KORLOY Indexable New Generation Drill

KING DRILL

KORLOY TECH-NEWS

- Excellent chip control and surface finish due to optimized insert geometries.
- The balance between cutting edges and grades largely improves stability of tool life.

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TECH-NEWS

High Speed and High Efficiency Indexable Drill

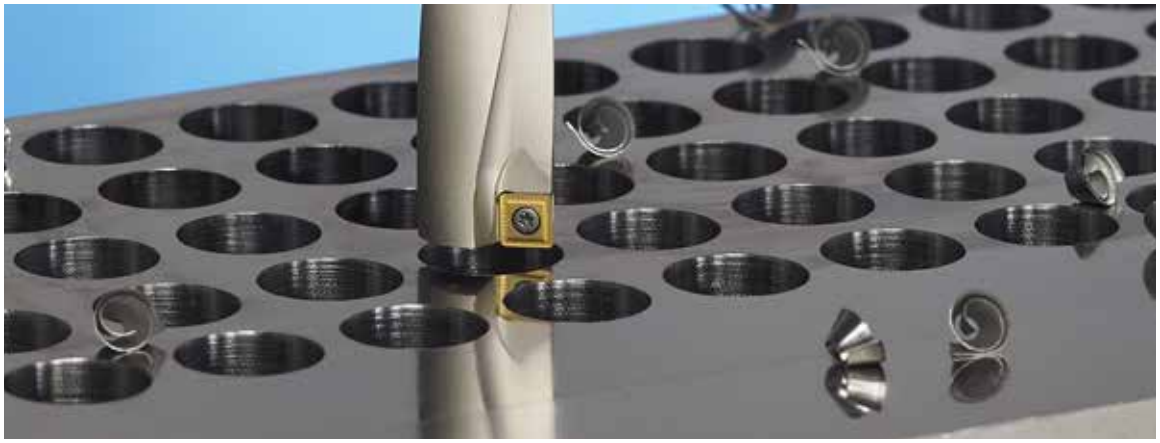
KING DRILL

Unlike the solid drills, most indexable drills used for general purpose drilling produce poor machining precision and imbalanced hole shape due to asymmetric geometries of blades. This results in difficulties making holes that are deeper than three times the drill diameter (3D).

In order to solve this problem, both central and peripheral inserts and centering of the **KING DRILL** were specially designed to be able to make holes deeper, up to five times the drill diameter (5D). The balance between edge arrangement and grade has therefore been improved.

Optimized blade and flute design of the **KING DRILL** enhance effectiveness of drilling mechanisms due to superior chip formation and chip shape. The helical oil holes on the **KING DRILL** allow for smoother chip evacuation. In addition, **KING DRIL**L inserts have **three kinds of chip breakers** for a wide range of applications: **PD** for general purpose, **LD** for mild steel and hard-to-cut materials, and **ND** for aluminum machining. The various grades for the central and peripheral inserts maximize cutting tool life.

As a result, faster and higher stability will significantly increase productivity and reduce tool cost.



Helical shaped coolant hole system
- Stable chip evacuation

Optimized grade for central / peripheral insert each
- Higher stability

Optimized blade design for an indexable drill
- Excellent chip geometries

Material technology
- Excellent anti chipping & wear resistance

Holder code system

K	5D	200	25	—	-	07

KING, KORLOY

Aspect ratio(L/D)
2xD, 3xD, 4xD, 5xD

Drill Dia.
Ø20,0mm
(One decimal place marked)

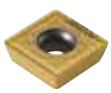
Shank Dia.
Ø20, Ø25,
Ø32, Ø40

Shank shape
No mark: Flange Shank, Weldone
HP (Standard): Flange Shank, Weldon, NPT Tap
F1: Flange Shank, Whistle Notch
F2: Flange Shank, Without Side Lock
S: Straight Shank, Weldone
S1: Straight Shank, Whistle Notch
S2: Straight Shank, Without Side Lock
M0, M1, M2, M3…: MT0, MT1, MT2, MT3…
H63, H100: HSK63, HSK100
B30, B40, B50: BT30, BT40, BT50

Inscribed circle of insert
05, 06, 07, 09, 11, 13, 15, 18mm

Features of Insert

- Optimized design of inserts for maximum drilling efficiency
- Excellent cutting performance and chip control due to the optimized geometry and chip breaker of both inserts: central and peripheral
- A set of differently shaped central and peripheral inserts optimize the insert locations in order to maximize cutting tool life.

Chipbreaker	**PD**		**LD**		**RD**	**ND**	
Features	- Universal - Medium feed and speed		- Superior chip control form machining mild steel and stainless steel - Light cutting (at low - medium speed and low feed)		- Chip Breaker with strong cutting edge improve(*) (*) Up to 0.02 mm/rev, increased feed rate.	- Sharp cutting edge for aluminum machining - Insert surface buffed for high quality result	
Insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Central insert	Peripheral insert	Central insert
Shape							
Grades for workpiece	NC5330: P, M, K PC3500: P PC5300: P, M, K, S PC6510: K	PC5300: P, M, K, S	PC5335: P, M	PC5335: P, M	PC5335: P, M PC5300: P, M	H01: N	H01: N

Features of Drill

Optimized Flute System

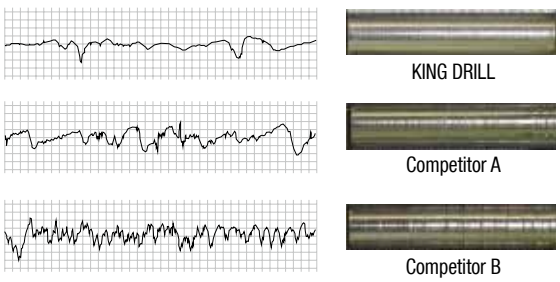
- The optimized shape of the flute increases the rigidity of the drill body and improves chip evacuation.

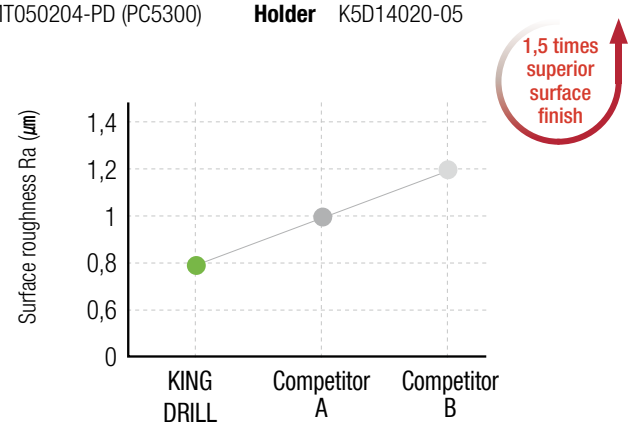
Cutting Performance

KING DRILL shows superior surface finish compared to other competitors.

Surface Finish

- **Workpiece** 42CrMo4
- **Cutting conditions** vc = 150 m/min · fn = 0,08 mm/rev · ap = 60 mm (pass though), Through coolant system
- **Tool** **Insert** SPMT050204-PD (PC3500), XOMT050204-PD (PC5300) **Holder** K5D14020-05

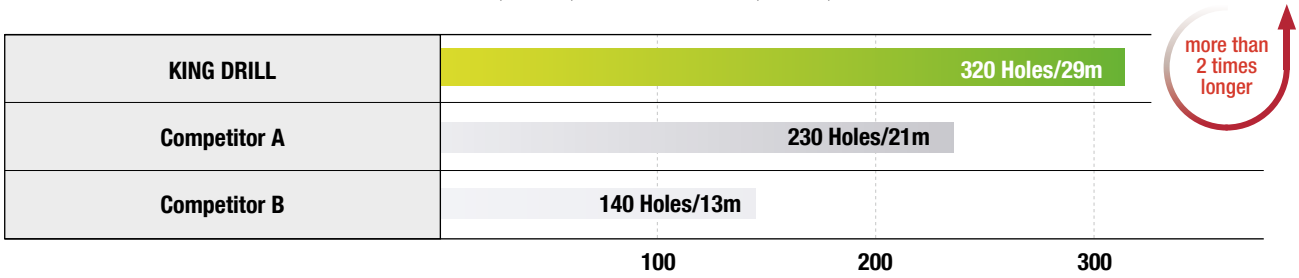




Cutting Performance

Performance comparison

- **Workpiece** 42CrMo4
- **Cutting conditions** vc = 150 m/min · fn = 0,08 mm/rev · ap = 60 mm (pass though) · Through coolant system
- **Tool** **Insert** SPMT060205-PD (PC3500) · XOMT060204-PD (PC5300) **Holder** K5D18025-06



Evaluation of Wear Resistance

As the test result shows, KING DRILL has higher wear resistance than competitors and provides the best tool life.

KING DRILL

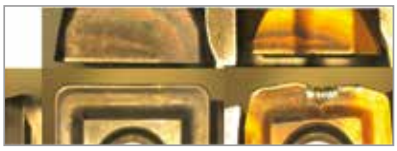
320 Holes (29 m)

Normal wear

Competitor A

230 Holes (21 m)

Chipping on cutting edge



Competitor B

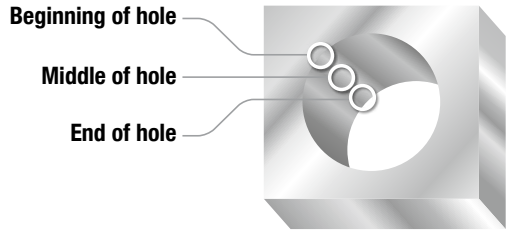
140 Holes (13 m)

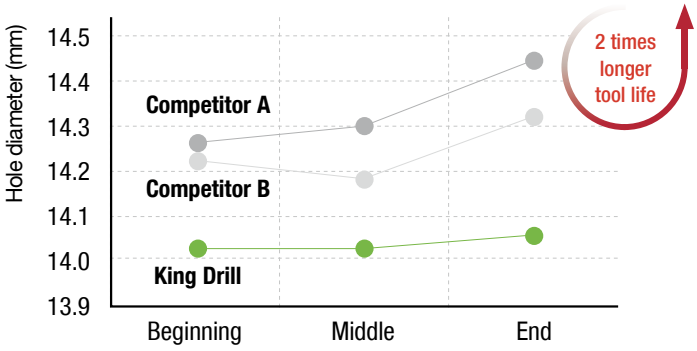
Wear and chipping on cutting edge

Precision of Machining

The diameters of beginning, middle, and end of hole are regular after drilling with KING DRILL.

- **Workpiece** 42CrMo4
- **Cutting conditions** vc = 150 m/min · fn = 0,08 mm/rev · ap = 60 mm (pass though) · Through coolant system
- **Tool** **Insert** SPMT060205-PD (PC3500) · XOMT060204-PD (PC5300) **Holder** K5D14020-05





- **KING DRIL** Regular hole diameters at the beginning, middle and end of hole
- **Competitor A** Hole diameter : beginning < middle < end
- **Competitor B** Bigger hole diameter at the end of hole

Cutting Performance

The tests clearly shows that the KING DRILL's cutting performance is far superior to its competitors when it comes to chip evacuation.

Chip Evacuation

- **Workpiece** C45
- **Cutting conditions** vc = 90 - 180 m/min · fn = 0,7 mm/rev · ap = 90 mm (pass though) · Through coolant system
- **Tool** **Insert** SPMT07T208-PD (PC3500) · XOMT07T205-PD (PC5300) **Holder** K5D20025-07

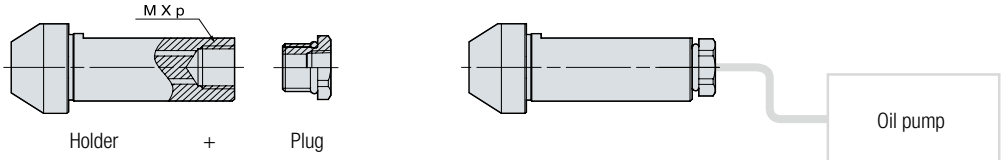
[KING DRILL]
Stable chip control

[Competitor A]
Thin and long chips are coiled around the holder.

[Competitor B]
Folded chips under certain cutting condition. Poor chip evacuation.

KING DRILL with Through Coolant System for Lathe

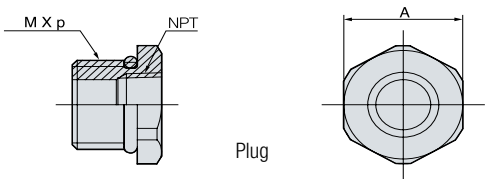
Drill with through coolant system for general lathe and CNC lathe without through coolant system. Through coolant system with drill holder, plug, oil-hole hose and oil-hole pum. NPT Tap in the plug is combined to NPT Tap connected to oil hose. Available to use the drill without a plug in milling machine.



- Clamping oil hose to the bottom of plug and connect the oil pump to the holder.

(mm)

Designation	Drill Dia.	Shank Dia.	M x p	Plug
K_D120 - 16020HP-__	Ø12,0 - Ø16,0	Ø19,0	M12 x 1,5	PLG12NPT18
K_D161 - 23525HP-__	Ø0,7 - Ø0,9	Ø1,00	M16 x 1,5	PLG16NPT18
K_D236 - 35532HP-__	Ø1,0 - Ø1,5	Ø1,25	M20 x 2,0	PLG20NPT14
K_D356 - 60940HP-__	Ø1,5 - Ø2,5	Ø1,50	M27 x 2,0	PLG27NPT38



Plug	M x p	NPT Tap	A
PLG12NPT18	M12 x 1,5	1/8	5/8
PLG16NPT18	M16 x 1,5	1/8	7/8
PLG20NPT14	M20 x 2,0	1/4	1 1/8
PLG27NPT38	M27 x 2,0	3/8	11/8

*External coolant supply is not possible when used in milling machines.

Application Examples

Track link bush

- **Workpiece** 42CrMo4
- **Cutting conditions** vc = 120 m/min · fn = 0,1 mm/rev · pass though
- **Tool** **Insert** SPMT07T208-PD (PC3500) · XOMT07T205-PD (PC5300) **Holder** K5D20025-07

KING DRILL	**180 ea**
Competitor	**120 ea**

50% more

Superior surface finish and chip evacuation.
50% longer tool life than competitor.

Hydraulic oil pump

- **Workpiece** 42CrMo4
- **Cutting conditions** vc = 152 m/min · fn = 0,13 mm/rev · ap: 59 mm (Not pass though) · Through coolant system
- **Tool** **Insert** SPMT090308-PD (PC3500) · XOMT090305-PD (PC5300) **Holder** K3D25532-09

KING DRILL	**468 Holes**
Competitor	**254 Holes**

84% more

Superior chip evacuation and surface finish.
84% longer tool life than competitor.

Track link bush

- **Workpiece** 25CrMo4
- **Cutting conditions** vc = 140m/min · fn = 0,12mm/rev · Through coolant system
- **Tool** **Insert** SPMT090308-PD (PC3500) · XOMT090305-PD (PC5300) **Holder** K3D27025-09

KING DRILL	**vf(mm/min) = 95**
Competitor	**vf(mm/min) = 70**

35% more

KING DRILL has 35% longer tool life and 35% improved productivity.

Track link

- **Workpiece** 42CrMo4
- **Cutting conditions** vc = 110m/min · fn = 0,1mm/rev · Through coolant system
- **Tool** **Insert** SPMT090308-PD (PC3500) , XOMT090305-PD (PC5300) **Holder** K3D27025-09

Chips: KING DRILL Competitor

KING DRILL	**220 Holes**
Competitor	**150 Holes**

45% more

KING DRILL has 45% longer tool life and 100% improved productivity.
Good surface finish, improved chip control and less chattering.

Recommended Cutting Condition

(mm)

Workpiece				Insert			vc (m/min)	Depth of cut = 2D, 3D, 4D Feed rate (mm/rev) per drill dia. (mm)				
ISO		Workpiece	Hardness (HB)	Chip Breaker	Grade			Ø12 - Ø16	Ø17 - Ø23	Ø24 - Ø29	Ø30 - Ø42	Ø43 - Ø60
					Central	Peripheral						
P	Carbon steel	Low carbon steel	80 - 180	LD	PC5335	PC5335	60 -170	0,04 - 0,08	0,04 - 0,08	0,04 - 0,08	0,04 - 0,08	0,04 - 0,08
				PD	PC5300	PC3500	120 - 180					
						NC5330	140 - 220					
		High carbon	180 - 280	PD	PC5300	PC3500	90 - 150	0,04 - 0,10	0,04 - 0,12	0,05 - 0,16	0,06 - 0,16	0,06 - 0,18
						NC5330	110 - 190	0,04 - 0,06	0,04 - 0,07	0,04 - 0,08	0,04 - 0,08	0,04 - 0,08
	Alloy steel	Low alloy steel	140 - 260	LD	PC5335	PC5335	60 - 160	0,06 -0,10	0,06 - 0,10	0,06 - 0,12	0,06 - 0,14	0,06 - 0,14
				PD	PC3500	PC3500	120 - 170	0,06 - 0,12	0,06 - 0,12	0,06 - 0,14	0,06 - 0,16	0,06 - 0,16
						NC5330	140 - 210	0,06 - 0,08	0,06 - 0,08	0,06 - 0,10	0,06 - 0,12	0,06 - 0,12
		Hardened low alloy steel	200 - 400	PD	PC5300	PC5300	50 - 150	0,04 - 0,10	0,06 - 0,10	0,06 - 0,12	0,06 - 0,14	0,06 - 0,14
		High alloy steel	260 - 320	PD	PC5300	PC3500	50 - 160	0,05 - 0,11	0,05 - 0,11	0,05 - 0,13	0,05 - 0,15	0,05 - 0,15
		Hardened high alloy steel	300 - 450	PD	PC5300	PC5300	30 - 120	0,04 - 0,08	0,06 - 0,08	0,06 - 0,10	0,06 - 0,12	0,06 - 0,12
M	Stainless steel	austenitic	135 - 275	LD	PC5335	PC5335	80 - 140	0,04 - 0,07	0,04 - 0,07	0,04 - 0,07	0,04 - 0,08	0,04 - 0,08
				PD	PC5300	PC5300	100 - 160	0,04 - 0,07	0,04 - 0,07	0,04 - 0,07	0,04 - 0,08	0,04 - 0,08
		ferritic, martensitic		LD	PC5335	PC5335	60 -160	0,04 - 0,10	0,04 - 0,12	0,04 - 0,12	0,04 - 0,12	0,04 - 0,12
				PD	PC5300	PC5300		0,04 - 0,10	0,04 - 0,12	0,04 - 0,14	0,06 - 0,14	0,06 - 0,14
K	Cast iron	Gray cast iron	150 - 230	PD	PC5300	PC6510	150 - 250	0,04 - 0,12	0,05 - 0,14	0,06 - 0,18	0,10 - 0,22	0,10 - 0,26
		Ductile cast iron	150 - 230	PD	PC5300	PC6510	100 - 160	0,04 - 0,07	0,04 - 0,08	0,04 - 0,10	0,05 - 0,12	0,05 - 0,12
N	Alloyed aluminum	Alloyed copper	30 - 150	ND	H01	H01	250 - 350	0,04 - 0,12	0,06 - 0,16	0,08 - 0,18	0,10 - 0,22	0,10 - 0,24
	Alloyed copper	Kupfer-legierung	150-160	ND	H01	H01	200 - 300	0,04 - 0,12	0,06 - 0,16	0,08 - 0,18	0,10 - 0,22	0,10 - 0,24
S	Heat resisting alloy	Ni-heat resisting alloy	130 - 400	PD	PC5300	PC5300	30 - 100	0,04 - 0,10	0,04 - 0,10	0,04 - 0,10	0,04 - 0,10	0,04 - 0,10
		Ti-heat resisting alloy	130 - 400	PD	PC5335	PC5335	40 - 80	0,04 - 0,08	0,04 - 0,10	0,06 - 0,12	0,06 - 0,14	0,06 - 0,16
				PD	PC5300	PC5300	40 - 80	0,04 - 0,08	0,04 - 0,10	0,06 - 0,12	0,06 - 0,14	0,06 - 0,16
		High hardened steel	400 -	PD	PC5300	PC5300	20 - 80	0,04 - 0,05	0,04 - 0,06	0,04 - 0,08	0,04 - 0,08	0,04 - 0,08

※ The Max. feed of 5D holders is 70% - 80% of the max. conditions of 2D/3D/4D holders.

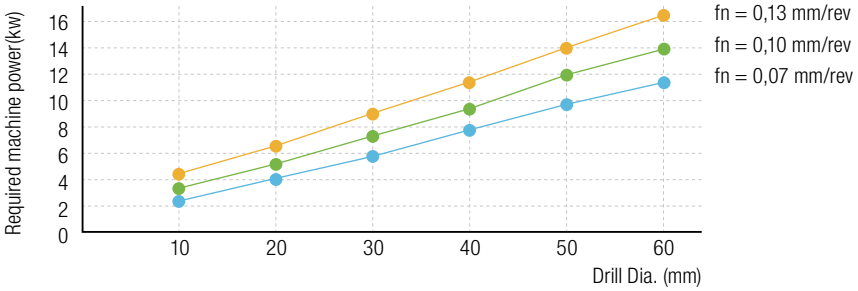
※ In interrupted machining part, reduce 30 - 50% of feed from the above machining around interrupted part.

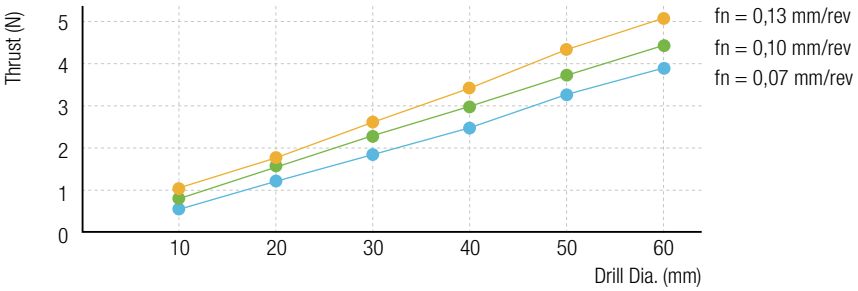
Required Machine Power

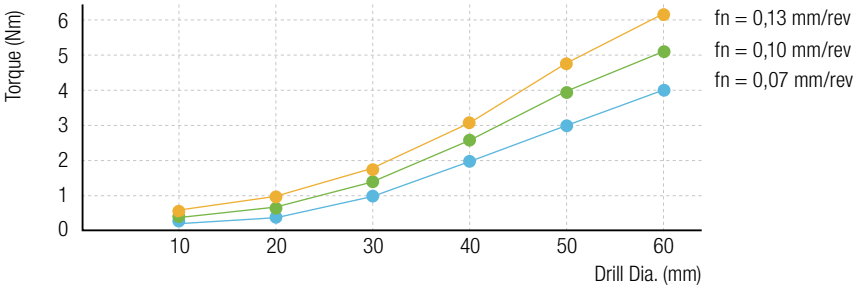
Workpiece 42CrMo4 (240HB)
Cutting conditions vc = 100 m/min · Through coolant system

- The graphs below show the cutting force required in drilling.
- Machining with the KING DRILL and a machine with high rigidity and power.

Test results





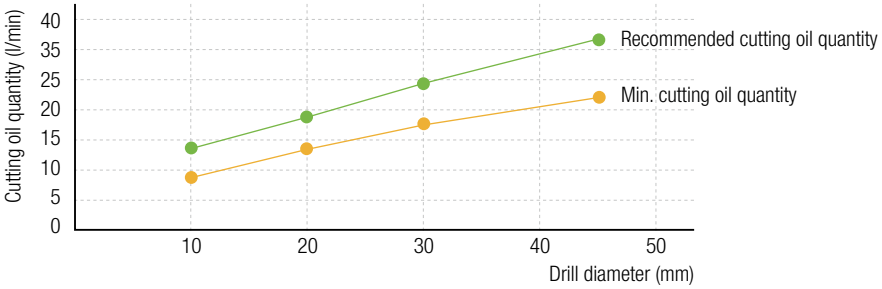


Cutting Oil Quantity

Workpiece 42CrMo4 (240HB)
Cutting conditions vc: 100 m/min · Through coolant system

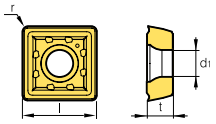
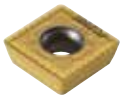
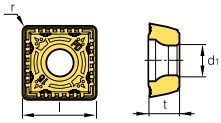
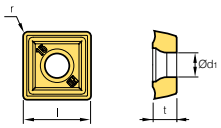
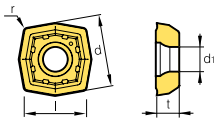
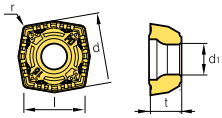
- Recommended coolant pressure: 5kg/cm^2 above
- Data from the above graph can vary depending on workpiece and cutting condition.

Test results



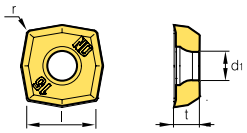
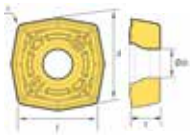
Recommended inserts

(mm)

Fig	Designation		Stock	Grade	Drill Dia.	l	d	t	r	d1	Dimensions
	SPMT	060205-LD	▲	PC5335	Ø16,1 - Ø19,5	6,2	-	2,5	0,5	2,5	
		07T208-LD	▲		Ø19,6 - Ø23,5	7,5	-	2,8	0,7	2,8	
		090308-LD	▲		Ø23,6 - Ø29,5	9,2	-	3,3	0,8	3,4	
		11T308-LD	▲		Ø29,6 - Ø35,5	11,0	-	4,0	0,8	4,0	
		130410-LD	▲		Ø35,6 - Ø42,5	13,0	-	4,5	1,0	4,5	
		15M510-LD	▲		Ø42,6 - Ø50,5	15,2	-	5,0	1,0	5,5	
		180510-LD	▲		Ø50,6 - Ø60,5	18,2	-	5,5	1,0	6,0	
	SPMT	040204-PD	▲	NC5330 PC5300 PC3500 PC6510	Ø12,0 - Ø13,5	4,7	-	2,4	0,4	2,3	
		050204-PD	▲		Ø13,6 - Ø16,0	5,1	-	2,4	0,4	2,3	
		060205-PD	▲		Ø16,1 - Ø19,5	6,2	-	2,5	0,5	2,5	
		07T208-PD	▲		Ø19,6 - Ø23,5	7,5	-	2,8	0,7	2,8	
		090308-PD	▲		Ø23,6 - Ø29,5	9,2	-	3,3	0,8	3,4	
		11T308-PD	▲		Ø29,6 - Ø35,5	11,0	-	4,0	0,8	4,0	
		130410-PD	▲		Ø35,6 - Ø42,5	13,0	-	4,5	1,0	4,5	
		15M510-PD	▲		Ø42,6 - Ø50,5	15,2	-	5,0	1,0	5,5	
		180510-PD	▲		Ø50,6 - Ø60,5	18,2	-	5,5	1,0	6,0	
	SPET	040204-ND	▲	H01	Ø16,1 - Ø19,5	4,7	-	2,4	0,4	2,3	
		050204-ND	▲		Ø19,6 - Ø23,5	5,1	-	2,4	0,4	2,3	
		060205-ND	▲		Ø23,6 - Ø29,5	6,2	-	2,5	0,5	2,5	
		07T208-ND	▲		Ø29,6 - Ø35,5	7,5	-	2,8	0,7	2,8	
		090308-ND	▲		Ø35,6 - Ø42,5	9,2	-	3,3	0,8	3,4	
		11T308-ND	▲		Ø42,6 - Ø50,5	11,0	-	4,0	0,8	4,0	
		130410-ND	▲		Ø50,6 - Ø60,5	13,0	-	4,5	1,0	4,5	
		15M510-ND	▲		Ø12,0 - Ø13,5	15,2	-	5,0	1,0	5,5	
		180510-ND	▲		Ø13,6 - Ø16,0	18,2	-	5,5	1,0	6,0	
	XOMT	060204-LD	▲	PC5335	Ø16,1 - Ø19,5	5,8	6,6	2,5	0,4	2,5	
		07T205-LD	▲		Ø19,6 - Ø23,5	6,9	7,8	2,8	0,5	2,8	
		090305-LD	▲		Ø23,6 - Ø29,5	8,4	9,6	3,3	0,5	3,4	
		11T306-LD	▲		Ø29,6 - Ø35,5	10,0	11,4	4,0	0,6	4,0	
		130406-LD	▲		Ø35,6 - Ø42,5	11,9	13,6	4,5	0,6	4,5	
		15M508-LD	▲		Ø42,6 - Ø50,5	13,9	15,9	5,0	0,8	5,5	
		180508-LD	▲		Ø50,6 - Ø60,5	16,5	18,9	5,5	0,8	6,0	
	XOMT	040204-PD	▲	PC5300	Ø16,1 - Ø19,5	4,3	4,9	2,4	0,4	2,3	
		050204-PD	▲		Ø19,6 - Ø23,5	4,8	5,4	2,4	0,4	2,3	
		060204-PD	▲		Ø23,6 - Ø29,5	5,8	6,6	2,5	0,4	2,5	
		07T205-PD	▲		Ø29,6 - Ø35,5	6,9	7,8	2,8	0,5	2,8	
		090305-PD	▲		Ø35,6 - Ø42,5	8,4	9,6	3,3	0,5	3,4	
		11T306-PD	▲		Ø42,6 - Ø50,5	10,0	11,4	4,0	0,6	4,0	
		130406-PD	▲		Ø50,6 - Ø60,5	11,9	13,6	4,5	0,6	4,5	
		15M508-PD	▲		Ø12,0 - Ø13,5	13,9	15,9	5,0	0,8	5,5	
		180508-PD	▲		Ø13,6 - Ø16,0	16,5	18,9	5,5	0,8	6,0	

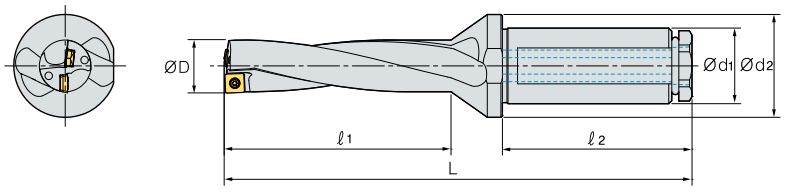
▲: Stock item Europe ●: Stock item Korea ○: Production on demand

Recommended inserts

Fig	Designation		Stock	Grade	Drill Dia.	l	d	t	r	d1	Dimensions
	XOET	040204-ND	▲	H01	Ø13 - Ø14	4,3	4,9	2,4	0,4	2,3	
		050204-ND	▲		Ø15 - Ø16	4,8	5,4	2,4	0,4	2,3	
		060204-ND	▲		Ø18 - Ø20	5,8	6,6	2,5	0,4	2,5	
		07T205-ND	▲		Ø21 - Ø23	6,9	7,8	2,8	0,5	2,8	
		090305-ND	▲		Ø24 - Ø29	8,4	9,6	3,3	0,5	3,4	
		11T306-ND	▲		Ø31 - Ø35	10,0	11,4	4,0	0,6	4,0	
		130406-ND	▲		Ø37 - Ø43	11,9	13,6	4,5	0,6	4,5	
		15M508-ND	▲		Ø45 - Ø51	13,9	15,9	5,0	0,8	5,5	
		180508-ND	▲		Ø53 - Ø61	16,5	18,9	5,5	0,8	6,0	
	XOMT	040205-RD	○	PC5300 PC5335	Ø12,0 - Ø13,5	4,3	4,9	2,4	0,5	2,3	
		050205-RD	○		Ø13,6 - Ø16,0	4,8	5,4	2,4	0,5	2,3	
		060205-RD	○		Ø16,1 - Ø19,5	5,8	6,6	2,5	0,5	2,5	
		07T207-RD	▲		Ø19,6 - Ø23,5	6,9	7,8	2,8	0,7	2,8	
		090308-RD	▲		Ø23,6 - Ø29,5	8,4	9,6	3,3	0,8	3,4	
		11T309-RD	▲		Ø29,6 - Ø35,5	10,0	11,4	4,0	0,9	4,0	
		130410-RD	▲		Ø35,6 - Ø42,5	11,9	13,6	4,5	0,10	4,5	
		15M511-RD	▲		Ø42,6 - Ø50,5	13,9	15,9	5,0	0,11	5,5	
		180512-RD	▲		Ø50 - Ø60,5	16,5	18,9	5,5	0,12	6,0	

▲: Stock item Europe ●: Stock item Korea ○: Production on demand

Drill Tolerance and Hole Tolerance



- The actual hole tolerance of KING DRILL is as shown in the chart above.
- The length of drill, type of workpiece, machine stability, and cutting condition could affect the hole tolerance.

(mm)

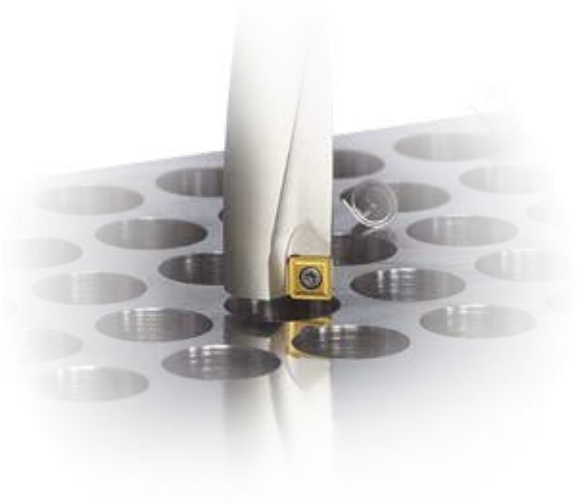
Drill Dia.		Ø12 - Ø29	Ø30 - Ø45	Ø46 - Ø60,5
2D - 3D	Drill tolerance (ØD)	0 to -0,15	0 to -0,15	0 to -0,15
	Hole tolerance	+0,2 to -0,1	+0,25 to -0,1	+0,28 to -0,1
4D - 5D	Drill tolerance (ØD)	0 to -0,15	0 to -0,15	0 to -0,15
	Hole tolerance	+0,25 to -0,05	+0,3 to -0,05	+0,33 to -0,05

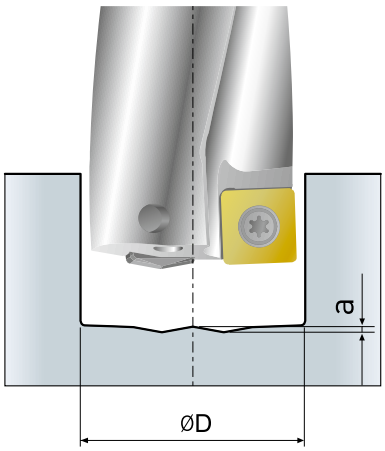
The Shape of the Bottom of Blind Hole

- KING DRILL drills with two inserts, central and peripheral.
- Refer to the above chart for remaining insert curve of blind hole bottom.

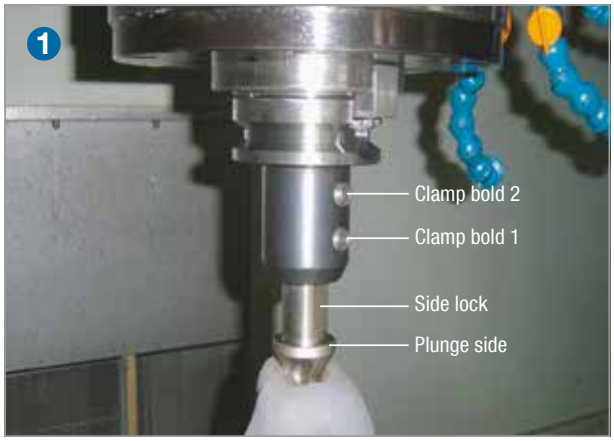
(mm)

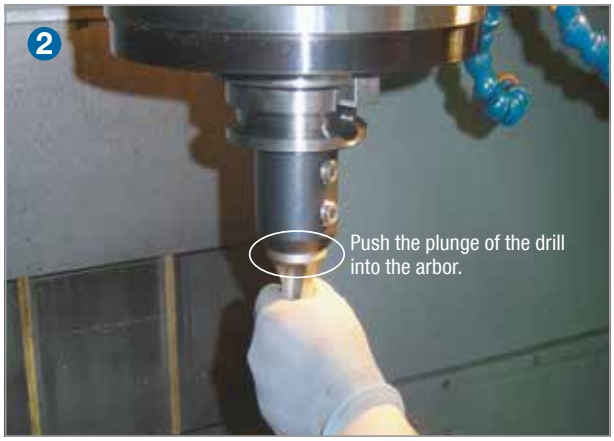
Drill Dia.	Peripheral - Insert	Central - Insert	Torque (Nm)	a
Ø12,0 - 13,5	SP_T040204 - _ _	XO_T040204 - _ _	0,4	0,4
Ø13,6 - 16,0	SP_T050204 - _ _	XO_T050204 - _ _	0,4	0,4
Ø16,1 - 19,5	SP_T060205 - _ _	XO_T060204 - _ _	0,8	0,5
Ø19,6 - 23,5	SP_T07T208 - _ _	XO_T07T205 - _ _	0,8	0,5
Ø23,6 - 29,5	SP_T090308 - _ _	XO_T090305 - _ _	1,2	0,7
Ø29,6 - 35,5	SP_T11T308 - _ _	XO_T11T306 - _ _	3,0	0,8
Ø35,6 - 42,5	SP_T130410 - _ _	XO_T130406 - _ _	3,0	1,0
Ø42,6 - 50,5	SP_T15M510 - _ _	XO_T15M508 - _ _	5,0	1,1
Ø50,6 - 60,5	SP_T180510 - _ _	XO_T180508 - _ _	5,0	1,2





How to Clamp KING DRILL to Side Lock Arbor

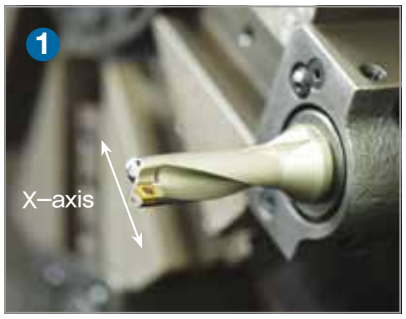


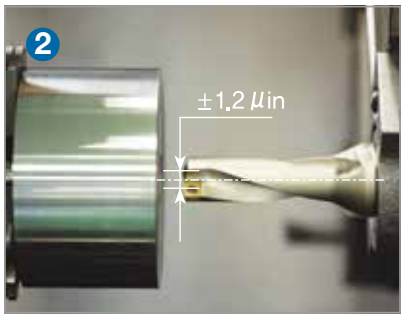


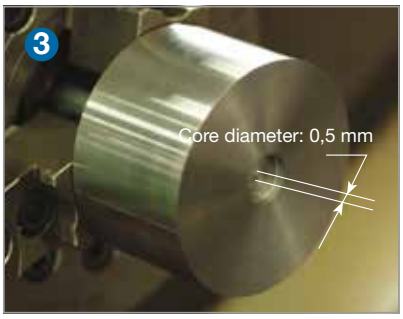
Recommendation to use side lock arbor for KING DRILL

① Insert the drill with the side lock aligned to the bolts of the arbor.
② Push the plunge of the drill into the arbor.
③ Clamp Bolt 1.
④ Clamp Bolt 2.

Notice for Setting the Drill in the Lathe







Note

- Set the peripheral insert parallel to the X axis. (Based on the side lock.)
- To calibrate the drill to its ideal settings, the initial drilling depth should be at 5 mm, in order to make the core dia. of 0,5 mm wide.
- Note that the location of the side lock may vary depending on the lathe brand.

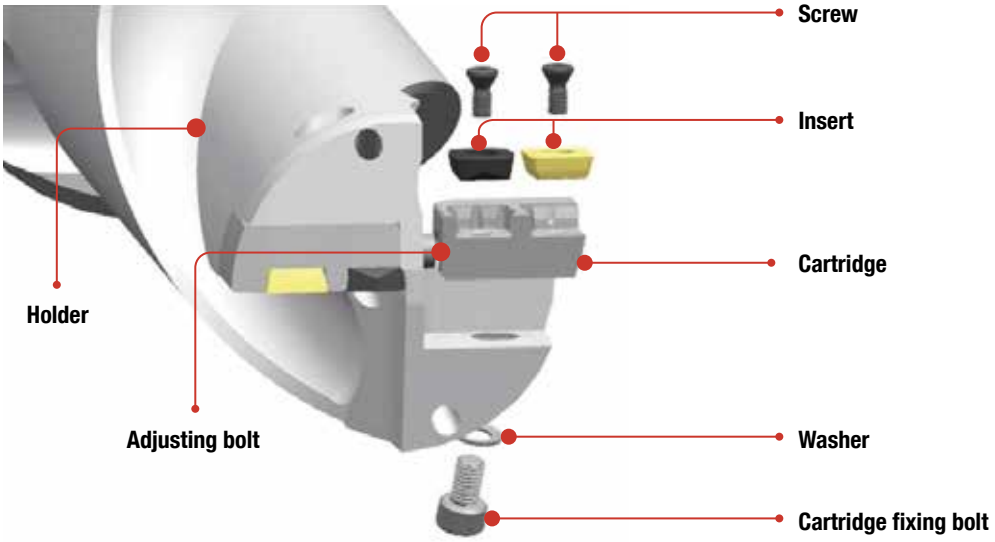
Machining Required Attention

Workpiece	Machining	
	**Machining overlapped panels**	• Possible chipping and fracture of insert. • Reduce normal feed 25%.
	**Machining irregular face**	• Possible chipping and fracture of the insert. • Reduce normal feed 25%.
	**Machining convex side**	• Possible initial contact with central insert. • Reduce feed 50% until both inserts are engaged.
	**Machining concave side**	• Reduce feed 50% until both inserts are engaged.
	**Ramping**	• Reduce feed 50% from normal conditions.
	**Machining cross holes**	• Reduce feed 50% in the overlapped section.
	**Machining overlapped holes**	• Reduce feed 50% from normal conditions.

Solutions for Machining Failure

Failure	Detail	Solution
Different diameters of one machined hole	Different diameters of one machined hole → The end of hole Diameter is bigger	• Use more coolant and check the coolant evacuation. • Change the drill to one with small aspect ratio. • Change the cutting condition for better chip control.
Enlarging or reducing hole diameter	Enlarging or reducing hole diameter	• Drilling → Use more coolant → Check the coolant evacuation • Turning → Check the center of drill and workpiece → Rotate the drill to 180°
Chattering	Vibration while machining	• Set the overhang of drill short • Reduce the cutting speed and feed • Stable clamping • Check the torque of machine
Poor chip evacuation	Long chip	• Mild steel/STS → speed up, feed down.
		• Alloy steel/carbon steel → speed up, feed up.
	Short chip	• Speed down, feed down, pressure of coolant up.
Poor surface finish	Scratch on the machined side	• Set the cutting condition for better chip control. • Feed down or speed up. • Increase the coolant flow and check the coolant evacuation. • Set the overhang of drill short and more stable clamping.
Short tool life of insert	Too much wear or chipping on insert	• Check the cutting condition. • Use more coolant and check the coolant evacuation. • Set the overhang of drill short and more stable clamping. • Change the insert grade.

KING DRILL - For Large Diameter Drilling

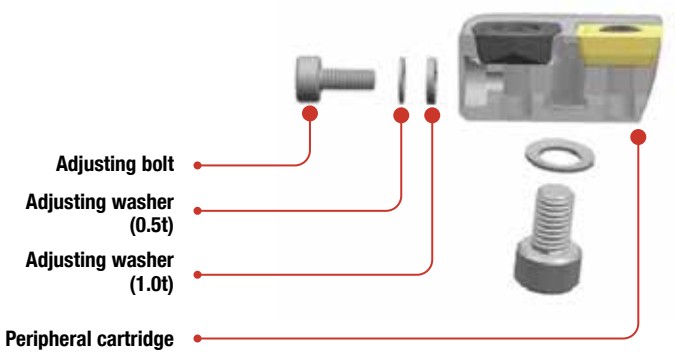


Cartridge type for
Ø61 - Ø31 drilling.

Peripheral cartridge can adjust the drilling diameter within 5 mm.

Easy to adjust drilling diameter with adjusting bolt.

Cartridge fixing bolt



Adjustment Ø (mm)	Adjusting Washer	
	Designation	Width (mm)
1	WA0305	0,5
2	WA0310	1,0
3	WA0305 + WA0310	1,5
4	WA0310 x 2	2,0
5	WA0305 + WA0310 x 2	2,5

※ Adjusting washer adjusts the drilling diameter within 5mm.

KING DRILL Parts (For large diameter drilling)

Cartridge		Range (Ø)	Insert				Screw	Wrench
Internal	External		Designation	Quantity	Designation	Quantity		
KDC6165C	KDC6165P	61 - 65	XO_T11T306-_ _	2	SP_T11T308-_ _	2	FTKA03508	TW15S
KDC6570C	KDC6570P	65 - 70	XO_T130406-_ _	2	SP_T130410-_ _	2	FTKA0410	TW15S
KDC7075C	KDC7075P	70 - 75	XO_T130406-_ _	2	SP_T130410-_ _	2	FTKA0410	TW15S
KDC7580C	KDC7580P	75 - 80	XO_T130406-_ _	2	SP_T130410-_ _	2	FTKA0410	TW15S
KDC8085C	KDC8085P	80 - 85	XO_T15M508-_ _	2	SP_T15M510-_ _	2	FTNC04511	TW20S
KDC8590C	KDC8590P	85 - 90	XO_T15M508-_ _	2	SP_T15M510-_ _	2	FTNC04511	TW20S
KDC9095C	KDC9095P	90 - 95	XO_T15M508-_ _	2	SP_T15M510-_ _	2	FTNC04511	TW20S
KDC95100C	KDC95100P	95 - 100	XO_T180508-_ _	2	SP_T180510-_ _	2	FTNA0511	TW20-100

Special Drill Order Form

Mark 'X'
in the box:

Note

Currently using tool:

.....

Current Cutting conditions:

..... RPM / vc (m/min)

..... vf (mm/min) / fn (mm/rev)

..... Depth of cut (mm)

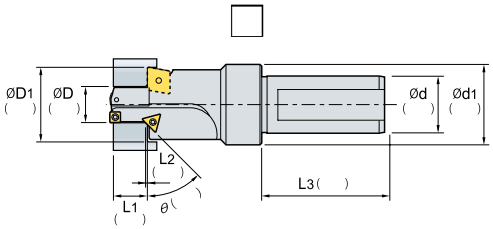
Standard of measuring tool life:

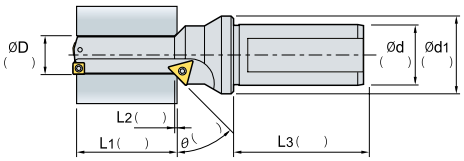
.....
Currently using machine

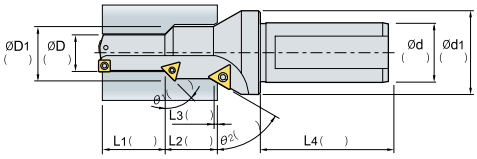
.....
Machining center

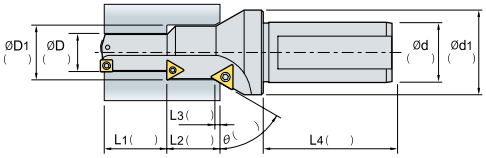
.....
General lathe

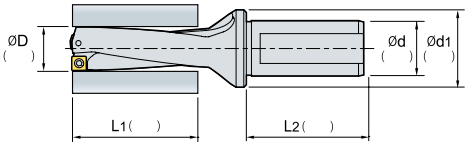
.....
CNC-lathe:



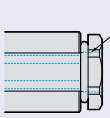








Coolant type



Through coolant
Plug Type (Standard

Through coolant
Non Plug Type

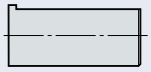
No coolant

Hole type

Blind hole

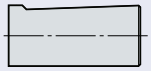
Thru hole

Types of shank



Flat Type

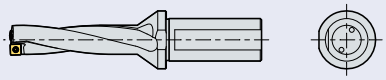
Weldon Type



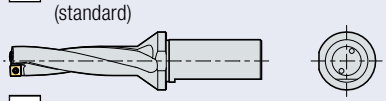
Whistle Notch Type

Location of side lock

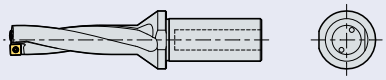
Parallel to peripheral insert (standard)



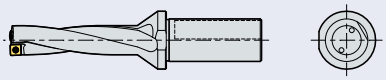
90° angle to peripheral insert
(standard)



180° angle to peripheral insert
(standard)



270° angle to peripheral insert
(standard)



Notes

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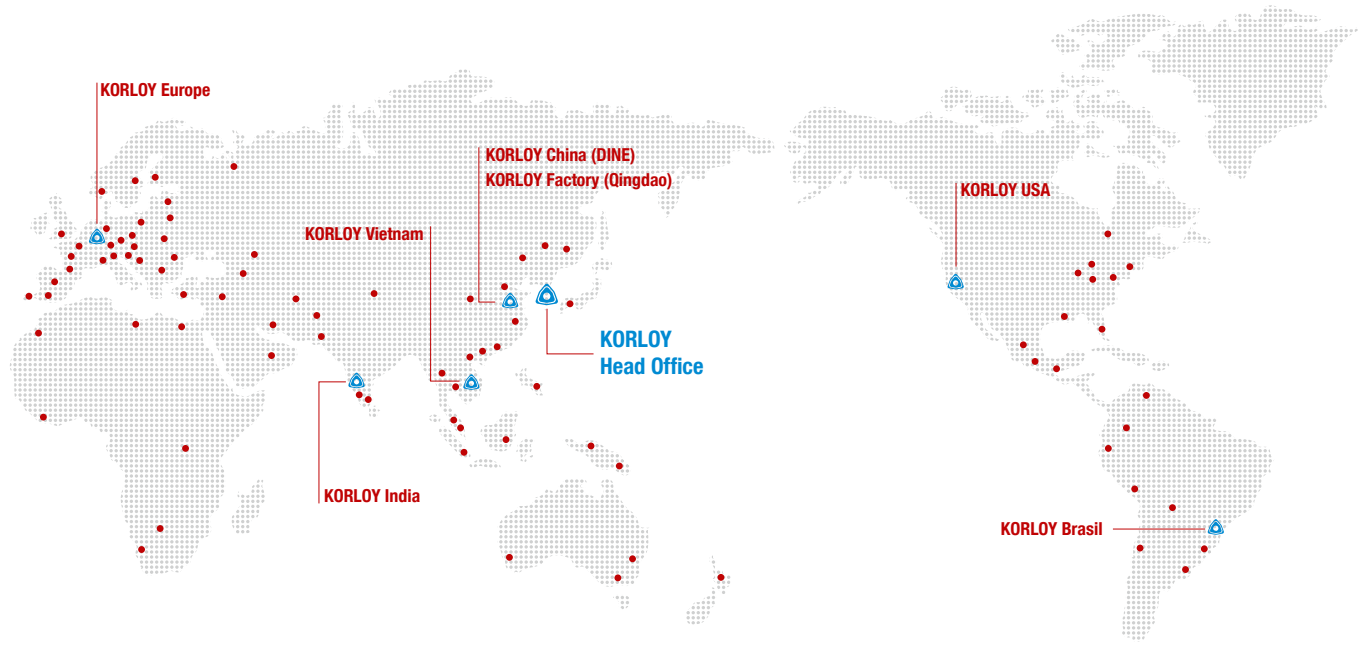

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