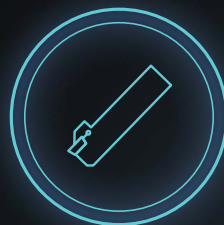


# KORLOY Tools Selection Guide



Turning



Grooving



Threading



Milling

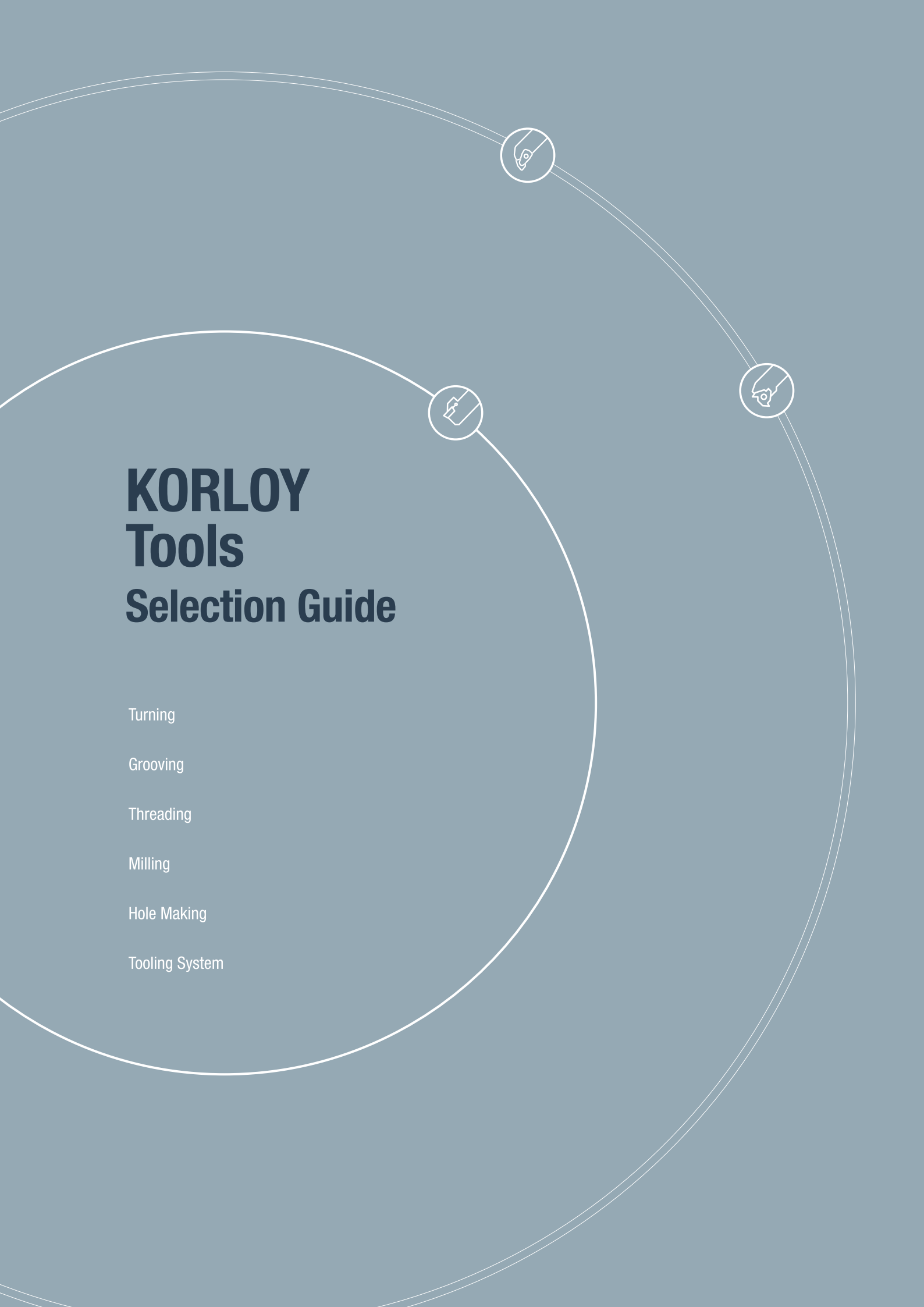


Hole Making



Tooling System





# KORLOY Tools Selection Guide

Turning

Grooving

Threading

Milling

Hole Making


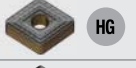


















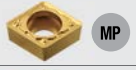
























Tooling System

# Contents

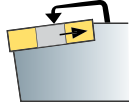


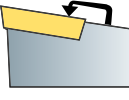


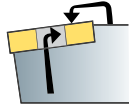

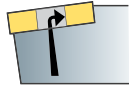


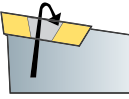


<b>Turning</b>	04	Turning insert
	05	Turning tool holder
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	07	Machining types of grooving
<b>Threading</b>	08	Thread for turning
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	11	Machining types of milling
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	15	Solid drill
<b>Tooling System</b>	16	DINOX Map
<b>Smart Factory</b>	18	Solution map



# Turning insert

	Negative inserts	Chip control	Recommended	Toughness		Positive insert	Chip control	Recommended	Toughness
<b>P</b>		NC3215	NC3225	NC3030			NC3215	NC3225	NC3030
	Heavy	 HL	 HG	 HV		Medium cutting		 C25	
	Roughing		 GR			Medium to finishing	 HMP	 MP	
	Medium cutting	 VC	 MP	 HM		Finishing	 FP	 VL	 VF
	Medium to finishing		 LP	 CP					
<b>M</b>		NC9115	NC9125	NC9135 PC5300			NC9115	NC9125	NC9135 PC5300
	Roughing		 RM			Medium cutting		 C25	
	Medium cutting	 MP	 MM			Medium to finishing	 HMP	 MP	
			 VP2			Finishing	 FP	 VL	
<b>K</b>		NC6310	NC6315	NC3215			NC6310	NC6315	NC3215
	Roughing	 VR	 RK	 -MA		Medium cutting		 C25	
	Medium cutting		 MK			Medium to finishing		 MP	
	Medium to finishing		 MK	 B25		Finishing			
			 MP						
<b>N</b>			H01	H05				H01	H05
	Medium to finishing		 HA			Medium cutting		 AR	
						Medium to finishing		 AK	
<b>S</b>		PC8105 UNC805	PC8110	PC8115			PC8105 UNC805	PC8110	PC8115
	Roughing		 VP4			Medium to finishing	 MU	 MP	
	Medium cutting		 VP3			Finishing	 LU	 VP1	 VL
	Medium to finishing		 VP2						
			 VP1						

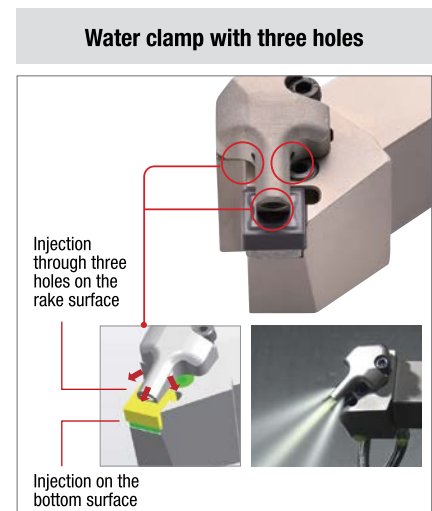
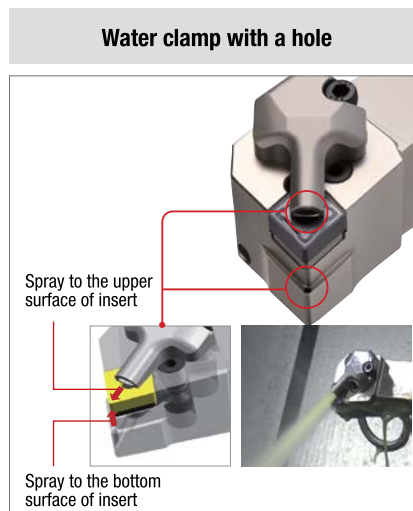
# Turning tool holder

Clamping system	Features	Holder shape	
		For external machining	For internal machining
<b>Double clamp system</b> Top and hole clamping (Multi clamp, pin and clamp) <b>D</b> 	<ul style="list-style-type: none"> <li>• High clamping force</li> <li>• High machinability in high interrupted roughing</li> <li>• Easy to clamp the insert</li> </ul>		
<b>Clamp on system</b> Top clamping without hole <b>C</b> 	<ul style="list-style-type: none"> <li>• Normal clamping force</li> <li>• Possible to face chip evacuation matter</li> <li>• Time saving in insert exchange</li> <li>• Mainly use for ceramic</li> </ul>		
<b>Wedge clamp system</b> Top and hole clamping (Multi clamp, pin and clamp) <b>W</b> 	<ul style="list-style-type: none"> <li>• High clamping force</li> <li>• Possible to face chip evacuation matter</li> <li>• Time saving in insert exchange</li> <li>• Proper for medium cutting and external holder machining</li> </ul>		-
<b>Lever lock system</b> Hole clamping (Pin lock) <b>P</b> 	<ul style="list-style-type: none"> <li>• Normal clamping force</li> <li>• Good chip evacuation</li> <li>• Easy to exchange insert in short time</li> </ul>		
<b>Screw on system</b> Screw on <b>S</b> 	<ul style="list-style-type: none"> <li>• Normal clamping force</li> <li>• Good chip evacuation</li> <li>• For internal holder and small-sized holder</li> <li>• Long time for exchanging insert</li> </ul>		

## KHP Coolant features

(KORLOY High Pressure Coolant)

- 300% increased productivity on Inconel machining vs. low pressure coolant system
- Cooling, tool life, and chip control are improved by the high pressure coolant multi-directional injection system



# Features of items for grooving

## Grade

CVD		1st	PVD			1st	Carbide			
NC3225	NC5330	<b>PC3035</b> <small>(Exclusive use for grooving)</small>	PC8110	PC9030	PC5300	H01				
P	P	P	S	M	M	P	M	K	S	N

## Line-up and feature

Division	Tool type	Features				
Parting off 	<b>Saw Man-X, Saw Man</b> 					
		Precise grooving	Grooving	Small part grooving	Deep grooving	Grooving with a number of teeth
		★★★★	★★★★	★★★★	★★★★	★★★★
		<ul style="list-style-type: none"> <li>Enhanced stability of clamping in high speed and high feed machining</li> <li>More convenient exchanging inserts</li> </ul>				
External, internal facing (ø20 or above) 	<b>KGT, MGT</b> 					
		Precise grooving	Grooving	Small part grooving	Deep grooving	Grooving with a number of teeth
		★★★★	★★★★	★★★★	★★★★	★★★★
		<ul style="list-style-type: none"> <li>Strong clamping</li> <li>Various kinds of chip breakers</li> </ul>				
External grooving 	<b>TB</b> 					
		Precise grooving	Grooving	Small part grooving	Deep grooving	Grooving with a number of teeth
		★★★★	★★★★	★★★★	★★★★	★★★★
		<ul style="list-style-type: none"> <li>Machining reliability</li> <li>Good chip control</li> </ul>				
External grooving 	<b>K Notch</b> 					
		Precise grooving	Grooving	Small part grooving	Deep grooving	Grooving with a number of teeth
		★★★★	★★★★	★★★★	★★★★	★★★★
		<ul style="list-style-type: none"> <li>Insert for high precise grooving</li> <li>High machinability and longer tool life</li> </ul>				
External grooving 	<b>Auto Tools</b> (Blade, multi functional tools) 					
		Precise grooving	Grooving	Small part grooving	Deep grooving	Grooving with a number of teeth
		★★★★	★★★★	★★★★	★★★★	★★★★
		<ul style="list-style-type: none"> <li>Increased convenience</li> <li>High productivity</li> </ul>				
Internal grooving (ø16 or under) 	<b>Fine Tools</b> 					
		Precise grooving	Grooving	Small part grooving	Deep grooving	Grooving with a number of teeth
		★★★★	★★★★	★★★★	★★★★	★★★★
		<ul style="list-style-type: none"> <li>Insert shaped properly for small diameter grooving</li> <li>Precise insert realizes high precision machining</li> </ul>				
Internal grooving, face grooving (ø10 or under) 	<b>MSB Tool</b> 					
		Precise grooving	Grooving	Small part grooving	Deep grooving	Grooving with a number of teeth
		★★★★	★★★★	★★★★	★★★★	★★★★
		<ul style="list-style-type: none"> <li>Good surface finish and long tool life</li> <li>Available for machining of pitting, valve, regulatory affairs, automotive components, semiconductor equipment etc.</li> </ul>				

# Machining types of grooving

( )\* : MGT

( )\*\* : Saw Man







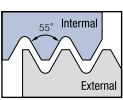
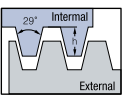
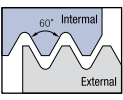
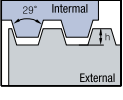
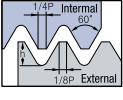
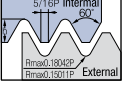
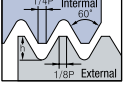
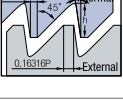
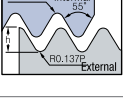
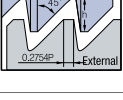
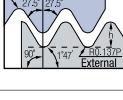
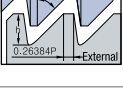
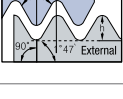
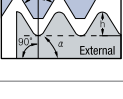
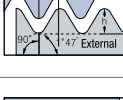
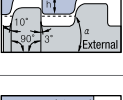
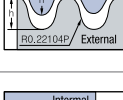
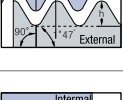

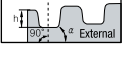
Machining type	Holder			Insert		Product name	Holder	Available inserts	
	Max. ap (mm)	Min. machining dia. (Ø)	Min. machining dia. (Ø)	Cutting edge width (mm)	No. of corner				
External grooving 	2.8~3.3 (3~5)*	40~65	-	3~8	2	KGT	KGEUR/L	KRG(M)N	
	8~36 (10~28)*	-	-	1.5~8	2		KGEHR/L	KGG(M)N	
						KGMR			
	1~6.5	-	-	0.5~4.5	3	TB	TBH	TB(-M)	
1.27 ~6.35	-	-	0.79 ~6.35	2	K Notch	K Notch	KNG(P) KNR(P)		
Internal grooving 	1~4.3	-	-	0.75 ~4.02	1	Fine Tools	NFTIH	NFTG(F/T)	
	4~8.5 (3.5~12)*	20~45	-	1.5~8	2	KGT	KGIVR/L	KGMI	
								KRG(M)N	
3.5 (3.5~6.5)*	35~50	-	3~8	2	KGIUR/L	KRG(M)N			
Face grooving 	3~8 (3~9)*	50~120	-	1.5~8	2	KGT	KGEVR/L	KGG(M)N	
	10~25 (10~15)*	34~190 (24~112)*	50~∞ (35~200)*	3~6 (3~4)*	2			KGFHR/L KGFVR/L	
						KGG(M)N			
12~25	25~100	30~140	3~5	1	MGT	FGH(V)H	FGD(M) FMM		
Parting 	25~60 (16~60)**	-	50~120 (30~120)**	2~6 (1.6~9.6)**	1	Saw Man-X	KSPB	KSP	
	14~30 (10~31)**	-	28~60 (20~62)**	1.5~8 (2~5)**	2	KGT	KGEHR/L	KGMR/L-R(L)P	
								KGMN	
13~60	-	26~120	1.5~8	2 1	KGTB	KGGN-S-R			

# Thread for turning

## Grade

Thread for turning						Thread for milling			Solid				
PVD													
PC3030T		PC9070T			PC5300 (M class thread)			PC9570T			PC9070M		
P	K	M			P	M	K	P	M	K	P	M	K

## Turning line-up

Division	Application	Geometries	Unit	Grinding	M-type	U-type	Division	Application	Geometries	Unit	Grinding	M-type	U-type
													
Partial profile (55°)	General threading		mm tpi	0.5~6.0 48~4	0.5~5.0 48~5	0.5~3.0 48~8	American ACME (ACME)	Power transfer (feed screw)		mm tpi	- 16~4	- -	- -
Partial profile (60°)	General threading		mm tpi	0.5~6.0 48~4	0.5~5.0 48~5	0.5~3.0 48~8	Stub ACME (STACME)	Power transfer (thin shape)		mm tpi	- 16~3	- -	- -
ISO metric	General industry		mm tpi	0.35~6.0 -	1.0~3.0 -	1.5~2.0 -	UNJ	Aero-space industry		mm tpi	- 48~4	- -	- -
American UN (UN, UNC)	General industry		mm tpi	- 72~4	- -	- -	American buttress (ABUT)	One direction		mm tpi	- 20~6	- -	- -
Withworth (BSW, BSF)	Industrial pipe		mm tpi	- 72~4	- 14~11	- 14~11	British buttress (BBUT)	One direction		mm tpi	- 16~8	- -	- -
British standard pipe (BSPT)	Gas and water pipe (55°)		mm tpi	- 28~11	- -	- -	Metric buttress (SAGE)	One direction (DIN513)		mm tpi	2.0~4.0 -	- -	- -
National pipe (NPT)	Gas and water pipe		mm tpi	- 27~8	- -	- -	API	Oil and gas industry		mm tpi	- 6~4	- -	- -
National pipe (NPTF) Dryseal	Gas and water pipe		mm tpi	- 27~8	- -	- -	API buttress casing (BUT)	Oil and gas industry (tube, casing)		mm tpi	- 5	- -	- -
Round DIN405 (RD)	Fire-fighting and food industry		mm tpi	- 10~4	- -	- -	API round casing (APIRD)	Oil and gas industry		mm tpi	- 10~8	- -	- -
Trapez DIN103 (TR)	Power transfer		mm tpi	1.5~6.0 -	- -	- -	Extreme line casing (EL)	Oil and gas industry (tube, casing)		mm tpi	- 6~5	- -	- -



# Thread for milling

## ● Milling line-up

Division	Application	Geometries	Unit	Indexable	Internal coolant Helical	Internal coolant Helical, drill/chamfer	Deep drilling
							
ISO metric	General industry		mm	0.5~6.0	0.5~3.0	1.0~1.75	0.35~1.75
			tpi	-	-	-	-
American UN (UN, UNC)	General industry		mm	-	-	-	-
			tpi	32~4	32~8	-	72~14
UNJ	Aerospace industry		mm	-	-	-	-
			tpi	24~11	-	-	-
Withworth (BSW, BSF)	Industrial pipe		mm	-	-	-	-
			tpi	28~4	26~11	-	-
British standard pipe (BSPT)	Gas and water pipe (55°)		mm	-	-	-	-
			tpi	19~11	28~11	-	-
National pipe (NPT)	Gas and water pipe		mm	-	-	-	-
			tpi	18~8	27~8	-	-
National pipe (NPTF) _Dryseal	Gas and water pipe		mm	-	-	-	-
			tpi	14~8	27~8	-	-



Turning

Grooving

Threading

Milling

Hole Making

Tooling System

# Features of items for milling

## Grade

CVD		PVD 1st			1st Carbide		PVD 1st				CVD	PVD	
NCM535		PC3700	PC9530	PC9540	PC6510	H01	H05	PC5300	PC5400	PC2505	PC2510	UNC840	UPC845
P	K	P	M		K	N		P	M	K	S	H	
Interrupted ↔ Heavy Interrupted		Interrupted ↔ Heavy Interrupted			Continuous ↔ Interrupted		Interrupted ↔ Heavy Interrupted		Continuous ↔ Interrupted		Interrupted ↔ Heavy Interrupted		

## Chip breaker

MA	ML	MF	MM
For aluminum	For hard-to-cut material	For light cutting	For general cutting
Sharp cutting edge type	Low cutting load type	Low cutting load type	Reinforced cutting edge type

## Tool selection guideline by functions

### Facing

Legend: RM8 (blue), RM14 (orange), RM16 (grey)

### High feed machining

Legend: HFMD (blue), HFM (orange), HRMD (grey), HRM (yellow)

### Shouldering

Legend: RM3 (blue), Alpha Mill-X (orange), RM6 (grey)

### Aluminum machining

Legend: Pro-V Mill (blue), Pro-A Mill (orange), Pro-X Mill (grey)

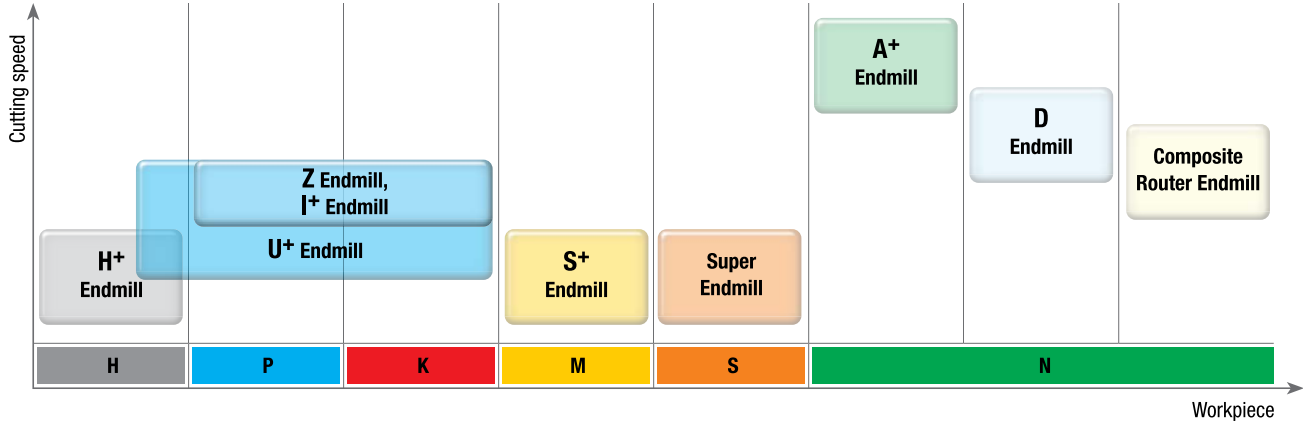


# Machining types of milling

Machining type	AA	Max. ap (mm)	Number of edges	Type	Diameter (Ø)	Product name	Holder	Available inserts			
<b>Facing</b> 	45°	7.5 / 6	8	Cutter	50~400	Rich Mill (RM8)	RM8AC	SNM(E)X15 / 12(ANN)			
		5.5 / 4	16		63~400	Rich Mill (RM16)	RM16AC	ONM(H)X08 / 06			
	51°	3.5 (helix) 4.8 (Flat)	14		50~160	Rich Mill (RM14)	RM14XC	XNMX06			
		11 / 9	8		50~400	Rich Mill (RM8)	RM8EC	SNM(E)X15 / 12(ENN)			
<b>Shouldering</b> 	90°	16.5 / 11.5 / 9.5	2	Shank	16~40	Alpha Mill-X	AMXS	ADKT17 / 12 / 10			
				Cutter	40~125		AMXC				
	90°	11.5 / 8	15.5 / 11.5	3	Shank	25~40	Triple Mill	TPMS	TNKT16 / 11		
					Cutter	50~125		TPMC	TNKT20 / 16		
	90°	14 / 9	4	4	Shank	14~63	Rich Mill (RM4)	RM4PS	LNM(E)X15 / 10		
					Cutter	40~160		RM4PC			
	90°	8.2 / 4.3	6	6	Shank	20~50	Rich Mill (RM6)	RM6PS	WNGX08 / 04		
					Cutter	40~125		RM6PC			
90°	8 / 5.5	3	3	Shank	20~63	Rich Mill (RM3)	RM3PS	XNK(C)T08 / 06			
				Cutter	40~125		RM3PC	XNK(C)T12 / 08 / 06			
<b>High feed machining</b>	-	1.5 / 1	4	Shank	16~42	HFMD	HFMDS	LNMX10 / 06			
				Cutter	32~100		HFMDC				
	13°	0.5	2	2	Shank	8~21	HFM	HFMS	LPMT04 LPM(E)W04		
					14°	2 / 1.5 / 1		6	Shank		
	14°	2.5 / 2 / 1.5	6	Cutter			40~315		HRMDC	WNMX16 / 13 / 09	
				15°	2.5 / 2 / 1 / 1	3	Shank	20~63	HRM	HRMS	WDKT15 / 13 / 10 / 08
15°	2.5 / 2	3	Cutter				50~160	HRMC		WDKT15 / 13	
			<b>Aluminum machining</b>	90°	34 / 25	2	Shank	32~63	Pro-L Mill	PALS	LXET34 / 25
90°	34	2					Cutter	63		PALC	LXET34
				90°	23 / 17	2	Shank	20~40	Pro-X Mill	PAXS	XEKT25 / 19
90°	17	2					Cutter	40~125		PAXC	
				90°	17	2	Shank	25~40	Pro-V Mill	PAVS	XDET19
90°	15 / 8	2					Cutter	40~125		PAVC	
				90°	15 / 8	2	Shank	12~40	Pro-A Mill	PAS	VC(D)KT22 / 11
90°	15 / 8	2					Cutter	40~100		PAC	

# Solid endmill

## Guideline by workpieces






















## Tool selection guideline by functions

● 1<sup>st</sup> recommended   ● 2<sup>nd</sup> recommended   ○ Not recommended

Type	No. of tooth								
		Precise finishing	Finishing	Roughing	Slotting	Plunging	Copying	Trochoidal milling	
Flat/ Radius	2 teeth	○	○	●	●	●	○	○	
	3 teeth	○	●	●	●	●	○	○	
	4 teeth	●	●	●	●	○	○	●	
	6 teeth or over	●	●	○	○	○	○	●	
Ball	2 teeth	○	○	○	●	○	●	○	
	4 teeth	○	○	○	●	○	●	○	

- It is recommended to choose the shortest length tool in every application as possible.
- Stable machining actualizes long tool life and enhanced surface finish.

### Line-up and features

Work-piece	Use	Product name	Type	No. of tooth	Diameter (tolerance)	Picture		Features
						No. of standard items		
P K	High hardness (~HRC70)	H+ Endmill	F B R	2~6	0.1~20		1,395 Items	<ul style="list-style-type: none"> <li>Economical tools for high speed and high hardness machining</li> </ul>
	hardness (~HRC55)	U+ Endmill	F B R	2~6	0.1~25		3,980 Items	<ul style="list-style-type: none"> <li>Economical tools for general machining with high performance</li> <li>For various workpiece machining (carbon steel, alloy steel, cast iron, pre-hardened, etc.)</li> </ul>
	General (~HRC47)	Z Endmill	F B R	2~4	1.0~16		133 Items	<ul style="list-style-type: none"> <li>For general machining with high performance and high quality</li> <li>For various workpiece machining (carbon steel, alloy steel, cast iron, pre-hardened, etc.)</li> </ul>
	General (~HRC45)	I+ Endmill	F B R	2~4	1.0~20		398 Items	<ul style="list-style-type: none"> <li>For general machining from finishing to roughing</li> </ul>
M	Stainless steel	S+ Endmill	F R	4	1.0~12		72 Items	<ul style="list-style-type: none"> <li>Optimal performance in stainless machining</li> <li>Enhanced oxidation resistance</li> </ul> 
S	HRSA	Super Endmill	F R	4	3.0~20		162 Items	<ul style="list-style-type: none"> <li>Endmill for HRSA machining</li> <li>Optimal for machining of Ni based HRSA such as Inconel, Hastelloy, Waspaloy, etc.</li> </ul> 
N	Non-ferrous metal, Aluminum	A+ Endmill	F B R	2~3	1.0~20		187 Items	<ul style="list-style-type: none"> <li>Effective chip evacuation in high feed machining with U-shape</li> <li>Double relief angle (stronger cutting edge)</li> </ul> 
	Non-ferrous metal, Aluminum	SSEA	F B	2~3	1.0~20		128 Items	<ul style="list-style-type: none"> <li>Good welding resistance and chip evacuation</li> <li>Minimized cutting load and built-up-edge and good surface finish</li> </ul>
	Composite materials	Composite Router Endmill	F	2~8	4.0~12		44 Items	<ul style="list-style-type: none"> <li>Router for composite material machining</li> <li>High performance due to Nano-Crystalline dia-coating</li> </ul> 
	Graphite, Ceramics	D Endmill	F B	2~4	0.6~12		151 Items	<ul style="list-style-type: none"> <li>Longer tool life due to high hardness dia-coating</li> <li>Applying one-pass grinding and good surface finish</li> </ul> 
	Dental, metal, wax, Zirconia	T Endmill	B	2	0.6~3		11 Items	<ul style="list-style-type: none"> <li>Endmill for machining materials for stooping teeth, Zirconia, Titanium, Co-Cr, Wax, PMMA, etc.</li> <li>Applicable to dental milling machine and various materials for stooping teeth</li> </ul> 
For general machining with special function	Multi-functional	M+ Endmill	F D	4	3.0~20		32 Items	<ul style="list-style-type: none"> <li>Multi-endmill for various machining (drilling, milling, etc.)</li> </ul>
	Roughing	R+ Endmill	R	2~4	5.0~25		204 Items	<ul style="list-style-type: none"> <li>Endmill with a shape minimizing cutting load for roughing</li> </ul>

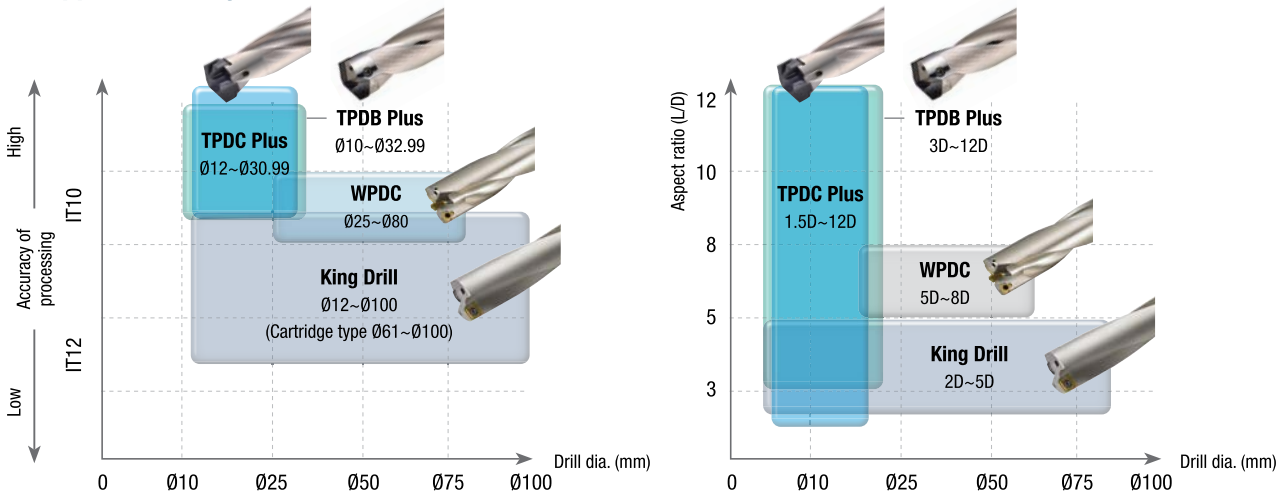


# Indexable drill

## Grade

King Drill				TPDC Plus				TPDB Plus				
1st	1st	PVD		Carbide	1st	PVD		Carbide	PVD		1st	
PC3700	PC5300	PC5335	PC6510	H01	PC5335	PC5300	PC330N	H01	PC330P	PC5335	PC5300	PC340Q
P	P M K S	P M	K	N	P	P K	M	N	P		P K	P
		LD Chip Breaker							Carbon steel for structure			H-Beam

## Application range

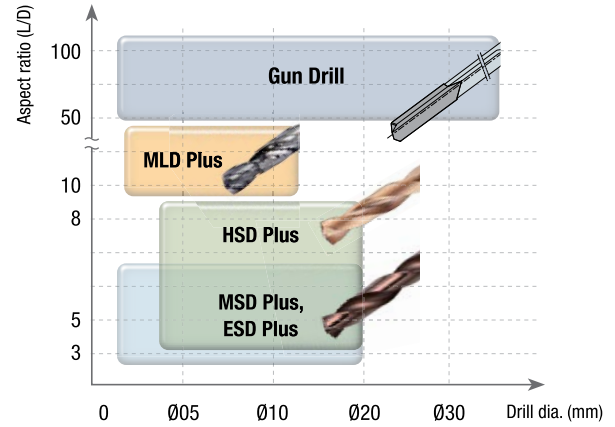
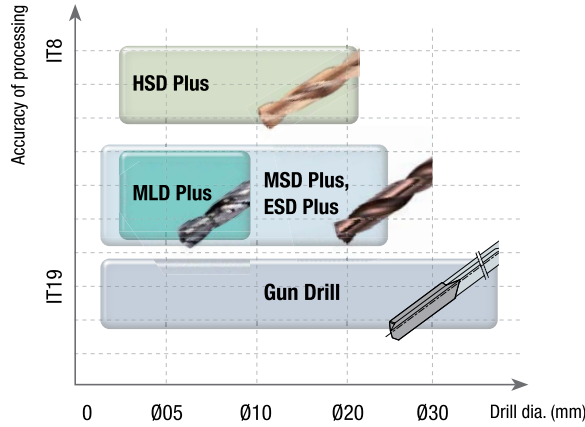


## Line-up and features

Aspect ratio (L/D)	Drill dia.	Tolerance of hole	Holder	Product name	Features	Available insert
2D~5D	Ø12.0 ~Ø60.5	-0.1~+0.4	K□D	King Drill	• Central and peripheral inserts ensures high quality of machining	External : SPE(M)T04 / 05 / 06 / 07 / 09 / 11 / 13 / 15 / 18 Internal : XOE(M)T04 / 05 / 06 / 07 / 09 / 11 / 13 / 15 / 18
2D~4D	Ø61.0 ~Ø100				• Cartridge type	
2D~4D	Ø13.0 ~Ø60.5		K□D-HP		• Adjusting machining diameter in 5 mm	
1.5D~12D	Ø12.0 ~Ø30.9	0~+0.1	TPDC□D	TPDC Plus	• Optimal shape by work-piece • Management of flat type • Compatible with one holder	TPD□CP / CM / CN TPD□CP-FC (Flat type)
3D~12D	Ø10.0 ~Ø32.9	0~+0.1	TPDB-P	TPDB Plus	• Standard type	TPD□B
1.5D	Ø14.0 ~Ø30.9		TPDB-F		• Flat type	TPD□B-F (Flat type)
3D~8D	Ø14.0 ~Ø30.9		TPDB-H		• Exclusive for steel structural frame	TPD□B-H

# Solid drill

## Application range



## Line-up and feature

Work-piece	Use	Product name	Coolant	Drill dia. (tolerance)	Aspect ratio (L/D)	Geometries	Features
P M K	Medium hardness	HSD Plus	Central/peripheral	Ø3.0~20.0 (h7)	3D~8D		<ul style="list-style-type: none"> <li>The optimal international standard for high speed machining with ~ Hrc50</li> </ul>
	General	MSD Plus	Central/peripheral	Ø1.0~20.0 (h7)	3D~7D		<ul style="list-style-type: none"> <li>High efficiency machining for various workpiece machining such as automobile components</li> </ul>
		MLD Plus (Long drill)	Central	Ø3.0~10.0 (h7)	10D~25D		<ul style="list-style-type: none"> <li>For deep drilling with high efficiency and high quality</li> </ul>
		ESD Plus	Peripheral	Ø1.0~20.0 (h7)	3D~7D		<ul style="list-style-type: none"> <li>High efficient and economic endmill </li> </ul>
		MSFD	Central/peripheral	Ø2.5~12.0 (h7)	2D~3D		<ul style="list-style-type: none"> <li>Flat drill for various types of drilling such as helical machining, curved surface machining, flat surface machining, etc. </li> </ul>
		Gun Drill	-	Ø2.0~33.0 (h5)	50D ~ 100D		<ul style="list-style-type: none"> <li>High efficient drilling of deep hole (50D~100D)</li> <li>Availability of special types</li> </ul>
S	HRSA	MSD Plus-S	Central	Ø3.0~16.0 (h7)	3D~5D		<ul style="list-style-type: none"> <li>For HRSA machining</li> <li>For hard-to-cut material machining of aerospace, energy, power generation, automobile, etc. </li> </ul>
N	CFRP	MSD Plus CFRP	Peripheral	Ø3.0~12.7 (m7)	5D		<ul style="list-style-type: none"> <li>Machining for CFRP workpiece </li> </ul>
	Non-ferrous metal, Aluminum	SSD-N	Peripheral	Ø1.0~13.0 (h7)	-		<ul style="list-style-type: none"> <li>Non-coated drill for non-ferrous steel and mild steel</li> </ul>
		PCD Drill	Peripheral	Ø2.0~12.0 (h7)	-		<ul style="list-style-type: none"> <li>High precision and surface finish</li> <li>Cone/Sandwich type</li> </ul>



Turning

Grooving

Threading

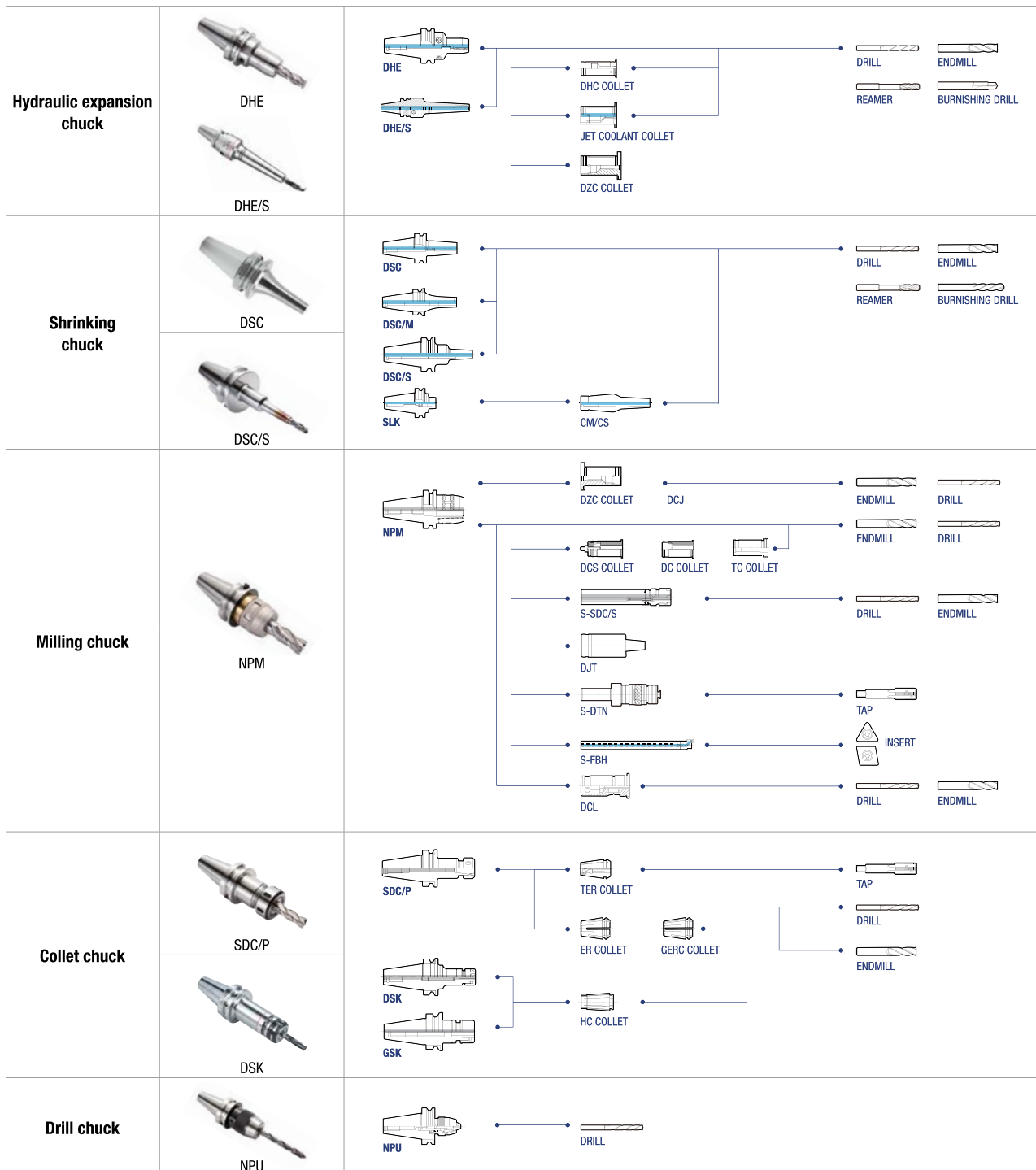
Milling

Hole Making



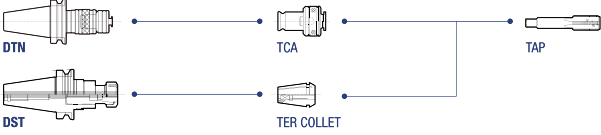







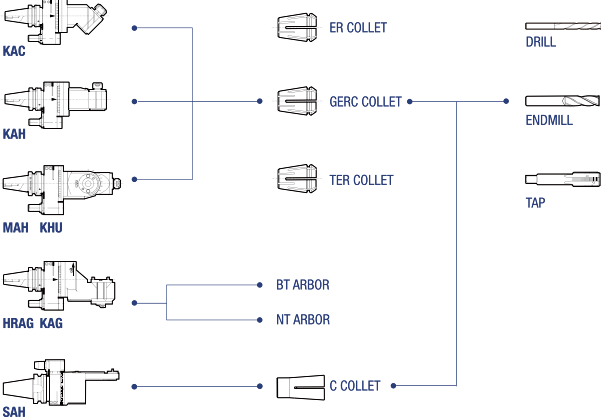




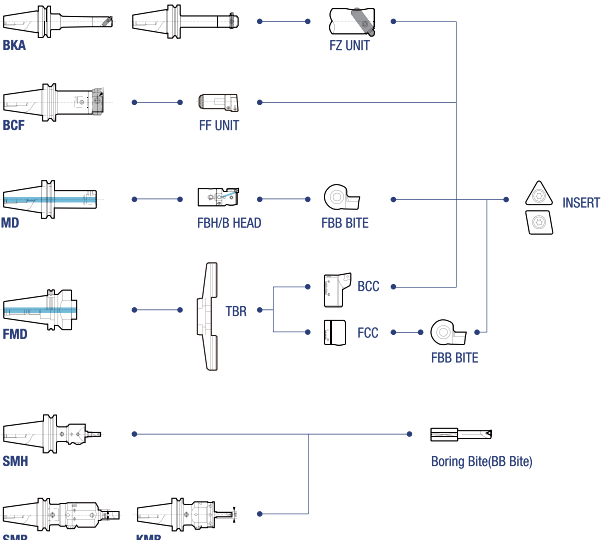

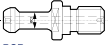
Tooling System

# DINOX map

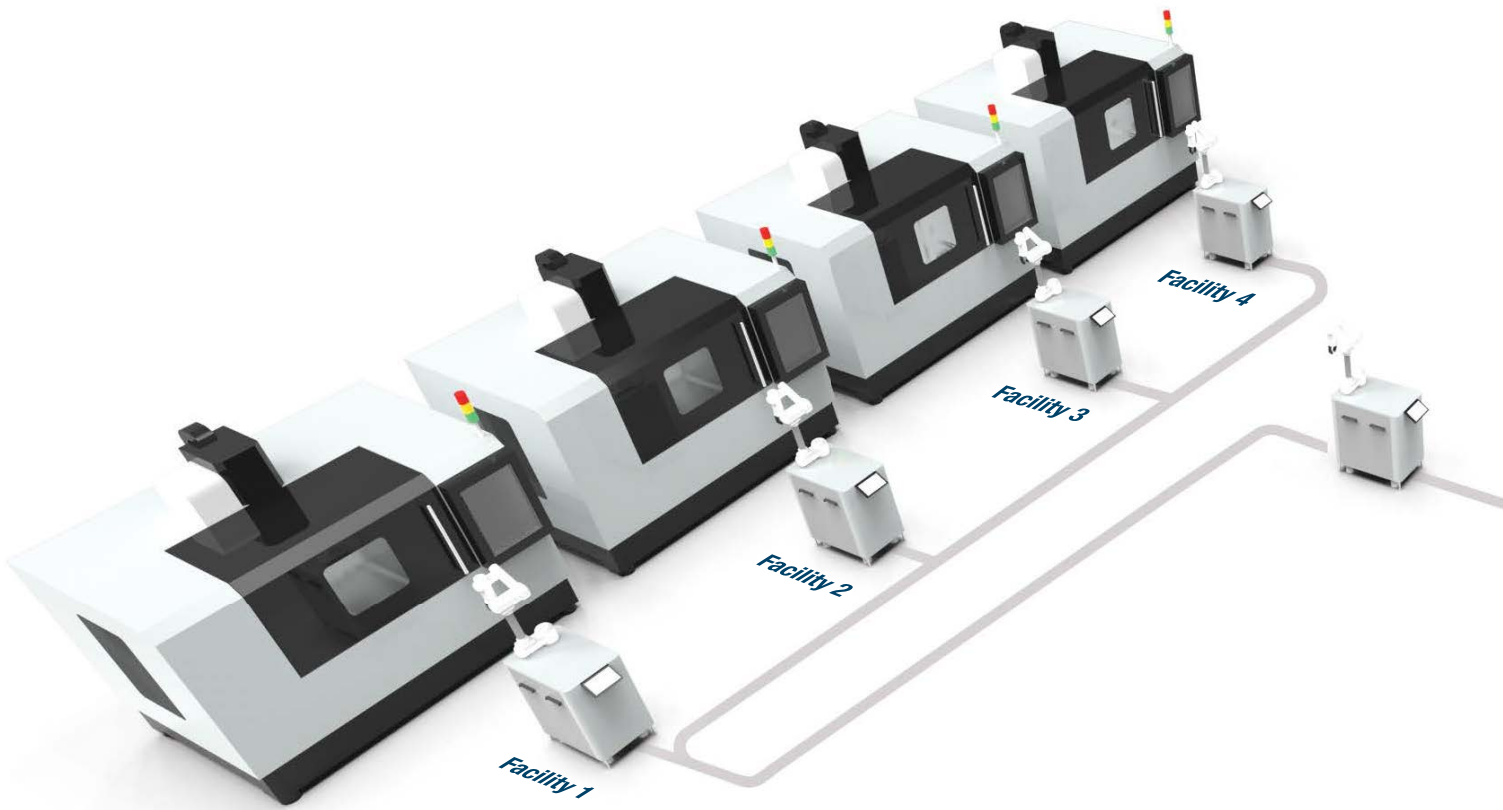
Division	Milling chuck	Hydraulic expansion chuck	Shrinking chuck
Use	High speed/general machining	Low to medium speed machining/ precision machining	High speed finishing for narrow and deep shape
Maintaining clamping force	★★	★★★	★★★★★
Precision	★★	★★★	★★★★★
Ultra-high speed machining	★★★	★	★★★★★
Easy to use	★★★	★★★★★	★★
Handling of tools	★★★★★	★★★★★	★★





<p><b>Tapping holder</b></p>	 <p>DTN</p>  <p>DST</p>	 <p>DTN TCA TAP</p> <p>DST TER COLLET</p>
<p><b>Side lock arbor</b></p>	 <p>SLA</p>	 <p>SLA U-DRILL DRILL ENDMILL</p>
<p><b>Face mill arbor</b></p>	 <p>FMA</p>	 <p>FMA FMC FMD CUTTER</p>
<p><b>Angular head</b></p>	 <p>KAC</p>  <p>KAH</p>  <p>MAH</p>	 <p>KAC ER COLLET DRILL</p> <p>KAH GERC COLLET ENDMILL</p> <p>MAH TER COLLET TAP</p> <p>HRAG KAG BT ARBOR NT ARBOR</p> <p>SAH C COLLET</p>
<p><b>Boring series</b></p>	 <p>BKA</p>  <p>BCF</p>  <p>TBC, FBC</p>  <p>KMB</p>	 <p>BKA FZ UNIT</p> <p>BCF FF UNIT</p> <p>MD FBH/B HEAD FBB BITE INSERT</p> <p>FMD TBR BCC FCC FBB BITE</p> <p>SMH Boring Bite(BB Bite)</p> <p>SMB KMB</p>
<p><b>Pull stud bolt</b></p>	 <p>PSB</p>	 <p>PSB</p>

# Smart factory solution map



## Collaborative Robot

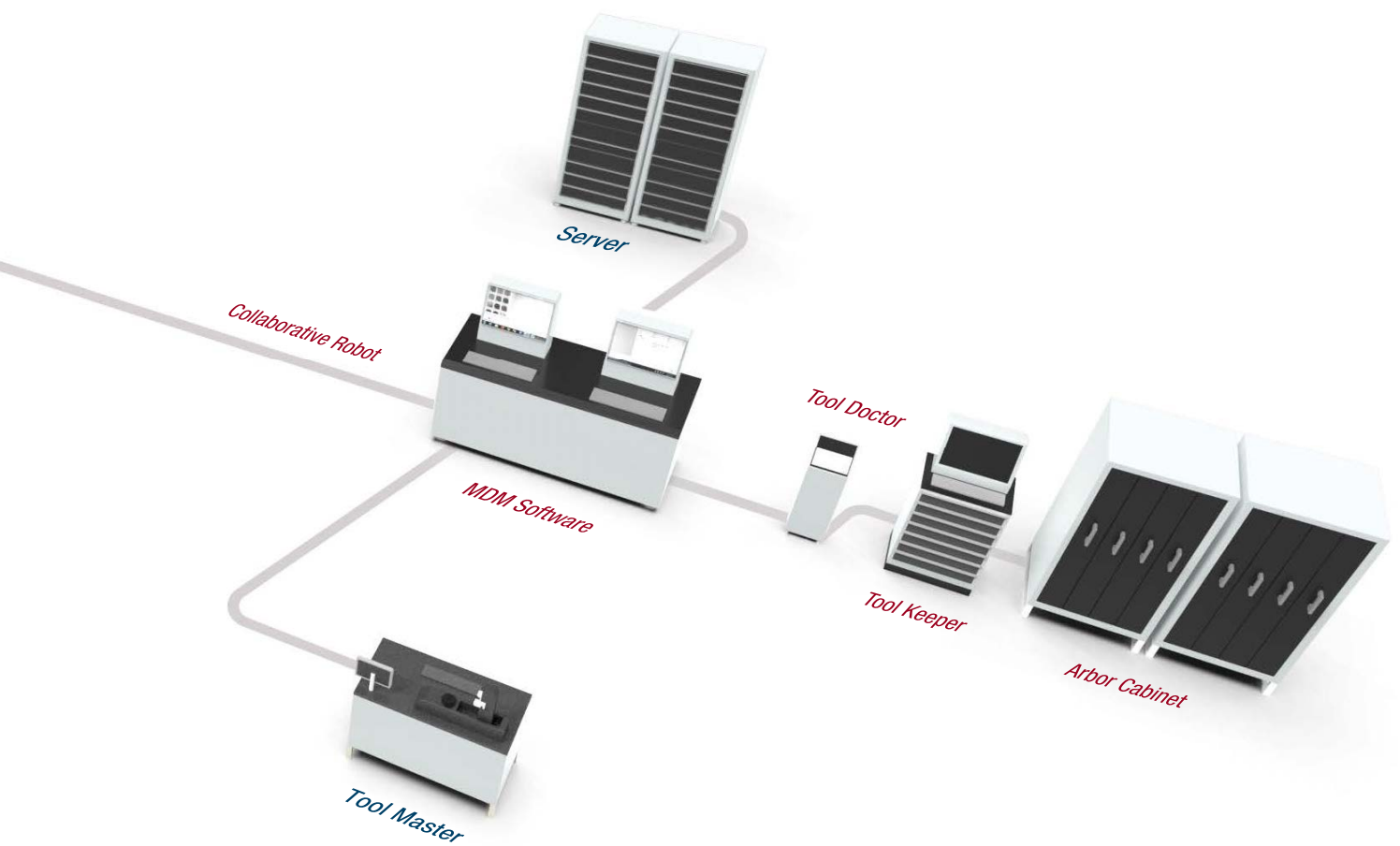
- Optimal for repeated machining in small place
- Effective on works with heavy weight materials

## Tool Master (Tool pre-setter)

- Measuring the offset of tool length in advance
- Reduced tool setting time and downtime

## MDM (Tool management S/W)

- Managing the tool holder information  
→ Cutting diameter, total length, storage location
- Integrated management of tool, production, CAM, etc.



### Tool Doctor (Monitoring system)

- Control of poor products in process of mass production
  - Tool breakage, unprocessed item check, re processing
- Managing tool life trends

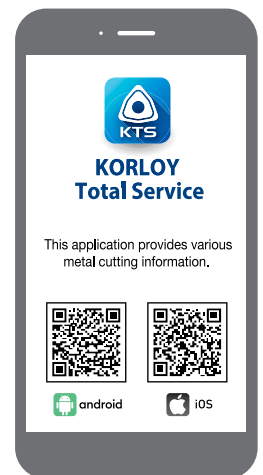
### Tool Keeper (Tool management equipment)

- Managing the warehousing releases of tools day and night
- Systemic management of stock and order
- Managing tool using background

### Arbor Cabinet (Arbor case)

- Enhancing space efficiency and protecting tools (from foreign substance)
- Running tool keeper of imaginary storage (Managing position and quantity of tools)

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