Member IMC Group Tungaloy

TUNGDRILLBIG

TUNGALOY

DrillLine

DRILLLINE

Tungaloy Report 401-E

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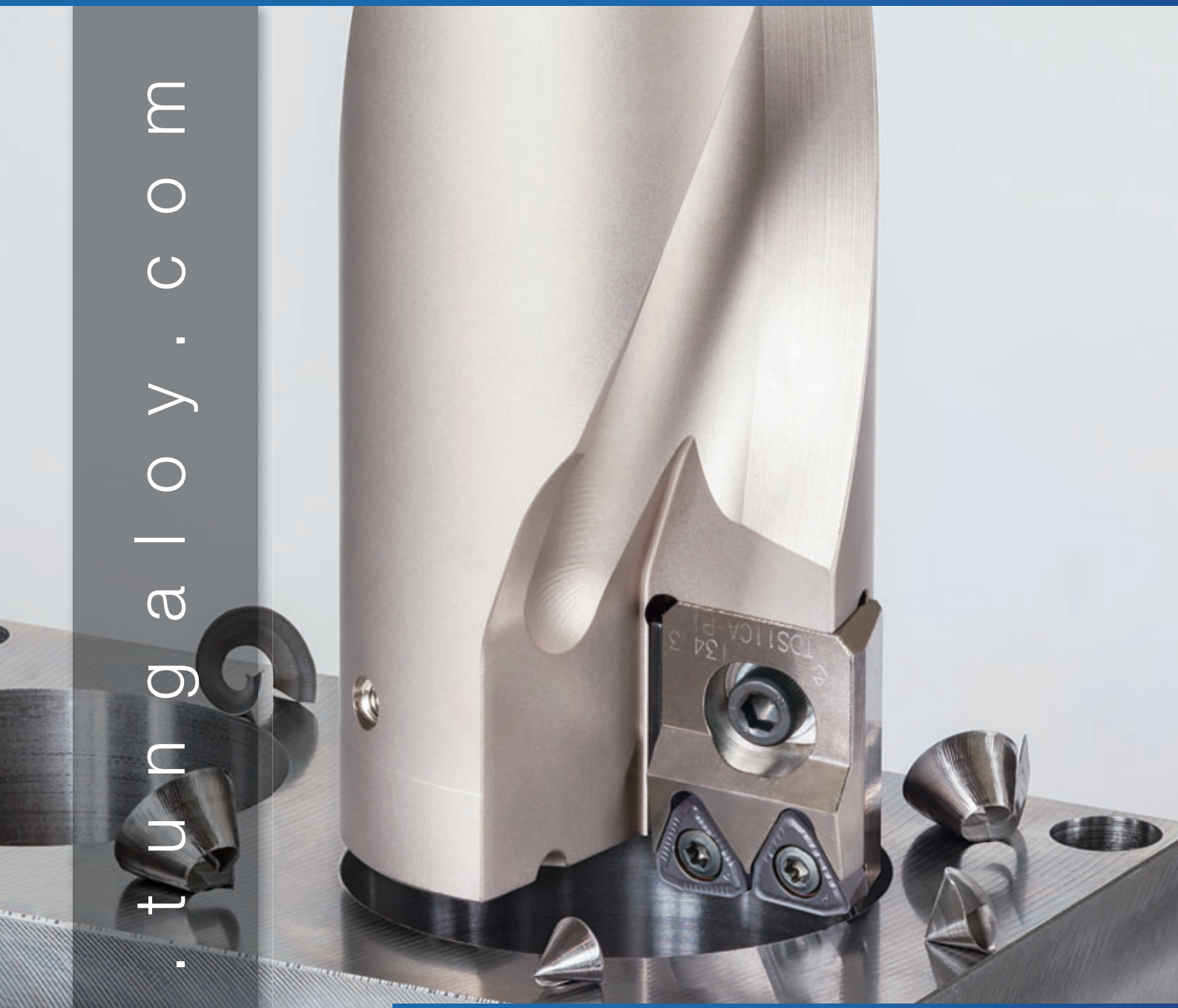
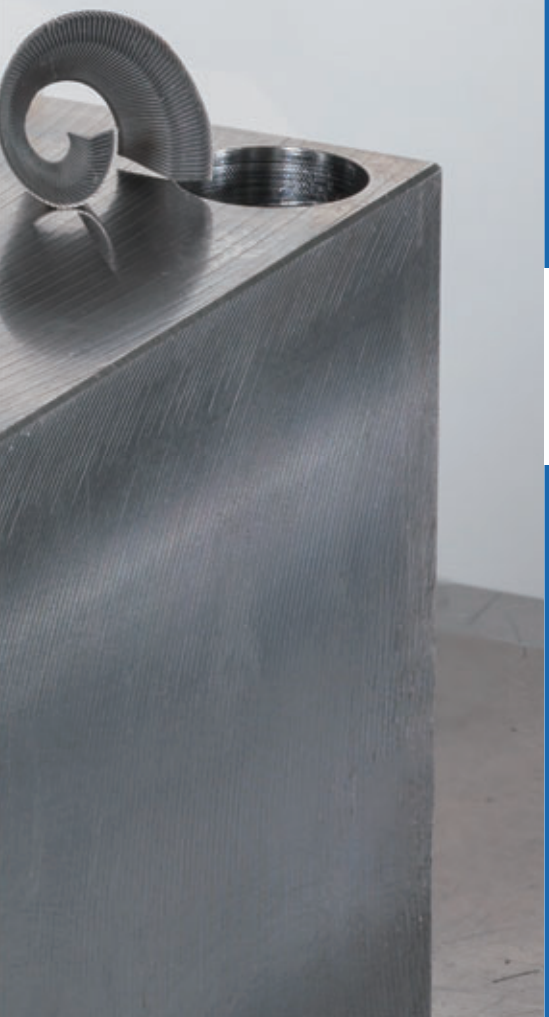


Adjustable tool reduces the number of drills required

TDX11CX-P2



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.

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. øDc (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. øDc (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. øDc (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 cartidge.
Customer can order inner or outer cartridge separately.

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

❶ Body
TDB55-56F50-2.5

+

❷ Cartridge set
TDSCA-55-56

NEW TDS type inserts

Chipbreakers

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

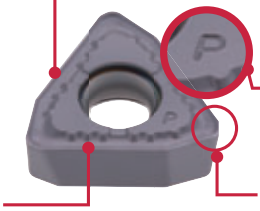
Central insert

Identification for central edge side

Chipbreaker for central edge
The chipbreaker has thick width and gentle curves. This prevents chips from packing.

Low cutting forces and long tool life
Bumps and grooves formed on the rake face reduce cutting forces and deliver longer tool life.

Peripheral insert



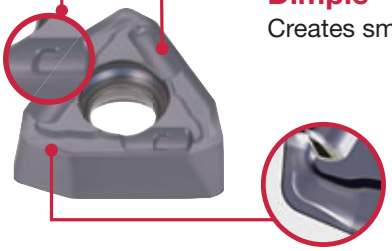
Chipbreaker for peripheral edge
The high rake angle and high breaker wall reduce cutting forces and improve chipbreaking.

Identification for peripheral edge side

Wiper design
Can improve surface finish

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

Central insert

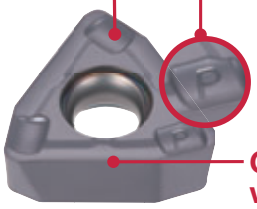


Identification for central edge side

Dimple
Creates smooth chip curling.

Reinforced land
Prevents fracture and chipping.

Peripheral insert

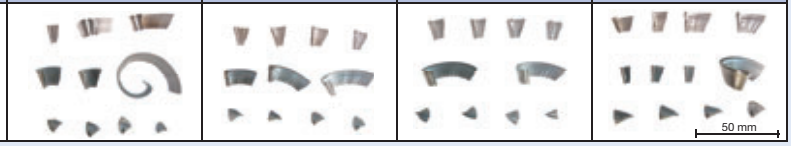


Identification for peripheral edge side

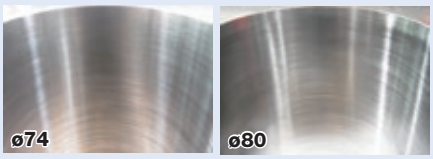
Optimum chipbreaker width and contact area
Provides excellent chip control.

Cutting performance

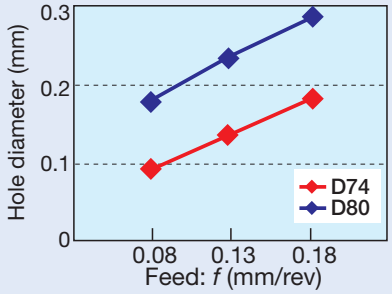
Chip control
Chips are well controlled and shortened.

Tool diameter øDc (mm)	ø74 (without setting plate)		ø80 (with setting plate)	
Feed f (mm/rev)	0.13	0.18	0.13	0.18
C55				

Surface quality



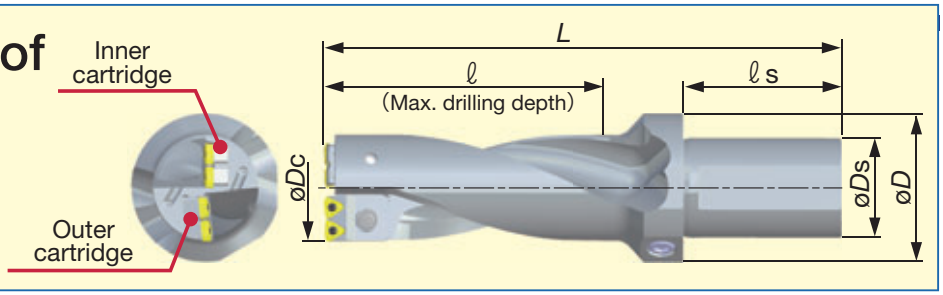
Hole accuracy



▶Good chip control and hole diameter, surface quality

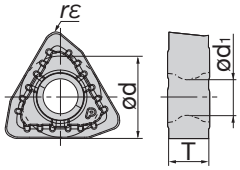
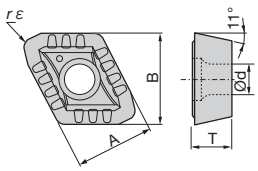
Drill	: TDB74-80F50-2.5	Cutting speed	: *Vc* = 140 m/min
Cartridge	: TDS11CA-C-74-80 TDS11CA-P-74-80	Feed	: *f* = 0.13 mm/rev
		Tool diameter	: ø*Dc* = 74, 80
Insert	: WWMU11X512R-DJ	Hole depth	: H = 150 mm
Grade	: AH9030	Coolant	: Wet (Internal)
Machine	: Vertical M/C, BT50		

Specifications of TDB with TDS cartridge



øDc (mm)	Body Cat. No.	Stock	Cartridge set Cat. No.	Stock	Dimensions (mm) øDs	øD	ℓ	ℓ s	L	Weight (kg)	Setting plate Cat. No.	(mm)	Applicable inserts
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 PREMIUMTEC AH9030	AH6030	Dimensions (mm) ød	T	ød1	rε	Applicable drill diameters øDc (mm)
DJ	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
DS	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

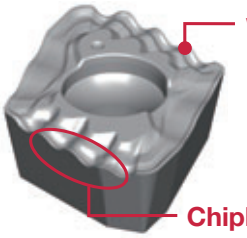
● : Stocked items

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.

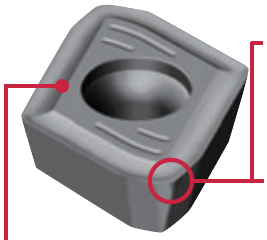
Chipbreaker with peripheral edge
Deeply formed chip groove performs exceptionally free cutting action with effective chipbreaking.

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.



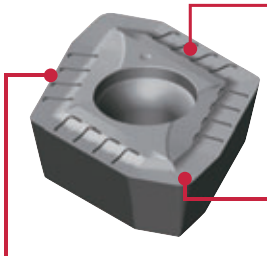
Wiper design
Can improve surface finish.

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				

50 mm

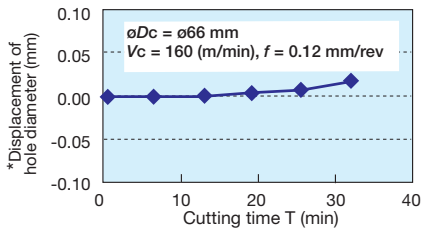
▶ No chip control difference with or without setting plates. This ensures stable machining in each diameter range.

Drill	: TDB57-62F50-2.5
Insert	: XPMT08T308R-DJ
Grade	: AH725
Machine	: Vertical M/C, BT50
Cutting speed	: *Vc* = 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.

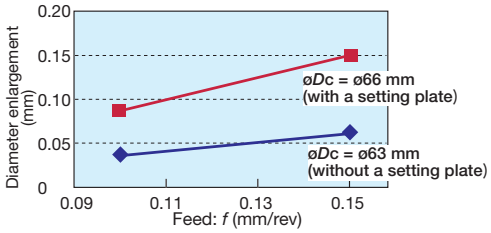
Change of hole diameter



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

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

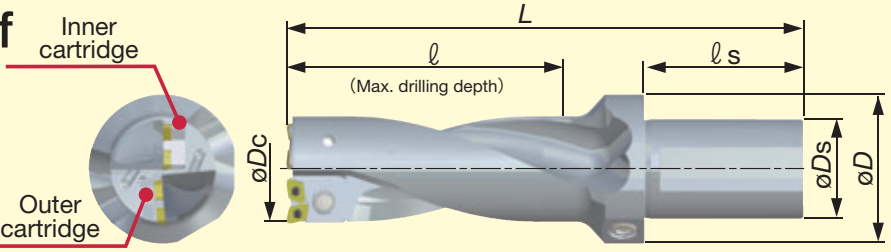
Hole enlargement



▶ 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	: *Vc* = 160 m/min
Feed	: *f* = 0.10 ~ 0.15 mm/rev
Hole depth	: H = 70 mm
Coolant	: Wet (Internal)

Specifications of TDB with TDX cartridge



øDc (mm)	Body Cat. No.	Stock	Cartridge set Cat. No.	Stock	Dimensions (mm) øDs	øD	ℓ	ℓ s	L	Weight (kg)	Setting plate Cat. No.	(mm)	Applicable inserts
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 AH9030	AH6030	AH725	T1115	Dimensions (mm) A	B	T	ød1	r_ε	Applicable drill dia. øDc (mm)
DJ	XPMT06***-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
DS	XPMT06***-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
DW	XPMT06***-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
DG	XPMT06***-DG			●		8.5	9.9	3.97	3.4	0.8	ø55 - ø66
	XPMT06***-DG			●		11.2	12.5	4.76	4.4	1.2	ø67 - ø80

TDS type

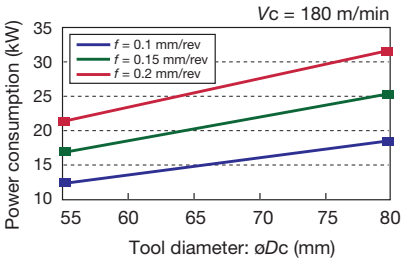
Standard cutting conditions

ISO	Workpiece materials	Selection criteria	Chip-breaker	Grade	Cutting speed	Feed: *f* (mm/rev) øDc (mm)		
					Vc (m/min)	ø55 - 56	ø57 - 73	ø74 - 80
P	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
M	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
K	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
N	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
S	High temperature alloy Innconel718 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 eyc.	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
H	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

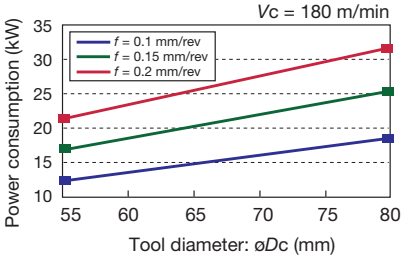
Standard cutting conditions for DG chipbreaker

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.

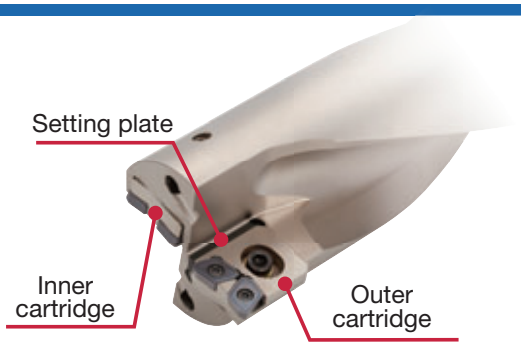


Cutting coolant

- 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.	Catrtridge		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 catrtridge 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 catrtridge 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.	Catrtridge		Clamp screw		Wrench
	Outer	Inner	For insert	For setting plate	For insert
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

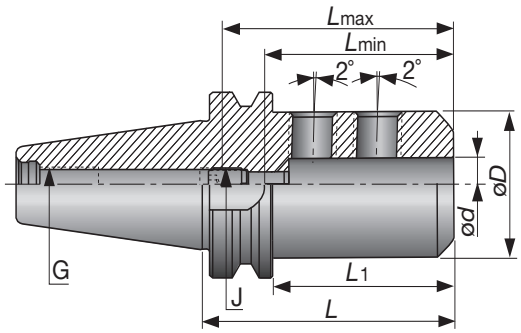
Inner catrtridge Cat. No.	Stock	Clamp screw	
		For insert (x2)	For setting plate
TDX08CA-C0	●	CSTB-3	-
TDX08CA-C1	●	CSTB-3	-
TDX08CA-C2	●	CSTB-3	-
TDX11CA-C1	●	CSTB-4	-
TDX11CA-C2	●	CSTB-4	-

Outer catrtridge 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

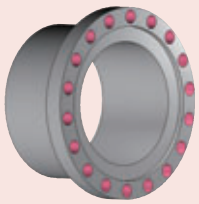
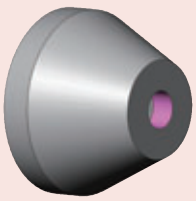
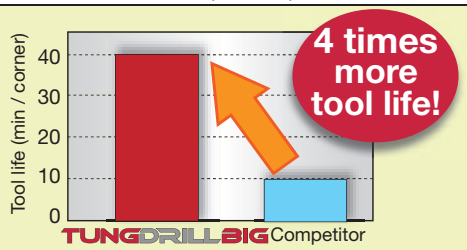
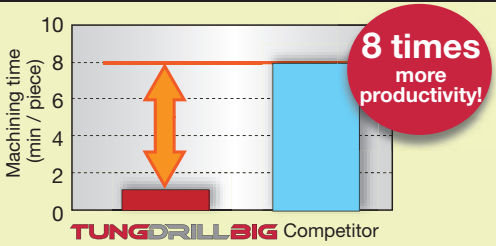


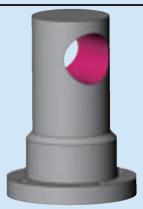
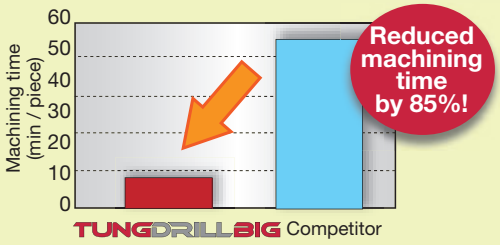
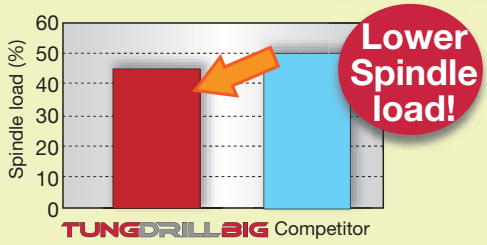
Cat. No.	Stock	Dimensions (mm)						J ∗	G	Wrench
		ød	øD	L	L1	Lmin	Lmax			
BT50EM50X125E	●	50	98	125	67	78	88	M20X1.5	M24	10

∗ The adjustment screw has an internal coolant hole.

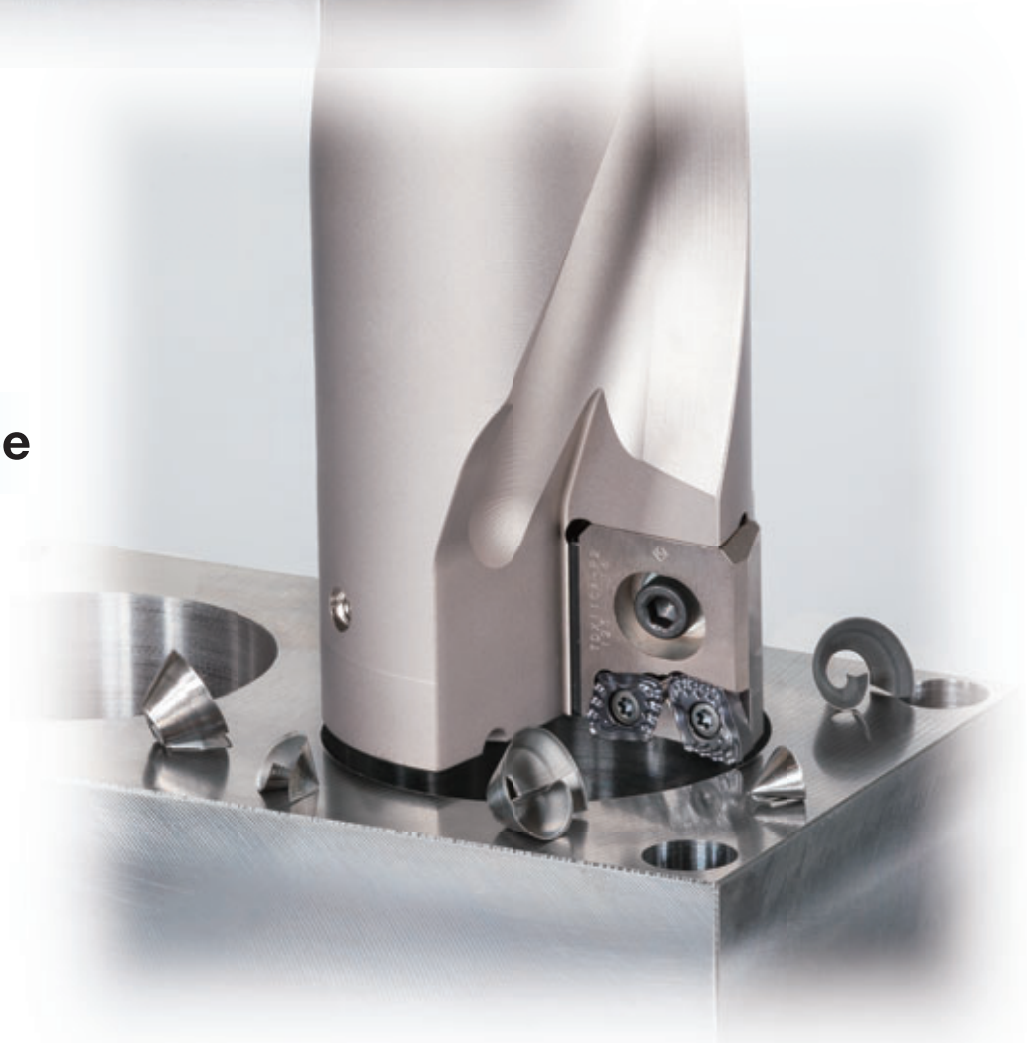
● : Stocked items

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
		 K	 K
Cutting conditions	Cutting speed: *Vc* (m/min)	150	120
	Feed: *f* (mm/rev)	0.15	0.15
	Tool diameter: ø*Dc* (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	WWMU11X512R-DJ
Grade		AH725	AH9030
Workpiece material		S45C / C45	SCPH32 / G17CrMo9-10
		 P	P
Cutting conditions	Cutting speed: *Vc* (m/min)	150	120
	Feed: *f* (mm/rev)	0.15	0.15
	Tool diameter: ø*Dc* (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



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