DRILL

Korloy drills provide a total solution for hole making,
based on tooling know-how
as well as extensive research and
development for our tools.

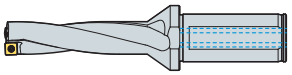
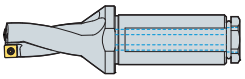
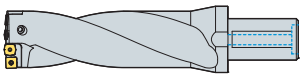
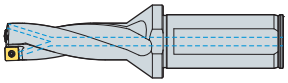
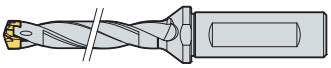
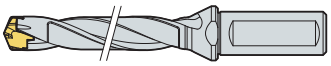
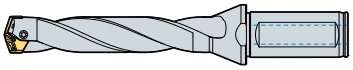
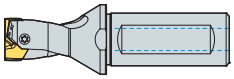
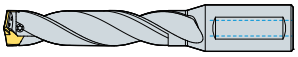
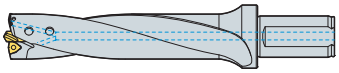
F

Technical Information for Drills

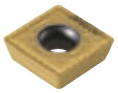
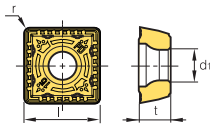
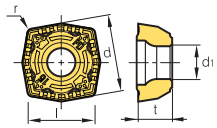
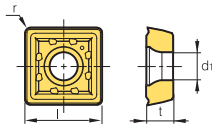
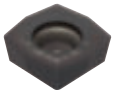
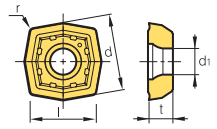
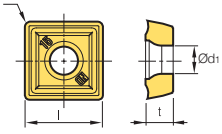
Indexable Drills

Indexable Drills

Reamer

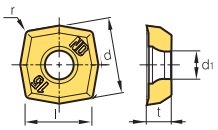
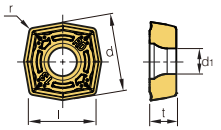
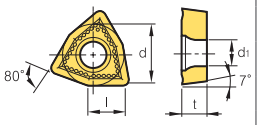
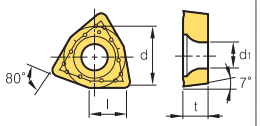
Type	Designation		Shape	Drills dia.	Aspect ratio	Page
Indexable Drills	King Drill	K□D	 Available insert: SP□T, XO□T	Ø12.0~Ø60.5	2D~5D	F11~F19
	King Drill HP	K□D..HP	 Available insert: SP□T, XO□T	Ø12.0~Ø60.5	2D~4D	F21~F23
	King Drill (for large diameter drilling)	K□D	 Available insert: SP□T, XO□T	Ø61.0~Ø100.0	2D~4D	F25
	KED Plus Drill new	E□D	 Available insert: SP□T, XO□T	Ø12.0~Ø60.5	2D~5D	F29~F36
	TPDC Plus Drill new	TPDX	 Available insert: TPD□□□□XP	Ø8.0~Ø11.9	3D~8D	F50
		TPDC	 Available insert: TPD□□□□C□	Ø12.0~Ø30.9	1.5D~12D	F51~F53
	TPDB Plus Drill new	TPDB-P	 Available insert: TPD□□□B	Ø10.0~Ø32.9	3D~12D	F58~F62
		TPDB-F	 Available insert: TPD□□□B–F	Ø14.0~Ø30.9	1.5D	F67
		TPDB-H	 Available insert: TPD□□□B–H	Ø14.0~Ø30.9	3D~8D	F72~F74
	Indexable Drills & Drill with center	WPDC	 Available insert: WC□T	Ø25.0~Ø80.0	5D~8D	F79~F81
Reamer	Indexable Reamer	IRT	 Available Insert: RI	Ø10.0~Ø31.0	3D~5D	F86
		IRB	 Available Insert: RI	Ø10.0~Ø31.0	3D~5D	F87

Available insert

Picture	Designation	Coated								Uncoated	Dimensions (mm)					Configuration	Page
		NC5330	NCM535	PC3700	PC6510	PC9530	PC9540	PC5335	PC5300	H01	l	d	t	r	d1		
[Peripheral] **SPMT-PD**  Universal	040204-PD	●	●	●	●		●		●		4.7	-	2.4	0.4	2.3		F11~ F36
	050204-PD	●	●	●	●		●		●		5.1	-	2.4	0.4	2.3		
	060205-PD	●	●	●	●		●		●		6.2	-	2.5	0.5	2.5		
	07T208-PD	●	●	●	●		●		●		7.5	-	2.8	0.7	2.8		
	090308-PD	●	●	●	●		●		●		9.2	-	3.3	0.8	3.4		
	11T308-PD	●	●	●	●		●		●		11.0	-	4.0	0.8	4.0		
	130410-PD	●	●	●	●		●		●		13.0	-	4.5	1.0	4.5		
	15M510-PD	●	●	●	●		●		●		15.2	-	5.0	1.0	5.5		
	180510-PD	●	●	●	●		●		●		18.2	-	5.5	1.0	6.0		
[Central] **XOMT-PD**  Universal	040204-PD						●		●		4.3	4.9	2.4	0.4	2.3		F11~ F36
	050204-PD						●		●		4.8	5.4	2.4	0.4	2.3		
	060204-PD						●		●		5.8	6.6	2.5	0.4	2.5		
	07T205-PD						●		●		6.9	7.8	2.8	0.5	2.8		
	090305-PD						●		●		8.4	9.6	3.3	0.5	3.4		
	11T306-PD						●		●		10.0	11.4	4.0	0.6	4.0		
	130406-PD						●		●		11.9	13.6	4.5	0.6	4.5		
	15M508-PD						●		●		13.9	15.9	5.0	0.8	5.5		
	180508-PD						●		●		16.5	18.9	5.5	0.8	6.0		
[Peripheral] **SPMT-LD**  Mild steel	060205-LD							●			6.2	-	2.5	0.5	2.5		F11~ F36
	07T208-LD							●			7.5	-	2.8	0.7	2.8		
	090308-LD							●			9.2	-	3.3	0.8	3.4		
	11T308-LD							●			11.0	-	4.0	0.8	4.0		
	130410-LD							●			13.0	-	4.5	1.0	4.5		
	15M510-LD							●			15.2	-	5.0	1.0	5.5		
	180510-LD							●			18.2	-	5.5	1.0	6.0		
[Central] **XOMT-LD**  Mild steel	060204-LD							●			5.8	6.6	2.5	0.4	2.5		F11~ F36
	07T205-LD							●			6.9	7.8	2.8	0.5	2.8		
	090305-LD							●			8.4	9.6	3.3	0.5	3.4		
	11T306-LD							●			10.0	11.4	4.0	0.6	4.0		
	130406-LD							●			11.9	13.6	4.5	0.6	4.5		
	15M508-LD							●			13.9	15.9	5.0	0.8	5.5		
	180508-LD							●			16.5	18.9	5.5	0.8	6.0		
[Peripheral] **SPET-ND**  Al	040204-ND									●	4.7	-	2.4	0.4	2.3		F11~ F36
	050204-ND									●	5.1	-	2.4	0.4	2.3		
	060205-ND									●	6.2	-	2.5	0.5	2.5		
	07T208-ND									●	7.5	-	2.8	0.7	2.8		
	090308-ND									●	9.2	-	3.3	0.8	3.4		
	11T308-ND									●	11.0	-	4.0	0.8	4.0		
	130410-ND									●	13.0	-	4.5	1.0	4.5		
	15M510-ND									●	15.2	-	5.0	1.0	5.5		
	180510-ND									●	18.2	-	5.5	1.0	6.0		

● : Stock Item

Available insert

Picture	Designation	Coated								Uncoated	Dimensions (mm)					Configuration	Page
		NC5330	NCM535	PC3700	PC6510	PC9530	PC9540	PC5335	PC5300	H01	l	d	t	r	d_1		
[Central] **XOET-ND**  Al	040204-ND									●	4.3	4.9	2.4	0.4	2.3		F11~ F36
	050204-ND									●	4.8	5.4	2.4	0.4	2.3		
	060204-ND									●	5.8	6.6	2.5	0.4	2.5		
	07T205-ND									●	6.9	7.8	2.8	0.5	2.8		
	090305-ND									●	8.4	9.6	3.3	0.5	3.4		
	11T306-ND									●	10.0	11.4	4.0	0.6	4.0		
	130406-ND									●	11.9	13.6	4.5	0.6	4.5		
	15M508-ND									●	13.9	15.9	5.0	0.8	5.5		
	180508-ND									●	16.5	18.9	5.5	0.8	6.0		
[Central] **XOMT-RD**  Rein fored cutting-edge	07T207-RD								●		6.9	7.8	2.8	0.7	2.8		F11~ F36
	090308-RD								●		8.4	9.6	3.3	0.8	3.4		
	11T309-RD								●		10.0	11.4	4.0	0.9	4.0		
	130410-RD								●		11.9	13.6	4.5	1.0	4.5		
	15M511-RD								●		13.9	15.9	5.0	1.1	5.5		
	180512-RD								●		16.5	18.9	5.5	1.2	6.0		
WCMT-C20N 	030208-C20N							●			3.8	5.56	2.38	0.8	2.8		-
	040208-C20N							●			4.3	6.35	2.38	0.8	3.0		
	050308-C20N		●					●			5.4	7.94	3.18	0.8	3.4		
	06T308-C20N		●					●			6.5	9.525	3.97	0.8	3.7		
	080408-C20N							●			8.7	12.7	4.76	0.8	4.3		
	080412-C20N		●					●			8.7	12.7	4.76	1.2	4.3		
WCMT-C21N 	030204-C21N							●			3.8	5.56	2.38	0.4	2.55		F79~ F81
	040204-C21N							●			4.3	6.35	2.38	0.4	2.8		
	040208-C21N							●			4.3	6.35	2.38	0.8	2.8		
	050308-C21N							●			5.4	7.94	3.18	0.8	3.4		
	06T308-C21N							●			6.5	9.525	3.97	0.8	4.4		
	080408-C21N							●			8.7	12.7	4.76	0.8	5.5		

●: Stock Item

Optimized insert design for maximum drilling efficiency

King Drill

Code system

K 5D 200 25 □ - 07

KING/KORLOY

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

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

Shank Dia.
Ø20
Ø25
Ø32
Ø40 mm

Shank shape
No mark: Flange Shank, Weldone
HP: Flange Shank, Weldon, PT 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

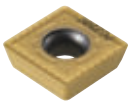
Inscribed circle of insert
04, 05, 06, 07, 09, 11, 13, 15, 18

Features

- 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 & peripheral
- Different inserts, optimized for the central and peripheral insert locations in order to maximize cutting tool life

Optimized flute system - 2 coolant holes applied
The optimized shape of the flute increases the rigidity of the drill body and improves chip evacuation

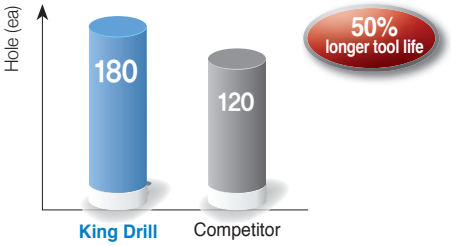
Features of chip breaker

Chip breaker	PD		LD		ND		RD
Features	- Universal - At medium speed and medium feed		- Superior chip control for machining mild steel and stainless steel - Light cutting (at low~medium speed and low feed)		- Sharp cutting edge for aluminum machining - Insert surface buffed for high quality result - E Class tolerance		- Improved chipping resistance - Excellent performance in case of frequent fracture and chipping on the cutting edge
Insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Central insert
Shape							
Grades for workpiece	NC5330: P, M, K PC3700: P PC5300: P, M, K, S PC6510: K PC9540: P, M, S	PC5300: P, M, K, S PC9540: P, M, S	PC5335: P, M		H01: N		PC5300: P, M, K, S

Application examples

- **Use** Track link bush
- **Workpiece** SM45C
- **Cutting conditions** vc (m/min) = 120, fn (mm/rev) = 0.1
  Through coolant system
- **Tools** **Inserts** SPMT07T208–PD (PC3700)
  XOMT07T205–PD (PC5300)
  Holder K5D20025–07
- **Machine** Drilling machine

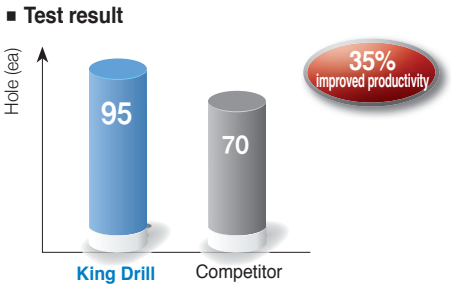
Test result



• Superior surface finish and chip evacuation

- **Use** Track link bush
- **Workpiece** SCM415H
- **Cutting conditions** Competitor: vc (m/min) = 125, fn (mm/rev) = 0.1
  King Drill: vc (m/min) = 140, fn (mm/rev) = 0.12
- **Tools** **Inserts** SPMT090308–PD (PC3700)
  XOMT090305–PD (PC5300)
  Holder K3D27032–09
- **Machine** MCT

Test result



• Increased productivity due to higher capabilities for cutting conditions compared to the competitor

Recommended cutting condition

Workpiece				Insert			vc (m/min)	Aspect ratio (L/D) = 2D, 3D, 4D					
ISO		Workpiece	Hardness (HB)	Chip breaker	Grade			Feed rate (mm/rev) per drill dia. (mm)					
					Central	Peripheral		Ø12~Ø16	Ø17~Ø23	Ø24~Ø29	Ø30~Ø42	Ø43~Ø60	Ø61~Ø100
P	Carbon steel	Low carbon steel	80~180	LD	PC5335	PC5335	120 (60~170)	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08
				PD/RD	PC5300	PC3700	150 (120~180)						
						NC5330	180 (140~220)						
		High carbon steel	180~280	PD	PC5300	PC3700	120 (90~150)	0.04~0.10	0.04~0.12	0.05~0.16	0.06~0.16	0.06~0.18	0.06~0.18
						NC5330	150 (110~190)	0.04~0.06	0.04~0.07	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08
	Alloy steel	Low alloy steel	140~260	LD	PC5335	PC5335	120 (60~160)	0.06~0.10	0.06~0.10	0.06~0.12	0.06~0.14	0.06~0.14	0.06~0.14
				PD	PC5300	PC3700	150 (120~170)	0.06~0.12	0.06~0.12	0.06~0.14	0.06~0.16	0.06~0.16	0.06~0.16
						NC5330	180 (140~210)	0.06~0.08	0.06~0.08	0.06~0.10	0.06~0.12	0.06~0.12	0.06~0.12
		Low alloy heattreated steel	200~400	PD	PC5300	PC5300	100 (50~150)	0.04~0.10	0.06~0.10	0.06~0.12	0.06~0.14	0.06~0.14	0.06~0.14
		High alloy steel	260~320	PD	PC5300	PC3700	100 (50~160)	0.05~0.11	0.05~0.11	0.05~0.13	0.05~0.15	0.05~0.15	0.05~0.15
		High alloy heattreated steel	300~450	PD	PC5300	PC5300	70 (30~120)	0.04~0.08	0.06~0.08	0.06~0.10	0.06~0.12	0.06~0.12	0.06~0.12
M	Stainless steel	Stainless steel	135-275	LD	PC5335	PC5335	120 (80~140)	0.04~0.07	0.04~0.07	0.04~0.07	0.04~0.08	0.04~0.08	0.04~0.08
				PD	PC5300	PC5300	130 (100~160)	0.04~0.07	0.04~0.07	0.04~0.07	0.04~0.08	0.04~0.08	0.04~0.08
					PC9540	PC9540	90 (60~120)	0.04~0.07	0.04~0.07	0.04~0.07	0.04~0.08	0.04~0.08	0.04~0.08
K	Cast iron	Gray cast iron	150~230	PD	PC5300	PC6510	190 (150~250)	0.04~0.12	0.05~0.14	0.06~0.18	0.10~0.22	0.10~0.26	0.10~0.26
		Ductile cast iron	150~230	PD	PC5300	PC6510	130 (100~160)	0.04~0.07	0.04~0.08	0.04~0.10	0.05~0.12	0.05~0.12	0.05~0.12
S	Heat resisting alloy	Ni-heat resisting alloy	130~400	PD	PC5300	PC5300	50 (30~100)	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10
					PC9540	PC9540	40 (20~80)	0.04~0.10	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	LD	PC5335	PC5335	60 (40~80)	0.04~0.08	0.04~0.10	0.06~0.12	0.06~0.14	0.06~0.16	0.06~0.16
				PD	PC5300	PC5300	60 (40~80)	0.04~0.08	0.04~0.10	0.06~0.12	0.06~0.14	0.06~0.16	0.06~0.16
		High hardened steel	over 400	PD	PC5300	PC5300	40 (20~80)	0.04~0.05	0.04~0.06	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08
N	Aluminium	Aluminium	30~150	ND	H01	H01	300 (250~400)	0.05~0.14	0.06~0.16	0.10~0.20	0.10~0.22	0.12~0.25	0.12~0.25
		Alloyed copper	150-160	ND	H01	H01	250 (200~300)	0.05~0.14	0.06~0.16	0.10~0.20	0.10~0.22	0.12~0.25	0.12~0.25

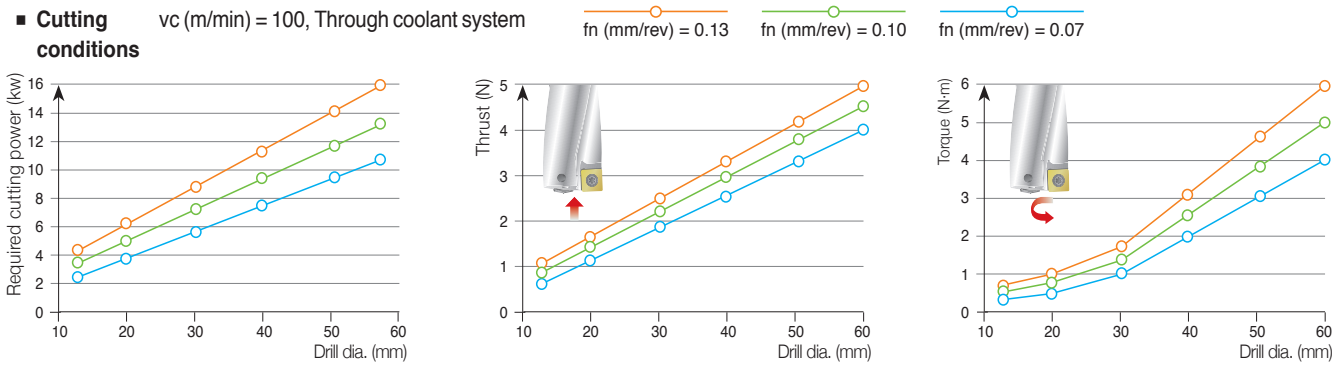
• The Max. feed of 5D holders is 70%~80% of the max. conditions of 2D/3D/4D holders
• In interrupted machining part, reduce 30~50% of feed from the above machining around interrupted part

Required cutting power

- The graphs below show the cutting force required in drilling
- Machining with the King Drill and a machine with high rigidity and power

■ **Workpiece** SCM440 (240HB)

■ **Cutting conditions** vc (m/min) = 100, Through coolant system

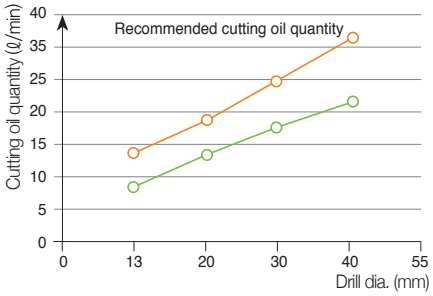


Cutting oil quantity

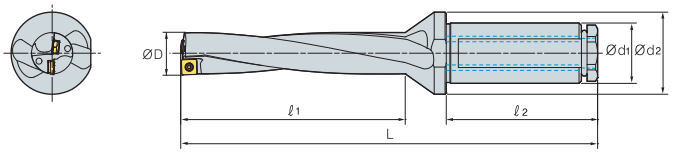
■ **Workpiece** SCM440 (240HB)

■ **Cutting conditions** vc (m/min) = 100, Through coolant system

- The data of the graph above could be changed depending on workpiece and cutting condition



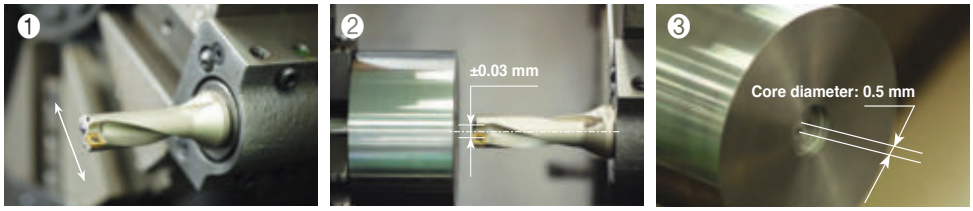
Drill tolerance and hole tolerance



(mm)

Drill dia.		Ø12~Ø29	Ø30~Ø45	Ø46~Ø60.5
2D~3D	Drill tolerance (ØD)	0~-0.15	0~-0.15	0~-0.15
	Hole tolerance	+0.2~-0.1	+0.25~-0.1	+0.28~-0.1
4D~5D	Drill tolerance (ØD)	0~-0.15	0~-0.15	0~-0.15
	Hole tolerance	+0.25~-0.05	+0.3~-0.05	+0.33~-0.05

Notice for setting the drill in the lathe

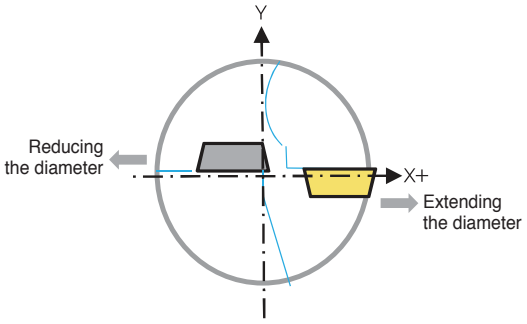


- Set the peripheral insert parallel to the X axis. (based on the side lock)
- If the machined core is 0.5 mm after machining 5 mm, that is the proper setting

※ Please make sure that the location of the side lock could be different depending on manufacturers of machine

Range of adjusting machining diameter in the lathe

- In machining in the lathe, the King Drill can extend and reduce the machining diameter by adjusting the x-axis. Please refer to the table showing the range of adjusting drilling diameter below
- The more the drilling diameter is extended or reduced, the more the drill loses drilling balance. In this case, reduce the feed or cutting speed in machining
- Reducing the machining diameter excessively could damage the holder



(mm)

Drill dia. (Ø)	Range of adjusting drilling diameter (Ø)	Drill dia. (Ø)	Range of adjusting drilling diameter (Ø)	Drill dia. (Ø)	Range of adjusting drilling diameter (Ø)	Drill dia. (Ø)	Range of adjusting drilling diameter (Ø)
12.0	11.7~12.4	24.5	23.9~25.1	37.0	36.3~37.7	49.5	48.7~50.2
12.5	12.2~12.9	25.0	24.4~25.6	37.5	36.8~38.2	50.0	49.2~50.7
13.0	12.7~13.4	25.5	24.9~26.1	38.0	37.3~38.7	50.5	49.7~51.2
13.5	13.2~13.9	26.0	25.4~26.6	38.5	37.8~39.2	51.0	50.2~51.7
14.0	13.6~14.5	26.5	25.9~27.1	39.0	38.3~39.7	51.5	50.7~52.2
14.5	14.1~15.0	27.0	26.4~27.6	39.5	38.8~40.2	52.0	51.2~52.7
15.0	14.6~15.5	27.5	26.9~28.1	40.0	39.3~40.7	52.5	51.7~53.2
15.5	15.1~16.0	27.8	27.4~28.6	40.5	39.8~41.2	53.0	52.2~53.7
16.0	15.6~16.5	28.5	27.9~29.1	41.0	40.3~41.7	53.5	52.7~54.2
16.5	16.0~17.0	29.0	28.4~29.6	41.5	40.8~42.2	54.0	53.2~54.7
17.0	16.5~17.5	29.5	28.9~30.1	42.0	41.3~42.7	54.5	53.7~55.2
17.5	17.0~18.0	30.0	29.3~30.7	42.5	41.8~43.2	55.0	54.2~55.7
18.0	17.5~18.5	30.5	29.8~31.2	43.0	42.2~43.7	55.5	54.7~56.2
18.5	18.0~19.0	31.0	30.3~31.7	43.5	42.7~44.2	56.0	55.2~56.7
19.0	18.5~19.5	31.5	30.8~32.2	44.0	43.2~44.7	56.5	55.7~57.2
19.5	19.0~20.0	32.0	31.3~32.7	44.5	43.7~45.2	57.0	56.2~57.7
20.0	19.4~20.6	32.5	31.8~33.2	45.0	44.2~45.7	57.5	56.7~58.2
20.5	19.9~21.1	33.0	32.3~33.7	45.5	44.7~46.2	58.0	57.2~58.7
21.0	20.4~21.6	33.5	32.8~34.2	46.0	45.2~46.7	58.5	57.7~59.2
21.5	20.9~22.1	34.0	33.3~34.7	46.5	45.7~47.2	59.0	58.2~59.7
22.0	21.4~22.6	34.5	33.8~35.2	47.0	46.2~47.7	59.5	58.7~60.2
22.5	21.9~23.1	35.0	34.3~35.7	47.5	46.7~48.2	60.0	59.2~60.7
23.0	22.4~23.6	35.5	34.8~36.2	48.0	47.2~48.7	60.5	59.7~61.2
23.5	22.9~24.1	36.0	35.3~36.7	48.5	47.7~49.2		
24.0	23.4~24.6	36.5	35.8~37.2	49.0	48.2~49.7		

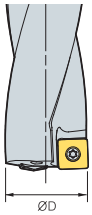
Insert and parts

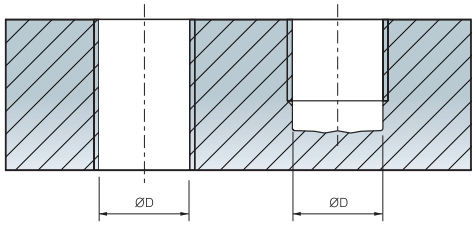
Drill dia. (mm)	Peripheral insert	Central insert	Screw	Wrench	Torque (N·m)
Ø12.0~Ø13.5	SP□T040204-□□	XO□T040204-□□	FTNA0204	TW06P	0.4
Ø13.6~Ø16.0	SP□T050204-□□	XO□T050204-□□	FTNA0204	TW06P	0.4
Ø16.1~Ø19.5	SP□T060205-□□	XO□T060204-□□	FTKA02206S	TW07P	0.8
Ø19.6~Ø23.5	SP□T07T208-□□	XO□T07T205-□□	FTKA02565	TW07S	0.8
Ø23.6~Ø29.5	SP□T090308-□□	XO□T090305-□□	FTKA0307	TW09S	1.2
Ø29.6~Ø35.5	SP□T11T308-□□	XO□T11T306-□□	FTKA03508	TW15S	3
Ø35.6~Ø42.5	SP□T130410-□□	XO□T130406-□□	FTKA0410	TW15S	3
Ø42.6~Ø50.5	SP□T15M510-□□	XO□T15M508-□□	FTNC04511	TW20S	5
Ø50.6~Ø60.5	SP□T180510-□□	XO□T180508-□□	FTNA0511	TW20-100	5

- In clamping an insert, please clean the tip seat and apply CASMOLY1000 on the screw
- Please make sure to use a Korloy-produced wrench and screw only

King Drill - for machining a tap foundation hole

• There are two types of specifications of tap, metric and inch. The King Drill is available for machining both thru tap and blind tap



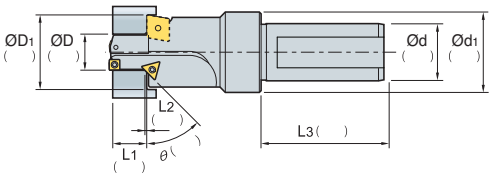


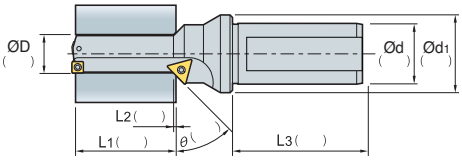
Thru tap Blind tap

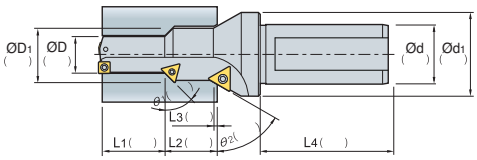
(mm)

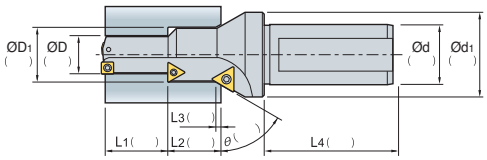
Tap type	Thread	ØD	Designation	Reference
Mertic	M14 x 2.0	12.0	K3D12020-04	F13
	M16 x 2.0	14.0	K3D14020-05	F13
	M18 x 2.5	15.5	K3D15520-05	F13
	M20 x 2.5	17.5	K3D17525-06	F13
	M22 x 2.5	19.5	K3D19525-06	F13
	M24 x 3.0	21.0	K3D21025-07	F13
	M27 x 3.0	24.0	K3D24032-09	F13
	M30 x 3.5	26.5	K3D26532-09	F13
	M33 x 4.0	29.0	K3D29032-09	F13
	M36 x 4.0	32.0	K3D30032-11	F14
	M39 x 4.0	35.0	K3D35032-11	F14
	M42 x 4.5	37.5	K3D37540-13	F14
Inch	9/16-12 UNC	12.2	K3D12220-04	F13
	5/8-11 UNC	13.5	K3D13520-04	F13
	3/4-10 UNC	16.5	K3D16525-06	F13
	7/8-9 UNC	19.5	K3D19525-06	F13
	9/16-18 UNF	12.9	K3D12920-04	F13
	5/8-18 UNF	14.5	K3D14520-05	F13
	3/4-16 UNF	17.5	K3D17525-06	F13

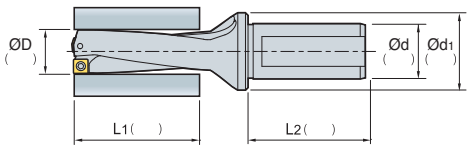
Special drill order form





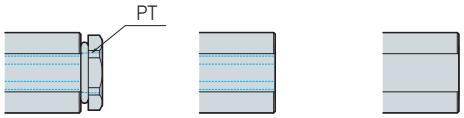






■ Coolant type

☐ Through coolant Plug type (Standard) ☐ Through coolant Non plug type ☐ No coolant



■ Hole type

☐ Blind hole ☐ Thru hole

■ Types of shank

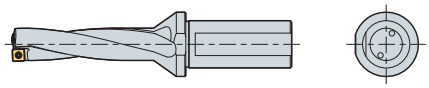
☐  Flat type

☐  Weldon type

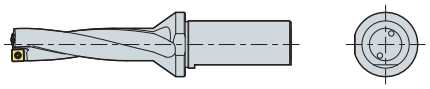
☐  Whistle Notch type

■ Location of side lock

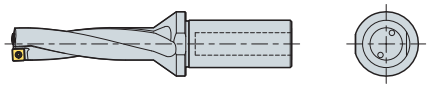
☐ Parallel to peripheral insert (standard)



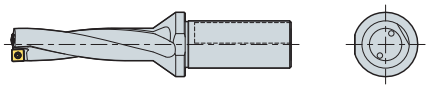
☐ 90°angle to peripheral insert (standard)



☐ 180°angle to peripheral insert (standard)



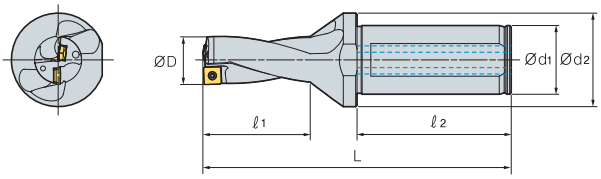
☐ 270° angle to peripheral insert (standard)



■ Note

- Currently using tool:
- Current cutting condition
  - RPM or vc (m/min):
  - vf (mm/min) or fn (mm/rev):
  - Depth of cut (mm):
- Standard of measuring tool life:
- Currently using machine
  - Machining center:
  - General lathe:
  - CNC lathe:

King Drill (2D)

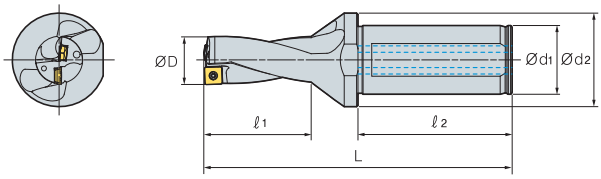


(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K2D	12020-04	12.0	20	25	27	50	91	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04	12.5	20	25	27	50	91			
	13020-04	13.0	20	25	29	50	93			
	13520-04	13.5	20	25	29	50	93			
	14020-05	14.0	20	25	31	50	96	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	14520-05	14.5	20	25	31	50	96			
	15020-05	15.0	20	25	33	50	99			
	15520-05	15.5	20	25	33	50	99			
	16020-05	16.0	20	25	35	50	101			
	16525-06	16.5	25	34	35	56	107	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	17025-06	17.0	25	34	37	56	109			
	17525-06	17.5	25	34	37	56	109			
	18025-06	18.0	25	34	39	56	112			
	18525-06	18.5	25	34	39	56	112			
	19025-06	19.0	25	34	41	56	114			
	19525-06	19.5	25	34	41	56	114			
	20025-07	20.0	25	34	43	56	118	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	20525-07	20.5	25	34	43	56	118			
	21025-07	21.0	25	34	45	56	120			
	21525-07	21.5	25	34	45	56	120			
	22025-07	22.0	25	34	47	56	122			
	22525-07	22.5	25	34	47	56	122			
	23025-07	23.0	25	34	49	56	126			
	23525-07	23.5	25	34	49	56	126			
	24032-09	24.0	32	44	51	60	133	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	24532-09	24.5	32	44	51	60	133			
	25032-09	25.0	32	44	53	60	135			
	25532-09	25.5	32	44	53	60	135			
	26032-09	26.0	32	44	55	60	137			
	26532-09	26.5	32	44	55	60	137			
	27032-09	27.0	32	44	57	60	140			
	27532-09	27.5	32	44	57	60	140			
	28032-09	28.0	32	44	59	60	143			
	28532-09	28.5	32	44	59	60	143			
	29032-09	29.0	32	44	61	60	145			
	29532-09	29.5	32	44	61	60	145			
	30032-11	30.0	32	44	63	60	150	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	30532-11	30.5	32	44	63	60	150			
	31032-11	31.0	32	44	65	60	152			
	31532-11	31.5	32	44	65	60	152			
	32032-11	32.0	32	44	67	60	154			
	32532-11	32.5	32	44	67	60	154			
	33032-11	33.0	32	44	69	60	157			
	33532-11	33.5	32	44	69	60	157			
	34032-11	34.0	32	44	71	60	159			
	34532-11	34.5	32	44	71	60	159			
	35032-11	35.0	32	44	73	60	161			
	35532-11	35.5	32	44	73	60	161			

Applicable inserts **F03~04**

King Drill (2D)

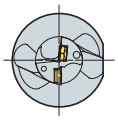


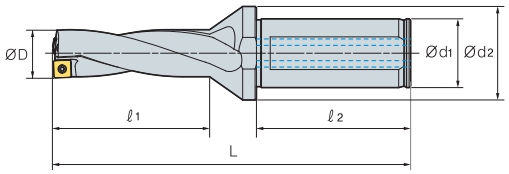
(mm)

	Designation	ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K2D	36040-13	36.0	40	48	76	70	176	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13	36.5	40	48	76	70	176			
	37040-13	37.0	40	48	78	70	178			
	37540-13	37.5	40	48	78	70	178			
	38040-13	38.0	40	48	80	70	181			
	38540-13	38.5	40	48	80	70	181			
	39040-13	39.0	40	48	82	70	183			
	39540-13	39.5	40	48	82	70	183			
	40040-13	40.0	40	48	84	70	186			
	40540-13	40.5	40	48	84	70	186			
	41040-13	41.0	40	48	86	70	188			
	41540-13	41.5	40	48	86	70	188			
	42040-13	42.0	40	48	88	70	191			
	42540-13	42.5	40	48	88	70	191			
	43040-15	43.0	40	58	91	70	196	SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	43540-15	43.5	40	58	91	70	196			
	44040-15	44.0	40	58	93	70	198			
	44540-15	44.5	40	58	93	70	198			
	45040-15	45.0	40	58	95	70	201			
	45540-15	45.5	40	58	95	70	201			
	46040-15	46.0	40	58	97	70	203			
	46540-15	46.5	40	58	97	70	203			
	47040-15	47.0	40	58	99	70	206			
	47540-15	47.5	40	58	99	70	206			
	48040-15	48.0	40	58	101	70	208			
	48540-15	48.5	40	58	101	70	208			
	49040-15	49.0	40	58	103	70	210			
	49540-15	49.5	40	58	103	70	210			
	50040-15	50.0	40	58	105	70	212			
	50540-15	50.5	40	58	105	70	212			
	51040-18	51.0	40	68	108	70	218	SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	51540-18	51.5	40	68	108	70	218			
	52040-18	52.0	40	68	110	70	220			
	52540-18	52.5	40	68	110	70	220			
	53040-18	53.0	40	68	112	70	222			
	53540-18	53.5	40	68	112	70	222			
	54040-18	54.0	40	68	114	70	224			
	54540-18	54.5	40	68	114	70	224			
	55040-18	55.0	40	68	116	70	226			
	55540-18	55.5	40	68	116	70	226			
	56040-18	56.0	40	68	118	70	230			
	56540-18	56.5	40	68	118	70	230			
	57040-18	57.0	40	68	121	70	233			
	57540-18	57.5	40	68	121	70	233			
	58040-18	58.0	40	68	124	70	236			
	58540-18	58.5	40	68	124	70	236			
	59040-18	59.0	40	68	127	70	239			
	59540-18	59.5	40	68	127	70	239			
	60040-18	60.0	40	68	130	70	242			
	60540-18	60.5	40	68	130	70	242			

Applicable inserts **F03~04**

King Drill (3D)





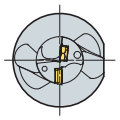
(mm)

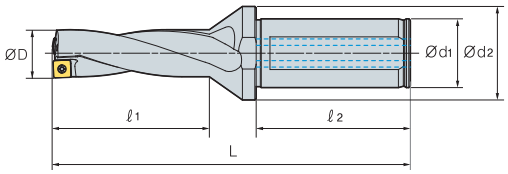
Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K3D	12020-04＊	12.0	20	25	39	50	103	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12220-04	12.2	20	25	39	50	103			
	12520-04	12.5	20	25	39	50	103			
	12920-04	12.9	20	25	42	50	106			
	13020-04	13.0	20	25	42	50	106			
	13520-04	13.5	20	25	42	50	106			
	14020-05＊	14.0	20	25	45	50	110	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	14520-05	14.5	20	25	45	50	110			
	15020-05	15.0	20	25	48	50	114			
	15520-05＊	15.5	20	25	48	50	114			
	16020-05	16.0	20	25	51	50	117			
	16525-06	16.5	25	34	51	56	123	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	17025-06	17.0	25	34	54	56	126			
	17525-06＊	17.5	25	34	54	56	126			
	18025-06	18.0	25	34	57	56	130			
	18525-06	18.5	25	34	57	56	130			
	19025-06	19.0	25	34	60	56	133			
	19525-06＊	19.5	25	34	60	56	133			
	20025-07	20.0	25	34	63	56	138	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	20525-07	20.5	25	34	63	56	138			
	21025-07＊	21.0	25	34	66	56	141			
	21525-07	21.5	25	34	66	56	141			
	22025-07	22.0	25	34	69	56	144			
	22525-07	22.5	25	34	69	56	144			
	23025-07	23	25	34	72	56	149			
	23525-07	23.5	25	34	72	56	149			
	24032-09＊	24.0	32	44	75	60	157	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	24532-09	24.5	32	44	75	60	157			
	25032-09	25.0	32	44	78	60	160			
	25532-09	25.5	32	44	78	60	160			
	26032-09	26.0	32	44	81	60	163			
	26532-09＊	26.5	32	44	81	60	163			
	27032-09	27.0	32	44	84	60	167			
	27532-09	27.5	32	44	84	60	167			
	28032-09	28.0	32	44	87	60	171			
	28532-09	28.5	32	44	87	60	171			
	29032-09＊	29.0	32	44	90	60	174			
	29532-09	29.5	32	44	90	60	174			

Applicable inserts **F03~04**

The items marked ＊ can machine a tap foundation hole (Reference F09 page)

King Drill (3D)





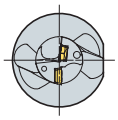
(mm)

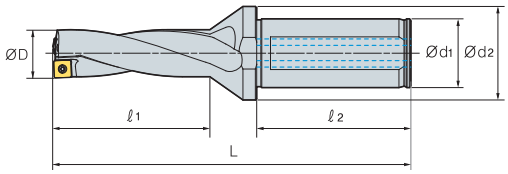
Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K3D	30032-11 *	30.0	32	44	93	60	180	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	30532-11	30.5	32	44	93	60	180			
	31032-11	31.0	32	44	96	60	183			
	31532-11	31.5	32	44	96	60	183			
	32032-11	32.0	32	44	99	60	186			
	32532-11	32.5	32	44	99	60	186			
	33032-11	33.0	32	44	102	60	190			
	33532-11	33.5	32	44	102	60	190			
	34032-11	34.0	32	44	105	60	193			
	34532-11	34.5	32	44	105	60	193			
	35032-11 *	35.0	32	44	108	60	196			
	35532-11	35.5	32	44	108	60	196			
	36040-13	36.0	40	48	112	70	212	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13	36.5	40	48	112	70	212			
	37040-13	37.0	40	48	115	70	215			
	37540-13	37.5	40	48	115	70	215			
	38040-13	38.0	40	48	118	70	219			
	38540-13	38.5	40	48	118	70	219			
	39040-13	39.0	40	48	121	70	222			
	39540-13	39.5	40	48	121	70	222			
	40040-13	40.0	40	48	124	70	226			
	40540-13	40.5	40	48	124	70	226			
	41040-13	41.0	40	48	127	70	229			
	41540-13	41.5	40	48	127	70	229			
	42040-13	42.0	40	48	130	70	233			
	42540-13	42.5	40	48	130	70	233			
	43040-15	43.0	40	58	134	70	239	SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	43540-15	43.5	40	58	134	70	239			
	44040-15	44.0	40	58	137	70	242			
	44540-15	44.5	40	58	137	70	242			
	45040-15	45.0	40	58	140	70	246			
	45540-15	45.5	40	58	140	70	246			
	46040-15	46.0	40	58	143	70	249			
	46540-15	46.5	40	58	143	70	249			
	47040-15	47.0	40	58	146	70	253			
	47540-15	47.5	40	58	146	70	253			
	48040-15	48.0	40	58	149	70	256			
	48540-15	48.5	40	58	149	70	256			
	49040-15	49.0	40	58	152	70	259			
	49540-15	49.5	40	58	152	70	259			
	50040-15	50.0	40	58	155	70	262			
	50540-15	50.5	40	58	155	70	262			

Applicable inserts **F03~04**

The items marked * can machine a tap foundation hole (Reference F09 page)

King Drill (3D)



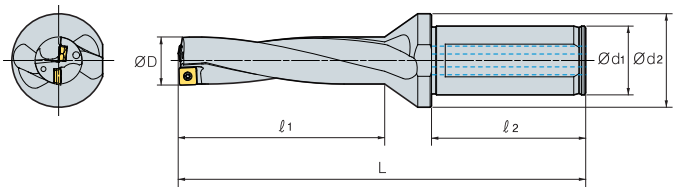


(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K3D	51040-18	51.0	40	68	159	70	269	SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	51540-18	51.5	40	68	159	70	269			
	52040-18	52.0	40	68	162	70	272			
	52540-18	52.5	40	68	162	70	272			
	53040-18	53.0	40	68	165	70	275			
	53540-18	53.5	40	68	165	70	275			
	54040-18	54.0	40	68	168	70	278			
	54540-18	54.5	40	68	168	70	278			
	55040-18	55.0	40	68	171	70	281			
	55540-18	55.5	40	68	171	70	281			
	56040-18	56.0	40	68	174	70	286			
	56540-18	56.5	40	68	174	70	286			
	57040-18	57.0	40	68	178	70	290			
	57540-18	57.5	40	68	178	70	290			
	58040-18	58.0	40	68	182	70	294			
	58540-18	58.5	40	68	182	70	294			
	59040-18	59.0	40	68	186	70	298			
	59540-18	59.5	40	68	186	70	298			
	60040-18	60.0	40	68	190	70	302			
	60540-18	60.5	40	68	190	70	302			

Applicable inserts **F03~04**

King Drill (4D)

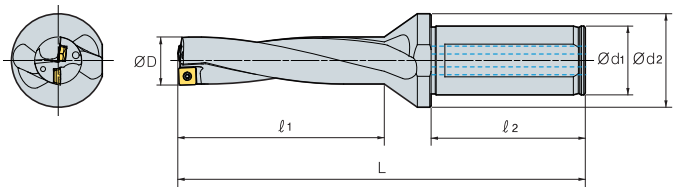


(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K4D	12020-04	12.0	20	25	51	50	115	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04	12.5	20	25	51	50	115			
	13020-04	13.0	20	25	55	50	119			
	13520-04	13.5	20	25	55	50	119			
	14020-05	14.0	20	25	59	50	124	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	14520-05	14.5	20	25	59	50	124			
	15020-05	15.0	20	25	63	50	129			
	15520-05	15.5	20	25	63	50	129			
	16020-05	16.0	20	25	67	50	133			
	16525-06	16.5	25	34	67	56	139	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	17025-06	17.0	25	34	71	56	143			
	17525-06	17.5	25	34	71	56	143			
	18025-06	18.0	25	34	75	56	148			
	18525-06	18.5	25	34	75	56	148			
	19025-06	19.0	25	34	79	56	152			
	19525-06	19.5	25	34	79	56	152			
	20025-07	20.0	25	34	83	56	158	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	20525-07	20.5	25	34	83	56	158			
	21025-07	21.0	25	34	87	56	162			
	21525-07	21.5	25	34	87	56	162			
	22025-07	22.0	25	34	91	56	166			
	22525-07	22.5	25	34	91	56	166			
	23025-07	23.0	25	34	95	56	172			
	23525-07	23.5	25	34	95	56	172			
	24032-09	24.0	32	44	99	60	181	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	24532-09	24.5	32	44	99	60	181			
	25032-09	25.0	32	44	103	60	185			
	25532-09	25.5	32	44	103	60	185			
	26032-09	26.0	32	44	107	60	189			
	26532-09	26.5	32	44	107	60	189			
	27032-09	27.0	32	44	111	60	194			
	27532-09	27.5	32	44	111	60	194			
	28032-09	28.0	32	44	115	60	199			
	28532-09	28.5	32	44	115	60	199			
	29032-09	29.0	32	44	119	60	203			
	29532-09	29.5	32	44	119	60	203			
	30032-11	30.0	32	44	123	60	210	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	30532-11	30.5	32	44	123	60	210			
	31032-11	31.0	32	44	127	60	214			
	31532-11	31.5	32	44	127	60	214			
	32032-11	32.0	32	44	131	60	218			
	32532-11	32.5	32	44	131	60	218			
	33032-11	33.0	32	44	135	60	223			
	33532-11	33.5	32	44	135	60	223			
	34032-11	34.0	32	44	139	60	227			
	34532-11	34.5	32	44	139	60	227			
	35032-11	35.0	32	44	143	60	231			
	35532-11	35.5	32	44	143	60	231			

Applicable inserts **F03~04**

King Drill (4D)

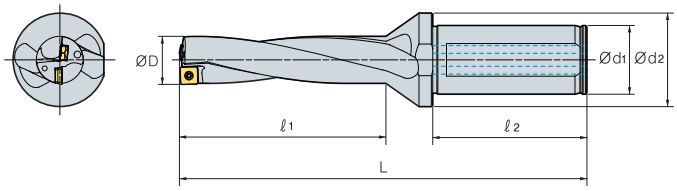


(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K4D	36040-13	36.0	40	48	148	70	248	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13	36.5	40	48	148	70	248			
	37040-13	37.0	40	48	152	70	252			
	37540-13	37.5	40	48	152	70	252			
	38040-13	38.0	40	48	156	70	257			
	38540-13	38.5	40	48	156	70	257			
	39040-13	39.0	40	48	160	70	261			
	39540-13	39.5	40	48	160	70	261			
	40040-13	40.0	40	48	164	70	266			
	40540-13	40.5	40	48	164	70	266			
	41040-13	41.0	40	48	168	70	270			
	41540-13	41.5	40	48	168	70	270			
	42040-13	42.0	40	48	172	70	275			
	42540-13	42.5	40	48	172	70	275			
	43040-15	43.0	40	58	177	70	282	SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	43540-15	43.5	40	58	177	70	282			
	44040-15	44.0	40	58	181	70	286			
	44540-15	44.5	40	58	181	70	286			
	45040-15	45.0	40	58	185	70	291			
	45540-15	45.5	40	58	185	70	291			
	46040-15	46.0	40	58	189	70	295			
	46540-15	46.5	40	58	189	70	295			
	47040-15	47.0	40	58	193	70	300			
	47540-15	47.5	40	58	193	70	300			
	48040-15	48.0	40	58	197	70	304			
	48540-15	48.5	40	58	197	70	304			
	49040-15	49.0	40	58	201	70	308			
	49540-15	49.5	40	58	201	70	308			
	50040-15	50.0	40	58	205	70	312			
	50540-15	50.5	40	58	205	70	312			
	51040-18	51.0	40	68	210	70	320	SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	51540-18	51.5	40	68	210	70	320			
	52040-18	52.0	40	68	214	70	324			
	52540-18	52.5	40	68	214	70	324			
	53040-18	53.0	40	68	218	70	328			
	53540-18	53.5	40	68	218	70	328			
	54040-18	54.0	40	68	222	70	332			
	54540-18	54.5	40	68	222	70	332			
	55040-18	55.0	40	68	226	70	336			
	55540-18	55.5	40	68	226	70	336			
	56040-18	56.0	40	68	230	70	342			
	56540-18	56.5	40	68	230	70	342			
	57040-18	57.0	40	68	235	70	347			
	57540-18	57.5	40	68	235	70	347			
	58040-18	58.0	40	68	240	70	352			
	58540-18	58.5	40	68	240	70	352			
	59040-18	59.0	40	68	245	70	357			
	59540-18	59.5	40	68	245	70	357			
	60040-18	60.0	40	68	250	70	362			
	60540-18	60.5	40	68	250	70	362			

Applicable inserts **F03~04**

King Drill (5D)

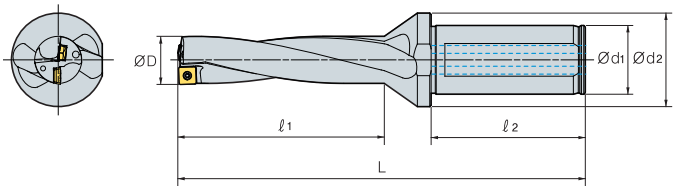


(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K5D	12020-04	12.0	20	25	63	50	127	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04	12.5	20	25	63	50	127			
	13020-04	13.0	20	25	68	50	132			
	13520-04	13.5	20	25	68	50	132			
	14020-05	14.0	20	25	73	50	138	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	14520-05	14.5	20	25	73	50	138			
	15020-05	15.0	20	25	78	50	144			
	15520-05	15.5	20	25	78	50	144			
	16020-05	16.0	20	25	83	50	149			
	16525-06	16.5	25	34	83	56	155	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	17025-06	17.0	25	34	88	56	160			
	17525-06	17.5	25	34	88	56	160			
	18025-06	18.0	25	34	93	56	166			
	18525-06	18.5	25	34	93	56	166			
	19025-06	19.0	25	34	98	56	171			
	19525-06	19.5	25	34	98	56	171			
	20025-07	20.0	25	34	103	56	178	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	20525-07	20.5	25	34	103	56	178			
	21025-07	21.0	25	34	108	56	183			
	21525-07	21.5	25	34	108	56	183			
	22025-07	22.0	25	34	113	56	188			
	22525-07	22.5	25	34	113	56	188			
	23025-07	23.0	25	34	118	56	195			
	23525-07	23.5	25	34	118	56	195			
	24032-09	24.0	32	44	123	60	205	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	24532-09	24.5	32	44	123	60	205			
	25032-09	25.0	32	44	128	60	210			
	25532-09	25.5	32	44	128	60	210			
	26032-09	26.0	32	44	133	60	215			
	26532-09	26.5	32	44	133	60	215			
	27032-09	27.0	32	44	138	60	221			
	27532-09	27.5	32	44	138	60	221			
	28032-09	28.0	32	44	143	60	227			
	28532-09	28.5	32	44	143	60	227			
	29032-09	29.0	32	44	148	60	232			
	29532-09	29.5	32	44	148	60	232			
	30032-11	30.0	32	44	153	60	240	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	30532-11	30.5	32	44	153	60	240			
	31032-11	31.0	32	44	158	60	245			
	31532-11	31.5	32	44	158	60	245			
	32032-11	32.0	32	44	163	60	250			
	32532-11	32.5	32	44	163	60	250			
	33032-11	33.0	32	44	168	60	256			
	33532-11	33.5	32	44	168	60	256			
	34032-11	34.0	32	44	173	60	261			
	34532-11	34.5	32	44	173	60	261			
	35032-11	35.0	32	44	178	60	266			
	35532-11	35.5	32	44	178	60	266			

Applicable inserts **F03~04**

King Drill (5D)



(mm)

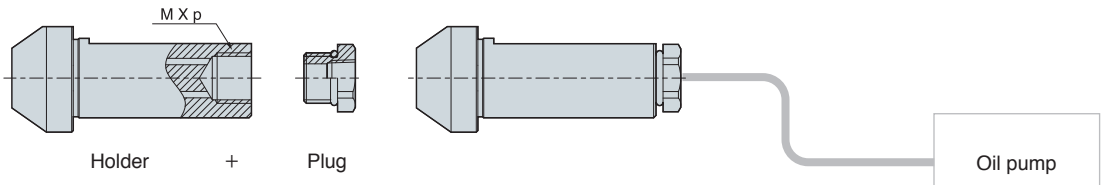
	Designation	ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K5D	36040-13	36.0	40	48	184	70	284	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13	36.5	40	48	184	70	284			
	37040-13	37.0	40	48	189	70	289			
	37540-13	37.5	40	48	189	70	289			
	38040-13	38.0	40	48	194	70	295			
	38540-13	38.5	40	48	194	70	295			
	39040-13	39.0	40	48	199	70	300			
	39540-13	39.5	40	48	199	70	300			
	40040-13	40.0	40	48	204	70	306			
	40540-13	40.5	40	48	204	70	306			
	41040-13	41.0	40	48	209	70	311			
	41540-13	41.5	40	48	209	70	311			
	42040-13	42.0	40	48	214	70	317			
	42540-13	42.5	40	48	214	70	317			
	43040-15	43.0	40	58	220	70	325	SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	43540-15	43.5	40	58	221	70	326			
	44040-15	44.0	40	58	225	70	330			
	44540-15	44.5	40	58	225	70	330			
	45040-15	45.0	40	58	230	70	336			
	45540-15	45.5	40	58	230	70	336			
	46040-15	46.0	40	58	235	70	341			
	46540-15	46.5	40	58	235	70	341			
	47040-15	47.0	40	58	240	70	347			
	47540-15	47.5	40	58	240	70	347			
	48040-15	48.0	40	58	245	70	352			
	48540-15	48.5	40	58	245	70	352			
	49040-15	49.0	40	58	250	70	357			
	49540-15	49.5	40	58	250	70	357			
	50040-15	50.0	40	58	255	70	362			
	50540-15	50.5	40	58	255	70	362			
	51040-18	51.0	40	68	261	70	371	SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	51540-18	51.5	40	68	261	70	371			
	52040-18	52.0	40	68	266	70	376			
	52540-18	52.5	40	68	266	70	376			
	53040-18	53.0	40	68	271	70	381			
	53540-18	53.5	40	68	271	70	381			
	54040-18	54.0	40	68	276	70	386			
	54540-18	54.5	40	68	276	70	386			
	55040-18	55.0	40	68	281	70	391			
	55540-18	55.5	40	68	281	70	391			
	56040-18	56.0	40	68	286	70	398			
	56540-18	56.5	40	68	286	70	398			
	57040-18	57.0	40	68	292	70	404			
	57540-18	57.5	40	68	292	70	404			
	58040-18	58.0	40	68	298	70	410			
	58540-18	58.5	40	68	298	70	410			
	59040-18	59.0	40	68	304	70	416			
	59540-18	59.5	40	68	304	70	416			
	60040-18	60.0	40	68	310	70	422			
	60540-18	60.5	40	68	310	70	422			

Applicable inserts **F03~04**

Drill with through coolant system for general lathe and CNC lathe without through coolant system

King Drill (For through coolant system with a lathe)

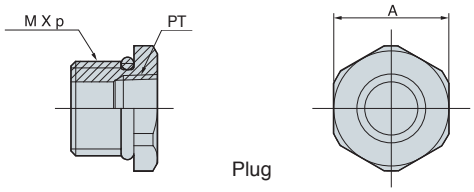
- Through coolant system with drill holder, plug, oil-hole hose and oil-hole pump
- PT TAP in the plug is combined to PT TAP connected to oil hose
- Available to use the drill without a plug in milling machine



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

(mm)

Tap type	Diameter	Shank dia.	M x p	Plug
K□D120~16020HP-□□	Ø12.0~Ø16.0	Ø20	M12x1.5	PLG12PT18
K□D161~23525HP-□□	Ø16.1~Ø23.5	Ø25	M16x1.5	PLG16PT18
K□D236~35532HP-□□	Ø23.6~Ø35.5	Ø32	M20x2.0	PLG20PT14
K□D356~60940HP-□□	Ø35.6~Ø60.5	Ø40	M27x2.0	PLG27PT38

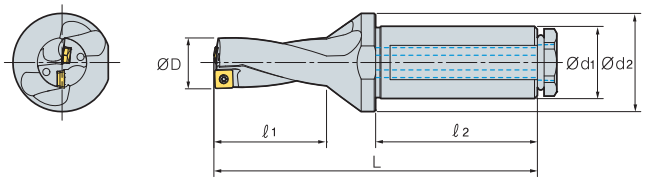


• Plug is assembled

Plug type	M x p	PT tap	A
PLG12PT18	M12 x 1.5	1/8	16
PLG16PT18	M16 x 1.5	1/8	19
PLG20PT14	M20 x 2.0	1/4	26
PLG27PT38	M27 x 2.0	3/8	35

King Drill (2D)

For through coolant system with a lathe



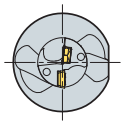
(mm)

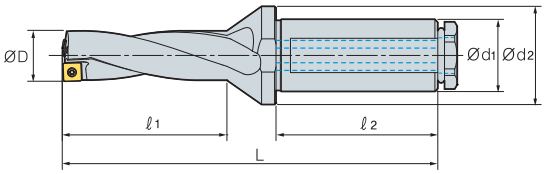
Desiagnation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K2D	13020HP-04	13.0	20	25	29	50	93	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	13520HP-04	13.5	20	25	29	50	93			
	14020HP-05	14.0	20	25	31	50	96	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	15020HP-05	15.0	20	25	33	50	99			
	16020HP-05	16.0	20	25	35	50	101			
	17025HP-06	17.0	25	34	37	56	109	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	18025HP-06	18.0	25	34	39	56	112			
	19025HP-06	19.0	25	34	41	56	114			
	20025HP-07	20.0	25	34	43	56	118	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	21025HP-07	21.0	25	34	45	56	120			
	22025HP-07	22.0	25	34	47	56	122			
	23025HP-07	23.0	25	34	49	56	126			
	24032HP-09	24.0	32	44	51	60	133	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	25032HP-09	25.0	32	44	53	60	135			
	26032HP-09	26.0	32	44	55	60	137			
	27032HP-09	27.0	32	44	57	60	140			
	28032HP-09	28.0	32	44	59	60	143			
	29032HP-09	29.0	32	44	61	60	145			

Applicable inserts **F03~04**

King Drill (3D)

For through coolant system with a lathe





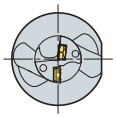
(mm)

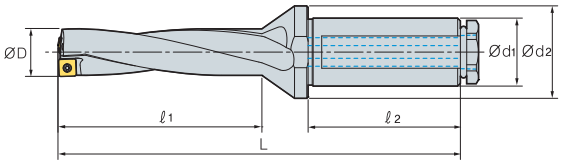
Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K3D	13020HP-04	13.0	20	25	42	50	106	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	13520HP-04	13.5	20	25	42	50	106			
	14020HP-05	14.0	20	25	45	50	110	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	14520HP-05	14.5	20	25	45	50	110			
	15020HP-05	15.0	20	25	48	50	114			
	15520HP-05	15.5	20	25	48	50	114			
	16020HP-05	16.0	20	25	51	50	117			
	16525HP-06	16.5	25	34	51	56	123	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	17025HP-06	17.0	25	34	54	56	126			
	17525HP-06	17.5	25	34	54	56	126			
	18025HP-06	18.0	25	34	57	56	130			
	18525HP-06	18.5	25	34	57	56	130			
	19025HP-06	19.0	25	34	60	56	133			
	19525HP-06	19.5	25	34	60	56	133			
	20025HP-07	20.0	25	34	63	56	138	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	20525HP-07	20.5	25	34	63	56	138			
	21025HP-07	21.0	25	34	66	56	141			
	21525HP-07	21.5	25	34	66	56	141			
	22025HP-07	22.0	25	34	69	56	144			
	22525HP-07	22.5	25	34	69	56	144			
	23025HP-07	23.0	25	34	72	56	149			
	23525HP-07	23.5	25	34	72	56	149			
	24032HP-09	24.0	32	44	75	60	157	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	24532HP-09	24.5	32	44	75	60	157			
	25032HP-09	25.0	32	44	78	60	160			
	25532HP-09	25.5	32	44	78	60	160			
	26032HP-09	26.0	32	44	81	60	163			
	26532HP-09	26.5	32	44	81	60	163			
	27032HP-09	27.0	32	44	84	60	167			
	27532HP-09	27.5	32	44	84	60	167			
	28032HP-09	28.0	32	44	87	60	171			
	28532HP-09	28.5	32	44	87	60	171			
	29032HP-09	29.0	32	44	90	60	174			
	29532HP-09	29.5	32	44	90	60	174			

Applicable inserts **F03~04**

King Drill (4D)

For through coolant system with a lathe





(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K4D	13020HP-04	13.0	20	25	55	50	119	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	13520HP-04	13.5	20	25	55	50	119			
	14020HP-05	14.0	20	25	59	50	124	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	15020HP-05	15.0	20	25	63	50	129			
	16020HP-05	16.0	20	25	67	50	133			
	17025HP-06	17.0	25	34	71	56	143	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	18025HP-06	18.0	25	34	75	56	148			
	19025HP-06	19.0	25	34	79	56	152			
	20025HP-07	20.0	25	34	83	56	158	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	21025HP-07	21.0	25	34	87	56	162			
	22025HP-07	22.0	25	34	91	56	166			
	23025HP-07	23.0	25	34	95	56	172			
	24032HP-09	24.0	32	44	99	60	181	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	25032HP-09	25.0	32	44	103	60	185			
	26032HP-09	26.0	32	44	107	60	189			
	27032HP-09	27.0	32	44	111	60	194			
	28032HP-09	28.0	32	44	115	60	199			
	29032HP-09	29.0	32	44	119	60	203			

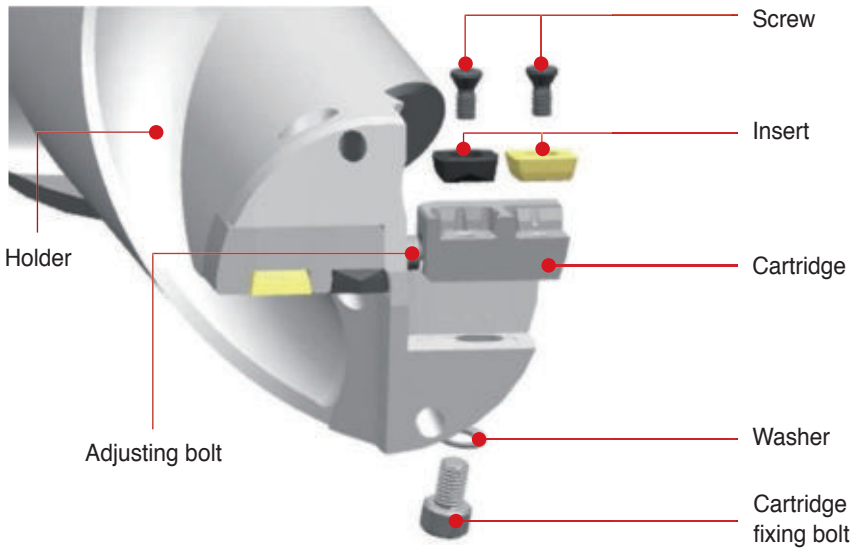
Applicable inserts **F03~04**

High rigidity drill produces cost efficiency due to cartridge replacement

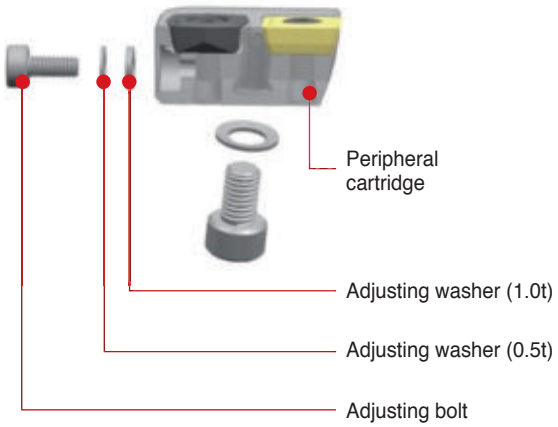
King Drill (For large diameter drilling)

- Cartridge type for Ø61~Ø100 drilling
- Peripheral cartridge can adjust the drilling diameter within 5 mm
- Easy to adjust drilling diameter with adjusting bolt

Structure of King Drill (for large diameter) parts



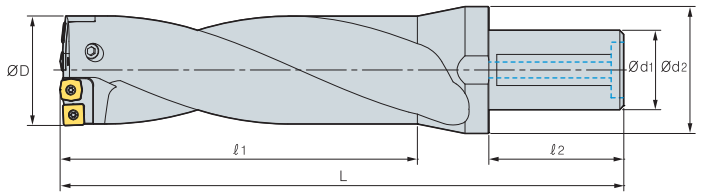
Adjustment of drill diameter



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 5 mm

King Drill



(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Cartridge		Screw	Wrench
								Internal	External		
K2D	616550-11	61~65	50	80	130	80	255	KDC6165C	KDC6165P	FTKA03508	TW15S
	657050-13	65~70	50	88	140	80	265	KDC6570C	KDC6570P	FTKA0410	TW15S
	707550-13	70~75	50	88	150	80	275	KDC7075C	KDC7075P	FTKA0410	TW15S
	758050-13	75~80	50	88	160	80	285	KDC7580C	KDC7580P	FTKA0410	TW15S
	808550-15	80~85	50	88	170	80	295	KDC8085C	KDC8085P	FTNC04511	TW20S
	859050-15	85~90	50	95	180	80	305	KDC8590C	KDC8590P	FTNC04511	TW20S
	909550-15	90~95	50	95	190	80	315	KDC9095C	KDC9095P	FTNC04511	TW20S
	9510050-18	95~100	50	95	200	80	325	KDC95100C	KDC95100P	FTNA0511	TW20-100
K3D	616550-11	61~65	50	80	195	80	320	KDC6165C	KDC6165P	FTKA03508	TW15S
	657050-13	65~70	50	88	210	80	335	KDC6570C	KDC6570P	FTKA0410	TW15S
	707550-13	70~75	50	88	225	80	350	KDC7075C	KDC7075P	FTKA0410	TW15S
	758050-13	75~80	50	88	240	80	365	KDC7580C	KDC7580P	FTKA0410	TW15S
	808550-15	80~85	50	88	255	80	380	KDC8085C	KDC8085P	FTNC04511	TW20S
	859050-15	85~90	50	95	270	80	395	KDC8590C	KDC8590P	FTNC04511	TW20S
	909550-15	90~95	50	95	285	80	410	KDC9095C	KDC9095P	FTNC04511	TW20S
	9510050-18	95~100	50	95	300	80	425	KDC95100C	KDC95100P	FTNA0511	TW20-100
K4D	616550-11	61~65	50	80	260	80	385	KDC6165C	KDC6165P	FTKA03508	TW15S
	657050-13	65~70	50	88	280	80	405	KDC6570C	KDC6570P	FTKA0410	TW15S
	707550-13	70~75	50	88	300	80	425	KDC7075C	KDC7075P	FTKA0410	TW15S
	758050-13	75~80	50	88	320	80	445	KDC7580C	KDC7580P	FTKA0410	TW15S
	808550-15	80~85	50	88	340	80	465	KDC8085C	KDC8085P	FTNC04511	TW20S
	859050-15	85~90	50	95	360	80	485	KDC8590C	KDC8590P	FTNC04511	TW20S
	909550-15	90~95	50	95	380	80	505	KDC9095C	KDC9095P	FTNC04511	TW20S
	9510050-18	95~100	50	95	400	80	525	KDC95100C	KDC95100P	FTNA0511	TW20-100

Applicable inserts **F03~04**

Parts

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

KORLOY indexable new generation economical drill

KED Plus Drill new

- Economical drill with good chip control due to optimal chip flute enlarging the space for chip flow
- Stable machining due to optimal shape and cutting edge arrangement of central and peripheral inserts

Code system

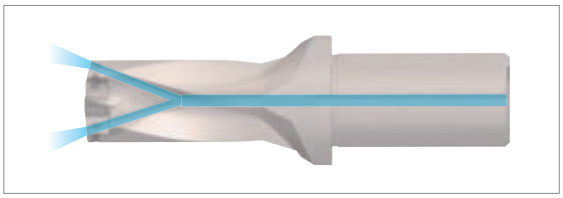
E 4D - 200 - 25 - 07 - P

E	4D	200	25	07	P
KING, Economical	Aspect ratio (L/D): 2D, 3D, 4D, 5D	Drill dia.: 200: Ø20.0 mm (One decimal place marked)	Shank Dia: Ø20, Ø25 Ø32, Ø40 mm	Inscribed circle of insert: 04, 05, 06, 07, 09, 11, 13, 15, 18	Plus

Features

- Excellent chip control for suitable cutting range with small diameters (Ø12-Ø23.5) due to the cutting fluid system and chip flute
- Excellent surface finish for suitable cutting range with medium to large diameters (Ø24-Ø60.5) due to widened chip pockets even in deep drilling
- Increased the rigidity of drill body and improved chip evacuation due to optimalized shape of flute

Optimized flute system - 2 coolant holes applied

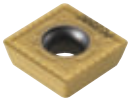
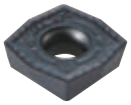


Peripheral insert

Central insert

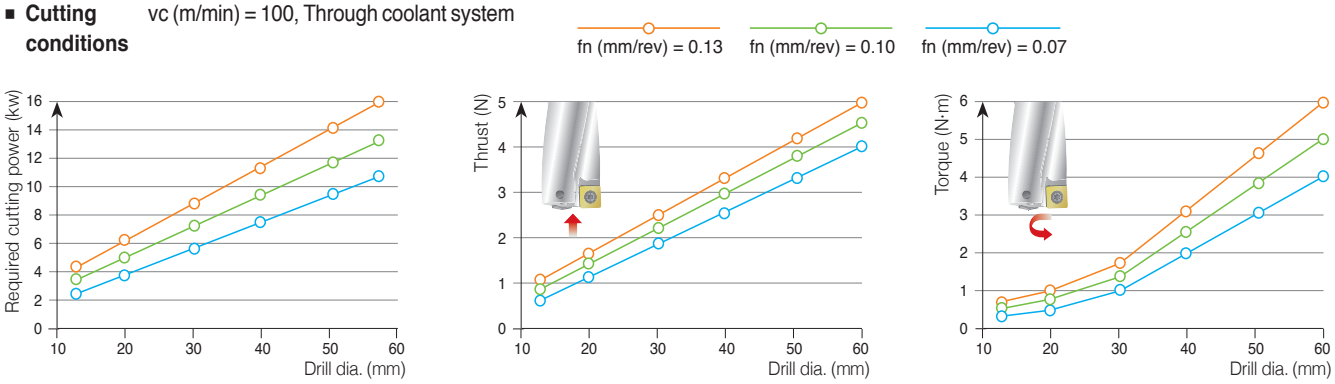
Features of chip breaker

- **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 optimizing the insert locations in order to maximize cutting tool life

Chip breaker	PD		LD		ND		RD
Features	- Universal - At medium speed and medium feed		- Superior chip control for machining mild steel and stainless steel - Light cutting (at low~medium speed and low feed)		- Sharp cutting edge for aluminum machining - Insert surface buffed for high quality result - E Class Tolerance		- Improved chipping resistance - Excellent performance in case of frequent fracture and chipping on the cutting edge
Insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Central insert
Shape							
Grades for workpiece	NC5330: P, M, K PC3700: P PC5300: P, M, K, S PC6510: K PC9540: P, M, S	PC5300: P, M, K, S PC9540: P, M, S	PC5335: P, M		H01: N		PC5300: P, M, K, S

Required cutting power

- **Workpiece** SCM440 (240HB)
- **Cutting conditions** vc (m/min) = 100, Through coolant system

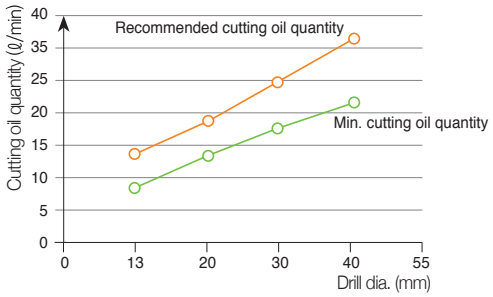


※ Cutting force shown as the above is base on drilling in facilities with enough rigidity and power

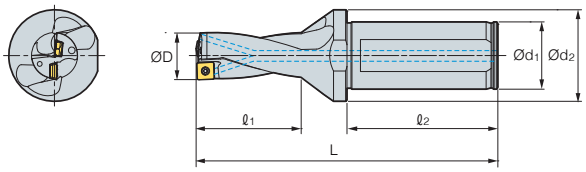
Cutting oil quantity

- **Workpiece** SCM440 (240HB)
- **Cutting conditions** vc (m/min) = 100, Through coolant system

• The data of the graph above could be changed depending on workpiece and cutting condition



Drill tolerance and hole tolerance



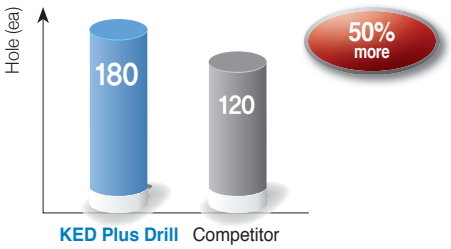
(mm)

Drill dia.		Ø12~Ø29	Ø30~Ø45	Ø46~Ø60.5
2D~3D	Drill tolerance (ØD)	0~-0.15	0~-0.15	0~-0.15
	Hole tolerance	+0.2~-0.1	+0.25~-0.1	+0.28~-0.1
4D~5D	Drill tolerance (ØD)	0~-0.15	0~-0.15	0~-0.15
	Hole tolerance	+0.25~-0.05	+0.3~-0.05	+0.33~-0.05

Application examples

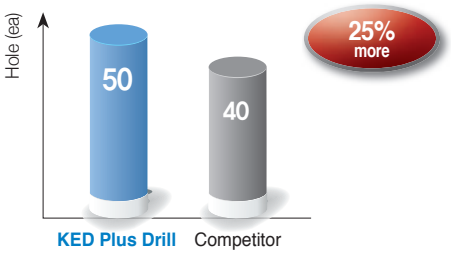
- **Workpiece** Carbon steel (SM440)
- **Cutting conditions** vc (m/min) = 150, fn (mm/rev) = 0.1
  ap (mm) = 80 (through hole), wet
- **Tools**
  Inserts SPMT060205-PD (PC3700)
  XOMT060205-PD (PC5300)
  Holder E4D-18025-06-P
  (Drill dia. = Ø18 mm)

■ **Test result**



- **Workpiece** Stainless steel (STS316)
- **Cutting conditions** vc (m/min) = 120, fn (mm/rev) = 0.06
  ap (mm) = 42, wet
- **Tools**
  Inserts SPMT060205-PD (PC3700)
  XOMT060204-PD (PC3500)
  Holder E3D-18025-06-P
  (Drill dia. = Ø18 mm)

■ **Test result**

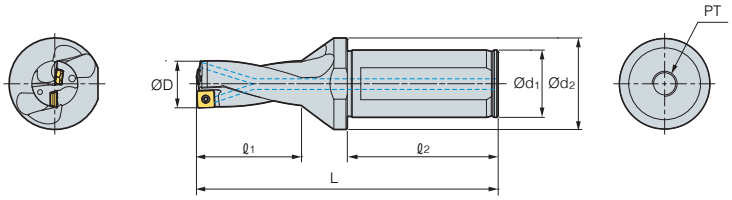


Recommended cutting condition

Workpiece				Insert			vc (m/min)	Aspect ratio (L/D) = 2D, 3D, 4D				
ISO		Workpiece	Hardness (HB)	Chip breaker	Grade			Feed rate (mm/rev) per drill dia. (mm)				
					Central	Peripheral		Ø12~Ø16	Ø17~Ø23	Ø24~Ø29	Ø30~Ø42	Ø43~Ø60
P	Carbon steel	Low carbon steel	80~180	LD	PC5335	PC5335	120 (60~170)	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08
				PD/RD	PC5300	PC3500	150 (120~180)					
						NC5330	180 (140~220)					
		High carbon steel	180~280	PD	PC5300	PC3500	120 (90~150)	0.04~0.10	0.04~0.12	0.05~0.16	0.06~0.16	0.06~0.18
						NC5330	150 (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	120 (60~160)	0.06~0.10	0.06~0.10	0.06~0.12	0.06~0.14	0.06~0.14
				PD	PC5300	PC3500	150 (120~170)	0.06~0.12	0.06~0.12	0.06~0.14	0.06~0.16	0.06~0.16
						NC5330	180 (140~210)	0.06~0.08	0.06~0.08	0.06~0.10	0.06~0.12	0.06~0.12
		Low alloy heattreated steel	200~400	PD	PC5300	PC5300	100 (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	100 (50~160)	0.05~0.11	0.05~0.11	0.05~0.13	0.05~0.15	0.05~0.15
		High alloy heattreated steel	300~450	PD	PC5300	PC5300	70 (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	Stainless steel	135~275	LD	PD5335	PC5335	120 (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	130 (100~160)	0.04~0.07	0.04~0.07	0.04~0.07	0.04~0.08	0.04~0.08
					PC9540	PC9540	90 (60~120)	0.04~0.07	0.04~0.07	0.04~0.07	0.04~0.08	0.04~0.08
K	Cast iron	Gray cast iron	150~230	PD	PC5300	PC6510	190 (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	130 (100~160)	0.04~0.07	0.04~0.08	0.04~0.10	0.05~0.12	0.05~0.12
S	Heat resisting alloy	Ni-heat resisting alloy	130~400	PD	PC5300	PC5300	50 (30~100)	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10
					PC9540	PC9540	40 (20~80)	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	LD	PC5335	PC5335	60 (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	60 (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	over 400	PD	PC5300	PC5300	40 (20~80)	0.04~0.05	0.04~0.06	0.04~0.08	0.04~0.08	0.04~0.08
N	Non-ferrous metal	Aluminium	30~150	ND	H01	H01	300 (250~400)	0.05~0.14	0.06~0.16	0.10~0.20	0.10~0.22	0.12~0.25
		Alloyed copper	150-160	ND	H01	H01	250 (200~300)	0.05~0.14	0.06~0.16	0.10~0.20	0.10~0.22	0.12~0.25

• 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

KED Plus Drill (2D)

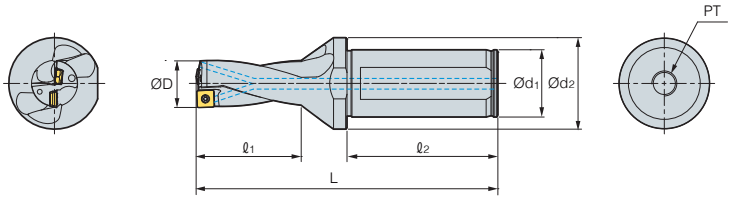


(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	PT	Insert	Screw	Wrench
E2D-	12020-04-P	12.0	20	25	27	50	91	1/8	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04-P	12.5	20	25	27	50	91				
	13020-04-P	13.0	20	25	29	50	93				
	13520-04-P	13.5	20	25	29	50	93				
	14020-05-P	14.0	20	25	31	50	96		SP□T050204-□□ XO□T050204-□□		
	14520-05-P	14.5	20	25	31	50	96				
	15020-05-P	15.0	20	25	33	50	99				
	15520-05-P	15.5	20	25	33	50	99				
	16020-05-P	16.0	20	25	35	50	101				
	16525-06-P	16.5	25	34	35	56	107		SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	17025-06-P	17.0	25	34	37	56	109				
	17525-06-P	17.5	25	34	37	56	109				
	18025-06-P	18.0	25	34	39	56	112				
	18525-06-P	18.5	25	34	39	56	112				
	19025-06-P	19.0	25	34	41	56	114				
	19525-06-P	19.5	25	34	41	56	114				
	20025-07-P	20.0	25	34	43	56	118		SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	20525-07-P	20.5	25	34	43	56	118				
	21025-07-P	21.0	25	34	45	56	120				
	21525-07-P	21.5	25	34	45	56	120				
	22025-07-P	22.0	25	34	47	56	122				
	22525-07-P	22.5	25	34	47	56	122				
	23025-07-P	23.0	25	34	49	56	126				
	23525-07-P	23.5	25	34	49	56	126				
	24032-09-P	24.0	32	44	51	60	133	1/4	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	24532-09-P	24.5	32	44	51	60	133				
	25032-09-P	25.0	32	44	53	60	135				
	25532-09-P	25.5	32	44	53	60	135				
	26032-09-P	26.0	32	44	55	60	137				
	26532-09-P	26.5	32	44	55	60	137				
	27032-09-P	27.0	32	44	57	60	140				
	27532-09-P	27.5	32	44	57	60	140				
	28032-09-P	28.0	32	44	59	60	143				
	28532-09-P	28.5	32	44	59	60	143				
	29032-09-P	29.0	32	44	61	60	145				
	29532-09-P	29.5	32	44	61	60	145				
	30032-11-P	30.0	32	44	63	60	150		SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	30532-11-P	30.5	32	44	63	60	150				
	31032-11-P	31.0	32	44	65	60	152				
	31532-11-P	31.5	32	44	65	60	152				
	32032-11-P	32.0	32	44	67	60	154				
	32532-11-P	32.5	32	44	67	60	154				
	33032-11-P	33.0	32	44	69	60	157				
	33532-11-P	33.5	32	44	69	60	157				
	34032-11-P	34.0	32	44	71	60	159				
	34532-11-P	34.5	32	44	71	60	159				
	35032-11-P	35.0	32	44	73	60	161				
	35532-11-P	35.5	32	44	73	60	161				

Applicable inserts **F03~04**

KED Plus Drill (2D)

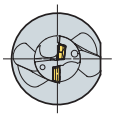


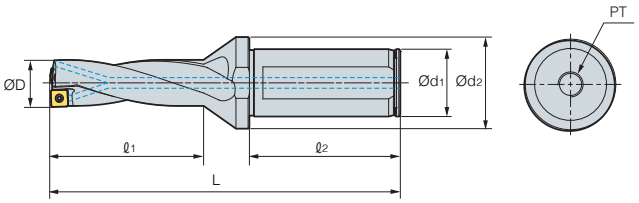
(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	PT	Insert	Screw	Wrench
E2D-	36040-13-P	36.0	40	48	76	70	176	1/4	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13-P	36.5	40	48	76	70	176				
	37040-13-P	37.0	40	48	78	70	178				
	37540-13-P	37.5	40	48	78	70	178				
	38040-13-P	38.0	40	48	80	70	181				
	38540-13-P	38.5	40	48	80	70	181				
	39040-13-P	39.0	40	48	82	70	183				
	39540-13-P	39.5	40	48	82	70	183				
	40040-13-P	40.0	40	48	84	70	186				
	40540-13-P	40.5	40	48	84	70	186				
	41040-13-P	41.0	40	48	86	70	188				
	41540-13-P	41.5	40	48	86	70	188				
	42040-13-P	42.0	40	48	88	70	191				
	42540-13-P	42.5	40	48	88	70	191				
	43040-15-P	43.0	40	58	91	70	196		SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	43540-15-P	43.5	40	58	91	70	196				
	44040-15-P	44.0	40	58	93	70	198				
	44540-15-P	44.5	40	58	93	70	198				
	45040-15-P	45.0	40	58	95	70	201				
	45540-15-P	45.5	40	58	95	70	201				
	46040-15-P	46.0	40	58	97	70	203				
	46540-15-P	46.5	40	58	97	70	203				
	47040-15-P	47.0	40	58	99	70	206				
	47540-15-P	47.5	40	58	99	70	206				
	48040-15-P	48.0	40	58	101	70	208				
	48540-15-P	48.5	40	58	101	70	208				
	49040-15-P	49.0	40	58	103	70	210				
	49540-15-P	49.5	40	58	103	70	210				
	50040-15-P	50.0	40	58	105	70	212				
	50540-15-P	50.5	40	58	105	70	212				
	51040-18-P	51.0	40	68	108	70	218		SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	51540-18-P	51.5	40	68	108	70	218				
	52040-18-P	52.0	40	68	110	70	220				
	52540-18-P	52.5	40	68	110	70	220				
	53040-18-P	53.0	40	68	112	70	222				
	53540-18-P	53.5	40	68	112	70	222				
	54040-18-P	54.0	40	68	114	70	224				
	54540-18-P	54.5	40	68	114	70	224				
	55040-18-P	55.0	40	68	116	70	226				
	55540-18-P	55.5	40	68	116	70	226				
	56040-18-P	56.0	40	68	118	70	230				
	56540-18-P	56.5	40	68	118	70	230				
	57040-18-P	57.0	40	68	121	70	233				
	57540-18-P	57.5	40	68	121	70	233				
	58040-18-P	58.0	40	68	124	70	236				
	58540-18-P	58.5	40	68	124	70	236				
	59040-18-P	59.0	40	68	127	70	239				
	59540-18-P	59.5	40	68	127	70	239				
	60040-18-P	60.0	40	68	130	70	242				
	60540-18-P	60.5	40	68	130	70	242				

Applicable inserts **F03~04**

KED Plus Drill (3D)



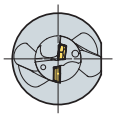


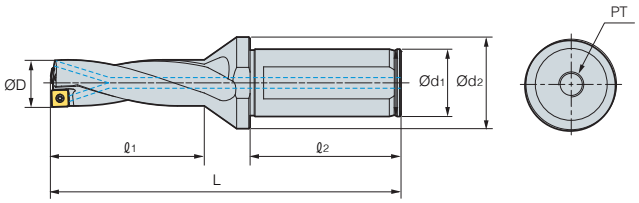
(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	PT	Insert	Screw	Wrench
E3D-	12020-04-P	12.0	20	25	39	50	103	1/8	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04-P	12.5	20	25	39	50	103				
	13020-04-P	13.0	20	25	42	50	106				
	13520-04-P	13.5	20	25	42	50	106				
	14020-05-P	14.0	20	25	45	50	110		SP□T050204-□□ XO□T050204-□□		
	14520-05-P	14.5	20	25	45	50	110				
	15020-05-P	15.0	20	25	48	50	114				
	15520-05-P	15.5	20	25	48	50	114				
	16020-05-P	16.0	20	25	51	50	117				
	16525-06-P	16.5	25	34	51	56	123		SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	17025-06-P	17.0	25	34	54	56	126				
	17525-06-P	17.5	25	34	54	56	126				
	18025-06-P	18.0	25	34	57	56	130				
	18525-06-P	18.5	25	34	57	56	130				
	19025-06-P	19.0	25	34	60	56	133				
	19525-06-P	19.5	25	34	60	56	133				
	20025-07-P	20.0	25	34	63	56	138		SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	20525-07-P	20.5	25	34	63	56	138				
	21025-07-P	21.0	25	34	66	56	141				
	21525-07-P	21.5	25	34	66	56	141				
	22025-07-P	22.0	25	34	69	56	144				
	22525-07-P	22.5	25	34	69	56	144				
	23025-07-P	23.0	25	34	72	56	149				
	23525-07-P	23.5	25	34	72	56	149				
	24032-09-P	24.0	32	44	75	60	157	1/4	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	24532-09-P	24.5	32	44	75	60	157				
	25032-09-P	25.0	32	44	78	60	160				
	25532-09-P	25.5	32	44	78	60	160				
	26032-09-P	26.0	32	44	81	60	163				
	26532-09-P	26.5	32	44	81	60	163				
	27032-09-P	27.0	32	44	84	60	167				
	27532-09-P	27.5	32	44	84	60	167				
	28032-09-P	28.0	32	44	87	60	171				
	28532-09-P	28.5	32	44	87	60	171				
	29032-09-P	29.0	32	44	90	60	174				
	29532-09-P	29.5	32	44	90	60	174				
	30032-11-P	30.0	32	44	93	60	180		SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	30532-11-P	30.5	32	44	93	60	180				
	31032-11-P	31.0	32	44	96	60	183				
	31532-11-P	31.5	32	44	96	60	183				
	32032-11-P	32.0	32	44	99	60	186				
	32532-11-P	32.5	32	44	99	60	186				
	33032-11-P	33.0	32	44	102	60	190				
	33532-11-P	33.5	32	44	102	60	190				
	34032-11-P	34.0	32	44	105	60	193				
	34532-11-P	34.5	32	44	105	60	193				
	35032-11-P	35.0	32	44	108	60	196				
	35532-11-P	35.5	32	44	108	60	196				

Applicable inserts **F03~04**

KED Plus Drill (3D)



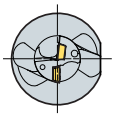


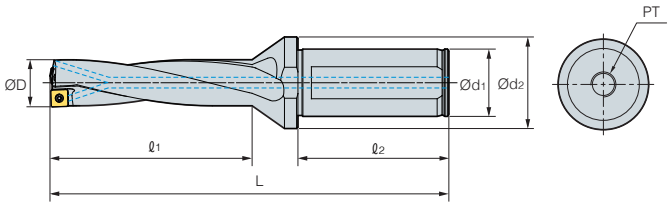
(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	PT	Insert	Screw	Wrench
E3D-	36040-13-P	36.0	40	48	112	70	212	1/4	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13-P	36.5	40	48	112	70	212				
	37040-13-P	37.0	40	48	115	70	215				
	37540-13-P	37.5	40	48	115	70	215				
	38040-13-P	38.0	40	48	118	70	219				
	38540-13-P	38.5	40	48	118	70	219				
	39040-13-P	39.0	40	48	121	70	222				
	39540-13-P	39.5	40	48	121	70	222				
	40040-13-P	40.0	40	48	124	70	226				
	40540-13-P	40.5	40	48	124	70	226				
	41040-13-P	41.0	40	48	127	70	229				
	41540-13-P	41.5	40	48	127	70	229				
	42040-13-P	42.0	40	48	130	70	233				
	42540-13-P	42.5	40	48	130	70	233				
	43040-15-P	43.0	40	58	134	70	239		SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	43540-15-P	43.5	40	58	134	70	239				
	44040-15-P	44.0	40	58	137	70	242				
	44540-15-P	44.5	40	58	137	70	242				
	45040-15-P	45.0	40	58	140	70	246				
	45540-15-P	45.5	40	58	140	70	246				
	46040-15-P	46.0	40	58	143	70	249				
	46540-15-P	46.5	40	58	143	70	249				
	47040-15-P	47.0	40	58	146	70	253				
	47540-15-P	47.5	40	58	146	70	253				
	48040-15-P	48.0	40	58	149	70	256				
	48540-15-P	48.5	40	58	149	70	256				
	49040-15-P	49.0	40	58	152	70	259				
	49540-15-P	49.5	40	58	152	70	259				
	50040-15-P	50.0	40	58	155	70	262				
	50540-15-P	50.5	40	58	155	70	262				
	51040-18-P	51.0	40	68	159	70	269		SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	51540-18-P	51.5	40	68	159	70	269				
	52040-18-P	52.0	40	68	162	70	272				
	52540-18-P	52.5	40	68	162	70	272				
	53040-18-P	53.0	40	68	165	70	275				
	53540-18-P	53.5	40	68	165	70	275				
	54040-18-P	54.0	40	68	168	70	278				
	54540-18-P	54.5	40	68	168	70	278				
	55040-18-P	55.0	40	68	171	70	281				
	55540-18-P	55.5	40	68	171	70	281				
	56040-18-P	56.0	40	68	174	70	286				
	56540-18-P	56.5	40	68	174	70	286				
	57040-18-P	57.0	40	68	178	70	290				
	57540-18-P	57.5	40	68	178	70	290				
	58040-18-P	58.0	40	68	182	70	294				
	58540-18-P	58.5	40	68	182	70	294				
	59040-18-P	59.0	40	68	186	70	298				
	59540-18-P	59.5	40	68	186	70	298				
	60040-18-P	60.0	40	68	190	70	302				
	60540-18-P	60.5	40	68	190	70	302				

Applicable inserts **F03~04**

KED Plus Drill (4D)



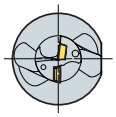


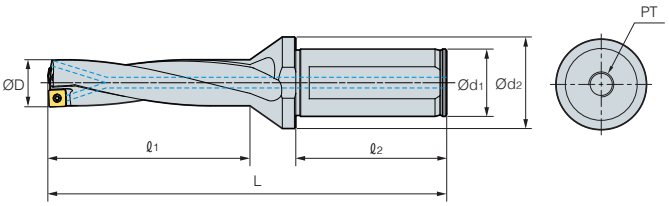
(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	PT	Insert	Screw	Wrench
E4D-	12020-04-P	12.0	20	25	51	50	115	1/8	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04-P	12.5	20	25	51	50	115				
	13020-04-P	13.0	20	25	55	50	119				
	13520-04-P	13.5	20	25	55	50	119				
	14020-05-P	14.0	20	25	59	50	124		SP□T050204-□□ XO□T050204-□□		
	14520-05-P	14.5	20	25	59	50	124				
	15020-05-P	15.0	20	25	63	50	129				
	15520-05-P	15.5	20	25	63	50	129				
	16020-05-P	16.0	20	25	67	50	133				
	16525-06-P	16.5	25	34	67	56	139		SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	17025-06-P	17.0	25	34	71	56	143				
	17525-06-P	17.5	25	34	71	56	143				
	18025-06-P	18.0	25	34	75	56	148				
	18525-06-P	18.5	25	34	75	56	148				
	19025-06-P	19.0	25	34	79	56	152				
	19525-06-P	19.5	25	34	79	56	152				
	20025-07-P	20.0	25	34	83	56	158		SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	20525-07-P	20.5	25	34	83	56	158				
	21025-07-P	21.0	25	34	87	56	162				
	21525-07-P	21.5	25	34	87	56	162				
	22025-07-P	22.0	25	34	91	56	166				
	22525-07-P	22.5	25	34	91	56	166				
	23025-07-P	23.0	25	34	95	56	172				
	23525-07-P	23.5	25	34	95	56	172				
	24032-09-P	24.0	32	44	99	60	181	1/4	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	24532-09-P	24.5	32	44	99	60	181				
	25032-09-P	25.0	32	44	103	60	185				
	25532-09-P	25.5	32	44	103	60	185				
	26032-09-P	26.0	32	44	107	60	189				
	26532-09-P	26.5	32	44	107	60	189				
	27032-09-P	27.0	32	44	111	60	194				
	27532-09-P	27.5	32	44	111	60	194				
	28032-09-P	28.0	32	44	115	60	199				
	28532-09-P	28.5	32	44	115	60	199				
	29032-09-P	29.0	32	44	119	60	203				
	29532-09-P	29.5	32	44	119	60	203				
	30032-11-P	30.0	32	44	123	60	210		SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	30532-11-P	30.5	32	44	123	60	210				
	31032-11-P	31.0	32	44	127	60	214				
	31532-11-P	31.5	32	44	127	60	214				
	32032-11-P	32.0	32	44	131	60	218				
	32532-11-P	32.5	32	44	131	60	218				
	33032-11-P	33.0	32	44	135	60	223				
	33532-11-P	33.5	32	44	135	60	223				
	34032-11-P	34.0	32	44	139	60	227				
	34532-11-P	34.5	32	44	139	60	227				
	35032-11-P	35.0	32	44	143	60	231				
	35532-11-P	35.5	32	44	143	60	231				

Applicable inserts **F03~04**

KED Plus Drill (4D)



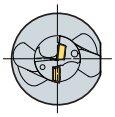


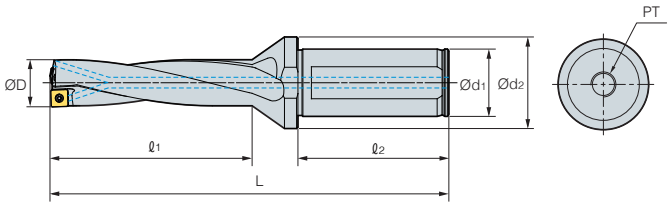
(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	PT	Insert	Screw	Wrench
E4D-	36040-13-P	36.0	40	48	148	70	248	1/4	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13-P	36.5	40	48	148	70	248				
	37040-13-P	37.0	40	48	152	70	252				
	37540-13-P	37.5	40	48	152	70	252				
	38040-13-P	38.0	40	48	156	70	257				
	38540-13-P	38.5	40	48	156	70	257				
	39040-13-P	39.0	40	48	160	70	261				
	39540-13-P	39.5	40	48	160	70	261				
	40040-13-P	40.0	40	48	164	70	266				
	40540-13-P	40.5	40	48	164	70	266				
	41040-13-P	41.0	40	48	168	70	270				
	41540-13-P	41.5	40	48	168	70	270				
	42040-13-P	42.0	40	48	172	70	275				
	42540-13-P	42.5	40	48	172	70	275				
	43040-15-P	43.0	40	58	177	70	282		SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	43540-15-P	43.5	40	58	177	70	282				
	44040-15-P	44.0	40	58	181	70	286				
	44540-15-P	44.5	40	58	181	70	286				
	45040-15-P	45.0	40	58	185	70	291				
	45540-15-P	45.5	40	58	185	70	291				
	46040-15-P	46.0	40	58	189	70	295				
	46540-15-P	46.5	40	58	189	70	295				
	47040-15-P	47.0	40	58	193	70	300				
	47540-15-P	47.5	40	58	193	70	300				
	48040-15-P	48.0	40	58	197	70	304				
	48540-15-P	48.5	40	58	197	70	304				
	49040-15-P	49.0	40	58	201	70	308				
	49540-15-P	49.5	40	58	201	70	308				
	50040-15-P	50.0	40	58	205	70	312				
	50540-15-P	50.5	40	58	205	70	312				
	51040-18-P	51.0	40	68	210	70	320		SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	51540-18-P	51.5	40	68	210	70	320				
	52040-18-P	52.0	40	68	214	70	324				
	52540-18-P	52.5	40	68	214	70	324				
	53040-18-P	53.0	40	68	218	70	328				
	53540-18-P	53.5	40	68	218	70	328				
	54040-18-P	54.0	40	68	222	70	332				
	54540-18-P	54.5	40	68	222	70	332				
	55040-18-P	55.0	40	68	226	70	336				
	55540-18-P	55.5	40	68	226	70	336				
	56040-18-P	56.0	40	68	230	70	342				
	56540-18-P	56.5	40	68	230	70	342				
	57040-18-P	57.0	40	68	235	70	347				
	57540-18-P	57.5	40	68	235	70	347				
	58040-18-P	58.0	40	68	240	70	352				
	58540-18-P	58.5	40	68	240	70	352				
	59040-18-P	59.0	40	68	245	70	357				
	59540-18-P	59.5	40	68	245	70	357				
	60040-18-P	60.0	40	68	250	70	362				
	60540-18-P	60.5	40	68	250	70	362				

Applicable inserts **F03~04**

KED Plus Drill (5D)



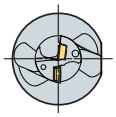


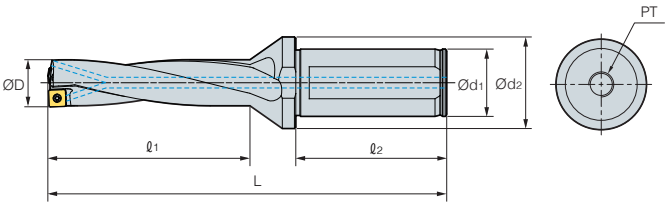
(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	PT	Insert	Screw	Wrench
E5D-	12020-04-P	12.0	20	25	63	50	127	1/8	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04-P	12.5	20	25	63	50	127				
	13020-04-P	13.0	20	25	68	50	132				
	13520-04-P	13.5	20	25	68	50	132				
	14020-05-P	14.0	20	25	73	50	138		SP□T050204-□□ XO□T050204-□□		
	14520-05-P	14.5	20	25	73	50	138				
	15020-05-P	15.0	20	25	78	50	144				
	15520-05-P	15.5	20	25	78	50	144				
	16020-05-P	16.0	20	25	83	50	149				
	16525-06-P	16.5	25	34	83	56	155		SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	17025-06-P	17.0	25	34	88	56	160				
	17525-06-P	17.5	25	34	88	56	160				
	18025-06-P	18.0	25	34	93	56	166				
	18525-06-P	18.5	25	34	93	56	166				
	19025-06-P	19.0	25	34	98	56	171				
	19525-06-P	19.5	25	34	98	56	171				
	20025-07-P	20.0	25	34	103	56	178		SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	20525-07-P	20.5	25	34	103	56	178				
	21025-07-P	21.0	25	34	108	56	183				
	21525-07-P	21.5	25	34	108	56	183				
	22025-07-P	22.0	25	34	113	56	188				
	22525-07-P	22.5	25	34	113	56	188				
	23025-07-P	23.0	25	34	118	56	195				
	23525-07-P	23.5	25	34	118	56	195				
	24032-09-P	24.0	32	44	123	60	205	1/4	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	24532-09-P	24.5	32	44	123	60	205				
	25032-09-P	25.0	32	44	128	60	210				
	25532-09-P	25.5	32	44	128	60	210				
	26032-09-P	26.0	32	44	133	60	215				
	26532-09-P	26.5	32	44	133	60	215				
	27032-09-P	27.0	32	44	138	60	221				
	27532-09-P	27.5	32	44	138	60	221				
	28032-09-P	28.0	32	44	143	60	227				
	28532-09-P	28.5	32	44	143	60	227				
	29032-09-P	29.0	32	44	148	60	232				
	29532-09-P	29.5	32	44	148	60	232				
	30032-11-P	30.0	32	44	153	60	240		SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	30532-11-P	30.5	32	44	153	60	240				
	31032-11-P	31.0	32	44	158	60	245				
	31532-11-P	31.5	32	44	158	60	245				
	32032-11-P	32.0	32	44	163	60	250				
	32532-11-P	32.5	32	44	163	60	250				
	33032-11-P	33.0	32	44	168	60	256				
	33532-11-P	33.5	32	44	168	60	256				
	34032-11-P	34.0	32	44	173	60	261				
	34532-11-P	34.5	32	44	173	60	261				
	35032-11-P	35.0	32	44	178	60	266				
	35532-11-P	35.5	32	44	178	60	266				

Applicable inserts **F03~04**

KED Plus Drill (5D)





(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	PT	Insert	Screw	Wrench
E5D-	36040-13-P	36.0	40	48	184	70	284	1/4	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13-P	36.5	40	48	184	70	284				
	37040-13-P	37.0	40	48	189	70	289				
	37540-13-P	37.5	40	48	189	70	289				
	38040-13-P	38.0	40	48	194	70	295				
	38540-13-P	38.5	40	48	194	70	295				
	39040-13-P	39.0	40	48	199	70	300				
	39540-13-P	39.5	40	48	199	70	300				
	40040-13-P	40.0	40	48	204	70	306				
	40540-13-P	40.5	40	48	204	70	306				
	41040-13-P	41.0	40	48	209	70	311				
	41540-13-P	41.5	40	48	209	70	311				
	42040-13-P	42.0	40	48	214	70	317				
	42540-13-P	42.5	40	48	214	70	317				
	43040-15-P	43.0	40	58	220	70	325		SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	43540-15-P	43.5	40	58	221	70	326				
	44040-15-P	44.0	40	58	225	70	330				
	44540-15-P	44.5	40	58	225	70	330				
	45040-15-P	45.0	40	58	230	70	336				
	45540-15-P	45.5	40	58	230	70	336				
	46040-15-P	46.0	40	58	235	70	341				
	46540-15-P	46.5	40	58	235	70	341				
	47040-15-P	47.0	40	58	240	70	347				
	47540-15-P	47.5	40	58	240	70	347				
	48040-15-P	48.0	40	58	245	70	352				
	48540-15-P	48.5	40	58	245	70	352				
	49040-15-P	49.0	40	58	250	70	357				
	49540-15-P	49.5	40	58	250	70	357				
	50040-15-P	50.0	40	58	255	70	362				
	50540-15-P	50.5	40	58	255	70	362				
	51040-18-P	51.0	40	68	261	70	371		SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	51540-18-P	51.5	40	68	261	70	371				
	52040-18-P	52.0	40	68	266	70	376				
	52540-18-P	52.5	40	68	266	70	376				
	53040-18-P	53.0	40	68	271	70	381				
	53540-18-P	53.5	40	68	271	70	381				
	54040-18-P	54.0	40	68	276	70	386				
	54540-18-P	54.5	40	68	276	70	386				
	55040-18-P	55.0	40	68	281	70	391				
	55540-18-P	55.5	40	68	281	70	391				
	56040-18-P	56.0	40	68	286	70	398				
	56540-18-P	56.5	40	68	286	70	398				
	57040-18-P	57.0	40	68	292	70	404				
	57540-18-P	57.5	40	68	292	70	404				
	58040-18-P	58.0	40	68	298	70	410				
	58540-18-P	58.5	40	68	298	70	410				
	59040-18-P	59.0	40	68	304	70	416				
	59540-18-P	59.5	40	68	304	70	416				
	60040-18-P	60.0	40	68	310	70	422				
	60540-18-P	60.5	40	68	310	70	422				

Applicable inserts **F03~04**

High quality and high feed top solid indexable drill

TPDC Plus Drill new

(TPDC-XP, CP, CM, CN, CP-FC)

- The optimal tool shape for drilling realizing high precision and high feed machining as of carbide solid drill performance level
- Usable for various machining through enlarged line-up by workpieces, depth of cuts and workpiece shapes

Code system

• **Insert**

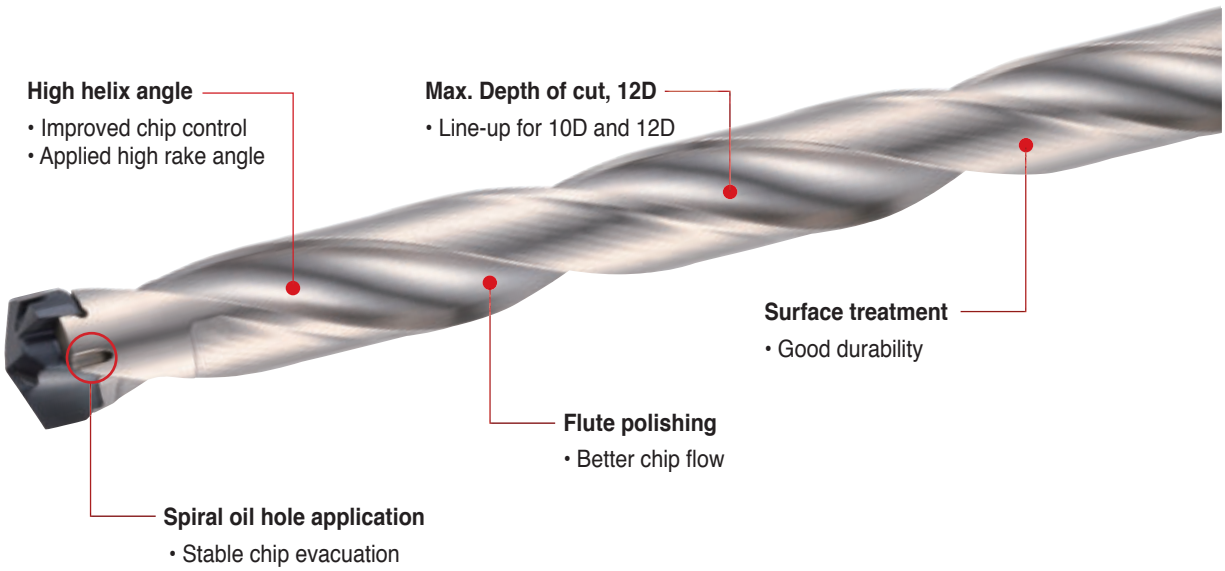
TPD	1500	C	P	-	□
Top solid Piercing Drill	Drill dia. 1500: Ø15.00 mm	Insert type X, C: Cone type	Machining area P: Steel and general M: Stainless steel K: Cast iron N: Non-ferrous metal		Cutting edge No code: Standard F: Flat FC: Flat Candle

• **Holder**

TPD	C	5D	-	150	20	-	75
Top solid Piercing Drill	Insert type X, C: Cone type	Aspect ratio (L/D) 1.5D, 3D, 5D 8D, 10D, 12D		Drill dia. 150: Ø15.00-Ø15.99 mm	Shank dia. 20: Ø20 mm		Flute length 75: 75 mm

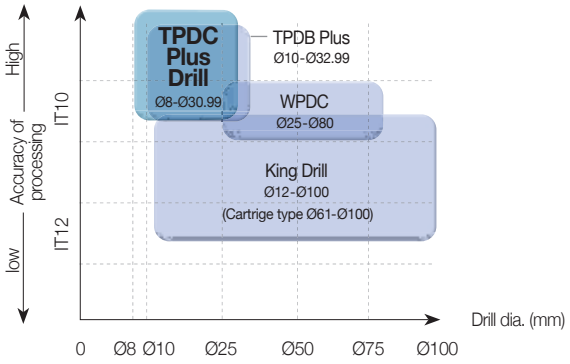
Features

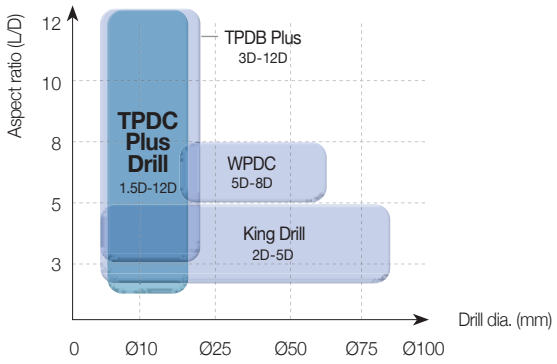
- One step clamp system - Increased stability and shortened setting time
- High helix angle and flute polishing - Reduced cutting load and enhanced chip evacuation
- Various applications from enlarged line-up by depth of cuts and shapes of workpiece



Technical Information for TPDC Plus Drill

Application range





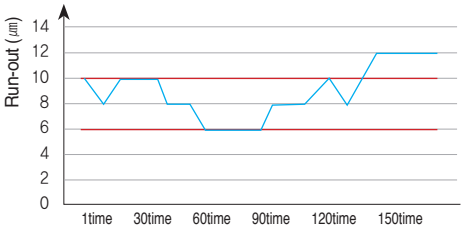
Run-out

Durability evaluation

- **Workpiece** Alloy steel (SCM440, HRC22)
- **Cutting conditions** vc (m/min) = 90, fn (mm/rev) = 0.25
  ap (mm) = 60, wet (10bar)
- **Tools** **Insert** TPD1500CP(PC5335)
  Holder TPDC5D-15020-75
  (Drill dia. = Ø15 mm)

Long tool life with the setting run-out, lower than 15 ㎛ after using 40 inserts

Clamping repeatability evaluation



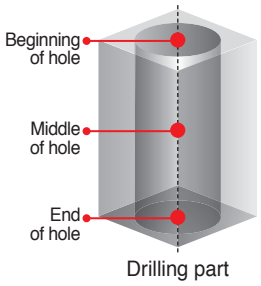
Excellent clamping system keeping the run-out, lower than 6 ㎛ after clamping 150 times repeatedly

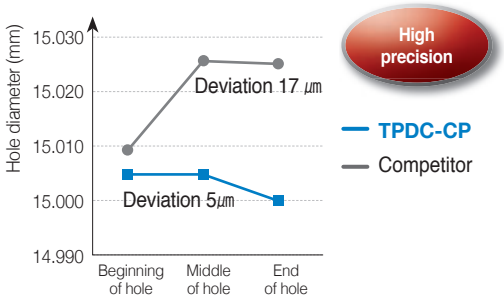
Performance evaluation

Precision

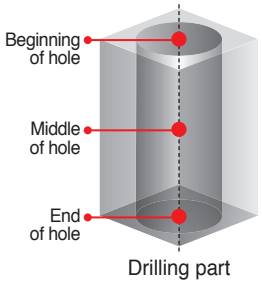
- **Workpiece** Carbon steel (SM45C, HRC19)
- **Cutting conditions** vc (m/min) = 60, fn (mm/rev) = 0.2
  ap (mm) = 150, wet (20bar)
- **Tools** **Insert** TPD1500CP (PC5335)
  Holder TPDC12D-15020-170
  (Drill dia. = Ø15 mm)

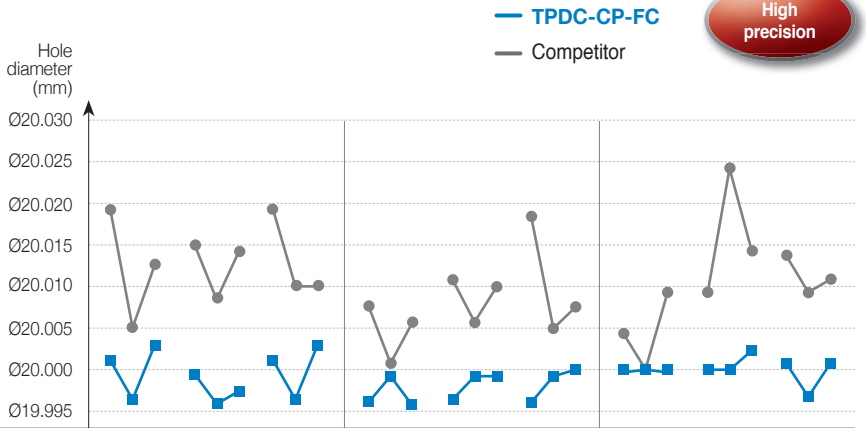
High precision in deep hole-making





- **Workpiece** Carbon steel (SM45C, HRC18)
- **Cutting conditions** vc (m/min) = 60~100
  fn (mm/rev) = 0.2~0.3
  ap (mm) = 50, wet (20 bar)
- **Tools** **Insert** TPD2000CP-FC (PC5335)
  Holder TPDC3D-20025-60
  (Drill dia. = Ø20 mm)





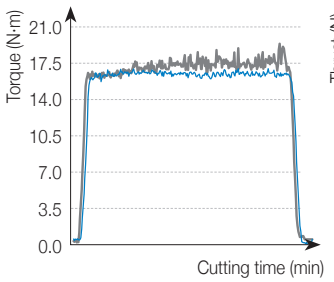
Drilling part	Beginning	Middle	End	Beginning	Middle	End	Beginning	Middle	End
fn (mm/rev)	0.20	0.25	0.30	0.20	0.25	0.30	0.20	0.25	0.30
vc (m/min)	60			80			100		

High precision and excellent centering due to profiled cutting edge

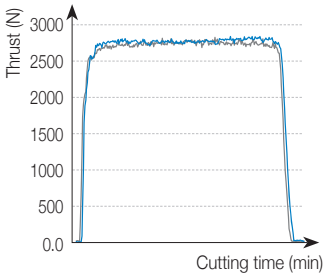
Performance evaluation

Cutting load

- **Workpiece** Carbon steel (SM45C, HRC19)
- **Cutting conditions** vc (m/min) = 90
  fn (mm/rev) = 0.25
  ap (mm) = 60, wet (10bar)
- **Tools** **Insert** TPD1500CP (PC5335)
  Holder TPDC5D-15025-75
  (Drill dia. = Ø15 mm)



Torque



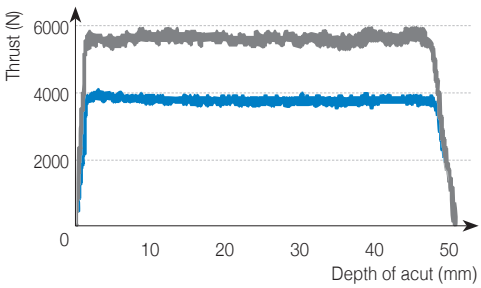
Thrust

Stable cutting load

TPDC-CP
Competitor

Stable cutting load due to multi-cutting edge and good chip control

- **Workpiece** Carbon steel (SM45C, HRC18)
- **Cutting conditions** vc (m/min) = 100
  fn (mm/rev) = 0.25
  ap (mm) = 50, wet (10bar)
- **Tools** **Insert** TPD2000CP-FC (PC5335)
  Holder TPDC3D-20025-60
  (Drill dia. = Ø20 mm)



Decreased 30% of cutting load

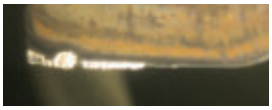
TPDC-CP-FC
Average thrust 3667N
Competitor
Average thrust 5471N

Low and stable cutting load due to profiled-cutting edge

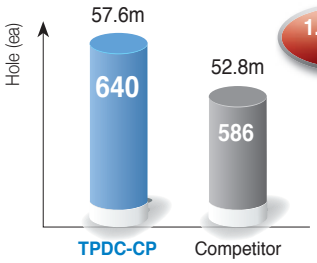
Application examples

- **Use** Part of machine
- **Workpiece** Alloy steel (SCM440, HRC22)
- **Cutting conditions** vc (m/min) = 100
  fn (mm/rev) = 0.3
  ap (mm) = 90, wet
- **Tools** **Insert** TPD1900CP (PC5335)
  Holder TPDC5D-19025-95
  (Drill dia.(mm) = Ø19.0)

TPDC-CP


Competitor

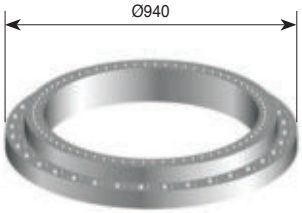
■ **Test result**



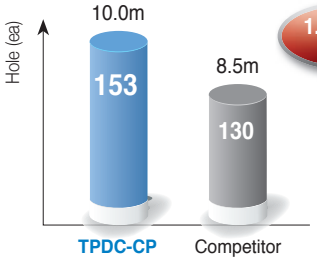
1.1 times more

- Lubricative multi-layer coating prevents chipping on cutting edges

- **Use** Part of machine
- **Workpiece** Carbon steel (SM45C, HRC40)
- **Cutting conditions** vc (m/min) = 60
  fn (mm/rev) = 0.15
  ap (mm) = 65, wet
- **Tools** **Insert** TPD1800CP (PC5335)
  Holder TPDC5D-18025-90
  (Drill dia.(mm) = Ø18.0)



■ **Test result**

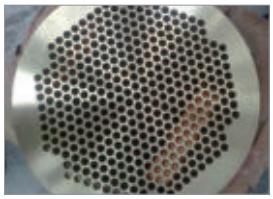


1.2 times more

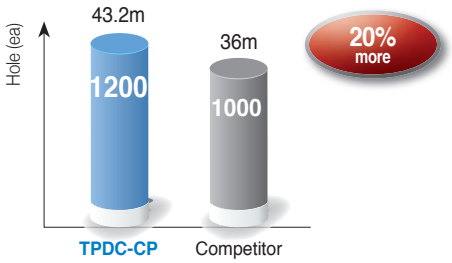
- Lubricative multi-layer coating enhances wear resistance

Application examples

- **Use** Tube sheet
- **Workpiece** Carbon steel (S235JR, HRC18)
- **Cutting conditions** vc (m/min) = 85
  n (rpm) = 1381
  fn (mm/rev) = 0.27
  ap (mm) = 12mm x 3Passes, wet
- **Tools** **Insert** TPD1960CP (PC330P)
  Holder TPDC3D-19025-57



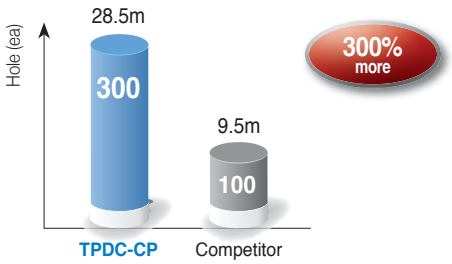
■ **Test result**



• Optimized cutting edge enhances wear resistance due to stable cutting load and lubricated multi-layer coating

- **Use** Turret flange
- **Workpiece** Alloy steel (SCM440, HRC22)
- **Cutting conditions** vc (m/min) = 82
  n (rpm) = 2000
  fn (mm/rev) = 0.2
  ap (mm) = 95, wet
- **Tools** **Insert** TPD1300CP (PC5335)
  Holder TPDC8D-13016-104

■ **Test result**



• Lubricated multi-layer coating improving chipping resistance prevents chipping on the cutting edge

Insert features

Shape	Application	Drill dia. (mm)	Features
 XP new	P	Ø8.00~Ø11.99	• High durability due to the strong clamping system • Excellent quality of machining and stable machining from high clamping force • Enhanced performance by high lubricated grade
 CP	P K	Ø12.00~Ø30.99	• High quality machining due to excellent centering: Good roundness and surface finish • Excellent chip control from exclusive edge design: Stable machining by good chip forming and chip evacuation
 CM new	M	Ø12.00~Ø30.99	• Ensuring strength of point and cutting edge: Stable machinability • Increased stability of machining due to low cutting load • Applied grade with high built up edge resistance and chipping resistance
 CN new	N	Ø12.00~Ø30.99	• Cutting edge with low cutting load: Excellent chip evacuation from increased surface finish of insert by special after treatment • Long tool life due to ultra-fine substrate application
 CP-FC new	P	Ø12.00~Ø30.99	• Cutting edge shape with excellent centering: Stable machinability from low cutting load • Available in various machining applications: Flat surface, angled surface, curved surface drilling, plunging and boring • Reduced cycle time by simplified tools: Endmill+drill machining → TPDC-CP-FC insert

How to clamp insert

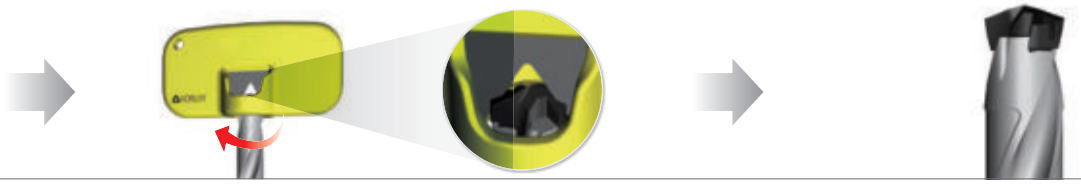
Using the improved wrench

• Using the insert with slot on the top (Use the improved inserts only)

❶ Clean the mounting seat with air or cloth

❷ Put an insert on the holder

❸ Put the wrench in the slot parallel



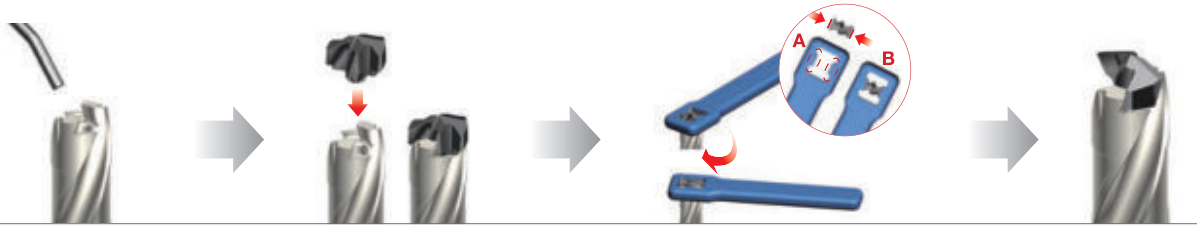
❹ After fixing the wrench firmly, turn it clockwise and clamp the insert to the holder

Clamped state

Using the existing wrench

• Using any inserts (Use both existing inserts and improved inserts)

Use only the improved wrench later



❶ Clean the mounting seat with air or cloth

❷ Put an insert on the holder

❸ A part of wrench and B part of insert must beparallel to each other before clamp the insert
Turn the wrench clockwise to finish clamping

Clamped state

Recommended cutting conditions (TPDC-XP)

• 3D Drilling

Workpiece				Grade	vc (m/min)	Aspect ratio (L/D) = 3D	
						Feed rate (mm/rev) per drill dia. (mm)	
ISO		Workpiece	HB			Ø8.00~Ø9.99	Ø10.00~Ø11.99
P	Carbon steel	Low carbon steel	80~120	PC325U	110 (80~140)	0.12~0.22	0.15~0.28
		High carbon steel	180~280	PC325U	90 (70~110)		
P	Alloy steel	Low alloy steel	140~260	PC325U	90 (70~110)	0.12~0.20	0.14~0.25
		Low alloy heat-treated steel	200~400	PC325U	70 (50~90)		
		High alloy steel	260~320	PC325U	70 (50~90)	0.10~0.15	0.12~0.18
		High alloy heat-treated steel	300~450	PC325U	60 (40~80)		
K	Cast iron	Gray cast iron	150~230	PC325U	125 (90~160)	0.15~0.30	0.20~0.35
		Ductile cast iron	160~260	PC325U	110 (80~140)		

※ In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part

• 5D Drilling

Workpiece				Grade	vc (m/min)	Aspect ratio (L/D) = 5D	
						Feed rate (mm/rev) per drill dia. (mm)	
ISO		Workpiece	HB			Ø8.00-Ø9.99	Ø10.00-Ø11.99
P	Carbon steel	Low carbon steel	80~120	PC325U	110 (80~140)	0.12~0.22	0.15~0.28
		High carbon steel	180~280	PC325U	90 (70~110)		
P	Alloy steel	Low alloy steel	140~260	PC325U	90 (70~110)	0.12~0.20	0.14~0.25
		Low alloy heat-treated steel	200~400	PC325U	70 (50~90)		
		High alloy steel	260~320	PC325U	70 (50~90)	0.10~0.15	0.12~0.18
		High alloy heat-treated steel	300~450	PC325U	60 (40~80)		
K	Cast iron	Gray cast iron	150~230	PC325U	125 (90~160)	0.15~0.30	0.20~0.35
		Ductile cast iron	160~260	PC325U	110 (80~140)		

※ In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part

• 8D Drilling

Workpiece				Grade	vc (m/min)	Aspect ratio (L/D) = 8D	
						Feed rate (mm/rev) per drill dia. (mm)	
ISO		Workpiece	HB			Ø8.00-Ø9.99	Ø10.00-Ø11.99
P	Carbon steel	Low carbon steel	80~120	PC325U	100 (70~130)	0.10~0.20	0.12~0.25
		High carbon steel	180~280	PC325U	80 (60~100)		
P	Alloy steel	Low alloy steel	140~260	PC325U	80 (60~100)	0.10~0.18	0.12~0.20
		Low alloy heat-treated steel	200~400	PC325U	60 (40~80)		
		High alloy steel	260~320	PC325U	60 (40~80)	0.09~0.13	0.10~0.16
		High alloy heat-treated steel	300~450	PC325U	50 (30~70)		
K	Cast iron	Gray cast iron	150~230	PC325U	115 (80~150)	0.12~0.27	0.17~0.32
		Ductile cast iron	160~260	PC325U	100 (70~130)		

※ In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part
※ In case of 8D drilling, please use a Pilot Dirll

Recommended cutting conditions (TPDC-CP/CM/CN)

• 1.5D/3D Drilling

Workpiece				Insert	Grade	vc (m/min)	Aspect ratio (L/D) = 1.5D, 3D		
							Feed rate (mm/rev) per drill dia. (mm)		
ISO		Workpiece	HB				Ø12.00~Ø17.99	Ø18.00~Ø25.99	Ø26.00~Ø30.99
P	Carbon steel	Low carbon steel	80~120	CP	PC5335 PC330P	120 (90~140)	0.25~0.35	0.30~0.40	0.35~0.45
		High carbon steel	180~280	CP	PC5335 PC330P	110 (80~130)	0.25~0.35	0.30~0.40	0.30~0.45
	Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	120 (90~140)	0.28~0.40	0.33~0.43	0.38~0.48
		Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	80 (60~100)	0.28~0.40	0.33~0.43	0.30~0.48
		High alloy steel	260~320	CP	PC5335 PC5300	75 (60~90)	0.20~0.35	0.22~0.40	0.25~0.45
		High alloy heat-treated steel	300~450	CP	PC5335 PC5300	65 (50~80)	0.20~0.35	0.22~0.40	0.22~0.45
M	Stainless steel	Austenitic	135~275	CM	PC330N	65 (50~80)	0.05~0.15	0.10~0.20	0.15~0.25
		Ferritic, martensitic	135~275	CM	PC330N	75 (60~90)	0.10~0.20	0.15~0.30	0.20~0.35
K	Cast iron	Gray cast iron	150~230	CP	PC5335 PC5300	130 (90~140)	0.35~0.45	0.40~0.50	0.45~0.55
		Ductile cast iron	160~260	CP	PC5335 PC5300	120 (80~130)	0.30~0.40	0.30~0.45	0.40~0.50
N	Non-ferrous metal	Aluminum	30~150	CN	H01	200 (120~220)	0.35~0.45	0.40~0.50	0.45~0.55
		Copper alloy	150~160	CN	H01	200 (120~220)	0.35~0.45	0.40~0.50	0.45~0.55

※ In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part
※ In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions

• 5D Drilling

Workpiece				Insert	Grade	vc (m/min)	Aspect ratio (L/D) = 5D		
							Feed rate (mm/rev) per drill dia. (mm)		
ISO		Workpiece	HB				Ø12.00~Ø17.99	Ø18.00~Ø25.99	Ø26.00~Ø30.99
P	Carbon steel	Low carbon steel	80~120	CP	PC5335 PC330P	110 (80~140)	0.15~0.30	0.20~0.35	0.25~0.40
		High carbon steel	180~280	CP	PC5335 PC330P	100 (70~130)	0.15~0.30	0.20~0.35	0.25~0.40
	Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	110 (80~140)	0.18~0.35	0.23~0.38	0.28~0.43
		Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	75 (50~100)	0.18~0.35	0.23~0.38	0.28~0.43
		High alloy steel	260~320	CP	PC5335 PC5300	70 (50~90)	0.18~0.30	0.20~0.35	0.25~0.40
		High alloy heat-treated steel	300~450	CP	PC5335 PC5300	60 (40~80)	0.18~0.30	0.20~0.35	0.22~0.40
M	Stainless steel	Austenitic	135~275	CM	PC330N	60 (40~80)	0.05~0.15	0.10~0.20	0.15~0.25
		Ferritic, martensitic	135~275	CM	PC330N	70 (50~90)	0.10~0.20	0.15~0.30	0.20~0.35
K	Cast iron	Gray cast iron	150~230	CP	PC5335 PC5300	120 (80~140)	0.25~0.40	0.30~0.45	0.35~0.50
		Ductile cast iron	160~260	CP	PC5335 PC5300	110 (70~130)	0.20~0.35	0.25~0.40	0.30~0.45
N	Non-ferrous metal	Aluminum	30~150	CN	H01	200 (90~220)	0.35~0.45	0.40~0.50	0.45~0.55
		Copper alloy	150~160	CN	H01	200 (90~220)	0.35~0.45	0.40~0.50	0.45~0.55

※ In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part
※ In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions

• 8D Drilling

Workpiece				Insert	Graade	vc (m/min)	Aspect ratio (L/D) = 8D		
							Feed rate (mm/rev) per drill dia. (mm)		
ISO		Workpiece	HB				Ø12.00-Ø17.99	Ø18.00-Ø25.99	Ø26.00-Ø30.99
P	Carbon steel	Low carbon steel	80~120	CP	PC5335 PC330P	100 (70~130)	0.12~0.25	0.17~0.30	0.22~0.35
		High carbon steel	180~280	CP	PC5335 PC330P	90 (60~120)	0.12~0.25	0.17~0.30	0.22~0.35
	Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	100 (70~130)	0.15~0.30	0.20~0.33	0.25~0.38
		Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	65 (40~90)	0.15~0.30	0.20~0.33	0.25~0.38
		High alloy steel	260~320	CP	PC5335 PC5300	60 (40~80)	0.15~0.25	0.17~0.30	0.22~0.35
		High alloy heat-treated steel	300~450	CP	PC5335 PC5300	50 (30~70)	0.15~0.25	0.17~0.30	0.22~0.35
M	Stainless steel	Austenitic	135~275	CM	PC330N	50 (30~70)	0.05~0.10	0.05~0.15	0.10~0.20
		Ferritic, martensitic	135~275	CM	PC330N	60 (40~80)	0.05~0.15	0.10~0.25	0.15~0.30
K	Cast iron	Gray cast iron	150~230	CP	PC5335 PC5300	110 (70 ~130)	0.22~0.35	0.27~0.40	0.32~0.45
		Ductile cast iron	160~260	CP	PC5335 PC5300	100 (60~120)	0.17~0.30	0.22~0.35	0.27~0.40
N	Non-ferrous metal	Aluminum	30~150	CN	H01	190 (80~200)	0.30~0.40	0.35~0.45	0.40~0.50
		Copper alloy	150~160	CN	H01	190 (80~200)	0.30~0.40	0.35~0.45	0.40~0.50

※ In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part
※ In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions

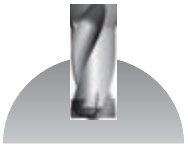
• 10D/12D Drilling

Workpiece				Insert	Grade	vc (m/min)	Aspect ratio (L/D) = 10D, 12D		
							Feed rate (mm/rev) per drill dia. (mm)		
ISO		Workpiece	HB				Ø12.00~Ø17.99	Ø18.00~Ø25.99	Ø26.00~Ø30.99
P	Carbon steel	Low carbon steel	80~120	CP	PC5335 PC330P	90 (60~120)	0.10~0.20	0.15~0.25	0.20~0.30
		High carbon steel	180~280	CP	PC5335 PC330P	80 (50~110)	0.10~0.20	0.15~0.25	0.20~0.30
	Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	90 (60~120)	0.13~0.25	0.18~0.28	0.23~0.33
		Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	55 (40~80)	0.13~0.30	0.18~0.28	0.23~0.33
		High alloy steel	260~320	CP	PC5335 PC5300	50 (40~70)	0.13~0.25	0.15~0.25	0.20~0.30
		High alloy heat-treated steel	300~450	CP	PC5335 PC5300	40 (30~60)	0.13~0.25	0.15~0.25	0.20~0.30
M	Stainless steel	Austenitic	135~275	CM	PC330N	50 (30~60)	0.05~0.10	0.05~0.15	0.10~0.20
		Ferritic, martensitic	135~275	CM	PC330N	60 (40~70)	0.05~0.15	0.10~0.25	0.15~0.30
K	Cast iron	Gray cast iron	150~230	CP	PC5335 PC5300	100 (60~120)	0.20~0.30	0.25~0.35	0.30~0.40
		Ductile cast iron	160~260	CP	PC5335 PC5300	90 (50~110)	0.15~0.25	0.20~0.30	0.25~0.35
N	Non-ferrous metal	Aluminum	30~150	CN	H01	180 (70~190)	0.28~0.35	0.33~0.40	0.38~0.45
		Copper alloy	150~160	CN	H01	180 (70~190)	0.28~0.35	0.33~0.40	0.38~0.45

※ In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part
※ In case of 10D and 12D, apply the recommended cutting conditions in the other side
※ In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions

Recommended cutting conditions (TPDC-CP-FC)

Workpiece				Graade	vc (m/min)	Aspect ratio (L/D) = 1.5D, 3D, 5D		
						Feed rate (mm/rev) per drill dia. (mm)		
ISO		Workpiece	HB			Ø12.00~Ø17.99	Ø18.00~Ø25.99	Ø26.00~Ø30.99
P	Carbon steel	Low carbon steel (SM10C, SM20C etc)	80~120	PC5335	90 (70~110)	0.18~0.28	0.2~0.3	0.23~0.33
		High carbon steel (SM45C, SM50C etc)	180~280		80 (60~100)	0.18~0.28	0.2~0.3	0.23~0.33
	Alloy steel	Low alloy steel (SCM420, SCM440 etc)	140~260		90 (70~110)	0.18~0.28	0.2~0.3	0.23~0.33
		High alloy steel (SCM435, SCM445 etc)	260~320		70 (50~90)	0.18~0.28	0.2~0.3	0.23~0.33

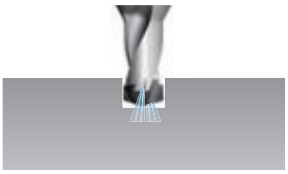
Machining	Flat surface drilling	Angled surface drilling	Curved surface drilling	Plunging	Boring
Pic.					
1.5D/3D	○	○	○	○	○
5D	○	×	×	×	×

※ Please refer to the precaution in drilling in case of angled surface drilling, curved surface drilling, plunging and boring

How to drill a deep hole (10D/12D)

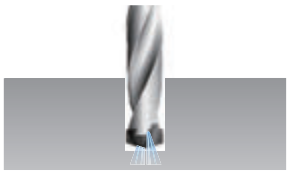
• Using a pilot drill (recommended)

1. Drilling a pilot hole (with a pilot drill)



• Drill a 0.5D pilot hole in 70% lower cutting speed with 1.5D drill or 3D drill

2. Start drilling



• Start drilling in recommended cutting conditions after replacing the drill

• Without pilot drill

1. Drilling a pilot hole (without a pilot drill)

• After drill 0.5D with 70% lower cutting speed, stop drilling for 2-3 seconds putting the drill in the hole

2. Stop drilling

• Stop supplying the coolant and take out the drill from the hole. Then, stop drilling for 2-3 seconds

3. Ready to drill

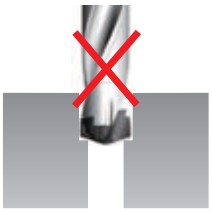
• After putting the drill in the hole to 2-3 mm upper than the bottom of the pilot hole, start supplying the coolant. Then, be ready to start drilling

4. Stop drilling

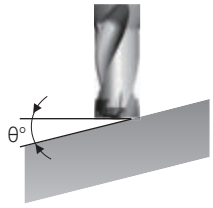
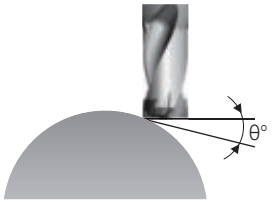
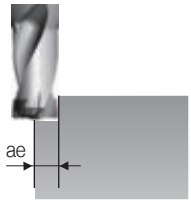
• Start drilling in recommended cutting conditions

Precaution in drilling

• TPDC-CP/CM/CN

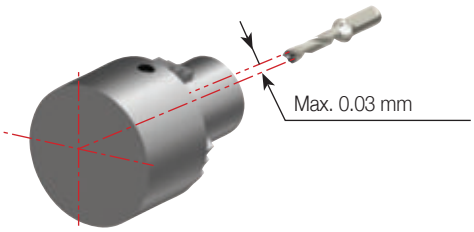
Angled surface drilling	Stacked plates drilling	Plunging	Boring
			
• The approach angle between drill and the workpiece at the beginning and the end should be less than 6° • Reduce the feed (fn) to 30-50% than general cutting conditions at the beginning and the end of angled surface	• Gap between the plates could make wrong chip evacuation causing fracture of the drill • Place stacked plates without any gap between each	• Irregular cutting resistance in plunging could cause fracture and deformation of the drill	• Boring is not recommended due to wear and chipping in the corner of the insert

• TPDC-CP-FC

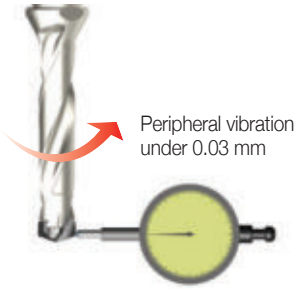
Angled surface drilling	Curved surface drilling	Plunging	Boring
			
• Reduce the feed (fn) to 30% than general cutting conditions at the beginning and the end of angled surface (Recommended only in case of θ is less than 10°)	• Reduce the feed (fn) to 30% than general cutting conditions at the beginning of curved surface (In case, θ is over 30°, reduce it to 50%)	• Reduce the depth of cut (ae) to shorter than 1/2 of drill diameter • In case, the depth of cut is longe than drill diameter, plunge with divided depth of cut	• Reduce the feed (fn) to 30% than general cutting conditions at the beginning of boring • Start with 2 mm stepping before boring to prevent long chip

Check point in drilling

- Condition of the clamped workpiece
- Revolution of the main axis of the machine
- Condition of the holder
- Run-out of the clamped drill (Max. 0.03 mm)
- Condition of supplying coolant (pressure, flow, concentration)
- Chip evacuation



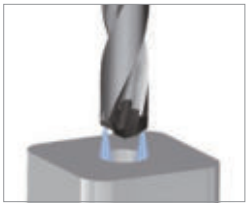
Setting of the horizontal equipment



Setting of the vertical equipment

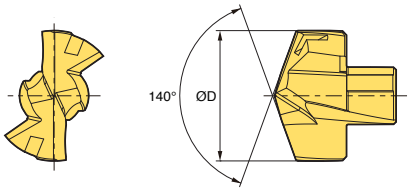
Supply of coolant

- Supply enough coolant to the beginning of the hole
- Minimum pressure of oil coolant: 5 bar
- Minimum flow of coolant: 5 ℓ/min



Available insert

XP



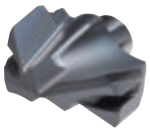
Drill dia. ØD (mm)	P type (XP)	Coated	Holder	Wrench
	TPDC-XP	PC325U		
8.0	TPD0800XP	●	TPDX□D-08012-□	TPDC -W0811
8.1	TPD0810XP	●		
8.2	TPD0820XP	●		
8.3	TPD0830XP	●		
8.4	TPD0840XP	●		
8.5	TPD0850XP	●	TPDX□D-08512-□	
8.6	TPD0860XP	●		
8.7	TPD0870XP	●		
8.8	TPD0880XP	●		
8.9	TPD0890XP	●		
9.0	TPD0900XP	●	TPDX□D-09012-□	
9.1	TPD0910XP	●		
9.2	TPD0920XP	●		
9.3	TPD0930XP	●		
9.4	TPD0940XP	●		
9.5	TPD0950XP	●	TPDX□D-09512-□	
9.6	TPD0960XP	●		
9.7	TPD0970XP	●		
9.8	TPD0980XP	●		
9.9	TPD0990XP	●		
10.0	TPD1000XP	●	TPDX□D-10016-□	
10.1	TPD1010XP	●		
10.2	TPD1020XP	●		
10.3	TPD1030XP	●		
10.4	TPD1040XP	●		
10.5	TPD1050XP	●	TPDX□D-10516-□	
10.6	TPD1060XP	●		
10.7	TPD1070XP	●		
10.8	TPD1080XP	●		
10.9	TPD1090XP	●		
11.0	TPD1100XP	●	TPDX□D-11016-□	
11.1	TPD1110XP	●		
11.2	TPD1120XP	●		
11.3	TPD1130XP	●		
11.4	TPD1140XP	●		
11.5	TPD1150XP	●	TPDX□D-11516-□	
11.6	TPD1160XP	●		
11.7	TPD1170XP	●		
11.8	TPD1180XP	●		
11.9	TPD1190XP	●		

※ We can provide if you order exact machining specification ●: Stock Item

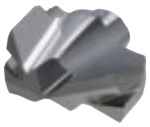
Parts (applicable wrench)

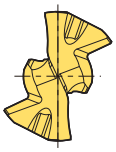
Picture	Designation	Drill diameter ØD (mm)	Torque (N·m)
	TPDC-W0811	8.00-11.99	0.7-1.5

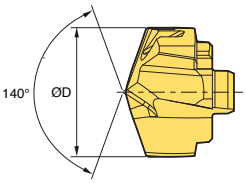
Available insert


CP


CM


CN





Drill dia. ØD(mm)	P type (CP)				M type (CM)		N type (CN)		Holder	Wrench
	TPDC-CP	Coated			TPDC-CM	Coated	TPDC-CN	Uncoated		
		PC5335	PC5300	PC330P		PC330N		H01		
12.0	TPD1200CP	●			TPD1200CM	●	TPD1200CN		TPDC□D-12016-□	TPDC-W1216
12.2	TPD1220CP	●			TPD1220CM	●	TPD1220CN			
12.5	TPD1250CP	●			TPD1250CM	●	TPD1250CN		TPDC□D-12516-□	
12.6	TPD1260CP	●			TPD1260CM	●	TPD1260CN			
13.0	TPD1300CP	●			TPD1300CM	●	TPD1300CN		TPDC□D-13016-□	
13.5	TPD1350CP	●			TPD1350CM	●	TPD1350CN		TPDC□D-13516-□	
14.0	TPD1400CP	●			TPD1400CM	●	TPD1400CN		TPDC□D-14016-□	
14.2	TPD1420CP	●			TPD1420CM	●	TPD1420CN			
14.3	TPD1430CP	●			TPD1430CM	●	TPD1430CN			
14.5	TPD1450CP	●			TPD1450CM	●	TPD1450CN		TPDC□D-14516-□	
15.0	TPD1500CP	●			TPD1500CM	●	TPD1500CN		TPDC□D-15020-□	
15.2	TPD1520CP	●			TPD1520CM	●	TPD1520CN			
15.5	TPD1550CP	●			TPD1550CM	●	TPD1550CN			
16.0	TPD1600CP	●			TPD1600CM	●	TPD1600CN		TPDC□D-16020-□	
16.3	TPD1630CP	●			TPD1630CM	●	TPD1630CN			
16.5	TPD1650CP	●			TPD1650CM	●	TPD1650CN			
16.7	TPD1670CP	●			TPD1670CM	●	TPD1670CN			
16.9	TPD1690CP	●			TPD1690CM	●	TPD1690CN			
17.0	TPD1700CP	●			TPD1700CM	●	TPD1700CN		TPDC□D-17020-□	TPDC-W1721
17.5	TPD1750CP	●			TPD1750CM	●	TPD1750CN			
17.7	TPD1770CP	●			TPD1770CM	●	TPD1770CN			
18.0	TPD1800CP	●			TPD1800CM	●	TPD1800CN		TPDC□D-18025-□	
18.1	TPD1810CP	●			TPD1810CM	●	TPD1810CN			
18.5	TPD1850CP	●			TPD1850CM	●	TPD1850CN			
18.6	TPD1860CP	●			TPD1860CM	●	TPD1860CN			
18.7	TPD1870CP	●			TPD1870CM	●	TPD1870CN			
19.0	TPD1900CP	●			TPD1900CM	●	TPD1900CN		TPDC□D-19025-□	
19.2	TPD1920CP	●			TPD1920CM	●	TPD1920CN			
19.3	TPD1930CP	●			TPD1930CM	●	TPD1930CN			
19.5	TPD1950CP	●			TPD1950CM	●	TPD1950CN			
19.7	TPD1970CP	●			TPD1970CM	●	TPD1970CN			
20.0	TPD2000CP	●			TPD2000CM	●	TPD2000CN		TPDC□D-20025-□	
20.5	TPD2050CP	●			TPD2050CM	●	TPD2050CN			
21.0	TPD2100CP	●			TPD2100CM	●	TPD2100CN		TPDC□D-21025-□	
21.5	TPD2150CP	●			TPD2150CM	●	TPD2150CN			
22.0	TPD2200CP	●			TPD2200CM	●	TPD2200CN		TPDC□D-22025-□	TPDC-W2225
22.5	TPD2250CP	●			TPD2250CM	●	TPD2250CN			
22.6	TPD2260CP	●			TPD2260CM	●	TPD2260CN			
22.7	TPD2270CP	●			TPD2270CM	●	TPD2270CN			
23.0	TPD2300CP	●			TPD2300CM	●	TPD2300CN		TPDC□D-23025-□	
23.5	TPD2350CP	●			TPD2350CM	●	TPD2350CN			
24.0	TPD2400CP	●			TPD2400CM	●	TPD2400CN		TPDC□D-24032-□	
24.5	TPD2450CP	●			TPD2450CM	●	TPD2450CN			
25.0	TPD2500CP	●			TPD2500CM	●	TPD2500CN		TPDC□D-25032-□	
25.3	TPD2530CP	●			TPD2530CM	●	TPD2530CN			
25.5	TPD2550CP	●			TPD2550CM	●	TPD2550CN			
25.8	TPD2580CP	●			TPD2580CM	●	TPD2580CN			
25.9	TPD2590CP	●			TPD2590CM	●	TPD2590CN			
26.0	TPD2600CP	●			TPD2600CM	●	TPD2600CN		TPDC□D-26032-□	TPDC-W2630
26.5	TPD2650CP	●			TPD2650CM	●	TPD2650CN			
27.0	TPD2700CP	●			TPD2700CM	●	TPD2700CN		TPDC□D-27032-□	
27.5	TPD2750CP	●			TPD2750CM	●	TPD2750CN			
28.0	TPD2800CP	●			TPD2800CM	●	TPD2800CN		TPDC□D-28032-□	
28.5	TPD2850CP	●			TPD2850CM	●	TPD2850CN			
29.0	TPD2900CP	●			TPD2900CM	●	TPD2900CN		TPDC□D-29032-□	
29.5	TPD2950CP	●			TPD2950CM	●	TPD2950CN			
30.0	TPD3000CP	●			TPD3000CM	●	TPD3000CN		TPDC□D-30032-□	
30.5	TPD3050CP	●			TPD3050CM	●	TPD3050CN			

※ We can provide if you order exact machining specification Ex) Ø15.9 and carbon steel machining → TPDC1590CP/PC330P

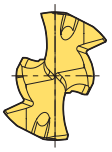
●: Stock Item

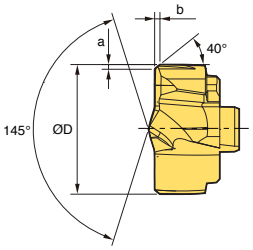
Parts (applicable wrench)

Picture	Designation		Drill diameter ØD (mm)	Torque (N·m)
	TPDC-	W1216	12.00-16.99	2.0-3.0
		W1721	17.00-21.99	2.0-4.0
		W2225	22.00-25.99	3.0-4.0
		W2630	26.00-30.99	4.0-5.0

Available insert

FC





Drill dia. ØD(mm)	FC type (CP-FC)		Holder	Chamfer (mm)		Wrench
	TPDC-CP-FC	Coated PC5335		a	b	
12.0	TPD1200CP-FC		TPDC□D-12016-□	0.38	0.45	TPDC-W1216
12.2	TPD1220CP-FC					
12.5	TPD1250CP-FC		TPDC□D-12516-□			
12.6	TPD1260CP-FC					
13.0	TPD1300CP-FC		TPDC□D-13016-□			
13.5	TPD1350CP-FC		TPDC□D-13516-□			
14.0	TPD1400CP-FC		TPDC□D-14016-□			
14.2	TPD1420CP-FC					
14.3	TPD1430CP-FC					
14.5	TPD1450CP-FC		TPDC□D-14516-□			
15.0	TPD1500CP-FC		TPDC□D-15020-□			
15.5	TPD1550CP-FC					
16.0	TPD1600CP-FC		TPDC□D-16020-□			
16.3	TPD1630CP-FC					
16.5	TPD1650CP-FC					
16.7	TPD1670CP-FC					
17.0	TPD1700CP-FC		TPDC□D-17020-□	0.46	0.55	TPDC-W1721
17.5	TPD1750CP-FC					
17.7	TPD1770CP-FC					
18.0	TPD1800CP-FC		TPDC□D-18025-□			
18.1	TPD1810CP-FC					
18.5	TPD1850CP-FC					
18.6	TPD1860CP-FC					
18.7	TPD1870CP-FC					
19.0	TPD1900CP-FC		TPDC□D-19025-□			
19.2	TPD1920CP-FC					
19.5	TPD1950CP-FC					
19.7	TPD1970CP-FC					
20.0	TPD2000CP-FC		TPDC□D-20025-□			
20.5	TPD2050CP-FC					
21.0	TPD2100CP-FC		TPDC□D-21025-□			
21.5	TPD2150CP-FC					
22.0	TPD2200CP-FC		TPDC□D-22025-□			TPDC-W2225
22.5	TPD2250CP-FC					
22.6	TPD2260CP-FC					
22.7	TPD2270CP-FC					
23.0	TPD2300CP-FC		TPDC□D-23025-□			
23.5	TPD2350CP-FC					
24.0	TPD2400CP-FC		TPDC□D-24032-□			
24.5	TPD2450CP-FC					
25.0	TPD2500CP-FC		TPDC□D-25032-□			
25.3	TPD2530CP-FC					
25.5	TPD2550CP-FC					
25.8	TPD2580CP-FC					
25.9	TPD2590CP-FC					
26.0	TPD2600CP-FC		TPDC□D-26032-□	0.54	0.65	TPDC-W2630
26.5	TPD2650CP-FC					
27.0	TPD2700CP-FC		TPDC□D-27032-□			
27.5	TPD2750CP-FC					
28.0	TPD2800CP-FC		TPDC□D-28032-□			
28.5	TPD2850CP-FC					
29.0	TPD2900CP-FC		TPDC□D-29032-□			
29.5	TPD2950CP-FC					
30.0	TPD3000CP-FC		TPDC□D-30032-□			
30.5	TPD3050CP-FC					

※ We can provide if you order exact machining specification Ex) Ø15.9 and carbon steel machining → TPDC1590CP-FC/PC5335

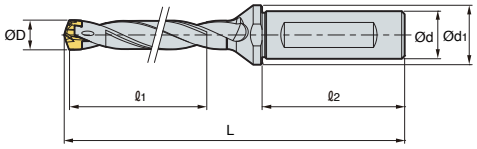
●: Stock Item

※ TPDC-CP-FC insert: impossible to be reground

Parts (applicable wrench)

Picture	Designation		Drill diameter ØD (mm)	Torque (N·m)
	TPDC-	W1216	12.00-16.99	2.0-3.0
		W1721	17.00-21.99	2.0-4.0
		W2225	22.00-25.99	3.0-4.0
		W2630	26.00-30.99	4.0-5.0

TPDX (3D/5D/8D)



(mm)

Designation		ØD	Ød	Ød$_1$	ℓ$_1$	ℓ$_2$	L	Insert
TPDX	3D-08012-24	8.0-8.4	12	16	24	45	82.2	TPD0800XP-0849XP
	3D-08512-26	8.5-8.9	12	16	26	45	84.1	TPD0850XP-0899XP
	3D-09012-27	9.0-9.4	12	16	27	45	85.9	TPD0900XP-0949XP
	3D-09512-29	9.5-9.9	12	16	29	45	87.7	TPD0950XP-0999XP
	3D-10016-30	10.0-10.4	16	20	30	48	94.6	TPD1000XP-1049XP
	3D-10516-32	10.5-10.9	16	20	32	48	96.5	TPD1050XP-1099XP
	3D-11016-33	11.0-11.4	16	20	33	48	98.2	TPD1100XP-1149XP
	3D-11516-35	11.5-11.9	16	20	35	48	100.1	TPD1150XP-1199XP
TPDX	5D-08012-40	8.0-8.4	12	16	40	45	98.2	TPD0800XP-0849XP
	5D-08512-43	8.5-8.9	12	16	43	45	101.1	TPD0850XP-0899XP
	5D-09012-45	9.0-9.4	12	16	45	45	103.9	TPD0900XP-0949XP
	5D-09512-48	9.5-9.9	12	16	48	45	106.7	TPD0950XP-0999XP
	5D-10016-50	10.0-10.4	16	20	50	48	114.6	TPD1000XP-1049XP
	5D-10516-53	10.5-10.9	16	20	53	48	117.5	TPD1050XP-1099XP
	5D-11016-55	11.0-11.4	16	20	55	48	120.2	TPD1100XP-1149XP
	5D-11516-58	11.5-11.9	16	20	58	48	123.1	TPD1150XP-1199XP
TPDX	8D-08012-64	8.0-8.4	12	16	64	45	122.2	TPD0800XP-0849XP
	8D-08512-68	8.5-8.9	12	16	68	45	126.6	TPD0850XP-0899XP
	8D-09012-72	9.0-9.4	12	16	72	45	130.9	TPD0900XP-0949XP
	8D-09512-76	9.5-9.9	12	16	76	45	135.2	TPD0950XP-0999XP
	8D-10016-80	10.0-10.4	16	20	80	48	144.6	TPD1000XP-1049XP
	8D-10516-84	10.5-10.9	16	20	84	48	149.0	TPD1050XP-1099XP
	8D-11016-88	11.0-11.4	16	20	88	48	153.2	TPD1100XP-1149XP
	8D-11516-92	11.5-11.9	16	20	92	48	157.6	TPD1150XP-1199XP

Applicable inserts **F47**

※ We can provide if you order exact machining specification. Ex) Ø10 and 60 mm depth of cut → TPDX6D-10016-60

TPDC (1.5D/3D)

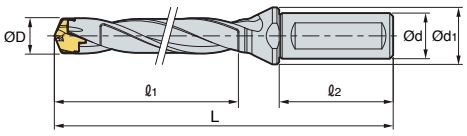


Fig.1

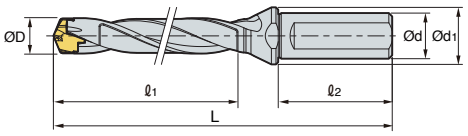


Fig.2

(mm)

Designation		ØD	Ød	Ød1	ℓ1	ℓ2	L	Insert	Fig.
TPDC	1.5D-12016-18	12.0~12.4	16	20	18	48	85	TPD1200C□-1249C□	1
	1.5D-12516-19	12.5~12.9	16	20	19	48	86	TPD1250C□-1299C□	1
	1.5D-13016-20	13.0~13.4	16	20	20	48	87	TPD1300C□-1349C□	1
	1.5D-13516-20	13.5~13.9	16	20	20	48	88	TPD1350C□-1399C□	1
	1.5D-14016-21	14.0~14.4	16	20	21	48	93	TPD1400C□-1449C□	1
	1.5D-14516-22	14.5~14.9	16	20	22	48	94	TPD1450C□-1499C□	1
	1.5D-15020-23	15.0~15.9	20	25	23	50	95	TPD1500C□-1599C□	2
	1.5D-16020-24	16.0~16.9	20	25	24	50	98	TPD1600C□-1699C□	2
	1.5D-17020-26	17.0~17.9	20	25	26	50	100	TPD1700C□-1799C□	2
	1.5D-18025-27	18.0~18.9	25	33	27	56	110	TPD1800C□-1899C□	2
	1.5D-19025-28	19.0~19.9	25	33	28	56	112	TPD1900C□-1999C□	2
	1.5D-20025-30	20.0~20.9	25	33	30	56	114	TPD2000C□-2099C□	2
	1.5D-21025-31	21.0~21.9	25	33	31	56	116	TPD2100C□-2199C□	2
	1.5D-22025-33	22.0~22.9	25	33	33	56	119	TPD2200C□-2299C□	2
	1.5D-23025-34	23.0~23.9	25	33	34	56	121	TPD2300C□-2399C□	2
	1.5D-24032-36	24.0~24.9	32	43	36	60	130	TPD2400C□-2499C□	2
	1.5D-25032-37	25.0~25.9	32	43	37	60	132	TPD2500C□-2599C□	2
	1.5D-26032-39	26.0~26.9	32	43	39	60	134	TPD2600C□-2699C□	2
	1.5D-27032-40	27.0~27.9	32	43	40	60	136	TPD2700C□-2799C□	2
	1.5D-28032-42	28.0~28.9	32	43	42	60	138	TPD2800C□-2899C□	2
	1.5D-29032-43	29.0~29.9	32	43	43	60	141	TPD2900C□-2999C□	2
	1.5D-30032-45	30.0~30.9	32	43	45	60	143	TPD3000C□-3099C□	2
TPDC	3D-12016-36	12.0~12.4	16	20	36	48	99	TPD1200C□-1249C□	1
	3D-12516-38	12.5~12.9	16	20	38	48	101	TPD1250C□-1299C□	1
	3D-13016-39	13.0~13.4	16	20	39	48	103	TPD1300C□-1349C□	1
	3D-13516-41	13.5~13.9	16	20	41	48	105	TPD1350C□-1399C□	1
	3D-14016-42	14.0~14.4	16	20	42	48	106	TPD1400C□-1449C□	1
	3D-14516-44	14.5~14.9	16	20	44	48	107	TPD1450C□-1499C□	1
	3D-15020-45	15.0~15.9	20	25	45	50	113	TPD1500C□-1599C□	2
	3D-16020-48	16.0~16.9	20	25	48	50	117	TPD1600C□-1699C□	2
	3D-17020-51	17.0~17.9	20	25	51	50	120	TPD1700C□-1799C□	2
	3D-18025-54	18.0~18.9	25	33	54	56	132	TPD1800C□-1899C□	2
	3D-19025-57	19.0~19.9	25	33	57	56	135	TPD1900C□-1999C□	2
	3D-20025-60	20.0~20.9	25	33	60	56	138	TPD2000C□-2099C□	2
	3D-21025-63	21.0~21.9	25	33	63	56	141	TPD2100C□-2199C□	2
	3D-22025-66	22.0~22.9	25	33	66	56	145	TPD2200C□-2299C□	2
	3D-23025-69	23.0~23.9	25	33	69	56	149	TPD2300C□-2399C□	2
	3D-24032-72	24.0~24.9	32	43	72	60	159	TPD2400C□-2499C□	2
	3D-25032-75	25.0~25.9	32	43	75	60	162	TPD2500C□-2599C□	2
	3D-26032-78	26.0~26.9	32	43	78	60	173	TPD2600C□-2699C□	2
	3D-27032-81	27.0~27.9	32	43	81	60	176	TPD2700C□-2799C□	2
	3D-28032-84	28.0~28.9	32	43	84	60	180	TPD2800C□-2899C□	2
	3D-29032-87	29.0~29.9	32	43	87	60	185	TPD2900C□-2999C□	2
	3D-30032-90	30.0~30.9	32	43	90	60	188	TPD3000C□-3099C□	2

Applicable inserts **F48~49**

※ We can provide if you order exact machining specification. Ex) Ø15 and 60 mm depth of cut → TPDC4D-15020-60

TPDC (5D/8D)

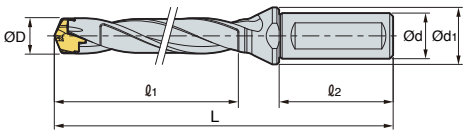


Fig.1

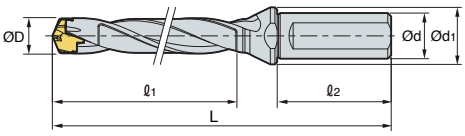


Fig.2

(mm)

Designation		ØD	Ød	Ød1	ℓ1	ℓ2	L	Insert	Fig.
TPDC	5D-12016-60	12.0~12.4	16	20	60	48	123	TPD1200C□-1249C□	1
	5D-12516-63	12.5~12.9	16	20	63	48	126	TPD1250C□-1299C□	1
	5D-13016-65	13.0~13.4	16	20	65	48	129	TPD1300C□-1349C□	1
	5D-13516-68	13.5~13.9	16	20	68	48	132	TPD1350C□-1399C□	1
	5D-14016-70	14.0~14.4	16	20	70	48	134	TPD1400C□-1449C□	1
	5D-14516-73	14.5~14.9	16	20	73	48	136	TPD1450C□-1499C□	1
	5D-15020-75	15.0~15.9	20	25	75	50	143	TPD1500C□-1599C□	2
	5D-16020-80	16.0~16.9	20	25	80	50	149	TPD1600C□-1699C□	2
	5D-17020-85	17.0~17.9	20	25	85	50	154	TPD1700C□-1799C□	2
	5D-18025-90	18.0~18.9	25	33	90	56	168	TPD1800C□-1899C□	2
	5D-19025-95	19.0~19.9	25	33	95	56	173	TPD1900C□-1999C□	2
	5D-20025-100	20.0~20.9	25	33	100	56	178	TPD2000C□-2099C□	2
	5D-21025-105	21.0~21.9	25	33	105	56	183	TPD2100C□-2199C□	2
	5D-22025-110	22.0~22.9	25	33	110	56	189	TPD2200C□-2299C□	2
	5D-23025-115	23.0~23.9	25	33	115	56	195	TPD2300C□-2399C□	2
	5D-24032-120	24.0~24.9	32	43	120	60	207	TPD2400C□-2499C□	2
	5D-25032-125	25.0~25.9	32	43	125	60	212	TPD2500C□-2599C□	2
	5D-26032-130	26.0~26.9	32	43	130	60	225	TPD2600C□-2699C□	2
	5D-27032-135	27.0~27.9	32	43	135	60	230	TPD2700C□-2799C□	2
	5D-28032-140	28.0~28.9	32	43	140	60	236	TPD2800C□-2899C□	2
	5D-29032-145	29.0~29.9	32	43	145	60	243	TPD2900C□-2999C□	2
	5D-30032-150	30.0~30.9	32	43	150	60	248	TPD3000C□-3099C□	2
TPDC	8D-12016-96	12.0~12.4	16	20	96	48	159	TPD1200C□-1249C□	1
	8D-12516-100	12.5~12.9	16	20	100	48	163	TPD1250C□-1299C□	1
	8D-13016-104	13.0~13.4	16	20	104	48	168	TPD1300C□-1349C□	1
	8D-13516-108	13.5~13.9	16	20	108	48	173	TPD1350C□-1399C□	1
	8D-14016-112	14.0~14.4	16	20	112	48	176	TPD1400C□-1449C□	1
	8D-14516-116	14.5~14.9	16	20	116	48	180	TPD1450C□-1499C□	1
	8D-15020-120	15.0~15.9	20	25	120	50	188	TPD1500C□-1599C□	2
	8D-16020-128	16.0~16.9	20	25	128	50	197	TPD1600C□-1699C□	2
	8D-17020-136	17.0~17.9	20	25	136	50	205	TPD1700C□-1799C□	2
	8D-18025-144	18.0~18.9	25	33	144	56	222	TPD1800C□-1899C□	2
	8D-19025-152	19.0~19.9	25	33	152	56	230	TPD1900C□-1999C□	2
	8D-20025-160	20.0~20.9	25	33	160	56	238	TPD2000C□-2099C□	2
	8D-21025-168	21.0~21.9	25	33	168	56	246	TPD2100C□-2199C□	2
	8D-22025-176	22.0~22.9	25	33	176	56	255	TPD2200C□-2299C□	2
	8D-23025-184	23.0~23.9	25	33	184	56	264	TPD2300C□-2399C□	2
	8D-24032-192	24.0~24.9	32	43	192	60	279	TPD2400C□-2499C□	2
	8D-25032-200	25.0~25.9	32	43	200	60	287	TPD2500C□-2599C□	2
	8D-26032-208	26.0~26.9	32	43	208	60	303	TPD2600C□-2699C□	2
	8D-27032-216	27.0~27.9	32	43	216	60	311	TPD2700C□-2799C□	2
	8D-28032-224	28.0~28.9	32	43	224	60	320	TPD2800C□-2899C□	2
	8D-29032-232	29.0~29.9	32	43	232	60	330	TPD2900C□-2999C□	2
	8D-30032-240	30.0~30.9	32	43	240	60	338	TPD3000C□-3099C□	2

Applicable inserts **F48~49**

※ We can provide if you order exact machining specification. Ex) Ø15 and 60 mm depth of cut → TPDC4D–15020–60

TPDC (10D/12D)

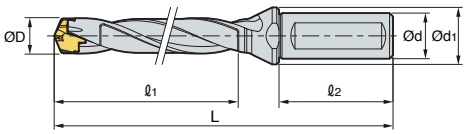


Fig.1

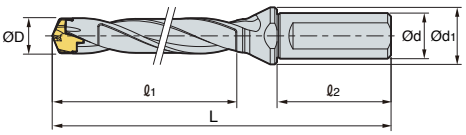


Fig.2

(mm)

Designation		ØD	Ød	Ød1	ℓ1	ℓ2	L	Insert	Fig.
TPDC	10D-12016-120	12.0~12.4	16	20	120	48	183	TPD1200C□-1249C□	1
	10D-12516-125	12.5~12.9	16	20	125	48	188	TPD1250C□-1299C□	1
	10D-13016-130	13.0~13.4	16	20	130	48	194	TPD1300C□-1349C□	1
	10D-13516-135	13.5~13.9	16	20	135	48	199	TPD1350C□-1399C□	1
	10D-14016-140	14.0~14.4	16	20	140	48	204	TPD1400C□-1449C□	1
	10D-14516-145	14.5~14.9	16	20	145	48	208	TPD1450C□-1499C□	1
	10D-15020-150	15.0~15.9	20	25	150	50	218	TPD1500C□-1599C□	1
	10D-16020-160	16.0~16.9	20	25	160	50	229	TPD1600C□-1699C□	1
	10D-17020-170	17.0~17.9	20	25	170	50	239	TPD1700C□-1799C□	1
	10D-18025-180	18.0~18.9	25	33	180	56	258	TPD1800C□-1899C□	1
	10D-19025-190	19.0~19.9	25	33	190	56	268	TPD1900C□-1999C□	1
	10D-20025-200	20.0~20.9	25	33	200	56	278	TPD2000C□-2099C□	1
	10D-21025-210	21.0~21.9	25	33	210	56	288	TPD2100C□-2199C□	1
	10D-22025-220	22.0~22.9	25	33	220	56	299	TPD2200C□-2299C□	1
	10D-23025-230	23.0~23.9	25	33	230	56	310	TPD2300C□-2399C□	1
	10D-24032-240	24.0~24.9	32	43	240	60	327	TPD2400C□-2499C□	2
	10D-25032-250	25.0~25.9	32	43	250	60	337	TPD2500C□-2599C□	2
	10D-26032-260	26.0~26.9	32	43	260	60	355	TPD2600C□-2699C□	2
	10D-27032-270	27.0~27.9	32	43	270	60	365	TPD2700C□-2799C□	2
	10D-28032-280	28.0~28.9	32	43	280	60	376	TPD2800C□-2899C□	2
	10D-29032-290	29.0~29.9	32	43	290	60	388	TPD2900C□-2999C□	2
	10D-30032-300	30.0~30.9	32	43	300	60	398	TPD3000C□-3099C□	2
TPDC	12D-12016-144	12.0~12.4	16	20	144	48	207	TPD1200C□-1249C□	1
	12D-12516-150	12.5~12.9	16	20	150	48	213	TPD1250C□-1299C□	1
	12D-13016-156	13.0~13.4	16	20	156	48	220	TPD1300C□-1349C□	1
	12D-13516-162	13.5~13.9	16	20	162	48	226	TPD1350C□-1399C□	1
	12D-14016-168	14.0~14.4	16	20	168	48	232	TPD1400C□-1449C□	1
	12D-14516-174	14.5~14.9	16	20	174	48	237	TPD1450C□-1499C□	1
	12D-15020-180	15.0~15.9	20	25	180	50	248	TPD1500C□-1599C□	1
	12D-16020-192	16.0~16.9	20	25	192	50	261	TPD1600C□-1699C□	1
	12D-17020-204	17.0~17.9	20	25	204	50	273	TPD1700C□-1799C□	1
	12D-18025-216	18.0~18.9	25	33	216	56	294	TPD1800C□-1899C□	1
	12D-19025-228	19.0~19.9	25	33	228	56	306	TPD1900C□-1999C□	1
	12D-20025-240	20.0~20.9	25	33	240	56	318	TPD2000C□-2099C□	1
	12D-21025-252	21.0~21.9	25	33	252	56	330	TPD2100C□-2199C□	1
	12D-22025-264	22.0~22.9	25	33	264	56	343	TPD2200C□-2299C□	1
	12D-23025-276	23.0~23.9	25	33	276	56	356	TPD2300C□-2399C□	1
	12D-24032-288	24.0~24.9	32	43	288	60	375	TPD2400C□-2499C□	2
	12D-25032-300	25.0~25.9	32	43	300	60	387	TPD2500C□-2599C□	2
	12D-26032-312	26.0~26.9	32	43	312	60	407	TPD2600C□-2699C□	2
	12D-27032-324	27.0~27.9	32	43	324	60	419	TPD2700C□-2799C□	2
	12D-28032-336	28.0~28.9	32	43	336	60	432	TPD2800C□-2899C□	2
	12D-29032-348	29.0~29.9	32	43	348	60	446	TPD2900C□-2999C□	2
	12D-30032-360	30.0~30.9	32	43	360	60	458	TPD3000C□-3099C□	2

Applicable inserts **F48~49**

We can provide if you order exact machining specification. Ex) Ø15 and 135 mm depth of cut → TPDC9D–15020–135

Highly precise and efficient top solid indexable drill

TPDB Plus Drill

(TPDB Plus / TPDB-F new / TPDB-H new)

- Highly precise clamping system - Superior clamping precision with auto-centering system and highly precise grinding clamping parts
- Screw on clamping system - Easy to replace inserts
- Sharp cutting edge - Low cutting load and good chip control
- Holder with excellent durability - Holder with high rigidity and excellent wear resistance due to special surface treatment
- Holder with excellent chip control - Low cutting resistance and outstanding chip evaluation applying high helix angle

Code system

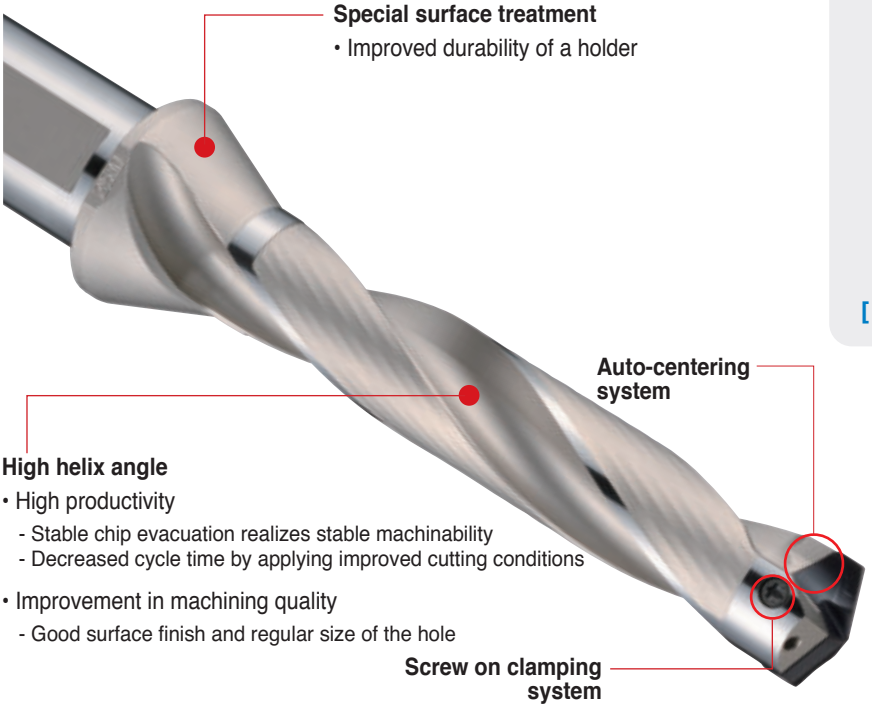
• Insert

TPD	200	B
Top solid Piercing Drill	Drill dia. 200: Ø20.0 mm	Insert type B: Blade type

• Holder

TPD	B	-	200	-	25	-	5	-	P
Top solid Piercing Drill	Insert type B: Blade type		Drill dia. 200: Ø20.0 mm		Shank dia. 25: Ø25 mm		Aspect ratio (L/D) 3D, 5D, 8D, 10D, 12D		Plus

Features



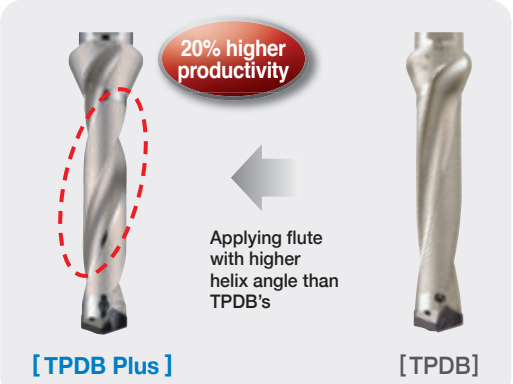
Special surface treatment
• Improved durability of a holder

Auto-centering system

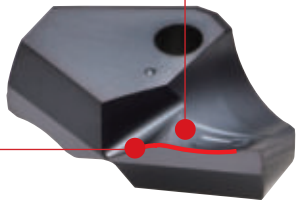
High helix angle
• High productivity
- Stable chip evacuation realizes stable machinability
- Decreased cycle time by applying improved cutting conditions

• Improvement in machining quality
- Good surface finish and regular size of the hole

Screw on clamping system

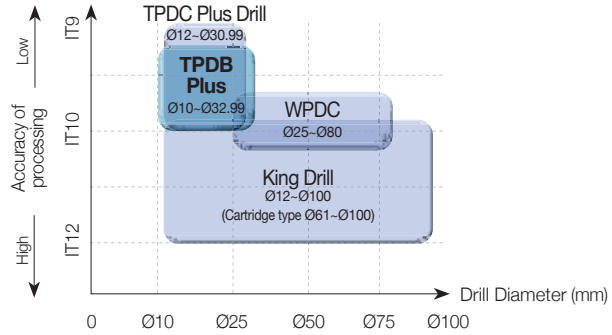


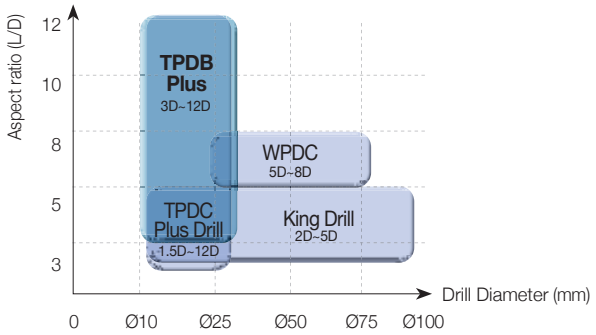
Advanced chip control due to a chip breaker



Cutting edge with low cutting resistance
• Low cutting load and excellent chip control

Application range



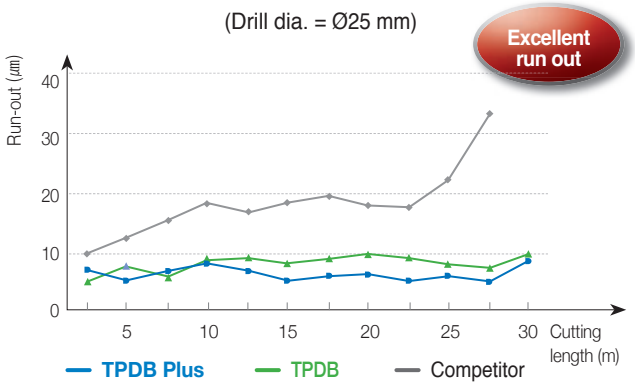


Tools	Application range					
	Drill Diameter (Ø)	Aspect ratio (L/D)	Tolerance of drill dia.	Tolerance of hole	Surface finish of hole (Ra)	Workpiece meterial
TPDB Plus	10~32.99 mm	3, 5, 8, 10, 12	h7	IT10	≤ 2.0 ㎛	P, K

Performance evaluation

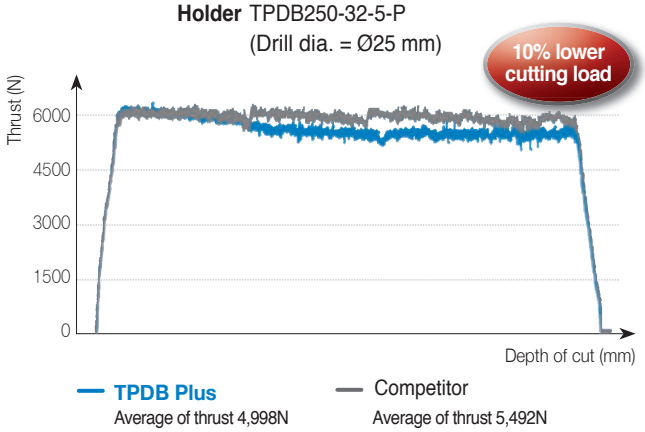
Run-out

- **Workpiece** Alloy steel (SCM440)
- **Cutting conditions** vc (m/min) = 90, fn (mm/rev) = 0.25
  ap (mm) = 120, wet (20 bar)
- **Tools** **Insert** TPD250B (PC5300)
  Holder TPDB250-32-5-P
  (Drill dia. = Ø25 mm)



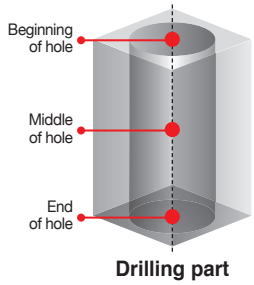
Cutting load

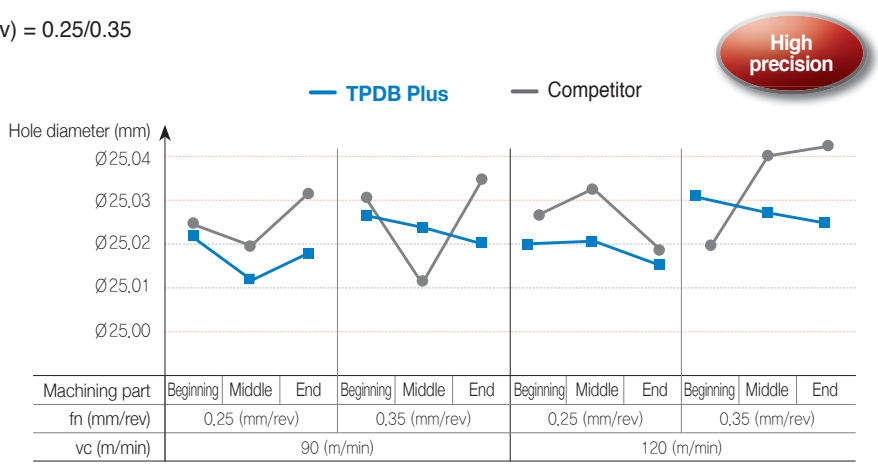
- **Workpiece** Alloy steel (SCM440)
- **Cutting conditions** vc (m/min) = 120, fn (mm/rev) = 0.25
  ap (mm) = 120, wet (20 bar)
- **Tools** **Insert** TPD250B (PC5300)
  Holder TPDB250-32-5-P
  (Drill dia. = Ø25 mm)



Outstanding roundness of hole

- **Workpiece** Alloy steel (SCM440)
- **Cutting conditions** vc (m/min) = 90/120, fn (mm/rev) = 0.25/0.35
  ap (mm) = 120, wet (20 bar)
- **Tools** **Insert** TPD250B (PC5300)
  Holder TPDB250-32-5-P
  (Drill dia. = Ø25 mm)





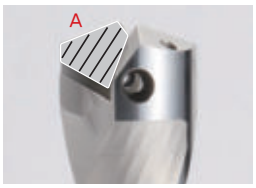
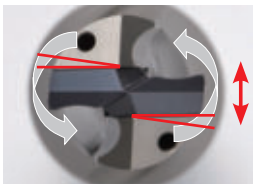
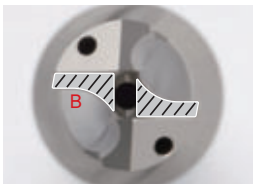
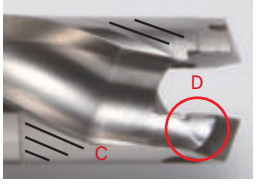
Machining part	Beginning	Middle	End	Beginning	Middle	End	Beginning	Middle	End	Beginning	Middle	End
fn (mm/rev)	0.25 (mm/rev)			0.35 (mm/rev)			0.25 (mm/rev)			0.35 (mm/rev)		
vc (m/min)	90 (m/min)						120 (m/min)					

Recommended cutting conditions

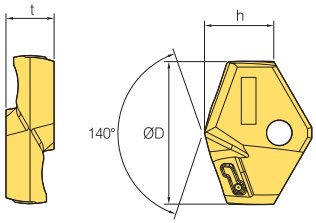
Workpiece				Grade	vc (m/min)	Aspect ratio (L/D) = 3D, 5D		
						Feed rate (mm/rev) per drill dia. (mm)		
ISO		Workpiece	HB			Ø10~Ø16.9	Ø17~Ø26.9	Ø27~Ø32.9
P	Carbon steel	Low carbon steel	80~120	PC5335 PC330P	110 (80~140)	0.15~0.30	0.20~0.35	0.25~0.40
		High carbon steel	180~280	PC5335 PC330P	100 (70~130)	0.15~0.30	0.20~0.35	0.25~0.40
	Alloy steel	Low alloy steel	140~260	PC5300	110 (80~140)	0.18~0.35	0.23~0.38	0.28~0.43
		Low alloy heat treated steel	200~400	PC5300	75 (50~100)	0.18~0.35	0.23~0.38	0.28~0.43
		High alloy steel	50~260	PC5300	70 (50~90)	0.18~0.30	0.20~0.35	0.25~0.40
		High alloy heat treated steel	220~450	PC5300	60 (40~80)	0.18~0.30	0.20~0.35	0.25~0.40
K	Cast iron	Gray cast iron	150~230	PC5300	110 (80~140)	0.18~0.35	0.20~0.40	0.25~0.45
		Ductile cast iron	160~260	PC5300	100 (70~130)	0.18~0.35	0.20~0.40	0.25~0.45

※ In case of 8D, machine in 20-30% lower cutting conditions than the mentioned above, or machine the beginning of hole (1.5D) before drilling.
※ In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part.

Replacement of holders and screws

Worn part	How to check	Description
[Pic.1] 	[Pic.2] Check the gap 	• In case of drilling for a long time as shown in the [Pic.1] the 'A' part is torn and twisted due to torque • As shown in the [Pic.2] check the gap between the insert and the tip seat turning the clamped insert from side to side. If there is a gap between them, replace the used holder to a new one
[Pic.3] 	[Pic.4] Check the moving 	• The insert could move up or down due to the load on the Z-axis in drilling over an extended period of time which causes wear on the 'B' part as shown the [Pic.3] • After clamping an insert, if the insert is moving or there is a gap between the insert and the tip seat as shown in the [Pic.4] replace the used holder to a new one
[Pic.5] 	Check the moving 	• After an extended period of use, the screw can be worn as shown in the 'E' part of [Pic.5] which could decrease the clamping force of the insert. When the screw is worn, replace the old screw to a new one among the enclosed extras • Spreading the grease on the screw makes it last longer
[Pic.6] ① Check the 'C' and 'D' parts as shown in the [Pic.6] ② Check whether the chips are getting longer or not.		• Winding or jamming of long and tiny chips in drilling causes wear or scratch on the 'C' part as shown in the [Pic.6] due to chattering from machining in improper cutting conditions. In that case, reset the cutting conditions and check the Run-out before machining • The excessive wear of the part 'D' as shown in the [Pic.6] relating to chip curling might cause long chips

Available insert



(mm)

Designation		Coated			ØD	h	t
		PC5300	PC5335	PC330P			
TPD	100B	●			10.0	5.5	3.5
	105B	●			10.5	5.5	3.5
	110B	●	●		11.0	5.8	3.5
	115B	●			11.5	5.8	3.5
	120B	●	●		12.0	6.3	3.5
	125B	●	●		12.5	6.3	3.5
	130B	●			13.0	6.5	4.0
	135B	●			13.5	6.5	4.0
	140B	●	●		14.0	6.8	4.0
	145B	●	●		14.5	6.8	4.0
	150B	●	●		15.0	7.0	4.0
	155B	●	●		15.5	7.0	4.0
	160B	●	●		16.0	7.7	5.5
	165B	●			16.5	7.7	5.5
	170B	●	●		17.0	7.9	5.5
	175B	●	●		17.5	7.9	5.5
	180B	●	●		18.0	8.1	6.0
	185B	●	●		18.5	8.1	6.0
	190B	●	●		19.0	8.3	6.0
	195B	●			19.5	8.3	6.0
	200B	●	●		20.0	9.7	6.5
	205B	●			20.5	9.7	6.5
	210B	●	●		21.0	9.4	6.5
	215B	●			21.5	9.4	6.5
	220B	●	●		22.0	9.6	7.0
	225B	●			22.5	9.6	7.0
	230B	●	●		23.0	9.8	7.0
	235B	●			23.5	9.8	7.0
	240B	●	●		24.0	10.7	7.5
	245B	●			24.5	10.7	7.5
	250B	●	●		25.0	10.9	7.5
	255B	●			25.5	10.9	7.5
	260B	●	●		26.0	11.0	8.5
	265B	●			26.5	11.0	8.5
	270B	●			27.0	11.8	8.5
	275B	●			27.5	11.8	8.5
	280B	●			28.0	12.6	9.5
	285B	●			28.5	12.6	9.5
	290B	●			29.0	12.9	9.5
	295B	●			29.5	12.9	9.5
	300B	●			30.0	13.0	10.0
	305B	●			30.5	13.0	10.0
	310B	●			31.0	13.2	10.0
	315B	●			31.5	13.2	10.0
	320B	●			32.0	13.4	10.0
	325B	●			32.5	13.4	10.0

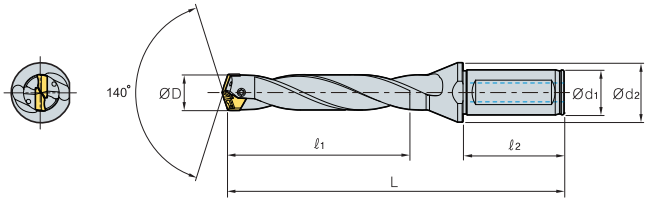
※ We can provide nonstock items with Ø10.00-Ø32.99 ●: Stock Item

Parts

(mm)

Designation		Drill dia. (ØD)	Screw	Wrench	Torque (N·m)
TPD	100B~129B	10.0~12.9	FTNB0209-P	TW06P	0.4
	130B~149B	13.0~14.9	FTNB02512-P	TW07S	0.8
	150B~179B	15.0~17.9	FTNB02514-P	TW07S	0.8
	180B~199B	18.0~19.9	FTNB0316-P	TW09S	1.2
	200B~239B	20.0~23.9	FTNB0319	TW09S	1.2
	240B~259B	24.0~25.9	FTNB03522	TW15S	3.0
	260B~279B	26.0~27.9	FTNB03524	TW15S	3.0
	280B~299B	28.0~29.9	FTNB0426	TW15S	3.0
	300B~329B	30.0~32.9	FTNB0528	TW20-100	4.0

TPDB-P (3D)

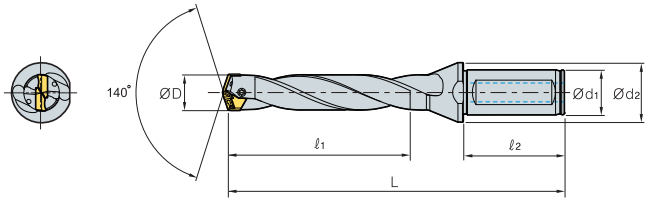


(mm)

Designation		ØD	Ød$_1$	Ød$_2$	ℓ$_1$	ℓ$_2$	L	Insert
TPDB	100-16-3-P	10.0~10.4	16	20	30.0	48	96.6	TPD100B~104B
	105-16-3-P	10.5~10.9	16	20	31.5	48	97.6	TPD105B~109B
	110-16-3-P	11.0~11.4	16	20	33.0	48	99.7	TPD110B~114B
	115-16-3-P	11.5~11.9	16	20	34.5	48	100.7	TPD115B~119B
	120-16-3-P	12.0~12.4	16	20	36.0	48	104.1	TPD120B~124B
	125-16-3-P	12.5~12.9	16	20	37.5	48	106.2	TPD125B~129B
	130-16-3-P	13.0~13.4	16	20	39.0	48	109.3	TPD130B~134B
	135-16-3-P	13.5~13.9	16	20	40.5	48	111.4	TPD135B~139B
	140-16-3-P	14.0~14.4	16	20	42.0	48	113.5	TPD140B~144B
	145-16-3-P	14.5~14.9	16	20	43.5	48	116.6	TPD145B~149B
	150-20-3-P	15.0~15.4	20	25	45.0	50	120.7	TPD150B~154B
	155-20-3-P	15.5~15.9	20	25	46.5	50	122.7	TPD155B~159B
	160-20-3-P	16.0~16.4	20	25	48.0	50	124.9	TPD160B~164B
	165-20-3-P	16.5~16.9	20	25	49.5	50	126.9	TPD165B~169B
	170-20-3-P	17.0~17.4	20	25	51.0	50	130.1	TPD170B~174B
	175-20-3-P	17.5~17.9	20	25	52.5	50	132.1	TPD175B~179B
	180-25-3-P	18.0~18.4	25	33	54.0	56	140.2	TPD180B~184B
	185-25-3-P	18.5~18.9	25	33	55.5	56	142.2	TPD185B~189B
	190-25-3-P	19.0~19.4	25	33	57.0	56	145.3	TPD190B~194B
	195-25-3-P	19.5~19.9	25	33	58.5	56	147.3	TPD195B~199B
	200-25-3-P	20.0~20.4	25	33	60.0	56	149.5	TPD200B~204B
	205-25-3-P	20.5~20.9	25	33	61.5	56	151.5	TPD205B~209B
	210-25-3-P	21.0~21.4	25	33	63.0	60	154.7	TPD210B~214B
	215-25-3-P	21.5~21.9	25	33	64.5	60	156.7	TPD215B~219B
	220-25-3-P	22.0~22.4	25	33	66.0	60	158.9	TPD220B~224B
	225-25-3-P	22.5~22.9	25	33	67.5	60	160.9	TPD225B~229B
	230-25-3-P	23.0~23.4	25	33	69.0	60	164.1	TPD230B~234B
	235-25-3-P	23.5~23.9	25	33	70.5	60	166.1	TPD235B~239B
	240-32-3-P	24.0~24.4	32	43	72.0	60	172.3	TPD240B~244B
	245-32-3-P	24.5~24.9	32	43	73.5	60	174.3	TPD245B~249B
	250-32-3-P	25.0~25.4	32	43	75.0	60	177.5	TPD250B~254B
	255-32-3-P	25.5~25.9	32	43	76.5	60	179.5	TPD255B~259B
	260-32-3-P	26.0~26.9	32	43	78.0	60	181.7	TPD260B~269B
	270-32-3-P	27.0~27.9	32	43	81.0	60	186.9	TPD270B~279B
	280-32-3-P	28.0~28.9	32	43	84.0	60	191.0	TPD280B~289B
	290-32-3-P	29.0~29.9	32	43	87.0	60	196.2	TPD290B~299B
	300-32-3-P	30.0~30.9	32	43	90.0	60	199.4	TPD300B~309B
	310-32-3-P	31.0~31.9	32	43	93.0	60	204.6	TPD310B~319B
	320-32-3-P	32.0~32.9	32	43	96.0	60	206.8	TPD320B~329B

Applicable inserts **F57**

TPDB-P (5D)

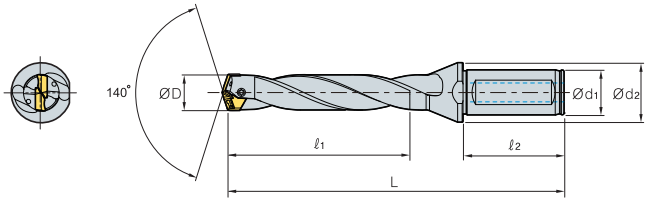


(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert
TPDB	100-16-5-P	10.0~10.4	16	20	50.0	48	116.1	TPD100B~104B
	105-16-5-P	10.5~10.9	16	20	52.5	48	118.9	TPD105B~109B
	110-16-5-P	11.0~11.4	16	20	55.0	48	121.7	TPD110B~114B
	115-16-5-P	11.5~11.9	16	20	57.5	48	124.5	TPD115B~119B
	120-16-5-P	12.0~12.4	16	20	60.0	48	128.1	TPD120B~124B
	125-16-5-P	12.5~12.9	16	20	62.5	48	131.2	TPD125B~129B
	130-16-5-P	13.0~13.4	16	20	65.0	48	135.3	TPD130B~134B
	135-16-5-P	13.5~13.9	16	20	67.5	48	138.4	TPD135B~139B
	140-16-5-P	14.0~14.4	16	20	70.0	48	141.5	TPD140B~144B
	145-16-5-P	14.5~14.9	16	20	72.5	48	145.6	TPD145B~149B
	150-20-5-P	15.0~15.4	20	25	75.0	50	150.7	TPD150B~154B
	155-20-5-P	15.5~15.9	20	25	77.5	50	153.7	TPD155B~159B
	160-20-5-P	16.0~16.4	20	25	80.0	50	156.9	TPD160B~164B
	165-20-5-P	16.5~16.9	20	25	82.5	50	159.9	TPD165B~169B
	170-20-5-P	17.0~17.4	20	25	85.0	50	164.1	TPD170B~174B
	175-20-5-P	17.5~17.9	20	25	87.5	50	167.1	TPD175B~179B
	180-25-5-P	18.0~18.4	25	33	90.0	56	176.2	TPD180B~184B
	185-25-5-P	18.5~18.9	25	33	92.5	56	179.2	TPD185B~189B
	190-25-5-P	19.0~19.4	25	33	95.0	56	183.3	TPD190B~194B
	195-25-5-P	19.5~19.9	25	33	97.5	56	186.3	TPD195B~199B
	200-25-5-P	20.0~20.4	25	33	100.0	56	189.5	TPD200B~204B
	205-25-5-P	20.5~20.9	25	33	102.5	56	192.5	TPD205B~209B
	210-25-5-P	21.0~21.4	25	33	105.0	60	196.7	TPD210B~214B
	215-25-5-P	21.5~21.9	25	33	107.5	60	199.7	TPD215B~219B
	220-25-5-P	22.0~22.4	25	33	110.0	60	202.9	TPD220B~224B
	225-25-5-P	22.5~22.9	25	33	112.5	60	205.9	TPD225B~229B
	230-25-5-P	23.0~23.4	25	33	115.0	60	210.1	TPD230B~234B
	235-25-5-P	23.5~23.9	25	33	117.5	60	213.1	TPD235B~239B
	240-32-5-P	24.0~24.4	32	43	120.0	60	220.3	TPD240B~244B
	245-32-5-P	24.5~24.9	32	43	122.5	60	223.3	TPD245B~249B
	250-32-5-P	25.0~25.4	32	43	125.0	60	227.5	TPD250B~254B
	255-32-5-P	25.5~25.9	32	43	127.5	60	230.5	TPD255B~259B
	260-32-5-P	26.0~26.9	32	43	130.0	60	233.7	TPD260B~269B
	270-32-5-P	27.0~27.9	32	43	135.0	60	240.9	TPD270B~279B
	280-32-5-P	28.0~28.9	32	43	140.0	60	247.0	TPD280B~289B
	290-32-5-P	29.0~29.9	32	43	145.0	60	254.2	TPD290B~299B
	300-32-5-P	30.0~30.9	32	43	150.0	60	259.4	TPD300B~309B
	310-32-5-P	31.0~31.9	32	43	155.0	60	266.6	TPD310B~319B
	320-32-5-P	32.0~32.9	32	43	160.0	60	270.8	TPD320B~329B

Applicable inserts F57

TPDB-P (8D)

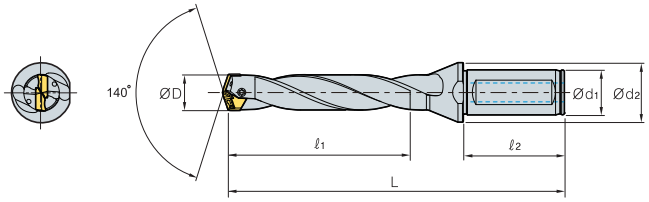


(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert
TPDB	100-16-8-P	10.0~10.4	16	20	80	48	146.1	TPD100B~104B
	105-16-8-P	10.5~10.9	16	20	84	48	150.4	TPD105B~109B
	110-16-8-P	11.0~11.4	16	20	88	48	154.7	TPD110B~114B
	115-16-8-P	11.5~11.9	16	20	92	48	159.0	TPD115B~119B
	120-16-8-P	12.0~12.4	16	20	96	48	164.1	TPD120B~124B
	125-16-8-P	12.5~12.9	16	20	100	48	168.7	TPD125B~129B
	130-16-8-P	13.0~13.4	16	20	104	48	174.3	TPD130B~134B
	135-16-8-P	13.5~13.9	16	20	108	48	178.9	TPD135B~139B
	140-16-8-P	14.0~14.4	16	20	112	48	183.5	TPD140B~144B
	145-16-8-P	14.5~14.9	16	20	116	48	189.1	TPD145B~149B
	150-20-8-P	15.0~15.4	20	25	120	50	195.7	TPD150B~154B
	155-20-8-P	15.5~15.9	20	25	124	50	200.2	TPD155B~159B
	160-20-8-P	16.0~16.4	20	25	128	50	204.9	TPD160B~164B
	165-20-8-P	16.5~16.9	20	25	132	50	209.4	TPD165B~169B
	170-20-8-P	17.0~17.4	20	25	136	50	215.1	TPD170B~174B
	175-20-8-P	17.5~17.9	20	25	140	50	219.6	TPD175B~179B
	180-25-8-P	18.0~18.4	25	33	144	56	230.2	TPD180B~184B
	185-25-8-P	18.5~18.9	25	33	148	56	234.7	TPD185B~189B
	190-25-8-P	19.0~19.4	25	33	152	56	240.3	TPD190B~194B
	195-25-8-P	19.5~19.9	25	33	156	56	244.8	TPD195B~199B
	200-25-8-P	20.0~20.4	25	33	160	56	249.5	TPD200B~204B
	205-25-8-P	20.5~20.9	25	33	164	56	254.0	TPD205B~209B
	210-25-8-P	21.0~21.4	25	33	168	60	259.7	TPD210B~214B
	215-25-8-P	21.5~21.9	25	33	172	60	264.2	TPD215B~219B
	220-25-8-P	22.0~22.4	25	33	176	60	268.9	TPD220B~224B
	225-25-8-P	22.5~22.9	25	33	180	60	273.4	TPD225B~229B
	230-25-8-P	23.0~23.4	25	33	184	60	279.1	TPD230B~234B
	235-25-8-P	23.5~23.9	25	33	188	60	283.6	TPD235B~239B
	240-32-8-P	24.0~24.4	32	43	192	60	292.3	TPD240B~244B
	245-32-8-P	24.5~24.9	32	43	196	60	296.8	TPD245B~249B
	250-32-8-P	25.0~25.4	32	43	200	60	302.5	TPD250B~254B
	255-32-8-P	25.5~25.9	32	43	204	60	307.0	TPD255B~259B
	260-32-8-P	26.0~26.9	32	43	208	60	311.7	TPD260B~269B
	270-32-8-P	27.0~27.9	32	43	216	60	321.9	TPD270B~279B
	280-32-8-P	28.0~28.9	32	43	224	60	331.0	TPD280B~289B
	290-32-8-P	29.0~29.9	32	43	232	60	341.2	TPD290B~299B
	300-32-8-P	30.0~30.9	32	43	240	60	349.4	TPD300B~309B
	310-32-8-P	31.0~31.9	32	43	248	60	359.6	TPD310B~319B
	320-32-8-P	32.0~32.9	32	43	256	60	366.8	TPD320B~329B

Applicable inserts F57

TPDB-P (10D)

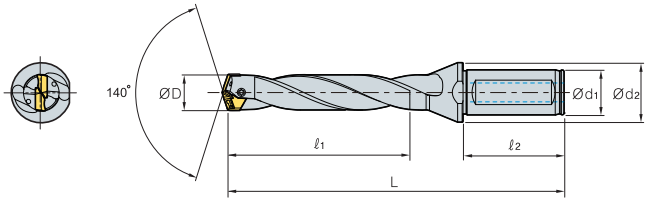


(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert
TPDB	100-16-10-P	10.0~10.4	16	20	100	48	166.6	TPD100B~104B
	105-16-10-P	10.5~10.9	16	20	105	48	171.6	TPD105B~109B
	110-16-10-P	11.0~11.4	16	20	110	48	176.7	TPD110B~114B
	115-16-10-P	11.5~11.9	16	20	115	48	181.7	TPD115B~119B
	120-16-10-P	12.0~12.4	16	20	120	48	188.1	TPD120B~124B
	125-16-10-P	12.5~12.9	16	20	125	48	193.7	TPD125B~129B
	130-16-10-P	13.0~13.4	16	20	130	48	200.3	TPD130B~134B
	135-16-10-P	13.5~13.9	16	20	135	48	205.9	TPD135B~139B
	140-16-10-P	14.0~14.4	16	20	140	48	211.5	TPD140B~144B
	145-16-10-P	14.5~14.9	16	20	145	48	218.1	TPD145B~149B
	150-20-10-P	15.0~15.4	20	25	150	50	225.7	TPD150B~154B
	155-20-10-P	15.5~15.9	20	25	155	50	231.2	TPD155B~159B
	160-20-10-P	16.0~16.4	20	25	160	50	236.9	TPD160B~164B
	165-20-10-P	16.5~16.9	20	25	165	50	242.4	TPD165B~169B
	170-20-10-P	17.0~17.4	20	25	170	50	249.1	TPD170B~174B
	175-20-10-P	17.5~17.9	20	25	175	50	254.6	TPD175B~179B
	180-25-10-P	18.0~18.4	25	33	180	56	266.2	TPD180B~184B
	185-25-10-P	18.5~18.9	25	33	185	56	271.7	TPD185B~189B
	190-25-10-P	19.0~19.4	25	33	190	56	278.3	TPD190B~194B
	195-25-10-P	19.5~19.9	25	33	195	56	283.8	TPD195B~199B
	200-25-10-P	20.0~20.4	25	33	200	56	289.5	TPD200B~204B
	205-25-10-P	20.5~20.9	25	33	205	56	295.0	TPD205B~209B
	210-25-10-P	21.0~21.4	25	33	210	60	301.7	TPD210B~214B
	215-25-10-P	21.5~21.9	25	33	215	60	307.2	TPD215B~219B
	220-25-10-P	22.0~22.4	25	33	220	60	312.9	TPD220B~224B
	225-25-10-P	22.5~22.9	25	33	225	60	318.6	TPD225B~229B
	230-25-10-P	23.0~23.4	25	33	230	60	325.1	TPD230B~234B
	235-25-10-P	23.5~23.9	25	33	235	60	330.6	TPD235B~239B
	240-32-10-P	24.0~24.4	32	43	240	60	340.3	TPD240B~244B
	245-32-10-P	24.5~24.9	32	43	245	60	345.8	TPD245B~249B
	250-32-10-P	25.0~25.4	32	43	250	60	352.5	TPD250B~254B
	255-32-10-P	25.5~25.9	32	43	255	60	358.0	TPD255B~259B
	260-32-10-P	26.0~26.9	32	43	260	60	363.7	TPD260B~269B
	270-32-10-P	27.0~27.9	32	43	270	60	375.9	TPD270B~279B
	280-32-10-P	28.0~28.9	32	43	280	60	387.0	TPD280B~289B
	290-32-10-P	29.0~29.9	32	43	290	60	399.2	TPD290B~299B
	300-32-10-P	30.0~30.9	32	43	300	60	409.4	TPD300B~309B
	310-32-10-P	31.0~31.9	32	43	310	60	421.6	TPD310B~319B
	320-32-10-P	32.0~32.9	32	43	320	60	430.8	TPD320B~329B

Applicable inserts F57

TPDB-P (12D)



(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert
TPDB	100-16-12-P	10.0~10.4	16	20	120	48	186.6	TPD100B~104B
	105-16-12-P	10.5~10.9	16	20	126	48	192.6	TPD105B~109B
	110-16-12-P	11.0~11.4	16	20	132	48	198.7	TPD110B~114B
	115-16-12-P	11.5~11.9	16	20	138	48	204.7	TPD115B~119B
	120-16-12-P	12.0~12.4	16	20	144	48	212.1	TPD120B~124B
	125-16-12-P	12.5~12.9	16	20	150	48	218.7	TPD125B~129B
	130-16-12-P	13.0~13.4	16	20	156	48	226.3	TPD130B~134B
	135-16-12-P	13.5~13.9	16	20	162	48	232.9	TPD135B~139B
	140-16-12-P	14.0~14.4	16	20	168	48	239.5	TPD140B~144B
	145-16-12-P	14.5~14.9	16	20	174	48	247.1	TPD145B~149B
	150-20-12-P	15.0~15.4	20	25	180	50	255.7	TPD150B~154B
	155-20-12-P	15.5~15.9	20	25	186	50	262.2	TPD155B~159B
	160-20-12-P	16.0~16.4	20	25	192	50	268.9	TPD160B~164B
	165-20-12-P	16.5~16.9	20	25	198	50	275.4	TPD165B~169B
	170-20-12-P	17.0~17.4	20	25	204	50	283.1	TPD170B~174B
	175-20-12-P	17.5~17.9	20	25	210	50	289.6	TPD175B~179B
	180-25-12-P	18.0~18.4	25	33	216	56	302.2	TPD180B~184B
	185-25-12-P	18.5~18.9	25	33	222	56	308.7	TPD185B~189B
	190-25-12-P	19.0~19.4	25	33	228	56	316.3	TPD190B~194B
	195-25-12-P	19.5~19.9	25	33	234	56	322.8	TPD195B~199B
	200-25-12-P	20.0~20.4	25	33	240	56	329.5	TPD200B~204B
	205-25-12-P	20.5~20.9	25	33	246	56	336.0	TPD205B~209B
	210-25-12-P	21.0~21.4	25	33	252	60	343.7	TPD210B~214B
	215-25-12-P	21.5~21.9	25	33	258	60	350.2	TPD215B~219B
	220-25-12-P	22.0~22.4	25	33	264	60	356.9	TPD220B~224B
	225-25-12-P	22.5~22.9	25	33	270	60	363.6	TPD225B~229B
	230-25-12-P	23.0~23.4	25	33	276	60	371.1	TPD230B~234B
	235-25-12-P	23.5~23.9	25	33	282	60	377.6	TPD235B~239B
	240-32-12-P	24.0~24.4	32	43	288	60	388.3	TPD240B~244B
	245-32-12-P	24.5~24.9	32	43	294	60	394.8	TPD245B~249B
	250-32-12-P	25.0~25.4	32	43	300	60	402.5	TPD250B~254B
	255-32-12-P	25.5~25.9	32	43	306	60	409.0	TPD255B~259B
	260-32-12-P	26.0~26.9	32	43	312	60	415.7	TPD260B~269B
	270-32-12-P	27.0~27.9	32	43	324	60	429.9	TPD270B~279B
	280-32-12-P	28.0~28.9	32	43	336	60	443.0	TPD280B~289B
	290-32-12-P	29.0~29.9	32	43	348	60	457.2	TPD290B~299B
	300-32-12-P	30.0~30.9	32	43	360	60	469.4	TPD300B~309B
	310-32-12-P	31.0~31.9	32	43	372	60	483.6	TPD310B~319B
	320-32-12-P	32.0~32.9	32	43	384	60	494.8	TPD320B~329B

Applicable inserts F57

Cutting edge with 180° point angle - Flat bottom machining

TPDB-F new

- High precision clamping system - High precision clamping due to high precise grinding and auto-centering
- Screw on clamping system - Easy to replace insert
- Low cutting load cutting edge - Low cutting load and excellent chip cpntrol
- High durability holder - Improved wear resistance and durability with special surface treatment implementation
- Holder with good chip evacuation - Good chip evacuation and reduced cutting load with high helix angle

Code system

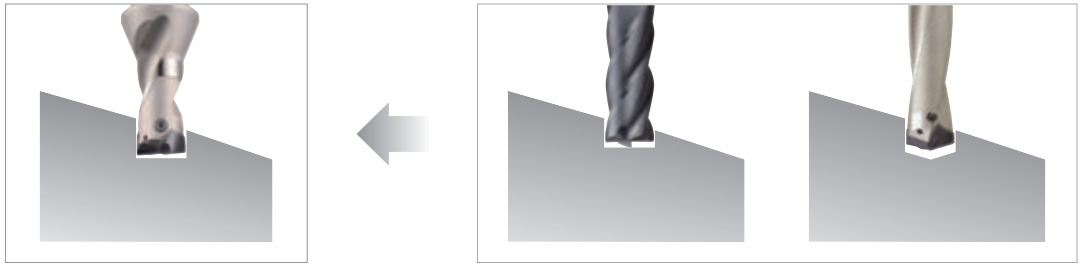
• Insert

TPD	200	B	-	F
Top solid Piercing Drill	Drill dia. 200: Ø20.0 mm	Insert type B: Blade type		Cutting edge F: Flat FC: Flat Candle

• Holder

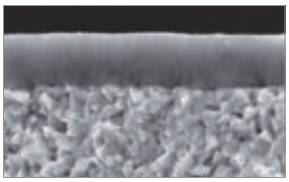
TPD	B	-	220	-	25	-	1.5	-	F
Top solid Piercing Drill	Insert type B: Blade type		Drill dia. 220: Ø22.0 mm		Shank dia. 25: Ø25 mm		Aspect ratio (L/D) 1.5D		Flat

Features



[Endmill + Drill] [Endmill] [Drill]

Grade selection



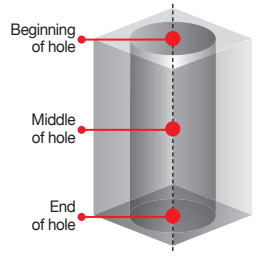
PC5400

- PVD coating technology with high lubrication, built up edge resistance and chipping resistance
- Excellent chipping resistance due to high toughness coating with high adhesive strength
- Enhanced fracture resistance and stable machinability due to ultra-fine substrate with high toughness substrate

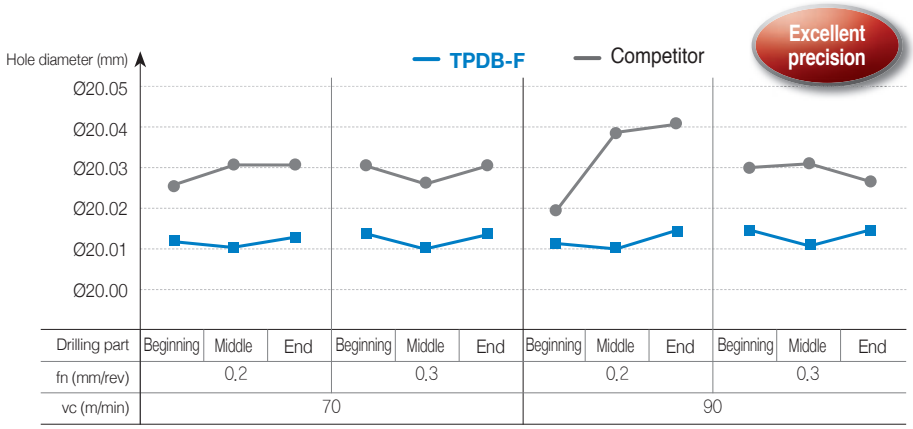
Performance evaluation

Precision

- **Workpiece** Alloy steel (SCM440, HRC22)
- **Cutting conditions** vc (m/min) = 70/90, fn (mm/rev) = 0.2/0.3, ap (mm) = 30, wet (20 bar)
- **Tools** **Insert** TPD200B-F (PC5400) **Holder** TPDB200-25-1.5-F (Drill dia. = Ø20 mm)



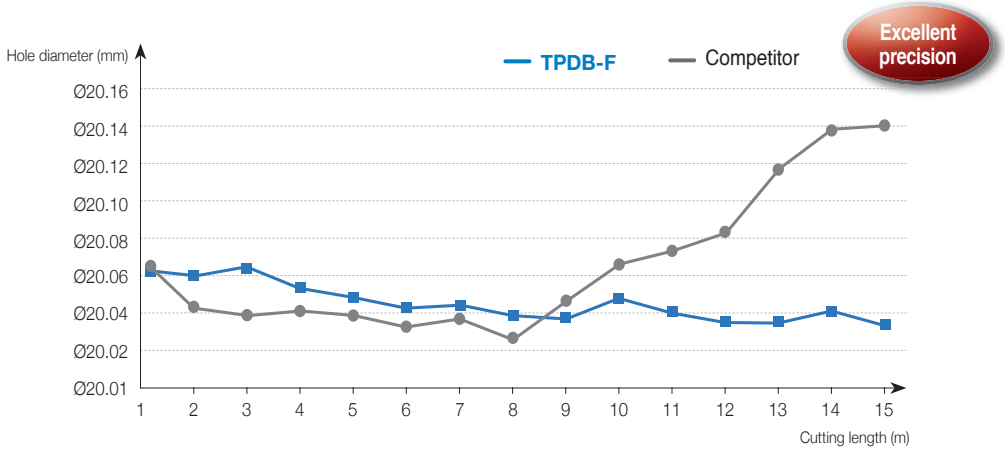
Drilling part



Cutting edge with low cutting load enhances high precision

- **Workpiece** Alloy steel (SCM440, HRC22), Angled surface 15°
- **Cutting conditions** vc (m/min) = 70, fn (mm/rev) = 0.21, ap (mm) = 20, wet (20 bar)
- **Tools** **Insert** TPD200B-F (PC5400) **Holder** TPDB200-25-1.5-F (Drill dia. = Ø20 mm)

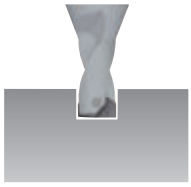
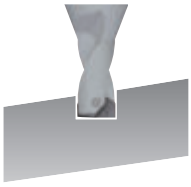
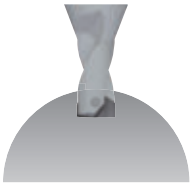
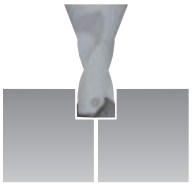
Angled surface drilling



Cutting edge with low cutting load enhances high precision

Recommended cutting condition (TPDB-F)

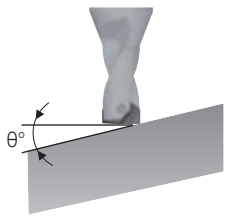
Workpiece				Grade	vc (m/min)	Aspect ratio (L/D) = 1.5D	
						Feed rate (mm/rev) per drill dia. (mm)	
ISO		Workpiece	HB			Ø14.0~Ø21.9	Ø22.0~Ø30.9
P	Carbon steel	Low carbon steel (SM10C, SM20C etc)	80~120	PC5400	80 (60~100)	0.2~0.3	0.22~0.32
		High carbon steel (SM45C, SM50C etc)	180~280		70 (50~90)	0.2~0.3	0.22~0.32
	Alloy steel	Low alloy steel (SCM420, SCM440 etc)	140~260		70 (50~90)	0.2~0.3	0.22~0.32
		High alloy steel (SCM435, SCM445 etc)	260~320		60 (40~80)	0.2~0.3	0.22~0.32

Machining	Flat surface drilling	Angled surface drilling	Curved surface drilling	Plunging	Boring
Pic.					
1.5D	○	○	○	○	○

※ Please refer to the precaution in drilling in case of angled surface, curved surface drilling, plunging and boring

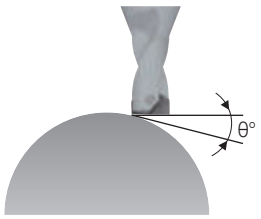
Precaution in drilling

Angled surface drilling



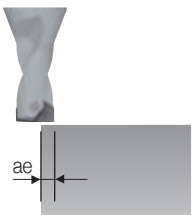
- Reduce the feed (fn) to 30% than general cutting conditions at the beginning and the end of angled surface (In case, θ is over 30°, reduce it to 50%)

Curved surface drilling



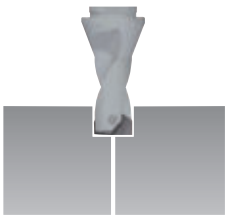
- Reduce the feed (fn) to 30% than general cutting conditions at the beginning of curved surface (In case, θ is over 30°, reduce it to 50%)

Plunging



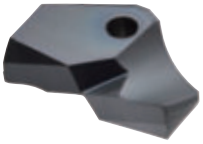
- Reduce the depth of cut (ae) to shorter than 1/2 of drill diameter
- In case, the depth of cut is longer than drill diameter, plunge with divided depth of cut

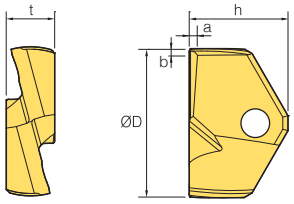
Boring



- Reduce the feed (fn) to 30% than general cutting conditions at the beginning of boring
- Start with 2 mm stepping before boring to prevent long chip

Available insert





(mm)

Designation		Coated PC5400	ØD	h	t	a	b
TPD	140B-F		14.0	8.75	4.0	0.065	0.055
	145B-F		14.5	8.75	4.0	0.065	0.055
	150B-F		15.0	9.25	4.0	0.065	0.055
	155B-F		15.5	9.25	4.0	0.065	0.055
	160B-F		16.0	10.25	5.5	0.065	0.055
	165B-F		16.5	10.25	5.5	0.065	0.055
	170B-F		17.0	10.75	5.5	0.065	0.055
	175B-F		17.5	10.75	5.5	0.065	0.055
	180B-F		18.0	11.75	6.0	0.065	0.055
	185B-F		18.5	11.75	6.0	0.065	0.055
	190B-F		19.0	12.25	6.0	0.065	0.055
	195B-F		19.5	12.25	6.0	0.065	0.055
	200B-F		20.0	12.75	6.5	0.065	0.055
	205B-F		20.5	12.75	6.5	0.065	0.055
	210B-F		21.0	13.25	6.5	0.065	0.055
	215B-F		21.5	13.25	6.5	0.065	0.055
	220B-F		22.0	13.75	7.0	0.065	0.055
	225B-F		22.5	13.75	7.0	0.065	0.055
	230B-F		23.0	14.25	7.0	0.065	0.055
	235B-F		23.5	14.25	7.0	0.065	0.055
	240B-F		24.0	14.75	7.5	0.065	0.055
	245B-F		24.5	14.75	7.5	0.065	0.055
	250B-F		25.0	15.25	7.5	0.065	0.055
	255B-F		25.5	15.25	7.5	0.065	0.055
	260B-F		26.0	15.75	8.5	0.065	0.055
	265B-F		26.5	15.75	8.5	0.065	0.055
	270B-F		27.0	16.75	8.5	0.065	0.055
	275B-F		27.5	16.75	8.5	0.065	0.055
	280B-F		28.0	17.75	9.5	0.065	0.055
	285B-F		28.5	17.75	9.5	0.065	0.055
	290B-F		29.0	18.25	9.5	0.065	0.055
	295B-F		29.5	18.25	9.5	0.065	0.055
	300B-F		30.0	18.75	10.0	0.065	0.055
	305B-F		30.5	18.75	10.0	0.065	0.055

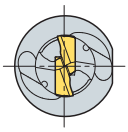
※ We can provide nonstock items with Ø14.00-Ø30.99

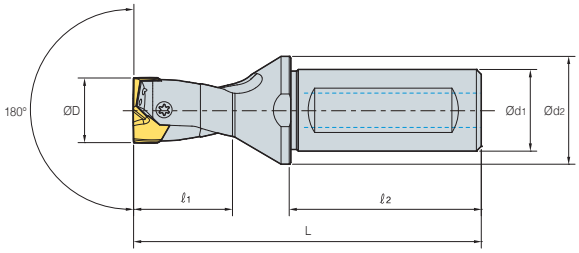
Parts

(mm)

Designation		Drill dia. (ØD)	Screw 	Wrench 	Torque (N·m)
TPD	140B-F~149B-F	14.0~14.9	FTNB02512-P	TW07S	0.8
	150B-F~179B-F	15.0~17.9	FTNB02514-P	TW07S	0.8
	180B-F~199B-F	18.0~19.9	FTNB0316-P	TW09S	1.2
	200B-F~239B-F	20.0~23.9	FTNB0319	TW09S	1.2
	240B-F~259B-F	24.0~25.9	FTNB03522	TW15S	3.0
	260B-F~279B-F	26.0~27.9	FTNB03524	TW15S	3.0
	280B-F~299B-F	28.0~29.9	FTNB0426	TW15S	3.0
	300B-F~309B-F	30.0~30.9	FTNB0528	TW20-100	4.0

TPDB-F (1.5D)





(mm)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert
TPDB	140-16-1.5-F	14.0~14.4	16	20	28	48	86.0	TPD140B-F~TPD144B-F
	145-16-1.5-F	14.5~14.9	16	20	29	48	87.0	TPD145B-F~TPD149B-F
	150-20-1.5-F	15.0~15.4	20	25	30	50	93.0	TPD150B-F~TPD154B-F
	155-20-1.5-F	15.5~15.9	20	25	31	50	94.0	TPD155B-F~TPD159B-F
	160-20-1.5-F	16.0~16.4	20	25	32	50	95.0	TPD160B-F~TPD164B-F
	165-20-1.5-F	16.5~16.9	20	25	33	50	96.0	TPD165B-F~TPD169B-F
	170-20-1.5-F	17.0~17.4	20	25	34	50	97.0	TPD170B-F~TPD174B-F
	175-20-1.5-F	17.5~17.9	20	25	35	50	98.0	TPD175B-F~TPD179B-F
	180-20-1.5-F	18.0~18.4	20	25	36	50	99.0	TPD180B-F~TPD184B-F
	185-20-1.5-F	18.5~18.9	20	25	37	50	100.0	TPD185B-F~TPD189B-F
	190-25-1.5-F	19.0~19.4	25	33	38	56	101.0	TPD190B-F~TPD194B-F
	195-25-1.5-F	19.5~19.9	25	33	39	56	102.0	TPD195B-F~TPD199B-F
	200-25-1.5-F	20.0~20.4	25	33	40	56	116.0	TPD200B-F~TPD204B-F
	205-25-1.5-F	20.5~20.9	25	33	41	56	117.0	TPD205B-F~TPD209B-F
	210-25-1.5-F	21.0~21.4	25	33	42	56	118.0	TPD210B-F~TPD214B-F
	215-25-1.5-F	21.5~21.9	25	33	43	56	119.0	TPD215B-F~TPD219B-F
	220-25-1.5-F	22.0~22.4	25	33	44	56	120.0	TPD220B-F~TPD224B-F
	225-25-1.5-F	22.5~22.9	25	33	45	56	121.0	TPD225B-F~TPD229B-F
	230-25-1.5-F	23.0~23.4	25	33	46	56	122.0	TPD230B-F~TPD234B-F
	235-25-1.5-F	23.5~23.9	25	33	47	56	123.0	TPD235B-F~TPD239B-F
	240-32-1.5-F	24.0~24.4	32	43	48	60	128.5	TPD240B-F~TPD244B-F
	245-32-1.5-F	24.5~24.9	32	43	49	60	129.5	TPD245B-F~TPD249B-F
	250-32-1.5-F	25.0~25.4	32	43	50	60	130.5	TPD250B-F~TPD254B-F
	255-32-1.5-F	25.5~25.9	32	43	51	60	131.5	TPD255B-F~TPD259B-F
	260-32-1.5-F	26.0~26.4	32	43	52	60	132.5	TPD260B-F~TPD264B-F
	265-32-1.5-F	26.5~26.9	32	43	53	60	133.5	TPD265B-F~TPD269B-F
	270-32-1.5-F	27.0~27.4	32	43	54	60	134.5	TPD270B-F~TPD274B-F
	275-32-1.5-F	27.5~27.9	32	43	55	60	135.5	TPD275B-F~TPD279B-F
	280-32-1.5-F	28.0~28.4	32	43	56	60	136.5	TPD280B-F~TPD284B-F
	285-32-1.5-F	28.5~28.9	32	43	57	60	137.5	TPD285B-F~TPD289B-F
	290-32-1.5-F	29.0~29.4	32	43	58	60	138.5	TPD290B-F~TPD294B-F
	295-32-1.5-F	29.5~29.9	32	43	59	60	139.5	TPD295B-F~TPD299B-F
	300-32-1.5-F	30.0~30.4	32	43	60	60	140.5	TPD300B-F~TPD304B-F
	305-32-1.5-F	30.5~30.9	32	43	61	60	141.5	TPD305B-F~TPD309B-F

Applicable inserts **F66**

The exclusive top solid indexable drill for steel-frame structure, H-Beam

TPDB-H new

- High precision clamping system - High precision clamping due highly precise grinding and auto-centering
- Screw on clamping system - Easy to replace insert
- Edge design with excellent centering - Low cutting load and good chip control
- High durability holder - Improved wear resistance and durability with special surface treatment implementation
- Holder with good chip evacuation - Good chip evacuation and reduced cutting load with high helix angle
- Optimally designed oil hole - Long tool life

Code system

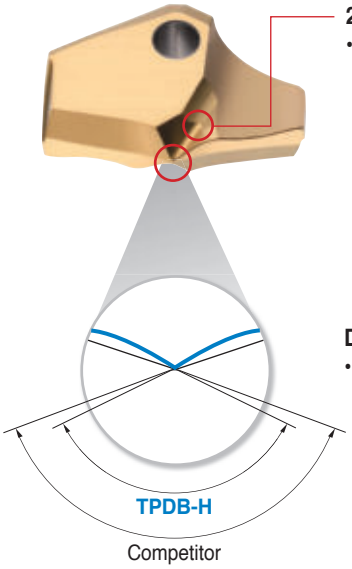
- **Insert**

TPD	200	B	-	H
Top solid Piercing Drill	Drill dia. 200: Ø20.0 mm	Insert type B: Blade type		H-Beam

- **Holder**

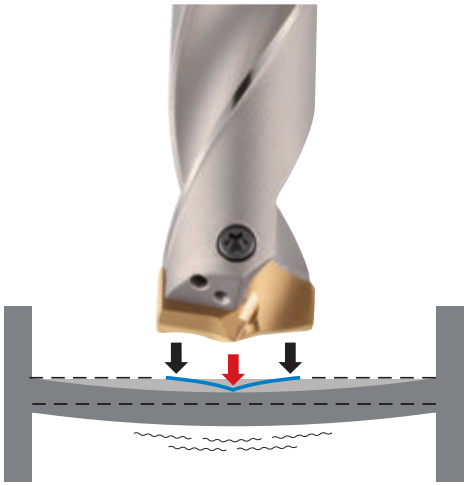
TPD	B	220	-	25	-	4	-	H
Top solid Piercing Drill	Insert type B: Blade type	Drill dia. 220: Ø22.0 mm		Shank dia. 25: Ø25 mm		Aspect ratio (L/D) 3D, 4D, 8D ※ For 8D Flange shank (8F)		H-Beam

Features of insert



2-step thinning shape
• Good chip control

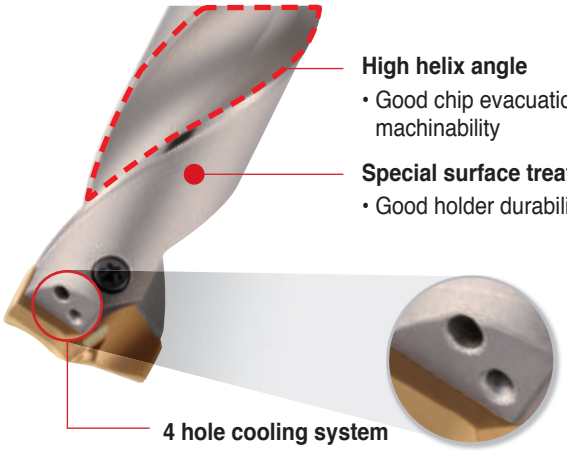
Double R point cutting edge
• Stable centering and machinability



Applied Double R point edge design is optimized for excellent centering and stable machinability

Machinability and productivity are improved by minimizing both workpiece's bending and chipping at edge corner section

Features of holder



High helix angle
• Good chip evacuation and machinability

Special surface treatment
• Good holder durability

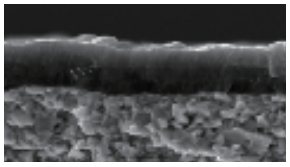
4 hole cooling system
• Long tool life

[TPDB-H]

[Competitor]

Concentrated coolant injection on delicate cutting edge increases tool life

Grade selection



PC340Q new

- Application of high hardness lubricative PVD coating technology with excellent resistance on wear, welding, and chipping
- The special surface treatment improves chip evacuation and reduces wear on the rake surface and relief face
- High hardness ultra-fine substrate ensures high rigidity of cutting edge and good chipping resistance

Performance evaluation

Chip control

- **Workpiece** Carbon steel (SS275, SM355A)
- **Cutting conditions** vc (m/min) = 80, fn (mm/rev) = 0.2, ap (mm) = 30, wet
- **Tools** **Insert** TPD270B-H (PC340Q), **Holder** TPDB270-32-4-H (Drill dia. = Ø27 mm)

SS275

SM355A

Good chip control

Wear resistance

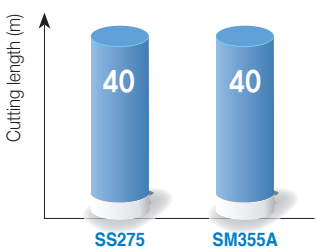
- **Workpiece** Carbon steel (SS275)
- **Cutting conditions** vc (m/min) = 65, fn (mm/rev) = 0.25, ap (mm) = 30, wet
- **Tools** **Insert** TPD220B-H (PC340Q), **Holder** TPDB220-25-4-H (Drill dia. = Ø22 mm)

SS275

- **Workpiece** Carbon steel (SM355A)
- **Cutting conditions** vc (m/min) = 70, fn (mm/rev) = 0.25, ap (mm) = 30, wet
- **Tools** **Insert** TPD270B-H (PC340Q), **Holder** TPDB270-32-4-H (Drill dia. = Ø27 mm)

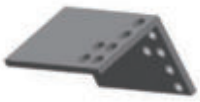
SM355A

■ **Test result**



• Normal wear and still usable

Workpiece and recommended cutting conditions

Workpiece				Worpiece materials	Grade	vc (m/min)	Aspect ratio (L/D) = 3D, 4D Feed rate (mm/rev) per drill dia. (mm)	
ISO		Workpiece					Ø14.0~Ø21.0	Ø22.0~Ø30.0
P	Carbon steel	H-Beam		SS275 (SS400*) SM355 (SM490*) SHN355 (SHN490*)	PC340Q	65 (60~75)	0.2~0.25	0.2~0.3
		Angle						
		Plate						
		Plate (Stacked)				60 (55~65)	0.15~0.25	0.15~0.25

*: old symbol

Precaution in drilling

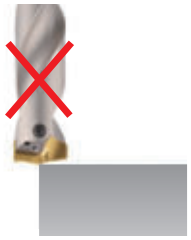
Angled surface drilling

- The approach angle between drill and the workpiece at the beginning and the end should be less than 6°
- Reduce the feed (fn) to 30-50% than general cutting conditions at the beginning and the end of angled surface

Stacked plates drilling

- Gap between the plates could make wrong chip evacuation causing fracture of the drill
- Place stacked plates without any gap between each

Plunging

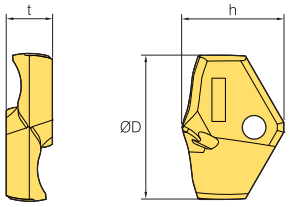


- Irregular cutting resistance in plunging could cause fracture and deformation of the drill

Boring

- Boring is not recommended due to wear and chipping in the corner of the insert

Available insert



(mm)

Designation		Coated PC5300	ØD	h	t
TPD	140B-H		14.0	10.0	4.0
	145B-H		14.5	10.0	4.0
	150B-H		15.0	10.5	4.0
	155B-H		15.5	10.5	4.0
	160B-H		16.0	11.5	5.5
	165B-H		16.5	11.5	5.5
	170B-H		17.0	12.0	5.5
	175B-H		17.5	12.0	5.5
	180B-H		18.0	13.0	6.0
	185B-H		18.5	13.0	6.0
	190B-H		19.0	13.5	6.0
	195B-H		19.5	13.5	6.0
	200B-H		20.0	14.5	6.5
	205B-H		20.5	14.5	6.5
	210B-H		21.0	15.0	6.5
	215B-H		21.5	15.0	6.5
	220B-H		22.0	15.5	7.0
	225B-H		22.5	15.5	7.0
	230B-H		23.0	16.0	7.0
	235B-H		23.5	16.0	7.0
	240B-H		24.0	16.5	7.5
	245B-H		24.5	16.5	7.5
	250B-H		25.0	17.0	7.5
	255B-H		25.5	17.0	7.5
	260B-H		26.0	17.5	8.5
	265B-H		26.5	17.5	8.5
	270B-H		27.0	18.5	8.5
	275B-H		27.5	18.5	8.5
	280B-H		28.0	19.5	9.5
	285B-H		28.5	19.5	9.5
	290B-H		29.0	20.0	9.5
	295B-H		29.5	20.0	9.5
	300B-H		30.0	20.5	10.0
	305B-H		30.5	20.5	10.0

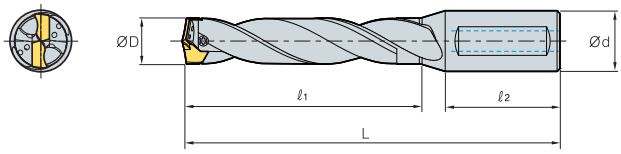
※ We can provide nonstock items with Ø14.00-Ø30.99 ●: Stock Item

Parts

(mm)

Designation		Drill dia. (ØD)	Screw	Wrench	Torque (N·m)
TPD	140B-H~149B-H	14.0~14.9	FTNB02512-P	TW07S	0.8
	150B-H~179B-H	15.0~17.9	FTNB02514-P	TW07S	0.8
	180B-H~199B-H	18.0~19.9	FTNB0316-P	TW09S	1.2
	200B-H~239B-H	20.0~23.9	FTNB0319	TW09S	1.2
	240B-H~259B-H	24.0~25.9	FTNB03522	TW15S	3.0
	260B-H~279B-H	26.0~27.9	FTNB03524	TW15S	3.0
	280B-H~299B-H	28.0~29.9	FTNB0426	TW15S	3.0
	300B-H~309B-H	30.0~30.9	FTNB0528	TW20-100	4.0

TPDB-H (3D)

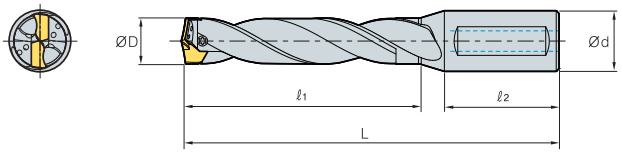


(mm)

Designation		ØD	Ød	ℓ1	ℓ2	L	Insert
TPDB	140-16-3-H	14.0~14.4	16	42	48	98.8	TPD140B-144B-H
	145-16-3-H	14.5~14.9	16	43.5	48	100.8	TPD145B-149B-H
	150-20-3-H	15.0~15.4	20	45	50	104.4	TPD150B-154B-H
	155-20-3-H	15.5~15.9	20	46.5	50	106.4	TPD155B-159B-H
	160-20-3-H	16.0~16.4	20	48	50	108.0	TPD160B-164B-H
	165-20-3-H	16.5~16.9	20	49.5	50	110.0	TPD165B-169B-H
	170-20-3-H	17.0~17.4	20	51	50	111.5	TPD170B-174B-H
	175-20-3-H	17.5~17.9	20	52.5	50	113.5	TPD175B-179B-H
	180-20-3-H	18.0~18.4	20	54	50	115.1	TPD180B-184B-H
	185-20-3-H	18.5~18.9	20	55.5	50	117.1	TPD185B-189B-H
	190-20-3-H	19.0~19.4	20	57	50	118.7	TPD190B-194B-H
	195-20-3-H	19.5~19.9	20	58.5	50	120.7	TPD195B-199B-H
	200-25-3-H	20.0~20.4	25	60	56	128.3	TPD200B-204B-H
	205-25-3-H	20.5~20.9	25	61.5	56	130.3	TPD205B-209B-H
	210-25-3-H	21.0~21.4	25	63	56	131.9	TPD210B-214B-H
	215-25-3-H	21.5~21.9	25	64.5	56	133.9	TPD215B-219B-H
	220-25-3-H	22.0~22.4	25	66	56	135.5	TPD220B-224B-H
	225-25-3-H	22.5~22.9	25	67.5	56	137.5	TPD225B-229B-H
	230-25-3-H	23.0~23.4	25	69	56	139.1	TPD230B-234B-H
	235-25-3-H	23.5~23.9	25	70.5	56	141.1	TPD235B-239B-H
	240-32-3-H	24.0~24.4	32	72	60	146.8	TPD240B-244B-H
	245-32-3-H	24.5~24.9	32	73.5	60	148.8	TPD245B-249B-H
	250-32-3-H	25.0~25.4	32	75	60	150.3	TPD250B-254B-H
	255-32-3-H	25.5~25.9	32	76.5	60	152.3	TPD255B-259B-H
	260-32-3-H	26.0~26.4	32	78	60	153.8	TPD260B-264B-H
	265-32-3-H	26.5~26.9	32	79.5	60	155.8	TPD265B-269B-H
	270-32-3-H	27.0~27.4	32	81	60	157.5	TPD270B-274B-H
	275-32-3-H	27.5~27.9	32	82.5	60	159.5	TPD275B-279B-H
	280-32-3-H	28.0~28.4	32	84	60	161.0	TPD280B-284B-H
	285-32-3-H	28.5~28.9	32	85.5	60	163.0	TPD285B-289B-H
	290-32-3-H	29.0~29.4	32	87	60	164.6	TPD290B-294B-H
	295-32-3-H	29.5~29.9	32	88.5	60	166.6	TPD295B-299B-H
	300-32-3-H	30.0~30.9	32	90	60	168.2	TPD300B-309B-H

Applicable inserts **F71**

TPDB-H (4D)

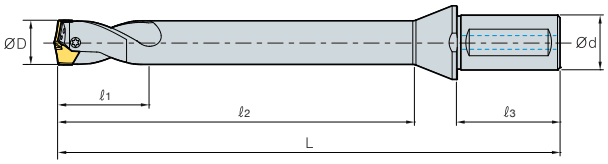


(mm)

Designation		ØD	Ød	ℓ1	ℓ2	L	Insert
TPDB	140-16-4-H	14.0~14.4	16	56	48	112.8	TPD140B-144B-H
	145-16-4-H	14.5~14.9	16	58	48	115.3	TPD145B-149B-H
	150-20-4-H	15.0~15.4	20	60	50	119.4	TPD150B-154B-H
	155-20-4-H	15.5~15.9	20	62	50	121.9	TPD155B-159B-H
	160-20-4-H	16.0~16.4	20	64	50	124.0	TPD160B-164B-H
	165-20-4-H	16.5~16.9	20	66	50	126.5	TPD165B-169B-H
	170-20-4-H	17.0~17.4	20	68	50	128.5	TPD170B-174B-H
	175-20-4-H	17.5~17.9	20	70	50	131.0	TPD175B-179B-H
	180-20-4-H	18.0~18.4	20	72	50	133.1	TPD180B-184B-H
	185-20-4-H	18.5~18.9	20	74	50	135.6	TPD185B-189B-H
	190-20-4-H	19.0~19.4	20	76	50	137.7	TPD190B-194B-H
	195-20-4-H	19.5~19.9	20	78	50	140.2	TPD195B-199B-H
	200-25-4-H	20.0~20.4	25	80	56	148.3	TPD200B-204B-H
	205-25-4-H	20.5~20.9	25	82	56	150.8	TPD205B-209B-H
	210-25-4-H	21.0~21.4	25	84	56	152.9	TPD210B-214B-H
	215-25-4-H	21.5~21.9	25	86	56	155.4	TPD215B-219B-H
	220-25-4-H	22.0~22.4	25	88	56	157.5	TPD220B-224B-H
	225-25-4-H	22.5~22.9	25	90	56	160.0	TPD225B-229B-H
	230-25-4-H	23.0~23.4	25	92	56	162.1	TPD230B-234B-H
	235-25-4-H	23.5~23.9	25	94	56	164.6	TPD235B-239B-H
	240-32-4-H	24.0~24.4	32	96	60	170.8	TPD240B-244B-H
	245-32-4-H	24.5~24.9	32	98	60	173.3	TPD245B-249B-H
	250-32-4-H	25.0~25.4	32	100	60	175.3	TPD250B-254B-H
	255-32-4-H	25.5~25.9	32	102	60	177.8	TPD255B-259B-H
	260-32-4-H	26.0~26.4	32	104	60	179.8	TPD260B-264B-H
	265-32-4-H	26.5~26.9	32	106	60	182.3	TPD265B-269B-H
	270-32-4-H	27.0~27.4	32	108	60	184.5	TPD270B-274B-H
	275-32-4-H	27.5~27.9	32	110	60	187.0	TPD275B-279B-H
	280-32-4-H	28.0~28.4	32	112	60	189.0	TPD280B-284B-H
	285-32-4-H	28.5~28.9	32	114	60	191.5	TPD285B-289B-H
	290-32-4-H	29.0~29.4	32	116	60	193.6	TPD290B-294B-H
	295-32-4-H	29.5~29.9	32	118	60	196.1	TPD295B-299B-H
	300-32-4-H	30.0~30.9	32	120	60	198.2	TPD300B-309B-H

Applicable inserts **F71**

TPDB-H (8D)



(mm)

Designation		ØD	Ød	ℓ1	ℓ2	ℓ3	L	Insert
TPDB	140-16-8F-H	14.0~14.4	16	50	112	48	176.3	TPD140B-144B-H
	145-16-8F-H	14.5~14.9	16	50	116	48	180.3	TPD145B-149B-H
	150-20-8F-H	15.0~15.4	20	50	120	50	187.4	TPD150B-154B-H
	155-20-8F-H	15.5~15.9	20	50	124	50	191.4	TPD155B-159B-H
	160-20-8F-H	16.0~16.4	20	50	128	50	196.5	TPD160B-164B-H
	165-20-8F-H	16.5~16.9	20	50	132	50	200.5	TPD165B-169B-H
	170-20-8F-H	17.0~17.4	20	50	136	50	205.5	TPD170B-174B-H
	175-20-8F-H	17.5~17.9	20	50	140	50	209.5	TPD175B-179B-H
	180-20-8F-H	18.0~18.4	20	50	144	50	215.6	TPD180B-184B-H
	185-20-8F-H	18.5~18.9	20	50	148	50	219.6	TPD185B-189B-H
	190-20-8F-H	19.0~19.4	20	50	152	50	223.7	TPD190B-194B-H
	195-20-8F-H	19.5~19.9	20	50	156	50	227.7	TPD195B-199B-H
	200-25-8F-H	20.0~20.4	25	50	160	56	237.8	TPD200B-204B-H
	205-25-8F-H	20.5~20.9	25	50	164	56	241.8	TPD205B-209B-H
	210-25-8F-H	21.0~21.4	25	50	168	56	245.9	TPD210B-214B-H
	215-25-8F-H	21.5~21.9	25	50	172	56	249.9	TPD215B-219B-H
	220-25-8F-H	22.0~22.4	25	50	176	56	254.0	TPD220B-224B-H
	225-25-8F-H	22.5~22.9	25	50	180	56	263.0	TPD225B-229B-H
	230-25-8F-H	23.0~23.4	25	50	184	56	267.1	TPD230B-234B-H
	235-25-8F-H	23.5~23.9	25	50	188	56	271.1	TPD235B-239B-H
	240-32-8F-H	24.0~24.4	32	50	192	60	279.3	TPD240B-244B-H
	245-32-8F-H	24.5~24.9	32	50	196	60	283.3	TPD245B-249B-H
	250-32-8F-H	25.0~25.4	32	50	200	60	287.3	TPD250B-254B-H
	255-32-8F-H	25.5~25.9	32	50	204	60	291.3	TPD255B-259B-H
	260-32-8F-H	26.0~26.4	32	50	208	60	295.3	TPD260B-264B-H
	265-32-8F-H	26.5~26.9	32	50	212	60	299.3	TPD265B-269B-H
	270-32-8F-H	27.0~27.4	32	50	216	60	303.5	TPD270B-274B-H
	275-32-8F-H	27.5~27.9	32	50	220	60	307.5	TPD275B-279B-H
	280-32-8F-H	28.0~28.4	32	50	224	60	313.5	TPD280B-284B-H
	285-32-8F-H	28.5~28.9	32	50	228	60	317.5	TPD285B-289B-H
	290-32-8F-H	29.0~29.4	32	50	232	60	322.6	TPD290B-294B-H
	295-32-8F-H	29.5~29.9	32	50	236	60	326.6	TPD295B-299B-H
	300-32-8F-H	30.0~30.9	32	50	240	60	330.7	TPD300B-309B-H

Applicable inserts **F71**

※ The maximum length of flute could be ℓ2

Convenient and quickly adjustable drill height

WPDC

Indexable drill clamped with center drill

Code system

- **Holder**

WPDC	410	40	8
Type	**Drill dia.**	**Shank dia.**	**Aspect ratio (L/D)**
WPDC: Using W-type I/S center drill NPDC: Using N-type I/S center drill	410: Ø41.0 mm 6570: Ø65~70 mm	32: Ø32 mm 40: Ø40 mm	5: 5D 6.5: 6.5D 8: 8D

- **Cartridge**

CWP	4145	C
Type	**Drill dia.**	**Classification**
CWP: Cartridge-WPDC	4145: Ø41~45 mm 450: Ø45.0 mm	C: Central P: Peripheral

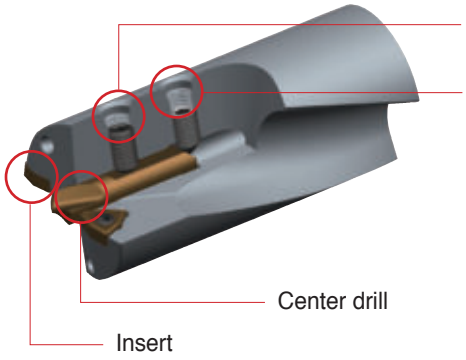
- **Center drill**

CD	H	1035
Type	**Coolant**	**Diameter × length of tool**
Center Dril	H: Coolant Unmarked: None	0630: Ø6 X 30mm 0835: Ø8 X 35 mm 1035: Ø10 X 35mm 1238: Ø12 X 38 mm 1645: Ø16 X 45 mm

- **Grade**

PC	40H
Product name	**Coating layer**
PVD coating	40H: TiN coating

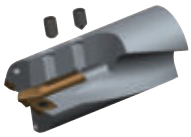
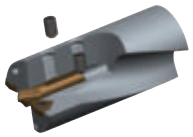
How to clamp the drills



Feature of corn-point system

- Convenient and quick adjustable heights when inserting the center drill
- In case the center drill brakes while in usage, it can be replaced with the bolt for adjusting cone point
- The bolt for adjusting cone point prevents chattering on the center drill

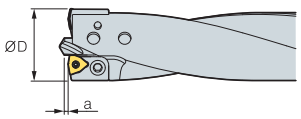
Clamping

❶	❷	❸	❹	❺
				
Place a center drill	Clamp insert and cartridge	Adjust the center drill with the bolt for adjusting cone point	Clamp the center drill firmly with fixing bolt	Reassure the clamp with bolt for adjusting cone point

※ Use safety covers for your safety when clamping the center drill and insert
※ When machining, be careful of the drill disk

Length of the 'a' part of center drill

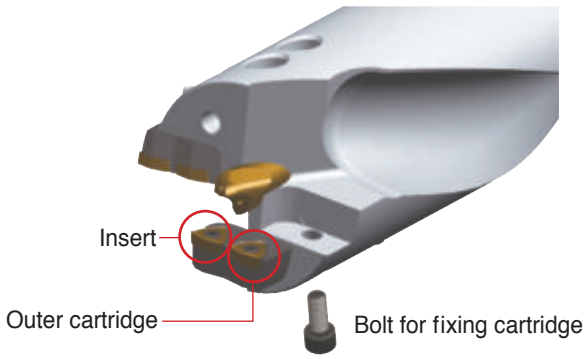
- The length of 'a' being too short can cause bad surface finish or high cutting load
- On the other hand, the length of 'a' being too long can make tool failure and chattering while drilling



Diameter (ØD)	Length of the 'a' part of center drill		
	Steel	Alloy steel	Non-ferrous metal
25~30	1.2	1.0	1.5
31~40	1.5	1.3	1.8
41~50	1.8	1.5	2.2
51~59	2.2	1.8	2.5
60~75	2.5	2.0	2.8
76~80	3.0	2.5	3.5

Adjusting diameter of cartridge type drill

1) Disassemble a cartridge from the holder by loosening the bolt fixed for outer cartridge
2) Machine after calculating the hole size on the side of the outer cartridge
3) Trim the sharp part after machining
4) Clamp the bolt for fixing cartridge without any gap in between the holder and the machined outer cartridge



1) Range of adjustable drill diameter

① Single cartridge type (Drill diameter Ø41~Ø59) ···› -1.0 mm
② Dual cartridge type (Drill diameter Ø60~Ø80) ···› -5.0 mm

2) Diameter of the standard drills is provided with maximum size of standards

Ex) WPDC6570-40-6.5 ···› Drill diameter 70.0 mm

Ex) How to adjust drill diameter to Ø66.0 machining with WPDC6570-40-8
···› To make the drill diameter of outer cartridge to Ø66.0, machine 2.0 mm (Ø70.0-Ø66.0 = 4 ···› 4÷2 = 2 (radius))

Recommended cutting condition

Workpiece				Chip breaker	Grade	vc (m/min)	Aspect ratio (L/D) = 5D, 6.5D, 8D					
							Feed rate (mm/rev) per drill dia. (mm)					
ISO		Workpiece	HB				~Ø30	Ø31~Ø40	Ø41~Ø50	Ø51~Ø59	Ø60~Ø75	Ø76~Ø80
P	Carbon steel	Low carbon steel (~0.25%)	80~180	C21N	PC5335	190 (160~220)	0.07~0.11	0.08~0.12	0.10~0.14	0.12~0.16	0.12~0.16	0.12~0.16
		High carbon steel (0.25%~)	180~280	C21N	PC5335	140 (110~170)	0.07~0.11	0.08~0.12	0.10~0.14	0.12~0.16	0.12~0.16	0.12~0.16
	Alloy steel	Low alloy steel	140~260	C21N	PC5335	130 (100~160)	0.08~0.12	0.08~0.12	0.10~0.14	0.12~0.18	0.12~0.18	0.12~0.18
		High alloy steel	50~260	C21N	PC5335	100 (70~130)	0.06~0.10	0.08~0.12	0.08~0.12	0.10~0.16	0.10~0.16	0.10~0.16
M	Stainless steel	Stainless steel	135~275	C21N	PC5335	100 (70~130)	0.06~0.10	0.08~0.12	0.10~0.12	0.12~0.14	0.12~0.14	0.12~0.14
K	Cast iron	Gray cast iron	150~220	C21N	PC5335	160 (130~190)	0.09~0.15	0.10~0.16	0.12~0.2	0.14~0.22	0.14~0.22	0.14~0.22
		Ductile cast iron	200~300	C21N	PC5335	140 (170~110)	0.09~0.15	0.10~0.16	0.12~0.2	0.14~0.22	0.14~0.22	0.14~0.22
		Malleable cast iron	130~230	C21N	PC5335	150 (180~120)	0.09~0.15	0.10~0.16	0.12~0.2	0.14~0.22	0.14~0.22	0.14~0.22
N	Non-ferrous metal	Aluminum	30~150	C21N	PC5335	300 (250~350)	0.08~0.12	0.10~0.14	0.12~0.16	0.14~0.18	0.14~0.18	0.14~0.18
		Alloyed copper	150~160	C21N	PC5335	250 (200~300)	0.08~0.12	0.10~0.14	0.12~0.16	0.14~0.18	0.14~0.18	0.14~0.18
S	Heat resistant alloy	Heat resistant alloy	130~400	C21N	PC5335	50 (70~30)	0.05~0.08	0.05~0.08	0.06~0.10	0.06~0.10	0.06~0.10	0.06~0.10

Parts of WPDC type indexable drills

Designation	ØD	Insert			Center drill			Cartridge		
		Insert	Screw	Wrench	Center drill	fixed bolt	cone point bolt	Inner	Outer	Fixed bolt
WPDC250-32-□	25	WC□T030204-C21N	FTKA02206	TW06S	CD0630	KHA0508	KHC0510			
WPDC260~280-32-□	26~28	WC□T040204-C21N	FTNA02555	TW07S						
WPDC290~300-32-□	29~30					KHA0510				
WPDC310~350-32-□	31~35	WC□T050308-C21N	FTKA0307	TW09S	CD0835	KHA0610	KHC0610			
WPDC360~400-32-□	36~40					KHA0612				
WPDC410-40-□	41	WC□T06T308-C21N	FTKA03508	TW15S	CDH1035	KHA0812	KHC0812	CWP4145C	CWP410P	BHA0510
WPDC420-40-□	42								CWP420P	
WPDC430-40-□	43								CWP430P	
WPDC440-40-□	44								CWP440P	
WPDC450-40-□	45								CWP450P	
WPDC460-40-□	46					KHA0815		CWP4650C	CWP460P	BHA0512
WPDC470-40-□	47								CWP470P	
WPDC480-40-□	48								CWP480P	
WPDC490-40-□	49								CWP490P	
WPDC500-40-□	50								CWP500P	
WPDC510-40-□	51	WC□T080408-C21N	FTKA0411K	TW15S	CDH1238	KHA1015	KHC1016	CWP5155C	CWP510P	BHA0612
WPDC520-40-□	52								CWP520P	
WPDC530-40-□	53								CWP530P	
WPDC540-40-□	54								CWP540P	
WPDC550-40-□	55								CWP550P	
WPDC560-40-□	56							CWP5659C	CWP560P	BHA0614
WPDC570-40-□	57								CWP570P	
WPDC580-40-□	58								CWP580P	
WPDC590-40-□	59								CWP590P	
WPDC6065-40-□	60~65	WC□T050308-C21N	FTKA0307	TW09S		KHA1020	KHA1020	CWP6065C	CWP6065P	BHA0510
WPDC6570-40-□	65~70							CWP6570C	CWP6570P	
WPDC7075-40-□	70~75							CWP7075C	CWP7075P	
WPDC7580-40-□	75~80	WC□T06T308-C21N	FTKA03508	TW15S	CDH1645			CWP7580C	CWP7580T	BHA0612

Applicable inserts **F03~04**

Center Drill

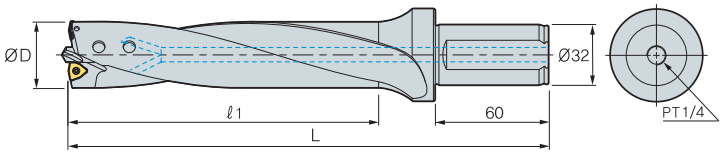
(mm)

Designation	Grade	ØD	L	Oil-hole
CD 0630	PC40H	6	30	×
CD 0835	PC40H	8	35	×
CDH 1035	PC40H	10	35	○
CDH 1238	PC40H	12	38	○
CDH 1645	PC40H	16	45	○

• This is HSS with Tin coating

WPDC (5D/6.5D/8D)

Standard type



(mm)

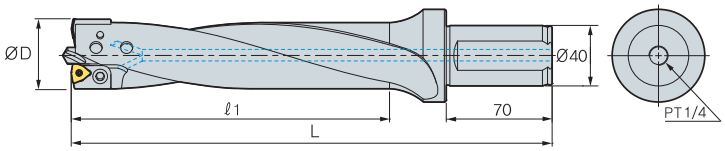
Designation		ØD	5D		6.5D		8D		Insert	Center drill
			ℓ1	L	ℓ1	L	ℓ1	L		
WPDC	250-32-□	25	150	240	185	275	220	310	WC□T030204-C21N	CD0630
	260-32-□	26	150	240	185	275	220	310	WC□T040204-C21N	
	270-32-□	27	150	240	185	275	220	310		
	280-32-□	28	150	240	185	275	220	310		
	290-32-□	29	150	240	185	275	220	310		
	300-32-□	30	150	240	185	275	220	310		
	310-32-□	31	175	265	218	308	260	350	WC□T050308-C21N	CD0835
	320-32-□	32	175	265	218	308	260	350		
	330-32-□	33	175	265	218	308	260	350		
	340-32-□	34	175	265	218	308	260	350		
	350-32-□	35	175	265	218	308	260	350		
	360-32-□	36	200	290	250	340	300	390		
	370-32-□	37	200	290	250	340	300	390		
	380-32-□	38	200	290	250	340	300	390		
	390-32-□	39	200	290	250	340	300	390		
	400-32-□	40	200	290	250	340	300	390		

Applicable inserts **F04**

* We can provide if you order exact diameter
Ex) machining hole 32.5 mm * 6.5D ···› WPDC325-32-6.5

WPDC (5D/6.5D/8D)

Single insert catridge type



(mm)

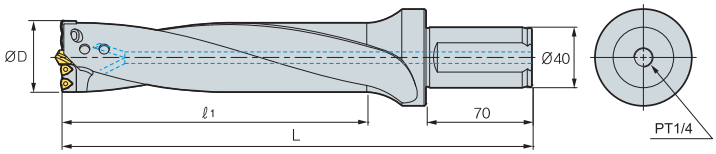
Designation		ØD	5D		6.5D		8D		Insert	Center drill	Cartridge	
			ℓ1	L	ℓ1	L	ℓ1	L			Inner	Outer
WPDC	410-40-□	41	225	330	283	388	340	445	WC□T06T308-C21N	CDH1035	CWP4145C	CWP410P
	420-40-□	42	225	330	283	388	340	445				CWP420P
	430-40-□	43	225	330	283	388	340	445				CWP430P
	440-40-□	44	225	330	283	388	340	445				CWP440P
	450-40-□	45	225	330	283	388	340	445				CWP450P
	460-40-□	46	250	355	315	420	380	485			CWP4650C	CWP460P
	470-40-□	47	250	355	315	420	380	485				CWP470P
	480-40-□	48	250	355	315	420	380	485				CWP480P
	490-40-□	49	250	355	315	420	380	485				CWP490P
	500-40-□	50	250	355	315	420	380	485				CWP500P
	510-40-□	51	275	380	348	453	420	525	WC□T080408-C21N	CDH1238	CWP5155C	CWP510P
	520-40-□	52	275	380	348	453	420	525				CWP520P
	530-40-□	53	275	380	348	453	420	525				CWP530P
	540-40-□	54	275	380	348	453	420	525				CWP540P
	550-40-□	55	275	380	348	453	420	525				CWP550P
	560-40-□	56	300	405	380	485	460	565			CWP5659C	CWP560P
	570-40-□	57	300	405	380	485	460	565				CWP570P
	580-40-□	58	300	405	380	485	460	565				CWP580P
	590-40-□	59	300	405	380	485	460	565				CWP590P

Applicable inserts **F04**

* We can provide if you order exact diameter
Ex) machining hole 47.5 mm * 5D -> WPDC475-40-5

WPDC (5D/6.5D/8D)

Dual insert cartridge type



(mm)

Designation		ØD	5D		6.5D		8D		Insert	Center drill	Cartridge	
			ℓ1	L	ℓ1	L	ℓ1	L			Inner	Outer
WPDC	6065-40-□	60~65	325	430	423	528	520	625	WC□T050308-C21N	CDH1238	CWP6065C	CWP6065P
	6570-40-□	65~70	350	455	455	560	560	665			CWP6570C	CWP6570P
	7075-40-□	70~75	375	480	488	593	600	705			CWP7075C	CWP7075P
	7580-40-□	75~80	400	505	520	625	640	745	WC□T06T308-C21N	CDH1645	CWP7580C	CWP7580P

Applicable inserts **F04**

* We can provide if you order exact diameter
Ex) machining hole 70.5 mm * 6.5D -> WPDC705-40-6.5

Mass production and High performance

Indexable Reamer

- Suitable for mass production and high performance
- Using PCD or coated insert for high speed machining
- Excellent high accuracy and adjustable machining hole
- Using accuracy chucking system (Hydraulic, rotating type arbor)
- Using inner coolant type machine to evacuate chips
- Using suitable holder and insert
- As insert setting, using setting fixture (KIRSD-210)

Code system

- **Insert**

RI 16 - B 06

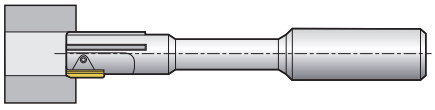
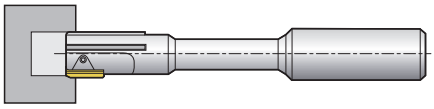
Type	Insert size	Insert reed type	Angle of C/B
Reamer Insert	15: 15.0 × 3.0 16: 16.0 × 3.5 17: 17.0 × 4.5 22: 22.0 × 6.5	A: Excellent surface finish, low cutting condition B: General surface finish, high cutting condition C: Aluminum and copper alloy D: Blind hole, low feed	00: 0°, Cast iron 06: 6°, General steel 12: 12°, Stainless, Al

- **Holder**

IR T 12.000 - 16 135 - 16

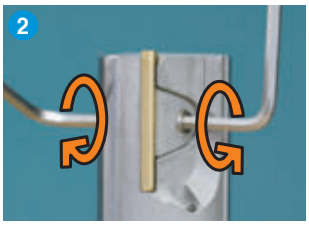
Type	Application	Reamer dia.	Shank Dia.	length	Insert size
Indexable Reamer	T: Throughout hole machining B: Blind hole machining	12.000: Ø12.0 mm	16: Ø16 mm	135: 135	15: 15.0 × 3.0 16: 16.0 × 3.5 17: 17.0 × 4.5 22: 22.0 × 6.5

Application

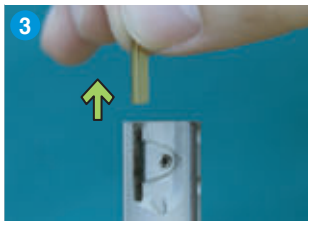
Throughout hole machining (IRT type)	Stuffed hole machining (IRB type)
	

How to set an insert

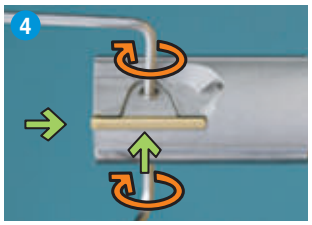
1. Screw the wedge screw counter clockwise with the exclusive wrench



2. Screw the clamp screw
   ① Top side: counter clockwise
   ② Lower side: clockwise



3. Remove the insert and clean the pocket



4. Put the insert up to the edge stopper and clamp the insert
   ① Top side: clockwise
   ② Lower side: counterclockwise

Exclusive fixture

- Designation: KIRSD-210
- Maximum diameter of reamer: Ø60 × 210 mm
- The fixture is also available for setting special reamer and mono tool
- Special reamers (out of maximum setting range) are available quotation

How to set an insert with fixture

1. Adjust the gauge to '0'

2. Rotate the reamer for the insert to touch the gauge

3. Set the back taper and adjust the insert height with screw the wedge screw
   ① Top side of insert: +0.015~ +0.020 mm
   ② Bottom side of insert: +0.005~ +0.010 mm
   ③ Back taper: 0.010~0.015 mm

Back taper

- Ensures low cutting load and excellent surface finish with good chip evacuation
- Inaccurate back taper could cause unstable machining with wear of insert
- The size of back taper of insert down side should be less to 0.010~0.015 mm than one of insert upper side

Insert setting with a micrometer

- Lathe with both centers or bench center are also available

Notice: The setting with a micrometer is not recommended due to chipping on the cutting edge

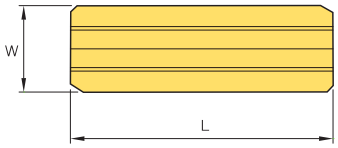
Recommended cutting condition

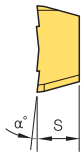
Workpiece	Insert type		Feed rate (mm/rev) per drill dia. (mm)	Cutting speed vc (m/min)		
	Rake angle	Lead type		Coated	Uncoated	Cermet
Carbon steel General steel	6	A	0.1~0.4	60~80	40~60	110~160
		B	0.1~0.3	80~120	60~80	
		D	0.05~0.2			
Mild steel Alloy steel	6	A	0.1~0.4	40~60	20~40	110~160
		B	0.1~0.3	80~120	60~80	
		D	0.05~0.2			
High alloy steel Tool steel	6	A	0.1~0.4	20~60	20~40	20~60
		B	0.1~0.3	40~80	40~60	40~80
		D	0.05~0.2			
Stainless steel	12	A	0.1~0.3	40~60	20~40	40~60
		B	0.1~0.2	60~80	40~60	60~80
		D	0.05~0.2			
Cast iron	0.6	A	0.1~0.3	60~100	40~60	
		B	0.1~0.25	80~120	60~80	
		D	0.05~0.2			
Alloyed aluminum	12	B	0.1~0.3		160~200	
		C	0.15~0.3		150~250	
		D	0.05~0.2		110~200	
Alloyed copper	0	B	0.1~0.2		80~100	
		D	0.05~0.2			
Non-ferrous alloy	0	B	0.1~0.3		10~70	

Parts

Reamer size	Clamp 	Wedge 	Clamp Screw 	Wedge Screw  (NYLOK)	Clamp Wrench 	Wedge Wrench 
10.0~11.9	CV 15	AW2430	DHA0308	HSO306	HW15L	HW15L
12.0~17.9	CV 16	AW2435				
18.0~27.9	CV 17	AW3240	DHA0409	HS0406	HW20L	HW20L
28.0~31.9	CV 22	AW3260				

Available insert



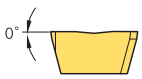
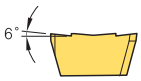
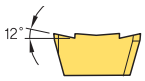


(mm)

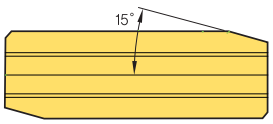
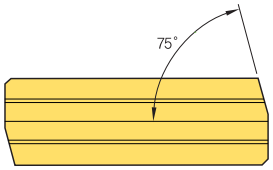
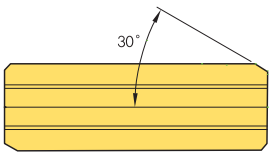
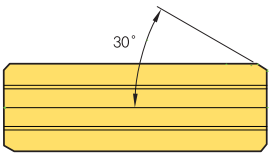
Designation		Grade			Dimensions			Lead type	Rake angle (α°)
		K10 (Uncoated)	BPK110 (TiAlN)	BPK210 (TiN)	L	W	S		
RI	15-A06			O	15	3.0	1.5	A	6°
	15-A12	O			15	3.0	1.5	A	12°
	15-B06		O	O	15	3.0	1.5	B	6°
	15-B12		O		15	3.0	1.5	B	12°
	16-A06			O	16	3.5	1.5	A	6°
	16-A12	O			16	3.5	1.5	A	12°
	16-B06		O	O	16	3.5	1.5	B	6°
	16-B12		O		16	3.5	1.5	B	12°
	17-A06			O	17	4.5	2.0	A	6°
	17-A12	O			17	4.5	2.0	A	12°
	17-B06		O	O	17	4.5	2.0	B	6°
	17-B12		O		17	4.5	2.0	B	12°
	22-A06			O	22	6.5	3.0	A	6°
	22-A12	O			22	6.5	3.0	A	12°
	22-B06		O	O	22	6.5	3.0	B	6°
	22-B12		O		22	6.5	3.0	B	12°

※ ○This is recommended grade as for insert type

Angle of chip breaker

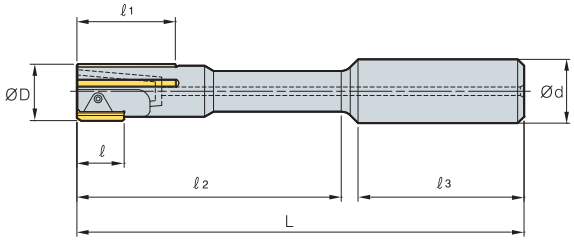
Division	00	06	12
Shape			
Application	For cast iron machining	For general machining	For stainless and aluminum machining

Insert lead type

Type	Shape	Working condition	Type	Shape	Working condition
A		For excellent surface, low cutting condition	C		For aluminum and copper alloy machining
B		For general application, high cutting condition	D		For blind hole machining, low feed

IRT

Throughout hole



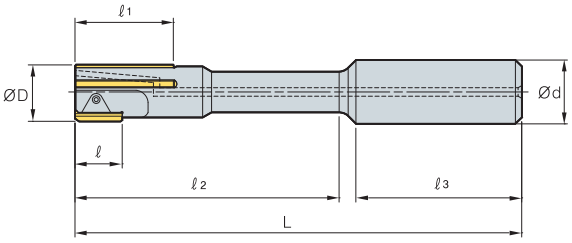
(mm)

	Designation	ØD	ℓ	ℓ1	ℓ2	ℓ3	L	Ød	Insert
IRT	10.000-16125-15	10	15	30	75	45	125	16	RI 15
	11.000-16125-15	11	15	30	75	45	125	16	RI 15
	12.000-16135-16	12	16	30	85	45	135	16	RI 16
	13.000-16135-16	13	16	30	85	45	135	16	RI 16
	14.000-16135-16	14	16	30	85	45	135	16	RI 16
	15.000-16135-16	15	16	30	85	45	135	16	RI 16
	16.000-20155-16	16	16	30	100	50	155	20	RI 16
	17.000-20155-16	17	16	30	100	50	155	20	RI 16
	18.000-20155-17	18	17	30	100	50	155	20	RI 17
	19.000-20155-17	19	17	30	100	50	155	20	RI 17
	20.000-25165-17	20	17	30	110	56	165	25	RI 17
	21.000-25165-17	21	17	30	110	56	165	25	RI 17
	22.000-25165-17	22	17	30	110	56	165	25	RI 17
	23.000-25165-17	23	17	30	110	56	165	25	RI 17
	24.000-25165-17	24	17	30	110	56	165	25	RI 17
	25.000-25165-17	25	17	30	110	56	165	25	RI 17
	26.000-25165-17	26	17	30	110	56	165	25	RI 17
	27.000-25165-17	27	17	30	110	56	165	25	RI 17
	28.000-32165-22	28	22	30	110	56	165	32	RI 22
	29.000-32165-22	29	22	30	110	56	165	32	RI 22
	30.000-32165-22	30	22	30	110	56	165	32	RI 22
	31.000-32165-22	31	22	30	110	56	165	32	RI 22

Applicable inserts **F85**

IRB

Stuffed hole



(mm)

	Designation	ØD	ℓ	ℓ1	ℓ2	ℓ3	L	Ød	Insert
IRB	10.000-16125-15	10	15	30	75	45	125	16	RI 15
	11.000-16125-15	11	15	30	75	45	125	16	RI 15
	12.000-16135-16	12	16	30	85	45	135	16	RI 16
	13.000-16135-16	13	16	30	85	45	135	16	RI 16
	14.000-16135-16	14	16	30	85	45	135	16	RI 16
	15.000-16135-16	15	16	30	85	45	135	16	RI 16
	16.000-20155-16	16	16	30	100	50	155	20	RI 16
	17.000-20155-16	17	16	30	100	50	155	20	RI 16
	18.000-20155-17	18	17	30	100	50	155	20	RI 17
	19.000-20155-17	19	17	30	100	50	155	20	RI 17
	20.000-25165-17	20	17	30	110	56	165	25	RI 17
	21.000-25165-17	21	17	30	110	56	165	25	RI 17
	22.000-25165-17	22	17	30	110	56	165	25	RI 17
	23.000-25165-17	23	17	30	110	56	165	25	RI 17
	24.000-25165-17	24	17	30	110	56	165	25	RI 17
	25.000-25165-17	25	17	30	110	56	165	25	RI 17
	26.000-25165-17	26	17	30	110	56	165	25	RI 17
	27.000-25165-17	27	17	30	110	56	165	25	RI 17
	28.000-32165-22	28	22	30	110	56	165	32	RI 22
	29.000-32165-22	29	22	30	110	56	165	32	RI 22
	30.000-32165-22	30	22	30	110	56	165	32	RI 22
	31.000-32165-22	31	22	30	110	56	165	32	RI 22

Applicable inserts **F85**