



Leading Through Innovation

A close-up photograph of a YMG HSS-PM Multi-1 drill bit being used to drill a hole in a metal plate. The drill bit is dark blue and has a double-flute design. Two other drill bits of different sizes are standing upright in the background. The metal plate has several pre-drilled holes and a larger central hole. A small chip of metal is visible near the drill bit.

HSS-PM

MULTI-1 DRILLS

MULTI-1 BOHRER

- Premium HSS-PM Drills
For Wide Range of Applications Particularly Stainless Steels and Titanium
- HSS-PM Bohrer
Für ein breites Anwendungsspektrum, insbesondere Edelstahl und Titan

A162 phone:+82-32-526-0909, www.yg1.solutions, E-mail:yg1@yg1.solutions **YG-1 CO., LTD.**

YG-1 CO., LTD. phone:+82-32-526-0909, www.yg1.solutions, E-mail:yg1@yg1.solutions **A163**

CARBIDE

HSS

MULTI-1 DRILLS

CDRA03 SERIES

HSS-PM, MULTI-1 DRILLS

HSS-PM MULTI-1 BOHRER

Forets MULTI-1 HSS-PM Premium, série extra-courte

PUNTA GAMBO CILINDRICO MULTI-1, HSS-PM

STUB

EXTRA KURZ

EXTRA-COURTE

EXTRA CORTA

►Application

: Structural steels, Carbon steels, Alloy steels, Pre-hardened steels, Mold steels, Stainless steels, Hardened steels(HRc30~45), Cast iron, Aluminum alloys, Nonferrous alloys, Titanium.

►Advantage

: Point shape to maximize self-centering. Flute design for the best chip evacuation. Premium powder materials with excellent toughness.

►Anwendung

: Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRc30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.

►Vorteile

: Maximale Selbstzentrierung durch besonderen Spitzenanschliff Bohrergeometrie für optimale Spanabfuhr. Premium Pulverstahl mit ausgezeichneter Zähigkeit.

up to 1.4mm

over 1.4mm

HSS PM

30°

h6

h7

118°

135°

TiAIN

p.A169

Recommended ToolHolder

Plain Shank

HYDRAULIC CHUCK

up to 1.9mm

over 1.9mm

Unit : mm				
EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAIN	D1	D2	L1	L2
CDRA03058	5.8	6	28	72
CDRA03059	5.9	6	28	72
CDRA03060	6.0	6	28	72
CDRA03061	6.1	8	31	75
CDRA03062	6.2	8	31	75
CDRA03063	6.3	8	31	75
CDRA03064	6.4	8	31	75
CDRA03065	6.5	8	31	75
CDRA03066	6.6	8	31	75
CDRA03067	6.7	8	31	75
CDRA03068	6.8	8	34	78
CDRA03069	6.9	8	34	78
CDRA03070	7.0	8	34	78
CDRA03071	7.1	8	34	78
CDRA03072	7.2	8	34	78
CDRA03073	7.3	8	34	78
CDRA03074	7.4	8	34	78
CDRA03075	7.5	8	34	78
CDRA03076	7.6	8	37	81
CDRA03077	7.7	8	37	81
CDRA03078	7.8	8	37	81
CDRA03079	7.9	8	37	81
CDRA03080	8.0	8	37	81
CDRA03081	8.1	10	37	87

Unit : mm				
EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAIN	D1	D2	L1	L2
CDRA03082	8.2	10	37	87
CDRA03083	8.3	10	37	87
CDRA03084	8.4	10	37	87
CDRA03085	8.5	10	37	87
CDRA03086	8.6	10	40	90
CDRA03087	8.7	10	40	90
CDRA03088	8.8	10	40	90
CDRA03089	8.9	10	40	90
CDRA03090	9.0	10	40	90
CDRA03091	9.1	10	40	90
CDRA03092	9.2	10	40	90
CDRA03093	9.3	10	40	90
CDRA03094	9.4	10	40	90
CDRA03095	9.5	10	40	90
CDRA03096	9.6	10	43	93
CDRA03097	9.7	10	43	93
CDRA03098	9.8	10	43	93
CDRA03099	9.9	10	43	93
CDRA03100	10.0	10	43	93
CDRA03101	10.1	12	43	100
CDRA03102	10.2	12	43	100
CDRA03103	10.3	12	43	100
CDRA03104	10.4	12	43	100
CDRA03105	10.5	12	43	100

► NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M			K							
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	○			◎	○	○	○			○		◎	○						

ISO	N										S						H							
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41			
HRc											15	30	25	38	34			55	60	42	55			
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550			
Recommended	◎	◎	○	○												○								

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h6

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135°

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up to 1.9mm

over 1.9mm

Unit : mm				
EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAIN	D1	D2	L1	L2
CDRA03106	10.6	12	43	100
CDRA03107	10.7	12	47	104
CDRA03108	10.8	12	47	104
CDRA03109	10.9	12	47	104
CDRA03110	11.0	12	47	104
CDRA03111	11.1	12	47	104
CDRA03112	11.2	12	47	104
CDRA03113	11.3	12	47	104
CDRA03114	11.4	12	47	104
CDRA03115	11.5	12	47	104
CDRA03116	11.6	12	47	104
CDRA03117	11.7	12	47	104
CDRA03118	11.8	12	47	104
CDRA03119	11.9	12	51	108
CDRA03120	12.0	12	51	108
CDRA03121	12.1	12	51	108
CDRA03122	12.2	12	51	108
CDRA03123	12.3	12	51	108
CDRA03124	12.4	12	51	108
CDRA03125	12.5	12	51	108

Unit : mm				
EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAIN	D1	D2	L1	L2
CDRA03126	12.6	12	51	108
CDRA03127	12.7	12	51	108
CDRA03128	12.8	12	51	108
CDRA03129	12.9	12	51	108
CDRA03130	13.0	12	51	108

◎ : Excellent ○ : Good

ISO	P										M			K							
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	○			◎	○	○	○			○		◎	○						

ISO	N										S						H							
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41			
HRc											15	30	25	38	34			55	60	42	55			
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550			
Recommended	◎	◎	○	○												○								

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Unit : mm				
EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAIN	D1	D2	L1	L2
CDRA03106	10.6	12	43	100
CDRA03107	10.7	12	47	104
CDRA03108	10.8	12	47	104
CDRA03109	10.9	12	47	104
CDRA03110	11.0	12	47	104
CDRA03111	11.1	12	47	104
CDRA03112	11.2	12	47	104
CDRA03113	11.3	12	47	104
CDRA03114	11.4	12	47	104
CDRA03115	11.5	12	47	104
CDRA03116	11.6	12	47	104
CDRA03117	11.7	12	47	104
CDRA03118	11.8	12	47	104
CDRA03119	11.9	12	51	108
CDRA03120	12.0	12	51	108
CDRA03121	12.1	12	51	108
CDRA03122	12.2	12	51	108
CDRA03123	12.3	12	51	108
CDRA03124	12.4	12	51	108
CDRA03125	12.5	12	51	108

Unit : mm				
EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAIN	D1	D2	L1	L2
CDRA03126	12.6	12	51	108
CDRA03127	12.7	12	51	108
CDRA03128	12.8	12	51	108
CDRA03129	12.9	12	51	108
CDRA03130	13.0	12	51	108

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ISO	P										M			K							
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HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	○			◎	○	○	○			○		◎	○						

ISO	N										S						H							
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41			
HRc											15	30	25	38	34			55	60	42	55			
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550			
Recommended	◎	◎	○	○												○								

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►Vorteile

: Maximale Selbstzentrierung durch besonderen Spitzenanschliff Bohrerge

**JOBBER**

**KURZ
COURTE
CORTA**

► Anwendung	: Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRC30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.
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				Unit : mm
EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAIN	D1	D2	L1	L2
CDRA04092	9.2	10	81	131
CDRA04093	9.3	10	81	131
CDRA04094	9.4	10	81	131
CDRA04095	9.5	10	81	131
CDRA04096	9.6	10	87	137
CDRA04097	9.7	10	87	137
CDRA04098	9.8	10	87	137
CDRA04099	9.9	10	87	137
CDRA04100	10.0	10	87	137
CDRA04101	10.1	12	87	144
CDRA04102	10.2	12	87	144
CDRA04103	10.3	12	87	144
CDRA04104	10.4	12	87	144
CDRA04105	10.5	12	87	144
CDRA04106	10.6	12	87	144
CDRA04107	10.7	12	94	151
CDRA04108	10.8	12	94	151
CDRA04109	10.9	12	94	151
CDRA04110	11.0	12	94	151
CDRA04111	11.1	12	94	151
CDRA04112	11.2	12	94	151
CDRA04113	11.3	12	94	151
CDRA04114	11.4	12	94	151
CDRA04115	11.5	12	94	151

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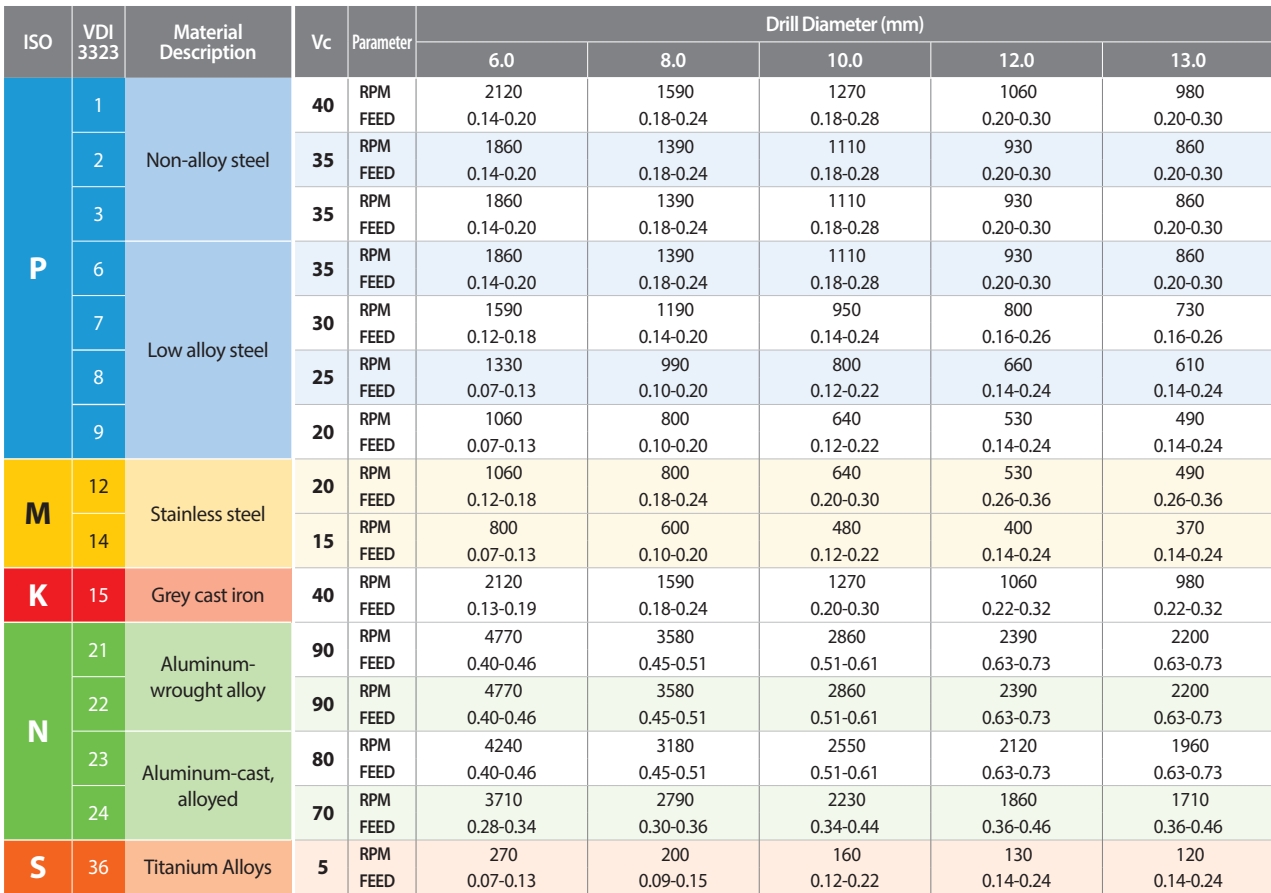
◎ : Excellent ○ : Good

ISO	P										M				K								
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230			
Recommended	⊙	⊙	○			⊙		○	○			○		⊙	○								
ISO	N										S						H						
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)				Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
HRc											15	30	25	38	34			55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550		
Recommended	⊙	⊙	○	○												○							

MULTI-1 DRILLS **RECOMMENDED CUTTING CONDITIONS** **EMPFOHLENE SCHNEIDPARAMETER**

CDRA03, CDRA04 SERIES **MULTI-1 DRILLS**

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm)	Vc	Parameter	Drill Diameter (mm)			
					1.0			2.0	3.0	4.0	5.0
P	1	Non-alloy steel	30	RPM FEED	9550 0.01-0.03	40	RPM FEED	6370 0.03-0.06	4240 0.08-0.12	3180 0.09-0.15	2550 0.12-0.18
	2		28	RPM FEED	8910 0.01-0.03	35	RPM FEED	5570 0.03-0.06	3710 0.08-0.12	2790 0.09-0.15	2230 0.12-0.18
	3		28	RPM FEED	8910 0.01-0.03	35	RPM FEED	5570 0.03-0.06	3710 0.08-0.12	2790 0.09-0.15	2230 0.12-0.18
	6	Low alloy steel	28	RPM FEED	8910 0.01-0.03	35	RPM FEED	5570 0.03-0.06	3710 0.08-0.12	2790 0.09-0.15	2230 0.12-0.18
	7		23	RPM FEED	7320 0.01-0.03	30	RPM FEED	4770 0.03-0.05	3180 0.06-0.10	2390 0.07-0.13	1910 0.10-0.16
	8		20	RPM FEED	6370 0.01-0.02	25	RPM FEED	3980 0.02-0.05	2650 0.03-0.07	1990 0.04-0.10	1590 0.06-0.12
	9		15	RPM FEED	4770 0.01-0.02	20	RPM FEED	3180 0.02-0.05	2120 0.03-0.07	1590 0.04-0.10	1270 0.06-0.12
M	12	Stainless steel	15	RPM FEED	4770 0.01-0.03	20	RPM FEED	3180 0.03-0.07	2120 0.05-0.09	1590 0.06-0.12	1270 0.09-0.15
	14		13	RPM FEED	4140 0.01-0.02	15	RPM FEED	2390 0.02-0.05	1590 0.03-0.07	1190 0.04-0.10	950 0.06-0.12
K	15	Grey cast iron	30	RPM FEED	9550 0.02-0.04	40	RPM FEED	6370 0.04-0.10	4240 0.07-0.13	3180 0.09-0.15	2550 0.12-0.18
N	21	Aluminum-wrought alloy	68	RPM FEED	21650 0.09-0.13	90	RPM FEED	14320 0.13-0.17	9550 0.23-0.27	7160 0.27-0.33	5730 0.33-0.39
	22		68	RPM FEED	21650 0.09-0.13	90	RPM FEED	14320 0.13-0.17	9550 0.23-0.27	7160 0.27-0.33	5730 0.33-0.39
	23	Aluminum-cast, alloyed	60	RPM FEED	19100 0.09-0.13	80	RPM FEED	12730 0.13-0.17	8490 0.23-0.27	6370 0.27-0.33	5090 0.33-0.39
	24		55	RPM FEED	17510 0.06-0.10	70	RPM FEED	11140 0.10-0.14	7430 0.15-0.19	5570 0.20-0.26	4460 0.24-0.30
S	36	Titanium Alloys	5	RPM FEED	1590 0.01-0.02	5	RPM FEED	800 0.02-0.05	530 0.03-0.07	400 0.04-0.08	320 0.06-0.12

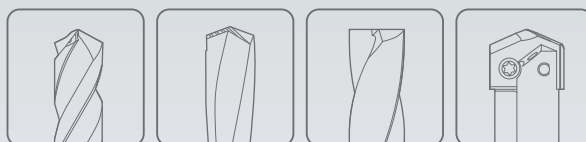


ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm)					
					6.0	8.0	10.0	12.0	13.0	
P	1	Non-alloy steel	40	RPM	2120	1590	1270	1060	980	
				FEED	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30	0.20-0.30	
	2		35	RPM	1860	1390	1110	930	860	
				FEED	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30	0.20-0.30	
	3	35	RPM	1860	1390	1110	930	860		
			FEED	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30	0.20-0.30		
	6	Low alloy steel	35	RPM	1860	1390	1110	930	860	
				FEED	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30	0.20-0.30	
			7	30	RPM	1590	1190	950	800	730
					FEED	0.12-0.18	0.14-0.20	0.14-0.24	0.16-0.26	0.16-0.26
8	25		RPM	1330	990	800	660	610		
			FEED	0.07-0.13	0.10-0.20	0.12-0.22	0.14-0.24	0.14-0.24		
9	20		RPM	1060	800	640	530	490		
			FEED	0.07-0.13	0.10-0.20	0.12-0.22	0.14-0.24	0.14-0.24		
M	12	Stainless steel	20	RPM	1060	800	640	530	490	
				FEED	0.12-0.18	0.18-0.24	0.20-0.30	0.26-0.36	0.26-0.36	
14	15		RPM	800	600	480	400	370		
			FEED	0.07-0.13	0.10-0.20	0.12-0.22	0.14-0.24	0.14-0.24		
K	15	Grey cast iron	40	RPM	2120	1590	1270	1060	980	
				FEED	0.13-0.19	0.18-0.24	0.20-0.30	0.22-0.32	0.22-0.32	
N	21	Aluminum-wrought alloy	90	RPM	4770	3580	2860	2390	2200	
				FEED	0.40-0.46	0.45-0.51	0.51-0.61	0.63-0.73	0.63-0.73	
	22		90	RPM	4770	3580	2860	2390	2200	
				FEED	0.40-0.46	0.45-0.51	0.51-0.61	0.63-0.73	0.63-0.73	
	23	Aluminum-cast, alloyed	80	RPM	4240	3180	2550	2120	1960	
				FEED	0.40-0.46	0.45-0.51	0.51-0.61	0.63-0.73	0.63-0.73	
24	70		RPM	3710	2790	2230	1860	1710		
			FEED	0.28-0.34	0.30-0.36	0.34-0.44	0.36-0.46	0.36-0.46		
S	36	Titanium Alloys	5	RPM	270	200	160	130	120	
				FEED	0.07-0.13	0.09-0.15	0.12-0.22	0.14-0.24	0.14-0.24	

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