

DrillLine



# DRILLFORCE MEISTER

[www.tungaloy.com](http://www.tungaloy.com)

Tungaloy Report No. 509S1-G

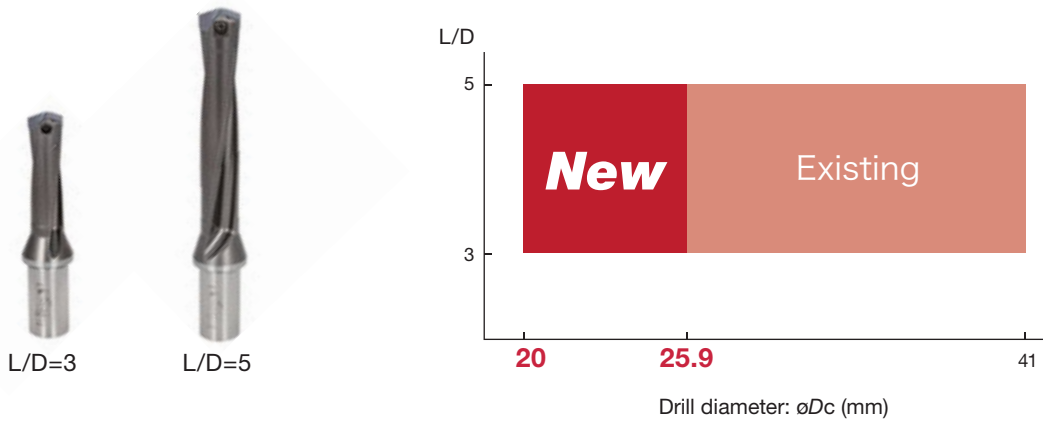
Expansion of the DrillForceMeister line with a wider range of diameters - **ø20 - 25.9 mm**



**INDUSTRY 4.0**  
*FEED the SPEED!*

## Line-up expansion of $\varnothing 20 - \varnothing 25.9$ mm

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.



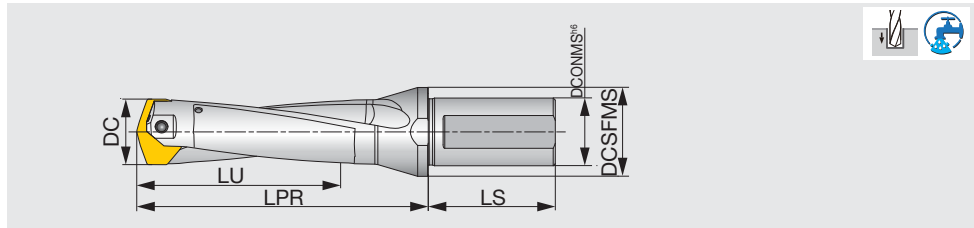
### Typical examples of unbalanced machining

Inclined exit	Inclined surface	Thin metal machining	Jump hole machining

## TIS L/D=3

Head indexable drill

**New**



Designation	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*

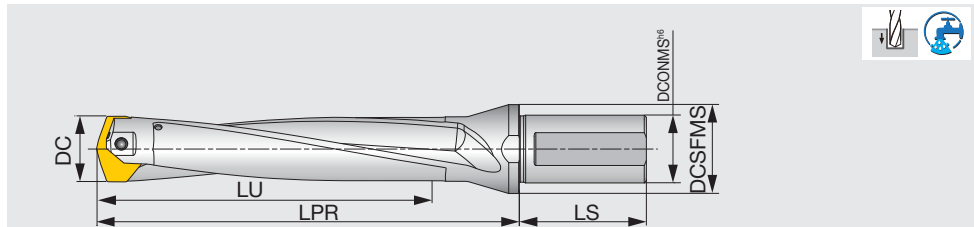
Tool diameter	Hole diameter tolerance*
ø20 - ø25.9	+0.05 / 0

\* Just for reference.

## TIS L/D=5

Head indexable drill

**New**



Designation	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.

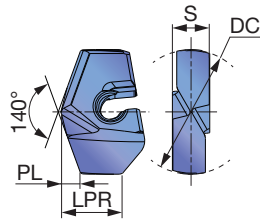
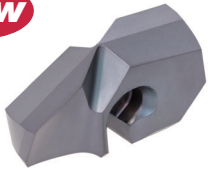
## SPARE PARTS



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**



<b>Tool diameter</b>	<b>Head diameter tolerance</b>
ø20 - ø25.9	+0.014 / -0.015

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

★ : First choice  
☆ : Second choice

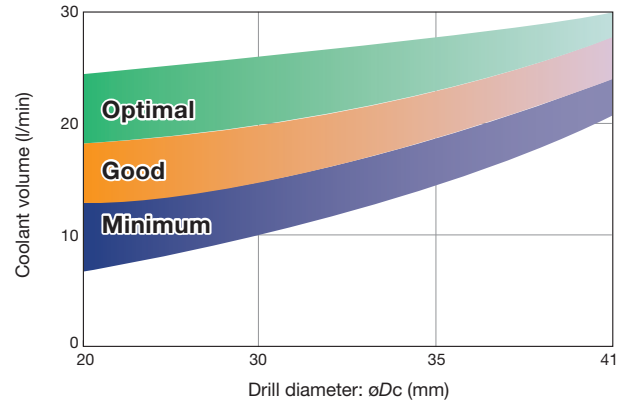
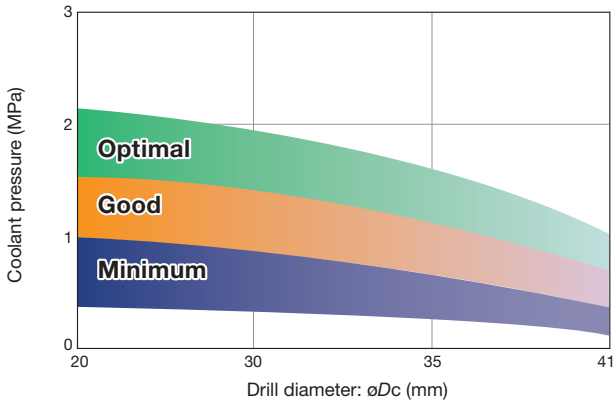
Designation	DC	S	Coated								LPR	PL	Pocket Size	Body
			AH725											
SMP200	20	5.7	●								9.7	3.11	20	TIS200F25-*
SMP205	20.5	5.7	●								9.7	3.2	20	TIS200F25-*
SMP210	21	5.7	●								9.7	3.29	21	TIS210F25-*
SMP215	21.5	5.7	●								9.7	3.38	21	TIS210F25-*
SMP220	22	6.2	●								10.5	3.42	22	TIS220F25-*
SMP223	22.3	6.2	●								10.5	3.47	22	TIS220F25-*
SMP225	22.5	6.2	●								10.5	3.51	22	TIS220F25-*
SMP230	23	6.2	●								10.5	3.6	23	TIS230F25-*
SMP235	23.5	6.2	●								10.5	3.69	23	TIS230F25-*
SMP240	24	6.7	●								10.8	3.73	24	TIS240F32-*
SMP245	24.5	6.7	●								10.8	3.82	24	TIS240F32-*
SMP247	24.7	6.7	●								10.8	3.86	24	TIS240F32-*
SMP250	25	6.7	●								10.8	3.91	25	TIS250F32-*
SMP255	25.5	6.7	●								10.8	4	25	TIS250F32-*

● : Line up

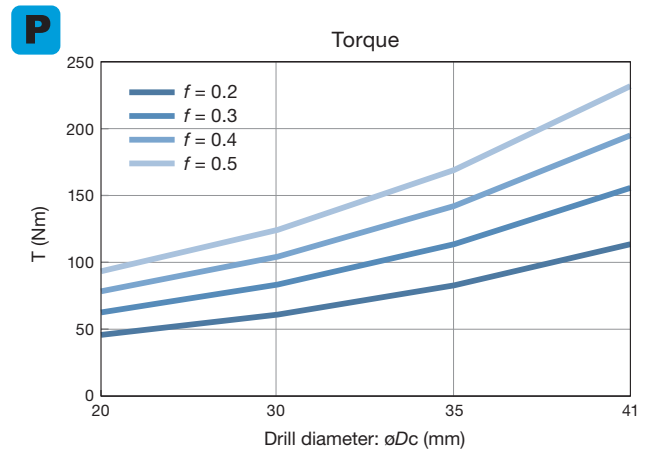
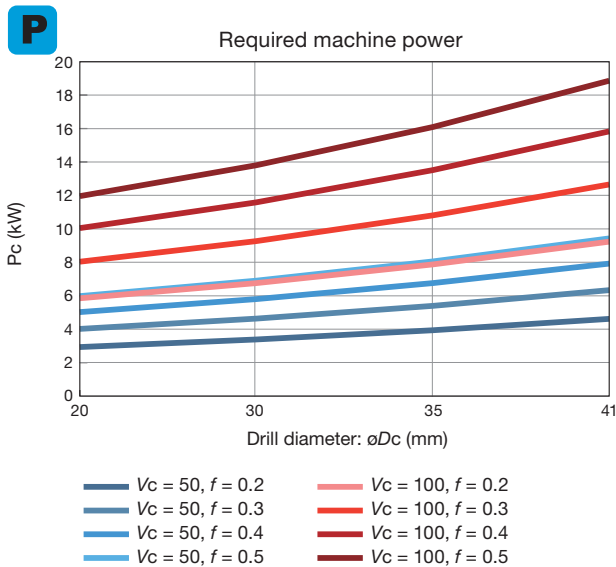
## STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Cutting speed Vc (m/min)	Feed: f (mm/rev)
			øDc (mm) 20 - 25.9
<b>P</b>	Low carbon steel (C15, C20, etc.)	80 - 140	0.2 - 0.5
	Carbon steel and alloy steel (S55C / C55, SCM440 / 42CrMo4, etc.)	80 - 130	0.2 - 0.5
	Prehardend steel (NAK80, PX5, etc.)	50 - 100	0.2 - 0.5
<b>M</b>	Stainless steel (SUS304 / X5CrNi18-9, SUS316 / X5CrNiMo17-12-3, etc.)	40 - 80	0.15 - 0.3
<b>K</b>	Grey cast iron (FC250 / 250, FC300 / 300, etc.)	80 - 180	0.25 - 0.55
	Ductile cast iron (400-15, 600-3, etc.)	80 - 140	0.25 - 0.55
<b>N</b>	Non ferrous materials	100 - 200	0.4 - 0.6
<b>S</b>	Heat-resistant alloys (Inconel718, etc.)	20 - 50	0.1 - 0.2
	Titanium alloys (Ti-6Al-4V, etc.)	20 - 50	0.1 - 0.2
<b>H</b>	Hardened materials	20 - 60	0.1 - 0.2

## 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


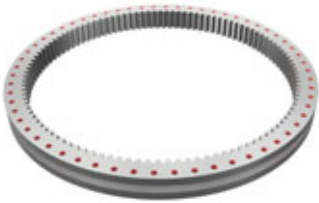
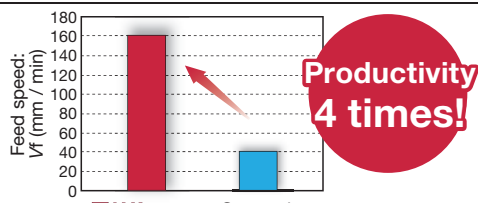
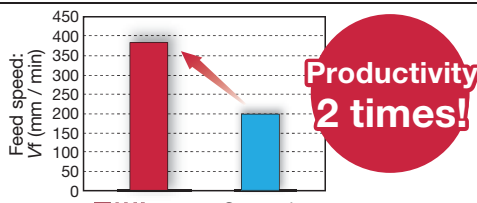
To unclamp rotate the screw 3-5 times counter-clockwise.



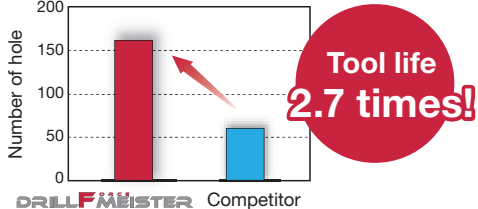
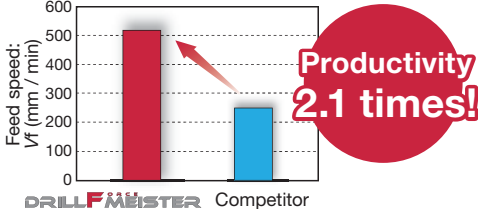
No need to remove the screw from the body.



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

## PRACTICAL EXAMPLES

Workpiece type	Gate valve	Slewing ring	
Drill	TIS300F40-5	TIS330F40-5	
Head	SMP300	SMP331	
Grade	AH725	AH725	
Workpiece material	SUS304 / X5CrNi18-9	SCM440 / 42CrMo4	
	 <b>M</b>	 <b>P</b>	
Cutting conditions	Cutting speed: $V_c$ (m/min)	60	100
	Feed : $f$ (mm/rev)	0.25	0.4
	Feed speed : $V_f$ (mm)	160	380
	Drilling depth : $H$ (mm)	120	150
	Machine	Horizontal M/C	Vertical M/C
Results	 <p><b>Productivity 4 times!</b></p> <p>DrillForceMeister provides 4 times productivity than HSS drill.</p>	 <p><b>Productivity 2 times!</b></p> <p>DrillForceMeister provides 2 times productivity and more stable hole diameter compare with indexable drill.</p>	

Workpiece type		Link	Plate	
Drill		TIS320F40-5	TIS260F32-3	
Head		SMP321	SMP260	
Grade		AH725	AH725	
Workpiece material		SCM440 / 42CrMo4	SN490B	
		 <b>M</b>	 <b>P</b>	
Cutting conditions	Cutting speed: $V_c$ (m/min)	60	120	
	Feed : $f$ (mm/rev)	0.15	0.35	
	Feed speed : $V_f$ (mm)	90	514	
	Drilling depth : $H$ (mm)	43	22	
	Machine	Horizontal M/C	Vertical M/C	
Results	 <p><b>Tool life 2.7 times!</b></p> <p>DRILLFMEISTER Competitor</p> <p>DrillForceMeister provides 2.7 times tool life than head changeable drill.</p>		 <p><b>Productivity 2.1 times!</b></p> <p>DRILLFMEISTER Competitor</p> <p>DrillForceMeister provides 2.1 times productivity than indexable drill.</p>	

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