

DrillLine

**DRILLMEISTER**

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Tungaloy Report No. 412S1-US



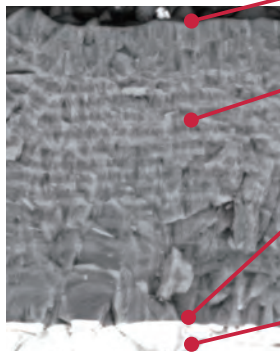
**Expansion of AH9130** with DMP head in  
range **ø0.394" - ø0.780" (ø10 mm - 19.8 mm)**



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

# Excellent wear resistance with unique multi-layered coating optimized for drilling applications

**New AH9130**



**Feature 1: Resistance to built up-edge**

Coating layer to resist built up-edge

**Feature 2: Resistance to wear, oxidation, and fracture**

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

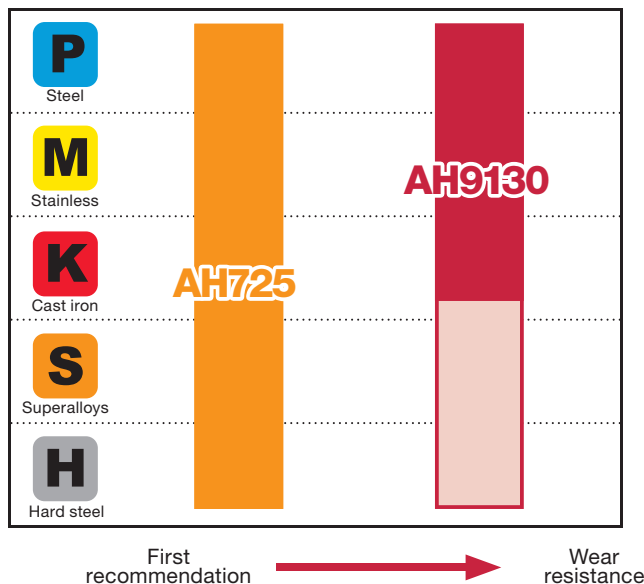
**Feature 3: Strong coating-substrate adhesion**

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

**Substrate**

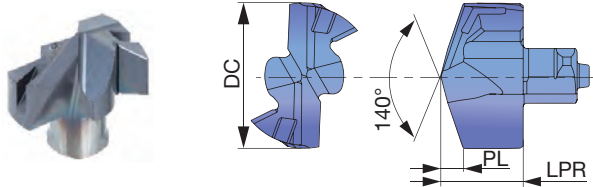
Carbide substrate features wear and fracture resistance

**Application range**



## DRILL HEAD

### DMP



Tool diameter (Inch)	ø0.236" - ø0.705"	ø0.709" - ø0.780"
Head diameter tolerance	+0.0007" / 0	+0.0008" / 0
Tool diameter (mm)	ø6 - ø17.9	ø18 - ø19.8
Head diameter tolerance	+0.018 / 0	+0.021 / 0

Designation	DC (in)	DC (mm)	Grade		LPR (mm)	PL (mm)	Pocket size	Body	Designation	DC (in)	DC (mm)	Grade		LPR (mm)	PL (mm)	Pocket size	Body
			AH725	AH9130								AH725	AH9130				
DMP100	0.394	10	●	●	6.1	1.47	10	TID*100*	DMP140	0.551	14	●	●	8	2.12	14	TID*140*
DMP101	0.398	10.1	●		6.1	1.49	10	TID*100*	DMP141	0.555	14.1	●		8	2.14	14	TID*140*
DMP102	0.402	10.2	●		6.1	1.51	10	TID*100*	DMP142	0.559	14.2	●	●	8	2.16	14	TID*140*
DMP103	0.406	10.3	●	●	6.1	1.52	10	TID*100*	DMP143	0.563	14.3	●	●	8	2.17	14	TID*140*
DMP104	0.409	10.4	●	●	6.1	1.54	10	TID*100*	DMP144	0.567	14.4	●		8	2.19	14	TID*140*
DMP105	0.413	10.5	●	●	6.1	1.56	10	TID*105*	DMP145	0.571	14.5	●	●	8	2.21	14	TID*145*
DMP106	0.417	10.6	●		6.1	1.58	10	TID*105*	DMP146	0.575	14.6	●		8	2.23	14	TID*145*
DMP107	0.421	10.7	●		6.1	1.6	10	TID*105*	DMP147	0.579	14.7	●		8	2.25	14	TID*145*
DMP108	0.425	10.8	●	●	6.1	1.62	10	TID*105*	DMP148	0.583	14.8	●		8	2.27	14	TID*145*
DMP109	0.429	10.9	●		6.1	1.63	10	TID*105*	DMP149	0.587	14.9	●		8	2.28	14	TID*145*
DMP110	0.433	11	●	●	6.5	1.67	11	TID*110*	DMP150	0.591	15	●	●	8.5	2.27	15	TID*150*
DMP111	0.437	11.1	●		6.5	1.69	11	TID*110*	DMP151	0.594	15.1	●		8.5	2.29	15	TID*150*
DMP112	0.441	11.2	●		6.5	1.71	11	TID*110*	DMP152	0.598	15.2	●	●	8.5	2.31	15	TID*150*
DMP113	0.445	11.3	●	●	6.5	1.72	11	TID*110*	DMP153	0.602	15.3	●	●	8.5	2.32	15	TID*150*
DMP114	0.449	11.4	●		6.5	1.74	11	TID*110*	DMP154	0.606	15.4	●		8.5	2.34	15	TID*150*
DMP115	0.453	11.5	●	●	6.5	1.76	11	TID*115*	DMP155	0.610	15.5	●	●	8.5	2.36	15	TID*150*
DMP116	0.457	11.6	●		6.5	1.78	11	TID*115*	DMP156	0.614	15.6	●		8.5	2.38	15	TID*150*
DMP117	0.461	11.7	●		6.5	1.8	11	TID*115*	DMP157	0.618	15.7	●		8.5	2.4	15	TID*150*
DMP118	0.465	11.8	●		6.5	1.82	11	TID*115*	DMP158	0.622	15.8	●	●	8.5	2.42	15	TID*150*
DMP119	0.469	11.9	●		6.5	1.83	11	TID*115*	DMP159	0.626	15.9	●		8.5	2.43	15	TID*150*
DMP120	0.472	12	●	●	6.8	1.82	12	TID*120*	DMP160	0.630	16	●	●	9.1	2.42	16	TID*160*
DMP121	0.476	12.1	●	●	6.8	1.84	12	TID*120*	DMP161	0.634	16.1	●	●	9.1	2.44	16	TID*160*
DMP122	0.480	12.2	●		6.8	1.86	12	TID*120*	DMP162	0.638	16.2	●		9.1	2.46	16	TID*160*
DMP123	0.484	12.3	●	●	6.8	1.87	12	TID*120*	DMP163	0.642	16.3	●	●	9.1	2.47	16	TID*160*
DMP124	0.488	12.4	●	●	6.8	1.89	12	TID*120*	DMP164	0.646	16.4	●		9.1	2.49	16	TID*160*
DMP125	0.492	12.5	●	●	6.8	1.91	12	TID*125*	DMP165	0.650	16.5	●	●	9.1	2.51	16	TID*160*
DMP126	0.496	12.6	●	●	6.8	1.93	12	TID*125*	DMP166	0.654	16.6	●	●	9.1	2.53	16	TID*160*
DMP127	0.500	12.7	●	●	6.8	1.95	12	TID*125*	DMP167	0.657	16.7	●	●	9.1	2.55	16	TID*160*
DMP128	0.504	12.8	●		6.8	1.97	12	TID*125*	DMP168	0.661	16.8	●		9.1	2.57	16	TID*160*
DMP129	0.508	12.9	●		6.8	1.98	12	TID*125*	DMP169	0.665	16.9	●		9.1	2.58	16	TID*160*
DMP130	0.512	13	●	●	7.4	1.96	13	TID*130*	DMP170	0.669	17	●	●	9.7	2.59	17	TID*170*
DMP131	0.516	13.1	●		7.4	1.98	13	TID*130*	DMP171	0.673	17.1	●		9.7	2.61	17	TID*170*
DMP132	0.520	13.2	●		7.4	2	13	TID*130*	DMP172	0.677	17.2	●		9.7	2.63	17	TID*170*
DMP133	0.524	13.3	●	●	7.4	2.01	13	TID*130*	DMP173	0.681	17.3	●		9.7	2.64	17	TID*170*
DMP134	0.528	13.4	●		7.4	2.03	13	TID*130*	DMP174	0.685	17.4	●		9.7	2.66	17	TID*170*
DMP135	0.531	13.5	●	●	7.4	2.05	13	TID*135*	DMP175	0.689	17.5	●	●	9.7	2.68	17	TID*170*
DMP136	0.535	13.6	●		7.4	2.07	13	TID*135*	DMP176	0.693	17.6	●		9.7	2.7	17	TID*170*
DMP137	0.539	13.7	●		7.4	2.09	13	TID*135*	DMP177	0.697	17.7	●		9.7	2.72	17	TID*170*
DMP138	0.543	13.8	●	●	7.4	2.11	13	TID*135*	DMP178	0.701	17.8	●		9.7	2.74	17	TID*170*
DMP139	0.547	13.9	●	●	7.4	2.12	13	TID*135*	DMP179	0.705	17.9	●	●	9.7	2.75	17	TID*170*

●: New ●: Line-up

Package Quantity: ø10 - ø19, 8 mm = 2 pcs.

Designation	DC (in)	DC (mm)	Grade		LPR (mm)	PL (mm)	Pocket size	Body
			AH725	AH9130				
DMP180	0.709	18	●	●	10.3	2.73	18	TID*180*
DMP181	0.713	18.1	●		10.3	2.75	18	TID*180*
DMP182	0.717	18.2	●		10.3	2.77	18	TID*180*
DMP183	0.720	18.3	●		10.3	2.78	18	TID*180*
DMP184	0.724	18.4	●		10.3	2.8	18	TID*180*
DMP185	0.728	18.5	●	●	10.3	2.82	18	TID*180*
DMP186	0.732	18.6	●		10.3	2.84	18	TID*180*
DMP187	0.736	18.7	●		10.3	2.86	18	TID*180*
DMP188	0.740	18.8	●		10.3	2.88	18	TID*180*
DMP189	0.744	18.9	●		10.3	2.89	18	TID*180*
DMP190	0.748	19	●	●	10.8	2.88	19	TID*190*
DMP191	0.752	19.1	●		10.8	2.9	19	TID*190*
DMP192	0.756	19.2	●		10.8	2.92	19	TID*190*
DMP1927	0.759	19.27	●		10.8	2.93	19	TID*190*
DMP193	0.760	19.3	●	●	10.8	2.93	19	TID*190*
DMP194	0.764	19.4	●	●	10.8	2.95	19	TID*190*
DMP195	0.768	19.5	●	●	10.8	2.97	19	TID*190*
DMP196	0.772	19.6	●		10.8	2.99	19	TID*190*
DMP197	0.776	19.7	●		10.8	3.01	19	TID*190*
DMP198	0.780	19.8	●	●	10.8	3.03	19	TID*190*

●: New ●: Line-up  
 Package Quantity: ø10 - ø19.8 mm = 2 pcs.


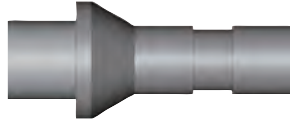
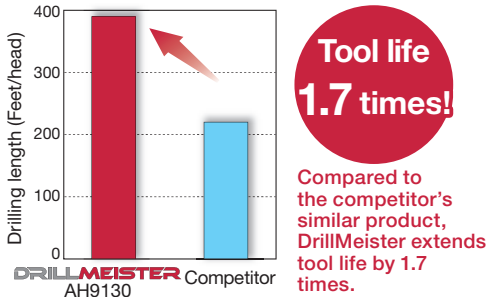
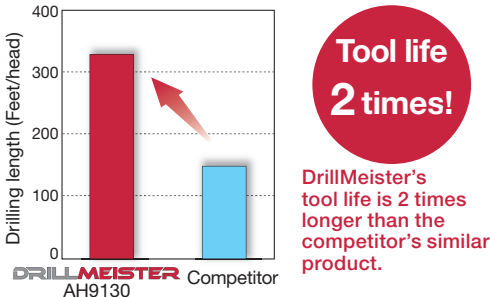

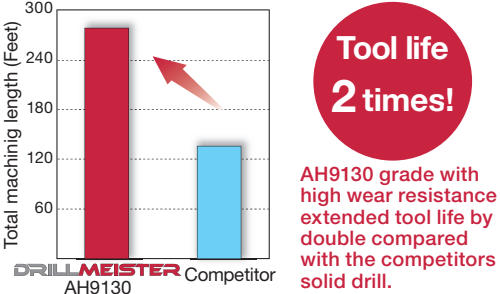
## STANDARD CUTTING CONDITIONS

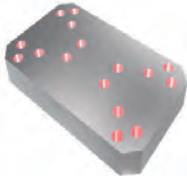

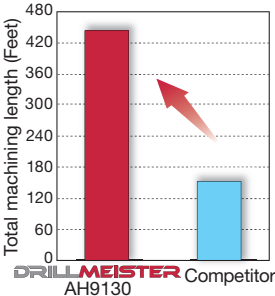
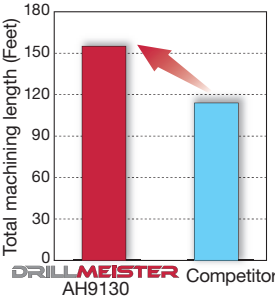
ISO	Workpiece materials	Priority	Grade	Cutting speed Vc (sfm)	Feed: f (ipr) DC (in)						
					ø0.236 - 0.311	ø0.315 - 0.390	ø0.394 - ø0.469	ø0.472 - ø0.547	ø0.551 - ø0.626	ø0.630 - ø0.783	ø0.787 - ø1.020
<b>P</b>	Low carbon steel (C < 0.3) 1018, 1020, 1026, etc.	First choice	AH725	262 - 459	0.004 -	0.005 -	0.006 -	0.007 -	0.008 -	0.010 -	0.010 -
		Wear resistance	AH9130		0.005	0.010	0.011	0.012	0.014	0.018	0.018
	High carbon steel (C > 0.3) 1045, 1055, etc.	First choice	AH725	230 - 394	0.004 -	0.005 -	0.006 -	0.007 -	0.008 -	0.010 -	0.010 -
		Wear resistance	AH9130		0.005	0.010	0.011	0.012	0.014	0.018	0.018
	Low alloy steel 5120, etc.	First choice	AH725	230 - 394	0.003 -	0.004 -	0.006 -	0.006 -	0.007 -	0.009 -	0.010 -
		Wear resistance	AH9130		0.005	0.010	0.011	0.013	0.014	0.016	0.018
	Alloy steel 4140, 8620, etc.	First choice	AH725	131 - 295	0.003 -	0.004 -	0.006 -	0.006 -	0.007 -	0.009 -	0.010 -
		Wear resistance	AH9130		0.005	0.010	0.011	0.013	0.014	0.016	0.018
<b>M</b>	Stainless steel 304SS, 316SS, 17-4PH, etc.	First choice	AH725	98 - 230	0.003 -	0.004 -	0.005 -	0.006 -	0.006 -	0.006 -	0.007 -
		Wear resistance	AH9130		0.004	0.006	0.007	0.008	0.009	0.010	0.012
<b>K</b>	Gray cast iron Class 25, Class 30, etc.	First choice	AH725	262 - 591	0.005 -	0.006 -	0.008 -	0.010 -	0.012 -	0.014 -	0.014 -
		Wear resistance	AH9130		0.007	0.012	0.014	0.016	0.018	0.022	0.024
	Ductile cast iron 60-40-18, 60-55-06, etc.	First choice	AH725	262 - 459	0.005 -	0.006 -	0.008 -	0.010 -	0.012 -	0.014 -	0.014 -
		Wear resistance	AH9130		0.007	0.012	0.014	0.016	0.018	0.022	0.024
<b>N</b>	Aluminum alloys 6061, 7075, etc.	First choice	AH725	262 - 722	0.004 -	0.008 -	0.010 -	0.012 -	0.014 -	0.016 -	0.020 -
		Wear resistance	AH9130		0.008	0.014	0.016	0.018	0.020	0.024	0.030
<b>S</b>	Titanium alloys Ti-6Al-4V, etc.	First choice	AH725	66 - 164	0.002 -	0.002 -	0.003 -	0.004 -	0.005 -	0.006 -	0.007 -
		Wear resistance	AH9130		0.003	0.005	0.006	0.011	0.008	0.009	0.011
	Nickel-based alloys	First choice	AH725	66 - 164	0.002 -	0.002 -	0.003 -	0.004 -	0.005 -	0.005 -	0.006 -
		Wear resistance	AH9130		0.003	0.004	0.005	0.006	0.007	0.009	0.009
<b>H</b>	Hardened steel	First choice	AH725	66 - 164	0.002 -	0.002 -	0.003 -	0.004 -	0.005 -	0.006 -	0.006 -
		Wear resistance	AH9130		0.003	0.005	0.006	0.007	0.008	0.009	0.010

- 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.

## PRACTICAL EXAMPLES

Workpiece type		Out put shaft	Drive pinion shaft
Drill body		TIDC160C16-5	TIDU0630F0750-5
Head		DMP165 AH9130	DMP160 AH9130
		4142	Low carbon alloy
Workpiece material		 <b>P</b>	 <b>P</b>
Cutting conditions	Cutting speed: $V_c$ (sfm)	262	361
	Feed : $f$ (ipr)	0.007	0.010
	Feed speed : $V_f$ (ipm)	11	22
	Drill diameter : $\phi D_c$ (in)	0.618	0.630
	Hole depth : $H$ (in)	1.181	2.843
	Machine	Vertical M/C	NC lathe
Coolant		Wet (Internal)	Wet (Internal)
Results			
Workpiece type		Hub	
Drill body		TIDU0413F0625-3	
Head		DMP108 AH9130	
		S35C	
Workpiece material		 <b>P</b>	
Cutting conditions	Cutting speed: $V_c$ (sfm)	295	
	Feed : $f$ (ipr)	0.007	
	Feed speed : $V_f$ (ipm)	18.807	
	Drill diameter : $\phi D_c$ (in)	0.425	
	Hole depth : $H$ (in)	0.512	
	Machine	Vertical M/C	
Coolant		Wet (External)	
Results			

Workpiece type		Plate	Pin
Drill body		TIDU0748F1000-3	TIDU0591F0750-8
Head		DMP9130 AH9130	DMP150 AH9130
Workpiece material		HT590	1026
		 <b>P</b>	 <b>P</b>
Cutting conditions	Cutting speed: $V_c$ (sfm)	177	394
	Feed : $f$ (ipr)	0.009	0.008
	Feed speed : $V_f$ (ipm)	7.839	20.063
	Drill diameter : $\phi D_c$ (in)	0.748	0.591
	Hole depth : $H$ (in)	1.181	3.740
	Machine	Vertical M/C	NC lathe
Coolant		Wet (Internal)	Wet (Internal)
Results		 <p><b>Tool life 3 times!</b></p> <p>DrillMeister's tool life with AH9130 is 3 times longer than the competitor's similar product.</p>	 <p><b>Tool life 1.4 times!</b></p> <p>Grade AH9130 had 1.4 times longer tool life compared to the competitor's similar product.</p>

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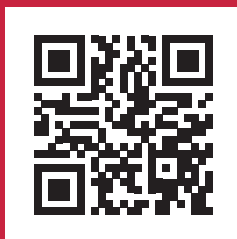
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