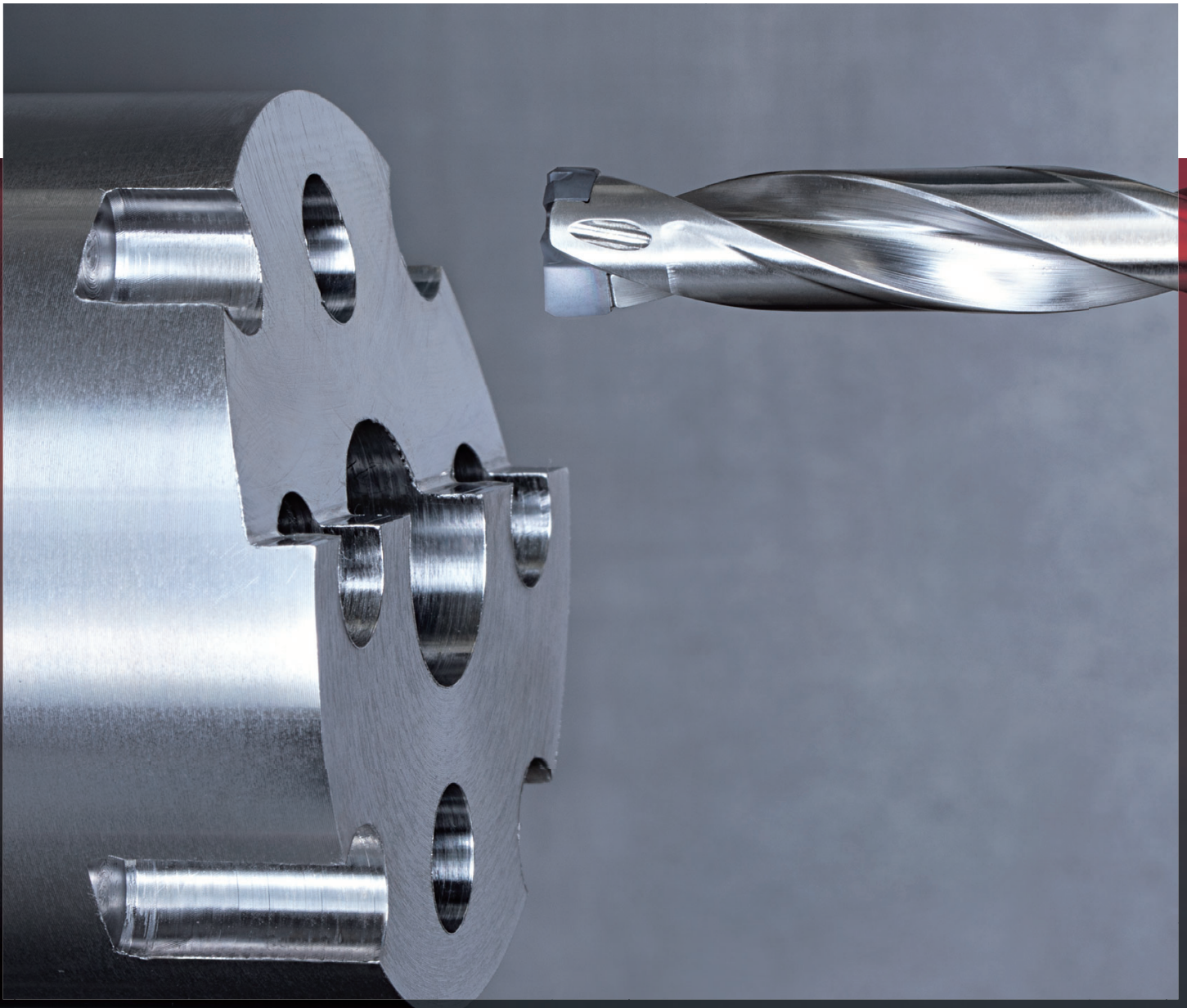


DRILLMEISTER

Tungaloy Report No. 412S2-G

Expansion of **flat-edged DMF drill**
now covers **ø6 - 9.9 mm**





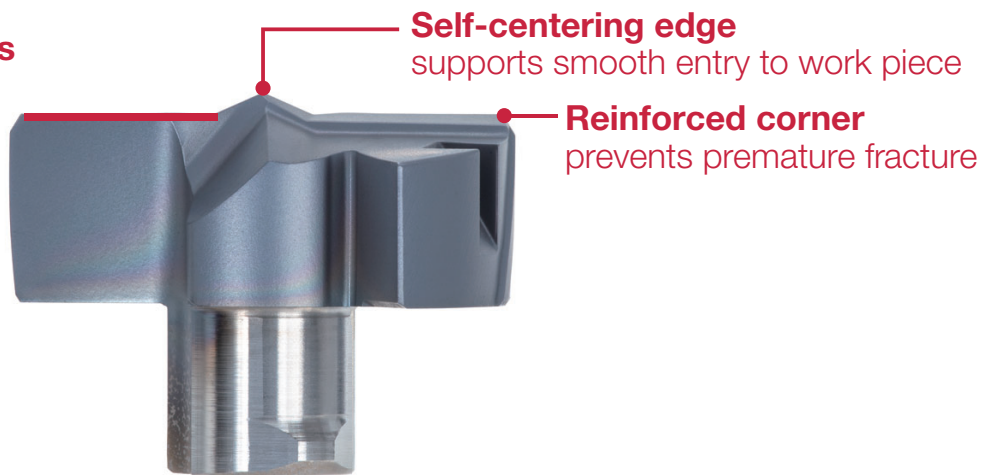
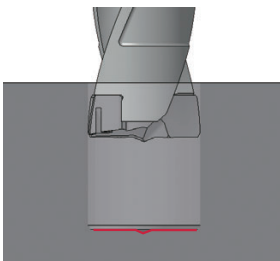
Optimized edge design for efficient drilling of flat-bottom holes

New

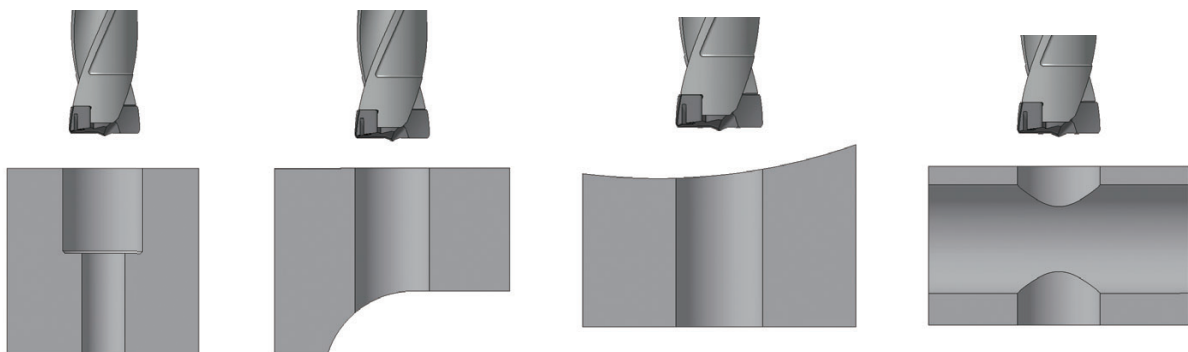
DMF DrillMeister flat head

- Flat edge design with pilot edge performs balanced drill entry
- Significantly reduced radial forces promise stable drilling for complex surfaces at drill entry and exit
- Stable drilling with long overhang up to $L/D = 8$ without pre-hole
- Uses existing standard TID body and key
- Prolonged tool life due to latest technology AH9130 grade

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

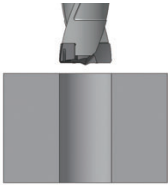
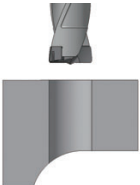
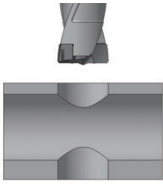
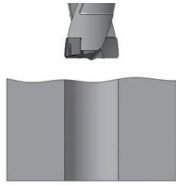
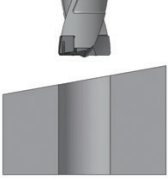
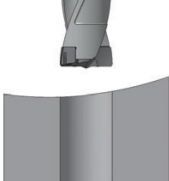
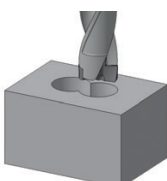
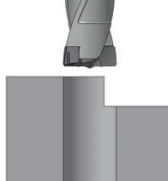


Solution for a wide application range of complex hole making processes:



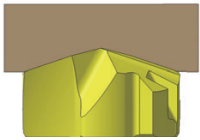
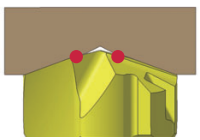

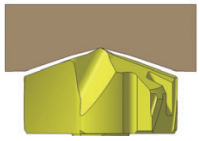
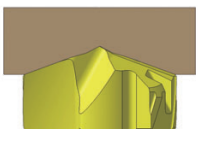


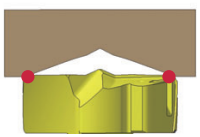

Application range and recommended tool lengths

Please use the shortest possible tool

Recommended L/D	≤ 8		≤ 5	
Application	Plane surface	Complex exit	Cross hole	Rough / cast surface
				
Recommended L/D	≤ 3		≤ 1.5	
Application	Slant surface	Round surface	Hole expansion	Plunging
				

- Maximum slant angle 12 degrees
- Feed rate should be decreased when drilling uneven surfaces
- Overlap should be under 30% of head dia. at hole expansion
- Plunging width should be max. 70% of head dia.

Head geometry combinations of pre-hole to main hole

		Pre-hole geometry		
		DMP	DMC	DMF
Main hole geometry	DMP	Good 	Not good 	Not good 
	DMC	Good 	Good 	Good 
	DMF	Not good 	Not good 	Good 

- Feed rate should be decreased when drill edge contact to pre-hole bottom

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

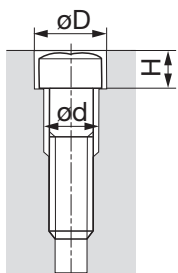
★ : First choice
☆ : Second choice

Designation	DC	LPR	Coated								CHW	PL	PDD	SSC	Pocket Size	Body
			AH9130													
DMF139	13.9	5.53	●								0.4	1.28	3.52	13	13	TID*135...
DMF140	14	5.96	●								0.4	1.31	3.81	14	14	TID*140...
DMF141	14.1	5.96	●								0.4	1.31	3.81	14	14	TID*140...
DMF142	14.2	5.96	●								0.4	1.31	3.81	14	14	TID*140...
DMF143	14.3	5.96	●								0.4	1.31	3.81	14	14	TID*140...
DMF144	14.4	5.96	●								0.4	1.31	3.81	14	14	TID*140...
DMF145	14.5	5.96	●								0.4	1.31	3.81	14	14	TID*145...
DMF150	15	6.43	●								0.4	1.35	4.24	15	15	TID*150...
DMF152	15.2	6.43	●								0.4	1.35	4.24	15	15	TID*150...
DMF155	15.5	6.43	●								0.4	1.35	4.24	15	15	TID*150...
DMF157	15.7	6.43	●								0.4	1.35	4.24	15	15	TID*150...
DMF158	15.8	6.43	●								0.4	1.35	4.24	15	15	TID*150...
DMF160	16	6.84	●								0.4	1.39	4.06	16	16	TID*160...
DMF161	16.1	6.84	●								0.4	1.39	4.06	16	16	TID*160...
DMF165	16.5	6.84	●								0.4	1.39	4.06	16	16	TID*160...
DMF167	16.7	6.84	●								0.4	1.39	4.06	16	16	TID*160...
DMF170	17	7.15	●								0.4	1.4	4.14	17	17	TID*170...
DMF175	17.5	7.15	●								0.4	1.4	4.14	17	17	TID*170...
DMF179	17.9	7.15	●								0.4	1.4	4.14	17	17	TID*170...
DMF180	18	7.45	●								0.4	1.42	4.16	18	18	TID*180...
DMF185	18.5	7.45	●								0.4	1.42	4.16	18	18	TID*180...
DMF190	19	7.79	●								0.4	1.44	4.25	19	19	TID*190...
DMF195	19.5	7.79	●								0.4	1.44	4.25	19	19	TID*190...
DMF198	19.8	7.79	●								0.4	1.44	4.25	19	19	TID*190...

ø6 - ø19.9 = 2 pieces per package

● : New product
● : Line up

Recommended dimensions for metric bolt heads



Screw size	M3	M4	M5	M6	M8	M10
øD (mm)	6.5	8	9.5	11	14	17.5
H (mm)	2.7	3.6	4.6	6.5	8.6	10.8
ød (mm)	3.4	4.5	5.5	6	9	11
Head	DMF065	DMF080	DMF095	DMF110	DMF140	DMF175
Tool	TID*065...	TID*080...	TID*095...	TID*110...	TID*140...	TID*170...

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Cutting speed Vc (m/min)	Feed: f (mm/rev)					
			DC (mm)					
			ø6 - ø7.9	ø8 - ø9.9	ø10 - ø11.9	ø12 - ø13.9	ø14 - ø15.9	ø16 - ø19.9
P	Low carbon steel (C < 0.3) (SS400 / St42-1, SM490 / St52-3, S25C / C25, etc.)	80 - 140	0.09 - 0.13	0.12 - 0.25	0.15 - 0.28	0.18 - 0.3	0.2 - 0.35	0.25 - 0.45
	High carbon steel (C > 0.3) (S45C / C45, S55C / C55, etc.)	70 - 120	0.09 - 0.13	0.12 - 0.25	0.15 - 0.28	0.18 - 0.3	0.2 - 0.35	0.25 - 0.45
	Low alloy steel (SCM415, etc.)	70 - 120	0.08 - 0.13	0.11 - 0.25	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.4
	Alloy steel (SCM440 / 42CrMo4, SCr420 / 20Cr4, etc.)	40 - 90	0.08 - 0.13	0.11 - 0.25	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.4
M	Stainless steel (SUS304 / X5CrNi18-9, SUS316 / X5CrNiMo17-12-2, etc.)	30 - 70	0.08 - 0.1	0.1 - 0.15	0.12 - 0.18	0.14 - 0.2	0.16 - 0.24	0.16 - 0.26
K	Grey cast iron (FC250 / GG25, etc.)	80 - 180	0.12 - 0.18	0.15 - 0.3	0.2 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.55
	Ductile cast iron (FCD700 / GGG70, etc.)	80 - 140	0.12 - 0.18	0.15 - 0.3	0.2 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.55
N	Aluminium alloys (ADC12, etc.)	80 - 220	0.1 - 0.2	0.2 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.5	0.4 - 0.6
S	Titanium alloys (Ti-6Al-4V, etc.)	20 - 50	0.05 - 0.07	0.06 - 0.12	0.08 - 0.15	0.1 - 0.18	0.12 - 0.2	0.14 - 0.22
	Nickel-based alloys	20 - 50	0.05 - 0.07	0.06 - 0.11	0.08 - 0.13	0.1 - 0.15	0.12 - 0.18	0.12 - 0.22
H	Hardened steel	20 - 50	0.05 - 0.07	0.06 - 0.12	0.08 - 0.15	0.1 - 0.18	0.12 - 0.2	0.14 - 0.22

- Cutting conditions in the above table show standard cutting conditions.
- Cutting conditions may change due to the rigidity and power of the machine and the workpiece material.

- Machined hole diameter may change depending upon the rigidity of the machine tool or cutting conditions.
- In case of L/D = 8 & 12 drill, the recommended range of cutting speeds and feeds is between the minimum and median values listed above.

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