

YE-DD20



SOLID CARBIDE DREAM DRILLS

- PRO** with/without Coolant Holes **NEW**
- GENERAL** with/without Coolant Holes
- HIGH FEED** with Coolant Holes
- FLAT BOTTOM** with/without Coolant Holes
- INOX** with Coolant Holes
- ALU** with Coolant Holes
- CFRP** for Composite Material
- MQL TYPE** with Coolant Holes(10xD - 40xD)
- for **HIGH HARDENED STEELS** HRc50-70

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YG1DD200305009

GUIDE LINE TO ICONS

Standard of Tools

DIN 6539

Number of DIN Standard

Coolant Supply Pressure

45 bar

20 bar

Tool Material

CARBIDE

Point Angle

140°

Surface Treatment

TiAIN

Titanium Aluminum Nitride Coating

X-Coating

YG-1 X-Coating

H-Coating

YG-1 H-Coating

Diamond

Diamond Coating

Bright

Bright Finish

Tolerance of Dimension

m7

Tolerance of Outside Diameter

h6

Tolerance of Shank Diameter

Cutting Condition

Green

SELECTION GUIDE



HOLEMAKING TOOLS

DREAM DRILLS

SOLID CARBIDE DREAM DRILLS

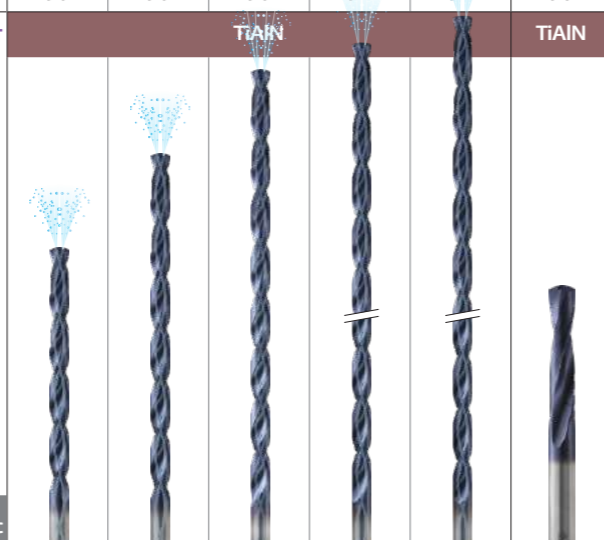


Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good
TECHNICAL DATA : P 97

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRC	MQL TYPE - End mill shank						HARDENED STEELS	
							DHM10	DHM15	DHM20	DHM25	DHM30	DH500		
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		Cutting Alloys, PB>1%		110									
	27	Copper and Copper Alloys (Bronze / Brass)	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			Pure Titanium	400 _{min}									
37	Alpha + Beta Alloys	Hardened	1050 _{min}											
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								

SERIES	MQL TYPE - End mill shank					HARDENED STEELS
	DHM10	DHM15	DHM20	DHM25	DHM30	
DRILLING DEPTH / STANDARD	10XD	15XD	20XD	25XD	30XD	3XD
LENGTH	EXTRA LONG	EXTRA LONG	EXTRA LONG	EXTRA LONG	EXTRA LONG	SHORT
SIZE MIN	D3.0	D3.0	D3.0	D3.0	D3.0	D2.6
SIZE MAX	D14.0	D12.0	D12.0	D10.0	D8.0	D14.0
PAGE	90	90	90	91	91	96



Leading Through Innovation



SOLID CARBIDE

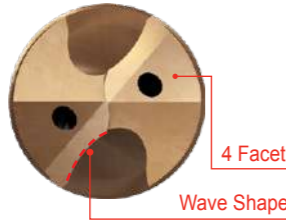
DREAM DRILLS PRO

- For General Purpose (HRC30 to HRC50)
- Extremely high hardness and heat resistance due to YG-1 special Z-Coating technology

DREAM DRILLS PRO

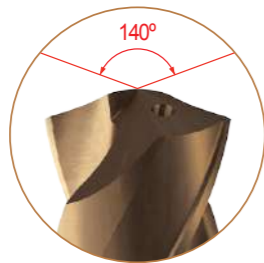


Performance Upgrade with Faster Cutting Speed



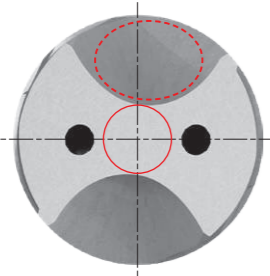
Wave Shape Cutting Edge

- Improve chip formation
- Low Cutting Force



140 Degree Point Angle

- Provides edge strength and Exceptional tool life
- Good Self Centering
- Low Torque



Micro-grained Carbide

- Achieving Excellent Wear Resistance
- Maximum Tool Life and High Performance

Optimized wide flute design

The unique flute structure provides good surface finish, longer tool life and requires less cutting force



Radius Shape



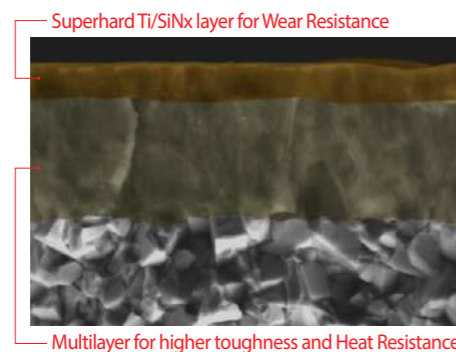
Helical Thinning

- Low Thrust
- Stable Torque
- Good Chip Breakage

Higher & Improved cutting conditions due to YG-1 Special Z-Coating Technology

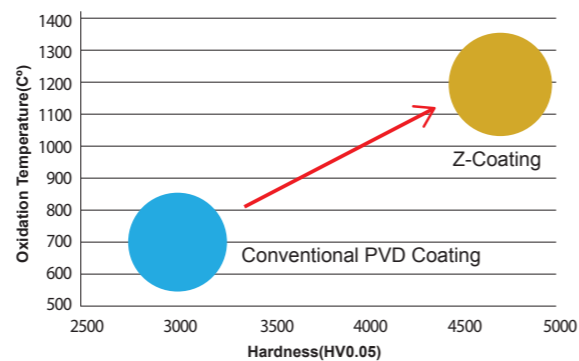
(YG-1's Unique Silicon Based Coating: Nano-Layer Coating)

- Extremely High Hardness and Heat Resistance



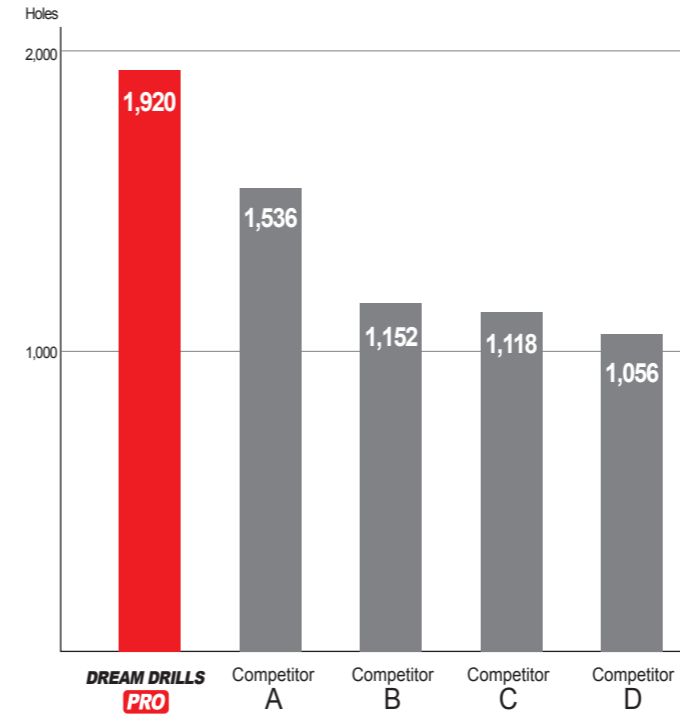
Superhard Ti/SiNx layer for Wear Resistance

Multilayer for higher toughness and Heat Resistance



CASE STUDY

► SOLID CARBIDE DREAM DRILLS - PRO with Coolant Holes



CUTTING CONDITION	
Work Material	DIN: 42CrMo4 ANSI: 4140 JIS: SCM440 Hardness: HRC30 (HB286)
O.D SIZE(mm)	Ø10.0 (.3937 inch)
RPM	14,856 rev./min.
Cutting Speed	140 m/min
Feed	0.30 mm/rev
Drilling Depth	45.0 mm
Coolant	Internal Cooling (20 bar) Water Soluble (9% Emulsion)
Machine	Machining Center

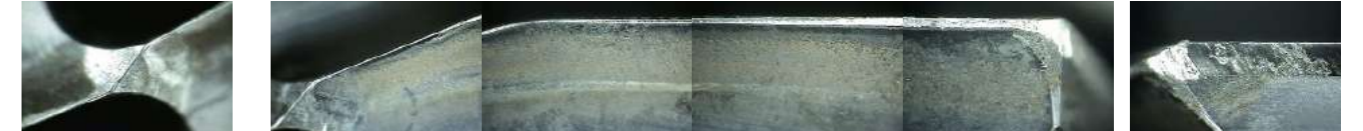
DREAM DRILLS PRO

Total Drilling 1,920 Holes



Competitor A

Total Drilling 1,536 Holes



Competitor B

Total Drilling 1,152 Holes



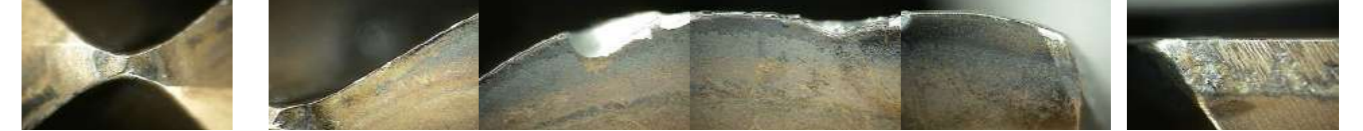
Competitor C

Total Drilling 1,118 Holes



Competitor D

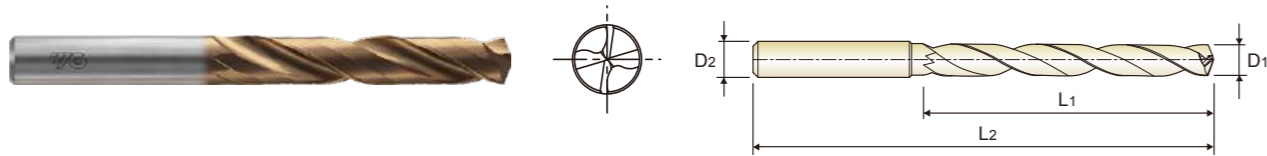
Total Drilling 1,056 Holes



Z-COATED SOLID CARBIDE DREAM DRILLS PRO without Coolant Holes (5XD)

DGN526 SERIES

- Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRC30-50), Cast Iron
► Wave shape cutting edge to improve chip formation for low cutting force
► Helical thinning for low thrust, stable torque and good chip breakage
► Extremely high hardness and heat resistance due to YG-1 special Z-Coating technology



LONG 5 x D

Table with 5 columns: EDP No., Drill Diameter (D1), Shank Diameter (D2), Flute Length (L1), Overall Length (L2). Lists various drill bit models and their dimensions.

Table with 5 columns: EDP No., Drill Diameter (D1), Shank Diameter (D2), Flute Length (L1), Overall Length (L2). Lists various drill bit models and their dimensions.

► Other shank types are available on your request.

► NEXT PAGE

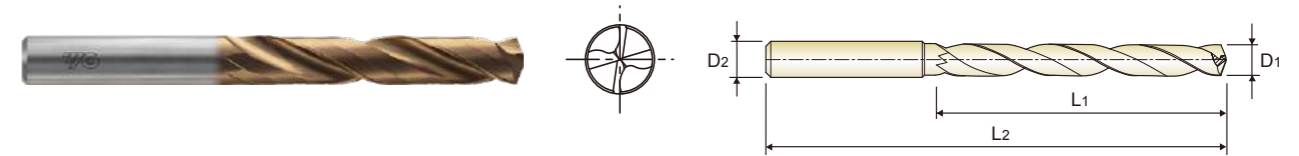
◎ : Excellent ○ : Good

ISO Material Recommendation chart showing compatibility with various materials like Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, etc.

Z-COATED SOLID CARBIDE DREAM DRILLS PRO without Coolant Holes (5XD)

DGN526 SERIES

- Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRC30-50), Cast Iron
► Wave shape cutting edge to improve chip formation for low cutting force
► Helical thinning for low thrust, stable torque and good chip breakage
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LONG 5 x D

Table with 5 columns: EDP No., Drill Diameter (D1), Shank Diameter (D2), Flute Length (L1), Overall Length (L2). Lists various drill bit models and their dimensions.

Table with 5 columns: EDP No., Drill Diameter (D1), Shank Diameter (D2), Flute Length (L1), Overall Length (L2). Lists various drill bit models and their dimensions.

► Other shank types are available on your request.

◎ : Excellent ○ : Good

ISO Material Recommendation chart showing compatibility with various materials like Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, etc.

Z-COATED SOLID CARBIDE DREAM DRILLS PRO with Coolant Holes (5XD)

DGN508 SERIES

- ▶ Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRC30-50), Cast Iron
- ▶ Wave shape cutting edge to improve chip formation for low cutting force
- ▶ Helical thinning for low thrust, stable torque and good chip breakage
- ▶ Extremely high hardness and heat resistance due to YG-1 special Z-Coating technology



LONG
5 x D

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length	
				D1	L2
Z-Coating	D1	D2	L1	L2	L2
DGN508010	1.0	3	8		55
DGN508011	1.1	3	12		55
DGN508012	1.2	3	12		55
DGN508013	1.3	3	12		55
DGN508014	1.4	3	12		55
DGN508015	1.5	3	16		55
DGN508016	1.6	3	16		55
DGN508017	1.7	3	16		55
DGN508018	1.8	3	16		55
DGN508019	1.9	3	16		55
DGN508020	2.0	4	21		57
DGN508021	2.1	4	21		57
DGN508022	2.2	4	21		57
DGN508023	2.3	4	21		57
DGN508024	2.4	4	21		57
DGN508025	2.5	4	21		57
DGN508026	2.6	4	21		57
DGN508027	2.7	4	21		57
DGN508028	2.8	4	21		57
DGN508029	2.9	4	21		57
DGN508030	3.0	6	28		66
DGN508031	3.1	6	28		66
DGN508032	3.2	6	28		66
DGN508033	3.3	6	28		66

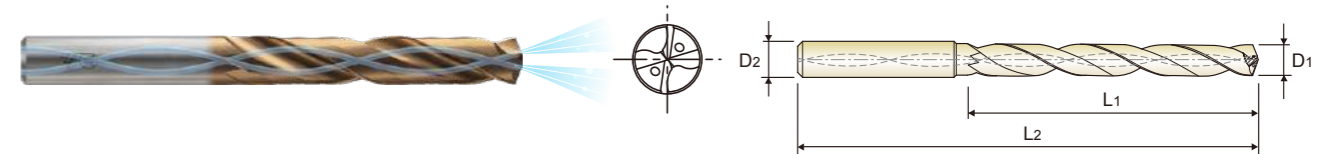
▶ Other shank types are available on your request.

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Z-COATED SOLID CARBIDE DREAM DRILLS PRO with Coolant Holes (5XD)

DGN508 SERIES

- ▶ Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRC30-50), Cast Iron
- ▶ Wave shape cutting edge to improve chip formation for low cutting force
- ▶ Helical thinning for low thrust, stable torque and good chip breakage
- ▶ Extremely high hardness and heat resistance due to YG-1 special Z-Coating technology



LONG
5 x D

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length	
				D1	L2
Z-Coating	D1	D2	L1	L2	L2
DGN508058	5.8	6	44		82
DGN508059	5.9	6	44		82
DGN508060	6.0	6	44		82
DGN508061	6.1	8	53		91
DGN508062	6.2	8	53		91
DGN508063	6.3	8	53		91
DGN508064	6.4	8	53		91
DGN508065	6.5	8	53		91
DGN508066	6.6	8	53		91
DGN508067	6.7	8	53		91
DGN508068	6.8	8	53		91
DGN508069	6.9	8	53		91
DGN508070	7.0	8	53		91
DGN508071	7.1	8	53		91
DGN508072	7.2	8	53		91
DGN508073	7.3	8	53		91
DGN508074	7.4	8	53		91
DGN508075	7.5	8	53		91
DGN508076	7.6	8	53		91
DGN508077	7.7	8	53		91
DGN508078	7.8	8	53		91
DGN508079	7.9	8	53		91
DGN508080	8.0	8	53		91
DGN508081	8.1	10	61		103

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P									M				K						
Material Description	Non-alloy steel			Low alloy steel			High alloy 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	11	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)		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																					

◎ : Excellent ○ : Good

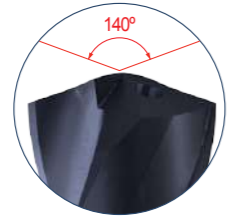
ISO	P									M				K						
Material Description	Non-alloy steel			Low alloy steel			High alloy steel, and tool steel			Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC		13	25	28	32	10	29	32	38	15	11	15	23	10	10	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)		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																					

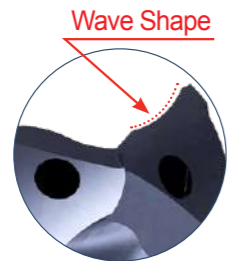
DREAM DRILLS GENERAL



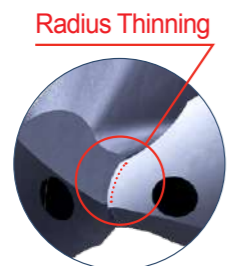
Micro-grained carbide for wear resistance and longer tool life



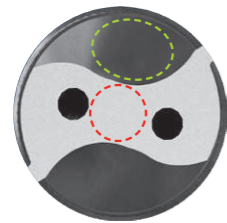
140 Degree Point Angle
for good centering and low thrust



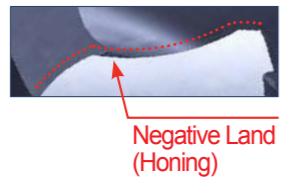
Wave shape Cutting Edge
will allow low thrust, stable torque and long tool life



Radius Thinning
for Self Centering and Chip Breaking



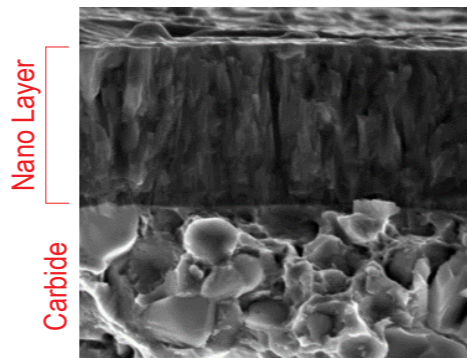
Optimized flute shape
for strength of drill and smooth chip evacuation



Negative land on the cutting edge
for Reliable Tool Life

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.



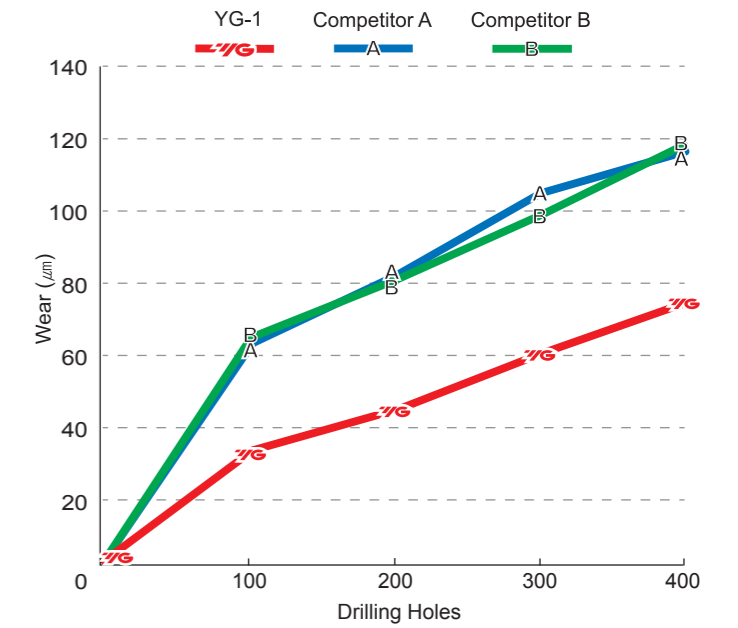
Nano Layer

Carbide

CASE STUDY

► SOLID CARBIDE DREAM DRILLS - General with Coolant Holes

CUTTING CONDITION	
Tool	DH408015 (Dream Drill with Coolant Holes)
Size	Ø1.5 x Ø3 x 15 x 55
Work Material	• DIN: X40GrMoV51 • WR: 1.2344 • JIS: SKD61 (HRC30)
RPM	14,856 rev./min.
Feed	0.05 mm/rev.
Drilling Depth	7.5 mm
Coolant	Wet Cut

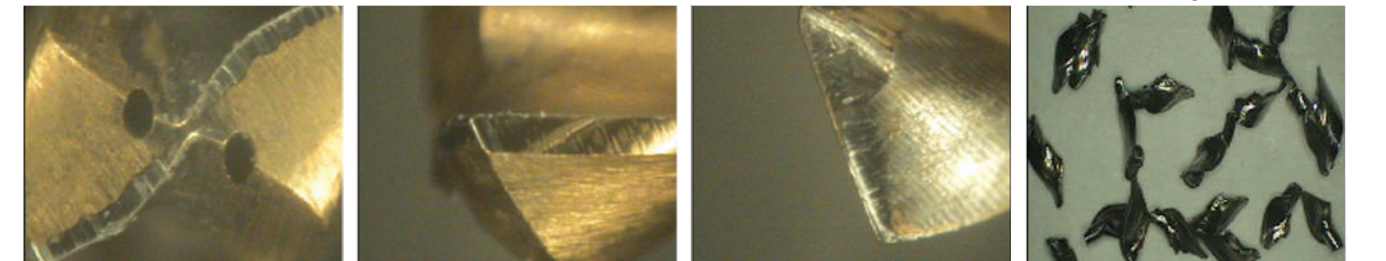


YG-1



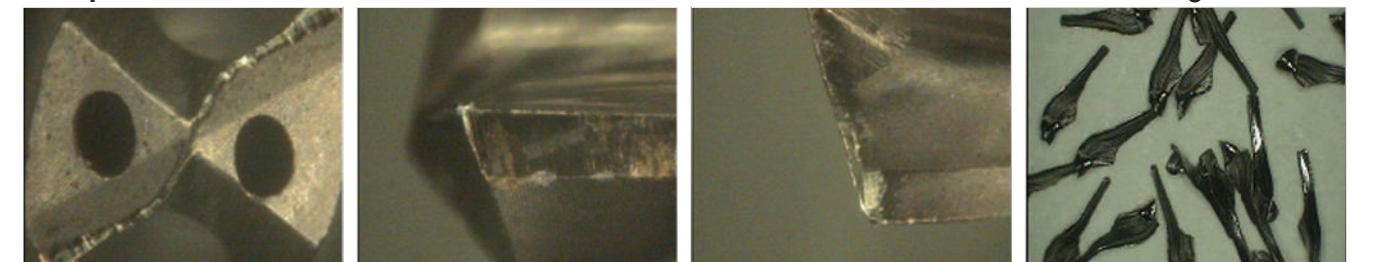
Total Drilling 400 Holes

Competitor A



Total Drilling 400 Holes

Competitor B

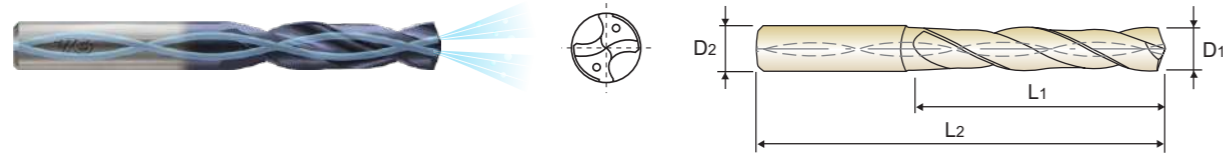


Total Drilling 400 Holes

TiN-COATED SOLID CARBIDE DREAM DRILLS
General with Coolant Holes (3XD)

PLAIN SHANK **DH406** SERIES
FLAT SHANK **DH446** SERIES

- ▶ Drilling for Steel, Cast Steel, Cast Iron, Malleable Cast Iron
- ▶ Self centering and chip breaking by R-thinning
- ▶ Wave shape and negative land on the cutting edge for low thrust, stable torque and long tool life
- ▶ Optimized flute shape for strength of drilling and smooth chip evacuation



SHORT
3 × D

EDP No. (TiN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH406030	DH446030	3.0	6	20	62
DH406031	DH446031	3.1	6	20	62
DH406032	DH446032	3.2	6	20	62
DH406033	DH446033	3.3	6	20	62
DH406034	DH446034	3.4	6	20	62
DH406035	DH446035	3.5	6	20	62
DH406036	DH446036	3.6	6	20	62
DH406037	DH446037	3.7	6	20	62
DH406038	DH446038	3.8	6	24	66
DH406039	DH446039	3.9	6	24	66
DH406040	DH446040	4.0	6	24	66
DH406041	DH446041	4.1	6	24	66
DH406042	DH446042	4.2	6	24	66
DH406043	DH446043	4.3	6	24	66
DH406044	DH446044	4.4	6	24	66
DH406045	DH446045	4.5	6	24	66
DH406046	DH446046	4.6	6	24	66
DH406047	DH446047	4.7	6	24	66
DH406048	DH446048	4.8	6	28	66
DH406049	DH446049	4.9	6	28	66
DH406050	DH446050	5.0	6	28	66
DH406051	DH446051	5.1	6	28	66
DH406052	DH446052	5.2	6	28	66
DH406053	DH446053	5.3	6	28	66
DH406054	DH446054	5.4	6	28	66
DH406055	DH446055	5.5	6	28	66

▶ Other shank types are available on your request.

▶ NEXT PAGE

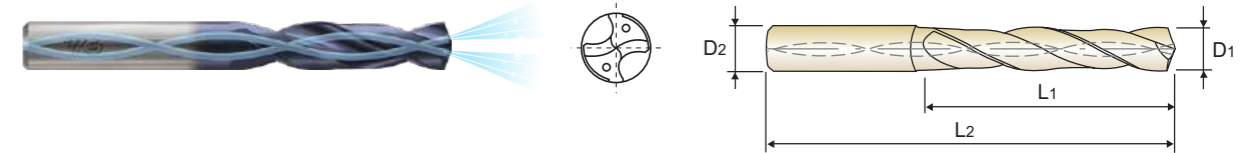
© : Excellent ○ : Good

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	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	125	13	25	28	32	10	29	32	38	10	15	35	15	23	10	10	26	3	25	180	260	180	250	130	230	180	260	160	250	130	230	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

TiN-COATED SOLID CARBIDE DREAM DRILLS
General with Coolant Holes (3XD)

PLAIN SHANK **DH406** SERIES
FLAT SHANK **DH446** SERIES

- ▶ Drilling for Steel, Cast Steel, Cast Iron, Malleable Cast Iron
- ▶ Self centering and chip breaking by R-thinning
- ▶ Wave shape and negative land on the cutting edge for low thrust, stable torque and long tool life
- ▶ Optimized flute shape for strength of drilling and smooth chip evacuation



SHORT
3 × D

EDP No. (TiN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH406082	DH446082	8.2	10	47	89
DH406083	DH446083	8.3	10	47	89
DH406084	DH446084	8.4	10	47	89
DH406085	DH446085	8.5	10	47	89
DH406086	DH446086	8.6	10	47	89
DH406087	DH446087	8.7	10	47	89
DH406088	DH446088	8.8	10	47	89
DH406089	DH446089	8.9	10	47	89
DH406090	DH446090	9.0	10	47	89
DH406091	DH446091	9.1	10	47	89
DH406092	DH446092	9.2	10	47	89
DH406093	DH446093	9.3	10	47	89
DH406094	DH446094	9.4	10	47	89
DH406095	DH446095	9.5	10	47	89
DH406096	DH446096	9.6	10	47	89
DH406097	DH446097	9.7	10	47	89
DH406098	DH446098	9.8	10	47	89
DH406099	DH446099	9.9	10	47	89
DH406100	DH446100	10.0	10	47	89
DH406101	DH446101	10.1	12	55	102
DH406102	DH446102	10.2	12	55	102
DH406103	DH446103	10.3	12	55	102
DH406104	DH446104	10.4	12	55	102
DH406105	DH446105	10.5	12	55	102
DH406106	DH446106	10.6	12	55	102
DH406107	DH446107	10.7	12	55	102
DH406108	DH446108	10.8	12	55	102
DH406109	DH446109	10.9	12	55	102

▶ Other shank types are available on your request.

© : 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	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	125	13	25	28	32	10	29	32	38	10	15	35	15	23	10	10	26	3	25	180	260	180	250	130	230	180	260	160	250	130	230	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



Leading Through Innovation

DH406, DH446, DH408, DH448, DH421 SERIES with COOLANT HOLES

Vc = m/min
RPM = rev./min.
FEED = mm/rev.

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	6.0
P	2	Non-alloy steel	80	RPM 25460 FEED 0.03-0.05	12730	12730	110	RPM 11670 FEED 0.06-0.12	8750	7000	5840	5840
	3		80	RPM 25460 FEED 0.03-0.05	12730	12730	110	RPM 11670 FEED 0.06-0.12	8750	7000	5840	5840
	4		80	RPM 25460 FEED 0.03-0.05	12730	12730	110	RPM 11670 FEED 0.04-0.10	8750	7000	5840	5840
	5		70	RPM 22280 FEED 0.03-0.05	11140	11140	90	RPM 9550 FEED 0.04-0.10	7160	5730	4770	4770
	6	Low alloy steel	80	RPM 25460 FEED 0.03-0.05	12730	12730	110	RPM 11670 FEED 0.06-0.12	8750	7000	5840	5840
	7		70	RPM 22280 FEED 0.03-0.05	11140	11140	90	RPM 9550 FEED 0.06-0.12	7160	5730	4770	4770
	8		70	RPM 22280 FEED 0.02-0.04	11140	11140	90	RPM 9550 FEED 0.04-0.10	7160	5730	4770	4770
	9	High alloyed steel, and tool steel	40	RPM 12730 FEED 0.02-0.04	6370	6370	50	RPM 5310 FEED 0.03-0.08	3980	3180	2650	2650
	10		60	RPM 19100 FEED 0.03-0.05	9550	9550	80	RPM 8490 FEED 0.04-0.10	6370	5090	4240	4240
	11		40	RPM 12730 FEED 0.02-0.04	6370	6370	45	RPM 4770 FEED 0.03-0.08	3580	2860	2390	2390
	M	12	Stainless steel	60	RPM 19100 FEED 0.03-0.05	9550	9550	80	RPM 8490 FEED 0.06-0.12	6370	5090	4240
13		45		RPM 14320 FEED 0.02-0.04	7160	7160	55	RPM 5840 FEED 0.04-0.10	4380	3500	2920	2920
K	15	Grey cast iron	80	RPM 25460 FEED 0.04-0.06	12730	12730	110	RPM 11670 FEED 0.08-0.14	8750	7000	5840	5840
	16		75	RPM 23870 FEED 0.04-0.06	11940	11940	95	RPM 10080 FEED 0.06-0.12	7560	6050	5040	5040
	17	Nodular cast iron	90	RPM 28650 FEED 0.04-0.06	14320	14320	120	RPM 12730 FEED 0.08-0.14	9550	7640	6370	6370
	18		60	RPM 19100 FEED 0.04-0.06	9550	9550	80	RPM 8490 FEED 0.06-0.12	6370	5090	4240	4240
	19	Malleable cast iron	70	RPM 22280 FEED 0.04-0.06	11140	11140	90	RPM 9550 FEED 0.08-0.14	7160	5730	4770	4770
20	60		RPM 19100 FEED 0.03-0.05	9550	9550	80	RPM 8490 FEED 0.06-0.12	6370	5090	4240	4240	

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm)						
					8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	2	Non-alloy steel	110	RPM 4380 FEED 0.18-0.24	3500	2920	2500	2190	1950	1750	1750
	3		110	RPM 4380 FEED 0.18-0.24	3500	2920	2500	2190	1950	1750	1750
	4		110	RPM 4380 FEED 0.14-0.20	3500	2920	2500	2190	1950	1750	1750
	5		90	RPM 3580 FEED 0.14-0.20	2860	2390	2050	1790	1590	1430	1430
	6	Low alloy steel	110	RPM 4380 FEED 0.18-0.24	3500	2920	2500	2190	1950	1750	1750
	7		90	RPM 3580 FEED 0.16-0.28	2860	2390	2050	1790	1590	1430	1430
	8		90	RPM 3580 FEED 0.14-0.20	2860	2390	2050	1790	1590	1430	1430
	9	High alloyed steel, and tool steel	50	RPM 1990 FEED 0.12-0.18	1590	1330	1140	990	880	800	800
	10		80	RPM 3180 FEED 0.14-0.20	2550	2120	1820	1590	1410	1270	1270
	11		45	RPM 1790 FEED 0.12-0.18	1430	1190	1020	900	800	720	720
	M	12	Stainless steel	80	RPM 3180 FEED 0.18-0.24	2550	2120	1820	1590	1410	1270
13		55		RPM 2190 FEED 0.14-0.20	1750	1460	1250	1090	970	880	880
K	15	Grey cast iron	110	RPM 4380 FEED 0.16-0.28	3500	2920	2500	2190	1950	1750	1750
	16		95	RPM 3780 FEED 0.18-0.24	3020	2520	2160	1890	1680	1510	1510
	17	Nodular cast iron	120	RPM 4770 FEED 0.16-0.28	3820	3180	2730	2390	2120	1910	1910
	18		80	RPM 3180 FEED 0.18-0.24	2550	2120	1820	1590	1410	1270	1270
	19	Malleable cast iron	90	RPM 3580 FEED 0.16-0.28	2860	2390	2050	1790	1590	1430	1430
20	80		RPM 3180 FEED 0.18-0.24	2550	2120	1820	1590	1410	1270	1270	

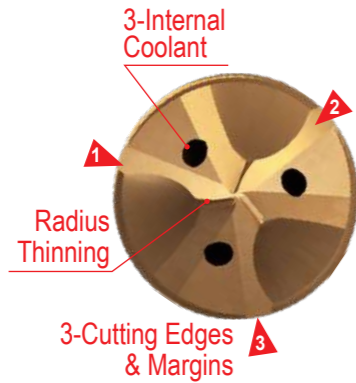
► Recommend to reduce the feed rate as following
Feed 100% : DH406(3×D), DH408(5×D) Feed 75% : DH421(8×D)

SOLID CARBIDE

DREAM DRILLS
HIGH FEED

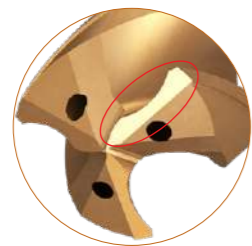
- 1.5 to 2 Times Faster Feeding Speed than 2-Flute Drill
For Carbon Steels, Alloy Steels(up to HRC35) and Cast Iron

DREAM DRILLS HIGH FEED



3-Cutting Edges & Margins will allow high penetration rate, accurate hole location and good surface finish.

Radius Thinning for **Self Centering and Chip Breaking**



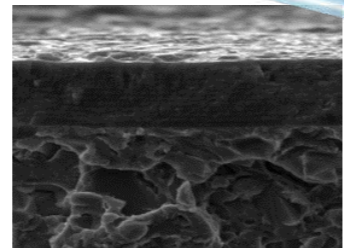
Ground Negative land on cutting edge for Reliable Tool Life

3-Slots on end of shank for smooth and consistent coolant supply



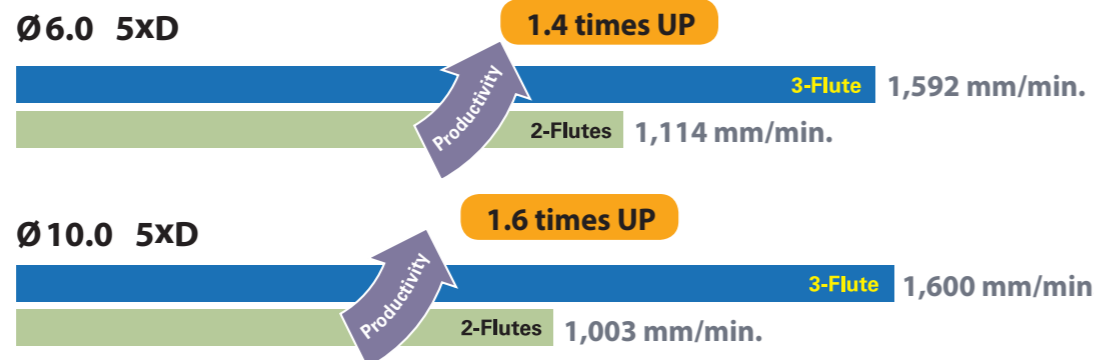
H-Coating
(Upgraded AlCrN-Based : **Multi-Layer coating**)

- Higher worn-out resistance and Lower friction
- Higher Cutting Speed and Feed
- Improved drill Hole Quality



Multi Layers
Carbide

Productivity (Carbon Steel)

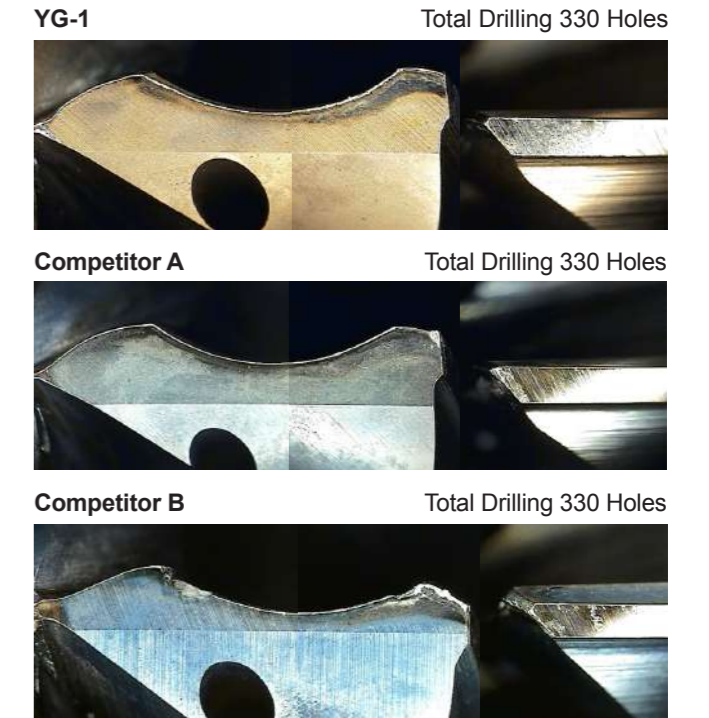


1.5 ~ 2 times Faster in drilling compared to two flute carbide drills

CASE STUDY

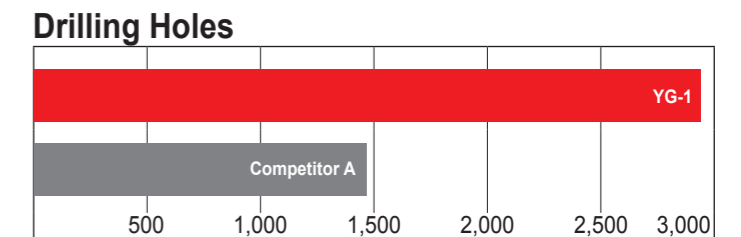
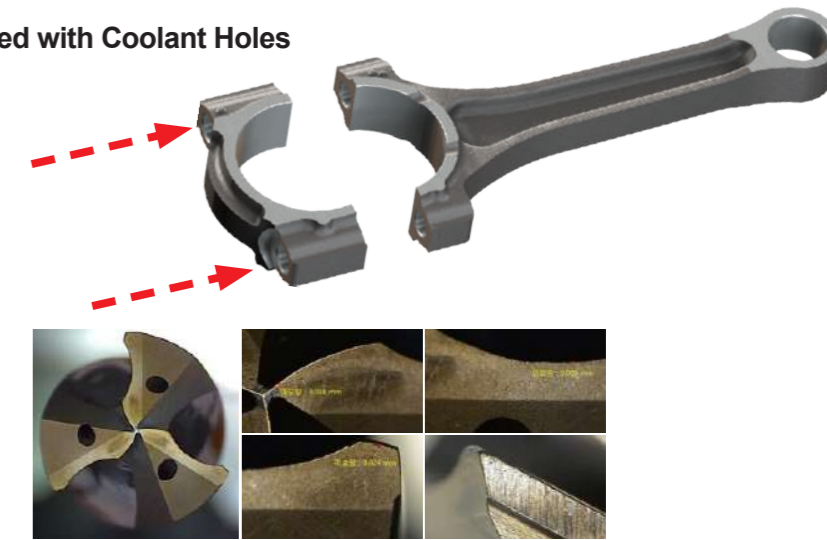
► SOLID CARBIDE DREAM DRILLS - High Feed with Coolant Holes

CUTTING CONDITION	
Tool	DGR495100 (Dream Drills High Feed)
Size	Ø10 x Ø10 x 61 x 103
Work Material	• DIN: C45 • AISI: 1045 • JIS: S45C (HRc20)
RPM	3,200 rev./min.
Feed	0.5 mm/rev.
Drilling Depth	50 mm
Drilling Method	Blind Hole
Coolant	Wet Cut
Machine	Machining Center



► SOLID CARBIDE DREAM DRILLS - High Feed with Coolant Holes

CUTTING CONDITION	
Tool	DGR495080 (Dream Drills High Feed)
Size	Ø8 x Ø8 x 53 x 91
Work Material	Connecting rod
RPM	2,000 rev./min.
Feed	0.23 mm/rev.
Drilling Depth	40.0 mm
Drilling Method	Internal Cooling, Water Soluble
Coolant	Wet Cut
Machine	Machining Center



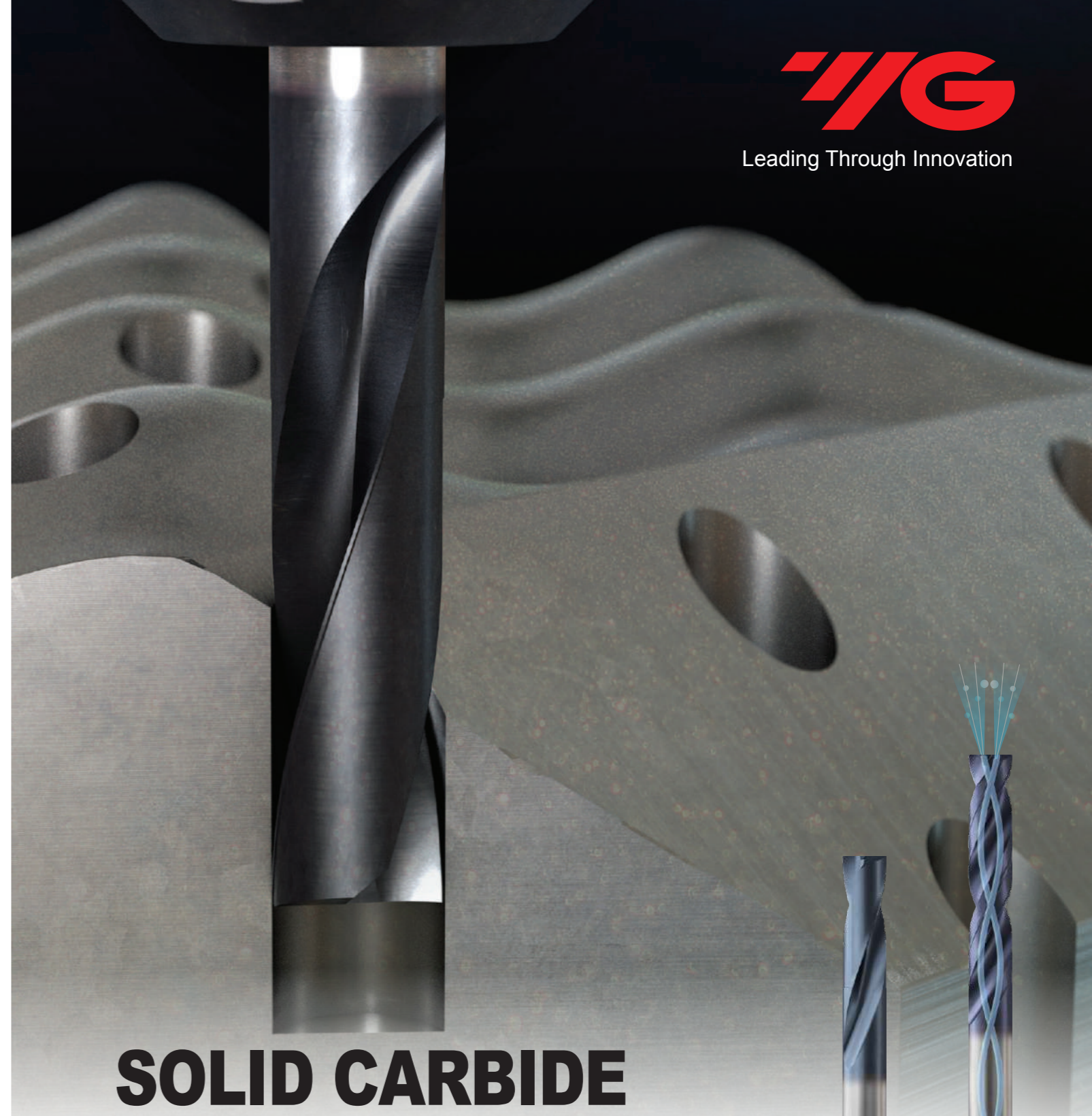


Leading Through Innovation

DGR493, DGR495 SERIES with COOLANT HOLES

Vc = m/min
RPM = rev./min.
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm)									
					5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	
P	2	Non-alloy steel	100	RPM	6370	5310	3980	3180	2650	2270	1990	1770	1590	
				FEED	0.2-0.25	0.24-0.3	0.32-0.4	0.4-0.5	0.48-0.6	0.56-0.7	0.56-0.72	0.63-0.81	0.7-0.88	
			100	RPM	6370	5310	3980	3180	2650	2270	1990	1770	1590	
	FEED			0.2-0.25	0.24-0.3	0.32-0.4	0.4-0.5	0.48-0.6	0.56-0.7	0.56-0.72	0.63-0.81	0.7-0.88		
	100		RPM	6370	5310	3980	3180	2650	2270	1990	1770	1590		
			FEED	0.16-0.21	0.2-0.26	0.26-0.34	0.34-0.42	0.41-0.47	0.47-0.54	0.47-0.55	0.5-0.59	0.54-0.67		
	80	RPM	5090	4240	3180	2550	2120	1820	1590	1410	1270			
		FEED	0.16-0.21	0.2-0.26	0.26-0.34	0.34-0.42	0.41-0.47	0.47-0.54	0.47-0.55	0.5-0.59	0.54-0.67			
	6	100	Low alloy steel	RPM	6370	5310	3980	3180	2650	2270	1990	1770	1590	
				FEED	0.2-0.25	0.24-0.3	0.32-0.4	0.4-0.5	0.48-0.54	0.56-0.63	0.56-0.64	0.63-0.72	0.68-0.81	
		80		RPM	5090	4240	3180	2550	2120	1820	1590	1410	1270	
FEED				0.2-0.25	0.24-0.3	0.32-0.4	0.4-0.5	0.48-0.54	0.56-0.63	0.56-0.64	0.63-0.72	0.68-0.81		
80	RPM	5090		4240	3180	2550	2120	1820	1590	1410	1270			
	FEED	0.16-0.21		0.2-0.26	0.26-0.34	0.34-0.42	0.41-0.47	0.47-0.54	0.47-0.55	0.5-0.59	0.54-0.67			
40	RPM	2550	2120	1590	1270	1060	910	800	710	640				
	FEED	0.13-0.18	0.16-0.22	0.21-0.29	0.26-0.36	0.32-0.38	0.36-0.43	0.36-0.45	0.38-0.47	0.41-0.54				
10	High alloyed steel, and tool steel	70	RPM	4460	3710	2790	2230	1860	1590	1390	1240	1110		
			FEED	0.16-0.21	0.2-0.26	0.26-0.34	0.34-0.42	0.41-0.47	0.47-0.54	0.47-0.55	0.5-0.59	0.54-0.67		
40		RPM	2550	2120	1590	1270	1060	910	800	710	640			
		FEED	0.13-0.18	0.16-0.22	0.21-0.29	0.26-0.36	0.32-0.38	0.36-0.43	0.36-0.45	0.38-0.47	0.41-0.54			
K		15	Grey cast iron	100	RPM	6370	5310	3980	3180	2650	2270	1990	1770	1590
					FEED	0.23-0.30	0.27-0.36	0.36-0.48	0.45-0.60	0.54-0.72	0.63-0.84	0.64-0.80	0.72-0.90	0.80-0.98
	80	RPM	5090	4240	3180	2550	2120	1820	1590	1410	1270			
		FEED	0.20-0.25	0.24-0.30	0.32-0.40	0.40-0.50	0.48-0.60	0.56-0.70	0.56-0.72	0.63-0.81	0.70-0.90			
	100	RPM	6370	5310	3980	3180	2650	2270	1990	1770	1590			
		FEED	0.23-0.30	0.27-0.36	0.36-0.48	0.45-0.60	0.54-0.72	0.63-0.84	0.64-0.80	0.72-0.90	0.80-0.98			
70	RPM	4460	3710	2790	2230	1860	1590	1390	1240	1110				
	FEED	0.20-0.25	0.24-0.30	0.32-0.40	0.40-0.50	0.48-0.60	0.56-0.70	0.56-0.72	0.63-0.81	0.70-0.90				
80	RPM	5090	4240	3180	2550	2120	1820	1590	1410	1270				
	FEED	0.23-0.30	0.27-0.36	0.36-0.48	0.45-0.60	0.54-0.72	0.63-0.84	0.64-0.80	0.72-0.90	0.80-0.98				
70	RPM	4460	3710	2790	2230	1860	1590	1390	1240	1110				
	FEED	0.20-0.25	0.24-0.30	0.32-0.40	0.40-0.50	0.48-0.60	0.56-0.70	0.56-0.72	0.63-0.81	0.70-0.90				



SOLID CARBIDE

**DREAM DRILLS
FLAT BOTTOM**

- For Holes on Various Angled Surfaces

DREAM DRILLS FLAT BOTTOM

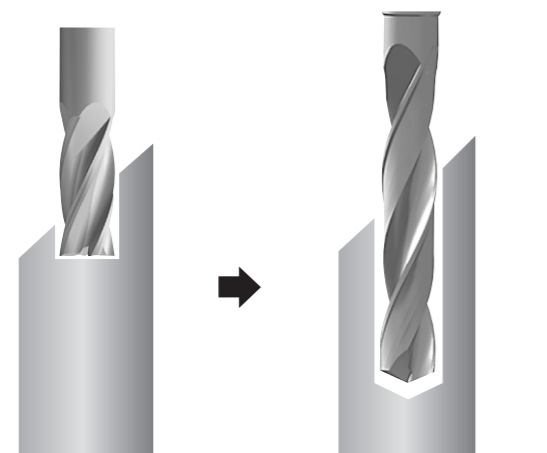
2XD

5XD

O.D.(mm)		5xD Corner Chamfer
Above	Up to	Length(mm)
Ø3	Ø6	0.06
Ø6	Ø10	0.12
Ø10	Ø14	0.18
Ø14	Ø20	0.26

Only One Operation for Angled Surface

For angled surfaces, two operations are required to drill in a conventional Process



1st operation(End mill)
Counter boring to make flat surface and guide hole

2nd operation(Drill)
Drilling to required depth of hole

For angled surfaces, only one operation can complete the drilling with Dream Drill Flat Bottom

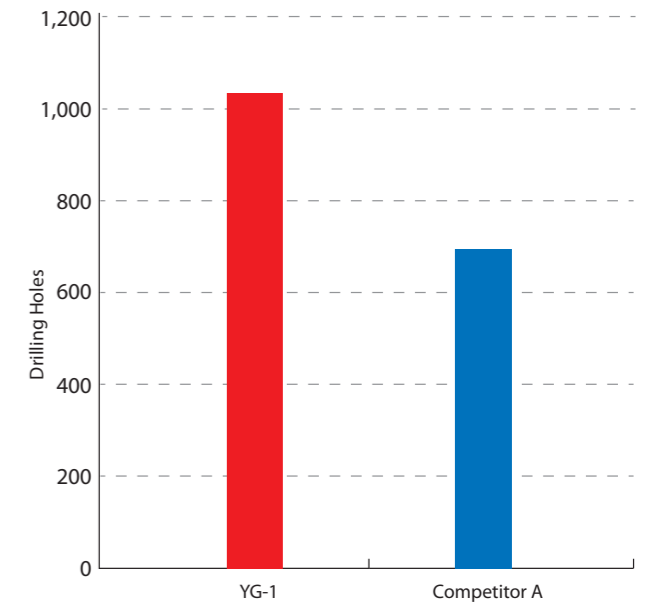
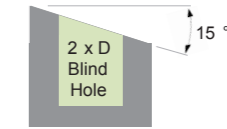


One operation(Dream Drill Flat Bottom)
One Drill does it all
without using both an end mill and a drill

CASE STUDY

► SOLID CARBIDE DREAM DRILLS - Flat Bottom without Coolant Holes

CUTTING CONDITION	
Drill Diameter (mm)	Ø6.0
Work Material	• DIN: C45 • AISI: 1045 • JIS: S45C (HRc20)
Cutting Speed	75.4 m/min
RPM	4,000 rev/min
Feed	0.1 mm/rev
Drilling Depth	12.0 mm (2XD) Blind Hole / without Pecking
Coolant	External Cooling Water Soluble (9% Emulsion)
Machine	Machining Center



YG-1



Small Chipping

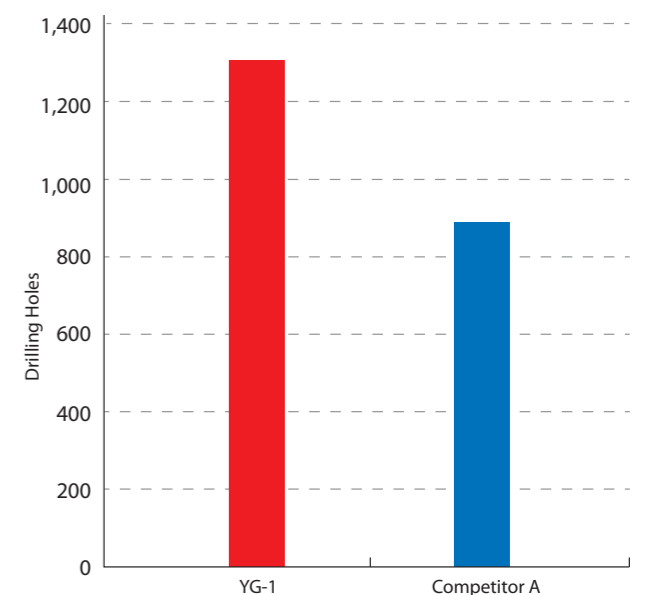
Competitor A



Big Chipping

► SOLID CARBIDE DREAM DRILLS - Flat Bottom with Coolant Holes

CUTTING CONDITION	
Drill Diameter (mm)	Ø6.0
Work Material	• DIN: 42CrMo4 • AISI: 4140 • JIS: SCM440 (HRc30)
Cutting Speed	100.0 m/min
RPM	5,300 rev/min
Feed	0.12 mm/rev
Drilling Depth	Pilot Drill- 6.0mm (1XD) Total depth- 30.0 mm (5XD) Through Hole / without Pecking
Coolant	Internal Cooling Water Soluble (9% Emulsion)
Machine	Machining Center



► YG-1



Small Chipping

► Competitor A



Big Chipping



Leading Through Innovation



Global Cutting Tool Leader **YG-1**



DREAM DRILLS

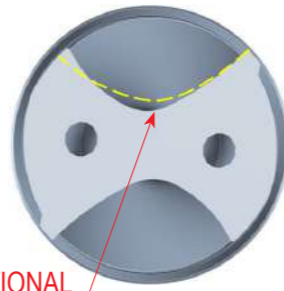
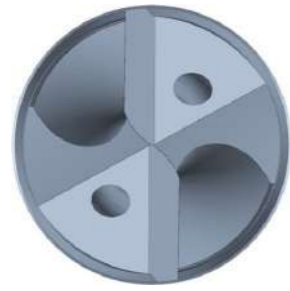


SOLID CARBIDE

DREAM DRILLS INOX

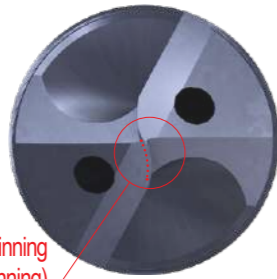
- For Tough Materials like Stainless Steels

DREAM DRILLS INOX



CONVENTIONAL

- Special Flute geometry and Chip pocket to help Chip evacuation and proper Chip Curl.
- strong rigidity from **Cutting Edge**
- high Performance on Stainless Steel and pre hardend Steel



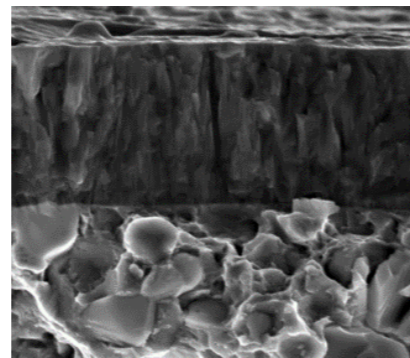
R-Thinning (Radius Thinning)

- Positive Axial **Rake Angle** and cutting force, with **R-Thinning** enhance centering and Chip Breaking.

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.



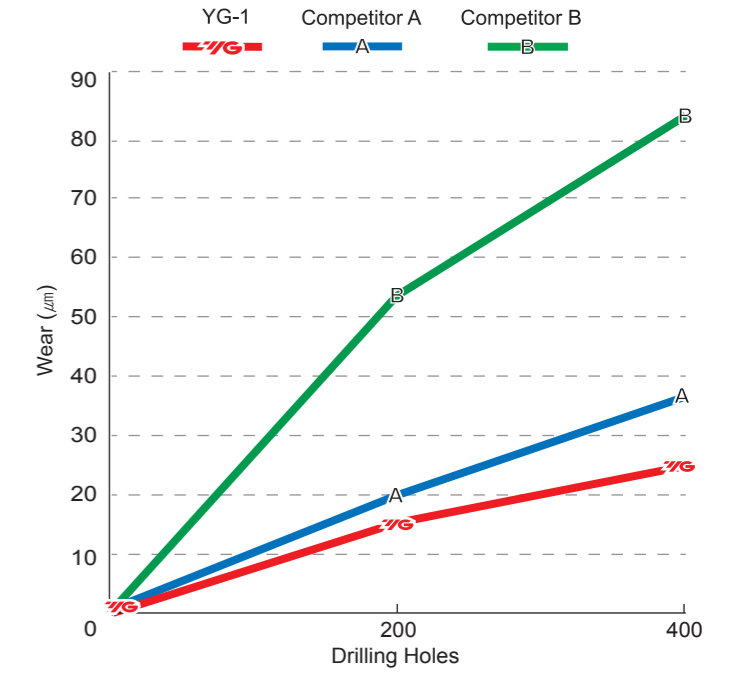
Nano Layer

Carbide

CASE STUDY

► SOLID CARBIDE DREAM DRILLS - INOX with Coolant Holes

CUTTING CONDITION	
Tool	DH452060 (DREAM DRILL-INOX)
Size	Ø6 x Ø6 x 44 x 82
Work Material	• DIN: X5CrNi1810 (X4CrNi18-10) • WR: 1.4301 • JIS: SUS304
RPM	3,700 rev./min.
Feed	0.07 mm/rev.
Drilling Depth	24 mm
Coolant	Wet Cut

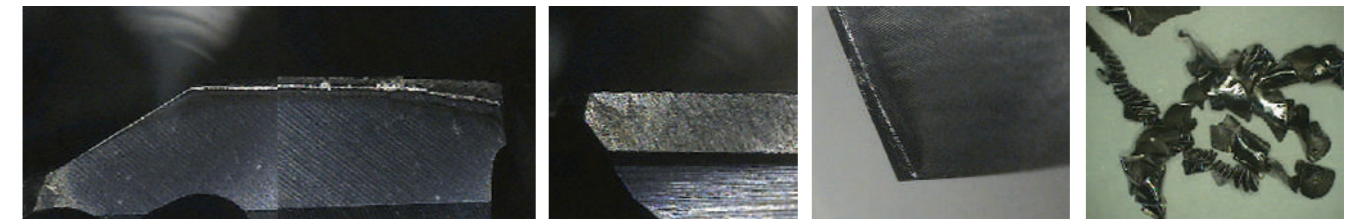


YG-1



Total Drilling 400 Holes

Competitor A



Total Drilling 400 Holes

Competitor B

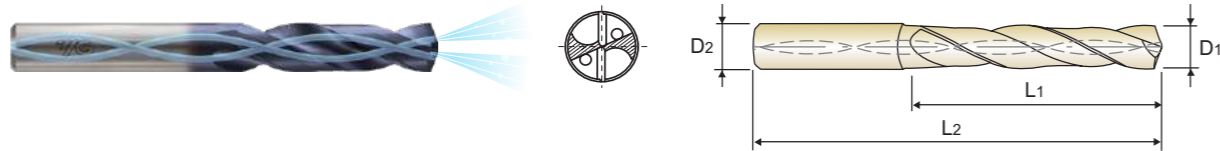


Total Drilling 400 Holes

TiAIN-COATED SOLID CARBIDE DREAM DRILLS INOX with Coolant Holes (3XD)

DH451 SERIES

- Special flute shape and geometry suitable for machining stainless steel
► Excellent chip evacuation from better surface treatment
► Point R-thinning achieves superior centering and chip curling
► TiAIN coating for better surface finishes and longer tool life



Icons representing DIN 6537, CARBIDE, h6, m7, 140°, 20 bar, and P.69.

SHORT 3 x D

Table listing drill bit specifications for TiAIN coating, including EDP No., Drill Diameter (D1), Shank Diameter (D2), Flute Length (L1), and Overall Length (L2).

Table listing drill bit specifications for TiAIN coating, including EDP No., Drill Diameter (D1), Shank Diameter (D2), Flute Length (L1), and Overall Length (L2).

► Other shank types are available on your request.

► NEXT PAGE

TiAIN-COATED SOLID CARBIDE DREAM DRILLS INOX with Coolant Holes (3XD)

DH451 SERIES

- Special flute shape and geometry suitable for machining stainless steel
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Icons representing DIN 6537, CARBIDE, h6, m7, 140°, 20 bar, and P.69.

SHORT 3 x D

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► Other shank types are available on your request.

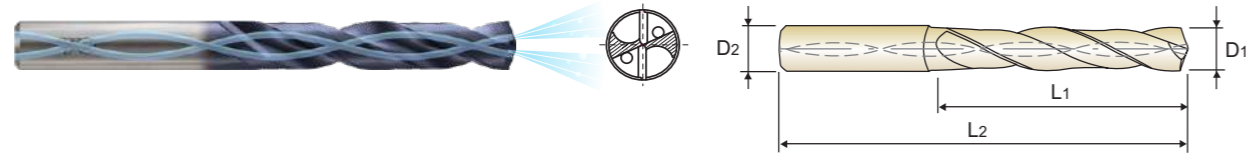
ISO material compatibility chart showing application ranges for various materials like Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, etc.

ISO material compatibility chart showing application ranges for various materials like Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, etc.

TiAIN-COATED SOLID CARBIDE DREAM DRILLS INOX with Coolant Holes (5XD)

DH452 SERIES

- ▶ Special flute shape and geometry suitable for machining stainless steel
- ▶ Excellent chip evacuation from better surface treatment
- ▶ Point R-thinning achieves superior centering and chip curling
- ▶ TiAIN coating for better surface finishes and longer tool life



DIN 6537 CARBIDE h6 m7 140° 20 bar P. 69

LONG
5 × D

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length	
				L1	L2
TiAIN					
DH452010	1.0	3	8	55	
DH452011	1.1	3	12	55	
DH452012	1.2	3	12	55	
DH452013	1.3	3	12	55	
DH452014	1.4	3	12	55	
DH452015	1.5	3	16	55	
DH452016	1.6	3	16	55	
DH452017	1.7	3	16	55	
DH452018	1.8	3	16	55	
DH452019	1.9	3	16	55	
DH452020	2.0	4	21	57	
DH452021	2.1	4	21	57	
DH452022	2.2	4	21	57	
DH452023	2.3	4	21	57	
DH452024	2.4	4	21	57	
DH452025	2.5	4	21	57	
DH452026	2.6	4	21	57	
DH452027	2.7	4	21	57	
DH452028	2.8	4	21	57	
DH452029	2.9	4	21	57	
DH452030	3.0	6	28	66	
DH452031	3.1	6	28	66	
DH452032	3.2	6	28	66	
DH452033	3.3	6	28	66	

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO Material Description	P									M			K								
	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				
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N							S					H									
	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	60	100	75	90	130	110	90	100			15	30	25	38	34	36	37	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

TiAIN-COATED SOLID CARBIDE DREAM DRILLS INOX with Coolant Holes (5XD)

DH452 SERIES

- ▶ Special flute shape and geometry suitable for machining stainless steel
- ▶ Excellent chip evacuation from better surface treatment
- ▶ Point R-thinning achieves superior centering and chip curling
- ▶ TiAIN coating for better surface finishes and longer tool life



DIN 6537 CARBIDE h6 m7 140° 20 bar P. 69

LONG
5 × D

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length	
				L1	L2
TiAIN					
DH452058	5.8	6	44	82	
DH452059	5.9	6	44	82	
DH452060	6.0	6	44	82	
DH452061	6.1	8	53	91	
DH452062	6.2	8	53	91	
DH452063	6.3	8	53	91	
DH452064	6.4	8	53	91	
DH452065	6.5	8	53	91	
DH452066	6.6	8	53	91	
DH452067	6.7	8	53	91	
DH452068	6.8	8	53	91	
DH452069	6.9	8	53	91	
DH452070	7.0	8	53	91	
DH452071	7.1	8	53	91	
DH452072	7.2	8	53	91	
DH452073	7.3	8	53	91	
DH452074	7.4	8	53	91	
DH452075	7.5	8	53	91	
DH452076	7.6	8	53	91	
DH452077	7.7	8	53	91	
DH452078	7.8	8	53	91	
DH452079	7.9	8	53	91	
DH452080	8.0	8	53	91	
DH452081	8.1	10	61	103	

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO Material Description	P									M			K								
	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				
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N							S					H									
	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	60	100	75	90	130	110	90	100			15	30	25	38	34	36	37	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



Leading Through Innovation



Global Cutting Tool Leader **YG-1**



DREAM DRILLS



SOLID CARBIDE

DREAM DRILLS ALU

- For Aluminum and Aluminum Alloys

DREAM DRILLS ALU



Design that optimized flute shape and geometry suitable for Aluminum, Aluminum alloy.



Optimized point thinning to prevent any chip-clogging from chip welding.

Polished flutes improve chip control and evacuation.

The Drilling of High Speed is possible while maintaining the excellent surface roughness of workpiece.

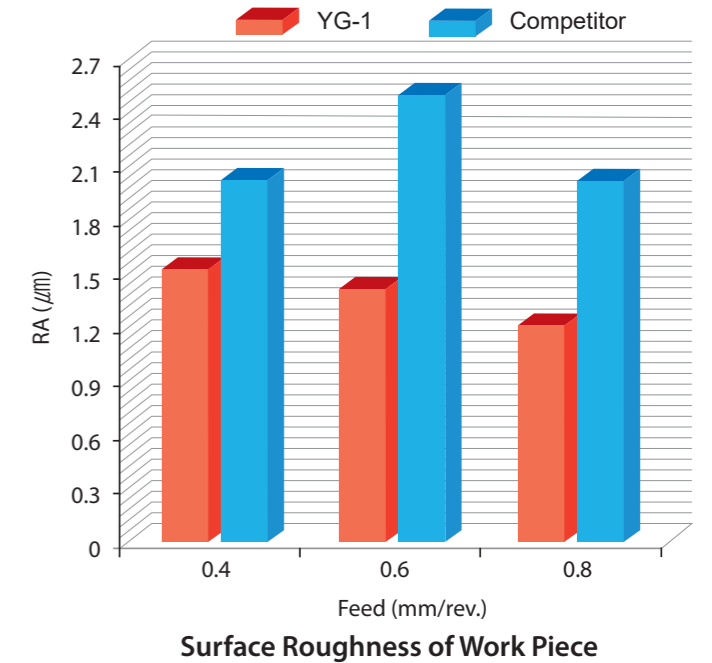
Ø6.0 & Ø10.0 TEST, Aluminum(6061)

CUTTING CONDITION	DREAM DRILL-ALU		COMPETITOR A	
	Roundness	Straightness	Roundness	Straightness
SIZE Ø 6.0				
Drilling Holes 1200 Holes				
SIZE Ø10.0				
Drilling Holes 820 Holes				

CASE STUDY

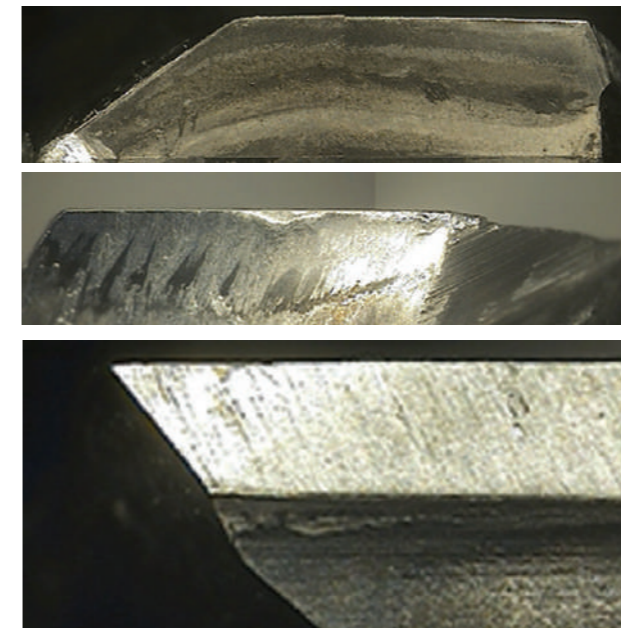
► SOLID CARBIDE DREAM DRILLS - ALU with Coolant Holes

CUTTING CONDITION	
Tool	D5433100 (DREAM DRILLS-ALU)
Size	Ø10 × Ø10 × 61 × 103
Work Material	• DIN: AlMgSiCu • AISI: 6061 • JIS: A6061
RPM	6,367 rev./min.
Feed	0.4-0.8 mm/rev.
Drilling Depth	45 mm
Coolant	Wet cut



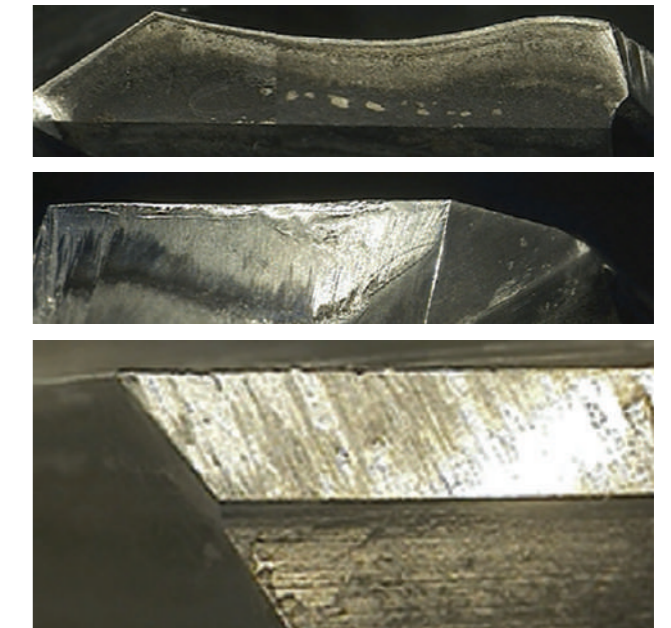
YG-1

Total Drilling 820 Holes



Competitor A

Total Drilling 820 Holes





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D5432, D5433, D5434 SERIES with COOLANT HOLES

Vc = m/min
RPM = rev./min.
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm)										
					3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
N	21	Aluminum-wrought alloy	200	RPM	21220	15920	12730	10610	7960	6370	5310	4550	3980	3540	3180
				FEED	0.12-0.18	0.14-0.22	0.15-0.23	0.17-0.25	0.21-0.28	0.24-0.30	0.24-0.30	0.25-0.35	0.25-0.35	0.28-0.38	0.30-0.40
	22	Aluminum-wrought alloy	160	RPM	16980	12730	10190	8490	6370	5090	4240	3640	3180	2830	2550
				FEED	0.12-0.18	0.14-0.22	0.15-0.23	0.17-0.25	0.21-0.28	0.24-0.30	0.24-0.30	0.25-0.35	0.25-0.35	0.28-0.38	0.30-0.40
	23	Aluminum-cast, alloyed	150	RPM	15920	11940	9550	7960	5970	4770	3980	3410	2980	2650	2390
				FEED	0.15-0.21	0.17-0.25	0.19-0.27	0.21-0.28	0.24-0.31	0.29-0.45	0.33-0.55	0.35-0.60	0.35-0.60	0.39-0.73	0.39-0.85
	24	Aluminum-cast, alloyed	140	RPM	14850	11140	8910	7430	5570	4460	3710	3180	2790	2480	2230
				FEED	0.15-0.21	0.17-0.25	0.19-0.27	0.21-0.28	0.24-0.31	0.29-0.45	0.33-0.55	0.35-0.60	0.35-0.60	0.39-0.73	0.39-0.85



SOLID CARBIDE

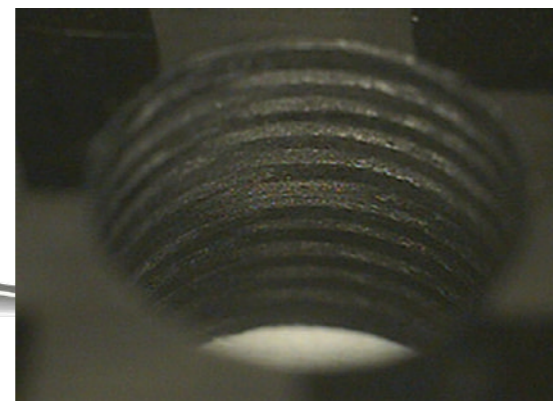
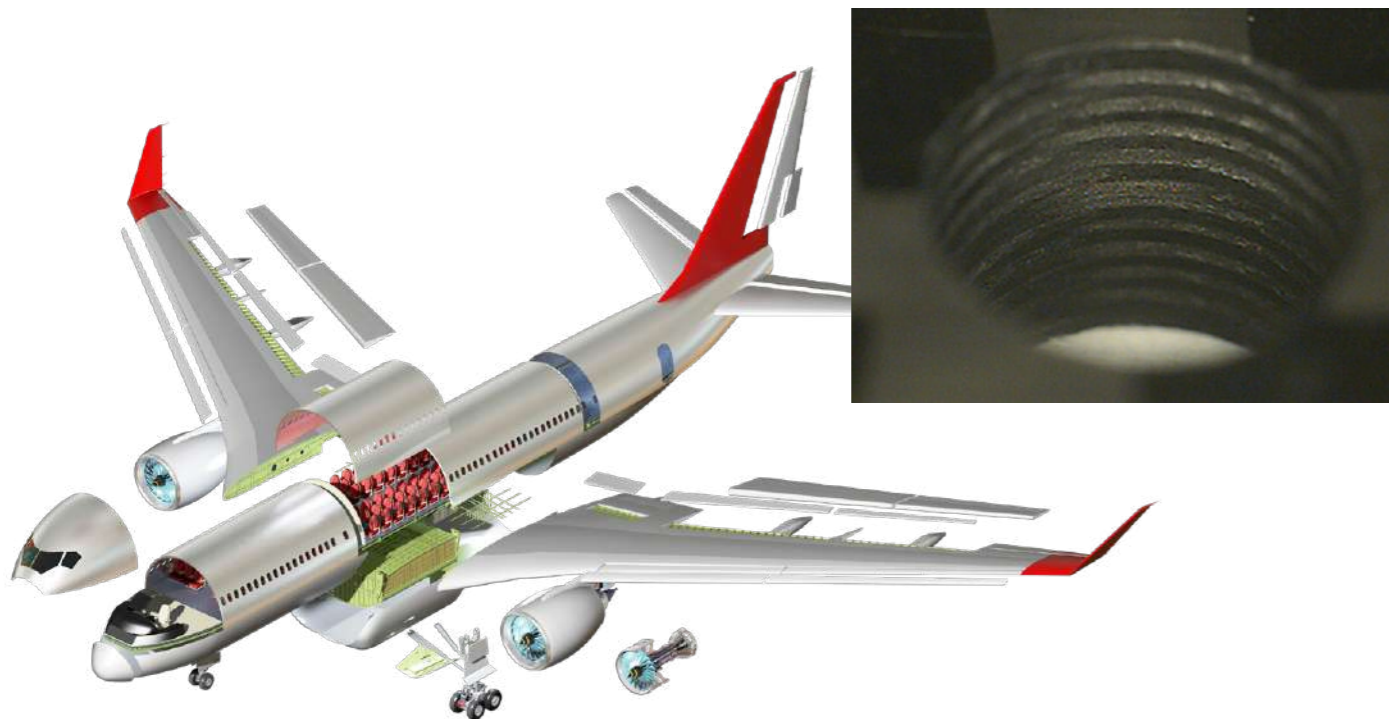
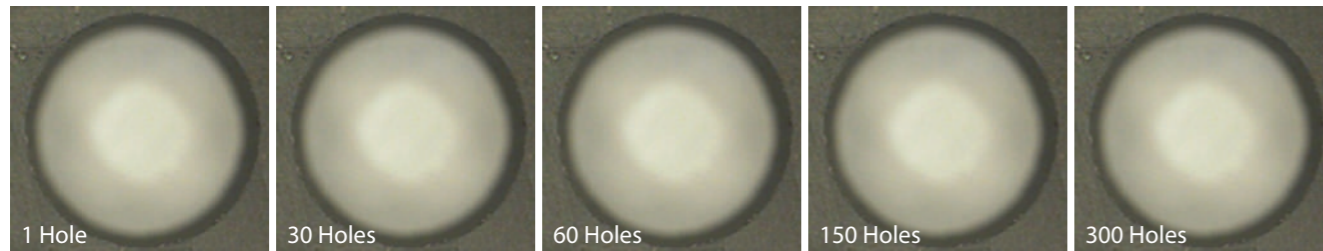
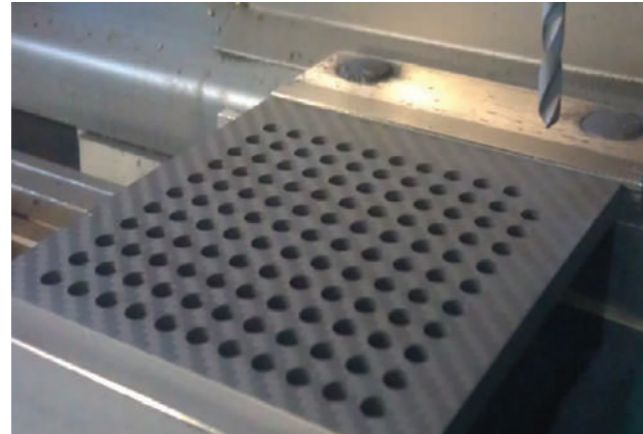
**DREAM DRILLS
CFRP**

- For Composite Materials including CFRP and GFRP

CASE STUDY

► SOLID CARBIDE DREAM DRILLS - CFRP without Coolant Holes

CUTTING CONDITION	
Tool	DI473060 (DREAM DRILLS - CFRP)
Size	Ø6 × Ø6 × 44 × 82
Work Material	CFRP
RPM	6,366 rev./min.
Feed	254.64 mm/min.
Drilling Depth	6 mm, Through Hole
Coolant	Dry Cut



DIAMOND-COATED SOLID CARBIDE DREAM DRILLS CFRP without Coolant Holes (3XD)

DI473 SERIES

- Special point type to improve hole quality for Composite Materials
- Minimized burr and delamination at entry / exit hole
- Outstanding performance
- Long tool life and increased product by Diamond Coating



3 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
▲ DI473025	2.5	6	24	66
▲ DI473030	3.0	6	28	66
▲ DI473040	4.0	6	36	74
▲ DI473050	5.0	6	44	82
▲ DI473060	6.0	6	44	82
▲ DI473080	8.0	8	53	91
▲ DI473090	9.0	10	61	103
▲ DI473100	10.0	10	61	103
▲ DI473110	11.0	12	71	118
▲ DI473120	12.0	12	71	118

▲ : Only available till stock runs out



CUTTING CONDITIONS

DI473 SERIES DREAM DRILLS- CFRP

Vc = m/min
RPM = rev./min.
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm)						
					3.0	4.0	5.0	6.0	8.0	10.0	20.0
N	21	CFRP, GFRP	120	RPM FEED	12730 0.03-0.07	9550 0.03-0.07	7640 0.03-0.07	6370 0.03-0.07	4770 0.03-0.07	3820 0.03-0.07	3180 0.03-0.07

◎ : Excellent ○ : Good

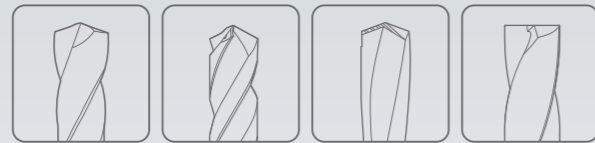
ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25			
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					
	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
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended																					



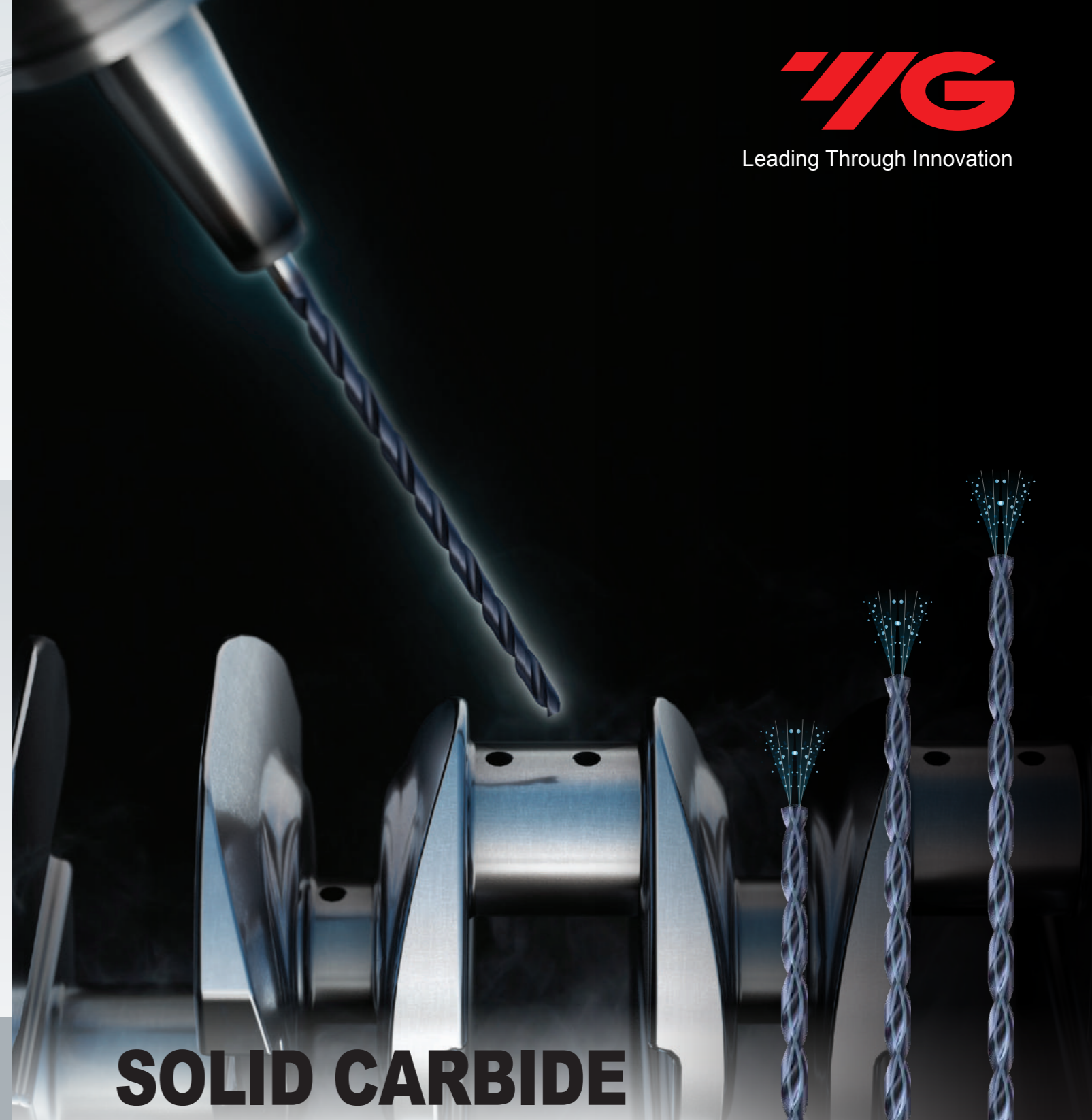
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Global Cutting Tool Leader **YG-1**



DREAM DRILLS



SOLID CARBIDE

DREAM DRILLS MQL TYPE

- Minimum Quantity Lubrication
Drilling Deep Holes (10xD - 40xD)

DREAM DRILLS MQL TYPE

4-Facet point for good centering capability

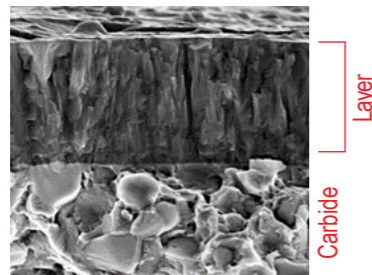


Polished flute for enhanced chip evacuation

Optimized special flutes are ideal for removing chips and for productive drilling



Upgraded TiAlN nano Layer Full Coating



Layer
Carbide

Compatible with the MQL (Minimum Quantity Lubrication) system.

- Reduction of Cooling Cost
- Reduce generation of dioxin for human [Eco-Friendly]

Compare with Gun drills

- Used on conventional machining center (MQL Drills)
- Higher productivity than conventional HSS deep hole drills and Gun drills

Gun drill	MQL Drill
 <p>Gun drilling Machine</p>	 <p>Vertical & Horizontal Machining Center</p>
<p>- Size Range : Ø2~Ø25</p> <p>- Drilling Depth : 25xD ~ over 100xD</p> <p>* Need Gun drilling machine</p>	<p>- Size Range : Ø3~Ø14</p> <p>- Drilling Depth : 10xD ~ 40xD</p> <p>* Need enough machine stroke on machining center</p>

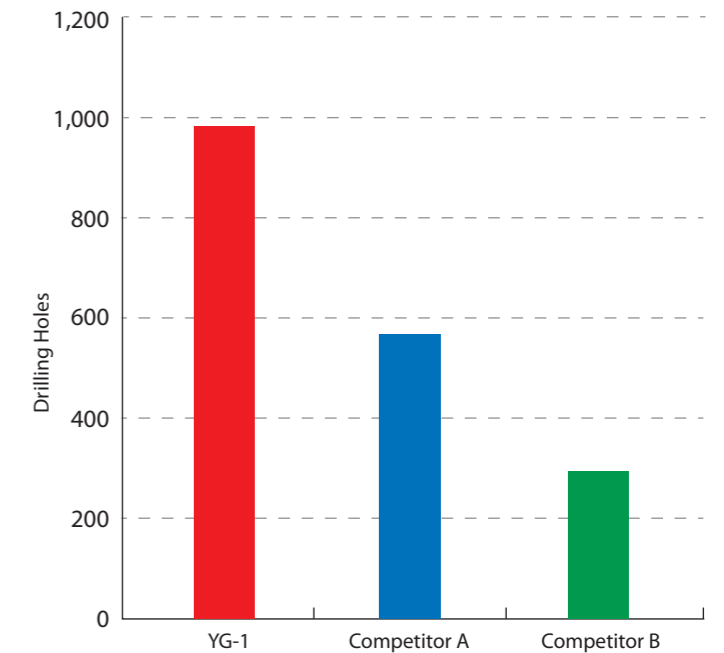
Productivity
Up to 10 times Drilling Feedrate

CASE STUDY

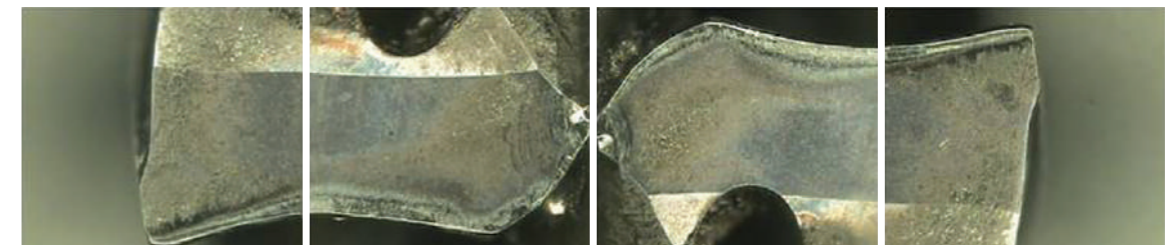
- Flute Shape and Point Shape allowing better chip evacuation in deep hole drilling
- Excellent Coating and Surface Treatment for better performance and chip evacuation

► SOLID CARBIDE DREAM DRILLS - MQL Type with Coolant Holes

CUTTING CONDITION	
Tool	DH520060 (DREAM DRILL- MQL TYPE, 20xD)
Size	Ø6 × Ø6 × 138 × 193
Work Material	• DIN: C45 • WR: 1.0503 • JIS: S45C(HRc25)
RPM	3,528 rev./min.
Feed	0.19 mm/rev.
Drilling Depth	80 mm
Coolant	Oil Mist (MQL Techniques)

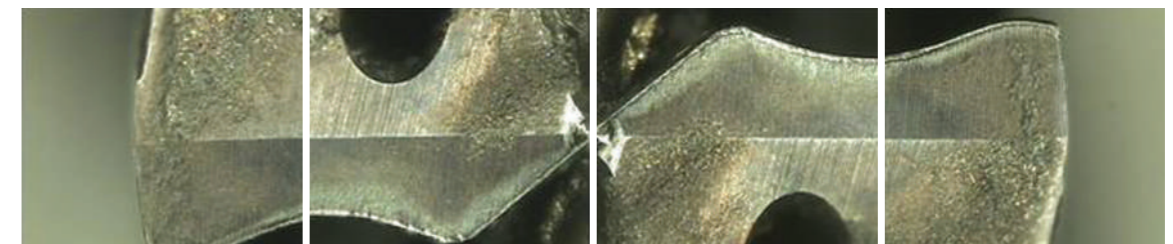


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After Drilling 1,000 Holes

Competitor A

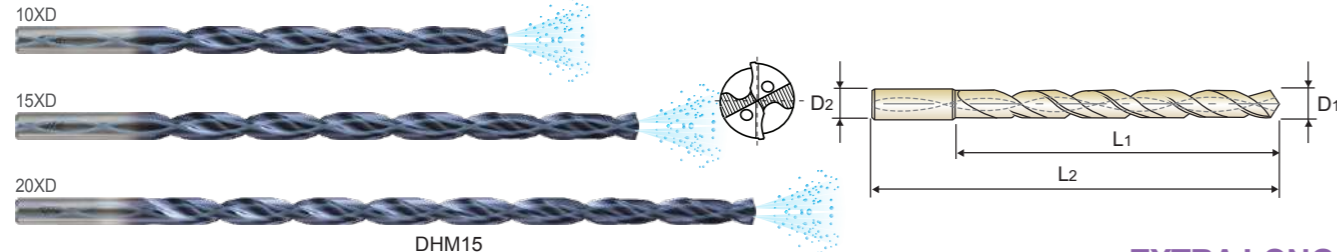


After Drilling 546 Holes

TiAIN-COATED SOLID CARBIDE DREAM DRILLS MQL with Coolant Holes (10XD, 15XD, 20XD)

DHM10 SERIES
DHM15 SERIES
DHM20 SERIES

- 4-Facet Point for good centering capability
Optimized special flutes are ideal for removing chips and for productive drilling
Enhanced chip evacuation by polished flute upgraded TiAIN nano layer full coating
MQL system compatible (Minimum Quantity Lubrication)



Product icons: CARBIDE, h6, h7, 140°, 20 bar, 45 bar, P. 92. Dimensions: 10xD (DHM10), 15xD (DHM15), 20xD (DHM20). Label: EXTRA LONG

DHM10 table with columns: EDP No., TiAIN, Drill Diameter (D1), Shank Diameter (D2), Flute Length (L1), Overall Length (L2). Lists 24 drill models from DHM10030 to DHM10140.

DHM15 table with columns: EDP No., TiAIN, Drill Diameter (D1), Shank Diameter (D2), Flute Length (L1), Overall Length (L2). Lists 15 drill models from DHM15030 to DHM15120.

DHM20 table with columns: EDP No., TiAIN, Drill Diameter (D1), Shank Diameter (D2), Flute Length (L1), Overall Length (L2). Lists 12 drill models from DHM20030 to DHM20120.

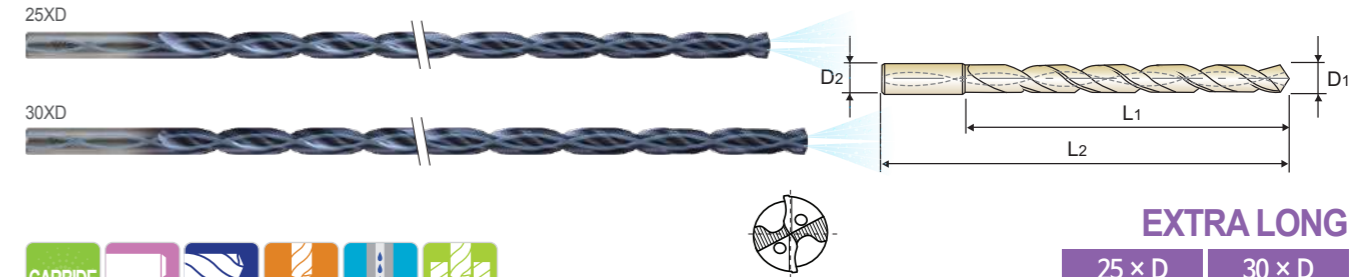
◎ : Excellent ○ : Good

ISO material compatibility chart for DHM10-20 series, showing recommended materials like Non-alloy steel, Low alloy steel, High alloyed steel, etc.

TiAIN-COATED SOLID CARBIDE DREAM DRILLS MQL with Coolant Holes (25XD, 30XD)

DHM25 SERIES
DHM30 SERIES

- 4-Facet Point for good centering capability
Optimized special flutes are ideal for removing chips and for productive drilling
Enhanced chip evacuation by polished flute upgraded TiAIN nano layer full coating
MQL system compatible (Minimum Quantity Lubrication)



Product icons: CARBIDE, h6, h7, 140°, 45 bar, P. 92. Dimensions: 25xD (DHM25), 30xD (DHM30). Label: EXTRA LONG

DHM25 table with columns: EDP No., TiAIN, Drill Diameter (D1), Shank Diameter (D2), Flute Length (L1), Overall Length (L2). Lists 10 drill models from DHM25030 to DHM25100.

DHM30 table with columns: EDP No., TiAIN, Drill Diameter (D1), Shank Diameter (D2), Flute Length (L1), Overall Length (L2). Lists 8 drill models from DHM30030 to DHM30080.

Made to order in depth 35xD(Ø3-Ø6) & 40xD(Ø3-Ø6)

◎ : Excellent ○ : Good

ISO material compatibility chart for DHM25-30 series, showing recommended materials like Non-alloy steel, Low alloy steel, High alloyed steel, etc.



Leading Through Innovation

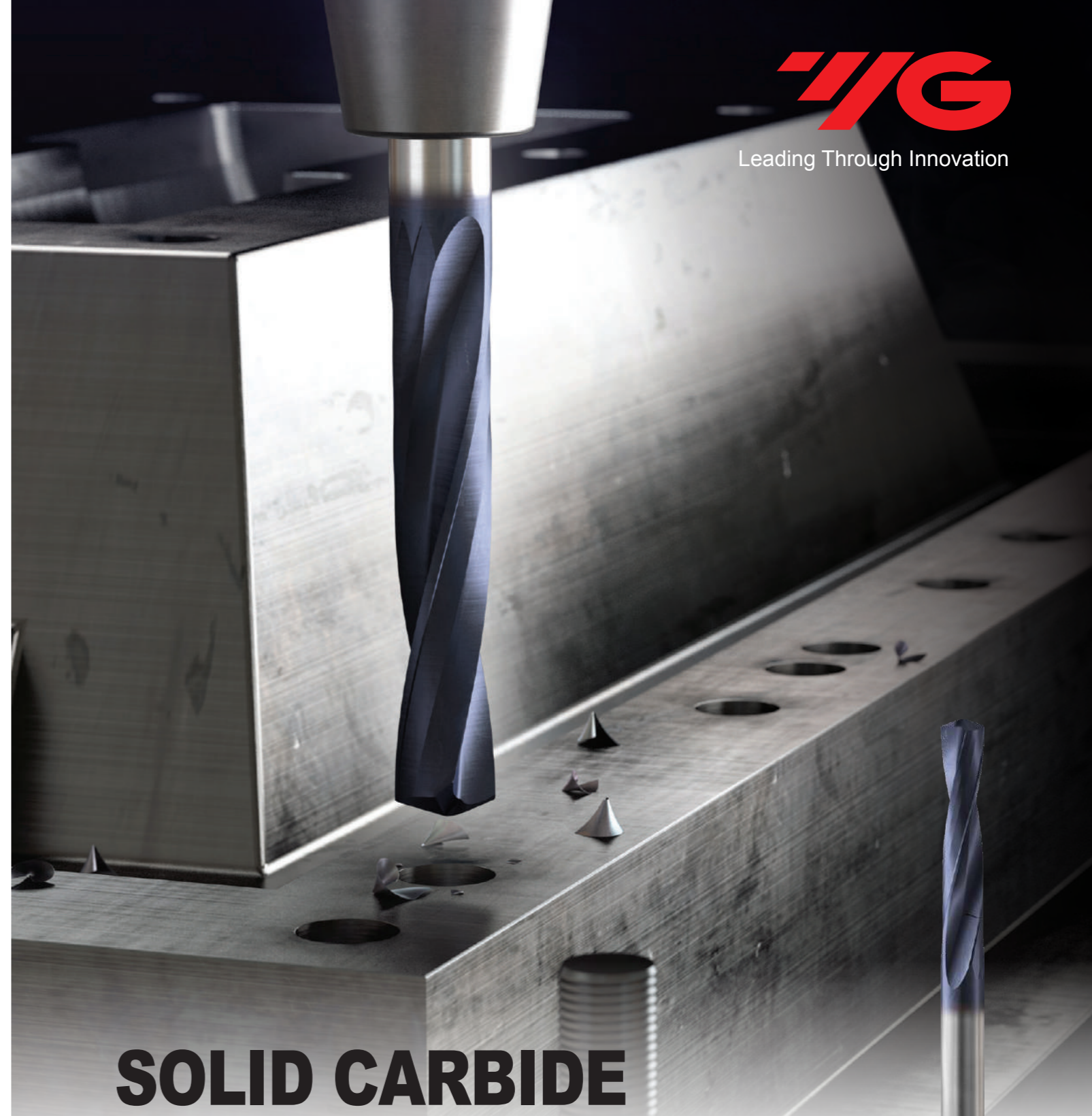
DH510, DH515, DH520, DHM10, DHM15, DHM20, DHM25, DHM30 SERIES

with COOLANT HOLES

Vc = m/min
RPM = rev./min.
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc		Parameter	Drill Diameter (mm)							
			10xD 20xD	25xD 30xD		3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0
P	1	Non-alloy steel	120	100	RPM(10xD-20xD)	12730	9550	7640	6370	4770	3820	3180	2730
					RPM(25xD-30xD)	10610	7960	6370	5310	3980	3180	2650	2270
					FEED	0.08-0.12	0.10-0.14	0.12-0.18	0.14-0.20	0.18-0.24	0.20-0.26	0.22-0.26	0.25-0.31
	2		100	80	RPM(10xD-20xD)	10610	7960	6370	5310	3980	3180	2650	2270
					RPM(25xD-30xD)	8490	6370	5090	4240	3180	2550	2120	1820
					FEED	0.08-0.12	0.10-0.14	0.12-0.18	0.14-0.20	0.18-0.24	0.20-0.26	0.22-0.26	0.25-0.31
	3		80	65	RPM(10xD-20xD)	8490	6370	5090	4240	3180	2550	2120	1820
					RPM(25xD-30xD)	6900	5170	4140	3450	2590	2070	1720	1480
					FEED	0.06-0.10	0.08-0.12	0.10-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.18-0.24	0.20-0.26
	6		100	100	RPM(10xD-20xD)	10610	7960	6370	5310	3980	3180	2650	2270
RPM(25xD-30xD)		10610			7960	6370	5310	3980	3180	2650	2270		
FEED		0.08-0.12			0.10-0.14	0.12-0.18	0.14-0.20	0.18-0.24	0.20-0.26	0.22-0.26	0.25-0.31		
7	70	60	RPM(10xD-20xD)	7430	5570	4460	3710	2790	2230	1860	1590		
			RPM(25xD-30xD)	6370	4770	3820	3180	2390	1910	1590	1360		
			FEED	0.06-0.10	0.08-0.12	0.10-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.18-0.24	0.20-0.26		
8	55	50	RPM(10xD-20xD)	5840	4380	3500	2920	2190	1750	1460	1250		
			RPM(25xD-30xD)	5310	3980	3180	2650	1990	1590	1330	1140		
			FEED	0.06-0.10	0.08-0.12	0.10-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.18-0.24	0.20-0.26		
10	60	50	RPM(10xD-20xD)	6370	4770	3820	3180	2390	1910	1590	1360		
			RPM(25xD-30xD)	5310	3980	3180	2650	1990	1590	1330	1140		
			FEED	0.05-0.09	0.07-0.11	0.08-0.14	0.10-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.18-0.24		
11	50	45	RPM(10xD-20xD)	5310	3980	3180	2650	1990	1590	1330	1140		
			RPM(25xD-30xD)	4770	3580	2860	2390	1790	1430	1190	1020		
			FEED	0.04-0.08	0.06-0.10	0.07-0.13	0.08-0.14	0.10-0.16	0.12-0.18	0.13-0.19	0.15-0.21		
K	15	Grey cast iron	90	75	RPM(10xD-20xD)	9550	7160	5730	4770	3580	2860	2390	2050
					RPM(25xD-30xD)	7960	5970	4770	3980	2980	2390	1990	1710
	16		70	60	RPM(10xD-20xD)	7430	5570	4460	3710	2790	2230	1860	1590
					RPM(25xD-30xD)	6370	4770	3820	3180	2390	1910	1590	1360
	17		100	80	RPM(10xD-20xD)	10610	7960	6370	5310	3980	3180	2650	2270
					RPM(25xD-30xD)	8490	6370	5090	4240	3180	2550	2120	1820
18	70	60	RPM(10xD-20xD)	7430	5570	4460	3710	2790	2230	1860	1590		
			RPM(25xD-30xD)	6370	4770	3820	3180	2390	1910	1590	1360		
Malleable cast iron	80	65	RPM(10xD-20xD)	8490	6370	5090	4240	3180	2550	2120	1820		
			RPM(25xD-30xD)	6900	5170	4140	3450	2590	2070	1720	1480		
			FEED	0.10-0.14	0.12-0.16	0.17-0.23	0.19-0.25	0.22-0.28	0.24-0.30	0.28-0.34	0.30-0.36		
	20	70	55	RPM(10xD-20xD)	7430	5570	4460	3710	2790	2230	1860	1590	
				RPM(25xD-30xD)	5840	4380	3500	2920	2190	1750	1460	1250	
				FEED	0.08-0.12	0.10-0.14	0.12-0.18	0.14-0.20	0.18-0.24	0.20-0.26	0.22-0.26	0.25-0.31	

1. Guide Drilling should be done as Diameter+0.1mm between 3xD and 5xD depth.
2. For Main Drilling, proceed with low RPM at Guide Drilling segment. (RPM 300, FEED 400mm/min)
3. Just before the end of Guide Drilling segment, reduce feed to zero and increase the RPM according to Recommended Cutting Condition chart (See above).
4. After then, proceed main drilling by increasing feed without step drilling.
5. When coming out from Guide Drilling start point after drilling, RPM should be reduced as 300 and feed should be 1000 mm/min.
6. When coming out from Guide Drilling segment to the outside, the feed should be decreased as 50%.



SOLID CARBIDE

DREAM DRILLS
for HIGH HARDENED STEELS

- For High Hardened Steels (HRc 50 - 70)

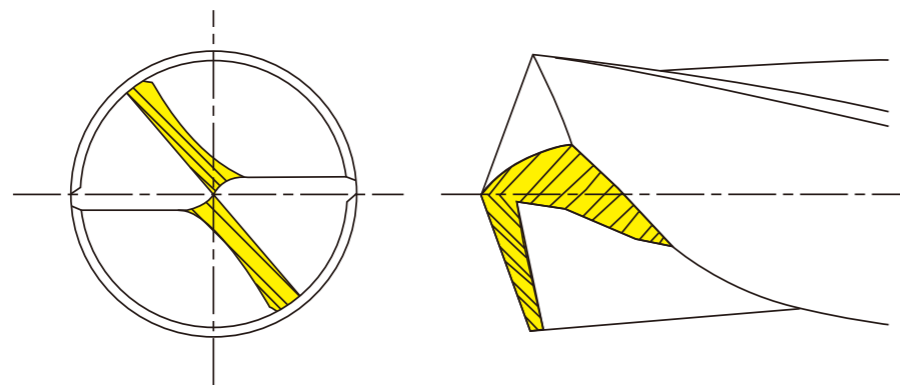
DREAM DRILLS for HIGH HARDENED STEELS

Low Helix

The low Helix angle maximizes tools' rigidity and stability with less deflection

Special Thinning (R+U Thinning)

Unique drill point geometry with special thinning to minimize cutting workload, axial thrust loading and heat generation.



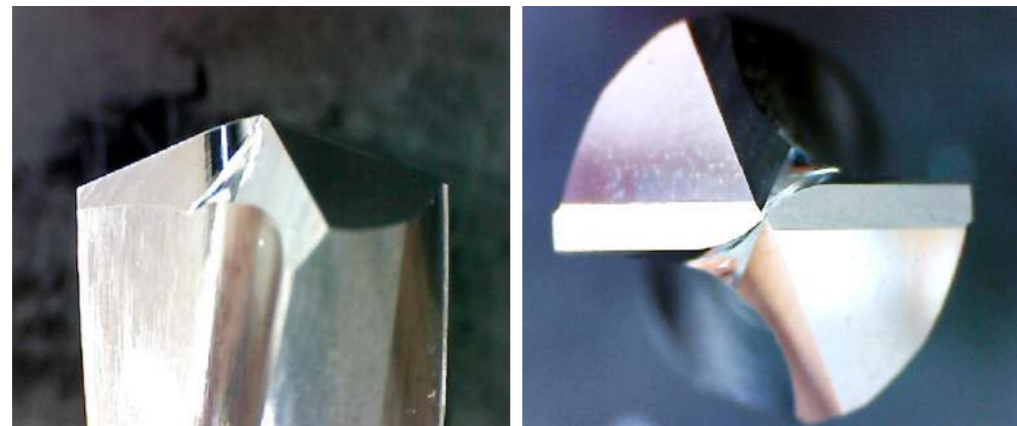
Coating

TiAlN nano coating combines high hardness with high thermal stability against oxidation, allows machining the upper level of hardened steels HRc 50-70.

Polished Flutes

Polished flutes improve coating addition, with better chip control and evacuation.

Point Shape

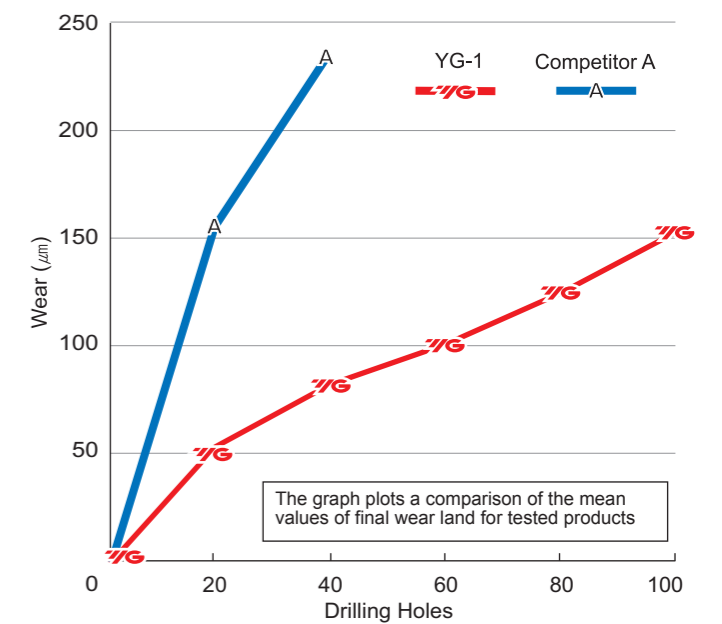


CASE STUDY

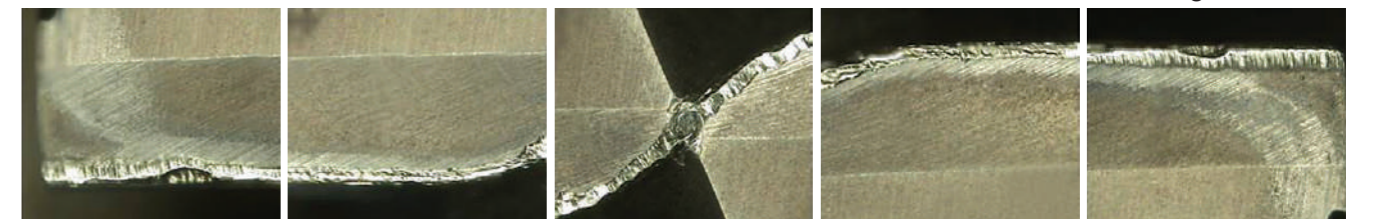
- Low Helix Angle to maximize tools' rigidity.
- Special Point Thinning to improve chip evacuation.
- Excellent Coating and Surface Treatment for improved surface and better chip evacuation.

► SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS (HRc50-70)

CUTTING CONDITION	
Tool	DH500100 (Dream Drills for High Hardened Steels)
Size	Ø10 × Ø10 × 63 × 111
Work Material	• DIN: X155CrV-Mo12-1 • WR: 1.2379 • JIS: SKD11(HRc60)
RPM	380 rev./min.
Feed	0.04 mm/rev.
Drilling Depth	25 mm
Coolant	Wet Cut

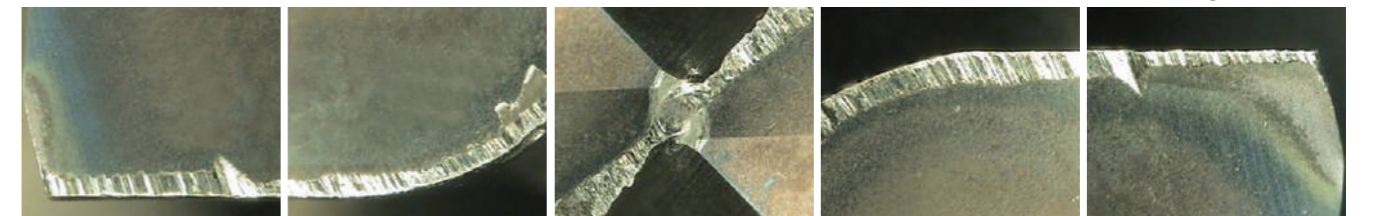


YG-1



After Drilling 100 Holes

Competitor A



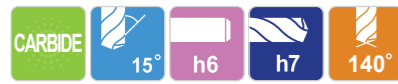
After Drilling 40 Holes

DREAM DRILLS for HIGH HARDENED STEELS

TiAIN-COATED SOLID CARBIDE DREAM DRILLS for High Hardened Steels (HRc 50 - 70)

DH500 SERIES

- ▶ Drilling for High Hardened Steels; Quenched Steels, Tempered Steels (under HRc 70)
- ▶ Special geometry design for Hardened Steels
- ▶ Minimum of cutting load through special thinning
- ▶ Performing good chip removal and powerful drilling



3 x D

EDP No.	Drill Diameter		Flute Length	Overall Length	EDP No.	Drill Diameter		Flute Length	Overall Length
	D1	D2				D1	D2		
DH500026	2.6	3	14	44	DH500070	7.0	8	45	85
DH500030	3.0	3	16	46	DH500075	7.5	8	45	85
DH500033	3.3	4	18	48	DH500080	8.0	8	50	98
DH500034	3.4	4	20	50	DH500085	8.5	10	50	98
DH500035	3.5	4	20	50	DH500086	8.6	10	57	105
DH500040	4.0	4	22	52	DH500088	8.8	10	57	105
DH500042	4.2	6	25	65	DH500090	9.0	10	57	105
DH500043	4.3	6	28	68	DH500095	9.5	10	57	105
DH500044	4.4	6	28	68	DH500100	10.0	10	63	111
DH500045	4.5	6	28	68	DH500102	10.2	12	63	111
DH500050	5.0	6	32	72	DH500103	10.3	12	63	111
DH500051	5.1	6	32	72	DH500105	10.5	12	63	111
DH500052	5.2	6	32	72	DH500108	10.8	12	71	119
DH500055	5.5	6	35	75	DH500110	11.0	12	71	119
DH500060	6.0	6	35	75	DH500115	11.5	12	71	119
DH500065	6.5	8	40	80	DH500120	12.0	12	71	119
DH500068	6.8	8	45	85	DH500140	14.0	14	77	125
DH500069	6.9	8	45	85					

Unit : mm

CUTTING CONDITIONS

DH500 SERIES DREAM DRILLS for HIGH HARDENED STEELS

Vc = m/min
RPM = rev/min.
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm)							
					3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0
H	38	Hardened steel	20	RPM	2120	1590	1270	1060	800	640	530	450
				FEED	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.05	0.01-0.05	0.01-0.06	0.01-0.06	
	39.1		15	RPM	1590	1190	950	800	600	480	400	340
				FEED	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.05	0.01-0.05	0.01-0.05	0.01-0.06	0.01-0.06
	39.3		12	RPM	1270	950	760	640	480	380	320	270
				FEED	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.05	0.01-0.05	0.01-0.05	0.01-0.06	0.01-0.06

◎ : Excellent ○ : Good

ISO	P										M				K								
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
VDI 3323																							
HRc																							
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											
	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	
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39.1	39.3	40	41
VDI 3323																						
HRc																						
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended																		◎	◎	◎		



TECHNICAL DATA



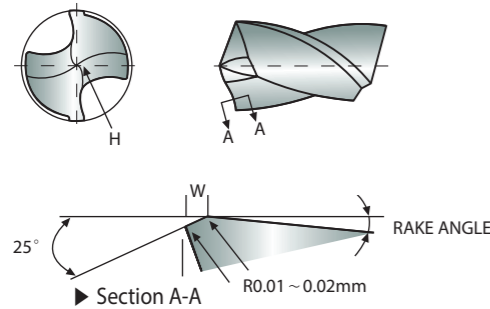
CHARACTERISTIC OF DREAM DRILLS

- YG-1's Dream Drill Series are suitable for high speed and accurate drilling operations by special design and high quality.
- Good performance for Steels, Cast Irons, Tool steels, Alloy steels and Stainless steels, Aluminum and Composite Material.
- Rapid chip evacuation and excellent chip breaking can be achieved by special designed cutting edges on point and chip breakers on leading edges.
- High accuracy and stability.
- Longer tool life with TiAlN coating.
- Self-centering

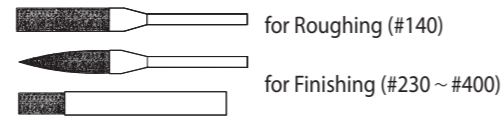


HONING GUIDE OF DREAM DRILLS

Dimension of Honing



Scraper

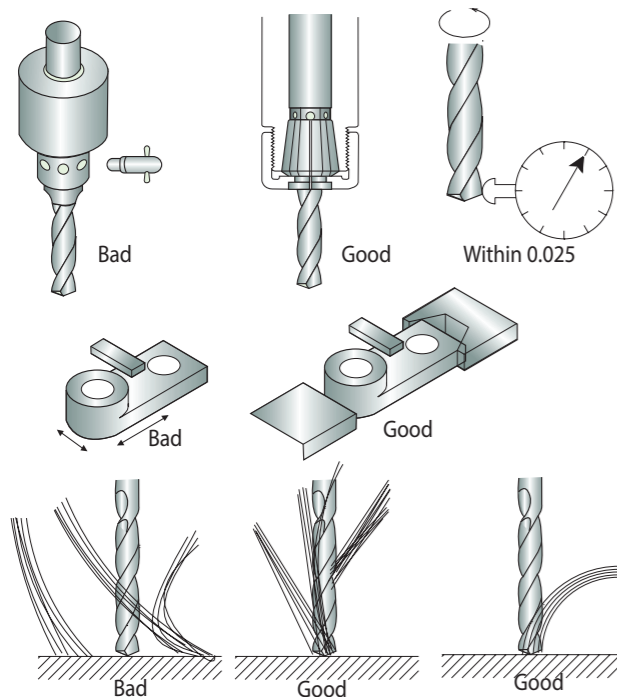


Work Material	Alloy Steels	Mild Steels	Cast Iron
W(mm)	0.15 ~ 0.2	0.1 ~ 0.15	0.03

▶ The dimension W of stocked products is 0.1 ~ 0.15.



USE OF DREAM DRILLS



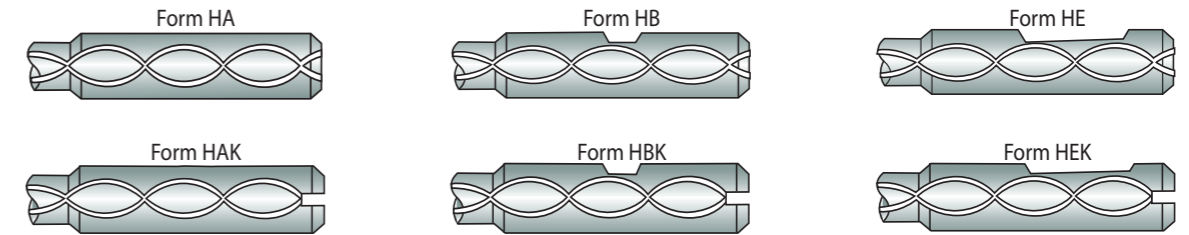
- ▶ Chucking with spring collet correctly.
- ▶ Radial run out at cutting lip must not exceed 0.025 mm.

▶ Tighten clamp of work piece.

- ▶ Supply coolant enough to the entrance of holes.
- ▶ In using Dream Drill with Coolant holes, high pressure coolant is needed.



SHANK TYPE DREAM DRILLS WITH COOLANT HOLES



▶ If you need other Shank Type, we can supply them.



ISO TOLERANCE

$\mu\text{m} = 1/1000\text{mm}$

Diameter (mm)	1 - 3 from to	3 - 6 over to	6 - 10 over to	10 - 18 over to	18 - 30 over to	30 - 50 over to
Tolerance range in μm / Toleranzwerte in μm						
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16
h7	0 - 10	0 - 12	0 - 15	0 - 18	0 - 21	0 - 25
h8	0 - 14	0 - 18	0 - 22	0 - 27	0 - 33	0 - 39
m7	+ 12 + 2	+ 16 + 4	+ 21 + 6	+ 25 + 7	+ 29 + 8	+ 34 + 9

Material Groups

Please visit globaly1.com/mat for material search



Material table for VDI 3323 12, Stainless steel, Ferritic / Martensitic, Annealed. Includes columns for Material No., JIS, DIN, AISI/ASTM/SAE, BS, EN, AFNOR, SS, UNI, UNE/IHA, UNS, GOST, HB, HRC, and Brands.

Material table for VDI 3323 13, Stainless steel, Martensitic, Quenched & Tempered. Includes columns for Material No., JIS, DIN, AISI/ASTM/SAE, BS, EN, AFNOR, SS, UNI, UNE/IHA, UNS, GOST, HB, HRC, and Brands.

Material Groups

Please visit globaly1.com/mat for material search



Material table for VDI 3323 14, Stainless steel, Austenitic. Includes columns for Material No., JIS, DIN, AISI/ASTM/SAE, BS, EN, AFNOR, SS, UNI, UNE/IHA, UNS, GOST, HB, HRC, and Brands.

Material Groups

Please visit globalyg1.com/mat for material search



Mat'l No.	JIS	DIN	AISI/ASTM/SAE	Material Description			Composition / Structure / Heat Treatment					HB	HRc
				BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST		
<p>K VDI 3323 15 Grey cast iron Pearlitic / Ferritic HB 180 HRc 10</p>													
0.6010	FC100	GG10	A48 20 B	Grade 100	GJL-100	Ft 10 D	0100	G10	FG10		Sc 10		
0.6015	FC150	GG15	A48 25 B	Grade 150	GJL-150	Ft 15 D	0115	G15	FG15		Sc 15		
0.6020	FC200	GG20	A48 30 B	Grade 220	GJL-200	Ft 20 D	0120	G20	FG20	W06020	Sc 20		
0.6025	FC250	GG25	A48 40 B	Grade 260	GJL-250	Ft 25 D	0125	G25	FG25		Sc 25		
0.6660		GGL-NiCr 20.2	1050/700/7	Grade F2	GJLA-XNiCr 20-2	L-NC 202	0523	-		F41002	Ni-Resist 2		
1.4449	SUS317	X5CrNiMo17133	317	317S16				X5CrNiMo1815		S31700	ATI 317		

Mat'l No.	JIS	DIN	AISI/ASTM/SAE	Material Description			Composition / Structure / Heat Treatment					HB	HRc
				BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST		
<p>K VDI 3323 16 Grey cast iron Pearlitic (Martensitic) HB 260 HRc 26</p>													
0.6025	FC250	GG25	A48 40 B	Grade 260	GJL-250	Ft 25 D	0125	G25	FG25		Sc 25		
0.6030	FC300	GG30	A48 45 B	Grade 300	GJL-300	Ft 30 D	0130	G30	FG30		Sc 30		
0.6035	FC350	GG35	A48 50 B	Grade 350	GJL-350	Ft 35 D	0135	G35	FG35		Sc 35		
0.6040	FC400	GG40	A48 60 B	Grade 400	GJL-400	Ft 40 D	0140	G40	FC40		Sc 40		

Mat'l No.	JIS	DIN	AISI/ASTM/SAE	Material Description			Composition / Structure / Heat Treatment					HB	HRc
				BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST		
<p>K VDI 3323 17 Nodular cast iron Ferritic HB 160 HRc 3</p>													
0.7033	FCD350-22L	GGG35.3	-	350/22L40	GJS-350-22-LT	FGS 370-17	0717-15	-					
0.7040	FCD400	GGG40	60-40-18	SNG 420-12	GJS-400-15	FCS 400-12	0717-02	GS 400-12	FG E38-17	F32800	Vc 42-12		
0.7043	FCD 370	GGG40.3	60-40-18	SNG 370-17	GJS-400-18-LT	FGS 370-17	0717-12	GSO 42-17			Vc 42-12		
0.6040	FC400	GG40	A48 60 B	Grade 400	GJL-400	Ft 40 D	0140	G40	FC40		Sc 40		

Mat'l No.	JIS	DIN	AISI/ASTM/SAE	Material Description			Composition / Structure / Heat Treatment					HB	HRc
				BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST		
<p>K VDI 3323 18 Nodular cast iron Pearlitic HB 250 HRc 25</p>													
0.7050	FCD500	GGG50	80-55-06	SNG 500-7	GJS-500-7	FGS 500-7	0727-02	GS 500-7	FG E50-7	F33100	Vc 50-2		
0.7060	FCD600	GGG60	80-55-06	SNG 600-3	GJS-600-3	FGS 600-3	0732-03	GS 600-3	FG E60-2		Vc 60-2		
0.7070	FCD700	GGG70	100-70-03	SNG 700-2	GJS-700-2	FGS 700-2	0737-01	GS 700-2	FG S70-2	F34800	Vc 70-2		
0.7652	FCDA-NiMn 13.7	GGG NiMn 13-7	-	Grade S6	GJSA-XNiMn 13-7	FGS Ni13 Mn7	0772	-			Nodumag		
0.7660		GGG NiCr 20-2	A436 D2	Grade S2	GJSA-XNiCr 20-2	FGS Ni20 Cr2	0776	-			Ni-Resist D-2		

Material Groups

Please visit globalyg1.com/mat for material search



Mat'l No.	JIS	DIN	AISI/ASTM/SAE	Material Description			Composition / Structure / Heat Treatment					HB	HRc
				BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST		
<p>K VDI 3323 19 Malleable cast iron Ferritic HB 130 HRc</p>													
0.8135	FCMW330	GTS-35	32510	B 340-12	GJMB350-10	MN 35-10	0815	GMN 35	GTS35		Kc 35-10		

Mat'l No.	JIS	DIN	AISI/ASTM/SAE	Material Description			Composition / Structure / Heat Treatment					HB	HRc
				BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST		
<p>K VDI 3323 20 Malleable cast iron Pearlitic HB 230 HRc 21</p>													
0.8145	FCMW370	GTS-45	A220-40010	P 440-7	GJMB450-6	MN 450	0852	GMN 45					
0.8155	FCMP490	GTS-55	50005	P 510-4	GJMB-550-4	MP 50-5	0854	GMN 55			Kc 60-3		
0.8165	FCMP590	GTS-65	70003	P 570-3	GJMB-650-2	MN 650-3	0856	GMN 65					
0.8170	FCMP690	GTS-70	90001	P 690-2	GJMB-700-2	MN 700-2	0862	GMN 70			Kc 70-2		

Material Groups

Please visit
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S		VDI 3323 31		Material Description Heat resistant super alloys				Composition / Structure / Heat Treatment Fe Based, Annealed					HB 200	HRc 15
Mat'l No.	JIS	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands		
1.4558	NCF 800 TB	X2NiCrAlTi3220	N08800	NA15										
1.4562		X1NiCrMoCu32287	N08031											
1.4563		X1NiCrMoCuN31274	N08028			Z1NCDU31-27-03	2584				EK77			
1.4864	SUH330	X12NiCrSi36-16	330	NA17		Z12NCS37-18				N08330				
1.4865	SCH15	GX40NiCrSi38-18		330C40				XG50NiCr3919		J94605				
1.4958		XSNiCrAlTi3120												

S		VDI 3323 32		Material Description Heat resistant super alloys				Composition / Structure / Heat Treatment Fe Based, Aged					HB 280	HRc 30
Mat'l No.	JIS	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands		
1.4977		X40CoCrNi2020				Z42CNKDWNb								

S		VDI 3323 33		Material Description Heat resistant super alloys				Composition / Structure / Heat Treatment Ni or Co Based, Annealed					HB 250	HRc 25
Mat'l No.	JIS	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands		
2.4360		NiCu30Fe		NA13		NU30				N04400		Monel400		
2.4603		NiCr 30 FeMo	5390A			NC22FeD						Hastelloy G-30		
2.4610		NiMo16Cr16Ti								N26455		Hastelloy C-4		
2.4630		NiCr20Ti		HR5,203-4		NC20T				N06075		Nimonic75		
2.4631	NCF 80A	NiCr20TiAl		Hr40		NC20TA				N07080	KHN77TYuR	Nimonic 80A		
2.4642	NCF 690	NiCr29Fe				Nnc30Fe				N06690		Inconel 690		
2.4856		NiCr22Mo9Nb		NA21		NC22FeDNb				N06625		Inconel 625		
2.4858		NiCr21Mo		NA16		NC21FeDU				N08825	KHN38VT	Incoloy 825		

S		VDI 3323 34		Material Description Heat resistant super alloys				Composition / Structure / Heat Treatment Ni or Co Based, Aged					HB 350	HRc 38
Mat'l No.	JIS	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands		
2.4375		NiCu30Al	4676	NA18		NU30AT				N05500		Monelk500		
2.4662		NiFe35Cr14MoTi	5660			ZSNCDT42				N09901		Incoloy 901		
2.4668		NiCr19Fe19NbMo	5383	HR8		NC19eNB				N07718		Inconel 718		
2.4670		S-NiCr13A16MoNb	5391	Mar-46		NC12AD						Nimocast 713		
2.4694		NiCr16Fe7TiAl								N07751		Inconel 751		
2.4955		NiFe25Cr20NbTi												
2.4964		CoCr20W15Ni	5772			KC20WN						Haynes 25		
		CoCr22W14Ni	AMS 5772			KC22WN								

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S		VDI 3323 35		Material Description Heat resistant super alloys				Composition / Structure / Heat Treatment Ni or Co Based, Cast					HB 320	HRc 34
Mat'l No.	JIS	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands		
2.4669		NiCr15Fe7TiAl								N07750		Inconel X750		
2.4685		G-NiMo28								N10665		Hastelloy B		
2.4810		G-NiMo30										Hastelloy C		
2.4973		NiCr19Co11MoTi	AMS 5399			NC19KDT					VT5-1			
3.7115		TiAl5Sn2								R54520	VT1-00	ATI Grade 6		

S		VDI 3323 36		Material Description Titanium alloys				Composition / Structure / Heat Treatment Pure Titanium					HB 400 Rm	HRc
Mat'l No.	JIS	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands		
2.4674		NiCo15Cr10MoAlTi	AMS 5397							N13100		IN 100		
3.7025		Ti1	R50250	2TA1						R50250		ATI 30 CP Gr. 1		
3.7225		Ti1pd	R52250	TP1						R52250				

S		VDI 3323 37		Material Description Titanium alloys				Composition / Structure / Heat Treatment Alpha + Beta Alloys, Hardened					HB 1050 Rm	HRc
Mat'l No.	JIS	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands		
3.7124		TiCu2			2TA21-24									
3.7145		TiAl6Sn2Zr4Mo2Si	R54620							R54620				
3.7165		TiAl6V4	AMS R56400	TA10-13		T-A6V					VT6			
3.7185		TiAl4Mo4Sn2		TA45-51										
3.7195		TiAl3V2.5								R56320		ATI 3-2.5		
		TiAl4Mo4Sn4Si0.5												
		TiAl5Sn2.5	AMS R54520	TA14/17		T-A5E								
		Ti6Al4VELI	AMS R56401	TA11										

Material Groups

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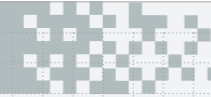


Mat'l No.	JIS	DIN	Material Description			Composition / Structure / Heat Treatment					HB	HRc	
			AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands	
		H	VDI 3323	Material Description			Composition / Structure / Heat Treatment					HB	HRc
		38	Hardened steel			Hardened					550	55	
1.1231	S 70 C-CSP	Ck 67	1070	060 A 67	C 67S	XC 68	1770	C 70	F 5103		70		
1.1248	C 75	Ck 75	1078, 1080	060 A 78	C 75S	XC 75	1774	C 75	F 5107		75		
1.1274	SUP 4	Ck 101	1095	060 A 96	C 100S	XC100	1870	C100	F 5117				
1.1545	SK 3	C 105 W1	W1	BW 2	C 105U	Y1 105	1880	C 100 KU	F 5118		U10A		
1.2762		75CrMoNiW67	-	-	-	-	-	-	-				
1.3401	SCMnH1	GX120Mn12	A128(A)			Z120M12	2183	GX120Mn12	F 8251		110G13L		
1.4021	SUS 420 J1	X 20 Cr 13	420	420 S 37	X 20 Cr 13	Z 20 C 13	2303	X 20 Cr 13	F 5261		20KH13	ATI 420	
1.4109	SUS 440 A	X 65 CrMo 14	440 A	-	X 70 CrMo 15	Z 70 D 14	-	-	-			ATI 440A	
1.4112	SUS 440 B	X 90 CrMoV 18	440 B	409 S 19	X 90 CrMoV 18	Z 2 CND 18 05	2327	X CrTi 12					
1.4125	SUS 440 C	X 105 CrMo 17	440 C	-	X 105 CrMo 17	Z 100 CD 17	-	X 105 CrMo 17			95KH18	ATI 440C	
1.6746		32NiCrMo14-5	-	832M31	32NiCrMo14-5	35NCD14	-	-					
1.7176	SUP9(A)	55Cr3	5155	527A60	48	55C3	2253	55Cr3					
1.7225	SCM 440 (H)	42CrMo4	4140	708 M 40	42 CrMo 4	42 CD 4	2244	42 CrMo 4	F 1252		38HM		

Mat'l No.	JIS	DIN	Material Description			Composition / Structure / Heat Treatment					HB	HRc	
			AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands	
		H	VDI 3323	Material Description			Composition / Structure / Heat Treatment					HB	HRc
		40	Chilled cast iron			Cast					400	42	
0.9620		GX260NiCr42	A532 IB	Grade 2 A	GJN-HV520	FB Ni4 Cr2 BC	0512	-		F45001		Ni-Hard2	
0.9625		GX330NiCr42	A532 IA	Grade 2 B	GJN-HV550	FB Ni4 Cr2 HC	0513	-		F45000		Ni-Hard1	
0.9630		GX300CrNiSi 9 5 2	A532 ID	Grade 2 C	GJN-HV600	FB Cr9 Ni5	0457	-		F45003		Ni-Hard 4	
0.9640		GX300CrMoNi1521	-	-	-	-	-	-		F45005			
0.9650		GX260Cr27	-	Grade 3 D	-	-	0466	-					
0.9655		GX300CrNiMo271	-	Grade 3 E	-	-	-	-			20C 25N20S2		
1.4841	SUH 310	X15CrNiSi25-20	310	314S31	X 15 CrNiSi 25 20	Z15CNS25-20	-	-		S31400		Cronifer 2520	

Mat'l No.	JIS	DIN	Material Description			Composition / Structure / Heat Treatment					HB	HRc	
			AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands	
		H	VDI 3323	Material Description			Composition / Structure / Heat Treatment					HB	HRc
		41	Hardened cast iron			Hardened					550	55	
0.9635		GX300 CrMo 15 3	-	-	-	-	-	-					
0.9645		GX260 CrMoNi 20 21	-	-	-	-	-	-		F45007			

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