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**Adjustable tool reduces**  
the number of drills  
required





TDX11CA-P2  
123





# TUNGDRILLBIG

TUNGALOY

A large diameter drill providing a more complete offering with the versatility of TDX and the economy of a 6 cornered TDS insert.

# TUNGDRILLBIG

TUNGALOY

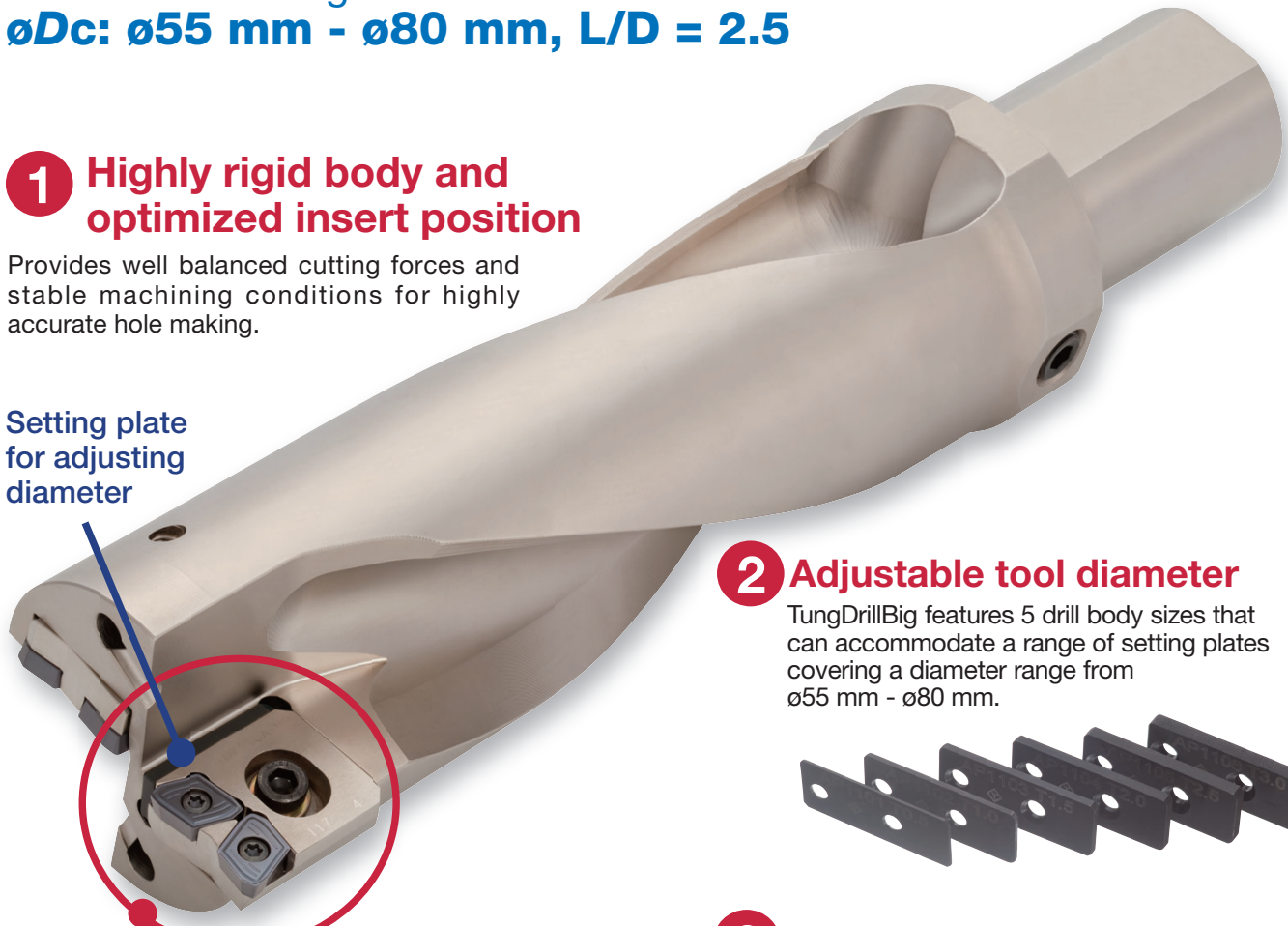
Drill body with adjustable cartridge covers  
hole diameter ranges from:

**ØDc: Ø55 mm - Ø80 mm, L/D = 2.5**

## 1 Highly rigid body and optimized insert position

Provides well balanced cutting forces and stable machining conditions for highly accurate hole making.

Setting plate for adjusting diameter



## 2 Adjustable tool diameter

TungDrillBig features 5 drill body sizes that can accommodate a range of setting plates covering a diameter range from Ø55 mm - Ø80 mm.



## 3 Drill body protection

The cartridge design protects the drill body from damage during demand in machining application.

## 4 Variety of design options

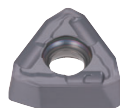
TDX and TDS type cartridges can be affixed to the same body.



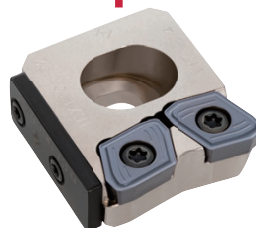
**TDS type**  
Double sided insert with 6 cutting edges



DJ type



DS type



**TDX type**  
Single sided insert with 4 cutting edges



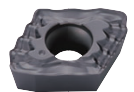
DJ type



DW type



DS type




DG type

# Ordering system

Please order both "Body" and "Cartridge set"

**Body**

New Description for Body  
TDB\*\*-\*\*F50-2.5




Tool dia. $\varnothing D_c$ (mm)	Cat. No.	
55	TDB55-56F50-2.5	
56		
57	TDB57-62F50-2.5	
58		
59		
60		
61		
62		
63	TDB63-66F50-2.5	
64		
65		
66		
67	TDB67-73F50-2.5	
68		
69		
70		
71		
72		
73		
74		TDB74-80F50-2.5
75		
76		
77		
78		
79		
80		

+

**Cartridge set**

**TDS** type

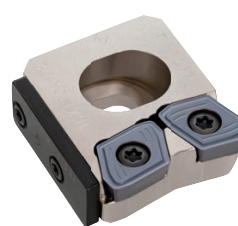
**NEW**



Tool dia. $\varnothing D_c$ (mm)	Cat. No.
55 - 56	TDSCA55-56
57 - 62	TDSCA57-62
63 - 66	TDSCA63-66
67 - 73	TDSCA67-73
74 - 80	TDSCA74-80

or

**TDX** type



Tool dia. $\varnothing D_c$ (mm)	Cat. No.
55 - 56	TDXCA55-56
57 - 62	TDXCA57-62
63 - 66	TDXCA63-66
67 - 73	TDXCA67-73
74 - 80	TDXCA74-80

Notes:  
Cartridge set consists of inner and outer cartridge.  
Customer can order inner or outer cartridge separately.

## Ordering example: TDB55-56F50-2.5 with TDS cartridge

1 Body

**TDB55-56F50-2.5**

+

2 Cartridge set

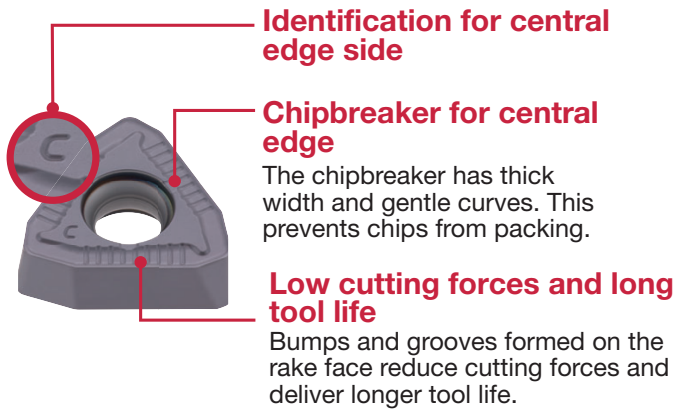
**TDSCA-55-56**

## NEW TDS type inserts

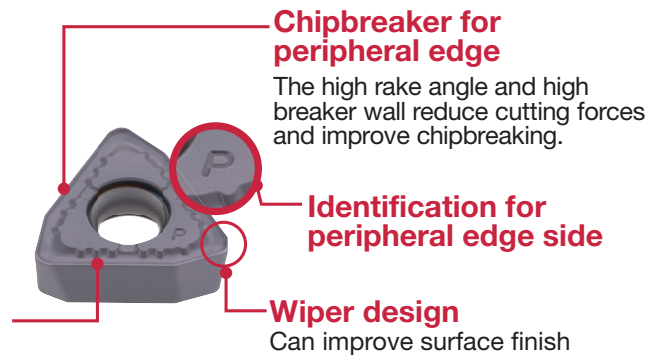
### ● Chipbreakers

**DJ type** For General purpose  
Suitable for cutting a wide range of workpiece materials

#### Central insert

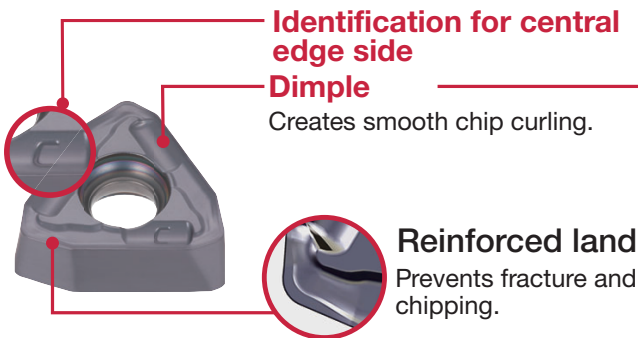


#### Peripheral insert

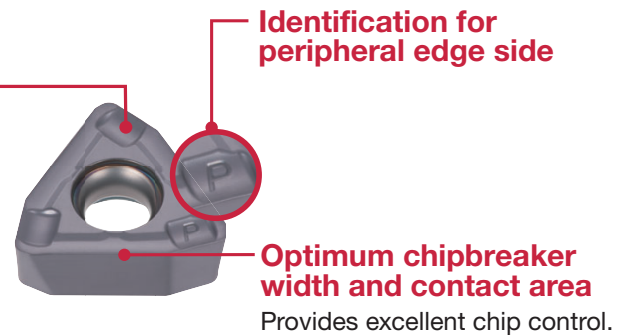


**DS type** For drilling stainless and gummy steels  
Demonstrates exceptional chip control

#### Central insert



#### Peripheral insert



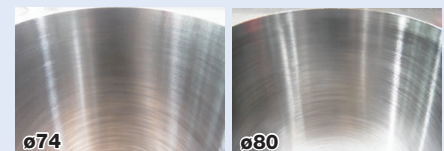
### ● Cutting performance

#### ● Chip control

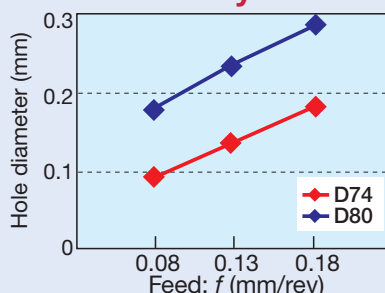
Chips are well controlled and shortened.

Tool diameter $\phi D_c$ (mm)	$\phi 74$ (without setting plate)		$\phi 80$ (with setting plate)		
	Feed $f$ (mm/rev)	0.13	0.18	0.13	0.18
C55					

#### ● Surface quality



#### ● Hole accuracy



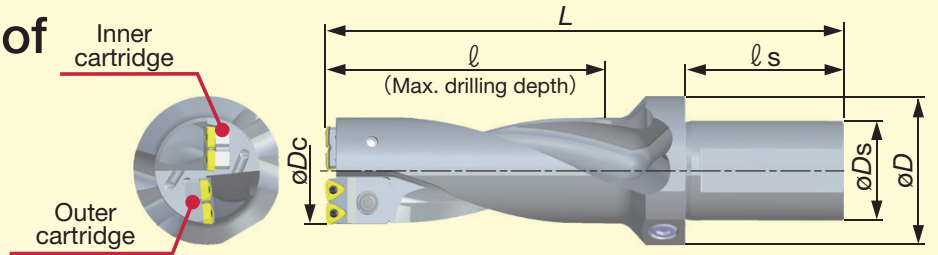
▶ Good chip control and hole diameter, surface quality

Drill : TDB74-80F50-2.5  
Cartridge : TDS11CA-C-74-80  
              TDS11CA-P-74-80  
Insert : WWMU11X512R-DJ  
Grade : AH9030  
Machine : Vertical M/C, BT50

Cutting speed :  $V_c = 140$  m/min  
Feed :  $f = 0.13$  mm/rev  
Tool diameter :  $\phi D_c = 74, 80$   
Hole depth :  $H = 150$  mm  
Coolant : Wet (Internal)



## Specifications of TDB with TDS cartridge



øDc (mm)	Body		Cartridge set		Dimensions (mm)					Weight (kg)	Setting plate		Applicable inserts
	Cat. No.	Stock	Cat. No.	Stock	øDs	øD	l	ls	L		Cat. No.	(mm)	
55	TDB55-56F50-2.5	●	TDSCA55-56	●	50	75	140	80	262	3.2	-	-	WWMU08X408R-D*
56	TDB55-56F50-2.5	●	TDSCA55-56	●	50	75	140	80	262	3.2	AP0801	0.5	WWMU08X408R-D*
57	TDB57-62F50-2.5	●	TDSCA57-62	●	50	75	155	80	282	3.6	-	-	WWMU08X408R-D*
58	TDB57-62F50-2.5	●	TDSCA57-62	●	50	75	155	80	282	3.6	AP0801	0.5	WWMU08X408R-D*
59	TDB57-62F50-2.5	●	TDSCA57-62	●	50	75	155	80	282	3.6	AP0802	1.0	WWMU08X408R-D*
60	TDB57-62F50-2.5	●	TDSCA57-62	●	50	75	155	80	282	3.6	AP0803	1.5	WWMU08X408R-D*
61	TDB57-62F50-2.5	●	TDSCA57-62	●	50	75	155	80	282	3.6	AP0804	2.0	WWMU08X408R-D*
62	TDB57-62F50-2.5	●	TDSCA57-62	●	50	75	155	80	282	3.6	AP0805	2.5	WWMU08X408R-D*
63	TDB63-66F50-2.5	●	TDSCA63-66	●	50	75	165	80	297	4.2	-	-	WWMU08X408R-D*
64	TDB63-66F50-2.5	●	TDSCA63-66	●	50	75	165	80	297	4.2	AP0801	0.5	WWMU08X408R-D*
65	TDB63-66F50-2.5	●	TDSCA63-66	●	50	75	165	80	297	4.2	AP0802	1.0	WWMU08X408R-D*
66	TDB63-66F50-2.5	●	TDSCA63-66	●	50	75	165	80	297	4.2	AP0803	1.5	WWMU08X408R-D*
67	TDB67-73F50-2.5	●	TDSCA67-73	●	50	75	183	80	322	5.0	-	-	WWMU09X510R-D*
68	TDB67-73F50-2.5	●	TDSCA67-73	●	50	75	183	80	322	5.0	AP1101	0.5	WWMU09X510R-D*
69	TDB67-73F50-2.5	●	TDSCA67-73	●	50	75	183	80	322	5.0	AP1102	1.0	WWMU09X510R-D*
70	TDB67-73F50-2.5	●	TDSCA67-73	●	50	75	183	80	322	5.0	AP1103	1.5	WWMU09X510R-D*
71	TDB67-73F50-2.5	●	TDSCA67-73	●	50	75	183	80	322	5.0	AP1104	2.0	WWMU09X510R-D*
72	TDB67-73F50-2.5	●	TDSCA67-73	●	50	75	183	80	322	5.0	AP1105	2.5	WWMU09X510R-D*
73	TDB67-73F50-2.5	●	TDSCA67-73	●	50	75	183	80	322	5.0	AP1106	3.0	WWMU09X510R-D*
74	TDB74-80F50-2.5	●	TDSCA74-80	●	50	75	200	80	333	5.7	-	-	WWMU11X512R-D*
75	TDB74-80F50-2.5	●	TDSCA74-80	●	50	75	200	80	333	5.7	AP1101	0.5	WWMU11X512R-D*
76	TDB74-80F50-2.5	●	TDSCA74-80	●	50	75	200	80	333	5.7	AP1102	1.0	WWMU11X512R-D*
77	TDB74-80F50-2.5	●	TDSCA74-80	●	50	75	200	80	333	5.7	AP1103	1.5	WWMU11X512R-D*
78	TDB74-80F50-2.5	●	TDSCA74-80	●	50	75	200	80	333	5.7	AP1104	2.0	WWMU11X512R-D*
79	TDB74-80F50-2.5	●	TDSCA74-80	●	50	75	200	80	333	5.7	AP1105	2.5	WWMU11X512R-D*
80	TDB74-80F50-2.5	●	TDSCA74-80	●	50	75	200	80	333	5.7	AP1106	3.0	WWMU11X512R-D*

## Inserts

Chipbreaker Appearance	Cat. No.	Stocked grades		Dimensions (mm)				Applicable drill diameters øDc (mm)
		PREMIUMTEC		ød	T	ød1	rε	
		AH9030	AH6030					
	WWMU08X408R-DJ	●		8.0	3.9	3.4	0.8	ø55 - ø66
	WWMU09X510R-DJ	●		9.7	4.9	4.4	1.0	ø67 - ø73
	WWMU11X512R-DJ	●		11.3	5.7	5.5	1.2	ø74 - ø80
	WWMU08X408R-DS		●	8.0	3.9	3.4	0.8	ø55 - ø66
	WWMU09X510R-DS		●	9.7	4.9	4.4	1.0	ø67 - ø73
	WWMU11X512R-DS		●	11.3	5.7	5.5	1.2	ø74 - ø80

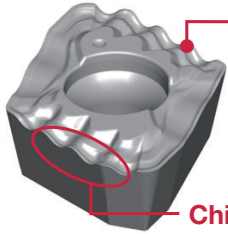
● : Stocked items

## TDX type inserts

### Chipbreakers

#### DG type

Applicable for low speed machining. Prevents long chips from tangling around the tool body, even when the cutting speed is low on heavy machines with a low-rpm spindle.



##### Wavy cutting edge

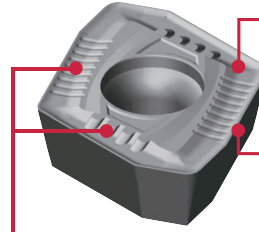
Creates wavy chips that are easily controlled and broken.

##### Chipbreaker for making short chips

Controls the direction of chip flow to break chips with cracks. This prevents long chips from tangling around the tool body.

#### DJ type

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



##### Chipbreaker with peripheral edge

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

##### Chipbreaker for central edge

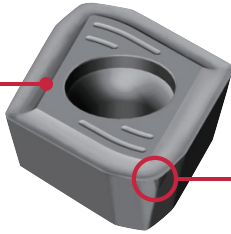
Relatively shallow chip groove prevents chips from packing.

##### Low cutting forces and long tool life

Bumps and grooves formed on the rake face reduce cutting forces and delivering longer tool life.

#### DW type

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



##### Wiper design

Can improve surface finish.

##### Extraordinarily strengthened corner

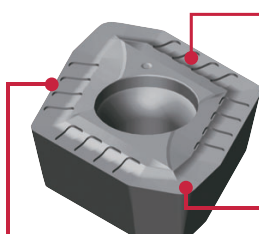
Increased land width plus a two step relief angle strengthens the corner section.

##### Strong chipbreaker for high feeds

Can forcibly curl thick chips produced at high feeds, causing them to break into short sections.

#### 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 when drilling stainless steels.

##### Sharp cutting edges

Exceptionally free cutting action improves chip control.

## Cutting performance

### 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					

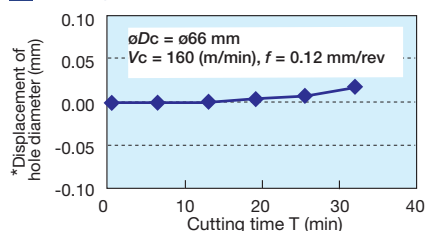
▶ No chip control difference with or without setting plates. This ensures stable machining in each diameter range.

Drill : TDB57-62F50-2.5  
 Insert : XPMT08T308R-DJ  
 Grade : AH725  
 Machine : Vertical M/C, BT50  
 Cutting speed :  $V_c = 160$  m/min  
 Hole depth :  $H = 70$  mm  
 Coolant : Wet (Internal)

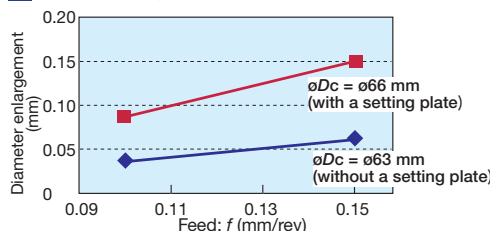
### Hole accuracy

Highly rigid body and optimized insert position provides stable machining for high accuracy.

#### Change of hole diameter



#### Hole enlargement



▶ The variation in hole diameter is minimal when drilling continuously.

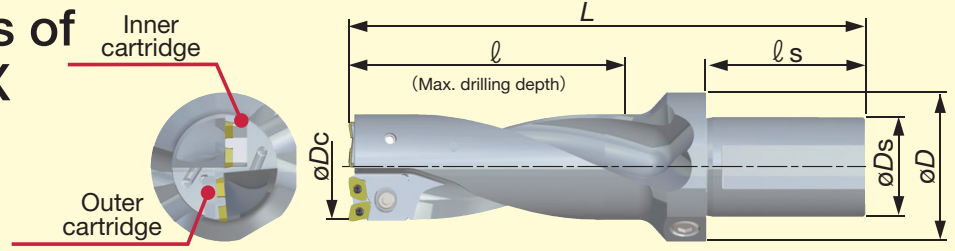
\* (Above graph shows the displacement value compared with diameter of 1st hole.)

▶ The value of diameter enlargement with setting plate is similar to the value without setting plate.

Drill : TDB63-66F50-2.5  
 Insert : XPMT08T308R-DJ  
 Grade : AH725  
 Work material : SCM440 (42CrMo4)  
 Machine : Vertical M/C, BT50  
 Cutting speed :  $V_c = 160$  m/min  
 Feed :  $f = 0.10 \sim 0.15$  mm/rev  
 Hole depth :  $H = 70$  mm  
 Coolant : Wet (Internal)



# Specifications of TDB with TDX cartridge



øDc (mm)	Body		Cartridge set		Dimensions (mm)					Weight (kg)	Setting plate		Applicable inserts
	Cat. No.	Stock	Cat. No.	Stock	øDs	øD	l	ls	L		Cat. No.	(mm)	
55	TDB55-56F50-2.5	●	TDXCA55-56	●	50	75	140	80	260	3.2	-	-	XPMT08T308R-D*
56	TDB55-56F50-2.5	●	TDXCA55-56	●	50	75	140	80	260	3.2	AP0801	0.5	XPMT08T308R-D*
57	TDB57-62F50-2.5	●	TDXCA57-62	●	50	75	155	80	280	3.6	-	-	XPMT08T308R-D*
58	TDB57-62F50-2.5	●	TDXCA57-62	●	50	75	155	80	280	3.6	AP0801	0.5	XPMT08T308R-D*
59	TDB57-62F50-2.5	●	TDXCA57-62	●	50	75	155	80	280	3.6	AP0802	1.0	XPMT08T308R-D*
60	TDB57-62F50-2.5	●	TDXCA57-62	●	50	75	155	80	280	3.6	AP0803	1.5	XPMT08T308R-D*
61	TDB57-62F50-2.5	●	TDXCA57-62	●	50	75	155	80	280	3.6	AP0804	2.0	XPMT08T308R-D*
62	TDB57-62F50-2.5	●	TDXCA57-62	●	50	75	155	80	280	3.6	AP0805	2.5	XPMT08T308R-D*
63	TDB63-66F50-2.5	●	TDXCA63-66	●	50	75	165	80	295	4.2	-	-	XPMT08T308R-D*
64	TDB63-66F50-2.5	●	TDXCA63-66	●	50	75	165	80	295	4.2	AP0801	0.5	XPMT08T308R-D*
65	TDB63-66F50-2.5	●	TDXCA63-66	●	50	75	165	80	295	4.2	AP0802	1.0	XPMT08T308R-D*
66	TDB63-66F50-2.5	●	TDXCA63-66	●	50	75	165	80	295	4.2	AP0803	1.5	XPMT08T308R-D*
67	TDB67-73F50-2.5	●	TDXCA67-73	●	50	75	183	80	320	5.0	-	-	XPMT110412R-D*
68	TDB67-73F50-2.5	●	TDXCA67-73	●	50	75	183	80	320	5.0	AP1101	0.5	XPMT110412R-D*
69	TDB67-73F50-2.5	●	TDXCA67-73	●	50	75	183	80	320	5.0	AP1102	1.0	XPMT110412R-D*
70	TDB67-73F50-2.5	●	TDXCA67-73	●	50	75	183	80	320	5.0	AP1103	1.5	XPMT110412R-D*
71	TDB67-73F50-2.5	●	TDXCA67-73	●	50	75	183	80	320	5.0	AP1104	2.0	XPMT110412R-D*
72	TDB67-73F50-2.5	●	TDXCA67-73	●	50	75	183	80	320	5.0	AP1105	2.5	XPMT110412R-D*
73	TDB67-73F50-2.5	●	TDXCA67-73	●	50	75	183	80	320	5.0	AP1106	3.0	XPMT110412R-D*
74	TDB74-80F50-2.5	●	TDXCA74-80	●	50	75	200	80	330	5.7	-	-	XPMT110412R-D*
75	TDB74-80F50-2.5	●	TDXCA74-80	●	50	75	200	80	330	5.7	AP1101	0.5	XPMT110412R-D*
76	TDB74-80F50-2.5	●	TDXCA74-80	●	50	75	200	80	330	5.7	AP1102	1.0	XPMT110412R-D*
77	TDB74-80F50-2.5	●	TDXCA74-80	●	50	75	200	80	330	5.7	AP1103	1.5	XPMT110412R-D*
78	TDB74-80F50-2.5	●	TDXCA74-80	●	50	75	200	80	330	5.7	AP1104	2.0	XPMT110412R-D*
79	TDB74-80F50-2.5	●	TDXCA74-80	●	50	75	200	80	330	5.7	AP1105	2.5	XPMT110412R-D*
80	TDB74-80F50-2.5	●	TDXCA74-80	●	50	75	200	80	330	5.7	AP1106	3.0	XPMT110412R-D*

● : Stocked items

## Inserts

Chipbreaker Appearance	Cat. No.	Stocked grades				Dimensions (mm)					Applicable drill dia. øDc (mm)
		AH9030	AH6030	AH725	T1115	A	B	T	ød1	rε	
	XPMT08***-DJ	●	●	●	●	8.5	9.9	3.97	3.4	0.8	ø55 - ø66
	XPMT11***-DJ	●	●	●	●	11.2	12.5	4.76	4.4	1.2	ø67 - ø80
	XPMT08***-DS		●	●		8.5	9.9	3.97	3.4	0.8	ø55 - ø66
	XPMT11***-DS		●	●		11.2	12.5	4.76	4.4	1.2	ø67 - ø80
	XPMT08***-DW	●	●	●		8.5	9.9	3.97	3.4	0.8	ø55 - ø66
	XPMT11***-DW	●	●	●		11.2	12.5	4.76	4.4	1.2	ø67 - ø80
	XPMT08***-DG			●		8.5	9.9	3.97	3.4	0.8	ø55 - ø66
	XPMT11***-DG			●		11.2	12.5	4.76	4.4	1.2	ø67 - ø80

## TDS type

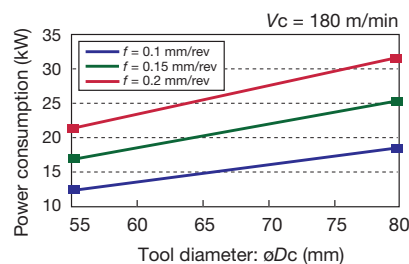
### Standard cutting conditions

ISO	Workpiece materials	Selection criteria	Chip-breaker	Grade	Cutting speed Vc (m/min)	Feed: f (mm/rev)		
						øDc (mm)		
						ø55 - 56	ø57 - 73	ø74 - 80
<b>P</b>	Low carbon steels (C<0.3) St42-1, St52-3, C25 etc.	First choice	DS	AH6030	160 - 250	0.04 - 0.10	0.04 - 0.10	0.04 - 0.10
		For wear resistance	DJ	AH9030	160 - 320	0.04 - 0.10	0.04 - 0.10	0.04 - 0.10
	Carbon steels (C>0.3) C45, C55 etc.	First choice	DJ	AH9030	80 - 250	0.06 - 0.16	0.06 - 0.18	0.08 - 0.20
		For impact resistance	DS	AH6030	80 - 250	0.04 - 0.13	0.04 - 0.15	0.04 - 0.16
	Low alloy steels 18CrMo4 etc.	First choice	DS	AH6030	160 - 250	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
		For wear resistance	DJ	AH9030	160 - 250	0.06 - 0.14	0.06 - 0.14	0.06 - 0.14
Alloy steels 42CrMo4, 20Cr4 etc.	First choice	DJ	AH9030	80 - 200	0.06 - 0.16	0.06 - 0.18	0.08 - 0.20	
	For impact resistance	DS	AH6030	80 - 200	0.04 - 0.13	0.04 - 0.14	0.04 - 0.15	
<b>M</b>	Stainless steels (Austenitic) X5CrNi189, X5CrNiMo17-12-2 etc.	First choice	DS	AH6030	100 - 200	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
		—	DJ	AH9030	100 - 200	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
	Stainless steels (Martensitic and ferritic) X6Cr17,X12CrS13,etc.	First choice	DS	AH6030	100 - 200	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
		—	DJ	AH9030	100 - 200	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
	Stainless steels (Precipitation hardening) X5CrNiCuNb16-4 etc.	First choice	DS	AH6030	80 - 120	0.04 - 0.10	0.04 - 0.10	0.04 - 0.10
		—	DJ	AH9030	80 - 120	0.04 - 0.10	0.04 - 0.10	0.04 - 0.10
<b>K</b>	Grey cast irons 250 etc.	First choice	DJ	AH9030	80 - 250	0.06 - 0.18	0.08 - 0.20	0.08 - 0.22
		For impact resistance	DS	AH6030	80 - 200	0.06 - 0.15	0.08 - 0.16	0.08 - 0.18
	Ductile cast irons 700-2 etc.	First choice	DJ	AH9030	80 - 200	0.06 - 0.16	0.06 - 0.18	0.08 - 0.20
		For impact resistance	DS	AH6030	80 - 150	0.06 - 0.15	0.08 - 0.16	0.08 - 0.18
<b>N</b>	Aluminium alloy	First choice	DS	AH6030	200 - 400	0.10 - 0.20	0.10 - 0.23	0.10 - 0.25
		—	DJ	AH9030	200 - 400	0.10 - 0.20	0.10 - 0.23	0.10 - 0.25
<b>S</b>	High temperature alloy Inconel718 etc	First choice	DS	AH6030	20 - 60	0.04 - 0.08	0.04 - 0.10	0.04 - 0.10
		—	DJ	AH9030	20 - 60	0.04 - 0.08	0.04 - 0.10	0.04 - 0.10
	Titanium alloy Ti-6Al-4V etc.	First choice	DS	AH6030	40 - 120	0.06 - 0.12	0.06 - 0.14	0.06 - 0.14
		—	DJ	AH9030	40 - 120	0.06 - 0.12	0.06 - 0.14	0.06 - 0.14
<b>H</b>	Hardened steel < 40HRC	First choice	DJ	AH9030	50 - 100	0.04 - 0.08	0.04 - 0.10	0.04 - 0.10
		For impact resistance	DS	AH6030	40 - 80	0.04 - 0.08	0.04 - 0.10	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.



# TDX type

## Inserts recommendation

ISO	Workpiece materials	First choice	High feed	High speed	Troubleshooting			
					Chipping resistance	Wear resistance	Surface finish	Chip control
P	Low carbon steel (C ≤ 0.3%)	DS, AH6030	-	-	DS, AH725	-	DW, AH6030	DG, AH725
	Carbon steel (C > 0.3%) Alloy steels	DJ, AH6030	DW, AH6030	DJ, AH9030	DW, AH725	DJ, AH9030	DW, AH6030	-
	Low alloy steel	DS, AH6030	-	-	DS, AH725	-	DW, AH6030	-
M	Stainless steel	DS, AH6030	-	-	DS, AH725	-	DW, AH6030	DG, AH725
K	Grey cast iron	DJ, AH9030	DW, AH9030	DJ, T1115	DW, AH725	-	DW, AH9030	-
	Ductile cast iron	DJ, AH9030	DW, AH9030	-	DW, AH725	-	DW, AH9030	-
N	Aluminium alloys	DJ, AH725	DW, AH725	DS, AH6030	-	DW, AH725	DG, AH725	
S	Titanium alloys Heat-resistant alloys	DS, AH6030	-	-	DW, AH725	-	DW, AH725	DG, AH725
H	Hardened steel	DJ, AH9030	DW, AH9030	-	DW, AH725	-	DW, AH9030	-

## Standard cutting conditions

ISO	Workpiece materials	Cutting speed Vc (m/min)	Feed: f (mm/rev)		
			ø55 ~ ø62	ø63 ~ ø73	ø74 ~ ø80
P	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	0.04 - 0.10
	Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	80 - 250	0.08 - 0.18	0.08 - 0.18	0.10 - 0.20
	Low alloy steels SCM415 etc. (15CrMo5 etc.)	160 - 250	0.04 - 0.16	0.04 - 0.16	0.04 - 0.16
	Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	80 - 200	0.08 - 0.18	0.08 - 0.18	0.08 - 0.20
M	Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	100 - 200	0.04 - 0.12	0.04 - 0.12	0.06 - 0.14
	Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	100 - 200	0.04 - 0.12	0.04 - 0.12	0.06 - 0.14
	Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	80 - 120	0.04 - 0.10	0.04 - 0.10	0.06 - 0.12
K	Grey cast irons FC250 etc. (GG25 etc.)	80 - 250	0.08 - 0.20	0.08 - 0.20	0.10 - 0.22
	Ductile cast irons FCD700 etc. (GGG70 etc.)	80 - 200	0.08 - 0.20	0.08 - 0.20	0.10 - 0.22
N	Aluminium alloys A2017, ADC12 etc.	200 - 400	0.15 - 0.25	0.15 - 0.25	0.18 - 0.28

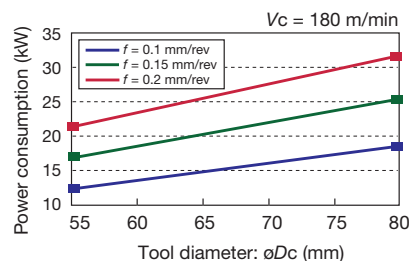
## Standard cutting conditions for DG chipbreaker

ISO	Workpiece materials	Cutting speed Vc (m/min)	Feed: f (mm/rev) ø55 ~ ø80
P	Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	60 - 180	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.

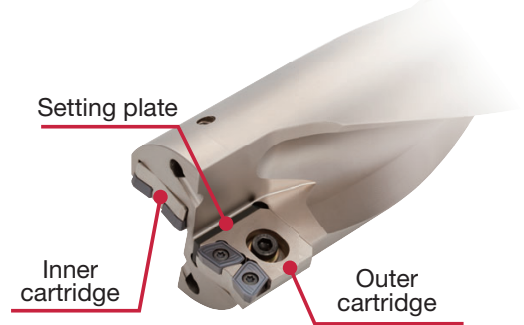


#### Cutting coolant

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

## Parts list

**NEW**



### Body

Cat. No.	Clamp Screw			Wrench			Setting plate					
	For cartridge (Outer, Inner)	For taper screw	Washer	For cartridge	For taper screw	For setting plate						
TDB55-56F50-2.5	CM5x0.8x12	PT1/4GN	5.3x10x1	P-4	P-6	T-9D	AP0801	-	-	-	-	-
TDB57-62F50-2.5	CM5x0.8x12	PT1/4GN	5.3x10x1	P-4	P-6	T-9D	AP0801	AP0802	AP0803	AP0804	AP0805	-
TDB63-66F50-2.5	CHHM6-15	PT1/4GN	6.4x12.5x1.6	P-5	P-6	T-9D	AP0801	AP0802	AP0803	-	-	-
TDB67-73F50-2.5	CM6x16	PT1/4GN	6.4x12.5x1.6	P-5	P-6	T-9D	AP1101	AP1102	AP1103	AP1104	AP1105	AP1106
TDB74-80F50-2.5	CM6x16	PT1/4GN	6.4x12.5x1.6	P-5	P-6	T-9D	AP1101	AP1102	AP1103	AP1104	AP1105	AP1106

### TDS type Cartridge set

Cat. No.	Cartridge		Clamp screw		Wrench for insert
	Outer	Inner	For inserts (x4)	For setting plate (x2)	
TDSCA55-56	TDS08CA-P-55-56	TDS08CA-C-55-56	CSTB-3	CSTB-3	T-9F
TDSCA57-62	TDS08CA-P-57-62	TDS08CA-C-57-62	CSTB-3	CSTB-3	T-9F
TDSCA63-66	TDS08CA-P-63-66	TDS08CA-C-63-66	CSTB-3	CSTB-3	T-9F
TDSCA67-73	TDS09CA-P-67-73	TDS09CA-C-67-73	CSTB-4	CSTB-3	T-15F
TDSCA74-80	TDS11CA-P-74-80	TDS11CA-C-74-80	CSTB-5	CSTB-3	T-20F

### TDS type individual cartridge

Inner cartridge Cat. No.	Stock	Clamp screw	
		For insert (x2)	For setting plate
TDS08CA-C-55-56	●	CSTB-3	-
TDS08CA-C-57-62	●	CSTB-3	-
TDS08CA-C-63-66	●	CSTB-3	-
TDS09CA-C-67-73	●	CSTB-4	-
TDS11CA-C-74-80	●	CSTB-5	-

Outer cartridge Cat. No.	Stock	Clamp screw	
		For insert (x2)	For setting plate (x2)
TDS08CA-P-55-56	●	CSTB-3	CSTB-3
TDS08CA-P-57-62	●	CSTB-3	CSTB-3
TDS08CA-P-63-66	●	CSTB-3	CSTB-3
TDS09CA-P-67-73	●	CSTB-4	CSTB-3
TDS11CA-P-74-80	●	CSTB-5	CSTB-3

### TDX type Cartridge set

Cat. No.	Cartridge		Clamp screw		Wrench for insert
	Outer	Inner	For insert	For setting plate	
TDXCA55-56	TDX08CA-P0	TDX08CA-C0	CSTB-3 (X4)	CSTB-3 (X2)	T-9F
TDXCA57-62	TDX08CA-P1	TDX08CA-C1	CSTB-3 (X4)	CSTB-3 (X2)	T-9F
TDXCA63-66	TDX08CA-P2	TDX08CA-C2	CSTB-3 (X4)	CSTB-3 (X2)	T-9F
TDXCA67-73	TDX11CA-P1	TDX11CA-C1	CSTB-4 (X4)	CSTB-3 (X2)	T-15F
TDXCA74-80	TDX11CA-P2	TDX11CA-C2	CSTB-4 (X4)	CSTB-3 (X2)	T-15F

### TDX type individual cartridge

Inner cartridge Cat. No.	Stock	Clamp screw	
		For insert (x2)	For setting plate
TDX08CA-C0	●	CSTB-3	-
TDX08CA-C1	●	CSTB-3	-
TDX08CA-C2	●	CSTB-3	-
TDX11CA-C1	●	CSTB-4	-
TDX11CA-C2	●	CSTB-4	-

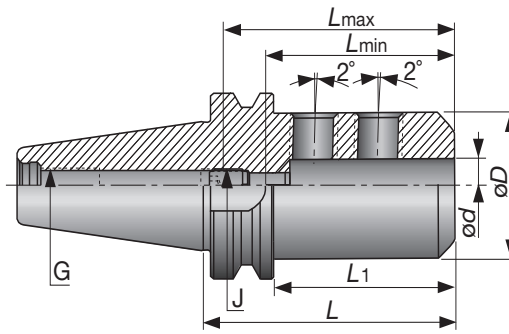
Outer cartridge Cat. No.	Stock	Clamp screw	
		For insert (x2)	For setting plate
TDX08CA-P0	●	CSTB-3	CSTB-3
TDX08CA-P1	●	CSTB-3	CSTB-3
TDX08CA-P2	●	CSTB-3	CSTB-3
TDX11CA-P1	●	CSTB-4	CSTB-3
TDX11CA-P2	●	CSTB-4	CSTB-3

● : Stocked items



# ● Holder

## BT MAS403 Side Lock Holder for Drills



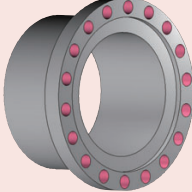
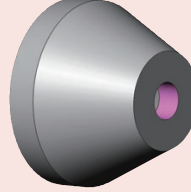
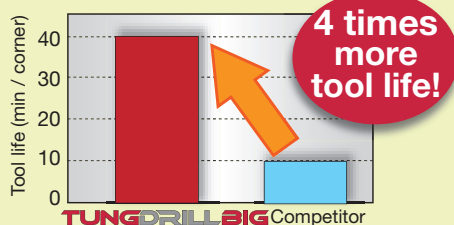
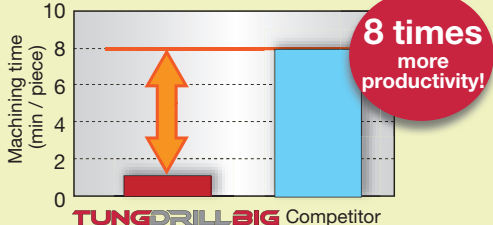
Cat. No.	Stock	Dimensions (mm)						J*	G	Wrench
		$\varnothing d$	$\varnothing D$	L	L1	Lmin	Lmax			
<b>BT50EM50X125E</b>	●	50	98	125	67	78	88	M20X1.5	M24	10

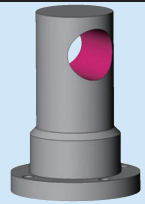
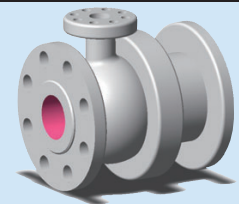
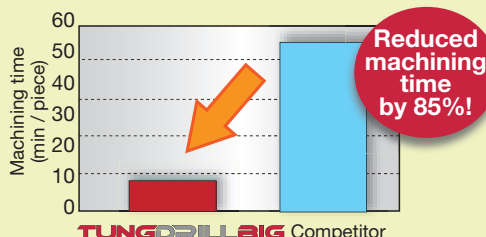
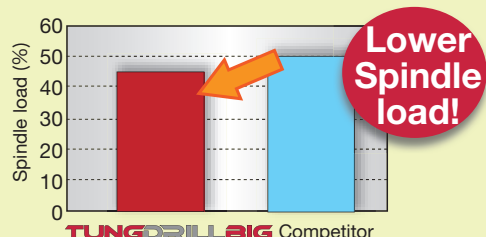
\* The adjustment screw has an internal coolant hole.

● : Stocked items



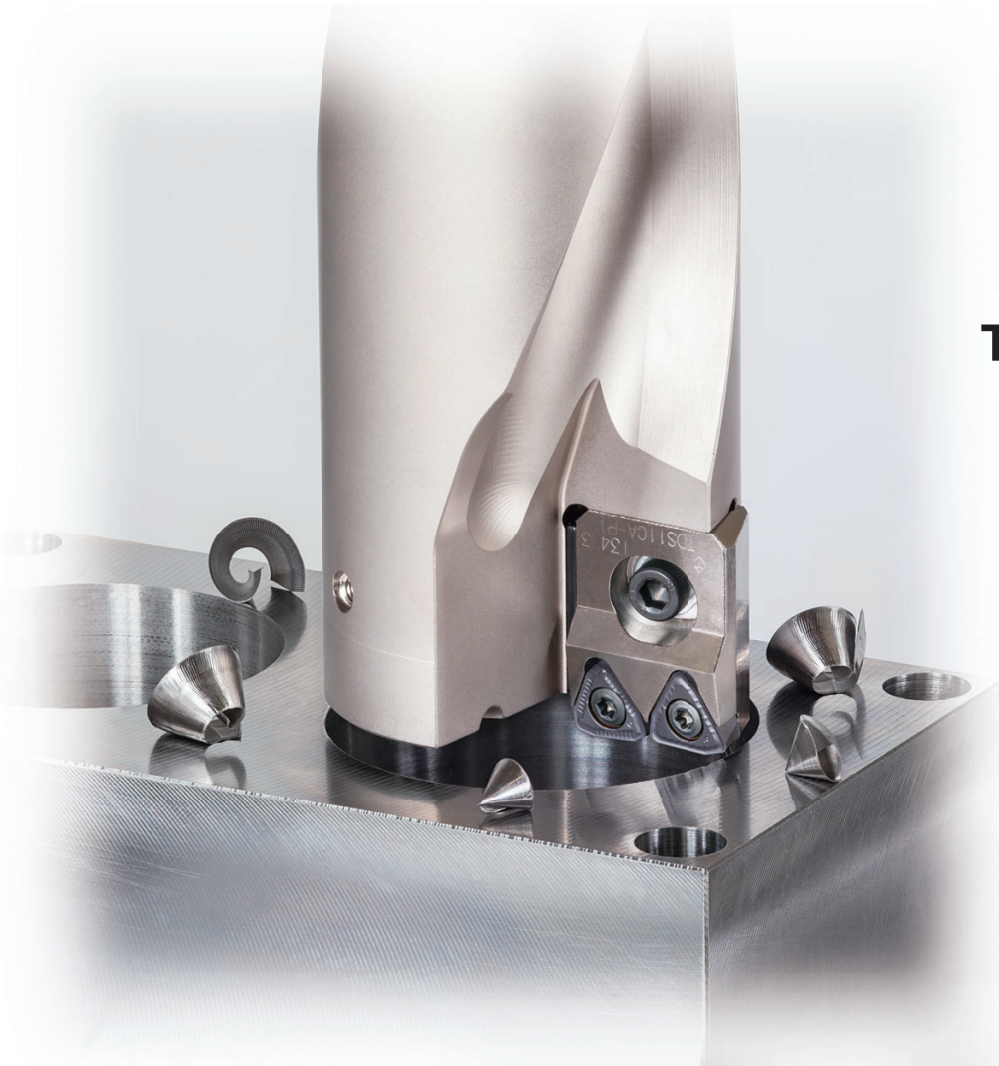
## Practical examples

Workpiece type		Flange on tube	Housing of machine
Drill		TDB74-80F50-2.5	TDB67-73F50-2.5
Cartridge		TDX11CA-C2, TDX11CA-P2	TDX11CA-C1, TDX11CA-P1
Insert		XPMT110412R-DJ	XPMT110412R-DJ
Grade		AH725	AH725
Workpiece material		FCD450 / GGG45	FCD450 / GGG45
		 <b>K</b>	 <b>K</b>
Cutting conditions	Cutting speed: $V_c$ (m/min)	150	120
	Feed: $f$ (mm/rev)	0.15	0.15
	Tool diameter: $\phi D_c$ (mm)	80	70
	Drilling depth: $H$ (mm)	80	80
	Coolant	MQL (Internal)	Wet (Internal)
Results			
		The stable drilling of TungDrillBig significantly reduces scratches in the hole wall. The AH725 grade provides 4 times longer tool life than its competitors.	TungDrillBig provides 8 times higher productivity than current HSS drill.

Workpiece type		Shaft	Valve
Drill		TDB74-80F50-2.5	TDB74-80F50-2.5
Cartridge		TDX11CA-C2, TDX11CA-P2	TDS11CA-C-74-80, TDS11CA-P-74-80
Insert		XPMT110412R-DJ	WWWU11X512R-DJ
Grade		AH725	AH9030
Workpiece material		S45C / C45	SCPH32 / G17CrMo9-10
		 <b>P</b>	 <b>P</b>
Cutting conditions	Cutting speed: $V_c$ (m/min)	150	120
	Feed: $f$ (mm/rev)	0.15	0.15
	Tool diameter: $\phi D_c$ (mm)	80	75
	Drilling depth: $H$ (mm)	74	150
	Coolant	Wet (Internal)	Wet (Internal)
Results			
		TungDrillBig can significantly reduce the number of boring passes required afterwards and the total machining time compared.	TungDrillBig is lower cutting force than competitor's, and achieves stable drilling. Furthermore, six corner is more economical.



**TDS type**



**TDX type**



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