

RX1S

EXCHANGEABLE HEAD REAMER FOR EFFICIENT AND
EASY REAMING OF A WIDE VARIETY OF APPLICATIONS



RX1S

EXCHANGEABLE HEAD REAMER

SIMPLE TO CHANGE HEAD WITH HIGH RUNOUT ACCURACY

Optimum head design to suit coolant flow



HELICAL GEOMETRY FOR COMPONENT THROUGH HOLE APPLICATIONS

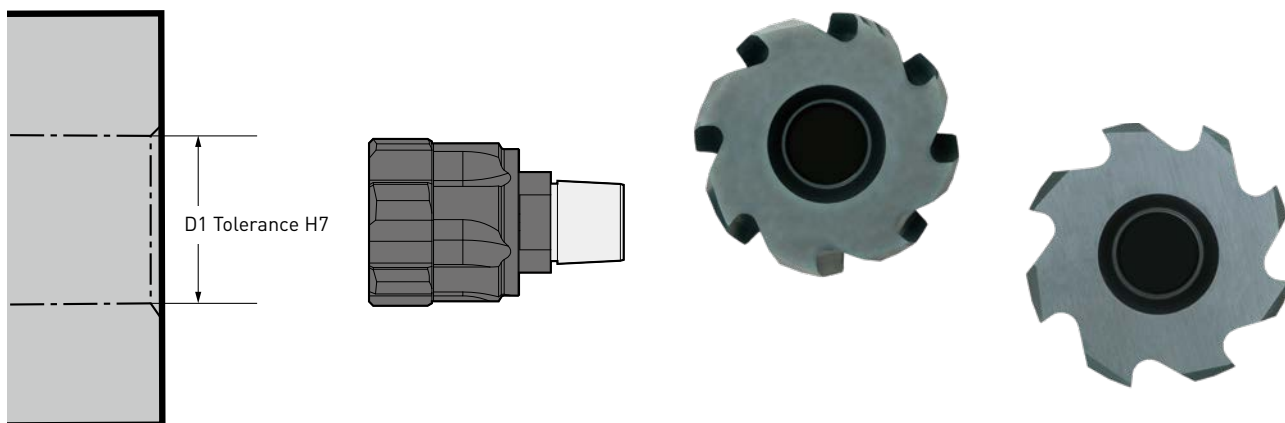
Side coolant holes in the flutes.

STRAIGHT FLUTE GEOMETRY FOR COMPONENT BLIND HOLES

Centre through coolant hole.

EASY TO USE WITH PRECISION HOLE TOLERANCE

H7 WORKPIECE HOLE TOLERANCE



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.

P	M	K	S
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 1 µm increments, in diameters (DC) 14 mm to 29 mm.

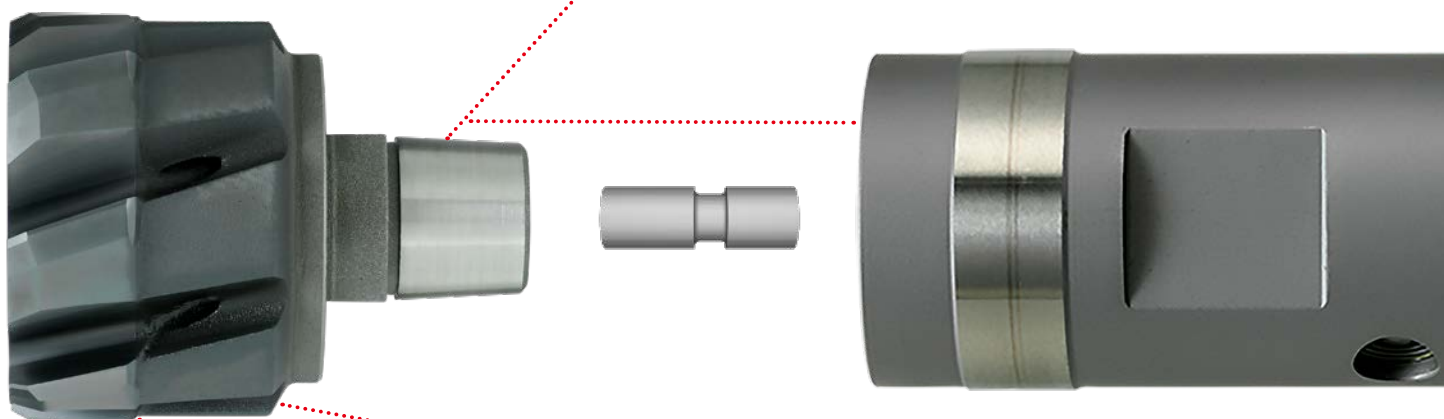
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EXCHANGEABLE HEAD REAMER



HIGH PRECISION MOUNTING MECHANISM

Double clamping by tapered surface and centre 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



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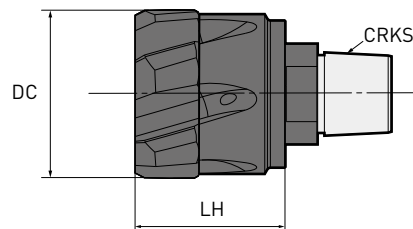


HELICAL FLUTE HEAD FOR THROUGH HOLES

P M K S



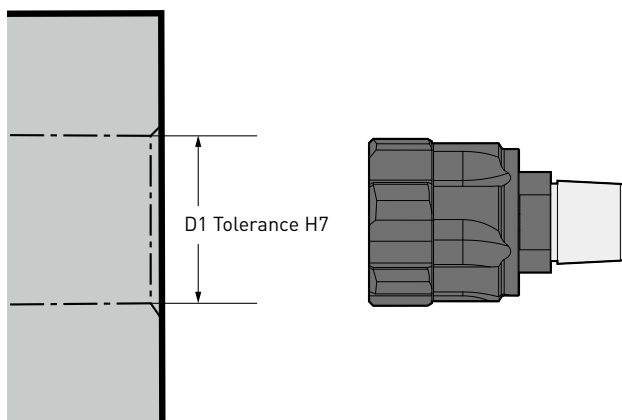
With side coolant holes in the flutes



Order number	RP1010	DC	ZEFP	LH	CRKS	Holder
RX1S14000H7DHTP1	●	14	6	17.9	TP1	RX1SX○○S16ATP1
RX1S15000H7DHTP1	●	15	6	17.9	TP1	RX1SX○○S16ATP1
RX1S16000H7DHTP2	●	16	6	17.9	TP2	RX1SX○○S20ATP2
RX1S17000H7DHTP2	●	17	6	17.9	TP2	RX1SX○○S20ATP2
RX1S18000H7DHTP3	●	18	6	17.9	TP3	RX1SX○○S20ATP3
RX1S19000H7DHTP3	●	19	6	17.9	TP3	RX1SX○○S20ATP3
RX1S20000H7DHTP4	●	20	6	17.9	TP4	RX1SX○○S20ATP4
RX1S21000H7DHTP4	●	21	6	17.9	TP4	RX1SX○○S20ATP4
RX1S22000H7DHTP4	●	22	6	17.9	TP4	RX1SX○○S20ATP4
RX1S23000H7DHTP5	●	23	6	18.9	TP5	RX1SX○○S20ATP5
RX1S24000H7DHTP5	●	24	6	18.9	TP5	RX1SX○○S20ATP5
RX1S25000H7DHTP5	●	25	8	18.9	TP5	RX1SX○○S20ATP5
RX1S26000H7DHTP5	●	26	8	18.9	TP5	RX1SX○○S20ATP5
RX1S27000H7DHTP5	●	27	8	18.9	TP5	RX1SX○○S20ATP5
RX1S28000H7DHTP6	●	28	8	18.9	TP6	RX1SX○○S25ATP6
RX1S29000H7DHTP6	●	29	8	18.9	TP6	RX1SX○○S25ATP6

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



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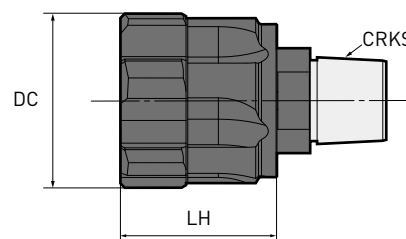


STRAIGHT FLUTE HEAD FOR BLIND HOLES

P M K S



With centre through coolant hole



Order number	RP1010	DC	ZEFP	LH	CRKS	Holder
RX1S14000H7DSTP1	●	14	6	17.9	TP1	RX1SX○○S16ATP1
RX1S15000H7DSTP1	●	15	6	17.9	TP1	RX1SX○○S16ATP1
RX1S16000H7DSTP2	●	16	6	17.9	TP2	RX1SX○○S20ATP2
RX1S17000H7DSTP2	●	17	6	17.9	TP2	RX1SX○○S20ATP2
RX1S18000H7DSTP3	●	18	6	17.9	TP3	RX1SX○○S20ATP3
RX1S19000H7DSTP3	●	19	6	17.9	TP3	RX1SX○○S20ATP3
RX1S20000H7DSTP4	●	20	6	17.9	TP4	RX1SX○○S20ATP4
RX1S21000H7DSTP4	●	21	6	17.9	TP4	RX1SX○○S20ATP4
RX1S22000H7DSTP4	●	22	6	17.9	TP4	RX1SX○○S20ATP4
RX1S23000H7DSTP5	●	23	6	18.9	TP5	RX1SX○○S20ATP5
RX1S24000H7DSTP5	●	24	6	18.9	TP5	RX1SX○○S20ATP5
RX1S25000H7DSTP5	●	25	8	18.9	TP5	RX1SX○○S20ATP5
RX1S26000H7DSTP5	●	26	8	18.9	TP5	RX1SX○○S20ATP5
RX1S27000H7DSTP5	●	27	8	18.9	TP5	RX1SX○○S20ATP5
RX1S28000H7DSTP6	●	28	8	18.9	TP6	RX1SX○○S25ATP6
RX1S29000H7DSTP6	●	29	8	18.9	TP6	RX1SX○○S25ATP6

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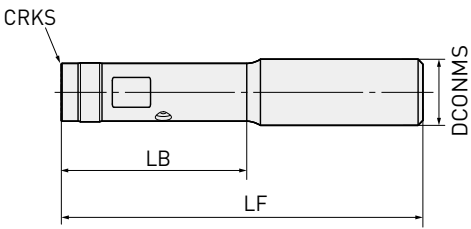
The screw size CRKS for the fastening size of the holder and head must be the same.



RX1S



12<DCONMS<16		20<DCONMS<25	
0		0	
- 0.011		- 0.013	



HOLDER

Order number	Stock	CRKS	LB	LF	DCONMS	Min. Head DC	Max. Head DC
RX1SX03S16ATP1	●	TP1	35.0	91.0	16	14	15
RX1SX05S16ATP1	●	TP1	67.0	123.0	16	14	15
RX1SX03S20ATP2	●	TP2	39.0	99.0	20	16	17
RX1SX05S20ATP2	●	TP2	75.0	135.0	20	16	17
RX1SX03S20ATP3	●	TP3	45.0	106.0	20	18	19
RX1SX05S20ATP3	●	TP3	85.0	146.0	20	18	19
RX1SX03S20ATP4	●	TP4	51.5	113.5	20	20	22
RX1SX05S20ATP4	●	TP4	96.5	158.5	20	20	22
RX1SX03S20ATP5	●	TP5	65.5	130.5	20	23	27
RX1SX05S20ATP5	●	TP5	120.5	185.5	20	23	27
RX1SX03S25ATP6	●	TP6	80.5	152.5	25	28	29
RX1SX05S25ATP6	●	TP6	145.5	217.5	25	28	29

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The screw size CRKS for the fastening size of the holder and head must be the same.
A wrench is not included with the holder.

RX1S

SPARE PARTS

Holder type



	Clamp screw	Drive size	Torque (Nm)
RX1SX○○S16ATP1	RX1ST8TP1	T8	2
RX1SX○○S20ATP2	RX1ST10TP23	T10	3
RX1SX○○S20ATP3	RX1ST10TP23	T10	3
RX1SX○○S20ATP4	RX1ST15TP45	T15	5
RX1SX○○S20ATP5	RX1ST15TP45	T15	5
RX1SX○○S25ATP6	RX1ST25TP6	T25	9

The packaging unit of replacement screws contains 1 piece.

PARTS SOLD SEPARATELY

Holder type



Wrench

RX1SX○○S16ATP1	TKY08W
RX1SX○○S20ATP2	TKY10F
RX1SX○○S20ATP3	TKY10F
RX1SX○○S20ATP4	TKY15T
RX1SX○○S20ATP5	TKY15T
RX1SX○○S25ATP6	TKY25T

RX1S

RECOMMENDED CUTTING CONDITIONS

	Material	Properties	Vc	fz	
				DC<20	DC≥20
P	Mild steel (Ck10)	Hardness ≤180HB	120 (90 – 155)	0.10 – 0.20	0.10 – 0.22
	Carbon steel, Alloy steel (Ck45, 42CrMo4 usw.)	Hardness 180–280HB	120 (90 – 155)	0.10 – 0.20	0.10 – 0.22
	Carbon steel, Alloy steel (36CrNiMo4)	Hardness 280–350HB	100 (75 – 130)	0.10 – 0.20	0.10 – 0.22
M	Austenitic stainless steel (X5CrNi18-9, X5CrNiMo18-10 usw.)	Hardness ≤200HB	20 (15 – 30)	0.08 – 0.15	0.08 – 0.18
	Ferritic stainless steel (X8Cr17, X10CrA118 usw.)	—	40 (30 – 60)	0.08 – 0.18	0.08 – 0.20
	Duplex stainless steel (X3CrNiMoN27-5-2, X2CrNiMoN22-5-3 usw.)	—	20 (15 – 30)	0.08 – 0.15	0.08 – 0.18
	Hardened stainless steel (X5CrNiCuNb16-4)	—	40 (30 – 60)	0.08 – 0.18	0.08 – 0.20
K	Gray cast iron (GG10, GG30 usw.)	Tensile strength ≤350MPa	110 (80 – 130)	0.10 – 0.20	0.10 – 0.22
	Ductile cast iron (GGG40, GGG50 usw.)	Tensile strength ≤450MPa	90 (65 – 110)	0.10 – 0.20	0.10 – 0.22
S	Heat resistant alloy (Inconel®718 etc.)	—	30 (20 – 40)	0.08 – 0.18	0.10 – 0.20
	Titanium alloy (Ti-6Al-4V etc.)	—	30 (20 – 40)	0.08 – 0.18	0.10 – 0.20

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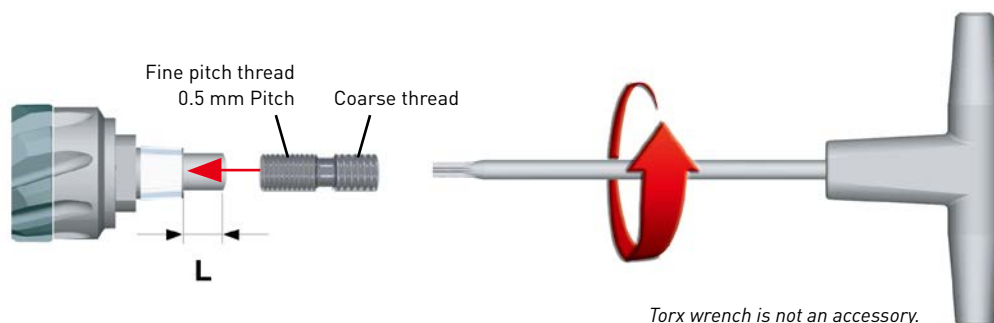
FINISH MACHINING ALLOWANCE BY DIAMETER

DC	14 ≤ DC < 15	15 ≤ DC < 20	20 ≤ DC ≤ 29
Machining allowance	0.15 – 0.30	0.15 – 0.35	0.20 – 0.40

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.



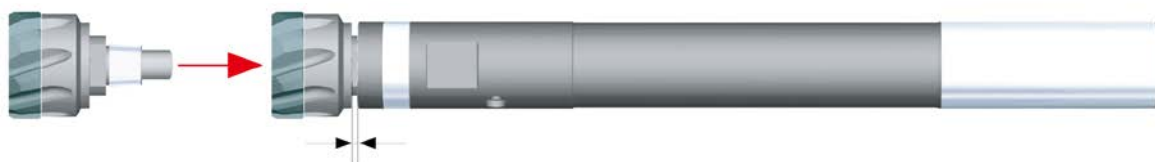
Head DC

L

14 – 27	5.5 – 6.0
28, 29	6.0 – 6.5

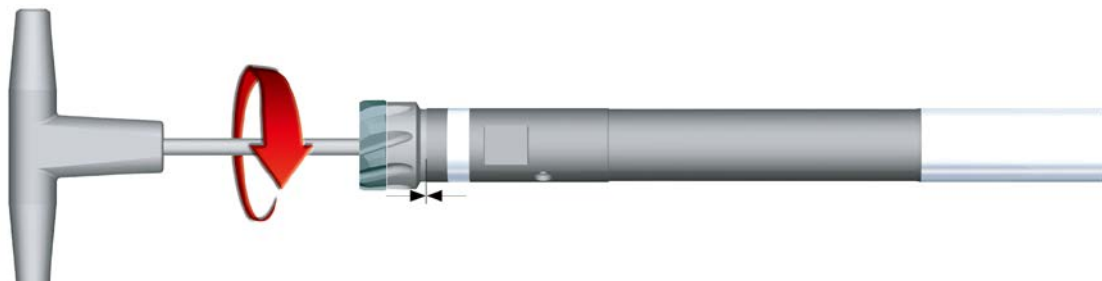
2.

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 head are firmly clamped.



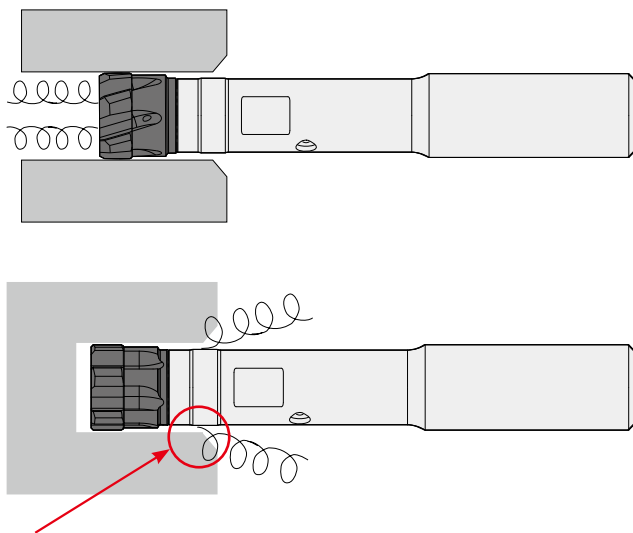
Holder type	Clamp screw	Drive size	Torque (Nm)
RX1SX $\odot$ S16ATP1	RX1ST8TP1	T8	2
RX1SX $\odot$ S20ATP2, TP3	RX1ST10TP23	T10	3
RX1SX $\odot$ S20ATP4, TP5	RX1ST15TP45	T15	5
RX1SX $\odot$ S25ATP6	RX1ST25TP6	T25	9

The packaging unit of replacement screws contains 5 pieces.

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.

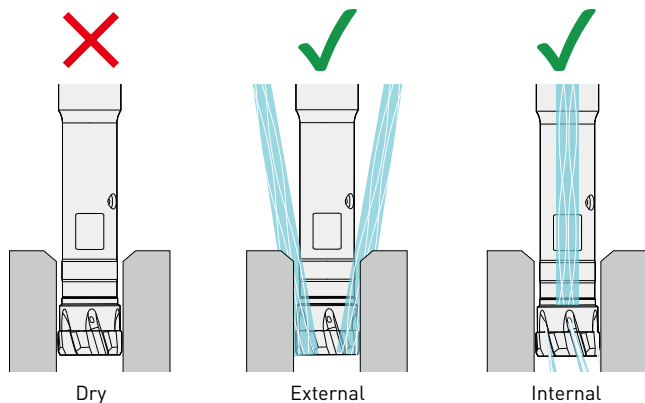


Helical type



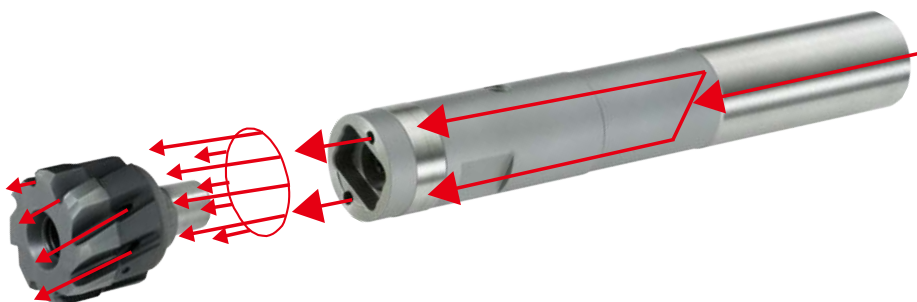
Straight type

- It is recommended to chamfer the entrance of the pilot hole before reaming.
- When reaming, it is generally recommended to return the tool at the same feed rate.
- When setting the tool on the machine, the run-out accuracy of the cutting edge should be 5 μm or less.
- For the holder, we recommend a hydraulic chuck type.



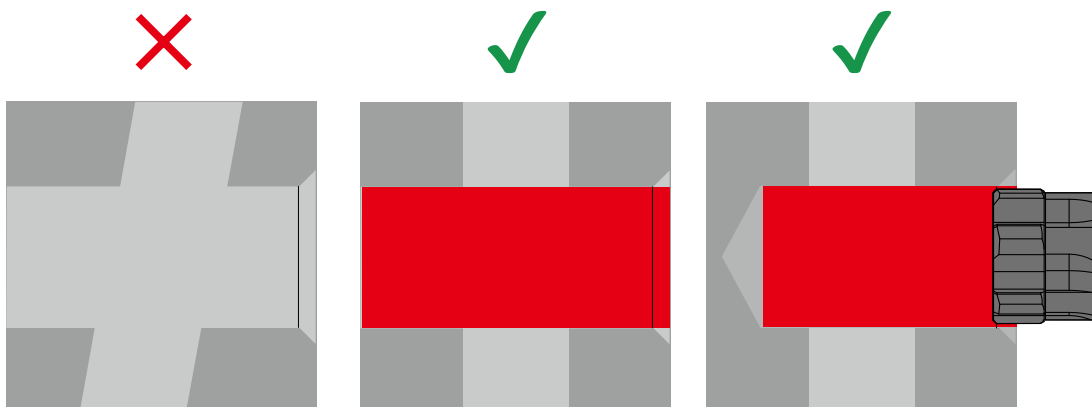
The first recommendation for best results is to use internal through coolant, then external coolant. Dry cutting is not recommended. For blind holes, with external coolant, reaming beyond depths of $DC \times 3$ is not recommended.

For reaming with internal through coolant, the pressure must be below 8 MPa.

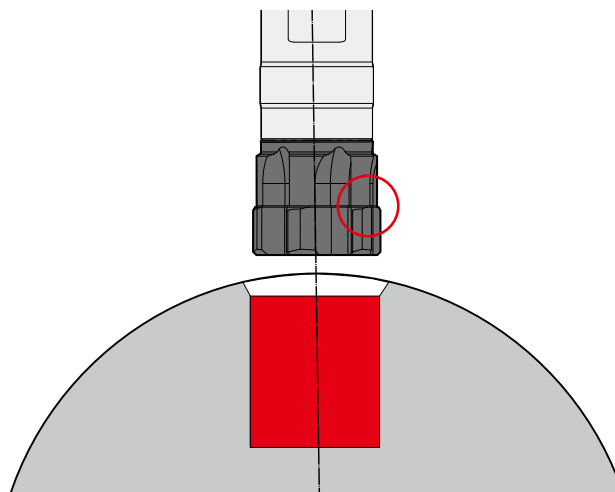


OPERATIONAL GUIDANCE

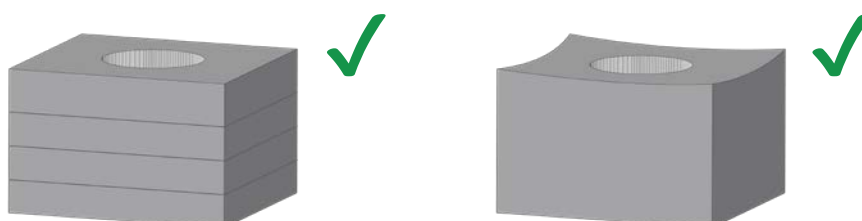
Reaming diagonally intersecting holes is not recommended.



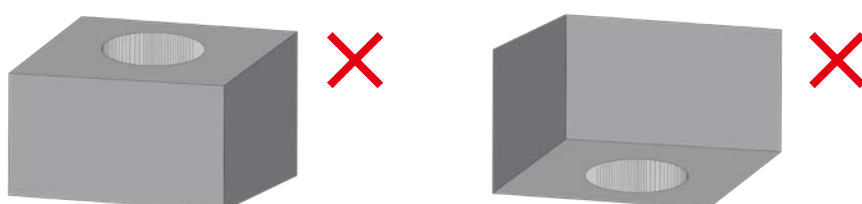
Please chamfer cylindrical surfaces before reaming.



Reaming with stacked plates and a concave centre is possible.



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



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