

GUIDE TO MILLING TOOLS

Section organization

Organized according to cutting mode for milling.
(Refer to the index on the next page.)

PHOTO OF PRODUCT

TYPE

APPLICATION

PRODUCT SECTION

PRODUCT FEATURES

CORNER ANGLE ICON

APPLICATION ICON
represents available machining applications, such as finishing and roughing.

CUTTING MODE ICON
represents available cutting modes, such as face milling and shoulder milling.

GEOMETRY

SCOPE OF AVAILABLE WORK MATERIAL
provides a graph depicting the scope of the available work material for machining.

STANDARDS FOR APPLICABLE INSERTS
indicates stock status, dimensions, etc. for applicable inserts.

MILLING

FACE MILLING
-GENERAL CUTTING-

WSX445

Fig.1 Fig.2 Fig.3

● Double sided Z Geometry
● Smooth chip discharge

Right hand tool holder only.

MILLING

INSERTS WITH BREAKER

| Work Material | Coated | Grade | Dimensions (inch) | Geometry |
|--------------------------------------|----------------|--------|-------------------|----------|
| Shape | Order Number | Coated | IC S BS RE | Geometry |
| Steel | WSX445UR1503SA | MP1020 | 551 331 .059 047 | 047 |
| Stainless Steel | WSX445UR1504AA | MP1020 | 551 331 .059 047 | 047 |
| Cast Iron | WSX445UR1504CA | MP1020 | 551 331 .059 047 | 047 |
| Non-ferrous Metal | WSX445UR1504EA | MP1020 | 551 331 .059 047 | 047 |
| Heat-resistant Alloy, Titanium Alloy | WSX445UR1504FA | MP1020 | 551 331 .059 047 | 047 |
| Hardened Steel | WSX445UR1504GA | MP1020 | 551 331 .059 047 | 047 |

WIPER INSERTS

| Shape | Order Number | Coated | Dimensions (inch) | Geometry |
|--------------|------------------|--------|---------------------|----------|
| Shape | Order Number | Coated | L W1 S BS RE | Geometry |
| Wiper Insert | WNGU1405ANEN8C-M | MP1020 | 713 551 236 315 039 | 039 |

ARBOR TYPE

| Order Number | Stock | Number | Dimensions (inch) | APMX (inch) | Type | | | | | | | | | | | | |
|----------------|-------|--------|-------------------|-------------|-----------|-------|-------|-------|-------|----------|-------------|-------|-----|-----|------|-----|---|
| Order Number | R | DC | DCCK | Lf | DCCK (mm) | CCCK | SD | KWMM | LI | WT (lbs) | APMX (inch) | Type | | | | | |
| WSX445UR1503SA | ● | 3 | 1.500 | 2.005 | 1.750 | 500 | 630 | 276 | 433 | 1.102 | 1.437 | 250 | 164 | 8 | 197 | 1 | |
| WSX445UR1504AA | ● | Y | 3 | 2.000 | 2.506 | 1.750 | 748 | 413 | 630 | 1.063 | 1.750 | 313 | 187 | 1.2 | 197 | 1 | |
| WSX445UR1504CA | ● | Y | 4 | 2.500 | 3.006 | 2.000 | 1,000 | 945 | 539 | 827 | 1.260 | 2.190 | 376 | 219 | 2.0 | 197 | 1 |
| WSX445UR1504EA | ● | Y | 4 | 3.000 | 3.506 | 2.000 | 1,000 | 945 | 539 | 827 | 1.260 | 2.190 | 376 | 219 | 2.8 | 197 | 1 |
| WSX445UR1504FA | ● | Y | 5 | 4.000 | 4.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 5.9 | 197 | 2 |
| WSX445UR1504GA | ● | Y | 6 | 5.000 | 5.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 8.5 | 197 | 2 |
| WSX445UR1504HA | ● | Y | 7 | 6.000 | 6.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 10.6 | 197 | 2 |
| WSX445UR1504IA | ● | N | 8 | 8.000 | 8.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 18.1 | 197 | 3 |
| WSX445UR1504JA | ● | Y | 4 | 1.500 | 2.005 | 1.750 | 500 | 630 | 276 | 433 | 1.102 | 1.437 | 250 | 164 | 7 | 197 | 1 |
| WSX445UR1504KA | ● | Y | 4 | 2.000 | 2.506 | 1.750 | 748 | 413 | 630 | 1.063 | 1.750 | 313 | 187 | 1.1 | 197 | 1 | |
| WSX445UR1504LA | ● | Y | 5 | 2.500 | 3.006 | 2.000 | 1,000 | 945 | 539 | 827 | 1.260 | 2.190 | 376 | 219 | 2.0 | 197 | 1 |
| WSX445UR1504MA | ● | Y | 6 | 3.000 | 3.506 | 2.000 | 1,000 | 945 | 539 | 827 | 1.260 | 2.190 | 376 | 219 | 2.5 | 197 | 1 |
| WSX445UR1504NA | ● | Y | 7 | 4.000 | 4.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 5.8 | 197 | 2 |
| WSX445UR1504OA | ● | Y | 8 | 5.000 | 5.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 8.3 | 197 | 2 |
| WSX445UR1504PA | ● | Y | 10 | 8.000 | 8.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 10.4 | 197 | 2 |
| WSX445UR1504QA | ● | N | 12 | 8.000 | 8.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 18.8 | 197 | 3 |
| WSX445UR1504RA | ● | Y | 5 | 2.000 | 2.506 | 1.750 | 748 | 413 | 630 | 1.063 | 1.750 | 313 | 187 | 1.1 | 197 | 1 | |
| WSX445UR1504SA | ● | Y | 6 | 2.500 | 3.006 | 2.000 | 1,000 | 945 | 539 | 827 | 1.260 | 2.190 | 376 | 219 | 1.9 | 197 | 1 |
| WSX445UR1504TA | ● | Y | 8 | 3.000 | 3.506 | 2.000 | 1,000 | 945 | 539 | 827 | 1.260 | 2.190 | 376 | 219 | 2.4 | 197 | 1 |
| WSX445UR1504UA | ● | Y | 10 | 4.000 | 4.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 5.6 | 197 | 2 |
| WSX445UR1504VA | ● | Y | 12 | 5.000 | 5.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 8.0 | 197 | 2 |
| WSX445UR1504WA | ● | Y | 16 | 8.000 | 8.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 9.9 | 197 | 2 |
| WSX445UR1504XA | ● | N | 20 | 8.000 | 8.506 | 2.500 | 1,500 | 1,417 | 1,181 | 2,205 | 1,654 | 3,500 | 626 | 376 | 18.3 | 197 | 3 |

*1 Inches Metric
 *2 The cutter body includes a set bolt for an arbor.
 *3 WT: Mass

INSTRUCTIONS FOR USE OF WIPER INSERTS

Wiper inserts for WSX445 are two-cornered. Please set as shown in Fig.1. Excellent finished surfaces can be achieved with one wiper. Set more than 2 wiper inserts, equally spaced, when the feed per revolution is larger than 8mm/rev.

Fig.1 Fig.2

K008 ● : Inventory maintained. * : Inventory maintained in Japan.

K012 ● : Inventory maintained. * : Inventory maintained in Japan. <10 inserts in one case>

LEGEND FOR STOCK STATUS MARK
is shown on the left hand page of each double-page spread.

PRODUCT STANDARDS
indicates tool types, order numbers, stock status (per right/left hand), dimensions, etc.

CUTTING EDGE ANGLE FOR FACE MILLING

To Order: For title product, please specify order number and hand of tool (right/left). For insert, please specify insert number and grade.

ROTATING TOOLS

MILLING TOOLS

CLASSIFICATION..... K002

STANDARD OF MILLING

●FACE MILLING

WSX445..... K008
 ASX445 K016
 AHX640S..... K024
 AHX640W..... K029
 AOX445 K032

●SHOULDER MILLING

VOX400 K033
 ASX400 K038

●DEEP SHOULDER MILLING

APX4000 (Long Cutting Edge) K060
 SPX..... K084
 VFX5..... K090
 VFX6..... K094
 LER..... K098

●MULTI FUNCTION MILLING

APX3000 K044
 APX4000 K052
 AXD4000 K064
 AXD7000 K074
 BXD4000 K080
 AQX K100
 AJX K108
 ARX K122
 BRP K126
 BOE K130
 ECMP K134

●RADIUS MILLING

MBD/MBF..... K147

●CHAMFER MILLING

CFSP K135

●BALL NOSE END MILL

SRF..... K136
 MBN..... K146
 SRM2..... K150
 SRM2 $\phi 40/\phi 50$ K156

●VERTICAL FEED MILLING

PMC K158
 PMR K160
 PMF K161

●SCREW-IN ARBORS..... K162


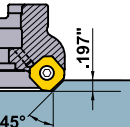

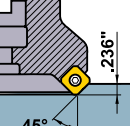

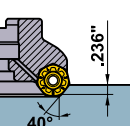

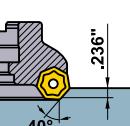

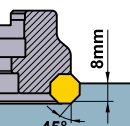

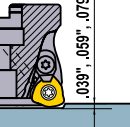

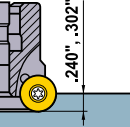

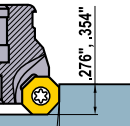
*Arranged by Alphabetical order

K024 AHX640S
 K029 AHX640W
 K108 AJX
 K032 AOX445
 K044 APX3000
 K052 APX4000
 K060 APX4000 (Long Cutting Edge)
 K100 AQX
 K122 ARX
 K038 ASX400
 K016 ASX445
 K064 AXD4000
 K074 AXD7000
 K130 BOE
 K126 BRP
 K080 BXD4000
 K135 CFSP
 K134 ECMP
 K098 LER
 K147 MBD/MBF
 K146 MBN
 K158 PMC
 K161 PMF
 K160 PMR
 K162 SCREW-IN ARBORS
 K084 SPX
 K136 SRF
 K150 SRM2
 K156 SRM2 $\phi 40/\phi 50$
 K090 VFX5
 K094 VFX6
 K033 VOX400
 K008 WSX445


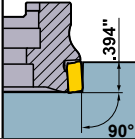



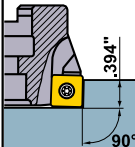



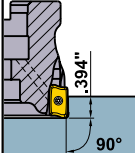



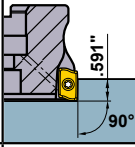
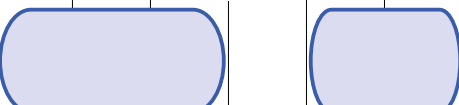


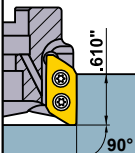


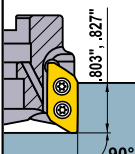


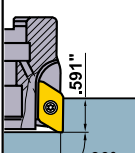

Note: Dimension symbols conforming to ISO13399. See pages PR3-PR6 for details.

CLASSIFICATION (ARBOR TYPE)

*Arranged by corner angle.


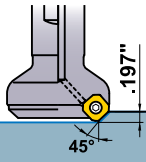

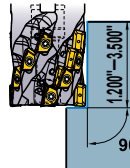

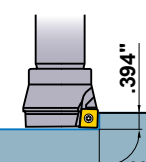

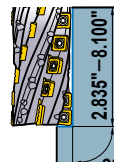

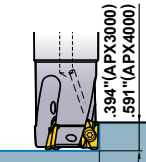

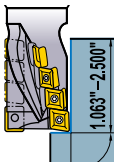

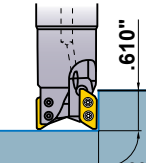

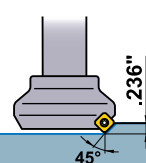

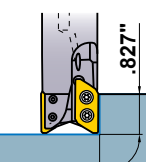

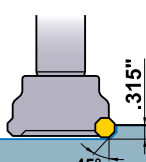

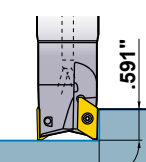

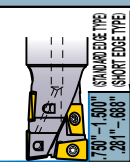

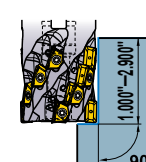

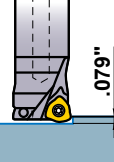
| Cutting Mode | Corner Angle | Application | Product Name · Shape | Corner Angle, Max. Depth of Cut | Features | Cutter Dia. | Work Material | | | | | |
|--------------|--------------|---------------------------------------|---|---|--|--|---------------|---|---|---|---|---|
| | | | | | | | P | M | K | N | S | H |
| Face Milling | 45° | General Cutting | WSX445   | <ul style="list-style-type: none"> ● Double sided Z Geometry. ● Smooth chip discharge. ● Face mill. | ·Ø1.500" ·Ø2.000" ·Ø2.500" ·Ø3.000" ·Ø4.000" ·Ø5.000" ·Ø6.000" ·Ø8.000" | <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; text-align: center;"> WSX445 (Max. Depth of Cut : .197") ↻ K008 </div> | | | | | | |
| | 45° | General Cutting | ASX445   | <ul style="list-style-type: none"> ● Precision molded 20° positive insert. ● A wide range of chip breakers. ● Screw-on type. ● High rigidity due to employment of a carbide shim. | ·Ø2.000" ·Ø2.500" ·Ø3.000" ·Ø4.000" ·Ø5.000" ·Ø6.000" ·Ø8.000" ·Ø10.000" | <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; text-align: center;"> ASX445 (Max. Depth of Cut : .236") ↻ K016 </div> | | | | | | |
| | 40° | General Cutting | AHX640S   | <ul style="list-style-type: none"> ● Heptagonal double-sided insert. ● Economical 14 corner use. ● Fine pitch design allows high feed milling. | ·Ø2.500" ·Ø3.000" ·Ø4.000" ·Ø5.000" ·Ø6.000" ·Ø8.000" | <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; text-align: center;"> AHX640S (Max. Depth of Cut : .236") ↻ K024 </div> | | | | | | |
| | 40° | High Feed Cutting for Cast Iron | AHX640W   | <ul style="list-style-type: none"> ● Heptagonal double-sided insert. ● Economical 14 corner use. ● Fine pitch design allows high feed milling. | ·Ø3.000" ·Ø4.000" ·Ø5.000" ·Ø6.000" ·Ø8.000" ·Ø10.000" ·Ø12.000" | <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; text-align: center;"> AHX640W (Max. Depth of Cut : .236") ↻ K029 </div> | | | | | | |
| | 45° | High Efficiency Cutting for Cast Iron | AOX445   | <ul style="list-style-type: none"> ● Octagonal double-sided solid CBN insert. ● Economical 16 corner use. (when depth of cut is 3mm) ● High efficiency machining from roughing to finishing. ● Easy operation and cleaning. | ·Ø63 ·Ø80 ·Ø100 ·Ø125 ·Ø160 | <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; text-align: center;"> AOX445 (Max. Depth of Cut : 8mm) ↻ K032 </div> | | | | | | |
| | - | Multi Functional Milling | AJX   | <ul style="list-style-type: none"> ● 15° positive insert. ● Air / coolant through. ● High rigidity due to double clamp structure. ● Suitable for high feed cutting. ● Special insert design with the use of 3 cutting edges. | ·Ø2.000" ·Ø2.500" ·Ø3.000" ·Ø4.000" ·Ø4.921" ·Ø6.299" | <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; text-align: center;"> AJX (Max. Depth of Cut : .039", .059", .079") ↻ K109 </div> | | | | | | |
| | - | Multi Functional Milling | BRP   | <ul style="list-style-type: none"> ● 11° positive insert. ● Round shape insert gives strong cutting edge. ● A wide variety of lengths available. ● Suitable for machining of die and mold. | ·Ø1.500" ·Ø2.000" ·Ø2.500" ·Ø3.000" ·Ø4.000" | <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; text-align: center;"> BRP (Max. Depth of Cut : .240", .302") ↻ K127 </div> | | | | | | |
| | - | Multi Functional Milling | BOE   | <ul style="list-style-type: none"> ● 20° positive insert. ● Compatible with 8-corner use insert and round type insert. ● Multi functional milling. | ·Ø1.250" ·Ø1.500" ·Ø2.000" ·Ø2.480" ·Ø2.500" ·Ø3.000" ·Ø3.150" ·Ø3.937" ·Ø4.921" ·Ø6.300" ·Ø8.000" | <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; text-align: center;"> BOE (Max. Depth of Cut : .276", .354") ↻ K131 </div> | | | | | | |

*Arranged by No. of available corners.

| Cutting Mode | Corner Angle | Application | Product Name · Shape | Corner Angle, Max. Depth of Cut | Features | Cutter Dia. | Work Material | | | | | |
|------------------|--------------|--|---|--|---|---|---|---|---|---|---|---|
| | | | | | | | P | M | K | N | S | H |
| Shoulder Milling | 0° | For Cast Iron | VOX400  |  .394" 90° | <ul style="list-style-type: none"> Vertical inserts with high strength cutting edge. Economical 8 corner use. Screw-on type. | ·Ø2.000" ·Ø2.500" ·Ø3.000" ·Ø4.000" ·Ø5.000" ·Ø6.000" ·Ø8.000" ·Ø10.000" |  VOX400 (Max. Depth of Cut : .394") → K033 | | | | | |
| | 0° | General Cutting | ASX400   |  .394" 90° | <ul style="list-style-type: none"> Economical due to the use of 4 cutting edges. Low resistance due to the 3D design of the curved cutting edge. Curved cutting edge and high rigidity holder. | ·Ø2.000" ·Ø2.500" ·Ø3.000" ·Ø4.000" ·Ø5.000" ·Ø6.000" ·Ø8.000" ·Ø10.000" |  ASX400 (Max. Depth of Cut : .394") → K038 | | | | | |
| | 0° | Multi Functional Milling | APX3000   |  .394" 90° | <ul style="list-style-type: none"> Air / coolant through. Low resistance insert and high rigidity body. Ideal chip control. High wall accuracy can be produced by using this cutter and unique insert geometry. | ·Ø2.000" ·Ø2.500" ·Ø3.000" |  APX3000 (Max. Depth of Cut : .394") → K045 | | | | | |
| | 0° | Multi Functional Milling | APX4000   |  .591" 90° | <ul style="list-style-type: none"> Air / coolant through. Low resistance insert and high rigidity body. Ideal chip control. High wall accuracy can be produced by using this cutter and unique insert geometry. | ·Ø2.000" ·Ø2.500" ·Ø3.000" ·Ø4.000" |  APX4000 (Max. Depth of Cut : .591") → K053 | | | | | |
| | 0° | Multi Functional Milling | AXD4000   |  .610" 90° | <ul style="list-style-type: none"> Air / coolant through. Low resistance inserts. High balance quality. Excellent wall accuracy. Multi functional milling. | ·Ø1.500" ·Ø2.000" ·Ø2.500" ·Ø3.000" ·Ø4.000" ·Ø5.000" |  AXD4000 (Max. Depth of Cut : .610") → K065 | | | | | |
| | 0° | Multi Functional Milling | AXD7000  |  .803", .827" 90° | <ul style="list-style-type: none"> Air / coolant through. Low resistance inserts. High balance quality. Excellent wall accuracy. Multi functional milling. | ·Ø2.000" ·Ø3.000" |  AXD7000 (Max. Depth of Cut : .803", .827") → K074 | | | | | |
| | 0° | Aluminum Alloy for Difficult-to-cut Material Cutting | BXD4000  |  .591" 90° | <ul style="list-style-type: none"> Air / coolant through. Low resistance inserts & high rigidity body. The Anti Fly Insert mechanism guarantees secure high-revolution milling. | ·Ø1.500" ·Ø2.000" ·Ø2.500" ·Ø3.000" ·Ø4.000" |  BXD4000 (Max. Depth of Cut : .591") → K081 | | | | | |











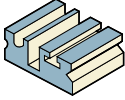
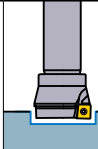
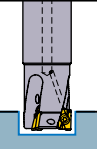

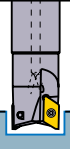
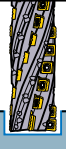
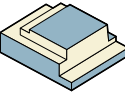
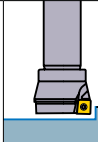
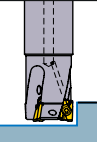

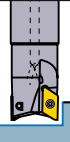



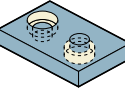
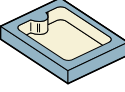
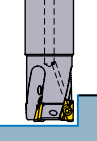

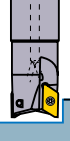
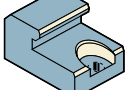
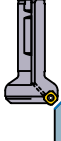

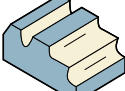
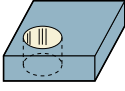
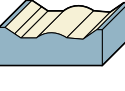



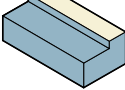

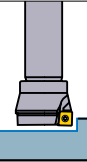
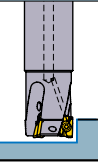
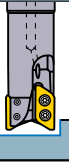
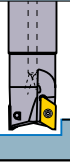

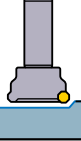
MILLING












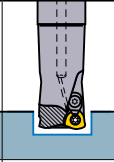
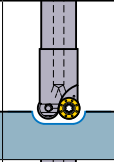
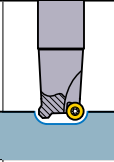
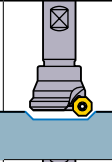
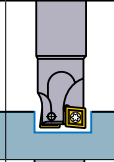
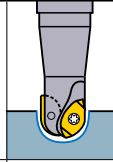
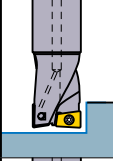
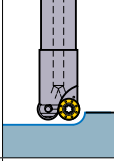
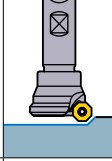
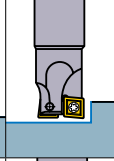
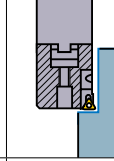
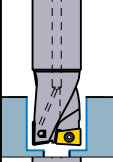
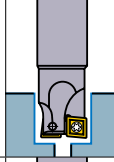

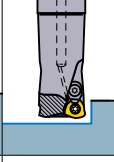
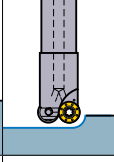
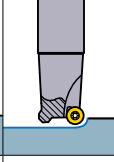
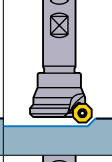
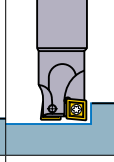
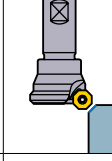
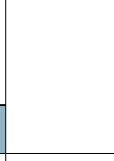
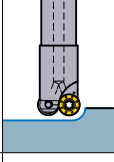
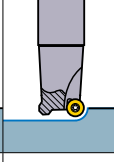
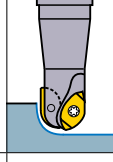
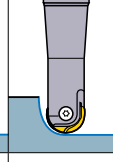
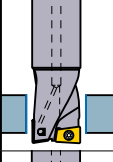

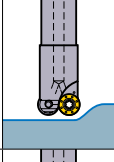
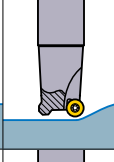
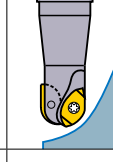
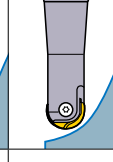

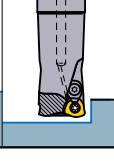
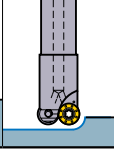
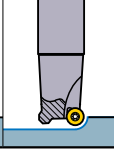
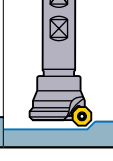
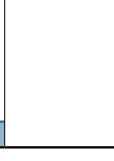
CLASSIFICATION (SHANK TYPE)

| Product Name · Shape | Corner Angle, Max. Depth of Cut | Features | Product Name · Shape | Corner Angle, Max. Depth of Cut | Features |
|---|--|---|---|---|---|
| WSX445  NEW K011 |  45° .197" | <ul style="list-style-type: none"> ● Double sided Z Geometry. ● Smooth chip discharge. ● $\phi 1.500'' - \phi 2.000''$ ● $\phi 63 - \phi 80\text{mm}$ ● End mill style. | VFX6  K094 |  90° 1.200"–3.500" | <ul style="list-style-type: none"> ● Vertical inserts with high strength cutting edge. ● Screw-on type clamping. ● High efficiency milling of titanium alloys. ● $\phi 2.000'' - \phi 4.000''$ |
| ASX400  K039 |  90° .394" | <ul style="list-style-type: none"> ● Economical due to the use of 4 cutting edges. ● Low resistance due to the 3D design of the curved cutting edge. ● Curved cutting edge and high rigidity holder. ● Max. depth of cut .394". ● $\phi 1.250'' - \phi 2.000''$ | SPX  K084 |  90° 2.835"–8.100" | <ul style="list-style-type: none"> ● The wavy cutting edge helps to reduce cutting resistance. ● Suitable for heavy machining due to holder rigidity. ● $\phi 1.969'' - \phi 2.000''$ |
| APX3000 APX4000  K044 K052 |  90° .394" (APX3000) .591" (APX4000) | <ul style="list-style-type: none"> ● Air / coolant through. ● Low resistance insert and high rigidity body. ● Ideal chip control. ● High wall accuracy can be produced by using this cutter and unique insert geometry. ● $\phi .500'' - \phi 1.500''$ | LER  K098 |  90° 1.063"–2.500" | <ul style="list-style-type: none"> ● Different helical flute angles prevents chattering. ● Suitable for heavy cutting due to holder rigidity. ● $\phi 1.000'' - \phi 2.000''$ |
| AXD4000  K064 |  90° .610" | <ul style="list-style-type: none"> ● Air / coolant through. ● Low resistance inserts. ● High balance quality. ● Excellent wall accuracy. ● Multi functional milling. ● $\phi 1.000'' - \phi 1.500''$ | ASX445  K017 |  45° .236" | <ul style="list-style-type: none"> ● Precision molded 20° positive insert. ● A wide range of chip breakers. ● Screw-on type. ● High rigidity due to employment of a carbide shim. ● $\phi 50 - \phi 80\text{mm}$ |
| AXD7000  K074 |  90° .827" | <ul style="list-style-type: none"> ● Air / coolant through. ● Low resistance inserts. ● High balance quality. ● Excellent wall accuracy. ● Multi functional milling. ● $\phi 1.250'' - \phi 1.500''$ | AOX445  K032 |  45° .315" | <ul style="list-style-type: none"> ● Octagonal double-sided solid CBN insert. ● Economical 16 corner use. (when depth of cut is 3mm) ● High efficiency machining from roughing to finishing. ● Easy operation and cleansing. ● $\phi 50 - \phi 63\text{mm}$ |
| BXD4000  K080 |  90° .591" | <ul style="list-style-type: none"> ● Air / coolant through. ● Low resistance inserts & high rigidity body. ● The Anti Fly Insert mechanism guarantees secure high-revolution milling. ● $\phi 1.000'' - \phi 1.500''$ | AQX  K100 |  90° .281"–.680" (SHORT EDGE TYPE) .179"–1.500" (STANDARD TYPE) | <ul style="list-style-type: none"> ● Air / coolant through. ● The center bottom cutting edge enables drilling and end milling without prepared hole. ● Max. depth of cut .281"–1.500". ● $\phi .625'' - \phi 1.500''$ |
| VFX5  K090 |  90° 1.000"–2.900" | <ul style="list-style-type: none"> ● Vertical inserts with high strength cutting edge. ● Screw-on type clamping. ● High efficiency milling of titanium alloys. ● $\phi 2.000'' - \phi 3.000''$ | AJX  K108 |  90° .079" | <ul style="list-style-type: none"> ● 13°, 15° positive insert. ● Air / coolant through. ● High rigidity due to double clamp structure. ● Suitable for high feed cutting. ● Special insert design with the use of 3 cutting edges. ● $\phi .625'' - \phi 2.000''$ |

| Product Name · Shape | Corner Angle, Max. Depth of Cut | Features | Product Name · Shape | Corner Angle, Max. Depth of Cut | Features |
|--|---|--|---|---|---|
| ARX  ↻ K122 |  | <ul style="list-style-type: none"> ● Precision M-class 15° positive insert. ● Effective for various machining applications. ● Air / coolant through. φ10—φ25mm | PMF  ↻ K161 |  | <ul style="list-style-type: none"> ● 2 directional cutting with large overhang. ● No burring so no need for hand finishing. ● High precision multi directional insert ensures highly accurate surfaces. φ50—φ80mm |
| BRP  ↻ K126 |  | <ul style="list-style-type: none"> ● 11° positive insert. ● Round shape insert gives strong cutting edge. ● A wide variety of lengths available. ● Suitable for machining of die and mold. ● Max. depth of cut .146"—.302". φ.500"—φ2.500" | SRM2  ↻ K150 |  | <ul style="list-style-type: none"> ● Air / coolant through. ● Suitable for roughing to semi-finishing of small and medium molds. ● High rigidity body design. ● Low resistance chipbreaker. ● Key type clamp. ● Shrink fit ready. φ.625"—φ1.250" |
| BOE  ↻ K130 |  | <ul style="list-style-type: none"> ● 20° positive insert. ● Compatible with 8-corner use insert and round type insert. ● Multi functional milling. φ1.250"—φ3.125" | SRM2 φ40/φ50 (φ1.575"/φ1.969")  ↻ K156 |  | <ul style="list-style-type: none"> ● Best for roughing of molds. ● Low resistance chipbreaker. ● Highly rigid body. φ40, φ50 mm (φ1.575", φ1.969") |
| ECMP  ↻ K134 |  | <ul style="list-style-type: none"> ● Unique insert seat position facilitates smooth initial cutting and stable machining. ● Excellent chip disposal. ● 86° rhombic shape 11° positive insert. φ1.000"—φ1.500" | SRF  ↻ K136 |  | <ul style="list-style-type: none"> ● S-shaped cutting edge provides sharpness similar to that of solid ball nose end mills. ● Highly accurate corner radius tolerance allows for high precision finishing. ● Carbide shank type available. φ.375"—φ1.250" |
| CFSP  ↻ K135 |  | <ul style="list-style-type: none"> ● Excellent sharpness with 11° positive inserts. ● 45° chamfer series. φ.313"—φ1.250" | MBN  ↻ K146 |  | <ul style="list-style-type: none"> ● Insert with two edges. ● Simple clamp system with one clamp screw. ● Sharp cutting edge. φ.312"—φ1.250" |
| PMC  ↻ K158 |  | <ul style="list-style-type: none"> ● For undercutting trimmed part of press mould. ● 2 directional cutting with large overhang. φ25—φ40mm | MBD  ↻ K147 |  | <ul style="list-style-type: none"> ● Insert with two edges. ● Simple clamp system with one clamp screw. ● Sharp cutting edge. φ.500"—φ1.000" |
| PMR  ↻ K160 |  | <ul style="list-style-type: none"> ● 1 directional cutting with large overhang. ● Unique shape of curved edge gives high rigidity and low resistance. φ50—φ80mm | | | |

SELECTION CHART (SHANK TYPE)

| Product Name | WSX445 <small>NEW</small> | ASX400 | APX3000 APX4000 | AXD4000 AXD7000 | BXD4000 | VFX5 VFX6 | SPX | LER | ASX445 | AOX445 |
|---|---|---|---|---|---|--|---|---|---|---|
| Cutting Mode |  ↻ K011 |  ↻ K039 |  ↻ K044 ↻ K052 |  ↻ K064 ↻ K074 |  ↻ K080 |  ↻ K090 ↻ K094 |  ↻ K084 |  ↻ K098 |  ↻ K017 |  ↻ K032 |
| Slot Milling  | |  |  |  |  | |  | | | |
| Shoulder Milling  | |  |  |  |  |  |  |  | | |
| Spot Milling  | | | | | | | | | | |
| Contour Milling  | | |  |  |  | | | | | |
| Chamfer Milling  |  | | | | | | | |  | |
| Radius Milling  | | | | | | | | | | |
| Drilling  | | | | | | | | | | |
| Copy Milling  | | |  |  |  | | | | | |
| Face Milling  |  |  |  |  |  | | | |  |  |

| AQX MULTI FUNCTIONAL TYPE  → K100 | AJX MULTI FUNCTIONAL TYPE  → K108 | ARX MULTI FUNCTIONAL TYPE  → K122 | BRP MULTI FUNCTIONAL TYPE  → K126 | BOE MULTI FUNCTIONAL TYPE  → K130 | ECMP  → K134 | CFSP  → K135 | PMC PMR PMF  → K158 → K160 → K161 | SRM2 MULTI FUNCTIONAL TYPE  → K150 → K156 | SRF MBN MBD  → K136 → K146 → K147 |
|---|---|---|---|---|--|--|--|--|---|
|  |  |  |  |  |  | | |  | |
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|  |  |  |  |  |  | | | | |

MILLING

FACE MILLING

<GENERAL CUTTING>



Finishing

Roughing



WSX445

NEW

- P
- M
- K
- N
- S
- H

- Double sided Z Geometry.
- Smooth chip discharge.



Fig.1

- ø1.5"
- ø2"
- ø2.5"
- ø3"

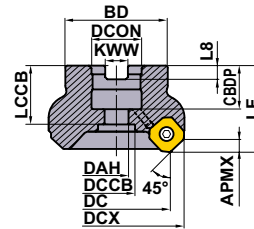


Fig.2

- ø4"
- ø5"
- ø6"

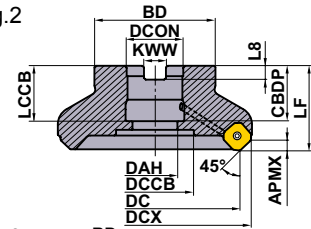
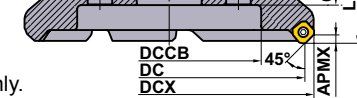


Fig.3

- ø8"
- ø.709"
- ø.709"



Right hand tool holder only.

| Cutter Diameter DC | Set Bolt | Geometry |
|-----------------------|-------------|----------|
| 1.500 | HSCU25011H | ① |
| 2.000 | HSCI 37513H | |
| 2.500 | HSCU50014H | ② |
| 3.000 | HSCI 50014H | |
| 4.000 | MBAU75016H | ② |
| 5.000 | MBAU 75016H | |
| 6.000 | MBAU75016H | |
| 8.000 | — | — |

KAPR :45°
GAMP :+17° T : -7°--2°
GAMF : -6°--+1° I : +16°--+19°

ARBOR TYPE

| Type | Order Number | Stock | *1 Coolant Thru | Number of Teeth | Dimensions (inch) | | | | | | | | | | | *3 WT (lbs) | APMX (inch) | Type (Fig.) |
|------------------|----------------|-------|-----------------------|--------------------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------------------|----------------|----------------|
| | | R | | | DC | DCX | LF | DCON | CBDP | DAH | DCCB | LCCB | BD | KWW | L8 | | | |
| Coarse Pitch | WSX445UR1503SA | ● | Y | 3 | 1.500 | 2.005 | 1.750 | .500 | .630 | .276 | .433 | 1.102 | 1.437 | .250 | .156 | .8 | .197 | 1 |
| | WSX445UR0203AA | ● | Y | 3 | 2.000 | 2.506 | 1.750 | .750 | .748 | .413 | .630 | 1.063 | 1.750 | .313 | .187 | 1.2 | .197 | 1 |
| | WSX445UR2504CA | ● | Y | 4 | 2.500 | 3.006 | 2.000 | 1.000 | .945 | .539 | .827 | 1.260 | 2.190 | .375 | .219 | 2.0 | .197 | 1 |
| | WSX445UR0304CA | ● | Y | 4 | 3.000 | 3.506 | 2.000 | 1.000 | .945 | .539 | .827 | 1.260 | 2.190 | .375 | .219 | 2.6 | .197 | 1 |
| | WSX445UR0405EA | ● | Y | 5 | 4.000 | 4.506 | 2.500 | 1.500 | 1.417 | 1.181 | 2.205 | 1.654 | 3.500 | .625 | .375 | 5.9 | .197 | 2 |
| | WSX445UR0506EA | ● | Y | 6 | 5.000 | 5.506 | 2.500 | 1.500 | 1.417 | 1.181 | 2.205 | 1.654 | 3.813 | .625 | .375 | 8.5 | .197 | 2 |
| | WSX445UR0607EA | ● | Y | 7 | 6.000 | 6.506 | 2.500 | 1.500 | 1.417 | 1.181 | 2.205 | 1.654 | 3.813 | .625 | .375 | 10.6 | .197 | 2 |
| | WSX445UR0808MN | ● | N | 8 | 8.000 | 8.506 | 2.500 | 2.500 | 1.378 | 5.512 | — | — | 6.890 | 1.000 | .560 | 19.1 | .197 | 3 |
| Fine Pitch | WSX445UR1504SA | ● | Y | 4 | 1.500 | 2.005 | 1.750 | .500 | .630 | .276 | .433 | 1.102 | 1.437 | .250 | .156 | .7 | .197 | 1 |
| | WSX445UR0204AA | ● | Y | 4 | 2.000 | 2.506 | 1.750 | .750 | .748 | .413 | .630 | 1.063 | 1.750 | .313 | .187 | 1.1 | .197 | 1 |
| | WSX445UR2505CA | ● | Y | 5 | 2.500 | 3.006 | 2.000 | 1.000 | .945 | .539 | .827 | 1.260 | 2.190 | .375 | .219 | 2.0 | .197 | 1 |
| | WSX445UR0306CA | ● | Y | 6 | 3.000 | 3.506 | 2.000 | 1.000 | .945 | .539 | .827 | 1.260 | 2.190 | .375 | .219 | 2.5 | .197 | 1 |
| | WSX445UR0407EA | ● | Y | 7 | 4.000 | 4.506 | 2.500 | 1.500 | 1.417 | 1.181 | 2.205 | 1.654 | 3.500 | .625 | .375 | 5.8 | .197 | 2 |
| | WSX445UR0508EA | ● | Y | 8 | 5.000 | 5.506 | 2.500 | 1.500 | 1.417 | 1.181 | 2.205 | 1.654 | 3.813 | .625 | .375 | 8.3 | .197 | 2 |
| | WSX445UR0610EA | ● | Y | 10 | 6.000 | 6.506 | 2.500 | 1.500 | 1.417 | 1.181 | 2.205 | 1.654 | 3.813 | .625 | .375 | 10.4 | .197 | 2 |
| | WSX445UR0812MN | ● | N | 12 | 8.000 | 8.506 | 2.500 | 2.500 | 1.378 | 5.512 | — | — | 6.890 | 1.000 | .560 | 18.8 | .197 | 3 |
| Extra Fine Pitch | WSX445UR0205AA | ● | Y | 5 | 2.000 | 2.506 | 1.750 | .750 | .748 | .413 | .630 | 1.063 | 1.750 | .313 | .187 | 1.1 | .197 | 1 |
| | WSX445UR2506CA | ● | Y | 6 | 2.500 | 3.006 | 2.000 | 1.000 | .945 | .539 | .827 | 1.260 | 2.190 | .375 | .219 | 1.9 | .197 | 1 |
| | WSX445UR0308CA | ● | Y | 8 | 3.000 | 3.506 | 2.000 | 1.000 | .945 | .539 | .827 | 1.260 | 2.190 | .375 | .219 | 2.4 | .197 | 1 |
| | WSX445UR0410EA | ● | Y | 10 | 4.000 | 4.506 | 2.500 | 1.500 | 1.417 | 1.181 | 2.205 | 1.654 | 3.500 | .625 | .375 | 5.6 | .197 | 2 |
| | WSX445UR0512EA | ● | Y | 12 | 5.000 | 5.506 | 2.500 | 1.500 | 1.417 | 1.181 | 2.205 | 1.654 | 3.813 | .625 | .375 | 8.0 | .197 | 2 |
| | WSX445UR0616EA | ● | Y | 16 | 6.000 | 6.506 | 2.500 | 1.500 | 1.417 | 1.181 | 2.205 | 1.654 | 3.813 | .625 | .375 | 9.9 | .197 | 2 |
| | WSX445UR0820MN | ● | N | 20 | 8.000 | 8.506 | 2.500 | 2.500 | 1.378 | 5.512 | — | — | 6.890 | 1.000 | .560 | 18.3 | .197 | 3 |

*1 Y=Yes, N=No

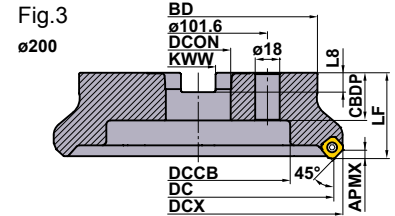
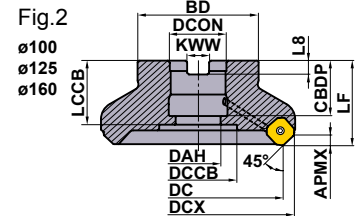
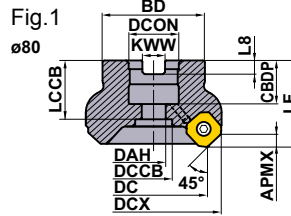
*2 The cutter body includes a set bolt for an arbor.

*3 WT : Mass



METRIC Standard

For inch arbors



Right hand tool holder only.

| Cutter Diameter DC | Set Bolt | Geometry | |
|-----------------------|-----------|----------|--|
| ø80 | HSC12035H | ① | |
| ø100 | MBA16033H | ② | |
| ø125 | MBA20040H | | |
| ø160 | MBA24045H | | |
| ø200 | — | | |

KAPR :45°
GAMP :+17° T :-7°--2°
GAMF :-6°--+1° I :+16°--+19°

ARBOR TYPE

| Type | Order Number | Stock R | Coolant *1 Thru | Number of Teeth | Dimensions (mm) | | | | | | | | | | | | WT *3 (kg) | APMX (mm) | Type (Fig.) |
|------------------|----------------|------------|-----------------------|--------------------|-----------------|-------|----|----------------|------|-----|------|------|-----|------|-------|------|------------------|--------------|----------------|
| | | | | | DC | DCX | LF | DCON | CBDP | DAH | DCCB | LCCB | BD | KWW | L8 | | | | |
| Coarse Pitch | WSX445R08004CA | ★ | Y | 4 | 80 | 92.9 | 50 | 25.4 [1.0"] | 26 | 13 | 20 | 34 | 56 | 9.5 | 6 | 1.27 | 5 | 1 | |
| | WSX445R10005DA | ★ | Y | 5 | 100 | 112.9 | 50 | 31.75 [1.25"] | 32 | 26 | 45 | 37 | 70 | 12.7 | 8 | 1.78 | 5 | 2 | |
| | WSX445R12506EA | ★ | Y | 6 | 125 | 137.9 | 63 | 38.1 [1.5"] | 36 | 30 | 56 | 42 | 80 | 15.9 | 10 | 3.2 | 5 | 2 | |
| | WSX445R16007FA | ★ | Y | 7 | 160 | 172.9 | 63 | 50.8 [2.0"] | 38 | 40 | 72 | 45 | 100 | 19.1 | 11 | 4.93 | 5 | 2 | |
| | WSX445R20008KN | ★ | N | 8 | 200 | 212.9 | 63 | 47.625 [1.85"] | 35 | — | 135 | — | 175 | 25.4 | 14.22 | 8.73 | 5 | 3 | |
| Fine Pitch | WSX445R08006CA | ★ | Y | 6 | 80 | 92.9 | 50 | 25.4 [1.0"] | 26 | 13 | 20 | 34 | 56 | 9.5 | 6 | 1.21 | 5 | 1 | |
| | WSX445R10007DA | ★ | Y | 7 | 100 | 112.9 | 50 | 31.75 [1.25"] | 32 | 26 | 45 | 37 | 70 | 12.7 | 8 | 1.72 | 5 | 2 | |
| | WSX445R12508EA | ★ | Y | 8 | 125 | 137.9 | 63 | 38.1 [1.5"] | 36 | 30 | 56 | 42 | 80 | 15.9 | 10 | 3.13 | 5 | 2 | |
| | WSX445R16010FA | ★ | Y | 10 | 160 | 172.9 | 63 | 50.8 [2.0"] | 38 | 40 | 72 | 45 | 100 | 19.1 | 11 | 4.83 | 5 | 2 | |
| | WSX445R20012KN | ★ | N | 12 | 200 | 212.9 | 63 | 47.625 [1.85"] | 35 | — | 135 | — | 175 | 25.4 | 14.22 | 8.6 | 5 | 3 | |
| Extra Fine Pitch | WSX445R08008CA | ★ | Y | 8 | 80 | 92.9 | 50 | 25.4 [1.0"] | 26 | 13 | 20 | 34 | 56 | 9.5 | 6 | 1.14 | 5 | 1 | |
| | WSX445R10010DA | ★ | Y | 10 | 100 | 112.9 | 50 | 31.75 [1.25"] | 32 | 26 | 45 | 37 | 70 | 12.7 | 8 | 1.62 | 5 | 2 | |
| | WSX445R12512EA | ★ | Y | 12 | 125 | 137.9 | 63 | 38.1 [1.5"] | 36 | 30 | 56 | 42 | 80 | 15.9 | 10 | 3 | 5 | 2 | |
| | WSX445R16016FA | ★ | Y | 16 | 160 | 172.8 | 63 | 50.8 [2.0"] | 38 | 40 | 72 | 45 | 100 | 19.1 | 11 | 4.64 | 5 | 2 | |
| | WSX445R20020KN | ★ | N | 20 | 200 | 212.8 | 63 | 47.625 [1.85"] | 35 | — | 135 | — | 175 | 25.4 | 14.22 | 8.37 | 5 | 3 | |

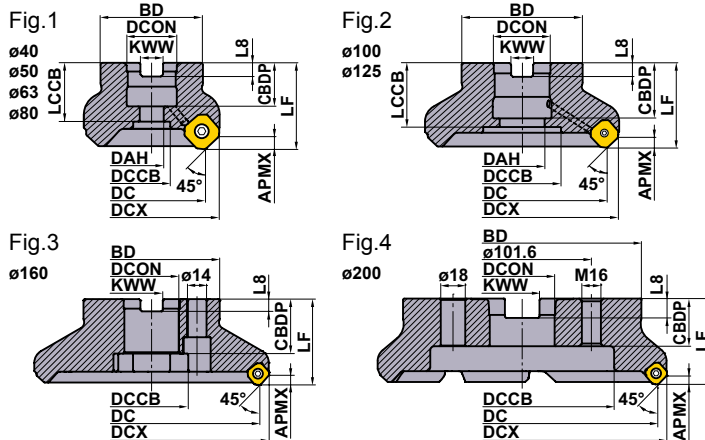
*1 Y=Yes, N=No
*2 Set bolt not included.
*3 WT : Mass

MILLING



METRIC Standard

For metric arbors



Right hand tool holder only.

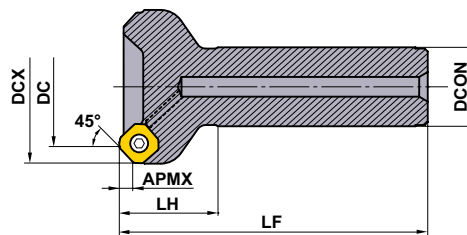
| Cutter Diameter DC | Set Bolt | Geometry | |
|-----------------------|-----------|----------|--|
| φ40 | HSC08025H | ① | |
| φ50 | HSC10030H | | |
| φ63 | HSC10030H | | |
| φ80 | HSC12035H | | |
| φ100 | MBA16033H | ② | |
| φ125 | MBA20040H | | |
| φ160 | MBA20040H | | |
| φ200 | — | | |

KAPR :45°
GAMP :+17° T : -7°--2°
GAMF : -6°--+1° | :+16°--+19°

ARBOR TYPE

| Type | Order Number | Stock R | Coolant *1 Thru | Number of Teeth | Dimensions (mm) | | | | | | | | | | | WT *3 (kg) | APMX (mm) | Type (Fig.) |
|------------------|-----------------|------------|-----------------------|--------------------|-----------------|-------|----|------|------|-----|------|------|-----|------|-------|------------------|--------------|----------------|
| | | | | | DC | DCX | LF | DCON | CBDP | DAH | DCCB | LCCB | BD | KWW | L8 | | | |
| Coarse Pitch | WSX445-040A03AR | ★ | Y | 3 | 40 | 52.8 | 40 | 16 | 18 | 9 | 14 | 25 | 37 | 8.4 | 5.6 | 0.31 | 5 | 1 |
| | WSX445-050A03AR | ★ | Y | 3 | 50 | 62.9 | 40 | 22 | 20 | 11 | 17 | 27 | 47 | 10.4 | 6.3 | 0.47 | 5 | 1 |
| | WSX445-063A04AR | ★ | Y | 4 | 63 | 75.9 | 40 | 22 | 20 | 11 | 17 | 27 | 50 | 10.4 | 6.3 | 0.64 | 5 | 1 |
| | WSX445-080A04AR | ★ | Y | 4 | 80 | 92.9 | 50 | 27 | 23 | 13 | 20 | 34 | 56 | 12.4 | 7 | 1.26 | 5 | 1 |
| | WSX445-100B05AR | ★ | Y | 5 | 100 | 112.9 | 50 | 32 | 26 | 26 | 45 | 32 | 78 | 14.4 | 8 | 1.93 | 5 | 2 |
| | WSX445-125B06AR | ★ | Y | 6 | 125 | 137.9 | 63 | 40 | 28 | 30 | 56 | 40 | 89 | 16.4 | 9 | 3.43 | 5 | 2 |
| | WSX445-160C07NR | ★ | N | 7 | 160 | 172.9 | 63 | 40 | 40 | — | 56 | — | 100 | 16.4 | 9 | 4.91 | 5 | 3 |
| | WSX445-200C08NR | ★ | N | 8 | 200 | 212.9 | 63 | 60 | 32 | — | 135 | — | 160 | 25.7 | 14.22 | 7.54 | 5 | 4 |
| Fine Pitch | WSX445-040A04AR | ★ | Y | 4 | 40 | 52.8 | 40 | 16 | 18 | 9 | 14 | 25 | 37 | 8.4 | 5.6 | 0.28 | 5 | 1 |
| | WSX445-050A04AR | ★ | Y | 4 | 50 | 62.9 | 40 | 22 | 20 | 11 | 17 | 27 | 47 | 10.4 | 6.3 | 0.44 | 5 | 1 |
| | WSX445-063A05AR | ★ | Y | 5 | 63 | 75.9 | 40 | 22 | 20 | 11 | 17 | 27 | 50 | 10.4 | 6.3 | 0.61 | 5 | 1 |
| | WSX445-080A06AR | ★ | Y | 6 | 80 | 92.9 | 50 | 27 | 23 | 13 | 20 | 34 | 56 | 12.4 | 7 | 1.2 | 5 | 1 |
| | WSX445-100B07AR | ★ | Y | 7 | 100 | 112.9 | 50 | 32 | 26 | 26 | 45 | 32 | 78 | 14.4 | 8 | 1.87 | 5 | 2 |
| | WSX445-125B08AR | ★ | Y | 8 | 125 | 137.9 | 63 | 40 | 28 | 30 | 56 | 40 | 89 | 16.4 | 9 | 3.36 | 5 | 2 |
| | WSX445-160C10NR | ★ | N | 10 | 160 | 172.9 | 63 | 40 | 40 | — | 56 | — | 100 | 16.4 | 9 | 4.81 | 5 | 3 |
| | WSX445-200C12NR | ★ | N | 12 | 200 | 212.9 | 63 | 60 | 32 | — | 135 | — | 160 | 25.7 | 14.22 | 7.41 | 5 | 4 |
| Extra Fine Pitch | WSX445-050A05AR | ★ | Y | 5 | 50 | 62.9 | 40 | 22 | 20 | 11 | 17 | 27 | 47 | 10.4 | 6.3 | 0.41 | 5 | 1 |
| | WSX445-063A06AR | ★ | Y | 6 | 63 | 75.9 | 40 | 22 | 20 | 11 | 17 | 27 | 50 | 10.4 | 6.3 | 0.58 | 5 | 1 |
| | WSX445-080A08AR | ★ | Y | 8 | 80 | 92.9 | 50 | 27 | 23 | 13 | 20 | 34 | 56 | 12.4 | 7 | 1.14 | 5 | 1 |
| | WSX445-100B10AR | ★ | Y | 10 | 100 | 112.9 | 50 | 32 | 26 | 26 | 45 | 32 | 78 | 14.4 | 8 | 1.77 | 5 | 2 |
| | WSX445-125B12AR | ★ | Y | 12 | 125 | 137.9 | 63 | 40 | 28 | 30 | 56 | 40 | 89 | 16.4 | 9 | 3.22 | 5 | 2 |
| | WSX445-160C16NR | ★ | N | 16 | 160 | 172.8 | 63 | 40 | 40 | — | 56 | — | 100 | 16.4 | 9 | 4.64 | 5 | 3 |
| | WSX445-200C20NR | ★ | N | 20 | 200 | 212.8 | 63 | 60 | 32 | — | 135 | — | 160 | 25.7 | 14.22 | 7.17 | 5 | 4 |

*1 Y=Yes, N=No
*2 Set bolt not included.
*3 WT : Mass



Right hand tool holder only.

SHANK TYPE

| Type | Order Number | Stock R | *1 Coolant Thru Y | Number of Teeth | Dimensions (inch) | | | | | WT (lbs) *2 | APMX (inch) |
|--------------|-------------------|------------|----------------------------|--------------------|-------------------|-------|------|-------|-------|----------------|----------------|
| | | | | | DC | DCX | LF | DCON | LH | | |
| Coarse Pitch | WSX445UR2403FA20M | ● | Y | 3 | 1.500 | 2.005 | .498 | 1.250 | 1.500 | 1.698 | .197 |
| | WSX445UR3203FA20M | ● | Y | 3 | 2.000 | 2.506 | .498 | 1.250 | 1.500 | 2.050 | .197 |
| Fine Pitch | WSX445UR2404FA20M | ● | Y | 4 | 1.500 | 2.005 | .498 | 1.250 | 1.500 | 1.631 | .197 |
| | WSX445UR3204FA20M | ● | Y | 4 | 2.000 | 2.506 | .498 | 1.250 | 1.500 | 1.984 | .197 |

*1 Y=Yes, N=No

*2 WT : Mass

METRIC Standard

STRAIGHT SHANK TYPE

| Type | Order Number | Stock R | *1 Coolant Thru Y | Number of Teeth | Dimensions (mm) | | | | | WT (kg) *2 | APMX (mm) |
|--------------|----------------------|------------|----------------------------|--------------------|-----------------|------|-----|------|----|---------------|--------------|
| | | | | | DC | DCX | LF | DCON | LH | | |
| Coarse Pitch | WSX445R4003SA32M | ★ | Y | 3 | 40 | 52.8 | 125 | 32 | 40 | 0.84 | 5 |
| | WSX445R5003SA32M | ★ | Y | 3 | 50 | 62.9 | 125 | 32 | 40 | 0.98 | 5 |
| | NEW WSX445R6304SA32M | ★ | Y | 4 | 63 | 75.9 | 125 | 32 | 40 | 1.18 | 5 |
| | NEW WSX445R8004SA32M | ★ | Y | 4 | 80 | 92.9 | 125 | 32 | 40 | 1.51 | 5 |
| Fine Pitch | WSX445R4004SA32M | ★ | Y | 4 | 40 | 52.8 | 125 | 32 | 40 | 0.81 | 5 |
| | WSX445R5004SA32M | ★ | Y | 4 | 50 | 62.9 | 125 | 32 | 40 | 0.95 | 5 |
| | NEW WSX445R6305SA32M | ★ | Y | 5 | 63 | 75.9 | 125 | 32 | 40 | 1.15 | 5 |
| | NEW WSX445R8006SA32M | ★ | Y | 6 | 80 | 92.9 | 125 | 32 | 40 | 1.45 | 5 |

*1 Y=Yes, N=No


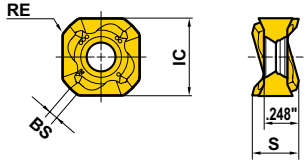
*2 WT : Mass

SPARE PARTS

| Tool Holder Number | * | |
|--------------------|-------------|-----------------|
| | Clamp Screw | Wrench (Insert) |
| WSX445 | TPS4R | TIP15W |


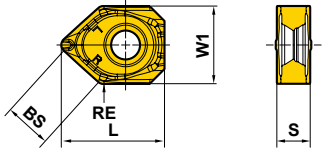
* Clamp Torque (lbf-in) : TPS4R=31

INSERTS WITH BREAKER

| Work Material | P | Steel | | | | | | | | Cutting Conditions : ● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting Honing : E : Round F : Sharp | | | | | | |
|---|------------------|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|---|---------|-------------------|------|------|------|---|
| | M | Stainless Steel | | | | | | | | | | | | | | |
| Work Material | K | Cast Iron | | | | | | | | | | | | | | |
| | N | Non-ferrous Metal | | | | | | | | | | | | | | |
| | S | Heat-resistant Alloy, Titanium Alloy | | | | | | | | | | | | | | |
| | H | Hardened Steel | | | | | | | | | | | | | | |
| Shape | Order Number | Class | Honing | Coated | | | | | | | Carbide | Dimensions (inch) | | | | Geometry |
| | | | | MC5020 | MP6120 | MP6130 | MP7130 | MP9120 | VP15TF | VP20RT | TF15 | IC | S | BS | RE | |
|  | SNGU140812ANFR-L | G | F | | | | | | | | ● | .551 | .331 | .059 | .047 |  |
| | SNGU140812ANER-L | G | E | ● | ● | ● | ● | ★ | ★ | | | .551 | .331 | .059 | .047 | |
| | SNGU140812ANER-M | G | E | ● | ● | ● | ● | ★ | ★ | | | .551 | .331 | .059 | .047 | |
| | SNMU140812ANER-M | M | E | ● | ● | ● | ● | ★ | ★ | | | .551 | .331 | .059 | .047 | |
| | SNMU140812ANER-R | M | E | ● | ● | ● | | ★ | ★ | | | .551 | .331 | .059 | .047 | |
| | SNMU140812ANER-H | M | E | ● | ● | ● | | ★ | ★ | | | .551 | .331 | .059 | .047 | |



WIPER INSERTS

| Shape | Order Number | Class | Honing | Coated | | Dimensions (inch) | | | | | Geometry |
|--|------------------|-------|--------|--------|--------|-------------------|------|------|------|------|--|
| | | | | MP6120 | VP15TF | L | W1 | S | BS | RE | |
|  | WNGU1406ANEN8C-M | G | E | ● | ● | .713 | .551 | .236 | .315 | .039 |  |



Instructions for use of wiper inserts



Fig.1



Fig.2

Wiper inserts for WSX445 are two-cornered. Please set as shown in Fig.1.

Excellent finished surfaces can be achieved with one wiper.

Set more than 2 wiper inserts, equally spaced, when the feed per revolution is larger than 8mm/rev.

● : Inventory maintained. ★ : Inventory maintained in Japan.

<10 inserts in one case>

RECOMMENDED CUTTING CONDITIONS

Dry cutting condition

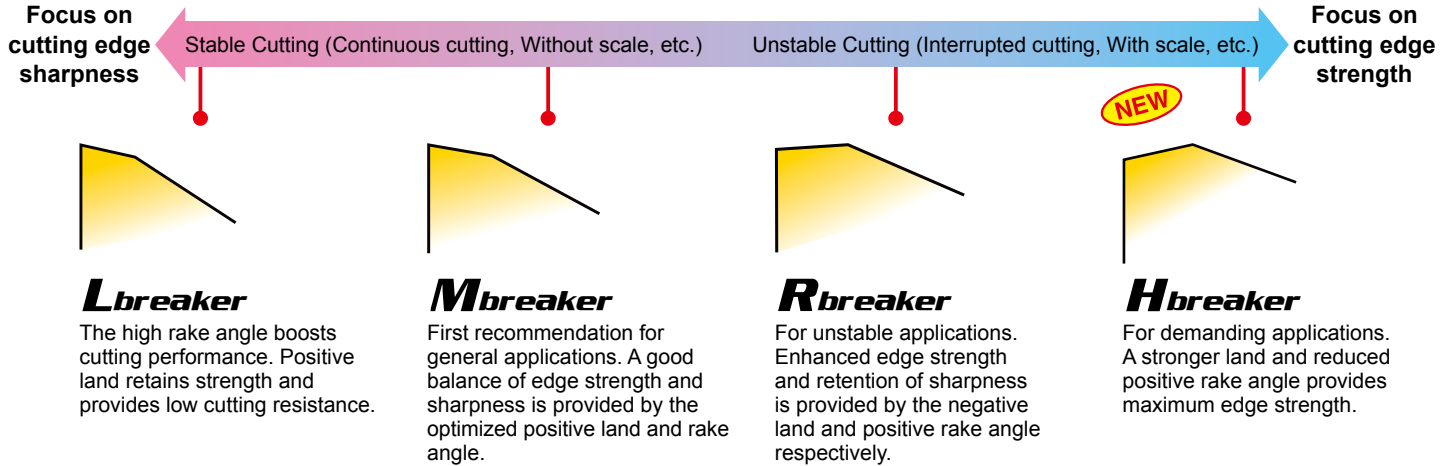
| Work Material | Hardness | Grade | vc (SFM) | Finish—Light Cutting | | Light—Rough Cutting | | Medium—Heavy Cutting | | |
|--|-----------------------------------|-----------------------------|----------------------------|----------------------|------------------|---------------------|------------------|----------------------|------------------|------|
| | | | | fz (IPT) | ap (inch) | fz (IPT) | ap (inch) | fz (IPT) | ap (inch) | |
| P Mild Steel | ≤180HB | MP6120 VP15TF | 820 (655—985) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 | |
| | | MP6130 VP20RT | 785 (620—950) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 | |
| | Carbon Steel Alloy Steel | 180—350HB | MP6120 VP15TF | 720 (560—885) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 |
| | | | MP6130 VP20RT | 655 (490—820) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 |
| | Alloy Steel Pre-Hardened Steel | 35—45HRC | MP6120 VP15TF | 460 (330—590) | .006 (.004—.008) | .079 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 |
| | | | MP6130 VP20RT | 395 (295—490) | .006 (.004—.008) | .079 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 |
| M Austenitic Stainless Steel Ferritic and Martensitic Stainless Steel | — | MP7130 VP15TF VP20RT | 655 (490—820) | .006 (.004—.008) | .079 | .008 (.006—.010) | .118 | — | — | |
| | Austenitic Stainless Steel | >200HB | MP7130 VP15TF VP20RT | 560 (395—720) | .006 (.004—.008) | .079 | .008 (.006—.010) | .118 | — | |
| | Two-phase Stainless Steel | ≤280MPa | MP7130 VP15TF VP20RT | 525 (360—690) | .006 (.004—.008) | .079 | .008 (.006—.010) | .118 | — | |
| | Hardened Stainless Steel | <450HB | MP7130 VP15TF VP20RT | 490 (330—655) | .006 (.004—.008) | .079 | .008 (.006—.010) | .118 | — | |
| K Gray Cast Iron | Tensile Strength ≤350MPa | MC5020 | 720 (655—885) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 | |
| | | VP15TF VP20RT | 590 (425—820) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 | |
| | Ductile Cast Iron | Tensile Strength ≤800MPa | MC5020 | 655 (590—820) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 |
| | | | VP15TF VP20RT | 525 (360—785) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 |
| H Hardened Steel | 40—55HRC | VP15TF | 165 (100—230) | .002 (.002—.004) | .059 | .004 (.002—.006) | .079 | — | — | |

Wet cutting condition

| Work Material | Hardness | Grade | vc (SFM) | Finish—Light Cutting | | Light—Rough Cutting | | Medium—Heavy Cutting | | |
|---|-----------------------------------|-----------------------------|----------------------------|----------------------|------------------|---------------------|------------------|----------------------|------------------|------|
| | | | | fz (IPT) | ap (inch) | fz (IPT) | ap (inch) | fz (IPT) | ap (inch) | |
| P Mild Steel | ≤180HB | MP6120 VP15TF | 490 (330—655) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 | |
| | | MP6130 VP20RT | | | | | | | | |
| | Carbon Steel Alloy Steel | 180—350HB | MP6120 VP15TF | 395 (260—525) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 |
| | | | MP6130 VP20RT | | | | | | | |
| | Alloy Steel Pre-Hardened Steel | 35—45HRC | MP6120 VP15TF | 330 (260—395) | .006 (.004—.008) | .079 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 |
| | | | MP6130 VP20RT | | | | | | | |
| M Austenitic Stainless Steel Ferritic and Martensitic Stainless Steel | — | MP7130 VP15TF VP20RT | 425 (260—590) | .006 (.004—.008) | .079 | .008 (.006—.010) | .079 | — | — | |
| | Austenitic Stainless Steel | >200HB | MP7130 VP15TF VP20RT | 330 (260—490) | .006 (.004—.008) | .079 | .008 (.006—.010) | .118 | — | — |
| | Two-phase Stainless Steel | ≤280MPa | MP7130 VP15TF VP20RT | 330 (260—490) | .006 (.004—.008) | .079 | .008 (.006—.010) | .118 | — | — |
| | Hardened Stainless Steel | <450HB | MP7130 VP15TF VP20RT | 295 (165—460) | .006 (.004—.008) | .079 | .008 (.006—.010) | .118 | — | — |
| K Gray Cast Iron | Tensile Strength ≤350MPa | MC5020 | 590 (525—655) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 | |
| | | VP15TF VP20RT | 425 (330—525) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 | |
| | Ductile Cast Iron | Tensile Strength ≤800MPa | MC5020 | 590 (525—655) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 |
| | | | VP15TF VP20RT | 360 (260—460) | .006 (.004—.008) | .118 | .008 (.006—.010) | .158 | .010 (.008—.012) | .197 |
| N Aluminum Alloy | — | TF15 | 1640 (655-3280) | .008 (.004—.012) | .197 | — | — | — | — | |
| S Titanium Alloy | — | MP9120 VP15TF VP20RT | 165 (130—195) | .002 (.002—.004) | .059 | .004 (.002—.006) | .079 | — | — | |
| | Heat Resistant Alloy | — | MP9120 VP15TF VP20RT | 130 (65—165) | .002 (.002—.004) | .059 | .004 (.002—.006) | .079 | — | — |
| H Hardened Steel | 40—55HRC | VP15TF | 165 (100—230) | .002 (.002—.004) | .059 | .004 (.002—.006) | .079 | — | — | |

BREAKER SYSTEM

Breaker series for varied cutting condition.



| Workpiece Material | Cutting Condition | | |
|--------------------|-------------------|---------|--------|
| | Light | General | Heavy |
| P | L | M | R H |
| M | L | M | R |
| K | L | M | R H |
| S | L | M | R |
| N | L | | |
| H | H | | |

MILLING

FACE MILLING

<GENERAL CUTTING>

45°



Finishing



Roughing

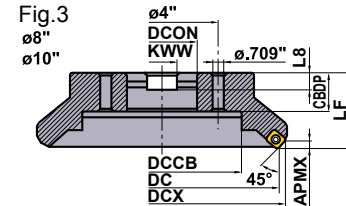
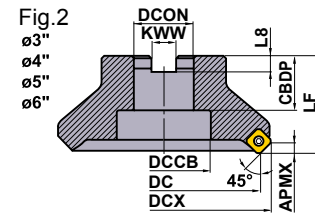
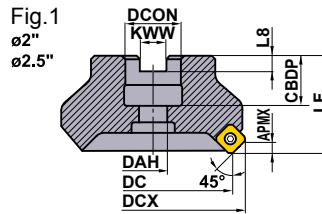


ASX445

P M K N S H



- Precision molded 20° positive insert.
- A wide range of chip breakers.
- Screw-on type.
- High rigidity due to employment of a carbide shim.



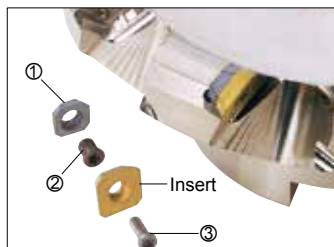
KAPR :45°
 GAMP :+20°—+23° T :+4°49'—+9°53'
 GAMF :—13°—10° I :+22°55'—+23°02'

Right hand tool holder only.

ARBOR TYPE

| Type | Order Number | Stock R | Number of Teeth | Dimensions (inch) | | | | | | | | APMX (inch) | WT* (lbs) | Type (Fig.) | |
|------------------|--------------|---------|-----------------|-------------------|--------|-------|-------|-------|-------|-------|-------|-------------|-----------|-------------|----|
| | | | | DC | DCX | LF | DCON | CBDP | DAH | DCCB | KWW | | | | L8 |
| Coarse Pitch | ASX445R2504 | ● | 4 | 2.500 | 3.009 | 1.575 | .750 | .748 | .415 | — | .313 | .187 | .236 | 1.5 | 1 |
| | ASX445R0304C | ● | 4 | 3.000 | 3.520 | 1.969 | 1.000 | 1.024 | — | 1.496 | .375 | .219 | .236 | 2.4 | 2 |
| | ASX445R0405E | ● | 5 | 4.000 | 4.518 | 1.969 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .236 | 4.0 | 2 |
| | ASX445R0506E | ● | 6 | 5.000 | 5.513 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .236 | 6.6 | 2 |
| | ASX445R0607E | ● | 7 | 6.000 | 6.511 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .236 | 10.4 | 2 |
| | ASX445R0808M | ● | 8 | 8.000 | 8.509 | 2.480 | 2.500 | 1.378 | — | 5.512 | 1.000 | .560 | .236 | 14.6 | 3 |
| | ASX445R1010M | ● | 10 | 10.000 | 10.508 | 2.480 | 2.500 | 1.378 | — | 7.087 | 1.000 | .560 | .236 | 23.7 | 3 |
| Fine Pitch | ASX445R0204 | ● | 4 | 2.000 | 2.513 | 1.575 | .750 | .748 | .415 | — | .313 | .187 | .236 | .9 | 1 |
| | ASX445R2505 | ● | 5 | 2.500 | 3.009 | 1.575 | .750 | .748 | .415 | — | .313 | .187 | .236 | 1.5 | 1 |
| | ASX445R0306C | ● | 6 | 3.000 | 3.520 | 1.969 | 1.000 | 1.024 | — | 1.496 | .375 | .219 | .236 | 2.2 | 2 |
| | ASX445R0407E | ● | 7 | 4.000 | 4.518 | 1.969 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .236 | 3.7 | 2 |
| | ASX445R0508E | ● | 8 | 5.000 | 5.513 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .236 | 6.2 | 2 |
| | ASX445R0610E | ● | 10 | 6.000 | 6.511 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .236 | 10.1 | 2 |
| | ASX445R0812M | ● | 12 | 8.000 | 8.509 | 2.480 | 2.500 | 1.378 | — | 5.512 | 1.000 | .560 | .236 | 14.6 | 3 |
| ASX445R1014M | ● | 14 | 10.000 | 10.508 | 2.480 | 2.500 | 1.378 | — | 7.087 | 1.000 | .560 | .236 | 23.7 | 3 | |
| Extra Fine Pitch | ASX445R0205 | ● | 5 | 2.000 | 2.513 | 1.575 | .750 | .748 | .415 | — | .313 | .187 | .236 | .9 | 1 |
| | ASX445R0308C | ● | 8 | 3.000 | 3.520 | 1.969 | 1.000 | 1.024 | — | 1.496 | .375 | .219 | .236 | 2.2 | 2 |
| | ASX445R0410E | ● | 10 | 4.000 | 4.518 | 1.969 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .236 | 3.8 | 2 |
| | ASX445R0512E | ● | 12 | 5.000 | 5.513 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .236 | 6.4 | 2 |
| | ASX445R0616E | ● | 16 | 6.000 | 6.511 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .236 | 10.3 | 2 |
| | ASX445R0820M | ● | 20 | 8.000 | 8.509 | 2.480 | 2.500 | 1.378 | — | 5.512 | 1.000 | .560 | .236 | 14.6 | 3 |
| | ASX445R1024M | ● | 24 | 10.000 | 10.508 | 2.480 | 2.500 | 1.378 | — | 7.087 | 1.000 | .560 | .236 | 23.7 | 3 |

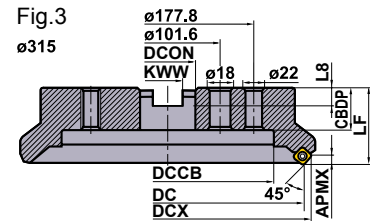
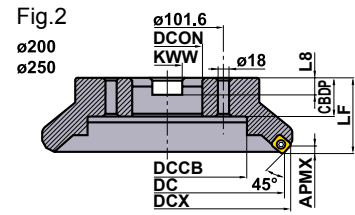
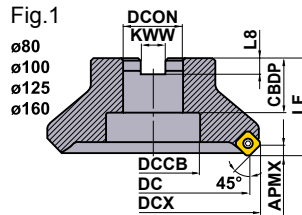
- 1) * WT : Mass
 2) Set bolt not included.



SPARE PARTS

| Tool Holder Number | ① Shim | ② Shim Screw | ③ Insert Screw | Wrench (Insert) | Wrench (Shim) |
|--------------------|-----------|--------------|----------------|-----------------|---------------|
| ASX445 Type | STASX445N | WCS503507H | TPS35 | TIP15T | HKY35R |

* Clamp Torque (lbf-in) : WCS503507H=44, TPS35=31



METRIC Standard
For inch arbors

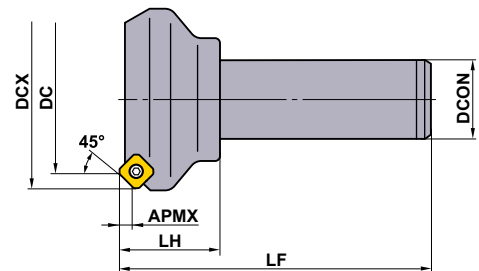
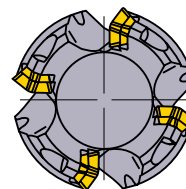
KAPR :45°
GAMP :+20°-+23° T :+4°49'-+9°53'
GAMF :-13°-10° I :+22°55'-+23°02'

Right hand tool holder only.

ARBOR TYPE

| Type | Order Number | Stock R | Number of Teeth | Dimensions (mm) [inch] | | | | | | | | | APMX (mm) | WT * (kg) | Type (Fig.) |
|------------------|---------------|------------|--------------------|------------------------|-------|-----------------|-----------------|------|------|------|----|------|--------------|--------------|----------------|
| | | | | DC | DCX | LF | DCON | CBDP | DCCB | KWW | L8 | | | | |
| Coarse Pitch | ASX445R08004C | ★ | 4 | 80 | 93.2 | 50 | 25.4 [1.0"] | 26 | 38 | 9.5 | 6 | 6 | 1.1 | 1 | |
| | ASX445R10005D | ★ | 5 | 100 | 113.2 | 50 | 31.75 [1.25"] | 32 | 45 | 12.7 | 8 | 6 | 1.8 | 1 | |
| | ASX445R12506E | ★ | 6 | 125 | 138.0 | 63 | 38.1 [1.5"] | 35 | 60 | 15.9 | 10 | 6 | 2.9 | 1 | |
| | ASX445R16007F | ★ | 7 | 160 | 173.0 | 63 | 50.8 [2.0"] | 38 | 80 | 19.1 | 11 | 6 | 4.7 | 1 | |
| | ASX445R20008K | ★ | 8 | 200 | 212.9 | 63 | 47.625 [1.875"] | 35 | 140 | 25.4 | 14 | 6 | 7.9 | 2 | |
| | ASX445R25010K | ★ | 10 | 250 | 262.9 | 63 | 47.625 [1.875"] | 35 | 180 | 25.4 | 14 | 6 | 12.9 | 2 | |
| ASX445R31514P | ★ | 14 | 315 | 327.9 | 63 | 47.625 [1.875"] | 40 | 245 | 25.4 | 14 | 6 | 22.4 | 3 | | |
| Fine Pitch | ASX445R08006C | ★ | 6 | 80 | 93.2 | 50 | 25.4 [1.0"] | 26 | 38 | 9.5 | 6 | 6 | 1.0 | 1 | |
| | ASX445R10007D | ★ | 7 | 100 | 113.2 | 50 | 31.75 [1.25"] | 32 | 45 | 12.7 | 8 | 6 | 1.7 | 1 | |
| | ASX445R12508E | ★ | 8 | 125 | 138.0 | 63 | 38.1 [1.5"] | 35 | 60 | 15.9 | 10 | 6 | 2.8 | 1 | |
| | ASX445R16010F | ★ | 10 | 160 | 173.0 | 63 | 50.8 [2.0"] | 38 | 80 | 19.1 | 11 | 6 | 4.6 | 1 | |
| | ASX445R20012K | ★ | 12 | 200 | 212.9 | 63 | 47.625 [1.875"] | 35 | 140 | 25.4 | 14 | 6 | 7.8 | 2 | |
| | ASX445R25014K | ★ | 14 | 250 | 262.9 | 63 | 47.625 [1.875"] | 35 | 180 | 25.4 | 14 | 6 | 12.8 | 2 | |
| ASX445R31518P | ★ | 18 | 315 | 327.9 | 63 | 47.625 [1.875"] | 40 | 245 | 25.4 | 14 | 6 | 22.2 | 3 | | |
| Extra Fine Pitch | ASX445R08008C | ★ | 8 | 80 | 93.2 | 50 | 25.4 [1.0"] | 26 | 38 | 9.5 | 6 | 6 | 1.1 | 1 | |
| | ASX445R10010D | ★ | 10 | 100 | 113.2 | 50 | 31.75 [1.25"] | 32 | 45 | 12.7 | 8 | 6 | 1.8 | 1 | |
| | ASX445R12512E | ★ | 12 | 125 | 138.0 | 63 | 38.1 [1.5"] | 35 | 60 | 15.9 | 10 | 6 | 2.9 | 1 | |
| | ASX445R16016F | ★ | 16 | 160 | 173.0 | 63 | 50.8 [2.0"] | 38 | 80 | 19.1 | 11 | 6 | 4.7 | 1 | |
| | ASX445R20020K | ★ | 20 | 200 | 212.9 | 63 | 47.625 [1.875"] | 35 | 140 | 25.4 | 14 | 6 | 7.8 | 2 | |
| | ASX445R25024K | ★ | 24 | 250 | 262.9 | 63 | 47.625 [1.875"] | 35 | 180 | 25.4 | 14 | 6 | 12.8 | 2 | |
| ASX445R31528P | ★ | 28 | 315 | 327.9 | 63 | 47.625 [1.875"] | 40 | 245 | 25.4 | 14 | 6 | 21.8 | 3 | | |

- 1) ★ WT : Mass
- 2) Set bolt not included.



Right hand tool holder only.

METRIC Standard

SHANK TYPE

| Order Number | Stock R | Number of Teeth | Dimensions (mm) | | | | | APMX (mm) |
|---------------|------------|--------------------|-----------------|------|-----|------|----|--------------|
| | | | DC | DCX | LF | DCON | LH | |
| ASX445R503S32 | ★ | 3 | 50 | 63.0 | 125 | 32 | 40 | 6 |
| ASX445R634S32 | ★ | 4 | 63 | 75.9 | 125 | 32 | 40 | 6 |
| ASX445R804S32 | ★ | 4 | 80 | 93.2 | 125 | 32 | 40 | 6 |

- INSERTS > K019
- SPARE PARTS > M001
- TECHNICAL DATA > N001

MILLING

METRIC Standard

For metric arbors

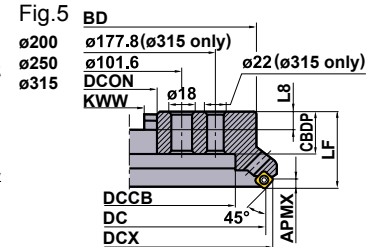
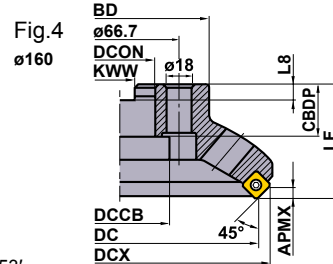
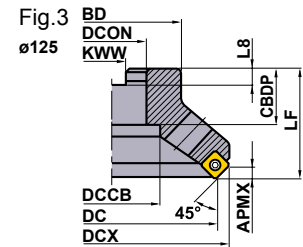
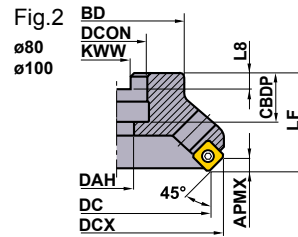
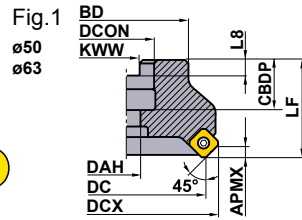


ø50, ø63



Over ø80

KAPR :45°
 GAMP :+20° - +23° T :+4°49' - +9°53'
 GAMF :-13° - -10° I :+22°55' - +23°02'



Right hand tool holder only.

ARBOR TYPE

| Type | Order Number | Stock R | Number of Teeth | Dimensions (mm) | | | | | | | | | | APMX (mm) | WT* (kg) | Type (Fig.) |
|------------------|----------------|------------|--------------------|-----------------|-------|----|------|------|------|-------|-----|------|-----|--------------|-------------|----------------|
| | | | | DC | DCX | LF | DCON | CBDP | DAH | DCCB | BD | KWW | L8 | | | |
| Coarse Pitch | ASX445-050A03R | ★ | 3 | 50 | 63.0 | 40 | 22 | 20 | 11 | — | 45 | 10.4 | 6.3 | 6 | 0.5 | 1 |
| | ASX445-063A04R | ★ | 4 | 63 | 75.9 | 40 | 22 | 20 | 11 | — | 50 | 10.4 | 6.3 | 6 | 0.7 | 1 |
| | ASX445-080A04R | ★ | 4 | 80 | 93.2 | 50 | 27 | 22 | 13.5 | — | 56 | 12.4 | 7 | 6 | 1.0 | 2 |
| | ASX445-100A05R | ★ | 5 | 100 | 113.2 | 50 | 32 | 25 | 17.5 | — | 70 | 14.4 | 8 | 6 | 1.6 | 2 |
| | ASX445-125B06R | ★ | 6 | 125 | 138.0 | 63 | 40 | 32 | — | 56 | 80 | 16.4 | 9 | 6 | 2.4 | 3 |
| | ASX445-160C07R | ★ | 7 | 160 | 173.0 | 63 | 40 | 29 | — | 56 | 100 | 16.4 | 9 | 6 | 3.9 | 4 |
| | ASX445-200C08R | ★ | 8 | 200 | 212.9 | 63 | 60 | 32 | — | 135 | 155 | 25.7 | 14 | 6 | 6.7 | 5 |
| | ASX445-250C10R | ★ | 10 | 250 | 262.9 | 63 | 60 | 32 | — | 174 | 200 | 25.7 | 14 | 6 | 10.5 | 5 |
| | ASX445-315C14R | ★ | 14 | 315 | 327.9 | 80 | 60 | 57 | — | 256.8 | 285 | 25.7 | 14 | 6 | 22.4 | 5 |
| Fine Pitch | ASX445-050A04R | ★ | 4 | 50 | 63.0 | 40 | 22 | 20 | 11 | — | 45 | 10.4 | 6.3 | 6 | 0.4 | 1 |
| | ASX445-063A05R | ★ | 5 | 63 | 75.9 | 40 | 22 | 20 | 11 | — | 50 | 10.4 | 6.3 | 6 | 0.6 | 1 |
| | ASX445-080A06R | ★ | 6 | 80 | 93.2 | 50 | 27 | 22 | 13.5 | — | 56 | 12.4 | 7 | 6 | 0.9 | 2 |
| | ASX445-100A07R | ★ | 7 | 100 | 113.2 | 50 | 32 | 25 | 17.5 | — | 70 | 14.4 | 8 | 6 | 1.5 | 2 |
| | ASX445-125B08R | ★ | 8 | 125 | 138.0 | 63 | 40 | 32 | — | 56 | 80 | 16.4 | 9 | 6 | 2.3 | 3 |
| | ASX445-160C10R | ★ | 10 | 160 | 173.0 | 63 | 40 | 29 | — | 56 | 100 | 16.4 | 9 | 6 | 3.6 | 4 |
| | ASX445-200C12R | ★ | 12 | 200 | 212.9 | 63 | 60 | 32 | — | 135 | 155 | 25.7 | 14 | 6 | 5.8 | 5 |
| | ASX445-250C14R | ★ | 14 | 250 | 262.9 | 63 | 60 | 32 | — | 174 | 200 | 25.7 | 14 | 6 | 10.6 | 5 |
| | ASX445-315C18R | ★ | 18 | 315 | 327.9 | 80 | 60 | 57 | — | 256.8 | 285 | 25.7 | 14 | 6 | 22.2 | 5 |
| Extra Fine Pitch | ASX445-050A05R | ★ | 5 | 50 | 63.0 | 40 | 22 | 20 | 11 | — | 45 | 10.4 | 6.3 | 6 | 0.4 | 1 |
| | ASX445-063A06R | ★ | 6 | 63 | 75.9 | 40 | 22 | 20 | 11 | — | 50 | 10.4 | 6.3 | 6 | 0.6 | 1 |
| | ASX445-080A08R | ★ | 8 | 80 | 93.2 | 50 | 27 | 22 | 13.5 | — | 56 | 12.4 | 7 | 6 | 0.9 | 2 |
| | ASX445-100A10R | ★ | 10 | 100 | 113.2 | 50 | 32 | 25 | 17.5 | — | 70 | 14.4 | 8 | 6 | 1.5 | 2 |
| | ASX445-125B12R | ★ | 12 | 125 | 138.0 | 63 | 40 | 32 | — | 56 | 80 | 16.4 | 9 | 6 | 2.3 | 3 |
| | ASX445-160C16R | ★ | 16 | 160 | 173.0 | 63 | 40 | 29 | — | 56 | 100 | 16.4 | 9 | 6 | 3.6 | 4 |
| | ASX445-200C20R | ★ | 20 | 200 | 212.9 | 63 | 60 | 32 | — | 135 | 155 | 25.7 | 14 | 6 | 6.5 | 5 |
| | ASX445-250C24R | ★ | 24 | 250 | 262.9 | 63 | 60 | 32 | — | 174 | 200 | 25.7 | 14 | 6 | 10.3 | 5 |
| | ASX445-315C28R | ★ | 28 | 315 | 327.9 | 80 | 60 | 57 | — | 256.8 | 285 | 25.7 | 14 | 6 | 21.8 | 5 |

1) * WT : Mass

2) Set bolt not included.

● : Inventory maintained. ★ : Inventory maintained in Japan.

<10 inserts in one case> <1 insert in one case for CBN/PCD>

INSERTS WITH BREAKER

| Application | Shape | Order Number | Class | Honing | Coated | | | | | | | | | | Cermet | Carbide | Dimensions (inch) | | | | Geometry | | |
|------------------------|------------|-----------------|-------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------------------|--------|------|------|----------|------|----|
| | | | | | F7010 | F7030 | MC5020 | MP6120 | MP6130 | MP7130 | MP7140 | MP9120 | MP9130 | VP15TF | | | VP30RT | NX4545 | HT10 | IC | | S | BS |
| Finish—Light Cutting | JL Breaker | SEET13T3AGEN-JL | E | E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | .528 | .156 | .075 | .059 | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Light—Rough Cutting | JM Breaker | SEMT13T3AGSN-JM | M | S | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | .528 | .156 | .075 | .059 | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Medium—Heavy Cutting | JH Breaker | SEMT13T3AGSN-JH | M | S | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | .528 | .156 | .075 | .059 | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Roughing For Cast Iron | FT Breaker | SEMT13T3AGSN-FT | M | S | ● | | | | | | | | | | | | | | .528 | .156 | .075 | .059 | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| For Aluminium Alloy | JP Breaker | SEGT13T3AGFN-JP | G | F | | | | | | | | | | | | | ● | .528 | .156 | .087 | — | | |
| | | | | | | | | | | | | | | | | | | | | | | | |

■ = MIRACLE SIGMA

■ Instructions for using JP breaker handling

- *The JP breaker has sharp cutting edge. Please wear gloves when installing to prevent.
- *During machining of aluminum alloy, chip welding can occur that can cause fracturing of the insert.
- *Wet cutting is recommended.

WIPER INSERTS

| Shape | Order Number | Honing | Coated | | Cermet | Coated Cermet | | Carbide | CBN | PCD | Dimensions (inch) | | | | | Geometry |
|-------|-------------------|--------|--------|--------|--------|---------------|-------|---------|-----|-----|-------------------|-------|-------|------|------|----------|
| | | | MC5020 | VP15TF | | NX2525 | VP25N | | | | HT10ST | MB710 | MD220 | L | W1 | |
| | WEEW13T3AGER8C | E | ● | ● | | | | ● | | | .649 | .654 | .156 | .295 | .059 | |
| | WEEW13T3AGTR8C | T | | | ● | ● | | | | | .649 | .654 | .156 | .295 | .059 | |
| | NP-WEEW13T3AGFR3C | F | | | | | | | | ● | .649 | .654 | .156 | .118 | .059 | |
| | NP-WEEW13T3AGTR3C | T | | | | | | | | ● | .649 | .654 | .156 | .118 | .059 | |

RECOMMENDED CUTTING CONDITIONS

| Work Material | Hardness | Grade | Cutting Speed (SFM) | Finish—Light Cutting | | Light—Rough Cutting | | Medium—Heavy Cutting | | |
|---|-----------------------------|------------------|---------------------|---------------------------|------------------|---------------------------|------------------|---------------------------|------------------|----|
| | | | | Feed per Tooth (mm/tooth) | Breaker | Feed per Tooth (mm/tooth) | Breaker | Feed per Tooth (mm/tooth) | Breaker | |
| P Mild Steel Carbon Steel Alloy Steel | ≤180HB | F7030 | 920 (690—1150) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH | |
| | | MP6120 VP15TF | 820 (655—985) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH | |
| | | MP6130 | 800 (620—950) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH | |
| | | VP30RT | 755 (590—920) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH | |
| | | NX4545 | 590 (425—755) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | — | — | |
| | 180—280HB | F7030 | 820 (655—985) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH | |
| | | MP6120 VP15TF | 720 (560—885) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH | |
| | | MP6130 | 600 (480—740) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH | |
| | | VP30RT | 490 (395—590) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | — | — | |
| | | NX4545 | 490 (390—590) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | — | — | |
| | | 280—350HB | F7030 | 590 (425—755) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH |
| | | | MP6120 VP15TF | 460 (330—590) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH |
| | | | MP6130 | 400 (300—490) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH |
| | | | VP30RT | 330 (260—395) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | — | — |
| | | | NX4545 | 330 (260—390) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | — | — |
| M Stainless Steel | ≤270HB | MP7130 VP15TF | 720 (560—885) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH | |
| | | MP7140 VP30RT | 655 (490—820) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH | |
| | | NX4545 | 490 (395—590) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | — | — | |
| K Cast Iron Ductile Cast Iron | Tensile Strength ≤450MPa | MC5020 | 655 (400—820) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH FT | |
| | | VP15TF | 590 (425—826) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH | |
| | Tensile Strength ≥450MPa | MC5020 | 360 (260—490) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | .012 (.008—.016) | JH FT | |
| N Aluminum Alloy | — | HTi10 | 2130 (1000—3300) | .006 (.004—.008) | JP | .008 (.004—.012) | JP | .012 (.008—.016) | JP | |
| S Titanium Alloy Heat Resistant Alloy | — | MP9120 VP15TF | 165 (130—195) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | — | — | |
| | | MP9130 | 140 (100—180) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | — | — | |
| | — | MP9120 VP15TF | 130 (65—165) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | — | — | |
| | | MP9130 | 110 (55—140) | .006 (.004—.008) | JL | .008 (.004—.012) | JM | — | — | |
| H Hardened Steel | 40—55HRC | VP15TF | 260 (195—330) | .004 (.002—.006) | JL | .006 (.004—.008) | JM | .008 (.004—.012) | JH | |

INSTRUCTIONS FOR USE OF WIPER INSERTS



Fig.1



Fig.2

- Wiper inserts for ASX445 are single-cornered.
- When installing the wiper insert, place the insert so that the cutting edge is located as shown Fig.1. Do not install the wiper insert as Fig.2
- Recommended depth of cut is $a_p = .008-.020$ (inch).
(Be aware of cutting load if the depth of cut is over the recommendation.)
- The major cutting edge of a wiper insert should be set inside as shown. This is to prevent heavy loads on the wiper and ensure the regular insert after the wiper takes the cutting load. To prevent fracture, set the feed under $.008$ inch/tooth.
- Excellent finished surfaces achieved with one wiper.
- Set more than 2 wiper inserts, equally spaced, when the feed per revolution is larger than the width of the wiper edge.

RECOMMENDED CUTTING CONDITIONS WHEN USING A WIPER INSERT

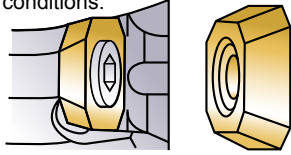
| Work Material | Grade | Recommended Cutting Speed (SFM) |
|---------------|--------|---------------------------------|
| P | VP25N | 655 (260–820) |
| | VP15TF | 590 (260–820) |
| M | VP15TF | 390–885 |
| K | MC5020 | 425–820 |
| | VP15TF | |
| S | VP15TF | 65–165 |
| H | VP15TF | 130–260 |

- Recommended depth of cut (a_p) is $.008$ inch- $.020$ inch, and feed per tooth (f_z) is up to $.008$ inch/tooth.

FEATURES

STABLE, LONG TOOL LIFE, HIGH ACCURACY BODY

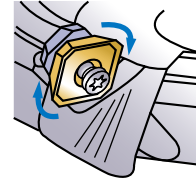
A carbide shim with Mitsubishi's proprietary Anti-Fly Insert (AFI) mechanism provides excellent insert location characteristics, permitting stable cutting even under high load conditions.



The cutter body is made from a special alloy that provides high strength at high temperature. A special surface treatment improves the corrosion resistance.



The ASX cutter uses screw-on type inserts that allow easy clamping of the inserts with high location precision. Indexing of the inserts can be performed without completely removing the screw.



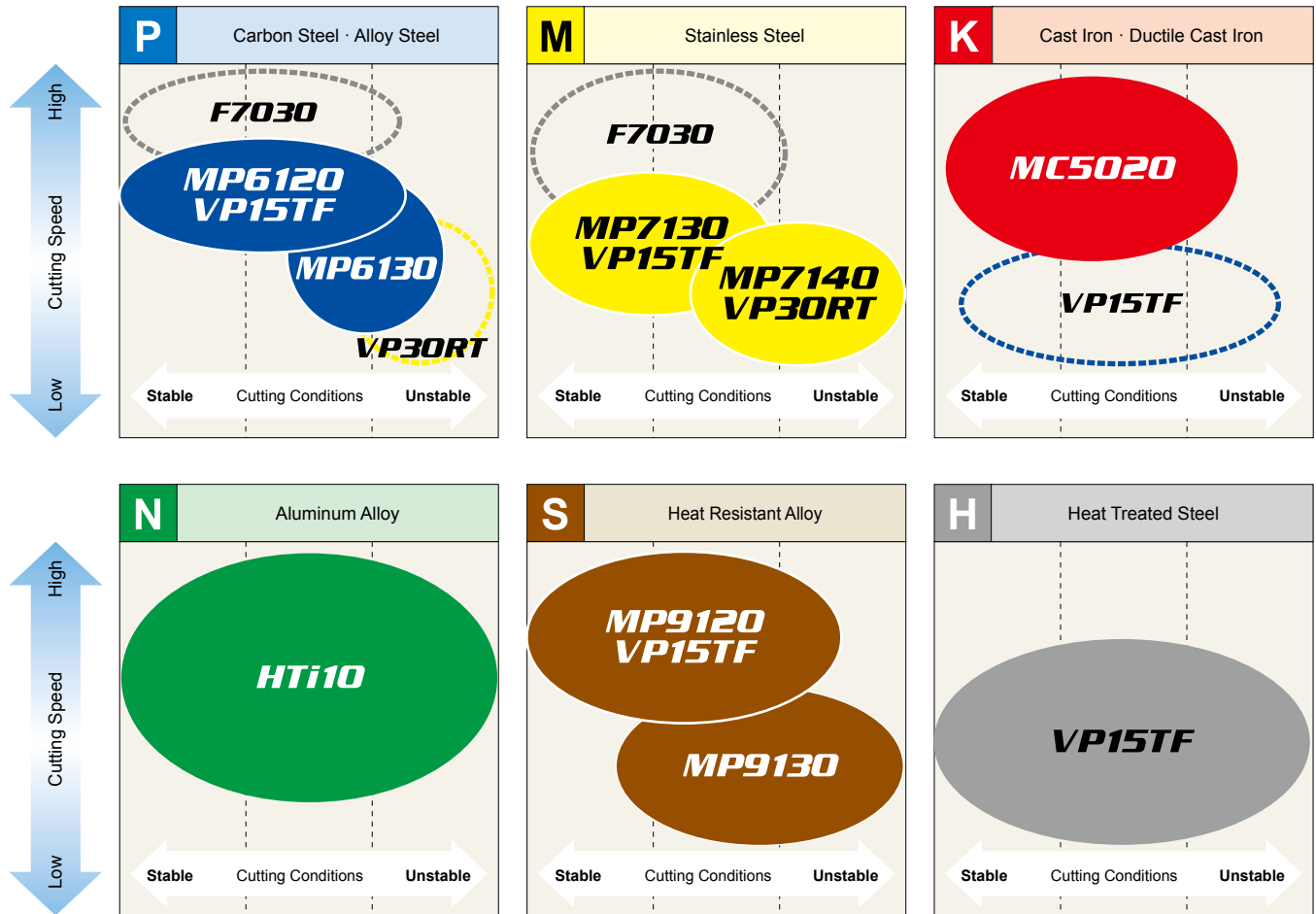
EFFECTIVE FOR VARIOUS MACHINING APPLICATIONS

| | | | | | |
|--|--|---|--|---|--|
| <p>● Coarse Pitch Type</p> <ol style="list-style-type: none"> 1. The 1st recommendation for cutting steel and stainless steel. 2. For deep cutting and high feed rates with large-volume chip discharge. 3. Longer overhang possible for relatively low machining rigidity. | | <p>● Fine Pitch Type</p> <ol style="list-style-type: none"> 1. The 1st recommendation type for cast iron, hardened steel and heat-resistant alloys. 2. For shallow cutting with low feed rates and low-volume chip discharge. | | <p>● Extra Fine Pitch Type</p> <ol style="list-style-type: none"> 1. The 1st recommendation for cast iron. 2. For cutting operations where chip discharge volume is small and high table feed is desired. | |
|--|--|---|--|---|--|

CHIPBREAKERS FOR A WIDE RANGE OF APPLICATIONS

| JL Finish to Light cutting Breaker | JM Light to Rough Cutting Breaker | JH Medium to Heavy cutting Breaker | JP Aluminum alloy cutting Breaker | FT Rough cutting for cast iron Breaker |
|--|--|---|--|--|
| | | | | |
| High accuracy insert with ground-finished periphery. Large rake angle leading to low cutting resistance. | High accuracy M class insert. For a wide range of work-piece materials and cutting conditions. | High accuracy M class insert. Strong cutting edge for high fracture resistance. | High accuracy insert with ground-finished periphery. Large rake angle and mirror-finished rake face for sharp cutting performance and high welding resistance. | High accuracy M class inserts. High fracture-resistant flat-top inserts. |
| ①Workpiece rigidity is low. | ①General cutting. | ①Interrupted cutting. ②Scaling. | ①General machining of aluminum alloy. | ①For rough machining of scaled cast iron. |

■ INSERT GRADES FOR A WIDE RANGE OF MATERIALS

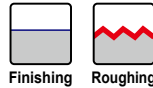


(Note) When machining steel or stainless steel where the emphasis is on surface finish, use cermet grade NX4545.
 Stable Cutting : Continuous cutting, Constant depth of cut, Pre-machined securely clamped component cutting
 Unstable Cutting : Heavy interrupted, Irregular depth of cut, Low clamping rigidity cutting

MILLING

FACE MILLING

<GENERAL CUTTING> **40°**



AHX6405



Fig.1
ø2.5"
ø3"

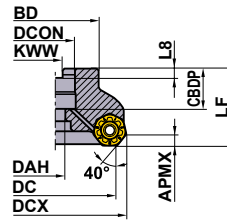


Fig.2
ø4"
ø5"
ø6"

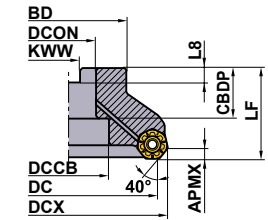
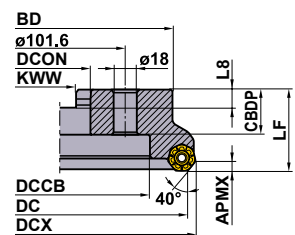


Fig.3
ø8"



- Heptagonal double-sided insert.
- Economical 14 corner use.

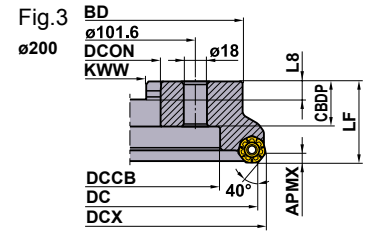
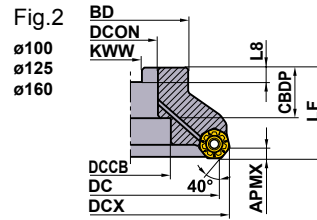
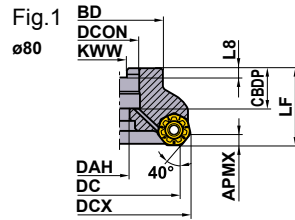
Right hand tool holder only.

| DC | Set Bolt | Geometry | |
|------|-------------|----------|---|
| ø2.5 | HSCU37513H | ① | |
| ø3 | HSCU62516H | ① | |
| ø4 | HSCU75016H | ② | |
| ø5 | MBAU75016H | | |
| ø6 | MBAU100016H | | |
| ø8 | — | — | — |

KAPR : 40° T : +10° (When using the MK breaker insert.)
 GAMP : -6° T : +20° (When using the MP/MM breaker insert.)
 GAMF : -5° I : +9° - +10°

| Type | Order Number | Stock | | Coolant Thru *1 | Number of Teeth | Dimensions (inch) | | | | | | | | WT (lbs) | APMX (inch) | Type (Fig.) | *2 | | | |
|--------------|-------------------|-------|---|-----------------|-----------------|-------------------|-------|-----|------|-------|------|-------|------|-------------|----------------|-------------|------|----|-------------|--------|
| | | R | L | | | DC | DCX | LF | DCON | CBDP | DAH | DCCB | BD | | | | KWW | L8 | Clamp Screw | Wrench |
| Coarse Pitch | AHX640SUR/L2504AA | ● | □ | Y | 4 | 2.5 | 2.994 | 2 | .75 | .748 | .413 | — | 1.75 | .313 | .187 | 2 | .236 | 1 | CS5015060T | TKY20T |
| | AHX640SUR/0304DA | ● | □ | Y | 4 | 3 | 3.494 | 2.5 | 1.25 | 1.26 | .669 | — | 2.88 | .5 | .281 | 3.7 | .236 | 1 | CS5015060T | TKY20T |
| | AHX640SUR/L0405EA | ● | □ | Y | 5 | 4 | 4.494 | 2.5 | 1.5 | 1.181 | — | .787 | 3.81 | .625 | .375 | 6.4 | .236 | 2 | CS5015060T | TKY20T |
| | AHX640SUR/0506EA | ● | □ | Y | 6 | 5 | 5.494 | 2.5 | 1.5 | 1.575 | — | 2.205 | 3.81 | .625 | .375 | 8.2 | .236 | 2 | CS5015060T | TKY20T |
| | AHX640SUR/L0607FA | ● | □ | Y | 7 | 6 | 6.494 | 2.5 | 2 | 1.693 | — | 3.228 | 4.88 | .75 | .437 | 11.7 | .236 | 2 | CS5015060T | TKY20T |
| | AHX640SUR/0808MN | ● | □ | N | 8 | 8 | 8.494 | 2.5 | 2.5 | 1.378 | — | 5.512 | 6.89 | 1 | .56 | 18.5 | .236 | 3 | CS5015060T | TKY20T |
| Fine Pitch | AHX640SUR/L2505AA | ● | □ | Y | 5 | 2.5 | 2.994 | 2 | .75 | .748 | .413 | — | 1.75 | .313 | .187 | 1.8 | .236 | 1 | CS5015060T | TKY20T |
| | AHX640SUR/0306DA | ● | □ | Y | 6 | 3 | 3.494 | 2.5 | 1.25 | 1.26 | .669 | — | 2.88 | .5 | .281 | 3.5 | .236 | 1 | CS5015060T | TKY20T |
| | AHX640SUR/L0407EA | ● | □ | Y | 7 | 4 | 4.494 | 2.5 | 1.5 | 1.181 | — | .787 | 3.81 | .625 | .375 | 6.4 | .236 | 2 | CS5015060T | TKY20T |
| | AHX640SUR/0508EA | ● | □ | Y | 8 | 5 | 5.494 | 2.5 | 1.5 | 1.575 | — | 2.205 | 3.81 | .625 | .375 | 7.9 | .236 | 2 | CS5015060T | TKY20T |
| | AHX640SUR/L0610FA | ● | □ | Y | 10 | 6 | 6.494 | 2.5 | 2 | 1.693 | — | 3.228 | 4.88 | .75 | .437 | 11.2 | .236 | 2 | CS5015060T | TKY20T |
| | AHX640SUR/0812MN | ● | □ | N | 12 | 8 | 8.494 | 2.5 | 2.5 | 1.378 | — | 5.512 | 6.89 | 1 | .56 | 18.3 | .236 | 3 | CS5015060T | TKY20T |

*1 Y=Yes, N=No
 *2 Clamp Torque (lbf-in) : CS5015060T=44
 *3 WT : Mass
 *4 The cutter body includes a set bolt for an arbor.



Right hand tool holder only.

METRIC Standard

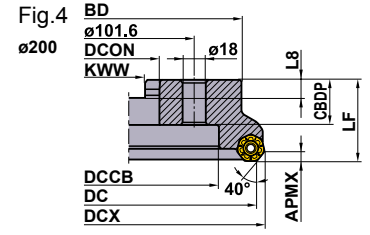
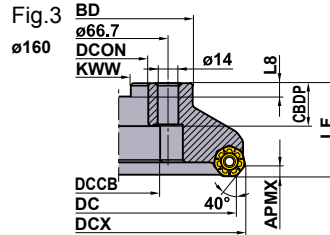
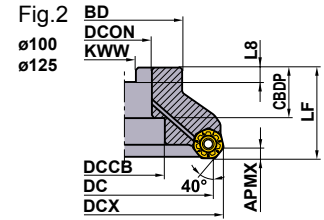
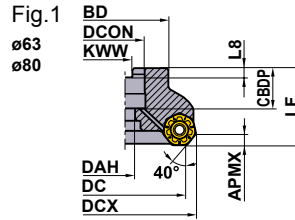
For inch arbors

KAPR :40° T :+10° (When using the MK breaker insert.)
 GAMP :-6° T :+20° (When using the MP/MM breaker insert.)
 GAMF :-5° I :+9° - +10°

| DC | Set Bolt | Geometry | |
|------|-----------|----------|--|
| ø80 | HSC12035H | ① | |
| ø100 | MBA16033H | ② | |
| ø125 | MBA20040H | ② | |
| ø160 | MBA24045H | ② | |
| ø200 | — | — | |

| Type | Order Number | Stock R | Coolant Thru *1 | Number of Teeth | Dimensions (mm) [inch] | | | | | | | | | | WT (kg) | APMX (mm) | Type (Fig.) | *2 Clamp Screw | Wrench |
|--------------|-----------------|------------|-----------------|-----------------|------------------------|-------|----|-----------------|------|-----|------|-----|------|-------|------------|--------------|-------------|-----------------------|------------|
| | | | | | DC | DCX | LF | DCON | CBDP | DAH | DCCB | BD | KWW | L8 | | | | | |
| Coarse Pitch | AHX640SR08004CA | ★ | Y | 4 | 80 | 92.6 | 50 | 25.4 [1.0"] | 26 | 13 | — | 56 | 9.5 | 6 | 1.1 | 6 | 1 | CS5015060T | TKY20T |
| | AHX640SR10005DA | ★ | Y | 5 | 100 | 112.6 | 50 | 31.75 [1.25"] | 35 | — | 45 | 70 | 12.7 | 8 | 1.7 | 6 | 2 | CS5015060T | TKY20T |
| | AHX640SR12506EA | ★ | Y | 6 | 125 | 137.6 | 63 | 38.1 [1.5"] | 42 | — | 56 | 80 | 15.9 | 10 | 3.0 | 6 | 2 | CS5015060T | TKY20T |
| | AHX640SR16007FA | ★ | N | 7 | 160 | 172.6 | 63 | 50.8 [2.0"] | 43 | — | 72 | 100 | 19.1 | 11 | 4.9 | 6 | 2 | CS5015060T | TKY20T |
| | AHX640SR20008KN | ★ | N | 8 | 200 | 212.6 | 63 | 47.625 [1.875"] | 35 | — | 140 | 175 | 25.4 | 14.22 | 8.2 | 6 | 3 | CS5015060T | TKY20T |
| Fine Pitch | AHX640SR08006CA | ★ | Y | 6 | 80 | 92.6 | 50 | 25.4 [1.0"] | 26 | 13 | — | 56 | 9.5 | 6 | 1.0 | 6 | 1 | CS5015060T | TKY20T |
| | AHX640SR10007DA | ★ | Y | 7 | 100 | 112.6 | 50 | 31.75 [1.25"] | 35 | — | 45 | 70 | 12.7 | 8 | 1.5 | 6 | 2 | CS5015060T | TKY20T |
| | AHX640SR12508EA | ★ | Y | 8 | 125 | 137.6 | 63 | 38.1 [1.5"] | 42 | — | 56 | 80 | 15.9 | 10 | 2.9 | 6 | 2 | CS5015060T | TKY20T |
| | AHX640SR16010FA | ★ | N | 10 | 160 | 172.6 | 63 | 50.8 [2.0"] | 43 | — | 72 | 100 | 19.1 | 11 | 4.7 | 6 | 2 | CS5015060T | TKY20T |
| | AHX640SR20012KN | ★ | N | 12 | 200 | 212.6 | 63 | 47.625 [1.875"] | 35 | — | 140 | 175 | 25.4 | 14.22 | 7.9 | 6 | 3 | CS5015060T | TKY20T |

*1 Y=Yes, N=No
 *2 Clamp Torque (lbf-in) : CS5015060T=44
 *3 WT : Mass
 *4 Set bolt not included.



Right hand tool holder only.

METRIC Standard

For metric arbors

KAPR :40° T :+10° (When using the MK breaker insert.)
 GAMP :-6° T :+20° (When using the MP/MM breaker insert.)
 GAMF :-5° I :+9° - +10°

| Cutter Diameter DC | Set Bolt | Geometry | |
|-----------------------|-----------|----------|---|
| | | ① | ② |
| ø63 | HSC10030H | ① | |
| ø80 | HSC12035H | ① | |
| ø100 | MBA16033H | ② | |
| ø125 | MBA20040H | | |
| ø160 | — | — | — |
| ø200 | — | — | — |

| Type | Order Number | Stock R | Coolant Thru *1 | Number of Teeth | Dimensions (mm) | | | | | | | | | | *3 WT (kg) | *4 APMX (mm) | Type (Fig.) | Clamp Screw | Wrench |
|--------------|------------------|------------|-----------------|-----------------|-----------------|-------|----|------|------|-----|------|-----|------|-------|------------------|--------------------|-------------|-----------------|------------|
| | | | | | DC | DCX | LF | DCON | CBDP | DAH | DCCB | BD | KWW | L8 | | | | | |
| Coarse Pitch | AHX640S-063A04AR | ★ | Y | 4 | 63 | 75.6 | 50 | 22 | 20 | 11 | — | 50 | 10.4 | 6.3 | 0.7 | 6 | 1 | CS5015060T | TKY20T |
| | AHX640S-080A04AR | ★ | Y | 4 | 80 | 92.6 | 50 | 27 | 23 | 13 | — | 56 | 12.4 | 7 | 1.1 | 6 | 1 | CS5015060T | TKY20T |
| | AHX640S-100B05AR | ★ | Y | 5 | 100 | 112.6 | 50 | 32 | 32 | — | 45 | 78 | 14.4 | 8 | 1.7 | 6 | 2 | CS5015060T | TKY20T |
| | AHX640S-125B06AR | ★ | Y | 6 | 125 | 137.6 | 63 | 40 | 42 | — | 56 | 89 | 16.4 | 9 | 3.1 | 6 | 2 | CS5015060T | TKY20T |
| | AHX640S-160C07NR | ★ | N | 7 | 160 | 172.6 | 63 | 40 | 29 | — | 56 | 120 | 16.4 | 9 | 5.4 | 6 | 3 | CS5015060T | TKY20T |
| | AHX640S-200C08NR | ★ | N | 8 | 200 | 212.6 | 63 | 60 | 32 | — | 140 | 175 | 25.7 | 14.22 | 7.8 | 6 | 4 | CS5015060T | TKY20T |
| Fine Pitch | AHX640S-063A05AR | ★ | Y | 5 | 63 | 75.6 | 50 | 22 | 20 | 11 | — | 50 | 10.4 | 6.3 | 0.6 | 6 | 1 | CS5015060T | TKY20T |
| | AHX640S-080A06AR | ★ | Y | 6 | 80 | 92.6 | 50 | 27 | 23 | 13 | — | 56 | 12.4 | 7 | 1.0 | 6 | 1 | CS5015060T | TKY20T |
| | AHX640S-100B07AR | ★ | Y | 7 | 100 | 112.6 | 50 | 32 | 32 | — | 45 | 78 | 14.4 | 8 | 1.6 | 6 | 2 | CS5015060T | TKY20T |
| | AHX640S-125B08AR | ★ | Y | 8 | 125 | 137.6 | 63 | 40 | 42 | — | 56 | 89 | 16.4 | 9 | 3.0 | 6 | 2 | CS5015060T | TKY20T |
| | AHX640S-160C10NR | ★ | N | 10 | 160 | 172.6 | 63 | 40 | 29 | — | 56 | 120 | 16.4 | 9 | 5.2 | 6 | 3 | CS5015060T | TKY20T |
| | AHX640S-200C12NR | ★ | N | 12 | 200 | 212.6 | 63 | 60 | 32 | — | 140 | 175 | 25.7 | 14.22 | 7.5 | 6 | 4 | CS5015060T | TKY20T |

- *1 Y=Yes, N=No
- *2 Clamp Torque (lbf-in) : CS5015060T=44
- *3 WT : Mass
- *4 Set bolt not included.

INSERTS

| Application | Shape | Order Number | Class | Hornning | Coated | | | Geometry |
|------------------------------|-------|------------------|-------|----------|--------|--------|--------|--|
| | | | | | MC5020 | MP7030 | VP15TF | |
| For Steel General Purpose | | NNMU200708ZEN-MP | M | E | | | ● | R.031" .039" ø.787" .315" |
| For Stainless | | NNMU200712ZER-MM | M | E | | ● | | R.047" .039" ø.787" .315" |
| Wiper Insert | | WNEU2007ZEN7C-WP | E | E | | | ● | R.031" ø.787" .272" |

| Application | Shape | Order Number | Class | Hornning | Coated | | | Geometry |
|---|-------|------------------|-------|----------|--------|--------|--------|--|
| | | | | | MC5020 | VP15TF | VP20RT | |
| For Cast Iron General Use | | NNMU200608ZEN-MK | M | E | ● | ● | ● | R.031" .039" ø.787" .258" |
| For Cast Iron Strong Cutting Edge Type | | NNMU200608ZEN-HK | M | E | ● | ● | ● | R.031" .039" ø.787" .258" |
| For Cast Iron | | WNEU2006ZEN7C-WK | E | E | ● | | | R.031" .291" ø.787" .258" |

● =

RECOMMENDED CUTTING CONDITIONS

DRY CUTTING

| | Work Material | Hardness | Insert Breaker | Grade | Cutting Speed (SFM) | Feed per Tooth (IPT) | Axial depth of cut ap (inch) |
|----------|---|--------------------------|-----------------|--------------------------|---------------------|----------------------|------------------------------|
| P | Mild Steel (AISI 1010) | ≤180HB | MP | VP15TF | 820 (655 – 985) | .012 (.008 – .016) | .197 |
| | Carbon Steel, Alloy Steel (AISI 1045,4140) | 180–280HB | MP | VP15TF | 720 (555 – 885) | .012 (.008 – .016) | .197 |
| | Carbon Steel, Alloy Steel (AISI 4340) | 280–350HB | MP | VP15TF | 460 (330 – 590) | .012 (.008 – .016) | .197 |
| M | Austenitic Stainless Steel (AISI 304,316) | ≤200HB | MM | MP7030 | 655 (490 – 820) | .008 (.004 – .012) | .197 |
| | Austenitic Stainless Steel (AISI 304LN,316LN) | >200HB | MM | MP7030 | 490 (330 – 655) | .008 (.004 – .012) | .197 |
| | Duplex Stainless Steel (ASTM S 32900) | ≤280HB | MM | MP7030 | 460 (330 – 590) | .006 (.002 – .010) | .197 |
| | Ferritic and Martensitic Stainless Steel (ASTM S 41000,S 43000) | ≤200HB | MM | MP7030 | 655 (490 – 820) | .008 (.004 – .012) | .197 |
| | Ferritic and Martensitic Stainless Steel (ASTM S 43100,S 42000) | >200HB | MM | MP7030 | 490 (330 – 655) | .008 (.004 – .012) | .197 |
| | Hardened Stainless Steel (ASTM S 17400,S 17700) | <450HB | MM | MP7030 | 425 (330 – 525) | .006 (.002 – .010) | .197 |
| K | Gray Cast Iron (AISI No 45 B) | Tensile Strength ≤350MPa | MK,HK | MC5020 | 720 (490 – 985) | .012 (.008 – .016) | .197 |
| | | | MP,MK,HK | VP15TF VP20RT | 590 (425 – 755) | .012 (.008 – .016) | .197 |
| | Ductile Cast Iron (ASTM 65-45-12) | Tensile Strength ≤450MPa | MK,HK | MC5020 | 655 (490 – 820) | .008 (.004 – .012) | .197 |
| | | | MP,MK,HK | VP15TF VP20RT | 555 (390 – 720) | .008 (.004 – .012) | .197 |
| | Ductile Cast Iron (AISI 100-70-03) | Tensile Strength ≤800MPa | MK,HK | MC5020 | 555 (490 – 655) | .008 (.004 – .012) | .197 |
| | | | MP,MK,HK | VP15TF VP20RT | 490 (410 – 575) | .008 (.004 – .012) | .197 |
| H | Hardened Steel (ASTM H13) | 40–55HRC | MP | VP15TF | 260 (195 – 330) | .006 (.004 – .008) | .118 |

(Note 1) Recommend wet cutting for good surface finishing of stainless steel.

(Note 2) When clamp rigidity is low and tool is overhanged, we recommend to adjust the cutting speed and feed 70% to 80% than the condition above.

WET CUTTING

| | Work Material | Hardness | Insert Breaker | Grade | Cutting Speed (SFM) | Feed per Tooth (IPT) | Axial depth of cut ap (inch) |
|----------|---|----------|----------------|---------------|---------------------|----------------------|-------------------------------------|
| M | Austenitic Stainless Steel (AISI 304,316) | ≤200HB | MM | MP7030 | 410 (330 – 490) | .006 (.004 – .008) | .197 |
| | Austenitic Stainless Steel (AISI 304LN,316LN) | >200HB | MM | MP7030 | 330 (245 – 410) | .006 (.004 – .008) | .197 |
| | Duplex Stainless Steel (ASTM S 32900) | ≤280HB | MM | MP7030 | 260 (195 – 330) | .004 (.002 – .006) | .197 |
| | Ferritic and Martensitic Stainless Steel (ASTM S 41000,S 43000) | ≤200HB | MM | MP7030 | 410 (330 – 490) | .006 (.004 – .008) | .197 |
| | Ferritic and Martensitic Stainless Steel (ASTM S 43100,S 42000) | >200HB | MM | MP7030 | 330 (245 – 410) | .006 (.004 – .008) | .197 |
| | Hardened Stainless Steel (ASTM S 17400,S 17700) | <450HB | MM | MP7030 | 230 (165 – 295) | .004 (.002 – .006) | .197 |
| S | Titanium Alloy (Ti-6A-4V) | – | MM | MP7030 | 130 (65 – 165) | .006 (.004 – .008) | .118 |
| | Heat Resistant Alloy (Inconel718) | – | MM | MP7030 | 130 (65 – 165) | .006 (.004 – .008) | .118 |

(Note 1) With low workpiece clamping rigidity or long overhang of the tool, adjust cutting speed and feed to 70 or 80 % of the recommended conditons above.

CUTTING CONDITION WITH WIPER INSERT

| | Work Material | Hardness | Main Insert | Grade | Wiper Insert | Grade | Cutting Speed (SFM) | Feed per Tooth (IPT) | Axial depth of cut ap (inch) |
|----------|--|--------------------------|--------------|--------------------------|--------------|---------------|---------------------|----------------------|-------------------------------------|
| P | Mild Steel (AISI 1010) | ≤180HB | MP | VP15TF | WP | VP15TF | 820 (655 – 985) | .012 (.008 – .016) | .0197 |
| | Carbon Steel, Alloy Steel (AISI 1045,4140) | 180–280HB | MP | VP15TF | WP | VP15TF | 720 (555 – 885) | .012 (.008 – .016) | .0197 |
| | Carbon Steel, Alloy Steel (AISI 4340) | 280–350HB | MP | VP15TF | WP | VP15TF | 460 (330 – 590) | .012 (.008 – .016) | .0197 |
| K | Gray Cast Iron (AISI No 45 B) | Tensile Strength ≤350MPa | MK,HK | MC5020 | WK | MC5020 | 1050 (820 – 1310) | .012 (.008 – .016) | .0197 |
| | | | MP | VP15TF VP20RT | WP | VP15TF | 720 (490 – 985) | .012 (.008 – .016) | .0197 |
| | Ductile Cast Iron (ASTM 65-45-12) | Tensile Strength ≤450MPa | MK,HK | MC5020 | WK | MC5020 | 820 (655 – 985) | .008 (.004 – .012) | .0197 |
| | | | MP | VP15TF VP20RT | WP | VP15TF | 655 (490 – 820) | .008 (.004 – .012) | .0197 |
| | Ductile Cast Iron (AISI 100-70-03) | Tensile Strength ≤800MPa | MK,HK | MC5020 | WK | MC5020 | 720 (655 – 820) | .008 (.004 – .012) | .0197 |
| | | | MP | VP15TF VP20RT | WP | VP15TF | 555 (510 – 655) | .008 (.004 – .012) | .0197 |
| S | Heat Resistant Alloy | – | MP | VP15TF | WP | VP15TF | 130 (65 – 165) | .006 (.004 – .008) | .0197 |
| H | Hardened Steel (ASTM H13) | 40–55HRC | MP | VP15TF | WP | VP15TF | 260 (195 – 330) | .006 (.004 – .008) | .0197 |

(Note 1) With low workpiece clamping rigidity or long overhang of the tool, adjust cutting speed and feed to 70 or 80 % of the recommended conditons above.

FACE MILLING 40°

<HIGH FEED CUTTING FOR CAST IRON>



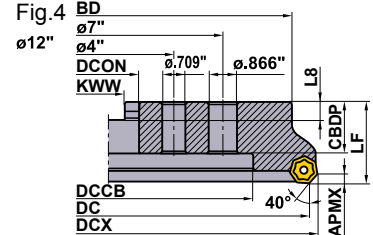
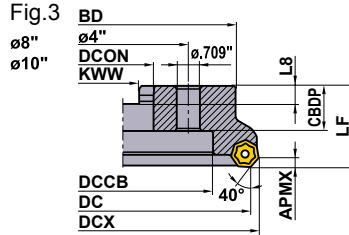
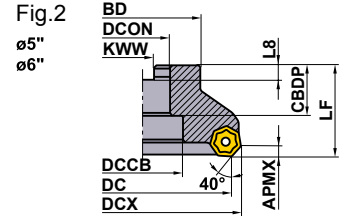
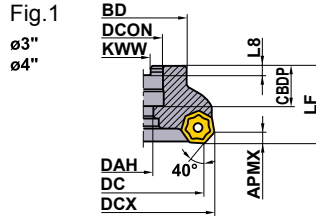
AHX640W

P M **K** N S H



- Heptagonal double-sided insert.
- Economical 14 corner use.
- Fine pitch design allows high feed milling.

KAPR :40°
 GAMP :-6° T :+10°
 GAMF :-4° I :+9°—+10° (T, I : When using the MK breaker insert)


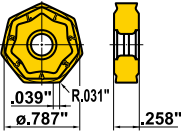

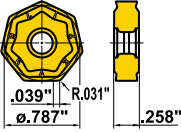

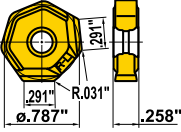


Right hand tool holder shown.

| Type | Order Number | Stock | | Number of Teeth | Dimensions (inch) | | | | | | | | | | APMX (inch) | WT* (lbs) | Type (Fig.) |
|------------------------|-----------------|-------|---|-----------------|-------------------|--------|-------|-------|-------|------|-------|--------|-------|------|-------------|-----------|-------------|
| | | R | L | | DC | DCX | LF | DCON | CBDP | DAH | DCCB | BD | KWW | L8 | | | |
| Extra Fine Pitch | AHX640WR/L0308D | ● | □ | 8 | 3.000 | 3.494 | 2.500 | 1.250 | 1.260 | .669 | — | 2.874 | .500 | .281 | .236 | 4.2 | 1 |
| | AHX640WR/L0410E | ● | □ | 10 | 4.000 | 4.494 | 2.500 | 1.500 | 1.181 | .787 | — | 3.799 | .625 | .375 | .236 | 7.3 | 1 |
| | AHX640WR/L0512E | ● | □ | 12 | 5.000 | 5.494 | 2.500 | 1.500 | 1.378 | — | 2.362 | 3.799 | .625 | .375 | .236 | 8.8 | 2 |
| | AHX640WR/L0614F | ● | □ | 14 | 6.000 | 6.494 | 2.500 | 2.000 | 1.496 | — | 3.150 | 4.724 | .750 | .437 | .236 | 12.6 | 2 |
| | AHX640WR/L0820M | ● | □ | 20 | 8.000 | 8.494 | 2.500 | 2.500 | 1.378 | — | 5.512 | 6.890 | 1.000 | .560 | .236 | 19.6 | 3 |
| | AHX640WR/L1024M | ● | □ | 24 | 10.000 | 10.494 | 2.500 | 2.500 | 1.378 | — | 7.087 | 8.661 | 1.000 | .560 | .236 | 32.0 | 3 |
| | AHX640WR/L1228M | ● | □ | 28 | 12.000 | 12.494 | 2.500 | 2.500 | 1.575 | — | 9.646 | 11.220 | 1.000 | .560 | .236 | 49.2 | 4 |
| Super Extra Fine Pitch | AHX640WR/L0310D | ● | □ | 10 | 3.000 | 3.494 | 2.500 | 1.250 | 1.260 | .669 | — | 2.874 | .500 | .281 | .236 | 4.2 | 1 |
| | AHX640WR/L0414E | ● | □ | 14 | 4.000 | 4.494 | 2.500 | 1.500 | 1.181 | .787 | — | 3.799 | .625 | .375 | .236 | 7.3 | 1 |
| | AHX640WR/L0518E | ● | □ | 18 | 5.000 | 5.494 | 2.500 | 1.500 | 1.378 | — | 2.362 | 3.799 | .625 | .375 | .236 | 8.8 | 2 |
| | AHX640WR/L0620F | ● | □ | 20 | 6.000 | 6.494 | 2.500 | 2.000 | 1.496 | — | 3.150 | 4.724 | .750 | .437 | .236 | 12.6 | 2 |
| | AHX640WR/L0828M | ● | □ | 28 | 8.000 | 8.494 | 2.500 | 2.500 | 1.378 | — | 5.512 | 6.890 | 1.000 | .560 | .236 | 19.6 | 3 |
| | AHX640WR/L1036M | ● | □ | 36 | 10.000 | 10.494 | 2.500 | 2.500 | 1.378 | — | 7.087 | 8.661 | 1.000 | .560 | .236 | 32.0 | 3 |
| | AHX640WR/L1242M | ● | □ | 42 | 12.000 | 12.494 | 2.500 | 2.500 | 1.575 | — | 9.646 | 11.220 | 1.000 | .560 | .236 | 49.2 | 4 |

- 1) * WT : Mass
- 2) Set bolt not included.

INSERTS

| Shape | Order Number | Class | Honing | Coated | | | Geometry |
|---|------------------|-------|--------|--------|--------|--------|---|
| | | | | MC5020 | VP15TF | VP20R1 | |
|  MK breaker General Use | NNMU200608ZEN-MK | M | E | ● | ● | ● |  |
|  HK breaker Strong Cutting Edge Type | NNMU200608ZEN-HK | M | E | ● | ● | ● |  |
|  Wiper | WNEU2006ZEN7C-WK | E | E | ● | | |  |

- : Inventory maintained.
 - : Non stock, produced to order only.
- <10 inserts in one case>

SPARE PARTS > M001
 TECHNICAL DATA > N001



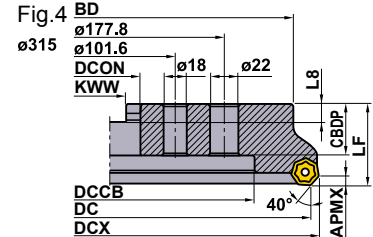
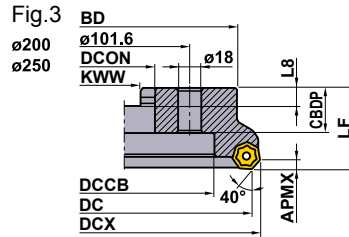
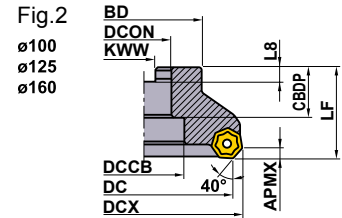
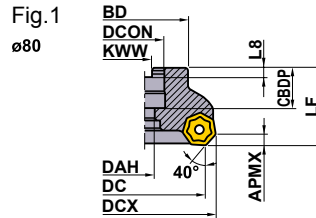
METRIC Standard

For inch arbors

KAPR :40°

GAMP :-6° T :+10°

GAMF :-4° I :+9°—+10° (T, I : When using the MK breaker insert)



Right hand tool holder shown.

| Type | Order Number | Stock | | Number of Teeth | Dimensions (mm) [inch] | | | | | | | | | | APMX (mm) | WT* (kg) | Type (Fig.) |
|------------------------|------------------|-------|---|-----------------|------------------------|-------|----|-----------------|------|-----|------|-----|------|-------|-----------|----------|-------------|
| | | R | L | | DC | DCX | LF | DCON | CBDP | DAH | DCCB | BD | KWW | L8 | | | |
| Extra Fine Pitch | AHX640WR/L08008C | ★ | ★ | 8 | 80 | 92.6 | 50 | 25.4 [1.0"] | 26 | 13 | — | 56 | 9.5 | 6 | 6 | 1.5 | 1 |
| | AHX640WR/L10010D | ★ | ★ | 10 | 100 | 112.6 | 50 | 31.75 [1.25"] | 32 | — | 45 | 70 | 12.7 | 8 | 6 | 2.1 | 2 |
| | AHX640WR/L12512E | ★ | ★ | 12 | 125 | 137.6 | 63 | 38.1 [1.5"] | 35 | — | 56 | 80 | 15.9 | 10 | 6 | 3.5 | 2 |
| | AHX640WR/L16016F | ★ | ★ | 16 | 160 | 172.6 | 63 | 50.8 [2.0"] | 38 | — | 72 | 100 | 19.1 | 11 | 6 | 5.6 | 2 |
| | AHX640WR/L20020K | ★ | ★ | 20 | 200 | 212.6 | 63 | 47.625 [1.875"] | 35 | — | 140 | 175 | 25.4 | 14.22 | 6 | 9.0 | 3 |
| | AHX640WR/L25024K | ★ | ★ | 24 | 250 | 262.6 | 63 | 47.625 [1.875"] | 35 | — | 180 | 220 | 25.4 | 14.22 | 6 | 14.4 | 3 |
| | AHX640WR/L31528P | ★ | ★ | 28 | 315 | 327.6 | 63 | 47.625 [1.875"] | 40 | — | 225 | 285 | 25.4 | 14.22 | 6 | 23.8 | 4 |
| Super Extra Fine Pitch | AHX640WR/L08010C | ★ | ★ | 10 | 80 | 92.6 | 50 | 25.4 [1.0"] | 26 | 13 | — | 56 | 9.5 | 6 | 6 | 1.5 | 1 |
| | AHX640WR/L10014D | ★ | ★ | 14 | 100 | 112.6 | 50 | 31.75 [1.25"] | 32 | — | 45 | 70 | 12.7 | 8 | 6 | 2.1 | 2 |
| | AHX640WR/L12518E | ★ | ★ | 18 | 125 | 137.6 | 63 | 38.1 [1.5"] | 35 | — | 56 | 80 | 15.9 | 10 | 6 | 3.5 | 2 |
| | AHX640WR/L16022F | ★ | ★ | 22 | 160 | 172.6 | 63 | 50.8 [2.0"] | 38 | — | 72 | 100 | 19.1 | 11 | 6 | 5.6 | 2 |
| | AHX640WR/L20028K | ★ | ★ | 28 | 200 | 212.6 | 63 | 47.625 [1.875"] | 35 | — | 140 | 175 | 25.4 | 14.22 | 6 | 9.0 | 3 |
| | AHX640WR/L25036K | ★ | ★ | 36 | 250 | 262.6 | 63 | 47.625 [1.875"] | 35 | — | 180 | 220 | 25.4 | 14.22 | 6 | 14.4 | 3 |
| | AHX640WR/L31544P | ★ | ★ | 44 | 315 | 327.6 | 63 | 47.625 [1.875"] | 40 | — | 225 | 285 | 25.4 | 14.22 | 6 | 23.8 | 4 |

1) ★ WT : Mass

2) Set bolt not included.

SPARE PARTS



| Tool Holder Number | Wedge | Clamp Screw | Wrench |
|--------------------|------------|-------------|--------|
| AHX640W Type | CWAHX640WN | LS0622T | TKY15T |

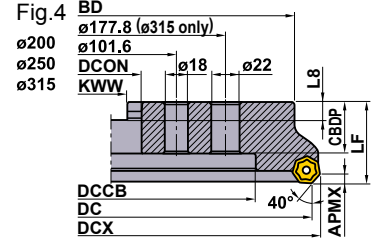
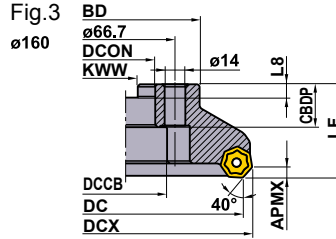
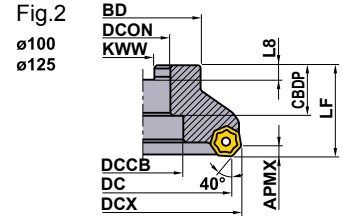
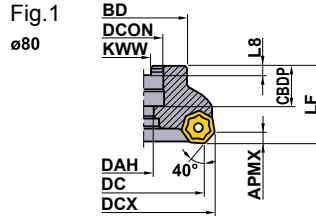
* Clamp Torque (lb·in) : LS0622T=53



METRIC Standard

For metric arbors

KAPR :40°
 GAMP :-6° T :+10°
 GAMF :-4° I :+9°—+10° (T, I : When using the MK breaker insert)



Right hand tool holder shown.

| Type | Order Number | Stock | | Number of Teeth | Dimensions (mm) | | | | | | | | | | APMX (mm) | WT * (kg) | Type (Fig.) |
|------------------------|-------------------|-------|---|-----------------|-----------------|-------|----|------|------|-----|------|-----|------|----|-----------|-----------|-------------|
| | | R | L | | DC | DCX | LF | DCON | CBDP | DAH | DCCB | BD | KWW | L8 | | | |
| Extra Fine Pitch | AHX640W-080A08R/L | ★ | ★ | 8 | 80 | 92.6 | 50 | 27 | 23 | 13 | — | 56 | 12.4 | 7 | 6 | 1.5 | 1 |
| | AHX640W-100B10R/L | ★ | ★ | 10 | 100 | 112.6 | 50 | 32 | 32 | — | 45 | 70 | 14.4 | 8 | 6 | 2.1 | 2 |
| | AHX640W-125B12R/L | ★ | ★ | 12 | 125 | 137.6 | 63 | 40 | 32 | — | 56 | 80 | 16.4 | 9 | 6 | 3.1 | 2 |
| | AHX640W-160C16R/L | ★ | ★ | 16 | 160 | 172.6 | 63 | 40 | 29 | — | 56 | 100 | 16.4 | 9 | 6 | 5.6 | 3 |
| | AHX640W-200C20R/L | ★ | ★ | 20 | 200 | 212.6 | 63 | 60 | 32 | — | 135 | 155 | 25.7 | 14 | 6 | 8.0 | 4 |
| | AHX640W-250C24R/L | ★ | ★ | 24 | 250 | 262.6 | 63 | 60 | 32 | — | 180 | 200 | 25.7 | 14 | 6 | 12.6 | 4 |
| | AHX640W-315C28R/L | ★ | ★ | 28 | 315 | 327.6 | 80 | 60 | 57 | — | 225 | 285 | 25.7 | 14 | 6 | 31.5 | 4 |
| Super Extra Fine Pitch | AHX640W-080A10R/L | ★ | ★ | 10 | 80 | 92.6 | 50 | 27 | 23 | 13 | — | 56 | 12.4 | 7 | 6 | 1.5 | 1 |
| | AHX640W-100B14R/L | ★ | ★ | 14 | 100 | 112.6 | 50 | 32 | 32 | — | 45 | 70 | 14.4 | 8 | 6 | 2.1 | 2 |
| | AHX640W-125B18R/L | ★ | ★ | 18 | 125 | 137.6 | 63 | 40 | 32 | — | 56 | 80 | 16.4 | 9 | 6 | 3.1 | 2 |
| | AHX640W-160C22R/L | ★ | ★ | 22 | 160 | 172.6 | 63 | 40 | 29 | — | 56 | 100 | 16.4 | 9 | 6 | 5.6 | 3 |
| | AHX640W-200C28R/L | ★ | ★ | 28 | 200 | 212.6 | 63 | 60 | 32 | — | 135 | 155 | 25.7 | 14 | 6 | 8.0 | 4 |
| | AHX640W-250C36R/L | ★ | ★ | 36 | 250 | 262.6 | 63 | 60 | 32 | — | 180 | 200 | 25.7 | 14 | 6 | 12.6 | 4 |
| | AHX640W-315C44R/L | ★ | ★ | 44 | 315 | 327.6 | 80 | 60 | 57 | — | 225 | 285 | 25.7 | 14 | 6 | 31.5 | 4 |

- 1) * WT : Mass
- 2) Set bolt not included.

RECOMMENDED CUTTING CONDITION

GENERAL CUTTING

| Work Material | Tensile Strength | Grade | Cutting Speed (SFM) | Feed per Tooth (IPT) |
|-------------------|------------------|------------------|---------------------|----------------------|
| Gray Cast Iron | ≤350MPa | MC5020 | 720 (490—985) | .012 (.008—.016) |
| | | VP15TF VP20RT | 590 (425—755) | .012 (.008—.016) |
| Ductile Cast Iron | ≤450MPa | MC5020 | 655 (490—820) | .008 (.004—.012) |
| | | VP15TF VP20RT | 560 (395—720) | .008 (.004—.012) |
| Ductile Cast Iron | ≤800MPa | MC5020 | 560 (490—655) | .008 (.004—.012) |
| | | VP15TF VP20RT | 460 (330—590) | .008 (.004—.012) |

FINISHING (USE OF WIPER INSERTS)

| Work Material | Grade | Axial Depth of Cut (inch) | Cutting Speed (SFM) | Feed per Tooth (IPT) |
|-------------------|--------|---------------------------|---------------------|----------------------|
| Gray Cast Iron | MC5020 | < .0197 | 1050 (820—1310) | .008 (.004—.012) |
| | | .0197—.118 | 885 (655—1150) | |
| Ductile Cast Iron | MC5020 | < .0197 | 885 (655—1150) | |
| | | .0197—.118 | 720 (655—820) | |

* Please use 2-3 pcs of Wiper inserts in case of 'over .236 IPR'.

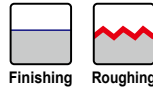
- INSERTS > K029
- SPARE PARTS > M001
- TECHNICAL DATA > N001

MILLING

MILLING

FACE MILLING 45°

<HIGH EFFICIENCY CUTTING FOR CAST IRON>



AOX445

P M **K** N S H



- Octagonal double-sided solid CBN insert.
- Economical 16 corner use. (when depth of cut is 3mm)
- High efficiency machining from roughing to finishing.
- Easy operation and cleaning.

Fig.1
ø63

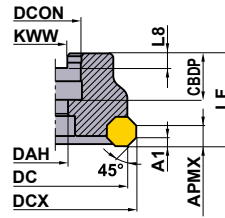
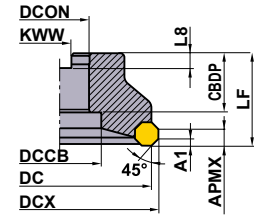


Fig.2
ø80
ø100
ø125
ø160



METRIC Standard

For inch arbors

KAPR :45°
GAMP :-5° T :-9°-6°
GAMF :-9°-6° I :-5°

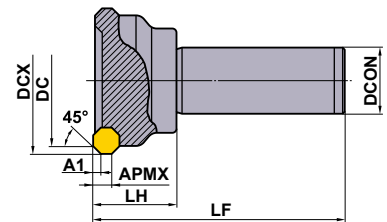
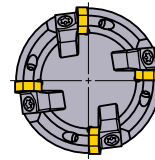
ARBOR TYPE

Right hand tool holder only.

| Type | Order Number | Stock | Number of Teeth | Dimensions (mm) [inch] | | | | | | | | | | * WT (kg) | Max. Depth of Cut (mm) | | Max. Spindle Speed (min ⁻¹) | Type (Fig.) |
|--------------|-----------------------|-------|-----------------|------------------------|--------|----|---------------|-------|-----|------|------|-----|-----|-----------|------------------------|-------|---|-------------|
| | | | | DC | DCX | LF | DCON | CBBDP | DAH | DCCB | KWW | L8 | A1 | | APMX | | | |
| Coarse Pitch | AOX445-063A04R | ★ | 4 | 63 | 70.75 | 40 | 22 | 20 | 11 | — | 10.4 | 6.3 | 0.6 | 3 | 8 | 12000 | 1 | |
| | AOX445-R08006C | ★ | 6 | 80 | 87.73 | 50 | 25.4 [1.0"] | 26 | — | 38 | 9.5 | 6 | 1.2 | 3 | 8 | 11000 | 2 | |
| | AOX445-R10008D | ★ | 8 | 100 | 107.73 | 50 | 31.75 [1.25"] | 32 | — | 45 | 12.7 | 8 | 1.8 | 3 | 8 | 9300 | 2 | |
| | AOX445-R12510E | ★ | 10 | 125 | 132.71 | 63 | 38.1 [1.5"] | 35 | — | 60 | 15.9 | 10 | 3.0 | 3 | 8 | 8300 | 2 | |
| | AOX445-R16012F | ★ | 12 | 160 | 167.71 | 63 | 50.8 [2.0"] | 38 | — | 80 | 19.1 | 11 | 4.9 | 3 | 8 | 7200 | 2 | |

(Note) When machining with a depth of cut of over 3mm, 16 corners cannot be used.

* WT : Mass



METRIC Standard

SHANK TYPE

Right hand tool holder only.

| Type | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | * WT (kg) | Max. Depth of Cut (mm) | | Max. Spindle Speed (min ⁻¹) |
|--------------|----------------------|-------|-----------------|-----------------|-------|-----|------|----|-----------|------------------------|------|---|
| | | | | DC | DCX | LF | DCON | LH | | A1 | APMX | |
| Coarse Pitch | AOX445R503S32 | ★ | 3 | 50 | 57.75 | 125 | 32 | 40 | 1.1 | 3 | 8 | 13000 |
| | AOX445R634S32 | ★ | 4 | 63 | 70.75 | 125 | 32 | 40 | 1.4 | 3 | 8 | 12000 |

* WT : Mass

INSERTS

| Order Number | Class | CBN | | Geometry |
|-------------------------|-------|--------|--|----------|
| | | BC5030 | | |
| SL-ONEN120404ASN | E | ★ | | |

SPARE PARTS

| Tool Holder Number | | * | |
|--------------------|-----------|-------|--------|
| AOX445 | CWAOX445N | LS15T | TKY25T |

* Clamp Torque (lbf-in) : LS15T=71

RECOMMENDED CUTTING CONDITIONS

| Work Material | Tensile Strength | Grade | Cutting Speed (SFM) | Feed per Tooth (inch/tooth) |
|-------------------------|------------------|---------------|---------------------|-----------------------------|
| K Gray Cast Iron | ≤200MPa | BC5030 | 3280 (2625-4920) | .004 (.002-.006) |
| | 250-350 MPa | | | |

★ : Inventory maintained in Japan.

<1 insert in one case for CBN>

SHOULDER MILLING

<STRONG EDGE TYPE FOR CAST IRON>



Roughing



VOX400

P

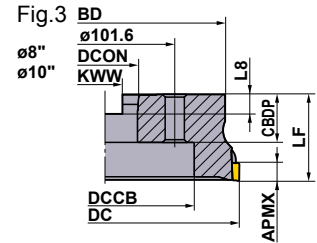
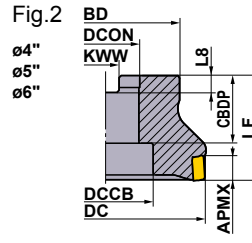
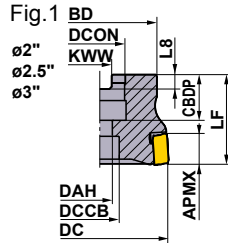
M

K

N

S

H



Right hand tool holder only.

ARBOR TYPE

| Type | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | | | | | | WT (lbs) | APMX (inch) | Type (Fig.) |
|------------------|---------------|-------|-----------------|-------------------|-------|-------|-------|------|-------|------|-------|------|----------|-------------|-------------|
| | | | | DC | LF | DCON | CBDP | DAH | DCCB | BD | KWW | L8 | | | |
| Coarse Pitch | VOX400UR0203C | ● | 3 | 2.000 | 2.000 | 1.000 | 1.339 | .539 | .787 | 1.93 | .375 | .219 | .8 | .394 | 1 |
| | VOX400UR2504C | ● | 4 | 2.500 | 2.000 | 1.000 | 1.339 | .539 | .787 | 2.19 | .375 | .219 | 1.7 | .394 | 1 |
| | VOX400UR0304C | ● | 4 | 3.000 | 2.000 | 1.000 | 1.339 | .539 | .787 | 2.19 | .375 | .219 | 2.2 | .394 | 1 |
| | VOX400UR0406E | ● | 6 | 4.000 | 2.000 | 1.500 | 1.024 | — | 2.205 | 3.81 | .625 | .375 | 4.3 | .394 | 2 |
| | VOX400UR0508E | ● | 8 | 5.000 | 2.000 | 1.500 | 1.024 | — | 2.205 | 3.81 | .625 | .375 | 6.0 | .394 | 2 |
| | VOX400UR0610F | ● | 10 | 6.000 | 2.500 | 2.000 | 1.024 | — | 3.228 | 4.88 | .750 | .437 | 10.2 | .394 | 2 |
| | VOX400UR0812M | ● | 12 | 8.000 | 2.500 | 2.500 | 1.378 | — | 5.512 | 6.89 | 1.000 | .560 | 17.6 | .394 | 3 |
| | VOX400UR1016M | ● | 16 | 10.000 | 2.500 | 2.500 | 1.378 | — | 7.078 | 8.66 | 1.000 | .560 | 29.4 | .394 | 3 |
| Fine Pitch | VOX400UR0205C | ● | 5 | 2.000 | 2.000 | 1.000 | 1.339 | .539 | .787 | 1.93 | .375 | .219 | .8 | .394 | 1 |
| | VOX400UR2506C | ● | 6 | 2.500 | 2.000 | 1.000 | 1.339 | .539 | .787 | 2.19 | .375 | .219 | 1.7 | .394 | 1 |
| | VOX400UR0308C | ● | 8 | 3.000 | 2.000 | 1.000 | 1.339 | .539 | .787 | 2.19 | .375 | .219 | 2.2 | .394 | 1 |
| | VOX400UR0410E | ● | 10 | 4.000 | 2.000 | 1.500 | 1.024 | — | 2.205 | 3.81 | .625 | .375 | 4.3 | .394 | 2 |
| | VOX400UR0512E | ● | 12 | 5.000 | 2.000 | 1.500 | 1.024 | — | 2.205 | 3.81 | .625 | .375 | 6.0 | .394 | 2 |
| | VOX400UR0616F | ● | 16 | 6.000 | 2.500 | 2.000 | 1.024 | — | 3.228 | 4.88 | .750 | .437 | 10.2 | .394 | 2 |
| | VOX400UR0820M | ● | 20 | 8.000 | 2.500 | 2.500 | 1.378 | — | 5.512 | 6.89 | 1.000 | .560 | 17.6 | .394 | 3 |
| | VOX400UR1024M | ● | 24 | 10.000 | 2.500 | 2.500 | 1.378 | — | 7.078 | 8.66 | 1.000 | .560 | 29.4 | .394 | 3 |
| Extra Fine Pitch | VOX400UR2508C | ● | 8 | 2.500 | 2.000 | 1.000 | 1.024 | .539 | .787 | 2.19 | .375 | .219 | 1.5 | .394 | 1 |
| | VOX400UR0310C | ● | 10 | 3.000 | 2.000 | 1.000 | 1.024 | .539 | .787 | 2.19 | .375 | .219 | 2.0 | .394 | 1 |
| | VOX400UR0412E | ● | 12 | 4.000 | 2.000 | 1.500 | 1.024 | — | 2.205 | 3.81 | .625 | .375 | 4.1 | .394 | 2 |
| | VOX400UR0516E | ● | 16 | 5.000 | 2.000 | 1.500 | 1.024 | — | 2.205 | 3.81 | .625 | .375 | 5.6 | .394 | 2 |
| | VOX400UR0620F | ● | 20 | 6.000 | 2.500 | 2.000 | 1.024 | — | 3.228 | 4.88 | .750 | .437 | 9.8 | .394 | 2 |
| | VOX400UR0826M | ● | 26 | 8.000 | 2.500 | 2.500 | 1.378 | — | 5.512 | 6.89 | 1.000 | .560 | 17.1 | .394 | 3 |
| | VOX400UR1034M | ● | 34 | 10.000 | 2.500 | 2.500 | 1.378 | — | 7.087 | 8.66 | 1.000 | .560 | 28.7 | .394 | 3 |

1) * WT : Mass

2) Set bolt not included.

INSERTS

| Shape | Order Number | Class | Horn | Coated | | Geometry (inch) |
|-------|--------------|-------|------|--------|--------|-----------------|
| | | | | MC5020 | VP15TF | |
| | SONX1206PER | N | E | ● | ● | |

WIPER INSERTS

| Shape | Order Number | Class | Horn | Coated | | Geometry (inch) |
|-------|---------------|-------|------|--------|--------|-----------------|
| | | | | MC5020 | VP15TF | |
| | WOEX1206PER5C | E | E | ● | | |

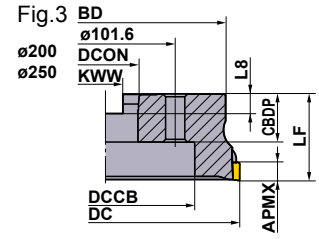
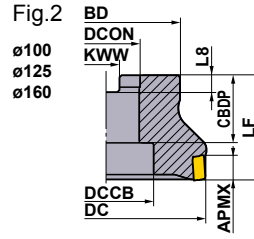
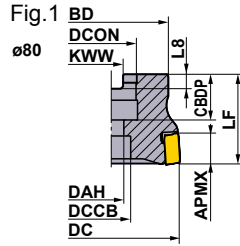
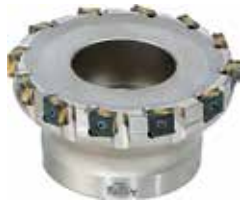
● : Inventory maintained.
<10 inserts in one case>

SPARE PARTS > M001
TECHNICAL DATA > N001

K033

MILLING

MILLING



Right hand tool holder only.

METRIC Standard

For inch arbors



ARBOR TYPE

| Type | Order Number | Stock | Number of Teeth | Dimensions (mm) [inch] | | | | | | | | | | WT (kg) | APMX (mm) | Type (Fig.) |
|------------------|---------------|-------|-----------------|------------------------|----|-----------------|------|-----|------|-----|------|-------|------|------------|--------------|----------------|
| | | | | DC | LF | DCON | CDBP | DAH | DCCB | BD | KWW | L8 | | | | |
| Coarse Pitch | VOX400R08004C | ★ | 4 | 80 | 50 | 25.4 [1.0"] | 26 | 13 | 20 | 55 | 9.5 | 6 | 1.0 | 10 | 1 | |
| | VOX400R10006D | ★ | 6 | 100 | 50 | 31.75 [1.25"] | 32 | — | 45 | 70 | 12.7 | 8 | 1.5 | 10 | 2 | |
| | VOX400R12508E | ★ | 8 | 125 | 63 | 38.1 [1.5"] | 40 | — | 60 | 80 | 15.9 | 10 | 2.7 | 10 | 2 | |
| | VOX400R16010F | ★ | 10 | 160 | 63 | 50.8 [2.0"] | 43 | — | 80 | 120 | 19.1 | 11 | 5.3 | 10 | 2 | |
| | VOX400R20012K | ★ | 12 | 200 | 63 | 47.625 [1.875"] | 35 | — | 130 | 175 | 25.4 | 14.22 | 8.5 | 10 | 3 | |
| | VOX400R25016K | ★ | 16 | 250 | 63 | 47.625 [1.875"] | 35 | — | 180 | 220 | 25.4 | 14.22 | 13.3 | 10 | 3 | |
| Fine Pitch | VOX400R08008C | ★ | 8 | 80 | 50 | 25.4 [1.0"] | 26 | 13 | 20 | 55 | 9.5 | 6 | 1.0 | 10 | 1 | |
| | VOX400R10010D | ★ | 10 | 100 | 50 | 31.75 [1.25"] | 32 | — | 45 | 70 | 12.7 | 8 | 1.5 | 10 | 2 | |
| | VOX400R12512E | ★ | 12 | 125 | 63 | 38.1 [1.5"] | 40 | — | 60 | 80 | 15.9 | 10 | 2.7 | 10 | 2 | |
| | VOX400R16016F | ★ | 16 | 160 | 63 | 50.8 [2.0"] | 43 | — | 80 | 120 | 19.1 | 11 | 5.3 | 10 | 2 | |
| | VOX400R20020K | ★ | 20 | 200 | 63 | 47.625 [1.875"] | 35 | — | 130 | 175 | 25.4 | 14.22 | 8.5 | 10 | 3 | |
| | VOX400R25024K | ★ | 24 | 250 | 63 | 47.625 [1.875"] | 35 | — | 180 | 220 | 25.4 | 14.22 | 13.3 | 10 | 3 | |
| Extra Fine Pitch | VOX400R08010C | ★ | 10 | 80 | 50 | 25.4 [1.0"] | 26 | 13 | 20 | 55 | 9.5 | 6 | 1.0 | 10 | 1 | |
| | VOX400R10012D | ★ | 12 | 100 | 50 | 31.75 [1.25"] | 32 | — | 45 | 70 | 12.7 | 8 | 1.4 | 10 | 2 | |
| | VOX400R12516E | ★ | 16 | 125 | 63 | 38.1 [1.5"] | 40 | — | 60 | 80 | 15.9 | 10 | 2.6 | 10 | 2 | |
| | VOX400R16020F | ★ | 20 | 160 | 63 | 50.8 [2.0"] | 43 | — | 80 | 120 | 19.1 | 11 | 5.1 | 10 | 2 | |
| | VOX400R20026K | ★ | 26 | 200 | 63 | 47.625 [1.875"] | 35 | — | 130 | 175 | 25.4 | 14.22 | 8.2 | 10 | 3 | |
| | VOX400R25034K | ★ | 34 | 250 | 63 | 47.625 [1.875"] | 35 | — | 180 | 220 | 25.4 | 14.22 | 13.0 | 10 | 3 | |

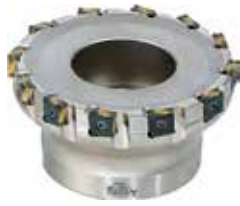
1) ★ WT : Mass

2) Set bolt not included.

SPARE PARTS

| Tool Holder Number |  * |  |
|--------------------|---|---|
| | Clamp Screw | Wrench |
| VOX400 | CS401160T | TKY15T |

* Clamp Torque (lbf-in) : CS401160T=31



METRIC Standard

For metric arbors

Fig.1

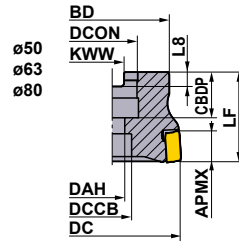


Fig.2

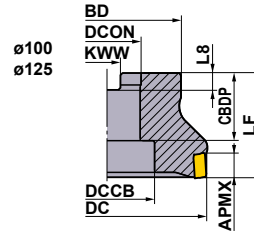
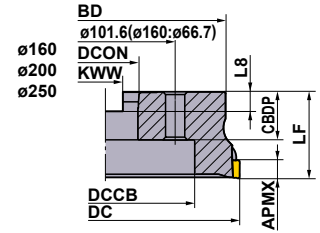


Fig.3



Right hand tool holder only.

ARBOR TYPE

| Type | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | | | | | WT (kg) | APMX (mm) | Type (Fig.) |
|------------------|----------------|-------|-----------------|-----------------|----|------|------|-----|------|-----|------|-------|---------|-----------|-------------|
| | | | | DC | LF | DCON | CBDP | DAH | DCCB | BD | KWW | L8 | | | |
| Coarse Pitch | VOX400-050A03R | ★ | 3 | 50 | 40 | 22 | 20 | 11 | 17 | 41 | 10.4 | 6.3 | 0.3 | 10 | 1 |
| | VOX400-063A04R | ★ | 4 | 63 | 40 | 22 | 20 | 11 | 17 | 50 | 10.4 | 6.3 | 0.6 | 10 | 1 |
| | VOX400-080A04R | ★ | 4 | 80 | 50 | 27 | 23 | 13 | 20 | 56 | 12.4 | 7 | 1 | 10 | 1 |
| | VOX400-100B06R | ★ | 6 | 100 | 50 | 32 | 32 | — | 45 | 78 | 14.4 | 8 | 1.7 | 10 | 2 |
| | VOX400-125B08R | ★ | 8 | 125 | 63 | 40 | 32 | — | 56 | 89 | 16.4 | 9 | 3 | 10 | 2 |
| | VOX400-160C10R | ★ | 10 | 160 | 63 | 40 | 29 | — | 56 | 120 | 16.4 | 9 | 5.4 | 10 | 3 |
| | VOX400-200C12R | ★ | 12 | 200 | 63 | 60 | 32 | — | 130 | 175 | 25.7 | 14.22 | 8.1 | 10 | 3 |
| | VOX400-250C16R | ★ | 16 | 250 | 63 | 60 | 32 | — | 180 | 210 | 25.7 | 14.22 | 11.8 | 10 | 3 |
| Fine Pitch | VOX400-050A05R | ★ | 5 | 50 | 40 | 22 | 20 | 11 | 17 | 41 | 10.4 | 6.3 | 0.3 | 10 | 1 |
| | VOX400-063A06R | ★ | 6 | 63 | 40 | 22 | 20 | 11 | 17 | 50 | 10.4 | 6.3 | 0.6 | 10 | 1 |
| | VOX400-080A08R | ★ | 8 | 80 | 50 | 27 | 23 | 13 | 20 | 56 | 12.4 | 7 | 1 | 10 | 1 |
| | VOX400-100B10R | ★ | 10 | 100 | 50 | 32 | 32 | — | 45 | 78 | 14.4 | 8 | 1.7 | 10 | 2 |
| | VOX400-125B12R | ★ | 12 | 125 | 63 | 40 | 32 | — | 56 | 89 | 16.4 | 9 | 3 | 10 | 2 |
| | VOX400-160C16R | ★ | 16 | 160 | 63 | 40 | 29 | — | 56 | 120 | 16.4 | 9 | 5.4 | 10 | 3 |
| | VOX400-200C20R | ★ | 20 | 200 | 63 | 60 | 32 | — | 130 | 175 | 25.7 | 14.22 | 8.1 | 10 | 3 |
| | VOX400-250C24R | ★ | 24 | 250 | 63 | 60 | 32 | — | 180 | 210 | 25.7 | 14.22 | 11.8 | 10 | 3 |
| Extra Fine Pitch | VOX400-063A08R | ★ | 8 | 63 | 40 | 22 | 20 | 11 | 17 | 50 | 10.4 | 6.3 | 0.5 | 10 | 1 |
| | VOX400-080A10R | ★ | 10 | 80 | 50 | 27 | 23 | 13 | 20 | 56 | 12.4 | 7 | 1.0 | 10 | 1 |
| | VOX400-100B12R | ★ | 12 | 100 | 50 | 32 | 32 | — | 45 | 78 | 14.4 | 8 | 1.6 | 10 | 2 |
| | VOX400-125B16R | ★ | 16 | 125 | 63 | 40 | 32 | — | 56 | 89 | 16.4 | 9 | 2.8 | 10 | 2 |
| | VOX400-160C20R | ★ | 20 | 160 | 63 | 40 | 29 | — | 56 | 120 | 16.4 | 9 | 5.2 | 10 | 3 |
| | VOX400-200C26R | ★ | 26 | 200 | 63 | 60 | 32 | — | 130 | 175 | 25.7 | 14.22 | 7.9 | 10 | 3 |
| | VOX400-250C34R | ★ | 34 | 250 | 63 | 60 | 32 | — | 180 | 210 | 25.7 | 14.22 | 11.5 | 10 | 3 |

1) ★ WT : Mass
2) Set bolt not included.

RECOMMENDED CUTTING CONDITIONS

VOX400 (Standard pitch)

| Work Material | Tensile Strength | Insert Grade | Cutting Speed (SFM) | φ2"–φ10" | | |
|-------------------|------------------|--------------|---------------------|-----------------------------|------------------------|----------------------|
| | | | | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) |
| Gray Cast Iron | ≤200MPa | MC5020 | 985(820–1150) | ≤DC | ≤.394 | .016(.012–.020) |
| | | VP15TF | 820(655–985) | ≤DC | ≤.394 | .016(.012–.020) |
| | ≤350MPa | MC5020 | 720(490–985) | ≤DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 655(490–985) | ≤DC | ≤.394 | .012(.008–.016) |
| Ductile Cast Iron | ≤450MPa | MC5020 | 655(490–820) | ≤DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 555(490–655) | ≤DC | ≤.394 | .012(.008–.016) |
| | ≤800MPa | MC5020 | 555(490–655) | ≤DC | ≤.394 | .008(.004–.012) |
| | | VP15TF | 490(330–655) | ≤DC | ≤.394 | .008(.004–.012) |

VOX400 (Fine pitch)

| Work Material | Tensile Strength | Insert Grade | Cutting Speed (SFM) | φ2.5" | | | φ3" | | |
|-------------------|------------------|--------------|---------------------|-----------------------------|------------------------|----------------------|-----------------------------|------------------------|----------------------|
| | | | | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) |
| Gray Cast Iron | ≤200MPa | MC5020 | 985(820–1150) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | | VP15TF | 820(655–985) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | ≤350MPa | MC5020 | 720(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 655(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| Ductile Cast Iron | ≤450MPa | MC5020 | 655(490–820) | ≤0.8DC | ≤.394 | .012(.008–.016) | ≤0.6DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 555(490–655) | ≤0.8DC | ≤.394 | .012(.008–.016) | ≤0.6DC | ≤.394 | .012(.008–.016) |
| | ≤800MPa | MC5020 | 555(490–655) | ≤0.8DC | ≤.394 | .008(.004–.012) | ≤0.6DC | ≤.394 | .008(.004–.012) |
| | | VP15TF | 490(330–655) | ≤0.8DC | ≤.394 | .008(.004–.012) | ≤0.6DC | ≤.394 | .008(.004–.012) |

| Work Material | Tensile Strength | Insert Grade | Cutting Speed (SFM) | φ4" | | | φ5" | | |
|-------------------|------------------|--------------|---------------------|-----------------------------|------------------------|----------------------|-----------------------------|------------------------|----------------------|
| | | | | Radial depth of cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) |
| Gray Cast Iron | ≤200MPa | MC5020 | 985(820–1150) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | | VP15TF | 820(655–985) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | ≤350MPa | MC5020 | 720(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 655(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| Ductile Cast Iron | ≤450MPa | MC5020 | 655(490–820) | ≤0.5DC | ≤.394 | .012(.008–.016) | ≤0.4DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 555(490–655) | ≤0.5DC | ≤.394 | .012(.008–.016) | ≤0.4DC | ≤.394 | .012(.008–.016) |
| | ≤800MPa | MC5020 | 555(490–655) | ≤0.5DC | ≤.394 | .008(.004–.012) | ≤0.4DC | ≤.394 | .008(.004–.012) |
| | | VP15TF | 490(330–655) | ≤0.5DC | ≤.394 | .008(.004–.012) | ≤0.4DC | ≤.394 | .008(.004–.012) |

| Work Material | Tensile Strength | Insert Grade | Cutting Speed (SFM) | φ6" | | | φ8", φ10" | | |
|-------------------|------------------|--------------|---------------------|-----------------------------|------------------------|----------------------|-----------------------------|------------------------|----------------------|
| | | | | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) |
| Gray Cast Iron | ≤200MPa | MC5020 | 985(820–1150) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | | VP15TF | 820(655–985) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | ≤350MPa | MC5020 | 720(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 655(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| Ductile Cast Iron | ≤450MPa | MC5020 | 655(490–820) | ≤0.3DC | ≤.394 | .012(.008–.016) | ≤0.2DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 555(490–655) | ≤0.3DC | ≤.394 | .012(.008–.016) | ≤0.2DC | ≤.394 | .012(.008–.016) |
| | ≤800MPa | MC5020 | 555(490–655) | ≤0.3DC | ≤.394 | .008(.004–.012) | ≤0.2DC | ≤.394 | .008(.004–.012) |
| | | VP15TF | 490(330–655) | ≤0.3DC | ≤.394 | .008(.004–.012) | ≤0.2DC | ≤.394 | .008(.004–.012) |

● DC is cutter diameter.

● When using wiper insert, please reduce the feed per tooth to half the normal rate.

VOX400 (Extra fine pitch)

| Work Material | Tensile Strength | Insert Grade | Cutting Speed (SFM) | φ2.5" | | | φ3" | | |
|-------------------|------------------|--------------|---------------------|-----------------------------|------------------------|----------------------|-----------------------------|------------------------|----------------------|
| | | | | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) |
| Gray Cast Iron | ≤200MPa | MC5020 | 985(820–1150) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | | VP15TF | 820(655–985) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | ≤350MPa | MC5020 | 720(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 655(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| Ductile Cast Iron | ≤450MPa | MC5020 | 655(490–820) | ≤0.6DC | ≤.394 | .012(.008–.016) | ≤0.5DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 555(490–655) | ≤0.6DC | ≤.394 | .012(.008–.016) | ≤0.5DC | ≤.394 | .012(.008–.016) |
| | ≤800MPa | MC5020 | 555(490–655) | ≤0.6DC | ≤.394 | .008(.004–.012) | ≤0.5DC | ≤.394 | .008(.004–.012) |
| | | VP15TF | 490(330–655) | ≤0.6DC | ≤.394 | .008(.004–.012) | ≤0.5DC | ≤.394 | .008(.004–.012) |

| Work Material | Tensile Strength | Insert Grade | Cutting Speed (SFM) | φ4" | | | φ5" | | |
|-------------------|------------------|--------------|---------------------|-----------------------------|------------------------|----------------------|-----------------------------|------------------------|----------------------|
| | | | | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) |
| Gray Cast Iron | ≤200MPa | MC5020 | 985(820–1150) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | | VP15TF | 820(655–985) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | ≤350MPa | MC5020 | 720(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 655(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| Ductile Cast Iron | ≤450MPa | MC5020 | 655(490–820) | ≤0.4DC | ≤.394 | .012(.008–.016) | ≤0.3DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 555(490–655) | ≤0.4DC | ≤.394 | .012(.008–.016) | ≤0.3DC | ≤.394 | .012(.008–.016) |
| | ≤800MPa | MC5020 | 555(490–655) | ≤0.4DC | ≤.394 | .008(.004–.012) | ≤0.3DC | ≤.394 | .008(.004–.012) |
| | | VP15TF | 490(330–655) | ≤0.4DC | ≤.394 | .008(.004–.012) | ≤0.3DC | ≤.394 | .008(.004–.012) |

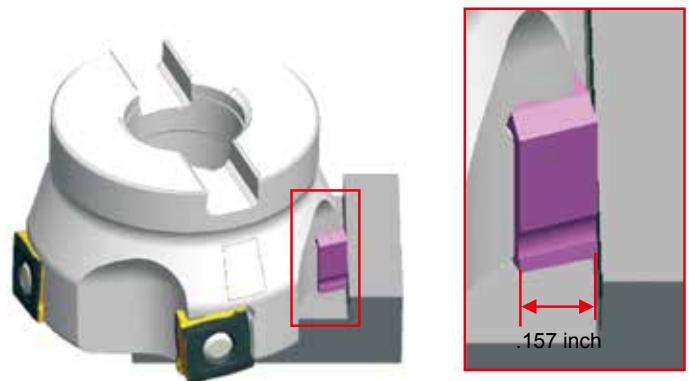
| Work Material | Tensile Strength | Insert Grade | Cutting Speed (SFM) | φ6" | | | φ8", φ10" | | |
|-------------------|------------------|--------------|---------------------|-----------------------------|------------------------|----------------------|-----------------------------|------------------------|----------------------|
| | | | | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) | Radial Depth of Cut ae (mm) | Depth of Cut ap (inch) | Feed per Tooth (IPT) |
| Gray Cast Iron | ≤200MPa | MC5020 | 985(820–1150) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | | VP15TF | 820(655–985) | ≤DC | ≤.394 | .016(.012–.020) | ≤DC | ≤.394 | .016(.012–.020) |
| | ≤350MPa | MC5020 | 720(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 655(490–985) | ≤DC | ≤.394 | .012(.008–.016) | ≤DC | ≤.394 | .012(.008–.016) |
| Ductile Cast Iron | ≤450MPa | MC5020 | 655(490–820) | ≤0.25DC | ≤.394 | .012(.008–.016) | ≤0.15DC | ≤.394 | .012(.008–.016) |
| | | VP15TF | 555(490–655) | ≤0.25DC | ≤.394 | .012(.008–.016) | ≤0.15DC | ≤.394 | .012(.008–.016) |
| | ≤800MPa | MC5020 | 555(490–655) | ≤0.25DC | ≤.394 | .008(.004–.012) | ≤0.15DC | ≤.394 | .008(.004–.012) |
| | | VP15TF | 490(330–655) | ≤0.25DC | ≤.394 | .008(.004–.012) | ≤0.15DC | ≤.394 | .008(.004–.012) |

- DC is cutter diameter.
- When using wiper insert, please reduce the feed per tooth to half the normal rate.

Usable cutting edge width of wiper inserts

The width of the wiper insert itself is .217 inch, however the actual functioning cutting edge width after installation to the body is .177 inch, as shown in the diagram.

With one wiper insert, it is possible to machine up to $f_r = .157$ inch feed per revolution. When exceeding $f_r = .157$ inch, use two or more wiper inserts. Note that there is a possibility to exceed $f_r = .157$ inch when using a holder with more than 24 inserts.



MILLING

SHOULDER MILLING

<GENERAL CUTTING>



ASX400

P M K N S H



- Economical due to the use of 4 cutting edges.
- Low resistance due to the 3D design of the curved cutting edge.
- Curved cutting edge and high rigidity holder.

KAPR :0°
GAMP :+11° T : -9°--11°
GAMF : -9°--11° I : +11°

Fig.1
ø2"
ø2-1/2"

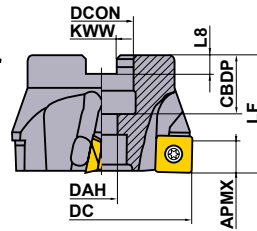


Fig.2
ø3"
ø4"
ø5"
ø6"

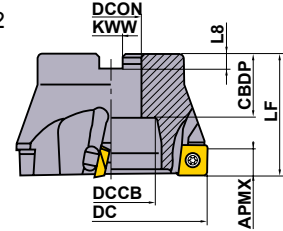
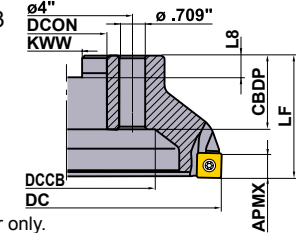


Fig.3
ø4"
ø8"
ø10"



Right hand tool holder only.

ARBOR TYPE

| Type | Order Number | Stock R | Number of Teeth | Dimensions (inch) | | | | | | | | APMX (inch) | WT* (lbs) | Type (Fig.) |
|------------------|--------------|------------|-----------------------|-------------------|-------|-------|-------|------|-------|-------|------|----------------|--------------|----------------|
| | | | | DC | LF | DCON | CBDDP | DAH | DCCB | KWW | L8 | | | |
| Coarse Pitch | ASX400R0203 | ● | 3 | 2.000 | 1.575 | .750 | .748 | .415 | — | .313 | .187 | .394 | .8 | 1 |
| | ASX400R2504 | ● | 4 | 2.500 | 1.575 | .750 | .748 | .415 | — | .313 | .187 | .394 | 1.1 | 1 |
| | ASX400R0304C | ● | 4 | 3.000 | 1.969 | 1.000 | 1.024 | — | 1.496 | .375 | .219 | .394 | 2.2 | 2 |
| | ASX400R0405E | ● | 5 | 4.000 | 1.969 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .394 | 3.3 | 2 |
| | ASX400R0506E | ● | 6 | 5.000 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .394 | 5.5 | 2 |
| | ASX400R0608E | ● | 8 | 6.000 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .394 | 8.8 | 2 |
| | ASX400R0810M | ● | 10 | 8.000 | 2.480 | 2.500 | 1.378 | — | 5.315 | 1.000 | .560 | .394 | 15.0 | 3 |
| | ASX400R1012M | ● | 12 | 10.000 | 2.480 | 2.500 | 1.378 | — | 7.087 | 1.000 | .560 | .394 | 26.0 | 3 |
| Fine Pitch | ASX400R0204 | ● | 4 | 2.000 | 1.575 | .750 | .748 | .415 | — | .313 | .187 | .394 | .8 | 1 |
| | ASX400R2505 | ● | 5 | 2.500 | 1.575 | .750 | .748 | .415 | — | .313 | .187 | .394 | 1.1 | 1 |
| | ASX400R0306C | ● | 6 | 3.000 | 1.969 | 1.000 | 1.024 | — | 1.496 | .375 | .219 | .394 | 2.2 | 2 |
| | ASX400R0407E | ● | 7 | 4.000 | 1.969 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .394 | 3.3 | 2 |
| | ASX400R0508E | ● | 8 | 5.000 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .394 | 5.5 | 2 |
| | ASX400R0612E | ● | 12 | 6.000 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .394 | 8.8 | 2 |
| | ASX400R0816M | ● | 16 | 8.000 | 2.480 | 2.500 | 1.378 | — | 5.315 | 1.000 | .560 | .394 | 15.0 | 3 |
| | ASX400R1018M | ● | 18 | 10.000 | 2.480 | 2.500 | 1.378 | — | 7.087 | 1.000 | .560 | .394 | 26.0 | 3 |
| Extra Fine Pitch | ASX400R0205 | ● | 5 | 2.000 | 1.575 | .750 | .748 | .415 | — | .313 | .187 | .394 | .8 | 1 |
| | ASX400R2506 | ● | 6 | 2.500 | 1.575 | .750 | .748 | .415 | — | .313 | .187 | .394 | 1.1 | 1 |
| | ASX400R0308C | ● | 8 | 3.000 | 1.969 | 1.000 | 1.024 | — | 1.496 | .375 | .219 | .394 | 2.2 | 2 |
| | ASX400R0410E | ● | 10 | 4.000 | 1.969 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .394 | 3.3 | 2 |
| | ASX400R0512E | ● | 12 | 5.000 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .394 | 5.5 | 2 |
| | ASX400R0615E | ● | 15 | 6.000 | 2.480 | 1.500 | 1.378 | — | 2.362 | .625 | .375 | .394 | 8.8 | 2 |
| | ASX400R0819M | ● | 19 | 8.000 | 2.480 | 2.500 | 1.378 | — | 5.315 | 1.000 | .560 | .394 | 15.0 | 3 |
| | ASX400R1022M | ● | 22 | 10.000 | 2.480 | 2.500 | 1.378 | — | 7.087 | 1.000 | .560 | .394 | 26.0 | 3 |

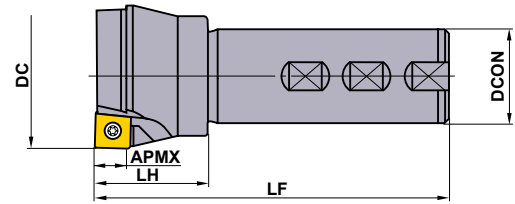
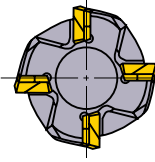
- 1) * WT : Mass
2) Set bolt not included.

SPARE PARTS

| Tool Holder Number | | * | * | | | |
|--------------------|-----------|------------|--------------|-----------------|---------------|------------------|
| | Shim | Shim Screw | Insert Screw | Wrench (Insert) | Wrench (Shim) | Insert |
| ASX400R Type | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R | SO-T12T3 PE-R |

* Clamp Torque (lbf-in) : WCS503507H=44, TPS35=31

- : Inventory maintained.
<10 inserts in one case>



WELDON SHANK TYPE

Right hand tool holder only.

| Order Number | Stock R | Number of Teeth | Dimensions (inch) | | | | | Shim | Shim Screw | Insert Screw | Wrench (Insert) | Wrench (Shim) | Insert |
|---------------|------------|-----------------|-------------------|-------|-------|-------|------|-----------|------------|--------------|-----------------|---------------|----------------|
| | | | DC | LF | DCON | LH | APMX | | | | | | |
| ASX400R202W20 | ● | 2 | 1.250 | 4.750 | 1.250 | 1.500 | .394 | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R | SOET12T308PEER |
| ASX400R243W20 | ● | 3 | 1.500 | 4.750 | 1.250 | 1.500 | .394 | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R | |
| ASX400R324W20 | ● | 4 | 2.000 | 4.750 | 1.250 | 1.575 | .394 | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R | |

* Clamp Torque (lb·in) : WCS503507H=44, TPS35=31

INSERTS

| Application | Shape | Order Number | Class | Honing | Coated | | | | | | | | | | | Cermet | Carbide | Dimensions (inch) | | | | Geometry | | |
|---------------------------|---------------------|-------------------|-------------------|--------|-------------------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------------------|-------|------|------|----------|------|----|
| | | | | | F7010 | F7030 | MC5020 | MP6120 | MP6130 | MP7130 | MP7140 | MP9120 | MP9130 | VP15TF | VP30RT | | | NX4545 | HT110 | IC | S | | BS | RE |
| | | | | | NEW NEW NEW NEW NEW NEW | | | | | | | | | | | | | | | | | | | |
| Finish—Light Cutting | JL Breaker | SOET12T308PEER-JL | E | E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | .500 | .156 | .055 | .031 | | |
| | Light—Rough Cutting | JM Breaker | SOMT12T308PEER-JM | M | E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | .500 | .156 | .055 | .031 | |
| Medium—Heavy Cutting | JH Breaker | SOMT12T308PEER-JH | M | E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | .500 | .156 | .055 | .031 | | |
| Heavy Interrupted Cutting | FT Breaker | SOMT12T320PEER-FT | M | E | | ● | ● | | | ● | ● | ● | | | | | | | .500 | .156 | .055 | .079 | | |
| For Aluminium Alloy | JP Breaker | SOGT12T308PEFR-JP | G | F | | | | | | | | | | | | | ● | | .500 | .156 | .055 | .031 | | |

Cutting Conditions :
 ● : Stable Cutting ● : General Cutting
 ✖ : Unstable Cutting

Honing :
 E : Round F : Sharp T : Chamfer

WIPER INSERTS

| Shape | Order Number | Class | Honing | Carbide | | Cermet | | Dimensions (inch) | | | | | Geometry |
|-------|------------------|-------|--------|---------|--------|--------|------|-------------------|------|------|--|--|----------|
| | | | | HT105T | NX2525 | L | W1 | S | BS | RE | | | |
| | WOEW12T308PEER8C | E | E | ● | | .492 | .520 | .156 | .315 | .031 | | | |
| | WOEW12T308PETR8C | E | T | | ● | .492 | .520 | .156 | .315 | .031 | | | |

SPARE PARTS > M001
 TECHNICAL DATA > N001

MILLING



METRIC Standard

For inch arbors

Fig.1
ø80
ø100
ø125
ø160

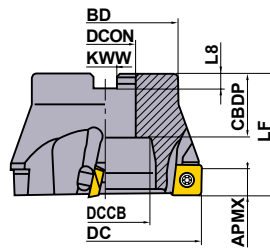
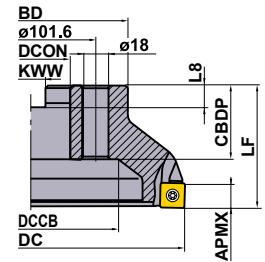


Fig.2
ø200
ø250



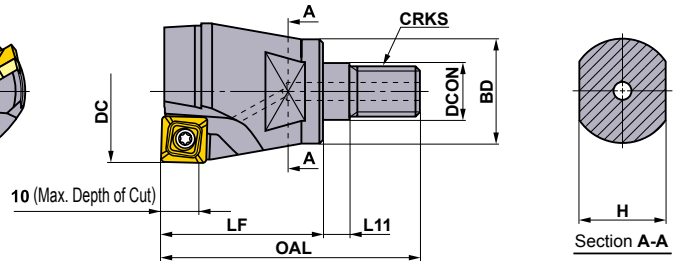
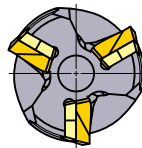
Right hand tool holder only.

KAPR :0°
GAMP :+11° T :-9°--11°
GAMF :-9°--11° I :+11°

ARBOR TYPE

| Type | Order Number | Stock R | Number of Teeth | Dimensions (mm) [inch] | | | | | | | | APMX (mm) | WT * (kg) | Type (Fig.) |
|--------------|---------------|------------|--------------------|------------------------|----|-----------------|------|------|-----|------|-------|--------------|--------------|----------------|
| | | | | DC | LF | DCON | CBDP | DCCB | BD | KWW | L8 | | | |
| Coarse Pitch | ASX400R08004C | ★ | 4 | 80 | 50 | 25.4 [1.0"] | 26 | 38 | 60 | 9.5 | 6 | 10 | 1.0 | 1 |
| | ASX400R10005D | ★ | 5 | 100 | 50 | 31.75 [1.25"] | 32 | 45 | 70 | 12.7 | 8 | 10 | 1.5 | 1 |
| | ASX400R12506E | ★ | 6 | 125 | 63 | 38.1 [1.5"] | 35 | 60 | 80 | 15.9 | 10 | 10 | 2.5 | 1 |
| | ASX400R16008F | ★ | 8 | 160 | 63 | 50.8 [2.0"] | 38 | 90 | 100 | 19.1 | 11 | 10 | 4.0 | 1 |
| | ASX400R20010K | ★ | 10 | 200 | 63 | 47.625 [1.875"] | 35 | 135 | 160 | 25.4 | 14.22 | 10 | 7.0 | 2 |
| | ASX400R25012K | ★ | 12 | 250 | 63 | 47.625 [1.875"] | 35 | 180 | 210 | 25.4 | 14.22 | 10 | 12.0 | 2 |
| Fine Pitch | ASX400R08006C | ★ | 6 | 80 | 50 | 25.4 [1.0"] | 26 | 38 | 60 | 9.5 | 6 | 10 | 1.0 | 1 |
| | ASX400R10007D | ★ | 7 | 100 | 50 | 31.75 [1.25"] | 32 | 45 | 70 | 12.7 | 8 | 10 | 1.5 | 1 |
| | ASX400R12508E | ★ | 8 | 125 | 63 | 38.1 [1.5"] | 35 | 60 | 80 | 15.9 | 10 | 10 | 2.5 | 1 |
| | ASX400R16012F | ★ | 12 | 160 | 63 | 50.8 [2.0"] | 38 | 90 | 100 | 19.1 | 11 | 10 | 4.0 | 1 |
| | ASX400R20016K | ★ | 16 | 200 | 63 | 47.625 [1.875"] | 35 | 135 | 160 | 25.4 | 14.22 | 10 | 7.0 | 2 |
| | ASX400R25018K | ★ | 18 | 250 | 63 | 47.625 [1.875"] | 35 | 180 | 210 | 25.4 | 14.22 | 10 | 12.0 | 2 |

- ★ WT : Mass
- Set bolt not included.



METRIC Standard

SCREW-IN TYPE

Right hand tool holder only.

| Order Number | Stock R | Coolant Thru *3 Y | Number of Teeth | Dimensions (mm) | | | | | | | WT (kg) | *4 Shim | *1 Shim Screw | *1 Insert Screw | *1 Wrench (Insert) | *1 Wrench (Shim) | |
|------------------|------------|----------------------|--------------------|-----------------|------|----|-----|----|-----|----|------------|------------|---------------------|-----------------------|--------------------------|------------------------|--------|
| | | | | DC | DCON | BD | OAL | LF | L11 | H | | | | | | | |
| ASX400R322AM1640 | ★ | Y | 2 | 32 | 17 | 29 | 63 | 40 | 6 | 24 | M16 | 0.3 | — | WCS503507H | TPS35 | TIP15T | HKY35R |
| ASX400F403AM1645 | ★ | Y | 3 | 40 | 17 | 29 | 68 | 45 | 6 | 24 | M16 | 0.3 | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R |

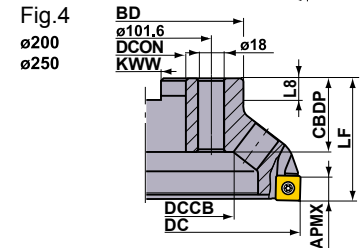
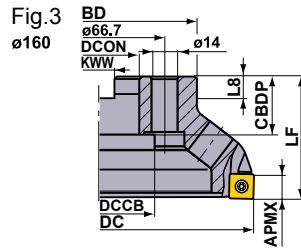
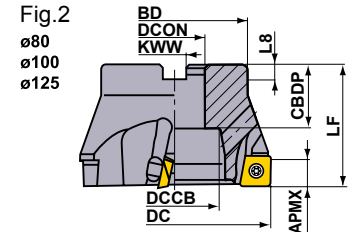
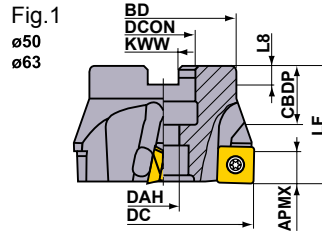
- *1 Clamp Torque (lbf-in) : WCS503507H=44, TPS35=31
- *2 Clamp Torque of the Head (lbf-ft) : M16=66.7
- *3 Y=Yes
- *4 WT : Mass



METRIC Standard

For metric arbors

KAPR : 0°
 GAMP : +11° T : -9°--11°
 GAMF : -9°--11° I : +11°



Right hand tool holder only.

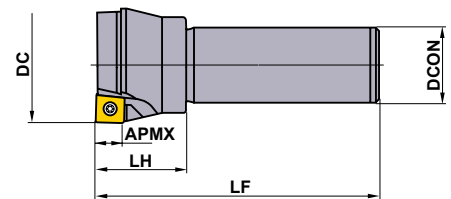
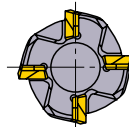
ARBOR TYPE

| Type | Order Number | Stock R | Number of Teeth | Dimensions (mm) | | | | | | | | | APMX (mm) | WT* (kg) | Type (Fig.) |
|------------------|----------------|------------|-----------------------|-----------------|----|------|------|-----|------|------|-------|-------|--------------|-------------|----------------|
| | | | | DC | LF | DCON | CBDP | DAH | DCCB | BD | KWW | L8 | | | |
| Coarse Pitch | ASX400-050A03R | ★ | 3 | 50 | 40 | 22 | 20 | 11 | — | 41 | 10.4 | 6.3 | 10 | 0.3 | 1 |
| | ASX400-063A04R | ★ | 4 | 63 | 40 | 22 | 20 | 11 | — | 50 | 10.4 | 6.3 | 10 | 0.5 | 1 |
| | ASX400-080B04R | ★ | 4 | 80 | 50 | 27 | 29 | — | 38 | 60 | 12.4 | 7 | 10 | 0.9 | 2 |
| | ASX400-100B05R | ★ | 5 | 100 | 50 | 32 | 32 | — | 45 | 70 | 14.4 | 8 | 10 | 1.4 | 2 |
| | ASX400-125B06R | ★ | 6 | 125 | 63 | 40 | 32 | — | 60 | 80 | 16.4 | 9 | 10 | 2.3 | 2 |
| | ASX400-160C08R | ★ | 8 | 160 | 63 | 40 | 29 | — | 56 | 100 | 16.4 | 9 | 10 | 3.6 | 3 |
| | ASX400-200C10R | ★ | 10 | 200 | 63 | 60 | 32 | — | 135 | 160 | 25.7 | 14.22 | 10 | 6.3 | 4 |
| Fine Pitch | ASX400-050A04R | ★ | 4 | 50 | 40 | 22 | 20 | 11 | — | 41 | 10.4 | 6.3 | 10 | 0.3 | 1 |
| | ASX400-063A05R | ★ | 5 | 63 | 40 | 22 | 20 | 11 | — | 50 | 10.4 | 6.3 | 10 | 0.5 | 1 |
| | ASX400-080B06R | ★ | 6 | 80 | 50 | 27 | 29 | — | 38 | 60 | 12.4 | 7 | 10 | 0.9 | 2 |
| | ASX400-100B07R | ★ | 7 | 100 | 50 | 32 | 32 | — | 45 | 70 | 14.4 | 8 | 10 | 1.4 | 2 |
| | ASX400-125B08R | ★ | 8 | 125 | 63 | 40 | 32 | — | 60 | 80 | 16.4 | 9 | 10 | 2.2 | 2 |
| | ASX400-160C12R | ★ | 12 | 160 | 63 | 40 | 29 | — | 56 | 100 | 16.4 | 9 | 10 | 3.5 | 3 |
| | ASX400-200C16R | ★ | 16 | 200 | 63 | 60 | 32 | — | 135 | 160 | 25.7 | 14.22 | 10 | 6.2 | 4 |
| Extra Fine Pitch | ASX400-050A05R | ★ | 5 | 50 | 40 | 22 | 20 | 11 | — | 41 | 10.4 | 6.3 | 10 | 0.3 | 1 |
| | ASX400-063A06R | ★ | 6 | 63 | 40 | 22 | 20 | 11 | — | 50 | 10.4 | 6.3 | 10 | 0.5 | 1 |
| | ASX400-080B08R | ★ | 8 | 80 | 50 | 27 | 29 | — | 38 | 60 | 12.4 | 7 | 10 | 0.9 | 2 |
| | ASX400-100B10R | ★ | 10 | 100 | 50 | 32 | 32 | — | 45 | 70 | 14.4 | 8 | 10 | 1.4 | 2 |
| | ASX400-125B12R | ★ | 12 | 125 | 63 | 40 | 32 | — | 60 | 80 | 16.4 | 9 | 10 | 2.1 | 2 |
| | ASX400-160C15R | ★ | 15 | 160 | 63 | 40 | 29 | — | 56 | 100 | 16.4 | 9 | 10 | 3.4 | 3 |
| | ASX400-200C19R | ★ | 19 | 200 | 63 | 60 | 32 | — | 135 | 160 | 25.7 | 14.22 | 10 | 6.2 | 4 |
| ASX400-250C22R | ★ | 22 | 250 | 63 | 60 | 32 | — | 180 | 210 | 25.7 | 14.22 | 10 | 10.5 | 4 | |

- 1) * WT : Mass
- 2) Set bolt not included.



METRIC Standard



SHANK TYPE

Right hand tool holder only.

| Type | Order Number | Stock R | Number of Teeth | Dimensions (mm) | | | | | Shim | Shim Screw* | Insert Screw* | Wrench (Insert) | Wrench (Shim) | Insert |
|--------------|---------------|------------|--------------------|-----------------|-----|------|----|------|-----------|-------------|---------------|--------------------|------------------|------------------|
| | | | | DC | LF | DCON | LH | APMX | | | | | | |
| Coarse Pitch | ASX400R403S32 | ★ | 3 | 40 | 125 | 32 | 40 | 10 | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R | SO-T12T3 PE-R |
| | ASX400R503S32 | ★ | 3 | 50 | 125 | 32 | 40 | 10 | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R | |
| | ASX400R634S32 | ★ | 4 | 63 | 125 | 32 | 40 | 10 | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R | |
| | ASX400R804S32 | ★ | 4 | 80 | 125 | 32 | 40 | 10 | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R | |
| Fine Pitch | ASX400R504S32 | ★ | 4 | 50 | 125 | 32 | 40 | 10 | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R | SO-T12T3 PE-R |
| | ASX400R635S32 | ★ | 5 | 63 | 125 | 32 | 40 | 10 | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R | |
| | ASX400R806S32 | ★ | 6 | 80 | 125 | 32 | 40 | 10 | STASX400N | WCS503507H | TPS35 | TIP15T | HKY35R | |

* Clamp Torque (lbf-in) : WCS503507H=44, TPS35=31

SCREW-IN ARBORS > K162
 INSERTS > K039

SPARE PARTS > M001
 TECHNICAL DATA > N001

MILLING

RECOMMENDED CUTTING CONDITIONS

| Work Material | Hardness | Grade | Cutting Speed (SFM) | Finish—Light Cutting | | Light—Rough Cutting | | Medium—Heavy Cutting | | |
|-------------------------------------|-----------------------------|------------------|---------------------|-----------------------------|------------------|-----------------------------|------------------|-----------------------------|------------------|----|
| | | | | Feed per Tooth (inch/tooth) | Breaker | Feed per Tooth (inch/tooth) | Breaker | Feed per Tooth (inch/tooth) | Breaker | |
| P Mild Steel | ≤180HB | F7030 | 920 (690—1150) | .007 (.003—.011) | JL | .008 (.004—.012) | JM | .010 (.008—.014) | JH | |
| | | MP6120 VP15TF | 820 (655—985) | .007 (.003—.011) | JL | .008 (.004—.012) | JM | .010 (.004—.014) | JH | |
| | | MP6130 | 780 (652—950) | .007 (.003—.011) | JL | .008 (.004—.012) | JM | .010 (.004—.014) | JH | |
| | | VP30RT | 755 (590—920) | .007 (.003—.011) | JL | .008 (.004—.012) | JM | .010 (.004—.014) | JH | |
| | | NX4545 | 590 (425—755) | .006 (.003—.009) | JL | .007 (.004—.011) | JM | — | — | |
| | Carbon Steel Alloy Steel | 180—280HB | F7030 | 820 (655—985) | .006 (.003—.009) | JL | .007 (.004—.011) | JM | .008 (.004—.012) | JH |
| | | | MP6120 VP15TF | 720 (560—885) | .006 (.003—.009) | JL | .007 (.004—.011) | JM | .008 (.004—.012) | JH |
| | | | MP6130 | 600 (480—740) | .006 (.003—.009) | JL | .007 (.004—.011) | JM | .008 (.004—.012) | JH |
| | | | VP30RT | 490 (395—590) | .005 (.002—.008) | JL | .006 (.004—.010) | JM | — | — |
| | | | NX4545 | 490 (390—590) | .005 (.002—.008) | JL | .006 (.004—.010) | JM | — | — |
| 280—350HB | | F7030 | 590 (425—755) | .005 (.002—.008) | JL | .006 (.004—.010) | JM | .007 (.004—.011) | JH | |
| | | MP6120 VP15TF | 460 (330—590) | .005 (.002—.008) | JL | .006 (.004—.010) | JM | .007 (.004—.011) | JH | |
| | | MP6130 | 510 (290—560) | .005 (.002—.008) | JL | .006 (.004—.010) | JM | .007 (.004—.011) | JH | |
| | | VP30RT | 390 (260—525) | .005 (.002—.008) | JL | .006 (.004—.010) | JM | .007 (.004—.011) | JH | |
| | | NX4545 | 330 (260—395) | .004 (.002—.006) | JL | .005 (.004—.008) | JM | — | — | |
| M Stainless Steel | ≤270HB | MP7130 VP15TF | 720 (560—885) | .006 (.003—.009) | JL | .007 (.004—.011) | JM | .008 (.004—.012) | JH | |
| | | MP7140 VP30RT | 490 (395—590) | .006 (.003—.009) | JL | .007 (.004—.011) | JM | — | — | |
| | | NX4545 | 490 (390—590) | .006 (.003—.009) | JL | .007 (.004—.011) | JM | — | — | |
| K Cast Iron Ductile Cast Iron | Tensile Strength ≤450MPa | MC5020 | 655 (490—820) | — | — | .008 (.004—.012) | JM | .010 (.004—.014) | JH FT | |
| | | VP15TF | 590 (425—820) | .007 (.004—.011) | JL | .008 (.004—.012) | JM | .010 (.004—.014) | JH | |
| N Aluminum Alloy | — | HTi10 | 2130 (1000—3300) | .006 (.004—.008) | JP | .008 (.004—.012) | JP | .012 (.008—.016) | JP | |
| S Titanium Alloy | — | MP9120 VP15TF | 165 (130—195) | .005 (.002—.008) | JL | .006 (.003—.009) | JM | — | — | |
| | | MP9130 | 140 (100—180) | .005 (.002—.008) | JL | .006 (.003—.009) | JM | — | — | |
| | Heat Resistant Alloy | — | MP9120 VP15TF | 130 (65—165) | .004 (.002—.006) | JL | .005 (.003—.008) | JM | — | — |
| | | | MP9130 | 110 (55—140) | .004 (.002—.006) | JL | .005 (.003—.008) | JM | — | — |
| H Hardened Steel | 40—55HRC | VP15TF | 200 (120—280) | .003 (.002—.005) | JL | .004 (.002—.006) | JM | .005 (.003—.007) | JH | |

INSTRUCTIONS FOR USING INSERTS

INSTRUCTIONS FOR USE OF THE JP BREAKER

- The JP breaker has sharp cutting edges. Wear gloves when handling.
- When machining aluminum alloy, welding to the cutting edge tends to occur, often leading to insert failure. To prevent this, wet cutting is recommended.

INSTRUCTIONS FOR USE OF WIPER INSERTS

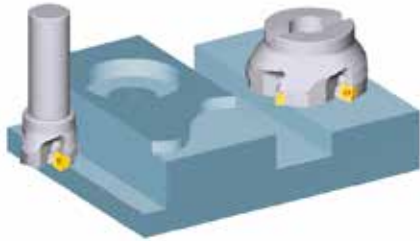


- Wiper inserts for the ASX400 are single-cornered.
- When installing the wiper insert, place the insert so that the small chamfer is located as shown.

FEATURES

ECONOMICAL

ASX400 is economical as it employs inserts that have 4 cutting edges. Additionally with one tool, it is possible to carry out face milling, shoulder milling, and slotting operations.



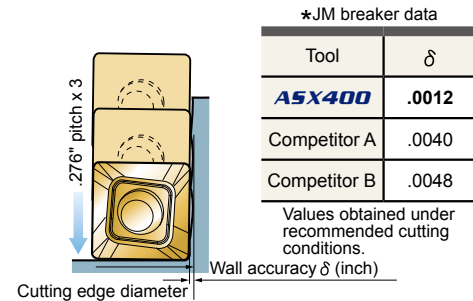
LOW RESISTANCE

Due to the 3D design of the cutting edge and a large rake angle, high cutting edge sharpness has been achieved with reduced cutting resistance.



HIGH ACCURACY

Due to the curved edge and high accuracy body and insert, high accuracy surface finish on walls and high quality surface finish on faces can be achieved.



EASY TO USE

Employs a screw on type mechanism, therefore, the inserts can be easily set. Additionally when indexing the insert, it is not necessary to remove the screw completely.



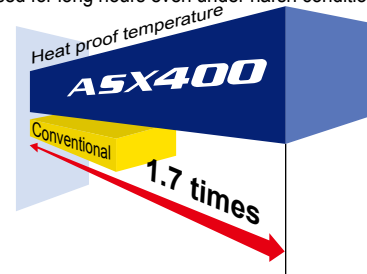
HIGH RELIABILITY

Uses a carbide shim and Mitsubishi's proprietary Anti-Fly-Insert (A.F.I) to prevent the inserts from moving when machining. Additionally the insert screw uses TORXPLUS®, for high clamping force ensuring high reliability.



HIGH HEAT-RESISTANT BODY

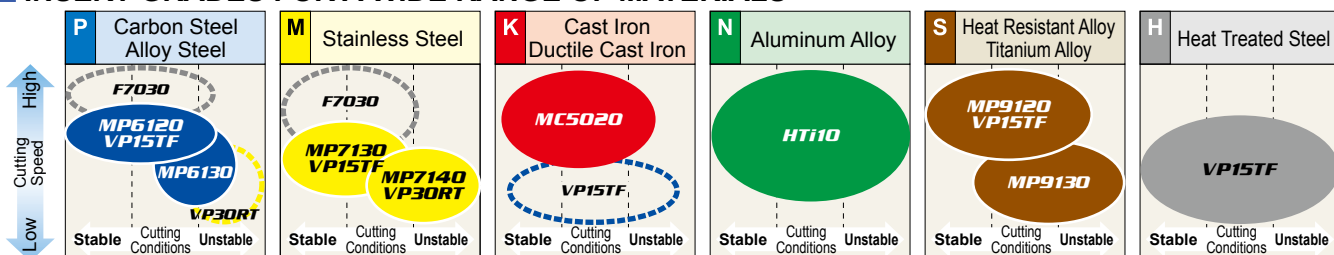
The cutter body is made from a special alloy that provides high strength at high temperatures. A special surface treatment improves the corrosion and friction resistance. The **ASX400** can be used for long hours even under harsh conditions.



CHIPBREAKERS FOR A WIDE RANGE OF APPLICATIONS

| JL Finish to Light cutting Breaker | JM Light to Rough Cutting Breaker | JH Medium to Heavy cutting Breaker | FT Heavy cutting/ Heavy interrupted cutting Breaker | JP Aluminum alloy cutting Breaker |
|---|--|--|---|---|
| | | | | |
| <ul style="list-style-type: none"> ● High accuracy insert with ground-finished periphery. ● Large rake angle leading to low cutting resistance. | <ul style="list-style-type: none"> ● High accuracy M class insert. ● For a wide range of workpiece materials and cutting conditions. | <ul style="list-style-type: none"> ● High accuracy M class insert. ● Strong cutting edge for high fracture resistance. | <ul style="list-style-type: none"> ● High accuracy M class insert. ● Corner radius of .079" has improved fracture resistance. ● Strong main cutting edge allows heavy cutting and heavy interrupted cutting. Stable cutting performance. | <ul style="list-style-type: none"> ● High accuracy insert with ground-finished periphery. ● Large rake angle and mirror-finished rake face lead to sharp cutting performance and high welding resistance. |

INSERT GRADES FOR A WIDE RANGE OF MATERIALS



(Note) When machining steel or stainless steel where the emphasis is on surface finish, use cermet grade NX4545.
 Stable Cutting : Continuous cutting, Constant depth of cut, Pre-machined securely clamped component cutting
 Unstable Cutting : Heavy interrupted, Irregular depth of cut, Low clamping rigidity cutting

MILLING

MILLING

MULTI FUNCTIONAL MILLING



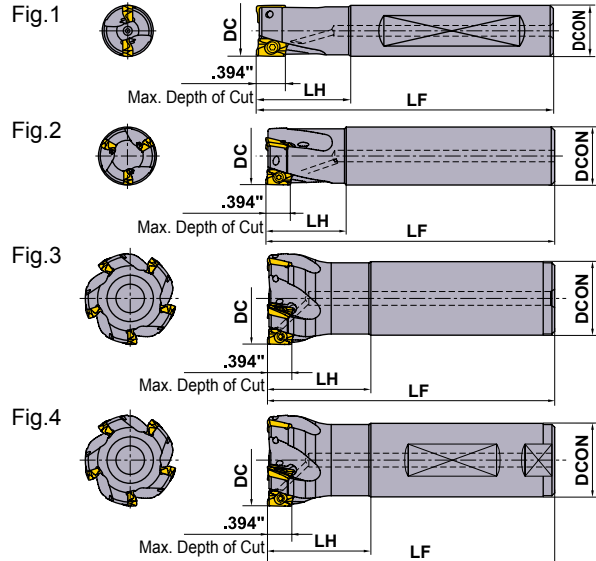
Finishing Roughing

APX3000

- P
- M
- K
- N
- S
- H



- Air / coolant through.
- Low resistance insert and high rigidity body.
- Ideal chip control.
- High wall accuracy can be produced by using this cutter and unique insert geometry.






Right hand tool holder only.

SHANK TYPE

| Type | RE (inch) | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | *2 RMPX | *1 Type (Fig.) | Insert Screw | Wrench | Anti-seize Lubricant |
|-----------------------|-------------------|--------------------|-------|-----------------|-------------------|-------|-------|-------|---------|----------------|--------------|--------|----------------------|
| | | | | | DC | DCON | LF | LH | | | | | |
| Standard A Holders | .008 .079 | APX3000UR081FA10SA | ● | 1 | .500 | .625 | 3.250 | 1.120 | 6° | 1 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR081SA08SA | ● | 1 | .500 | .500 | 3.250 | 1.120 | 6° | 2 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR102FA10SA | ● | 2 | .625 | .625 | 3.625 | 1.190 | 11.5° | 1 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR102SA10SA | ● | 2 | .625 | .625 | 3.625 | 1.190 | 11.5° | 2 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR122FA12SA | ● | 2 | .750 | .750 | 4.375 | 1.380 | 7.5° | 1 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR122SA12SA | ● | 2 | .750 | .750 | 4.375 | 1.380 | 7.5° | 2 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR123FA12SA | ● | 3 | .750 | .750 | 4.375 | 1.380 | 7.5° | 1 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR123SA12SA | ● | 3 | .750 | .750 | 4.375 | 1.380 | 7.5° | 2 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR163FA12SA | ● | 3 | 1.000 | .750 | 4.375 | 1.570 | 4.5° | 4 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR163SA12SA | ● | 3 | 1.000 | .750 | 4.375 | 1.570 | 4.5° | 3 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR164FA12SA | ● | 4 | 1.000 | .750 | 4.375 | 1.570 | 4.5° | 4 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR164SA12SA | ● | 4 | 1.000 | .750 | 4.375 | 1.570 | 4.5° | 3 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR163FA16SA | ● | 3 | 1.000 | 1.000 | 4.750 | 1.570 | 4.5° | 1 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR163SA16SA | ● | 3 | 1.000 | 1.000 | 4.750 | 1.570 | 4.5° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR164FA16SA | ● | 4 | 1.000 | 1.000 | 4.750 | 1.570 | 4.5° | 1 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR164SA16SA | ● | 4 | 1.000 | 1.000 | 4.750 | 1.570 | 4.5° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR205FA20SA | ● | 5 | 1.250 | 1.250 | 5.125 | 1.970 | 3.1° | 1 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR205SA20SA | ● | 5 | 1.250 | 1.250 | 5.125 | 1.970 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS |
| APX3000UR246FA20SA | ● | 6 | 1.500 | 1.250 | 5.125 | 1.970 | 2.3° | 4 | TPS25-1 | TIP07F | MK1KS | | |
| APX3000UR246SA20SA | ● | 6 | 1.500 | 1.250 | 5.125 | 1.970 | 2.3° | 3 | TPS25-1 | TIP07F | MK1KS | | |
| Standard B Holders | .094 .125 | APX3000UR081SA08SB | ● | 1 | .500 | .500 | 3.250 | 1.120 | 6° | 2 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR102SA10SB | ● | 2 | .625 | .625 | 3.625 | 1.190 | 11.5° | 2 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR122SA12SB | ● | 2 | .750 | .750 | 4.375 | 1.380 | 7.5° | 2 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR123SA12SB | ● | 3 | .750 | .750 | 4.375 | 1.380 | 7.5° | 2 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR163SA12SB | ● | 3 | 1.000 | .750 | 4.375 | 1.570 | 4.5° | 3 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR164SA12SB | ● | 4 | 1.000 | .750 | 4.375 | 1.570 | 4.5° | 3 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR163SA16SB | ● | 3 | 1.000 | 1.000 | 4.750 | 1.570 | 4.5° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR164SA16SB | ● | 4 | 1.000 | 1.000 | 4.750 | 1.570 | 4.5° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR205SA20SB | ● | 5 | 1.250 | 1.250 | 5.125 | 1.970 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR246SA20SB | ● | 6 | 1.500 | 1.250 | 5.125 | 1.970 | 2.3° | 3 | TPS25-1 | TIP07F | MK1KS |

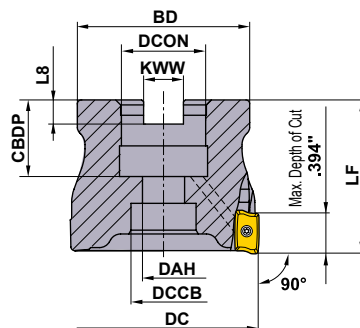
*1 Clamp Torque (lbf-in) : TPS25=8.9, TPS25-1=8.9

*2 RMPX : Max. Ramping Angle

| Type | RE (inch) | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | RMPX | *2 Type (Fig.) | *1  |  |  |
|-------------------|-------------------|--------------------|-------|-----------------|-------------------|-------|-------|-------|------|----------------|--|---|---|
| | | | | | DC | DCON | LF | LH | | | | | |
| Long A Holders | .008 .079 | APX3000UR122SA12LA | ● | 2 | .750 | .750 | 7.250 | 1.380 | 7.5° | 2 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR162SA16LA | ● | 2 | 1.000 | 1.000 | 8.500 | 1.570 | 4.5° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR163SA16LA | ● | 3 | 1.000 | 1.000 | 8.500 | 1.570 | 4.5° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR203SA20LA | ● | 3 | 1.250 | 1.250 | 9.000 | 1.970 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR204SA20LA | ● | 4 | 1.250 | 1.250 | 9.000 | 1.970 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR243SA20LA | ● | 3 | 1.500 | 1.250 | 9.000 | 1.970 | 2.3° | 3 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR244SA20LA | ● | 4 | 1.500 | 1.250 | 9.000 | 1.970 | 2.3° | 3 | TPS25-1 | TIP07F | MK1KS |
| B Holders | .094 .125 | APX3000UR122SA12LB | ● | 2 | .750 | .750 | 7.250 | 1.380 | 7.5° | 2 | TPS25 | TIP07F | MK1KS |
| | | APX3000UR162SA16LB | ● | 2 | 1.000 | 1.000 | 8.500 | 1.570 | 4.5° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR163SA16LB | ● | 3 | 1.000 | 1.000 | 8.500 | 1.570 | 4.5° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR203SA20LB | ● | 3 | 1.250 | 1.250 | 9.000 | 1.970 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR204SA20LB | ● | 4 | 1.250 | 1.250 | 9.000 | 1.970 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR243SA20LB | ● | 3 | 1.500 | 1.250 | 9.000 | 1.970 | 2.3° | 3 | TPS25-1 | TIP07F | MK1KS |
| | | APX3000UR244SA20LB | ● | 4 | 1.500 | 1.250 | 9.000 | 1.970 | 2.3° | 3 | TPS25-1 | TIP07F | MK1KS |

*1 Clamp Torque (lbf-in) : TPS25=8.9, TPS25-1=8.9





*2 RMPX : Max. Ramping Angle



KAPR : 0°
GAMP : +7°--+21° T : +15°--+27°
GAMF : +15°--+27° I : +7°--+21°

Right hand tool holder only.











ARBOR TYPE

| Type | RE (inch) | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | | | | | | | RMPX | *1  |  |  |  |
|-----------|-------------------|----------------|-------|-----------------|-------------------|-------|-------|-------|------|-------|------|------|------|------|---------|--|---|---|---|
| | | | | | DC | LF | DCON | CBDB | DAH | BD | KWW | L8 | DCCB | | | | | | |
| A Holders | .008 .079 | APX3000R0205A | ● | 5 | 2.000 | 1.575 | .750 | .748 | .415 | 1.811 | .313 | .187 | .600 | 1.6° | TPS25-1 | TIP07F | MK1KS | HSCU37513H | |
| | | APX3000F 0207A | ● | 7 | 2.000 | 1.575 | .750 | .748 | .415 | 1.811 | .313 | .187 | .600 | 1.6° | TPS25-1 | TIP07F | MK1KS | HSCU37513H | |
| | | APX3000F 2506A | ● | 6 | 2.500 | 1.969 | 1.000 | 1.024 | .539 | 2.360 | .375 | .219 | .787 | 1.3° | TPS25-1 | TIP07F | MK1KS | HSCU50014H | |
| | | APX3000F 0306A | ● | 6 | 3.000 | 1.969 | 1.000 | 1.024 | .539 | 2.756 | .375 | .219 | .787 | 1.0° | TPS25-1 | TIP07F | MK1KS | HSCU50014H | |
| | | APX3000F 0309A | ● | 9 | 3.000 | 1.969 | 1.000 | 1.024 | .539 | 2.756 | .375 | .219 | .787 | 1.0° | TPS25-1 | TIP07F | MK1KS | HSCU50014H | |
| B Holders | .094 .125 | APX3000R0205B | ● | 5 | 2.000 | 1.575 | .750 | .748 | .415 | 1.811 | .313 | .187 | .600 | 1.6° | TPS25-1 | TIP07F | MK1KS | HSCU37513H | |
| | | APX3000F 0207B | ● | 7 | 2.000 | 1.575 | .750 | .748 | .415 | 1.811 | .313 | .187 | .600 | 1.6° | TPS25-1 | TIP07F | MK1KS | HSCU37513H | |
| | | APX3000F 2506B | ● | 6 | 2.500 | 1.969 | 1.000 | 1.024 | .539 | 2.360 | .375 | .219 | .787 | 1.3° | TPS25-1 | TIP07F | MK1KS | HSCU50014H | |
| | | APX3000F 0306B | ● | 6 | 3.000 | 1.969 | 1.000 | 1.024 | .539 | 2.756 | .375 | .219 | .787 | 1.0° | TPS25-1 | TIP07F | MK1KS | HSCU50014H | |
| | | APX3000F 0309B | ● | 9 | 3.000 | 1.969 | 1.000 | 1.024 | .539 | 2.756 | .375 | .219 | .787 | 1.0° | TPS25-1 | TIP07F | MK1KS | HSCU50014H | |

*1 Clamp Torque (lbf-in) : TPS25-1=8.9

*2 RMPX : Max. Ramping Angle *3 The cutter body includes a set bolt for an arbor.

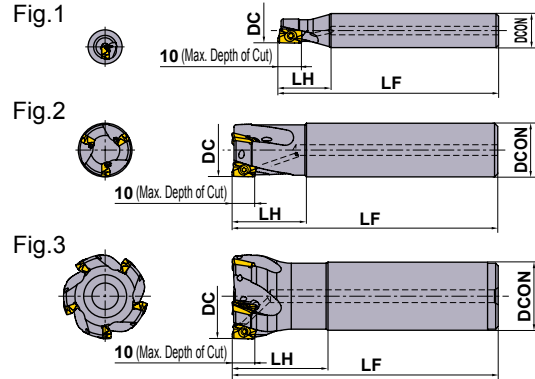
COMBINATION OF HOLDER AND INSERT CORNER RADIUS

| Holder | A Holder | | | | | | | B Holder | | | | |
|---------------------------|---|---|---|---|---|---|--|---|---|---|-------------------|--|
| | APX3000UR○○○○○○○A | | | | | | | | | | APX3000UR○○○○○○○B | |
| Insert Corner Radius (RE) |  |  |  |  |  |  |  |  |  |  | | |

INSERTS > K049
OPERATION GUIDANCE > K063

SPARE PARTS > M001
TECHNICAL DATA > N001

MILLING



METRIC Standard

STRAIGHT SHANK TYPE (A Holders)

Right hand tool holder only.

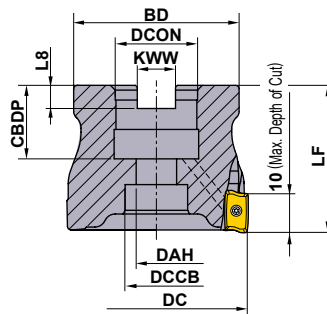
| Type | RE (inch) | Order Number | Stock R | Number of Teeth | Dimensions (mm) | | | | *2 RMPX | Type (Fig.) | *1 | | | |
|--------------------|-------------------|--------------------|------------|-----------------|-----------------|------|------|-----|------------|----------------|--------------|--|----------------------|------------------------------|
| | | | | | DC | DCON | LF | LH | | | Insert Screw | Wrench | Anti-seize Lubricant | Insert |
| Standard | .008 .079 | APX3000R121SA16SA | ★ | 1 | 12 | 16 | 85 | 25 | 6.0° | 1 | TPS25 | TIP07F | MK1KS | |
| | | APX3000R141SA16SA | ★ | 1 | 14 | 16 | 85 | 25 | 6.0° | 1 | TPS25 | TIP07F | MK1KS | |
| | | APX3000R162SA16SA | ★ | 2 | 16 | 16 | 85 | 25 | 11.3° | 2 | TPS25 | TIP07F | MK1KS | |
| | | APX3000R182SA16SA | ★ | 2 | 18 | 16 | 85 | 25 | 8.6° | 3 | TPS25 | TIP07F | MK1KS | |
| | | APX3000R202SA20SA | ★ | 2 | 20 | 20 | 100 | 30 | 6.9° | 2 | TPS25 | TIP07F | MK1KS | |
| | | APX3000R203SA20SA | ★ | 3 | 20 | 20 | 100 | 30 | 6.9° | 2 | TPS25 | TIP07F | MK1KS | |
| | | APX3000R223SA20SA | ★ | 3 | 22 | 20 | 115 | 30 | 5.7° | 3 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R252SA25SA | ★ | 2 | 25 | 25 | 115 | 35 | 4.6° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R253SA25SA | ★ | 3 | 25 | 25 | 115 | 35 | 4.6° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R254SA25SA | ★ | 4 | 25 | 25 | 115 | 35 | 4.6° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R284SA25SA | ★ | 4 | 28 | 25 | 115 | 35 | 3.8° | 3 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R304SA32SA | ★ | 4 | 30 | 32 | 125 | 45 | 3.4° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R323SA32SA | ★ | 3 | 32 | 32 | 125 | 45 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R324SA32SA | ★ | 4 | 32 | 32 | 125 | 45 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R325SA32SA | ★ | 5 | 32 | 32 | 125 | 45 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R403SA32SA | ★ | 3 | 40 | 32 | 125 | 45 | 2.2° | 3 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R405SA32SA | ★ | 5 | 40 | 32 | 125 | 45 | 2.2° | 3 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R406SA32SA | ★ | 6 | 40 | 32 | 125 | 45 | 2.2° | 3 | TPS25-1 | TIP07F | MK1KS | |
| APX3000R507SA32SA | ★ | 7 | 50 | 32 | 125 | 45 | 1.7° | 3 | TPS25-1 | TIP07F | MK1KS | AOMT | | |
| APX3000R638SA32SA | ★ | 8 | 63 | 32 | 125 | 45 | 1.3° | 3 | TPS25-1 | TIP07F | MK1KS | 1236 [○] PEER [○] | | |
| Long | .008 .079 | APX3000R182SA16LA | ★ | 2 | 18 | 16 | 120 | 25 | 8.6° | 3 | TPS25 | TIP07F | MK1KS | |
| | | APX3000R202SA20LA | ★ | 2 | 20 | 20 | 150 | 60 | 6.9° | 2 | TPS25 | TIP07F | MK1KS | |
| | | APX3000R222SA20LA | ★ | 2 | 22 | 20 | 150 | 30 | 5.7° | 3 | TPS25-1 | TIP07F | MK1KS | AOGT |
| | | APX3000R252SA25LA | ★ | 2 | 25 | 25 | 170 | 70 | 4.6° | 2 | TPS25-1 | TIP07F | MK1KS | 1236 [○] PEFR-GM |
| | | APX3000R253SA25LA | ★ | 3 | 25 | 25 | 170 | 70 | 4.6° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R282SA25LA | ★ | 2 | 28 | 25 | 170 | 35 | 3.8° | 3 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R283SA25LA | ★ | 3 | 28 | 25 | 170 | 35 | 3.8° | 3 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R322SA32LA | ★ | 2 | 32 | 32 | 190 | 90 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R323SA32LA | ★ | 3 | 32 | 32 | 190 | 90 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R352SA32LA | ★ | 2 | 35 | 32 | 190 | 45 | 2.7° | 3 | TPS25-1 | TIP07F | MK1KS | |
| APX3000R353SA32LA | ★ | 3 | 35 | 32 | 190 | 45 | 2.7° | 3 | TPS25-1 | TIP07F | MK1KS | | | |
| Extra Long | .008 .079 | APX3000R182SA16ELA | ★ | 2 | 18 | 16 | 180 | 25 | 8.6° | 3 | TPS25 | TIP07F | MK1KS | |
| | | APX3000R202SA20ELA | ★ | 2 | 20 | 20 | 200 | 70 | 6.9° | 2 | TPS25 | TIP07F | MK1KS | |
| | | APX3000R222SA20ELA | ★ | 2 | 22 | 20 | 200 | 30 | 5.7° | 3 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R252SA25ELA | ★ | 2 | 25 | 25 | 220 | 80 | 4.6° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R253SA25ELA | ★ | 3 | 25 | 25 | 220 | 80 | 4.6° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R282SA25ELA | ★ | 2 | 28 | 25 | 220 | 35 | 3.8° | 3 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R283SA25ELA | ★ | 3 | 28 | 25 | 220 | 35 | 3.8° | 3 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R322SA32ELA | ★ | 2 | 32 | 32 | 260 | 100 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R323SA32ELA | ★ | 3 | 32 | 32 | 260 | 100 | 3.1° | 2 | TPS25-1 | TIP07F | MK1KS | |
| | | APX3000R352SA32ELA | ★ | 2 | 35 | 32 | 260 | 45 | 2.7° | 3 | TPS25-1 | TIP07F | MK1KS | |
| APX3000R353SA32ELA | ★ | 3 | 35 | 32 | 260 | 45 | 2.7° | 3 | TPS25-1 | TIP07F | MK1KS | | | |

(Note) When using inserts with corner radius RE ≥ .094" (2.4mm), B-Holders are required as shown on page K049.

*1 Clamp Torque (lbf-in) : TPS25=8.9, TPS25-1=8.9

*2 RMPX : Max. Ramping Angle

★ : Inventory maintained in Japan.



METRIC Standard

For metric arbors

KAPR : 0°
 GAMP : +7°-+21° T : +15°-+27°
 GAMF : +15°-+27° I : +7°-+21°

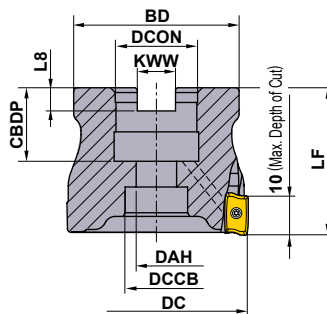
Right hand tool holder only.

ARBOR TYPE (A Holders)

| RE (inch) | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | | | | | | RMPX *2 | *1 | *1 | *1 | *1 |
|-------------------|------------------|-------|-----------------|-----------------|----|------|------|-----|----|------|-----|------|------|---------|--------|-------|-----------|----|
| | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | DCCB | | | | | | |
| .008 .079 | APX3000-032A05RA | ★ | 5 | 32 | 40 | 16 | 18 | 9 | 30 | 8.4 | 5.6 | 14 | 3.1° | TPS25-1 | TIP07F | MK1KS | HSC08030H | |
| | APX3000-040A06RA | ★ | 6 | 40 | 40 | 16 | 18 | 9 | 34 | 8.4 | 5.6 | 14 | 2.2° | TPS25-1 | TIP07F | MK1KS | HSC08030H | |
| | APX3000-050A07RA | ★ | 7 | 50 | 40 | 22 | 20 | 11 | 45 | 10.4 | 6.3 | 17 | 1.7° | TPS25-1 | TIP07F | MK1KS | HSC10030H | |
| | APX3000-063A08RA | ★ | 8 | 63 | 40 | 22 | 20 | 11 | 55 | 10.4 | 6.3 | 17 | 1.3° | TPS25-1 | TIP07F | MK1KS | HSC10030H | |
| | APX3000-080A09RA | ★ | 9 | 80 | 50 | 27 | 23 | 13 | 70 | 12.4 | 7 | 20 | 1.0° | TPS25-1 | TIP07F | MK1KS | HSC12035H | |
| | APX3000-100A11RA | ★ | 11 | 100 | 63 | 32 | 26 | 17 | 80 | 14.4 | 8 | 26 | 0.8° | TPS25-1 | TIP07F | MK1KS | HSC16040H | |

(Note) When using inserts with corner radius RE ≥ .094" (2.4mm), B-Holders are required as shown on page K049.

- *1 Clamp Torque (lbf-in) : TPS25-1=8.9
- *2 RMPX : Max. Ramping Angle
- *3 Set bolt not included.



METRIC Standard

For inch arbors

KAPR : 0°
 GAMP : +7°-+21° T : +15°-+27°
 GAMF : +15°-+27° I : +7°-+21°

Right hand tool holder only.

ARBOR TYPE (A Holders)

| RE (inch) | Order Number | Stock | Number of Teeth | Dimensions (mm) [inch] | | | | | | | | | | RMPX *2 | *1 | *1 | *1 | *1 |
|-------------------|-----------------|-------|-----------------|------------------------|----|---------------|------|-----|----|------|----|------|------|---------|--------|-------|-----------|----|
| | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | DCCB | | | | | | |
| .008 .079 | APX3000R08009CA | ★ | 9 | 80 | 50 | 25.4 [1.0"] | 26 | 13 | 70 | 9.5 | 6 | 20 | 1.0° | TPS25-1 | TIP07F | MK1KS | HSC12035H | |
| | APX3000R10011DA | ★ | 11 | 100 | 63 | 31.75 [1.25"] | 32 | 17 | 80 | 12.7 | 8 | 26 | 0.8° | TPS25-1 | TIP07F | MK1KS | HSC16040H | |

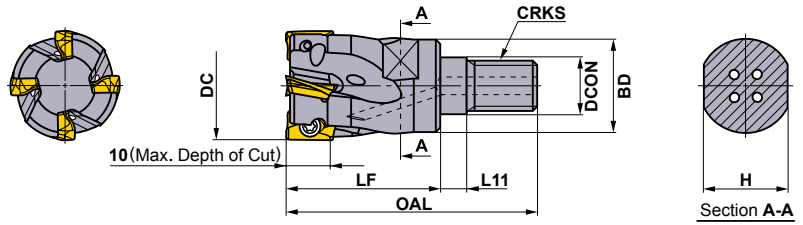
(Note) When using inserts with corner radius RE ≥ .094" (2.4mm), B-Holders are required as shown on page K049.

- *1 Clamp Torque (lbf-in) : TPS25-1=8.9
- *2 RMPX : Max. Ramping Angle
- *3 Set bolt not included.

| | |
|--------------------|--------|
| INSERTS | ➤ K049 |
| OPERATION GUIDANCE | ➤ K063 |
| SPARE PARTS | ➤ M001 |
| TECHNICAL DATA | ➤ N001 |



● Air / coolant through.



METRIC Standard

SCREW-IN TYPE (A Holders)

Right hand tool holder only.

| RE (inch) | Order Number | Stock R | Number of Teeth | Dimensions (mm) | | | | | | | | *3 WT (kg) | *1 Insert Screw | Wrench | Anti-seize Lubricant | Insert |
|-------------------|-------------------|------------|-----------------|-----------------|------|----|-----|----|-----|----|------|------------------|--------------------|--------|-------------------------|---------------------------|
| | | | | DC | DCON | BD | OAL | LF | L11 | H | CRKS | | | | | |
| .008 .079 | APX3000R162M08A30 | ★ | 2 | 16 | 8.5 | 13 | 48 | 30 | 6 | 10 | M8 | 0.1 | TPS25 | TIP07F | MK1KS | AOMT 1236○○ PEER○ |
| | APX3000R182M08A30 | ★ | 2 | 18 | 8.5 | 13 | 48 | 30 | 6 | 10 | M8 | 0.1 | TPS25 | TIP07F | MK1KS | |
| | APX3000R203M10A30 | ★ | 3 | 20 | 10.5 | 18 | 49 | 30 | 6 | 14 | M10 | 0.1 | TPS25 | TIP07F | MK1KS | |
| | APX3000R223M10A30 | ★ | 3 | 22 | 10.5 | 18 | 49 | 30 | 6 | 14 | M10 | 0.1 | TPS25-1 | TIP07F | MK1KS | |
| | APX3000R254M12A35 | ★ | 4 | 25 | 12.5 | 21 | 57 | 35 | 6 | 19 | M12 | 0.2 | TPS25-1 | TIP07F | MK1KS | AOGT 1236○○ PEFR-GM |
| | APX3000R284M12A35 | ★ | 4 | 28 | 12.5 | 21 | 57 | 35 | 6 | 19 | M12 | 0.2 | TPS25-1 | TIP07F | MK1KS | |
| | APX3000R304M16A40 | ★ | 4 | 30 | 17 | 29 | 63 | 40 | 6 | 24 | M16 | 0.3 | TPS25-1 | TIP07F | MK1KS | |
| | APX3000R325M16A40 | ★ | 5 | 32 | 17 | 29 | 63 | 40 | 6 | 24 | M16 | 0.3 | TPS25-1 | TIP07F | MK1KS | |
| | APX3000R355M16A40 | ★ | 5 | 35 | 17 | 29 | 63 | 40 | 6 | 24 | M16 | 0.3 | TPS25-1 | TIP07F | MK1KS | |
| | APX3000R406M16A40 | ★ | 6 | 40 | 17 | 29 | 63 | 40 | 6 | 24 | M16 | 0.3 | TPS25-1 | TIP07F | MK1KS | |

*1 Clamp Torque (lbf-in) : TPS25=8.9, TPS25-1=8.9

*2 Clamp Torque of the Head (lbf-ft) : M8=17.1, M10=33.8, M12=59.2, M16=66.7

*3 WT : Mass

(Note) For large R inserts

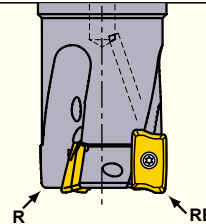
APX offers various nose radii for inserts, however one holder can NOT secure every insert radius.

We offer A-Holders that properly secures up to .079" radius.

Customers may modify holders as below, so that larger nose radii can be secured.

NOTE ON USE OF INSERTS WITH LARGE CORNER RADII

When using inserts with corner radius $RE \geq R.094"$, please machine the holder with a radius form as shown on the right table.



| RE | R |
|-------|---------------------|
| .094" | .106" (B-Holder) |
| .118" | |
| .125" | |

R : Holder end radius
RE : Insert corner radius

Or B-Holders are available as non stock, produced to order only.

"Order numbers"; Please add "B" to the end of the order number of A-Holders.

Ex) APX3000R162M08A30 → APX3000R162M08A30B

INSERTS

| Work Material | P | Steel | Coated | MC5020 | MP6120 | MP6130 | MP7130 | MP9120 | MP9130 | VP15TF | VP20RT | TF15 | Carbide | Dimensions (inch) | | | | | Geometry |
|--|-------------------|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|---------|-------------------|------|------|------|------|----------|
| | M | Stainless Steel | | | | | | | | | | | | L | W1 | S | BS | RE | |
| | K | Cast Iron | | | | | | | | | | | | | | | | | |
| General M Breaker | N | Non-ferrous Metal | | | | | | | | | | | | | | | | | |
| | S | Heat-resistant Alloy, Titanium Alloy | | | | | | | | | | | | | | | | | |
| | H | Hardened Steel | | | | | | | | | | | | | | | | | |
| | AOMT123602PEER-M | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .071 | .008 | |
| | AOMT123604PEER-M | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .063 | .016 | |
| | AOMT123608PEER-M | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .047 | .031 | |
| | AOMT123610PEER-M | M E | ● | ● | ● | ● | ● | ● | ● | ★ | ★ | ● | | .472 | .260 | .142 | .039 | .039 | |
| | AOMT123612PEER-M | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .031 | .047 | |
| | AOMT123616PEER-M | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .016 | .063 | |
| | AOMT123620PEER-M | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .016 | .079 | |
| | AOMT123624PEER-M | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .016 | .094 | |
| AOMT123630PEER-M | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .016 | .118 | | |
| AOMT123632PEER-M | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .016 | .125 | | |
| Strong Cutting Edge Type H Breaker | AOMT123604PEER-H | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .063 | .016 | |
| | AOMT123608PEER-H | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .047 | .031 | |
| | AOMT123616PEER-H | M E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | .472 | .260 | .142 | .016 | .063 | |
| For Machining of Aluminium Alloys GM Breaker | AOGT123602PEFR-GM | G F | | | | | | | | | | ● | | .472 | .260 | .142 | .071 | .008 | |
| | AOGT123604PEFR-GM | G F | | | | | | | | | | ● | | .472 | .260 | .142 | .063 | .016 | |
| | AOGT123608PEFR-GM | G F | | | | | | | | | | ● | | .472 | .260 | .142 | .047 | .031 | |

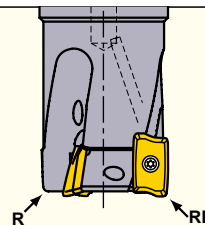
(Note) For large R inserts

APX offers various nose radii for inserts, however one holder can NOT secure every insert radius. We offer A-Holders that properly secures up to .079" radius. We offer B-Holders that secures .094", .118" and .125" radius, only for popular inch sizes. Customers may modify holders as below, so that larger nose radii can be secured.



NOTE ON USE OF INSERTS WITH LARGE CORNER RADII

When using inserts with corner radius $RE \geq R$.079", please machine the holder with a radius form as shown on the right table.



| RE | R |
|-------|---------------------|
| .094" | .106" (B-Holder) |
| .118" | |
| .125" | |

R : Holder end radius
RE : Insert corner radius

Or additional B-Holders are available as non stock, produced to order only. "Order numbers"; Please replace the last letter "A" of A-Holders to "B".
Ex) APX3000R08009CA → APX3000R08009CB

SCREW-IN ARBORS > K162
SPARE PARTS > M001
TECHNICAL DATA > N001

OPERATION GUIDANCE > K063

MILLING

RECOMMENDED CUTTING CONDITIONS

CUTTING SPEED

| Work Material | Hardness | Insert | | | | Cutting Width a_e (inch) | | | |
|---------------------------|---------------|--------------------|--------------------|---------|----------------|----------------------------|----------------|----------------|--|
| | | Grade | | Breaker | $\leq .25DC$ | .25-.5DC | .5-.75DC | DC (Slot) | |
| | | 1st Recommendation | 2nd Recommendation | | | | | | |
| Cutting Speed v_c (SFM) | | | | | | | | | |
| P Mild Steel | $\leq 180HB$ | MP6120 | VP15TF | M H | 755(590-885) | 720(560-850) | 590(460-690) | 590(460-690) | |
| | | MP6130 | VP20RT | M H | 655(490-785) | 620(460-755) | 490(360-590) | 490(370-600) | |
| Carbon Steel Alloy Steel | 180-350HB | MP6120 | VP15TF | M H | 590(460-690) | 560(425-655) | 460(360-525) | 460(360-525) | |
| | | MP6130 | VP20RT | M H | 490(360-590) | 460(330-560) | 360(260-425) | 360(260-425) | |
| M Stainless Steel | $\leq 270HB$ | MP7130 | VP20RT | M H | 590(460-690) | 560(425-655) | 460(360-525) | 460(360-525) | |
| K Gray Cast Iron | $\leq 350MPa$ | MC5020 | VP15TF | H | 820(655-985) | 785(620-950) | 690(525-850) | 460(360-525) | |
| | $\leq 800MPa$ | MC5020 | VP15TF | H | 425(330-490) | 395(295-460) | 330(260-395) | 330(260-395) | |
| N Aluminum Alloy | - | TF15 | | GM | 1640(655-3280) | 1640(655-3280) | 1640(655-3280) | 1640(655-3280) | |
| S Titanium Alloy | $\leq 350HB$ | MP9120 | VP15TF | M H | 165(130-230) | | | 165(130-230) | |
| | | MP9130 | VP20RT | M H | 130(100-195) | | | 130(100-195) | |
| Heat-resistant Alloy | - | MP9120 | VP15TF | M H | 130(100-195) | | | 130(100-195) | |
| | | MP9130 | VP20RT | M H | 100(65-130) | | | 100(65-130) | |
| H Hardened Steel | 40-55HRC | VP15TF | | H | 295(230-330) | 280(195-330) | 230(165-260) | 230(165-260) | |

DEPTH OF CUT / FEED PER TOOTH

| Work Material | Hardness | Cutting Width a_e (inch) | Cutter Diameter (inch) | | | | | |
|---|--------------------------------|----------------------------|---|---------------------------|--|---------------------------|--|---------------------------|
| | | | $\phi .500'' - \phi .625'' (\phi 12 - \phi 16mm)$ | | $\phi .750'' - \phi 1.000'' (\phi 20 - \phi 25mm)$ | | $\phi 1.250'' - \phi 3.000'' (\phi 28 - \phi 100mm)$ | |
| | | | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) |
| P Mild Steel Carbon Steel Alloy Steel | $\leq 180HB$ 180-350HB | $\leq .25DC$ | $\leq .157$ | .006 | $\leq .197$ | .010 | $\leq .197$ | .008 |
| | | | .157-.276 | .004 | .197-.276 | .008 | .197-.276 | .006 |
| | | | | | .276-.335 | .006 | .276-.335 | .004 |
| | | | | | .335-.394 | .004 | .335-.394 | .003 |
| | | .25-.5DC | $\leq .079$ | .006 | $\leq .118$ | .010 | $\leq .118$ | .008 |
| | | | .078-.197 | .004 | .118-.217 | .008 | .118-.217 | .006 |
| | | | | | .217-.315 | .006 | .217-.315 | .004 |
| | | | | | .315-.394 | .004 | .315-.394 | .003 |
| .5-.75DC | $\leq .157$ | .004 | $\leq .157$ | .006 | $\leq .118$ | .004 | | |
| | | | .157-.394 | .004 | .118-.276 | .003 | | |
| DC (Slot) | $\leq .118$ | .004 | $\leq .157$ | .004 | $\leq .118$ | .004 | | |
| | | | .157-.276 | .003 | .118-.197 | .003 | | |
| M Stainless Steel | $\leq 270HB$ | $\leq .25DC$ | $\leq .157$ | .006 | $\leq .197$ | .008 | $\leq .197$ | .008 |
| | | | .157-.276 | .004 | .197-.276 | .006 | .197-.276 | .006 |
| | | | | | .276-.335 | .004 | .276-.335 | .004 |
| | | | | | .335-.394 | .003 | .335-.394 | .004 |
| | | .25-.5DC | $\leq .079$ | .006 | $\leq .118$ | .008 | $\leq .118$ | .008 |
| | | | .078-.197 | .004 | .118-.217 | .006 | .118-.217 | .006 |
| | | | | | .217-.315 | .004 | .217-.315 | .004 |
| | | | | | .315-.394 | .003 | .315-.394 | .003 |
| .5-.75DC | $\leq .157$ | .004 | $\leq .157$ | .004 | $\leq .118$ | .004 | | |
| | | | .157-.394 | .003 | .118-.276 | .003 | | |
| DC (Slot) | $\leq .157$ | .004 | $\leq .157$ | .100 | ≤ 3 | .100 | | |
| | | | .157-.276 | .003 | .118-.197 | .003 | | |
| K Gray Cast Iron | Tensile Strength $\leq 350MPa$ | $\leq .25DC$ | $\leq .157$ | .006 | $\leq .197$ | .010 | $\leq .197$ | .008 |
| | | | .157-.276 | .004 | .197-.276 | .008 | .197-.276 | .006 |
| | | | | | .276-.335 | .006 | .276-.335 | .004 |
| | | | | | .335-.394 | .004 | .335-.394 | .003 |
| | | .25-.5DC | $\leq .079$ | .006 | $\leq .118$ | .010 | $\leq .118$ | .008 |
| | | | .079-.197 | .004 | .118-.217 | .008 | .118-.217 | .006 |
| | | | | | .217-.315 | .006 | .217-.315 | .004 |
| | | | | | .315-.394 | .004 | .315-.394 | .003 |
| .5-.75DC | $\leq .157$ | .004 | $\leq .157$ | .006 | $\leq .118$ | .004 | | |
| | | | .157-.394 | .004 | .118-.276 | .003 | | |
| DC (Slot) | $\leq .118$ | .004 | $\leq .157$ | .004 | $\leq .118$ | .004 | | |
| | | | .157-.276 | .003 | .118-.197 | .003 | | |
| Ductile, Cast Iron | Tensile Strength $\leq 800MPa$ | $\leq .25DC$ | $\leq .157$ | .004 | $\leq .197$ | .008 | $\leq .197$ | .008 |
| | | | .157-.276 | .003 | .197-.276 | .006 | .197-.276 | .006 |
| | | | | | .276-.335 | .004 | .276-.335 | .004 |
| | | | | | .335-.394 | .003 | .335-.394 | .003 |
| | | .25-.5DC | $\leq .079$ | .004 | $\leq .118$ | .008 | $\leq .118$ | .008 |
| | | | .079-.197 | .003 | .118-.217 | .006 | .118-.217 | .006 |
| | | | | | .217-.315 | .004 | .217-.315 | .004 |
| | | | | | .315-.394 | .003 | .315-.394 | .003 |
| .5-.75DC | $\leq .157$ | .003 | $\leq .157$ | .004 | $\leq .118$ | .004 | | |
| | | | .315-.394 | .003 | .118-.276 | .003 | | |
| DC (Slot) | $\leq .118$ | .003 | $\leq .157$ | .100 | ≤ 3 | .100 | | |
| | | | .157-.276 | .003 | .118-.197 | .003 | | |

CUTTING CONDITIONS FOR SLOT MILLING

| Work Material | Hardness | Cutting Width ae (inch) | Cutter Diameter (inch) | | | | | |
|----------------------|-----------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|-----------------------------|----------------------------|
| | | | φ.500"–φ.625"(φ12–φ16mm) | | φ.750"–φ1.000"(φ20–φ25mm) | | φ1.250"–φ3.000"(φ28–φ100mm) | |
| | | | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) |
| N Aluminum Alloy | – | ≤ .25DC | ≤ .157 | .006 | ≤ .157 | .010 | ≤ .157 | .008 |
| | | | .157–.276 | .004 | .157–.276 | .006 | .157–.276 | .004 |
| | | .25–.5DC | ≤ .157 | .004 | ≤ .157 | .008 | ≤ .157 | .008 |
| | | | .157–.276 | .004 | .157–.276 | .004 | .157–.276 | .004 |
| .5–.75DC | ≤ .197 | .004 | ≤ .197 | .006 | ≤ .197 | .004 | | |
| | DC (Slot) | ≤ .197 | .004 | ≤ .197 | .008 | ≤ .197 | .006 | |
| S Titanium Alloy | ≤ 350HB | ≤ .25DC | ≤ .157 | .006 | ≤ .157 | .006 | ≤ .157 | .004 |
| | | | .157–.276 | .004 | .157–.276 | .004 | .157–.276 | .003 |
| | | .25–.5DC | ≤ .118 | .002 | ≤ .118 | .002 | ≤ .118 | .002 |
| Heat-resistant Alloy | – | .5–.75DC | ≤ .079 | .004 | ≤ .079 | .002 | ≤ .079 | .002 |
| | | DC (Slot) | ≤ .039 | .002 | ≤ .039 | .002 | ≤ .039 | .002 |
| H Hardened Steel | 40–55HRC | ≤ .25DC | ≤ .157 | .004 | ≤ .197 | .006 | ≤ .197 | .006 |
| | | | .157–.276 | .003 | .197–.276 | .004 | .197–.276 | .004 |
| | | .25–.5DC | ≤ .079 | .004 | ≤ .118 | .006 | ≤ .118 | .006 |
| | | | .079–.197 | .003 | .118–.217 | .004 | | |
| | | .5–.75DC | ≤ .157 | .003 | ≤ .157 | .003 | ≤ .118 | .003 |
| DC (Slot) | ≤ .118 | .003 | ≤ .157 | .003 | ≤ .118 | .003 | | |

(Note 1) These cutting conditions are a guide to the standard shank type and the arbor type.

Please make adjustments according to the machining conditions.

(Note 2) Vibration is liable to occur in certain cases. Please reduce the depth of cut and / or reduce cutting conditions in the following cases.

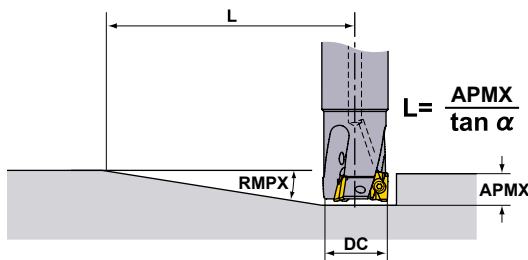
- When using the long shank type and extra long shank type.
- When using long tool overhang with the standard or arbor type.
- When the application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) In case of coarse and fine pitch cutters, the coarse pitch type is recommended to prevent vibration.

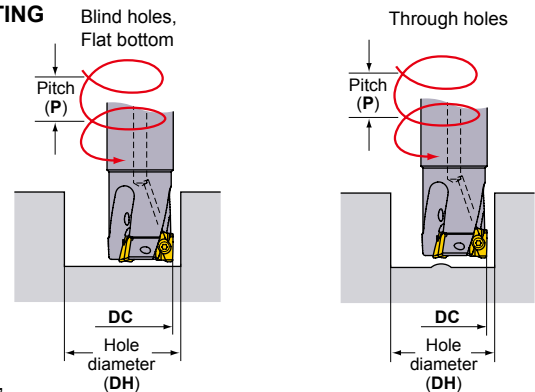
(Note 4) For heavy interrupted and unstable cutting, the H breaker is first recommendation.

RAMPING/HELICAL CUTTING

RAMPING



HELICAL CUTTING



Refer to the table below when using .031 inch radius for maximum ramping angle,

pitch and minimum/maximum hole diameter. Use cutting conditions for slotting to calculate speed and feed when ramping / helical cutting.

| Cutting Edge Diameter DC (inch) | Ramping | | Helical Cutting (Blind Hole, Flat Bottom) | | | | Helical Cutting (Through Hole) | |
|---------------------------------|-------------------------------|---|--|-----------------------------|--------------------------------------|-----------------------------|--------------------------------------|-----------------------------|
| | Maximum Ramping Angle RMPX | Minimum Distance ¹⁾ L (inch) | Maximum Hole Diameter ²⁾ DH max. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) |
| .500 | 6.0° | 3.8 | 0.92 | .09 | .87 | .07 | .63 | .020 |
| .625 | 11.5° | 1.9 | 1.17 | .35 | 1.1 | .27 | .79 | .079 |
| .750 | 7.5° | 3.0 | 1.42 | .19 | 1.35 | .17 | 1.03 | .079 |
| 1.000 | 4.5° | 5.0 | 1.92 | .23 | 1.85 | .19 | 1.58 | .079 |
| 1.250 | 3.1° | 7.3 | 2.42 | .17 | 2.35 | .15 | 2.05 | .079 |
| 1.500 | 2.3° | 9.8 | 2.92 | .15 | 2.85 | .13 | 2.56 | .079 |
| 2.000 | 1.6° | 14.1 | 3.92 | .07 | 3.85 | .07 | 3.55 | .079 |
| 2.500 | 1.3° | 17.4 | 4.92 | .07 | 4.85 | .07 | 4.56 | .079 |
| 3.000 | 1.0° | 22.6 | 5.92 | .07 | 5.85 | .07 | 5.52 | .079 |

(Note 1) $L = (.394 / \tan \alpha)$. Cutters' moving distance until depth of cut reaches .394" at a maximum ramping angle.

(Note 2) In case corner radius of .031". Other than that, find the below formula.

$$\{(\text{cutting edge diameter DC}) - (\text{corner radius}) - .008\} \times 2$$

(Note 3) When machining highly ductile materials with ramping angles above, chips could be continuous.

In this case, decrease the ramping angle or feed per tooth.

MILLING

MULTI FUNCTIONAL MILLING



Finishing

Roughing

APX4000



Fig.1

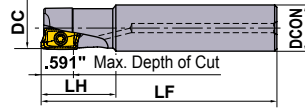


Fig.2

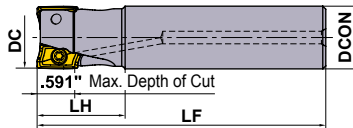


Fig.3

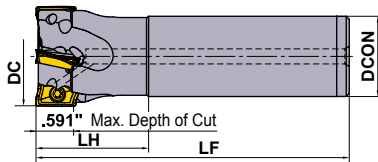


Fig.4

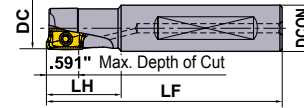


Fig.5

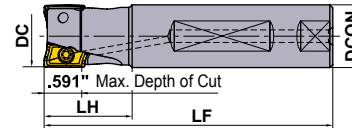
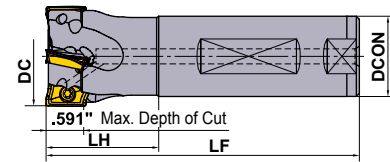


Fig.6



Right hand tool holder only.

- APX4000UR $\odot\odot\odot$ SA $\odot\odot$ = Ground shank : See figure 1, 2 and 3.
- APX4000UR $\odot\odot\odot$ FA $\odot\odot$ = Flat shank : See figure 4 and 5.

SHANK TYPE

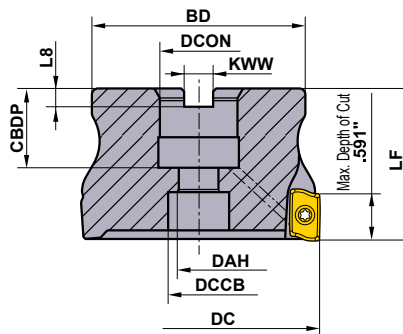
| Type | RE (inch) | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | *2 RMPX | Type (Fig.) | *1 Insert Screw | Wrench | Anti-seize Lubricant | |
|-----------------------|-------------------|---------------------|---------------------|-----------------|-------------------|-------|--------|--------|------------|-------------|--------------------|--------|----------------------|-------|
| | | | | | DC | DCON | LF | LH | | | | | | |
| Standard A Holders | .016 .079 | APX4000UR121FA12SA | ● | 1 | .750 | .750 | 4.000 | 1.250 | 14° | 4 | TPS4S | TIP15W | MK1KS | |
| | | APX4000UR121SA12SA | ● | 1 | .750 | .750 | 4.000 | 1.250 | 14° | 1 | TPS4S | TIP15W | MK1KS | |
| | | APX4000UR162SA12SA | ● | 2 | 1.000 | .750 | 4.000 | 1.250 | 11° | 3 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR162FA16SA | ● | 2 | 1.000 | 1.000 | 4.500 | 1.250 | 11° | 4 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR162SA16SA | ● | 2 | 1.000 | 1.000 | 4.500 | 1.250 | 11° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR202FA20SA | ● | 2 | 1.250 | 1.250 | 5.000 | 1.750 | 7° | 5 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR202SA20SA | ● | 2 | 1.250 | 1.250 | 5.000 | 1.750 | 7° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR203FA20SA | ● | 3 | 1.250 | 1.250 | 5.000 | 1.750 | 7° | 5 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR203SA20SA | ● | 3 | 1.250 | 1.250 | 5.000 | 1.750 | 7° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR243FA20SA | ● | 3 | 1.500 | 1.250 | 5.000 | 1.750 | 7° | 6 | TPS43 | TIP15W | MK1KS | |
| | | APX4000UR243SA20SA | ● | 3 | 1.500 | 1.250 | 5.000 | 1.750 | 7° | 3 | TPS43 | TIP15W | MK1KS | |
| | | APX4000UR244FA20SA | ● | 4 | 1.500 | 1.250 | 5.000 | 1.750 | 7° | 6 | TPS43 | TIP15W | MK1KS | |
| APX4000UR244SA20SA | ● | 4 | 1.500 | 1.250 | 5.000 | 1.750 | 7° | 3 | TPS43 | TIP15W | MK1KS | | | |
| Standard B Holders | .125 .157 | APX4000UR121FA12SB | ● | 1 | .750 | .750 | 4.000 | 1.250 | 14° | 4 | TPS4S | TIP15W | MK1KS | |
| | | APX4000UR162FA16SB | ● | 2 | 1.000 | 1.000 | 4.500 | 1.250 | 11° | 5 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR202FA20SB | ● | 2 | 1.250 | 1.250 | 5.000 | 1.750 | 7° | 5 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR203FA20SB | ● | 3 | 1.250 | 1.250 | 5.000 | 1.750 | 7° | 5 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR243FA20SB | ● | 3 | 1.500 | 1.250 | 5.000 | 1.750 | 7° | 6 | TPS43 | TIP15W | MK1KS | |
| | | APX4000UR244FA20SB | ● | 4 | 1.500 | 1.250 | 5.000 | 1.750 | 7° | 6 | TPS43 | TIP15W | MK1KS | |
| Long A Holders | .016 .079 | APX4000UR162SA16LA | ● | 2 | 1.000 | 1.000 | 8.500 | 1.250 | 11° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR202SA20LA | ● | 2 | 1.250 | 1.250 | 9.000 | 1.750 | 7° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR203SA20LA | ● | 3 | 1.250 | 1.250 | 9.000 | 1.750 | 7° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000UR243SA24LA | ● | 3 | 1.500 | 1.500 | 9.000 | 1.750 | 7° | 2 | TPS43 | TIP15W | MK1KS | |
| | | APX4000UR244SA24LA | ● | 4 | 1.500 | 1.500 | 9.000 | 1.750 | 7° | 2 | TPS43 | TIP15W | MK1KS | |
| | | APX4000UR243SA24ELA | ● | 3 | 1.500 | 1.500 | 14.000 | 1.750 | 7° | 2 | TPS43 | TIP15W | MK1KS | |
| | Long B Holders | .125 .157 | APX4000UR162SA16LB | ● | 2 | 1.000 | 1.000 | 8.500 | 1.250 | 11° | 2 | TPS4 | TIP15W | MK1KS |
| | | | APX4000UR202SA20LB | ● | 2 | 1.250 | 1.250 | 9.000 | 1.750 | 7° | 2 | TPS4 | TIP15W | MK1KS |
| | | | APX4000UR203SA20LB | ● | 3 | 1.250 | 1.250 | 9.000 | 1.750 | 7° | 2 | TPS4 | TIP15W | MK1KS |
| | | | APX4000UR243SA24LB | ● | 3 | 1.500 | 1.500 | 9.000 | 1.750 | 7° | 2 | TPS43 | TIP15W | MK1KS |
| | | | APX4000UR244SA24LB | ● | 4 | 1.500 | 1.500 | 9.000 | 1.750 | 7° | 2 | TPS43 | TIP15W | MK1KS |
| | | | APX4000UR243SA24ELB | ● | 3 | 1.500 | 1.500 | 14.000 | 1.750 | 7° | 2 | TPS43 | TIP15W | MK1KS |

(Note) When using inserts with corner radius RE ≥ .125"(3.2mm), B-Holders or C-Holders are required as shown on page K057.

*1 Clamp Torque (lb·in) : TPS4=31, TPS4S=31, TPS43=31

*2 RMPX : Max. Ramping Angle

● : Inventory maintained.



KAPR:0°
 GAMP:+15°-+22° T:+21°-+28°
 GAMF:+21°-+28° I:+15°-+22°

Right hand tool holder only.

ARBOR TYPE

| Type | RE (inch) | Order Number | Stock Number of Teeth | Dimensions (inch) | | | | | | | | | | RMPX | *2 | *1 | Insert Screw | Wrench | Anti-seize Lubricant | Coolant thru Set Bolt |
|-----------|-------------------|-----------------|-----------------------|-------------------|-------|-------|-------|------|-------|------|------|-------|------|-------|--------|-------|--------------|--------|----------------------|-----------------------|
| | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | DCCB | | | | | | | | |
| A Holders | .016 .079 | APX4000UR0204A | ● 4 | 2.000 | 1.625 | .750 | .748 | .415 | 1.875 | .313 | .187 | .600 | 4° | TPS43 | TIP15W | MK1KS | HSCU37513H | | | |
| | | APX4000UR0205A | ● 5 | 2.000 | 1.625 | .750 | .748 | .415 | 1.875 | .313 | .187 | .600 | 4° | TPS43 | TIP15W | MK1KS | HSCU37513H | | | |
| | | APX4000UR2505CA | ● 5 | 2.500 | 2.000 | 1.000 | 1.024 | .539 | 2.375 | .375 | .219 | .787 | 2° | TPS43 | TIP15W | MK1KS | HSCU50014H | | | |
| | | APX4000UR0306DA | ● 6 | 3.000 | 2.500 | 1.250 | 1.260 | .669 | 2.874 | .500 | .281 | 1.024 | 2° | TPS43 | TIP15W | MK1KS | HSCU62516H | | | |
| | | APX4000UR0307DA | ● 7 | 3.000 | 2.500 | 1.250 | 1.260 | .669 | 2.874 | .500 | .281 | 1.024 | 2° | TPS43 | TIP15W | MK1KS | HSCU62516H | | | |
| | | APX4000UR0408EA | ● 8 | 4.000 | 2.500 | 1.500 | 1.181 | .787 | 3.799 | .625 | .375 | 1.181 | 1.5° | TPS43 | TIP15W | MK1KS | HSCU75016H | | | |
| B Holders | .125 .157 | APX4000UR0204B | ● 4 | 2.000 | 1.625 | .750 | .748 | .415 | 1.875 | .313 | .187 | .600 | 4° | TPS43 | TIP15W | MK1KS | HSCU37513H | | | |
| | | APX4000UR0205B | ● 5 | 2.000 | 1.625 | .750 | .748 | .415 | 1.875 | .313 | .187 | .600 | 4° | TPS43 | TIP15W | MK1KS | HSCU37513H | | | |
| | | APX4000UR2505CB | ● 5 | 2.500 | 2.000 | 1.000 | 1.024 | .539 | 2.375 | .375 | .219 | .787 | 2° | TPS43 | TIP15W | MK1KS | HSCU50014H | | | |
| | | APX4000UR0306DB | ● 6 | 3.000 | 2.500 | 1.250 | 1.260 | .669 | 2.874 | .500 | .281 | 1.024 | 2° | TPS43 | TIP15W | MK1KS | HSCU62516H | | | |
| | | APX4000UR0307DB | ● 7 | 3.000 | 2.500 | 1.250 | 1.260 | .669 | 2.874 | .500 | .281 | 1.024 | 2° | TPS43 | TIP15W | MK1KS | HSCU62516H | | | |
| | | APX4000UR0408EB | ● 8 | 4.000 | 2.500 | 1.500 | 1.181 | .787 | 3.799 | .625 | .375 | 1.181 | 1.5° | TPS43 | TIP15W | MK1KS | HSCU75016H | | | |

(Note) When using inserts with corner radius RE ≥ .197" (5.0mm), C-Holders are required as shown on page K057.

*1 Clamp Torque (lbf-in) : TPS43=31

*2 RMPX : Max. Ramping Angle

*3 The cutter body includes a set bolt.

COMBINATION OF HOLDER AND INSERT CORNER RADIUS

| Holder | A Holder | | | | | | B Holder | | C Holder | |
|---------------------------|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-----------------|-------|
| | APX4000UR○○○○○A | | | | | | APX4000UR○○○○○B | | APX4000UR○○○○○C | |
| Insert Corner Radius (RE) | .016" | .031" | .039" | .047" | .063" | .079" | .125" | .157" | .197" | .250" |

- INSERTS > K057
- OPERATION GUIDANCE > K063
- SPARE PARTS > M001
- TECHNICAL DATA > N001



Fig.1

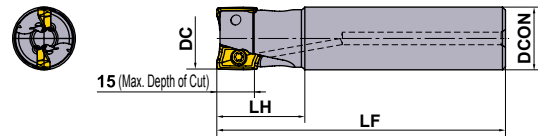
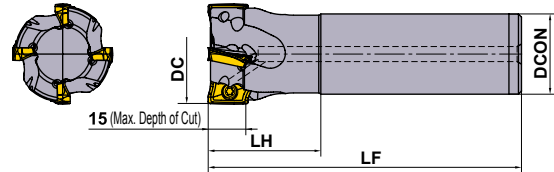


Fig.2



METRIC Standard

STRAIGHT SHANK TYPE (A Holders)

Right hand tool holder only.

| Type | RE (inch) | Order Number | Stock R | Number of Teeth | Dimensions (mm) | | | | *2 RMPX | Type (Fig.) | *1 Insert Screw | Wrench | Anti-seize Lubricant | Insert |
|------------|-------------------|--------------------|------------|-----------------|-----------------|------|-----|-----|------------|----------------|--------------------|--------|-------------------------|----------------------|
| | | | | | DC | DCON | LF | LH | | | | | | |
| Standard | .016 .079 | APX4000R252SA25SA | ★ | 2 | 25 | 25 | 115 | 35 | 11° | 1 | TPS4 | TIP15W | MK1KS | AOMT 1848 PEER |
| | | APX4000R322SA32SA | ★ | 2 | 32 | 32 | 125 | 45 | 7° | 1 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R323SA32SA | ★ | 3 | 32 | 32 | 125 | 45 | 7° | 1 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R403SA32SA | ★ | 3 | 40 | 32 | 125 | 45 | 6° | 2 | TPS43 | TIP15W | MK1KS | |
| | | APX4000R404SA32SA | ★ | 4 | 40 | 32 | 125 | 45 | 6° | 2 | TPS43 | TIP15W | MK1KS | |
| | | APX4000R504SA32SA | ★ | 4 | 50 | 32 | 125 | 45 | 4° | 2 | TPS43 | TIP15W | MK1KS | |
| | | APX4000R505SA32SA | ★ | 5 | 50 | 32 | 125 | 45 | 4° | 2 | TPS43 | TIP15W | MK1KS | |
| | | APX4000R634SA32SA | ★ | 4 | 63 | 32 | 125 | 45 | 3° | 2 | TPS43 | TIP15W | MK1KS | |
| | | APX4000R636SA32SA | ★ | 6 | 63 | 32 | 125 | 45 | 3° | 2 | TPS43 | TIP15W | MK1KS | |
| Long | .016 .079 | APX4000R252SA25LA | ★ | 2 | 25 | 25 | 170 | 35 | 11° | 1 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R282SA25LA | ★ | 2 | 28 | 25 | 170 | 35 | 9° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R322SA32LA | ★ | 2 | 32 | 32 | 190 | 45 | 7° | 1 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R323SA32LA | ★ | 3 | 32 | 32 | 190 | 45 | 7° | 1 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R352SA32LA | ★ | 2 | 35 | 32 | 190 | 45 | 6° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R353SA32LA | ★ | 3 | 35 | 32 | 190 | 45 | 6° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R402SA32LA | ★ | 2 | 40 | 32 | 190 | 45 | 6° | 2 | TPS43 | TIP15W | MK1KS | |
| | | APX4000R403SA32LA | ★ | 3 | 40 | 32 | 190 | 45 | 6° | 2 | TPS43 | TIP15W | MK1KS | |
| | | APX4000R404SA32LA | ★ | 4 | 40 | 32 | 190 | 45 | 6° | 2 | TPS43 | TIP15W | MK1KS | |
| Extra Long | .016 .079 | APX4000R252SA25ELA | ★ | 2 | 25 | 25 | 220 | 80 | 11° | 1 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R282SA25ELA | ★ | 2 | 28 | 25 | 220 | 35 | 9° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R322SA32ELA | ★ | 2 | 32 | 32 | 260 | 100 | 7° | 1 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R323SA32ELA | ★ | 3 | 32 | 32 | 260 | 100 | 7° | 1 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R352SA32ELA | ★ | 2 | 35 | 32 | 260 | 45 | 6° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R353SA32ELA | ★ | 3 | 35 | 32 | 260 | 45 | 6° | 2 | TPS4 | TIP15W | MK1KS | |
| | | APX4000R402SA32ELA | ★ | 2 | 40 | 32 | 260 | 45 | 6° | 2 | TPS43 | TIP15W | MK1KS | |
| | | APX4000R403SA32ELA | ★ | 3 | 40 | 32 | 260 | 45 | 6° | 2 | TPS43 | TIP15W | MK1KS | |
| | | APX4000R404SA32ELA | ★ | 4 | 40 | 32 | 260 | 45 | 6° | 2 | TPS43 | TIP15W | MK1KS | |

(Note) When using inserts with corner radius RE ≥ .125" (3.2mm), B-Holders or C-Holders are required as shown on page K057.

*1 Clamp Torque (lbf-in) : TPS4=31, TPS43=31

*2 RMPX : Max. Ramping Angle



Fig.1

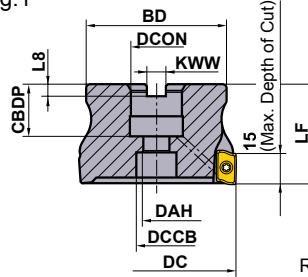
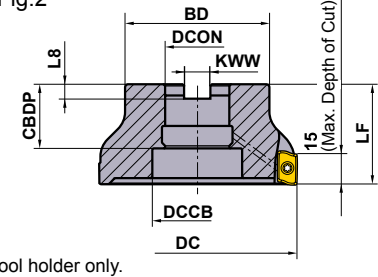


Fig.2



Right hand tool holder only.

METRIC Standard

For inch arbors

KAPR:0°
 GAMP:+15°-+22° T :+21°-+28°
 GAMF:+21°-+28° I :+15°-+22°

| Cutter Diameter DC | Set Bolt | Geometry | |
|-----------------------|-----------|----------|---|
| φ80 | HSC12035H | | |
| φ100 | HSC16040H | ① | ② |
| φ125 | MBA20040H | | |
| φ160 | MBA24045H | ② | |

ARBOR TYPE (A Holders)

| RE (inch) | Order Number | Stock Number of Teeth | Dimensions (mm) [inch] | | | | | | | | | | | *3 WT (kg) | *2 RMPX | *1 Type (Fig.) | Insert Screw | Wrench | Anti-seize Lubricant | Insert |
|-------------------|-----------------|--------------------------|------------------------|----|---------------|------|-----|-----|------|----|------|-----|------|------------------|------------|-------------------|--------------|----------------------|----------------------|--------|
| | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | DCCB | | | | | | | | | |
| .016 .079 | APX4000R08007CA | ★ 7 | 80 | 50 | 25.4 [1.0"] | 26 | 13 | 70 | 9.5 | 6 | 20 | 1.2 | 2° | 1 | TPS43 | TIP15W | MK1KS | AOMT 1848 PEER | | |
| | APX4000R10008DA | ★ 8 | 100 | 63 | 31.75 [1.25"] | 32 | 17 | 80 | 12.7 | 8 | 26 | 2.1 | 1.5° | 1 | TPS43 | TIP15W | MK1KS | | | |
| | APX4000R12509EA | ★ 9 | 125 | 63 | 38.1 [1.5"] | 40 | — | 100 | 15.9 | 10 | 56 | 3.3 | 1° | 2 | TPS43 | TIP15W | MK1KS | | | |
| | APX4000R16010FA | ★ 10 | 160 | 63 | 50.8 [2.0"] | 40 | — | 100 | 19.1 | 11 | 72 | 4.8 | 1° | 2 | TPS43 | TIP15W | MK1KS | | | |

(Note) When using inserts with corner radius RE ≥ .125" (3.2mm), B-Holders or C-Holders are required as shown on page K057.

- *1 Clamp Torque (lbf-in) : TPS43=31
- *2 RMPX : Max. Ramping Angle
- *3 WT : Mass
- *4 Set bolt not included.

| | |
|--------------------|--------|
| INSERTS | ➤ K057 |
| OPERATION GUIDANCE | ➤ K063 |
| SPARE PARTS | ➤ M001 |
| TECHNICAL DATA | ➤ N001 |

MILLING



Fig.1

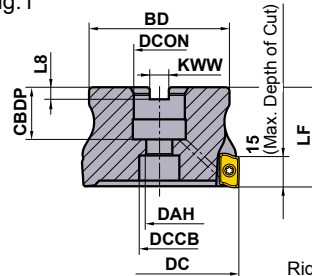
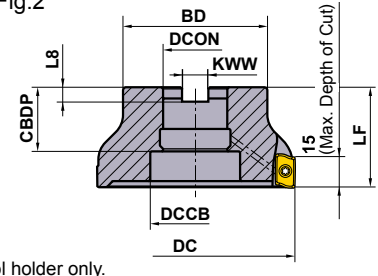


Fig.2



Right hand tool holder only.

| Cutter Diameter DC | Set Bolt | Geometry | |
|-----------------------|-----------|----------|--|
| φ40 | HSC08030H | ① | |
| φ50, φ63 | HSC10030H | | |
| φ80 | HSC12035H | ② | |
| φ100 | HSC16040H | | |
| φ125 | MBA20040H | | |
| φ160 | MBA20040H | | |

METRIC Standard

For metric arbors

C.H: 0°
A.R: +15°-+22° T: +21°-+28°
R.R: +21°-+28° I: +15°-+22°

ARBOR TYPE (A Holders)

| RE (inch) | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | | | | | *3 WT (kg) | *2 RMPX | Type (Fig.) | *1 | | | |
|-------------------|------------------|-------|-----------------|-----------------|----|------|-------|-----|-----|------|-----|------|------------------|------------|-------------|--------------|--------|----------------------|----------------------|
| | | | | DC | LF | DCON | CBDDP | DAH | BD | KWW | L8 | DCCB | | | | Insert Screw | Wrench | Anti-seize Lubricant | Insert |
| .016 .079 | APX4000-040A04RA | ★ | 4 | 40 | 40 | 16 | 18 | 9 | 34 | 8.4 | 5.6 | 14 | 0.2 | 6° | 1 | TPS43 | TIP15W | MK1KS | AOMT 1848 PEER |
| | APX4000-050A05RA | ★ | 5 | 50 | 40 | 22 | 20 | 11 | 45 | 10.4 | 6.3 | 17 | 0.3 | 4° | 1 | TPS43 | TIP15W | MK1KS | |
| | APX4000-063A06RA | ★ | 6 | 63 | 40 | 22 | 20 | 11 | 50 | 10.4 | 6.3 | 17 | 0.5 | 3° | 1 | TPS43 | TIP15W | MK1KS | |
| | APX4000-080A07RA | ★ | 7 | 80 | 50 | 27 | 23 | 13 | 60 | 12.4 | 7 | 20 | 1.2 | 2° | 1 | TPS43 | TIP15W | MK1KS | |
| | APX4000-100A08RA | ★ | 8 | 100 | 50 | 32 | 25 | 17 | 70 | 14.4 | 8 | 27 | 2.1 | 1.5° | 1 | TPS43 | TIP15W | MK1KS | |
| | APX4000-125A09RA | ★ | 9 | 125 | 63 | 40 | 40 | — | 90 | 16.4 | 9 | 56 | 3.3 | 1° | 2 | TPS43 | TIP15W | MK1KS | |
| | APX4000-160A10RA | ★ | 10 | 160 | 63 | 40 | 40 | — | 100 | 16.4 | 9 | 72 | 4.8 | 1° | 2 | TPS43 | TIP15W | MK1KS | |

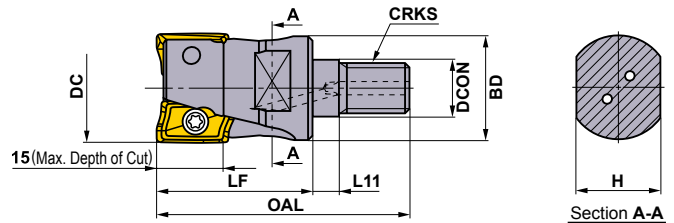
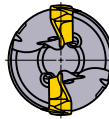
(Note) When using inserts with corner radius RE ≥ .125" (3.2mm), B-Holders or C-Holders are required as shown on page K057.

*1 Clamp Torque (lbf-in) : TPS43=31 *2 RMPX : Max. Ramping Angle *3 WT : Mass

*4 Set bolt not included.



● Air / coolant through.



METRIC Standard

SCREW-IN TYPE (A Holders)

Right hand tool holder only.

| Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | | | | | *3 WT (kg) | *1 | | | |
|-------------------|-------|-----------------|-----------------|------|------|-----|----|-----|----|------|--------------|------------------|--------|----------------------|----------------------|--|
| | | | DC | DCON | BD | OAL | LF | L11 | H | CRKS | Insert Screw | | Wrench | Anti-seize Lubricant | Insert | |
| APX4000R252M12A35 | ★ | 2 | 25 | 12.5 | 23.5 | 57 | 35 | 6 | 19 | M12 | 0.2 | TPS4 | TIP15W | MK1KS | AOMT 1848 PEER | |
| APX4000R282M12A35 | ★ | 2 | 28 | 12.5 | 23.5 | 57 | 35 | 6 | 19 | M12 | 0.2 | TPS4 | TIP15W | MK1KS | | |
| APX4000R322M16A40 | ★ | 2 | 32 | 17 | 28.5 | 63 | 40 | 6 | 24 | M16 | 0.3 | TPS4 | TIP15W | MK1KS | | |
| APX4000R323M16A40 | ★ | 3 | 32 | 17 | 28.5 | 63 | 40 | 6 | 24 | M16 | 0.3 | TPS4 | TIP15W | MK1KS | | |
| APX4000R352M16A40 | ★ | 2 | 35 | 17 | 28.5 | 63 | 40 | 6 | 24 | M16 | 0.3 | TPS4 | TIP15W | MK1KS | | |
| APX4000R353M16A40 | ★ | 3 | 35 | 17 | 28.5 | 63 | 40 | 6 | 24 | M16 | 0.3 | TPS4 | TIP15W | MK1KS | | |
| APX4000R403M16A40 | ★ | 3 | 40 | 17 | 28.5 | 63 | 40 | 6 | 24 | M16 | 0.3 | TPS43 | TIP15W | MK1KS | | |
| APX4000R404M16A40 | ★ | 4 | 40 | 17 | 28.5 | 63 | 40 | 6 | 24 | M16 | 0.3 | TPS43 | TIP15W | MK1KS | | |

(Note) When using inserts with corner radius RE ≥ .125" (3.2mm), B-Holders or C-Holders are required as shown on page K057.

*1 Clamp Torque (lbf-in) : TPS4=31, TPS43=31

*2 Clamp Torque of the Head (lbf-ft) : M12=59.2, M16=66.7

*3 WT : Mass

● : Inventory maintained. ★ : Inventory maintained in Japan.

<10 inserts in one case>

INSERTS

| Work Material | P | Steel | Coated | MC5020 | MP6120 | MP6130 | MP7130 | MP9120 | MP9130 | VP15TF | VP20RT | Dimensions (inch) | | | | | Geometry | |
|---|------------------|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|---------------------|------|---|------|----------|------------------------------|
| | M | Stainless Steel | | | | | | | | | | L | W1 | S | BS | RE | | |
| Work Material | K | Cast Iron | Honing | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | |
| | S | Heat-resistant Alloy, Titanium Alloy | | | | | | | | | | | | | | | | Cutting Conditions (Guide) : |
| | H | Hardened Steel | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | E : Round F : Sharp | | ● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting | | | |
| General M Breaker | AOMT184804PEER-M | M | E | ● | ● | ● | ● | ● | ● | ● | ● | .709 | .354 | .189 | .071 | .016 | | |
| | AOMT184808PEER-M | M | E | ● | ● | ● | ● | ● | ● | ● | ● | .709 | .354 | .189 | .055 | .031 | | |
| | AOMT184810PEER-M | M | E | ● | ● | ● | ● | ● | ● | ★ | ● | .709 | .354 | .189 | .039 | .039 | | |
| | AOMT184812PEER-M | M | E | ● | ● | ● | ● | ● | ● | ● | ● | .709 | .354 | .189 | .031 | .047 | | |
| | AOMT184816PEER-M | M | E | ● | ● | ● | ● | ● | ● | ● | ● | .709 | .354 | .189 | .016 | .063 | | |
| | AOMT184820PEER-M | M | E | ● | ● | ● | ● | ● | ● | ● | ★ | ● | .709 | .354 | .189 | .016 | | .079 |
| Strong Cutting Edge Type H Breaker | AOMT184804PEER-H | M | E | ● | ● | ● | ● | ● | ● | ● | ● | .709 | .354 | .189 | .071 | .016 | | |
| | AOMT184808PEER-H | M | E | ● | ● | ● | ● | ● | ● | ● | ● | .709 | .354 | .189 | .055 | .031 | | |
| | AOMT184816PEER-H | M | E | ● | ● | ● | ● | ● | ● | ● | ● | .709 | .354 | .189 | .016 | .063 | | |
| | AOMT184832PEER-H | M | E | ● | ● | ● | ● | ● | ● | ● | ● | .709 | .354 | .189 | .016 | .125 | | |
| | AOMT184840PEER-H | M | E | ● | ● | ● | ● | ● | ● | ● | ● | .709 | .354 | .189 | .016 | .157 | | |
| | AOMT184850PEER-H | M | E | ● | ● | ● | ● | ● | ● | ● | ● | .709 | .354 | .189 | — | .197 | | |
| AOMT184864PEER-H | M | E | ● | ● | ● | ● | ● | ● | ● | ● | .709 | .354 | .189 | — | .250 | | | |

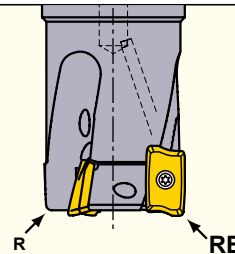
(Note) For large R inserts

APX offers various nose radii for inserts, however one holder can NOT secure every insert radius. We offer A-Holders that properly secures up to .079" radius. We offer B-Holders that secures .125" and .157" radius, only for popular inch sizes. Customers may modify holders as below, so that larger nose radii can be secured.



NOTE ON USE OF INSERTS WITH LARGE CORNER RADII

When using inserts with corner radius $RE \geq R.125"$, please machine the holder with a radius form as shown on the right table.



| RE | R |
|-------|-----------|
| .125" | .098" |
| .157" | B-Holders |
| .197" | .197" |
| .250" | C-Holders |

R : Holder end radius
RE : Insert corner radius

Or additional B-Holders and C-Holders are available as non stock, produced to order only. "Order numbers"; Please replace the last letter "A" of A-Holders to "B" or "C". In case of screw-in holders, please add "B" or "C" to the end of the order number of A-Holders. Ex) APX4000R08007CA → APX4000R08007CC
APX4000R252M12A35 → APX4000R252M12A35C

MILLING

RECOMMENDED CUTTING CONDITIONS

CUTTING SPEED

| Work Material | Hardness | Insert | | | Cutting Width ae (inch) | | | |
|------------------------|---------------------------------------|--------------------|--------------------|---------|-------------------------|--------------|--------------|--------------|
| | | Grade | | Breaker | ≤ .25DC | .25-.5DC | .5-.75DC | DC (Slot) |
| | | 1st Recommendation | 2nd Recommendation | | | | | |
| Cutting Speed vc (SFM) | | | | | | | | |
| P | Mild Steel ≤ 180HB | MP6120 | VP15TF | M H | 755(590-885) | 720(560-850) | 590(460-690) | 590(460-690) |
| | | MP6130 | VP20RT | M H | 655(490-785) | 620(460-755) | 490(360-590) | 490(360-590) |
| | Carbon Steel Alloy Steel 180-350HB | MP6120 | VP15TF | M H | 590(460-690) | 560(430-655) | 460(360-525) | 460(360-590) |
| | | MP6130 | VP20RT | M H | 490(360-590) | 460(330-560) | 360(260-425) | 360(260-425) |
| M | Stainless Steel ≤ 270HB | MP7130 | VP20RT | M H | 590(460-690) | 560(425-655) | 460(360-525) | 460(360-525) |
| K | Gray Cast Iron ≤ 350MPa | MC5020 | VP15TF | H | 820(655-985) | 785(620-950) | 690(525-850) | 460(360-525) |
| | Ductile, Cast Iron ≤ 800MPa | MC5020 | VP15TF | H | 425(330-490) | 395(295-460) | 330(260-395) | 330(260-395) |
| S | Titanium Alloy ≤ 350HB | MP9120 | VP15TF | H M | 165(130-230) | | | 165(130-230) |
| | | MP9130 | VP20RT | H M | 130(100-195) | | | 130(100-195) |
| | Heat-resistant Alloy - | MP9120 | VP15TF | H M | 130(100-195) | | | 130(100-195) |
| | | MP9130 | VP20RT | H M | 100(65-130) | | | 100(65-130) |
| H | Hardened Steel 40-55HRC | VP15TF | | H | 295(230-330) | 280(195-330) | 230(165-260) | 230(165-260) |

DEPTH OF CUT / FEED PER TOOTH

| Work Material | Hardness | Cutting Width ae (inch) | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) | | |
|---------------|--|-------------------------|------------------------|---------------------------|----------------------------|----------------------|
| | | | | Cutter Diameter (inch) | | |
| | | | | φ.750"-φ1.500"(φ25-φ40mm) | φ2.000"-φ3.000"(φ50-φ80mm) | φ4.000"(φ100-φ160mm) |
| P | Mild Steel Carbon Steel Alloy Steel ≤ 180HB 180-350HB | ≤ .5DC | ≤ .197 | .012 | .012 | .010 |
| | | | .197-.295 | .010 | .010 | .008 |
| | | | .295-.394 | .008 | .008 | .006 |
| | | .394-.492 | .006 | .006 | .004 | |
| | | .492-.591 | .004 | .004 | .003 | |
| | | ≤ .197 | .008 | .008 | .006 | |
| | .5-.75DC | .295-.394 | .006 | .006 | .004 | |
| | | .394-.591 | .004 | .004 | .003 | |
| | | ≤ .197 | .006 | .006 | .006 | |
| | DC (Slot) | .197-.295 | .004 | .004 | .004 | |
| | | .295-.394 | .003 | .003 | .003 | |
| | | ≤ .197 | .012 | .012 | .010 | |
| M | Stainless Steel ≤ 270HB | ≤ .5DC | .197-.295 | .010 | .008 | .008 |
| | | | .295-.394 | .008 | .006 | .006 |
| | | | .394-.492 | .006 | .004 | .004 |
| | | .492-.591 | .004 | .003 | .003 | |
| | | ≤ .197 | .008 | .006 | .006 | |
| | | .295-.394 | .006 | .004 | .004 | |
| | .5-.75DC | .394-.591 | .004 | .003 | .003 | |
| | | ≤ .197 | .006 | .006 | .006 | |
| | | .197-.295 | .004 | .004 | .004 | |
| | DC (Slot) | .295-.394 | .003 | .003 | .003 | |
| | | ≤ .197 | .012 | .012 | .010 | |
| | | .197-.295 | .010 | .010 | .008 | |
| K | Gray Cast Iron Tensile Strength ≤ 350MPa | ≤ .5DC | .295-.394 | .008 | .008 | .006 |
| | | | .394-.492 | .006 | .006 | .004 |
| | | | .492-.591 | .004 | .004 | .003 |
| | | ≤ .197 | .008 | .008 | .006 | |
| | | .197-.394 | .006 | .006 | .004 | |
| | | .394-.591 | .004 | .004 | .003 | |
| | .5-.75DC | ≤ .197 | .006 | .006 | .006 | |
| | | .197-.295 | .004 | .004 | .004 | |
| | | .295-.394 | .003 | .003 | .003 | |
| | DC (Slot) | ≤ .197 | .010 | .010 | .010 | |
| | | .197-.295 | .008 | .008 | .008 | |
| | | .295-.394 | .006 | .006 | .006 | |
| | Ductile, Cast Iron Tensile Strength ≤ 800MPa | ≤ .5DC | .394-.492 | .004 | .004 | .004 |
| | | | .492-.591 | .003 | .003 | .003 |
| | | | ≤ .197 | .008 | .008 | .006 |
| | | .197-.394 | .006 | .006 | .004 | |
| | | .394-.591 | .004 | .004 | .003 | |
| | | ≤ .197 | .006 | .006 | .006 | |
| | .5-.75DC | .197-.295 | .004 | .004 | .004 | |
| | | .295-.394 | .003 | .003 | .003 | |
| | | ≤ .197 | .010 | .010 | .010 | |
| | DC (Slot) | .197-.295 | .008 | .008 | .008 | |
| | | .295-.394 | .006 | .006 | .006 | |
| | | .394-.492 | .004 | .004 | .004 | |

| Work Material | Hardness | Cutting Width ae (inch) | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) | | |
|----------------------------|----------|----------------------------|---------------------------|---------------------------|----------------------------|----------------------|
| | | | | Cutter Diameter (inch) | | |
| | | | | φ.750"–φ1.500"(φ25–φ40mm) | φ2.000"–φ3.000"(φ50–φ80mm) | φ4.000"(φ100–φ160mm) |
| S Titanium Alloy | ≤350HB | ≤.25DC | ≤.197 | .006 | .004 | .004 |
| | | | .197–.295 | .004 | .002 | .002 |
| | | | .295–.394 | .002 | — | — |
| | | DC (Slot) | ≤.197 | .002 | .002 | .002 |
| Heat-resistant Alloy | — | ≤.25DC | ≤.079 | .004 | .002 | .002 |
| | | DC (Slot) | ≤.039 | .002 | .002 | .002 |
| H Hardened Steel | 40–55HRC | ≤.25DC | ≤.197 | .006 | .006 | .006 |
| | | | .197–.295 | .004 | .004 | .004 |
| | | | .295–.394 | .003 | .003 | .003 |
| | | .25–.5DC | ≤.197 | .004 | .004 | .004 |
| | | | .197–.295 | .003 | .003 | .003 |
| | | .5–.75DC | ≤.197 | .003 | .003 | .003 |
| | | | DC (Slot) | ≤.197 | .003 | .003 |

(Note 1) These cutting conditions are a guide to the standard shank type and the arbor type.

Please make adjustments according to the machining conditions.

(Note 2) Vibration is liable to occur in certain cases. Please reduce the depth of cut and / or reduce cutting conditions in the following cases.

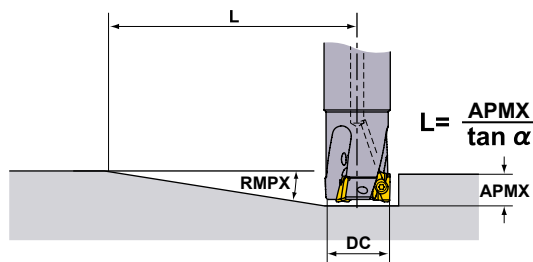
- When using the long shank type and extra long shank type.
- When using long tool overhang with the standard or arbor type.
- When the application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) In case of coarse and fine pitch cutters, the coarse pitch type is recommended to prevent vibration.

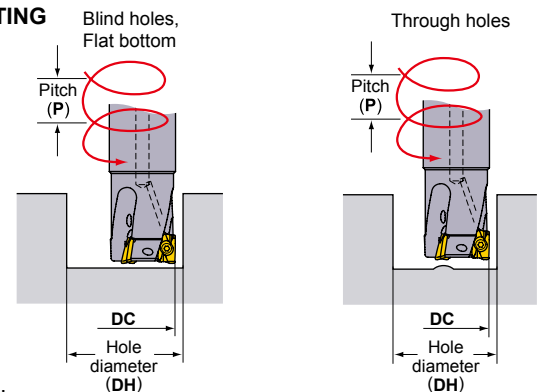
(Note 4) For heavy interrupted and unstable cutting, the H breaker is first recommendation.

RAMPING/HELICAL CUTTING

RAMPING



HELICAL CUTTING



Refer to the table below when using .031 inch radius for maximum ramping angle,

pitch and minimum/maximum hole diameter. Use cutting conditions for slotting to calculate speed and feed when ramping / helical cutting.

| Cutting Edge Diameter DC (inch) | Ramping | | Helical Cutting (Blind Hole, Flat Bottom) | | | | Helical Cutting (Through Hole) | |
|---------------------------------------|-------------------------------|---|--|-----------------------------------|--|-----------------------------------|--|-----------------------------------|
| | Maximum Ramping Angle RMPX | Minimum Distance ¹⁾ L (inch) | Maximum Hole Diameter ²⁾ DH max. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) |
| .750 | 14° | 2.7 | 1.42 | .51 | 1.31 | .43 | .80 | .019 |
| 1.000 | 11° | 3.4 | 1.92 | .55 | 1.81 | .47 | 1.30 | .157 |
| 1.250 | 7° | 5.4 | 2.42 | .43 | 2.31 | .39 | 1.80 | .196 |
| 1.500 | 7° | 5.4 | 2.92 | .51 | 2.81 | .47 | 2.30 | .275 |
| 2.000 | 4° | 9.4 | 3.92 | .39 | 3.81 | .39 | 3.30 | .275 |
| 2.500 | 2° | 18.8 | 4.92 | .23 | 4.81 | .23 | 4.30 | .157 |
| 3.000 | 2° | 18.8 | 5.92 | .31 | 5.81 | .27 | 5.30 | .236 |
| 4.000 | 1.5° | 25.1 | 7.92 | .31 | 7.81 | .27 | 7.30 | .236 |

(Note 1) $L = (.591 / \tan \alpha)$. Cutters' moving distance until depth of cut reaches .591" at a maximum ramping angle.

(Note 2) In case corner radius of .031". Other than that, find with the below formula.

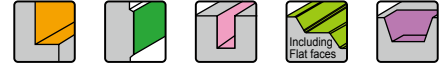
$$\{(\text{cutting edge diameter DC}) - (\text{corner radius}) - .008\} \times 2$$

(Note 3) When machining highly ductile materials with ramping angles above, chips could be continuous.

In this case, decrease the ramping angle or feed per tooth.

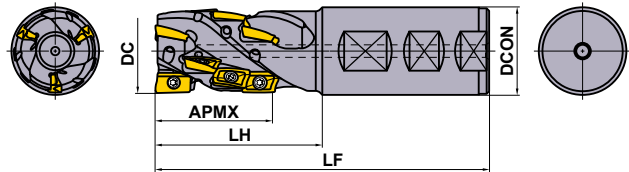
MILLING

DEEP SHOULDER MILLING

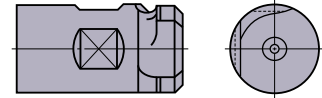


APX4000

LONG CUTTING EDGE



*1 Combination Type



LONG EDGE SHANK TYPE (A Holders)

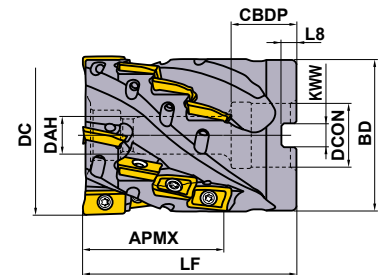
| Order Number | Stock R | Number of Flutes | Total | Dimensions (inch) | | | | | *2 | Wrench | Anti-seizure Lubricant | Insert |
|-------------------------|------------|------------------|-------|-------------------|-------|-------|-------|-------|-------|--------|------------------------|----------|
| | | | | DC | DCON | LF | LH | APMX | | | | |
| APX4KUR2408WA24S35A | ● | 2 | 8 | 1.500 | 1.500 | 6.500 | 3.250 | 2.200 | TPS43 | TIP15W | MK1KS | |
| APX4KUP 2412WA24S35A | ● | 3 | 12 | 1.500 | 1.500 | 6.500 | 3.250 | 2.200 | TPS43 | TIP15W | MK1KS | AOMT1848 |
| *1 APX4KUR3212WA32S35A | ● | 3 | 12 | 2.000 | 2.000 | 6.500 | 3.250 | 2.200 | TPS43 | TIP15W | MK1KS | ○PEER○ |
| *1 APX4KUP 3218WA32M53A | ● | 3 | 18 | 2.000 | 2.000 | 7.750 | 4.500 | 3.300 | TPS43 | TIP15W | MK1KS | |

*2 Clamp Torque (lbf-in) : TPS43=31

(Note 1) When using inserts with corner radius $RE \geq .125"$ on the bottom, B-Holders or C-Holders are required as shown on page K057.

(Note 2) Only corner radius $RE .016"$ and $.031"$ can be used for the peripheral cutting edges except the bottom cutting edge (the end cutting edge).

(Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.



Right hand tool holder only.

| DC | Set Bolt | Geometry |
|---------|-------------|----------|
| φ2.000" | HSCUF37520 | |
| φ2.500" | HSCUF 50028 | |

LONG EDGE SHELL TYPE (A Holders)

| Order Number | Stock R | Number of Flutes | Total | Dimensions (mm) | | | | | | | | | | * Insert Screw | Wrench | Anti-seizure Lubricant | Insert |
|------------------|------------|------------------|-------|-----------------|-------|-------|-------|------|-------|------|------|-------|-------|-------------------|--------|------------------------|--------|
| | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | APMX | | | | | |
| APX4KUR0209A16A | ● | 3 | 9 | 2.000 | 2.500 | .750 | 1.063 | .415 | 1.918 | .313 | .187 | 1.650 | TPS43 | TIP15W | MK1KS | AOMT1848 | |
| APX4KUR2516CA22A | ● | 4 | 16 | 2.500 | 3.500 | 1.000 | 1.339 | .539 | 2.409 | .375 | .219 | 2.200 | TPS43 | TIP15W | MK1KS | ○PEER○ | |

* Clamp Torque (lbf-in) : TPS43=31

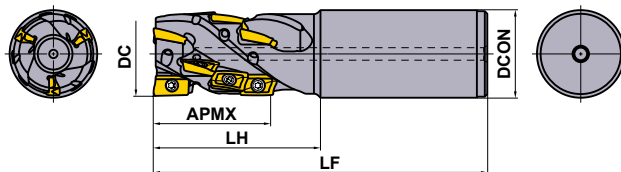
(Note 1) When using inserts with corner radius $Re \geq .125"$ on the bottom, B-Holders or C-Holders are required as shown on page K057.

(Note 2) Only corner radius $Re .016"$ and $.031"$ can be used for the peripheral cutting edges except the bottom cutting edge (the end cutting edge).

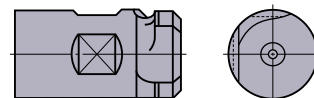
(Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

(Note 4) In case of internal coolant supply, please use a face mill arbor with through coolant channels. Regular center-thru or side-thru arbors can't be used.

(Note 5) The cutter body includes a set bolt for an arbor.



*1 Combination Type



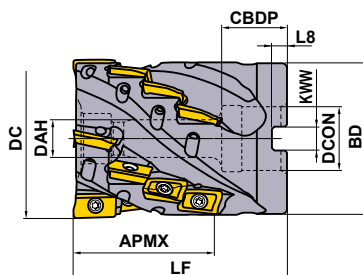
METRIC Standard

LONG EDGE SHANK TYPE (A Holders)

| Order Number | Stock R | Number of Flutes | Total | Dimensions (mm) [inch] | | | | | *2 | Wrench | Anti-seizure Lubricant | Insert |
|-------------------------|------------|------------------|-------|------------------------|-------------|-----|-----|------|-------|--------|---------------------------|------------------|
| | | | | DC | DCON | LF | LH | APMX | | | | |
| APX4KR4008SA42S056A | ★ | 2 | 8 | 40 | 42 | 160 | 80 | 56 | TPS43 | TIP15W | MK1KS | |
| APX4KR4012SA42S056A | ★ | 3 | 12 | 40 | 42 | 160 | 80 | 56 | TPS43 | TIP15W | MK1KS | AOMT1848 PEER |
| *1 APX4KR5012WA508S056A | ★ | 3 | 12 | 50 | 50.8 [2.0"] | 160 | 80 | 56 | TPS43 | TIP15W | MK1KS | PEER |
| *1 APX4KR5018WA508M084A | ★ | 3 | 18 | 50 | 50.8 [2.0"] | 190 | 110 | 84 | TPS43 | TIP15W | MK1KS | |

*2 Clamp Torque (lbf-in) : TPS43=31

(Note 1) When using inserts with corner radius $RE \geq .125"$ on the bottom, B-Holders or C-Holders are required as shown on page K057.
 (Note 2) Only corner radius $RE .016"$ and $.031"$ can be used for the peripheral cutting edges except the bottom cutting edge (the end cutting edge).
 (Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.



Right hand tool holder only.

| DC | Set Bolt | Geometry |
|-------|----------|----------|
| φ50mm | HSC10050 | |
| φ63mm | HSC12070 | |

METRIC Standard

For inch arbors

LONG EDGE SHELL TYPE (A Holders)

The bore diameter (DCON) is equivalent to a metric size.

| Order Number | Stock R | Number of Flutes | Total | Dimensions (mm) [inch] | | | | | | | | | | *2 | Wrench | Anti-seizure Lubricant | Insert |
|-------------------|------------|------------------|-------|------------------------|----|-------------|------|-----|------|-----|----|------|-------|--------|--------|---------------------------|--------|
| | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | APMX | | | | | |
| APX4KR06316CA056A | ★ | 4 | 16 | 63 | 85 | 25.4 [1.0"] | 26 | 13 | 60.7 | 9.5 | 6 | 56 | TPS43 | TIP15W | MK1KS | AOMT1848 PEER | |

* Clamp Torque (lbf-in) : TPS43=31

METRIC Standard

For metric arbors

LONG EDGE SHELL TYPE (A Holders)

| Order Number | Stock R | Number of Flutes | Total | Dimensions (mm) | | | | | | | | | | *2 | Wrench | Anti-seizure Lubricant | Insert |
|--------------------|------------|------------------|-------|-----------------|----|------|------|-----|------|------|-----|------|-------|--------|--------|---------------------------|--------|
| | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | APMX | | | | | |
| APX4K-050A09A042RA | ★ | 3 | 9 | 50 | 65 | 22 | 22 | 11 | 48 | 10.4 | 6.3 | 42 | TPS43 | TIP15W | MK1KS | AOMT1848 | |
| APX4K-063A16A056RA | ★ | 4 | 16 | 63 | 85 | 27 | 28 | 13 | 60.7 | 12.4 | 7 | 56 | TPS43 | TIP15W | MK1KS | PEER | |

* Clamp Torque (lbf-in) : TPS43=31

(Note 1) When using inserts with corner radius $RE \geq .125"$ on the bottom, B-Holders or C-Holders are required as shown on page K057.
 (Note 2) Only corner radius $RE .016"$ and $.031"$ can be used for the peripheral cutting edges except the bottom cutting edge (the end cutting edge).
 (Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.
 (Note 4) In case of internal coolant supply, please use a face mill arbor with through coolant channels. Regular center-thru or side-thru arbors can't be used.
 (Note 5) Set bolt not included.

| | |
|--------------------|--------|
| INSERTS | > K057 |
| OPERATION GUIDANCE | > K063 |
| SPARE PARTS | > M001 |
| TECHNICAL DATA | > N001 |

MILLING

RECOMMENDED CUTTING CONDITIONS

CUTTING SPEED

| Work Material | Hardness | Insert | | | Cutting Width a_e (inch) | | | |
|---------------------------|--------------------------|--------------------|--------------------|---------|----------------------------|--------------|--------------|--------------|
| | | Grade | | Breaker | $\leq 0.15DC$ | 0.15–0.3DC | DC (Slot) | |
| | | 1st Recommendation | 2nd Recommendation | | | | | |
| Cutting Speed v_c (SFM) | | | | | | | | |
| P | Mild Steel | $\leq 180HB$ | MP6120 | VP15TF | M H | 655(525–820) | 525(395–655) | 460(395–525) |
| | | | MP6130 | VP20RT | M H | 560(425–720) | 425(295–560) | 360(295–425) |
| | Carbon Steel Alloy Steel | 180–350HB | MP6120 | VP15TF | M H | 525(395–655) | 395(330–460) | 330(260–395) |
| | | | MP6130 | VP20RT | M H | 425(295–560) | 295(230–360) | 230(165–295) |
| M | Stainless Steel | $\leq 270HB$ | MP7130 | VP15TF | M H | 525(395–655) | 395(330–460) | 330(260–395) |
| K | Gray Cast Iron | $\leq 350MPa$ | MC5020 | VP15TF | H | 755(590–920) | 620(460–785) | 620(460–785) |
| | Ductile, Cast Iron | $\leq 800MPa$ | MC5020 | VP15TF | H | 620(460–720) | 560(395–720) | 560(395–720) |
| S | Titanium Alloy | $\leq 350HB$ | MP9120 | VP15TF | H M | 165(130–230) | | 165(130–230) |
| | | | MP9130 | VP20RT | H M | 130(100–195) | | 130(100–195) |
| | Heat-resistant Alloy | – | MP9120 | VP15TF | H M | 130(100–195) | | 130(100–195) |
| | | | MP9130 | VP20RT | H M | 100(65–130) | | 100(65–130) |

DEPTH OF CUT / FEED PER TOOTH

| Work Material | Hardness | Cutting Width a_e (inch) | Depth of Cut a_p (inch) | Feed per Tooth f_z (IPT) | | | |
|----------------------|--------------------------|--------------------------------|---------------------------|---|--|---|------|
| | | | | Cutter Diameter (inch) | | | |
| | | | | $\phi 1.5''$ (Max.ap=2.2") $\phi 2.0''$ (Max.ap=1.65") $\phi 40$ (Max.ap=56mm(2.205")) $\phi 50$ (Max.ap=42mm(1.654")) | $\phi 2.0''$ (Max.ap=2.2") $\phi 2.5''$ (Max.ap=2.2") $\phi 50$ (Max.ap=56mm(2.205")) $\phi 63$ (Max.ap=56mm(2.205")) | $\phi 2.0''$ (Max.ap=3.3") $\phi 50$ (Max.ap=84mm(3.307")) | |
| P | Mild Steel | $\leq .3DC$ | $\leq .787$ | .010 | .010 | .008 | |
| | | | .787–1.969 | .008 | .008 | .006 | |
| | | DC (Slot) | 1.969–3.150 | | | .004 | |
| | | | $\leq .787$ | .008 | .008 | .006 | |
| | Carbon Steel Alloy Steel | $\leq .3DC$ | $\leq .787$ | .010 | .010 | .008 | |
| | | | .787–1.969 | .008 | .008 | .006 | |
| | | DC (Slot) | 1.969–3.150 | | | .004 | |
| | | | $\leq .787$ | .006 | .006 | .004 | |
| M | Stainless Steel | $\leq .3DC$ | $\leq .787$ | .010 | .010 | .008 | |
| | | | .787–1.969 | .008 | .008 | .006 | |
| | | DC (Slot) | 1.969–3.150 | | | .004 | |
| | | | $\leq .394$ | .004 | .004 | .003 | |
| K | Gray Cast Iron | $\leq .15DC$ | $\leq .394$ | .012 | .012 | .010 | |
| | | | .394–1.969 | .010 | .010 | .008 | |
| | | .15–.3DC | 1.969–3.150 | | | .006 | |
| | | | $\leq .394$ | .010 | .010 | .008 | |
| | Ductile, Cast Iron | Tensile Strength $\leq 350MPa$ | $\leq .15DC$ | .394–1.969 | .008 | .008 | .006 |
| | | | | 1.969–3.150 | | | .004 |
| | | .15–.3DC | $\leq .787$ | .008 | .008 | .006 | |
| | | | .787–1.969 | .006 | .006 | .004 | |
| S | Titanium Alloy | $\leq .15DC$ | 1.969–3.150 | | | .003 | |
| | | | $\leq .394$ | .006 | .006 | .004 | |
| | | DC (Slot) | .394–1.969 | .004 | .004 | | |
| | | | $\leq .787$ | .004 | .004 | | |
| Heat-resistant Alloy | – | $\leq .15DC$ | $\leq .394$ | .003 | .003 | | |
| | | DC (Slot) | $\leq .787$ | .002 | .002 | | |

(Note 1) The above cutting conditions are determined based on high rigidity machine and workpiece, where no vibration occurred.

Please adjust processing conditions if the vibration is generated.

OPERATIONAL GUIDANCE

- Use only specified inserts and parts.
- Clamp the inserts at a specified torque of only.
- The maximum allowable spindle speeds are shown in Table 1. Ensure that the cutter operates under the maximum allowable spindle speed.

The maximum allowable spindle speeds for safety purposes are determined in accordance with ISO15641 (Milling Cutters for high speed machining—Safety requirements).

(Table 1) Maximum allowable spindle speed

| Cutting Edge Diameter (inch) | φ.500" | φ.625" | φ.750" | φ1.000" | φ1.250" | φ1.500" | φ2.000" | φ2.500" | φ3.000" | φ4.000" |
|---|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| Max. Allowable Spindle Speed (min ⁻¹) | 9900 | 19000 | 16000 | 12000 | 9500 | 7600 | 6000 | 4800 | 3800 | 3100 |

| Cutting Edge Diameter DC(mm) | ø12 | ø14 | ø16 | ø18 | ø20 | ø22 | ø25 | ø28 | ø30 |
|---|-----|-----|-------|-------|-------|-------|-------|-------|-------|
| Max. Allowable Spindle Speed (min ⁻¹) | — | — | 19000 | 17000 | 15000 | 14000 | 12000 | 11000 | 10000 |

| Cutting Edge Diameter DC(mm) | ø32 | ø35 | ø40 | ø50 | ø63 | ø80 | ø100 | ø125 | ø160 |
|---|------|------|------|------|------|------|------|------|------|
| Max. Allowable Spindle Speed (min ⁻¹) | 9500 | 9000 | 7500 | 6000 | 5000 | 3500 | 3000 | 2500 | 1500 |

MILLING

MULTI FUNCTIONAL MILLING <CUTTING FOR ALUMINUM ALLOY>



AXD4000

P M K **N** S H



Fig. 1

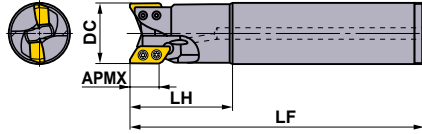
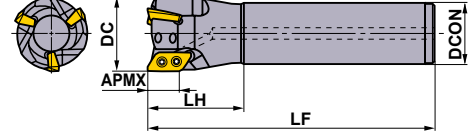


Fig. 2

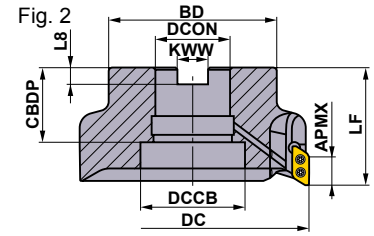
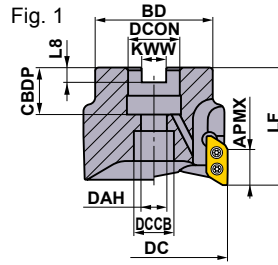


SHANK TYPE

Right hand tool holder only.

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | APMX (inch) | Max. Spindle Speed (min ⁻¹) | Type (Fig.) | * Right hand tool holder only. | | | |
|-----------|-------------------|--------------------|-------|-----------------|-------------------|-------|-------|-------|-------------|---|-------------|--------------------------------|--------|----------------------|------------------|
| | | | | | DC | LF | LH | DCON | | | | Insert Screw | Wrench | Anti-seize Lubricant | Insert |
| A Holders | .016 .125 | AXD4000UR162SA12SA | ● | 2 | 1.000 | 6.000 | 2.000 | .750 | .610 | 49000 | 2 | TS3SB | TKY08D | MK1KS | XDGX1750 PD-R |
| | | AXD4000UR162SA16SA | ● | 2 | 1.000 | 6.000 | 2.000 | 1.000 | .610 | 49000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000UR162SA16LA | ● | 2 | 1.000 | 8.500 | 3.000 | 1.000 | .610 | 49000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000UR202SA20SA | ● | 2 | 1.250 | 6.000 | 2.000 | 1.250 | .610 | 48000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000UR202SA20LA | ● | 2 | 1.250 | 9.000 | 3.500 | 1.250 | .610 | 48000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000UR243SA20SA | ● | 3 | 1.500 | 6.000 | 2.000 | 1.250 | .610 | 41000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000UR243SA20LA | ● | 3 | 1.500 | 9.000 | 2.000 | 1.250 | .610 | 41000 | 2 | TS3SB | TKY08D | MK1KS | |
| B Holders | .157 .197 | AXD4000UR162SA12SB | ● | 2 | 1.000 | 6.000 | 2.000 | .750 | .583 | 49000 | 2 | TS3SB | TKY08D | MK1KS | XDGX1750 PD-R |
| | | AXD4000UR162SA16SB | ● | 2 | 1.000 | 6.000 | 2.000 | 1.000 | .583 | 49000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000UR162SA16LB | ● | 2 | 1.000 | 8.500 | 3.000 | 1.000 | .583 | 49000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000UR202SA20SB | ● | 2 | 1.250 | 6.000 | 2.000 | 1.250 | .583 | 48000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000UR202SA20LB | ● | 2 | 1.250 | 9.000 | 3.500 | 1.250 | .583 | 48000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000UR243SA20SB | ● | 3 | 1.500 | 6.000 | 2.000 | 1.250 | .583 | 41000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000UR243SA20LB | ● | 3 | 1.500 | 9.000 | 2.000 | 1.250 | .583 | 41000 | 2 | TS3SB | TKY08D | MK1KS | |

- The maximum spindle speeds are set to ensure tool and insert stability. Before operating this tool read the operation guidance on page K071.
 - When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.
 - Note for insert with a corner radius of .063" and above, as corner radius increases the LF and LH dimension decreases.
- * Clamp Torque (lbf-in) : TS3SB=13



Right hand tool holder only.

| Cutter Diameter DC | Set Bolt | Geometry |
|-----------------------|-------------|----------|
| φ 1.5" | HSCU25014H | |
| φ 2" | HSCU 37513H | |
| φ 2.5" | HSCU 50014H | |
| φ 3" | HSCU 62516H | |
| φ 4" | HSCU 75016H | |
| φ 5" | MBAU75016H | |

KAPR : 0°
 GAMP : +14° - 15° T : +21° - +26°
 GAMF : +21° - +26° I : +14° - +15°

ARBOR TYPE

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | | | | | | | *2 WT (lbs) | APMX (inch) | Max. Spindle Speed (min ⁻¹) | Type (Fig.) | *1 Insert Screw | Wrench | Anti-seize Lubricant | Insert |
|------------------------------|-----------------|-----------------|-------|-----------------|-------------------|-------|-------|-------|-------|-------|------|-------|-------|------|-------------------|----------------|--|-------------|-----------------------|--------|-------------------------|--------|
| | | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | DCCB | R | | | | | | | | |
| A Holders 016 - 125 | | AXD4000UR1502A | ● | 2 | 1.500 | 2.000 | .500 | .630 | .276 | 1.440 | .250 | .156 | .433 | .6 | .610 | 41000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR1503A | ● | 3 | 1.500 | 2.000 | .500 | .630 | .276 | 1.440 | .250 | .156 | .433 | .6 | .610 | 41000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0202A | ● | 2 | 2.000 | 2.000 | .750 | .748 | .413 | 1.750 | .313 | .187 | .630 | .9 | .610 | 35000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0203A | ● | 3 | 2.000 | 2.000 | .750 | .748 | .413 | 1.750 | .313 | .187 | .630 | .9 | .610 | 35000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0204A | ● | 4 | 2.000 | 2.000 | .750 | .748 | .413 | 1.750 | .313 | .187 | .630 | .9 | .610 | 35000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR2504CA | ● | 4 | 2.500 | 2.000 | 1.000 | .984 | .539 | 2.190 | .375 | .219 | .787 | 1.4 | .610 | 30000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0303DA | ● | 3 | 3.000 | 2.500 | 1.250 | 1.260 | .669 | 2.880 | .500 | .281 | 1.024 | 2.9 | .610 | 27000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0305DA | ● | 5 | 3.000 | 2.500 | 1.250 | 1.260 | .669 | 2.880 | .500 | .281 | 1.024 | 2.9 | .610 | 27000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0404EA | ● | 4 | 4.000 | 2.500 | 1.500 | 1.181 | .787 | 3.810 | .625 | .375 | 1.181 | 5.5 | .610 | 23000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0406EA | ● | 6 | 4.000 | 2.500 | 1.500 | 1.181 | .787 | 3.810 | .625 | .375 | 1.181 | 5.5 | .610 | 23000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0505EA | ● | 5 | 5.000 | 2.500 | 1.500 | 1.575 | - | 3.810 | .625 | .375 | 2.205 | 6.7 | .610 | 20000 | 2 | TS3SB | TKY08D | MK1KS | | |
| | AXD4000UR0507EA | ● | 7 | 5.000 | 2.500 | 1.500 | 1.575 | - | 3.810 | .625 | .375 | 2.205 | 6.7 | .610 | 20000 | 2 | TS3SB | TKY08D | MK1KS | | | |
| B Holders 157 - 197 | | AXD4000UR1502B | □ | 2 | 1.500 | 2.000 | .500 | .630 | .276 | 1.440 | .250 | .156 | .433 | .6 | .583 | 41000 | 1 | TS3SB | TKY08D | MK1KS | XDGX1750 PDR | |
| | | AXD4000UR1503B | ● | 3 | 1.500 | 2.000 | .500 | .630 | .276 | 1.440 | .250 | .156 | .433 | .6 | .583 | 41000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0202B | □ | 2 | 2.000 | 2.000 | .750 | .748 | .413 | 1.750 | .313 | .187 | .630 | .9 | .583 | 35000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0203B | □ | 3 | 2.000 | 2.000 | .750 | .748 | .413 | 1.750 | .313 | .187 | .630 | .9 | .583 | 35000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0204B | ● | 4 | 2.000 | 2.000 | .750 | .748 | .413 | 1.750 | .313 | .187 | .630 | .9 | .583 | 35000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR2504CB | □ | 4 | 2.500 | 2.000 | 1.000 | .984 | .539 | 2.190 | .375 | .219 | .787 | 1.4 | .583 | 30000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0303DB | □ | 3 | 3.000 | 2.500 | 1.250 | 1.260 | .669 | 2.880 | .500 | .281 | 1.024 | 2.9 | .583 | 27000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0305DB | ● | 5 | 3.000 | 2.500 | 1.250 | 1.260 | .669 | 2.880 | .500 | .281 | 1.024 | 2.9 | .583 | 27000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0404EB | □ | 4 | 4.000 | 2.500 | 1.500 | 1.181 | .787 | 3.810 | .625 | .375 | 1.181 | 5.5 | .583 | 23000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0406EB | □ | 6 | 4.000 | 2.500 | 1.500 | 1.181 | .787 | 3.810 | .625 | .375 | 1.181 | 5.5 | .583 | 23000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000UR0505EB | □ | 5 | 5.000 | 2.500 | 1.500 | 1.575 | - | 3.810 | .625 | .375 | 2.205 | 6.7 | .583 | 20000 | 2 | TS3SB | TKY08D | MK1KS | | |
| | AXD4000UR0507EB | □ | 7 | 5.000 | 2.500 | 1.500 | 1.575 | - | 3.810 | .625 | .375 | 2.205 | 6.7 | .583 | 20000 | 2 | TS3SB | TKY08D | MK1KS | | | |

(Note 1) The maximum spindle speeds are set to ensure tool and insert stability.

Before operating this tool read the operation guidance on page K071.

(Note 2) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

(Note 3) Note for insert with a corner radius of .063" and above, as corner radius increases the LF dimension decreases.

*1 Clamp Torque (lbf-in) : TS3SB=13

*2 WT : Mass

*3 The cutter body includes a set bolt for an arbor.

| | |
|----------------|--------|
| INSERTS | > K069 |
| SPARE PARTS | > M001 |
| TECHNICAL DATA | > N001 |

MILLING

MILLING



METRIC Standard

Fig. 1

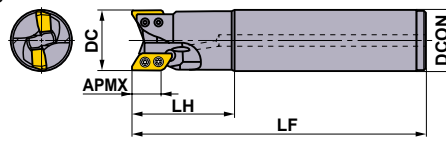
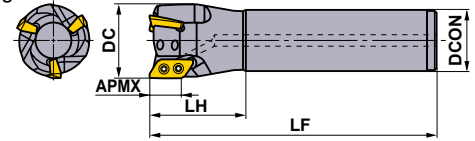



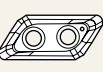


Fig. 2



SHANK TYPE

Right hand tool holder only.

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | APMX (mm) | Max. Spindle Speed (min ⁻¹) | Type (Fig.) | *  |  |  |  |
|-------------------------------|-----------------|-------------------------------|-------|-----------------|-----------------|-----|------|-------|-----------|---|-------------|---|---|---|---|
| | | | | | DC | LF | LH | DCON | | | | | | | |
| A Holders | 0.4 — 3.2 | NEW AXD4000R201SA20SA | ★ | 1 | 20 | 110 | 35 | 20 | 15.5 | 15000 | 1 | TS3SBS | TKY08D | MK1KS | |
| | | AXD4000R252SA25SA | ★ | 2 | 25 | 125 | 50 | 25 | 15.5 | 49000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000R252SA25LA | ★ | 2 | 25 | 170 | 80 | 25 | 15.5 | 49000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | NEW AXD4000R282SA25SA | ★ | 2 | 28 | 125 | 50 | 25 | 15.5 | 48500 | 2 | TS3SB | TKY08D | MK1KS | |
| | | NEW AXD4000R282SA25ELA | ★ | 2 | 28 | 220 | 50 | 25 | 15.5 | 48500 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000R322SA32SA | ★ | 2 | 32 | 150 | 50 | 32 | 15.5 | 48000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000R322SA32LA | ★ | 2 | 32 | 200 | 80 | 32 | 15.5 | 48000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | NEW AXD4000R352SA32SA | ★ | 2 | 35 | 150 | 50 | 32 | 15.5 | 45000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | NEW AXD4000R352SA32ELA | ★ | 2 | 35 | 250 | 50 | 32 | 15.5 | 45000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000R403SA32SA | ★ | 3 | 40 | 150 | 50 | 32 | 15.5 | 41000 | 2 | TS3SB | TKY08D | MK1KS | |
| AXD4000R403SA42SA | ★ | 3 | 40 | 170 | 80 | 42 | 15.5 | 41000 | 1 | TS3SB | TKY08D | MK1KS | | | |
| NEW AXD4000R403SA32ELA | ★ | 3 | 40 | 250 | 50 | 32 | 15.5 | 41000 | 2 | TS3SB | TKY08D | MK1KS | XDGX1750○○ PD○R○○ | | |
| B Holders | 4.0 — 5.0 | NEW AXD4000R201SA20SB | ★ | 1 | 20 | 110 | 35 | 20 | 14.8 | 15000 | 1 | TS3SBS | TKY08D | MK1KS | |
| | | AXD4000R252SA25SB | ★ | 2 | 25 | 125 | 50 | 25 | 14.8 | 49000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000R252SA25LB | ★ | 2 | 25 | 170 | 80 | 25 | 14.8 | 49000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | NEW AXD4000R282SA25SB | ★ | 2 | 28 | 125 | 50 | 25 | 14.8 | 48500 | 2 | TS3SB | TKY08D | MK1KS | |
| | | NEW AXD4000R282SA25ELB | ★ | 2 | 28 | 220 | 50 | 25 | 14.8 | 48500 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000R322SA32SB | ★ | 2 | 32 | 150 | 50 | 32 | 14.8 | 48000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000R322SA32LB | ★ | 2 | 32 | 200 | 80 | 32 | 14.8 | 48000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | NEW AXD4000R352SA32SB | ★ | 2 | 35 | 150 | 50 | 32 | 14.8 | 45000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | NEW AXD4000R352SA32ELB | ★ | 2 | 35 | 250 | 50 | 32 | 14.8 | 45000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000R403SA32SB | ★ | 3 | 40 | 150 | 50 | 32 | 14.8 | 41000 | 2 | TS3SB | TKY08D | MK1KS | |
| AXD4000R403SA42SB | ★ | 3 | 40 | 170 | 80 | 42 | 14.8 | 41000 | 1 | TS3SB | TKY08D | MK1KS | | | |
| NEW AXD4000R403SA32ELB | ★ | 3 | 40 | 250 | 50 | 32 | 14.8 | 41000 | 2 | TS3SB | TKY08D | MK1KS | | | |

(Note 1) The maximum spindle speeds are set to ensure tool and insert stability.

Before operating the tool read the operation guidance on page K071.

(Note 2) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

(Note 3) Note for insert with a corner radius of .063" and above, as corner radius increases the LF and LH dimension decreases.

* Clamp Torque (lbf-in) : TS3SBS=13, TS3SB=13



Fig. 1

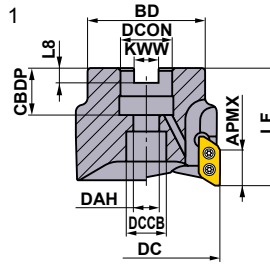
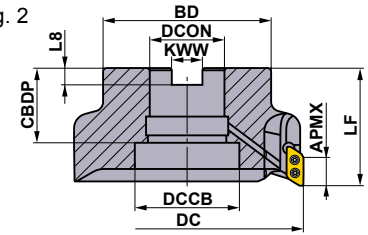


Fig. 2



METRIC Standard

For inch arbors

Right hand tool holder only.

| Cutter Diameter DC | Set Bolt | Geometry | |
|-----------------------|-----------|----------|--|
| φ80 | 12035H | ① | |
| φ100 | 16040H | ① | |
| φ125 | MBA20040H | ② | |

KAPR :0°
 GAMP :+14°-15° T :+21°-+26°
 GAMF :+21°-+26° I :+14°-+15°

ARBOR TYPE

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (mm) [inch] | | | | | | | | | | *2 WT (kg) | APMX (mm) | Max. Spindle Speed (min ⁻¹) | Type (Fig.) | *1 Insert Screw | Wrench | Anti-seize Lubricant | Insert |
|-----------|-----------------|-----------------|-------|-----------------|------------------------|----|------------------|-------|-----|----|------|----|------|-----|------------------|--------------|--|-------------|--------------------|--------|----------------------|--------|
| | | | | | DC | LF | DCON | CBDDP | DAH | BD | KWW | L8 | DCCB | | | | | | | | | |
| A Holders | 0.4 3.2 | AXD4000R08005CA | ★ | 5 | 80 | 50 | 25.4 [1.0"] | 26 | 13 | 60 | 9.5 | 6 | 20 | 1.0 | 15.5 | 27000 | 1 | TS3SB | TKY08D | MK1KS | XDGX1750 PD-R | |
| | | AXD4000R10006DA | ★ | 6 | 100 | 63 | 31.75 [1.25"] | 32 | 17 | 70 | 12.7 | 8 | 26 | 2.0 | 15.5 | 23000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000R12507EA | ★ | 7 | 125 | 63 | 38.1 [1.5"] | 40 | - | 90 | 15.9 | 10 | 56 | 2.8 | 15.5 | 20000 | 2 | TS3SB | TKY08D | MK1KS | | |
| B Holders | 4.0 5.0 | AXD4000R08005CB | ★ | 5 | 80 | 50 | 25.4 [1.0"] | 26 | 13 | 60 | 9.5 | 6 | 20 | 1.0 | 14.8 | 27000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000R10006DB | ★ | 6 | 100 | 63 | 31.75 [1.25"] | 32 | 17 | 70 | 12.7 | 8 | 26 | 2.0 | 14.8 | 23000 | 1 | TS3SB | TKY08D | MK1KS | | |
| | | AXD4000R12507EB | ★ | 7 | 125 | 63 | 38.1 [1.5"] | 40 | - | 90 | 15.9 | 10 | 56 | 2.8 | 14.8 | 20000 | 2 | TS3SB | TKY08D | MK1KS | | |

(Note 1) The maximum spindle speeds are set to ensure tool and insert stability.
 Before operating this tool read the operation guidance on page K071.

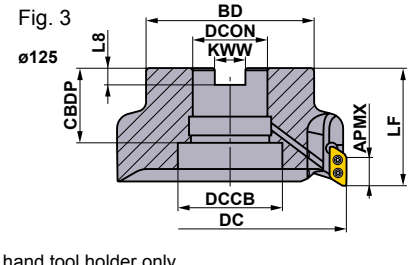
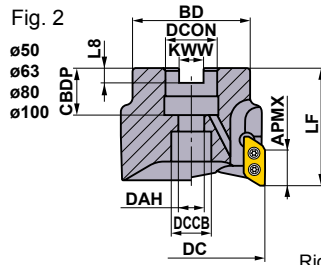
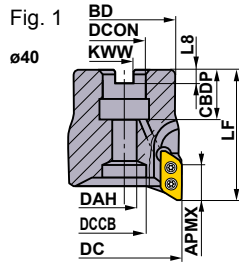
(Note 2) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

(Note 3) Note for inserts with a corner radius of .063" and above, as corner radius increases the LF dimension decreases.

*1 Clamp Torque (lbf-in) : TS3SB=13

*2 WT : Mass

*3 Set bolt not included.



Right hand tool holder only.

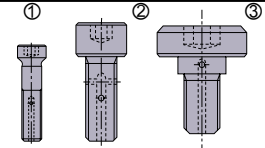
METRIC Standard

For metric arbors

KAPR : 0°
 GAMP : +14° - 15° T : +21° - +26°
 GAMF : +21° - +26° I : +14° - +15°

ARBOR TYPE

| Cutter Diameter DC | Set Bolt | Geometry |
|-----------------------|-----------|----------|
| φ40 | HFF08043H | ① |
| φ50, φ63 | HSC10030H | ② |
| φ80 | HSC12035H | ② |
| φ100 | HSC16040H | ② |
| φ125 | MBA20040H | ③ |



| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | | | | *2 WT (kg) | APMX (mm) | Max. Spindle Speed (min ⁻¹) | Type (Fig.) | *1 Clamp Screw | Wrench | Anti-seize Lubricant | Insert | |
|-----------|-----------------|------------------|-------|-----------------|-----------------|----|------|------|-----|----|------|-----|------------------|--------------|---|-------------|----------------------|--------|-------------------------|--------|-----------------|
| | | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | | | | | | | | | DCCB |
| A Holders | 0.4 - 3.2 | AXD4000-040A02RA | ★ | 2 | 40 | 50 | 16 | 18 | 8.5 | 34 | 8.4 | 5.6 | 12 | 0.3 | 15.5 | 41000 | 1 | TS3SB | TKY08D | MK1KS | XDGX1750 PDR |
| | | AXD4000-040A03RA | ★ | 3 | 40 | 50 | 16 | 18 | 8.5 | 34 | 8.4 | 5.6 | 12 | 0.3 | 15.5 | 41000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-050A02RA | ★ | 2 | 50 | 50 | 22 | 20 | 11 | 45 | 10.4 | 6.3 | 17 | 0.4 | 15.5 | 35000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-050A04RA | ★ | 4 | 50 | 50 | 22 | 20 | 11 | 45 | 10.4 | 6.3 | 17 | 0.4 | 15.5 | 35000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-063A05RA | ★ | 5 | 63 | 50 | 22 | 20 | 11 | 50 | 10.4 | 6.3 | 17 | 0.6 | 15.5 | 30000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-080A05RA | ★ | 5 | 80 | 50 | 27 | 23 | 13 | 60 | 12.4 | 7 | 20 | 1.0 | 15.5 | 27000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-100A06RA | ★ | 6 | 100 | 63 | 32 | 26 | 17 | 70 | 14.4 | 8 | 26 | 2.0 | 15.5 | 23000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-125B07RA | ★ | 7 | 125 | 63 | 40 | 40 | - | 90 | 16.4 | 9 | 56 | 2.8 | 15.5 | 20000 | 3 | TS3SB | TKY08D | MK1KS | |
| B Holders | 4.0 - 5.0 | AXD4000-040A02RB | ★ | 2 | 40 | 50 | 16 | 18 | 8.5 | 34 | 8.4 | 5.6 | 12 | 0.3 | 14.8 | 41000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-040A03RB | ★ | 3 | 40 | 50 | 16 | 18 | 8.5 | 34 | 8.4 | 5.6 | 12 | 0.3 | 14.8 | 41000 | 1 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-050A02RB | ★ | 2 | 50 | 50 | 22 | 20 | 11 | 45 | 10.4 | 6.3 | 17 | 0.4 | 14.8 | 35000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-050A04RB | ★ | 4 | 50 | 50 | 22 | 20 | 11 | 45 | 10.4 | 6.3 | 17 | 0.4 | 14.8 | 35000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-063A05RB | ★ | 5 | 63 | 50 | 22 | 20 | 11 | 50 | 10.4 | 6.3 | 17 | 0.6 | 14.8 | 30000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-080A05RB | ★ | 5 | 80 | 50 | 27 | 23 | 13 | 60 | 12.4 | 7 | 20 | 1.0 | 14.8 | 27000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-100A06RB | ★ | 6 | 100 | 63 | 32 | 26 | 17 | 70 | 14.4 | 8 | 26 | 2.0 | 14.8 | 23000 | 2 | TS3SB | TKY08D | MK1KS | |
| | | AXD4000-125B07RB | ★ | 7 | 125 | 63 | 40 | 40 | - | 90 | 16.4 | 9 | 56 | 2.8 | 14.8 | 20000 | 3 | TS3SB | TKY08D | MK1KS | |

(Note 1) The maximum spindle speeds are set to ensure tool and insert stability.

Before operating the tool read the operation guidance on page K071.

(Note 2) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

(Note 3) Note for insert with a corner radius of .063" and above, as corner radius increases the LF dimension decreases.

*1 Clamp Torque (lbf-in) : TS3SB=13

*2 WT : Mass

*3 Set bolt not included.

INSERTS

| Work Material | N | Non-Ferrous Metal | ✚ | ✚ | ✚ | ✚ | ✚ | Cutting Conditions (Guide): | | | | Honing: F :Sharp | | |
|-------------------|-------------------|--------------------------------------|--------|--------|---------|-----|-------------------|-----------------------------|-----------------|------|------------------|---------------------|------|-------------------|
| | S | Heat-resistant Alloy, Titanium Alloy | | | | | | ● | :Stable Cutting | ● | :General Cutting | | ✚ | :Unstable Cutting |
| Shape | Order Number | Class | Honing | Stock | | | Dimensions (inch) | | | | | Geometry | | |
| | | | | Coated | Carbide | | L | INSL | S | BS | RE | | | |
| | | | | LC15TF | MP9120 | NEW | | TF15 | | | | | | |
| | XDGX175004PDFR-GL | G | F | ★ | | | | ● | .906 | .689 | .197 | .067 | .016 | |
| | XDGX175008PDFR-GL | G | F | ★ | | | | ● | .906 | .689 | .197 | .051 | .031 | |
| | XDGX175012PDFR-GL | G | F | ★ | | | | ● | .906 | .689 | .197 | .035 | .047 | |
| | XDGX175016PDFR-GL | G | F | ★ | | | | ● | .866 | .689 | .197 | .055 | .063 | |
| | XDGX175020PDFR-GL | G | F | ★ | | | | ● | .866 | .689 | .197 | .039 | .079 | |
| | XDGX175024PDFR-GL | G | F | ★ | | | | ● | .866 | .689 | .197 | .024 | .094 | |
| | XDGX175030PDFR-GL | G | F | ★ | | | | ● | .831 | .689 | .197 | .031 | .118 | |
| | XDGX175032PDFR-GL | G | F | ★ | | | | ● | .831 | .689 | .197 | .024 | .125 | |
| | XDGX175040PDFR-GL | G | F | ★ | | | | ● | .787 | .689 | .197 | .031 | .157 | |
| XDGX175050PDFR-GL | G | F | ★ | | | | ● | .764 | .689 | .197 | .016 | .197 | | |
| | XDGX175004PDER-GM | G | E | | | | | ● | .906 | .689 | .197 | .067 | .016 | |
| | XDGX175008PDER-GM | G | E | | | | | ● | .906 | .689 | .197 | .051 | .031 | |
| | XDGX175012PDER-GM | G | E | | | | | ● | .906 | .689 | .197 | .035 | .047 | |
| | XDGX175016PDER-GM | G | E | | | | | ● | .866 | .689 | .197 | .055 | .063 | |
| | XDGX175020PDER-GM | G | E | | | | | ● | .866 | .689 | .197 | .039 | .079 | |
| | XDGX175024PDER-GM | G | E | | | | | ● | .866 | .689 | .197 | .024 | .094 | |
| | XDGX175030PDER-GM | G | E | | | | | ● | .831 | .689 | .197 | .031 | .118 | |
| | XDGX175032PDER-GM | G | E | | | | | ● | .831 | .689 | .197 | .024 | .125 | |
| | XDGX175040PDER-GM | G | E | | | | | ● | .787 | .689 | .197 | .019 | .157 | |
| XDGX175050PDER-GM | G | E | | | | | ● | .764 | .689 | .197 | .016 | .197 | | |
| | XDGX175004PDFR-GM | G | F | | | | | ● | .906 | .689 | .197 | .067 | .016 | |
| | XDGX175008PDFR-GM | G | F | | | | | ● | .906 | .689 | .197 | .051 | .031 | |
| | XDGX175012PDFR-GM | G | F | | | | | ● | .906 | .689 | .197 | .035 | .047 | |
| | XDGX175016PDFR-GM | G | F | | | | | ● | .866 | .689 | .197 | .055 | .063 | |
| | XDGX175020PDFR-GM | G | F | | | | | ● | .866 | .689 | .197 | .039 | .079 | |
| | XDGX175024PDFR-GM | G | F | | | | | ● | .866 | .689 | .197 | .024 | .094 | |
| | XDGX175030PDFR-GM | G | F | | | | | ● | .831 | .689 | .197 | .031 | .118 | |
| | XDGX175032PDFR-GM | G | F | | | | | ● | .831 | .689 | .197 | .024 | .125 | |
| | XDGX175040PDFR-GM | G | F | | | | | ● | .787 | .689 | .197 | .019 | .157 | |
| XDGX175050PDFR-GM | G | F | | | | | ● | .764 | .689 | .197 | .016 | .197 | | |

Please note that the insert nose R differs from radius form which is remains on work material after machining due to the effects of the axial rake angle at the time of setting.



HOLDER AND INSERT CORNER RADIUS COMBINATION

| Holder | A Holder | | | | | B Holder | | | | |
|---------------------------|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | (Inch) AXD4000UR ○○○○○○ A AXD4000UR ○○○○○○ A (Metric) AXD4000- ○○○○○○ A AXD4000R ○○○○○○ A | | | | | | | | | |
| Insert Corner Radius (RE) | | | | | | | | | | |
| | XDGX175004PD_R | XDGX175008PD_R | XDGX175012PD_R | XDGX175016PD_R | XDGX175020PD_R | XDGX175024PD_R | XDGX175030PD_R | XDGX175032PD_R | XDGX175040PD_R | XDGX175050PD_R |

(Note) Other combinations of holder and insert corner R are not acceptable.

RECOMMENDED CUTTING CONDITIONS

| Work Material | Insert Grade | Breaker | Cutting Speed vc (SFM) | Width of Cut ae (inch) | Depth of Cut ap (inch) | Feed per Tooth (inch/tooth) | | | | |
|---|--------------------------|----------|-------------------------------------|-------------------------------------|-------------------------------------|---------------------------------|---------------|---------------|---------------|-----------------------------|
| | | | | | | Cutting Edge Diameter DC | | | | |
| | | | | | | ϕ .787" | ϕ 1.000" | ϕ 1.250" | ϕ 1.500" | ϕ 2.000– ϕ 5.000" |
| N Aluminum Alloy Si<5% | LC15TF TF15 MP9120 | GL GM | 3300 (660–9800) | -.25 DC | -.197 | ≤ .002 | ≤ .014 | ≤ .014 | ≤ .016 | ≤ .016 |
| | | | | | .197–.295 | ≤ .002 | ≤ .013 | ≤ .013 | ≤ .015 | ≤ .015 |
| | | | | | .295–.393 | ≤ .002 | ≤ .012 | ≤ .012 | ≤ .014 | ≤ .014 |
| | | | | | .393–.492 | ≤ .002 | ≤ .011 | ≤ .011 | ≤ .013 | ≤ .013 |
| | | | | | .492–.571 | ≤ .002 | ≤ .010 | ≤ .010 | ≤ .012 | ≤ .012 |
| | | | 3300 (660–9800) | -.5 DC | -.197 | ≤ .002 | ≤ .014 | ≤ .014 | ≤ .014 | ≤ .016 |
| | | | | | .197–.295 | ≤ .002 | ≤ .013 | ≤ .013 | ≤ .013 | ≤ .015 |
| | | | | | .295–.393 | – | ≤ .012 | ≤ .012 | ≤ .012 | ≤ .014 |
| | | | | | .393–.492 | – | ≤ .010 | ≤ .011 | ≤ .011 | ≤ .013 |
| | | | | | .492–.571 | – | ≤ .008 | ≤ .010 | ≤ .010 | ≤ .012 |
| | | | 3300 (660–9800) | -.75 DC | -.197 | ≤ .002 | ≤ .012 | ≤ .012 | ≤ .012 | ≤ .014 |
| | | | | | .197–.295 | ≤ .002 | ≤ .011 | ≤ .011 | ≤ .011 | ≤ .013 |
| | | | | | .295–.393 | – | ≤ .010 | ≤ .010 | ≤ .010 | ≤ .012 |
| | | | | | .393–.492 | – | ≤ .009 | ≤ .009 | ≤ .009 | ≤ .011 |
| | | | | | .492–.571 | – | ≤ .008 | ≤ .008 | ≤ .008 | ≤ .010 |
| | | | 3300 (660–9800) | DC(Slot) | -.197 | ≤ .002 | ≤ .010 | ≤ .010 | ≤ .012 | ≤ .014 |
| | | | | | .197–.295 | ≤ .002 | ≤ .009 | ≤ .009 | ≤ .011 | ≤ .013 |
| | | | | | .295–.393 | – | ≤ .008 | ≤ .008 | ≤ .010 | ≤ .012 |
| | | | | | .393–.492 | – | – | ≤ .007 | ≤ .009 | ≤ .011 |
| | | | | | .492–.571 | – | – | ≤ .006 | ≤ .008 | ≤ .010 |
| Aluminum Alloy 5% ≤ Si ≤ 10% Si > 10% | LC15TF TF15 MP9120 | GL GM | 660 (660–9800) | -.25 DC | -.197 | ≤ .002 | ≤ .014 | ≤ .014 | ≤ .016 | ≤ .016 |
| | | | | | .197–.295 | ≤ .002 | ≤ .013 | ≤ .013 | ≤ .015 | ≤ .015 |
| | | | | | .295–.393 | ≤ .002 | ≤ .012 | ≤ .012 | ≤ .014 | ≤ .014 |
| | | | | | .393–.492 | ≤ .002 | ≤ .011 | ≤ .011 | ≤ .013 | ≤ .013 |
| | | | | | .492–.571 | ≤ .002 | ≤ .010 | ≤ .010 | ≤ .012 | ≤ .012 |
| | | | 660 (660–9800) | -.5 DC | -.197 | ≤ .002 | ≤ .014 | ≤ .014 | ≤ .014 | ≤ .016 |
| | | | | | .197–.295 | ≤ .002 | ≤ .013 | ≤ .013 | ≤ .013 | ≤ .015 |
| | | | | | .295–.393 | – | ≤ .012 | ≤ .012 | ≤ .012 | ≤ .014 |
| | | | | | .393–.492 | – | ≤ .010 | ≤ .011 | ≤ .011 | ≤ .013 |
| | | | | | .492–.571 | – | ≤ .008 | ≤ .010 | ≤ .010 | ≤ .012 |
| | | | 660 (660–9800) | -.75 DC | -.197 | ≤ .002 | ≤ .012 | ≤ .012 | ≤ .012 | ≤ .014 |
| | | | | | .197–.295 | ≤ .002 | ≤ .011 | ≤ .011 | ≤ .011 | ≤ .013 |
| | | | | | .295–.393 | – | ≤ .010 | ≤ .010 | ≤ .010 | ≤ .012 |
| | | | | | .393–.492 | – | ≤ .009 | ≤ .009 | ≤ .009 | ≤ .011 |
| | | | | | .492–.571 | – | ≤ .008 | ≤ .008 | ≤ .008 | ≤ .010 |
| | | | 660 (660–9800) | DC(Slot) | -.197 | ≤ .002 | ≤ .010 | ≤ .010 | ≤ .012 | ≤ .014 |
| | | | | | .197–.295 | ≤ .002 | ≤ .009 | ≤ .009 | ≤ .011 | ≤ .013 |
| | | | | | .295–.393 | – | ≤ .008 | ≤ .008 | ≤ .010 | ≤ .012 |
| | | | | | .393–.492 | – | – | ≤ .007 | ≤ .009 | ≤ .011 |
| | | | | | .492–.571 | – | – | ≤ .006 | ≤ .008 | ≤ .010 |

| Work Material | Insert Grade | Breaker | Cutting Speed vc (SFM) | Width of Cut ae (inch) | Depth of Cut ap (inch) | Feed per Tooth (inch/tooth) | | | | |
|---------------------|--------------|---------|----------------------------------|----------------------------------|----------------------------------|---------------------------------|---------|---------|---------|----------------|
| | | | | | | Cutting Edge Diameter DC | | | | |
| | | | | | | ø.787" | ø1.000" | ø1.250" | ø1.500" | ø2.000–ø5.000" |
| S Titanium Alloy | MP9120 | GM | 130 (100–200) | –.25 DC | –.197 | ≤.002 | ≤.004 | ≤.004 | ≤.004 | ≤.004 |
| | | | | | .197–.295 | ≤.002 | ≤.004 | ≤.004 | ≤.004 | ≤.004 |
| | | | | | .295–.393 | ≤.002 | ≤.004 | ≤.004 | ≤.004 | ≤.004 |
| | | | | | .393–.492 | ≤.002 | ≤.004 | ≤.004 | ≤.004 | ≤.004 |
| | | | | | .492–.571 | ≤.002 | ≤.004 | ≤.004 | ≤.004 | ≤.004 |
| | | | | –.5 DC | –.197 | ≤.002 | ≤.003 | ≤.004 | ≤.004 | ≤.004 |
| | | | | | .197–.295 | ≤.002 | ≤.003 | ≤.004 | ≤.004 | ≤.004 |
| | | | | | .295–.393 | – | ≤.003 | ≤.004 | ≤.004 | ≤.004 |
| | | | | | .393–.492 | – | ≤.003 | ≤.004 | ≤.004 | ≤.004 |
| | | | | | .492–.571 | – | ≤.003 | ≤.004 | ≤.004 | ≤.004 |
| | | | –.75 DC | –.197 | ≤.002 | ≤.002 | ≤.003 | ≤.004 | ≤.004 | |
| | | | | .197–.295 | ≤.002 | ≤.002 | ≤.003 | ≤.004 | ≤.004 | |
| | | | | .295–.393 | – | ≤.002 | ≤.003 | ≤.004 | ≤.004 | |
| | | | | .393–.492 | – | ≤.002 | ≤.003 | ≤.004 | ≤.004 | |
| | | | | .492–.571 | – | ≤.002 | ≤.003 | ≤.004 | ≤.004 | |
| | | | 130 (100–200) | DC(Slot) | –.197 | ≤.002 | ≤.002 | ≤.002 | ≤.002 | ≤.002 |
| | | | | | .197–.295 | ≤.002 | ≤.002 | ≤.002 | ≤.002 | ≤.002 |
| | | | | | .295–.393 | – | ≤.002 | ≤.002 | ≤.002 | ≤.002 |
| | | | | | .393–.492 | – | ≤.002 | ≤.002 | ≤.002 | ≤.002 |
| | | | | | .492–.571 | – | ≤.002 | ≤.002 | ≤.002 | ≤.002 |

(Note 1) The above cutting conditions are determined based on high rigidity of workpiece and machine, where no vibration occurred. If vibrations occur make adjustments according to the machining conditions.

(Note 2) Vibrations may occur in the following conditions.

- When using long tool overhang.
- When pocket machining corner radii.
- When the workpiece has poor clamping rigidity or when the machine rigidity or workpiece rigidity is low, vibrations can occur easily, if so, reduce cutting conditions such as width and depth of cut and feed per tooth.

OPERATIONAL GUIDANCE

Only use the inserts and parts provided by Mitsubishi Materials with this tool. Use of the correct insert clamp screws is especially important to ensure overall tool safety. Do not use damaged or worn clamp screws.

| Cutting Edge Diameter DC (inch) | ø.787" | ø1.000"–ø5.000" |
|--|--------|-----------------|
| Clamp Screw Number | TS3SBS | TS3SB |
| Overall Length L (inch) | .256 | .315 |
| Clamp Torque (lbf-in) | 13 | 13 |

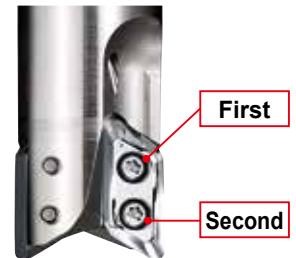
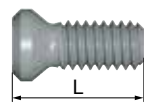


Figure 1

- When tightening the clamp screws, follow the order in Figure 1.
- The maximum allowable spindle speeds are shown in Table 1. Ensure that the cutter operates under the maximum allowable spindle speed.
The maximum allowable spindle speeds for safety purposes are determined in accordance with ISO15641 (Milling Cutters for high speed machining–Safety requirements).

(Table 1) Maximum allowable spindle speed

| Cutting Edge Diameter DC (inch) | ø.787" | ø1.000" | ø1.250" | ø1.500" | ø2.000" | ø2.500" | ø3.000" | ø4.000" | ø5.000" |
|---|--------|---------|---------|---------|---------|---------|---------|---------|---------|
| Max. Allowable Spindle Speed (min ⁻¹) | 15000 | 49000 | 48000 | 41000 | 35000 | 30000 | 27000 | 23000 | 20000 |

- Even when operating under the maximum allowable spindle speed, if the spindle speed is equal to or higher than the values shown in table 2, it is recommended that the balance quality (with the arbor or milling chuck) conforms to G6.3 or better based on ISO1940. It is also recommended to replace the clamp screws with new ones when changing inserts. Furthermore, ensure to use machines that are provided with safety measures in case of cutter breakage.
- ★ The balance quality of the holder (without inserts and clamp screws) is G6.3 or better at 10000min⁻¹.

(Table 2) Maximum spindle speed when balancing with the arbor or milling chuck has not been achieved

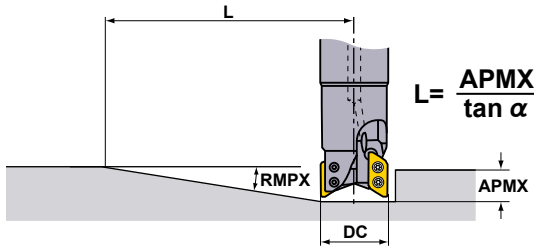
| Cutting Edge Diameter DC (inch) | ø.787" | ø1.000" | ø1.250" | ø1.500" | ø2.000" | ø2.500" | ø3.000" | ø4.000" | ø5.000" |
|---|--------|---------|---------|---------|---------|---------|---------|---------|---------|
| Max. Spindle Speed (min ⁻¹) | 15000 | 12000 | 9500 | 7600 | 6000 | 4800 | 3800 | 3000 | 2400 |

- When setting the spindle speed, take into consideration the maximum allowable spindle speed of the arbor or milling chuck.
- Use the specified set bolt when using the arbor type with through coolant.
- The inserts have sharp cutting edges and handling them with bare hands may cause injuries. Always wear safety gloves when handling the indexable inserts.

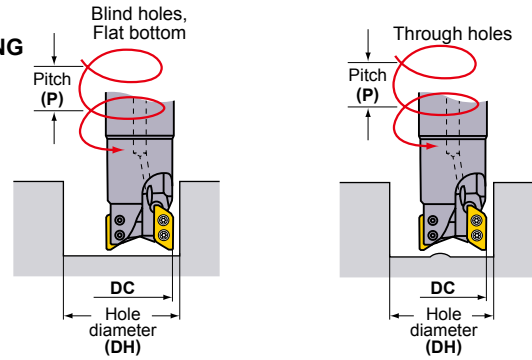
MILLING

RAMPING/HELICAL CUTTING

RAMPING



HELICAL CUTTING



RAMPING/HELICAL CUTTING

| Holder Type | Cutting Edge Diameter DC (inch) | Insert Corner Radius RE (inch) | Ramping | | Helical Cutting (Blind Hole, Flat Bottom) | | | | Helical Cutting (Through Hole) | |
|-------------|---------------------------------|--------------------------------|----------------------------|------------------------------|---|-----------------------------|--------------------------------------|-----------------------------|--------------------------------------|-----------------------------|
| | | | Maximum Ramping Angle RMPX | Minimum Distance L *1 (inch) | Maximum Hole Diameter DH max. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) |
| A | .787 | .016-.047 | 20.7° | 1.65 | 1.524 *2 | .551 | 1.421 | .551 | .866 | .079 |
| | | .063-.094 | 19.9° | 1.69 | 1.429 *3 | .512 | 1.362 | .512 | .866 | .079 |
| | | .118-.125 | 18.9° | 1.81 | 1.319 *4 | .472 | 1.311 | .472 | .866 | .039 |
| | 1.000 | .016-.047 | 22.6° | 1.50 | 1.949 *2 | .551 | 1.832 | .551 | 1.267 | .315 |
| | | .063-.094 | 22.1° | 1.54 | 1.854 *3 | .512 | 1.766 | .512 | 1.267 | .315 |
| | | .118-.125 | 20.7° | 1.65 | 1.728 *4 | .472 | 1.707 | .472 | 1.267 | .315 |
| | 1.102 | .016-.047 | 19.2° | 1.77 | 2.154 *2 | .551 | 2.047 | .551 | 1.417 | .315 |
| | | .063-.094 | 18.5° | 1.85 | 2.059 *3 | .512 | 1.984 | .512 | 1.417 | .315 |
| | | .118-.125 | 16.7° | 2.05 | 1.949 *4 | .472 | 1.925 | .472 | 1.417 | .276 |
| | 1.250 | .016-.047 | 15.6° | 2.20 | 2.449 *2 | .551 | 2.331 | .551 | 1.762 | .433 |
| | | .063-.094 | 14.9° | 2.32 | 2.354 *3 | .512 | 2.264 | .512 | 1.762 | .394 |
| | | .118-.125 | 14.0° | 2.48 | 2.244 *4 | .472 | 2.203 | .472 | 1.762 | .394 |
| | 1.378 | .016-.047 | 13.4° | 2.60 | 2.705 *2 | .551 | 2.591 | .551 | 1.969 | .433 |
| | | .063-.094 | 12.7° | 2.71 | 2.610 *3 | .512 | 2.531 | .512 | 1.969 | .394 |
| | | .118-.125 | 11.8° | 2.95 | 2.500 *4 | .472 | 2.472 | .472 | 1.969 | .354 |
| | 1.500 | .016-.047 | 13.0° | 2.68 | 2.933 *2 | .551 | 2.827 | .551 | 2.262 | .512 |
| | | .063-.094 | 12.3° | 2.83 | 2.839 *3 | .512 | 2.760 | .512 | 2.262 | .512 |
| | | .118-.125 | 11.6° | 2.99 | 2.728 *4 | .472 | 2.701 | .472 | 2.262 | .472 |
| | 2.000 | .016-.047 | 8.7° | 4.02 | 3.933 *2 | .551 | 3.827 | .551 | 3.258 | .551 |
| | | .063-.094 | 8.2° | 4.25 | 3.839 *3 | .512 | 3.757 | .512 | 3.257 | .512 |
| | | .118-.125 | 7.6° | 4.61 | 3.728 *4 | .472 | 3.696 | .472 | 3.257 | .472 |
| | 2.500 | .016-.047 | 6.6° | 5.28 | 4.933 *2 | .551 | 4.824 | .551 | 4.259 | .551 |
| | | .063-.094 | 6.1° | 5.75 | 4.839 *3 | .512 | 4.756 | .512 | 4.259 | .512 |
| | | .118-.125 | 5.7° | 6.14 | 4.728 *4 | .472 | 4.695 | .472 | 4.258 | .472 |
| 3.000 | .016-.047 | 5.3° | 6.61 | 5.933 *2 | .551 | 5.824 | .551 | 5.260 | .551 | |
| | .063-.094 | 4.9° | 7.13 | 5.839 *3 | .512 | 5.756 | .512 | 5.260 | .512 | |
| | .118-.125 | 4.5° | 7.76 | 5.728 *4 | .472 | 5.746 | .472 | 5.259 | .472 | |
| 4.000 | .016-.047 | 3.8° | 9.21 | 7.933 *2 | .551 | 7.824 | .551 | 7.261 | .551 | |
| | .063-.094 | 3.5° | 10.00 | 7.839 *3 | .512 | 7.755 | .512 | 7.261 | .512 | |
| | .118-.125 | 3.2° | 10.94 | 7.728 *4 | .472 | 7.694 | .472 | 7.260 | .472 | |
| 5.000 | .016-.047 | 2.9° | 12.05 | 9.933 *2 | .551 | 9.823 | .551 | 9.261 | .551 | |
| | .063-.094 | 2.7° | 12.95 | 9.839 *3 | .512 | 9.755 | .512 | 9.261 | .512 | |
| | .118-.125 | 2.5° | 14.02 | 9.728 *4 | .472 | 9.693 | .472 | 9.260 | .472 | |

| Holder Type | Cutting Edge Diameter DC (inch) | Insert Corner Radius RE (inch) | Ramping | | Helical Cutting (Blind Hole, Flat Bottom) | | | | Helical Cutting (Through Hole) | |
|-------------|---------------------------------|--------------------------------|----------------------------|------------------------------|---|-----------------------------|--------------------------------------|-----------------------------|--------------------------------------|-----------------------------|
| | | | Maximum Ramping Angle RMPX | Minimum Distance L *1 (inch) | Maximum Hole Diameter DH max. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) |
| B | .787 | .157 | 17.5° | 1.850 | 1.240 | .394 | 1.252 | .394 | .866 | .039 |
| | | .197 | 16.6° | 2.795 | 1.161 | .236 | 1.224 | .276 | .866 | .039 |
| | 1.000 | .157 | 17.9° | 1.81 | 1.665 | .394 | 1.635 | .394 | 1.269 | .236 |
| | | .197 | 14.7° | 2.24 | 1.587 | .354 | 1.596 | .354 | 1.269 | .197 |
| | 1.250 | .157 | 14.1° | 2.323 | 1.870 | .394 | 1.858 | .394 | 1.417 | .236 |
| | | .197 | 13° | 2.559 | 1.791 | .354 | 1.827 | .354 | 1.417 | .197 |
| | 1.250 | .157 | 12.9° | 2.56 | 2.165 | .394 | 2.130 | .394 | 1.762 | .354 |
| | | .197 | 12.2° | 2.72 | 2.087 | .354 | 2.090 | .354 | 1.762 | .315 |
| | 1.500 | .157 | 10.8° | 3.071 | 2.421 | .394 | 2.402 | .394 | 1.969 | .315 |
| | | .197 | 10.2° | 3.268 | 2.343 | .354 | 2.370 | .354 | 1.969 | .315 |
| | 1.500 | .157 | 10.7° | 3.11 | 2.650 | .394 | 2.622 | .394 | 2.261 | .394 |
| | | .197 | 10.1° | 3.31 | 2.571 | .354 | 2.583 | .354 | 2.261 | .354 |
| | 2.000 | .157 | 6.9° | 4.84 | 3.650 | .394 | 3.621 | .394 | 3.257 | .394 |
| | | .197 | 6.5° | 5.12 | 3.571 | .354 | 3.580 | .354 | 3.256 | .354 |
| | 2.500 | .157 | 5.1° | 6.54 | 4.650 | .394 | 4.600 | .394 | 4.258 | .394 |
| | | .197 | 4.8° | 6.97 | 4.571 | .354 | 4.578 | .354 | 4.257 | .354 |
| | 3.000 | .157 | 4.1° | 8.15 | 5.650 | .394 | 5.619 | .394 | 5.258 | .394 |
| | | .197 | 3.8° | 8.78 | 5.571 | .354 | 5.578 | .354 | 5.258 | .354 |
| | 4.000 | .157 | 2.9° | 11.54 | 7.650 | .394 | 7.618 | .394 | 7.259 | .394 |
| | | .197 | 2.7° | 12.36 | 7.571 | .354 | 7.577 | .354 | 7.258 | .354 |
| 5.000 | .157 | 2.2° | 15.20 | 9.650 | .394 | 9.618 | .394 | 9.260 | .394 | |
| | .197 | 2.1° | 15.91 | 9.571 | .354 | 9.577 | .354 | 9.259 | .354 | |

The recommended ramping or helical cutting feed is .002IPT or less.

- *1. Using the maximum ramping angle, the distance to reach the maximum depth of cut is as follows:
 $L = (\text{maximum depth of cut APMX} / \tan \alpha)$. Maximum depth of cut A type is .610", B type is .583".
- *2. The maximum diameter when machining a blind hole with a flat face using a corner radius of .047".
- *3. The maximum diameter when machining a blind hole with a flat face using a corner radius of .094".
- *4. The maximum diameter when machining a blind hole with a flat face using a corner radius of .125".
 For other corner radius, use to following formula. $\{(\text{cutting edge diameter DC}) - (\text{corner radius RE}) - \beta\} \times 2$

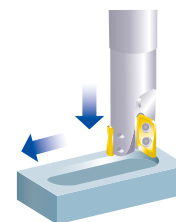
| DC | β |
|-----------|---------|
| 1.0–1.25" | .010" |
| 1.5–5.0" | .018" |

MAX.DRILLING DEPTH

| Holder Type | Insert Corner Radius RE (inch) | Max.Drilling Depth (inch) | | | |
|-------------|--------------------------------|---------------------------------------|--|--|---|
| | | Cutting Edge Diameter DC ϕ .787" | Cutting Edge Diameter DC ϕ 1.000" | Cutting Edge Diameter DC ϕ 1.250" | Cutting Edge Diameter DC ϕ 1.500"– ϕ 5.000" |
| A | .016–.047 | .209 | .205 | .205 | .209 |
| | .063–.094 | .189 | .181 | .185 | .189 |
| | .118–.125 | .169 | .146 | .165 | .173 |
| B | .157 | .146 | .106 | .142 | .150 |
| | .197 | .134 | .091 | .130 | .138 |

The recommended drilling feed is .002 IPT or less.

AXD4000 can be effectively used for pocket machining without the need for a prepared hole.



MILLING

MILLING

MULTI FUNCTIONAL MILLING

<CUTTING FOR ALUMINUM ALLOY>



Finishing Roughing

Including Flat faces

AXD7000

P

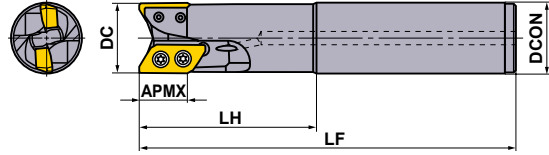
M

K

N

S

H



SHANK TYPE

Right hand tool holder only.

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | APMX (inch) | RMPX *2 | Max. Spindle Speed (min ⁻¹) | Insert Screw *1 | Wrench | Anti-seize Lubricant | Insert |
|-----------|------|--------------------|-------|-----------------|-------------------|-------|-------|-------|-------------|---------|---|-----------------|--------|----------------------|----------|
| | | | | | DC | LF | LH | DCON | | | | | | | |
| A Holders | .031 | AXD7000UR202SA20SA | ● | 2 | 1.250 | 6.000 | 2.000 | 1.250 | .827 | 19° | 41000 | TS4SB | TKY15D | MK1KS | XDGX2270 |
| | .125 | AXD7000UR242SA24SA | ● | 2 | 1.500 | 7.000 | 3.000 | 1.500 | .827 | 13° | 36000 | TS4SBL | TKY15D | MK1KS | PDFR-GL |
| B Holders | .157 | AXD7000UR202SA20SB | ● | 2 | 1.250 | 6.000 | 2.000 | 1.250 | .803 | 18° | 41000 | TS4SB | TKY15D | MK1KS | XDGX2270 |
| | .197 | AXD7000UR242SA24SB | ● | 2 | 1.500 | 7.000 | 3.000 | 1.500 | .803 | 11° | 36000 | TS4SBL | TKY15D | MK1KS | PDFR-GL |

(Note 1) The maximum spindle speeds are set to ensure tool and insert stability.

Before operating the tool read the operation guidance on page K079.

(Note 2) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

(Note 3) Note for insert with a corner radius of .118" and above, as corner radius increases the LF and LH dimension decreases.

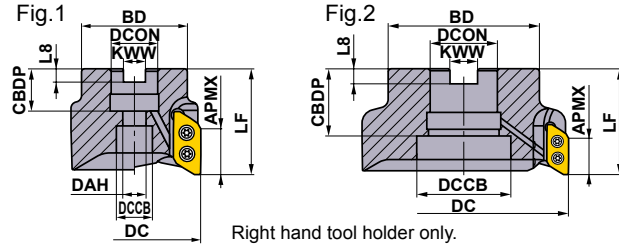
*1 Clamp Torque (lbf-in) : TS4SB=31, TS4SBL=31

*2 RMPX : Max. Ramping Angle



- Air / coolant through.
- Low resistance inserts.
- Excellent wall accuracy.
- High spindle speeds possible.
- Multi functional milling.

KAPR : 0°
GAMP : +11° T : +26° - +27°
GAMF : +26° - +27° I : +11°



Right hand tool holder only.

| DC | Coolant thru Set Bolt | Geometry | |
|-----|-----------------------|----------|---|
| φ2" | HSCU37513H | | |
| φ3" | HSCU62516H | ① | ② |
| φ4" | HSCU75016H | | |
| φ5" | MBAU75016H | ② | |

ARBOR TYPE

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | | | | | | | WT (lbs) | APMX (inch) | RMPX *2 | Max. Spindle Speed (min ⁻¹) | Type (Fig.) | Insert Screw *1 | Wrench | Anti-seize Lubricant | Insert |
|-----------|------|-----------------|-------|-----------------|-------------------|-------|-------|-------|-------|-------|------|------|-------|-----|----------|-------------|---------|---|-------------|-----------------|--------|----------------------|--------|
| | | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | DCCB | | | | | | | | | | |
| A Holders | .031 | AXD7000UR0203A | ● | 3 | 2.000 | 2.000 | .750 | .748 | .415 | 1.875 | .313 | .187 | .600 | .9 | .827 | 9° | 30000 | 1 | TS4SBL | TKY15D | MK1KS | | |
| | .125 | AXD7000UR0303DA | ● | 3 | 3.000 | 2.500 | 1.250 | 1.260 | .669 | 2.750 | .500 | .281 | 1.024 | 2.6 | .827 | 5° | 23000 | 1 | TS4SBL | TKY15D | MK1KS | XDGX2270 | |
| | | AXD7000UR0405EA | ● | 5 | 4.000 | 2.500 | 1.500 | 1.181 | .787 | 3.810 | .625 | .375 | 1.181 | 5.4 | .827 | 4° | 19000 | 1 | TS4SBL | TKY15D | MK1KS | PDFR-GL | |
| | | AXD7000UR0506EA | ● | 6 | 5.000 | 2.500 | 1.500 | 1.575 | 2.205 | 3.810 | .625 | .375 | 1.181 | 6.6 | .827 | 3° | 16000 | 2 | TS4SBL | TKY15D | MK1KS | | |
| B Holders | .157 | AXD7000UR0203B | ● | 3 | 2.000 | 2.000 | .750 | .748 | .415 | 1.875 | .313 | .187 | .600 | .9 | .803 | 8° | 30000 | 1 | TS4SBL | TKY15D | MK1KS | | |
| | .197 | AXD7000UR0303DB | ● | 3 | 3.000 | 2.500 | 1.250 | 1.260 | .669 | 2.750 | .500 | .281 | 1.024 | 2.6 | .803 | 4° | 23000 | 1 | TS4SBL | TKY15D | MK1KS | XDGX2270 | |
| | | AXD7000UR0405EB | □ | 5 | 4.000 | 2.500 | 1.500 | 1.181 | .787 | 3.810 | .625 | .375 | 1.181 | 5.4 | .803 | 3° | 19000 | 1 | TS4SBL | TKY15D | MK1KS | PDFR-GL | |
| | | AXD7000UR0506EB | □ | 6 | 5.000 | 2.500 | 1.500 | 1.575 | 2.205 | 3.810 | .625 | .375 | 1.181 | 6.6 | .803 | 2° | 20000 | 2 | TS4SBL | TKY15D | MK1KS | | |

(Note 1) The maximum spindle speeds are set to ensure tool and insert stability.

Before operating the tool read the operation guidance on page K079.

(Note 2) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

(Note 3) Note for insert with a corner radius of .118" and above, as corner radius increases the LF dimension decreases.

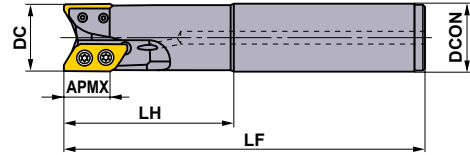
*1 Clamp Torque (lbf-in) : TS4SBL=31

*2 RMPX : Max. Ramping Angle

*3 WT : Mass *4 The cutter body includes a set bolt for an arbor.

● : Inventory maintained. ★ : Inventory maintained in Japan.

□ : Non stock, produced to order only.



METRIC Standard

SHANK TYPE

Right hand tool holder only.

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | APMX (mm) | RMPX *2 | Max. Spindle Speed (min ⁻¹) | Insert Screw *1 | Wrench | Anti-seize Lubricant | Insert |
|-----------|-----|-------------------|-------|-----------------|-----------------|-----|----|------|-----------|---------|---|-----------------|--------|----------------------|---------------------|
| | | | | | DC | LF | LH | DCON | | | | | | | |
| A Holders | 0.8 | AXD7000R322SA32SA | ★ | 2 | 32 | 170 | 80 | 32 | 21 | 19° | 41000 | TS4SB | TKY15D | MK1KS | XDGX2270 PDFR-GL |
| | 3.2 | AXD7000R402SA42SA | ★ | 2 | 40 | 170 | 80 | 42 | 21 | 13° | 36000 | TS4SBL | TKY15D | MK1KS | |
| B Holders | 4.0 | AXD7000R322SA32SB | ★ | 2 | 32 | 170 | 80 | 32 | 20.4 | 18° | 41000 | TS4SB | TKY15D | MK1KS | XDGX2270 PDFR-GL |
| | 5.0 | AXD7000R402SA42SB | ★ | 2 | 40 | 170 | 80 | 42 | 20.4 | 11° | 36000 | TS4SBL | TKY15D | MK1KS | |

(Note 1) The maximum spindle speeds are set to ensure tool and insert stability.
Before operating the tool read the operation guidance on page K079.

(Note 2) When using the tool at high spindle speeds, ensure that the tool and chuck are correctly balanced.

(Note 3) Note for inserts with a corner radius of .118" and above, as corner radius increases the OAL and LH dimensions decreases.

*1 Clamp Torque (lbf-in) : TS4SB=31, TS4SBL=31

*2 RMPX : Max. Ramping Angle



Fig.1

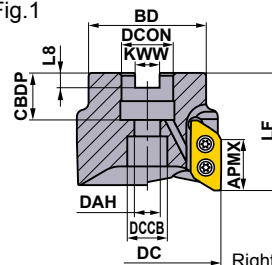
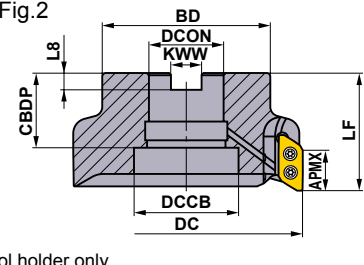


Fig.2



Right hand tool holder only.

METRIC Standard

For inch arbors

KAPR :0°
GAMP :+11° T :+26°-+29°
GAMF :+26°-+29° I :+11°

ARBOR TYPE

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (mm) [inch] | | | | | | | | | | *3 WT (kg) | APMX (mm) | RMPX *2 | Max. Spindle Speed (min ⁻¹) | Type (Fig.) | Insert Screw *1 | Wrench | Anti-seize Lubricant | Insert |
|-----------|-----|-----------------|-------|-----------------|------------------------|----|---------------|-------|-----|----|------|----|------|-----|------------|-----------|---------|---|-------------|-----------------|--------|----------------------|--------|
| | | | | | DC | LF | DCON | CBBDP | DAH | BD | KWW | L8 | DCCB | | | | | | | | | | |
| A Holders | 0.8 | AXD7000R08004CA | ★ | 4 | 80 | 63 | 25.4 [1.0"] | 26 | 13 | 63 | 9.5 | 6 | 20 | 1.2 | 21 | 5° | 23000 | 1 | TS4SBL | TKY15D | MK1KS | XDGX2270 PDFR-GL | |
| | 1 | AXD7000R10005DA | ★ | 5 | 100 | 63 | 31.75 [1.25"] | 32 | 17 | 70 | 12.7 | 8 | 26 | 1.8 | 21 | 4° | 19000 | 1 | TS4SBL | TKY15D | MK1KS | | |
| | 3.2 | AXD7000R12506EA | ★ | 6 | 125 | 63 | 38.1 [1.5"] | 40 | - | 90 | 15.9 | 10 | 56 | 2.7 | 21 | 3° | 16000 | 2 | TS4SBL | TKY15D | MK1KS | | |
| B Holders | 4.0 | AXD7000R08004CB | ★ | 4 | 80 | 63 | 25.4 [1.0"] | 26 | 13 | 63 | 9.5 | 6 | 20 | 1.2 | 20.4 | 4° | 23000 | 1 | TS4SBL | TKY15D | MK1KS | XDGX2270 PDFR-GL | |
| | 1 | AXD7000R10005DB | ★ | 5 | 100 | 63 | 31.75 [1.25"] | 32 | 17 | 70 | 12.7 | 8 | 26 | 1.8 | 20.4 | 3° | 19000 | 1 | TS4SBL | TKY15D | MK1KS | | |
| | 5.0 | AXD7000R12506EB | ★ | 6 | 125 | 63 | 38.1 [1.5"] | 40 | - | 90 | 15.9 | 10 | 56 | 2.7 | 20.4 | 2° | 16000 | 2 | TS4SBL | TKY15D | MK1KS | | |

(Note 1) The maximum spindle speeds are set to ensure tool and insert stability.
Before operating the tool read the operation guidance on page K079.

(Note 2) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

(Note 3) Note for inserts with a corner radius of .118" and above, as corner radius increases the LF dimension decreases.

*1 Clamp Torque (lbf-in) : TS4SBL=31

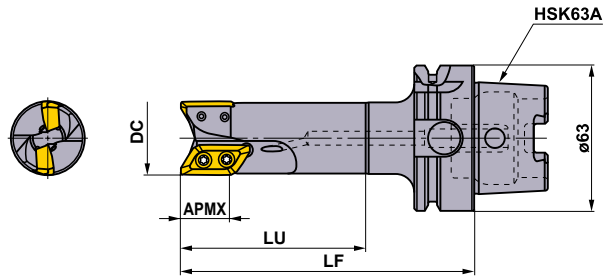
*2 RMPX : Max. Ramping Angle

*3 WT : Mass

*4 Set bolt not included.

| | |
|----------------|--------|
| INSERTS | ➤ K077 |
| SPARE PARTS | ➤ M001 |
| TECHNICAL DATA | ➤ N001 |

MILLING



METRIC Standard

HSK63A SHANK TYPE (A Holders)

Right hand tool holder only.

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | APMX | RMPX ^{*2} | Max. Spindle Speed (min ⁻¹) | Insert Screw ^{*1} | Wrench | Anti-seize Lubricant | Insert |
|-----------|-----|---------------------|-------|-----------------|-----------------|-----|----|------|--------------------|---|----------------------------|--------|----------------------|----------------------------------|
| | | | | | DC | LF | LU | | | | | | | |
| A Holders | 0.8 | AXD7000R03202A-H63A | ★ | 2 | 32 | 127 | 80 | 21 | 19° | 41000 | TS4SB | TKY15D | MK1KS | XDGX2270 [○] PDFR-GL |
| | 1 | AXD7000R04002A-H63A | ★ | 2 | 40 | 132 | 85 | 21 | 13° | 36000 | TS4SBL | TKY15D | MK1KS | |
| | 3.2 | AXD7000R05003A-H63A | ★ | 3 | 50 | 137 | 90 | 21 | 9° | 30000 | TS4SBL | TKY15D | MK1KS | |

(Note 1) The maximum spindle speeds are set to ensure tool and insert stability.

Before operating the tool read the operation guidance on page K079.

(Note 2) Note for inserts with a corner radius of .118" and above, as corner radius increases the LF and LU dimensions decreases.

(Note 3) There is no data chip hole.

*1 Clamp Torque (lbf-in) : TS4SB=31, TS4SBL=31

*2 RMPX : Max. Ramping Angle



Fig.1

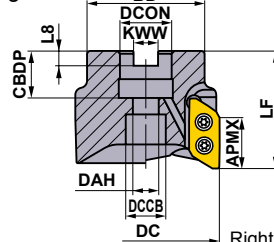
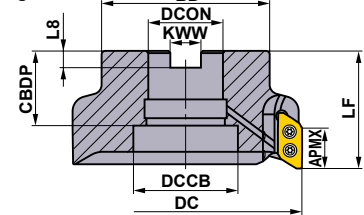


Fig.2



Right hand tool holder only.

METRIC Standard

For metric arbors

KAPR : 0°
GAMP : +11° T : +26° - +29°
GAMF : +26° - +29° I : +11°

ARBOR TYPE

| DC | Set Bolt | Geometry |
|----------|-----------|----------|
| φ50, φ63 | HSC10030H | ① |
| φ80 | HSC12035H | |
| φ100 | HSC16040H | ② |
| φ125 | MBA20040H | |

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | | | | | | WT ^{*3} (kg) | APMX (mm) | RMPX ^{*2} (min ⁻¹) | Max. Spindle Speed (min ⁻¹) | Type (Fig.) | Insert Screw ^{*1} | Wrench | Anti-seize Lubricant | Insert |
|-----------|-----|------------------|-------|-----------------|-----------------|----|------|------|-----|----|------|-----|------|-----|-----------------------|-----------|---|---|-------------|----------------------------|--------|----------------------------------|--------|
| | | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | DCCB | | | | | | | | | | |
| A Holders | 0.8 | AXD7000-050A03RA | ★ | 3 | 50 | 50 | 22 | 20 | 11 | 45 | 10.4 | 6.3 | 17 | 0.4 | 21 | 9° | 30000 | 1 | TS4SBL | TKY15D | MK1KS | XDGX2270 [○] PDFR-GL | |
| | 1 | AXD7000-063A03RA | ★ | 3 | 63 | 50 | 22 | 20 | 11 | 45 | 10.4 | 6.3 | 17 | 0.5 | 21 | 7° | 25000 | 1 | TS4SBL | TKY15D | MK1KS | | |
| | 3.2 | AXD7000-080A04RA | ★ | 4 | 80 | 63 | 27 | 23 | 13 | 63 | 12.4 | 7 | 20 | 1.2 | 21 | 5° | 23000 | 1 | TS4SBL | TKY15D | MK1KS | | |
| | 3.2 | AXD7000-100A05RA | ★ | 5 | 100 | 63 | 32 | 26 | 17 | 70 | 14.4 | 8 | 26 | 1.8 | 21 | 4° | 19000 | 1 | TS4SBL | TKY15D | MK1KS | | |
| | 3.2 | AXD7000-125B06RA | ★ | 6 | 125 | 63 | 40 | 40 | — | 90 | 16.4 | 9 | 56 | 2.7 | 21 | 3° | 16000 | 2 | TS4SBL | TKY15D | MK1KS | | |
| B Holders | 4.0 | AXD7000-050A03RB | ★ | 3 | 50 | 50 | 22 | 20 | 11 | 45 | 10.4 | 6.3 | 17 | 0.4 | 20.4 | 8° | 30000 | 1 | TS4SBL | TKY15D | MK1KS | XDGX2270 [○] PDFR-GL | |
| | 4.0 | AXD7000-063A03RB | ★ | 3 | 63 | 50 | 22 | 20 | 11 | 45 | 10.4 | 6.3 | 17 | 0.5 | 20.4 | 6° | 25000 | 1 | TS4SBL | TKY15D | MK1KS | | |
| | 5.0 | AXD7000-080A04RB | ★ | 4 | 80 | 63 | 27 | 23 | 13 | 63 | 12.4 | 7 | 20 | 1.2 | 20.4 | 4° | 23000 | 1 | TS4SBL | TKY15D | MK1KS | | |
| | 5.0 | AXD7000-100A05RB | ★ | 5 | 100 | 63 | 32 | 26 | 17 | 70 | 14.4 | 8 | 26 | 1.8 | 20.4 | 3° | 19000 | 1 | TS4SBL | TKY15D | MK1KS | | |
| | 5.0 | AXD7000-125B06RB | ★ | 6 | 125 | 63 | 40 | 40 | — | 90 | 16.4 | 9 | 56 | 2.7 | 20.4 | 2° | 16000 | 2 | TS4SBL | TKY15D | MK1KS | | |

(Note 1) The maximum spindle speeds are set to ensure tool and insert stability.

Before operating the tool read the operation guidance on page K079.

(Note 2) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

(Note 3) Note for inserts with a corner radius of .118" and above, as corner radius increases the LF dimension decreases.

*1 Clamp Torque (lbf-in) : TS4SBL=31

*2 RMPX : Max. Ramping Angle *3 WT : Mass

*4 Set bolt not included.

● : Inventory maintained. ★ : Inventory maintained in Japan.

□ : Non stock, produced to order only. <10 inserts in one case>

INSERTS

| Work Material | N | Non-Ferrous Metal | ✱ | | | ● | Cutting Conditions : | | | | | Honing : |
|---------------|-------------------|-------------------|--------|--------|---------|------|----------------------|---------------------|----------------------|-----------|------|----------|
| | | | | | | | ● : Stable Cutting | ● : General Cutting | ✱ : Unstable Cutting | F : Sharp | | |
| Shape | Order Number | Class | Honing | Stock | | TF15 | Dimensions (inch) | | | | | Geometry |
| | | | | Coated | Carbide | | L | INSL | S | BS | RE | |
| | XDGX227008PDFR-GL | G | F | ★ | | ● | 1.181 | .886 | .276 | .079 | .031 | |
| | XDGX227016PDFR-GL | G | F | ★ | | ● | 1.181 | .886 | .276 | .047 | .063 | |
| | XDGX227020PDFR-GL | G | F | ★ | | ● | 1.181 | .886 | .276 | .031 | .079 | |
| | XDGX227024PDFR-GL | G | F | □ | | ● | 1.181 | .886 | .276 | .016 | .094 | |
| | XDGX227030PDFR-GL | G | F | ★ | | ● | 1.134 | .886 | .276 | .031 | .118 | |
| | XDGX227032PDFR-GL | G | F | ★ | | ● | 1.134 | .886 | .276 | .024 | .125 | |
| | XDGX227040PDFR-GL | G | F | ★ | | ● | 1.083 | .886 | .276 | .035 | .157 | |
| | XDGX227050PDFR-GL | G | F | ★ | | ● | 1.063 | .886 | .276 | .016 | .197 | |

COMBINATION OF HOLDER AND INSERT CORNER RADIUS

| Holder | A Holder | | | | | B Holder | | | | |
|--------|----------|-----------|-----------|-----------|-------|----------|-----------|-----------|-----------|---|
| | (Inch) | AXD7000UR | AXD7000UR | AXD7000UR | A | (Inch) | AXD7000UR | AXD7000UR | AXD7000UR | B |
| | (Metric) | AXD7000R | AXD7000R | AXD7000R- | A | (Metric) | AXD7000R | AXD7000R | AXD7000R- | B |
| | | | | | A | | | | | B |
| | | | | | -H63A | | | | | B |

| Insert Corner Radius (RE) | .031" | .063" | .079" | .118" | .125" | .157" | .197" |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | | | | | | | |
| | XDGX 227008PDFR-GL | XDGX 227016PDFR-GL | XDGX 227020PDFR-GL | XDGX 227030PDFR-GL | XDGX 227032PDFR-GL | XDGX 227040PDFR-GL | XDGX 227050PDFR-GL |

(Note) Other combinations of holder and insert corner R are not acceptable.

RECOMMENDED CUTTING CONDITIONS

| Work Material | Insert Grade | Width of Cut ae (inch) | Cutting Speed vc (SFM) | Depth of Cut ap (inch) | Feed per Tooth (inch/tooth) | | |
|---------------------|--------------------|-------------------------------|-------------------------------|-------------------------------|-----------------------------|---------|-----------------|
| | | | | | Cutting Edge Diameter DC | | |
| | | | | | φ1.250" | φ1.500" | φ2.000"–φ3.000" |
| N Aluminum Alloy | LC15TF TF15 | -0.25DC | 3300 (660–9800) | -.197 | ≤ .014 | ≤ .016 | ≤ .016 |
| | | | | .197–.394 | ≤ .012 | ≤ .014 | ≤ .014 |
| | | | | .394–.591 | ≤ .010 | ≤ .012 | ≤ .012 |
| | | | | .591–.787 | ≤ .008 | ≤ .010 | ≤ .010 |
| | | -0.5DC | 3300 (660–9800) | -.197 | ≤ .014 | ≤ .014 | ≤ .016 |
| | | | | .197–.394 | ≤ .012 | ≤ .012 | ≤ .014 |
| | | | | .394–.591 | ≤ .010 | ≤ .010 | ≤ .012 |
| | | | | .591–.787 | ≤ .008 | ≤ .008 | ≤ .010 |
| | | -0.75DC | 3300 (660–9800) | -.197 | ≤ .012 | ≤ .012 | ≤ .014 |
| | | | | .197–.394 | ≤ .010 | ≤ .010 | ≤ .012 |
| | | | | .394–.591 | ≤ .008 | ≤ .008 | ≤ .010 |
| | | | | .591–.787 | ≤ .006 | ≤ .006 | ≤ .008 |
| DC | 3300 (660–9800) | -.197 | ≤ .010 | ≤ .012 | ≤ .014 | | |
| | | .197–.394 | ≤ .008 | ≤ .010 | ≤ .012 | | |
| | | .394–.591 | ≤ .006 | ≤ .008 | ≤ .010 | | |
| | | .591–.787 | ≤ .004 | ≤ .006 | ≤ .008 | | |

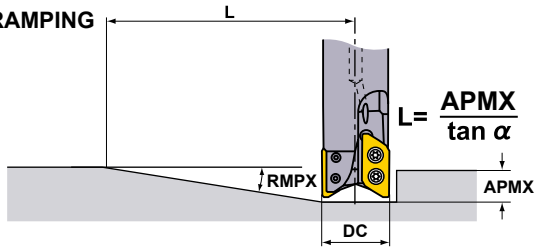
(Note 1) The above cutting conditions are determined based on high rigidity of workpiece and machine, where no vibration occurred. If vibrations occur make adjustments according to the machining conditions.

(Note 2) Vibrations may occur in the following conditions.

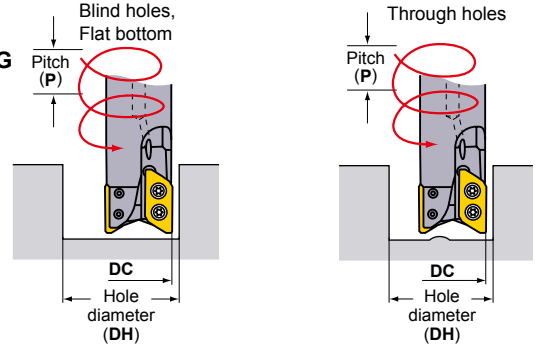
- When using long tool overhang.
- When pocket machining corner radii.
- When the workpiece has poor clamping rigidity or when the machine rigidity or workpiece rigidity is low, vibrations can occur easily, if so, reduce cutting conditions such as width and depth of cut and feed per tooth.

RAMPING/HELICAL CUTTING

RAMPING



HELICAL CUTTING



RAMPING/HELICAL CUTTING

| Holder Type | Cutting Edge Diameter DC (inch) | Insert Corner Radius RE (inch) | Ramping | | Helical Cutting (Blind Hole, Flat Bottom) | | | | Helical Cutting (Through Hole) | |
|-------------|---------------------------------|--------------------------------|----------------------------|------------------------------|---|-----------------------------|--------------------------------------|-----------------------------|--------------------------------------|-----------------------------|
| | | | Maximum Ramping Angle RMPX | Minimum Distance L *1 (inch) | Maximum Hole Diameter DH max. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) |
| A | 1.250 | .031 | 20° | 2.272 | 2.417 | .787 | 2.276 | .787 | 1.535 | .315 |
| | | .063 | 20° | 2.272 | 2.354 | .748 | 2.276 | .748 | 1.535 | .315 |
| | | .079 | 20° | 2.272 | 2.323 | .709 | 2.276 | .748 | 1.535 | .315 |
| | | .094 | 20° | 2.272 | 2.291 | .709 | 2.276 | .748 | 1.535 | .315 |
| | | .118 | 19.3° | 2.362 | 2.244 | .669 | 2.193 | .669 | 1.535 | .315 |
| | | .126 | 19.3° | 2.362 | 2.228 | .669 | 2.193 | .669 | 1.535 | .315 |
| | 1.500 | .031 | 14.1° | 3.292 | 2.902 | .787 | 2.776 | .787 | 2.047 | .394 |
| | | .063 | 14.1° | 3.292 | 2.839 | .748 | 2.776 | .748 | 2.047 | .394 |
| | | .079 | 14.1° | 3.292 | 2.807 | .709 | 2.776 | .748 | 2.047 | .394 |
| | | .094 | 14.1° | 3.292 | 2.776 | .709 | 2.776 | .748 | 2.047 | .394 |
| | | .118 | 13.3° | 3.498 | 2.728 | .669 | 2.693 | .669 | 2.047 | .394 |
| | | .126 | 13.3° | 3.498 | 2.713 | .669 | 2.693 | .669 | 2.047 | .394 |
| | 2.000 | .031 | 9.8° | 4.778 | 3.902 | .787 | 3.768 | .787 | 3.031 | .551 |
| | | .063 | 9.8° | 4.778 | 3.839 | .748 | 3.768 | .748 | 3.031 | .551 |
| | | .079 | 9.8° | 4.778 | 3.807 | .709 | 3.768 | .748 | 3.031 | .551 |
| | | .094 | 9.8° | 4.778 | 3.776 | .709 | 3.768 | .748 | 3.031 | .551 |
| | | .118 | 9.1° | 5.163 | 3.728 | .669 | 3.768 | .669 | 3.031 | .472 |
| | | .126 | 9.1° | 5.163 | 3.713 | .669 | 3.687 | .669 | 3.031 | .472 |
| | 3.000 | .031 | 5.3° | 8.915 | 5.902 | .787 | 5.768 | .787 | 5.000 | .551 |
| | | .063 | 5.3° | 8.915 | 5.839 | .748 | 5.768 | .748 | 5.000 | .551 |
| | | .079 | 5.3° | 8.915 | 5.807 | .709 | 5.768 | .748 | 5.000 | .551 |
| | | .094 | 5.3° | 8.915 | 5.776 | .709 | 5.768 | .748 | 5.000 | .551 |
| | | .118 | 4.9° | 9.647 | 5.728 | .669 | 5.686 | .669 | 5.000 | .512 |
| | | .126 | 4.9° | 9.647 | 5.713 | .669 | 5.686 | .669 | 5.000 | .512 |
| | 4.000 | .031 | 4.2° | 11.262 | 7.902 | .787 | 7.768 | .787 | 6.969 | .669 |
| | | .063 | 4.2° | 11.262 | 7.839 | .748 | 7.768 | .748 | 6.969 | .669 |
| | | .079 | 4.2° | 11.262 | 7.807 | .709 | 7.768 | .748 | 6.969 | .669 |
| | | .094 | 4.2° | 11.262 | 7.776 | .709 | 7.768 | .748 | 6.969 | .669 |
| | | .118 | 3.8° | 12.451 | 7.728 | .669 | 7.686 | .669 | 6.969 | .591 |
| | | .126 | 3.8° | 12.451 | 7.713 | .669 | 7.686 | .669 | 6.969 | .591 |
| 5.000 | .031 | 2.5° | 18.941 | 9.902 | .669 | 9.767 | .630 | 9.016 | .512 | |
| | .063 | 2.5° | 18.941 | 9.839 | .630 | 9.767 | .630 | 9.016 | .512 | |
| | .079 | 2.5° | 18.941 | 9.807 | .630 | 9.767 | .630 | 9.016 | .512 | |
| | .094 | 2.5° | 18.941 | 9.776 | .630 | 9.767 | .630 | 9.016 | .512 | |
| | .118 | 2.2° | 21.527 | 9.728 | .551 | 9.685 | .551 | 9.016 | .472 | |
| | .126 | 2.2° | 21.527 | 9.713 | .551 | 9.685 | .551 | 9.016 | .472 | |

| Holder Type | Cutting Edge Diameter DC (inch) | Insert Corner Radius RE (inch) | Ramping | | Helical Cutting (Blind Hole, Flat Bottom) | | | | Helical Cutting (Through Hole) | |
|-------------|---------------------------------|--------------------------------|----------------------------|------------------------------|---|-----------------------------|--------------------------------------|-----------------------------|--------------------------------------|-----------------------------|
| | | | Maximum Ramping Angle RMPX | Minimum Distance L *1 (inch) | Maximum Hole Diameter DH max. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) | Minimum Hole Diameter DH min. (inch) | Maximum Pitch P max. (inch) |
| B | 1.250 | .157 | 18° | 2.471 | 2.165 | .630 | 2.106 | .630 | 1.535 | .276 |
| | | .197 | 18° | 2.471 | 2.087 | .591 | 2.070 | .591 | 1.535 | .276 |
| | 1.500 | .157 | 11° | 4.131 | 2.650 | .630 | 2.605 | .630 | 2.047 | .315 |
| | | .197 | 11° | 4.131 | 2.571 | .591 | 2.569 | .591 | 2.047 | .315 |
| | 2.000 | .157 | 8° | 5.714 | 3.650 | .630 | 3.599 | .630 | 3.031 | .433 |
| | | .197 | 8° | 5.714 | 3.571 | .591 | 3.563 | .591 | 3.031 | .433 |
| | 3.000 | .157 | 4° | 11.820 | 5.650 | .551 | 5.597 | .551 | 5.000 | .433 |
| | | .197 | 4° | 11.820 | 5.571 | .551 | 5.561 | .551 | 5.000 | .433 |
| | 4.000 | .157 | 3° | 15.322 | 7.650 | .591 | 7.597 | .591 | 6.969 | .472 |
| | | .197 | 3° | 15.322 | 7.571 | .551 | 7.561 | .551 | 6.969 | .472 |
| | 5.000 | .157 | 2° | 22.995 | 9.650 | .472 | 9.597 | .472 | 9.016 | .433 |
| | | .197 | 2° | 22.995 | 9.571 | .472 | 9.559 | .472 | 9.016 | .433 |

(Note) The recommended ramping and helical cutting feed is .002IPT or less.

- *1. Using the maximum ramping angle, the distance to reach the maximum depth of cut is as follows:
 $L = (\text{maximum depth of cut APMX} / \tan \alpha)$. Maximum depth of cut A type is .827", B type is .803".
- *2. The maximum diameter when machining a blind hole with a flat face using a corner radius of .063".
- *3. The maximum diameter when machining a blind hole with a flat face using a corner radius of .118".
 For other corner radius, use to following formula. $\{(\text{cutting edge diameter DC}) - (\text{corner radius RE}) - \beta\} \times 2$

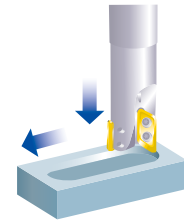
| DC | β |
|-----------|---------|
| 1.25–1.5" | .010" |
| 2.0–5.0" | .018" |

MAX.DRILLING DEPTH

| Holder Type | RE (inch) | Max.Drilling Depth (inch) | | |
|-------------|-----------|--|--|--|
| | | Cutting Edge Diameter DC $\phi 1.250"$ | Cutting Edge Diameter DC $\phi 1.500"$ | Cutting Edge Diameter DC $\phi 2.00"- \phi 5.000"$ |
| A | .031 | .209 | .205 | .205 |
| | .063–.094 | .209 | .205 | .205 |
| | .118–.125 | .181 | .181 | .181 |
| B | .157 | .157 | .154 | .154 |
| | .197 | .146 | .142 | .142 |

The recommended drilling feed is .002 IPT or less.

AXD7000 can be effectively used for pocket machining without the need for a prepared hole.



OPERATIONAL GUIDANCE

Only use the inserts and parts provided by Mitsubishi Materials with this tool. Use of the correct insert clamp screws is especially important to ensure overall tool safety.

Do not use damaged or worn clamp screws.

| Cutting Edge Diameter DC (inch) | $\phi 1.250"$ | $\phi 1.500"- \phi 5.000"$ |
|---------------------------------|---------------|----------------------------|
| Clamp Screw Number | TS4SB | TS4SBL |
| Overall Length L (inch) | .353 | .413 |
| Clamp Torque (lbf-in) | 31 | 31 |

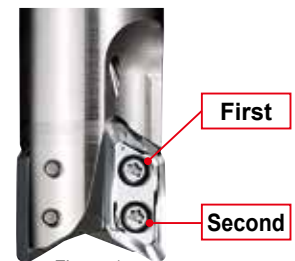
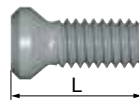


Figure 1

- When tightening the clamp screws, follow the order in Figure 1.
- The maximum allowable spindle speeds are shown in Table 1. Ensure that the cutter operates under the maximum allowable spindle speed.
 The maximum allowable spindle speeds for safety purposes are determined in accordance with ISO15641 (Milling Cutters for high speed machining–Safety requirements).

(Table 1) Maximum allowable spindle speed

| Cutting Edge Diameter DC (inch) | $\phi 1.250"$ | $\phi 1.500"$ | $\phi 2.000"$ | $\phi 2.500"$ | $\phi 3.000"$ | $\phi 4.000"$ | $\phi 5.000"$ |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Max. Allowable Spindle Speed (min ⁻¹) | 41000 | 36000 | 30000 | 25000 | 23000 | 19000 | 16000 |

- Even when operating under the maximum allowable spindle speed, if the spindle speed is equal to or higher than the values shown in table 2, it is recommended that the balance quality (with the arbor or milling chuck) conforms to G6.3 or better based on ISO1940. It is also recommended to replace the clamp screws with new ones when changing inserts. Furthermore, ensure to use machines that are provided with safety measures in case of cutter breakage.

* The balance quality of the holder (without inserts and clamp screws) is G6.3 or better at 10000min⁻¹.

(Table 2) Maximum spindle speed when balancing with the arbor or milling chuck has not been achieved

| Cutting Edge Diameter DC (inch) | $\phi 1.250"$ | $\phi 1.500"$ | $\phi 2.000"$ | $\phi 2.500"$ | $\phi 3.000"$ | $\phi 4.000"$ | $\phi 5.000"$ |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Max. Spindle Speed (min ⁻¹) | 9500 | 7600 | 6000 | 4800 | 3800 | 3000 | 2400 |

- When setting the spindle speed, take into consideration the maximum allowable spindle speed of the arbor or milling chuck.
- Use the specified set bolt when using the arbor type with through coolant.
- The inserts have sharp cutting edges and handling them with bare hands may cause injuries. Always wear safety gloves when handling the indexable inserts.

MILLING

MULTI FUNCTIONAL MILLING

<ALUMINUM ALLOY FOR DIFFICULT-TO-CUT MATERIAL CUTTING>



Finishing

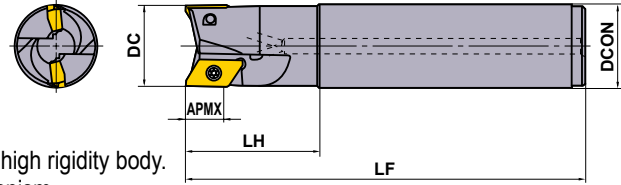
Roughing



Including Flat faces

BXD4000

P M K N S H



- Air / coolant through.
- Low resistance inserts & high rigidity body.
- The Anti Fly Insert mechanism guarantees secure high-revolution milling.

STRAIGHT SHANK TYPE

Right hand tool holder only.

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | APMX | RMPX | Max. Spindle Speed (min ⁻¹) | | Insert Screw | Wrench |
|-----------|-------------------|--------------------------|-------|-----------------|-------------------|-------|-------|-------|------|------|---|--------|--------------|--------|
| | | | | | DC | LF | DCON | LH | | | Balance Unknown | G40 *1 | | |
| A Holders | .016 .125 | BXD4000R162SA12S | ● | 2 | 1.000 | 6.000 | .750 | 2.000 | .591 | 20° | 12000 | 38000 | TS4SL | TKY15W |
| | | BXD4000R162SA16S | ● | 2 | 1.000 | 6.000 | 1.000 | 2.000 | .591 | 20° | 12000 | 38000 | TS4SL | TKY15W |
| | | BXD4000R202SA20S | ● | 2 | 1.250 | 6.000 | 1.250 | 2.000 | .591 | 13° | 9500 | 33000 | TS4SL | TKY15W |
| | | BXD4000R243SA20S | ● | 3 | 1.500 | 6.000 | 1.250 | 2.000 | .591 | 10° | 7600 | 29000 | TS4SL | TKY15W |
| B Holders | .157 .197 | BXD4000R162SA12SB | ● | 2 | 1.000 | 6.000 | .750 | 2.000 | .591 | 20° | 12000 | 38000 | TS4SL | TKY15W |
| | | BXD4000R162SA16SB | ● | 2 | 1.000 | 6.000 | 1.000 | 2.000 | .591 | 20° | 12000 | 38000 | TS4SL | TKY15W |
| | | BXD4000R202SA20SB | ● | 2 | 1.250 | 6.000 | 1.250 | 2.000 | .591 | 13° | 9500 | 33000 | TS4SL | TKY15W |
| | | BXD4000R243SA20SB | ● | 3 | 1.500 | 6.000 | 1.250 | 2.000 | .591 | 10° | 7600 | 29000 | TS4SL | TKY15W |

*1 You need to balance the tool and holder together so that it confirms to G40 or higher standards.

*2 Clamp Torque (lb·in) : TS4SL=35

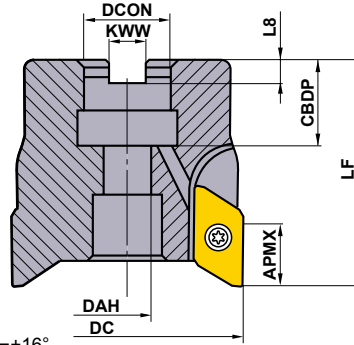
*3 RMPX : Max. Ramping Angle

INSERTS WITH BREAKER

| Work Material | P | M | K | N | S | Cutting Conditions : | | Honing : | | | | | |
|-------------------------------|--------------------------|-----------------|-----------|-------------------|--------------------------------------|----------------------|------|-------------------|------|------|------|------|----------|
| | Steel | Stainless Steel | Cast Iron | Non-Ferrous Metal | Heat-resistant Alloy, Titanium Alloy | ● | ● | ● | ● | | | | |
| Shape | Order Number | Class | Honing | Coated | | Carbide | | Dimensions (inch) | | | | | Geometry |
| | | | | VP15TF | LC15TF | TF15 | L | INSL | S | BS | RE | | |
| G breaker | XDGT1550PDFR-G04 | G | F | ★ | ● | | | .866 | .630 | .197 | .059 | .016 | |
| | XDGT1550PDFR-G08 | G | F | ★ | ● | | | .866 | .630 | .197 | .043 | .031 | |
| | XDGT1550PDFR-G12 | G | F | ★ | ★ | | | .866 | .630 | .197 | .028 | .047 | |
| | XDGT1550PDFR-G16 | G | F | ★ | ● | | | .866 | .630 | .197 | .016 | .063 | |
| | XDGT1550PDFR-G20 | G | F | ★ | ● | | | .854 | .630 | .197 | .008 | .079 | |
| | XDGT1550PDFR-G30 | G | F | ★ | ● | | | .787 | .630 | .197 | .024 | .118 | |
| | XDGT1550PDFR-G32 | G | F | ★ | ● | | | .787 | .630 | .197 | .016 | .125 | |
| | XDGT1550PDFR-G40 | G | F | ★ | ● | | | .748 | .630 | .197 | .020 | .157 | |
| | XDGT1550PDFR-G50 | G | F | ★ | ● | | | .709 | .630 | .197 | .016 | .197 | |
| | XDGT1550PDER-G04 | G | E | ● | | | | .866 | .630 | .197 | .059 | .016 | |
| | XDGT1550PDER-G08 | G | E | ● | | | | .866 | .630 | .197 | .043 | .031 | |
| | XDGT1550PDER-G12 | G | E | ★ | | | | .866 | .630 | .197 | .028 | .047 | |
| | XDGT1550PDER-G16 | G | E | ● | | | | .866 | .630 | .197 | .016 | .063 | |
| | XDGT1550PDER-G20 | G | E | ● | | | | .854 | .630 | .197 | .008 | .079 | |
| XDGT1550PDER-G30 | G | E | ● | | | | .787 | .630 | .197 | .024 | .118 | | |
| XDGT1550PDER-G32 | G | E | ● | | | | .787 | .630 | .197 | .016 | .125 | | |
| XDGT1550PDER-G40 | G | E | ● | | | | .748 | .630 | .197 | .020 | .157 | | |
| XDGT1550PDER-G50 | G | E | ● | | | | .709 | .630 | .197 | .016 | .197 | | |
| Lower Cutting Resistance Type | XDGT1550PDFR-GL04 | G | F | | ● | | | .866 | .630 | .197 | .059 | .016 | |
| | XDGT1550PDFR-GL08 | G | F | | ● | | | .866 | .630 | .197 | .043 | .031 | |

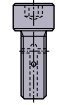
● : Inventory maintained. ★ : Inventory maintained in Japan.

<10 inserts in one case>



KAPR :0°
 GAMP :+15° T :+13°—+16°
 GAMF :+13°—+16° I :+15°

| DC | Coolant thru Set Bolt |
|-----|-----------------------|
| 1.5 | HSCU25014H |
| 2 | HSCU37513H |
| 2.5 | HSCU37513H |
| 3 | HSCU50014H |
| 4 | HSCU75016H |



Right hand tool holder only.

ARBOR TYPE

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | | | | | APMX | RMPX | Max. Spindle Speed (min ⁻¹) | | Insert Screw | Wrench |
|-----------|-------------------|---------------|-------|-----------------|-------------------|-------|-------|-------|------|------|------|-----------------|------|------|---|-------|--------------|--------|
| | | | | | DC | LF | DCON | CBDP | DAH | KWW | L8 | Balance Unknown | | | G40 *1 Balanced | | | |
| A Holders | .016 .125 | BXD4000R1503 | ● | 3 | 1.500 | 1.969 | .500 | .630 | .276 | .250 | .156 | .591 | 10° | 7600 | 29000 | TS4SL | TKY15W | |
| | | BXD4000R0203 | ● | 3 | 2.000 | 1.969 | .750 | .748 | .415 | .313 | .187 | .591 | 7° | 6000 | 24000 | TS4SL | TKY15W | |
| | | BXD4000R0204 | ● | 4 | 2.000 | 1.969 | .750 | .748 | .415 | .313 | .187 | .591 | 7° | 6000 | 24000 | TS4SL | TKY15W | |
| | | BXD4000R2504 | ● | 4 | 2.500 | 1.969 | .750 | .748 | .415 | .313 | .187 | .591 | 5° | 4800 | 21000 | TS4SL | TKY15W | |
| | | BXD4000R0305 | ● | 5 | 3.000 | 1.969 | 1.000 | 1.024 | .539 | .375 | .219 | .591 | 3° | 3800 | 19000 | TS4SL | TKY15W | |
| | | BXD4000R0406 | ● | 6 | 4.000 | 2.480 | 1.500 | 1.181 | .787 | .625 | .375 | .591 | 3° | 3000 | 16000 | TS4SL | TKY15W | |
| B Holders | .157 .197 | BXD4000R1503B | ● | 3 | 1.500 | 1.969 | .500 | .630 | .276 | .250 | .156 | .591 | 10° | 7600 | 29000 | TS4SL | TKY15W | |
| | | BXD4000R0203B | ● | 3 | 2.000 | 1.969 | .750 | .748 | .415 | .313 | .187 | .591 | 7° | 6000 | 24000 | TS4SL | TKY15W | |
| | | BXD4000R0204B | ● | 4 | 2.000 | 1.969 | .750 | .748 | .415 | .313 | .187 | .591 | 7° | 6000 | 24000 | TS4SL | TKY15W | |
| | | BXD4000R2504B | ● | 4 | 2.500 | 1.969 | .750 | .748 | .415 | .313 | .187 | .591 | 5° | 4800 | 21000 | TS4SL | TKY15W | |
| | | BXD4000R0305B | ● | 5 | 3.000 | 1.969 | 1.000 | 1.024 | .539 | .375 | .219 | .591 | 3° | 3800 | 19000 | TS4SL | TKY15W | |
| | | BXD4000R0406B | ● | 6 | 4.000 | 2.480 | 1.500 | 1.181 | .787 | .625 | .375 | .591 | 3° | 3000 | 16000 | TS4SL | TKY15W | |

*1 You need to balance the tool and holder together so that it conforms to G40 or higher standards.

*2 Clamp Torque (lbf-in) : TS4SL=35 *3 RMPX : Max. Ramping Angle *4 The cutter body includes a set bolt for an arbor.

COMBINATION OF HOLDER AND INSERT CORNER RADIUS

| Holder | ~ A Holder | | | | | | | ~ B Holder | |
|---------------------------|------------------|---------------|---------------|---------------|---------------|---------------|---------------|------------------|---------------|
| | BXD4000R○○○○○○○A | | | | | | | BXD4000R○○○○○○○B | |
| Insert Corner Radius (RE) | | | | | | | | | |
| | XDGT.....-G04 | XDGT.....-G08 | XDGT.....-G12 | XDGT.....-G16 | XDGT.....-G20 | XDGT.....-G30 | XDGT.....-G32 | XDGT.....-G40 | XDGT.....-G50 |

(Note) Other combinations of holder and insert corner R are not acceptable.

RECOMMENDED CUTTING CONDITIONS

| | Work Material | Hardness | Grade | Cutting Speed (SFM) | Feed per Tooth (inch/tooth) |
|---|--------------------------|-----------|--------|---------------------|-----------------------------|
| P | Mild Steel | ≤180HB | VP15TF | 590 (490—655) | .006 (.004—.008) |
| | Carbon Steel Alloy Steel | ≤280HB | VP15TF | 490 (390—655) | .006 (.004—.008) |
| | | 280—350HB | VP15TF | 460 (390—525) | .006 (.004—.008) |
| M | Stainless Steel | ≤270HB | VP15TF | 460 (390—525) | .008 (.004—.012) |
| N | Aluminum Alloy | — | TF15 | 3280 (655—9840) | .012 (.004—.020) |
| S | Titanium Alloy | — | VP15TF | 130 (100—195) | .004 (.004—.012) |
| | Heat Resistant Alloy | — | VP15TF | 100 (65—130) | .006 (.004—.008) |

The figure above are the guidelines for conditions of general cutting by a standard type tool.

The conditions vary depending on machine strength, the length of overhang, and work clamping conditions.

Please adjust table feed when using long shank type tool.

SPARE PARTS > M001
 TECHNICAL DATA > N001

MILLING



Fig.1
ø40

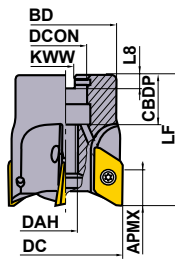


Fig.2
ø50
ø63
ø80
ø100

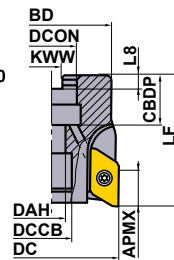
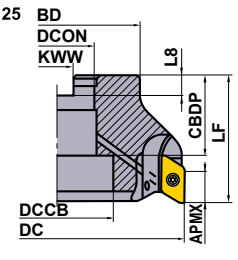


Fig.3
ø125



Right hand tool holder only.

METRIC Standard

For metric arbors

KAPR : 0°
GAMP : +14° - +15° T : +8° - +16°
GAMF : +13° - +16° I : +11° - +15°

| DC | Set Bolt | Geometry | | | |
|----------|-----------|----------|---|---|---|
| ø40 | HFF08043H | ① | ① | ② | ③ |
| ø50, ø63 | HSC10030H | | | | |
| ø80 | HSC12035H | ② | | | |
| ø100 | HSC16040H | | | | |
| ø125 | MBA20040H | ③ | | | |

ARBOR TYPE

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | | | | *3 WT (kg) | *2 APMX (mm) | *2 RMPX (min ⁻¹) | Max. Spindle Speed (min ⁻¹) | Type (Fig.) | *1 Insert Screw | Wrench | Insert | |
|-----------|-----------------|------------------|-------|-----------------|-----------------|----|------|------|-----|----|------|-----|------------------|--------------------|------------------------------------|--|-------------|--------------------|--------|--------|----------|
| | | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | | | | | | | | | DCCB |
| A Holders | 0.4 3.2 | BXD4000-040A03RA | ★ | 3 | 40 | 50 | 16 | 18 | 8.5 | 32 | 8.4 | 5.6 | — | 0.3 | 15 | 9° | 29000 | 1 | TS4SL | TKY15W | |
| | | BXD4000-050A04RA | ★ | 4 | 50 | 50 | 22 | 20 | 11 | 41 | 10.4 | 6.3 | 17 | 0.4 | 15 | 6° | 24000 | 2 | TS4SL | TKY15W | XDGT1550 |
| | | BXD4000-063A05RA | ★ | 5 | 63 | 50 | 22 | 20 | 11 | 50 | 10.4 | 6.3 | 17 | 0.7 | 15 | 5° | 21000 | 2 | TS4SL | TKY15W | PDOR-G |
| | | BXD4000-080A05RA | ★ | 5 | 80 | 50 | 27 | 23 | 13 | 60 | 12.4 | 7 | 20 | 1.1 | 15 | 3° | 19000 | 2 | TS4SL | TKY15W | XDGT1550 |
| | | BXD4000-100A06RA | ★ | 6 | 100 | 63 | 32 | 26 | 17 | 70 | 14.4 | 8 | 26 | 2.0 | 15 | 3° | 16000 | 2 | TS4SL | TKY15W | PDOR-GL |
| | | BXD4000-125B07RA | ★ | 7 | 125 | 63 | 40 | 40 | — | 80 | 16.4 | 9 | 56 | 2.8 | 15 | 2° | 14000 | 3 | TS4SL | TKY15W | |
| B Holders | 4.0 5.0 | BXD4000-040A03RB | ★ | 3 | 40 | 50 | 16 | 18 | 8.5 | 32 | 8.4 | 5.6 | — | 0.3 | 15 | 9° | 29000 | 1 | TS4SL | TKY15W | |
| | | BXD4000-050A04RB | ★ | 4 | 50 | 50 | 22 | 20 | 11 | 41 | 10.4 | 6.3 | 17 | 0.4 | 15 | 6° | 24000 | 2 | TS4SL | TKY15W | |
| | | BXD4000-063A05RB | ★ | 5 | 63 | 50 | 22 | 20 | 11 | 50 | 10.4 | 6.3 | 17 | 0.7 | 15 | 5° | 21000 | 2 | TS4SL | TKY15W | XDGT1550 |
| | | BXD4000-080A05RB | ★ | 5 | 80 | 50 | 27 | 23 | 13 | 60 | 12.4 | 7 | 20 | 1.1 | 15 | 3° | 19000 | 2 | TS4SL | TKY15W | PDOR-G |
| | | BXD4000-100A06RB | ★ | 6 | 100 | 63 | 32 | 26 | 17 | 70 | 14.4 | 8 | 26 | 2.0 | 15 | 3° | 16000 | 2 | TS4SL | TKY15W | |
| | | BXD4000-125B07RB | ★ | 7 | 125 | 63 | 40 | 40 | — | 80 | 16.4 | 9 | 56 | 2.8 | 15 | 2° | 14000 | 3 | TS4SL | TKY15W | |

*1 Clamp Torque (lbf-in) : TS4SL=35

*2 RMPX : Max. Ramping Angle

*3 WT : Mass

METRIC Standard

For inch arbors

ARBOR TYPE

| Type | RE | Order Number | Stock | Number of Teeth | Dimensions (mm) [inch] | | | | | | | | *3 WT (kg) | *2 APMX (mm) | *2 RMPX (min ⁻¹) | Max. Spindle Speed (min ⁻¹) | Type (Fig.) | *1 Insert Screw | Wrench | Insert | | |
|-----------|-----------------|-----------------|-------|-----------------|------------------------|----|------|----|-----|------|-------|---------|------------------|--------------------|------------------------------------|--|-------------|--------------------|--------|--------|--------|----------|
| | | | | | DC | LF | CBDP | L8 | DAH | KWW | DMM | DCCB | | | | | | | | | BD | |
| A Holders | 0.4 3.2 | BXD4000R08005CA | ★ | 5 | 80 | 50 | 26 | 6 | 13 | 9.5 | 25.4 | [1.0"] | 20 | 60 | 1.1 | 15 | 3° | 19000 | 2 | TS4SL | TKY15W | XDGT1550 |
| | | BXD4000R10006DA | ★ | 6 | 100 | 63 | 32 | 8 | 17 | 12.7 | 31.75 | [1.25"] | 26 | 70 | 2.0 | 15 | 3° | 16000 | 2 | TS4SL | TKY15W | PDOR-G |
| | | BXD4000R12507EA | ★ | 7 | 125 | 63 | 40 | 10 | — | 15.9 | 38.1 | [1.5"] | 56 | 80 | 2.8 | 15 | 2° | 14000 | 3 | TS4SL | TKY15W | PDOR-GL |
| B Holders | 4.0 5.0 | BXD4000R08005CB | ★ | 5 | 80 | 50 | 26 | 6 | 13 | 9.5 | 25.4 | [1.0"] | 20 | 60 | 1.1 | 15 | 3° | 19000 | 2 | TS4SL | TKY15W | |
| | | BXD4000R10006DB | ★ | 6 | 100 | 63 | 32 | 8 | 17 | 12.7 | 31.75 | [1.25"] | 26 | 70 | 2.0 | 15 | 3° | 16000 | 2 | TS4SL | TKY15W | XDGT1550 |
| | | BXD4000R12507EB | ★ | 7 | 125 | 50 | 40 | 10 | — | 15.9 | 38.1 | [1.5"] | 56 | 80 | 2.8 | 15 | 2° | 14000 | 3 | TS4SL | TKY15W | PDOR-G |

(Note 1) The maximum spindle speeds stated above are based on ISO15641.

(Note 2) When using the tool at high spindle speeds, please pay special attention to the balancing. The whole tool assembly should be balanced according to G6.3 based on ISO1940 quality grades.

*1 Clamp Torque (lbf-in) : TS4SL=35

*2 RMPX : Max. Ramping Angle *3 WT : Mass

*4 Set bolt not included.



Fig.1 Straight Shank

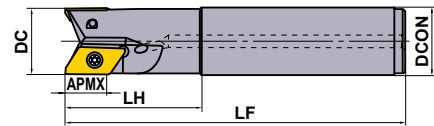
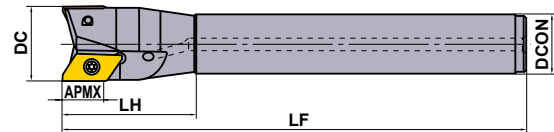


Fig.2 Offset Shank



Right hand tool holder only.

METRIC Standard

SHANK TYPE

| Type | RE | Shank Type | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | *3 RMPX | Max. Spindle Speed (min ⁻¹) | Type (Fig.) | *2 | | Insert |
|-------------------|-----------------|--------------------|--------------------|-------|-----------------|-----------------|-----|------|-------|-----|---------|---|-------------|--------|--------------|----------------------------------|
| | | | | | | R | DC | APMX | LF | LH | | | | DCON | Insert Screw | |
| A Holders | 0.4 3.2 | Standard | BXD4000R201SA20SA | ★ | 1 | 20 | 15 | 110 | 35 | 20 | 28° | 15000 | 1 | TS4SL | TKY15W | XDGT1550 PD-R-G ⁰⁰ |
| | | | BXD4000F252SA25SA | ★ | 2 | 25 | 15 | 125 | 50 | 25 | 20° | 38000 | 1 | TS4SL | TKY15W | |
| | | | BXD4000F282SA25SA | ★ | 2 | 28 | 15 | 125 | 50 | 25 | 17° | 35000 | 2 | TS4SL | TKY15W | |
| | | | BXD4000F322SA32SA | ★ | 2 | 32 | 15 | 150 | 50 | 32 | 13° | 33000 | 1 | TS4SL | TKY15W | |
| | | | BXD4000F352SA32SA | ★ | 2 | 35 | 15 | 150 | 50 | 32 | 11° | 31000 | 2 | TS4SL | TKY15W | |
| | | | BXD4000F403SA32SA | ★ | 3 | 40 | 15 | 170 | 80 | 32 | 9° | 29000 | 2 | TS4SL | TKY15W | |
| | 0.4 3.2 | Long | BXD4000R252SA25LA | ★ | 2 | 25 | 15 | 170 | 80 | 25 | 20° | 38000 | 1 | TS4SL | TKY15W | XDGT1550 PD-R-G ⁰⁰ |
| | | | BXD4000F322SA32LA | ★ | 2 | 32 | 15 | 200 | 80 | 32 | 13° | 33000 | 1 | TS4SL | TKY15W | |
| | | | BXD4000R282SA25ELA | ★ | 2 | 28 | 15 | 220 | 50 | 25 | 17° | 35000 | 2 | TS4SL | TKY15W | |
| | | | BXD4000F352SA32ELA | ★ | 2 | 35 | 15 | 250 | 50 | 32 | 11° | 31000 | 2 | TS4SL | TKY15W | |
| | | | BXD4000F403SA32ELA | ★ | 3 | 40 | 15 | 250 | 65 | 32 | 9° | 29000 | 2 | TS4SL | TKY15W | |
| | | | BXD4000R201SA20SB | ★ | 1 | 20 | 15 | 110 | 35 | 20 | 28° | 15000 | 1 | TS4SL | TKY15W | |
| BXD4000F252SA25SB | ★ | 2 | 25 | 15 | 125 | 50 | 25 | 20° | 38000 | 1 | TS4SL | TKY15W | | | | |
| BXD4000F282SA25SB | ★ | 2 | 28 | 15 | 125 | 50 | 25 | 17° | 35000 | 2 | TS4SL | TKY15W | | | | |
| BXD4000F322SA32SB | ★ | 2 | 32 | 15 | 150 | 50 | 32 | 13° | 33000 | 1 | TS4SL | TKY15W | | | | |
| BXD4000F352SA32SB | ★ | 2 | 35 | 15 | 150 | 50 | 32 | 11° | 31000 | 2 | TS4SL | TKY15W | | | | |
| BXD4000F403SA32SB | ★ | 3 | 40 | 15 | 170 | 80 | 32 | 9° | 29000 | 2 | TS4SL | TKY15W | | | | |
| 4.0 5.0 | Long | BXD4000R252SA25LB | ★ | 2 | 25 | 15 | 170 | 80 | 25 | 20° | 38000 | 1 | TS4SL | TKY15W | | |
| | | BXD4000F322SA32LB | ★ | 2 | 32 | 15 | 200 | 80 | 32 | 13° | 33000 | 1 | TS4SL | TKY15W | | |
| | | BXD4000R282SA25ELB | ★ | 2 | 28 | 15 | 220 | 50 | 25 | 17° | 35000 | 2 | TS4SL | TKY15W | | |
| | | BXD4000F352SA32ELB | ★ | 2 | 35 | 15 | 250 | 50 | 32 | 11° | 31000 | 2 | TS4SL | TKY15W | | |
| | | BXD4000F403SA32ELB | ★ | 3 | 40 | 15 | 250 | 65 | 32 | 9° | 29000 | 2 | TS4SL | TKY15W | | |
| | | BXD4000R201SA20SA | ★ | 1 | 20 | 15 | 110 | 35 | 20 | 28° | 15000 | 1 | TS4SL | TKY15W | | |

*1 You need to balance the tool and holder together so that it conforms to G40 or higher standards.

*2 Clamp Torque (lbf-in) : TS4SL=35

*3 RMPX : Max. Ramping Angle

OPERATIONAL GUIDANCE

Only use the inserts and parts provided by Mitsubishi Materials with this tool. Use of the correct insert clamp screws is especially important to ensure overall tool safety. Do not use damaged or worn clamp screws.

- When tightening the clamp screws, follow the order in Figure 1.
- The maximum allowable spindle speeds are shown in Table 1. Ensure that the cutter operates under the maximum allowable spindle speed. The maximum allowable spindle speeds for safety purposes are determined in accordance with ISO15641 (Milling Cutters for high speed machining–Safety requirements).

(Table 1) Maximum allowable spindle speed

| Cutting Edge Diameter DC(inch) | ø.750" | ø.950" | ø1.100" | ø1.250" | ø1.350" | ø1.500" | ø2.000" | ø2.500" | ø3.000" | ø4.000" | ø5.000" |
|---|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Max. Allowable Spindle Speed (min ⁻¹) | 15000※ | 38000 | 35000 | 33000 | 31000 | 29000 | 24000 | 21000 | 19000 | 16000 | 14000 |

※Φ20mm with one tooth balancing is necessary to adjust sensitively.

●Even when operating under the maximum allowable spindle speed, if the spindle speed is equal to or higher than the values shown in table 2, it is recommended that the balance quality (with the arbor or milling chuck) conforms to G40 or better based on ISO1940. It is also recommended to replace the clamp screws with new ones when changing inserts. Furthermore, ensure to use machines that are provided with safety measures in case of cutter breakage.

* The balance quality of the holder (without inserts and clamp screws) is G40 or better at 10000min⁻¹.

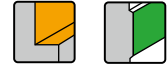
(Table 2) Maximum spindle speed when balancing with the arbor or milling chuck has not been achieved

| Cutting Edge Diameter DC(inch) | ø.750" | ø.950" | ø1.100" | ø1.250" | ø1.350" | ø1.500" | ø2.000" | ø2.500" | ø3.000" | ø4.000" | ø5.000" |
|---|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Max. Spindle Speed (min ⁻¹) | 15000 | 12000 | 10800 | 9500 | 8700 | 7600 | 6000 | 4800 | 3800 | 3000 | 2400 |

- When setting the spindle speed, take into consideration the maximum allowable spindle speed of the arbor or milling chuck.
- Use the specified set bolt when using the arbor type with through coolant.
- The inserts have sharp cutting edges and handling them with bare hands may cause injuries. Always wear safety gloves when handling the indexable inserts.

MILLING

DEEP SHOULDER MILLING



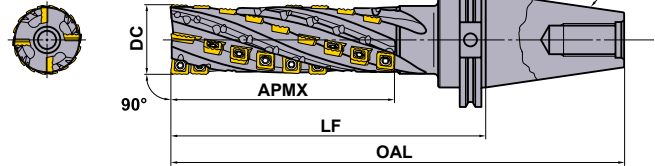
SPX

P M K N S H

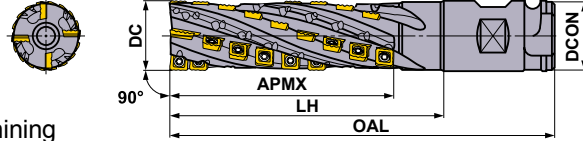


- The wavy cutting edge helps to reduce cutting resistance.
- Suitable for heavy machining due to holder rigidity.

CAT50 shank



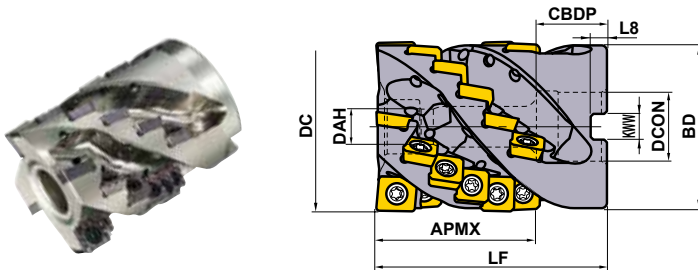
Straight shank (Combination type)



SHANK TYPE

Right hand tool holder only.

| Type | Order Number | Stock | Number of Flute | Number of Teeth | Dimensions (inch) | | | | | | Number of Insert | | |
|------------------------------|------------------|-------|-----------------|-----------------|-------------------|--------|-------|-------|--------|-------|-----------------------|-----------------------|-------------------------|
| | | | | | DC | OAL | DCON | LH | LF | APMX | Bottom Cutting Edge A | Bottom Cutting Edge B | Peripheral Cutting Edge |
| CAT50 Shank | SPX4R3224CAT50NS | ● | 2 | 24 | 2.000 | 11.000 | — | — | 7.000 | 4.300 | JPMX 190412-00 | MPMX 120412-00 | SPMX 120408-00 |
| | SPX4R3234CAT50NM | ● | 2 | 34 | 2.000 | 13.000 | — | — | 9.000 | 6.200 | 2 | 2 | 30 |
| | SPX4R3244CAT50NL | ● | 2 | 44 | 2.000 | 15.000 | — | — | 11.000 | 8.100 | 2 | 2 | 40 |
| Straight Shank (Combination) | SPX4R05016WNES | ● | 2 | 16 | 1.969 | 7.091 | 2.000 | 3.937 | — | 2.835 | 2 | 2 | 12 |
| | SPX4R05024WNS | ● | 2 | 24 | 1.969 | 8.661 | 2.000 | 5.512 | — | 4.331 | 2 | 2 | 20 |
| | SPX4R05034WNM | ● | 2 | 34 | 1.969 | 10.630 | 2.000 | 7.480 | — | 6.181 | 2 | 2 | 30 |
| | SPX4R05044WNL | ● | 2 | 44 | 1.969 | 12.598 | 2.000 | 9.449 | — | 8.071 | 2 | 2 | 40 |



Right hand tool holder only.

| DC | Set Bolt | Geometry |
|---------|------------|----------|
| φ2.500" | HSCUF50028 | |
| φ3.000" | HSCUF62528 | |

SHELL TYPE

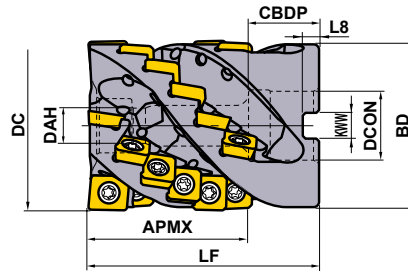
| Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | | | | | | | Number of Insert | | |
|-----------------|-------|-----------------|-------------------|-------|-------|-------|-------|------|-------|------|------|-----------------------|-----------------------|-------------------------|----------------|
| | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | APMX | Bottom Cutting Edge A | Bottom Cutting Edge B | Peripheral Cutting Edge | |
| SPX4UR2524CA22A | ● | 4 | 24 | 2.500 | 3.500 | 1.000 | 1.339 | .539 | 2.375 | .375 | .219 | 2.280 | JPMX 140412-00 | MPMX 120412-00 | SPMX 120408-00 |
| SPX4UR0324DA22A | ● | 4 | 24 | 3.000 | 3.500 | 1.250 | 1.654 | .669 | 2.874 | .500 | .281 | 2.280 | 2 | 2 | 20 |

*1 In case of internal coolant supply, please use a face mill arbor with through coolant channels. Regular center-thru or side-thru arbors can't be used.

*2 The cutter body includes a set bolt for an arbor.

● : Inventory maintained. ★ : Inventory maintained in Japan.

<10 inserts in one case>



Right hand tool holder only.

METRIC Standard

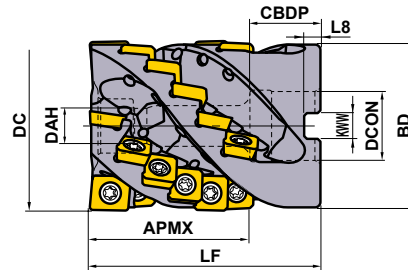
For inch arbors

| DC | Set Bolt | Geometry |
|-------|-----------|----------|
| φ63mm | HSC12070 | |
| φ80mm | HSC 16065 | |

SHELL TYPE

| Order Number | Stock R | Number of Teeth | | Dimensions (mm) [inch] | | | | | | | | | | Number of Insert | | |
|------------------|------------|-----------------|----|------------------------|-------|----------------|----|------|------|------|----|-----|----|-----------------------|-----------------------|-------------------------|
| | | | | | | | | | | | | | | Bottom Cutting Edge A | Bottom Cutting Edge B | Peripheral Cutting Edge |
| | | | | Flutes | Total | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | APMX | JPMX 140412-○○ | MPMX 120412-○○ |
| SPX4R06324CA058A | ★ | 4 | 24 | 63 | 85 | 25.4 [1.000"] | 26 | 13 | 60 | 9.5 | 6 | 58 | 2 | 2 | 20 | |
| SPX4R08024DA058A | ★ | 4 | 24 | 80 | 85 | 31.75 [1.250"] | 38 | 17 | 76.8 | 12.7 | 8 | 58 | 2 | 2 | 20 | |

*1 In case of internal coolant supply, please use a face mill arbor with through coolant channels. Regular center-thru or side-thru arbors can't be used.
*2 Set bolt not included.



Right hand tool holder only.

METRIC Standard

For metric arbors
The bore diameter (DCON) is equivalent to a metric size.

| DC | Set Bolt | Geometry |
|-------|-----------|----------|
| φ63mm | HSC12070 | |
| φ80mm | HSC 16065 | |

SHELL TYPE

| Order Number | Stock R | Number of Teeth | | Dimensions (mm) | | | | | | | | | | Number of Insert | | |
|-------------------|------------|-----------------|----|-----------------|-------|----|----|------|------|------|----|-----|----|-----------------------|-----------------------|-------------------------|
| | | | | | | | | | | | | | | Bottom Cutting Edge A | Bottom Cutting Edge B | Peripheral Cutting Edge |
| | | | | Flutes | Total | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | APMX | JPMX 140412-○○ | MPMX 120412-○○ |
| SPX4-063A24A058RA | ★ | 4 | 24 | 63 | 85 | 27 | 28 | 13 | 60 | 12.4 | 7 | 58 | 2 | 2 | 20 | |
| SPX4-080A24A058RA | ★ | 4 | 24 | 80 | 85 | 32 | 40 | 17 | 76.8 | 14.4 | 8 | 58 | 2 | 2 | 20 | |

*1 In case of internal coolant supply, please use a face mill arbor with through coolant channels. Regular center-thru or side-thru arbors can't be used.
*2 Set bolt not included.

SPARE PARTS

| Holder | *1 Insert Screw | Wrench | Insert | | |
|--------|--------------------|------------|-----------------------|-----------------------|-------------------------|
| | | | Bottom Cutting Edge A | Bottom Cutting Edge B | Peripheral Cutting Edge |
| | | | JPMX190412-WH | MPMX120412-WH | SPMX120408-WH |
| SPX | TS55 | TKY25D | JPMX190412-JM | MPMX120412-JM | SPMX120408-JM |

* Clamp Torque (lbf-in) : TS55=66

INSERTS

| Type | Shape | Order Number | Class | Coated | | Dimensions (inch) | | | | | Geometry |
|----------------------------|-------------------------|-----------------|-------|--------|--------|-------------------|------|------|------|------|----------|
| | | | | VP15TF | VP20RT | L | W1 | IC | S | RE | |
| Wavy Cutting Edge Type | Bottom Cutting Edge A | JPMX190412-WH | M | ● | ● | .750 | .500 | — | .187 | .047 | |
| | | * JPMX140412-WH | M | ● | ● | .563 | .500 | — | .187 | .047 | |
| | Bottom Cutting Edge B | MPMX120412-WH | M | ● | ● | — | — | .500 | .187 | .047 | |
| Peripheral Cutting Edge | Peripheral Cutting Edge | SPMX120408-WH | M | ● | ● | — | — | .500 | .187 | .031 | |
| | | JPMX190412-JM | M | ● | ● | .750 | .500 | — | .187 | .047 | |
| | * JPMX140412-JM | M | ● | ● | .563 | .500 | — | .187 | .047 | | |
| Straight Cutting Edge Type | Bottom Cutting Edge B | MPMX120412-JM | M | ● | ● | — | — | .500 | .187 | .047 | |
| | | SPMX120408-JM | M | ● | ● | — | — | .500 | .187 | .031 | |
| | Peripheral Cutting Edge | SPMX120408-JM | M | ● | ● | — | — | .500 | .187 | .031 | |

* Only for use with a shell type holder.



RECOMMENDED CUTTING CONDITIONS (Shank Type)

CUTTING CONDITIONS FOR SHOULDER MILLING (Number of effective flutes is 2.)

| | Work Material | Hardness | Insert Grade/Breaker | Cutting Speed vc (SFM) | Width of Cut ae (inch) | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) |
|----------|-----------------------------|--------------------------------|----------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|
| P | Mild Steel | ≤180HB | VP15TF WH | 395 (330-460) | <.197 | <4DC | .006-.010 |
| | | | VP15TF JM | 395 (330-460) | <.394 | <2DC | .006-.010 |
| | Carbon Steel Alloy Steel | 180-350HB | VP15TF WH | 260 (230-395) | <.197 | <4DC | .006-.010 |
| | | | VP15TF JM | 260 (230-395) | <.394 | <2DC | .006-.010 |
| | Alloy Tool Steel | ≤300HB | VP15TF WH | 260 (200-330) | <.197 | <4DC | .004-.008 |
| | | | VP15TF JM | 260 (200-330) | <.394 | <2DC | .004-.008 |
| M | Stainless Steel | ≤200HB | VP20RT WH | 260 (230-395) | <.197 | <4DC | .004-.008 |
| | | | VP20RT JM | 260 (230-395) | <.394 | <2DC | .004-.008 |
| K | Cast Iron | Tensile Strength ≤350MPa | VP15TF WH | 330 (260-395) | <.197 | <4DC | .006-.016 |
| | | | VP15TF JM | 330 (260-395) | <.197 | <4DC | .004-.010 |
| | Ductile Cast Iron | Tensile Strength ≤800MPa | VP15TF WH | 260 (200-330) | <.197 | <4DC | .006-.014 |
| | | | VP15TF JM | 260 (200-330) | <.197 | <4DC | .004-.008 |
| S | Titanium Alloy | ≤350HB | VP20RT WH | 130 (115-165) | <.197 | <4DC | .003-.005 |
| | | | VP20RT JM | 130 (115-165) | <.394 | <2DC | .003-.005 |

(Note 1) The above cutting conditions are determined based on high rigidity machine and workpiece, where no vibration occurred. Please adjust processing conditions if the vibration is generated.

(Note 2) For tools with a cutting edge length of 7.87" or more, please reduce the cutting speed and table feed by 10-20% and the width of cut by 50%.

(Note 3) If the cutting angle between the tool and workpiece exceeds 90° when machining corners, Reduce the cutting speed and table feed by 10-20% and ae by 50%. Also if possible, set a radius cutting path for corners.

CUTTING CONDITIONS FOR SLOT MILLING

| | Work Material | Hardness | Insert Grade/Breaker | Cutting Speed vc (SFM) | Width of Cut ae (inch) | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) |
|----------|-----------------------------|--------------------------------|----------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|
| P | Mild Steel | ≤180HB | VP15TF WH | 200 (165-395) | DC | <.394 | .004-.010 |
| | | | VP15TF JM | 200 (165-395) | DC | <.394 | .004-.006 |
| | Carbon Steel Alloy Steel | 180-350HB | VP15TF WH | 200 (165-330) | DC | <.394 | .004-.010 |
| | | | VP15TF JM | 200 (165-330) | DC | <.394 | .004-.006 |
| | Alloy Tool Steel | ≤300HB | VP15TF WH | 165 (130-260) | DC | <.394 | .004-.010 |
| | | | VP15TF JM | 165 (130-260) | DC | <.394 | .004-.006 |
| M | Stainless Steel | ≤200HB | VP20RT WH | 200 (165-395) | DC | <.394 | .004-.010 |
| | | | VP20RT JM | 200 (165-395) | DC | <.394 | .004-.006 |
| K | Cast Iron | Tensile Strength ≤350MPa | VP15TF WH | 165 (130-260) | DC | <1.969 | .006-.010 |
| | | | VP15TF JM | 165 (130-260) | DC | <1.575 | .004-.008 |
| | Ductile Cast Iron | Tensile Strength ≤800MPa | VP15TF WH | 130 (115-260) | DC | <1.575 | .006-.010 |
| | | | VP15TF JM | 130 (115-260) | DC | <1.181 | .004-.008 |
| S | Titanium Alloy | ≤350HB | VP20RT WH | 115 (100-165) | DC | <.394 | .003-.005 |
| | | | VP20RT JM | 115 (100-165) | DC | <.394 | .003-.005 |

(Note 1) The above cutting conditions are determined based on high rigidity machine and workpiece, where no vibration occurred. Please adjust processing conditions if the vibration is generated.



RECOMMENDED CUTTING CONDITIONS (Shell Type)

CUTTING CONDITIONS FOR SHOULDER MILLING (Number of effective flutes is 4.)

| Work Material | Hardness | Insert Grade/Breaker | Cutting Speed vc (SFM) | Width of Cut ae (inch) | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) |
|-----------------------------|-----------------------------|----------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|
| P Mild Steel | ≤180HB | VP15TF JM | 395 (330-460) | <.394 | <0.5DC | .006-.012 |
| | | | 395 (330-460) | <.394 | >0.5DC | .006-.010 |
| | 180-350HB | VP15TF JM | 395 (260-425) | <.394 | <0.5DC | .006-.012 |
| | | | 330 (260-395) | <.394 | >0.5DC | .006-.010 |
| Alloy Tool Steel | ≤300HB | VP15TF JM | 330 (200-360) | <.394 | <0.5DC | .004-.010 |
| | | | 260 (200-330) | <.394 | >0.5DC | .004-.006 |
| M Stainless Steel | ≤200HB | VP20RT JM | 460 (330-490) | <.394 | <0.5DC | .004-.010 |
| | | | 395 (330-460) | <.394 | >0.5DC | .004-.008 |
| K Cast Iron | Tensile Strength ≤350MPa | VP15TF WH | 395 (260-425) | <.394 | <0.5DC | .010-.016 |
| | | | 330 (260-395) | <.394 | >0.5DC | .010-.016 |
| | | VP15TF JM | 395 (260-425) | <.394 | <0.5DC | .006-.012 |
| | | | 330 (260-395) | <.394 | >0.5DC | .006-.010 |
| Ductile Cast Iron | Tensile Strength ≤800MPa | VP15TF WH | 330 (200-360) | <.394 | <0.5DC | .008-.014 |
| | | | 260 (200-360) | <.394 | >0.5DC | .008-.014 |
| | | VP15TF JM | 330 (200-395) | <.394 | <0.5DC | .006-.012 |
| | | | 260 (200-395) | <.394 | >0.5DC | .006-.012 |
| S Titanium Alloy | ≤350HB | VP20RT JM | 150 (115-165) | <.394 | <0.5DC | .003-.004 |
| | | | 150 (115-165) | <.394 | >0.5DC | .003-.004 |

(Note 1) The above cutting conditions are determined based on high rigidity machine and workpiece, where no vibration occurred.
Please adjust processing conditions if the vibration is generated.

CUTTING CONDITIONS FOR SLOT MILLING

| Work Material | Hardness | Insert Grade/Breaker | Cutting Speed vc (SFM) | Width of Cut ae (inch) | Depth of Cut ap (inch) | Feed per Tooth fz (IPT) |
|-----------------------------|-----------------------------|----------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|
| P Mild Steel | ≤180HB | VP15TF JM | 395 (330-460) | DC | <0.25DC | .006-.010 |
| | 180-350HB | VP15TF JM | 330 (260-395) | DC | <0.25DC | .006-.010 |
| | | | 260 (200-330) | DC | <.394 | .004-.008 |
| M Stainless Steel | ≤200HB | VP20RT JM | 330 (260-460) | DC | <.394 | .004-.006 |
| K Cast Iron | Tensile Strength ≤350MPa | VP15TF WH | 260 (200-330) | DC | <0.25DC | .004-.010 |
| | | | 200 (165-330) | DC | <0.6DC | .004-.008 |
| | | VP15TF JM | 260 (200-330) | DC | <0.25DC | .004-.008 |
| | | | 200 (165-330) | DC | <0.6DC | .004-.006 |
| Ductile Cast Iron | Tensile Strength ≤800MPa | VP15TF WH | 260 (200-330) | DC | <0.25DC | .004-.010 |
| | | | 200 (165-330) | DC | <0.5DC | .004-.008 |
| | | VP15TF JM | 260 (200-330) | DC | <0.25DC | .004-.008 |
| | | | 200 (165-330) | DC | <0.5DC | .004-.006 |
| S Titanium Alloy | ≤350HB | VP20RT JM | 130 (115-165) | DC | <0.25DC | .002-.004 |

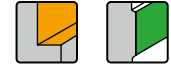
(Note 1) The above cutting conditions are determined based on high rigidity machine and workpiece, where no vibration occurred.
Please adjust processing conditions if the vibration is generated.

Memo

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MILLING

DEEP SHOULDER MILLING <CUTTING FOR TITANIUM ALLOY>

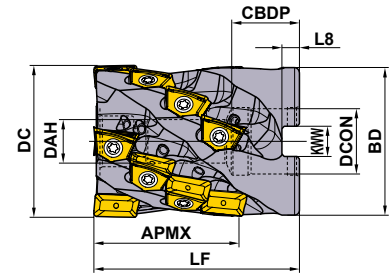


VFX5

P M K N **S** H



- Vertical inserts with high strength cutting edge.
- Screw-on type clamping.
- High efficiency milling of titanium alloys.



Right hand tool holder only.

SHELL TYPE

| Order Number | Stock R | Number of Flutes | Total Inserts | Dimensions (inch) | | | | | | | | | WT (lbs) * |
|----------------|------------|------------------|---------------|-------------------|------|------|-------|------|-------|------|------|------|------------|
| | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | APMX | |
| VFX5UR0203CA10 | ● | 3 | 6 | 2.0 | 2.0 | 1.00 | .95 | .520 | 1.929 | .375 | .219 | 1.0 | .20 |
| VFX5UR0203CA15 | ● | 3 | 9 | 2.0 | 2.5 | 1.00 | 1.00 | .520 | 1.929 | .375 | .219 | 1.5 | .26 |
| VFX5UR0204AA10 | ● | 4 | 8 | 2.0 | 2.0 | .75 | .75 | .395 | 1.929 | .313 | .187 | 1.0 | .24 |
| VFX5UR0204AA15 | ● | 4 | 12 | 2.0 | 2.5 | .75 | .75 | .395 | 1.929 | .313 | .187 | 1.5 | .30 |
| VFX5UR0204CA15 | ● | 4 | 12 | 2.0 | 2.5 | 1.00 | 1.00 | .520 | 1.929 | .375 | .219 | 1.5 | .27 |
| VFX5UR0204AA20 | ● | 4 | 16 | 2.0 | 2.75 | .75 | .75 | .395 | 1.929 | .313 | .187 | 2.0 | .32 |
| VFX5UR0204CA20 | ● | 4 | 16 | 2.0 | 3.0 | 1.00 | 1.00 | .520 | 1.929 | .375 | .219 | 2.0 | .33 |
| VFX5UR2505CA10 | ● | 5 | 10 | 2.5 | 2.5 | 1.00 | 1.25 | .520 | 2.421 | .375 | .219 | 1.0 | .49 |
| VFX5UR2505CA24 | ● | 5 | 25 | 2.5 | 3.5 | 1.00 | 1.25 | .520 | 2.421 | .375 | .219 | 2.4 | .68 |
| VFX5UR0306DA29 | ● | 6 | 36 | 3.0 | 4.25 | 1.25 | 1.375 | .645 | 2.894 | .500 | .281 | 2.9 | 1.21 |

* WT : Mass

SPARE PARTS

| Order Number | *2 | | Seal Washer | Wrench | *3 | | Anti-seize Lubricant | Set Bolt | Number of Insert | |
|----------------|-------------|--------|-------------|--------|----------------|--------|----------------------|------------|--------------------|----------------------------|
| | Clamp Screw | Number | | | Coolant Nozzle | Number | | | End cutting edge | Peripheral *1 cutting edge |
| | | | | | | | | | XNMU1607 00R-00 | XNMU1607 08R-00 |
| VFX5UR0203CA10 | TS352 | 6 | WU500-S1 | TKY10D | HSD04004H08 | 9 | MK1KS | HSCUF50014 | 3 | 3 |
| VFX5UR0203CA15 | TS352 | 9 | WU500-S1 | TKY10D | HSD04004H08 | 12 | MK1KS | HSCUF50018 | 3 | 6 |
| VFX5UR0204AA10 | TS352 | 8 | WU375-S1 | TKY10D | HSD04004H08 | 12 | MK1KS | HSCUF37513 | 4 | 4 |
| VFX5UR0204AA15 | TS352 | 12 | WU375-S1 | TKY10D | HSD04004H08 | 16 | MK1KS | HSCUF37520 | 4 | 8 |
| VFX5UR0204CA15 | TS352 | 12 | WU500-S1 | TKY10D | HSD04004H08 | 16 | MK1KS | HSCUF50018 | 4 | 8 |
| VFX5UR0204AA20 | TS352 | 16 | WU375-S1 | TKY10D | HSD04004H08 | 20 | MK1KS | HSCUF37520 | 4 | 12 |
| VFX5UR0204CA20 | TS352 | 16 | WU500-S1 | TKY10D | HSD04004H08 | 20 | MK1KS | HSCUF50023 | 4 | 12 |
| VFX5UR2505CA10 | TS352 | 10 | WU500-S1 | TKY10D | HSD04004H08 | 15 | MK1KS | HSCUF50018 | 5 | 5 |
| VFX5UR2505CA24 | TS352 | 25 | WU500-S1 | TKY10D | HSD04004H08 | 30 | MK1KS | HSCUF50028 | 5 | 20 |
| VFX5UR0306DA29 | TS352 | 36 | WU625-S1 | TKY10D | HSD04004H08 | 42 | MK1KS | HSCUF62535 | 6 | 30 |

*1. Only corner radius RE.031 can be used.

*2. Clamp Torque (lbf-in) : TS352=22

*3. The .031" nozzels are installed in the standard. Select and use alternate nozzels from below list depending on coolant pressure.

*4. The cutter body includes a set bolt for an arbor.

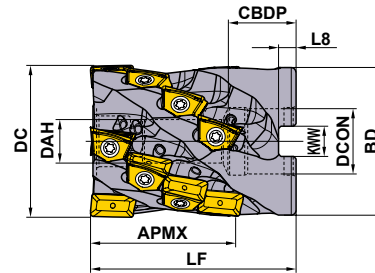
| | ≤140PSI (≤5.3gal/min) | ←Standard→ (140PSI-720PSI) | ≥720PSI (≥7.9gal/min) | ≥1000PSI (≥13.2gal/min) |
|--------------|--------------------------|-------------------------------|--------------------------|----------------------------|
| Nozzle Dia. | ø.024" | ø.031" | ø.047" | ø.063" |
| Order Number | HSD04004H06 | HSD04004H08 | HSD04004H12 | HSD04004H16 |

● Clamp Torque (lbf-in) : HSD0400H00=13

● The part number for a plug screw without a through nozzle is HSS04004.

● Insert with a corner radius of .125" and above, as corner radius increases the LF dimension increases.
Corner radius .125": LF+.028" Corner radius .157": LF+.059"

● : Inventory maintained. ★ : Inventory maintained in Japan.



Right hand tool holder only.

METRIC Standard

For metric arbors

SHELL TYPE

| Order Number | Stock R | Number of Flutes | Total Inserts | Dimensions (mm) | | | | | | | | | WT (kg) * |
|------------------|------------|------------------|---------------|-----------------|-----|------|------|------|------|------|-----|------|-----------|
| | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | APMX | |
| VFX5-040A03A026R | ★ | 3 | 6 | 40 | 50 | 16 | 21 | 8.5 | 38.2 | 8.4 | 5.6 | 26 | 0.3 |
| VFX5-040A03A038R | ★ | 3 | 9 | 40 | 60 | 16 | 21 | 8.5 | 38.2 | 8.4 | 5.6 | 38 | 0.4 |
| VFX5-050X03A026R | ★ | 3 | 6 | 50 | 50 | 27 | 23 | 12.5 | 48.2 | 12.4 | 7.0 | 26 | 0.4 |
| VFX5-050X03A038R | ★ | 3 | 9 | 50 | 60 | 27 | 23 | 12.5 | 48.2 | 12.4 | 7.0 | 38 | 0.5 |
| VFX5-050A04A026R | ★ | 4 | 8 | 50 | 50 | 22 | 21 | 10.5 | 48.2 | 10.4 | 6.3 | 26 | 0.5 |
| VFX5-050A04A038R | ★ | 4 | 12 | 50 | 60 | 22 | 21 | 10.5 | 48.2 | 10.4 | 6.3 | 38 | 0.6 |
| VFX5-050X04A038R | ★ | 4 | 12 | 50 | 60 | 27 | 23 | 12.5 | 48.2 | 12.4 | 7.0 | 38 | 0.5 |
| VFX5-050A04A050R | ★ | 4 | 16 | 50 | 70 | 22 | 21 | 10.5 | 48.2 | 10.4 | 6.3 | 50 | 0.7 |
| VFX5-063A05A026R | ★ | 5 | 10 | 63 | 60 | 27 | 28 | 12.5 | 61 | 12.4 | 7.0 | 26 | 1.0 |
| VFX5-063A05A063R | ★ | 5 | 25 | 63 | 85 | 27 | 28 | 12.5 | 61 | 12.4 | 7.0 | 63 | 1.4 |
| VFX5-080A06A075R | ★ | 6 | 36 | 80 | 100 | 32 | 28 | 16.5 | 77.3 | 14.4 | 8.0 | 75 | 2.8 |

* WT : Mass

SPARE PARTS

| Order Number | *2 | | Seal Washer | Wrench | *3 | | Anti-seize Lubricant | Set Bolt | Number of Insert | |
|------------------|-------------|--------|-------------|--------|----------------|--------|----------------------|----------|--------------------|----------------------------|
| | Clamp Screw | Number | | | Coolant Nozzle | Number | | | End cutting edge | Peripheral *1 cutting edge |
| | | | | | | | | | XNMU1607 ○○R-○○ | XNMU1607 08R-○○ |
| VFX5-040A03A026R | TS352 | 6 | W8-S1 | TKY10D | HSD04004H08 | 9 | MK1KS | HSC08040 | 3 | 3 |
| VFX5-040A03A038R | TS352 | 9 | W8-S1 | TKY10D | HSD04004H08 | 12 | MK1KS | HSC08050 | 3 | 6 |
| VFX5-050X03A026R | TS352 | 6 | W12-S1 | TKY10D | HSD04004H08 | 9 | MK1KS | HSC12035 | 3 | 3 |
| VFX5-050X03A038R | TS352 | 9 | W12-S1 | TKY10D | HSD04004H08 | 12 | MK1KS | HSC12045 | 3 | 6 |
| VFX5-050A04A026R | TS352 | 8 | W10-S1 | TKY10D | HSD04004H08 | 12 | MK1KS | HSC10035 | 4 | 4 |
| VFX5-050A04A038R | TS352 | 12 | W10-S1 | TKY10D | HSD04004H08 | 16 | MK1KS | HSC10045 | 4 | 8 |
| VFX5-050X04A038R | TS352 | 12 | W12-S1 | TKY10D | HSD04004H08 | 16 | MK1KS | HSC12045 | 4 | 8 |
| VFX5-050A04A050R | TS352 | 16 | W10-S1 | TKY10D | HSD04004H08 | 20 | MK1KS | HSC10055 | 4 | 12 |
| VFX5-063A05A026R | TS352 | 10 | W12-S1 | TKY10D | HSD04004H08 | 15 | MK1KS | HSC12045 | 5 | 5 |
| VFX5-063A05A063R | TS352 | 25 | W12-S1 | TKY10D | HSD04004H08 | 30 | MK1KS | HSC12070 | 5 | 20 |
| VFX5-080A06A075R | TS352 | 36 | W16-S1 | TKY10D | HSD04004H08 | 42 | MK1KS | HSC16080 | 6 | 30 |

*1. Only corner radius RE.031 can be used.

*2. Clamp Torque (lbf-in) : TS352=22

*3. The .031" nozzels are installed in the standard. Select and use alternate nozzles from below list depending on coolant pressure.

*4. Set bolt not included.

| | ≤140PSI (≤5.3gal/min) | ←Standard→ (140PSI-720PSI) | ≥720PSI (≥7.9gal/min) | ≥1000PSI (≥13.2gal/min) |
|--------------|--------------------------|-------------------------------|--------------------------|----------------------------|
| Nozzle Dia. | ø.024" | ø.031" | ø.047" | ø.063" |
| Order Number | HSD04004H06 | HSD04004H08 | HSD04004H12 | HSD04004H16 |


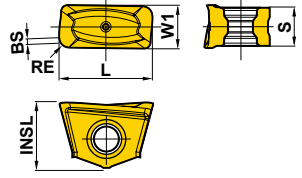

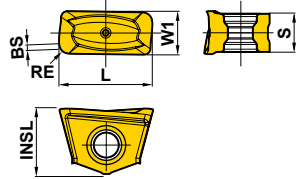

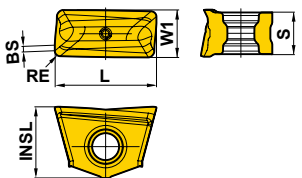
• Clamp Torque (lbf-in) : HSD0400H○○=13

• The part number for a plug screw without a through nozzle is HSS04004.

• Insert with a corner radius of .125" and above, as corner radius increases the LF dimension increases.
Corner radius .125": LF+.028" Corner radius .157": LF+.059"

| | |
|----------------|--------|
| INSERTS | > K092 |
| SPARE PARTS | > M001 |
| TECHNICAL DATA | > N001 |

INSERTS

| Shape | Order Number | Stock | | | Dimensions (inch) | | | | | | Geometry |
|---|------------------|--------|--------|--|-------------------|------|------|------|------|------|---|
| | | Coated | | | L | W1 | INSL | S | BS | RE | |
| | | MP9030 | MP9130 | | | | | | | | |
|  | XNMU160708R-MS | ● | | | .630 | .276 | .437 | .256 | .039 | .031 |  |
| | XNMU160712R-MS | ● | | | .630 | .276 | .437 | .256 | .039 | .047 | |
| | XNMU160716R-MS | ● | | | .630 | .276 | .437 | .256 | .039 | .063 | |
| | XNMU160724R-MS | ● | | | .630 | .276 | .437 | .256 | .039 | .094 | |
| | * XNMU160732R-MS | ● | | | .681 | .276 | .437 | .256 | — | .126 | |
| | * XNMU160740R-MS | ● | | | .744 | .276 | .437 | .256 | — | .157 | |
|  | XNMU160708R-HS | ● | | | .630 | .276 | .437 | .256 | .039 | .031 |  |
| | | | | | | | | | | | |
|  | XNMU160708R-LS | ● | | | .630 | .276 | .437 | .256 | .039 | .031 |  |
| | | | | | | | | | | | |

* Note for insert with a corner radius of .125" and above, as corner radius increases the LF dimension increases.
 Corner radius .125": LF+.028" Corner radius .157": LF+.059"



RECOMMENDED CUTTING CONDITIONS

VFX5

| Work Material | Cutting Edge Diameter (inch) | Number of Flutes | Recommended Insert | Cutting Speed | Revolution | Depth of Cut | Cutting Width | Feed per Tooth | Table Feed | Chip Removal Rate | Estimated cutting power | Expected Torque | Tool life ratio |
|--------------------------|------------------------------|------------------|--------------------|---------------|------------------------|--------------|---------------|----------------|-----------------------------|----------------------------|-------------------------|-----------------|-----------------|
| | | | | vc (SFM) | n (min ⁻¹) | ap (inch) | ae (inch) | fz (inch/t) | vf (inch ³ /min) | Q (inch ³ /min) | PC (HP) | (lbf-ft) | (%) |
| Titanium Alloy (Ti6Al4V) | φ2.0 | 3 | LS | 130 | 248 | 1.496 | 2.000 | .004 | 2.932 | 9 | 8.6 | 182 | 40 |
| | | 4 | MS | 165 | 315 | 1.969 | 1.200 | .004 | 4.963 | 12 | 10.7 | 178 | 60 |
| | | 4 | MS | 195 | 372 | 1.969 | .800 | .004 | 5.865 | 9 | 8.0 | 113 | 80 |
| | | 4 | HS | 195 | 372 | 1.969 | .400 | .005 | 7.038 | 6 | 5.2 | 74 | 100 |
| | φ2.5 | 5 | LS | 130 | 199 | 2.362 | 2.500 | .004 | 3.910 | 23 | 22.3 | 590 | 40 |
| | | 5 | MS | 165 | 252 | 2.362 | 1.500 | .004 | 4.963 | 18 | 15.9 | 332 | 60 |
| | | 5 | MS | 195 | 298 | 2.362 | 1.000 | .004 | 5.865 | 14 | 12.0 | 212 | 80 |
| | | 5 | HS | 195 | 298 | 2.362 | .500 | .005 | 7.038 | 8 | 7.8 | 137 | 100 |
| | φ3.0 | 6 | LS | 130 | 166 | 2.953 | 3.000 | .004 | 3.910 | 35 | 33.2 | 1055 | 40 |
| | | 6 | MS | 165 | 210 | 2.953 | 1.800 | .004 | 4.963 | 26 | 23.8 | 594 | 60 |
| | | 6 | MS | 195 | 248 | 2.953 | 1.200 | .004 | 5.865 | 21 | 17.9 | 379 | 80 |
| | | 6 | HS | 195 | 248 | 2.953 | .600 | .005 | 7.038 | 12 | 11.6 | 246 | 100 |
| Titanium Alloy (Ti-5553) | φ2.0 | 3 | LS | 80 | 153 | 2.953 | 2.000 | .003 | 1.444 | 9 | 8.5 | 292 | 30 |
| | | 4 | MS | 80 | 153 | 2.953 | 1.200 | .003 | 1.925 | 7 | 6.5 | 224 | 50 |
| | | 4 | MS | 100 | 191 | 2.953 | .800 | .004 | 3.008 | 7 | 6.5 | 178 | 70 |
| | | 4 | HS | 100 | 191 | 2.953 | .400 | .004 | 3.008 | 4 | 3.6 | 98 | 80 |
| | φ2.5 | 5 | LS | 80 | 122 | 2.953 | 2.500 | .003 | 1.925 | 14 | 14.1 | 608 | 30 |
| | | 5 | MS | 80 | 122 | 2.953 | 1.500 | .003 | 1.925 | 9 | 8.1 | 350 | 50 |
| | | 5 | MS | 100 | 153 | 2.953 | 1.000 | .004 | 3.008 | 9 | 8.1 | 278 | 70 |
| | | 5 | HS | 100 | 153 | 2.953 | .500 | .004 | 3.008 | 4 | 4.5 | 154 | 80 |
| | φ3.0 | 6 | LS | 80 | 102 | 3.543 | 3.000 | .003 | 1.925 | 20 | 20.1 | 1035 | 30 |
| | | 6 | MS | 80 | 102 | 3.543 | 1.800 | .003 | 1.925 | 12 | 11.5 | 595 | 50 |
| | | 6 | MS | 100 | 127 | 3.543 | 1.200 | .004 | 3.008 | 13 | 11.5 | 474 | 70 |
| | | 6 | HS | 100 | 127 | 3.543 | .600 | .004 | 3.008 | 6 | 6.3 | 262 | 80 |

VFX5 (METRIC Standard)

| Work Material | Cutting Edge Diameter (inch) | Number of Flutes | Recommended Insert | Cutting Speed | Revolution | Depth of Cut | Cutting Width | Feed per Tooth | Table Feed | Chip Removal Rate | Estimated cutting power | Expected Torque | Tool life ratio |
|--------------------------|------------------------------|------------------|--------------------|---------------|------------------------|--------------|---------------|----------------|-----------------------------|----------------------------|-------------------------|-----------------|-----------------|
| | | | | vc (SFM) | n (min ⁻¹) | ap (inch) | ae (inch) | fz (inch/t) | vf (inch ³ /min) | Q (inch ³ /min) | PC (HP) | (lbf-ft) | (%) |
| Titanium Alloy (Ti6Al4V) | φ40 | 3 | LS | 130 | 315 | 1.496 | 1.575 | .004 | 3.724 | 9 | 8.6 | 143 | 40 |
| | | 3 | MS | 165 | 400 | 1.496 | .945 | .004 | 4.727 | 7 | 6.1 | 80 | 60 |
| | | 3 | MS | 195 | 473 | 1.496 | .630 | .004 | 5.586 | 5 | 4.6 | 51 | 80 |
| | | 3 | HS | 195 | 473 | 1.496 | .315 | .005 | 6.704 | 3 | 3.0 | 33 | 100 |
| | φ50 | 3 | LS | 130 | 252 | 1.496 | 1.969 | .004 | 2.979 | 9 | 8.6 | 179 | 40 |
| | | 4 | MS | 165 | 320 | 1.969 | 1.181 | .004 | 5.042 | 12 | 10.7 | 175 | 60 |
| | | 4 | MS | 195 | 378 | 1.969 | .787 | .004 | 5.959 | 9 | 8.0 | 112 | 80 |
| | | 4 | HS | 195 | 378 | 1.969 | .394 | .005 | 7.151 | 6 | 5.2 | 72 | 100 |
| | φ63 | 5 | LS | 130 | 200 | 2.362 | 2.480 | .004 | 3.941 | 23 | 22.3 | 585 | 40 |
| | | 5 | MS | 165 | 254 | 2.362 | 1.488 | .004 | 5.002 | 18 | 15.9 | 329 | 60 |
| | | 5 | MS | 195 | 300 | 2.362 | .992 | .004 | 5.911 | 14 | 12.0 | 210 | 80 |
| | | 5 | HS | 195 | 300 | 2.362 | .496 | .005 | 7.094 | 8 | 7.8 | 136 | 100 |
| | φ80 | 6 | LS | 130 | 158 | 2.953 | 3.150 | .004 | 3.724 | 35 | 33.2 | 1107 | 40 |
| | | 6 | MS | 165 | 200 | 2.953 | 1.890 | .004 | 4.727 | 26 | 23.8 | 624 | 60 |
| | | 6 | MS | 195 | 236 | 2.953 | 1.260 | .004 | 5.586 | 21 | 17.9 | 398 | 80 |
| | | 6 | HS | 195 | 236 | 2.953 | .630 | .005 | 6.704 | 12 | 11.6 | 258 | 100 |
| Titanium Alloy (Ti-5553) | φ40 | 3 | LS | 80 | 194 | 2.362 | 1.575 | .003 | 1.833 | 7 | 6.8 | 185 | 30 |
| | | 3 | MS | 80 | 194 | 2.362 | .945 | .003 | 1.833 | 4 | 3.9 | 106 | 50 |
| | | 3 | MS | 100 | 243 | 2.362 | .630 | .004 | 2.865 | 4 | 3.9 | 85 | 70 |
| | | 3 | HS | 100 | 243 | 2.362 | .315 | .004 | 2.865 | 2 | 2.2 | 47 | 80 |
| | φ50 | 3 | LS | 80 | 155 | 2.953 | 1.969 | .003 | 1.467 | 9 | 8.5 | 287 | 30 |
| | | 4 | MS | 80 | 155 | 2.953 | 1.181 | .003 | 1.956 | 7 | 6.5 | 220 | 50 |
| | | 4 | MS | 100 | 194 | 2.953 | .787 | .004 | 3.056 | 7 | 6.5 | 175 | 70 |
| | | 4 | HS | 100 | 194 | 2.953 | .394 | .004 | 3.056 | 4 | 3.6 | 97 | 80 |
| | φ63 | 5 | LS | 80 | 123 | 2.953 | 2.480 | .003 | 1.940 | 14 | 14.1 | 603 | 30 |
| | | 5 | MS | 80 | 123 | 2.953 | 1.488 | .003 | 1.940 | 9 | 8.1 | 347 | 50 |
| | | 5 | MS | 100 | 154 | 2.953 | .992 | .004 | 3.032 | 9 | 8.1 | 276 | 70 |
| | | 5 | HS | 100 | 154 | 2.953 | .496 | .004 | 3.032 | 4 | 4.5 | 153 | 80 |
| | φ80 | 6 | LS | 80 | 97 | 3.543 | 3.150 | .003 | 1.833 | 20 | 20.1 | 1086 | 30 |
| | | 6 | MS | 80 | 97 | 3.543 | 1.890 | .003 | 1.833 | 12 | 11.5 | 625 | 50 |
| | | 6 | MS | 100 | 121 | 3.543 | 1.260 | .004 | 2.865 | 13 | 11.5 | 498 | 70 |
| | | 6 | HS | 100 | 121 | 3.543 | .630 | .004 | 2.865 | 6 | 6.3 | 275 | 80 |

- *1 Please note that machining performance varies depending to the conditions such as machine rigidity, work clamping rigidity, coolant supply system, pressure and flow volume etc.
- *2 Internal coolant is recommended. Please use an FMH type arbor for through coolant. Using external coolant in combination with through coolant is even more effective.
- *3 The reference of tool life which we mentioned on the tables, "tool life ratio 100(%)" is when "ae = 20(%)" of tool diameter".
If "ae" will be bigger than 20(%)" of tool diameter, tool life will decrease in "tool life ratio" on the tables.
- *4 The maximum depth of cut (ap) varies according to the machine rigidity and power.

MILLING

MILLING

DEEP SHOULDER MILLING <CUTTING FOR TITANIUM ALLOY>

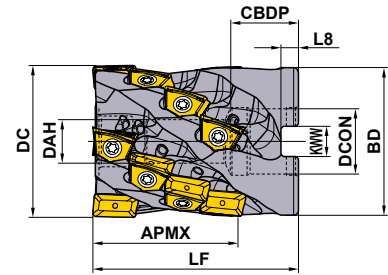


VFX6

- P M K N **S** H



- Vertical inserts with high strength cutting edge.
- Screw-on type clamping.
- High efficiency milling of titanium alloys.



Right hand tool holder only.

SHELL TYPE

| Order Number | Stock | Number of Flutes | Total | Dimensions (inch) | | | | | | | | | WT (lbs) |
|----------------|-------|------------------|-------|-------------------|------|------|-------|------|-------|------|------|------|----------|
| | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | APMX | |
| VFX6UR2504CA12 | ● | 4 | 8 | 2.5 | 2.5 | 1.00 | 1.25 | .520 | 2.421 | .375 | .219 | 1.2 | .21 |
| VFX6UR2504CA23 | ● | 4 | 16 | 2.5 | 3.5 | 1.00 | 1.25 | .520 | 2.421 | .375 | .219 | 2.3 | .29 |
| VFX6UR0305DA12 | ● | 5 | 10 | 3.0 | 2.5 | 1.25 | 1.375 | .645 | 2.894 | .500 | .281 | 1.2 | .30 |
| VFX6UR0305DA29 | ● | 5 | 25 | 3.0 | 4.25 | 1.25 | 1.375 | .645 | 2.894 | .500 | .281 | 2.9 | .52 |
| VFX6UR0406EA12 | ● | 6 | 12 | 4.0 | 3.0 | 1.50 | 1.50 | .770 | 3.866 | .625 | .375 | 1.2 | .69 |
| VFX6UR0406EA35 | ● | 6 | 36 | 4.0 | 5.0 | 1.50 | 1.50 | .770 | 3.866 | .625 | .375 | 3.5 | 1.16 |

* WT : Mass

SPARE PARTS

| Order Number | *2 | | Seal Washer | Wrench | *3 | | Anti-seize Lubricant | Set Bolt | Number of Insert | |
|----------------|-------------|--------|-------------|--------|----------------|--------|----------------------|------------|--------------------|----------------------------|
| | Clamp Screw | Number | | | Coolant Nozzle | Number | | | End cutting edge | Peripheral *1 cutting edge |
| | | | | | | | | | XNMU1909 ○○R-○○ | XNMU1909 12R-○○ |
| VFX6UR2504CA12 | TS450 | 8 | WU500-S1 | TKY20T | HSD04004H08 | 12 | MK1KS | HSCUF50018 | 4 | 4 |
| VFX6UR2504CA23 | TS450 | 16 | WU500-S1 | TKY20T | HSD04004H08 | 20 | MK1KS | HSCUF50028 | 4 | 12 |
| VFX6UR0305DA12 | TS450 | 10 | WU625-S1 | TKY20T | HSD04004H08 | 15 | MK1KS | HSCUF62518 | 5 | 5 |
| VFX6UR0305DA29 | TS450 | 25 | WU625-S1 | TKY20T | HSD04004H08 | 30 | MK1KS | HSCUF62535 | 5 | 20 |
| VFX6UR0406EA12 | TS450 | 12 | WU750-S1 | TKY20T | HSD04004H08 | 18 | MK1KS | HSCUF75018 | 6 | 6 |
| VFX6UR0406EA35 | TS450 | 36 | WU750-S1 | TKY20T | HSD04004H08 | 42 | MK1KS | HSCUF75040 | 6 | 30 |

*1. Only corner radius RE.047" can be used.

*2. Clamp Torque (lbf-in) : TS450=44

*3. The .031" nozzels are installed in the standard. Select and use alternate nozzles from below list depending on coolant pressure.

*4. The cutter body includes a set bolt for an arbor.

| | ≤140PSI (≤5.3gal/min) | ←Standard→ (140PSI-720PSI) | ≥720PSI (≥7.9gal/min) | ≥1000PSI (≥13.2gal/min) |
|--------------|--------------------------|-------------------------------|--------------------------|----------------------------|
| Nozzle Dia. | ø.024" | ø.031" | ø.047" | ø.063" |
| Order Number | HSD04004H06 | HSD04004H08 | HSD04004H12 | HSD04004H16 |

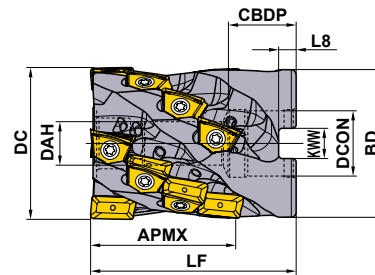
● Clamp Torque (lbf-in) : HSD0400H○○=13

● The part number for a plug screw without a through nozzle is HSS04004.

● Insert with a corner radius of .125" and above, as corner radius increases the LF dimension increases.

Corner radius .125": LF+.028" Corner radius .157": LF+.059" Corner radius .197": LF+.059"

● : Inventory maintained. ★ : Inventory maintained in Japan.



Right hand tool holder only.

METRIC Standard

For metric arbors

SHELL TYPE

| Order Number | Stock R | Number of Flutes | Total | Dimensions (mm) | | | | | | | | | WT (kg) |
|------------------|------------|------------------|-------|-----------------|-----|------|------|------|------|------|----|------|------------|
| | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | APMX | |
| VFX6-063A04A031R | ★ | 4 | 8 | 63 | 60 | 27 | 28 | 12.5 | 61 | 12.4 | 7 | 31 | 0.9 |
| VFX6-063A04A060R | ★ | 4 | 16 | 63 | 85 | 27 | 28 | 12.5 | 61 | 12.4 | 7 | 60 | 1.3 |
| VFX6-080A05A031R | ★ | 5 | 10 | 80 | 60 | 32 | 28 | 16.5 | 77.3 | 14.4 | 8 | 31 | 1.5 |
| VFX6-080A05A075R | ★ | 5 | 25 | 80 | 100 | 32 | 28 | 16.5 | 77.3 | 14.4 | 8 | 75 | 2.6 |
| VFX6-100A06A031R | ★ | 6 | 12 | 100 | 65 | 40 | 30 | 20.5 | 96.6 | 16.4 | 9 | 31 | 2.7 |
| VFX6-100A06A090R | ★ | 6 | 36 | 100 | 115 | 40 | 30 | 20.5 | 96.6 | 16.4 | 9 | 90 | 4.8 |

* WT : Mass

SPARE PARTS

| Order Number | *2 | | Seal Washer | Wrench | *3 | | Anti-seize Lubricant | Set Bolt | Number of Insert | |
|------------------|-------------|--------|-------------|--------|----------------|--------|----------------------|----------|--------------------|----------------------------|
| | Clamp Screw | Number | | | Coolant Nozzle | Number | | | End cutting edge | Peripheral *1 cutting edge |
| | | | | | | | | | XNMU1607 ○○R-○○ | XNMU1607 08R-○○ |
| VFX6-063A04A031R | TS450 | 8 | W12-S1 | TKY20T | HSD04004H08 | 12 | MK1KS | HSC12045 | 4 | 4 |
| VFX6-063A04A060R | TS450 | 16 | W12-S1 | TKY20T | HSD04004H08 | 20 | MK1KS | HSC12070 | 4 | 12 |
| VFX6-080A05A031R | TS450 | 10 | W16-S1 | TKY20T | HSD04004H08 | 15 | MK1KS | HSC16040 | 5 | 5 |
| VFX6-080A05A075R | TS450 | 25 | W16-S1 | TKY20T | HSD04004H08 | 30 | MK1KS | HSC16080 | 5 | 20 |
| VFX6-100A06A031R | TS450 | 12 | W20-S1 | TKY20T | HSD04004H08 | 18 | MK1KS | HSC20040 | 6 | 6 |
| VFX6-100A06A090R | TS450 | 36 | W20-S1 | TKY20T | HSD04004H08 | 42 | MK1KS | HSC20090 | 6 | 30 |

- *1. Only corner radius RE.047" can be used.
- *2. Clamp Torque (lbf-in) : TS450=44
- *3. The .031" nozzels are installed in the standard. Select and use alternate nozzels from below list depending on coolant pressure.
- *4. Set bolt not included.


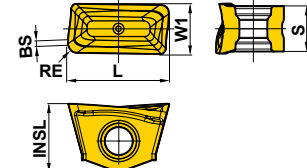

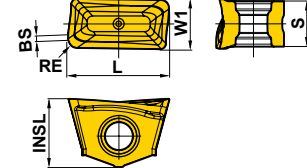

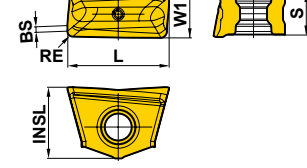
| | ≤140PSI (≤5.3gal/min) | ←Standard→ (140PSI-720PSI) | ≥720PSI (≥7.9gal/min) | ≥1000PSI (≥13.2gal/min) |
|--------------|--------------------------|-------------------------------|--------------------------|----------------------------|
| Nozzle Dia. | ø.024" | ø.031" | ø.047" | ø.063" |
| Order Number | HSD04004H06 | HSD04004H08 | HSD04004H12 | HSD04004H16 |

- Clamp Torque (lbf-in) : HSD0400H○○=13
- The part number for a plug screw without a through nozzle is HSS04004.
- Insert with a corner radius of .125" and above, as corner radius increases the LF dimension increases.
Corner radius .125": LF+.028" Corner radius .157": LF+.059" Corner radius .197": LF+.059"

| | |
|----------------|--------|
| INSERTS | > K096 |
| SPARE PARTS | > M001 |
| TECHNICAL DATA | > N001 |

MILLING

INSERTS

| Shape | Order Number | Stock | | | Dimensions (inch) | | | | | | Geometry |
|---|------------------|--------|--------|--|-------------------|------|------|------|------|------|--|
| | | Coated | | | L | W1 | INSL | S | BS | RE | |
| | | MP9030 | MP9130 | | | | | | | | |
|  | XNMU190912R-MS | ● | | | .752 | .374 | .500 | .335 | .039 | .047 |  |
| | XNMU190916R-MS | ● | | | .752 | .374 | .500 | .335 | .039 | .063 | |
| | XNMU190924R-MS | ● | | | .752 | .374 | .500 | .335 | .039 | .094 | |
| | * XNMU190932R-MS | ● | | | .795 | .374 | .500 | .335 | — | .126 | |
| | * XNMU190940R-MS | ● | | | .858 | .374 | .500 | .335 | — | .157 | |
| | * XNMU190950R-MS | ● | | | .858 | .374 | .500 | .335 | — | .197 | |
|  | XNMU190912R-HS | ● | | | .752 | .374 | .500 | .335 | .039 | .047 |  |
| | | | | | | | | | | | |
|  | XNMU190912R-LS | ● | | | .752 | .374 | .500 | .335 | .039 | .047 |  |
| | | | | | | | | | | | |

* Note for insert with a corner radius of .125" and above, as corner radius increases the LF dimension increases.
 Corner radius .125": LF+.028" Corner radius .157": LF+.059" Corner radius .197": LF+.059"



RECOMMENDED CUTTING CONDITIONS

VFX6

| Work Material | Cutting Edge Diameter (inch) | Number of Flutes | Recommended Insert | Cutting Speed vc (SFM) | Revolution n (min ⁻¹) | Depth of Cut ap (inch) | Cutting Width ae (inch) | Feed per Tooth fz (inch/t) | Table Feed vf (inch/min) | Chip Removal Rate Q (inch ³ /min) | Estimated cutting power PC (HP) | Expected Torque (lbf-ft) | Tool life ratio (%) |
|----------------------------|------------------------------|------------------|--------------------|------------------------|-----------------------------------|------------------------|-------------------------|----------------------------|--------------------------|--|---------------------------------|--------------------------|---------------------|
| S Titanium Alloy (Ti6Al4V) | φ2.5 | 4 | LS | 130 | 199 | 2.362 | 2.500 | .004 | 3.128 | 18 | 17.8 | 472 | 40 |
| | | 4 | MS | 165 | 252 | 2.362 | 1.500 | .004 | 3.970 | 14 | 12.7 | 266 | 60 |
| | | 4 | MS | 195 | 298 | 2.362 | 1.000 | .004 | 4.692 | 11 | 9.6 | 170 | 80 |
| | | 4 | HS | 195 | 298 | 2.362 | .500 | .005 | 5.630 | 7 | 6.2 | 110 | 100 |
| | φ3.0 | 5 | LS | 130 | 166 | 2.953 | 3.000 | .004 | 3.258 | 29 | 27.7 | 879 | 40 |
| | | 5 | MS | 165 | 210 | 2.953 | 1.800 | .004 | 4.136 | 22 | 19.8 | 495 | 60 |
| | | 5 | MS | 195 | 248 | 2.953 | 1.200 | .004 | 4.887 | 17 | 14.9 | 316 | 80 |
| | | 5 | HS | 195 | 248 | 2.953 | .600 | .005 | 5.865 | 10 | 9.7 | 205 | 100 |
| | φ4.0 | 6 | LS | 130 | 124 | 3.543 | 4.000 | .004 | 2.932 | 42 | 39.3 | 1663 | 40 |
| | | 6 | MS | 165 | 158 | 3.543 | 2.400 | .004 | 3.722 | 32 | 28.1 | 937 | 60 |
| | | 6 | MS | 195 | 186 | 3.543 | 1.600 | .004 | 4.399 | 25 | 21.2 | 599 | 80 |
| | | 6 | HS | 195 | 186 | 3.543 | .800 | .005 | 5.278 | 15 | 13.8 | 388 | 100 |
| S Titanium Alloy (Ti-5553) | φ2.5 | 4 | LS | 80 | 122 | 2.362 | 2.500 | .003 | 1.540 | 9 | 9.1 | 392 | 30 |
| | | 4 | MS | 80 | 122 | 2.362 | 1.500 | .003 | 1.540 | 5 | 5.2 | 225 | 50 |
| | | 4 | MS | 100 | 153 | 2.362 | 1.000 | .004 | 2.406 | 6 | 5.2 | 179 | 70 |
| | | 4 | HS | 100 | 153 | 2.362 | .500 | .004 | 2.406 | 3 | 2.9 | 99 | 80 |
| | φ3.0 | 5 | LS | 80 | 102 | 2.953 | 3.000 | .003 | 1.604 | 14 | 14.1 | 730 | 30 |
| | | 5 | MS | 80 | 102 | 2.953 | 1.800 | .003 | 1.604 | 9 | 8.1 | 419 | 50 |
| | | 5 | MS | 100 | 127 | 2.953 | 1.200 | .004 | 2.506 | 9 | 8.1 | 334 | 70 |
| | | 5 | HS | 100 | 127 | 2.953 | .600 | .004 | 2.506 | 4 | 4.5 | 185 | 80 |
| | φ4.0 | 6 | LS | 80 | 76 | 3.543 | 4.000 | .003 | 1.444 | 20 | 20.1 | 1380 | 30 |
| | | 6 | MS | 80 | 76 | 3.543 | 2.400 | .003 | 1.444 | 12 | 11.5 | 794 | 50 |
| | | 6 | MS | 100 | 95 | 3.543 | 1.600 | .004 | 2.256 | 13 | 11.5 | 632 | 70 |
| | | 6 | HS | 100 | 95 | 3.543 | .800 | .004 | 2.256 | 6 | 6.3 | 349 | 80 |

VFX6 (METRIC Standard)

| Work Material | Cutting Edge Diameter (mm) | Number of Flutes | Recommended Insert | Cutting Speed vc (SFM) | Revolution n (min ⁻¹) | Depth of Cut ap (inch) | Cutting Width ae (inch) | Feed per Tooth fz (inch/t) | Table Feed vf (inch/min) | Chip Removal Rate Q (inch ³ /min) | Estimated cutting power PC (HP) | Expected Torque (lbf-ft) | Tool life ratio (%) |
|----------------------------|----------------------------|------------------|--------------------|------------------------|-----------------------------------|------------------------|-------------------------|----------------------------|--------------------------|--|---------------------------------|--------------------------|---------------------|
| S Titanium Alloy (Ti6Al4V) | φ63 | 4 | LS | 130 | 200 | 2.362 | 2.480 | .004 | 3.153 | 18 | 17.8 | 468 | 40 |
| | | 4 | MS | 165 | 254 | 2.362 | 1.488 | .004 | 4.002 | 14 | 12.7 | 263 | 60 |
| | | 4 | MS | 195 | 300 | 2.362 | .992 | .004 | 4.729 | 11 | 9.6 | 168 | 80 |
| | | 4 | HS | 195 | 300 | 2.362 | .496 | .005 | 5.675 | 7 | 6.2 | 109 | 100 |
| | φ80 | 5 | LS | 130 | 158 | 2.953 | 3.150 | .004 | 3.104 | 29 | 27.7 | 923 | 40 |
| | | 5 | MS | 165 | 200 | 2.953 | 1.890 | .004 | 3.939 | 22 | 19.8 | 520 | 60 |
| | | 5 | MS | 195 | 236 | 2.953 | 1.260 | .004 | 4.655 | 17 | 14.9 | 332 | 80 |
| | | 5 | HS | 195 | 236 | 2.953 | .630 | .005 | 5.586 | 10 | 9.7 | 215 | 100 |
| | φ100 | 6 | LS | 130 | 126 | 3.543 | 3.937 | .004 | 2.979 | 42 | 39.3 | 1637 | 40 |
| | | 6 | MS | 165 | 160 | 3.543 | 2.362 | .004 | 3.782 | 32 | 28.1 | 923 | 60 |
| | | 6 | MS | 195 | 189 | 3.543 | 1.575 | .004 | 4.469 | 25 | 21.2 | 590 | 80 |
| | | 6 | HS | 195 | 189 | 3.543 | .787 | .005 | 5.363 | 15 | 13.8 | 382 | 100 |
| S Titanium Alloy (Ti-5553) | φ63 | 4 | LS | 80 | 123 | 2.362 | 2.480 | .003 | 1.552 | 9 | 9.1 | 389 | 30 |
| | | 4 | MS | 80 | 123 | 2.362 | 1.488 | .003 | 1.552 | 5 | 5.2 | 223 | 50 |
| | | 4 | MS | 100 | 154 | 2.362 | .992 | .004 | 2.425 | 6 | 5.2 | 178 | 70 |
| | | 4 | HS | 100 | 154 | 2.362 | .496 | .004 | 2.425 | 3 | 2.9 | 98 | 80 |
| | φ80 | 5 | LS | 80 | 97 | 2.953 | 3.150 | .003 | 1.528 | 14 | 14.1 | 766 | 30 |
| | | 5 | MS | 80 | 97 | 2.953 | 1.890 | .003 | 1.528 | 9 | 8.1 | 440 | 50 |
| | | 5 | MS | 100 | 121 | 2.953 | 1.260 | .004 | 2.387 | 9 | 8.1 | 350 | 70 |
| | | 5 | HS | 100 | 121 | 2.953 | .630 | .004 | 2.387 | 4 | 4.5 | 194 | 80 |
| | φ100 | 6 | LS | 80 | 78 | 3.543 | 3.937 | .003 | 1.467 | 20 | 20.1 | 1358 | 30 |
| | | 6 | MS | 80 | 78 | 3.543 | 2.362 | .003 | 1.467 | 12 | 11.5 | 781 | 50 |
| | | 6 | MS | 100 | 97 | 3.543 | 1.575 | .004 | 2.292 | 13 | 11.5 | 622 | 70 |
| | | 6 | HS | 100 | 97 | 3.543 | .787 | .004 | 2.292 | 6 | 6.3 | 344 | 80 |

- *1 Please note that machining performance varies depending to the conditions such as machine rigidity, work clamping rigidity, coolant supply system, pressure and flow volume etc.
- *2 Internal coolant is recommended. Please use an FMH type arbor for through coolant. Using external coolant in combination with through coolant is even more effective.
- *3 The reference of tool life which we mentioned on the tables, "tool life ratio 100(%)" is when "ae = 20(%)" of tool diameter". If "ae" will be bigger than 20(%)" of tool diameter, tool life will decrease in "tool life ratio" on the tables.
- *4 The maximum depth of cut (ap) varies according to the machine rigidity and power.

MILLING

DEEP SHOULDER MILLING

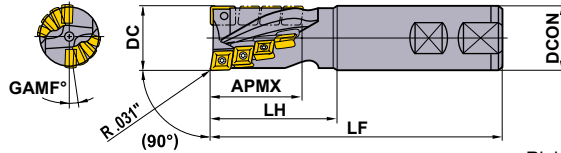


LER



- Different helical flute angles prevents chattering.
- Suitable for heavy cutting due to holder rigidity.

Fig.1



DESIGN FEATURES OF LER TYPE END MILL

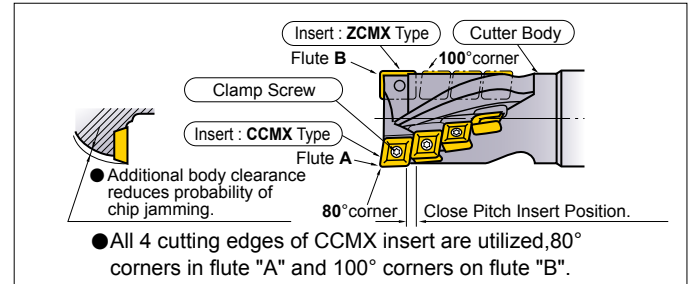
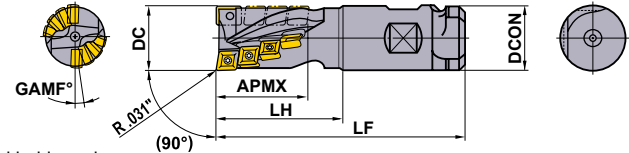


Fig.2 Combination Shank



Right hand tool holder only.

| Order Number | Stock | Number of Flute | Number of Teeth | Dimensions (inch) | | | | | Type (Fig.) | Insert Screw | Wrench | Insert | | |
|--------------|-------|-----------------|-----------------|-------------------|-------|-------|-------|-------|-------------|--------------|-----------|---------|--------------|-------|
| | | | | DC | LF | DCON | LH | APMX | | | | GAMF° | Insert | Teeth |
| LER1606W20 | ● | 2 | 6 | 1.000 | 4.281 | 1.250 | 2.000 | 1.063 | 8° | 1 | CS300890T | ①TKY08F | CCMX083508EN | 5 |
| LER2008W20 | ● | 2 | 8 | 1.250 | 4.781 | 1.250 | 2.500 | 1.700 | 8° 35' | 1 | CS350990T | ①TKY10F | CCMX09T308EN | 7 |
| LER2012W20 | ● | 2 | 12 | 1.250 | 5.531 | 1.250 | 3.250 | 2.480 | 8° 35' | 1 | CS350990T | ②TKY10D | ZCMX09T308ER | 1 |
| LER2415W24 | ● | 3 | 15 | 1.500 | 5.687 | 1.500 | 3.000 | 2.100 | 5° 27' | 1 | CS350990T | ①TKY10F | CCMX09T308EN | 11 |
| LER3218W32 | ● | 3 | 18 | 2.000 | 6.750 | 2.000 | 3.500 | 2.500 | 5° 52' | 2 | CS350990T | ②TKY10D | ZCMX09T308ER | 1 |

* Clamp Torque (lbf-in) : CS300890T=8.9, CS350990T=22

INSERTS

| Work Material | P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | Coated | | | Dimensions (inch) | | | | | Geometry |
|---------------------------------|---------|-------------------|-------------|---------------------|--------|--------|-------|-------------------|------|------|---|----|----------|
| | | | | | F7030 | VP15TF | UP20M | L | W1 | IC | S | RE | |
| Peripheral and Bottom Inserts | | CCMX083508ENA | M | ★ | ● | — | — | .313 | .138 | .031 | | | |
| | | CCMX09T308ENA | M | ● | ● | — | — | .375 | .156 | .031 | | | |
| Strong Cutting Edge Type | | * CCMX09T308ENB | M | ★ | — | — | .375 | .156 | .031 | | | | |
| | | | | | | | | | | | | | |
| Bottom Insert (One Pocket Only) | | ZCMX083508ERA | M | ★ | — | .409 | .313 | — | .137 | .031 | | | |
| | | ZCMX09T308ERA | M | ● | ● | .472 | .375 | — | .156 | .031 | | | |
| Strong Cutting Edge Type | | * ZCMX09T308ERB | M | ★ | ● | .472 | .375 | — | .156 | .031 | | | |
| | | | | | | | | | | | | | |

* These inserts are for slotting only when chipping occurs with standard inserts. Feed must be reduced 25%.

● : Inventory maintained. ★ : Inventory maintained in Japan.
<10 inserts in one case>

RECOMMENDED CUTTING CONDITIONS

SLOT MILLING

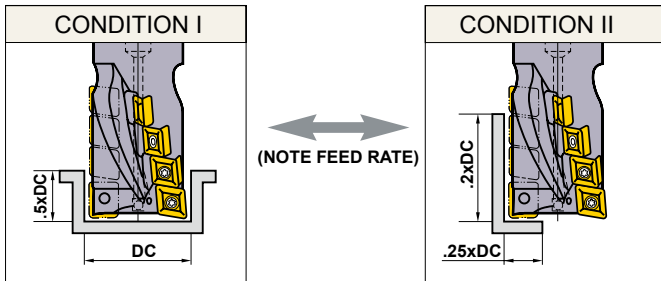
| Work Material | Cutting Condition Vs. Tool Diameter | | | | | Insert grade |
|--------------------------------|-------------------------------------|------|--------|-------|-------|---------------|
| | Spindle Speed Feed | φ1" | φ1.25" | φ1.5" | φ2" | |
| P Mild Steel (<160HB) | min ⁻¹ | 2250 | 1800 | 1500 | 1100 | VP15TF |
| | inch/min | 7-12 | 6-10 | 7-12 | 6-10 | |
| Carbon Steel (20HRC) | min ⁻¹ | 2250 | 1800 | 1500 | 1100 | |
| | inch/min | 8-14 | 7-12 | 8-14 | 7-12 | |
| Alloy Steel (30HRC) | min ⁻¹ | 1750 | 1800 | 1200 | 900 | |
| | inch/min | 6-10 | 5-8 | 6-10 | 5-8 | |
| M Stainless Steel (304) | min ⁻¹ | 1900 | 1500 | 1250 | 950 | VP15TF |
| | inch/min | 3-5 | 2.5-4 | 3-5 | 2.5-4 | |

Warning : These feed rates are for ENA and ERA inserts.
 Reduce feed 25% for ENB and ERB inserts.
 Do not use ENB or ERB inserts in stainless steel, mild steel, titanium alloys and nickel base alloys.
 Insert breakage will occur.

SHOULDER MILLING

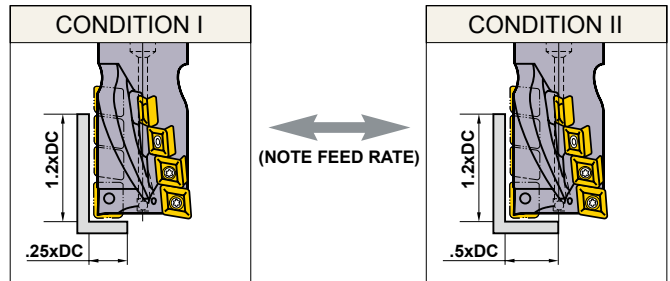
| Work Material | Cutting Condition Vs. Tool Diameter | | | | | Insert grade |
|--------------------------------|-------------------------------------|-------|--------|-------|-------|---------------|
| | Spindle Speed Feed | φ1" | φ1.25" | φ1.5" | φ2" | |
| P Mild Steel (<160HB) | min ⁻¹ | 2250 | 1800 | 1500 | 1100 | VP15TF |
| | inch/min | 11-18 | 9-15 | 11-18 | 9-15 | |
| Carbon Steel (20HRC) | min ⁻¹ | 2250 | 1800 | 1500 | 1100 | |
| | inch/min | 12-21 | 11-18 | 12-21 | 11-18 | |
| Alloy Steel (30HRC) | min ⁻¹ | 1750 | 1400 | 1200 | 900 | |
| | inch/min | 9-15 | 8-12 | 9-15 | 8-12 | |
| M Stainless Steel (304) | min ⁻¹ | 1900 | 1500 | 1250 | 950 | VP15TF |
| | inch/min | 7-12 | 6-10 | 7-12 | 6-10 | |

SLOT MILLING FORCED AIR IS REQUIRED AT CUTTING EDGE



- Titanium alloy requires coolant (Cutting fluid).
- Use higher recommended feed rate under CONDITION I.
- Use lower recommended feed rate under CONDITION II.

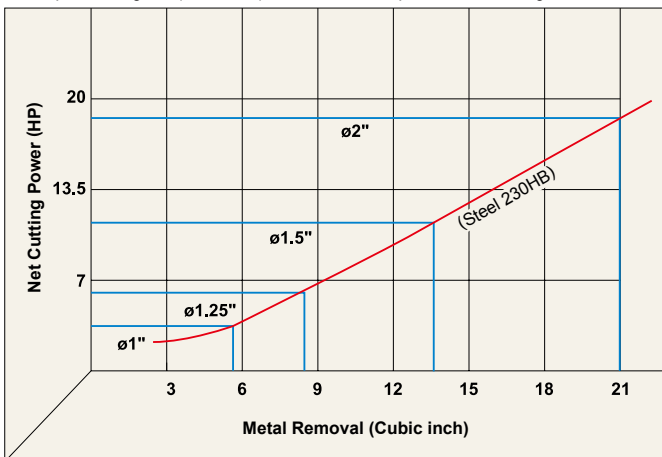
SHOULDER MILLING GENERALLY DOWN (CLIMB) CUT IS RECOMMENDED



- Titanium alloy requires coolant (Cutting fluid).
- Use higher recommended feed rate under CONDITION I.
- Use lower recommended feed rate under CONDITION II.

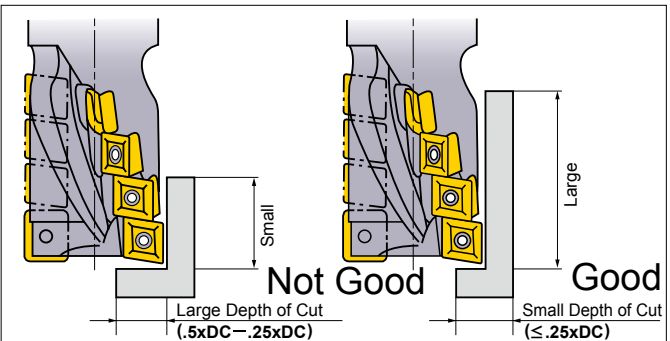
NET CUTTING POWER

- Please use the chart below for reference, please select the conditions that suits the machines power.
- Chip Discharge Q (inch³/min)=Table Feed×Depth of Cut×Cutting Width÷1000



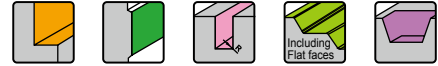
FOR USE OF LONG CUTTING LENGTH TYPE

- Since the overhang from the milling chuck is long, a large width of cut will cause chattering and tool breakage.
- Keep the width of cut small and the depth of cut in axial direction large. (See the following illustration.)
- For slot milling, keep the table feed at not more than half the value listed in the above table. (Use the standard cutting length type as much as possible.)



MILLING

MULTI FUNCTIONAL MILLING

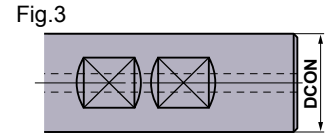
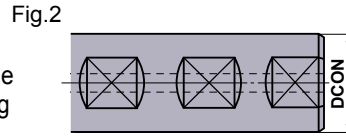
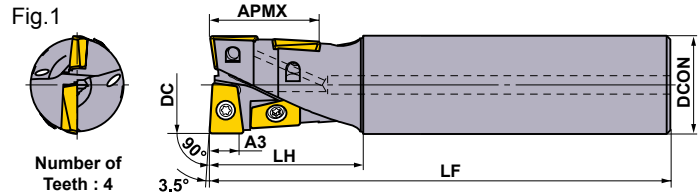


AQX

P M K N S H



- Air / coolant through.
- The center bottom cutting edge enables drilling and end milling without prepared hole.

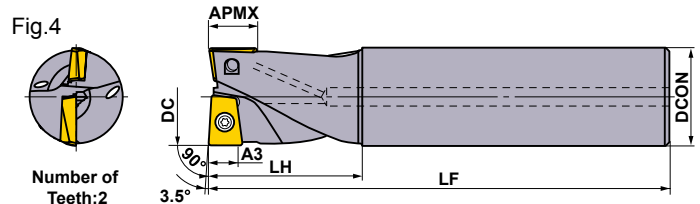


STANDARD EDGE TYPE

Right hand tool holder only.

| Type | Order Number | Stock | Dimensions (inch) | | | | | Type (Fig.) | Insert Screw | Wrench | Insert | |
|---------------|---------------|-------|-------------------|-------|-------|-------|-------|-------------|--------------|---------|---------------|------------------|
| | | | R | DC | LF | DCON | LH | | | | | A3 ^{*1} |
| Standard | AQXUR124WA12S | ● | .750 | 4.125 | .750 | 1.375 | .219 | .750 | 3 | TS25 | ①TKY08F | QOG/MT0934R-○ |
| | AQXUR164WA16S | ● | 1.000 | 4.875 | 1.000 | 1.625 | .281 | 1.000 | 2 | TS32 | ②TKY08D | QOG/MT1443R-○ |
| | AQXUR204WA20S | ● | 1.250 | 5.250 | 1.250 | 2.000 | .375 | 1.250 | 2 | TS407 | ②TKY15D | QOG/MT1651R-○ |
| | AQXUR244WA20S | ● | 1.500 | 5.625 | 1.250 | 2.375 | .438 | 1.500 | 2 | TS5 | ②TKY25D | QOG/MT1959R-○ |
| Long | AQXUR124SA12L | ● | .750 | 7.250 | .750 | 2.375 | .219 | .750 | 1 | TS25 | ①TKY08F | QOG/MT0934R-○ |
| | AQXUR134SA12L | ● | .797 | 7.250 | .750 | 1.375 | .219 | .750 | 1 | TS25 | ①TKY08F | QOG/MT0934R-○ |
| | AQXUR164SA16L | ● | 1.000 | 8.500 | 1.000 | 3.000 | .281 | 1.000 | 1 | TS32 | ②TKY08D | QOG/MT1443R-○ |
| | AQXUR174SA16L | ● | 1.047 | 8.500 | 1.000 | 1.625 | .281 | 1.000 | 1 | TS32 | ②TKY08D | QOG/MT1443R-○ |
| | AQXUR204SA20L | ● | 1.250 | 9.000 | 1.250 | 3.500 | .375 | 1.250 | 1 | TS407 | ②TKY15D | QOG/MT1651R-○ |
| | AQXUR214SA20L | ● | 1.297 | 9.000 | 1.250 | 2.000 | .375 | 1.250 | 1 | TS407 | ②TKY15D | QOG/MT1651R-○ |
| AQXUR244SA20L | ● | 1.500 | 9.500 | 1.250 | 2.375 | .438 | 1.500 | 1 | TS5 | ②TKY25D | QOG/MT1959R-○ | |

*3 Clamp Torque (lbf-in) : TS25=8.9, TS32=8.9, TS407=31, TS5=66



SHORT EDGE TYPE

Right hand tool holder only.

| Type | Order Number | Stock | Dimensions (inch) | | | | | Type (Fig.) | Insert Screw | Wrench | Insert | |
|---------------|---------------|-------|-------------------|-------|-------|-------|------|-------------|--------------|---------|---------------|------------------|
| | | | R | DC | LF | DCON | LH | | | | | A3 ^{*1} |
| Standard | AQXUR102WA10S | ● | .625 | 3.688 | .625 | 1.125 | .188 | .281 | 3 | TS2A | ①TKY06F | QOG/MT0830R-○ |
| | AQXUR122WA12S | ● | .750 | 4.125 | .750 | 1.375 | .219 | .344 | 3 | TS25 | ①TKY08F | QOG/MT0934R-○ |
| | AQXUR162WA16S | ● | 1.000 | 4.875 | 1.000 | 1.625 | .281 | .469 | 2 | TS32 | ②TKY08D | QOG/MT1443R-○ |
| | AQXUR202WA20S | ● | 1.250 | 5.250 | 1.250 | 2.000 | .375 | .563 | 2 | TS407 | ②TKY15D | QOG/MT1651R-○ |
| | AQXUR242WA20S | ● | 1.500 | 5.625 | 1.250 | 2.375 | .438 | .688 | 2 | TS55 | ②TKY25D | QOG/MT1959R-○ |
| Long | AQXUR102SA10L | ● | .625 | 6.875 | .625 | 2.000 | .188 | .281 | 4 | TS2A | ①TKY06F | QOG/MT0830R-○ |
| | AQXUR112SA10L | ● | .672 | 6.875 | .625 | 1.125 | .188 | .281 | 4 | TS2A | ①TKY06F | QOG/MT0830R-○ |
| | AQXUR122SA12L | ● | .750 | 7.250 | .750 | 2.375 | .219 | .344 | 4 | TS25 | ①TKY08F | QOG/MT0934R-○ |
| | AQXUR132SA12L | ● | .797 | 7.250 | .750 | 1.375 | .219 | .344 | 4 | TS25 | ①TKY08F | QOG/MT0934R-○ |
| | AQXUR162SA16L | ● | 1.000 | 8.500 | 1.000 | 3.000 | .281 | .469 | 4 | TS32 | ②TKY08D | QOG/MT1443R-○ |
| | AQXUR172SA16L | ● | 1.047 | 8.500 | 1.000 | 1.625 | .281 | .469 | 4 | TS32 | ②TKY08D | QOG/MT1443R-○ |
| | AQXUR202SA20L | ● | 1.250 | 9.000 | 1.250 | 3.500 | .375 | .563 | 4 | TS407 | ②TKY15D | QOG/MT1651R-○ |
| | AQXUR212SA20L | ● | 1.297 | 9.000 | 1.250 | 2.000 | .375 | .563 | 4 | TS407 | ②TKY15D | QOG/MT1651R-○ |
| AQXUR242SA20L | ● | 1.500 | 9.500 | 1.250 | 2.375 | .438 | .688 | 4 | TS55 | ②TKY25D | QOG/MT1959R-○ | |

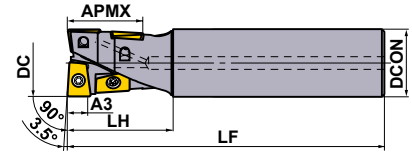
(Note) When exceeding A3 depth of cut, reduce feed rates by 50%(Do not exceed APMX depth of cut). Reference page K105.

*1 Dimension A3 represents the depth of cut when the cutting edge consists of 2 inserts.

*2 APMX: Maximum depth of cut.

*3 Clamp Torque (lbf-in) : TS2A=5.3, TS25=8.9, TS33=8.9, TS407=31, TS5=66

● : Inventory maintained. ★ : Inventory maintained in Japan.



METRIC Standard

STANDARD EDGE TYPE

Right hand tool holder only.

| Type | Order Number | Stock Coolant Thru ^{*4} | Dimensions (mm) | | | | | | Insert Screw ^{*3} | Wrench ^{① ② ③} | Insert | |
|----------|--------------|-------------------------------------|-----------------|-----|------|----|------------------|--------------------|----------------------------|-------------------------|-------------------|-------------------|
| | | | DC | LF | DCON | LH | A3 ^{*1} | APMX ^{*2} | | | | |
| Standard | AQXR164SA16S | ★ Y | 16 | 120 | 16 | 30 | 4.5 | 17.6 | TS2A | ①TKY06F | QOG/MT0830R-G1/M2 | |
| | AQXR164SN16S | ★ N | 16 | 120 | 16 | 30 | 4.5 | 17.6 | TS2A | ①TKY06F | | |
| | AQXR174SA16S | ★ Y | 17 | 120 | 16 | 30 | 4.5 | 17.6 | TS2A | ①TKY06F | | |
| | AQXR174SN16S | ★ N | 17 | 120 | 16 | 30 | 4.5 | 17.6 | TS2A | ①TKY06F | | |
| | Standard | AQXR204SA20S | ★ Y | 20 | 130 | 20 | 35 | 6 | 22 | TS25 | ①TKY08F | QOG/MT1035R-G1/M2 |
| | | AQXR204SN20S | ★ N | 20 | 130 | 20 | 35 | 6 | 22 | TS25 | ①TKY08F | |
| | | AQXR214SA20S | ★ Y | 21 | 130 | 20 | 35 | 6 | 22 | TS25 | ①TKY08F | |
| | | AQXR214SN20S | ★ N | 21 | 130 | 20 | 35 | 6 | 22 | TS25 | ①TKY08F | |
| | Standard | AQXR254SA25S | ★ Y | 25 | 140 | 25 | 40 | 7.5 | 27.5 | TS33 | ①TKY08D | QOG/MT1342R-G1/M2 |
| | | AQXR254SN25S | ★ N | 25 | 140 | 25 | 40 | 7.5 | 27.5 | TS33 | ②TKY08D | |
| | | AQXR264SA25S | ★ Y | 26 | 140 | 25 | 40 | 7.5 | 27.5 | TS33 | ②TKY08D | |
| | | AQXR264SN25S | ★ N | 26 | 140 | 25 | 40 | 7.5 | 27.5 | TS33 | ②TKY08D | |
| | Standard | AQXR324SA32S | ★ Y | 32 | 150 | 32 | 50 | 9.5 | 35.2 | TS407 | ②TKY15D | QOG/MT1651R-G1/M2 |
| | | AQXR324SN32S | ★ N | 32 | 150 | 32 | 50 | 9.5 | 35.2 | TS407 | ②TKY15D | |
| | | AQXR334SA32S | ★ Y | 33 | 150 | 32 | 50 | 9.5 | 35.2 | TS407 | ②TKY15D | |
| | | AQXR334SN32S | ★ N | 33 | 150 | 32 | 50 | 9.5 | 35.2 | TS407 | ②TKY15D | |
| | Standard | AQXR354SA32S | ★ Y | 35 | 150 | 32 | 50 | 11 | 40 | TS407 | ②TKY15D | QOG/MT1856R-G1/M2 |
| | | AQXR354SN32S | ★ N | 35 | 150 | 32 | 50 | 11 | 40 | TS407 | ②TKY15D | |
| | Standard | AQXR404SA32S | ★ Y | 40 | 160 | 32 | 60 | 12 | 44 | TS55 | ②TKY25D | QOG/MT2062R-G1/M2 |
| | | AQXR404SN32S | ★ N | 40 | 160 | 32 | 60 | 12 | 44 | TS55 | ②TKY25D | |
| Standard | AQXR504SA42S | ★ Y | 50 | 170 | 42 | 70 | 15 | 55 | TS6S | ③TKY30T | QOG/MT2576R-G1/M2 | |
| | AQXR504SN42S | ★ N | 50 | 170 | 42 | 70 | 15 | 55 | TS6S | ③TKY30T | | |
| Long | AQXR164SA16L | ★ Y | 16 | 175 | 16 | 50 | 4.5 | 17.6 | TS2A | ①TKY06F | QOG/MT0830R-G1/M2 | |
| | AQXR164SN16L | ★ N | 16 | 175 | 16 | 50 | 4.5 | 17.6 | TS2A | ①TKY06F | | |
| | AQXR174SA16L | ★ Y | 17 | 175 | 16 | 30 | 4.5 | 17.6 | TS2A | ①TKY06F | | |
| | AQXR174SN16L | ★ N | 17 | 175 | 16 | 30 | 4.5 | 17.6 | TS2A | ①TKY06F | | |
| | Long | AQXR204SA20L | ★ Y | 20 | 185 | 20 | 60 | 6 | 22 | TS25 | ①TKY08F | QOG/MT1035R-G1/M2 |
| | | AQXR204SN20L | ★ N | 20 | 185 | 20 | 60 | 6 | 22 | TS25 | ①TKY08F | |
| | | AQXR214SA20L | ★ Y | 21 | 185 | 20 | 35 | 6 | 22 | TS25 | ①TKY08F | |
| | | AQXR214SN20L | ★ N | 21 | 185 | 20 | 35 | 6 | 22 | TS25 | ①TKY08F | |
| | Long | AQXR254SA25L | ★ Y | 25 | 220 | 25 | 75 | 7.5 | 27.5 | TS33 | ②TKY08D | QOG/MT1342R-G1/M2 |
| | | AQXR254SN25L | ★ N | 25 | 220 | 25 | 75 | 7.5 | 27.5 | TS33 | ②TKY08D | |
| | | AQXR264SA25L | ★ Y | 26 | 220 | 25 | 40 | 7.5 | 27.5 | TS33 | ②TKY08D | |
| | | AQXR264SN25L | ★ N | 26 | 220 | 25 | 40 | 7.5 | 27.5 | TS33 | ②TKY08D | |
| | Long | AQXR324SA32L | ★ Y | 32 | 230 | 32 | 90 | 9.5 | 35.2 | TS407 | ②TKY15D | QOG/MT1651R-G1/M2 |
| | | AQXR324SN32L | ★ N | 32 | 230 | 32 | 90 | 9.5 | 35.2 | TS407 | ②TKY15D | |
| | | AQXR334SA32L | ★ Y | 33 | 230 | 32 | 50 | 9.5 | 35.2 | TS407 | ②TKY15D | |
| | | AQXR334SN32L | ★ N | 33 | 230 | 32 | 50 | 9.5 | 35.2 | TS407 | ②TKY15D | |
| | Long | AQXR354SA32L | ★ Y | 35 | 230 | 32 | 50 | 11 | 40 | TS407 | ②TKY15D | QOG/MT1856R-G1/M2 |
| | | AQXR354SN32L | ★ N | 35 | 230 | 32 | 50 | 11 | 40 | TS407 | ②TKY15D | |
| | Long | AQXR404SA32L | ★ Y | 40 | 240 | 32 | 60 | 12 | 44 | TS55 | ②TKY25D | QOG/MT2062R-G1/M2 |
| | | AQXR404SN32L | ★ N | 40 | 240 | 32 | 60 | 12 | 44 | TS55 | ②TKY25D | |
| Long | AQXR504SA42L | ★ Y | 50 | 250 | 42 | 70 | 15 | 55 | TS6S | ③TKY30T | QOG/MT2576R-G1/M2 | |
| | AQXR504SN42L | ★ N | 50 | 250 | 42 | 70 | 15 | 55 | TS6S | ③TKY30T | | |

*1 Dimension A3 represents the depth of cut when the cutting edge consists of 2 inserts.

*2 APMX: Maximum depth of cut.

*3 Clamp Torque (lbf-in) : TS2A=5.3, TS25=8.9, TS33=8.9, TS407=31, TS55=66, TS6S=89

*4 Y=Yes, N=No

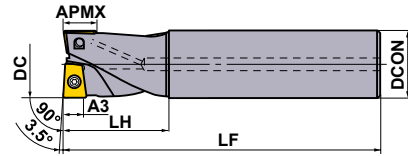
| | |
|----------------|--------|
| INSERTS | > K104 |
| SPARE PARTS | > M001 |
| TECHNICAL DATA | > N001 |

MILLING

MILLING



Number of Teeth : 2



METRIC Standard

SHORT EDGE TYPE

Right hand tool holder only.

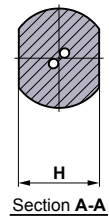
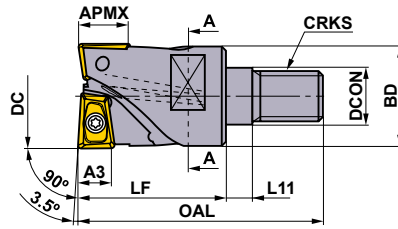
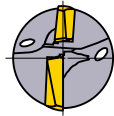
| Type | Order Number | Stock R | Coolant Thru *4 | Dimensions (mm) | | | | | Insert Screw | Wrench | Insert | |
|--------------|--------------|------------|--------------------|-----------------|-----|------|----|-------|--------------|---------|--------------|--------------|
| | | | | DC | LF | DCON | LH | A3 *1 | | | | APMX *2 |
| Standard | AQXR162SA16S | ★ | Y | 16 | 120 | 16 | 30 | 4.5 | 7.4 | TS2A | ①TKY06F | QO○T0830R-○○ |
| | AQXR162SN16S | ★ | N | 16 | 120 | 16 | 30 | 4.5 | 7.4 | TS2A | ①TKY06F | |
| | AQXR172SA16S | ★ | Y | 17 | 120 | 16 | 30 | 4.5 | 7.4 | TS2A | ①TKY06F | |
| | AQXR172SN16S | ★ | N | 17 | 120 | 16 | 30 | 4.5 | 7.4 | TS2A | ①TKY06F | |
| | AQXR202SA20S | ★ | Y | 20 | 130 | 20 | 35 | 6 | 9.2 | TS25 | ①TKY08F | QO○T1035R-○○ |
| | AQXR202SN20S | ★ | N | 20 | 130 | 20 | 35 | 6 | 9.2 | TS25 | ①TKY08F | |
| | AQXR212SA20S | ★ | Y | 21 | 130 | 20 | 35 | 6 | 9.2 | TS25 | ①TKY08F | |
| | AQXR212SN20S | ★ | N | 21 | 130 | 20 | 35 | 6 | 9.2 | TS25 | ①TKY08F | |
| | AQXR252SA25S | ★ | Y | 25 | 140 | 25 | 40 | 7.5 | 11.5 | TS33 | ②TKY08D | QO○T1342R-○○ |
| | AQXR252SN25S | ★ | N | 25 | 140 | 25 | 40 | 7.5 | 11.5 | TS33 | ②TKY08D | |
| | AQXR262SA25S | ★ | Y | 26 | 140 | 25 | 40 | 7.5 | 11.5 | TS33 | ②TKY08D | |
| | AQXR262SN25S | ★ | N | 26 | 140 | 25 | 40 | 7.5 | 11.5 | TS33 | ②TKY08D | |
| | AQXR322SA32S | ★ | Y | 32 | 150 | 32 | 50 | 9.5 | 14.5 | TS407 | ②TKY15D | QO○T1651R-○○ |
| | AQXR322SN32S | ★ | N | 32 | 150 | 32 | 50 | 9.5 | 14.5 | TS407 | ②TKY15D | |
| | AQXR332SA32S | ★ | Y | 33 | 150 | 32 | 50 | 9.5 | 14.5 | TS407 | ②TKY15D | |
| | AQXR332SN32S | ★ | N | 33 | 150 | 32 | 50 | 9.5 | 14.5 | TS407 | ②TKY15D | |
| | AQXR352SA32S | ★ | Y | 35 | 150 | 32 | 50 | 11 | 16 | TS407 | ②TKY15D | QO○T1856R-○○ |
| | AQXR352SN32S | ★ | N | 35 | 150 | 32 | 50 | 11 | 16 | TS407 | ②TKY15D | |
| AQXR402SA32S | ★ | Y | 40 | 160 | 32 | 60 | 12 | 18 | TS55 | ②TKY25D | QO○T2062R-○○ | |
| AQXR402SN32S | ★ | N | 40 | 160 | 32 | 60 | 12 | 18 | TS55 | ②TKY25D | | |
| AQXR502SA42S | ★ | Y | 50 | 170 | 42 | 70 | 15 | 23 | TS6S | ③TKY30T | QO○T2576R-○○ | |
| AQXR502SN42S | ★ | N | 50 | 170 | 42 | 70 | 15 | 23 | TS6S | ③TKY30T | | |
| Long | AQXR162SA16L | ★ | Y | 16 | 175 | 16 | 50 | 4.5 | 7.4 | TS2A | ①TKY06F | QO○T0830R-○○ |
| | AQXR162SN16L | ★ | N | 16 | 175 | 16 | 50 | 4.5 | 7.4 | TS2A | ①TKY06F | |
| | AQXR172SA16L | ★ | Y | 17 | 175 | 16 | 30 | 4.5 | 7.4 | TS2A | ①TKY06F | |
| | AQXR172SN16L | ★ | N | 17 | 175 | 16 | 30 | 4.5 | 7.4 | TS2A | ①TKY06F | |
| | AQXR202SA20L | ★ | Y | 20 | 185 | 20 | 60 | 6 | 9.2 | TS25 | ①TKY08F | QO○T1035R-○○ |
| | AQXR202SN20L | ★ | N | 20 | 185 | 20 | 60 | 6 | 9.2 | TS25 | ①TKY08F | |
| | AQXR212SA20L | ★ | Y | 21 | 185 | 20 | 35 | 6 | 9.2 | TS25 | ①TKY08F | |
| | AQXR212SN20L | ★ | N | 21 | 185 | 20 | 35 | 6 | 9.2 | TS25 | ①TKY08F | |
| | AQXR252SA25L | ★ | Y | 25 | 220 | 25 | 75 | 7.5 | 11.5 | TS33 | ②TKY08D | QO○T1342R-○○ |
| | AQXR252SN25L | ★ | N | 25 | 220 | 25 | 75 | 7.5 | 11.5 | TS33 | ②TKY08D | |
| | AQXR262SA25L | ★ | Y | 26 | 220 | 25 | 40 | 7.5 | 11.5 | TS33 | ②TKY08D | |
| | AQXR262SN25L | ★ | N | 26 | 220 | 25 | 40 | 7.5 | 11.5 | TS33 | ②TKY08D | |
| | AQXR322SA32L | ★ | Y | 32 | 230 | 32 | 90 | 9.5 | 14.5 | TS407 | ②TKY15D | QO○T1651R-○○ |
| | AQXR322SN32L | ★ | N | 32 | 230 | 32 | 90 | 9.5 | 14.5 | TS407 | ②TKY15D | |
| | AQXR332SA32L | ★ | Y | 33 | 230 | 32 | 50 | 9.5 | 14.5 | TS407 | ②TKY15D | |
| | AQXR332SN32L | ★ | N | 33 | 230 | 32 | 50 | 9.5 | 14.5 | TS407 | ②TKY15D | |
| | AQXR352SA32L | ★ | Y | 35 | 230 | 32 | 50 | 11 | 16 | TS407 | ②TKY15D | QO○T1856R-○○ |
| | AQXR352SN32L | ★ | N | 35 | 230 | 32 | 50 | 11 | 16 | TS407 | ②TKY15D | |
| AQXR402SA32L | ★ | Y | 40 | 240 | 32 | 60 | 12 | 18 | TS55 | ②TKY25D | QO○T2062R-○○ | |
| AQXR402SN32L | ★ | N | 40 | 240 | 32 | 60 | 12 | 18 | TS55 | ②TKY25D | | |
| AQXR502SA42L | ★ | Y | 50 | 250 | 42 | 70 | 15 | 23 | TS6S | ③TKY30T | QO○T2576R-○○ | |
| AQXR502SN42L | ★ | N | 50 | 250 | 42 | 70 | 15 | 23 | TS6S | ③TKY30T | | |

*1 Dimension A3 represents the depth of cut when the cutting edge consists of 2 inserts.

*2 APMX: Maximum depth of cut.

*3 Clamp Torque (lbf-in) : TS2A=5.3, TS25=8.9, TS33=8.9, TS407=31, TS55=66, TS6S=89

*4 Y=Yes, N=No



METRIC Standard

SCREW-IN TYPE


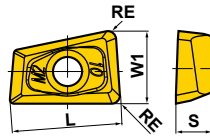

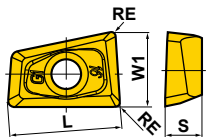
Right hand tool holder only.

| Order Number | R | Stock Coolant Thru *5 | Dimensions (mm) | | | | | | | | | *3 | *1 | *2 | Insert |
|---------------|---|-----------------------|-----------------|------|------|-----|----|-----|----|------|-----|------|-------|---------|--------------|
| | | | DC | DCON | BD | OAL | LF | L11 | H | CRKS | A3 | | | | |
| AQXR162M08A30 | ★ | Y | 16 | 8.5 | 14.7 | 48 | 30 | 6 | 10 | M8 | 4.5 | 7.4 | TS2A | ⓉTKY06F | |
| AQXF172M08A30 | ★ | Y | 17 | 8.5 | 14.5 | 48 | 30 | 6 | 10 | M8 | 4.5 | 7.4 | TS2A | ⓉTKY06F | QO○T0830R-○○ |
| AQXF202M10A30 | ★ | Y | 20 | 10.5 | 18.6 | 49 | 30 | 6 | 14 | M10 | 6 | 9.2 | TS25 | ⓉTKY08F | QO○T1035R-○○ |
| AQXF212M10A30 | ★ | Y | 21 | 10.5 | 18.5 | 49 | 30 | 6 | 14 | M10 | 6 | 9.2 | TS25 | ⓉTKY08F | |
| AQXR252M12A35 | ★ | Y | 25 | 12.5 | 23.5 | 57 | 35 | 6 | 19 | M12 | 7.5 | 11.5 | TS33 | ⓉTKY08D | QO○T1342R-○○ |
| AQXF262M12A35 | ★ | Y | 26 | 12.5 | 23.5 | 57 | 35 | 6 | 19 | M12 | 7.5 | 11.5 | TS33 | ⓉTKY08D | |
| AQXF322M16A40 | ★ | Y | 32 | 17 | 28.5 | 63 | 40 | 6 | 24 | M16 | 9.5 | 14.5 | TS407 | ⓉTKY15D | QO○T1651R-○○ |
| AQXF332M16A40 | ★ | Y | 33 | 17 | 28.5 | 63 | 40 | 6 | 24 | M16 | 9.5 | 14.5 | TS407 | ⓉTKY15D | |
| AQXF352M16A40 | ★ | Y | 35 | 17 | 28.5 | 63 | 40 | 6 | 24 | M16 | 11 | 16 | TS407 | ⓉTKY15D | QO○T1856R-○○ |
| AQXF402M16A45 | ★ | Y | 40 | 17 | 28.5 | 68 | 45 | 6 | 24 | M16 | 12 | 18 | TS55 | ⓉTKY25D | QO○T2062R-○○ |

*1 Dimension A3 represents the depth of cut when the cutting edge consists of 2 inserts.
 *2 APMX: Maximum depth of cut.
 *3 Clamp Torque (lbf-in) : TS2A=5.3, TS25=8.9, TS33=8.9, TS407=31, TS55=66
 *4 Clamp Torque of the Head (lbf-ft) : M8=17.1, M10=33.8, M12=59.2, M16=66.7
 *5 Y=Yes

MILLING


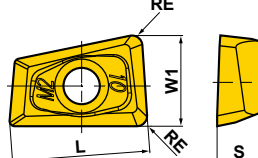

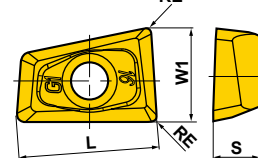
INSERTS

| Work Material | P | Steel | Class <th rowspan="2">Honing</th> <th colspan="3">Coated</th> <th>Carbide</th> <th colspan="4">Dimensions (inch)</th> <th rowspan="2">Geometry</th> | Honing | Coated | | | Carbide | Dimensions (inch) | | | | Geometry | |
|---|-----------|--------------------------------------|---|--------|--------|--------|------|---------|-------------------|------|------|------|----------|---|
| | M | Stainless Steel | | | VP15TF | VP30RT | HT10 | L | W1 | S | RE | | | |
| Work Material | K | Cast Iron | Class | Honing | Coated | | | Carbide | Dimensions (inch) | | | | Geometry | |
| | N | Non-Ferrous Metal | | | VP15TF | VP30RT | HT10 | L | W1 | S | RE | | | |
| Work Material | S | Heat-resistant Alloy, Titanium Alloy | Class | Honing | Coated | | | Carbide | Dimensions (inch) | | | | Geometry | |
| | H | Hardened Materials | | | VP15TF | VP30RT | HT10 | L | W1 | S | RE | | | |
|  | M breaker | QOMT0830R-M2 | φ .625, .672 | M | E | ● | ● | | | .350 | .220 | .120 | .031 |  |
| | | QOMT0934R-M2 | φ .750, .797 | M | E | ● | ● | | | .401 | .264 | .134 | .031 | |
| | | QOMT1443R-M2 | φ 1.000, 1.047 | M | E | ● | ● | | | .528 | .350 | .169 | .031 | |
| | | QOMT1651R-M2 | φ 1.250, 1.297 | M | E | ● | ● | | | .650 | .433 | .200 | .031 | |
| | | QOMT1959R-M2 | φ 1.500 | M | E | ● | ● | | | .768 | .512 | .232 | .031 | |
|  | G breaker | QOGT0830R-G1 | φ .625, .672 | G | F* | ★ | | ● | | .350 | .220 | .120 | .016 |  |
| | | QOGT0934R-G1 | φ .750, .797 | G | F | | | ● | | .401 | .264 | .134 | .016 | |
| | | QOGT1443R-G1 | φ 1.000, 1.047 | G | F | | | ● | | .528 | .350 | .169 | .016 | |
| | | QOGT1651R-G1 | φ 1.250, 1.297 | G | F* | ★ | | ● | | .650 | .433 | .200 | .016 | |
| | | QOGT1959R-G1 | φ 1.500 | G | F | | | ● | | .768 | .512 | .232 | .016 | |

* Grade VP15TF has "E" honing.

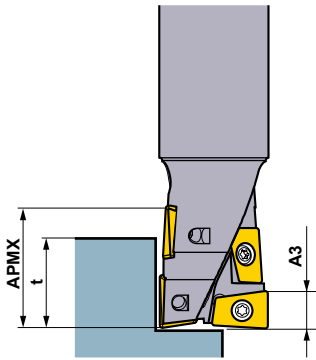
INSERTS

For Metric Standard

| Work Material | P | Steel | Class | Honing | Coated | | | Carbide | Dimensions (mm) | | | | Geometry | |
|---|-----------|--------------------------------------|---------|--------|--------|--------|------|---------|-----------------|------|------|-----|----------|---|
| | M | Stainless Steel | | | VP15TF | VP30RT | HT10 | L | W1 | S | RE | | | |
| Work Material | K | Cast Iron | Class | Honing | Coated | | | Carbide | Dimensions (mm) | | | | Geometry | |
| | N | Non-Ferrous Metal | | | VP15TF | VP30RT | HT10 | L | W1 | S | RE | | | |
| Work Material | S | Heat-resistant Alloy, Titanium Alloy | Class | Honing | Coated | | | Carbide | Dimensions (mm) | | | | Geometry | |
| | H | Hardened Materials | | | VP15TF | VP30RT | HT10 | L | W1 | S | RE | | | |
|  | M breaker | QOMT0830R-M2 | φ 16,17 | M | E | ● | ● | | | 8.4 | 5.5 | 3 | 0.8 |  |
| | | QOMT1035R-M2 | φ 20,21 | M | E | ★ | ★ | | | 10.6 | 7 | 3.5 | 0.8 | |
| | | QOMT1342R-M2 | φ 25,26 | M | E | ★ | ★ | | | 13.1 | 8.7 | 4.2 | 0.8 | |
| | | QOMT1651R-M2 | φ 32,33 | M | E | ● | ● | | | 16.5 | 11 | 5.1 | 0.8 | |
| | | QOMT1856R-M2 | φ 35 | M | E | ★ | ★ | | | 18 | 12 | 5.6 | 0.8 | |
| | | QOMT2062R-M2 | φ 40 | M | E | ★ | ★ | | | 20.4 | 13.6 | 6.2 | 0.8 | |
| | | QOMT2576R-M2 | φ 50 | M | E | ★ | ★ | | | 25.8 | 17.2 | 7.6 | 0.8 | |
|  | G breaker | QOGT0830R-G1 | φ 16,17 | G | F* | ★ | | ● | | 8.4 | 5.5 | 3 | 0.4 |  |
| | | QOGT1035R-G1 | φ 20,21 | G | F* | ★ | | ★ | | 10.6 | 7 | 3.5 | 0.4 | |
| | | QOGT1342R-G1 | φ 25,26 | G | F* | ★ | | ★ | | 13.1 | 8.7 | 4.2 | 0.4 | |
| | | QOGT1651R-G1 | φ 32,33 | G | F* | ★ | | ● | | 16.5 | 11 | 5.1 | 0.4 | |
| | | QOGT1856R-G1 | φ 35 | G | F* | ★ | | ★ | | 18 | 12 | 5.6 | 0.4 | |
| | | QOGT2062R-G1 | φ 40 | G | F* | ★ | | ★ | | 20.4 | 13.6 | 6.2 | 0.4 | |
| | | QOGT2576R-G1 | φ 50 | G | F* | ★ | | ★ | | 25.8 | 17.2 | 7.6 | 0.4 | |

* Grade VP15TF has "E" honing.

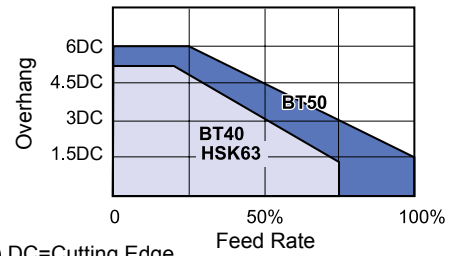
RECOMMENDED CUTTING CONDITIONS



(Note) Figures for A3 and APMX are shown in the table of holder standard.

- A3 is the depth of cut for the full dual blade portion at the end of the cutting edge.
- Beyond the range of A3 where overlapping occurs, there is an area where the cutting edge becomes single bladed, not forming full dual blade configuration. As such, please pay special attention to the relationship between depth of cut and feed.
- In general, the edge at the border of cut tends to suffer from damages. At large depth of cut operations, applying the following depth of cut (t), at which the edge is full dual bladed at the border of cut, is recommended to prevent damage to the cutting edge.

| Tool diameter | Recommended depth of cut t (inch) |
|------------------|-----------------------------------|
| φ .625, φ .672 | .472— .551 |
| φ .750, φ .797 | .551— .669 |
| φ 1.000, φ 1.047 | .669— .866 |
| φ 1.250, φ 1.297 | .866— 1.102 |
| φ 1.500 | 1.102— 1.378 |



(Note) DC=Cutting Edge Diameter

- Chatter vibration and other problems tend to occur at operations where overhang length is large and/or machine rigidity is low, resulting in unstable machining.
- Please reduce feed accordingly, using the above chart as a guideline.

CUTTING CONDITIONS FOR SHOULDER MILLING

| Work Material | Hardness | Grade | Cutting Speed (SFM) | φ .625", φ .672" (φ 16mm, φ 17mm) | | | φ .750", φ .797" (φ 20mm, φ 21mm) | | | φ 1.000", φ 1.047" (φ 25mm, φ 26mm) | | | φ 1.250", φ 1.297" (φ 32mm, φ 33mm) | | | φ 1.500" (φ 40mm) | | |
|-------------------------------|---------------------------|--------------------|---------------------|-----------------------------------|---------------------|-----------------|-----------------------------------|---------------------|-----------------|-------------------------------------|---------------------|-----------------|-------------------------------------|---------------------|-----------------|---------------------|---------------------|-----------------|
| | | | | Depth of Cut (inch) | Width of Cut (inch) | Feed (inch/rev) | Depth of Cut (inch) | Width of Cut (inch) | Feed (inch/rev) | Depth of Cut (inch) | Width of Cut (inch) | Feed (inch/rev) | Depth of Cut (inch) | Width of Cut (inch) | Feed (inch/rev) | Depth of Cut (inch) | Width of Cut (inch) | Feed (inch/rev) |
| P Mild Steel | ≤ 180HB | VP15TF | 590 (490-720) | - .177 | - .315 | .010 | - .236 | - .394 | .012 | - .295 | - .492 | .014 | - .374 | - .630 | .016 | - .472 | - .787 | .020 |
| | | | | .177- .472 | - .197 | .006 | .236- .551 | - .276 | .010 | .295- .669 | - .315 | .011 | .374- .866 | - .433 | .013 | .472- 1.102 | - .512 | .016 |
| | | | | .472- .669 | - .118 | .004 | .551- .866 | - .157 | .007 | .669- 1.063 | - .197 | .008 | .866- 1.378 | - .236 | .010 | 1.102- 1.732 | - .276 | .012 |
| M Carbon Steel Alloy Steel | 180-350HB | VP15TF | 525 (395-655) | - .177 | - .315 | .008 | - .236 | - .394 | .010 | - .295 | - .492 | .012 | - .374 | - .630 | .014 | - .472 | - .787 | .016 |
| | | | | .177- .472 | - .157 | .006 | .236- .551 | - .236 | .008 | .295- .669 | - .276 | .010 | .374- .866 | - .394 | .011 | .472- 1.102 | - .472 | .013 |
| | | | | .472- .669 | - .079 | .003 | .551- .866 | - .118 | .006 | .669- 1.063 | - .157 | .007 | .866- 1.378 | - .197 | .008 | 1.102- 1.732 | - .236 | .010 |
| K Cast Iron | Tensile Strength ≤ 450MPa | VP15TF | 590 (490-720) | - .177 | - .315 | .010 | - .236 | - .394 | .012 | - .295 | - .492 | .014 | - .374 | - .630 | .016 | - .472 | - .787 | .020 |
| | | | | .177- .472 | - .197 | .006 | .236- .551 | - .276 | .010 | .295- .669 | - .315 | .011 | .374- .866 | - .433 | .013 | .472- 1.102 | - .512 | .016 |
| | | | | .472- .669 | - .118 | .004 | .551- .866 | - .157 | .007 | .669- 1.063 | - .197 | .008 | .866- 1.378 | - .236 | .010 | 1.102- 1.732 | - .276 | .012 |
| N Aluminum Alloy | — | HTi10 (G1 Breaker) | 1640 (655-2620) | - .177 | - .433 | .012 | - .236 | - .551 | .014 | - .295 | - .689 | .016 | - .374 | - .906 | .018 | - .472 | - 1.102 | .022 |
| | | | | .177- .472 | - .315 | .008 | .236- .551 | - .394 | .012 | .295- .669 | - .492 | .013 | .374- .866 | - .630 | .015 | .472- 1.102 | - .787 | .018 |
| | | | | .472- .669 | - .197 | .006 | .551- .866 | - .236 | .009 | .669- 1.063 | - .295 | .010 | .866- 1.378 | - .394 | .012 | 1.102- 1.732 | - .472 | .014 |
| H Hardened Steel | 45-55HRC | VP15TF | 260 (160-390) | - .177 | - .197 | .006 | - .236 | - .236 | .008 | - .295 | - .276 | .009 | - .374 | - .315 | .010 | - .472 | - .394 | .012 |
| | | | | .177- .472 | - .118 | .004 | .236- .551 | - .157 | .006 | .295- .669 | - .157 | .007 | .374- .866 | - .197 | .008 | .472- 1.102 | - .236 | .009 |
| | | | | .472- .669 | - .039 | .002 | .551- .866 | - .079 | .005 | .669- 1.063 | - .079 | .006 | .866- 1.378 | - .079 | .006 | 1.102- 1.732 | - .079 | .007 |

(Note 1) Please pay special attention on the depth of cut when using the short edge type.

(Note 2) When using the G1 breaker (VP15TF), please reduce the feed rate by 20%.

MILLING

CUTTING CONDITIONS FOR SLOTTING

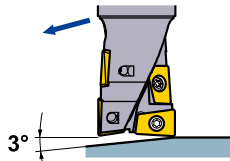
| Work Material | Hardness | Grade | Cutting Speed (SFM) | φ.625", φ.672" (φ16mm, φ17mm) | | φ.750", φ.797" (φ20mm, φ21mm) | | φ1.000", φ1.047" (φ25mm, φ26mm) | | φ1.250", φ1.297" (φ32mm, φ33mm) | | φ1.500" (φ40mm) | |
|--------------------------|-----------------------------|-----------------------|---------------------|----------------------------------|-----------------|----------------------------------|-----------------|------------------------------------|-----------------|------------------------------------|-----------------|---------------------|-----------------|
| | | | | Depth of Cut (inch) | Feed (inch/rev) | Depth of Cut (inch) | Feed (inch/rev) | Depth of Cut (inch) | Feed (inch/rev) | Depth of Cut (inch) | Feed (inch/rev) | Depth of Cut (inch) | Feed (inch/rev) |
| P Mild Steel | ≤180HB | VP15TF | 590 (490-720) | -.177 | .006 | -.236 | .007 | -.295 | .008 | -.374 | .010 | -.472 | .012 |
| | | | | .177-.472 | .004 | .236-.551 | .006 | .295-.669 | .006 | .374-.866 | .008 | .472-1.102 | .010 |
| | | | | .472-.669 | .003 | .551-.866 | .004 | .669-1.063 | .005 | .866-1.378 | .006 | 1.102-1.732 | .007 |
| Carbon Steel Alloy Steel | 180-350HB | VP15TF | 525 (395-655) | -.177 | .006 | -.236 | .006 | -.295 | .007 | -.374 | .008 | -.472 | .010 |
| | | | | .177-.472 | .004 | .236-.551 | .005 | .295-.669 | .006 | .374-.866 | .006 | .472-1.102 | .008 |
| | | | | .472-.669 | .002 | .551-.866 | .004 | .669-1.063 | .004 | .866-1.378 | .005 | 1.102-1.732 | .006 |
| M Stainless Steel | ≤270HB | VP30RT | 490 (395-590) | -.177 | .006 | -.236 | .006 | -.295 | .007 | -.374 | .008 | -.472 | .010 |
| | | | | .177-.472 | .004 | .236-.551 | .005 | .295-.669 | .006 | .374-.866 | .006 | .472-1.102 | .008 |
| | | | | .472-.669 | .002 | .551-.866 | .004 | .669-1.063 | .004 | .866-1.378 | .005 | 1.102-1.732 | .006 |
| K Cast Iron | Tensile Strength ≤450MPa | VP15TF | 590 (490-720) | -.177 | .006 | -.236 | .007 | -.295 | .008 | -.374 | .010 | -.472 | .012 |
| | | | | .177-.472 | .004 | .236-.551 | .006 | .295-.669 | .006 | .374-.866 | .008 | .472-1.102 | .010 |
| | | | | .472-.669 | .003 | .551-.866 | .004 | .669-1.063 | .005 | .866-1.378 | .006 | 1.102-1.732 | .007 |
| N Aluminum Alloy | - | HTi10 (G1 Breaker) | 1640 (655-2620) | -.177 | .007 | -.236 | .008 | -.295 | .009 | -.374 | .011 | -.472 | .013 |
| | | | | .177-.472 | .005 | .236-.551 | .006 | .295-.669 | .007 | .374-.866 | .009 | .472-1.102 | .011 |
| | | | | .472-.669 | .004 | .551-.866 | .005 | .669-1.063 | .006 | .866-1.378 | .006 | 1.102-1.732 | .008 |
| H Hardened Steel | 45-55HRC | VP15TF | 260 (160-390) | -.177 | .004 | -.236 | .005 | -.295 | .006 | -.374 | .006 | -.472 | .007 |
| | | | | .177-.472 | .003 | .236-.551 | .004 | .295-.669 | .005 | .374-.866 | .005 | .472-1.102 | .006 |
| | | | | | | | | | | | | | |

(Note 1) Please pay special attention on the depth of cut when using the short edge type.

(Note 2) When using the G1 breaker (VP15TF), please reduce the feed rate by 20%.

RECOMMENDED CUTTING CONDITIONS

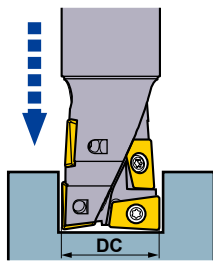
CUTTING CONDITIONS (For Ramping)



- When machining steel the recommended ramping angle is 3°. If a ramping angle larger than 3° is used, then the chips may not be broken effectively resulting in chips wrapping around the tool.
- When ramping, it is recommended to reduce the feed rate by 40%.

CUTTING CONDITIONS (For Drilling and Plunging)

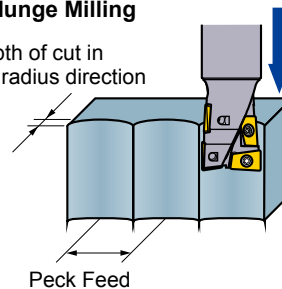
Drilling



- The recommended drilling depth is less than .5DC.
- Use step feed when drilling (.01-.02 inch) to ensure that the chips are effectively broken.
- Use internal or external cooling to ensure that the chips disposal is sufficiently achieved.
- The chips generated can discharge in any direction, so ensure that adequate safety precautions are taken.

Plunge Milling

Depth of cut in the radius direction



- The feed for plunging is the same as the feed for drilling.
- No step feed necessary.
- Please refer to the following table for the depth of cut at plunging operations.

| | |
|--------------------------------------|--------|
| Depth of Cut in the Radius Direction | ≤ .4DC |
| Peck Feed | ≤ .5DC |

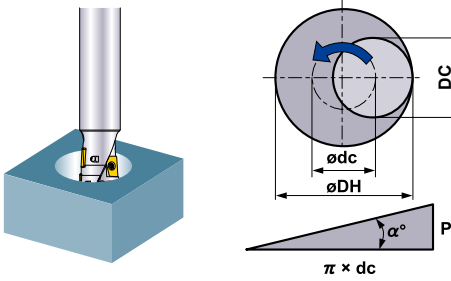
| Work Material | Hardness | Grade | Cutting Speed (SFM) | φ.625", φ.672" (φ16mm, φ17mm) | | φ.750", φ.797" (φ20mm, φ21mm) | | φ1.000", φ1.047" (φ25mm, φ26mm) | | φ1.250", φ1.297" (φ32mm, φ33mm) | | φ1.500" (φ40mm) | |
|----------------------|-----------------------------|-----------------------|---------------------|----------------------------------|-------------|----------------------------------|------------------|------------------------------------|-------------|------------------------------------|-------------|--------------------|-------------|
| | | | | Feed (inch/rev) | Step (inch) | Feed (inch/rev) | Step (inch) | Feed (inch/rev) | Step (inch) | Feed (inch/rev) | Step (inch) | Feed (inch/rev) | Step (inch) |
| P Mild Steel | ≤180HB | VP15TF | 590 (490-720) | .001-.003 | .008 | .002 | .012 | .002 | .012 | .002 | .012 | .002 | .012 |
| | | | | Carbon Steel Alloy Steel | 180-350HB | VP15TF | 525 (395-655) | .001-.003 | .008 | .002 | .012 | .002 | .012 |
| M Stainless Steel | ≤270HB | VP30RT | 490 (395-590) | .001-.003 | .006 | .002 | .010 | .002 | .010 | .002 | .010 | .002 | .010 |
| K Cast Iron | Tensile Strength ≤450MPa | VP15TF | 590 (490-720) | .002-.004 | .016 | .002 | .020 | .002 | .020 | .003 | .020 | .003 | .020 |
| N Aluminum Alloy | - | HTi10 (G1 Breaker) | 1640 (655-2620) | .002-.004 | .008 | .002 | .012 | .002 | .012 | .003 | .012 | .003 | .012 |
| H Hardened Steel | 45-55HRC | VP15TF | 260 (160-390) | .001-.003 | .006 | .001 | .010 | .001 | .010 | .002 | .010 | .002 | .010 |

(Note 1) Helical grooving is strongly recommended for machining of tempered steel.

(Note 2) When using the G1 breaker (VP15TF), please reduce the feed rate by 20%.

RECOMMENDED CUTTING CONDITIONS

CUTTING CONDITIONS (Helical Cutting)



● How to calculate the theoretical center of the tool path.

$$\varnothing dc = \varnothing DH - DC$$

Theoretical center of the tool Desired hole diameter Cutting edge diameter

● Depth of cut for a pass.

$$P = \pi \times dc \times \tan \alpha^\circ$$

(Note) $\alpha^\circ \leq 3^\circ$

- Min. machined hole diameter at helical cutting : 1.2DC
Max. machined hole diameter at helical cutting : 1.8DC
- For chip discharge, please always apply air blow.
(When aluminum cutting, please use coolant.)
- When helical cutting, it is recommended to reduce the feed rate by 40%.
- When using the G1 breaker (VP15TF), please reduce the feed rate by 20%.

| Work Material | Hardness | Grade | Cutting Speed (SFM) | $\phi .625", \phi .672"$ ($\phi 16mm, \phi 17mm$) | | | | $\phi .750", \phi .797"$ ($\phi 20mm, \phi 21mm$) | | | | $\phi 1.000", \phi 1.047"$ ($\phi 25mm, \phi 26mm$) | | | |
|--------------------------|--------------------------------|-----------------------|---------------------|--|--------------------------|-----------------|----------------------|--|--------------------------|-----------------|----------------------|--|--------------------------|-----------------|----------------------|
| | | | | Machining Diameter (inch) | Max. Depth of Cut (inch) | Feed (inch/rev) | DOC/pass (inch/pass) | Machining Diameter (inch) | Max. Depth of Cut (inch) | Feed (inch/rev) | DOC/pass (inch/pass) | Machining Diameter (inch) | Max. Depth of Cut (inch) | Feed (inch/rev) | DOC/pass (inch/pass) |
| P Mild Steel | $\leq 180HB$ | VP15TF | 590 (490-720) | .787 | .315 | .006 | .017 | .945 | .394 | .007 | .017 | 1.181 | .492 | .008 | .022 |
| | | | | .984 | .472 | .006 | .039 | 1.181 | .591 | .006 | .043 | 1.496 | .748 | .007 | .056 |
| | | | | 1.142 | .630 | .005 | .056 | 1.417 | .787 | .006 | .069 | 1.772 | .984 | .006 | .087 |
| Carbon Steel Alloy Steel | 180-350HB | VP15TF | 525 (395-655) | .787 | .315 | .006 | .013 | .945 | .394 | .006 | .013 | 1.181 | .492 | .007 | .016 |
| | | | | .984 | .472 | .005 | .029 | 1.181 | .591 | .006 | .032 | 1.496 | .748 | .006 | .042 |
| | | | | 1.142 | .630 | .004 | .042 | 1.417 | .787 | .005 | .052 | 1.772 | .984 | .006 | .065 |
| M Stainless Steel | $\leq 270HB$ | VP30RT | 490 (395-590) | .787 | .118 | .006 | .009 | .945 | .157 | .006 | .009 | 1.181 | .197 | .007 | .011 |
| | | | | .984 | .197 | .005 | .019 | 1.181 | .276 | .006 | .022 | 1.496 | .354 | .006 | .028 |
| | | | | 1.142 | .315 | .004 | .028 | 1.417 | .394 | .005 | .035 | 1.772 | .492 | .006 | .043 |
| K Cast Iron | Tensile Strength $\leq 450MPa$ | VP15TF | 590 (490-720) | .787 | .394 | .006 | .022 | .945 | .551 | .007 | .022 | 1.181 | .709 | .008 | .027 |
| | | | | .984 | .512 | .006 | .048 | 1.181 | .669 | .006 | .054 | 1.496 | .827 | .007 | .070 |
| | | | | 1.142 | .630 | .005 | .070 | 1.417 | .787 | .006 | .086 | 1.772 | .984 | .006 | .108 |
| N Aluminum Alloy | - | HT110 (G1 Breaker) | 1640 (655-2620) | .787 | .394 | .007 | .017 | .945 | .551 | .008 | .017 | 1.181 | .709 | .009 | .022 |
| | | | | .984 | .512 | .006 | .039 | 1.181 | .669 | .007 | .043 | 1.496 | .827 | .008 | .056 |
| | | | | 1.142 | .630 | .006 | .056 | 1.417 | .787 | .006 | .069 | 1.772 | .984 | .007 | .087 |
| H Hardened Steel | 45-55HRC | VP15TF | 260 (160-390) | .787 | .118 | .004 | .009 | .945 | .157 | .005 | .009 | 1.181 | .197 | .006 | .011 |
| | | | | .984 | .197 | .003 | .019 | 1.181 | .276 | .004 | .022 | 1.496 | .354 | .005 | .028 |
| | | | | 1.142 | .315 | .002 | .028 | 1.417 | .394 | .003 | .035 | 1.772 | .492 | .004 | .043 |

| Work Material | Hardness | Grade | Cutting Speed (SFM) | $\phi 1.250", \phi 1.297"$ ($\phi 32mm, \phi 33mm$) | | | | $\phi 1.500"$ ($\phi 40mm$) | | | |
|--------------------------|--------------------------------|-----------------------|---------------------|--|--------------------------|-----------------|----------------------|----------------------------------|--------------------------|-----------------|----------------------|
| | | | | Machining Diameter (inch) | Max. Depth of Cut (inch) | Feed (inch/rev) | DOC/pass (inch/pass) | Machining Diameter (inch) | Max. Depth of Cut (inch) | Feed (inch/rev) | DOC/pass (inch/pass) |
| P Mild Steel | $\leq 180HB$ | VP15TF | 590 (490-720) | 1.496 | .630 | .010 | .026 | 1.890 | .787 | .012 | .035 |
| | | | | 1.890 | .945 | .009 | .069 | 2.362 | 1.181 | .010 | .086 |
| | | | | 2.283 | 1.260 | .008 | .112 | 2.835 | 1.575 | .009 | .138 |
| Carbon Steel Alloy Steel | 180-350HB | VP15TF | 525 (395-655) | 1.496 | .630 | .008 | .019 | 1.890 | .787 | .010 | .026 |
| | | | | 1.890 | .945 | .007 | .052 | 2.362 | 1.181 | .009 | .065 |
| | | | | 2.283 | 1.260 | .006 | .084 | 2.835 | 1.575 | .008 | .104 |
| M Stainless Steel | $\leq 270HB$ | VP30RT | 490 (395-590) | 1.496 | .236 | .008 | .013 | 1.890 | .315 | .010 | .017 |
| | | | | 1.890 | .433 | .007 | .035 | 2.362 | .551 | .009 | .043 |
| | | | | 2.283 | .630 | .006 | .056 | 2.835 | .787 | .008 | .069 |
| K Cast Iron | Tensile Strength $\leq 450MPa$ | VP15TF | 590 (490-720) | 1.496 | .866 | .010 | .032 | 1.890 | 1.102 | .012 | .043 |
| | | | | 1.890 | 1.063 | .009 | .086 | 2.362 | 1.339 | .010 | .108 |
| | | | | 2.283 | 1.260 | .008 | .141 | 2.835 | 1.575 | .009 | .173 |
| N Aluminum Alloy | - | HT110 (G1 Breaker) | 1640 (655-2620) | 1.496 | .866 | .011 | .026 | 1.890 | 1.102 | .013 | .035 |
| | | | | 1.890 | 1.063 | .009 | .069 | 2.362 | 1.339 | .011 | .086 |
| | | | | 2.283 | 1.260 | .009 | .112 | 2.835 | 1.575 | .009 | .138 |
| H Hardened Steel | 45-55HRC | VP15TF | 260 (160-390) | 1.496 | .236 | .006 | .013 | 1.890 | .315 | .007 | .017 |
| | | | | 1.890 | .433 | .006 | .035 | 2.362 | .551 | .006 | .043 |
| | | | | 2.283 | .630 | .005 | .056 | 2.835 | .787 | .006 | .069 |

MILLING

MULTI FUNCTIONAL MILLING



Roughing



AJX



- 13°, 15° positive insert.
- Air / coolant through.
- High rigidity due to double clamp structure.
- Suitable for high feed cutting.
- Special insert design with the use of 3 cutting edges.

Fig.3

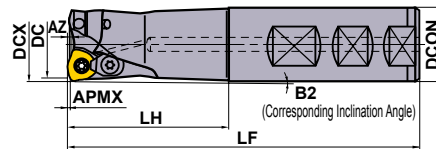


Fig.1 "FA" flat shank

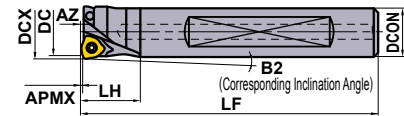


Fig.2

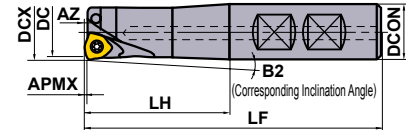
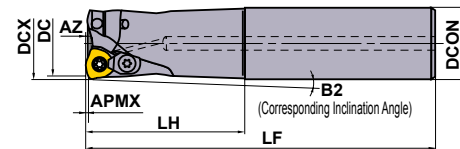


Fig.4

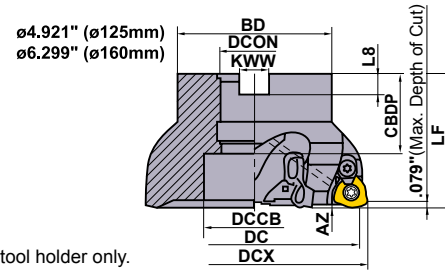
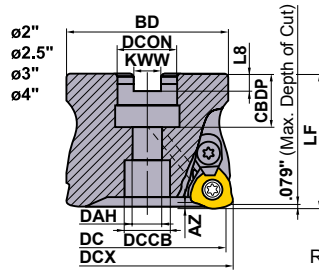


SHANK TYPE

Right hand tool holder only.

| Type | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | | | | Type (Fig.) | Insert | Clamp Screw | Clamp Bridge | Clamp Bridge Screw | Spring | Wrench | Insert |
|-----------------|-----------------|-------|-----------------|-------------------|-------|--------|--------|-------|------|-------|-------------|--------|-------------|--------------|--------------------|---------|-------------|---------------|
| | | | | DCX | DCON | DC | LF | LH | APMX | AZ | | | | | | | | |
| Standard | AJXU06R102FA10S | ● | 2 | .625 | .625 | .346 | 3.750 | 1.250 | .039 | .012 | 2.12° | 1 | TS25 | - | - | - | ⊙TKY08F | JOM06T215 ZZR |
| | AJXU06R112FA10S | ● | 2 | .688 | .625 | .409 | 3.750 | .750 | .039 | .012 | - | 1 | TS25 | - | - | - | ⊙TKY08F | JOM06T215 ZZR |
| | AJXU08R122WA12S | ● | 2 | .750 | .750 | .417 | 4.750 | 2.000 | .059 | .020 | 1.31° | 2 | TS33 | - | - | - | ⊙TKY08D | JOM080320 ZZR |
| | AJXU08R142FA12S | ● | 2 | .875 | .750 | .535 | 4.750 | 1.250 | .059 | .020 | - | 1 | TS33 | - | - | - | ⊙TKY08D | JOM080320 ZZR |
| | AJXU09R162WA16S | ● | 2 | 1.000 | 1.000 | .602 | 5.625 | 2.375 | .079 | .039 | 1.1° | 3 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | JDM09T3 ZDR |
| | AJXU09R182FA16S | ● | 2 | 1.125 | 1.000 | .728 | 5.625 | 1.625 | .079 | .039 | - | 1 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | JDM09T3 ZDR |
| | AJXU12R202WA20S | ● | 2 | 1.250 | 1.250 | .789 | 6.000 | 2.750 | .079 | .059 | 0.94° | 3 | TS43 | AMS4 | AJS4012T15 | ASS2 | ⊙TKY15D | JDM1204 ZDR |
| | AJXU12R243WA20S | ● | 3 | 1.500 | 1.250 | 1.038 | 6.000 | 2.000 | .079 | .059 | - | 3 | TS43 | AMS4 | AJS4012T15 | ASS2 | ⊙TKY15D | JDM1204 ZDR |
| Long | AJXU14R323WA24S | ● | 3 | 2.000 | 1.500 | 1.534 | 6.000 | 2.000 | .079 | .079 | - | 3 | TS54 | AMS5 | AJS5014T25 | ASS3 | ⊙TKY25D | JDM1405 ZDR |
| | AJXU06R102SA10M | ● | 2 | .625 | .625 | .346 | 5.750 | 1.500 | .039 | .012 | 1.75° | 4 | TS25 | - | - | - | ⊙TKY08F | JOM06T215 ZZR |
| | AJXU06R102SA10L | ● | 2 | .625 | .625 | .346 | 5.750 | 2.750 | .039 | .012 | 0.93° | 4 | TS25 | - | - | - | ⊙TKY08F | JOM06T215 ZZR |
| | AJXU06R112SA10L | ● | 2 | .688 | .625 | .409 | 5.750 | .750 | .039 | .012 | - | 4 | TS25 | - | - | - | ⊙TKY08F | JOM06T215 ZZR |
| | AJXU06R123SA12M | ● | 3 | .750 | .750 | .472 | 7.000 | 2.375 | .039 | .012 | 1.11° | 4 | TS25 | - | - | - | ⊙TKY08F | JOM06T215 ZZR |
| | AJXU08R122SA12L | ● | 2 | .750 | .750 | .417 | 7.000 | 4.000 | .059 | .020 | 0.64° | 4 | TS33 | - | - | - | ⊙TKY08D | JOM080320 ZZR |
| | AJXU08R142SA12L | ● | 2 | .875 | .750 | .535 | 7.000 | 1.250 | .059 | .020 | - | 4 | TS33 | - | - | - | ⊙TKY08D | JOM080320 ZZR |
| | AJXU08R163SA16M | ● | 3 | 1.000 | 1.000 | .661 | 8.000 | 2.750 | .059 | .020 | 0.94° | 4 | TS33 | - | - | - | ⊙TKY08D | JOM080320 ZZR |
| | AJXU09R162SA16L | ● | 2 | 1.000 | 1.000 | .602 | 8.000 | 4.750 | .079 | .039 | 0.54° | 4 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | JDM09T3 ZDR |
| | AJXU09R182SA16L | ● | 2 | 1.125 | 1.000 | .728 | 8.000 | 1.625 | .079 | .039 | - | 4 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | JDM09T3 ZDR |
| | AJXU09R203SA20M | ● | 3 | 1.250 | 1.250 | .854 | 8.000 | 3.125 | .079 | .039 | 0.82° | 4 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | JDM09T3 ZDR |
| | AJXU09R244SA20M | ● | 4 | 1.500 | 1.250 | 1.114 | 10.000 | 2.375 | .079 | .039 | - | 4 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | JDM09T3 ZDR |
| AJXU12R202SA20L | ● | 2 | 1.250 | 1.250 | .789 | 8.000 | 4.750 | .079 | .059 | 0.54° | 4 | TS43 | AMS4 | AJS4012T15 | ASS2 | ⊙TKY15D | JDM1204 ZDR | |
| AJXU12R243SA20L | ● | 3 | 1.500 | 1.250 | 1.038 | 10.000 | 2.000 | .079 | .059 | - | 4 | TS43 | AMS4 | AJS4012T15 | ASS2 | ⊙TKY15D | JDM1204 ZDR | |
| AJXU12R243SA24L | ● | 3 | 1.500 | 1.500 | 1.038 | 10.000 | 2.750 | .079 | .059 | 0.94° | 4 | TS43 | AMS4 | AJS4012T15 | ASS2 | ⊙TKY15D | JDM1204 ZDR | |

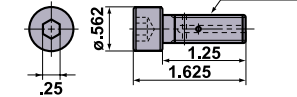
* Clamp Torque (lbf-in) : TS25=8.9, TS33=8.9, TS351=22, TS43=31, TS54=66, AJS3010T10=22, AJS4012T15=31, AJS5014T25=66



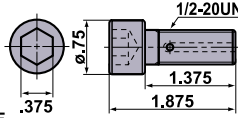
Right hand tool holder only.

Coolant thru Set Bolt

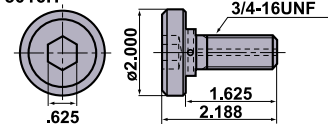
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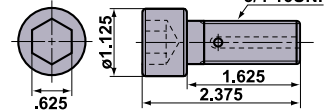
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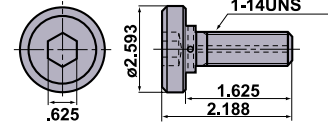
MBAU75016H



HSCU75016H



MBAU100016H



AJX09 AJX12 AJX14
 KAPR :+8° KAPR :+8° KAPR :+8°
 GAMF :-6° GAMF :-5°-4° GAMF :-3°

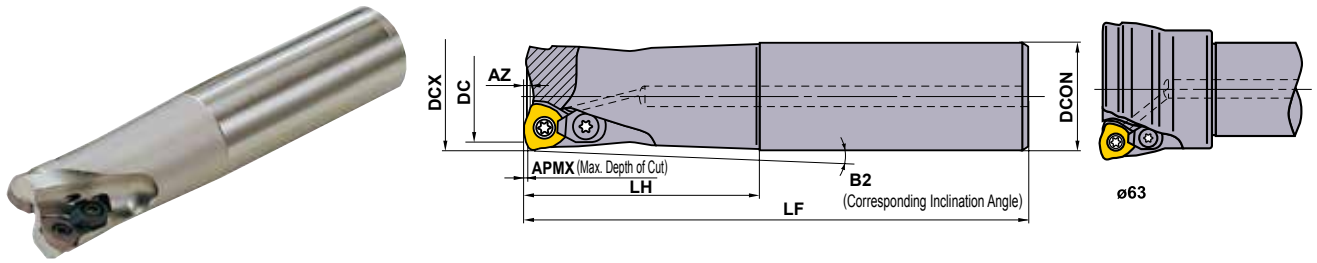
ARBOR TYPE

| Type | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | | | | | | | Tools & Accessories | | | | | | | |
|------------------|----------------|-------|-----------------|-------------------|-------|-------|-------|-------|-------|-------|------|------|-------|---------------------|--------------|--------------|--------------------|--------|---------|-----------------------|-------------|
| | | | | DCX | DC | LF | DCON | CBDF | DAH | BD | KWW | L8 | DCCB | AZ | Insert Screw | Clamp Bridge | Clamp Bridge Screw | Spring | Wrench | Coolant thru Set Bolt | Insert |
| Coarse Pitch | AJXU12R0203 | ● | 3 | 2.000 | 1.539 | 2.000 | .750 | .748 | .415 | 1.875 | .313 | .187 | .600 | .059 | TS43 | AMS4 | AJS4012T15 | ASS2 | ⓪TKY15T | HSCU37513H | JDM1204ZD-R |
| | AJXU14R2503C | ● | 3 | 2.500 | 2.032 | 2.000 | 1.000 | 1.024 | .539 | 2.375 | .375 | .219 | .787 | .079 | | | | | | HSCU50014H | JDM1405ZD-R |
| | AJXU14R0304C | ● | 4 | 3.000 | 2.532 | 2.000 | 1.000 | 1.024 | .539 | 2.750 | .375 | .219 | .787 | .079 | TS54 | AMS5 | AJS5014T25 | ASS3 | ⓪TKY25T | HSCU75016H | JDM1405ZD-R |
| | AJXU14R0405E | ● | 5 | 4.000 | 3.531 | 2.500 | 1.500 | 1.181 | .787 | 3.750 | .625 | .375 | 1.181 | .079 | | | | | | MBAU75016H | JDM1405ZD-R |
| | AJX14RA12505E | ● | 5 | 4.921 | 4.457 | 2.480 | 1.500 | 1.575 | 2.205 | 3.937 | .625 | .375 | - | .079 | | | | | | MBAU75016H | JDM1405ZD-R |
| Fine Pitch | AJXU14RA16006F | ● | 6 | 6.299 | 5.835 | 2.480 | 2.000 | 1.693 | 2.835 | 3.937 | .750 | .437 | - | .079 | | | | | | MBAU100016H | JDM1405ZD-R |
| | AJXU12R0204 | ● | 4 | 2.000 | 1.539 | 2.000 | .750 | .748 | .415 | 1.875 | .313 | .187 | .600 | .059 | TS43 | AMS4 | AJS4012T15 | ASS2 | ⓪TKY15T | HSCU37513H | JDM1204ZD-R |
| | AJXU14R2504C | ● | 4 | 2.500 | 2.032 | 2.000 | 1.000 | 1.024 | .539 | 2.375 | .375 | .219 | .787 | .079 | | | | | | HSCU50014H | JDM1405ZD-R |
| | AJXU14R0305C | ● | 5 | 3.000 | 2.532 | 2.000 | 1.000 | 1.024 | .539 | 2.750 | .375 | .219 | .787 | .079 | TS54 | AMS5 | AJS5014T25 | ASS3 | ⓪TKY25T | HSCU75016H | JDM1405ZD-R |
| | AJXU14R0406E | ● | 6 | 4.000 | 3.531 | 2.500 | 1.500 | 1.181 | .787 | 3.750 | .625 | .375 | 1.181 | .079 | | | | | | MBAU75016H | JDM1405ZD-R |
| Extra Fine Pitch | AJX14RA12507E | ● | 7 | 4.921 | 4.457 | 2.480 | 1.500 | 1.575 | 2.205 | 3.937 | .625 | .375 | - | .079 | | | | | | MBAU75016H | JDM1405ZD-R |
| | AJXU14RA16008F | ● | 8 | 6.299 | 5.835 | 2.480 | 2.000 | 1.693 | 2.835 | 3.937 | .750 | .437 | - | .079 | | | | | | MBAU100016H | JDM1405ZD-R |
| | AJXU09R0205 | ● | 5 | 2.000 | 1.606 | 2.000 | .750 | .748 | .415 | 1.875 | .313 | .187 | .600 | .039 | TS351 | AMS3 | AJS3010T10 | | ⓪TKY10D | HSCU37513H | JDM09T3ZD-R |
| | AJXU12R2505C | ● | 5 | 2.500 | 2.039 | 2.000 | 1.000 | 1.024 | .539 | 2.375 | .375 | .219 | .787 | .059 | | | | ASS2 | ⓪TKY15T | HSCU50014H | JDM1204ZD-R |
| Extra Fine Pitch | AJXU12R0306C | ● | 6 | 3.000 | 2.543 | 2.000 | 1.000 | 1.024 | .539 | 2.750 | .375 | .219 | .787 | .059 | TS43 | AMS4 | AJS4012T15 | | ⓪TKY15T | HSCU50014H | JDM1204ZD-R |
| | AJXU12R0407E | ● | 7 | 4.000 | 3.539 | 2.500 | 1.500 | 1.181 | .787 | 3.750 | .625 | .375 | 1.181 | .059 | | | | | | HSCU75016H | JDM1204ZD-R |

*1 Clamp Torque (lbf-in) : TS351=22, TS43=31, TS54=66, AJS3010T10=22, AJS4012T15=31, AJS5014T25=66
 *2 The cutter body includes a set bolt for an arbor.

| | |
|----------------|--------|
| INSERTS | > K115 |
| SPARE PARTS | > M001 |
| TECHNICAL DATA | > N001 |

MILLING



METRIC Standard

SHANK TYPE

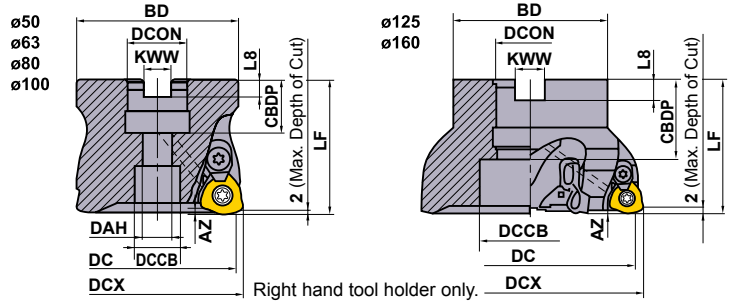
Right hand tool holder only.

| Type | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | | | Insert Screw | Clamp Bridge | Clamp Bridge Screw | Spring | Wrench | Insert | |
|----------------|-----------------|-------|-----------------|-----------------|------|------|-----|-----|------|-------|--------------|--------------|--------------------|------------|---------|------------|------------|
| | | | | DCX | DCON | DC | LF | LH | APMX | AZ | | | | | | | B2 |
| Short | AJX06R162SA16SS | ★ | 2 | 16 | 16 | 8.9 | 70 | 20 | 1.0 | 0.3 | 3°30' | TS25 | — | — | — | ①TKY08F | JOM 06T215 |
| | AJX06R172SA16SS | ★ | 2 | 17 | 16 | 9.9 | 70 | 20 | 1.0 | 0.3 | — | TS25 | — | — | — | ①TKY08F | ZZSR-○○ |
| Standard | AJX06R162SA16S | ★ | 2 | 16 | 16 | 8.9 | 110 | 30 | 1.0 | 0.3 | 2°15' | TS25 | — | — | — | ①TKY08F | JOM 06T215 |
| | AJX06R172SA16S | ★ | 2 | 17 | 16 | 9.9 | 110 | 20 | 1.0 | 0.3 | — | TS25 | — | — | — | ①TKY08F | |
| | AJX06R203SA20S | ★ | 3 | 20 | 20 | 12.9 | 130 | 50 | 1.0 | 0.3 | 1°18' | TS25 | — | — | — | ①TKY08F | ZZSR-○○ |
| | AJX06R223SA20S | ★ | 3 | 22 | 20 | 14.9 | 130 | 30 | 1.0 | 0.3 | — | TS25 | — | — | — | ①TKY08F | |
| | AJX08R202SA20S | ★ | 2 | 20 | 20 | 11.4 | 130 | 50 | 1.5 | 0.5 | 1°18' | TS33 | — | — | — | ②TKY08D | JOM 080320 |
| | AJX08R222SA20S | ★ | 2 | 22 | 20 | 13.4 | 130 | 30 | 1.5 | 0.5 | — | TS33 | — | — | — | ②TKY08D | |
| | AJX08R253SA25S | ★ | 3 | 25 | 25 | 16.4 | 140 | 60 | 1.5 | 0.5 | 1°06' | TS33 | — | — | — | ②TKY08D | ZZSR-○○ |
| | AJX08R283SA25S | ★ | 3 | 28 | 25 | 19.4 | 140 | 40 | 1.5 | 0.5 | — | TS33 | — | — | — | ②TKY08D | |
| | AJX09R252SA25S | ★ | 2 | 25 | 25 | 14.9 | 140 | 60 | 2.0 | 1.0 | 1°06' | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | JDM 09T3○○ |
| | AJX09R282SA25S | ★ | 2 | 28 | 25 | 17.9 | 140 | 40 | 2.0 | 1.0 | — | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX09R303SA32S | ★ | 3 | 30 | 32 | 20.0 | 150 | 70 | 2.0 | 1.0 | 1°48' | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX09R323SA32S | ★ | 3 | 32 | 32 | 21.9 | 150 | 70 | 2.0 | 1.0 | 0°56' | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX09R353SA32S | ★ | 3 | 35 | 32 | 24.9 | 150 | 50 | 2.0 | 1.0 | — | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX09R404SA32S | ★ | 4 | 40 | 32 | 29.9 | 150 | 50 | 2.0 | 1.0 | — | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX09R404SA42S | ★ | 4 | 40 | 42 | 29.9 | 150 | 70 | 2.0 | 1.0 | 1°48' | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX12R302SA32S | ★ | 2 | 30 | 32 | 18.3 | 150 | 70 | 2.0 | 1.5 | 1°48' | TS407 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | JDM 1204○○ |
| AJX12R322SA32S | ★ | 2 | 32 | 32 | 20.3 | 150 | 70 | 2.0 | 1.5 | 0°58' | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | | |
| AJX12R352SA32S | ★ | 2 | 35 | 32 | 23.3 | 150 | 50 | 2.0 | 1.5 | — | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | | |
| AJX12R403SA32S | ★ | 3 | 40 | 32 | 28.3 | 150 | 50 | 2.0 | 1.5 | — | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | | |
| AJX12R403SA42S | ★ | 3 | 40 | 42 | 28.3 | 150 | 70 | 2.0 | 1.5 | 1°48' | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | | |
| AJX14R503SA42S | ★ | 3 | 50 | 42 | 38.2 | 150 | 50 | 2.0 | 2.0 | — | TS54 | AMS5 | AJS5014T25 | ASS3 | ②TKY25D | JDM 1405○○ | |
| AJX14R634SA42S | ★ | 4 | 63 | 42 | 51.1 | 150 | 50 | 2.0 | 2.0 | — | TS54 | AMS5 | AJS5014T25 | ASS3 | ②TKY25D | | |

* Clamp Torque (lbf-in) : TS25=8.9, TS33=8.9, TS351=22, TS407=31, TS43=31, TS54=66

| Type | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | | | | Insert Screw | Clamp Bridge | Clamp Bridge Screw | Spring | Wrench | Insert |
|-----------------|-----------------|-------|-----------------|-----------------|------|------|-----|-----|------|-------|-------|--------------|--------------|--------------------|---------|--------------------------|--------------------------|
| | | | | DCX | DCON | DC | LF | LH | APMX | AZ | B2 | | | | | | |
| Long | AJX06R162SA16L | ★ | 2 | 16 | 16 | 8.9 | 150 | 70 | 1.0 | 0.3 | 0°56' | TS25 | — | — | — | ①TKY08F | JOM 06T215 ZZSR-○○ |
| | AJX06R172SA16L | ★ | 2 | 17 | 16 | 9.9 | 150 | 20 | 1.0 | 0.3 | — | TS25 | — | — | — | ①TKY08F | |
| | AJX06R203SA20L | ★ | 3 | 20 | 20 | 12.9 | 180 | 100 | 1.0 | 0.3 | 0°38' | TS25 | — | — | — | ①TKY08F | |
| | AJX06R223SA20L | ★ | 3 | 22 | 20 | 14.9 | 180 | 30 | 1.0 | 0.3 | — | TS25 | — | — | — | ①TKY08F | |
| | AJX08R202SA20L | ★ | 2 | 20 | 20 | 11.4 | 180 | 100 | 1.5 | 0.5 | 0°39' | TS33 | — | — | — | ②TKY08D | JOM 080320 ZZSR-○○ |
| | AJX08R222SA20L | ★ | 2 | 22 | 20 | 13.4 | 180 | 30 | 1.5 | 0.5 | — | TS33 | — | — | — | ②TKY08D | |
| | AJX08R253SA25L | ★ | 3 | 25 | 25 | 16.4 | 200 | 120 | 1.5 | 0.5 | 0°32' | TS33 | — | — | — | ②TKY08D | |
| | AJX08R283SA25L | ★ | 3 | 28 | 25 | 19.4 | 200 | 40 | 1.5 | 0.5 | — | TS33 | — | — | — | ②TKY08D | |
| | AJX09R252SA25L | ★ | 2 | 25 | 25 | 14.9 | 200 | 120 | 2.0 | 1.0 | 0°32' | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | JDM 09T3○○ ZD○R-○○ |
| | AJX09R282SA25L | ★ | 2 | 28 | 25 | 17.9 | 200 | 40 | 2.0 | 1.0 | — | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX09R303SA32L | ★ | 3 | 30 | 32 | 20.0 | 200 | 120 | 2.0 | 1.0 | 1°02' | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX09R323SA32L | ★ | 3 | 32 | 32 | 21.9 | 200 | 120 | 2.0 | 1.0 | 0°32' | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX09R353SA32L | ★ | 3 | 35 | 32 | 24.9 | 200 | 50 | 2.0 | 1.0 | — | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX09R404SA32L | ★ | 4 | 40 | 32 | 29.9 | 250 | 50 | 2.0 | 1.0 | — | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX09R404SA42L | ★ | 4 | 40 | 42 | 29.9 | 250 | 70 | 2.0 | 1.0 | 1°48' | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | |
| | AJX12R302SA32L | ★ | 2 | 30 | 32 | 18.3 | 200 | 120 | 2.0 | 1.5 | 1°02' | TS407 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | |
| | AJX12R322SA32L | ★ | 2 | 32 | 32 | 20.3 | 200 | 120 | 2.0 | 1.5 | 0°33' | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | JDM 1204○○ ZD○R-○○ |
| | AJX12R352SA32L | ★ | 2 | 35 | 32 | 23.3 | 200 | 50 | 2.0 | 1.5 | — | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | |
| | AJX12R403SA32L | ★ | 3 | 40 | 32 | 28.3 | 250 | 50 | 2.0 | 1.5 | — | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | |
| | AJX12R403SA42L | ★ | 3 | 40 | 42 | 28.3 | 250 | 70 | 2.0 | 1.5 | 1°48' | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY25D | |
| AJX14R503SA42L | ★ | 3 | 50 | 42 | 38.1 | 250 | 50 | 2.0 | 2.0 | — | TS54 | AMS5 | AJS5014T25 | ASS3 | ②TKY25D | JDM 1405○○ ZD○R-○○ | |
| AJX14R634SA42L | ★ | 4 | 63 | 42 | 51.1 | 250 | 50 | 2.0 | 2.0 | — | TS54 | AMS5 | AJS5014T25 | ASS3 | ②TKY25D | | |
| Extra Long | AJX06R162SA16EL | ★ | 2 | 16 | 16 | 8.9 | 200 | 100 | 1.0 | 0.3 | 0°38' | TS25 | — | — | — | ①TKY08F | JOM 06T215 ZZSR-○○ |
| | AJX06R172SA16EL | ★ | 2 | 17 | 16 | 9.9 | 200 | 20 | 1.0 | 0.3 | — | TS25 | — | — | — | ②TKY08F | |
| | AJX08R202SA20EL | ★ | 2 | 20 | 20 | 11.4 | 250 | 130 | 1.5 | 0.5 | 0°30' | TS33 | — | — | — | ②TKY08D | JOM 080320 ZZSR-○○ |
| | AJX08R222SA20EL | ★ | 2 | 22 | 20 | 13.4 | 250 | 30 | 1.5 | 0.5 | — | TS33 | — | — | — | ②TKY10D | |
| | AJX09R252SA25EL | ★ | 2 | 25 | 25 | 14.9 | 300 | 180 | 2.0 | 1.0 | 0°22' | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | JDM 09T3○○ ZD○R-○○ |
| | AJX09R282SA25EL | ★ | 2 | 28 | 25 | 17.9 | 300 | 40 | 2.0 | 1.0 | — | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY15D | |
| | AJX12R302SA32EL | ★ | 2 | 30 | 32 | 18.3 | 300 | 180 | 2.0 | 1.5 | 0°42' | TS407 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | JDM 1204○○ ZD○R-○○ |
| | AJX12R322SA32EL | ★ | 2 | 32 | 32 | 20.3 | 300 | 180 | 2.0 | 1.5 | 0°22' | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | |
| | AJX12R352SA32EL | ★ | 2 | 35 | 32 | 23.3 | 300 | 50 | 2.0 | 1.5 | — | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | |
| | AJX12R402SA32EL | ★ | 2 | 40 | 32 | 28.3 | 350 | 50 | 2.0 | 1.5 | — | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | |
| AJX12R402SA42EL | ★ | 2 | 40 | 42 | 28.3 | 350 | 70 | 2.0 | 1.5 | 1°48' | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | | |

* Clamp Torque (lbf-in) : TS25=8.9, TS33=8.9, TS351=22, TS407=31, TS43=31, TS54=66



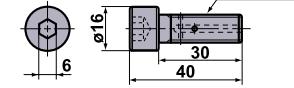
METRIC Standard

For inch arbors

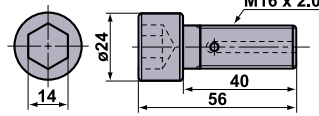
AJX09 **AJX12** **AJX14**
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 GAMF :-6° GAMF :-5°—-4° GAMF :-3°

Coolant thru Set Bolt

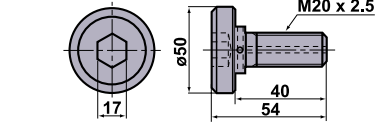
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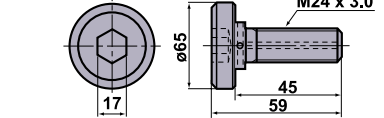
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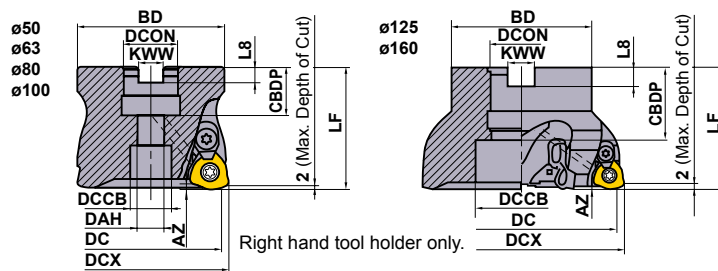
ARBOR TYPE

| Type | Order Number | Stock | Number of Teeth | Dimensions (mm) [inch] | | | | | | | | | | | *2 WT (kg) | *1 Insert Screw | *1 Clamp Bridge | *1 Clamp Bridge Screw | *1 Spring | *1 Wrench | *1 Set Bolt | *1 Insert |
|------------------|--------------|-------|-----------------|------------------------|-------|---------------|----------------|------|-----|------|------|----|------|-----|------------------|-----------------------|-----------------------|--------------------------------|--------------|--------------|----------------|--------------------|
| | | | | DCX | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | DCCB | AZ | | | | | | | | |
| Coarse Pitch | AJX12R05003B | ★ | 3 | 50 | 38.3 | 50 | 22.225 [.875"] | 19 | 11 | 47 | 8.4 | 5 | 17 | 1.5 | 0.4 | TS43 | AMS4 | AJS40 12T15 | ASS2 | ⓪TKY15T | HSC100 30H | JDM 1204 ZD R-⓪ |
| | AJX14R06303B | ★ | 3 | 63 | 51.1 | 50 | 22.225 [.875"] | 19 | 11 | 60 | 8.4 | 5 | 17 | 2 | 0.7 | | | | | | HSC100 30H | |
| | AJX14R08004D | ★ | 4 | 80 | 68.1 | 63 | 31.75 [1.25"] | 32 | 17 | 76 | 12.7 | 8 | 26 | 2 | 1.3 | | | | | | HSC160 40H | JDM 1405 ZD R-⓪ |
| | AJX14R10005D | ★ | 5 | 100 | 88.1 | 63 | 31.75 [1.25"] | 32 | 17 | 96 | 12.7 | 8 | 26 | 2 | 2.4 | TS54 | AMS5 | AJS50 14T25 | ASS3 | ⓪TKY25T | MBA200 40H | |
| | AJX14R12505E | ★ | 5 | 125 | 113.2 | 63 | 38.1 [1.5"] | 40 | — | 100 | 15.9 | 10 | 56 | 2 | 3.3 | | | | | | MBA240 45H | |
| AJX14R16006F | ★ | 6 | 160 | 148.2 | 63 | 50.8 [2.0"] | 43 | — | 100 | 19.1 | 11 | 72 | 2 | 5.0 | | | | | | | | |
| Fine Pitch | AJX12R05004B | ★ | 4 | 50 | 38.3 | 50 | 22.225 [.875"] | 19 | 11 | 47 | 8.4 | 5 | 17 | 1.5 | 0.4 | TS43 | AMS4 | AJS40 12T15 | ASS2 | ⓪TKY15T | HSC100 30H | JDM 1204 ZD R-⓪ |
| | AJX14R06304B | ★ | 4 | 63 | 51.1 | 50 | 22.225 [.875"] | 19 | 11 | 60 | 8.4 | 5 | 17 | 2 | 0.7 | | | | | | HSC100 30H | |
| | AJX14R08005D | ★ | 5 | 80 | 68.1 | 63 | 31.75 [1.25"] | 32 | 17 | 76 | 12.7 | 8 | 26 | 2 | 1.3 | | | | | | HSC160 40H | JDM 1405 ZD R-⓪ |
| | AJX14R10006D | ★ | 6 | 100 | 88.1 | 63 | 31.75 [1.25"] | 32 | 17 | 96 | 12.7 | 8 | 26 | 2 | 2.4 | TS54 | AMS5 | AJS50 14T25 | ASS3 | ⓪TKY25T | MBA200 40H | |
| | AJX14R12507E | ★ | 7 | 125 | 113.2 | 63 | 38.1 [1.5"] | 40 | — | 100 | 15.9 | 10 | 56 | 2 | 3.3 | | | | | | MBA240 45H | |
| AJX14R16008F | ★ | 8 | 160 | 148.2 | 63 | 50.8 [2.0"] | 43 | — | 100 | 19.1 | 11 | 72 | 2 | 5.0 | | | | | | | | |
| Extra Fine Pitch | AJX09R05005B | ★ | 5 | 50 | 40 | 50 | 22.225 [.875"] | 19 | 11 | 47 | 8.4 | 5 | 17 | 1 | 0.5 | TS351 | AMS3 | AJS30 10T10 | ASS2 | ⓪TKY10D | HSC100 30H | JDM 09T3 ZD R-⓪ |
| | AJX12R06305B | ★ | 5 | 63 | 51.3 | 50 | 22.225 [.875"] | 19 | 11 | 60 | 8.4 | 5 | 17 | 1.5 | 0.9 | | | | | | HSC100 30H | |
| | AJX12R08006D | ★ | 6 | 80 | 68.3 | 63 | 31.75 [1.25"] | 32 | 17 | 76 | 12.7 | 8 | 26 | 1.5 | 1.7 | TS43 | AMS4 | AJS40 12T15 | ASS2 | ⓪TKY15T | HSC160 40H | JDM 1204 ZD R-⓪ |
| AJX12R10007D | ★ | 7 | 100 | 88.3 | 63 | 31.75 [1.25"] | 32 | 17 | 96 | 12.7 | 8 | 26 | 1.5 | 2.9 | | | | | | | | |

*1 Clamp Torque (lbf-in) : TS351=22, TS43=31, TS54=66, AJS3010T10=22, AJS4012T15=31, AJS5014T25=66

*2 WT : Mass

*3 Set bolt not included.

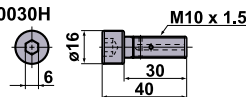


METRIC Standard

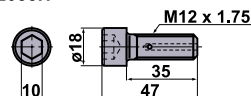
For metric arbors

Coolant thru Set Bolt

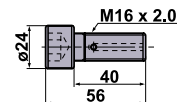
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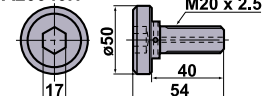
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HSC16040H



MBA20040H



ARBOR TYPE

AJX09 AJX12 AJX14
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 GAMF :-6° GAMF :-5° -4° GAMF :-3°

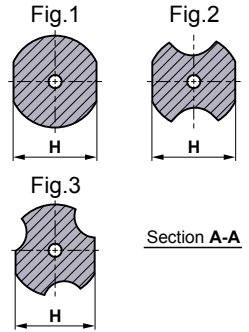
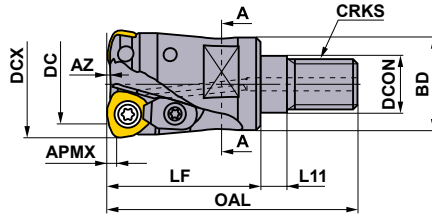
| Type | Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | | | | | | *2 WT (kg) | | | | | | | | | |
|---------------|---------------|-------|-----------------|-----------------|-------|----|------|------|-----|------|------|-----|------|------------------|-----|--------------|--------------|--------------------|--------|---------|---------------|---------------------|---------------------|
| | | | | DCX | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | DCCB | | AZ | Insert Screw | Clamp Bridge | Clamp Bridge Screw | Spring | Wrench | Set Bolt | Insert | |
| Coarse Pitch | AJX12-050A03R | ★ | 3 | 50 | 38.3 | 50 | 22 | 20 | 11 | 47 | 10.4 | 6.3 | 17 | 1.5 | 0.4 | TS43 | AMS4 | AJS40 12T15 | ASS2 | ⓪TKY15T | HSC100 30H | JDM 1204 ZD-R | |
| | AJX14-063A03R | ★ | 3 | 63 | 51.1 | 50 | 22 | 20 | 11 | 60 | 10.4 | 6.3 | 17 | 2 | 0.7 | | | | | | HSC100 30H | JDM 1405 ZD-R | |
| | AJX14-080A04R | ★ | 4 | 80 | 68.1 | 50 | 27 | 23 | 13 | 76 | 12.4 | 7 | 19 | 2 | 1.2 | | | | | | HSC120 35H | | |
| | AJX14-100A05R | ★ | 5 | 100 | 88.1 | 63 | 32 | 26 | 17 | 96 | 14.4 | 8 | 26 | 2 | 2.4 | TS54 | AMS5 | AJS50 14T25 | ASS3 | ⓪TKY25T | HSC160 40H | | |
| | AJX14-125B05R | ★ | 5 | 125 | 113.2 | 63 | 40 | 40 | - | 100 | 16.4 | 9 | 56 | 2 | 3.3 | | | | | | MBA200 40H | | |
| | AJX14-160B06R | ★ | 6 | 160 | 148.2 | 63 | 40 | 40 | - | 100 | 16.4 | 9 | 56 | 2 | 5.0 | | | | | | | | |
| Fine Pitch | AJX09-050A05R | ★ | 5 | 50 | 40 | 50 | 22 | 20 | 11 | 47 | 10.4 | 6.3 | 17 | 1 | 0.4 | TS351 | AMS3 | AJS30 10T10 | ASS2 | ⓪TKY10D | HSC100 30H | JDM 09T3 ZD-R | |
| | AJX12-050A04R | ★ | 4 | 50 | 38.3 | 50 | 22 | 20 | 11 | 47 | 10.4 | 6.3 | 17 | 1.5 | 0.4 | | | | | | HSC100 30H | JDM 1204 ZD-R | |
| | AJX12-063A05R | ★ | 5 | 63 | 51.3 | 50 | 22 | 20 | 11 | 60 | 10.4 | 6.3 | 17 | 1.5 | 0.7 | TS43 | AMS4 | AJS40 12T15 | ASS2 | ⓪TKY15T | HSC120 35H | | |
| | AJX12-080A06R | ★ | 6 | 80 | 68.3 | 50 | 27 | 23 | 13 | 76 | 12.4 | 7 | 19 | 1.5 | 1.2 | | | | | | HSC160 40H | | |
| | AJX12-100A07R | ★ | 7 | 100 | 88.3 | 63 | 32 | 26 | 17 | 96 | 14.4 | 8 | 26 | 1.5 | 2.6 | | | | | | | | |
| | AJX14-063A04R | ★ | 4 | 63 | 51.1 | 50 | 22 | 20 | 11 | 60 | 10.4 | 6.3 | 17 | 2 | 0.7 | | | | | | | HSC100 30H | JDM 1405 ZD-R |
| | AJX14-080A05R | ★ | 5 | 80 | 68.1 | 50 | 27 | 23 | 13 | 76 | 12.4 | 7 | 19 | 2 | 1.2 | | | | | | | HSC120 35H | |
| | AJX14-100A06R | ★ | 6 | 100 | 88.1 | 63 | 32 | 26 | 17 | 96 | 14.4 | 8 | 26 | 2 | 2.4 | TS54 | AMS5 | AJS50 14T25 | ASS3 | ⓪TKY25T | HSC160 40H | | |
| | AJX14-125B07R | ★ | 7 | 125 | 113.2 | 63 | 40 | 40 | - | 100 | 16.4 | 9 | 56 | 2 | 3.3 | | | | | | | MBA200 40H | |
| AJX14-160B08R | ★ | 8 | 160 | 148.2 | 63 | 40 | 40 | - | 100 | 16.4 | 9 | 56 | 2 | 5.0 | | | | | | | | | |

*1 Clamp Torque (lbf-in) : TS351=22, TS43=31, TS54=66, AJS3010T10=22, AJS4012T15=31, AJS5014T25=66

*2 WT : Mass

*3 Set bolt not included.

INSERTS > K115
 SPARE PARTS > M001
 TECHNICAL DATA > N001



Section A-A

METRIC Standard

SCREW-IN TYPE

Right hand tool holder only.

| Order Number | Stock R | Coolant Thru *3 | Number of Teeth | Dimensions (mm) | | | | | | | | | | Type (Fig.) | Insert Screw *1 | Clamp Bridge | Clamp Bridge Screw *1 | Spring | Wrench | Insert | |
|-----------------|------------|-----------------|-----------------|-----------------|------|----|------|-----|----|-----|----|---------|------|-------------|-----------------|--------------|-----------------------|------------|--------|---------|---------------|
| | | | | DCX | DCON | BD | DC | OAL | LF | L11 | H | CRKS *2 | APMX | | | | | | | | AZ |
| AJX06R162AM0830 | ★ | Y | 2 | 16 | 8.5 | 13 | 8.9 | 48 | 30 | 6 | 10 | M8 | 1.0 | 0.3 | 1 | TS25 | — | — | — | ⊙TKY08F | |
| AJX06R172AM0830 | ★ | Y | 2 | 17 | 8.5 | 13 | 9.9 | 48 | 30 | 6 | 10 | M8 | 1.0 | 0.3 | 1 | TS25 | — | — | — | ⊙TKY08F | JOM 06T215 |
| AJX06R203AM1030 | ★ | Y | 3 | 20 | 10.5 | 18 | 12.9 | 49 | 30 | 6 | 14 | M10 | 1.0 | 0.3 | 3 | TS25 | — | — | — | ⊙TKY08F | ZZSR-⊙ |
| AJX06R223AM1030 | ★ | Y | 3 | 22 | 10.5 | 18 | 14.9 | 49 | 30 | 6 | 14 | M10 | 1.0 | 0.3 | 3 | TS25 | — | — | — | ⊙TKY08F | |
| AJX08R202AM1030 | ★ | Y | 2 | 20 | 10.5 | 18 | 11.4 | 49 | 30 | 6 | 14 | M10 | 1.5 | 0.5 | 2 | TS33 | — | — | — | ⊙TKY08D | |
| AJX08R222AM1030 | ★ | Y | 2 | 22 | 10.5 | 18 | 13.4 | 49 | 30 | 6 | 14 | M10 | 1.5 | 0.5 | 2 | TS33 | — | — | — | ⊙TKY08D | JOM 080320 |
| AJX08R253AM1235 | ★ | Y | 3 | 25 | 12.5 | 21 | 16.4 | 57 | 35 | 6 | 19 | M12 | 1.5 | 0.5 | 1 | TS33 | — | — | — | ⊙TKY08D | ZZSR-⊙ |
| AJX08R283AM1235 | ★ | Y | 3 | 28 | 12.5 | 21 | 19.4 | 57 | 35 | 6 | 19 | M12 | 1.5 | 0.5 | 1 | TS33 | — | — | — | ⊙TKY08D | |
| AJX09R252AM1235 | ★ | Y | 2 | 25 | 12.5 | 21 | 14.9 | 57 | 35 | 6 | 19 | M12 | 2.0 | 1.0 | 2 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | |
| AJX09R282AM1235 | ★ | Y | 2 | 28 | 12.5 | 21 | 17.9 | 57 | 35 | 6 | 19 | M12 | 2.0 | 1.0 | 2 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | |
| AJX09R303AM1645 | ★ | Y | 3 | 30 | 17.0 | 29 | 20.0 | 68 | 45 | 6 | 24 | M16 | 2.0 | 1.0 | 1 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | JDM 09T3-⊙ |
| AJX09R323AM1645 | ★ | Y | 3 | 32 | 17.0 | 29 | 21.9 | 68 | 45 | 6 | 24 | M16 | 2.0 | 1.0 | 1 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | ZD-R-⊙ |
| AJX09R353AM1645 | ★ | Y | 3 | 35 | 17.0 | 29 | 24.9 | 68 | 45 | 6 | 24 | M16 | 2.0 | 1.0 | 1 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | |
| AJX09R404AM1645 | ★ | Y | 4 | 40 | 17.0 | 29 | 29.9 | 68 | 45 | 6 | 24 | M16 | 2.0 | 1.0 | 1 | TS351 | AMS3 | AJS3010T10 | ASS2 | ⊙TKY10D | |
| AJX12R302AM1645 | ★ | Y | 2 | 30 | 17.0 | 29 | 18.3 | 68 | 45 | 6 | 24 | M16 | 2.0 | 1.5 | 2 | TS407 | AMS4 | AJS4012T15 | ASS2 | ⊙TKY15D | |
| AJX12R322AM1645 | ★ | Y | 2 | 32 | 17.0 | 29 | 20.3 | 68 | 45 | 6 | 24 | M16 | 2.0 | 1.5 | 2 | TS43 | AMS4 | AJS4012T15 | ASS2 | ⊙TKY15D | JDM 1204-⊙ |
| AJX12R352AM1645 | ★ | Y | 2 | 35 | 17.0 | 29 | 23.3 | 68 | 45 | 6 | 24 | M16 | 2.0 | 1.5 | 2 | TS43 | AMS4 | AJS4012T15 | ASS2 | ⊙TKY15D | ZD-R-⊙ |
| AJX12R403AM1645 | ★ | Y | 3 | 40 | 17.0 | 29 | 28.3 | 68 | 45 | 6 | 24 | M16 | 2.0 | 1.5 | 2 | TS43 | AMS4 | AJS4012T15 | ASS2 | ⊙TKY15D | |

*1 Clamp Torque (lbf-in) : TS25=8.9, TS33=8.9, TS351=22, TS407=31, TS43=31, AJS3010T10=22, AJS4012T15=31

*2 Clamp Torque of the Head (lbf-ft) : M8=17.1, M10=33.8, M12=59.2, M16=66.7

*3 Y=Yes

● : Inventory maintained. ○ : Inventory maintained. (Available Winter 2015)

★ : Inventory maintained in Japan.

<10 inserts in one case>

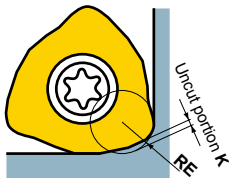
INSERTS

| Work Material | P | Steel | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Cutting Conditions : ● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting | | | | | | |
|--------------------------|--------------------|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|-------------------|---|-----|------|------|----------|------|--|
| | M | Stainless Steel | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| K | Cast Iron | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| | S | Heat-resistant Alloy, Titanium Alloy | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| H | Hardened Materials | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| Shape | Order Number | Class | Coated | | | | | | | | | | Dimensions (inch) | | | | | Geometry | | |
| | | | FH7020 | MP6120 | MP6130 | MP7130 | MP7140 | MP9120 | MP9130 | VP15TF | VP30RT | AN | IC | S | BS | RE | | | | |
| | JOMW06T215ZZSR-FT | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 13° | .250 | .109 | .047 | .059 | |
| | JOMW080320ZZSR-FT | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 13° | .315 | .125 | .055 | .079 | |
| | JDMW09T320ZDSR-FT | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 15° | .375 | .156 | .071 | .079 | |
| | JDMW120420ZDSR-FT | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 15° | .472 | .187 | .098 | .079 | |
| | JDMW140520ZDSR-FT | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 15° | .551 | .219 | .110 | .079 | |
| Strong Cutting Edge | JDMT120420ZDSR-ST | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 15° | .472 | .187 | .098 | .079 | |
| | JDMT140520ZDSR-ST | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 15° | .551 | .219 | .110 | .079 | |
| NEW | JOMT06T218ZZER-JL | M | | | | ○ | ○ | ○ | ○ | | | | | | 13° | .250 | .109 | .047 | .071 | |
| | JOMT080326ZZER-JL | M | | | | ○ | ○ | ○ | ○ | | | | | | 13° | .315 | .125 | .055 | .102 | |
| | JDMT09T323ZDER-JL | M | | | | ● | ● | ● | ● | | | | | | 15° | .375 | .156 | .071 | .091 | |
| | JDMT120423ZDER-JL | M | | | | ● | ● | ● | ● | | | | | | 15° | .472 | .187 | .098 | .091 | |
| | JDMT140523ZDER-JL | M | | | | ● | ● | ● | ● | | | | | | 15° | .551 | .219 | .110 | .091 | |
| Lower Cutting Resistance | JOMT06T215ZZSR-JM | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 13° | .250 | .109 | .047 | .059 | |
| | JOMT080320ZZSR-JM | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 13° | .315 | .125 | .055 | .079 | |
| | JDMT09T320ZDSR-JM | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 15° | .375 | .156 | .071 | .079 | |
| | JDMT120420ZDSR-JM | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 15° | .472 | .187 | .098 | .079 | |
| | JDMT140520ZDSR-JM | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 15° | .551 | .219 | .110 | .079 | |

(Note) Setting heights for ST chipbreaker and the other chipbreakers differ slightly.
If an ST type chipbreaker is used, please check the tool length offset height.



NOTE FOR PROGRAMMING



When using the **AJX**, please program the approximate radius as indicated. The approximate uncut portions for the program are as follows.

| Insert size | Breaker | Approx. RE(inch) | Uncut portion K(inch) |
|---------------|--------------|------------------|-----------------------|
| JOM06T215ZZSR | FT / JM | .079 | .013 |
| | JL | .098 | .013 |
| JOM080320ZZSR | FT / JM | .098 | .018 |
| | JL | .079 | .016 |
| JOM09T320ZDSR | FT / JM | .118 | .019 |
| | JL | .118 | .018 |
| JOM120420ZDSR | FT / JM / ST | .118 | .025 |
| | JL | .118 | .021 |
| JOM140520ZDSR | FT / JM / ST | .118 | .025 |
| | JL | .118 | .022 |

(Note) The uncut portion may change slightly depending on cutting conditions.

SCREW-IN ARBORS > K162
SPARE PARTS > M001
TECHNICAL DATA > N001

MILLING

RECOMMENDED CUTTING CONDITIONS

DEPTH OF CUT/FEED

| Work Material | Hardness | $\phi.625"$, $\phi.688"$ ($\phi16\text{mm}$, $\phi17\text{mm}$) (Shank type) | | | $\phi.750"$, $\phi.875"$ ($\phi20\text{mm}$, $\phi22\text{mm}$) (Shank type) | | | $\phi.750"$ ($\phi20\text{mm}$) (Shank type) | | | | |
|---------------|----------------------|--|---------------------------------|----------------------------|--|---------------------------------|----------------------------|--|---------------------------------|----------------------------|------|------|
| | | AJXU06 Type | | | AJXU08 Type | | | AJXU06 Type | | | | |
| | | 2 (Number of Teeth) | | | 2 (Number of Teeth) | | | 3 (Number of Teeth) | | | | |
| | | Over-hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | Over-hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | Over-hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | | |
| P | Mild Steel | $\leq 180\text{HB}$ | 5.5 | .031 | .031 | 6.3 | .039 | .039 | 6.3 | .035 | .035 | |
| | | | 7.0 | .024 | .024 | 8.3 | .031 | .031 | 8.3 | .028 | .028 | |
| | | | 8.2 | .016 | .016 | 9.4 | .024 | .024 | 9.4 | .020 | .020 | |
| | Carbon Steel | 180–280HB | 5.5 | .031 | .031 | 6.3 | .039 | .039 | 6.3 | .035 | .035 | |
| | | | 7.0 | .024 | .024 | 8.3 | .031 | .031 | 8.3 | .028 | .028 | |
| | | | 8.2 | .016 | .016 | 9.4 | .024 | .024 | 9.4 | .020 | .020 | |
| | Alloy Steel | 280–350HB | 5.5 | .028 | .031 | 6.3 | .031 | .039 | 6.3 | .028 | .035 | |
| | | | 7.0 | .020 | .024 | 8.3 | .024 | .031 | 8.3 | .020 | .028 | |
| | | | 8.2 | .012 | .016 | 9.4 | .016 | .024 | 9.4 | .016 | .020 | |
| | Alloy Tool Steel | $\leq 350\text{HB}$ | 5.5 | .028 | .031 | 6.3 | .031 | .039 | 6.3 | .028 | .035 | |
| | | | 7.0 | .020 | .024 | 8.3 | .024 | .031 | 8.3 | .020 | .028 | |
| | | | 8.2 | .012 | .016 | 9.4 | .016 | .024 | 9.4 | .016 | .020 | |
| | Pre-hardened Steel | $\leq 35\text{HRC}$ | 5.5 | .028 | .028 | 6.3 | .031 | .031 | 6.3 | .028 | .028 | |
| | | | 7.0 | .020 | .020 | 8.3 | .024 | .024 | 8.3 | .020 | .020 | |
| | | | 8.2 | .012 | .012 | 9.4 | .016 | .016 | 9.4 | .016 | .012 | |
| | M | Stainless Steel | $\leq 270\text{HB}$ | 5.5 | .031 | .028 | 6.3 | .039 | .031 | 6.3 | .035 | .028 |
| | | | | 7.0 | .024 | .020 | 8.3 | .031 | .024 | 8.3 | .028 | .020 |
| | | | | 8.2 | .016 | .012 | 9.4 | .024 | .016 | 9.4 | .020 | .012 |
| K | Gray Cast Iron | Tensile Strength $\leq 350\text{MPa}$ | 5.5 | .031 | .039 | 6.3 | .039 | .047 | 6.3 | .035 | .039 | |
| | | | 7.0 | .024 | .031 | 8.3 | .031 | .039 | 8.3 | .028 | .031 | |
| | | | 8.2 | .016 | .024 | 9.4 | .024 | .031 | 9.4 | .020 | .024 | |
| | Ductile Cast Iron | Tensile Strength $\leq 450\text{MPa}$ | 5.5 | .028 | .031 | 6.3 | .031 | .039 | 6.3 | .028 | .035 | |
| | | | 7.0 | .020 | .024 | 8.3 | .024 | .031 | 8.3 | .020 | .028 | |
| | | | 8.2 | .012 | .016 | 9.4 | .016 | .024 | 9.4 | .016 | .020 | |
| S | Heat Resistant Alloy | $\leq 350\text{HB}$ | — | — | — | — | — | — | — | — | | |
| | Titanium Alloy | — | — | — | — | — | — | — | — | — | | |
| H | Hardened Steel | 43–55HRC | 5.5 | .020 | .020 | 6.3 | .020 | .024 | 6.3 | .020 | .020 | |
| | | | 7.0 | .016 | .012 | 8.3 | .016 | .016 | 8.3 | .016 | .016 | |
| | | | 8.2 | .012 | .008 | 9.4 | .012 | .008 | 9.4 | .012 | .008 | |

| | φ1.000", φ1.125" (φ25mm, φ28mm) (Shank type) | | | φ1.000" (φ25mm) (Shank type) | | | φ1.250" (φ32mm) (Shank type) | | | φ1.250" (φ32mm) (Shank type) | | | φ1.500" (φ40mm) (φ1.250"shank) | | | φ1.500" (φ40mm) (φ1.250"shank) | | |
|--|--|---------------------------------|----------------------------|------------------------------------|---------------------------------|----------------------------|------------------------------------|---------------------------------|----------------------------|------------------------------------|---------------------------------|----------------------------|--------------------------------------|---------------------------------|----------------------------|--------------------------------------|---------------------------------|----------------------------|
| | AJXU09 Type | | | AJXU08 Type | | | AJXU12 Type | | | AJXU09 Type | | | AJXU12 Type | | | AJXU09 Type | | |
| | 2 (Number of Teeth) | | | 3 (Number of Teeth) | | | 2 (Number of Teeth) | | | 3 (Number of Teeth) | | | 3 (Number of Teeth) | | | 4 (Number of Teeth) | | |
| | Over- hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | Over- hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | Over- hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | Over- hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | Over- hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | Over- hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) |
| | 6.7 | .039 | .047 | 6.7 | .035 | .039 | 7.0 | .047 | .055 | 7.0 | .043 | .047 | 7.0 | .047 | .055 | 7.0 | .043 | .047 |
| | 9.0 | .031 | .039 | 9.0 | .028 | .031 | 9.0 | .039 | .047 | 9.0 | .035 | .039 | 9.5 | .039 | .047 | 9.5 | .035 | .039 |
| | 11.5 | .024 | .031 | 11.5 | .020 | .024 | 11.0 | .031 | .039 | 11.5 | .028 | .031 | 12.0 | .031 | .039 | 12.0 | .028 | .031 |
| | 6.7 | .039 | .047 | 6.7 | .035 | .039 | 7.0 | .047 | .055 | 7.0 | .043 | .047 | 7.0 | .047 | .055 | 7.0 | .043 | .047 |
| | 9.0 | .031 | .039 | 9.0 | .028 | .031 | 9.0 | .039 | .047 | 9.0 | .035 | .039 | 9.5 | .039 | .047 | 9.5 | .035 | .039 |
| | 11.5 | .024 | .031 | 11.5 | .020 | .024 | 11.0 | .031 | .039 | 11.5 | .028 | .031 | 12.0 | .031 | .039 | 12.0 | .028 | .031 |
| | 6.7 | .031 | .047 | 6.7 | .028 | .039 | 7.0 | .039 | .055 | 7.0 | .035 | .047 | 7.0 | .039 | .055 | 7.0 | .035 | .047 |
| | 9.0 | .024 | .039 | 9.0 | .020 | .031 | 9.0 | .031 | .047 | 9.0 | .028 | .039 | 9.5 | .031 | .047 | 9.5 | .028 | .039 |
| | 11.5 | .016 | .031 | 11.5 | .016 | .024 | 11.0 | .024 | .039 | 11.5 | .020 | .031 | 12.0 | .024 | .039 | 12.0 | .020 | .031 |
| | 6.7 | .031 | .047 | 6.7 | .028 | .039 | 7.0 | .039 | .055 | 7.0 | .035 | .047 | 7.0 | .039 | .055 | 7.0 | .035 | .047 |
| | 9.0 | .024 | .039 | 9.0 | .020 | .031 | 9.0 | .031 | .047 | 9.0 | .028 | .039 | 9.5 | .031 | .047 | 9.5 | .028 | .039 |
| | 11.5 | .016 | .031 | 11.5 | .016 | .024 | 11.0 | .024 | .039 | 11.5 | .020 | .031 | 12.0 | .024 | .039 | 12.0 | .020 | .031 |
| | 6.7 | .031 | .039 | 6.7 | .028 | .035 | 7.0 | .039 | .047 | 7.0 | .035 | .039 | 7.0 | .039 | .047 | 7.0 | .035 | .039 |
| | 9.0 | .024 | .031 | 9.0 | .020 | .028 | 9.0 | .031 | .039 | 9.0 | .028 | .031 | 9.5 | .031 | .039 | 9.5 | .028 | .031 |
| | 11.5 | .016 | .024 | 11.5 | .016 | .020 | 11.0 | .024 | .031 | 11.5 | .020 | .024 | 12.0 | .024 | .031 | 12.0 | .020 | .024 |
| | 6.7 | .039 | .039 | 6.7 | .035 | .035 | 7.0 | .047 | .047 | 7.0 | .043 | .039 | 7.0 | .047 | .047 | 7.0 | .043 | .039 |
| | 9.0 | .031 | .031 | 9.0 | .028 | .028 | 9.0 | .039 | .039 | 9.0 | .035 | .031 | 9.5 | .039 | .039 | 9.5 | .035 | .031 |
| | 11.5 | .024 | .024 | 11.5 | .020 | .020 | 11.0 | .031 | .031 | 11.5 | .028 | .024 | 12.0 | .031 | .031 | 12.0 | .028 | .024 |
| | 6.7 | .039 | .055 | 6.7 | .035 | .047 | 7.0 | .047 | .063 | 7.0 | .043 | .055 | 7.0 | .047 | .063 | 7.0 | .043 | .055 |
| | 9.0 | .031 | .047 | 9.0 | .028 | .039 | 9.0 | .039 | .055 | 9.0 | .035 | .047 | 9.5 | .039 | .055 | 9.5 | .035 | .047 |
| | 11.5 | .024 | .039 | 11.5 | .020 | .031 | 11.0 | .031 | .047 | 11.5 | .028 | .035 | 12.0 | .031 | .047 | 12.0 | .028 | .035 |
| | 6.7 | .031 | .047 | 6.7 | .028 | .039 | 7.0 | .039 | .055 | 7.0 | .035 | .047 | 7.0 | .039 | .055 | 7.0 | .035 | .047 |
| | 9.0 | .024 | .039 | 9.0 | .020 | .031 | 9.0 | .031 | .047 | 9.0 | .028 | .039 | 9.5 | .031 | .047 | 9.5 | .028 | .039 |
| | 11.5 | .016 | .031 | 11.5 | .016 | .024 | 11.0 | .024 | .039 | 11.5 | .020 | .031 | 12.0 | .024 | .039 | 12.0 | .020 | .031 |
| | 6.7 | .047 | .024 | — | — | — | 7.0 | .047 | .024 | 7.0 | .047 | .024 | 7.0 | .047 | .024 | 7.0 | .047 | .024 |
| | 9.0 | .039 | .016 | — | — | — | 9.0 | .039 | .016 | 9.0 | .039 | .016 | 9.5 | .039 | .016 | 9.5 | .039 | .016 |
| | 11.5 | .031 | .012 | — | — | — | 11.0 | .031 | .012 | 11.5 | .031 | .012 | 12.0 | .031 | .012 | 12.0 | .031 | .012 |
| | 6.7 | .020 | .031 | 6.7 | .020 | .028 | 7.0 | .024 | .039 | 7.0 | .020 | .035 | 7.0 | .024 | .039 | 7.0 | .020 | .035 |
| | 9.0 | .016 | .024 | 9.0 | .016 | .020 | 9.0 | .020 | .031 | 9.0 | .016 | .028 | 9.5 | .020 | .031 | 9.5 | .016 | .028 |
| | 11.5 | .012 | .016 | 11.5 | .012 | .012 | 11.0 | .016 | .024 | 11.5 | .012 | .020 | 12.0 | .016 | .024 | 12.0 | .012 | .020 |

* Depth of cut of JL breaker is up to .047inch.

RECOMMENDED CUTTING CONDITIONS

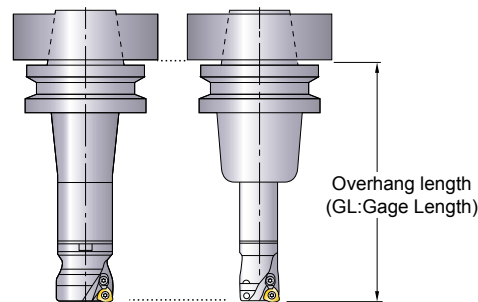
DEPTH OF CUT/FEED

| Work Material | Hardness | ϕ 1.500" (ϕ 40mm) (ϕ 1.500"shank) | | | ϕ 2.000" (ϕ 50mm) (Shank type) | | | ϕ 2.000", ϕ 2.500" (ϕ 50mm, ϕ 63mm) (Arbor type) | | | | |
|---------------|----------------------|-----------------------------------|---------------------------|----------------------|--------------------------------|---------------------------|----------------------|--|---------------------------|----------------------|------|------|
| | | AJXU12 Type | | | AJXU14 Type | | | AJXU12 Type (ϕ 2.000") AJXU14 Type (ϕ 2.500") | | | | |
| | | 3 (Number of Teeth) | | | 3 (Number of Teeth) | | | 3 or 4 (Number of Teeth) | | | | |
| | | Over-hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | Over-hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | Over-hang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | | |
| P | Mild Steel | ≤180HB | 7.0 | .047 | .059 | 7.0 | .055 | .059 | 6.0 | .059 | .059 | |
| | | | 9.5 | .039 | .051 | 9.5 | .047 | .051 | 10.0 | .051 | .051 | |
| | | | 12.0 | .031 | .043 | — | — | — | 14.0 | .043 | .043 | |
| | Carbon Steel | 180—280HB | 7.0 | .047 | .059 | 7.0 | .055 | .059 | 6.0 | .059 | .059 | |
| | | | 9.5 | .039 | .051 | 9.5 | .047 | .051 | 10.0 | .051 | .051 | |
| | | | 12.0 | .031 | .043 | — | — | — | 14.0 | .043 | .043 | |
| | Alloy Steel | 280—350HB | 7.0 | .039 | .059 | 7.0 | .047 | .059 | 6.0 | .051 | .059 | |
| | | | 9.5 | .031 | .051 | 9.5 | .039 | .051 | 10.0 | .043 | .051 | |
| | | | 12.0 | .024 | .043 | — | — | — | 14.0 | .035 | .043 | |
| | Alloy Tool Steel | ≤350HB | 7.0 | .039 | .059 | 7.0 | .047 | .059 | 6.0 | .051 | .059 | |
| | | | 9.5 | .031 | .051 | 9.5 | .039 | .051 | 10.0 | .043 | .051 | |
| | | | 12.0 | .024 | .043 | — | — | — | 14.0 | .035 | .043 | |
| | Pre-hardened Steel | ≤35HRC | 7.0 | .039 | .051 | 7.0 | .047 | .051 | 6.0 | .051 | .051 | |
| | | | 9.5 | .031 | .043 | 9.5 | .039 | .043 | 10.0 | .043 | .043 | |
| | | | 12.0 | .024 | .035 | — | — | — | 14.0 | .035 | .035 | |
| | M | Stainless Steel | ≤270HB | 7.0 | .047 | .051 | 7.0 | .055 | .051 | 6.0 | .059 | .051 |
| | | | | 9.5 | .039 | .043 | 9.5 | .047 | .043 | 10.0 | .051 | .043 |
| | | | | 12.0 | .031 | .035 | — | — | — | 14.0 | .043 | .035 |
| K | Gray Cast Iron | Tensile Strength ≤350MPa | 7.0 | .047 | .067 | 7.0 | .055 | .067 | 6.0 | .059 | .067 | |
| | | | 9.5 | .039 | .059 | 9.5 | .047 | .059 | 10.0 | .051 | .059 | |
| | | | 12.0 | .031 | .051 | — | — | — | 14.0 | .043 | .051 | |
| | Ductile Cast Iron | Tensile Strength ≤450MPa | 7.0 | .039 | .059 | 7.0 | .047 | .059 | 6.0 | .051 | .059 | |
| | | | 9.5 | .031 | .051 | 9.5 | .039 | .051 | 10.0 | .043 | .051 | |
| | | | 12.0 | .024 | .043 | — | — | — | 14.0 | .035 | .043 | |
| S | Heat Resistant Alloy | ≤350HB | 7.0 | .047 | .024 | 7.0 | .047 | .024 | 6.0 | .047 | .024 | |
| | | | 9.5 | .039 | .016 | 9.5 | .039 | .016 | 10.0 | .039 | .016 | |
| | Titanium Alloy | — | 12.0 | .031 | .012 | — | — | — | 14.0 | .031 | .012 | |
| H | Hardened Steel | 43—55HRC | 7.0 | .024 | .043 | 7.0 | .031 | .043 | 6.0 | .035 | .043 | |
| | | | 9.5 | .020 | .035 | 9.5 | .024 | .035 | 10.0 | .028 | .035 | |
| | | | 12.0 | .016 | .028 | — | — | — | — | — | — | |

| φ2.000", φ2.500" (φ50mm, φ63mm) (Arbor type) | | | φ3.000", φ4.000", φ4.921", φ6.299" (φ80mm, φ100mm, φ125mm, φ160mm) (Arbor type) | | | φ3.000", φ4.000" (φ80mm, φ100mm) (Arbor type) | | |
|--|---------------------------|----------------------|---|---------------------------|----------------------|---|---------------------------|----------------------|
| AJXU09 Type (φ2.000") AJXU12 Type (φ2.500") | | | AJXU14 Type AJX14 Type | | | AJXU12 Type | | |
| 5 (Number of Teeth) | | | 4 or 5 or 6 or 7 or 8 (Number of Teeth) | | | 6 or 7 (Number of Teeth) | | |
| Overhang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | Overhang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) | Overhang (inch) | Axial Depth of Cut (inch) | Feed per Tooth (IPT) |
| 6.0 | .053 | .051 | 7.0 | .059 | .059 | 7.0 | .053 | .051 |
| 10.0 | .046 | .043 | 12.0 | .051 | .051 | 12.0 | .046 | .043 |
| 14.0 | .039 | .035 | 18.0 | .039 | .039 | 18.0 | .035 | .031 |
| 6.0 | .053 | .051 | 7.0 | .059 | .059 | 7.0 | .053 | .051 |
| 10.0 | .046 | .043 | 12.0 | .051 | .051 | 12.0 | .046 | .043 |
| 14.0 | .039 | .035 | 18.0 | .039 | .039 | 18.0 | .035 | .031 |
| 6.0 | .046 | .051 | 7.0 | .051 | .059 | 7.0 | .046 | .051 |
| 10.0 | .039 | .043 | 12.0 | .043 | .051 | 12.0 | .039 | .043 |
| 14.0 | .032 | .035 | 18.0 | .031 | .039 | 18.0 | .028 | .031 |
| 6.0 | .046 | .051 | 7.0 | .051 | .059 | 7.0 | .046 | .051 |
| 10.0 | .039 | .043 | 12.0 | .043 | .051 | 12.0 | .039 | .043 |
| 14.0 | .032 | .035 | 18.0 | .031 | .039 | 18.0 | .028 | .031 |
| 6.0 | .046 | .043 | 7.0 | .051 | .051 | 7.0 | .046 | .043 |
| 10.0 | .039 | .035 | 12.0 | .043 | .043 | 12.0 | .039 | .035 |
| 14.0 | .032 | .028 | 18.0 | .031 | .031 | 18.0 | .028 | .024 |
| 6.0 | .053 | .043 | 7.0 | .059 | .051 | 7.0 | .053 | .043 |
| 10.0 | .046 | .035 | 12.0 | .051 | .043 | 12.0 | .046 | .035 |
| 14.0 | .039 | .028 | 18.0 | .039 | .031 | 18.0 | .035 | .024 |
| 6.0 | .053 | .059 | 7.0 | .059 | .067 | 7.0 | .053 | .059 |
| 10.0 | .046 | .051 | 12.0 | .051 | .059 | 12.0 | .046 | .051 |
| 14.0 | .039 | .039 | 18.0 | .039 | .047 | 18.0 | .035 | .035 |
| 6.0 | .046 | .051 | 7.0 | .051 | .059 | 7.0 | .046 | .051 |
| 10.0 | .039 | .043 | 12.0 | .043 | .051 | 12.0 | .039 | .043 |
| 14.0 | .032 | .035 | 18.0 | .031 | .039 | 18.0 | .028 | .031 |
| 6.0 | .047 | .024 | 7.0 | .047 | .024 | 7.0 | .047 | .024 |
| 10.0 | .039 | .016 | 12.0 | .039 | .016 | 12.0 | .039 | .016 |
| 14.0 | .031 | .012 | 18.0 | .031 | .012 | 18.0 | .031 | .012 |
| 6.0 | .032 | .039 | 7.0 | .035 | .043 | 7.0 | .032 | .039 |
| 10.0 | .025 | .031 | 12.0 | .028 | .035 | 12.0 | .025 | .031 |
| — | — | — | — | — | — | — | — | — |

* Depth of cut of JL breaker is up to .047inch.

① Overhang length



② Main spindle speed

$$N(\text{min}^{-1}) = (\text{Recommended cutting speed} \times 12) \div (\text{outer tool diameter} \times 3.14)$$

③ Table feed rate

$$v_f(\text{inch}/\text{min}) = N \times \text{feed per tooth} \times \text{number of teeth}$$

④ Recommended width of cut (ae) is more than 60% of cutter diameter.

⑤ The above cutting conditions are a guide when using a CAT50 size holder. In case of CAT40 and HSK63 machines, a cutter diameter of under 1.5 inch is recommended. In this case, reduce the depth of cut and table feed rate.

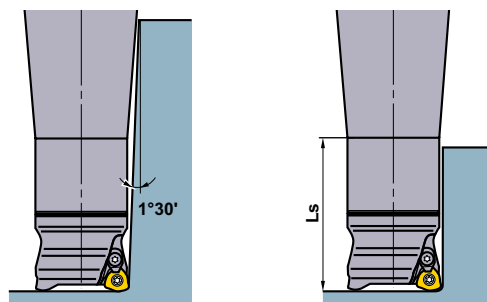
⑥ Use of **ST** chipbreaker with a tougher cutting edge is recommended for interrupted cutting. For tough applications, **MP7140** is recommended.

⑦ A cutter body with a coarse pitch is recommended for use in unstable conditions such as a long tool overhang.

⑧ Use "sharp" **JM** chipbreaker to lower cutting forces or when there is a long tool overhang.

⑨ Large chips are generated when machining with the **AJX**. To avoid chip jamming-related problems, machine using an air blow to disperse the chips effectively.

EFFECTIVE USE



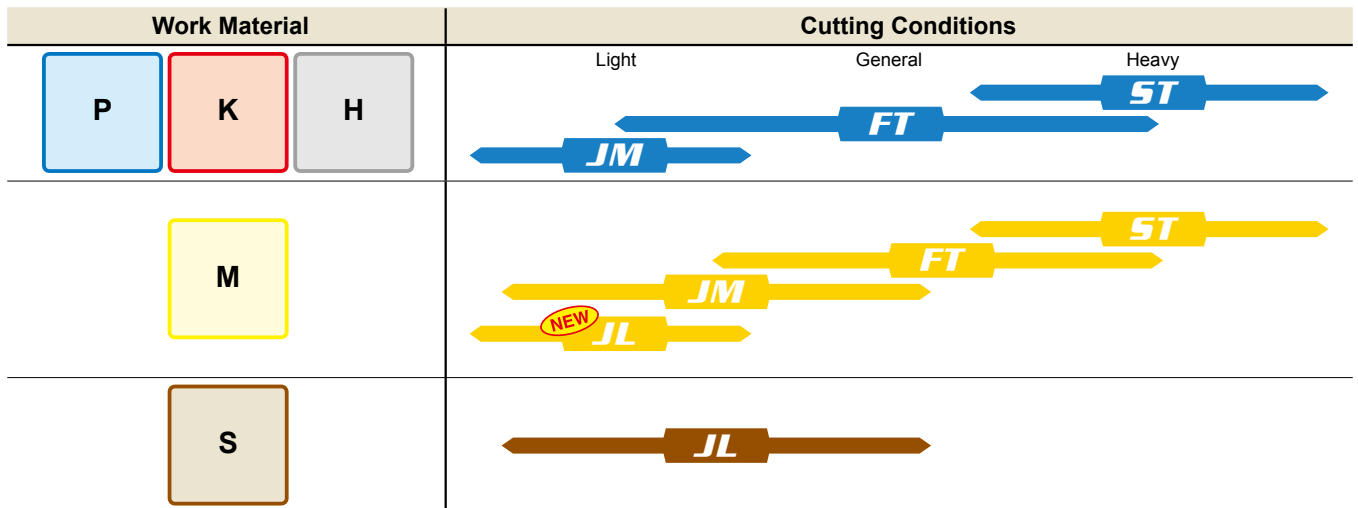
The tapered body of the special arbor for the AJX enables machining without touching a finished wall with a 1°30' draft angle.

Vertical wall machining is possible within the range of Ls.

RECOMMENDED CUTTING CONDITIONS

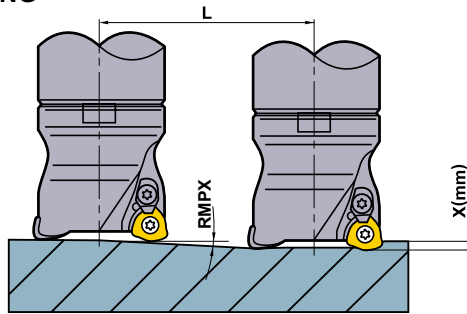
CUTTING SPEED

| Work Material | Hardness | Cutting speed (SFM) for different grades | | | |
|----------------------|-----------------------------|--|------------------|------------------|------------------|
| | | FH7020 | MP6120 | MP6130 | VP30RT |
| P | | FH7020 | MP6120 | MP6130 | VP30RT |
| Mild Steel | ≤180HB | 850 (700–1000) | 750 (580–910) | 685 (515–845) | 620 (450–880) |
| Carbon Steel | 180–280HB | 550 (400–700) | 480 (320–630) | 415 (255–565) | 350 (190–500) |
| Alloy Steel | 280–350HB | 450 (300–600) | 350 (190–500) | 285 (125–435) | 220 (60–370) |
| Alloy Tool Steel | ≤350HB | 450 (300–600) | 350 (190–500) | 285 (125–435) | 220 (60–370) |
| Pre-hardened Steel | 35–45HRC | – | 330 (230–425) | 265 (165–360) | 200 (100–295) |
| M | | MP7130 | MP7140 | | |
| Stainless Steel | ≤270HB | 450 (300–600) | 385 (235–535) | – | – |
| K | | FH7020 | VP15TF | | |
| Gray Cast Iron | Tensile Strength ≤350MPa | 850 (700–1000) | – | – | – |
| Ductile Cast Iron | Tensile Strength ≤800MPa | – | 550 (400–700) | – | – |
| S | | MP9120 | MP9130 | | |
| Heat Resistant Alloy | ≤350HB | 100 (65–130) | 80 (65–115) | – | – |
| Titanium Alloy | – | 165 (130–195) | 150 (100–180) | – | – |
| H | | VP15TF | | | |
| Hardened Steel | 40–55HRC | 230 (165–295) | – | – | – |

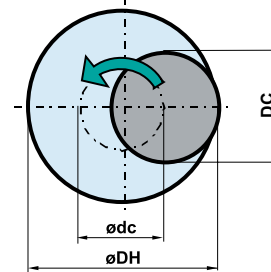


MAXIMUM CAPACITIES BY MODE

RAMPING



HELICAL CUTTING



- How to calculate the theoretical center of the tool path.

$$\text{ødc} = \text{øDH} - \text{DC}$$

Theoretical center of the tool Desired hole diameter Cutting edge diameter
- Please set the depth of cut per cycle under max. depth of cut (APMX).
- Please machine in a down cutting direction (climb milling).

- When ramping and helical cutting, it is recommended to reduce the feed rate by 40%.
- When drilling, please set the feed in the axial direction .008 inch/rev or less.
- The long chips generated can discharge in any direction, so ensure that adequate safety precautions are taken.

| Holder Type | Tool Diameter (inch) | Width of Face Cut (inch) | Max. Depth of Cut APMX (inch) | | Ramp machining | | | | | Helical Cutting | | Max. Drilling Depth AZ (inch) | |
|-------------|----------------------|--------------------------|-------------------------------|------|-----------------|---|--------|--------|--------|---------------------------|---------------------------|-------------------------------|------|
| | | | FT/JM/ST | JL | Max. Angle RMPX | Required "X" distance for "Z" inch depth (inch) | | | | Min. Hole Diameter (inch) | Max. Hole Diameter (inch) | | |
| | | | | | | Z=.039 | Z=.047 | Z=.059 | Z=.079 | | | | |
| Shank Type | AJXU06R102 | .63 | .34 | .039 | — | 3.0° | .744 | — | — | — | .90 | 1.13 | .012 |
| | AJXL 06R112 | .69 | .40 | .039 | — | 2.5° | .893 | — | — | — | 1.02 | 1.26 | .012 |
| | AJXU06R123 | .75 | .47 | .039 | — | 1.7° | 1.314 | — | — | — | 1.15 | 1.38 | .012 |
| | AJXL 08R122 | .75 | .41 | .059 | — | 3.5° | .638 | .768 | .965 | — | .99 | 1.34 | .020 |
| | AJXU08R142 | .88 | .53 | .059 | — | 3.0° | .744 | .897 | 1.126 | — | 1.24 | 1.59 | .020 |
| | AJXL 08R163 | 1.00 | .66 | .059 | — | 2.0° | 1.117 | 1.346 | 1.690 | — | 1.49 | 1.84 | .020 |
| | AJXU09R162 | 1.00 | .59 | .079 | .047 | 4.0° | .558 | .672 | .844 | 1.130 | 1.33 | 1.84 | .039 |
| | AJXL 09R182 | 1.13 | .72 | .079 | .047 | 3.0° | .744 | .897 | 1.126 | 1.507 | 1.58 | 2.09 | .039 |
| | AJXU09R203 | 1.25 | .85 | .079 | .047 | 3.3° | .676 | .815 | 1.023 | 1.370 | 1.83 | 2.34 | .039 |
| | AJXL 09R244 | 1.50 | 1.11 | .079 | .047 | 2.4° | .931 | 1.121 | 1.408 | 1.885 | 2.33 | 2.84 | .039 |
| | AJXU12R202 | 1.25 | .79 | .079 | .047 | 4.0° | .558 | .672 | .844 | 1.130 | 1.59 | 2.34 | .059 |
| | AJXL 12R243 | 1.50 | 1.04 | .079 | .047 | 3.0° | .744 | .897 | 1.126 | 1.507 | 2.09 | 2.84 | .059 |
| | AJXU14R323 | 2.00 | 1.53 | .079 | .047 | 4.2° | .531 | .640 | .803 | 1.076 | 2.90 | 3.84 | .079 |
| Arbor Type | AJXU09R02 | 2.00 | 1.61 | .079 | .047 | 1.1° | 2.031 | 2.448 | 3.073 | 4.114 | 3.33 | 3.84 | .039 |
| | AJXU12R02 | 2.00 | 1.54 | .079 | .047 | 2.0° | 1.117 | 1.346 | 1.690 | 2.262 | 3.09 | 3.84 | .059 |
| | AJXL 12R2505 | 2.50 | 2.04 | .079 | .047 | 1.5° | 1.489 | 1.795 | 2.253 | 3.017 | 4.09 | 4.84 | .059 |
| | AJXL 12R0306 | 3.00 | 2.54 | .079 | .047 | 1.2° | 1.862 | 2.244 | 2.817 | 3.771 | 5.09 | 5.84 | .059 |
| | AJXL 12R0407 | 4.00 | 3.54 | .079 | .047 | .8° | 2.793 | 3.366 | 4.225 | 5.658 | 7.09 | 7.84 | .059 |
| | AJXL 14R25 | 2.50 | 2.03 | .079 | .047 | 2.8° | .797 | .961 | 1.206 | 1.615 | 3.90 | 4.84 | .079 |
| | AJXL 14R03 | 3.00 | 2.53 | .079 | .047 | 1.8° | 1.241 | 1.496 | 1.877 | 2.514 | 4.90 | 5.84 | .079 |
| | AJXL 14R04 | 4.00 | 3.53 | .079 | .047 | 1.2° | 1.862 | 2.244 | 2.817 | 3.771 | 6.90 | 7.84 | .079 |
| | AJX14RA125 | 4.92 | 4.53 | .079 | .047 | .8° | 2.793 | 3.366 | 4.225 | 5.658 | 8.74 | 9.68 | .079 |
| AJX14RA160 | 6.30 | 5.83 | .079 | .047 | .5° | 4.469 | 5.386 | 6.761 | 9.053 | 11.50 | 12.44 | .079 | |

MILLING

MULTI FUNCTIONAL MILLING



ARX

- P
M
K
N
S
H



- Precision M-class 15° positive insert.
- Effective for various machining applications.
- Air / coolant through.

METRIC Standard

STEEL SHANK TYPE

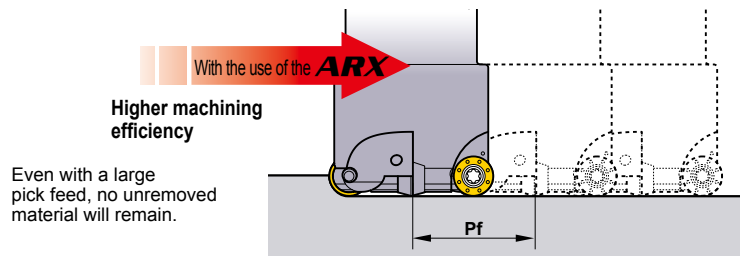
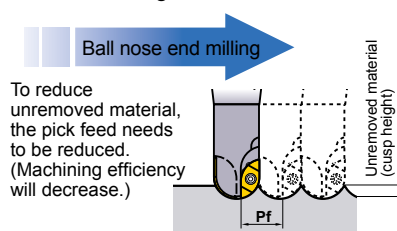
Right hand tool holder only.

| Type | Order Number | Stock | Coolant Thru *1 | Number of Teeth | Dimensions (mm) | | | | | | Type (Fig.) | *2 | | |
|---|----------------|-------|-----------------|-----------------|-----------------|-----|------|-----|-----|----|-------------|--------------|-------------|-------------|
| | | | | | RE | DCX | DCON | DC | LF | LH | | Insert Screw | Wrench | Insert |
| With the Center Cutting Edge | ARX25R102SA10S | ★ | Y | 2 | 2.5 | 10 | 10 | 5 | 120 | 20 | 1 | TPS20 | TIP06F | RDMW0517M0E |
| | ARX30R122SA10S | ★ | Y | 2 | 3.0 | 12 | 10 | 6 | 120 | 20 | 1 | TPS22S | TIP07FS | RDMW0620M0E |
| | ARX35R142SA12S | ★ | Y | 2 | 3.5 | 14 | 12 | 7 | 140 | 20 | 1 | TPS22 | TIP07FS | RDMW0724M0E |
| Without the Center Cutting Edge (Multi-tooth) | ARX25R122SA10S | ★ | Y | 2 | 2.5 | 12 | 10 | 7 | 120 | 20 | 2 | TPS20 | TIP06F | RDMW0517M0E |
| | ARX25R163SA16S | ★ | Y | 3 | 2.5 | 16 | 16 | 11 | 180 | 20 | 2 | TPS20 | TIP06F | RDMW0517M0E |
| | ARX30R163SA16S | ★ | Y | 3 | 3.0 | 16 | 16 | 10 | 180 | 20 | 2 | TPS22 | TIP07FS | RDMW0620M0E |
| | ARX25R173SA16S | ★ | Y | 3 | 2.5 | 17 | 16 | 12 | 180 | 20 | 2 | TPS20 | TIP06F | RDMW0517M0E |
| | ARX30R173SA16S | ★ | Y | 3 | 3.0 | 17 | 16 | 11 | 180 | 20 | 2 | TPS22 | TIP07FS | RDMW0620M0E |
| | ARX25R204SA20S | ★ | Y | 4 | 2.5 | 20 | 20 | 15 | 180 | 20 | 2 | TPS20 | TIP06F | RDMW0517M0E |
| | ARX30R203SA20S | ★ | Y | 3 | 3.0 | 20 | 20 | 14 | 180 | 20 | 2 | TPS22 | TIP07FS | RDMW0620M0E |
| | ARX25R224SA20S | ★ | Y | 4 | 2.5 | 22 | 20 | 17 | 180 | 20 | 2 | TPS20 | TIP06F | RDMW0517M0E |
| | ARX30R224SA20S | ★ | Y | 4 | 3.0 | 22 | 20 | 16 | 180 | 20 | 2 | TPS22 | TIP07FS | RDMW0620M0E |
| | ARX25R255SA20S | ★ | Y | 5 | 2.5 | 25 | 20 | 20 | 180 | 20 | 2 | TPS20 | TIP06F | RDMW0517M0E |
| ARX30R254SA20S | ★ | Y | 4 | 3.0 | 25 | 20 | 19 | 180 | 20 | 2 | TPS22 | TIP07FS | RDMW0620M0E | |

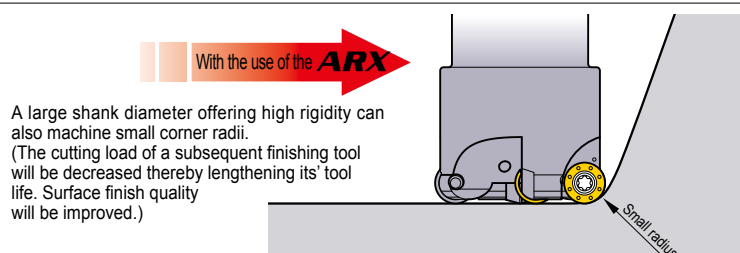
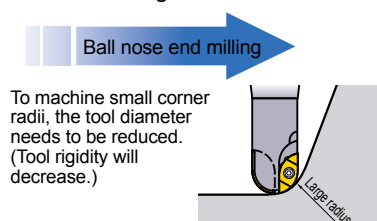
*1 Y=Yes *2 Clamp Torque (lbf-in) : TPS20=5.3, TPS22=5.3, TPS22S=5.3

Using the ARX Effectively (Reducing Unremoved Material)

● When Milling Even Surfaces



● When Milling Corner Radius





METRIC Standard

Fig.1

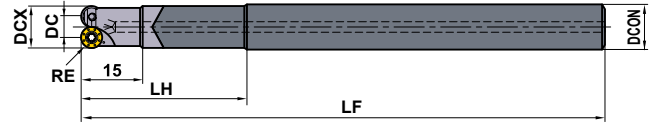


Fig.2

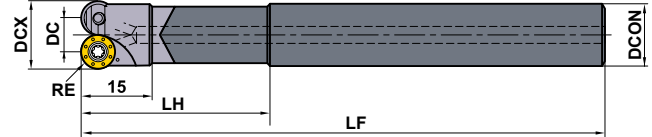
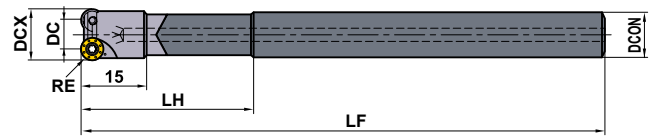


Fig.3



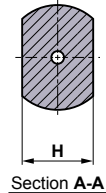
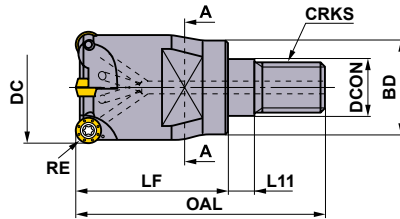
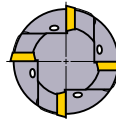
CARBIDE SHANK TYPE

Right hand tool holder only.

| Type | Order Number | Stock R | Coolant Thru *1 Y | Number of Teeth | Dimensions (mm) | | | | | | Type (Fig.) | *2 | | |
|---|-----------------|------------|----------------------|-----------------|-----------------|-----|------|----|-----|----|-------------|--------------|---------|-------------|
| | | | | | RE | DCX | DCON | DC | LF | LH | | Insert Screw | Wrench | Insert |
| With the Center Cutting Edge | ARX25R102SA10LW | ★ | Y | 2 | 2.5 | 10 | 10 | 5 | 150 | 40 | 1 | TPS20 | TIP06F | RDMW0517M0E |
| | ARX30R122SA10LW | ★ | Y | 2 | 3.0 | 12 | 10 | 6 | 150 | 40 | 1 | TPS22S | TIP07FS | RDMW0620M0E |
| | ARX35R142SA12LW | ★ | Y | 2 | 3.5 | 14 | 12 | 7 | 170 | 40 | 2 | TPS22 | TIP07FS | RDMW0724M0E |
| Without the Center Cutting Edge (Multi-tooth) | ARX25R122SA10LW | ★ | Y | 2 | 2.5 | 12 | 10 | 7 | 150 | 40 | 3 | TPS20 | TIP06F | RDMW0517M0E |

*1 Y=Yes

*2 Clamp Torque (lbf-in) : TPS20=5.3, TPS22=5.3, TPS22S=5.3



METRIC Standard

SCREW-IN TYPE

Right hand tool holder only.

| Order Number | Stock R | Coolant Thru *3 Y | Number of Teeth | Dimensions (mm) | | | | | | | | | WT (kg) | *1 | | |
|-----------------|------------|----------------------|-----------------|-----------------|----|------|------|-----|----|-----|----|---------|------------|--------------|---------|-------------|
| | | | | RE | DC | DCON | BD | OAL | LF | L11 | H | CRKS *2 | | Insert Screw | Wrench | Insert |
| ARX25R163M08A30 | ★ | Y | 3 | 2.5 | 16 | 8.5 | 14.7 | 48 | 30 | 6 | 10 | M8 | 0.1 | TPS20 | TIP06F | RDMW0517M0E |
| ARX25R173M08A30 | ★ | Y | 3 | 2.5 | 17 | 8.5 | 14.5 | 48 | 30 | 6 | 10 | M8 | 0.1 | TPS20 | TIP06F | RDMW0517M0E |
| ARX25R204M10A30 | ★ | Y | 4 | 2.5 | 20 | 10.5 | 18.6 | 49 | 30 | 6 | 14 | M10 | 0.2 | TPS20 | TIP06F | RDMW0517M0E |
| ARX25R224M10A30 | ★ | Y | 4 | 2.5 | 22 | 10.5 | 18.5 | 49 | 30 | 6 | 14 | M10 | 0.2 | TPS20 | TIP06F | RDMW0517M0E |
| ARX25R255M12A35 | ★ | Y | 5 | 2.5 | 25 | 12.5 | 23.6 | 57 | 35 | 6 | 19 | M12 | 0.2 | TPS20 | TIP06F | RDMW0517M0E |
| ARX30R163M08A30 | ★ | Y | 3 | 3.0 | 16 | 8.5 | 14.6 | 48 | 30 | 6 | 10 | M8 | 0.1 | TPS22 | TIP07FS | RDMW0620M0E |
| ARX30R173M08A30 | ★ | Y | 3 | 3.0 | 17 | 8.5 | 14.5 | 48 | 30 | 6 | 10 | M8 | 0.1 | TPS22 | TIP07FS | RDMW0620M0E |
| ARX30R203M10A30 | ★ | Y | 3 | 3.0 | 20 | 10.5 | 18.5 | 49 | 30 | 6 | 14 | M10 | 0.2 | TPS22 | TIP07FS | RDMW0620M0E |
| ARX30R224M10A30 | ★ | Y | 4 | 3.0 | 22 | 10.5 | 18.5 | 49 | 30 | 6 | 14 | M10 | 0.2 | TPS22 | TIP07FS | RDMW0620M0E |
| ARX30R254M12A35 | ★ | Y | 4 | 3.0 | 25 | 12.5 | 23.4 | 57 | 35 | 6 | 19 | M12 | 0.2 | TPS22 | TIP07FS | RDMW0620M0E |

*1 Clamp Torque (lbf-in) : TPS20=5.3, TPS22=5.3

*2 Clamp Torque of the Head (lbf-ft) : M8=17.1, M10=33.8, M12=59.2

*3 Y=Yes


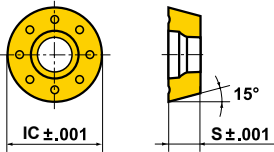
*4 WT : Mass

- INSERTS > K124
- SCREW-IN ARBORS > K162
- SPARE PARTS > M001
- TECHNICAL DATA > N001

MILLING

MILLING

INSERTS

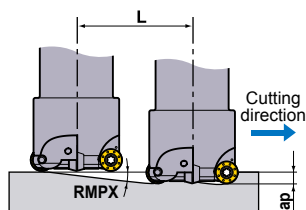
| Shape | Order Number | Coated | | Dimensions (mm) | | Geometry |
|---|--------------|--------|--------|-----------------|------|---|
| | | VP15TF | MP8010 | IC | S | |
|  | RDMW0517M0E | ★ | ★ | 5.0 | 1.70 |  |
| | RDMW0620M0E | ★ | ★ | 6.0 | 1.99 | |
| | RDMW0724M0E | ★ | ★ | 7.0 | 2.38 | |

CUTTING MODE MAXIMUM CAPACITIES

RAMPING

Finding a cutters' distance moved "L" when depth of cut reaches "ap" at a ramping angle of "α".

$$L = ap / \tan \alpha \text{ (mm)}$$



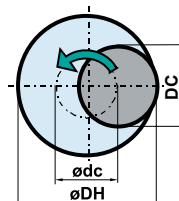
HELICAL CUTTING

- Setting a tool's center excursion

$$\phi_{dc} = \phi_{DH} - DC$$

Tool's center excursion Required bore diameter Tool's cutting diameter

- For the depth of cut per pass, refer to the cutting conditions on page K124 for helical cutting.
- Set the machine spindle revolution so that the tool is rotating and cutting in a down cut direction.



| Type | Order Number | DC (mm) | RE (mm) | Number of Teeth | Ramping | | | Helical Cutting | |
|---|-----------------|---------|---------|-----------------|---------|--------------|--------|-----------------|--------------|
| | | | | | RMPX *1 | APMX (mm) *2 | L (mm) | DH min. (mm) | DH max. (mm) |
| With the Center Cutting Edge | ARX25R102SA10S | 10 | 2.5 | 2 | 90° | 2.5 | 0 | 15 | 19 |
| | ARX25R102SA10LW | 10 | 2.5 | 2 | 90° | 2.5 | 0 | 15 | 19 |
| | ARX30R122SA10S | 12 | 3.0 | 2 | 90° | 3.0 | 0 | 18 | 23 |
| | ARX30R122SA10LW | 12 | 3.0 | 2 | 90° | 3.0 | 0 | 18 | 23 |
| | ARX35R142SA12S | 14 | 3.5 | 2 | 90° | 3.5 | 0 | 21 | 27 |
| | ARX35R142SA12LW | 14 | 3.5 | 2 | 90° | 3.5 | 0 | 21 | 27 |
| Without the Center Cutting Edge (Multi-tooth) | ARX25R122SA10S | 12 | 2.5 | 2 | 27.17° | 2.5 | 4.87 | 19 | 23 |
| | ARX25R122SA10LW | 12 | 2.5 | 2 | 27.17° | 2.5 | 4.87 | 19 | 23 |
| | ARX30R163SA16S | 16 | 3.0 | 3 | 21.25° | 3.0 | 7.71 | 26 | 31 |
| | ARX25R163SA16S | 16 | 2.5 | 3 | 13.70° | 2.5 | 10.26 | 27 | 31 |
| | ARX30R173SA16S | 17 | 3.0 | 3 | 18.42° | 3.0 | 9.01 | 28 | 33 |
| | ARX25R173SA16S | 17 | 2.5 | 3 | 12.22° | 2.5 | 11.54 | 29 | 33 |
| | ARX30R203SA20S | 20 | 3.0 | 3 | 13.21° | 3.0 | 12.78 | 34 | 39 |
| | ARX25R204SA20S | 20 | 2.5 | 4 | 9.23° | 2.5 | 15.38 | 35 | 39 |
| | ARX30R224SA20S | 22 | 3.0 | 4 | 11.13° | 3.0 | 15.25 | 38 | 43 |
| | ARX25R224SA20S | 22 | 2.5 | 4 | 7.94° | 2.5 | 17.92 | 39 | 43 |
| | ARX30R254SA20S | 25 | 3.0 | 4 | 9.01° | 3.0 | 18.92 | 44 | 49 |
| ARX25R255SA20S | 25 | 2.5 | 5 | 6.57° | 2.5 | 21.71 | 45 | 49 | |

*1 RMPX : Max. Ramping Angle

*2 APMX : Max. Depth of Cut

RECOMMENDED CUTTING CONDITIONS (Note) The cutting conditions below are a guide only. Please make adjustments according to the machining conditions.

SHOULDER • POCKET • RAMPING • COPYING

| Work Material | Hardness | Grade | Cutting Speed vc (SFM) | ARX25R ○ SA ○ S | | ARX30R ○ SA ○ S | | ARX35R ○ SA ○ S | |
|-------------------|---------------------------|-----------|------------------------------|---------------------------|-----------------------------------|---------------------------|-----------------------------------|---------------------------|-----------------------------------|
| | | | | Depth of Cut ap (inch) | Feed per Tooth fz (inch/tooth) | Depth of Cut ap (inch) | Feed per Tooth fz (inch/tooth) | Depth of Cut ap (inch) | Feed per Tooth fz (inch/tooth) |
| P Mild Steel | ≤ 180HB | VP15TF | 590 (490–720) | ≤.039 | ≤.020 | ≤.047 | ≤.020 | ≤.059 | ≤.020 |
| | Carbon Steel, Alloy Steel | 180–350HB | VP15TF | 525 (395–655) | ≤.028 | ≤.012 | ≤.035 | ≤.012 | ≤.047 |
| M Stainless Steel | ≤ 270HB | VP15TF | 490 (395–590) | ≤.028 | ≤.012 | ≤.035 | ≤.012 | ≤.047 | ≤.012 |
| K Cast Iron | Tensile strength ≤ 450MPa | VP15TF | 590 (490–720) | ≤.039 | ≤.020 | ≤.047 | ≤.020 | ≤.059 | ≤.020 |
| H Hardened Steel | 45–55HRC | VP15TF | 260 (165–395) | ≤.020 | ≤.008 | ≤.028 | ≤.008 | ≤.039 | ≤.008 |

(Note) When ramping, refer to the machining limits on page K122.

SLOTTING

| Work Material | Hardness | Grade | Cutting Speed vc (SFM) | ARX25R ○ SA ○ S | | ARX30R ○ SA ○ S | | ARX35R ○ SA ○ S | |
|-------------------|---------------------------|-----------|------------------------------|---------------------------|-----------------------------------|---------------------------|-----------------------------------|---------------------------|-----------------------------------|
| | | | | Depth of Cut ap (inch) | Feed per Tooth fz (inch/tooth) | Depth of Cut ap (inch) | Feed per Tooth fz (inch/tooth) | Depth of Cut ap (inch) | Feed per Tooth fz (inch/tooth) |
| P Mild Steel | ≤ 180HB | VP15TF | 590 (490–720) | ≤.039 | ≤.016 | ≤.047 | ≤.016 | ≤.059 | ≤.016 |
| | Carbon Steel, Alloy Steel | 180–350HB | VP15TF | 525 (395–655) | ≤.028 | ≤.008 | ≤.035 | ≤.008 | ≤.047 |
| M Stainless Steel | ≤ 270HB | VP15TF | 490 (395–590) | ≤.028 | ≤.008 | ≤.035 | ≤.008 | ≤.047 | ≤.008 |
| K Cast Iron | Tensile strength ≤ 450MPa | VP15TF | 590 (490–720) | ≤.039 | ≤.016 | ≤.047 | ≤.016 | ≤.059 | ≤.016 |
| H Hardened Steel | 45–55HRC | VP15TF | 260 (165–395) | ≤.020 | ≤.004 | ≤.028 | ≤.004 | ≤.039 | ≤.004 |

PLUNGING

| Work Material | Hardness | Grade | Cutting Speed vc (SFM) | ARX25R ○ SA ○ S | | ARX30R ○ SA ○ S | | ARX35R ○ SA ○ S | |
|-------------------|---------------------------|-----------|------------------------------|---------------------------|-----------------------------------|---------------------------|-----------------------------------|---------------------------|-----------------------------------|
| | | | | Width of Cut ae (inch) | Feed per Tooth fz (inch/tooth) | Width of Cut ae (inch) | Feed per Tooth fz (inch/tooth) | Width of Cut ae (inch) | Feed per Tooth fz (inch/tooth) |
| P Mild Steel | ≤ 180HB | VP15TF | 590 (490–720) | ≤.098 | ≤.012 | ≤.118 | ≤.012 | ≤.138 | ≤.012 |
| | Carbon Steel, Alloy Steel | 180–350HB | VP15TF | 525 (395–655) | ≤.098 | ≤.008 | ≤.118 | ≤.008 | ≤.138 |
| M Stainless Steel | ≤ 270HB | VP15TF | 490 (395–590) | ≤.098 | ≤.008 | ≤.118 | ≤.008 | ≤.138 | ≤.008 |
| K Cast Iron | Tensile strength ≤ 450MPa | VP15TF | 590 (490–720) | ≤.098 | ≤.012 | ≤.118 | ≤.012 | ≤.138 | ≤.012 |
| H Hardened Steel | 45–55HRC | VP15TF | 260 (165–395) | ≤.098 | ≤.004 | ≤.118 | ≤.004 | ≤.138 | ≤.004 |

HELICAL DRILLING

| Work Material | Hardness | Grade | Cutting Speed vc (SFM) | ARX25R ○ SA ○ S | | ARX30R ○ SA ○ S | | ARX35R ○ SA ○ S | |
|-------------------|---------------------------|-----------|------------------------------|--|-----------------------------------|--|-----------------------------------|--|-----------------------------------|
| | | | | Depth of Cut Per Pass ap (inch/pass) | Feed per Tooth fz (inch/tooth) | Depth of Cut Per Pass ap (inch/pass) | Feed per Tooth fz (inch/tooth) | Depth of Cut Per Pass ap (inch/pass) | Feed per Tooth fz (inch/tooth) |
| P Mild Steel | ≤ 180HB | VP15TF | 590 (490–720) | ≤.039 | ≤.012 | ≤.039 | ≤.012 | ≤.039 | ≤.012 |
| | Carbon Steel, Alloy Steel | 180–350HB | VP15TF | 525 (395–655) | ≤.028 | ≤.008 | ≤.035 | ≤.008 | ≤.039 |
| M Stainless Steel | ≤ 270HB | VP15TF | 490 (395–590) | ≤.028 | ≤.008 | ≤.035 | ≤.008 | ≤.039 | ≤.008 |
| K Cast Iron | Tensile strength ≤ 450MPa | VP15TF | 590 (490–720) | ≤.039 | ≤.012 | ≤.039 | ≤.012 | ≤.039 | ≤.012 |
| H Hardened Steel | 45–55HRC | VP15TF | 260 (165–395) | ≤.020 | ≤.004 | ≤.028 | ≤.004 | ≤.039 | ≤.004 |

(Note) When helical drilling, refer to the machining limits on page K122.

MILLING

MULTI FUNCTIONAL MILLING



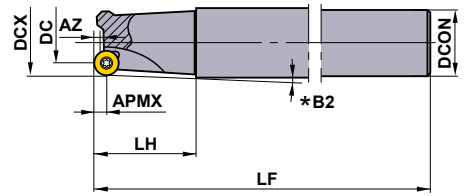
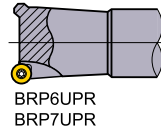
BRP

P M K N S H



- 11° positive insert.
- Round shape insert gives strong cutting edge.
- A wide variety of lengths available.
- Suitable for machining of die and mold.

Fig.1



*Please allow for an inclination angle of B2+1°

Fig.2

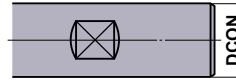


Fig.3

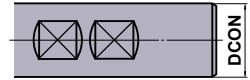
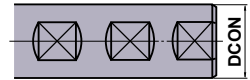


Fig.4



SHANK TYPE

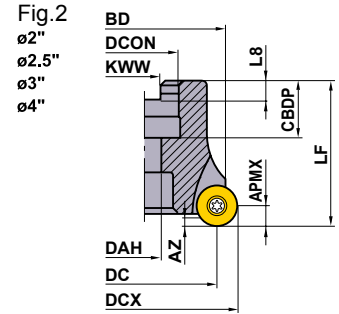
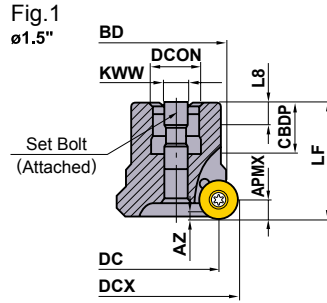
Right hand tool holder only.

| Corner Radius | Type *1 | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | | | | Type (Fig.) | Insert Screw | Wrench | Insert | |
|-----------------|-----------------|-----------------|-------|-----------------|-------------------|--------|--------|-------|-------|------|--------|-------------|--------------|-----------|---------|---------------------------------|
| | | | | | DCX | DC | LF | DCON | LH | AZ | APMX | | | | | B2 |
| .156 | R | BRP3UNR081W08 | ● | 1 | .500 | .177 | 2.781 | .500 | 1.000 | .007 | .146 | 2° 56' | 2 | CS250560T | ①TKY08F | ①RPMW07T200E ②RPMT07T200E-JS |
| | | BRP3UNR101W10 | ● | 1 | .625 | .303 | 3.500 | .625 | 1.000 | .039 | .146 | 2° 56' | 3 | CS250560T | ①TKY08F | |
| | | BRP3UNR122W12 | ● | 2 | .750 | .429 | 4.000 | .750 | 1.250 | .066 | .146 | 2° 16' | 3 | CS250560T | ①TKY08F | |
| | | BRP3UNR163W16 | ● | 3 | 1.000 | .681 | 4.500 | 1.000 | 1.250 | .078 | .146 | 2° 16' | 4 | CS250560T | ①TKY08F | |
| | L | BRP3UNR081LW08 | ● | 1 | .500 | .177 | 6.000 | .500 | 2.800 | .007 | .146 | 0° 56' | 1 | CS250560T | ①TKY08F | |
| | | BRP3UNR101LW10 | ● | 1 | .625 | .303 | 6.000 | .625 | 2.800 | .039 | .146 | 0° 56' | 1 | CS250560T | ①TKY08F | |
| EL | BRP3UNR122ELW12 | ● | 2 | .750 | .429 | 10.000 | .750 | 5.100 | .066 | .146 | 0° 30' | 1 | CS250560T | ①TKY08F | | |
| | BRP3UNR163ELW16 | ● | 3 | 1.000 | .681 | 10.000 | 1.000 | 5.100 | .078 | .146 | 0° 30' | 1 | CS250560T | ①TKY08F | | |
| .187 | R | BRP4UNR101W10 | ● | 1 | .625 | .244 | 3.500 | .625 | 1.000 | .011 | .177 | 3° 3' | 3 | CS350760T | ①TKY15F | ①RPMW09T300E ②RPMT09T300E-JS |
| | | BRP4UNR121W12 | ● | 1 | .750 | .366 | 4.000 | .750 | 1.250 | .035 | .177 | 2° 20' | 3 | CS350760T | ①TKY15F | |
| | | BRP4UNR162W16 | ● | 2 | 1.000 | .618 | 4.500 | 1.000 | 1.250 | .098 | .177 | 2° 20' | 4 | CS350760T | ①TKY15F | |
| | | BRP4UNR203W20 | ● | 3 | 1.250 | .866 | 5.000 | 1.250 | 1.750 | .098 | .177 | 1° 35' | 4 | CS350760T | ①TKY15F | |
| | L | BRP4UNR101LW10 | ● | 1 | .625 | .244 | 6.000 | .625 | 2.800 | .011 | .177 | 0° 57' | 1 | CS350760T | ①TKY15F | |
| | | BRP4UNR121LW12 | ● | 1 | .750 | .366 | 7.000 | .750 | 3.900 | .035 | .177 | 0° 40' | 1 | CS350760T | ①TKY15F | |
| EL | BRP4UNR162ELW16 | ● | 2 | 1.000 | .618 | 10.000 | 1.000 | 5.100 | .098 | .177 | 0° 30' | 1 | CS350760T | ①TKY15F | | |
| | BRP4UNR203ELW20 | ● | 3 | 1.250 | .866 | 12.000 | 1.250 | 7.100 | .098 | .177 | 0° 22' | 1 | CS350760T | ①TKY15F | | |
| .250 | R | BRP6UPR202W20 | ● | 2 | 1.250 | .744 | 5.000 | 1.250 | 1.750 | .157 | .240 | — | 4 | TS43 | ②TKY15D | ①RPMW120400E ②RPMT120400E-JS |
| | | BRP6UPR243W20 | ● | 3 | 1.500 | .976 | 5.000 | 1.250 | 1.750 | .157 | .240 | — | 4 | TS43 | ②TKY15D | |
| | | BRP6UPR324W20 | ● | 4 | 2.000 | 1.492 | 5.000 | 1.250 | 1.750 | .157 | .240 | — | 4 | TS43 | ②TKY15D | |
| | | BRP6UPR405W20 | ● | 5 | 2.500 | 1.999 | 5.000 | 1.250 | 1.750 | .157 | .240 | — | 4 | TS43 | ②TKY15D | |
| | EL | BRP6UPR202ELS20 | ● | 2 | 1.250 | .744 | 12.000 | 1.250 | 1.750 | .157 | .240 | — | 1 | TS43 | ②TKY15D | |
| | | BRP6UPR243ELS20 | ● | 3 | 1.500 | .996 | 12.000 | 1.250 | 1.750 | .157 | .240 | — | 1 | TS43 | ②TKY15D | |
| BRP6UPR324ELS20 | ● | 4 | 2.000 | 1.492 | 12.000 | 1.250 | 1.750 | .157 | .240 | — | 1 | TS43 | ②TKY15D | | | |
| | | | | | | | | | | | | | | | | |
| .312 | R | BRP7UPR323W20 | ● | 3 | 2.000 | 1.370 | 5.000 | 1.250 | 1.750 | .217 | .302 | — | 4 | TS54 | ②TKY25D | ①RPMW150600E ②RPMT150600E-JS |
| | | BRP7UPR404W20 | ● | 4 | 2.500 | 1.866 | 5.000 | 1.250 | 1.750 | .217 | .302 | — | 4 | TS54 | ②TKY25D | |
| | EL | BRP7UPR323ELS20 | ● | 3 | 2.000 | 1.370 | 12.000 | 1.250 | 1.750 | .217 | .302 | — | 1 | TS54 | ②TKY25D | |

*1 Type R : Standard shank, L : Long shank, EL : Extra Long shank

*2 Clamp Torque (lbf-in) : CS250560T=8.9, CS350760T=31, TS43=31, TS54=66

- : Inventory maintained.
- <10 inserts in one case>



Use the attached set bolt.

Right hand tool holder only.

ARBOR TYPE

| Corner Radius | Order Number | Stock R | Number of Teeth | Dimensions (inch) | | | | | | | | | Max. Depth of cut | | Type (Fig.) | Insert |
|---------------|--------------|---------|-----------------|-------------------|-------|-------|-------|-------|-------|------|------|------|-------------------|------|-------------|-------------------------------|
| | | | | DCX | DC | BD | LF | DCON | CBDP | DAH | KWW | L8 | AZ | APMX | | |
| .250 | BRP6UPR1503X | ● | 3 | 1.500 | .996 | 1.228 | 2.000 | .750 | .748 | — | .313 | .187 | .157 | .240 | 1 | RPMW120400E RPMT120400E-JS |
| | BRP6UPR0204 | ● | 4 | 2.000 | 1.492 | 1.715 | 2.000 | .750 | .748 | .415 | .313 | .187 | .157 | .240 | 2 | |
| | BRP6UPR2505 | ● | 5 | 2.500 | 1.992 | 2.214 | 2.000 | .750 | .748 | .415 | .313 | .187 | .157 | .240 | 2 | |
| | BRP6UPR0306C | ● | 6 | 3.000 | 2.492 | 2.706 | 2.000 | 1.000 | 1.024 | .539 | .375 | .219 | .157 | .240 | 2 | |
| | BRP6UPR0407E | ● | 7 | 4.000 | 3.492 | 3.696 | 2.500 | 1.500 | 1.181 | .787 | .625 | .375 | .157 | .240 | 2 | |
| .312 | BRP7UPR2504 | ● | 4 | 2.500 | 1.866 | 2.165 | 2.000 | .750 | .748 | .415 | .313 | .187 | .217 | .302 | 2 | RPMW150600E RPMT150600E-JS |
| | BRP7UPR0305C | ● | 5 | 3.000 | 2.366 | 2.649 | 2.000 | 1.000 | .969 | .539 | .375 | .219 | .217 | .302 | 2 | |
| | BRP7UPR0406E | ● | 6 | 4.000 | 3.366 | 3.631 | 2.500 | 1.500 | 1.122 | .787 | .625 | .375 | .217 | .302 | 2 | |

SPARE PARTS

| Tool Holder Number | * | | |
|----------------------------------|--------------|--------|-----------|
| | Insert Screw | Wrench | Set Screw |
| BRP6UPR1503X | TS43 | TKY15D | HDSU37513 |
| BRP6UPR0204 BRP6UPR0407E | TS43 | TKY15D | — |
| BRP7UPR2504 BRP7UPR0406E | TS54 | TKY25D | — |

- * Clamp Torque (lbf-in) : TS43=31, TS54=66
- Set bolt not included.

INSERTS

| Work Material | P | Steel | M | Stainless Steel | K | Cast Iron | S | Heat-resistant Alloy, Titanium Alloy | H | Hardened Materials | Cutting Conditions : | | | |
|---------------|----------------|-------|--------|-----------------|-------------------|-----------|----------|--------------------------------------|---|--------------------|----------------------|---|---|---|
| | | | | | | | | | | | ● | ● | ⊕ | ⊕ |
| Shape | Order Number | Class | Coated | | Dimensions (inch) | | Geometry | | | | | | | |
| | | | F7010 | VP15TF | IC | S | | | | | | | | |
| | RPMW120400E | M | ● | ● | .500 | .188 | | | | | | | | |
| | RPMW150600E | M | ● | ● | .625 | .250 | | | | | | | | |
| JS breaker | RPMT07T200E-JS | M | ● | ● | .313 | .109 | | | | | | | | |
| | RPMT09T300E-JS | M | ● | ● | .375 | .156 | | | | | | | | |
| | RPMT120400E-JS | M | ● | ● | .500 | .188 | | | | | | | | |
| | RPMT150600E-JS | M | ● | ● | .625 | .250 | | | | | | | | |

RECOMMENDED CUTTING CONDITIONS

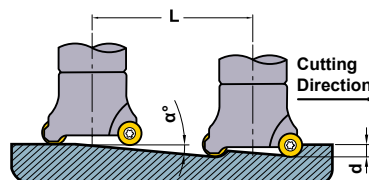
| Work Material | | Cutting Speed (SFM) | | |
|---------------|-------------------|-----------------------------|----------------|---------------|
| | | CVD | PVD | |
| Material | Hardness | F7010 / F7030 / F620 | VP15TF / AP20M | |
| P | Mild Steel | ≤ 180HB | 820 (660–980) | 820 (660–980) |
| | Carbon Steel | 180–280HB | 590 (425–720) | 590 (425–720) |
| | Alloy Steel | 280–380HB | 525 (360–620) | 525 (360–620) |
| | Prehardened Steel | 35–45HB | 390 (260–460) | 390 (260–460) |
| | High Alloy Steel | ≤ 300HB | 425 (295–525) | 425 (295–525) |
| | Sintered Steel | 45–60HRC | – | 215 (155–275) |
| M | Stainless Steel | ≤ 260HB | 590 (425–720) | 590 (425–720) |
| K | Gray Cast Iron | Tensile Strength ≤ 350MPa | – | 570 (425–720) |
| | Ductile Cast Iron | Tensile Strength 360–500MPa | – | 470 (340–600) |
| | | Tensile Strength 500–800MPa | – | 360 (260–460) |

FEED PER TOOTH (IPT) FOR STRAIGHT LINE (NON-RAMPING) CUTTING ONLY

| Type | Depth of Cut (inch) | | | | | | | | |
|-------|---------------------|------|------|------|------|------|------|------|------|
| | .040 | .080 | .120 | .150 | .180 | .200 | .240 | .280 | .320 |
| BRP3U | .012 | .009 | .008 | .006 | – | – | – | – | – |
| BRP4U | .014 | .012 | .010 | .010 | .007 | – | – | – | – |
| BRP6U | .020 | .016 | .012 | .012 | .011 | .009 | .008 | – | – |
| BRP7U | .024 | .020 | .018 | .016 | .012 | .013 | .012 | .010 | .008 |

RAMPING

| Type | Tool Diameter (inch) | Max. Ramping Angle RMPX | Tan α per inch | Min. Cutting Length According to Max. Ramping Angle L min. (inch) | | | | | | |
|-------|----------------------|-------------------------|----------------|---|----------|----------|----------|----------|----------|----------|
| | | | | d= .094" | d= .125" | d= .156" | d= .188" | d= .250" | d= .281" | d= .312" |
| BRP3U | .500 | 3.71° | .065° | 1.446 | 1.923 | 2.400 | – | – | – | – |
| | .625 | 12.34° | .219° | .429 | .571 | .712 | – | – | – | – |
| | .750 | 13.50° | .240° | .392 | .521 | .650 | – | – | – | – |
| | 1.000 | 8.48° | .149° | .631 | .839 | 1.047 | – | – | – | – |
| BRP4U | .625 | 4.07° | .071° | 1.324 | 1.761 | 2.197 | 2.648 | – | – | – |
| | .750 | 8.41° | .148° | .635 | .845 | 1.054 | 1.270 | – | – | – |
| | 1.000 | 12.98° | .231° | .407 | .541 | .675 | .814 | – | – | – |
| | 1.250 | 8.18° | .144° | .653 | .868 | 1.083 | 1.306 | – | – | – |
| BRP6U | 1.250 | 17.3° | .312° | .301 | .401 | .500 | .603 | .801 | – | – |
| | 1.500 | 11.78° | .209° | .450 | .598 | .746 | .900 | 1.196 | – | – |
| | 2.000 | 7.15° | .125° | .752 | 1.000 | 1.248 | 1.504 | 2.000 | – | – |
| | 2.500 | 5.13° | .090° | 1.044 | 1.389 | 1.733 | 2.089 | 2.778 | – | – |
| | 3.000 | 3.99° | .070° | 1.343 | 1.786 | 2.229 | 2.686 | 3.571 | – | – |
| | 4.000 | 2.77° | .048° | 1.958 | 2.604 | 3.250 | 3.917 | 5.208 | – | – |
| BRP7U | 2.000 | 11.49° | .203° | .463 | .616 | .768 | .926 | 1.232 | 1.384 | 1.537 |
| | 2.500 | 7.88° | .138° | .681 | .906 | 1.130 | 1.362 | 1.812 | 2.036 | 2.261 |
| | 3.000 | 5.99° | .105° | .895 | 1.190 | 1.486 | 1.790 | 2.381 | 2.676 | 2.971 |
| | 4.000 | 4.04° | .071° | 1.324 | 1.761 | 2.197 | 2.648 | 3.521 | 3.958 | 4.394 |



INTERPOLATING

CUTTING HOLE DIAMETER AND DEPTH OF CUT

| Type | DC (inch) | Minimum Cutting Diameter | | | | | | | Maximum Cutting Diameter | | | | | | |
|-------|-----------|--------------------------|-----------|------------------------|---------|---------|---------|---------|--------------------------|-----------|------------------------|---------|---------|---------|---------|
| | | | | Inclination Angle RMPX | | | | | | | Inclination Angle RMPX | | | | |
| | | *1 φDH min. | *2 φdc | d=.094" | d=.156" | d=.188" | d=.250" | d=.312" | *1 φDH max. | *2 φdc | d=.094" | d=.156" | d=.188" | d=.250" | d=.312" |
| BRP3U | .500 | .688 | .188 | d=.039 → RMPX=3.778° | | | | | .922 | .422 | d=.078 → RMPX= 3.367° | | | | |
| | .625 | .938 | .313 | 5.461° | 9.015° | — | — | — | 1.172 | .547 | 3.131° | 5.187° | — | — | — |
| | .750 | 1.188 | .438 | 3.908° | 6.468° | — | — | — | 1.422 | .672 | 2.549° | 4.226° | — | — | — |
| | 1.000 | 1.688 | .688 | 2.490° | 4.128° | — | — | — | 1.922 | .922 | 1.859° | 3.083° | — | — | — |
| BRP4U | .625 | .874 | .249 | d=.039 → RMPX=2.854° | | | | | 1.172 | .547 | 3.131° | 5.187° | 6.243° | — | — |
| | .750 | 1.124 | .374 | 4.574° | 7.563° | 9.091° | — | — | 1.422 | .672 | 2.549° | 4.226° | 5.089° | — | — |
| | 1.000 | 1.624 | .624 | 2.745° | 4.550° | 5.478° | — | — | 1.922 | .922 | 1.859° | 3.083° | 3.714° | — | — |
| | 1.250 | 2.124 | .874 | 1.961° | 3.252° | 3.917° | — | — | 2.422 | 1.172 | 1.462° | 2.426° | 2.923° | — | — |
| BRP6U | 1.250 | 2.000 | .750 | 2.285° | 3.788° | 4.562° | 6.057° | — | 2.422 | 1.172 | 1.462° | 2.426° | 2.923° | 3.884° | — |
| | 1.500 | 2.500 | 1.000 | 1.714° | 2.843° | 3.425° | 4.550° | — | 2.922 | 1.422 | 1.205° | 2.000° | 2.410° | 3.203° | — |
| | 2.000 | 3.500 | 1.500 | 1.143° | 1.896° | 2.285° | 3.037° | — | 3.922 | 1.922 | .892° | 1.480° | 1.783° | 2.371° | — |
| | 2.500 | 4.500 | 2.000 | .857° | 1.422° | 1.714° | 2.279° | — | 4.922 | 2.422 | .708° | 1.175° | 1.415° | 1.882° | — |
| | 3.000 | 5.500 | 2.500 | .686° | 1.138° | 1.371° | 1.823° | — | 5.922 | 2.922 | .587° | .974° | 1.173° | 1.560° | — |
| BRP7U | 4.000 | 7.500 | 3.500 | .490° | .813° | .980° | 1.302° | — | 7.922 | 3.922 | .437° | .725° | .874° | 1.162° | — |
| | 2.000 | 3.376 | 1.376 | 1.246° | 2.067° | 2.490° | 3.310° | 4.128° | 3.922 | 1.922 | .892° | 1.480° | 1.783° | 2.371° | 2.958° |
| | 2.500 | 4.376 | 1.876 | .914° | 1.516° | 1.827° | 2.429° | 3.030° | 4.922 | 2.422 | .708° | 1.175° | 1.415° | 1.882° | 2.348° |
| | 3.000 | 5.376 | 2.376 | .721° | 1.197° | 1.443° | 1.918° | 2.393° | 5.922 | 2.922 | .587° | .974° | 1.173° | 1.560° | 1.947° |
| | 4.000 | 7.376 | 3.376 | .508° | .842° | 1.016° | 1.350° | 1.685° | 7.922 | 3.922 | .437° | .725° | .874° | 1.162° | 1.451° |

*1 DH = Cutting Hole Diameter : φ (inch)

*2 dc = Tool Pass Diameter : φ (inch)

BRP3U type DH min. = (DC-.156) X 2, DH max. = (DC-.039) X 2, d max. =.156 (inch)
BRP4U type DH min. = (DC-.188) X 2, DH max. = (DC-.039) X 2, d max. =.188 (inch)
BRP6U type DH min. = (DC-.250) X 2, DH max. = (DC-.039) X 2, d max. =.250 (inch)
BRP7U type DH min. = (DC-.312) X 2, DH max. = (DC-.039) X 2, d max. =.312 (inch)
dc = DH-D

*DH min. (Minimum Cutting Diameter) DH max.(Maximum Cutting Diameter) d (Maximum Depth of Cut)

MILLING

MULTI FUNCTIONAL MILLING



BOE

- P
- M
- K
- N
- S
- H



- 20° positive insert.
- Compatible with 8-corner use insert and round type insert.
- Multi functional milling.

Fig.1 (BOE4 type)

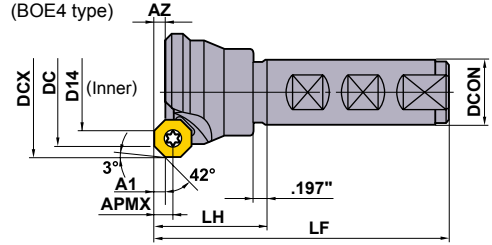
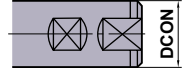


Fig.2 (BOE type)



WELDON SHANK TYPE

Right hand tool holder only.

| Order Number | Stock R | Number of Teeth | Dimensions (inch) | | | | | | Max. Depth of Cut | | | Insert Screw | Wrench | Insert |
|--------------|------------|-----------------|-------------------|-------|-------|-------|-------|-------|-------------------|------|------|--------------|---------|---------------|
| | | | DCX | DC | D14 | LF | DCON | LH | A1 | APMX | AZ | | | |
| BOE4R202W20 | ● | 2 | 1.250 | .925 | .516 | 5.022 | 1.250 | 1.772 | .098 | .276 | .118 | CS350990T | ⓉTKY10F | |
| BOE4F 243W20 | ● | 3 | 1.500 | 1.177 | .767 | 5.022 | 1.250 | 1.772 | .098 | .276 | .118 | CS350990T | ⓉTKY10F | ①OEMX12T3ETR |
| BOE4R 323W20 | ● | 3 | 2.000 | 1.680 | 1.269 | 5.022 | 1.250 | 1.772 | .098 | .276 | .118 | CS350990T | ⓉTKY10F | ②REMX12T3EN |
| BOE4F 404W20 | ● | 4 | 2.500 | 2.181 | 1.772 | 5.022 | 1.250 | 1.772 | .098 | .276 | .118 | CS350990T | ⓉTKY10F | |
| BOER322W20 | ● | 2 | 2.000 | 1.539 | .996 | 4.053 | 1.250 | 1.772 | .118 | .354 | .155 | CS501290T | ⓉTKY25T | ①OEMX1705EOR1 |
| BOEF 403W20 | ● | 3 | 2.500 | 2.043 | 1.500 | 4.053 | 1.250 | 1.772 | .118 | .354 | .155 | CS501290T | ⓉTKY25T | ②REMX1705ON |
| BOER 504W20 | ● | 4 | 3.125 | 2.668 | 2.129 | 4.053 | 1.250 | 1.772 | .118 | .354 | .155 | CS501290T | ⓉTKY25T | |

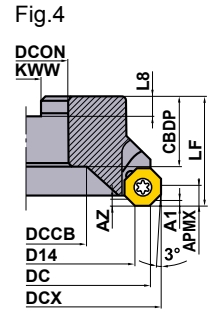
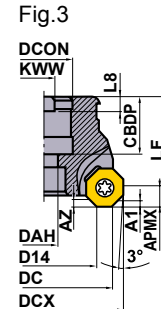
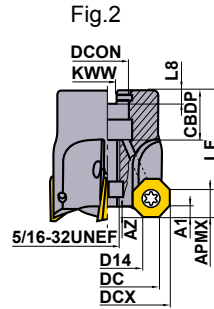
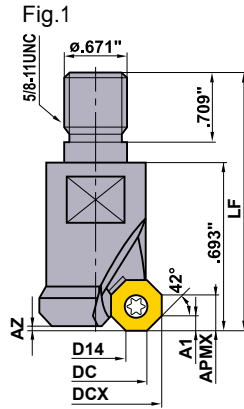
* Clamp Torque (lbf-in) : CS350990T=22, CS501290T=66

INSERTS

| Work Material | P | Steel | ● ● ● ● | | | | | | Cutting Conditions : | | | | | | |
|---------------|--------------------|--------------------|---------|-------|--------|--|--------|-------|---|------|------|-------------------|--|--|----------|
| | M | Stainless Steel | ● ● ● ● | | | ● : Stable Cutting ● : General Cutting | | | | | | | | | |
| Shape | K | Cast Iron | ● ● ● ● | | | | | | Honing : | | | | | | |
| | H | Hardened Materials | ● ● ● ● | | | | | | E : Round S : Chamfer + Round T : Chamfer | | | | | | |
| Order Number | Class | Honing | Coated | | | | Cermet | | CBN*1 | | | Dimensions (inch) | | | Geometry |
| | | | F7010 | F7030 | VP15TF | NX4545 | MB835 | MB730 | IC | S | BS | | | | |
| | OEMX12T3ETR1 | M T | | | | | ● | ● | .500 | .156 | .039 | | | | |
| | OEMX 12T3ETR5 | M T | | | | | ● | ● | .500 | .156 | .197 | | | | |
| | OEMX12T3ESR1 | M S | ● | | | | | | .500 | .156 | .039 | | | | |
| | *2 OEMX12T3EER1-JS | M E | ★ | | | | | | .500 | .156 | .039 | | | | |
| | OEMX1705ETR1 | M T | ● | ● | ● | | | .669 | .197 | .055 | | | | | |
| | OEMX1705ESR1 | M S | ● | | | | | .669 | .197 | .055 | | | | | |
| | *2 OEMX1705EER1-JS | M E | ★ | | | | | .669 | .197 | .055 | | | | | |
| | *2 OEMX1705ETR1-JS | M T | | ● | | | | .669 | .197 | .055 | | | | | |
| | *2 REMX12T3EN-JS | M E | ● | | | | | .500 | .164 | — | | | | | |
| | REMX1705EN | M E | ● | | | | | .679 | .205 | — | | | | | |
| | REMX1705SN | M S | ★ | | | | | .679 | .205 | — | | | | | |
| | *2 REMX1705EN-JS | M E | ● | | | | | .679 | .205 | — | | | | | |

*1 Flat insert.
*2 Insert with breaker.

MILLING



ARBOR TYPE

Right hand tool holder only.

| Order Number | Stock R | Number of Teeth | Dimensions (inch) | | | | | | | | | | WT* (lbs) | Max. Depth of Cut | | | Type (Fig.) | Insert |
|--------------|------------|--------------------|-------------------|-------|-------|-------|-------|-------|------|-------|------|------|--------------|-------------------|------|------|----------------|----------|
| | | | DCX | DC | D14 | LF | DCON | CBDP | DAH | DCCB | KWW | L8 | | A1 | APMX | AZ | | |
| BOE4R202 | ● | 2 | 1.250 | .925 | .516 | 2.598 | — | — | — | — | — | — | — | .098 | .276 | .118 | 1 | |
| BOE4R1503X | ● | 3 | 1.500 | 1.177 | .767 | 1.575 | .750 | .748 | — | — | .313 | .187 | .5 | .098 | .276 | .118 | 2 | |
| BOE4R0203 | ● | 3 | 2.000 | 1.680 | 1.269 | 1.575 | .750 | .748 | — | — | .313 | .201 | .8 | .098 | .276 | .118 | 2 | OEMX12T3 |
| BOE4R2504 | ● | 4 | 2.500 | 2.181 | 1.772 | 1.969 | .750 | .748 | .415 | — | .313 | .201 | 1.3 | .098 | .276 | .118 | 3 | REMX12T3 |
| BOE4R0305C | ● | 5 | 3.000 | 2.682 | 2.271 | 1.969 | 1.000 | 1.024 | .512 | — | .375 | .236 | 2.4 | .098 | .276 | .118 | 3 | |
| BOER2503A | ● | 3 | 2.480 | 2.024 | 1.480 | 1.969 | .750 | .748 | .415 | — | .313 | .187 | 1.3 | .118 | .354 | .155 | 3 | |
| BOER0304C | ● | 4 | 3.150 | 2.693 | 2.154 | 1.969 | 1.000 | 1.024 | .512 | — | .375 | .219 | 3.8 | .118 | .354 | .155 | 3 | |
| BOER0405E | ● | 5 | 3.937 | 3.484 | 2.941 | 2.480 | 1.500 | 1.181 | .787 | — | .625 | .375 | 6.3 | .118 | .354 | .155 | 3 | |
| BOER0506E | ● | 6 | 4.921 | 4.469 | 3.929 | 2.480 | 1.500 | 1.380 | — | 2.362 | .625 | .375 | 7.0 | .118 | .354 | .155 | 4 | OEMX1705 |
| BOER0608F | ● | 8 | 6.300 | 5.846 | 5.307 | 2.480 | 2.000 | 1.496 | — | 3.185 | .750 | .437 | 11.4 | .118 | .354 | .155 | 4 | REMX1705 |
| BOER0809F | ● | 9 | 8.000 | 7.547 | 7.003 | 2.500 | 2.000 | 1.496 | — | 2.185 | .750 | .437 | 16.2 | .118 | .354 | .155 | 4 | |

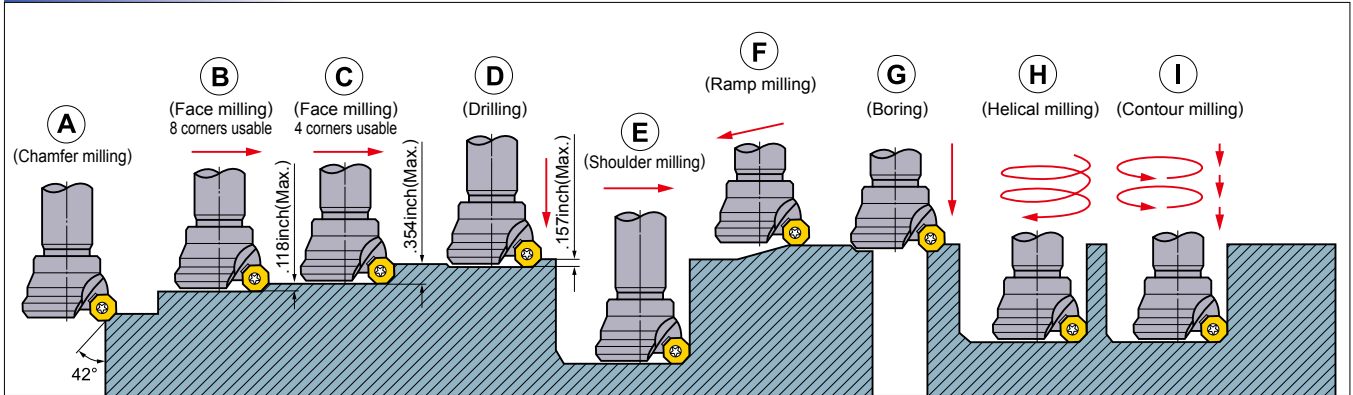
- 1) * WT : Mass
- 2) Set bolt not included.

SPARE PARTS

| Milling Cutter No. | * | | |
|-----------------------------|--------------|---------|----------|
| | Insert Screw | Wrench | Set Bolt |
| BOE4R202 | CS350990T | ①TKY10F | — |
| BOE4R0203 | | | BOE4S06U |
| BOE4R2504 | | | — |
| BOE4R0305C | | | — |
| BOER2503A BOER0809F | CS501290T | ②TKY25T | — |

* Clamp Torque (lbf-in) : CS350990T=22, CS501290T=66

RECOMMENDED CUTTING CONDITIONS



(Note) These are recommended cutting conditions when cutter diameter is less than 3.15inch. For cutters with diameter $\geq \phi 3.15$ inch increase cutting speed by 10%. Above sizes are for OEMX1705

| Work Material | Hardness | Grade | Cutting Speed (SFM) | Feed per Tooth (inch/tooth) | | |
|-------------------------|---------------------------------|-----------------------------|---------------------|--------------------------------|--------------------------------------|--------------------------------------|
| | | | | Cutting Mode | | |
| P Mild Steel | ≤ 180 HB | F7010 | 785 (590–985) | A | .008 (.006–.010) | |
| | | F7030 | 705 (475–820) | B | .008 (.006–.010) | |
| | | VP15TF | 590 (330–820) | C,E,F D,G,H,I | .008 (.006–.010) .003 (.002–.004) | |
| | Carbon Steel Alloy Steel | 180–280HB | F7010 | 655 (460–785) | A | .008 (.006–.010) |
| | | | F7030 | 590 (390–690) | B | .008 (.006–.010) |
| | | | VP15TF | 590 (330–820) | C,E,F D,G,H,I | .008 (.006–.010) .003 (.002–.004) |
| | | 280–380HB | F7010 | 490 (330–555) | A | .008 (.006–.010) |
| | | | F7030 | 425 (295–525) | B | .008 (.006–.010) |
| | | | VP15TF | 390 (260–525) | C,E,F D,G,H,I | .008 (.006–.010) .003 (.002–.004) |
| | Pre-Hardened Steel | 35–45HRC | F7010 | 425 (295–525) | A | .006 (.004–.008) |
| | | | F7030 | 360 (260–460) | B | .006 (.004–.008) |
| | | | VP15TF | 390 (260–525) | C,E,F D,G,H,I | .004 (.002–.006) .002 (.001–.003) |
| High Alloy Steel | ≤ 300 HB | F7010 | 490 (330–555) | A | .006 (.004–.008) | |
| | | F7030 | 425 (295–525) | B | .006 (.004–.008) | |
| | | VP15TF | 390 (260–525) | C,E,F D,G,H,I | .004 (.002–.006) .002 (.001–.003) | |
| M Stainless Steel | ≤ 270 HB | F7010 | 655 (460–785) | A | .006 (.004–.008) | |
| | | F7030 | 590 (390–690) | B | .006 (.004–.008) | |
| | | VP15TF | 490 (330–655) | C,E,F D,G,H,I | .004 (.002–.006) .003 (.002–.004) | |
| K Cast Iron | Tensile Strength ≤ 350 MPa | VP15TF | 525 (330–720) | A | .012 (.010–.014) | |
| | | | | B | .010 (.008–.012) | |
| | | | | C,E,F D,G,H,I | .006 (.004–.008) .003 (.002–.004) | |
| | Ductile Cast Iron | Tensile Strength 360–500MPa | VP15TF | 525 (330–720) | A | .010 (.008–.012) |
| | | | | | B | .008 (.006–.010) |
| | | | | | C,E,F D,G,H,I | .004 (.002–.006) .002 (.001–.003) |
| H Heat-Treated Steel | 45–60HRC | VP15TF | 260 (165–330) | A | .006 (.004–.008) | |
| | | | | B | .006 (.004–.008) | |
| | | | | C,E,F D,G,H,I | .004 (.002–.005) .002 (.001–.002) | |
| | | MB835 | 490 (330–655) | B (Depth of Cut .004–.012inch) | | .006 (.004–.008) |

(Note 1) This list of recommended cutting conditions is for flank wear of .012 inch in 30min. cutting time.

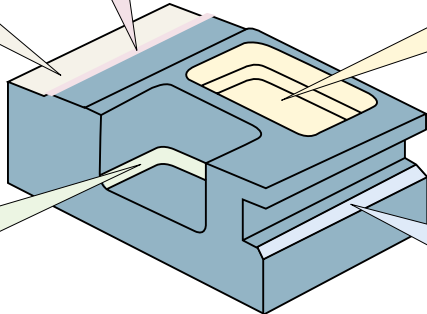
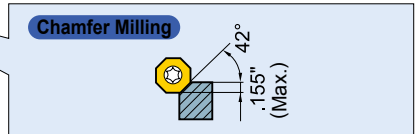
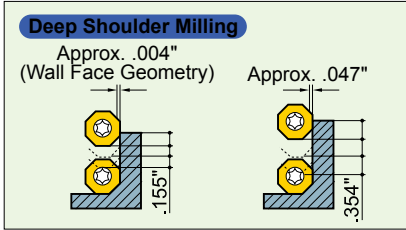
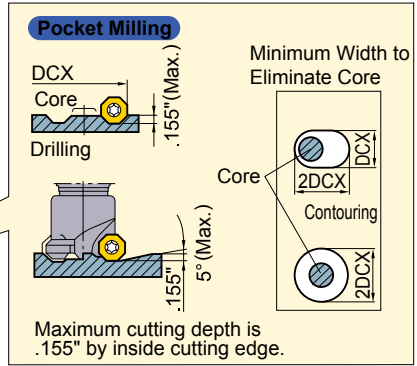
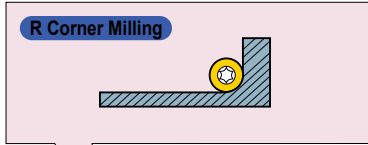
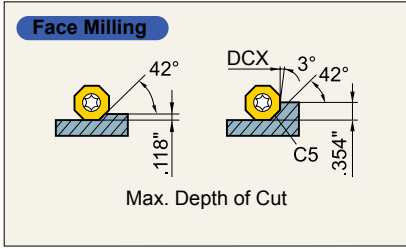
(Note 2) More than 2 inch shank length should be clamped in the milling chuck.

(Note 3) Use peck feed when drilling. (.020inch step is recommended)

(Note 4) When chattering occurs, reduce cutting speed to 70–80%.

(Note 5) When using round inserts, make sure that the flat portion of the flank surface is secure against the insert seat wall.

APPLICATION



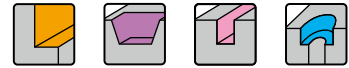
Above sizes are for OEMX1705

MILLING

MULTI FUNCTIONAL MILLING



Roughing

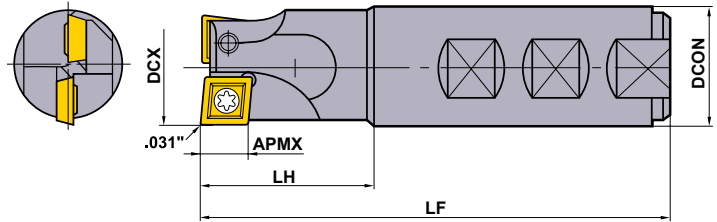


ECMP

P M **K** N S H



- Unique insert seat position facilitates smooth initial cutting and stable machining.
- Excellent chip disposal.
- 86° rhombic shape 11° positive insert.



Right hand tool holder only.

| Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | APMX | * Insert Screw | Wrench | Insert |
|--------------|-------|-----------------|-------------------|-------|-------|-------|------|-------------------|--------|---------|
| | | | DCX | LF | DCON | LH | | | | |
| ECMPR162W16 | ● | 2 | 1.000 | 4.500 | 1.000 | 1.250 | .315 | TS4 | TKY15R | MPMM322 |
| ECMPR202W20 | ● | 2 | 1.250 | 5.000 | 1.250 | 1.750 | .433 | TS5 | TKY25R | MPMM432 |
| ECMPR242W20 | ● | 2 | 1.500 | 6.562 | 1.250 | 3.313 | .433 | TS5 | TKY25R | MPMM432 |

* Clamp Torque (lbf-in) : TS4=31, TS5=66

INSERTS

| Shape | Order Number | ISO Number | Class | Coated | | Carbide | Dimensions (inch) | | | Geometry |
|-------|--------------|------------|-------|--------|--------|---------|-------------------|-------|------|----------|
| | | | | VP15TF | UT120T | | IC | S | RE | |
| | MPMM322 | MPMT090308 | M | ★ | ● | ● | .375 | .125 | .031 | |
| | MPMM432 | MPMT120408 | M | | ● | ● | .500 | .1875 | .031 | |

RECOMMENDED CUTTING CONDITIONS

(Note) Feed per Tooth (inch/tooth) or Feed per Revolution (inch/rev)

ECMPR162W16

| Work Material | Hardness | Grade | Outer Peripheral Edge Cutting (inch/tooth) | | | | Cutting Speed : 260-400 SFM | Bottom Cutting Edge Machining (inch/rev) (Drilling, Boring) Cutting Speed : 200-330 SFM |
|-----------------|----------------------------|-----------|--|--------------------|--------------------|--------------------|-----------------------------|---|
| | | | Depth of Cut .080" | Depth of Cut .160" | Depth of Cut .240" | Depth of Cut .320" | | |
| P Mild Steel | ≤180HB | UT120T | .004-.010 | .004-.008 | .004-.006 | .004-.006 | .004-.006 | |
| | Carbon Steel • Alloy Steel | 280-350HB | UT120T | .004-.008 | .004-.006 | .002-.004 | .002-.004 | |
| K Cast Iron | Tensile Strength ≤450MPa | UT120T | .004-.012 | .004-.010 | .004-.008 | .004-.006 | .004-.006 | |

ECMPR202W20, ECMP242W20

| Work Material | Hardness | Grade | Outer Peripheral Edge Cutting (inch/tooth) | | | | | Cutting Speed : 260-400 SFM | Bottom Cutting Edge Machining (inch/rev) (Drilling, Boring) Cutting Speed : 200-330 SFM |
|-----------------|----------------------------|-----------|--|--------------------|--------------------|--------------------|--------------------|-----------------------------|---|
| | | | Depth of Cut .080" | Depth of Cut .160" | Depth of Cut .240" | Depth of Cut .320" | Depth of Cut .400" | | |
| P Mild Steel | ≤180HB | UT120T | .004-.012 | .004-.010 | .004-.008 | .004-.006 | .004-.006 | .005-.006 | |
| | Carbon Steel • Alloy Steel | 280-350HB | UT120T | .004-.010 | .004-.008 | .004-.006 | .002-.006 | .002-.004 | |
| K Cast Iron | Tensile Strength ≤450MPa | UT120T | .004-.016 | .004-.012 | .004-.010 | .004-.008 | .004-.008 | .004-.008 | |

PRECAUTIONS IN USING ECMP

- Higher than recommended data may be used if depth of cut is small and peripheral cutting is operation.
- When bottom cutting use coolant.

● : Inventory maintained. ★ : Inventory maintained in Japan.
<10 inserts in one case>

SPARE PARTS > M001
TECHNICAL DATA > N001

CHAMFER MILLING

45°



Roughing



CFSP

P

M

K

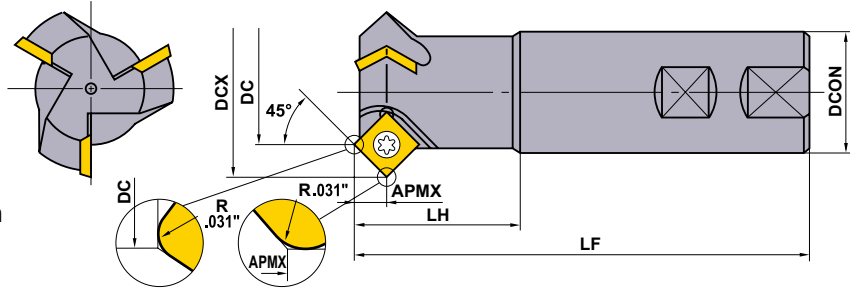
N

S

H



- Excellent sharpness with 11° positive inserts.
- 45° chamfer series.



Right hand tool holder only.

| Order Number | Stock Number of Teeth | Dimensions (inch) | | | | | | Insert Screw | Wrench | Insert |
|--------------|--------------------------|-------------------|-------|-------|-------|-------|------|--------------|--------|--------|
| | | DC | DCX | LF | DCON | LH | APMX | | | |
| CFSPR051W16 | ● 1 | .313 | .964 | 4.000 | 1.000 | 1.719 | .327 | TS52 | TKY25R | SPMW42 |
| CFSPR101W16 | ● 1 | .625 | 1.280 | 4.000 | 1.000 | 1.719 | .327 | TS5 | TKY25R | SPMW42 |
| CFSPR203W20 | ● 3 | 1.250 | 1.905 | 4.125 | 1.250 | 1.844 | .327 | TS5 | TKY25R | SPMW42 |

* Clamp Torque (lbf-in) : TS52=66, TS5=66

INSERTS

| Work Material | Steel | | Stainless Steel | | Cast Iron | | Cutting Conditions : | | | | | | |
|---------------|--------------|------------|-----------------|--------|-----------|--------|----------------------|---------|-------|-------------------|------|------|----------|
| | P | M | K | ● | ● | ● | ● | ● | ● | ● | | | |
| Shape | Order Number | ISO Number | Class | Coated | | Cermet | | Carbide | | Dimensions (inch) | | | Geometry |
| | | | | VP15TF | UP20M | NX2525 | NX4545 | UTi20T | HTi10 | IC | S | RE | |
| | SPMW421 | SPMW120304 | M | ● | ● | ★ | ★ | ● | ● | .500 | .125 | .016 | |
| | SPMW422 | SPMW120308 | M | ● | ● | ★ | ★ | ● | ● | .500 | .125 | .031 | |

RECOMMENDED CUTTING CONDITIONS

| Work Material | Hardness | Grade | Cutting Speed (SFM) | Feed per Tooth (inch/tooth) | |
|----------------------------------|--------------------------|--------|---------------------|-----------------------------|--------------|
| | | | | Chamfer Milling | Face Milling |
| P Carbon Steel Alloy Steel | 180-280HB | UTi20T | 590 (425-720) | .016 | .006 |
| | | UP20M | 590 (425-720) | .016 | .008 |
| | | NX2525 | 590 (425-720) | .016 | .008 |
| | 280-350HB | UTi20T | 330 (230-395) | .012 | .006 |
| K Cast Iron | Tensile Strength ≤450MPa | UTi20T | 460 (330-560) | .020 | .004 |
| | | HTi10 | 460 (330-560) | .020 | .004 |

SPARE PARTS > M001
TECHNICAL DATA > N001

MILLING

MILLING

BALL NOSE END MILL



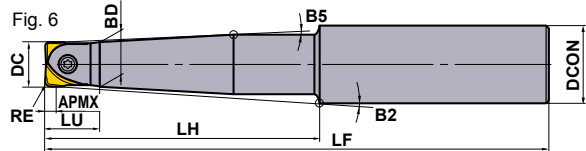
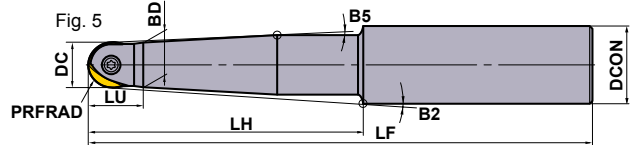
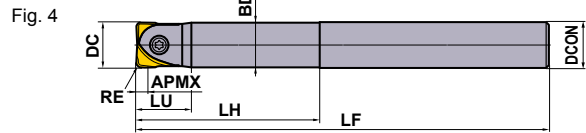
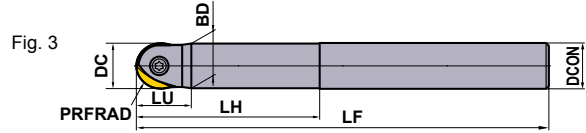
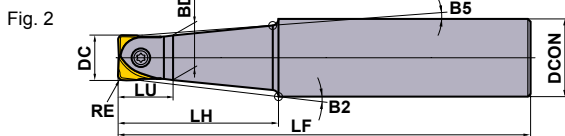
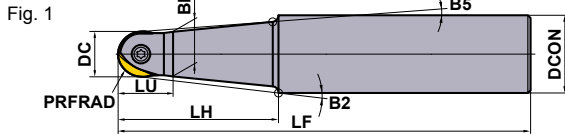
Finishing



Including curved faces

SRF

- P
- M
- K
- N
- S
- H



Right hand tool holder only.
Refer to page K142 for APMX, PRFRAD&RE.

STEEL SHANK

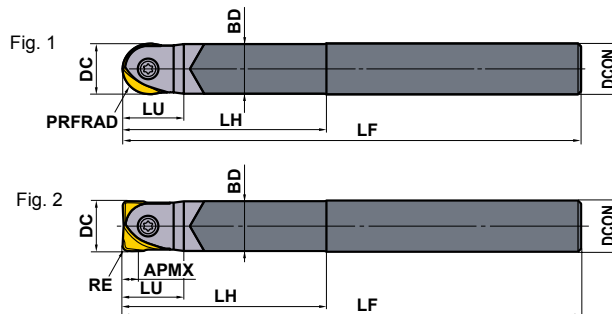
| Type | Order Number | Stock | Inserts | Dimensions (inch) | | | | | | | | | Fig. | Tools | | |
|------------|--------------|-------------|------------|-------------------|-------|-------|-------|-------|-------|-------|---------|----------|----------|-------------|--------|----------------------|
| | | | | PRFRAD | DC | DCON | LF | BD | LH | LU | B2 | B5 | | Clamp Screw | Wrench | Anti-seize Lubricant |
| Standard | SRFU06S08M | ● SRFT0375 | .1875 .375 | .500 | 4.375 | .354 | 1.625 | 512 | 2°30' | 1°30' | 1 | RS3008TS | ① TKY08D | MK1KS | | |
| | | ● SRFT10 | .1969 .394 | | | | | | 2°08' | 1°30' | | | | | | |
| | | ○ SUFT10R | — .394 | | | | | | 2°08' | 1°30' | | | | | | |
| | SRFU08S10M | ● SRFT0500 | .2500 .500 | .625 | 4.750 | .453 | 2.000 | .591 | 2°03' | 1°30' | 1 | RS3510T | ① TKY10D | MK1KS | | |
| | | ● SRFT12 | .2362 .472 | | | | | | 2°29' | 1°30' | | | | | | |
| | | ○ SUFT12R | — .472 | | | | | | 2°29' | 1°30' | | | | | | |
| | SRFU10S12M | ● SRFT0625 | .3125 .625 | .750 | 5.125 | .606 | 2.000 | .787 | 2°07' | 1°30' | 1 | RS4015T | ② TKY15T | MK1KS | | |
| ● SRFT16 | | .3150 .630 | 2°02' | | | | | | 1°30' | | | | | | | |
| ○ SUFT16R | | — .630 | 2°02' | | | | | | 1°30' | | | | | | | |
| SRFU12S16M | ● SRFT0750 | .3750 .750 | 1.000 | 6.000 | .732 | 2.875 | .945 | 2°52' | 1°30' | 1 | RS5020T | ② TKY20T | MK1KS | | | |
| | ● SRFT20 | .3937 .787 | | | | | | 2°27' | 1°30' | | | | | | | |
| | ○ SUFT20R | — .787 | | | | | | 2°27' | 1°30' | | | | | | | |
| SRFU16S20M | ● SRFT1000 | .5000 1.000 | 1.250 | 7.125 | .965 | 3.250 | 1.181 | 2°36' | 1°30' | 1 | RS6025T | ② TKY25T | MK1KS | | | |
| | ● SRFT25 | .4921 .984 | | | | | | 2°46' | 1°30' | | | | | | | |
| | ○ SUFT25R | — .984 | | | | | | 2°46' | 1°30' | | | | | | | |
| SRFU20S20M | ● SRFT1250 | .6250 1.250 | 1.250 | 8.039 | 1.161 | 4.164 | 1.417 | — | — | 3 | RS8030T | ② TKY30T | MK1KS | | | |
| | | ● SRFT30 | | | | | | | | | | | | .5906 1.181 | 4.125 | 1.378 |
| | | ● SRFT32 | | | | | | | | | | | | .6299 1.260 | 4.164 | 1.417 |
| | | ○ SUFT30R | | | | | | | | | | | | — 1.181 | 4.125 | 1.378 |
| Long | SRFU06S08L | ● SRFT0375 | .1875 .375 | .500 | 6.000 | .354 | 2.500 | .512 | 1°33' | 1°30' | 1 | RS3008TS | ① TKY08D | MK1KS | | |
| | | ● SRFT10 | .1969 .394 | | | | | | 1°19' | 1°30' | | | | | | |
| | | ○ SUFT10R | — .394 | | | | | | 1°19' | 1°30' | | | | | | |
| | SRFU08S10L | ● SRFT0500 | .2500 .500 | .625 | 6.375 | .453 | 2.875 | .591 | 1°22' | 1°30' | 1 | RS3510T | ① TKY10D | MK1KS | | |
| | | ● SRFT12 | .2362 .472 | | | | | | 1°39' | 1°30' | | | | | | |
| | | ○ SUFT12R | — .472 | | | | | | 1°39' | 1°30' | | | | | | |
| | SRFU10S12L | ● SRFT0625 | .3125 .625 | .750 | 7.125 | .606 | 3.625 | .787 | 1°05' | 1°30' | 2 | RS4015T | ② TKY15T | MK1KS | | |
| ● SRFT16 | | .3150 .630 | 1°02' | | | | | | 1°30' | | | | | | | |
| ○ SUFT16R | | — .630 | 1°02' | | | | | | 1°30' | | | | | | | |
| SRFU12S16L | ● SRFT0750 | .3750 .750 | 1.000 | 8.500 | .732 | 4.625 | .945 | 1°41' | 1°30' | 1 | RS5020T | ② TKY20T | MK1KS | | | |
| | ● SRFT20 | .3937 .787 | | | | | | 1°25' | 1°30' | | | | | | | |
| | ○ SUFT20R | — .787 | | | | | | 1°25' | 1°30' | | | | | | | |
| SRFU16S20L | ● SRFT1000 | .5000 1.000 | 1.250 | 9.625 | .965 | 5.750 | 1.181 | 1°22' | 1°30' | 1 | RS6025T | ② TKY25T | MK1KS | | | |
| | ● SRFT25 | .4921 .984 | | | | | | 1°27' | 1°30' | | | | | | | |
| | ○ SUFT25R | — .984 | | | | | | 1°27' | 1°30' | | | | | | | |
| SRFU20S20L | ● SRFT1250 | .6250 1.250 | 1.250 | 10.539 | 1.161 | 6.664 | 1.417 | — | — | 3 | RS8030T | ② TKY30T | MK1KS | | | |
| | | ● SRFT30 | | | | | | | | | | | | .5906 1.181 | 6.625 | 1.378 |
| | | ● SRFT32 | | | | | | | | | | | | .6299 1.260 | 6.664 | 1.417 |
| | | ○ SUFT30R | | | | | | | | | | | | — 1.181 | 6.625 | 1.378 |

(Note) Fit inserts in the right direction. (Refer to page K144 & K145)

* Clamp Torque (lbf-in) : RS3008TS=13, RS3510T=22, RS4015T=29, RS5020T=44, RS6025T=66, RS8030T=88

● : Inventory maintained.

<2 inserts in one case>



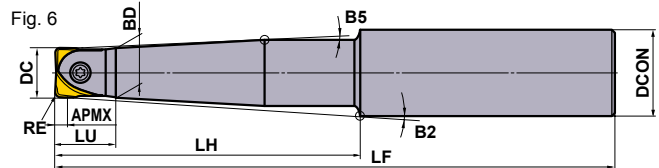
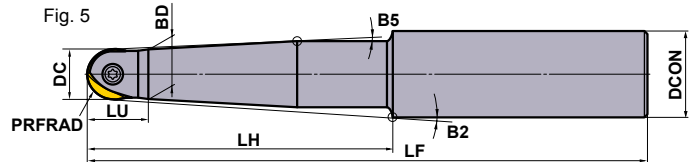
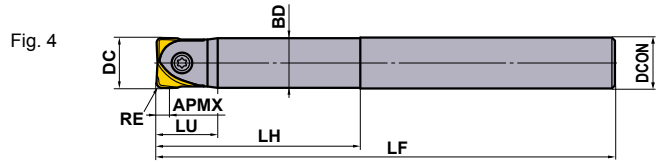
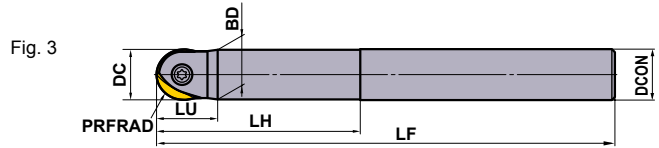
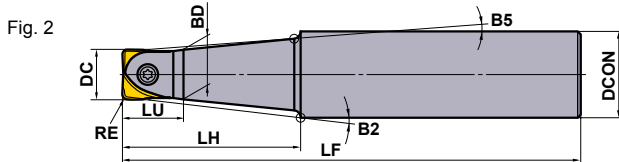
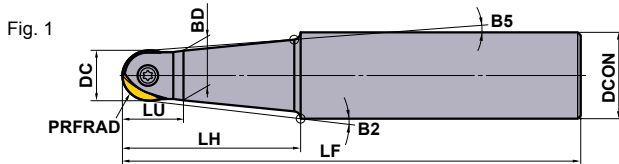
CARBIDE SHANK

Right hand tool holder only.
Refer to page K142 for APMX, PRFRAD&RE.

| Type | Order Number | Stock R | Inserts | Dimensions (inch) | | | | | | | Fig. | * | | | |
|-------------|--------------|------------|----------|-------------------|-------|-------|--------|--------|-------|-------|-------|-------------|---------|----------------------|-------|
| | | | | PRFRAD | DC | DCON | LF | BD | LH | LU | | Clamp Screw | Wrench | Anti-seize Lubricant | |
| Standard | SRFU06S06MW | ● | SRFT0375 | .1875 | .375 | .375 | 4.375 | .354 | 1.625 | 0.512 | 1 | RS3008TS | ①TKY08D | MK1KS | |
| | | | SRFT10 | .1969 | .394 | | | | | | 1 | | | | |
| | | | SUFT10R | — | .394 | | | | | | 2 | | | | |
| | SRFU08S08MW | ● | ● | SRFT0500 | .2500 | .500 | .500 | 4.750 | .453 | 2.000 | 0.591 | 1 | RS3510T | ①TKY10D | MK1KS |
| | | | | SRFT12 | .2362 | .472 | | | | | | 1 | | | |
| | | | | SUFT12R | — | .472 | | | | | | 2 | | | |
| | SRFU10S10MW | ● | ● | SRFT0625 | .3125 | .625 | .625 | 5.250 | .606 | 2.125 | 0.787 | 1 | RS4015T | ②TKY15T | MK1KS |
| | | | | SRFT16 | .3150 | .630 | | | | | | 1 | | | |
| | | | | SUFT16R | — | .630 | | | | | | 2 | | | |
| | SRFU12S12MW | ● | ● | SRFT0750 | .3750 | .750 | .750 | 7.125 | .732 | 4.000 | 0.945 | 1 | RS5020T | ②TKY20T | MK1KS |
| | | | | SRFT20 | .3937 | .787 | | | | | | 1 | | | |
| | | | | SUFT20R | — | .787 | | | | | | 2 | | | |
| SRFU16S16MW | ● | ● | SRFT1000 | .5000 | 1.000 | 1.000 | 8.000 | .965 | 4.125 | 1.181 | 1 | RS6025T | ②TKY25T | MK1KS | |
| | | | SRFT25 | .4921 | .984 | | | | | | 1 | | | | |
| | | | SUFT25R | — | .984 | | | | | | 2 | | | | |
| Long | SRFU06S06LW | ● | SRFT0375 | .1875 | .375 | .375 | 6.625 | .354 | 3.125 | .512 | 1 | RS3008TS | ①TKY08D | MK1KS | |
| | | | SRFT10 | .1969 | .394 | | | | | | 1 | | | | |
| | | | SUFT10R | — | .394 | | | | | | 2 | | | | |
| | SRFU08S08LW | ● | ● | SRFT0500 | .2500 | .500 | .500 | 6.625 | .453 | 3.125 | .591 | 1 | RS3510T | ①TKY10D | MK1KS |
| | | | | SRFT12 | .2362 | .472 | | | | | | 1 | | | |
| | | | | SUFT12R | — | .472 | | | | | | 2 | | | |
| | SRFU10S10LW | ● | ● | SRFT0625 | .3125 | .625 | .625 | 8.000 | .606 | 4.500 | .787 | 1 | RS4015T | ②TKY15T | MK1KS |
| | | | | SRFT16 | .3150 | .630 | | | | | | 1 | | | |
| | | | | SUFT16R | — | .630 | | | | | | 2 | | | |
| | SRFU12S12LW | ● | ● | SRFT0750 | .3750 | .750 | .750 | 10.000 | .732 | 6.125 | .945 | 1 | RS5020T | ②TKY20T | MK1KS |
| | | | | SRFT20 | .3937 | .787 | | | | | | 1 | | | |
| | | | | SUFT20R | — | .787 | | | | | | 2 | | | |
| SRFU16S16LW | ● | ● | SRFT1000 | .5000 | 1.000 | 1.000 | 12.000 | .965 | 8.125 | 1.181 | 1 | RS6025T | ②TKY25T | MK1KS | |
| | | | SRFT25 | .4921 | .984 | | | | | | 1 | | | | |
| | | | SUFT25R | — | .984 | | | | | | 2 | | | | |

(Note) Fit inserts in the right direction. (Refer to page K144 & K145)

* Clamp Torque (lbf-in) : RS3008TS=13, RS3510T=22, RS4015T=29, RS5020T=44, RS6025T=66



METRIC Standard

STEEL SHANK

Right hand tool holder only.
Refer to page K142 for APMX, PRFRAD&RE.

| Type | Order Number | Stock | Inserts | Dimensions (mm) | | | | | | | | Fig. | * Clamp Screw | ① Wrench | ② Anti-seize Lubricant | |
|------------|---------------|---------|---------|-----------------|----|------|------|------|-----|-------|-------|-------|------------------|-------------|---------------------------|-------|
| | | | | PRFRAD | DC | DCON | LF | BD | LH | LU | B2 | | | | | B5 |
| Standard | SRFH10S12M | ★ | SRFT10 | 5 | 10 | 12 | 110 | 9.5 | 40 | 13 | 1°38' | 1°30' | 1 | RS3008T | ①TKY08D | MK1KS |
| | | ★ | SUFT10R | — | 10 | 12 | 110 | 9.5 | 40 | 13 | 1°38' | — | 2 | | | |
| | SRFH12S16M | ★ | SRFT12 | 6 | 12 | 16 | 120 | 11.5 | 50 | 15 | 2°36' | 1°30' | 1 | RS3510T | ①TKY10D | MK1KS |
| | | ★ | SUFT12R | — | 12 | 16 | 120 | 11.5 | 50 | 15 | 2°36' | — | 2 | | | |
| | SRFH16S20M | ★ | SRFT16 | 8 | 16 | 20 | 130 | 15.5 | 50 | 20 | 2°44' | 1°30' | 1 | RS4015T | ②TKY15T | MK1KS |
| | | ★ | SUFT16R | — | 16 | 20 | 130 | 15.5 | 50 | 20 | 2°44' | — | 2 | | | |
| | SRFH20S25M | ★ | SRFT20 | 10 | 20 | 25 | 150 | 19.5 | 70 | 24 | 2°23' | 1°30' | 1 | RS5020T | ②TKY20T | MK1KS |
| | | ★ | SUFT20R | — | 20 | 25 | 150 | 19.5 | 70 | 24 | 2°23' | 1°30' | 2 | | | |
| | SRFH25S32M | ★ | SRFT25 | 12.5 | 25 | 32 | 180 | 24.5 | 80 | 30 | 2°58' | 1°30' | 1 | RS6025T | ②TKY25T | MK1KS |
| ★ | | SUFT25R | — | 25 | 32 | 180 | 24.5 | 80 | 30 | 2°58' | 1°30' | 2 | | | | |
| SRFH30S32M | ★ | SRFT30 | 15 | 30 | 32 | 200 | 29.5 | 100 | 35 | — | — | 3 | RS8030T | ②TKY30T | MK1KS | |
| | ★ | SUFT30R | — | 30 | 32 | 200 | 29.5 | 100 | 35 | — | — | 4 | | | | |
| SRFH32S32M | ★ | SRFT32 | 16 | 32 | 32 | 200 | 31.5 | 100 | 35 | — | — | 3 | RS8030T | ②TKY30T | MK1KS | |
| | ★ | SUFT32R | — | 32 | 32 | 200 | 31.5 | 100 | 35 | — | — | 4 | | | | |
| Semi Long | SRFH10S12L | ★ | SRFT10 | 5 | 10 | 12 | 150 | 9.5 | 60 | 13 | 1°30' | 1°30' | 1 | RS3008T | ①TKY08D | MK1KS |
| | | ★ | SUFT10R | — | 10 | 12 | 150 | 9.5 | 60 | 13 | 1°30' | — | 2 | | | |
| | SRFH12S16L | ★ | SRFT12 | 6 | 12 | 16 | 160 | 11.5 | 70 | 15 | 1°47' | 1°30' | 1 | RS3510T | ①TKY10D | MK1KS |
| | | ★ | SUFT12R | — | 12 | 16 | 160 | 11.5 | 70 | 15 | 1°47' | — | 2 | | | |
| | SRFH16S20L | ★ | SRFT16 | 8 | 16 | 20 | 160 | 15.5 | 70 | 20 | 1°51' | 1°30' | 1 | RS4015T | ②TKY15T | MK1KS |
| | | ★ | SUFT16R | — | 16 | 20 | 160 | 15.5 | 70 | 20 | 1°51' | — | 2 | | | |
| | SRFH20S25L | ★ | SRFT20 | 10 | 20 | 25 | 180 | 19.5 | 80 | 24 | 2°03' | 1°30' | 1 | RS5020T | ②TKY20T | MK1KS |
| | | ★ | SUFT20R | — | 20 | 25 | 180 | 19.5 | 80 | 24 | 2°03' | 1°30' | 2 | | | |
| | SRFH20S20L80 | ★ | SRFT20 | 10 | 20 | 20 | 180 | 19.5 | 80 | 24 | — | — | 3 | RS5020T | ②TKY20T | MK1KS |
| | | ★ | SUFT20R | — | 20 | 20 | 180 | 19.5 | 80 | 24 | — | — | 4 | | | |
| | SRFH25S32L | ★ | SRFT25 | 12.5 | 25 | 32 | 200 | 24.5 | 100 | 30 | 2°17' | 1°30' | 1 | RS6025T | ②TKY25T | MK1KS |
| | | ★ | SUFT25R | — | 25 | 32 | 200 | 24.5 | 100 | 30 | 2°17' | 1°30' | 2 | | | |
| | SRFH25S25L100 | ★ | SRFT25 | 12.5 | 25 | 25 | 200 | 24.5 | 100 | 30 | — | — | 3 | RS6025T | ②TKY25T | MK1KS |
| ★ | | SUFT25R | — | 25 | 25 | 200 | 24.5 | 100 | 30 | — | — | 4 | | | | |
| SRFH30S32L | ★ | SRFT30 | 15 | 30 | 32 | 230 | 29.5 | 130 | 35 | — | — | 3 | RS8030T | ②TKY30T | MK1KS | |
| | ★ | SUFT30R | — | 30 | 32 | 230 | 29.5 | 130 | 35 | — | — | 4 | | | | |

(Note 1) Fit inserts in the right direction. (Refer to page K144 & K145)

(Note 2) Inch type insert can not be installed on the metric holder.

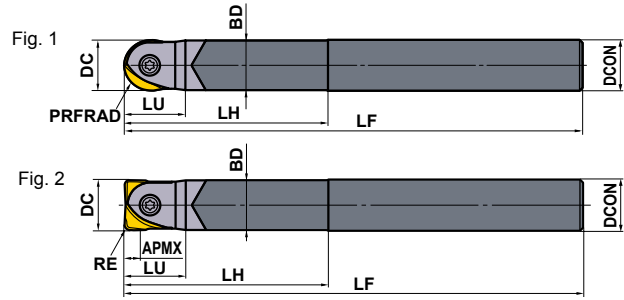
* Clamp Torque (lbf-in) : RS3008T=13, RS3510T=22, RS4015T=29, RS5020T=44, RS6025T=66, RS8030T=88

| Type | Order Number | Stock | Inserts | Dimensions (mm) | | | | | | | | Fig. | * | | | |
|------------|---------------|---------|---------|-----------------|----|------|------|------|-----|----|-------|-------|---------|-------------|---------|----------------------|
| | | | | PRFRAD | DC | DCON | LF | BD | LH | LU | B2 | | B5 | Clamp Screw | Wrench | Anti-seize Lubricant |
| Long | SRFH20S25E | ★ | SRFT20 | 10 | 20 | 25 | 220 | 19.5 | 120 | 24 | 1°30' | 1°30' | 5 | RS5020T | ②TKY20T | MK1KS |
| | | | SUFT20R | — | 20 | 25 | 220 | 19.5 | 120 | 24 | 1°30' | 1°30' | 6 | | | |
| | SRFH20S20E120 | ★ | SRFT20 | 10 | 20 | 20 | 220 | 19.5 | 120 | 24 | — | — | 3 | RS5020T | ②TKY20T | MK1KS |
| | | | SUFT20R | — | 20 | 20 | 220 | 19.5 | 120 | 24 | — | — | 4 | | | |
| | SRFH25S32E | ★ | SRFT25 | 12.5 | 25 | 32 | 250 | 24.5 | 150 | 30 | 1°30' | 1°30' | 5 | RS6025T | ②TKY25T | MK1KS |
| | | | SUFT25R | — | 25 | 32 | 250 | 24.5 | 150 | 30 | 1°30' | 1°30' | 6 | | | |
| | SRFH25S25E150 | ★ | SRFT25 | 12.5 | 25 | 25 | 250 | 24.5 | 150 | 30 | — | — | 3 | RS6025T | ②TKY25T | MK1KS |
| | | | SUFT25R | — | 25 | 25 | 250 | 24.5 | 150 | 30 | — | — | 4 | | | |
| SRFH30S32E | ★ | SRFT30 | 15 | 30 | 32 | 300 | 29.5 | 200 | 35 | — | — | 3 | RS8030T | ②TKY30T | MK1KS | |
| | | SUFT30R | — | 30 | 32 | 300 | 29.5 | 200 | 35 | — | — | 4 | | | | |

(Note 1) Fit inserts in the right direction. (Refer to page K144 & K145)

(Note 2) Inch type insert can not be installed on the metric holder.

* Clamp Torque (lbf-in) : RS5020T=44, RS6025T=66, RS8030T=88



METRIC Standard

CARBIDE SHANK

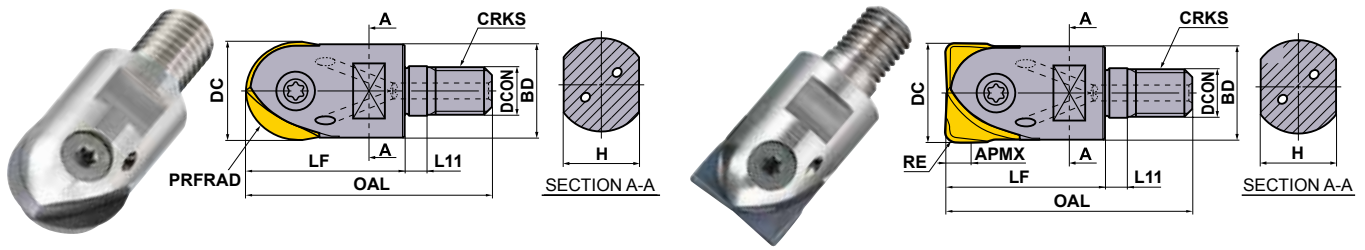
Right hand tool holder only.
Refer to page K142 for APMX, PRFRAD&RE.

| Type | Order Number | Stock R | Inserts | Dimensions (mm) | | | | | | | Fig. | | | |
|-------------|--------------|------------|---------|-----------------|----|------|------|------|-----|----|---------|-------------|---------|----------------------|
| | | | | PRFRAD | DC | DCON | LF | BD | LH | LU | | Clamp Screw | Wrench | Anti-seize Lubricant |
| Standard | SRFH10S10MW | ★ | SRFT10 | 5 | 10 | 10 | 110 | 9.5 | 40 | 13 | 1 | RS3008T | ①TKY08D | MK1KS |
| | | ★ | SUFT10R | — | 10 | 10 | 110 | 9.5 | 40 | 13 | 1 | | | |
| | SRFH12S12MW | ★ | SRFT12 | 6 | 12 | 12 | 120 | 11.5 | 50 | 15 | 1 | RS3510T | ①TKY10D | MK1KS |
| | | ★ | SUFT12R | — | 12 | 12 | 120 | 11.5 | 50 | 15 | 1 | | | |
| | SRFH16S16MW | ★ | SRFT16 | 8 | 16 | 16 | 130 | 15.5 | 50 | 20 | 1 | RS4015T | ②TKY15T | MK1KS |
| | | ★ | SUFT16R | — | 16 | 16 | 130 | 15.5 | 50 | 20 | 1 | | | |
| | SRFH20S20MW | ★ | SRFT20 | 10 | 20 | 20 | 180 | 19.5 | 80 | 24 | 1 | RS5020T | ②TKY20T | MK1KS |
| | | ★ | SUFT20R | — | 20 | 20 | 180 | 19.5 | 80 | 24 | 2 | | | |
| | SRFH25S25MW | ★ | SRFT25 | 12.5 | 25 | 25 | 200 | 24.5 | 100 | 30 | 1 | RS6025T | ②TKY25T | MK1KS |
| | | ★ | SUFT25R | — | 25 | 25 | 200 | 24.5 | 100 | 30 | 2 | | | |
| SRFH30S32MW | ★ | SRFT30 | 15 | 30 | 32 | 230 | 29.5 | 130 | 35 | 1 | RS8030T | ②TKY30T | MK1KS | |
| | | SRFT32 | 16 | 32 | 32 | 231 | 29.5 | 131 | 36 | | | | | |
| | ★ | SUFT30R | — | 32 | 32 | 230 | 29.5 | 130 | 35 | 2 | | | | |
| Long | SRFH10S10LW | ★ | SRFT10 | 5 | 10 | 10 | 150 | 9.5 | 60 | 13 | 1 | RS3008T | ①TKY08D | MK1KS |
| | | ★ | SUFT10R | — | 10 | 10 | 150 | 9.5 | 60 | 13 | 1 | | | |
| | SRFH12S12LW | ★ | SRFT12 | 6 | 12 | 12 | 160 | 11.5 | 70 | 15 | 1 | RS3510T | ①TKY10D | MK1KS |
| | | ★ | SUFT12R | — | 12 | 12 | 160 | 11.5 | 70 | 15 | 1 | | | |
| | SRFH16S16LW | ★ | SRFT16 | 8 | 16 | 16 | 160 | 15.5 | 70 | 20 | 1 | RS4015T | ②TKY15T | MK1KS |
| | | ★ | SUFT16R | — | 16 | 16 | 160 | 15.5 | 70 | 20 | 1 | | | |
| | SRFH16S16EW | ★ | SRFT16 | 8 | 16 | 16 | 200 | 15.5 | 110 | 20 | 1 | RS4015T | ②TKY15T | MK1KS |
| | SRFH20S20LW | ★ | SRFT20 | 10 | 20 | 20 | 250 | 19.5 | 150 | 24 | 1 | RS5020T | ②TKY20T | MK1KS |
| | | ★ | SUFT20R | — | 20 | 20 | 250 | 19.5 | 150 | 24 | 2 | | | |
| | SRFH25S25LW | ★ | SRFT25 | 12.5 | 25 | 25 | 300 | 24.5 | 200 | 30 | 1 | RS6025T | ②TKY25T | MK1KS |
| ★ | | SUFT25R | — | 25 | 25 | 300 | 24.5 | 200 | 30 | 2 | | | | |
| SRFH30S32LW | ★ | SRFT30 | 15 | 30 | 32 | 350 | 29.5 | 250 | 35 | 1 | RS8030T | ②TKY30T | MK1KS | |
| | | SRFT32 | 16 | 32 | 32 | 351 | 29.5 | 251 | 36 | | | | | |
| | ★ | SUFT30R | — | 30 | 32 | 350 | 29.5 | 250 | 35 | 2 | | | | |

(Note 1) Fit inserts in the right direction. (Refer to page K144 & K145)

(Note 2) Inch type insert can not be installed on the metric holder.

* Clamp Torque (lbf-in) : RS3008T=13, RS3510T=22, RS4015T=29, RS5020T=44, RS6025T=66, RS8030T=88



METRIC Standard

SCREW-IN TYPE

Right hand tool holder only.

| Order Number | Stock | Coolant Hole *1 | Insert | Dimensions (mm) | | | | | | | | WT (kg) | *2 | | | |
|----------------------|-------|-----------------|---------|-----------------|----|------|------|-----|----|-----|----|------------|------|-------------|--------|----------------------|
| | | | | PRFRAD | DC | DCON | BD | OAL | LF | L11 | H | | CRKS | Clamp Screw | Wrench | Anti-seize Lubricant |
| SRFH16AM0830 | ★ | Y | SRFT16 | 8 | 16 | 8.5 | 14.9 | 48 | 30 | 6 | 10 | M8 | 0.1 | RS4015T | TKY15T | MK1KS |
| | | | SUFT16R | — | 16 | 8.5 | 14.9 | 48 | 30 | 6 | 10 | M8 | | | | |
| SRFH 20AM1035 | ★ | Y | SRFT20 | 10 | 20 | 10.5 | 18.4 | 54 | 35 | 6 | 14 | M10 | 0.1 | RS5020T | TKY20T | MK1KS |
| | | | SUFT20R | — | 20 | 10.5 | 18.4 | 54 | 35 | 6 | 14 | M10 | | | | |
| SRFH25AM1240 | ★ | Y | SRFT25 | 12.5 | 25 | 12.5 | 23.5 | 62 | 40 | 6 | 19 | M12 | 0.1 | RS6025T | TKY25T | MK1KS |
| | | | SUFT25R | — | 25 | 12.5 | 25.5 | 62 | 40 | 6 | 19 | M12 | | | | |
| SRFH 30AM1645 | ★ | Y | SRFT30 | 15 | 30 | 17 | 28.1 | 68 | 45 | 6 | 24 | M16 | 0.2 | RS8030T | TKY30T | MK1KS |
| | | | SUFT30R | — | 32 | 17 | 28.1 | 69 | 46 | 6 | 24 | M16 | | | | |

(Note 1) Fit inserts in the right direction. (Refer to page K144 & K145)

(Note 2) Inch type insert can not be installed on the metric holder.

*1 Y=Yes


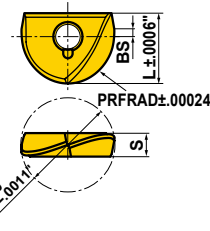
*2 Clamp Torque (lbf-in) : RS4015T=29, RS5020T=44, RS6025T=66, RS8030T=88

*3 WT : Mass

| | |
|-----------------|--------|
| INSERTS | > K142 |
| SCREW-IN ARBORS | > K162 |
| SPARE PARTS | > M001 |
| TECHNICAL DATA | > N001 |


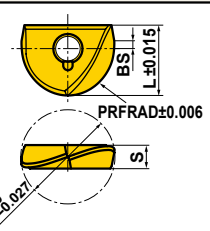

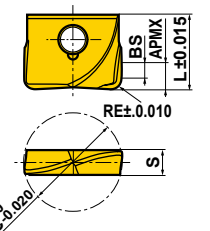
INSERTS

INCH Standard

| Shape | Order Number | Coated | | | Dimensions (inch) | | | | | | Geometry | |
|---|--------------|--------|--------|--------|-------------------|--------|----|------|------|------|----------|--|
| | | MP8010 | EP6120 | VP15TF | DC | PRFRAD | RE | L | BS | S | | APMX |
|  | SRFT0375 | ● | ● | ● | .375 | .1875 | — | .335 | .020 | .102 | — |  <p>BS L±.0006" PRFRAD±.00024" S DC-0.0014"</p> |
| | SRFT0500 | ● | ● | ● | .500 | .2500 | — | .394 | .020 | .118 | — | |
| | SRFT0625 | ● | ● | ● | .625 | .3125 | — | .472 | .039 | .158 | — | |
| | SRFT0750 | ● | ● | ● | .750 | .3750 | — | .591 | .039 | .197 | — | |
| | SRFT1000 | ● | ● | ● | 1.000 | .5000 | — | .728 | .039 | .236 | — | |
| | SRFT1250 | ● | ● | ● | 1.250 | .6250 | — | .925 | .039 | .276 | — | |

METRIC Standard



| Shape | Order Number | Coated | | | Dimensions (mm) | | | | | | Geometry | |
|---|--------------|--------|--------|--------|-----------------|---------------|--------------|------|-----|-----|----------|---|
| | | MP8010 | EP6120 | VP15TF | DC | PRFRAD | RE | L | BS | S | | APMX |
|  | SRFT10 | ★ | ★ | ★ | 10 | 5 (.1969") | — | 8.5 | 0.5 | 2.6 | — |  <p>BS L±0.015 PRFRAD±0.006 S DC-0.021"</p> |
| | SRFT12 | ★ | ★ | ★ | 12 | 6 (.2362") | — | 10 | 0.5 | 3 | — | |
| | SRFT16 | ★ | ★ | ★ | 16 | 8 (.3150") | — | 12 | 1 | 4 | — | |
| | SRFT20 | ★ | ★ | ★ | 20 | 10 (.3937") | — | 15 | 1 | 5 | — | |
| | SRFT25 | ★ | ★ | ★ | 25 | 12.5 (.4921") | — | 18.5 | 1 | 6 | — | |
| | SRFT30 | ★ | ★ | ★ | 30 | 15 (.5906") | — | 22.5 | 1 | 7 | — | |
| | SRFT32 | ★ | ★ | ★ | 32 | 16 (.6299") | — | 23.5 | 1 | 7 | — | |
|  | SUFT10R05 | ★ | ★ | ★ | 10 | — | 0.5 (.0197") | 8.5 | 1 | 2.6 | 1.5 |  <p>BS APMX L±0.015 RE±0.010 S DC-0.020"</p> |
| | SUFT10R10 | ★ | ★ | ★ | 10 | — | 1 (.0394") | 8.5 | 1 | 2.6 | 2 | |
| | SUFT10R20 | ★ | ★ | ★ | 10 | — | 2 (.0787") | 8.5 | 1 | 2.6 | 3 | |
| | SUFT12R05 | ★ | ★ | ★ | 12 | — | 0.5 (.0197") | 10 | 1.2 | 3 | 1.7 | |
| | SUFT12R10 | ★ | ★ | ★ | 12 | — | 1 (.0394") | 10 | 1.2 | 3 | 2.2 | |
| | SUFT12R20 | ★ | ★ | ★ | 12 | — | 2 (.0787") | 10 | 1.2 | 3 | 3.2 | |
| | SUFT12R30 | ★ | ★ | ★ | 12 | — | 3 (.1181") | 10 | 1.2 | 3 | 4.2 | |
| | SUFT16R05 | ★ | ★ | ★ | 16 | — | 0.5 (.0197") | 12 | 1.6 | 4 | 2.1 | |
| | SUFT16R10 | ★ | ★ | ★ | 16 | — | 1 (.0394") | 12 | 1.6 | 4 | 2.6 | |
| | SUFT16R15 | ★ | ★ | ★ | 16 | — | 1.5 (.0591") | 12 | 1.6 | 4 | 3.1 | |
| | SUFT16R20 | ★ | ★ | ★ | 16 | — | 2 (.0787") | 12 | 1.6 | 4 | 3.6 | |
| | SUFT16R30 | ★ | ★ | ★ | 16 | — | 3 (.1181") | 12 | 1.6 | 4 | 4.6 | |
| | SUFT20R05 | ★ | ★ | ★ | 20 | — | 0.5 (.0197") | 15 | 2 | 5 | 2.5 | |
| | SUFT20R10 | ★ | ★ | ★ | 20 | — | 1 (.0394") | 15 | 2 | 5 | 3 | |
| | SUFT20R15 | ★ | ★ | ★ | 20 | — | 1.5 (.0591") | 15 | 2 | 5 | 3.5 | |
| | SUFT20R20 | ★ | ★ | ★ | 20 | — | 2 (.0787") | 15 | 2 | 5 | 4 | |
| | SUFT20R30 | ★ | ★ | ★ | 20 | — | 3 (.1181") | 15 | 2 | 5 | 5 | |
| | SUFT25R05 | ★ | ★ | ★ | 25 | — | 0.5 (.0197") | 18.5 | 2.5 | 6 | 3 | |
| | SUFT25R10 | ★ | ★ | ★ | 25 | — | 1 (.0394") | 18.5 | 2.5 | 6 | 3.5 | |
| | SUFT25R20 | ★ | ★ | ★ | 25 | — | 2 (.0787") | 18.5 | 2.5 | 6 | 4.5 | |
| | SUFT25R30 | ★ | ★ | ★ | 25 | — | 3 (.1181") | 18.5 | 2.5 | 6 | 5.5 | |
| | SUFT30R05 | ★ | ★ | ★ | 30 | — | 0.5 (.0197") | 22.5 | 3 | 7 | 3.5 | |
| | SUFT30R10 | ★ | ★ | ★ | 30 | — | 1 (.0394") | 22.5 | 3 | 7 | 4 | |
| SUFT30R20 | ★ | ★ | ★ | 30 | — | 2 (.0787") | 22.5 | 3 | 7 | 5 | | |
| SUFT30R30 | ★ | ★ | ★ | 30 | — | 3 (.1181") | 22.5 | 3 | 7 | 6 | | |
| SUFT32R05 | ★ | ★ | ★ | 32 | — | 0.5 (.0197") | 23.5 | 3.2 | 7 | 3.7 | | |
| SUFT32R10 | ★ | ★ | ★ | 32 | — | 1 (.0394") | 23.5 | 3.2 | 7 | 4.2 | | |
| SUFT32R20 | ★ | ★ | ★ | 32 | — | 2 (.0787") | 23.5 | 3.2 | 7 | 5.2 | | |

● : Inventory maintained. ★ : Inventory maintained in Japan.

<2 inserts in one case>



RECOMMENDED CUTTING CONDITIONS FOR SRFT BALL-NOSE INSERTS

| | Work Material | Hardness | Insert Grades | Cutting Speed vc (SFM) | Feed per Tooth fz (IPT) | Depth of Cut ap (inch) |
|-------------------|--------------------------|----------------|---------------|-------------------------------------|--------------------------------------|-------------------------------------|
| P | Mild Steel | 180HB | EP6120 | 655 (260–985) | .008 (.004–.012) | ≤ 0.05DC |
| | Carbon Steel Alloy Steel | 180–280HB | EP6120 | 655 (260–985) | .008 (.004–.012) | ≤ 0.05DC |
| | | | VP15TF | 655 (260–985) | .008 (.004–.012) | ≤ 0.05DC |
| | Pre-hardened steels | 35–45HRC | EP6120 | 490 (260–655) | .008 (.004–.012) | ≤ 0.05DC |
| | | | VP15TF | 490 (260–655) | .008 (.004–.012) | ≤ 0.05DC |
| | Alloy Tool Steel | 350HB | EP6120 | 490 (260–655) | .008 (.004–.012) | ≤ 0.05DC |
| | | | VP15TF | 490 (260–655) | .008 (.004–.012) | ≤ 0.05DC |
| | K | Gray Cast Iron | 350MPa | MP8010 | 820 (260–1475) | .008 (.004–.012) |
| Ductile Cast Iron | | 450MPa | MP8010 | 655 (260–985) | .008 (.004–.012) | ≤ 0.05DC |
| | | 800MPa | MP8010 | 655 (260–985) | .008 (.004–.012) | ≤ 0.05DC |
| N | Copper, Copper Alloys | | EP6120 | 655 (260–985) | .008 (.004–.012) | ≤ 0.05DC |
| H | Hardened Steel | 45–55HRC | MP8010 | 330 (195–395) | .008 (.004–.012) | ≤ 0.05DC |
| | | 55–65HRC | MP8010 | 260 (195–395) | .008 (.004–.012) | ≤ 0.01DC |

(Note 1) The values above are for average machining conditions. The optimum values can change slightly according to the condition and rigidity of the machine and work holding. Adjust the values accordingly.

(Note 2) For end mills with a carbide shank, up to 20 percent higher cutting conditions are possible.

(Note 3) Please note the following when machining hardened steel with MP8010.

- Please shorten the overhang length as much as possible.
- Use with carbide shank recommended.
- Take special care with the depth of cut to prevent fracture.

CALCULATING ACTUAL CUTTING SPEED

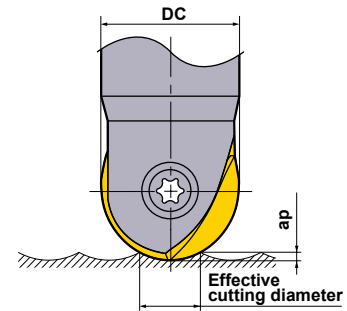
1. Effective cutting diameter = $2\sqrt{ap(DC-ap)}$

DC : Tool diameter (inch)
ap : Depth of Cut (inch)

2. Using ap → Calculate cutting speed at the depth of cut line.

$$vc = \frac{2\pi n \sqrt{ap(DC-ap)}}{12}$$

vc : Actual cutting speed (SFM)
n : Revolution (min⁻¹)



SELECTING PICK FEED

Theoretical

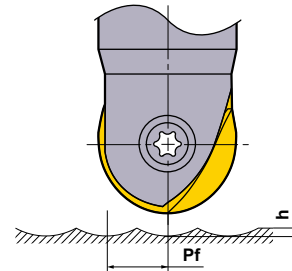
$$h = \frac{(Pf)^2}{8R}$$

h : Cusp height
pf : Pick feed
PRFRAD : Ball nose or corner radius

Actual surface roughness Rz will be about 3 times worse than theoretical h. This is because of the effect of a built-up edge.

To determine Pf, use the formula below based on a particular Rz value.

$$Pf = \sqrt{\frac{8 \times PRFRAD \times Rz}{3}}$$



INSERT INSTALLATION

1. Clean the insert and the insert pocket

Thoroughly clean the insert and the insert pocket on the holder body.

2. Fitting the insert

Place the concave mark on the insert uppermost as shown with the clamp screw inserted from above. Fasten the clamp screw while firmly pressing the insert against the insert pocket wall. Use of a special anti seize lubricant MK1KS is recommended. Tighten at the recommended torque range.



RECOMMENDED CUTTING CONDITIONS FOR SUFT CORNER RADIUS INSERT

Shoulder milling(When small width of cut.*)

| | Work Material | Hardness | Insert Grades | Cutting Speed vc (SFM) | Depth of Cut ap (inch) | Wide of Cut ae (inch) | Feed per Tooth fz (IPT) |
|---|-----------------------------|------------------------------|---------------|------------------------------|------------------------------|-----------------------------|-------------------------------|
| P | Carbon Steel Alloy Steel | 180–280HB | VP15TF | 655 (260–985) | ≤ 0.05DC | ≤ 0.05DC | .008 (≤ .016) |
| | Pre-hardened steels | ≤ 45HRC | VP15TF | 490 (260–655) | ≤ 0.05DC | ≤ 0.05DC | .006 (≤ .012) |
| | Alloy Tool Steel | 180–380HB | VP15TF | 490 (260–655) | ≤ 0.05DC | ≤ 0.05DC | .006 (≤ .012) |
| M | Stainless Steel | ≤ 270HB | VP15TF | 490 (330–655) | ≤ 0.05DC | ≤ 0.05DC | .008 (≤ .016) |
| K | Cast Iron | Tensile Strength ≤ 350MPa | MP8010 | 820 (590–1475) | ≤ 0.05DC | ≤ 0.1DC | .012 (≤ .016) |
| | Ductile Cast Iron | Tensile Strength ≤ 800MPa | MP8010 | 655 (260–985) | ≤ 0.05DC | ≤ 0.1DC | .012 (≤ .016) |
| H | Hardened Steel | 45–55HRC | MP8010 | 330 (260–395) | ≤ 0.05DC | ≤ 0.02DC | .004 (≤ .008) |
| | Hardened Steel | 55–65HRC | MP8010 | 260 (195–330) | ≤ 0.05DC | ≤ 0.02DC | .004 (≤ .008) |

* When the pick feed direction is along the axis of the tool such as finish machining at the wall part.

Slot milling / Shoulder milling(When large width of cut.*)

| | Work Material | Hardness | Insert Grades | Cutting Speed vc (SFM) | Depth of Cut ap (inch) | Wide of Cut ae (inch) | Feed per Tooth fz (IPT) |
|---|-----------------------------|------------------------------|---------------|------------------------------|------------------------------|-----------------------------|-------------------------------|
| P | Carbon Steel Alloy Steel | 180–280HB | VP15TF | 655 (260–985) | ≤ 0.02DC | ≤ DC | .008 (≤ .016) |
| | Pre-hardened steels | ≤ 45HRC | VP15TF | 490 (260–655) | ≤ 0.02DC | ≤ DC | .006 (≤ .012) |
| | Alloy Tool Steel | 180–380HB | VP15TF | 490 (260–655) | ≤ 0.02DC | ≤ DC | .006 (≤ .012) |
| M | Stainless Steel | ≤ 270HB | VP15TF | 490 (330–655) | ≤ 0.02DC | ≤ DC | .008 (≤ .016) |
| K | Cast Iron | Tensile Strength ≤ 350MPa | MP8010 | 835 (590–1475) | ≤ 0.03DC | ≤ DC | .012 (≤ .016) |
| | Ductile Cast Iron | Tensile Strength ≤ 800MPa | MP8010 | 655 (260–985) | ≤ 0.03DC | ≤ DC | .012 (≤ .016) |
| H | Hardened Steel | 45–55HRC | MP8010 | 330 (260–395) | ≤ 0.01DC | ≤ DC | .004 (≤ .006) |
| | Hardened Steel | 55–65HRC | MP8010 | 230 (195–330) | ≤ 0.01DC | ≤ DC | .004 (≤ .008) |

* When the pick feed direction is along the radius of the tool such as finish face machining.

(Note 1) This cutting condition is the standard condition when using the steel standard shank type.

If vibration or chipping on cutting edge occurs, please decrease the cutting condition as width of cut, depth of cut and feed per tooth depending on the situation.

(Note 2) Recommended cutting speeds apply to tool outside diameter.

Please calculate the spindle speed of tool in the following expressions.

Spindle speed of cutting tool $n(\text{min}^{-1}) = 12 \times \text{Cutting speed } vc \div \text{Diameter of cutting tool } DC \div 3.14$

INSERT INSTALLATION

1. Clean the insert and insert pocket

Thoroughly clean the insert and the insert pocket on the holder body.

2. Fitting the insert

Place the concave mark on the insert uppermost as shown with the clamp screw inserted from above. Fasten the clamp screw while firmly pressing the insert against the insert pocket wall. Use of a special anti seize lubricant MK1KS is recommended. Tighten at the recommended torque range.



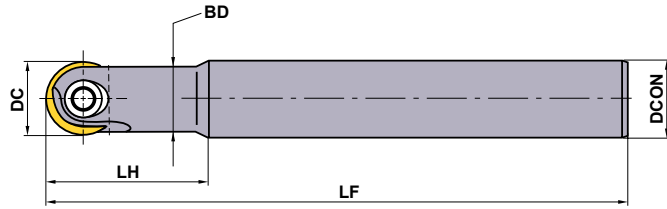
MILLING

BALL NOSE END MILL



MBN

- P
- M
- K
- N
- S
- H

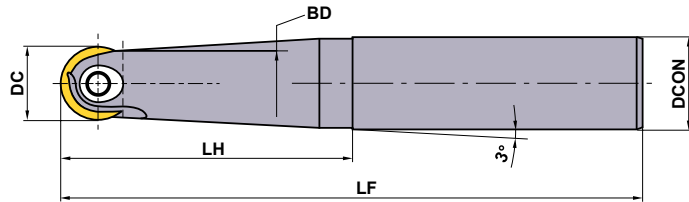


STRAIGHT MBN SERIES TOOL HOLDER

| Order Number | Stock | Dimensions (inch) | | | | | * | | |
|--------------|-------|-------------------|-------|-------|-------|-------|--------------|--------|---------|
| | | DC | LF | DCON | LH | BD | Insert Screw | Wrench | Insert |
| MBN040375SC | ● | .375 | 3.540 | .500 | 1.340 | .335 | BLS03 | TKY15R | MBN0375 |
| MBN040500SB | ● | .500 | 5.910 | .500 | 1.810 | .413 | BLS04 | TKY20R | MBN0500 |
| MBN050625SB | ● | .625 | 6.300 | .625 | 2.090 | .551 | BLS05 | TKY20R | MBN0625 |
| MBN060750SA | ● | .750 | 8.270 | .750 | 2.360 | .709 | BLS06 | TKY20R | MBN0750 |
| MBN081000SA | ● | 1.000 | 9.060 | 1.000 | 3.140 | .882 | BLS08 | TKY30R | MBN1000 |
| MBN101250SB | ● | 1.250 | 8.270 | 1.250 | 3.150 | 1.126 | BLS12 | TKY30R | MBN1250 |
| MBN10M300SB | ● | 30mm | 6.890 | 1.250 | 2.200 | 1.126 | BLS12 | TKY30R | MBNM300 |
| MBN10M300SC | ● | 30mm | 8.270 | 1.250 | 3.150 | 1.126 | BLS12 | TKY30R | MBNM300 |

(Note) Uses MBN style inserts only.

* Clamp Torque (lbf-in) : BLS03=27, BLS04=35, BLS05=44, BLS06=53, BLS08=58, BLS12=58



TAPERED NECK MBN SERIES TOOL HOLDER

| Order Number | Stock | Dimensions (inch) | | | | | * | | |
|--------------|-------|-------------------|-------|-------|-------|-------|--------------|--------|---------|
| | | DC | LF | DCON | LH | BD | Insert Screw | Wrench | Insert |
| MBN040312TB | ● | .312 | 5.510 | .500 | 1.970 | .295 | BLS02 | TKY08D | MBN0312 |
| MBN040375TB | ● | .375 | 5.910 | .500 | 1.380 | .354 | BLS03 | TKY15R | MBN0375 |
| MBN050500TB | ● | .500 | 6.300 | .625 | 2.360 | .413 | BLS04 | TKY20R | MBN0500 |
| MBN060625TB | ● | .625 | 6.890 | .750 | 2.640 | .551 | BLS05 | TKY20R | MBN0625 |
| MBN080750TB | ● | .750 | 7.480 | 1.000 | 3.150 | .709 | BLS06 | TKY20R | MBN0750 |
| MBN101000TB | ● | 1.000 | 8.270 | 1.250 | 3.940 | .882 | BLS08 | TKY30R | MBN1000 |
| MBN121250TB | ● | 1.250 | 9.450 | 1.500 | 4.840 | 1.167 | BLS12 | TKY30R | MBN1250 |

(Note) Uses MBN style inserts only.

* Clamp Torque (lbf-in) : BLS02=18, BLS03=27, BLS04=35, BLS05=44, BLS06=53, BLS08=58, BLS12=58

INSERTS

| Shape | Order Number | APL05 | DC (inch) | Geometry |
|-------|--------------|-------|--------------|----------|
| | MBN0312001 | ● | .312 | |
| | MBN0375001 | ● | .375 | |
| | MBN0500001 | ● | .500 | |
| | MBN0625001 | ● | .625 | |
| | MBN0750001 | ● | .750 | |
| | MBN1000001 | ● | 1.000 | |
| | MBN1250001 | ● | 1.250 | |
| | MBNM200001 | ● | 20mm (.7874) | |
| | MBNM300001 | ● | 30mm (1.181) | |

● : Inventory maintained.

SPARE PARTS > M001
TECHNICAL DATA > N001

RADIUS END MILL

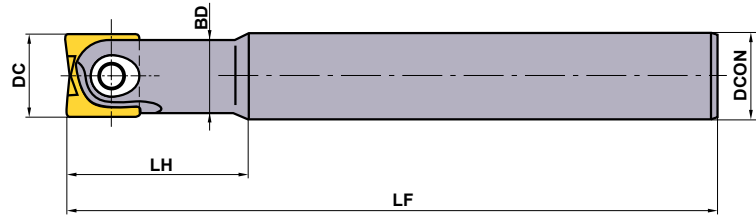


Finishing



MBD/MBF

- P
M
K
N
S
H



STRAIGHT NECK MBD SERIES TOOL HOLDER

| Order Number | Stock | Dimensions (inch) | | | | | Insert Screw * | Wrench | Insert |
|--------------------|-------|-------------------|-------|-------|-------|------|----------------|--------|------------|
| | | DC | LF | DCON | LH | BD | | | |
| MBD040500SB | ● | .500 | 5.980 | .500 | 1.890 | .413 | BLS04 | TKY20R | MBD/F 0500 |
| MBD050625SB | ● | .625 | 6.380 | .625 | 2.160 | .551 | BLS05 | TKY20R | MBD/F 0625 |
| MBD060750SB | ● | .750 | 6.890 | .750 | 2.480 | .709 | BLS06 | TKY20R | MBD/F 0750 |
| MBD081000SB | ● | 1.000 | 7.480 | 1.000 | 2.830 | .882 | BLS08 | TKY30R | MBD/F 1000 |

(Note) Uses MBD and MBF style inserts only.

* Clamp Torque (lbf-in) : BLS04=35, BLS05=44, BLS06=53, BLS08=58

INSERTS

| Shape | Order Number | APL05 | DC (inch) | RE (inch) | L (inch) | Geometry |
|-------|-------------------|-------|-----------|-----------|----------|------------------------|
| | MBD0500021 | ● | .500 | .031 | .550 | Backdraft |
| | MBD0500041 | ● | .500 | .063 | .550 | |
| | MBD0625021 | ● | .625 | .031 | .625 | |
| | MBD0625041 | ● | .625 | .063 | .625 | |
| | MBD0750021 | ● | .750 | .031 | .700 | |
| | MBD0750041 | ● | .750 | .063 | .700 | |
| | MBD1000021 | ● | 1.000 | .031 | .925 | |
| | MBD1000041 | ● | 1.000 | .063 | .925 | |
| | MBD1000081 | ● | 1.000 | .125 | .925 | |
| | MBF0500021 | ● | .500 | .031 | .550 | Flat Bottom |
| | MBF0500041 | ● | .500 | .063 | .550 | |
| | MBF0625021 | ● | .625 | .031 | .625 | |
| | MBF0625041 | ● | .625 | .063 | .625 | |
| | MBF0750021 | ● | .750 | .031 | .700 | |
| | MBF0750041 | ● | .750 | .063 | .700 | |
| | MBF1000021 | ● | 1.000 | .031 | .925 | |
| | MBF1000041 | ● | 1.000 | .063 | .925 | |
| | MBF1000081 | ● | 1.000 | .125 | .925 | |

MILLING

● : Inventory maintained.

SPARE PARTS > M001
 TECHNICAL DATA > N001

K147

MBD/MBF/MBN

■ CALCULATED EFFECTIVE CUTTING DIAMETER FOR BALL NOSE AND FEEDRATE MULTIPLIER

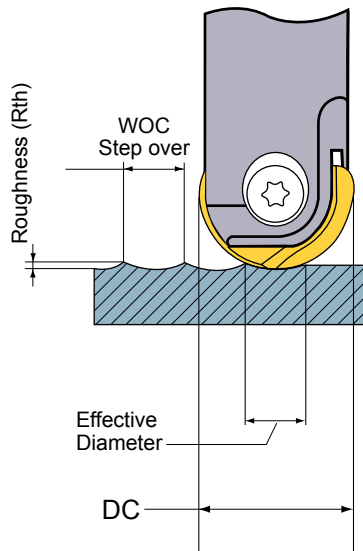
| Axial DOC | φ.3125" Ball Nose | | φ.375" Ball Nose | | φ.50" Ball Nose | | φ.625" Ball Nose | | φ.750" Ball Nose | | φ20mm Ball Nose | | φ1.0" Ball Nose | | φ30mm Ball Nose | | φ1.25" Ball Nose | |
|-----------|-------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|
| | Eff. Cutting Dia | Feed Rate Multiple | Eff. Cutting Dia | Feed Rate Multiple | Eff. Cutting Dia | Feed Rate Multiple | Eff. Cutting Dia | Feed Rate Multiple | Eff. Cutting Dia | Feed Rate Multiple | Eff. Cutting Dia | Feed Rate Multiple | Eff. Cutting Dia | Feed Rate Multiple | Eff. Cutting Dia | Feed Rate Multiple | Eff. Cutting Dia | Feed Rate Multiple |
| .005 | .078 | 4.000 | .086 | 4.200 | .099 | 4.600 | .111 | 5.000 | .122 | 5.300 | .125 | 5.390 | .141 | 5.800 | .153 | 6.170 | .158 | 6.300 |
| .010 | .110 | 3.100 | .121 | 3.300 | .140 | 3.700 | .157 | 4.000 | .172 | 4.200 | .176 | 4.280 | .199 | 4.600 | .216 | 4.900 | .223 | 5.000 |
| .020 | .153 | 2.500 | .169 | 2.700 | .196 | 2.900 | .220 | 3.100 | .242 | 3.300 | .248 | 3.400 | .280 | 3.700 | .304 | 3.890 | .314 | 4.000 |
| .050 | .229 | 1.800 | .255 | 2.000 | .300 | 2.200 | .339 | 2.300 | .374 | 2.500 | .384 | 2.500 | .436 | 2.700 | .475 | 2.870 | .490 | 2.900 |
| .075 | .267 | 1.600 | .300 | 1.700 | .357 | 1.900 | .406 | 2.000 | .450 | 2.200 | .462 | 2.190 | .527 | 2.400 | .576 | 2.500 | .594 | 2.600 |
| .100 | .295 | 1.500 | .332 | 1.600 | .400 | 1.700 | .458 | 1.800 | .510 | 2.000 | .524 | 1.990 | .600 | 2.200 | .657 | 2.280 | .678 | 2.300 |
| .125 | .306 | 1.400 | .354 | 1.400 | .433 | 1.600 | .500 | 1.700 | .559 | 1.800 | .575 | 1.850 | .661 | 2.000 | .727 | 2.110 | .750 | 2.200 |
| .156 | | | .370 | 1.300 | .463 | 1.500 | .541 | 1.600 | .609 | 1.700 | .627 | 1.710 | .726 | 1.900 | .800 | 1.960 | .826 | 2.000 |
| .188 | | | .375 | 1.000 | .484 | 1.400 | .573 | 1.500 | .650 | 1.600 | .671 | 1.610 | .781 | 1.700 | .864 | 1.840 | .894 | 1.900 |
| .250 | | | | | .500 | 1.000 | .612 | 1.400 | .707 | 1.400 | .733 | 1.470 | .866 | 1.600 | .964 | 1.680 | 1.000 | 1.700 |
| .312 | | | | | | | .625 | 1.000 | .739 | 1.300 | .770 | 1.360 | .927 | 1.500 | 1.042 | 1.560 | 1.082 | 1.600 |
| .375 | | | | | | | | | .750 | 1.000 | .787 | 1.280 | .968 | 1.400 | 1.099 | 1.470 | 1.146 | 1.500 |
| .600 | | | | | | | | | | | | | 1.000 | 1.000 | 1.000 | 1.000 | 1.225 | 1.300 |
| .625 | | | | | | | | | | | | | | | | | 1.250 | 1.000 |

MBN insert with chipbreaker, axial depth of cut range .010" to 15% of cutter diameter. Rec. Axial DOC = .020" to .030"

MBN insert without chipbreaker depth of cut range .007" to .050". Rec. Axial = .015" to .030"

Ideal chip thickness = .005" to .008"

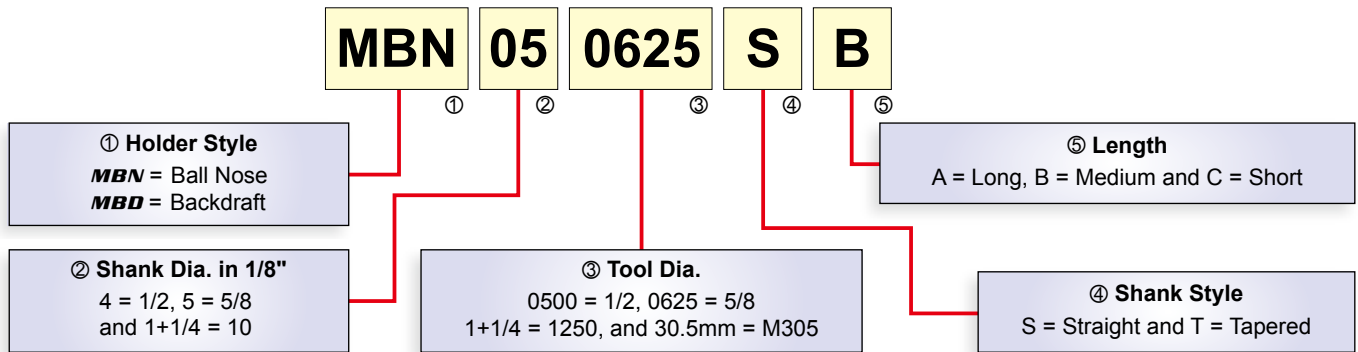
Excessive feed can deteriorate surface finish.



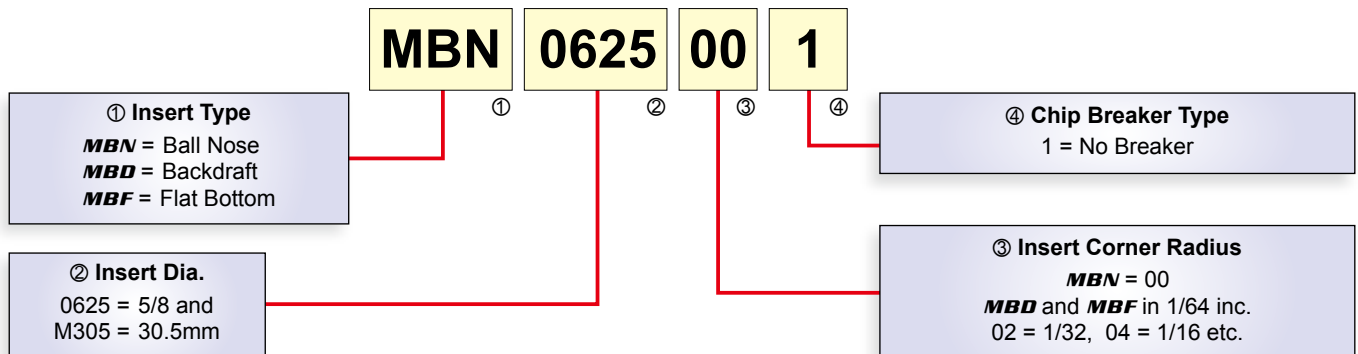
$$R_{th} = \frac{DC}{2} \sqrt{\frac{DC^2 - WOC^2}{4}}$$

DC=Tool Diameter

MBN and MBD Tool Holder Descriptions



MBN, MBD and MBF Insert Descriptions



GRADE DESCRIPTIONS

APL05 A premium micrograin carbide combined with alternating layers of thermally stable TiAlN. This combination of micrograin carbide and TiAlN enables APL05 to exceed the most demanding high speed finishing requirements of the Die Mold professional.

RECOMMENDED FINISHING SPEEDS AND FEEDS

| | Work Material | Hardness (BHN) | Cutting Speed (SFM) | Feed Rate (IPT) |
|---|--|-------------------------------|-------------------------------|-------------------------------------|
| P | Plain Carbon Steel | 50–180 | 250–800 | .004–.025 |
| | | 180–330 | 250–800 | |
| | Alloy Steels and Medium Carbon Tool Steels | 135–330 330–450 450–500 | 220–650 150–600 400–500 | .004–.015 .004–.008 .003–.006 |
| M | Stainless Steels 200 & 300 Series 400 & 500 Series | 135–275 | 200–700 | .004–.009 |
| | | 135–330 | 230–650 | .004–.011 |
| | PH Series | 330–425 | 180–600 | .004–.008 |
| | | 425–500 | 400–500 | .003–.006 |
| K | Gray Cast Iron | 120–320 | 300–1000 | .004–.014 |
| | Ductile and Malleable Cast Iron | 120–320 | 300–800 | .004–.014 |
| N | Aluminum Low Silicon | – | 800–1000 | .004–.020 |
| | High Silicon | – | 300–550 | .003–.015 |
| | Wood and Resins | – | 1000–2400 | .003–.020 |
| | Graphite | – | 800–1500 | .003–.016 |
| S | Nickel Base Alloys | 140–300 | 80–450 | .003–.008 |
| | | 300–475 | 50–260 | .003–.008 |
| | Pure Titanium and Titanium Alloys | 110–300 | 100–1200 | .004–.010 |
| | | 300–350 | 50–600 | .004–.010 |
| | | 350–440 | 35–300 | .004–.010 |

MILLING

BALL NOSE END MILL



Roughing



SRM2

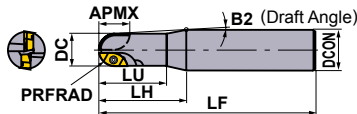
- P
- M
- K
- N
- S
- H



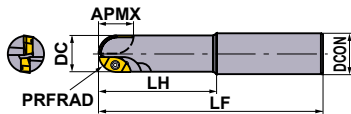
- Air / coolant through.
- Suitable for roughing to semi-finishing of small and medium molds.
- High rigidity body design.
- Low resistance chipbreaker.
- Key type clamp.
- Shrink fit ready.

Short Type

SRM210SAS2
SRM212SAS2

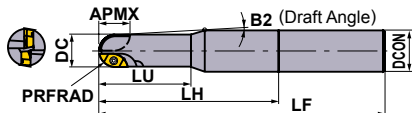


SRM216SAS2
SRM220SAS2

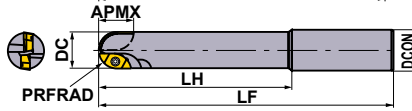


Long Type

SRM210SAL2
SRM212SAL2
SRM216SAL2

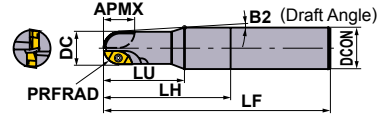


SRM220SAL2

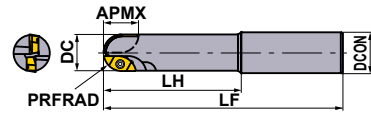


Medium Type

SRM210SAM2
SRM212SAM2

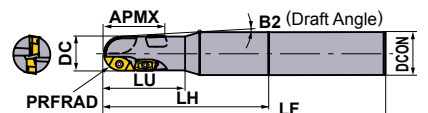


SRM216SAM2
SRM220SAM2

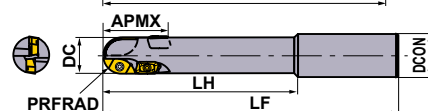


Long Edge Type

SRM212SAL4
SRM216SAL4



SRM220SAL4



Right hand tool holder only.


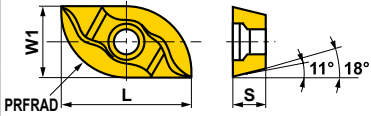

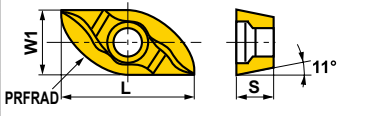

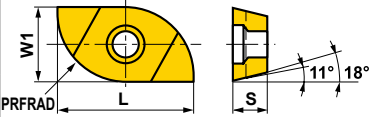

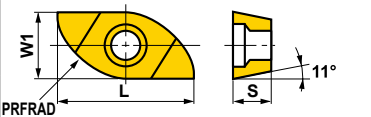

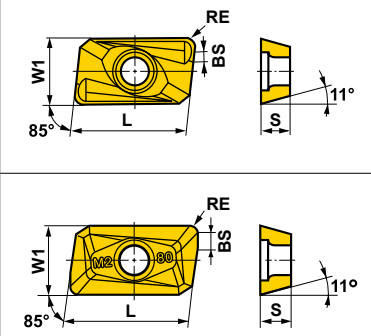

SHANK TYPE

| Type | Order Number | Stock | Number of Teeth | Dimensions (inch) | | | | | | | | * | | * | | | | | | |
|-----------|--------------|-------|-----------------|-------------------|------|-----|------|-----|------|-------|--------|-------|-------|----------|------------|-----------|-----------|------------|--|--|
| | | | | PRFRAD | DC | LF | DCON | LH | LU | APMX | B2 | Inner | Outer | Inner | Peripheral | Inner | Outer | Peripheral | | |
| Short | SRM210SAS2 | ● | 2 | .313 | .625 | 4 | .75 | 1.5 | 1.0 | .625 | 3° | TS25H | — | ① TKY08D | — | SRM210C-M | SRM210E-M | — | | |
| | SRM212SAS2 | ● | 2 | .375 | .75 | 4 | 1 | 1.5 | 1.25 | .750 | 6° 30' | TS32 | — | ① TKY08D | — | SRM212C | SRM212E | — | | |
| | SRM216SAS2 | ● | 2 | .500 | 1 | 4.5 | 1 | 2 | — | .945 | — | TS43 | — | ② TKY15T | — | SRM216C | SRM216E | — | | |
| | SRM220SAS2 | ● | 2 | .625 | 1.25 | 5 | 1.25 | 2 | — | 1.102 | — | TS55 | — | ② TKY25T | — | SRM220C | SRM220E | — | | |
| Medium | SRM210SAM2 | ● | 2 | .313 | .625 | 5 | .75 | 2.5 | 1.0 | .625 | 1° 30' | TS25H | — | ① TKY08D | — | SRM210C-M | SRM210E-M | — | | |
| | SRM212SAM2 | ● | 2 | .375 | .75 | 5 | 1 | 2.5 | 1.25 | .750 | 1° 30' | TS32 | — | ① TKY08D | — | SRM212C | SRM212E | — | | |
| | SRM216SAM2 | ● | 2 | .500 | 1 | 5.5 | 1 | 3 | — | .945 | — | TS43 | — | ② TKY15T | — | SRM216C | SRM216E | — | | |
| | SRM220SAM2 | ● | 2 | .625 | 1.25 | 6.5 | 1.25 | 3.5 | — | 1.102 | — | TS55 | — | ② TKY25T | — | SRM220C | SRM220E | — | | |
| Long | SRM210SAL2 | ● | 2 | .313 | .625 | 6 | .75 | 3.5 | 1.0 | .625 | 1° 30' | TS25H | — | ① TKY08D | — | SRM210C-M | SRM210E-M | — | | |
| | SRM212SAL2 | ● | 2 | .375 | .75 | 6 | 1 | 3.5 | 1.50 | .750 | 1° 30' | TS32 | — | ① TKY08D | — | SRM212C | SRM212E | — | | |
| | SRM216SAL2 | ● | 2 | .500 | 1 | 6.5 | 1.25 | 4 | 1.75 | .945 | 1° 30' | TS43 | — | ② TKY15T | — | SRM216C | SRM216E | — | | |
| | SRM220SAL2 | ● | 2 | .625 | 1.25 | 8 | 1.25 | 5 | — | 1.102 | — | TS55 | — | ② TKY25T | — | SRM220C | SRM220E | — | | |
| Long Edge | SRM212SAL4 | ● | 4 | .375 | .75 | 6 | 1 | 3.5 | 1.50 | 1.180 | 1° 30' | TS32 | TS25 | ① TKY08D | ① TKY08D | SRM212C | SRM212E | APMT1135 | | |
| | SRM216SAL4 | ● | 4 | .500 | 1 | 6.5 | 1.25 | 4 | 1.75 | 1.457 | 1° 30' | TS43 | TS25 | ② TKY15T | ③ TKY08F | SRM216C | SRM216E | APMT1135 | | |
| | SRM220SAL4 | ● | 4 | .625 | 1.25 | 8 | 1.25 | 5 | — | 1.732 | — | TS55 | TS43 | ② TKY25T | ③ TKY15F | SRM220C | SRM220E | APMT1604 | | |

* Clamp Torque (lbf-in) : TS25H=8.9, TS25=8.9, TS32=8.9, TS43=31, TS55=66

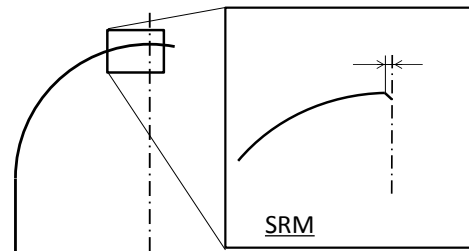
● : Inventory maintained.
<10 inserts in one case>

INSERTS

| Type | Shape | Order Number | Class | Coated | | Dimensions (inch) | | | | | Geometry | |
|-----------------------|---|-----------------|-------|--------|--|-------------------|-------|------|------|------|----------|---|
| | | | | VP15TF | | PRFRAD | L | W1 | S | BS | | RE |
| Inner With Breaker |  | SRM210C-M | M | ● | | .313 | .630 | .323 | .138 | — | — |  |
| | | SRM212C-M | M | ● | | .375 | .748 | .385 | .169 | — | — | |
| | | SRM216C-M | M | ● | | .500 | .945 | .512 | .216 | — | — | |
| | | SRM220C-M | M | ● | | .625 | 1.102 | .638 | .275 | — | — | |
| Outer With Breaker |  | SRM210E-M | M | ● | | .313 | .531 | .258 | .138 | — | — |  |
| | | SRM212E-M | M | ● | | .375 | .610 | .315 | .169 | — | — | |
| | | SRM216E-M | M | ● | | .500 | .807 | .409 | .216 | — | — | |
| | | SRM220E-M | M | ● | | .625 | .964 | .520 | .275 | — | — | |
| Inner No Breaker | Strong Cutting Edge Type  | SRM212C | M | ● | | .375 | .748 | .385 | .169 | — | — |  |
| | | SRM216C | M | ● | | .500 | .945 | .512 | .216 | — | — | |
| | | SRM220C | M | ● | | .625 | 1.102 | .638 | .275 | — | — | |
| Outer No Breaker | Strong Cutting Edge Type  | SRM212E | M | ● | | .375 | .610 | .315 | .169 | — | — |  |
| | | SRM216E | M | ● | | .500 | .807 | .409 | .216 | — | — | |
| | | SRM220E | M | ● | | .625 | .964 | .520 | .275 | — | — | |
| Peripheral | With Breaker Strong Cutting Edge Type  | APMT1135PDER-H2 | M | ● | | — | .433 | .250 | .138 | .047 | .031 |  |
| | | APMT1604PDER-H2 | M | ● | | — | .650 | .375 | .187 | .055 | .031 | |
| | With Breaker Low Resistance Type  | APMT1135PDER-M2 | M | ● | | — | .433 | .250 | .138 | .047 | .031 | |
| | | APMT1604PDER-M2 | M | ● | | — | .650 | .375 | .187 | .055 | .031 | |

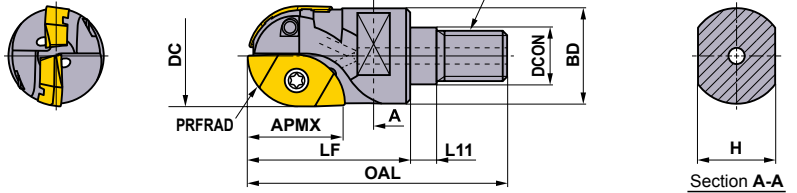
(Note) The **M** type breaker (APMT....PDER-M2) is the first recommendation for its excellent cutting performance. Please use **H** type breakers (APMT....PDER-H2) due to cutting edge strength.

(Note) SRM tooling is designed for rough machining applications.
*Programming Note: If you choose to use SRM tooling for semi-finishing applications, care must be taken when setting the tool height. The SRM insert includes a chamfer flat at the tip as illustrated. To assist with SRM programming needs, please download our CAD data from our web site; <http://www.mitsubishicarbide.com/>

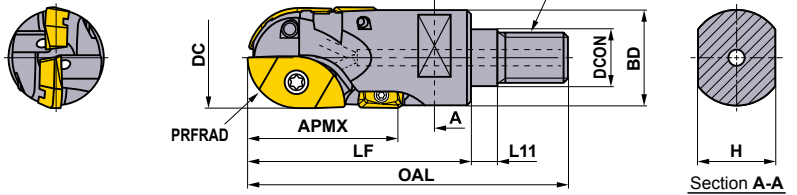




● Standard Type



● Long Type



METRIC Standard

■ SCREW-IN TYPE

Right hand tool holder only.

| Type | Order Number | Stock R | Coolant Thru *3 | Dimensions (mm) | | | | | | | | | | *4 WT (kg) | *1 Inner, Outer Insert Screw | *1 Peripheral Screw | Wrench | Inner | Outer | Peripheral |
|----------|-----------------|------------|--------------------|-----------------|----|------|------|-----|----|-----|----|---------|------|------------------|------------------------------------|---------------------------|--------------------|----------|----------|------------|
| | | | | PRFRAD | DC | DCON | BD | OAL | LF | L11 | H | CRKS *2 | APMX | | | | | | | |
| Standard | SRM2160AM08S30 | ★ | Y | 8 | 16 | 8.5 | 14.6 | 48 | 30 | 6 | 10 | M8 | 12 | 0.1 | TS25H | — | ①TKY08D | SRG16C | SRG16E | — |
| | SRM 2200AM10S35 | ★ | Y | 10 | 20 | 10.5 | 18.6 | 54 | 35 | 6 | 14 | M10 | 14 | 0.1 | TS32 | — | ①TKY08D | SRM16C-M | SRM16E-M | — |
| | SRM 2250AM12S40 | ★ | Y | 12.5 | 25 | 12.5 | 23.5 | 62 | 40 | 6 | 19 | M12 | 19 | 0.2 | TS43 | TS25 | ②TKY15T | SRG20C | SRG20E | — |
| | SRM 2300AM16S45 | ★ | Y | 15 | 30 | 17 | 28.3 | 68 | 45 | 6 | 24 | M16 | 24 | 0.2 | TS55 | — | ②TKY15T ③TKY08F | SRM20C-M | SRM20E-M | — |
| | SRM 2320AM16S45 | ★ | Y | 16 | 32 | 17 | 30.0 | 68 | 45 | 6 | 24 | M16 | 28 | 0.2 | TS55 | TS43 | ②TKY25T ③TKY15F | SRG25C | SRG25E | — |
| Long | SRM2200AM10L45 | ★ | Y | 10 | 20 | 10.5 | 18.6 | 64 | 45 | 6 | 14 | M10 | 30 | 0.2 | TS32 | TS25 | ①TKY08D | SRG30C | SRG30E | APMT1135 |
| | SRM 2250AM12L55 | ★ | Y | 12.5 | 25 | 12.5 | 23.5 | 77 | 55 | 6 | 19 | M12 | 37 | 0.3 | TS43 | TS25 | ②TKY15T ③TKY08F | SRM20E-M | SRM25E-M | PDER-02 |
| | SRM 2300AM16L60 | ★ | Y | 15 | 30 | 17 | 28.3 | 83 | 60 | 6 | 24 | M16 | 44 | 0.3 | TS55 | TS43 | ②TKY25T ③TKY15F | SRG25E-M | SRM30E-M | APMT1135 |
| | SRM 2320AM16L60 | ★ | Y | 16 | 32 | 17 | 29.0 | 83 | 60 | 6 | 24 | M16 | 44 | 0.3 | TS55 | TS43 | ②TKY25T ③TKY15F | SRM30E-M | SRM32E-M | APMT1604 |

*1 Clamp Torque (lbf-in) : TS25H=8.9, TS25=8.9, TS32=8.9, TS43=31, TS55=66

*2 Clamp Torque of the Head (lbf-ft) : M8=17.1, M10=33.8, M12=59.2, M16=66.7

*3 Y=Yes

*4 WT : Mass

INSERTS

For Metric Standard

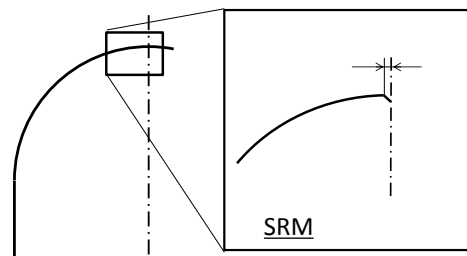
| Type | Shape | Order Number | Class | Coated | | Dimensions (mm) | | | | | | Geometry | |
|--------------|-------|-----------------|-------|--------|--------|-----------------|------|-------|------|-----|-----|----------|----|
| | | | | F7030 | VP15TF | PRFRAD | L | W1 | S | BS | RE | | AN |
| | | | | | | | | | | | | | |
| Inner | | SRG16C | G | ★ | 8 | 16 | 8.2 | 3.5 | — | — | 11° | | |
| | | SRG20C | G | ★ | 10 | 19 | 10.2 | 4.6 | — | — | 10° | | |
| | | SRG25C | G | ★ | 12.5 | 24 | 12.8 | 5.5 | — | — | 10° | | |
| | | SRG30C | G | ★ | 15 | 28 | 15.3 | 7 | — | — | 10° | | |
| | | SRG32C | G | ★ | 16 | 28 | 16.3 | 7 | — | — | 10° | | |
| Outer | | SRG16E | G | ★ | 8 | 13.5 | 6.7 | 3.5 | — | — | 11° | | |
| | | SRG20E | G | ★ | 10 | 15.5 | 8.5 | 4.6 | — | — | 9° | | |
| | | SRG25E | G | ★ | 12.5 | 20.5 | 10.2 | 5.5 | — | — | 9° | | |
| | | SRG30E | G | ★ | 15 | 25.2 | 12.2 | 7 | — | — | 9° | | |
| | | SRG32E | G | ★ | 16 | 26.1 | 13.1 | 7 | — | — | 9° | | |
| Inner | | SRM16C-M | M | ★ | 8 | 16 | 8.2 | 3.5 | — | — | 11° | | |
| | | SRM20C-M | M | ★ | 10 | 19 | 10.2 | 4.6 | — | — | 10° | | |
| | | SRM25C-M | M | ★ | 12.5 | 24 | 12.8 | 5.5 | — | — | 10° | | |
| | | SRM30C-M | M | ★ | 15 | 28 | 15.3 | 7 | — | — | 10° | | |
| | | SRM32C-M | M | ★ | 16 | 28 | 16.3 | 7 | — | — | 10° | | |
| Outer | | SRM16E-M | M | ★ | 8 | 13.5 | 6.7 | 3.5 | — | — | 11° | | |
| | | SRM20E-M | M | ★ | 10 | 15.5 | 8.5 | 4.6 | — | — | 9° | | |
| | | SRM25E-M | M | ★ | 12.5 | 20.5 | 10.2 | 5.5 | — | — | 9° | | |
| | | SRM30E-M | M | ★ | 15 | 25.2 | 12.2 | 7 | — | — | 9° | | |
| | | SRM32E-M | M | ★ | 16 | 26.1 | 13.1 | 7 | — | — | 9° | | |
| Peripheral * | | APMT1135PDER-H2 | M | ● | ● | — | 11 | 6.35 | 3.5 | 1.2 | 0.8 | 11° | |
| | | APMT1604PDER-H2 | M | ● | ● | — | 16.5 | 9.525 | 4.76 | 1.4 | 0.8 | 11° | |
| | | APMT1135PDER-M2 | M | ● | ● | — | 11 | 6.35 | 3.5 | 1.2 | 0.8 | 11° | |
| | | APMT1604PDER-M2 | M | ● | ● | — | 16.5 | 9.525 | 4.76 | 1.4 | 0.8 | 11° | |

(Low-resistance inner or outer inserts are precision M class type.)

* Selection guide for peripheral cutting edges : The first recommendation is the super sharp M breaker (APMT...PDER-M2).

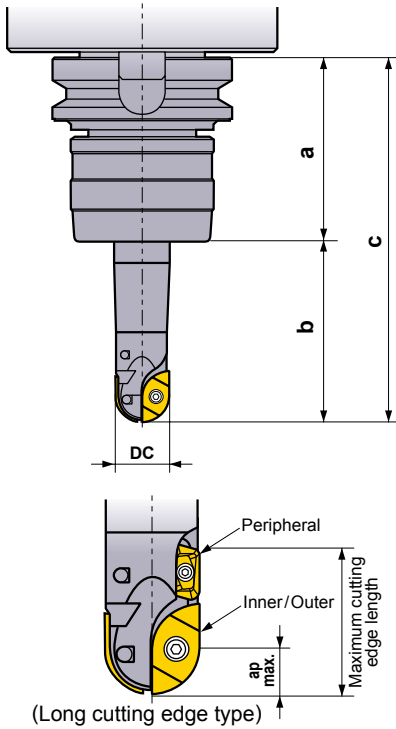
When cutting edge strength is particularly important, use the H breaker (APMT...PDER-H2).

(Note) SRM tooling is designed for rough machining applications.
 *Programming Note: If you choose to use SRM tooling for semi-finishing applications, care must be taken when setting the tool height. The SRM insert includes a chamfer flat at the tip as illustrated. To assist with SRM programming needs, please download our CAD data from our web site; <http://www.mitsubishicarbide.com/>



MILLING

RECOMMENDED CUTTING CONDITIONS



Tool Overhang

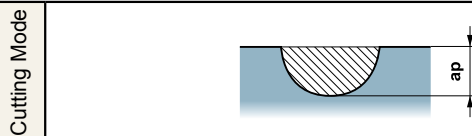
Recommended cutting conditions on this literature are chosen based on deflection, vibration and machined surface when using a CAT50 arbor. Conditions-"a" is the length from a gage line to the arbor end face, and "b" is the neck length (tool overhang from the arbor).

| Cutting Diameter : DC | Type | a | b | c |
|-----------------------|--------|---|-----|-----|
| .625" | Short | 4 | 1.5 | 5.5 |
| | Medium | | 2.5 | 6.5 |
| | Long | | 3.5 | 7.5 |
| .750" | Short | | 1.5 | 5.5 |
| | Medium | | 2.5 | 6.5 |
| | Long | | 3.5 | 7.5 |
| 1.000" | Short | | 2.0 | 6.0 |
| | Medium | | 3.0 | 7.0 |
| | Long | | 4.0 | 8.0 |
| 1.250" | Short | | 2.0 | 6.0 |
| | Medium | | 3.5 | 7.5 |
| | Long | | 5.0 | 9.0 |

Recommended Depth of Cut for Long Cutting Edge Type

The maximum cutting edge length of the long cutting edge type with a peripheral insert is 1.4-1.5DC. The peripheral insert is for light machining only. Maximum ap is 0.5DC or below.

SLOT MILLING



N: Spindle Speed (RPM)
F: Table Feed (IPM)

| Work Material | Hardness | Cutting Speed (SFM) | Grade | Type | φ .625" (φ 16mm) | | | φ .750" (φ 20mm) | | | φ 1.000" (φ 25mm) | | | φ 1.250" (φ 32mm) | | | |
|----------------------------------|-------------------|---------------------|------------------|--------|------------------|------|------|------------------|------|------|-------------------|------|------|-------------------|------|------|------|
| | | | | | N | F | ap | N | F | ap | N | F | ap | N | F | ap | |
| P Carbon Steel Alloy Steel | 180-280HB | 500 (375-667) | VP15TF | Short | 3056 | 14 | .236 | 2546 | 12 | .315 | 1910 | 18 | .500 | 1528 | 14 | .625 | |
| | | | | Medium | 3056 | 14 | .157 | 2546 | 12 | .157 | 1910 | 18 | .500 | 1528 | 14 | .625 | |
| | | | | Long | 3056 | 14 | .079 | 2546 | 12 | .079 | 1910 | 18 | .333 | 1528 | 14 | .417 | |
| | 280-350HB | 458 (375-542) | VP15TF | Short | 2801 | 13 | .236 | 2334 | 11 | .315 | 1751 | 17 | .500 | 1401 | 13 | .625 | |
| | | | | Medium | 2801 | 13 | .157 | 2334 | 11 | .157 | 1751 | 17 | .500 | 1401 | 13 | .625 | |
| | | | | Long | 2801 | 13 | .079 | 2334 | 11 | .079 | 1751 | 17 | .333 | 1401 | 13 | .417 | |
| Pre-Hardened Steel | 35-45HRC | 375 (333-500) | VP15TF | Short | 2292 | 11 | .236 | 1910 | 9 | .315 | 1432 | 14 | .500 | 1146 | 11 | .625 | |
| | | | | Medium | 2292 | 11 | .157 | 1910 | 9 | .157 | 1432 | 14 | .500 | 1146 | 11 | .625 | |
| | | | | Long | 2292 | 11 | .079 | 1910 | 9 | .079 | 1432 | 14 | .333 | 1146 | 11 | .417 | |
| Alloy Tool Steel | ≤350HB | 458 (375-542) | VP15TF | Short | 2801 | 13 | .236 | 2334 | 11 | .315 | 1751 | 17 | .500 | 1401 | 13 | .625 | |
| | | | | Medium | 2801 | 13 | .157 | 2334 | 11 | .157 | 1751 | 17 | .500 | 1401 | 13 | .625 | |
| | | | | Long | 2801 | 13 | .079 | 2334 | 11 | .079 | 1751 | 17 | .333 | 1401 | 13 | .417 | |
| M Stainless Steel | ≤270HB | 500 (333-667) | VP15TF | Short | 3056 | 14 | .157 | 2546 | 12 | .197 | 1910 | 18 | .500 | 1528 | 14 | .625 | |
| | | | | Medium | 3056 | 14 | .118 | 2546 | 12 | .118 | 1910 | 18 | .500 | 1528 | 14 | .625 | |
| | | | | Long | 3056 | 14 | .079 | 2546 | 12 | .059 | 1910 | 18 | .333 | 1528 | 14 | .417 | |
| K Gray Cast Iron | ≤350MPa | 667 (500-1000) | VP15TF | Short | 4074 | 32 | .236 | 3395 | 27 | .315 | 2546 | 24 | .500 | 2037 | 19 | .625 | |
| | | | | Medium | 4074 | 32 | .157 | 3395 | 27 | .157 | 2546 | 24 | .500 | 2037 | 19 | .625 | |
| | | | | Long | 4074 | 26 | .079 | 3395 | 27 | .079 | 2546 | 24 | .333 | 2037 | 19 | .417 | |
| | Ductile Cast Iron | ≤500MPa | 583 (500-750) | VP15TF | Short | 3565 | 28 | .236 | 2971 | 23 | .315 | 2228 | 21 | .500 | 1783 | 17 | .625 |
| | | | | | Medium | 3565 | 28 | .157 | 2971 | 23 | .157 | 2228 | 21 | .500 | 1783 | 17 | .625 |
| | | | | | Long | 3565 | 22 | .079 | 2971 | 23 | .079 | 2228 | 21 | .333 | 1783 | 17 | .417 |
| Heat Treated Steel | 45-50HRC | 333 (167-417) | VP15TF | Short | 2037 | 10 | .157 | 1698 | 8 | .157 | 1273 | 12 | .500 | 1019 | 10 | .625 | |
| | | | | Medium | 2037 | 10 | .079 | 1698 | 8 | .079 | 1273 | 12 | .500 | 1019 | 10 | .625 | |
| | | | | Long | 2037 | 10 | .039 | 1698 | 8 | .039 | 1273 | 12 | .333 | 1019 | 10 | .417 | |
| H Heat Treated Steel | 50-60HRC | 188 (125-333) | VP15TF | Short | 1146 | 5 | .157 | 955 | 5 | .157 | 716 | 7 | .500 | 573 | 5 | .625 | |
| | | | | Medium | 1146 | 5 | .079 | 955 | 5 | .079 | 716 | 7 | .500 | 573 | 5 | .625 | |
| | | | | Long | 1146 | 5 | .039 | 955 | 5 | .039 | 716 | 7 | .333 | 573 | 5 | .417 | |

MILLING

BALL NOSE END MILL



Roughing

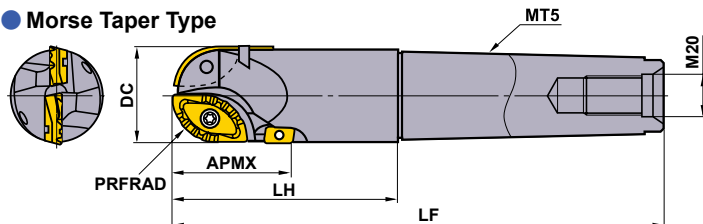


SRM2 Ø40(1.575")
Ø50(1.969")

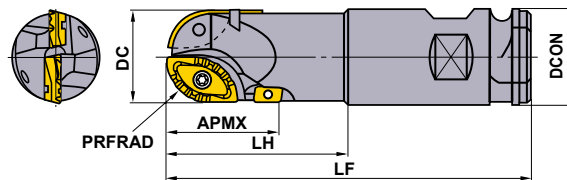
P M **K** N S H



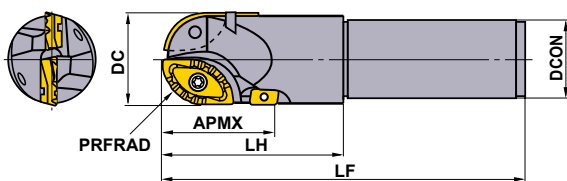
● Morse Taper Type



● Combination Type



● Straight Type



METRIC Standard

Right hand tool holder only.

| Type | Order Number | Stock R | Number of Flutes | Dimensions (inch) | | | | | | * Insert Screw | | * Wrench | | Insert | | |
|-------------|--------------|------------|------------------|-------------------|-------|-------|--------|-------|-------|-------------------|------------|--------------|------------|--------|--------|-----------------|
| | | | | PRFRAD | DC | DCON | LF | LH | APMX | Inner, Outer | Peripheral | Inner, Outer | Peripheral | Inner | Outer | Peripheral |
| Combination | SRM2400WNLS | ★ | 2 | .787 | 1.575 | 2.000 | 7.874 | 4.724 | 2.126 | TS6S | TS43 | TKY30T | TKY15F | SRG40C | SRG40E | APMT1604PDER-M2 |
| | SRM2500WNLS | ★ | 2 | .984 | 1.969 | 2.000 | 7.874 | 4.724 | 2.480 | TS6 | TS43 | TKY30T | TKY15F | SRG50C | SRG50E | APMT1604PDER-M2 |
| | SRM2400WNLM | ★ | 2 | .787 | 1.575 | 2.000 | 9.843 | 6.693 | 2.126 | TS6S | TS43 | TKY30T | TKY15F | SRG40C | SRG40E | APMT1604PDER-M2 |
| | SRM2500WNLM | ★ | 2 | .984 | 1.969 | 2.000 | 9.843 | 6.693 | 2.480 | TS6 | TS43 | TKY30T | TKY15F | SRG50C | SRG50E | APMT1604PDER-M2 |
| | SRM2500WNLL | ★ | 2 | .984 | 1.969 | 2.000 | 11.811 | 8.661 | 2.480 | TS6 | TS43 | TKY30T | TKY15F | SRG50C | SRG50E | APMT1604PDER-M2 |
| Straight | SRM2400SNLS | ★ | 2 | .787 | 1.575 | 1.654 | 7.874 | 3.937 | 2.126 | TS6S | TS43 | TKY30T | TKY15F | SRG40C | SRG40E | APMT1604PDER-M2 |
| | SRM2500SNLS | ★ | 2 | .984 | 1.969 | 1.654 | 7.874 | 3.937 | 2.480 | TS6 | TS43 | TKY30T | TKY15F | SRG50C | SRG50E | APMT1604PDER-M2 |
| | SRM2400SNLM | ★ | 2 | .787 | 1.575 | 1.654 | 9.843 | 5.906 | 2.126 | TS6S | TS43 | TKY30T | TKY15F | SRG40C | SRG40E | APMT1604PDER-M2 |
| | SRM2500SNLM | ★ | 2 | .984 | 1.969 | 1.654 | 9.843 | 3.937 | 2.480 | TS6 | TS43 | TKY30T | TKY15F | SRG50C | SRG50E | APMT1604PDER-M2 |
| Morse Taper | SRM2500MNLS | ★ | 2 | .984 | 1.969 | — | 10.079 | 4.724 | 2.480 | TS6 | TS43 | TKY30T | TKY15F | SRG50C | SRG50E | APMT1604PDER-M2 |
| | SRM2500MNLM | ★ | 2 | .984 | 1.969 | — | 11.260 | 5.906 | 2.480 | TS6 | TS43 | TKY30T | TKY15F | SRG50C | SRG50E | APMT1604PDER-M2 |

* Clamp Torque (lbf-in) : TS43=31, TS6=89, TS6S=89

INSERTS

| Application | Shape | Order Number | Class | Coated | | | Dimensions (inch) | | | | | | Geometry |
|-------------|-------|---|-------|--------|--------|--------|-------------------|-------|-------|------|------|------|----------|
| | | | | VP15TF | VP20RT | VP30RT | PRFRAD | L | W1 | S | BS | RE | |
| Inner | | * SRG40C | G | ★ | ★ | ★ | .787 | 1.417 | .807 | .315 | — | — | |
| | | * SRG50C | G | ★ | ★ | ★ | .984 | 1.575 | 1.024 | .335 | — | — | |
| Outer | | * SRG40E | G | ★ | ★ | ★ | .787 | 1.260 | .654 | .315 | — | — | |
| | | * SRG50E | G | ★ | ★ | ★ | .984 | 1.409 | .787 | .335 | — | — | |
| Peripheral | | APMT1604PDER-M2 | M | ● | | | — | .650 | .375 | .187 | .055 | .031 | |
| | | Strong Cutting Edge Type APMT1604PDER-H2 | M | ● | | | — | .650 | .375 | .187 | .055 | .031 | |

* 2 inserts in one case.

● : Inventory maintained. ★ : Inventory maintained in Japan.

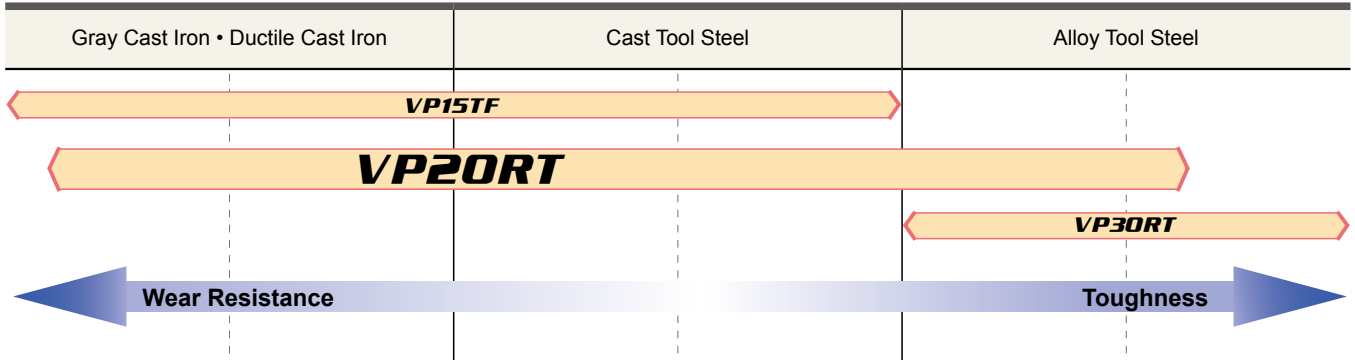
<10 inserts in one case>

RECOMMENDED CUTTING CONDITIONS

| Cutting Mode | A : Slot Milling | B : Shoulder Milling (Standard Type) | C : Shoulder Milling (Long Cutting Edge Type) |
|--------------|------------------|--------------------------------------|---|
| | | | |

| | Work Material | Hardness | Grade | Cutting Speed (SFM) | Feed per Tooth (IPR) | Cutting Mode |
|----------|-------------------|-----------------------------|------------------|---------------------|----------------------|--------------|
| P | Alloy Tool Steel | ≤250HB | VP20RT VP30RT | 655 (525–820) | .008 (.004–.012) | A |
| | | | | | .008 (.004–.016) | B |
| | | | | | .012 (.004–.016) | C |
| K | Cast Tool Steel | ≤230HB | VP15TF VP20RT | 655 (525–985) | .008 (.004–.012) | A |
| | | | | | .012 (.004–.018) | B |
| | | | | | .008 (.004–.016) | C |
| K | Ductile Cast Iron | Tensile Strength ≤540MPa | VP15TF VP20RT | 655 (525–985) | .010 (.004–.016) | A |
| | | | | | .010 (.004–.018) | B |
| | | | | | .014 (.004–.018) | C |
| K | Gray Cast Iron | Tensile Strength ≤350MPa | VP15TF VP20RT | 655 (525–985) | .010 (.004–.016) | A |
| | | | | | .014 (.004–.018) | B |
| | | | | | .010 (.004–.016) | C |

GRADE APPLICATION GUIDE



MILLING

VERTICAL FEED MILLING



Roughing

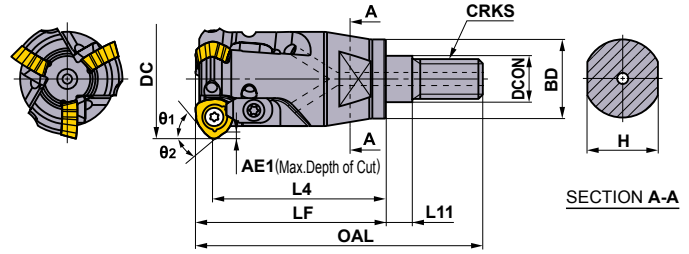


PMC

P M **K** N S H



- For under-cutting trimmed part of press mold.
- 2 directional cutting with large overhang.
- Suitable for automated 3 axis programming.



Right hand tool holder only.

| Order Number | Stock | Coolant Hole *1 | Number of Teeth | Dimensions (mm) | | | | | | | | | | WT *3 | Insert | Shank Arbor | | |
|-----------------|-------|-----------------|-----------------|-----------------|------|----|------|------|----|-----|----|---------|-----|-------|--------|-------------|----------------------|-------------------|
| | | | | DC | DCON | BD | OAL | LF | L4 | L11 | H | CRKS *2 | AE1 | | | | θ1 | θ2 |
| PMC08R252AM1035 | ★ | Y | 2 | 25 | 10.5 | 18 | 58.7 | 39.7 | 35 | 6 | 14 | M10 | 1.5 | 40.5° | 35° | 0.1 | JOM080320 ZZSR-00 | SC20M10S 0000W |
| PMC09R323AM1245 | ★ | Y | 3 | 32 | 12.5 | 21 | 72.5 | 50.5 | 45 | 6 | 19 | M12 | 3 | 40.5° | 35° | 0.2 | JDM09T320 ZDSR-00 | SC25M12S 0000W |
| PMC12R403AM1645 | ★ | Y | 3 | 40 | 17 | 29 | 74.4 | 51.4 | 45 | 6 | 24 | M16 | 3.5 | 42° | 35° | 0.3 | JDM120420 ZDSR-00 | SC32M16S 0000W |

*1 Y=Yes *2 Clamp Torque of the Head(lbf-ft) : M10=33.8, M12=59.2, M16=66.7 *3 WT : Mass

SPARE PARTS

| Order Number | Clamp Bridge Screw | Clamp Bridge | Clamp Screw | Spring | Wrench | Anti-seize Lubricant |
|-----------------|--------------------|--------------|-------------|--------|--------------------|----------------------|
| PMC08R252AM1035 | TS33 | AMS3 | AJS3010T10 | ASS2 | ②TKY08D ①TKY10R | MK1KS |
| PMC09R323AM1245 | TS351 | AMS3 | AJS3010T10 | ASS2 | ②TKY10D | MK1KS |
| PMC12R403AM1645 | TS43 | AMS4 | AJS4012T15 | ASS2 | ②TKY15D | MK1KS |

* Clamp Torque (lbf-in) : TS33=8.9, TS351=22, TS43=31, AJS3010T10=22, AJS4012T15=31

INSERTS

| Shape | Order Number | Class | Coated | | | Dimensions (mm) | | | | | PMC holder | Geometry |
|------------|-------------------|-------|--------|--------|--------|-----------------|-------|------|-----|----|-----------------|----------|
| | | | FH7020 | VP15TF | VP30RT | AN | IC | S | BS | RE | | |
| FT Breaker | JOMW080320ZZSR-FT | M | ● | ● | ● | 13° | 8 | 3.18 | 1.4 | 2 | PMC08R252AM1035 | |
| | JDMW09T320ZDSR-FT | M | ● | ● | ● | 15° | 9.525 | 3.97 | 1.8 | 2 | PMC09R323AM1245 | |
| | JDMW120420ZDSR-FT | M | ● | ● | ● | 15° | 12 | 4.76 | 2.5 | 2 | PMC12R403AM1645 | |
| ST Breaker | JDMT120420ZDSR-ST | M | ● | ● | ● | 15° | 12 | 4.76 | 2.5 | 2 | PMC12R403AM1645 | |
| JM Breaker | JOMT080320ZZSR-JM | M | ● | ● | ● | 13° | 8 | 3.18 | 1.4 | 2 | PMC08R252AM1035 | |
| | JDMT09T320ZDSR-JM | M | ● | ● | ● | 15° | 9.525 | 3.97 | 1.8 | 2 | PMC09R323AM1245 | |
| | JDMT120420ZDSR-JM | M | ● | ● | ● | 15° | 12 | 4.76 | 2.5 | 2 | PMC12R403AM1645 | |

● : Inventory maintained. ★ : Inventory maintained in Japan.

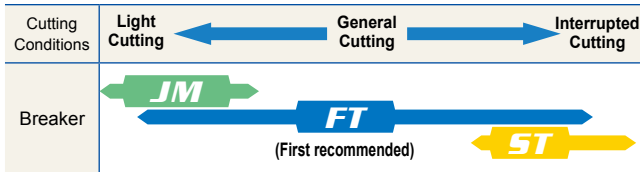
RECOMMENDED CUTTING CONDITIONS

| Work Material | Hardness | Grade | Breaker | Cutting Dia. (mm) | Number of Teeth | Cutting Speed (SFM) | Feed per Tooth (inch/tooth) | Width of Cut (inch) | Pick Feed (inch) | |
|----------------------------------|---|--------------------------|---------|-------------------|-----------------|---------------------|-----------------------------|---------------------|------------------|-------|
| P Carbon Steel Alloy Steel | ≤180HB | VP15TF | FT | φ40 | 3 | 820 (655–985) | -.024 | -.059 | -.236 | |
| | | | | φ32 | 3 | 655 (490–720) | -.022 | -.047 | -.197 | |
| | | | | φ25 | 2 | 655 (490–720) | -.022 | -.039 | -.197 | |
| | Hardening Tool Steel for Cold Work Dies | ≤300HB | VP15TF | FT | φ40 | 3 | 820 (655–985) | -.022 | -.059 | -.197 |
| | | | | | φ32 | 3 | 590 (490–655) | -.020 | -.047 | -.118 |
| | | | | | φ25 | 2 | 590 (490–655) | -.020 | -.039 | -.118 |
| Alloy Tool Steel | ≤300HB | VP15TF | FT | φ40 | 3 | 655 (330–985) | -.022 | -.059 | -.197 | |
| | | | | φ32 | 3 | 490 (260–655) | -.020 | -.047 | -.118 | |
| | | | | φ25 | 2 | 490 (260–655) | -.020 | -.039 | -.118 | |
| K Cast Iron | Tensile Strength ≤350MPa | VP15TF | FT | φ40 | 3 | 820 (655–985) | -.024 | -.059 | -.236 | |
| | | | | φ32 | 3 | 655 (490–720) | -.022 | -.047 | -.197 | |
| | | | | φ25 | 2 | 655 (490–720) | -.022 | -.039 | -.197 | |
| | Ductile Cast Iron | Tensile Strength ≤800MPa | VP15TF | FT | φ40 | 3 | 820 (655–985) | -.024 | -.059 | -.236 |
| | | | | | φ32 | 3 | 655 (490–720) | -.022 | -.047 | -.197 |
| | | | | | φ25 | 2 | 655 (490–720) | -.022 | -.039 | -.197 |

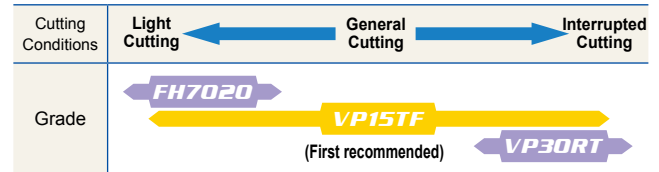
(Note 1) The above cutting conditions are general guide lines. Adjustments may be necessary depending on machine rigidity, workpiece geometry and clamping.

(Note 2) A carbide shank extension is recommended to prevent vibrations.

Application of Breakers



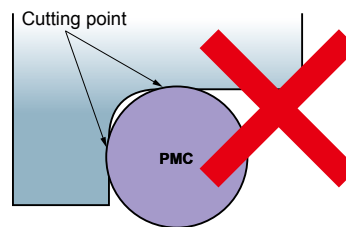
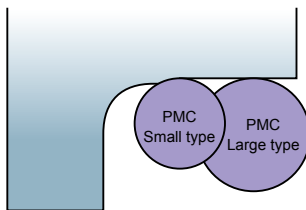
Application of Insert Grades



NOTES ON MACHINING METHODS

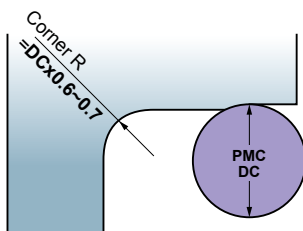
● How to choose an appropriate diameter tool.

Machine plain surfaces with a larger tool and corner radii with smaller diameter cutters.



● Relation of the cutter diameter and corner R size of work piece

A guide for the smallest possible workpiece radius that can be machined is from 0.6–0.7 x diameter of the tool.



| Tool diameter DC(mm) | Corner R (inch) |
|----------------------|-----------------|
| φ25 | R ≥ .689 |
| φ32 | R ≥ .866 |
| φ40 | R ≥ .945 |

* Adjust cutting conditions according to the set up.

* Smaller workpiece corner radii (only >0.5 x cutter φ) may be possible by reducing the width of cut, speed and pick feed.

MILLING

VERTICAL FEED MILLING



Roughing

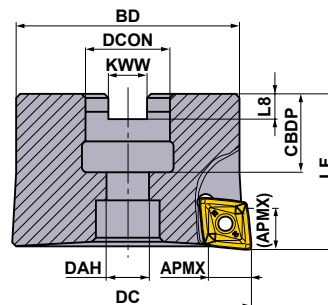


PMR

P M **K** N S H



- 1 directional cutting with large overhang.
- Unique shape of curved edge gives high rigidity and low resistance.



Right hand tool holder only.

| | Order Number | Stock R | Number of Teeth | Dimensions (mm) | | | | | | | | Insert | |
|--------|---------------|------------|-----------------|-----------------|----|--------|------|-----|----|------|-----|--------|-------------------|
| | | | | DC | LF | DCON | CBDP | DAH | BD | KWW | L8 | | APMX |
| Metric | PMR405003A22R | ★ | 3 | 50 | 40 | 22 | 20 | 11 | 45 | 10.4 | 6.3 | 11 | CPMT1205ZPEN-M2/3 |
| | PMR406304A22R | ★ | 4 | 63 | 40 | 22 | 20 | 11 | 57 | 10.4 | 6.3 | 11 | CPMT1205ZPEN-M2/3 |
| | PMR408005A27R | ★ | 5 | 80 | 50 | 27 | 23 | 13 | 73 | 12.4 | 7 | 11 | CPMT1205ZPEN-M2/3 |
| Inch | PMR405003BR | ★ | 3 | 50 | 40 | 22.225 | 19 | 11 | 45 | 8.4 | 5 | 11 | CPMT1205ZPEN-M2/3 |
| | PMR406304BR | ★ | 4 | 63 | 40 | 22.225 | 19 | 11 | 57 | 8.4 | 5 | 11 | CPMT1205ZPEN-M2/3 |
| | PMR408005DR | ★ | 5 | 80 | 63 | 31.75 | 32 | 17 | 73 | 12.7 | 8 | 11 | CPMT1205ZPEN-M2/3 |

SPARE PARTS



| Order Number | Shim | Shim Screw * | Insert Screw * | Wrench (Insert) | Wrench (Shim) | Set Bolt |
|---------------|---------|--------------|----------------|-----------------|---------------|----------|
| PMR405003A22R | STPMR4N | WCS503507H | TPS35 | TIP15T | HKY35R | HSC10035 |
| PMR406304A22R | STPMR4N | WCS503507H | TPS35 | TIP15T | HKY35R | HSC10035 |
| PMR408005A27R | STPMR4N | WCS503507H | TPS35 | TIP15T | HKY35R | HSC12040 |
| PMR405003BR | STPMR4N | WCS503507H | TPS35 | TIP15T | HKY35R | HSC10035 |
| PMR406304BR | STPMR4N | WCS503507H | TPS35 | TIP15T | HKY35R | HSC10035 |
| PMR408005DR | STPMR4N | WCS503507H | TPS35 | TIP15T | HKY35R | HSC16040 |

* Clamp Torque (lbf-in) : WCS503507H=44, TPS35=31

INSERTS

| Shape | Order Number | Class | Coated | Dimensions (mm) | | | | Geometry |
|-------|-----------------|-------|--------|-----------------|------|-----|-----|----------|
| | | | VP15TF | IC | S | BS | RE | |
| | CPMT1205ZPEN-M2 | M | ● | 12.7 | 5.56 | 1.4 | 0.8 | |
| | CPMT1205ZPEN-M3 | M | ★ | 12.7 | 5.56 | 1.4 | 1.2 | |

RECOMMENDED CUTTING CONDITIONS

| | Work Material | Hardness | Grade | Cutting Speed (SFM) | Feed per Tooth (inch/tooth) | pf (mm) |
|--------------------------------|-----------------------------|--------------------------------|---------------|---------------------|-----------------------------|---------|
| P | Carbon Steel Alloy Steel | 180—280HB | VP15TF | 590 (490—655) | .008 (.004—.012) | ≤.5DC |
| | | 280—380HB | | | | |
| K | Gray Cast Iron | Tensile Strength ≤350MPa | VP15TF | 590 (490—655) | .008 (.004—.012) | ≤.5DC |
| | Ductile Cast Iron | Tensile Strength 360—500MPa | VP15TF | 490 (390—555) | .008 (.004—.012) | ≤.5DC |
| Tensile Strength 500—800MPa | | VP15TF | 390 (330—490) | .008 (.004—.012) | ≤.5DC | |

(Note 1) The above conditions are suitable for general machining purposes, it is possible to use conditions that are different from the above.

(Note 2) For horizontal feed machining, please reduce the feed rate by 20—40%.

(Note 3) If vibration occurs when machining, please reduce the depth of cut, cutting speed by 20—50%.

● : Inventory maintained. ★ : Inventory maintained in Japan.

<10 inserts in one case>

MILLING

VERTICAL FEED MILLING

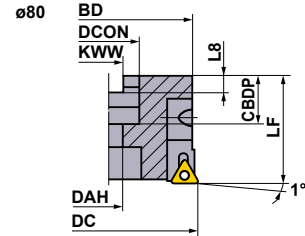
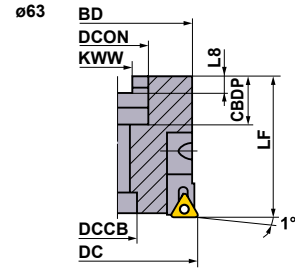
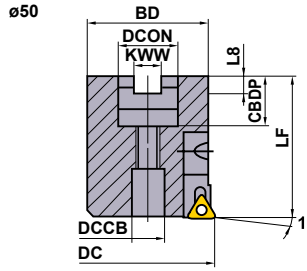


PMF

P M **K** N S H



- 2 directional cutting with large overhang.
- No burring so no need for hand finishing.
- High precision multi directional insert ensures highly accurate surfaces.



METRIC Standard

Right hand tool holder only.

| Order Number | Stock | Number of Teeth | Dimensions (mm) | | | | | | | | Max. Allowable Revolution (min ⁻¹) | | Tools | | | | | | | | |
|--------------|-------|-----------------|-----------------|----|------|------|------|------|------|-----|--|-----------------|-----------------|-----------|--------------|--------------|----------------------|--------|------------------|-----------|-------------------|
| | | | DC | LF | DCON | CBDF | DAH | DCCB | KWW | L8 | BD | Balance Unknown | G40 *1 Balanced | Cartridge | Insert Screw | Radial Screw | Set Bolt (Cartridge) | Wrench | Wrench | Set Bolt | Insert |
| PMF05004A22R | ● | 4 | 50 | 63 | 22 | 20 | — | 12 | 10.4 | 6.3 | 48 | 6300 | 12700 | PMFA13R | TS254 | TSS04005 | HBH06012 | TKY08F | HKY40R HKY50R | ①HDS10031 | TPEW 1303 |
| PMF06306A22R | ● | 6 | 63 | 63 | 22 | 20 | — | 18 | 10.4 | 6.3 | 60 | 5000 | 10100 | PMFA13R | TS254 | TSS04005 | HBH06012 | TKY08F | HKY40R | ②HSC10050 | ZP _R 2 |
| PMF08008A27R | ● | 8 | 80 | 50 | 27 | 23 | 13.5 | — | 12.4 | 7 | 75 | 3900 | 7900 | PMFA13R | TS254 | TSS04005 | HBH06012 | TKY08F | HKY40R | ②HSC12035 | |

*1 You need to balance the tool and holder together so that it conforms to G40 or higher standards.

*2 Clamp Torque (lbf-in) : TS254=8.9, HBH06012=8.5

INSERTS

| Shape | Order Number | Class | Coated | | | CBN | Dimensions (mm) | | | Geometry |
|-------|---------------|-------|--------|-------|-------|-----|-----------------|------|----|----------|
| | | | VP15TF | AP10H | MB710 | | IC | S | BS | |
| | TPEW1303ZPER2 | E | ● | ● | | | 7.94 | 3.18 | 2 | |
| | TPEW1303ZPTR2 | E | | | ● | | 7.94 | 3.18 | 2 | |

RECOMMENDED CUTTING CONDITIONS

| Work Material | Hardness | Grade | Cutting Speed (SFM) | Feed per Tooth (inch/tooth) |
|----------------------------------|-----------------------------|--------|---------------------|-----------------------------|
| P Carbon Steel Alloy Steel | 180—280HB | VP15TF | 820 (490—1150) | .004 (.0019— .006) |
| | 280—380HB | VP15TF | 655 (330—985) | |
| K Gray Cast Iron | Tensile Strength ≤350MPa | AP10H | 1150 (655—1640) | .004 (.0019— .006) |
| | | MB710 | 4920 (3280—6560) | |

| Work Material | Hardness | Grade | Cutting Speed (SFM) | Feed per Tooth (inch/tooth) |
|---------------------------|-----------------------------|-------|---------------------|-----------------------------|
| K Ductile Cast Iron | Tensile Strength ≤500MPa | AP10H | 820 (490—1150) | .004 (.002— .006) |
| | | MB710 | 3280 (2625—3940) | |
| | Tensile Strength ≤800MPa | AP10H | 655 (330—985) | .004 (.002— .006) |
| | | MB710 | 3280 (2625—3940) | |

(Note 1) Recommended radial depth of cut is .004" to .008" (1—2mm).

(Note 2) Up and down vertical cutting is recommended for efficiency.

(Note 3) For crossfeed cutting, feed per tooth should be reduced to less than .002(inch/tooth).

● : Inventory maintained.

<10 inserts in one case> <1 insert in one case for CBN>

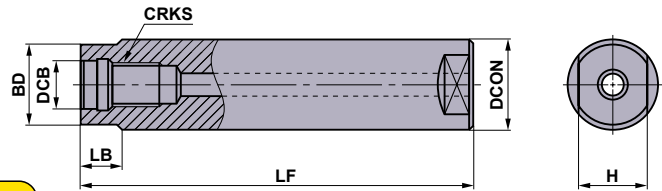
SPARE PARTS > M001
TECHNICAL DATA > N001

K161

MILLING

SCREW-IN ARBORS

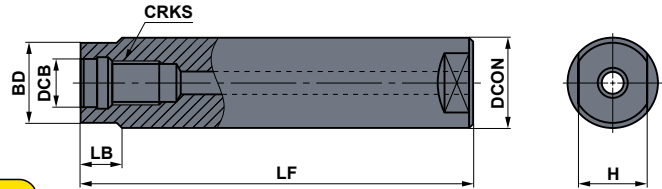
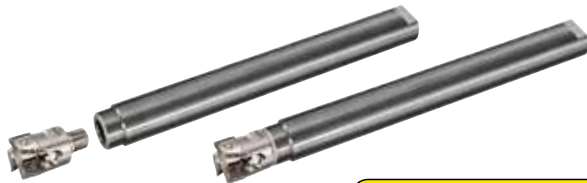
STRAIGHT SHANK ARBOR



STEEL SHANK TYPE

METRIC Standard

| Type | Order Number | Stock | Coolant Thru*1 | Dimensions (mm) | | | | | | | WT (kg) ^{*2} |
|-------------|--------------|-------|----------------|-----------------|------|------|-----|----|----|------|-----------------------|
| | | | | DCB | DCON | BD | LF | LB | H | CRKS | |
| Steel Shank | SC16M08S100S | ★ | Y | 8.5 | 16 | 14.5 | 100 | 10 | 10 | M8 | 0.1 |
| | SC16M08S200L | ★ | Y | 8.5 | 16 | 14.5 | 200 | 10 | 10 | M8 | 0.3 |
| | SC20M10S120S | ★ | Y | 10.5 | 20 | 18.5 | 120 | 10 | 14 | M10 | 0.3 |
| | SC20M10S220L | ★ | Y | 10.5 | 20 | 18.5 | 220 | 10 | 14 | M10 | 0.5 |
| | SC25M12S125S | ★ | Y | 12.5 | 25 | 23.5 | 125 | 10 | 19 | M12 | 0.4 |
| | SC25M12S245L | ★ | Y | 12.5 | 25 | 23.5 | 245 | 10 | 19 | M12 | 0.8 |
| | SC32M16S140S | ★ | Y | 17 | 32 | 28.5 | 140 | 15 | 24 | M16 | 0.8 |
| | SC32M16S280L | ★ | Y | 17 | 32 | 28.5 | 280 | 15 | 24 | M16 | 1.6 |

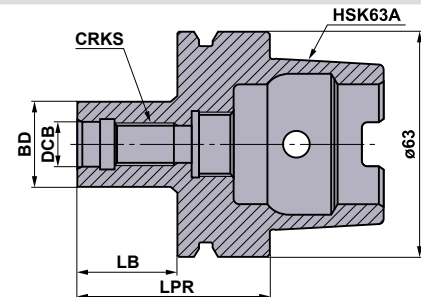


CARBIDE SHANK TYPE

METRIC Standard

| Type | Order Number | Stock | Coolant Thru*1 | Dimensions (mm) | | | | | | | WT (kg) ^{*2} |
|---------------|---------------|-------|----------------|-----------------|------|------|-----|----|----|------|-----------------------|
| | | | | DCB | DCON | BD | LF | LB | H | CRKS | |
| Carbide Shank | SC16M08S100SW | ★ | Y | 8.5 | 16 | 14.5 | 100 | 10 | 10 | M8 | 0.2 |
| | SC16M08S200LW | ★ | Y | 8.5 | 16 | 14.5 | 200 | 10 | 10 | M8 | 0.5 |
| | SC20M10S120SW | ★ | Y | 10.5 | 20 | 18.5 | 120 | 10 | 14 | M10 | 0.5 |
| | SC20M10S220LW | ★ | Y | 10.5 | 20 | 18.5 | 220 | 10 | 14 | M10 | 0.9 |
| | SC25M12S125SW | ★ | Y | 12.5 | 25 | 23.5 | 125 | 10 | 19 | M12 | 0.8 |
| | SC25M12S245LW | ★ | Y | 12.5 | 25 | 23.5 | 245 | 10 | 19 | M12 | 1.5 |
| | SC32M16S140SW | ★ | Y | 17 | 32 | 28.5 | 140 | 15 | 24 | M16 | 1.4 |
| | SC32M16S280LW | ★ | Y | 17 | 32 | 28.5 | 280 | 15 | 24 | M16 | 2.8 |

HSK SHANK ARBOR



HSK63A SHANK ARBOR

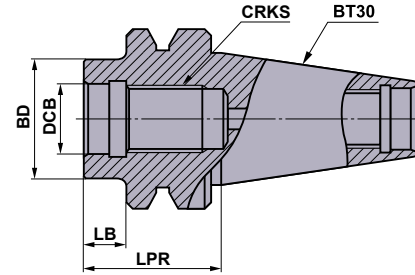
METRIC Standard

| Order Number | Stock | Coolant Thru*1 | Dimensions (mm) | | | | | WT (kg) ^{*2} |
|-------------------|-------|----------------|-----------------|------|-----|----|------|-----------------------|
| | | | DCB | BD | LPR | LB | CRKS | |
| SC16M08S22-HSK63A | ★ | Y | 8.5 | 14.5 | 48 | 22 | M8 | 0.7 |
| SC20M10S24-HSK63A | ★ | Y | 10.5 | 18.5 | 50 | 24 | M10 | 0.7 |
| SC25M12S27-HSK63A | ★ | Y | 12.5 | 23.5 | 53 | 27 | M12 | 0.7 |
| SC32M16S28-HSK63A | ★ | Y | 17.0 | 28.5 | 54 | 28 | M16 | 0.8 |

*1 Y=Yes *2 WT : Mass

★ : Inventory maintained in Japan.

BT SHANK ARBOR

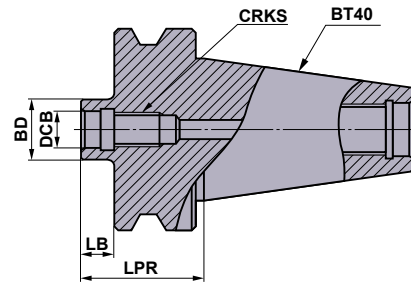


BT30 SHANK ARBOR

METRIC Standard

| Order Number | Stock | Coolant Thru *1 | Dimensions (mm) | | | | | WT *2 (kg) |
|-----------------|-------|-----------------|-----------------|------|-----|----|------|------------|
| | | | DCB | BD | LPR | LB | CRKS | |
| SC16M08S10-BT30 | ★ | Y | 8.5 | 14.5 | 32 | 10 | M8 | 0.4 |
| SC20M10S10-BT30 | ★ | Y | 10.5 | 18.5 | 32 | 10 | M10 | 0.4 |
| SC25M12S10-BT30 | ★ | Y | 12.5 | 23.5 | 32 | 10 | M12 | 0.4 |
| SC32M16S10-BT30 | ★ | Y | 17.0 | 28.5 | 32 | 10 | M16 | 0.4 |

*1 Y=Yes *2 WT : Mass



BT40 SHANK ARBOR

METRIC Standard

| Order Number | Stock | Coolant Thru *1 | Dimensions (mm) | | | | | WT *2 (kg) |
|-----------------|-------|-----------------|-----------------|------|-----|----|------|------------|
| | | | DCB | BD | LPR | LB | CRKS | |
| SC16M08S10-BT40 | ★ | Y | 8.5 | 14.5 | 37 | 10 | M8 | 1.0 |
| SC20M10S10-BT40 | ★ | Y | 10.5 | 18.5 | 37 | 10 | M10 | 1.0 |
| SC25M12S10-BT40 | ★ | Y | 12.5 | 23.5 | 37 | 10 | M12 | 1.0 |
| SC32M16S10-BT40 | ★ | Y | 17.0 | 28.5 | 37 | 10 | M16 | 1.0 |

*1 Y=Yes *2 WT : Mass

HOW TO INSTALL THE SCREW-IN HEAD

- ① Thoroughly clean the clamp section of the head and the arbor with an air blower or brush before installation.
- ② Tighten the head at the recommended torque and ensure that there is no gap between the head and arbor.

| Screw Size | Recommended Torque (lb-ft) | Wrench Size (mm) |
|------------|----------------------------|------------------|
| M8 | 17.1 | 10 |
| M10 | 33.8 | 14 |
| M12 | 59.2 | 19 |
| M16 | 66.7 | 24 |



- Cutting tools become extremely hot during cutting. Never touch them with bare hands after operation as this may produce risk of injuries or burns.
- Do not handle the cutting tools with bare hands as this may cause injuries.

SPARE PARTS > M001
TECHNICAL DATA > N001

MILLING

MAXIMUM SPINDLE SPEED FOR CUTTER

| Diameter | WSX445 | | ASX445 | | AHX640S | | AHX640W | | AOX445 | |
|----------|---|-----------------------|---|-----------------------|---|-----------------------|---|-----------------------|---|-----------------------|
| | Max. Spindle Speed (min ⁻¹) | Clamp Torque (lbf-in) | Max. Spindle Speed (min ⁻¹) | Clamp Torque (lbf-in) | Max. Spindle Speed (min ⁻¹) | Clamp Torque (lbf-in) | Max. Spindle Speed (min ⁻¹) | Clamp Torque (lbf-in) | Max. Spindle Speed (min ⁻¹) | Clamp Torque (lbf-in) |
| 1.5" | 19000 | 31 | | | | | | | | |
| 2.0" | 17000 | 31 | 18000 | 31 | | | | | 13000 | 71 |
| 2.5" | 15000 | 31 | 16000 | 31 | 11800 | 44.3 | | | 12000 | 71 |
| 3.0" | 14000 | 31 | 14000 | 31 | 10000 | 44.3 | 9200 | 53 | 11000 | 71 |
| 4.0" | 12000 | 31 | 13000 | 31 | 8600 | 44.3 | 7700 | 53 | 9300 | 71 |
| 5.0" | 11000 | 31 | 12000 | 31 | 7300 | 44.3 | 6500 | 53 | 8300 | 71 |
| 6.0" | 9500 | 31 | 10000 | 31 | 6400 | 44.3 | 5500 | 53 | 7200 | 71 |
| 8.0" | 8500 | 31 | 9000 | 31 | 5000 | 44.3 | 4000 | 53 | 6400 | 71 |
| 10.0" | | | 8000 | 31 | | | 2800 | 53 | | |
| 12.0" | | | | | | | 1900 | 53 | | |

| Diameter | ASX400 | | AXD4000 | | AXD7000 | | BXD4000 | | PMF | |
|----------|---|-----------------------|---|-----------------------|---|-----------------------|---|-----------------------|---|-----------------------|
| | Max. Spindle Speed (min ⁻¹) | Clamp Torque (lbf-in) | Max. Spindle Speed (min ⁻¹) | Clamp Torque (lbf-in) | Max. Spindle Speed (min ⁻¹) | Clamp Torque (lbf-in) | Max. Spindle Speed (min ⁻¹) | Clamp Torque (lbf-in) | Max. Spindle Speed (min ⁻¹) | Clamp Torque (lbf-in) |
| 1.0" | | | 49000 | 13.3 | | | 38000 | 35 | | |
| 1.25" | | | 48000 | 13.3 | 41000 | 31 | 33000 | 35 | | |
| 1.5" | | | 41000 | 13.3 | 36000 | 31 | 29000 | 35 | | |
| 2.0" | 18000 | 31 | 35000 | 13.3 | 30000 | 31 | 24000 | 35 | 12700 | 8.9 |
| 2.5" | 16000 | 31 | 30000 | 13.3 | 25000 | 31 | 21000 | 35 | 10100 | 8.9 |
| 3.0" | 14000 | 31 | 27000 | 13.3 | 23000 | 31 | 19000 | 35 | 7900 | 8.9 |
| 4.0" | 13000 | 31 | 23000 | 13.3 | 19000 | 31 | 16000 | 35 | | |
| 5.0" | 12000 | 31 | 20000 | 13.3 | 16000 | 31 | | | | |
| 6.0" | 10000 | 31 | | | | | | | | |
| 8.0" | 9000 | 31 | | | | | | | | |
| 10.0" | 8000 | 31 | | | | | | | | |
| 12.0" | | | | | | | | | | |

All values shown on this chart are based on the insert being properly seated in pocket and torqued to the recommended values.

(Note) You need to balance the tool and holder together so that it confirms to G40 or higher standards.

Memo

A series of horizontal dotted lines for writing, spanning the width of the page.