIN916 |
| **ER32 SRK 4X85 JET2** | ER32 | 4.00 | 70.00 | 85.00 | 95.00 | 12.00 | 18.00 | 6.00 | 19.80 | 10.00 | M6 | 3.00 | 0.22 | SR M6X10 DIN916 |
| **ER32 SRK 5X35 JET2** | ER32 | 5.00 | 24.50 | 35.00 | 45.00 | 15.00 | 21.00 | 6.00 | 13.50 | 10.00 | M6 | 3.00 | 0.16 | SR M6X10 DIN916 |
| **ER32 SRK 5X60 JET2** | ER32 | 5.00 | 44.50 | 60.00 | 70.00 | 15.00 | 21.00 | 6.00 | 16.30 | 10.00 | M6 | 3.00 | 0.19 | SR M6X10 DIN916 |
| **ER32 SRK 5X85 JET2** | ER32 | 5.00 | 70.00 | 85.00 | 95.00 | 15.00 | 21.00 | 6.00 | 19.80 | 10.00 | M6 | 3.00 | 0.25 | SR M6X10 DIN916 |
| **ER32 SRK 6X35 JET2** | ER32 | 6.00 | 25.50 | 35.00 | 45.00 | 18.00 | 24.00 | 6.00 | 14.70 | 11.00 | M8 | 4.00 | 0.15 | SR M8X12 DIN916 |
| **ER32 SRK 6X60 JET2** | ER32 | 6.00 | 45.00 | 60.00 | 70.00 | 18.00 | 24.00 | 6.00 | 17.30 | 11.00 | M8 | 4.00 | 0.19 | SR M8X12 DIN916 |
| **ER32 SRK 6X85 JET2** | ER32 | 6.00 | 69.50 | 85.00 | 95.00 | 18.00 | 26.00 | 8.00 | 20.80 | 11.00 | M8 | 4.00 | 0.23 | SR M8X12 DIN916 |
| **ER32 SRK 8X35 JET2** | ER32 | 8.00 | 33.00 | 35.00 | 45.00 | 25.00 | 31.00 | 6.00 | 18.80 | 14.00 | M10 | 5.00 | 0.17 | SR M10X10 DIN913 |
| **ER32 SRK 8X60 JET2** | ER32 | 8.00 | 45.00 | 60.00 | 70.00 | 25.00 | 31.00 | 6.00 | 20.40 | 14.00 | M10 | 5.00 | 0.22 | SR M10X10 DIN913 |
| **ER32 SRK 8X85 JET2** | ER32 | 8.00 | 65.00 | 85.00 | 95.00 | 25.00 | 31.00 | 6.00 | 23.20 | 14.00 | M10 | 5.00 | 0.21 | SR M10X10 DIN913 |
| **ER32 SRK 10X35 JET2** | ER32 | 10.00 | 34.00 | 35.00 | 45.00 | 30.00 | 35.00 | 5.00 | 20.80 | 16.00 | M12 | 6.00 | 0.20 | SR M12X10 DIN913 |
| **ER32 SRK 10X60 JET2** | ER32 | 10.00 | 44.50 | 60.00 | 70.00 | 30.00 | 36.00 | 6.00 | 22.40 | 16.00 | M12 | 6.00 | 0.25 | SR M12X10 DIN913 |
| **ER32 SRK 10X85 JET2** | ER32 | 10.00 | 49.50 | 85.00 | 95.00 | 30.00 | 36.00 | 6.00 | 23.00 | 16.00 | M12 | 6.00 | 0.30 | SR M12X10 DIN913 |
| **ER32 SRK 12X35 JET2** | ER32 | 12.00 | 28.00 | 35.00 | 45.00 | 32.00 | - | 0.00 | 24.00 | 20.00 | - | - | 0.21 | |
| **ER32 SRK 12X60 JET2** | ER32 | 12.00 | 28.00 | 60.00 | 70.00 | 32.00 | 38.00 | 6.00 | 24.00 | 20.00 | M14 | 6.00 | 0.29 | SR M14X12 DIN913 |
| **ER32 SRK 12X85 JET2** | ER32 | 12.00 | 28.00 | 85.00 | 95.00 | 32.00 | 38.00 | 6.00 | 24.00 | 20.00 | M14 | 6.00 | 0.32 | SR M14X12 DIN913 |

• For carbide tools only • For through tool coolant, preset screw must be removed

(1) Hex key size for the rear stopper screw



784-786

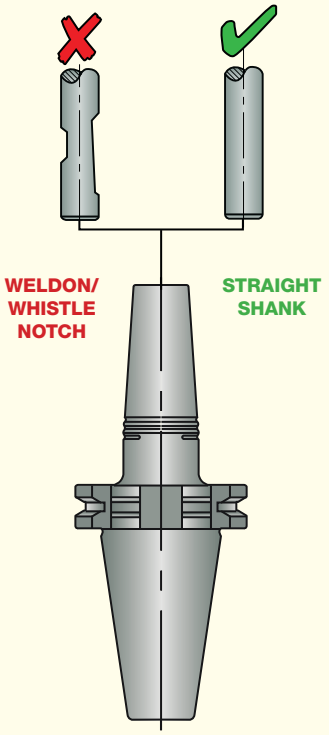
SHRINKIN

**INDN AP UNIT EU**
Induction Heating Unit for
Thermal Shrink Tool Chucking

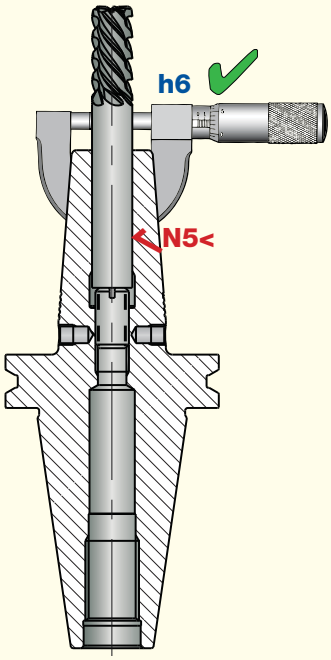
| Designation | Machines |
|---|---|
| INDN AP UNIT EU | 400V / 16A / 50Hz |

New

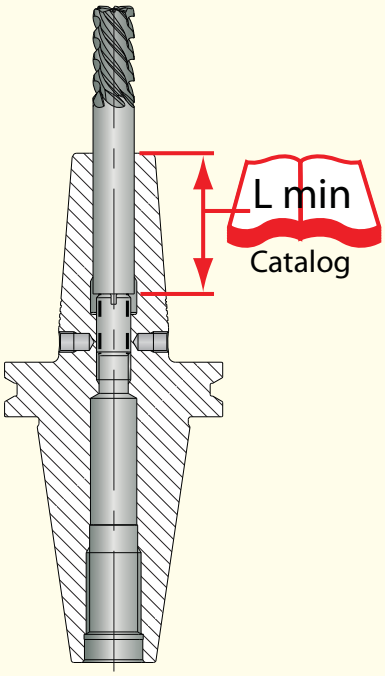
## 1 Shank Type



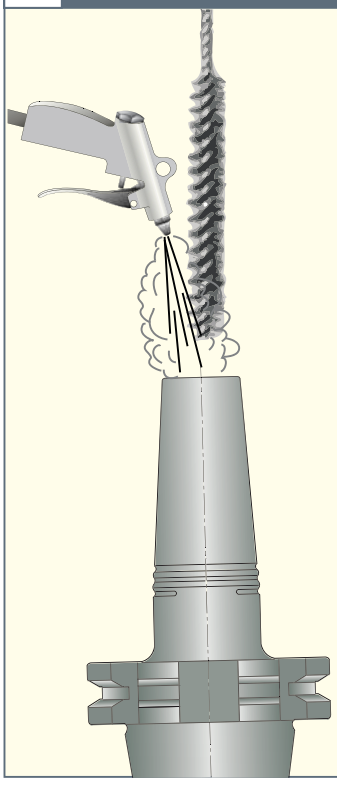

## 2 Shank Size



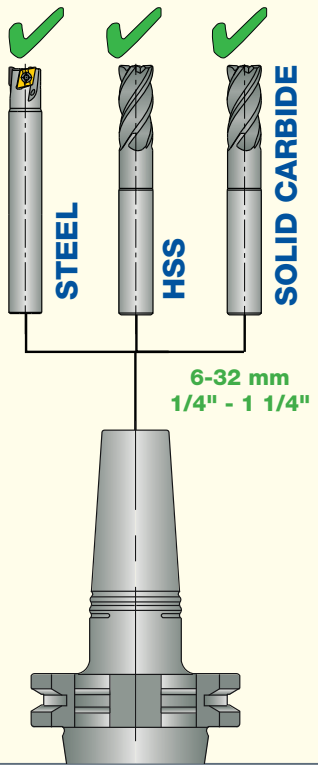

## 3 Shank Langth



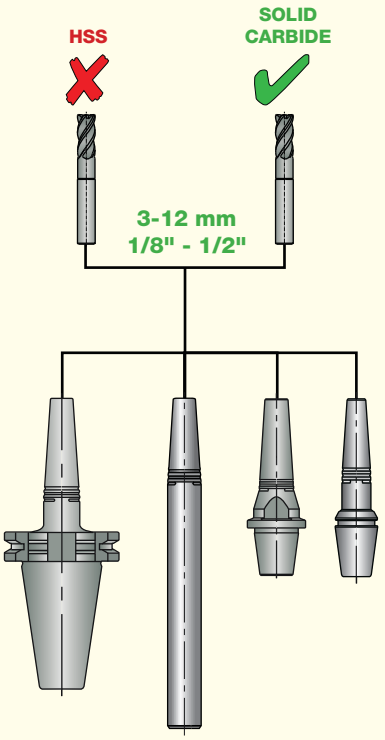

## 4 Bore Cleaning



## 5 SRKIN




## 6 SRK



**What's in the Box**

- AP Induction Unit
- Clamping ring
- 7 stop discs for whole range of shrinkable holders
- Protective gloves
- 1L of cooling and protection concentrate

**Not included – suitable holder adaptor – should be ordered separately**

| | | |
|---|---|---|
| 3446176 | INDN AP AD 32 | Multi adapter HSK32 |
| 3446177 | INDN AP AD 40 | Multi adapter HSK40/C4 |
| 3446178 | INDN AP AD 50 | Multi adapter HSK50/C5/#30 |
| 3446179 | INDN AP AD 63 | Multi adapter HSK63/#40/C6/KM63 |
| 3446180 | INDN AP AD 80 | Multi adapter HSK80/C8/#45 |
| 3446181 | INDN AP AD 100 | Multi adapter HSK100/C10/#50 |

Technical Data

| | |
|---|---|
| **Machine Type** | INDN AP INDUCTION UNIT |
| **Clamping Range** | Ø3-32mm (1/8"- 1 1/4") (Carbide), Ø6-32mm (1/4"- 1 1/4") (HSS) |
| **Coil** | Fixed |
| **Max. Tool Length** | 400mm (15.748") |
| **Max. Cooling Length** | 200mm (7.874") |
| **Cooling Type** | Liquid cooling with drying, geometry independent |
| **Cooling Time / Liquid Tank** | 30s / 50L (13.2 GAL) |
| **Max. Machine Interface** | HSK A100 / #50 taper cone |
| **Power** | 11kW |
| **Electric Current Supply** | 400V / 16A / 50 Hz - EU (480V / 15A / 60Hz – US) |
| **Air Pressure** | 4 Bar (58PSI) |
| **Dimensions ( W x D x H )** | 800 x 560 x 1720 mm (31.496"x 22.047" x 67.716") |
| **Weight** | 120 Kg (265 lb) |

**Operation TIP**

For easy and safe operation of shrink holders do not disassemble and use preset screw

**Needed Infrastructures for INDN AP Unit:**

16A 5pin industrial socket

**G3/8 Connection to Air Hose ( 4 Bar ) (58 PSI)**

SHRINKIN

**INDN BS UNIT EU**
SHRINKIN Induction Heating Unit for Shrink Tool Chucking.

| Designation | Machines |
|---|---|
| **INDN BS UNIT EU** | 400V / 16A / 50Hz |

**New**

**What's in the Box**
- BS Induction Unit
- Clamping ring
- 4 stop discs for SRKIN shrinkable holders.
- Protective gloves
- Barcode scanner
- 12 blank magnets
- Page with SRKIN parameter stickers

**Not included – suitable holder adaptor – should be ordered separately**

| | | |
|---|---|---|
| 3449603 | INDN BS AD HSK 32 | HSK 32 |
| 3449604 | INDN BS AD HSK 40 | HSK 40 /HSK 50 F.B.D |
| 3449605 | INDN BS AD HSK 50 | HSK 50 /HSK 63 F.B.D |
| 3449606 | INDN BS AD HSK 63 | HSK 63 /HSK 80 F.B.D |
| 3449607 | INDN BS AD HSK 80 | HSK 80 /HSK 100 F.B.D |
| 3449608 | INDN BS AD HSK 100 | HSK 100 |
| 3449609 | INDN BS AD TAPER #30 | SK/BT/CAT #30 |
| 3449611 | INDN BS AD TAPER #40 | SK/BT/CAT #40 |
| 3449613 | INDN BS AD TAPER #50 | SK/BT/CAT #50W |
| 3449614 | INDN BS AD C3 | C3 |
| 3449615 | INDN BS AD C4 | C4 |
| 3449616 | INDN BS AD C5 | C5 |
| 3449617 | INDN BS AD C6 | C6 |
| 3449618 | INDN BS AD C8 | C8 |

**Not included – suitable stop disc – – to be ordered separately**

| | | |
|---|---|---|
| 3449266 | INDN BS DISC SRK3 #6 | SRK Ø 3 |
| 3449267 | INDN BS DISC SRK4 #7 | SRK Ø 4 |
| 3449268 | INDN BS DISC SRK5 #8 | SRK Ø 5 |
| 3449270 | INDN BS DISC SRK6 #9 | SRK Ø 6 |
| 3449271 | NDN BS DISC SRK8 #10 | SRK Ø 8 |
| 3449272 | INDN BS DISC SRK10 #11 | SRK Ø 10 |
| 3449273 | INDN BS DISC SRK12 #12 | SRK Ø 12 |

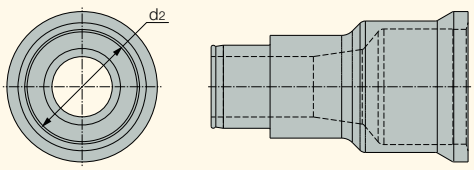
**Technical Data**

| | |
|---|---|
| **Machine Type** | INDN BS INDUCTION UNIT |
| **Clamping Range** | Ø3-32mm (1/8"- 1 1/4") (Carbide) |
| **Coil** | Fixed |
| **Max. Tool Length** | 400mm (15.748") |
| **Max. Machine Interface** | HSK A100 / #50 taper cone |
| **Power** | 8kW |
| **Electric Current Supply** | 400V / 16A / 50 Hz - EU<br>(480V / 15A / 60Hz – US) |
| **Dimensions ( W x D x H )** | 320 x 400 x 840 mm<br>(12.599"x 15.748" x 33.071") |
| **Weight** | 20 Kg (44 lb) |

**Needed Infrastructures for INDN BS Unit:**
16A 5pin industrial socket

## Accessories

**INDN AP AD**
Tool Holder Adapter AP Unit



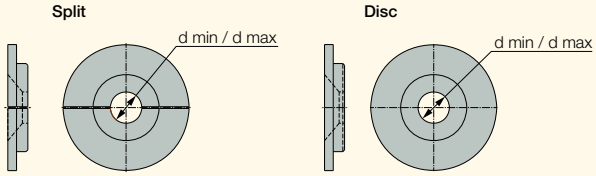

| Designation | SFMT | S3[1] | d2 |
|---|---|---|---|
| INDN AP AD 32 | AP | HSK32 | 32.00 |
| INDN AP AD 40 | AP | HSK40/C4 | 40.00 |
| INDN AP AD 50 | AP | HSK50/C5/#30 | 50.00 |
| INDN AP AD 63 | AP | HSK63/C6/#40/KM63 | 63.00 |
| INDN AP AD 80 | AP | HSK80/C8/#45 | 80.00 |
| INDN AP AD 100 | AP | HSK100/C10/#50 | 100.00 |

New

(1) Suitable tool holder

## Accessories

**INDN AP DISC/SPLIT**
Induction Coil Stop Disc AP Unit



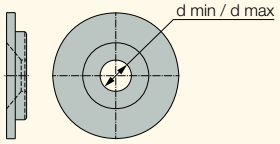

| Designation | SFMT | d min | d max[1] | S3[2] |
|---|---|---|---|---|
| INDN AP DISC 3-5 #0 | AP | 3.0 | 5.0 | 3-5mm / SRK 6mm |
| INDN AP DISC 6-12 #1 | AP | 6.0 | 12.0 | 6-12mm |
| INDN AP DISC 14-20 #2 | AP | 14.0 | 22.0 | 14-22mm |
| INDN AP DISC 25-32 #3 | AP | 25.0 | 32.0 | 25-32mm |
| INDN AP DISC SRK3-5 #5 | AP | 3.0 | 5.0 | SRK 3-5mm |
| INDN AP DISC SRK8 #8 | AP | 8.0 | 8.0 | SRK 8mm |
| INDN AP DISC SRK12 #12 | AP | 10.0 | 12.0 | SRK 10-12mm |
| INDN AP SPLIT #0 | AP | 3.0 | 5.0 | "T shape" 3-5mm |
| INDN AP SPLIT #1 | AP | 6.0 | 12.0 | "T shape" 6-12mm |
| INDN AP SPLIT #2 | AP | 14.0 | 22.0 | "T shape" 14-22mm |
| INDN AP SPLIT #3 | AP | 25.0 | 32.0 | "T shape" 25-32mm |
| INDN AP DISC SHORT 12-22 | AP | 12.0 | 22.0 | Short 12-22mm |

New

(1) Maximum workpiece diameter for grooving operation
(2) Clamping diameter

## Accessories

**INDN BS DISC**
Induction Coil Stop Disc BS Unit




| Designation | SFMT | d min | d max(1) | S3(2) |
|---|---|---|---|---|
| INDN BS DISC 6-8 #1 | BS | 6.0 | 8.0 | 6-8mm |
| INDN BS DISC 10-14 #2 | BS | 10.0 | 14.0 | 10-14mm |
| INDN BS DISC 16-18 #3 | BS | 16.0 | 18.0 | 16-18mm |
| INDN BS DISC 20 #4 | BS | 20.0 | 20.0 | 20mm |
| INDN BS DISC 25-32 #5 | BS | 25.0 | 32.0 | 25-32mm |
| INDN BS DISC SRK3 #6 | BS | 3.0 | 3.0 | SRK 3mm |
| INDN BS DISC SRK4 #7 | BS | 4.0 | 4.0 | SRK 4mm |
| INDN BS DISC SRK5 #8 | BS | 5.0 | 5.0 | SRK 5mm |
| INDN BS DISC SRK6 #9 | BS | 6.0 | 6.0 | SRK 6mm |
| INDN BS DISC SRK8 #10 | BS | 8.0 | 8.0 | SRK 8mm |
| INDN BS DISC SRK10 #11 | BS | 10.0 | 10.0 | SRK 10mm |
| INDN BS DISC SRK12 #12 | BS | 12.0 | 12.0 | SRK 12mm |

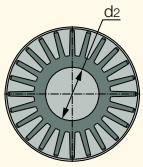
New

(1) Maximum workpiece diameter for grooving operation

(2) Clamping diameter

## Accessories

**INDN BS AD HSK**
Tool Holder Adapter BS Unit



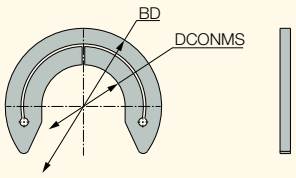

| Designation | SFMT | S3(1) | d2 |
|---|---|---|---|
| INDN BS AD HSK 25 | BS | HSK25 | 25.00 |
| INDN BS AD HSK 32 | BS | HSK32 | 32.00 |
| INDN BS AD HSK 40 | BS | HSK40 | 40.00 |
| INDN BS AD HSK 50 | BS | HSK50 | 50.00 |
| INDN BS AD HSK 63 | BS | HSK63 | 63.00 |
| INDN BS AD HSK 80 | BS | HSK80 | 80.00 |
| INDN BS AD HSK 100 | BS | HSK100 | 100.00 |
| INDN BS AD TAPER #30 | BS | Taper #30 | 50.00 |
| INDN BS AD TAPER #40 | BS | Taper #40 | 63.00 |
| INDN BS AD TAPER #50 | BS | Taper #50 | 100.00 |
| INDN BS AD C3 | BS | C3 | 32.00 |
| INDN BS AD C4 | BS | C4 | 40.00 |
| INDN BS AD C5 | BS | C5 | 50.00 |
| INDN BS AD C6 | BS | C6 | 63.00 |
| INDN BS AD C8 | BS | C8 | 80.00 |

New

(1) Suitable tool holder

## Accessories

**INDN SETTING DISC**
Height Setting Discs Metric




| Designation | SFMT | BD | DCONMS | S3(1) |
|---|---|---|---|---|
| INDN SETTING DISC 3 | AP+BS | 16.00 | 3.00 | 3 |
| INDN SETTING DISC 4 | AP+BS | 16.00 | 4.00 | 4 |
| INDN SETTING DISC 5 | AP+BS | 16.00 | 5.00 | 5 |
| INDN SETTING DISC 6 | AP+BS | 16.00 | 6.00 | 6 |
| INDN SETTING DISC 8 | AP+BS | 20.00 | 8.00 | 8 |
| INDN SETTING DISC 10 | AP+BS | 20.00 | 10.00 | 10 |
| INDN SETTING DISC 12 | AP+BS | 25.00 | 12.00 | 12 |
| INDN SETTING DISC 14 | AP+BS | 25.00 | 14.00 | 14 |
| INDN SETTING DISC 16 | AP+BS | 30.00 | 16.00 | 16 |
| INDN SETTING DISC 18 | AP+BS | 30.00 | 18.00 | 18 |
| INDN SETTING DISC 20 | AP+BS | 34.00 | 20.00 | 20 |
| INDN SETTING DISC 25 | AP+BS | 39.00 | 25.00 | 25 |
| INDN SETTING DISC 32 | AP+BS | 48.00 | 32.00 | 32 |

New

(1) Tool diameter

# SPIN-JET COOLENT DRIVEN HSM SPINDLES

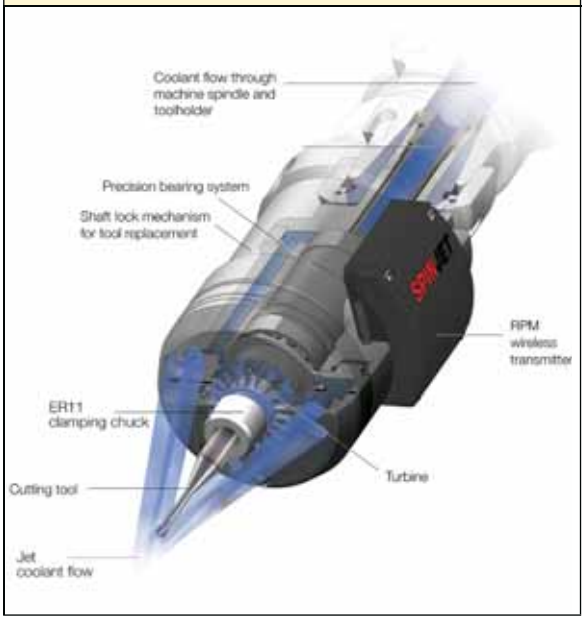
SPINJET

**SPIN-JET** – A unique, coolant-driven high speed compact spindle for small diameter tools.

The **SPIN-JET** spindles have been developed for use when high RPM is required for small diameter tools on limited RPM machines. The spindles are for semi-finish and finish machining applications such as milling, drilling, engraving, chamfering / deburring and fine radial grinding.

**General View**

**Internal Structure**




## Advantages

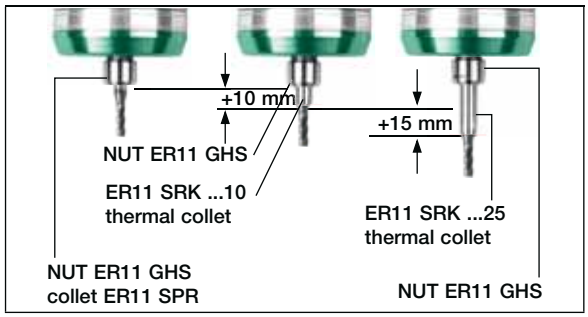
- Reduced machining time - High table speed, thus faster machining due to high rotation speed
- High efficiency - Up to 65% increased productivity compared to machining with the original machine with low RPM spindle
- Energy saving - The machine spindle is idle while the **SPIN-JET** is in operation
- High precision - Excellent surface quality due to optimized machining conditions
- Plug & play – Easy installation on existing machines with no adaptation required
- Extended tool life – As a result of optimal cutting conditions and strong jet coolant flow

## Features Direct Wireless Rotation Speed Display

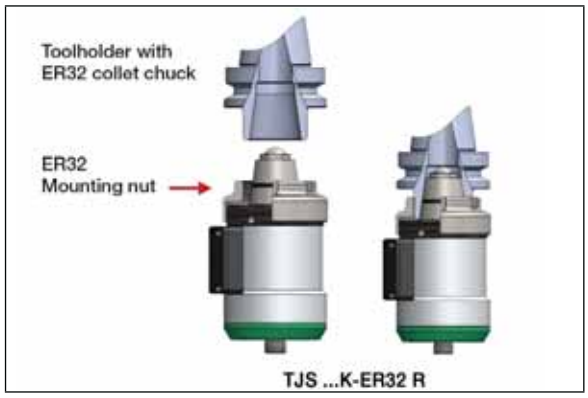
**SPIN-JET** is equipped with an online speed display system, monitoring the actual cutting tool rotation speed during machining.

- 2.4 GHz radio frequency transmission
- Direct wireless rotational speed monitoring in a range of up to 10 meters
- Externally powered display enables reading all **SPIN-JET** systems being used on the machine

## A New Solution for Cutting Tool Overhang




Built in ER32 Collet Chuck Featuring high precision and low runout, suitable for various standard toolholders with ER32 taper.



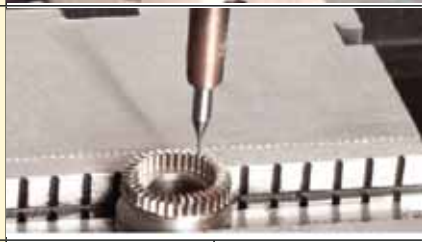

## SPIN-JET-HPC ER32 LINE - Adaptation Options

Clamping type: ER11 collet size

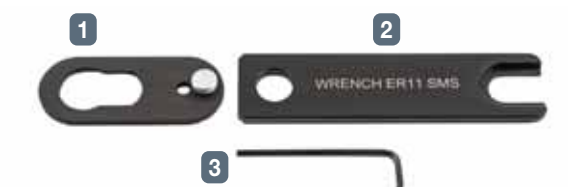
| Operating Data | Model: HPC | Model: SPIN-JET-GREEN LINE |
|---|---|---|
| Operating range of coolant pressure [bar] | 15-70 | 20 - 40 |
| Operating range of coolant flow rate [l/min] | 10-22 | 10-20 |
| Rotational spindle speed [rpm]* | 20,000-45,000 | 35000- 55000 |
| Optimum cutting tool diameter [mm] | Drilling: 0.5 - 3.0 | Drilling: 0.5 - 4 |
| | Milling: 1.0 - 4.0 | Milling: 1 - 3.5 |
| Maximum tool shank diameter [mm] | 7 | 7 |

Table 1. – General operating parameters

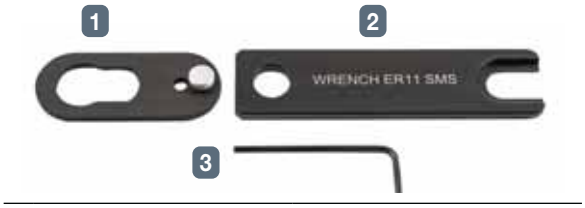
## SPIN-JET-HPC LINE Spindle Applications

| | |
|---|---|
| **Drilling** | |
| **Thread Milling** | |
| **Milling** |  |
| **Engraving & Chamfering** | |
| **Grinding** | |

HSM Jet Spindle with mounting adaptation options (for illustration purposes only)

| Spindle Case Contents | Display Case Contents |
|---|---|
| | |
| 1 TJS Shaft Lock Key HPC<br>2 Wrench ERSMS<br>3 HW2.Hex (Allen) key | **For Europe:**<br>1 TJS TSD display EUR - wireless RPM display<br>2 TJS DISP. power supply EUR - AC/DC 5V<br>**For USA/Japan:**<br>1 TJS TSD display - USA<br>2 TJS DISP. power supply - USA - AC/DC 5V |
|   | |

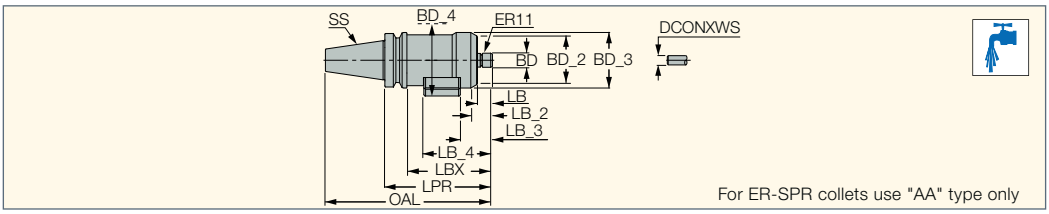
Shaft lock flat key and wrench

| Spindle Case Contents | Display Case Contents |
|---|---|
| | |
| 1 TJS Shaft Lock Key GJET<br>2 Wrench ERSMS<br>3 HW2.Hex (Allen) key | **For Europe:**<br>1 TJS TSD display EUR - wireless RPM display<br>2 TJS DISP. power supply EUR - AC/DC 5V<br>**For USA/Japan:**<br>1 TJS TSD display - USA<br>2 TJS DISP. power supply - USA - AC/DC 5V |
|   | |

Shaft lock flat key and wrench

## BT MAS SPINJET

**TJS-GJET-BT**
Coolant Driven High Speed Compact Spindles with BT Shanks




| Designation | BD | BD_2 | BD_3 | BD_4 | LB | LB_2 | LB_3 | LB_4 | LBX | SS | LF | LPR | DCONXWS(1) | OAL | RPMN(2) | RPMX(3) | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TJS GJET BT30 | 16.00 | 54.25 | 63.00 | 81.00 | 17.00 | 24.58 | 36.24 | 77.84 | 109.00 | 30 | 124.00 | 141.00 | 7.00 | 189.00 | 35000 | 55000 | 0 | 1.60 |
| TJS GJET BT40 | 16.00 | 54.25 | 63.00 | 81.00 | 17.00 | 24.58 | 36.44 | 77.84 | 97.04 | 40 | 107.00 | 124.00 | 7.00 | 189.00 | 35000 | 55000 | 0 | 1.80 |

- Minimum coolant pressure 20 bar and flow rate 12 l/min
- The spindle provides only external strong coolant jet around the tool
- Battery not supplied
- For user guide, see pages 790-792

(1) Maximum tool shank diameter
(2) Minimum RPM
(3) Maximum RPM
(4) 1 - Slot for data chip, 0 - Without slot for data chip

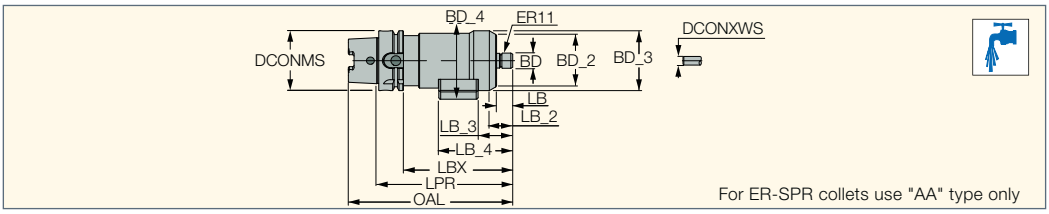
### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| TJS-GJET-BT | NUT ER11 GHS | WRENCH ER11 SMS | HW 2.0 | TJS SHAFT LOCK KEY | TJS TSD DISPLAY* |

* Optional, to be ordered separately

## HSK SPINJET

**TJS-GJET-HSK A63**
Coolant Driven High Speed Compact Spindles with HSK Shanks




| Designation | BD | BD_2 | BD_3 | BD_4 | LB | LB_2 | LB_3 | LB_4 | LBX | DCONMS | LPR | OAL | DCONXWS(1) | RPMN(2) | RPMX(3) | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TJS GJET HSK A63 | 16.00 | 54.25 | 63.00 | 81.00 | 17.00 | 24.58 | 36.24 | 77.84 | 115.00 | 63.00 | 141.00 | 173.00 | 7.00 | 35000 | 55000 | 0 | 1.80 |

- Minimum coolant pressure 20 bar and flow rate 12 l/min
- The spindle provides only external strong coolant jet around the tool
- Battery not supplied
- For user guide, see pages 790-792

(1) Maximum tool shank diameter
(2) Minimum RPM
(3) Maximum RPM
(4) 1 - Slot for data chip, 0 - Without slot for data chip

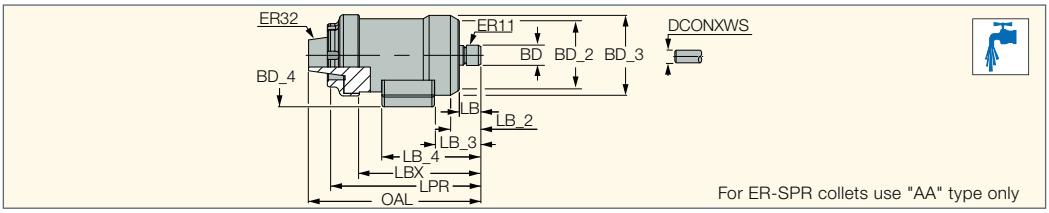
### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| TJS-GJET-HSK A63 | NUT ER11 GHS | WRENCH ER11 SMS | HW 2.0 | TJS SHAFT LOCK KEY | TJS TSD DISPLAY* |

* Optional, to be ordered separately

## SPINJET

**TJS-GJET-ER32**
Coolant Driven High Speed Compact Spindles with ER32 Shanks




| Designation | BD | BD_2 | BD_3 | BD_4 | LB | LB_2 | LB_3 | LB_4 | LBX | LPR | OAL | DCONXWS(1) | RPMN(2) | RPMX(3) | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TJS GJET ER32 | 16.00 | 54.92 | 63.00 | 81.00 | 17.00 | 24.00 | 36.44 | 78.00 | 95.84 | 109.00 | 138.00 | 7.00 | 35000 | 55000 | 0 | 1.30 |

- Minimum coolant pressure 20 bar and flow rate 12 l/min
- The spindle provides only external strong coolant jet around the tool
- Battery not supplied
- Recommended tightening torque for NUT ER GHS 10 NM
- For user guide, see pages 790-792

(1) Maximum tool shank diameter
(2) Minimum RPM
(3) Maximum RPM
(4) 1 - Slot for data chip, 0 - Without slot for data chip

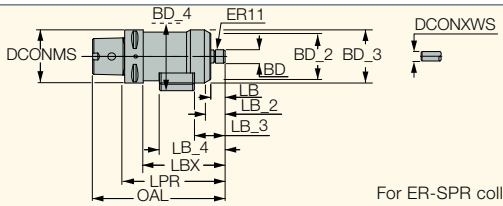
### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| TJS-GJET-ER32 | NUT ER11 GHS | WRENCH ER11 SMS | HW 2.0 | TJS SHAFT LOCK KEY | TJS TSD DISPLAY* |

* Optional, to be ordered separately

## CAMFIX SPINJET

**TJS-GJET-C#**
Coolant Driven High Speed Compact Spindles with CAMFIX (ISO 26623-1) Shanks




| Designation | BD | BD_2 | BD_3 | BD_4 | LB | LB_2 | LB_3 | LB_4 | LBX | LPR | OAL | DCONXWS(1) | DCONMS | LF | DCP(2) | RPMN(3) | RPMX(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TJS GJET C5 | 16.00 | 54.25 | 63.00 | 81.00 | 17.00 | 24.58 | 36.24 | 77.84 | 109.00 | 129.00 | 159.00 | 7.00 | 50.00 | 112.00 | 0 | 35000 | 55000 | 1.50 |
| TJS GJET C6 | 16.00 | 54.25 | 63.00 | 81.00 | 17.00 | 24.54 | 36.20 | 77.80 | 97.00 | 119.00 | 157.00 | 7.00 | 63.00 | 102.00 | 0 | 35000 | 55000 | 1.60 |

- Minimum coolant pressure 20 bar and flow rate 12 l/min • The spindle provides only external strong coolant jet around the tool
- Battery not supplied
- For user guide, see pages 790-792

(1) Maximum tool shank diameter
(2) 1 - Slot for data chip, 0 - Without slot for data chip
(3) Minimum RPM
(4) Maximum RPM

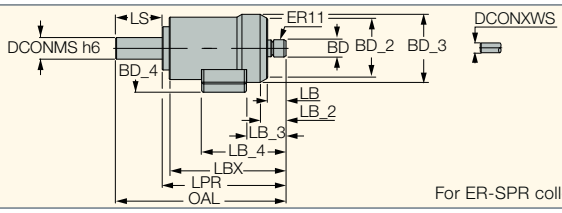
### Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| TJS GJET C5 | TJS SHAFT LOCK KEY | TJS TSD DISPLAY* | NUT ER11 GHS | WRENCH ER11 SMS | HW 2.0 | COOLING TUBE C5* |
| TJS GJET C6 | TJS SHAFT LOCK KEY | TJS TSD DISPLAY* | NUT ER11 GHS | WRENCH ER11 SMS | HW 2.0 | COOLING TUBE C6* |

* Optional, to be ordered separately

## Straight Shank SPINJET

**TJS-GJET-ST**
Coolant Driven High Speed Compact Spindles with Cylindrical Shanks




| Designation | BD | BD_2 | BD_3 | BD_4 | LB | LB_2 | LB_3 | LB_4 | LBX | LPR | OAL | DCONXWS(1) | LS | RPMN(2) | RPMX(3) | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TJS GJET ST20 | 16.00 | 54.92 | 63.00 | 81.00 | 17.00 | 24.00 | 36.44 | 78.00 | 108.00 | 115.00 | 158.00 | 7.00 | 43.0 | 35000 | 55000 | 0 | 1.20 |

- Minimum coolant pressure 20 bar and flow rate 12 l/min • The spindle provides only external strong coolant jet around the tool
- Battery not supplied
- For user guide, see pages 790-792

(1) Maximum tool shank diameter
(2) Minimum RPM
(3) Maximum RPM
(4) 1 - Slot for data chip, 0 - Without slot for data chip

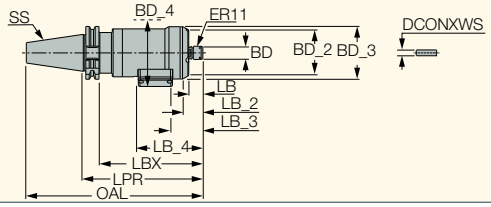
### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| TJS-GJET-ST | NUT ER11 GHS | WRENCH ER11 SMS | HW 2.0 | TJS SHAFT LOCK KEY | TJS TSD DISPLAY* |

* Optional, to be ordered separately

## DIN69871 SPINJET

**TJS-GJET-DIN69871**
Coolant Driven High Speed Compact Spindles with DIN69871 Shank




| Designation | SS | BD | BD_2 | BD_3 | BD_4 | LB | LB_2 | LB_3 | LB_4 | LBX | LPR | OAL | DCONXWS(1) | RPMN(2) | RPMX(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TJS GJET DIN69871 30 | 30 | 16.00 | 54.69 | 63.00 | 81.00 | 17.00 | 24.20 | 36.24 | 77.84 | 125.00 | 144.00 | 192.00 | 7.00 | 35000 | 55000 |
| TJS GJET DIN69871 40 | 40 | 16.00 | 54.69 | 63.00 | 81.00 | 17.00 | 24.20 | 36.24 | 77.84 | 125.00 | 144.00 | 212.54 | 7.00 | 35000 | 55000 |

- Minimum coolant pressure 20 bar and flow rate 12 l/min • The spindle provides only external strong coolant jet around the tool
- Battery not supplied
- For user guide, see pages 790-792

(1) Maximum diameter
(2) Minimum RPM
(3) Maximum RPM

### Spare Parts

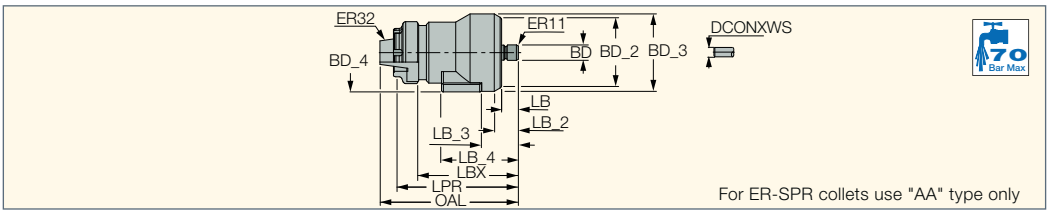
| Designation | | | | | |
|---|---|---|---|---|---|
| TJS-GJET-DIN69871 | TJS SHAFT LOCK KEY | NUT ER11 GHS | WRENCH ER11 SMS | TJS TSD DISPLAY* | HW 2.0 |

* Optional, to be ordered separately

## SPINJET

### TJS HPC ER

High-Pressure Coolant Driven HSM Spindle with ER32 Shank for Small Diameter Cutting Tools




| Designation | BD | BD_2 | BD_3 | BD_4 | LB | LB_2 | LB_3 | LB_4 | LBX | LPR | OAL | SS | DCONXWS(1) | RPMN(2) | RPMX(3) | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TJS HPC ER32 | 16.00 | 71.25 | 80.00 | 81.00 | 17.31 | 24.89 | 37.81 | 79.41 | 103.00 | 114.21 | 143.00 | ER32 | 7.00 | 25000 | 45000 | 0 | 1.70 |

- Coolant pressure 15-70 bar and flow rate 10-22 l/min • RPM range 20,000-45,000 RPM • The spindle provides only external strong coolant jet around the tool
- Battery not supplied • For user guide, see pages 790-792

(1) Maximum diameter
(2) Minimum RPM
(3) Maximum RPM
(4) 1 - Slot for data chip, 0 - Without slot for data chip

### Spare Parts

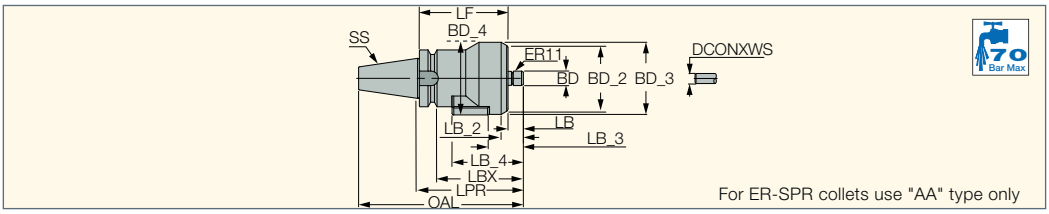
| Designation | | | | | |
|---|---|---|---|---|---|
| TJS HPC ER | TJS TSD DISPLAY* | NUT ER11 GHS | WRENCH ER11 SMS | HW 2.0 | TJS SHAFT LOCK KEY |

* Optional, to be ordered separately

## BT MAS SPINJET

### TJS HPC BT

High-Pressure Coolant Driven HSM Spindle with BT Shank for Small Diameter Cutting Tools




| Designation | BD | BD_2 | BD_3 | BD_4 | LB | LB_2 | LB_3 | LB_4 | LBX | SS | LF | LPR | DCONXWS(1) | OAL | RPMN(2) | RPMX(3) | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TJS HPC BT30 | 16.00 | 71.25 | 80.00 | 81.00 | 17.00 | 24.58 | 37.50 | 79.10 | 90.30 | BT30 | 119.00 | 136.00 | 7.00 | 185.00 | 25000 | 45000 | 0 | 0.00 |
| TJS HPC BT40 | 16.00 | 71.25 | 80.00 | 81.00 | 17.00 | 24.58 | 37.50 | 79.10 | 90.30 | BT40 | 100.00 | 117.00 | 7.00 | 183.00 | 25000 | 45000 | 0 | 1.90 |

- Coolant pressure 15-70 bar and flow rate 10-22 l/min • RPM range 20,000-45,000 RPM • The spindle provides only external strong coolant jet around the tool
- Battery not supplied • For user guide, see pages 790-792

(1) Maximum diameter
(2) Minimum RPM
(3) Maximum RPM
(4) 1 - Slot for data chip, 0 - Without slot for data chip

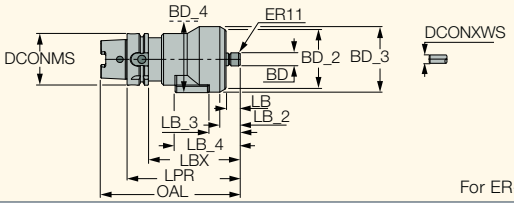
### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| TJS HPC BT | TJS TSD DISPLAY* | NUT ER11 GHS | WRENCH ER11 SMS | HW 2.0 | TJS SHAFT LOCK KEY |

* Optional, to be ordered separately

## HSK SPINJET

**TJS HPC HSK**
High-Pressure Coolant Driven HSM Spindle with HSK Shank for Small Diameter Cutting Tools




| Designation | BD | BD_2 | BD_3 | BD_4 | LB | LB_2 | LB_3 | LB_4 | LBX | DCONMS | DCONXWS(1) | LF | LPR | OAL | RPMN(2) | RPMX(3) | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TJS HPC HSK A63 | 16.00 | 71.30 | 80.00 | 81.00 | 17.30 | 24.90 | 37.80 | 79.40 | 112.00 | 63.00 | 7.00 | 121.00 | 138.00 | 170.00 | 25000 | 45000 | 0 | 2.00 |

- Coolant pressure 15-70 bar and flow rate 10-22 l/min • RPM range 20,000-45,000 RPM • The spindle provides only external strong coolant jet around the tool
- Battery not supplied • For user guide, see pages 790-792

(1) Maximum diameter
(2) Minimum RPM
(3) Maximum RPM
(4) 1 - Slot for data chip, 0 - Without slot for data chip

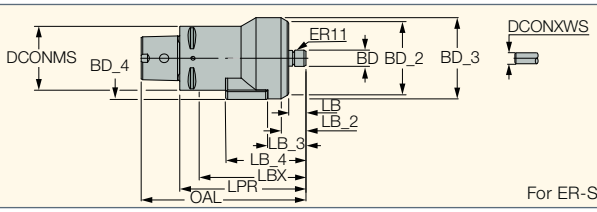
### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| TJS HPC HSK | TJS TSD DISPLAY* | NUT ER11 GHS | WRENCH ER11 SMS | HW 2.0 | TJS SHAFT LOCK KEY |

* Optional, to be ordered separately

## CAMFIX SPINJET

**TJS HPC C#**
High-Pressure Coolant Driven HSM Spindle with CAMFIX Shank for Small Diameter Cutting Tools




| Designation | BD | BD_2 | BD_3 | BD_4 | LB | LB_2 | LB_3 | LB_4 | LBX | LPR | OAL | DCONMS | DCONXWS(1) | RPMN(2) | RPMX(3) | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TJS HPC C6 | 16.00 | 71.25 | 80.00 | 81.00 | 17.00 | 24.58 | 37.50 | 79.10 | 114.30 | 124.30 | 159.00 | 63.00 | 7.00 | 25000 | 45000 | 0 | 2.00 |

- Coolant pressure 15-70 bar and flow rate 10-22 l/min • RPM range 20,000-45,000 RPM • The spindle provides only external strong coolant jet around the tool
- Battery not supplied • For user guide, see pages 790-792

(1) Maximum diameter
(2) Minimum RPM
(3) Maximum RPM
(4) 1 - Slot for data chip, 0 - Without slot for data chip

### Spare Parts

| Designation | | | | | | |
|---|---|---|---|---|---|---|
| TJS HPC C# | NUT ER11 GHS | WRENCH ER11 SMS | TJS TSD DISPLAY* | HW 2.0 | TJS SHAFT LOCK KEY | COOLING TUBE C6* |

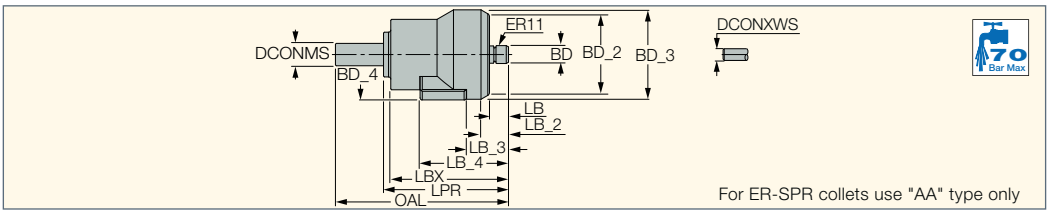
* Optional, to be ordered separately

## Straight Shank

**SPINJET**

### TJS HPC ST

High-Pressure Coolant Driven HSM Spindle with Straight Shank for Small Diameter Cutting Tools




| Designation | BD | BD_2 | BD_3 | BD_4 | LB | LB_2 | LB_3 | LB_4 | LBX | LPR | OAL | DCONMS | DCONXWS(1) | RPMN(2) | RPMX(3) | DCP(4) | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TJS HPC ST20 | 16.00 | 71.25 | 80.00 | 81.00 | 17.00 | 24.58 | 37.50 | 79.10 | 105.30 | 111.84 | 155.00 | 20.00 | 7.00 | 25000 | 45000 | 0 | 1.50 |

- Coolant pressure 15-70 bar and flow rate 10-22 l/min • RPM range 20,000-45,000 RPM • The spindle provides only external strong coolant jet around the tool
- Battery not supplied • For user guide, see pages 790-792

(1) Maximum diameter
(2) Minimum RPM
(3) Maximum RPM
(4) 1 - Slot for data chip, 0 - Without slot for data chip

### Spare Parts

| Designation | | | | | |
|---|---|---|---|---|---|
| TJS HPC ST | NUT ER11 GHS | WRENCH ER11 SMS | TJS TSD DISPLAY* | HW 2.0 | TJS SHAFT LOCK KEY |

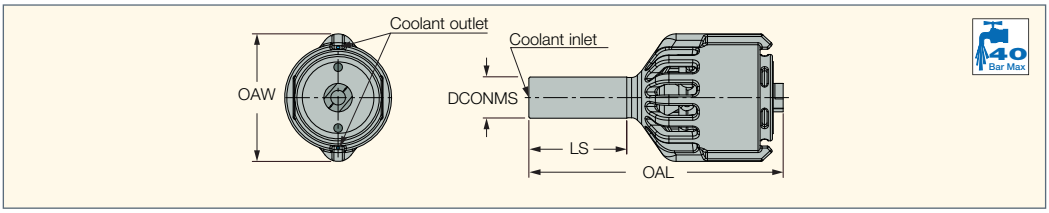
* Optional, to be ordered separately

## Straight Shank

**SPINJET**

### TJS M00 ST

High-Pressure Coolant Driven HSM Spindle with a Straight Shank for Small Diameter Cutting Tools




| Designation | LS | OAL | OAW | DCONMS |
|---|---|---|---|---|
| TJS M00-3.0 | 23.8 | 61.80 | 31.00 | 10.00 |

New

### Spare Parts

| Designation | | | | | | | |
|---|---|---|---|---|---|---|---|
| TJS M00-3.0 | TJS-COLLET 1.6* | TJS-COLLET 2.0* | TJS-COLLET 3.0 | TJS-COLLET 1/8* | TJS MJ-WRENCH-COLLET | TJS MJ-SHAFT-LOCK | TJS MJ-PLUG COOLANT |

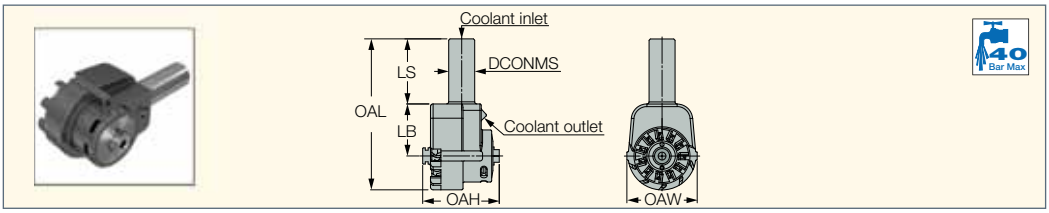
* Optional, to be ordered separately

## Straight Shank

**SPINJET**

### TJS M90 ST

High-Pressure Coolant Driven HSM Spindle with a Straight Shank for Small Diameter Cutting Tools




| Designation | LS | LB | OAL | OAH | OAW | DCONMS |
|---|---|---|---|---|---|---|
| TJS M90-3.0 | 25.0 | 20.00 | 58.00 | 29.00 | 27.00 | 10.00 |

New

### Spare Parts

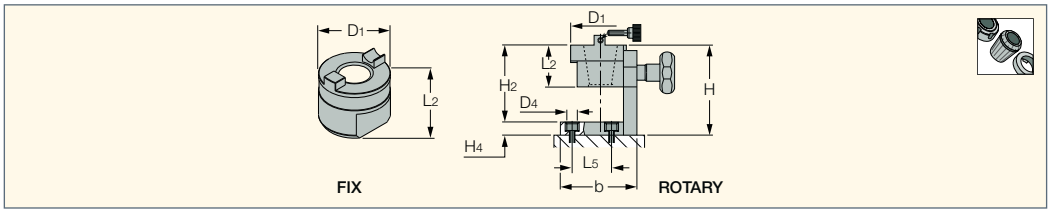
| Designation | | | | | |
|---|---|---|---|---|---|
| TJS M90-3.0 | TJS-COLLET 3.0 | TJS-COLLET 1.6* | TJS-COLLET 2.0* | TJS-COLLET 1/8* | TJS MJ90 WRENCH-2430 |

* Optional, to be ordered separately

# AUXILIARY DEVICES

## Accessories

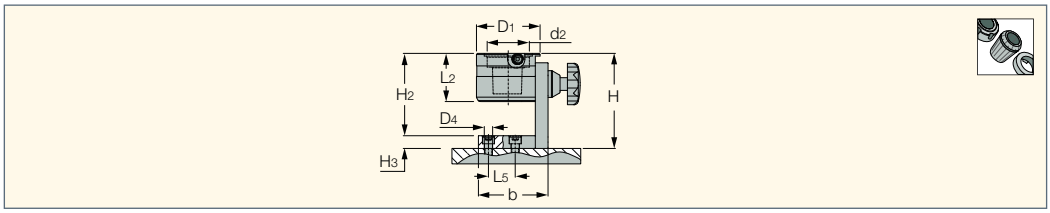
**TOOL CLAMP**
Tool Clamp Fixture for
ISO, DIN 69871 and BT
MAS-403 Tool Shanks




| Designation | CSI | D1 | L2 | H | H2 | H4 | b | L5 | D4 |
|---|---|---|---|---|---|---|---|---|---|
| TOOL CLAMP 30 ROTARY | ROTARY | 70.00 | 56.00 | 128.0 | 109.0 | 19.0 | 104.0 | 40.00 | 12.50 |
| TOOL CLAMP 40 ROTARY | ROTARY | 82.00 | 56.00 | 128.0 | 109.0 | 19.0 | 104.0 | 40.00 | 12.50 |
| TOOL CLAMP 50 ROTARY | ROTARY | 103.00 | 71.00 | 170.0 | 151.0 | 19.0 | 144.0 | 85.00 | 12.50 |
| TOOL CLAMP 30 FIX | FIX | 82.00 | 58.00 | - | - | - | - | - | - |
| TOOL CLAMP 40 FIX | FIX | 82.00 | 58.00 | - | - | - | - | - | - |
| TOOL CLAMP 50 FIX | FIX | 103.00 | 71.00 | - | - | - | - | - | - |

## Accessories

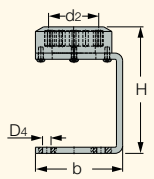
**MULTI-CLAMP C#**
Rotary Clamping Fixtures
for CAMFIX (ISO 26623-1)
Tapered Shank Toolholders




| Designation | S. Std. | SS | d2 | D1 | L2 | H | H2 | H3 | b | L5 | D4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MULTI CLAMP C3 | C3 | 32 | 32.00 | 70.00 | 64.00 | 128.0 | 109.0 | 19.0 | 104.0 | 40.00 | 12.50 |
| MULTI CLAMP C4 | C4 | 40 | 40.00 | 78.00 | 67.00 | 137.0 | 118.0 | 19.0 | 104.0 | 40.00 | 12.50 |
| MULTI CLAMP C5 | C5 | 50 | 50.00 | 82.00 | 72.00 | 142.0 | 123.0 | 19.0 | 104.0 | 40.00 | 12.50 |
| MULTI CLAMP C6 | C6 | 63 | 63.00 | 95.00 | 72.00 | 142.0 | 123.0 | 19.0 | 104.0 | 40.00 | 12.50 |
| MULTI CLAMP C8 | C8 | 80 | 80.00 | 130.00 | 90.00 | 178.0 | 159.0 | 19.0 | 104.0 | 85.00 | 12.50 |

## *Accessories*

**MULTI-CLAMP UNIVERSAL**
Universal Rotary Clamping Fixtures for a Variety of Taper Shank Toolholders



| Designation | CSI | d2 | H | b | D4 |
|---|---|---|---|---|---|
| MULTI CLAMP 40 UNIVERSAL | 40 | 40.00 | 161.0 | 112.0 | 11.00 |
| MULTI CLAMP 50 UNIVERSAL | 50 | 50.00 | 161.0 | 112.0 | 11.00 |
| MULTI CLAMP 63 UNIVERSAL | 63 | 63.00 | 164.0 | 113.0 | 11.00 |
| MULTI CLAMP 80 UNIVERSAL | 80 | 80.00 | 240.0 | 150.0 | 11.00 |
| MULTI CLAMP 100 UNIVERSAL | 100 | 100.00 | 240.0 | 150.0 | 11.00 |

### Mounting table for standard tool holder taper types

| Designation | HSK A/C/E/F | CAMFIX | BT | DIN69871 | CAT | IM | DIN2080 |
|---|---|---|---|---|---|---|---|
| MULTI CLAMP 40 UNIVERSA | HSK 40 | C4 | | | | IM 40 | |
| MULTI CLAMP 50 UNIVERSAL | HSK 50 | C5 | | SK 30 | | IM 50 | DIN2080 30 |
| MULTI CLAMP 63 UNIVERSAL | HSK 63 | C6 | BT 40 | SK 40 | CAT 40 | IM 63 | DIN2080 40 |
| MULTI CLAMP 80 UNIVERSAL | HSK 80 | C8 | | | | IM 80 | |
| MULTI CLAMP100 UNIVERSAL | HSK 100 | C10 | BT 50 | SK 50 | CAT 50 | | |

## Electrical Nut-Clamp Torque Control Device

- Ensures controlled (proper) clamping of cutting tools
- Maintains collet chuck accuracy
- Easy clamping and unclamping of cutting tools
- Handy set for various collet chuck sizes
- Main spindle taper #50
- Suitable for main shank standards
  #40, #50, HSK 63, HSK 100

### Table Model

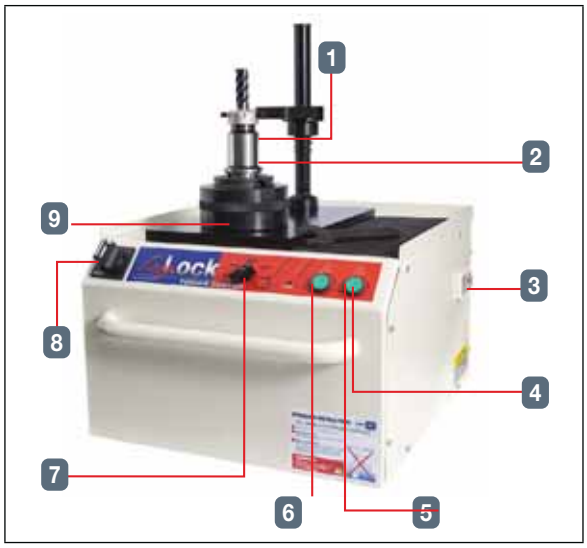
| Specifications | |
|---|---|
| Euro Motor | 1 phase 200/240V 50/60 HZ 1 HP |
| Weight | Table model - 85 kg.<br>Trolley (optional) - 15 kg. |

### EASYLOCK Unit

| Designation | Accessories | |
|---|---|---|
| | Standard | Optional |
| EASY LOCK T.C. EU | TP50 AD 40 EASY | EASY LOCK TROLLEY |
| | WRENCH ER16 EASY LOCK | TP40 AD 30 EASY |
| | WRENCH ER20 EASY LOCK | TP50 AD HSK 63 EASY |
| | WRENCH ER25 EASY LOCK | TP50 AD HSK 100 EASY |
| | WRENCH ER32 EASY LOCK | |
| | WRENCH ER40 EASY LOCK | WRENCH ER50 EASY LOCK |
| | | WRENCH TG100 OPEN EASY |
| | | WRENCH ROLLER 20/32 |

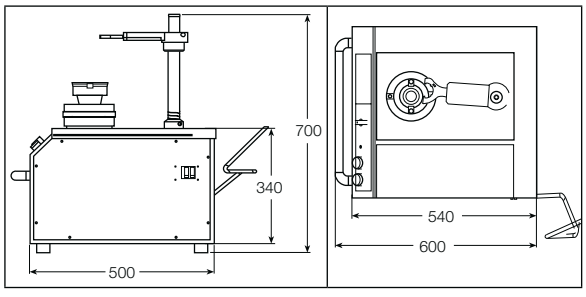
### Power Clamping Unit for Collet Chucks

Safety precautions: never hold or touch the cutting tool, chuck or machine spindle during operation.

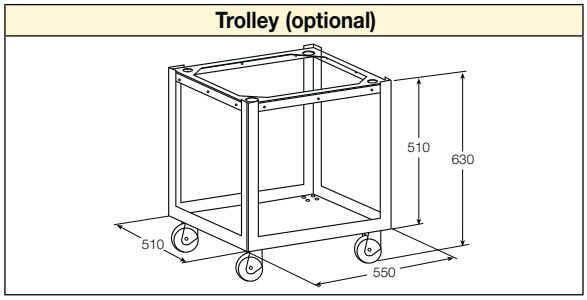



Note: Assemble the collet and cutting tool. By hand, place the nut onto the collet chuck.

1. Choose the correct wrench size. Mount it on the wrench holder.
2. Place the wrench on the collet chuck nut.
3. Ensure that main power switch is on and that the power supply cable is connected.
4. To clamp - Push and hold the “clamp” button until the bottom light goes off.
5. To unclamp - Push and hold the “unclamp” button until the collet chuck is totally open.
6. Power Lamp
7. Torque Selector NEW
8. Main switch
9. Mount the collet chuck into the unit spindle.



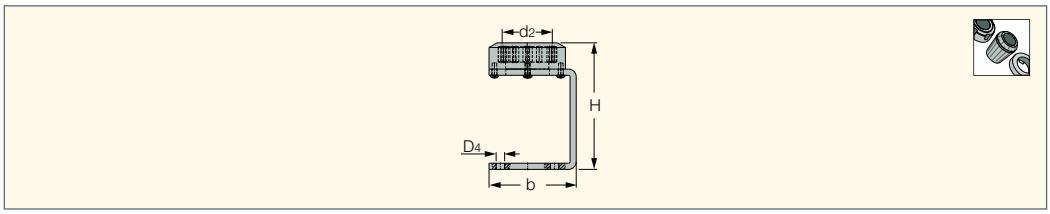

**Trolley (optional)**



# ACCESSORIES & SPARE PARTS

## Accessories

**MULTI-CLAMP UNIVERSAL**
Universal Clamping Fixtures
for a Variety of Taper
Shank Toolholders



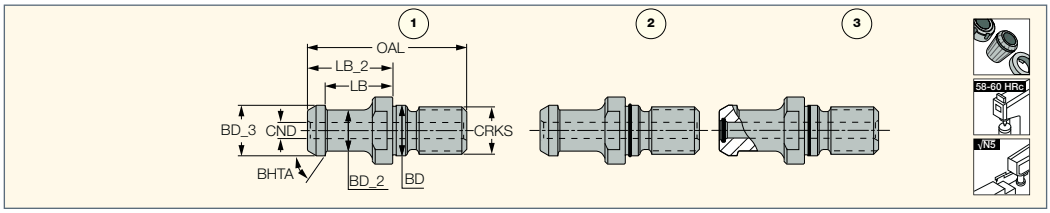

| Designation | CSI | d2 | H | b | D4 |
|---|---|---|---|---|---|
| MULTI CLAMP 40 UNIVERSAL | 40 | 40.00 | 161.0 | 112.0 | 11.00 |
| MULTI CLAMP 50 UNIVERSAL | 50 | 50.00 | 161.0 | 112.0 | 11.00 |
| MULTI CLAMP 63 UNIVERSAL | 63 | 63.00 | 164.0 | 113.0 | 11.00 |
| MULTI CLAMP 80 UNIVERSAL | 80 | 80.00 | 240.0 | 150.0 | 11.00 |
| MULTI CLAMP 100 UNIVERSAL | 100 | 100.00 | 240.0 | 150.0 | 11.00 |

**Mounting table for standard tool holder taper types**

| Designation | HSK A/C/E/F | CAMFIX | BT | DIN69871 | CAT | IM | DIN2080 |
|---|---|---|---|---|---|---|---|
| MULTI CLAMP 40 UNIVERSA | HSK 40 | C4 | | | | IM 40 | |
| MULTI CLAMP 50 UNIVERSAL | HSK 50 | C5 | | SK 30 | | IM 50 | DIN2080 30 |
| MULTI CLAMP 63 UNIVERSAL | HSK 63 | C6 | BT 40 | SK 40 | CAT 40 | IM 63 | DIN2080 40 |
| MULTI CLAMP 80 UNIVERSAL | HSK 80 | C8 | | | | IM 80 | |
| MULTI CLAMP100 UNIVERSAL | HSK 100 | C10 | BT 50 | SK 50 | CAT 50 | | |

## Accessories

**PS BT-JIS (Pull Stud)**
BT Pull Stud with JIS 6339
Retention Knob

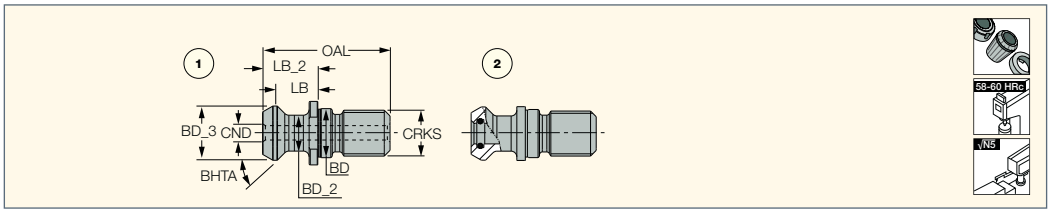



| Designation | SS | CRKS | BD_3 | BD_2 | BD | CND(3) | LB | OAL | LB_2 | BHTA | Fig. | CSP(4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PS BT30 15 M12 JISB | 30 | M12 | 12.00 | 8.00 | 12.50 | 4.0 | 18.40 | 43.0 | 23.40 | 75.0 | 1. | 1 |
| PS BT40 15 M16 JIS 4OB (1) | 40 | M16 | 19.00 | 14.00 | 17.00 | 4.0 | 23.00 | 54.0 | 29.00 | 75.0 | 2. | 1 |
| PS BT40 15 M16 JISB | 40 | M16 | 19.00 | 14.00 | 17.00 | 5.5 | 23.00 | 54.0 | 29.00 | 75.0 | 1. | 1 |
| PS BT40 15 M16 JISOB | 40 | M16 | 19.00 | 14.00 | 17.00 | 5.5 | 23.00 | 54.0 | 29.00 | 75.0 | 2. | 1 |
| PS BT40 15 M16 JISOBO (2) | 40 | M16 | 19.00 | 14.00 | 17.00 | 6.0 | 23.00 | 54.0 | 29.00 | 75.0 | 3. | 1 |
| PS BT50 15 M24 JIS B | 50 | M24 | 28.00 | 21.00 | 25.00 | 8.0 | 25.00 | 74.0 | 34.00 | 75.0 | 1. | 1 |
| PS BT50 15 M24 JIS OB | 50 | M24 | 28.00 | 21.00 | 25.00 | 8.0 | 25.00 | 74.0 | 34.00 | 75.0 | 2. | 1 |

• Fig 1: With coolant holes only • Fig 2: With coolant holes and external O-ring • Fig 3: With coolant holes, external and internal O-rings
(1) 4 mm through hole for OKUMA machines
(2) For DMG MORI machines
(3) Coolant entry diameter
(4) 0 - Without coolant supply, 1 - With coolant supply

## Accessories

**PS BT-MAZAK (Pull Stud)**
BT Pull Stud with ANSI Retention
Knob for MAZAK Machines

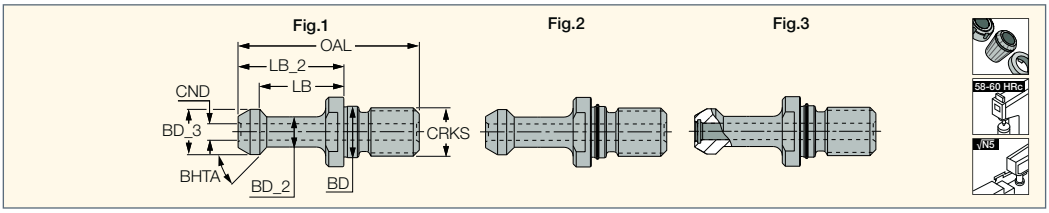



| Designation | SS | CRKS | BD_3 | BD_2 | BD | CND(1) | LB | OAL | LB_2 | BHTA | Fig. | CSP(2) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PS BT40 45 M16 MAZAKB | 40 | M16 | 18.80 | 12.40 | 17.00 | 7.0 | 14.03 | 44.1 | 19.10 | 45.0 | 1 | 1 |
| PS BT40 45 M16 MAZAKBO | 40 | M16 | 18.80 | 12.40 | 17.00 | 7.0 | 14.03 | 44.1 | 19.10 | 45.0 | 2 | 1 |
| PS BT40 90 M16 MAZAK B | 40 | M16 | 15.00 | 10.00 | 17.00 | - | 22.60 | 54.6 | 29.60 | 90.0 | 1 | 0 |
| PS BT50 45 M24 MAZAKB | 50 | M24 | 29.00 | 20.80 | 25.00 | 8.0 | 17.58 | 65.2 | 25.20 | 45.0 | 1 | 1 |

• Fig 1: With coolant hole only • Fig 2: With coolant hole and internal O-ring
(1) Coolant entry diameter
(2) 0 - Without coolant supply, 1 - With coolant supply

## Accessories

**PS BT-MAS (Pull Stud)**
BT Pull Stud with MAS
Retention Knob



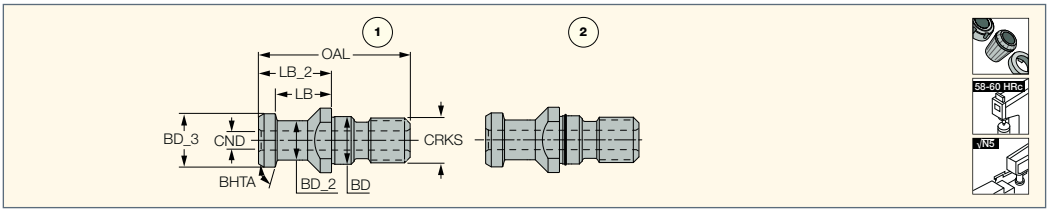

| Designation | SS | CRKS | BD_3 | BD_2 | BD | CND(1) | LB | OAL | LB_2 | BHTA | Fig. | CSP(2) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PS BT30 45 M12 MAS1 | 30 | M12 | 11.00 | 7.00 | 12.50 | - | 18.00 | 43.0 | 23.00 | 45.0 | 1. | 0 |
| PS BT30 45 M12 MAS1B | 30 | M12 | 11.00 | 7.00 | 12.50 | 3.0 | 18.00 | 43.0 | 23.00 | 45.0 | 1. | 1 |
| PS BT30 60 M12 MAS2 | 30 | M12 | 11.00 | 7.00 | 12.50 | - | 18.00 | 43.0 | 23.00 | 60.0 | 1. | 0 |
| PS BT40 45 M16 MAS1 | 40 | M16 | 15.00 | 10.00 | 17.00 | - | 28.00 | 60.0 | 35.00 | 45.0 | 1. | 0 |
| PS BT40 45 M16 MAS1B | 40 | M16 | 15.00 | 10.00 | 17.00 | 4.0 | 28.00 | 60.0 | 35.00 | 45.0 | 1. | 1 |
| PS BT40 60 M16 MAS2 | 40 | M16 | 15.00 | 10.00 | 17.00 | - | 28.00 | 60.0 | 35.00 | 60.0 | 1. | 0 |
| PS BT40 60 M16 MAS2 B | 40 | M16 | 15.00 | 10.00 | 17.00 | 5.5 | 28.00 | 60.0 | 35.00 | 60.0 | 1. | 1 |
| PS BT40 90 M16 MAS3 | 40 | M16 | 15.00 | 10.00 | 17.00 | - | 28.00 | 60.0 | 35.00 | 90.0 | 1. | 0 |
| PS BT40 90 M16 MAS3 B | 40 | M16 | 15.00 | 10.00 | 17.00 | 5.5 | 28.00 | 60.0 | 35.00 | 90.0 | 1. | 1 |
| PS BT50 45 M24 MAS1 | 50 | M24 | 23.00 | 17.00 | 25.00 | - | 35.00 | 85.0 | 45.00 | 45.0 | 1. | 0 |
| PS BT50 45 M24 MAS1 B | 50 | M24 | 23.00 | 17.00 | 25.00 | 6.0 | 35.00 | 85.0 | 45.00 | 45.0 | 1. | 1 |
| PS BT50 45 M24 MAS1 OB | 50 | M24 | 23.00 | 17.00 | 25.00 | 6.0 | 35.00 | 85.0 | 45.00 | 45.0 | 2. | 1 |
| PS BT50 45 M24 MAS1 OBO | 50 | M24 | 23.00 | 17.00 | 25.00 | 6.0 | 35.00 | 85.0 | 45.00 | 45.0 | 3. | 1 |
| PS BT50 60 M24 MAS2 | 50 | M24 | 23.00 | 17.00 | 25.00 | - | 35.00 | 85.0 | 45.00 | 60.0 | 1. | 0 |
| PS BT50 60 M24 MAS2 OB | 50 | M24 | 23.00 | 17.00 | 25.00 | 6.0 | 35.00 | 85.0 | 45.00 | 60.0 | 2. | 1 |
| PS BT50 60 M24 MAS2B | 50 | M24 | 23.00 | 17.00 | 25.00 | 6.0 | 35.00 | 85.0 | 45.00 | 60.0 | 1. | 1 |
| PS BT50 90 M24 MAS3 | 50 | M24 | 23.00 | 17.00 | 25.00 | - | 35.00 | 85.0 | 45.00 | 90.0 | 1. | 0 |
| PS BT50 90 M24 MAS3 B | 50 | M24 | 23.00 | 17.00 | 25.00 | 6.0 | 35.00 | 85.0 | 45.00 | 90.0 | 1. | 1 |
| PS BT50 90 M24 MAS3 OB | 50 | M24 | 23.00 | 17.00 | 25.00 | 6.0 | 35.00 | 85.0 | 45.00 | 90.0 | 2. | 1 |
| PS BT50 90 M24 MAS3 OBO* | 50 | M24 | 23.00 | 17.00 | 25.00 | 8.0 | 35.00 | 85.0 | 45.00 | 90.0 | 3. | 1 |

- Fig 1: With or without coolant holes (coolant holes only in items with a B suffix)
- Fig 2: With coolant holes and external O-ring
- Fig 3: With coolant holes, external and internal O-rings

(1) Coolant entry diameter
(2) 0 - Without coolant supply, 1 - With coolant supply

## Accessories

**PS SK-DIN (Pull Stud)**
SK Pull Stud with DIN 69872
Retention Knob



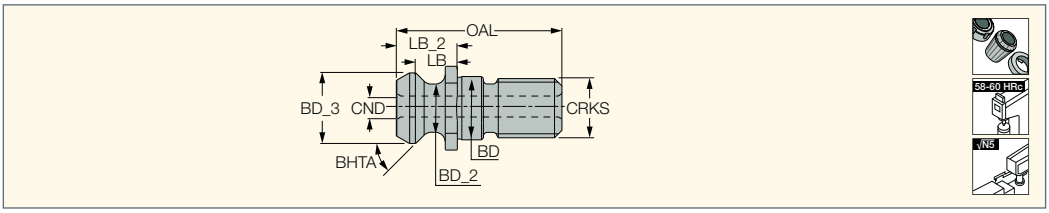

| Designation | SS | CRKS | BD_3 | BD_2 | BD | CND(1) | LB | OAL | LB_2 | BHTA | Fig. | CSP(2) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PS SK30 15 M12 DIN | 30 | M12 | 13.00 | 9.00 | 13.00 | - | 19.00 | 44.0 | 24.00 | 75.0 | 1. | 0 |
| PS SK40 15 M16 DIN | 40 | M16 | 19.00 | 14.00 | 17.00 | - | 20.00 | 54.0 | 26.00 | 75.0 | 1. | 0 |
| PS SK40 15 M16 DIN O | 40 | M16 | 19.00 | 14.00 | 17.00 | - | 20.00 | 54.0 | 26.00 | 75.0 | 2. | 0 |
| PS SK40 15 M16 DIN OB | 40 | M16 | 19.00 | 14.00 | 17.00 | 7.0 | 20.00 | 54.0 | 26.00 | 75.0 | 2. | 1 |
| PS SK40 15 M16 DINB | 40 | M16 | 19.00 | 14.00 | 17.00 | 7.0 | 20.00 | 54.0 | 26.00 | 75.0 | 1. | 1 |
| PS SK50 15 M24 DIN | 50 | M24 | 28.00 | 21.00 | 25.00 | - | 25.00 | 74.0 | 34.00 | 75.0 | 1. | 0 |
| PS SK50 15 M24 DIN O | 50 | M24 | 28.00 | 21.00 | 25.00 | - | 25.00 | 74.0 | 34.00 | 75.0 | 2. | 0 |
| PS SK50 15 M24 DINB | 50 | M24 | 28.00 | 21.00 | 25.00 | 11.5 | 25.00 | 74.0 | 34.00 | 75.0 | 1. | 1 |

- Coolant holes only in items with a B suffix
- Fig 1: Without or with coolant holes
- Fig 2: Without or with coolant holes and external O-ring

(1) Coolant entry diameter
(2) 0 - Without coolant supply, 1 - With coolant supply

## Accessories

**PS CAT-ISO (Pull Stud)**
CAT Pull Studs with ISO Retention Knob

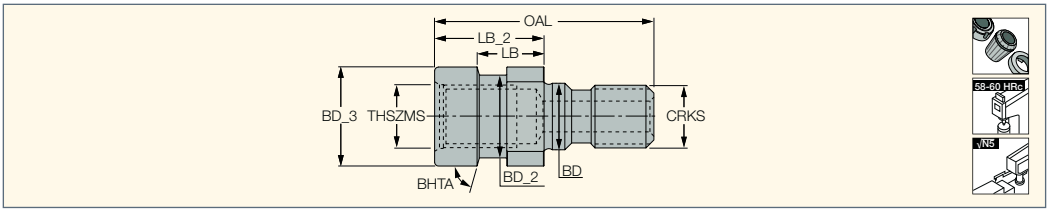



| Designation | SS | CRKS | BD_3 | BD_2 | BD | CND(1) | LB | OAL | LB_2 | BHTA | CSP(2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PS CAT40 45 M16ISOB | 40 | M16 | 18.95 | 12.95 | 17.00 | 7.4 | 11.15 | 44.5 | 16.40 | 45.0 | 1 |
| PS CAT50 45 M24ISOB | 50 | M24 | 29.10 | 19.60 | 25.00 | 8.0 | 17.95 | 65.5 | 25.55 | 45.0 | 1 |

(1) Coolant entry diameter
(2) 0 - Without coolant supply, 1 - With coolant supply

## Accessories

**PS OTT-BT (Pull Stud)**
BT/SK Pull Stud with OTT System Retention Knob

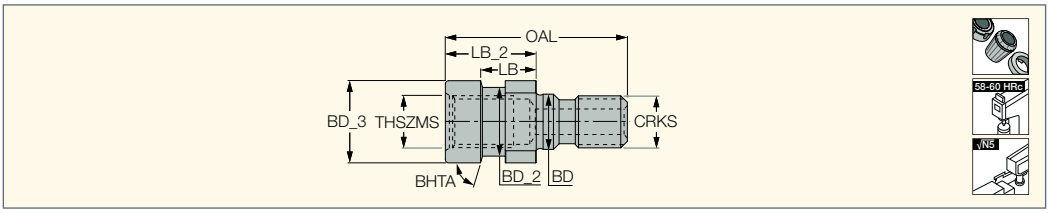



| Designation | SS | CRKS | THSZMS | BD_3 | BD_2 | BD | LB | OAL | LB_2 | BHTA | CSP(1) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PS OTT BT40 M16 | 40 | M16 | M16 | 25.00 | 21.10 | 17.00 | 16.60 | 56.0 | 28.00 | 75.0 | 0 |
| PS OTT BT50 M24 | 50 | M24 | M24 | 39.30 | 32.00 | 25.00 | 13.35 | 65.0 | 25.00 | 75.0 | 0 |

(1) 0 - Without coolant supply, 1 - With coolant supply

## Accessories

**PS OTT-SK (Pull Stud)**
SK Pull Stud with OTT System Retention Knob

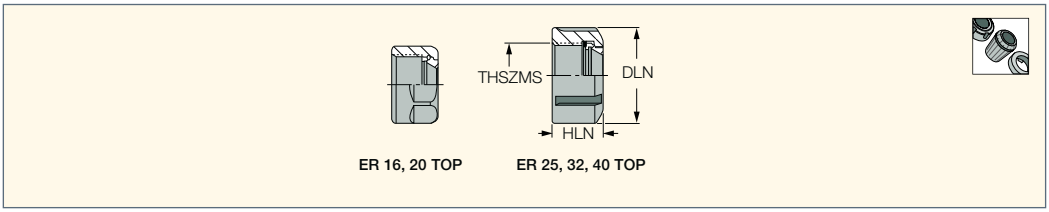



| Designation | SS | CRKS | THSZMS | BD_3 | BD_2 | BD | LB | OAL | LB_2 | BHTA | CSP(1) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PS OTT SK40 M16 | 40 | M16 | M16 | 25.00 | 21.10 | 17.00 | 13.00 | 53.0 | 25.00 | 75.0 | 0 |

(1) 0 - Without coolant supply, 1 - With coolant supply

## Accessories

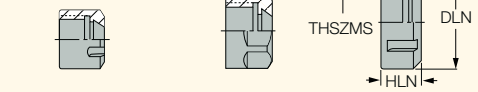
**NUT ER-TOP**
ER-TOP Clamping Nuts for DIN 6499 Collet Chucks




| Designation | DLN | HLN | THSZMS | TQ |
|---|---|---|---|---|
| NUT ER16 TOP | 28.00 | 17.80 | M22X1.5 | 68.7 |
| NUT ER20 TOP | 34.00 | 19.00 | M25X1.5 | 117.7 |
| NUT ER25 TOP | 42.00 | 20.00 | M32X1.5 | 196.2 |
| NUT ER32 TOP | 50.00 | 22.50 | M40X1.5 | 215.8 |
| NUT ER40 TOP | 63.00 | 25.00 | M50X1.5 | 245.3 |

## Accessories

**NUT ER-MINI/UM**
Clamping Nuts for DIN 6499
ER Collet Chucks

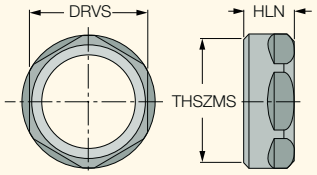



ER 11, 16, 20, 25 Mini | UM ER 16, 20 | UM ER 25, 32, 40, 50

| Designation | DLN | HLN | THSZMS | TQ |
|---|---|---|---|---|
| NUT ER11 MINI | 16.00 | 10.80 | M13X0.75 | 29.4 |
| NUT ER11 UM | 19.00 | 11.30 | M14X0.75 | 49.1 |
| NUT ER16 MINI | 22.00 | 18.00 | M19X1.0 | 39.2 |
| NUT ER16 UM | 28.00 | 17.00 | M22X1.5 | 68.7 |
| NUT ER20 MINI | 28.00 | 19.00 | M24X1.0 | 78.5 |
| NUT ER20 UM | 34.00 | 19.50 | M25X1.5 | 117.7 |
| NUT ER25 MINI | 35.00 | 20.00 | M30X1.0 | 98.1 |
| NUT ER25 UM | 42.00 | 20.00 | M32X1.5 | 196.2 |
| NUT ER32 UM | 50.00 | 22.00 | M40X1.5 | 215.8 |
| NUT ER40 UM | 63.00 | 25.00 | M50X1.5 | 245.3 |
| NUT ER50 UM | 78.00 | 35.00 | M64X2.0 | 343.4 |

## Accessories

**NUT ER-SHORT**
Nuts for SHORT-IN Short
ER Collet Chucks

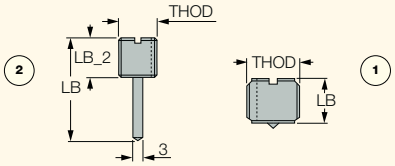



| Designation | DRVS[1] | HLN | THSZMS | TQ |
|---|---|---|---|---|
| NUT ER20 SHORT | 22.0 | 10.70 | M25X1.5 | 117.7 |
| NUT ER32 SHORT | 36.0 | 15.00 | M40X1.5 | 215.8 |
| NUT ER40 SHORT | 46.0 | 16.00 | M50X1.5 | 245.3 |

[1] Torque key size

## Accessories

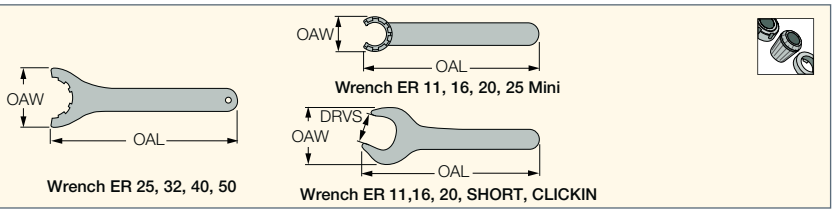
**PRESET ER-JET**
Preset Screws with Oil Holes
for ER Sealed Collets (optional)




| Designation | THOD | LB | LB_2 | Fig. |
|---|---|---|---|---|
| PRESET ER-JET 8X1 | M8X1 | 15.00 | - | 1. |
| PRESET ER-JET 8X1.25 | M8X1.25 | 15.00 | - | 1. |
| PRESET ER-JET 10X1.5 | M10X1.5 | 15.00 | - | 1. |
| PRESET ER-JET 12X1 | M12X1 | 15.00 | - | 1. |
| PRESET ER-JET 12X1.75 | M12X1.75 | 15.00 | - | 1. |
| PRESET ER-JET 12X1.75L | M12X1.75 | 40.00 | 15.0 | 2. |
| PRESET ER-JET 14X1 | M14X1 | 15.00 | - | 1. |
| PRESET ER-JET 16X2 | M16X2 | 15.00 | - | 1. |
| PRESET ER-JET 16X2L | M16X2 | 40.00 | 15.0 | 2. |
| PRESET ER-JET 18X1 | M18X1 | 15.00 | - | 1. |
| PRESET ER-JET 18X1.5 | M18X1.5 | 15.00 | - | 1. |
| PRESET ER-JET 18X1.5L | M18X1.5 | 40.00 | 15.0 | 2. |
| PRESET ER-JET 22X1.5 | M22X1.5 | 15.00 | - | 1. |
| PRESET ER-JET 22X1.5L | M22X1.5 | 40.00 | 15.0 | 2. |
| PRESET ER-JET 28X1.5 | M28X1.5 | 15.00 | - | 1. |

## Accessories

**WRENCH ER**
Wrench for ER DIN 6499
Clamping Nut

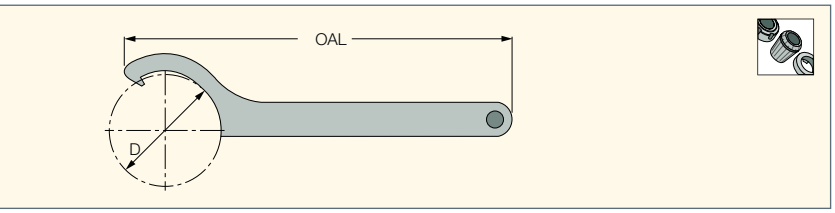



| Designation | OAW | DRVS[1] | OAL |
|---|---|---|---|
| WRENCH ER11 MINI | 16.80 | - | 95.00 |
| WRENCH ER11 | 32.00 | 17.0 | 95.00 |
| WRENCH ER16 MINI | 22.50 | - | 117.00 |
| WRENCH ER16 | 42.80 | 25.0 | 143.00 |
| WRENCH ER20 MINI | 28.00 | - | 128.00 |
| WRENCH ER20 | 53.50 | 30.0 | 172.00 |
| WRENCH ER25 MINI | 36.00 | - | 140.00 |
| WRENCH ER25 | 70.00 | - | 207.00 |
| WRENCH ER32 | 78.00 | - | 255.00 |
| WRENCH ER40 | 95.00 | - | 285.00 |
| WRENCH ER50 | 110.00 | - | 350.00 |
| WRENCH ER32 SHORT | 75.00 | 36.0 | 303.00 |
| WRENCH ER40 SHORT | 94.00 | 46.0 | 378.00 |
| WRENCH ER32 CLICKIN 27 | 57.00 | 27.0 | 239.00 |
| WRENCH ER32 CLICKIN 32 | 67.00 | 32.0 | 273.00 |

(1) Torque key size

## Accessories

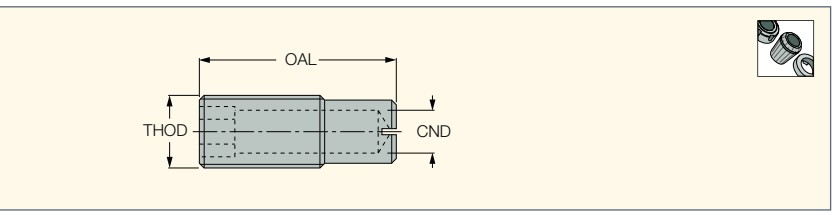
**WRENCH MAXIN**
Wrench for MAXIN Collets




| Designation | D | OAL |
|---|---|---|
| WRENCH MAXIN 20 HOOK | 52.00 | 205.00 |
| WRENCH MAXIN 32 HOOK | 68.00 | 240.00 |

## MAXIN

**PRESET MAXIN**
Tool Stopper Preset Screws
for MAXIN Collet Chucks

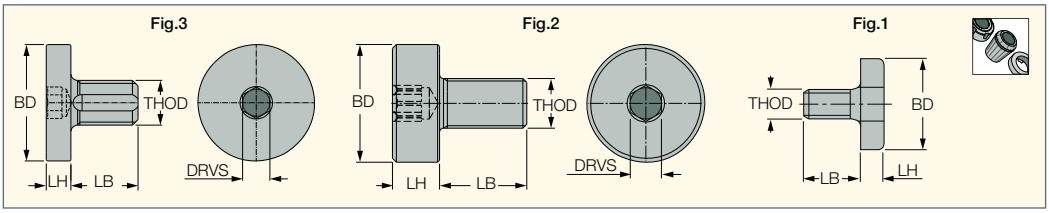



| Designation | THOD | OAL | CND[1] | Key |
|---|---|---|---|---|
| PRESET MAXIN 16X30 | M16 | 30.00 | 8.0 | 8.00 |
| PRESET MAXIN 16X44 | M16 | 44.00 | 8.0 | 8.00 |
| PRESET MAXIN 20X55 | M20 | 55.00 | 12.0 | 12.00 |

(1) Coolant entry diameter

## Accessories

**SEM Clamping Screws**
Lock Screws DIN 6367 for COMBI Shell Mill Holders




| Designation | THOD | BD | LH | LB | DRVS(2) | Fig. |
|---|---|---|---|---|---|---|
| M8 CLAMP SCREW SEM16 | M08 | 20.00 | 6.0 | 16.00 | - | 1 |
| M10 CLAMP SCREW SEM22 | M10 | 28.00 | 7.0 | 18.00 | - | 1 |
| CLAMP SCREW 6368-27-M12 (1) | M12 | 35.00 | 9.0 | 22.00 | 6.0 | 2 |
| M12 CLAMP SCREW SEM27 | M12 | 35.00 | 8.0 | 22.00 | - | 1 |
| CLAMP SCREW 6368-32-M16-C | M16 | 42.00 | 10.0 | 26.00 | 10.0 | 3 |
| CLAMP SCREW 6368-32-M16 (1) | M16 | 42.00 | 10.0 | 26.00 | 10.0 | 2 |
| M16 CLAMP SCREW SEM32 | M16 | 42.00 | 9.0 | 26.00 | - | 1 |
| CLAMP SCREW 6368-40-M20-C | M20 | 52.00 | 11.0 | 30.00 | 12.0 | 3 |
| CLAMP SCREW 6368-40-M20 (1) | M20 | 52.00 | 11.0 | 30.00 | 12.0 | 2 |
| M20 CLAMP SCREW SEM40 | M20 | 52.00 | 10.0 | 30.00 | - | 1 |
| M24 CLAMP SCREW SEM50 | M24 | 63.00 | 12.0 | 36.00 | - | 1 |

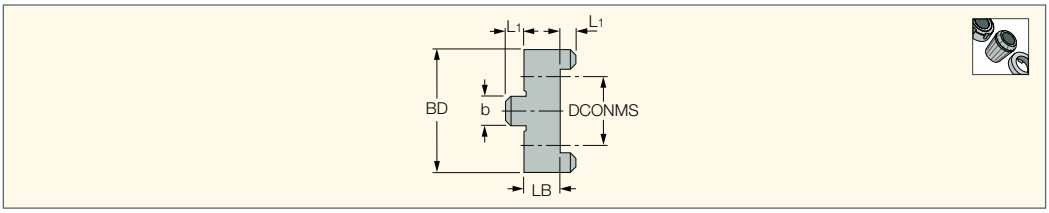
(1) Round head
(2) Torque key size

### Spare Parts

| Designation | |
|---|---|
| CLAMP SCREW 6368-32-M16-C | CLAMP SCREW 6368-32-M16 |
| CLAMP SCREW 6368-40-M20-C | CLAMP SCREW 6368-40-M20 |

## Accessories

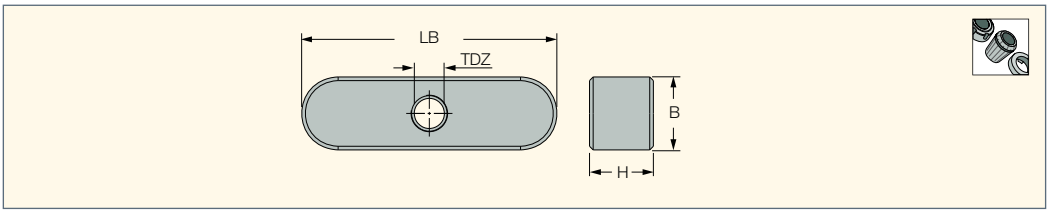
**Driving Ring-SEMC**
Driving Rings DIN 6366/1 for COMBI Shell Mill Holders




| Designation | DCONMS | BD | LB | b | L1 |
|---|---|---|---|---|---|
| 16 D.RING SEMC | 16.00 | 32.00 | 10.00 | 8.0 | 5.0 |
| 22 D.RING SEMC | 22.00 | 40.00 | 12.00 | 10.0 | 6.0 |
| 27 D.RING SEMC | 27.00 | 48.00 | 12.00 | 12.0 | 6.3 |
| 32 D.RING SEMC | 32.00 | 58.00 | 14.00 | 14.0 | 7.0 |
| 40 D.RING SEMC | 40.00 | 70.00 | 14.00 | 16.0 | 8.0 |
| 50 D.RING SEMC | 50.00 | 90.00 | 16.00 | 18.0 | 9.0 |

## Accessories

**KEY-SEMC**
Driven Key for COMBI Shell Mill Holders for Assembling Disk Cutters

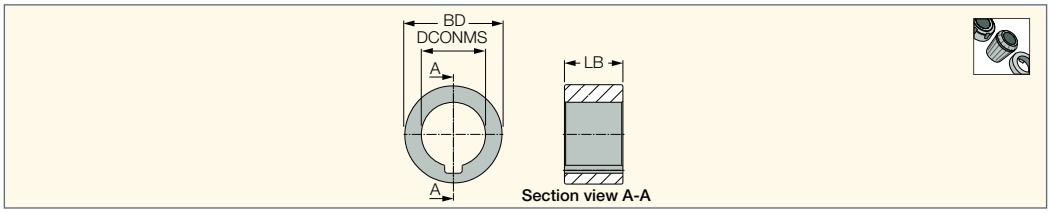



| Designation | LB | B | H | TDZ |
|---|---|---|---|---|
| KEY SEMC 16 4X4X20 (1) | 20.00 | 4.0 | 4.0 | M2 |
| KEY SEMC 22 6X6X25 (2) | 25.00 | 6.0 | 6.0 | M4 |
| KEY SEMC 27 7X7X25 (3) | 25.00 | 7.0 | 7.0 | M4 |
| KEY SEMC 32 8X7X28 (3) | 28.00 | 8.0 | 7.0 | M4 |
| KEY SEMC 40 10X8X32 (3) | 32.00 | 10.0 | 8.0 | M4 |
| KEY SEMC 50 12X8X36 (3) | 36.00 | 12.0 | 8.0 | M4 |

New
(1) M2x7 connecting screw
(2) M4x4 connecting screw
(3) M4x6 connecting screw

## Accessories

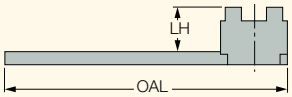
**SPACER STUB**
Stub Spacer Rings In Accordance with DIN 2084-B Standard




| Designation | DCONMS | LB | BD |
|---|---|---|---|
| SPACER STUB 22X2 | 22.00 | 2.00 | 34.00 |
| SPACER STUB 22X5 | 22.00 | 5.00 | 34.00 |
| SPACER STUB 22X6 | 22.00 | 6.00 | 34.00 |
| SPACER STUB 22X20 | 22.00 | 20.00 | 34.00 |
| SPACER STUB 27X2 | 27.00 | 2.00 | 41.00 |
| SPACER STUB 27X4 | 27.00 | 4.00 | 41.00 |
| SPACER STUB 27X6 | 27.00 | 6.00 | 41.00 |
| SPACER STUB 27X8 | 27.00 | 8.00 | 41.00 |
| SPACER STUB 27X10 | 27.00 | 10.00 | 41.00 |
| SPACER STUB 27X20 | 27.00 | 20.00 | 41.00 |
| SPACER STUB 32X1 | 32.00 | 1.00 | 47.00 |
| SPACER STUB 32X2 | 32.00 | 2.00 | 47.00 |
| SPACER STUB 32X4 | 32.00 | 4.00 | 47.00 |
| SPACER STUB 32X5 | 32.00 | 5.00 | 47.00 |
| SPACER STUB 32X20 | 32.00 | 20.00 | 47.00 |
| SPACER STUB 32X30 | 32.00 | 30.00 | 47.00 |
| SPACER STUB 40X2 | 40.00 | 2.00 | 55.00 |
| SPACER STUB 40X4 | 40.00 | 4.00 | 55.00 |
| SPACER STUB 40X5 | 40.00 | 5.00 | 55.00 |
| SPACER STUB 40X6 | 40.00 | 6.00 | 55.00 |
| SPACER STUB 40X10 | 40.00 | 10.00 | 55.00 |
| SPACER STUB 40X20 | 40.00 | 20.00 | 55.00 |
| SPACER STUB 40X30 | 40.00 | 30.00 | 55.00 |
| SPACER STUB 50X1 | 50.00 | 1.00 | 69.00 |
| SPACER STUB 50X3 | 50.00 | 3.00 | 69.00 |
| SPACER STUB 50X5 | 50.00 | 5.00 | 69.00 |
| SPACER STUB 50X20 | 50.00 | 20.00 | 69.00 |
| SPACER STUB 50X30 | 50.00 | 30.00 | 69.00 |

## Accessories

**WRENCH SEMC**
Wrench DIN 6368 for Face and COMBI Shell Endmill Holders

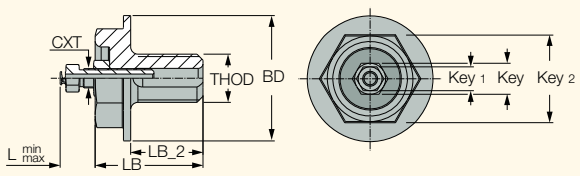



| Designation | DRVS[1] | FTDZ | OAL | LH |
|---|---|---|---|---|
| WRENCH M8 SEMC16 | 16.0 | M8 | 180.00 | 20.0 |
| WRENCH M10 SEMC 22 | 22.0 | M10 | 200.00 | 25.0 |
| WRENCH M12 SEMC 27 | 27.0 | M12 | 225.00 | 32.0 |
| WRENCH M16 SEMC 32 | 32.0 | M16 | 250.00 | 36.0 |
| WRENCH M20 SEMC 40 | 40.0 | M20 | 280.00 | 40.0 |
| WRENCH M24 SEMC 50 | 50.0 | M24 | 315.00 | 50.0 |

(1) Torque key size

## Accessories

**COOLANT SET**
Clamping Screws with Adjustable Protruding Nozzles for Shell-Type Face Mills




| Designation | BD | THOD | CXT | LB | LB_2 | L min | L max | Key(1) | Key 1(2) | DRVS(3) |
|---|---|---|---|---|---|---|---|---|---|---|
| COOLANT SET SR M10X1.5-22 | 28.00 | M10 | M4 | 25.00 | 18.00 | 2.0 | 17.0 | 7.00 | 6.00 | 21.00 |
| COOLANT SET SRM12X1.75-27 | 35.00 | M12 | M4 | 31.00 | 22.00 | 2.0 | 17.0 | 7.00 | 6.00 | 27.00 |
| COOLANT SET SR M16X2-32 | 42.00 | M16 | M8 | 37.00 | 26.00 | 3.0 | 25.0 | 13.00 | 10.00 | 30.00 |
| COOLANT SET SR M20X2.5-40 | 52.00 | M20 | M8 | 45.00 | 30.00 | 3.0 | 25.0 | 13.00 | 10.00 | 36.00 |

(1) For the nut
(2) For the nozzle
(3) For the screw

### Clamping Screws with Adjustable Protrusion Nozzles for Shell-Type Face Mills

The protrusion of the nozzle screw can be easily adjusted according to countersink depth, insert size or any other application requirement. The nozzle screw position can be secured by a locking nut.

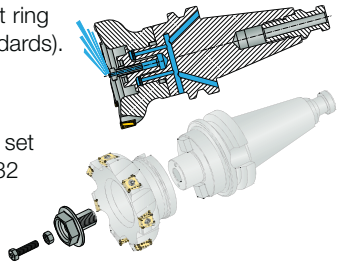
Tests show that cutting fluid supplied through the axis of a tool and directed radially at the bottom of the tool dramatically improves both the cooling effect and chip evacuation.

The screws are offered as sets, comprising a nozzle screw, locking screw, a locking nut and washers.

The locking nut can be tightened by a standard open-ended wrench, or preferably by an offset ring wrench (ISO 10104, DIN 838 or DIN 897 standards).

If desired, the following ring wrenches can also be ordered from **ISCAR**:

- 7000783 Ring Wrench 10X13 mm for coolant set SR M20X2.5-40 and Coolant set SR M16X2-32
- 7000788 Ring Wrench 6X7 mm for coolant set SRM12X1.75-27 and coolant set SR M10X1.5-22.



**Assembly with a Lock Nut**

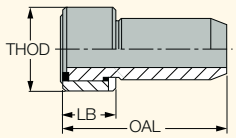
**Assembly without a Lock Nut**

### Spare Parts

| Designation | | | |
|---|---|---|---|
| COOLANT SET SR M10X1.5-22 | WASHER FLAT M4 DIN 433 | SPRING PLUNGER | |
| COOLANT SET SRM12X1.75-27 | WASHER FLAT M4 DIN 433 | SPRING PLUNGER | |
| COOLANT SET SR M16X2-32 | WASHER M8 DIN 433 A2 | NOZZLE M8 | NUT M8 DIN 934 A2 |
| COOLANT SET SR M20X2.5-40 | WASHER M8 DIN 433 A2 | NOZZLE M8 | NUT M8 DIN 934 A2 |

## Accessories

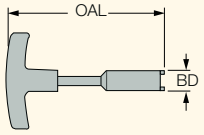
**COOLING TUBE HSK-A**
Cooling Tubes for HSK-A Shanks




| Designation | OAL | LB | THOD |
|---|---|---|---|
| COOLING TUBE HSK A32 | 26.00 | 5.5 | M10X1 |
| COOLING TUBE HSK A40 | 29.50 | 7.5 | M12X1 |
| COOLING TUBE HSK A50 | 33.00 | 9.5 | M16X1 |
| COOLING TUBE HSK A63 | 36.50 | 11.5 | M18X1 |
| COOLING TUBE HSK A80 | 40.00 | 13.5 | M20X1.5 |
| COOLING TUBE HSK A100 | 44.00 | 15.5 | M24X1.5 |
| COOLING TUBE HSK A125 | 48.00 | 17.5 | M30X1.5 |

## Accessories

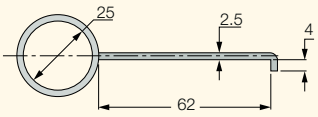
**WRENCH HSK**
HSK-A Cooling Tube Wrench




| Designation | OAL | BD |
|---|---|---|
| WRENCH COOL TUBE HSK32 | 115.00 | 8.50 |
| WRENCH COOL TUBE HSK40 | 115.00 | 10.50 |
| WRENCH COOL TUBE HSK50 | 115.00 | 14.50 |
| WRENCH COOL TUBE HSK63 | 136.00 | 16.50 |
| WRENCH COOL TUBE HSK80 | 136.00 | 18.50 |
| WRENCH COOL TUBE HSK100 | 136.00 | 22.00 |
| WRENCH COOL TUBE HSK125 | 175.00 | 24.50 |

## Accessories

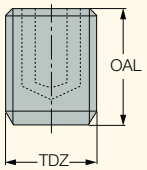
**EXTRACTOR SC COLLETS**
SC Collet Extraction Hook




| Designation | Key |
|---|---|
| EXTRACTOR SC COLLETS | 25 |

## Accessories

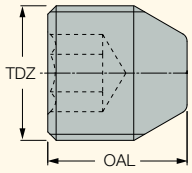
**SCREW EM**
Lock Screw for Endmill Holder




| Designation | TDZ | OAL | SS |
|---|---|---|---|
| SR M6X10 DIN1835B | M6 | 10.00 | 6 |
| SR M8X10 DIN1835-B | M8 | 10.00 | 8 |
| SR M10X12 DIN1835-B | M10 | 12.00 | 10 |
| SR M12X16 DIN1835-B | M12 | 16.00 | 12,14 |
| SR M14X16 DIN1835-B | M14 | 16.00 | 16,18 |
| SR M16X16 DIN1835-B | M16 | 16.00 | 20 |
| SR M18X2X20 DIN1835-B | M18X2 | 20.00 | 25 |
| SR M20X2X20 DIN1835-B | M20X2 | 20.00 | 32,40 |
| SR M24X2X25 DIN1835-B | M24X2 | 25.00 | 50 |
| SR M16X10.3 EM SHORT | M16 | 10.30 | 20 |
| SR M18X2X10 EM SHORT | M18X2 | 10.00 | 25 |

## Accessories

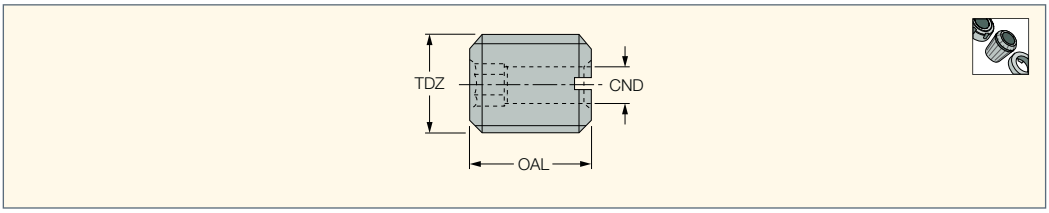
**CLICK-FIT LOCKING SCREW**
Locking Screw for
CLICK-FIT Holders




| Designation | TDZ | OAL | Key |
|---|---|---|---|
| SCREW M16X1.5 FOR CF4 | M16X1.5 | 16.50 | 8.00 |
| SCREW M18X1.5 FOR CF5 | M18X1.5 | 18.00 | 10.00 |

## Accessories

**SRKIN PRESET SCREW**
Preset Screw for SRKIN Thermal Shrink Collets with Coolant Holes



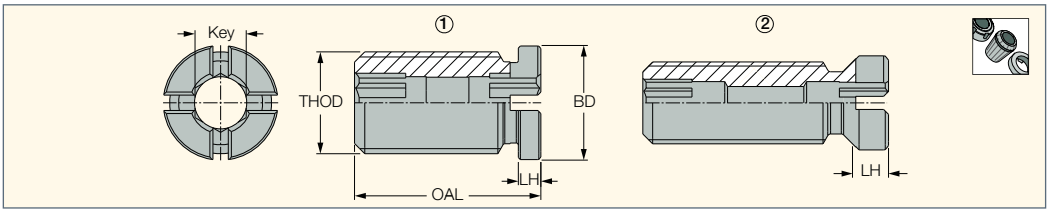

| Designation | TDZ | OAL | CND(1) | Key | SS |
|---|---|---|---|---|---|
| PRESET M5X18B | M5X0.8 | 18.00 | 2.10 | 2.50 | EM E/SRKIN |
| PRESET M6X20B | M6X1 | 20.00 | 2.50 | 3.00 | EM E/SRKIN |
| PRESET M8X20B | M8X1.25 | 20.00 | 3.50 | 4.00 | EM E/SRKIN |
| PRESET M10X18B | M10X1.5 | 18.00 | 4.50 | 5.00 | EM E/SRKIN |
| PRESET M12X18B | M12X1.75 | 18.00 | 5.50 | 6.00 | EM E/SRKIN |
| PRESET M16X20B | M16X2 | 20.00 | 7.50 | 6.00 | EM E/SRKIN |
| PRESET M16X25B | M16X2 | 25.00 | 7.50 | 6.00 | SRKIN |

(1) Coolant entry diameter

SHRINKIN

## Accessories

**PRESET CX**
Preset Screws for SRKIN Thermal Shrink Chucks

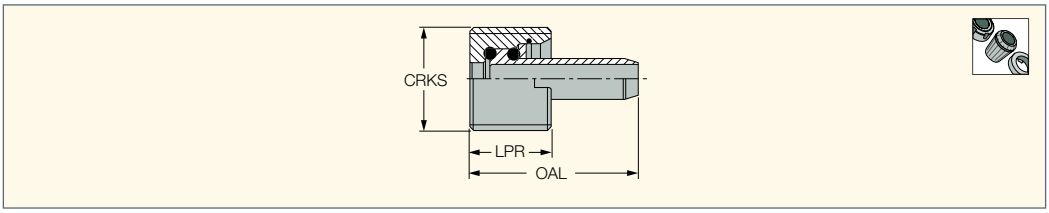



| Designation | THOD | OAL | BD | LH | Key | Fig. |
|---|---|---|---|---|---|---|
| PRESET CX M10X16 | M10 | 18.20 | 11.20 | 2.2 | 5.00 | 1. |
| PRESET CX M12X16 | M12 | 18.20 | 15.00 | 2.2 | 6.00 | 1. |
| PRESET CX M16X14 | M16 | 17.00 | 18.80 | 3.0 | 8.00 | 1. |
| PRESET CX M5X5 | M5 | 7.00 | 6.50 | 2.5 | 2.50 | 2. |
| PRESET CX M5X13 | M5 | 15.00 | 5.80 | 2.2 | 2.50 | 2. |
| PRESET CX M6X12 | M6 | 14.00 | 8.00 | 2.0 | 3.00 | 1. |
| PRESET CX M8X16 | M8 | 18.20 | 9.30 | 2.2 | 4.00 | 1. |

New

## Accessories

**COOLING TUBE C#**
Cooling Tubes for CAMFIX (ISO 26623-1) Shanks

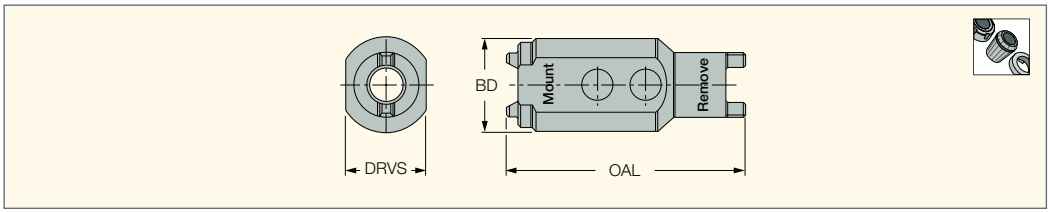



| Designation | LPR | CRKS | OAL |
|---|---|---|---|
| COOLING TUBE C4 | 12.00 | M14x1.5 | 25.40 |
| COOLING TUBE C5 | 14.00 | M16x1.5 | 28.50 |
| COOLING TUBE C6 | 15.00 | M20x2 | 31.00 |
| COOLING TUBE C8 | 15.00 | M20x2 | 31.50 |

- Refer to machine manual before mounting CAMFIX Cooling Tube
- Check that clamping drawbar has O-ring inside
- Apply Loctite 542 (or equivalent) on coolant tube thread to secure/seal the thread
- Mount cooling tube (ONLY) by using Cooling Tube C# wrench with "mount" side

## Accessories

**WRENCH COOL TUBE C#**
Clamping and Removing Wrenches for CAMFIX (ISO 26623-1) Cooling Tubes

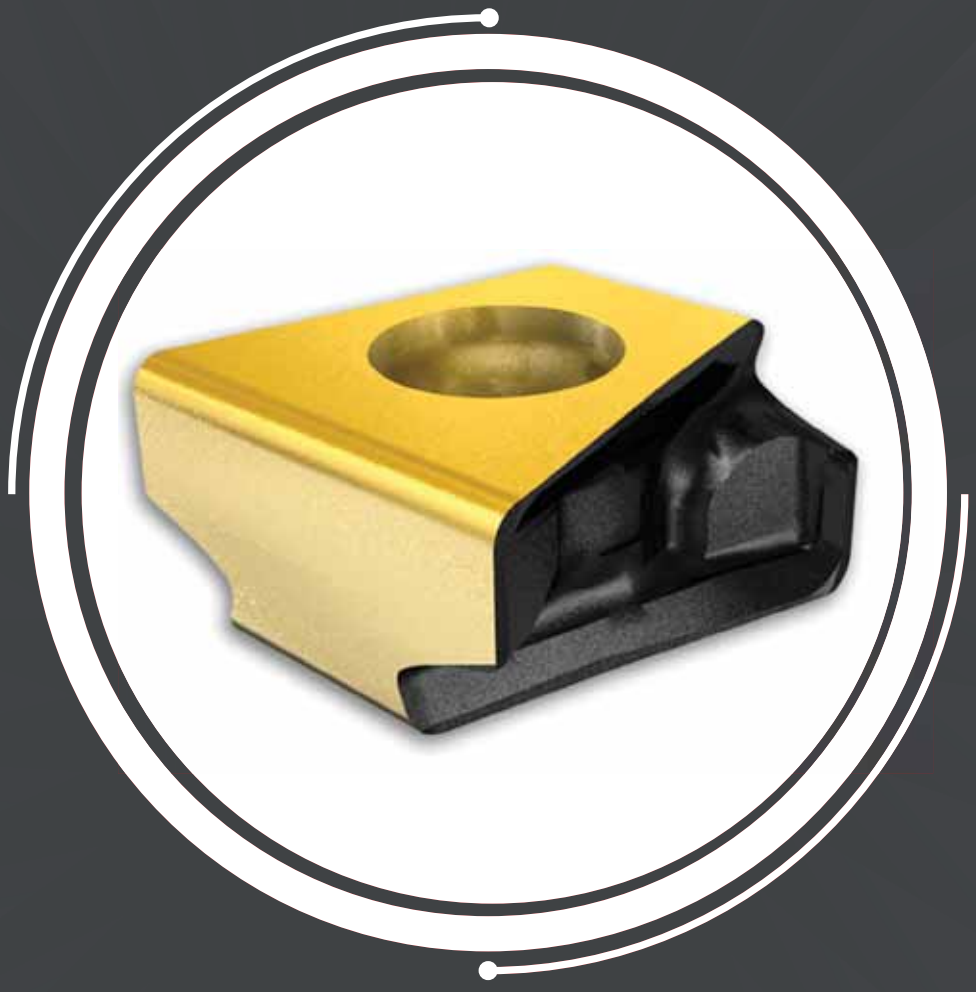



| Designation | OAL | BD | DRVS(1) |
|---|---|---|---|
| WRENCH COOL TUBE C4 | 45.00 | 17.80 | 15.0 |
| WRENCH COOL TUBE C5 | 50.00 | 20.80 | 16.9 |
| WRENCH COOL TUBE C6 | 60.00 | 27.80 | 19.0 |
| WRENCH COOL TUBE C8 | 60.00 | 31.80 | 22.0 |
| WRENCH COOL TUBE C10 | 75.00 | 42.80 | 25.9 |

(1) Torque key size

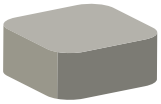
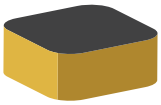
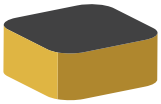
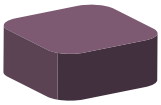
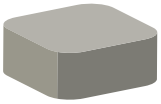
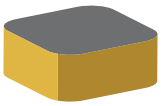
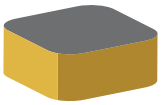
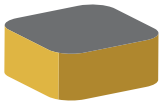
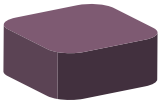
# MATERIALS AND GRADES

YOU MACHINING INTELLIGENTLY?



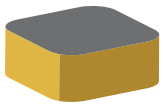
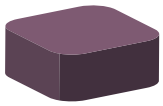
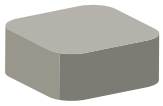
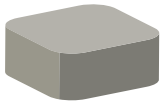
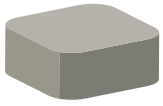
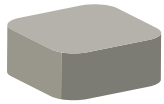
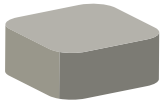
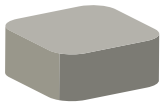
Member IMC Group

## Milling Materials Grades Chart

| | Grade | ISO | Grade Description | Coating Layers | Coating Color* |
|---|---|---|---|---|---|
| PVD COATED | IC328 | P25-P40<br>M30-M40<br>S20-S30 | A tough substrate with PVD coating, suitable for a wide range of applications on steel and stainless steel at low to medium speeds and medium to high feeds. The grade is recommended for interrupted cuts and machining under unstable conditions. | TiCN<br>Base |  |
| | IC330 | P25-P40<br>M30-M40<br>S20-S30 | A tough PVD coated grade with SUMOTEC surface treatment. Used for milling a wide range of workpiece materials, at low to medium cutting speeds and for unstable machining conditions. | TiCN<br>Base |  |
| | IC380 | S15-S20<br>H15-H25 | A tough submicron grain size substrate with SUMOTEC PVD coated grade. Used for machining Titanium and heat resistant alloys at medium to high cutting speeds. Excellent resistance to built-up edge, mechanical and thermal shock resistance. | TiCN<br>Base |  |
| | IC608 | M10-M20<br>K10-K25<br>S10-S25<br>H15-H25 | A hard submicron grain size substrate with PVD coated. Long tool life and high deformation, oxidation, chipping and wear resistance on a wide range of materials. | TiSiN<br>TiAlSiN<br>AlTiN<br>Base |  |
| | IC716 | S20-S25 | A tough PVD coated grade that provides high wear and chipping resistance. Recommended for Ti alloys machining in variable cutting condition. | $TiB_2$<br>Base |  |
| | IC808 | P15-P30<br>M20-M30<br>K20-K30<br>S10-S25<br>H20-H30 | A tough hard, submicron grain size substrate with excellent chipping resistance, combined with a SUMOTEC PVD coating. Provides high wear resistance. Recommended for a very wide range of materials. | TiN<br>TiAlN<br>Base |  |
| | IC810 | P15-P30<br>K15-K35 | A SUMOTEC PVD coated grade. Optimal choice for milling nodular cast iron at medium to high cutting speeds. | TiN<br>AlTiCrN<br>Base |  |
| | IC830 | P20-P40<br>M25-M35<br>S15-S30 | A tough substrate with PVD coating and a special SUMOTEC surface treatment. Suitable for machining steel and stainless steel at low to medium cutting speeds and moderate to high feeds. The grade features high toughness and recommended for interrupted cuts and machining under unstable conditions. May be used on high temperature alloys at low cutting speeds. | TiN<br>TiAlN<br>Base |  |
| | IC840 | M20-M35<br>S15-S25 | A PVD coated tough grade followed by a special surface treatment. Suitable for milling austenitic stainless steel and high temperature alloys. Recommended for interrupted cuts and heavy operations. | TiSiN<br>TiAlSiN<br>AlTiN<br>Base |  |

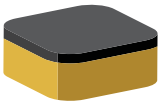
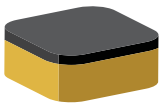
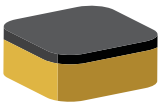
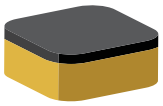
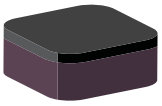
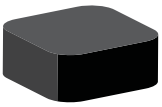
* For coated grades

## Milling Materials Grades Chart

| | Grade | ISO | Grade Description | Coating Layers | Coating Color* |
|---|---|---|---|---|---|
| PVD COATED | IC845 | P25-P45 | A PVD coated tough grade followed by a special SUMOTEC surface treatment. Designed for milling alloyed steel, especially when used for interrupted cuts and heavy operations. | TiN<br>AlTiN<br>Base |  |
| | IC882 | M25-M40<br>S20-S30 | A grade with a tough substrate, a with PVD coating and a special surface treatment. Designed for machining austenitic stainless steel, Titanium and high temperature alloys, particularly under hard cutting conditions. | TiSiN<br>TiAlSiN<br>AlTiN<br>Base |  |
| | IC900 | P15-P30<br>M20-M30<br>K20-K30<br>S10-S25<br>H20-H30 | A tough submicron grain size with a PVD coating coated grade. Suitable for medium to high cutting speeds. Designed for machining various materials like steel, stainless steel, Titanium, and heat resistant alloys. | AlTiN<br>Base |  |
| | IC902 | P05-P15<br>M10-M15<br>K05-K15<br>S05-S10<br>H05-H15 | Ultra-fine carbide grain, PVD coated with high resistance to abrasive wear, suitable for machining various materials including hard steel and cast iron, at high cutting speeds. | AlTiN<br>Base |  |
| | IC903 | P10-P20<br>M15-M25<br>K10-K20<br>S10-S20<br>H10-H20 | Ultra-fine carbide grain, PVD coated with high wear resistance and toughness. High speed, medium feed. Used for up to 62 HRC hardened steel, Titanium, nickel-based alloys and stainless steel. | AlTiN<br>Base |  |
| | IC908 | P15-P30<br>M20-M30<br>K20-K30<br>S10-S25<br>H20-H30 | A tough submicron grain size substrate with PVD coating, recommended for general use in a large variety of operations and materials such as steels, alloy steels, austenitic stainless steel and high temperature alloys at moderate cutting speeds. Features high wear resistance and chipping durability. | TiAlN<br>Base |  |
| | IC910 | P15-P30<br>K15-K35 | A PVD coated grade. First choice for milling gray and nodular cast iron at medium to high cutting speeds. | AlTiN<br>Base |  |
| | IC928 | P20-P40<br>M25-M35<br>S15-S30 | A tough substrate with PVD coating, suitable for machining steel and stainless steel at low to medium cutting speeds and moderate to high feeds. The grade is recommended for interrupted cuts and machining under unstable conditions. | AlTiN<br>Base |  |

* For coated grades

## Milling Materials Grades Chart

| | Grade | ISO | Grade Description | Coating Layers | Coating Color* |
|---|---|---|---|---|---|
| CVD COATED | IC5100 | K10-K25 | A CVD multi-layer coating with SUMOTEC post coating surface treatment. Recommended for milling grey cast iron at high cutting speeds, and provides extended tool life. | TiN<br>$Al_2O_3$<br>TiCN<br>Base |  |
| | IC5400 | P10-P20<br>M10-M25 | A tough substrate with MTCVD coating. Recommended for milling steel at high cutting speed and for parting stainless steel. | TiN<br>$Al_2O_3$<br>TiCN<br>Base |  |
| | IC5500 | P20-P35 | A tough substrate with CVD coating. Recommended for machining martensitic stainless steel at high cutting speed. Provides excellent tool life. | TiN<br>$Al_2O_3$<br>TiCN<br>Base |  |
| | IC5600 | P10-P15 | A CVD coated carbide grade with a submicron substrate. Intended for machining steel at high cutting speeds. | TiN<br>$Al_2O_3$<br>TiCN<br>Base |  |
| | IC5820 | M20-M35<br>S15-S25 | A tough substrate, with a MTCVD coating and special SUMOTEC post coating surface treatment. Designed for machining austenitic stainless steel, Titanium and high temperature alloys. | TiCN<br>$Al_2O_3$<br>TiCN<br>Base |  |
| DLC | IC1508 | N10-N20 | A submicron DLC coated grade for machining mainly aluminum and non-ferrous materials. | DLC<br>Base |  |

* For coated grades

| | Grade | ISO | Grade Description | Uncoated Layers | Uncoated |
|---|---|---|---|---|---|
| UNCOATED | IC4 | N05-N15<br>S05-S15 | A very hard-uncoated carbide grade, suitable for machining aluminum alloys, aluminum alloys with high silicon content and other non-ferrous materials at high cutting speeds. | Base | |
| | IC07 | M10-M20<br>N05-N20<br>S10-S30 | A hard-uncoated submicron grain size carbide grade, suitable for machining aluminum alloys and other non-ferrous materials at high cutting speeds. | Base | |
| | IC08 | M10-M30<br>N10-N25<br>S10-S30 | A tough uncoated submicron grain size carbide grade, suitable for steels, stainless steel and high temperature alloys at low cutting speeds. Good choice for non-ferrous materials. | Base | |

## Milling Materials Grades Chart

| | Grade | ISO | Grade Description | Uncoated Layers | Uncoated |
|---|---|---|---|---|---|
| CERMET | IC30N | P10-P30<br>M10-M20<br><br><br><br>H10-H25 | A tough cermet grade, suitable for machining steels and stainless steel at medium to high cutting speeds and low feeds. Features excellent surface finish, very good wear resistance and prevents built-up edge. | Base | |
| CBN | IB55 | <br><br>K05-K15<br><br><br>H10-H25 | A PCBN grade, suitable for finishing operations on hardened steels (45-65 HRC) and cast iron in continuous cutting and light interrupted cuts. | Base | |
| | IB85 | <br>K01-K15<br><br><br>S05-S10<br>H05-H10 | A PCBN grade, used for high speed machining of cast iron, cemented tungsten carbide, sintered metals, and heavy alloys. Excellent for interrupted cutting of hardened steel. | Base | |
| PCD | ID5 | <br><br><br>N01-N10<br><br> | A PCD brazed tip, suitable for machining aluminum alloys (Si < 12%) and other non-ferrous materials. Features very high wear resistance with high toughness.<br>Suitable for finishing operations and can be used for semi roughing operations and interrupted cuts. | Base | |
| CERAMICS | IS35 | <br><br><br><br>S15-S25<br> | A ceramic SiAlON grade for machining high temperature alloys such as Inconel, Waspaloy and Rene. Provides high hardness with excellent toughness. | Base | |
| | IS8 | <br><br>K01-K15<br><br><br> | A silicon nitride ($Si_3N_4$) grade, suitable for turning and milling applications. Can be used for interrupted cuts on cast iron and nickel-based alloys. | Base | |
| | IW7 | <br><br><br><br>S10-S20<br>H05-H25 | A whisker-reinforced ceramic grade for machining high temperature alloys and hardened steel at high cutting speeds. | Base | |

For complete information regarding ISCAR's ceramic, CBN, and PCD grades, please refer to ISCAR's catalog on the subject.

## MATERIAL GROUPS

### Based on ISO 513 and VDI 3323 standards

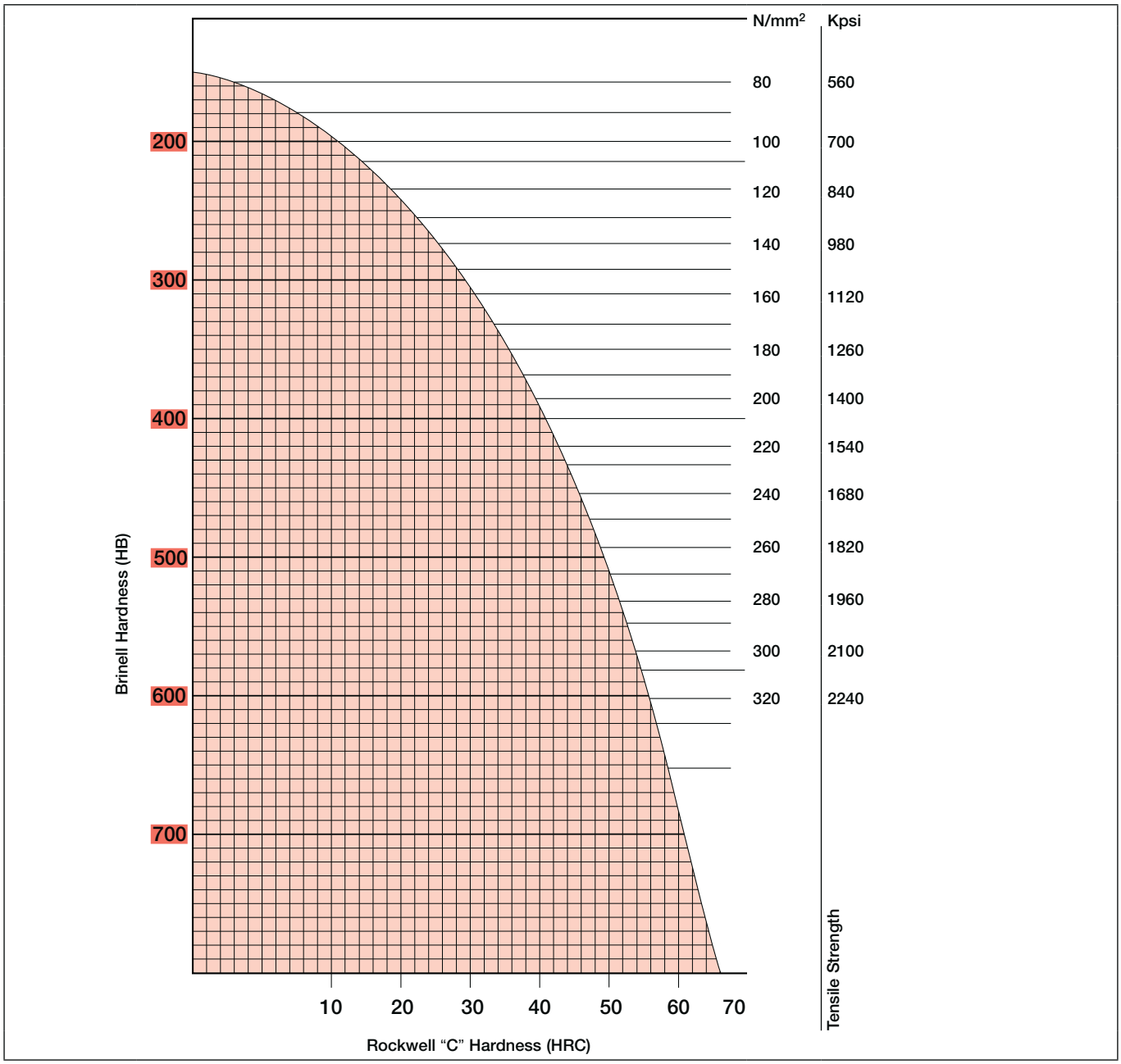
| ISO | Material | | Condition | Tensile Strength [N/mm²] | Kc1(1) [N/mm²] | mc(2) | Hardness HB | Material Group No. |
|---|---|---|---|---|---|---|---|---|
| P | non-alloy steel and cast steel, free cutting steel | <0.25% C | annealed | 420 | 1350 | 0.21 | 125 | 1 |
| | | ≥0.25% C | annealed | 650 | 1500 | 0.22 | 190 | 2 |
| | | <0.55% C | quenched and tempered | 850 | 1675 | 0.24 | 250 | 3 |
| | | ≥0.55% C | annealed | 750 | 1700 | 0.24 | 220 | 4 |
| | | | quenched and tempered | 1000 | 1900 | 0.24 | 300 | 5 |
| | low alloy and cast steel (less than 5% of alloying elements) | | annealed | 600 | 1775 | 0.24 | 200 | 6 |
| | | | quenched and tempered | 930 | 1675 | 0.24 | 275 | 7 |
| | | | | 1000 | 1725 | 0.24 | 300 | 8 |
| | | | | 1200 | 1800 | 0.24 | 350 | 9 |
| | high alloyed steel, cast steel and tool steel | | annealed | 680 | 2450 | 0.23 | 200 | 10 |
| | | | quenched and tempered | 1100 | 2500 | 0.23 | 325 | 11 |
| | stainless steel and cast steel | | ferritic/martensitic | 680 | 1875 | 0.21 | 200 | 12 |
| | | | martensitic | 820 | 1875 | 0.21 | 240 | 13 |
| M | stainless steel and cast steel | | austenitic, duplex | 600 | 2150 | 0.20 | 180 | 14 |
| K | gray cast iron (GG) | | ferritic / pearlitic | | 1150 | 0.20 | 180 | 15 |
| | | | pearlitic / martensitic | | 1350 | 0.28 | 260 | 16 |
| | nodular cast iron (GGG) | | ferritic | | 1225 | 0.25 | 160 | 17 |
| | | | pearlitic | | 1350 | 0.28 | 250 | 18 |
| | malleable cast iron | | ferritic | | 1225 | 0.25 | 130 | 19 |
| | | | pearlitic | | 1420 | 0.3 | 230 | 20 |
| N | aluminum-wrought alloys | | not hardenable | | 700 | 0.25 | 60 | 21 |
| | | | hardenable | | 800 | 0.25 | 100 | 22 |
| | aluminum-cast alloys | ≤12% Si | not hardenable | | 700 | 0.25 | 75 | 23 |
| | | | hardenable | | 700 | 0.25 | 90 | 24 |
| | | >12% Si | high temperature | | 750 | 0.25 | 130 | 25 |
| | copper alloys | >1% Pb | free cutting | | 700 | 0.27 | 110 | 26 |
| | | | brass | | 700 | 0.27 | 90 | 27 |
| | | | electrolytic copper | | 700 | 0.27 | 100 | 28 |
| | non metallic | | duroplastics, fiber plastics | | | | | 29 |
| | | | hard rubber | | | | | 30 |
| S | high temperature alloys | Fe based | annealed | | 2600 | 0.24 | 200 | 31 |
| | | | hardened | | 3100 | 0.24 | 280 | 32 |
| | | Ni or Co based | annealed | | 3300 | 0.24 | 250 | 33 |
| | | | hardened | | 3300 | 0.24 | 350 | 34 |
| | | | cast | | 3300 | 0.24 | 320 | 35 |
| | titanium alloys | | pure | 400 | 1160 | 0.24 | | 36 |
| | | | alpha+beta alloys, hardened | 1050 | 1245 | 0.24 | | 37 |
| H | hardened steel | | hardened | | 4600 | | 55 HRC | 38 |
| | | | hardened | | 4700 | | 60 HRC | 39 |
| | chilled cast iron | | cast | | 4600 | | 400 | 40 |
| | cast iron | | hardened | | 4500 | | 55 HRC | 41 |

Steel
Stainless Steel
Cast Iron
Non-Ferrous Metals
Superalloys and Titaniu
Hard Materials

(1) Specific cutting force for 1 mm² chip section.
(2) Chip thickness factor.

## MATERIAL GROUPS

Hardness Conversion Table



## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | NF/AFNOR (FRANCE) | E 28-2 | A 50-2 | E 36-2 | E 28-3 | SPH 265; A 42 AP | E | E 28-3; E 28-4 | C; TC | E 24-2 | A 33 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 1020; G10200; K02301; K02595; K02596; K02597; K02598; K02599; K02702; K0300 | | K02404; K02702 | K02702 | | A 619 | K02601; K03000; A 573 Gr. 70; A 611 Gr.D | 1008; G10080; A 621 | 1015; G10150; K02401 | |
| | BS (UK) | En 43 B; Fe 430 B FN; 43/25 HR; 43/25HS; 43 B; HFW4; HFS4; ERW 3 | Fe 490-2 FN; 50 B | 50 B; 4360-50 B | 43C; 4360-43C | 164-400B LT 20 | 2 CR; 3 CR | Fe 430 D1 FF; 4360-43 C; 4360-43 D | CR 4; CS 4 | Fe 360 B; 4360-40 B; ERW 3; CEW 3; 37/23 HR; 37/23 HS; 37/23 CR; 37/23 CS | Fe 310-0; 15 HR; 15 HS; 1449 15 HR; 1449 15 HS |
| | DIN (GERMANY) | S275JR; St 44-2; Fe 430 B; S275J2G3 | E295; St 50-2; Fe 490-2; ST 50-2 G (E295+CR) | S355JR; Fe 510 B | S275J0; St 44-3 U; Fe 430 C | P265S; SPH 265 | DC03G1; USt 3; USt 13 | S275J2G3 (S275J2); St 44-3 (Fe 430 D 1) | DC01; DC 01; St 2; St 12 | S235JR (Fe 360 B); St 37-2 | S185 (Fe 310-0); St 33 |
| | Werkstoff (GERMANY) | 1.0044 | 1.0050 | 1.0045 | 1.0143 | 1.0130 | 1.0333 | 1.0144 | 1.0330 | 1.0037 | 1.0035 |
| | EN (EUROPE) | S275JR | | S355JR | S275J0 | P265S | DC03G1 | | DC01 (FeP 05) | | S185 |
| | GOST (RUSSIA) | St4ps; St4sp | St5ps; St5sp | | | | | St4kp; St4ps; St4sp | | | St0 |
| | JIS (JAPAN) | SN 400 B; SN 400 C; SN 490 B; SN 490 C; SS 400; STK 400; STKM 19 C; STKR 400; 19 C; SS 41; STK 41 | SS 490; SS 50 | SN 400 B; SN 400 C; SN 490 B; SN 490 C; SS 490; SS 50 | | | SPCD | SM 400 A; SM 400 B; SM 400 C; SS 400; STK 400; STKR 400; SM 41 A; SM 41 B; SM 41 C | SPCC; CR 1 | STKM 12 A; STKM 12 AC | SGP; SS 330; SS 34 |
| | SS (SWEDEN) | 1411; 1412 | 1550; 2172 | | 1414-01 | | | 1411; 1412; 1414 | 1142 | 1311 | 1300 |
| | UNE (SPAIN) | AE 275 B; Fe 430 B FN | A 490-2; Fe 490-2 FN | AE 355 B | AE 275 D | SPH 265 | AP 02 | AE 275 D; Fe 430 D1 FF | AP 11; FeP 01; AP 00 | AE 235 B; Fe 360 B | Fe 310-0; A 310-0 |
| | UNI (ITALY) | Fe 430 B FN; Fe 430 B | Fe 490 | Fe 510 B FN | Fe 430 C FN | | FeP 02 | Fe 430 B; Fe 430 C (FN); Fe 430 D (FF) | FeP 01; FeP 00 | Fe 360 B; 1449 37/23 HR | Fe 320 |
| | IS (INDIA) | | Fe 490 | IS 961 | Fe410WA | | | Fe410WC | IS 513/94 O | | |
| | KS REP. OF) (KOREA | SB 41 | SS 490 | SS 490 | | | SPCD | SWS 41C; SWS 4 B; SWS 41A; SM 400A; SM 400B; SM 400C | | STKM 12A; STKM 12C | SS 330 |
| | GB/YB/JB/ SY/NB (PRC) | Q255A; Q255D | Q295A | Q345B | Q275 | 20 | 10F | Q275 | 8 | 15 | Q195 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | NF/AFNOR (FRANCE) | A 34-2 NE | 2 C | 3 C | ES | A 37 CP | C10RR; XC 10; C 10; AF 34 C 10 | E 28-3 | GC | E 24-3 | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | K02502 | | 1006; G10060 | A 620 | K01700; K02001; K02200; K02201; K02203; K02503; K02601; K02801 | 1010; G10100 | | | A 1011 (SS Grade 36 (230) Type 2); A1011 (SS Grade 36 (250) Type 1) | A572-60 |
| | BS (UK) | CEW 2; 34/20 HR; 34/20 HS; 34/20 CR; 1449 34/20CS | | 1 CR; 1 CS; 1 HR; 2 HR; 2 HS; 2 CR; 2 CS | CR 1; CR 2 | 141-360; 151-360; 154-360; 161-360; 164-360 | 040 A 10; 045 M 10; En 2 A; En 2 A/1; En 2 B; En 32 A; 10 CS | 43 C; 4360-43C | Z2 | 40 C; 4360-40C | 4360 55 E |
| | DIN (GERMANY) | E195; RSt 34-2 | DD12G1; UStW 23 | DD13; StW 24 | DC04; St 4; St 14 | P235GH; HI; H I | C10; C 10 | S275JOH; St 44-3 U; RoSt 44-2 | DX51D; St 02 Z | S235JO; St 37-3 U; Fe 360 C | S380N; StE 380 |
| | Werkstoff (GERMANY) | 1.0034 | 1.0334 | 1.0335 | 1.0338 | 1.0345 | 1.0301 | 1.0149 | 1.0226 | | 1.8900 |
| | EN (EUROPE) | E195 | | DD13 | DC04 (FeP 04) | P235GH | C10 | S275JOH | | S235JO | S380N |
| | GOST (RUSSIA) | St2ps; St2sp | 10kp | 08kp | 08JuA | | 10 | | | | |
| | JIS (JAPAN) | | SPHD | SPHE | SPCE; HR 4 | SGV 410; SGV 450; SGV 480; SPV 235; SPV 450; SPV 490; SGV 42; SGV 46; SGV 49; SPV 24; SPV 46; SPV 50 | S 10C | | SGC C | SS 330; SS 34 | S 25 C |
| | SS (SWEDEN) | | | | 1147 | 1330; 1331 | | 1412-04 | 1151 10 | | 2145 |
| | UNE (SPAIN) | | AP 12 | AP13 | AP 04; FeP 04 | A 37 Grado RA II; A 37 Grado RC I | F.151; F.151.A | Fe 430 C; AE 275 C | FeP 02 G | AE 235 C | |
| | UNI (ITALY) | Fe 330 BFN | FeP 12 | FeP 13 | FeP 04 | FeE 235; Fe 360 1 KW; Fe 360 1 KG; Fe 360 2 KW; Fe 360 2 KG | 1 C 10; C 10 | Fe 430 C | FeP 02 G | Fe 360 C FN | FeE 390 KG |
| | IS (INDIA) | | | | | IS 2002 Grade 1 | 5C4 | | | Fe410-S | |
| | KS REP. OF) (KOREA | | SPHD | SPHE | SPCE | SPV 24; SGV 49; SGV 46; SGV 42; SGV 410; SGV 450; SGV 480 | SM 10C | | | SS 330 | SM 25C |
| | GB/YB/JB/ SY/NB (PRC) | Q215B | Q195 | 08F | | A3R | 10 | | | Q195 | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | NF/AFNOR (FRANCE) | A 60-2 | A 34-2 | A 37 AP; SPH 235 | 10 PbF 2 | 10 F 2 | S 250 Pb | S 250 | XC 25; XC 18; 2 C 22 | E 560 D; S 560 MC |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | A 572 Gr. 65 | | K01700; K02200; K02801 | | 1108; 1109; 1111; B1111; B 1111; G11080; G11090 | 12L13; 12L14; 12 L 13; 12 L 14; G12134; G12144 | 1213; 1215; G12130; G12150 | 1020; 1023; G10200; G10230 | A 1008 (HSLAS-F Grade 80 [550]); A 1011 (HLAS-F Grade 80 [550]) |
| | BS (UK) | En 55 C; Fe 590-2-FN; 55 E; 4360-55 E | | 164-360B LT20; 1501-164-360B LT20 | | | 230 M 07 Pb; En 1A Pb | 230 M 07; En 1 A | 055 M 15; 070 M 20; En 3 A; En 3 C; En 2 | 60F55 HR; 60F55 HS; 60F55 CS |
| | DIN (GERMANY) | E335; St 60-2 (Fe 590-2 B) | S250G1T; USt 34-2 | P235S; SPH 235 | 10SPb20; 10 SPb 20 | 10S20; 10 S 20 | 11SMnPb30; 9 SMnPb 28 | 11SMn30; 9 SMn 28 | C22E; Ck 22 | S500MC; QStE 500 TM |
| | Werkstoff (GERMANY) | 1.0060 | 1.0028 | 1.0112 | 1.0722 | 1.0721 | 1.0718 | 1.0715 | 1.1151 | 1.0986 |
| | EN (EUROPE) | E335 | | P235S | 10SPb20 | 10S20 | 11SMnPb30 | 11SMn30 | C22E | S500MC |
| | GOST (RUSSIA) | St6ps; St6sp | | | | | | | 20 | |
| | JIS (JAPAN) | SM 570; SM 58 | SS 330; SS 34 | | | | SUM 22 L; SUM 23 L; SUM 24 L | SUM 22 | S 20 C; S 20 CK; S 22 C | |
| | SS (SWEDEN) | 1650 | | | | | 1914 | 1912 | 1450 | |
| | UNE (SPAIN) | A 590; Fe 590-2 FN | | AE 235 C | 10 SPb 20; F.2122 | 10 S 20; F. 2121 | F.210.C; F.210.M; 11 SMnPb 28; F.2112 | F.210.A; F.210.L; 11 SMn 28; F.2111 | F.1120; C 25 K | |
| | UNI (ITALY) | Fe 590; Fe 60-2 | Fe 330; Fe 330 B FU | Fe 360 C | CF 10 SPb 20 | CF 10 S 20 | CF 9 SMnPb 28 | CF 9 S 22 | C 20; C 25 | FeE 560 TM |
| | IS (INDIA) | St 58 | | | | | | 10C14S14 | 20C8 | |
| | KS REP. OF) (KOREA | SM 570 | SS 330 | | | | SUM 23 L; SUM 24 L | SUM 22; SUM 24L | S 20C; S 22C; S 20CK | |
| | GB/YB/JB/ SY/NB (PRC) | Q235C | Q215A | | | Y12 | | Y15 | 20 | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | |
|---|---|---|---|---|---|
| | | 1 | 1 | 1 | 1 |
| | NF/AFNOR (FRANCE) | E 490 D;<br>S 490 MC | | E 355 D | E 315 D |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | A 1008 (HSLAS-F Grade 70 [480]);<br>A 1008 (HSLAS Grade 70 [480] Class 1) | A 1008 (HSLAS Grade 65 [450] Class 1);<br>A 1008 (HSLAS Grade 65 [450] Class 2) | A 1008 (HSLAS Grade 50 [340] Class 1);<br>A 1008 (HSLAS Grade 50 [340] Class 2) | A 1008 (HSLAS Grade 50 [340]);<br>A 1008 (HSLAS Grade45 [310] Class 2);<br>A 1011 (HSLAS-F Grade 50 [340]) |
| | BS (UK) | | 1501-50F45;<br>50F45 HR;<br>50F45 HS;<br>50F45 CS | 46F40 HR;<br>46F40 HS;<br>46F40 CS | 1501-40F30;<br>43F35 HR;<br>43F35 HS;<br>43F35 CS |
| | DIN (GERMANY) | S500MC;<br>QStE 500 TM | S460MC;<br>QStE 460 TM | S355MC;<br>QStE 360 TM | S315MC;<br>QStE 300 TM |
| | Werkstoff (GERMANY) | 1.0984 | 1.0982 | 1.0976 | 1.0972 |
| | EN (EUROPE) | S500MC | S460MC | S355MC | |
| | GOST (RUSSIA) | | | | |
| | JIS (JAPAN) | | | | |
| | SS (SWEDEN) | 2662 | | 2642 | |
| | UNE (SPAIN) | | | | |
| | UNI (ITALY) | FeE 490 TM | | FeE 355 TM | |
| | IS (INDIA) | | | | |
| | KS REP. OF) (KOREA | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | NF/AFNOR (FRANCE) | FeE 355 KG N; E 355 R/FP; A 510 AP | | A 510 FP | A 510 AP | | E 36-3 | TSE 355-3; E 36-3 | | AF 42 C 20; XC 25; 1 C 22 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | K01600; K02007; K02700; K02701; K02803; K02900; K03009; K03300; K11803; K12000; K12001; K12037 | 1024; K03011; K03014; K12037; K12709 | K01600; K02302; K02700; K02701; K02803; K03301; K11803; K12037; K12609; A 299 (A); A 299 (B) | K01600; K02007; K02701; K02803; K117803; K12001; K12037; K12609 | K12037 | K12000 | A 252 (1); A 252 (2); A 252 (3) | K02502 | 1020; 1022; 1023; G10200; G10220; G10230 |
| | BS (UK) | 225-490A | | 225-490 A | 225/490; 225-490 A; 500 Nb | 50 EE | 50 C; 4360-50C | 50 C; 4360-50C | Fe 360 B FU; Fe 360 B FN | 055 M 15; 070 M 20; En 3 A; En 3 B; En 3 C; En 2; 22 HS; 22 CS |
| | DIN (GERMANY) | P355N; StE 355 | S355J2G3 (S355J2); St 52-3 N (Fe 510 D1) | P355NL1; TStE 355 | P355NH; WStE 355 | S355 NLH; TStE 355 | S355JO; St 52-3 U; Fe 510 C | S355JOH; St 52-3 U | S235JRG1; S235JR; Fe 360 B; USt 37-2 | C22 |
| | Werkstoff (GERMANY) | 1.0562 | 1.0570 | 1.0566 | 1.0565 | 1.0549 | 1.0553 | 1.0547 | 1.0036 | 1.0402 |
| | EN (EUROPE) | P355N | S355J2G3 | P355NL1 | P355NH | S355 NLH | S355JO | S355JOH | | C22; 2C/2D |
| | GOST (RUSSIA) | 15GF | 17GS; 17G1S | | | | | | 16D; St3Kp | 20 |
| | JIS (JAPAN) | SM 490 A; SM 490 B; SM 490 C; SM 490 YA; SM 490YB STK 490 YB; STK 490; STK 500; SM 50 A; SM 50 B | SM 490 A; SM 490 B; SM 490 C; SM 490 YA; SM 490 YB; SM 520 B; SM 520 C; STK 490; STK 500; STKM 16 C | SLA 365; STK 490; STK 500; SLA 37; STK 50; STK 51 | | | SCC 3 | | | S 20 C; S 22 C |
| | SS (SWEDEN) | 2106 | 2132; 2134 | 2107 | 2106 | 2135 | | | 1311; 1312 | 1450 |
| | UNE (SPAIN) | AE 355 KG; AE 355 DD | AE 355 D; Fe 510 D1 FF | | | FeE 355 KTM | AE 355 C | AE 355 C; Fe 510 C | AE 235 B; Fe 360 B | F.112; 1 C 22 |
| | UNI (ITALY) | FeE 355; FeE 355 KG; FeE 355 KW | fE 510 | Fe E 355 KT | FeE 355-2; FeE 355 KW | Fe 510 D | Fe 510 C FN | Fe 510 C | Fe 360 B; Fe 360 C; Fe 360 D | C 20; C 21 |
| | IS (INDIA) | | Fe540WHT | | | | | | IS226 | |
| | KS REP. OF) (KOREA | SM 490A; SM 490 ; SM 490C; YA; YB | SM 490A; SM 490B; SM 490C; YA; YB | | | | | | | SM 20C; SM 20CK |
| | GB/YB/JB/ SY/NB (PRC) | | 20Mn2 | | | | Q345C | | Q235B | 20Mn |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | NF/AFNOR (FRANCE) | A 42 CP; A 42 AP | E 23-45 M | E 355 FP | E 355 R | S355NH; TSE 355-4 | S 250 | 10 PbF 2 | S 300 | S 300 Pb | C10RR; XC 10 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | K01701; K02505; K02704; K02801 | A27 65-35 | K12000; K12037 | K12709 | K02705; K02305; K12709 | 1213; 1215; G12130; G12150 | | 1215; G12150; A 29 (1215); A 108 (1215); A 510 (1215); A 510 (1215); A 519 (1215); A 521 (1215) | 12L14; 12 L 14; G12144 | 1010; G10100 |
| | BS (UK) | 151-400; 154-400; 161-400; 164-400 | | 50 EE; 4360-50EE | 50 E; 4360-50E | S355NH | 230 M 07; 220 M 07 | | | | 040 A 10; 045 M 10; En 2 A; En 2 A/1; En 2 B; En 32 A |
| | DIN (GERMANY) | P265GH; H II | HX300PD; H300PD; H 300 PD | S355NL; TStE 355 | S355N; StE 355 | S355NH; StE 335 N | 11SMn30; 9 SMn 28 | 10SPb20; 10 SPb 20 | 11SMn37; 9 SMn 36 | 11SMnPb37; 9 SMnPb 36 | C10E; Ck 10 |
| | Werkstoff (GERMANY) | 1.0425 | 1.0443 | 1.0546 | 1.0545 | 1.0539 | 1.0715 | 1.0722 | 1.0736 | 1.0737 | 1.1121 |
| | EN (EUROPE) | P265GH | HX300PD | | S355N | S355NH | 11SMn30 | 10SPb20 | 11SMn37 | 11SMnPb37 | C10E |
| | GOST (RUSSIA) | 16K; 20K | | | | | | | | | 08; 10 |
| | JIS (JAPAN) | SG 295; SGV 410; SGV 450; SGV 480; SPV 315; SPV 355; SG 30; SGV 42; SGV 46; SGV 49; SPV 32; SPV 36 | | | SM 490 A; SM 490 B; SM 490 C; SM 490 YA; SM 490 YB; SM 50 A; SM 50 B; SM 50 C; SM 50 YA; SM 50 YB | | SUM 22 | | SUM 25 | | S 09 CK; S 10 C |
| | SS (SWEDEN) | 1431; 1430; 1432 | 1305 | 2135; 2135-01 | 2134 | 2134-04 | 1912 | | | 1926 | 1265 |
| | UNE (SPAIN) | A 42 Grado RC I; A 42 Grado RC II; F.6306; F.6307 | | AE 355 Grado KT | AE 355 Grado KG | Fe 355 KGN | F.210.A; F.210.L; 11 SMn 28; F.2111 | 10 SPb 20; F.2122 | 12 SMn 35; F.2113 | 12 SMnPb 35; F.2114 | C 10 k; F.1510 |
| | UNI (ITALY) | Fe 410 1 KW; Fe 410 1 KG; Fe 410 1 KT; Fe 410 2 KW; Fe 410 2 KG | | FeE 355 KT | FeE 355 KG | Fe 510 B | CF 9 S 22 | CF 10 SPb 20 | CF 9 Mn 36 | CF 9 SMnPb 36 | 2 C 10; 2 C 15; 1 C 10; C 10 |
| | IS (INDIA) | IS 2002 Grade 2B | | | | | 11C10S25 | | | | 10C4 |
| | KS REP. OF) (KOREA | SPPV 32; SGV 49; SGV 46; SGV 42; SGV 410; SGV 450; SGV 48; SPV 450; SPV 480 | | | | | SUM 22 | | SUM 25 | | S 10 C |
| | GB/YB/JB/ SY/NB (PRC) | 16Mn | | | | | Y15 | | Y13 | | 08 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | NF/AFNOR (FRANCE) | XC 12; XC 15; XC 18 | E 28 A; NFA 35-501 E 28 | S 320 GD | | ES | E 24-3; E 24-4; E 24-U | C18RR; XC 18; C 18; AF 37 C 12 | E | E 24-2 NE | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 1015; 1017; G10150; G10170 | 1020; G10200; K02301; K02595; K02596; K02597; K02598; K02599; K02702; K03000 | | | | K02001; K02601; K02701 | 1015; 1017; G10150; G10170 | | K01500; K01702; K02401; K02502; K03000; A570.36 | J03001 | 1117; C1117; G11170 |
| | BS (UK) | 080 A 15; 080 M 15; En 32 C | En 43 B; Fe 430 B; 43/25 HR; 43/25 HS; 43 B; HFW 4; HFS 4; ERW 3; CEW 4; SAW 4 | | | CR 1; CS 2 | Fe 360 D1 FF; 37/23 CR; 37/23 CS; 37/23 HR; 37/23 HS; 40 D; HFW 4; HFS 4 | 080 A 15; 080 M 15; En32 C; 17 CS; 17 HS | CR2; CR3; CS3; 1449 3 CR; 1449 2 CR | Fe 360 B FU; 37/23 CR; 37/23 CS; 37/23 HR; 37/23 HS; HFW 3; HFS 3; 40 B | A 1 | |
| | DIN (GERMANY) | C15E; Ck 15 | S275JR; St 44-2; Fe 430 B | S320GD; StE 320-3 Z | P265NL; P 265 NL | DC04; St 4; St 14 | S235J2G3 (S235J2); St 37-3 N; Fe 360 D 1 | C15; C 15 | DC03; RRSt; RRSt 13 | S235JR; S235JRG2; RSt 37-2; Fe 360 B | GE240; GS-45 | 18S10; 15SMn13 |
| | Werkstoff (GERMANY) | 1.1141 | 1.0044 | 1.0250 | 1.0453 | 1.0338 | 1.0116 | 1.0401 | 1.0347 | 1.0038 | 1.0446 | 1.0712; 1.0725 |
| | EN (EUROPE) | C15E | S275JR | S320GD | P265NL | DC04 | S235J2G3 | C15 | DC03 | S235JR | GE240 | 18S10; 15SMn13 |
| | GOST (RUSSIA) | 15 | St4ps; St4sp | | | 08JuA | 16D; St3sp | | 08Ju | St3ps; St3sp | 25L-3 | |
| | JIS (JAPAN) | S 15 C; S 15 CK | SN 400 B; SN 400 C; SN 490 B; SN 490 C; SS 400; STK 400; STKM 19 C; STKR 400; 19 C; SS 41; STK 41 | SGC 440; SZAC 440; SZAH 440; SGLH 440 | | SPCE; HR 4 | SS 330; SS 34 | S 15 C | SPCD; CR 3 | SS 330; SS 34 | 230-450; 230-450 W | |
| | SS (SWEDEN) | 1370 | 1411; 1412 | | | 1147 | 1312; 1313 | 1350 | 1146 | 1312 | | |
| | UNE (SPAIN) | C 16 k; F.1511; F.1110; C 15 k | AE 275 B; Fe 430 B FN | | | AP 04; FeP 04 | | F.111 | AP 02; AP02; FeP03 | AE 235 B FN; AE 235 B FU; Fe 360 B FN; Fe 360 B FU | | |
| | UNI (ITALY) | 1 C 15; C 15 | Fe 430 B FN | | | FeP 04 | Fe 360 C; D; Fe 360 C FN; Fe 360 D FF; Fe 37-2 | 1 C 15; C15; C16 | FeP 02; FeP 03 | Fe 360 B FN | | |
| | IS (INDIA) | 15C4 | | | | | | 15C4 | | | | |
| | KS REP. OF) (KOREA | SM 15C; SM 15CK | SB 41 | | | SPCE | SS 330 | SM 15C | SPCD | SS 330 | | SS 330 |
| | GB/YB/JB/ SY/NB (PRC) | 15 | Q255A ; Q255D | | | | Q195 | 15 | | Q235C | ZG230-450 | Q215A |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | NF/AFNOR (FRANCE) | E24-4 | 14-13-12E | | C 35; AF 55; 1 C 35; XC 38 | XC 38 TS | 35 M 5 | AF 60; C 40; 1 C 40 | C45RR; XC 45; XC 48 H-1 | 2 C 25; XC 25 | C 45; AF 65; C 45; 1 C 45 | XC 48 TS | 35 MF 4 | 45 MF 4 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | A 36 | 1018; G10180; 5069D | | 1035; G10350 | 1035; G10350 | 1039; G10390 | 1040; G10400 | 1045; 1045 H; 1042; G10450; H10450; G10420 | 1025; G10250 | 1043; 1045; G10430; G10450 | 1050; 1055; G10500; G10550 | 1140; G11400 | 1139; 1146; G11390; G11460 |
| | BS (UK) | En 40 D | 43A | | 080 M 30; En 5; 080 M 36 | 080 A 35 | | En 8; 080 M 40 | 080 H 46; 080 M 46 | 070 M 26 | 080 M 46 | | 212 M 36 | |
| | DIN (GERMANY) | S235J2; S235J2G4 | L355; RSt 44-2 | C15R; C15RPb; Cm 15 | C35G; C 35 G | C35G; C 35 G; Cf 35 | 40Mn4; 40 Mn 4 | C40; C 40 | C45E; Ck 45 | C25E; Ck 25 | C45; C 45 | C53G; C53E; Cf 53 | 35S20; 35 S 20 | 46S20; 45 S 20 |
| | Werkstoff (GERMANY) | 1.0117 | 1.0419 | 1.1140 | 1.0501 | 1.1183 | 1.1157 | 1.0511 | 1.1191 | 1.1158 | 1.0503 | 1.1213 | 1.0726 | 1.0727 |
| | EN (EUROPE) | S235J2 | L355 | C15R; C15RPb | C35G | C35G | | C40 | C45E | C25E | C45 | | 35S20; 8M | 46S20 |
| | GOST (RUSSIA) | | St3sp | | | 35 | 40G | | 45 | 25 | 45 | 50 | | |
| | JIS (JAPAN) | SS 330; SS 34 | SWRCH 18 A; SWRCH 18 K; SWRCH 19 A | | S 35 C; S 35 CM | S 35 C; S 35 CM | | | S 45 C; S 45 CM; S 48 C | S 25 C; S 28 C | S 45 C; S 45 CM | S 50 C; S 50 CM | | |
| | SS (SWEDEN) | 1313 | | | 1572; 1550 | 1572 | | | 1672 | | 1650 | | 1957 | |
| | UNE (SPAIN) | | | | F.113 | F.1130; C 35 k | | F.114.A | F.1140; F.1142; C 45 k; C48 k | F.1120; C 25 k | F.114 | | F.210.G; 35 MnS 6; F.2131 | |
| | UNI (ITALY) | Fe 360 D | | | C 35; 1 C 35 | C 36; C 38 | | C 40; 1 C 40 | C 45 | C 25 | C 45; 1 C 45 | C 53 | | |
| | IS (INDIA) | | 15C8 | | 35C8 | | 40C8 | | 45C8 | | | | 40C10S18 | 40C15S12 |
| | KS REP. OF) (KOREA | | | | SM 35C | SM 35C | | | SM 45C; S 48C | SM 25C | SM 45C | SM 50C; SB 450M | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | 35 | 35Mn | 40Mn | 40Mn | 45 | 25 | 45 | 50Mn | | Y40Mn |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | NF/AFNOR (FRANCE) | E 36-3 | | A 52 CP | 20-400 M | A 52 FP | XC 50; 2 C 50 | 20 M 5 | XC35RR; XC32; XC 35; XC 38 H 2; XC 38 H 1; 2 C 35 | XC 38 H 1 u; Cm 35 | XC 32 | C50 | | 1 C 25 | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | K12000 | | K02700; K02803; K03103; K03300; K12437 | | K12447 | 1049; 1050; G10490; G10500 | 1330; 1527; G13300; G15270 | 1034; 1035; 1038; G10340; G10350; G10380; C 1034 | | 1030; G10300 | 1049; 1050; G10490; G10500 | 1536; G15360 | 1025; G10250 | |
| | BS (UK) | 50 C | | | | | 080 M 50 | 150 M 19; En 14 A; En 14 B | 080 M 30; En 5; 080 M 36 | 080 A 35 | 080 M 30; En 5 | En 43 A; 080 M 50 | | 070 M 26 | 210 A 15; 210 M 15 |
| | DIN (GERMANY) | S355J0; St 52-3 U; Fe 510-C | S355JRC | P355GH; 19 Mn 6 | C18D; GS-38 | S355J2; S355J2G4; Fe 510 D2 | C50E; Ck 50 | 28Mn6 | C35E; Ck 35 | C35R; Cm 35 | C30E; Ck 30 | C50 | 34Mn5 | C25 | 15S22; 15 S 20 |
| | Werkstoff (GERMANY) | 1.0553 | 1.0551 | 1.0473 | 1.0416 | 1.0577 | 1.1206 | 1.1170 | 1.1181 | 1.1180 | 1.1178 | 1.0540 | 1.1166 | 1.0406 | 1.0723 |
| | EN (EUROPE) | S355J0 | S355JRC | P355GH | C18D | | C50E | 28Mn6 | C35E | C35R | C30E | C50 | | | |
| | GOST (RUSSIA) | | | | | | 50 | 30G | 35 | | | | | | |
| | JIS (JAPAN) | SCC 3 | | SGV 410; SGV 450; SGV 480 | | | | SCMn 1 | S 35 C; S 35 CM; S 38 C | | S 30 C; S 30 CM | S 50 C | SMn 433 H; SMn 433 HRCH; SMn 433 RCH; SMn 1 H | | SUM 32 |
| | SS (SWEDEN) | | | 2101; 2102 | 1306 | 2107 | 1674 | | 1572 | | | 1674 | | | 1922 |
| | UNE (SPAIN) | AE 355 C | | A 52 RC I, RA II | | A 52 RB II; AE 355 D | | | F.1130; C 35 k | F.1135; C 35 k-1 | 2 C 30 | 1 C 50 | TO.B | | F.210F; F.210.F |
| | UNI (ITALY) | Fe 510 C FN | | Fe E 355-2 | | | C 50 | C 28 Mn | C 35 | C 35 | C 30 | C 50 | | C 25; 1 C 25 | |
| | IS (INDIA) | Fe570HT | | | | | | 27C15 | 35C8 | | 30C8 | 50C4 | 37C15 | 25C4 | |
| | KS REP. OF) (KOREA | | | SGV 410; SGV 450; SGV 480 | | | | SCMn 1 | SM 35C; SGV 480 | | | SM 50C | SMn 433H | | SUM 32 |
| | GB/YB/JB/ SY/NB (PRC) | Q345C | | | ZG15 | Q345D | 50Mn | 30Mn2 | 35 | | 30Mn | 50Mn | 30Mn2 | 25 | Y20 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | NF/AFNOR (FRANCE) | | | | 3 C 45; XC 42 H 1; XC 48 H 1 u | 2 C 40; XC 42 H 1 | XC 75 | XC 90 | XC 80 | | A 48 CP; A 48 AP | C 45; AF 65; C 45; 1 C 45 | 40 M 5; 35 Mn 5 | C45RR; XC 45; XC 48 H 1 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | K03504; A105; SA-105 | | 1045; 1049; G10450; G10490 | 1040; G10400 | 1074; 1075; G10740; G10750 | 1095; G10950 | 1086; G10860 | | K01700; K02001; K02200; K02201; A 516 Gr.70; A 515 Gr. 70; A 414 Gr.F; A 414 Gr.G | 1043; 1045; G10430; G10450 | 1335; 1335 H; 1541; 1541 H; G13350; G15410; H13350; H15410 | 1045; 1045 H; 1042; G10450; H10450; G10420 |
| | BS (UK) | | | | 080 M 46 | 080 M 40; En 8 | | 95 HS; 95 CS | 80 HS; 80 CS | A 5; A 6 | 224-469 B | 080 M 46 | 150 M 36 | 089 H 46; 080 M 46 |
| | DIN (GERMANY) | C45U; C45W; C 45 U; C 45 U | A105; C21; P250GH; C22.8; C22 G2 | C53E; C 53 E; Ck 53 | C45R; Cm 45 | C40E; Ck 40 | C76D; C 76 D; D 75-2 | C92D; C 92 D; D 95-2 | C86D; C 86 D; D 85-2 | G28Mn6; GS-30 Mn 5 | P295GH; 17Mn4; 17 Mn 4 | C45; C 45 | 36Mn5; 36 Mn 5 | C45E; Ck 45 |
| | Werkstoff (GERMANY) | 1.1730 | 1.9443; 1.0432; 1.0460 | 1.1210 | 1.1201 | 1.1186 | 1.0614 | 1.0618 | 1.0616 | 1.1165 | 1.0481 | 1.0503 | 1.1167 | 1.1191 |
| | EN (EUROPE) | C45U | P250GH | | C45R | C40E | C76D | C92D | C86D | G28Mn6 | P295GH | C45 | 36Mn5 | C45E |
| | GOST (RUSSIA) | | | | 45 | 40 | 75 | | | 27ChGSNMDTL; 30GSL | 14G2 | | 35G2; 35GL | 45 |
| | JIS (JAPAN) | | | S 53 C | S 45 C; S 45 CM | S 40 C | | | | SCMn 2 | SG 365; SGV 410; SGV 450; SGV 480; SPV 315; SG 37; SGV 42; SGV 46; SGV 49; SPV 32 | S 45 C; S 45 CM | SMn 438; SMn 438H; SCMn 3 | S 45 C; S 45 CM; S 48 C |
| | SS (SWEDEN) | | | | 1660 | | | | | | 2102 | 1650 | 2120 | 1672 |
| | UNE (SPAIN) | | | | F.1145; F.1147; C 45 k-1; C 48 k-1 | | | | | 30 Mn 5; AM 30 Mn 5; F.120.D; F.8211; F.8311 | A 47 RC I; RA II | F.114 | F. 1203-36 Mn 6; F. 8212-36 Mn 5 | F.1140; F.1142; C 45 k; C 48 k |
| | UNI (ITALY) | | | | C 45 | C 40 | 3 CD 75 | 3 CD 95 | C 85; 3 CD 85 | | Fe 295 | C 45; 1 C 45 | | C 45 |
| | IS (INDIA) | | | 55C4; C55 | 45C8 | | | | | | | | 37C15 | 45C8 |
| | KS REP. OF) (KOREA | | | | SM 45C | SM 40C | | | | SCMn 2 | SPPV 32; SGV 49; SGV 46; SGV 42; SGV 410; SGV 450; SGV 48; SPV 450; SPV 480 | SM 45C | SMn 438H; SCMn 3 | SM 45C; S 48C |
| | GB/YB/JB/ SY/NB (PRC) | | | | 45 | 40Mn | 75 | 1A95 | | 20Mn2 | 16Mn | 45 | 35Mn2 | 45 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3 | 3 | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | NF/AFNOR (FRANCE) | | 44SMn28; 45 MF 6.3 | P355GH | C54; 1 C 55; AF 70; C 55 | C50RR; XC 54; XC 50; 2 C 55; XC 55 H 1 | C60; 1 C 60 | C68RR; XC 68 | C75RR; XC 75 | C100RR; XC 100 | Y2 120; C120E3U | C90RR; XC 90 | 3 C 55; XC 55 H 1 | C 75 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | 1144; G11440 | K11852; K12437; AH36; DH36; EH36 | 1055; G10550 | 1055; G10550 | 1060; G10600 | 1070; G10700 | 1074; 1075; 1078; G10700; G10750; G10780 | 1095; G10950 | W112; W1; T72301 | 1086; G10860 | 1055; G10550 | 1074; 1075; G10740; G10750 |
| | BS (UK) | | 44SMn28; 226 M 44 | | 070 M 55; En 9 | 070 M 55; En 9 | 060 A 62; En 43 D | 060 A 67; 080 A 67; En 43 E | 060 A 78; 80 | 95 | | | 070 M 55; En 9 | 060 A 78 |
| | DIN (GERMANY) | 38MnVS6; 38 MnVS 6 | 44SMn28 | GL-A 36; GL-AH 36; S 355 G 1 S | C55 | C55E; Ck 55 | C60 | C67S; Ck 67 | C75S; Ck 75 | C100S; Ck 101 | C125U; C 125 W | C80S; Ck 85; C 85 E | C55R; Cm 55 | C75 |
| | Werkstoff (GERMANY) | 1.1303 | 1.0762 | 1.0583 | 1.0535 | 1.1203 | 1.0601 | 1.1231 | 1.1248 | 1.1274 | 1.1563 | 1.1269 | 1.1209 | 1.0605 |
| | EN (EUROPE) | 38MnVS6 | 44SMn28 | | C55 | C55E | C60; 43D | C67S | C75S | C100S | C125U | C80S | C55R | |
| | GOST (RUSSIA) | | A40G | A36 | 55 | 55 | 60; 60G | 65GA; 68GA | 75A | | U12-1 | 85A | | 75 |
| | JIS (JAPAN) | | SUM 43 | SPV 36 | S 55 C; S 55 C-CSP; S 55 CM | S 55 C; S 55 C-CSP; S 55 CM | S 58 C; S 60-C-CSP; S 60 CM; S 65 C-CSP; S 65 CM | S 70 C-CSP; S 70 CM | S 75 CM | SK 95 -CSP | SK 120; SK 120 M; SK 2; SK 2 M; TC 120 | SK 85-CP | | |
| | SS (SWEDEN) | | | | 1655 | 1655 | | 1770 | 1774 | 1870 | | | | |
| | UNE (SPAIN) | | | | F.115 | F.1150; C 55 K | | | | | F.5123; C 120 | | F.1155; C 55 k-1 | |
| | UNI (ITALY) | | CF 44 SMn 28 | | C 55; 1 C 55 | C 55 | C 60; 1 C 60 | C 67 | C 75 | C 100 | C 120 KU | C 85 | C 55 | C 75 |
| | IS (INDIA) | | | | 55C4 | | 60C4 | | 80C6 | | | 85C6 | | 75C6 |
| | KS REP. OF) (KOREA | | SUM 43 | | SM 55C | SM 55C | SM 58C | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | Y40Mn | | 55 | 55 | 60 | 65 | 75 | 1A95 | T12 | T8A | 55 | 75 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4 | 4 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | NF/AFNOR (FRANCE) | C68; XC 65 | | C 56 D 2 | C90RR; XC 90; XC90; C90E2U | C60RR; XC 60; X 65; 2 C 60 | C50RR; XC 54; XC 50; XC 55 H 1; 2 C 55 | 60 S 7 | 60 S 7 | 55 S 7 | 50S7; 51 Si 7 | 45 S 7; Y 46 S 7; 46 SI 7 | 100C2 | 12 CD 9-10; 10 CD 9.10 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 1070; G10700 | | 1055; G10550 | | 1060; 1064; G10600; G10640 | 1055; G10550 | 9260; G92600 | 9260 H; H92600; 9260; G92600 | 9255; G92550 | 9255; G22550 | | G50986; ASTM Grade E50100; ASTM Grade G15116; SAE E50100 | K21390; K21590; ASTM A182 F22; ASTM A387 Grade 22; A387-22-2 |
| | BS (UK) | 060 A 67; 080 A 67; En 43 E; 1449 70 HS | | | CS95 | 060 A 62; 070 M 60; En 43 D | 070 M 55; En 9 | | 251 A 60; 251 H 60 | 251 A 58; En 45 A | | | GCr6; B00040; GCr4 | 622; 622-490; 622/515; 622/690 |
| | DIN (GERMANY) | C67 | C56E2; Cf 54 | C56D2; C 56 D 2 | C90S; C 90 S | C60E; Ck 60 | C55E; Ck 55 | 65Si7; 65 Si 7 | 60Si7 | 56Si7; 56 Si 7; 55Si7; 55 Si 7 | 51Si7; 51 S 7 | 46Si7 | 100Cr2; 100 Cr 2 | 10CrMo9-10; 10 CrMo 9 10 |
| | Werkstoff (GERMANY) | 1.0603 | 1.1219 | 1.1220 | 1.1217 | 1.1221 | 1.1203 | 1.5028 | 1.5027 | 1.5026 | 1.5025 | 1.5024 | 1.3501 | 1.7380 |
| | EN (EUROPE) | C67 | C56E2 | C56D2 | C90S | C60E | C55E | | | 565Si7; 55Si7 | 51Si7 | 46Si7 | | 10CrMo9-10 |
| | GOST (RUSSIA) | | | | | 60GA | 55 | 60S2G | 60S2 | 55S2; 60S2 | | | SchCh4 | 12Ch8 |
| | JIS (JAPAN) | S 70 C-CSP; S 70 CM | C56E2; S55C | | SK 95 | S 58 C; S 60 C-CSP; S 60 CM; C 65 C-CSP; C 60 CM | S 55 C; S 55 C-CSP; S 55 CM | 50 P 7; SUP 6; SUP 6 M; SUP 7; SWOSM | | | | | | SCMQ4E; SCMV 4; SFVA F 22.A; SFVA F 22.B; SFVCM F22B; STBA 24; STFA 24; STPA 24 |
| | SS (SWEDEN) | | | | | 1678 | 1655 | | | 2085; 2090 | | | | 2218 |
| | UNE (SPAIN) | | | | | | F.1150; C 55 k | | F.144.B; F.1441 | F.144; F.144.A; 56 Si 7; F.1440 | F.145.B | F.1451 | | TU.H |
| | UNI (ITALY) | C 67 | | | | C 60 | C 55 | | 60 Si 7 | 55 Si 7 | 48 Si 7; 50 Si 7 | | | 12 CrMo 9 10 |
| | IS (INDIA) | 65C6 | | | | | 55C4 | 65Si7 | 60Si7 | 55Si7 | | | | |
| | KS REP. OF) (KOREA | | S 55C | | | SM 58C | SM 55C | SPS 6 | | | | | | SPA 24 |
| | GB/YB/JB/ SY/NB (PRC) | 70 | | 55 | | 60Mn | 55 | 60Si2Mn | 60Si2Mn | 55Si2Mn | 55Si2Mn | | GCr6 | 12Cr2Mo1 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | NF/AFNOR (FRANCE) | 90 MnV 8; 90 MV 8 | 55 WC 20 | | 100 C 3 | 105 WCr 5; 105 WC 13 | 20 MC 5 | 55 S 7 | 55 S 7 | 60 SC 6 | 34 CD 4; 34CrMo4RR; 35 CD 4; | | 100Cr6RR; 100 C 6; 100Cr6; Y 100 C 6 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | O2; T31502 | | | L2; T61202 | | 4820; 5120; 5120H; G48200; G51200; H51200 | 9255; G92550 | 9254; G92550 | 9262; G95620 | 4135; 4137; 4135H; 4137H; G41350; G41370; H41350; H41370 | | L3; T61203 |
| | BS (UK) | BO 2; BO2 | BS1; BS 1 | | | 105WC 13 | 150 M 19 | 250A53 | 250 A 53 | | 708 A 30 | | BL 3; BL3 |
| | DIN (GERMANY) | 90MnCrV8; 90 MnCrV 8 | 60WCrV7; 60 WCrV 7 | 51CrMnV4; 51 CrV 4; 50 CrV 4 | 115CrV3; 115 CrV 3 | 105WCr6; 105 WCr 6 | 20MnCr5; 20 MnCr 5 | 55Si7; 55 Si 7 | 55Si7; 55 Si 7 | HDT 450 F; S340 MGC | 34CrMo4; GS34 CrMo 4; G34 CrMo 4 | 38MnSi4; 38 MnSi 4 | 102Cr6; 102 Cr 6; 100Cr6 |
| | Werkstoff (GERMANY) | 1.2842 | 1.2550 | 1.2241 | 1.2210 | 1.2419 | 1.7147 | 1.0904 | 1.0904 | 1.0961 | 1.7220 | 1.5120 | 1.2067 |
| | EN (EUROPE) | 90MnCrV8 | 60WCrV7 | | 115CrV3 | 105WCr6 | 20MnCr5 | | | | 34CrMo4 | | 102Cr6 |
| | GOST (RUSSIA) | | | | | ChW1G; ChWG | 18ChG | | | 60S2; 55S2; 50ChFA | 35ChM; AS38ChGM | | Ch |
| | JIS (JAPAN) | | | | | SKS 2; SKS 2 M; SKS 3; SKS 31 | SMnC 420 H; SMnC 420 RCH; SMnC 21 H | | | | SCM 435 H; SCM 435 HRCH; SCM 435 M; SCM 435 RCH; SCM 435TK; SCM 3 H; STKS 3 | | SUJ 2 |
| | SS (SWEDEN) | | 2710 | | | 2140 | 2172 | 2085 | 2090 | | 2234 | | |
| | UNE (SPAIN) | 90 MnCrV 8; F.5229 | 60 WCrSiV 8; F.5242 | | F.520.L; F.5125 | F.5233; 105 WCr 5 | F.150.D | 56 Si 7 | | 60 SiCr 8; F.1442 | 35 CrMo 4 DF; F.125.A; F.125.B; F.1254; F.1250 | | F.5230; 100 Cr 6 |
| | UNI (ITALY) | 90 MnVCr 8 KU | 55 WCrV 8 KU; 58 WCr 9 KU | | 107 CrV 3 KU | 107 WCr 5 KU | 20 MnCr 5; Fe52 | 55 Si 8 | | 60 SiCr 8 | 34 CrMo 4 KB; 35 CrMo 4 | | 102 Cr 6 KU |
| | IS (INDIA) | | | | | T110W2Cr1 | 20MnCr1 | 55Si2Mn90 | | | | | |
| | KS REP. OF) (KOREA | | | | | STS 31 | | | | | SCM 435 TK | | STB 2 |
| | GB/YB/JB/ SY/NB (PRC) | 9Mn2V | | | | 9CrWMo | 15CrMn | 55Si2Mn | 55Si2Mn | | 35CrMo | 42SiMn | Cr2 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | NF/AFNOR (FRANCE) | | 34 CD 4 | 90MnWCrV5; 90 MWCV 5; 8 MO 8 | 45 WCrV 8; 45 WCrV 20 | 55 NCDV 7 | 55 NCV 6 | 100Cr6RR; 100 C 6; 100Cr6 | 15 D 3 | | 16 N 6 | 14 NC 11 | 10 NC 12; 12 NC 15; 14 NC 12; 16 NC 12; 16 NCD 13 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | L1 | P20; T51620 | O1; T31501 | S1; T41901 | L6; T61206 | | E52100; G52986 | K11820; K12020; K12320; A204 Grade A; A182 Grade F1 | 4422; G44220; J12522 | A 350-LF 5; K13050; K21703; K22103 | 3415 | 3310; 3310 RH; 3312; 3316; 9315; E 3310; E 3316; E9315; G33106 |
| | BS (UK) | | 708 A 37 | BO1; BO0; BO 1; BO 0 | BS1; BS 1 | BH 224; BH 225 | | 2 S.135; 535 A 99 | 1503-243 B | 245; B 1; B1 | | | 655 M 13; 655 H 13; En 36 A |
| | DIN (GERMANY) | 90CrSi5; 90 CrSi 5 | 35CrMo4; 35 CrMo 4 | 100MnCrW4; 100 MnCrW 4 | 45WCrV7; 45 WCrV 7 | 55NiCrMoV6; 56NiCrMoV6; 55 NiCrMoV 6; 56 NiCrMoV 6 | 50NiCr13 | 100Cr6; 100 Cr 6 | 16Mo3; 15 Mo 3 | G20Mo5; 20Mo4; GS-22 Mo 4 | 14Ni6; 14 Ni 6 | 14NiCr10; 14 NiCr 10 | 15NiCr13; 14NiCr14; 15 NiCr 13; 14NiCr14 |
| | Werkstoff (GERMANY) | 1.2108 | 1.2330 | 1.2510 | 1.2542 | 1.2713 | 1.2721 | 1.3505 | 1.5415 | 1.5419 | 1.5622 | 1.5732 | 1.5752 |
| | EN (EUROPE) | 90CrSi5 | 35CrMo4 | 100MnCrW4 | 45WCrV7 | 55NiCrMoV6 | | 100Cr6 | | G20Mo5 | 14Ni6 | 14NiCr10 | 15NiCr13 |
| | GOST (RUSSIA) | | | | 5ChW25F | 5ChNM | | SchCh 15 | | | | 12ChN3A | |
| | JIS (JAPAN) | | | SKS 31 | | SKT 4 | | SUJ 2; SUJ 4 | STBA 12; STFA 12; STPA 12 | SCPH 11 | | SNC 415; SNC 415 H; SNC 415 M | SNC 815 H; SNC 815 HRCH; SNC 815 RCH; SNC 22 H |
| | SS (SWEDEN) | 2092 | 2234 | 2140 | 2710 | | 2550 | 2258 | 2912; 16Mo3 | | | | |
| | UNE (SPAIN) | | | F.522.A; F.5220; 95 MnCrW5; 105 WCr 5 | F.524; F.5241; 45 WCrSi 8 | F.520.S | F.528 | F.131; 100 Cr 6; F.1310 | F. 2601; 16 Mo 3 | | F.2641; 15 Ni 6 | 15 NiCr 11 | 15 NiCr 11; F.1540 |
| | UNI (ITALY) | 105 WCr 5 | 35 CrMo 4 | 95 MnWCr 5 KU; 10 WCr 6 | 45 WCrV 8 KU | | | 100 Cr 6 | 16 Mo 3 KG; 16 Mo 3 KW; 16 Mo 5 KG; 16 Mo 5 KW | | 14 Ni 6 KG; 14 Ni 6 KT | 16 NiCr 11 | |
| | IS (INDIA) | | | | | | | 105Cr1Mn60 | | | | | 13Ni3Cr80 |
| | KS REP. OF) (KOREA | | SCM 435 TK | STS 31 | | STF 4 | | STB 2 | SPA 10 | SCPH 11 | | | |
| | GB/YB/JB/ SY/NB (PRC) | 9SiCr | 3CrMo | CrWMn | 5CrW2Si | 5CrNiMo | | Gr15; 45G | 16Mo | | | 12CrNi2 | 12CrNi3A |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | NF/AFNOR (FRANCE) | 12 CD 4 | 18 NCD 6 | 16 NCD 13 | 12 C 3; 15Cr2RR; 15 C 2 | 32 C 4 | 42 C 4 | 42 C 4 TS | 16MnCr5RR; 16 MC 5 | 16MnCrS5 | 55 C 3; 55Cr3 | MOC 2; V320 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | | 9310; 9310H; 9310 RH; E 9310 H; G93106; H93100; H93106; AMS 6265 | 5015; G50150 | 5132; 5132 H; G51320; H51320 | 5140; 5140 H; 5140 RH; G51400; H51400 | 5140; G51400 | 5115; 5117; G51150; G51170 | | 5155; 5155 H; 5150; G51550; H51550; G51600 | 4142; G41420 |
| | BS (UK) | | 820A16 | 832 H 13; 832 M 13; S.157; En 36 C | 523 M 15 | 530 A 32; 530 H 32; 530 M 32 | 530 A 40; 530 M 40; 530 H 40; En 18 | 530 A 40 | 527 M 17; 590 H 17; 590 M 17 | | 525 A 58; 525 A 60; En 48 | |
| | DIN (GERMANY) | 15CrMo5; 15 CrMo 5 | 17CrNiMo6; 17 CrNiMo 6 | 14NiCrMo13-4; 14 NiCrMo 13 4 | 15Cr3; 15 Cr 3 | 34Cr4; 34 Cr 4 | 41Cr4; 41 Cr 4 | 42Cr4; 42 Cr 4 | 16MnCr5; 16 MnCr 5 | 16MnCrS5; 16 MnCrS 5 | 55Cr3; 55 Cr 3 | 41CrMo4; 41 CrMo 4 |
| | Werkstoff (GERMANY) | 1.7262 | 1.6587 | 1.6657 | 1.7015 | 1.7033 | 1.7035 | 1.7045 | 1.7131 | 1.7139 | 1.7176 | 1.7223 |
| | EN (EUROPE) | 15CrMo5 | | | 15Cr3 | 34Cr4 | 41Cr4 | | 16MnCrS5 | 16MnCrS5 | 55Cr3 | |
| | GOST (RUSSIA) | | | | 15Ch | 35Ch | 40Ch | | 18ChG | | 50ChGA | 40ChFA |
| | JIS (JAPAN) | SCM 415 H; SCM 415 HRCH; SCM 415 M; SCM 415 RCH; SCM 415 TK; SCM 21 H | | | SCr 415; SCr 415 H; SCr 415 HRCH; SCr 415 RCH; SCr 21 H | SCr 430; SCr 430 H; SCr 430 HRCH; SCr 430 RCH; SCr 2 H | SCr 440; SCr 440 H | SCr 440 | | | SUP 9; SUP 9 A; SUP 9 M | SNB 22-1 |
| | SS (SWEDEN) | | | | | | | 2245 | 2173 | 2127 | 2253 | |
| | UNE (SPAIN) | 12 CrMo 4; F.150.J; F155; F.1551 | 14 NiCrMo 13 | 14 NiCrMo 13; 14 NiCrMo 13-1; F.1560; F.1569 | | 35 Cr 4; F.8221 | 41 Cr 4 DF; F.1211; F.1202 | 42 Cr 4 | F.1516 | | F.1431 | 42 CrMo 4 |
| | UNI (ITALY) | | | 15 NiCrMo 13; 16 NiCrMo 12 | | 34 Cr 4; 34 Cr KB | 41 Cr 4; 41 Cr 4 KB | 41 Cr 4 | 16 MnCr 5 | | 55 Cr 3 | 41 CrMo 4 |
| | IS (INDIA) | | 15Ni2Cr1Mo15 | | 15Cr3 | | 40Cr1 | | 17Mn1Cr95 | | 55Cr3 | |
| | KS REP. OF) (KOREA | | | | | SCr 430; SCr 430H | SCr 440 | SCr 440 | | | SPS 9A | SNB 22-1 |
| | GB/YB/JB/ SY/NB (PRC) | 15CrMnMo | | | 15Cr | 35Cr | 40Cr | 40Cr | 15Cr | | 50CrMn | 40CrMoA |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | NF/AFNOR (FRANCE) | 42 CD 4; 40 CD 4; 42CrMo4RR | | | 15 CD 4-05 | 12 CD 9-10; 10 CD 9.10 | | 40 CAD 6.12 | | 40 CMD 8 S | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 4140; 4140 H; 4140 RH; 4142; 4142 H; 4145; G41400; H41400; G41420; H41420; K14248; K14047 | 4147; 4147 H; 4150; 4150 H; 8650; 8650 H; G41470; G41500; G86500; H41470; H41500; H86500 | 4118; 4118H; G41180; H41180 | K11547; K11562; K11564; K11757; K11789; K12052; ASTM A182 F12 | K21390; K21590; ASTM A182 F22 | | E71400; K24065; K24728; A355 Class A | | P20+S | |
| | BS (UK) | 708 M 40; 709 M 40; En 19; En 19 A | 708 M 40; 708 A 47 | | 620; 620-440; 620-470; 620-540; 621 | 622; 622-490; 622/515; 622/690; 1502-622 | 1503-660-440 | 905 M 39; En 41 B | | | |
| | DIN (GERMANY) | 42CrMo4; 42CrMo4V; 42 CrMo 4; 42 CrMo 4 V | 50CrMo4; 50 CrMo 4 | 20MoCr4; 20 MoCr 4 | 13CrMo4-5; 13 CrMo4 4 | 10CrMo9-10; 10 CrMo 9 10; GS-12CrMo9-10; GS-12 CrMo 9 10; G 12 CrMo9-12 | 14MoV6-3; 14 MoV 6 3 | 41CrAlMo7-10; 41CrAlMo7; 41 CrAlMo 7 | 17NiCrMo6-4 | 40CrMnMoS8-6 | 20MnCrS5; 20 MnCrS 5 |
| | Werkstoff (GERMANY) | 1.7225; 1.7227 | 1.7228 | 1.7321 | 1.7335 | 1.7380 | 1.7715 | 1.8509 | 1.6566 | 1.2312 | 1.7149 |
| | EN (EUROPE) | 42CrMo4 | 50CrMo4 | 20MoCr4 | 13CrMo4-5 | 10CrMo9-10 | | 41B | 17NiCrMo6-4 | | 20MnCrS5 |
| | GOST (RUSSIA) | 40ChFA | | BGH 7321; E320; SIQUAL 7321 | 12ChM; 15ChM | 12Ch8 | | 38Ch2MJuA | | | |
| | JIS (JAPAN) | SCM 440 H; SCM 440 HRCH; SCM 440 M; SCM 440 RCH; SCM 440 TK; SNB 7 Class 2; SCM 4 H; SNB 22-1 | SCM 445 H; SCM 445 HRCH; SCM 445 RCH; SCM 5 H | | SCMV 2; SFVA 12; STBA 22; STFA 22; STPA 20; STPA 22 | SCMQ 4 E; SCMV 4; SFVA F 22 A; SFVA F 22 B; SFVCM F 22 B; STBA 24; STFA 24; STPA 24 | | SACM 645; SACM 1 | | | |
| | SS (SWEDEN) | 2244; 42CrMo4 | 2512 | 2625 | 2216 | 2218 | | 2940 | | | |
| | UNE (SPAIN) | TO.D; TU.L | | | TU.E; TU.F; F.2631; 14 CrMo 4 5 | TU.H | 13 MoCrV 6 | F.174; 41 CrAlMo 7; F1740 | | | |
| | UNI (ITALY) | 42 CrMo 4; 38 CrMo 4 KB; 41 CrMo 4 | 653 M 31 | | 14 CrMo 3; 14CrMo4 5 | 12 CrMo 9; 12 CrMo 10 | | 41 CrAlMo 7 | | | |
| | IS (INDIA) | 40Cr4Mo3 | | | | | | 40Cr2Al1Mo18 | | | |
| | KS REP. OF) (KOREA | SNB 22-1 | | | SPA 22 | SPA 24 | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | 42CrMo; 42CrMnMo | | 20CrMo | 12CrMo | 12Cr2Mo1 | | 38CrMoAl | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | NF/AFNOR (FRANCE) | 40 CMND 8 | 40 CMD 8 | | 51 CDV 4; 51CrMoV4 | | 15 CD 3.5 | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | P20+Ni | | | 4150; G41500 | | | 4419; 4419 H; 4520; G44190; H44190; G45200; K11522; K11820; K12020; K12023; K12320; K12821 | | HY-80; HY 80; HY80; K31820; MIL-S-21952 | |
| | BS (UK) | | | | | | | | | | 605 M 36; En 16; En 16T |
| | DIN (GERMANY) | 40CrMnNiMo8-6-4; 40 CrMnNiMo 8 6 4 | 40CrMnMo7; 40 CrMnMo 7 | 49CrMo4; 49 CrMo 4 | 52CrMoV4; 51CrMoV4; 51 CrMoV 4 | 16CrMo4-4; 16 CrMo 4 4 | 16CrMo4; 16 CrMo 4 | 16Mo5 | | | |
| | Werkstoff (GERMANY) | 1.2738 | 1.2311 | 1.7238 | 1.7701 | 1.7337 | 1.7242 | 1.5423 | | | |
| | EN (EUROPE) | 40CrMnNiMo8-6-4 | 40CrMnMo7 | | 51CrMoV4 | | 16CrMo4 | | | | |
| | GOST (RUSSIA) | 40Ch2GNM | | | | | | | 30ChGSA | | |
| | JIS (JAPAN) | | | | | SCM 415 M; SCM 415; STBA 22; SFVA F12 | SCM 418 H; SCM 418 HRCH; SCM 418 RCH; SCM 418 TK | SB 450 M; SB 480 M; SB 46 M SB 49 M | | | |
| | SS (SWEDEN) | | | | | | | | | | |
| | UNE (SPAIN) | | F.5302 | | | | F.1550; 18 CrMo 4 | TU.D; F.2602 | | | |
| | UNI (ITALY) | | 35 CrMo 8 KU | | 51 CrMoV 4 | A 18 CrMo 45 KW | 18 CrMo 4 | 16 Mo 5 KG; 16 Mo 5 KW | | | |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | SB 450M | | | |
| | GB/YB/JB/ SY/NB (PRC) | | 5CrMnMo | | | 15CrMo | | 15Mn | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | NF/AFNOR (FRANCE) | | 16 NC 6 | | 35 C 2; 38 C 2 | | | | | | E 690 D | | 38 B 3; 38B3 | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | K52440 | 4320; 4320H; G43200; H43200 | | 5140; G51400 | E51100; E52100; G51986; G52986 | | P6; T51606 | | | A514 Grade B; K11630 | A709-100; A709 Grade 100 | | |
| | BS (UK) | | 815 M 17 | | 120 M 36 | | | | | | 75 F 70 | | | |
| | DIN (GERMANY) | 34CrAlNi7-10; 34CrAlNi7; 34 CrAlNi 7 | 15 CrNi 6 | 17CrNi6-6 | 38Cr2; 38 Cr 2 | 105Cr4; 105 Cr 4 | 140Cr2; 140 Cr 3 | 15NiCr14; 15 NiCr 14 | S690QL1; EStE 690V | 26CrMo4-2; 26 CrMo 4 | S700MC; QStE 690 TM | S690QL; TStE 690 V | | 20MnB4; 20 MnB 4 |
| | Werkstoff (GERMANY) | 1.8550; 1.2891 | 1.5919 | 1.5918 | 1.7003 | 1.2057 | 1.2008 | 1.2735 | 1.8988 | 1.7219 | 1.8974 | 1.8928 | | 1.5525 |
| | EN (EUROPE) | 34CrAlNi7-10 | | 17CrNi6-6 | 38Cr2 | | | | S690QL1 | 26CrMo4-2 | S700MC | S690QL | | 20MnB4 |
| | GOST (RUSSIA) | | 12ChN2 | | | | 13Ch | | | | | | | |
| | JIS (JAPAN) | | SNCM 415 | | | SUJ 1 | | | | | | | | |
| | SS (SWEDEN) | | 2511; 2512 | | | | | | | | | 2625 | | |
| | UNE (SPAIN) | | | | F.1200 | F.120.J | | | | | | | | |
| | UNI (ITALY) | 34 CrAlNi 7 | | | 41 Cr 2 KB | | | | | | | | | |
| | IS (INDIA) | | 15NiCr1Mo12 | | 40Cr1 | 105Cr1 | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | 40Cr | GCr9 | Cr06 | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 |
| | NF/AFNOR (FRANCE) | P460NL1; A 590 FP | | | 18 NCD 6 | | 25 CD 4 | | | 20 CDV 6 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | K12202 | A217 WC6; A372 Grade J; J12072; J12073; K11598 | ASTM A387 Grade 11 Ckass 2; A 387 Grade 11 Class 2; SA387 GR 11 CLASS 2; SA387 Gr.11 CL2; SA387-11-2; K11789 | | 5120; G51200 | 4130; 4130 H; 4130 RH; G41300; H41300 | | | |
| | BS (UK) | | | 621 A; 621 B | | | 708 A 25 | | | |
| | DIN (GERMANY) | P460NL1; P460 NL1; TStE 460 | G17CrMo5-5; GS-17 CrMo 5 5 | 13CrMoSi5-5 | 18CrNiMo7-6; 17CrNiMo6; 17 CrNiMo 6 | 20Cr4; 20 Cr 4 | 25CrMo4; 25 CrMo 4; GS-25 CrMo 4; G 25 CrMo 4 | 21CrMoV5-11; 21 CrMoV 5 11 | GS-35 CrMoV 10 4; G35 CrMoV 10-4 | 24CrMoV5-5 |
| | Werkstoff (GERMANY) | 1.8915 | 1.7357 | 1.7336 | 1.6587 | 1.7027 | 1.7218 | 1.8070 | 1.7755 | 1.7733 |
| | EN (EUROPE) | P460NL1; P460 NL1 | G17CrMo5-5 | 13CrMoSi5-5 | 18CrNiMo7-6 | 20Cr4 | 25CrMo4 | | | |
| | GOST (RUSSIA) | | | | | 20Ch | 20ChM; 30ChM | | | |
| | JIS (JAPAN) | SHY 685 N; SHY 685 NS | SCPH 21 | | | SCr 420 | SCM 420 TK; SCM 430 M; SCM 430 RCH; SCM 430 TK; STKS 1 | | | |
| | SS (SWEDEN) | | | | | | 2225 | | | |
| | UNE (SPAIN) | P460NL1 | | | F.1560; 14 NiCrMo 13 | | F.222; F.1256 | | | |
| | UNI (ITALY) | | | | 18 NiCrMo 7 | | 25 CrMo 4; 25 CrMo KB | 35 NiCr 9 | | 21 CrMoV 5 11 |
| | IS (INDIA) | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | SCr 420 | SCM 420; SCM 430 | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | 20Cr; A20202 | 30CrMo | | | 12Cr1MoV |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| | NF/AFNOR (FRANCE) | | 40 NCD 2; 40 NCD TS | 20 NCD 2 | 18 NC 13 | 35 NC 6 | 34 CrNiMo 8; 35 NCD 6 | | 30 NCD 2 | 30 CND 8; 30 NCD 8 | 20MV6; TS E 455 4; TU E 455 4 | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 4340; 4340 H; 9850; G43400; G98500; H43400; K23028 | 8640; 8640 H; 8740; 8740 H; 8742; G86400; G87400; G87420; H86400; H87400; K11640 | 8617; 8617 H; 8620; 8620 H; 8620 RH; 8617; G86170; G86200; H86170; H86200; K12147 | | 3135 | 4340; G43400; 4337; G43370 | | 8630 | 4340; G43400 | K01907 | 300M; 4340M; K44220 |
| | BS (UK) | 817 M 40; En 24 | | 805 H 20; 805 M 20; 806 M 20; En 362 | 653 M 31 | 640 A 35 | 816 M 6; 817 M 40 | | | 823 M 30 | 55 C; GR 55; Grade 55 | S 155 |
| | DIN (GERMANY) | 40NiCrMo6; 40 NiCrMo 6 | 40NiCrMo2-2; 40 NiCrMo 2 2 | 20NiCrMo2-2; 21NiCrMo2; 21 NiCrMo 2 | 31NiCr14; 31 NiCr 14 | 36NiCr6; 36 NiCr 6 | 34CrNiMo6; 34 CrNiMo 6 | 31CrMoV9; 31 CrMoV 9 | 30NiCrMo2-2; 30 NiCrMo 2 2 | 30CrNiMo8 | 20MnV6; 20MnVS6; 20 MnV 6 N | 41SiNiCrMoV7-6 |
| | Werkstoff (GERMANY) | 1.6565 | | 1.6523 | 1.5755 | 1.5710 | 1.6582 | 1.8519 | 1.6545 | 1.6580 | 1.5217 | 1.6928 |
| | EN (EUROPE) | 40NiCrMo6 | | 20NiCrMo2-2 | | 36NiCr6 | 34CrNiMo6 | 31CrMoV9 | | | 20MnV6; S460 | |
| | GOST (RUSSIA) | 40Ch2N2MA | 38ChGNM | 20ChGNM | | | 38Ch2N2MA | 30Ch3MF | | | | |
| | JIS (JAPAN) | SNB 24-1; SNB 24-2; SNB 24-3; SNB 24-4; SNB 24-5; SNCM 439 RCH | SNCM 240; SNCM 240 RCH | SNCM 220; SNCM 220 H; SNCM 220 HRCH; SNCM 220 M; SNCM 220 RCH; SNCM 21 H | | SNC 236 | | | | SNCM 431 | | |
| | SS (SWEDEN) | | | 2506 | | | 2541 | | | | | |
| | UNE (SPAIN) | F.1275; 40 NiCrMo 7 | 40 NiCrMo 2 DF; F.1205; F.1204; TO.E | 20 NiCrMo 2; 20 NiCrMo 3-1; F.1522; F.1534 | | | F.1272 | | | 30 CrNi Mo 8 | | |
| | UNI (ITALY) | | 40 NiCrMo 2; 40 NiCrMo 2 KB | 20 NiCrMo 2 | | | 35 NiCrMo 6 KB | | 30 NiCrMo 2 KB | | | |
| | IS (INDIA) | 40Ni2Cr1Mo28 | | 20NiCrMo2 | | | | | | | | |
| | KS REP. OF) (KOREA | SNB 24-1; SNB 24-2; SNB 24-3; SNB 24-4; SNB 24-5 | SNCM 240 | SNCM 220; SNCM 220H | | SNC 236 | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | 40CrNiMoA | | 21NiCrMo2 | 30CrNi3A | 40CrNi | 40CrNiMoA | | | | 20MnV | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| | NF/AFNOR (FRANCE) | E690D | 20 NCD 2; 20NiCrMo2 | | | | 15 CDV 6; 9160/C 33; 9160 C 073 | | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | A514; A514/T-1; K11630 | | | | | | | WC5; A217 grade WC5 | | | E4340; G43406 |
| | BS (UK) | 75 F 70 | | | | | | | | | S 153; S 154 | |
| | DIN (GERMANY) | S700MC; QStE 690 TM | 20NiCrMo2 | 47CrMo4; 47 CrMo 4 | 38MnSiVS5; 38 MnSiVS 5 | 20NiCrMoS2-2; 21NiCrMoS2 | 12CrMoV6-9; 12 CrMoV 6 9 | | G22NiMoCr5-6 | St 145/160 | 32NiCrMo10-4; 32 NiCrMo 10 4 | 30CrMoV9; 30 CrMoV 9 |
| | Werkstoff (GERMANY) | 1.8974; 1.0966 | 1.6522 | 1.2332 | 1.5231 | 1.6526 | 1.7734; 1.7736 | | 1.6760 | 1.8863 | 1.6743 | 1.7707 |
| | EN (EUROPE) | S700MC | 20NiCrMo2 | | | 20NiCrMoS2-2 | 15CrMnMoV5-4-9-3; 4334; FE-WL 1806; FE-PL 52 S | 19MnV6; E470 | | St 145/160 | | 30CrMoV9 |
| | GOST (RUSSIA) | | | | | | | | | | 38ChN3MA | |
| | JIS (JAPAN) | | SNCM 220 H; SNCM 21 H | | | | | | | | | |
| | SS (SWEDEN) | | | | | 92506 | | 2142 | | | | |
| | UNE (SPAIN) | | 20 NiCrMo 2; F.1527 | | | | | | | | F.127 | |
| | UNI (ITALY) | | | | | | 15CrMoV6 | | | | | |
| | IS (INDIA) | | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | 42CrMo ; 42CrMnMo | | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | NF/AFNOR (FRANCE) | | 30 CD 12 | | 30 CD 12 | 40 NCD 3; 35 NCD 5 | 50CrV4RR; 50 CV 4; 51 CV 4 | 30 NC 11 | Z 120 M 12 | 42 CD 4 | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | | | | 9840; G98400 | 6145; 6150; 6150 H; G61500; H61500 | 3435 | A128 Grade A; J91109; J91129; J91139; J91149 | 4142; G41420 | 4140 H; 4140 RH; 4140 HT | |
| | BS (UK) | 897 M 39 | 722 M 24 | | 722 M 24 | 817 M 37; 816 M 40 | 735 A 50; 735 A 51; 735 H 51; 735 M 50; En 47 | | BW 10 | 708 M 40 | | |
| | DIN (GERMANY) | 40CrMoV13-9; 39CrMoV13-9; 39 CrMoV 13 9 | 31CrMo12; 31 CrMo 12 | 58CrV4; 58 CrV 4 | 32CrMo12; 32 CrMo 12 | 36CrNiMo4; 36 CrNiMo 4 | 51CrV4; 50CrV4; 50 CrV 4 | 36NiCr10; 36 NiCr 10 | X120Mn12; X 120 Mn 12; G-X120 Mn 12 | 47CrMo4 | 42CrMo4+QT | 21MnCr6-5 |
| | Werkstoff (GERMANY) | 1.8523 | 1.8515 | 1.8161 | 1.7361 | 1.6511 | 1.8159 | 1.5736 | 1.3401; 1.3403 | 1.2332 | | 1.8705 |
| | EN (EUROPE) | 40CrMoV13-9 | 31CrMo12; 40B | | 32CrMo12 | 36CrNiMo4 | 51CrV4 | | | 47CrMo4 | | |
| | GOST (RUSSIA) | | | | | 40ChGNM; 40ChN2MA | 50ChFA; 50ChGFA | | 110G13L | | | |
| | JIS (JAPAN) | | | | | SUP 10 | SUP 10; SUP 10-CSP; SUP 10 M | SNC 631; SNC 631 H; SNC 631 M | SCMnH 1; SCMnH 11 | SCM; SCM 440 | | |
| | SS (SWEDEN) | | 2240 | | 2240 | | 2230 | | 2183 | 2244 | | |
| | UNE (SPAIN) | | F.1712; F.124.A | | F.124.A | F.128; F.1280; 35 NiCrMo 4 | F.143; F.143.A; 51 CrV 4; F.1430 | | F.240.A; F.240.A1; AM-X 120 Mn 12; F.8251 | 42 CrMo 4 | | |
| | UNI (ITALY) | 36 CrMoV 12 | 32 CrMo 12 | | 30 CrMo 12 | 39 NiCrMo 4; 39 NiCrMo 4 KB | 50 CrV 4 | | GX 120 Mn 12 | 42 CrMo 4 | | |
| | IS (INDIA) | | | | | | T50Cr1V23 | | | | | |
| | KS REP. OF) (KOREA | | | | | SPS 10 | SPS 10 | | SCMnH 1, SCMn H 11 | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | 40CrNiMo | 50CrVA | 20CrNi3A | ZGMn13 | 42CrMo; 42CrMnMo | 42CrMo; 42CrMnMo | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | NF/AFNOR (FRANCE) | 45 SCV 6 | | | | | | 42 C 2; 45 C 2 | | | | | 16 NCD 17 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | | | | | | 5045; 5046; 5150; 5150 H; G50460; G51500; H51500 | | | | | |
| | BS (UK) | | | | 830 M 31 | | | | | | | | 5 S.82; 835 H 15; 835 N 15; En 39 B |
| | DIN (GERMANY) | 45SiCrV6; 45 SiCrV 6 | S890Q | 45B2 | 31NiCrMo13-4 | 35NiCr18 | 17MnCr5-3 | 46Cr2; 46 Cr 2; 45 Cr 2 | 62SiMnCr4; 62 SiMnCr 4 | 48CrMoV6-7; 48 CrMoV 6 7 | 65MnCrMo4; 65 MnCrMo 4 | 80CrV2; 80 CrV 2; 80 CrV 2 3 | 15NiCrMo16-5; 15 NiCrMo 16 5 |
| | Werkstoff (GERMANY) | 1.2249 | 1.8940 | 1.5513 | 1.6659 | 1.5864 | 1.8715 | 1.7006; 1.7005 | 1.2101 | 1.2323 | 1.2309 | 1.2235; 1.2236 | 1.6723 |
| | EN (EUROPE) | | S890Q | | | | 17MnCr5-3 | 46Cr2 | | | | 80CrV2 | |
| | GOST (RUSSIA) | | | | | | | | | | | 8ChF; 9ChF | |
| | JIS (JAPAN) | | | | | | | | | | | | |
| | SS (SWEDEN) | | | | 2534 | | | | | | | | |
| | UNE (SPAIN) | | | | F.270 | | | | | | | F.520.J | F.156 |
| | UNI (ITALY) | | | | | | | 45 Cr 2 | | | | | |
| | IS (INDIA) | | | | | 30Ni4Cr1 | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | 4SiCrV | | | | | | 50Cr | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | NF/AFNOR (FRANCE) | 55 NCDV 7; 55 NiCrMoV7 | 9 Ni; Z 8 N 09 | Z 18 N 5; Z 10 N 05; 5 Ni | Z 200 CD 12; Z 210 CW 12-01; X210CrW12-1 | X 40 CrMoV 5; Z 40 CDV 5 | X 100 CrMoV 5; Z 100 CDW 5 | Z 30 WCV 9 | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | L6; T61206 | K71340; K81340 | 2515; A2515; 2517; E2517; K41583 | D4; T30404; D6; T30406 | H13; T20813 | A2; T30102 | H21; T20821 | | |
| | BS (UK) | | 1501-509; 1501-510; 502-650; 509-690 | | BD6 | BH 13 | BA 2 | BH 21 | | |
| | DIN (GERMANY) | 55NiCrMoV7; 56 NiCrMoV 7 | X8Ni9 | X12Ni5; 12Ni19; | X210CrW12; X 210 CrW 12 | X40CrMoV5-1; X40 CrMoV 5 1 | X100CrMoV5; X100CrMoV5-1; X 100 CrMoV 5 1 | X30WCrV9-3; X30WCrV9 3 | X165CrMoV12; X 165 CrMoV 12 | X36CrMo17; X38CrMo16 |
| | Werkstoff (GERMANY) | 1.2714 | 1.5662 | 1.5680 | 1.2436 | 1.2344 | 1.2363 | 1.2581 | 1.2601 | 1.2316 |
| | EN (EUROPE) | 55NiCrMoV7 | X8Ni9 | X12Ni5 | X210CrW12 | X40CrMoV5-1 | X100CrMoV5 | X30WCrV9-3; X30WCrV9 3 | X165CrMoV12 | X38CrMo16 |
| | GOST (RUSSIA) | 5ChGNM | | | | 4Ch5MF1S | | 3Ch2W8F | | |
| | JIS (JAPAN) | SKT 4 | SL9N520; SL9N590; STBL 690; STPL 690; SL9N53; SL9N60; STBL 70; STPL 70 | SL5N590; SL5N60 | SKD 2 | SKD 61 | SKD 12 | SKD 5 | | |
| | SS (SWEDEN) | | | | 2312 | 2242 | 2260 | | 2310 | |
| | UNE (SPAIN) | F.520.B; 55 NiCrMoV 7; F.5307 | F.2645; XBNi 09 | | F.5213; X210 CrW 12 | F.5318; X 40 CrMoSiV 5 | F.536; F.5227; X 100 CrMoV 5 | F.5323; X 30 WCrV 9 | | |
| | UNI (ITALY) | 55 NiCrMoV 7 KU; 56 NiCrMoV 7 KU | X 10 Ni 9; X 12 Ni 09 | | X 215 CrW 12 1 KU | X 40 CrMoV 5 1 1 KU | X 100 CrMoV 5 1 KU | X 30 WCrV 9 3 KU | X165CrMoW12KU | |
| | IS (INDIA) | | | | | | | | | |
| | KS REP. OF) (KOREA | STF 4 | SL9N590; SL9N520 | | | STD 61 | STD 12 | STD 5 | | |
| | GB/YB/JB/ SY/NB (PRC) | 5CrNiMo | | | | 40CrMoV5 | Cr5Mo1V | 3Cr2W8V | Cr12MoV | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | NF/AFNOR (FRANCE) | Z 85 WDCV 06-05-04-02; 6-5-2; HS6-5-2 | Z 38 CDV 5; X38CrMoV | Z 35 CWDV 5; X35CrWMoV5 | X 160 CrMoV 12; Z 160 CDV 12 | Z 35 V CD 17.S | 20 MC 5 | 45 NCD 16 | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | M2; T11302 | H11; T20811 | H12; T20812 | D2; T30402 | | | | |
| | BS (UK) | BM 2; BM2 | BH 11 | BH 12 | BD 2 | | | | |
| | DIN (GERMANY) | HS6-5-2; HS 6-5-2; S 6-5-2 | X37CrMoV5-1; X38CrMoV5-1 | X37CrMoW5-1; X 37 CrMoW 5 1; X35CrWMoV5; X 35 CrWMoV 5 | X153CrMoV12; X155CrVMo12-1; X155 CrVMo 12 1 | X33CrS16; X 33 CrS 16 | 21MnCr5; 21 MnCr 5 | X45NiCrMo4; 45NiCrMo16; X 45 NiCrMo 4 | X19NiCrMo4; X 19 NiCrMo 4; GX19NiCrMo4 |
| | Werkstoff (GERMANY) | 1.3343 | 1.2343 | 1.2606; 1.2605 | 1.2379 | 1.2085 | 1.2162 | 1.2767 | 1.2764 |
| | EN (EUROPE) | HS6-5-2 | X37CrMoV5-1 | X37CrMoW5-1; X35CrWMoV5 | X153CrMoV12 | X33CrS16 | 21MnCr5 | X45NiCrMo4 | X19NiCrMo4 |
| | GOST (RUSSIA) | R6M5 | 4Ch5MFS | | | | | | |
| | JIS (JAPAN) | SKH 51 | SKD 6 | SKD 62 | SKD 10; SKD 11 | | | | |
| | SS (SWEDEN) | 2722 | | | 2310 | | | | |
| | UNE (SPAIN) | F.550.A; F.5604 | F.520.G; F.5137; X 37 CrMoSiV 5 | F.537 | F.520.A | | | | |
| | UNI (ITALY) | | X 37 CrMoV 5 1 KU | X 35 CrMoW 05 KU | X 155 CrVMo 12 1 KU | | | 40 NiCrMoV 8 KU | |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | SKH 51 | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | W6Mo5Cr4V2 | 4Cr5MoVS | 4Cr5W2VSi | Cr12MoV | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | NF/AFNOR (FRANCE) | X200Cr12; Z 200 C 12 | | | | 80 DCV 40; 80MoCrV42-16 | | | Z 120 WDCV 06-05-04-03; HS6-5-3; Z 120 WDCV 06-05-04-04; HS6-5-4 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | D3; T30403 | | | 501; 502; S50100; S50200; K41545; SA213 T5 | M50; T11350 | K91231; AMS 6278 | S7; T41907 | M3 Class 2; T11323 |
| | BS (UK) | BD 3 | | | | | | | |
| | DIN (GERMANY) | X210Cr12; X 210 Cr 12 | X38CrMoV5-3; X 38 CrMoV 5 3 | 27NiCrMoV15-6; 26NiCrMoV14-5; 26 NiCrMoV 14 5 | X12CrMo5; X 11 CrMo 5; 12CrMo19-5; 12 CrMo 19 5; X16CrMo5-1 | 80MoCrV42-16; 80 MoCrV 42 16 | M50NiL | 50CrMoV13-4; 50 CrMoV 13 4; 50CrMoV13-15 | HS6-5-3; HS 6-5-3; S 6-5-3 |
| | Werkstoff (GERMANY) | 1.2080 | 1.2367 | 1.6957 | 1.7362; 1.7366 | 1.3551 | 1.3590 | 1.2357; 1.2355 | 1.3344 |
| | EN (EUROPE) | X210Cr12 | X38CrMoV5-3 | | X12CrMo5; X16CrMo5-1 | 80MoCrV42-16 | 13MoCrNiV42-16-14 | 50CrMoV13-15 | HS6-5-3 |
| | GOST (RUSSIA) | Ch12 | | | | | | | |
| | JIS (JAPAN) | SKD 1 | | | SCMV 6; SFVA F 5 A; SFVA F 5 B; SFVA F 5 C; SFVA 5 D; SNB 5 Class 1; STBA 29; STFA 25; STPA 25 | | | | SKH 52; SKH 53 |
| | SS (SWEDEN) | | | | | | | | 2725 |
| | UNE (SPAIN) | F.521; F.5212; X 210 Cr 12 | | | F.240.B; TU.J | 80 MoCrV 40-16; F.1351 | | | F.5605; 6-5-3 |
| | UNI (ITALY) | X 205 Cr 12 KU | | | | | | | |
| | IS (INDIA) | T215Cr12 | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | Cr12 | | | 1Cr5Mo | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | |
|---|---|---|---|---|---|---|---|
| | | 10 | 11 | 11 | 11 | 11 | 11 |
| | NF/AFNOR (FRANCE) | | | Z 110 WKCDV 07-05-04-04-02 | Z 110 DKCWV 09-08-04-02-01; 2-9-1-8; HS2-9-1-8 | Z 130 WKCDV 10-10-04-04-03; 10-4-3-10; HS10-4-3-10 | HS12-1-4-5 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | M33; T11333; M34; T11334 | M41; T11341 | M42; T11342 | | T15; T12015 |
| | BS (UK) | | BM 34 | | BM 42 | BT 42 | BT 15 |
| | DIN (GERMANY) | HS6-5-3C; HS 6-5-3 C | HS2-9-2-8; S 2-9-2-8 | HS7-4-2-5; S 7-4-2-5 | HS2-10-1-8; S 2-10-1-8 | HS10-4-3-10; S 10-4-3-10 | HS12-1-4-5; S 12-1-4-5 |
| | Werkstoff (GERMANY) | 1.3345 | 1.3249 | 1.3246 | 1.3247 | 1.3207 | 1.3202 |
| | EN (EUROPE) | HS6-5-3C | | HS7-4-2-5 | HS2-10-1-8 | HS10-4-3-10 | |
| | GOST (RUSSIA) | | | | | R12F3K10M3-SCh | R13F4K5 |
| | JIS (JAPAN) | | | | SKH 59 | SKH 57 | |
| | SS (SWEDEN) | | | | 2716 | | |
| | UNE (SPAIN) | | 2-9-2-8; F.5611 | F.5615; HS 7-4-2-5 | F.5617; HS 2-10-1-8 | F.550.B; F.5553; HS 10-4-3-10 | F.5563; HS 12-1-5-5 |
| | UNI (ITALY) | | | | HS 2-9-1-8 | HS 10-4-3-10 | HS 12-1-5-5 |
| | IS (INDIA) | | | | | | |
| | KS REP. OF) (KOREA | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | W7Mo4Cr4V2Co5 | W2Mo9Cr4VCo8 | | W12Cr4V5Co5 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| | NF/AFNOR (FRANCE) | 6-5-2-5; 6-5-2-5 HC; HS6-5-2-5; HS6-5-2-5HC; Z 85 WDKCV 06-05-05-04-02; Z 90 WDKCV 06-05-05-04-02 | Z 100 DCWV 09-04-02-02; 2-9-2; HS2-9-2 | Z 80 WKCV 19-05-04-01; HS 18-1-1-5 | 18-0-1; HS 18-0-1; Z 80 WCV 18-04-01 | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | M7; T11307 | T4; T12004 | T1; T12001 | HY 130; UNS K51255 | H19; T20819 | HY 100; K32045; J42240 |
| | BS (UK) | BM 35 | | BT 4 | BT 1 | | | |
| | DIN (GERMANY) | HS6-5-2-5; S 6-5-2-5 | HS2-9-2; S 2-9-2 | HS18-1-2-5; S 18-1-2-5 | HS18-0-1; S 18-0-1 | X10NiMoCrV6 | 38CrCoWV18-17-17; 38 CrCoWV 18 17 17 | 20NiCrMo14-6; G19NiCrMo12-6; GS-19 NiCrMo 12 6 |
| | Werkstoff (GERMANY) | 1.3243 | 1.3348 | 1.3255 | 1.3355 | | 1.2661 | 1.6742; 1.6783 |
| | EN (EUROPE) | HS6-5-2-5 | HS2-9-2 | HS18-1-2-5 | HS18-0-1 | | 38CrCoWV18-17-17 | |
| | GOST (RUSSIA) | R6M5K5 | | | R18 | | | 12ChN3MD; 12ChN3MDF; AB2 |
| | JIS (JAPAN) | SKH 55 | SKH 58 | SKH 3 | SKH 2 | | | |
| | SS (SWEDEN) | 2723 | 2782 | | 2750 | | | |
| | UNE (SPAIN) | F.550.C; F.5613; HS 6-5-2-5 | F.5607; HS 2-9-2 | F.5530; HS 18-1-1-5 | F.5520; HS 18-0-1 | | | |
| | UNI (ITALY) | HS 6-5-2-5 | HS 2 9 2 | HS 18-1-1-5 | HS 18-0-1 | | | |
| | IS (INDIA) | | | T75W18Co6Cr4V1Mo75 | | | | |
| | KS REP. OF) (KOREA | SKH 55 | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | W2Mo9Cr4V2 | W18Cr4VCo5 | W18Cr4V | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 |
| | NF/AFNOR (FRANCE) | | Z 2 CN 18-10 M | | | | Z 13 CF 17 | Z 12 CAS 18 | | Z 8 CD 17-01 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | M62, T11362 | K92710 | K92890; AMS 6512 | K93120; AMS 6514 | K93540; AMS 6515 | 430 F; S43020 | | | 434; S43400 |
| | BS (UK) | | | BS S162 | | | | | | 434 S 17 |
| | DIN (GERMANY) | | X2NiCoMo18-8-5 | X2NiCoMo18-9-5; X2NiCoMo18-8-5 | X2NiCoMo18-8-5 | X2NiCoMo18-12; X2NiCoMoTi18-12-4 | X12CrMoS17; X 12 CrMoS 17 | X10CrAlSi18; X10CrAl18 | X10CrAlSi13; X10CrAl13; X 10 CrAl 13 | X6CrMo17-1; X 6 CrMo 17 1 |
| | Werkstoff (GERMANY) | | 1.636 | 1.6358; 1.6359 | 1.6354; 1.6359 | 1.6355; 1.6356 | 1.4104 | 1.4742 | 1.4724 | 1.4113 |
| | EN (EUROPE) | HS 6-10-2 | X2NiCoMo18-8-5 | X2NiCoMo18-8-5 | X2NiCoMo18-8-5 | | X12CrMoS17 | X10CrAlSi18 | X10CrAlSi13 | X6CrMo17-1 |
| | GOST (RUSSIA) | | | | | | | 15Ch18SJu | 10Ch13SJu | |
| | JIS (JAPAN) | | | | | | SUS 430 F | SUS 21 | | SUS 434 |
| | SS (SWEDEN) | | | | | | 2383 | | | 2325 |
| | UNE (SPAIN) | | | | | | F.3413 | F.3113; X 10 CrAl 18 | F.3152; X 10 CrAl 13 | F.3116 |
| | UNI (ITALY) | | | | | | X 10 CrS 17 | | X 10 CrAl 12 | |
| | IS (INDIA) | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | STS 434 |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | Y1Cr17 | Cr17 | 1Cr13SiAl | 1Cr17Mo |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| | NF/AFNOR (FRANCE) | Z 80 CSN 20-02 | Z 10 CAS 24 | Z 8 C 13 FF | X 89 CrMoV 18-1 | Z 8 C 12 | Z 10 C 13; Z 13 C 13 | Z 8 CA 12 | Z 11 CF 13 | | Z 8 C 17 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | HNV-6; HNV6; S65006 | 446; S44600 | 429; S42900 | 440B; S44003 | 410S; 403; S41008; S40300 | 410; S41000; S41001; CA-15; ASTM A182 Fa | 405; S40500 | 416; S41600 | | 430; S43000 |
| | BS (UK) | 443 S 65 | | | | 403 S 17 | 410 S 21; ANC 1 grade A; En 56 A | 405 S 17 | 416 S 21; En 56 AM | | 430 S 17; 430 S 15; 430 S 18 |
| | DIN (GERMANY) | X80CrNiSi20; X 80 CrNiSi 20 | X10CrAlSi25; X10CrAl24; X 10 CrAl 24 | X7Cr14; X 7 Cr 14; G-X 7 Cr 13 | X90CrMoV18 | X6Cr13; X 6 Cr 13 | X12Cr13; GX12Cr13; X 12 Cr 13; X 10 Cr 13 | X6CrAl13; X 6 CrAl 13 | X12CrS13; X 12 CrS 13 | X8Cr17 | X6Cr17; X 6 Cr 17 |
| | Werkstoff (GERMANY) | 1.4747 | 1.4762 | 1.4001 | 1.4112 | 1.4000 | 1.4006 | 1.4002 | 1.4005 | 1.4015 | 1.4016 |
| | EN (EUROPE) | | X10CrAlSi25 | X7Cr14 | X90CrMoV18 | X6Cr13 | X13Cr13 | X6CrAl13 | X12CrS13 | | X6Cr17 |
| | GOST (RUSSIA) | | | | | 08Ch13 | 12Ch13; 15Ch13L | | | | 12Ch17 |
| | JIS (JAPAN) | SUH 4 | SUH 446 | SUS 4105 | | SUS 403; SUS 403 FB; SUS 410 S | SUS 410; SUS 410 FB; SUS 410 TB; SUS 410 TKA; SUS 410 TKC; SUS F 410-A; SUS F 410-B; SUS F 410-C | SUS 405; SUS 405 TB; SUS 405 TP | SUS 416 | | SUS 430; SUS 430 TB; SUS 430 TKA; SUS 430 TKC; SUS 430 TP |
| | SS (SWEDEN) | | 2322 | | | 2301 | 2302 | | 2380 | | 2320 |
| | UNE (SPAIN) | F.320B | F.3154 | | SUS 440B | F.3110 | F.3401 | F.3111 | F.3411 | | F.310.D; F.3113 |
| | UNI (ITALY) | X 80 CrSiNi 20 | | | | X 6 Cr 13 | X 12 Cr 13 KG; X 12 Cr 13 KW | X 6 CrAl 13 | X12 CrS 13 | | X 8 Cr 17 |
| | IS (INDIA) | X80Cr20Si2Ni1 | | | | | | | | | |
| | KS REP. OF) (KOREA | STR 1 | STR 446 | | | STS 403 | STS 410 | STS 405 | STS 416 | | STS 430 |
| | GB/YB/JB/ SY/NB (PRC) | | 2Cr25N | MI0Cr18Ni12 | 9Cr18MoV | 1Cr13; 1Cr12 | 1Cr13 | 0Cr13Al | Y1Cr13 | | 1Cr17 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| | NF/AFNOR (FRANCE) | Z 20 C 13 M | Z 33 C 13 Cl; Z 33 C 13; Z 30 C 13 | | | Z 4 CT 17 | Z 12 C 25 | Z 4 CNb 17 | Z 3 CT 12 | Z 6 CND 16-04-01 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | 420F; S42020 | | | 439; 430 Ti; S43035; S43036; XM 8 | 446-1 | | 409; S40900 | |
| | BS (UK) | ANC 1 grade B; ANC 1 grade C; 420 C 24; 420 C 29 | 420 S 37; 420 S 45; En 56 C; En 56 D | 452 C 11 | | | | | LW 19; 409 S 19 | |
| | DIN (GERMANY) | GX20Cr14 | X30Cr13; X 30 Cr 13 | GX120Cr29; G-X 120 Cr 29 | X20CrMo13; X 20 CrMo 13 | X3CrTi17; X 6 CrTi 17 | X18CrN28 | X3CrNb17; X 6 CrNb 17 | X2CrTi12; X 6 CrTi 12 | X4CrNiMo16-5-1; X 4 CrNiMo 16 5 |
| | Werkstoff (GERMANY) | 1.4027 | 1.4028 | 1.4086 | 1.4720 | 1.4510 | 1.4749 | 1.4511 | 1.4512 | 1.4418 |
| | EN (EUROPE) | | X30Cr13 | | | X3CrTi17 | X18CrN28 | X3CrNb17 | X2CrTi12 | X4CrNiMo16-5-1 |
| | GOST (RUSSIA) | 20Ch13L | 30Ch13 | | | 08Ch17T | | | | |
| | JIS (JAPAN) | SCS 2 | SUS 420 F; SUS 420 J 2; SUS 420 J 2-CSP; SUS 420 J 2 FB; SUS 420 J 2 TKA | | | SUS 430 LX; SUS 430 LXTB; SUS XM8TB | | SUS 430 LX; SUS 430 LXTB | SUH 409 L; SUS 409 LTB; SUS 409 TB | |
| | SS (SWEDEN) | | 2304 | | | | | | | 2387 |
| | UNE (SPAIN) | | F.3403 | | | F.3115; X 5 CrTi 17 | | F.3122; X 5 CrNb 17 | F.3121 | |
| | UNI (ITALY) | | X 30 Cr 13 | | | X 6 CrTi 17 | | X 6 CrNb 17 | X 6 CrTi 12 | |
| | IS (INDIA) | | X30Cr13 | | | | | | | |
| | KS REP. OF) (KOREA | | STS 420J2 | | | STS 430LX | | STS 430LX | SUH 409 | |
| | GB/YB/JB/ SY/NB (PRC) | ZG2Cr13 | 3Cr13 | | | 1Cr17Ti | | 1Cr17 | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 12 | 12 | 12 | 13 | 13 | 13 | 13 | 13 |
| | NF/AFNOR (FRANCE) | Z 20 C 13 Cl; Z 20 C 13 | TU Z 10 CDVNA 49-213; TU Z 10 CDVNA 49-219 | Z 3 CDT 18-02; Z 3 CDT 18-2 | Z 40 C 14 Cl; Z 40 C 14 | | Z 20 CDNbV 11 | Z 20 C 13 Cl; Z 20 C 13 | Z 44 C 14 Cl; Z 44 C 14; Z 38 C 13 M |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 420; S42000 | K91560; K90901; P91; F91; T91 | 443; 444; S44300; S44400 | 420; S42000; S42080 | | | 420; S42000 | 420; S42000 |
| | BS (UK) | 420 S 37; 420 S 29; En 56 C | | | | BS 762 | | 420 S 37; 420 S 29; En 56 C | |
| | DIN (GERMANY) | X20Cr13; X 20 Cr 13 | X10CrMoVNb9-1; X 10 CrMoVNb 9 1 | X2CrMoTi18-2; X 2 CrMoTi 18 2 | X39Cr13; X 38 Cr 13 | X20CrMoV11-1; X20CrMoV12-1; X 20 CrMoV 12 1 | X22CrMoV12-1; X21CrMoNiV12-1; X 22 CrMoV 12 1 | X20Cr13; X 20 Cr 13 | X46Cr13; X 46 Cr 13 |
| | Werkstoff (GERMANY) | 1.4021 | 1.4903 | 1.4521 | 1.4031 | 1.4922 | 1.4923; 1.4934 | 1.4021 | 1.4034 |
| | EN (EUROPE) | X20Cr13 | X10CrMoVNb9-1 | X2CrMoTi18-2 | X39Cr13 | X20CrMoV11-1; X20CrMoV12-1 | X22CrMoV12-1; X21CrMoNiV12-1 | X20Cr13 | X46Cr13 |
| | GOST (RUSSIA) | 20Ch13 | | | 40Ch13 | | 18Ch11MNFB; EP 291; 2Ch11MFBN | 20Ch13 | 40Ch13 |
| | JIS (JAPAN) | SUS 420 J 1; SUS 420 J 1 FB; SUS 420 J 1 TKA | | SUS 444; SUS 444 TB; SUS 444 TP | SUS 420 J 2 | | | SUS 420 J 1; SUS 420 J 1 FB; SUS 420 J 1 TKA | |
| | SS (SWEDEN) | 2303 | | 2326 | 2304 | 2317 | | 2303 | |
| | UNE (SPAIN) | F.310.J; F.3402 | | F.3123; X 2 CrMoTiNb 18 2 | F.3404; X40 Cr 13 | | | F.310.J; F.3402; X 20 Cr 13 | F.3405; X 40 Cr 13 |
| | UNI (ITALY) | X 20 Cr 13 | | | X 40 Cr 14 | X 20 CrMoNi 12 01 | | X 20 Cr 13 | X 40 Cr 14 |
| | IS (INDIA) | X20Cr13 | | | | | | X20Cr13 | |
| | KS REP. OF) (KOREA | | | STS 444 | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | 2Cr13 | | 1Cr15 | 3Cr13 | | | 2Cr13 | 4Cr13 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| | NF/AFNOR (FRANCE) | Z 15 CN 16.02 Cl; Z 15 CN 16-02 | Z 6 CN 13-04; Z 6 CN 13-4; Z 4 CND 13.4 M | | | Z 45 CS 9 | X40Cr14; Z 40 C 14 | Z 4 CND 13 4 M | MARVAL X12H |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 431; S43100 | 415; CA 6-NM; S41500; J91540; ASTM A182 F6NM | | 422; HNV 8; S42200 | HNV 3; S65007 | | CA 6-NM; J91540 | S10120; AMS 5935 |
| | BS (UK) | 431 S 29; En 57 | | | | 401 S 45; En 52 | | 425 C 11; 425 C 12 | |
| | DIN (GERMANY) | X17CrNi16-2; X 20 CrNi 17 2; X 22 CrNi 17 | X3CrNiMo13-4; X 4 CrNi 13 4 | X39CrMo17-1; X 35 CrMo 17 | X20CrMoWV12-1; X 20 CrMoWV 12 1 | X45CrSi9-3; X 45 CrS 9 3; G-X 45 CrNi 9 3 | X40Cr14; X 42 Cr 13 | GX4CrNi13-4; G-X 5 CrNi 13 4 | X1CrNiMoAlTi 12-10-2; X 1 CrNiMoAlTi 12 10 2 |
| | Werkstoff (GERMANY) | 1.4057 | 1.4313 | 1.4122 | 1.4935 | 1.4718 | 1.2083; 1.2083 ESR | 1.4317 | 1.4596 |
| | EN (EUROPE) | X17CrNi16-2 | X3CrNiMo13-4 | X39CrMo17-1 | X20CrMoWV12-1 | X45CrSi9-3 | X40Cr14 | GX4CrNi13-4 | X1CrNiMoAlTi 12-10-2 |
| | GOST (RUSSIA) | 14Ch17N2; 20Ch17N2 | | | | 40Ch9S2; 4Ch9S2 | | | |
| | JIS (JAPAN) | SUS 431; SUS 431 FB | | | | SUH 1 | SUS 420 J 2 | SCS 6; SCS 6X | |
| | SS (SWEDEN) | 2321 | 2384 | | | | 2314 | | |
| | UNE (SPAIN) | F.313; F.3427; X 19 CrNi 17 2 | | | | F.322; F.3220 | F.5263; X 40 Cr 13 | | |
| | UNI (ITALY) | X16 CrNi 16 | | X 39 CrMo 17-1 | | X 45 CrSi 8 | X 41 Cr 13 KU | GX 6 CrNi 13 04 | |
| | IS (INDIA) | | | | | X45Cr9Si3 | | | |
| | KS REP. OF) (KOREA | STS 431 | | | | STR 1 | | | |
| | GB/YB/JB/ SY/NB (PRC) | 1Cr17Ni2 | | | | 4Cr9Si2 | 3Cr13 | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No 13 | 13 | Material Group No 14 | 14 | 14 | 14 | 14 | 14 |
|---|---|---|---|---|---|---|---|---|---|
| | NF/AFNOR (FRANCE) | Z 100 CD 17 Cl; Z 100 CD 17 | | Z 6 CNT 18-10 | | Z 6 CND 17-11; Z 6 CND 17-11-02-FF; Z 7 CND 17-11-02; Z 7 CND 17-12-02 | Z20CNS25.04 | Z 10 CN 18.9 M | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 440C; S44004; S44025 | | 321; S32100 | | 316; 316H; 316 H; S31600; S31609 | | J92701 | |
| | BS (UK) | | | 321 S 31; LW 18; LW 24; LWCF 18; LWCF 24; 321 S 12; 321 S 50; 321 S 51; 321 S 50-490; 1010; 1115 | | 316 S 31; 316 S 33; 316 S 17; 316 S 19; 316 S 40; 316 S 41; 845 | | ANC 3 grade A; ANC 3 A; 302 C 25 | |
| | DIN (GERMANY) | X105CrMo17; X105 CrMo 17 | GX4CrNiMo16-5-1; G-X 5 CrNiMo 15 5 | X6CrNiTi18-10 | X2CrNiMo18-13-3 | X5CrNiMo17-12-2; X 5 CrNiMo 18 10 | X20CrNiSi25-4 | GX10CrNi18-8 | GX7CrNiMoCuNb18-18; G-X 7 CrNiMoCuNb 18 18 |
| | Werkstoff (GERMANY) | 1.4125 | 1.441 | 1.4541 | 1.4425 | 1.4401 | 1.4821 | 1.4312 | 1.4585 |
| | EN (EUROPE) | X105CrMo17 | | X6CrNiTi18-10 | | X5CrNiMo17-12-2 | X20CrNiSi25-4 | | |
| | GOST (RUSSIA) | 95Ch18; 110Ch18M-SchD | | 06Ch18N10T; 08Ch18N10T; 09Ch18N10T; 12Ch18N10T | | 08Ch16N11M3 | | 10Ch18N9L | |
| | JIS (JAPAN) | SUS 440 C | | SUS 321 | | SUS 316; SUS 316 A; SUS 316 FB; SUS 316 HFB; SUS 316 HTB; SUS 316 HTP; SUS 316 TB; SUS 316 TBS | | SCS 12; SCS 13A | |
| | SS (SWEDEN) | | | 2337 | | 2347 | | | |
| | UNE (SPAIN) | | | F.332; F.3523; X 6 CrNiTi 18 10 | | F.310.A; F.3534; X 5 CrNiMo 17 12 2 | | | |
| | UNI (ITALY) | | | X 6 CrNiTi 18 11; X 6 CrNiTi 18 11 KG; X 6 CrNiTi 18 11 KW; X 6 CrNiTi 18 11 KT | | X 5 CrNiMo 17 12; X 5 CrNiMo 17 12 KG; X 5 CrNiMo 17 12 KW | | | X 6 CrNiMoTi 17 12 |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | STS 321 | | STS 316 | | SSC 13A | |
| | GB/YB/JB/ SY/NB (PRC) | 9Cr18 | | 1Cr18Ni9Ti | | 0Cr17Ni12Mo2 | | ZG0Cr18Ni9Ti | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | Z 4 CNNb 19.10 M; Z 6 CNNb 18.10 M | 23 NCDU 25.20 M | Z 4 CN 19-10 FF; Z 5 CN 17-08; Z 6 CN 18-09; Z 7 CN 18-09 | Z 1 CN 18-12; Z 2 CN 18-10; Z 3 CN 19.10 M; Z 3 CN 18-10; Z 3 CN 19-11; Z 3 CN 19-11 FF | Z 6 CN 18.10 M; Z 6 CN 19.9 M | Z 10 CND 18.9 M | Z 12 CMN 17-07 Az |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 347; J92640; J82710 | | 304; S30400 | 304L; 304 L; S30403; J92500; J92600 | 304H; 304 H; CF-8; J92590; J92600; J92650; J92710 | J92701 | 201; S20100 |
| | BS (UK) | 347 C 17; 821 grade Nb | | 304 S 15; 304 S 31; LW 13; LW 15; LW 21; LWCF 13; LWCF 15; 302 S 17; 304 S 16; 304 S 17; 304 S 40 | 304 S 11; LW 20; LWCF 20; S.536; T.74; 304 C 12; 305 S 11 | 304 C 15 | ANC 3 grade A; ANC 3 A; 3025 S 25 | |
| | DIN (GERMANY) | GX5CrNiNb19-11; G-X 5 CrNiNb 18 9 | GX7NiCrMoCuNb25-20; G-X 7 NiCrMoCuNb 25-20 | X5CrNi18-10; X 5 CrNi 18 9 | X2CrNi19-11; GXCrNi19-11 | GX5CrNi19-10; G-X 6 CrNi 18 9 | GX10CrNi18-8; G-X 10 CrNi 18 8 | X12CrMnNiN17-7-5 |
| | Werkstoff (GERMANY) | 1.4552 | 1.4500 | 1.430 | 1.4306; 1.4309 | 1.4308 | 1.4312 | 1.4372 |
| | EN (EUROPE) | GX5CrNiNb19-11 | | X5CrNi18-10 | X2CrNi19-11; GXCrNi19-11 | GX5CrNi19-10; 58E | GX10CrNi18-8 | X12CrMnNiN17-7-5 |
| | GOST (RUSSIA) | | | 08Ch18N10 | 03Ch18N11 | 07Ch18N9L | 10Ch18N9L | |
| | JIS (JAPAN) | SCS 21; SCS 21 X | | SUS 304; SUS 304 A; SUS 304-CSP; SUS 304 FB; SUS 304 TB; SUS 304 TBS; SUS 304 TKA; SUS 304 TKC | SCS19 | SCS 13; SCS 13 A; SCS 13 X | SCS 12 | SUS 201 |
| | SS (SWEDEN) | | | 2333; 2332 | 2352 | | | |
| | UNE (SPAIN) | AM-X 7 CrNiNb 20 10; F.8413 | | F.3504; X 5 CrNi 18 10 | F.310.G; F.3503; X 2 CrNi 19 10; AM-X 2 CrNi 19 10; F.8412 | AM-X 7 CrNi 20 10; F.8411 | | |
| | UNI (ITALY) | | | X 5 CrNi 18 10; X 5 CrNi 18 10 KG; X 5 CrNi 18 10 KW; X 5 CrNi 18 10 KT | X 3 CrNi 18 11; X 2 CrNi 18 11; GX 2 CrNi 19 10 | | | |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | | | STS 304 | | | | |
| | GB/YB/JB/ SY/NB (PRC) | ZG1Cr18Ni9Ti | | 0Cr19Ni9 | ZG0Cr18Ni9 | ZG1Cr18Ni9 | ZG0Cr18Ni9Ti | 1Cr17Mn6Ni5N |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | Z 6 CND 18-12-03; Z6 CND 18-13; Z 7 CND 18-12-03 | Z 2 CND 17-12; Z 3 CND 17-11-02; Z 3 CND 17-12-02; Z 3 CND 17-12-02 FF; Z 3 CND 18-12-03 | Z 2 CND 17-11 Az | | Z 3 CND 17-12 Az | Z 3 CND 17-12-03; Z 3 CND 18-14-03 | Z 3 CND 18-14-05 Az |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 316; S31600 | 316L; 316 L; S31603; J92700; J92800 | 316LN; 316 LN; S31653 | CF-8M; J92900 | 316LN; 316 LN; S31563 | 316L; 316 L; S31603; J92800 | S31726 |
| | BS (UK) | 316 S 31; 316 S 33; LW 23; LWCF 23; 316 S 19; 316 S 40; 316 S 41; 1.4436 | 316 S 11; 316 S 13; 316 S 14; 316 S 30; S.161; S.537; T.75 | 316 S 61; 316 S 63 | ANC 4 grade B; ANC 4 B; 316 C 16; 845 grade B | 316 S 63 | 316 S 13; 316 S 11; 316 S 14; 316 S 31; LW 22; LWCF 22; 845 B | |
| | DIN (GERMANY) | X3CrNiMo17-13-3; X 5 CrNiMo 17 13 3 | X2CrNiMo17-12-2; X2CrNiMo17-13-2; X 2 CrNiMo 17 12 2; X 2 CrNiMo 17 13 2 | X2CrNiMoN17-11-2; X2CrNiMoN17-12-2; X 2 CrNiMoN 17 12 2 | GX5CrNiMo 19-11-2; G-X 6 CrNiMo 18 10 | X2CrNiMoN17-13-3; X 2 CrNiMoN 17 13 3 | X2CrNiMo18-4-3; X 2 CrNiMo18 14 3 | X2CrNiMoN17-13-5; X 2 CrNiMoN 17 13 5 |
| | Werkstoff (GERMANY) | 1.444 | 1.4404 | 1.4406 | 1.4408 | 1.4429 | 1.4435 | 1.4439 |
| | EN (EUROPE) | X3CrNiMo17-13-3 | X2CrNiMo17-13-2 | X2CrNiMoN17-11-2 | GX5CrNiMo 19-11-2 | X2CrNiMoN17-13-3 | X2CrNiMo18-4-3 | X2CrNiMoN17-13-5 |
| | GOST (RUSSIA) | | | | 07Ch18N10G2S2M2L | | O3Ch17N14M3 | |
| | JIS (JAPAN) | SUS 316; SUS 316 A; SUS 316 FB; SUS 316 TB; SUS 316 TBS; SUS 316 TKA; SUS 316 TKC; SUS 316 TP | SUS 316 L; SUS 316 LFB; SUS 316 LTBS; SUS 316 LTP; SUS 316 F 316 L | SUS 316 LN; SUS F 316 LN | SCS 14; SCS 14 A; SCS 14 X | SUS 316 LN; SUS F 316 LN | SUS 316 L; SUS 316 LFB; SUS 316 LTBS; SUS 316 LTP; SUS F 316 L | |
| | SS (SWEDEN) | 2343 | 2348 | | | 2375 | 2353 | |
| | UNE (SPAIN) | F.3538; X 5 CrNiMo 17 13 3 | F.310.K; F.3533; F.3537 | F.3542; X 2 CrNiMoN 17 12 2 | AM-X 7 CrNiMo 20 10; F.8414 | F.3543; X 2 CrNiMoN 17 13 3 | F.3533-X2 CrNiMo 17 13 2 | F.3544; X 2 CrNiMoN 17 13 5 |
| | UNI (ITALY) | X 5 CrNiMo 17 13; X 8 CrNiMo 17 13 | X 2 CrNiMo 17 12 | X 2 CrNiMoN 17 12 | | X 2 CrNiMoN 17 13 | X 2 CrNiMoN 17 13; X 2 CrNiMoN 17 13 KG; X 2 CrNiMoN 17 13 KW | |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | STS 316 | STS 316L | STS 316LN | SSC 14 | STS 316LN | STS 316L | |
| | GB/YB/JB/ SY/NB (PRC) | 0Cr17Ni12Mo2 | 00Cr17Ni14Mo2 | 00Cr18Ni14Mo2Cu2 | ZG1Cr24Ni20Mo2Cu3 | 0Cr17Ni13Mo | 00Cr17Ni14Mo2 | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | | Z 6 CNDT 17-12 | Z 15 CN 23-13; Z 15 CN 24-13 | | | Z 5 CN 18-09 | Z 4 CNDNb 18.12 M |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 317; S31700 | 316 Ti; S31635 | 309S; 309 S; 309; S30908; S30900 | S30415 | S30815 | 304H; 304 H; S30409; S30480 | |
| | BS (UK) | 317 S 16 | 320 S 31; 320 S 18 | 309 S 24 | | | 304 S 50; 304 S 51; 801 grade A | ANC 4 grade C; ANC 4 C; 318 C 17; 845 grade Nb |
| | DIN (GERMANY) | X3CrNiMo18-12-3 | X6CrNiMoTi17-12-2; X 6 CrNiMoTi 17 12 2 | X12CrNi23-13; X 7 CrNi 23 14 | X4CrNiSiN18-10; X 4 CrNiSiN 18 10 | X9CrNiSiNCe21-11-2; X 8 CrNiSiN 21 11 | X6CrNi18-10; X6CrNi18-11; X 6 CrNi 18 11; | GX5CrNiMoNb19-11-2; G X 5 CrNiMoNb 18 10 |
| | Werkstoff (GERMANY) | 1.4449 | 1.4571 | 1.4833 | 1.4891 | 1.4893 | 1.4948 | 1.4581 |
| | EN (EUROPE) | X3CrNiMo18-12-3 | X6CrNiMoTi17-12-2 | X12CrNi23-13 | X4CrNiSiN18-10 | X9CrNiSiNCe21-11-2 | X6CrNi18-10 | GX5CrNiMoNb19-11-2 |
| | GOST (RUSSIA) | | 08Ch16N11M3T; 08Ch17N13M2T; 10Ch17N13M2T | | | | | |
| | JIS (JAPAN) | SUS 317; SUS 317 TB; SUS 317 TP; SUS F 317 | SUS 316 Ti; SUS 316 TiTB; SUS 316 TiTP | SUS 309 S; SUS 309 S TB; SUS 309 S TP | | | SUS 302 | SCS 22 |
| | SS (SWEDEN) | | 2350 | | 2372 | 2368 | | |
| | UNE (SPAIN) | | F.310.B; F.3535; X 6 CrNiMoTi 17 12 2 | | | | | |
| | UNI (ITALY) | X 5 CrNiMo 18 15 | X 6 CrNiMoTi 17 12; X 6 CrNiMoTi 17 12 KG; X 6 CrNiMoTi 17 12 KW | X 6 CrNi 23 14 | | | | GX 6 CrNiMoNb 20 11 |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | STS 317 | | SSC17 | | | STS 302 | SSC 22 |
| | GB/YB/JB/ SY/NB (PRC) | 1Cr18Ni12Mo3Ti | 1Cr18Ni12Mo2Ti | 1Cr23Ni13 | | | 1Cr18Ni9 | ZG1Cr18Mn8Ni4N |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No 14 | 14 | 14 | 14 | 14 | 14 | 14 |
|---|---|---|---|---|---|---|---|---|
| | NF/AFNOR (FRANCE) | Z 8 CNF 18-09 | Z 1 CN 18-12; Z 3 CN 18-10; Z 3 CN 19-11; Z 3 CN 19-11 FF | Z 11 CN 17-08; Z 11 CN 18-08; Z 12 18-09 | Z 3 CN 18-10 Az; Z 3 CN 18-07 Az | Z 6 CN 18.09 | Z 2 CND 19-15-04; Z 3 CND 19-15-04 | Z 6 CNT 18-10 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 303; S30300 | 304L; 304 L; S30403 | 301; J 230; S30100; S30200 | 304LN; 304 LN; S30453 | 304B1; 304B2; 304B3; 304 B1; 304 B2; 304 B3; S30461; S30462; S30463 | 317L; 317 L; S31703 | 321H; 321 H; S32109 |
| | BS (UK) | 303 S 31 | 304 S 11; LW14; LW 20; LWCF 14; LWCF 20; S.536; T.74; 304 C 12; 304 S 11 | 301 S 21; 301 S 22 | 304 S 61 | 304 S 31 | 317 S 12 | 321 S 31 |
| | DIN (GERMANY) | X8CrNiS18-9; X 10 CrNiS 18 9 | X2CrNi19-11; X 2 CrNi 19 11 | X10CrNi18-8; X 12 CrNi 17 7 | X2CrNiN18-10; X 2 CrNiN 18 10 | X5CrNi18-9 | X2CrNiMo18-15-4; X2 CrNiMo 18 16 4 | X12CrNiTi18-10; X 12 CrNiTi 18-9 |
| | Werkstoff (GERMANY) | 1.4305 | 1.4306 | 1.4310 | 1.4311 | 1.4350 | 1.4438 | 1.4878 |
| | EN (EUROPE) | X8CrNiS18-9; 58M | X2CrNi19-11 | X10CrNi18-8 | X2CrNiN18-10 | 58E | X2CrNiMo18-15-4 | X12CrNiTi18-10; 58B |
| | GOST (RUSSIA) | 30Ch18N11 | 03Ch18N11 | 12Ch18N9 | | | | |
| | JIS (JAPAN) | SUS 303 | SUS 304 L; SUS 304 LFP; SUS 304 LTB; SUS 304 LTBS; SUS 304 LTP; SUS F 304 L | SUS 301; SUS 301-CSP; SUS 302; SUS 302 FB | SUS 304 LN; SUS F 304 LN | | SUS 317 L; SUS 317 LFB; SUS 317 LTB; SUS 317 LTP; SUS F 317 L; SUS Y 317 L | SUS 321; SUS 321 HFB; SUS 321 HTB; SUS 321 HTP; SUS 321 TKA; SUS 321 TP; SUS F 321; SUS Y 321 |
| | SS (SWEDEN) | 2346 | 2352 | 2331 | 2371 | 2332; 2333 | 2367 | 2337 |
| | UNE (SPAIN) | F.310.C; F.3508; X 10 CrNiS 18-09 | F.310.G; F.3503; X 2 CrNi 18 10 | F.3517; X 2 CrNiN 18 10 | F.3541; X 2 CrNiN 18 10 | F.3551 | F.3539; X2 CrNiMo 18 16 4 | F.3553 |
| | UNI (ITALY) | X 10 CrNiS 18 09 | X 2 CrNi 18 11; X 3 CrNi 18 11 | X 12 CrNi 17 07 | X 2 CrNiN 18 11 | X 5 CrNi 18 10 | X 2 CrNiMo 18 16 | X 6 CrNiTi 18.11 |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | STS 303 | STS 304L | STS 302 | STS 304LN | STS 304L | STS 317L | STS 321 |
| | GB/YB/JB/ SY/NB (PRC) | 1Cr18Ni9MoZr | 00Cr19Ni10 | Cr17Ni7 | 00Cr18Ni10N | 0Cr18Ni9 | 00Cr19Ni13Mo | 0Cr18Ni9Ti |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | Z 6 CNNb 18-10 | Z 6 CNDNb 18-12 | | Z 9 CN 24-13; Z 17 CNS 20-12 | Z 15 CNS 25-20 | | Z 10 CNT 18-11; 9160/C 63; 9160C201 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 347; 348; S34700; S34800 | 318; S31803 | | 309; S30900 | 310; 314; S3100; S31400; S31500 | 348; S34800 | |
| | BS (UK) | 347 S 31; ANC 3 grade B; ANC 3 B; 347 S 20; 347 S 40; 347 S 50; 347 S 51 | | | 309 S 24 | 314 S 25 | 2 S.130; 2 S.143; 3 S.144; 3 S.145; S.525; S.527 | S.524; S.526; 2 S 129 |
| | DIN (GERMANY) | X6CrNiNb18-10; X 6 CrNiNb 18 10 | X10CrNiMoNb18-12; X 10CrNiMoNb 18 12 | X1CrNiMoN25-22-2; X 2 CrNiMoN 25 22 7 | X15CrNiSi20-12; X 15 CrNiSi 20 12 | X15CrNiSi25-21; X 15 CrNiSi 25 20 | X5CrNiNb18-10 | |
| | Werkstoff (GERMANY) | 1.4550 | 1.4583 | 1.4465; 1.4466 | 1.4828 | 1.4841 | 1.4546 | 1.4544; 1.4544.9 |
| | EN (EUROPE) | X6CrNiNb18-10; 58F; | | X1CrNiMoN25-22-2 | 58C; X15CrNiSi20-12 | X15CrNiSi25-21 | | FE-PA 13 |
| | GOST (RUSSIA) | 08Ch18N12B | | | 20Ch20N14S2 | 20Ch25N20S2 | | 08Ch18N12T |
| | JIS (JAPAN) | SUS 347; SUS 347 FB; SUS 347 HTB; SUS 347 TB; SUS 347 TKA; SUS 347 TP; SUS F 347 | | | SUH 309; SUS 309 TB; SUS 309 TP | SUH 310; SUS 310 TB; SUS Y 310 | | |
| | SS (SWEDEN) | 2338 | | | | | | |
| | UNE (SPAIN) | F.3524; X 6 CrNiNb 18 10 | | | F.3312; X 15 CrNiSi 20-12 | F.3310; X 15 CrNiSi 25-20 | | |
| | UNI (ITALY) | X 6 CrNiNb 18 11; X 6 CrNiNb 18 11 KG; X 6 CrNiNb 18 11 KW; X 6 CrNiNb 18 11 KT | X 6 CrNiMoNb 20 11 | | X 16 CrNi 23 14 | X 16 CrNiSi 25 20 | | X 6 CrNiTi 18 11 |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | STS 347 | | | | STR 310 | | |
| | GB/YB/JB/ SY/NB (PRC) | 1Cr18Ni11Nb | Cr17Ni12Mo3Mb | | 1Cr20Ni14Si2 | 1Cr25Ni20Si2 | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | | | Z 3 CND 19.10 M | Z 3 CN 19.10 M | | Z 2 CN 18 10 | Z 6 CNU 18 10 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | | 316N; 316 N; J92804 | 304L; 304 L J92500; J92620 | | | 302 HQ; 304 Cu; 304 HQ; XM-7; EV-17; S30430 |
| | BS (UK) | | | | 304 C 12 | | 304 S 12 | 394 S 17 |
| | DIN (GERMANY) | X12CrNi18-9; X 12 CrNi 18 9 | X12CrNi22-12; X 12 CrNi 22 12 | GX2CrNiMo19-11-2; G-X 2 CrNiMo 19 11 2 | GX2CrNi19-11 | GX2CrNiMnMoNNb21-15-4-3; G-X 2 CrNiMnMoNNb 21 15 43 | X2CrNi18-9; X 2 CrNi 18 9 | X3CrNiCu18-9-4; X 3 CrNiCu 18 9 |
| | Werkstoff (GERMANY) | 1.6900 | 1.4829 | 1.4409 | 1.4309 | 1.4569 | 1.431 | 1.457 |
| | EN (EUROPE) | | | GX2CrNiMo19-11-2 | GX2CrNi19-11 | | X2CrNi18-9 | X3CrNiCu18-9-4 |
| | GOST (RUSSIA) | | | | | | | |
| | JIS (JAPAN) | | | SCS 16 A; SCS 16 AX SCS 16 AXN | SCS 19; SCS 19 A | | | SUS XM 7 |
| | SS (SWEDEN) | | | | | | | |
| | UNE (SPAIN) | | | AM-X 2 CrNiMo 19 11; F.8415 | AM-X 2 CrNi 19 10; F.8412 | | | |
| | UNI (ITALY) | | | GX2 CrNiMo 19 11 | GX 2 CrNi 19 10 | | | |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | | | | SSC 19 | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | ZG00Cr18Nice0 | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | | | | Z 5 CN 18-11 FF | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | S21800; AMS 5848 | S20910; XM-19 | S24100; XM-28 | 305; 308; S30500; S30800 | S31630 | | | |
| | BS (UK) | | | | 305 S 17; 305 S 19 | | | | |
| | DIN (GERMANY) | | X2CrNiMnMoNNb21-16-5-3 | | X4CrNi18-12; X 5 CrNi 18 12 | | GX6CrNIMo18-12; G-X 6 CrNIMo 18 12 | GX2CrNIMoM17-13-4 | GX6CrNiMo17-13; G-X 6 CrNiMo 17 13 |
| | Werkstoff (GERMANY) | | 1.396 | | 1.430 | | 1.444 | 1.445 | 1.445 |
| | EN (EUROPE) | | | | X4CrNi18-12 | | | GX2CrNIMoM17-13-4 | |
| | GOST (RUSSIA) | | | | 06Ch18N11 | | | | |
| | JIS (JAPAN) | | | | SUS 305 J 1; SUS 305 | | | | |
| | SS (SWEDEN) | | | | | | | | |
| | UNE (SPAIN) | | | | F.3513; X 8 CrNi 18 12 | | | | |
| | UNI (ITALY) | | | | X 7 CrNi 18 10; X 8 CrNi 19 10 | | | | |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | |
|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | | Z 2 NCDU 25-20 | | Z 8 CN 25-20;<br>Z 12 CN 25-20;<br>Z 12 CN 26-21 | | Z 52 CMN 21-09 Az;<br>Z 53 CMN 21-09 Az |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | J93254;<br>CK3MCuN | 904L;<br>904 L;<br>N08904 | | 310H;<br>310 H;<br>310S;<br>310 S;<br>S31008;<br>S31009 | 254 SMo;<br>S31254;<br>F44 | EV 8;<br>S63008 |
| | BS (UK) | | 904 S 13 | | 310 S 16;<br>310 S 24;<br>310 S 25;<br>310 S 31 | | 349 S 52 |
| | DIN (GERMANY) | GX2CrNiMoCuN20-18-6 | X1NiCrMoCu25-20-5;<br>X 1 NiCrMoCuN 25 20 5 | GX1NiCrMoCuN25-20-5;<br>G-X 1 NiCrMoCuN 25 20 5 | X8CrNi25-21;<br>X 12 CrNi 25 21 | X1CrNiMoN20-18-7 | X53CrMnNiN21-9;<br>X 53 CrMnNiN 21 9 |
| | Werkstoff (GERMANY) | 1.456 | 1.4539 | 1.454 | 1.4845 | 1.4547 | 1.4871 |
| | EN (EUROPE) | GX2CrNiMoCuN20-18-6 | X1NiCrMoCu25-20-5 | | X12CrNi25-21 | X1CrNiMoN20-18-7 | X53CrMnNiN21-9 |
| | GOST (RUSSIA) | | | | 10Ch23N18;<br>20Ch23N18 | | 55Ch20G9AN4 |
| | JIS (JAPAN) | | | | SUS 310 S;<br>SUS 310 FB;<br>SUS 310 STG;<br>SUS 310 STP;<br>SUS310 TB;<br>SYS Y 310 S | | SUH 35;<br>SUH 36 |
| | SS (SWEDEN) | | 2562 | | 2361 | 2378 | |
| | UNE (SPAIN) | | | | F.331 | | F.3217;<br>X 53 CrMnNiN 21-09 |
| | UNI (ITALY) | | | | X 6 CrNi 25 20 (X 6 CrNi 25 20) | | X 53 CrMnNiN 21 9 |
| | IS (INDIA) | | | | | | X53Cr22Mn9Ni4N |
| | KS REP. OF) (KOREA | | | | | | STR 35;<br>STR 36 |
| | GB/YB/JB/ SY/NB (PRC) | | | | 0Cr25Ni20 | | 5Cr2Mn9Ni4N |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | |
|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | Z 6 CND 15-07; 9160/C 65; 9160C 211 | Z 55 CMN 20-08 Az | Z 50 CMNNb 21.09; Z 50 CMNNb 21-09 | Z 53 CMNB 21-09-02 Az | | Z 9 CNA 17-07; Z 8 CNA 17-07 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 632; S15700; 15-7 PH; 15-7PH; AMS 5520; AMS 5657 | EV 12; S63012 | XEV-F; S63019 | | EV 16; S63018 | 631; 17-7PH; 17-7 PH; S17700 |
| | BS (UK) | | | | 352 S 52 | | 301 S 81 |
| | DIN (GERMANY) | X8CrNiMoAl15-7-2; X 7 CrNiMoAl 15-7 | X55CrMoNiN20-8; X 55 CrMoNiN 20 8 | X50CrMnNiNbN21-9 | X53CrMnNiNbN21-9; X 53 CrMnNiNbN 21 9 | X33CrNiMnN23-8; X 33 CrNiMnN 23 8 | X7CrNiAl17-7; X 7 CrNiAl 17 7 |
| | Werkstoff (GERMANY) | 1.4532; 1.4574 | 1.488 | 1.4882 | 1.487 | 1.487 | 1.4568; 1.4564; 1.4504 |
| | EN (EUROPE) | X8CrNiMoAl15-7-2 | X55CrMoNiN20-8 | X50CrMnNiNbN21-9 | X53CrMnNiNbN21-9 | X33CrNiMnN23-8 | X7CrNiAl17-7 |
| | GOST (RUSSIA) | | | | | | 09Ch17N7Ju1 |
| | JIS (JAPAN) | | | | | | SUS 631; SUS 631 J 1; SUS 631-CSP |
| | SS (SWEDEN) | | | | | | 2388 |
| | UNE (SPAIN) | | | | | | X 2 CrNiMo 17 12 |
| | UNI (ITALY) | | X 55 CrMnNiN 20.8 | | X 53 CrMnNiNbN 21.9 | | |
| | IS (INDIA) | | | | | | |
| | KS REP. OF) (KOREA | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | 0Cr17Ni7Al |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | |
|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | | | | Z 3 CN 23-04 Az | Z 5 CND 27-05 Az; Z 3 CND 25-07 Az | Z 2 CND 24-08 Az; Z 3 CND 25-06-03 Az; Z 3 CND 25 -05 Az |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | S31266 | 654 SMo; S32654 | J94650; CN7MS | S32304 | 329; S31260; S32900 | S31803; S31260; S32900; A182 F51; A182 Gr. F51; A182 Grade F51 |
| | BS (UK) | | | | | | 318 S 13; 1.4462 |
| | DIN (GERMANY) | X1CrNiMoCuNW24-22-6 | X1CrNiMoCuN24-22-8 | GX2NiCrMoCuN25-20 | X2CrNiN23-4; X 2 CrNiN 23 4 | X3CrNiMoN27-5-2; X 4 CrNiMoN 27 5 2 | X2CrNiMoN22-5-3; X 2 CrNiMoN 22 5 3 |
| | Werkstoff (GERMANY) | 1.466 | 1.465 | 1.454 | 1.4362 | 1.4460 | 1.4462 |
| | EN (EUROPE) | X1CrNiMoCuNW24-22-6 | X1CrNiMoCuN24-22-8 | | X2CrNiN23-4 | X3CrNiMoN27-5-2 | X2CrNiMoN22-5-3 |
| | GOST (RUSSIA) | | | | 03Ch3N6 | 10Ch26N5M; 08Ch21N6M2T | |
| | JIS (JAPAN) | | | | | SUS 329 J 1; SUS 329 J 1 FB; SUS 329 J 1 TB; SUS 329 J 1 TP | SUS 329 J 3 L; SUS 329 J 3 LTB; SUS 329 J 3 LTP |
| | SS (SWEDEN) | | | | 2327 | 2324 | 2377 |
| | UNE (SPAIN) | | | | | F.3552; F.3309; X 8 CrNiMo 27-05; X 8 CrNiMo 26 6 | |
| | UNI (ITALY) | | | | | | |
| | IS (INDIA) | | | | | | |
| | KS REP. OF) (KOREA | | | | | STS 329J1 | STS 329J3L |
| | GB/YB/JB/ SY/NB (PRC) | | | | 0Cr26Ni5Mo2 | 0Cr26Ni5Mo2 | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | | | | | | Z 2 CND 18.05.03 | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | J92605; J93005 | 329; S32900 | S33100; A182 F10; A182 Gr. F10; A182 Grade F10 | | | S31500 | | |
| | BS (UK) | | | | | | | | |
| | DIN (GERMANY) | GX40CrNiSi27-4; G-X 40 CrNiSi 27 4 | X6CrNiMo26-4-2; X 6 CrNiMo 26 4 2 | | | GX2CrNiMoN25-6-3; G-X 3 CrNiMoN 26 6 3 | GX2CrNiMoN25-7-3; G-X 2 CrNiMoN 25 7 3; X2CrNiMoSi18-5-3; X 2 CrNiMoSi 18 5 3 | GX4CrNiN26-7; G-X 8 CrNiN 26-7; G-X 6 CrNiN 26-7 | GX6CrNiMo24-8-2; G-X 6 CrNiMo 24 8 2 |
| | Werkstoff (GERMANY) | 1.4823 | 1.448 | | | 1.447 | 1.4417; 1.4424 | 1.435 | 1.446 |
| | EN (EUROPE) | GX40CrNiSi27-4 | | | | GX2CrNiMoN25-6-3 | GX2CrNiMoN25-7-3; X2CrNiMoSi18-5-3 | GX4CrNiN26-7 | |
| | GOST (RUSSIA) | | | | 03Ch22N6M2 | 03Ch24N6AM3 | | | |
| | JIS (JAPAN) | SCH 11 X | | | | | | | |
| | SS (SWEDEN) | | | | | | 2376 | | |
| | UNE (SPAIN) | | | | | | | | |
| | UNI (ITALY) | | | | | | | | |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | |
|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | | | | | | Z 3 CNDU 25-06 Az |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | J92205; CD3MN 4A; A 995 Grade 4A | | J93372; CD4MCuN; A890 Grade 1B; A 995 Grade 1B | | J92615; CC 50; CC-50 | S32760; SA351/995; 25Cr-7Ni-Mo-N |
| | BS (UK) | | | | | | |
| | DIN (GERMANY) | GX2CrNiMoN22-5-3 | GX3CrNiMoCuN26-6-3-3; G-X 2 CrNiMoCuN 26 6 3 3 | GX2CrNiMoCuN25-6-3-3; G-X 3 CrNiMoCuN 26 6 3 3 | GX32CrNi28-10 | GX40CrNi27-4; G-X 40 CrNi 27 4 | X2CrNiMoCuWN25-7-4 |
| | Werkstoff (GERMANY) | 1.447 | 1.452 | 1.452 | 1.434 | 1.4340 | 1.4501 |
| | EN (EUROPE) | GX2CrNiMoN22-5-3 | | GX2CrNiMoCuN25-6-3-3 | | | X2CrNiMoCuWN25-7-4 |
| | GOST (RUSSIA) | | | | | | |
| | JIS (JAPAN) | | | SCS 32 | | | |
| | SS (SWEDEN) | | | | | | |
| | UNE (SPAIN) | | | | | | |
| | UNI (ITALY) | | | | | | |
| | IS (INDIA) | | | | | | |
| | KS REP. OF) (KOREA | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | 0Cr26Ni5Mo2 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | Z 5 CND 25-06 Az | | Z 3 CNDU 25-06 Az; Z 3 CNDU 25-07 Az | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | S32750 | | S32520; S32550; F61 | S32950; SA276; SA479 | J93380; CD3MNWCuN; A890 Grade 6A | J93503; J94003; J94013; HK 30; HH; A297-HH | J94203; J94204; J94224; HK |
| | BS (UK) | | | | | | 309 C 30 | 310 C 40; 310 C 45 |
| | DIN (GERMANY) | X2CrNiMoN25-7-4; X 10 CrNiMo 18 9 | GX2CrNiMoN26-7-4; G-X 2 CrNiMoN 25-7-4 | X2CrNiMoCuN25-6-3 | | GX3CrNiMoWCuN27-6-3-1; G-X 3 CrNiMoWCuN 27 6 3 1 | GX40CrNiSi25-12; G-X 40 CrNiSi 25 12 | GX40CrNiSi25-20; G-X 40 CrNiSi 25 20 |
| | Werkstoff (GERMANY) | 1.4410 | 1.447 | 1.451 | | 1.447 | 1.4837; 1.4848+Nb | 1.4848 |
| | EN (EUROPE) | X2CrNiMoN25-7-4 | GX2CrNiMoN26-7-4 | X2CrNiMoCuN25-6-3 | | | GX40CrNiSi25-12 | GX40CrNiSi25-20 |
| | GOST (RUSSIA) | | | | | | 40Ch24N12SL | |
| | JIS (JAPAN) | | | | | | SCH 13; SCH 13 A; SCH 13 X; SCH 17; SCS 17 | SCH 21; SCH 22; SCH 22 X |
| | SS (SWEDEN) | 2328 | | | | | | |
| | UNE (SPAIN) | | | | | | | AM-X 40 CrNi 25 20; F.8452 |
| | UNI (ITALY) | | | | | | G X 35 CrNi 25 12 | G X 40 CrNi 26 20 |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | SSC 17 | HRSC 21; HRSC 22 |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | ZG4Cr25Ni20Si2 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | NF/AFNOR (FRANCE) | | | | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | | | J94202; CK 20; AMS 5365; A351; A743 | | | |
| | BS (UK) | | | | | | | |
| | DIN (GERMANY) | GX40NiCrSiNb38-19; G-X 40 NiCrSi 38 18 | GX40NiCrSiNb35-26; G-X 40 NiCrSiNb 35 25 | GX25CrNiSi20-14 | GX15CrNi25-20 | GX40CrNiSiNb24-24; G-X 30 CrNiSiNb 24 24 | GX40NiCrSi35-26; G-X 40 NiCrSi 35 25 | GX25CrNiSi18-9; G-X 25 CrNiSi 18 9 |
| | Werkstoff (GERMANY) | 1.4849 | 1.485 | 1.483 | 1.484 | 1.486 | 1.486 | 1.483 |
| | EN (EUROPE) | GX40NiCrSiNb38-19 | GX40NiCrSiNb35-26 | GX25CrNiSi20-14 | | GX40CrNiSiNb24-24 | GX40NiCrSi35-26 | GX25CrNiSi18-9 |
| | GOST (RUSSIA) | | | | | | | |
| | JIS (JAPAN) | | | | SCS 18 | SCH 33 | SCH 24 X | |
| | SS (SWEDEN) | | | | | | | |
| | UNE (SPAIN) | | | | | | | |
| | UNI (ITALY) | | | | | | | |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | Material Group No | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 14 | 14 | 14 | 15 | 15 | 15 | 15 | 15 |
| | NF/AFNOR (FRANCE) | | | | Ft 10 D | | Ft 15 D; R 15 D; FGL 150 | | Ft 20 D; FGL 200 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | N08151; CT15C | | F11401; A48-20; A48-20 B; Class 20; No 20 B | H10 J431 | F11701; A48-25; A48 25 B; Class 25; No 25 B; G9H12 J431 | H11 J431 | F12101; A48-30; A48-30 B; Class 30, No.30 B; G110H18 J431 |
| | BS (UK) | | | | Grade 100 | | Grade 150 | | Grade 220 |
| | DIN (GERMANY) | GX40CrNiSi22-10; G-X 40 CrNiSi 22 9 | GX10NiCrSiNb32-20; G-X 10NiCrNb 32 20 | GX50NiCrCoW35-25-15-5; G-X 50 NiCrCoWSi 35 25 15 5 | EN-GJL-100; EN-JL 1010; GG-10 | EN-GJL-HB155; EN-JL 2010; GG-150 HB | EN-GJL-150; EN-GJL-150C; EN-JL 1020; GG-15 | EN-GJL-HB175; EN-JL 2020; GG-170 HB | EN-GJL-200; EN-GJL-200C; EN-JL 1030; GG-20 |
| | Werkstoff (GERMANY) | 1.483 | 1.486 | 1.487 | 0.6010; 5.1100 | 0.6012; 5.1101 | 0.6015; 5.1200 | 0.6017; 5.1201 | 0.6020; 5.1300 |
| | EN (EUROPE) | GX40CrNiSi22-10 | GX10NiCrSiNb32-20 | GX50NiCrCoW35-25-15-5 | EN-GJL-100; EN-JL 1010 | EN-GJL-HB155; EN-JL 2010 | EN-GJL-150; EN-GJL-150C; EN-JL 1020 | EN-GJL-HB175; EN-JL 2020 | EN-GJL-200; EN-GJL-200C; EN-JL 1030 |
| | GOST (RUSSIA) | | | | SCh10 | | SCh 15 | | SCh 20 |
| | JIS (JAPAN) | SCH12 | SCH 34 | SCH 46 | FC 10; FC 100 | | FC 15; FC 150 | | FC 20; FC 200 |
| | SS (SWEDEN) | | | | 0110-00 | | 0115-00 | | 0120-00 |
| | UNE (SPAIN) | | | | FG 10 | | FG 15 | | FG 20 |
| | UNI (ITALY) | | | | G 10 | | G 14; G 15 | | G 20; Gh 190 |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | | GC 10 | | GC 15 | | GC 20 |
| | GB/YB/JB/ SY/NB (PRC) | | | | HT100 | | HT150 | | HT200 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 16 |
| | NF/AFNOR (FRANCE) | | | | Ft 25 D; FGL 250 | Ft 30 D; FGL 300 | Ft 35 D; FGL 350 | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | F10004; G1800; A159 Grade G1800 | F10005; G2500; A159 Grade G2500 | F10009; G2500a; A159 Grade G2500a | F12401; A48-40; A48-40 B; Class 40; No 40 B; A278-35; G11H20 | F13101; A48-45; A48-45 B; Class 45; No 45 B; A278-45 | F13501; A48-50; A48-50 B; Class 50; No 50 B; A278-50 | H13 J431; H14 J431 | H16 J431 |
| | BS (UK) | | | | Grade 260; Grade 250 | Grade 300 | Grade 350 | | |
| | DIN (GERMANY) | | | | EN-GJL-250; EN-GJL-250C; EN-JL1040; GG-25 | EN-GJL-300; EN-GJL-300C; EN-JL 1050; GG-30 | EN-GJL-350; EN-GJL-350C; EN-JL 1060; GG-35 | EN-GJL-HB195; EN-JL2030; GG-190 HB | EN-GJL-HB215; EN-JL2040; GG-220 HB |
| | Werkstoff (GERMANY) | | | | 0.6025; 5.1301 | 0.6030; 5.1302 | 0.6035; 5.1303 | 0.6022; 5.1304 | 0.6027; 5.1305 |
| | EN (EUROPE) | | | | EN-GJL-250; EN-GJL-250C; EN-JL1040 | EN-GJL-300; EN-GJL-300C; EN-JL 1050 | EN-GJL-350; EN-GJL-350C; EN-JL 1060 | EN-GJL-HB195; EN-JL2030 | EN-GJL-HB215; EN-JL2040 |
| | GOST (RUSSIA) | | | | SCh 25 | SCh 30 | SCh 35 | | |
| | JIS (JAPAN) | | | | FC 25; FC250 | FC 30; FC 300 | FC 35; FC350 | | |
| | SS (SWEDEN) | | | | 0125-00 | 0130-00 | 0135-00 | | |
| | UNE (SPAIN) | | | | FG 25 | FG 30 | FG 35 | | |
| | UNI (ITALY) | | | | G 25 | G 30 | G 35 | | |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | | GC 25; GC 250 | GC 30 | GC 350 | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | HT250 | HT300 | HT350 | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | NF/AFNOR (FRANCE) | | | | Ft 40 D | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | H18 J431 | H20 J431 | F13801; A48-55; A48-55 B; Class 55; No 60 B | F14101; A48-60 B; Class 60; No 60 B | F10006; G3000; A159 Grade G3000 | F10007; G3500; A159 Grade G3500 | F10010; G3500b; A159 Grade G3500b | F10011; G3500c; A159 Grade G3500c |
| | BS (UK) | | | | Grade 400 | | | | |
| | DIN (GERMANY) | EN-GJL-HB235; EN-JL2050; GG-240 HB | EN-GJL-HB255; EN-JL2060; GG-260 HB | | EN-JLZ; GG-40 | | | | |
| | Werkstoff (GERMANY) | 0.6032; 5.1306 | 0.6037; 5.1307 | | 0.6040 | | | | |
| | EN (EUROPE) | EN-GJL-HB235; EN-JL2050 | EN-GJL-HB255; EN-JL2060 | | EN-JLZ | | | | |
| | GOST (RUSSIA) | | | | SCh 40 | | | | |
| | JIS (JAPAN) | | | | | | | | |
| | SS (SWEDEN) | | | | 0140-00 | | | | |
| | UNE (SPAIN) | | | | | | | | |
| | UNI (ITALY) | | | | | | | | |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | HT400 | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 16 | 16 | 17 | 17 | 17 | 17 | 17 |
| | NF/AFNOR (FRANCE) | | | FGS 370-/17 | | | FGS 370-17 | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | F10008; G4000; A159 Grade G4000 | F10012; G4000d; A159 Grade G4000d | | | | F32800; 60-40-18; A395 60-40-18; A536 60-40-18 | |
| | BS (UK) | | | 350/22 L 40 | | | 370/17; Grade 370/17; 400/18; Grade 400/18; SG 24/17 | |
| | DIN (GERMANY) | | | EN-GJS-350-22-LT; GGG-35.3 | | | EN-GJS-400-18-LT; EN-GJS-400-18C-LT; EN-GJS-400-18U-LT; EN-JS1025; EN-JS1049; GGG-40.3 | |
| | Werkstoff (GERMANY) | | | 0.7033; 5.3100 | 5.310 | 5.310 | 0.7043; 5.3103 | 5.310 |
| | EN (EUROPE) | | | EN-GJS-350-22-LT; EN-GJS-350-22C-LT; EN-GJS-350-22U-LT; EN-JS1015; EN-JS1019 | EN-GJS-350-22-RT; EN-GJS-350-22C-RT; EN-GJS-350-22U-RT; EN-JS1014; EN-JS1029 | EN-GJS-350-22; EN-GJS-350-22C; EN-GJS-350-22U; EN-JS1010; EN-JS1032; EN-JS2010 | EN-GJS-400-18-LT; EN-GJS-400-18C-LT; EN-GJS-400-18U-LT; EN-JS1025; EN-JS1049 | EN-GJS-400-18-RT; EN-GJS-400-18C-RT; EN-GJS-400-18U-RT; EN-JS1024; EN-JS1059 |
| | GOST (RUSSIA) | | | VCh 42-12 | VCh 35 | VCh 35 | VCh 42-2 | |
| | JIS (JAPAN) | | | FCD 350-22L | FCD 350-22 | FCD 350-22 | FCD 400-18L; FCD 400-18AL; FCD 370 | FCD 400-18; FCD 400-18A |
| | SS (SWEDEN) | | | | | | 0717-15 | |
| | UNE (SPAIN) | | | FNG 38-17 | | | | |
| | UNI (ITALY) | | | GS 370/17 | | | GSO 42/15 | |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | QT350-22L | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 17 | 17 | 17 | 17 | 18 | 18 | 18 | 18 |
| | NF/AFNOR (FRANCE) | | FCS 400-12; FCS 400-12 | FGS 450-10 | | FGS 500-7 | FGS 600-3 | FGS 700-2 | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | F32800; 60-40-18; A395 60-40-18; A536 60- 40-18; D400 J434; D4018 J434 | F32800; 60-40-18; A395 60-40-18; A536 60-40-18 | F33100; A395 65-45-15; 65-45-15; A536 65-45-12; 65-45-12 | | F33500; D5006 J 434; D5006 | F33800; A536 80-55-06; 80-55-06; F34100; A538 80-60-03; 80-60-03 | F34800; A536 100-70-03; 100-70-03; A536 100-70-03; D700 J434; D7003 J434 | |
| | BS (UK) | 400/18; Grade 400/18; SG 24/17 | 420/12; Grade 420/12 | 420/12; Grade 420/12; SG 27/12 | | 500/7; Grade 500/7; SG 32/7 | 600/3; Grade 600/3 | 700/2; Grade 700/2; SG42/2; SNG700/2 | |
| | DIN (GERMANY) | | EN-GJS-400-15; EN-GJS-400-15C; EN-GJS-400-15U; EN-GJS-HB155; EN-JS 1030; EN-JS1072; EN-JS2030; GGG-40 | | | EN-GJS-500-7; EN-GJS-500-7C; EN-GJS-500-7U; EN-GJS-HB200; EN-JS-1050; EN-JS-1082; EN-JS-2050; GGG-50 | EN-GJS-600-3; EN-GJS-600-3C; EN-GJS-600-3U; EN-GJS-HB230; EN-JS1060; EN-JS1092; EN-JS2060; GGG-60 | EN-GJS-700-2; EN-JS 1070; GGG-70 | |
| | Werkstoff (GERMANY) | 0.7043; 5.3105 | 0.7040; 5.3106 | 5.311 | 5.311 | 0.7050; 5.3200 | 0.7060; 5.3201 | 0.7070; 5.3300 | 5.311 |
| | EN (EUROPE) | EN-GJS-400-18; EN-GJS-400-18-C; EN-GJS-400-18U; EN-GJS-HB-150; EN-JS1020; EN_JS1062; EN-JS-2020 | EN-GJS-400-15; EN-GJS-400-15C; EN-GJS-400-15U; EN-GJS-HB155; EN-JS 1030; EN-JS1072; EN-JS2030 | EN-GJS-450-10; EN-GJS-450-10C; EN-GJS-450-10U; EN-GJS-HB185; EN-JS1040; EN-JS1132; EN-JS-HB185 | EN-GJS-450-18; EN-GJS-450-18C | EN-GJS-500-7; EN-GJS-500-7C; EN-GJS-500-7U; EN-GJS-HB200; EN-JS-1050; EN-JS-1082; EN-JS-2050 | EN-GJS-600-3; EN-GJS-600-3C; EN-GJS-600-3U; EN-GJS-HB230; EN-JS1060; EN-JS1092; EN-JS2060 | EN-GJS-700-2; EN-GJS-700-2C; EN-GJS-700-2U; EN GJS-HB265; EN-JS1070; EN-JS1102; EN-JS2070 | EN-GJS-500-14; EN-GJS-500-14C |
| | GOST (RUSSIA) | VCh 40 | VCh 40; VCh 42-12 | VCh 45 | | VCh 50; VCh 50-2; VCh 50-2-2 | VCh 60; VCh 60-2 | VCh 70; VCh 70-2; VCh 70-3 | |
| | JIS (JAPAN) | FCD 400-18; FCD 400-18A | FCD 400-15; FCD 400-15A; FCD 400; FCD 40 | FCD 450-10 | | FCD 500-7; FCD 500-7A; FCD 500; FCD 50 | FCD 600-3; FCD 600-3A; FCD 600; FCD 60; FCD 550-7; FCD 550 | FCD 700-2; FCD 700; FCD 70 | |
| | SS (SWEDEN) | | 0717-02 | | | 0727-02 | 0732-03 | 0737-01 | |
| | UNE (SPAIN) | | FGE 38-17 | | | FGE 50-7 | FGE 60-2 | FGE 70-2 | |
| | UNI (ITALY) | | GS 400/12 | | | GS 500/7 | GS 600/3 | GS 700-2 | |
| | IS (INDIA) | | SG370/17 | SG400/12 | | SG500/7 | SG600/3 | SG700/2 | |
| | KS REP. OF) (KOREA | | DC 40; GCD 42 | | | GCD 50; GCD 500-7 | GCD 600-3 | GCD 700-2 | |
| | GB/YB/JB/ SY/NB (PRC) | QT400-18 | QT400-15 | QT400-18L | | QT500-7 | QT600-3 | QT700-2 | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 18 | 18 | 18 | 19 | 19 | 19 | 20 |
| | NF/AFNOR (FRANCE) | | | FGS 900-2 | MN 35-10; A32-702 MN 350-10 | MN 380-18; A32-702 MN 380-18 | | MP 60-3; A32-703 MP 60-3; Mn 550-4 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | F36200; A536 120-90-02; 120-90-02 | | A47-32510; A47 Class 32510; A47 Grade 32510; 32510; F22200 | A47-35018, A47 Class 35018; A47 Grade 35018 | A47-22010; A47 Class 22010; A47 Grade 22010; F22200 | A220-50005; A220 Class 50005; A220 Grade 50005; A220-60004; A220 Class 60004; F24130 |
| | BS (UK) | | 800/2; Grade 800/2 | 900/2; Grade 900/2 | B 340/12; 310 B340/12 | | B 32-10; 6681 B 32-10 | P 55-04; P 510/4 |
| | DIN (GERMANY) | | EN-GJS-800-2; EN-GJS-800-2C; EN-GJS-800-2U; EN-GJS-HB300; EN-JS1080; EN-JS1112; EN-JS2080; GGG-80 | | EN-GJMB-350-10; EN-JM 1130; GTS-35-10; GTS-35 | | | EN-GJMB-550-4; EN-JM1160; GTS-55-04 |
| | Werkstoff (GERMANY) | 5.3110 | 0.7080; 5.3301 | 5.330 | 0.8135; 5.4101 | | | 0.8155; 5.4207 |
| | EN (EUROPE) | EN-GJS-600-10; EN-GJS-600-10C | EN-GJS-800-2; EN-GJS-800-2C; EN-GJS-800-2U; EN-GJS-HB300; EN-JS1080; EN-JS1112; EN-JS2080 | EN-GJS-900-2; EN-GJS-900-2U; EN-GJS-HB330; EN-JS1090; EN-JS1122; EN-JS2090 | EN-GJMB-350-10; EN-JM 1130 | | | EN-GJMB-550-4; EN-JM1160 |
| | GOST (RUSSIA) | | VCh 80; VCh 80-2; VCh 80-3 | VCh 100; VCh 100-4 | KCh 35-10 | KCh 37-12 | KCh 33-8 | KCh 55-4 |
| | JIS (JAPAN) | | FCD 800-2; FCD 800 | | FCMB 35-10; FCMB 340 | | FCMB 310 | FCMP 55-04; FCMP 540 |
| | SS (SWEDEN) | | | | 0810; 0815-00 | | | 0856-00 |
| | UNE (SPAIN) | | | | GTS 35; 36114 Type A | | | Type C; 36116 Type C |
| | UNI (ITALY) | | GS 800/2 | | B 35-10 | | | P 55-04 |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | KTH350-10 | KTH370-12 | KTH330-08 | KTZ550-04 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| | NF/AFNOR (FRANCE) | | Mn 650-3 | MP 70-2; A 32-703 MP 70-2; Mn 700-2 | MP 50-5; A32-703 MP 50-5 | MN 700-2 | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | A220-70003; A220 Class 70003; A220 Grade 70003; A220-480M3; A220 Class 480M3; A602-M5503; F24830 | A220-70003; A220 Class 70003; A220 Grade 70003; A220-80002; A220 Class 80002; F25530 | A220-70003; A220 Class 70003; A220 Grade 70003; F26230; F20004; F24830; A220-90001; A220-620M1 | A220-45006; A220 Class 45006; A220 Grade 45006 A220-45008; A220-310M6; A220-310M8; F23130; F23131 | A220-80002; A220 Class 80002; A220 Grade 80002; A602-M8501; F20005 | A220-90001; A220 Class 90001; A220 Grade 90001 | A220-60004; A220 Class 60004; A220 Grade 60004 | A220-40010; A220 Class 40010; A220 Grade 40010 |
| | BS (UK) | | P 65-02; 6681 P 65-02; P 570/3 | P 70-2; 6681 P 70-2; P 690/2 | P 45-06; 6681 P 45-06 | | | | |
| | DIN (GERMANY) | EN-GJMB-600-3; EN-JM1170 | EN-GJMB-650-2; EN-JM1180; GTS-65-02 | EN-GJMB-700-2; EN-JM1190; GTS-70-02 | EN-GJMD-450-6; EN-JM1140; GTS-45-06; GTS-45 | EN-GJMB-800-1; EN-JM1200 | | | |
| | Werkstoff (GERMANY) | 5.421 | 0.8165; 5.4300 | 0.8170; 5.4301 | 0.8145; 5.4205 | 5.4302 | | | |
| | EN (EUROPE) | EN-GJMB-600-3; EN-JM1170 | EN-GJMB-650-2; EN-JM1180 | EN-GJMB-700-2; EN-JM1190 | EN-GJMD-450-6; EN-JM1140 | EN-GJMB-800-1; EN-JM1200 | | | |
| | GOST (RUSSIA) | KCh60-3 | KCh 63-3; KCh 65-3 | KCh 70-2 | KCh 45-7 | KCh 80-1.5 | | | |
| | JIS (JAPAN) | FCMP 60-03 | FCMP 65-02; FCMP 590 | FCMP 70-02; FCMP 690 | FCMP 45-06 | FCMP 80-01; FCMP 70; FCMP 700 | | | |
| | SS (SWEDEN) | | 0862-030 | 0862-03 | 0854-00 | | | | 0852-00 |
| | UNE (SPAIN) | | Type B; 36116 Type B | 36116 Type A | Type E; 36116 Type E | | | | |
| | UNI (ITALY) | | GMN 65; P 65-02 | P 70-2; GMN 70 | P 45-06 | | | | |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | PMC 490 | PMC 590 | | |
| | GB/YB/JB/ SY/NB (PRC) | | KTZ650-02 | KTZ700-02 | KTZ450-06 | KTZ650-02 | KTZ700-02 | KTZ550-04 | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | Material Group No | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 20 | 20 | 20 | 21 | 21 | 21 | 21 | 22 |
| | NF/AFNOR (FRANCE) | MB 400-5 | MB 35-7 | MB 380-12 | A G0-6 | A5 | A4 | A-G4.5MC | A-U4G |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | | | AA5005; AA5006; A95005; A95006; 5005; 5005A; 5006 | AA1050; A91050; 1050; 1050A | AA1200; A91200; 1200; 1200A | AA5083; A95083; 5083 | AA2017; A92017; 2017; 2017A |
| | BS (UK) | W 40-05 | W 35-04 | | N41 | 1B | 1C | N8 | |
| | DIN (GERMANY) | EN-GJMW-400-5; GTW-40-05 | EN-GJMW-350-4; GTW-35-04 | GTW-S-38-12; EN-GJMW-360-12; EN-JM1020 | AlMg1; AlMg1C | Al99,5; Al99.5 | Al99,0; Al99.0; Al99 | AlMg4,5Mn; AlMg4.5Mn | AlCu2,5Si(A); AlCu2.5Si(A); AlCuMg1 |
| | Werkstoff (GERMANY) | 0.8040; 5.4202 | 0.8035; 5.4200 | 0.8038; 5.4201 | 3.3315 | 3.0255 | 3.0205 | 3.355 | 3.1325; 3.1124 |
| | EN (EUROPE) | EN-GJMW-400-5; EN-JM1030 | EN-GJMW-350-4; EN-JM1010 | EN-GJMW-360-12; EN-JM1020 | AlMg1C; 5005A | Al99.5; Al99,5; 1050A | Al99.0; AL99,0; 1200 | EN AW-5083; AlMg4,5Mn; AlMg4.5Mn | AlCu2,5Si(A); AlCu2.5Si(A); 2017A |
| | GOST (RUSSIA) | | | | 1510; AMg1 | AD0 | A0 | | V65 |
| | JIS (JAPAN) | FCMW 40-05; FCMW 370 | FCMW 35-04; FCMW 330 | FCMW 38-12; FCMW 370 | A5005 | | A1200 | A5083 | |
| | SS (SWEDEN) | | | | 144106 | 14407 | 144010 | 144140 | |
| | UNE (SPAIN) | 36113 Type A | 36113 Type B | | L-3350 | L-3051 | L-3001 | L-3321 | L-3120 |
| | UNI (ITALY) | W 40-05 | W 35-04 | | 9005/1 | 9001/2 | Al99.0 | 9005/5 | |
| | IS (INDIA) | | | | 51000 | 19500 | 19000 | | 24534 |
| | KS REP. OF) (KOREA | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | KTB380-12 | KTB350-04 | KTB380-12 | 5005 | 1A50 | 1200; L50 | | 2A11; LY11 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 |
| | NF/AFNOR (FRANCE) | A-SGM0.7 | | A-U5PbBi | A-Z5GU | A-U4G1 | A-Z5G | A-GSUC | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | | | AA7075; A97075; 7075 | AA2024; A92024; 2024 | | AA6061; A96061; 6061 | AA7010; A97010; 7010 |
| | BS (UK) | H30 | | FC1 | 7075; L95; L96 | 2024; 2L97 | H17 | H20 | 5120 B; 5130 A |
| | DIN (GERMANY) | AlMgSi1 | AlZnMgCuO,5; AlZnMgCuO.5 | AlCu6BiPb; AlCuBiPb | AlZn5,5MgCu; AlZn5.5MgCu; AlZnMgCu1,5; AlZnMgCu1.5 | AlCuMg2 | AlZn4,5Mg1; AlZn4.5Mg1 | AlMg1SiCu | AlZn6MgCu |
| | Werkstoff (GERMANY) | 3.2315 | 3.4345 | 3.1655 | 3.4365; 3.4364 | 3.1355; 3.1354 | 3.4335 | 3.3211; 3.3214 | 3.4394 |
| | EN (EUROPE) | AlSiMgMn; 6082; EN AW-6082 | AlZnMgCu0.5; AlZnMgCu0,5; 7022 | AlCu6BiPb; 2011 | AlZn5.5MgCu; AlZn5,.5MgCu; AW-7075; 7075 | AlCu4Mg1; 2024 | AlZn4.5Mg1; AlZn4,5Mg1; 7020 | EN AW-6061; EN AW-AlMg1SiCu; AlMg1SiCu | EN AW-7010; AlZn6MgCu |
| | GOST (RUSSIA) | AD35 | | | B95 | D16 | | AD33 | |
| | JIS (JAPAN) | | | A2011 | A7075 | A2024 | | A6061 | |
| | SS (SWEDEN) | 144312 | | 144355 | | | 144425 | | |
| | UNE (SPAIN) | L-3453 | | L-3192 | L-3710 | L-3140 | L-3741 | L-3420 | |
| | UNI (ITALY) | 9006/4 | | 9002/5 | 9007/2 | 9002/4; 3583 | 9007/1 | 9006/2 | 9007/4; P-AlZn6 2Mg2 3Cu 1.8Zr |
| | IS (INDIA) | 64430 | | | 76528 | 24530 | 74530 | 65032 | |
| | KS REP. OF) (KOREA | | | | A7075P | | | A6061P | |
| | GB/YB/JB/ SY/NB (PRC) | | 7022 | | 7075 | 2A12 | 7020 | 6061 | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 22 | 22 | 22 | 22 | 23 | 23 | 23 | 23 | 23 |
| | NF/AFNOR (FRANCE) | | | A-U2GN; 2618A | | | A-S12U | A-G10S | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | AA7050; A97050; 7050 | AA6063; A96063; 6063 | AA2618; A92618; A2618; 2618 | AA7050; A97050; 7050 | | | 520.0; AA 520.0; A05200 | 222.0; AA 222.0; A02220 | 518.0; AA 518.0; A05180 |
| | BS (UK) | | H9 | 2618A; H16 | | LM5 | | | LM12 | |
| | DIN (GERMANY) | AlZn6CuMgZr | AlMg0.7Si | AlCu2Mg1.5Ni | AlZn6CuMgZr | G-AlMg5Si; GK-AlMg5Si; AlMg5Si; VDS 245 | GD-AlSi12(Cu); G-AlSi12(Cu); AlSi12(Cu); VDS 231 D | | | G-AlMg9; GD-AlMg9; AlMg9; VDS 349 |
| | Werkstoff (GERMANY) | | | 3.192 | 3.4144 | 3.3261 | 3.2982 | | | 3.3292 |
| | EN (EUROPE) | EN AW-7050; EN AW-AlZn6CuMgZr; AlZn6CuMgZr | EN AW-6063; AlMg0.7Si | EN AW-2618A; AlCu2Mg1.5Ni; 2618A | EN AW-7050; EN AW-AlZn6CuMgZr; AlZn6CuMgZr | EN AC-51400; EN AC-AlMg5Si; G-AlMg5Si; AlMg5Si | EN AC-47100; EN AC-AlSi12C; G-AlSi12Cu; AlSi12Cu; AlSi12Cu1(Fe) | | | EN AC-51200; EN AC-AlMg9; G-AlMg9; AlMg9 |
| | GOST (RUSSIA) | | | | | AL13 | | A18 | | |
| | JIS (JAPAN) | A7050 | A6063 | A2618 | A7050 | | | AC7B | | |
| | SS (SWEDEN) | | 144104 | | | 144163 | | | | |
| | UNE (SPAIN) | | L-3441 | L-3171; 2618A; Al-2CuMgNi | | | | L-2310 | L-2110 | |
| | UNI (ITALY) | | | 9002/6; 3578; P-AlCu2.3Mg1.5FeNi; 2618A | | | 3048 | 3056 | 3041 | |
| | IS (INDIA) | | | | | | 4685 | | | |
| | KS REP. OF) (KOREA | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | LD7 | 7050 | ZL303 | | ZL301 | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 24 | 24 |
| | NF/AFNOR (FRANCE) | AU5NKZr | | A-Z5GF | A-G6 | A-S13 | | | A-G3T | | A-S9G |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 203.0; AA 203.0; A02030 | ER4047; A94047 | 712.0; AA 712.0; A07120 | 514.0; 514.1; AA 514.0; AA 514.1; A05140; A05141 | B413.0; AA B413.0; A24130; B213.0; AA 213.0; A22130 | | A444.0; AA A444.0; A14440 | | 515.0; AA 515.0; A05150 | |
| | BS (UK) | | 4047A; NG2 | | | LM6 | | | H20 | | |
| | DIN (GERMANY) | G-AlCu5Ni1,5; G-AlCu5Ni1.5 | SG-AlSi12 | G-AlZn10Si8Mg; GK-AlZn10Si8Mg; AlZn10Si8Mg; VDS 108 | G-AlMg5; GK-AlMg5; AlMg5; EN AC-51300; VDS 244 | G-AlSi12; GK-AlSi12; GD-AlSi12; AlSi12 | G-AlSi11; GK-AlSi11; AlSi11 | | G-AlMg3; GK-AlMg3; GF-AlMg3; AlMg3; VDC 244 | G-AlMg3Si; GK-AlMg3Si; GF-AlMg3Si; AlMg3Si; AlMg3Si1 | G-AlSi9Mg; GK-AlSi9Mg; AlSi9Mg |
| | Werkstoff (GERMANY) | 3.1754 | 3.2585 | | 3.3561 | 3.2581; 3,2582 | 3.2211 | | 3.3541 | 3.3241 | 3.2373 |
| | EN (EUROPE) | | SG-AlSi12; EL-AlSi12 | EN AC-71100; EN AC-AlZn10Si8Mg; G-AlZn10Si8Mg; AlZn10Si8Mg | EN AC-51300; EN AC-AlMg5; G-AlMg5; AlMg5 | EN AC-44200; EN AC-AlSi12; G-AlSi12; GD-AlSi12; AlSi12 | EN AC-44000; EN AC-AlSi11; G-AlSi11 | | EN AC-51100; EN AC-AlMg3; G-AlMg3; AlMg3 | G-AlMg3Si1; AlMg3Si | G-AlSi9Mg; AlSi9Mg |
| | GOST (RUSSIA) | | | | AL28; AMg5Mz; | | | AK7 | | | AK9 |
| | JIS (JAPAN) | | | | | AC3 | | | ADC6 | | AC4A |
| | SS (SWEDEN) | | 144262 | | | 144261 | | | 144224 | | |
| | UNE (SPAIN) | | | | L-2331 | L-2520 | | | L-2341 | | |
| | UNI (ITALY) | | | 3602 | 3058 | 4514 | | | 3059 | | 3051 |
| | IS (INDIA) | | | | | | | | 53000 | | |
| | KS REP. OF) (KOREA | | | | | | | | | | AC4A |
| | GB/YB/JB/ SY/NB (PRC) | | 4047 | ZL402 | YI302 | YL102 | | | 5754 | | ZL102 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| | NF/AFNOR (FRANCE) | A-S7G03 | AU5GT | | A-S9U3 | | A-S5UZ | A-S10UG | A-S10G | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | A356.0; AA A356.0; A13560; A356.2; AA A356.2; A13562 | 204.0; AA 204.0; A02040 | A333.0; AA A333.0; A13330 | 380.0; AA 380.0; A03800 | 365.0; AA 365.0; A03650 | 319.0; AA 319.0; A03190 | | | |
| | BS (UK) | 2L99 | | | LM24 | | LM21 | | | |
| | DIN (GERMANY) | G-AlSi7Mg; GK-AlSi7Mg; GF-AlSi7Mg; AlSi7Mg | G-AlCu4TiMg; GK-AlCu4TiMg; GF-AlCu4TiMg; AlCu4TiMg | G-AlSi8Cu3; GK-AlSi8Cu3 | G-AlSi9Cu3; GD-AlSi9Cu3; AlSi9Cu3; VDS 226 | G-AlSi10MnMg | G-AlSi6Cu4; GK-AlSi6Cu4; AlSi6Cu4; VDS 225 | G-AlSi10MgCu; GK-AlSi10MgCu; G-AlSi10Mg(Cu); GK-AlSi10Mg(Cu); AlSi10MgCu; AlSi10Mg(Cu) | G-AlSi10Mg; GK-AlSi10Mg; GD-AlSi10Mg; AlSi10Mg; VDS 239 | G-AlCu4Ti; AlCu4Ti |
| | Werkstoff (GERMANY) | 3.2371 | 3.1371 | 3.2161 | 3.2163 | | 3.2151 | 3.2383 | 3.2381; 3.2385 | 3.1841 |
| | EN (EUROPE) | G-AlSi7Mg; AlSi7Mg | EN AC-21000; EN AC-AlCu4TiMg; G-AlCu4TiMg | EN AC-AlSi8Cu3; EN AC-AlSi8Cu3; G-AlSi8Cu3 | EN AC-46200; EN AC-AlSi8Cu3; G-AlSi9Cu3; AlSi8Cu3 | EN AC-43500; EN AC-AlSi10MnMg; G-AlSi10MnMg | EN AC-45000; EN AC-AlSi6Cu4; G-AlSi6Cu4; AlSi6Cu4 | | EN AC-43000; EN AC-AlSi10Mg; G-AlSi10Mg; AlSi10Mg | EN AC-21100; EN AC-AlCu4Ti; G-AlCu4Ti; AlCu4Ti |
| | GOST (RUSSIA) | AL9 | | AL13 | AK8M3; AK8 | | AK5M | | | AL19 |
| | JIS (JAPAN) | AC4CH | AC1B | | AC4B | | AC2B | | | |
| | SS (SWEDEN) | | | 144163 | 144252 | | 144230 | | 144253 | |
| | UNE (SPAIN) | L-2651 | L-2140 | | L-2630 | | L-2620 | | | |
| | UNI (ITALY) | | | | 3610 | | 7369/4 | | | |
| | IS (INDIA) | | | | | | | | | 2280 |
| | KS REP. OF) (KOREA | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | ZL101 | ZL201 | | ZL105A | | ZL107 | | YL104 | ZL203 |

## Material Designation in Accordance with Selected Standards

| Standards | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 24 | 25 | 25 | 25 | 26 | 26 | 26 | 26 | 26 | 26 |
| NF/AFNOR (FRANCE) | | | | | | CuPb5Sn5Zn5; UE5; U-E 5 Pb 5 Z 5 | CuSn7Pb6Zn4; UE7; U-E 7 Z 5 Pb 4 | U-Pb15E8; U-Pb 15 E8 | U-Pb10 | CuZn36Pb3 |
| AISI/ASM/ ASTM/SAE/ UNS/AA (US) | A304 | 390.0; AA 390.0; A03900 | 393.0; AA 393.0; A03930 | | C83810 | C83600 | C93200 | C93800 | C93700 | C36000 |
| BS (UK) | | LM30 | LM29 | LM28 | LG1 | LG2 | GC 493K | LB1 | LB2 | CZ124 |
| DIN (GERMANY) | | G-AlSi17Cu4Mg | G-AlSi20CuMgNi; AlSi20CuMgNi | G-AlSi18Cu1MgNi; AlSi18Cu1MgNi | CuSn3Zn8Pb5-C; G-CuSn2ZnPb | CuSn5Zn5Pb5-C; G-CuSn5ZnPb; Rg 5 | CuSn7Zn4Pb7-C; G-CuSn7ZnPb; GC-CuSn7ZnPb; GZ-CuSn7ZnPb; Rg 7 | CuSn7Pb15-C; G-CuPb15Sn; GC-CuPb15Sn; GZ-CuPb15Sn | CuSn10Pb10-C; G-CuPb10Sn; GC-CuPb10Sn; GZ-CuPb10Sn | CuZn36Pb3 |
| Werkstoff (GERMANY) | | | | | 2.1098 | 2.1096; 2.1096.01 | 2.1090 | 2.1182 | 2.1176 | 2.0375 |
| EN (EUROPE) | | EN AB-48100; EN AC-48100; G-AlSi17Cu4Mg; AlSi17Cu4Mg | | | CuSn3Zn8Pb5-C | CuSn5Zn5Pb5-C | CuSn7Zn4Pb7-C | CuSn7Pb15-C; CC496K | CuSn10Pb10-C | CuZn36Pb3; CW603N |
| GOST (RUSSIA) | | | AK21M2N2 | | | BrO5Ts5S5 | | | | |
| JIS (JAPAN) | | ADC14 | | | | H5111; H2203 | | | | C3600; C3601; C3602 |
| SS (SWEDEN) | | 4282 | | | | 5204-15 | | | | |
| UNE (SPAIN) | | | | | | | | C-3300 | | |
| UNI (ITALY) | | | | | | | | | | 12167 |
| IS (INDIA) | | | | | | | | | | |
| KS REP. OF) (KOREA | | | | | | | | | | |
| GB/YB/JB/ SY/NB (PRC) | | | | | | QSn4-0.3 | | | ZCuPb10Sn10 | HPb63-3 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 26 | 26 | 27 | 27 | 27 | 27 | 27 | 27 | 27 |
| | NF/AFNOR (FRANCE) | CuZn38Pb2 | | U-Z10; CuZn10 | U-Z36N3; CuZn19Al6Y20 | U-Z36; CuZn 36 | | | | U-Z15; CuZn15 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | C37000 | C67300; J461; J463 | C22000 | C86200; SAE 430A | C27200 | C27400 | C86400 | C46400 | C23000; 85Cu-15Zn |
| | BS (UK) | CZ129 | | CZ101 | HTB 1 | CZ108 | CZ108 | HTB 1 | CZ112 | CZ102 |
| | DIN (GERMANY) | CuZn38Pb2; CuZn38Pb1.5 | | CuZn10; Ms90 | CuZn34Mn3Al2Fe1-C; G-CuZn34Al2; GK-CuZn34Al2; GZ-CuZn34Al2 | CuZn36; Ms64 | CuZn37; Ms63 | CuZn35Mn2Al1Fe1-C; G-CuZn35Al1; GK-CuZn35Al1; GZ-CuZn35Al1; G-Ms60 | CuZn38Sn1As; CuZn38Sn1 | CuZn15 ; CuZn 15 |
| | Werkstoff (GERMANY) | 2.037 | | 2.0230 | 2.0596 | 2.0335 | 2.0321 | 2.0592 | 2.0530 | 2.0240 |
| | EN (EUROPE) | CuZn38Pb2; CW608N | CuZn35Mn3Pb2Si1 | CuZn10; CW501L | CuZn34Mn3Al2Fe1-C; CC764S | CuZn36; CW507L | CuZn37; CW508L | CuZn35Mn2Al1Fe1-C; CC765S | CuZn38Sn1As; CW717R | CuZn15; CW502L |
| | GOST (RUSSIA) | LS59-1 | | L90 | LTs23A; LTs23A6Zh3MTs2 | L63 | L63 | | LO60-1 | |
| | JIS (JAPAN) | C3710 | | C2200 | HBSC4; H5102/class 3; H5102/class 4 | | C2720 | HBSC1; CAC301 | C4640 | C2300 |
| | SS (SWEDEN) | | | | | | | | | 5112-02; 5112-04; 5112-05 |
| | UNE (SPAIN) | | | | | | | | | |
| | UNI (ITALY) | | | P-CuZn10; P-OT90 | | C 2700 | P-CuZn37; P-OT63 | | P-CuZn39Sn1 | |
| | IS (INDIA) | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | H90 | ZCuZn25Al6Fe3Mn3 | H65 | H63 | ZCuZn35Al2Mn2Fe1 | HSn60-1 | H85 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No 27 | 27 | 27 | 27 | 27 | 27 | 28 | 28 | 28 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NF/AFNOR (FRANCE) | CuZn20 | CuZn30 | | | | CuZn40 | U-A10N; CuAl9Ni5Fe3 | CuSn8 | UE12P | CuAl10Fe5Ni5 Y70 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | C24000; 80Cu-20Zn | C26000; CA260 | C27453 | | C85566 | C28000 | C63000 | C90700 | C90800; C91700 | C95800; C95810 |
| | BS (UK) | CZ103 | CZ106 | | | | CZ109 | CA 104 | CT1 | PB2 | |
| | DIN (GERMANY) | CuZn20; CuZn 20; Ms80 | CuZn30; CuZn 30 | | | | CuZn40 | CuAl10Ni5Fe4; CuAl 10 Ni 5 Fe 4 | CuSn10-C; G-CuSn 10; SnBz10 | CuSn12-C; G-CuSn12; GZ-CuSn12; SnBz12, Gbz12 | G-CuAl10Fe5Ni5-C; G-CuAl 10 Ni; NiAlBz-F60 |
| | Werkstoff (GERMANY) | 2.0250 | 2.0265 | | | | 2.036 | 2.0966 | 2.1050 | 2.1052; 2.1052.01; 2.1052.04; 2.1052.03; 2.1056 | 2.0975 |
| | EN (EUROPE) | CuZn20; CW503L | CuZn30; CW505L | CuZn38As; CW511L | CuZn36AlAsSb-B; CB771S | CuZn38AsSb-C; CC771S | CuZn40; CW509L | CuAl10Ni5Fe4; CW307G | CuSn10-C; CC480K | CuSn12-C; CC483K | CC333G |
| | GOST (RUSSIA) | | | | | | L60 | BrAD; BrAZhN10-4-4; N10-4-4 | | | |
| | JIS (JAPAN) | C2400 | C2600 | | | | C2801 | C6301 | | CAC502C; PBC2C | CAC703C |
| | SS (SWEDEN) | 5114-02; 5114-04; 5114-05 | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | | |
| | UNI (ITALY) | | | | | | | P-CuAl10Ni5Fe5 | | | |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | H80 | H70 | | | | | QAl10-4-4 | | | |

## Material Designation in Accordance with Selected Standards

| Standards | Material Group No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| NF/AFNOR (FRANCE) | Cu-B | U-Cr0.8Zr | | Ci-c1; Cu-c2 | | U-C1Z; U-Cr0.8Zr | Cu-B | UA9 | CuAl8 | CuNi10Fe1Mn | CuZn16Si4-C |
| AISI/ASM/ ASTM/SAE/ UNS/AA (US) | C11000 | C81500 | C10300 | C10100; C10200 | C86550 | C18100; C18150 | C11000; C12200 | C95500 | C61000 | C70600; 90Cu-10Ni | C87500; C87400; C87800 |
| BS (UK) | C101 | CC1-FF | | C103; C110 | | CC102 | C106 | | | CN 102; CN102 | ZCuZn16Si4 |
| DIN (GERMANY) | Cu-ETP; E-Cu57; E Cu 57 | G-CuCrF 35 | Cu-HCP; Cu-PHC; SE-Cu | Cu-OF; OF-Cu | G-CuZn40Fe; G-SoMsF30 | CuCr1Zr; CuCrZr | Cu-DHP; E-Cu58; E Cu 58 SF-Cu | CuAl9Ni3Fe2 | CuAl8; Cu Al 8 | CuNi10Fe1Mn | G-CuZn15Si4; GD-CuZn15Si4; GK-CuZn15Si4 |
| Werkstoff (GERMANY) | 2.0060 | 2.1292 | 2.0070 | 2.0040 | 2.0590 | 2.1293 | 2.0090 | 2.0971 | 2.0920 | 2.0872 | 2.0492; 2.0492-01; 2.0492-02; 2.0492-05 |
| EN (EUROPE) | Cu-ETP; E-Cu57; CW004A | | Cu-HCP; CW020A; Cu-PHC; CW021A | Cu-OF; CW008A | G-CuZn40Fe | CuCr1Zr; CW106C | Cu-DHP; E-Cu58; CW024A | | CuAl8 | CW 352H; CuNi10Fe1Mn | CuZn16Si4-B; CuZn16Si4-C; CB761S; CC761S |
| GOST (RUSSIA) | M1 | | LS60-2 | M0b | | | M1f | BrA10Zh4N4L | BrA7 | MNZhMtz10-1-1 | LTs16K4 |
| JIS (JAPAN) | C1100 | | C103 | C1011; C1020 | | | C1100; C1220 | | | C7060; YCuNi-1 | SzBC2; H5112/class 2; H5112/class 3 |
| SS (SWEDEN) | | | | | | | | | | 5667 | |
| UNE (SPAIN) | C11020 | | | C-1120 | | | | | | CW 352H | |
| UNI (ITALY) | Cu-DHP | | | | | | | | | | |
| IS (INDIA) | | | | | | | | | | | |
| KS REP. OF) (KOREA | | | | | | | | | | | |
| GB/YB/JB/ SY/NB (PRC) | T2 | | | TU2 | | QCr0.6-0.4-0.05 | TP2 | | QAl7 | BFe10-1-1 | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | Material Group No | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 29 | 29 | 29 | 29 | 29 | 29 | 31 | 31 | 31 | 31 |
| | NF/AFNOR (FRANCE) | | | | | | | Z 20 NCS 33-16; Z 12 NCS 37-18; Z 12 NCS 35-16 | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | | | | | | 330; N08330 | N08002; N08004; N08005; N08030 | | N08031 |
| | BS (UK) | | | | | | | NA 17; INCOLOY alloy DS | 330 C 11; 330 C 40; 331 C 40 | NA 15 | |
| | DIN (GERMANY) | | | | | | | X12NiCrSi35-16; X12NiCrSi36-16; X12 NiCrSi 36 16 | GX40NiCrSi38-19 GX40NiCrSi38-18; G-X40 NiCrSi38 18 | X2NiCrAlTi32-20; X2 NiCrAlTi 32 20 | X1NiCrMoCu32-28-7; X1 NiCrMoCu 32 28 7 |
| | Werkstoff (GERMANY) | | | | | | | 1.486 | 1.487 | 1.456 | 1.456 |
| | EN (EUROPE) | | | | | | | X12NiCrSi35-16 | GX40NiCrSi38-18 | X2NiCrAlTi32-20 | X1NiCrMoCu32-28-7 |
| | GOST (RUSSIA) | Capron; Nylon | Polymetylmetakrylat; orgsteklo; SOL; ST-1; 2-55 | PVCh | Polystyrol | Teflon; PTFE; Ftoroplast-4 | RST; RST-250; RST-275; RST-320; RST-410 | | | | |
| | JIS (JAPAN) | | | | | | | SUH 330 | SCH 15; SCH 16 | NCF 800 | |
| | SS (SWEDEN) | | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | F.3313; X 12 CrNiSi 36-16 | | | |
| | UNI (ITALY) | | | | | | | | GX 50 NiCr 39 19 | | |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | STR 330 | HRSC 15 | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | 1Cr16Ni35 | | NS111 | NS1404 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| | NF/AFNOR (FRANCE) | | Z 8 NC 33-21; Z 10 NC 32-21 | Z 2 NCDU 31-27; Z 1 NCDU 31-27-03 | Z 10 NC 32-21; Z 8 NC 33-21 | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | N08811 | N08028 | B 163; N08800; N08810; N08332; N08811 | | | | |
| | BS (UK) | NA 15 | NA 15; NA 15 H | | NA 15; NA 15 H | | | | |
| | DIN (GERMANY) | X5NiCrAlTi31-20; X5 NiCrAlTi 31 20 | X8NiCrAlTi32-21; X8 NiCrAlTi 32 21 | X1NiCrMoCu31-27-4; X1 NiCrMoCu 31 27 4 | X10NiCrAlTi32-21; X10NiCrAlTi32-20; X10 NiCrAlTi 32 20 | | | | |
| | Werkstoff (GERMANY) | 1.496 | 1.496 | 1.456 | 1.488 | | | | |
| | EN (EUROPE) | X5NiCrAlTi31-20 | X8NiCrAlTi32-21 | X1NiCrMoCu31-27-4 | X10NiCrAlTi32-21 | | | | |
| | GOST (RUSSIA) | | | EK77; ChN30MDB | | 08Ch15N25M3TYuB | 06Ch16N15M3B; EI 847 | 08Ch15N24VTR; Ch15N24VT; EP 164 | 08Ch16N9M2 |
| | JIS (JAPAN) | NCF 800 H; NCF 718 | | | NCF 800; NCF 800 TB; NCF 800 TP | | | | |
| | SS (SWEDEN) | | | 2584 | | | | | |
| | UNE (SPAIN) | | | | F.3314; F.3545 | | | | |
| | UNI (ITALY) | | | | | | | | |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | NS112 | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 31 | 31 | 31 | 31 | 32 | 32 | 32 | 32 | 32 | 32 |
| | NF/AFNOR (FRANCE) | | A54-301 | | | Z 42 CNKDWNb | Z 3 NCT 25; Z 6 NCTDV 25.15 B | Z 6 NCTDV 25-15 B | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | K94610; AMS 7726; F15 | K93600; K93601; B388; F1684 | K93500; AMS 1-23011 | S590; J 467 | 660; S66286; AMS 5731; AMS 5732; AMS 5737; AMS 5525 | | 661; R30155 | R30556 | S41880; AMS 5508; AMS 5616; A565 Grade 615; J467 |
| | BS (UK) | | | 4J36 | | | HR 51; HR 52; 286 S 31 | HR 51 | | | |
| | DIN (GERMANY) | | NiCo 29 18; X3NiCo29-18 | Ni36; Ni 36 | | X40CoCrNi20-20; X40 CoCrNi 20 20 | X6NiCrTiMoVB25-15-2; X5NiCrTi26-15 X6 NiCrTiMoVB 25 15 2; X5 NiCrTi 26 15 | X4NiCrTi25-15; X5NiCrTi26-15 | X12CrCoNi21-20; X12 CrCoNi 21 20 | | |
| | Werkstoff (GERMANY) | | 1.398 | 1.391 | | 1.4977 | 1.4980 | 1.4943; 1.4944 | 1.4971 | | |
| | EN (EUROPE) | | | | | | X6NiCrTiMoVB25-15-2; X5NiCrTi26-15 | X4NiCrTi25-15; X5NiCrTi26-15 | X12CrCoNi21-20 | | |
| | GOST (RUSSIA) | 20Ch12N2V2MF | | 36N; 36N-VI | | | | 36NChTYu | | | |
| | JIS (JAPAN) | | | | | | | | | | |
| | SS (SWEDEN) | | | | | | | 2570 | | | |
| | UNE (SPAIN) | | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | 0Cr15Ni25Ti2MoA | GH2132 | GH19 | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| | NF/AFNOR (FRANCE) | | | | | | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | 651; S63198; AMS 5579; AMS 5526 | AMS 5725 | 662; S66220; AMS 5733 | R30590; S-590 | | | S38100; XM-15; A249 Grade TPXM-15 | | S66009 |
| | BS (UK) | | | | | | | | | |
| | DIN (GERMANY) | | | X4NiCrMoTiMnSiB26-14-3-2 | | | X5NiCrTiMoV26-15 | | | |
| | Werkstoff (GERMANY) | | | 1.464 | | | 1.3980 | | | |
| | EN (EUROPE) | | | | | | | | | |
| | GOST (RUSSIA) | | | | | 36NChTYu | 08Ch15N25T2MFR | 08Ch20N14S2; 08Ch20N14S2; EI 732 | 37Ch12N8G8MFB | 45Ch14N14B2M |
| | JIS (JAPAN) | | | | | | | | | |
| | SS (SWEDEN) | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| | NF/AFNOR (FRANCE) | | | | KC 20 WN | K 13 C 20 N16 Fe 15 D 7 | | NC 21 Fe DU | | NC 20 T | NC 22 FeDNb |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | | S66315 | R30605; 670; 5537C; AMS 5759 | R30003; R30008; F1058; F1058 Grade 1; F1058 Grade 2 | R31233; B815; B818 | Incoloy 825; N08825; | Hastelloy C-4; N06455 | Nimonic 75; N06075; AMS 5715 | Inconel 625; N06625; AMS 5666 |
| | BS (UK) | | | | | | | NA 16 | | HR 5; HR 203-4 | NA 21 |
| | DIN (GERMANY) | | | | CoCr20W15Ni | CoCr20Ni15Mo7; CoCr 20 Ni 15 Mo | CoCr26Ni9Mo5W; CoCr 26 Ni 9 Mo 5 W | NiCr21Mo | NiMo16Cr16Ti | NiCr20Ti | NiCr22Mo9Nb |
| | Werkstoff (GERMANY) | | | | 2.4964 | 2.471 | 2.468 | 2.4858 | 2.4610 | 2.4630; 2.4951 | 2.4856 |
| | EN (EUROPE) | | | | CoCr20W15Ni | | | | | | |
| | GOST (RUSSIA) | 40Ch15N7GF2MS; EI 388 | ChN35VTYu; EI 787 | | | | | ChN38VT | | | |
| | JIS (JAPAN) | | | | | | | | | | |
| | SS (SWEDEN) | | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | GH25 | | | NS142 | GH182 | | GH984 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| | NF/AFNOR (FRANCE) | NC 30 Fe | NU 30 | NC 22 FeD | NC 14 K 9 T 5 DWA | Z 8 NCDT 42 | | NC 19 KDT | | NU 30 | NC 16 FeT |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | Inconel 690; N06690 | Monel 400; N04400 | Hastelloy X; Inconel HX; N06002; 5390A; AMS 5754; AMS 5536 | Inconel 617; N06617; AMS 5887 | Nimonic 90; N07090; AMS 5829 | Haynes 214; NO7214 | Rene 41; N07041; AMS 5712; AMS 5713; AMS 5800 | Hastelloy B2; N10665 | Monel R-405; N04405 | Inconel 600; N06600; AMS 5665 |
| | BS (UK) | | NA 13; ANC 18 | HR 6; HR 204 | | HR 2; HR202; HR 402; HR 501; HR 502; HR 503 | | | | NA 13 | NA 14 |
| | DIN (GERMANY) | NiC29Fe | NiCu30Fe | NiCr30FeMo; NiCr22Fe18Mo; NiCr21Fe18Mo9 | NiCr23Co12Mo | NiCr20Co18Ti; NiCr 20 Co 18 Ti | NiCr16Al | NiCr19Co11MoTi; NiCr 19 CoMo | NiMo28; EL-NiM29; SG(UP)-NiMo27 | NiCu30Fe | NiCr15Fe8; NiCr 15 Fe |
| | Werkstoff (GERMANY) | 2.464 | 2.4360; 2.4361 | 2.4603; 2.4665 | 2.4663a | 2.4632; 2.4969 | 2.4646 | 2.4973 | 2.4617; 2.4616; 2.4615 | 2.4360; 2.4361 | 2.4816 |
| | EN (EUROPE) | | | | | NiCr20Co18Ti | | | NiMo28 | | NiCr15Fe8 |
| | GOST (RUSSIA) | | | | | | | | | | ChN78T |
| | JIS (JAPAN) | | | | | | | | YNiMo-7 | | |
| | SS (SWEDEN) | | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | NS315 | | GH22; GH334; GH536GH739; SG-5 | | GH4037 | | GH141 | NS322 | | NS312 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| | NF/AFNOR (FRANCE) | N C 23 FeA | NCK 20 D | | NC 17 D | | A54-301; Fe-Ni48 | NW 11 AC | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | Inconel 601; N06601 | Nimonic 263; N07263; AMS 5872; AMS 5886 | Hastelloy C-22; N06022 | Hastelloy C-276; N10276 | N06025 | K94800; F 30 | Nimonic PE 16 | Haynes HR-120; N08120; B408; B409 | Haynes HR-160; N12160 | Udimet 520 |
| | BS (UK) | | HR 10; HR 206; HR 404 | | | | | HR 55; HR 207 | | | |
| | DIN (GERMANY) | NiCr23Fe15A; NiCr 23 Fe | NiCo20Cr20MoTi; NiCo 20 Cr 20 MoTi MoTi | NiCr21Mo14W | NiMo16Cr15W; NiMo 16 Cr 15 W | NiCr25FeAlY | Ni 48; RNi 12; RNi 8 | | | NiCo29Cr28Si | |
| | Werkstoff (GERMANY) | 2.4851 | 2.4650 | 2.4602 | 2.482 | 2.463 | 1.3922; 1.3926; 1.3927 | | | 2.488 | |
| | EN (EUROPE) | NiCr23Fe15A | NiCo20Cr20MoTi | | | NiCr25FeAlY | | | | | |
| | GOST (RUSSIA) | ChN60Yu | | | | | | | | | |
| | JIS (JAPAN) | | | NW 6022 | | NCF 625 | | | | | |
| | SS (SWEDEN) | | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | NS313 | GH163 | | NS334 | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| | NF/AFNOR (FRANCE) | | | KC 22 WN | | | | | NU 30 AT | NC 19 Fe Nb | NiFe25Cr20NbTi |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | Incoloy 840 | N08020 | R30188; AMS 5608; AMS 5772 | R30816; S-816; B639; Grade 671 Cobalt | | | R30600 | Monel K-500; N05500 | Inconel 718; N07718; AMS 5596; AMS 5589 | |
| | BS (UK) | | GH 1015; NS 1403; NS 143 | | | | | | NA 18 | HR 8 | |
| | DIN (GERMANY) | X8CrNiAlTi20-20 | NiCr20CuMo | CoCr22W14Ni | CoCr20Ni20W | | | | NiCu30Al3Ti; NiCu 30 Al | NiCr19Nb5Mo3; NiCr 19 NbMo; NiCr19Fe19Nb5Mo3 | NiFe25Cr20NbTi; NiFe 25 Cr 20 NbTi |
| | Werkstoff (GERMANY) | 1.485 | 2.466 | 2.4964 | 2.4989 | | | 2.478 | 2.438 | 2.467 | 2.496 |
| | EN (EUROPE) | | NiCr20CuMo | CoCr22W14Ni | CoCr20Ni20W | | | | NiCu30Al3Ti | NiCr19Nb5Mo3 | NiFe25Cr20NbTi |
| | GOST (RUSSIA) | | ChN28VMAB | | Altemp S-816 | | | | | | |
| | JIS (JAPAN) | | | | | | | | | | |
| | SS (SWEDEN) | | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | GH25 | | GH4169 | GH901; GH109 | GH146 | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| | NF/AFNOR (FRANCE) | | Z 8 NCDT 42 | NCK 19 DAT | NC 20 TA | | | NC 20 K 14 | | NC 19 KDT | NC 14 K8 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | Incoloy 925; N09925 | Nimonic 901; N09901; AMS 5660; AMS 5661 | Udimet 500; N07500; AISI 684 | Nimonic 80A; N07080 | MAR-M 246 | Inconel 722; N07722; AMS 5411 | Waspaloy; N07001; AISI 685; AMS 5704; AMS 5706; AMS 5708; AMS 5544 | | Rene 41; N07041; AMS 5712; AMS 5713; AMS 5800 | Rene 95 |
| | BS (UK) | | | | HR 401; HR 601 | | | | | | |
| | DIN (GERMANY) | | NiFe35Cr14MoTi; NiCr13Mo6Ti3; NiCr 13 Mo 6 Ti 3 | NiCr18Co18MoAlTi | NiCr20TiAl; NiCr 20 TiAl | NiCr23Mo16Cu; NiCr 23 Mo 16 Cu | | NiCr20Co13Mo4Ti3AL; NiCr 19 Co 14 Mo 4 Ti | | NiCr19Co11MoTi; NiCr 19 CoMo | |
| | Werkstoff (GERMANY) | | 2.4662 | 2.4983 | 2.4631; 2.4952 | 2.4675 | | 2.4654 | | 2.4973 | |
| | EN (EUROPE) | | | NiCr18Co18MoAlTi | NiCr20TiAl | NiCr23Mo16Cu | | NiCr20Co13Mo4Ti3AL | | | |
| | GOST (RUSSIA) | | | | ChN77TYuR; ChN56VMTYu | | | | ChN75VMYu; EI 827 | | |
| | JIS (JAPAN) | | | | NCF 80 A | | | | | | |
| | SS (SWEDEN) | | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | GH80A | | GH141 | GH738 | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| | NF/AFNOR (FRANCE) | | | | | NK 20 CDA; NCK 20 Atv | NCK 15 ATD | NC 19 KDu/v | NC 16 FeTNb | | Z 3 NK 28; Z 3 NK 38 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | N06230; AMS 5891; AMS 5878 | | | Udimet 700; 687; AMS 5846; J467; GE C50T67 | Nimonic 105; N13021; C565 | Nimonic 115; N06115; AMS 5666 | Nimonic PK 33 | Inconel X-750; N07750; AMS 5542; AMS 5582; AMS 5670; AMS 5667 | Astroloy; N13017; AMS 5851; AMS 5852; AMS 5882 | Incoloy 903; N19903; AMS 5803; ANS 5884; AMS 5892; AMS 5893 |
| | BS (UK) | | | | | HR 3 | HR 4 | | | | |
| | DIN (GERMANY) | NiCr22W14Mo | | | | NiCo20Cr15MoAlTi; NiCo 20 Cr 5 MoAlTi | NiCo15Cr15MoAlTi; NiCo 15 Cr 5 MoAlTi | | NiCr15Fe7TiAl; NiCr15Fe7Ti2Al | | |
| | Werkstoff (GERMANY) | 2.473 | | | | 2.463 | 2.464 | | 2.467 | | |
| | EN (EUROPE) | | | | | | | | NiCr15Fe7TiAl; NiCr15Fe7Ti2Al | | |
| | GOST (RUSSIA) | | ChN72MVKYu | ChN60MVTYu | | | | | | | |
| | JIS (JAPAN) | | | | | | | | | | |
| | SS (SWEDEN) | | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | NF/AFNOR (FRANCE) | | | | ND 30 M | | NK 15 CAT | | NC 13 AD | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | Inconel 740H; N07740 | 5388C; N30002; CW-12MW; | N7M; N-7M; N30007 | N12MV; N-12MV; N30012 | Nimocast PK24; N13100; AMS 5397 | Jethete M-252; N07252; AMS 5551 | Nimocast 713; N07713; AMS 5391; Inconel 713LC | M-35-1; N214135 |
| | BS (UK) | | | | | | HC 204 | | HC 203 | |
| | DIN (GERMANY) | NoCr25Co20TiMo | | G-NiM16CrW | G-NiMo28 | G-NiMo30 | G-NiCo15Cr10AlTiMo | G-NiCr19Co; G-NiCr 19 Co | G-NiCr13Al6MoNb | G-NiCu40Nb |
| | Werkstoff (GERMANY) | 2.488 | | 2.4883 | 2.4685 | 2.4882; 9.4810; 2.4810/9.4810 | 2.4674 | 2.4916 | 2.467 | 2.4365; 2.4365/9.4365 |
| | EN (EUROPE) | NoCr25Co20TiMo | | | | | | | | |
| | GOST (RUSSIA) | | | | | | | | | |
| | JIS (JAPAN) | | | | | | | | | NiCuC |
| | SS (SWEDEN) | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | NF/AFNOR (FRANCE) | | | NC14 K9 T5 DWA | | | | | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | Rene 77 | Rene 80 | | | | | MAR-M 247 | MAR-M 421 | MAR-M 432 | Rene 125 |
| | BS (UK) | | | | | | | | | | | |
| | DIN (GERMANY) | G-NiCr28W | | | G-NiCr15 | | | | G-NiCo10W10CrAlNb | | | |
| | Werkstoff (GERMANY) | 2.488 | | | 2.482 | | | | 2.468 | | | |
| | EN (EUROPE) | G-NiCr28W | | | G-NiCr15 | | | | | | | |
| | GOST (RUSSIA) | | | | | ChN62MVKYuL | ChN65VMTYuL | ChN67VMTYuL | | | | |
| | JIS (JAPAN) | | | | | | | | | | | |
| | SS (SWEDEN) | | | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 36 | 36 |
| | NF/AFNOR (FRANCE) | | | KD 27 DN | KC 25 NW; KC 25 N 10 W 7 Fe | | | T-35 | T-40 | T-50 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | Rene 220C | Udimet 700B | F75; AMS 5385D | A567; AMS 5382E; Cobalt Alloy 31; Cobalt #31 | | | R50250; Titanium Grade 1; ASTM GR. 1 | R50400; Titanium Grade 2; AMS 4902; AMS 4941; ASTM Gr. 2 | R50500; R50550; Titanium Grade 3; AMS 4900 |
| | BS (UK) | | | ANC 14 | ANC 13; 3146.2 | | | TA1 | TA2; TA3; TA4; TA5 | DTD 5023, DTD 5273 |
| | DIN (GERMANY) | | | CoCr28MoNi | CoCr25NiW | G-CoCr28 | G-CoCr28Nb | Ti 1; Ti 99.8; Titan Grade 1 | Ti 2; Ti 99.7 | Ti 3; Ti 99.6; Titan Grade 3 |
| | Werkstoff (GERMANY) | | | 2.498 | 2.497 | 2.478 | 2.478 | 3.7024; 3.7025 | 3.7034; 3.7035; 3.7036 | 3.7055; 3.7056 |
| | EN (EUROPE) | | | | | G-CoCr28 | | Ti 99.8 | Ti 99.7 | Ti 99.6 |
| | GOST (RUSSIA) | | | | | | | VT1-00 | VT1-0 | |
| | JIS (JAPAN) | | | | | | | Class 2; Gr-1 | Class 2; Gr-2 | Class 3; Gr-3 |
| | SS (SWEDEN) | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | Ti-PO1 | Ti-PO2; 38-711L-7001; 38-712L-7002 | |
| | UNI (ITALY) | | | | | | | Ti1-Type 1 | Ti1-Type 2 | Ti1-Type 3 |
| | IS (INDIA) | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | TA0 | TA1 | TA2 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| | NF/AFNOR (FRANCE) | T-60 | | | | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | R50700; Titanium Grade 4; AMS 4901; AMS 4921 | R52400; Titanium Grade 7; Ti-0.15Pd | R52250; Titanium Grade 11; Ti-0.15Pd | R52402; Titanium Grade 16; Ti-0.05Pd | R52252; Titanium Grade 17; Ti-0.05Pd | R52404; Titanium Grade 26; Ti-0.1Ru | R52254; Titanium Grade 27; Ti-0.1Ru | R53400; Titanium Grade 12; Ti-0.3Mo-0.8Ni; AMS 4902 |
| | BS (UK) | TA7; TA8; TA9 | | | | | | | |
| | DIN (GERMANY) | Ti 4; Ti 99.5; Titan Grade 4 | | | | | | | TiNi0.8Mo0.3 |
| | Werkstoff (GERMANY) | 3.7064; 3.7065; 3.7066 | 3.724 | 3.723 | | | | | 3.711 |
| | EN (EUROPE) | Ti 99.5 | | | | | | | TiNi0.8Mo0.3 |
| | GOST (RUSSIA) | | | | | | | | |
| | JIS (JAPAN) | Class 4; Gr-4 | Class 13; Gr-13 | Class 13; Gr-13 | | | | | |
| | SS (SWEDEN) | | | | | | | | |
| | UNE (SPAIN) | 38-714L-7004 | 38-715L-7021 | 38-715L-7021 | | | | | |
| | UNI (ITALY) | Ti1-Type 4 | Ti2Pd-Type 7 | Ti2Pd-Type 7 | | | | | |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | TA3 | TA9 | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No 37 | 37 | 37 | 37 | 37 | 37 | 37 |
|---|---|---|---|---|---|---|---|---|
| | NF/AFNOR (FRANCE) | TA6V; T-A6V; Ti-P.63 | TA6ZR4DE; T-A6ZR4DE | | TA6V6E2; T-A6V6E2 | | TU2; T-U2 | TA4DE; T-A4DE |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | R56400; Titanium Grade 5; Ti-6Al-4V; AMS 4911; AMS 4928 | R54620; Titanium Grade 6Al-2Sn-4Zr-2Mo; 6Al-2Sn-4Zr-2Mo; AMS 4975; AMS 4976; AMS 4919 | R54790; Ti-679; AMS 4974 | R56620; Titanium Grade 6Al-6V-2Sn; Ti-6Al-6V-2Sn; AMS 4918; AMS 4936; AMS 4971; AMS 4978 | R56320; Titanium Grade 9; Ti-3Al-2.5V; AMS 4943; AMS 4944 | | |
| | BS (UK) | TA10; TA11; TA12; TA13; TA 28; TA56; Ti-Al-V | TA18; TA19; TA20; TA25; TA26; TA27 | TA18; TA19; TA20; TA25; TA26; TA27 | | | TA21; TA22; TA23; TA24 | TA45; TA46; TA47; TA48; TA49; TA50; TA51; TA57 |
| | DIN (GERMANY) | Ti6Al4V; Titan Grade 5; Titan 6 Al 4V | TiAl6Sn2Zr4Mo2 | | Ti-6Al-2Sn-4Zr-6Mo | Ti6Al2.5V; Titan Grade 9; Titan 3Al 2,5V | TiCu2 | Ti4Al4Mo2Sn; TiAl4Mo4Sn4Si0.5 |
| | Werkstoff (GERMANY) | 3.7165; 3.7164 | 3.7145; 3.7144 | | 3.7175; 3.7174 | 3.7195; 3.7194 | 3.712 | 3.7185; 3.7184 |
| | EN (EUROPE) | Ti6Al4V | TiAl6Sn2Zr4Mo2 | | Ti-6Al-6V-2Sn | Ti6Al2.5V | | |
| | GOST (RUSSIA) | VT6; VT6L | VT25 | | | PT-3V | | |
| | JIS (JAPAN) | Class 6 0; Gr 6 0; SAT-64; TAB 6400E; TAF 6400 | | | | Class 6 1; Gr 6 1 | | |
| | SS (SWEDEN) | | | | | | | |
| | UNE (SPAIN) | Ti-P63; 38-723L-7301 | | | 38-725L-7303 | | Ti-P11 | Ti-P68 |
| | UNI (ITALY) | TiAl6V4-Type 5 | | | | TiAl3V2.5-Type 9 | | |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | TC4 | TC2 | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| | NF/AFNOR (FRANCE) | TA5E; T-A5E; Ti-P.65 | | | TA6VE; T-A6VE | TA4D3V; T-A4D3V | | TA8DV; T-A8DV |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | R54520; Titanium Grade 6; Ti-5Al-2.5Sn; Gr6; AMS 4910; AMS 4926 | R54521; Titanium Grade Ti-5Al-2.5Sn-ELI; Ti-5Al-2.5Sn-ELI; AMS 4909; AMS 4924 | R56410; Titanium Grade Ti-10V-2Fe-3Al | R56401; R56407; Titanium Grade 23; Ti-6Al-4V-ELI; AMS 4907; AMS 4930; AMS 4956 | Ti-4Al-3Mo-1V | | R54810; Titanium Grade Ti-8Al-1Mo-1V; Ti-8Al-1Mo-1V; AMS 4915; AMS 4916; AMS 4972; AMS 4973 |
| | BS (UK) | TA14; TA17 | TA32 | | TA11 | | | TA40 |
| | DIN (GERMANY) | TiAl5Sn2.5; TiAl 5 Sn 22; Titan 5Al2.5Sn; Ti5Al2,5Sn | TiAl5Sn2.5 ELI | | Ti6Al4V ELI | | | |
| | Werkstoff (GERMANY) | 3.7115.1; 3.7115; 3.7114 | | | | | | |
| | EN (EUROPE) | TiAl5Sn2.5 | | | | | | |
| | GOST (RUSSIA) | VT5-1 | VT5-1 | | VT6S | VT14 | VT22 | |
| | JIS (JAPAN) | SAT-525 | | | Class 6 1; Gr 6 1 | | | |
| | SS (SWEDEN) | | | | | | | |
| | UNE (SPAIN) | 38-716L-7101 | | | | | | |
| | UNI (ITALY) | | | | TiAl6V4ELI-Type 5.1 | | | |
| | IS (INDIA) | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | TA7 | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | |
|---|---|---|---|---|---|---|---|
| | | 37 | 37 | 37 | 37 | 37 | 37 |
| | NF/AFNOR (FRANCE) | | | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | R56322; Titanium Grade 18; Ti-3Al-2.5V-0.05Pd; Ti-Pd18; F18 | R56323; Titanium Grade 28; Ti-3Al-2.5V-0.1Ru | R54250; Titanium Grade 38; Ti-4Al-2.5V; AMS 6946B | R56260; Titanium Grade 6Al-2Sn-4Zr-6Mo; Ti-6Al-2Sn-4Zr-6Mo; AMS 4981B | R58650; Titanium Grade Ti-5Al-2Sn-2Zr-4Cr-4Mo; AMS 4995; AMS 4997 | Ti-6Al-2Sn-2Zr-2Mo-2Cr-0.15Si; AMS 4898 |
| | BS (UK) | | | | | | |
| | DIN (GERMANY) | | | | Ti6Al2Sn4Zr6Mo | Ti5Al2Sn2Zr4Mo4Cr | |
| | Werkstoff (GERMANY) | | | | | | |
| | EN (EUROPE) | | | | Ti6Al2Sn4Zr6Mo | Ti5Al2Sn2Zr4Mo4Cr | |
| | GOST (RUSSIA) | | | | | | |
| | JIS (JAPAN) | | TAT 3250 Class 61 | | | | |
| | SS (SWEDEN) | | | | | | |
| | UNE (SPAIN) | | | | | | |
| | UNI (ITALY) | | | | | | |
| | IS (INDIA) | | | | | | |
| | KS REP. OF) (KOREA | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| | NF/AFNOR (FRANCE) | | | | | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | Ti-4.5Al-3V-2Mo-2Fe; AMS 4899 | R56700; Titanium Grade Ti-6Al-7Nb; F1295 | | | R56410; Ti-10V-2Fe-3Al; AMS 4983; AMS 4984; AMS 4986; AMS 4987 | R58010; Ti-13V-11Cr-3Al; AMS 4917; AMS 4959; B120VCA; B-1; 3Al-13V-11Cr | R58030; Titanium Grade 10; Ti-11.5Mo-6Zr-4.5Sn; AMS 4977; AMS 4980 | R58153; Ti-15V-3Cr-3Al-3Sn; AMS 4914 |
| | BS (UK) | | | | | | TA3 | TA5 | |
| | DIN (GERMANY) | | | | | | | | |
| | Werkstoff (GERMANY) | | | | | | | | |
| | EN (EUROPE) | | | | Ti5Al5V5Mo3Cr | | | | |
| | GOST (RUSSIA) | | | OT4-1 | VST 5553 | | | | |
| | JIS (JAPAN) | | | ST-A90 | | | | | |
| | SS (SWEDEN) | | | | | | | | |
| | UNE (SPAIN) | | | | | | 38-729L-7701 | | |
| | UNI (ITALY) | | | | | | | | |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | Material Group No |
|---|---|---|---|---|---|---|---|---|---|
| | | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 |
| | NF/AFNOR (FRANCE) | | | | | | | | C 105 E 2 U; Y1 105; C105E2U |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | R58210; Titanium Grade 21; Ti-15Mo-2.7Nb-3Al-0.2Si; B265 | R58640; Titanium Grade 19; Ti-3Al-8V-6Cr-4Mo-4Zr | R58645; Titanium Grade 20; Ti-3Al-8V-6Cr-4Mo-4Zr | R58820; Titanium Grade 8Mo-8V-2Fe-3Al; Ti-8Mo-8V-2Fe-3Al | | | | W110; T72301 |
| | BS (UK) | | TA38 | | | | | | |
| | DIN (GERMANY) | | | | | | | | C105U; C 105 W 1; C 105 U |
| | Werkstoff (GERMANY) | | | | | | | | 1.1545 |
| | EN (EUROPE) | | | | | | | | C105U |
| | GOST (RUSSIA) | | | | | VT15 | VT15-1 | VT19 | U10A-1; U10A-2; U11-1 |
| | JIS (JAPAN) | | | | | | | | SK 105; SK 3; TC 105 |
| | SS (SWEDEN) | | | | | | | | 1880 |
| | UNE (SPAIN) | | | | | | | | F.515; F.516 |
| | UNI (ITALY) | | | | | | | | C 100 KU |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | STC 105; STC 3 |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | T10 |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| | NF/AFNOR (FRANCE) | 35 NCD 14 | C 105 E 2 UV 1; Y1 105 V; 100 V 2 | 50CrV4RR; 50 CV 4; 51 CV 4 | 34 CD 4 | | X40Cr14; Z 40 C 14 | | | Z 30 WCV 9 | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | W210; T72302 | 6145; 6150; 6150 H; G61500; H61500 | P20; T51620 | | | 300M; 4340M; K44220 | | H21; T20821 | S7; T41907 |
| | BS (UK) | 832 M 31 | BW 2 | 735 A 50; 735 A 51; 735 H 51; 735 M 50; En 47 | 708 A 37 | | | | | BH 21 | |
| | DIN (GERMANY) | 32NiCrMo14-5; 32 NiCrMo 14-5 | 100V1; 100 V 1 | 51CrV4; 50CrV4; 50 CrV 4 | 35CrMo4; 35 CrMo 4 | 26MnCr6-3 | X40Cr14; X 42 Cr 13 | 41SiNiCrMoV7-6 | | X30WCrV9-3; X30WCrV9 3 | 50CrMoV13-4; 50 CrMoV 13 4; 50CrMoV13-15 |
| | Werkstoff (GERMANY) | 1.6746 | 1.2833 | 1.8159 | 1.2330 | 1.8721 | 1.2083; 1.2083 ESR | 1.6928 | | 1.2581 | |
| | EN (EUROPE) | 32NiCrMo14-5 | 100V1 | 51CrV4 | 35CrMo4 | 26MnCr6-3 | X40Cr14 | S 155 | | X30WCrV9-3; X30WCrV9 3 | 50CrMoV13-15 |
| | GOST (RUSSIA) | | | 50ChFA; 50ChGFA | | | | | 30ChGSA | 3Ch2W8F | |
| | JIS (JAPAN) | | SKS 43 | SUP 10; SUP 10-CSP; SUP 10 M | | | SUS 420 J 2 | | | SKD 5 | |
| | SS (SWEDEN) | | | 2230 | 2234 | | 2314 | | | | |
| | UNE (SPAIN) | F.1262-32 NiCrMo 12 | | F.143; F.143.A; 51 CrV 4; F.1430 | | | F.5263; X 40 Cr 13 | | | F.5323; X 30 WCrV 9 | 1.2357; 1.2355 |
| | UNI (ITALY) | | 102 V 2 KU | 50 CrV 4 | 35 CrMo 4 | | X 41 Cr 13 KU | | | X 30 WCrV 9 3 KU | |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | SPS 4 | SPS 10 | SCM 435TK | | STS 420J2 | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | T9 ; V | 50CrVA | 3CrMo | | 3Cr13 | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 |
| | NF/AFNOR (FRANCE) | | | Z 40 C 13 | | 55WC20; 55 WC 20 | Z 2 CN 18-10 M | | | | X 160 CrMoV 12; Z 160 CDV 12 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | A9; T30109 | S6; T41906 | 420 C | 414; S41400; AMS 5615 | S1; T41901 | K92710 | K92890; AMS 6512 | K93120; AMS 6514 | K93540; AMS 6515 | D2; T30402 |
| | BS (UK) | | | 420 S 45 | | BS 1 | | BS S162 | | | BD 2 |
| | DIN (GERMANY) | | | X39Cr13; X 38 Cr 13 | | 60WCrV8; 60 WCrV 7 | X2NiCoMo18-8-5 | X2NiCoMo18-9-5; X2NiCoMo18-8-5 | X2NiCoMo18-8-5 | X2NiCoMo18-12; X2NiCoMoTi18-12-4 | X153CrMoV12; X155CrVMo12-1; X155 CrVMo 12 1 |
| | Werkstoff (GERMANY) | | | 1.4031 | | 1.2550 | 1.6359 | 1.6358; 1.6359 | 1.6354; 1.6359 | 1.6355; 1.6356 | 1.238 |
| | EN (EUROPE) | | | X39Cr13 | | 60WCrV8 | X2NiCoMo18-8-5 | X2NiCoMo18-8-5 | X2NiCoMo18-8-5 | | X153CrMoV12 |
| | GOST (RUSSIA) | | | 40Ch13 | | 6ChV2S; 5ChV2S | | | | | |
| | JIS (JAPAN) | | | | | | | | | | SKD 10; SKD 11 |
| | SS (SWEDEN) | | | | | | | | | | 2310 |
| | UNE (SPAIN) | | | | | | | | | | F.520.A |
| | UNI (ITALY) | | | X 40 Cr 14 | | 55 WCrV 8 KU | | | | | X 155 CrVMo 12 1 KU |
| | IS (INDIA) | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | | | Cr12MoV |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| | NF/AFNOR (FRANCE) | X200Cr12; Z 200 C 12 | 100Cr6RR; 100 C 6; 100Cr6; Y 100 C 6 | 90 MnV 8; 90 MV 8 | X 40 CrMoV 5; Z 40 CDV 5 | | Z 100 CD 17 Cl; Z 100 CD 17 | | | 100 C 3 | 55 NCDV 7; 55 NiCrMoV7 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | D3; T30403 | L3; T61203 | O2; T31502 | H13; T20813 | | 440C; S44004; S44025 | 440A; S44002; J91606 | | L2; T61202 | L6; T61206 |
| | BS (UK) | BD 3 | BL 3; BL3 | BO 2; BO2 | BH 13 | | | | | | |
| | DIN (GERMANY) | X210Cr12; X 210 Cr 12 | 102Cr6; 102 Cr 6; 100 Cr 6 | 90MnCrV8; 90 MnCrV 8 | X40CrMoV5-1; X40 CrMoV 5 1 | | X105CrMo17; X105 CrMo 17 | X70CrMo15; X 65 CrMo 14 | 62SiMnCr4; 62 SiMnCr 4 | 115CrV3; 115 CrV 3 | 55NiCrMoV7; 56 NiCrMoV 7 |
| | Werkstoff (GERMANY) | 1.2080 | 1.2067 | 1.284 | 1.2344 | | 1.4125 | 1.411 | 1.2101 | 1.2210 | 1.2714 |
| | EN (EUROPE) | X210Cr12 | 102Cr6 | 90MnCrV8 | X40CrMoV5-1 | | X105CrMo17 | X70CrMo15 | | 115CrV3 | 55NiCrMoV7 |
| | GOST (RUSSIA) | Ch12 | Ch | | 4Ch5MF1S | | 95Ch18; 110Ch18M-SchD | | | | 5ChGNM |
| | JIS (JAPAN) | SKD 1 | SUJ 2 | | SKD 61 | | SUS 440 C | | | | SKT 4 |
| | SS (SWEDEN) | | | | 2242 | | | | | | |
| | UNE (SPAIN) | F.521; F.5212; X 210 Cr 12 | F.5230; 100 Cr 6 | 90 MnCrV 8; F.5229 | F.5318; X 40 CrMoSiV 5 | | | | | F.520.L; F.5125 | F.520.B; 55 NiCrMoV 7; F.5307 |
| | UNI (ITALY) | X 205 Cr 12 KU | 102 Cr 6 KU | 90 MoVCr 8 KU | X 40 CrMoV 5 1 1 KU | | | | | 107 CrV 3 KU | 55 NiCrMoV 7 KU; 56 NiCrMoV 7 KU |
| | IS (INDIA) | T215Cr12 | | | | | | | | | |
| | KS REP. OF) (KOREA | STR 3 | STB 2 | | STD 61 | STF 4 | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | Cr12 | Cr2 | 9Mn2V | 40CrMoV5 | 5CrNiMo | 9Cr18 | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| | NF/AFNOR (FRANCE) | | | | | | | | | C 105 E 2 U; Y1 105; C105E2U | X200Cr12; Z 200 C 12 | HS 2-8-1; Z 85 DCWV 08-04-02-01 | 18-0-1; HS 18-0-1; Z 80 WCV 18-04-01 |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | S2; T41902 | S5; T41905 | D7; T30407 | A6; T30106 | A8; T30108 | 440F; S44020 | K93540; AMS 6515 | W1; T72301 | W110; T72301 | D3; T30403 | M1; H41; T11301; T20841 | T1; T12001 |
| | BS (UK) | | | | | | | | BW 18 | | BD 3 | BM 1 | BT 1 |
| | DIN (GERMANY) | | | | | | | X2NiCoMo18-12; X2NiCoMoTi18-12-4 | C80W2; C 80 W2 | C105U; C 105 W 1; C 105 U | X210Cr12; X 210 Cr 12 | HS2-9-1; S 2-9-1 | HS18-0-1; S 18-0-1 |
| | Werkstoff (GERMANY) | | | | | | | 1.6355; 1.6356 | 1.1625 | 1.1545 | 1.2080 | 1.3346 | 1.336 |
| | EN (EUROPE) | | | | | | | | C80W2 | C105U | X210Cr12 | HS2-9-1 | HS18-0-1 |
| | GOST (RUSSIA) | | | | | | | | U8-1 | U10A-1; U10A-2; U11-1 | Ch12 | | R18 |
| | JIS (JAPAN) | | | | | | | | SK 75; SK 85; SK 85 M; SK 5; SK 5 M; SK 6 | SK 105; SK 3; TC 105 | SKD 1 | | SKH 2 |
| | SS (SWEDEN) | | | | | | | | | 1880 | | | 2750 |
| | UNE (SPAIN) | | | | | | | | F.520.U; F.5107; C 80 | F.515; F.516 | F.521; F.5212; X 210 Cr 12 | | F.5520; HS 18-0-1 |
| | UNI (ITALY) | | | | | | | | | C 100 KU | X 205 Cr 12 KU | | HS 18-0-1 |
| | IS (INDIA) | | | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | STC 105; STC 3 | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | T7 | T10 | | | W18Cr4V |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 |
| | NF/AFNOR (FRANCE) | 90 MnV 8; 90 MV 8 | Z 85 WDCV 06-05-04-02; 6-5-2; HS6-5-2 | | | | | | Z 80 WKCV 19-05-04-01; HS 18-1-1-5 | Z 120 WDCV 06-05-04-03; HS6-5-3; Z 120 WDCV 06-05-04-04; HS6-5-4 | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | O2; T31502 | M2; T11302 | D7; T30407 | A3; T30103 | A7; T30107 | W5; T72305 | P4; T51604 | T4; T12004 | M3 Class 2; T11323 | | A532 IB; Ni-Hard 2; Ni-Cr-Lc; F45001 |
| | BS (UK) | BO 2; BO2 | BM 2; BM2 | | | | | | BT 4 | | | Grade 2 A |
| | DIN (GERMANY) | 90MnCrV8; 90 MnCrV 8 | HS6-5-2; HS 6-5-2; S 6-5-2 | | | | | 6CrMo15-5; X 6 CrMo 4 | HS18-1-2-5; S 18-1-2-5 | HS6-5-3; HS 6-5-3; S 6-5-3 | HS6-5-3C | G-X 260 NiCr 4 2; EN-GJN-HV520; EN-GJN-HB480; EN-JN2029 |
| | Werkstoff (GERMANY) | 1.284 | 1.3343 | | | | | 1.234 | 1.3255 | 1.334 | 1.335 | 0.9620; 5.5602 |
| | EN (EUROPE) | 90MnCrV8 | HS6-5-2 | | | | | | HS18-1-2-5 | HS6-5-3 | HS6-5-3C | EN-GJN-HB480; EN-JN2029 |
| | GOST (RUSSIA) | | R6M5 | | | | | | | | | |
| | JIS (JAPAN) | | SKH 51 | | | | | | SKH 3 | SKH 52; SKH 53 | | |
| | SS (SWEDEN) | | 2722 | | | | | | | 2725 | | 0512-00 |
| | UNE (SPAIN) | 90 MnCrV 8; F.5229 | F.550.A; F.5604 | | | | | | F.5530; HS 18-1-1-5 | F.5605; 6-5-3 | | |
| | UNI (ITALY) | 90 MoVCr 8 KU | | | | | | | HS 18-1-1-5 | | | |
| | IS (INDIA) | | T83MoW6Cr4V2 | | | | | | | | | |
| | KS REP. OF) (KOREA | | SKH 51 | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | 9Mn2V | W6Mo5Cr4V2 | | | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| | NF/AFNOR (FRANCE) | | | | | | | | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | | | SAE J2477 AD 1400 | F37006; A897 230-185-01; A897 (230/185/01); A897M 1600-1300-01; A897M (1600/1300/01); A897 Grade 5; SAE J2477 AD 1600 | | | | | | |
| | BS (UK) | Grade 1 A; Grade 1 B; Grade 1 C | | | | | | | | | | |
| | DIN (GERMANY) | EN-GJN-HV350; EN-GJN-HB340; EN-JN2019 | EN-GJN-HB400; EN-JN2059 | EN-GJN-HB500 | EN-GJS-HB400 | EN-GJS-HB450 | G-X 250 CrMoV 25 | | | | | |
| | Werkstoff (GERMANY) | 0.9610; 5.5600 | 5.5601 | 5.560 | 5.3406 | 5.3407 | 1.4192 | | | | | |
| | EN (EUROPE) | EN-GJN-HB340; EN-JN2019 | EN-GJN-HB400; EN-JN2059 | EN-GJN-HB500 | EN-GJS-HB400 | EN-GJS-HB450 | | | | | | |
| | GOST (RUSSIA) | | | | | | | ChS15M4 | ChS17 | ChS17M3 | ChKh16 | ChKh22 |
| | JIS (JAPAN) | | | | | | | | | | | |
| | SS (SWEDEN) | | | | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 |
| | NF/AFNOR (FRANCE) | | | | | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | | | | | A532 IID 20% CrMo-LC; A532 Class II Type D; F45007 | A532 IIC 15% CrMo-HC; A532 Class II Type C; 15% CrMo; F45005 | A532 IIIA 25% Cr; A532 Class III Type A | A532 ID; Ni-Hard 4; Ni-HiCr; F45003 |
| | BS (UK) | | | | | Grade 3 C | Grade 3 A; Grade 3 B | Grade 3 D | Grade 2 C; Grade 2 D; Grade 2 E |
| | DIN (GERMANY) | | | | | G-X 260 CrMoNi 20 2 1; EN-GJN-HV600(XCr23); EN-GJN-HB555(XCr18); EN-JN3039 | G-X 300 CrMo 15 3; G-X 300 CrMoNi 15 2 1; EN-GJN-HV600(XCr14) | G-X 260 Cr 27; EN-GJN-HB555(XCr23); EN-JN3049 | G-X 300 CrNiSi 9 5 2; EN-GJN-HV600; |
| | Werkstoff (GERMANY) | | | | | 0.9645; 5.5609 | 0.9635; 0.9640; 5.5608 | 0.9650; 5.5610 | 0.9630; 5.5605 |
| | EN (EUROPE) | | | | | EN-GJN-HB555(XCr18); EN-JN3039 | EN-GJN-HB555(XCr14) | EN-GJN-HB555(XCr23); EN-JN3049 | EN-GJN-HB555; EN-JN2049 |
| | GOST (RUSSIA) | ChKh28D2 | ChG7Kh4 | ChYu30 | ChN3KhMDSha | | | ChWG | |
| | JIS (JAPAN) | | | | | | | | |
| | SS (SWEDEN) | | | | | | | 0466-00 | 0457-00 |
| | UNE (SPAIN) | | | | | | | | |
| | UNI (ITALY) | | | | | | | | |
| | IS (INDIA) | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | |

## Material Designation in Accordance with Selected Standards

| Standards | | Material Group No | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
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| | NF/AFNOR (FRANCE) | | | | | | | | | |
| | AISI/ASM/ ASTM/SAE/ UNS/AA (US) | A532 IA; Ni-Hard; F45000; Ni-Cr-Hc | A532 IIIA 25% Cr | | | | | | | |
| | BS (UK) | Grade 2 B | Grade 3 E | | | | | | | |
| | DIN (GERMANY) | G-X 330 NiCr 4 2; EN-GJN-HV550; EN-GJN-HB510; EN-JN2039 | G-X 300 CrMo 27 1; EN-GJN-HB555(XCr23) | G-X 250 CrMoV 25 | | | | | | |
| | Werkstoff (GERMANY) | 0.9625; 5.5604 | 0.9655; 5.5610 | 1.419 | | | | | | |
| | EN (EUROPE) | EN-GJN-HB510; EN-JN2039 | EN-GJN-HB555(XCr23) | | | | | | | |
| | GOST (RUSSIA) | | 20Ch25N20S2 | | ChKh9N5 | ChKh16M2 | ChKh22 | ChKh28D2 | ChYu30 | ChN3KhMDSha |
| | JIS (JAPAN) | | | | | | | | | |
| | SS (SWEDEN) | 0513-00 | | | | | | | | |
| | UNE (SPAIN) | | | | | | | | | |
| | UNI (ITALY) | | | | | | | | | |
| | IS (INDIA) | | | | | | | | | |
| | KS REP. OF) (KOREA | | | | | | | | | |
| | GB/YB/JB/ SY/NB (PRC) | | | | | | | | | |

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| | MM TRD-W | 79,470 |
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| MT LNHT-ABUT | 488 |
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