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General product information

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Added products



ø20 - 25.9 mm

Expansion of the DrillForceMeister line with a wider range of diameters - ø20 - 25.9 mm

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SMF

Expanded lineup with new SMF flat-edged drill head: ø20 – ø40 mm

[View](#)



SMP AH9130

SMP drill head expansion with grade AH9130

[View](#)

DrillLine

DRILL^{ORCE}**MEISTER**

www.tungaloyamerica.com

Tungaloy Report No. 509-US

DRILLFORCE-MEISTER

Head-changeable drill for drilling large holes



Member IMC Group
Tungaloy



ACCELERATED MACHINING



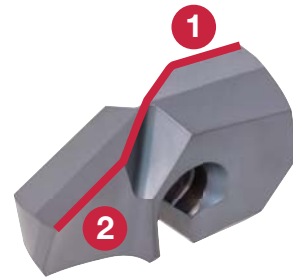


Unique clamping concept and two effective cutting edges on the drill head provide excellent hole quality and high productivity

Improves productivity and reliability in heavy drilling with unique drill head and clamping concept

Two effective cutting edges

- The drill head with two effective cutting edges provides high productivity and reliability



Optimized drill body

- The drill body has an optimized flute design for smooth chip evacuation and enhanced stiffness



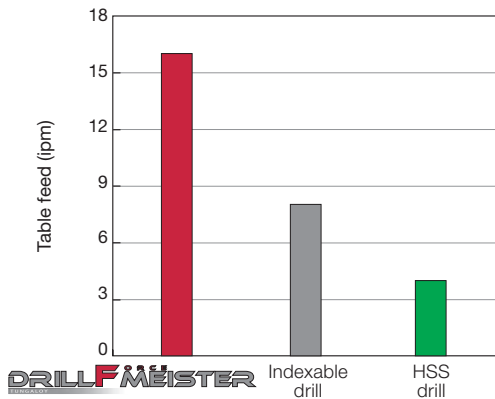
Unique clamping system

Easy and quick yet rigid and reliable clamping method for excellent hole quality and long tool life

- The drill head change is possible without removing the drill body from the tool holder or the spindle, eliminating re-adjustments
- Asymmetric shaped drill head not only secures stability in heavy machining but also error-proofs drill head installation
- The drill body has a wide supporting area for the drill head for rigid insert clamping
- By replacing the head screw regularly, the drill body can be used for an even longer period



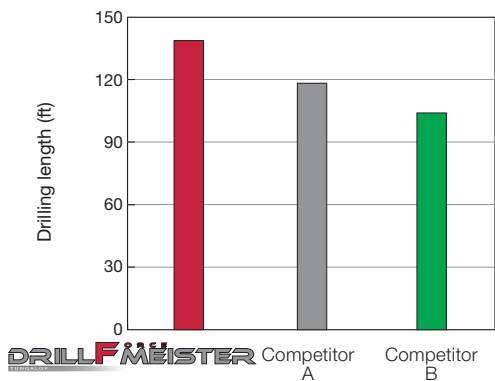
High productivity



Drill : $\phi 1.299''$, L/D = 5
Workpiece material : 1055

	Cutting speed Vc (sfm)	Feed f (ipr)	Feed speed Vf (ipm)
DRILLFMEISTER	330	0.016	17
Indexable drill	492	0.006	9.5
HSS drill	66	0.016	3.35

AH725, a highly reliable PVD grade



Drill : $\phi 1.024''$
Workpiece material : 1055
Cutting speed : Vc = 328 sfm
Feed : f = 0.014 ipr
Drilling depth : H = 4.724"

AH725 achieves smooth and flat coating surface to improve resistance to build-up edge and chipping, thus extending tool life in heavy machining.

An smart combination of optimized edge preparation and dedicated PVD grade extends tool life in heavy drilling

AH725, a highly reliable PVD grade

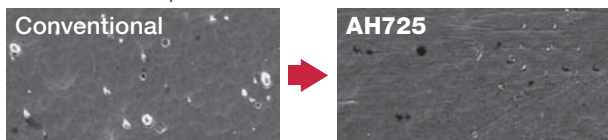
AH725 **PREMIUMTEC**
TUNGALOY

Improved coating adhesion

Sub-micron grain carbide substrate with superior toughness and resistance to plastic-deformation

Super-flash coating:

Eliminates droplets on the surface



Optimized edge preparation

- Enlarged images of the edges before use

The cutting edge is honed to enhance coating adhesion

No coating delamination

Honed edge

Coating is delaminated

Chamfered edge
Competitor

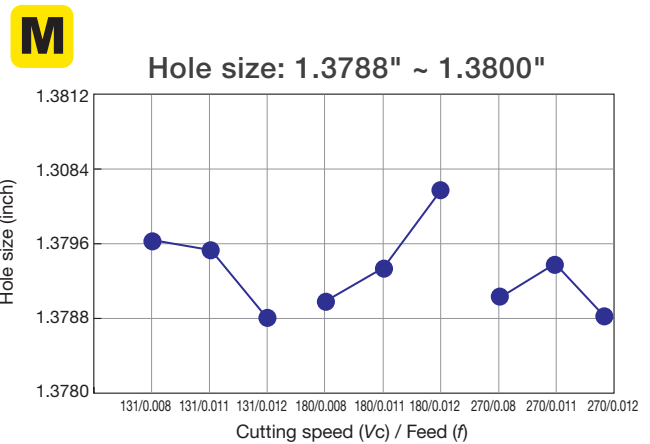
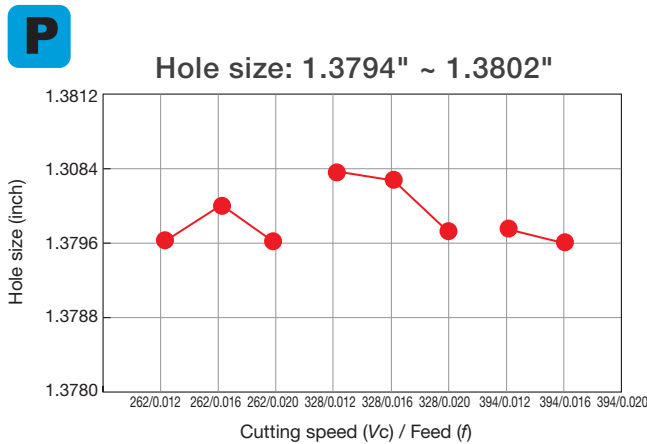
CUTTING PERFORMANCE

Hole size



The hole size is stable in various cutting conditions and materials

Drill : TISU1378F1500-5 (ø1.378")
 Head : SMP350
 Grade : AH725
 Workpiece material : 4140, S30400
 Cutting speed : $V_c = 262 - 394$ sfm (4140)
 : $V_c = 131 - 230$ sfm (S30400)
 Feed : $f = 0.012 - 0.020$ ipr (4140)
 : $f = 0.008 - 0.012$ ipr (S30400)
 Drilling depth : $H = 3.937"$
 Machine : Horizontal M/C (CAT50)
 Coolant : Wet (Internal)



Chip control

DrillForceMeister provides good chip control even in drilling low carbon steel

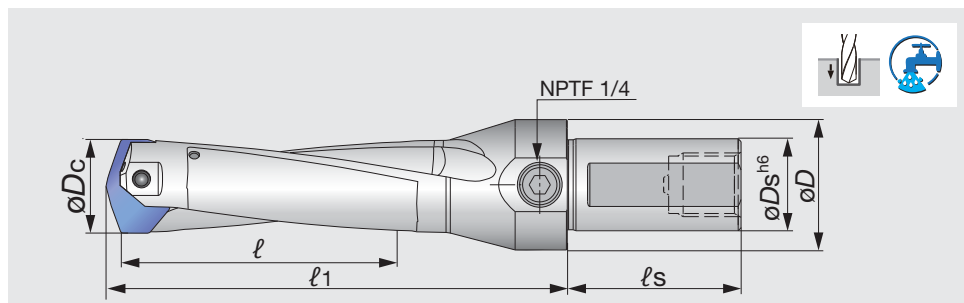
0.008			
0.012			
0.016			
Feed: f (ipr)	DRILLFORCE MEISTER	Competitor A	Competitor B

Drill : TISU1024F1250-5 (ø1.024")
 Head : SMP260
 Grade : AH725
 Workpiece material : Low carbon steel
 Cutting speed : $V_c = 328$ sfm
 Feed : $f = 0.008 - 0.016$ ipr
 Drilling depth : $H = 3.94"$
 Machine : Horizontal M/C (CAT50)
 Coolant : Wet (Internal)

Head indexable large drill

DRILL - L/D = 3

DrillForceMeister TIS L/D =3



Designation	ϕD_c min	ϕD_c max	ϕD_s	ϕD	ℓ	ℓ_1	ℓ_s	Po. Size	Coolant	Head
TISU1024F1250-3	1.024	1.059	1.250	1.772	3.071	5.315	2.362	26	Y	SMP26*
TISU1063F1250-3	1.063	1.098	1.250	1.772	3.189	5.453	2.362	27	Y	SMP27*
TISU1102F1250-3	1.102	1.138	1.250	1.772	3.307	5.606	2.362	28	Y	SMP28*
TISU1142F1250-3	1.142	1.177	1.250	1.772	3.425	5.744	2.362	29	Y	SMP29*
TISU1181F1250-3	1.181	1.217	1.250	1.772	3.543	5.893	2.362	30	Y	SMP30*
TISU1220F1250-3	1.220	1.256	1.250	1.772	3.661	6.031	2.362	31	Y	SMP31*
TISU1260F1500-3	1.260	1.295	1.500	2.165	3.780	6.378	2.677	32	Y	SMP32*
TISU1299F1500-3	1.299	1.335	1.500	2.165	3.898	6.516	2.677	33	Y	SMP33*
TISU1339F1500-3	1.339	1.374	1.500	2.165	4.016	6.654	2.677	34	Y	SMP34*
TISU1378F1500-3	1.378	1.413	1.500	2.165	4.134	6.807	2.677	35	Y	SMP35*
TISU1417F1500-3	1.417	1.453	1.500	2.165	4.252	6.945	2.677	36	Y	SMP36*
TISU1457F1500-3	1.457	1.492	1.500	2.165	4.370	7.083	2.677	37	Y	SMP37*
TISU1496F1500-3	1.496	1.531	1.500	2.165	4.488	7.240	2.677	38	Y	SMP38*
TISU1535F1500-3	1.535	1.571	1.500	2.165	4.606	7.378	2.677	39	Y	SMP39*
TISU1575F1500-3	1.575	1.614	1.500	2.165	4.724	7.516	2.677	40	Y	SMP40*

SPARE PARTS



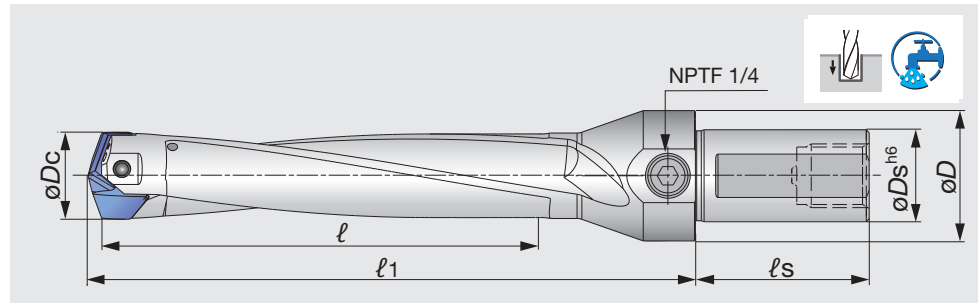
Designation	Clamping screw	Wrench		Screw for side port	Plug*
		Torx Bit	Grip		
TISU1024F1250-3	TS50230D3	BLDT20/S7	H-TB2W	NPTF1/4	SL32IN
TISU1063F1250-3	TS50230D3	BLDT20/S7	H-TB2W	NPTF1/4	SL32IN
TISU1102F1250-3	TS50250D35	BLDT25/S7	H-TB2W	NPTF1/4	SL32IN
TISU1142F1250-3	TS50250D35	BLDT25/S7	H-TB2W	NPTF1/4	SL32IN
TISU1181F1250-3	TS60265D4	BLDT25/S7	H-TB2W	NPTF1/4	SL32IN
TISU1220F1250-3	TS60265D4	BLDT25/S7	H-TB2W	NPTF1/4	SL32IN
TISU1260F1500-3	TS60285D42	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1299F1500-3	TS60285D42	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1339F1500-3	TS60285D42	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1378F1500-3	TS60320D5	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1417F1500-3	TS60320D5	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1457F1500-3	TS60320D5	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1496F1500-3	TS80340D6	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1535F1500-3	TS80340D6	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1575F1500-3	TS80340D6	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN

ϕD_c	Hole diameter tolerance
$\phi 1.024 - \phi 1.142$	+0.0020 / 0
$\phi 1.181 - \phi 1.575$	+0.0024 / 0

Head indexable large drill

DRILL - L/D = 5

DrillForceMeister TIS L/D = 5



Designation	ϕD_c min	ϕD_c max	ϕD_s	ϕD	ℓ	ℓ_1	ℓ_s	Po. Size	Coolant	Head
TISU1024F1250-5	1.024	1.059	1.250	1.772	5.118	7.362	2.362	26	Y	SMP26*
TISU1063F1250-5	1.063	1.098	1.250	1.772	5.315	7.579	2.362	27	Y	SMP27*
TISU1102F1250-5	1.102	1.138	1.250	1.772	5.512	7.811	2.362	28	Y	SMP28*
TISU1142F1250-5	1.142	1.177	1.250	1.772	5.709	8.028	2.362	29	Y	SMP29*
TISU1181F1250-5	1.181	1.217	1.250	1.772	5.906	8.256	2.362	30	Y	SMP30*
TISU1220F1250-5	1.220	1.256	1.250	1.772	6.102	8.472	2.362	31	Y	SMP31*
TISU1260F1500-5	1.260	1.295	1.500	2.165	6.299	8.898	2.677	32	Y	SMP32*
TISU1299F1500-5	1.299	1.335	1.500	2.165	6.496	9.114	2.677	33	Y	SMP33*
TISU1339F1500-5	1.339	1.374	1.500	2.165	6.693	9.331	2.677	34	Y	SMP34*
TISU1378F1500-5	1.378	1.413	1.500	2.165	6.890	9.563	2.677	35	Y	SMP35*
TISU1417F1500-5	1.417	1.453	1.500	2.165	7.087	9.780	2.677	36	Y	SMP36*
TISU1457F1500-5	1.457	1.492	1.500	2.165	7.283	9.996	2.677	37	Y	SMP37*
TISU1496F1500-5	1.496	1.531	1.500	2.165	7.480	10.232	2.677	38	Y	SMP38*
TISU1535F1500-5	1.535	1.571	1.500	2.165	7.677	10.449	2.677	39	Y	SMP39*
TISU1575F1500-5	1.575	1.614	1.500	2.165	7.874	10.665	2.677	40	Y	SMP40*

SPARE PARTS



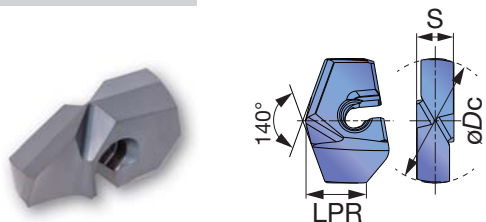
Disignation	Clamping screw	Wrench		Screw for side port	Plug*
		Torx Bit	Grip		
TISU1024F1250-5	TS50230D3	BLDT20/S7	H-TB2W	NPTF1/4	SL32IN
TISU1063F1250-5	TS50230D3	BLDT20/S7	H-TB2W	NPTF1/4	SL32IN
TISU1102F1250-5	TS50250D35	BLDT25/S7	H-TB2W	NPTF1/4	SL32IN
TISU1142F1250-5	TS50250D35	BLDT25/S7	H-TB2W	NPTF1/4	SL32IN
TISU1181F1250-5	TS60265D4	BLDT25/S7	H-TB2W	NPTF1/4	SL32IN
TISU1220F1250-5	TS60265D4	BLDT25/S7	H-TB2W	NPTF1/4	SL32IN
TISU1260F1500-5	TS60285D42	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1299F1500-5	TS60285D42	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1339F1500-5	TS60285D42	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1378F1500-5	TS60320D5	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1417F1500-5	TS60320D5	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1457F1500-5	TS60320D5	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1496F1500-5	TS80340D6	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1535F1500-5	TS80340D6	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN
TISU1575F1500-5	TS80340D6	BLDT25/S7	H-TB2W	NPTF1/4	SL38IN

ϕD_c	Hole diameter tolerance
$\phi 1.024 - \phi 1.142$	+0.0020 / 0
$\phi 1.181 - \phi 1.575$	+0.0024 / 0

*Optional part
Inner thread size: NPTF1/4

DRILL HEAD

SMP



Tool diameter	ø1.024 - ø1.142	ø1.181 - ø1.575
Head diameter tolerance	0.0006"	0.0008"

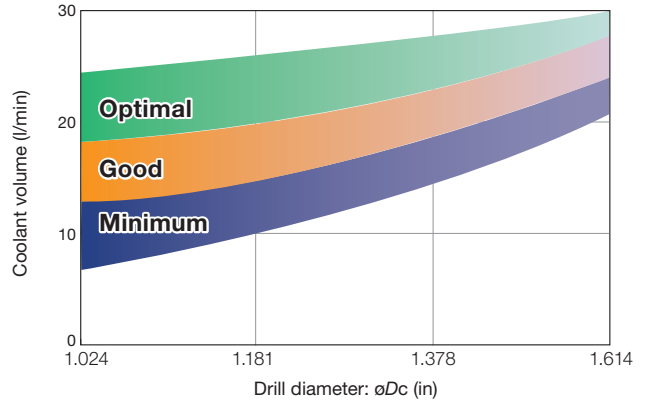
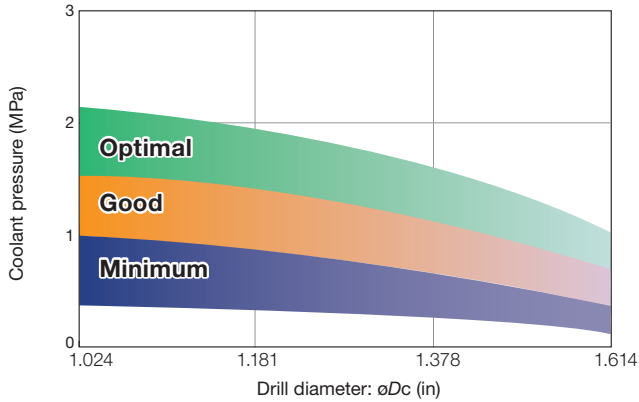
Designation	øDc	Grade AH725	S	LPR	Pocket size	Applicable body	Designation	øDc	Grade AH725	S	LPR	Pocket size	Applicable body
SMP260	1.024	●	0.295	0.457	26	TISU1024F1250-*	SMP360	1.417	●	0.394	0.394	36	TISU1417F1250-*
SMP261	1.028	●	0.295	0.457	26	TISU1024F1250-*	SMP361	1.421	●	0.394	0.394	36	TISU1417F1250-*
SMP265	1.043	●	0.295	0.457	26	TISU1024F1250-*	SMP365	1.437	●	0.394	0.394	36	TISU1417F1250-*
SMP267	1.051	●	0.295	0.457	26	TISU1024F1250-*	SMP366	1.441	●	0.394	0.394	36	TISU1417F1250-*
SMP270	1.063	●	0.295	0.437	27	TISU1063F1250-*	SMP370	1.457	●	0.394	0.394	37	TISU1457F1250-*
SMP271	1.067	●	0.295	0.437	27	TISU1063F1250-*	SMP371	1.461	●	0.394	0.394	37	TISU1457F1250-*
SMP272	1.071	●	0.295	0.437	27	TISU1063F1250-*	SMP375	1.476	●	0.394	0.394	37	TISU1457F1250-*
SMP275	1.083	●	0.295	0.437	27	TISU1063F1250-*	SMP380	1.496	●	0.413	0.413	38	TISU1496F1250-*
SMP280	1.102	●	0.315	0.461	28	TISU1102F1250-*	SMP381	1.500	●	0.413	0.413	38	TISU1496F1250-*
SMP281	1.106	●	0.315	0.461	28	TISU1102F1250-*	SMP385	1.516	●	0.413	0.413	38	TISU1496F1250-*
SMP285	1.122	●	0.315	0.461	28	TISU1102F1250-*	SMP388	1.528	●	0.413	0.413	38	TISU1496F1250-*
SMP286	1.126	●	0.315	0.461	28	TISU1102F1250-*	SMP390	1.535	●	0.413	0.413	39	TISU1535F1250-*
SMP290	1.142	●	0.315	0.445	29	TISU1142F1250-*	SMP391	1.539	●	0.413	0.413	39	TISU1535F1250-*
SMP291	1.146	●	0.315	0.445	29	TISU1142F1250-*	SMP395	1.555	●	0.413	0.413	39	TISU1535F1250-*
SMP295	1.161	●	0.315	0.445	29	TISU1142F1250-*	SMP397	1.563	●	0.413	0.413	39	TISU1535F1250-*
SMP296	1.165	●	0.315	0.445	29	TISU1142F1250-*	SMP398	1.567	●	0.413	0.413	39	TISU1535F1250-*
SMP300	1.181	●	0.335	0.555	30	TISU1181F1250-*	SMP400	1.575	●	0.413	0.413	40	TISU1575F1250-*
SMP301	1.185	●	0.335	0.555	30	TISU1181F1250-*	SMP401	1.579	●	0.413	0.413	40	TISU1575F1250-*
SMP302	1.189	●	0.335	0.555	30	TISU1181F1250-*	SMP405	1.594	●	0.413	0.413	40	TISU1575F1250-*
SMP303	1.193	●	0.335	0.555	30	TISU1181F1250-*	SMP410	1.614	●	0.413	0.413	40	TISU1575F1250-*
SMP305	1.201	●	0.335	0.555	30	TISU1181F1250-*							
SMP308	1.213	●	0.335	0.555	30	TISU1181F1250-*							
SMP310	1.220	●	0.335	0.539	31	TISU1220F1250-*							
SMP311	1.224	●	0.335	0.539	31	TISU1220F1250-*							
SMP315	1.240	●	0.335	0.539	31	TISU1220F1250-*							
SMP318	1.252	●	0.335	0.539	31	TISU1220F1250-*							
SMP320	1.260	●	0.354	0.571	32	TISU1260F1250-*							
SMP321	1.264	●	0.354	0.571	32	TISU1260F1250-*							
SMP325	1.280	●	0.354	0.571	32	TISU1260F1250-*							
SMP328	1.291	●	0.354	0.571	32	TISU1260F1250-*							
SMP330	1.299	●	0.354	0.555	33	TISU1299F1250-*							
SMP331	1.303	●	0.354	0.555	33	TISU1299F1250-*							
SMP333	1.311	●	0.354	0.555	33	TISU1299F1250-*							
SMP335	1.319	●	0.354	0.555	33	TISU1299F1250-*							
SMP340	1.339	●	0.354	0.539	34	TISU1339F1250-*							
SMP341	1.343	●	0.354	0.539	34	TISU1339F1250-*							
SMP345	1.358	●	0.354	0.539	34	TISU1339F1250-*							
SMP349	1.374	●	0.354	0.539	34	TISU1339F1250-*							
SMP350	1.378	●	0.394	0.654	35	TISU1378F1250-*							
SMP351	1.382	●	0.394	0.654	35	TISU1378F1250-*							
SMP355	1.398	●	0.394	0.654	35	TISU1378F1250-*							

Package quantity = 1 pc
●: Line-up

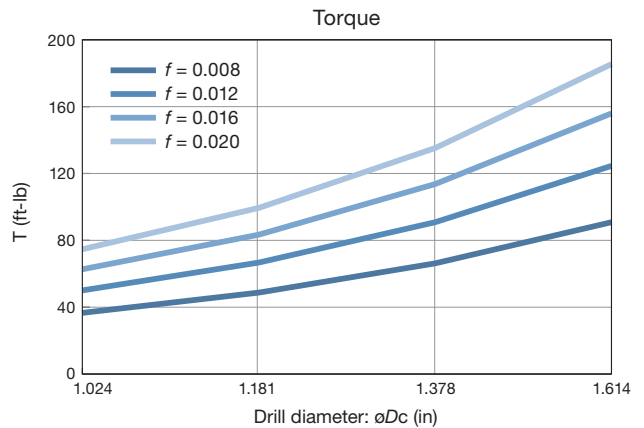
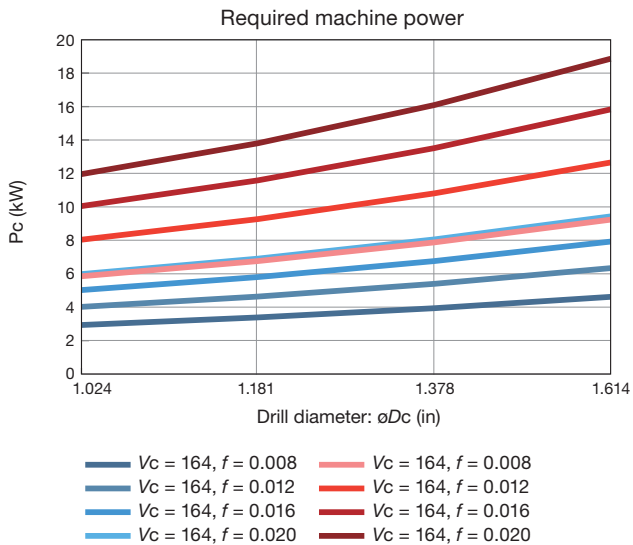
STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Cutting speed Vc (ipm)	Feed: f (ipr)		
			øDc (in)		
			1.024" - 1.177"	1.181" - 1.403"	1.417" - 1.614"
P	Low carbon steels 1015, etc.	262 - 459	0.008 - 0.02	0.008 - 0.02	0.01 - 0.022
	Carbon steels, Alloy steels 1055, 44140, etc.	262 - 427	0.008 - 0.02	0.008 - 0.02	0.01 - 0.022
	Prehardened steels NAK80, PX5, etc.	164 - 328	0.008 - 0.02	0.008 - 0.02	0.01 - 0.022
M	Stainless steels S30400, etc.	131 - 262	0.006 - 0.012	0.006 - 0.012	0.008 - 0.014
K	Gray cast irons No.250B, No.300B, etc.	262 - 591	0.01 - 0.022	0.01 - 0.022	0.012 - 0.024
	Ductile cast irons 60-40-18, 80-55-06, etc.	262 - 459	0.01 - 0.022	0.01 - 0.022	0.012 - 0.024
N	Non ferrous materials	328 - 722	0.016 - 0.024	0.016 - 0.024	0.02 - 0.028
S	Heat-resistant alloys (Inconel718, etc.)	66 - 164	0.004 - 0.008	0.004 - 0.008	0.004 - 0.01
	Titanium alloys (Ti-6Al-4V, etc.)	98 - 197	0.004 - 0.008	0.004 - 0.008	0.004 - 0.01
H	Hardened materials	66 - 197	0.004 - 0.008	0.004 - 0.008	0.004 - 0.01

RECOMMENDED COOLANT PRESSURE AND VOLUME



REQUIRED MACHINE POWER AND TORQUE

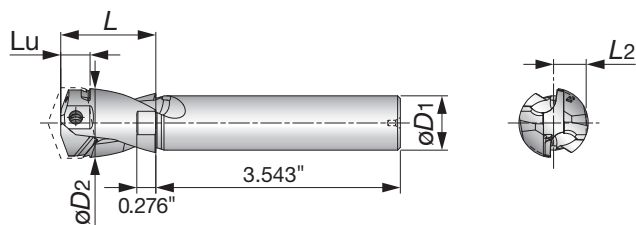


- Please access to "Tungaloy machining power" to calculate more detailed cutting forces.

<http://mpwr.imc-companies.com/machiningpwr/machiningpower.wgx?vwginstance=3d4bfb46110a456b8d375e68942cd0a3&Home=tungaloy>



REGRINDING HOLDER



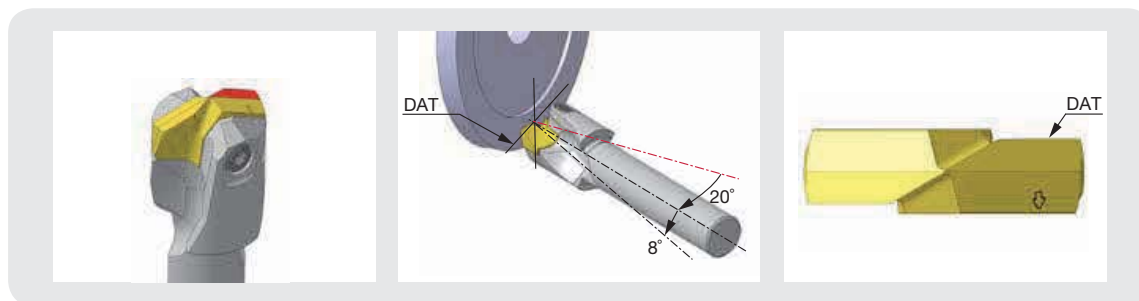
Designation	ϕD_1	ϕD_2	L	L_u	L_2	Head
SMP260-279-GH	0.787	1.004	1.378	0.425	0.472	SMP260-SMP279
SMP280-299-GH	0.787	1.083	1.378	0.425	0.512	SMP280-SMP299
SMP300-319-GH	0.787	1.161	1.378	0.512	0.551	SMP300-SMP319
SMP320-349-GH	0.787	1.240	1.378	0.512	0.591	SMP320-SMP349
SMP350-379-GH	0.787	1.358	1.575	0.579	0.650	SMP350-SMP379
SMP380-410-GH	0.787	1.476	1.575	0.594	0.709	SMP380-SMP410

① Clamping

- Assemble the drill head on the regrinding holder or shortest standard holder (3xD)
- Set-up the drill head in the machine : Total run-out must be less than 0.0008"

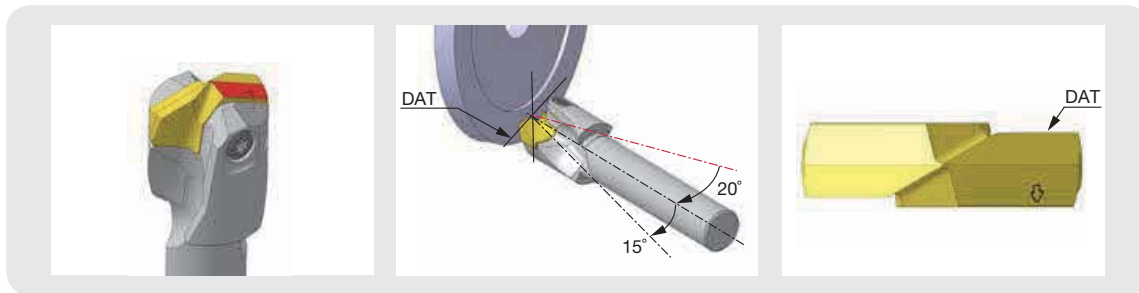
② Grinding the 1st clearance angle

- Set the drill for point angle (140°) and 1st clearance angle (8°)
- Keep the cutting edge in the horizontal plane



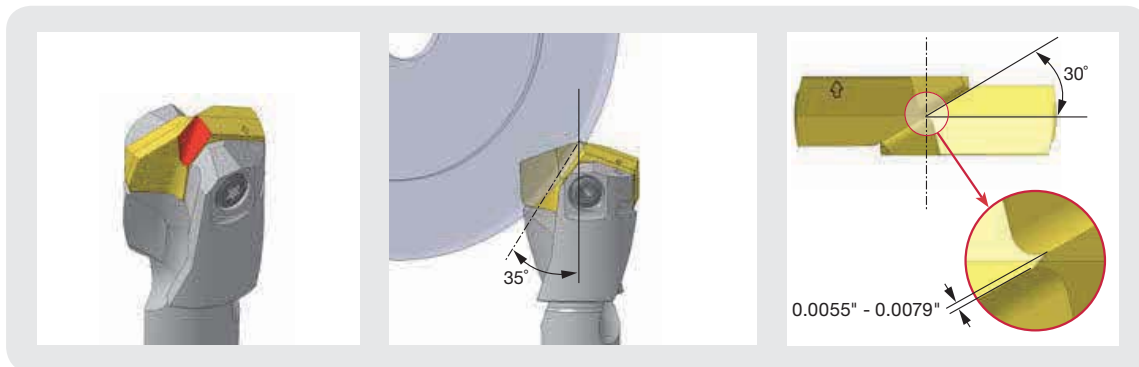
③ Grinding the 2nd clearance angle

- Set the drill for 2nd clearance angle (15°)



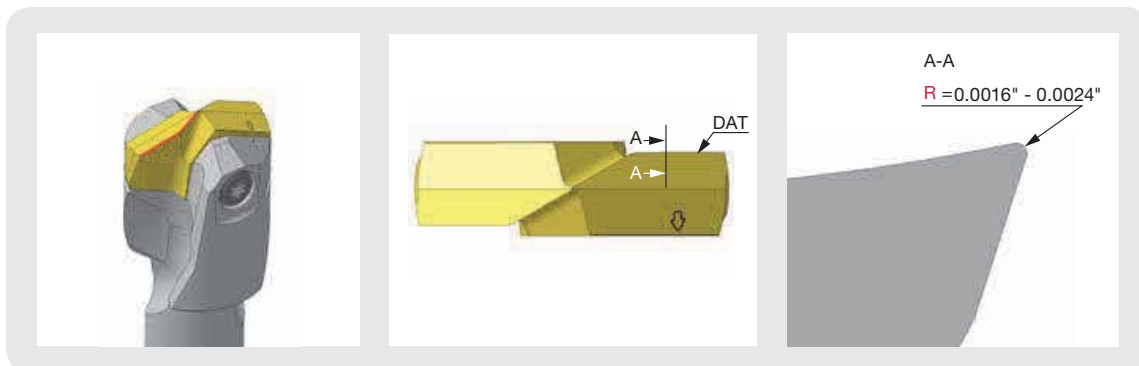
④ Grinding the chisel (Thinning)

- Set the drill for thinning angle (35°) with reference to drill axis and angle (30°) with reference to radial axis
- Keep the chisel thickness (0.0055" - 0.0079") and the thinning point must be over the center line



⑤ Edge preparation (Honing)

- Cutting edges should have honing by sand or brush (0.0016" - 0.0024")
- Nega-land by diamond hand lapper is also available
- The width of honing must be uniform with good surface finish



HOW TO CHANGE DRILL HEAD


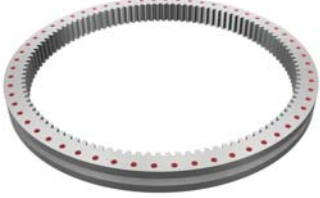
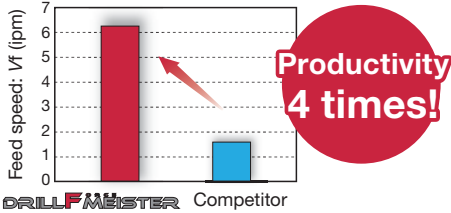
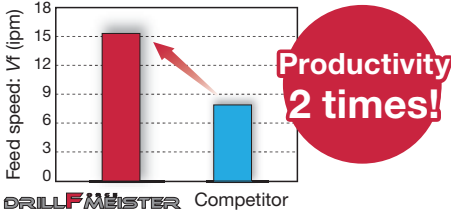
To unclamp rotate the screw 3-5 times counter-clockwise.

No need to remove the screw from the body.

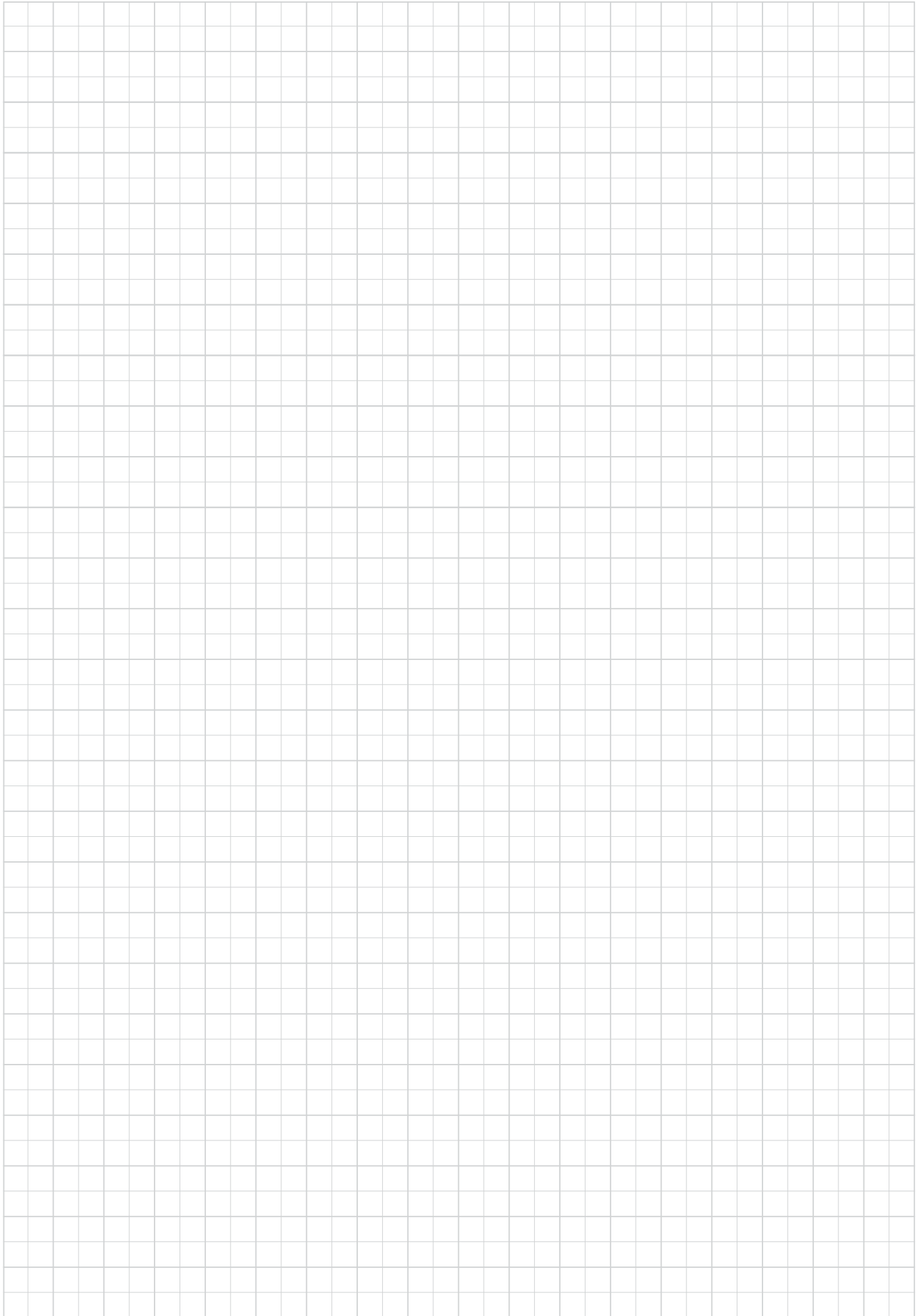


- Please change the screw to new one when the screw does not rotate smoothly

PRACTICAL EXAMPLES

Workpiece type		Gate valve	Slewing ring
Drill		TISU1181F1250-5	TISU1299F1500-5
Head		SMP300	SMP331
Grade		AH725 S30400	AH725 4140
Workpiece material		 M	 P
Cutting conditions	Cutting speed: V_c (sfm)	197	328
	Feed : f (ipr)	0.010	0.016
	Feed speed : V_f (in)	6.3	15
	Drilling depth : H (in)	4.73	5.9
	Machine	Horizontal M/C	Vertical M/C
Results		 <p>Productivity 4 times!</p> <p>DrillForce-Meister provides 4 times productivity than HSS drill.</p>	 <p>Productivity 2 times!</p> <p>DrillForce-Meister provides 2 times productivity and more stable hole diameter compare with indexable drill.</p>

MEMO



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DRILLFORCE MEISTER

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Tungaloy Report No. 509S1-US

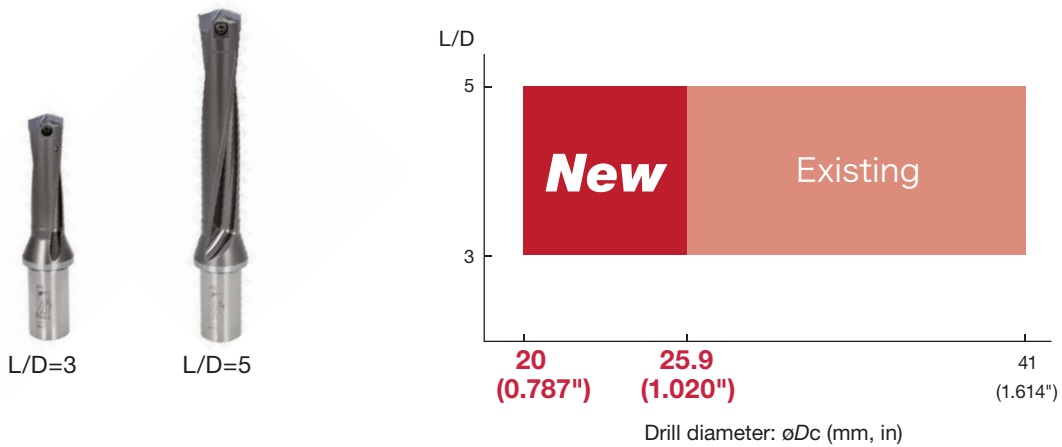
Expansion of the DrillForceMeister line with
a wider range of diameters - \varnothing 20 - 25.9 mm



INDUSTRY 4.0
FEED the SPEED!

Line-up expansion of $\varnothing 20 - \varnothing 25.9$ mm (0.787" - 1.020")

Based on the big success of the existing range of DrillForceMeister and following market demand, Tungaloy has expanded the range of diameters. All heads are coated with our excellent wear resistant PVD coating, AH725.



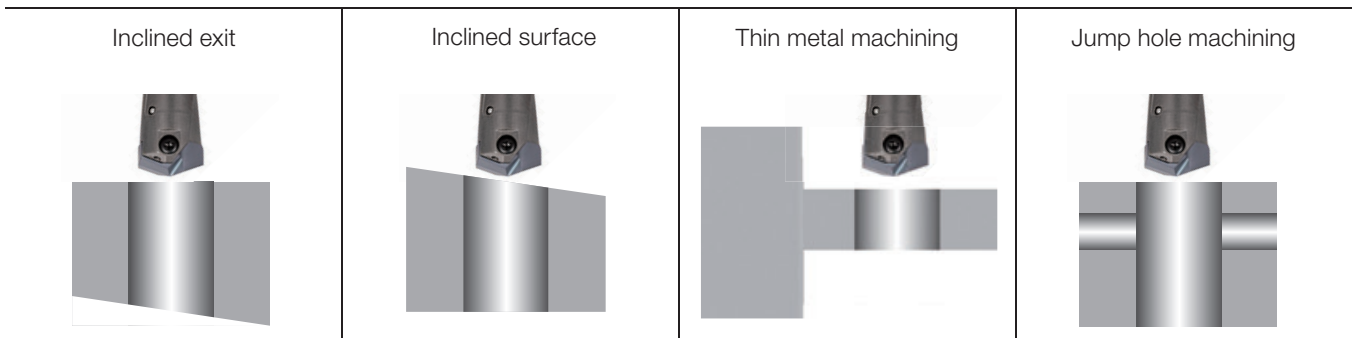
Unique clamping system

Easy and quick yet rigid and reliable clamping method for excellent hole quality and long tool life

DrillForceMeister has a large contact area, thus it strongly withstands radical forces and low rigidity workpiece clamping.



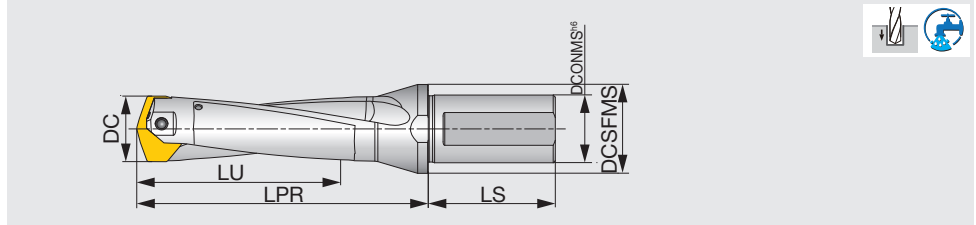
Typical examples of unbalanced machining



TIS L/D=3

Head indexable drill

New



Metric	DC	DCONMS	DCSFMS	LU	LPR	LS	Pocket size	Head
TIS200F25-3	20 - 20.9	25	32	63.1	92.1	56	20	SMP20*
TIS210F25-3	21 - 21.9	25	32	66.3	95.1	56	21	SMP21*
TIS220F25-3	22 - 22.9	25	32	69.4	98.4	56	22	SMP22*
TIS230F25-3	23 - 23.9	25	32	72.6	101.4	56	23	SMP23*
TIS240F32-3	24 - 24.9	32	40	75.7	110.7	60	24	SMP24*
TIS250F32-3	25 - 25.9	32	40	78.9	113.7	60	25	SMP25*

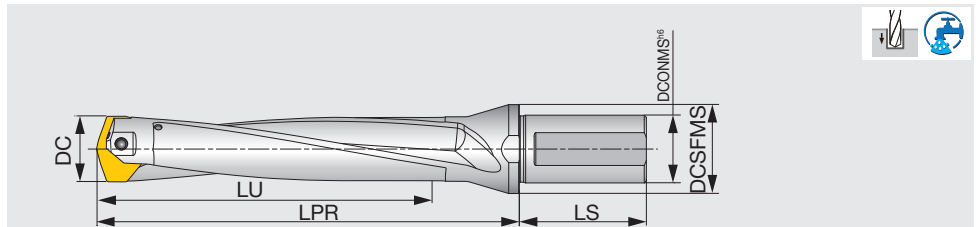
Tool diameter	Hole diameter tolerance*
ø20 - ø25.9	+0.05 / 0

* Just for reference.

TIS L/D=5

Head indexable drill

New



Metric	DC	DCONMS	DCSFMS	LU	LPR	LS	Pocket size	Head
TIS200F25-5	20 - 20.9	25	32	103.1	132.1	56	20	SMP20*
TIS210F25-5	21 - 21.9	25	32	108.3	137.1	56	21	SMP21*
TIS220F25-5	22 - 22.9	25	32	113.4	142.4	56	22	SMP22*
TIS230F25-5	23 - 23.9	25	32	118.6	147.4	56	23	SMP23*
TIS240F32-5	24 - 24.9	32	40	123.7	158.7	60	24	SMP24*
TIS250F32-5	25 - 25.9	32	40	128.9	163.7	60	25	SMP25*

Tool diameter	Hole diameter tolerance*
ø20 - ø25.9	+0.08 / 0

* Just for reference.

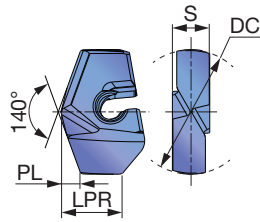
SPARE PARTS



Designation	Clamping screw	Wrench	
		Torx Bit	Grip
TIS200F25-*	TS40178D25	BLDT20/S7	H-TB2W
TIS210F25-*	TS40178D25	BLDT20/S7	H-TB2W
TIS220F25-*	TS40198D28	BLDT20/S7	H-TB2W
TIS230F25-*	TS40198D28	BLDT20/S7	H-TB2W
TIS240F32-*	TS40210D3	BLDT20/S7	H-TB2W
TIS250F32-*	TS40210D3	BLDT20/S7	H-TB2W

SMP

New



Tool diameter	Head diameter tolerance
ø20 - ø25.9	-0.006 / -0.026

P Steel	★								
M Stainless	★								
K Cast iron	★								
N Non-ferrous	☆								
S Superalloys	★								
H Hard materials	★								

★ : First choice
☆ : Second choice

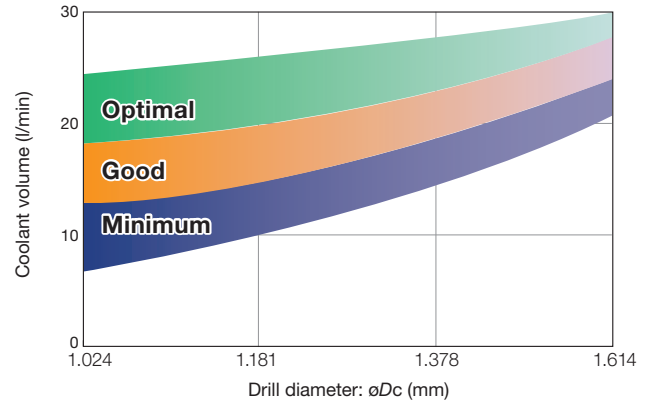
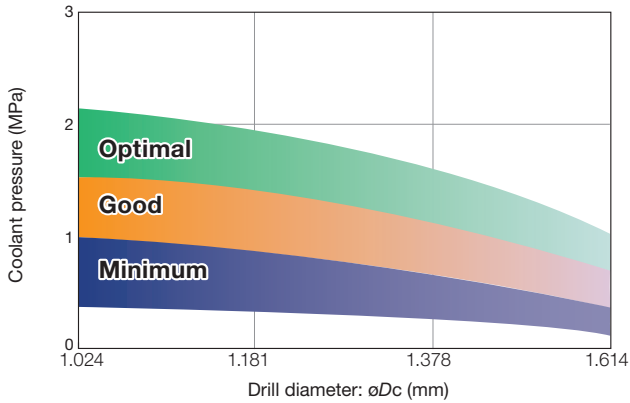
Designation	DC (in)	DC (mm)	S	Coated		LPR (mm)	PL (mm)	Pocket Size	Body
				AH725					
SMP200	0.787	20	5.7	●		9.7	3.11	20	TIS200F25-*
SMP205	0.807	20.5	5.7	●		9.7	3.2	20	TIS200F25-*
SMP210	0.827	21	5.7	●		9.7	3.29	21	TIS210F25-*
SMP215	0.846	21.5	5.7	●		9.7	3.38	21	TIS210F25-*
SMP220	0.866	22	6.2	●		10.5	3.42	22	TIS220F25-*
SMP223	0.878	22.3	6.2	●		10.5	3.47	22	TIS220F25-*
SMP225	0.886	22.5	6.2	●		10.5	3.51	22	TIS220F25-*
SMP230	0.906	23	6.2	●		10.5	3.6	23	TIS230F25-*
SMP235	0.925	23.5	6.2	●		10.5	3.69	23	TIS230F25-*
SMP240	0.945	24	6.7	●		10.8	3.73	24	TIS240F32-*
SMP245	0.965	24.5	6.7	●		10.8	3.82	24	TIS240F32-*
SMP247	0.972	24.7	6.7	●		10.8	3.86	24	TIS240F32-*
SMP250	0.984	25	6.7	●		10.8	3.91	25	TIS250F32-*
SMP255	1.004	25.5	6.7	●		10.8	4	25	TIS250F32-*

● : Line up

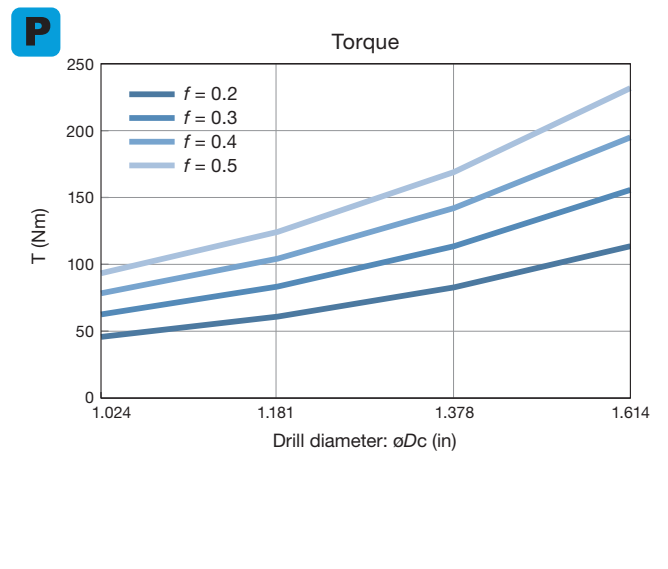
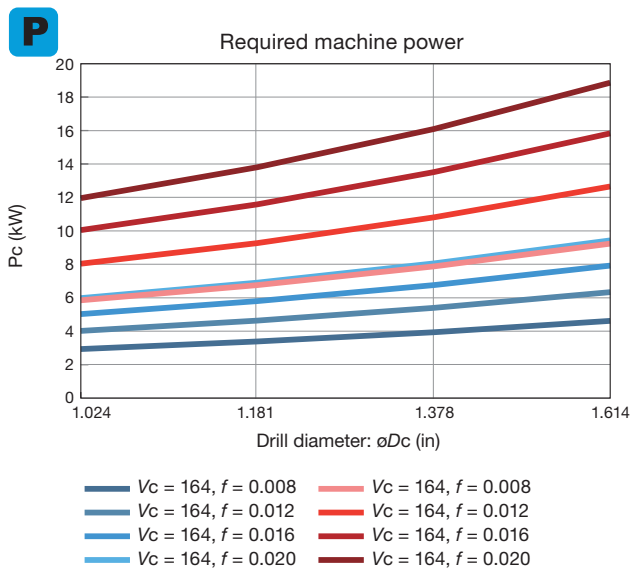
STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Cutting speed Vc (sfm)	Feed: f (ipr)
			øDc (in)
			0.787 - 1.020
P	Low carbon steel 1015, 1020, etc.	262 - 459	0.008 - 0.020
	Carbon steel and alloy steel 1055, 4140, etc.	262 - 427	0.008 - 0.020
	Prehardend steel NAK80, PX5, etc.	164 - 328	0.008 - 0.020
M	Stainless steel 304SS, 316SS, etc.	131 - 262	0.006 - 0.012
K	Gray cast iron Class 25, Class 30, etc.	262 - 591	0.010 - 0.022
	Ductile cast iron 80-55-06, etc.	262 - 459	0.010 - 0.022
N	Non ferrous materials	328 - 656	0.016 - 0.024
S	Heat-resistant alloys Inconel718, etc.	66 - 164	0.004 - 0.008
	Titanium alloys Ti-6Al-4V, etc.	66 - 164	0.004 - 0.008
H	Hardened materials	66 - 197	0.004 - 0.008

RECOMMENDED COOLANT PRESSURE AND VOLUME



REQUIRED MACHINE POWER AND TORQUE



- Please access to "Tungaloy machining power" to calculate more detailed cutting forces.

<https://www.imc-i.com/mpwr/MachiningPower>



HOW TO CHANGE DRILL HEAD


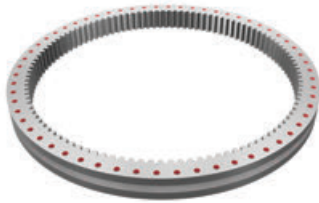
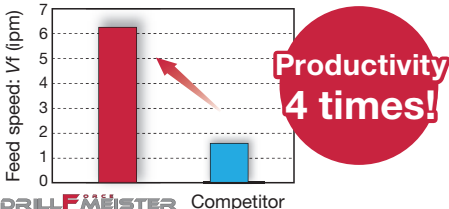
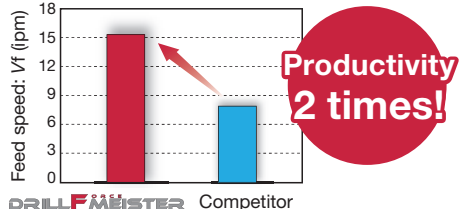
To unclamp rotate the screw 3-5 times counter-clockwise.

No need to remove the screw from the body.



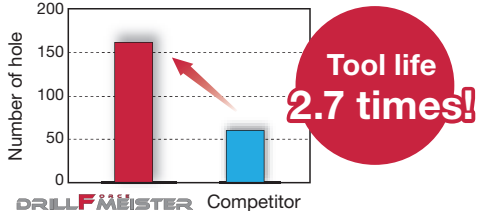
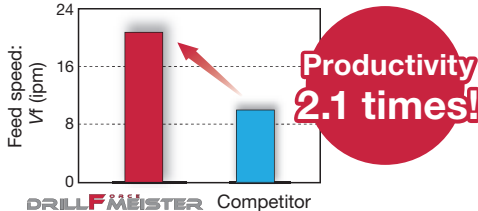


- Please change the screw to new one when the screw does not rotate smoothly

PRACTICAL EXAMPLES

Workpiece type	Gate valve	Slewing ring	
Drill	TISU1181F1250-5	TISU1299F1500-5	
Head	SMP300	SMP331	
Grade	AH725	AH725	
	S30400	4140	
Workpiece material	 M	 P	
Cutting conditions	Cutting speed: V_c (sfm)	197	328
	Feed : f (ipr)	0.010	0.016
	Feed speed : V_f (in)	6.3	15
	Drilling depth : H (in)	4.73	5.9
	Machine	Horizontal M/C	Vertical M/C
Results	 <p>Productivity 4 times!</p> <p>DrillForceMeister provides 4 times productivity than HSS drill.</p>	 <p>Productivity 2 times!</p> <p>DrillForceMeister provides 2 times productivity and more stable hole diameter compare with indexable drill.</p>	

ACCELERATED MACHINING

Workpiece type	Link	Plate	
Drill	TISU1260F1500-5	TISU1024F1250-3	
Head	SMP321	SMP260	
Grade	AH725	AH725	
	4140	SN490B	
Workpiece material	 M	 P	
Cutting conditions	Cutting speed: V_c (sfm)	197	394
	Feed : f (ipr)	0.006	0.014
	Feed speed : V_f (in)	3.543	20.236
	Drilling depth : H (in)	1.693	0.866
	Machine	Horizontal M/C	Vertical M/C
Results	 <p>Tool life 2.7 times!</p> <p>DRILLFMEISTER Competitor</p> <p>DrillForceMeister provides 2.7 times tool life than head changeable drill.</p>	 <p>Productivity 2.1 times!</p> <p>DRILLFMEISTER Competitor</p> <p>DrillForceMeister provides 2.1 times productivity than indexable drill.</p>	

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DRILL^{ORCE}**FMEISTER**

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Tungaloy Report No. 509S2-US

Expanded lineup with new SMF
flat-edged drill head: $\varnothing 0.787'' - 1.575''$
($\varnothing 20 \text{ mm} - \varnothing 40 \text{ mm}$)



INDUSTRY 4.0
FEED the SPEED!



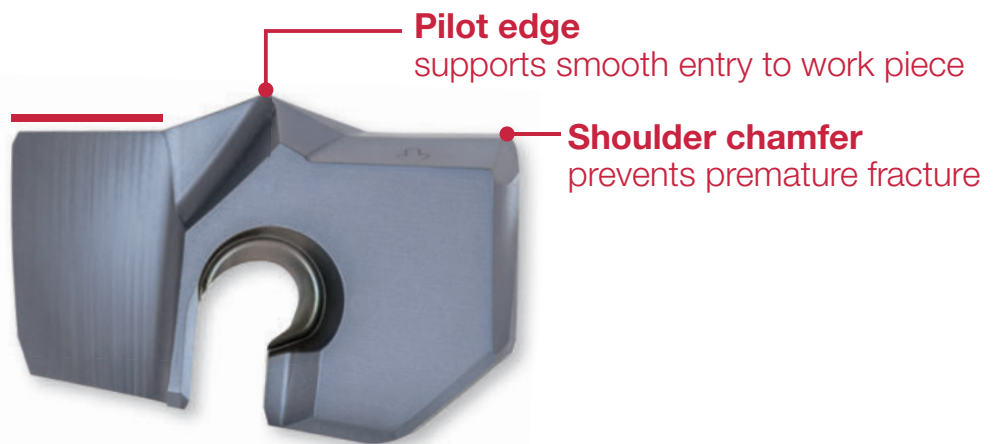
Optimized edge design for efficient drilling of flat-bottom holes

New SMF DrillForceMeister flat-edged drill head

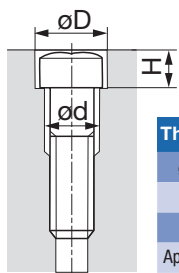
Tungaloy further expands the lineup of SMF flat-edged drill heads. All heads are coated with Tungaloy's top-notch wear resistant PVD grade, AH9130.

The flat-edge drill head is an ideal tool for counterboring bolt and screw heads.

180° flat cutting edges produces holes with flat bottom. Ideal for counterboring bolt heads.



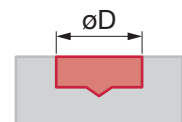
Counterbore dimensions for bolt holes



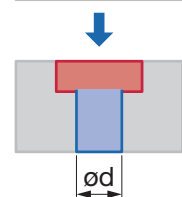
Thread size	M16	M20	M22	M24
øD (mm)	26	32	35	39
H (mm)	17.5	21.5	23.5	25.5
ød (mm)	18	22	24	26
Applicable tool	SMF260	SMF320	SMF350	SMF390

Recommended counterboring method

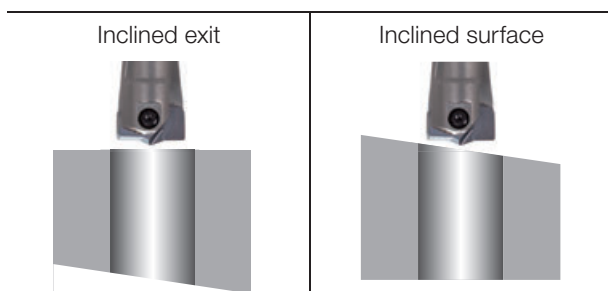
1 Use SMF to make a counterbore for the bolt head.



2 Drill a smaller diameter hole for threads.



Typical applications for irregular surfaces



Compared with a 140° drill tip, the SMF head provides greater resistance to radial forces, improving machining stability during the drilling of irregular surfaces or workpieces with low rigidity. In addition, the drill head and holder interface is designed to provide tool reliability during demanding operations.

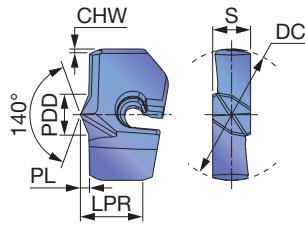
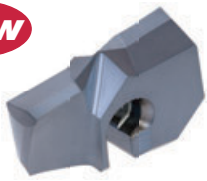


Wide contact area

* Standard DrillForceMeister body can be used

SMF

New



Tool diameter	Head diameter tolerance
ø20 - ø29.9	0 / -0.020
ø30 - ø40	0 / -0.025

P	Steel	★			
M	Stainless	★			
K	Cast iron	★			
N	Non-ferrous	☆			
S	Superalloys	★			
H	Hard materials	★			

★ : First choice
☆ : Second choice

Designation	DC (in)	DC (mm)	S (mm)	Coated		LPR (mm)	PL (mm)	CHW (mm)	PDD (mm)	Pocket size	Body
				AH9130							
SMF200	0.787	20	5.69	●		10.2	2.11	0.3	6	20	TIS200F25-*
SMF205	0.807	20.5	5.69	●		10	2.11	0.3	6	20	TIS200F25-*
SMF210	0.827	21	5.69	●		9.8	2.11	0.3	6	21	TIS210F25-*
SMF215	0.846	21.5	5.69	●		9.6	2.11	0.3	6	21	TIS210F25-*
SMF220	0.866	22	6.19	●		10.9	2.27	0.3	6.6	22	TIS220F25-*
SMF225	0.886	22.5	6.19	●		10.7	2.27	0.3	6.6	22	TIS220F25-*
SMF230	0.906	23	6.19	●		10.5	2.27	0.3	6.6	23	TIS230F25-*
SMF235	0.925	23.5	6.19	●		10.3	2.27	0.3	6.6	23	TIS230F25-*
SMF240	0.945	24	6.69	●		11	2.43	0.3	7.2	24	TIS240F32-*
SMF245	0.965	24.5	6.69	●		10.8	2.43	0.3	7.2	24	TIS240F32-*
SMF250	0.984	25	6.69	●		10.6	2.43	0.3	7.2	25	TIS250F32-*
SMF255	1.004	25.5	6.69	●		10.4	2.43	0.3	7.2	25	TIS250F32-*
SMF260	1.024	26	7.49	●		12.7	2.5	0.3	7.8	26	TIS260F32-*
SMF265	1.043	26.5	7.49	●		12.5	2.5	0.3	7.8	26	TIS260F32-*
SMF270	1.063	27	7.49	●		12.3	2.5	0.3	7.8	27	TIS270F32-*
SMF275	1.083	27.5	7.49	●		12.1	2.5	0.3	7.8	27	TIS270F32-*
SMF280	1.102	28	7.99	●		12.9	2.66	0.3	8.4	28	TIS280F32-*
SMF300	1.181	30	8.49	●		15.1	2.82	0.3	9	30	TIS300F32-*
SMF315	1.240	31.5	8.49	●		14.4	2.82	0.3	9	31	TIS310F32-*
SMF320	1.260	32	8.99	●		15.3	2.98	0.3	9.6	32	TIS320F40-*
SMF325	1.280	32.5	8.99	●		15.1	2.98	0.3	9.6	32	TIS320F40-*
SMF330	1.299	33	8.99	●		14.9	2.98	0.3	9.6	33	TIS330F40-*
SMF340	1.339	34	8.99	●		14.5	2.98	0.3	9.6	34	TIS340F40-*
SMF345	1.358	34.5	8.99	●		14.3	2.98	0.3	9.6	34	TIS340F40-*
SMF350	1.378	35	9.99	●		17.1	3.21	0.3	10.5	35	TIS350F40-*
SMF360	1.417	36	9.99	●		16.7	3.21	0.3	10.5	36	TIS360F40-*
SMF390	1.535	39	10.49	●		17	3.44	0.3	11.4	39	TIS390F40-*
SMF400	1.575	40	10.49	●		16.6	3.44	0.3	11.4	40	TIS400F40-*

● : New product

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Cutting speed Vc (sfm)	Feed: f (ipr)		
			ø0.787 - ø1.177	ø1.181 - ø1.413	ø1.417 - ø1.575
P	Low carbon steel 1015, 1020 etc.	262 - 459	0.008 - 0.020	0.008 - 0.02	0.008 - 0.022
	Carbon steel and alloy steel 1055, 4140, etc.	262 - 427	0.008 - 0.020	0.008 - 0.02	0.008 - 0.022
	Prehardend steel NAK80, PX5, etc.	164 - 328	0.008 - 0.020	0.008 - 0.02	0.008 - 0.022
M	Stainless steel 304SS, 316SS, etc.	131 - 230	0.006 - 0.010	0.008 - 0.012	0.008 - 0.014
K	Gray cast iron Class 25, Class 30, etc.	262 - 591	0.010 - 0.022	0.01 - 0.022	0.012 - 0.024
	Ductile cast iron 60-4018, 80-55-06, etc.	262 - 459	0.010 - 0.022	0.01 - 0.022	0.012 - 0.024
N	Non ferrous materials	328 - 656	0.016 - 0.024	0.016 - 0.024	0.020 - 0.028
S	Heat-resistant alloys Inconel718, etc.	66 - 164	0.004 - 0.008	0.004 - 0.008	0.004 - 0.010
	Titanium alloys Ti-6Al-4V, etc.	66 - 164	0.004 - 0.008	0.004 - 0.008	0.004 - 0.010
H	Hardened materials	66 - 197	0.004 - 0.008	0.004 - 0.008	0.004 - 0.010

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DrillLine



DRILL^{ORCE}**F**MEISTER

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Tungaloy Report No. 509S3-US

SMP drill head expansion with grade **AH9130**



INDUSTRY 4.0
FEED the SPEED!

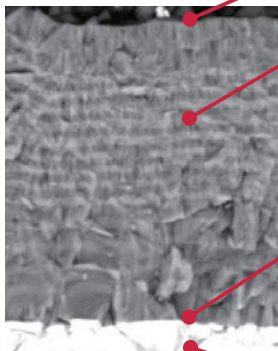


DrillForce-Meister **SMP** drill heads are now offered in **AH9130** insert grade

For increased productivity, extended tool life and reduced machining costs

New

AH9130

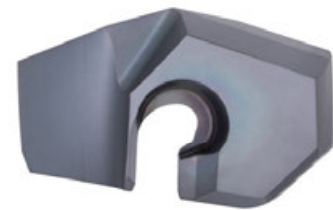


Resistance to built up-edge
Coating layer to resist built up-edge

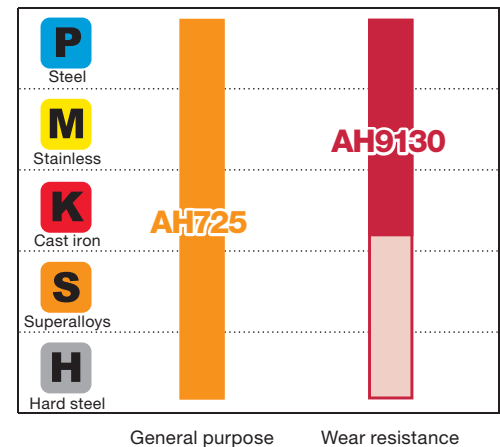
Resistance to wear, oxidation and fracture
- 2 coating layers for wear and oxidation resistance
- Layered alternatively to prevent crack from propagating to fracture

Strong coating-substrate adhesion
- Coating is provided with strong adhesion between the coating layer and carbide substrate to prevent coating delamination

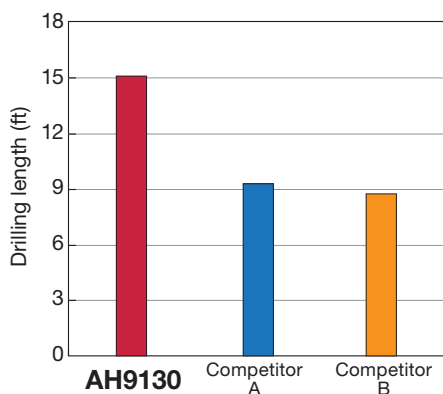
Substrate
Carbide substrate features wear and fracture resistance



Application range



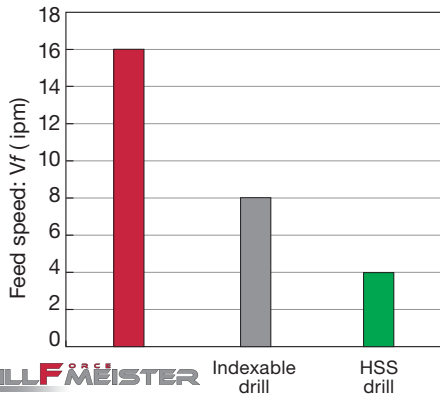
Cutting performance



P Drill : $\phi 1.024''$
Workpiece material : 1055
Cutting speed : $V_c = 328 \text{ sfm}$
Feed : $f = 0.014 \text{ ipr}$

AH9130 provided superior wear resistance, significantly increasing tool life. In addition, the secure drill tip clamping system provided tool life stability.

High productivity



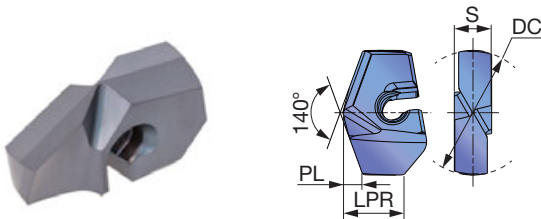
P Drill : $\phi 1.299"$, L/D = 5
Workpiece material : 1055

	Cutting speed Vc (sfm)	Feed f (ipr)	Feed speed Vf (ipm)
DRILLFMEISTER	330	0.016	16
Indexable drill	490	0.006	8
HSS drill	66	0.016	4

Secure drill tip clamping and high-rigidity body provides remarkable increase in productivity.

DRILLFMEISTER

SMP



Tool diameter	Head diameter tolerance
$\phi 0.787" - \phi 1.177"$	+0.0006" / -0.0006"
$\phi 1.181" - \phi 1.378"$	+0.0006" / -0.0008"

P Steel	★	★	
M Stainless	★	★	
K Cast iron	★	★	
N Non-ferrous	☆	☆	
S Superalloys	☆	★	
H Hard materials	☆	★	

★ : First choice
☆ : Second choice

Designation	DC (in)	DC (mm)	S (in)	Coated		LPR (in)	PL (in)	Pocket Size	Body
				AH9130	AH725				
SMP200	0.787	20	0.224	●	●	0.382	0.122	20	TIS200F25-*
SMP205	0.807	20.5	0.224	●	●	0.382	0.126	20	TIS200F25-*
SMP210	0.827	21	0.224	●	●	0.382	0.130	21	TIS210F25-*
SMP220	0.866	22	0.244	●	●	0.413	0.135	22	TIS220F25-*
SMP230	0.906	23	0.244	●	●	0.413	0.142	23	TIS230F25-*
SMP240	0.945	24	0.264	●	●	0.425	0.147	24	TIS240F32-*
SMP250	0.984	25	0.264	●	●	0.425	0.154	25	TIS250F32-*
SMP260	1.024	26	0.295	●	●	0.457	0.186	26	TIS260F32-*
SMP265	1.043	26.5	0.295	●	●	0.457	0.190	26	TIS260F32-*
SMP267	1.051	26.7	0.295	●	●	0.457	0.191	26	TIS260F32-*
SMP270	1.063	27	0.295	●	●	0.437	0.193	27	TIS270F32-*
SMP275	1.083	27.5	0.295	●	●	0.437	0.197	27	TIS270F32-*
SMP280	1.102	28	0.315	●	●	0.461	0.201	28	TIS280F32-*
SMP300	1.181	30	0.335	●	●	0.555	0.215	30	TIS300F32-*
SMP320	1.260	32	0.354	●	●	0.571	0.229	32	TIS320F40-*
SMP340	1.339	34	0.354	●	●	0.539	0.244	34	TIS340F40-*
SMP350	1.378	35	0.394	●	●	0.654	0.251	35	TIS350F40-*

● : New
● : Line up

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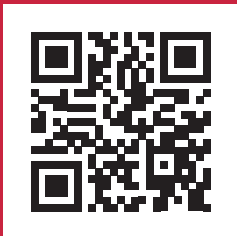
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