

Power Generation Industry



Power Generation Industry

Wind power generation uses flow of air to operate a rotor for changing aerodynamic kinetic energy into mechanical energy which makes electricity.

To simplify Wind power generation, it can be classified according to its direction of rotation axis against the ground; horizontal or vertical type.

The main components are a rotor which consist of a wing and a hub, gearboxes, control devices, hydraulic brakes, power control devices and pylons.

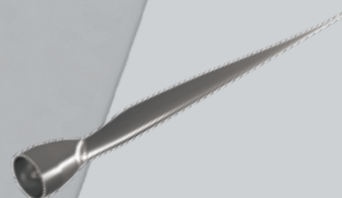
Korloy carries out customer satisfaction management by supplying tools to manufacture these parts.

Contents

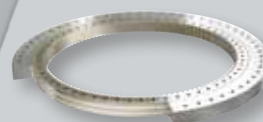
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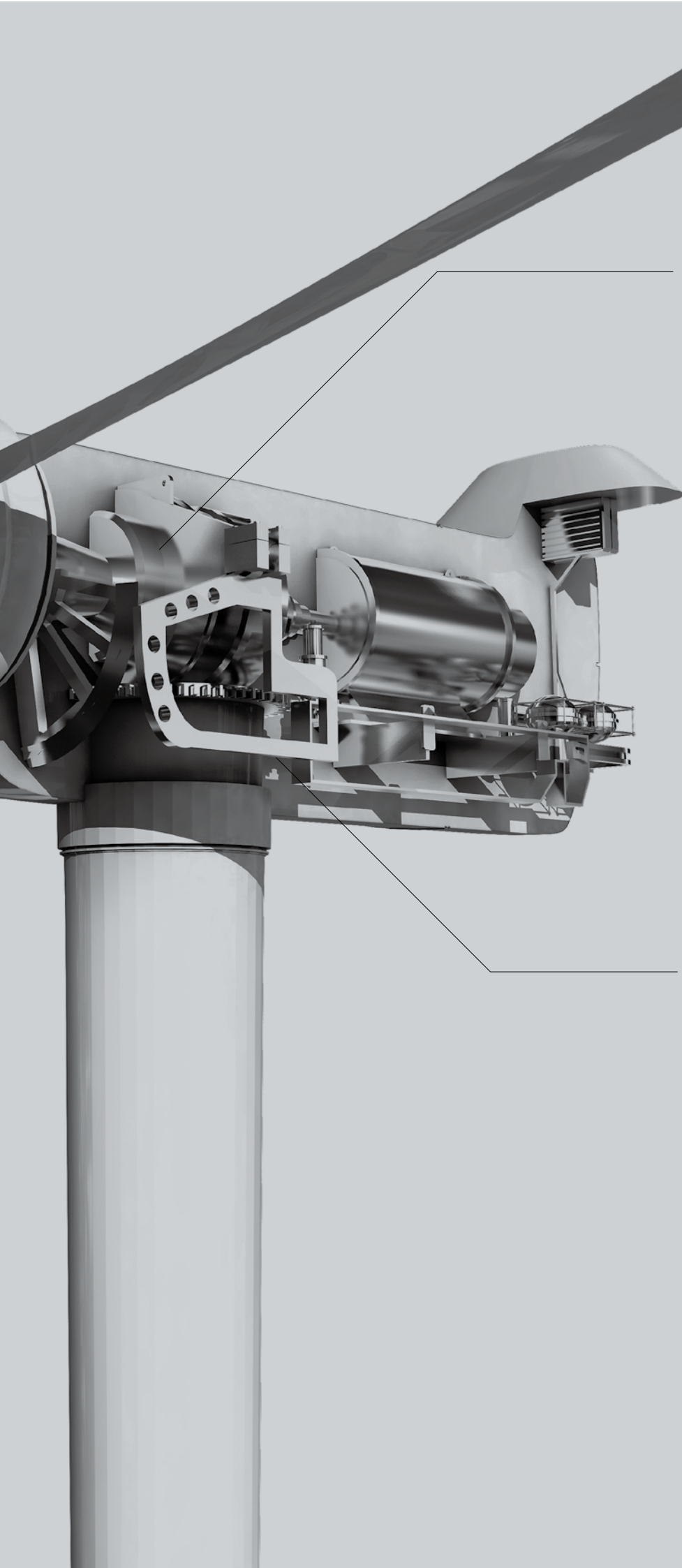
Blade Hub



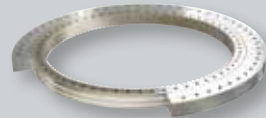
Blade



Blade Bearing



Tower Flange



Bearing



Main Frame



Main Shaft



Turbine Casing

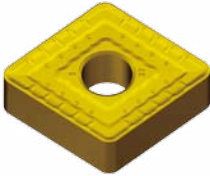


Turbine Rotor

Product Guide

HG

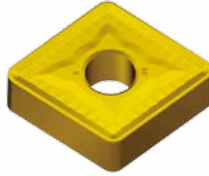
(For horizontal lathe)



- For heavy roughing(Recommended depth of cut: 7.0~8.0mm)
- 1st recommended chip breaker for heavy machining
- Suitable for horizontal machining
- Good cutting performance in even low horse power machine
- Good chip control

HV

(For vertical lathe)



- For heavy roughing(Recommended depth of cut: 8.0~10.0mm)
- Suitable for vertical machining
- Recommended in high feed and high depth of cut machining
- Good chip evacuation and chip control

Alpha Mill-X

INFO



- Stable machinability
- Enhanced clamping force due to thick and flat clamping side
- Smooth cutting, high speed and high feed machining
- High rake angled cutting edge and chip breaker

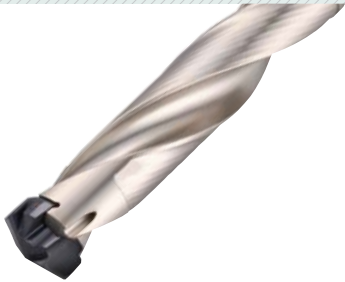
HRM/HRMDouble

INFO



- Low cutting load due to high rake angle chip breaker
- Multifunctional and high feed milling tool with both left-handed and right-handed

Top Solid Drill <TPDC Plus>



- Convenient and high productivity in using
- Long tool life due to ultra-fine substrate and high lubricated coating layer
- High quality of machining from cutting edge with low cutting load and low cutting resistance

Top Solid Drill <TPDB Plus>



- High precise clamping system due to auto-centering
- High rigidity and high durability of holder
- Good chip evacuation from high helix flute

Indexable Drill <King Drill>



- Long tool life(Optimal central and peripheral shape and grade for drilling)
- Good chip evacuation from high helix flute

Rich Mill Series <RM3>



- Stable machinability due to high clamping force
- More chip removal amount per min. in high speed and high feed machining due to sharp cutting edge

Rich Mill Series <RM8>



- Economical face mill from using maximum 8 corners
- Low cutting load and long tool life due to special shape of chip breaker and cutting edge

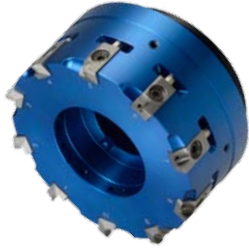
Rich Mill Series <RM14>



- Economical face mill from using maximum 14 corners
- Reduced chattering by maximum lead angle and sharp cutting edge

Product Guide

Aero Mill-Plus



- Long tool life due to direct spraying coolant on the cutting edge
- With adjustment bolt application, detailed edge location is available
- Applying light weight coolant bolt
- Applying more tooth(Screw set and chip cover are not applied.)

Roughing Gear Cutter



- Roughing tool for large gear with M30 or above
- Applied for roughing of large gear with its step shaped edge arrangement

Rich Mill Series <RM6>



- Good surface finish and perpendicularity due to economical double-sided insert with 6 corners
- More chip removal amount per min. and high speed and high feed machining due to sharp cutting edge

Shave Mill Ultra



- Optimal cutter for steel and cast iron finishing with large workpiece and for good surface finish
- High rigidity and easy handling due to simple screw-on clamping system
- Selectable: basic type(1 teeth) or adjustable cutting edge type with adjustable run-out

Semi-Finishing Gear Cutter



- 4-cornered insert for root and corner R of gear machining
- Optimal arrangement of cutting edge for reducing cutting resistance
- Applying 3D side chip breaker insert

Finishing Gear Cutter



- Optimal cutter for finishing with internal gear and external gear
- Precision machining(DIN 9 class)
- High machinability with optimal design for machining root of gear
- Chamfering and cutting at the same time

Wind Mill



- Long tool life due to less cutting load from applying proprietary recess on the rake surface of minor cutting edge
- Protruded part on tip seat prevents wrong clamping and fracture
- Precise slotting

Alpha Mill



- Less cutting resistance and better chip evacuation due to 3-dimensional cutting edge and chip breaker designed with dots
- Multi-functional tool in various types of machining

Balance Cutter for Big Hole Boring

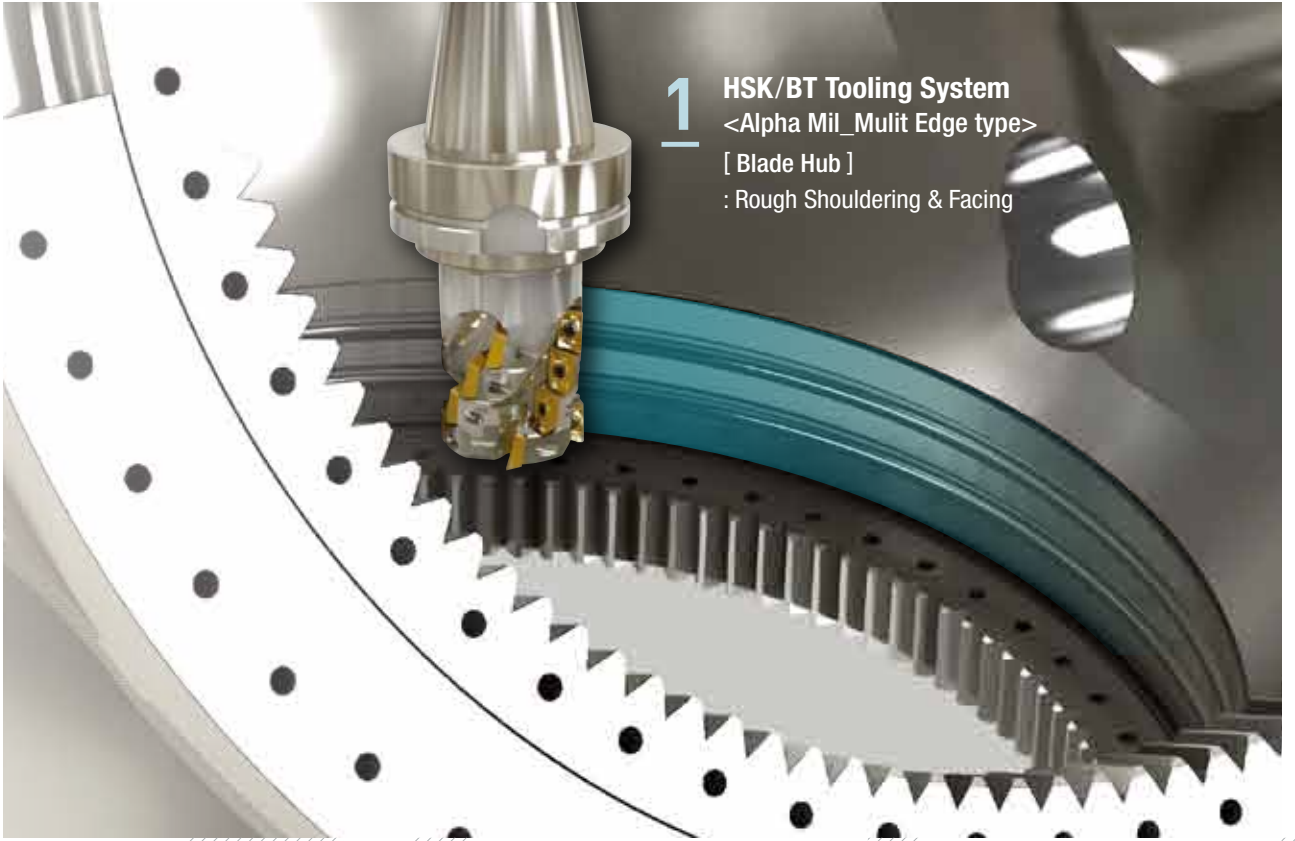


- Convenient use(Usable inside and outside at the same time)
- Wide cutting diameter and cutting range
- Using common rail for roughing and finishing(Able to choose its application through exchanging cartridges)
- Range of diameter cutting:
External: $\varnothing 40 \sim 315$ Internal: $\varnothing 265 \sim 615$

Special Boring Bar



- High speed boring and back boring
- Easy to change the direction with changing bite direction in back boring
- High precision balancing: G6.3
- Minimum adjustable range: $2\mu\text{m}$



1

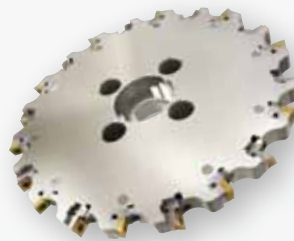
HSK/BT Tooling System
<Alpha Mil_Mulit Edge type>
[Blade Hub]
: Rough Shouldering & Facing

Blade

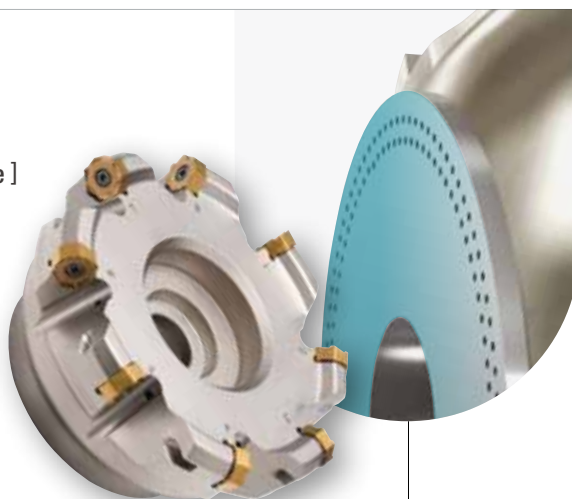


2

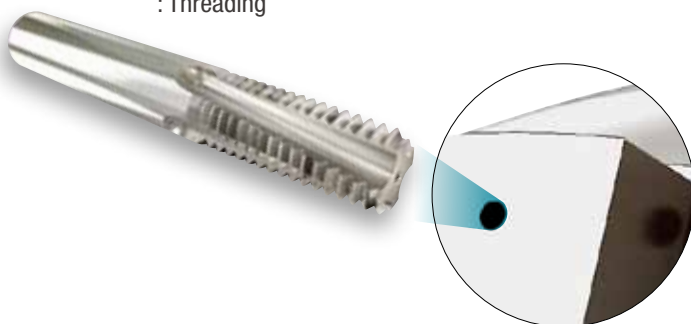
Side Cutter for Special Adjustment type
<TAFCB>
[Internal Surface of Hub]
: Back Facing-Roughing, Finishing



3 Rich Mill Series
<RM14>
 [Top & Bottom Plane]
 : Roughing/Finishing



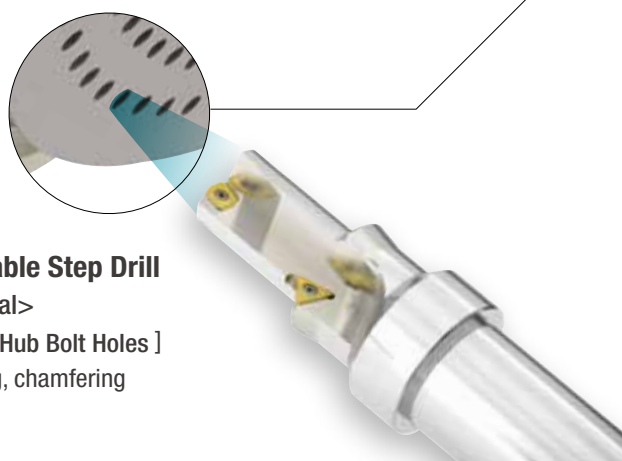
4 Thread Milling Solid Endmill
<TM-Solid>
 [Side Clamping Bolt Holes]
 : Threading



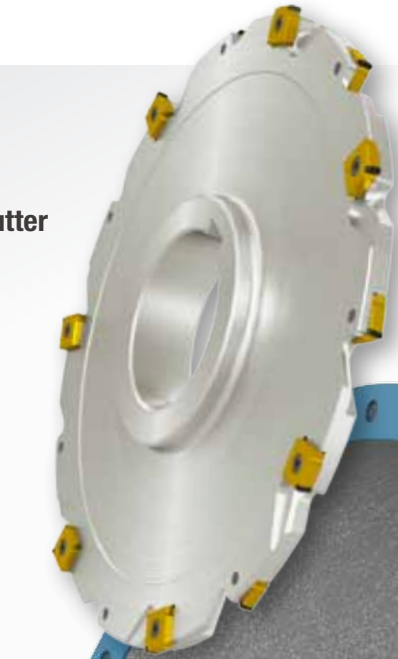
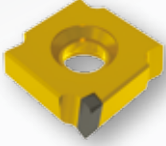
5 Top Solid Drill
<TPDB, TPDC>
 [Blade Hub Holes]
 : Centering & Drilling



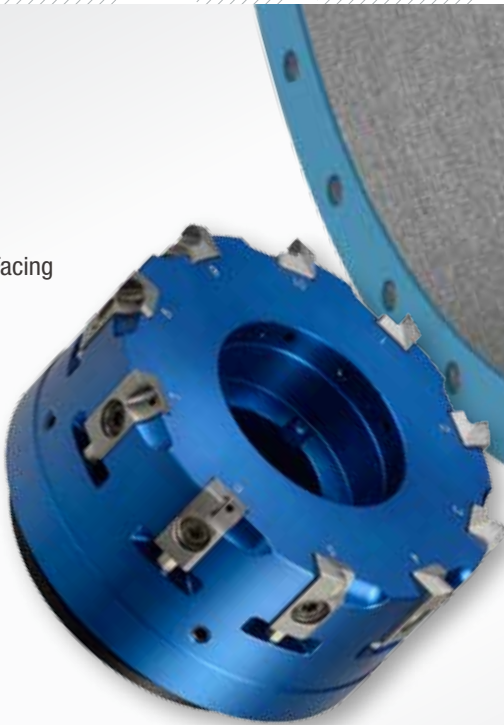
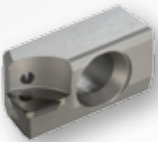
6 Indexable Step Drill
<Special>
 [Blade Hub Bolt Holes]
 : Drilling, chamfering



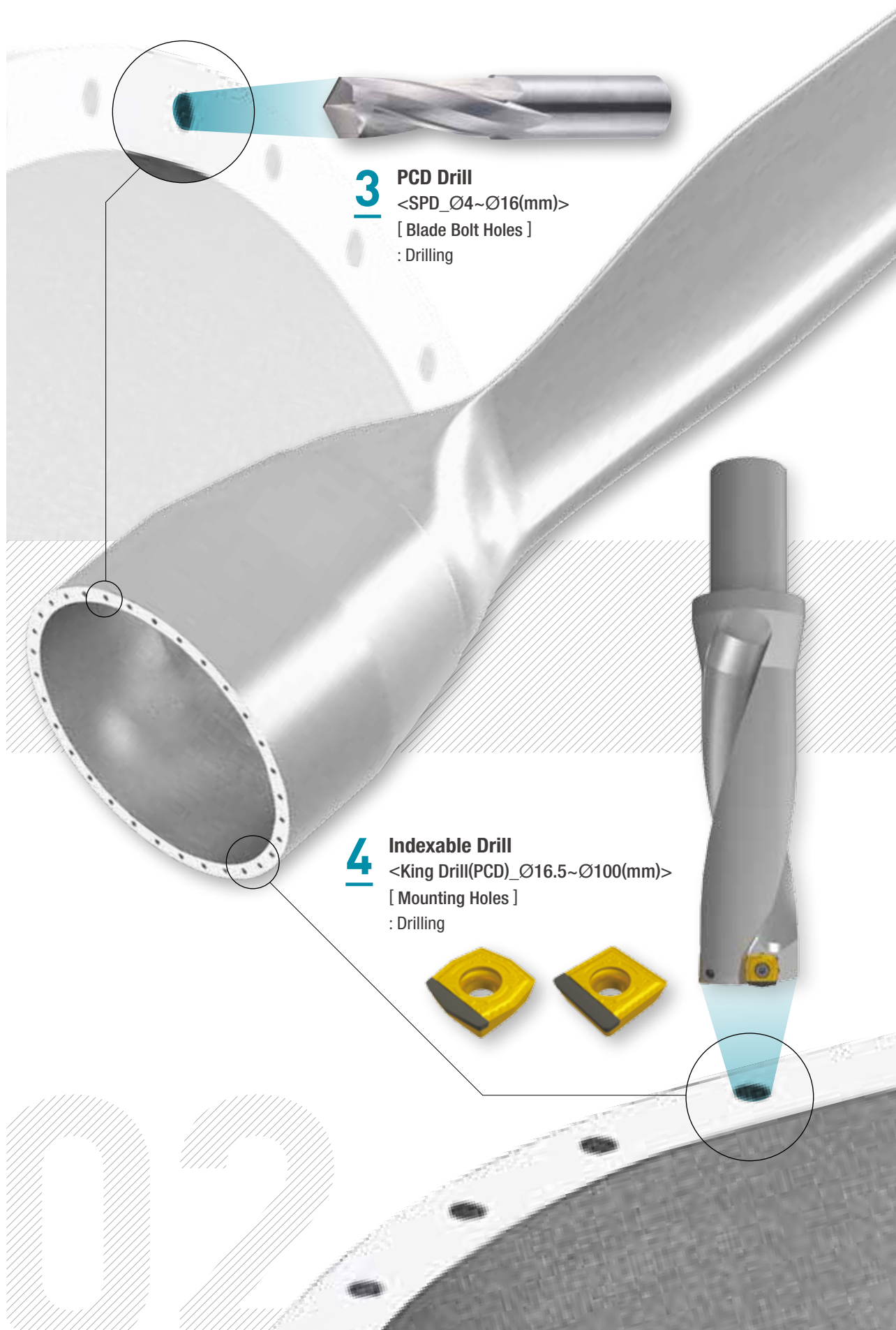
1 Special Side Cutter <Special> [Blade] : Rough Slotting



2 Aero Mill-Plus <APD> [Blade] : Semi-Finish/Finish Facing



BLADE





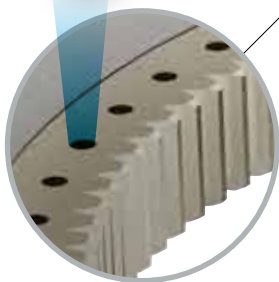
1 Internal Finishing Cutter
<M16, Ø400(mm)>
[Working for Internal Gear]
: Internal Finishing



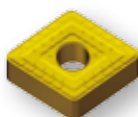
M16 type



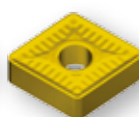
2 Indexable Drill <King Drill>
Top Solid Drill <TPDB/TPDC>
[Blade Bearing Holes]
: Centering & Drilling



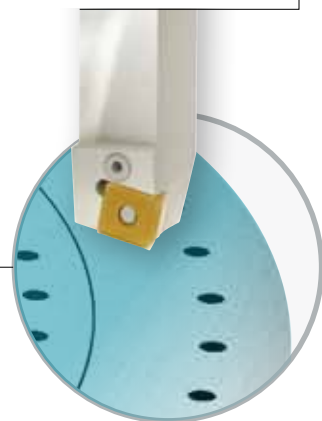
3 Inserts for Heavy Duty Machining
<CNMM/SNMM(HG/HV)>
[Top & Bottom Plane]
: External Turning



HG type



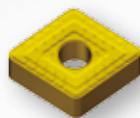
HV type



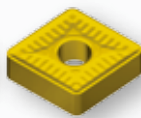
1 Inserts for Heavy Duty Machining <CNMM/SNMM(HG/HV)>

[Tower Flange External/Profile]

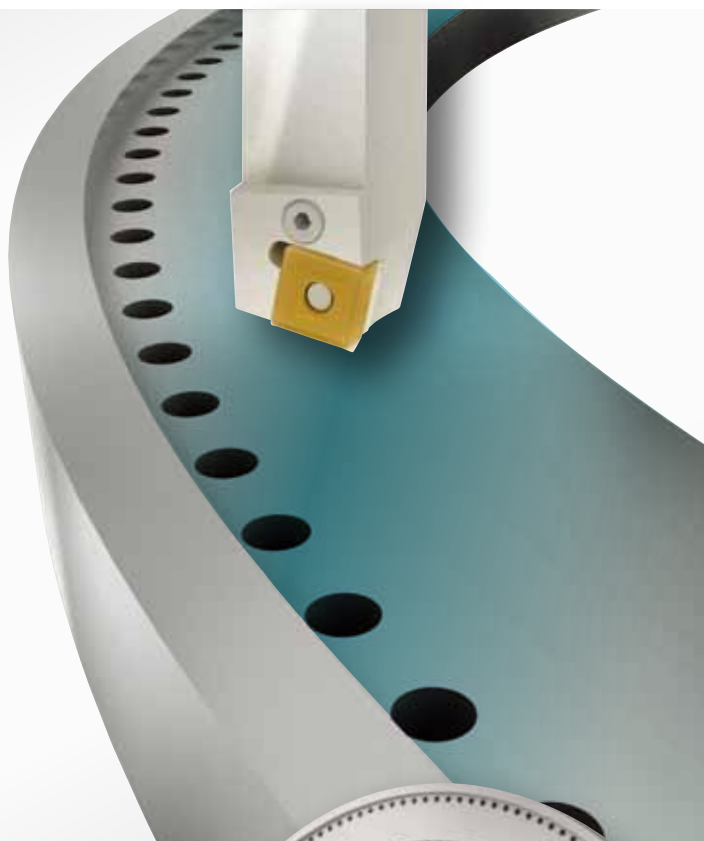
: External Turning



HG type



HV type

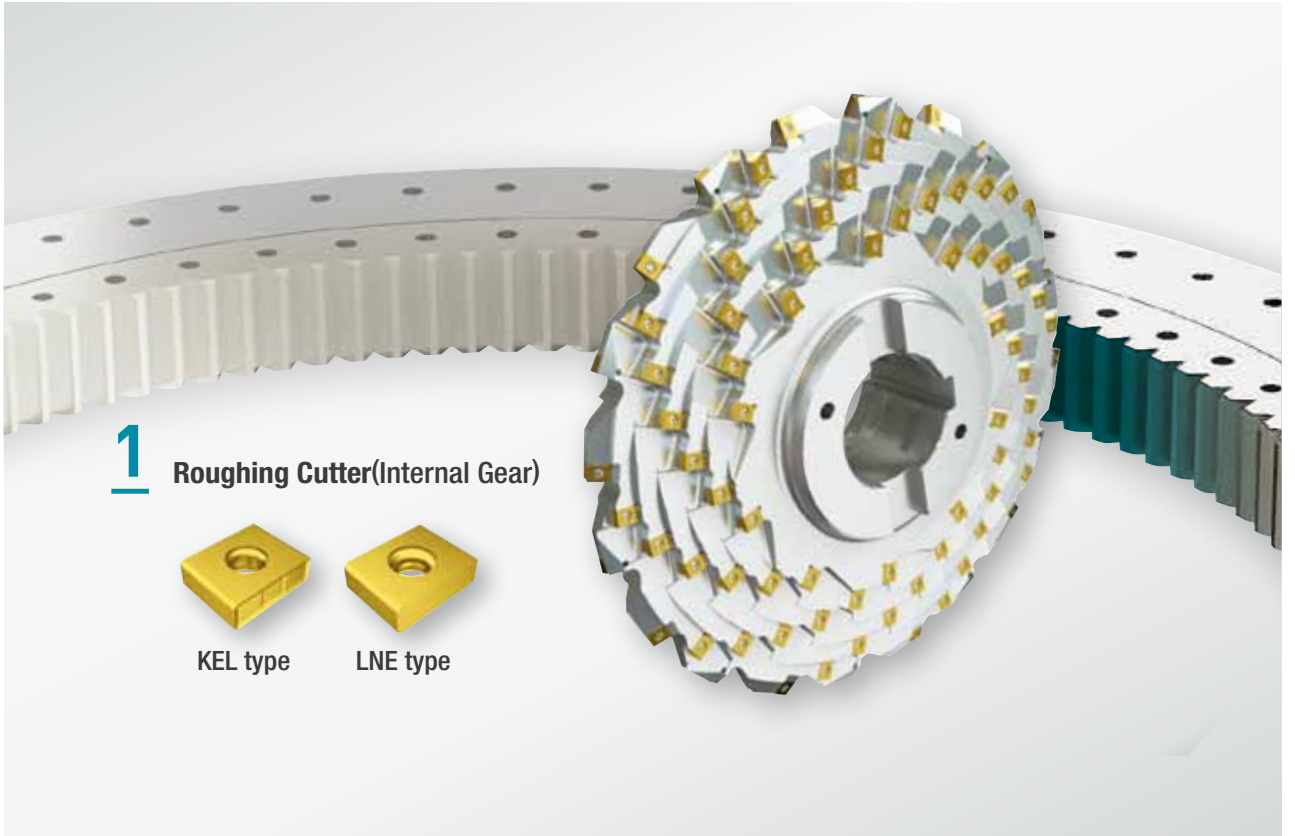


2 Indexable Drill <King Drill> Top Solid Drill <TPDB/TPDC>

[Tower Flange]

: Drilling

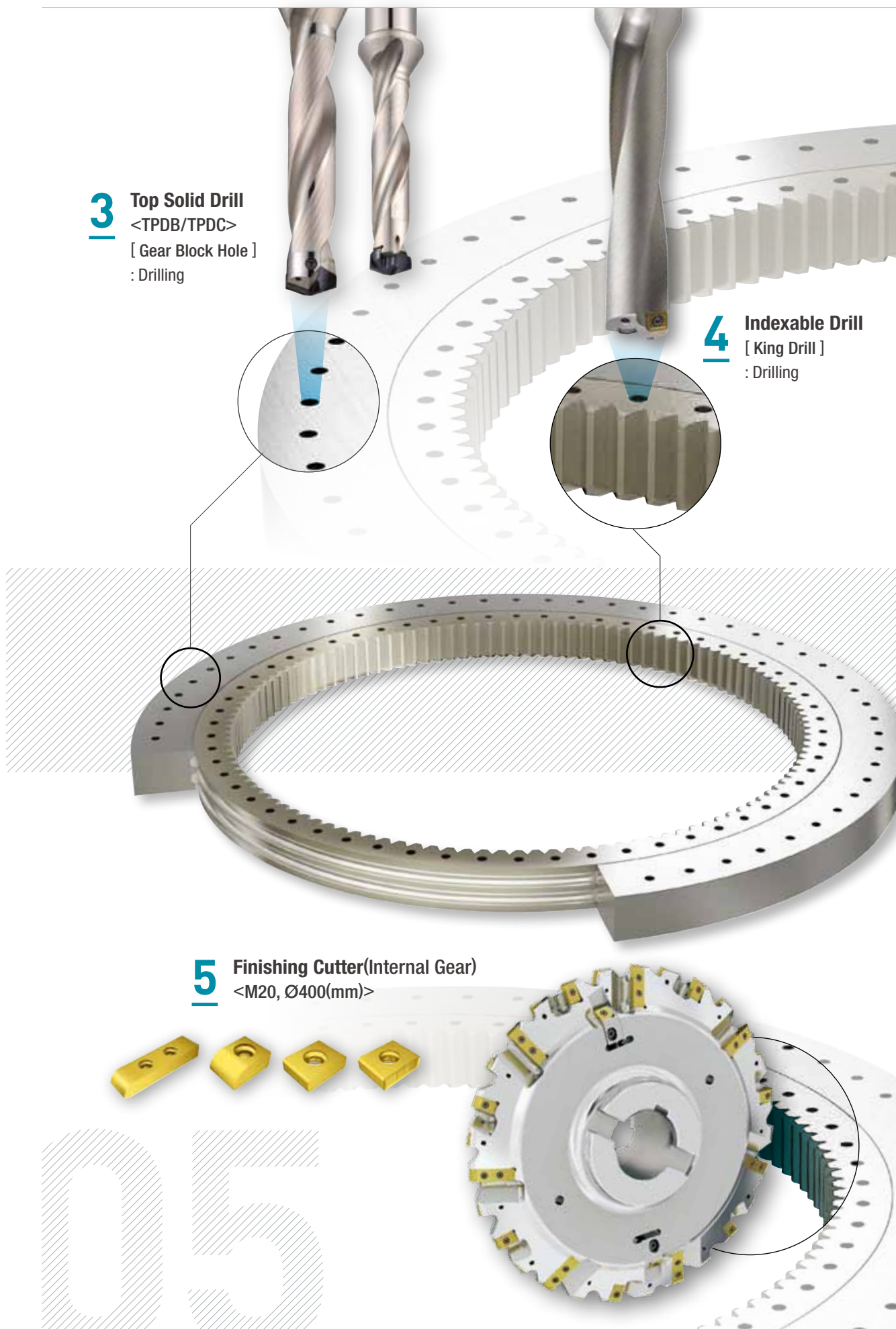




3 Top Solid Drill
<TPDB/TPDC>
[Gear Block Hole]
: Drilling

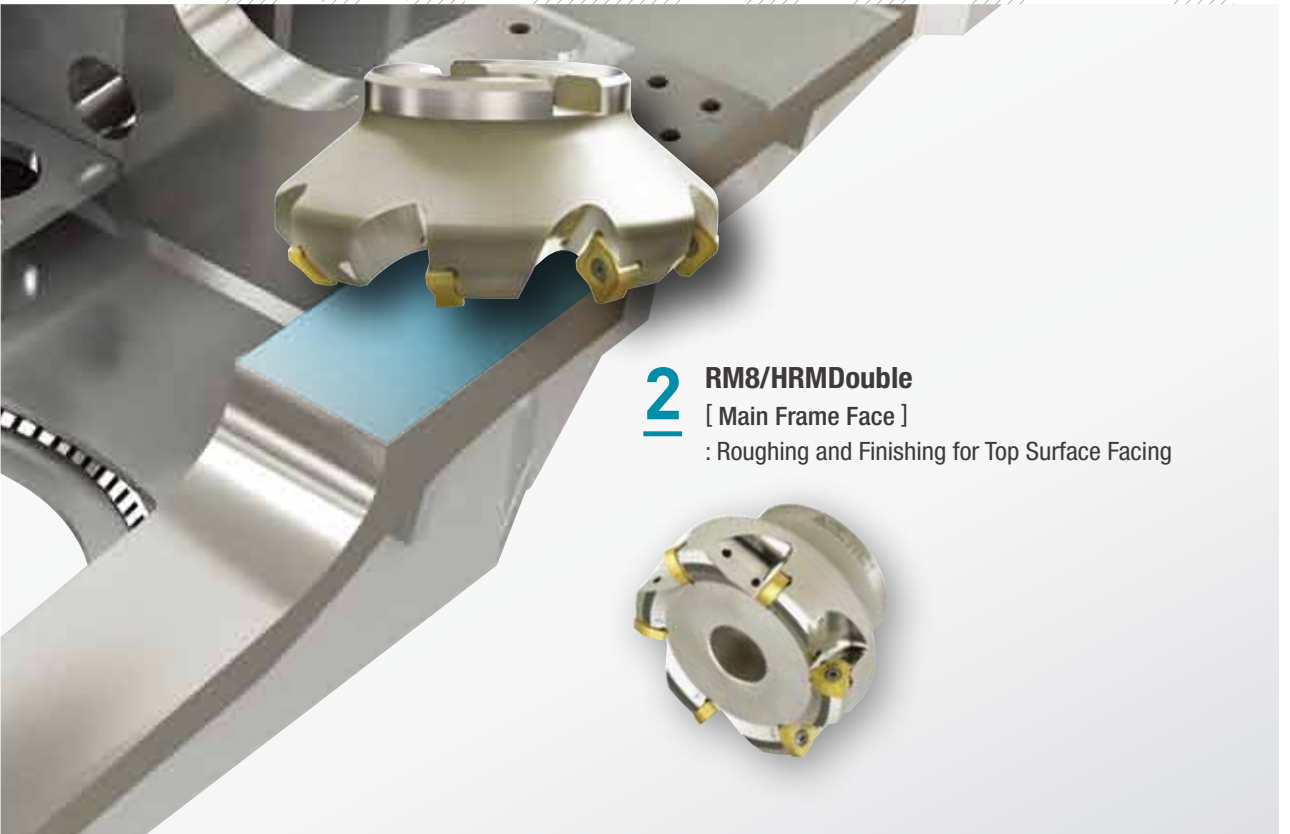
4 Indexable Drill
[King Drill]
: Drilling

5 Finishing Cutter(Internal Gear)
<M20, Ø400(mm)>

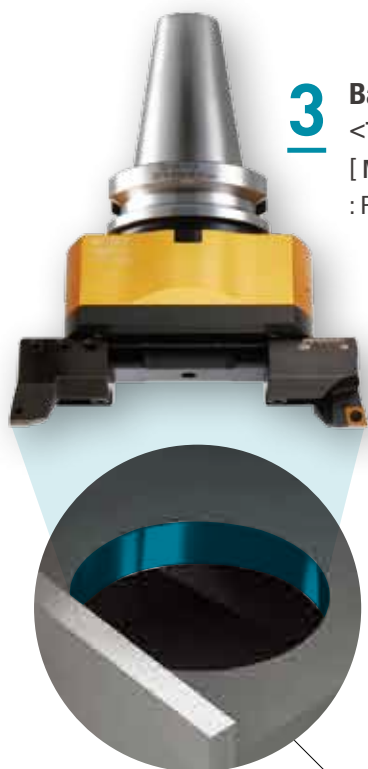




1 Side Cutter for Special Adjustment type
<Special>
[Internal Surface of Main Frame]
: Back Facing – Roughing, Finishing

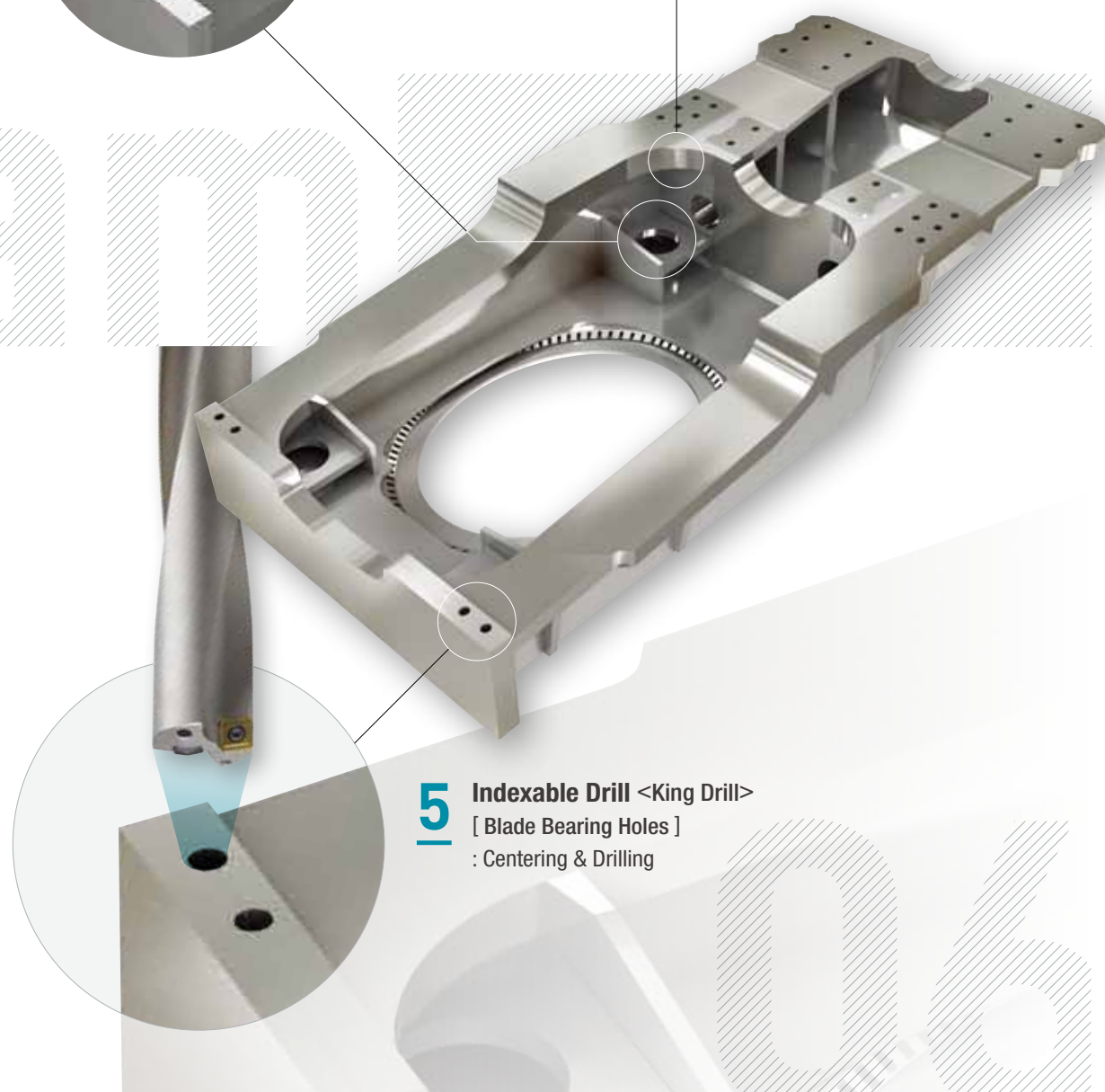


2 RM8/HRMDouble
[Main Frame Face]
: Roughing and Finishing for Top Surface Facing

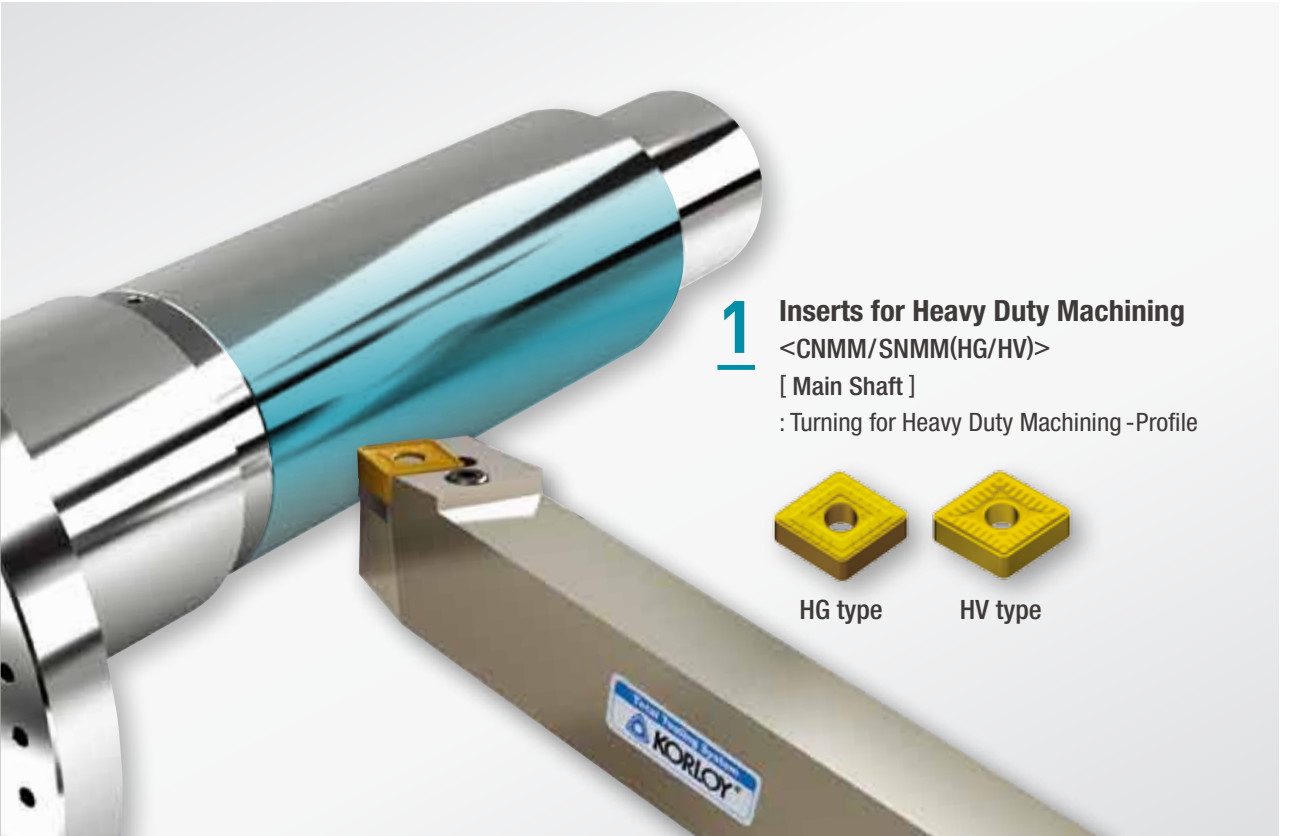


3 Balance Cutter for Big Hole Boring
<TBCA>
[Main Frame Bore]
: Roughing & Finish Boring

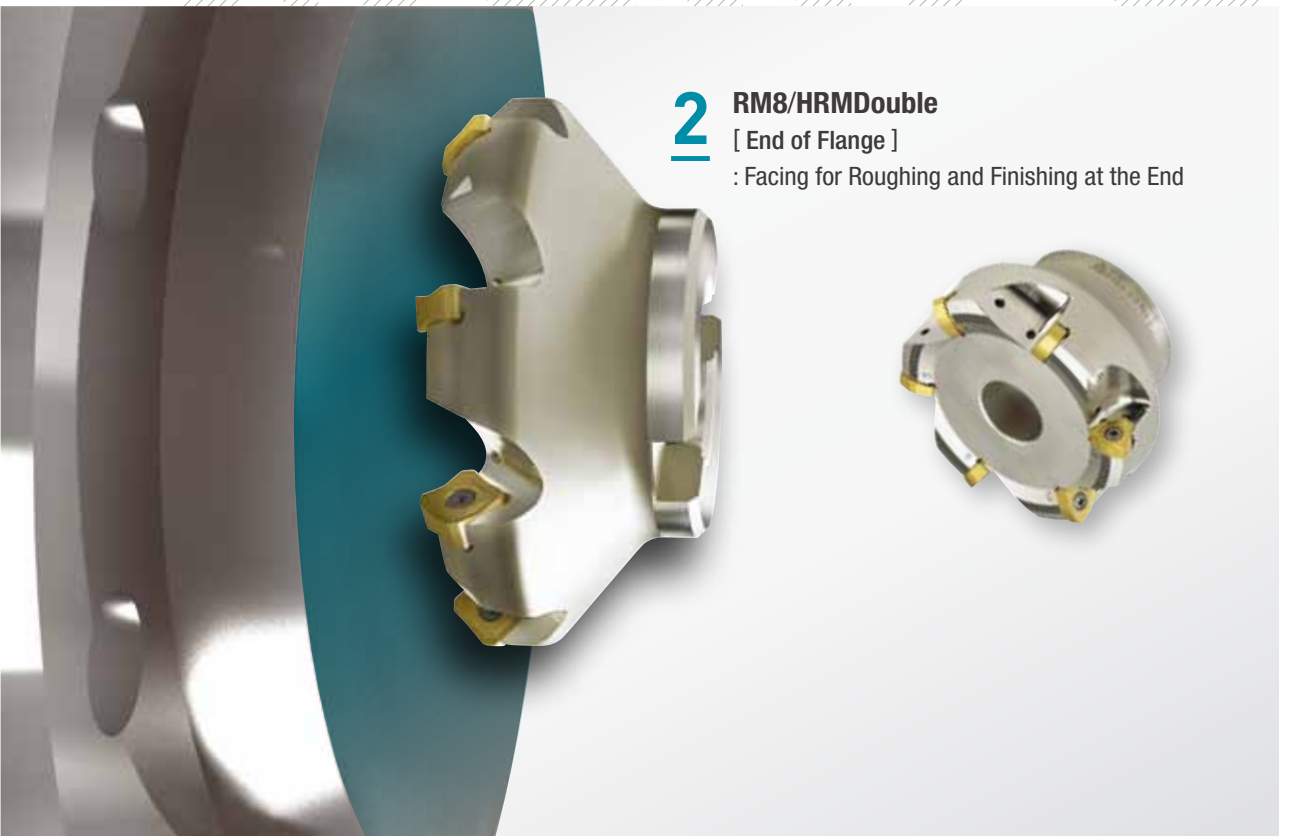
4 HSK/BT Toole System
<Alpha Mil_Mulit Edge type>
[Shouldering, Facing]
: Roughing



5 Indexable Drill <King Drill>
[Blade Bearing Holes]
: Centering & Drilling



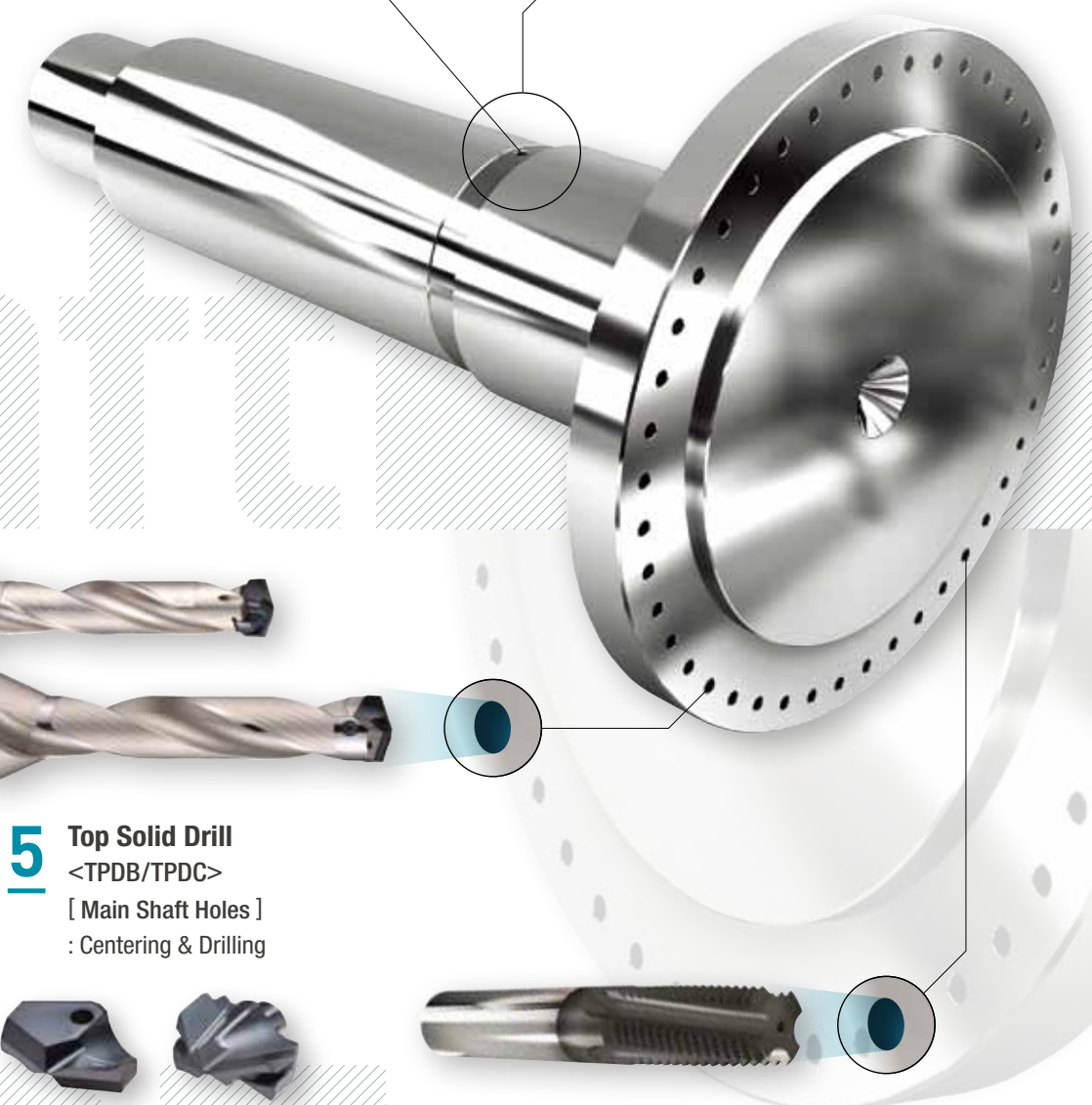
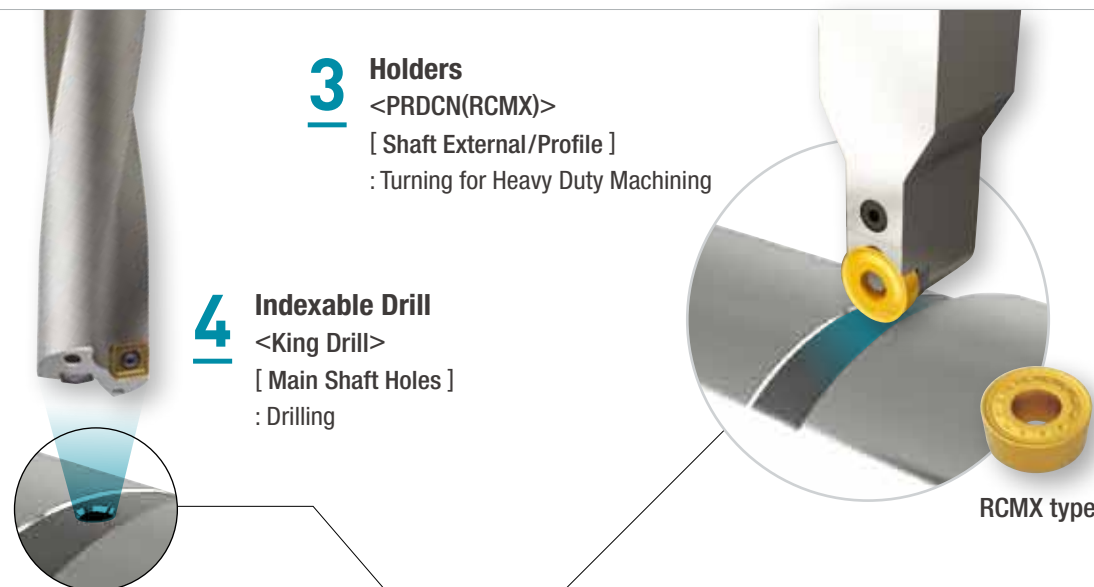
Main Shaft



3 Holders
<PRDCN(RCMX)>
[Shaft External/Profile]
: Turning for Heavy Duty Machining

4 Indexable Drill
<King Drill>
[Main Shaft Holes]
: Drilling

RCMX type



5 Top Solid Drill
<TPDB/TPDC>
[Main Shaft Holes]
: Centering & Drilling

6 TM solid
[Side Clamping Bolt Holes]
: Threading

08. Turbine Casing



1 Indexable Step Drill
<Special>
[Turbine Casing Bolt Holes]
: Drilling, Chamfering

Turbine

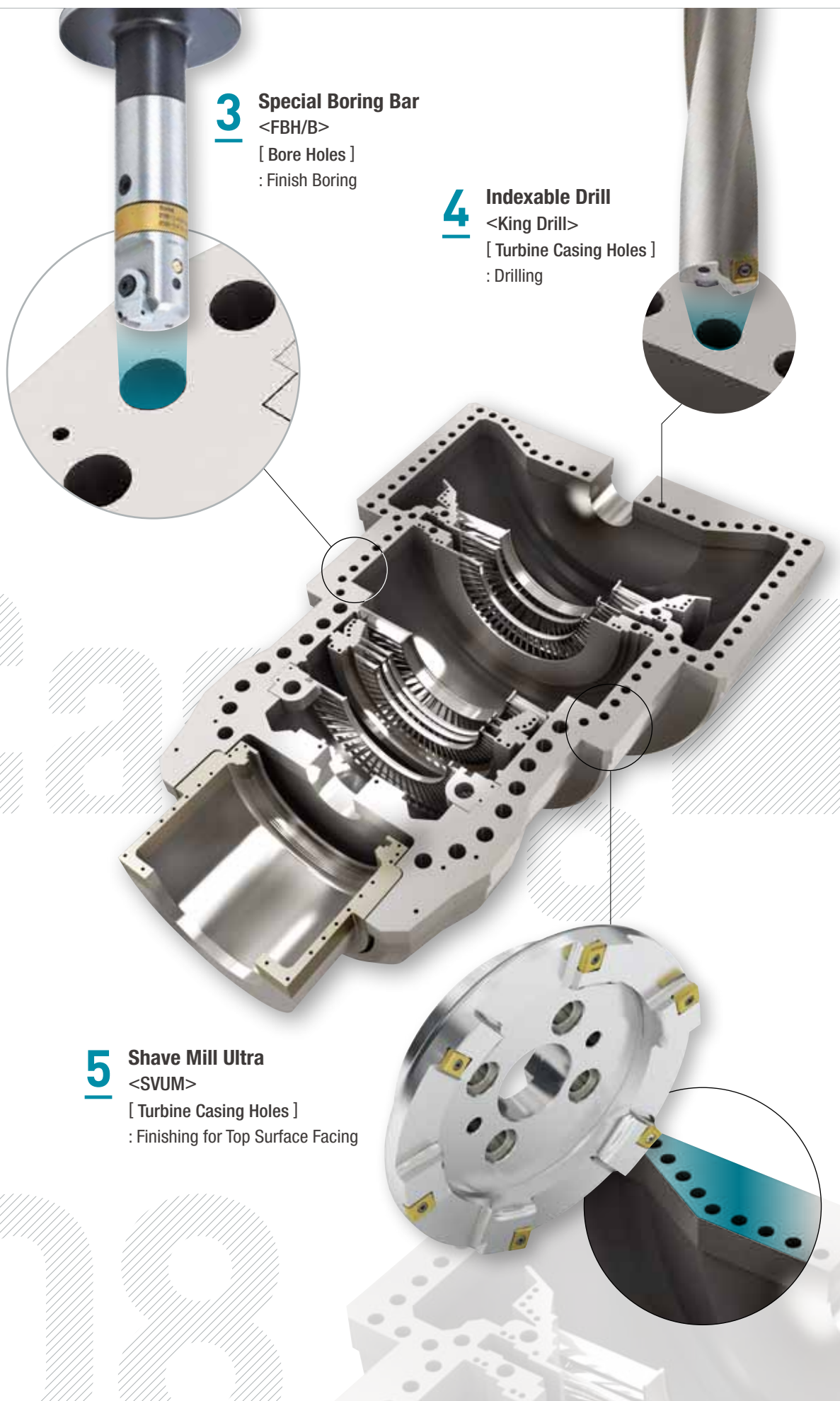


2 Alpha Mill-X/RM3/RM6
[Turbine Casing Face]
: Roughing and Finishing for Top Surface Facing

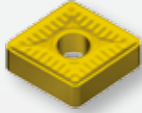
3 **Special Boring Bar**
<FBH/B>
 [Bore Holes]
 : Finish Boring

4 **Indexable Drill**
<King Drill>
 [Turbine Casing Holes]
 : Drilling

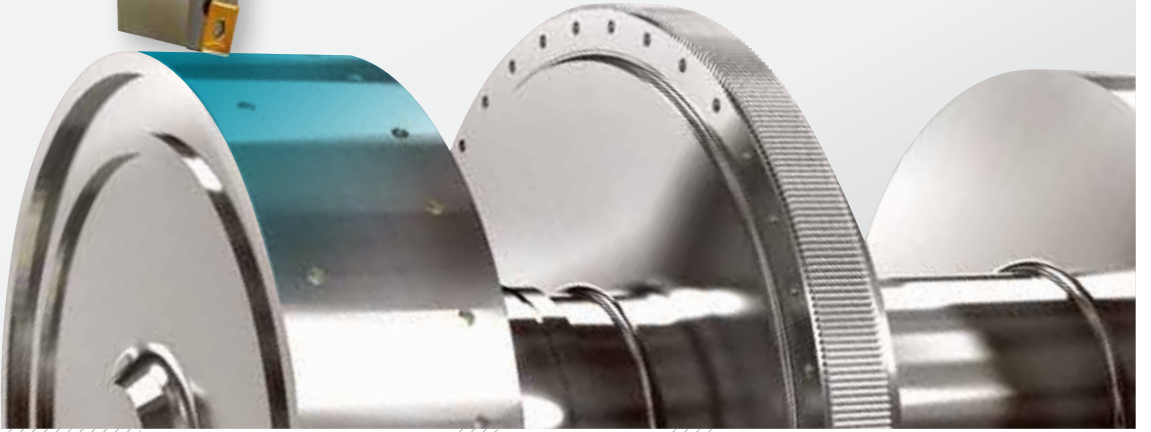
5 **Shave Mill Ultra**
<SVUM>
 [Turbine Casing Holes]
 : Finishing for Top Surface Facing



1 Inserts for Heavy Duty Machining <CNMM/SNMM(HV)> [Turbine Rotor] : Turning for Heavy Duty Machining-Profile



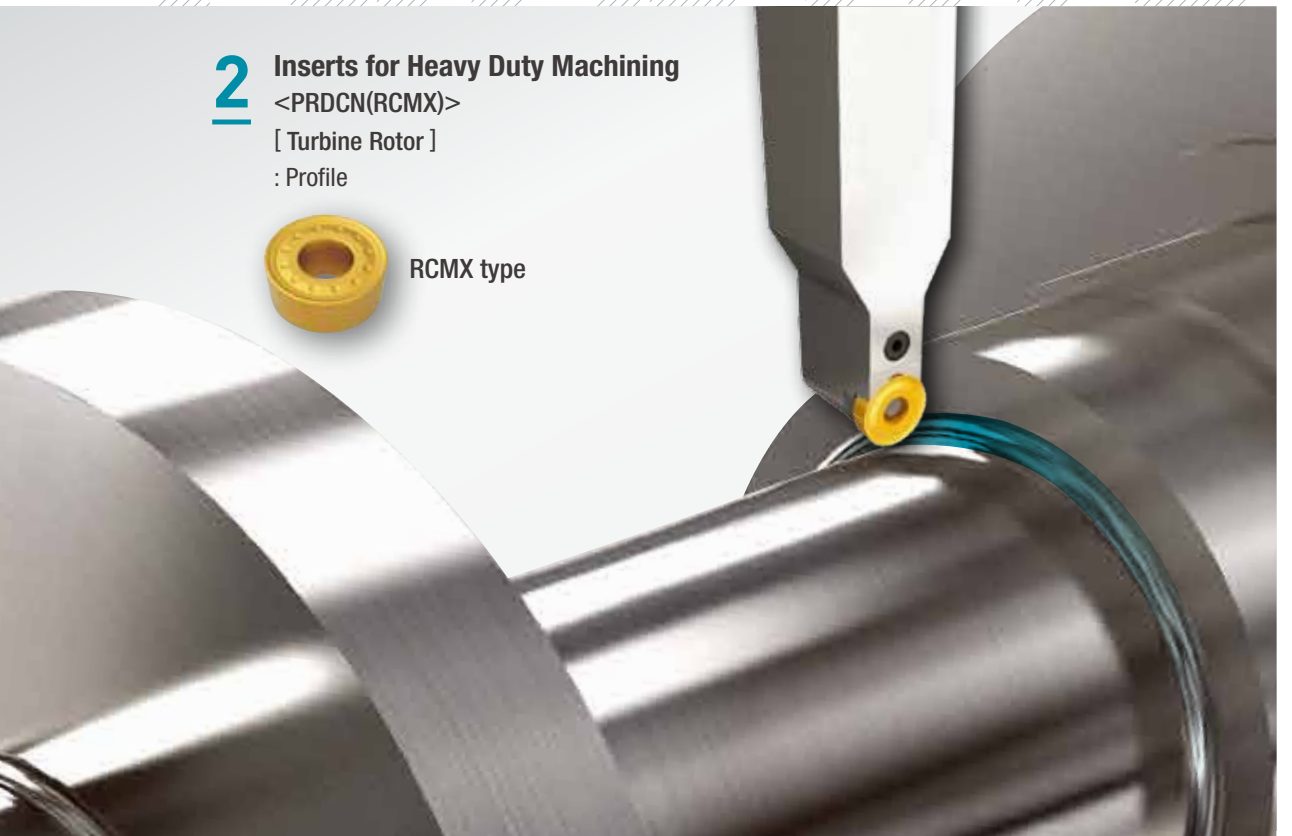
HV type



2 Inserts for Heavy Duty Machining <PRDCN(RCMX)> [Turbine Rotor] : Profile



RCMX type



3

Top Solid Drill

<TPDB/TPDC>

[Turbine Rotor Holes]

: Centering & Drilling



4

Inserts for Heavy Duty Machining

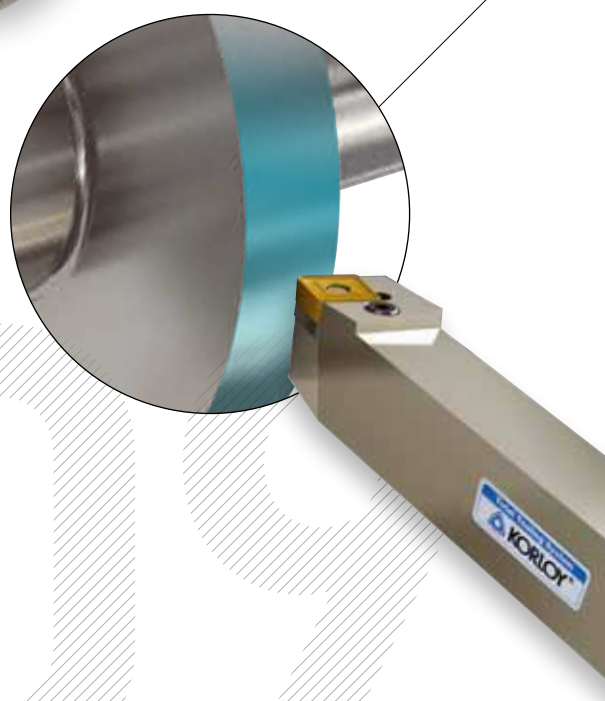
<CNMM/SNMM(HG)>

[Turbine Rotor]

: Turning for Heavy Duty Machining -Profile

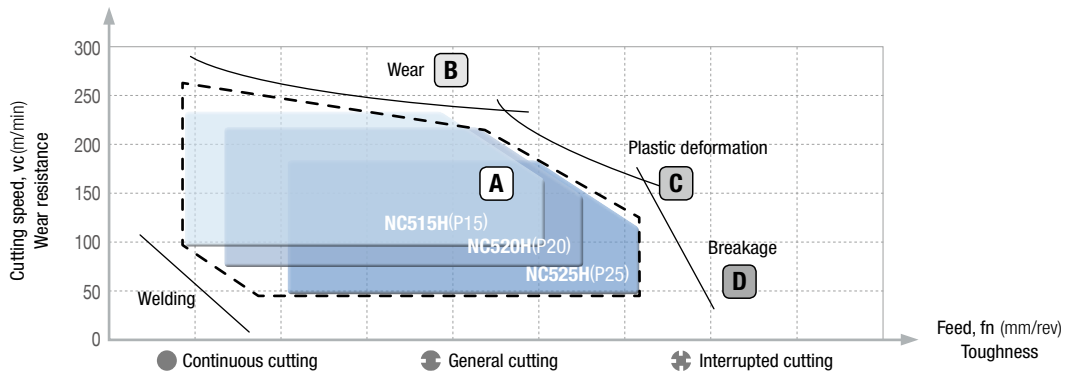


HG type

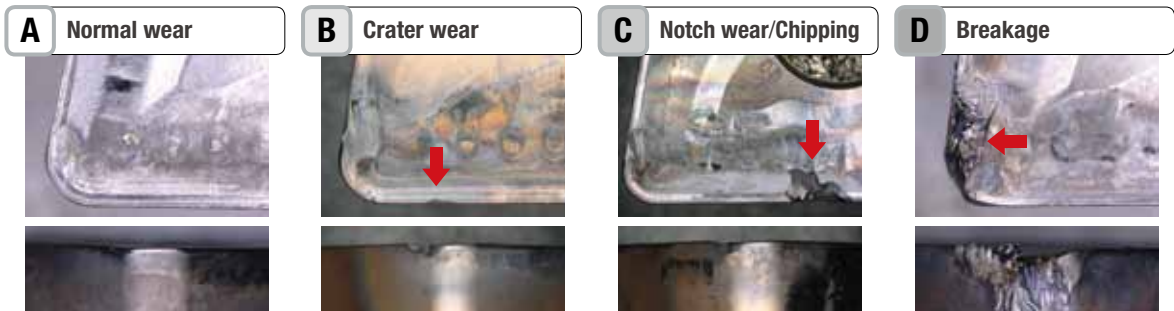


Grade Guide

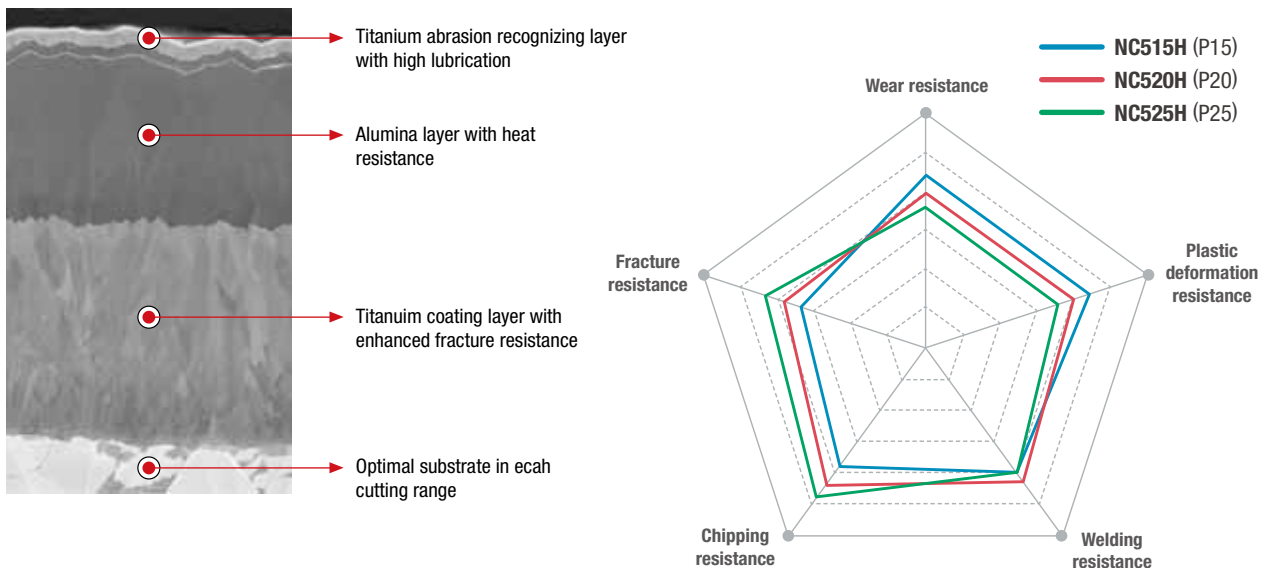
Heavy Insert grade lineup for Steel (P15/20/25)



Grade	ISO	Features
NC515H	P15	Optimal grade for high speed and continuous machining
NC520H	P20	High wear resistance grade for medium to high speed and medium feed machining
NC525H	P25	General grade for medium speed and medium to high feed machining



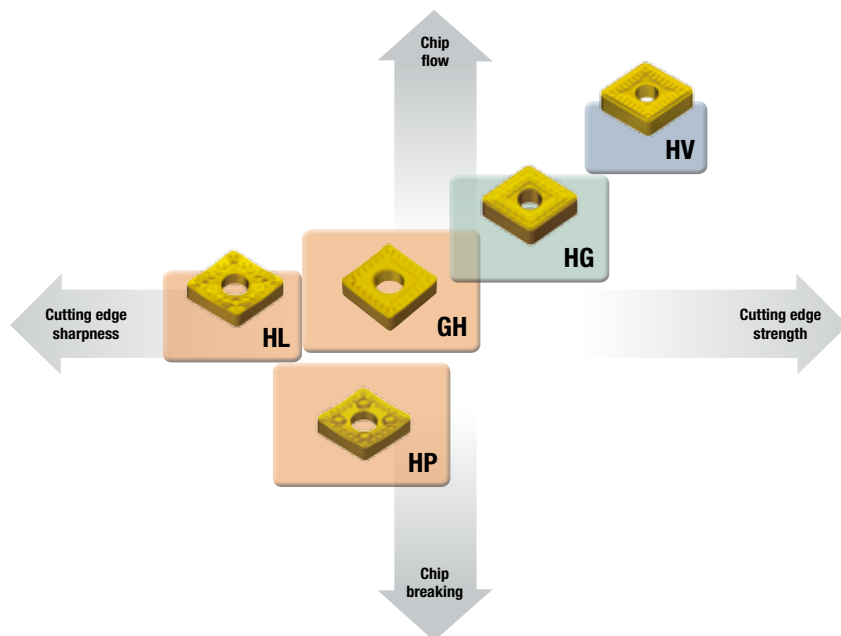
Features of NC515H, NC520H, NC525H



Chip Breaker Guide

Application range of heavy chip breaker with 19-sized inscribed circle (CNMM19, SNMM19)

※ Recommended C/B for [Medium to small workpiece/Horizontal/Low carbon & STS steel]



HV

- For heavy medium to roughing(in vertical lathe)
- Recommended depth of cut: 4.0~13.0 mm
- 1st recommended chip breaker in vertical machining
- Recommended in high feed and high depth of cut machining
- Blanced chip evacuation and chip control
(Designation: CNMM/SNMM19 & CNMM/SNMM25)

HG

- For heavy medium cutting(in horizontal lathe)
- Recommended depth of cut: 3.0~12.0 mm
- 1st recommended chip breaker in horizontal machining
- Outstanding performance at low-power machine
(Designation: CNMM/SNMM19 & CNMM/SNMM25)

GH

- For heavy medium to finishing(in horizontal lathe)
- Recommended depth of cut: 3~12 mm
- 1st recommended chip breaker for heay insert with 19 size
- Recommended in high feed and chip evacuation machining
(Designation: CNMM/SNMM19 & CNMM/SNMM25)

HL

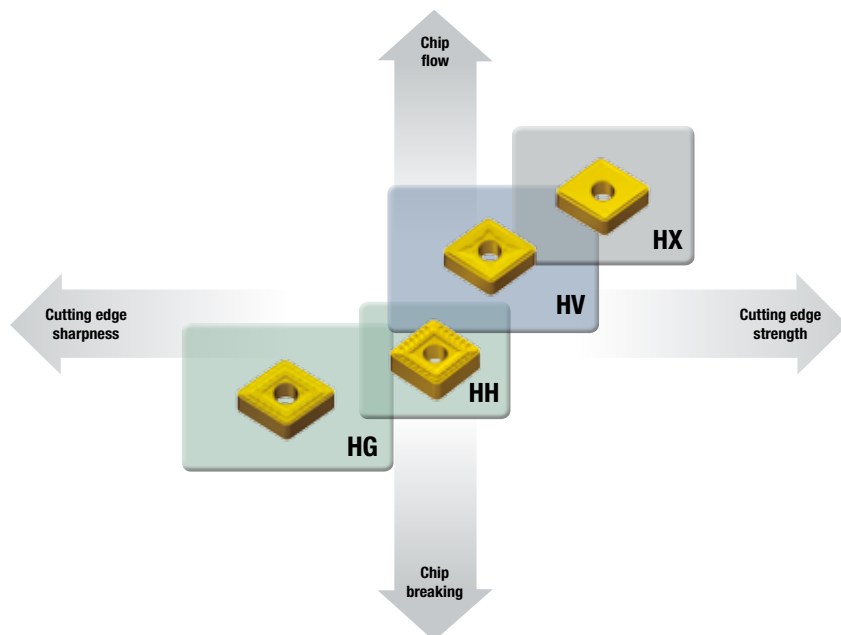
- For heavy medium to finishing(in horizontal lathe)
- Recommended depth of cut: 2.5~12 mm
- Suitable for mild steel(STS, low carbon steel, and etc.)
- Cutting range: between GH and HP
(Designation: CNMM/SNMM19)

HP

- For heavy medium to finishing(in horizontal lathe)
- Recommended depth of cut: 2.5~12 mm
- Optomal for mild steel(STS, low carbon steel and etc.)
- Recommended for machining with excellent chip control
(Designation: CNMM/SNMM19 & CNMM/SNMM25)

Application range of heavy chip breaker with 25-sized inscribed circle (CNMM25, SNMM25)

※ Recommended C/B for [Heavy workpiece/Horizontal & Vertical/Alloy & Carton steel]



HX

- For heavy roughing(in vertical lathe)
- Recommended depth of cut: 4.5~17.0 mm
- 2nd recommended chip breaker in vertical machining
- Recommended in high feed and high depth of cut machining
- Better chip evacuation
(Designation: CNMM/SNMM25)

HV

- For heavy medium to roughing(in vertical lathe)
- Recommended depth of cut: 4.0~13.0 mm
- 1st recommended chip breaker in vertical machining
- Recommended for high feed and high depth of cut machining
- Blanced chip evacuation and chip control
(Designation: CNMM/SNMM19 & CNMM/SNMM25)

HH

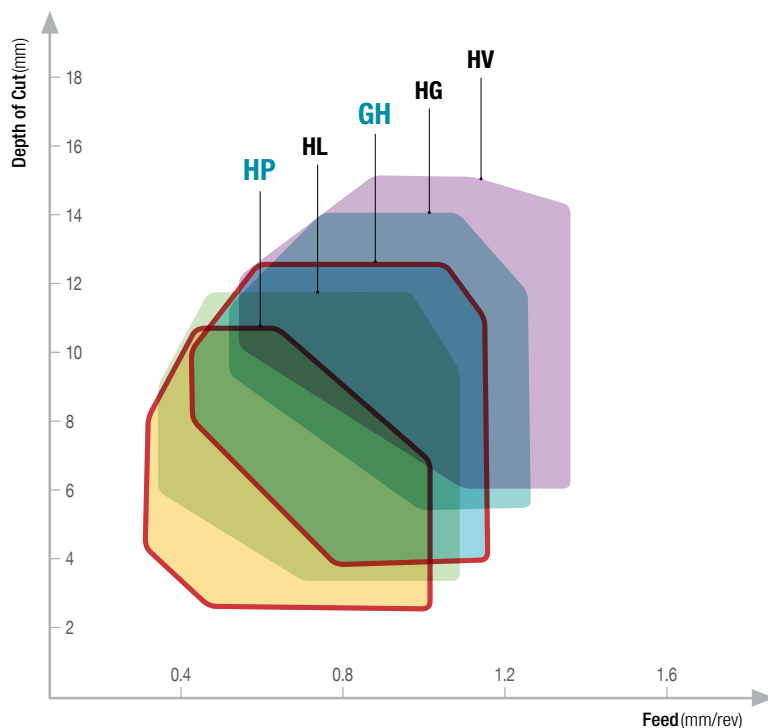
- For heavy medium cutting(in horizontal lathe)
- Recommended depth of cut: 3.5~12.5 mm
- 2nd recommended chip breaker in horizontal machining
- High tensile strength
(Designation: CNMM/SNMM19 & CNMM/SNMM25)

HG

- For heavy medium cutting(in horizontal lathe)
- Recommended depth of cut: 3.0~12.0 mm
- 1st recommended chip breaker in horizontal machining
- Outstanding performance at low-power machine
(Designation: CNMM/SNMM19 & CNMM/SNMM25)

Chip Breaker Guide

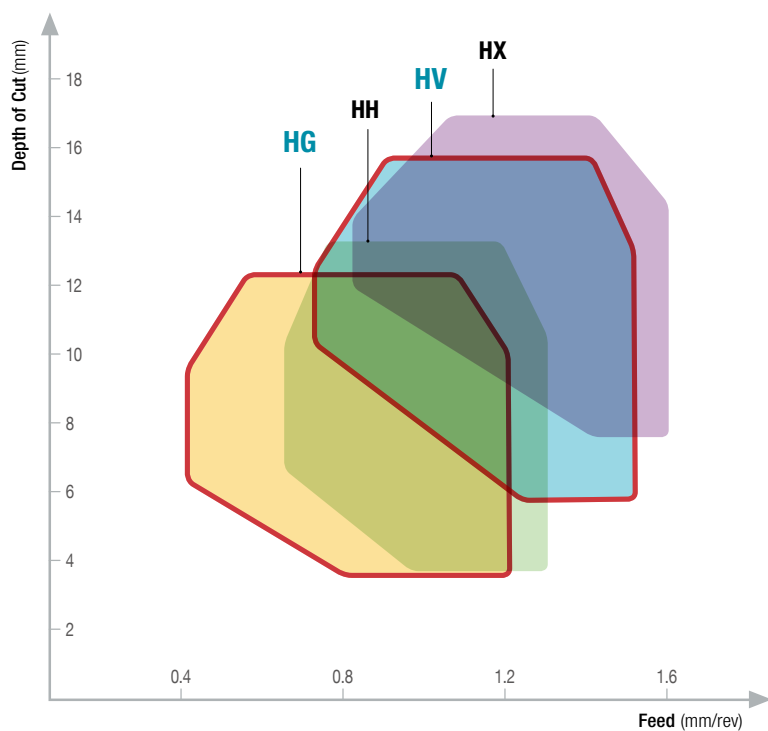
Heavy Inscribed circle 19 C/B application guide (CNMM19, SNMM19)



Cutting range	C/B	Shape	Recommended feed (mm/rev)	Recommended depth of cut (mm)
Medium to roughing	HV		0.90 (0.5~1.1)	6.0 (4.0~11.0)
Medium	HG		0.60 (0.4~1.0)	4.0 (3.0~10.0)
Medium to finishing	GH		0.66 (0.4~1.0)	3.8 (3.0~10.0)
	HL		0.63 (0.4~1.0)	3.5 (2.5~10.0)
	HP		0.50 (0.4~1.0)	3.5 (2.5~10.0)

※ Inscribed circle: 19, Main chip breaker: GH-HP

Heavy Inscribed circle 25 C/B application guide (CNMM25, SNMM25)

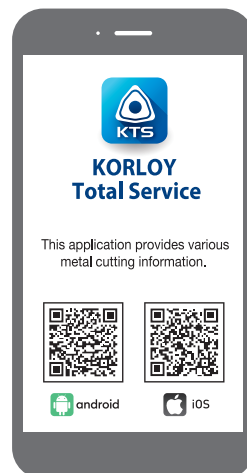


Cutting range	C/B	Shape	Recommended feed (mm/rev)	Recommended depth of cut (mm)
Roughing	HX		1.2 (0.6~1.5)	9.0 (4.5~17.0)
Medium to roughing	HV		1.0 (0.5~1.4)	8.0 (4.0~15.0)
Medium	HH		0.9 (0.45~1.3)	7.0 (3.5~13.0)
	HG		0.8 (0.4~1.2)	6.0 (3.0~12.0)

※ Inscribed circle: 25, Main chip breaker: HV/HG

Power Generation
Industry

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E-mail: sales.kip@korloy.com

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