

Chapter Composition of Drilling Tools

- ◆ In this chapter, products are arranged in order as follows: TAC Drills → Solid drills
- ◆ In each product group, the products are arranged in increasing order of diameter.

Icons indicate tool shape.

Designation of the drill type

Series name of the drill

Applicable work materials are shown.

Tolerances of drill diameters

Icons indicate tool shape.

Designation of the drill type

Series name of the drill

Applicable work materials are shown.

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Series name of the drill

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Cat. No. of TAC drills

Dimensions

Cat. No. of applicable TAC inserts

Replacement parts

Cat. No. of TAC inserts

Diameter ranges of applicable TAC drills

Inserts

DJ chipbreaker

DS chipbreaker

DW chipbreaker

DG chipbreaker

Symbols of stock status

Cat Nos. of solid drills.

Dimensions

Reference pages of relating items

Table of standard cutting conditions

Icons overview

■ Icons showing drill shapes

● Drill diameter range

● Type of coating

● Approximate tolerance obtained in drilling

● Coolant supply method

Diameter
ø3.0~20.0mm

(Ti,Al)N
Coated

TiN
Coated

● Helix angle

● Point angle

● L / D

30°
Helix

140°
Point angle

3
L/D

Internal Coolant

External Coolant

Ordering information

- When ordering TAC drill, please specify Cat. No. and quantity.
Example: TDX160W20-2 1 piece.
 - Standard packing quantity is 1 piece.
 - Inserts must be ordered separately.
- When ordering TAC inserts for TAC drill, please specify Cat. No., grade, and quantity.
Example: XPMT050204R-DJ AH725 10 pieces.
 - Standard packing quantity is 10 pieces.
- When ordering solid or brazed drill, please specify Cat. No. and quantity.
Example: DSW030-014-06DE3 1 piece.
 - Standard packing quantity is 1 piece.

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Guidance

■ List of Drilling Tools for steels.....	11-2
■ Basic Selection of Drilling Tools.....	11-4
■ Designation system for TAC Drilling Inserts.....	11-24
■ Regrinding Procedures.....	11-47

11 Drilling Tools

Products

■ Indexable drills

● TungdrillTwisted	L/D = 2, 3, 4, 5	ø12.5 ~ ø54.0	11-8
● TungDrillBig	L/D = 2.5	ø55.0 ~ ø80.0	11-12
● TAC inserts for TungDrill			11-13
● TungSix-Drill	L/D = 2, 3	ø28.0 ~ ø54.0	11-16
● TungHold tooling system: TungBore			11-19
● Chamfering ring for indexable drills			11-20
● EZ Sleeve			11-22

■ TAC Drilling inserts

	11-26
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■ Indexable head drills

● DrillMeister	L/D = 3	ø10.0 ~ ø19.5	11-28
● Chamfering ring for DrillMeister			11-29

■ Solid drills















● DSW SoridDrill	L/D = 3, 5, 8	ø3.0 ~ ø16.0	11-32
● DSX GigaJetDrills	L/D = 3, 5, 8	ø3.0 ~ ø20.0	11-40
● DSM GigaMiniDrills	L/D = 5, 10, 15	ø0.1 ~ ø3.0	11-45

■ Gun drills

● TungGun / For deep hole drilling indexable head gun drills	11-48
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List of Drilling Tools

Notes : • Shaded bands in drill diameter ranges show stocked ranges.
• White bands in drill diameter ranges show unstocked ranges.

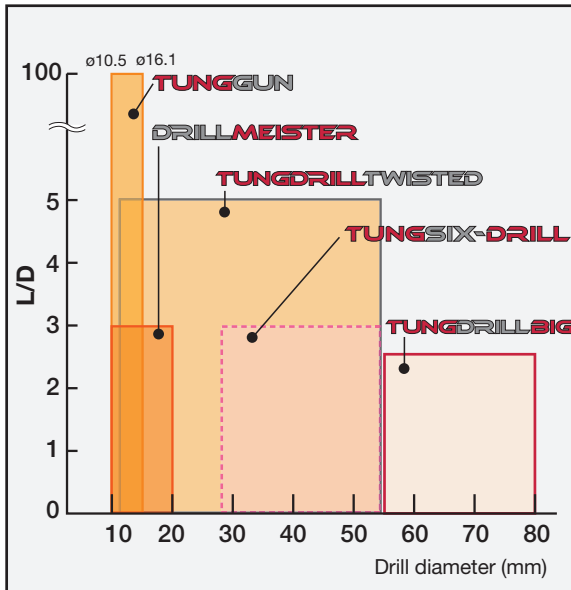
Operation	Tool name	Type	Appearance	Work materials										Machinable L/D ratio	Drill diameter range (mm)											
				Mild steels	Steels	High hardened steels	Stainless steels	Difficult-to-cut Materials	Cast irons	Ductile cast irons	Aluminium alloys	Non-ferrous metals	0.4		1.0	2.0	3.0	5.0	10	15	20	30	50	100		
General drilling	Large diameter TAC drills	NEW TDX		○	○	○	○	○	○	○	○	○	2,3,4,5		ø12.5		ø54									
	Indexable large diameter drill with cartridge	NEW TDX		○	○	○	○	○					2.5					ø55		ø80						
	Large diameter TAC drills	NEW TDS		○	○	○	○	○					2,3					ø28		ø54						
	Indexable head drills	NEW TIDC		○	○	○	○	○					3					ø10.3		ø19.5						
	Coated or uncoated solid carbide drills for small diameter drilling	NEW DSW		○	○	○	○	○					3,5,8		ø3.0		ø16									
	For Steels Giga Mini Drills	DSM		○	○	○	○	○					5,10		ø0.1		ø3.0									
Deep hole drilling	Indexable head gun drills	NEW GNSTG		○	○	○	○	○	○	○	○	○	※					ø10.5		ø16.1						

Type	Type of coolant supply	IT class	Attainable surface roughness (RzJIS)	Features	Page
<small>TUNGDRILLTWISTED</small> <small>NEW</small> TDX	Internal	11 ~	12 ~	<ul style="list-style-type: none">• Indexable insert type drills• Four corner insert design for economical drilling Excellent chip evacuation	11-8
<small>TUNGDRILLSIG</small> <small>NEW</small> TDX	Internal	11 ~	12 ~	<ul style="list-style-type: none">• Indexable large diameter drill with cartridge. Highly rigid body provides stable machining. Cartridge protects the drill body from damage and prolongs the tool life. Drill diameter can be adjusted by using setting plates.	11-12
<small>TUNGDRILL</small> <small>NEW</small> TDS	Internal	11 ~	12 ~	<ul style="list-style-type: none">• Indexable drill with 6 cornered insert offers high economical advantage.• New insert grade with improved adhesion and chipping resistance demonstrates stable and long tool life.	11-16
<small>DRILLMASTER</small> <small>NEW</small> TIDC	Internal	9 ~ 10	6.3 ~ 25	<ul style="list-style-type: none">• Head indexable drill. High reliable clamping system provides secure head clamp and easy operation. Unique designed cutting edges and rigid body offers stable drilling.	11-28
<small>SOLIDDRILL</small> <small>NEW</small> DSW	Internal External	9 ~ 10	6.3 ~ 25	<ul style="list-style-type: none">• Highly versatile coated solid carbide drill.• Newly developed grade and cutting edge shape provides excellent chip control and long tool life due to wear and fracture resistance.	11-32
DSM	External	9 ~ 10	—	<ul style="list-style-type: none">• Coated solid drills with ø3 mm shank.• Applicable for very small diameter drilling from ø0.1 mm	11-45
<small>TUNGDRILL</small> <small>NEW</small> GNSTG	Internal	8 ~ 9	6.3 ~ 25	<ul style="list-style-type: none">• Head indexable GunDrill• Unique clamping system allows easy operation on the machine and significantly reduces tool changing time.	11-48

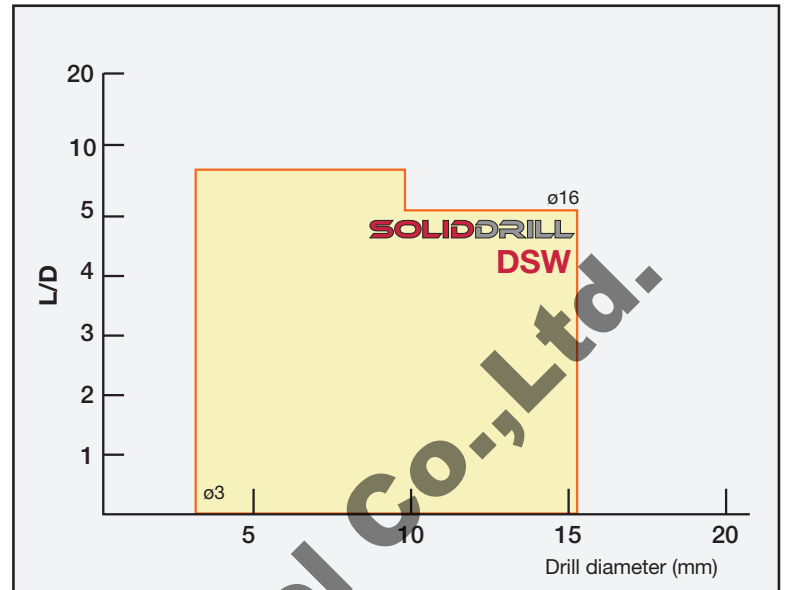
Basic Selection of Drilling Tools

Application ranges of drilling tools

Indexable drill



Solid drill, Brazed carbide drills

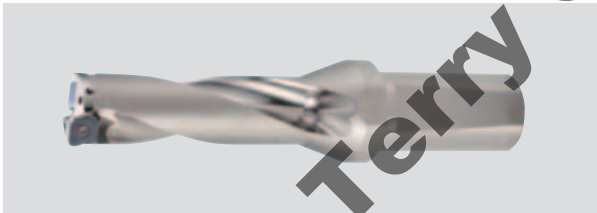


Large diameter drilling

TUNGDRILLTWISTED 11-8

NEW TDX

Applicable work materials



Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Indexable	Internal	○	—	—	—
Hole depth		Drill diameter		Approximate accuracy	
< 5 x tool diameter		ø12.5 ~ ø54.0		Hole diameter (IT) 11~ Roughness (RzJIS): 12~	

● Stabilization of spindle power New TDX type

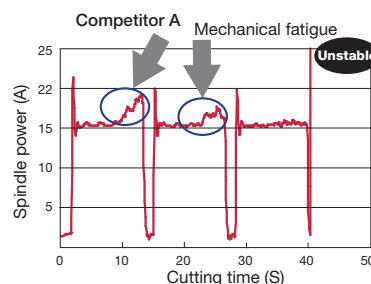
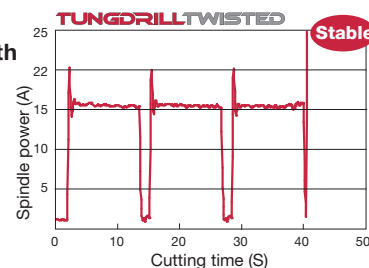
Features

Excellent surface finish and stable chip evacuation with newly developed drill body!

- Highly economic = TDX concept.
- Excellent chip evacuation!
- Applicable to various machining applications.
- Ideally-balanced with a strong and rigid design = TDX concept.
- Improved drilling durability!

The new AH725 PVD coated grade now offers new chipbreakers! **PREMIUMTEC**

- Flat and smooth coated surface by adopting "Triple Force Technology".
- Significantly improved resistance to chip welding and insert edge chipping.



Workpiece : SCM440 (JIS)
Drill : ø22 mm,
L/D = 3
Cutting speed : $V_c = 180$ m/min
Feed : $f = 0.13$ mm/rev
Drilling depth : 3D (Blind)
Machine : Vertical machining center
Cutting fluid : Water soluble type



Large diameter drilling

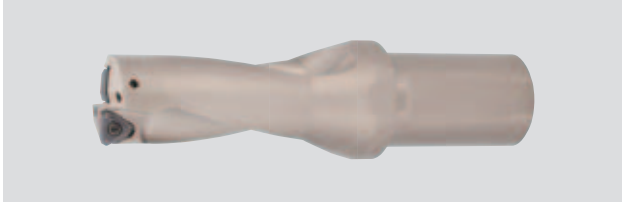
TUNGDRILL

11-16

Applicable work materials

P M
Steel Stainless

NEW TDS



Features

The only drill available with 6 cornered inserts

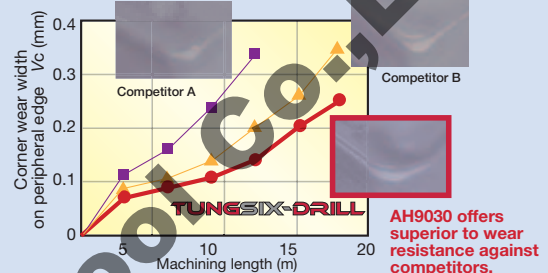
- 6 cornered insert provides economical advantage.
- Only one type of insert is required for peripheral and central edge.
- Enhanced corner shape on central insert edge allows incredible fracture resistance.
- Newly designed insert pocket prevents incorrect insert clamping

New PVD coated AH9030 grade with PremiumTec

- Special surface technology "PremiumTec" is applied
- Significantly improved adhesion and chipping resistance
- DJ chipbreaker can be applied for improved versatility and reduced cutting forces

Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Indexable	External	○	—	Same as drill dia.	—
Hole depth		Drill diameter		Approximate accuracy	
< 3 x tool diameter		ø28 ~ ø54		Hole diameter (IT) 11~ Roughness (RzJIS): 12~	

■ Excellent wear resistance of AH9030



Drill	: TDS280W32-3	Feed	: f = 0.1 mm/rev
Insert	: WWMU08X408R-DJ	Hole diameter	: ø28 mm
Grade	: AH9030	Hole depth	: H = 84 mm
Work material	: S55C / C55	Machine	: Horizontal M/C, BT40
Cutting speed	: Vc = 140 m/min	Coolant	: Wet (Internal supply)

TUNGDRILL BIG

11-12

Applicable work materials

P M K N
Steel Stainless Cast Iron Non-ferrous

NEW TDX



Features

Adjustable large diameter drill with cartridge

- Drill diameter can be adjusted by changing setting plates.
- The same inserts as the TungdrillTwisted can be used. This simplifies inventory control.
- By exchanging cartridges, the drill body maintains a long tool life even if the insert seat is damaged.

Highly rigid body and optimized insert position

- Provides well balanced cutting forces and stable machining conditions for highly accurate hole making.
- Creates small chips and allows excellent chip evacuation.

Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Indexable	External	○	—	Same drill dia.	—
Hole depth		Drill diameter		Approximate accuracy	
< 3 x tool diameter		ø55 ~ ø80		Hole diameter (IT) 11~ Roughness (RzJIS): 12~	

Chip control

Chips are well controlled and shortened.

Tool diameter øDc (mm)	ø57 (without setting plate)		ø62 (with setting plate)		
	Feed f (mm/rev)	0.08	0.13	0.08	0.13
SCM440					
S45C					

▶ No chip control difference with or without setting plates. This ensures stable machining in each diameter range.

Drill	: TDX57-62F50-2.5	Cutting speed	: Vc = 160 m/min
Insert	: XPMT08T308R-DJ	Hole depth	: H = 70 mm
Grade	: AH725	Coolant	: Wet (Internal)
Machine	: Vertical M/C, BT50		

11

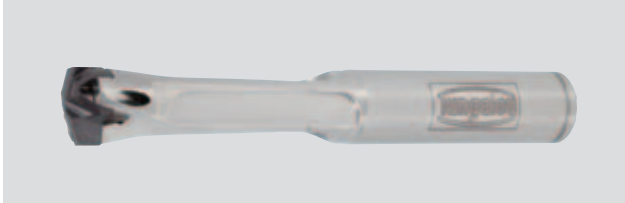
Drilling Tools

Basic Selection of Drilling Tools

General drilling

DRILLMEISTER 11-28

NEW TIDC + DMP



Features

Clamping system for secure and easy operation

- Drill head can be changed easily even on the machine.
- High clamping force and accurate clamp system provides stable machining.

With exclusive chamfering adaptor, DrillMeister allows both drilling and chamfering in one operation.

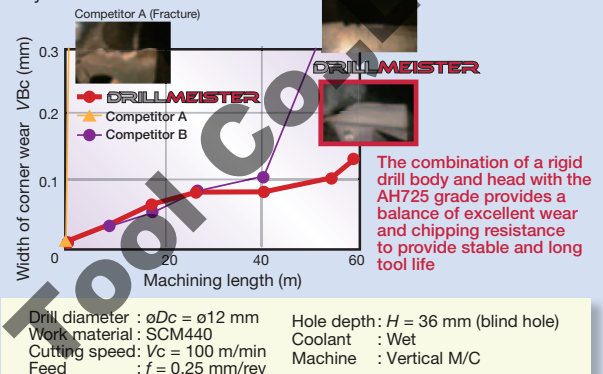
- 3 kinds of chamfering angle can be selected and the chamfering adaptor is freely adjustable.

Applicable work materials

P M K N S
Steel Stainless Cast Iron Non-ferrous Superalloys

Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Indexable	Internal	○	-	10, 12, 14, 15, 17, 19	140°
Hole depth		Drill diameter		Approximate accuracy	
< 3 x tool diameter		ø10.3 ~ ø19.5		Hole diameter (IT) 9 ~ 10 Roughness (RzJIS): 6.3 ~ 25	

Comparison of tool life when drilling alloy steel



SOLIDDRILL 11-32

NEW DSW



Features

The newly developed cutting edge with a new PVD grade delivers high wear resistance

- Allows stable and long tool life for a wide range of work materials.
- Improved adhesion strength of coating layer prevents the edge from chipping

The newly developed flute breaks chips into smaller pieces, resulting in excellent chip control

Worldwide standard shank style - Standardized with DIN6535-Form HA

- Only 6 sizes of shank diameter available, - ø6, ø8, ø10, ø12, ø14, ø16 mm.
- This reduces the number of collets required.

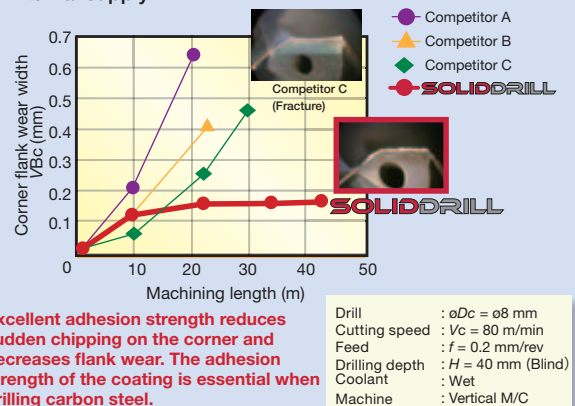
Applicable work materials

P M K N H
Steel Stainless Cast Iron Non-ferrous Hard Materials

Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Solid	Internal	○	-	6, 8, 10, 12, 14, 16	140°
Hole depth		Drill diameter		Approximate accuracy	
< 3 x tool diameter		ø3.0 ~ ø16.0		Hole diameter (IT) 9 ~ 10 Roughness (RzJIS): 6.3 ~ 25	

Drilling of carbon steel, S45C / C45 (220HB)

Internal supply





Small diameter drilling

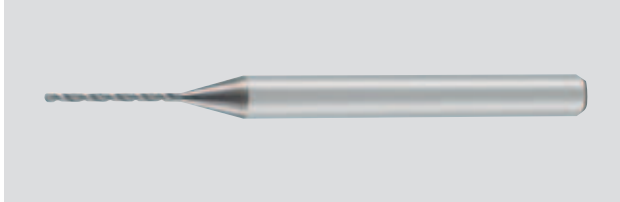
DSM

▶ 11-45

Applicable work materials



Giga Mini Drills



Features

Highly tough tool material and rigid tool geometry

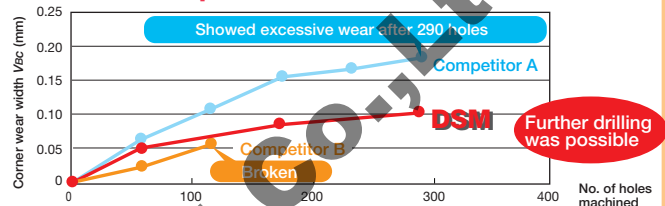
- Allows stable drilling for extra small diameter ($\phi 0.1$ to $\phi 3.0$ mm) where tool breakage is likely to occur.
- Web thinning in spite of small diameter drills assures accurate hole positioning.

Dedicated coating for small diameter drilling

- Machinable number of holes is 1.5 to 2 times higher than competitor drills.
- Tool life improvements when machining stainless steel and Kovar.

Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Solid	External	○	30°	3 mm	140°
Hole depth		Drill diameter		Approximate accuracy	
< 3-15 X tool diameter		$\phi 0.10 \sim \phi 3.00$		Hole diameter (IT) 9-10	

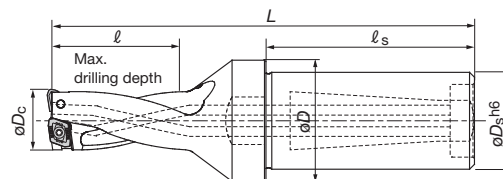
● Tool life comparison



● Cutting conditions

Drill diameter	: $\phi 3.0$ mm	Cutting speed	: $V_c = 52$ m/min
Work material	: Carbon steel (JIS S45C)	Feed	: $f = 0.06$ mm/rev
Machine	: Vertical machining center	Step length	: 0.75 mm
Coolant	: Water soluble type	Drilling depth	: 15 mm (blind hole)

The DSM drill showed less wear and could continue further drilling.



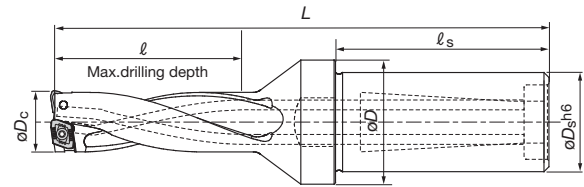
Please take note that the new TDX type differs from the older TDX type in the total length (L) of drill.

L/D = 2

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)					Max offset	Applicable inserts	Clamping screw	Torx driver
			øDs	øD	ℓ	ℓs	L				
12.5	TDX125W20-2	●	20	25	25	43	87.5	0.8	XPMT040104R-D*	CSTB-2	T-6D
13.0	TDX130W20-2	●			26		89.0	0.7			
13.5	TDX135W20-2	●			27		90.5	0.5			
14.0	TDX140W20-2	●			28		92.0	0.4			
14.5	TDX145W20-2	●			29		93.5	0.3			
15.0	TDX150W20-2	●			30		95.0	0.9			
15.5	TDX155W20-2	●		32	31		96.5	0.8	XPMT050204R-D*	CSTB-2L040	T-6D
16.0	TDX160W20-2	●			32		98.0	0.6			
16.5	TDX165W20-2	●			33		99.5	0.5			
17.0	TDX170W20-2	●			34		101.0	0.4			
17.5	TDX175W25-2	●	25	32	35	50	109.5	1.2	XPMT06X308R-D*	CSTB-2.2R	T-7D
18.0	TDX180W25-2	●			36		111.0	1.1			
18.5	TDX185W25-2	●			37		112.5	0.9			
19.0	TDX190W25-2	●			38		114.0	0.8			
19.5	TDX195W25-2	●			39		115.5	0.7			
20.0	TDX200W25-2	●			40		117.0	0.5			
20.5	TDX205W25-2	●			41		118.5	0.4			
21.0	TDX210W25-2	●			42		120.0	0.3			
21.5	TDX215W25-2	●			43		121.5	0.2			
22.0	TDX220W25-2	●			44		123.0	1.2	XPMT07H308R-D*	CSTB-2.5	T-8D
22.5	TDX225W25-2	●	32	40	45	55	124.5	1.1			
23.0	TDX230W25-2	●			46		126.0	0.9			
23.5	TDX235W25-2	●			47		127.5	0.8			
24.0	TDX240W25-2	●			48		129.0	0.7			
24.5	TDX245W25-2	●			49		130.5	0.5			
25.0	TDX250W25-2	●			50		132.0	0.4			
25.5	TDX255W25-2	●			51		133.5	0.3			
26.0	TDX260W25-2	●			52		135.0	0.2			
27.0	TDX270W32-2	●	32	40	54	55	143.0	1.5	XPMT08T308R-D*	CSTB-3	T-9D
28.0	TDX280W32-2	●			56		146.0	1.2			
29.0	TDX290W32-2	●			58		149.0	1.0			
30.0	TDX300W32-2	●			60		152.0	0.7			
31.0	TDX310W32-2	●			62		155.0	0.4			
32.0	TDX320W32-2	●			64		158.0	0.2			
33.0	TDX330W40-2	●	40	50	66	65	171.0	2.3	XPMT110412R-D*	CSTB-4	T-15D
34.0	TDX340W40-2	●			68		174.0	2.1			
35.0	TDX350W40-2	●			70		177.0	1.8			
36.0	TDX360W40-2	●			72		180.0	1.5			
37.0	TDX370W40-2	●			74		183.0	1.3			
38.0	TDX380W40-2	●			76		186.0	1.0			
39.0	TDX390W40-2	●			78		189.0	0.7			
40.0	TDX400W40-2	●			80		192.0	0.5			
41.0	TDX410W40-2	●			82		195.0	0.2			
42.0	TDX420W40-2	●	40	55	84	65	198.0	3.1	XPMT150512R-D*	CSTB-5	T-20D
43.0	TDX430W40-2	●			86		201.0	2.9			
44.0	TDX440W40-2	●			88		204.0	2.6			
45.0	TDX450W40-2	●			90		207.0	2.3			
46.0	TDX460W40-2	●			92		210.0	2.1			
47.0	TDX470W40-2	●			94		213.0	1.8			
48.0	TDX480W40-2	●			96		216.0	1.5			
49.0	TDX490W40-2	●			98		219.0	1.3			
50.0	TDX500W40-2	●			100		222.0	1.0			
51.0	TDX510W40-2	●			102		225.0	0.7			
52.0	TDX520W40-2	●	40	55	104	65	228.0	0.5	XPMT150512R-D*	CSTB-5	T-20D
53.0	TDX530W40-2	●			106		231.0	-			
54.0	TDX540W40-2	●			108		234.0	-			



Note: L/D = Hole depth / Drill diameter

● : Stocked items.



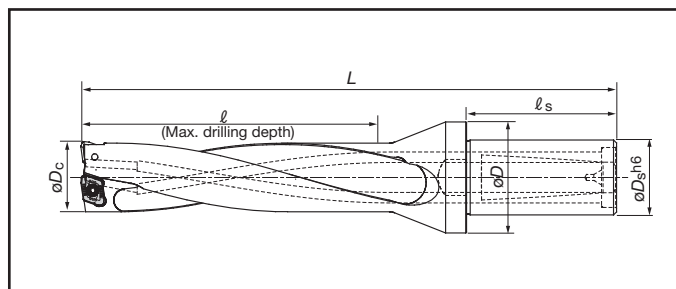
Please take note that new TDX type differs from old TDX type in the total length (L) of drill

L/D = 3

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)					Max offset	Applicable inserts	 Clamping screw	 Torx driver	
			øDs	øD	ℓ	ℓs	L					
12.5	TDX125W20-3	●	20	25	37.5	43	100	0.8	XPMT040104R-D*	CSTB-2	T-6D	
13.0	TDX130W20-3	●			39		102	0.7				
13.5	TDX135W20-3	●			40.5		104	0.5				
14.0	TDX140W20-3	●			42		106	0.4				
14.5	TDX145W20-3	●			43.5		108	0.3				
15.0	TDX150W20-3	●		45	110	0.9	XPMT050204R-D*	CSTB-2L040	T-6D			
15.5	TDX155W20-3	●		46.5	112	0.8						
16.0	TDX160W20-3	●		48	114	0.6						
16.5	TDX165W20-3	●		49.5	116	0.5						
17.0	TDX170W20-3	●		51	118	0.4						
17.5	TDX175W25-3	●	25	32	52.5	50	127	1.2	XPMT06X308R-D*	CSTB-2.2R	T-7D	
18.0	TDX180W25-3	●			54		129	1.1				
18.5	TDX185W25-3	●			55.5		131	0.9				
19.0	TDX190W25-3	●			57		133	0.8				
19.5	TDX195W25-3	●			58.5		135	0.7				
20.0	TDX200W25-3	●		60	137	0.5	XPMT07H308R-D*	CSTB-2.5	T-8D			
20.5	TDX205W25-3	●		61.5	139	0.4						
21.0	TDX210W25-3	●		63	141	0.3						
21.5	TDX215W25-3	●		64.5	143	0.2						
22.0	TDX220W25-3	●		66	145	1.2						
22.5	TDX225W25-3	●	37	67.5	50	147	1.1	XPMT08T308R-D*	CSTB-3	T-9D		
23.0	TDX230W25-3	●		69		149	0.9					
23.5	TDX235W25-3	●		70.5		151	0.8					
24.0	TDX240W25-3	●		72		153	0.7					
24.5	TDX245W25-3	●		73.5		155	0.5					
25.0	TDX250W25-3	●	32	40	75	55	157	0.4	XPMT110412R-D*	CSTB-4	T-15D	
25.5	TDX255W25-3	●			76.5		159	0.3				
26.0	TDX260W25-3	●			78		161	0.2				
27.0	TDX270W32-3	●			81		170	1.5				
28.0	TDX280W32-3	●			84		174	1.2				
29.0	TDX290W32-3	●		87	178	1.0	XPMT150512R-D*	CSTB-5	T-20D			
30.0	TDX300W32-3	●		90	182	0.7						
31.0	TDX310W32-3	●		93	186	0.4						
32.0	TDX320W32-3	●		96	190	0.2						
33.0	TDX330W40-3	●		99	204	2.3						
34.0	TDX340W40-3	●	50	102	65	208	2.1	XPMT150512R-D*	CSTB-5	T-20D		
35.0	TDX350W40-3	●		105		212	1.8					
36.0	TDX360W40-3	●		108		216	1.5					
37.0	TDX370W40-3	●		111		220	1.3					
38.0	TDX380W40-3	●		114		224	1.0					
39.0	TDX390W40-3	●		117		228	0.7					
40.0	TDX400W40-3	●		120		232	0.5					
41.0	TDX410W40-3	●		123		236	0.2					
42.0	TDX420W40-3	●		55		126	65				240	3.1
43.0	TDX430W40-3	●				129					244	2.9
44.0	TDX440W40-3	●	132		248	2.6						
45.0	TDX450W40-3	●	135		252	2.3						
46.0	TDX460W40-3	●	138		256	2.1						
47.0	TDX470W40-3	●	141		260	1.8						
48.0	TDX480W40-3	●	144		264	1.5						
49.0	TDX490W40-3	●	147		268	1.3						
50.0	TDX500W40-3	●	150		272	1.0						
51.0	TDX510W40-3	●	153		276	0.7						
52.0	TDX520W40-3	●	40	156	65	280	0.5	XPMT150512R-D*	CSTB-5	T-20D		
53.0	TDX530W40-3	●		159		284	-					
54.0	TDX540W40-3	●		162		288	-					

Note: L/D = Hole depth / Drill diameter

● : Stocked items.

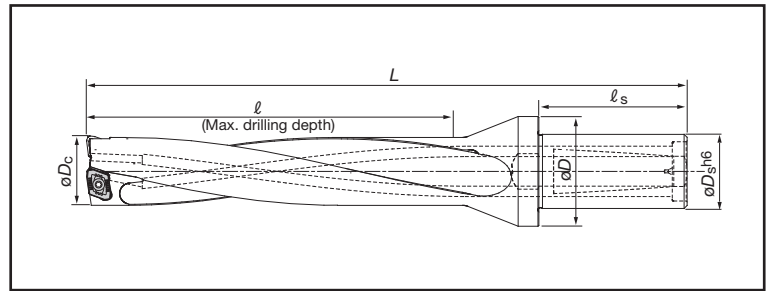


L/D = 4

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)					Max offset	Applicable inserts	Clamping screw	Torx driver
			øDs	øD	l	l _s	L				
12.5	TDX125W20-4	●	20	25	50	43	116	0.8	XPMT040104R-D*	CSTB-2	T-6D
13.0	TDX130W20-4	●			52		118	0.7			
13.5	TDX135W20-4	●			54		121	0.5			
14.0	TDX140W20-4	●			56		123	0.4			
14.5	TDX145W20-4	●			58		125	0.3			
15.0	TDX150W20-4	●			60		128	0.9			
15.5	TDX155W20-4	●		32	62		130	0.8	XPMT050204R-D*	CSTB-2L040	T-6D
16.0	TDX160W20-4	●			64		132	0.6			
16.5	TDX165W20-4	●			66		135	0.5			
17.0	TDX170W20-4	●			68		137	0.4			
17.5	TDX175W25-4	●	25	32	70	50	148	1.2	XPMT06X308R-D*	CSTB-2.2R	T-7D
18.0	TDX180W25-4	●			72		150	1.1			
18.5	TDX185W25-4	●			74		152	0.9			
19.0	TDX190W25-4	●			76		154	0.8			
19.5	TDX195W25-4	●			78		157	0.7			
20.0	TDX200W25-4	●			80		160	0.5			
20.5	TDX205W25-4	●			82		162	0.4			
21.0	TDX210W25-4	●			84		164	0.3			
21.5	TDX215W25-4	●			86		166	0.2			
22.0	TDX220W25-4	●			88		169	1.2	XPMT07H308R-D*	CSTB-2.5	T-8D
22.5	TDX225W25-4	●	32	40	90	55	171	1.1			
23.0	TDX230W25-4	●			92		173	0.9			
23.5	TDX235W25-4	●			94		175	0.8			
24.0	TDX240W25-4	●			96		178	0.7			
24.5	TDX245W25-4	●			98		181	0.5			
25.0	TDX250W25-4	●			100		183	0.4			
25.5	TDX255W25-4	●			102		185	0.3			
26.0	TDX260W25-4	●			104		187	0.2			
27.0	TDX270W32-4	●			108		198	1.5	XPMT08T308R-D*	CSTB-3	T-9D
28.0	TDX280W32-4	●	32	40	112		203	1.2			
29.0	TDX290W32-4	●			116		208	1.0			
30.0	TDX300W32-4	●			120		213	0.7			
31.0	TDX310W32-4	●			124		217	0.4			
32.0	TDX320W32-4	●	40	50	128	65	222	0.2	XPMT110412R-D*	CSTB-4	T-15D
33.0	TDX330W40-4	●			132		238	2.3			
34.0	TDX340W40-4	●			136		243	2.1			
35.0	TDX350W40-4	●			140		248	1.8			
36.0	TDX360W40-4	●			144		252	1.5			
37.0	TDX370W40-4	●			148		258	1.3			
38.0	TDX380W40-4	●			152		262	1.0			
39.0	TDX390W40-4	●			156		267	0.7			
40.0	TDX400W40-4	●			160		272	0.5			
41.0	TDX410W40-4	●			164		277	0.2	XPMT150512R-D*	CSTB-5	T-20D
42.0	TDX420W40-4	●	40	55	168		282	3.1			
43.0	TDX430W40-4	●			172		287	2.9			
44.0	TDX440W40-4	●			176		292	2.6			
45.0	TDX450W40-4	●			180		296	2.3			
46.0	TDX460W40-4	●			184		302	2.1			
47.0	TDX470W40-4	●			188		306	1.8			
48.0	TDX480W40-4	●			192		311	1.5			
49.0	TDX490W40-4	●			196		316	1.3			
50.0	TDX500W40-4	●			200		320	1.0			
51.0	TDX510W40-4	●	50	60	204	70	325	0.7	XPMT150512R-D*	CSTB-5	T-20D
52.0	TDX520W40-4	●			208		330	0.5			
53.0	TDX530W40-4	●			212		335	-			
54.0	TDX540W40-4	●			216		339	-			

Note: L/D = Hole depth / Drill diameter

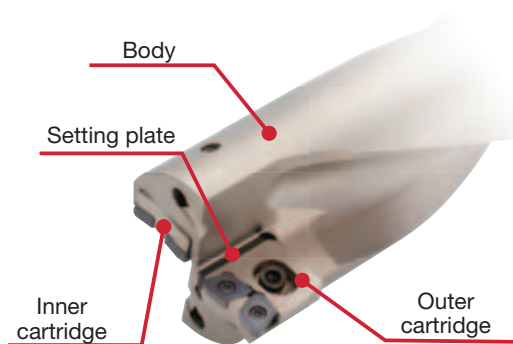
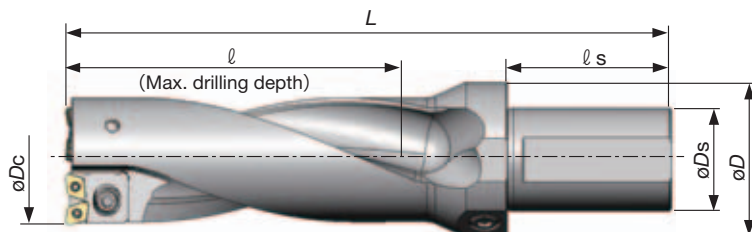
● : Stocked items.


L/D = 5

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)					Max offset	Applicable inserts	Clamping screw 	Torx driver
			øDs	øD	l	l _s	L				
12.5	TDX125W20-5	●	20	25	62.5	43	128	0.8	XPMT040104R-D*	CSTB-2	T-6D
13.0	TDX130W20-5	●			65.0		131	0.7			
13.5	TDX135W20-5	●			67.5		134	0.5			
14.0	TDX140W20-5	●			70.0		137	0.4			
14.5	TDX145W20-5	●			72.5		140	0.3			
15.0	TDX150W20-5	●			75.0		143	0.9			
15.5	TDX155W20-5	●			77.5		146	0.8			
16.0	TDX160W20-5	●			80.0		148	0.6			
16.5	TDX165W20-5	●	25	32	82.5	50	152	0.5	XPMT050204R-D*	CSTB-2L040	T-6D
17.0	TDX170W20-5	●			85.0		154	0.4			
17.5	TDX175W25-5	●			87.5		165	1.2			
18.0	TDX180W25-5	●			90.0		168	1.1			
18.5	TDX185W25-5	●			92.5		171	0.9			
19.0	TDX190W25-5	●			95.0		173	0.8			
19.5	TDX195W25-5	●			97.5		176	0.7			
20.0	TDX200W25-5	●			100.0		180	0.5			
20.5	TDX205W25-5	●			102.5		182	0.4			
21.0	TDX210W25-5	●			105.0		185	0.3			
21.5	TDX215W25-5	●			107.5		188	0.2			
22.0	TDX220W25-5	●			110.0		191	1.2			
22.5	TDX225W25-5	●	32	40	112.5	55	193	1.1	XPMT06X308R-D*	CSTB-2.2R	T-7D
23.0	TDX230W25-5	●			115.0		196	0.9			
23.5	TDX235W25-5	●			117.5		199	0.8			
24.0	TDX240W25-5	●			120.0		202	0.7			
24.5	TDX245W25-5	●			122.5		205	0.5			
25.0	TDX250W25-5	●			125.0		208	0.4			
25.5	TDX255W25-5	●			127.5		211	0.3			
26.0	TDX260W25-5	●			130		213	0.2			
27.0	TDX270W32-5	●			135		225	1.5			
28.0	TDX280W32-5	●			140		231	1.2			
29.0	TDX290W32-5	●			145		237	1.0			
30.0	TDX300W32-5	●			150		243	0.7			
31.0	TDX310W32-5	●	40	50	155	65	248	0.4	XPMT07H308R-D*	CSTB-2.5	T-8D
32.0	TDX320W32-5	●			160		254	0.2			
33.0	TDX330W40-5	●			165		271	2.3			
34.0	TDX340W40-5	●			170		277	2.1			
35.0	TDX350W40-5	●			175		283	1.8			
36.0	TDX360W40-5	●			180		288	1.5			
37.0	TDX370W40-5	●			185		295	1.3			
38.0	TDX380W40-5	●			190		300	1.0			
39.0	TDX390W40-5	●			195		306	0.7			
40.0	TDX400W40-5	●			200		312	0.5			
41.0	TDX410W40-5	●			205		318	0.2			
42.0	TDX420W40-5	●	50	55	210	65	324	3.1	XPMT110412R-D*	CSTB-3	T-9D
43.0	TDX430W40-5	●			215		330	2.9			
44.0	TDX440W40-5	●			220		336	2.6			
45.0	TDX450W40-5	●			225		341	2.3			
46.0	TDX460W40-5	●			230		348	2.1			
47.0	TDX470W40-5	●			235		353	1.8			
48.0	TDX480W40-5	●			240		359	1.5			
49.0	TDX490W40-5	●			245		365	1.3			
50.0	TDX500W40-5	●			250		370	1.0			
51.0	TDX510W40-5	●			255		376	0.7			
52.0	TDX520W40-5	●			260		382	0.5			
53.0	TDX530W40-5	●	55	65	265		388	-	XPMT150512R-D*	CSTB-4	T-15D
54.0	TDX540W40-5	●			270		393	-			

Note: L/D = Hole depth / Drill diameter

● : Stocked items.



Cat. No.	Stock	Dimensions (mm)						Weight (kg)	Outer cartridge	Inner cartridge	Setting plate		Applicable inserts
		ϕD_c	ϕD_s	ϕD	l	l_s	L				Cat. No.	(mm)	
TDX55-56F50-2.5	●	55	50	75	140	80	260	3.2	TDX08CA-P0	TDX08CA-C0	-	-	XPMT08T308R-**
		56									AP0801	0.5	
TDX57-62F50-2.5	●	57	50	75	155	80	280	3.6	TDX08CA-P1	TDX08CA-C1	-	-	XPMT08T308R-**
		58									AP0801	0.5	
		59									AP0802	1.0	
		60									AP0803	1.5	
		61									AP0804	2.0	
		62									AP0805	2.5	
TDX63-66F50-2.5	●	63	50	75	165	80	295	4.2	TDX08CA-P2	TDX08CA-C2	-	-	XPMT08T308R-**
		64									AP0801	0.5	
		65									AP0802	1.0	
		66									AP0803	1.5	
TDX67-73F50-2.5	●	67	50	75	183	80	320	5.0	TDX11CA-P1	TDX11CA-C1	-	-	XPMT110412R-**
		68									AP1101	0.5	
		69									AP1102	1.0	
		70									AP1103	1.5	
		71									AP1104	2.0	
		72									AP1105	2.5	
		73									AP1106	3.0	
TDX74-80F50-2.5	●	74	50	75	200	80	330	5.7	TDX11CA-P2	TDX11CA-C2	-	-	XPMT110412R-**
		75									AP1101	0.5	
		76									AP1102	1.0	
		77									AP1103	1.5	
		78									AP1104	2.0	
		79									AP1105	2.5	
		80									AP1106	3.0	

●: Stocked items

Replacement Parts

Cat. No.	Screws				Washer	Wrenches				
	For cartridge (Inner, outer)	For setting plate	For insert	For sideport		For cartridge (Inner, outer)	For setting plate	For insert	For sideport	
TDX55-56F50-2.5	CM5x0.8x12	CSTB-3	CSTB-3	PT1/4GN	5.3x10x1	P-4	T-9D	T-9D	P-6	
TDX57-62F50-2.5					6.4x12.5x1.6	P-5				
TDX63-66F50-2.5	CM6x15		CSTB-4			T-15D				
TDX67-73F50-2.5	CM6x16									
TDX74-80F50-2.5	CM6x16									

Inserts

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DJ chipbreaker	Cat. No.	Stocked grades			Dimensions (mm)					Applicable drill diameters ϕD_c (mm)
		PREMIUMTEC NEW AH725	AH740	PREMIUMTEC NEW T1115	A	B	T	ϕd	r_ϵ	
	XPMT040104R-DJ	●	●	●	4.3	4.5	1.59	2.3	0.4	$\phi 12.5 \sim \phi 14.5$
	XPMT050204R-DJ	●	●	●	5.2	5.4	2.38	2.3	0.4	$\phi 15.0 \sim \phi 17.0$
	XPMT06X308R-DJ	●	●	●	6.0	7.0	3.00	2.5	0.8	$\phi 17.5 \sim \phi 21.5$
	XPMT07H308R-DJ	●	●	●	7.0	8.2	3.60	2.8	0.8	$\phi 22.0 \sim \phi 26.0$
	XPMT08T308R-DJ	●	●	●	8.5	9.9	3.97	3.4	0.8	$\phi 27.0 \sim \phi 32.0$
	XPMT110412R-DJ	●	●	●	11.2	12.5	4.76	4.4	1.2	$\phi 33.0 \sim \phi 41.0$
	XPMT150512R-DJ	●	●	●	15.0	16.1	5.56	5.5	1.2	$\phi 42.0 \sim \phi 54.0$

DS chipbreaker	Cat. No.	Stocked grades			Dimensions (mm)					Applicable drill diameters ϕD_c (mm)
		PREMIUMTEC NEW AH725	AH120		A	B	T	ϕd	r_ϵ	
	XPMT040104R-DS	●	●		4.3	4.5	1.59	2.3	0.4	$\phi 12.5 \sim \phi 14.5$
	XPMT050204R-DS	●	●		5.2	5.4	2.38	2.3	0.4	$\phi 15.0 \sim \phi 17.0$
	XPMT06X308R-DS	●	●		6.0	7.0	3.00	2.5	0.8	$\phi 17.5 \sim \phi 21.5$
	XPMT07H308R-DS	●	●		7.0	8.2	3.60	2.8	0.8	$\phi 22.0 \sim \phi 26.0$
	XPMT08T308R-DS	●	●		8.5	9.9	3.97	3.4	0.8	$\phi 27.0 \sim \phi 32.0$
	XPMT110412R-DS	●	●		11.2	12.5	4.76	4.4	1.2	$\phi 33.0 \sim \phi 41.0$
	XPMT150512R-DS	●	●		15.0	16.1	5.56	5.5	1.2	$\phi 42.0 \sim \phi 54.0$

DW chipbreaker	Cat. No.	Stocked grades			Dimensions (mm)					Applicable drill diameters ϕD_c (mm)
		PREMIUMTEC NEW AH725	AH740	AH120	A	B	T	ϕd	r_ϵ	
	XPMT040104R-DW	●	●	●	4.3	4.5	1.59	2.3	0.4	$\phi 12.5 \sim \phi 14.5$
	XPMT050204R-DW	●	●	●	5.2	5.4	2.38	2.3	0.4	$\phi 15.0 \sim \phi 17.0$
	XPMT06X308R-DW	●	●	●	6.0	7.0	3.00	2.5	0.8	$\phi 17.5 \sim \phi 21.5$
	XPMT07H308R-DW	●	●	●	7.0	8.2	3.60	2.8	0.8	$\phi 22.0 \sim \phi 26.0$
	XPMT08T308R-DW	●	●	●	8.5	9.9	3.97	3.4	0.8	$\phi 27.0 \sim \phi 32.0$
	XPMT110412R-DW	●	●	●	11.2	12.5	4.76	4.4	1.2	$\phi 33.0 \sim \phi 41.0$
	XPMT150512R-DW	●	●	●	15.0	16.1	5.56	5.5	1.2	$\phi 42.0 \sim \phi 54.0$

DG chipbreaker	Cat. No.	Stocked grade	Dimensions (mm)					Applicable drill diameters ϕD_c (mm)
		PREMIUMTEC NEW AH725	A	B	T	ϕd	r_ϵ	
	XPMT08T308R-DG	●	8.5	9.9	3.97	3.4	0.8	$\phi 27.0 \sim \phi 32.0$
	XPMT110412R-DG	●	11.2	12.5	4.76	4.4	1.2	$\phi 33.0 \sim \phi 41.0$
	XPMT150512R-DG	●	15.0	16.1	5.56	5.5	1.2	$\phi 42.0 \sim \phi 54.0$

● : Stocked items

Recommended inserts

Drill dia. ϕD_c : $\phi 12.5 \sim \phi 54.0$

Work materials	First choice	High feed	High speed	Troubleshooting			
				Breakage	Wear	Surface finish	Chip control
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (st42-1, St52-3, C25 etc.)	DS, AH725			DW, AH725		DW, AH120	DG, AH725
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	DJ, AH725	DW, AH725	DS, AH120	DW, AH725	DJ, T1115	DW, AH725	
Low alloy steels SCM415 etc.	DS, AH725			DW, AH725		DW, AH725	
Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	DJ, AH725	DW, AH725	DS, AH120	DW, AH725	DJ, T1115	DW, AH725	
Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	DS, AH725			DS, AH120		DW, AH120	DG, AH725
Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	DS, AH725			DS, AH120		DW, AH120	
Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	DS, AH725			DS, AH120		DW, AH120	
Grey cast irons FC250 etc. (GG25 etc.)	DJ, T1115	DJ, AH725		DJ, AH725		DW, AH740	
Ductile cast irons FCD700 etc. (GGG70 etc.)	DJ, T1115	DJ, AH725		DJ, AH725		DW, AH740	
Aluminium alloys A2017, ADC12 etc.	DW, AH725						

Standard cutting conditions

Work materials	Cutting Speed Vc (m/min)	Series L/D	Feed: f (mm/rev)				
			$\phi 12.5 \sim \phi 14.5$	$\phi 15.0 \sim \phi 17.0$	$\phi 17.5 \sim \phi 26.0$	$\phi 27.0 \sim \phi 32.0$	$\phi 33.0 \sim \phi 54.0$
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (st42-1, St52-3, C25 etc.)	240 (160 - 320)	2D, 3D	0.04 (0.02-0.06)	0.04 (0.02-0.06)	0.07 (0.04-0.10)	0.07 (0.04-0.10)	0.07 (0.04-0.10)
		4D, 5D	0.04 (0.02-0.06)	0.04 (0.02-0.06)	0.07 (0.04-0.10)	0.07 (0.04-0.10)	0.07 (0.04-0.10)
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	140 (80 - 250)	2D, 3D	0.07 (0.04-0.10)	0.08 (0.04-0.12)	0.10 (0.06-0.13)	0.11 (0.06-0.15)	0.13 (0.08-0.18)
		4D, 5D	0.06 (0.04-0.08)	0.06 (0.04-0.08)	0.08 (0.06-0.10)	0.09 (0.06-0.12)	0.11 (0.08-0.14)
Low alloy steels SCM415 etc.	210 (160 - 250)	2D, 3D	0.06 (0.04-0.08)	0.06 (0.04-0.08)	0.09 (0.06-0.12)	0.09 (0.06-0.12)	0.10 (0.06-0.14)
		4D, 5D	0.06 (0.04-0.08)	0.06 (0.04-0.08)	0.09 (0.06-0.12)	0.09 (0.06-0.12)	0.10 (0.06-0.14)
Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	140 (80 - 200)	2D, 3D	0.07 (0.04-0.10)	0.08 (0.04-0.12)	0.10 (0.06-0.13)	0.11 (0.06-0.15)	0.13 (0.08-0.18)
		4D, 5D	0.06 (0.04-0.08)	0.06 (0.04-0.08)	0.08 (0.06-0.10)	0.09 (0.06-0.12)	0.11 (0.08-0.14)
Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	150 (100 - 200)	2D, 3D	0.05 (0.02-0.08)	0.05 (0.02-0.08)	0.07 (0.04-0.10)	0.08 (0.04-0.12)	0.08 (0.04-0.12)
		4D, 5D	0.05 (0.02-0.08)	0.05 (0.02-0.08)	0.07 (0.04-0.10)	0.08 (0.04-0.12)	0.08 (0.04-0.12)
Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	160 (100 - 220)	2D, 3D	0.05 (0.02-0.08)	0.05 (0.02-0.08)	0.07 (0.04-0.10)	0.08 (0.04-0.12)	0.08 (0.04-0.12)
		4D, 5D	0.05 (0.02-0.08)	0.05 (0.02-0.08)	0.07 (0.04-0.10)	0.08 (0.04-0.12)	0.08 (0.04-0.12)
Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	100 (80 - 120)	2D, 3D	0.06 (0.04-0.08)	0.06 (0.04-0.08)	0.06 (0.04-0.08)	0.07 (0.04-0.10)	0.08 (0.06-0.10)
		4D, 5D	0.06 (0.04-0.08)	0.06 (0.04-0.08)	0.06 (0.04-0.08)	0.07 (0.04-0.10)	0.08 (0.06-0.10)
Grey cast irons FC250 etc. (GG25 etc.)	170 (80 - 250)	2D, 3D	0.09 (0.06-0.12)	0.09 (0.06-0.12)	0.11 (0.06-0.15)	0.12 (0.06-0.18)	0.14 (0.08-0.20)
		4D, 5D	0.08 (0.06-0.10)	0.08 (0.06-0.10)	0.09 (0.06-0.12)	0.10 (0.06-0.14)	0.12 (0.08-0.16)
Ductile cast irons FCD700 etc. (GGG70 etc.)	140 (80 - 200)	2D, 3D	0.08 (0.04-0.12)	0.08 (0.04-0.12)	0.11 (0.06-0.15)	0.12 (0.06-0.18)	0.14 (0.08-0.20)
		4D, 5D	0.07 (0.04-0.10)	0.07 (0.04-0.10)	0.09 (0.06-0.12)	0.10 (0.06-0.14)	0.12 (0.08-0.16)
Aluminium alloys A2017, ADC12 etc.	300 (200 - 400)	2D, 3D	0.11 (0.10-0.12)	0.12 (0.10-0.15)	0.18 (0.15-0.20)	0.18 (0.15-0.20)	0.20 (0.15-0.25)
		4D, 5D	0.10 (0.08-0.12)	0.10 (0.08-0.12)	0.14 (0.12-0.16)	0.14 (0.12-0.16)	0.16 (0.12-0.20)

NEW Standard cutting conditions for DG type chipbreaker

Work materials	Cutting Speed Vc (m/min)	Series L/D	Feed: f (mm/rev)	
			$\phi 27.0 \sim \phi 32.0$	$\phi 33.0 \sim \phi 54.0$
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (st42-1, St52-3, C25 etc.)	100 (60 - 180)	2D, 3D 4D, 5D	0.07 (0.04-0.10)	

- When using the smaller side of the diameter range, the feed rate should be set lower.
- For work materials of 40 HRC, the feed rate should be set below 50%.
- For difficult-to-cut materials (heat-resistant alloys, etc.), the cutting speed should be set 25% below that of carbon steels.
- For high-feed machining, apply a feed rate that is

- approximately 1.5 times the standard feed conditions.
- High speed machining means cutting speeds over 150 m/min.
- When using DW insert for troubleshooting, use it within the range of standard cutting conditions.
- DG type chipbreaker is suitable for heavy machines that have low-rpm spindles. If chatter occurs, a lower feed rate is recommended.

Recommended inserts

Drill dia. ϕD_c : $\phi 55 \sim \phi 80$

Work materials	First choice	High feed	High speed	Troubleshooting		
				Breakage	Wear	Surface finish
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	DS, AH725		DJ, AH725	DS, AH120		DW, AH725
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	DJ, AH725	DW, AH725	DJ, AH725	DW, AH740	DJ, T1115	DW, AH725
Low alloy steels SCM415 etc. (15CrMo5 etc.)	DS, AH725		DJ, AH725	DS, AH120		DW, AH725
Alloy steels SCM440, SCR420 etc. (42CrMo4, 20Cr4 etc.)	DJ, AH725	DW, AH725	DJ, AH725	DW, AH740	DJ, T1115	DW, AH725
Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	DS, AH725		DS, AH725	DS, AH120		DW, AH725
Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	DS, AH725		DS, AH725	DS, AH120		DW, AH725
Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	DS, AH725		DS, AH725	DS, AH120		DW, AH725
Grey cast irons FC250 etc. (GG25 etc.)	DJ, AH725	DW, AH725	DJ, T1115	DW, AH740	DJ, T1115	DW, AH725
Ductile cast irons FCD700 etc. (GGG70 etc.)	DJ, AH725	DW, AH725	DJ, T1115	DW, AH740	DJ, T1115	DW, AH725
Aluminium alloys A2017, ADC12 etc.	DW, AH725	DW, AH725	DJ, AH725	DW, AH740		

Standard cutting conditions

Work materials	Cutting speed V_c (m/min)	Feed: f (mm/rev)		
		$\phi 55 \sim \phi 62$	$\phi 63 \sim \phi 73$	$\phi 74 \sim \phi 80$
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	240 (160-320)	0.07 (0.04-0.10)	0.07 (0.04-0.10)	0.07 (0.04-0.10)
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	140 (80-250)	0.13 (0.08-0.18)	0.13 (0.08-0.18)	0.15 (0.10-0.20)
Low alloy steels SCM415 etc. (15CrMo5 etc.)	210 (160-250)	0.10 (0.04-0.16)	0.10 (0.04-0.16)	0.10 (0.04-0.16)
Alloy steels SCM440, SCR420 etc. (42CrMo4, 20Cr4 etc.)	140 (80-200)	0.13 (0.08-0.18)	0.13 (0.08-0.18)	0.14 (0.08-0.20)
Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	150 (100-200)	0.08 (0.04-0.12)	0.08 (0.04-0.12)	0.10 (0.06-0.14)
Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	160 (100-200)	0.08 (0.04-0.12)	0.08 (0.04-0.12)	0.10 (0.06-0.14)
Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	100 (80-120)	0.08 (0.04-0.10)	0.08 (0.04-0.10)	0.09 (0.06-0.12)
Grey cast irons FC250 etc. (GG25 etc.)	170 (80-250)	0.14 (0.08-0.20)	0.14 (0.08-0.20)	0.16 (0.10-0.22)
Ductile cast irons FCD700 etc. (GGG70 etc.)	140 (80-200)	0.14 (0.08-0.20)	0.14 (0.08-0.20)	0.16 (0.10-0.22)
Aluminium alloys A2017, ADC12 etc.	300 (200-400)	0.20 (0.15-0.25)	0.20 (0.15-0.25)	0.23 (0.18-0.28)

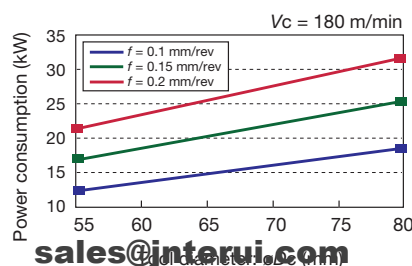
NEW

Standard cutting conditions for DG chipbreaker

Work materials	Cutting speed V_c (m/min)	Feed: f (mm/rev)
		$\phi 55 \sim \phi 80$
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	100 (60 - 180)	0.07 (0.04-0.10)

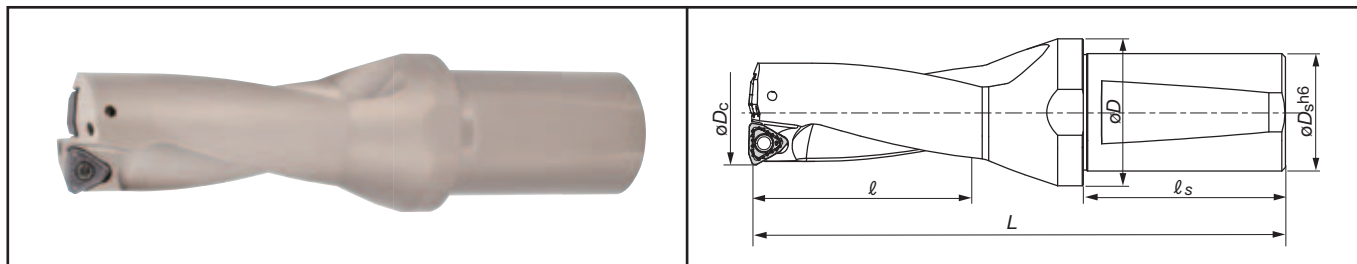
Caution Machine

- Use drills on a fully covered machine to maintain safety.
- Use drills on a high powered machine such as a BT50.
- Figure on right shows reference of required machine power.



Cutting coolant

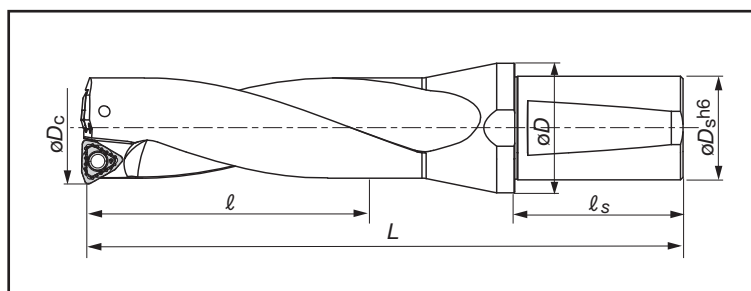
- Use water soluble type coolant with internal supply.
- Coolant pressure higher than 1MPa is essential.



L/D = 2

Cat. No	Stock	Dimensions (mm)						Max Offset (Radius)	Weight (kg)	Applicable inserts	Clamping screw	Torx driver
		øDc	øDs	øD	ℓ	ℓs	L					
TDS280W32-2	●	28	32	40	56	55	145	1.3	0.6	WWMU08X408R-DJ	CSTB-3	T-9D
TDS290W32-2	●	29			58		148	1.1	0.7			
TDS300W32-2	●	30			60		151	0.8	0.7			
TDS310W32-2	●	31			62		154	0.5	0.7			
TDS320W32-2	●	32			64		157	0.2	0.8			
TDS330W40-2	●	33	40	50	66	65	170	1.7	1.2	WWMU09X510R-DJ	CSTB-4	T-15D
TDS340W40-2	●	34			68		173	1.4	1.2			
TDS350W40-2	●	35			70		176	1.2	1.2			
TDS360W40-2	●	36			72		179	0.9	1.3			
TDS370W40-2	●	37			74		182	0.7	1.3			
TDS380W40-2	●	38			76		185	0.4	1.3			
TDS390W40-2	●	39	40	50	78	65	188	2.2	1.4	WWMU11X512R-DJ	CSTB-5	T-20D
TDS400W40-2	●	40			80		191	1.9	1.4			
TDS410W40-2	●	41			82		194	1.7	1.5			
TDS420W40-2	●	42			84		197	1.5	1.6			
TDS430W40-2	●	43		55	86		200	1.3	1.6			
TDS440W40-2	●	44			88		203	1	1.7			
TDS450W40-2	●	45			90		206	0.7	1.7			
TDS460W40-2	●	46			92		209	0.4	1.8			
TDS470W40-2	●	47		55	94		212	2.6	1.9			
TDS480W40-2	●	48			96		215	2.4	1.9			
TDS490W40-2	●	49			98		218	2.2	1.9			
TDS500W40-2	●	50			100	65	221	2	2.0	WWMU13X512R-DJ	CSTB-5	T-20D
TDS510W40-2	●	51			102		224	1.7	2.1			
TDS520W40-2	●	52			104		227	1.5	2.2			
TDS530W40-2	●	53			106		230	1.3	2.3			
TDS540W40-2	●	54			108		233	1	2.4			

● : Stocked items





L/D = 3

Cat. No	Stock	Dimensions (mm)						Max Offset (Radius)	Weight (kg)	Applicable inserts	Clamping screw	Torx driver
		øDc	øDs	øD	ℓ	ℓs	L					
TDS280W32-3	●	28	32	40	84	55	173	1.3	0.7	WWMU08X408R-DJ	CSTB-3	T-9D
TDS290W32-3	●	29			87		177	1.1	0.7			
TDS300W32-3	●	30			90		181	0.8	0.8			
TDS310W32-3	●	31			93		185	0.5	0.8			
TDS320W32-3	●	32			96		189	0.2	0.9			
TDS330W40-3	●	33	40	50	99	65	203	1.7	1.3	WWMU09X510R-DJ	CSTB-4	T-15D
TDS340W40-3	●	34			102		207	1.4	1.3			
TDS350W40-3	●	35			105		211	1.2	1.3			
TDS360W40-3	●	36			108		215	0.9	1.4			
TDS370W40-3	●	37			111		219	0.7	1.4			
TDS380W40-3	●	38			114		223	0.4	1.5			
TDS390W40-3	●	39			117		227	2.2	1.6			
TDS400W40-3	●	40	40	50	120	65	231	1.9	1.6	WWMU11X512R-DJ	CSTB-5	T-20D
TDS410W40-3	●	41			123		235	1.7	1.7			
TDS420W40-3	●	42			126		239	1.5	1.8			
TDS430W40-3	●	43			129		243	1.3	1.8			
TDS440W40-3	●	44		55	132		247	1	1.9			
TDS450W40-3	●	45			135		251	0.7	2.0			
TDS460W40-3	●	46			138		255	0.4	2.1			
TDS470W40-3	●	47			141		259	2.6	2.2			
TDS480W40-3	●	48			144		263	2.4	2.3			
TDS490W40-3	●	49			147		267	2.2	2.3			
TDS500W40-3	●	50	40	55	150	65	271	2	2.4	WWMU13X512R-DJ	CSTB-5	T-20D
TDS510W40-3	●	51			153		275	1.7	2.5			
TDS520W40-3	●	52			156		279	1.5	2.6			
TDS530W40-3	●	53			159		283	1.3	2.7			
TDS540W40-3	●	54			162		287	1	2.9			

● : Stocked items

Inserts

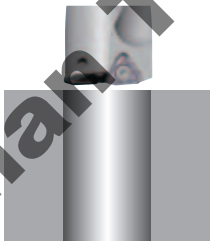
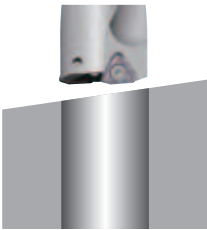
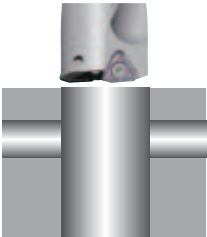

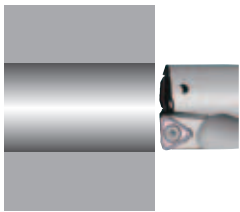
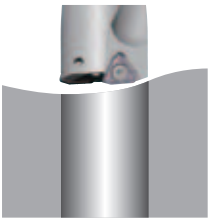
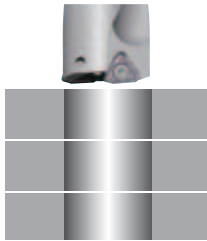

DJ chipbreaker		Cat. No.	Stocked grades	Dimensions (mm)				Applicable drill diameters øDc (mm)
			<div>PREMIUMTEC</div> <div>NEW AH9030</div>	ød	T	ød1	rε	
		WWMU08X408R-DJ	●	8.0	3.9	3.4	0.8	ø28.0 ~ ø32.0
		WWMU09X510R-DJ	●	9.7	4.9	4.4	1.0	ø33.0 ~ ø38.0
		WWMU11X512R-DJ	●	11.3	5.7	5.5	1.2	ø39.0 ~ ø46.0
		WWMU13X512R-DJ	●	13.0	5.7	5.5	1.2	ø47.0 ~ ø54.0

Standard cutting conditions

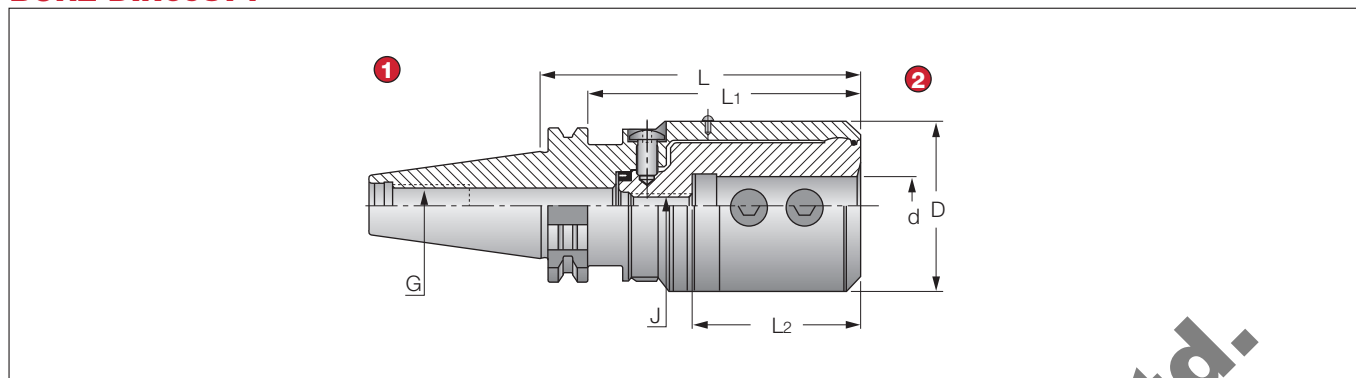
Work materials	Cutting Speed Vc (m/min)	Feed: f (mm/rev)	
		ϕD_c (mm)	
		$\phi 28 \sim \phi 32$	$\phi 33 \sim \phi 54$
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	160 - 320	0.04 - 0.10	0.04 - 0.10
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	80 - 250	0.06 - 0.15	0.08 - 0.18
Low alloy steels SCM415 etc.	160 - 250	0.06 - 0.12	0.06 - 0.14
Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	80 - 200	0.06 - 0.15	0.08 - 0.18
Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	100 - 200	0.04 - 0.12	0.04 - 0.12
Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X6Cr17, X20Cr13 etc.)	100 - 200	0.04 - 0.12	0.04 - 0.12
Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	80 - 120	0.04 - 0.10	0.06 - 0.10
Grey cast irons FC250 etc. (GG25 etc.)	80 - 250	0.06 - 0.18	0.08 - 0.20
Ductile cast irons FCD700 etc. (GGG70 etc.)	80 - 200	0.06 - 0.18	0.08 - 0.20

Application range

In case of Interrupted cutting, feed should be decreased.

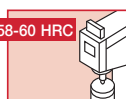
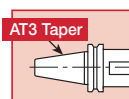
Feed f (mm/rev)	Upper table	0.05	0.05	0.05
Application	OK Plane surface 	OK Slant surface 	OK Cross hole 	OK Plunging 
Feed f (mm/rev)	0.1	0.05	Disapprove	Disapprove
Application	OK Boring 	OK Round surface 	✗ Stacked plate 	✗ Back boring 

BORE DIN69871



1 BORE DIN69871 Form A/B

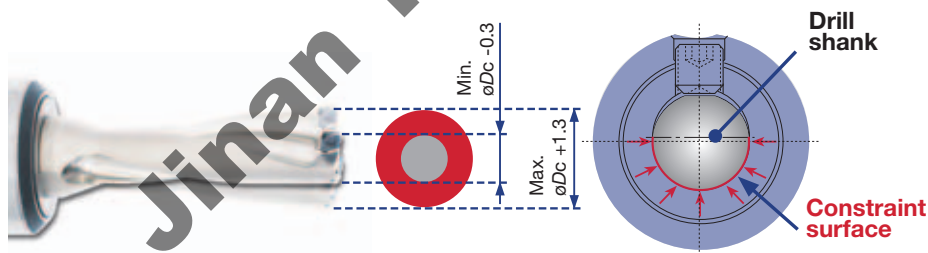
2 ISO 9766



BORE DIN69871 Adjustable Drilling Diameter Holder

Cat. No.	Dimensions (mm)						
	ϕd	ϕD	L	L ₁	L ₂	J	G
TUNGBOREDIN6987140EM16	16	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM20	20	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM25	25	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM32	32	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM40	40	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987150EM16	16	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM20	20	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM25	25	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM32	32	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM40	40	72	115.6	96.5	71	M10	M24

Add B for coolant through the flange.

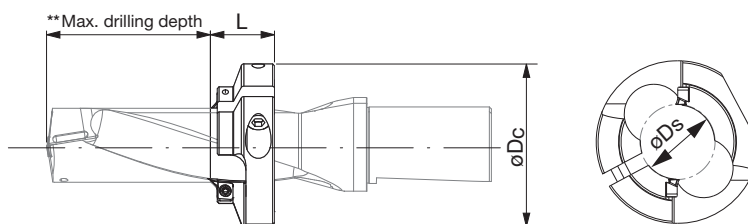


The bore section is actually made from two shifted circular sections. The clamping screw pushes the drill shank through a narrow opening, forcing elastic deformation of the holder. Contact is made around more than 180°, providing a high clamping force.

* Adjustable range of diameter in TDX drill is different by each item.
Therefore, please refer to the maximum offset value shown in TDX drill leaflet.

Chamfering ring

TDXCF



Cat. No.	Stock	Dimensions (mm)				Application drill	**Max. drilling depth (mm)			
		øDs	øDc	L	Tool Dia.		L/D = 2	L/D = 3	L/D = 4	L/D = 5
TDXCF130L25		12.55	49	25	12.5	TDX125W20-*	7.3	19.8	32.3	44.8
					13.0	TDX130W20-*	8.4	21.4	34.4	47.4
TDXCF140L25		13.25	49	25	13.5	TDX135W20-*	9.6	23.1	36.6	50.1
					14.0	TDX140W20-*	10.7	24.7	38.7	52.7
TDXCF150L25		14.25	49	25	14.5	TDX145W20-*	11.9	26.4	40.9	55.4
					15.0	TDX150W20-*	13.0	28.0	43.0	58.0
TDXCF160L25		15.25	49	25	15.5	TDX155W20-*	14.2	29.7	45.2	60.7
					16.0	TDX160W20-*	15.3	31.3	47.3	63.3
TDXCF170L25		16.25	49	25	16.5	TDX165W20-*	16.5	33.0	49.5	66.0
					17.0	TDX170W20-*	17.6	34.6	51.6	68.6
TDXCF180L25	●	17.3	49	25	17.5	TDX175W25-*	18.8	36.3	53.8	71.3
					18.0	TDX180W25-*	19.9	37.9	55.9	73.9
TDXCF190L25	●	18.1	49	25	18.5	TDX185W25-*	21.1	39.6	58.1	76.6
					19.0	TDX190W25-*	22.2	41.2	60.2	79.2
TDXCF200L25	●	19.1	49	25	19.5	TDX195W25-*	23.4	42.9	62.4	81.9
					20.0	TDX200W25-*	24.5	44.5	64.5	84.5
TDXCF210L25	●	20.1	49	25	20.5	TDX205W25-*	25.7	46.2	66.7	87.2
					21.0	TDX210W25-*	26.8	47.8	68.8	89.8
TDXCF220L25	●	21.1	49	25	21.5	TDX215W25-*	28.0	49.5	71.0	92.5
					22.0	TDX220W25-*	29.1	51.1	73.1	95.1
TDXCF230L25	●	22.1	49	25	22.5	TDX225W25-*	30.3	52.8	75.3	97.8
					23.0	TDX230W25-*	31.4	54.4	77.4	100.4
TDXCF240L25	●	23.1	49	25	23.5	TDX235W25-*	32.6	56.1	79.6	103.1
					24.0	TDX240W25-*	33.7	57.7	81.7	105.7
TDXCF250L25	●	23.95	49	25	24.5	TDX245W25-*	34.9	59.4	83.9	108.4
					25.0	TDX250W25-*	36.0	61.0	86.0	111.0
TDXCF260L30	●	24.95	64	30	25.5	TDX255W25-*	32.2	57.7	83.2	108.7
					26.0	TDX260W25-*	33.3	59.3	85.3	111.3
TDXCF270L30	●	25.9	64	30	27.0	TDX270W32-*	35.6	62.6	89.6	116.6
TDXCF280L30	●	26.9	64	30	28.0	TD□280W32-*	37.9	65.9	93.9	121.9
TDXCF290L30	●	27.9	64	30	29.0	TD□290W32-*	40.2	69.2	98.2	127.2
TDXCF300L30	●	28.9	64	30	30.0	TD□300W32-*	42.5	72.5	102.5	132.5
TDXCF310L30	●	29.9	64	30	31.0	TD□310W32-*	44.8	75.8	106.8	137.8
TDXCF320L30	●	30.9	64	30	32.0	TD□320W32-*	47.1	79.1	111.1	143.1
TDXCF330L30		31.8	64	30	33.0	TD□330W40-*	49.4	82.4	115.4	148.4
TDXCF340L30		32.8	64	30	34.0	TD□340W40-*	51.7	85.7	119.7	153.7
TDXCF350L30		33.8	64	30	35.0	TD□350W40-*	54.0	89.0	124.0	159.0
TDXCF360L30		34.8	85	30	36.0	TD□360W40-*	57.3	93.3	129.3	165.3
TDXCF370L30		35.8	85	30	37.0	TD□370W40-*	58.6	95.6	132.6	169.6
TDXCF380L30		36.8	85	30	38.0	TD□380W40-*	60.9	98.9	136.9	174.9
TDXCF390L30		37.8	85	30	39.0	TD□390W40-*	63.2	102.2	141.2	180.2
TDXCF400L30		38.8	85	30	40.0	TD□400W40-*	65.5	105.5	145.5	185.5
TDXCF410L30		39.8	85	30	41.0	TD□410W40-*	67.8	108.8	149.8	190.8
TDXCF420L30		40.6	85	30	42.0	TD□420W40-*	70.1	112.1	154.1	196.1
TDXCF430L30		41.6	85	30	43.0	TD□430W40-*	72.4	115.4	158.4	201.4
TDXCF440L30		42.6	85	30	44.0	TD□440W40-*	74.7	118.7	162.7	206.7
TDXCF450L30		43.6	85	30	45.0	TD□450W40-*	77.0	122.0	167.0	212.0
TDXCF460L30		44.6	85	30	46.0	TD□460W40-*	80.3	126.3	172.3	218.3
TDXCF470L30		45.6	85	30	47.0	TD□470W40-*	81.6	128.6	175.6	222.6
TDXCF480L30		46.6	85	30	48.0	TD□480W40-*	83.9	131.9	179.9	227.9
TDXCF490L30		47.6	85	30	49.0	TD□490W40-*	86.2	135.2	184.2	233.2
TDXCF500L30		48.6	85	30	50.0	TD□500W40-*	88.5	138.5	188.5	238.5
TDXCF510L30		49.6	85	30	51.0	TD□510W40-*	90.8	141.8	192.8	243.8
TDXCF520L30		50.6	85	30	52.0	TD□520W40-*	93.1	145.1	197.1	249.1
TDXCF530L30		51.6	85	30	53.0	TD□530W40-*	95.4	148.4	201.4	254.4
TDXCF540L30		52.6	85	30	54.0	TD□540W40-*	97.7	151.7	205.7	259.7

● : Stocked items

Chamfering ring

Chamfering tool insert & part list

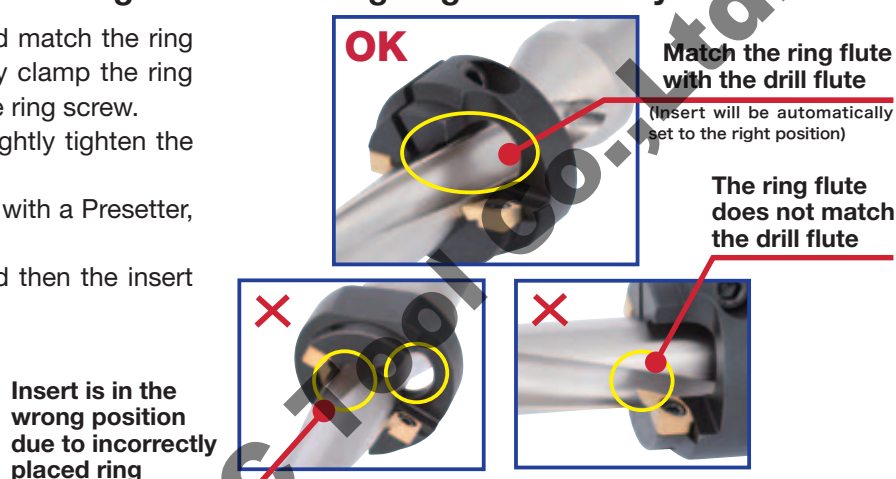
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Cat. No.	Insert	Stocked grade	Insert clamping screw	Torque (N·m)	Ring clamping screw	Torque (N·m)	Wrench for insert	Wrench for ring
		GH130						
TDXCF130L25 ↓ TDXCF250L25 ↓ TDXCF260L30 ↓ TDXCF540L30	XHGX090700R-45A	●	CSPB-4S	3.5	CM6X16	7.0	T-15D	P-5
					CM8 x 20	8.0		

● : Stocked items

Points of caution when mounting the chamfering ring on drill body

- ① Place the ring on the drill body and match the ring flute with the drill flute. Temporarily clamp the ring on the body by lightly tightening the ring screw. Place the inserts on the ring and lightly tighten the insert screws.
- ② Adjust the ring to the right position with a Presetter, height gauge or Vernier caliper.
- ③ Securely tighten the ring screw and then the insert screw.



Cautious points for TDX and TDS

Using TungdrillTwisted

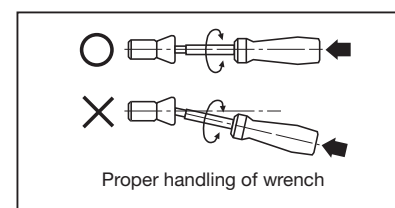
- Ensure that the drilling machine to be used has sufficient rigidity and motor output.
- Not recommended for drilling stacked plates.
- Be sure to carry out proper alignment when drilling is to be performed on a rotating workpiece.

Cutting fluid

- Be sure to supply cutting fluid through the tool.
- A water soluble emulsifiable type cutting fluid should be used.
- Fluid pressure of 1 MPa or higher and fluid quantity of 7R/min or more are essential. For 4D and 5D type, a fluid pressure of 1.5 MPa or higher and fluid quantity of 10R/min or more is recommended.

Cautionary points for setting inserts

- Before installing the insert in the drill body, remove all foreign matter from the insert pocket.
- When clamping and unclamping the insert, the center-line of the wrench should be aligned with the center-line of the screw. Misalignment may result in deformation of the socket of the screw head or the tip of the wrench.
- When installing the insert, eliminate all play between the insert pocket and the bottom face of the insert.
- Replace the screw before it will be excessively deformed or worn out by long term use.



EZ Sleeve

Use EZ sleeves for the following purposes

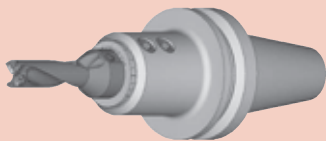
Hole diameter adjustment on the milling machine

Adjusting the finishing diameter when milling

Adjusting the finishing diameter in tool-rotating applications such as on machining centres and milling machines:



By using **EZ sleeve**, the finishing diameter can be adjusted in the range from **+0.6 mm to -0.2 mm**.



Scale for adjusting finishing diameter in milling (Periphery of sleeve)

Adjusting cutting edge height on lathe

Adjusting of the cutting edge height in work rotating applications such as on lathes:



By using **EZ sleeve**, the cutting edge height can be adjusted in the range from **+0.3 mm to -0.2 mm**. It results in eliminating troubles caused by improper cutting-edge height.

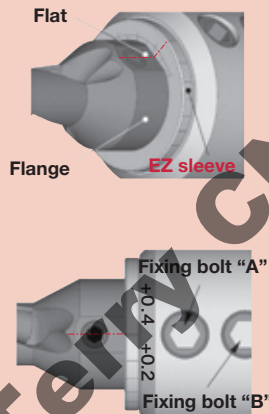


Scale for adjusting cutting edge height in turning (Front face of sleeve)

Setting of EZ sleeve

Adjusting finishing diameter in milling

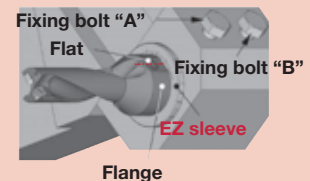
As shown in the Figure below, set the EZ sleeve between the drill shank and the toolholder.



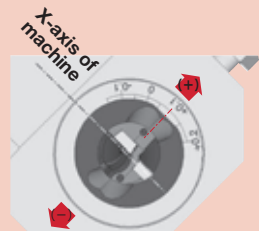
Align the graduated scale on the periphery of the EZ sleeve with the center of the flat of the drill flange. In the Figure shown below, the sleeve is set so that the finishing diameter will be increased by 0.4 mm.

Adjusting cutting edge height on lathe

As shown in the Figure below, set the EZ sleeve between the drill shank and the toolblock.



Align the graduated scale on the front face of the Esleeve with the center of the flat of the drill flange. In the Figure shown below, the sleeve is set so that the center of the drill will shift by 0.1 mm to the plus (+) direction.



When rotating the EZ sleeve, insert the wrench into the hole at the flange periphery and rotate the EZ sleeve.

Screws A + B have to be loosened.

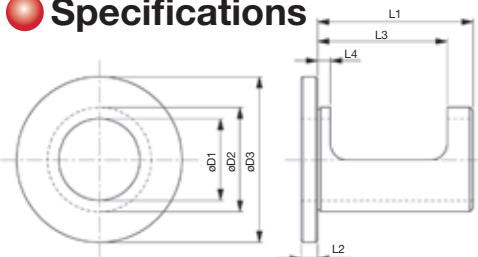
Secure the drill by screw A. Secure the EZ sleeve by lightly tightening screw B.

Tighten screw B only lightly otherwise EZ sleeve can be damaged!

Cautious points

- Can not be used for collect chuck holders.
- Over L/D 4 or bigger adjustment, please reduce feed.
- For smaller adjustment, the drill itself will interfere with the hole diameter. It is recommended that hole diameter should be adjusted to a larger diameter than the drill diameter.

Specifications



Sleeve Cat. No.	Stock	øD1	øD2	øD3	L1	L2	L3	L4	Adjusting range of finishing diameter	Adjusting range of cutting edge height
EZ2025	●	20	25	46	49	5	32.5	4	+0.4 ~ - 0.2	+0.2 ~ - 0.15
EZ2532	●	25	32	51	52	5	38	4	+0.4 ~ - 0.2	+0.2 ~ - 0.15
EZ3240	●	32	40	54	62	5	43	4	+0.4 ~ - 0.2	+0.2 ~ - 0.15
EZ4050	●	40	50	69	63	5	55	4	+0.6 ~ - 0.2	+0.3 ~ - 0.2

Note: Select the sleeve so that the D1 of the sleeve will be same as the diameter of the drill shank.

Jinan Terry CNC Tool Co., Ltd.

Designation System for TAC Drilling Inserts

Symbol	Shape	Included angle (degree)	Outlined figure
H	Hexagonal	120°	
S	Square	90°	
T	Triangular	60°	
C	Rhombic	80°	
E		75°	
G		70°	
L	Rectangular	90°	
A	Parallelogram	85°	
R	Round		
W	Trigon	80°	
X	Special	Others angle	
Y	Special		
Z	Special shape for ball endmills, etc.		

1 Shape

Symbol	Relief angle (degree)
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	
S	Others
W	Others
X	Others

2 Relief angle

Inscribed circle dia.	Tolerance on inscribed circle (ød)		Tolerance on corner height (mm)	
	J,K,L,M,N (class)	U (class)	M,N(class)	U(class)
6.35	±0.05	±0.08	±0.08	±0.13
9.525				
12.7	±0.08	±0.13	±0.13	±0.2
15.875				
19.05				
25.4	±0.13	±0.25	±0.18	±0.38

Symbol	Tolerance on corner height	Tolerance on thickness	Tolerance on inscribed circle
A	±0.005	±0.025	±0.025
C	±0.013	±0.025	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.13	±0.025
H	±0.013	±0.025	±0.013
K	±0.013	±0.025	±0.05 ~ ±0.13
M	±0.08 ~ ±0.18	±0.13	±0.05 ~ ±0.13
N	±0.08 ~ ±0.18	±0.025	±0.05 ~ ±0.13

3 Tolerance class (mm)

Example

Metric system



4 Insert type				
Symbol	Hole	Hole shape	Chip groove	Section shape
N	Without	-	Without	
R			On one side	
F			On both sides	
W	With	Partially cylindrical hole with 40°-60° mouth on one side	Without	
T			On one side	
Q			On both sides	
U		Partially cylindrical hole with 40°-60° mouth on both sides	Without	
B			On both sides	
H		Partially cylindrical hole with 70°-90° mouth on one side	Without	
C			On one side	
J		Partially cylindrical hole with 70°-90° mouth on both sides	Without	
X			On both sides	






5 Cutting edge length	
Symbol	Cutting edge length (ℓ)
S	
T	
R	
H	
A	

Example

H3 **08** **[0.4]** **R** - **DJ**

6 Thickness	
Symbol	Thickness. (mm)
01	1.59
02	2.38
X3	3.00
03	3.18
H3	3.60
T3	3.97
04	4.76
05	5.56

7 Corner radius	
Symbol	Corner radius r_e (mm)
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4

8 Cutting edge condition		
Symbol	Condition	Shape
F	Sharp edge	
E	Round honing	
T	Chamfer honing	
S	Combination honing	
P	Combination round honing	


9 Hand of insert	
Symbol	Hand
R	Right
L	Left
N	Neutral

10 Special feature	
D	For Drilling
D2	For Drilling
D4	For Drilling
DC	For Drilling
DG	For mild steel
DJ	For general
DS	For stainless steel
DW	Wiper

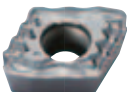

TAC Inserts for TAC Drills

TUNGSIX-DRILL


● WWMU□□□□□R-DJ

Shape	Cat. No.		Accuracy	Honing	Stocked grades					Applicable drill diameters	Applicable TAC drills (Page)
					Coated						
					NEW						
				AH9030							
	WWMU08X408R-DJ		M	With	●					ø28.0 ~ ø32.0	NEW TAC drill TDS ▶ 11-16
	WWMU09X510R-DJ				●					ø33.0 ~ ø38.0	
	WWMU11X512R-DJ				●					ø39.0 ~ ø46.0	
	WWMU13X512R-DJ				●					ø47.0 ~ ø54.0	

● XPMT□□□□□R-DG

Shape	Cat. No.		Accuracy	Honing	Stocked grades				Applicable drill diameters	Applicable TAC drills (Page)
					Coated					
					NEW					
				AH725						
	XPMT08T308R-DG		M	With	●				ø27.0 ~ ø32.0	NEW
	XPMT110412R-DG				●				ø33.0 ~ ø41.0	TAC drill TDX
	XPMT150512R-DG				●				ø42.0 ~ ø54.0	 11-8


● XPMT□□□□□R-DJ

Shape	Cat. No.		Accuracy	Honing	Stocked grades				Applicable drill diameters	Applicable TAC drills (Page)
					Coated					
					NEW AH725	NEW AH740	T1115			
	XPMT040104R-DJ		M	With	●	●	●		ø12.5 ~ ø14.5	NEW TAC drill TDX ▶ 11-8
	XPMT050204R-DJ				●	●	●		ø15.0 ~ ø17.0	
	XPMT06X308R-DJ				●	●	●		ø17.5 ~ ø21.5	
	XPMT07H308R-DJ				●	●	●		ø22.0 ~ ø26.0	
	XPMT08T308R-DJ				●	●	●		ø26.5 ~ ø32.0	
	XPMT110412R-DJ				●	●	●		ø33.0 ~ ø41.0	
	XPMT150512R-DJ				●	●	●		ø42.0 ~ ø54.0	

● : Stocked items



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● XPMT□□□□□R-DS

Shape	Cat. No.		Accuracy	Honing	Stocked grades					Applicable drill diameters	Applicable TAC drills (Page)
					Coated						
					NEW AH725	AH120					
	XPMT040104R-DS		M	With	●	●				ø12.5 ~ ø14.5	NEW TAC drill TDX 11-8
	XPMT050204R-DS				●	●				ø15.0 ~ ø17.0	
	XPMT06X308R-DS				●	●				ø17.5 ~ ø21.5	
	XPMT07H308R-DS				●	●				ø22.0 ~ ø26.0	
	XPMT08T308R-DS				●	●				ø26.5 ~ ø32.0	
	XPMT110412R-DS				●	●				ø33.0 ~ ø41.0	
	XPMT150512R-DS				●	●				ø42.0 ~ ø54.0	

● XPMT□□□□□R-DW

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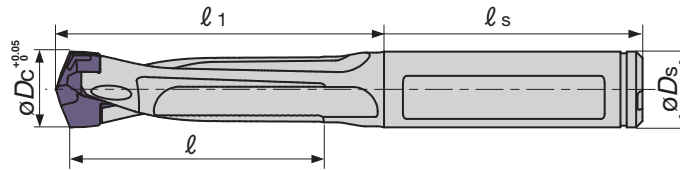
Shape	Cat. No.		Accuracy	Honing	Stocked grades					Applicable drill diameters	Applicable TAC drills (Page)
					Coated						
					NEW AH725	AH120	AH740				
	XPMT040104R-DW		M	With	●	●	●			ø12.5 ~ ø14.5	NEW TAC drill TDX 
	XPMT050204R-DW				●	●	●			ø15.0 ~ ø17.0	
	XPMT06X308R-DW				●	●	●			ø17.5 ~ ø21.5	
	XPMT07H308R-DW				●	●	●			ø22.0 ~ ø26.0	
	XPMT08T308R-DW				●	●	●			ø26.5 ~ ø32.0	
	XPMT110412R-DW				●	●	●			ø33.0 ~ ø41.0	
	XPMT150512R-DW				●	●	●			ø42.0 ~ ø54.0	

● : Stocked items

3
L/D

140°
Point angle

Drill body

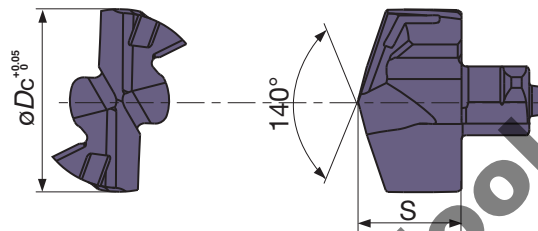


Cat. No.	Stock	Dimensions (mm)					Pocket size	Lamping key (included)	Applicable head
		ϕD_c	ϕD_s	l	l_1	l_s			
TIDC100C10-3	●	10 ~ 10.4	10	30	45.2	41	10	K-TID10-19.99	DMP103
TIDC120C12-3	●	12 ~ 12.4	12	36	52	41	12		DMP120, DMP121
TIDC140C14-3	●	14 ~ 14.4	14	42	59.2	44	14		DMP140, DMP141
TIDC150C15-3	●	15 ~ 15.9	15	45	62.7	45	15		DMP150, DMP155, DMP156
TIDC170C17-3	●	17 ~ 17.9	17	51	71.9	48	17		DMP175
TIDC190C19-3	●	19 ~ 19.9	19	57	78.6	54	19		DMP195

• Please select the drill head which diameter must be bigger than drill body. (Applicable drill head with diameter ϕD_c shown in above table.)

• Machined hole diameter may change depend on the rigidity of machine or cutting condition.

Drill head



Cat. No.	Stock	Dimensions (mm)		Pocket size	Applicable drill body	Applicable screw size
	AH725	ϕD_c	S			
DMP103	●	10.3	6.2	10	TIDC100C10-3	M12x1.75
DMP120	●	12.0	7.0	12	TIDC120C12-3	M14x2
DMP121	●	12.1	7.0	12		(M14x2)
DMP140	●	14.0	8.15	14	TIDC140C14-3	M16x2
DMP141	●	14.1	8.15	14		(M16x2)
DMP150	●	15.0	8.73	15	TIDC150C15-3	M16x1.0
DMP155	●	15.5	8.73	15		M18x2.5
DMP156	●	15.6	8.73	15		(M18x2.5)
DMP175	●	17.5	9.9	17	TIDC170C17-3	M20x2.5
DMP195	●	19.5	11.0	19	TIDC190C19-3	M22x2.5

Packing Quantity = 2 pcs.

● : Stocked items

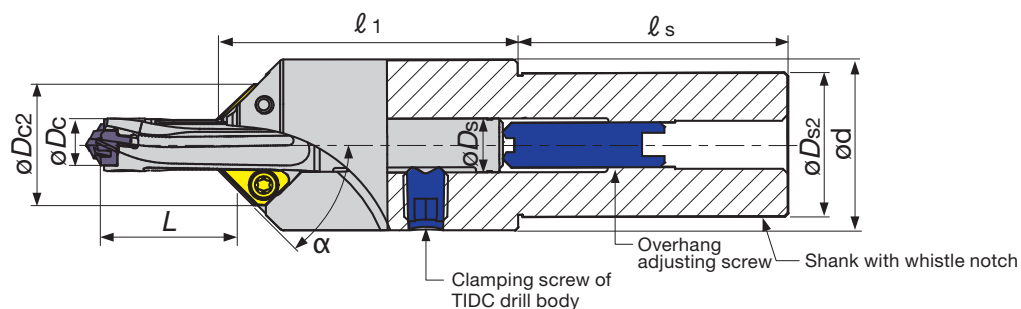
Standard cutting condition

Work material	Cutting speed V_c (m/min)	Feed: f (mm/rev)				
		ϕD_c (mm)				
		$\phi 10 - \phi 11.9$	$\phi 12 - \phi 13.9$	$\phi 14 - \phi 15.9$	$\phi 16 - \phi 19.9$	$\phi 20 - \phi 25.9$
Low carbon steels ($C < 0.3$) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	80 - 140	0.15 - 0.28	0.18 - 0.30	0.20 - 0.35	0.25 - 0.45	0.25 - 0.45
Carbon steels ($C > 0.3$) S45C, S55C etc. (C45, C55 etc.)	70 - 120	0.15 - 0.28	0.18 - 0.30	0.20 - 0.35	0.25 - 0.45	0.25 - 0.45
Low alloy steels SCM415 etc.	70 - 120	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.40	0.25 - 0.45
Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	40 - 90	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.40	0.25 - 0.45
Stainless steels SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	30 - 70	0.12 - 0.18	0.14 - 0.20	0.16 - 0.24	0.16 - 0.26	0.18 - 0.30
Grey cast irons FC250 etc. (GG25 etc.)	80 - 180	0.20 - 0.35	0.25 - 0.40	0.30 - 0.45	0.35 - 0.55	0.35 - 0.60
Ductile cast irons FCD700 etc. (GGG70 etc.)	80 - 140	0.20 - 0.35	0.25 - 0.40	0.30 - 0.45	0.35 - 0.55	0.35 - 0.60
Aluminium alloys ADC12 etc.	80 - 220	0.25 - 0.40	0.30 - 0.45	0.35 - 0.50	0.40 - 0.60	0.50 - 0.75
Titanium alloys Ti-6Al-4V etc.	20 - 50	0.08 - 0.15	0.10 - 0.28	0.12 - 0.20	0.14 - 0.22	0.18 - 0.27
Nickel-based alloys	20 - 50	0.08 - 0.13	0.10 - 0.15	0.12 - 0.18	0.12 - 0.22	0.14 - 0.22

• Cutting conditions in above table shows the general condition

• Cutting conditions should be changed depend on the rigidity and power of the machine and the workpiece material.

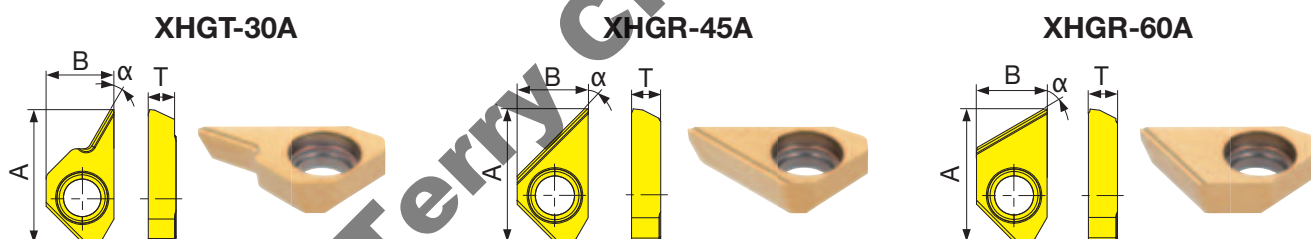
Chamfering adaptor TIDCF type



Cat. No.	Stock	Dimensions (mm)							Applicable drill body	
		ϕDc	ϕDs_2	ϕd	ϕDc_2	l_1	l_s	L	Cat. No.	ϕDs (mm)
TIDCF100-W32	●	10.0 ~ 10.4	32	38	24.9	67.3	60	14.5 ~ 31.8	TIDC100C10-3	10
TIDCF120-W32	●	12.0 ~ 12.4	32	38	26.9	67.3	60	16.5 ~ 37.7	TIDC120C12-3	12
TIDCF140-W32	●	14.0 ~ 14.4	32	38	28.4	67.3	60	18.1 ~ 45.0	TIDC140C14-3	14
TIDCF150-W32	●	15.0 ~ 15.9	32	38	29.4	67.3	60	19.7 ~ 47.4	TIDC150C15-3	15
TIDCF170-W32	●	17.0 ~ 17.9	32	38	31.4	67.3	60	21.4 ~ 54.9	TIDC170C17-3	17
TIDCF190-W32	●	19.0 ~ 19.9	32	38	33.4	75	60	28.5 ~ 62.3	TIDC190C19-3	19

• Chamfering angle α should be depend on chamfering insert

Chamfering insert



Cat. No.	Stock	Dimensions (mm)			Chamfering angle α	Maximum width of chamfer
		A	B	T		
XHGT090300-30A	●	16	8.8	3.3	30°	1.5
XHGR090300-45A	●	16	8.8	3.3	45°	6.0
XHGR090300-60A	●	16	8.8	3.3	60°	3.5

Note: Chamfering insert must be clamped after fixing the TIDC drill body in adaptor.

Replacement parts

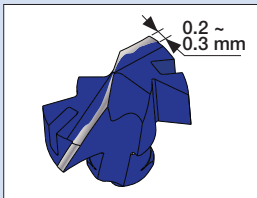
Clamping screw of TIDC drill body	Overhang adjusting screw	Wrench	Clamping screw of insert	Wrench	
				Torx bit	Grip
SCREWM10X1.5SPECIAL	SRM10X10DIN916	HW5.0	SR14-544/S	BLDT15/S7	SW6-SD

●: Stocked items
Packing Quantity = 2 pcs

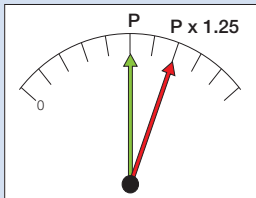
Notice when using

● Criteria for head change (Criteria of tool life)

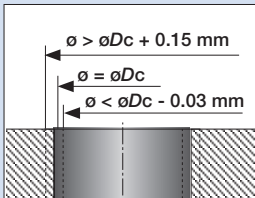
The followings are the general criteria of tool life



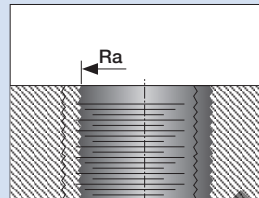
Width of corner wear:
0.2 - 0.3 mm



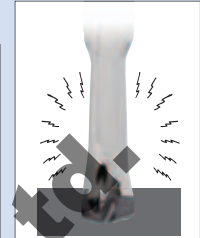
Spindle load: Increased
by 25% higher than load
of beginning



Hole diameter: 0.15 mm
bigger, or 0.03 mm smaller
than drill diameter



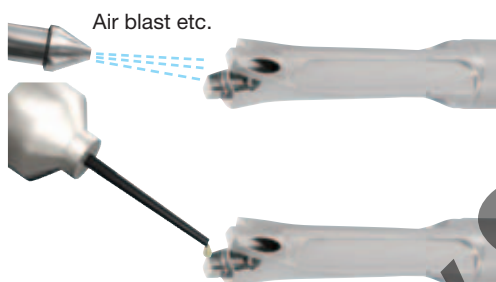
Surface finish: Rougher
than the beginning



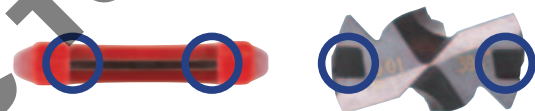
Abnormal noise, or
vibration

● How to clamp the drill head

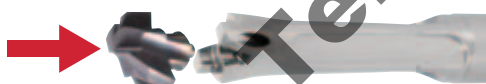
① Cleaning the pocket and oiling



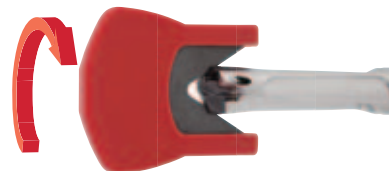
③ Set the clamping key on the drill head



② Set the drill head in the pocket



④ Clamp



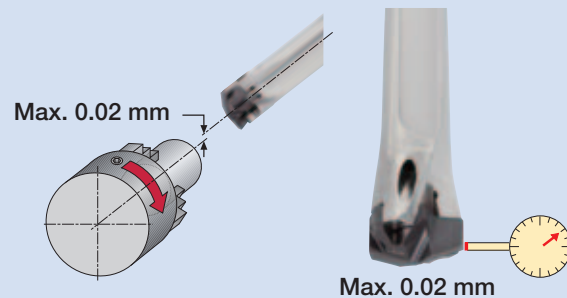
● Coolant supply

Internal supply should be recommended.

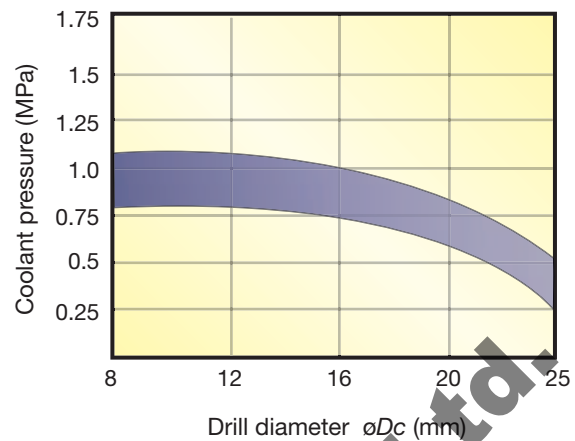
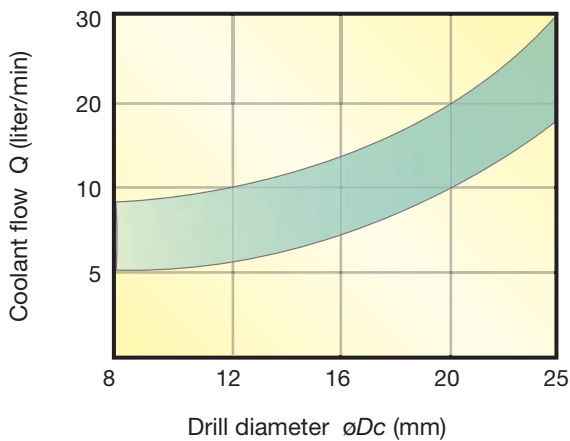


● Run out

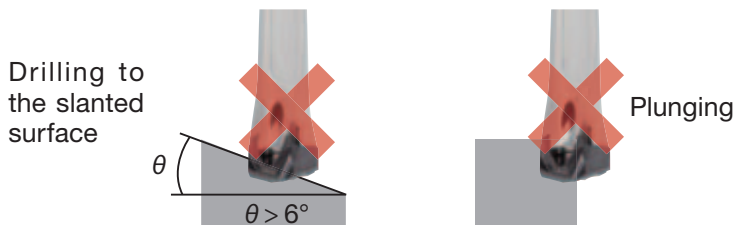
Run out less than 0.02 mm should be recommended.



■ The coolant flow and pressure required

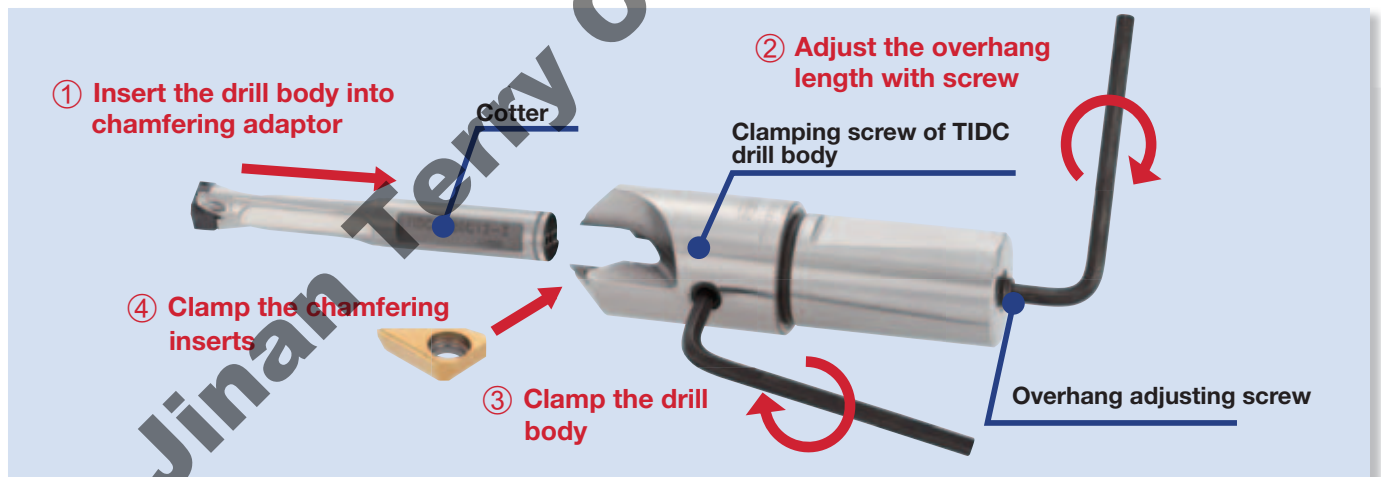


■ Not-recommended application



How to mount the drill body into the chamfering adaptor

The overhang length of drill can be changed by the adjusting screw at the bottom of adaptor.
Drill body must contact to the adjusting screw. This screw supports the drill against thrust force when drilling.



Procedure

- ① Insert the TIDC drill body into the chamfering adaptor without clamping chamfering inserts.
- ② Adjust the overhang length of drill body with adjusting screw from the bottom of adaptor.
- ③ Tighten the clamping screw of drill body and fix. When tightening, the screw must contact to the cotter. When screw contacts to the cotter, the flutes of TIDC drill body fit the position of chamfering inserts.

- ④ Clamp the chamfering inserts. When tightening the screw, insert must fit to the seat.

Notice

Before removing the drill body from adaptor, chamfering inserts must be removed.

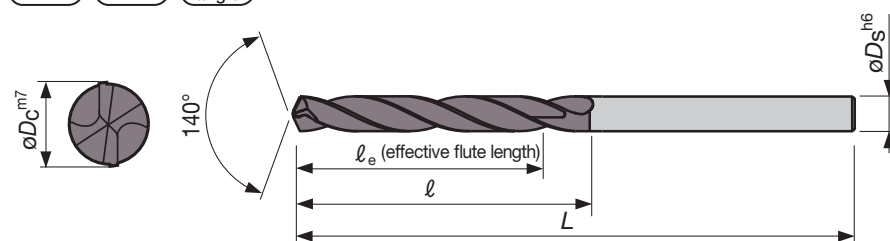
The overhang adjusting screw can operate from the top of adaptor with flat-blade screwdriver. Once the adaptor sets on holder, overhang length of drill body can be adjusted by operating the screw from the top of adaptor.

25°~30°
Helix

3/5/8
L/D

140°
Point angle

For High Efficient Drilling of Steels
Coated Solid Carbide Drills



Drill dia. øDc (mm)	Tolerance m7 (mm)
3.00 ~ 6	0.004 ~ 0.016
6.01 ~ 10	0.006 ~ 0.021
10.01 ~ 16	0.007 ~ 0.025

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					øDs	le	l	L
3.0	3	Ext.	DSW030-014-06DE3		6	14	20	62
	5	Ext.	DSW030-023-06DE5		6	23	28	66
	5	Int.	DSW030-023-06DI5		6	23	28	66
	8	Int.	DSW030-029-06DI8		6	29	34	72
3.1	3	Ext.	DSW031-014-06DE3		6	14	20	62
	5	Ext.	DSW031-023-06DE5		6	23	28	66
	5	Int.	DSW031-023-06DI5		6	23	28	66
	8	Int.	DSW031-029-06DI8		6	29	34	72
3.2	3	Ext.	DSW032-014-06DE3		6	14	20	62
	5	Ext.	DSW032-023-06DE5		6	23	28	66
	5	Int.	DSW032-023-06DI5		6	23	28	66
	8	Int.	DSW032-029-06DI8		6	29	34	72
3.3	3	Ext.	DSW033-014-06DE3		6	14	20	62
	5	Ext.	DSW033-023-06DE5		6	23	28	66
	5	Int.	DSW033-023-06DI5		6	23	28	66
	8	Int.	DSW033-029-06DI8		6	29	34	72
3.4	3	Ext.	DSW034-014-06DE3		6	14	20	62
	5	Ext.	DSW034-023-06DE5		6	23	28	66
	5	Int.	DSW034-023-06DI5		6	23	28	66
	8	Int.	DSW034-029-06DI8		6	29	34	72
3.5	3	Ext.	DSW035-014-06DE3		6	14	20	62
	5	Ext.	DSW035-023-06DE5		6	23	28	66
	5	Int.	DSW035-023-06DI5		6	23	28	66
	8	Int.	DSW035-029-06DI8		6	29	34	72
3.6	3	Ext.	DSW036-014-06DE3		6	14	20	62
	5	Ext.	DSW036-023-06DE5		6	23	28	66
	5	Int.	DSW036-023-06DI5		6	23	28	66
	8	Int.	DSW036-029-06DI8		6	29	34	72
3.7	3	Ext.	DSW037-014-06DE3		6	14	20	62
	5	Ext.	DSW037-023-06DE5		6	23	28	66
	5	Int.	DSW037-023-06DI5		6	23	28	66
	8	Int.	DSW037-029-06DI8		6	29	34	72
3.8	3	Ext.	DSW038-017-06DE3		6	17	24	66
	5	Ext.	DSW038-029-06DE5		6	29	36	74
	5	Int.	DSW038-029-06DI5		6	29	36	74
	8	Int.	DSW038-036-06DI8		6	36	43	81
3.9	3	Ext.	DSW039-017-06DE3		6	17	24	66
	5	Ext.	DSW039-029-06DE5		6	29	36	74
	5	Int.	DSW039-029-06DI5		6	29	36	74
	8	Int.	DSW039-036-06DI8		6	36	43	81

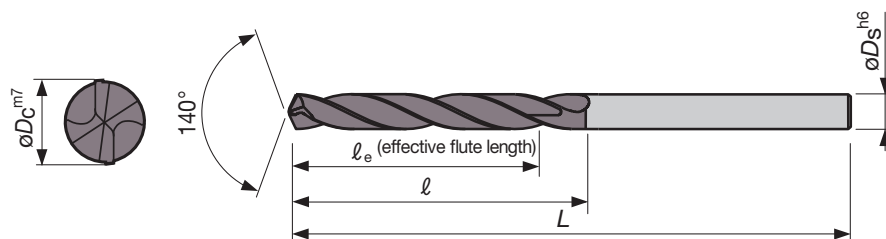
Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					øDs	le	l	L
4.0	3	Ext.	DSW040-017-06DE3		6	17	24	66
	5	Ext.	DSW040-029-06DE5		6	29	36	74
	5	Int.	DSW040-029-06DI5		6	29	36	74
	8	Int.	DSW040-036-06DI8		6	36	43	81
4.1	3	Ext.	DSW041-017-06DE3		6	17	24	66
	5	Ext.	DSW041-029-06DE5		6	29	36	74
	5	Int.	DSW041-029-06DI5		6	29	36	74
	8	Int.	DSW041-036-06DI8		6	36	43	81
4.2	3	Ext.	DSW042-017-06DE3		6	17	24	66
	5	Ext.	DSW042-029-06DE5		6	29	36	74
	5	Int.	DSW042-029-06DI5		6	29	36	74
	8	Int.	DSW042-036-06DI8		6	36	43	81
4.3	3	Ext.	DSW043-017-06DE3		6	17	24	66
	5	Ext.	DSW043-029-06DE5		6	29	36	74
	5	Int.	DSW043-029-06DI5		6	29	36	74
	8	Int.	DSW043-036-06DI8		6	36	43	81
4.4	3	Ext.	DSW044-017-06DE3		6	17	24	66
	5	Ext.	DSW044-029-06DE5		6	29	36	74
	5	Int.	DSW044-029-06DI5		6	29	36	74
	8	Int.	DSW044-036-06DI8		6	36	43	81
4.5	3	Ext.	DSW045-017-06DE3		6	17	24	66
	5	Ext.	DSW045-029-06DE5		6	29	36	74
	5	Int.	DSW045-029-06DI5		6	29	36	74
	8	Int.	DSW045-036-06DI8		6	36	43	81
4.6	3	Ext.	DSW046-017-06DE3		6	17	24	66
	5	Ext.	DSW046-029-06DE5		6	29	36	74
	5	Int.	DSW046-029-06DI5		6	29	36	74
	8	Int.	DSW046-036-06DI8		6	36	43	81
4.7	3	Ext.	DSW047-017-06DE3		6	17	24	66
	5	Ext.	DSW047-029-06DE5		6	29	36	74
	5	Int.	DSW047-029-06DI5		6	29	36	74
	8	Int.	DSW047-036-06DI8		6	36	43	81
4.8	3	Ext.	DSW048-020-06DE3		6	20	28	66
	5	Ext.	DSW048-035-06DE5		6	35	44	82
	5	Int.	DSW048-035-06DI5		6	35	44	82
	8	Int.	DSW048-048-06DI8		6	48	57	95
4.9	3	Ext.	DSW049-020-06DE3		6	20	28	66
	5	Ext.	DSW049-035-06DE5		6	35	44	82
	5	Int.	DSW049-035-06DI5		6	35	44	82
	8	Int.	DSW049-048-06DI8		6	48	57	95

*For inquiry on DSW stock, please contact the local office.

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					øDs	ℓ _e	ℓ	L
5.0	3	Ext.	DSW050-020-06DE3		6	20	28	66
	5	Ext.	DSW050-035-06DE5		6	35	44	82
	5	Int.	DSW050-035-06DI5		6	35	44	82
	8	Int.	DSW050-048-06DI8		6	48	57	95
5.1	3	Ext.	DSW051-020-06DE3		6	20	28	66
	5	Ext.	DSW051-035-06DE5		6	35	44	82
	5	Int.	DSW051-035-06DI5		6	35	44	82
	8	Int.	DSW051-048-06DI8		6	48	57	95
5.2	3	Ext.	DSW052-020-06DE3		6	20	28	66
	5	Ext.	DSW052-035-06DE5		6	35	44	82
	5	Int.	DSW052-035-06DI5		6	35	44	82
	8	Int.	DSW052-048-06DI8		6	48	57	95
5.3	3	Ext.	DSW053-020-06DE3		6	20	28	66
	5	Ext.	DSW053-035-06DE5		6	35	44	82
	5	Int.	DSW053-035-06DI5		6	35	44	82
	8	Int.	DSW053-048-06DI8		6	48	57	95
5.4	3	Ext.	DSW054-020-06DE3		6	20	28	66
	5	Ext.	DSW054-035-06DE5		6	35	44	82
	5	Int.	DSW054-035-06DI5		6	35	44	82
	8	Int.	DSW054-048-06DI8		6	48	57	95
5.5	3	Ext.	DSW055-020-06DE3		6	20	28	66
	5	Ext.	DSW055-035-06DE5		6	35	44	82
	5	Int.	DSW055-035-06DI5		6	35	44	82
	8	Int.	DSW055-048-06DI8		6	48	57	95
5.6	3	Ext.	DSW056-020-06DE3		6	20	28	66
	5	Ext.	DSW056-035-06DE5		6	35	44	82
	5	Int.	DSW056-035-06DI5		6	35	44	82
	8	Int.	DSW056-048-06DI8		6	48	57	95
5.7	3	Ext.	DSW057-020-06DE3		6	20	28	66
	5	Ext.	DSW057-035-06DE5		6	35	44	82
	5	Int.	DSW057-035-06DI5		6	35	44	82
	8	Int.	DSW057-048-06DI8		6	48	57	95
5.8	3	Ext.	DSW058-020-06DE3		6	20	28	66
	5	Ext.	DSW058-035-06DE5		6	35	44	82
	5	Int.	DSW058-035-06DI5		6	35	44	82
	8	Int.	DSW058-048-06DI8		6	48	57	95
5.9	3	Ext.	DSW059-020-06DE3		6	20	28	66
	5	Ext.	DSW059-035-06DE5		6	35	44	82
	5	Int.	DSW059-035-06DI5		6	35	44	82
	8	Int.	DSW059-048-06DI8		6	48	57	95
6.0	3	Ext.	DSW060-020-06DE3		6	20	28	66
	5	Ext.	DSW060-035-06DE5		6	35	44	82
	5	Int.	DSW060-035-06DI5		6	35	44	82
	8	Int.	DSW060-048-06DI8		6	48	57	95
6.1	3	Ext.	DSW061-024-08DE3		8	24	34	79
	5	Ext.	DSW061-043-08DE5		8	43	53	91
	5	Int.	DSW061-043-08DI5		8	43	53	91
	8	Int.	DSW061-064-08DI8		8	64	76	114

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					øDs	ℓ _e	ℓ	L
6.2	3	Ext.	DSW062-024-08DE3		8	24	34	79
	5	Ext.	DSW062-043-08DE5		8	43	53	91
	5	Int.	DSW062-043-08DI5		8	43	53	91
	8	Int.	DSW062-064-08DI8		8	64	76	114
6.3	3	Ext.	DSW063-024-08DE3		8	24	34	79
	5	Ext.	DSW063-043-08DE5		8	43	53	91
	5	Int.	DSW063-043-08DI5		8	43	53	91
	8	Int.	DSW063-064-08DI8		8	64	76	114
6.4	3	Ext.	DSW064-024-08DE3		8	24	34	79
	5	Ext.	DSW064-043-08DE5		8	43	53	91
	5	Int.	DSW064-043-08DI5		8	43	53	91
	8	Int.	DSW064-064-08DI8		8	64	76	114
6.5	3	Ext.	DSW065-024-08DE3		8	24	34	79
	5	Ext.	DSW065-043-08DE5		8	43	53	91
	5	Int.	DSW065-043-08DI5		8	43	53	91
	8	Int.	DSW065-064-08DI8		8	64	76	114
6.6	3	Ext.	DSW066-024-08DE3		8	24	34	79
	5	Ext.	DSW066-043-08DE5		8	43	53	91
	5	Int.	DSW066-043-08DI5		8	43	53	91
	8	Int.	DSW066-064-08DI8		8	64	76	114
6.7	3	Ext.	DSW067-024-08DE3		8	24	34	79
	5	Ext.	DSW067-043-08DE5		8	43	53	91
	5	Int.	DSW067-043-08DI5		8	43	53	91
	8	Int.	DSW067-064-08DI8		8	64	76	114
6.8	3	Ext.	DSW068-024-08DE3		8	24	34	79
	5	Ext.	DSW068-043-08DE5		8	43	53	91
	5	Int.	DSW068-043-08DI5		8	43	53	91
	8	Int.	DSW068-064-08DI8		8	64	76	114
6.9	3	Ext.	DSW069-024-08DE3		8	24	34	79
	5	Ext.	DSW069-043-08DE5		8	43	53	91
	5	Int.	DSW069-043-08DI5		8	43	53	91
	8	Int.	DSW069-064-08DI8		8	64	76	114
7.0	3	Ext.	DSW070-024-08DE3		8	24	34	79
	5	Ext.	DSW070-043-08DE5		8	43	53	91
	5	Int.	DSW070-043-08DI5		8	43	53	91
	8	Int.	DSW070-064-08DI8		8	64	76	114
7.1	3	Ext.	DSW071-029-08DE3		8	29	41	79
	5	Ext.	DSW071-043-08DE5		8	43	53	91
	5	Int.	DSW071-043-08DI5		8	43	53	91
	8	Int.	DSW071-064-08DI8		8	64	76	114
7.2	3	Ext.	DSW072-029-08DE3		8	29	41	79
	5	Ext.	DSW072-043-08DE5		8	43	53	91
	5	Int.	DSW072-043-08DI5		8	43	53	91
	8	Int.	DSW072-064-08DI8		8	64	76	114
7.3	3	Ext.	DSW073-029-08DE3		8	29	41	79
	5	Ext.	DSW073-043-08DE5		8	43	53	91
	5	Int.	DSW073-043-08DI5		8	43	53	91
	8	Int.	DSW073-064-08DI8		8	64	76	114

*For inquiry on DSW stock, please contact the local office.



Drill dia. $\varnothing D_c$ (mm)	Tolerance m7 (mm)
3.00 ~ 6	0.004 ~ 0.016
6.01 ~ 10	0.006 ~ 0.021
10.01 ~ 16	0.007 ~ 0.025

Drill dia. $\varnothing D_c$	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					$\varnothing D_s$	ℓ_e	ℓ	L
7.4	3	Ext.	DSW074-029-08DE3		8	29	41	79
	5	Ext.	DSW074-043-08DE5		8	43	53	91
	5	Int.	DSW074-043-08DI5		8	43	53	91
	8	Int.	DSW074-064-08DI8		8	64	76	114
7.5	3	Ext.	DSW075-029-08DE3		8	29	41	79
	5	Ext.	DSW075-043-08DE5		8	43	53	91
	5	Int.	DSW075-043-08DI5		8	43	53	91
	8	Int.	DSW075-064-08DI8		8	64	76	114
7.6	3	Ext.	DSW076-029-08DE3		8	29	41	79
	5	Ext.	DSW076-043-08DE5		8	43	53	91
	5	Int.	DSW076-043-08DI5		8	43	53	91
	8	Int.	DSW076-064-08DI8		8	64	76	114
7.7	3	Ext.	DSW077-029-08DE3		8	29	41	79
	5	Ext.	DSW077-043-08DE5		8	43	53	91
	5	Int.	DSW077-043-08DI5		8	43	53	91
	8	Int.	DSW077-064-08DI8		8	64	76	114
7.8	3	Ext.	DSW078-029-08DE3		8	29	41	79
	5	Ext.	DSW078-043-08DE5		8	43	53	91
	5	Int.	DSW078-043-08DI5		8	43	53	91
	8	Int.	DSW078-064-08DI8		8	64	76	114
7.9	3	Ext.	DSW079-029-08DE3		8	29	41	79
	5	Ext.	DSW079-043-08DE5		8	43	53	91
	5	Int.	DSW079-043-08DI5		8	43	53	91
	8	Int.	DSW079-064-08DI8		8	64	76	114
8.0	3	Ext.	DSW080-029-08DE3		8	29	41	79
	5	Ext.	DSW080-043-08DE5		8	43	53	91
	5	Int.	DSW080-043-08DI5		8	43	53	91
	8	Int.	DSW080-064-08DI8		8	64	76	114
8.1	3	Ext.	DSW081-035-10DE3		10	35	47	89
	5	Ext.	DSW081-049-10DE5		10	49	61	103
	5	Int.	DSW081-049-10DI5		10	49	61	103
	8	Int.	DSW081-080-10DI8		10	80	95	142
8.2	3	Ext.	DSW082-035-10DE3		10	35	47	89
	5	Ext.	DSW082-049-10DE5		10	49	61	103
	5	Int.	DSW082-049-10DI5		10	49	61	103
	8	Int.	DSW082-080-10DI8		10	80	95	142
8.3	3	Ext.	DSW083-035-10DE3		10	35	47	89
	5	Ext.	DSW083-049-10DE5		10	49	61	103
	5	Int.	DSW083-049-10DI5		10	49	61	103
	8	Int.	DSW083-080-10DI8		10	80	95	142

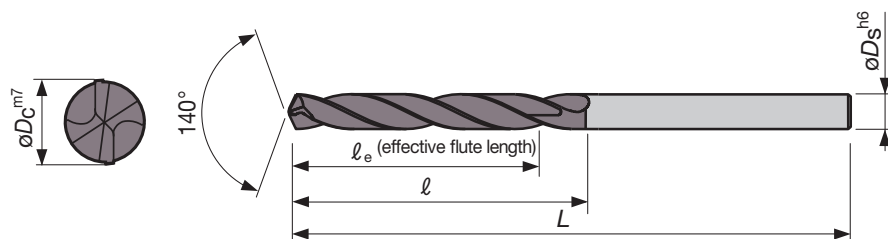
Drill dia. $\varnothing D_c$	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					$\varnothing D_s$	ℓ_e	ℓ	L
8.4	3	Ext.	DSW084-035-10DE3		10	35	47	89
	5	Ext.	DSW084-049-10DE5		10	49	61	103
	5	Int.	DSW084-049-10DI5		10	49	61	103
	8	Int.	DSW084-080-10DI8		10	80	95	142
8.5	3	Ext.	DSW085-035-10DE3		10	35	47	89
	5	Ext.	DSW085-049-10DE5		10	49	61	103
	5	Int.	DSW085-049-10DI5		10	49	61	103
	8	Int.	DSW085-080-10DI8		10	80	95	142
8.6	3	Ext.	DSW086-035-10DE3		10	35	47	89
	5	Ext.	DSW086-049-10DE5		10	49	61	103
	5	Int.	DSW086-049-10DI5		10	49	61	103
	8	Int.	DSW086-080-10DI8		10	80	95	142
8.7	3	Ext.	DSW087-035-10DE3		10	35	47	89
	5	Ext.	DSW087-049-10DE5		10	49	61	103
	5	Int.	DSW087-049-10DI5		10	49	61	103
	8	Int.	DSW087-080-10DI8		10	80	95	142
8.8	3	Ext.	DSW088-035-10DE3		10	35	47	89
	5	Ext.	DSW088-049-10DE5		10	49	61	103
	5	Int.	DSW088-049-10DI5		10	49	61	103
	8	Int.	DSW088-080-10DI8		10	80	95	142
8.9	3	Ext.	DSW089-035-10DE3		10	35	47	89
	5	Ext.	DSW089-049-10DE5		10	49	61	103
	5	Int.	DSW089-049-10DI5		10	49	61	103
	8	Int.	DSW089-080-10DI8		10	80	95	142
9.0	3	Ext.	DSW090-035-10DE3		10	35	47	89
	5	Ext.	DSW090-049-10DE5		10	49	61	103
	5	Int.	DSW090-049-10DI5		10	49	61	103
	8	Int.	DSW090-080-10DI8		10	80	95	142
9.1	3	Ext.	DSW091-035-10DE3		10	35	47	89
	5	Ext.	DSW091-049-10DE5		10	49	61	103
	5	Int.	DSW091-049-10DI5		10	49	61	103
	8	Int.	DSW091-080-10DI8		10	80	95	142
9.2	3	Ext.	DSW092-035-10DE3		10	35	47	89
	5	Ext.	DSW092-049-10DE5		10	49	61	103
	5	Int.	DSW092-049-10DI5		10	49	61	103
	8	Int.	DSW092-080-10DI8		10	80	95	142
9.3	3	Ext.	DSW093-035-10DE3		10	35	47	89
	5	Ext.	DSW093-049-10DE5		10	49	61	103
	5	Int.	DSW093-049-10DI5		10	49	61	103
	8	Int.	DSW093-080-10DI8		10	80	95	142

*For inquiry on DSW stock, please contact the local office.

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					øDs	ℓ _e	ℓ	L
9.4	3	Ext.	DSW094-035-10DE3		10	35	47	89
	5	Ext.	DSW094-049-10DE5		10	49	61	103
	5	Int.	DSW094-049-10DI5		10	49	61	103
	8	Int.	DSW094-080-10DI8		10	80	95	142
9.5	3	Ext.	DSW095-035-10DE3		10	35	47	89
	5	Ext.	DSW095-049-10DE5		10	49	61	103
	5	Int.	DSW095-049-10DI5		10	49	61	103
	8	Int.	DSW095-080-10DI8		10	80	95	142
9.6	3	Ext.	DSW096-035-10DE3		10	35	47	89
	5	Ext.	DSW096-049-10DE5		10	49	61	103
	5	Int.	DSW096-049-10DI5		10	49	61	103
	8	Int.	DSW096-080-10DI8		10	80	95	142
9.7	3	Ext.	DSW097-035-10DE3		10	35	47	89
	5	Ext.	DSW097-049-10DE5		10	49	61	103
	5	Int.	DSW097-049-10DI5		10	49	61	103
	8	Int.	DSW097-080-10DI8		10	80	95	142
9.8	3	Ext.	DSW098-035-10DE3		10	35	47	89
	5	Ext.	DSW098-049-10DE5		10	49	61	103
	5	Int.	DSW098-049-10DI5		10	49	61	103
	8	Int.	DSW098-080-10DI8		10	80	95	142
9.9	3	Ext.	DSW099-035-10DE3		10	35	47	89
	5	Ext.	DSW099-049-10DE5		10	49	61	103
	5	Int.	DSW099-049-10DI5		10	49	61	103
	8	Int.	DSW099-080-10DI8		10	80	95	142
10.0	3	Ext.	DSW100-035-10DE3		10	35	47	89
	5	Ext.	DSW100-049-10DE5		10	49	61	103
	5	Int.	DSW100-049-10DI5		10	49	61	103
	8	Int.	DSW100-080-10DI8		10	80	95	142
10.1	3	Ext.	DSW101-040-12DE3		12	40	55	102
	5	Ext.	DSW101-056-12DE5		12	56	71	118
	5	Int.	DSW101-056-12DI5		12	56	71	118
	8	Int.	DSW101-080-10DI8		10	80	95	142
10.2	3	Ext.	DSW102-040-12DE3		12	40	55	102
	5	Ext.	DSW102-056-12DE5		12	56	71	118
	5	Int.	DSW102-056-12DI5		12	56	71	118
	8	Int.	DSW102-080-10DI8		10	80	95	142
10.3	3	Ext.	DSW103-040-12DE3		12	40	55	102
	5	Ext.	DSW103-056-12DE5		12	56	71	118
	5	Int.	DSW103-056-12DI5		12	56	71	118
	8	Int.	DSW103-080-10DI8		10	80	95	142
10.4	3	Ext.	DSW104-040-12DE3		12	40	55	102
	5	Ext.	DSW104-056-12DE5		12	56	71	118
	5	Int.	DSW104-056-12DI5		12	56	71	118
	8	Int.	DSW104-080-10DI8		10	80	95	142
10.5	3	Ext.	DSW105-040-12DE3		12	40	55	102
	5	Ext.	DSW105-056-12DE5		12	56	71	118
	5	Int.	DSW105-056-12DI5		12	56	71	118
	8	Int.	DSW105-080-10DI8		10	80	95	142
10.6	3	Ext.	DSW106-040-12DE3		12	40	55	102
	5	Ext.	DSW106-056-12DE5		12	56	71	118
	5	Int.	DSW106-056-12DI5		12	56	71	118
	8	Int.	DSW106-080-10DI8		10	80	95	142
10.7	3	Ext.	DSW107-040-12DE3		12	40	55	102
	5	Ext.	DSW107-056-12DE5		12	56	71	118
	5	Int.	DSW107-056-12DI5		12	56	71	118
	8	Int.	DSW107-080-10DI8		10	80	95	142

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					øDs	ℓ _e	ℓ	L
10.8	3	Ext.	DSW108-040-12DE3		12	40	55	102
	5	Ext.	DSW108-056-12DE5		12	56	71	118
	5	Int.	DSW108-056-12DI5		12	56	71	118
	8	Int.	DSW108-080-10DI8		10	80	95	142
10.9	3	Ext.	DSW109-040-12DE3		12	40	55	102
	5	Ext.	DSW109-056-12DE5		12	56	71	118
	5	Int.	DSW109-056-12DI5		12	56	71	118
	8	Int.	DSW109-080-10DI8		10	80	95	142
11.0	3	Ext.	DSW110-040-12DE3		12	40	55	102
	5	Ext.	DSW110-056-12DE5		12	56	71	118
	5	Int.	DSW110-056-12DI5		12	56	71	118
	8	Int.	DSW110-080-10DI8		10	80	95	142
11.1	3	Ext.	DSW111-040-12DE3		12	40	55	102
	5	Ext.	DSW111-056-12DE5		12	56	71	118
	5	Int.	DSW111-056-12DI5		12	56	71	118
	8	Int.	DSW111-080-10DI8		10	80	95	142
11.2	3	Ext.	DSW112-040-12DE3		12	40	55	102
	5	Ext.	DSW112-056-12DE5		12	56	71	118
	5	Int.	DSW112-056-12DI5		12	56	71	118
	8	Int.	DSW112-080-10DI8		10	80	95	142
11.3	3	Ext.	DSW113-040-12DE3		12	40	55	102
	5	Ext.	DSW113-056-12DE5		12	56	71	118
	5	Int.	DSW113-056-12DI5		12	56	71	118
	8	Int.	DSW113-080-10DI8		10	80	95	142
11.4	3	Ext.	DSW114-040-12DE3		12	40	55	102
	5	Ext.	DSW114-056-12DE5		12	56	71	118
	5	Int.	DSW114-056-12DI5		12	56	71	118
	8	Int.	DSW114-080-10DI8		10	80	95	142
11.5	3	Ext.	DSW115-040-12DE3		12	40	55	102
	5	Ext.	DSW115-056-12DE5		12	56	71	118
	5	Int.	DSW115-056-12DI5		12	56	71	118
	8	Int.	DSW115-080-10DI8		10	80	95	142
11.6	3	Ext.	DSW116-040-12DE3		12	40	55	102
	5	Ext.	DSW116-056-12DE5		12	56	71	118
	5	Int.	DSW116-056-12DI5		12	56	71	118
	8	Int.	DSW116-080-10DI8		10	80	95	142
11.7	3	Ext.	DSW117-040-12DE3		12	40	55	102
	5	Ext.	DSW117-056-12DE5		12	56	71	118
	5	Int.	DSW117-056-12DI5		12	56	71	118
	8	Int.	DSW117-080-10DI8		10	80	95	142
11.8	3	Ext.	DSW118-040-12DE3		12	40	55	102
	5	Ext.	DSW118-056-12DE5		12	56	71	118
	5	Int.	DSW118-056-12DI5		12	56	71	118
	8	Int.	DSW118-080-10DI8		10	80	95	142
11.9	3	Ext.	DSW119-040-12DE3		12	40	55	102
	5	Ext.	DSW119-056-12DE5		12	56	71	118
	5	Int.	DSW119-056-12DI5		12	56	71	118
	8	Int.	DSW119-080-10DI8		10	80	95	142
12.0	3	Ext.	DSW120-040-12DE3		12	40	55	102
	5	Ext.	DSW120-056-12DE5		12	56	71	118
	5	Int.	DSW120-056-12DI5		12	56	71	118
	8	Int.	DSW120-080-10DI8		10	80	95	142
12.1	3	Ext.	DSW121-043-14DE3		14	43	60	107
	5	Ext.	DSW121-060-14DE5		14	60	77	124
	5	Int.	DSW121-060-14DI5		14	60	77	124
	8	Int.	DSW121-080-10DI8		10	80	95	142
12.2	3	Ext.	DSW122-043-14DE3		14	43	60	107
	5	Ext.	DSW122-060-14DE5		14	60	77	124
	5	Int.	DSW122-060-14DI5		14	60	77	124
	8	Int.	DSW122-080-10DI8		10	80	95	142
12.3	3	Ext.	DSW123-043-14DE3		14	43	60	107
	5	Ext.	DSW123-060-14DE5		14	60	77	124
	5	Int.	DSW123-060-14DI5		14	60	77	124
	8	Int.	DSW123-080-10DI8		10	80	95	142

*For inquiry on DSW stock, please contact the local office.



Drill dia. $\varnothing D_c$ (mm)	Tolerance m7 (mm)
3.00 ~ 6	0.004 ~ 0.016
6.01 ~ 10	0.006 ~ 0.021
10.01 ~ 16	0.007 ~ 0.025

Drill dia. $\varnothing D_c$	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					$\varnothing D_s$	ℓ_e	ℓ	L
12.4	3	Ext.	DSW124-043-14DE3		14	43	60	107
	5	Ext.	DSW124-060-14DE5		14	60	77	124
	5	Int.	DSW124-060-14DI5		14	60	77	124
12.5	3	Ext.	DSW125-043-14DE3		14	43	60	107
	5	Ext.	DSW125-060-14DE5		14	60	77	124
	5	Int.	DSW125-060-14DI5		14	60	77	124
12.6	3	Ext.	DSW126-043-14DE3		14	43	60	107
	5	Ext.	DSW126-060-14DE5		14	60	77	124
	5	Int.	DSW126-060-14DI5		14	60	77	124
12.7	3	Ext.	DSW127-043-14DE3		14	43	60	107
	5	Ext.	DSW127-060-14DE5		14	60	77	124
	5	Int.	DSW127-060-14DI5		14	60	77	124
12.8	3	Ext.	DSW128-043-14DE3		14	43	60	107
	5	Ext.	DSW128-060-14DE5		14	60	77	124
	5	Int.	DSW128-060-14DI5		14	60	77	124
12.9	3	Ext.	DSW129-043-14DE3		14	43	60	107
	5	Ext.	DSW129-060-14DE5		14	60	77	124
	5	Int.	DSW129-060-14DI5		14	60	77	124
13.0	3	Ext.	DSW130-043-14DE3		14	43	60	107
	5	Ext.	DSW130-060-14DE5		14	60	77	124
	5	Int.	DSW130-060-14DI5		14	60	77	124
13.1	3	Ext.	DSW131-043-14DE3		14	43	60	107
	5	Ext.	DSW131-060-14DE5		14	60	77	124
	5	Int.	DSW131-060-14DI5		14	60	77	124
13.2	3	Ext.	DSW132-043-14DE3		14	43	60	107
	5	Ext.	DSW132-060-14DE5		14	60	77	124
	5	Int.	DSW132-060-14DI5		14	60	77	124
13.3	3	Ext.	DSW133-043-14DE3		14	43	60	107
	5	Ext.	DSW133-060-14DE5		14	60	77	124
	5	Int.	DSW133-060-14DI5		14	60	77	124
13.4	3	Ext.	DSW134-043-14DE3		14	43	60	107
	5	Ext.	DSW134-060-14DE5		14	60	77	124
	5	Int.	DSW134-060-14DI5		14	60	77	124
13.5	3	Ext.	DSW135-043-14DE3		14	43	60	107
	5	Ext.	DSW135-060-14DE5		14	60	77	124
	5	Int.	DSW135-060-14DI5		14	60	77	124
13.6	3	Ext.	DSW136-043-14DE3		14	43	60	107
	5	Ext.	DSW136-060-14DE5		14	60	77	124
	5	Int.	DSW136-060-14DI5		14	60	77	124

Drill dia. $\varnothing D_c$	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					$\varnothing D_s$	ℓ_e	ℓ	L
13.7	3	Ext.	DSW137-043-14DE3		14	43	60	107
	5	Ext.	DSW137-060-14DE5		14	60	77	124
	5	Int.	DSW137-060-14DI5		14	60	77	124
13.8	3	Ext.	DSW138-043-14DE3		14	43	60	107
	5	Ext.	DSW138-060-14DE5		14	60	77	124
	5	Int.	DSW138-060-14DI5		14	60	77	124
13.9	3	Ext.	DSW139-043-14DE3		14	43	60	107
	5	Ext.	DSW139-060-14DE5		14	60	77	124
	5	Int.	DSW139-060-14DI5		14	60	77	124
14.0	3	Ext.	DSW140-043-14DE3		14	43	60	107
	5	Ext.	DSW140-060-14DE5		14	60	77	124
	5	Int.	DSW140-060-14DI5		14	60	77	124
14.1	3	Ext.	DSW141-045-16DE3		16	45	65	115
	5	Ext.	DSW141-063-16DE5		16	63	83	133
	5	Int.	DSW141-063-16DI5		16	63	83	133
14.2	3	Ext.	DSW142-045-16DE3		16	45	65	115
	5	Ext.	DSW142-063-16DE5		16	63	83	133
	5	Int.	DSW142-063-16DI5		16	63	83	133
14.3	3	Ext.	DSW143-045-16DE3		16	45	65	115
	5	Ext.	DSW143-063-16DE5		16	63	83	133
	5	Int.	DSW143-063-16DI5		16	63	83	133
14.4	3	Ext.	DSW144-045-16DE3		16	45	65	115
	5	Ext.	DSW144-063-16DE5		16	63	83	133
	5	Int.	DSW144-063-16DI5		16	63	83	133
14.5	3	Ext.	DSW145-045-16DE3		16	45	65	115
	5	Ext.	DSW145-063-16DE5		16	63	83	133
	5	Int.	DSW145-063-16DI5		16	63	83	133
14.6	3	Ext.	DSW146-045-16DE3		16	45	65	115
	5	Ext.	DSW146-063-16DE5		16	63	83	133
	5	Int.	DSW146-063-16DI5		16	63	83	133
14.7	3	Ext.	DSW147-045-16DE3		16	45	65	115
	5	Ext.	DSW147-063-16DE5		16	63	83	133
	5	Int.	DSW147-063-16DI5		16	63	83	133
14.8	3	Ext.	DSW148-045-16DE3		16	45	65	115
	5	Ext.	DSW148-063-16DE5		16	63	83	133
	5	Int.	DSW148-063-16DI5		16	63	83	133
14.9	3	Ext.	DSW149-045-16DE3		16	45	65	115
	5	Ext.	DSW149-063-16DE5		16	63	83	133
	5	Int.	DSW149-063-16DI5		16	63	83	133

*For inquiry on DSW stock, please contact the local office.

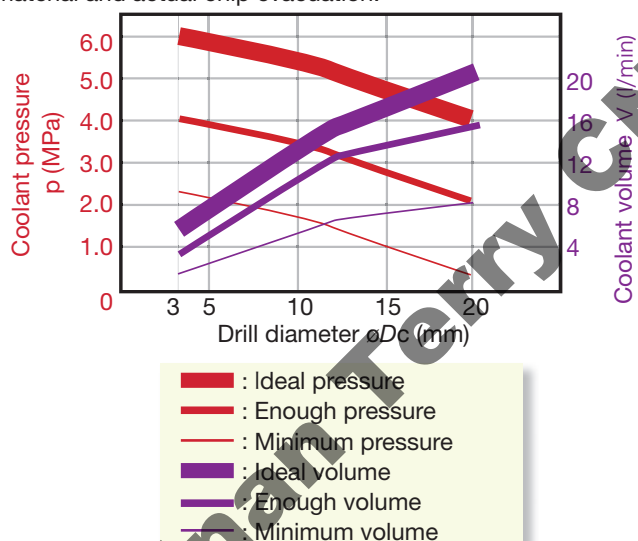
Drill dia. ϕD_c	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					ϕD_s	ℓ_e	ℓ	L
15.0	3	Ext.	DSW150-045-16DE3		16	45	65	115
	5	Ext.	DSW150-063-16DE5		16	63	83	133
	5	Int.	DSW150-063-16DI5		16	63	83	133
15.1	3	Ext.	DSW151-045-16DE3		16	45	65	115
	5	Ext.	DSW151-063-16DE5		16	63	83	133
	5	Int.	DSW151-063-16DI5		16	63	83	133
15.2	3	Ext.	DSW152-045-16DE3		16	45	65	115
	5	Ext.	DSW152-063-16DE5		16	63	83	133
	5	Int.	DSW152-063-16DI5		16	63	83	133
15.3	3	Ext.	DSW153-045-16DE3		16	45	65	115
	5	Ext.	DSW153-063-16DE5		16	63	83	133
	5	Int.	DSW153-063-16DI5		16	63	83	133
15.4	3	Ext.	DSW154-045-16DE3		16	45	65	115
	5	Ext.	DSW154-063-16DE5		16	63	83	133
	5	Int.	DSW154-063-16DI5		16	63	83	133
15.5	3	Ext.	DSW155-045-16DE3		16	45	65	115
	5	Ext.	DSW155-063-16DE5		16	63	83	133
	5	Int.	DSW155-063-16DI5		16	63	83	133

Drill dia. ϕD_c	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					ϕD_s	ℓ_e	ℓ	L
15.6	3	Ext.	DSW156-045-16DE3		16	45	65	115
	5	Ext.	DSW156-063-16DE5		16	63	83	133
	5	Int.	DSW156-063-16DI5		16	63	83	133
15.7	3	Ext.	DSW157-045-16DE3		16	45	65	115
	5	Ext.	DSW157-063-16DE5		16	63	83	133
	5	Int.	DSW157-063-16DI5		16	63	83	133
15.8	3	Ext.	DSW158-045-16DE3		16	45	65	115
	5	Ext.	DSW158-063-16DE5		16	63	83	133
	5	Int.	DSW158-063-16DI5		16	63	83	133
15.9	3	Ext.	DSW159-045-16DE3		16	45	65	115
	5	Ext.	DSW159-063-16DE5		16	63	83	133
	5	Int.	DSW159-063-16DI5		16	63	83	133
16.0	3	Ext.	DSW160-045-16DE3		16	45	65	115
	5	Ext.	DSW160-063-16DE5		16	63	83	133
	5	Int.	DSW160-063-16DI5		16	63	83	133

*For inquiry on DSW stock, please contact the local office.

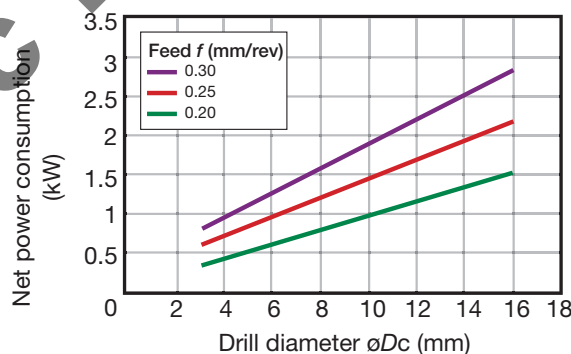
■ Recommended coolant pressure and volume for internal coolant supply:

The following graph is a reference guide for pressure and volume. Values should be adjusted according to work material and actual chip evacuation.



■ Reference for required spindle power:

The required spindle power may vary depending on the type of work material or hardness. A spindle with sufficient power should be used when referring to the below graph.



Work material : Alloy steel (SNCM439)
Cutting speed : $V_c = 100$ m/min

● Designation system

The designation for the new solid drill series includes tool dimensions for easy product identification.

DSW	088	-	035	-	10	-	D	E	3
1	2		3		4		5	6	7

1 Series	DSW Series name of solid drill
2 Drill dia. ϕD_c (mm)	088 $\phi 8.8$
3 Effective flute length ℓ_e (mm)	035 35

4 Shank diameter ϕD_s (mm)	10 $\phi 10$
5 DIN 6535 - Form HA	
6 Coolant Supply	E External (without coolant hole) I Internal (with coolant hole)

7 Drilling depth	Approximate value of L/D ratio. Caution: Code may be different from the actual length. This is dependent upon the tool diameter.
Caution: "Effective flute length" shows the maximum flute length for effective chip evacuation. The actual drilling depth may be shorter than described depending on the work material or cutting conditions.	

Standard cutting conditions

DSW-DE (External supply)

Work materials	Brinell hardness (HB)	Cutting Speed: Vc (m/min)			Feed: f (mm/rev)		
		ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16	ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	~ 180	40 - 100	60 - 120	60 - 130	0.15 - 0.30	0.15 - 0.35	0.20 - 0.50
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	180 ~ 300	40 - 90	50 - 120	60 - 130	0.15 - 0.30	0.15 - 0.35	0.20 - 0.40
High alloy steels SCM440 etc. (42CrMo4 etc.)	250 ~ 350	40 - 80	50 - 100	50 - 100	0.10 - 0.20	0.15 - 0.20	0.15 - 0.35
Stainless steels SUS304 etc. (X5CrNi18-9 etc.)	~ 200	10 - 20	10 - 20	10 - 20	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15
Grey cast irons FC300 etc. (GG30 etc.)	~ 200	40 - 90	50 - 95	50 - 100	0.15 - 0.30	0.20 - 0.40	0.20 - 0.50
Ductile cast irons FCD450 etc. (GGG45 etc.)	~ 300	30 - 80	40 - 90	45 - 90	0.10 - 0.30	0.20 - 0.40	0.20 - 0.40
Aluminium alloys ADC12 etc.	-	40 - 90	50 - 100	50 - 100	0.15 - 0.30	0.20 - 0.40	0.20 - 0.50
Titanium alloys Ti-6Al-4V etc.	-	20 - 40	20 - 40	20 - 40	0.10 - 0.20	0.15 - 0.25	0.15 - 0.40
Heat-resistant alloys, Inconel Inconel 718 etc.	250 ~	10 - 30	10 - 30	10 - 30	0.03 - 0.07	0.05 - 0.10	0.07 - 0.12
High hardened steels SKD11 etc.	~ 40HRC	10 - 30	10 - 30	10 - 30	0.05 - 0.15	0.05 - 0.15	0.05 - 0.20

· The cutting parameters shown in the table are merely a starting guideline for general machining. Values should be varied depending on the power or rigidity of the machine to be used. Optimum conditions should be selected depending on the actual chip control or damage on edges.

· When using the smaller diameter tools in each range, set the feed "f" to the lower recommended values.

to the lower recommended values.

· The coolant supply is critical for the provision of stable machining conditions and enhanced tool life. A large coolant volume should be supplied, especially when drilling difficult-to-cut materials.

· When drilling stainless steel with low machinability such as austenitic stainless steel with a depth deeper than L/D = 3, a pecking cycle or internal coolant supply is recommended.

DSW-DI (Internal supply)

Work materials	Brinell hardness (HB)	Cutting Speed: Vc (m/min)			Feed: f (mm/rev)		
		ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16	ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	~ 180	70 - 140	80 - 160	90 - 190	0.15 - 0.30	0.15 - 0.35	0.20 - 0.50
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	180 ~ 300	40 - 90	40 - 90	60 - 130	0.15 - 0.30	0.15 - 0.35	0.20 - 0.40
High alloy steels SCM440 etc. (42CrMo4 etc.)	250 ~ 350	40 - 80	50 - 100	50 - 100	0.10 - 0.20	0.15 - 0.20	0.15 - 0.35
Stainless steels SUS304 etc. (X5CrNi18-9 etc.)	~ 200	25 - 75	25 - 75	25 - 75	0.05 - 0.15	0.05 - 0.15	0.10 - 0.30
Grey cast irons FC300 etc. (GG30 etc.)	~ 200	70 - 90	70 - 90	70 - 90	0.15 - 0.30	0.20 - 0.40	0.20 - 0.50
Ductile cast irons FCD450 etc. (GGG45 etc.)	~ 300	40 - 90	40 - 90	40 - 90	0.10 - 0.30	0.20 - 0.40	0.20 - 0.40
Aluminium alloys ADC12 etc.	-	60 - 200	60 - 200	60 - 200	0.15 - 0.30	0.20 - 0.40	0.20 - 0.50
Titanium alloys Ti-6Al-4V etc.	-	20 - 40	20 - 40	20 - 40	0.10 - 0.20	0.15 - 0.25	0.15 - 0.40
Heat-resistant alloys, Inconel Inconel 718 etc.	250 ~	10 - 30	10 - 30	10 - 30	0.03 - 0.07	0.05 - 0.10	0.07 - 0.12
High hardened steels SKD11 etc.	~ 40HRC	10 - 30	10 - 30	10 - 30	0.05 - 0.15	0.05 - 0.15	0.05 - 0.20

· The cutting parameters shown in the table are merely a starting guideline for general machining. Values should be varied depending on the power or rigidity of the machine to be used. Optimum conditions should be selected depending on the actual chip control or damage on edges.

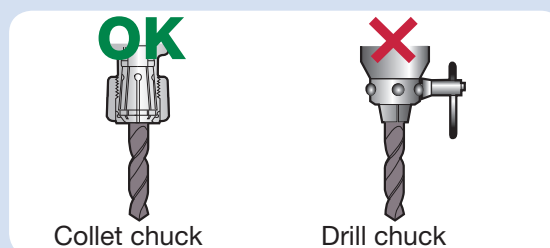
· When using the smaller diameter tools in each range, set the feed "f" to the lower recommended values.

· Oil holes that become blocked may cause drill breakages. A filter to prevent the circulation of chips must be used on the coolant supply system.

● Guidelines for correct usage of carbide drills

● Holders for solid carbide drills:

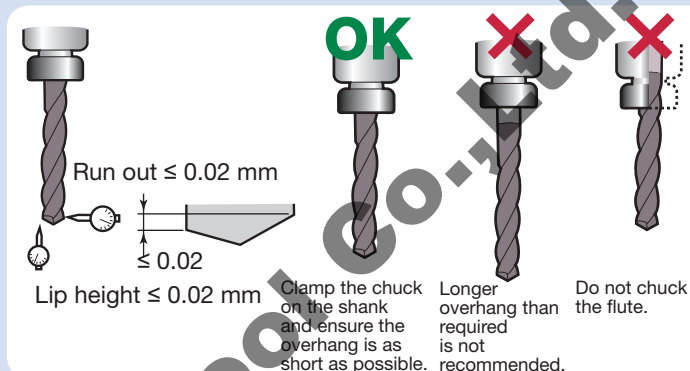
A collet chuck holder is recommended for use with carbide drills. When using a milling chuck holder, a collet chuck with a straight shank or straight collet should be used.



● Chucking drills:

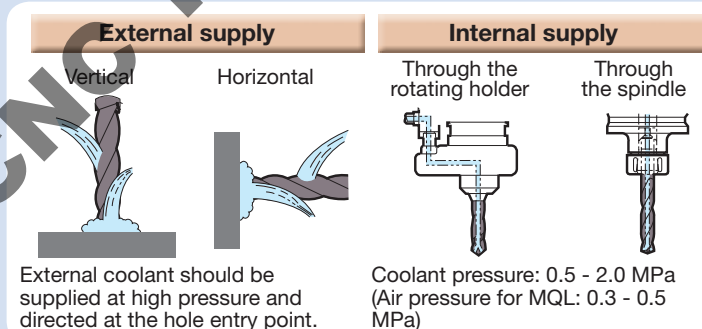
■ Radial run out and lip height should be less than 0.02mm. If run out or lip height is larger (close to 0.05mm), machining is possible. However, less accurate holes or short tool life may be a result.

■ Overhang length should be as short as possible.



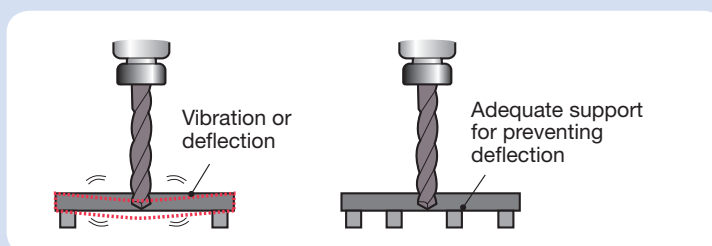
● Coolant Supply:

When using a drill without a coolant hole, such as the DSW-DE type, coolant should always be directed to the entrance of the hole. Maintaining this supplying is very important for stable drilling performance.



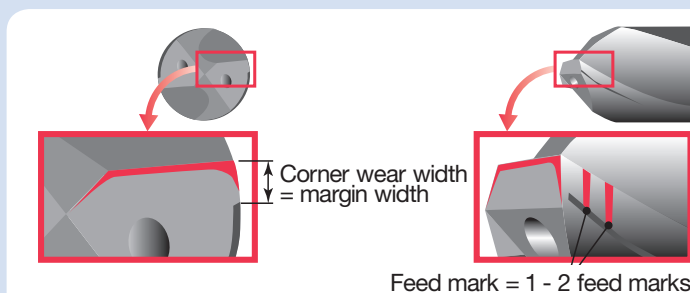
● Clamping workpieces:

As solid carbide drills have a higher thrust force, machining with low rigidity or inadequate support can cause fractures or breakages through vibration. It is important the workpiece is rigidly clamped and has adequate support.



● The criteria of tool life:

- Corner wear width: equal to margin width
- Feed mark: 1 - 2 feed marks on the margin
- Spindle load increase: 30% higher than starting level
- Irregular situation: worse chip control, hole diameter change, worse surface finish, larger burrs, bigger sound.

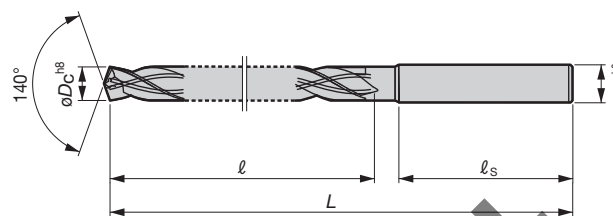


(Ti,Al)N
CoatedDiameter
ø3.0~20.0 mmIT9~10
IT class30°
Helix3/5/8
L/D140°
Point angleFor High Speed and efficient Deep Hole Drilling of Steels
Coated solid carbide drills with spiral oil holes

Internal coolant supply



Drill Dia. øDc	øDc≤3.0	3.0<øDc≤6.0	6.0<øDc≤10.0	10.0<øDc≤18.0	18.0<øDc≤20.0
Tolerances	0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033



L/D = 3

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)			
			øDs	ℓ	ℓs	L
3.0	DSX0300F03	▲	3.0	15		68
3.1	DSX0310F03	▲				
3.2	DSX0320F03	▲				
3.3	DSX0330F03	▲		18		71
3.4	DSX0340F03	▲				
3.5	DSX0350F03	▲	4.0		48	
3.6	DSX0360F03	▲				
3.7	DSX0370F03	▲		20		73
3.8	DSX0380F03	▲				
3.9	DSX0390F03	▲				
4.0	DSX0400F03	▲				
4.1	DSX0410F03	▲				
4.2	DSX0420F03	▲				
4.3	DSX0430F03	▲		23		78
4.4	DSX0440F03	▲				
4.5	DSX0450F03	▲	5.0		50	
4.6	DSX0460F03	▲				
4.7	DSX0470F03	▲				
4.8	DSX0480F03	▲		25		80
4.9	DSX0490F03	▲				
5.0	DSX0500F03	▲				
5.1	DSX0510F03	▲				
5.2	DSX0520F03	▲				
5.3	DSX0530F03	▲		28		
5.4	DSX0540F03	▲				
5.5	DSX0550F03	▲	6.0		52	82
5.6	DSX0560F03	▲				
5.7	DSX0570F03	▲				
5.8	DSX0580F03	▲		30		
5.9	DSX0590F03	▲				
6.0	DSX0600F03	▲				
6.1	DSX0610F03	▲				
6.2	DSX0620F03	▲				
6.3	DSX0630F03	▲		33		86
6.4	DSX0640F03	▲				
6.5	DSX0650F03	▲	7.0		53	
6.6	DSX0660F03	▲				
6.7	DSX0670F03	▲				
6.8	DSX0680F03	▲		35		88
6.9	DSX0690F03	▲				
7.0	DSX0700F03	▲				
7.1	DSX0710F03	▲				
7.2	DSX0720F03	▲				
7.3	DSX0730F03	▲	8.0	38	54	92
7.4	DSX0740F03	▲				

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)			
			øDs	ℓ	ℓs	L
7.5	DSX0750F03	▲		38		92
7.6	DSX0760F03	▲				
7.7	DSX0770F03	▲	8.0		54	
7.8	DSX0780F03	▲		40		94
7.9	DSX0790F03	▲				
8.0	DSX0800F03	▲				
8.1	DSX0810F03	▲				
8.2	DSX0820F03	▲				
8.3	DSX0830F03	▲		43		
8.4	DSX0840F03	▲				
8.5	DSX0850F03	▲	9.0		55	100
8.6	DSX0860F03	▲				
8.7	DSX0870F03	▲				
8.8	DSX0880F03	▲		45		
8.9	DSX0890F03	▲				
9.0	DSX0900F03	▲				
9.1	DSX0910F03	▲				
9.2	DSX0920F03	▲				
9.3	DSX0930F03	▲		48		
9.4	DSX0940F03	▲				
9.5	DSX0950F03	▲	10.0		56	106
9.6	DSX0960F03	▲				
9.7	DSX0970F03	▲				
9.8	DSX0980F03	▲		50		
9.9	DSX0990F03	▲				
10.0	DSX1000F03	▲				
10.1	DSX1010F03	▲				
10.2	DSX1020F03	▲				
10.3	DSX1030F03	▲				
10.4	DSX1040F03	▲				
10.5	DSX1050F03	▲	11.0		61	116
10.6	DSX1060F03	▲				
10.7	DSX1070F03	▲				
10.8	DSX1080F03	▲		53		
10.9	DSX1090F03	▲				
11.0	DSX1100F03	▲				
11.1	DSX1110F03	▲				
11.2	DSX1120F03	▲				
11.3	DSX1130F03	▲				
11.4	DSX1140F03	▲		55		
11.5	DSX1150F03	▲				
11.6	DSX1160F03	▲				
11.7	DSX1170F03	▲				
11.8	DSX1180F03	▲		58		
11.9	DSX1190F03	▲				
			12.0		62	122
				60		

▲ : Discontinued items

■ L/D = 5

Drill dia. øD _C	Cat. No.	Stock	Dimensions (mm)			
			øD _S	ℓ	ℓ _S	L
12.0	DSX1200F03	▲	12.0	60	62	122
12.1	DSX1210F03	▲	13.0	65	63	128
12.2	DSX1220F03	▲				
12.3	DSX1230F03	▲				
12.4	DSX1240F03	▲				
12.5	DSX1250F03	▲				
12.6	DSX1260F03	▲				
12.7	DSX1270F03	▲				
12.8	DSX1280F03	▲				
12.9	DSX1290F03	▲	14.0	70	64	134
13.0	DSX1300F03	▲				
13.1	DSX1310F03	▲				
13.2	DSX1320F03	▲				
13.3	DSX1330F03	▲				
13.4	DSX1340F03	▲				
13.5	DSX1350F03	▲				
13.6	DSX1360F03	▲				
13.7	DSX1370F03	▲				
13.8	DSX1380F03	▲				
13.9	DSX1390F03	▲				
14.0	DSX1400F03	▲	15.0	75	65	140
14.1	DSX1410F03	▲				
14.2	DSX1420F03	▲				
14.3	DSX1430F03	▲				
14.4	DSX1440F03	▲				
14.5	DSX1450F03	▲				
14.6	DSX1460F03	▲				
14.7	DSX1470F03	▲				
14.8	DSX1480F03	▲				
14.9	DSX1490F03	▲				
15.0	DSX1500F03	▲				
15.1	DSX1510F03	▲	16.0	80	66	146
15.2	DSX1520F03	▲				
15.3	DSX1530F03	▲				
15.4	DSX1540F03	▲				
15.5	DSX1550F03	▲				
15.6	DSX1560F03	▲				
15.7	DSX1570F03	▲				
15.8	DSX1580F03	▲				
15.9	DSX1590F03	▲				
16.0	DSX1600F03	▲				
16.5	DSX1650F03	▲	17.0	85	67	152
17.0	DSX1700F03	▲				
17.5	DSX1750F03	▲				
18.0	DSX1800F03	▲	18.0	90	68	158
18.5	DSX1850F03	▲				
19.0	DSX1900F03	▲	19.0	95	69	164
19.5	DSX1950F03	▲				
20.0	DSX2000F03	▲	20.0	100	70	170

Note: L/D = Hole depth / Drill diameter

Drill dia. $\varnothing D_c$	Cat. No.	Stock	Dimensions (mm)			
			$\varnothing D_s$	ℓ	ℓ_s	L
3.0	DSX0300F05	▲	3.0	24	48	77
3.1	DSX0310F05	▲	4.0	28		81
3.2	DSX0320F05	▲				
3.3	DSX0330F05	▲				
3.4	DSX0340F05	▲				
3.5	DSX0350F05	▲		32		85
3.6	DSX0360F05	▲				
3.7	DSX0370F05	▲				
3.8	DSX0380F05	▲				
3.9	DSX0390F05	▲	5.0	36	91	
4.0	DSX0400F05	▲				
4.1	DSX0410F05	▲				
4.2	DSX0420F05	▲				
4.3	DSX0430F05	▲		40	94	
4.4	DSX0440F05	▲				
4.5	DSX0450F05	▲				
4.6	DSX0460F05	▲				
4.7	DSX0470F05	▲	6.0	44	96	
4.8	DSX0480F05	▲				
4.9	DSX0490F05	▲				
5.0	DSX0500F05	▲				
5.1	DSX0510F05	▲		48	100	
5.2	DSX0520F05	▲				
5.3	DSX0530F05	▲				
5.4	DSX0540F05	▲				
5.5	DSX0550F05	▲	7.0	52	105	
5.6	DSX0560F05	▲				
5.7	DSX0570F05	▲				
5.8	DSX0580F05	▲				
5.9	DSX0590F05	▲		56	109	
6.0	DSX0600F05	▲				
6.1	DSX0610F05	▲				
6.2	DSX0620F05	▲				
6.3	DSX0630F05	▲	8.0	60	114	
6.4	DSX0640F05	▲				
6.5	DSX0650F05	▲				
6.6	DSX0660F05	▲				
6.7	DSX0670F05	▲		64	118	
6.8	DSX0680F05	▲				
6.9	DSX0690F05	▲				
7.0	DSX0700F05	▲				
7.1	DSX0710F05	▲	9.0	68	127	
7.2	DSX0720F05	▲				
7.3	DSX0730F05	▲				
7.4	DSX0740F05	▲				
7.5	DSX0750F05	▲		72		
7.6	DSX0760F05	▲				
7.7	DSX0770F05	▲				
7.8	DSX0780F05	▲				
7.9	DSX0790F05	▲				
8.0	DSX0800F05	▲				
8.1	DSX0810F05	▲	9.0	68	55	127
8.2	DSX0820F05	▲				
8.3	DSX0830F05	▲				
8.4	DSX0840F05	▲				
8.5	DSX0850F05	▲		72		
8.6	DSX0860F05	▲				
8.7	DSX0870F05	▲				
8.8	DSX0880F05	▲				
8.9	DSX0890F05	▲				

▲ : Discontinued items

(Ti, Al) N
CoatedDiameter
ø3.0~20.0 mmIT9~10
IT classP
SteelM
StainlessK
Cast IronN
Non-ferrousS
SuperalloysH
Hard Materials

Drill dia. øD _c	Cat. No.	Stock	Dimensions (mm)			
			øD _s	ℓ	ℓ _s	L
9.0	DSX0900F05	▲	9.0	72	55	127
9.1	DSX0910F05	▲	10.0	76	56	136
9.2	DSX0920F05	▲				
9.3	DSX0930F05	▲				
9.4	DSX0940F05	▲				
9.5	DSX0950F05	▲				
9.6	DSX0960F05	▲		80		
9.7	DSX0970F05	▲				
9.8	DSX0980F05	▲				
9.9	DSX0990F05	▲				
10.0	DSX1000F05	▲				
10.1	DSX1010F05	▲	11.0	84	61	149
10.2	DSX1020F05	▲				
10.3	DSX1030F05	▲				
10.4	DSX1040F05	▲				
10.5	DSX1050F05	▲				
10.6	DSX1060F05	▲		88		
10.7	DSX1070F05	▲				
10.8	DSX1080F05	▲				
10.9	DSX1090F05	▲				
11.0	DSX1100F05	▲				
11.1	DSX1110F05	▲	12.0	92	62	158
11.2	DSX1120F05	▲				
11.3	DSX1130F05	▲				
11.4	DSX1140F05	▲				
11.5	DSX1150F05	▲				
11.6	DSX1160F05	▲		96		
11.7	DSX1170F05	▲				
11.8	DSX1180F05	▲				
11.9	DSX1190F05	▲				
12.0	DSX1200F05	▲				
12.1	DSX1210F05	▲	13.0	104	63	167
12.2	DSX1220F05	▲				
12.3	DSX1230F05	▲				
12.4	DSX1240F05	▲				
12.5	DSX1250F05	▲				
12.6	DSX1260F05	▲				
12.7	DSX1270F05	▲				
12.8	DSX1280F05	▲				
12.9	DSX1290F05	▲				
13.0	DSX1300F05	▲				
13.1	DSX1310F05	▲	14.0	112	64	176
13.2	DSX1320F05	▲				
13.3	DSX1330F05	▲				
13.4	DSX1340F05	▲				
13.5	DSX1350F05	▲				
13.6	DSX1360F05	▲				
13.7	DSX1370F05	▲				
13.8	DSX1380F05	▲				
13.9	DSX1390F05	▲				
14.0	DSX1400F05	▲				
14.1	DSX1410F05	▲	15.0	120	65	185
14.2	DSX1420F05	▲				
14.3	DSX1430F05	▲				
14.4	DSX1440F05	▲				
14.5	DSX1450F05	▲				
14.6	DSX1460F05	▲				
14.7	DSX1470F05	▲				
14.8	DSX1480F05	▲				
14.9	DSX1490F05	▲				

Drill dia. øD _c	Cat. No.	Stock	Dimensions (mm)			
			øD _s	ℓ	ℓ _s	L
15.0	DSX1500F05	▲	15.0	120	65	185
15.1	DSX1510F05	▲	16.0	128	66	194
15.2	DSX1520F05	▲				
15.3	DSX1530F05	▲				
15.4	DSX1540F05	▲				
15.5	DSX1550F05	▲				
15.6	DSX1560F05	▲				
15.7	DSX1570F05	▲				
15.8	DSX1580F05	▲				
15.9	DSX1590F05	▲				
16.0	DSX1600F05	▲				
16.5	DSX1650F05	▲	17.0	136	67	203
17.0	DSX1700F05	▲	18.0	144	68	212
17.5	DSX1750F05	▲				
18.0	DSX1800F05	▲	19.0	152	69	221
18.5	DSX1850F05	▲				
19.0	DSX1900F05	▲				
19.5	DSX1950F05	▲				
20.0	DSX2000F05	▲	20.0	160	70	230

Note: L/D = Hole depth / Drill diameter

▲ : Discontinued items

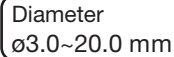
■ L/D = 8

Drill dia. øD _C	Cat. No.	Stock	Dimensions (mm)			
			øD _S	ℓ	ℓ _S	L
3.0	DSX0300F08	▲	3.0	33	48	86
3.1	DSX0310F08					
3.2	DSX0320F08					
3.3	DSX0330F08			39		92
3.4	DSX0340F08					
3.5	DSX0350F08	▲	4.0		48	
3.6	DSX0360F08					
3.7	DSX0370F08					
3.8	DSX0380F08			44		97
3.9	DSX0390F08					
4.0	DSX0400F08	▲				
4.1	DSX0410F08					
4.2	DSX0420F08					
4.3	DSX0430F08			50		105
4.4	DSX0440F08					
4.5	DSX0450F08	▲	5.0		50	
4.6	DSX0460F08					
4.7	DSX0470F08					
4.8	DSX0480F08			55		110
4.9	DSX0490F08					
5.0	DSX0500F08	▲				
5.1	DSX0510F08					
5.2	DSX0520F08					
5.3	DSX0530F08			61		113
5.4	DSX0540F08					
5.5	DSX0550F08	▲	6.0		52	
5.6	DSX0560F08					
5.7	DSX0570F08					
5.8	DSX0580F08			66		118
5.9	DSX0590F08					
6.0	DSX0600F08	▲				
6.1	DSX0610F08					
6.2	DSX0620F08					
6.3	DSX0630F08			72		125
6.4	DSX0640F08					
6.5	DSX0650F08	▲	7.0		53	
6.6	DSX0660F08					
6.7	DSX0670F08					
6.8	DSX0680F08			77		130
6.9	DSX0690F08					
7.0	DSX0700F08	▲				
7.1	DSX0710F08					
7.2	DSX0720F08					
7.3	DSX0730F08			83		137
7.4	DSX0740F08					
7.5	DSX0750F08	▲	8.0		54	
7.6	DSX0760F08					
7.7	DSX0770F08					
7.8	DSX0780F08			88		142
7.9	DSX0790F08					
8.0	DSX0800F08	▲				

Drill dia. øD _C	Cat. No.	Stock	Dimensions (mm)			
			øD _S	ℓ	ℓ _S	L
8.1	DSX0810F08					
8.2	DSX0820F08					
8.3	DSX0830F08			94		
8.4	DSX0840F08					
8.5	DSX0850F08	▲	9.0		55	154
8.6	DSX0860F08					
8.7	DSX0870F08					
8.8	DSX0880F08			99		
8.9	DSX0890F08					
9.0	DSX0900F08	▲				
9.1	DSX0910F08					
9.2	DSX0920F08					
9.3	DSX0930F08			105		
9.4	DSX0940F08					
9.5	DSX0950F08	▲	10.0		56	166
9.6	DSX0960F08					
9.7	DSX0970F08					
9.8	DSX0980F08			110		
9.9	DSX0990F08					
10.0	DSX1000F08	▲				
10.1	DSX1010F08					
10.2	DSX1020F08					
10.3	DSX1030F08			116		
10.4	DSX1040F08					
10.5	DSX1050F08	▲	11.0		61	182
10.6	DSX1060F08					
10.7	DSX1070F08					
10.8	DSX1080F08			121		
10.9	DSX1090F08					
11.0	DSX1100F08	▲				
11.1	DSX1110F08					
11.2	DSX1120F08					
11.3	DSX1130F08			127		
11.4	DSX1140F08					
11.5	DSX1150F08	▲	12.0		62	194
11.6	DSX1160F08					
11.7	DSX1170F08					
11.8	DSX1180F08			132		
11.9	DSX1190F08					
12.0	DSX1200F08	▲				
12.1	DSX1210F08					
12.2	DSX1220F08					
12.3	DSX1230F08					
12.4	DSX1240F08					
12.5	DSX1250F08	▲	13.0		63	206
12.6	DSX1260F08			143		
12.7	DSX1270F08					
12.8	DSX1280F08					
12.9	DSX1290F08					
13.0	DSX1300F08	▲				
13.1	DSX1310F08		14.0	154	64	218

- No. of revolutions (min⁻¹) = Cutting speed × 1000 ÷ 3.14 ÷ Tool diameter
- Table feed (mm / min) = No. of revolutions × Feed per revolution

▲ : Discontinued items



Drill dia. ϕD_c	Cat. No.	Stock	Dimensions (mm)			
			ϕD_s	ℓ	ℓ_s	L
13.2	DSX1320F08		14.0	154	64	218
13.3	DSX1330F08					
13.4	DSX1340F08					
13.5	DSX1350F08	▲				
13.6	DSX1360F08					
13.7	DSX1370F08					
13.8	DSX1380F08					
13.9	DSX1390F08					
14.0	DSX1400F08	▲	15.0	165	65	230
14.1	DSX1410F08					
14.2	DSX1420F08					
14.3	DSX1430F08					
14.4	DSX1440F08					
14.5	DSX1450F08	▲				
14.6	DSX1460F08					
14.7	DSX1470F08					
14.8	DSX1480F08		16.0	176	66	242
14.9	DSX1490F08					
15.0	DSX1500F08	▲				
15.1	DSX1510F08					
15.2	DSX1520F08					
15.3	DSX1530F08					
15.4	DSX1540F08					
15.5	DSX1550F08	▲				
15.6	DSX1560F08					
15.7	DSX1570F08					
15.8	DSX1580F08					
15.9	DSX1590F08					
16.0	DSX1600F08	▲				

Standard cutting conditions

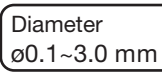
Work materials	Examples (JIS)	Hardness	Cutting speed: V_c (m/min)			Feed: f (mm/rev)		
			$\phi 3 \sim \phi 6$	$\phi 6 \sim \phi 10$	$\phi 10 \sim \phi 20$	$\phi 3 \sim \phi 6$	$\phi 6 \sim \phi 10$	$\phi 10 \sim \phi 20$
Mild steels, Low carbon steels	USt.42-2, Ck25	< 180HB	70 - 120 - 140	80 - 130 - 160	90 - 160 - 190	0.15 - 0.20 - 0.25	0.20 - 0.30 - 0.35	0.25 - 0.30 - 0.40
Carbon steels, Alloy steels	CK45, 42CrMo4	180 ~ 300HB	50 - 100 - 130	70 - 120 - 160	80 - 140 - 170	0.15 - 0.20 - 0.25	0.20 - 0.30 - 0.35	0.25 - 0.30 - 0.40
High alloy steels etc.	42CrMoS4	250 ~ 350HB	40 - 80 - 100	60 - 90 - 140	60 - 100 - 160	0.10 - 0.15 - 0.20	0.15 - 0.25 - 0.30	0.15 - 0.25 - 0.30
Stainless steels	X5CrNi18-10	< 200HB	30 - 60 - 70	50 - 80 - 100	50 - 90 - 120	0.10 - 0.15 - 0.20	0.10 - 0.20 - 0.25	0.15 - 0.25 - 0.35
Grey cast irons	GG25	< 200HB	80 - 110 - 140	100 - 140 - 160	100 - 160 - 180	0.15 - 0.25 - 0.35	0.20 - 0.35 - 0.40	0.25 - 0.40 - 0.50
Ductile cast irons	GGG70	< 300HB	70 - 100 - 140	80 - 120 - 150	80 - 140 - 170	0.15 - 0.25 - 0.35	0.20 - 0.30 - 0.40	0.25 - 0.35 - 0.45
Aluminium alloys	ADC12	-	80 - 130 - 160	100 - 160 - 180	100 - 170 - 190	0.15 - 0.25 - 0.35	0.20 - 0.30 - 0.45	0.25 - 0.40 - 0.60
Titanium alloys	Ti-6Al-4V	-	25 - 40 - 60	30 - 60 - 80	30 - 60 - 80	0.10 - 0.15 - 0.20	0.10 - 0.20 - 0.25	0.15 - 0.25 - 0.35
Heat-resistant alloys	Inconel	250HB <	10 - 20 - 30	10 - 30 - 40	10 - 30 - 40	0.02 - 0.04 - 0.10	0.05 - 0.10 - 0.15	0.10 - 0.15 - 0.25
Hard materials	(SKD11)	< 40HRC	20 - 30 - 50	30 - 40 - 60	30 - 40 - 60	0.08 - 0.09 - 0.10	0.10 - 0.12 - 0.15	0.12 - 0.14 - 0.20

Note: • The cutting parameters shown in the table are merely a starting guideline for general machining.
• Values should be varied depending on the power or rigidity of the machine to be used. For the smaller side of drill diameters, select lower feeds.

• Chip packing in the oil holes may cause drill breakage. A filter preventing the circulation of chips should be used on coolant supply.
• Inconel is trademark of Huntington Alloys, Inc.

• No. of revolutions (min^{-1}) = Cutting speed \times 1000 \div 3.14 \div Tool diameter
• Table feed (mm/min) = No. of revolutions \times Feed per revolution

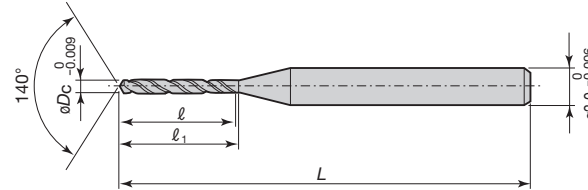
▲ : Discontinued items



For Steels

Coated solid carbide drills

External coolant supply



Drill dia. ϕD_c	L/D	Cat. No.	Stock	Dimensions (mm) L ℓ ℓ_1	Drill dia. ϕD_c	L/D	Cat. No.	Stock	Dimensions (mm) L ℓ ℓ_1	Drill dia. ϕD_c	L/D	Cat. No.	Stock	Dimensions (mm) L ℓ ℓ_1
0.10		DSM0010G10	●	1.15 1.4	0.59	10	DSM0059G10	●	38 7.3 7.9	1.08		DSM0108G05	●	38 8.0 8.6
0.11		DSM0011G10	●	1.25 1.5	0.60		DSM0060G10	●	38 7.3 7.9	1.09	5	DSM0109G05	●	38 8.0 8.6
0.12		DSM0012G10	●	1.35 1.6	0.61		DSM0061G10	●	38 7.3 7.9	1.10		DSM0110G05	●	38 8.0 8.6
0.13		DSM0013G10	●	1.55 1.8	0.62		DSM0062G10	●	38 7.3 7.9	1.11		DSM0111G05	●	38 8.0 8.6
0.14		DSM0014G10	●	1.65 1.9	0.63		DSM0063G10	●	38 7.3 7.9	1.12		DSM0112G05	●	38 8.0 8.6
0.15	10	DSM0015G10	●	1.75 2.0	0.64		DSM0064G10	●	38 7.3 7.9	1.13		DSM0113G05	●	38 8.0 8.6
0.16		DSM0016G10	●	1.85 2.1	0.65	10	DSM0065G10	●	38 7.3 7.9	1.14		DSM0114G05	●	38 8.0 8.6
0.17		DSM0017G10	●	1.95 2.2	0.66		DSM0066G10	●	38 7.3 7.9	1.15	5	DSM0115G05	●	38 8.9 9.5
0.18		DSM0018G10	●	2.15 2.4	0.67		DSM0067G10	●	38 7.3 7.9	1.16		DSM0116G05	●	38 8.9 9.5
0.19		DSM0019G10	●	2.25 2.5	0.68		DSM0068G10	●	38 7.3 7.9	1.17		DSM0117G05	●	38 8.9 9.5
0.20		DSM0020G10	●	2.35 2.6	0.69		DSM0069G10	●	38 7.3 7.9	1.18		DSM0118G05	●	38 8.9 9.5
0.21		DSM0021G10	●	2.45 2.7	0.70		DSM0070G10	●	38 7.3 7.9	1.19		DSM0119G05	●	38 8.9 9.5
0.22		DSM0022G10	●	2.55 2.8	0.71		DSM0071G10	●	38 7.3 7.9	1.20		DSM0120G05	●	38 8.9 9.5
0.23		DSM0023G10	●	2.75 3.0	0.72		DSM0072G10	●	38 7.3 7.9	1.21		DSM0121G05	●	38 8.9 9.5
0.24		DSM0024G10	●	2.85 3.1	0.73		DSM0073G10	●	38 7.3 7.9	1.22		DSM0122G05	●	38 8.9 9.5
0.25	10	DSM0025G10	●	3.0 3.3	0.74		DSM0074G10	●	38 7.3 7.9	1.23		DSM0123G05	●	38 8.9 9.5
0.26		DSM0026G10	●	3.1 3.4	0.75	10	DSM0075G10	●	38 7.3 7.9	1.24	5	DSM0124G05	●	38 9.7 10.3
0.27		DSM0027G10	●	3.2 3.5	0.76		DSM0076G10	●	38 7.3 7.9	1.25		DSM0125G05	●	38 9.7 10.3
0.28		DSM0028G10	●	3.4 3.7	0.77		DSM0077G10	●	38 7.3 7.9	1.26		DSM0126G05	●	38 9.7 10.3
0.29		DSM0029G10	●	3.5 3.8	0.78		DSM0078G10	●	38 7.3 7.9	1.27		DSM0127G05	●	38 9.7 10.3
0.30		DSM0030G10	●	3.9 4.2	0.79		DSM0079G10	●	38 7.3 7.9	1.28		DSM0128G05	●	38 9.7 10.3
0.31		DSM0031G15	●		0.80		DSM0080G10	●	38 7.3 7.9	1.29		DSM0129G05	●	38 9.7 10.3
0.32		DSM0032G15	●		0.81		DSM0081G10	●	38 7.3 7.9	1.30		DSM0130G05	●	38 9.7 10.3
0.33		DSM0033G15	●	5.6 5.9	0.82		DSM0082G10	●	38 7.3 7.9	1.31		DSM0131G05	●	38 9.7 10.3
0.34		DSM0034G15	●		0.83		DSM0083G10	●	38 7.3 7.9	1.32		DSM0132G05	●	38 9.7 10.3
0.35	15	DSM0035G15	●		0.84		DSM0084G10	●	38 7.3 7.9	1.33		DSM0133G05	●	38 9.7 10.3
0.36		DSM0036G15	●		0.85	10	DSM0085G10	●	38 7.3 7.9	1.34	5	DSM0134G05	●	38 10.5 11.1
0.37		DSM0037G15	●		0.86		DSM0086G10	●	38 7.3 7.9	1.35		DSM0135G05	●	38 10.5 11.1
0.38		DSM0038G15	●	6.5 6.8	0.87		DSM0087G10	●	38 7.3 7.9	1.36		DSM0136G05	●	38 10.5 11.1
0.39		DSM0039G15	●		0.88		DSM0088G10	●	38 7.3 7.9	1.37		DSM0137G05	●	38 10.5 11.1
0.40		DSM0040G15	●		0.89		DSM0089G10	●	38 7.3 7.9	1.38		DSM0138G05	●	38 10.5 11.1
0.41		DSM0041G15	●		0.90		DSM0090G10	●	38 7.3 7.9	1.39		DSM0139G05	●	38 10.5 11.1
0.42		DSM0042G15	●		0.91		DSM0091G10	●	38 7.3 7.9	1.40		DSM0140G05	●	38 10.5 11.1
0.43		DSM0043G15	●	7.4 7.7	0.92		DSM0092G10	●	38 7.3 7.9	1.41		DSM0141G05	●	38 10.5 11.1
0.44		DSM0044G15	●		0.93		DSM0093G10	●	38 7.3 7.9	1.42		DSM0142G05	●	38 10.5 11.1
0.45	15	DSM0045G15	●		0.94		DSM0094G10	●	38 7.3 7.9	1.43		DSM0143G05	●	38 10.5 11.1
0.46		DSM0046G15	●		0.95	10	DSM0095G10	●	38 7.3 7.9	1.44	5	DSM0144G05	●	38 11.3 11.9
0.47		DSM0047G15	●		0.96		DSM0096G10	●	38 7.3 7.9	1.45		DSM0145G05	●	38 11.3 11.9
0.48		DSM0048G15	●	8.1 8.7	0.97		DSM0097G10	●	38 7.3 7.9	1.46		DSM0146G05	●	38 11.3 11.9
0.49		DSM0049G15	●		0.98		DSM0098G10	●	38 7.3 7.9	1.47		DSM0147G05	●	38 11.3 11.9
0.50		DSM0050G15	●		0.99		DSM0099G10	●	38 7.3 7.9	1.48		DSM0148G05	●	38 11.3 11.9
0.51		DSM0051G10	●		1.00		DSM0100G10	●	38 7.3 7.9	1.49		DSM0149G05	●	38 11.3 11.9
0.52		DSM0052G10	●		1.01		DSM0101G05	●	38 7.3 7.9	1.50		DSM0150G05	●	38 11.3 11.9
0.53		DSM0053G10	●	6.6 7.2	1.02		DSM0102G05	●	38 7.3 7.9	1.51		DSM0151G05	●	38 11.3 11.9
0.54	10	DSM0054G10	●		1.03		DSM0103G05	●	38 7.3 7.9	1.52	5	DSM0152G05	●	45 12.1 12.7
0.55		DSM0055G10	●		1.04	5	DSM0104G05	●	38 7.3 7.9	1.53		DSM0153G05	●	45 12.1 12.7
0.56		DSM0056G10	●		1.05		DSM0105G05	●	38 7.3 7.9	1.54		DSM0154G05	●	45 12.1 12.7
0.57		DSM0057G10	●	7.3 7.9	1.06		DSM0106G05	●	38 7.3 7.9	1.55		DSM0155G05	●	45 12.1 12.7
0.58		DSM0058G10	●		1.07		DSM0107G05	●	38 7.3 7.9	1.56		DSM0156G05	●	45 12.1 12.7

● : Stocked items

Ti (C,N)
CoatedDiameter
ø0.1~3.0 mmIT9~10
IT class

Drill dia. øDc	L/D	Cat. No.	Stock	Dimensions (mm)			Drill dia. øDc	L/D	Cat. No.	Stock	Dimensions (mm)			Drill dia. øDc	L/D	Cat. No.	Stock	Dimensions (mm)		
				L	ℓ	ℓ ₁					L	ℓ	ℓ ₁					L	ℓ	ℓ ₁
1.57	5	DSM0157G05		45	12.1	12.7	2.06	5	DSM0206G05		45	16.1	16.7	2.55	5	DSM0255G05		55	20.1	20.7
1.58		DSM0158G05					2.07		DSM0207G05					2.56		DSM0256G05				
1.59		DSM0159G05					2.08		DSM0208G05					2.57		DSM0257G05				
1.60		DSM0160G05	●				2.09		DSM0209G05					2.58		DSM0258G05				
1.61	5	DSM0161G05		45	12.9	13.6	2.10	5	DSM0210G05	●	45	16.9	17.5	2.59	5	DSM0259G05		55	20.9	21.5
1.62		DSM0162G05					2.11		DSM0211G05					2.60		DSM0260G05	●			
1.63		DSM0163G05					2.12		DSM0212G05					2.61		DSM0261G05				
1.64		DSM0164G05					2.13		DSM0213G05					2.62		DSM0262G05				
1.65		DSM0165G05	●				2.14		DSM0214G05					2.63		DSM0263G05				
1.66		DSM0166G05					2.15		DSM0215G05					2.64		DSM0264G05				
1.67		DSM0167G05					2.16		DSM0216G05					2.65		DSM0265G05				
1.68		DSM0168G05					2.17		DSM0217G05					2.66		DSM0266G05				
1.69	5	DSM0169G05		45	13.7	14.3	2.18	5	DSM0218G05		45	17.7	18.3	2.67	5	DSM0267G05		55	21.7	22.3
1.70		DSM0170G05	●				2.19		DSM0219G05					2.68		DSM0268G05				
1.71		DSM0171G05					2.20		DSM0220G05	●				2.69		DSM0269G05				
1.72		DSM0172G05					2.21		DSM0221G05					2.70		DSM0270G05	●			
1.73		DSM0173G05					2.22		DSM0222G05					2.71		DSM0271G05				
1.74		DSM0174G05					2.23		DSM0223G05					2.72		DSM0272G05				
1.75		DSM0175G05					2.24		DSM0224G05					2.73		DSM0273G05				
1.76		DSM0176G05					2.25		DSM0225G05					2.74		DSM0274G05				
1.77		DSM0177G05					2.26		DSM0226G05					2.75		DSM0275G05				
1.78		DSM0178G05					2.27		DSM0227G05					2.76		DSM0276G05				
1.79	5	DSM0179G05		45	14.5	15.1	2.28	5	DSM0228G05		55	18.5	19.1	2.77	5	DSM0277G05		55	22.5	23.1
1.80		DSM0180G05	●				2.29		DSM0229G05					2.78		DSM0278G05				
1.81		DSM0181G05					2.30		DSM0230G05	●				2.79		DSM0279G05				
1.82		DSM0182G05	●				2.31		DSM0231G05					2.80		DSM0280G05	●			
1.83		DSM0183G05					2.32		DSM0232G05					2.81		DSM0281G05				
1.84		DSM0184G05					2.33		DSM0233G05					2.82		DSM0282G05				
1.85		DSM0185G05					2.34		DSM0234G05					2.83		DSM0283G05				
1.86		DSM0186G05					2.35		DSM0235G05					2.84		DSM0284G05				
1.87		DSM0187G05					2.36		DSM0236G05					2.85		DSM0285G05				
1.88		DSM0188G05					2.37		DSM0237G05					2.86		DSM0286G05				
1.89	5	DSM0189G05		45	15.3	15.9	2.38	5	DSM0238G05		55	19.3	19.9	2.87	5	DSM0287G05		55	23.3	23.9
1.90		DSM0190G05	●				2.39		DSM0239G05					2.88		DSM0288G05				
1.91		DSM0191G05					2.40		DSM0240G05	●				2.89		DSM0289G05				
1.92		DSM0192G05					2.41		DSM0241G05					2.90		DSM0290G05	●			
1.93		DSM0193G05					2.42		DSM0242G05					2.91		DSM0291G05				
1.94		DSM0194G05					2.43		DSM0243G05					2.92		DSM0292G05				
1.95		DSM0195G05	●				2.44		DSM0244G05					2.93		DSM0293G05				
1.96		DSM0196G05					2.45		DSM0245G05					2.94		DSM0294G05				
1.97		DSM0197G05					2.46		DSM0246G05					2.95		DSM0295G05				
1.98		DSM0198G05					2.47		DSM0247G05					2.96		DSM0296G05				
1.99	5	DSM0199G05		45	16.1	16.7	2.48	5	DSM0248G05		55	20.1	20.7	2.97	5	DSM0297G05		55	23.3	23.9
2.00		DSM0200G05	●				2.49		DSM0249G05					2.98		DSM0298G05				
2.01		DSM0201G05					2.50		DSM0250G05	●				2.99		DSM0299G05				
2.02		DSM0202G05					2.51		DSM0251G05					3.00		DSM0300G05	●			
2.03		DSM0203G05					2.52		DSM0252G05											
2.04		DSM0204G05					2.53		DSM0253G05											
2.05		DSM0205G05					2.54		DSM0254G05											

Note: L/D = Hole depth / Drill diameter

● : Stocked items

Standard cutting conditions

Work materials	Cutting speed: Vc (m/min)			Feed: f (mm/rev)					
	ø0.1 ~ ø0.3	ø0.3 ~ ø0.5	ø0.5 ~ ø3.0	ø0.1 ~ ø0.3	ø0.3 ~ ø0.5	ø0.5 ~ ø1.0	ø1.0 ~ ø2.0	ø2.0 ~ ø3.0	
Carbon and alloy steels	5 - 15 - 20	15 - 25 - 30	25 - 40 - 60	0.001 - 0.002 - 0.004	0.002 - 0.005 - 0.01	0.005 - 0.01 - 0.05	0.03 - 0.06 - 0.09	0.05 - 0.08 - 0.1	
Stainless steels	2 - 6 - 12	6 - 12 - 18	10 - 15 - 20	0.0005 - 0.002 - 0.004	0.002 - 0.005 - 0.008	0.005 - 0.01 - 0.03	0.01 - 0.02 - 0.04	0.02 - 0.03 - 0.05	
Grey cast irons	5 - 10 - 15	10 - 20 - 25	20 - 35 - 50	0.0005 - 0.002 - 0.004	0.002 - 0.005 - 0.012	0.005 - 0.01 - 0.03	0.01 - 0.03 - 0.06	0.03 - 0.05 - 0.12	
Ductile cast irons	5 - 10 - 15	10 - 20 - 25	20 - 35 - 50	0.001 - 0.002 - 0.003	0.002 - 0.005 - 0.01	0.005 - 0.01 - 0.02	0.01 - 0.03 - 0.05	0.03 - 0.05 - 0.1	
Aluminium alloys	10 - 15 - 20	10 - 20 - 30	20 - 35 - 50	0.001 - 0.005 - 0.01	0.005 - 0.01 - 0.03	0.01 - 0.03 - 0.05	0.04 - 0.05 - 0.15	0.06 - 0.1 - 0.2	
Copper / Brass	10 - 15 - 20	10 - 20 - 30	20 - 35 - 50	0.001 - 0.005 - 0.01	0.005 - 0.01 - 0.03	0.01 - 0.03 - 0.05	0.04 - 0.05 - 0.15	0.06 - 0.1 - 0.2	
Hard materials	4 - 6 - 8	6 - 8 - 10	6 - 10 - 16	0.0005 - 0.001 - 0.002	0.001 - 0.003 - 0.005	0.005 - 0.01 - 0.02	0.01 - 0.02 - 0.03	0.02 - 0.04 - 0.06	
Heat-resistant alloys	2 - 4 - 6	5 - 8 - 10	8 - 15 - 20	0.0005 - 0.001 - 0.003	0.002 - 0.003 - 0.004	0.002 - 0.003 - 0.004	0.002 - 0.003 - 0.004	Not recommended	

Notes :

- When the drilling depth is deeper than L/D = 5, use drill pecking every 10 to 50% of the drill diameter.
- The above cutting conditions are applied to when a water soluble cutting fluid is used. For drilling a hole smaller than ø0.3 mm, use of a starting drill is recommended.
- When setting the drill, the drill run out should be within 0.002 mm on the taper. (Especially for the drill diameter smaller than ø0.5 mm)

Regrinding Procedures

Regrinding method [Applied to DSW]

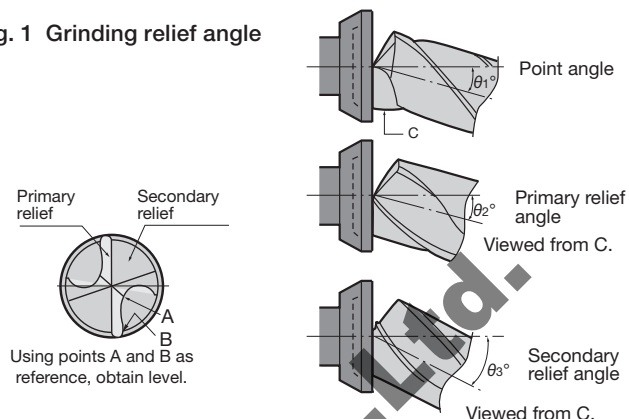
Before regrinding

Check the cutting edge for damage and wear. If any large fracture is found, remove with a silicon carbide wheel.

(1) Grinding the flank

- Use a 280 to 400 grit diamond cup type wheel of 100 ~ 200 mm in diameter.
- 1) Grind the relief surface so that primary relief angle (θ) of 2° can be formed as shown in Fig.1. After grinding the other side likewise, do sparkout grinding so that the difference of the lip height will be kept within 0.02 mm.
- 2) In the cases of DSW types: After grinding the primary relief angle (θ) 2° , without rotating the drill, grind the secondary relief surface so that the relief angle (θ) of 3° can be formed. In the same way as 2), take care to bring the ridge line formed between the primary and secondary relief surfaces to the drill center. (Values (θ) of $1^\circ \sim 3^\circ$ are shown in Table 1)

Fig. 1 Grinding relief angle



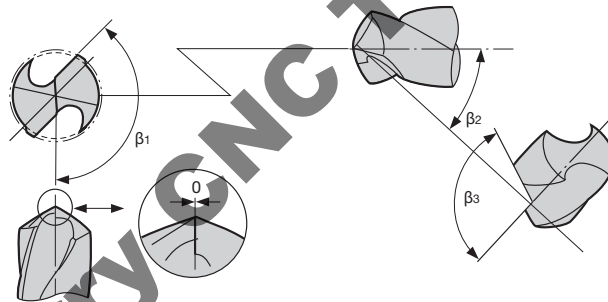
(2) Thinning

- Use a 280 ~ 400 grit diamond straight-type wheel of 100 ~ 200 mm in diameter.
- Conduct thinning in the same manner as cross thinning (X-type).
- Values of β_1 to β_3 written in the figures are given in the Table 2.

Table 1	θ_1 (Point angle)	θ_2 (Primary relief angle)	θ_3 (Secondary relief angle)	θ_4 (Rotating angle)
DSW	-20°	$-5^\circ \sim -9^\circ$	$-23^\circ \sim -27^\circ$	—

Table 2	β_1	β_2	β_3	R
DSW	$145^\circ \sim 150^\circ$	$33^\circ \sim 35^\circ$	$108^\circ \sim 112^\circ$	—

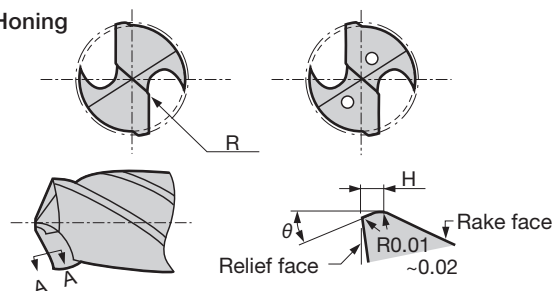
Fig. 2



(3) Honing

- The honing angle θ and width H should be varied depending on the drill type, diameter, and work material. Recommended honing specifications are given in the Table below.
- Honing procedures (refer to Fig.3)
 - (1) Round the R portion shown in Fig.3 in large.
 - (2) Then, roughly hone the cutting edge lines by using an electro-deposited diamond file of around 170 grit.
 - (3) Carry out finish honing by using a diamond hand stick of 400 to 600 grit.
- The honing width should be changed depending on the drill diameter. For smaller side of diameters, the width should be in smaller side of values given in the Table.

Fig.3 Honing



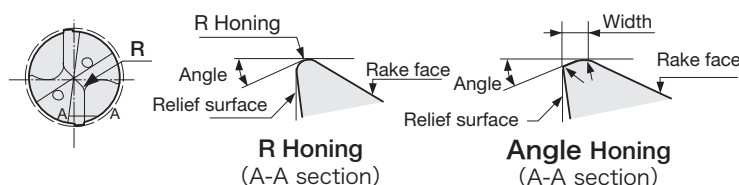
Honing specifications for DSW

Honing

	~ $\phi 6$ mm	$\phi 6 \sim \phi 10$ mm	$\phi 10 \sim \phi 16$ mm
θ	-20°	-20°	-20°
H	0.03 ~ 0.05	0.05 ~ 0.08	0.08 ~ 0.10

R Honing

Dimensions (mm)	R Honing R (mm)
$\phi Dc \leq \phi 6$	0.02 ~ 0.04
$\phi 6 < \phi Dc \leq \phi 12$	0.03 ~ 0.05



After regrinding, check the following before use.

- The difference of the lip height is kept within 0.02 mm.
- Any damaged portion on the cutting edges is not left.
- Cutting edges are properly honed.
- Any grinding burr is not left.

Notes:

- For more details on regrinding, consult the nearest Tungaloy sales office.


Diameter
 $\phi 10.4 \sim 16 \text{ mm}$

IT8~9
IT class

P M K N S
Steel Stainless Cast Iron Non-Ferrous Superalloys

0°
Helix

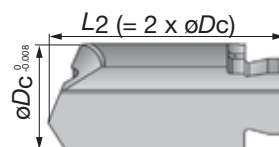
100
L/D

For Deep Hole Drilling
Indexable Head Gun Drills

Coolant supply: internal



Drill heads



M type



P type

Drill heads

Cat. No	Stock	Tool dia. ϕD_c (mm)	Head length L2 (mm)	Head type	Wrench
TGI105-P-G-KS15F	●	10.5	21	P	K GDT-100
TGI110-P-G-KS15F	●	11	22	P	K GDT-110
TGI115-P-G-KS15F	●	11.5	23	P	
TGI120-P-G-KS15F	●	12	24	P	K GDT-120
TGI121-P-G-KS15F	●	12.1	24.2	P	
TGI130-P-G-KS15F	●	13	26	P	K GDT-130
TGI140-P-G-KS15F	●	14	28	P	K GDT-140
TGI141-P-G-KS15F	●	14.1	28.2	P	
TGI150-P-G-KS15F	●	15	30	P	
TGI160-P-G-KS15F	●	16	32	P	K GDT-150
TGI161-P-G-KS15F	●	16.1	32.2	P	
TGI110-M-G-KS15F	●	11	22	M	K GDT-110
TGI115-M-G-KS15F	●	11.5	23	M	
TGI120-M-G-KS15F	●	12	24	M	K GDT-120
TGI121-M-G-KS15F	●	12.1	24.2	M	
TGI140-M-G-KS15F	●	14	28	M	K GDT-140
TGI141-M-G-KS15F	●	14.1	28.2	M	
TGI160-M-G-KS15F	●	16	32	M	K GDT-150
TGI161-M-G-KS15F	●	16.1	32.2	M	
TGI110-P-G-AH725	●	11	22	P	K GDT-110
TGI120-P-G-AH725	●	12	24	P	K GDT-120
TGI140-P-G-AH725	●	14	28	P	K GDT-140

● : Stocked items

Drill body

* Drill body should be ordered depending on each application. When ordering, tool information such as drill diameter, overall length and type of driver must be specified.

Standard cutting condition

Work material	Cutting speed V_c (m/min)	Feed f (mm/rev) ϕD_c (mm)		
		$\phi 9.8 \sim \phi 11.69$	$\phi 11.7 \sim \phi 13.19$	$\phi 13.2 \sim \phi 16.19$
Carbon steel, free-cutting steel	70 - 110	0.030 - 0.050	0.035 - 0.060	0.040 - 0.070
Low alloy steel ($\leq 5\%$ of alloying elements)	50 - 110	0.030 - 0.050	0.035 - 0.060	0.040 - 0.070
High alloy steel	50 - 70	0.025 - 0.040	0.030 - 0.045	0.035 - 0.050
Stainless steel	40 - 80	0.025 - 0.040	0.030 - 0.045	0.035 - 0.050
Cast iron	70 - 115	0.040 - 0.100	0.050 - 0.120	0.060 - 0.140
Aluminium alloy	80 - 160	0.030 - 0.170	0.030 - 0.180	0.035 - 0.190
Copper alloy	80 - 180	0.020 - 0.130	0.030 - 0.160	0.040 - 0.180
Titanium alloy	25 - 60	0.025 - 0.030	0.030 - 0.035	0.030 - 0.040
Hardened steel	25 - 50	0.025 - 0.030	0.030 - 0.035	0.030 - 0.040

* When machining carbon steel or alloy steel with M type head, 20 - 30% higher feed can be applied.

Jinan Terry CNC Tool Co., Ltd.