



# HIPOPOS<sup>μ</sup>

MILLING PRODUCTS

**Cutter series (Applications)**  
 12J1D: 90° Mill (.22 DOC)  
 22J3D: 90° Long Edge Mill  
 12\_1D: Chamfer End Mill

**Diameter Range**  
 .375" - 2.000"  
 9.5-30.0 mm

**Corner Radii**  
 Sharp, .008", .015", .031",  
 .062" & Hi-Feed

**Chamfer Angles**  
 30, 45, 60

**Materials**  
 Iron, Steel, Stainless Steel,  
 Aluminum, Hi-Temps  
 Titanium, Hard Steel,  
 Graphite



## Our Highest Positive Mini-Size Mills with 90° and Hi-Feed Insert Options

### Features & Benefits:

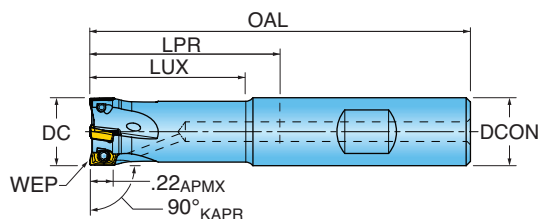
- Double-Positive geometry for efficient milling on small platform machines; Ideal for Live Spindles on Lathe and Swiss type machines
- 90° & Hi-Feed inserts fit the same pocket
- Diverse range of cutter adaptions and insert grades/geometries
- Large diameter modular cutter heads that fit solid ER shanks for utmost productivity and fast/accurate tool changes on the machine
- Inserts with integrated wipers produce 32-63 Ra surface finishes





## SERIES 12J1D (WELDON SHANK)

### 90° & HI-FEED END MILL



WE - See insert drawing for wiper options.

### INCH

| Part Number      | DC<br>Cutting<br>Dia. | LUX<br>Usable Length<br>Max. | LPR<br>Protruding<br>Length | OAL<br>Overall<br>Length | ZEFF<br>Effective<br>Teeth | DCON<br>Shank<br>Dia. |
|------------------|-----------------------|------------------------------|-----------------------------|--------------------------|----------------------------|-----------------------|
| 12J1D-0300587R01 | 0.375                 | 0.52                         | 0.72                        | 2.50                     | 2                          | 0.500                 |
| 12J1D-0500979R01 | 0.500                 | 0.90                         | 1.09                        | 3.00                     | 3                          | 0.625                 |
| 12J1D-0601479R01 | 0.620                 | 1.52                         | 1.72                        | 3.50                     | 4                          | 0.625                 |
| 12J1D-0701684R02 | 0.720                 | 1.65                         | 1.75                        | 3.75                     | 4                          | 0.750                 |
| 12J1D-0701684R01 | 0.750                 | 1.65                         | 1.75                        | 3.75                     | 5                          | 0.750                 |
| 12J1D-1001780R01 | 1.000                 | 1.75                         | 1.75                        | 4.00                     | 7                          | 1.000                 |
| 12J1D-1001780R02 | 1.000                 | 1.75                         | 1.75                        | 4.00                     | 5                          | 1.000                 |
| 12J1D-1001784R01 | 1.000                 | 1.75                         | 1.75                        | 3.75                     | 7                          | 0.750                 |
| 12J1D-1001784R02 | 1.000                 | 1.75                         | 1.75                        | 3.75                     | 5                          | 0.750                 |

Notes: Cutter body should be relieved to accept .062"R insert.  
.02" APMX for Hi-Feed insert UOMT0602TR.

### METRIC

| Part Number      | DC<br>Cutting<br>Dia. | LUX<br>Usable Length<br>Max. | LPR<br>Protruding<br>Length | OAL<br>Overall<br>Length | ZEFF<br>Effective<br>Teeth | DCON<br>Shank<br>Dia. |
|------------------|-----------------------|------------------------------|-----------------------------|--------------------------|----------------------------|-----------------------|
| 12J1D010018W3R01 | 9.50 mm               | 18.0 mm                      | 32.0 mm                     | 80.0 mm                  | 2                          | 16.00 mm              |
| 12J1D010018W3R00 | 10.00 mm              | 18.0 mm                      | 32.0 mm                     | 80.0 mm                  | 2                          | 16.00 mm              |
| 12J1D012020W3R01 | 11.50 mm              | 20.0 mm                      | 32.0 mm                     | 80.0 mm                  | 3                          | 16.00 mm              |
| 12J1D012020W3R00 | 12.00 mm              | 20.0 mm                      | 32.0 mm                     | 80.0 mm                  | 3                          | 16.00 mm              |
| 12J1D014022W3R00 | 14.00 mm              | 22.0 mm                      | 32.0 mm                     | 80.0 mm                  | 3                          | 16.00 mm              |
| 12J1D016026W3R00 | 16.00 mm              | 26.0 mm                      | 37.0 mm                     | 85.0 mm                  | 4                          | 16.00 mm              |
| 12J1D020030W4R00 | 20.00 mm              | 30.0 mm                      | 40.0 mm                     | 90.0 mm                  | 5                          | 20.00 mm              |
| 12J1D025040W5R00 | 25.00 mm              | 40.0 mm                      | 44.0 mm                     | 100.0 mm                 | 7                          | 25.00 mm              |

Notes: Cutter body should be relieved to accept 1.6mm R insert.  
0.5mm APMX for Hi-Feed insert UOMT0602TR.



## SERIES 12J1D (CYLINDRICAL SHANK)

### 90° & HI-FEED END MILL



Facing



Shoulder Milling



Channeling



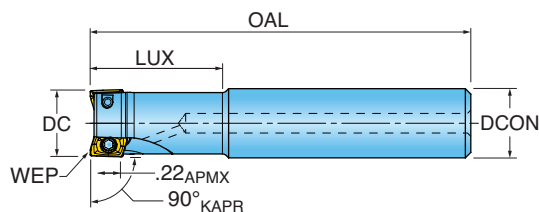
Ramping



Corkscrew



Coolant



WE - See insert drawing for wiper options.

### INCH

| Part Number      | DC<br>Cutting<br>Dia. | LUX<br>Usable Length<br>Max. | OAL<br>Overall<br>Length | ZEFF<br>Effective<br>Teeth | DCON<br>Shank<br>Dia. |
|------------------|-----------------------|------------------------------|--------------------------|----------------------------|-----------------------|
| 12J1D-03009R8R01 | 0.375                 | 0.90                         | 2.50                     | 2                          | 0.375                 |
| 12J1D-04009S4R01 | 0.490                 | 0.90                         | 2.75                     | 2                          | 0.500                 |
| 12J1D-05009S4R01 | 0.500                 | 0.90                         | 2.75                     | 3                          | 0.500                 |
| 12J1D-05011S4R01 | 0.500                 | 1.15                         | 3.00                     | 2                          | 0.500                 |
| 12J1D-06014S6R01 | 0.620                 | 1.40                         | 6.00                     | 3                          | 0.625                 |

Notes: Cutter body should be relieved to accept .062"R insert.  
.02" APMX for Hi-Feed insert UOMT0602TR.

### METRIC

| Part Number      | DC<br>Cutting<br>Dia. | LUX<br>Usable Length<br>Max. | OAL<br>Overall<br>Length | ZEFF<br>Effective<br>Teeth | DCON<br>Shank<br>Dia. |
|------------------|-----------------------|------------------------------|--------------------------|----------------------------|-----------------------|
| 12J1D010016T1R00 | 10.00 mm              | 16.0 mm                      | 55.0 mm                  | 2                          | 10.00 mm              |
| 12J1D012017T2R00 | 12.00 mm              | 17.0 mm                      | 60.0 mm                  | 3                          | 12.00 mm              |
| 12J1D016019T3R00 | 16.00 mm              | 19.0 mm                      | 90.0 mm                  | 4                          | 16.00 mm              |
| 12J1D020017T4R00 | 20.00 mm              | 19.0 mm                      | 105.0 mm                 | 5                          | 20.00 mm              |
| 12J1D025065T4R00 | 25.00 mm              | 65.0 mm                      | 115.0 mm                 | 7                          | 20.00 mm              |

Notes: Cutter body should be relieved to accept 1.6mm R insert.  
0.5mm APMX for Hi-Feed insert (UOMT0602TR).



## **SERIES 12J1D (TOP-ON STYLE)**

### 90° & HI-FEED END MILL



Facing



Shoulder Milling



Channeling



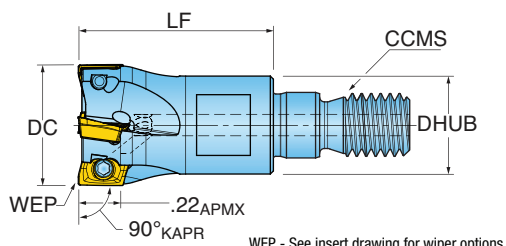
Ramping



Corkscrew



Coolant



### INCH

| Part Number      | DC<br>Cutting<br>Dia. | LF<br>Functional<br>Length | ZEFF<br>Effective<br>Teeth | CCMS<br>Connection Code<br>Machine Side | DHUB<br>Hub<br>Dia. |
|------------------|-----------------------|----------------------------|----------------------------|-----------------------------------------|---------------------|
| 12J1D-05010X4R01 | 0.500                 | 1.00                       | 3                          | TopOn M06                               | 0.47                |
| 12J1D-06010X5R01 | 0.620                 | 1.00                       | 4                          | TopOn M08                               | 0.51                |
| 12J1D-07015X6R01 | 0.750                 | 1.50                       | 5                          | TopOn M10                               | 0.70                |
| 12J1D-10015X7R01 | 1.000                 | 1.50                       | 7                          | TopOn M12                               | 0.82                |
| 12J1D-12017X8R01 | 1.250                 | 1.75                       | 8                          | TopOn M16                               | 1.14                |
| 12J1D-15017X8R01 | 1.500                 | 1.75                       | 9                          | TopOn M16                               | 1.14                |

Notes: Cutter body should be relieved to accept .062"R insert.  
.02" APMX for Hi-Feed insert UOMT0602TR.

### METRIC

| Part Number      | DC<br>Cutting<br>Dia. | LF<br>Functional<br>Length | ZEFF<br>Effective<br>Teeth | CCMS<br>Connection Code<br>Machine Side | DHUB<br>Hub<br>Dia. |
|------------------|-----------------------|----------------------------|----------------------------|-----------------------------------------|---------------------|
| 12J1D010017X4R00 | 10.00 mm              | 17.0 mm                    | 2                          | TopOn M06                               | 9.8 mm              |
| 12J1D012023X4R00 | 12.00 mm              | 23.0 mm                    | 3                          | TopOn M06                               | 11.8 mm             |
| 12J1D015023X5R00 | 15.00 mm              | 23.0 mm                    | 4                          | TopOn M08                               | 13.0 mm             |
| 12J1D016023X5R00 | 16.00 mm              | 23.0 mm                    | 4                          | TopOn M08                               | 13.0 mm             |
| 12J1D020030X6R00 | 20.00 mm              | 30.0 mm                    | 5                          | TopOn M10                               | 18.0 mm             |
| 12J1D025035X7R00 | 25.00 mm              | 35.0 mm                    | 7                          | TopOn M12                               | 21.0 mm             |
| 12J1D030043X8R00 | 30.00 mm              | 43.0 mm                    | 8                          | TopOn M16                               | 29.0 mm             |
| 12J1D032043X8R00 | 32.00 mm              | 43.0 mm                    | 8                          | TopOn M16                               | 29.0 mm             |
| 12J1D035043X8R00 | 35.00 mm              | 43.0 mm                    | 9                          | TopOn M16                               | 29.0 mm             |

Notes: Cutter body should be relieved to accept 1.6mm R insert.  
0.5mm APMX for Hi-Feed insert (UOMT0602TR).



**SERIES 12J1D (CHIPSURFER STYLE)**
**90° & HI-FEED END MILL**


Facing



Shoulder Milling



Channeling



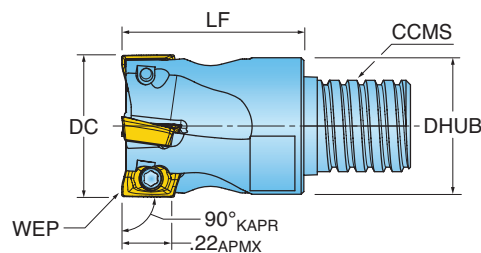
Ramping



Corkscrew



Coolant



WEP - See insert drawing for wiper options.

**INCH**

| Part Number      | DC<br>Cutting<br>Dia. | LF<br>Functional<br>Length | ZEFF<br>Effective<br>Teeth | CCMS<br>Connection Code<br>Machine Side | DHUB<br>Hub<br>Dia. |
|------------------|-----------------------|----------------------------|----------------------------|-----------------------------------------|---------------------|
| 12J1D-03006T6R01 | 0.375                 | 0.630                      | 2                          | Chip Surfer T06                         | 0.36                |
| 12J1D-05006T8R01 | 0.500                 | 0.650                      | 2                          | Chip Surfer T08                         | 0.48                |
| 12J1D-05006T8R02 | 0.500                 | 0.650                      | 3                          | Chip Surfer T08                         | 0.48                |
| 12J1D-06008TRR01 | 0.625                 | 0.800                      | 4                          | Chip Surfer T10                         | 0.60                |
| 12J1D-07010TSR01 | 0.750                 | 1.000                      | 5                          | Chip Surfer T12                         | 0.72                |
| 12J1D-07010TSR02 | 0.750                 | 1.000                      | 3                          | Chip Surfer T12                         | 0.72                |
| 12J1D-10012TUR01 | 1.000                 | 1.250                      | 7                          | Chip Surfer T15                         | 0.94                |

Notes: Cutter body should be relieved to accept .062"R insert.

.02" APMX for Hi-Feed insert UOMT0602TR. No lubricant on adaption. Wrenches sold seperately.

**METRIC**

| Part Number      | DC<br>Cutting<br>Dia. | LF<br>Functional<br>Length | ZEFF<br>Effective<br>Teeth | CCMS<br>Connection Code<br>Machine Side | DHUB<br>Hub<br>Dia. |
|------------------|-----------------------|----------------------------|----------------------------|-----------------------------------------|---------------------|
| 12J1D010016T6R00 | 10.00 mm              | 16.0 mm                    | 2                          | Chip Surfer T06                         | 9.7 mm              |
| 12J1D012017T8R00 | 12.00 mm              | 17.0 mm                    | 3                          | Chip Surfer T08                         | 11.7 mm             |
| 12J1D016019TRR00 | 16.00 mm              | 19.0 mm                    | 4                          | Chip Surfer T10                         | 15.5 mm             |
| 12J1D020022TSR00 | 20.00 mm              | 22.0 mm                    | 5                          | Chip Surfer T12                         | 18.2 mm             |

Notes: Cutter body should be relieved to accept 1.6mm R insert.

0.5mm APMX for Hi-Feed insert (UOMT0602TR). No lubricant on adaption. Wrenches sold seperately.



## **SERIES 12J1D (CHIPSURFER STYLE)**

**90° END MILL FOR SWISS & LIVE TOOLING**



Facing



Shoulder Milling



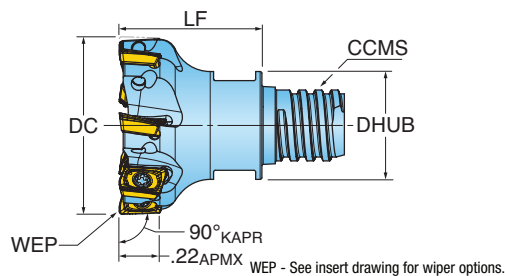
Channeling



Ramping



Corkscrew



**INCH**

| Part Number      | DC<br>Cutting<br>Dia. | LF<br>Functional<br>Length | ZEFF<br>Effective<br>Teeth | CCMS<br>Connection Code<br>Machine Side | DHUB<br>Hub<br>Dia. |
|------------------|-----------------------|----------------------------|----------------------------|-----------------------------------------|---------------------|
| 12J1D-07008T8R01 | 0.750                 | 0.800                      | 5                          | Chip Surfer T08                         | 0.48                |
| 12J1D-07008TRR01 | 0.750                 | 0.800                      | 5                          | Chip Surfer T10                         | 0.60                |
| 12J1D-10008TRR01 | 1.000                 | 0.800                      | 7                          | Chip Surfer T10                         | 0.72                |

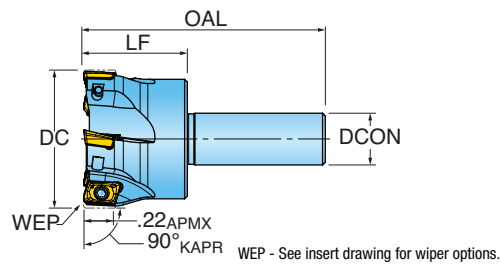
Notes: Cutter body should be relieved to accept .062" R insert. .02" APMX for Hi-Feed insert UOMT0602TR. No lubricant on adaption. Wrenches sold separately. Ideal when coupled with solid ER shanks for live spindles on swiss and lathe machines.





**HI-POS™ SERIES 12J1D (CYLINDRICAL SHANK)**

90° END MILL FOR SWISS & LIVE TOOLING



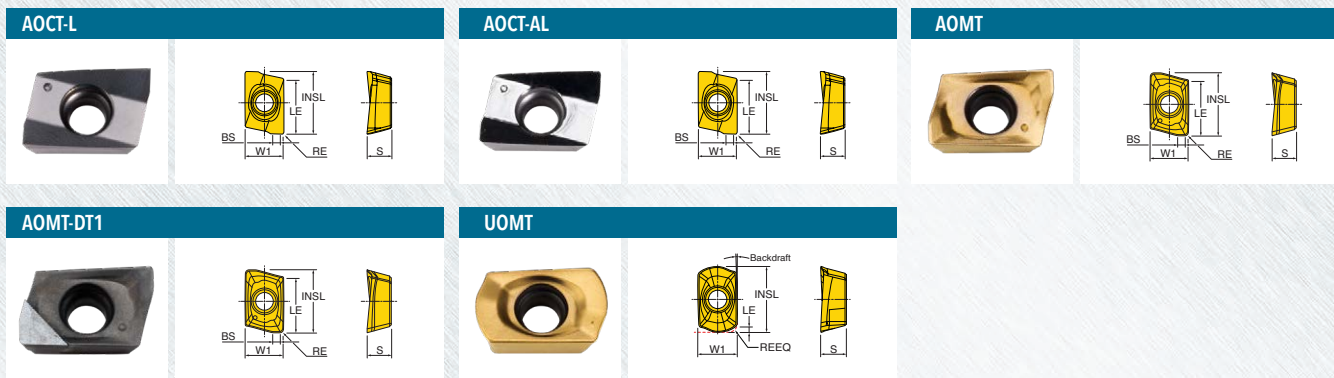
INCH

| Part Number      | DC<br>Cutting<br>Dia. | LF<br>Functional<br>Length | OAL<br>Overall<br>Length | ZEFF<br>Effective<br>Teeth | DCON<br>Shank<br>Dia. |
|------------------|-----------------------|----------------------------|--------------------------|----------------------------|-----------------------|
| 12J1D-07007R8R01 | 0.750                 | 0.75                       | 1.75                     | 5                          | 0.375                 |
| 12J1D-10007R8R01 | 1.000                 | 0.75                       | 1.75                     | 5                          | 0.375                 |
| 12J1D-15007S4R01 | 1.500                 | 0.75                       | 1.75                     | 7                          | 0.500                 |
| 12J1D-20007S6R01 | 2.000                 | 0.75                       | 1.75                     | 7                          | 0.625                 |

Notes: Cutter body should be relieved to accept .062"R insert.



**HI-POS™ SERIES 12J1D INSERTS**



| Part Number     | Application          | RE<br>Corner<br>Radius | BS<br>Wiper<br>Length | LE<br>Cutting Edge<br>Length | INSL<br>Insert<br>Length | W1<br>Insert<br>Width | S<br>Thickness | NOI<br>Number of<br>Indexes | IH<br>Insert<br>Hand | Grade | IN055 | IN10K | IN1030 | IN2005 | IN2036 | IN2504 | IN2505 | IN2530 | IN3005 | IN90D |
|-----------------|----------------------|------------------------|-----------------------|------------------------------|--------------------------|-----------------------|----------------|-----------------------------|----------------------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|-------|
| AOCT060200R-L*  | Light; Keen & Coated | Sharp                  | 0.039                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       |       |        | •      |        |        |        |        |        |       |
| AOCT060202R-AL  | Grd/Pol for Al       | 0.008                  | 0.031                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       | •     |       |        |        |        |        |        |        |        |       |
| AOCT060202R-L*  | Light; Keen & Coated | 0.008                  | 0.031                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       |       | •      |        |        |        |        |        |        |       |
| AOCT060204R-AL  | Grd/Pol for Al       | 0.015                  | 0.023                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       | •     |       |        |        |        |        |        |        |        |       |
| AOCT060204R-L*  | Light; Keen & Coated | 0.015                  | 0.023                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       |       | •      |        |        |        |        |        |        |       |
| AOCT060204FR-P  | Non-ferrous/graphite | 0.015                  | -                     | 0.228                        | 0.264                    | 0.163                 | 0.103          | 2                           | Right                |       | •     |       |        |        |        |        |        |        | •      |       |
| AOCT060208R-AL  | Grd/Pol for Al       | 0.031                  | 0.018                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       | •     |       |        |        |        |        |        |        |        |       |
| AOMT060202R     | Multi-Purpose        | 0.008                  | 0.030                 | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       | •     | •      |        | •      |        | •      |        |        |       |
| AOMT060202R-DT1 | PCD Tipped           | 0.008                  | 0.040                 | 0.090                        | 0.265                    | 0.163                 | 0.100          | 1                           | Right                |       |       |       |        |        |        |        |        |        |        | •     |
| AOMT060204R     | Multi-Purpose        | 0.015                  | 0.020                 | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       |       |        | •      | •      | •      | •      | •      |        |       |
| AOMT060208R     | Multi-Purpose        | 0.031                  | 0.010                 | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       |       |        | •      | •      | •      | •      | •      |        |       |
| AOMT060216R     | Multi-Purpose        | 0.062                  | -                     | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       |       |        | •      | •      | •      |        | •      |        |       |

\* Ideal for light chip loads on Swiss and Live Tooling.

| Part Number | Application | REEQ<br>Program Radius<br>Equivalent | LE<br>Cutting Edge<br>Length | INSL<br>Insert<br>Length | W1<br>Insert<br>Width | S<br>Thickness | NOI<br>Number of<br>Indexes | IH<br>Insert<br>Hand | Grade | IN2036 | IN2504 | IN2505 | IN2530 |
|-------------|-------------|--------------------------------------|------------------------------|--------------------------|-----------------------|----------------|-----------------------------|----------------------|-------|--------|--------|--------|--------|
| UOMT0602TR  | Hi-Feed     | 0.040                                | 0.019                        | 0.265                    | 0.162                 | 0.104          | 2                           | Right                |       | •      | •      | •      | •      |





## HI-POS™ SERIES 12J1D HARDWARE

|             |                   |  |  |  |  |  |  |  |  |
|-------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|             |                   | Insert Screw                                                                      | Driver                                                                            | **OPTIONAL**                                                                      | **OPTIONAL**                                                                      | **OPTIONAL**                                                                       | **OPTIONAL**                                                                        | **OPTIONAL**                                                                        | **OPTIONAL**                                                                        |
| Straight    | 12J1D Weldon      | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | -                                                                                   | -                                                                                   |
|             | 12J1D Cylindrical | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | -                                                                                   | -                                                                                   |
|             | 12J1D Cyl. Swiss  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | -                                                                                   | -                                                                                   |
| Top-On      | 12J1D-05010X4R01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | -                                                                                   | -                                                                                   |
|             | 12J1D-06010X5R01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 610MM                                                                               | -                                                                                   | -                                                                                   |
|             | 12J1D-07015X6R01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 615MM                                                                               | -                                                                                   | -                                                                                   |
|             | 12J1D-10015X7R01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 617MM                                                                               | -                                                                                   | -                                                                                   |
|             | 12J1D-12017X8R01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 622MM                                                                               | -                                                                                   | -                                                                                   |
|             | 12J1D-15017X8R01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 622MM                                                                               | -                                                                                   | -                                                                                   |
|             | 12J1D010017X4R00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | -                                                                                   | -                                                                                   |
|             | 12J1D012023X4R00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | -                                                                                   | -                                                                                   |
|             | 12J1D015023X5R00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 610MM                                                                               | -                                                                                   | -                                                                                   |
|             | 12J1D016023X5R00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 610MM                                                                               | -                                                                                   | -                                                                                   |
|             | 12J1D020030X6R00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 615MM                                                                               | -                                                                                   | -                                                                                   |
|             | 12J1D025035X7R00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 617MM                                                                               | -                                                                                   | -                                                                                   |
|             | 12J1D030043X8R00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 622MM                                                                               | -                                                                                   | -                                                                                   |
|             | 12J1D032043X8R00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 622MM                                                                               | -                                                                                   | -                                                                                   |
|             | 12J1D035043X8R00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | 622MM                                                                               | -                                                                                   | -                                                                                   |
| Chip-Surfer | 12J1D-03006T6R01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0029                                                                             | DT-90-08                                                                            |
|             | 12J1D-05006T8R01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0030                                                                             | DT-130-10                                                                           |
|             | 12J1D-05006T8R02  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0030                                                                             | DT-130-10                                                                           |
|             | 12J1D-06008TRR01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0044                                                                             | DT-250-13                                                                           |
|             | 12J1D-07008T8R01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0030                                                                             | DT-130-10                                                                           |
|             | 12J1D-07008TRR01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0044                                                                             | DT-250-13                                                                           |
|             | 12J1D-07010TSR01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0059                                                                             | DT-250-16                                                                           |
|             | 12J1D-07010TSR02  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0059                                                                             | DT-250-16                                                                           |
|             | 12J1D-10008TRR01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0044                                                                             | DT-250-13                                                                           |
|             | 12J1D-10012TUR01  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0061                                                                             | DT-350-20                                                                           |
|             | 12J1D010016T6R00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0029                                                                             | DT-90-08                                                                            |
|             | 12J1D012017T8R00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0030                                                                             | DT-130-10                                                                           |
|             | 12J1D016019TRR00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0044                                                                             | DT-250-13                                                                           |
|             | 12J1D020022TSR00  | SM18-041-00                                                                       | DS-TP06S                                                                          | DS-A00-.25-S                                                                      | DT-05-.25                                                                         | DS-TP06B                                                                           | -                                                                                   | WS-0059                                                                             | DT-250-16                                                                           |



## SERIES 22J3D (WELDON SHANK)

90° END MILL; ALL-EFFECTIVE RH HELIX



Facing



Shoulder Milling



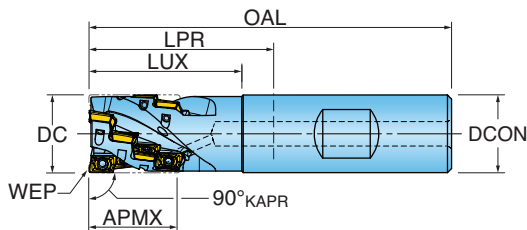
Slabbing



Channeling



Coolant



WEP - See insert drawing for wiper options.

### INCH

| Part Number      | DC<br>Cutting<br>Dia. | APMX<br>Depth of<br>Cut Max. | LUX<br>Usable Length<br>Max. | LPR<br>Protruding<br>Length | OAL<br>Overall<br>Length | ZNF<br>Face Insert<br>Count | ZNP<br>Peripheral Insert<br>Count | NOF<br>Flute Count | DCON<br>Shank<br>Dia. |
|------------------|-----------------------|------------------------------|------------------------------|-----------------------------|--------------------------|-----------------------------|-----------------------------------|--------------------|-----------------------|
| 22J3D-0601179R01 | 0.625                 | 0.650                        | 1.25                         | 1.59                        | 3.50                     | 2                           | 4                                 | 2                  | 0.625                 |
| 22J3D-0701484R01 | 0.750                 | 0.860                        | 1.45                         | 1.50                        | 3.50                     | 3                           | 9                                 | 3                  | 0.750                 |

Notes: Total Number of Inserts = ZNF + ZNP.

Cutter body must be relieved to accept .062R insert.

### METRIC

| Part Number      | DC<br>Cutting<br>Dia. | APMX<br>Depth of<br>Cut Max. | LUX<br>Usable Length<br>Max. | LPR<br>Protruding<br>Length | OAL<br>Overall<br>Length | ZNF<br>Face Insert<br>Count | ZNP<br>Peripheral Insert<br>Count | NOF<br>Flute Count | DCON<br>Shank<br>Dia. |
|------------------|-----------------------|------------------------------|------------------------------|-----------------------------|--------------------------|-----------------------------|-----------------------------------|--------------------|-----------------------|
| 22J1D016017W3R00 | 16.00 mm              | 16.50 mm                     | 30.0 mm                      | 32.0 mm                     | 80.0 mm                  | 2                           | 4                                 | 2                  | 16.00 mm              |
| 22J1D019022W4R00 | 19.00 mm              | 22.00 mm                     | 32.0 mm                      | 35.0 mm                     | 85.0 mm                  | 3                           | 9                                 | 3                  | 20.00 mm              |
| 22J1D020022W4R00 | 20.00 mm              | 22.00 mm                     | 32.0 mm                      | 35.0 mm                     | 85.0 mm                  | 3                           | 9                                 | 3                  | 20.00 mm              |
| 22J1D022022W4R00 | 22.00 mm              | 22.00 mm                     | 32.0 mm                      | 35.0 mm                     | 85.0 mm                  | 4                           | 12                                | 4                  | 20.00 mm              |
| 22J1D025027W5R00 | 25.00 mm              | 27.00 mm                     | 36.0 mm                      | 39.0 mm                     | 95.0 mm                  | 4                           | 16                                | 4                  | 25.00 mm              |

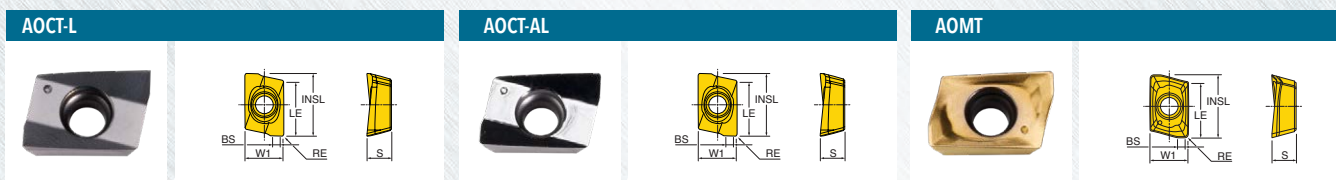
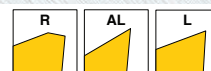
Notes: Total Number of Inserts = ZNF + ZNP.

Cutter body must be relieved to accept .062R insert.





## HI-POS™ SERIES 22J3D INSERTS



| Part Number    | Application          | Station          | RE<br>Corner<br>Radius | BS<br>Wiper<br>Length | LE<br>Cutting Edge<br>Length | INSL<br>Insert<br>Length | W1<br>Insert<br>Width | S<br>Thickness | NOI<br>Number of<br>Indexes | IH<br>Insert<br>Hand | Grade | IN05S | IN10K | IN1030 | IN2005 | IN2036 | IN2504 | IN2505 | IN2530 | IN3005 |
|----------------|----------------------|------------------|------------------------|-----------------------|------------------------------|--------------------------|-----------------------|----------------|-----------------------------|----------------------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| AOCT060200R-L  | Light; Keen & Coated | Face & Periphery | Sharp                  | 0.039                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       |       |        | •      |        |        |        |        |        |
| AOCT060202R-AL | Grd/Pol for Al       | Face & Periphery | 0.008                  | 0.031                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       | •     |        |        |        |        |        |        |        |
| AOCT060202R-L  | Light; Keen & Coated | Face & Periphery | 0.008                  | 0.031                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       |       |        | •      |        |        |        |        |        |
| AOCT060204R-AL | Grd/Pol for Al       | Face & Periphery | 0.015                  | 0.023                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       | •     |        |        |        |        |        |        |        |
| AOCT060204R-L  | Light; Keen & Coated | Face & Periphery | 0.015                  | 0.023                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       |       |        | •      |        |        |        |        |        |
| AOCT060204FR-P | Non-ferrous/graphite | -                | 0.015                  | -                     | 0.228                        | 0.264                    | 0.163                 | 0.103          | 2                           | Right                |       | •     |       |        |        |        |        |        |        | •      |
| AOCT060208R-AL | Grd/Pol for Al       | Face             | 0.031                  | 0.018                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       | •     |        |        |        |        |        |        |        |
| AOMT060202R    | Multi-Purpose        | Face & Periphery | 0.008                  | 0.030                 | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       |       | •      | •      |        | •      |        | •      |        |
| AOMT060204R    | Multi-Purpose        | Face & Periphery | 0.015                  | 0.020                 | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       |       |        | •      | •      | •      | •      | •      |        |
| AOMT060208R    | Multi-Purpose        | Face             | 0.031                  | 0.010                 | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       |       |        | •      | •      | •      | •      | •      |        |
| AOMT060216R    | Multi-Purpose        | Face             | 0.062                  | -                     | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       |       |        | •      | •      | •      |        | •      |        |

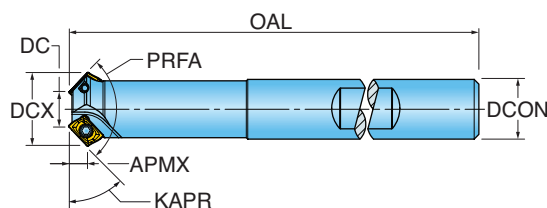
## HI-POS™ SERIES 22J3D HARDWARE

|              |          |                      |                   |                   |  |
|--------------|----------|----------------------|-------------------|-------------------|--|
|              |          |                      |                   |                   |  |
| Insert Screw | Driver   | Torque Driver Handle | Preset Torque Bit | Torque Driver Bit |  |
| SM18-041-00  | DS-TP06S | DS-A00-.25-S         | DT-05-.25         | DS-TP06B          |  |



**HI-POS™ SERIES 12\_1D (WELDON SHANK)**

**CHAMFER MILL**



**INCH**

| Part Number      | DC<br>Cutting<br>Dia. | DCX<br>Cutting<br>Dia. Max. | KAPR<br>Cutting Edge<br>Angle | PRFA<br>Profile<br>Angle | APMX<br>Depth of<br>Cut Max. | OAL<br>Overall<br>Length | ZEFF<br>Effective<br>Teeth | DCON<br>Shank<br>Dia. |
|------------------|-----------------------|-----------------------------|-------------------------------|--------------------------|------------------------------|--------------------------|----------------------------|-----------------------|
| 12M1D-0303287R01 | 0.312                 | 0.520                       | 60                            | 60                       | 0.180                        | 5.00                     | 2                          | 0.500                 |
| 12N1D-0303287R01 | 0.312                 | 0.618                       | 45                            | 90                       | 0.150                        | 5.00                     | 2                          | 0.500                 |
| 12P1D-0303287R01 | 0.312                 | 0.690                       | 30                            | 120                      | 0.100                        | 5.00                     | 2                          | 0.500                 |

Notes: Shank modifications can be made by cutting off the back to desired length.

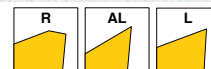
**METRIC**

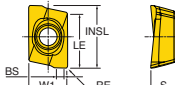
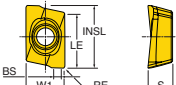
| Part Number      | DC<br>Cutting<br>Dia. | DCX<br>Cutting<br>Dia. Max. | KAPR<br>Cutting Edge<br>Angle | PRFA<br>Profile<br>Angle | APMX<br>Depth of<br>Cut Max. | OAL<br>Overall<br>Length | ZEFF<br>Effective<br>Teeth | DCON<br>Shank<br>Dia. |
|------------------|-----------------------|-----------------------------|-------------------------------|--------------------------|------------------------------|--------------------------|----------------------------|-----------------------|
| 12M1D008025T1R00 | 8.00 mm               | 13.70 mm                    | 60                            | 60                       | 4.80 mm                      | 65.0 mm                  | 2                          | 10.00 mm              |
| 12N1D008025T1R00 | 8.00 mm               | 16.00 mm                    | 45                            | 90                       | 3.90 mm                      | 65.0 mm                  | 2                          | 10.00 mm              |
| 12P1D008025T1R00 | 8.00 mm               | 17.70 mm                    | 30                            | 120                      | 2.70 mm                      | 65.0 mm                  | 2                          | 10.00 mm              |

Notes: Shank modifications can be made by cutting off the back to desired length.



**HI-POS™ SERIES 12\_1D INSERTS**



| AOCT-L                                                                            | AOCT-AL                                                                           | AOMT                                                                                |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |
|  |  |  |

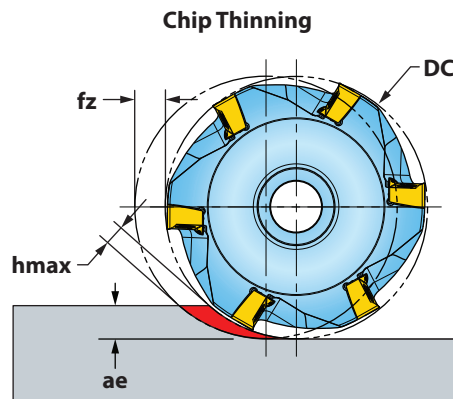
| Part Number    | Application          | RE<br>Corner<br>Radius | BS<br>Wiper<br>Length | LE<br>Cutting Edge<br>Length | INSL<br>Insert<br>Length | W1<br>Insert<br>Width | S<br>Thickness | NOI<br>Number of<br>Indexes | IH<br>Insert<br>Hand | Grade | IN05S | IN10K | IN1030 | IN2005 | IN2036 | IN2504 | IN2505 | IN2530 | IN3005 |
|----------------|----------------------|------------------------|-----------------------|------------------------------|--------------------------|-----------------------|----------------|-----------------------------|----------------------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| AOCT060200R-L  | Light; Keen & Coated | Sharp                  | 0.039                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       |       |        | •      |        |        |        |        |        |
| AOCT060202R-AL | Grd/Pol for Al       | 0.008                  | 0.031                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       | •     |        |        |        |        |        |        |        |
| AOCT060202R-L  | Light; Keen & Coated | 0.008                  | 0.031                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       |       |        | •      |        |        |        |        |        |
| AOCT060204R-AL | Grd/Pol for Al       | 0.015                  | 0.023                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       | •     |        |        |        |        |        |        |        |
| AOCT060204R-L  | Light; Keen & Coated | 0.015                  | 0.023                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       |       |        | •      |        |        |        |        |        |
| AOCT060204FR-P | Non-ferrous/graphite | 0.015                  | -                     | 0.228                        | 0.264                    | 0.163                 | 0.103          | 2                           | Right                |       | •     |       |        |        |        |        |        |        | •      |
| AOCT060208R-AL | Grd/Pol for Al       | 0.031                  | 0.018                 | 0.216                        | 0.256                    | 0.165                 | 0.102          | 2                           | Right                |       |       | •     |        |        |        |        |        |        |        |
| AOMT060202R    | Multi-Purpose        | 0.008                  | 0.030                 | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       |       | •      | •      |        | •      |        | •      |        |
| AOMT060204R    | Multi-Purpose        | 0.015                  | 0.020                 | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       |       |        | •      | •      | •      | •      | •      |        |
| AOMT060208R    | Multi-Purpose        | 0.031                  | 0.010                 | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       |       |        | •      | •      | •      | •      | •      |        |
| AOMT060216R    | Multi-Purpose        | 0.062                  | -                     | 0.220                        | 0.228                    | 0.166                 | 0.103          | 2                           | Right                |       |       |       |        | •      | •      | •      |        | •      |        |

**HI-POS™ SERIES 12\_1D HARDWARE**

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |  |  |  |
| Insert Screw                                                                        | Driver                                                                              | **OPTIONAL**                                                                        | **OPTIONAL**                                                                        | **OPTIONAL**                                                                         |
| SM18-041-00                                                                         | DS-TP06S                                                                            | DS-A00-.25-S                                                                        | DT-05-.25                                                                           | DS-TP06B                                                                             |



**HI-POS™ 90° OPERATING GUIDELINES**

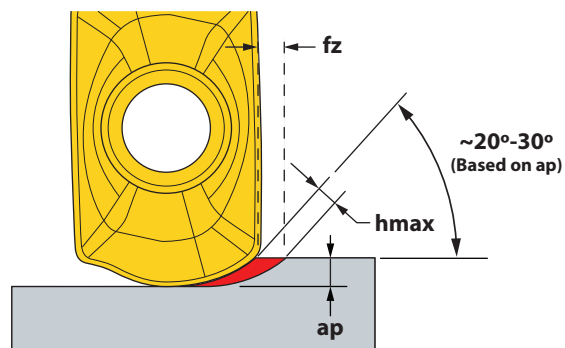


\* Chip Thinning Calculator is recommended to ensure hmax is within fz range.

| Materials |                          |                                               |                                    | Vc<br>Cutting<br>Speed<br>SFM | fz*<br>Feed/Tooth<br>(inch) | Harder <-----> Tougher |                   |         |       |       |        |        |        | Coolant |                                          |        |
|-----------|--------------------------|-----------------------------------------------|------------------------------------|-------------------------------|-----------------------------|------------------------|-------------------|---------|-------|-------|--------|--------|--------|---------|------------------------------------------|--------|
| ISO       | Mat'l Group<br>#VDI 3323 | Type                                          | Examples                           |                               |                             | PCD                    | Diamond<br>Coated | Carbide |       |       |        |        |        |         |                                          |        |
|           |                          |                                               |                                    |                               |                             | IN90D                  | IN3005            | IN2504  | IN10K | IN05S | IN2505 | IN2005 | IN2530 |         | IN1030                                   | IN2035 |
| P         | 1 - 5                    | Non-alloy Steel                               | 1018, A36, 1045, A572, 1070        | 400-1000                      | .002-.006                   |                        |                   |         |       |       |        |        |        |         |                                          | No     |
|           | 6 - 9                    | Low-alloy Steel                               | 4140, 4340, P20, 8620, 300M        | 350-700                       |                             |                        |                   | 3       |       |       |        | 1      | 2      |         |                                          |        |
|           | 10 - 11                  | High-alloy Steel                              | H13, A2, D2, M2, T1                | 300-600                       |                             |                        |                   |         |       |       |        |        |        |         |                                          |        |
| M         | 12 - 13                  | Stainless Steel (Fer-<br>ritic & Martensitic) | 410, 416, 440                      | 350-600                       | .002-.005                   |                        |                   |         |       |       |        |        | 2      | 3       | 1                                        | Yes    |
|           | 14                       | Stainless Steel (Austenitic)                  | 303, 304, 316, 15-5, 17-4          | 300-550                       |                             |                        |                   |         |       |       |        |        |        |         | May not be<br>required at high<br>speeds |        |
| K         | 15 - 16                  | Gray Cast Iron                                | CLS. 20, 30, 45                    | 500-1000                      | .002-.006                   |                        |                   |         | 1     |       |        |        | 2      |         |                                          | No     |
|           | 17 - 20                  | Nodular Cast Iron                             | 60-40-18, 100-70-03                | 400-800                       |                             |                        |                   |         |       |       |        |        |        |         |                                          |        |
| N         | 21 - 30                  | Aluminum                                      | 7075, 6061                         | 1000-3000                     | .002-.007                   | 1                      | 2                 |         | 3     | 4     |        |        |        |         |                                          | Yes    |
|           |                          | Graphite                                      | Graphite                           | 1000-1500                     | .002-.004                   | 2                      | 1                 |         |       |       |        |        |        |         | No                                       |        |
| S         | 31 - 35                  | High-Temp Alloys                              | Inconel, Hastelloy, Nimonic, Monel | 65-150                        | .002-.005                   |                        |                   |         |       |       |        | 2      | 3      | 1       | Yes                                      |        |
|           | 36 - 37                  | Titanium Alloys                               | 6Al-4V, 5Al-5Mo-5V-3Cr             | 85-200                        |                             |                        |                   |         |       |       |        | 3      | 2      | 1       |                                          |        |
| H         | 38 - 39                  | Hardened Steel >48                            | A2, O1, D2                         | 130-250                       | .002-.004                   |                        |                   | 1       |       |       |        | 2      |        |         | No                                       |        |

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally, DOC and WOC may need to be revised to optimize the tools performance.



**HI-FEED OPERATING GUIDELINES**
**Radius (Lead Angle) Chip Thinning**


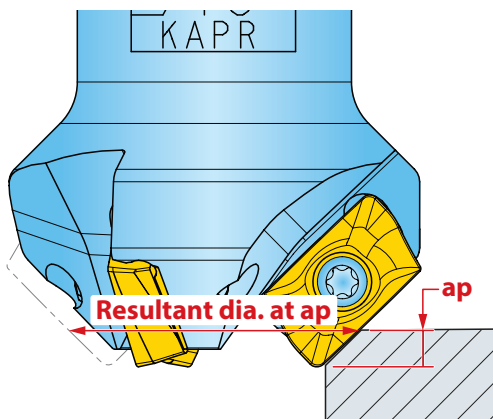
| Materials |                          |                                               |                                       | Vc<br>Cutting<br>Speed<br>SFM | fz<br>Feed/Tooth<br>(inch) | ap<br>Recom-<br>mended<br>(inch) | hmax*<br>Max. Chip<br>Thickness<br>(inch) | Harder <--> Tougher |        |        |        | Coolant                                  |
|-----------|--------------------------|-----------------------------------------------|---------------------------------------|-------------------------------|----------------------------|----------------------------------|-------------------------------------------|---------------------|--------|--------|--------|------------------------------------------|
| ISO       | Mat'l Group<br>#VDI 3323 | Type                                          | Examples                              |                               |                            |                                  |                                           | IN2504              | IN2505 | IN2530 | IN2036 |                                          |
| <b>P</b>  | 1 - 5                    | Non-alloy Steel                               | 1018, A36, 1045, A572, 1070           | 400-1000                      | .012-.030                  | .008-.019                        | .003-.010                                 | 3                   | 2      | 1      |        | No                                       |
|           | 6 - 9                    | Low-alloy Steel                               | 4140, 4340, P20, 8620, 300M           | 350-700                       |                            |                                  |                                           |                     |        |        |        |                                          |
|           | 10 - 11                  | High-alloy Steel                              | H13, A2, D2, M2, T1                   | 300-600                       |                            |                                  |                                           |                     |        |        |        |                                          |
| <b>M</b>  | 12 - 13                  | Stainless Steel (Fer-<br>ritic & Martensitic) | 410, 416, 440                         | 350-600                       | .012-.030                  | .008-.019                        | .003-.010                                 | 3                   | 2      | 1      |        | Yes                                      |
|           | 14                       | Stainless Steel (Austenitic)                  | 303, 304, 316, 15-5, 17-4             | 300-550                       |                            |                                  |                                           |                     |        |        |        | May not be<br>required at high<br>speeds |
| <b>K</b>  | 15 - 16                  | Gray Cast Iron                                | CLS. 20, 30, 45                       | 500-1000                      | .015-.030                  | .008-.019                        | .003-.012                                 | 1                   | 2      |        |        | No                                       |
|           | 17 - 20                  | Nodular Cast Iron                             | 60-40-18,<br>100-70-03                | 400-800                       |                            |                                  |                                           |                     |        |        |        |                                          |
| <b>S</b>  | 31 - 35                  | High-Temp Alloys                              | Inconel, Hastelloy,<br>Nimonic, Monel | 65-150                        | .012-.025                  | .008-.019                        | .003-.009                                 |                     | 2      | 3      | 1      | Yes                                      |
|           | 36 - 37                  | Titanium Alloys                               | 6Al-4V,<br>5Al-5Mo-5V-3Cr             | 85-200                        |                            |                                  |                                           |                     | 3      | 2      | 1      |                                          |
| <b>H</b>  | 38 - 39                  | Hardened Steel >48                            | A2, O1, D2                            | 130-250                       | .012-.025                  | .008-.015                        | .003-.009                                 | 1                   | 2      |        |        | No                                       |

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally, DOC and WOC may need to be revised to optimize the tools performance.



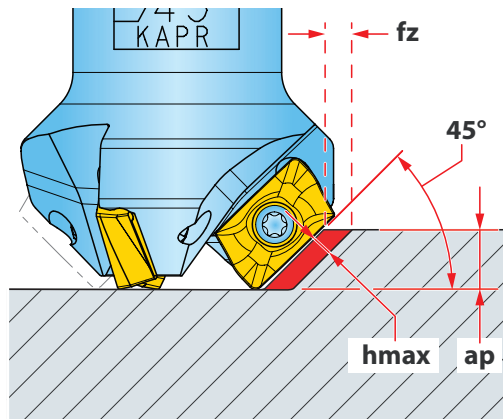
## HI-POS<sup>®</sup> CHAMFER OPERATING GUIDELINES

### RPM Calculation



RPM calculation is to be made using the resultant diameter at ap.

### Chip Thinning



Chip Thinning calculator is recommended to ensure hmax falls within fz range.

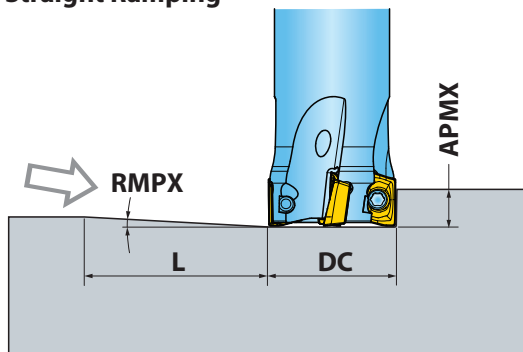
| Materials |                          |                                               |                                    | Vc<br>Cutting<br>Speed<br>SFM | fz*<br>Feed/Tooth<br>(inch) | Harder <-----> Tougher |         |       |       |                  |                  |        | Coolant                                  |
|-----------|--------------------------|-----------------------------------------------|------------------------------------|-------------------------------|-----------------------------|------------------------|---------|-------|-------|------------------|------------------|--------|------------------------------------------|
| ISO       | Mat'l Group<br>#VDI 3323 | Type                                          | Examples                           |                               |                             | Diamond<br>Coated      | Carbide |       |       |                  |                  |        |                                          |
|           |                          |                                               |                                    |                               |                             | IN3005                 | IN2504  | IN10K | IN05S | IN2505<br>IN2005 | IN2530<br>IN1030 | IN2035 |                                          |
| P         | 1 - 5                    | Non-alloy Steel                               | 1018, A36, 1045, A572, 1070        | 400-1000                      | .002-.006                   |                        | 3       |       |       | 1                | 2                |        | No                                       |
|           | 6 - 9                    | Low-alloy Steel                               | 4140, 4340, P20, 8620, 300M        | 350-700                       |                             |                        |         |       |       |                  |                  |        |                                          |
|           | 10 - 11                  | High-alloy Steel                              | H13, A2, D2, M2, T1                | 300-600                       |                             |                        |         |       |       |                  |                  |        |                                          |
| M         | 12 - 13                  | Stainless Steel (Fer-<br>ritic & Martensitic) | 410, 416, 440                      | 350-600                       | .002-.005                   |                        |         |       |       | 2                | 3                | 1      | Yes                                      |
|           | 14                       | Stainless Steel (Austenitic)                  | 303, 304, 316, 15-5, 17-4          | 300-550                       |                             |                        |         |       |       |                  |                  |        | May not be<br>required at high<br>speeds |
| K         | 15 - 16                  | Gray Cast Iron                                | CLS. 20, 30, 45                    | 500-1000                      | .002-.006                   |                        | 1       |       |       | 2                |                  |        | No                                       |
|           | 17 - 20                  | Nodular Cast Iron                             | 60-40-18, 100-70-03                | 400-800                       |                             |                        |         |       |       |                  |                  |        |                                          |
| N         | 21 - 30                  | Aluminum                                      | 7075, 6061                         | 1000-3000                     | .002-.007                   | 1                      |         | 2     | 3     |                  |                  |        | Yes                                      |
|           |                          | Graphite                                      | Graphite                           | 1000-1500                     | .002-.004                   | 1                      |         |       |       |                  |                  |        | No                                       |
| S         | 31 - 35                  | High-Temp Alloys                              | Inconel, Hastelloy, Nimonic, Monel | 65-150                        | .002-.005                   |                        |         |       |       | 2                | 3                | 1      | Yes                                      |
|           | 36 - 37                  | Titanium Alloys                               | 6Al-4V, 5Al-5Mo-5V-3Cr             | 85-200                        |                             |                        |         |       |       |                  |                  |        |                                          |
| H         | 38 - 39                  | Hardened Steel >48                            | A2, O1, D2                         | 130-250                       | .002-.004                   |                        | 1       |       |       | 2                |                  |        | No                                       |

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally, DOC and WOC may need to be revised to optimize the tools performance.

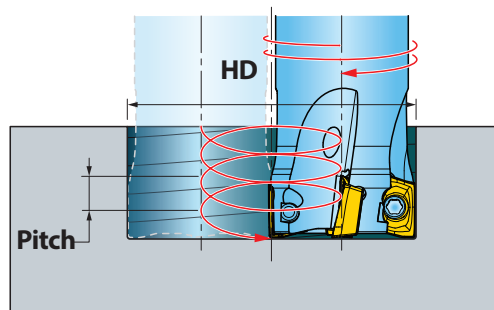


**HI-POS™ RAMPING DATA**

**Straight Ramping**



**Helical Ramping**



**Ramp Data - 90° Inserts (AOMT06)**

| DC<br>Cutter<br>Diameter | Straight Ramp           |                           |                       | Helical Ramp         |                      |               |
|--------------------------|-------------------------|---------------------------|-----------------------|----------------------|----------------------|---------------|
|                          | RMPX<br>Ramp Angle Max. | APMX<br>Depth of Cut Max. | L<br>Ramp Length Min. | HD<br>Hole Dia. Min. | HD<br>Hole Dia. Max. | Pitch<br>Max. |
| 0.375                    | 10.5                    | 0.22                      | 1.2                   | 0.43                 | 0.75                 | 0.035         |
| 0.500                    | 5.5                     | 0.22                      | 2.3                   | 0.75                 | 1.00                 | 0.059         |
| 0.625                    | 4.0                     | 0.22                      | 3.1                   | 0.95                 | 1.25                 | 0.062         |
| 0.750                    | 2.6                     | 0.22                      | 4.8                   | 1.18                 | 1.50                 | 0.062         |
| 1.000                    | 2.0                     | 0.22                      | 6.3                   | 1.65                 | 2.00                 | 0.067         |
|                          |                         |                           |                       |                      |                      | 0.137         |

**Ramp Data - Hi-Feed Insert (UOMT06)**

| DC<br>Cutter<br>Diameter | Straight Ramp           |                           |                       | Helical Ramp         |                      |               |
|--------------------------|-------------------------|---------------------------|-----------------------|----------------------|----------------------|---------------|
|                          | RMPX<br>Ramp Angle Max. | APMX<br>Depth of Cut Max. | L<br>Ramp Length Min. | HD<br>Hole Dia. Min. | HD<br>Hole Dia. Max. | Pitch<br>Max. |
| 0.375                    | 0.5                     | 0.019                     | 2.2                   | 0.55                 | 0.75                 | 0.004         |
| 0.500                    | 4.5                     | 0.019                     | 0.3                   | 0.70                 | 1.00                 | 0.008         |
| 0.625                    | 2.8                     | 0.019                     | 0.4                   | 1.02                 | 1.25                 | 0.019         |
| 0.750                    | 2.2                     | 0.019                     | 0.5                   | 1.02                 | 1.50                 | 0.019         |
| 1.000                    | 1.4                     | 0.019                     | 0.8                   | 1.73                 | 2.00                 | 0.019         |
|                          |                         |                           |                       |                      |                      | 0.019         |



## HOUSING MODIFICATION

### Housing Modification for R.062 Insert

When using AOMT06020216R, check to ensure the cutter body does not protrude beyond the trailing edge of the insert. If it does, the housing corner can be modified on a lathe or grinder by removing material as illustrated below.

