

YE-DD24

EUROPE



SOLID CARBIDE **DREAM DRILLS**

PRO with/without Coolant Holes

NEW X with/without Coolant Holes

GENERAL with/without Coolant Holes

HIGH FEED with Coolant Holes

FLAT BOTTOM with/without Coolant Holes

INOX with Coolant Holes

ALU with Coolant Holes

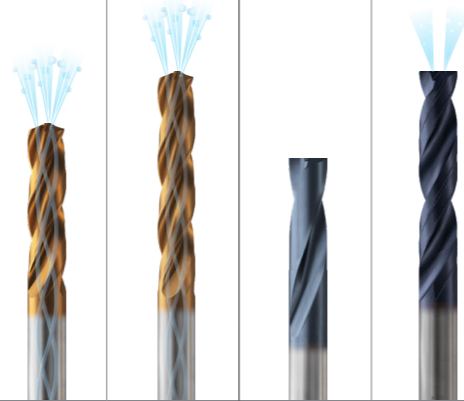
MQL TYPE with Coolant Holes(10xD - 40xD)

for **HIGH HARDENED STEELS** HRc50-70

SERIES
DRILLING DEPTH
TOOL MATERIAL
LENGTH
SIZE MIN
SIZE MAX
PAGE

| | HIGH FEED | | FLAT BOTTOM | |
|-------------------|-----------|--------|-------------|-------|
| | DGR493 | DGR495 | DPP447 | DH450 |
| DRILLING DEPTH | 3XD | 5XD | 2XD | 5XD |
| TOOL MATERIAL | CARBIDE | | CARBIDE | |
| LENGTH | SHORT | LONG | SHORT | LONG |
| SIZE MIN | D5.0 | D5.0 | D3.0 | D3.0 |
| SIZE MAX | D20.0 | D20.0 | D20.0 | D20.0 |
| PAGE | 66 | 68 | 74 | 76 |
| SURFACE TREATMENT | H-Coating | | X-Coating | TiAlN |

SOLID CARBIDE DREAM DRILLS

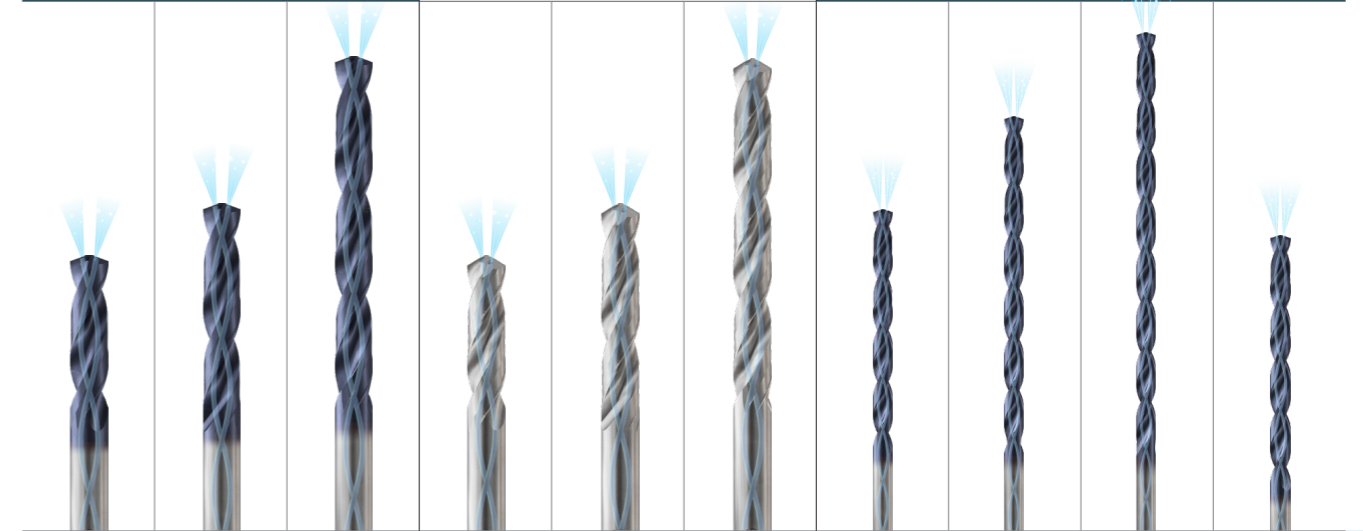


◎ : Excellent ○ : Good

Please visit globalyg1.com/mat for material search

| ISO | VDI 3323 | Material Description | Composition / Structure / Heat Treatment | HB | HRC | DGR493 | DGR495 | DPP447 | DH450 |
|-----|----------|---|--|---------------------------------------|--------|--------|--------|--------|-------|
| 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 | | Ferritic | 130 | ◎ | ◎ | | | |
| | 20 | | Malleable cast iron | 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 | | Annealed | 250 25 | | | | | |
| | 34 | | Ni or Co Based Cured | 350 38 | | | | | |
| | 35 | | Cast | 320 34 | | | | | |
| | 36 | Titanium Alloys | Pure Titanium | 400 Rm | | | | | |
| | 37 | | Alpha + Beta Alloys Hardened | 1050 Rm | | | | | |
| H | 38 | Hardened steel | Hardened | 550 55 | | | | | |
| | 39 | | Hardened | 630 60 | | | | | |
| | 40 | Hardened Cast Iron | Cast | 400 42 | | | | | |
| | 41 | | Hardened | 550 55 | | | | | |

| | INOX | | | ALU | | | MQL TYPE | | | |
|--|---------|-------|------------|---------|-------|------------|------------|-------|-------|-------|
| | DH451 | DH452 | DH453 | D5432 | D5433 | D5434 | DH510 | DH515 | DH520 | DHM10 |
| | 3XD | 5XD | 8XD | 3XD | 5XD | 8XD | 10XD | 15XD | 20XD | 10XD |
| | CARBIDE | | | CARBIDE | | | CARBIDE | | | |
| | SHORT | LONG | EXTRA LONG | SHORT | LONG | EXTRA LONG | EXTRA LONG | | | |
| | D3.0 | D1.0 | D3.0 | D3.0 | D3.0 | D3.0 | D3.0 | D3.0 | D3.0 | D3.0 |
| | D20.0 | D20.0 | D14.0 | D20.0 | D20.0 | D14.0 | D14.0 | D12.0 | D12.0 | D14.0 |
| | 84 | 86 | 89 | 96 | 98 | 100 | 106 | 107 | 107 | 108 |
| | TiAlN | | | Bright | | | TiAlN | | | |



| | | | | | | | | | | | |
|---|---|---|---|---|---|--|---|---|---|---|------|
| ◎ | ◎ | ◎ | | | | | ◎ | ◎ | ◎ | ◎ | 1 |
| ◎ | ◎ | ◎ | | | | | ◎ | ◎ | ◎ | ◎ | 2 |
| ○ | ○ | ○ | | | | | ○ | ○ | ○ | ○ | 3 |
| | | | | | | | | | | | 4 |
| | | | | | | | | | | | 5 |
| ◎ | ◎ | ◎ | | | | | ◎ | ◎ | ◎ | ◎ | 6 P |
| ○ | ○ | ○ | | | | | ○ | ○ | ○ | ○ | 7 |
| | | | | | | | ○ | ○ | ○ | ○ | 8 |
| | | | | | | | ○ | ○ | ○ | ○ | 9 |
| | | | | | | | ○ | ○ | ○ | ○ | 10 |
| | | | | | | | ○ | ○ | ○ | ○ | 11 |
| ◎ | ◎ | ◎ | | | | | | | | | 12 |
| ◎ | ◎ | ◎ | | | | | | | | | 13 M |
| ◎ | ◎ | ◎ | | | | | | | | | 14 |
| | | | | | | | ◎ | ◎ | ◎ | ◎ | 15 |
| | | | | | | | ○ | ○ | ○ | ○ | 16 |
| | | | | | | | ◎ | ◎ | ◎ | ◎ | 17 K |
| | | | | | | | ○ | ○ | ○ | ○ | 18 |
| | | | | | | | ◎ | ◎ | ◎ | ◎ | 19 |
| | | | | | | | ○ | ○ | ○ | ○ | 20 |
| ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | | | | | | 21 |
| ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | | | | | | 22 |
| ○ | ○ | ○ | ◎ | ◎ | ◎ | | | | | | 23 |
| ○ | ○ | ○ | ◎ | ◎ | ◎ | | | | | | 24 |
| ○ | ○ | ○ | | | | | | | | | 25 |
| | | | | | | | | | | | 26 N |
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| | | | | | | | | | | | 34 S |
| | | | | | | | | | | | 35 |
| | | | | | | | | | | | 36 |
| ○ | ○ | ○ | | | | | | | | | 37 |
| | | | | | | | | | | | 38 |
| | | | | | | | | | | | 39 |
| | | | | | | | | | | | 40 H |
| | | | | | | | | | | | 41 |

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

RCH-Coating

YG-1 RCH-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

Y/G
SELECTION GUIDE
METRIC

SERIES
DRILLING DEPTH
TOOL MATERIAL
LENGTH
SIZE MIN
SIZE MAX
PAGE

| SERIES | MQL TYPE | | | | HARDENED STEEL |
|----------------|------------|-------|-------|-------|----------------|
| | DHM15 | DHM20 | DHM25 | DHM30 | DH500 |
| DRILLING DEPTH | 15XD | 20XD | 25XD | 30XD | 3XD |
| TOOL MATERIAL | CARBIDE | | | | CARBIDE |
| LENGTH | EXTRA LONG | | | | SHORT |
| SIZE MIN | D3.0 | D3.0 | D3.0 | D3.0 | D2.6 |
| SIZE MAX | D12.0 | D12.0 | D10.0 | D8.0 | D14.0 |
| PAGE | 108 | 108 | 109 | 109 | 114 |

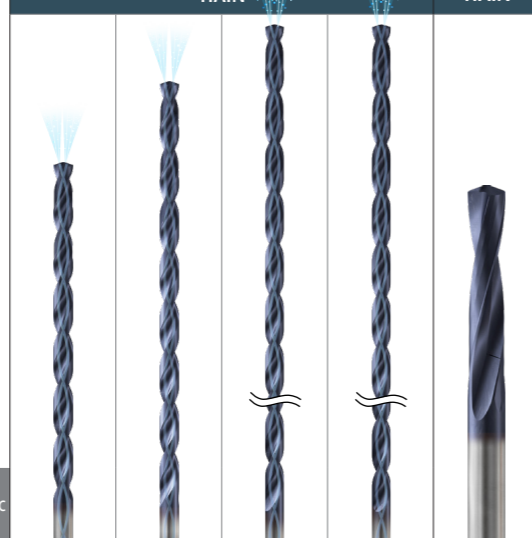
SURFACE TREATMENT

TiAIN

TiAIN

SOLID CARBIDE
DREAM
DRILLS

© : Excellent ○ : Good

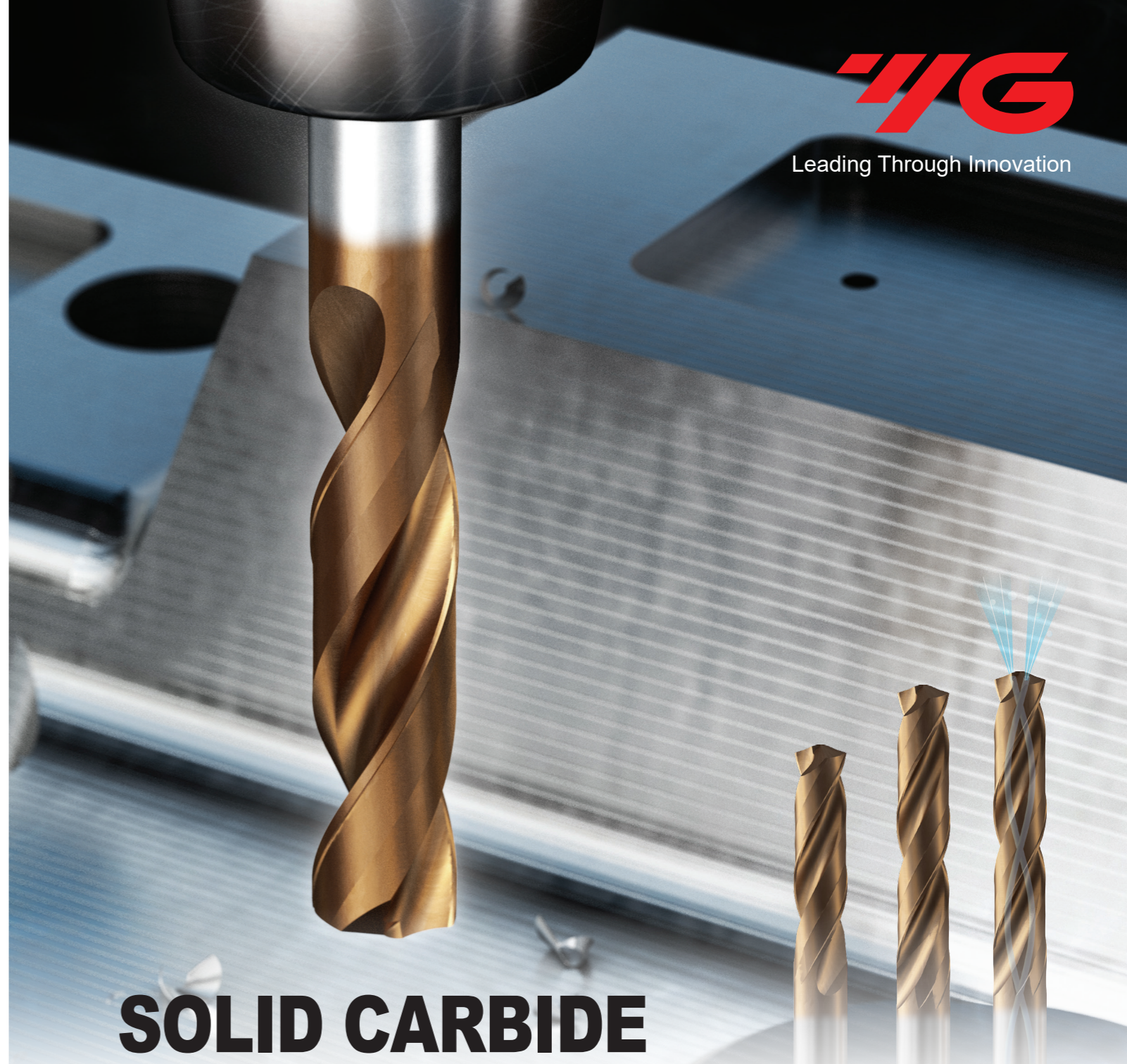


Please visit globalyg1.com/mat for material search

| ISO VDI 3323 | Material Description | Composition / Structure / Heat Treatment | HB | HRc | | | | | | |
|--------------|---|--|---------------------|---------|----|---|---|---|---|--|
| 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 | ○ | ○ | ○ | ○ | | |
| 12 | Stainless steel | Ferritic / Martensitic | Annealed | 200 | 15 | | | | | |
| 13 | | Martensitic | Quenched & Tempered | 240 | 23 | | | | | |
| 14 | | Austenitic | | 180 | 10 | | | | | |
| 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 | ○ | ○ | ○ | ○ | | |
| 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 | Non Metallic Materials | CuSn, lead-free copper and electrolytic copper | 100 | | | | | | | |
| 29 | | Duroplastic, Fiber Reinforced Plastic | | | | | | | | |
| 30 | Rubber, Wood, etc. | | | | | | | | | |
| 31 | Heat Resistant Super Alloys | Fe Based | Annealed | 200 | 15 | | | | | |
| 32 | | Cured | 280 | 30 | | | | | | |
| 33 | | Annealed | 250 | 25 | | | | | | |
| 34 | | Ni or Co Based | Cured | 350 | 38 | | | | | |
| 35 | | Cast | 320 | 34 | | | | | | |
| 36 | Titanium Alloys | Pure Titanium | 400 Rm | | | | | | | |
| 37 | | Alpha + Beta Alloys | Hardened | 1050 Rm | | | | | | |
| 38 | Hardened steel | Hardened | 550 | 55 | | | | | ◎ | |
| 39 | | Hardened | 630 | 60 | | | | | ◎ | |
| 40 | Chilled Cast Iron | Cast | 400 | 42 | | | | | | |
| 41 | Hardened Cast Iron | Hardened | 550 | 55 | | | | | | |



Leading Through Innovation

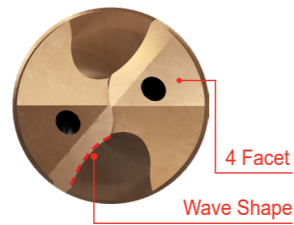


SOLID CARBIDE

DREAM DRILLS
-PRO

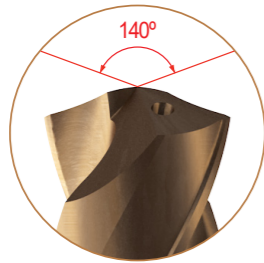
- For General Purpose (up to HRc50)
- Extremely High hardness and Heat resistance due to YG-1 special Z-Coating technology

DREAM DRILLS PRO



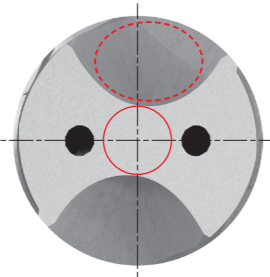
Wave Shape Cutting Edge

- Improve Chip Formation
- Low Cutting Force



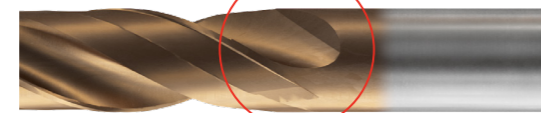
140 Degree Point Angle

- Provides Edge Strength and Exceptional Tool Life
- Good Self Centering
- Low Torque

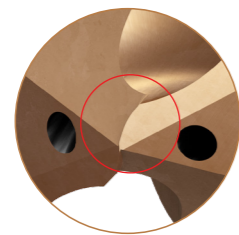


Optimized Wide Flute Design

The Unique Flute Structure provides Good Surface Finish, Longer Tool Life and requires Less Cutting Force



Radius Shape



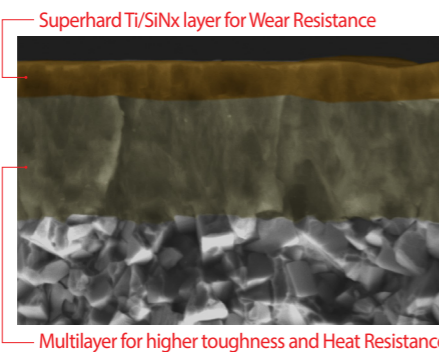
Helical Thinning

- Low Thrust
- Stable Torque
- Good Chip Breakage

Higher & Improved Cutting Conditions due to YG-1 Special Z-Coating Technology

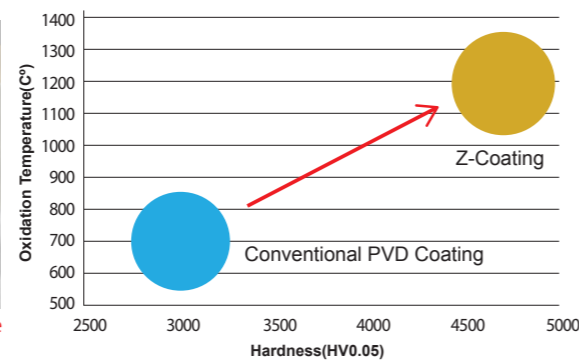
(YG-1's Unique Silicon Based Coating: Nano-Layer Coating)

- Extremely High Hardness and Heat Resistance



Superhard Ti/SiNx layer for Wear Resistance

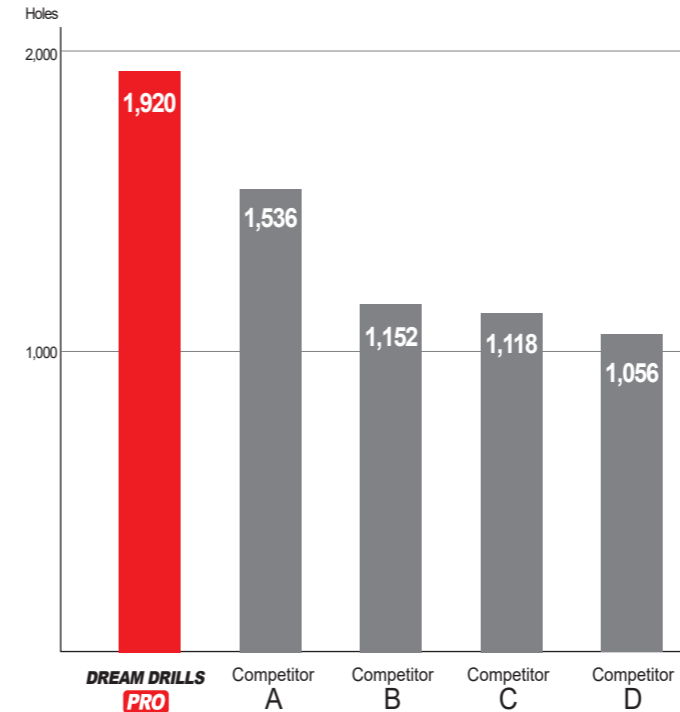
Multilayer for higher toughness and Heat Resistance



Performance Upgrade with Faster Cutting Speed

CASE STUDY

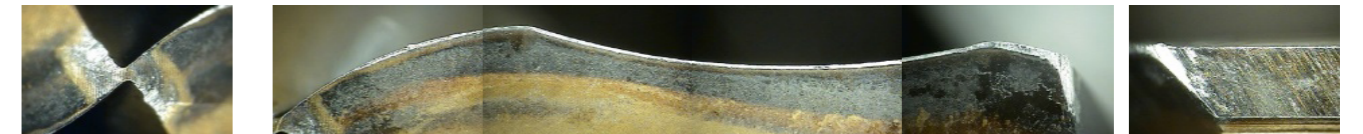
► SOLID CARBIDE DREAM DRILLS - PRO with Coolant Holes



| CUTTING CONDITION | |
|--------------------|--|
| Work Material | • DIN: 42CrMo4 • ANSI: 4140 • JIS: SCM440 (HRc30) |
| Drill Diameter(mm) | Ø10.0 |
| RPM | 4,458 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 |

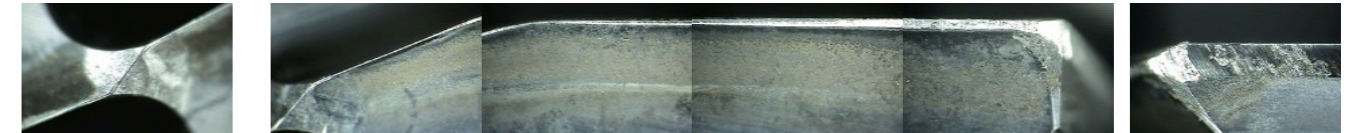
DREAM DRILLS PRO

Total Drilling 1,920 Holes



Competitor A

Total Drilling 1,536 Holes



Competitor B

Total Drilling 1,152 Holes



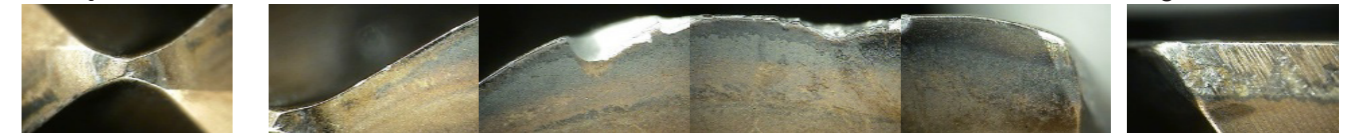
Competitor C

Total Drilling 1,118 Holes



Competitor D

Total Drilling 1,056 Holes

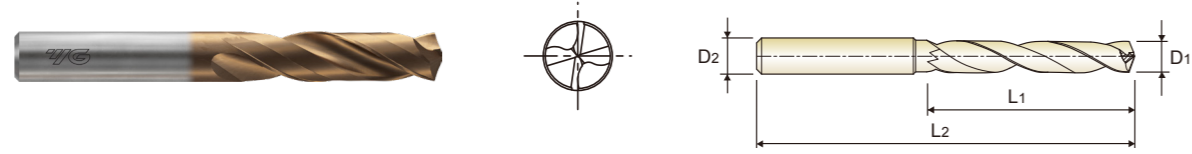


Z-COATED SOLID CARBIDE
DREAM DRILLS PRO without COOLANT HOLES (3XD)

SERIES

DGN523

- ▶ 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



DIN 6537 CARBIDE 30° h6 m7 140° Z Coating p.20

SHORT
3 × D

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|-----------|----------------|----------------|--------------|----------------|-----------|----------------|----------------|--------------|----------------|
| | | | | | | | | | |
| DGN523030 | 3.0 | 6 | 20 | 62 | DGN523060 | 6.0 | 6 | 28 | 66 |
| DGN523031 | 3.1 | 6 | 20 | 62 | DGN523061 | 6.1 | 8 | 34 | 79 |
| DGN523032 | 3.2 | 6 | 20 | 62 | DGN523062 | 6.2 | 8 | 34 | 79 |
| DGN523033 | 3.3 | 6 | 20 | 62 | DGN523063 | 6.3 | 8 | 34 | 79 |
| DGN523034 | 3.4 | 6 | 20 | 62 | DGN523064 | 6.4 | 8 | 34 | 79 |
| DGN523035 | 3.5 | 6 | 20 | 62 | DGN523065 | 6.5 | 8 | 34 | 79 |
| DGN523036 | 3.6 | 6 | 20 | 62 | DGN523066 | 6.6 | 8 | 34 | 79 |
| DGN523037 | 3.7 | 6 | 20 | 62 | DGN523067 | 6.7 | 8 | 34 | 79 |
| DGN523038 | 3.8 | 6 | 24 | 66 | DGN523068 | 6.8 | 8 | 34 | 79 |
| DGN523039 | 3.9 | 6 | 24 | 66 | DGN523069 | 6.9 | 8 | 34 | 79 |
| DGN523040 | 4.0 | 6 | 24 | 66 | DGN523070 | 7.0 | 8 | 34 | 79 |
| DGN523041 | 4.1 | 6 | 24 | 66 | DGN523071 | 7.1 | 8 | 41 | 79 |
| DGN523042 | 4.2 | 6 | 24 | 66 | DGN523072 | 7.2 | 8 | 41 | 79 |
| DGN523043 | 4.3 | 6 | 24 | 66 | DGN523073 | 7.3 | 8 | 41 | 79 |
| DGN523044 | 4.4 | 6 | 24 | 66 | DGN523074 | 7.4 | 8 | 41 | 79 |
| DGN523045 | 4.5 | 6 | 24 | 66 | DGN523075 | 7.5 | 8 | 41 | 79 |
| DGN523046 | 4.6 | 6 | 24 | 66 | DGN523076 | 7.6 | 8 | 41 | 79 |
| DGN523047 | 4.7 | 6 | 24 | 66 | DGN523077 | 7.7 | 8 | 41 | 79 |
| DGN523048 | 4.8 | 6 | 28 | 66 | DGN523078 | 7.8 | 8 | 41 | 79 |
| DGN523049 | 4.9 | 6 | 28 | 66 | DGN523079 | 7.9 | 8 | 41 | 79 |
| DGN523050 | 5.0 | 6 | 28 | 66 | DGN523080 | 8.0 | 8 | 41 | 79 |
| DGN523051 | 5.1 | 6 | 28 | 66 | DGN523081 | 8.1 | 10 | 47 | 89 |
| DGN523052 | 5.2 | 6 | 28 | 66 | DGN523082 | 8.2 | 10 | 47 | 89 |
| DGN523053 | 5.3 | 6 | 28 | 66 | DGN523083 | 8.3 | 10 | 47 | 89 |
| DGN523054 | 5.4 | 6 | 28 | 66 | DGN523084 | 8.4 | 10 | 47 | 89 |
| DGN523055 | 5.5 | 6 | 28 | 66 | DGN523085 | 8.5 | 10 | 47 | 89 |
| DGN523056 | 5.6 | 6 | 28 | 66 | DGN523086 | 8.6 | 10 | 47 | 89 |
| DGN523057 | 5.7 | 6 | 28 | 66 | DGN523087 | 8.7 | 10 | 47 | 89 |
| DGN523058 | 5.8 | 6 | 28 | 66 | DGN523088 | 8.8 | 10 | 47 | 89 |
| DGN523059 | 5.9 | 6 | 28 | 66 | DGN523089 | 8.9 | 10 | 47 | 89 |

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : 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 | | | |
| 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 |
| HRC | 13 | 25 | 28 | 32 | 30 | 10 | 29 | 32 | 38 | 35 | 15 | 23 | 10 | 26 | 10 | 26 | 3 | 25 | 21 | 21 | 15 | 15 | 10 | 10 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | 180 | 260 | 160 | 250 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

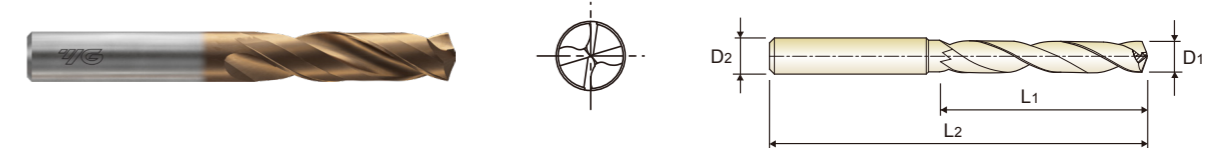
| ISO | N | | | | | | | | | | S | | | | | | H | | | | | | | | |
|-------------|------------------------|-----|-----------------------|----|-----|---|----|-----|----|----|------------------------|-----|-----------------------------|-----|-----|-------|-----------------|-----|----------------|-------------------|--------------------|-----|-----|-----|-----|
| | 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 | | | | |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | |
| HRC | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 | 550 | 630 | 400 | 550 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | |

Z-COATED SOLID CARBIDE
DREAM DRILLS PRO without COOLANT HOLES (3XD)

SERIES

DGN523

- ▶ 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



DIN 6537 CARBIDE 30° h6 m7 140° Z Coating p.20

SHORT
3 × D

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|-----------|----------------|----------------|--------------|----------------|-----------|----------------|----------------|--------------|----------------|
| | | | | | | | | | |
| DGN523090 | 9.0 | 10 | 47 | 89 | DGN523120 | 12.0 | 12 | 55 | 102 |
| DGN523091 | 9.1 | 10 | 47 | 89 | DGN523123 | 12.3 | 14 | 60 | 107 |
| DGN523092 | 9.2 | 10 | 47 | 89 | DGN523125 | 12.5 | 14 | 60 | 107 |
| DGN523093 | 9.3 | 10 | 47 | 89 | DGN523128 | 12.8 | 14 | 60 | 107 |
| DGN523094 | 9.4 | 10 | 47 | 89 | DGN523130 | 13.0 | 14 | 60 | 107 |
| DGN523095 | 9.5 | 10 | 47 | 89 | DGN523135 | 13.5 | 14 | 60 | 107 |
| DGN523096 | 9.6 | 10 | 47 | 89 | DGN523138 | 13.8 | 14 | 60 | 107 |
| DGN523097 | 9.7 | 10 | 47 | 89 | DGN523140 | 14.0 | 14 | 60 | 107 |
| DGN523098 | 9.8 | 10 | 47 | 89 | DGN523145 | 14.5 | 16 | 65 | 115 |
| DGN523099 | 9.9 | 10 | 47 | 89 | DGN523148 | 14.8 | 16 | 65 | 115 |
| DGN523100 | 10.0 | 10 | 47 | 89 | DGN523150 | 15.0 | 16 | 65 | 115 |
| DGN523101 | 10.1 | 12 | 55 | 102 | DGN523155 | 15.5 | 16 | 65 | 115 |
| DGN523102 | 10.2 | 12 | 55 | 102 | DGN523158 | 15.8 | 16 | 65 | 115 |
| DGN523103 | 10.3 | 12 | 55 | 102 | DGN523160 | 16.0 | 16 | 65 | 115 |
| DGN523104 | 10.4 | 12 | 55 | 102 | DGN523165 | 16.5 | 18 | 73 | 123 |
| DGN523105 | 10.5 | 12 | 55 | 102 | DGN523168 | 16.8 | 18 | 73 | 123 |
| DGN523106 | 10.6 | 12 | 55 | 102 | DGN523170 | 17.0 | 18 | 73 | 123 |
| DGN523107 | 10.7 | 12 | 55 | 102 | DGN523175 | 17.5 | 18 | 73 | 123 |
| DGN523108 | 10.8 | 12 | 55 | 102 | DGN523178 | 17.8 | 18 | 73 | 123 |
| DGN523109 | 10.9 | 12 | 55 | 102 | DGN523180 | 18.0 | 18 | 73 | 123 |
| DGN523110 | 11.0 | 12 | 55 | 102 | DGN523185 | 18.5 | 20 | 79 | 131 |
| DGN523111 | 11.1 | 12 | 55 | 102 | DGN523190 | 19.0 | 20 | 79 | 131 |
| DGN523112 | 11.2 | 12 | 55 | 102 | DGN523195 | 19.5 | 20 | 79 | 131 |
| DGN523113 | 11.3 | 12 | 55 | 102 | DGN523198 | 19.8 | 20 | 79 | 131 |
| DGN523114 | 11.4 | 12 | 55 | 102 | DGN523200 | 20.0 | 20 | 79 | 131 |
| DGN523115 | 11.5 | 12 | 55 | 102 | | | | | |
| DGN523116 | 11.6 | 12 | 55 | 102 | | | | | |
| DGN523117 | 11.7 | 12 | 55 | 102 | | | | | |
| DGN523118 | 11.8 | 12 | 55 | 102 | | | | | |
| DGN523119 | 11.9 | 12 | 55 | 102 | | | | | |

▶ Other shank types are available on your request.

◎ : 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 | | | |
| 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 |
| HRC | 13 | 25 | 28 | 32 | 30 | 10 | 29 | 32 | 38 | 35 | 15 | 23 | 10 | 26 | 10 | 26 | 3 | 25 | 21 | 21 | 15 | 15 | 10 | 10 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | 180 | 260 | 160 | 250 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

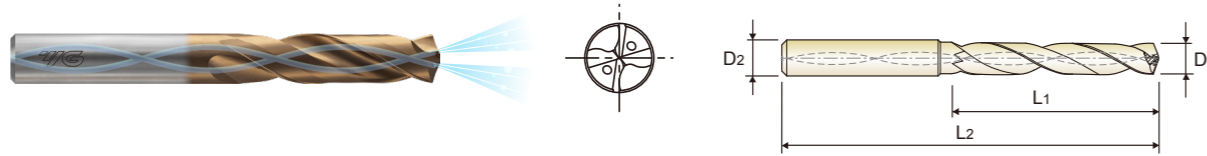
| ISO | N | | | | | | | | | | S | | | | | | H | | | | | | | | |
|-------------|------------------------|-----|-----------------------|----|-----|---|----|-----|----|----|------------------------|-----|-----------------------------|-----|-----|-------|-----------------|-----|----------------|-------------------|--------------------|-----|-----|-----|-----|
| | 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 | | | | |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | |
| HRC | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 | 550 | 630 | 400 | 550 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | |

Z-COATED SOLID CARBIDE DREAM DRILLS PRO with COOLANT HOLES (3XD)

SERIES

DGN506

- 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



DIN 6537
CARBIDE
30°
h6
m7
140°
20 bar
Z Coating
p.21

SHORT
3 × D

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length | Unit : mm | | | | |
|-----------|--|----------------|----------------|--------------|----------------|-----------|----------------|----------------|--------------|----------------|
| Z-Coating | | D1 | D2 | L1 | L2 | EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
| DGN506086 | | 8.6 | 10 | 47 | 89 | DGN506114 | 11.4 | 12 | 55 | 102 |
| DGN506087 | | 8.7 | 10 | 47 | 89 | DGN506115 | 11.5 | 12 | 55 | 102 |
| DGN506088 | | 8.8 | 10 | 47 | 89 | DGN506116 | 11.6 | 12 | 55 | 102 |
| DGN506089 | | 8.9 | 10 | 47 | 89 | DGN506117 | 11.7 | 12 | 55 | 102 |
| DGN506090 | | 9.0 | 10 | 47 | 89 | DGN506118 | 11.8 | 12 | 55 | 102 |
| DGN506091 | | 9.1 | 10 | 47 | 89 | DGN506119 | 11.9 | 12 | 55 | 102 |
| DGN506092 | | 9.2 | 10 | 47 | 89 | DGN506120 | 12.0 | 12 | 55 | 102 |
| DGN506093 | | 9.3 | 10 | 47 | 89 | DGN506125 | 12.5 | 14 | 60 | 107 |
| DGN506094 | | 9.4 | 10 | 47 | 89 | DGN506130 | 13.0 | 14 | 60 | 107 |
| DGN506095 | | 9.5 | 10 | 47 | 89 | DGN506135 | 13.5 | 14 | 60 | 107 |
| DGN506096 | | 9.6 | 10 | 47 | 89 | DGN506140 | 14.0 | 14 | 60 | 107 |
| DGN506097 | | 9.7 | 10 | 47 | 89 | DGN506145 | 14.5 | 16 | 65 | 115 |
| DGN506098 | | 9.8 | 10 | 47 | 89 | DGN506150 | 15.0 | 16 | 65 | 115 |
| DGN506099 | | 9.9 | 10 | 47 | 89 | DGN506155 | 15.5 | 16 | 65 | 115 |
| DGN506100 | | 10.0 | 10 | 47 | 89 | DGN506160 | 16.0 | 16 | 65 | 115 |
| DGN506101 | | 10.1 | 12 | 55 | 102 | DGN506165 | 16.5 | 18 | 73 | 123 |
| DGN506102 | | 10.2 | 12 | 55 | 102 | DGN506170 | 17.0 | 18 | 73 | 123 |
| DGN506103 | | 10.3 | 12 | 55 | 102 | DGN506175 | 17.5 | 18 | 73 | 123 |
| DGN506104 | | 10.4 | 12 | 55 | 102 | DGN506180 | 18.0 | 18 | 73 | 123 |
| DGN506105 | | 10.5 | 12 | 55 | 102 | DGN506185 | 18.5 | 20 | 79 | 131 |
| DGN506106 | | 10.6 | 12 | 55 | 102 | DGN506190 | 19.0 | 20 | 79 | 131 |
| DGN506107 | | 10.7 | 12 | 55 | 102 | DGN506195 | 19.5 | 20 | 79 | 131 |
| DGN506108 | | 10.8 | 12 | 55 | 102 | DGN506200 | 20.0 | 20 | 79 | 131 |
| DGN506109 | | 10.9 | 12 | 55 | 102 | | | | | |
| DGN506110 | | 11.0 | 12 | 55 | 102 | | | | | |
| DGN506111 | | 11.1 | 12 | 55 | 102 | | | | | |
| DGN506112 | | 11.2 | 12 | 55 | 102 | | | | | |
| DGN506113 | | 11.3 | 12 | 55 | 102 | | | | | |

► Other shank types are available on your request.

◎ : 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 | 30 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 18 | 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 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 CastIron | Hardened CastIron | | |
| 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 | | 55 | 60 | 42 | 55 | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | | | | | | | | | | | | | | | | | | | | | |

Z-COATED SOLID CARBIDE DREAM DRILLS PRO with COOLANT HOLES (5XD)

SERIES

DGN508

- 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



DIN 6537
CARBIDE
30°
h6
m7
140°
20 bar
Z Coating
p.21

LONG
5 × D

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length | Unit : mm | | | | |
|-----------|--|----------------|----------------|--------------|----------------|-----------|----------------|----------------|--------------|----------------|
| Z-Coating | | D1 | D2 | L1 | L2 | EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
| DGN508010 | | 1.0 | 3 | 8 | 55 | DGN508038 | 3.8 | 6 | 36 | 74 |
| DGN508011 | | 1.1 | 3 | 12 | 55 | DGN508039 | 3.9 | 6 | 36 | 74 |
| DGN508012 | | 1.2 | 3 | 12 | 55 | DGN508040 | 4.0 | 6 | 36 | 74 |
| DGN508013 | | 1.3 | 3 | 12 | 55 | DGN508041 | 4.1 | 6 | 36 | 74 |
| DGN508014 | | 1.4 | 3 | 12 | 55 | DGN508042 | 4.2 | 6 | 36 | 74 |
| DGN508015 | | 1.5 | 3 | 16 | 55 | DGN508043 | 4.3 | 6 | 36 | 74 |
| DGN508016 | | 1.6 | 3 | 16 | 55 | DGN508044 | 4.4 | 6 | 36 | 74 |
| DGN508017 | | 1.7 | 3 | 16 | 55 | DGN508045 | 4.5 | 6 | 36 | 74 |
| DGN508018 | | 1.8 | 3 | 16 | 55 | DGN508046 | 4.6 | 6 | 36 | 74 |
| DGN508019 | | 1.9 | 3 | 16 | 55 | DGN508047 | 4.7 | 6 | 36 | 74 |
| DGN508020 | | 2.0 | 4 | 21 | 57 | DGN508048 | 4.8 | 6 | 44 | 82 |
| DGN508021 | | 2.1 | 4 | 21 | 57 | DGN508049 | 4.9 | 6 | 44 | 82 |
| DGN508022 | | 2.2 | 4 | 21 | 57 | DGN508050 | 5.0 | 6 | 44 | 82 |
| DGN508023 | | 2.3 | 4 | 21 | 57 | DGN508051 | 5.1 | 6 | 44 | 82 |
| DGN508024 | | 2.4 | 4 | 21 | 57 | DGN508052 | 5.2 | 6 | 44 | 82 |
| DGN508025 | | 2.5 | 4 | 21 | 57 | DGN508053 | 5.3 | 6 | 44 | 82 |
| DGN508026 | | 2.6 | 4 | 21 | 57 | DGN508054 | 5.4 | 6 | 44 | 82 |
| DGN508027 | | 2.7 | 4 | 21 | 57 | DGN508055 | 5.5 | 6 | 44 | 82 |
| DGN508028 | | 2.8 | 4 | 21 | 57 | DGN508056 | 5.6 | 6 | 44 | 82 |
| DGN508029 | | 2.9 | 4 | 21 | 57 | DGN508057 | 5.7 | 6 | 44 | 82 |
| DGN508030 | | 3.0 | 6 | 28 | 66 | DGN508058 | 5.8 | 6 | 44 | 82 |
| DGN508031 | | 3.1 | 6 | 28 | 66 | DGN508059 | 5.9 | 6 | 44 | 82 |
| DGN508032 | | 3.2 | 6 | 28 | 66 | DGN508060 | 6.0 | 6 | 44 | 82 |
| DGN508033 | | 3.3 | 6 | 28 | 66 | DGN508061 | 6.1 | 8 | 53 | 91 |
| DGN508034 | | 3.4 | 6 | 28 | 66 | DGN508062 | 6.2 | 8 | 53 | 91 |
| DGN508035 | | 3.5 | 6 | 28 | 66 | DGN508063 | 6.3 | 8 | 53 | 91 |
| DGN508036 | | 3.6 | 6 | 28 | 66 | DGN508064 | 6.4 | 8 | 53 | 91 |
| DGN508037 | | 3.7 | 6 | 28 | 66 | DGN508065 | 6.5 | 8 | 53 | 91 |

► 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 | 30 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 18 | 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 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 CastIron | Hardened CastIron | | |
| 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 | | 55 | 60 | 42 | 55 | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | | | | | | | | | | | | | | | | | | | | | |

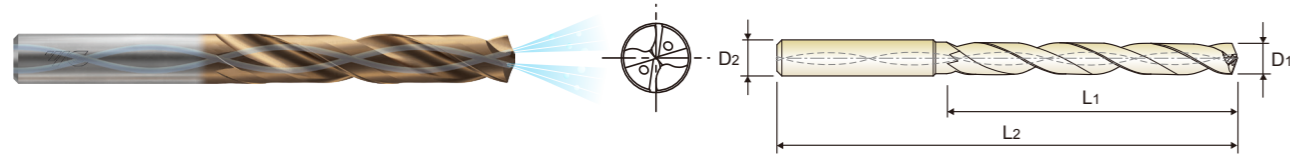


Z-COATED SOLID CARBIDE DREAM DRILLS PRO with COOLANT HOLES (5XD)

SERIES

DGN508

- ▶ 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



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar Z Coating p.21

LONG
5 x D

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|-----------|----------------|----------------|--------------|----------------|-----------|----------------|----------------|--------------|----------------|
| Z-Coating | D1 | D2 | L1 | L2 | Z-Coating | D1 | D2 | L1 | L2 |
| DGN508066 | 6.6 | 8 | 53 | 91 | DGN508094 | 9.4 | 10 | 61 | 103 |
| DGN508067 | 6.7 | 8 | 53 | 91 | DGN508095 | 9.5 | 10 | 61 | 103 |
| DGN508068 | 6.8 | 8 | 53 | 91 | DGN508096 | 9.6 | 10 | 61 | 103 |
| DGN508069 | 6.9 | 8 | 53 | 91 | DGN508097 | 9.7 | 10 | 61 | 103 |
| DGN508070 | 7.0 | 8 | 53 | 91 | DGN508098 | 9.8 | 10 | 61 | 103 |
| DGN508071 | 7.1 | 8 | 53 | 91 | DGN508099 | 9.9 | 10 | 61 | 103 |
| DGN508072 | 7.2 | 8 | 53 | 91 | DGN508100 | 10.0 | 10 | 61 | 103 |
| DGN508073 | 7.3 | 8 | 53 | 91 | DGN508101 | 10.1 | 12 | 71 | 118 |
| DGN508074 | 7.4 | 8 | 53 | 91 | DGN508102 | 10.2 | 12 | 71 | 118 |
| DGN508075 | 7.5 | 8 | 53 | 91 | DGN508103 | 10.3 | 12 | 71 | 118 |
| DGN508076 | 7.6 | 8 | 53 | 91 | DGN508104 | 10.4 | 12 | 71 | 118 |
| DGN508077 | 7.7 | 8 | 53 | 91 | DGN508105 | 10.5 | 12 | 71 | 118 |
| DGN508078 | 7.8 | 8 | 53 | 91 | DGN508106 | 10.6 | 12 | 71 | 118 |
| DGN508079 | 7.9 | 8 | 53 | 91 | DGN508107 | 10.7 | 12 | 71 | 118 |
| DGN508080 | 8.0 | 8 | 53 | 91 | DGN508108 | 10.8 | 12 | 71 | 118 |
| DGN508081 | 8.1 | 10 | 61 | 103 | DGN508109 | 10.9 | 12 | 71 | 118 |
| DGN508082 | 8.2 | 10 | 61 | 103 | DGN508110 | 11.0 | 12 | 71 | 118 |
| DGN508083 | 8.3 | 10 | 61 | 103 | DGN508111 | 11.1 | 12 | 71 | 118 |
| DGN508084 | 8.4 | 10 | 61 | 103 | DGN508112 | 11.2 | 12 | 71 | 118 |
| DGN508085 | 8.5 | 10 | 61 | 103 | DGN508113 | 11.3 | 12 | 71 | 118 |
| DGN508086 | 8.6 | 10 | 61 | 103 | DGN508114 | 11.4 | 12 | 71 | 118 |
| DGN508087 | 8.7 | 10 | 61 | 103 | DGN508115 | 11.5 | 12 | 71 | 118 |
| DGN508088 | 8.8 | 10 | 61 | 103 | DGN508116 | 11.6 | 12 | 71 | 118 |
| DGN508089 | 8.9 | 10 | 61 | 103 | DGN508117 | 11.7 | 12 | 71 | 118 |
| DGN508090 | 9.0 | 10 | 61 | 103 | DGN508118 | 11.8 | 12 | 71 | 118 |
| DGN508091 | 9.1 | 10 | 61 | 103 | DGN508119 | 11.9 | 12 | 71 | 118 |
| DGN508092 | 9.2 | 10 | 61 | 103 | DGN508120 | 12.0 | 12 | 71 | 118 |
| DGN508093 | 9.3 | 10 | 61 | 103 | DGN508125 | 12.5 | 14 | 77 | 124 |

▶ 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 |
| HRC | 13 | 25 | 28 | 32 | 30 | 10 | 29 | 32 | 38 | 35 | 15 | 23 | 10 | 10 | 10 | 26 | 3 | 25 | 21 | 21 | 180 | 260 | 160 | 250 | 130 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | 180 | 260 | 160 | 250 | 130 |
| 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 CastIron | Hardened CastIron | | | | | | | | | | | | | | | |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | | |
| HRC | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 | | | | | | | | | | | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 | | | | | | | | | | | | | | | | |
| Recommended | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Z-COATED SOLID CARBIDE DREAM DRILLS PRO with COOLANT HOLES (5XD)

SERIES

DGN508

- ▶ 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



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar Z Coating p.21

LONG
5 x D

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|-----------|----------------|----------------|--------------|----------------|-----------|----------------|----------------|--------------|----------------|
| Z-Coating | D1 | D2 | L1 | L2 | Z-Coating | D1 | D2 | L1 | L2 |
| DGN508130 | 13.0 | 14 | 77 | 124 | DGN508170 | 17.0 | 18 | 93 | 143 |
| DGN508135 | 13.5 | 14 | 77 | 124 | DGN508175 | 17.5 | 18 | 93 | 143 |
| DGN508140 | 14.0 | 14 | 77 | 124 | DGN508180 | 18.0 | 18 | 93 | 143 |
| DGN508145 | 14.5 | 16 | 83 | 133 | DGN508185 | 18.5 | 20 | 101 | 153 |
| DGN508150 | 15.0 | 16 | 83 | 133 | DGN508190 | 19.0 | 20 | 101 | 153 |
| DGN508155 | 15.5 | 16 | 83 | 133 | DGN508195 | 19.5 | 20 | 101 | 153 |
| DGN508160 | 16.0 | 16 | 83 | 133 | DGN508200 | 20.0 | 20 | 101 | 153 |
| DGN508165 | 16.5 | 18 | 93 | 143 | | | | | |

▶ 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 |
| HRC | 13 | 25 | 28 | 32 | 30 | 10 | 29 | 32 | 38 | 35 | 15 | 23 | 10 | 10 | 10 | 26 | 3 | 25 | 21 | 21 | 180 | 260 | 160 | 250 | 130 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | 180 | 260 | 160 | 250 | 130 |
| 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 CastIron | Hardened CastIron | | | | | | | | | | | | | | | |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | | |
| HRC | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 | | | | | | | | | | | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 | | | | | | | | | | | | | | | | |
| Recommended | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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

DGN523, DGN526 SERIES

without COOLANT HOLES

| ISO | VDI 3323 | Material Description | Vc | Parameter | Drill Diameter (mm) | | | | | |
|-----|---------------------|----------------------|-----------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|--------------------|
| | | | | | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 |
| P | 2 | Non-alloy steel | 85 | RPM FEED | 27,060 0.03-0.05 | 13,530 0.05-0.07 | 12,730 0.06-0.12 | 9,550 0.08-0.14 | 7,640 0.14-0.20 | 6,370 0.16-0.22 |
| | 3 | | 85 | RPM FEED | 27,060 0.03-0.05 | 13,530 0.05-0.07 | 12,730 0.06-0.12 | 9,550 0.08-0.14 | 7,640 0.14-0.20 | 6,370 0.16-0.22 |
| | 4 | | 85 | RPM FEED | 27,060 0.03-0.05 | 13,530 0.05-0.07 | 12,730 0.06-0.12 | 9,550 0.08-0.14 | 7,640 0.14-0.20 | 6,370 0.16-0.22 |
| | 5 | | 75 | RPM FEED | 23,870 0.03-0.05 | 11,940 0.05-0.07 | 10,080 0.04-0.10 | 7,560 0.07-0.13 | 6,050 0.10-0.16 | 5,040 0.12-0.18 |
| | 6 | | 85 | RPM FEED | 27,060 0.03-0.05 | 13,530 0.05-0.07 | 12,730 0.06-0.12 | 9,550 0.08-0.14 | 7,640 0.14-0.20 | 6,370 0.16-0.22 |
| | 7 | 75 | RPM FEED | 23,870 0.03-0.05 | 11,940 0.05-0.07 | 10,080 0.04-0.10 | 7,560 0.07-0.13 | 6,050 0.10-0.16 | 5,040 0.12-0.18 | |
| | 8 | 75 | RPM FEED | 23,870 0.03-0.05 | 11,940 0.05-0.07 | 10,080 0.04-0.10 | 7,560 0.07-0.13 | 6,050 0.10-0.16 | 5,040 0.12-0.18 | |
| | 9 | 36 | RPM FEED | 11,460 0.02-0.04 | 5,730 0.03-0.05 | 5,310 0.03-0.08 | 3,980 0.05-0.11 | 3,180 0.08-0.14 | 2,650 0.10-0.16 | |
| | 10 | 60 | RPM FEED | 19,100 0.03-0.05 | 9,550 0.05-0.07 | 8,490 0.04-0.10 | 6,370 0.07-0.13 | 5,090 0.10-0.16 | 4,240 0.12-0.18 | |
| | 11 | 35 | RPM FEED | 11,140 0.02-0.04 | 5,570 0.03-0.05 | 4,770 0.03-0.08 | 3,580 0.05-0.11 | 2,860 0.08-0.14 | 2,390 0.10-0.16 | |
| | M | 12 | Stainless steel | 60 | RPM FEED | 19,100 0.03-0.05 | 9,550 0.05-0.07 | 8,490 0.04-0.10 | 6,370 0.07-0.13 | 5,090 0.10-0.16 |
| 13 | | 45 | | RPM FEED | 14,320 0.02-0.04 | 7,160 0.03-0.05 | 5,840 0.04-0.10 | 4,380 0.07-0.13 | 3,500 0.10-0.16 | 2,920 0.12-0.18 |
| K | 15 | Grey cast iron | 85 | RPM FEED | 27,060 0.04-0.06 | 13,530 0.04-0.06 | 12,730 0.08-0.14 | 9,550 0.12-0.18 | 7,640 0.15-0.22 | 6,370 0.20-0.26 |
| | 16 | | 80 | RPM FEED | 25,460 0.04-0.06 | 12,730 0.04-0.06 | 10,080 0.06-0.12 | 7,560 0.08-0.14 | 6,050 0.14-0.20 | 5,040 0.16-0.22 |
| | 17 | Nodular cast iron | 85 | RPM FEED | 27,060 0.04-0.06 | 13,530 0.04-0.06 | 12,730 0.08-0.14 | 9,550 0.12-0.18 | 7,640 0.15-0.22 | 6,370 0.20-0.26 |
| | 18 | | 60 | RPM FEED | 19,100 0.04-0.06 | 9,550 0.04-0.06 | 9,020 0.06-0.12 | 6,760 0.08-0.14 | 5,410 0.14-0.20 | 4,510 0.16-0.22 |
| | 19 | | 75 | RPM FEED | 23,870 0.04-0.06 | 11,940 0.04-0.06 | 10,080 0.08-0.14 | 7,560 0.12-0.18 | 6,050 0.15-0.22 | 5,040 0.20-0.26 |
| 20 | Malleable cast iron | 60 | RPM FEED | 19,100 0.03-0.05 | 9,550 0.05-0.07 | 8,490 0.06-0.12 | 6,370 0.08-0.14 | 5,090 0.14-0.20 | 4,240 0.16-0.22 | |
| H | 38 | Hardened steel | 25 | RPM FEED | 7,960 0.01-0.02 | 3,980 0.01-0.03 | 3,180 0.01-0.03 | 2,390 0.01-0.04 | 1,910 0.02-0.05 | 1,590 0.03-0.06 |

| 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 | 120 | RPM FEED | 4,770 0.18-0.24 | 3,820 0.19-0.27 | 3,180 0.21-0.29 | 2,730 0.23-0.31 | 2,390 0.25-0.33 | 2,120 0.28-0.38 | 1,910 0.30-0.40 |
| | 3 | | 120 | RPM FEED | 4,770 0.18-0.24 | 3,820 0.19-0.27 | 3,180 0.21-0.29 | 2,730 0.23-0.31 | 2,390 0.25-0.33 | 2,120 0.28-0.38 | 1,910 0.30-0.40 |
| | 4 | | 120 | RPM FEED | 4,770 0.14-0.20 | 3,820 0.15-0.23 | 3,180 0.17-0.25 | 2,730 0.18-0.26 | 2,390 0.19-0.27 | 2,120 0.20-0.30 | 1,910 0.22-0.32 |
| | 5 | | 95 | RPM FEED | 3,780 0.14-0.20 | 3,020 0.15-0.23 | 2,520 0.17-0.25 | 2,160 0.18-0.26 | 1,890 0.19-0.27 | 1,680 0.20-0.30 | 1,510 0.22-0.32 |
| | 6 | | 120 | RPM FEED | 4,770 0.18-0.24 | 3,820 0.19-0.27 | 3,180 0.21-0.29 | 2,730 0.23-0.31 | 2,390 0.25-0.33 | 2,120 0.28-0.38 | 1,910 0.30-0.40 |
| | 7 | 95 | RPM FEED | 3,780 0.18-0.24 | 3,020 0.19-0.27 | 2,520 0.21-0.29 | 2,160 0.23-0.31 | 1,890 0.25-0.33 | 1,680 0.28-0.38 | 1,510 0.30-0.40 | |
| | 8 | 95 | RPM FEED | 3,780 0.14-0.20 | 3,020 0.15-0.23 | 2,520 0.17-0.25 | 2,160 0.18-0.26 | 1,890 0.19-0.27 | 1,680 0.20-0.30 | 1,510 0.22-0.32 | |
| | 9 | 50 | RPM FEED | 1,990 0.12-0.18 | 1,590 0.13-0.19 | 1,330 0.14-0.20 | 1,140 0.15-0.21 | 990 0.16-0.22 | 880 0.17-0.25 | 800 0.18-0.28 | |
| | 10 | 80 | RPM FEED | 3,180 0.14-0.20 | 2,550 0.15-0.23 | 2,120 0.17-0.25 | 1,820 0.18-0.26 | 1,590 0.19-0.27 | 1,410 0.20-0.30 | 1,270 0.22-0.32 | |
| | 11 | 45 | RPM FEED | 1,790 0.12-0.18 | 1,430 0.13-0.19 | 1,190 0.14-0.20 | 1,020 0.15-0.21 | 900 0.16-0.22 | 800 0.17-0.25 | 720 0.18-0.28 | |
| | M | 12 | Stainless steel | 85 | RPM FEED | 3,380 0.18-0.24 | 2,710 0.19-0.27 | 2,250 0.21-0.29 | 1,930 0.23-0.31 | 1,690 0.25-0.33 | 1,500 0.28-0.38 |
| 13 | | 55 | | RPM FEED | 2,190 0.14-0.20 | 1,750 0.15-0.23 | 1,460 0.17-0.25 | 1,250 0.18-0.26 | 1,090 0.19-0.27 | 970 0.20-0.30 | 880 0.22-0.32 |
| K | 15 | Grey cast iron | 120 | RPM FEED | 4,770 0.22-0.28 | 3,820 0.25-0.33 | 3,180 0.27-0.35 | 2,730 0.29-0.37 | 2,390 0.31-0.39 | 2,120 0.32-0.42 | 1,910 0.34-0.44 |
| | 16 | | 95 | RPM FEED | 3,780 0.18-0.24 | 3,020 0.19-0.27 | 2,520 0.21-0.29 | 2,160 0.23-0.31 | 1,890 0.25-0.33 | 1,680 0.28-0.38 | 1,510 0.30-0.40 |
| | 17 | Nodular cast iron | 120 | RPM FEED | 4,770 0.22-0.28 | 3,820 0.25-0.33 | 3,180 0.27-0.35 | 2,730 0.29-0.37 | 2,390 0.31-0.39 | 2,120 0.32-0.42 | 1,910 0.34-0.44 |
| | 18 | | 85 | RPM FEED | 3,380 0.18-0.24 | 2,710 0.19-0.27 | 2,250 0.21-0.29 | 1,930 0.23-0.31 | 1,690 0.25-0.33 | 1,500 0.28-0.38 | 1,350 0.30-0.40 |
| | 19 | | 95 | RPM FEED | 3,780 0.22-0.28 | 3,020 0.25-0.33 | 2,520 0.27-0.35 | 2,160 0.29-0.37 | 1,890 0.31-0.39 | 1,680 0.32-0.42 | 1,510 0.34-0.44 |
| 20 | Malleable cast iron | 85 | RPM FEED | 3,380 0.18-0.24 | 2,710 0.19-0.27 | 2,250 0.21-0.29 | 1,930 0.23-0.31 | 1,690 0.25-0.33 | 1,500 0.28-0.38 | 1,350 0.30-0.40 | |
| H | 38 | Hardened steel | 30 | RPM FEED | 1,190 0.03-0.06 | 950 0.04-0.07 | 800 0.04-0.08 | 680 0.05-0.09 | 600 0.05-0.09 | 530 0.05-0.10 | 480 0.05-0.10 |

► Recommend to reduce the feed rate as following **Feed 100%** : DGN523(3xD), DGN526(5xD)

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

DGN506, DGN508 SERIES

with COOLANT HOLES

| ISO | VDI 3323 | Material Description | Vc | Parameter | Drill Diameter (mm) | | | | | |
|-----|---------------------|----------------------|-----------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|
| | | | | | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 |
| P | 2 | Non-alloy steel | 95 | RPM FEED | 30,240 0.03-0.05 | 15,120 0.05-0.07 | 13,790 0.06-0.12 | 10,350 0.08-0.14 | 8,280 0.14-0.20 | 6,900 0.16-0.22 |
| | 3 | | 95 | RPM FEED | 30,240 0.03-0.05 | 15,120 0.05-0.07 | 13,790 0.06-0.12 | 10,350 0.08-0.14 | 8,280 0.14-0.20 | 6,900 0.16-0.22 |
| | 4 | | 95 | RPM FEED | 30,240 0.03-0.05 | 15,120 0.05-0.07 | 13,790 0.06-0.12 | 10,350 0.08-0.14 | 8,280 0.14-0.20 | 6,900 0.16-0.22 |
| | 5 | | 85 | RPM FEED | 27,060 0.03-0.05 | 13,530 0.05-0.07 | 11,670 0.04-0.10 | 8,750 0.07-0.13 | 7,000 0.10-0.16 | 5,840 0.12-0.18 |
| | 6 | | 95 | RPM FEED | 30,240 0.03-0.05 | 15,120 0.05-0.07 | 13,790 0.06-0.12 | 10,350 0.08-0.14 | 8,280 0.14-0.20 | 6,900 0.16-0.22 |
| | 7 | 85 | RPM FEED | 27,060 0.03-0.05 | 13,530 0.05-0.07 | 11,670 0.04-0.10 | 8,750 0.07-0.13 | 7,000 0.10-0.16 | 5,840 0.12-0.18 | |
| | 8 | 95 | RPM FEED | 30,240 0.03-0.05 | 15,120 0.05-0.07 | 13,790 0.06-0.12 | 10,350 0.08-0.14 | 8,280 0.14-0.20 | 6,900 0.16-0.22 | |
| | 9 | 50 | RPM FEED | 15,920 0.02-0.04 | 7,960 0.03-0.05 | 6,370 0.03-0.08 | 4,770 0.05-0.11 | 3,820 0.08-0.14 | 3,180 0.10-0.16 | |
| | 10 | 70 | RPM FEED | 22,280 0.03-0.05 | 11,140 0.05-0.07 | 9,550 0.04-0.10 | 7,160 0.07-0.13 | 5,730 0.10-0.16 | 4,770 0.12-0.18 | |
| | 11 | 45 | RPM FEED | 14,320 0.02-0.04 | 7,160 0.03-0.05 | 5,310 0.03-0.08 | 3,980 0.05-0.11 | 3,180 0.08-0.14 | 2,650 0.10-0.16 | |
| | M | 12 | Stainless steel | 75 | RPM FEED | 23,870 0.03-0.05 | 11,940 0.05-0.07 | 10,080 0.06-0.12 | 7,560 0.08-0.14 | 6,050 0.14-0.20 |
| 13 | | 55 | | RPM FEED | 17,510 0.02-0.04 | 8,750 0.03-0.05 | 6,900 0.04-0.10 | 5,170 0.07-0.13 | 4,140 0.10-0.16 | 3,450 0.12-0.18 |
| K | 15 | Grey cast iron | 95 | RPM FEED | 30,240 0.04-0.06 | 15,120 0.04-0.06 | 13,790 0.08-0.14 | 10,350 0.12-0.18 | 8,280 0.15-0.22 | 6,900 0.20-0.26 |
| | 16 | | 90 | RPM FEED | 28,650 0.04-0.06 | 14,320 0.04-0.06 | 12,200 0.06-0.12 | 9,150 0.08-0.14 | 7,320 0.14-0.20 | 6,100 0.16-0.22 |
| | 17 | Nodular cast iron | 110 | RPM FEED | 35,010 0.04-0.06 | 17,510 0.04-0.06 | 15,380 0.08-0.14 | 11,540 0.12-0.18 | 9,230 0.15-0.22 | 7,690 0.20-0.26 |
| | 18 | | 75 | RPM FEED | 23,870 0.04-0.06 | 11,940 0.04-0.06 | 10,080 0.06-0.12 | 7,560 0.08-0.14 | 6,050 0.14-0.20 | 5,040 0.16-0.22 |
| | 19 | | 85 | RPM FEED | 27,060 0.04-0.06 | 13,530 0.04-0.06 | 11,670 0.08-0.14 | 8,750 0.12-0.18 | 7,000 0.15-0.22 | 5,840 0.20-0.26 |
| 20 | Malleable cast iron | 75 | RPM FEED | 23,870 0.03-0.05 | 11,940 0.05-0.07 | 10,080 0.06-0.12 | 7,560 0.08-0.14 | 6,050 0.14-0.20 | 5,040 0.16-0.22 | |
| H | 38 | Hardened steel | 30 | RPM FEED | 9,550 0.01-0.02 | 4,770 0.01-0.03 | 3,710 0.01-0.03 | 2,790 0.01-0.04 | 2,230 0.02-0.05 | 1,860 0.03-0.06 |

| 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 | 130 | RPM FEED | 5,170 0.18-0.24 | 4,140 0.19-0.27 | 3,450 0.21-0.29 | 2,960 0.23-0.31 | 2,590 0.25-0.33 | 2,300 0.28-0.38 | 2,070 0.30-0.40 |
| | 3 | | 130 | RPM FEED | 5,170 0.18-0.24 | 4,140 0.19-0.27 | 3,450 0.21-0.29 | 2,960 0.23-0.31 | 2,590 0.25-0.33 | 2,300 0.28-0.38 | 2,070 0.30-0.40 |
| | 4 | | 130 | RPM FEED | 5,170 0.14-0.20 | 4,140 0.15-0.23 | 3,450 0.17-0.25 | 2,960 0.18-0.26 | 2,590 0.19-0.27 | 2,300 0.20-0.30 | 2,070 0.22-0.32 |
| | 5 | | 110 | RPM FEED | 4,380 0.14-0.20 | 3,500 0.15-0.23 | 2,920 0.17-0.25 | 2,500 0.18-0.26 | 2,190 0.19-0.27 | 1,950 0.20-0.30 | 1,750 0.22-0.32 |
| | 6 | | 130 | RPM FEED | 5,170 0.18-0.24 | | | | | | |



Leading Through Innovation



Global Cutting Tool Leader **YG-1**



DREAM DRILLS



NEW

SOLID CARBIDE

DREAM DRILL X

- Multi-Purpose Solid Carbide Drilling up to HRc50
- Proprietary coating upgrade boosting performance in Steel and Cast-Iron applications

NEW
DREAM DRILL X

New Coating Technology "RCH-Coating"

Combining the major benefits of TiAlN and AlCrN into a new 'Nano Layered Multilayer' coating generation provides unique advantages such as:



Extreme Wear Resistance

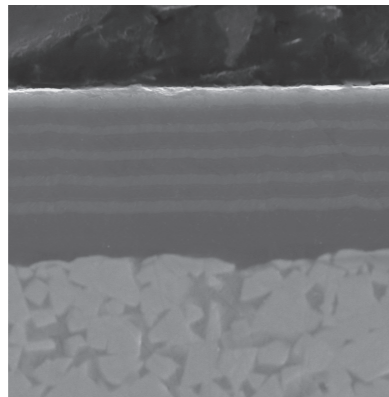


High Heat Endurance



Chipping Protection

↑ Tool Life
compared to Normal TiAlN coated drills
20 to 50%

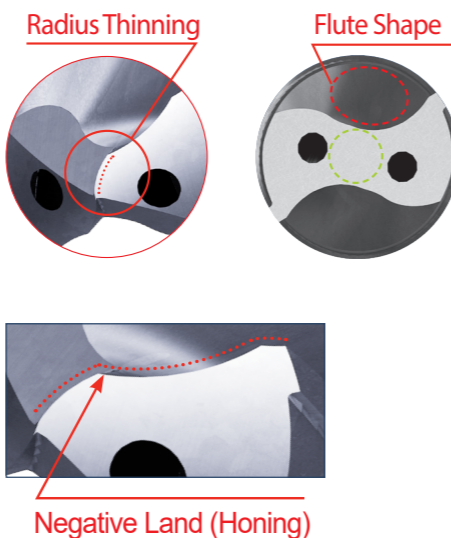


Nano Layered Multilayer
Carbide

At insufficient coolant conditions where higher temperatures occur, **RCH-Coating** allows with its very high temperature stability for great tool life results.

FEATURES & BENEFITS

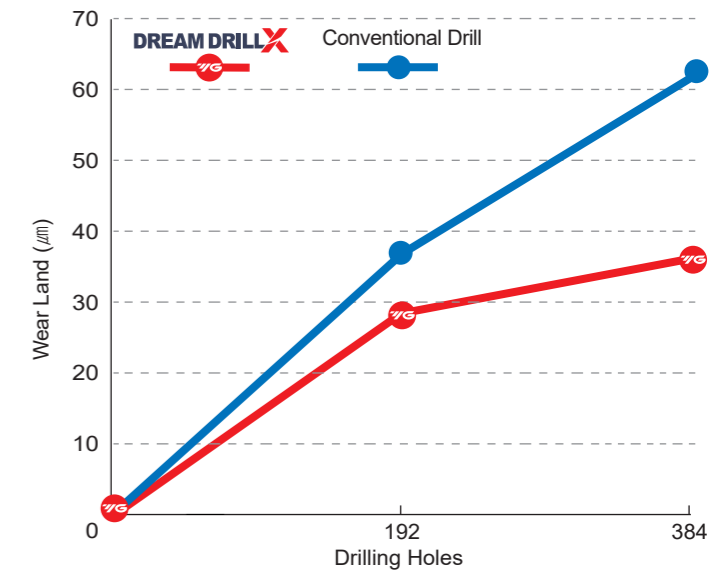
- **Universal Point Grinding**
Soft cutting action and reduced axial forces; Easy to Recondition
- **Radius Thinning**
Provides very good self centering even at low feed rates and unstable situations
- **Tailored Flute Design**
Excellent chip breaking and evacuation
- **Edge Preparation**
Maximizing tool life in various materials



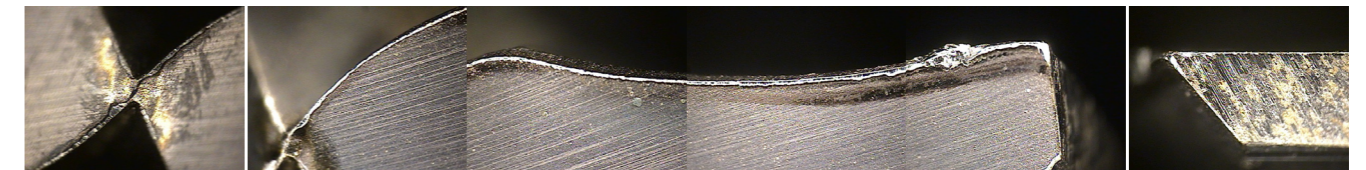
CASE STUDY

► SOLID CARBIDE DREAM DRILL X with Coolant Holes

| CUTTING CONDITION | |
|--------------------|--|
| Work Material | • DIN : C45 • AISI : 1045 • JIS : S45C (HRc20) |
| Drill Diameter(mm) | Ø10.0 |
| Cutting Speed | 109.99 m/min. |
| Feed | 0.23 mm/rev |
| Drilling Depth | 40mm |
| Coolant | Internal Cooling Wet Cut (9% Emulsion) |
| Machine | Vertical Machine |

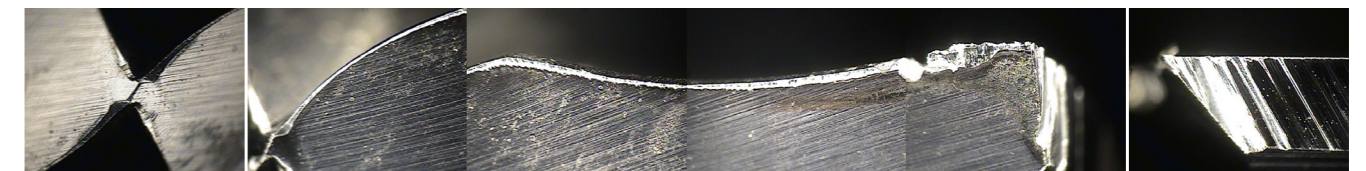


DREAM DRILL X



Total Drilling 384 Holes

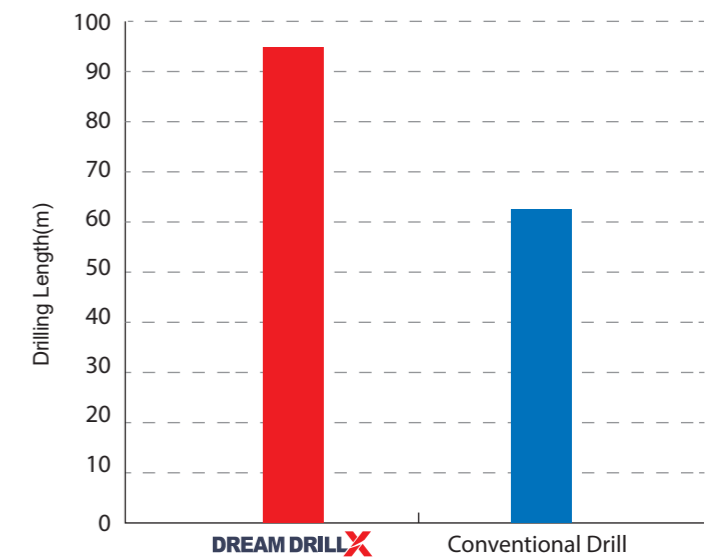
Conventional Drill



Total Drilling 384 Holes

► SOLID CARBIDE DREAM DRILL X with Coolant Holes

| CUTTING CONDITION | |
|-----------------------|--|
| Work Material | • DIN : GGG40 • AISI : 60-40-18 • JIS : FCD400 |
| Drilling Diameter(mm) | Ø8.5 |
| Cutting Speed | 112m/min |
| Feed | 0.33mm/rev. |
| Drilling Depth | 18mm |
| Coolant | Internal Cooling |
| Machine | Machining Center (Horizontal) |



RCH-COATED SOLID CARBIDE
DREAM DRILL X without COOLANT HOLES (3XD)

SERIES
NEW DTX404

- ▶ Upgraded coating for higher Tool Life in various materials
- ▶ Soft cutting action and reduced axial forces; Easy to Recondition
- ▶ Good self-centering even at low feed rates and unstable situations
- ▶ Excellent Chip breaking and chip evacuation



DIN 6539 CARBIDE 30° h6 h7 140° RCH Coating p.40

STUB
3 × D

| Unit : mm | | | | Unit : mm | | | |
|-------------|----------------|--------------|----------------|-------------|----------------|--------------|----------------|
| EDP No. | Drill Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Flute Length | Overall Length |
| RCH-Coating | D1=D2 | L1 | L2 | RCH-Coating | D1=D2 | L1 | L2 |
| DTX404030 | 3.0 | 16 | 46 | DTX404058 | 5.8 | 28 | 66 |
| DTX404031 | 3.1 | 18 | 49 | DTX404059 | 5.9 | 28 | 66 |
| DTX404032 | 3.2 | 18 | 49 | DTX404060 | 6.0 | 28 | 66 |
| DTX404033 | 3.3 | 18 | 49 | DTX404061 | 6.1 | 31 | 70 |
| DTX404034 | 3.4 | 20 | 52 | DTX404062 | 6.2 | 31 | 70 |
| DTX404035 | 3.5 | 20 | 52 | DTX404063 | 6.3 | 31 | 70 |
| DTX404036 | 3.6 | 20 | 52 | DTX404064 | 6.4 | 31 | 70 |
| DTX404037 | 3.7 | 20 | 52 | DTX404065 | 6.5 | 31 | 70 |
| DTX404038 | 3.8 | 22 | 55 | DTX404066 | 6.6 | 31 | 70 |
| DTX404039 | 3.9 | 22 | 55 | DTX404067 | 6.7 | 31 | 70 |
| DTX404040 | 4.0 | 22 | 55 | DTX404068 | 6.8 | 34 | 74 |
| DTX404041 | 4.1 | 22 | 55 | DTX404069 | 6.9 | 34 | 74 |
| DTX404042 | 4.2 | 22 | 55 | DTX404070 | 7.0 | 34 | 74 |
| DTX404043 | 4.3 | 24 | 58 | DTX404071 | 7.1 | 34 | 74 |
| DTX404044 | 4.4 | 24 | 58 | DTX404072 | 7.2 | 34 | 74 |
| DTX404045 | 4.5 | 24 | 58 | DTX404073 | 7.3 | 34 | 74 |
| DTX404046 | 4.6 | 24 | 58 | DTX404074 | 7.4 | 34 | 74 |
| DTX404047 | 4.7 | 24 | 58 | DTX404075 | 7.5 | 34 | 74 |
| DTX404048 | 4.8 | 26 | 62 | DTX404076 | 7.6 | 37 | 79 |
| DTX404049 | 4.9 | 26 | 62 | DTX404077 | 7.7 | 37 | 79 |
| DTX404050 | 5.0 | 26 | 62 | DTX404078 | 7.8 | 37 | 79 |
| DTX404051 | 5.1 | 26 | 62 | DTX404079 | 7.9 | 37 | 79 |
| DTX404052 | 5.2 | 26 | 62 | DTX404080 | 8.0 | 37 | 79 |
| DTX404053 | 5.3 | 26 | 62 | DTX404081 | 8.1 | 37 | 79 |
| DTX404054 | 5.4 | 28 | 66 | DTX404082 | 8.2 | 37 | 79 |
| DTX404055 | 5.5 | 28 | 66 | DTX404083 | 8.3 | 37 | 79 |
| DTX404056 | 5.6 | 28 | 66 | DTX404084 | 8.4 | 37 | 79 |
| DTX404057 | 5.7 | 28 | 66 | DTX404085 | 8.5 | 37 | 79 |

▶ 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 |
| HRc | 13 | 25 | 28 | 32 | 30 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 56 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 210 | 230 | 250 | 270 | 290 | 310 | 330 | 350 | 370 | 390 | 410 | 430 | 450 | 470 | 490 | 510 | 530 | 550 | |
| 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 | 42 | 43 | 44 | 45 | |
| HRc | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

RCH-COATED SOLID CARBIDE
DREAM DRILL X without COOLANT HOLES (3XD)

SERIES
NEW DTX404

- ▶ Upgraded coating for higher Tool Life in various materials
- ▶ Soft cutting action and reduced axial forces; Easy to Recondition
- ▶ Good self-centering even at low feed rates and unstable situations
- ▶ Excellent Chip breaking and chip evacuation



DIN 6539 CARBIDE 30° h6 h7 140° RCH Coating p.40

STUB
3 × D

| Unit : mm | | | | Unit : mm | | | |
|-------------|----------------|--------------|----------------|-------------|----------------|--------------|----------------|
| EDP No. | Drill Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Flute Length | Overall Length |
| RCH-Coating | D1=D2 | L1 | L2 | RCH-Coating | D1=D2 | L1 | L2 |
| DTX404086 | 8.6 | 40 | 84 | DTX404170 | 17.0 | 60 | 119 |
| DTX404087 | 8.7 | 40 | 84 | DTX404175 | 17.5 | 62 | 123 |
| DTX404088 | 8.8 | 40 | 84 | DTX404180 | 18.0 | 62 | 123 |
| DTX404089 | 8.9 | 40 | 84 | DTX404185 | 18.5 | 64 | 127 |
| DTX404090 | 9.0 | 40 | 84 | DTX404190 | 19.0 | 64 | 127 |
| DTX404091 | 9.1 | 40 | 84 | DTX404195 | 19.5 | 66 | 131 |
| DTX404092 | 9.2 | 40 | 84 | DTX404200 | 20.0 | 66 | 131 |
| DTX404093 | 9.3 | 40 | 84 | | | | |
| DTX404094 | 9.4 | 40 | 84 | | | | |
| DTX404095 | 9.5 | 40 | 84 | | | | |
| DTX404096 | 9.6 | 43 | 89 | | | | |
| DTX404097 | 9.7 | 43 | 89 | | | | |
| DTX404098 | 9.8 | 43 | 89 | | | | |
| DTX404099 | 9.9 | 43 | 89 | | | | |
| DTX404100 | 10.0 | 43 | 89 | | | | |
| DTX404102 | 10.2 | 43 | 89 | | | | |
| DTX404105 | 10.5 | 43 | 89 | | | | |
| DTX404110 | 11.0 | 47 | 95 | | | | |
| DTX404115 | 11.5 | 47 | 95 | | | | |
| DTX404120 | 12.0 | 51 | 102 | | | | |
| DTX404130 | 13.0 | 51 | 102 | | | | |
| DTX404135 | 13.5 | 54 | 107 | | | | |
| DTX404140 | 14.0 | 54 | 107 | | | | |
| DTX404145 | 14.5 | 56 | 111 | | | | |
| DTX404150 | 15.0 | 56 | 111 | | | | |
| DTX404155 | 15.5 | 58 | 115 | | | | |
| DTX404160 | 16.0 | 58 | 115 | | | | |
| DTX404165 | 16.5 | 60 | 119 | | | | |

▶ 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 |
| HRc | 13 | 25 | 28 | 32 | 30 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 56 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 210 | 230 | 250 | 270 | 290 | 310 | 330 | 350 | 370 | 390 | 410 | 430 | 450 | 470 | 490 | 510 | 530 | 550 | |
| 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 | 42 | 43 | 44 | 45 | |
| HRc | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

RCH-COATED SOLID CARBIDE DREAM DRILL X without COOLANT HOLES (3XD)

SERIES

NEW DTX423

- ▶ Upgraded coating for higher Tool Life in various materials
- ▶ Soft cutting action and reduced axial forces; Easy to Recondition
- ▶ Good self-centering even at low feed rates and unstable situations
- ▶ Excellent Chip breaking and chip evacuation



SHORT
3 × D

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length | |
|-----------|----------------|----------------|--------------|----------------|----|
| | | | | L1 | L2 |
| DTX423030 | 3.0 | 6 | 20 | | 62 |
| DTX423031 | 3.1 | 6 | 20 | | 62 |
| DTX423032 | 3.2 | 6 | 20 | | 62 |
| DTX423033 | 3.3 | 6 | 20 | | 62 |
| DTX423034 | 3.4 | 6 | 20 | | 62 |
| DTX423035 | 3.5 | 6 | 20 | | 62 |
| DTX423036 | 3.6 | 6 | 20 | | 62 |
| DTX423037 | 3.7 | 6 | 20 | | 62 |
| DTX423038 | 3.8 | 6 | 24 | | 66 |
| DTX423039 | 3.9 | 6 | 24 | | 66 |
| DTX423040 | 4.0 | 6 | 24 | | 66 |
| DTX423041 | 4.1 | 6 | 24 | | 66 |
| DTX423042 | 4.2 | 6 | 24 | | 66 |
| DTX423043 | 4.3 | 6 | 24 | | 66 |
| DTX423044 | 4.4 | 6 | 24 | | 66 |
| DTX423045 | 4.5 | 6 | 24 | | 66 |
| DTX423046 | 4.6 | 6 | 24 | | 66 |
| DTX423047 | 4.7 | 6 | 24 | | 66 |
| DTX423048 | 4.8 | 6 | 28 | | 66 |
| DTX423049 | 4.9 | 6 | 28 | | 66 |
| DTX423050 | 5.0 | 6 | 28 | | 66 |
| DTX423051 | 5.1 | 6 | 28 | | 66 |
| DTX423052 | 5.2 | 6 | 28 | | 66 |
| DTX423053 | 5.3 | 6 | 28 | | 66 |
| DTX423054 | 5.4 | 6 | 28 | | 66 |
| DTX423055 | 5.5 | 6 | 28 | | 66 |
| DTX423056 | 5.6 | 6 | 28 | | 66 |
| DTX423057 | 5.7 | 6 | 28 | | 66 |
| DTX423058 | 5.8 | 6 | 28 | | 66 |
| DTX423059 | 5.9 | 6 | 28 | | 66 |

Unit : mm

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

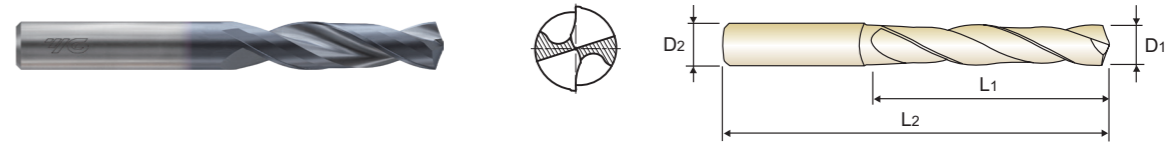
| ISO | P | | | | | | | | | | | M | | | | | K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|-----|------------------------------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-------------------|-----|-----|-----|-----|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---|---|---|
| | Non-alloy steel | | | | | Low alloy steel | | | | | | High alloyed steel, and tool steel | | | | | Stainless steel | | | | | Grey cast iron | | | | | Nodular cast iron | | | | | Malleable cast iron | | | | | | | | | | | | | | | | |
| 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 | 13 | 25 | 28 | 32 | 38 | 40 | 42 | 45 | 48 | 50 | 52 | 55 | 58 | 60 | 63 | 65 | 68 | 70 | 72 | 75 | 78 | 80 | 82 | 85 | 88 | 90 | 93 | 95 | 98 | 100 | 105 | 110 | 115 | 120 | 125 | 130 | 135 | 140 | 145 | 150 | 155 | 160 | | | | | | |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | | | | |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

RCH-COATED SOLID CARBIDE DREAM DRILL X without COOLANT HOLES (3XD)

SERIES

NEW DTX423

- ▶ Upgraded coating for higher Tool Life in various materials
- ▶ Soft cutting action and reduced axial forces; Easy to Recondition
- ▶ Good self-centering even at low feed rates and unstable situations
- ▶ Excellent Chip breaking and chip evacuation



SHORT
3 × D

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length | |
|-----------|----------------|----------------|--------------|----------------|-----|
| | | | | L1 | L2 |
| DTX423090 | 9.0 | 10 | 47 | | 89 |
| DTX423091 | 9.1 | 10 | 47 | | 89 |
| DTX423092 | 9.2 | 10 | 47 | | 89 |
| DTX423093 | 9.3 | 10 | 47 | | 89 |
| DTX423094 | 9.4 | 10 | 47 | | 89 |
| DTX423095 | 9.5 | 10 | 47 | | 89 |
| DTX423096 | 9.6 | 10 | 47 | | 89 |
| DTX423097 | 9.7 | 10 | 47 | | 89 |
| DTX423098 | 9.8 | 10 | 47 | | 89 |
| DTX423099 | 9.9 | 10 | 47 | | 89 |
| DTX423100 | 10.0 | 10 | 47 | | 89 |
| DTX423101 | 10.1 | 12 | 55 | | 102 |
| DTX423102 | 10.2 | 12 | 55 | | 102 |
| DTX423103 | 10.3 | 12 | 55 | | 102 |
| DTX423104 | 10.4 | 12 | 55 | | 102 |
| DTX423105 | 10.5 | 12 | 55 | | 102 |
| DTX423106 | 10.6 | 12 | 55 | | 102 |
| DTX423107 | 10.7 | 12 | 55 | | 102 |
| DTX423108 | 10.8 | 12 | 55 | | 102 |
| DTX423109 | 10.9 | 12 | 55 | | 102 |
| DTX423110 | 11.0 | 12 | 55 | | 102 |
| DTX423111 | 11.1 | 12 | 55 | | 102 |
| DTX423112 | 11.2 | 12 | 55 | | 102 |
| DTX423113 | 11.3 | 12 | 55 | | 102 |
| DTX423114 | 11.4 | 12 | 55 | | 102 |
| DTX423115 | 11.5 | 12 | 55 | | 102 |
| DTX423116 | 11.6 | 12 | 55 | | 102 |
| DTX423117 | 11.7 | 12 | 55 | | 102 |
| DTX423118 | 11.8 | 12 | 55 | | 102 |
| DTX423119 | 11.9 | 12 | 55 | | 102 |

Unit : mm

▶ Other shank types are available on your request.

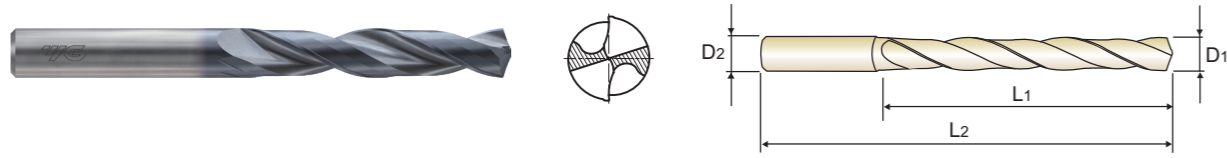
◎ : Excellent ○ : Good

| 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 | | | | | | | | | | | | | | | | | | |
| 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 | 13 | 25 | 28 | 32 | 38 | 40 | 42 | 45 | 48 | 50 | 52 | 55 | 58 | 60 | 63 | 65 | 68 | 70 | 72 | 75 | 78 | 80 | 82 | 85 | 88 | 90 | 93 | 95 | 98 | 100 | 105 | 110 | 115 | 120 | 125 | 130 | 135 | 140 | 145 | 150 | 155 | 160 | | | | | | | | |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | | | | | | |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

RCH-COATED SOLID CARBIDE
DREAM DRILL X without COOLANT HOLES (5XD)

SERIES
NEW DTX424

- ▶ Upgraded coating for higher Tool Life in various materials
- ▶ Soft cutting action and reduced axial forces; Easy to Recondition
- ▶ Good self-centering even at low feed rates and unstable situations
- ▶ Excellent Chip breaking and chip evacuation



DIN 6537 CARBIDE **30°** h6 m7 140° RCH Coating p.40

LONG
5x D

Unit : mm

| EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 |
|-----------|----------------------|----------------------|--------------------|----------------------|
| DTX424010 | 1.0 | 3 | 8 | 55 |
| DTX424011 | 1.1 | 3 | 12 | 55 |
| DTX424012 | 1.2 | 3 | 12 | 55 |
| DTX424013 | 1.3 | 3 | 12 | 55 |
| DTX424014 | 1.4 | 3 | 12 | 55 |
| DTX424015 | 1.5 | 3 | 16 | 55 |
| DTX424016 | 1.6 | 3 | 16 | 55 |
| DTX424017 | 1.7 | 3 | 16 | 55 |
| DTX424018 | 1.8 | 3 | 16 | 55 |
| DTX424019 | 1.9 | 3 | 16 | 55 |
| DTX424020 | 2.0 | 4 | 21 | 57 |
| DTX424021 | 2.1 | 4 | 21 | 57 |
| DTX424022 | 2.2 | 4 | 21 | 57 |
| DTX424023 | 2.3 | 4 | 21 | 57 |
| DTX424024 | 2.4 | 4 | 21 | 57 |
| DTX424025 | 2.5 | 4 | 21 | 57 |
| DTX424026 | 2.6 | 4 | 21 | 57 |
| DTX424027 | 2.7 | 4 | 21 | 57 |
| DTX424028 | 2.8 | 4 | 21 | 57 |
| DTX424029 | 2.9 | 4 | 21 | 57 |
| DTX424030 | 3.0 | 6 | 28 | 66 |
| DTX424031 | 3.1 | 6 | 28 | 66 |
| DTX424032 | 3.2 | 6 | 28 | 66 |
| DTX424033 | 3.3 | 6 | 28 | 66 |
| DTX424034 | 3.4 | 6 | 28 | 66 |
| DTX424035 | 3.5 | 6 | 28 | 66 |
| DTX424036 | 3.6 | 6 | 28 | 66 |
| DTX424037 | 3.7 | 6 | 28 | 66 |

Unit : mm

| EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 |
|-----------|----------------------|----------------------|--------------------|----------------------|
| DTX424038 | 3.8 | 6 | 36 | 74 |
| DTX424039 | 3.9 | 6 | 36 | 74 |
| DTX424040 | 4.0 | 6 | 36 | 74 |
| DTX424041 | 4.1 | 6 | 36 | 74 |
| DTX424042 | 4.2 | 6 | 36 | 74 |
| DTX424043 | 4.3 | 6 | 36 | 74 |
| DTX424044 | 4.4 | 6 | 36 | 74 |
| DTX424045 | 4.5 | 6 | 36 | 74 |
| DTX424046 | 4.6 | 6 | 36 | 74 |
| DTX424047 | 4.7 | 6 | 36 | 74 |
| DTX424048 | 4.8 | 6 | 44 | 82 |
| DTX424049 | 4.9 | 6 | 44 | 82 |
| DTX424050 | 5.0 | 6 | 44 | 82 |
| DTX424051 | 5.1 | 6 | 44 | 82 |
| DTX424052 | 5.2 | 6 | 44 | 82 |
| DTX424053 | 5.3 | 6 | 44 | 82 |
| DTX424054 | 5.4 | 6 | 44 | 82 |
| DTX424055 | 5.5 | 6 | 44 | 82 |
| DTX424056 | 5.6 | 6 | 44 | 82 |
| DTX424057 | 5.7 | 6 | 44 | 82 |
| DTX424058 | 5.8 | 6 | 44 | 82 |
| DTX424059 | 5.9 | 6 | 44 | 82 |
| DTX424060 | 6.0 | 6 | 44 | 82 |
| DTX424061 | 6.1 | 8 | 53 | 91 |
| DTX424062 | 6.2 | 8 | 53 | 91 |
| DTX424063 | 6.3 | 8 | 53 | 91 |
| DTX424064 | 6.4 | 8 | 53 | 91 |
| DTX424065 | 6.5 | 8 | 53 | 91 |

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : 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 | | | | | | | | | | | | | | | | | | | | |
| 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 CastIron | Hardened CastIron | | |
| 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 | | | | | | | | | | | | | | | | | | | | | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommended | | | | | | | | | | | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

RCH-COATED SOLID CARBIDE
DREAM DRILL X without COOLANT HOLES (5XD)

SERIES
NEW DTX424

- ▶ Upgraded coating for higher Tool Life in various materials
- ▶ Soft cutting action and reduced axial forces; Easy to Recondition
- ▶ Good self-centering even at low feed rates and unstable situations
- ▶ Excellent Chip breaking and chip evacuation



DIN 6537 CARBIDE **30°** h6 m7 140° RCH Coating p.40

LONG
5x D

Unit : mm

| EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 |
|-----------|----------------------|----------------------|--------------------|----------------------|
| DTX424066 | 6.6 | 8 | 53 | 91 |
| DTX424067 | 6.7 | 8 | 53 | 91 |
| DTX424068 | 6.8 | 8 | 53 | 91 |
| DTX424069 | 6.9 | 8 | 53 | 91 |
| DTX424070 | 7.0 | 8 | 53 | 91 |
| DTX424071 | 7.1 | 8 | 53 | 91 |
| DTX424072 | 7.2 | 8 | 53 | 91 |
| DTX424073 | 7.3 | 8 | 53 | 91 |
| DTX424074 | 7.4 | 8 | 53 | 91 |
| DTX424075 | 7.5 | 8 | 53 | 91 |
| DTX424076 | 7.6 | 8 | 53 | 91 |
| DTX424077 | 7.7 | 8 | 53 | 91 |
| DTX424078 | 7.8 | 8 | 53 | 91 |
| DTX424079 | 7.9 | 8 | 53 | 91 |
| DTX424080 | 8.0 | 8 | 53 | 91 |
| DTX424081 | 8.1 | 10 | 61 | 103 |
| DTX424082 | 8.2 | 10 | 61 | 103 |
| DTX424083 | 8.3 | 10 | 61 | 103 |
| DTX424084 | 8.4 | 10 | 61 | 103 |
| DTX424085 | 8.5 | 10 | 61 | 103 |
| DTX424086 | 8.6 | 10 | 61 | 103 |
| DTX424087 | 8.7 | 10 | 61 | 103 |
| DTX424088 | 8.8 | 10 | 61 | 103 |
| DTX424089 | 8.9 | 10 | 61 | 103 |
| DTX424090 | 9.0 | 10 | 61 | 103 |
| DTX424091 | 9.1 | 10 | 61 | 103 |
| DTX424092 | 9.2 | 10 | 61 | 103 |
| DTX424093 | 9.3 | 10 | 61 | 103 |

Unit : mm

| EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 |
|-----------|----------------------|----------------------|--------------------|----------------------|
| DTX424094 | 9.4 | 10 | 61 | 103 |
| DTX424095 | 9.5 | 10 | 61 | 103 |
| DTX424096 | 9.6 | 10 | 61 | 103 |
| DTX424097 | 9.7 | 10 | 61 | 103 |
| DTX424098 | 9.8 | 10 | 61 | 103 |
| DTX424099 | 9.9 | 10 | 61 | 103 |
| DTX424100 | 10.0 | 10 | 61 | 103 |
| DTX424101 | 10.1 | 12 | 71 | 118 |
| DTX424102 | 10.2 | 12 | 71 | 118 |
| DTX424103 | 10.3 | 12 | 71 | 118 |
| DTX424104 | 10.4 | 12 | 71 | 118 |
| DTX424105 | 10.5 | 12 | 71 | 118 |
| DTX424106 | 10.6 | 12 | 71 | 118 |
| DTX424107 | 10.7 | 12 | 71 | 118 |
| DTX424108 | 10.8 | 12 | 71 | 118 |
| DTX424109 | 10.9 | 12 | 71 | 118 |
| DTX424110 | 11.0 | 12 | 71 | 118 |
| DTX424111 | 11.1 | 12 | 71 | 118 |
| DTX424112 | 11.2 | 12 | 71 | 118 |
| DTX424113 | 11.3 | 12 | 71 | 118 |
| DTX424114 | 11.4 | 12 | 71 | 118 |
| DTX424115 | 11.5 | 12 | 71 | 118 |
| DTX424116 | 11.6 | 12 | 71 | 118 |
| DTX424117 | 11.7 | 12 | 71 | 118 |
| DTX424118 | 11.8 | 12 | 71 | 118 |
| DTX424119 | 11.9 | 12 | 71 | 118 |
| DTX424120 | 12.0 | 12 | 71 | 118 |
| DTX424125 | 12.5 | 14 | 77 | 124 |

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : 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 | | | | | | | | | | | | | | | | | | | | |
| 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 CastIron | Hardened CastIron | | |
| 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 | | | | | | | | | | | | | | | | | | | | | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommended | | | | | | | | | | | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

RCH-COATED SOLID CARBIDE
DREAM DRILL X without COOLANT HOLES (5XD)

SERIES
NEW DTX424

- ▶ Upgraded coating for higher Tool Life in various materials
- ▶ Soft cutting action and reduced axial forces; Easy to Recondition
- ▶ Good self-centering even at low feed rates and unstable situations
- ▶ Excellent Chip breaking and chip evacuation



DIN 6537 CARBIDE 30° h6 m7 140° RCH Coating p.40 **LONG 5x D**

| EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 | EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 |
|-----------|----------------------|----------------------|--------------------|----------------------|-----------|----------------------|----------------------|--------------------|----------------------|
| | | | | | | | | | |
| DTX424130 | 13.0 | 14 | 77 | 124 | DTX424170 | 17.0 | 18 | 93 | 143 |
| DTX424135 | 13.5 | 14 | 77 | 124 | DTX424175 | 17.5 | 18 | 93 | 143 |
| DTX424140 | 14.0 | 14 | 77 | 124 | DTX424180 | 18.0 | 18 | 93 | 143 |
| DTX424145 | 14.5 | 16 | 83 | 133 | DTX424185 | 18.5 | 20 | 101 | 153 |
| DTX424150 | 15.0 | 16 | 83 | 133 | DTX424190 | 19.0 | 20 | 101 | 153 |
| DTX424155 | 15.5 | 16 | 83 | 133 | DTX424195 | 19.5 | 20 | 101 | 153 |
| DTX424160 | 16.0 | 16 | 83 | 133 | DTX424200 | 20.0 | 20 | 101 | 153 |
| DTX424165 | 16.5 | 18 | 93 | 143 | | | | | |

▶ Other shank types are available on your request.

RCH-COATED SOLID CARBIDE
DREAM DRILL X with COOLANT HOLES (3XD)

SERIES
NEW DTX406

- ▶ Upgraded coating for higher Tool Life in various materials
- ▶ Soft cutting action and reduced axial forces; Easy to Recondition
- ▶ Good self-centering even at low feed rates and unstable situations
- ▶ Excellent Chip breaking and chip evacuation



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar RCH Coating p.41 **SHORT 3x D**

| EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 | EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 |
|-----------|----------------------|----------------------|--------------------|----------------------|-----------|----------------------|----------------------|--------------------|----------------------|
| | | | | | | | | | |
| DTX406030 | 3.0 | 6 | 20 | 62 | DTX406058 | 5.8 | 6 | 28 | 66 |
| DTX406031 | 3.1 | 6 | 20 | 62 | DTX406059 | 5.9 | 6 | 28 | 66 |
| DTX406032 | 3.2 | 6 | 20 | 62 | DTX406060 | 6.0 | 6 | 28 | 66 |
| DTX406033 | 3.3 | 6 | 20 | 62 | DTX406061 | 6.1 | 8 | 34 | 79 |
| DTX406034 | 3.4 | 6 | 20 | 62 | DTX406062 | 6.2 | 8 | 34 | 79 |
| DTX406035 | 3.5 | 6 | 20 | 62 | DTX406063 | 6.3 | 8 | 34 | 79 |
| DTX406036 | 3.6 | 6 | 20 | 62 | DTX406064 | 6.4 | 8 | 34 | 79 |
| DTX406037 | 3.7 | 6 | 20 | 62 | DTX406065 | 6.5 | 8 | 34 | 79 |
| DTX406038 | 3.8 | 6 | 24 | 66 | DTX406066 | 6.6 | 8 | 34 | 79 |
| DTX406039 | 3.9 | 6 | 24 | 66 | DTX406067 | 6.7 | 8 | 34 | 79 |
| DTX406040 | 4.0 | 6 | 24 | 66 | DTX406068 | 6.8 | 8 | 34 | 79 |
| DTX406041 | 4.1 | 6 | 24 | 66 | DTX406069 | 6.9 | 8 | 34 | 79 |
| DTX406042 | 4.2 | 6 | 24 | 66 | DTX406070 | 7.0 | 8 | 34 | 79 |
| DTX406043 | 4.3 | 6 | 24 | 66 | DTX406071 | 7.1 | 8 | 41 | 79 |
| DTX406044 | 4.4 | 6 | 24 | 66 | DTX406072 | 7.2 | 8 | 41 | 79 |
| DTX406045 | 4.5 | 6 | 24 | 66 | DTX406073 | 7.3 | 8 | 41 | 79 |
| DTX406046 | 4.6 | 6 | 24 | 66 | DTX406074 | 7.4 | 8 | 41 | 79 |
| DTX406047 | 4.7 | 6 | 24 | 66 | DTX406075 | 7.5 | 8 | 41 | 79 |
| DTX406048 | 4.8 | 6 | 28 | 66 | DTX406076 | 7.6 | 8 | 41 | 79 |
| DTX406049 | 4.9 | 6 | 28 | 66 | DTX406077 | 7.7 | 8 | 41 | 79 |
| DTX406050 | 5.0 | 6 | 28 | 66 | DTX406078 | 7.8 | 8 | 41 | 79 |
| DTX406051 | 5.1 | 6 | 28 | 66 | DTX406079 | 7.9 | 8 | 41 | 79 |
| DTX406052 | 5.2 | 6 | 28 | 66 | DTX406080 | 8.0 | 8 | 41 | 79 |
| DTX406053 | 5.3 | 6 | 28 | 66 | DTX406081 | 8.1 | 10 | 47 | 89 |
| DTX406054 | 5.4 | 6 | 28 | 66 | DTX406082 | 8.2 | 10 | 47 | 89 |
| DTX406055 | 5.5 | 6 | 28 | 66 | DTX406083 | 8.3 | 10 | 47 | 89 |
| DTX406056 | 5.6 | 6 | 28 | 66 | DTX406084 | 8.4 | 10 | 47 | 89 |
| DTX406057 | 5.7 | 6 | 28 | 66 | DTX406085 | 8.5 | 10 | 47 | 89 |

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : 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 |
| 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 | 38 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 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 | | | | | | | | | | |
|-------------|------------------------|-----|-----------------------|----|-----|---|----|-----|------------------------|----|-----------------------------|----|----|----|----|-----------------|-----|----------------|-----|-------------------|--------|--------------------|-----|-----|-----|-----|
| | 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 | 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 | | | 15 | 30 | 25 | 38 | 34 | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommended | | | | | | | | | | | | | | | | | | | | | | | | | | |

◎ : 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 |
| 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 | 38 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 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 | | | | | | | | | | |
|-------------|------------------------|-----|-----------------------|----|-----|---|----|-----|------------------------|----|-----------------------------|----|----|----|----|-----------------|-----|----------------|-----|-------------------|--------|--------------------|-----|-----|-----|-----|
| | 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 | 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 | | | 15 | 30 | 25 | 38 | 34 | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommended | | | | | | | | | | | | | | | | | | | | | | | | | | |

RCH-COATED SOLID CARBIDE
DREAM DRILL X with COOLANT HOLES (5XD)

SERIES
NEW DTX408

- ▶ Upgraded coating for higher Tool Life in various materials
- ▶ Soft cutting action and reduced axial forces; Easy to Recondition
- ▶ Good self-centering even at low feed rates and unstable situations
- ▶ Excellent Chip breaking and chip evacuation



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar RCH Coating p.41 **LONG** 5x D

Unit : mm

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|-------------|----------------|----------------|--------------|----------------|
| RCH-Coating | D1 | D2 | L1 | L2 |
| DTX408066 | 6.6 | 8 | 53 | 91 |
| DTX408067 | 6.7 | 8 | 53 | 91 |
| DTX408068 | 6.8 | 8 | 53 | 91 |
| DTX408069 | 6.9 | 8 | 53 | 91 |
| DTX408070 | 7.0 | 8 | 53 | 91 |
| DTX408071 | 7.1 | 8 | 53 | 91 |
| DTX408072 | 7.2 | 8 | 53 | 91 |
| DTX408073 | 7.3 | 8 | 53 | 91 |
| DTX408074 | 7.4 | 8 | 53 | 91 |
| DTX408075 | 7.5 | 8 | 53 | 91 |
| DTX408076 | 7.6 | 8 | 53 | 91 |
| DTX408077 | 7.7 | 8 | 53 | 91 |
| DTX408078 | 7.8 | 8 | 53 | 91 |
| DTX408079 | 7.9 | 8 | 53 | 91 |
| DTX408080 | 8.0 | 8 | 53 | 91 |
| DTX408081 | 8.1 | 10 | 61 | 103 |
| DTX408082 | 8.2 | 10 | 61 | 103 |
| DTX408083 | 8.3 | 10 | 61 | 103 |
| DTX408084 | 8.4 | 10 | 61 | 103 |
| DTX408085 | 8.5 | 10 | 61 | 103 |
| DTX408086 | 8.6 | 10 | 61 | 103 |
| DTX408087 | 8.7 | 10 | 61 | 103 |
| DTX408088 | 8.8 | 10 | 61 | 103 |
| DTX408089 | 8.9 | 10 | 61 | 103 |
| DTX408090 | 9.0 | 10 | 61 | 103 |
| DTX408091 | 9.1 | 10 | 61 | 103 |
| DTX408092 | 9.2 | 10 | 61 | 103 |
| DTX408093 | 9.3 | 10 | 61 | 103 |

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : 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 |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| HRc | 13 | 25 | 28 | 32 | 30 | 29 | 32 | 38 | 35 | 35 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 21 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

RCH-COATED SOLID CARBIDE
DREAM DRILL X with COOLANT HOLES (5XD)

SERIES
NEW DTX408

- ▶ Upgraded coating for higher Tool Life in various materials
- ▶ Soft cutting action and reduced axial forces; Easy to Recondition
- ▶ Good self-centering even at low feed rates and unstable situations
- ▶ Excellent Chip breaking and chip evacuation



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar RCH Coating p.41 **LONG** 5x D

Unit : mm

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|-------------|----------------|----------------|--------------|----------------|
| RCH-Coating | D1 | D2 | L1 | L2 |
| DTX408130 | 13.0 | 14 | 77 | 124 |
| DTX408135 | 13.5 | 14 | 77 | 124 |
| DTX408140 | 14.0 | 14 | 77 | 124 |
| DTX408145 | 14.5 | 16 | 83 | 133 |
| DTX408150 | 15.0 | 16 | 83 | 133 |
| DTX408155 | 15.5 | 16 | 83 | 133 |
| DTX408160 | 16.0 | 16 | 83 | 133 |
| DTX408165 | 16.5 | 18 | 93 | 143 |

▶ Other shank types are available on your request.

◎ : 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 |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| HRc | 13 | 25 | 28 | 32 | 30 | 29 | 32 | 38 | 35 | 35 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 21 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

DTX404, DTX423, DTX424 SERIES

without COOLANT HOLES

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

Table with 11 columns: ISO, VDI 3323, Material Description, Vc, Parameter, Drill Diameter (mm) [1.0, 2.0], Vc, Parameter, Drill Diameter (mm) [3.0, 4.0, 5.0, 6.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron, and Hardened steel.

Table with 11 columns: ISO, VDI 3323, Material Description, Vc, Parameter, Drill Diameter (mm) [8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron, and Hardened steel.

► Recommend to reduce the feed rate as following Feed 100% : DTX404(3xD), DTX423(3xD), DTX424(5xD)

DTX406, DTX408, DTX421 SERIES

with COOLANT HOLES

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

Table with 11 columns: ISO, VDI 3323, Material Description, Vc, Parameter, Drill Diameter (mm) [1.0, 2.0], Vc, Parameter, Drill Diameter (mm) [3.0, 4.0, 5.0, 6.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron, and Hardened steel.

Table with 11 columns: ISO, VDI 3323, Material Description, Vc, Parameter, Drill Diameter (mm) [8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron, and Hardened steel.

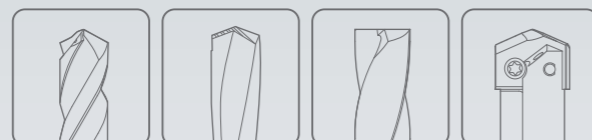
► Recommend to reduce the feed rate as following Feed 100% : DTX406(3xD), DTX408(5xD) Feed 75% : DTX421(8xD)



Leading Through Innovation



Global Cutting Tool Leader **YG-1**



DREAM DRILLS

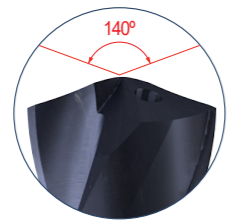


SOLID CARBIDE

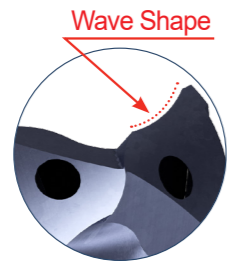
DREAM DRILLS -GENERAL

- For General Purpose (HRc30 to HRc50)

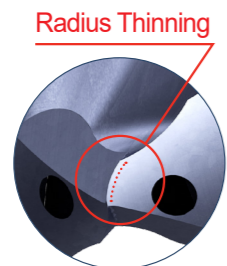
DREAM DRILLS GENERAL



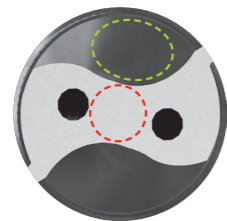
140 Degree Point Angle
for good centering and low thrust



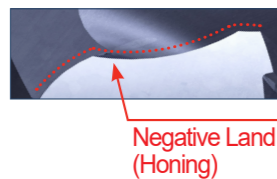
Wave Shape Cutting Edge
will allow low thrust, stable torque and long tool life



Radius Thinning
for Self Centering and Chip Breaking



Optimized Flute Shape
for strength of drill and smooth chip evacuation

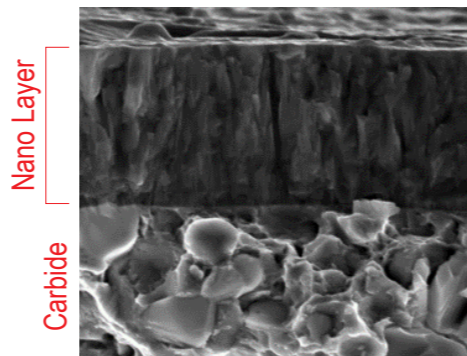


Negative Land on the cutting edge
for Reliable Tool Life

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.

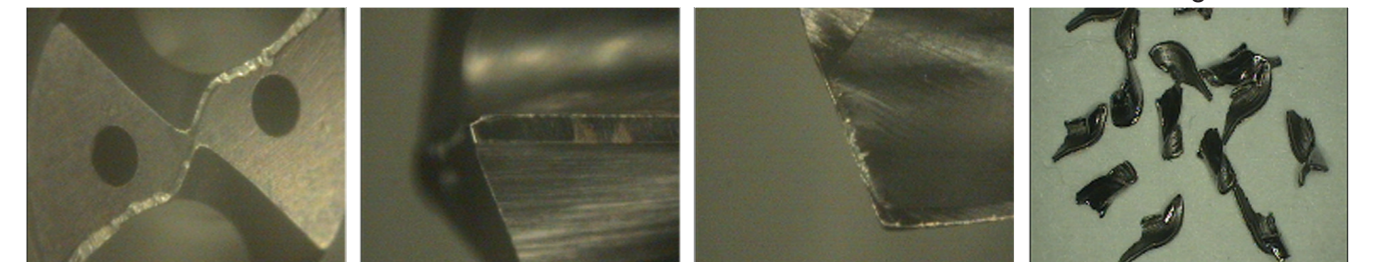
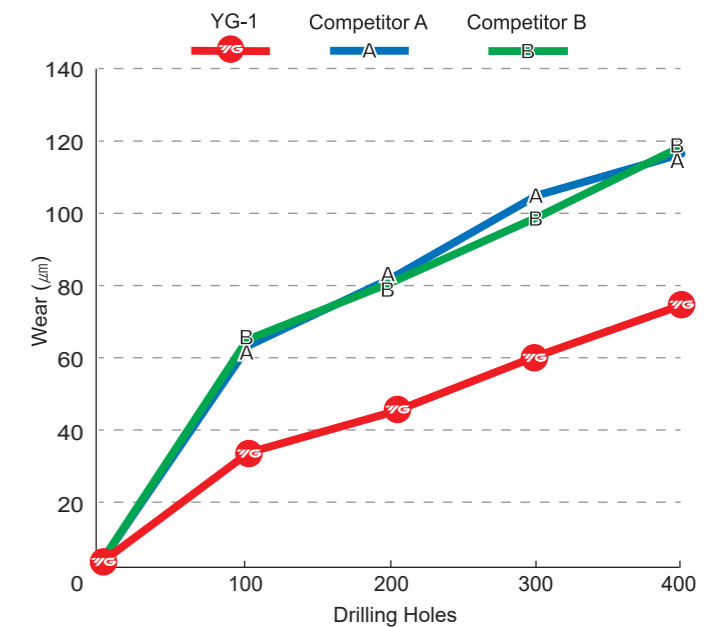


Micro-grained carbide for wear resistance and longer tool life

CASE STUDY

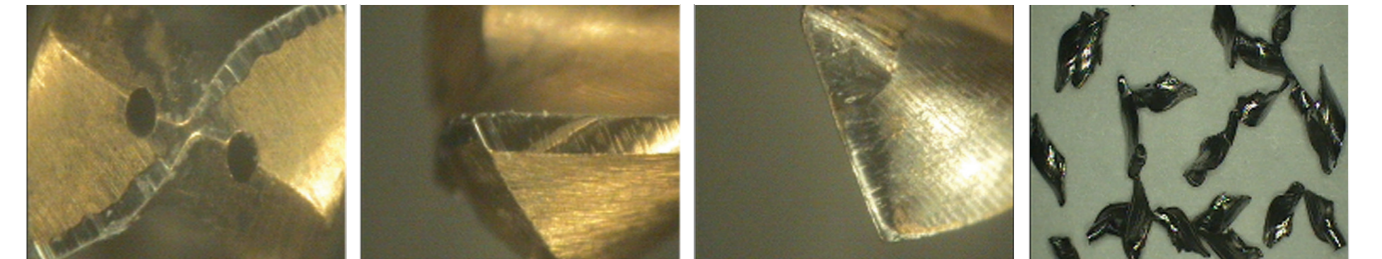
► SOLID CARBIDE DREAM DRILLS - General with Coolant Holes

| CUTTING CONDITION | |
|-------------------|---|
| Tool | DH408015 (Dream Drill with Coolant Holes) |
| Size(mm) | 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 |



Total Drilling 400 Holes

Competitor A



Total Drilling 400 Holes

Competitor B



Total Drilling 400 Holes

TiAIN-COATED SOLID CARBIDE
DREAM DRILLS GENERAL without COOLANT HOLES (3XD)

SERIES

DH404

- ▶ 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



DIN 6539 CARBIDE 30° h6 h7 140° TiAIN p.60

STUB
3 × D

| Unit : mm | | | | Unit : mm | | | |
|-----------|----------------|--------------|----------------|-----------|----------------|--------------|----------------|
| EDP No. | Drill Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Flute Length | Overall Length |
| TiAIN | D1=D2 | L1 | L2 | TiAIN | D1=D2 | L1 | L2 |
| DH404030 | 3.0 | 16 | 46 | DH404058 | 5.8 | 28 | 66 |
| DH404031 | 3.1 | 18 | 49 | DH404059 | 5.9 | 28 | 66 |
| DH404032 | 3.2 | 18 | 49 | DH404060 | 6.0 | 28 | 66 |
| DH404033 | 3.3 | 18 | 49 | DH404061 | 6.1 | 31 | 70 |
| DH404034 | 3.4 | 20 | 52 | DH404062 | 6.2 | 31 | 70 |
| DH404035 | 3.5 | 20 | 52 | DH404063 | 6.3 | 31 | 70 |
| DH404036 | 3.6 | 20 | 52 | DH404064 | 6.4 | 31 | 70 |
| DH404037 | 3.7 | 20 | 52 | DH404065 | 6.5 | 31 | 70 |
| DH404038 | 3.8 | 22 | 55 | DH404066 | 6.6 | 31 | 70 |
| DH404039 | 3.9 | 22 | 55 | DH404067 | 6.7 | 31 | 70 |
| DH404040 | 4.0 | 22 | 55 | DH404068 | 6.8 | 34 | 74 |
| DH404041 | 4.1 | 22 | 55 | DH404069 | 6.9 | 34 | 74 |
| DH404042 | 4.2 | 22 | 55 | DH404070 | 7.0 | 34 | 74 |
| DH404043 | 4.3 | 24 | 58 | DH404071 | 7.1 | 34 | 74 |
| DH404044 | 4.4 | 24 | 58 | DH404072 | 7.2 | 34 | 74 |
| DH404045 | 4.5 | 24 | 58 | DH404073 | 7.3 | 34 | 74 |
| DH404046 | 4.6 | 24 | 58 | DH404074 | 7.4 | 34 | 74 |
| DH404047 | 4.7 | 24 | 58 | DH404075 | 7.5 | 34 | 74 |
| DH404048 | 4.8 | 26 | 62 | DH404076 | 7.6 | 37 | 79 |
| DH404049 | 4.9 | 26 | 62 | DH404077 | 7.7 | 37 | 79 |
| DH404050 | 5.0 | 26 | 62 | DH404078 | 7.8 | 37 | 79 |
| DH404051 | 5.1 | 26 | 62 | DH404079 | 7.9 | 37 | 79 |
| DH404052 | 5.2 | 26 | 62 | DH404080 | 8.0 | 37 | 79 |
| DH404053 | 5.3 | 26 | 62 | DH404081 | 8.1 | 37 | 79 |
| DH404054 | 5.4 | 28 | 66 | DH404082 | 8.2 | 37 | 79 |
| DH404055 | 5.5 | 28 | 66 | DH404083 | 8.3 | 37 | 79 |
| DH404056 | 5.6 | 28 | 66 | DH404084 | 8.4 | 37 | 79 |
| DH404057 | 5.7 | 28 | 66 | DH404085 | 8.5 | 37 | 79 |

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

| ISO | P | | | | | | | | | | M | | | | K | | | | | |
|----------------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|------------------------------------|-----|-----|-----|-----------------|-----|-----|-----|-----|-----|
| | Non-alloy steel | | | | | Low alloy steel | | | | | High alloyed steel, and tool steel | | | | Stainless steel | | | | | |
| 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 | 25 | 28 | 32 | 32 | 10 | 29 | 32 | 38 | 38 | 15 | 35 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 21 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

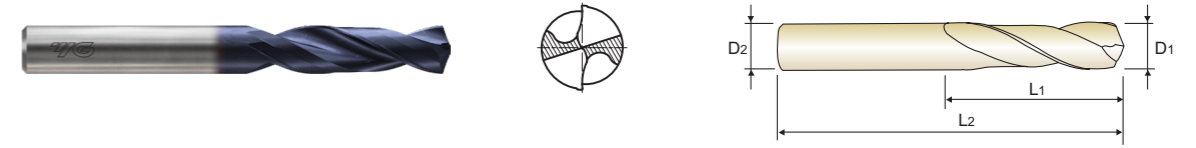
| ISO | N | | | | | | | | | | S | | | | | | H | | | | |
|----------------------|------------------------|-----|-----------------------|----|-----|---|----|------------------------|----|----|-----------------------------|-----|-----|-----------------|-----|--------|----------------|------------------|-------------------|-----|-----|
| | Aluminum-wrought alloy | | Aluminum-cast alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | Non Metallic Materials | | | Heat Resistant Super Alloys | | | Titanium Alloys | | | Hardened steel | Chilled CastIron | Hardened CastIron | | |
| 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 | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 400 Rm | 1050 Rm | 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 GENERAL without COOLANT HOLES (3XD)

SERIES

DH404

- ▶ 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



DIN 6539 CARBIDE 30° h6 h7 140° TiAIN p.60

STUB
3 × D

| Unit : mm | | | | Unit : mm | | | |
|-----------|----------------|--------------|----------------|-----------|----------------|--------------|----------------|
| EDP No. | Drill Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Flute Length | Overall Length |
| TiAIN | D1=D2 | L1 | L2 | TiAIN | D1=D2 | L1 | L2 |
| DH404086 | 8.6 | 40 | 84 | DH404170 | 17.0 | 60 | 119 |
| DH404087 | 8.7 | 40 | 84 | DH404175 | 17.5 | 62 | 123 |
| DH404088 | 8.8 | 40 | 84 | DH404180 | 18.0 | 62 | 123 |
| DH404089 | 8.9 | 40 | 84 | DH404185 | 18.5 | 64 | 127 |
| DH404090 | 9.0 | 40 | 84 | DH404190 | 19.0 | 64 | 127 |
| DH404091 | 9.1 | 40 | 84 | DH404195 | 19.5 | 66 | 131 |
| DH404092 | 9.2 | 40 | 84 | DH404200 | 20.0 | 66 | 131 |
| DH404093 | 9.3 | 40 | 84 | | | | |
| DH404094 | 9.4 | 40 | 84 | | | | |
| DH404095 | 9.5 | 40 | 84 | | | | |
| DH404096 | 9.6 | 43 | 89 | | | | |
| DH404097 | 9.7 | 43 | 89 | | | | |
| DH404098 | 9.8 | 43 | 89 | | | | |
| DH404099 | 9.9 | 43 | 89 | | | | |
| DH404100 | 10.0 | 43 | 89 | | | | |
| DH404102 | 10.2 | 43 | 89 | | | | |
| DH404105 | 10.5 | 43 | 89 | | | | |
| DH404110 | 11.0 | 47 | 95 | | | | |
| DH404115 | 11.5 | 47 | 95 | | | | |
| DH404120 | 12.0 | 51 | 102 | | | | |
| DH404130 | 13.0 | 51 | 102 | | | | |
| DH404135 | 13.5 | 54 | 107 | | | | |
| DH404140 | 14.0 | 54 | 107 | | | | |
| DH404145 | 14.5 | 56 | 111 | | | | |
| DH404150 | 15.0 | 56 | 111 | | | | |
| DH404155 | 15.5 | 58 | 115 | | | | |
| DH404160 | 16.0 | 58 | 115 | | | | |
| DH404165 | 16.5 | 60 | 119 | | | | |

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

| ISO | P | | | | | | | | | | M | | | | K | | | | | |
|----------------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|------------------------------------|-----|-----|-----|-----------------|-----|-----|-----|-----|-----|
| | Non-alloy steel | | | | | Low alloy steel | | | | | High alloyed steel, and tool steel | | | | Stainless steel | | | | | |
| 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 | 25 | 28 | 32 | 32 | 10 | 29 | 32 | 38 | 38 | 15 | 35 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 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 | | | | |
|----------------------|------------------------|-----|-----------------------|----|-----|---|----|------------------------|----|----|-----------------------------|-----|-----|-----------------|-----|--------|----------------|------------------|-------------------|-----|-----|
| | Aluminum-wrought alloy | | Aluminum-cast alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | Non Metallic Materials | | | Heat Resistant Super Alloys | | | Titanium Alloys | | | Hardened steel | Chilled CastIron | Hardened CastIron | | |
| 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 | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| 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 GENERAL without COOLANT HOLES (3XD)**

SERIES
PLAIN SHANK **DH423**
FLAT SHANK **DH443**

- ▶ 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



DIN 6537 CARBIDE 30° h6 m7 140° TiAIN p.60 **SHORT 3 x D**

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------|----------------|----------------|--------------|----------------|----------|----------|----------------|----------------|--------------|----------------|
| Plain | Flat | D1 | D2 | L1 | L2 | Plain | Flat | D1 | D2 | L1 | L2 |
| DH423030 | DH443030 | 3.0 | 6 | 20 | 62 | DH423060 | DH443060 | 6.0 | 6 | 28 | 66 |
| DH423031 | DH443031 | 3.1 | 6 | 20 | 62 | DH423061 | DH443061 | 6.1 | 8 | 34 | 79 |
| DH423032 | DH443032 | 3.2 | 6 | 20 | 62 | DH423062 | DH443062 | 6.2 | 8 | 34 | 79 |
| DH423033 | DH443033 | 3.3 | 6 | 20 | 62 | DH423063 | DH443063 | 6.3 | 8 | 34 | 79 |
| DH423034 | DH443034 | 3.4 | 6 | 20 | 62 | DH423064 | DH443064 | 6.4 | 8 | 34 | 79 |
| DH423035 | DH443035 | 3.5 | 6 | 20 | 62 | DH423065 | DH443065 | 6.5 | 8 | 34 | 79 |
| DH423036 | DH443036 | 3.6 | 6 | 20 | 62 | DH423066 | DH443066 | 6.6 | 8 | 34 | 79 |
| DH423037 | DH443037 | 3.7 | 6 | 20 | 62 | DH423067 | DH443067 | 6.7 | 8 | 34 | 79 |
| DH423038 | DH443038 | 3.8 | 6 | 24 | 66 | DH423068 | DH443068 | 6.8 | 8 | 34 | 79 |
| DH423039 | DH443039 | 3.9 | 6 | 24 | 66 | DH423069 | DH443069 | 6.9 | 8 | 34 | 79 |
| DH423040 | DH443040 | 4.0 | 6 | 24 | 66 | DH423070 | DH443070 | 7.0 | 8 | 34 | 79 |
| DH423041 | DH443041 | 4.1 | 6 | 24 | 66 | DH423071 | DH443071 | 7.1 | 8 | 41 | 79 |
| DH423042 | DH443042 | 4.2 | 6 | 24 | 66 | DH423072 | DH443072 | 7.2 | 8 | 41 | 79 |
| DH423043 | DH443043 | 4.3 | 6 | 24 | 66 | DH423073 | DH443073 | 7.3 | 8 | 41 | 79 |
| DH423044 | DH443044 | 4.4 | 6 | 24 | 66 | DH423074 | DH443074 | 7.4 | 8 | 41 | 79 |
| DH423045 | DH443045 | 4.5 | 6 | 24 | 66 | DH423075 | DH443075 | 7.5 | 8 | 41 | 79 |
| DH423046 | DH443046 | 4.6 | 6 | 24 | 66 | DH423076 | DH443076 | 7.6 | 8 | 41 | 79 |
| DH423047 | DH443047 | 4.7 | 6 | 24 | 66 | DH423077 | DH443077 | 7.7 | 8 | 41 | 79 |
| DH423048 | DH443048 | 4.8 | 6 | 28 | 66 | DH423078 | DH443078 | 7.8 | 8 | 41 | 79 |
| DH423049 | DH443049 | 4.9 | 6 | 28 | 66 | DH423079 | DH443079 | 7.9 | 8 | 41 | 79 |
| DH423050 | DH443050 | 5.0 | 6 | 28 | 66 | DH423080 | DH443080 | 8.0 | 8 | 41 | 79 |
| DH423051 | DH443051 | 5.1 | 6 | 28 | 66 | DH423081 | DH443081 | 8.1 | 10 | 47 | 89 |
| DH423052 | DH443052 | 5.2 | 6 | 28 | 66 | DH423082 | DH443082 | 8.2 | 10 | 47 | 89 |
| DH423053 | DH443053 | 5.3 | 6 | 28 | 66 | DH423083 | DH443083 | 8.3 | 10 | 47 | 89 |
| DH423054 | DH443054 | 5.4 | 6 | 28 | 66 | DH423084 | DH443084 | 8.4 | 10 | 47 | 89 |
| DH423055 | DH443055 | 5.5 | 6 | 28 | 66 | DH423085 | DH443085 | 8.5 | 10 | 47 | 89 |
| DH423056 | DH443056 | 5.6 | 6 | 28 | 66 | DH423086 | DH443086 | 8.6 | 10 | 47 | 89 |
| DH423057 | DH443057 | 5.7 | 6 | 28 | 66 | DH423087 | DH443087 | 8.7 | 10 | 47 | 89 |
| DH423058 | DH443058 | 5.8 | 6 | 28 | 66 | DH423088 | DH443088 | 8.8 | 10 | 47 | 89 |
| DH423059 | DH443059 | 5.9 | 6 | 28 | 66 | DH423089 | DH443089 | 8.9 | 10 | 47 | 89 |

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎: Excellent ○: Good

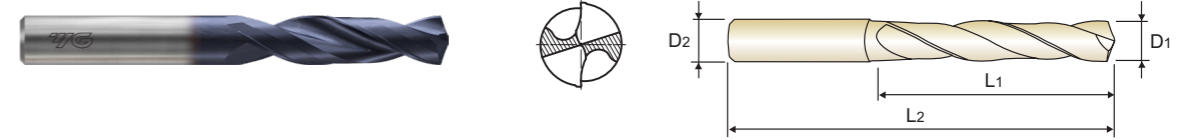
| ISO | P | | | | | | | | | | M | | | | K | | | | | | |
|----------------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|------------------------------------|-----|-----|-----|-----------------|-----|-----|-----|----------------|-------------------|---------------------|
| 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 | |
| HRc | 13 | 25 | 28 | 32 | 35 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 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 | 15 | 30 | 25 | 38 | 34 | 40 | 60 | 42 | 42 | 55 | 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 GENERAL without COOLANT HOLES (3XD)**

SERIES
PLAIN SHANK **DH423**
FLAT SHANK **DH443**

- ▶ 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



DIN 6537 CARBIDE 30° h6 m7 140° TiAIN p.60 **SHORT 3 x D**

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------|----------------|----------------|--------------|----------------|----------|----------|----------------|----------------|--------------|----------------|
| Plain | Flat | D1 | D2 | L1 | L2 | Plain | Flat | D1 | D2 | L1 | L2 |
| DH423090 | DH443090 | 9.0 | 10 | 47 | 89 | DH423120 | DH443120 | 12.0 | 12 | 55 | 102 |
| DH423091 | DH443091 | 9.1 | 10 | 47 | 89 | DH423123 | DH443123 | 12.3 | 14 | 60 | 107 |
| DH423092 | DH443092 | 9.2 | 10 | 47 | 89 | DH423125 | DH443125 | 12.5 | 14 | 60 | 107 |
| DH423093 | DH443093 | 9.3 | 10 | 47 | 89 | DH423128 | DH443128 | 12.8 | 14 | 60 | 107 |
| DH423094 | DH443094 | 9.4 | 10 | 47 | 89 | DH423130 | DH443130 | 13.0 | 14 | 60 | 107 |
| DH423095 | DH443095 | 9.5 | 10 | 47 | 89 | DH423135 | DH443135 | 13.5 | 14 | 60 | 107 |
| DH423096 | DH443096 | 9.6 | 10 | 47 | 89 | DH423138 | DH443138 | 13.8 | 14 | 60 | 107 |
| DH423097 | DH443097 | 9.7 | 10 | 47 | 89 | DH423140 | DH443140 | 14.0 | 14 | 60 | 107 |
| DH423098 | DH443098 | 9.8 | 10 | 47 | 89 | DH423145 | DH443145 | 14.5 | 16 | 65 | 115 |
| DH423099 | DH443099 | 9.9 | 10 | 47 | 89 | DH423148 | DH443148 | 14.8 | 16 | 65 | 115 |
| DH423100 | DH443100 | 10.0 | 10 | 47 | 89 | DH423150 | DH443150 | 15.0 | 16 | 65 | 115 |
| DH423101 | DH443101 | 10.1 | 12 | 55 | 102 | DH423155 | DH443155 | 15.5 | 16 | 65 | 115 |
| DH423102 | DH443102 | 10.2 | 12 | 55 | 102 | DH423158 | DH443158 | 15.8 | 16 | 65 | 115 |
| DH423103 | DH443103 | 10.3 | 12 | 55 | 102 | DH423160 | DH443160 | 16.0 | 16 | 65 | 115 |
| DH423104 | DH443104 | 10.4 | 12 | 55 | 102 | DH423165 | DH443165 | 16.5 | 18 | 73 | 123 |
| DH423105 | DH443105 | 10.5 | 12 | 55 | 102 | DH423168 | DH443168 | 16.8 | 18 | 73 | 123 |
| DH423106 | DH443106 | 10.6 | 12 | 55 | 102 | DH423170 | DH443170 | 17.0 | 18 | 73 | 123 |
| DH423107 | DH443107 | 10.7 | 12 | 55 | 102 | DH423175 | DH443175 | 17.5 | 18 | 73 | 123 |
| DH423108 | DH443108 | 10.8 | 12 | 55 | 102 | DH423178 | DH443178 | 17.8 | 18 | 73 | 123 |
| DH423109 | DH443109 | 10.9 | 12 | 55 | 102 | DH423180 | DH443180 | 18.0 | 18 | 73 | 123 |
| DH423110 | DH443110 | 11.0 | 12 | 55 | 102 | DH423185 | DH443185 | 18.5 | 20 | 79 | 131 |
| DH423111 | DH443111 | 11.1 | 12 | 55 | 102 | DH423190 | DH443190 | 19.0 | 20 | 79 | 131 |
| DH423112 | DH443112 | 11.2 | 12 | 55 | 102 | DH423195 | DH443195 | 19.5 | 20 | 79 | 131 |
| DH423113 | DH443113 | 11.3 | 12 | 55 | 102 | DH423198 | DH443198 | 19.8 | 20 | 79 | 131 |
| DH423114 | DH443114 | 11.4 | 12 | 55 | 102 | DH423200 | DH443200 | 20.0 | 20 | 79 | 131 |
| DH423115 | DH443115 | 11.5 | 12 | 55 | 102 | | | | | | |
| DH423116 | DH443116 | 11.6 | 12 | 55 | 102 | | | | | | |
| DH423117 | DH443117 | 11.7 | 12 | 55 | 102 | | | | | | |
| DH423118 | DH443118 | 11.8 | 12 | 55 | 102 | | | | | | |
| DH423119 | DH443119 | 11.9 | 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 | |
| HRc | 13 | 25 | 28 | 32 | 35 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 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 | 15 | 30 | 25 | 38 | 34 | 40 | 60 | 42 | 42 | 55 | 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 GENERAL without COOLANT HOLES (5XD)

SERIES
PLAIN SHANK **DH424**
FLAT SHANK **DH444**

- ▶ 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



DIN 6537 **CARBIDE** 30° h6 m7 140° TiAIN p.60 **LONG 5x D**

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | | Overall Length |
|----------|----------------|----------------|--------------|----|----------------|
| | | | L1 | L2 | |
| | D1 | D2 | | | |
| DH424010 | - | 1.0 | 3 | 8 | 55 |
| DH424011 | - | 1.1 | 3 | 12 | 55 |
| DH424012 | - | 1.2 | 3 | 12 | 55 |
| DH424013 | - | 1.3 | 3 | 12 | 55 |
| DH424014 | - | 1.4 | 3 | 12 | 55 |
| DH424015 | - | 1.5 | 3 | 16 | 55 |
| DH424016 | - | 1.6 | 3 | 16 | 55 |
| DH424017 | - | 1.7 | 3 | 16 | 55 |
| DH424018 | - | 1.8 | 3 | 16 | 55 |
| DH424019 | - | 1.9 | 3 | 16 | 55 |
| DH424020 | - | 2.0 | 4 | 21 | 57 |
| DH424021 | - | 2.1 | 4 | 21 | 57 |
| DH424022 | - | 2.2 | 4 | 21 | 57 |
| DH424023 | - | 2.3 | 4 | 21 | 57 |
| DH424024 | - | 2.4 | 4 | 21 | 57 |
| DH424025 | - | 2.5 | 4 | 21 | 57 |
| DH424026 | - | 2.6 | 4 | 21 | 57 |
| DH424027 | - | 2.7 | 4 | 21 | 57 |
| DH424028 | - | 2.8 | 4 | 21 | 57 |
| DH424029 | - | 2.9 | 4 | 21 | 57 |
| DH424030 | DH444030 | 3.0 | 6 | 28 | 66 |
| DH424031 | DH444031 | 3.1 | 6 | 28 | 66 |
| DH424032 | DH444032 | 3.2 | 6 | 28 | 66 |
| DH424033 | DH444033 | 3.3 | 6 | 28 | 66 |
| DH424034 | DH444034 | 3.4 | 6 | 28 | 66 |
| DH424035 | DH444035 | 3.5 | 6 | 28 | 66 |
| DH424036 | DH444036 | 3.6 | 6 | 28 | 66 |
| DH424037 | DH444037 | 3.7 | 6 | 28 | 66 |

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | | Overall Length |
|----------|----------|----------------|----------------|--------------|----|----------------|
| Plain | Flat | | | L1 | L2 | |
| DH424038 | DH444038 | 3.8 | 6 | 36 | 74 | |
| DH424039 | DH444039 | 3.9 | 6 | 36 | 74 | |
| DH424040 | DH444040 | 4.0 | 6 | 36 | 74 | |
| DH424041 | DH444041 | 4.1 | 6 | 36 | 74 | |
| DH424042 | DH444042 | 4.2 | 6 | 36 | 74 | |
| DH424043 | DH444043 | 4.3 | 6 | 36 | 74 | |
| DH424044 | DH444044 | 4.4 | 6 | 36 | 74 | |
| DH424045 | DH444045 | 4.5 | 6 | 36 | 74 | |
| DH424046 | DH444046 | 4.6 | 6 | 36 | 74 | |
| DH424047 | DH444047 | 4.7 | 6 | 36 | 74 | |
| DH424048 | DH444048 | 4.8 | 6 | 44 | 82 | |
| DH424049 | DH444049 | 4.9 | 6 | 44 | 82 | |
| DH424050 | DH444050 | 5.0 | 6 | 44 | 82 | |
| DH424051 | DH444051 | 5.1 | 6 | 44 | 82 | |
| DH424052 | DH444052 | 5.2 | 6 | 44 | 82 | |
| DH424053 | DH444053 | 5.3 | 6 | 44 | 82 | |
| DH424054 | DH444054 | 5.4 | 6 | 44 | 82 | |
| DH424055 | DH444055 | 5.5 | 6 | 44 | 82 | |
| DH424056 | DH444056 | 5.6 | 6 | 44 | 82 | |
| DH424057 | DH444057 | 5.7 | 6 | 44 | 82 | |
| DH424058 | DH444058 | 5.8 | 6 | 44 | 82 | |
| DH424059 | DH444059 | 5.9 | 6 | 44 | 82 | |
| DH424060 | DH444060 | 6.0 | 6 | 44 | 82 | |
| DH424061 | DH444061 | 6.1 | 8 | 53 | 91 | |
| DH424062 | DH444062 | 6.2 | 8 | 53 | 91 | |
| DH424063 | DH444063 | 6.3 | 8 | 53 | 91 | |
| DH424064 | DH444064 | 6.4 | 8 | 53 | 91 | |
| DH424065 | DH444065 | 6.5 | 8 | 53 | 91 | |

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : 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 | | | | |
| 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 | 32 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 18 | 21 | 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 | | | | | |
|-------------|------------------------|-----|-----------------------|----|-----|---|----|------------------------|----|----|-----------------------------|-----|-----|-----|-----|-----------------|---------|----------------|-------------------|--------------------|-----|
| | 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 | 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 GENERAL without COOLANT HOLES (5XD)

SERIES
PLAIN SHANK **DH424**
FLAT SHANK **DH444**

- ▶ 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



DIN 6537 **CARBIDE** 30° h6 m7 140° TiAIN p.60 **LONG 5x D**

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | | Overall Length |
|----------|----------------|----------------|--------------|----|----------------|
| | | | L1 | L2 | |
| | D1 | D2 | | | |
| DH424066 | DH444066 | 6.6 | 8 | 53 | 91 |
| DH424067 | DH444067 | 6.7 | 8 | 53 | 91 |
| DH424068 | DH444068 | 6.8 | 8 | 53 | 91 |
| DH424069 | DH444069 | 6.9 | 8 | 53 | 91 |
| DH424070 | DH444070 | 7.0 | 8 | 53 | 91 |
| DH424071 | DH444071 | 7.1 | 8 | 53 | 91 |
| DH424072 | DH444072 | 7.2 | 8 | 53 | 91 |
| DH424073 | DH444073 | 7.3 | 8 | 53 | 91 |
| DH424074 | DH444074 | 7.4 | 8 | 53 | 91 |
| DH424075 | DH444075 | 7.5 | 8 | 53 | 91 |
| DH424076 | DH444076 | 7.6 | 8 | 53 | 91 |
| DH424077 | DH444077 | 7.7 | 8 | 53 | 91 |
| DH424078 | DH444078 | 7.8 | 8 | 53 | 91 |
| DH424079 | DH444079 | 7.9 | 8 | 53 | 91 |
| DH424080 | DH444080 | 8.0 | 8 | 53 | 91 |
| DH424081 | DH444081 | 8.1 | 10 | 61 | 103 |
| DH424082 | DH444082 | 8.2 | 10 | 61 | 103 |
| DH424083 | DH444083 | 8.3 | 10 | 61 | 103 |
| DH424084 | DH444084 | 8.4 | 10 | 61 | 103 |
| DH424085 | DH444085 | 8.5 | 10 | 61 | 103 |
| DH424086 | DH444086 | 8.6 | 10 | 61 | 103 |
| DH424087 | DH444087 | 8.7 | 10 | 61 | 103 |
| DH424088 | DH444088 | 8.8 | 10 | 61 | 103 |
| DH424089 | DH444089 | 8.9 | 10 | 61 | 103 |
| DH424090 | DH444090 | 9.0 | 10 | 61 | 103 |
| DH424091 | DH444091 | 9.1 | 10 | 61 | 103 |
| DH424092 | DH444092 | 9.2 | 10 | 61 | 103 |
| DH424093 | DH444093 | 9.3 | 10 | 61 | 103 |

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | | Overall Length |
|----------|----------|----------------|----------------|--------------|-----|----------------|
| Plain | Flat | | | L1 | L2 | |
| DH424094 | DH444094 | 9.4 | 10 | 61 | 103 | |
| DH424095 | DH444095 | 9.5 | 10 | 61 | 103 | |
| DH424096 | DH444096 | 9.6 | 10 | 61 | 103 | |
| DH424097 | DH444097 | 9.7 | 10 | 61 | 103 | |
| DH424098 | DH444098 | 9.8 | 10 | 61 | 103 | |
| DH424099 | DH444099 | 9.9 | 10 | 61 | 103 | |
| DH424100 | DH444100 | 10.0 | 10 | 61 | 103 | |
| DH424101 | DH444101 | 10.1 | 12 | 71 | 118 | |
| DH424102 | DH444102 | 10.2 | 12 | 71 | 118 | |
| DH424103 | DH444103 | 10.3 | 12 | 71 | 118 | |
| DH424104 | DH444104 | 10.4 | 12 | 71 | 118 | |
| DH424105 | DH444105 | 10.5 | 12 | 71 | 118 | |
| DH424106 | DH444106 | 10.6 | 12 | 71 | 118 | |
| DH424107 | DH444107 | 10.7 | 12 | 71 | 118 | |
| DH424108 | DH444108 | 10.8 | 12 | 71 | 118 | |
| DH424109 | DH444109 | 10.9 | 12 | 71 | 118 | |
| DH424110 | DH444110 | 11.0 | 12 | 71 | 118 | |
| DH424111 | DH444111 | 11.1 | 12 | 71 | 118 | |
| DH424112 | DH444112 | 11.2 | 12 | 71 | 118 | |
| DH424113 | DH444113 | 11.3 | 12 | 71 | 118 | |
| DH424114 | DH444114 | 11.4 | 12 | 71 | 118 | |
| DH424115 | DH444115 | 11.5 | 12 | 71 | 118 | |
| DH424116 | DH444116 | 11.6 | 12 | 71 | 118 | |
| DH424117 | DH444117 | 11.7 | 12 | 71 | 118 | |
| DH424118 | DH444118 | 11.8 | 12 | 71 | 118 | |
| DH424119 | DH444119 | 11.9 | 12 | 71 | 118 | |
| DH424120 | DH444120 | 12.0 | 12 | 71 | 118 | |
| DH424125 | DH444125 | 12.5 | 14 | 77 | 124 | |

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

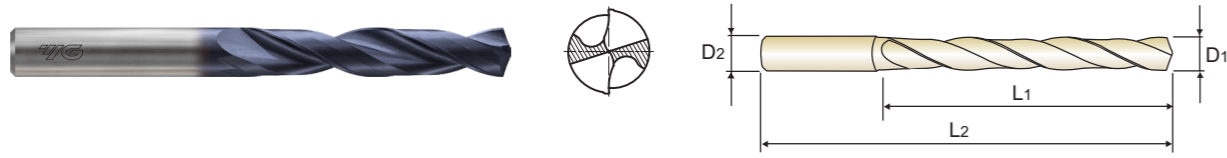
| ISO | P | | | | | M | | | | K | | | | | | | | | | |
|-------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|------------------------------------|-----|-----------------|-----|----------------|-------------------|---------------------|-----|-----|-----|-----|
| | Non-alloy steel | | | | | Low alloy steel | | | | High alloyed steel, and tool steel | | Stainless steel | | Grey cast iron | Nodular cast iron | Malleable cast iron | | | | |
| 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 | 32 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 18 | 21 | 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 | | | | | |
|----------|------------------------|----|-----------------------|----|----|---|----|------------------------|----|----|-----------------------------|----|----|----|----|-----------------|----|----------------|-------------------|--------------------|----|
| | 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 | 55 | 60 | 42 | 55 |

TiAlN-COATED SOLID CARBIDE
DREAM DRILLS GENERAL without COOLANT HOLES (5XD)

SERIES
PLAIN SHANK **DH424**
FLAT SHANK **DH444**

- ▶ 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



DIN 6537 CARBIDE 30° h6 m7 140° TiAlN p.60 **LONG** 5×D

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------|----------------|----------------|--------------|----------------|
| Plain | Flat | D1 | D2 | L1 | L2 |
| DH424130 | DH444130 | 13.0 | 14 | 77 | 124 |
| DH424135 | DH444135 | 13.5 | 14 | 77 | 124 |
| DH424140 | DH444140 | 14.0 | 14 | 77 | 124 |
| DH424145 | DH444145 | 14.5 | 16 | 83 | 133 |
| DH424150 | DH444150 | 15.0 | 16 | 83 | 133 |
| DH424155 | DH444155 | 15.5 | 16 | 83 | 133 |
| DH424160 | DH444160 | 16.0 | 16 | 83 | 133 |
| DH424165 | DH444165 | 16.5 | 18 | 93 | 143 |

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------|----------------|----------------|--------------|----------------|
| Plain | Flat | D1 | D2 | L1 | L2 |
| DH424170 | DH444170 | 17.0 | 18 | 93 | 143 |
| DH424175 | DH444175 | 17.5 | 18 | 93 | 143 |
| DH424180 | DH444180 | 18.0 | 18 | 93 | 143 |
| DH424185 | DH444185 | 18.5 | 20 | 101 | 153 |
| DH424190 | DH444190 | 19.0 | 20 | 101 | 153 |
| DH424195 | DH444195 | 19.5 | 20 | 101 | 153 |
| DH424200 | DH444200 | 20.0 | 20 | 101 | 153 |

Unit : mm

▶ Other shank types are available on your request.

TiAlN-COATED SOLID CARBIDE
DREAM DRILLS GENERAL with COOLANT HOLES (3XD)

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

- ▶ 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



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar TiAlN p.61 **SHORT** 3×D

| EDP No. | | 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 |
| DH406056 | DH446056 | 5.6 | 6 | 28 | 66 |
| DH406057 | DH446057 | 5.7 | 6 | 28 | 66 |

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------|----------------|----------------|--------------|----------------|
| Plain | Flat | D1 | D2 | L1 | L2 |
| DH406058 | DH446058 | 5.8 | 6 | 28 | 66 |
| DH406059 | DH446059 | 5.9 | 6 | 28 | 66 |
| DH406060 | DH446060 | 6.0 | 6 | 28 | 66 |
| DH406061 | DH446061 | 6.1 | 8 | 34 | 79 |
| DH406062 | DH446062 | 6.2 | 8 | 34 | 79 |
| DH406063 | DH446063 | 6.3 | 8 | 34 | 79 |
| DH406064 | DH446064 | 6.4 | 8 | 34 | 79 |
| DH406065 | DH446065 | 6.5 | 8 | 34 | 79 |
| DH406066 | DH446066 | 6.6 | 8 | 34 | 79 |
| DH406067 | DH446067 | 6.7 | 8 | 34 | 79 |
| DH406068 | DH446068 | 6.8 | 8 | 34 | 79 |
| DH406069 | DH446069 | 6.9 | 8 | 34 | 79 |
| DH406070 | DH446070 | 7.0 | 8 | 34 | 79 |
| DH406071 | DH446071 | 7.1 | 8 | 41 | 79 |
| DH406072 | DH446072 | 7.2 | 8 | 41 | 79 |
| DH406073 | DH446073 | 7.3 | 8 | 41 | 79 |
| DH406074 | DH446074 | 7.4 | 8 | 41 | 79 |
| DH406075 | DH446075 | 7.5 | 8 | 41 | 79 |
| DH406076 | DH446076 | 7.6 | 8 | 41 | 79 |
| DH406077 | DH446077 | 7.7 | 8 | 41 | 79 |
| DH406078 | DH446078 | 7.8 | 8 | 41 | 79 |
| DH406079 | DH446079 | 7.9 | 8 | 41 | 79 |
| DH406080 | DH446080 | 8.0 | 8 | 41 | 79 |
| DH406081 | DH446081 | 8.1 | 10 | 47 | 89 |
| 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 |

Unit : mm

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎: 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 | 25 | 28 | 32 | 32 | 29 | 32 | 38 | 38 | 38 | 15 | 35 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 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 | | | | | |
|----------------------|------------------------|-----|-----------------------|----|-----|---|----|------------------------|----|----|-----------------------------|-----|-----|-----|-----|-----------------|---------|----------------|-------------------|--------------------|-----|
| | 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 | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 55 | 60 | 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 | | | | | | |
|----------------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|------------------------------------|-----|-----|-----------------|-----|-----|----------------|-------------------|---------------------|-----|
| | 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 | 25 | 28 | 32 | 32 | 29 | 32 | 38 | 38 | 38 | 15 | 35 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 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 | | | | | |
|----------------------|------------------------|-----|-----------------------|----|-----|---|----|------------------------|----|----|-----------------------------|-----|-----|-----|-----|-----------------|---------|----------------|-------------------|--------------------|-----|
| | 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 | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 55 | 60 | 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 GENERAL with COOLANT HOLES (3XD)

- 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

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



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar TiAIN p.61 **SHORT** 3 × D

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------|----------------|----------------|--------------|----------------|
| Plain | Flat | D1 | D2 | L1 | L2 |
| 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 |
| DH406110 | DH446110 | 11.0 | 12 | 55 | 102 |
| DH406111 | DH446111 | 11.1 | 12 | 55 | 102 |
| DH406112 | DH446112 | 11.2 | 12 | 55 | 102 |
| DH406113 | DH446113 | 11.3 | 12 | 55 | 102 |

Unit : mm

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------|----------------|----------------|--------------|----------------|
| Plain | Flat | D1 | D2 | L1 | L2 |
| DH406114 | DH446114 | 11.4 | 12 | 55 | 102 |
| DH406115 | DH446115 | 11.5 | 12 | 55 | 102 |
| DH406116 | DH446116 | 11.6 | 12 | 55 | 102 |
| DH406117 | DH446117 | 11.7 | 12 | 55 | 102 |
| DH406118 | DH446118 | 11.8 | 12 | 55 | 102 |
| DH406119 | DH446119 | 11.9 | 12 | 55 | 102 |
| DH406120 | DH446120 | 12.0 | 12 | 55 | 102 |
| DH406125 | DH446125 | 12.5 | 14 | 60 | 107 |
| DH406130 | DH446130 | 13.0 | 14 | 60 | 107 |
| DH406135 | DH446135 | 13.5 | 14 | 60 | 107 |
| DH406140 | DH446140 | 14.0 | 14 | 60 | 107 |
| DH406145 | DH446145 | 14.5 | 16 | 65 | 115 |
| DH406150 | DH446150 | 15.0 | 16 | 65 | 115 |
| DH406155 | DH446155 | 15.5 | 16 | 65 | 115 |
| DH406160 | DH446160 | 16.0 | 16 | 65 | 115 |
| DH406165 | DH446165 | 16.5 | 18 | 73 | 123 |
| DH406170 | DH446170 | 17.0 | 18 | 73 | 123 |
| DH406175 | DH446175 | 17.5 | 18 | 73 | 123 |
| DH406180 | DH446180 | 18.0 | 18 | 73 | 123 |
| DH406185 | DH446185 | 18.5 | 20 | 79 | 131 |
| DH406190 | DH446190 | 19.0 | 20 | 79 | 131 |
| DH406195 | DH446195 | 19.5 | 20 | 79 | 131 |
| DH406200 | DH446200 | 20.0 | 20 | 79 | 131 |

► 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 | | | | | | | | | | |
| 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 | 18 | 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 | | | | | | | | | | | |
| 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 | | | | | | | | | | | |
| 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 GENERAL with COOLANT HOLES (5XD)

- 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

SERIES
PLAIN SHANK **DH408**
FLAT SHANK **DH448**



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar TiAIN p.61 **LONG** 5 × D

Unit : mm

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------|----------------|----------------|--------------|----------------|
| Plain | Flat | D1 | D2 | L1 | L2 |
| DH408010 | - | 1.0 | 3 | 8 | 55 |
| DH408011 | - | 1.1 | 3 | 12 | 55 |
| DH408012 | - | 1.2 | 3 | 12 | 55 |
| DH408013 | - | 1.3 | 3 | 12 | 55 |
| DH408014 | - | 1.4 | 3 | 12 | 55 |
| DH408015 | - | 1.5 | 3 | 16 | 55 |
| DH408016 | - | 1.6 | 3 | 16 | 55 |
| DH408017 | - | 1.7 | 3 | 16 | 55 |
| DH408018 | - | 1.8 | 3 | 16 | 55 |
| DH408019 | - | 1.9 | 3 | 16 | 55 |
| DH408020 | - | 2.0 | 4 | 21 | 57 |
| DH408021 | - | 2.1 | 4 | 21 | 57 |
| DH408022 | - | 2.2 | 4 | 21 | 57 |
| DH408023 | - | 2.3 | 4 | 21 | 57 |
| DH408024 | - | 2.4 | 4 | 21 | 57 |
| DH408025 | - | 2.5 | 4 | 21 | 57 |
| DH408026 | - | 2.6 | 4 | 21 | 57 |
| DH408027 | - | 2.7 | 4 | 21 | 57 |
| DH408028 | - | 2.8 | 4 | 21 | 57 |
| DH408029 | - | 2.9 | 4 | 21 | 57 |
| DH408030 | DH448030 | 3.0 | 6 | 28 | 66 |
| DH408031 | DH448031 | 3.1 | 6 | 28 | 66 |
| DH408032 | DH448032 | 3.2 | 6 | 28 | 66 |
| DH408033 | DH448033 | 3.3 | 6 | 28 | 66 |
| DH408034 | DH448034 | 3.4 | 6 | 28 | 66 |
| DH408035 | DH448035 | 3.5 | 6 | 28 | 66 |
| DH408036 | DH448036 | 3.6 | 6 | 28 | 66 |
| DH408037 | DH448037 | 3.7 | 6 | 28 | 66 |

Unit : mm

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------|----------------|----------------|--------------|----------------|
| Plain | Flat | D1 | D2 | L1 | L2 |
| DH408038 | DH448038 | 3.8 | 6 | 36 | 74 |
| DH408039 | DH448039 | 3.9 | 6 | 36 | 74 |
| DH408040 | DH448040 | 4.0 | 6 | 36 | 74 |
| DH408041 | DH448041 | 4.1 | 6 | 36 | 74 |
| DH408042 | DH448042 | 4.2 | 6 | 36 | 74 |
| DH408043 | DH448043 | 4.3 | 6 | 36 | 74 |
| DH408044 | DH448044 | 4.4 | 6 | 36 | 74 |
| DH408045 | DH448045 | 4.5 | 6 | 36 | 74 |
| DH408046 | DH448046 | 4.6 | 6 | 36 | 74 |
| DH408047 | DH448047 | 4.7 | 6 | 36 | 74 |
| DH408048 | DH448048 | 4.8 | 6 | 44 | 82 |
| DH408049 | DH448049 | 4.9 | 6 | 44 | 82 |
| DH408050 | DH448050 | 5.0 | 6 | 44 | 82 |
| DH408051 | DH448051 | 5.1 | 6 | 44 | 82 |
| DH408052 | DH448052 | 5.2 | 6 | 44 | 82 |
| DH408053 | DH448053 | 5.3 | 6 | 44 | 82 |
| DH408054 | DH448054 | 5.4 | 6 | 44 | 82 |
| DH408055 | DH448055 | 5.5 | 6 | 44 | 82 |
| DH408056 | DH448056 | 5.6 | 6 | 44 | 82 |
| DH408057 | DH448057 | 5.7 | 6 | 44 | 82 |
| DH408058 | DH448058 | 5.8 | 6 | 44 | 82 |
| DH408059 | DH448059 | 5.9 | 6 | 44 | 82 |
| DH408060 | DH448060 | 6.0 | 6 | 44 | 82 |
| DH408061 | DH448061 | 6.1 | 8 | 53 | 91 |
| DH408062 | DH448062 | 6.2 | 8 | 53 | 91 |
| DH408063 | DH448063 | 6.3 | 8 | 53 | 91 |
| DH408064 | DH448064 | 6.4 | 8 | 53 | 91 |
| DH408065 | DH448065 | 6.5 | 8 | 53 | 91 |

► 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 | | | | | | | | | | |
| 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 | 18 | 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 | | | | | | | | | | | |
| 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 | | | | | | | | | | | |
| 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 GENERAL with COOLANT HOLES (5XD)

SERIES
PLAIN SHANK **DH408**
FLAT SHANK **DH448**

- ▶ 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



DIN 6537 **CARBIDE** 30° h6 m7 140° 20 bar **TiAIN** p.61 **LONG** 5x D

Unit : mm

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------|----------------|----------------|--------------|----------------|----------|----------|----------------|----------------|--------------|----------------|
| Plain | Flat | D1 | D2 | L1 | L2 | Plain | Flat | D1 | D2 | L1 | L2 |
| DH408066 | DH448066 | 6.6 | 8 | 53 | 91 | DH408094 | DH448094 | 9.4 | 10 | 61 | 103 |
| DH408067 | DH448067 | 6.7 | 8 | 53 | 91 | DH408095 | DH448095 | 9.5 | 10 | 61 | 103 |
| DH408068 | DH448068 | 6.8 | 8 | 53 | 91 | DH408096 | DH448096 | 9.6 | 10 | 61 | 103 |
| DH408069 | DH448069 | 6.9 | 8 | 53 | 91 | DH408097 | DH448097 | 9.7 | 10 | 61 | 103 |
| DH408070 | DH448070 | 7.0 | 8 | 53 | 91 | DH408098 | DH448098 | 9.8 | 10 | 61 | 103 |
| DH408071 | DH448071 | 7.1 | 8 | 53 | 91 | DH408099 | DH448099 | 9.9 | 10 | 61 | 103 |
| DH408072 | DH448072 | 7.2 | 8 | 53 | 91 | DH408100 | DH448100 | 10.0 | 10 | 61 | 103 |
| DH408073 | DH448073 | 7.3 | 8 | 53 | 91 | DH408101 | DH448101 | 10.1 | 12 | 71 | 118 |
| DH408074 | DH448074 | 7.4 | 8 | 53 | 91 | DH408102 | DH448102 | 10.2 | 12 | 71 | 118 |
| DH408075 | DH448075 | 7.5 | 8 | 53 | 91 | DH408103 | DH448103 | 10.3 | 12 | 71 | 118 |
| DH408076 | DH448076 | 7.6 | 8 | 53 | 91 | DH408104 | DH448104 | 10.4 | 12 | 71 | 118 |
| DH408077 | DH448077 | 7.7 | 8 | 53 | 91 | DH408105 | DH448105 | 10.5 | 12 | 71 | 118 |
| DH408078 | DH448078 | 7.8 | 8 | 53 | 91 | DH408106 | DH448106 | 10.6 | 12 | 71 | 118 |
| DH408079 | DH448079 | 7.9 | 8 | 53 | 91 | DH408107 | DH448107 | 10.7 | 12 | 71 | 118 |
| DH408080 | DH448080 | 8.0 | 8 | 53 | 91 | DH408108 | DH448108 | 10.8 | 12 | 71 | 118 |
| DH408081 | DH448081 | 8.1 | 10 | 61 | 103 | DH408109 | DH448109 | 10.9 | 12 | 71 | 118 |
| DH408082 | DH448082 | 8.2 | 10 | 61 | 103 | DH408110 | DH448110 | 11.0 | 12 | 71 | 118 |
| DH408083 | DH448083 | 8.3 | 10 | 61 | 103 | DH408111 | DH448111 | 11.1 | 12 | 71 | 118 |
| DH408084 | DH448084 | 8.4 | 10 | 61 | 103 | DH408112 | DH448112 | 11.2 | 12 | 71 | 118 |
| DH408085 | DH448085 | 8.5 | 10 | 61 | 103 | DH408113 | DH448113 | 11.3 | 12 | 71 | 118 |
| DH408086 | DH448086 | 8.6 | 10 | 61 | 103 | DH408114 | DH448114 | 11.4 | 12 | 71 | 118 |
| DH408087 | DH448087 | 8.7 | 10 | 61 | 103 | DH408115 | DH448115 | 11.5 | 12 | 71 | 118 |
| DH408088 | DH448088 | 8.8 | 10 | 61 | 103 | DH408116 | DH448116 | 11.6 | 12 | 71 | 118 |
| DH408089 | DH448089 | 8.9 | 10 | 61 | 103 | DH408117 | DH448117 | 11.7 | 12 | 71 | 118 |
| DH408090 | DH448090 | 9.0 | 10 | 61 | 103 | DH408118 | DH448118 | 11.8 | 12 | 71 | 118 |
| DH408091 | DH448091 | 9.1 | 10 | 61 | 103 | DH408119 | DH448119 | 11.9 | 12 | 71 | 118 |
| DH408092 | DH448092 | 9.2 | 10 | 61 | 103 | DH408120 | DH448120 | 12.0 | 12 | 71 | 118 |
| DH408093 | DH448093 | 9.3 | 10 | 61 | 103 | DH408125 | DH448125 | 12.5 | 14 | 77 | 124 |

▶ 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 |
| HRc | 13 | 25 | 28 | 32 | 30 | 10 | 29 | 32 | 38 | 38 | 15 | 35 | 23 | 10 | 10 | 26 | 3 | 25 | 31 | 21 | 180 | 270 | 300 | 350 | 200 | 240 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | 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 | 42 | 43 | 44 | 45 | 46 | 47 |
| HRc | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 | |
| 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 GENERAL with COOLANT HOLES (5XD)

SERIES
PLAIN SHANK **DH408**
FLAT SHANK **DH448**

- ▶ 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



DIN 6537 **CARBIDE** 30° h6 m7 140° 20 bar **TiAIN** p.61 **LONG** 5x D

Unit : mm

| EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------|----------------|----------------|--------------|----------------|----------|----------|----------------|----------------|--------------|----------------|
| Plain | Flat | D1 | D2 | L1 | L2 | Plain | Flat | D1 | D2 | L1 | L2 |
| DH408130 | DH448130 | 13.0 | 14 | 77 | 124 | DH408170 | DH448170 | 17.0 | 18 | 93 | 143 |
| DH408135 | DH448135 | 13.5 | 14 | 77 | 124 | DH408175 | DH448175 | 17.5 | 18 | 93 | 143 |
| DH408140 | DH448140 | 14.0 | 14 | 77 | 124 | DH408180 | DH448180 | 18.0 | 18 | 93 | 143 |
| DH408145 | DH448145 | 14.5 | 16 | 83 | 133 | DH408185 | DH448185 | 18.5 | 20 | 101 | 153 |
| DH408150 | DH448150 | 15.0 | 16 | 83 | 133 | DH408190 | DH448190 | 19.0 | 20 | 101 | 153 |
| DH408155 | DH448155 | 15.5 | 16 | 83 | 133 | DH408195 | DH448195 | 19.5 | 20 | 101 | 153 |
| DH408160 | DH448160 | 16.0 | 16 | 83 | 133 | DH408200 | DH448200 | 20.0 | 20 | 101 | 153 |
| DH408165 | DH448165 | 16.5 | 18 | 93 | 143 | | | | | | |

▶ 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 |
| HRc | 13 | 25 | 28 | 32 | 30 | 10 | 29 | 32 | 38 | 38 | 15 | 35 | 23 | 10 | 10 | 26 | 3 | 25 | 31 | 21 | 180 | 270 | 300 | 350 | 200 | 240 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | 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 | 42 | 43 | 44 | 45 | 46 | 47 |
| HRc | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 15 | 30 | 25 | 38 | 34 | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 | |
| 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 SOLID CARBIDE
DREAM DRILLS GENERAL with COOLANT HOLES (8XD)

SERIES

DH421

- ▶ 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



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar TiAlN p.61

EXTRA LONG
8 × D

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------------|----------------|--------------|----------------|
| TiAlN | D1 | D2 | L1 | L2 |
| DH421030 | 3.0 | 6 | 34 | 72 |
| DH421031 | 3.1 | 6 | 34 | 72 |
| DH421032 | 3.2 | 6 | 34 | 72 |
| DH421033 | 3.3 | 6 | 34 | 72 |
| DH421034 | 3.4 | 6 | 34 | 72 |
| DH421035 | 3.5 | 6 | 34 | 72 |
| DH421036 | 3.6 | 6 | 34 | 72 |
| DH421037 | 3.7 | 6 | 34 | 72 |
| DH421038 | 3.8 | 6 | 43 | 81 |
| DH421039 | 3.9 | 6 | 43 | 81 |
| DH421040 | 4.0 | 6 | 43 | 81 |
| DH421041 | 4.1 | 6 | 43 | 81 |
| DH421042 | 4.2 | 6 | 43 | 81 |
| DH421043 | 4.3 | 6 | 43 | 81 |
| DH421044 | 4.4 | 6 | 43 | 81 |
| DH421045 | 4.5 | 6 | 43 | 81 |
| DH421046 | 4.6 | 6 | 43 | 81 |
| DH421047 | 4.7 | 6 | 43 | 81 |
| DH421048 | 4.8 | 6 | 57 | 95 |
| DH421049 | 4.9 | 6 | 57 | 95 |
| DH421050 | 5.0 | 6 | 57 | 95 |
| DH421051 | 5.1 | 6 | 57 | 95 |
| DH421052 | 5.2 | 6 | 57 | 95 |
| DH421053 | 5.3 | 6 | 57 | 95 |
| DH421054 | 5.4 | 6 | 57 | 95 |
| DH421055 | 5.5 | 6 | 57 | 95 |
| DH421056 | 5.6 | 6 | 57 | 95 |
| DH421057 | 5.7 | 6 | 57 | 95 |

Unit : mm

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------------|----------------|--------------|----------------|
| TiAlN | D1 | D2 | L1 | L2 |
| DH421058 | 5.8 | 6 | 57 | 95 |
| DH421059 | 5.9 | 6 | 57 | 95 |
| DH421060 | 6.0 | 6 | 57 | 95 |
| DH421061 | 6.1 | 8 | 76 | 114 |
| DH421062 | 6.2 | 8 | 76 | 114 |
| DH421063 | 6.3 | 8 | 76 | 114 |
| DH421064 | 6.4 | 8 | 76 | 114 |
| DH421065 | 6.5 | 8 | 76 | 114 |
| DH421066 | 6.6 | 8 | 76 | 114 |
| DH421067 | 6.7 | 8 | 76 | 114 |
| DH421068 | 6.8 | 8 | 76 | 114 |
| DH421069 | 6.9 | 8 | 76 | 114 |
| DH421070 | 7.0 | 8 | 76 | 114 |
| DH421071 | 7.1 | 8 | 76 | 114 |
| DH421072 | 7.2 | 8 | 76 | 114 |
| DH421073 | 7.3 | 8 | 76 | 114 |
| DH421074 | 7.4 | 8 | 76 | 114 |
| DH421075 | 7.5 | 8 | 76 | 114 |
| DH421076 | 7.6 | 8 | 76 | 114 |
| DH421077 | 7.7 | 8 | 76 | 114 |
| DH421078 | 7.8 | 8 | 76 | 114 |
| DH421079 | 7.9 | 8 | 76 | 114 |
| DH421080 | 8.0 | 8 | 76 | 114 |
| DH421081 | 8.1 | 10 | 95 | 142 |
| DH421082 | 8.2 | 10 | 95 | 142 |
| DH421083 | 8.3 | 10 | 95 | 142 |
| DH421084 | 8.4 | 10 | 95 | 142 |
| DH421085 | 8.5 | 10 | 95 | 142 |

▶ 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 | |
| HRc | 13 | 25 | 28 | 32 | 32 | 10 | 29 | 32 | 38 | 38 | 15 | 35 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 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 | 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 SOLID CARBIDE
DREAM DRILLS GENERAL with COOLANT HOLES (8XD)

SERIES

DH421

- ▶ 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



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar TiAlN p.61

EXTRA LONG
8 × D

Unit : mm

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------------|----------------|--------------|----------------|
| TiAlN | D1 | D2 | L1 | L2 |
| DH421086 | 8.6 | 10 | 95 | 142 |
| DH421087 | 8.7 | 10 | 95 | 142 |
| DH421088 | 8.8 | 10 | 95 | 142 |
| DH421089 | 8.9 | 10 | 95 | 142 |
| DH421090 | 9.0 | 10 | 95 | 142 |
| DH421091 | 9.1 | 10 | 95 | 142 |
| DH421092 | 9.2 | 10 | 95 | 142 |
| DH421093 | 9.3 | 10 | 95 | 142 |
| DH421094 | 9.4 | 10 | 95 | 142 |
| DH421095 | 9.5 | 10 | 95 | 142 |
| DH421096 | 9.6 | 10 | 95 | 142 |
| DH421097 | 9.7 | 10 | 95 | 142 |
| DH421098 | 9.8 | 10 | 95 | 142 |
| DH421099 | 9.9 | 10 | 95 | 142 |
| DH421100 | 10.0 | 10 | 95 | 142 |
| DH421101 | 10.1 | 12 | 114 | 162 |
| DH421102 | 10.2 | 12 | 114 | 162 |
| DH421103 | 10.3 | 12 | 114 | 162 |
| DH421104 | 10.4 | 12 | 114 | 162 |
| DH421105 | 10.5 | 12 | 114 | 162 |
| DH421106 | 10.6 | 12 | 114 | 162 |
| DH421107 | 10.7 | 12 | 114 | 162 |
| DH421108 | 10.8 | 12 | 114 | 162 |
| DH421109 | 10.9 | 12 | 114 | 162 |
| DH421110 | 11.0 | 12 | 114 | 162 |
| DH421111 | 11.1 | 12 | 114 | 162 |
| DH421112 | 11.2 | 12 | 114 | 162 |
| DH421113 | 11.3 | 12 | 114 | 162 |

Unit : mm

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------------|----------------|--------------|----------------|
| TiAlN | D1 | D2 | L1 | L2 |
| DH421114 | 11.4 | 12 | 114 | 162 |
| DH421115 | 11.5 | 12 | 114 | 162 |
| DH421116 | 11.6 | 12 | 114 | 162 |
| DH421117 | 11.7 | 12 | 114 | 162 |
| DH421118 | 11.8 | 12 | 114 | 162 |
| DH421119 | 11.9 | 12 | 114 | 162 |
| DH421120 | 12.0 | 12 | 114 | 162 |
| DH421125 | 12.5 | 14 | 133 | 178 |
| DH421130 | 13.0 | 14 | 133 | 178 |
| DH421135 | 13.5 | 14 | 133 | 178 |
| DH421140 | 14.0 | 14 | 133 | 178 |

▶ 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 | |
| HRc | 13 | 25 | 28 | 32 | 32 | 10 | 29 | 32 | 38 | 38 | 15 | 35 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 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 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

DH404, DH423, DH443, DH424, DH444 SERIES without COOLANT HOLES

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

| ISO | VDI 3323 | Material Description | Vc | Parameter | Drill Diameter (mm) | | | | | | |
|-----|------------|------------------------------------|----------------|-----------|---------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | | | | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | |
| P | 2, 3, 4 | Non-alloy steel | 70 | RPM | 22280 | 11140 | 10610 | 7960 | 6370 | 5310 | |
| | | | | FEED | 0.03-0.05 | 0.05-0.07 | 0.06-0.12 | 0.08-0.14 | 0.14-0.20 | 0.16-0.22 | |
| | | | | RPM | 22280 | 11140 | 10610 | 7960 | 6370 | 5310 | |
| | 5, 6, 7, 8 | Low alloy steel | 60 | RPM | 22280 | 11140 | 10610 | 7960 | 6370 | 5310 | |
| | | | | FEED | 0.03-0.05 | 0.05-0.07 | 0.06-0.12 | 0.08-0.14 | 0.14-0.20 | 0.16-0.22 | |
| | | | | RPM | 19100 | 9550 | 8490 | 6370 | 5090 | 4240 | |
| | | | | FEED | 0.03-0.05 | 0.05-0.07 | 0.04-0.10 | 0.07-0.13 | 0.10-0.16 | 0.12-0.18 | |
| | 9, 10, 11 | High alloyed steel, and tool steel | 30 | RPM | 19100 | 9550 | 8490 | 6370 | 5090 | 4240 | |
| | | | | FEED | 0.02-0.04 | 0.03-0.05 | 0.04-0.10 | 0.07-0.13 | 0.10-0.16 | 0.12-0.18 | |
| | | | | RPM | 9550 | 4770 | 4240 | 3180 | 2550 | 2120 | |
| | | | | FEED | 0.02-0.04 | 0.03-0.05 | 0.03-0.08 | 0.05-0.11 | 0.08-0.14 | 0.10-0.16 | |
| M | 12, 13 | Stainless steel | 50 | RPM | 15920 | 7960 | 7430 | 5570 | 4460 | 3710 | |
| | | | | FEED | 0.03-0.05 | 0.05-0.07 | 0.06-0.12 | 0.08-0.14 | 0.14-0.20 | 0.16-0.22 | |
| K | 15, 16 | Grey cast iron | 70 | RPM | 22280 | 11140 | 10610 | 7960 | 6370 | 5310 | |
| | | | | FEED | 0.04-0.06 | 0.04-0.06 | 0.08-0.14 | 0.12-0.18 | 0.15-0.22 | 0.20-0.26 | |
| | 17, 18 | Nodular cast iron | 50 | RPM | 22280 | 11140 | 10610 | 7960 | 6370 | 5310 | |
| | | | | FEED | 0.04-0.06 | 0.04-0.06 | 0.06-0.12 | 0.08-0.14 | 0.14-0.20 | 0.16-0.22 | |
| | 19, 20 | Malleable cast iron | 60 | RPM | 19100 | 9550 | 8490 | 6370 | 5090 | 4240 | |
| | | | | FEED | 0.04-0.06 | 0.04-0.06 | 0.08-0.14 | 0.12-0.18 | 0.15-0.22 | 0.20-0.26 | |
| | H | 38 | Hardened steel | 20 | RPM | 6370 | 3180 | 2650 | 1990 | 1590 | 1330 |
| | | | | | FEED | 0.01-0.02 | 0.01-0.03 | 0.01-0.03 | 0.01-0.04 | 0.02-0.05 | 0.03-0.06 |

| 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, 3, 4 | Non-alloy steel | 100 | RPM | 3980 | 3180 | 2650 | 2270 | 1990 | 1770 | 1590 | |
| | | | | FEED | 0.18-0.24 | 0.19-0.27 | 0.21-0.29 | 0.23-0.31 | 0.25-0.33 | 0.28-0.38 | 0.30-0.40 | |
| | | | | RPM | 3980 | 3180 | 2650 | 2270 | 1990 | 1770 | 1590 | |
| | 5, 6, 7, 8 | Low alloy steel | 80 | RPM | 3980 | 3180 | 2650 | 2270 | 1990 | 1770 | 1590 | |
| | | | | FEED | 0.14-0.20 | 0.15-0.23 | 0.17-0.25 | 0.18-0.26 | 0.19-0.27 | 0.20-0.30 | 0.22-0.32 | |
| | | | | RPM | 3180 | 2550 | 2120 | 1820 | 1590 | 1410 | 1270 | |
| | | | | FEED | 0.14-0.20 | 0.15-0.23 | 0.17-0.25 | 0.18-0.26 | 0.19-0.27 | 0.20-0.30 | 0.22-0.32 | |
| | 9, 10, 11 | High alloyed steel, and tool steel | 40 | RPM | 1590 | 1270 | 1060 | 910 | 800 | 710 | 640 | |
| | | | | FEED | 0.12-0.18 | 0.13-0.19 | 0.14-0.20 | 0.15-0.21 | 0.16-0.22 | 0.17-0.25 | 0.18-0.28 | |
| | | | | RPM | 2790 | 2230 | 1860 | 1590 | 1390 | 1240 | 1110 | |
| | | | | FEED | 0.14-0.20 | 0.15-0.23 | 0.17-0.25 | 0.18-0.26 | 0.19-0.27 | 0.20-0.30 | 0.22-0.32 | |
| M | 12, 13 | Stainless steel | 70 | RPM | 2790 | 2230 | 1860 | 1590 | 1390 | 1240 | 1110 | |
| | | | | FEED | 0.18-0.24 | 0.19-0.27 | 0.21-0.29 | 0.23-0.31 | 0.25-0.33 | 0.28-0.38 | 0.30-0.40 | |
| K | 15, 16 | Grey cast iron | 100 | RPM | 3980 | 3180 | 2650 | 2270 | 1990 | 1770 | 1590 | |
| | | | | FEED | 0.22-0.28 | 0.25-0.33 | 0.27-0.35 | 0.29-0.37 | 0.31-0.39 | 0.32-0.42 | 0.34-0.44 | |
| | 17, 18 | Nodular cast iron | 70 | RPM | 3980 | 3180 | 2650 | 2270 | 1990 | 1770 | 1590 | |
| | | | | FEED | 0.18-0.24 | 0.19-0.27 | 0.21-0.29 | 0.23-0.31 | 0.25-0.33 | 0.28-0.38 | 0.30-0.40 | |
| | 19, 20 | Malleable cast iron | 80 | RPM | 3180 | 2550 | 2120 | 1820 | 1590 | 1410 | 1270 | |
| | | | | FEED | 0.22-0.28 | 0.25-0.33 | 0.27-0.35 | 0.29-0.37 | 0.31-0.39 | 0.32-0.42 | 0.34-0.44 | |
| | H | 38 | Hardened steel | 25 | RPM | 990 | 800 | 660 | 570 | 500 | 440 | 400 |
| | | | | | FEED | 0.03-0.06 | 0.04-0.07 | 0.04-0.08 | 0.05-0.09 | 0.05-0.09 | 0.05-0.10 | 0.05-0.10 |

▶ Recommend to reduce the feed rate as following Feed 100% : DH404(3×D), DH423(3×D), DH424(5×D)

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) | | | | | | |
|-----|------------|------------------------------------|----------------|-----------|---------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | | | | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | |
| P | 2, 3, 4 | Non-alloy steel | 80 | RPM | 25460 | 12730 | 11670 | 8750 | 7000 | 5840 | |
| | | | | FEED | 0.03-0.05 | 0.05-0.07 | 0.06-0.12 | 0.08-0.14 | 0.14-0.20 | 0.16-0.22 | |
| | | | | RPM | 25460 | 12730 | 11670 | 8750 | 7000 | 5840 | |
| | 5, 6, 7, 8 | Low alloy steel | 70 | RPM | 25460 | 12730 | 11670 | 8750 | 7000 | 5840 | |
| | | | | FEED | 0.03-0.05 | 0.05-0.07 | 0.06-0.12 | 0.08-0.14 | 0.14-0.20 | 0.16-0.22 | |
| | | | | RPM | 22280 | 11140 | 9550 | 7160 | 5730 | 4770 | |
| | | | | FEED | 0.03-0.05 | 0.05-0.07 | 0.04-0.10 | 0.07-0.13 | 0.10-0.16 | 0.12-0.18 | |
| | 9, 10, 11 | High alloyed steel, and tool steel | 60 | RPM | 22280 | 11140 | 9550 | 7160 | 5730 | 4770 | |
| | | | | FEED | 0.03-0.05 | 0.05-0.07 | 0.04-0.10 | 0.07-0.13 | 0.10-0.16 | 0.12-0.18 | |
| | | | | RPM | 12730 | 6370 | 5310 | 3980 | 3180 | 2650 | |
| | | | | FEED | 0.02-0.04 | 0.03-0.05 | 0.03-0.08 | 0.05-0.11 | 0.08-0.14 | 0.10-0.16 | |
| M | 12, 13 | Stainless steel | 60 | RPM | 19100 | 9550 | 8490 | 6370 | 5090 | 4240 | |
| | | | | FEED | 0.03-0.05 | 0.05-0.07 | 0.04-0.10 | 0.07-0.13 | 0.10-0.16 | 0.12-0.18 | |
| K | 15, 16 | Grey cast iron | 80 | RPM | 25460 | 12730 | 11670 | 8750 | 7000 | 5840 | |
| | | | | FEED | 0.04-0.06 | 0.04-0.06 | 0.08-0.14 | 0.12-0.18 | 0.15-0.22 | 0.20-0.26 | |
| | 17, 18 | Nodular cast iron | 90 | RPM | 28650 | 14320 | 10080 | 7560 | 6050 | 5040 | |
| | | | | FEED | 0.04-0.06 | 0.04-0.06 | 0.06-0.12 | 0.08-0.14 | 0.14-0.20 | 0.16-0.22 | |
| | 19, 20 | Malleable cast iron | 70 | RPM | 19100 | 9550 | 8490 | 6370 | 5090 | 4240 | |
| | | | | FEED | 0.04-0.06 | 0.04-0.06 | 0.06-0.12 | 0.08-0.14 | 0.14-0.20 | 0.16-0.22 | |
| | H | 38 | Hardened steel | 25 | RPM | 7960 | 3980 | 3180 | 2390 | 1910 | 1590 |
| | | | | | FEED | 0.01-0.02 | 0.01-0.03 | 0.01-0.03 | 0.01-0.04 | 0.02-0.05 | 0.03-0.06 |

| 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, 3, 4 | Non-alloy steel | 110 | RPM | 4380 | 3500 | 2920 | 2500 | 2190 | 1950 | 1750 | |
| | | | | FEED | 0.18-0.24 | 0.19-0.27 | 0.21-0.29 | 0.23-0.31 | 0.25-0.33 | 0.28-0.38 | 0.30-0.40 | |
| | | | | RPM | 4380 | 3500 | 2920 | 2500 | 2190 | 1950 | 1750 | |
| | 5, 6, 7, 8 | Low alloy steel | 90 | RPM | 4380 | 3500 | 2920 | 2500 | 2190 | 1950 | 1750 | |
| | | | | FEED | 0.14-0.20 | 0.15-0.23 | 0.17-0.25 | 0.18-0.26 | 0.19-0.27 | 0.20-0.30 | 0.22-0.32 | |
| | | | | RPM | 3580 | 2860 | 2390 | 2050 | 1790 | 1590 | 1430 | |
| | | | | FEED | 0.14-0.20 | 0.15-0.23 | 0.17-0.25 | 0.18-0.26 | 0.19-0.27 | 0.20-0.30 | 0.22-0.32 | |
| | 9, 10, 11 | High alloyed steel, and tool steel | 50 | RPM | 4380 | 3500 | 2920 | 2500 | 2190 | 1950 | 1750 | |
| | | | | FEED | 0.18-0.24 | 0.19-0.27 | 0.21-0.29 | 0.23-0.31 | 0.25-0.33 | 0.28-0.38 | 0.30-0.40 | |
| | | | | RPM | 3580 | 2860 | 2390 | 2050 | 1790 | 1590 | 1430 | |
| | | | | FEED | 0.14-0.20 | 0.15-0.23 | 0.17-0.25 | 0.18-0.26 | 0.19-0.27 | 0.20-0.30 | 0.22-0.32 | |
| M | 12, 13 | Stainless steel | 80 | RPM | 1990 | 1590 | 1330 | 1140 | 990 | 880 | 800 | |
| | | | | FEED | 0.12-0.18 | 0.13-0.19 | 0.14-0.20 | 0.15-0.21 | 0.16-0.22 | 0.17-0.25 | 0.18-0.28 | |
| K | 15, 16 | Grey cast iron | 110 | RPM | 3180 | 2550 | 2120 | 1820 | 1590 | 1410 | 1270 | |
| | | | | FEED | 0.14-0.20 | 0.15-0.23 | 0.17-0.25 | 0.18-0.26 | 0.19-0.27 | 0.20-0.30 | 0.22-0.32 | |
| | 17, 18 | Nodular cast iron | 120 | RPM | 1790 | 1430 | 1190 | 1020 | 900 | 800 | 720 | |
| | | | | FEED | 0.12-0.18 | 0.13-0.19 | 0.14-0.20 | 0.15-0.21 | 0.16-0.22 | 0.17-0.25 | 0.18-0.28 | |
| | 19, 20 | Malleable cast iron | 90 | RPM | 3180 | 2550 | 2120 | 1820 | 1590 | 1410 | 1270 | |
| | | | | FEED | 0.18-0.24 | 0.19-0.27 | 0.21-0.29 | 0.23-0.31 | 0.25-0.33 | 0.28-0.38 | 0.30-0.40 | |
| | H | 38 | Hardened steel | 30 | RPM | 4380 | 3500 | 2920 | 2500 | 2190 | 1950 | 1750 |
| | | | | | FEED | 0.22-0.28 | 0.25-0.33 | 0.27-0.35 | 0.29-0.37 | 0.31-0.39 | 0.32-0.42 | 0.34-0.44 |

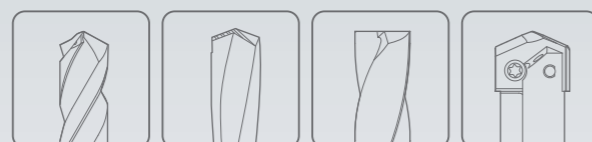
▶ Recommend to reduce the feed rate as following Feed 100% : DH406(3×D), DH408(5×D) Feed 75% : DH421(8×D)



Leading Through Innovation



Global Cutting Tool Leader **YG-1**



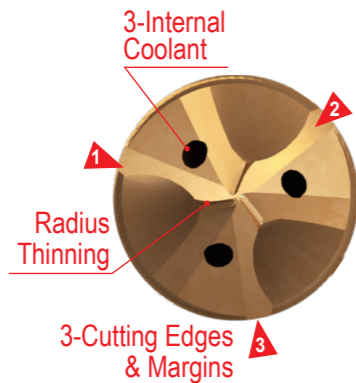
DREAM DRILLS

SOLID CARBIDE

DREAM DRILLS -HIGH FEED

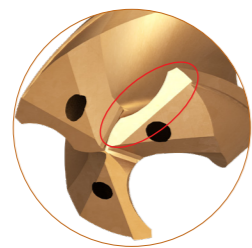
- 1.5 to 2 Times Faster Feeding Speed than 2-Flute Drill
For Carbon Steels, Alloy Steels(up to HRc35) and Cast Iron

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

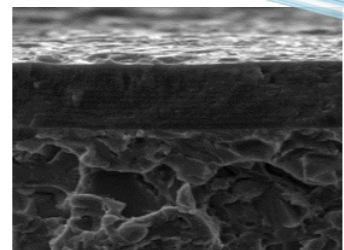
3-Slots on end of shank for smooth and consistent coolant supply



H - Coating

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

- Higher worn-out resistance and Lower friction
- Higher cutting speed and feed
- Improved drill hole quality

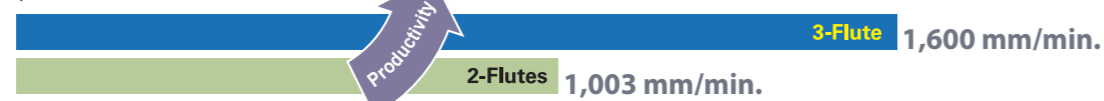


Productivity (Carbon Steel)

Ø6.0 5XD



Ø10.0 5XD



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

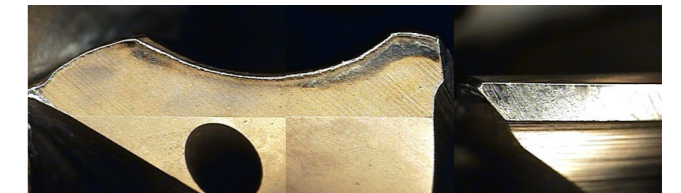
CASE STUDY

► SOLID CARBIDE DREAM DRILLS - High Feed with Coolant Holes

| CUTTING CONDITION | |
|-------------------|---|
| Tool | DGR495100 |
| Size(mm) | 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 |

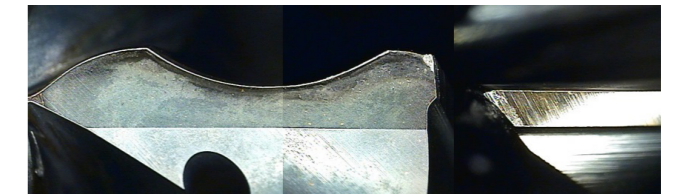


Total Drilling 330 Holes



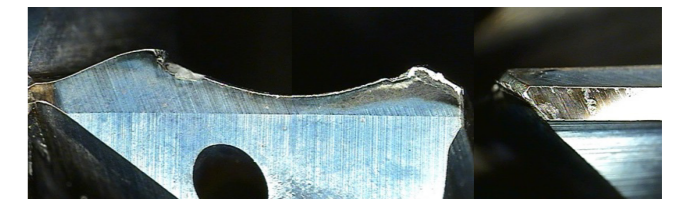
Competitor A

Total Drilling 330 Holes



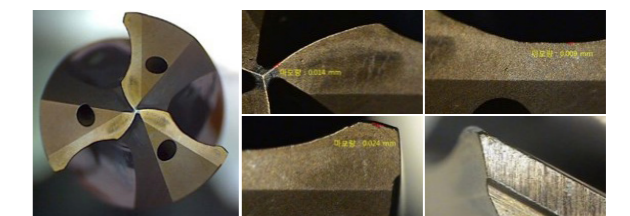
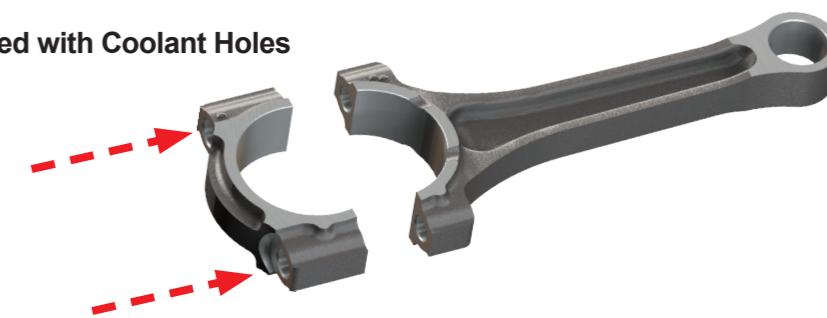
Competitor B

Total Drilling 330 Holes

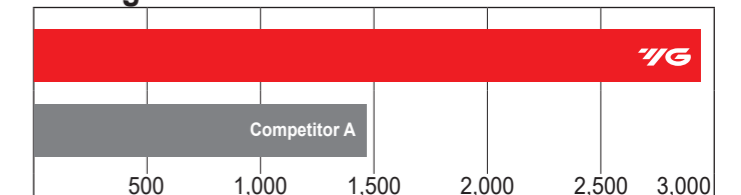


► SOLID CARBIDE DREAM DRILLS - High Feed with Coolant Holes

| CUTTING CONDITION | |
|-------------------|---------------------------------|
| Tool | DGR495080 |
| Size(mm) | 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 |



Drilling Holes

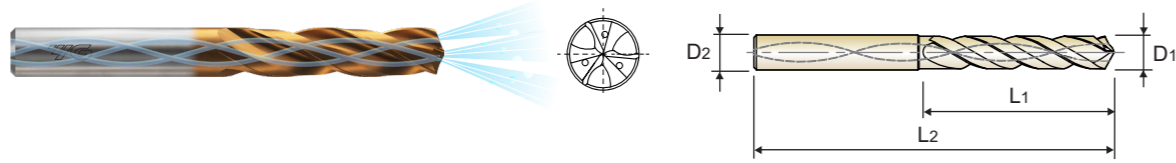


H-COATED SOLID CARBIDE
DREAM DRILLS HIGH FEED with COOLANT HOLES (3XD)

SERIES

DGR493

- ▶ Drilling for Carbon Steels, Alloy Steels(-HRC35) and Cast Iron
- ▶ Higher productivity due to 1.5 to 2 times faster feeding speed than 2-flute drill
- ▶ Multi-Layer coating delivers much better productivity and reliability
- ▶ Self centering and chip breaking by R-thinning and coolant holes



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar H Coating p.70

SHORT
3 × D

| ED P No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length | |
|-----------|-------------------|-------------------|-----------------|----------------|--|
| | | | | L2 | |
| DGR493050 | 5.0 | 6 | 28 | 66 | |
| DGR493051 | 5.1 | 6 | 28 | 66 | |
| DGR493052 | 5.2 | 6 | 28 | 66 | |
| DGR493053 | 5.3 | 6 | 28 | 66 | |
| DGR493054 | 5.4 | 6 | 28 | 66 | |
| DGR493055 | 5.5 | 6 | 28 | 66 | |
| DGR493056 | 5.6 | 6 | 28 | 66 | |
| DGR493057 | 5.7 | 6 | 28 | 66 | |
| DGR493058 | 5.8 | 6 | 28 | 66 | |
| DGR493059 | 5.9 | 6 | 28 | 66 | |
| DGR493060 | 6.0 | 6 | 28 | 66 | |
| DGR493061 | 6.1 | 8 | 34 | 79 | |
| DGR493062 | 6.2 | 8 | 34 | 79 | |
| DGR493063 | 6.3 | 8 | 34 | 79 | |
| DGR493064 | 6.4 | 8 | 34 | 79 | |
| DGR493065 | 6.5 | 8 | 34 | 79 | |
| DGR493066 | 6.6 | 8 | 34 | 79 | |
| DGR493067 | 6.7 | 8 | 34 | 79 | |
| DGR493068 | 6.8 | 8 | 34 | 79 | |
| DGR493069 | 6.9 | 8 | 34 | 79 | |
| DGR493070 | 7.0 | 8 | 34 | 79 | |
| DGR493071 | 7.1 | 8 | 41 | 79 | |
| DGR493072 | 7.2 | 8 | 41 | 79 | |
| DGR493073 | 7.3 | 8 | 41 | 79 | |
| DGR493074 | 7.4 | 8 | 41 | 79 | |
| DGR493075 | 7.5 | 8 | 41 | 79 | |
| DGR493076 | 7.6 | 8 | 41 | 79 | |
| DGR493077 | 7.7 | 8 | 41 | 79 | |

Unit : mm

| ED P No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length | |
|-----------|-------------------|-------------------|-----------------|----------------|--|
| | | | | L2 | |
| DGR493078 | 7.8 | 8 | 41 | 79 | |
| DGR493079 | 7.9 | 8 | 41 | 79 | |
| DGR493080 | 8.0 | 8 | 41 | 79 | |
| DGR493081 | 8.1 | 10 | 47 | 89 | |
| DGR493082 | 8.2 | 10 | 47 | 89 | |
| DGR493083 | 8.3 | 10 | 47 | 89 | |
| DGR493084 | 8.4 | 10 | 47 | 89 | |
| DGR493085 | 8.5 | 10 | 47 | 89 | |
| DGR493086 | 8.6 | 10 | 47 | 89 | |
| DGR493087 | 8.7 | 10 | 47 | 89 | |
| DGR493088 | 8.8 | 10 | 47 | 89 | |
| DGR493089 | 8.9 | 10 | 47 | 89 | |
| DGR493090 | 9.0 | 10 | 47 | 89 | |
| DGR493091 | 9.1 | 10 | 47 | 89 | |
| DGR493092 | 9.2 | 10 | 47 | 89 | |
| DGR493093 | 9.3 | 10 | 47 | 89 | |
| DGR493094 | 9.4 | 10 | 47 | 89 | |
| DGR493095 | 9.5 | 10 | 47 | 89 | |
| DGR493096 | 9.6 | 10 | 47 | 89 | |
| DGR493097 | 9.7 | 10 | 47 | 89 | |
| DGR493098 | 9.8 | 10 | 47 | 89 | |
| DGR493099 | 9.9 | 10 | 47 | 89 | |
| DGR493100 | 10.0 | 10 | 47 | 89 | |
| DGR493101 | 10.1 | 12 | 55 | 102 | |
| DGR493102 | 10.2 | 12 | 55 | 102 | |
| DGR493103 | 10.3 | 12 | 55 | 102 | |
| DGR493104 | 10.4 | 12 | 55 | 102 | |
| DGR493105 | 10.5 | 12 | 55 | 102 | |

▶ 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 | 21 |
| HRC | 13 | 25 | 28 | 32 | 30 | 29 | 32 | 38 | 35 | 30 | 25 | 23 | 23 | 10 | 10 | 26 | 3 | 25 | 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 | ◎ | ◎ | ◎ | ◎ | ○ | ◎ | ◎ | ◎ | ○ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ○ | ◎ | ◎ | ◎ | ◎ | ◎ |

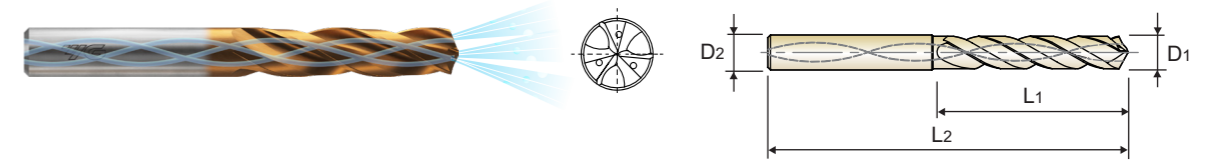
| ISO Material Description | N | | | | | | | | | | S | | | | | | H | | | | | |
|--------------------------|------------------------|-----|------------------------|----|--|-----|------------------------|-----|-----------------------------|----|-----|-----|-----|-----|-----------------|----------------|-------------------|--------------------|-----|-----|-----|--|
| | 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 | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | 55 | 60 | 60 | 42 | 55 | 55 | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 | |
| Recommended | | | | | | | | | | | | | | | | | | | | | | |

H-COATED SOLID CARBIDE
DREAM DRILLS HIGH FEED with COOLANT HOLES (3XD)

SERIES

DGR493

- ▶ Drilling for Carbon Steels, Alloy Steels(-HRC35) and Cast Iron
- ▶ Higher productivity due to 1.5 to 2 times faster feeding speed than 2-flute drill
- ▶ Multi-Layer coating delivers much better productivity and reliability
- ▶ Self centering and chip breaking by R-thinning and coolant holes



DIN 6537 CARBIDE 30° h6 m7 140° 20 bar H Coating p.70

SHORT
3 × D

Unit : mm

| ED P No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length | |
|-----------|-------------------|-------------------|-----------------|----------------|--|
| | | | | L2 | |
| DGR493106 | 10.6 | 12 | 55 | 102 | |
| DGR493107 | 10.7 | 12 | 55 | 102 | |
| DGR493108 | 10.8 | 12 | 55 | 102 | |
| DGR493109 | 10.9 | 12 | 55 | 102 | |
| DGR493110 | 11.0 | 12 | 55 | 102 | |
| DGR493111 | 11.1 | 12 | 55 | 102 | |
| DGR493112 | 11.2 | 12 | 55 | 102 | |
| DGR493113 | 11.3 | 12 | 55 | 102 | |
| DGR493114 | 11.4 | 12 | 55 | 102 | |
| DGR493115 | 11.5 | 12 | 55 | 102 | |
| DGR493116 | 11.6 | 12 | 55 | 102 | |
| DGR493117 | 11.7 | 12 | 55 | 102 | |
| DGR493118 | 11.8 | 12 | 55 | 102 | |
| DGR493119 | 11.9 | 12 | 55 | 102 | |
| DGR493120 | 12.0 | 12 | 55 | 102 | |
| DGR493125 | 12.5 | 14 | 60 | 107 | |
| DGR493130 | 13.0 | 14 | 60 | 107 | |
| DGR493135 | 13.5 | 14 | 60 | 107 | |
| DGR493140 | 14.0 | 14 | 60 | 107 | |
| DGR493145 | 14.5 | 16 | 65 | 115 | |
| DGR493150 | 15.0 | 16 | 65 | 115 | |
| DGR493155 | 15.5 | 16 | 65 | 115 | |
| DGR493160 | 16.0 | 16 | 65 | 115 | |
| DGR493165 | 16.5 | 18 | 73 | 123 | |
| DGR493170 | 17.0 | 18 | 73 | 123 | |
| DGR493175 | 17.5 | 18 | 73 | 123 | |
| DGR493180 | 18.0 | 18 | 73 | 123 | |
| DGR493185 | 18.5 | 20 | 79 | 131 | |

Unit : mm

| ED P No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length | |
|-----------|-------------------|-------------------|-----------------|----------------|--|
| | | | | L2 | |
| DGR493190 | 19.0 | 20 | 79 | 131 | |
| DGR493195 | 19.5 | 20 | 79 | 131 | |
| DGR493200 | 20.0 | 20 | 79 | 131 | |

▶ Other shank types are available on your request.

◎ : 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 | 21 |
| HRC | 13 | 25 | 28 | 32 | 30 | 29 | 32 | 38 | 35 | 30 | 25 | 23 | 23 | 10 | 10 | 26 | 3 | 25 | 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 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 | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | 55 | 60 | 60 | 42 | 55 | 55 | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 | |
| Recommended | | | | | | | | | | | | | | | | | | | | | | |

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 |
| | 3 | | 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 |
| | 4 | | 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 |
| | 5 | | 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 | 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 |
| | 7 | | 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 | | |
| 8 | 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 | | |
| 9 | 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 | 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 | | |
| 11 | 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 |
| | 16 | | 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 |
| | 17 | | 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 |
| 18 | 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 | | |
| 19 | 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 | | |
| 20 | 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 | | |

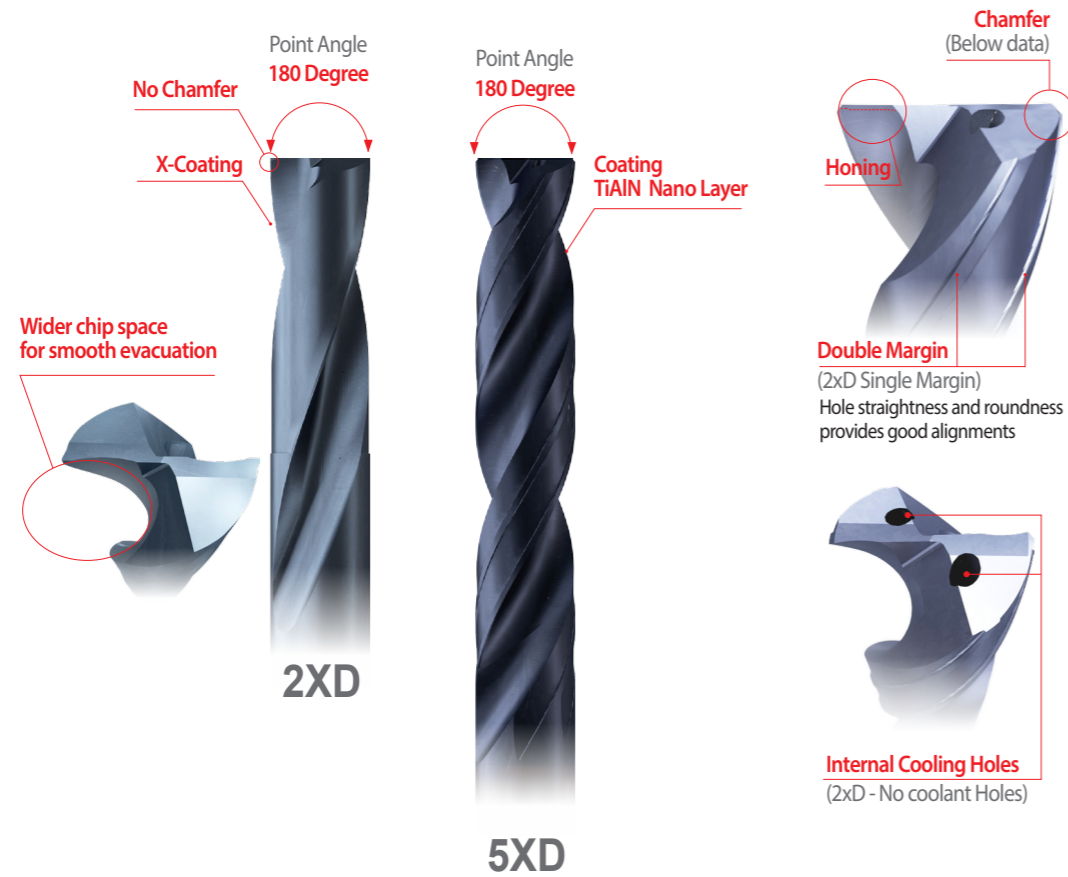


SOLID CARBIDE

**DREAM DRILLS
-FLAT BOTTOM**

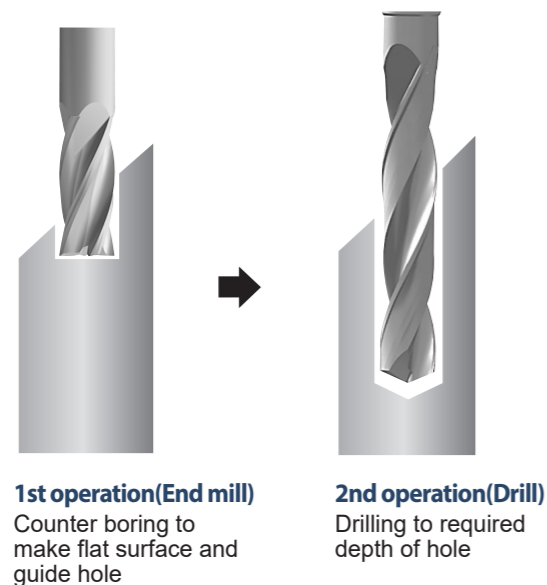
- For Holes on Various Angled Surfaces

DREAM DRILLS FLAT BOTTOM



Only One Operation for Angled Surface

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



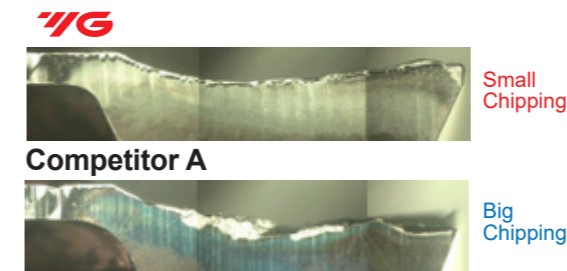
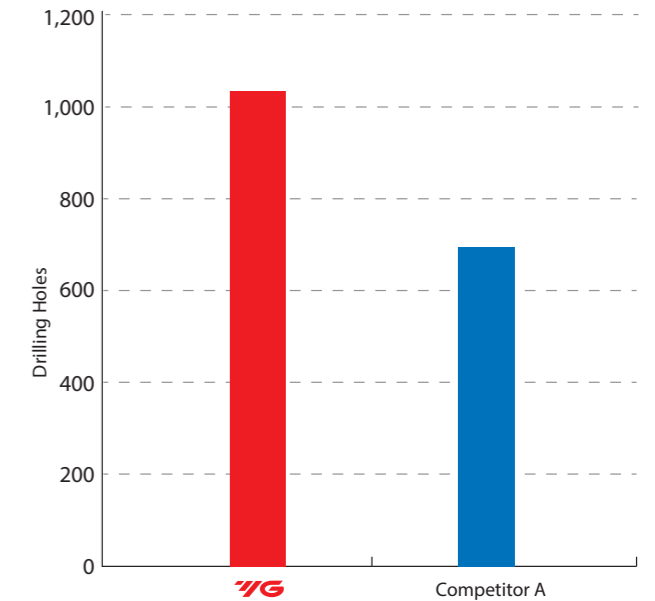
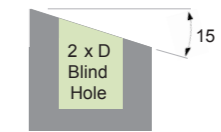
For angled surfaces, only one operation can complete the drilling with Dream Drill Flat Bottom



CASE STUDY

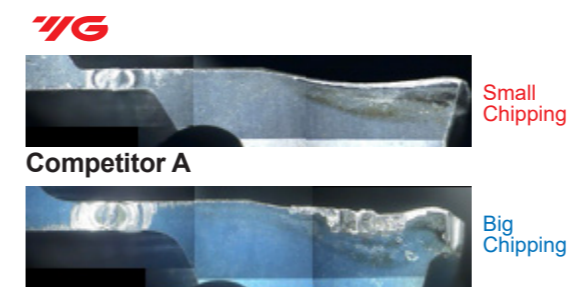
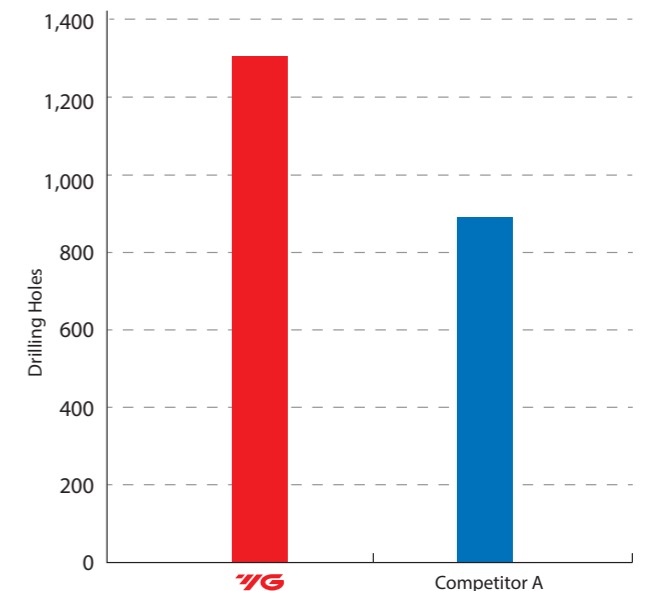
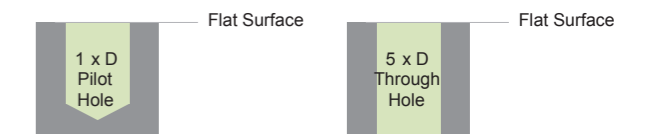
► SOLID CARBIDE DREAM DRILLS - Flat Bottom without Coolant Holes

| 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 |



► 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 |

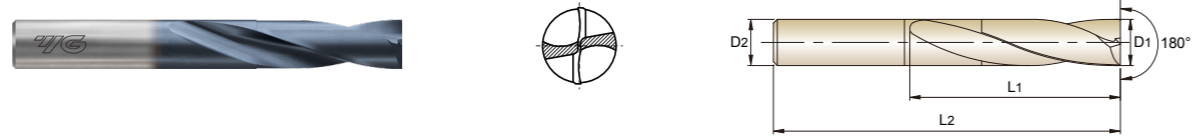


X-COATED SOLID CARBIDE
DREAM DRILLS FLAT BOTTOM without COOLANT HOLES (2XD)

SERIES

DPP447

- For holes on various angled surfaces.
- 180 degree point angle enables drilling of flat, inclined and curved surfaces.
- Optimized flute shape for excellent chip evacuation.
- High strength cutting edge to improve tool life and versatility drilling.
- For through holes, minimized burrs at entrance and exit when drilling thin plate.



SHORT
2 x D

| EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 | EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 |
|-----------|----------------------|----------------------|--------------------|----------------------|-----------|----------------------|----------------------|--------------------|----------------------|
| | | | | | | | | | |
| DPP447030 | 3.0 | 6 | 16 | 50 | DPP447058 | 5.8 | 6 | 26 | 60 |
| DPP447031 | 3.1 | 6 | 16 | 50 | DPP447059 | 5.9 | 6 | 26 | 60 |
| DPP447032 | 3.2 | 6 | 16 | 50 | DPP447060 | 6.0 | 6 | 26 | 60 |
| DPP447033 | 3.3 | 6 | 16 | 50 | DPP447061 | 6.1 | 8 | 28 | 70 |
| DPP447034 | 3.4 | 6 | 18 | 50 | DPP447062 | 6.2 | 8 | 28 | 70 |
| DPP447035 | 3.5 | 6 | 18 | 50 | DPP447063 | 6.3 | 8 | 28 | 70 |
| DPP447036 | 3.6 | 6 | 18 | 50 | DPP447064 | 6.4 | 8 | 30 | 70 |
| DPP447037 | 3.7 | 6 | 18 | 50 | DPP447065 | 6.5 | 8 | 30 | 70 |
| DPP447038 | 3.8 | 6 | 18 | 50 | DPP447066 | 6.6 | 8 | 30 | 70 |
| DPP447039 | 3.9 | 6 | 18 | 50 | DPP447067 | 6.7 | 8 | 30 | 70 |
| DPP447040 | 4.0 | 6 | 18 | 50 | DPP447068 | 6.8 | 8 | 30 | 70 |
| DPP447041 | 4.1 | 6 | 20 | 60 | DPP447069 | 6.9 | 8 | 30 | 70 |
| DPP447042 | 4.2 | 6 | 20 | 60 | DPP447070 | 7.0 | 8 | 30 | 70 |
| DPP447043 | 4.3 | 6 | 20 | 60 | DPP447071 | 7.1 | 8 | 34 | 70 |
| DPP447044 | 4.4 | 6 | 20 | 60 | DPP447072 | 7.2 | 8 | 34 | 70 |
| DPP447045 | 4.5 | 6 | 22 | 60 | DPP447073 | 7.3 | 8 | 34 | 70 |
| DPP447046 | 4.6 | 6 | 22 | 60 | DPP447074 | 7.4 | 8 | 34 | 70 |
| DPP447047 | 4.7 | 6 | 22 | 60 | DPP447075 | 7.5 | 8 | 34 | 70 |
| DPP447048 | 4.8 | 6 | 22 | 60 | DPP447076 | 7.6 | 8 | 34 | 70 |
| DPP447049 | 4.9 | 6 | 22 | 60 | DPP447077 | 7.7 | 8 | 34 | 70 |
| DPP447050 | 5.0 | 6 | 22 | 60 | DPP447078 | 7.8 | 8 | 34 | 70 |
| DPP447051 | 5.1 | 6 | 24 | 60 | DPP447079 | 7.9 | 8 | 34 | 70 |
| DPP447052 | 5.2 | 6 | 24 | 60 | DPP447080 | 8.0 | 8 | 34 | 70 |
| DPP447053 | 5.3 | 6 | 24 | 60 | DPP447081 | 8.1 | 10 | 38 | 80 |
| DPP447054 | 5.4 | 6 | 24 | 60 | DPP447082 | 8.2 | 10 | 38 | 80 |
| DPP447055 | 5.5 | 6 | 24 | 60 | DPP447083 | 8.3 | 10 | 38 | 80 |
| DPP447056 | 5.6 | 6 | 24 | 60 | DPP447084 | 8.4 | 10 | 38 | 80 |
| DPP447057 | 5.7 | 6 | 26 | 60 | DPP447085 | 8.5 | 10 | 38 | 80 |

► Other diameters and shank types are available upon 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 |
| HRC | 13 | 25 | 28 | 32 | 30 | 10 | 29 | 32 | 38 | 10 | 15 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 21 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 260 | 160 | 250 | 130 | 230 | |
| Recommended | ◎ | ◎ | ◎ | ○ | ○ | ◎ | ◎ | ◎ | ○ | ○ | ○ | ○ | ○ | ○ | ◎ | ○ | ○ | ○ | ○ | ○ |

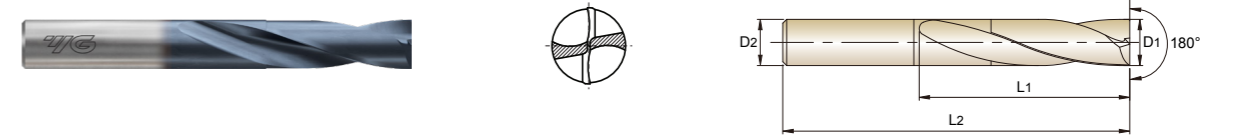
| ISO | N | | | | S | | | | | | H | | | | | | | | | | |
|----------------------|------------------------|-----|-----------------------|----|---|-----|----|------------------------|----|----|-----------------------------|----|-----------------|----------------|------------------|-------------------|--------|-----|-----|-----|-----|
| 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 CastIron | Hardened CastIron | | | | | |
| 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 | | | 15 | 30 | 25 | 38 | 34 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | ○ | ○ | | | | | | | | | | | | | | | | | | | |

X-COATED SOLID CARBIDE
DREAM DRILLS FLAT BOTTOM without COOLANT HOLES (2XD)

SERIES

DPP447

- For holes on various angled surfaces.
- 180 degree point angle enables drilling of flat, inclined and curved surfaces.
- Optimized flute shape for excellent chip evacuation.
- High strength cutting edge to improve tool life and versatility drilling.
- For through holes, minimized burrs at entrance and exit when drilling thin plate.



SHORT
2 x D

| EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 | EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 |
|-----------|----------------------|----------------------|--------------------|----------------------|-----------|----------------------|----------------------|--------------------|----------------------|
| | | | | | | | | | |
| DPP447086 | 8.6 | 10 | 38 | 80 | DPP447114 | 11.4 | 12 | 50 | 90 |
| DPP447087 | 8.7 | 10 | 40 | 80 | DPP447115 | 11.5 | 12 | 50 | 90 |
| DPP447088 | 8.8 | 10 | 40 | 80 | DPP447116 | 11.6 | 12 | 50 | 90 |
| DPP447089 | 8.9 | 10 | 40 | 80 | DPP447117 | 11.7 | 12 | 52 | 90 |
| DPP447090 | 9.0 | 10 | 40 | 80 | DPP447118 | 11.8 | 12 | 52 | 90 |
| DPP447091 | 9.1 | 10 | 42 | 80 | DPP447119 | 11.9 | 12 | 52 | 90 |
| DPP447092 | 9.2 | 10 | 42 | 80 | DPP447120 | 12.0 | 12 | 52 | 90 |
| DPP447093 | 9.3 | 10 | 42 | 80 | DPP447125 | 12.5 | 14 | 54 | 100 |
| DPP447094 | 9.4 | 10 | 42 | 80 | DPP447130 | 13.0 | 14 | 56 | 100 |
| DPP447095 | 9.5 | 10 | 42 | 80 | DPP447135 | 13.5 | 14 | 58 | 100 |
| DPP447096 | 9.6 | 10 | 42 | 80 | DPP447140 | 14.0 | 14 | 58 | 100 |
| DPP447097 | 9.7 | 10 | 45 | 80 | DPP447145 | 14.5 | 16 | 62 | 105 |
| DPP447098 | 9.8 | 10 | 45 | 80 | DPP447150 | 15.0 | 16 | 62 | 105 |
| DPP447099 | 9.9 | 10 | 45 | 80 | DPP447155 | 15.5 | 16 | 64 | 115 |
| DPP447100 | 10.0 | 10 | 45 | 80 | DPP447160 | 16.0 | 16 | 64 | 115 |
| DPP447101 | 10.1 | 12 | 46 | 90 | DPP447165 | 16.5 | 18 | 70 | 125 |
| DPP447102 | 10.2 | 12 | 46 | 90 | DPP447170 | 17.0 | 18 | 70 | 125 |
| DPP447103 | 10.3 | 12 | 46 | 90 | DPP447175 | 17.5 | 18 | 70 | 125 |
| DPP447104 | 10.4 | 12 | 48 | 90 | DPP447180 | 18.0 | 18 | 70 | 125 |
| DPP447105 | 10.5 | 12 | 48 | 90 | DPP447185 | 18.5 | 20 | 75 | 135 |
| DPP447106 | 10.6 | 12 | 48 | 90 | DPP447190 | 19.0 | 20 | 75 | 135 |
| DPP447107 | 10.7 | 12 | 48 | 90 | DPP447195 | 19.5 | 20 | 75 | 145 |
| DPP447108 | 10.8 | 12 | 48 | 90 | DPP447200 | 20.0 | 20 | 75 | 145 |
| DPP447109 | 10.9 | 12 | 48 | 90 | | | | | |
| DPP447110 | 11.0 | 12 | 48 | 90 | | | | | |
| DPP447111 | 11.1 | 12 | 50 | 90 | | | | | |
| DPP447112 | 11.2 | 12 | 50 | 90 | | | | | |
| DPP447113 | 11.3 | 12 | 50 | 90 | | | | | |

► Other diameters and shank types are available upon request.

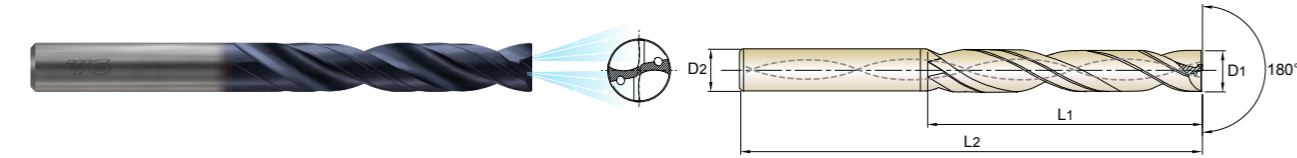
◎ : Excellent ○ : Good

| 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 |
| HRC | 13 | 25 | 28 | 32 | 30 | 10 | 29 | 32 | 38 | 10 | 15 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 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 CastIron | Hardened CastIron | | | | | |
| 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 | | | 15 | 30 | 25 | 38 | 34 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | ○ | ○ | | | | | | | | | | | | | | | | | | | |

TiAIN-COATED SOLID CARBIDE
DREAM DRILLS FLAT BOTTOM with COOLANT HOLES (5XD) SERIES
DH450

- ▶ For holes on various angled surfaces.
- ▶ 180 degree point angle enables drilling of flat, inclined and curved surfaces.
- ▶ Optimized flute shape for excellent chip evacuation.
- ▶ High strength cutting edge to improve tool life and versatility drilling.
- ▶ For through holes, minimized burrs at entrance and exit when drilling thin plate.
- ▶ Pilot Drilling for 5XD



DIN 6537
CARBIDE
30°
h6
h7
180°
20 bar
TiAIN
p.79
LONG
5 x D

| EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 | EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 |
|----------|----------------------|----------------------|--------------------|----------------------|----------|----------------------|----------------------|--------------------|----------------------|
| | | | | | | | | | |
| DH450030 | 3.0 | 6 | 28 | 66 | DH450058 | 5.8 | 6 | 44 | 82 |
| DH450031 | 3.1 | 6 | 28 | 66 | DH450059 | 5.9 | 6 | 44 | 82 |
| DH450032 | 3.2 | 6 | 28 | 66 | DH450060 | 6.0 | 6 | 44 | 82 |
| DH450033 | 3.3 | 6 | 28 | 66 | DH450061 | 6.1 | 8 | 53 | 91 |
| DH450034 | 3.4 | 6 | 28 | 66 | DH450062 | 6.2 | 8 | 53 | 91 |
| DH450035 | 3.5 | 6 | 28 | 66 | DH450063 | 6.3 | 8 | 53 | 91 |
| DH450036 | 3.6 | 6 | 28 | 66 | DH450064 | 6.4 | 8 | 53 | 91 |
| DH450037 | 3.7 | 6 | 28 | 66 | DH450065 | 6.5 | 8 | 53 | 91 |
| DH450038 | 3.8 | 6 | 36 | 74 | DH450066 | 6.6 | 8 | 53 | 91 |
| DH450039 | 3.9 | 6 | 36 | 74 | DH450067 | 6.7 | 8 | 53 | 91 |
| DH450040 | 4.0 | 6 | 36 | 74 | DH450068 | 6.8 | 8 | 53 | 91 |
| DH450041 | 4.1 | 6 | 36 | 74 | DH450069 | 6.9 | 8 | 53 | 91 |
| DH450042 | 4.2 | 6 | 36 | 74 | DH450070 | 7.0 | 8 | 53 | 91 |
| DH450043 | 4.3 | 6 | 36 | 74 | DH450071 | 7.1 | 8 | 53 | 91 |
| DH450044 | 4.4 | 6 | 36 | 74 | DH450072 | 7.2 | 8 | 53 | 91 |
| DH450045 | 4.5 | 6 | 36 | 74 | DH450073 | 7.3 | 8 | 53 | 91 |
| DH450046 | 4.6 | 6 | 36 | 74 | DH450074 | 7.4 | 8 | 53 | 91 |
| DH450047 | 4.7 | 6 | 36 | 74 | DH450075 | 7.5 | 8 | 53 | 91 |
| DH450048 | 4.8 | 6 | 44 | 82 | DH450076 | 7.6 | 8 | 53 | 91 |
| DH450049 | 4.9 | 6 | 44 | 82 | DH450077 | 7.7 | 8 | 53 | 91 |
| DH450050 | 5.0 | 6 | 44 | 82 | DH450078 | 7.8 | 8 | 53 | 91 |
| DH450051 | 5.1 | 6 | 44 | 82 | DH450079 | 7.9 | 8 | 53 | 91 |
| DH450052 | 5.2 | 6 | 44 | 82 | DH450080 | 8.0 | 8 | 53 | 91 |
| DH450053 | 5.3 | 6 | 44 | 82 | DH450081 | 8.1 | 10 | 61 | 103 |
| DH450054 | 5.4 | 6 | 44 | 82 | DH450082 | 8.2 | 10 | 61 | 103 |
| DH450055 | 5.5 | 6 | 44 | 82 | DH450083 | 8.3 | 10 | 61 | 103 |
| DH450056 | 5.6 | 6 | 44 | 82 | DH450084 | 8.4 | 10 | 61 | 103 |
| DH450057 | 5.7 | 6 | 44 | 82 | DH450085 | 8.5 | 10 | 61 | 103 |

▶ Other diameters and shank types are available upon request.

▶ NEXT PAGE

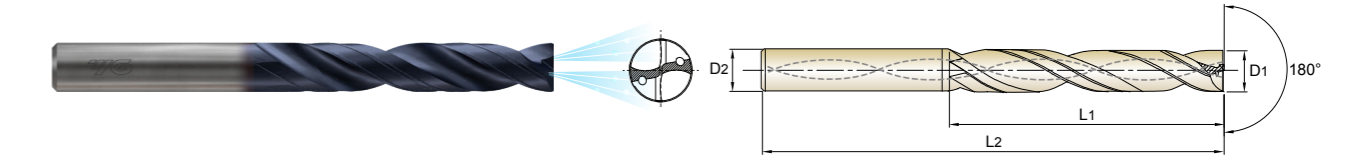
◎ : Excellent ○ : Good

| 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 |
| 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 | 35 | 38 | 40 | 42 | 45 | 48 | 50 | 52 | 55 | 58 | 60 | 62 | 65 | 68 | 70 | 72 | | |
| 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 |
| 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 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

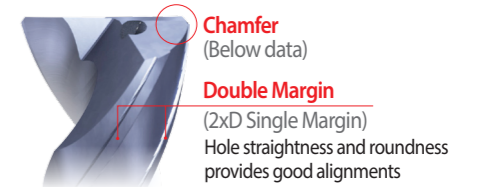
TiAIN-COATED SOLID CARBIDE
DREAM DRILLS FLAT BOTTOM with COOLANT HOLES (5XD) SERIES
DH450

- ▶ For holes on various angled surfaces.
- ▶ 180 degree point angle enables drilling of flat, inclined and curved surfaces.
- ▶ Optimized flute shape for excellent chip evacuation.
- ▶ High strength cutting edge to improve tool life and versatility drilling.
- ▶ For through holes, minimized burrs at entrance and exit when drilling thin plate.
- ▶ Pilot Drilling for 5XD



DIN 6537
CARBIDE
30°
h6
h7
180°
20 bar
TiAIN
p.79
LONG
5 x D

| EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 | EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 |
|----------|----------------------|----------------------|--------------------|----------------------|----------|----------------------|----------------------|--------------------|----------------------|
| | | | | | | | | | |
| DH450086 | 8.6 | 10 | 61 | 103 | DH450150 | 15.0 | 16 | 83 | 133 |
| DH450087 | 8.7 | 10 | 61 | 103 | DH450155 | 15.5 | 16 | 83 | 133 |
| DH450088 | 8.8 | 10 | 61 | 103 | DH450160 | 16.0 | 16 | 83 | 133 |
| DH450089 | 8.9 | 10 | 61 | 103 | DH450165 | 16.5 | 18 | 93 | 143 |
| DH450090 | 9.0 | 10 | 61 | 103 | DH450170 | 17.0 | 18 | 93 | 143 |
| DH450091 | 9.1 | 10 | 61 | 103 | DH450175 | 17.5 | 18 | 93 | 143 |
| DH450092 | 9.2 | 10 | 61 | 103 | DH450180 | 18.0 | 18 | 93 | 143 |
| DH450093 | 9.3 | 10 | 61 | 103 | DH450185 | 18.5 | 20 | 101 | 153 |
| DH450094 | 9.4 | 10 | 61 | 103 | DH450190 | 19.0 | 20 | 101 | 153 |
| DH450095 | 9.5 | 10 | 61 | 103 | DH450195 | 19.5 | 20 | 101 | 153 |
| DH450096 | 9.6 | 10 | 61 | 103 | DH450200 | 20.0 | 20 | 101 | 153 |
| DH450097 | 9.7 | 10 | 61 | 103 | | | | | |
| DH450098 | 9.8 | 10 | 61 | 103 | | | | | |
| DH450099 | 9.9 | 10 | 61 | 103 | | | | | |
| DH450100 | 10.0 | 10 | 61 | 103 | | | | | |
| DH450102 | 10.2 | 12 | 71 | 118 | | | | | |
| DH450105 | 10.5 | 12 | 71 | 118 | | | | | |
| DH450108 | 10.8 | 12 | 71 | 118 | | | | | |
| DH450110 | 11.0 | 12 | 71 | 118 | | | | | |
| DH450115 | 11.5 | 12 | 71 | 118 | | | | | |
| DH450118 | 11.8 | 12 | 71 | 118 | | | | | |
| DH450119 | 11.9 | 12 | 71 | 118 | | | | | |
| DH450120 | 12.0 | 12 | 71 | 118 | | | | | |
| DH450125 | 12.5 | 14 | 77 | 124 | | | | | |
| DH450130 | 13.0 | 14 | 77 | 124 | | | | | |
| DH450135 | 13.5 | 14 | 77 | 124 | | | | | |
| DH450140 | 14.0 | 14 | 77 | 124 | | | | | |
| DH450145 | 14.5 | 16 | 83 | 133 | | | | | |



| Drill Diameter (mm) | Corner Chamfer (mm) |
|---------------------|---------------------|
| Ø3.0 ~ Ø6.0 | 0.06 |
| Ø6.1 ~ Ø10.0 | 0.12 |
| Ø10.1 ~ Ø14.0 | 0.18 |
| Ø14.1 ~ Ø20.0 | 0.26 |

▶ Other diameters and shank types are available upon request.

◎ : 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 |
| 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 | 35 | 38 | 40 | 42 | 45 | 48 | 50 | 52 | 55 | 58 | 60 | 62 | 65 | 68 | 70 | 72 | | |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | | |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | | |

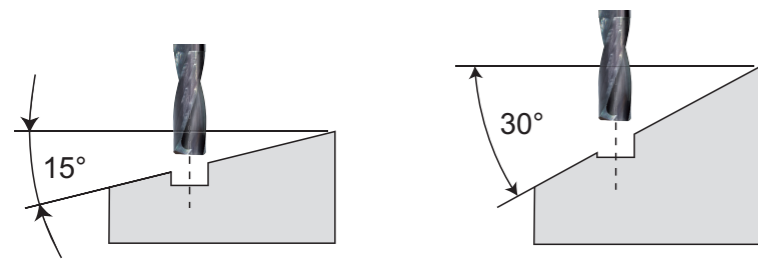
| ISO | N | | | | | | | | | | S | | | | | | H | | | | |
|-------------|------------------------|-----|-----------------------|----|-----|---|----|-----|------------------------|----|-----|-----|-----------------------------|-----|-----|-----------------|--------|-----|----------------|-------------------|--------------------|
| | 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 |
| 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 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

DPP447 SERIES

without COOLANT HOLES (2XD)

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

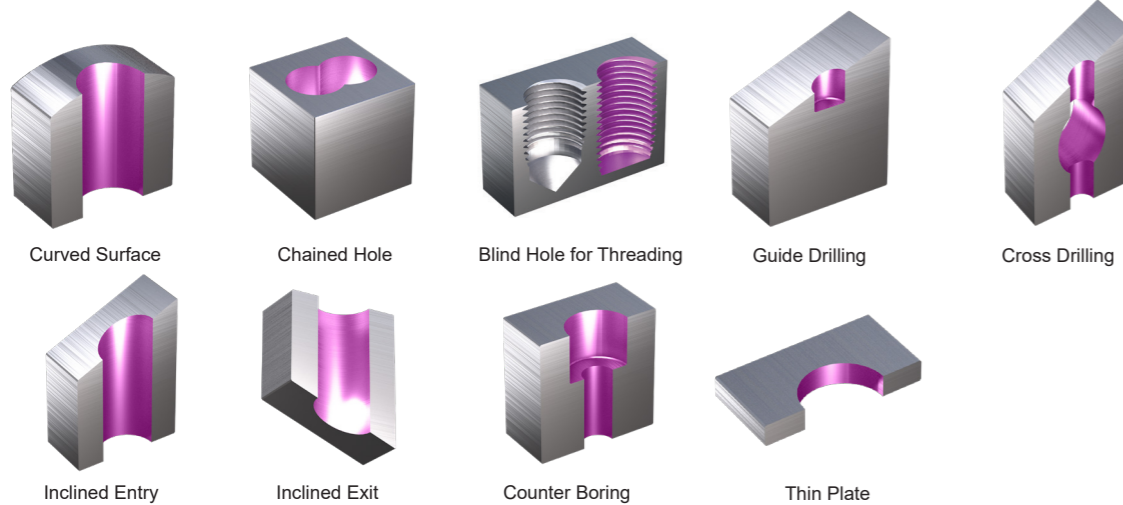
| ISO | VDI 3323 | Material Description | Vc | Parameter | Drill Diameter (mm) | | | | | | | | |
|-----|----------|----------------------|-----------|-----------|---------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | | | | 3.0 | 4.0 | 5.0 | 6.0 | 8.0 | 10.0 | 12.0 | 16.0 | 20.0 |
| P | 1 | Non-alloy steel | 80 | RPM | 8490 | 6370 | 5090 | 4240 | 3180 | 2550 | 2120 | 1590 | 1270 |
| | | | | FEED | 0.02-0.05 | 0.03-0.07 | 0.03-0.08 | 0.04-0.10 | 0.08-0.14 | 0.11-0.17 | 0.11-0.21 | 0.18-0.28 | 0.28-0.38 |
| | | | | RPM | 8490 | 6370 | 5090 | 4240 | 3180 | 2550 | 2120 | 1590 | 1270 |
| | 2 | | 80 | FEED | 0.02-0.05 | 0.03-0.07 | 0.03-0.08 | 0.04-0.10 | 0.08-0.14 | 0.11-0.17 | 0.11-0.21 | 0.18-0.28 | 0.28-0.38 |
| | | | | RPM | 7430 | 5570 | 4460 | 3710 | 2790 | 2230 | 1860 | 1390 | 1110 |
| | | | | FEED | 0.02-0.05 | 0.03-0.07 | 0.03-0.08 | 0.04-0.10 | 0.07-0.13 | 0.11-0.17 | 0.11-0.21 | 0.18-0.28 | 0.24-0.34 |
| | 3 | | 70 | RPM | 4240 | 3180 | 2550 | 2120 | 1590 | 1270 | 1060 | 800 | 640 |
| | | | | FEED | 0.02-0.05 | 0.03-0.07 | 0.03-0.08 | 0.04-0.10 | 0.07-0.13 | 0.11-0.17 | 0.11-0.21 | 0.18-0.28 | 0.24-0.34 |
| | | | | RPM | 4030 | 3020 | 2420 | 2020 | 1510 | 1210 | 1010 | 760 | 600 |
| 4 | 38 | FEED | 0.02-0.05 | 0.02-0.06 | 0.03-0.08 | 0.03-0.09 | 0.06-0.12 | 0.09-0.15 | 0.08-0.18 | 0.14-0.24 | 0.21-0.31 | | |
| | | RPM | 4770 | 3580 | 2860 | 2390 | 1790 | 1430 | 1190 | 900 | 720 | | |
| | | FEED | 0.02-0.05 | 0.03-0.07 | 0.03-0.08 | 0.04-0.10 | 0.07-0.13 | 0.11-0.17 | 0.11-0.21 | 0.18-0.28 | 0.24-0.34 | | |
| 5 | 40 | RPM | 4240 | 3180 | 2550 | 2120 | 1590 | 1270 | 1060 | 800 | 640 | | |
| | | FEED | 0.02-0.05 | 0.03-0.07 | 0.03-0.08 | 0.04-0.10 | 0.07-0.13 | 0.11-0.17 | 0.11-0.21 | 0.18-0.28 | 0.24-0.34 | | |
| | | RPM | 4030 | 3020 | 2420 | 2020 | 1510 | 1210 | 1010 | 760 | 600 | | |
| 6 | 38 | FEED | 0.02-0.05 | 0.02-0.06 | 0.03-0.08 | 0.03-0.09 | 0.06-0.12 | 0.09-0.15 | 0.08-0.18 | 0.14-0.24 | 0.21-0.31 | | |
| | | RPM | 2650 | 1990 | 1590 | 1330 | 990 | 800 | 660 | 500 | 400 | | |
| | | FEED | 0.01-0.03 | 0.02-0.04 | 0.02-0.05 | 0.03-0.06 | 0.03-0.08 | 0.05-0.10 | 0.06-0.12 | 0.06-0.16 | 0.10-0.20 | | |
| 7 | 30 | RPM | 3180 | 2390 | 1910 | 1590 | 1190 | 950 | 800 | 600 | 480 | | |
| | | FEED | 0.01-0.03 | 0.01-0.03 | 0.02-0.04 | 0.02-0.05 | 0.03-0.06 | 0.03-0.08 | 0.05-0.10 | 0.06-0.12 | 0.09-0.15 | | |
| | | RPM | 7430 | 5570 | 4460 | 3710 | 2790 | 2230 | 1860 | 1390 | 1110 | | |
| 8 | 70 | FEED | 0.02-0.05 | 0.02-0.06 | 0.03-0.08 | 0.03-0.09 | 0.06-0.12 | 0.09-0.15 | 0.08-0.18 | 0.14-0.24 | 0.20-0.30 | | |
| | | RPM | 6370 | 4770 | 3820 | 3180 | 2390 | 1910 | 1590 | 1190 | 950 | | |
| | | FEED | 0.02-0.05 | 0.02-0.05 | 0.03-0.06 | 0.03-0.07 | 0.04-0.10 | 0.07-0.13 | 0.06-0.16 | 0.11-0.21 | 0.15-0.25 | | |
| 9 | 60 | RPM | 17510 | 13130 | 10500 | 8750 | 6570 | 5250 | 4380 | 3280 | 2630 | | |
| | | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 | | |
| | | RPM | 17510 | 13130 | 10500 | 8750 | 6570 | 5250 | 4380 | 3280 | 2630 | | |
| N | 22 | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 | | |



| Surface Angle | Cutting Conditions | |
|---------------|--------------------|------|
| | RPM | FEED |
| 0° - 15° | 100% | 100% |
| 15° - 30° | 100% | 50% |
| 30° - | 70% | 30% |

- ▶ The cutting conditions are for 2xD.
- ▶ The rigid and precise machine and holder are required.
- ▶ The recommended depth of hole is measured from the highest point of the hole on drilling in inclined and angled surfaces.
- ▶ The recommended cutting conditions are those for drilling on flat and horizontal surfaces.
- ▶ Please adjust feed rate according to the above surface angle when drilling on an inclined surface.
 - The recommended feed rate 50% or lower, in case of 15°-30° of the incline angle.
 - The recommended feed rate 30% or lower and RPM 70%, in case of 30° - of the incline angle.
- ▶ Please decrease cutting speed as material hardness increases.
- ▶ Only use drilling tool. Side milling, traversing, helical milling are not usable.

VARIETY OF DRILLING



DH450 SERIES

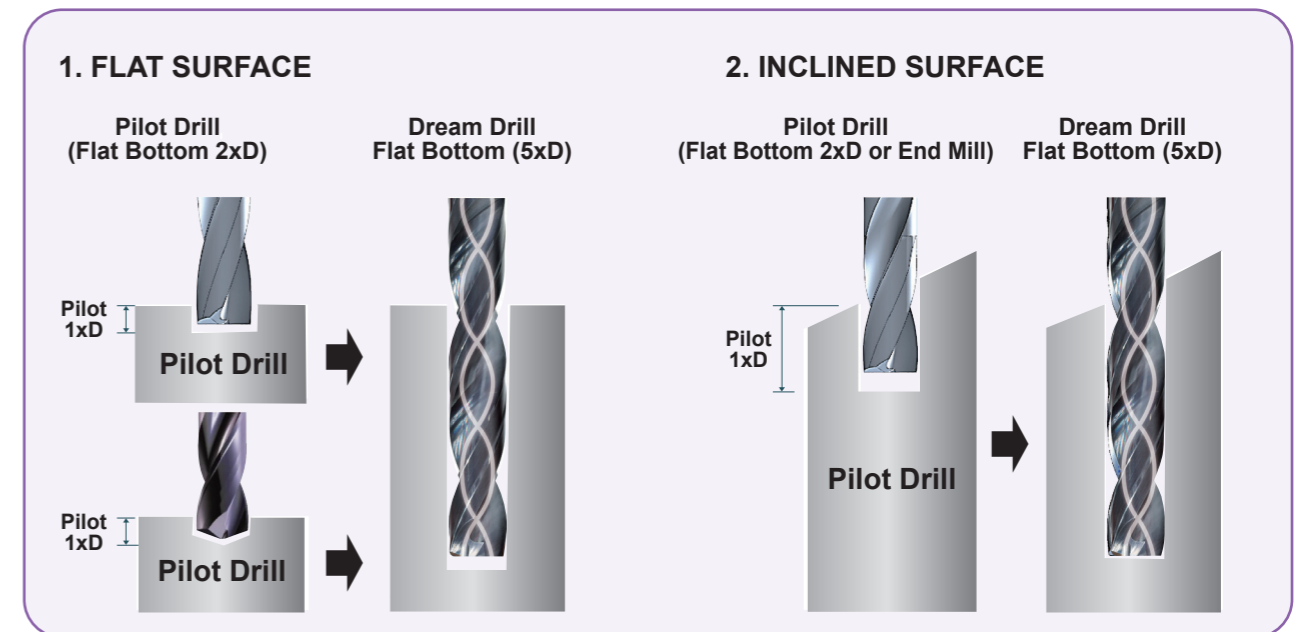
with COOLANT HOLES (5XD)

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 | 16.0 | 20.0 |
| P | 1 | Non-alloy steel | 100 | RPM | 10610 | 7960 | 6370 | 5310 | 3980 | 3180 | 2650 | 1990 | 1590 |
| | | | | FEED | 0.05-0.09 | 0.08-0.12 | 0.09-0.15 | 0.12-0.18 | 0.18-0.24 | 0.24-0.30 | 0.26-0.36 | 0.38-0.48 | 0.50-0.60 |
| | | | | RPM | 9550 | 7160 | 5730 | 4770 | 3580 | 2860 | 2390 | 1790 | 1430 |
| | 2 | | 90 | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 |
| | | | | RPM | 9550 | 7160 | 5730 | 4770 | 3580 | 2860 | 2390 | 1790 | 1430 |
| | | | | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 |
| | 3 | | 90 | RPM | 9550 | 7160 | 5730 | 4770 | 3580 | 2860 | 2390 | 1790 | 1430 |
| | | | | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 |
| | | | | RPM | 7960 | 5970 | 4770 | 3980 | 2980 | 2390 | 1990 | 1490 | 1190 |
| 4 | 75 | FEED | 0.02-0.04 | 0.03-0.06 | 0.05-0.08 | 0.05-0.09 | 0.06-0.12 | 0.09-0.15 | 0.08-0.18 | 0.14-0.24 | 0.20-0.30 | | |
| | | RPM | 7960 | 5970 | 4770 | 3980 | 2980 | 2390 | 1990 | 1490 | 1190 | | |
| | | FEED | 0.02-0.04 | 0.03-0.06 | 0.05-0.08 | 0.05-0.09 | 0.06-0.12 | 0.09-0.15 | 0.08-0.18 | 0.14-0.24 | 0.20-0.30 | | |
| 5 | 75 | RPM | 9020 | 6760 | 5410 | 4510 | 3380 | 2710 | 2250 | 1690 | 1350 | | |
| | | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 | | |
| | | RPM | 7960 | 5970 | 4770 | 3980 | 2980 | 2390 | 1990 | 1490 | 1190 | | |
| 6 | 85 | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 | | |
| | | RPM | 7960 | 5970 | 4770 | 3980 | 2980 | 2390 | 1990 | 1490 | 1190 | | |
| | | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 | | |
| 7 | 75 | RPM | 7960 | 5970 | 4770 | 3980 | 2980 | 2390 | 1990 | 1490 | 1190 | | |
| | | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 | | |
| | | RPM | 7960 | 5970 | 4770 | 3980 | 2980 | 2390 | 1990 | 1490 | 1190 | | |
| 8 | 75 | FEED | 0.02-0.04 | 0.03-0.06 | 0.05-0.08 | 0.05-0.09 | 0.06-0.12 | 0.09-0.15 | 0.08-0.18 | 0.14-0.24 | 0.20-0.30 | | |
| | | RPM | 5310 | 3980 | 3180 | 2650 | 1990 | 1590 | 1330 | 990 | 800 | | |
| | | FEED | 0.02-0.04 | 0.03-0.06 | 0.05-0.08 | 0.05-0.09 | 0.06-0.12 | 0.09-0.15 | 0.08-0.18 | 0.14-0.24 | 0.20-0.30 | | |
| 9 | 50 | RPM | 6370 | 4770 | 3820 | 3180 | 2390 | 1910 | 1590 | 1190 | 950 | | |
| | | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 | | |
| | | RPM | 9550 | 7160 | 5730 | 4770 | 3580 | 2860 | 2390 | 1790 | 1430 | | |
| M | 12 | Stainless steel | 60 | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 |
| | | | | RPM | 9550 | 7160 | 5730 | 4770 | 3580 | 2860 | 2390 | 1790 | 1430 |
| | | | | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 |
| K | 15 | Grey cast iron | 90 | RPM | 7960 | 5970 | 4770 | 3980 | 2980 | 2390 | 1990 | 1490 | 1190 |
| | | | | FEED | 0.02-0.05 | 0.04-0.08 | 0.04-0.10 | 0.06-0.12 | 0.10-0.16 | 0.14-0.20 | 0.14-0.24 | 0.22-0.32 | 0.30-0.40 |
| | | | | RPM | 7960 | 5970 | 4770 | 3980 | 2980 | 2390 | 1990 | 1490 | 1190 |
| N | 21 | Aluminum-wrought alloy | 160 | FEED | 0.02-0.05 | 0.02-0.05 | 0.03-0.06 | 0.03-0.07 | 0.04-0.10 | 0.07-0.13 | 0.06-0.16 | 0.11-0.21 | 0.15-0.25 |
| | | | | RPM | 16980 | 12730 | 10190 | 8490 | 6370 | 5090 | 4240 | 3180 | 2550 |
| | | | | FEED | 0.05-0.09 | 0.08-0.12 | 0.09-0.15 | 0.12-0.18 | 0.18-0.24 | 0.24-0.30 | 0.26-0.36 | 0.38-0.48 | 0.50-0.60 |
| 22 | 160 | RPM | 16980 | 12730 | 10190 | 8490 | 6370 | 5090 | 4240 | 3180 | 2550 | | |
| | | FEED | 0.05-0.09 | 0.08-0.12 | 0.09-0.15 | 0.12-0.18 | 0.18-0.24 | 0.24-0.30 | 0.26-0.36 | 0.38-0.48 | 0.50-0.60 | | |

- ▶ Required pilot hole of the same diameter before using the 5xD Flat bottom Drills.
- ▶ The above table values is for under 5xD depth with pilot drilling operation.

DREAM DRILLS FLAT BOTTOM - Pilot Drilling for 5 X D



- ▶ For Flat bottom 5xD drilling depth, Slope surface needs Pilot Drilling with YG-1 Flat Bottom Drill (2XD) and Flat surface needs Pilot Drilling with YG-1 Dream Drill General.
- ▶ Pilot Drilling Depth : around 1XD
- ▶ Pilot Drilling Diameter : same size diameter



Leading Through Innovation



Global Cutting Tool Leader **YG-1**



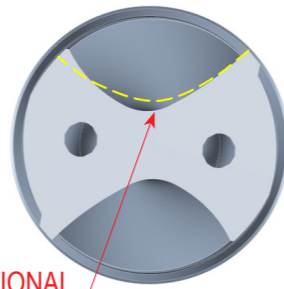
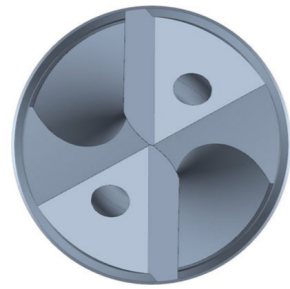
SOLID CARBIDE

DREAM DRILLS

**DREAM DRILLS
-INOX**

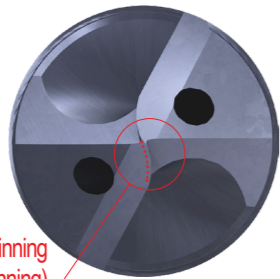
- For Tough Materials like Stainless Steels

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 hardened steel



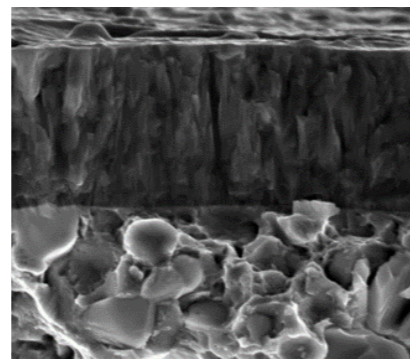
R-Thinning (Radius Thinning)

- 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.



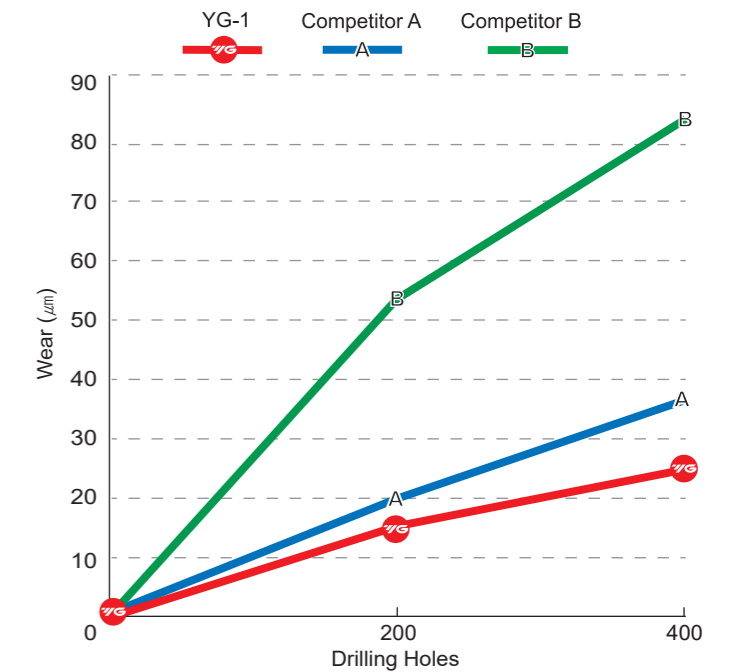
Nano Layer

Carbide

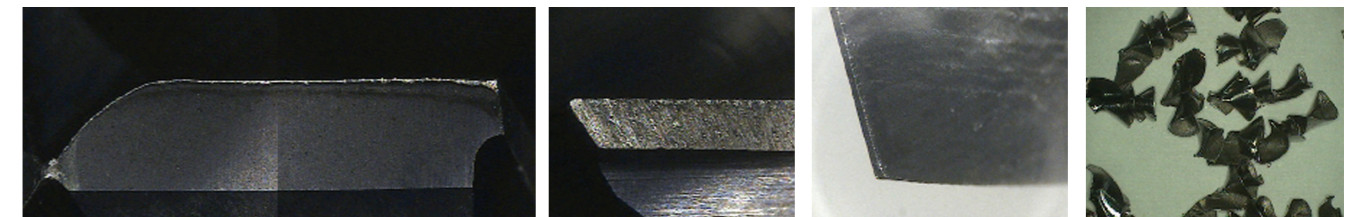
CASE STUDY

► SOLID CARBIDE DREAM DRILLS - INOX with Coolant Holes

| CUTTING CONDITION | |
|-------------------|--|
| Tool | DH452060 (DREAM DRILL-INOX) |
| Size(mm) | 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 |

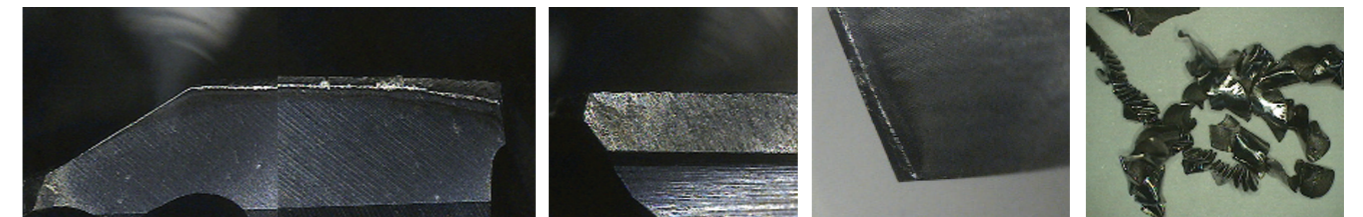


Total Drilling 400 Holes



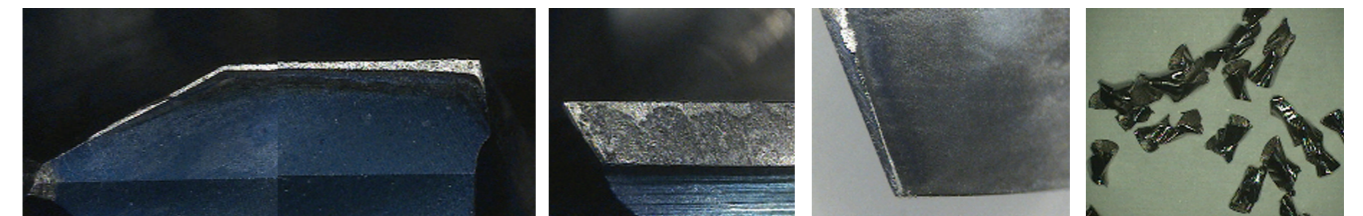
Competitor A

Total Drilling 400 Holes



Competitor B

Total Drilling 400 Holes



TiAlN-COATED SOLID CARBIDE
DREAM DRILLS INOX with COOLANT HOLES (3XD) SERIES **DH451**

- ▶ 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
- ▶ TiAlN coating for better surface finishes and longer tool life



DIN 6537
CARBIDE
30°
h6
m7
140°
20 bar
TiAlN
p.91
SHORT
3 × D

| Unit : mm | | | | |
|-----------|----------------|----------------|--------------|----------------|
| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
| TiAlN | D1 | D2 | L1 | L2 |
| DH451030 | 3.0 | 6 | 20 | 62 |
| DH451031 | 3.1 | 6 | 20 | 62 |
| DH451032 | 3.2 | 6 | 20 | 62 |
| DH451033 | 3.3 | 6 | 20 | 62 |
| DH451034 | 3.4 | 6 | 20 | 62 |
| DH451035 | 3.5 | 6 | 20 | 62 |
| DH451036 | 3.6 | 6 | 20 | 62 |
| DH451037 | 3.7 | 6 | 20 | 62 |
| DH451038 | 3.8 | 6 | 24 | 66 |
| DH451039 | 3.9 | 6 | 24 | 66 |
| DH451040 | 4.0 | 6 | 24 | 66 |
| DH451041 | 4.1 | 6 | 24 | 66 |
| DH451042 | 4.2 | 6 | 24 | 66 |
| DH451043 | 4.3 | 6 | 24 | 66 |
| DH451044 | 4.4 | 6 | 24 | 66 |
| DH451045 | 4.5 | 6 | 24 | 66 |
| DH451046 | 4.6 | 6 | 24 | 66 |
| DH451047 | 4.7 | 6 | 24 | 66 |
| DH451048 | 4.8 | 6 | 28 | 66 |
| DH451049 | 4.9 | 6 | 28 | 66 |
| DH451050 | 5.0 | 6 | 28 | 66 |
| DH451051 | 5.1 | 6 | 28 | 66 |
| DH451052 | 5.2 | 6 | 28 | 66 |
| DH451053 | 5.3 | 6 | 28 | 66 |
| DH451054 | 5.4 | 6 | 28 | 66 |
| DH451055 | 5.5 | 6 | 28 | 66 |
| DH451056 | 5.6 | 6 | 28 | 66 |
| DH451057 | 5.7 | 6 | 28 | 66 |

▶ Other shank types are available on your request.

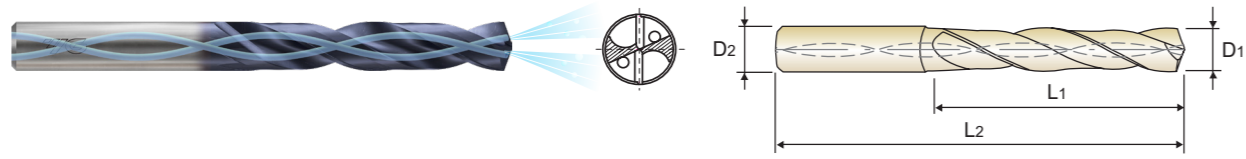
▶ NEXT PAGE

◎ : Excellent ○ : Good

| ISO | P | | | | | | | | | | | M | | | | K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | 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 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | 13 | 25 | 28 | 32 | 38 | 40 | 42 | 45 | 48 | 50 | 52 | 55 | 58 | 60 | 62 | 65 | 68 | 70 | 72 | 75 | 78 | 80 | 82 | 85 | 88 | 90 | 92 | 95 | 98 | 100 | 105 | 110 | 115 | 120 | 125 | 130 | 135 | 140 | 145 | 150 | 155 | 160 | 165 | 170 | 175 | 180 | 185 | 190 | 195 | 200 | 205 | 210 | 215 | 220 | 225 | 230 | 235 | 240 | 245 | 250 | 255 | 260 | 265 | 270 | 275 | 280 | 285 | 290 | 295 | 300 | 305 | 310 | 315 | 320 | 325 | 330 | 335 | 340 | 345 | 350 | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 | 410 | 415 | 420 | 425 | 430 | 435 | 440 | 445 | 450 | 455 | 460 | 465 | 470 | 475 | 480 | 485 | 490 | 495 | 500 | 505 | 510 | 515 | 520 | 525 | 530 | 535 | 540 | 545 | 550 | 555 | 560 | 565 | 570 | 575 | 580 | 585 | 590 | 595 | 600 | 605 | 610 | 615 | 620 | 625 | 630 | 635 | 640 | 645 | 650 | 655 | 660 | 665 | 670 | 675 | 680 | 685 | 690 | 695 | 700 | 705 | 710 | 715 | 720 | 725 | 730 | 735 | 740 | 745 | 750 | 755 | 760 | 765 | 770 | 775 | 780 | 785 | 790 | 795 | 800 | 805 | 810 | 815 | 820 | 825 | 830 | 835 | 840 | 845 | 850 | 855 | 860 | 865 | 870 | 875 | 880 | 885 | 890 | 895 | 900 | 905 | 910 | 915 | 920 | 925 | 930 | 935 | 940 | 945 | 950 | 955 | 960 | 965 | 970 | 975 | 980 | 985 | 990 | 995 | 1000 | 1005 | 1010 | 1015 | 1020 | 1025 | 1030 | 1035 | 1040 | 1045 | 1050 | 1055 | 1060 | 1065 | 1070 | 1075 | 1080 | 1085 | 1090 | 1095 | 1100 | 1105 | 1110 | 1115 | 1120 | 1125 | 1130 | 1135 | 1140 | 1145 | 1150 | 1155 | 1160 | 1165 | 1170 | 1175 | 1180 | 1185 | 1190 | 1195 | 1200 | 1205 | 1210 | 1215 | 1220 | 1225 | 1230 | 1235 | 1240 | 1245 | 1250 | 1255 | 1260 | 1265 | 1270 | 1275 | 1280 | 1285 | 1290 | 1295 | 1300 | 1305 | 1310 | 1315 | 1320 | 1325 | 1330 | 1335 | 1340 | 1345 | 1350 | 1355 | 1360 | 1365 | 1370 | 1375 | 1380 | 1385 | 1390 | 1395 | 1400 | 1405 | 1410 | 1415 | 1420 | 1425 | 1430 | 1435 | 1440 | 1445 | 1450 | 1455 | 1460 | 1465 | 1470 | 1475 | 1480 | 1485 | 1490 | 1495 | 1500 | 1505 | 1510 | 1515 | 1520 | 1525 | 1530 | 1535 | 1540 | 1545 | 1550 | 1555 | 1560 | 1565 | 1570 | 1575 | 1580 | 1585 | 1590 | 1595 | 1600 | 1605 | 1610 | 1615 | 1620 | 1625 | 1630 | 1635 | 1640 | 1645 | 1650 | 1655 | 1660 | 1665 | 1670 | 1675 | 1680 | 1685 | 1690 | 1695 | 1700 | 1705 | 1710 | 1715 | 1720 | 1725 | 1730 | 1735 | 1740 | 1745 | 1750 | 1755 | 1760 | 1765 | 1770 | 1775 | 1780 | 1785 | 1790 | 1795 | 1800 | 1805 | 1810 | 1815 | 1820 | 1825 | 1830 | 1835 | 1840 | 1845 | 1850 | 1855 | 1860 | 1865 | 1870 | 1875 | 1880 | 1885 | 1890 | 1895 | 1900 | 1905 | 1910 | 1915 | 1920 | 1925 | 1930 | 1935 | 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | 2055 | 2060 | 2065 | 2070 | 2075 | 2080 | 2085 | 2090 | 2095 | 2100 | 2105 | 2110 | 2115 | 2120 | 2125 | 2130 | 2135 | 2140 | 2145 | 2150 | 2155 | 2160 | 2165 | 2170 | 2175 | 2180 | 2185 | 2190 | 2195 | 2200 | 2205 | 2210 | 2215 | 2220 | 2225 | 2230 | 2235 | 2240 | 2245 | 2250 | 2255 | 2260 | 2265 | 2270 | 2275 | 2280 | 2285 | 2290 | 2295 | 2300 | 2305 | 2310 | 2315 | 2320 | 2325 | 2330 | 2335 | 2340 | 2345 | 2350 | 2355 | 2360 | 2365 | 2370 | 2375 | 2380 | 2385 | 2390 | 2395 | 2400 | 2405 | 2410 | 2415 | 2420 | 2425 | 2430 | 2435 | 2440 | 2445 | 2450 | 2455 | 2460 | 2465 | 2470 | 2475 | 2480 | 2485 | 2490 | 2495 | 2500 | 2505 | 2510 | 2515 | 2520 | 2525 | 2530 | 2535 | 2540 | 2545 | 2550 | 2555 | 2560 | 2565 | 2570 | 2575 | 2580 | 2585 | 2590 | 2595 | 2600 | 2605 | 2610 | 2615 | 2620 | 2625 | 2630 | 2635 | 2640 | 2645 | 2650 | 2655 | 2660 | 2665 | 2670 | 2675 | 2680 | 2685 | 2690 | 2695 | 2700 | 2705 | 2710 | 2715 | 2720 | 2725 | 2730 | 2735 | 2740 | 2745 | 2750 | 2755 | 2760 | 2765 | 2770 | 2775 | 2780 | 2785 | 2790 | 2795 | 2800 | 2805 | 2810 | 2815 | 2820 | 2825 | 2830 | 2835 | 2840 | 2845 | 2850 | 2855 | 2860 | 2865 | 2870 | 2875 | 2880 | 2885 | 2890 | 2895 | 2900 | 2905 | 2910 | 2915 | 2920 | 2925 | 2930 | 2935 | 2940 | 2945 | 2950 | 2955 | 2960 | 2965 | 2970 | 2975 | 2980 | 2985 | 2990 | 2995 | 3000 | 3005 | 3010 | 3015 | 3020 | 3025 | 3030 | 3035 | 3040 | 3045 | 3050 | 3055 | 3060 | 3065 | 3070 | 3075 | 3080 | 3085 | 3090 | 3095 | 3100 | 3105 | 3110 | 3115 | 3120 | 3125 | 3130 | 3135 | 3140 | 3145 | 3150 | 3155 | 3160 | 3165 | 3170 | 3175 | 3180 | 3185 | 3190 | 3195 | 3200 | 3205 | 3210 | 3215 | 3220 | 3225 | 3230 | 3235 | 3240 | 3245 | 3250 | 3255 | 3260 | 3265 | 3270 | 3275 | 3280 | 3285 | 3290 | 3295 | 3300 | 3305 | 3310 | 3315 | 3320 | 3325 | 3330 | 3335 | 3340 | 3345 | 3350 | 3355 | 3360 | 3365 | 3370 | 3375 | 3380 | 3385 | 3390 | 3395 | 3400 | 3405 | 3410 | 3415 | 3420 | 3425 | 3430 | 3435 | 3440 | 3445 | 3450 | 3455 | 3460 | 3465 | 3470 | 3475 | 3480 | 3485 | 3490 | 3495 | 3500 | 3505 | 3510 | 3515 | 3520 | 3525 | 3530 | 3535 | 3540 | 3545 | 3550 | 3555 | 3560 | 3565 | 3570 | 3575 | 3580 | 3585 | 3590 | 3595 | 3600 | 3605 | 3610 | 3615 | 3620 | 3625 | 3630 | 3635 | 3640 | 3645 | 3650 | 3655 | 3660 | 3665 | 3670 | 3675 | 3680 | 3685 | 3690 | 3695 | 3700 | 3705 | 3710 | 3715 | 3720 | 3725 | 3730 | 3735 | 3740 | 3745 | 3750 | 3755 | 3760 | 3765 | 3770 | 3775 | 3780 | 3785 | 3790 | 3795 | 3800 | 3805 | 3810 | 3815 | 3820 | 3825 | 3830 | 3835 | 3840 | 3845 | 3850 | 3855 | 3860 | 3865 | 3870 | 3875 | 3880 | 3885 | 3890 | 3895 | 3900 | 3905 | 3910 | 3915 | 3920 | 3925 | 3930 | 3935 | 3940 | 3945 | 3950 | 3955 | 3960 | 3965 | 3970 | 3975 | 3980 | 3985 | 3990 | 3995 | 4000 | 4005 | 4010 | 4015 | 4020 | 4025 | 4030 | 4035 | 4040 | 4045 | 4050 | 4055 | 4060 | 4065 | 4070 | 4075 | 4080 | 4085 | 4090 | 4095 | 4100 | 4105 | 4110 | 4115 | 4120 | 4125 | 4130 | 4135 | 4140 | 4145 | 4150 | 4155 | 4160 | 4165 | 4170 | 4175 | 4180 | 4185 | 4190 | 4195 | 4200 | 4205 | 4210 | 4215 | 4220 | 4225 | 4230 | 4235 | 4240 | 4245 | 4250 | 4255 | 4260 | 4265 | 4270 | 4275 | 4280 | 4285 | 4290 | 4295 | 4300 | 4305 | 4310 | 4315 | 4320 | 4325 | 4330 | 4335 | 4340 | 4345 | 4350 | 4355 | 4360 | 4365 | 4370 | 4375 | 4380 | 4385 | 4390 | 4395 | 4400 | 4405 | 4410 | 4415 | 4420 | 4425 | 4430 | 4435 | 4440 | 4445 | 4450 | 4455 | 4460 | 4465 | 4470 | 4475 | 4480 | 4485 | 4490 | 4495 | 4500 | 4505 | 4510 | 4515 | 4520 | 4525 | 4530 | 4535 | 4540 | 4545 | 4550 | 4555 | 4560 | 4565 | 4570 | 4575 | 4580 | 4585 | 4590 | 4595 | 4600 | 4605 | 4610 | 4615 | 4620 | 4625 | 4630 | 4635 | 4640 | 4645 | 4650 | 4655 | 4660 | 4665 | 4670 | 4675 | 4680 | 4685 | 4690 | 4695 | 4700 | 4705 | 4710 | 4715 | 4720 | 4725 | 4730 | 4735 | 4740 | 4745 | 4750 | 4755 | 4760 | 4765 | 4770 | 4775 | 4780 | 4785 | 4790 | 4795 | 4800 | 4805 | 4810 | 4815 | 4820 | 4825 | 4830 | 4835 | 4840 | 4845 | 4850 | 4855 | 4860 | 4865 | 4870 | 4875 | 4880 | 4885 | 4890 | 4895 | 4900 | 4905 | 4910 | 4915 | 4920 | 4925 | 4930 | 4935 | 4940 | 4945 | 4950 | 4955 | 4960 | 4965 | 4970 | 4975 | 4980 | 4985 | 4990 | 4995 | 5000 | 5005 | 5010 | 5015 | 5020 | 5025 | 5030 | 5035 | 5040 | 5045 | 5050 | 5055 | 5060 | 5065 | 5070 | 5075 | 5080 | 5085 | 5090 | 5095 | 5100 | 5105 | 5110 | 5115 | 5120 | 5125 | 5130 | 5135 | 5140 | 5145 | 5150 | 5155 | 5160 | 5165 | 5170 | 5175 | 5180 | 5185 | 5190 | 5195 | 5200 | 5205 | 5210 | 5215 | 5220 | 5225 | 5230 | 5235 | 5240 | 5245 | 5250 | 5255 | 5260 | 5265 | 5270 | 5275 | 5280 | 5285 | 5290 | 5295 | 5300 | 5305 | 5310 | 5315 | 5320 | 5325 | 5330 | 5335 | 5340 | 5345 | 5350 | 5355 | 5360 | 5365 | 5370 | 5375 | 5380 | |

TiAIN-COATED SOLID CARBIDE
DREAM DRILLS INOX with COOLANT HOLES (5XD) SERIES **DH452**

- ▶ 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 30° h6 m7 140° 20 bar TiAIN p.91 **LONG 5 x D**

| Unit : mm | | | | |
|-----------|----------------|----------------|--------------|----------------|
| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
| TiAIN | D1 | D2 | L1 | L2 |
| 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 |
| DH452034 | 3.4 | 6 | 28 | 66 |
| DH452035 | 3.5 | 6 | 28 | 66 |
| DH452036 | 3.6 | 6 | 28 | 66 |
| DH452037 | 3.7 | 6 | 28 | 66 |

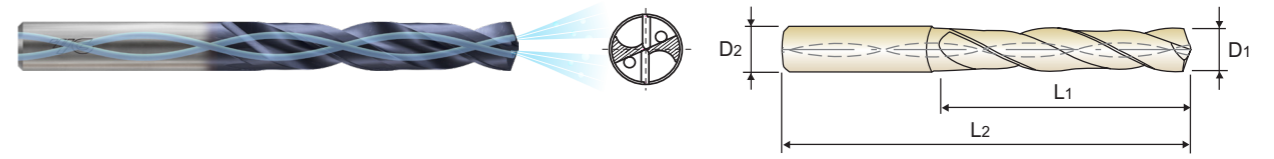
▶ Other shank types are available on your request. ▶ NEXT PAGE

◎ : 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 | | | |
| 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 |
| HRc | 13 | 25 | 28 | 32 | 35 | 38 | 40 | 42 | 45 | 48 | 50 | 52 | 55 | 58 | 60 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 | 80 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 215 | 270 | 300 | 350 | 400 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | | | | | |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

TiAIN-COATED SOLID CARBIDE
DREAM DRILLS INOX with COOLANT HOLES (5XD) SERIES **DH452**

- ▶ 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 30° h6 m7 140° 20 bar TiAIN p.91 **LONG 5 x D**

| Unit : mm | | | | |
|-----------|----------------|----------------|--------------|----------------|
| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
| TiAIN | D1 | D2 | L1 | L2 |
| 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 |
| DH452082 | 8.2 | 10 | 61 | 103 |
| DH452083 | 8.3 | 10 | 61 | 103 |
| DH452084 | 8.4 | 10 | 61 | 103 |
| DH452085 | 8.5 | 10 | 61 | 103 |
| DH452086 | 8.6 | 10 | 61 | 103 |
| DH452087 | 8.7 | 10 | 61 | 103 |
| DH452088 | 8.8 | 10 | 61 | 103 |
| DH452089 | 8.9 | 10 | 61 | 103 |
| DH452090 | 9.0 | 10 | 61 | 103 |
| DH452091 | 9.1 | 10 | 61 | 103 |
| DH452092 | 9.2 | 10 | 61 | 103 |
| DH452093 | 9.3 | 10 | 61 | 103 |

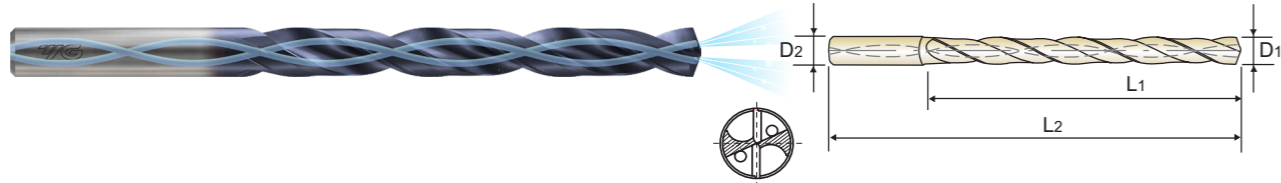
▶ Other shank types are available on your request. ▶ NEXT PAGE

◎ : 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 | | | |
| 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 |
| HRc | 13 | 25 | 28 | 32 | 35 | 38 | 40 | 42 | 45 | 48 | 50 | 52 | 55 | 58 | 60 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 | 80 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 215 | 270 | 300 | 350 | 400 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | | | | | |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

TiAIN-COATED SOLID CARBIDE DREAM DRILLS INOX with COOLANT HOLES (8XD) SERIES DH453

- ▶ 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 30° h6 m7 140° 20 bar TiAIN p.91 EXTRA LONG 8 x D

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------------|----------------|--------------|----------------|----------|----------------|----------------|--------------|----------------|
| TiAIN | D1 | D2 | L1 | L2 | TiAIN | D1 | D2 | L1 | L2 |
| DH453086 | 8.6 | 10 | 95 | 142 | DH453114 | 11.4 | 12 | 114 | 162 |
| DH453087 | 8.7 | 10 | 95 | 142 | DH453115 | 11.5 | 12 | 114 | 162 |
| DH453088 | 8.8 | 10 | 95 | 142 | DH453116 | 11.6 | 12 | 114 | 162 |
| DH453089 | 8.9 | 10 | 95 | 142 | DH453117 | 11.7 | 12 | 114 | 162 |
| DH453090 | 9.0 | 10 | 95 | 142 | DH453118 | 11.8 | 12 | 114 | 162 |
| DH453091 | 9.1 | 10 | 95 | 142 | DH453119 | 11.9 | 12 | 114 | 162 |
| DH453092 | 9.2 | 10 | 95 | 142 | DH453120 | 12.0 | 12 | 114 | 162 |
| DH453093 | 9.3 | 10 | 95 | 142 | DH453125 | 12.5 | 14 | 133 | 178 |
| DH453094 | 9.4 | 10 | 95 | 142 | DH453130 | 13.0 | 14 | 133 | 178 |
| DH453095 | 9.5 | 10 | 95 | 142 | DH453135 | 13.5 | 14 | 133 | 178 |
| DH453096 | 9.6 | 10 | 95 | 142 | DH453140 | 14.0 | 14 | 133 | 178 |
| DH453097 | 9.7 | 10 | 95 | 142 | | | | | |
| DH453098 | 9.8 | 10 | 95 | 142 | | | | | |
| DH453099 | 9.9 | 10 | 95 | 142 | | | | | |
| DH453100 | 10.0 | 10 | 95 | 142 | | | | | |
| DH453101 | 10.1 | 12 | 114 | 162 | | | | | |
| DH453102 | 10.2 | 12 | 114 | 162 | | | | | |
| DH453103 | 10.3 | 12 | 114 | 162 | | | | | |
| DH453104 | 10.4 | 12 | 114 | 162 | | | | | |
| DH453105 | 10.5 | 12 | 114 | 162 | | | | | |
| DH453106 | 10.6 | 12 | 114 | 162 | | | | | |
| DH453107 | 10.7 | 12 | 114 | 162 | | | | | |
| DH453108 | 10.8 | 12 | 114 | 162 | | | | | |
| DH453109 | 10.9 | 12 | 114 | 162 | | | | | |
| DH453110 | 11.0 | 12 | 114 | 162 | | | | | |
| DH453111 | 11.1 | 12 | 114 | 162 | | | | | |
| DH453112 | 11.2 | 12 | 114 | 162 | | | | | |
| DH453113 | 11.3 | 12 | 114 | 162 | | | | | |

▶ Other shank types are available on your request.

Unit : mm

| 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 | 32 | 10 | 29 | 32 | 38 | 38 | 15 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 19 | 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 | 13 | 25 | 28 | 32 | 32 | 10 | 29 | 32 | 38 | 38 | 15 | 15 | 23 | 10 | 10 | 10 | 26 | 3 | 25 | 19 | 21 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

RECOMMENDED CUTTING CONDITIONS

DH451, DH452, DH453 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 | 70 | RPM | 22280 | 11140 | 100 | RPM | 10610 | 7960 | 6370 | 5310 |
| | | | | FEED | 0.02-0.04 | 0.04-0.06 | | FEED | 0.04-0.10 | 0.06-0.12 | 0.12-0.18 | 0.14-0.20 |
| | 3 | | 70 | RPM | 22280 | 11140 | 100 | RPM | 10610 | 7960 | 6370 | 5310 |
| | | | | FEED | 0.02-0.04 | 0.04-0.06 | FEED | 0.04-0.10 | 0.06-0.12 | 0.12-0.18 | 0.14-0.20 | |
| | 6 | Low alloy steel | 70 | RPM | 22280 | 11140 | 100 | RPM | 10610 | 7960 | 6370 | 5310 |
| | | | | FEED | 0.02-0.04 | 0.04-0.06 | | FEED | 0.04-0.10 | 0.06-0.12 | 0.12-0.18 | 0.14-0.20 |
| 7 | 50 | | RPM | 15920 | 7960 | 70 | RPM | 7430 | 5570 | 4460 | 3710 | |
| | | | FEED | 0.02-0.04 | 0.04-0.06 | FEED | 0.04-0.10 | 0.06-0.12 | 0.12-0.18 | 0.14-0.20 | | |
| M | 12 | Stainless steel | 40 | RPM | 12730 | 6370 | 50 | RPM | 5310 | 3980 | 3180 | 2650 |
| | | | | FEED | 0.02-0.04 | 0.02-0.04 | | FEED | 0.03-0.05 | 0.05-0.09 | 0.07-0.11 | 0.08-0.12 |
| | 13 | | 25 | RPM | 7960 | 3980 | 40 | RPM | 4240 | 3180 | 2550 | 2120 |
| | | | | FEED | 0.02-0.04 | 0.02-0.04 | FEED | 0.03-0.05 | 0.05-0.09 | 0.07-0.11 | 0.08-0.12 | |
| | 14 | 45 | RPM | 14320 | 7160 | 60 | RPM | 6370 | 4770 | 3820 | 3180 | |
| | | | FEED | 0.02-0.04 | 0.02-0.04 | FEED | 0.04-0.06 | 0.06-0.10 | 0.08-0.12 | 0.09-0.13 | | |
| N | 21 | Aluminum-wrought alloy | 130 | RPM | 41380 | 20690 | 200 | RPM | 21220 | 15920 | 12730 | 10610 |
| | | | | FEED | 0.04-0.10 | 0.08-0.14 | | FEED | 0.14-0.20 | 0.19-0.25 | 0.20-0.26 | 0.22-0.28 |
| | 22 | | 130 | RPM | 41380 | 20690 | 200 | RPM | 21220 | 15920 | 12730 | 10610 |
| | | | | FEED | 0.04-0.10 | 0.08-0.14 | FEED | 0.14-0.20 | 0.19-0.25 | 0.20-0.26 | 0.22-0.28 | |
| | 23 | Aluminum-cast, alloyed | 110 | RPM | 35010 | 17510 | 180 | RPM | 19100 | 14320 | 11460 | 9550 |
| | | | | FEED | 0.04-0.10 | 0.08-0.14 | | FEED | 0.14-0.20 | 0.19-0.25 | 0.20-0.26 | 0.22-0.28 |
| 24 | 110 | | RPM | 35010 | 17510 | 180 | RPM | 19100 | 14320 | 11460 | 9550 | |
| | | | FEED | 0.04-0.10 | 0.08-0.14 | FEED | 0.14-0.20 | 0.19-0.25 | 0.20-0.26 | 0.22-0.28 | | |
| 25 | 90 | RPM | 28650 | 14320 | 150 | RPM | 15920 | 11940 | 9550 | 7960 | | |
| | | FEED | 0.04-0.08 | 0.06-0.10 | FEED | 0.12-0.18 | 0.16-0.22 | 0.17-0.23 | 0.19-0.25 | | | |
| S | 37 | Titanium Alloys | 25 | RPM | 7960 | 3980 | 40 | RPM | 4240 | 3180 | 2550 | 2120 |
| | | | | FEED | 0.01-0.03 | 0.01-0.03 | FEED | 0.02-0.04 | 0.04-0.08 | 0.06-0.10 | 0.07-0.11 | |

| 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 | 100 | RPM | 3980 | 3180 | 2650 | 2270 | 1990 | 1770 | 1590 |
| | | | | FEED | 0.16-0.22 | 0.18-0.24 | 0.19-0.27 | 0.21-0.39 | 0.23-0.31 | 0.26-0.36 | 0.28-0.38 |
| | 3 | | 100 | RPM | 3980 | 3180 | 2650 | 2270 | 1990 | 1770 | 1590 |
| | | | | FEED | 0.16-0.22 | 0.18-0.24 | 0.19-0.27 | 0.21-0.39 | 0.23-0.31 | 0.26-0.36 | 0.28-0.38 |
| | 6 | Low alloy steel | 100 | RPM | 3980 | 3180 | 2650 | 2270 | 1990 | 1770 | 1590 |
| | | | | FEED | 0.16-0.22 | 0.18-0.24 | 0.19-0.27 | 0.21-0.39 | 0.23-0.31 | 0.26-0.36 | 0.28-0.38 |
| 7 | 70 | | RPM | 2790 | 2230 | 1860 | 1590 | 1390 | 1240 | 1110 | |
| | | | FEED | 0.16-0.22 | 0.18-0.24 | 0.19-0.27 | 0.21-0.39 | 0.23-0.31 | 0.26-0.36 | 0.28-0.38 | |
| M | 12 | Stainless steel | 50 | RPM | 1990 | 1590 | 1330 | 1140 | 990 | 880 | 800 |
| | | | | FEED | 0.09-0.13 | 0.10-0.15 | 0.11-0.16 | 0.12-0.17 | 0.13-0.18 | 0.14-0.19 | 0.15-0.20 |
| | 13 | | 40 | RPM | 1590 | 1270 | 1060 | 910 | 800 | 710 | 640 |
| | | | | FEED | 0.09-0.13 | 0.10-0.15 | 0.11-0.16 | 0.12-0.17 | 0.13-0.18 | 0.14-0.19 | 0.15-0.20 |
| | 14 | 60 | RPM | 2390 | 1910 | 1590 | 1360 | 1190 | 1060 | 950 | |
| | | | FEED | 0.10-0.14 | 0.11-0.16 | 0.12-0.17 | 0.13-0.18 | 0.14-0.19 | 0.15-0.20 | 0.16-0.21 | |
| N | 21 | Aluminum-wrought alloy | 200 | RPM | 7960 | 6370 | 5310 | 4550 | 3980 | 3540 | 3180 |
| | | | | FEED | 0.24-0.30 | 0.26-0.32 | 0.28-0.34 | 0.30-0.36 | 0.32-0.38 | 0.33-0.43 | 0.35-0.45 |
| | 22 | | 200 | RPM | 7960 | 6370 | 5310 | 4550 | 3980 | 3540 | 3180 |
| | | | | FEED | 0.24-0.30 | 0.26-0.32 | 0.28-0.34 | 0.30-0.36 | 0.32-0.38 | 0.33-0.43 | 0.35-0.45 |
| | 23 | Aluminum-cast, alloyed | 180 | RPM | 7160 | 5730 | 4770 | 4090 | 3580 | 3180 | 2860 |
| | | | | FEED | 0.24-0.30 | 0.26-0.32 | 0.28-0.34 | 0.30-0.36 | 0.32-0.38 | 0.33-0.43 | 0.35-0.45 |
| 24 | 180 | | RPM | 7160 | 5730 | 4770 | 4090 | 3580 | 3180 | 2860 | |
| | | | FEED | 0.24-0.30 | 0.26-0.32 | 0.28-0.34 | 0.30-0.36 | 0.32-0.38 | 0.33-0.43 | 0.35-0.45 | |
| 25 | 150 | RPM | 5970 | 4770 | 3980 | 3410 | 2980 | 2650 | 2390 | | |
| | | FEED | 0.21-0.27 | 0.23-0.29 | 0.25-0.31 | 0.27-0.33 | 0.28-0.34 | 0.28-0.38 | 0.30-0.40 | | |
| S | 37 | Titanium Alloys | 40 | RPM | 1590 | 1270 | 1060 | 910 | 800 | 710 | 640 |
| | | | | FEED | 0.08-0.12 | 0.09-0.14 | 0.10-0.15 | 0.11-0.16 | 0.12-0.17 | 0.13-0.18 | 0.14-0.19 |

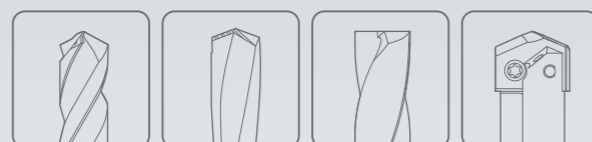
▶ Recommend to reduce the feed rate as following
Feed 100% : DH451(3xD), DH452(5xD) Feed 85% : DH453(8xD)



Leading Through Innovation



Global Cutting Tool Leader **YG-1**



DREAM DRILLS

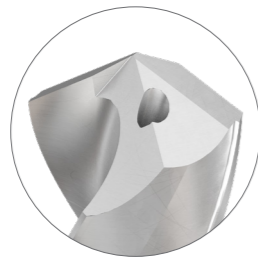


SOLID CARBIDE

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.

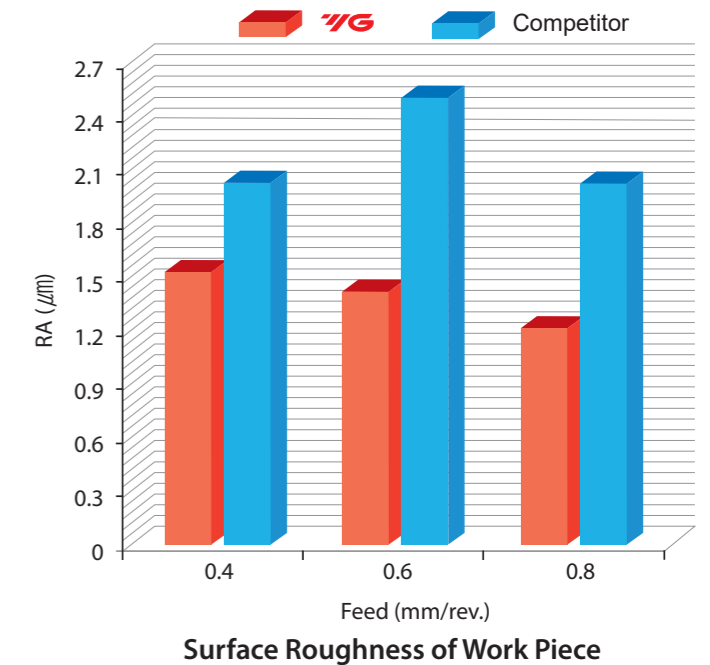
Ø6.0 & Ø10.0 TEST, Aluminum(6061)

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

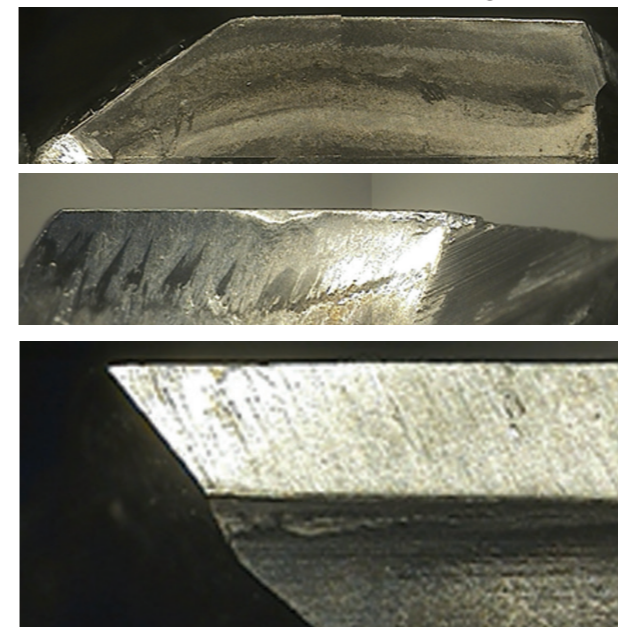
CASE STUDY

►SOLID CARBIDE DREAM DRILLS - ALU with Coolant Holes

| CUTTING CONDITION | |
|-------------------|---|
| Tool | D5433100 |
| Size(mm) | 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 |

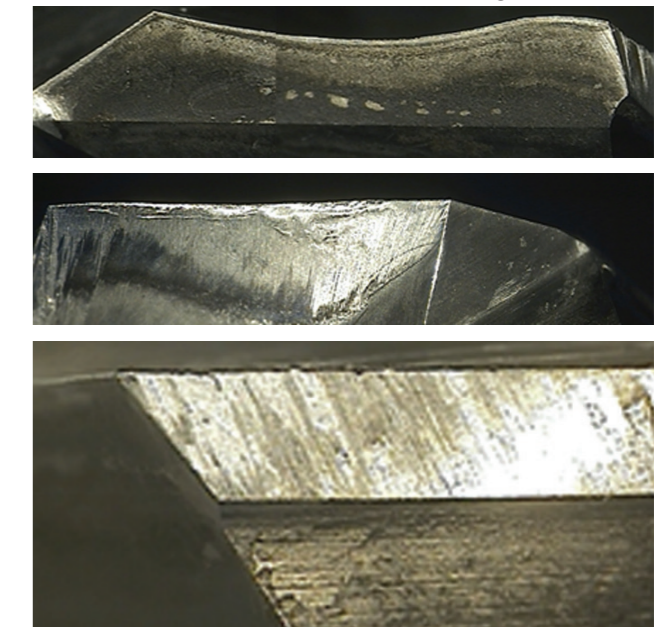


Total Drilling 820 Holes



Competitor A

Total Drilling 820 Holes



SOLID CARBIDE
DREAM DRILLS ALU with COOLANT HOLES (5XD)

SERIES

D5433

- ▶ Optimized thinning for Aluminum & Aluminum Alloys to
- ▶ prevent any clogging from chip welding
- ▶ Wider and deeper flute gullets for maximum chip removal
- ▶ Special geometry and smooth coating reduces built up edge and improves finishes



DIN 6537 CARBIDE 30° h6 m7 118° 20 bar Bright p.102

LONG
5 x D

| EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 | EDP No. | Drill Diameter D1 | Shank Diameter D2 | Flute Length L1 | Overall Length L2 |
|----------|----------------------|----------------------|--------------------|----------------------|----------|----------------------|----------------------|--------------------|----------------------|
| | | | | | | | | | |
| D5433031 | 3.1 | 6 | 28 | 66 | D5433059 | 5.9 | 6 | 44 | 82 |
| D5433032 | 3.2 | 6 | 28 | 66 | D5433060 | 6.0 | 6 | 44 | 82 |
| D5433033 | 3.3 | 6 | 28 | 66 | D5433061 | 6.1 | 8 | 53 | 91 |
| D5433034 | 3.4 | 6 | 28 | 66 | D5433062 | 6.2 | 8 | 53 | 91 |
| D5433035 | 3.5 | 6 | 28 | 66 | D5433063 | 6.3 | 8 | 53 | 91 |
| D5433036 | 3.6 | 6 | 28 | 66 | D5433064 | 6.4 | 8 | 53 | 91 |
| D5433037 | 3.7 | 6 | 28 | 66 | D5433065 | 6.5 | 8 | 53 | 91 |
| D5433038 | 3.8 | 6 | 36 | 74 | D5433066 | 6.6 | 8 | 53 | 91 |
| D5433039 | 3.9 | 6 | 36 | 74 | D5433067 | 6.7 | 8 | 53 | 91 |
| D5433040 | 4.0 | 6 | 36 | 74 | D5433068 | 6.8 | 8 | 53 | 91 |
| D5433041 | 4.1 | 6 | 36 | 74 | D5433069 | 6.9 | 8 | 53 | 91 |
| D5433042 | 4.2 | 6 | 36 | 74 | D5433070 | 7.0 | 8 | 53 | 91 |
| D5433043 | 4.3 | 6 | 36 | 74 | D5433071 | 7.1 | 8 | 53 | 91 |
| D5433044 | 4.4 | 6 | 36 | 74 | D5433072 | 7.2 | 8 | 53 | 91 |
| D5433045 | 4.5 | 6 | 36 | 74 | D5433073 | 7.3 | 8 | 53 | 91 |
| D5433046 | 4.6 | 6 | 36 | 74 | D5433074 | 7.4 | 8 | 53 | 91 |
| D5433047 | 4.7 | 6 | 36 | 74 | D5433075 | 7.5 | 8 | 53 | 91 |
| D5433048 | 4.8 | 6 | 44 | 82 | D5433076 | 7.6 | 8 | 53 | 91 |
| D5433049 | 4.9 | 6 | 44 | 82 | D5433077 | 7.7 | 8 | 53 | 91 |
| D5433050 | 5.0 | 6 | 44 | 82 | D5433078 | 7.8 | 8 | 53 | 91 |
| D5433051 | 5.1 | 6 | 44 | 82 | D5433079 | 7.9 | 8 | 53 | 91 |
| D5433052 | 5.2 | 6 | 44 | 82 | D5433080 | 8.0 | 8 | 53 | 91 |
| D5433053 | 5.3 | 6 | 44 | 82 | D5433081 | 8.1 | 10 | 61 | 103 |
| D5433054 | 5.4 | 6 | 44 | 82 | D5433082 | 8.2 | 10 | 61 | 103 |
| D5433055 | 5.5 | 6 | 44 | 82 | D5433083 | 8.3 | 10 | 61 | 103 |
| D5433056 | 5.6 | 6 | 44 | 82 | D5433084 | 8.4 | 10 | 61 | 103 |
| D5433057 | 5.7 | 6 | 44 | 82 | D5433085 | 8.5 | 10 | 61 | 103 |

- ▶ DLC coating is available on your request.
- ▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

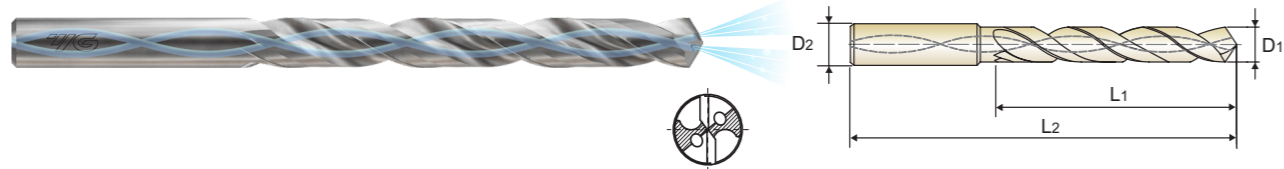
| ISO | P | | | | | | | | | | | M | | | | K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | 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 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 | 256 | 257 | 258 | 259 | 260 | 261 | 262 | 263 | 264 | 265 | 266 | 267 | 268 | 269 | 270 | 271 | 272 | 273 | 274 | 275 | 276 | 277 | 278 | 279 | 280 | 281 | 282 | 283 | 284 | 285 | 286 | 287 | 288 | 289 | 290 | 291 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 | 311 | 312 | 313 | 314 | 315 | 316 | 317 | 318 | 319 | 320 | 321 | 322 | 323 | 324 | 325 | 326 | 327 | 328 | 329 | 330 | 331 | 332 | 333 | 334 | 335 | 336 | 337 | 338 | 339 | 340 | 341 | 342 | 343 | 344 | 345 | 346 | 347 | 348 | 349 | 350 | 351 | 352 | 353 | 354 | 355 | 356 | 357 | 358 | 359 | 360 | 361 | 362 | 363 | 364 | 365 | 366 | 367 | 368 | 369 | 370 | 371 | 372 | 373 | 374 | 375 | 376 | 377 | 378 | 379 | 380 | 381 | 382 | 383 | 384 | 385 | 386 | 387 | 388 | 389 | 390 | 391 | 392 | 393 | 394 | 395 | 396 | 397 | 398 | 399 | 400 | 401 | 402 | 403 | 404 | 405 | 406 | 407 | 408 | 409 | 410 | 411 | 412 | 413 | 414 | 415 | 416 | 417 | 418 | 419 | 420 | 421 | 422 | 423 | 424 | 425 | 426 | 427 | 428 | 429 | 430 | 431 | 432 | 433 | 434 | 435 | 436 | 437 | 438 | 439 | 440 | 441 | 442 | 443 | 444 | 445 | 446 | 447 | 448 | 449 | 450 | 451 | 452 | 453 | 454 | 455 | 456 | 457 | 458 | 459 | 460 | 461 | 462 | 463 | 464 | 465 | 466 | 467 | 468 | 469 | 470 | 471 | 472 | 473 | 474 | 475 | 476 | 477 | 478 | 479 | 480 | 481 | 482 | 483 | 484 | 485 | 486 | 487 | 488 | 489 | 490 | 491 | 492 | 493 | 494 | 495 | 496 | 497 | 498 | 499 | 500 | 501 | 502 | 503 | 504 | 505 | 506 | 507 | 508 | 509 | 510 | 511 | 512 | 513 | 514 | 515 | 516 | 517 | 518 | 519 | 520 | 521 | 522 | 523 | 524 | 525 | 526 | 527 | 528 | 529 | 530 | 531 | 532 | 533 | 534 | 535 | 536 | 537 | 538 | 539 | 540 | 541 | 542 | 543 | 544 | 545 | 546 | 547 | 548 | 549 | 550 | 551 | 552 | 553 | 554 | 555 | 556 | 557 | 558 | 559 | 560 | 561 | 562 | 563 | 564 | 565 | 566 | 567 | 568 | 569 | 570 | 571 | 572 | 573 | 574 | 575 | 576 | 577 | 578 | 579 | 580 | 581 | 582 | 583 | 584 | 585 | 586 | 587 | 588 | 589 | 590 | 591 | 592 | 593 | 594 | 595 | 596 | 597 | 598 | 599 | 600 | 601 | 602 | 603 | 604 | 605 | 606 | 607 | 608 | 609 | 610 | 611 | 612 | 613 | 614 | 615 | 616 | 617 | 618 | 619 | 620 | 621 | 622 | 623 | 624 | 625 | 626 | 627 | 628 | 629 | 630 | 631 | 632 | 633 | 634 | 635 | 636 | 637 | 638 | 639 | 640 | 641 | 642 | 643 | 644 | 645 | 646 | 647 | 648 | 649 | 650 | 651 | 652 | 653 | 654 | 655 | 656 | 657 | 658 | 659 | 660 | 661 | 662 | 663 | 664 | 665 | 666 | 667 | 668 | 669 | 670 | 671 | 672 | 673 | 674 | 675 | 676 | 677 | 678 | 679 | 680 | 681 | 682 | 683 | 684 | 685 | 686 | 687 | 688 | 689 | 690 | 691 | 692 | 693 | 694 | 695 | 696 | 697 | 698 | 699 | 700 | 701 | 702 | 703 | 704 | 705 | 706 | 707 | 708 | 709 | 710 | 711 | 712 | 713 | 714 | 715 | 716 | 717 | 718 | 719 | 720 | 721 | 722 | 723 | 724 | 725 | 726 | 727 | 728 | 729 | 730 | 731 | 732 | 733 | 734 | 735 | 736 | 737 | 738 | 739 | 740 | 741 | 742 | 743 | 744 | 745 | 746 | 747 | 748 | 749 | 750 | 751 | 752 | 753 | 754 | 755 | 756 | 757 | 758 | 759 | 760 | 761 | 762 | 763 | 764 | 765 | 766 | 767 | 768 | 769 | 770 | 771 | 772 | 773 | 774 | 775 | 776 | 777 | 778 | 779 | 780 | 781 | 782 | 783 | 784 | 785 | 786 | 787 | 788 | 789 | 790 | 791 | 792 | 793 | 794 | 795 | 796 | 797 | 798 | 799 | 800 | 801 | 802 | 803 | 804 | 805 | 806 | 807 | 808 | 809 | 810 | 811 | 812 | 813 | 814 | 815 | 816 | 817 | 818 | 819 | 820 | 821 | 822 | 823 | 824 | 825 | 826 | 827 | 828 | 829 | 830 | 831 | 832 | 833 | 834 | 835 | 836 | 837 | 838 | 839 | 840 | 841 | 842 | 843 | 844 | 845 | 846 | 847 | 848 | 849 | 850 | 851 | 852 | 853 | 854 | 855 | 856 | 857 | 858 | 859 | 860 | 861 | 862 | 863 | 864 | 865 | 866 | 867 | 868 | 869 | 870 | 871 | 872 | 873 | 874 | 875 | 876 | 877 | 878 | 879 | 880 | 881 | 882 | 883 | 884 | 885 | 886 | 887 | 888 | 889 | 890 | 891 | 892 | 893 | 894 | 895 | 896 | 897 | 898 | 899 | 900 | 901 | 902 | 903 | 904 | 905 | 906 | 907 | 908 | 909 | 910 | 911 | 912 | 913 | 914 | 915 | 916 | 917 | 918 | 919 | 920 | 921 | 922 | 923 | 924 | 925 | 926 | 927 | 928 | 929 | 930 | 931 | 932 | 933 | 934 | 935 | 936 | 937 | 938 | 939 | 940 | 941 | 942 | 943 | 944 | 945 | 946 | 947 | 948 | 949 | 950 | 951 | 952 | 953 | 954 | 955 | 956 | 957 | 958 | 959 | 960 | 961 | 962 | 963 | 964 | 965 | 966 | 967 | 968 | 969 | 970 | 971 | 972 | 973 | 974 | 975 | 976 | 977 | 978 | 979 | 980 | 981 | 982 | 983 | 984 | 985 | 986 | 987 | 988 | 989 | 990 | 991 | 992 | 993 | 994 | 995 | 996 | 997 | 998 | 999 | 1000 | 1001 | 1002 | 1003 | 1004 | 1005 | 1006 | 1007 | 1008 | 1009 | 1010 | 1011 | 1012 | 1013 | 1014 | 1015 | 1016 | 1017 | 1018 | 1019 | 1020 | 1021 | 1022 | 1023 | 1024 | 1025 | 1026 | 1027 | 1028 | 1029 | 1030 | 1031 | 1032 | 1033 | 1034 | 1035 | 1036 | 1037 | 1038 | 1039 | 1040 | 1041 | 1042 | 1043 | 1044 | 1045 | 1046 | 1047 | 1048 | 1049 | 1050 | 1051 | 1052 | 1053 | 1054 | 1055 | 1056 | 1057 | 1058 | 1059 | 1060 | 1061 | 1062 | 1063 | 1064 | 1065 | 1066 | 1067 | 1068 | 1069 | 1070 | 1071 | 1072 | 1073 | 1074 | 1075 | 1076 | 1077 | 1078 | 1079 | 1080 | 1081 | 1082 | 1083 | 1084 | 1085 | 1086 | 1087 | 1088 | 1089 | 1090 | 1091 | 1092 | 1093 | 1094 | 1095 | 1096 | 1097 | 1098 | 1099 | 1100 | 1101 | 1102 | 1103 | 1104 | 1105 | 1106 | 1107 | 1108 | 1109 | 1110 | 1111 | 1112 | 111 |

SOLID CARBIDE
DREAM DRILLS ALU with COOLANT HOLES (8XD)

SERIES

D5434

- ▶ Optimized thinning for Aluminum & Aluminum Alloys to
- ▶ prevent any clogging from chip welding
- ▶ Wider and deeper flute gullets for maximum chip removal
- ▶ Special geometry and smooth coating reduces built up edge and improves finishes



DIN 6537 CARBIDE 30° h6 m7 118° 20 bar Bright p.102

EXTRA LONG 8 × D

| EDP No. | Drill Diameter | | Flute Length | Overall Length | EDP No. | Drill Diameter | | Flute Length | Overall Length |
|----------|----------------|----|--------------|----------------|----------|----------------|----|--------------|----------------|
| | D1 | D2 | | | | D1 | D2 | | |
| D5434030 | 3.0 | 6 | 34 | 72 | D5434058 | 5.8 | 6 | 57 | 95 |
| D5434031 | 3.1 | 6 | 34 | 72 | D5434059 | 5.9 | 6 | 57 | 95 |
| D5434032 | 3.2 | 6 | 34 | 72 | D5434060 | 6.0 | 6 | 57 | 95 |
| D5434033 | 3.3 | 6 | 34 | 72 | D5434061 | 6.1 | 8 | 76 | 114 |
| D5434034 | 3.4 | 6 | 34 | 72 | D5434062 | 6.2 | 8 | 76 | 114 |
| D5434035 | 3.5 | 6 | 34 | 72 | D5434063 | 6.3 | 8 | 76 | 114 |
| D5434036 | 3.6 | 6 | 34 | 72 | D5434064 | 6.4 | 8 | 76 | 114 |
| D5434037 | 3.7 | 6 | 34 | 72 | D5434065 | 6.5 | 8 | 76 | 114 |
| D5434038 | 3.8 | 6 | 43 | 81 | D5434066 | 6.6 | 8 | 76 | 114 |
| D5434039 | 3.9 | 6 | 43 | 81 | D5434067 | 6.7 | 8 | 76 | 114 |
| D5434040 | 4.0 | 6 | 43 | 81 | D5434068 | 6.8 | 8 | 76 | 114 |
| D5434041 | 4.1 | 6 | 43 | 81 | D5434069 | 6.9 | 8 | 76 | 114 |
| D5434042 | 4.2 | 6 | 43 | 81 | D5434070 | 7.0 | 8 | 76 | 114 |
| D5434043 | 4.3 | 6 | 43 | 81 | D5434071 | 7.1 | 8 | 76 | 114 |
| D5434044 | 4.4 | 6 | 43 | 81 | D5434072 | 7.2 | 8 | 76 | 114 |
| D5434045 | 4.5 | 6 | 43 | 81 | D5434073 | 7.3 | 8 | 76 | 114 |
| D5434046 | 4.6 | 6 | 43 | 81 | D5434074 | 7.4 | 8 | 76 | 114 |
| D5434047 | 4.7 | 6 | 43 | 81 | D5434075 | 7.5 | 8 | 76 | 114 |
| D5434048 | 4.8 | 6 | 57 | 95 | D5434076 | 7.6 | 8 | 76 | 114 |
| D5434049 | 4.9 | 6 | 57 | 95 | D5434077 | 7.7 | 8 | 76 | 114 |
| D5434050 | 5.0 | 6 | 57 | 95 | D5434078 | 7.8 | 8 | 76 | 114 |
| D5434051 | 5.1 | 6 | 57 | 95 | D5434079 | 7.9 | 8 | 76 | 114 |
| D5434052 | 5.2 | 6 | 57 | 95 | D5434080 | 8.0 | 8 | 76 | 114 |
| D5434053 | 5.3 | 6 | 57 | 95 | D5434081 | 8.1 | 10 | 95 | 142 |
| D5434054 | 5.4 | 6 | 57 | 95 | D5434082 | 8.2 | 10 | 95 | 142 |
| D5434055 | 5.5 | 6 | 57 | 95 | D5434083 | 8.3 | 10 | 95 | 142 |
| D5434056 | 5.6 | 6 | 57 | 95 | D5434084 | 8.4 | 10 | 95 | 142 |
| D5434057 | 5.7 | 6 | 57 | 95 | D5434085 | 8.5 | 10 | 95 | 142 |

- ▶ DLC coating is available on your request.
- ▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : 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 |
| 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 | 32 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 21 | | |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | | |
| Recommended | | | | | | | | | | | | | | | | | | | | | | |

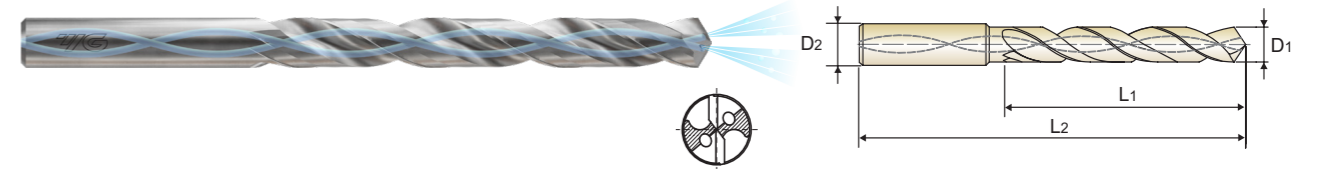
| ISO | N | | | | | | | | | | S | | | | | | H | | | | |
|-------------|------------------------|-----|-----------------------|----|-----|---|----|-----|----|----|------------------------|-----|-----------------------------|-----|-----|-------|-----------------|-----|----------------|-------------------|--------------------|
| | 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 | | 55 | 60 | 42 | 55 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | ◎ | ◎ | ◎ | ◎ | | | | | | | | | | | | | | | | | |

SOLID CARBIDE
DREAM DRILLS ALU with COOLANT HOLES (8XD)

SERIES

D5434

- ▶ Optimized thinning for Aluminum & Aluminum Alloys to
- ▶ prevent any clogging from chip welding
- ▶ Wider and deeper flute gullets for maximum chip removal
- ▶ Special geometry and smooth coating reduces built up edge and improves finishes



DIN 6537 CARBIDE 30° h6 m7 118° 20 bar Bright p.102

EXTRA LONG 8 × D

| EDP No. | Drill Diameter | | Flute Length | Overall Length | EDP No. | Drill Diameter | | Flute Length | Overall Length |
|----------|----------------|----|--------------|----------------|----------|----------------|----|--------------|----------------|
| | D1 | D2 | | | | D1 | D2 | | |
| D5434086 | 8.6 | 10 | 95 | 142 | D5434114 | 11.4 | 12 | 114 | 162 |
| D5434087 | 8.7 | 10 | 95 | 142 | D5434115 | 11.5 | 12 | 114 | 162 |
| D5434088 | 8.8 | 10 | 95 | 142 | D5434116 | 11.6 | 12 | 114 | 162 |
| D5434089 | 8.9 | 10 | 95 | 142 | D5434117 | 11.7 | 12 | 114 | 162 |
| D5434090 | 9.0 | 10 | 95 | 142 | D5434118 | 11.8 | 12 | 114 | 162 |
| D5434091 | 9.1 | 10 | 95 | 142 | D5434119 | 11.9 | 12 | 114 | 162 |
| D5434092 | 9.2 | 10 | 95 | 142 | D5434120 | 12.0 | 12 | 114 | 162 |
| D5434093 | 9.3 | 10 | 95 | 142 | D5434125 | 12.5 | 14 | 133 | 178 |
| D5434094 | 9.4 | 10 | 95 | 142 | D5434130 | 13.0 | 14 | 133 | 178 |
| D5434095 | 9.5 | 10 | 95 | 142 | D5434135 | 13.5 | 14 | 133 | 178 |
| D5434096 | 9.6 | 10 | 95 | 142 | D5434140 | 14.0 | 14 | 133 | 178 |
| D5434097 | 9.7 | 10 | 95 | 142 | | | | | |
| D5434098 | 9.8 | 10 | 95 | 142 | | | | | |
| D5434099 | 9.9 | 10 | 95 | 142 | | | | | |
| D5434100 | 10.0 | 10 | 95 | 142 | | | | | |
| D5434101 | 10.1 | 12 | 114 | 162 | | | | | |
| D5434102 | 10.2 | 12 | 114 | 162 | | | | | |
| D5434103 | 10.3 | 12 | 114 | 162 | | | | | |
| D5434104 | 10.4 | 12 | 114 | 162 | | | | | |
| D5434105 | 10.5 | 12 | 114 | 162 | | | | | |
| D5434106 | 10.6 | 12 | 114 | 162 | | | | | |
| D5434107 | 10.7 | 12 | 114 | 162 | | | | | |
| D5434108 | 10.8 | 12 | 114 | 162 | | | | | |
| D5434109 | 10.9 | 12 | 114 | 162 | | | | | |
| D5434110 | 11.0 | 12 | 114 | 162 | | | | | |
| D5434111 | 11.1 | 12 | 114 | 162 | | | | | |
| D5434112 | 11.2 | 12 | 114 | 162 | | | | | |
| D5434113 | 11.3 | 12 | 114 | 162 | | | | | |

- ▶ DLC coating is available on your request.
- ▶ Other shank types are available on your request.

◎ : 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 |
| 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 | 32 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 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 | | | | |
|-------------|------------------------|-----|-----------------------|----|-----|---|----|-----|----|----|------------------------|-----|-----------------------------|-----|-----|-------|-----------------|-----|----------------|-------------------|--------------------|
| | 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 | | 55 | 60 | 42 | 55 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | ◎ | ◎ | ◎ | ◎ | | | | | | | | | | | | | | | | | |

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 |



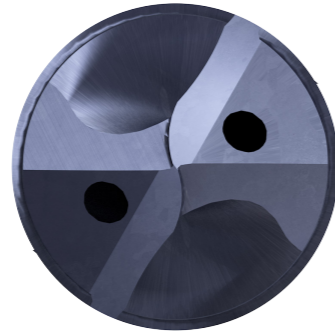
SOLID CARBIDE

**DREAM DRILLS
-MQL TYPE**

- Minimum Quantity Lubrication Drilling Deep Holes (10×D ~ 40×D)

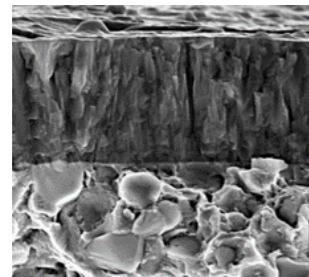
DREAM DRILLS MQL TYPE

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**

Compatible with the **MQL** (Minimum Quantity Lubrication) system.

- Reduction of Coolant related costs such as preparing, maintaining, disposal of emulsion
- Avoids additional efforts associated with part cleaning
- Allows for secure machining process ensuring predictable lubrication

Compare with Gun drills

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

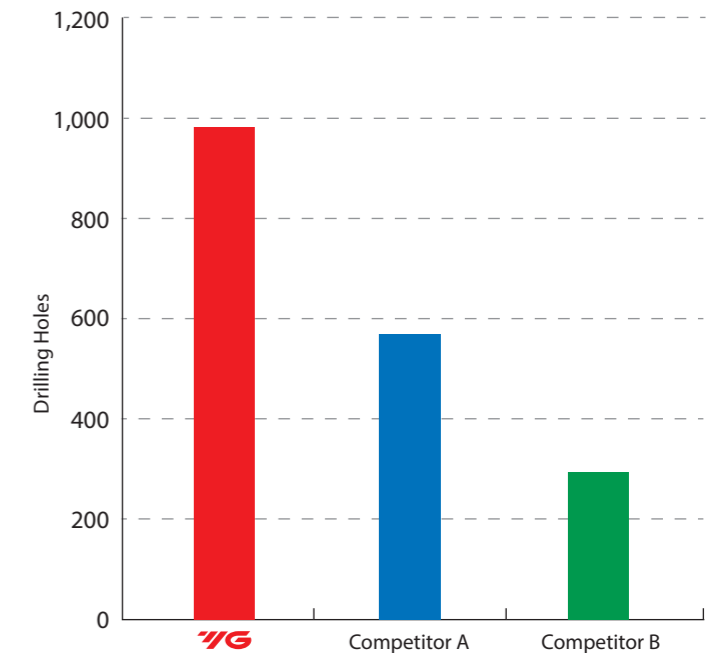
| | | |
|---|---|--|
| <p>Gun drill</p> <p>Gun drilling Machine</p> | <p>Productivity ↑</p> <p>Up to 10 times Drilling Feedrate</p> | <p>MQL Drill</p> <p>Vertical & Horizontal Machining Center</p> |
| <p>- Size Range : Ø2~Ø25</p> <p>- Drilling Depth : 25xD ~ over 100xD</p> <p>* Need Gun drilling machine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

CASE STUDY

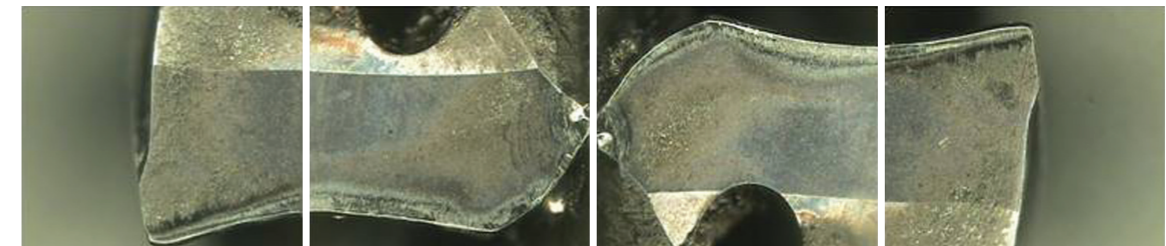
- Flute Shape and Point Shape allowing better chip evacuation in deep hole drilling
- Excellent Coating and Surface Treatment for better performance and chip evacuation

► SOLID CARBIDE DREAM DRILLS - MQL Type with Coolant Holes

| CUTTING CONDITION | |
|-------------------|--|
| Tool | DH520060 (20xD) |
| Size(mm) | 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) |

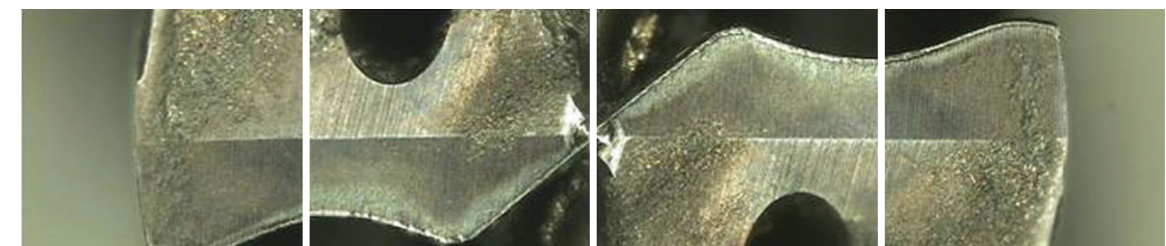


After Drilling 1,000 Holes



Competitor A

After Drilling 546 Holes





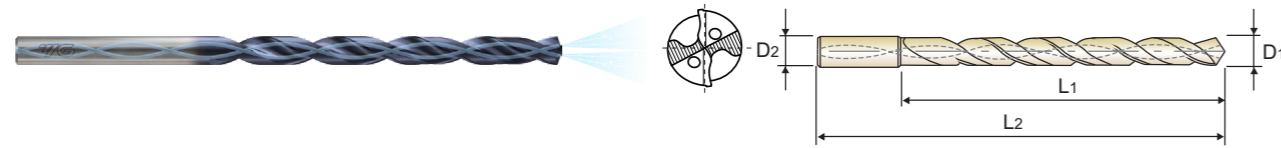
TiAlN-COATED SOLID CARBIDE

DREAM DRILLS MQL TYPE with COOLANT HOLES (10XD)

SERIES

DH510

- ▶ 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 TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)



EXTRA LONG

10 x D

| Unit : mm | | | | | Unit : mm | | | | |
|-----------|----------------|----------------|--------------|----------------|-----------|----------------|----------------|--------------|----------------|
| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
| TiAlN | D1 | D2 | L1 | L2 | TiAlN | D1 | D2 | L1 | L2 |
| DH510030 | 3.0 | 3 | 39 | 90 | DH510080 | 8.0 | 8 | 104 | 161 |
| DH510033 | 3.3 | 4 | 46 | 97 | DH510085 | 8.5 | 9 | 111 | 169 |
| DH510035 | 3.5 | 4 | 46 | 97 | DH510090 | 9.0 | 9 | 117 | 175 |
| DH510040 | 4.0 | 4 | 52 | 103 | DH510095 | 9.5 | 10 | 124 | 182 |
| DH510042 | 4.2 | 5 | 59 | 112 | DH510100 | 10.0 | 10 | 130 | 188 |
| DH510045 | 4.5 | 5 | 59 | 112 | DH510105 | 10.5 | 11 | 137 | 201 |
| DH510050 | 5.0 | 5 | 65 | 118 | DH510110 | 11.0 | 11 | 143 | 207 |
| DH510055 | 5.5 | 6 | 72 | 127 | DH510115 | 11.5 | 12 | 150 | 215 |
| DH510060 | 6.0 | 6 | 78 | 133 | DH510120 | 12.0 | 12 | 156 | 221 |
| DH510065 | 6.5 | 7 | 85 | 141 | DH510125 | 12.5 | 13 | 163 | 229 |
| DH510068 | 6.8 | 7 | 91 | 147 | DH510130 | 13.0 | 13 | 169 | 235 |
| DH510070 | 7.0 | 7 | 91 | 147 | DH510135 | 13.5 | 14 | 176 | 243 |
| DH510075 | 7.5 | 8 | 98 | 155 | DH510140 | 14.0 | 14 | 182 | 249 |

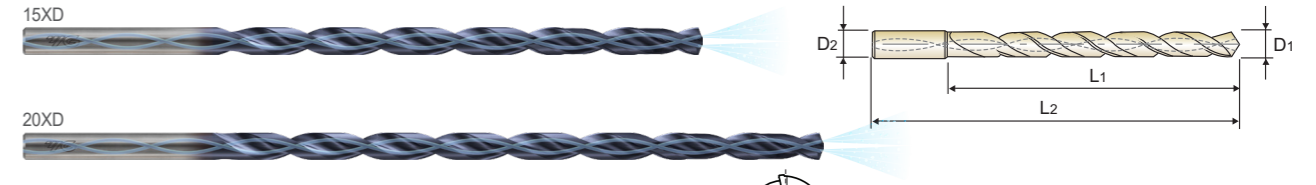
TiAlN-COATED SOLID CARBIDE

DREAM DRILLS MQL TYPE with COOLANT HOLES (15XD)(20XD)

DH515

DH520

- ▶ 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 TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)



EXTRA LONG

15 x D (DH515) 20 x D (DH520)

| Unit : mm | | | | | Unit : mm | | | | |
|-----------|----------------|----------------|--------------|----------------|-----------|----------------|----------------|--------------|----------------|
| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
| TiAlN | D1 | D2 | L1 | L2 | TiAlN | D1 | D2 | L1 | L2 |
| DH515030 | 3.0 | 3 | 54 | 105 | DH520030 | 3.0 | 3 | 69 | 120 |
| DH515035 | 3.5 | 4 | 63 | 114 | DH520035 | 3.5 | 4 | 81 | 132 |
| DH515040 | 4.0 | 4 | 72 | 123 | DH520040 | 4.0 | 4 | 92 | 143 |
| DH515045 | 4.5 | 5 | 81 | 134 | DH520045 | 4.5 | 5 | 104 | 157 |
| DH515050 | 5.0 | 5 | 90 | 143 | DH520050 | 5.0 | 5 | 115 | 168 |
| DH515055 | 5.5 | 6 | 99 | 154 | DH520055 | 5.5 | 6 | 127 | 182 |
| DH515060 | 6.0 | 6 | 108 | 163 | DH520060 | 6.0 | 6 | 138 | 193 |
| DH515070 | 7.0 | 7 | 126 | 182 | DH520070 | 7.0 | 7 | 161 | 217 |
| DH515080 | 8.0 | 8 | 144 | 201 | DH520080 | 8.0 | 8 | 184 | 241 |
| DH515090 | 9.0 | 9 | 162 | 220 | DH520090 | 9.0 | 9 | 207 | 265 |
| DH515100 | 10.0 | 10 | 180 | 238 | DH520100 | 10.0 | 10 | 230 | 288 |
| DH515110 | 11.0 | 11 | 198 | 262 | DH520120 | 12.0 | 12 | 276 | 341 |
| DH515120 | 12.0 | 12 | 216 | 281 | | | | | |

◎ : 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 | 21 | 22 | 23 | 24 | 25 |
| 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 |
| HRc | 13 | 25 | 28 | 32 | 38 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 | 120 | 125 | 130 | 135 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 215 | 275 | 300 | 350 | 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 | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | 55 | 60 | 55 | 60 | 42 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | | | | | | | | | | | | | | | | | | | | | |

◎ : 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 | 21 | 22 | 23 | 24 | 25 |
| 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 |
| HRc | 13 | 25 | 28 | 32 | 38 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 | 120 | 125 | 130 | 135 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 215 | 275 | 300 | 350 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | | | | | | |
| Recommended | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | |

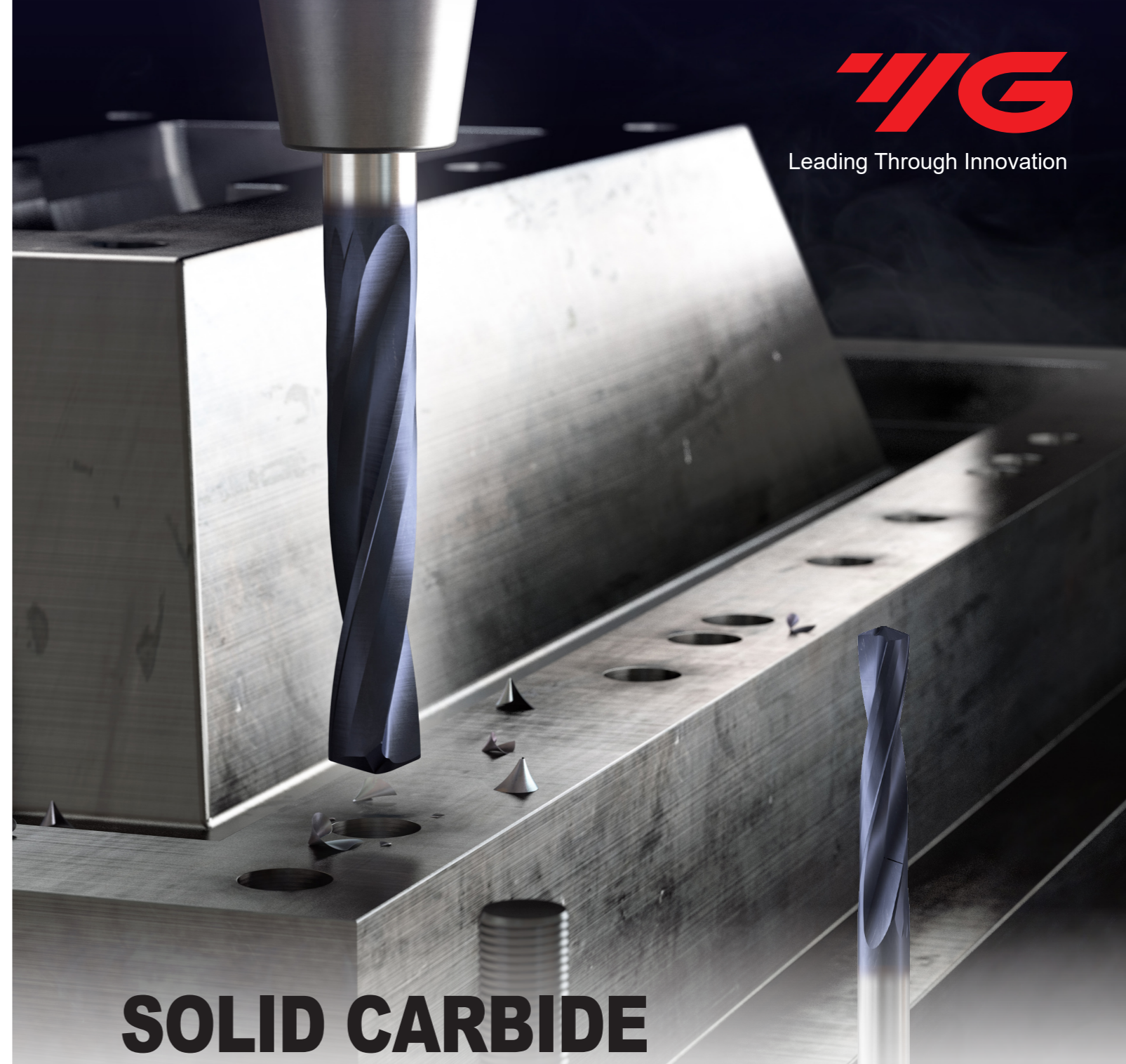
| ISO | N | | | | | | | | | | S | | | | | | H | | | | |
|----------------------|------------------------|-----|-----------------------|----|-----|---|----|------------------------|----|----|-----------------------------|-----|-----|-----------------|-----|-------|----------------|-----|-------------------|--------------------|-----|
| | 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 | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | 55 | 60 | 55 | 60 | 42 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | | | | | | | | | | | | | | | | | | | | | |

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 | | |
| 15 | 90 | 75 | RPM(10xD-20xD) | 9550 | 7160 | 5730 | 4770 | 3580 | 2860 | 2390 | 2050 | | |
| | | | RPM(25xD-30xD) | 7960 | 5970 | 4770 | 3980 | 2980 | 2390 | 1990 | 1710 | | |
| | | | 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 | | |
| 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 | | |
| | | | 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 | | |
| 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 | | |
| | | | 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 | | |
| 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 | | |
| | | | 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 | | |
| 19 | 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 | | |



SOLID CARBIDE

DREAM DRILLS for HIGH HARDENED STEELS

- For High Hardened Steels (HRc50 to HRc70)

1. Guide Drilling should be done as Diameter +0.01~+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%.

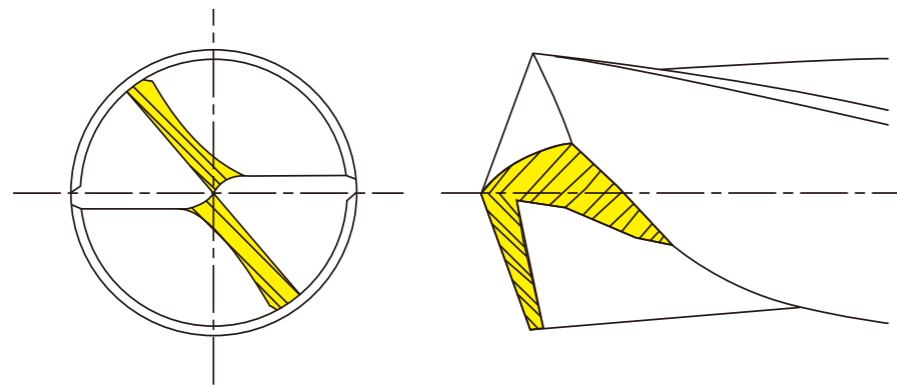
DREAM DRILLS for HIGH HARDENED STEELS

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.



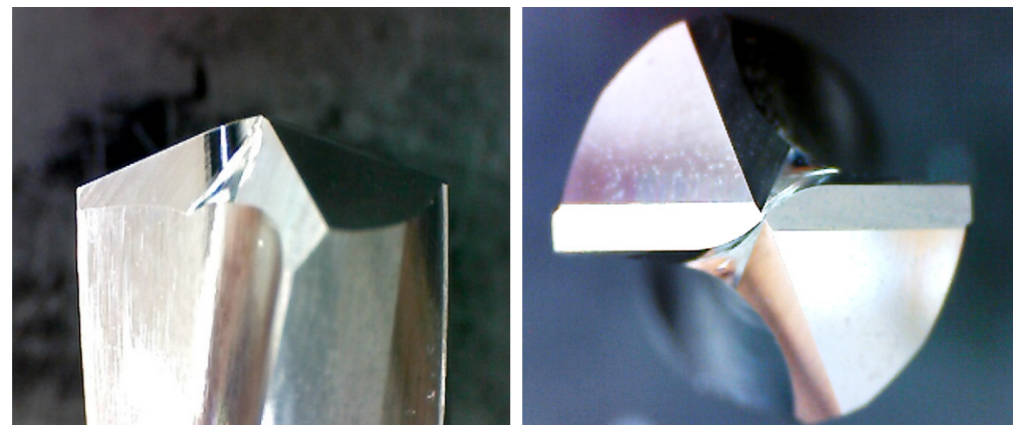
Coating

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

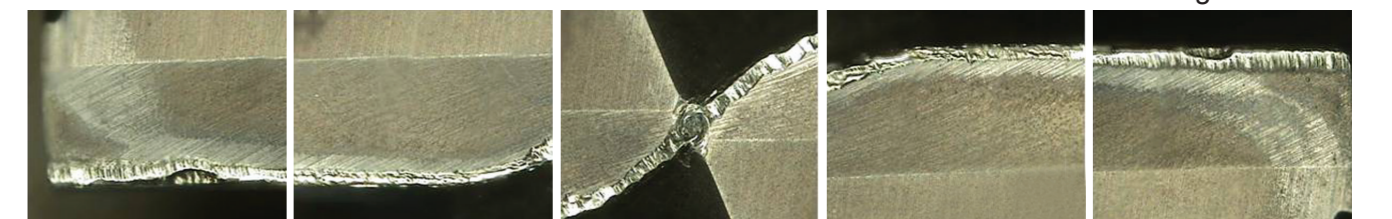
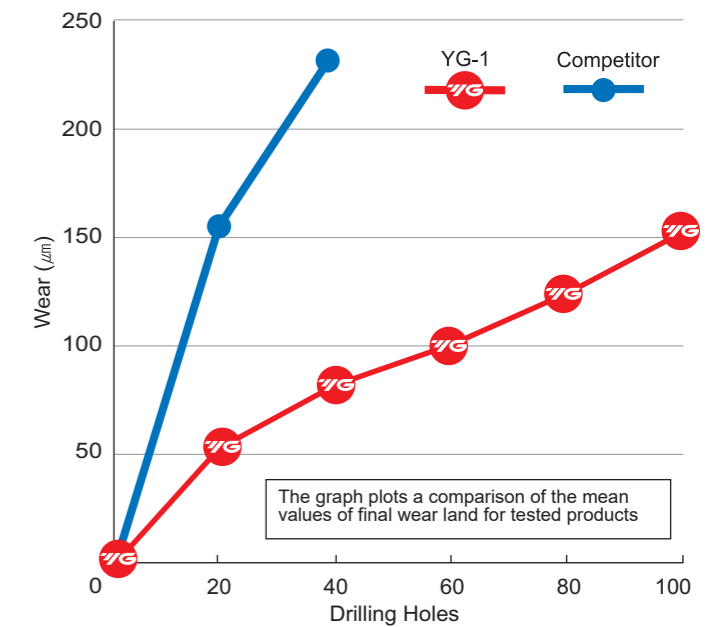


CASE STUDY

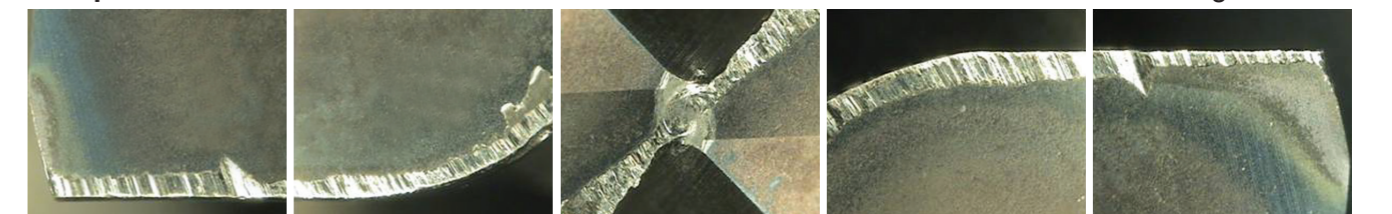
- Low Helix Angle to maximize tools' rigidity.
- Special Point Thinning to improve chip evacuation.
- Excellent Coating and Surface Treatment for improved surface and better chip evacuation.

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

| CUTTING CONDITION | |
|-------------------|--|
| Tool | DH500100 |
| Size(mm) | 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 |



Competitor A



DREAM DRILLS for HIGH HARDENED STEELS

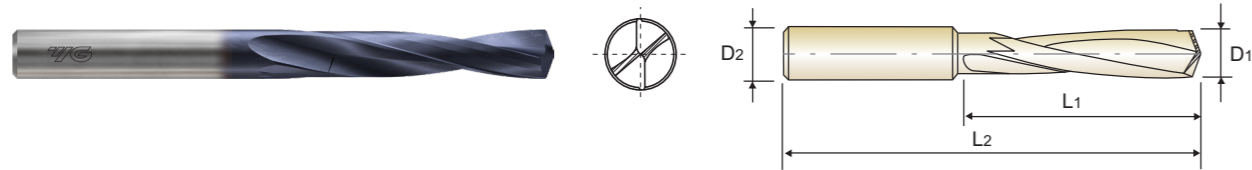
TIAlN-COATED SOLID CARBIDE

DREAM DRILLS HIGH HARDENED STEELS without COOLANT HOLES (3XD)

SERIES

DH500

- ▶ Drilling for High Hardened Steels; Quenched Steels, Tempered Steels (under HRc70)
- ▶ Special geometry design for Hardened Steels
- ▶ Minimum of cutting load through special thinning
- ▶ Performing good chip removal and powerful drilling



p.114

SHORT
3 × D

| EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length | EDP No. | Drill Diameter | Shank Diameter | Flute Length | Overall Length |
|----------|----------------|----------------|--------------|----------------|----------|----------------|----------------|--------------|----------------|
| TIAlN | D1 | D2 | L1 | L2 | TIAlN | D1 | D2 | L1 | L2 |
| 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

Recommended cutting conditions

| ISO | VDI 3323 | Material Description | Vc | Parameter | Drill Diameter (mm) | | | | | | | | | | | |
|------|----------|----------------------|-----------|-----------|---------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|--|--|
| | | | | | 2.5 | 3.0 | 4.0 | 5.0 | 6.0 | 8.0 | 10.0 | 12.0 | 14.0 | | | |
| H | 38 | Hardened steel | 20 | RPM | 2550 | 2120 | 1590 | 1270 | 1060 | 800 | 640 | 530 | 450 | | | |
| | | | | FEED | 0.01-0.03 | 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 | | | |
| | | | | RPM | 1910 | 1590 | 1190 | 950 | 800 | 600 | 480 | 400 | 340 | | | |
| | 39.1 | | | RPM | 0.01-0.03 | 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 | | | |
| | | | | FEED | 0.01-0.03 | 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 | | | |
| | | | | RPM | 1530 | 1270 | 950 | 760 | 640 | 480 | 380 | 320 | 270 | | | |
| 39.3 | RPM | 0.01-0.03 | 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 | | | | | | |
| | FEED | 0.01-0.03 | 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 | | | | | | |
| | FEED | 0.01-0.03 | 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 | | | | | | |

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

| 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 | |
| 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 | 32 | 10 | 29 | 32 | 38 | 35 | 15 | 23 | 30 | 34 | 10 | 26 | 3 | 25 | 21 | 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 | | | | |
|-------------|------------------------|-----|------------------------|----|-----|---|----|-----|------------------------|----|-----------------------------|-----|-----|-----|-----------------|-------|----------------|-------------------|--------------------|------|-----|
| | 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 | 39.3 | |
| HRc | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | | | 55 | 60 | 70 | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | | | | | | | | | | | | | | | | | | ◎ | ◎ | ◎ | |

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