



**TAC Drills / New TDX type**

# TUNGDRILLTWISTED

Range of drills from  $\varnothing 12.5 \sim 54$  mm  
L/D = 2xD, 3xD, 4xD, 5xD

**Full Line up  
Available!**

**Highest Productivity with Maximum Performance!**

*Range extended with new "AH725" grade,  
for steels and stainless steels!*

**PREMIUMTEC**  
TUNGALOY



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

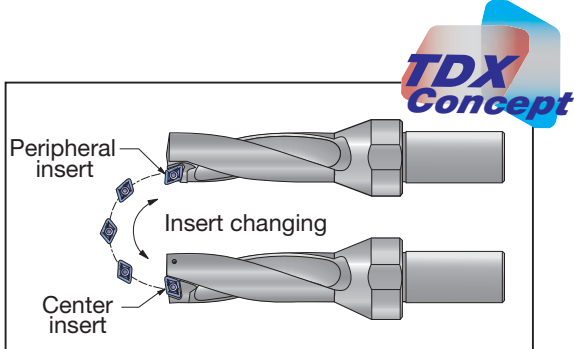


**Features**

Range of drills from  $\phi 12.5 \sim 54$  mm, L/D = 2xD, 3xD, 4xD, 5xD

**1 Highly economic = TDX concept**

Stable and efficient machining can be achieved by using four corners of the proven parallelogram shaped insert.



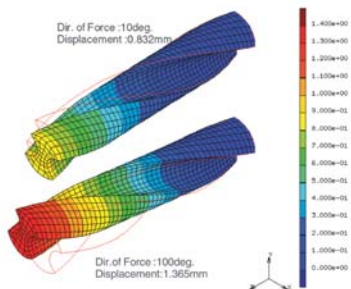
**3 Applicable to various machining applications**

Eight insert types can be applied to various machining applications and work materials on anything from lathes to machining centres.



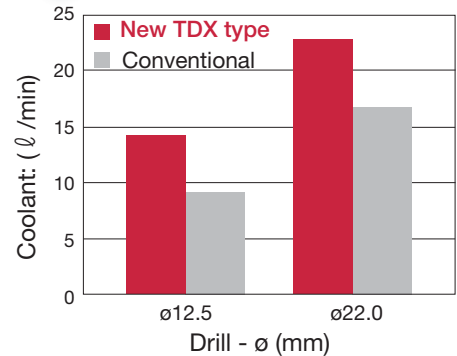
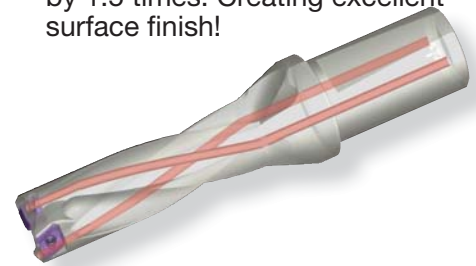
**4 Ideally-balanced with a strong and rigid design = TDX concept**

The drill body shape further enhances stable cutting. As a result, exceptional balance can be obtained and chatter can be constrained.



**2 Excellent chip evacuation!**

The new twisted coolant hole in the drill body increases fluid flow by 1.5 times. Creating excellent surface finish!



Machine : Vertical machining center  
Oil pressure : 2 MPa

**5 Improved drilling durability!**

Long tool life credit to specialised drill body coating that is hardened to improve rigidity.



**Power Up**

**Power Up**

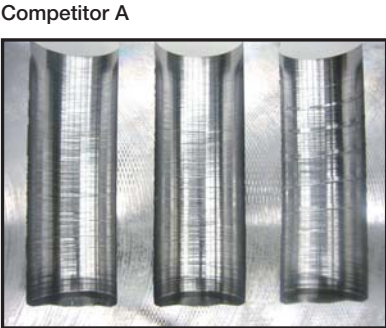
**Power Up**

# New TDX type drills machining comparisons

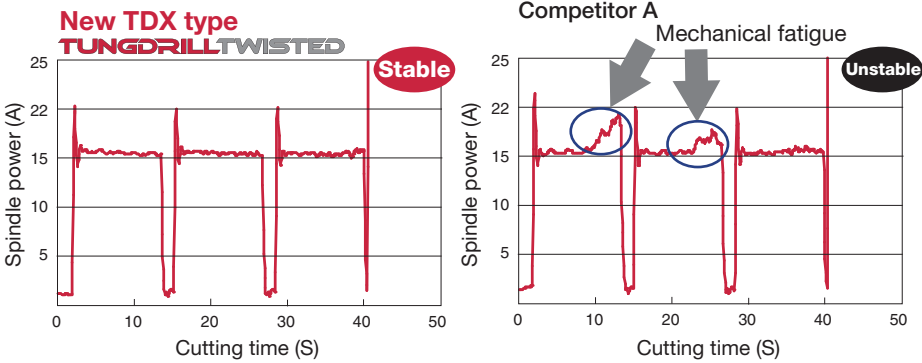
## High quality surface finishes

Both high efficiency and high quality are obtained.

By dramatically increasing oil, improved chip evacuation, stability and surface finish can be achieved when compared to conventional products.



## Stabilization of spindle power



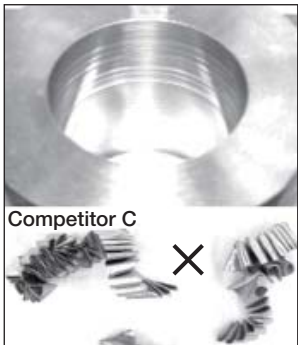
Workpiece : SCM440 (JIS)  
 Drill :  $\phi 22$  mm, L/D = 3xD  
 Cutting speed:  $V_c = 180$  m/min  
 Feed :  $f = 0.13$  mm/rev  
 Drilling depth: 3D (Blind)  
 Machine : Vertical machining center  
 Cutting fluid : Water soluble type

## Comparison of chip shape (the central and peripheral cutting edges)

Tungaloy's TDX enables excellent chip control in various work materials.

Work material	SCM440	SUS304	SS400	S55C
Cutting Speed	$V_c = 100$ m/min	$V_c = 150$ m/min	$V_c = 200$ m/min	$V_c = 200$ m/min
Feed rate	$f = 0.1$ mm/rev	$f = 0.12$ mm/rev	$f = 0.06$ mm/rev	$f = 0.2$ mm/rev
TDX type	Center: <b>Good</b> DJ type	DS type	DS type	DW type
	Peripheral: [Chip images]	[Chip images]	[Chip images]	[Chip images]
Competitor A	Center: [Chip images]	Unstable	[Chip images]	[Chip images]
	Peripheral: [Chip images]	[Chip images]	[Chip images]	[Chip images]
Competitor B	Center: [Chip images]	[Chip images]	[Chip images]	[Chip images]
	Peripheral: [Chip images]	[Chip images]	[Chip images]	[Chip images]
Competitor C	Center: [Chip images]	[Chip images]	[Chip images]	[Chip images]
	Peripheral: [Chip images]	[Chip images]	[Chip images]	[Chip images]

Surface finish is affected by chip shapes produced with the central insert.

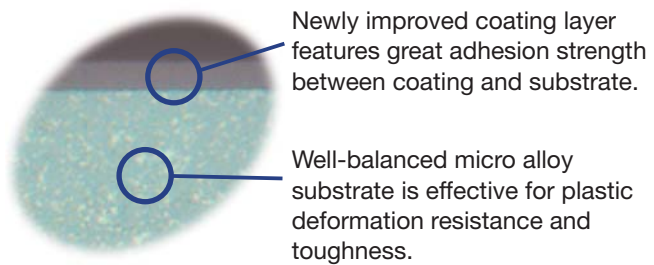


Workpiece : SUS316L (JIS)  
 Drill :  $\phi 22$  mm, L/D = 3xD  
 Cutting speed:  $V_c = 100$  m/min  
 Feed :  $f = 0.08$  mm/rev  
 Machine : NC lathe

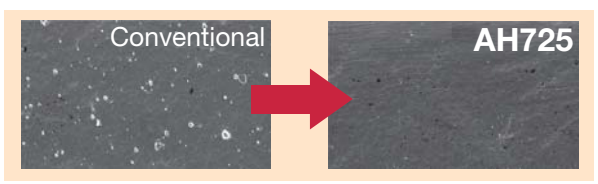
**New** The new AH725 PVD coated grade now offers all chipbreakers!

**AH725** for standard to high speed cutting

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



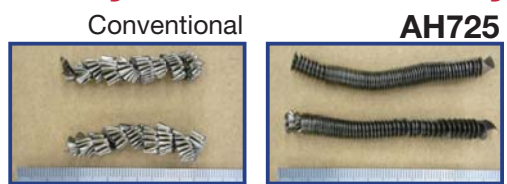
**Super flash coating**  
"Triple Force Technology" improves droplets on the coating surface.



**Features**

- ▼ Improved chip evacuation by reducing the friction between insert and chip
- ▼ Cutting applications extended to high speed machining

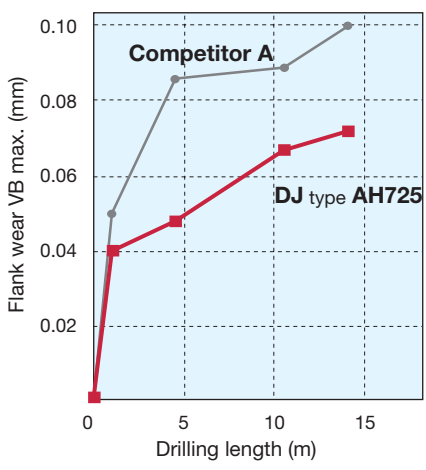
**Highly efficient machining with newly modified drill body**



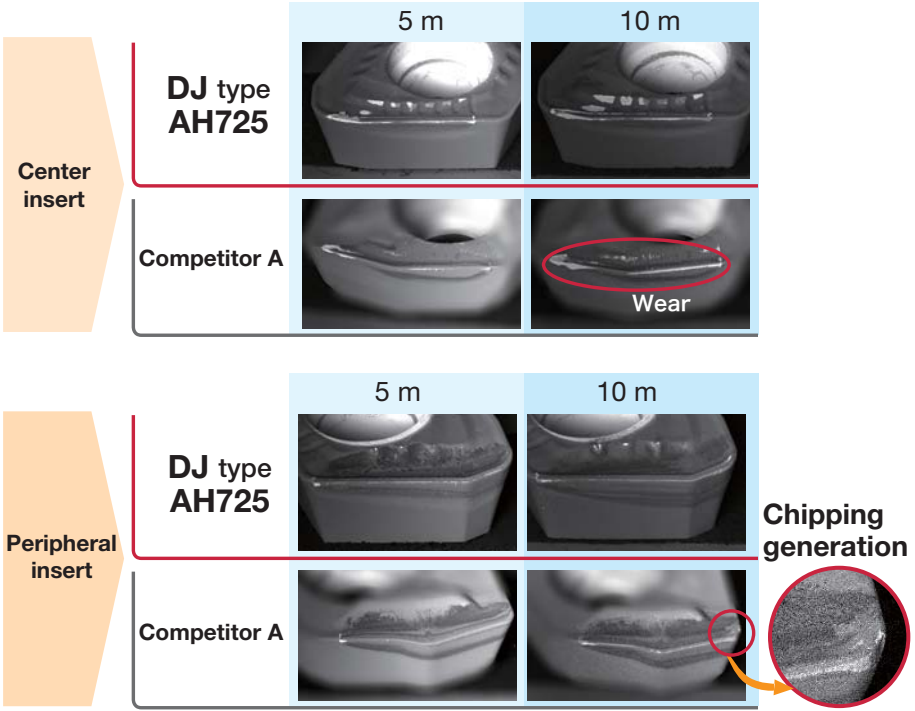
Chip shape is flat and smooth demonstrating stable surface machining (stainless steels)

**Cutting performance**

**For steels / High cutting speed**

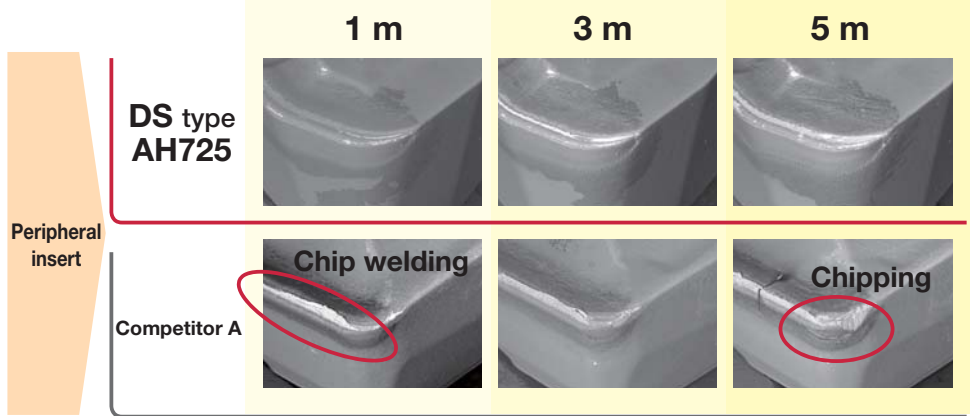
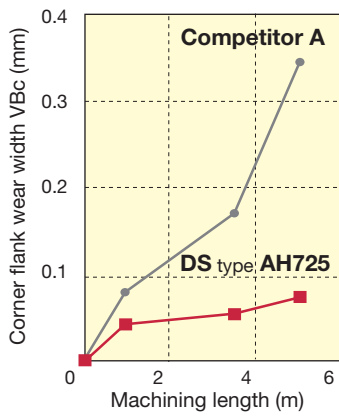


Drill :  $\phi 21$  mm, L/D = 3xD  
 Insert : XPMT06X308R-DJ  
 Workpiece : S55C (JIS)  
 Cutting speed:  $V_c = 200$  m/min  
 Feed :  $f = 0.1$  mm/rev  
 Cutting fluid : Water soluble type (Internal supply)



- Dramatically improved wear resistance by adopting "Triple Force Technology"
- Improved chipping resistance and stable machining when high speed cutting

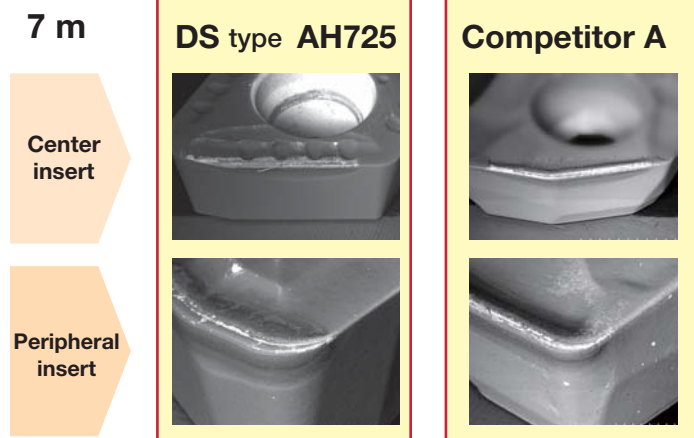
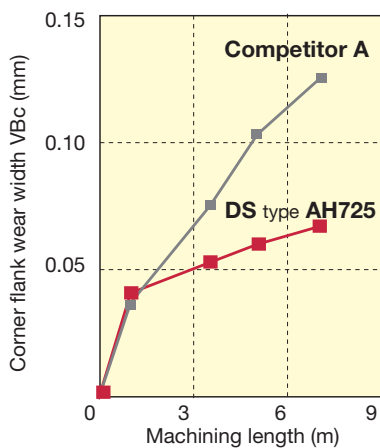
## Stainless steels processing (SUS304) / High cutting speed



- Improved wear resistance in high speed machining of stainless steels
- Edge welding is reduced with the AH725
- Excellent chipping resistance that is improved by the chip evacuation and characteristics of the new grade

Drill :  $\phi 21$  mm, L/D = 3xD  
 Insert : XPMT06X308R-DS  
 Workpiece : SUS304 (JIS)  
 Cutting speed :  $V_c = 200$  m/min  
 Feed :  $f = 0.08$  mm/rev  
 Cutting fluid : Water soluble type  
 (Internal supply)

## Stainless steels processing (SUS304) / General cutting speed

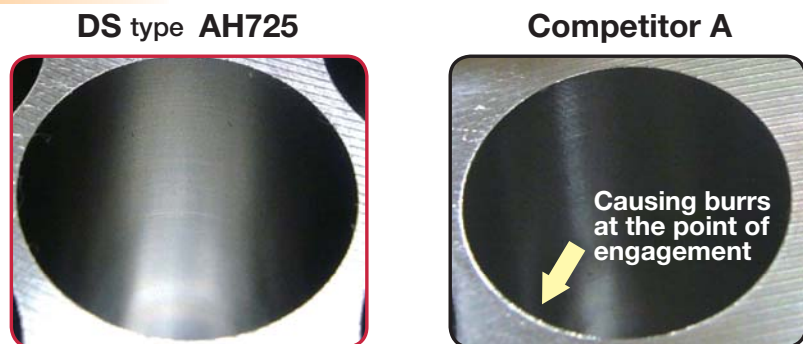


- Prevention of damage on cutting edge in general cutting area

Drill :  $\phi 21$  mm, L/D = 3xD  
 Insert : XPMT06X308R-DS  
 Workpiece : SUS304 (JIS)  
 Cutting speed :  $V_c = 120$  m/min  
 Feed :  $f = 0.08$  mm/rev  
 Cutting fluid : Water soluble type  
 (Internal supply)

## Prevents burrs

- Excellent chip control prevents burrs due to combination with Tungdrill Twisted.
- Provides more stable cutting performance.



Drill :  $\phi 21$  mm, L/D = 3xD  
 Insert : XPMT06X308R-DS  
 Workpiece : SUS304 (JIS)  
 Cutting speed :  $V_c = 120$  m/min  
 Feed :  $f = 0.08$  mm/rev  
 Cutting fluid : Water soluble type  
 (Internal supply)

## Features of chipbreakers

### DJ type

General purpose chipbreaker usable for almost all applications. Features low cutting forces and allows stable drilling.



#### Chipbreaker for peripheral edge

Deeply formed chip groove performs exceptionally free cutting action and effective chipbreaking.

#### Chipbreaker for central edge

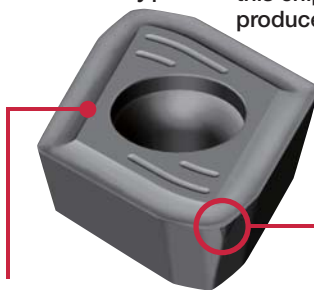
Relatively shallow chip groove prevents chips from packing.

#### Low cutting forces and long tool life

Bumps and grooves formed on the rake face reduce the contact area with chips reducing cutting forces and delivering longer tool life.

### DW type

In comparison with conventional inserts, this chipbreaker allows higher feeds and produces superior surface finish.



#### Wiper design

Can improve surface finish at normal feeds and minimizes surface degradation at high feeds.

#### Extraordinarily strengthened corner

Increased land width plus a two step relief angle strengthens the corner section.

#### Strong chipbreaker for high feeds

Can forcibly curl thick chips produced in high feeds and causes them to break into short sections. It also allows for large volume chip removal.

### DS type

Performs excellent chip control for gummy materials such as stainless steels and low carbon steels.



#### Entirely new rake face design

Can effectively form gummy material chips into short sections.

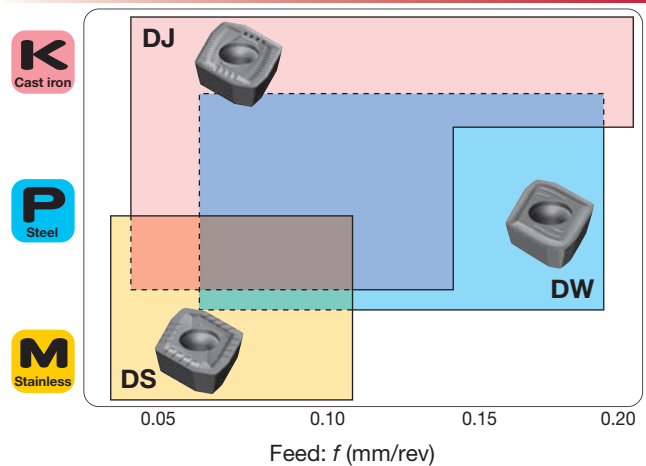
#### Strengthened corner

Strengthened corner geometry minimizes insert breakage even in drilling stainless steels.

#### Sharp cutting edges

Exceptionally free cutting action improves chip control.

### Application area of each chipbreaker type



## Features and applications of insert grades

**NEW** First choice: for steels and stainless steels

### AH725 PVD coated carbide

Improved wear and fracture resistance combined with new (Ti, Al)N coating and well-balanced substrate.

### AH120 PVD coated carbide

For stainless steels

By combining highly reliable carbide substrate with "Flashcoat", this grade provides superior impact resistance and wear resistance in high-speed machining. Suitable for drilling stainless steels.

### AH740 PVD coated carbide

General purpose grade

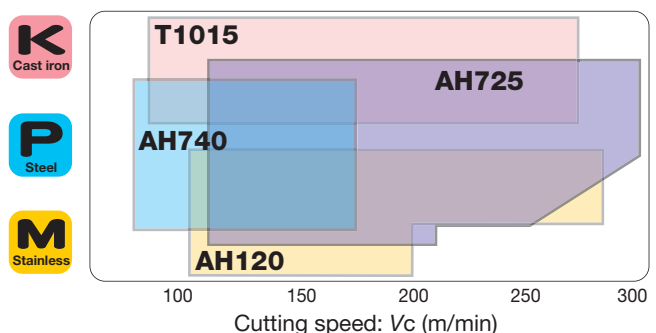
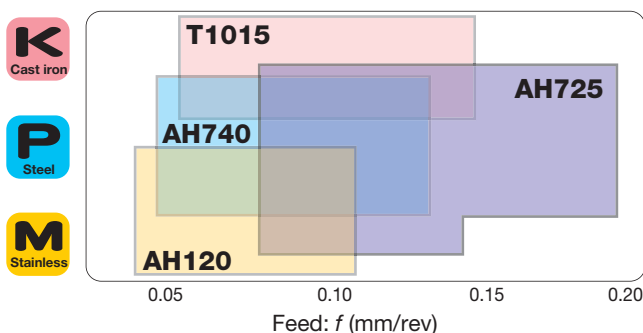
By combining ultra fine grain cemented carbide with "Flashcoat", this grade provides both wear resistance and impact resistance. Can be used for a wide range of applications.

### T1015 CVD coated carbide

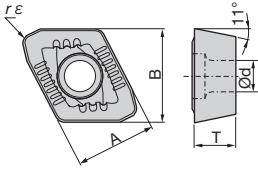
For cast irons

By combining specially designed hard carbide substrate with newly developed multilayer compound coatings, this grade provides excellent wear resistance in machining cast irons.

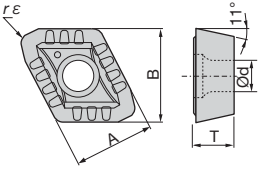
### Application area of each insert



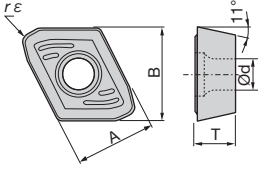
# Insert selection guide

DJ chipbreaker	Cat. No.	NEW Grades				Dimensions (mm)					Applicable drill diameters
		AH725	AH740	GH730	T1015	A	B	T	ød	rε	
			XPMT040104R-DJ	●	●	▲	●	4.3	4.5	1.59	
	XPMT050204R-DJ	●	●	▲	●	5.2	5.4	2.38	2.3	0.4	ø15.0 ~ ø17.0
	XPMT06X308R-DJ	●	●	▲	●	6.0	7.0	3.00	2.5	0.8	ø17.5 ~ ø21.5
	XPMT07H308R-DJ	●	●	▲	●	7.0	8.2	3.60	2.8	0.8	ø22.0 ~ ø26.0
	XPMT08T308R-DJ	●	●	▲	●	8.5	9.9	3.97	3.4	0.8	ø27.0 ~ ø32.0
	XPMT110412R-DJ	●	●	▲	●	11.2	12.5	4.76	4.4	1.2	ø33.0 ~ ø41.0
	XPMT150512R-DJ	●	●	▲	●	15.0	16.1	5.56	5.5	1.2	ø42.0 ~ ø54.0

DS chipbreaker	Cat. No.	NEW Grades			Dimensions (mm)					Applicable drill diameters
		AH725	AH120	GH730	A	B	T	ød	rε	
			XPMT040104R-DS	●	●	▲	4.3	4.5	1.59	
	XPMT050204R-DS	●	●	▲	5.2	5.4	2.38	2.3	0.4	ø15.0 ~ ø17.0
	XPMT06X308R-DS	●	●	▲	6.0	7.0	3.00	2.5	0.8	ø17.5 ~ ø21.5
	XPMT07H308R-DS	●	●	▲	7.0	8.2	3.60	2.8	0.8	ø22.0 ~ ø26.0
	XPMT08T308R-DS	●	●	▲	8.5	9.9	3.97	3.4	0.8	ø27.0 ~ ø32.0
	XPMT110412R-DS	●	●	▲	11.2	12.5	4.76	4.4	1.2	ø33.0 ~ ø41.0
	XPMT150512R-DS	●	●	▲	15.0	16.1	5.56	5.5	1.2	ø42.0 ~ ø54.0

DW chipbreaker	Cat. No.	NEW Grades				Dimensions (mm)					Applicable drill diameters
		AH725	AH740	AH120	GH730	A	B	T	ød	rε	
			XPMT040104R-DW	●	●	●	▲	4.3	4.5	1.59	
	XPMT050204R-DW	●	●	●	▲	5.2	5.4	2.38	2.3	0.4	ø15.0 ~ ø17.0
	XPMT06X308R-DW	●	●	●	▲	6.0	7.0	3.00	2.5	0.8	ø17.5 ~ ø21.5
	XPMT07H308R-DW	●	●	●	▲	7.0	8.2	3.60	2.8	0.8	ø22.0 ~ ø26.0
	XPMT08T308R-DW	●	●	●	▲	8.5	9.9	3.97	3.4	0.8	ø27.0 ~ ø32.0
	XPMT110412R-DW	●	●	●	▲	11.2	12.5	4.76	4.4	1.2	ø33.0 ~ ø41.0
	XPMT150512R-DW	●	●	●	▲	15.0	16.1	5.56	5.5	1.2	ø42.0 ~ ø54.0

● : Stocked items  
▲ : To be discontinued

# Recommended cutting conditions

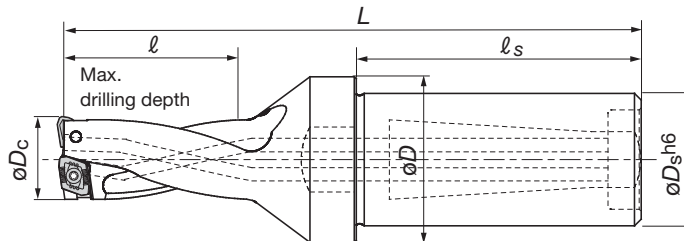
Work materials	First choice	High feed	High speed	Trouble shooting			Cutting Speed Vc (m/min)	Series L/D	Feed: f (mm/rev)				
				Break-age	Wear	Surface finish			ø12.5 ~ ø14.5	ø15.0 ~ ø17.0	ø17.5 ~ ø26.0	ø27.0 ~ ø32.0	ø33.0 ~ ø54.0
				Low carbon steels (C < 0.3) SS400, SM490, S25C, etc.	DS AH725					DW AH725		DW AH120	160-240-320
Carbon steels (C > 0.3) S45C, S55C, etc.	DJ AH725	DW AH725	DS AH120	DW AH725	DJ T1015	DW AH725	80-140-250	2D, 3D 4D, 5D	0.04-0.07-0.10	0.04-0.08-0.12	0.06-0.10-0.13	0.06-0.11-0.15	0.08-0.13-0.18
Low alloy steels SCM415, etc.	DS AH725			DW AH725		DW AH725	160-210-250	2D, 3D 4D, 5D	0.04-0.06-0.08	0.04-0.06-0.08	0.06-0.09-0.12	0.06-0.09-0.12	0.06-0.10-0.14
Alloy steels SCM440, SCr420, etc.	DJ AH725	DW AH725	DS AH120	DW AH725	DJ T1015	DW AH725	80-140-200	2D, 3D 4D, 5D	0.04-0.07-0.10	0.04-0.08-0.12	0.06-0.10-0.13	0.06-0.11-0.15	0.08-0.13-0.18
Stainless steels (Austenitic) SUS304, SUS316, etc.	DS AH725			DS AH120		DW AH120	100-150-200	2D, 3D 4D, 5D	0.02-0.05-0.08	0.02-0.05-0.08	0.04-0.07-0.10	0.04-0.08-0.12	0.04-0.08-0.12
Stainless steels (Martensitic and ferritic) SUS430, SUS416, etc.	DS AH725			DS AH120		DW AH120	100-160-220	2D, 3D 4D, 5D	0.02-0.05-0.08	0.02-0.05-0.08	0.04-0.07-0.10	0.04-0.08-0.12	0.04-0.08-0.12
Stainless steels (Precipitation hardening) SUS630, etc.	DS AH725			DS AH120		DW AH120	80-100-120	2D, 3D 4D, 5D	0.04-0.06-0.08	0.04-0.06-0.08	0.04-0.06-0.08	0.04-0.07-0.10	0.06-0.08-0.10
Grey cast irons FC250, etc.	DJ T1015	DJ AH725		DJ AH725		DW AH740	80-170-250	2D, 3D 4D, 5D	0.06-0.09-0.12	0.06-0.09-0.12	0.06-0.11-0.15	0.06-0.12-0.18	0.08-0.14-0.20
Ductile cast irons FCD700, etc.	DJ T1015	DJ AH725		DJ AH725		DW AH740	80-140-200	2D, 3D 4D, 5D	0.04-0.08-0.12	0.04-0.08-0.12	0.06-0.11-0.15	0.06-0.12-0.18	0.08-0.14-0.20
Aluminium alloys A2017, ADC12, etc.	DW AH725						200-300-400	2D, 3D 4D, 5D	0.10-0.11-0.12	0.10-0.12-0.15	0.15-0.18-0.20	0.15-0.18-0.20	0.15-0.20-0.25

- 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.

## Drills Specification

### $L/D = 2xD$

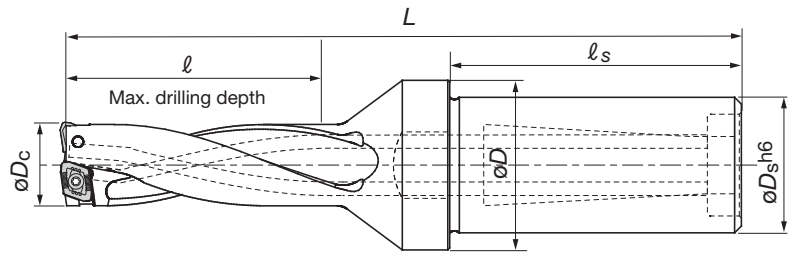


Please take note that the new TDX type differs from the older TDX type in the total length (L) of drill.

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	●		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	●	45	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	●		84	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	●	104	228.0	0.5						
53.0	TDX530W40-2	●	106	231.0	-						
54.0	TDX540W40-2	●	108	234.0	-						

● : Stocked items

# L/D = 3xD

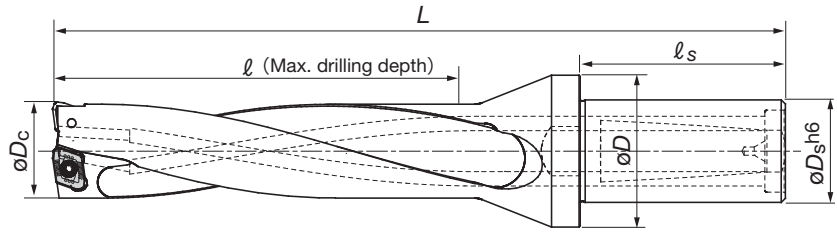


Please take note that the new TDX type differs from the older TDX type in the total length (L) of drill.

Drill dia. ØDc	Cat. No.	Stock	Dimensions (mm)					Max offset	Applicable inserts	Clamping screw	Torx driver				
			ØDs	ØD	l	l <sub>s</sub>	L								
12.5	TDX125W20-3	●	20	25	43	37.5	50	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									
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	50	52.5	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								
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	50	67.5	147	1.1	XPMT07H308R-D*	CSTB-2.5	T-8D					
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	●		75	157	0.4									
25.5	TDX255W25-3	●		76.5	159	0.3									
26.0	TDX260W25-3	●		78	161	0.2									
27.0	TDX270W32-3	●		32	40	55	81				170	1.5	XPMT08T308R-D*	CSTB-3	T-9D
28.0	TDX280W32-3	●					84				174	1.2			
29.0	TDX290W32-3	●	87				178	1.0							
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	●	40	50	65	99	204	2.3	XPMT110412R-D*	CSTB-4	T-15D				
34.0	TDX340W40-3	●				102	208	2.1							
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	240	3.1				XPMT150512R-D*	CSTB-5	T-20D	
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	●	156	280	0.5										
53.0	TDX530W40-3	●	159	284	-										
54.0	TDX540W40-3	●	162	288	-										

● : Stocked items

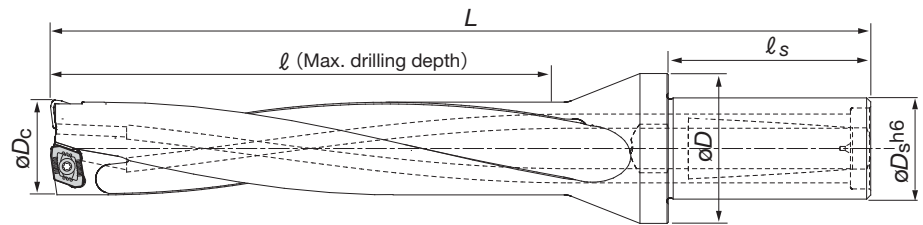
## L/D = 4xD



Drill dia. ØDc	Cat. No.	Stock	Dimensions (mm)					Max offset	Applicable inserts	Clamping screw	Torx driver						
			ØDs	ØD	l	l <sub>s</sub>	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	●		25	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	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	●		37	50	80	160	0.5	XPMT07H308R-D*				CSTB-2.5	T-8D			
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									
22.5	TDX225W25-4	●	32	40	90	171	1.1	XPMT08T308R-D*	CSTB-3	T-9D							
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	●		50	65	100	183				0.4	XPMT110412R-D*	CSTB-4	T-15D			
25.5	TDX255W25-4	●				102	185				0.3						
26.0	TDX260W25-4	●				104	187				0.2						
27.0	TDX270W32-4	●				108	198				1.5				XPMT150512R-D*	CSTB-5	T-20D
28.0	TDX280W32-4	●				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	●	128	222	0.2	XPMT150512R-D*	CSTB-5	T-20D									
33.0	TDX330W40-4	●	40	50	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								
42.0	TDX420W40-4	●		55	65	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	●	204	325	0.7												
52.0	TDX520W40-4	●	208	330	0.5												
53.0	TDX530W40-4	●	212	335	-												
54.0	TDX540W40-4	●	216	339	-												

● : Stocked items

# L/D = 5xD



Drill dia. ØDc	Cat. No.	Stock	Dimensions (mm)					Max offset	Applicable inserts	Clamping screw	Torx driver						
			ØDs	ØD	ℓ	ℓ <sub>s</sub>	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	●		32	77.5		146	0.8	XPMT050204R-D*	CSTB-2L040	T-6D						
16.0	TDX160W20-5	●			80.0		148	0.6									
16.5	TDX165W20-5	●			82.5		152	0.5									
17.0	TDX170W20-5	●			85.0		154	0.4									
17.5	TDX175W25-5	●	25	32	87.5	50	165	1.2	XPMT06X308R-D*	CSTB-2.2R	T-7D						
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	●		37	102.5		182	0.4	XPMT07H308R-D*	CSTB-2.5	T-8D						
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	XPMT08T308R-D*	CSTB-3	T-9D						
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	●		50	127.5		211	0.3	XPMT110412R-D*	CSTB-4	T-15D						
26.0	TDX260W25-5	●			130		213	0.2									
27.0	TDX270W32-5	●			40		50	135				65	271	2.3	XPMT150512R-D*	CSTB-5	T-20D
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	●	155	248		0.4											
32.0	TDX320W32-5	●	160	254		0.2											
33.0	TDX330W40-5	●	50	55		165	65	277	2.1	XPMT150512R-D*	CSTB-5		T-20D				
34.0	TDX340W40-5	●				170		283	1.8								
35.0	TDX350W40-5	●				175		288	1.5								
36.0	TDX360W40-5	●				180		295	1.3								
37.0	TDX370W40-5	●			185	300		1.0									
38.0	TDX380W40-5	●			190	306		0.7									
39.0	TDX390W40-5	●		55	195	312		0.5	XPMT150512R-D*	CSTB-5	T-20D						
40.0	TDX400W40-5	●			200	318		0.2									
41.0	TDX410W40-5	●			205	324		3.1									
42.0	TDX420W40-5	●			210	330		2.9									
43.0	TDX430W40-5	●	55	65	215	65	336	2.6	XPMT150512R-D*	CSTB-5	T-20D						
44.0	TDX440W40-5	●			220		341	2.3									
45.0	TDX450W40-5	●			225		348	2.1									
46.0	TDX460W40-5	●			230		353	1.8									
47.0	TDX470W40-5	●			235		359	1.5									
48.0	TDX480W40-5	●			240		365	1.3									
49.0	TDX490W40-5	●		65	245		370	1.0	XPMT150512R-D*	CSTB-5	T-20D						
50.0	TDX500W40-5	●			250		376	0.7									
51.0	TDX510W40-5	●			255		382	0.5									
52.0	TDX520W40-5	●			260		388	-									
53.0	TDX530W40-5	●	70	265	393	-	XPMT150512R-D*	CSTB-5	T-20D								
54.0	TDX540W40-5	●		270	393	-											

● : Stocked items

**EZ sleeve** (Eccentric Sleeves For TDX-type TAC drills)

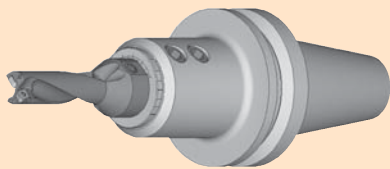
● Use EZ sleeves for the following purposes

**Hole diameter adjustment on the milling machine**

**Adjusting the finishing diameter in 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**.

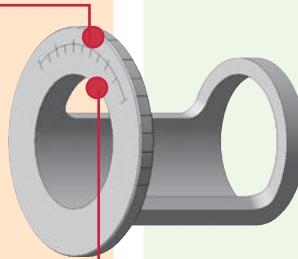


Scale for adjusting finishing diameter in milling (Periphery of sleeve)

**Adjusting cutting edge height on lathe**

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

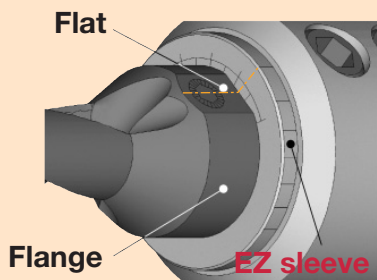
By using **EZ sleeve**, the cutting edge height can be adjusted in the range from **+0.3 mm to -0.2 mm**. It results in eliminating troubles caused by improper cutting-edge height.



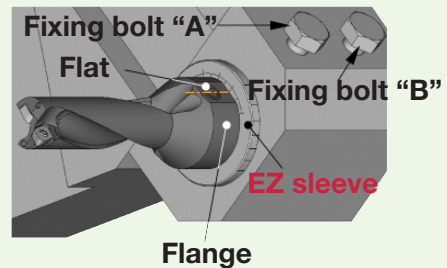
Scale for adjusting cutting edge height in turning (Front face of sleeve)

● **Setting of EZ sleeve**

As shown in the Figure below, set the EZ sleeve between the drill shank and the tool-holder.

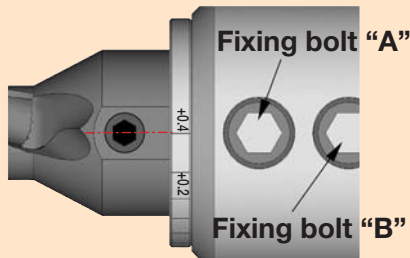


As shown in the Figure below, set the EZ sleeve between the drill shank and the tool-block.



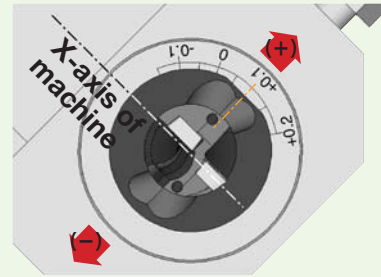
Align the graduated scale on the periphery of the EZ sleeve with the center of the flat of the drill flange.

In the Figure shown below, the sleeve is set so that the finishing diameter will be increased by 0.4 mm.



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.

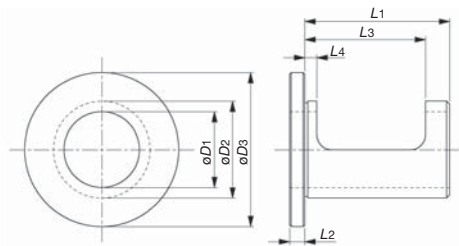
Secure the drill by screw A. Secure the EZ sleeve by lightly tightening screw B.

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 rate.
- 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	$\phi D1$	$\phi D2$	$\phi D3$	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.

## Cautious points

### TDX-type TAC drills

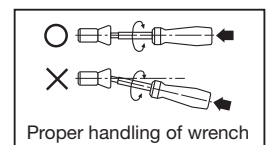
- Ensure that the drilling machine to be used has sufficient rigidity and motor output.
- Not recommended for drilling stacked plates.
- Be sure to carry out proper alignment when drilling is to be performed on a rotating workpiece.

### 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 TDX drills of 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

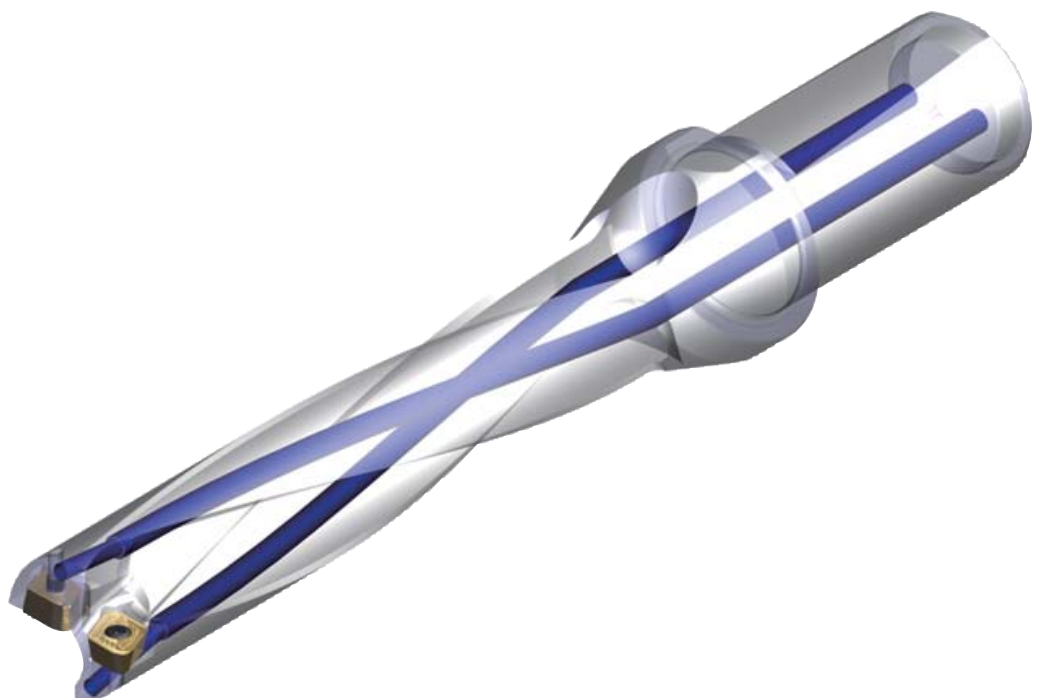
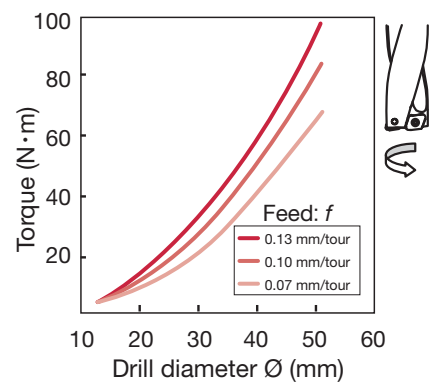
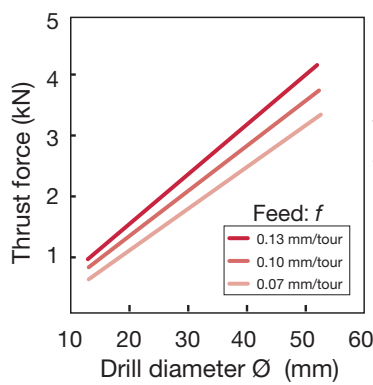
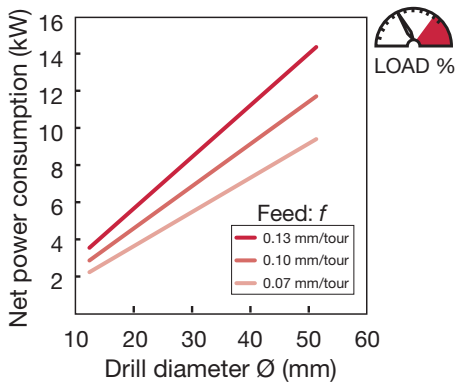
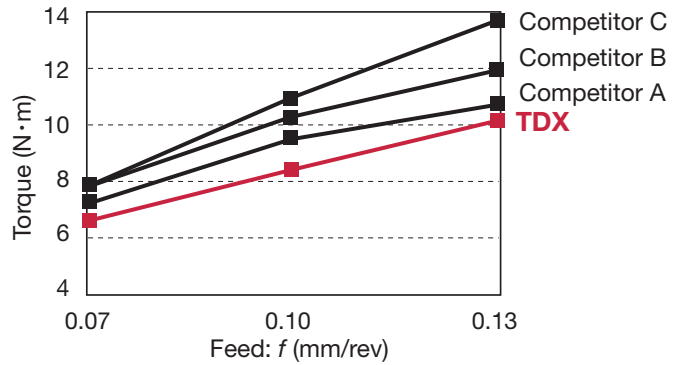
- Before installing the insert in the drill body, remove all foreign matter from the insert pocket.
- When clamping and unclamping the insert, the center-line of the wrench should be aligned with the center-line of the screw. Misalignment may result in deformation of the socket of the screw head or the 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.



## Comparison of cutting resistance of TDX drill

The charts below show a guideline for cutting forces. Use TDX drills on a machine with ample power and sufficient rigidity.

Workpiece : SCM440 (JIS)  
 Drill : Ø18  
 Cutting speed :  $V_c = 100$  m/min  
 Cutting fluid : Wet



# Machining examples

## Improves machining efficiency by 70%

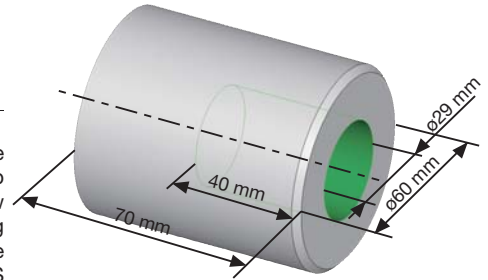
**Drill** : TDX290W32-2 (ø29)  
**Insert** : XPMT08T308R-DS AH120

Work material : SCM415  
 Cutting speed :  $V_c = 135$  m/min  
 Feed :  $f = 0.11$  mm/rev  
 Drilling depth : 40 mm  
 Machine : NC lathe  
 Cutting fluid : Water soluble type

### Results

The conventional drill can often stop machine operation due to poor chip control and chip removal. The machining efficiency of the new TDX drill can improve chip control, cutting speed and feed rate by 70%, through the combination of the AH120 grade and the DS chipbreaker.

Machine part



## Efficiency increase with twisted coolant hole

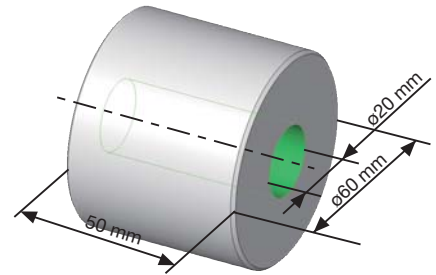
**Drill** : TDX200W25-3 (ø20)  
**Insert** : XPMT06X308R-DJ AH740

Work material : S45C  
 Cutting speed :  $V_c = 140$  m/min  
 Feed :  $f = 0.1$  mm/rev  
 Drilling depth : 50 mm Penetrated hole  
 Machine : NC lathe  
 Cutting fluid : Water soluble type

### Results

The conventional drill was optimally used at a cutting speed of  $V_c = 100$  m/min and feed rate of  $f = 0.05$  mm/rev. The new TDX drill can improve metal removal rates with its twisted coolant hole. As a result, cutting speed is increased to  $V_c = 140$  m/min and the feed rate can be increased to  $f = 0.1$  mm/rev.

Machine part



## Reduced Cutting Costs

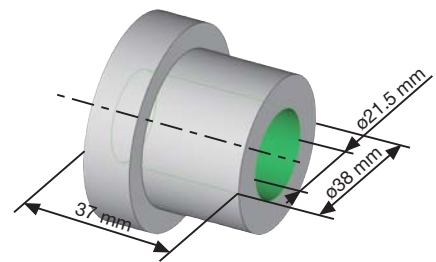
**Drill** : TDX215W25-2 (ø21.5)  
**Insert** : XPMT06X308R-DW AH740

Work material : Carbon steel  
 (S45C / C45)  
 Cutting speed :  $V_c = 90$  m/min  
 Feed :  $f = 0.07$  mm/rev  
 Drilling depth : 37 mm (Through hole)  
 Machine : Machining center  
 Cutting fluid : Water soluble fluid  
 Corner change: 500 pcs / corner

### Results

The conventional brazed drill delivered poor productivity levels and additional tooling costs. When using the new TDX drills, productivity was increased due to the high accuracy level of the prepared hole. In addition, the tool life was dramatically improved with use of the multi-corner inserts.

Machine part



## Tool life improved 1.2 times compared to previous tool

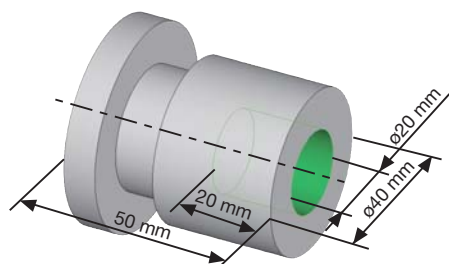
**Drill** : TDX200W25-3 (ø20)  
**Insert** : XPMT06X308R-DS AH725

Work material : Stainless steel  
 (SUS303 / X10CrNiS18-9)  
 Cutting speed :  $V_c = 200$  m/min  
 Feed :  $f = 0.08$  mm/rev  
 Drilling depth : 20 mm (Blind hole)  
 Machine : Vertical machining center  
 Cutting fluid : Water soluble type  
 Corner change: 550 pcs / corner

### Results

Previously, the conventional tool could not improve tool life and also caused unexpected tool failure. To deal with this issue, the new TDX drills utilise its new "PremiumTec" special surface technology that uses the AH725 grade as a coating. As a result, the tool life is drastically improved by up to 120% due to excellent adhesion resistance as well as resistance to wear and fracture.

Machine part





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