BEST VALUE IN THE WORLD OF CUTTING TOOLS



MULTI-1 DRILLS

TiAlN Coated HSS-PM Drills

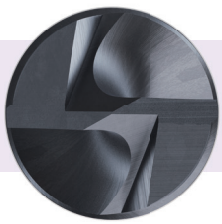
Wide range of work materials;
Carbon Steels, Alloy Steels, Structural Steels,
Hardened Steels(HRc30 - HRc45), Cast Iron,
Stainless Steels, Aluminum and Titanium



Wide range of work materials;

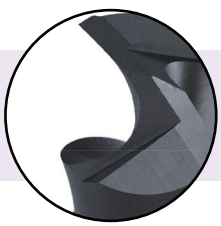
P M K N S

Carbon Steels, Alloy Steels, Structural Steels, Hardened Steels(up to HRc45), Cast Iron, Stainless Steels, Aluminum and Titanium



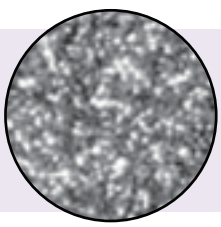
Point Shape to Maximize Self-centering

▶ Excellent positioning - bush 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

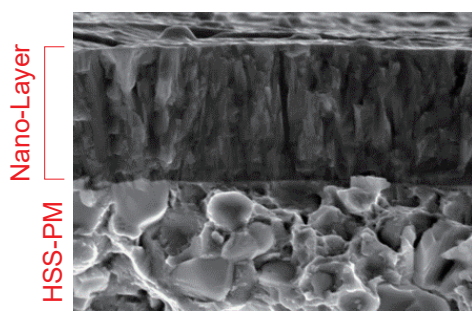
TiAlN Coating

(Upgraded Titanium Aluminum Nitride : Nano-Layer Coating)

- Higher Wear Resistance and Lower Friction
- Higher Cutting Speed and Feed
- Improved Drill Hole Quality

Special surface treatment after coating

to reduce friction and better chip flow.



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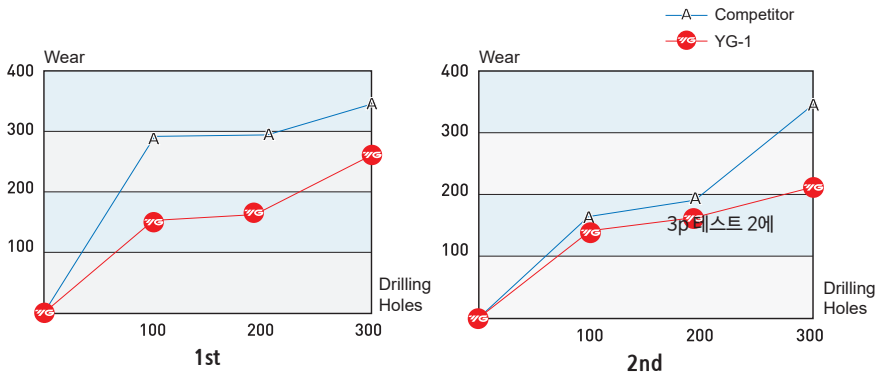
CASE STUDY

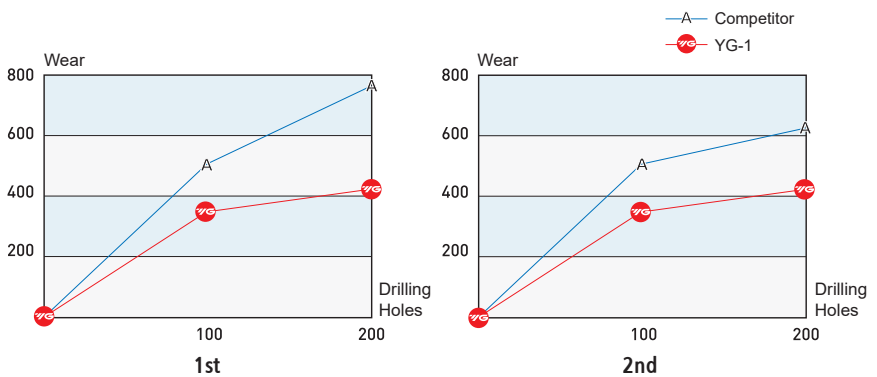
TEST I Comparison of edge wear



Cutting Condition

Work Material	- AISI : 316 - JIS : SUS316 - DIN : X3CrNiMo17-13-3
Drilling Depth	.94″
Total Drilling	300 Holes
RPM	600 rev./min.
Feed	4.3307 inch/min.

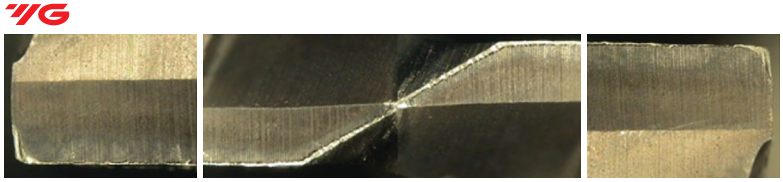
TEST II Comparison of edge wear



Cutting Condition

Work Material	- AISI : D2 - JIS : SKD11 - DIN : X155CrVMo12-1
Drilling Depth	.94″
Total Drilling	300 Holes
RPM	600 rev./min.
Feed	4.3307 inch/min.

YG



Competitor



GUIDE TO ICONS

HSS PM — Tool Material

30° — Helix Angle

h6 h7 — Tolerance of Dimension

135° — Point Angle

TiAlN — Type of Coating

Cutting Conditions

SELECTION GUIDE

HSS-PM
MULTI-1 DRILLS

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.11-12

SERIES	CDRA05	CDRA06	CDRA07	CDRA08	CDRA09	CDRA10
TOOL MATERIAL	HSS-PM					
LENGTH	STUB			JOBBER		
SIZE MIN	D3/32	#45	B	D3/32	#45	B
SIZE MAX	D1/2	#1	Z	D1/2	#1	Z
PAGE	5	6	7	8	9	10
SURFACE TREATMENT	TiAlN					



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc						
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎	◎	◎	◎	◎
	2		About 0.45% C	Annealed	190	13	◎	◎	◎	◎	◎	◎
	3		About 0.45% C	Quenched & Tempered	250	25	○	○	○	○	○	○
	4		About 0.75% C	Annealed	270	28						
	5		About 0.75% C	Quenched & Tempered	300	32						
	6	Low alloy steel		Annealed	180	10	◎	◎	◎	◎	◎	◎
	7			Quenched & Tempered	275	29	○	○	○	○	○	○
	8			Quenched & Tempered	300	32	○	○	○	○	○	○
	9			Quenched & Tempered	350	38	○	○	○	○	○	○
	10	High alloyed steel, and tool steel		Annealed	200	15						
	11			Quenched & Tempered	325	35						
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	○	○	○	○	○	○
	13		Martensitic	Quenched & Tempered	240	23						
	14		Austenitic		180	10	◎	◎	◎	◎	◎	◎
K	15	Grey cast iron	Pearlitic / ferritic		180	10						
	16		Pearlitic (Martensitic)		260	26						
	17	Nodular cast iron	Ferritic		160	3						
	18		Pearlitic		250	25						
	19	Malleable cast iron	Ferritic		130							
	20		Pearlitic		230	21						
N	21	Aluminum-wrought alloy	Not Curable		60		◎	◎	◎	◎	◎	◎
	22		Curable	Hardened	100		◎	◎	◎	◎	◎	◎
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		○	○	○	○	○	○
	24		≤ 12% Si, Curable	Hardened	90		○	○	○	○	○	○
	25		> 12% Si, Not Curable		130							
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110							
	27		CuZn, CuSnZn (Brass)		90							
	28		CuSn, lead-free copper and electrolytic copper		100							
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic									
	30		Rubber, Wood, etc.									
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15						
	32			Cured	280	30						
	33		Ni or Co Based	Annealed	250	25						
	34			Cured	350	38						
	35			Cast	320	34						
	36	Titanium Alloys	Pure Titanium		400Rm		○	○	○	○	○	○
	37		Alpha + Beta Alloys	Hardened	1050Rm							
H	38	Hardened steel		Hardened	550	55						
	39			Hardened	630	60						
	40	Chilled Cast Iron		Cast	400	42						
	41	Hardened Cast Iron		Hardened	550	55						

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TiAlN-COATED

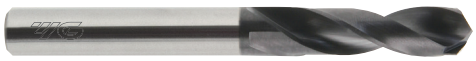
HSS-PM, MULTI-1 DRILLS

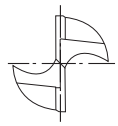
SERIES

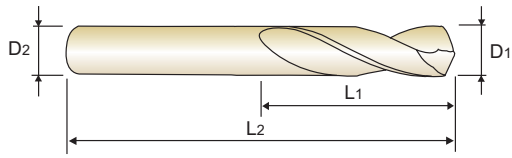
CDRA05

▶ **Application** : Structural steels, Carbon steels, Alloy steels, Prehardened steels, Mold steels, Stainless steels, Hardened steels(HRc30 - HRc45), 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.







HSS PM | 30° | h6 | h7 | 135° | TiAlN

p.11

STUB

▶ M15 / Fractional sizes

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
	D1		D2	L1	L2
M15006	3/32	.0938	1/8	1/2	1-3/4
M15007	7/64	.1094	1/8	5/8	1-7/8
M15008	1/8	.1250	1/8	3/4	2
M15009	9/64	.1406	3/16	13/16	2-1/8
M15010	5/32	.1563	3/16	13/16	2-1/8
M15011	11/64	.1719	3/16	1	2-3/8
M15012	3/16	.1875	3/16	1	2-3/8
M15013	13/64	.2031	1/4	1-1/8	2-7/8
M15014	7/32	.2188	1/4	1-1/8	2-7/8
M15015	15/64	.2344	1/4	1-1/4	3
M15016	1/4	.2500	1/4	1-1/4	3
M15017	17/64	.2656	3/8	1-3/8	3-3/16
M15018	9/32	.2813	3/8	1-3/8	3-3/16
M15019	19/64	.2969	3/8	1-3/8	3-3/16

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
	D1		D2	L1	L2
M15020	5/16	.3125	3/8	1-1/2	3-3/8
M15021	21/64	.3281	3/8	1-1/2	3-3/8
M15022	11/32	.3438	3/8	1-5/8	3-1/2
M15023	23/64	.3594	3/8	1-5/8	3-1/2
M15024	3/8	.3750	3/8	1-5/8	3-1/2
M15025	25/64	.3906	1/2	1-11/16	3-7/8
M15026	13/32	.4063	1/2	1-11/16	3-7/8
M15027	27/64	.4219	1/2	1-7/8	4-1/8
M15028	7/16	.4375	1/2	1-7/8	4-1/8
M15029	29/64	.4531	1/2	1-7/8	4-1/8
M15030	15/32	.4688	1/2	2	4-1/4
M15031	31/64	.4844	1/2	2	4-1/4
M15032	1/2	.5000	1/2	2	4-1/4

◎ : 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	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	○	○												○					

TiAlN-COATED

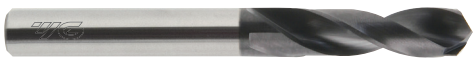
HSS-PM, MULTI-1 DRILLS

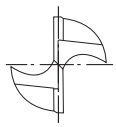
SERIES

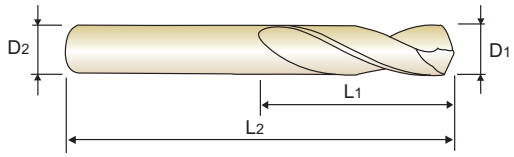
CDRA06

▶ **Application** : Structural steels, Carbon steels, Alloy steels, Prehardened steels, Mold steels, Stainless steels, Hardened steels(HRc30 - HRc45), 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.







HSS PM | 30° | h6 | h7 | 135° | TiAlN

p.11

STUB

▶ M16 / Wire gauge sizes

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Wire gauge	Decimal	D1		
	D1		D2	L1	L2
M16045	45	.0820	1/8	3/4	2
M16044	44	.0860	1/8	3/4	2
M16043	43	.0890	1/8	3/4	2
M16042	42	.0935	1/8	3/4	2
M16041	41	.0960	1/8	13/16	2-1/16
M16040	40	.0980	1/8	13/16	2-1/16
M16039	39	.0995	1/8	13/16	2-1/4
M16038	38	.1015	1/8	13/16	2-1/4
M16037	37	.1040	1/8	13/16	2-1/4
M16036	36	.1065	1/8	13/16	2-1/4
M16035	35	.1100	1/8	7/8	2-5/16
M16034	34	.1110	1/8	7/8	2-5/16
M16033	33	.1130	1/8	7/8	2-5/16
M16032	32	.1160	1/8	7/8	2-5/16
M16031	31	.1200	1/8	7/8	2-5/16
M16030	30	.1285	3/16	15/16	2-3/8
M16029	29	.1360	3/16	15/16	2-3/8
M16028	28	.1405	3/16	15/16	2-3/8
M16027	27	.1440	3/16	1	2-7/16
M16026	26	.1470	3/16	1	2-7/16
M16025	25	.1495	3/16	1	2-7/16
M16024	24	.1520	3/16	1	2-7/16
M16023	23	.1540	3/16	1	2-7/16

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Wire gauge	Decimal	D1		
	D1		D2	L1	L2
M16022	22	.1570	3/16	1-1/16	2-1/2
M16021	21	.1590	3/16	1-1/16	2-1/2
M16020	20	.1610	3/16	1-1/16	2-1/2
M16019	19	.1660	3/16	1-1/16	2-1/2
M16018	18	.1695	3/16	1-1/16	2-1/2
M16017	17	.1730	3/16	1-1/8	2-9/16
M16016	16	.1770	3/16	1-1/8	2-9/16
M16015	15	.1800	3/16	1-1/8	2-9/16
M16014	14	.1820	3/16	1-1/8	2-9/16
M16013	13	.1850	3/16	1-1/8	2-9/16
M16012	12	.1890	1/4	1-3/16	3
M16011	11	.1910	1/4	1-3/16	3
M16010	10	.1935	1/4	1-3/16	3
M16009	9	.1960	1/4	1-3/16	3
M16008	8	.1990	1/4	1-3/16	3
M16007	7	.2010	1/4	1-3/16	3
M16006	6	.2040	1/4	1-1/4	3-1/16
M16005	5	.2055	1/4	1-1/4	3-1/16
M16004	4	.2090	1/4	1-1/4	3-1/16
M16003	3	.2130	1/4	1-1/4	3-1/16
M16002	2	.2210	1/4	1-5/16	3-1/8
M16001	1	.2280	1/4	1-5/16	3-1/8

◎ : 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	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	○	○												○					

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TiAlN-COATED

HSS-PM, MULTI-1 DRILLS

SERIES

CDRA07

▶ **Application** : Structural steels, Carbon steels, Alloy steels, Prehardened steels, Mold steels, Stainless steels, Hardened steels(HRc30 - HRc45), Cast iron, Aluminum alloys, Nonferrous alloys, Titanium.

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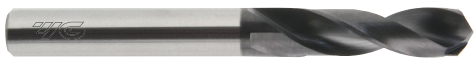
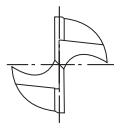
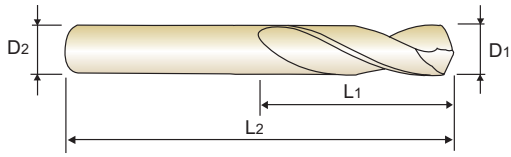






HSS PM | 30° | h6 | h7 | 135° | TiAlN

p.11

STUB

▶ M17 / Letter sizes

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Letter	Decimal			
	D1		D2	L1	L2
M1700B	B	.2380	1/4	1-3/8	3-3/16
M1700C	C	.2420	1/4	1-3/8	3-3/16
M1700D	D	.2460	1/4	1-3/8	3-3/16
M1700F	F	.2570	3/8	1-7/16	3-1/4
M1700G	G	.2610	3/8	1-7/16	3-1/4
M1700I	I	.2720	3/8	1-1/2	3-5/16
M1700J	J	.2770	3/8	1-1/2	3-5/16
M1700L	L	.2900	3/8	1-9/16	3-3/8
M1700M	M	.2950	3/8	1-9/16	3-3/8

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Letter	Decimal			
	D1		D2	L1	L2
M1700N	N	.3020	3/8	1-5/8	3-7/16
M1700O	O	.3160	3/8	1-11/16	3-1/2
M1700Q	Q	.3320	3/8	1-11/16	3-1/2
M1700R	R	.3390	3/8	1-11/16	3-1/2
M1700U	U	.3680	3/8	1-13/16	3-5/8
M1700V	V	.3770	1/2	1-7/8	3-31/32
M1700X	X	.3970	1/2	1-15/16	4-1/32
M1700Y	Y	.4040	1/2	1-15/16	4-1/32
M1700Z	Z	.4130	1/2	2	4-1/32

◎ : 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	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	○	○												○					

TiAlN-COATED

HSS-PM, MULTI-1 DRILLS

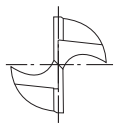
NEW SERIES

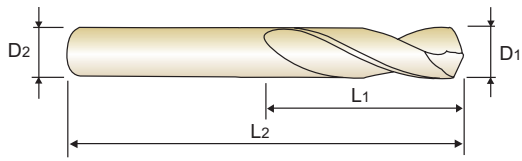
CDRA08

▶ **Application** : Structural steels, Carbon steels, Alloy steels, Prehardened steels, Mold steels, Stainless steels, Hardened steels(HRc30 - HRc45), 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.







HSS PM | 30° | h6 | h7 | 135° | TiAlN

p.12

JOBBER

▶ Fractional sizes

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal	D1		
			D2	L1	L2
CDRA08006	3/32	.0938	1/8	1-1/8	2-3/8
CDRA08007	7/64	.1094	1/8	1-1/4	2-1/2
CDRA08008	1/8	.1250	1/8	1-3/8	2-5/8
CDRA08009	9/64	.1406	3/16	1-1/2	2-7/8
CDRA08010	5/32	.1563	3/16	1-3/4	3-1/8
CDRA08011	11/64	.1719	3/16	1-7/8	3-1/4
CDRA08012	3/16	.1875	3/16	2	3-3/8
CDRA08013	13/64	.2031	1/4	2-1/16	3-7/8
CDRA08014	7/32	.2188	1/4	2-1/16	3-7/8
CDRA08015	15/64	.2344	1/4	2-3/8	4-1/4
CDRA08016	1/4	.2500	1/4	2-3/8	4-1/4
CDRA08017	17/64	.2656	3/8	2-3/4	4-5/8
CDRA08018	9/32	.2813	3/8	2-3/4	4-5/8
CDRA08019	19/64	.2969	3/8	2-7/8	4-3/4

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal	D1		
			D2	L1	L2
CDRA08020	5/16	.3125	3/8	2-7/8	4-3/4
CDRA08021	21/64	.3281	3/8	2-7/8	4-3/4
CDRA08022	11/32	.3438	3/8	3-1/4	5-1/8
CDRA08023	23/64	.3594	3/8	3-1/4	5-1/8
CDRA08024	3/8	.3750	3/8	3-1/4	5-1/8
CDRA08025	25/64	.3906	1/2	3-3/8	5-1/2
CDRA08026	13/32	.4063	1/2	3-3/8	5-1/2
CDRA08027	27/64	.4219	1/2	3-3/4	5-7/8
CDRA08028	7/16	.4375	1/2	3-3/4	5-7/8
CDRA08029	29/64	.4531	1/2	3-3/4	5-7/8
CDRA08030	15/32	.4688	1/2	4	6-1/4
CDRA08031	31/64	.4844	1/2	4	6-1/4
CDRA08032	1/2	.5000	1/2	4	6-1/4

◎ : 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	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	○	○												○					

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TiAlN-COATED

HSS-PM, MULTI-1 DRILLS

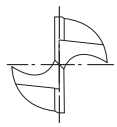
NEW SERIES

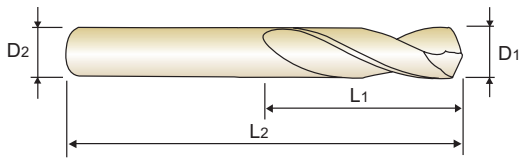
CDRA09

▶ **Application** : Structural steels, Carbon steels, Alloy steels, Prehardened steels, Mold steels, Stainless steels, Hardened steels(HRc30 - HRc45), 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.







HSS PM | 30° | h6 | h7 | 135° | TiAlN

p.12

JOBBER

▶ Wire gauge sizes

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Wire gauge	Decimal	D1		
			D2	L1	L2
CDRA09045	45	.0820	1/8	1-1/8	2-3/8
CDRA09044	44	.0860	1/8	1-1/8	2-3/8
CDRA09043	43	.0890	1/8	1-1/4	2-1/2
CDRA09042	42	.0935	1/8	1-1/4	2-1/2
CDRA09041	41	.0960	1/8	1-3/8	2-5/8
CDRA09040	40	.0980	1/8	1-3/8	2-5/8
CDRA09039	39	.0995	1/8	1-3/8	2-13/16
CDRA09038	38	.1015	1/8	1-7/16	2-7/8
CDRA09037	37	.1040	1/8	1-7/16	2-7/8
CDRA09036	36	.1065	1/8	1-7/16	2-7/8
CDRA09035	35	.1100	1/8	1-1/2	2-15/16
CDRA09034	34	.1110	1/8	1-1/2	2-15/16
CDRA09033	33	.1130	1/8	1-1/2	2-15/16
CDRA09032	32	.1160	1/8	1-1/2	2-15/16
CDRA09031	31	.1200	1/8	1-1/2	2-15/16
CDRA09030	30	.1285	3/16	1-5/8	3-1/16
CDRA09029	29	.1360	3/16	1-3/4	3-3/16
CDRA09028	28	.1405	3/16	1-3/4	3-3/16
CDRA09027	27	.1440	3/16	1-7/8	3-5/16
CDRA09026	26	.1470	3/16	1-7/8	3-5/16
CDRA09025	25	.1495	3/16	1-7/8	3-5/16
CDRA09024	24	.1520	3/16	2	3-7/16
CDRA09023	23	.1540	3/16	2	3-7/16

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Wire gauge	Decimal	D1		
			D2	L1	L2
CDRA09022	22	.1570	3/16	2	3-7/16
CDRA09021	21	.1590	3/16	2-1/8	3-9/16
CDRA09020	20	.1610	3/16	2-1/8	3-9/16
CDRA09019	19	.1660	3/16	2-1/8	3-9/16
CDRA09018	18	.1695	3/16	2-1/8	3-9/16
CDRA09017	17	.1730	3/16	2-3/16	3-5/8
CDRA09016	16	.1770	3/16	2-3/16	3-5/8
CDRA09015	15	.1800	3/16	2-3/16	3-5/8
CDRA09014	14	.1820	3/16	2-3/16	3-5/8
CDRA09013	13	.1850	3/16	2-3/16	3-5/8
CDRA09012	12	.1890	1/4	2-7/16	4-1/4
CDRA09011	11	.1910	1/4	2-7/16	4-1/4
CDRA09010	10	.1935	1/4	2-7/16	4-1/4
CDRA09009	9	.1960	1/4	2-7/16	4-1/4
CDRA09008	8	.1990	1/4	2-7/16	4-1/4
CDRA09007	7	.2010	1/4	2-7/16	4-1/4
CDRA09006	6	.2040	1/4	2-7/16	4-1/4
CDRA09005	5	.2055	1/4	2-1/2	4-5/16
CDRA09004	4	.2090	1/4	2-1/2	4-5/16
CDRA09003	3	.2130	1/4	2-1/2	4-5/16
CDRA09002	2	.2210	1/4	2-5/8	4-7/16
CDRA09001	1	.2280	1/4	2-5/8	4-7/16

◎ : 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	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	○	○												○					

TiAlN-COATED

HSS-PM, MULTI-1 DRILLS

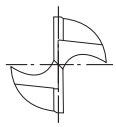
NEW SERIES

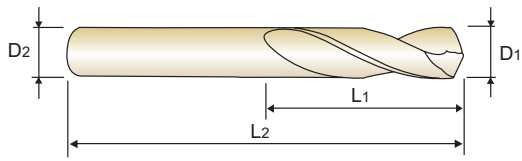
CDRA10

▶ **Application** : Structural steels, Carbon steels, Alloy steels, Prehardened steels, Mold steels, Stainless steels, Hardened steels(HRc30 - HRc45), 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.







HSS PM | 30° | h6 | h7 | 135° | TiAlN

p.12

JOBBER

▶ Letter sizes

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Letter	Decimal	D1		
			D2	L1	L2
CDRA1000B	B	.2380	1/4	2-3/4	4-9/16
CDRA1000C	C	.2420	1/4	2-3/4	4-9/16
CDRA1000D	D	.2460	1/4	2-3/4	4-9/16
CDRA1000F	F	.2570	3/8	2-7/8	4-11/16
CDRA1000G	G	.2610	3/8	2-7/8	4-11/16
CDRA1000I	I	.2720	3/8	2-7/8	4-11/16
CDRA1000J	J	.2770	3/8	2-7/8	4-11/16
CDRA1000L	L	.2900	3/8	2-15/16	4-3/4
CDRA1000M	M	.2950	3/8	3-1/16	4-7/8

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Letter	Decimal	D1		
			D2	L1	L2
CDRA1000N	N	.3020	3/8	3-1/16	4-7/8
CDRA1000O	O	.3160	3/8	3-3/16	5
CDRA1000Q	Q	.3320	3/8	3-7/16	5-1/4
CDRA1000R	R	.3390	3/8	3-7/16	5-1/4
CDRA1000U	U	.3680	3/8	3-5/8	5-7/16
CDRA1000V	V	.3770	1/2	3-5/8	5-23/32
CDRA1000X	X	.3970	1/2	3-3/4	5-27/32
CDRA1000Y	Y	.4040	1/2	3-7/8	5-31/32
CDRA1000Z	Z	.4130	1/2	3-7/8	5-31/32

◎ : 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	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	○	○												○					

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CDRA05, CDRA06, CDRA07 SERIES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter													
				METRIC	2.0	3.0	-	4.0	-	5.0	6.0	-	-	8.0	-	10.0	12.0	-
				FRACTIONAL	-	-	1/8	-	3/16	-	-	1/4	5/16	-	3/8	-	-	1/2
				DECIMAL	.0787	.1181	.1250	.1575	.1875	.1969	.2362	.2500	.3125	.3150	.3750	.3937	-	.5000
P	1	Non-alloy steel	130	RPM	6370	4240		3180	2550		2120		1590		1270		1060	
				FEED	.0012 - .0024	.0031 - .0047		.0035 - .0059	.0047 - .0071		.0055 - .0079		.0071 - .0094		.0071 - .0110		.0079 - .0118	
	2		120	RPM	5570	3710		2790	2230		1860		1390		1110		930	
				FEED	.0012 - .0024	.0031 - .0047		.0035 - .0059	.0047 - .0071		.0055 - .0079		.0071 - .0094		.0071 - .0110		.0079 - .0118	
	3		120	RPM	5570	3710		2790	2230		1860		1390		1110		930	
				FEED	.0012 - .0024	.0031 - .0047		.0035 - .0059	.0047 - .0071		.0055 - .0079		.0071 - .0094		.0071 - .0110		.0079 - .0118	
	6	Low alloy steel	120	RPM	5570	3710		2790	2230		1860		1390		1110		930	
				FEED	.0012 - .0024	.0031 - .0047		.0035 - .0059	.0047 - .0071		.0055 - .0079		.0071 - .0094		.0071 - .0110		.0079 - .0118	
	7		100	RPM	4770	3180		2390	1910		1590		1190		950		800	
				FEED	.0012 - .0020	.0024 - .0039		.0028 - .0051	.0039 - .0063		.0047 - .0071		.0055 - .0079		.0055 - .0094		.0063 - .0102	
	8		80	RPM	3980	2650		1990	1590		1330		990		800		660	
				FEED	.0008 - .0020	.0012 - .0028		.0016 - .0039	.0024 - .0047		.0028 - .0051		.0039 - .0079		.0047 - .0087		.0055 - .0094	
	9		70	RPM	3180	2120		1590	1270		1060		800		640		530	
				FEED	.0008 - .0020	.0012 - .0028		.0016 - .0039	.0024 - .0047		.0028 - .0051		.0039 - .0079		.0047 - .0087		.0055 - .0094	
M	12	Stainless steel	70	RPM	3180	2120		1590	1270		1060		800		640		530	
				FEED	.0012 - .0028	.0020 - .0035		.0024 - .0047	.0035 - .0059		.0047 - .0071		.0071 - .0094		.0079 - .0118		.0102 - .0142	
	14		50	RPM	2390	1590		1190	950		800		600		480		400	
				FEED	.0008 - .0020	.0012 - .0028		.0016 - .0039	.0024 - .0047		.0028 - .0051		.0039 - .0079		.0047 - .0087		.0055 - .0094	
K	15	Grey cast iron	130	RPM	6370	4240		3180	2550		2120		1590		1270		1060	
				FEED	.0016 - .0039	.0028 - .0051		.0035 - .0059	.0047 - .0071		.0051 - .0075		.0071 - .0094		.0079 - .0118		.0087 - .0126	
N	21	Aluminum-wrought alloy	300	RPM	14320	9550		7160	5730		4770		3580		2860		2390	
				FEED	.0051 - .0067	.0091 - .0106		.0106 - .0130	.0130 - .0154		.0157 - .0181		.0177 - .0201		.0201 - .0240		.0248 - .0287	
	22		300	RPM	14320	9550		7160	5730		4770		3580		2860		2390	
				FEED	.0051 - .0067	.0091 - .0106		.0106 - .0130	.0130 - .0154		.0157 - .0181		.0177 - .0201		.0201 - .0240		.0248 - .0287	
	23	Aluminum-cast, alloyed	260	RPM	12730	8490		6370	5090		4240		3180		2550		2120	
				FEED	.0051 - .0067	.0091 - .0106		.0106 - .0130	.0130 - .0154		.0157 - .0181		.0177 - .0201		.0201 - .0240		.0248 - .0287	
	24		230	RPM	11140	7430		5570	4460		3710		2790		2230		1860	
				FEED	.0039 - .0055	.0059 - .0075		.0079 - .0102	.0094 - .0118		.110 - .0134		.0118 - .0142		.0134 - .0173		.0142 - .0181	
S	36	Titanium Alloys	20	RPM	800	530		400	320		270		200		160		130	
				FEED	.0008 - .0020	.0012 - .0028		.0016 - .0031	.0024 - .0047		.0028 - .0051		.0035 - .0059		.0047 - .0087		.0055 - .0094	

CDRA08, CDRA09, CDRA10 SERIES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter												
				FRACTIONAL	-	-	1/8	-	3/16	-	-	1/4	5/16	-	3/8	-	1/2
				DECIMAL	.0787	.1181	.1250	.1575	.1875	.1969	.2362	.2500	.3125	.3150	.3750	.3937	.5000
P	1	Non-alloy steel	130	RPM	6370	4240		3180		2550		2120		1590		1270	1060
				FEED	.0012 - .0024	.0031 - .0047		.0035 - .0059		.0047 - .0071		.0055 - .0079		.0071 - .0094		.0071 - .0110	.0079 - .0118
	2		120	RPM	5570	3710		2790		2230		1860		1390		1110	930
				FEED	.0012 - .0024	.0031 - .0047		.0035 - .0059		.0047 - .0071		.0055 - .0079		.0071 - .0094		.0071 - .0110	.0079 - .0118
	3		120	RPM	5570	3710		2790		2230		1860		1390		1110	930
				FEED	.0012 - .0024	.0031 - .0047		.0035 - .0059		.0047 - .0071		.0055 - .0079		.0071 - .0094		.0071 - .0110	.0079 - .0118
	6	Low alloy steel	120	RPM	5570	3710		2790		2230		1860		1390		1110	930
				FEED	.0012 - .0024	.0031 - .0047		.0035 - .0059		.0047 - .0071		.0055 - .0079		.0071 - .0094		.0071 - .0110	.0079 - .0118
	7		100	RPM	4770	3180		2390		1910		1590		1190		950	800
				FEED	.0012 - .0020	.0024 - .0039		.0028 - .0051		.0039 - .0063		.0047 - .0071		.0055 - .0079		.0055 - .0094	.0063 - .0102
	8		80	RPM	3980	2650		1990		1590		1330		990		800	660
				FEED	.0008 - .0020	.0012 - .0028		.0016 - .0039		.0024 - .0047		.0028 - .0051		.0039 - .0079		.0047 - .0087	.0055 - .0094
	9		70	RPM	3180	2120		1590		1270		1060		800		640	530
				FEED	.0008 - .0020	.0012 - .0028		.0016 - .0039		.0024 - .0047		.0028 - .0051		.0039 - .0079		.0047 - .0087	.0055 - .0094
M	12	Stainless steel	70	RPM	3180	2120		1590		1270		1060		800		640	530
				FEED	.0012 - .0028	.002 - .0035		.0024 - .0047		.0035 - .0059		.0047 - .0071		.0071 - .0094		.0079 - .0118	.0102 - .0142
	14		50	RPM	2390	1590		1190		950		800		600		480	400
				FEED	.0008 - .0020	.0012 - .0028		.0016 - .0039		.0024 - .0047		.0028 - .0051		.0039 - .0079		.0047 - .0087	.0055 - .0094
K	15	Grey cast iron	130	RPM	6370	4240		3180		2550		2120		1590		1270	1060
				FEED	.0016 - .0039	.0028 - .0051		.0035 - .0059		.0047 - .0071		.0051 - .0075		.0071 - .0094		.0079 - .0118	.0087 - .0126
N	21	Aluminum-wrought alloy	300	RPM	14320	9550		7160		5730		4770		3580		2860	2390
				FEED	.0051 - .0067	.0091 - .0106		.0106 - .0130		.013 - .0154		.0157 - .0181		.0177 - .0201		.0201 - .0240	.0248 - .0287
	22		300	RPM	14320	9550		7160		5730		4770		3580		2860	2390
				FEED	.0051 - .0067	.0091 - .0106		.0106 - .0130		.013 - .0154		.0157 - .0181		.0177 - .0201		.0201 - .0240	.0248 - .0287
	23	Aluminum-cast, alloyed	260	RPM	12730	8490		6370		5090		4240		3180		2550	2120
				FEED	.0051 - .0067	.0091 - .0106		.0106 - .0130		.013 - .0154		.0157 - .0181		.0177 - .0201		.0201 - .0240	.0248 - .0287
	24		230	RPM	11140	7430		5570		4460		3710		2790		2230	1860
				FEED	.0039 - .0055	.0059 - .0075		.0079 - .0102		.0094 - .0118		.011 - .0134		.0118 - .0142		.0134 - .0173	.0142 - .0181
S	36	Titanium Alloys	20	RPM	800	530		400		320		270		200		160	130
				FEED	.0008 - .0020	.0012 - .0028		.0016 - .0031		.0024 - .0047		.0028 - .0051		.0035 - .0059		.0047 - .0087	.0055 - .0094

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*** For the more information on sales network, please contact the head office as below;**

YG-1 HEAD OFFICE

13-40, Songdogwahak-ro 16beon-gil, Yeonsu-gu, Incheon 21984, South Korea

Phone: +82-32-526-0909
E-mail: yg1@yg1.solutions www.yg1.solutions

YG-1 CO., LTD.

YG-1 USA

730 Corporate Woods Parkway,
Vernon Hills, IL 60061 U.S.A.
Phone: +1 800-765-8665
Technical Support: 888-868-5988
www.yg1usa.com

YG-1 CANADA INC.

3375 North Service Road, Unit A8,
Burlington, Ontario, L7N 3G2 Canada
Phone: +1 905-335-2500
E-mail: orders@yg1.solutions
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Parque Industrial Advance Aeropuerto Modulo 4 Edif A,
Col. Navajas, El Marques,
Querétaro, México CP 76260
Phone: +52 442-348-12-70
E-mail: ventas@yg1mexico.com
www.yg1mexico.com

HEAD OFFICE

13-40, Songdogwahak-ro 16beon-gil,
Yeonsu-gu, Incheon 21984, South Korea
Phone: +82-32-526-0909
E-mail: yg1@yg1.solutions
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