

TAC Drills / New TDX type



TUNGDRILLTWISTED

Range of drills from $\varnothing 0.500'' \sim 2.00''$

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!*



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

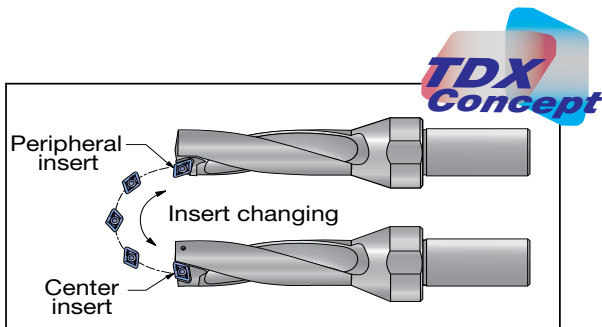


■ Features

Range of drills from $\phi 0.500'' \sim 2.00''$ & L/D = 2xD, 3xD, 4xD, 5xD

1 Highly economic

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



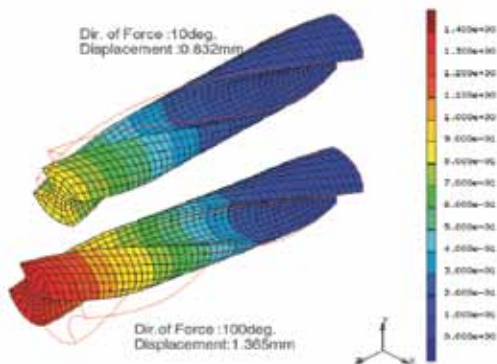
3 Applicable to various machining applications

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



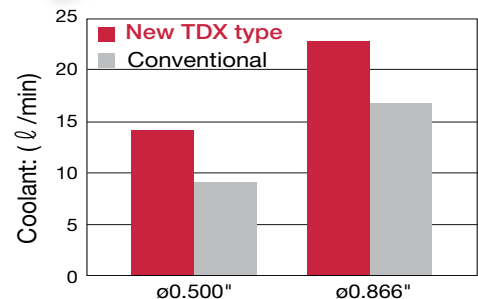
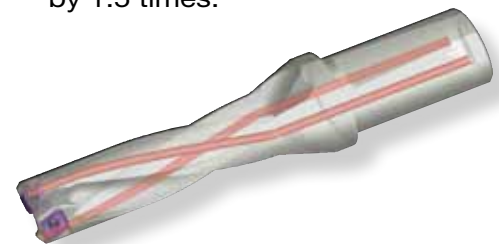
4 Well-balanced rigid design = TDX concept

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



2 Excellent chip evacuation!

The new twisted coolant hole in the drill body increases fluid flow by 1.5 times.



Machine : Vertical machining center
Oil pressure : 290psi

5 Improved drilling durability!

Long tool life due to specialized drill body coating that is hardened to improve rigidity.

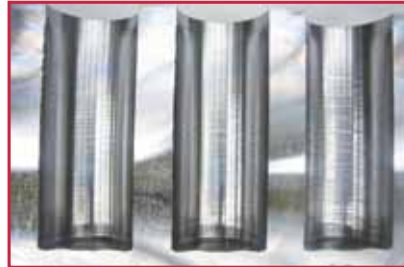
New TDX type drills machining comparisons

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.

New TDX type
TUNGDRILLTWISTED

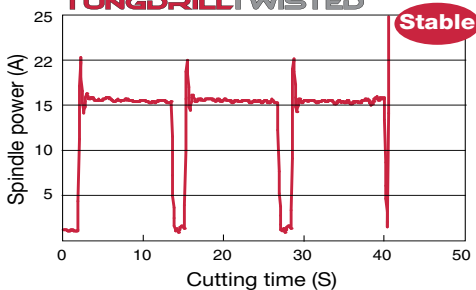


Competitor A

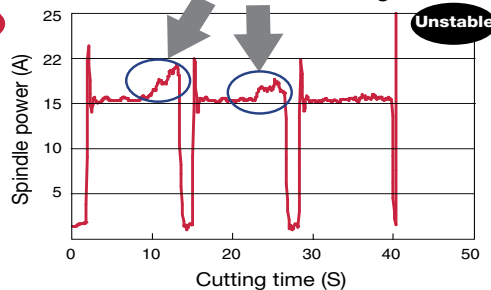


Stabilization of spindle power

New TDX type
TUNGDRILLTWISTED



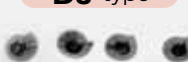
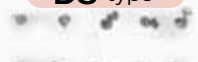
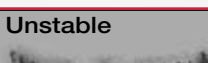
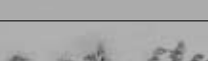
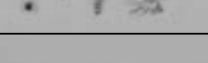
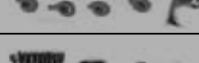
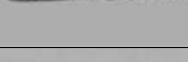
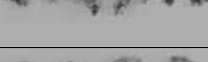
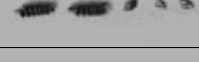
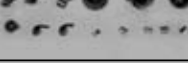
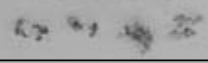
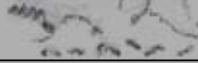
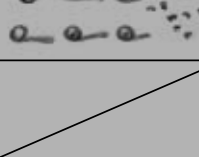
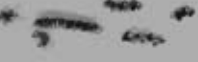
Competitor A
Mechanical fatigue



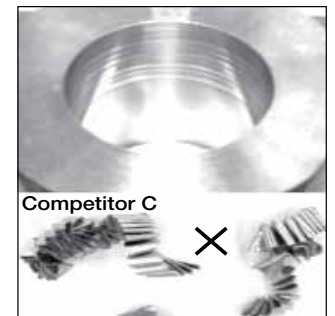
Workpiece : 4140 SAE
Drill : $\phi 0.875"$, L/D = 3xD
Cutting speed : $V_c = 600$ SFM
Feed : $f = 0.005$ ipr
Drilling depth : 3D (Blind)
Machine : Vertical machining center
Cutting fluid : Water soluble type

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

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

Work material	4140 SAE	304 SS	400 SS	1055 SAE
Cutting Speed	$V_c = 330$ SFM	$V_c = 500$ SFM	$V_c = 650$ SFM	$V_c = 650$ SFM
Feed rate	$f = .004$ ipr	$f = .005$ ipr	$f = .003$ ipr	$f = .008$ ipr
TDX type	Center Good  DJ type	Center  DS type	Center  DS type	Center  DW type
	Peripheral 	Peripheral 	Peripheral 	Peripheral 
Competitor A	Center 	Center Unstable 	Center 	Center 
	Peripheral 	Peripheral 	Peripheral 	Peripheral 
Competitor B	Center 	Center 	Center 	Center 
	Peripheral 	Peripheral 	Peripheral 	Peripheral 
Competitor C	Center 	Center 	Center 	
	Peripheral 	Peripheral 	Peripheral 	

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



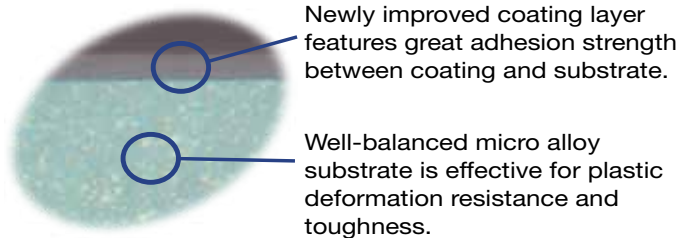
Workpiece : 316SS
Drill : $\phi 0.875"$, L/D = 3xD
Cutting speed : $V_c = 330$ SFM
Feed : $f = .003$ ipr
Machine : CNC lathe

NEW

The new AH725 PVD coated grade now offers all chipbreakers!

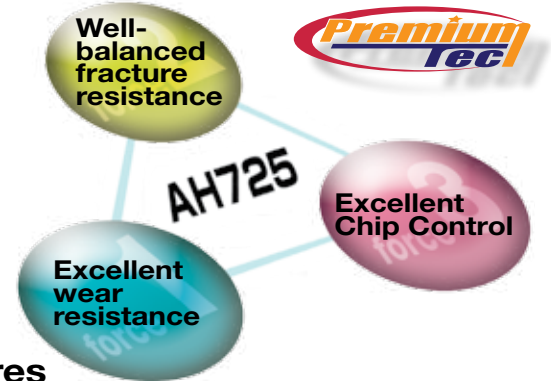
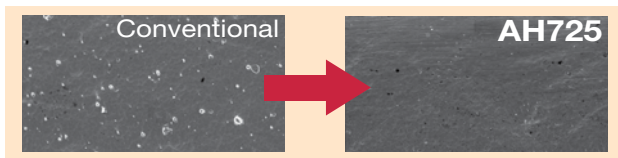
AH725 for standard to high speed cutting

- ▼ 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

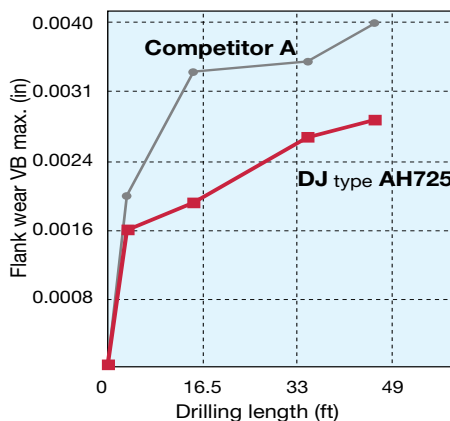
Highly efficient machining with newly modified drill body



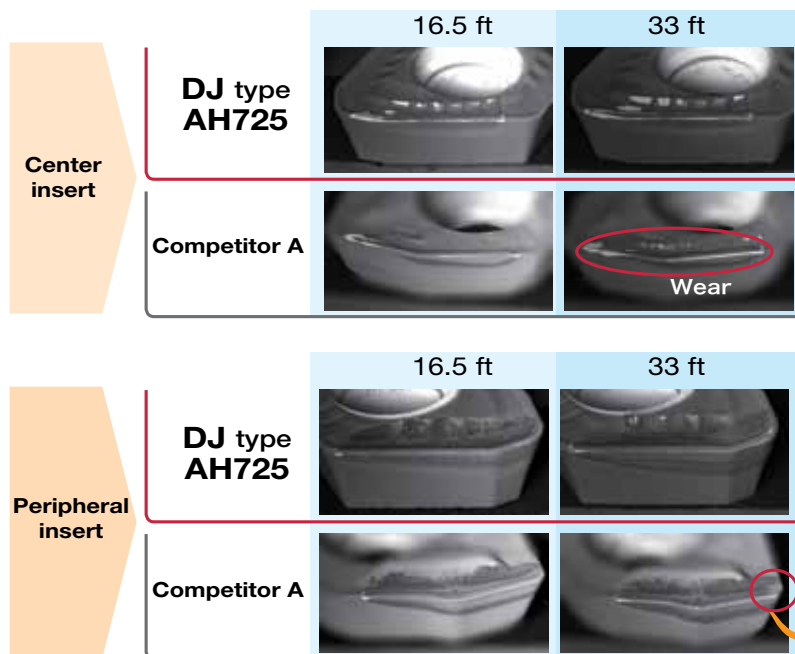
Chip shape is flat and smooth demonstrating stable surface machining (stainless steels)

Cutting performance

For Steels / High cutting speed

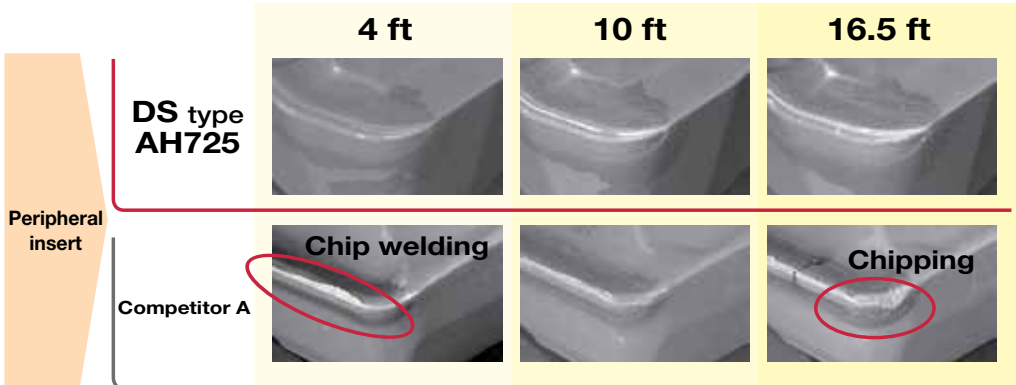
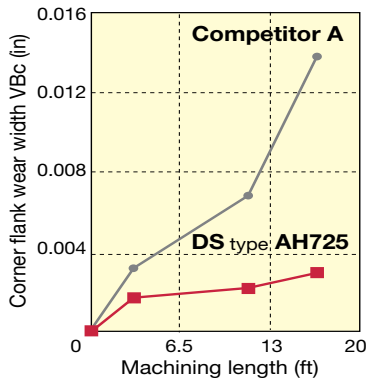


Drill : $\phi 0.827"$, L/D = 3xD
 Insert : XPMT06X308R-DJ
 Workpiece : 1055 SAE
 Cutting speed: $V_c = 650$ SFM
 Feed : $f = 0.004"$ ipr
 Cutting fluid : Water soluble type (Internal supply)



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

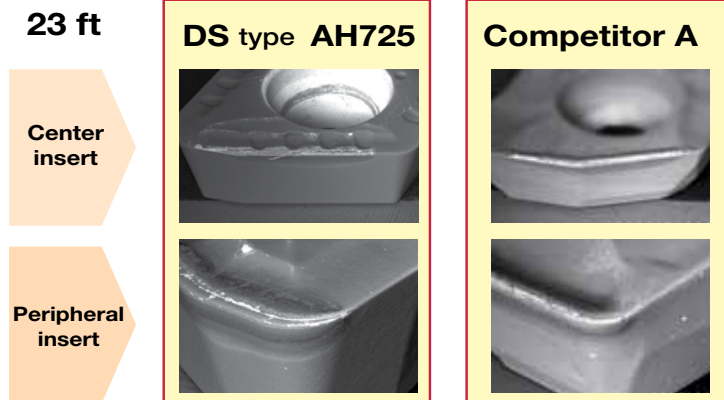
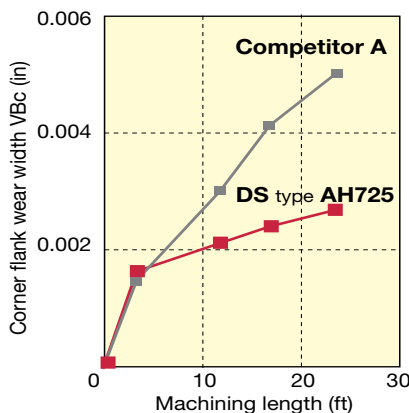
Stainless steels processing (304 SS) / High cutting speed



- 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 : $\phi 0.812$ " in, L/D = 3xD
 Insert : XPMT06X308R-DS
 Workpiece : 304 SS
 Cutting speed : $V_c = 650$ SFM
 Feed : $f = 0.0032$ ipr
 Cutting fluid : Water soluble type (Internal supply)

Stainless steels processing (304 SS) / General cutting speed

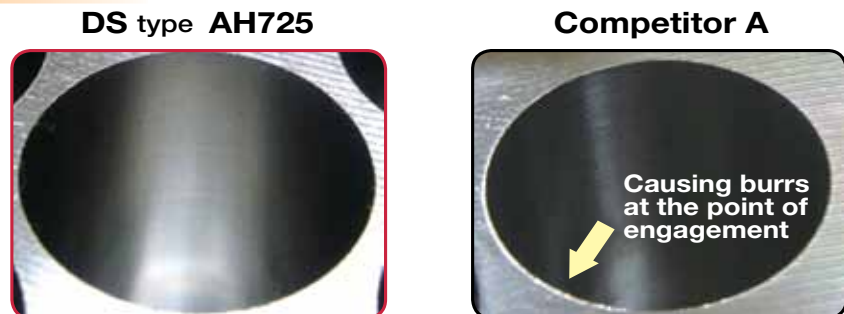


- Prevention of damage on cutting edge in general cutting area

Drill : $\phi 0.812$ " , L/D = 3xD
 Insert : XPMT06X308R-DS
 Workpiece : 304 SS
 Cutting speed : $V_c = 400$ SFM
 Feed : $f = 0.0032$ ipr
 Cutting fluid : Water soluble type (Internal supply)

Prevents burrs

- Tungdrill's new design can achieve excellent chip control which prevent burrs.
- Provides more stable cutting performance.

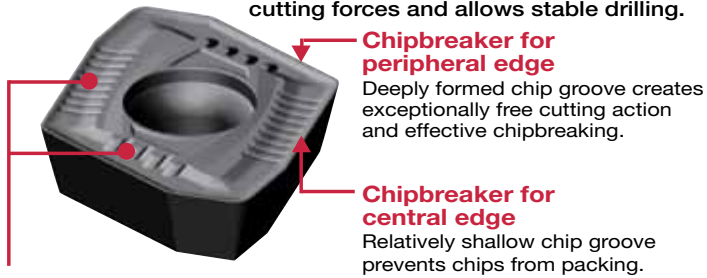


Drill : $\phi 0.812$ " , L/D = 3xD
 Insert : XPMT06X308R-DS
 Workpiece : 304 SS
 Cutting speed : $V_c = 400$ SFM
 Feed : $f = 0.0032$ ipr
 Cutting fluid : Water soluble type (Internal supply)

Features of chipbreakers

DJ type

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



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 finishes.

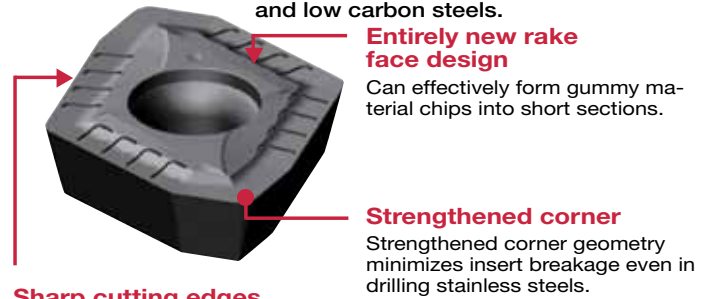


Strong chipbreaker for high feeds

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

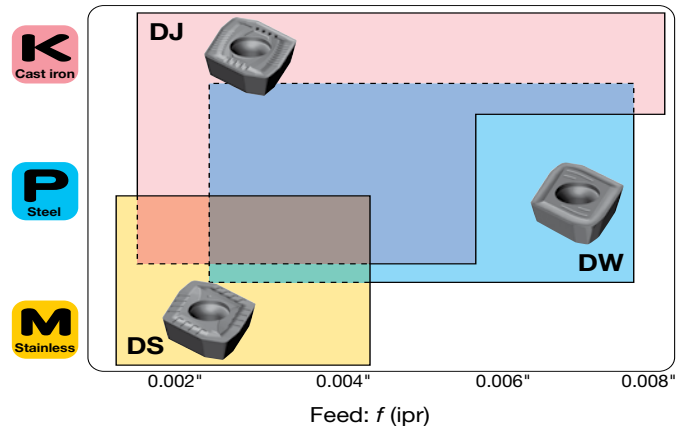
Creates excellent chip control for gummy materials such as stainless steels and low carbon steels.



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

AH740 PVD coated carbide

General purpose grade

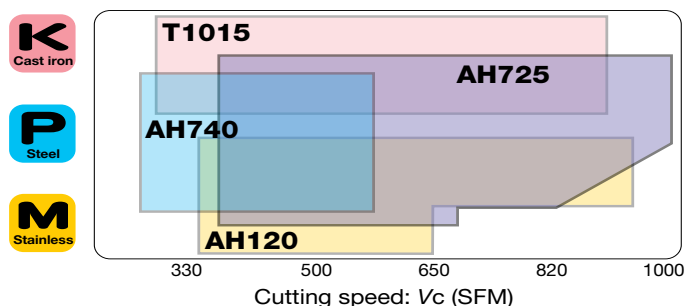
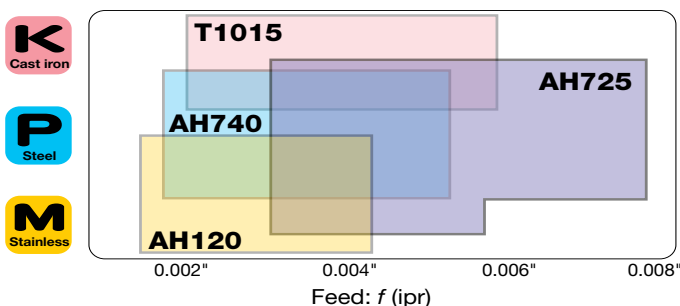
By combining an ultra fine grain cemented carbide with "Flash-coat", this grade provides both wear resistance and impact resistance. Can be used for a wide range of applications.

T1015 CVD coated carbide

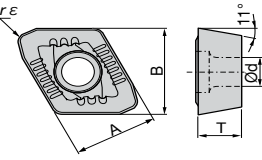
For cast irons

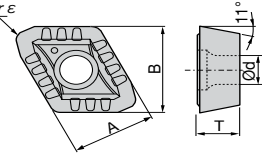
By combining a specially designed hard carbide substrate with newly developed multilayer compound coatings, this grade provides excellent wear resistance in machining cast irons.

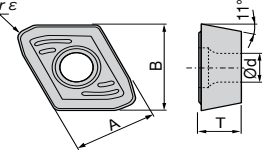
Application area of each insert



Insert selection guide

DJ chipbreaker		Insert	Grades					Dimensions (in)					Drill Diameters
			NEW					A	B	T	ød	rE	
			AH725	AH740	GH730	T1015	T313W						
		XPMT040104R-DJ	●	●	■	●	■	0.169	0.177	0.063	0.091	0.016	ø.500 ~ ø.562
		XPMT050204R-DJ	●	●	■	●	■	0.205	0.213	0.094	0.091	0.016	ø.625
		XPMT06X308R-DJ	●	●	■	●	■	0.236	0.276	0.118	0.098	0.031	ø.687 ~ ø.812
		XPMT07H308R-DJ	●	●	■	●	■	0.276	0.323	0.142	0.110	0.031	ø.875 ~ ø1.00
		XPMT08T308R-DJ	●	●	■	●	■	0.335	0.390	0.156	0.134	0.031	ø1.062 ~ ø1.25
		XPMT110412R-DJ	●	●	■	●	■	0.441	0.492	0.187	0.173	0.047	ø1.312 ~ ø1.562
		XPMT150512R-DJ	●	●	■	●	■	0.591	0.634	0.219	0.217	0.047	ø1.625 ~ ø2.00

DS chipbreaker		Insert	Grades			Dimensions (in)					Drill Diameters
			NEW			A	B	T	ød	rE	
			AH725	AH120	GH730						
		XPMT040104R-DS	●	●	■	0.169	0.177	0.063	0.091	0.016	ø.500 ~ ø.562
		XPMT050204R-DS	●	●	■	0.205	0.213	0.094	0.091	0.016	ø.625
		XPMT06X308R-DS	●	●	■	0.236	0.276	0.118	0.098	0.031	ø.687 ~ ø.812
		XPMT07H308R-DS	●	●	■	0.276	0.323	0.142	0.110	0.031	ø.875 ~ ø1.00
		XPMT08T308R-DS	●	●	■	0.335	0.390	0.156	0.134	0.031	ø1.062 ~ ø1.25
		XPMT110412R-DS	●	●	■	0.441	0.492	0.187	0.173	0.047	ø1.312 ~ ø1.562
		XPMT150512R-DS	●	●	■	0.591	0.634	0.219	0.217	0.047	ø1.625 ~ ø2.00

DW chipbreaker		Insert	Grades				Dimensions (in)					Drill Diameters
			NEW				A	B	T	ød	rE	
			AH725	AH740	AH120	GH730						
		XPMT040104R-DW	●	●	●	■	0.169	0.177	0.063	0.091	0.016	ø.500 ~ ø.562
		XPMT050204R-DW	●	●	●	■	0.205	0.213	0.094	0.091	0.016	ø.625
		XPMT06X308R-DW	●	●	●	■	0.236	0.276	0.118	0.098	0.031	ø.687 ~ ø.812
		XPMT07H308R-DW	●	●	●	■	0.276	0.323	0.142	0.110	0.031	ø.875 ~ ø1.00
		XPMT08T308R-DW	●	●	●	■	0.335	0.390	0.156	0.134	0.031	ø1.062 ~ ø1.25
		XPMT110412R-DW	●	●	●	■	0.441	0.492	0.187	0.173	0.047	ø1.312 ~ ø1.562
		XPMT150512R-DW	●	●	●	■	0.591	0.634	0.219	0.217	0.047	ø1.625 ~ ø2.00

● : Stocked items ■ : Discontinued

Recommended cutting conditions

Work materials	First choice	High-feed	High-speed	Troubleshooting			Cutting speed Vc(SFM)	Series L/D	Feed (ipr)			
				Breakage	Wear	Surface finish			φ0.500 - φ0.687	φ0.750 - φ1.00	φ1.062 - φ1.250	φ1.312 - φ2.00
Low carbon steels(C<3) JIS S45C,S55C,etc.	DS AH725			DW AH725		DW AH120	525-1050	2D,3D	.0015 - .005	.002 - .004	.002 - .004	.002 - .004
								4D,5D	.001 - .002	.002 - .004	.002 - .004	.002 - .004
Carbon steels(C<3) JIS S45C,S55C,etc.	DJ AH725	DW AH725	DS AH120	DW AH725	DJ T1015	DW AH740	250-800	2D,3D	.002 - .005	.002 - .006	.002 - .006	.003 - .007
								4D,5D	.002 - .003	.002 - .004	.002 - .005	.003 - .006
Low alloy steels JIS SCM415,etc.	DS AH725			DW AH725		DW AH725	525-800	2D,3D	.002 - .003	.002 - .005	.002 - .005	.002 - .006
								4D,5D	.002 - .003	.002 - .005	.002 - .005	.002 - .006
Alloy steels JIS SCM440,SCr420,etc.	DJ AH725	DW AH725	DS AH120	DW AH725	DJ T1015	DW AH725	250-650	2D,3D	.002 - .005	.002 - .006	.002 - .006	.003 - .007
								4D,5D	.002 - .003	.002 - .004	.002 - .005	.003 - .006
Stainless steels Austenitic JIS SUS304,SUS316,etc.	DS AH725			DS AH725		DW AH120	325-650	2D,3D	.001 - .003	.002 - .004	.002 - .005	.002 - .005
								4D,5D	.001 - .003	.002 - .004	.002 - .005	.002 - .005
Stainless steels Martensitic and ferritic JIS SUS430,SUS416,etc.	DS AH725			DS AH725		DW AH120	325-725	2D,3D	.0015 - .003	.002 - .004	.002 - .005	.002 - .005
								4D,5D	.001 - .003	.002 - .004	.002 - .005	.002 - .005
Stainless steels Precipitation hardening JIS SUS630,etc.	DS AH725			DS AH725		DW AH120	250-400	2D,3D	.002 - .003	.002 - .003	.002 - .004	.002 - .004
								4D,5D	.002 - .003	.002 - .003	.002 - .004	.002 - .004
Gray cast irons JIS FC250,etc.	DJ T1015	DJ AH725		DJ AH725		DW AH740	250-800	2D,3D	.002 - .005	.002 - .006	.002 - .007	.003 - .008
								4D,5D	.002 - .004	.002 - .005	.002 - .006	.003 - .006
Ductile cast irons JIS FCD700,etc.	DJ T1015	DJ AH725		DJ AH725		DW AH740	250-650	2D,3D	.002 - .005	.002 - .006	.002 - .007	.003 - .008
								4D,5D	.002 - .004	.002 - .005	.002 - .006	.003 - .006
Aluminum alloys JIS A2017,ADC12,etc.	DW AH725						650-1300	2D,3D	.004 - .006	.006 - .008	.006 - .008	.006 - .010
								4D,5D	.003 - .005	.005 - .006	.005 - .006	.005 - .008
Super Alloys	DS AH120						100-200	2D,3D	.002-.004	.002-.004	.002-.005	.002-.006
								4D,5D	.002-.004	.002-.004	.002-.004	.002-.005
Titanium	DS AH120						100-200	2D,3D	.002-.004	.002-.004	.002-.004	.002-.004
								4D,5D	.002-.004	.005 - .004	.002-.003	.002-.003

•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%.

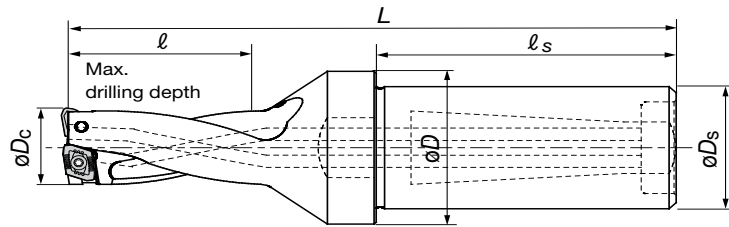
•For high-feed machining, apply a feed rate that is approximately 1.5 times the standard feed conditions.

•High speed machining means cutting speeds over 500 SFM.

•When using DW insert for troubleshooting, use it within the range of standard cutting conditions.

Drills Specification

$$L/D = 2xD$$

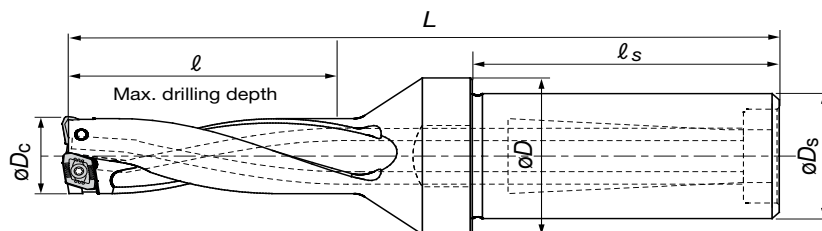


Please take note that the new TDX type differs from the older TDX type in the total length (L) of drill.

Dia.	Drill	Stock	Dimensions (in)					Insert	Clamping Screw 	Torx Wrench 
			ØDs	ØD	ℓ	ℓ s	L			
0.500	TDXU-0500-02	●	0.750	1.25	1.000	2.000	3.776	XPMT040104R-DJ,DS,DW	CSTB-2	T-6D
0.531	TDXU-0531-02	●			1.062		3.869			
0.562	TDXU-0562-02	●			1.124		3.963			
0.625	TDXU-0625-02	●			1.250		4.151	XPMT050204R-DJ,DS,DW	CSTB-2L040	
0.687	TDXU-0687-02	●	1.000	1.457	1.374	2.280	4.618	XPMT06X308R-DJ,DS,DW	CSTB-2.2R	T-7D
0.750	TDXU-0750-02	●			1.500		4.806			
0.812	TDXU-0812-02	●			1.624		4.993			
0.875	TDXU-0875-02	●			1.750		5.181	XPMT07H308R-DJ,DS,DW	CSTB-2.5	
0.937	TDXU-0937-02	●			1.874		5.368			
1.000	TDXU-1000-02	●			2.000		5.556			
1.062	TDXU-1062-02	●	1.250	1.575	2.124	2.688	5.743	XPMT08T308R-DJ,DS,DW	CSTB-3	T-9D
1.125	TDXU-1125-02	●			2.250		5.931			
1.187	TDXU-1187-02	●			2.374		6.118			
1.250	TDXU-1250-02	●			2.500		6.306			
1.312	TDXU-1312-02	●	1.500	1.969	2.624	2.688	6.901	XPMT110412R-DJ,DS,DW	CSTB-4	T-15D
1.375	TDXU-1375-02	●			2.750		7.088			
1.437	TDXU-1437-02	●			2.874		7.276			
1.500	TDXU-1500-02	●			3.000		7.463			
1.562	TDXU-1562-02	●			3.124		7.651			
1.625	TDXU-1625-02	●			2.165		3.250			
1.687	TDXU-1687-02	●	3.374	8.026						
1.750	TDXU-1750-02	●	3.500	8.213						
1.812	TDXU-1812-02	●	3.624	8.401						
1.875	TDXU-1875-02	●	3.750	8.588						
1.937	TDXU-1937-02	●	3.874	8.776						
2.000	TDXU-2000-02	●			4.000		8.963			

● : Stocked Standard

$$L/D = 3xD$$

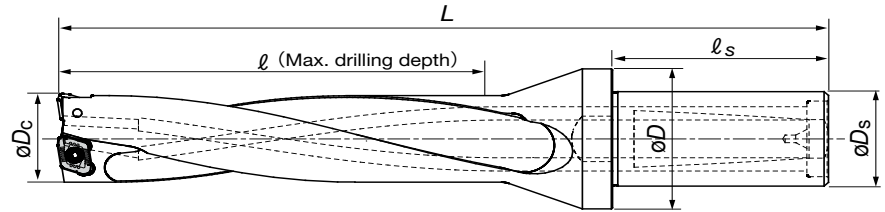


Please take note that new TDX type differs old TDX type in the total length (L) of drill

Dia.	Drill	Stock	Dimensions (in)					Insert	Clamping Screw	Torx Wrench
			ØDs	ØD	ℓ	ℓ s	L			
0.500	TDXU-0500-03	●	0.750	1.25	1.500	2.000	4.276	XPMT040104R-DJ,DS,DW	CSTB-2	T-6D
0.531	TDXU-0531-03	●			1.593		4.401			
0.562	TDXU-0562-03	●			1.686		4.526			
0.625	TDXU-0625-03	●			1.875		4.776	XPMT050204R-DJ,DS,DW	CSTB-2L040	
0.687	TDXU-0687-03	●	1.000	1.457	2.061	2.280	5.306	XPMT06X308R-DJ,DS,DW	CSTB-2.2R	T-7D
0.750	TDXU-0750-03	●			2.250		5.556			
0.812	TDXU-0812-03	●			2.436		5.806			
0.875	TDXU-0875-03	●			2.625		6.056	XPMT07H308R-DJ,DS,DW	CSTB-2.5	T-8D
0.937	TDXU-0937-03	●			2.811		6.306			
1.000	TDXU-1000-03	●			3.000		6.556			
1.062	TDXU-1062-03	●	1.250	1.575	3.186	2.688	6.806	XPMT08T308R-DJ,DS,DW	CSTB-3	T-9D
1.125	TDXU-1125-03	●			3.375		7.056			
1.187	TDXU-1187-03	●			3.561		7.306			
1.250	TDXU-1250-03	●			3.750		7.556			
1.312	TDXU-1312-03	●	1.500	1.969	3.936		8.213	XPMT110412R-DJ,DS,DW	CSTB-4	T-15D
1.375	TDXU-1375-03	●			4.125		8.463			
1.437	TDXU-1437-03	●			4.311		8.713			
1.500	TDXU-1500-03	●			4.500		8.963			
1.562	TDXU-1562-03	●			4.686		9.213	XPMT150512R-DJ,DS,DW	CSTB-5	T-20D
1.625	TDXU-1625-03	●		2.165	4.875		9.463			
1.687	TDXU-1687-03	●			5.061		9.713			
1.750	TDXU-1750-03	●			5.250		9.963			
1.812	TDXU-1812-03	●			5.436		10.213			
1.875	TDXU-1875-03	●			5.625		10.463			
1.937	TDXU-1937-03	●			5.811		10.713			
2.000	TDXU-2000-03	●			6.000		10.963			

● : Stocked Standard

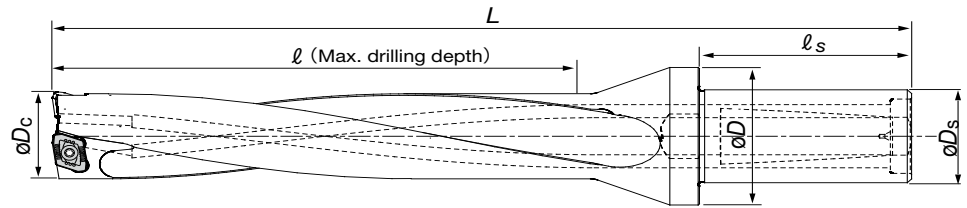
$$L/D = 4xD$$



Dia.	Drill	Stock	Dimensions (in)					Insert	Clamping Screw 	Torx Wrench 	
			ØDs	ØD	ℓ	ℓ s	L				
0.500	TDXU-0500-04	●	0.750	1.25	2.000	2.000	4.913	XPMT040104R-DJ,DS,DW	CSTB-2	T-6D	
0.531	TDXU-0531-04	●			2.124		5.071				
0.562	TDXU-0562-04	●			2.248		5.189				
0.625	TDXU-0625-04	●			2.500		5.504	XPMT050204R-DJ,DS,DW	CSTB-2L040		
0.687	TDXU-0687-04	●	1.000	1.457	2.748	2.280	6.099	XPMT06X308R-DJ,DS,DW	CSTB-2.2R		T-7D
0.750	TDXU-0750-04	●			3.000		6.414				
0.812	TDXU-0812-04	●			3.248		6.729				
0.875	TDXU-0875-04	●			3.500		7.004	XPMT07H308R-DJ,DS,DW	CSTB-2.5	T-8D	
0.937	TDXU-0937-04	●			3.748		7.28				
1.000	TDXU-1000-04	●			4.000		7.595				
1.062	TDXU-1062-04	●	1.250	1.575	4.248	2.280	7.91	XPMT08T308R-DJ,DS,DW	CSTB-3	T-9D	
1.125	TDXU-1125-04	●			4.500		8.225				
1.187	TDXU-1187-04	●			4.748		8.5				
1.250	TDXU-1250-04	●			5.000		8.815				
1.312	TDXU-1312-04	●	1.500	1.969	5.248	2.688	9.577	XPMT110412R-DJ,DS,DW	CSTB-4		T-15D
1.375	TDXU-1375-04	●			5.500		9.892				
1.437	TDXU-1437-04	●			5.748		10.168				
1.500	TDXU-1500-04	●			6.000		10.483				
1.562	TDXU-1562-04	●			6.248		10.758				
1.625	TDXU-1625-04	●			2.165		6.500	11.113	XPMT150512R-DJ,DS,DW	CSTB-5	T-20D
1.687	TDXU-1687-04	●	6.748	11.388							
1.750	TDXU-1750-04	●	7.000	11.703							
1.812	TDXU-1812-04	●	7.248	12.018							
1.875	TDXU-1875-04	●	7.500	12.294							
1.937	TDXU-1937-04	●	7.748	12.609							
2.000	TDXU-2000-04	●			8.000		12.884				

● : Stocked Standard

$$L/D = 5xD$$



Dia.	Drill	Stock	Dimensions (in)					Insert	Clamping Screw 	Torx Wrench 
			ØD _s	ØD	ℓ	ℓ _s	L			
0.500	TDXU-0500-05	●	0.750	1.25	2.500	2.000	5.386	XPMT040104R-DJ,DS,DW	CSTB-2	T-6D
0.531	TDXU-0531-05	●			2.655		5.583			
0.562	TDXU-0562-05	●			2.810		5.78			
0.625	TDXU-0625-05	●			3.125		6.134	XPMT050204R-DJ,DS,DW	CSTB-2L040	
0.687	TDXU-0687-05	●	1.000	1.457	3.435	2.280	6.808	XPMT06X308R-DJ,DS,DW	CSTB-2.2R	T-7D
0.750	TDXU-0750-05	●			3.750		7.162			
0.812	TDXU-0812-05	●			4.060		7.516			
0.875	TDXU-0875-05	●			4.375		7.871	XPMT07H308R-DJ,DS,DW	CSTB-2.5	T-8D
0.937	TDXU-0937-05	●			4.685		8.225			
1.000	TDXU-1000-05	●			5.000		8.579			
1.062	TDXU-1062-05	●	1.250	1.575	5.310	2.280	8.973	XPMT08T308R-DJ,DS,DW	CSTB-3	T-9D
1.125	TDXU-1125-05	●			5.625		9.367			
1.187	TDXU-1187-05	●			5.935		9.721			
1.250	TDXU-1250-05	●			6.250		10.036			
1.312	TDXU-1312-05	●	1.500	1.969	6.560	2.688	10.876	XPMT110412R-DJ,DS,DW	CSTB-4	T-15D
1.375	TDXU-1375-05	●			6.875		11.27			
1.437	TDXU-1437-05	●			7.185		11.585			
1.500	TDXU-1500-05	●			7.500		11.979			
1.562	TDXU-1562-05	●			7.810		12.294			
1.625	TDXU-1625-05	●		2.165	8.125		12.727	XPMT150512R-DJ,DS,DW	CSTB-5	T-20D
1.687	TDXU-1687-05	●			8.435		13.081			
1.750	TDXU-1750-05	●			8.750		13.436			
1.812	TDXU-1812-05	●			9.060		13.829			
1.875	TDXU-1875-05	●			9.375		14.184			
1.937	TDXU-1937-05	●			9.685		14.538			
2.000	TDXU-2000-05	●			10.000		14.892			

● : Stocked Standard

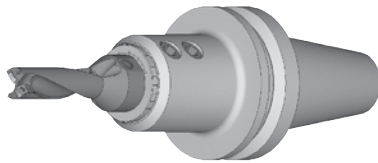
EZ sleeve (Eccentric Sleeves For TDX-type TAC drills)

■ Use EZ Sleeves for the following purposes:

● Adjusting finishing diameter in milling

Adjusting of the finishing diameter in tool rotating applications such as on machining centers and milling machines.

By using EZ sleeve, the finishing diameter can be adjusted in the range from +0.024in to -0.008in



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 +0.012in to -0.008in. It results in eliminating troubles caused by improper cutting edge height.

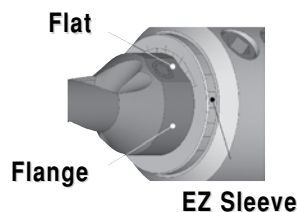


Scale for adjusting cutting edge height in turning (front face of sleeve)

■ Setting of EZ Sleeve

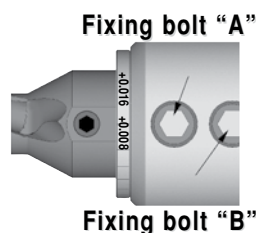
● Adjusting finishing diameter in milling

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



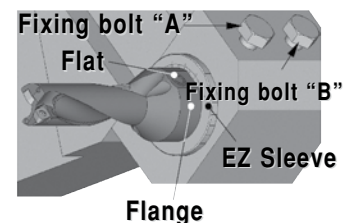
Align the scale graduated on the periphery of the EZ sleeve with the center of the flat of the drill flange.

In the figure shown, the sleeve is set so that the finishing diameter will be increased by 0.016in.

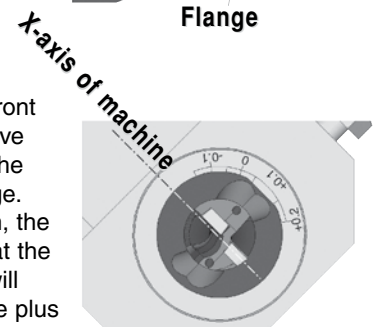


● Adjusting cutting edge height on lathe

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



Align the scale graduated on the front face of the EZ sleeve with the center of the flat of the drill flange. In the figure shown, the sleeve is set so that the center of the drill will shift by 0.004in~the plus (+) direction.



When aligning the scales, insert the attached wrench into the hole on the periphery of the sleeve and rotate the sleeve. After aligning the scales, secure the fixing bolt "A" positioned closer to the drill. Then, lightly secure the fixing bolt "B" to prevent the sleeve from rotating.

Caution Points:

- The scale should be used only as a guide. Measuring and checking the real finishing diameter is essential. Especially when using for adjusting the cutting edge height on a lathe, the finishing diameter also varies with the adjustment. Check the diameter by trial cutting.
- When using the sleeve in milling, use a side lock type toolholder designed for drilling. Collet type toolholders and milling chucks should not be used for this purpose.
- When heavy vibration develops during machining such as in combining with a long drill exceeding L/D=4 or requiring large amounts of adjusting, reduce the feed rate.
- If the finishing hole diameter is excessively adjusted to the minus (-) direction, the drill body may interfere with the hole to be drilled. Adjusting to the minus direction should be carried out, only when the finishing diameter is larger than the nominal drill diameter, as a means of fine adjustment.

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

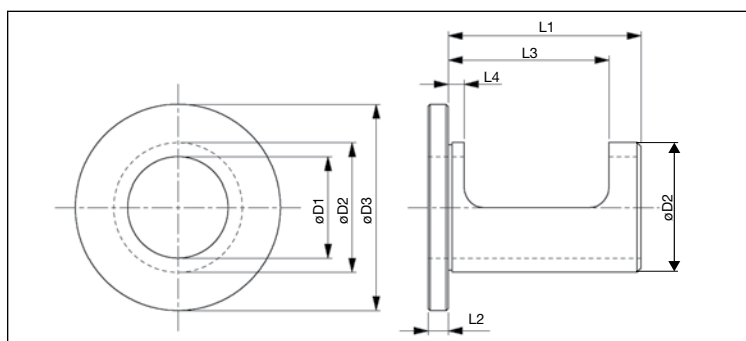
Specifications

● Inch ID/Inch OD

Sleeve Cat No.	Dimensions (inch)									Stock
	øD1	øD2	øD3	L1	L2	L3	L4	Adjusting range of finishing diameter	Adjusting range of cutting edge height	
EZ0.75-1.25	0.75	1.25	1.75	2.00	0.20	1.58	0.375	+0.016~-0.008	+0.008~-0.006	■
EZ1.00-1.50	1.00	1.50	2.00	2.50	0.20	1.97	0.375	+0.016~-0.008	+0.008~-0.006	■
EZ1.25-2.00	1.25	2.00	2.50	2.70	0.20	1.97	0.375	+0.016~-0.008	+0.008~-0.006	■
EZ1.50-2.00	1.50	2.00	2.75	2.90	0.20	1.97	0.375	+0.022~-0.008	+0.012~-0.008	■

● Metric ID/Metric OD

Sleeve Cat No.	Dimensions (mm)								Stock	
	øD1	øD2	øD3	L1	L2	L3	L4	Adjusting range of finishing diameter		Adjusting range of cutting edge height
EZ2025L43	20	25	46	43	5	30	4	-0.2~+0.4	-0.15~+0.2	○
EZ2532L48	25	32	51	48	5	40	4	-0.2~+0.4	-0.15~+0.2	○
EZ3240L53	32	40	54	53	5	45	4	-0.2~+0.4	-0.15~+0.2	○
EZ4050L63	40	50	69	63	5	55	4	-0.2~+0.6	-0.2~+0.3	○



■ Caution

- Ensure that the drilling machine to be used has sufficient rigidity and motor input.
- Before attaching inserts, please remove foreign substances at insert pockets.
- When attaching inserts, please be sure that crevices are not generated between the bottom surface of inserts and insert pocket.
- For work material rotation, please adjust the alignment sufficiently.
- Drilling into stacked plates tends to damage the tool and is not recommended.

■ Cutting Fluid

- Be sure to supply cutting fluid through the tool.
- A water soluble emulsifiable type cutting fluid should be used.
- Fluid pressure of 145 lb/in² or higher and fluid quantity of 237 oz/min or more are essential.
- For TDX drills of 4D and 5D type, a fluid pressure of 218 lb/in² or higher and fluid quantity of 338 oz/min or more is recommended.

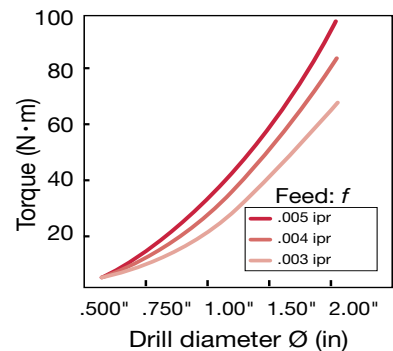
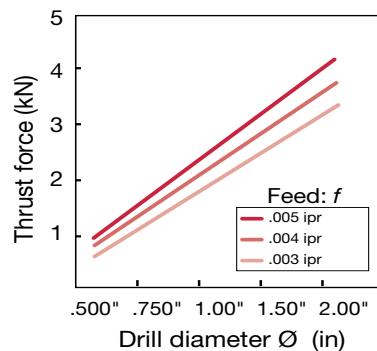
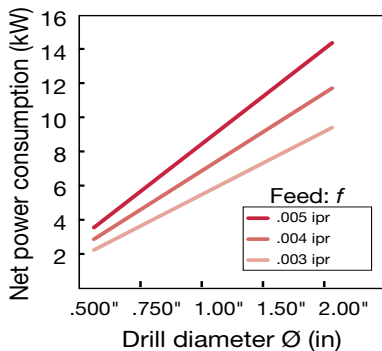
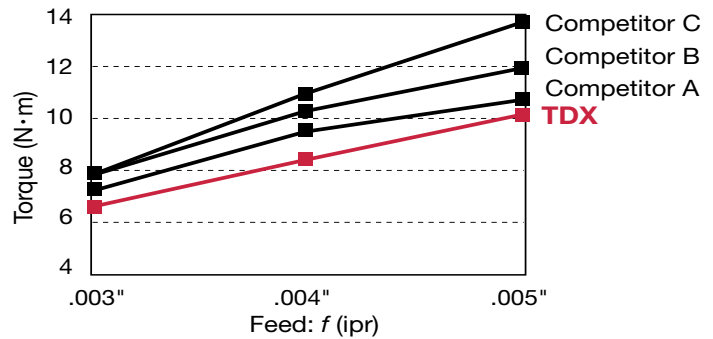
■ Cautionary points for setting inserts

- Before indexing or changing the inserts, remove chips and other foreign matter from the inserts and insert pockets using an air blast or a wiping cloth.
- Clamping screws should be fastened with a specified wrench enclosed in the package.
- An excessively worn or deformed screw or wrench should be replaced by a new one.

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 : 4140 SAE
Drill : Ø0.687in
Cutting speed : $V_c = 330$ SFM
Cutting fluid : Wet



Machining examples

Improves machining efficiency by 70%

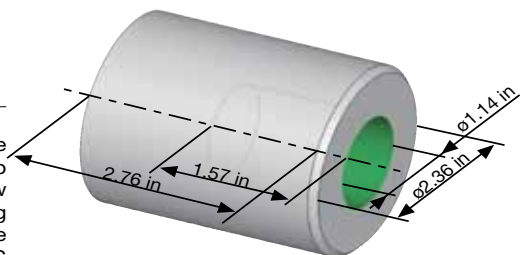
Tool drill : TDX290W32-2 (Ø29 mm)
Insert : XPMT08T308R-DS AH120

Work material : 4140 SAE
Cutting speed : $V_c = 440$ SFM
Feed : $f = 0.004$ ipr
Drilling depth : 1.57"
Machine : NC lathe
Cutting fluid : Water soluble type

Results

A 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

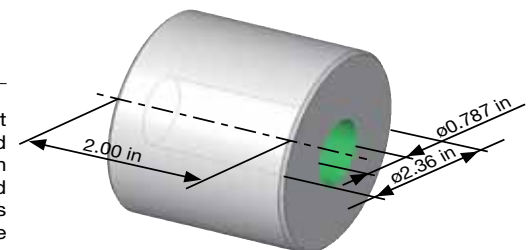
Tool drill : TDX200W25-3 (Ø20 mm)
Insert : XPMT06X308R-DJ AH740

Work material : 1045 SAE
Cutting speed : $V_c = 460$ SFM
Feed : $f = 0.004$ ipr
Drilling depth : 2.00" Penetrated hole
Machine : NC lathe
Cutting fluid : Water soluble type

Results

The conventional drill was optimally used at a cutting speed of $V_c = 330$ SFM and feed rate of $f = 0.002$ ipr. The new TDX drill can improve metal removal rates with its twisted coolant hole. As a result, cutting speed is increased to $V_c = 460$ SFM and the feed rate can be increased to $f = 0.004$ ipr.

Machine part

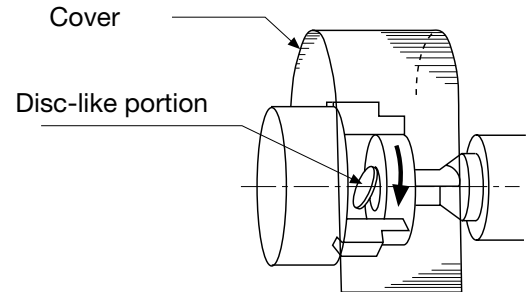




SAFETY PRECAUTIONS

- TDX-type TUNGDRILL have sharp edges. Special care should be taken in handling them.
- A safety shield and safety glasses should always be used when the machine is in operation to prevent a possible injury caused from flying fragments such as chips and pieces of the broken drill or drill parts.
- When drilling a through-hole in a rotating workpiece, a disc-like portion will be formed at the time of breakthrough and can be projected from between the chuck jaws at a high speed. This disc is extremely dangerous due to having sharp edges. For this reason, a suitable cover must be used to enclose the chuck to assure safety. (Fig. 1)
- Water insoluble cutting fluids are not recommended because their fumes may catch fire.

Fig. 1 Example of covering chuck



INSTALLING AND REMOVING OF INSERT

- 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. (Fig. 2)
- The central insert and peripheral insert have the same geometry. But their installing directions are different. Referring to Fig. 3, make sure that both inserts are placed in the right directions.
- 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 the long term of use.

CUTTING FLUID

- Cutting fluid should be supplied through the oil hole of the tool.
- Fluid pressure of 145 psi or greater and fluid quantity of 7 ℓ/min or more are essential.
- Water-soluble, emulsified type cutting fluids are recommended.

CAUTIONARY POINTS IN USE

- New TDX "TUNGDRILL TWISTED" is different from length of body against old TDX-type (i.e. L/D = 2 and 3.) When using New TDX-type, be careful of this point.
- Ensure that the drilling machine to be used has sufficient rigidity and motor output.
- Not recommended for drilling stacked plates.
- Keep overhang of the tool to a minimum.
- Be sure to carry out proper alignment when drilling is to be performed on a rotating workpiece.
- Specifications are subject to change without notice for further improvement.

Fig. 2 Proper handling of wrench

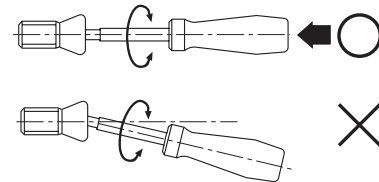
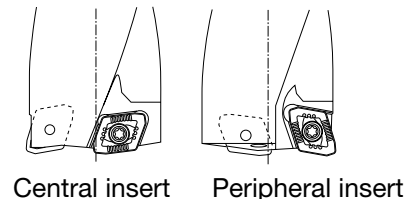


Fig. 3 Insert positioning



TUNGDRILLTWISTED



Tungaloy America, Inc.

1226A Michael Drive, Wood Dale, IL 60191
3726 N. Ventura Dr. Arlington Heights, IL 60004

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Tungaloy de Mexico S.A.

C Los Arellano 113, Vista Alegre, Aguascalientes, AGS, Mexico 20290
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