

DrillLine

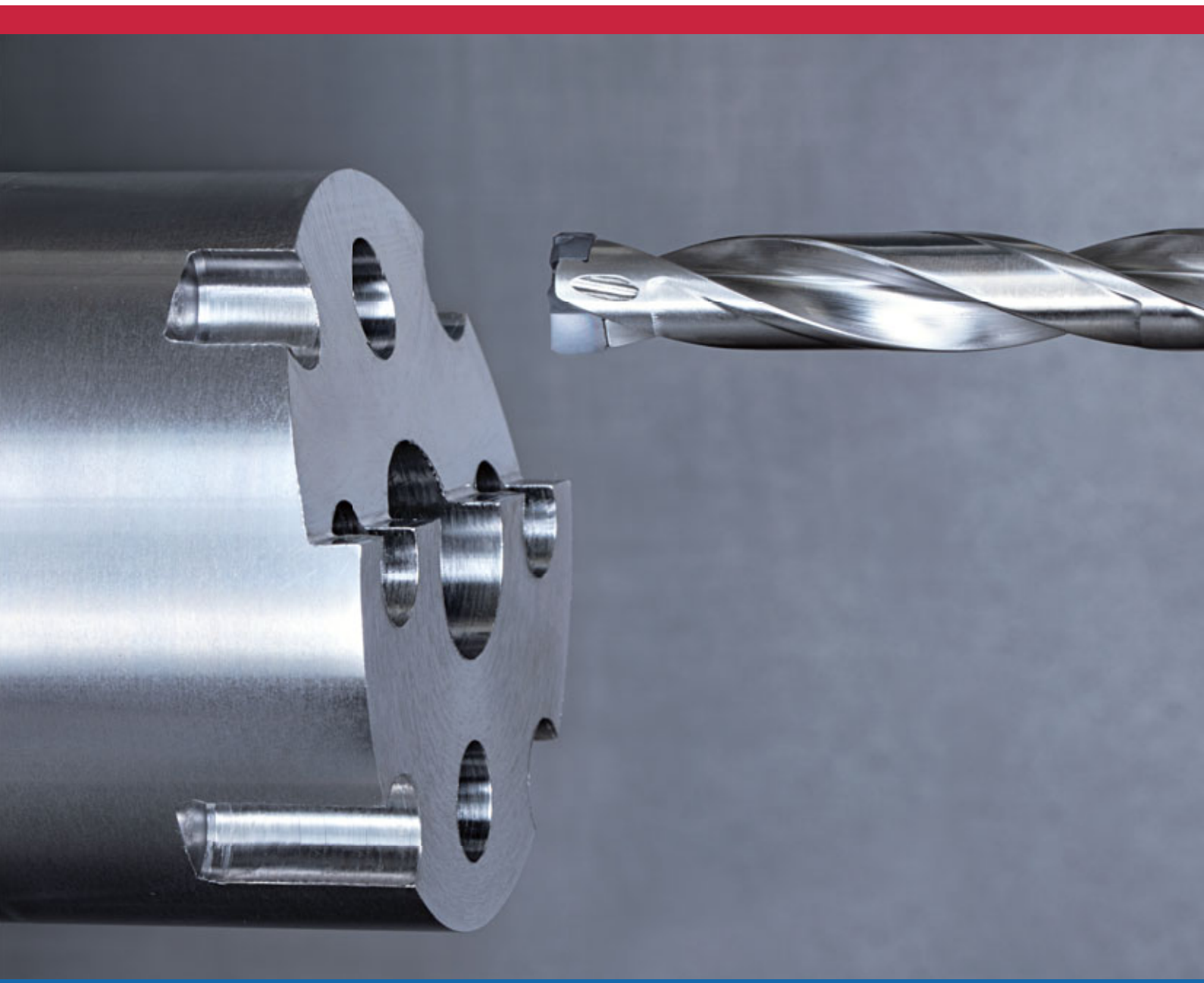


DRILLMEISTER

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Tungaloy Report No. 412S2-G

Irregular surface drilling made easy with
new flat-edged DMF drill head - \varnothing 10.0-19.8 mm



INDUSTRY 4.0
FEED the SPEED!



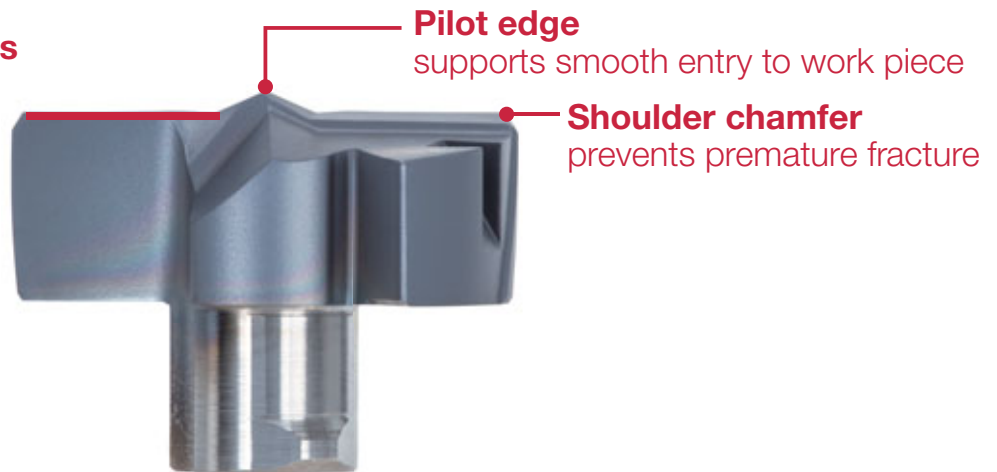
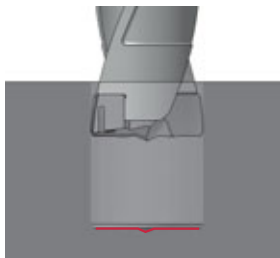
Optimized edge design for efficient drilling of flat-bottom holes

New

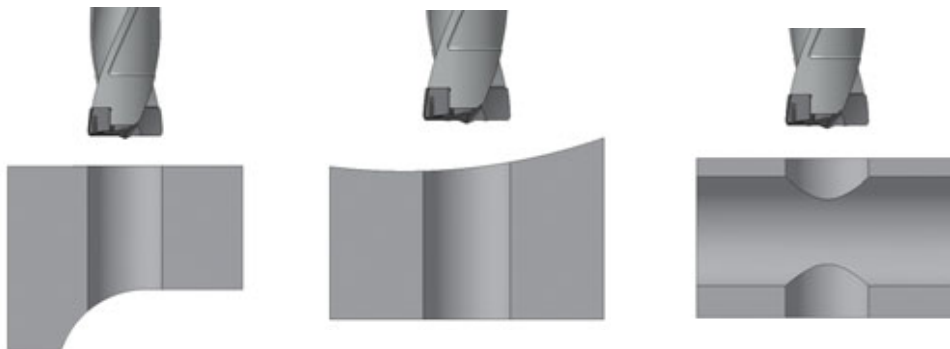
DMF DrillMeister flat head

- Flat edge design with pilot edge performs balanced drill entry
- Significantly reduced radial forces promise stable drilling for complex surface at drill entry and exit
- Stable drilling with long overhanging up to $L/D = 8$ without pre-hole

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

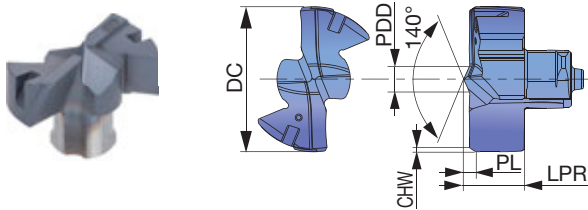


Solution for a wide application range of complex surfaces:



DRILL HEAD LINEUP

DMF Flat geometry head



Tool diameter	ø10 - ø17.9	ø18 - ø19.8
Head diameter tolerance	+0.018 / 0	+0.021 / 0

Designation	DC	Grade AH9130	PDD	LPR	PL	CHW	Pocket size	Body
DMF100	10	●	2.89	4.72	1.17	0.4	10	TID*100*
DMF101	10.1	●	2.89	4.72	1.17	0.4	10	TID*100*
DMF103	10.3	●	2.89	4.72	1.17	0.4	10	TID*100*
DMF104	10.4	●	2.89	4.72	1.17	0.4	10	TID*100*
DMF105	10.5	●	2.89	4.72	1.17	0.4	10	TID*105*
DMF106	10.6	●	2.89	4.72	1.17	0.4	10	TID*105*
DMF107	10.7	●	2.89	4.72	1.17	0.4	10	TID*105*
DMF108	10.8	●	2.89	4.72	1.17	0.4	10	TID*105*
DMF110	11	●	2.98	4.90	1.25	0.4	11	TID*110*
DMF115	11.5	●	2.98	4.90	1.25	0.4	11	TID*115*
DMF117	11.7	●	2.98	4.90	1.25	0.4	11	TID*115*
DMF120	12	●	3.13	5.21	1.26	0.4	12	TID*120*
DMF121	12.1	●	3.13	5.21	1.26	0.4	12	TID*120*
DMF122	12.2	●	3.13	5.21	1.26	0.4	12	TID*120*
DMF123	12.3	●	3.13	5.21	1.26	0.4	12	TID*120*
DMF124	12.4	●	3.13	5.21	1.26	0.4	12	TID*120*
DMF126	12.6	●	3.13	5.21	1.26	0.4	12	TID*125*
DMF127	12.7	●	3.13	5.21	1.26	0.4	12	TID*125*
DMF130	13	●	3.52	5.53	1.28	0.4	13	TID*130*
DMF131	13.1	●	3.52	5.53	1.28	0.4	13	TID*130*
DMF133	13.3	●	3.52	5.53	1.28	0.4	13	TID*130*
DMF135	13.5	●	3.52	5.53	1.28	0.4	13	TID*135*
DMF137	13.7	●	3.52	5.53	1.28	0.4	13	TID*135*
DMF138	13.8	●	3.52	5.53	1.28	0.4	13	TID*135*
DMF139	13.9	●	3.52	5.53	1.28	0.4	13	TID*135*
DMF140	14	●	3.81	5.96	1.31	0.4	14	TID*140*
DMF141	14.1	●	3.81	5.96	1.31	0.4	14	TID*140*
DMF142	14.2	●	3.81	5.96	1.31	0.4	14	TID*140*
DMF143	14.3	●	3.81	5.96	1.31	0.4	14	TID*140*
DMF144	14.4	●	3.81	5.96	1.31	0.4	14	TID*140*
DMF145	14.5	●	3.81	5.96	1.31	0.4	14	TID*145*
DMF150	15	●	4.24	6.43	1.35	0.4	15	TID*150*
DMF152	15.2	●	4.24	6.43	1.35	0.4	15	TID*150*
DMF155	15.5	●	4.24	6.43	1.35	0.4	15	TID*150*
DMF157	15.7	●	4.24	6.43	1.35	0.4	15	TID*150*
DMF158	15.8	●	4.24	6.43	1.35	0.4	15	TID*150*
DMF160	16	●	4.06	6.84	1.39	0.4	16	TID*160*
DMF161	16.1	●	4.06	6.84	1.39	0.4	16	TID*160*
DMF165	16.5	●	4.06	6.84	1.39	0.4	16	TID*160*
DMF167	16.7	●	4.06	6.84	1.39	0.4	16	TID*160*

Designation	DC	Grade AH9130	PDD	LPR	PL	CHW	Pocket size	Body
DMF170	17	●	4.14	7.15	1.4	0.4	17	TID*170*
DMF175	17.5	●	4.14	7.15	1.4	0.4	17	TID*170*
DMF179	17.9	●	4.14	7.15	1.4	0.4	17	TID*170*
DMF180	18	●	4.16	7.45	1.42	0.4	18	TID*180*
DMF185	18.5	●	4.16	7.45	1.42	0.4	18	TID*180*
DMF190	19	●	4.25	7.79	1.44	0.4	19	TID*190*
DMF195	19.5	●	4.25	7.79	1.44	0.4	19	TID*190*
DMF198	19.8	●	4.25	7.79	1.44	0.4	19	TID*190*

● Line up

Recommended countersink dimensions for metric bolt heads

Screw size	M6	M8	M10
øD (mm)	11	14	17.5
H (mm)	6.5	8.6	10.8
ød (mm)	6	9	11
Head	DMF110	DMF140	DMF175
Tool	TID*110...	TID*140...	TID*170...

STANDARD CUTTING CONDITIONS



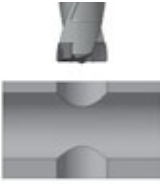




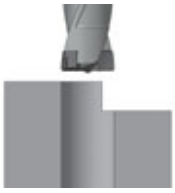
ISO	Workpiece materials	Cutting speed Vc (m/min)	Feed: f (mm/rev)			
			ø10 - ø11.9	ø12 - ø13.9	ø14 - ø15.9	ø16 - ø19.8
P	Low carbon steel (C < 0.3) (SS400 / St42-1, SM490 / St52-3, S25C / C25, etc.)	80 - 140	0.15 - 0.28	0.18 - 0.3	0.2 - 0.35	0.25 - 0.45
	High carbon steel (C > 0.3) (S45C / C45, S55C / C55, etc.)	70 - 120	0.15 - 0.28	0.18 - 0.3	0.2 - 0.35	0.25 - 0.45
	Low alloy steel (SCM415, etc.)	70 - 120	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	0.14 - 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	0.12 - 0.18	0.14 - 0.2	0.16 - 0.24	0.16 - 0.26
K	Grey cast iron (FC250 / GG25, etc.)	80 - 180	0.2 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.55
	Ductile cast iron (FCD700 / GGG70, etc.)	80 - 140	0.2 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.55
N	Aluminium alloys (ADC12, etc.)	80 - 220	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	0.08 - 0.15	0.1 - 0.18	0.12 - 0.2	0.14 - 0.22
	Nickel-based alloys	20 - 50	0.08 - 0.13	0.1 - 0.15	0.12 - 0.18	0.12 - 0.22
H	Hardened steel	20 - 50	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.










Application range and recommended tool lengths

Please use the shortest possible tool

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

- Maximum slant angle 12 deg
- Feed rate should be decrease when drilling un-even surface
- Overlap should be under 30% of head dia. at hole expansion
- Plunging width should be 70% of head dia.

Head combinations of pre-hole to main hole

		Pre-hole		
		DMP	DMC	DMF
Hole	DMP	Good 	Not good 	Not good 
	DMC	Good 	Good 	Good 
	DMF	Not good 	Not good 	Good 

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