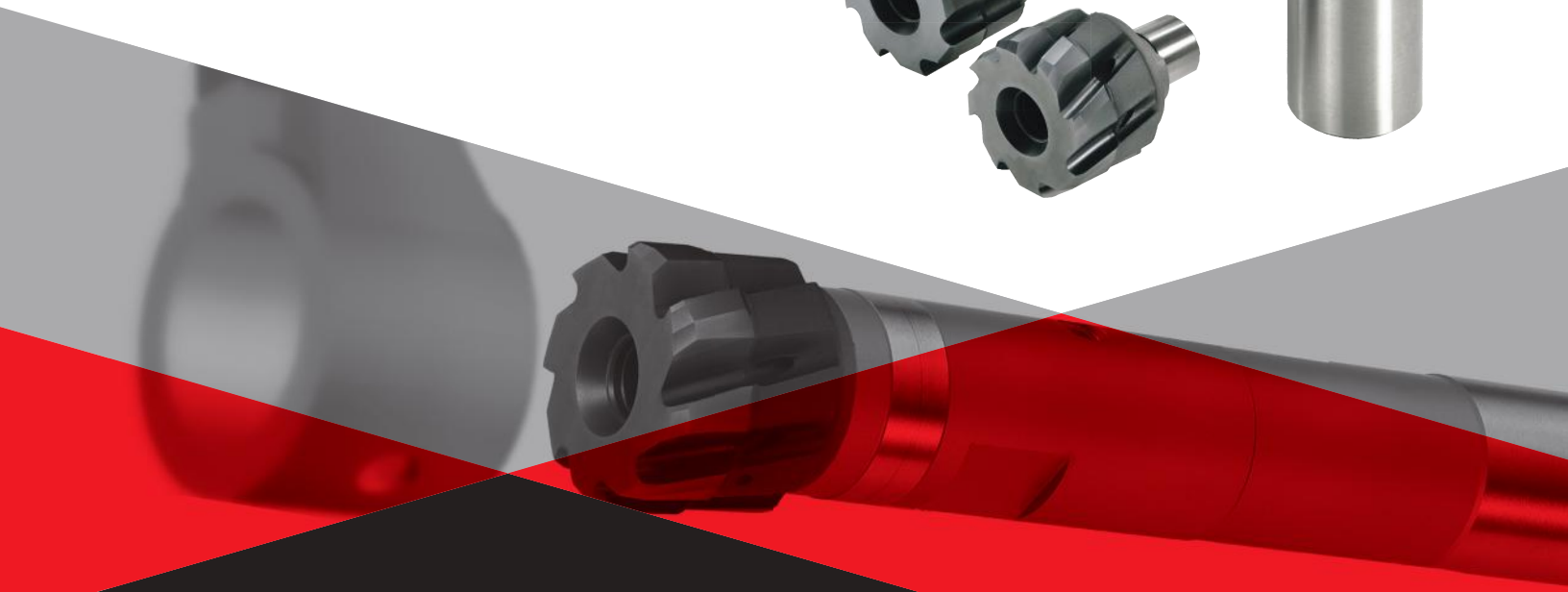
MITSUBISHI MATERIALS

# RX1S

## EXCHANGEABLE HEAD REAMER





TOOL NEWS **B276A**

# Exchangeable Head Reamer

# RX1S

**Simple to change head with high runout accuracy.**

## Optimum Head Design to Suit Coolant thru Flow



**Helical Geometry for Component Through Hole Applications**

Side Coolant thru Holes in the Flutes



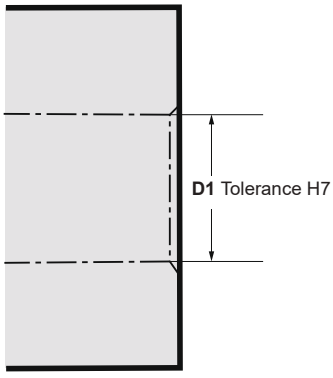
**Straight Flute Geometry for Component Blind Holes**

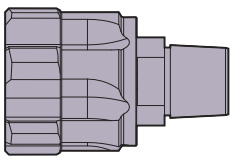
Center Coolant thru



## Easy to Use with Precision Hole Tolerance

H7 workpiece hole tolerance.







## High Precision Mounting Mechanism

Double clamping by tapered surface and center lock achieves high runout accuracy.



## Solid Carbide Head

High Cutting Speeds Enables Elevated Performance

## Lapped and Polished Cutting Edge

Excellent surface finish promotes good chip evacuation.

# Short and Long Holder Options Available

**X03**

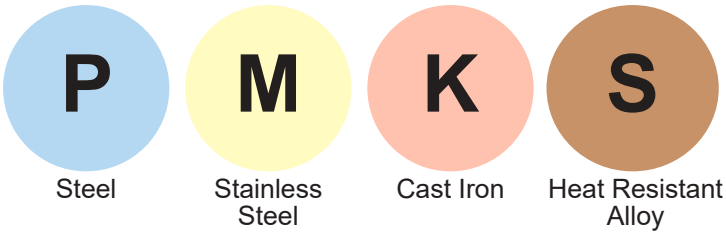


**X05**



# For a Wide Range of Materials

The combination of highly versatile carbide substrate and PVD coating has achieved high precision reaming with a long tool life.




Steel | Stainless Steel | Cast Iron | Heat Resistant Alloy

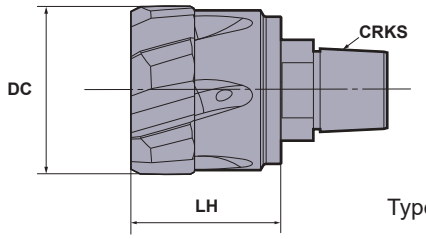
# Custom Made Options

Custom made, optimally designed reaming heads, with different hole tolerance classes, can be manufactured in .039 µ-inch increments, in diameters (DC) .551 inches (14 mm) to 1.142 inches (29 mm)

# RX1S

P Steel | M Stainless Steel | K Cast Iron | N | S Heat Resistant Alloy | H






Type1

## Helical Flute Head for Through Holes

With side Air/Coolant through in the flutes

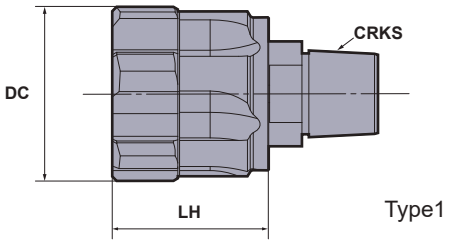
| DC (mm) | DC (inch) | Order Number | Stock RP1010 | Number of Teeth | LH | CRKS | Type | Holder |
|---|---|---|---|---|---|---|---|---|
| 14 | .551 | RX1S14000H7DHTP1 | ★ | 6 | 17.9 | TP1 | 1 | RX1SX○○S16ATP1 |
| 15 | .591 | RX1S15000H7DHTP1 | ★ | 6 | 17.9 | TP1 | 1 | RX1SX○○S16ATP1 |
| 16 | .630 | RX1S16000H7DHTP2 | ★ | 6 | 17.9 | TP2 | 1 | RX1SX○○S20ATP2 |
| 17 | .669 | RX1S17000H7DHTP2 | ★ | 6 | 17.9 | TP2 | 1 | RX1SX○○S20ATP2 |
| 18 | .709 | RX1S18000H7DHTP3 | ★ | 6 | 17.9 | TP3 | 1 | RX1SX○○S20ATP3 |
| 19 | .748 | RX1S19000H7DHTP3 | ★ | 6 | 17.9 | TP3 | 1 | RX1SX○○S20ATP3 |
| 20 | .787 | RX1S20000H7DHTP4 | ★ | 6 | 17.9 | TP4 | 1 | RX1SX○○S20ATP4 |
| 21 | .827 | RX1S21000H7DHTP4 | ★ | 6 | 17.9 | TP4 | 1 | RX1SX○○S20ATP4 |
| 22 | .866 | RX1S22000H7DHTP4 | ★ | 6 | 17.9 | TP4 | 1 | RX1SX○○S20ATP4 |
| 23 | .906 | RX1S23000H7DHTP5 | ★ | 6 | 18.9 | TP5 | 1 | RX1SX○○S20ATP5 |
| 24 | .945 | RX1S24000H7DHTP5 | ★ | 6 | 18.9 | TP5 | 1 | RX1SX○○S20ATP5 |
| 25 | .984 | RX1S25000H7DHTP5 | ★ | 8 | 18.9 | TP5 | 1 | RX1SX○○S20ATP5 |
| 26 | 1.024 | RX1S26000H7DHTP5 | ★ | 8 | 18.9 | TP5 | 1 | RX1SX○○S20ATP5 |
| 27 | 1.063 | RX1S27000H7DHTP5 | ★ | 8 | 18.9 | TP5 | 1 | RX1SX○○S20ATP5 |
| 28 | 1.102 | RX1S28000H7DHTP6 | ★ | 8 | 18.9 | TP6 | 1 | RX1SX○○S25ATP6 |
| 29 | 1.142 | RX1S29000H7DHTP6 | ★ | 8 | 18.9 | TP6 | 1 | RX1SX○○S25ATP6 |

Note 1) The screw size CRKS for the fastening size of the holder and the head must be the same.

★ : Stocked in Japan

# RX1S






## Straight Flute Head for Blind Holes

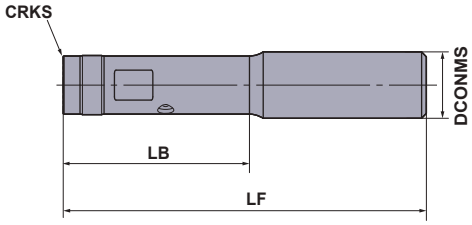
With center Air/Coolant through

| DC (mm) | DC (inch) | Order Number | Stock RP1010 | Number of Teeth | LH | CRKS | Type | Holder |
|---|---|---|---|---|---|---|---|---|
| **14** | **.551** | **RX1S14000H7DSTP1** | ★ | 6 | 17.9 | TP1 | 1 | RX1SX○○S16ATP1 |
| **15** | **.591** | **RX1S15000H7DSTP1** | ★ | 6 | 17.9 | TP1 | 1 | RX1SX○○S16ATP1 |
| **16** | **.630** | **RX1S16000H7DSTP2** | ★ | 6 | 17.9 | TP2 | 1 | RX1SX○○S20ATP2 |
| **17** | **.669** | **RX1S17000H7DSTP2** | ★ | 6 | 17.9 | TP2 | 1 | RX1SX○○S20ATP2 |
| **18** | **.709** | **RX1S18000H7DSTP3** | ★ | 6 | 17.9 | TP3 | 1 | RX1SX○○S20ATP3 |
| **19** | **.748** | **RX1S19000H7DSTP3** | ★ | 6 | 17.9 | TP3 | 1 | RX1SX○○S20ATP3 |
| **20** | **.787** | **RX1S20000H7DSTP4** | ★ | 6 | 17.9 | TP4 | 1 | RX1SX○○S20ATP4 |
| **21** | **.827** | **RX1S21000H7DSTP4** | ★ | 6 | 17.9 | TP4 | 1 | RX1SX○○S20ATP4 |
| **22** | **.866** | **RX1S22000H7DSTP4** | ★ | 6 | 17.9 | TP4 | 1 | RX1SX○○S20ATP4 |
| **23** | **.906** | **RX1S23000H7DSTP5** | ★ | 6 | 18.9 | TP5 | 1 | RX1SX○○S20ATP5 |
| **24** | **.945** | **RX1S24000H7DSTP5** | ★ | 6 | 18.9 | TP5 | 1 | RX1SX○○S20ATP5 |
| **25** | **.984** | **RX1S25000H7DSTP5** | ★ | 8 | 18.9 | TP5 | 1 | RX1SX○○S20ATP5 |
| **26** | **1.024** | **RX1S26000H7DSTP5** | ★ | 8 | 18.9 | TP5 | 1 | RX1SX○○S20ATP5 |
| **27** | **1.063** | **RX1S27000H7DSTP5** | ★ | 8 | 18.9 | TP5 | 1 | RX1SX○○S20ATP5 |
| **28** | **1.102** | **RX1S28000H7DSTP6** | ★ | 8 | 18.9 | TP6 | 1 | RX1SX○○S25ATP6 |
| **29** | **1.142** | **RX1S29000H7DSTP6** | ★ | 8 | 18.9 | TP6 | 1 | RX1SX○○S25ATP6 |

Note 1) The screw size CRKS for the fastening size of the holder and the head must be the same.

**★ : Stocked in Japan**






## Holder

(mm)

| CRKS | Order Number | Stock | LB | LF | DCONMS | Min. Head DC | Max. Head DC |
|---|---|---|---|---|---|---|---|
| TP1 | **RX1SX03S16ATP1** | ★ | 38.8 | 91.0 | 16 | 14 | 15 |
| TP1 | **RX1SX05S16ATP1** | ★ | 70.8 | 123.0 | 16 | 14 | 15 |
| TP2 | **RX1SX03S20ATP2** | ★ | 41.5 | 99.0 | 20 | 16 | 17 |
| TP2 | **RX1SX05S20ATP2** | ★ | 77.5 | 135.0 | 20 | 16 | 17 |
| TP3 | **RX1SX03S20ATP3** | ★ | 49.4 | 106.0 | 20 | 18 | 19 |
| TP3 | **RX1SX05S20ATP3** | ★ | 89.4 | 146.0 | 20 | 18 | 19 |
| TP4 | **RX1SX03S20ATP4** | ★ | 58.8 | 113.5 | 20 | 20 | 22 |
| TP4 | **RX1SX05S20ATP4** | ★ | 103.9 | 158.5 | 20 | 20 | 22 |
| TP5 | **RX1SX03S20ATP5** | ★ | 77.9 | 130.5 | 20 | 23 | 27 |
| TP5 | **RX1SX05S20ATP5** | ★ | 132.9 | 185.5 | 20 | 23 | 27 |
| TP6 | **RX1SX03S25ATP6** | ★ | 94.9 | 152.5 | 25 | 28 | 29 |
| TP6 | **RX1SX05S25ATP6** | ★ | 159.9 | 217.5 | 25 | 28 | 29 |

Note 1) The screw size CRKS for the fastening size of the holder and the head must be the same.

## Spare Parts

| Holder Type |  | | |
|---|---|---|---|
| | Clamp Screw | Drive Size | Torque(lbf-in) |
| **RX1SX○○S16ATP1** | RX1ST8TP1 | T8 | 18 |
| **RX1SX○○S20ATP2** | RX1ST10TP23 | T10 | 27 |
| **RX1SX○○S20ATP3** | RX1ST10TP23 | T10 | 27 |
| **RX1SX○○S20ATP4** | RX1ST15TP45 | T15 | 44 |
| **RX1SX○○S20ATP5** | RX1ST15TP45 | T15 | 44 |
| **RX1SX○○S25ATP6** | RX1ST25TP6 | T25 | 80 |

Note 1) A wrench is not included with the holder.

## Parts Sold Separately

| Holder Type |  |
|---|---|
| | Wrench |
| **RX1SX○○S16ATP1** | TKY08W |
| **RX1SX○○S20ATP2** | TKY10F |
| **RX1SX○○S20ATP3** | TKY10F |
| **RX1SX○○S20ATP4** | TKY15T |
| **RX1SX○○S20ATP5** | TKY15T |
| **RX1SX○○S25ATP6** | TKY25T |

## Recommended Cutting Conditions

(inch)

| | Material | Properties | Cutting Speed **vc**(SRF) | Feed **fz**(IPT) | |
|---|---|---|---|---|---|
| | | | | DC<20 | DC≥20 |
| P | Mild Steel (SS400, S10C **etc.**) | **Hardness ≤180HB** | 395(295—510) | .004—.008 | .004—.009 |
| | Carbon Steel, Alloy Steel (S45C, SCM440 **etc.**) | **Hardness 180—280HB** | 395(295—510) | .004—.008 | .004—.009 |
| | Carbon Steel, Alloy Steel (SNCM439 **etc.**) | **Hardness 280—350HB** | 330(245—425) | .004—.008 | .004—.009 |
| M | Austenitic Stainless Steel (SUS304, SUS316 **etc.**) | **Hardness ≤200HB** | 65(50—100) | .003—.006 | .003—.007 |
| | Ferritic Stainless Steel (SUS430 **etc.**) | — | 130(100—195) | .003—.007 | .003—.008 |
| | Duplex Stainless Steel (SUS329J1 **etc.**) | — | 65(50—100) | .003—.006 | .003—.007 |
| | Hardened Stainless Steel (SUS630 **etc.**) | — | 130(100—195) | .003—.007 | .003—.008 |
| K | Gray Cast Iron (FC300 **etc.**) | **Tensile Strength ≤350MPa** | 1180(850—1395) | .004—.008 | .004—.009 |
| | Ductile Cast Iron (FC450 **etc.**) | **Tensile Strength ≤450MPa** | 295(210—360) | .004—.008 | .004—.009 |
| S | Heat Resistant Alloy (Inconel718 **etc.**) | — | 100(65—130) | .003—.007 | .004—.008 |
| | Titanium Alloy (Ti-6Al-4V **etc.**) | — | 100(65—130) | .003—.007 | .004—.008 |

## Finish Machining Allowance by Diameter

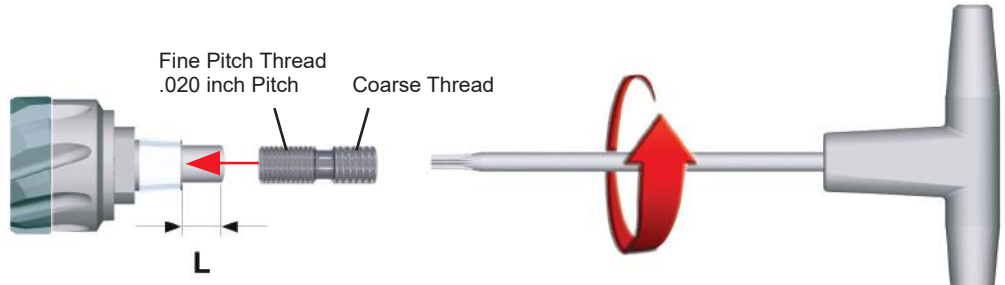
(inch)

| DC | 14≤DC<15 | 15≤DC<20 | 20≤DC≤29 |
|---|---|---|---|
| Machining Allowance | .006—.012 | .006—.014 | .008—.016 |

# How to Install the Head

## 1

Use a Torx wrench to adjust the amount of protrusion according to the L dimension below.
The cutting edges are sharp so protective gloves should be worn.




| Head **DC**(mm) | L (inch) |
|---|---|
| 14 – 27 | .217 – .236 |
| 28, 29 | .236 – .256 |

Torx wrench is not an accessory.

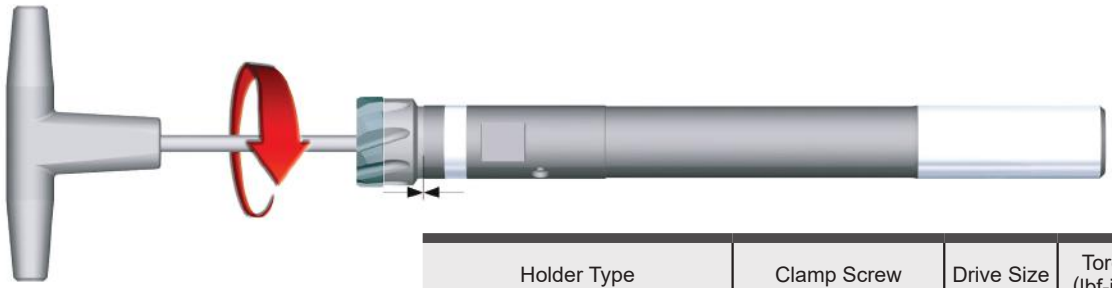
## 2

Insert the head into the holder.
At this time, a slight gap will be seen between the end face of the holder and the head.



## 3

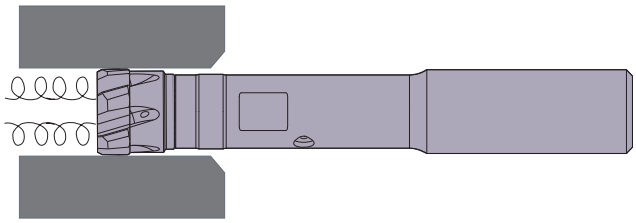
Use a Torx wrench to tighten until the holder and the head are firmly clamped.



| Holder Type | Clamp Screw | Drive Size | Torque (lbf-inch) |
|---|---|---|---|
| **RX1SX○○S16ATP1** | RX1ST8TP1 | T8 | 18 |
| **RX1SX○○S20ATP2, TP3** | RX1ST10TP23 | T10 | 27 |
| **RX1SX○○S20ATP4, TP5** | RX1ST15TP45 | T15 | 44 |
| **RX1SX○○S25ATP6** | RX1ST25TP6 | T25 | 80 |

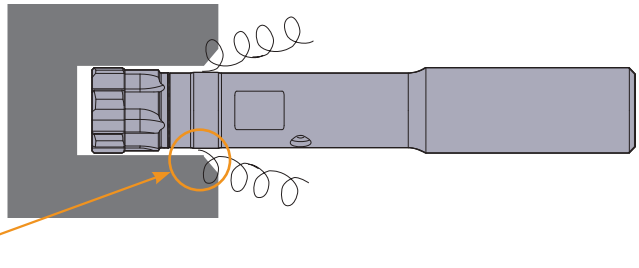
# Operational Guidance

● Please use a helical type head for through holes and a straight type head for blind holes.
The helical type is designed to eject chips forward, and the straight type is designed to eject chips backwards.





Helical Type

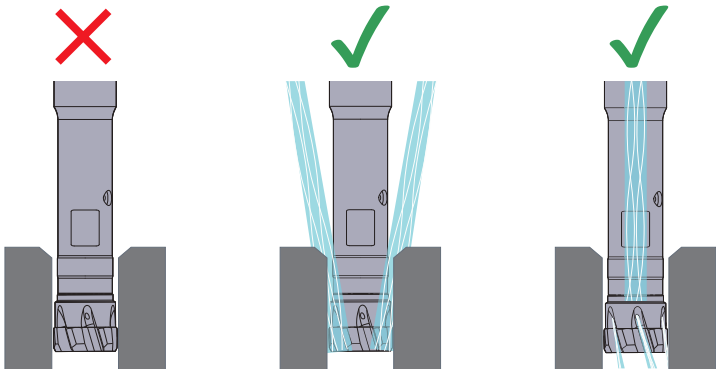




Straight Type

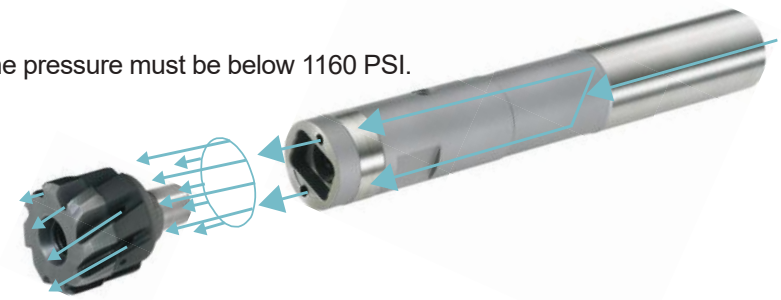
● It is recommended to chamfer the entrance of the pilot hole before reaming.
● When setting the tool on the machine, the run-out accuracy of the cutting edge should be .197 µ-inch or less.
● For the holder, we recommend a hydraulic chuck type.

● The first recommendation for best results is to use internal coolant thru, then external coolant thru. Dry cutting is not recommended.
For blind holes, with external coolant thru, reaming beyond depths of DC x 3 is not recommended.

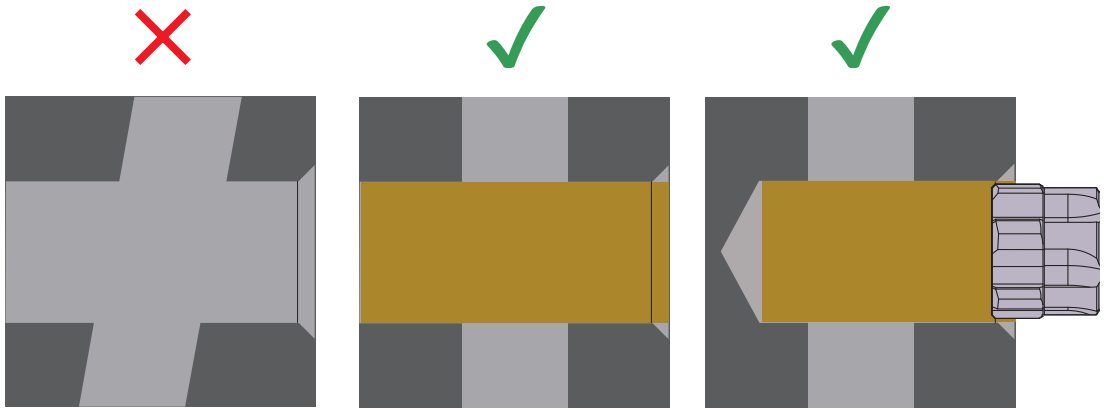


Dry External Internal

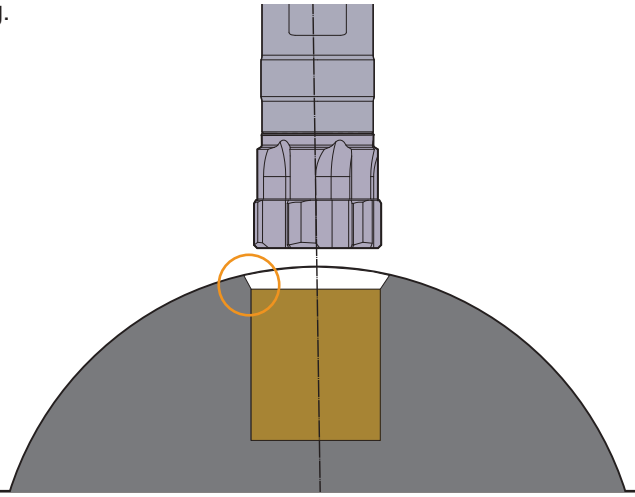
● For reaming with internal coolant through, the pressure must be below 1160 PSI.



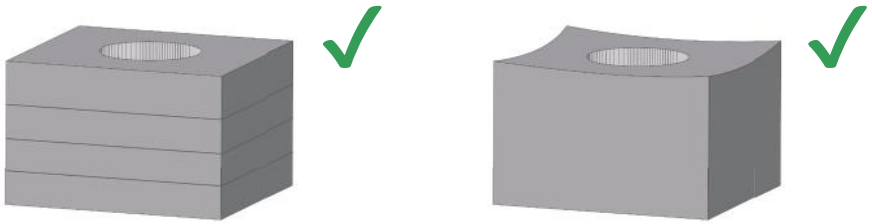
● Reaming diagonally intersecting holes is not recommended.



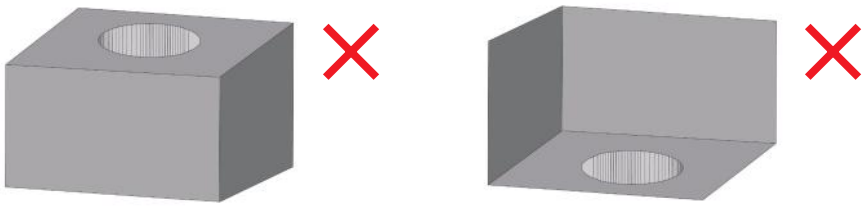
● Please chamfer cylindrical surfaces before reaming.



● Reaming with stacked plates and a concave center is possible.



● Reaming is not recommended if the entrance/exit of the pilot hole is on an inclined surface.



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## FOR YOUR SAFETY

- Don't handle inserts and chips without gloves.
- Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage.
- Please use safety covers and wear safety glasses.
- When using compounded cutting oils, please take fire precautions.
- When attaching inserts or spare parts, please use only the correct wrench or driver.
- When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

**www.mmc-carbide.com/us**

Tools specifications subject to change without notice.

B276A-US-2025.4