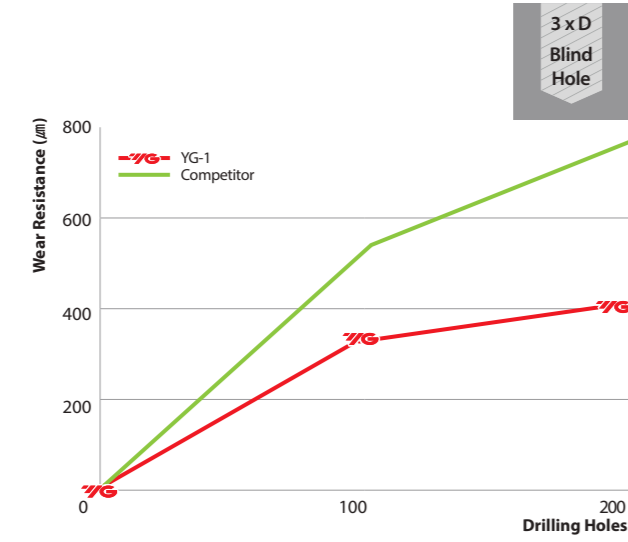


## MULTI-1 DRILLS CASE STUDY

### ▶ Ø8.0mm, Steel

Tool	YG-1 CDRA03080	Competitor
O.D Size	Ø8.0	
Work Material	DIN: X155CrVMo121 AISI: D2 JIS: SKD11(HRc20)	
Cutting Speed	15 m/min. (49.2 ft/min.)	
RPM	600 rev./min.	
Feed	0.18 mm/rev. (0.0071 in/rev.)	
Drilling Method	Blind Hole / without Pecking	
Drilling Depth	24.0 mm (3XD)	
Cooling Method	External Cooling Water Soluble (9% Emulsion)	
Machine	Machining Center	



YG-1

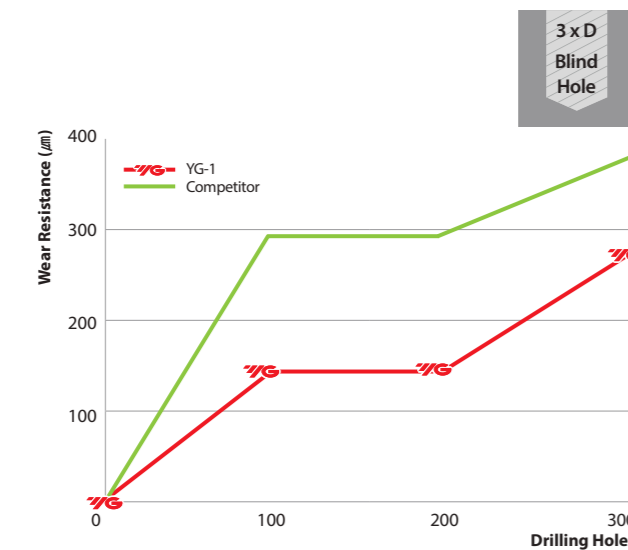


Competitor



### ▶ Ø8.0mm, Stainless Steel

Tool	YG-1 CDRA03080	Competitor
O.D Size	Ø8.0	
Work Material	DIN: X5CrNiMo17-12-2 AISI: 316 JIS: SUS316(HRc10)	
Cutting Speed	15 m/min. (49.2 ft/min.)	
RPM	600 rev./min.	
Feed	0.18 mm/rev. (0.0071 in/rev.)	
Drilling Method	Blind Hole / without Pecking	
Drilling Depth	24.0 mm (3XD)	
Cooling Method	External Cooling Water Soluble (9% Emulsion)	
Machine	Machining Center	



YG-1



Competitor



## YE-ML20



# MULTI-1 DRILLS

TiAlN Coated HSS-PM Drills

Wide range of work materials;  
Carbon Steels, Alloy Steels, Structural Steels,  
Hardened Steels(HRc 30-45), Cast Iron, Stainless  
Steels, Aluminum and Titanium

## MULTI-1 DRILLS FEATURES & CUTTING CONDITION

Wide range of  
work materials  
**P M K N S**

Carbon Steels, Alloy Steels, Structural Steels,  
Hardened Steels(HRc 30-45), Cast Iron, Stainless  
Steels, Aluminum and Titanium



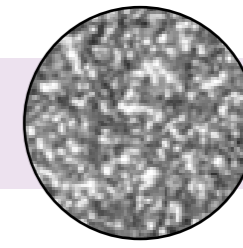
### Point Shape to Maximize Self-centering

▶ Excellent positioning - bushing is not necessary



### Flute Design for the Best Chip Evacuation

▶ Prevent chip clogging and reduce axial thrust



### Premium Powder Material with Excellent Toughness

▶ Improve cutting edge strength with higher stability and rigidity

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm)									
					2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0		
P	1	Non-alloy steel	40	RPM	6370	4240	3180	2550	2120	1590	1270	1060		
			FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30			
			35	RPM	5570	3710	2790	2230	1860	1390	1110	930		
	2		FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30			
			35	RPM	5570	3710	2790	2230	1860	1390	1110	930		
			FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30			
	3		FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30			
			6	Low alloy steel	35	RPM	5570	3710	2790	2230	1860	1390	1110	930
					FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30	
30	RPM	4770			3180	2390	1910	1590	1190	950	800			
7	FEED	0.03-0.05	0.06-0.10		0.07-0.13	0.10-0.16	0.12-0.18	0.14-0.20	0.14-0.24	0.16-0.26				
	8	Titanium Alloys	25		RPM	3980	2650	1990	1590	1330	990	800	660	
			FEED		0.02-0.05	0.03-0.07	0.04-0.10	0.06-0.12	0.07-0.13	0.10-0.20	0.12-0.22	0.14-0.24		
20			RPM		3180	2120	1590	1270	1060	800	640	530		
9	FEED		0.02-0.05		0.03-0.07	0.04-0.10	0.06-0.12	0.07-0.13	0.10-0.20	0.12-0.22	0.14-0.24			
	12		Stainless steel		20	RPM	3180	2120	1590	1270	1060	800	640	530
				FEED	0.03-0.07	0.05-0.09	0.06-0.12	0.09-0.15	0.12-0.18	0.18-0.24	0.20-0.30	0.26-0.36		
15				RPM	2390	1590	1190	950	800	600	480	400		
14	FEED			0.02-0.05	0.03-0.07	0.04-0.10	0.06-0.12	0.07-0.13	0.10-0.20	0.12-0.22	0.14-0.24			
	15			Grey cast iron	40	RPM	6370	4240	3180	2550	2120	1590	1270	1060
		FEED			0.04-0.10	0.07-0.13	0.09-0.15	0.12-0.18	0.13-0.19	0.18-0.24	0.20-0.30	0.22-0.32		
90		RPM			14320	9550	7160	5730	4770	3580	2860	2390		
21	Aluminum-wrought alloy	FEED			0.13-0.17	0.23-0.27	0.27-0.33	0.33-0.39	0.40-0.46	0.45-0.51	0.51-0.61	0.63-0.73		
		90			RPM	14320	9550	7160	5730	4770	3580	2860	2390	
		FEED	0.13-0.17		0.23-0.27	0.27-0.33	0.33-0.39	0.40-0.46	0.45-0.51	0.51-0.61	0.63-0.73			
22		Aluminum-cast, alloyed	80		RPM	12730	8490	6370	5090	4240	3180	2550	2120	
			FEED		0.13-0.17	0.23-0.27	0.27-0.33	0.33-0.39	0.40-0.46	0.45-0.51	0.51-0.61	0.63-0.73		
			70		RPM	11140	7430	5570	4460	3710	2790	2230	1860	
23			FEED	0.10-0.14	0.15-0.19	0.20-0.26	0.24-0.30	0.28-0.34	0.30-0.36	0.34-0.44	0.36-0.46			
			24	Titanium Alloys	800	RPM	800	530	400	320	270	200	160	130
					FEED	0.02-0.05	0.03-0.07	0.04-0.08	0.06-0.12	0.07-0.13	0.09-0.15	0.12-0.22	0.14-0.24	
5	FEED				0.02-0.05	0.03-0.07	0.04-0.08	0.06-0.12	0.07-0.13	0.09-0.15	0.12-0.22	0.14-0.24		

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