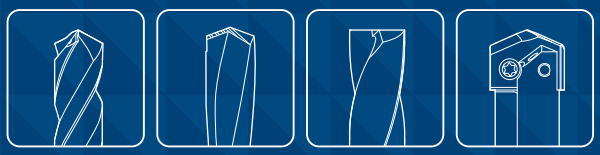
YE-HT20
EUROPE
2020/2021

Registered
ISO 9001:2015 / ISO 14001:2015

GLOBAL BRAND 2012

CUTTING TOOLS



HOLEMAKING

YG-1 CO., LTD.

GUIDE LINE TO ICONS

Standard of Tools

YG STD — YG-1 Standard

DIN 333 / DIN 1869/1 / DIN 1870/1 — Number of DIN Standard

Tool Material

CARBIDE — Carbide

HSS PM — YG-1 Premium Powder Metallurgy HSS

SUPER HSS — Super HSS

HSS Co8 — 8% Cobalt HSS

HSS-E — 5% Cobalt HSS

HSS — High Speed Steel

Surface Treatment

TiCN — Titanium Carbon Nitride Coating

TiN — Titanium Nitride Coating

TiAlN — Titanium Aluminum Nitride Coating

Hardslick — TiAlN + WC/C Coating

X-Coating — YG-1 X-Coating

H-Coating — YG-1 H-Coating

Diamond — Diamond Coating

Homo — Steam Tempered (Black Oxide finish)

Bright — Bright Finish

The Type of Shank



Flat shank with DIN Standard



Range of Morse Taper Shank

Coolant Supply Pressure



Internal Coolant Suppy at 45 bar average pressure



Internal Coolant Suppy at 20 bar average pressure

Helix Angle



Point Angle



Chamfer Angle



Reamers

Tolerance of Dimension



Tolerance of Outside Diameter



Tolerance of Shank Diameter

O.D. Tolerance of Reamer

H7 — DIN 1420 for H7 Reamed Hole

Cutting Condition

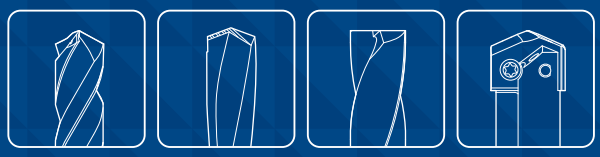

Drills

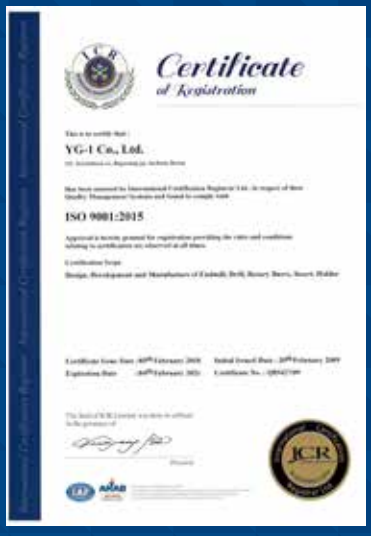

Reamers


Countersinks


Counterbores

CUTTING TOOLS




Certificate
of Registration

YG-1 Co., Ltd.

ISO 9001:2015

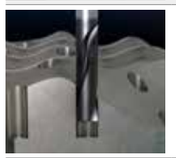

Certificate
of Registration

YG-1 Co., Ltd.

ISO 14001:2015

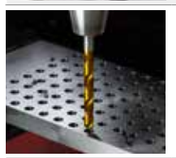
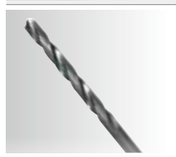
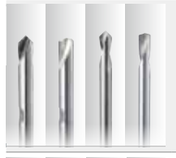
HOLEMAKING TOOLS

1. ENGLISH 2.GERMAN 3.FRENCH 4. ITALIAN 5. SPANISH 6. RUSSIAN 7. POLISH 8. TURKISH

PRODUCTS	DESCRIPTION	PAGE
		
1 **i-ONE DRILLS, CARBIDE INSERTS & HOLDERS** 2 i-One DRILLS, VHM auswechselbare Bohrschneiden 3 i-ONE DRILLS, PLAQUETTE CARBURE DE PERÇAGE 4 PUNTE i-ONE DRILLS 5 i-one Drills con inserto de carburo 6 Сверла i-ONE с твердосплавными сменными пластинами 7 Wiertła i-ONE na wymienne płytki węglikowe 8 i-ONE DRILLS, DEĞİŞTİRİLEBİLİR KARBÜR UÇLU MATKAPLAR	High Performance Exchangeable for General Steels and Cast Iron	**35**
		
1 **i-DREAM DRILLS, CARBIDE INSERTS & HOLDERS** 2 i-DREAM DRILLS, HM-Wechselplatten 3 i-DREAM DRILLS - PLAQUETTES CARBURE 4 INSERTI i-DREAM DRILL 5 Brocas i-dream, inserto de metal duro 6 Сверла i-DREAM с твердосплавными сменными пластинами 7 WIERTŁA I-DREAM DRILL, PŁYTKI WĘGLIKOWE 8 i-DREAM DRILL, DEĞİŞTİRİLEBİLİR KARBÜR UÇLU MATKAPLAR	For General Steels and Stainless Steels	**53**
		
1 **SOLID CARBIDE DREAM DRILLS - GENERAL (with & without coolant Holes)** 2 VHM-DREAM DRILLS-UNIVERSAL (mit und ohne Kühlkanäle) 3 DREAM DRILLS - FORETS CARBURE Général (avec et sans arrosage central) 4 PUNTE DREAM DRILLS (con e senza fori di refrigerazione) 5 Brocas Dream de metal duro- General (con y sin agujeros de refrigeración) 6 Твердосплавные сверла DREAM DRILLS - GENERAL общего применения (с/без отверстий для СОЖ) 7 WIERTŁA WĘGLIKOWE DREAM-DRILL - DO OGÓLNEGO ZASTOSOWANIA (Z CHŁODZENIEM LUB BEZ CHŁODZENIA WEW.) 8 SOLID KARBÜR DREAM DRILL MATKAPLAR-GENEL KULLANIM (İçten su delikli ve su deliksiz)	For General Purpose (HRc30 to HRc45)	**75**
		
1 **SOLID CARBIDE DREAM DRILLS - HIGH FEED (with coolant holes)** 2 VHM Dream Drills - High Feed mit innerer Kühlmittelzufuhr (IK) 3 DREAM DRILLS Grande Avance, FORETS CARBURE MONOBLOC (avec arrosage central) 4 PUNTE DREAM DRILLS AD ELEVATO AVANZAMENTO (Con fori di refrigerazione) 5 Dream Drills de carburo sólido, de alto avance con agujeros de refrigeración 6 ТВЕРДОСПЛАВНЫЕ СВЕРЛА DREAM DRILLS - HIGH FEED ДЛЯ ВЫСОКОЙ ПОДАЧИ (с отверстиями для СОЖ) 7 Wiertła węglikowe Dream Drill – High Feed (z chłodzeniem wewnętrznym) 8 SOLID KARBÜR DREAM DRILL MATKAPLAR -YÜKSEK İLERLEMELİ MATKAPLAR (İçten su delikli)	1.5 to 2 Times Faster Feeding Speed than 2-Flute Drill for Carbon Steels, Alloy Steels (up to HRc35) and Cast Iron	**99**
		
1 **SOLID CARBIDE DREAM DRILLS - FLAT BOTTOM (with & without coolant Holes)** 2 VHM Dream Drills - Flachbohrer 3 DREAM DRILLS - FOND PLAT, FORET CARBURE MONOBLOC 4 PUNTE DREAM DRILLS FLAT BOTTOM 5 Dream Drills de carburo sólido - Flat Bottom 6 ТВЕРДОСПЛАВНЫЕ СВЕРЛА DREAM DRILLS С ПЛОСКИМ ТОРЦЕМ 7 Wiertła węglikowe Dream Drill – płaskie dno 8 SOLID KARBÜR DREAM DRILL MATKAPLAR -DÜZ AĞIZLI	For Holes on Various Angled Surfaces	**107**
		
1 **SOLID CARBIDE DREAM DRILLS - INOX (with coolant Holes)** 2 VHM - DREAM DRILLS - INOX (mit Kühlkanälen) 3 DREAM DRILLS - FORETS CARBURE Spécial INOX (avec arrosage central) 4 PUNTE DREAM DRILLS PER INOX (con fori di refrigerazione) 5 Brocas de metal duro- Inox (con agujeros de refrigeración) 6 Твердосплавные сверла DREAM DRILLS - INOX для нержавеющей стали, никелевых сплавов, титана (с отверстиями для СОЖ) 7 WIERTŁA WĘGLIKOWE DREAM DRILL- INOX (Z CHŁODZENIEM WEWNĘTRZNYM) 8 SOLID KARBÜR DREAM DRILL PASLANMAZ ÇELİK MATKAPLARI (İçten su delikli)	For Tough Materials like Stainless Steels, Nickel Alloys and Titanium	**119**
		
1 **SOLID CARBIDE DREAM DRILLS - ALU (with coolant Holes)** 2 VHM - DREAM DRILLS - ALU (mit Kühlkanälen) 3 DREAM DRILLS - FORETS CARBURE Spécial ALU (avec arrosage central) 4 PUNTE DREAM DRILLS ALU (con fori di refrigerazione) 5 Brocas de metal duro- ALU(con agujeros de refrigeración) 6 Твердосплавные сверла DREAM DRILLS - ALU для алюминия (с отверстиями для СОЖ) 7 WIERTŁA WĘGLIKOWE DREAM DRILL - ALU (Z CHŁODZENIEM WEWNĘTRZNYM) 8 SOLID KARBÜR DREAM DRILL ALUMINYUM MATKAPLARI (İçten su delikli)	For Aluminum and Aluminum Alloys	**131**
		
1 **SOLID CARBIDE DREAM DRILLS - CFRP (without coolant Holes)** 2 VHM - DREAM DRILLS - CFK 3 DREAM DRILLS - FORETS CARBURE Spécial CFRP 4 PUNTE DREAM DRILLS CFRP 5 Brocas de metal duro- CFRP 6 Твердосплавные сверла DREAM DRILLS - CFRP для композитных материалов 7 WIERTŁA WĘGLIKOWE DREAM DRILL - CFRP 8 SOLID KARBÜR DREAM DRILL CRFP - KOMPOZİT MATKAPLARI	For Composite Materials including CFRP and GFRP	**143**
		
1 **SOLID CARBIDE DREAM DRILLS - MQL TYPE (with coolant Holes)** 2 VHM - DREAM DRILLS - MQL (mit Kühlkanälen) 3 DREAM DRILLS - FORETS CARBURE - Type MQL (avec arrosage central) 4 PUNTE DREAM DRILL MQL (con fori per refrigerazione) 5 Brocas Dream de metal duro- Tipo MQL(con agujeros de refrigeración) 6 Твердосплавные сверла DREAM DRILLS - MQL для глубокого сверления (с отверстиями для СОЖ) 7 WIERTŁA WĘGLIKOWE DREAM DRILL - TYP MQL (Z CHŁODZENIEM WEWNĘTRZNYM) 8 SOLID KARBÜR DREAM DRILL MQL MATKAPLAR (İçten su delikli)	Minimum Quantity Lubrication Drilling Deep Holes (10×D - 30×D)	**147**
		
1 **SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS (without coolant Holes)** 2 VHM - DREAM DRILLS FÜR HOCHGEHÄRTETE STÄHLE 3 DREAM DRILLS - FORETS CARBURE pour ACIERS DURS 4 PUNTE DREAM DRILLS PER ACCIAI TEMPRATI 5 Brocas Dream de metal duro para aceros templados 6 Твердосплавные сверла DREAM DRILLS для закалённой стали 7 WIERTŁA WĘGLIKOWE DREAM DRILL DO STALI UTWARDANYCH 8 SOLID KARBÜR DREAM DRILL SETLEŞTİRİLMİŞ ÇELİK MATKAPLARI	For High Hardened Steels (HRc50 to HRc70)	**157**

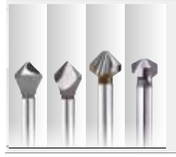
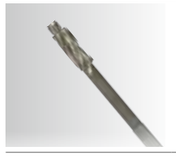
HOLEMAKING TOOLS

1. ENGLISH 2.GERMAN 3.FRENCH 4. ITALIAN 5. SPANISH 6. RUSSIAN 7. POLISH 8. TURKISH

PRODUCTS	DESCRIPTION	PAGE
		
1 **GENERAL SOLID CARBIDE DRILLS (JOBBER & STUB LENGTH)** 2 UNIVERSELLE VHM - BOHRER (in Längen nach DIN 338 und DIN 1897) 3 FORETS CARBURE à usage général- SERIE COURTE 4 PUNTE GENERICHE CORTE ED EXTRA CORTE 5 Brocas de metal duro, longitud extra corta, estándar 6 Твердосплавные сверла общего применения, обычной длины и укороченные 7 WIERTŁA WĘGLIKOWE DO OGÓLNEGO ZASTOSOWANIA 8 NORMAL ve KISA BOY KARBÜR GENEL KULLANIM MATKAPLARI	For General Purpose, DIN338 & DIN6539	**161**
		
1 **HSS-PM MULTI-1 DRILLS** 2 HSS-PM MULTI-1 BOHRER 3 MULTI-1 DRILLS - FORETS HSS-PM 4 PUNTE MULTI-1 DRILLS 5 Brocas HSS sinterizado Multi-1 6 Сверла MULTI-1 из порошковой быстрорежущей стали 7 WIERTŁA MULTI-1 HSS-PM 8 HSS-PM MULTI-1 MATKAPLAR	Premium HSS-PM Drills For Wide Range of Applications Particularly Stainless Steels and Titanium	**169**
		
1 **HSSCo8 & HSS-E HPD STRAIGHT SHANK DRILLS** 2 PREMIUM-HSS HPD ZYLINDERSCHAFT BOHRER 3 FORETS HSS-PM Haute Performance cylindriques 4 PUNTE HPD GAMBO CILINDRICO 5 Brocas HSS Co HPD mango cilíndrico 6 Сверла HPD с цилиндрическим хвостовиком из улучшенной быстрорежущей стали 7 WIERTŁA PROSTE PREMIUM HSS DO OBRÓBKI PRECYZYJNEJ 8 PREMIUM HSS SİLİNDİRİK ŞAFTLI YÜKSEK PERFORMANS MATKAPLARI	High Precision Drilling for General Steels & Stainless Steels	**179**
		
1 **HSS & HSS-E GOLD-P DRILLS** 2 HSS GOLD-P BOHRER 3 GOLD-P, FORETS HSS 4 PUNTE GOLD-P DRILLS 5 Brocas Acero rápido Gold-P 6 Сверла GOLD-P из быстрорежущей стали 7 WIERTŁA GOLD-P HSS 8 HSS GOLD-P MATKAPLAR	Same Performance as Full TiN-coated Drills	**203**
		
1 **SUPER HSS SUPER-GP DRILLS** 2 HSS BOHRER MIT ZYLINDERSCHAFT 3 FORETS HSS Cylindriques 4 PUNTE SUPER GP-DRILLS 5 Brocas HSS mango cilíndrico 6 Сверла SUPER-GP DRILLS из супер быстрорежущей стали 7 WIERTŁA Z CHWYTEM PROSTYM HSS 8 HSS SUPER-GP SİLİNDİRİK DÜZ ŞAFTLI MATKAPLAR	All Applications Regardless of Machining Conditions; Good or Poor	**221**
		
1 **HSS, HSS-E & HSSCo8 STRAIGHT SHANK DRILLS** 2 HSS BOHRER MIT ZYLINDERSCHAFT 3 FORETS HSS Cylindriques 4 PUNTE HSS GAMBO CILINDRICO 5 Brocas HSS mango cilíndrico 6 Сверла из быстрорежущей стали с цилиндрическим хвостовиком 7 WIERTŁA Z CHWYTEM PROSTYM HSS 8 HSS SİLİNDİRİK DÜZ ŞAFTLI MATKAPLAR	For General Purpose (Soft & Tough Materials)	**229**
		
1 **HSS & HSS-E MORSE TAPER SHANK DRILLS** 2 HSS BOHRER MIT MORSEKEGEL 3 FORETS HSS Queue Cône Morse 4 PUNTE HSS CON ATTACCO CONO MORSE 5 Brocas HSS mango cónico 6 Сверла из быстрорежущей стали с хвостовиком конус Морзе 7 WIERTŁA Z CHWYTEM MORSE HSS 8 HSS MORS KONİK ŞAFTLI MATKAPLAR	Morse Taper Shank Drills for Wide Applications	**285**
		
1 **SOLID CARBIDE & HSSCo8 NC-SPOTTING DRILLS** 2 VHM/HSS-Co8 - NC-ANBOHRER 3 FORETS CARBURE/HSSCo8 A POINTER NC 4 PUNTE NC A CENTRARE IN MDI/HSSCo8 5 Brocas de metal duro/HSS Co8 para puntear 6 Твердосплавные центровочные сверла для станков с ЧПУ из быстрорежущей стали, с с содержанием кобальта 7 NAWIERTAKI WĘGLIKOWE/HSSCo8 8 SOLID KARBÜR/HSS (%8 Cobalt) NC PUNTA MATKAPLARI	For Centering and Chamfering of Holes	**297**
		
1 **SOLID CARBIDE, HSS & HSS-E CENTER DRILLS** 2 VHM/HSS - ZENTRIERBOHRER 3 FORETS CARBURE/HSS à centrer 4 PUNTE A CENTRARE MD/HSS 5 Brocas CARBURO/HSS de centrar 6 Твердосплавные центровочные сверла из быстрорежущей стали, с содержанием кобальта 7 WIERTŁA WĘGLIKOWE/HSS CE NTRUJĄCE 8 SOLID KARBÜR/HSS PUNTA MATKAPLARI	For General Purpose	**307**
		
1 **SPADE DRILLS, INSERTS & HOLDERS** 2 HM & HSS-PM BOHRMESSER 3 LAMES CARBURE & HSS-PM 4 PUNTE SPADE DRILLS METALLO DURO & HSS-PM 5 Insertos de metall duro y HSS para taladrado 6 Сверла Spade со сменными твердосплавными пластинами из быстрорежущей стали 7 WIERTŁA SKŁADANE WĘGLIKOWE I HSS-PM 8 KARBÜR ve HSS-PM DEĞİŞTİRİLEBİLİR UÇLU MATKAPLAR	For General Machines and Drilling Large Diameters Longer Tool Life and High Productivity	**319**

HOLEMAKING TOOLS

1. ENGLISH 2.GERMAN 3.FRENCH 4. ITALIAN 5. SPANISH 6. RUSSIAN 7. POLISH 8. TURKISH

PRODUCTS	DESCRIPTION	PAGE
 1 **CARBIDE, HSS & HSS-E REAMERS** 2 REIBAHLEN 3 ALESOIRS 4 ALESATORI 5 Escariadores 6 Развертки 7 ROZWIERTAKI 8 RAYBALAR	Carbide NC Machine Reamers HSS Hand Reamers HSS-E Chucking Reamers	**403**
 1 **HSS & HSSCo8 COUNTERSINKS** 2 HSS SENKER 3 FRAISES A EBAVURER HSS 4 SVASATORI IN HSS 5 Avellanadores conicos HSS mango cilíndrico 6 Зенкеры из быстрорежущей стали 7 POGŁĘBIACZE HSS 8 HSS HAVŞA VE PAH TAKIMLARI	For Deburring, Chamfering and Countersinking	**431**
 1 **HSS-E COUNTERBORES** 2 HSS-E FLACHSENKER 3 FRAISES A LAMER HSS-E 4 LAMATORI IN HSS-E 5 Avellanadores tipo Allen HSS mango cilíndrico 6 Цековки из быстрорежущей стали 7 POGŁĘBIACZE HSS-E 8 HSS-E KADEMELİ TAKIMLAR	For Machining Screw Head Seats	**441**

i-DREAM DRILL

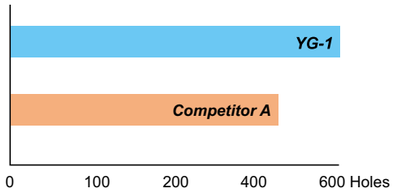
Reference page : p.53 - p.73

TEST I GENERAL

Cutting Condition

HOLDER	ZH14505020
INSERT	YB1A1450 / Ø14.5
Work Material	ASTM : A36 DIN : St37-2 JIS : SS400
utting Speed	80 m/min
Feed	0.24 mm/rev.
Feedrate	421 mm/min.
RPM	1,756 rev./min.
Drilling	48.0 mm
Coolant	Internal
Machine type	Vertical Machining Center

RESULT



▶ YG-1 (Total Drilling 600 Holes)



▶ Competitor A (Total Drilling 470 Holes)

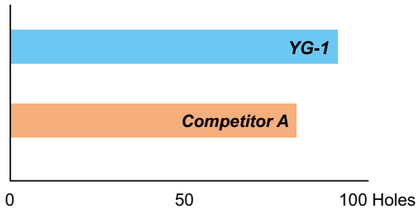


TEST II INOX

Cutting Condition

HOLDER	ZH14005020
INSERT	YB2C1400 / Ø14.0
Work Material	AISI : 304 DIN : X5CrNi189 JIS : SUS304
Cutting Speed	55 m/min
Feed	0.15 mm/rev.
Feedrate	188 mm/min.
RPM	1,250 rev./min.
Drilling	50.0 mm
Coolant	Internal
Machine type	Vertical Machining Center

RESULT



▶ YG-1 (Total Drilling 100 Holes)



▶ Competitor A (Total Drilling 80 Holes)



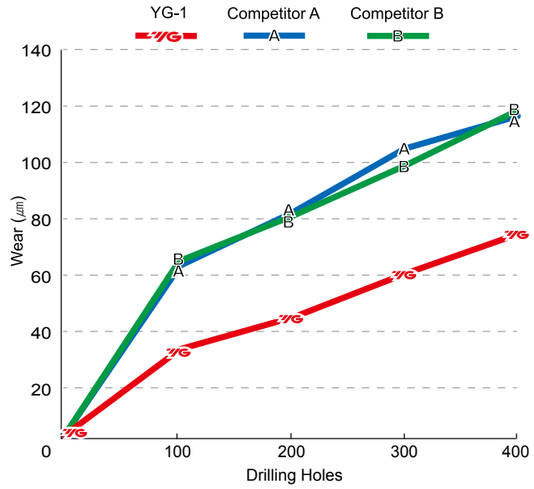
DREAM DRILLS - GENERAL

Reference page : p.75 - p.97

▶ SOLID CARBIDE DREAM DRILLS - GENERAL with Coolant Holes

Cutting Condition

Tool	DH408015 (Dream Drill with Coolant Holes)
Size	Ø1.5 x 3 x 15 x 55
Work Material	DIN : X40GrMoV51 WR : 1.2344 JIS : SKD61 (HRc30)
RPM (rev./min)	14,856 rev./min.
Feed(mm/min)	0.05 mm/rev.
Drilling Depth	7.5 mm
Coolant	Wet Cut



▶ YG-1 (Total Drilling 400 Holes)



▶ Competitor A (Total Drilling 400 Holes)



▶ Competitor B (Total Drilling 400 Holes)



DREAM DRILLS - HIGH FEED

Reference page : p.99 - p.105

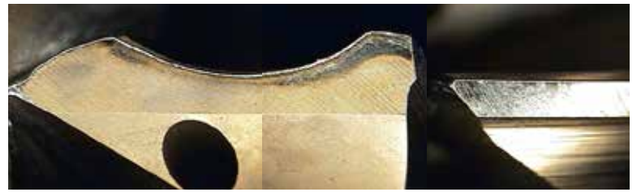
Dream Drills-High Feed offers 1.5 to 2 times higher feeding speed compared to conventional 2-flute drills. The unique flute design and exceptional surface finish promise extraordinary chip evacuation.

▶ SOLID CARBIDE DREAM DRILLS - HIGH FEED with Coolant Holes

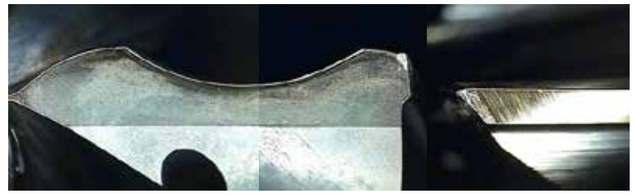
Cutting Condition

Tool	DGR495100 (Dream Drills High Feed)
Size	Ø10 x 10 x 61 x 103
Work Material	DIN : C45 AISI : 1045 JIS : S45C (HRc20)
RPM (rev./min)	3,200 rev./min.
Feed(mm/min)	0.5 mm/rev.
Drilling Depth	50 mm (5xD)
Drilling Method	Blind Hole
Coolant	Wet Cut
Machine	Machining Center

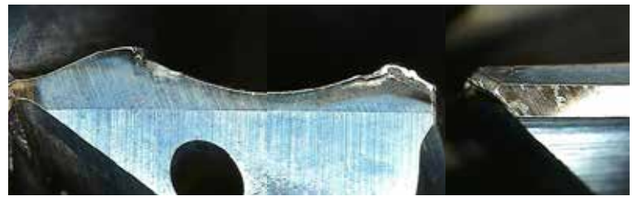
▶ YG-1 (Total Drilling 330 Holes)



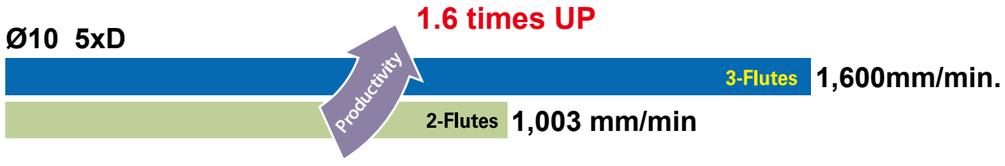
▶ Competitor A (Total Drilling 330 Holes)



▶ Competitor B (Total Drilling 330 Holes)



Productivity (Carbon Steel)



DREAM DRILLS - FLAT BOTTOM

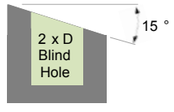
Reference page : p.107 - p.118

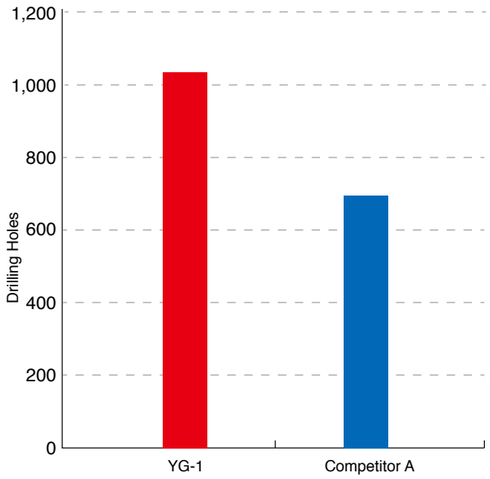
TEST Ⅰ

▶ 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 (rev./min)	4,000 rev/min
Feed(mm/min)	0.1 mm/rev
Drilling Depth	12.0 mm (2XD) Blind Hole / without Pecking
Coolant	External Cooling Water Soluble (9% Emulsion)
Machine	Vertical Machining Center





▶ YG-1



Small Chipping

▶ Competitor A



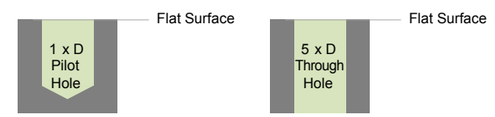
Big Chipping

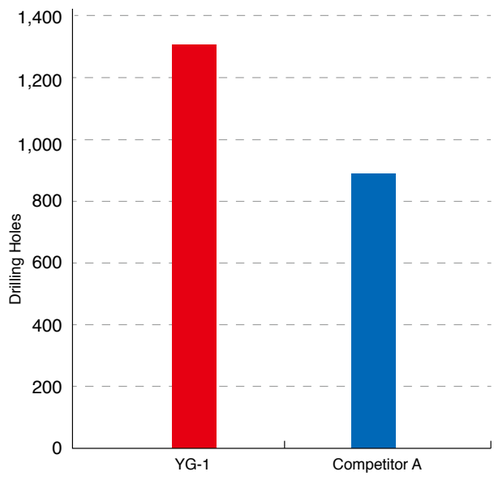
TEST Ⅱ

▶ SOLID CARBIDE DREAM DRILLS - FLAT BOTTOM with Coolant Holes

Cutting Condition

Tool	DH408015 (Dream Drill with Coolant Holes)
Size	Ø1.5 x 3 x 15 x 55
Work Material	DIN : X40GrMoV51 WR : 1.2344 JIS : SKD61 (HRc30)
RPM (rev./min)	14,856 rev./min.
Feed(mm/min)	0.05 mm/rev.
Drilling Depth	7.5 mm
Coolant	Wet Cut





▶ YG-1



Small Chipping

▶ Competitor A



Big Chipping

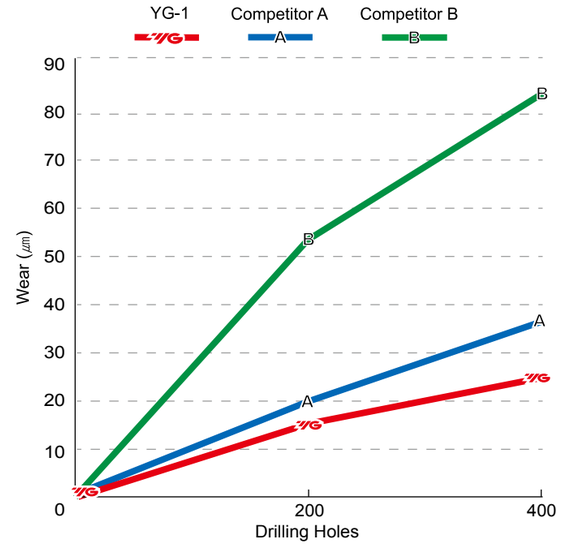
DREAM DRILLS - INOX

Reference page : p.119 - p.130

▶ SOLID CARBIDE DREAM DRILLS - INOX with Coolant Holes

Cutting Condition

Tool	DH452060 (DREAM DRILL-INOX)
Size	Ø6x Ø6 x 44 x 82
Work Material	DIN : X5CrNi1810 (X4CrNi18-10) WR : 1.4301 JIS : SUS304
RPM (rev./min)	3,700 rev./min.
Feed(mm/min)	0.07 mm/rev.
Drilling Depth	24 mm
Coolant	Wet Cut



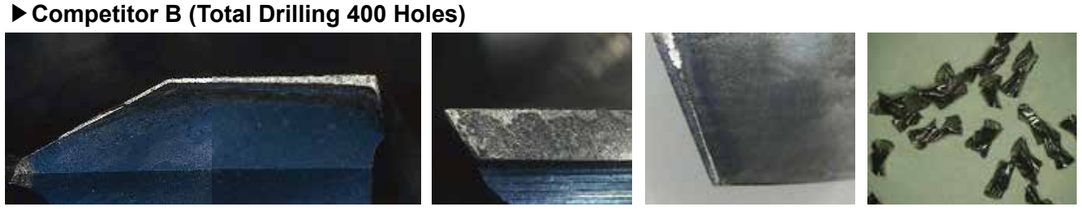
▶ YG-1 (Totarilling 400 Holes)



▶ Competitor A (Total Drilling 400 Holes)



▶ Competitor B (Total Drilling 400 Holes)



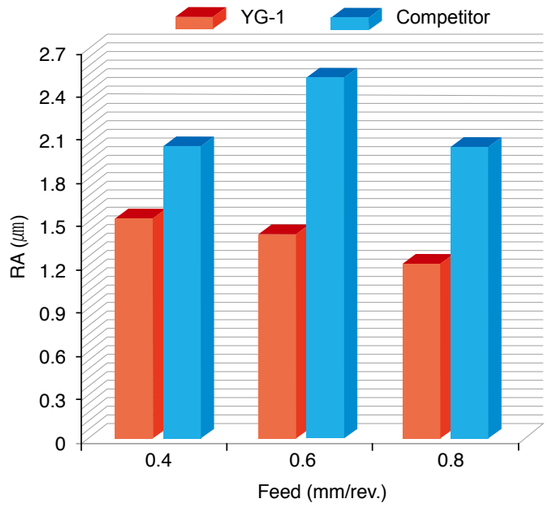
DREAM DRILLS - ALU

Reference page : p.131 - p.141

▶ SOLID CARBIDE DREAM DRILLS - ALU with Coolant Holes

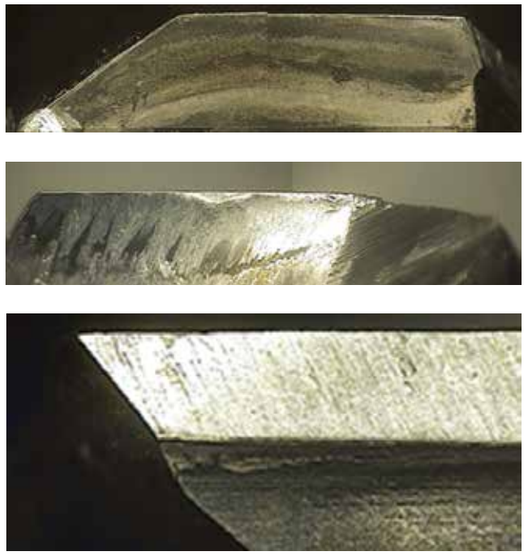
Cutting Condition

Tool	D5433100 (DREAM DRILLS-ALU)
Size	Ø10.0×Ø10×61×103
Work Material	DIN : AlMgSiCu AISI : 6061 JIS : A6061
RPM (rev./min)	6,367 rev./min.
Feed(mm/min)	0.4 ~ 0.8 mm/rev.
Drilling Depth	45 mm
Coolant	Wet Cut

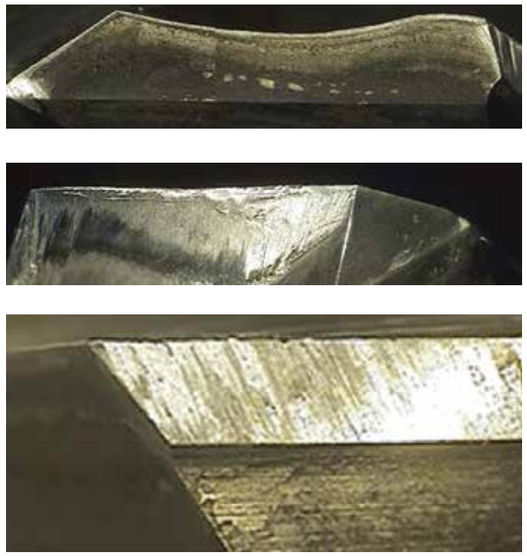


Surface Roughness of Work Piece

▶ YG-1 (Total Drilling 820 Holes)



▶ Competitor A (Total Drilling 820 Holes)



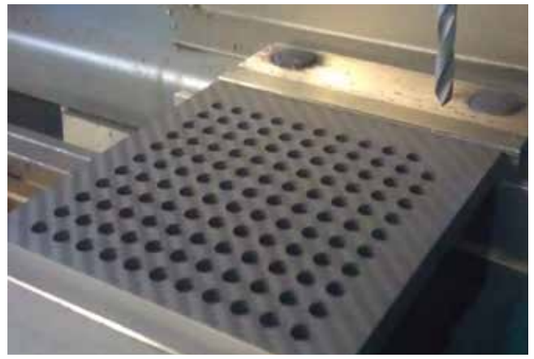
DREAM DRILLS - CFRP

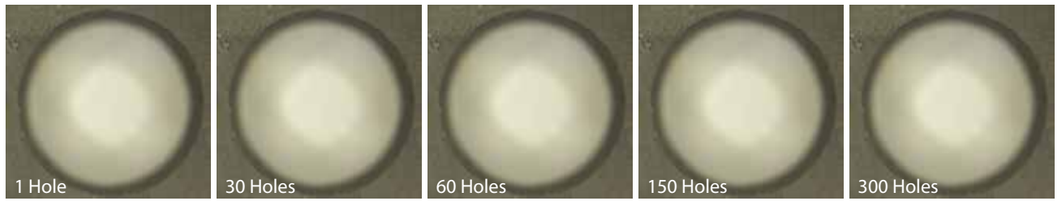
Reference page : p.143 - p.146

▶ SOLID CARBIDE DREAM DRILLS - CFRP without Coolant Holes

Cutting Condition

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









DREAM DRILLS - MQL TYPE

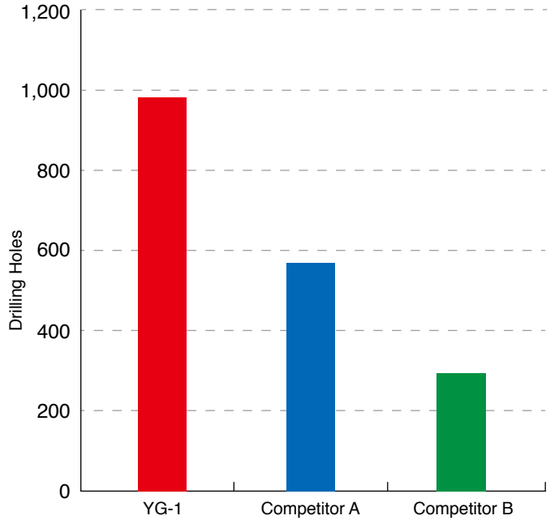
Reference page : p.147 - p.155

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

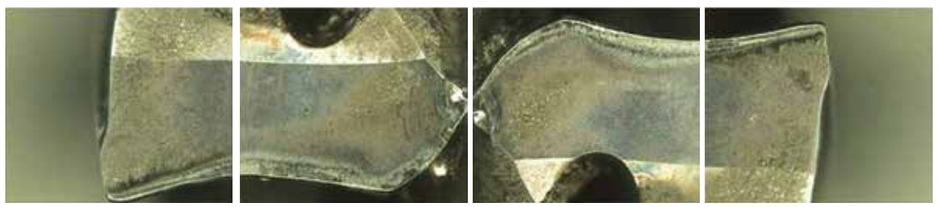
▶ SOLID CARBIDE DREAM DRILLS - MQL Type with Coolant Holes

Cutting Condition

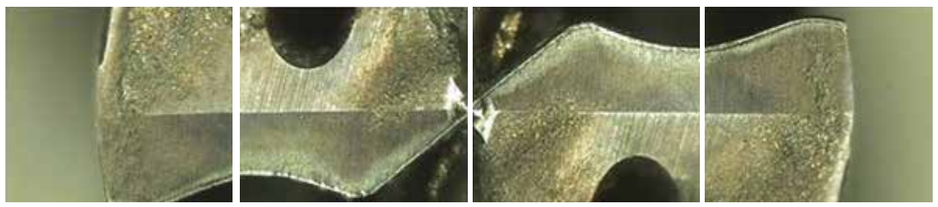
Tool	DH520060 (DREAM DRILL- MQL TYPE, 20×D)
Size	Ø6×6×138×193
Work Material	DIN : C45 WR : 1.0503 JIS : S45C(HRc25)
RPM (rev./min)	3,528 rev./min.
Feed(mm/min)	0.19 mm/rev.
Drilling Depth	80 mm
Coolant	Oil Mist (MQL Techniques)



▶ YG-1 (After Drilling 1,000 Holes)



▶ Competitor A (After Drilling 546 Holes)



DREAM DRILLS for HIGH HARDENED STEEL

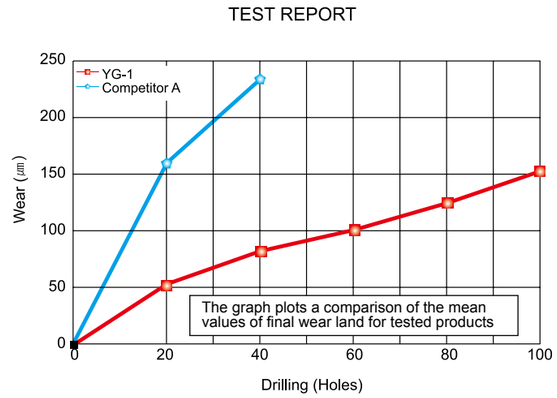
Reference page : p.157 - p.160

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

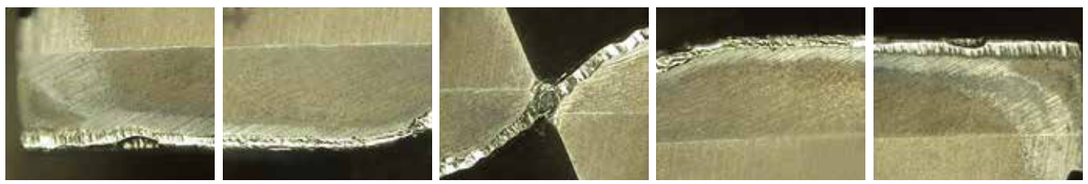
▶ SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS (HRc50-70)

Cutting Condition

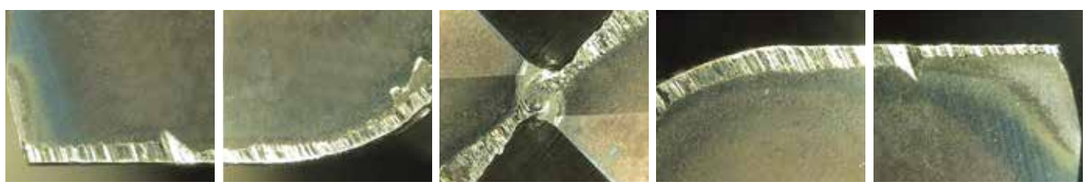
Tool	DH500100 (Dream Drills for High Hardened Steels)
Size	Ø10×10×63×111
Work Material	DIN : X155CrV-Mo12-1 WR : 1.2379 JIS : SKD11(HRc60)
RPM (rev./min)	380 rev./min..
Feed(mm/min)	0.04 mm/rev.
Drilling Depth	25 mm(2.5xD)
Coolant	Wet Cut



▶ YG-1 (After Drilling 100 Holes)



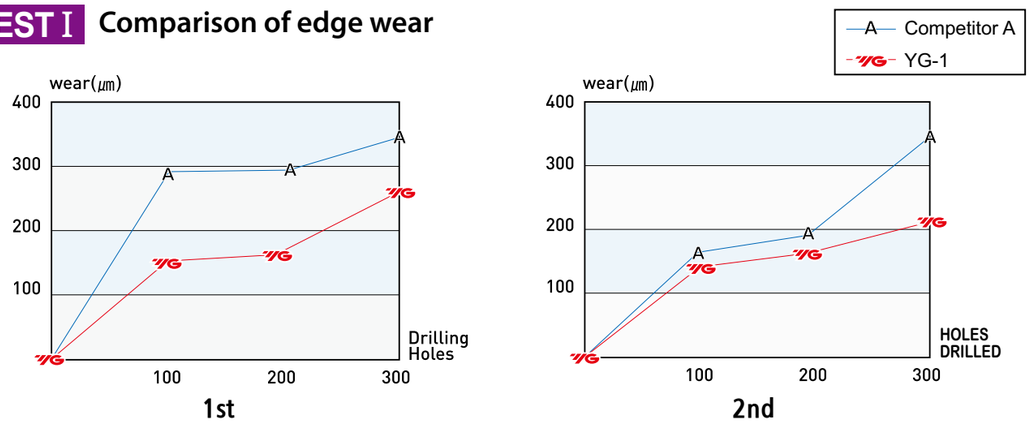
▶ Competitor A (After Drilling 40 Holes)



MULTI-1 DRILLS

Reference page : p.169 - p.177

TEST Ⅰ Comparison of edge wear

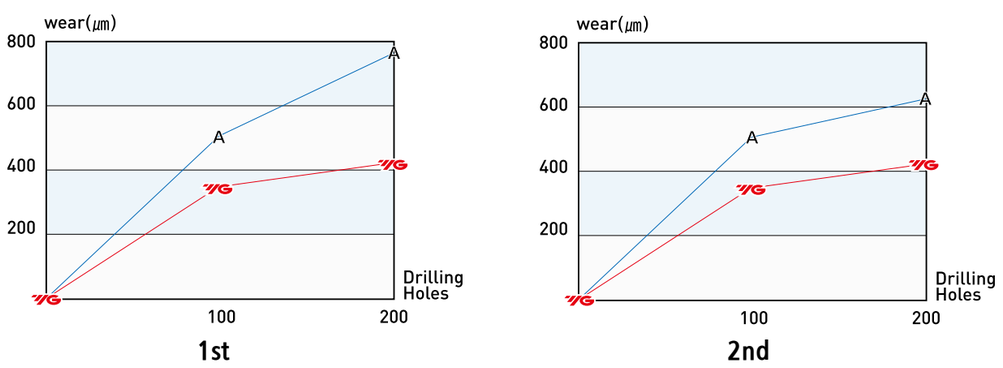


Cutting Condition

Work Material	JIS : SUS316 DIN : X3CrNiMo17-13-3 WR : 1.4436

Drilling Depth	24mm
Total Drilling (hole)	300 Holes
R.P.M	600 rev./min.
Feed	110 mm/min.

TEST Ⅱ Comparison of edge wear

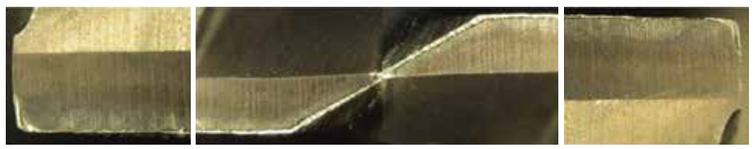


Cutting Condition

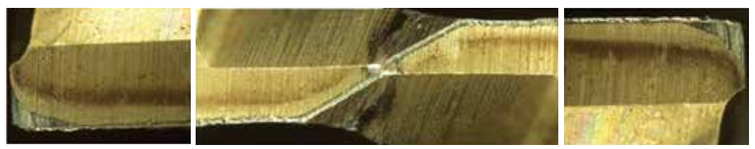
Work Material	JIS : SKD11 DIN : X155CrVMo12-1 WR : 1.4436

Drilling Depth	24mm
Total Drilling (hole)	200 Holes
R.P.M	600 rev./min.
Feed	110 mm/min.

▶ YG-1



▶ Competitor A



HOLEMAKING TOOLS

i-ONE DRILLS, CARBIDE INSERTS & HOLDERS
i-DREAM DRILLS, CARBIDE INSERTS & HOLDERS
SOLID CARBIDE DREAM DRILLS - GENERAL (with & without Coolant Holes)
SOLID CARBIDE DREAM DRILLS - HIGH FEED (with Coolant Holes)
SOLID CARBIDE DREAM DRILLS - FLAT BOTTOM (with & without Coolant Holes)
SOLID CARBIDE DREAM DRILLS - INOX (with Coolant Holes)
SOLID CARBIDE DREAM DRILLS - ALU (with Coolant Holes)
SOLID CARBIDE DREAM DRILLS - CFRP (without Coolant Holes)
SOLID CARBIDE DREAM DRILLS - MQL TYPE (with Coolant Holes)
SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS (without Coolant Holes)
GENERAL SOLID CARBIDE DRILLS (JOBBER & STUB LENGTH)
HSS-PM MULTI-1 DRILLS
HSSCo8 & HSS-E HPD STRAIGHT SHANK DRILLS
HSS & HSS-E GOLD-P DRILLS
SUPER HSS SUPER-GP DRILLS
HSS, HSS-E & HSSCo8 STRAIGHT SHANK DRILLS
HSS & HSS-E MORSE TAPER SHANK DRILLS
SOLID CARBIDE & HSSCo8 NC-SPOTTING DRILLS
SOLID CARBIDE, HSS & HSS-E CENTER DRILLS
SPADE DRILLS, INSERTS & HOLDERS
CARBIDE, HSS & HSS-E REAMERS
HSS & HSSCo8 COUNTERSINKS
HSS-E COUNTERBORES
TECHNICAL DATA

YG-1 CO., LTD.

CONTENTS

CARBIDE INSERT DRILLS

SOLID CARBIDE DRILLS

HSS DRILLS

CARBIDE & HSS DRILLS

REAMERS

COUNTERSINKS

COUNTERBORES

TECHNICAL DATA

YG-1 CO., LTD.

i-ONE DRILLS, CARBIDE INSERTS & HOLDERS
High Performance Exchangeable for General Steels and Cast Iron — i-ONE DRILLS

i-DREAM DRILLS, CARBIDE INSERTS & HOLDERS
For General Steels and Stainless Steels — i-DREAM DRILLS

SOLID CARBIDE **DREAM DRILLS - GENERAL** (with & without Coolant Holes)
For General Purpose (HRc30 to HRc45) — DREAM DRILLS -GENERAL

SOLID CARBIDE **DREAM DRILLS - HIGH FEED** (with Coolant holes)
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

SOLID CARBIDE **DREAM DRILLS - FLAT BOTTOM** (with & without Coolant Holes)
For Holes on Various Angled Surfaces — DREAM DRILLS -FLAT BOTTOM

SOLID CARBIDE **DREAM DRILLS - INOX** (with Coolant Holes)
For Tough Materials like Stainless Steels, Nickel Alloys and Titanium — DREAM DRILLS -INOX

SOLID CARBIDE **DREAM DRILLS - ALU** (with Coolant Holes)
For Aluminum and Aluminum Alloys — DREAM DRILLS -ALU

SOLID CARBIDE **DREAM DRILLS - CFRP** (without Coolant Holes)
For Composite Materials including CFRP and GFRP — DREAM DRILLS -CFRP

SOLID CARBIDE **DREAM DRILLS - MQL TYPE** (with Coolant Holes)
Minimum Quantity Lubrication Drilling Deep Holes (10×D ~ 30×D) — DREAM DRILLS -MQL

SOLID CARBIDE **DREAM DRILLS for HIGH HARDENED STEELS** (without Coolant Holes)
For High Hardened Steels (HRc50 to HRc70) — DREAM DRILLS for HIGH HARDENED STEELS

GENERAL SOLID CARBIDE DRILLS (JOBBER & STUB LENGTH)
For General Purpose, DIN338 & DIN6539 — GENERAL CARBIDE DRILLS

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Premium HSS-PM Drills For Wide Range of Applications Particularly Stainless Steels and Titanium — MULTI-1 DRILLS

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HSS & HSS-E **GOLD-P DRILLS**
Same Performance as Full TiN-coated Drills — GOLD-P DRILLS

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All Applications Regardless of Machining Conditions; Good or Poor — SUPER-GP DRILLS

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For General Purpose (Soft &Tough Materials) — STRAIGHT SHANK DRILLS

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Morse Taper Shank Drills for Wide Applications — TAPER SHANK DRILLS

SOLID CARBIDE & HSSCo8 **NC-SPOTTING DRILLS**
For Centering and Chamfering of Holes — NC-SPOTTING DRILLS

SOLID CARBIDE, HSS & HSS-E **CENTER DRILLS**
For General Purpose — CENTER DRILLS

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Carbide NC Machine Reamers / HSS Hand Reamers / HSS-E Chucking Reamers — REAMERS

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For Deburring, Chamfering and Countersinking — COUNTER SINKS

HSS-E **COUNTERBORES**
For Machining Screw Head Seats — COUNTER BORES

TECHNICAL DATA — TECHNICAL DATA

SELECTION GUIDE

YG HOLEMAKING TOOLS

SERIES	i-ONE DRILLS INSERTS					
	Y101H	Y121H	Y141H	Y161H	Y181H	Y201H
SIZE MIN	10.00	12.00	14.00	16.00	18.00	20.00
SIZE MAX	11.91	13.90	15.90	17.90	19.90	21.90
PAGE	38	39	40	41	42	43
SURFACE TREATMENT	H-Coating					



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ISO		VDI 3323	Material Description	HB	HRc	Y101H	Y121H	Y141H	Y161H	Y181H	Y201H
P	1			125		◎	◎	◎	◎	◎	◎
	2			190	13	◎	◎	◎	◎	◎	◎
	3		Non-alloy steel	250	25	◎	◎	◎	◎	◎	◎
	4			270	28	◎	◎	◎	◎	◎	◎
	5			300	32	◎	◎	◎	◎	◎	◎
	6			180	10	◎	◎	◎	◎	◎	◎
	7		Low alloy steel	275	29	◎	◎	◎	◎	◎	◎
	8			300	32	◎	◎	◎	◎	◎	◎
	9			350	38	◎	◎	◎	◎	◎	◎
	10		High alloyed steel,	200	15	◎	◎	◎	◎	◎	◎
	11		and tool steel	325	35	◎	◎	◎	◎	◎	◎
M	12			200	15						
	13		Stainless steel	240	23						
	14			180	10						
K	15		Grey cast iron	180	10	◎	◎	◎	◎	◎	◎
	16			260	26	◎	◎	◎	◎	◎	◎
	17		Nodular cast iron	160	3	◎	◎	◎	◎	◎	◎
	18			250	25	◎	◎	◎	◎	◎	◎
	19		Malleable cast iron	130		◎	◎	◎	◎	◎	◎
	20			230	21	◎	◎	◎	◎	◎	◎
N	21		Aluminum-wrought alloy	60							
	22			100							
	23		Aluminum-cast, alloyed	75							
	24			90							
	25			130							
	26		Copper and Copper Alloys (Bronze / Brass)	110							
	27			90							
	28			100							
	29		Non Metallic Materials								
	30										
S	31		Heat Resistant Super Alloys	200	15						
	32			280	30						
	33			250	25						
	34			350	38						
	35			320	34						
	36		Titanium Alloys	400 Rm							
	37			1050 Rm							
H	38		Hardened steel	550	55						
	39			630	60						
	40		Chilled Cast Iron	400	42						
	41		Hardened Cast Iron	550	55						

	i-ONE DRILLS INSERTS						i-ONE DRILLS HOLDERS		
	Y221H	Y241H	Y261H	Y281H	Y301H	Y321H	ZD*3	ZD*5	ZD*8
	22.00	24.00	26.00	28.00	30.00	32.00			
	23.90	25.90	27.78	29.77	31.75	33.73			
	44	45	46	46	47	47			
	H-Coating						3XD	5XD	8XD



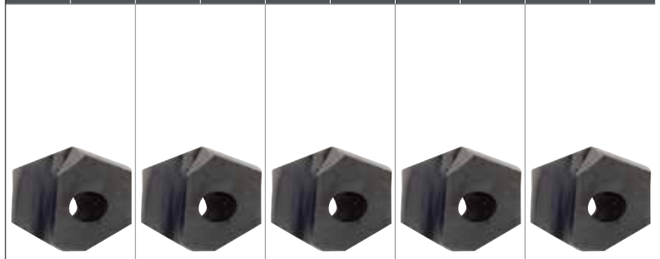
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2	◎	◎	◎	◎	◎	◎				2		
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4	◎	◎	◎	◎	◎	◎				4		
5	◎	◎	◎	◎	◎	◎				5		
6	◎	◎	◎	◎	◎	◎				6		
7	◎	◎	◎	◎	◎	◎				7		
8	◎	◎	◎	◎	◎	◎				8		
9	◎	◎	◎	◎	◎	◎				9		
10	◎	◎	◎	◎	◎	◎				10		
11	◎	◎	◎	◎	◎	◎				11		
12										12		
13										13	M	
14										14		
15	◎	◎	◎	◎	◎	◎				15		
16	◎	◎	◎	◎	◎	◎				16		
17	◎	◎	◎	◎	◎	◎				17		
18	◎	◎	◎	◎	◎	◎				18	K	
19	◎	◎	◎	◎	◎	◎				19		
20	◎	◎	◎	◎	◎	◎				20		
21										21		
22										22		
23										23		
24										24		
25										25		
26										26	N	
27										27		
28										28		
29										29		
30										30		
31										31		
32										32		
33										33		
34										34	S	
35										35		
36										36		
37										37		
38										38		
39										39		
40										40	H	
41										41		

SELECTION GUIDE

YG HOLEMAKING TOOLS

i-DREAM DRILLS INSERTS

SERIES	YA1A	YA2C	YB1A	YB2C	YC1A	YC2C	YD1A	YD2C	YE1A	YE2C
TYPE	A		B		C		D		E	
SIZE MIN	12.00		14.00		16.00		18.00		20.00	
SIZE MAX	13.89		15.87		17.86		19.84		21.83	
PAGE	58		59		60		61		62	
SURFACE TREATMENT	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

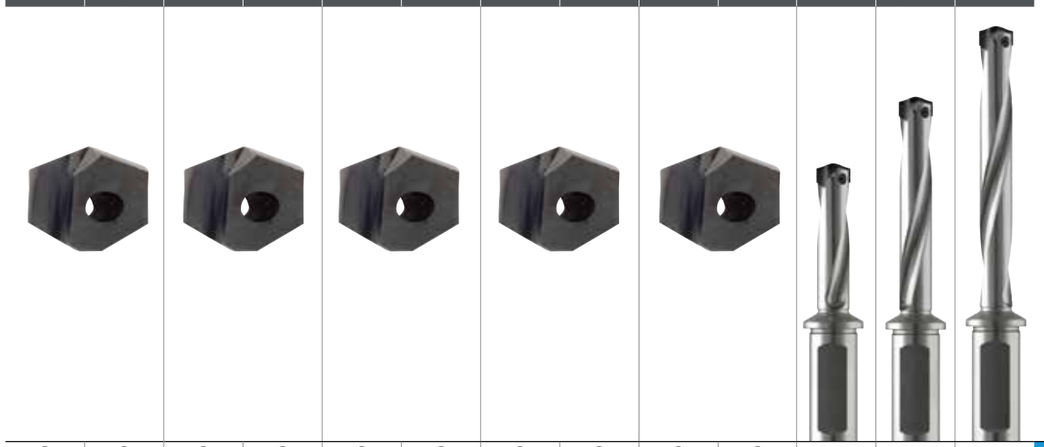
ISO		VDI 3323	Material Description	HB	HRc	YA1A	YA2C	YB1A	YB2C	YC1A	YC2C	YD1A	YD2C	YE1A	YE2C
P	1		Non-alloy steel	125		◎	○	◎	○	◎	○	◎	○	◎	○
	2			190	13	◎	○	◎	○	◎	○	◎	○	◎	○
	3			250	25	◎	○	◎	○	◎	○	◎	○	◎	○
	4			270	28	◎	○	◎	○	◎	○	◎	○	◎	○
	5		Low alloy steel	300	32	◎		◎		◎		◎		◎	
	6			180	10	◎	○	◎	○	◎	○	◎	○	◎	○
	7			275	29	◎	○	◎	○	◎	○	◎	○	◎	○
	8			300	32	◎		◎		◎		◎		◎	
	9			350	38	◎		◎		◎		◎		◎	
	10		High alloyed steel, and tool steel	200	15	◎	○	◎	○	◎	○	◎	○	◎	○
	11			325	35	◎		◎		◎		◎		◎	
M	12		Stainless steel	200	15		◎		◎		◎		◎		◎
	13			240	23		◎		◎		◎		◎		◎
	14			180	10		◎		◎		◎		◎		◎
K	15		Grey cast iron	180	10	◎		◎		◎		◎		◎	
	16			260	26	◎		◎		◎		◎		◎	
	17		Nodular cast iron	160	3	◎		◎		◎		◎		◎	
	18			250	25	◎		◎		◎		◎		◎	
	19		Malleable cast iron	130		◎		◎		◎		◎		◎	
	20			230	21	◎		◎		◎		◎		◎	
N	21		Aluminum-wrought alloy	60			○		○		○		○		○
	22			100			○		○		○		○		○
	23		Aluminum-cast, alloyed	75			○		○		○		○		○
	24			90			○		○		○		○		○
	25			130			○		○		○		○		○
	26		Copper and Copper Alloys (Bronze / Brass)	110			○		○		○		○		○
	27			90			○		○		○		○		○
	28			100			○		○		○		○		○
	29		Non Metallic Materials												
	30														
S	31		Heat Resistant Super Alloys	200	15										
	32			280	30										
	33			250	25										
	34			350	38										
	35			320	34										
	36		Titanium Alloys	400 Rm											
	37			1050 Rm											
H	38		Hardened steel	550	55										
	39			630	60										
	40		Chilled Cast Iron	400	42										
	41		Hardened Cast Iron	550	55										

i-DREAM DRILLS INSERTS

SERIES	YF1A	YF2C	YG1A	YG2C	YH1A	YH2C	YI1A	YI2C	YJ1A	YJ2C
TYPE	F		G		H		I		J	
SIZE MIN	22.00		24.00		26.00		28.00		30.00	
SIZE MAX	23.81		25.80		27.78		29.77		31.75	
PAGE	63		64		65		66		67	
SURFACE TREATMENT	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN

i-DREAM DRILLS HOLDERS

	ZH*3	ZH*5	ZH*7
	3XD	5XD	7XD



YF1A	YF2C	YG1A	YG2C	YH1A	YH2C	YI1A	YI2C	YJ1A	YJ2C				
◎	○	◎	○	◎	○	◎	○	◎	○				1
◎	○	◎	○	◎	○	◎	○	◎	○				2
◎	○	◎	○	◎	○	◎	○	◎	○				3
◎	○	◎	○	◎	○	◎	○	◎	○				4
◎		◎		◎		◎		◎					5
◎	○	◎	○	◎	○	◎	○	◎	○				6 P
◎	○	◎	○	◎	○	◎	○	◎	○				7
◎		◎		◎		◎		◎					8
◎		◎		◎		◎		◎					9
◎	○	◎	○	◎	○	◎	○	◎	○				10
◎		◎		◎		◎		◎					11
	◎		◎		◎		◎		◎				12
	◎		◎		◎		◎		◎				13 M
	◎		◎		◎		◎		◎				14
◎		◎		◎		◎		◎					15
◎		◎		◎		◎		◎					16
◎		◎		◎		◎		◎					17
◎		◎		◎		◎		◎					18 K
◎		◎		◎		◎		◎					19
◎		◎		◎		◎		◎					20
	○		○		○		○		○				21
	○		○		○		○		○				22
	○		○		○		○		○				23
	○		○		○		○		○				24
	○		○		○		○		○				25
	○		○		○		○		○				26 N
	○		○		○		○		○				27
	○		○		○		○		○				28
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													40 H
													41

SELECTION GUIDE

HOLEMAKING TOOLS

SPADE DRILLS INSERTS

SERIES	1~8	Y,Z,0,1~4	Y,Z,0,1,2	Y,Z,0,1,2	Y,Z,0,1~3	Y,Z,0,1~3
SIZE MIN	Ø17.86(#1)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)
SIZE MAX	Ø114.3(#8)	Ø65.09(#4)	Ø35(#2)	Ø35(#2)	Ø47.63(#3)	Ø47.63(#3)
PAGE	322	328	333	336	339	343
SURFACE TREATMENT	TiN / TiCN / TiAlN					



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

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

SPADE DRILLS INSERTS

1~3	Y,Z,0,1~3	Y,Z,0,1,2	Y,Z,0,1,2	Y,Z,0,1~3	Y,Z,0,1~3	Y,Z,0,1,2
Ø17.86(#1)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)
Ø47.63(#3)	Ø47.63(#3)	Ø35(#2)	Ø35(#2)	Ø47.63(#3)	Ø47.63(#3)	Ø35(#2)
348	351	355	358	361	365	369
TiN / TiCN / TiAlN						TiN / Hardslick / TiAl

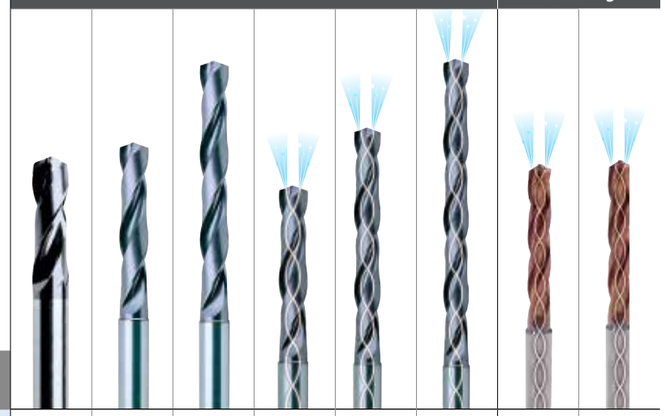


○	◎	◎		○	◎	◎	1	
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○	◎	◎		○	◎	◎	4	
							5	
○	◎	◎		○	◎	◎	6	P
○	◎	◎		○	◎	◎	7	
	○	◎		○	◎	○	8	
	○	◎		○	◎	○	9	
	○	◎		○	◎	○	10	
	○	◎		○	◎	○	11	
◎	○			◎	○	○	12	
◎	○			◎	○	○	13	M
◎	○			◎	○	○	14	
◎	○	○	◎	○	○	○	15	
○	◎	◎	◎	○	○	◎	16	
◎	○	○	◎	○	○	○	17	K
○	◎	◎	◎	○	○	◎	18	
◎	○	○	◎	○	○	○	19	
○	◎	◎	◎	○	○	◎	20	
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	○	◎		◎	○	○	32	
	○	◎		◎	○	○	33	
	○	◎		◎	○	○	34	S
	○	◎		◎	○	○	35	
							36	
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	○	◎		○	◎	○	38	
							39	
							40	H
							41	

SELECTION GUIDE

YG HOLEMAKING TOOLS

	DREAM DRILLS GENERAL						DREAM DRILLS HIGH FEED	
SERIES	DH404	DH423	DH424	DH406	DH408	DH421	DGR493	DGR495
DRILLING DEPTH	3XD	3XD	5XD	3XD	5XD	8XD	3XD	5XD
LENGTH	STUB	SHORT	LONG	SHORT	LONG	EXTRA LONG	SHORT	LONG
SIZE MIN	D3.0	D3.0	D1.0	D3.0	D1.0	D3.0	D5.0	D5.0
SIZE MAX	D20.0	D20.0	D20.0	D20.0	D20.0	D14.0	D20.0	D20.0
PAGE	78	80	83	86	89	92	101	103
SURFACE TREATMENT	TiAlN						H-Coating	

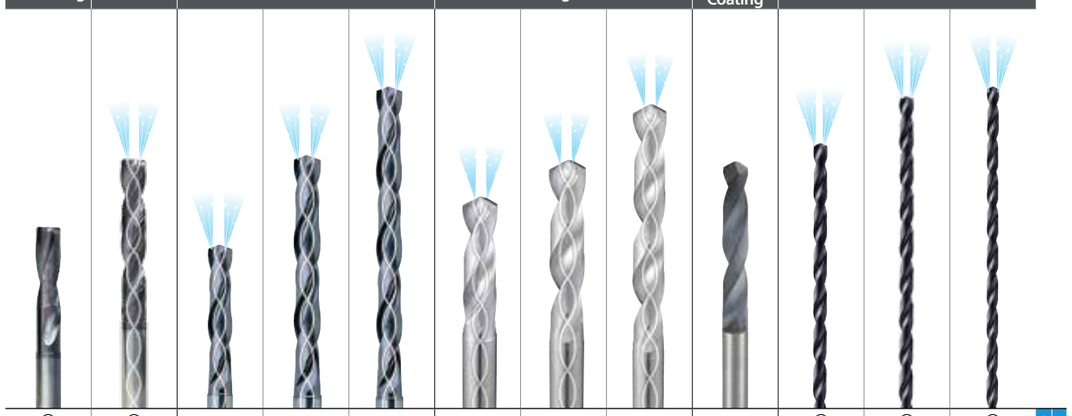


Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

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

	DREAM DRILLS FLAT BOTTOM		DREAM DRILLS INOX			DREAM DRILLS ALU			DREAM DRILLS CFRP	DREAM DRILLS - MQL TYPE		
SERIES	DPP447	DH450	DH451	DH452	DH453	D5432	D5433	D5434	DI473	DH510	DH515	DH520
DRILLING DEPTH	2XD	5XD	3XD	5XD	8XD	3XD	5XD	8XD	5XD	10XD	15XD	20XD
LENGTH	SHORT	LONG	SHORT	LONG	EXTRA LONG	SHORT	LONG	EXTRA LONG	LONG	EXTRA LONG	EXTRA LONG	EXTRA LONG
SIZE MIN	D3.0	D3.0	D3.0	D1.0	D3.0	D3.0	D3.0	D3.0	D2.5	D3.0	D3.0	D3.0
SIZE MAX	D20.0	D20.0	D20.0	D20.0	D14.0	D20.0	D20.0	D14.0	D12.0	D14.0	D12.0	D12.0
PAGE	110	113	121	124	127	133	136	139	145	150	151	151
SURFACE TREATMENT	X-Coating	TiAlN	TiAlN			Bright			Diamond Coating	TiAlN		

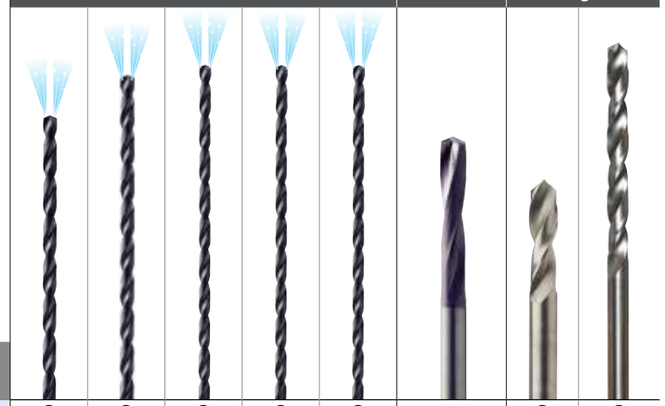


	1									◎	◎	◎	
	2			◎	◎	◎				◎	◎	◎	
	3			○	○	○				○	○	○	
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	5												
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	23			○	○	○	◎	◎	◎				
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	25			○	○	○							
N	26												
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	32												
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S	35												
	36												
	37			○	○	○							
	38												
	39												
H	40												
	41												

SELECTION GUIDE

HOLEMAKING TOOLS

	DREAM DRILLS - MQL TYPE					DREAM DRILLS for HIGH HARDENED STEELS	GENERAL CARBIDE DRILLS	
SERIES	DHM10	DHM15	DHM20	DHM25	DHM30	DH500	D5405	D5407
DRILLING DEPTH / STANDARD	10XD	15XD	20XD	25XD	30XD	3XD	-	-
LENGTH	EXTRA LONG	EXTRA LONG	EXTRA LONG	EXTRA LONG	EXTRA LONG	SHORT	STUB	JOBBER
SIZE MIN	D3.0	D3.0	D3.0	D3.0	D3.0	D2.6	D1.0	D1.0
SIZE MAX	D14.0	D12.0	D12.0	D10.0	D8.0	D14.0	D13.0	D13.0
PAGE	152	152	152	153	153	159	163	165
SURFACE TREATMENT	TiAlN					TiAlN	Bright	

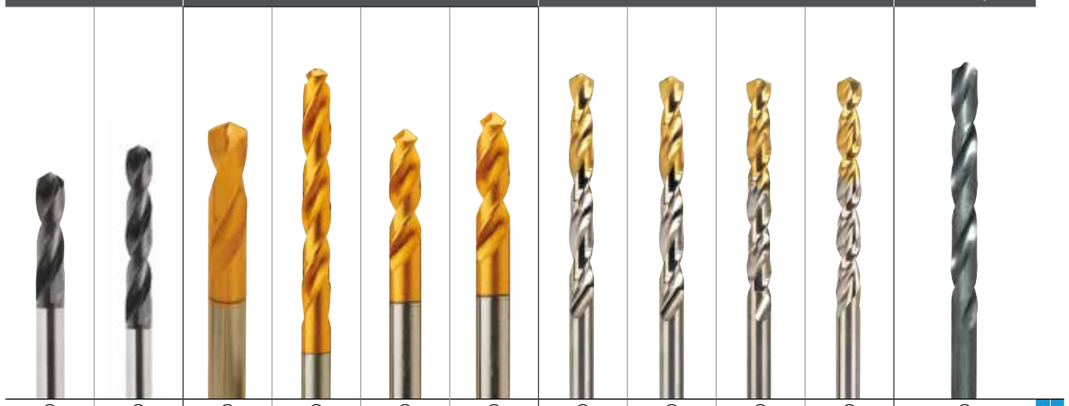


Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

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

MULTI-1 DRILLS		HPD DRILLS				GOLD-P DRILLS				SUPER-GP DRILLS
CDRA03	CDRA04	D4541	D4542	DJ543	DJ544	D1GP125	D1GP165	DLGP195	DLGP506	DSH105
HSS-PM		HSSCo8		HSS-E		DIN338	DIN338	DIN338	DIN338	DIN338
STUB	JOBBER	STUB	JOBBER	STUB	JOBBER	JOBBER	JOBBER	JOBBER	JOBBER	JOBBER
D1.0	D2.0	D2.0	D2.0	D2.0	D2.0	D1.0	D1.6	D1.0	D2.0	D2.0
D13.0	D13.0	D13.0	D32.0	D13.0	D20.0	D13.0	D13.0	D13.0	D13.0	D13.0
171	174	182	186	192	195	206	209	212	215	223
TiAlN		TiN				TiN				Steam Tempered



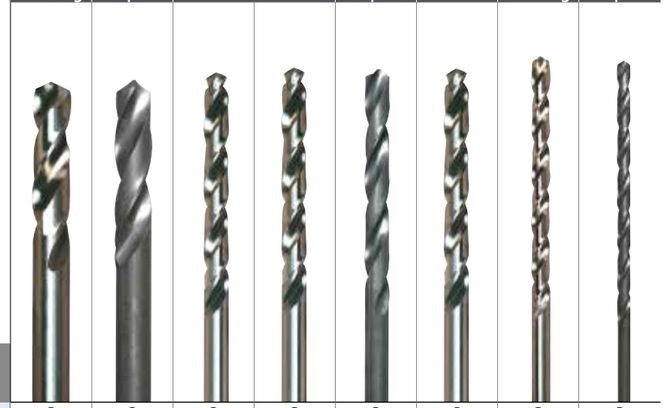
◎	◎	◎	◎	○	○	◎	◎	◎	◎	◎	1	
◎	◎	◎	◎			◎	◎	◎	◎	◎	2	
○	○	○	○			◎	◎	◎	◎	◎	3	
						○	○	○	○	○	4	
											5	
◎	◎	◎	◎			◎	◎	◎	◎	◎	6	P
○	○	○	○			○	○	○	○	○	7	
						○	○	○	○	○	8	
											9	
		○	○			○	○	○	○	○	10	
											11	
○	○			◎	◎	◎	◎	◎		○	12	
				○	○	○	○	○		○	13	M
◎	◎			◎	◎	○	○	○		○	14	
○	○	◎	◎			○	○	○	○	○	15	
						○	○	○	○	○	16	
						○	○	○	○	○	17	K
									○		18	
						○	○	○	○	○	19	
									○		20	
◎	◎			◎	◎	○	○	○		○	21	
◎	◎			◎	◎	○	○	○		○	22	
○	○					○	○	○		○	23	
○	○										24	
											25	
				○	○						26	N
											27	
											28	
						○	○	○		○	29	
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											33	
											34	S
											35	
○	○					○	○	○		○	36	
											37	
											38	
											39	H
											40	
											41	

SELECTION GUIDE

YG HOLEMAKING TOOLS

STRAIGHT SHANK DRILLS

SERIES	D2107	D1107	D2105	DL105	D1105	D1125	D2104	D1121
STANDARD	DIN1897	DIN1897	DIN338	DIN338	DIN338	DIN338	DIN340	DIN1869/1
LENGTH	STUB	STUB	JOBBER	JOBBER	JOBBER	JOBBER	LONG	EXTRA LONG
SIZE MIN	D1.0	D1.0	D1.0	D1.0	D0.3	D2.0	D2.0	D2.0
SIZE MAX	D31.0	D13.0	D20.0	D20.0	D20.0	D20.0	D12.0	D13.0
PAGE	234	238	241	244	247	252	255	257
SURFACE TREATMENT	Gold Coloring	Steam Tempered	Gold Coloring		Steam Tempered	Bright	Gold Coloring	Steam Tempered



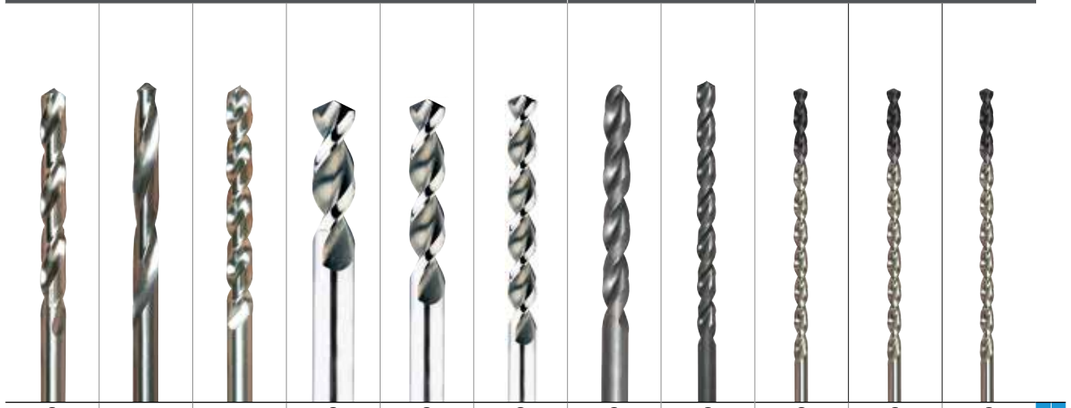
Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

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

STRAIGHT SHANK DRILLS

SERIES	DL109	D1100	D1106	DH100 DL510	DH100 DL508	DH100 DL509	DH100 DL505	DH100 DL504	DH100 DT600	DH100 DT692	DH100 DT693
STANDARD	DIN338	DIN338	DIN338	DIN1897	DIN338	DIN340	DIN338	DIN340	DIN1869/1	DIN1869/2	DIN1869/3
LENGTH	JOBBER	JOBBER	JOBBER	STUB	JOBBER	LONG	JOBBER	LONG	EXTRA LONG		
SIZE MIN	D1.5	D1.5	D1.5	D2.0	D2.0	D2.0	D2.0	D2.0	D2.0	D3.0	D4.0
SIZE MAX	D13.0	D13.0	D13.0	D20.0	D16.0	D12.0	D13.0	D13.0	D10.5	D10.2	D10.0
PAGE	258	259	261	263	265	267	269	271	272		
SURFACE TREATMENT	Bright						Steam Tempered		TiAlN		

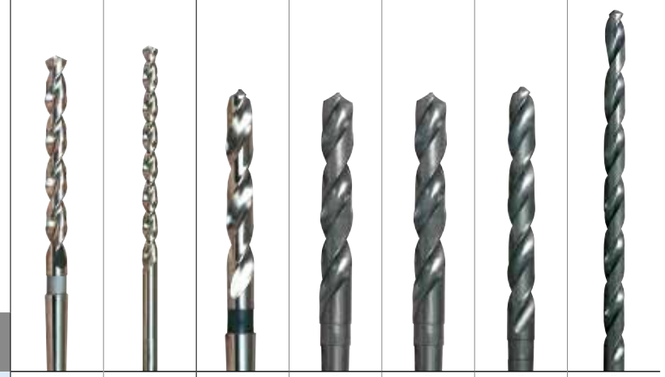


◎			◎	◎	◎	◎	◎	◎	◎	◎	1		
◎			◎	◎	◎	◎	◎	◎	◎	◎	2		
◎			◎	◎	◎	◎	◎	◎	◎	◎	3		
○			○	○	○	○	○	○	○	○	4		
											5		
◎			◎	◎	◎	◎	◎	◎	◎	◎	6	P	
○			○	○	○	○	○	○	○	○	7		
○			○	○	○	○	○	○	○	○	8		
											9		
○			○	○	○	○	○	○	○	○	10		
											11		
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○			○	○	○	○	○	○	○	○	15		
○			○	○	○	○	○	○	○	○	16		
○			○	○	○	○	○	○	○	○	17		
			○	○	○	○	○	○	○	○	18	K	
○			○	○	○	○	○	○	○	○	19		
			○	○	○	○	○	○	○	○	20		
○		◎									21		
○		◎									22		
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		◎									24		
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	◎										28		
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											39		
											40	H	
											41		

SELECTION GUIDE

HOLEMAKING TOOLS

	STRAIGHT SHANK DRILLS		MORSE TAPER SHANK DRILLS				
SERIES	DH100 DL608	DH50 DL507	DL205	D1205	D1206	D1209	D1210
STANDARD	DIN341	-	DIN345	DIN345	DIN341	DIN1870/1	DIN1870/2
LENGTH	LONG	EXTRA LONG	JOBBER	JOBBER	LONG	EXTRA LONG	EXTRA LONG
SIZE MIN	D13.0	D2.0	D13.0	D5.0	D13.0	D13.0	D13.0
SIZE MAX	D30.0	D13.0	D30.0	D60.0	D30.0	D50.0	D50.0
PAGE	273	274	288	289	292	293	294
SURFACE TREATMENT	Bright		Bright	Steam Tempered			



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◎ : Excellent ○ : Good

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

SELECTION GUIDE

HOLEMAKING TOOLS

	NC-SPOTTING DRILLS					COUNTERSINKS				
SERIES	D5306 D5307	D5320	D2306 D2321	D2307 D2322	D2320 D2323	C1109 C3109	C1119 C3119	C1136 C3136	C1139 C3139	C1132 C3132
STANDARD	-	-	-	-	-	-	-	DIN334C	DIN335C	-
LENGTH	90° / 120°	142°	90°	120°	142°	90°	90°	60°	90°	120°
SIZE MIN	D6.0	D3.0	D3.0	D3.0 / D6.0	D3.0 / D6.0	D10.0	D10.0	D6.3	D4.3	D8.0
SIZE MAX	D20.0	D20.0	D20.0	D20.0 / D12.0	D20.0 / D12.0	D50.0	D50.0	D25.0	D31.0	D25.0
PAGE	300	301	302	303	304	434	435	436	437	438
SURFACE TREATMENT	Bright					Bright				



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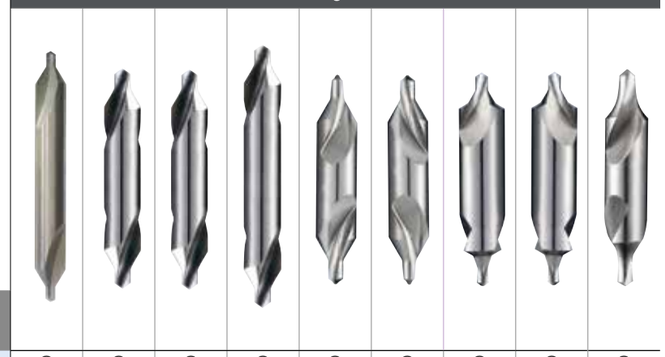
◎ : Excellent ○ : Good

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

SELECTION GUIDE

HOLEMAKING TOOLS

	CENTER DRILLS								
SERIES	D5303	DV303	DV333	DV334	D1303	D1343	D1313	D1353	D1363
HOLE TYPE	-	-	-	-	-	-	-	-	-
FLUTE / FORM TYPE	FORM A	FORM A	FORM A	FORM A	FORM A	FORM A	FORM B	FORM B	FORM R
SIZE Min	D1.0	D0.5	D1.6	D1.0	D0.5	D0.5	D1.0	D2.0	D0.5
SIZE Max	D6.3	D6.3	D6.3	D5.0	D10.0	D8.0	D6.3	D6.3	D8.0
PAGE	310	311	311	312	313	313	314	314	315
SURFACE TREATMENT	Bright								



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

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

	CENTER DRILLS		REAMERS									
	D1373	DV383	K4101	K4111	K1143	K1153	K2101	K2111	K2121	K2102	K2112	K21B1
	-	-										
	FORM R	FORM R	Straight	LH Spiral	Straight	LH Spiral	Straight	LH Spiral	LH Spiral (Quick Spiral)	Straight	LH Spiral	LH Spiral
	D0.8	D1.6	D2.0	D2.0	D2.0	D2.0	D2.0	D2.0	D4.0	D10.0	D10.0	D2.0
	D5.0	D6.3	D20.0	D20.0	D60.0	D60.0	D20.0	D20.0	D20.0	D50.0	D50.0	D20.0
	315	316	406	407	408	410	412	414	416	417	419	421
	Bright		Bright									



		◎	◎	◎	◎	○	○	◎	◎	○	◎	◎	◎	1
		◎	◎	◎	◎	○	○	◎	◎	○	◎	◎	◎	2
		○	○	◎	◎			○	○		○	○	○	3
				○	○			○	○		○	○	○	4
				○	○									5
P		◎	◎	◎	◎	○	○	◎	◎	○	◎	◎	◎	6
		○	○	◎	◎			○	○		○	○	○	7
				○	○									8
														9
				○	○			○	○		○	○	○	10
														11
		○	○	○	○			○	○		○	○	○	12
				○	○			○	○		○	○	○	13
M				○	○			○	○		○	○	○	14
		◎	◎	◎	◎			○	○		○	○	○	15
		○	○	○	○			○	○		○	○	○	16
		○	○	◎	◎			○	○		○	○	○	17
				○	○			○	○		○	○	○	18
K		○	○	◎	◎			○	○		○	○	○	19
				○	○			○	○		○	○	○	20
				○	○	○	○	○	○	◎	○	○	○	21
				○	○	○	○	○	○	◎	○	○	○	22
				○	○	○	○	○	○	◎	○	○	○	23
				○	○	○	○	○	○	◎	○	○	○	24
														25
N				○	○	○	○	○	○	◎	○	○	○	26
				○	○	○	○	○	○	◎	○	○	○	27
				○	○	○	○	○	○	◎	○	○	○	28
														29
														30
														31
														32
														33
														34
S														35
														36
														37
														38
														39
H														40
														41

SELECTION GUIDE

HOLEMAKING TOOLS

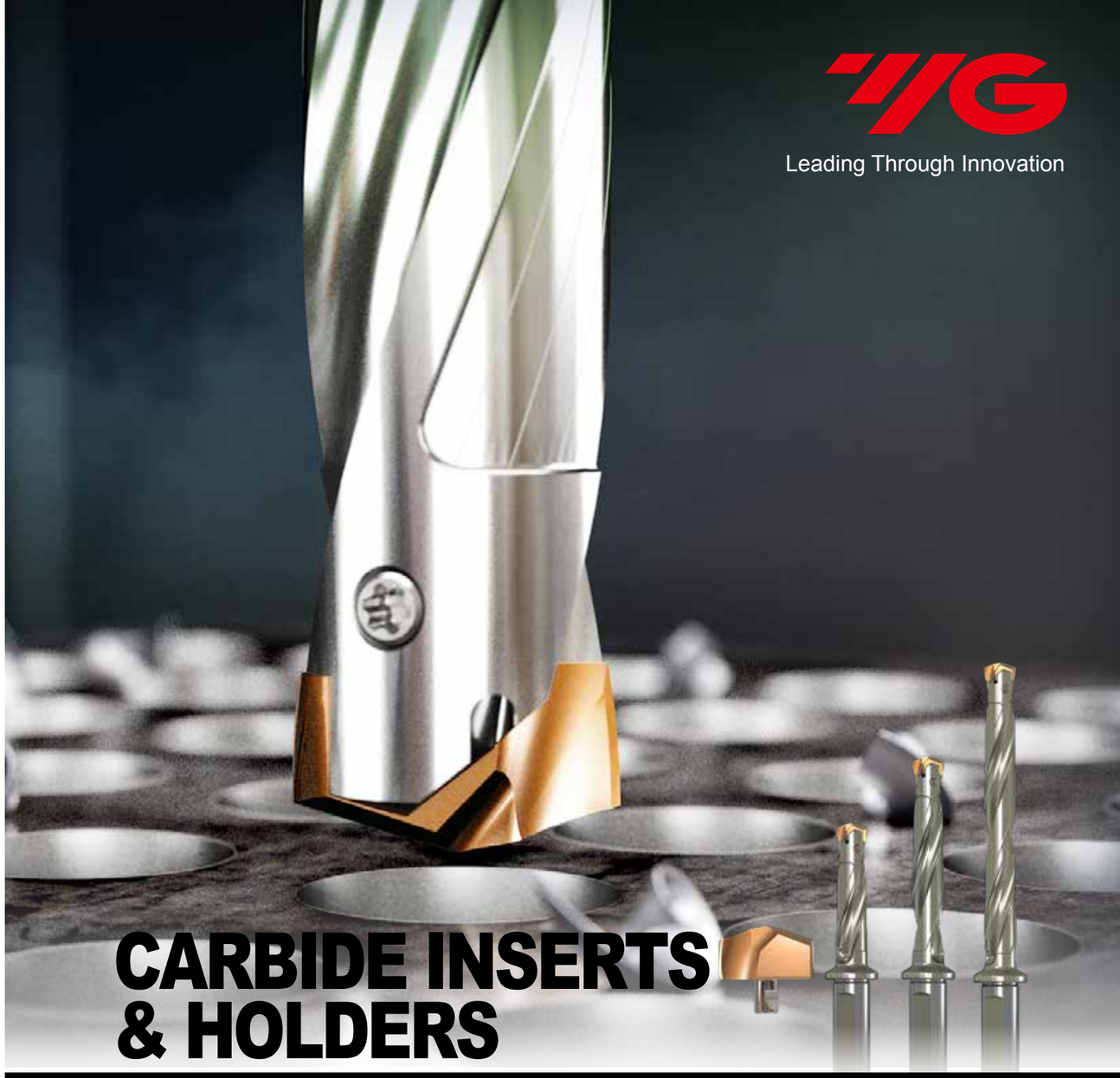
	COUNTERBORES		
SERIES	EL950		
TYPE	MEDIUM	FINE	BEOFRE THREADING
PILOT DIA.	3.4~14.0	3.2~13.0	2.5~10.2
CUTTER DIA.	6.0~20.0		
PAGE	443		
SURFACE TREATMENT	Bright		



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

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



i - ONE DRILLS

i-One Drills

- High Performance Exchangeable for General Steels and Cast Iron
- Leistungsstarke, austauschbare Bohrwerkzeuge für allgemeine Stähle und Gusseisen

SELECTION GUIDE

YG HOLEMAKING TOOLS

CARBIDE INSERTS & HOLDERS
i-ONE DRILLS

High Performance Exchangeable
for General Steels and Cast Iron

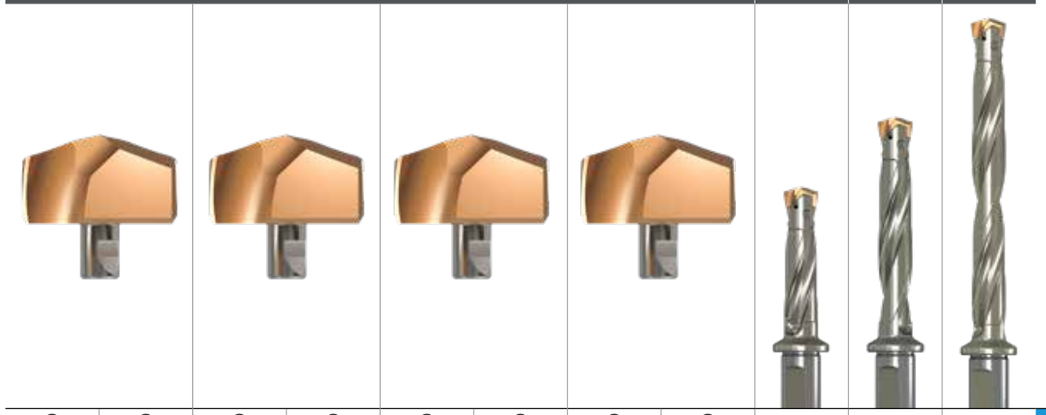
Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.48

SERIES	Y101H	Y121H	Y141H	Y161H	Y181H	Y201H	Y221H	Y241H	Y261H	Y281H	Y301H	Y321H	ZD*3	ZD*5	ZD*8	
SIZE MIN	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00				
SIZE MAX	11.91	13.90	15.90	17.90	19.90	21.90	23.90	25.90	27.78	29.77	31.75	33.73				
PAGE	38	39	40	41	42	43	44	45	46	46	47	47				
SURFACE TREATMENT	H-Coating				H-Coating								3XD	5XD	8XD	





ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc												
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	2		About 0.45% C	Annealed	190	13	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	3		About 0.45% C	Quenched & Tempered	250	25	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	4		About 0.75% C	Annealed	270	28	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	5		About 0.75% C	Quenched & Tempered	300	32	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	6	Low alloy steel		Annealed	180	10	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	7			Quenched & Tempered	275	29	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	8			Quenched & Tempered	300	32	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	9			Quenched & Tempered	350	38	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	10	High alloyed steel, and tool steel		Annealed	200	15	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	11			Quenched & Tempered	325	35	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15					◎	◎	◎	◎	◎	◎	◎	◎
	13		Martensitic	Quenched & Tempered	240	23					◎	◎	◎	◎	◎	◎	◎	◎
	14		Austenitic10		180	10					◎	◎	◎	◎	◎	◎	◎	◎
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	16		Pearlitic (Martensitic)		260	26	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	17	Nodular cast iron	Ferritic		160	3	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	18		Pearlitic		250	25	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	19	Malleable cast iron	Ferritic		130		◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	20		Pearlitic		230	21	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
N	21	Aluminum-wrought alloy	Not Curable		60													
	22		Curable	Hardened	100													
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75													
	24		≤ 12% Si, Curable	Hardened	90													
	25		> 12% Si, Not Curable		130													
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110													
	27		CuZn, CuSnZn (Brass)		90													
	28		CuSn, lead-free copper and electrolytic copper		100													
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic															
	30		Rubber, Wood, etc.															
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15												
	32			Cured	280	30												
	33		Ni or Co Based	Annealed	250	25												
	34			Cured	350	38												
	35			Cast	320	34												
	36	Titanium Alloys	Pure Titanium		400 Rm													
	37		Alpha + Beta Alloys	Hardened	1050 Rm													
H	38	Hardened steel		Hardened	550	55												
	39			Hardened	630	60												
	40	Chilled Cast Iron		Cast	400	42												
	41	Hardened Cast Iron		Hardened	550	55												

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

i - ONE DRILLS

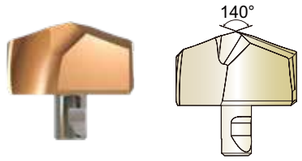
Y101H SERIES

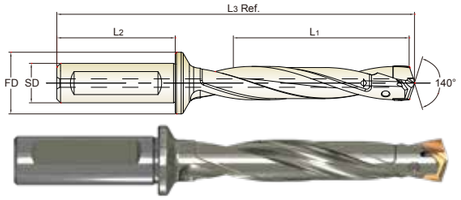
i-ONE DRILL INSERTS & HOLDERS

i-ONE DRILL EINSÄTZE UND HALTER
PLAQUETTES ET PORTE-PLAQUETTE i-ONE DRILL
INSERTI & PORTAINSERTI i-ONE DRILL

- Applications
▶For carbon steels, alloy steels and cast iron.
▶Holder length: 3xD, 5xD, 8xD
- Benefits
▶Secure and quick clamping system.
▶High performance with cost efficiency.
▶Multi-layered coating delivers outstanding productivity and reliability.

- Anwendungen
▶Für Kohlenstoffstähle, legierte Stähle und Gusseisen.
▶Halterlänge: 3xD, 5xD, 8xD
- Vorteile
▶Sicheres und schnelles Spannsystem.
▶Hohe Leistungsfähigkeit bei gleichzeitiger Kosteneffizienz.
▶Mehrschichtige Beschichtung bietet hervorragende Produktivität und Zuverlässigkeit.





CARBIDE | ISO 9766 | h7 | 140° P.48

Unit : mm

Series Range	Insert EDP No.	Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
		h7										
(mm)	H-Coating	dec.	frac.	mm		SD	L2	FD	L1		L3 Ref.	
S10 Ø10.00 to Ø11.99	Y101H1000	0.3937		10.00	ZD10003016	16	48	23	3D	31.5	103.0	TX1011P5
	Y101H1010	0.3976		10.10	ZD10005016				5D	52.5	123.0	
	Y101H1020	0.4016		10.20	ZD10008016				8D	84.0	153.0	
	Y101H1030	0.4055		10.30								
	Y101H1032	0.4063	13/32	10.32								
	Y101H1040	0.4094		10.40								
	Y101H1050	0.4134		10.50	ZD10503016	16	48	23	3D	33.0	104.0	
	Y101H1060	0.4173		10.60	ZD10505016				5D	55.0	125.0	
	Y101H1070	0.4213		10.70	ZD10508016				8D	88.0	156.5	
	Y101H1072	0.4219	27/64	10.72								
	Y101H1080	0.4252		10.80								
	Y101H1090	0.4291		10.90								
	Y101H1100	0.4331		11.00	ZD11003016	16	48	23	3D	34.5	105.0	
	Y101H1110	0.4370		11.10	ZD11005016				5D	57.5	127.0	
	Y101H1111	0.4375	7/16	11.11	ZD11008016				8D	92.0	160.0	
	Y101H1120	0.4409		11.20								
	Y101H1130	0.4449		11.30								
	Y101H1140	0.4488		11.40								
	Y101H1150	0.4528		11.50								
	Y101H1151	0.4531	29/64	11.51								
	Y101H1160	0.4567		11.60	ZD11503016	16	48	23	3D	36.0	106.0	
	Y101H1170	0.4606		11.70	ZD11505016				5D	60.0	129.0	
	Y101H1180	0.4646		11.80	ZD11508016				8D	96.0	163.5	
	Y101H1190	0.4685		11.90								
	Y101H1191	0.4688	15/32	11.91								

▶ Other diameters of insert and shank types of holder are available upon request.

◎ : Excellent ○ : Good

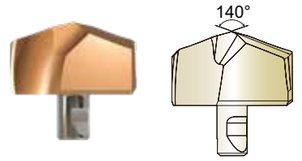
ISO	P														M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel			Duplex	Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14		15	16	17	18	19	20			
HRc		13	25	28	32	10	29	32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

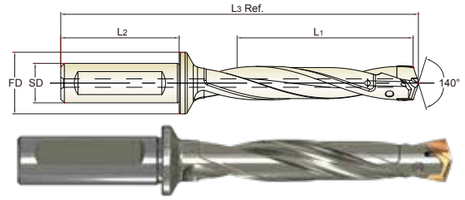
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29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

i - ONE DRILLS

Y121H SERIES

i-ONE DRILL INSERTS & HOLDERS
i-ONE DRILL EINSÄTZE UND HALTER
PLAQUETTES ET PORTE-PLAQUETTE i-ONE DRILL
INSERTI & PORTAINSERTI i-ONE DRILL
- Applications
▶For carbon steels, alloy steels and cast iron.
▶Holder length: 3xD, 5xD, 8xD
- Benefits
▶Secure and quick clamping system.
▶High performance with cost efficiency.
▶Multi-layered coating delivers outstanding productivity and reliability.
- Anwendungen
▶Für Kohlenstoffstähle, legierte Stähle und Gusseisen.
▶Halterlänge: 3xD, 5xD, 8xD
- Vorteile
▶Sicheres und schnelles Spannsystem.
▶Hohe Leistungsfähigkeit bei gleichzeitiger Kosteneffizienz.
▶Mehrschichtige Beschichtung bietet hervorragende Produktivität und Zuverlässigkeit.





CARBIDE | ISO 9766 | h7 | 140° P.48

Unit : mm

Series Range	Insert EDP No.	Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
		h7										
(mm)	H-Coating	dec.	frac.	mm		SD	L2	FD	L1		L3 Ref.	
S12 Ø12.00 to Ø13.99	Y121H1200	0.4724		12.00	ZD12003016	16	48	23	3D	37.5	109.8	TX1213P5
	Y121H1210	0.4764		12.10	ZD12005016				5D	62.5	133.8	
	Y121H1220	0.4803		12.20	ZD12008016				8D	100.0	169.8	
	Y121H1230	0.4844	31/64	12.30								
	Y121H1240	0.4882		12.40								
	Y121H1250	0.4921		12.50								
	Y121H1260	0.4961		12.60	ZD12503016	16	48	23	3D	39.0	110.8	
	Y121H1270	0.5000	1/2	12.70	ZD12505016				5D	65.0	135.8	
	Y121H1280	0.5039		12.80	ZD12508016				8D	104.0	173.3	
	Y121H1290	0.5079		12.90								
	Y121H1300	0.5118		13.00	ZD13003016	16	48	23	3D	40.5	112.8	
	Y121H1310	0.5156	33/64	13.10	ZD13005016				5D	67.5	138.8	
	Y121H1320	0.5197		13.20	ZD13008016				8D	108.0	177.8	
	Y121H1330	0.5236		13.30								
	Y121H1340	0.5276		13.40								
	Y121H1349	0.5313	17/32	13.49								
	Y121H1350	0.5315		13.50								
	Y121H1360	0.5354		13.60	ZD13503016	16	48	23	3D	42.0	113.8	
	Y121H1370	0.5394		13.70	ZD13505016				5D	70.0	140.8	
	Y121H1380	0.5433		13.80	ZD13508016				8D	112.0	181.3	
	Y121H1389	0.5469	35/64	13.89								
	Y121H1390	0.5472		13.90								

▶ Other diameters of insert and shank types of holder 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			Duplex	Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14		15	16	17	18	19	20			
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	10	26	3	25			21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	180	260	160	250	130	230			
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					◎	◎	◎	◎	◎	◎			

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

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

i - ONE DRILLS

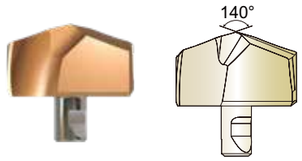
Y141H SERIES

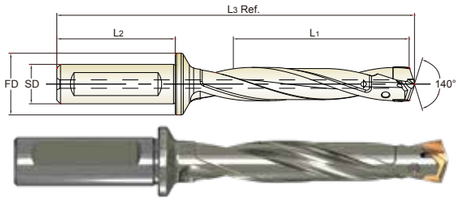
i-ONE DRILL INSERTS & HOLDERS

i-ONE DRILL EINSÄTZE UND HALTER
PLAQUETTES ET PORTE-PLAQUETTE i-ONE DRILL
INSERTI & PORTAINSERTI i-ONE DRILL

- Applications
▶For carbon steels, alloy steels and cast iron.
▶Holder length: 3xD, 5xD, 8xD
- Benefits
▶Secure and quick clamping system.
▶High performance with cost efficiency.
▶Multi-layered coating delivers outstanding productivity and reliability.

- Anwendungen
▶Für Kohlenstoffstähle, legierte Stähle und Gusseisen.
▶Halterlänge: 3xD, 5xD, 8xD
- Vorteile
▶Sicheres und schnelles Spannsystem.
▶Hohe Leistungsfähigkeit bei gleichzeitiger Kosteneffizienz.
▶Mehrschichtige Beschichtung bietet hervorragende Produktivität und Zuverlässigkeit.





CARBIDE | ISO 9766 | h7 | 140° | P.48

Unit : mm

Series Range	Insert EDP No.	Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	H-Coating	h7 dec.	frac.	mm		SD	L2	FD	L1		L3 Ref.	
S14 Ø14.00 to Ø15.99	Y141H1400	0.5512		14.00	ZD14003016	16	48	23	3D	43.5	116.3	TX1415P7
	Y141H1410	0.5551		14.10	ZD14005016				5D	72.5	144.3	
	Y141H1420	0.5591		14.20	ZD14008016				8D	116.0	186.3	
	Y141H1429	0.5625	9/16	14.29								
	Y141H1430	0.5630		14.30								
	Y141H1440	0.5669		14.40								
	Y141H1450	0.5709		14.50	ZD14503016	16	48	23	3D	45.0	118.3	
	Y141H1460	0.5748		14.60	ZD14505016				5D	75.0	147.3	
	Y141H1468	0.5781	37/64	14.68	ZD14508016				8D	120.0	190.8	
	Y141H1470	0.5787		14.70								
	Y141H1480	0.5827		14.80								
	Y141H1490	0.5866		14.90								
	Y141H1500	0.5906		15.00	ZD15003016	16	48	23	3D	46.5	120.3	
	Y141H1508	0.5938	19/32	15.08	ZD15005016				5D	77.5	150.3	
	Y141H1510	0.5945		15.10	ZD15008016				8D	124.0	195.3	
	Y141H1520	0.5984		15.20								
	Y141H1530	0.6024		15.30								
	Y141H1540	0.6063		15.40								
	Y141H1548	0.6094	39/64	15.48								
	Y141H1550	0.6102		15.50	ZD15503016	16	48	23	3D	48.0	121.3	
	Y141H1560	0.6142		15.60	ZD15505016				5D	80.0	152.3	
	Y141H1570	0.6181		15.70	ZD15508016				8D	128.0	198.8	
	Y141H1580	0.6220		15.80								
	Y141H1588	0.6250	5/8	15.88								
	Y141H1590	0.6260		15.90								

▶ Other diameters of insert and shank types of holder are available upon request.

◎ : Excellent ○ : Good

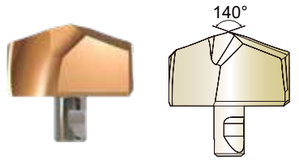
ISO	P																				M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel			Duplex	Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14			15	16	17	18	19	20
HRc		13	25	28	32	10	29	32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

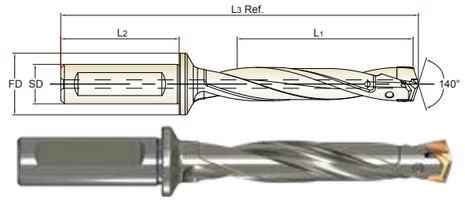
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28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

i - ONE DRILLS

Y161H SERIES

i-ONE DRILL INSERTS & HOLDERS
i-ONE DRILL EINSÄTZE UND HALTER
PLAQUETTES ET PORTE-PLAQUETTE i-ONE DRILL
INSERTI & PORTAINSERTI i-ONE DRILL
- Applications
▶For carbon steels, alloy steels and cast iron.
▶Holder length: 3xD, 5xD, 8xD
- Benefits
▶Secure and quick clamping system.
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▶Für Kohlenstoffstähle, legierte Stähle und Gusseisen.
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▶Sicheres und schnelles Spannsystem.
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CARBIDE | ISO 9766 | h7 | 140° | P.48

Unit : mm

Series Range	Insert EDP No.	Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	H-Coating	h7 dec.	frac.	mm		SD	L2	FD	L1		L3 Ref.	
S16 Ø16.00 to Ø17.99	Y161H1600	0.6299		16.00	ZD16003020	20	50	25	3D	51.0	127.0	TX1617P7
	Y161H1609	0.6335		16.09	ZD16005020				5D	85.0	160.0	
	Y161H1610	0.6339		16.10	ZD16008020				8D	136.0	209.5	
	Y161H1620	0.6378		16.20								
	Y161H1627	0.6406	41/64	16.27								
	Y161H1630	0.6417		16.30								
	Y161H1640	0.6457		16.40								
	Y161H1650	0.6496		16.50								
	Y161H1660	0.6535		16.60								
	Y161H1667	0.6563	21/32	16.67								
	Y161H1670	0.6575		16.70								
	Y161H1680	0.6614		16.80								
	Y161H1690	0.6654		16.90								
	Y161H1700	0.6693		17.00	ZD17003020	20	50	25	3D	54.0	130.0	TX1718P7
	Y161H1707	0.6719	43/64	17.07	ZD17005020				5D	90.0	165.0	
	Y161H1710	0.6732		17.10	ZD17008020				8D	144.0	217.5	
	Y161H1720	0.6772		17.20								
	Y161H1730	0.6811		17.30								
	Y161H1740	0.6850		17.40								
	Y161H1746	0.6875	11/16	17.46								
	Y161H1750	0.6890		17.50								
	Y161H1760	0.6929		17.60								
	Y161H1770	0.6969		17.70								
	Y161H1780	0.7008		17.80								
	Y161H1786	0.7031	45/64	17.86								
	Y161H1790	0.7047		17.90								

▶ Other diameters of insert and shank types of holder 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			Duplex	Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14			15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10		10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180		180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎						◎	◎	◎	◎	◎	◎

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

i - ONE DRILLS

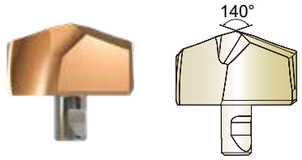
Y181H SERIES

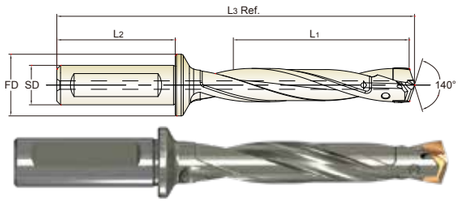
i-ONE DRILL INSERTS & HOLDERS

i-ONE DRILL EINSÄTZE UND HALTER
PLAQUETTES ET PORTE-PLAQUETTE i-ONE DRILL
INSERTI & PORTAINSERTI i-ONE DRILL

- Applications
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- Anwendungen
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- Vorteile
▶Sicheres und schnelles Spannsystem.
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▶Mehrschichtige Beschichtung bietet hervorragende Produktivität und Zuverlässigkeit.





CARBIDE | ISO 9766 | h7 | 140° P.48

Unit : mm

Series Range	Insert EDP No.	Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	H-Coating	h7				SD	L2	FD	L1		L3 Ref.	
		dec.	frac.	mm								
S18 Ø18.00 to Ø19.99	Y181H1800	0.7087		18.00	ZD18003025 ZD18005025 ZD18008025	25	56	32	3D 5D 8D	57.0 95.0 152.0	141.3 178.3 233.8	TX1819P9
	Y181H1810	0.7126		18.10								
	Y181H1820	0.7165		18.20								
	Y181H1826	0.7188	23/32	18.26								
	Y181H1830	0.7205		18.30								
	Y181H1840	0.7244		18.40								
	Y181H1850	0.7283		18.50								
	Y181H1860	0.7323		18.60								
	Y181H1865	0.7344	47/64	18.65								
	Y181H1870	0.7362		18.70								
	Y181H1880	0.7402		18.80								
	Y181H1890	0.7441		18.90								
	Y181H1900	0.7480		19.00	ZD19003025 ZD19005025 ZD19008025	25	56	32	3D 5D 8D	60.0 100.0 160.0	145.3 184.3 242.8	TX1920P9
	Y181H1905	0.7500	3/4	19.05								
	Y181H1910	0.7520		19.10								
	Y181H1920	0.7559		19.20								
	Y181H1927	0.7587		19.27								
	Y181H1930	0.7598		19.30								
	Y181H1940	0.7638		19.40								
	Y181H1945	0.7656	49/64	19.45								
	Y181H1950	0.7677		19.50								
	Y181H1960	0.7717		19.60								
	Y181H1970	0.7756		19.70								
	Y181H1980	0.7795		19.80								
	Y181H1984	0.7813	25/32	19.84								
	Y181H1990	0.7835		19.90								

▶ Other diameters of insert and shank types of holder are available upon request.

◎ : Excellent ○ : Good

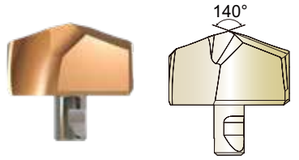
ISO	P																				M				K							
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel											Stainless steel			Duplex	Grey cast iron		Nodular cast iron		Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14		15	16	17	18	19	20											
HRc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

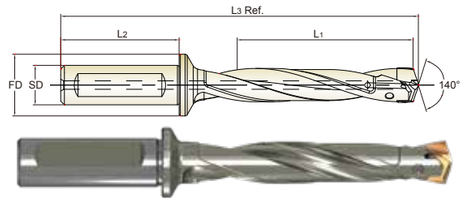
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29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

i - ONE DRILLS

Y201H SERIES

i-ONE DRILL INSERTS & HOLDERS
i-ONE DRILL EINSÄTZE UND HALTER
PLAQUETTES ET PORTE-PLAQUETTE i-ONE DRILL
INSERTI & PORTAINSERTI i-ONE DRILL
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- Benefits
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▶Halterlänge: 3xD, 5xD, 8xD
- Vorteile
▶Sicheres und schnelles Spannsystem.
▶Hohe Leistungsfähigkeit bei gleichzeitiger Kosteneffizienz.
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CARBIDE | ISO 9766 | h7 | 140° P.48

Unit : mm

Series Range	Insert EDP No.	Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	H-Coating	h7				SD	L2	FD	L1		L3 Ref.	
		dec.	frac.	mm								
S20 Ø20.00 to Ø21.99	Y201H2000	0.7874		20.00	ZD20003025 ZD20005025 ZD20008025	25	56	32	3D 5D 8D	63.0 105.0 168.0	147.5 188.5 250.0	TX2021P9
	Y201H2010	0.7913		20.10								
	Y201H2020	0.7953		20.20								
	Y201H2024	0.7969	51/64	20.24								
	Y201H2030	0.7992		20.30								
	Y201H2040	0.8031		20.40								
	Y201H2050	0.8071		20.50								
	Y201H2060	0.8110		20.60								
	Y201H2064	0.8125	13/16	20.64								
	Y201H2070	0.8150		20.70								
	Y201H2080	0.8189		20.80								
	Y201H2090	0.8228		20.90								
	Y201H2100	0.8268		21.00	ZD21003025 ZD21005025 ZD21008025	25	56	32	3D 5D 8D	66.0 110.0 176.0	150.5 193.5 258.0	TX2122P9
	Y201H2103	0.8281	53/64	21.03								
	Y201H2110	0.8307		21.10								
	Y201H2120	0.8346		21.20								
	Y201H2130	0.8386		21.30								
	Y201H2140	0.8425		21.40								
	Y201H2143	0.8438	27/32	21.43								
	Y201H2150	0.8465		21.50								
	Y201H2160	0.8504		21.60								
	Y201H2170	0.8543		21.70								
	Y201H2180	0.8583		21.80								
	Y201H2183	0.8594	55/64	21.83								
	Y201H2190	0.8622		21.90								

▶ Other diameters of insert and shank types of holder 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			Duplex	Grey cast iron		Nodular cast iron		Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14		15	16	17	18	19	20											
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	10	26	3	25		21											
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	180	260	160	250	130	230											
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					◎	◎	◎	◎	◎	◎											

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

i - ONE DRILLS

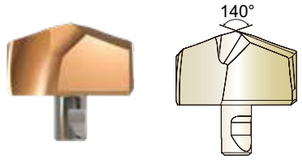
Y221H SERIES

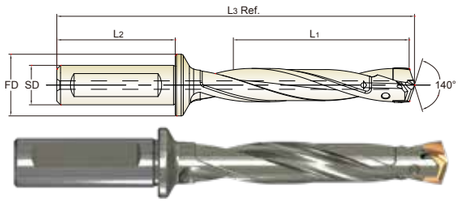
i-ONE DRILL INSERTS & HOLDERS

i-ONE DRILL EINSÄTZE UND HALTER
PLAQUETTES ET PORTE-PLAQUETTE i-ONE DRILL
INSERTI & PORTAINSERTI i-ONE DRILL

- Applications
▶For carbon steels, alloy steels and cast iron.
▶Holder length: 3xD, 5xD, 8xD
- Benefits
▶Secure and quick clamping system.
▶High performance with cost efficiency.
▶Multi-layered coating delivers outstanding productivity and reliability.

- Anwendungen
▶Für Kohlenstoffstähle, legierte Stähle und Gusseisen.
▶Halterlänge: 3xD, 5xD, 8xD
- Vorteile
▶Sicheres und schnelles Spannsystem.
▶Hohe Leistungsfähigkeit bei gleichzeitiger Kosteneffizienz.
▶Mehrschichtige Beschichtung bietet hervorragende Produktivität und Zuverlässigkeit.





CARBIDE ISO 9766 h7 140° P.48

Unit : mm

Series Range	Insert EDP No.	Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	H-Coating	h7				SD	L2	FD	L1		L3 Ref.	
		dec.	frac.	mm								
S22 Ø22.00 to Ø23.99	Y221H2200	0.8661		22.00	ZD22003025 ZD22005025 ZD22008025	25	56	32	3D	69.0	153.4	TX2223P9
	Y221H2210	0.8701		22.10					5D	115.0	198.4	
	Y221H2220	0.8740		22.20					8D	184.0	265.9	
	Y221H2223	0.8750	7/8	22.23								
	Y221H2230	0.8780		22.30								
	Y221H2240	0.8819		22.40								
	Y221H2250	0.8858		22.50								
	Y221H2260	0.8898		22.60								
	Y221H2262	0.8906	57/64	22.62								
	Y221H2270	0.8937		22.70								
	Y221H2280	0.8976		22.80								
	Y221H2290	0.9016		22.90								
	Y221H2300	0.9055		23.00	ZD23003025 ZD23005025 ZD23008025	25	56	32	3D	72.0	157.4	TX2324P9
	Y221H2302	0.9063	29/32	23.02					5D	120.0	204.4	
	Y221H2310	0.9094		23.10					8D	192.0	274.9	
	Y221H2320	0.9134		23.20								
	Y221H2330	0.9173		23.30								
	Y221H2340	0.9213		23.40								
	Y221H2342	0.9219	59/64	23.42								
	Y221H2350	0.9252		23.50								
	Y221H2360	0.9291		23.60								
	Y221H2370	0.9331		23.70								
	Y221H2380	0.9370		23.80								
	Y221H2381	0.9375	15/16	23.81								
	Y221H2390	0.9409		23.90								

▶ Other diameters of insert and shank types of holder 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		Duplex	Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14		15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					◎	◎	◎	◎	◎	◎

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

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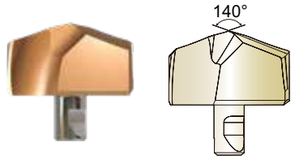
Y241H SERIES

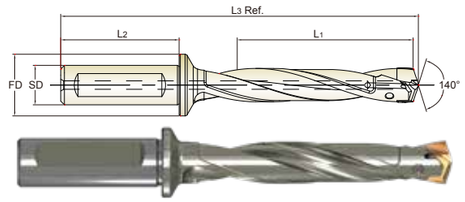
i-ONE DRILL INSERTS & HOLDERS

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PLAQUETTES ET PORTE-PLAQUETTE i-ONE DRILL
INSERTI & PORTAINSERTI i-ONE DRILL

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▶Sicheres und schnelles Spannsystem.
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CARBIDE ISO 9766 h7 140° P.48

Unit : mm

Series Range	Insert EDP No.	Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	H-Coating	h7				SD	L2	FD	L1		L3 Ref.	
		dec.	frac.	mm								
S24 Ø24.00 to Ø25.99	Y241H2400	0.9449		24.00	ZD24003032 ZD24005032 ZD24008032	32	60	37	3D	75.0	165.8	TX2425P10
	Y241H2410	0.9488		24.10					5D	125.0	214.8	
	Y241H2420	0.9528		24.20					8D	200.0	288.3	
	Y241H2421	0.9531	61/64	24.21								
	Y241H2430	0.9567		24.30								
	Y241H2440	0.9606		24.40								
	Y241H2450	0.9646		24.50								
	Y241H2460	0.9685		24.60								
	Y241H2461	0.9688	31/32	24.61								
	Y241H2470	0.9724		24.70								
	Y241H2480	0.9764		24.80								
	Y241H2490	0.9803		24.90								
	Y241H2500	0.9844	63/64	25.00	ZD25003032 ZD25005032 ZD25008032	32	60	37	3D	78.0	170.8	TX2526P10
	Y241H2510	0.9882		25.10					5D	130.0	221.8	
	Y241H2520	0.9921		25.20					8D	208.0	298.3	
	Y241H2530	0.9961		25.30								
	Y241H2540	1.0000	1	25.40								
	Y241H2550	1.0039		25.50								
	Y241H2560	1.0079		25.60								
	Y241H2567	1.0106		25.67								
	Y241H2570	1.0118		25.70								
	Y241H2580	1.0156	1-1/64	25.80								
	Y241H2590	1.0197		25.90								

▶ Other diameters of insert and shank types of holder 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		Duplex	Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14		15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					◎	◎	◎	◎	◎	◎

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

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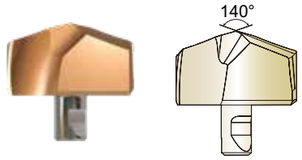
Y261H SERIES
Y281H SERIES

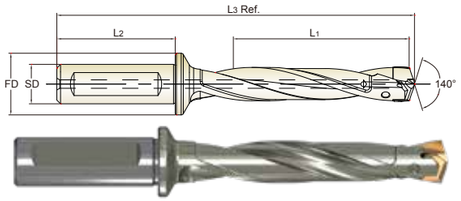
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CARBIDE | ISO 9766 | h7 | 140° P.48

Unit : mm

Series Range	Insert EDP No.	Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	H-Coating	h7 dec.	h7 frac.	h7 mm		SD	L2	FD	L1		L3 Ref.	
S26 Ø26.00 to Ø27.99	Y261H2600	1.0236		26.00	ZD26003032	32	60	37	3D	81.0	172.2	TX2627P10
	Y261H2619	1.0313	1-1/32	26.19	ZD26005032				5D	135.0	225.2	
	Y261H2650	1.0433		26.50	ZD26008032				8D	216.0	304.	
	Y261H2659	1.0469	1-3/64	26.59								
	Y261H2699	1.0625	1-1/16	26.99	ZD27003032	32	60	37	3D	84.0	175.2	TX2728P10
	Y261H2700	1.0630		27.00	ZD27005032				5D	140.0	230.2	
	Y261H2738	1.0781	1-5/64	27.38	ZD27008032				8D	224.0	312.7	
	Y261H2750	1.0827		27.50								
	Y261H2778	1.0938	1-3/32	27.78	ZD28003032	32	60	37	3D	87.0	179.2	TX2829P10
S28 Ø28.00 to Ø29.99	Y281H2800	1.1024		28.00	ZD28005032				5D	145.0	236.2	
	Y281H2818	1.1094	1-7/64	28.18	ZD28008032				8D	232.0	321.7	
	Y281H2850	1.1220		28.50								
	Y281H2858	1.1250	1-1/8	28.58	ZD29003032	32	60	37	3D	90.0	183.2	TX2930P10
	Y281H2897	1.1406	1-9/64	28.97	ZD29005032				5D	150.0	242.2	
	Y281H2900	1.1417		29.00	ZD29008032				8D	240.0	330.7	
	Y281H2937	1.1563	1-5/32	29.37								
	Y281H2950	1.1614		29.50								
	Y281H2977	1.1719	1-11/64	29.77								

▶ Other diameters of insert and shank types of holder 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		Duplex	Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10		10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180		180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎						◎	◎	◎	◎	◎	◎

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

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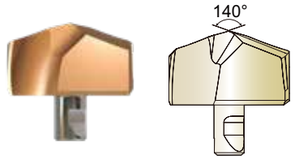
Y301H SERIES
Y321H SERIES

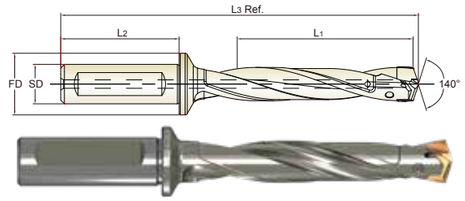
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CARBIDE | ISO 9766 | h7 | 140° P.48

Unit : mm

Series Range	Insert EDP No.	Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	H-Coating	h7 dec.	h7 frac.	h7 mm		SD	L2	FD	L1		L3 Ref.	
S30 Ø30.00 to Ø31.99	Y301H3000	1.1811		30.00	ZD30003032	32	60	37	3D	93.0	187.0	TX3031P15
	Y301H3016	1.1875	1-3/16	30.16	ZD30005032				5D	155.0	248.0	
	Y301H3050	1.2008		30.50	ZD30008032				8D	248.0	339.5	
	Y301H3056	1.2031	1-13/64	30.56								
	Y301H3096	1.2188	1-7/32	30.96	ZD31003032	32	60	37	3D	96.0	191.0	TX3132P15
	Y301H3100	1.2205		31.00	ZD31005032				5D	160.0	254.0	
	Y301H3135	1.2344	1-15/64	31.35	ZD31008032				8D	256.0	348.5	
	Y301H3150	1.2402		31.50								
	Y301H3175	1.2500	1-1/4	31.75	ZD32003032	32	60	37	3D	99.0	197.2	TX3233P15
S32 Ø32.00 to Ø33.99	Y321H3200	1.2598		32.00	ZD32005032				5D	165.0	262.2	
	Y321H3215	1.2656	1-17/64	32.15	ZD32008032				8D	264.0	359.7	
	Y321H3250	1.2795		32.50								
	Y321H3254	1.2813	1-9/32	32.54	ZD33003032	32	60	37	3D	102.0	201.2	TX3334P15
	Y321H3294	1.2969	1-19/64	32.94	ZD33005032				5D	170.0	268.2	
	Y321H3300	1.2992		33.00	ZD33008032				8D	272.0	368.7	
	Y321H3334	1.3125	1-5/16	33.34								
	Y321H3350	1.3189		33.50								
	Y321H3373	1.3281	1-21/64	33.73								

▶ Other diameters of insert and shank types of holder 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		Duplex	Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10		10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180		180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎						◎	◎	◎	◎	◎	◎

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

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RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

ISO	VDI 3323	Material Description	Vc (m/min)	Feed(mm/rev)					
				Ø10.0-11.99	Ø12.09-14.99	Ø15.00-17.99	Ø18.00-21.99	Ø22.0-26.9	Ø27.0-33.99
P	1	Non-alloy steel	100-126	0.14-0.24	0.18-0.31	0.23-0.39	0.30-0.44	0.37-0.57	0.41-0.61
	2		84-110	0.12-0.21	0.15-0.26	0.23-0.39	0.30-0.44	0.37-0.57	0.41-0.61
	3		63-84	0.11-0.18	0.13-0.22	0.19-0.31	0.24-0.35	0.33-0.51	0.36-0.54
	4		58-74	0.09-0.14	0.11-0.18	0.17-0.28	0.23-0.33	0.28-0.42	0.32-0.47
	5		58-74	0.09-0.14	0.11-0.18	0.17-0.28	0.23-0.33	0.28-0.42	0.32-0.47
	6	Low alloy steel	74-95	0.11-0.18	0.13-0.22	0.19-0.31	0.24-0.35	0.33-0.51	0.37-0.55
	7		63-84	0.11-0.18	0.13-0.22	0.17-0.28	0.24-0.35	0.33-0.51	0.37-0.55
	8		58-74	0.09-0.14	0.11-0.18	0.14-0.23	0.23-0.33	0.28-0.42	0.32-0.47
	9		47-63	0.07-0.11	0.09-0.13	0.14-0.23	0.23-0.33	0.28-0.42	0.32-0.47
	10	High alloyed steel, and tool steel	53-68	0.09-0.14	0.11-0.18	0.14-0.23	0.20-0.29	0.22-0.34	0.26-0.39
	11		42-58	0.09-0.14	0.11-0.18	0.12-0.20	0.23-0.33	0.22-0.34	0.26-0.39
M	12	Stainless steel							
	13								
	14								
K	15	Grey cast iron	105-131	0.13-0.23	0.17-0.29	0.22-0.41	0.30-0.46	0.40-0.56	0.44-0.61
	16		79-100	0.10-0.18	0.12-0.22	0.18-0.32	0.22-0.33	0.28-0.39	0.32-0.44
	17	Nodular cast iron	100-126	0.11-0.20	0.14-0.24	0.19-0.34	0.23-0.35	0.31-0.44	0.35-0.48
	18		79-100	0.10-0.18	0.12-0.22	0.15-0.29	0.21-0.32	0.28-0.39	0.32-0.44
	19	Malleable cast iron	105-131	0.11-0.20	0.14-0.24	0.19-0.34	0.23-0.35	0.31-0.44	0.35-0.48
	20		79-100	0.10-0.15	0.12-0.20	0.15-0.29	0.21-0.32	0.28-0.39	0.32-0.44
N	21	Aluminum-wrought alloy							
	22								
	23	Aluminum-cast, alloyed							
	24								
	25								
	26	Copper and Copper Alloys (Bronze / Brass)							
	27								
	28								
	29	Non Metallic Materials							
	30								
S	31	Heat Resistant Super Alloys							
	32								
	33								
	34								
	35								
	36	Titanium Alloys							
	37								
H	38	Hardened steel							
	39								
	40	Chilled Cast Iron							
	41	Hardened Cast Iron							

▶ The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points. Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.
▶ Recommend you to reduce the feed rate to 85%, 70% when you use 5xD, 8xD holders.
▶ For use of 8xD holder, we recommend to use a pilot drill with equal to or larger than 140º point angle (0.5xD ~ 1.5xD).
The use of the centering pre-hole improves hole location, roundness and surface finish.

i - ONE DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

Comparison with Split Point Drill, Spade Drill & Dream Drill



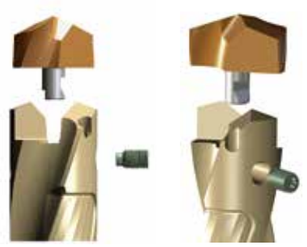
ASSEMBLY OF *i*-ONE DRILLS
MONTAGE DES i-ONE DRILLS





Make sure to clean the insert and insert seat.
Schneideinsatz und Haltersitz sorgfältig reinigen.

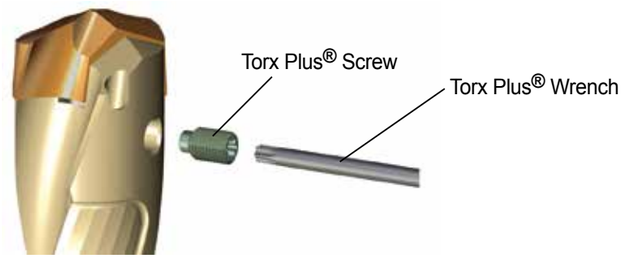






Slide the drill insert into the slot of the holder and press down the insert to touch the bottom of the slot.
Schneideinsatz in den Haltersitz einführen und den Schneideinsatz fest auf den Grund des Haltersitzes pressen.

After confirming the insert is pressed down to the bottom of the slot, tighten the screw using anti-seize compound.
Wenn der Schneideinsatz fest auf den Grund des Haltersitzes gepresst ist, die Schraube fest anziehen und dabei Spezialfett verwenden.



WRENCH TYPE	PRODUCT NO.	SERIES (INSERT SIZE)	TORX PLUS®	TORQUE (N·m)
	TWFP05	S10~S12 (10.00 ~ 13.90)	5 IP	0.6
	TWDP07	S14~S16 (14.00 ~ 17.90)	7 IP	1.0
	TWDP09	S18~S22 (18.00 ~ 23.90)	9 IP	1.5
	TWDP10	S24~S28 (24.00 ~ 29.77)	10 IP	2.2
	TWDP15	S30~S32 (30.00 ~ 33.73)	15 IP	3.2

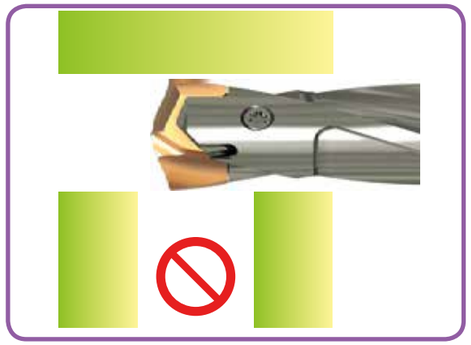
Use the Torx Plus wrench
Benutzen Sie den Winkeldreher oder T - Schlüsse

- ▶ Need to use appropriate wrenches and screws as indicated.
  Unbedingt die angegebenen Schrauben und Dreher verwenden.
- ▶ It's important to tighten up the screw properly.
  Es ist wichtig, die Schraube korrekt und fest anzuziehen.

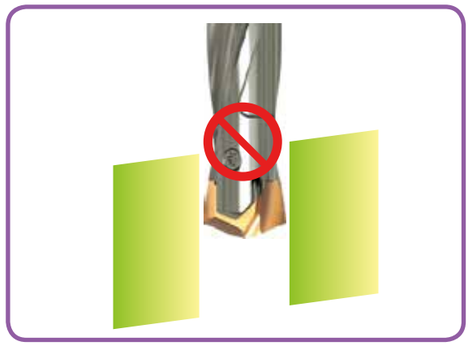
CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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NC-SPOTTING DRILLS
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i - ONE DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

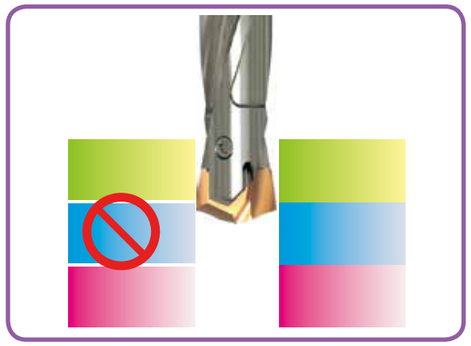
CAUTION-NOT RECOMMENDABLE APPLICATION
ACHTUNG - NICHT EMPFOHLENE ANWENDUNG



Intersecting cross hole is bigger than the drill insert's Margin Length.
Der Haltersitz ist größer als die Breite des Schneideinsatzes.

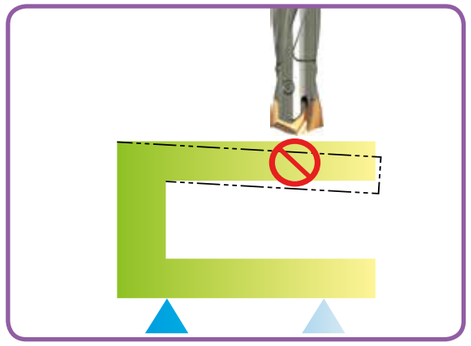


Material with slanting entrance and exit over 7 degrees. (If drilling 7 degrees or under slanting surface, reduce the feed about 30-50%)
Werkstücke mit schrägem Anschnitt oder Austritt von über 7°. (Zum Bohren von bis zu 7° Schräge den Vorschub um ca. 30-50% reduzieren).



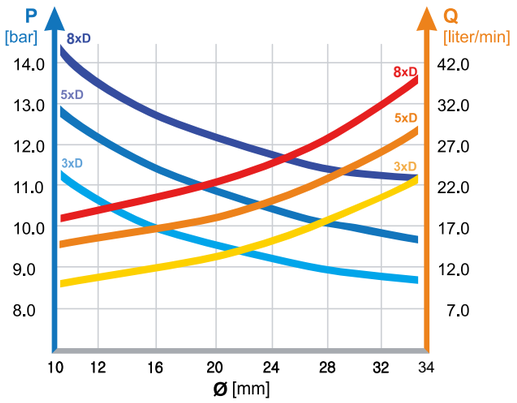
For drilling stacked plates, minimize the space between the plates.
Beim Bohren von Blechpaketen den Abstand der Bleche minimieren.

The space between stacked plates can cause insert breakage or poor chip control.
Freiraum in Blechpaketen kann den Bruch des Schneideinsatzes oder schlechte Entspanung verursachen.



The material needs to be fixtured securely before drilling.
Das Werkstück muss fest und sicher aufgespannt sein

RECOMMENDED COOLANT PRESSURE AND FLOW RATE ON VERTICAL DRILLING
EMPFOHLENE KÜHLMITTELDRUCK UND - MENGE BEIM VERTIKALEN BOHREN



- Recommended emulsion mix is 6 - 8%.
  Empfohlene Emulsionsmischung 6 - 8%.
- For Drilling into Stainless and High Strength steels, a mix of 10% is recommended.
  Beim Bohren in rostfreie und hochfeste Stähle werden 10% empfohlen.
- For horizontal drilling, 30% reduction on the coolant pressure and flow rate is possible.
  Beim horizontalen Bohren können Kühlmitteldruck und - menge um 30% gemindert werden.
- Dry drilling is possible for 1-2xD drilling. But not recommended.
  Trocken Bohren ist möglich bei 1-2xD. Aber nicht empfohlen.

TROUBLE SHOOTING
PROBLEMLÖSUNGEN



1) Heavy flank wear / Fast flank wear
- Reduce cutting speed
- Increase feed



2) Chipping on cutting edge
- Reduce feed
- Check the rigidity of spindle and chuck
- Rigid clamping of workpiece



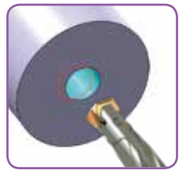
3) Build-up on cutting edge
- Increase cutting speed
- Use a coated insert



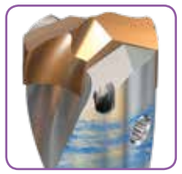
4) Chipping or break down on outer corner
- Reduce feed
- Rigid clamping of workpiece



5) Wear of land margin
- Rigid clamping of workpiece
- Reduce cutting speed
- Increase coolant flow



6) Unsatisfactory positioning of the hole
- Rigid clamping of workpiece
- Reduce feed during entrance or exit



7) Scratching on holder
- Rigid clamping of workpiece
- Reduce feed
- Increase coolant flow



8) Unsatisfactory surface finish
- Rigid clamping of workpiece
- Increase coolant flow and pressure



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CARBIDE INSERTS & HOLDERS

i-DREAM DRILLS

i-Dream Drills

- For General Steels and Stainless Steels
- Für allgemeine Stähle und Edelstähle

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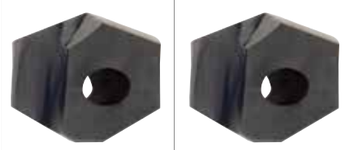
For General Steels and Stainless Steels

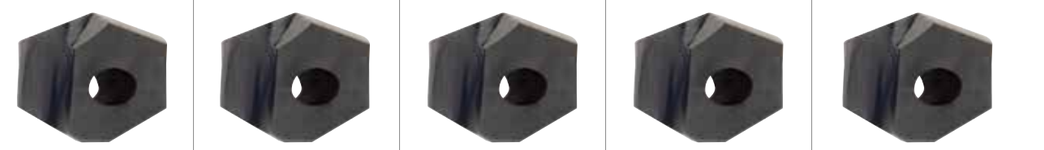
Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.68

SERIES	YA1A	YA2C	YB1A	YB2C	YC1A	YC2C	YD1A	YD2C	YE1A	YE2C	YF1A	YF2C	YG1A	YG2C
TYPE	A		B		C		D		E		F		G	
SIZE MIN	12.00		14.00		16.00		18.00		20.00		22.00		24.00	
SIZE MAX	13.89		15.87		17.86		19.84		21.83		23.81		25.80	
PAGE	58		59		60		61		62		63		64	
SURFACE TREATMENT	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN





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

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i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
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HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
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Recommended cutting conditions : P.68

SERIES	YH1A	YH2C	YI1A	YI2C	YJ1A	YJ2C	ZH*3	ZH*5	ZH*7
TYPE	H		I		J				
SIZE MIN	26.00		28.00		30.00				
SIZE MAX	27.78		29.77		31.75				
PAGE	65		66		67				
SURFACE TREATMENT	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	3XD	5XD	7XD













ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	YH1A	YH2C	YI1A	YI2C	YJ1A	YJ2C	ZH*3	ZH*5	ZH*7	
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	○	◎	○	◎	○				1
	2		About 0.45% C	Annealed	190	13	◎	○	◎	○	◎	○				2
	3		About 0.45% C	Quenched & Tempered	250	25	◎	○	◎	○	◎	○				3
	4		About 0.75% C	Annealed	270	28	◎	○	◎	○	◎	○				4
	5		About 0.75% C	Quenched & Tempered	300	32	◎		◎		◎					5
	6	Low alloy steel		Annealed	180	10	◎	○	◎	○	◎	○				6
	7			Quenched & Tempered	275	29	◎	○	◎	○	◎	○				7
	8			Quenched & Tempered	300	32	◎		◎		◎					8
	9			Quenched & Tempered	350	38	◎		◎		◎					9
	10	High alloyed steel, and tool steel		Annealed	200	15	◎	○	◎	○	◎	○				10
	11			Quenched & Tempered	325	35	◎		◎		◎					11
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15		◎		◎		◎				12
	13		Martensitic	Quenched & Tempered	240	23		◎		◎		◎				13
	14		Austenitic		180	10		◎		◎		◎				14
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎		◎		◎					15
	16		Pearlitic (Martensitic)		260	26	◎		◎		◎					16
	17	Nodular cast iron	Ferritic		160	3	◎		◎		◎					17
	18		Pearlitic		250	25	◎		◎		◎					18
	19	Malleable cast iron	Ferritic		130		◎		◎		◎					19
	20		Pearlitic		230	21	◎		◎		◎					20
N	21	Aluminum-wrought alloy	Not Curable		60			○		○		○				21
	22		Curable	Hardened	100			○		○		○				22
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75			○		○		○				23
	24		≤ 12% Si, Curable	Hardened	90			○		○		○				24
	25		> 12% Si, Not Curable		130			○		○		○				25
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110			○		○		○				26
	27		CuZn, CuSnZn (Brass)		90			○		○		○				27
	28		CuSn, lead-free copper and electrolytic copper		100			○		○		○				28
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic													29
	30		Rubber, Wood, etc.													30
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15										31
	32			Cured	280	30										32
	33		Ni or Co Based	Annealed	250	25										33
	34			Cured	350	38										34
	35			Cast	320	34										35
	36	Titanium Alloys	Pure Titanium		400 Rm											36
	37		Alpha + Beta Alloys	Hardened	1050 Rm											37
H	38	Hardened steel		Hardened	550	55										38
	39			Hardened	630	60										39
	40	Chilled Cast Iron		Cast	400	42										40
	41	Hardened Cast Iron		Hardened	550	55										41

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YG i - DREAM DRILLS

YA1A SERIES
YA2C SERIES

i-DREAM DRILL INSERTS & HOLDERS

i-DREAM DRILL EINSÄTZE UND HALTER
PLAQUETTES ET PORTE-PLAQUETTE I-DREAM DRILL - USAGE GÉNÉRAL / INOX
INSERTI & PORTAINSERTI i-DREAM DRILL

- Features of *i-Dream Drill* Inserts-
Merkmale des i-Dream Drill Einsätze

- ▶ Secure and accurate seating resulting in accurate repeatability and concentricity.
  Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.

i-Dream Drill General / i-Dream Drill allgemeinen

- ▶ For most steels materials / In den meisten Stahlsorten

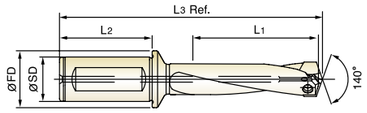
i-Dream Drill INOX / i-Dream Drill INOX

- ▶ For tough, ductile materials and stainless steels
  Für zähe, verformbare Werkstoffe und rostfreie Stähle.
- ▶ Light, sharp cutting edge / Scharfe Schneidkante
- ▶ Soft cutting action / Weicher Schnitt
- ▶ Minimize cutting forces / Minimaler Schneidendruck
- ▶ Reduce built-up edge / Reduzierte Gratbildung

- Features of *i-Dream Drill* Holders-
- Merkmale des i-Dresm Drill Halters-

- ▶ Special Alloy Steels maintain its hardness and toughness under high temperatures.
  Speziell legierter Stahl, der seine Härte und Zähigkeit auch bei hohen Temperaturen behält.
- ▶ Innovative surface treatment improves wear resistance and reduces corrosion.
  Innovative Oberflächenbehandlung, die die Verschleissfestigkeit erhöht und die Korrosion vermindert.
- ▶ High Performance flute design allows maximum chip evacuation and minimum interference.
  Optimierte Nutenform für maximale Spanabfuhr.





CARBIDE | ISO 9766 | h7 | 140° | P.68, 70

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Screw No.
(mm)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	mm		SD	L2	FD	L1	L3 Ref.	
A Ø12.00 to Ø13.99	YA1A1200	YA2C1200	.4724		12.00	ZH12003020	20	50	25	3D	36	112.4	TX1213T08
	YA1A1210	YA2C1210	.4764		12.10	ZH12005020				5D	60	136.4	
	YA1A1220	YA2C1220	.4803		12.20	ZH12007020				7D	84	160.4	
	YA1A1230	YA2C1230	.4844	31/64	12.30								
	YA1A1250	YA2C1250	.4921		12.50	ZH12503020	20	50	25	3D	37.5	113.4	
	YA1A1260	YA2C1260	.4961		12.60	ZH12505020				5D	62.5	138.4	
	YA1A1270	YA2C1270	.5000	1/2	12.70	ZH12507020				7D	87.5	163.4	
	YA1A1280	YA2C1280	.5039		12.80								
	YA1A1290	YA2C1290	.5079		12.90								
	YA1A1300	YA2C1300	.5118		13.00	ZH13003020	20	50	25	3D	39	115.4	TX1314T08
	YA1A1310	YA2C1310	.5156	33/64	13.10	ZH13005020				5D	65	141.4	
	YA1A1320	YA2C1320	.5197		13.20	ZH13007020				7D	91	167.4	
	YA1A1349	YA2C1349	.5312	17/32	13.49								
	YA1A1350	YA2C1350	.5315		13.50	ZH26503032	20	50	25	3D	40.5	116.4	
	YA1A1360	YA2C1360	.5354		13.60	ZH26505032				5D	67.5	143.4	
	YA1A1370	YA2C1370	.5394		13.70	ZH26507032				7D	94.5	170.4	
	YA1A1380	YA2C1380	.5433		13.80								
	YA1A1389	YA2C1389	.5469	35/64	13.89								

▶ Other diameters of insert and shank types of holder 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
YA1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎
YA2C	○	○	○	○		○	○			○		◎	◎	◎						

ISO	N										S						H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
YA1A																					
YA2C	○	○	○	○	○	○	○	○													

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL
CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

YG i - DREAM DRILLS

YB1A SERIES
YB2C SERIES

i-DREAM DRILL INSERTS & HOLDERS

i-DREAM DRILL EINSÄTZE UND HALTER
PLAQUETTES ET PORTE-PLAQUETTE I-DREAM DRILL - USAGE GÉNÉRAL / INOX
INSERTI & PORTAINSERTI i-DREAM DRILL

- Features of *i-Dream Drill* Inserts-
Merkmale des i-Dream Drill Einsätze

- ▶ Secure and accurate seating resulting in accurate repeatability and concentricity.
  Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.

i-Dream Drill General / i-Dream Drill allgemeinen

- ▶ For most steels materials / In den meisten Stahlsorten

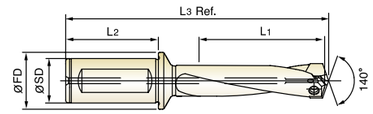
i-Dream Drill INOX / i-Dream Drill INOX

- ▶ For tough, ductile materials and stainless steels
  Für zähe, verformbare Werkstoffe und rostfreie Stähle.
- ▶ Light, sharp cutting edge / Scharfe Schneidkante
- ▶ Soft cutting action / Weicher Schnitt
- ▶ Minimize cutting forces / Minimaler Schneidendruck
- ▶ Reduce built-up edge / Reduzierte Gratbildung

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- Merkmale des i-Dresm Drill Halters-

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CARBIDE | ISO 9766 | h7 | 140° | P.68, 70

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Screw No.
(mm)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	mm		SD	L2	FD	L1	L3 Ref.	
B Ø14.00 to Ø15.99	YB1A1400	YB2C1400	.5512		14.00	ZH14003020	20	50	25	3D	42	118.9	TX1415T08
	YB1A1410	YB2C1410	.5551		14.10	ZH14005020				5D	70	146.9	
	YB1A1420	YB2C1420	.5591		14.20	ZH14007020				7D	98	174.9	
	YB1A1429	YB2C1429	.5625	9/16	14.29								
	YB1A1430	YB2C1430	.5630		14.30	ZH14503020	20	50	25	3D	43.5	120.9	
	YB1A1440	YB2C1440	.5669		14.40	ZH14505020				5D	72.5	149.9	
	YB1A1450	YB2C1450	.5709		14.50	ZH14507020				7D	101.5	178.9	
	YB1A1460	YB2C1460	.5748		14.60								
	YB1A1468	YB2C1468	.5781	37/64	14.68								
	YB1A1480	YB2C1480	.5827		14.80	ZH15003020	20	50	25	3D	45	122.9	TX1516T08
	YB1A1500	YB2C1500	.5906		15.00	ZH15005020				5D	75	152.9	
	YB1A1508	YB2C1508	.5938	19/32	15.08	ZH15007020				7D	105	182.9	
	YB1A1510	YB2C1510	.5945		15.10								
	YB1A1520	YB2C1520	.5984		15.20	ZH15503020	20	50	25	3D	46.5	123.9	
	YB1A1530	YB2C1530	.6024		15.30	ZH15505020				5D	77.5	154.9	
	YB1A1548	YB2C1548	.6094	39/64	15.48	ZH15507020				7D	108.5	185.9	
	YB1A1550	YB2C1550	.6102		15.50								
	YB1A1560	YB2C1560	.6142		15.60								
	YB1A1570	YB2C1570	.6181		15.70								
	YB1A1580	YB2C1580	.6220		15.80								
	YB1A1587	YB2C1587	.6250	5/8	15.87								

▶ Other diameters of insert and shank types of holder 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
YB1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎
YB2C	○	○	○	○		○	○			○		◎	◎	◎						

ISO	N										S						H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
YB1A																					
YB2C	○	○	○	○	○	○	○	○													

i - DREAM DRILLS

YC1A SERIES
YC2C SERIES

i-DREAM DRILL INSERTS & HOLDERS

- i-DREAM DRILL EINSÄTZE UND HALTER
- PLAQUETTES ET PORTE-PLAQUETTE I-DREAM DRILL - USAGE GÉNÉRAL / INOX
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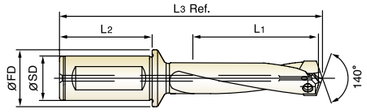
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CARBIDE | ISO 9766 | h7 | 140° | P.68, 70

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Screw No.
(mm)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	mm		SD	L2	FD	L1	L3 Ref.	
C Ø16.00 to Ø17.99	YC1A1600	YC2C1600	.6299		16.00	ZH16003020	20	50	25	3D	48	125.0	TX1617T08
	YC1A1609	YC2C1609	.6335		16.09	ZH16005020				5D	80	157.0	
	YC1A1620	YC2C1620	.6378		16.20	ZH16007020				7D	112	189.0	
	YC1A1627	YC2C1627	.6406	41/64	16.27								
	YC1A1630	YC2C1630	.6417		16.30								
	YC1A1650	YC2C1650	.6496		16.50	ZH16503020	20	50	25	3D	49.5	127.0	
	YC1A1667	YC2C1667	.6562	21/32	16.67	ZH16505020				5D	82.5	160.0	
	YC1A1680	YC2C1680	.6614		16.80	ZH16507020				7D	115.5	193.0	
	YC1A1700	YC2C1700	.6693		17.00	ZH17003020	20	50	25	3D	51	128.0	TX1718T08
	YC1A1707	YC2C1707	.6719	43/64	17.07	ZH17005020				5D	85	162.0	
	YC1A1746	YC2C1746	.6875	11/16	17.46	ZH17007020				7D	119	196.0	
	YC1A1750	YC2C1750	.6890		17.50	ZH17503020	20	50	25	3D	52.5	130.0	
	YC1A1780	YC2C1780	.7008		17.80	ZH17505020				5D	87.5	165.0	
	YC1A1786	YC2C1786	.7031	45/64	17.86	ZH17507020				7D	122.5	200.0	

▶ Other diameters of insert and shank types of holder 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
YC1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎
YC2C	○	○	○	○		○	○			○		◎	◎	◎						

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
YC1A																					
YC2C	○	○	○	○	○	○	○	○													

i - DREAM DRILLS

YD1A SERIES
YD2C SERIES

i-DREAM DRILL INSERTS & HOLDERS

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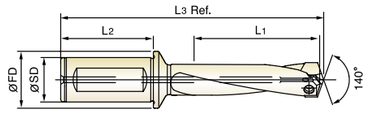
i-Dream Drill INOX / i-Dream Drill INOX

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CARBIDE | ISO 9766 | h7 | 140° | P.68, 70

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Screw No.
(mm)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	mm		SD	L2	FD	L1	L3 Ref.	
D Ø18.00 to Ø19.99	YD1A1800	YD2C1800	.7087		18.00	ZH18003025	25	56	32	3D	54	140.3	TX1819T15
	YD1A1826	YD2C1826	.7188	23/32	18.26	ZH18005025				5D	90	176.3	
	YD1A1850	YD2C1850	.7283		18.50	ZH18007025				7D	126	212.3	
	YD1A1865	YD2C1865	.7344	47/64	18.65	ZH18503025	25	56	32	3D	55.5	141.3	
	YD1A1880	YD2C1880	.7402		18.80	ZH18505025				5D	92.5	178.3	
	YD1A1900	YD2C1900	.7480		19.00	ZH18507025				7D	129.5	215.3	
	YD1A1905	YD2C1905	.7500	3/4	19.05	ZH19003025	25	56	32	3D	57	144.3	TX1920T15
	YD1A1927	YD2C1927	.7587		19.27	ZH19005025				5D	95	182.3	
	YD1A1945	YD2C1945	.7656	49/64	19.45	ZH19007025				7D	133	220.3	
	YD1A1950	YD2C1950	.7677		19.50	ZH19503025	25	56	32	3D	58.5	145.3	
	YD1A1980	YD2C1980	.7795		19.80	ZH19505025				5D	97.5	184.3	
	YD1A1984	YD2C1984	.7812	25/32	19.84	ZH19507025				7D	136.5	223.3	

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◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
YD1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎
YD2C	○	○	○	○		○	○			○		◎	◎	◎						

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
YD1A																					
YD2C	○	○	○	○	○	○	○	○													

i - DREAM DRILLS

YE1A SERIES
YE2C SERIES

i-DREAM DRILL INSERTS & HOLDERS

- i-DREAM DRILL EINSÄTZE UND HALTER
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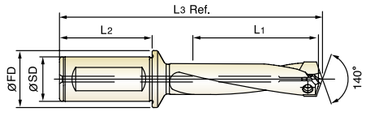
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Merkmale des i-Dream Drill Einsätze

▶ Secure and accurate seating resulting in accurate repeatability and concentricity.
Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.
i-Dream Drill ***General*** */ i-Dream Drill* ***allgemeinen***
▶ For most steels materials / In den meisten Stahlsorten
i-Dream Drill ***INOX*** */ i-Dream Drill* ***INOX***
▶ For tough, ductile materials and stainless steels
Für zähe, verformbare Werkstoffe und rostfreie Stähle.
▶ Light, sharp cutting edge / Scharfe Schneidkante
▶ Soft cutting action / Weicher Schnitt
▶ Minimize cutting forces / Minimaler Schneidendruck
▶ Reduce built-up edge / Reduzierte Gratbildung

- Features of *i-Dream Drill* Holders-
- Merkmale des i-Dresm Drill Halters-

▶ Special Alloy Steels maintain its hardness and toughness under high temperatures.
Speziell legierter Stahl, der seine Härte und Zähigkeit auch bei hohen Temperaturen behält.
▶ Innovative surface treatment improves wear resistance and reduces corrosion.
Innovative Oberflächenbehandlung, die die Verschleissfestigkeit erhöht und die Korrosion vermindert.
▶ High Performance flute design allows maximum chip evacuation and minimum interference.
Optimierte Nutenform für maximale Spanabfuhr.





CARBIDE | ISO 9766 | h7 | 140° | P.68, 70

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 mm		SD	L_2	FD	L_1		L_3 Ref.	
E Ø20.00 to Ø21.99	YE1A2000	YE2C2000	.7874		20.00	ZH20003025	25	56	32	3D	60	145.5	TX2021T20
	YE1A2024	YE2C2024	.7969	51/64	20.24	ZH20005025				5D	100	185.5	
	YE1A2050	YE2C2050	.8071		20.50	ZH20007025				7D	140	225.5	
	YE1A2064	YE2C2064	.8125	13/16	20.64	ZH20503025	25	56	32	3D	61.5	147.5	
	YE1A2070	YE2C2070	.8150		20.70	ZH20505025				5D	102.5	188.5	
	YE1A2100	YE2C2100	.8268		21.00	ZH20507025				7D	143.5	229.5	
	YE1A2103	YE2C2103	.8281	53/64	21.03	ZH21003025	25	56	32	3D	63	149.5	TX2122T20
	YE1A2143	YE2C2143	.8438	27/32	21.43	ZH21005025				5D	105	191.5	
	YE1A2150	YE2C2150	.8465		21.50	ZH21007025				7D	147	233.5	
	YE1A2170	YE2C2170	.8543		21.70	ZH21503025	25	56	32	3D	64.5	150.5	
	YE1A2183	YE2C2183	.8594	55/64	21.83	ZH21505025				5D	107.5	193.5	
						ZH21507025				7D	150.5	236.5	

▶ Other diameters of insert and shank types of holder 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
YE1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎
YE2C	○	○	○	○		○	○			○		◎	◎	◎						

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
YE1A																					
YE2C	○	○	○	○	○	○	○	○													

i - DREAM DRILLS

YF1A SERIES
YF2C SERIES

i-DREAM DRILL INSERTS & HOLDERS

- i-DREAM DRILL EINSÄTZE UND HALTER
- PLAQUETTES ET PORTE-PLAQUETTE I-DREAM DRILL - USAGE GÉNÉRAL / INOX
- INSERTI & PORTAINSERTI i-DREAM DRILL

- Features of *i-Dream Drill* Inserts-
Merkmale des i-Dream Drill Einsätze

▶ Secure and accurate seating resulting in accurate repeatability and concentricity.
Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.
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▶ Minimize cutting forces / Minimaler Schneidendruck
▶ Reduce built-up edge / Reduzierte Gratbildung

- Features of *i-Dream Drill* Holders-
- Merkmale des i-Dresm Drill Halters-

▶ Special Alloy Steels maintain its hardness and toughness under high temperatures.
Speziell legierter Stahl, der seine Härte und Zähigkeit auch bei hohen Temperaturen behält.
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Optimierte Nutenform für maximale Spanabfuhr.





CARBIDE | ISO 9766 | h7 | 140° | P.68, 70

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 mm		SD	L_2	FD	L_1		L_3 Ref.	
F Ø22.00 to Ø23.99	YF1A2200	YF2C2200	.8661		22.00	ZH22003025	25	56	32	3D	66	152.4	TX2223T20
	YF1A2223	YF2C2223	.8750	7/8	22.23	ZH22005025				5D	110	196.4	
	YF1A2250	YF2C2250	.8858		22.50	ZH22007025				7D	154	240.4	
	YF1A2262	YF2C2262	.8906	57/64	22.62	ZH22503025	25	56	32	3D	67.5	153.4	
	YF1A2270	YF2C2270	.8937		22.70	ZH22505025				5D	112.5	198.4	
	YF1A2300	YF2C2300	.9055		23.00	ZH22507025				7D	157.5	243.4	
	YF1A2302	YF2C2302	.9062	29/32	23.02	ZH23003025	25	56	32	3D	69	155.4	TX2324T20
	YF1A2342	YF2C2342	.9219	59/64	23.42	ZH23005025				5D	115	201.4	
	YF1A2350	YF2C2350	.9252		23.50	ZH23007025				7D	161	247.4	
	YF1A2370	YF2C2370	.9331		23.70	ZH23503025	25	56	32	3D	70.5	157.4	
	YF1A2381	YF2C2381	.9375	15/16	23.81	ZH23505025				5D	117.5	204.4	
						ZH23507025				7D	164.5	251.4	

▶ Other diameters of insert and shank types of holder 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
YF1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎
YF2C	○	○	○	○		○	○			○		◎	◎	◎						

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
YF1A																					
YF2C	○	○	○	○	○	○	○	○													

YG i - DREAM DRILLS

YG1A SERIES
YG2C SERIES

i-DREAM DRILL INSERTS & HOLDERS

i-DREAM DRILL EINSÄTZE UND HALTER
PLAQUETTES ET PORTE-PLAQUETTE I-DREAM DRILL - USAGE GÉNÉRAL / INOX
INSERTI & PORTAINSERTI i-DREAM DRILL

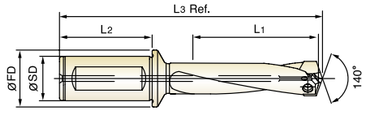
- Features of *i-Dream Drill* Inserts-
Merkmale des i-Dream Drill Einsätze

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▶ Minimize cutting forces / Minimaler Schneidendruck
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- Features of *i-Dream Drill* Holders-
- Merkmale des i-Dresm Drill Halters-

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CARBIDE | ISO 9766 | h7 | 140° | P.68, 70

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	mm		SD	L2	FD	L1		L3 Ref.	
G Ø24.00 to Ø25.99	YG1A2400	YG2C2400	.9449		24.00	ZH24003032	32	60	37	3D	72	164.8	TX2425T20
	YG1A2421	YG2C2421	.9531	61/64	24.21	ZH24005032				5D	120	212.8	
	YG1A2450	YG2C2450	.9646		24.50	ZH24007032				7D	168	260.8	
	YG1A2461	YG2C2461	.9688	31/32	24.61	ZH24503032	32	60	37	3D	73.5	165.8	
	YG1A2470	YG2C2470	.9724		24.70	ZH24505032				5D	122.5	214.8	
	YG1A2500	YG2C2500	.9843	63/64	25.00	ZH25003032				7D	171.5	263.8	
	YG1A2540	YG2C2540	1.0000	1	25.40	ZH25005032	32	60	37	3D	75	167.8	TX2526T20
	YG1A2550	YG2C2550	1.0039		25.50	ZH25007032				5D	125	217.8	
	YG1A2567	YG2C2567	1.0106		25.67					7D	175	267.8	
	YG1A2570	YG2C2570	1.0118		25.70	ZH25503032	32	60	37	3D	76.5	170.8	
	YG1A2580	YG2C2580	1.0156	1-1/64	25.80	ZH25505032				5D	127.5	221.8	
						ZH25507032				7D	178.5	272.8	

▶ Other diameters of insert and shank types of holder 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
YG1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎
YG2C	○	○	○	○		○	○			○		◎	◎	◎						

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
YG1A																					
YG2C	○	○	○	○	○	○	○	○													

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

YG i - DREAM DRILLS

YH1A SERIES
YH2C SERIES

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i-DREAM DRILL EINSÄTZE UND HALTER
PLAQUETTES ET PORTE-PLAQUETTE I-DREAM DRILL - USAGE GÉNÉRAL / INOX
INSERTI & PORTAINSERTI i-DREAM DRILL

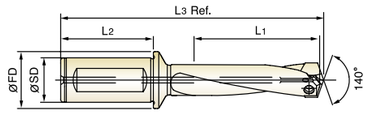
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CARBIDE | ISO 9766 | h7 | 140° | P.68, 70

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	mm		SD	L2	FD	L1		L3 Ref.	
H Ø26.00 to Ø27.99	YH1A2600	YH2C2600	1.0236		26.00	ZH26003032	32	60	37	3D	78	171.2	TX2627T25
	YH1A2619	YH2C2619	1.0312	1-1/32	26.19	ZH26005032				5D	130	223.2	
	YH1A2650	YH2C2650	1.0433		26.50	ZH26007032				7D	182	275.2	
	YH1A2659	YH2C2659	1.0469	1-3/64	26.59	ZH26503032	32	60	37	3D	79.5	172.2	
	YH1A2699	YH2C2699	1.0625	1-1/16	26.99	ZH26505032				5D	132.5	225.2	
	YH1A2700	YH2C2700	1.0630		27.00	ZH26507032				7D	185.5	278.2	
	YH1A2750	YH2C2750	1.0827		27.50	ZH27003032	32	60	37	3D	81	174.2	TX2728T25
	YH1A2778	YH2C2778	1.0938	1-3/32	27.78	ZH27005032				5D	135	228.2	
						ZH27007032				7D	189	282.2	
						ZH27503032	32	60	37	3D	82.5	175.2	
						ZH27505032				5D	137.5	230.2	
						ZH27507032				7D	192.5	285.2	

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ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
YH1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎
YH2C	○	○	○	○		○	○			○		◎	◎	◎						

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
YH1A																					
YH2C	○	○	○	○	○	○	○	○													

YG i - DREAM DRILLS

YI1A SERIES
YI2C SERIES

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i-Dream Drill General / i-Dream Drill allgemeinen

- ▶ For most steels materials / In den meisten Stahlsorten

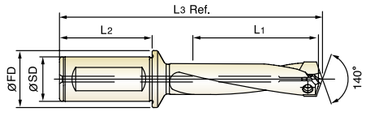
i-Dream Drill INOX / i-Dream Drill INOX

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  Optimierte Nutenform für maximale Spanabfuhr.





CARBIDE | ISO 9766 | h7 | 140° | P.68, 70

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Screw No.
(mm)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 mm		SD	L2	FD	L1	L3 Ref.	
I Ø28.00 to Ø29.99	YI1A2800	YI2C2800	1.1024		28.00	ZH28003032	32	60	37	3D 84 178.2		TX2829T25
	YI1A2818	YI2C2818	1.1094	1-7/64	28.18	ZH28005032				5D 140 234.2		
						ZH28007032				7D 196 290.2		
	YI1A2850	YI2C2850	1.1220		28.50	ZH28503032	32	60	37	3D 85.5 179.2		
	YI1A2858	YI2C2858	1.1250	1-1/8	28.58	ZH28505032				5D 142.5 236.2		
						ZH28507032				7D 199.5 293.2		
	YI1A2900	YI2C2900	1.1417		29.00	ZH29003032	32	60	37	3D 87 182.2		TX2930T25
	YI1A2937	YI2C2937	1.1562	1-5/32	29.37	ZH29005032				5D 145 240.2		
						ZH29007032				7D 203 298.2		
	YI1A2950	YI2C2950	1.1614		29.50	ZH29503032	32	60	37	3D 88.5 183.2		
	YI1A2977	YI2C2977	1.1719	1-11/64	29.77	ZH29505032				5D 147.5 242.2		
						ZH29507032				7D 206.5 301.2		

▶ Other diameters of insert and shank types of holder 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
YI1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎
YI2C	○	○	○	○		○	○			○		◎	◎	◎						

ISO	N										S						H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
YI1A																					
YI2C	○	○	○	○	○	○	○	○													

YG i - DREAM DRILLS

YJ1A SERIES
YJ2C SERIES

i-DREAM DRILL INSERTS & HOLDERS

- i-DREAM DRILL EINSÄTZE UND HALTER
- PLAQUETTES ET PORTE-PLAQUETTE I-DREAM DRILL - USAGE GÉNÉRAL / INOX
- INSERTI & PORTAINSERTI i-DREAM DRILL

- Features of *i-Dream Drill* Inserts-
Merkmale des i-Dream Drill Einsätze

- ▶ Secure and accurate seating resulting in accurate repeatability and concentricity.
  Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.

i-Dream Drill General / i-Dream Drill allgemeinen

- ▶ For most steels materials / In den meisten Stahlsorten

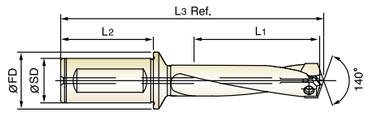
i-Dream Drill INOX / i-Dream Drill INOX

- ▶ For tough, ductile materials and stainless steels
  Für zähe, verformbare Werkstoffe und rostfreie Stähle.
- ▶ Light, sharp cutting edge / Scharfe Schneidkante
- ▶ Soft cutting action / Weicher Schnitt
- ▶ Minimize cutting forces / Minimaler Schneidendruck
- ▶ Reduce built-up edge / Reduzierte Gratbildung

- Features of *i-Dream Drill* Holders-
- Merkmale des i-Dresm Drill Halters-

- ▶ Special Alloy Steels maintain its hardness and toughness under high temperatures.
  Speziell legierter Stahl, der seine Härte und Zähigkeit auch bei hohen Temperaturen behält.
- ▶ Innovative surface treatment improves wear resistance and reduces corrosion.
  Innovative Oberflächenbehandlung, die die Verschleissfestigkeit erhöht und die Korrosion vermindert.
- ▶ High Performance flute design allows maximum chip evacuation and minimum interference.
  Optimierte Nutenform für maximale Spanabfuhr.





CARBIDE | ISO 9766 | h7 | 140° | P.68, 70

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Screw No.
(mm)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 mm		SD	L2	FD	L1	L3 Ref.	
J Ø30.00 to Ø31.99	YJ1A3000	YJ2C3000	1.1811		30.00	ZH30003032	32	60	37	3D 90 186.0		TX3031T25
	YJ1A3016	YJ2C3016	1.1875	1-3/16	30.16	ZH30005032				5D 150 246.0		
						ZH30007032				7D 210 306.0		
	YJ1A3050	YJ2C3050	1.2008		30.50	ZH30503032	32	60	37	3D 91.5 187.0		
	YJ1A3056	YJ2C3056	1.2031	1-13/64	30.56	ZH30505032				5D 152.5 248.0		
	YJ1A3096	YJ2C3096	1.2188	1-7/32	30.96	ZH30507032				7D 213.5 309.0		
	YJ1A3100	YJ2C3100	1.2205		31.00	ZH31003032	32	60	37	3D 93 188.0		TX3132T25
						ZH31005032				5D 155 250.0		
						ZH31007032				7D 217 312.0		
	YJ1A3150	YJ2C3150	1.2402		31.50	ZH31503032	32	60	37	3D 94.5 191.0		
	YJ1A3175	YJ2C3175	1.2500	1-1/4	31.75	ZH31505032				5D 157.5 254.0		
						ZH31507032				7D 220.5 317.0		

▶ Other diameters of insert and shank types of holder 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
YJ1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎
YJ2C	○	○	○	○		○	○			○		◎	◎	◎						

ISO	N										S						H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
YJ1A																					
YJ2C	○	○	○	○	○	○	○	○													

i - DREAM DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

YA1A, YB1A, YC1A, YD1A, YE1A, YF1A, YG1A, YH1A, YI1A, YJ1A SERIES

i-DREAM DRILLS - GENERAL

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

ISO	VDI 3323	Material Description	Vc (m/min)	Feed(mm/rev)				
				Ø12.00-14.99	Ø15.00-17.99	Ø18.00-21.99	Ø22.00-26.99	Ø27.00-31.99
P	1	Non-alloy steel	95-120	0.16-0.28	0.21-0.35	0.27-0.40	0.34-0.52	0.37-0.55
	2		80-105	0.14-0.24	0.21-0.35	0.27-0.40	0.34-0.52	0.37-0.55
	3		60-80	0.12-0.20	0.17-0.28	0.22-0.32	0.30-0.46	0.33-0.49
	4		55-70	0.10-0.16	0.15-0.25	0.21-0.30	0.25-0.38	0.29-0.43
	5		55-70	0.10-0.16	0.15-0.25	0.21-0.30	0.25-0.38	0.29-0.43
	6	Low alloy steel	70-90	0.12-0.20	0.17-0.28	0.22-0.32	0.30-0.46	0.34-0.50
	7		60-80	0.12-0.20	0.15-0.25	0.22-0.32	0.30-0.46	0.34-0.50
	8		55-70	0.10-0.16	0.13-0.21	0.21-0.30	0.25-0.38	0.29-0.43
	9		45-60	0.08-0.12	0.13-0.21	0.21-0.30	0.25-0.38	0.29-0.43
	10	High alloyed steel, and tool steel	50-65	0.10-0.16	0.13-0.21	0.18-0.26	0.20-0.31	0.24-0.35
	11		40-55	0.10-0.16	0.11-0.18	0.21-0.30	0.20-0.31	0.24-0.35
M	12	Stainless steel						
	13							
	14							
K	15	Grey cast iron	100-125	0.15-0.26	0.20-0.37	0.27-0.42	0.36-0.51	0.40-0.55
	16		75-95	0.11-0.20	0.16-0.29	0.20-0.30	0.25-0.35	0.29-0.40
	17	Nodular cast iron	95-120	0.13-0.22	0.17-0.31	0.21-0.32	0.28-0.40	0.32-0.44
	18		75-95	0.11-0.20	0.14-0.26	0.19-0.29	0.25-0.35	0.29-0.40
	19	Malleable cast iron	100-125	0.13-0.22	0.17-0.31	0.21-0.32	0.28-0.40	0.32-0.44
	20		75-95	0.11-0.18	0.14-0.26	0.19-0.29	0.25-0.35	0.29-0.40
N	21	Aluminum-wrought alloy						
	22							
	23	Aluminum-cast, alloyed						
	24							
	25							
	26	Copper and Copper Alloys (Bronze / Brass)						
	27							
	28							
	29	Non Metallic Materials						
	30							
S	31	Heat Resistant Super Alloys						
	32							
	33							
	34							
	35							
	36	Titanium Alloys						
	37							
H	38	Hardened steel						
	39							
	40	Chilled Cast Iron						
	41	Hardened Cast Iron						

▶ The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points. Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.
▶ Recommend you to reduce the feed rate to 85%, 70% when you use 5xD, 7xD holders.
▶ For use of 7xD holder, we recommend to use a pilot drill with equal to or larger than 140° point angle (0.5xD - 1.5xD).
The use of the centering pre-hole improves hole location, roundness and surface finish.

i - DREAM DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

Comparison with Split Point Drill, Spade Drill & Dream Drill



YA2C, YB2C, YC2C, YD2C, YE2C, YF2C, YG2C, YH2C, YI2C, YJ2C SERIES

i-DREAM DRILLS - INOX

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

ISO	VDI 3323	Material Description	Vc (m/min)	Feed(mm/rev) Ø12.00-14.99	Ø15.00-17.99	Ø18.00-21.90	Ø22.00-26.99	Ø27.00-31.99
P	1	Non-alloy steel	**95-120**	0.16-0.28	0.21-0.35	0.27-0.40	0.34-0.52	0.37-0.55
	2		**80-105**	0.14-0.24	0.21-0.35	0.27-0.40	0.34-0.52	0.37-0.55
	3		**60-80**	0.12-0.20	0.17-0.28	0.22-0.32	0.30-0.46	0.33-0.49
	4		**55-70**	0.10-0.16	0.15-0.25	0.21-0.30	0.25-0.38	0.29-0.43
	5							
	6	Low alloy steel	**70-90**	0.12-0.20	0.17-0.28	0.22-0.32	0.30-0.46	0.34-0.50
	7		**60-80**	0.12-0.20	0.15-0.25	0.22-0.32	0.30-0.46	0.34-0.50
	8							
	9							
	10	High alloyed steel, and tool steel	**50-65**	0.10-0.16	0.13-0.21	0.18-0.26	0.20-0.31	0.24-0.35
	11							
M	12	Stainless steel	**30-45**	0.08-0.14	0.09-0.15	0.10-0.16	0.12-0.20	0.14-0.22
	13		**30-45**	0.08-0.14	0.09-0.15	0.10-0.16	0.12-0.20	0.14-0.22
	14		**45-60**	0.10-0.16	0.12-0.18	0.14-0.20	0.15-0.26	0.18-0.28
K	15	Grey cast iron						
	16							
	17	Nodular cast iron						
	18							
	19	Malleable cast iron						
	20							
N	21	Aluminum-wrought alloy	**250-330**	0.30-0.40	0.35-0.45	0.40-0.50	0.45-0.55	0.50-0.60
	22		**200-250**	0.30-0.40	0.35-0.45	0.40-0.50	0.45-0.55	0.50-0.60
	23	Aluminum-cast, alloyed	**200-250**	0.25-0.35	0.30-0.40	0.35-0.45	0.40-0.50	0.45-0.55
	24		**150-220**	0.25-0.35	0.30-0.40	0.35-0.45	0.40-0.50	0.45-0.55
	25		**100-200**	0.20-0.30	0.25-0.35	0.30-0.40	0.35-0.45	0.40-0.50
	26	Copper and Copper Alloys (Bronze / Brass)	**115-145**	0.16-0.28	0.23-0.36	0.29-0.36	0.37-0.45	0.41-0.48
	27		**145-185**	0.17-0.29	0.24-0.37	0.30-0.38	0.38-0.46	0.42-0.49
	28		**95-120**	0.06-0.09	0.09-0.13	0.11-0.13	0.15-0.18	0.19-0.22
	29	Non Metallic Materials						
	30							
S	31	Heat Resistant Super Alloys						
	32							
	33							
	34							
	35							
	36	Titanium Alloys						
	37							
H	38	Hardened steel						
	39							
	40	Chilled Cast Iron						
	41	Hardened Cast Iron						

▶ The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points. Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.
▶ Recommend you to reduce the feed rate to 85%, 70% when you use 5xD, 7xD holders.
▶ For use of 7xD holder, we recommend to use a pilot drill with equal to or larger than 140° point angle (0.5xD - 1.5xD).
The use of the centering pre-hole improves hole location, roundness and surface finish.

i - DREAM DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

ASSEMBLY OF *i* -DREAM DRILLS
MONTAGE DES i-DREAM DRILLS





Make sure to clean the insert and insert seat.
Schneideinsatz und Haltersitz sorgfältig reinigen.



Slide the drill insert into the slot of the holder and press down the insert to touch the bottom of the slot.
Schneideinsatz in den Haltersitz einführen und den Schneideinsatz fest auf den Grund des Haltersitzes pressen.



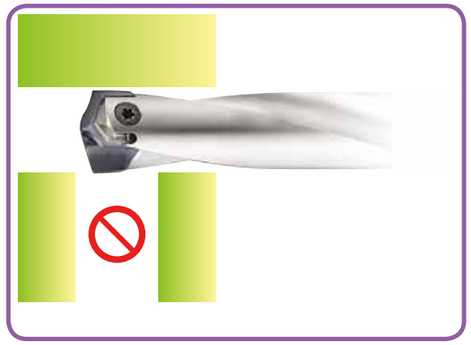
After confirming the insert is pressed down to the bottom of the slot, tighten the screw using anti-seize compound.
Wenn der Schneideinsatz fest auf den Grund des Haltersitzes gepresst ist, die Schraube fest anziehen und dabei Spezialfett verwenden.

WRENCH TYPE	PRODUCT NO.	T-HANDLE No.	SERIES (SIZE)
WING TYPE 	TWWT08	—	A (Ø12.00-Ø13.99)
			B (Ø14.00-Ø15.99)
			C (Ø16.00-Ø17.99)
TORX BIT TYPE 	TWBT15	TWH600 	D (Ø18.00-Ø19.99)
	TWBT20		E, F, G (Ø20.00-Ø25.99)
	TWBT25		H, I, J (Ø26.00-Ø31.99)

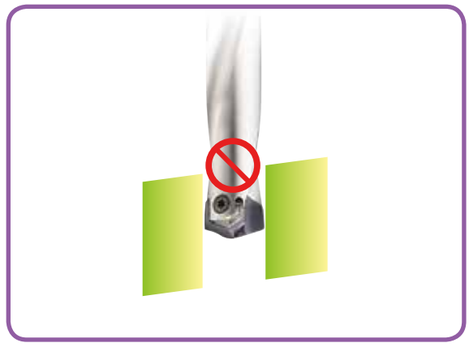
Use the wing type or T-type wrench.
Benutzen Sie den Winkeldreher oder T - Schlüsse

▶ Need to use appropriate wrenches and screws as indicated.
Unbedingt die angegebenen Schrauben und Dreher verwenden.
▶ It's important to tighten up the screw properly.
Es ist wichtig, die Schraube korrekt und fest anzuziehen.

CAUTION-NOT RECOMMENDABLE APPLICATION
ACHTUNG - NICHT EMPFOHLENE ANWENDUNG



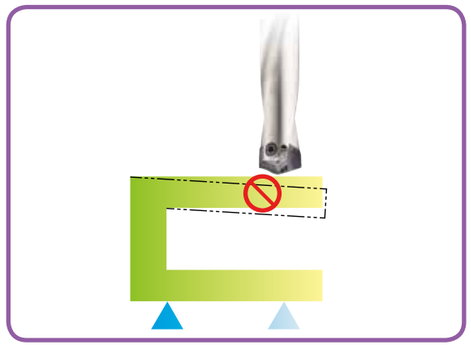
Intersecting cross hole is bigger than the drill insert's Margin Length.
Der Haltersitz ist größer als die Breite des Schneideinsatzes.



Material with slanting entrance and exit over 7 degrees. (If drilling 7 degrees or under slanting surface, reduce the feed about 30-50%)
Werkstücke mit schrägem Anschnitt oder Austritt von über 7°. (Zum Bohren von bis zu 7° Schräge den Vorschub um ca. 30-50% reduzieren).

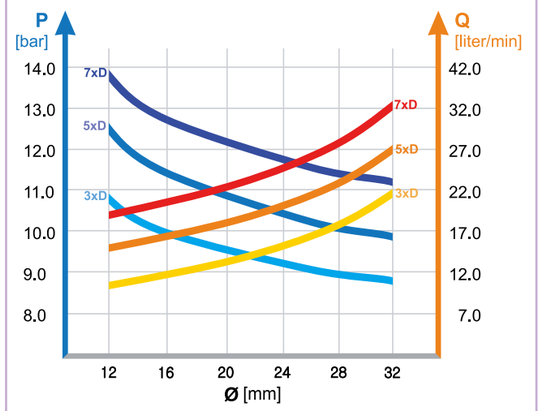


For drilling stacked plates, minimize the space between the plates.
Beim Bohren von Blechpaketen den Abstand der Bleche minimieren.
The space between stacked plates can cause insert breakage or poor chip control.
Freiraum in Blechpaketen kann den Bruch des Schneideinsatzes oder schlechte Entspanung verursachen.



The material needs to be fixtured securely before drilling.
Das Werkstück muss fest und sicher aufgespannt sein

RECOMMENDED COOLANT PRESSURE AND FLOW RATE ON VERTICAL DRILLING
EMPFOHLENE KÜHLMITTELDRUCK UND - MENGE BEIM VERTIKALEN BOHREN



- Recommended emulsion mix is 6 - 8%.
  Empfohlene Emulsionsmischung 6 - 8%.
- For Drilling into Stainless and High Strength steels, a mix of 10% is recommended.
  Beim Bohren in rostfreie und hochfeste Stähle werden 10% empfohlen.
- For horizontal drilling, 30% reduction on the coolant pressure and flow rate is possible.
  Beim horizontalen Bohren können Kühlmitteldruck und - menge um 30% gemindert werden.
- Dry drilling is possible for 1-2xD drilling. But not recommended.
  Trocken Bohren ist möglich bei 1-2xD. Aber nicht empfohlen.

TROUBLE SHOOTING
PROBLEMLÖSUNGEN

1) Heavy flank wear / Fast flank wear
- Reduce cutting speed
- Increase feed



2) Chipping on cutting edge
- Reduce feed
- Check the rigidity of spindle and chuck
- Rigid clamping of workpiece



3) Build-up on cutting edge
- Increase cutting speed
- Use a coated insert



4) Chipping or break down on outer corner
- Reduce feed
- Rigid clamping of workpiece



5) Wear of land margin
- Rigid clamping of workpiece
- Reduce cutting speed
- Increase coolant flow



6) Unsatisfactory positioning of the hole
- Rigid clamping of workpiece
- Reduce feed during entrance or exit

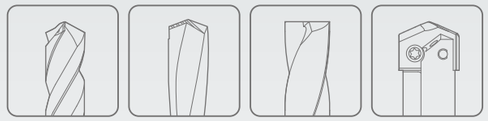


7) Scratching on holder
- Rigid clamping of workpiece
- Reduce feed
- Increase coolant flow



8) Unsatisfactory surface finish
- Rigid clamping of workpiece
- Increase coolant flow and pressure

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation

SOLID CARBIDE

DREAM DRILLS -GENERAL

DREAM DRILLS - UNIVERSAL

- **For General Purpose (HRc30 to HRc45)**
- **Für allgemeine Anwendungen (HRc30 bis HRc45)**

SELECTION GUIDE

YG HOLEMAKING TOOLS

SOLID CARBIDE DREAM DRILLS GENERAL

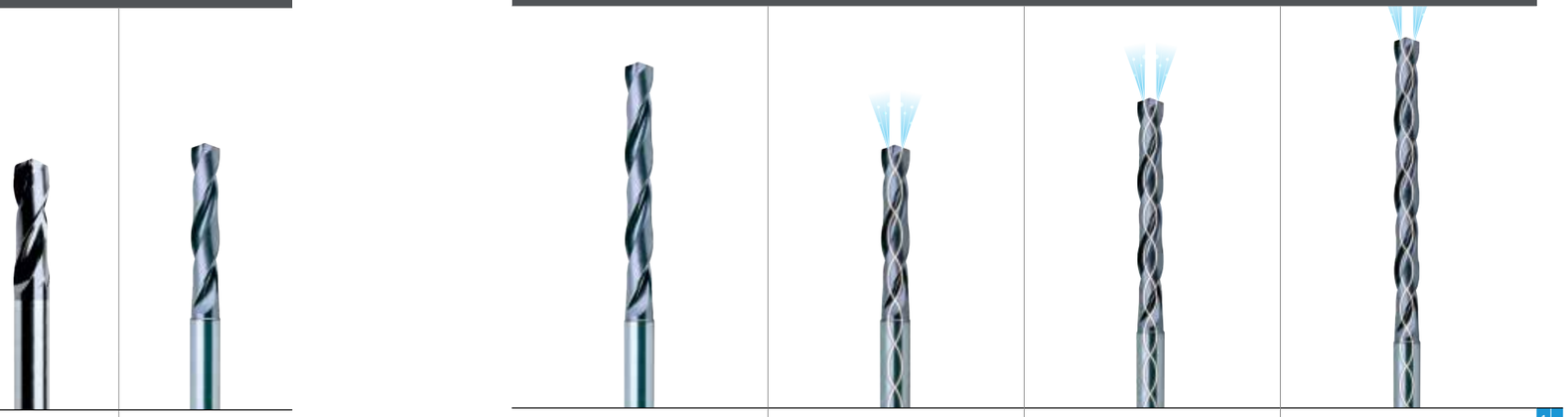
For General Purpose (HRc30 to HRc45)

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.94

SERIES	DH404	DH423	DH424	DH406	DH408	DH421
DRILLING DEPTH	3XD	3XD	5XD	3XD	5XD	8XD
LENGTH	STUB	SHORT	LONG	SHORT	LONG	EXTRA LONG
SIZE MIN	D3.0	D3.0	D1.0	D3.0	D1.0	D3.0
SIZE MAX	D20.0	D20.0	D20.0	D20.0	D20.0	D14.0
PAGE	78	80	83	86	89	92
SURFACE TREATMENT	TiAlN		TiAlN			



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	DH404	DH423	DH424	DH406	DH408	DH421	
P	1	Non-alloy steel	About 0.15% C	Annealed	125								1
	2		About 0.45% C	Annealed	190	13	◎	◎	◎	◎	◎	◎	2
	3		About 0.45% C	Quenched & Tempered	250	25	◎	◎	◎	◎	◎	◎	3
	4		About 0.75% C	Annealed	270	28	◎	◎	◎	◎	◎	◎	4
	5		About 0.75% C	Quenched & Tempered	300	32	○	○	○	○	○	○	5
	6	Low alloy steel		Annealed	180	10	◎	◎	◎	◎	◎	◎	6
	7			Quenched & Tempered	275	29	◎	◎	◎	◎	◎	◎	7
	8			Quenched & Tempered	300	32	○	○	○	○	○	○	8
	9			Quenched & Tempered	350	38	○	○	○	○	○	○	9
	10	High alloyed steel, and tool steel		Annealed	200	15	◎	◎	◎	◎	◎	◎	10
	11			Quenched & Tempered	325	35	○	○	○	○	○	○	11
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	○	○	○	○	○	○	12
	13		Martensitic	Quenched & Tempered	240	23	○	○	○	○	○	○	13
	14		Austenitic		180	10							14
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎	◎	◎	◎	◎	◎	15
	16		Pearlitic (Martensitic)		260	26	○	○	○	○	○	○	16
	17	Nodular cast iron	Ferritic		160	3	◎	◎	◎	◎	◎	◎	17
	18		Pearlitic		250	25	○	○	○	○	○	○	18
	19	Malleable cast iron	Ferritic		130		◎	◎	◎	◎	◎	◎	19
	20		Pearlitic		230	21	○	○	○	○	○	○	20
N	21	Aluminum-wrought alloy	Not Curable		60								21
	22		Curable	Hardened	100								22
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75								23
	24		≤ 12% Si, Curable	Hardened	90								24
	25		> 12% Si, Not Curable		130								25
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110								26
	27		CuZn, CuSnZn (Brass)		90								27
	28		CuSn, lead-free copper and electrolytic copper		100								28
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic										29
	30		Rubber, Wood, etc.										30
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15							31
	32			Cured	280	30							32
	33		Ni or Co Based	Annealed	250	25							33
	34			Cured	350	38							34
	35			Cast	320	34							35
	36	Titanium Alloys	Pure Titanium		400 Rm								36
	37		Alpha + Beta Alloys	Hardened	1050 Rm								37
H	38	Hardened steel		Hardened	550	55							38
	39			Hardened	630	60							39
	40	Chilled Cast Iron		Cast	400	42							40
	41	Hardened Cast Iron		Hardened	550	55							41

DREAM DRILLS - GENERAL

DH404 SERIES

CARBIDE, DREAM DRILLS

STUB

VOLLHARTMETALL DREAM SPIRALBOHRER
Forets DREAM DRILLS carbure, série extra-courte
PUNTE ELICOIDALI IN MD - DREAM DRILLS

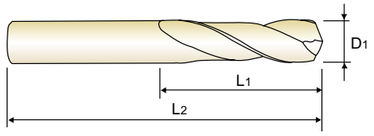
EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

- ▶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

- ▶ Bohren von Stahl, Stahlguss, Gusseisen, Temperguss, Nichteisenmetallen-Leichtmetallen, abrasiven Kunststoffen
- ▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung
- ▶ Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
- ▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr







DIN 6539 | CARBIDE | 30° | h6 | h7 | 140° | P.94-95

$D_1=D_2$
3 × D

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiAlN	D_1	L_1	L_2
DH404030	3.0	16	46
DH404031	3.1	18	49
DH404032	3.2	18	49
DH404033	3.3	18	49
DH404034	3.4	20	52
DH404035	3.5	20	52
DH404036	3.6	20	52
DH404037	3.7	20	52
DH404038	3.8	22	55
DH404039	3.9	22	55
DH404040	4.0	22	55
DH404041	4.1	22	55
DH404042	4.2	22	55
DH404043	4.3	24	58
DH404044	4.4	24	58
DH404045	4.5	24	58
DH404046	4.6	24	58
DH404047	4.7	24	58
DH404048	4.8	26	62
DH404049	4.9	26	62
DH404050	5.0	26	62
DH404051	5.1	26	62
DH404052	5.2	26	62
DH404053	5.3	26	62

EDP No.	Drill Diameter	Flute Length	Overall Length
TiAlN	D_1	L_1	L_2
DH404054	5.4	28	66
DH404055	5.5	28	66
DH404056	5.6	28	66
DH404057	5.7	28	66
DH404058	5.8	28	66
DH404059	5.9	28	66
DH404060	6.0	28	66
DH404061	6.1	31	70
DH404062	6.2	31	70
DH404063	6.3	31	70
DH404064	6.4	31	70
DH404065	6.5	31	70
DH404066	6.6	31	70
DH404067	6.7	31	70
DH404068	6.8	34	74
DH404069	6.9	34	74
DH404070	7.0	34	74
DH404071	7.1	34	74
DH404072	7.2	34	74
DH404073	7.3	34	74
DH404074	7.4	34	74
DH404075	7.5	34	74
DH404076	7.6	37	79
DH404077	7.7	37	79

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

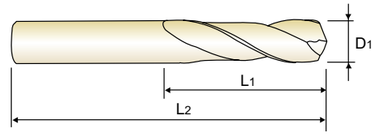
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10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

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

DREAM DRILLS - GENERAL
DH404 SERIES
CARBIDE, DREAM DRILLS
STUB
VOLLHARTMETALL DREAM SPIRALBOHRER
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DIN 6539 | CARBIDE | 30° | h6 | h7 | 140° | P.94-95
$D_1=D_2$
3 × D
Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiAlN	D_1	L_1	L_2
DH404078	7.8	37	79
DH404079	7.9	37	79
DH404080	8.0	37	79
DH404081	8.1	37	79
DH404082	8.2	37	79
DH404083	8.3	37	79
DH404084	8.4	37	79
DH404085	8.5	37	79
DH404086	8.6	40	84
DH404087	8.7	40	84
DH404088	8.8	40	84
DH404089	8.9	40	84
DH404090	9.0	40	84
DH404091	9.1	40	84
DH404092	9.2	40	84
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

EDP No.	Drill Diameter	Flute Length	Overall Length
TiAlN	D_1	L_1	L_2
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
DH404170	17.0	60	119
DH404175	17.5	62	123
DH404180	18.0	62	123
DH404185	18.5	64	127
DH404190	19.0	64	127
DH404195	19.5	66	131
DH404200	20.0	66	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		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

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

DREAM DRILLS - GENERAL

DH423 SERIES

CARBIDE, DREAM DRILLS

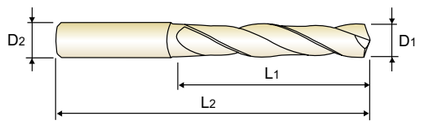
SHORT
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VOLLHARTMETALL DREAM SPIRALBOHRER
Forets DREAM DRILLS carbure, série courte
PUNTE ELICOIDALI IN MD - DREAM DRILLS

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DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | P.94-95

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH423030	3.0	6	20	62
DH423031	3.1	6	20	62
DH423032	3.2	6	20	62
DH423033	3.3	6	20	62
DH423034	3.4	6	20	62
DH423035	3.5	6	20	62
DH423036	3.6	6	20	62
DH423037	3.7	6	20	62
DH423038	3.8	6	24	66
DH423039	3.9	6	24	66
DH423040	4.0	6	24	66
DH423041	4.1	6	24	66
DH423042	4.2	6	24	66
DH423043	4.3	6	24	66
DH423044	4.4	6	24	66
DH423045	4.5	6	24	66
DH423046	4.6	6	24	66
DH423047	4.7	6	24	66
DH423048	4.8	6	28	66
DH423049	4.9	6	28	66
DH423050	5.0	6	28	66
DH423051	5.1	6	28	66
DH423052	5.2	6	28	66
DH423053	5.3	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH423054	5.4	6	28	66
DH423055	5.5	6	28	66
DH423056	5.6	6	28	66
DH423057	5.7	6	28	66
DH423058	5.8	6	28	66
DH423059	5.9	6	28	66
DH423060	6.0	6	28	66
DH423061	6.1	8	34	79
DH423062	6.2	8	34	79
DH423063	6.3	8	34	79
DH423064	6.4	8	34	79
DH423065	6.5	8	34	79
DH423066	6.6	8	34	79
DH423067	6.7	8	34	79
DH423068	6.8	8	34	79
DH423069	6.9	8	34	79
DH423070	7.0	8	34	79
DH423071	7.1	8	41	79
DH423072	7.2	8	41	79
DH423073	7.3	8	41	79
DH423074	7.4	8	41	79
DH423075	7.5	8	41	79
DH423076	7.6	8	41	79
DH423077	7.7	8	41	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
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

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

DREAM DRILLS - GENERAL

DH423 SERIES

CARBIDE, DREAM DRILLS

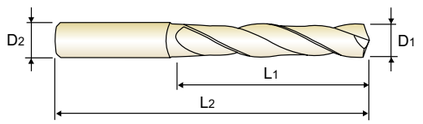
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- ▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr





DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | P.94-95

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH423078	7.8	8	41	79
DH423079	7.9	8	41	79
DH423080	8.0	8	41	79
DH423081	8.1	10	47	89
DH423082	8.2	10	47	89
DH423083	8.3	10	47	89
DH423084	8.4	10	47	89
DH423085	8.5	10	47	89
DH423086	8.6	10	47	89
DH423087	8.7	10	47	89
DH423088	8.8	10	47	89
DH423089	8.9	10	47	89
DH423090	9.0	10	47	89
DH423091	9.1	10	47	89
DH423092	9.2	10	47	89
DH423093	9.3	10	47	89
DH423094	9.4	10	47	89
DH423095	9.5	10	47	89
DH423096	9.6	10	47	89
DH423097	9.7	10	47	89
DH423098	9.8	10	47	89
DH423099	9.9	10	47	89
DH423100	10.0	10	47	89
DH423101	10.1	12	55	102

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH423102	10.2	12	55	102
DH423103	10.3	12	55	102
DH423104	10.4	12	55	102
DH423105	10.5	12	55	102
DH423106	10.6	12	55	102
DH423107	10.7	12	55	102
DH423108	10.8	12	55	102
DH423109	10.9	12	55	102
DH423110	11.0	12	55	102
DH423111	11.1	12	55	102
DH423112	11.2	12	55	102
DH423113	11.3	12	55	102
DH423114	11.4	12	55	102
DH423115	11.5	12	55	102
DH423116	11.6	12	55	102
DH423117	11.7	12	55	102
DH423118	11.8	12	55	102
DH423119	11.9	12	55	102
DH423120	12.0	12	55	102
DH423123	12.3	14	60	107
DH423125	12.5	14	60	107
DH423128	12.8	14	60	107
DH423130	13.0	14	60	107
DH423135	13.5	14	60	107

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

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

DREAM DRILLS - GENERAL

DH423 SERIES

CARBIDE, DREAM DRILLS

SHORT

VOLLHARTMETALL DREAM SPIRALBOHRER
Forets DREAM DRILLS carbure, série courte
PUNTE ELICOIDALI IN MD - DREAM DRILLS

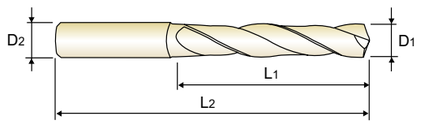
KURZ
COURTE
CORTA

- ▶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

- ▶ Bohren von Stahl, Stahlguss, Gusseisen, Temperguss, Nichteisenmetallen-Leichtmetallen, abrasiven Kunststoffen
- ▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung
- ▶ Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
- ▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr







DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | P.94-95

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH423138	13.8	14	60	107
DH423140	14.0	14	60	107
DH423145	14.5	16	65	115
DH423148	14.8	16	65	115
DH423150	15.0	16	65	115
DH423155	15.5	16	65	115
DH423158	15.8	16	65	115
DH423160	16.0	16	65	115
DH423165	16.5	18	73	123
DH423168	16.8	18	73	123

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH423170	17.0	18	73	123
DH423175	17.5	18	73	123
DH423178	17.8	18	73	123
DH423180	18.0	18	73	123
DH423185	18.5	20	79	131
DH423190	19.0	20	79	131
DH423195	19.5	20	79	131
DH423198	19.8	20	79	131
DH423200	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		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

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

DREAM DRILLS - GENERAL

DH424 SERIES

CARBIDE, DREAM DRILLS

LONG

VOLLHARTMETALL DREAM SPIRALBOHRER
Forets DREAM DRILLS carbure, série longue
PUNTE ELICOIDALI IN MD - DREAM DRILLS

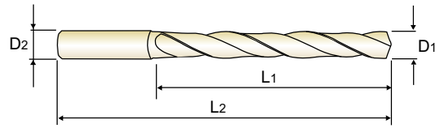
LANG
LONGUE
LUNGA

- ▶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

- ▶ Bohren von Stahl, Stahlguss, Gusseisen, Temperguss, Nichteisenmetallen-Leichtmetallen, abrasiven Kunststoffen
- ▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung
- ▶ Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
- ▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr







DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | P.94-95

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
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	3.0	6	28	66
DH424031	3.1	6	28	66
DH424032	3.2	6	28	66
DH424033	3.3	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH424034	3.4	6	28	66
DH424035	3.5	6	28	66
DH424036	3.6	6	28	66
DH424037	3.7	6	28	66
DH424038	3.8	6	36	74
DH424039	3.9	6	36	74
DH424040	4.0	6	36	74
DH424041	4.1	6	36	74
DH424042	4.2	6	36	74
DH424043	4.3	6	36	74
DH424044	4.4	6	36	74
DH424045	4.5	6	36	74
DH424046	4.6	6	36	74
DH424047	4.7	6	36	74
DH424048	4.8	6	44	82
DH424049	4.9	6	44	82
DH424050	5.0	6	44	82
DH424051	5.1	6	44	82
DH424052	5.2	6	44	82
DH424053	5.3	6	44	82
DH424054	5.4	6	44	82
DH424055	5.5	6	44	82
DH424056	5.6	6	44	82
DH424057	5.7	6	44	82

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

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

DREAM DRILLS - GENERAL

DH424 SERIES

CARBIDE, DREAM DRILLS

LONG

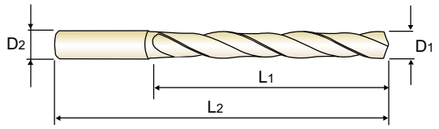
VOLLHARTMETALL DREAM SPIRALBOHRER
Forets DREAM DRILLS carbure, série longue
PUNTE ELICOIDALI IN MD - DREAM DRILLS

LANG
LONGUE
LUNGA

- ▶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

- ▶ Bohren von Stahl, Stahlguss, Gusseisen, Temperguss, Nichteisenmetallen-Leichtmetallen, abrasiven Kunststoffen
- ▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung
- ▶ Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
- ▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr





DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | P.94-95

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH424058	5.8	6	44	82
DH424059	5.9	6	44	82
DH424060	6.0	6	44	82
DH424061	6.1	8	53	91
DH424062	6.2	8	53	91
DH424063	6.3	8	53	91
DH424064	6.4	8	53	91
DH424065	6.5	8	53	91
DH424066	6.6	8	53	91
DH424067	6.7	8	53	91
DH424068	6.8	8	53	91
DH424069	6.9	8	53	91
DH424070	7.0	8	53	91
DH424071	7.1	8	53	91
DH424072	7.2	8	53	91
DH424073	7.3	8	53	91
DH424074	7.4	8	53	91
DH424075	7.5	8	53	91
DH424076	7.6	8	53	91
DH424077	7.7	8	53	91
DH424078	7.8	8	53	91
DH424079	7.9	8	53	91
DH424080	8.0	8	53	91
DH424081	8.1	10	61	103

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH424082	8.2	10	61	103
DH424083	8.3	10	61	103
DH424084	8.4	10	61	103
DH424085	8.5	10	61	103
DH424086	8.6	10	61	103
DH424087	8.7	10	61	103
DH424088	8.8	10	61	103
DH424089	8.9	10	61	103
DH424090	9.0	10	61	103
DH424091	9.1	10	61	103
DH424092	9.2	10	61	103
DH424093	9.3	10	61	103
DH424094	9.4	10	61	103
DH424095	9.5	10	61	103
DH424096	9.6	10	61	103
DH424097	9.7	10	61	103
DH424098	9.8	10	61	103
DH424099	9.9	10	61	103
DH424100	10.0	10	61	103
DH424101	10.1	12	71	118
DH424102	10.2	12	71	118
DH424103	10.3	12	71	118
DH424104	10.4	12	71	118
DH424105	10.5	12	71	118

▶ Other shank types are available on your request.

▶ NEXT PAGE

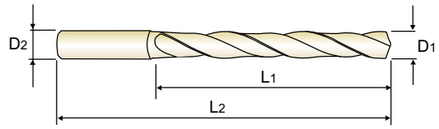
◎ : Excellent ○ : Good

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

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

DREAM DRILLS - GENERAL
DH424 SERIES
CARBIDE, DREAM DRILLS
LONG
VOLLHARTMETALL DREAM SPIRALBOHRER
Forets DREAM DRILLS carbure, série longue
PUNTE ELICOIDALI IN MD - DREAM DRILLS
LANG
LONGUE
LUNGA
▶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
▶ Bohren von Stahl, Stahlguss, Gusseisen, Temperguss, Nichteisenmetallen-Leichtmetallen, abrasiven Kunststoffen
▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung
▶ Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr





DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | P.94-95
5 × D
Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH424106	10.6	12	71	118
DH424107	10.7	12	71	118
DH424108	10.8	12	71	118
DH424109	10.9	12	71	118
DH424110	11.0	12	71	118
DH424111	11.1	12	71	118
DH424112	11.2	12	71	118
DH424113	11.3	12	71	118
DH424114	11.4	12	71	118
DH424115	11.5	12	71	118
DH424116	11.6	12	71	118
DH424117	11.7	12	71	118
DH424118	11.8	12	71	118
DH424119	11.9	12	71	118
DH424120	12.0	12	71	118
DH424125	12.5	14	77	124

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH424130	13.0	14	77	124
DH424135	13.5	14	77	124
DH424140	14.0	14	77	124
DH424145	14.5	16	83	133
DH424150	15.0	16	83	133
DH424155	15.5	16	83	133
DH424160	16.0	16	83	133
DH424165	16.5	18	93	143
DH424170	17.0	18	93	143
DH424175	17.5	18	93	143
DH424180	18.0	18	93	143
DH424185	18.5	20	101	153
DH424190	19.0	20	101	153
DH424195	19.5	20	101	153
DH424200	20.0	20	101	153

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

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

DREAM DRILLS - GENERAL

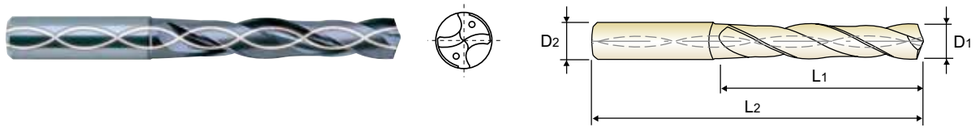
DH406 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES — SHORT

VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL — KURZ
Forets DREAM DRILLS carbure, avec arrosage central, série courte — COURTE
PUNTE ELICOIDALI IN MD - DREAM DRILLS (con fori di refrigerazione) — CORTA

- ▶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

- ▶ Bohren von Stahl, Stahlguss, Gusseisen, Temperguss, Nichteisenmetallen-Leichtmetallen, abrasiven Kunststoffen
- ▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung
- ▶ Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
- ▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | P.96-97

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH406030	3.0	6	20	62
DH406031	3.1	6	20	62
DH406032	3.2	6	20	62
DH406033	3.3	6	20	62
DH406034	3.4	6	20	62
DH406035	3.5	6	20	62
DH406036	3.6	6	20	62
DH406037	3.7	6	20	62
DH406038	3.8	6	24	66
DH406039	3.9	6	24	66
DH406040	4.0	6	24	66
DH406041	4.1	6	24	66
DH406042	4.2	6	24	66
DH406043	4.3	6	24	66
DH406044	4.4	6	24	66
DH406045	4.5	6	24	66
DH406046	4.6	6	24	66
DH406047	4.7	6	24	66
DH406048	4.8	6	28	66
DH406049	4.9	6	28	66
DH406050	5.0	6	28	66
DH406051	5.1	6	28	66
DH406052	5.2	6	28	66
DH406053	5.3	6	28	66
DH406054	5.4	6	28	66
DH406055	5.5	6	28	66
DH406056	5.6	6	28	66
DH406057	5.7	6	28	66
DH406058	5.8	6	28	66
DH406059	5.9	6	28	66
DH406060	6.0	6	28	66
DH406061	6.1	8	34	79
DH406062	6.2	8	34	79
DH406063	6.3	8	34	79
DH406064	6.4	8	34	79
DH406065	6.5	8	34	79
DH406066	6.6	8	34	79
DH406067	6.7	8	34	79
DH406068	6.8	8	34	79
DH406069	6.9	8	34	79
DH406070	7.0	8	34	79
DH406071	7.1	8	41	79
DH406072	7.2	8	41	79
DH406073	7.3	8	41	79
DH406074	7.4	8	41	79
DH406075	7.5	8	41	79
DH406076	7.6	8	41	79
DH406077	7.7	8	41	79
DH406078	7.8	8	41	79
DH406079	7.9	8	41	79
DH406080	8.0	8	41	79
DH406081	8.1	10	47	89
DH406082	8.2	10	47	89
DH406083	8.3	10	47	89
DH406084	8.4	10	47	89
DH406085	8.5	10	47	89
DH406086	8.6	10	47	89
DH406087	8.7	10	47	89
DH406088	8.8	10	47	89
DH406089	8.9	10	47	89
DH406090	9.0	10	47	89
DH406091	9.1	10	47	89
DH406092	9.2	10	47	89
DH406093	9.3	10	47	89
DH406094	9.4	10	47	89
DH406095	9.5	10	47	89
DH406096	9.6	10	47	89
DH406097	9.7	10	47	89
DH406098	9.8	10	47	89
DH406099	9.9	10	47	89
DH406100	10.0	10	47	89
DH406101	10.1	12	55	102
DH406102	10.2	12	55	102
DH406103	10.3	12	55	102
DH406104	10.4	12	55	102
DH406105	10.5	12	55	102
DH406106	10.6	12	55	102
DH406107	10.7	12	55	102
DH406108	10.8	12	55	102
DH406109	10.9	12	55	102
DH406110	11.0	12	55	102
DH406111	11.1	12	55	102
DH406112	11.2	12	55	102
DH406113	11.3	12	55	102
DH406114	11.4	12	55	102
DH406115	11.5	12	55	102
DH406116	11.6	12	55	102
DH406117	11.7	12	55	102
DH406118	11.8	12	55	102
DH406119	11.9	12	55	102
DH406120	12.0	12	55	102
DH406125	12.5	14	60	107
DH406130	13.0	14	60	107
DH406135	13.5	14	60	107
DH406140	14.0	14	60	107
DH406145	14.5	16	65	115

▶ Other shank types are available on your request.

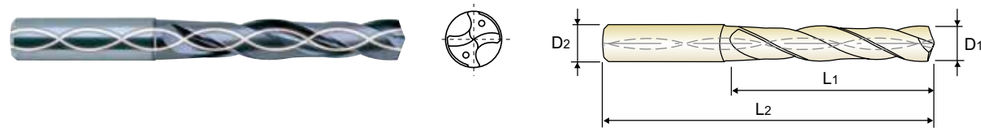
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◎ : Excellent ○ : Good

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

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

DREAM DRILLS - GENERAL
DH406 SERIES
CARBIDE, DREAM DRILLS with COOLANT HOLES — SHORT
VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL — KURZ
Forets DREAM DRILLS carbure, avec arrosage central, série courte — COURTE
PUNTE ELICOIDALI IN MD - DREAM DRILLS (con fori di refrigerazione) — CORTA
▶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
▶ Bohren von Stahl, Stahlguss, Gusseisen, Temperguss, Nichteisenmetallen-Leichtmetallen, abrasiven Kunststoffen
▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung
▶ Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | P.96-97
3 × D
Unit : mm
▶ Other shank types are available on your request.
▶ NEXT PAGE
◎ : Excellent ○ : Good

DREAM DRILLS - GENERAL

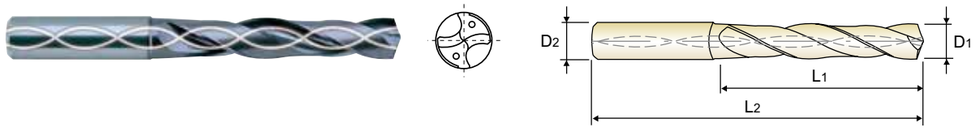
DH406 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES — SHORT

- VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL — KURZ
- Forets DREAM DRILLS carbure, avec arrosage central, série courte — COURTE
- PUNTE ELICOIDALI IN MD - DREAM DRILLS (con fori di refrigerazione) — CORTA

▶Drilling for Steel, Cast Steel, Cast Iron, Malleable Cast Iron
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▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | P.96-97

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH406150	15.0	16	65	115
DH406155	15.5	16	65	115
DH406160	16.0	16	65	115
DH406165	16.5	18	73	123
DH406170	17.0	18	73	123
DH406175	17.5	18	73	123

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH406180	18.0	18	73	123
DH406185	18.5	20	79	131
DH406190	19.0	20	79	131
DH406195	19.5	20	79	131
DH406200	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		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

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

DREAM DRILLS - GENERAL

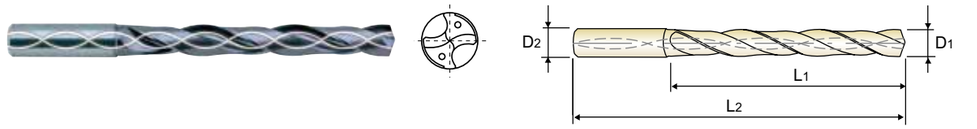
DH408 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES — LONG

- VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL — LANG
- Forets DREAM DRILLS carbure, avec arrosage central, série longue — LONGUE
- PUNTE ELICOIDALI IN MD - DREAM DRILLS (con fori di refrigerazione) — LUNGA

▶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

▶ Bohren von Stahl, Stahlguss, Gusseisen, Temperguss, Nichteisenmetallen-Leichtmetallen, abrasiven Kunststoffen
▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung
▶ Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | P.96-97

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	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	3.0	6	28	66
DH408031	3.1	6	28	66
DH408032	3.2	6	28	66
DH408033	3.3	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH408034	3.4	6	28	66
DH408035	3.5	6	28	66
DH408036	3.6	6	28	66
DH408037	3.7	6	28	66
DH408038	3.8	6	36	74
DH408039	3.9	6	36	74
DH408040	4.0	6	36	74
DH408041	4.1	6	36	74
DH408042	4.2	6	36	74
DH408043	4.3	6	36	74
DH408044	4.4	6	36	74
DH408045	4.5	6	36	74
DH408046	4.6	6	36	74
DH408047	4.7	6	36	74
DH408048	4.8	6	44	82
DH408049	4.9	6	44	82
DH408050	5.0	6	44	82
DH408051	5.1	6	44	82
DH408052	5.2	6	44	82
DH408053	5.3	6	44	82
DH408054	5.4	6	44	82
DH408055	5.5	6	44	82
DH408056	5.6	6	44	82
DH408057	5.7	6	44	82

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

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

DREAM DRILLS - GENERAL

DH408 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES — LONG

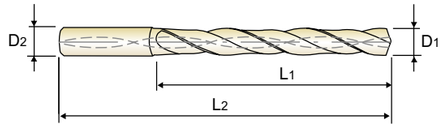
- VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL — LANG
- Forets DREAM DRILLS carbure, avec arrosage central, série longue — LONGUE
- PUNTE ELICOIDALI IN MD - DREAM DRILLS (con fori di refrigerazione) — LUNGA

▶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
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▶ Bohren von Stahl, Stahlguss, Gusseisen, Temperguss, Nichteisenmetallen-Leichtmetallen, abrasiven Kunststoffen
▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung
▶ Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr







DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | P.96-97

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH408058	5.8	6	44	82
DH408059	5.9	6	44	82
DH408060	6.0	6	44	82
DH408061	6.1	8	53	91
DH408062	6.2	8	53	91
DH408063	6.3	8	53	91
DH408064	6.4	8	53	91
DH408065	6.5	8	53	91
DH408066	6.6	8	53	91
DH408067	6.7	8	53	91
DH408068	6.8	8	53	91
DH408069	6.9	8	53	91
DH408070	7.0	8	53	91
DH408071	7.1	8	53	91
DH408072	7.2	8	53	91
DH408073	7.3	8	53	91
DH408074	7.4	8	53	91
DH408075	7.5	8	53	91
DH408076	7.6	8	53	91
DH408077	7.7	8	53	91
DH408078	7.8	8	53	91
DH408079	7.9	8	53	91
DH408080	8.0	8	53	91
DH408081	8.1	10	61	103

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH408082	8.2	10	61	103
DH408083	8.3	10	61	103
DH408084	8.4	10	61	103
DH408085	8.5	10	61	103
DH408086	8.6	10	61	103
DH408087	8.7	10	61	103
DH408088	8.8	10	61	103
DH408089	8.9	10	61	103
DH408090	9.0	10	61	103
DH408091	9.1	10	61	103
DH408092	9.2	10	61	103
DH408093	9.3	10	61	103
DH408094	9.4	10	61	103
DH408095	9.5	10	61	103
DH408096	9.6	10	61	103
DH408097	9.7	10	61	103
DH408098	9.8	10	61	103
DH408099	9.9	10	61	103
DH408100	10.0	10	61	103
DH408101	10.1	12	71	118
DH408102	10.2	12	71	118
DH408103	10.3	12	71	118
DH408104	10.4	12	71	118
DH408105	10.5	12	71	118

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

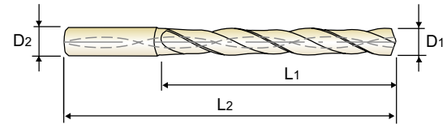
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10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

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

DREAM DRILLS - GENERAL
DH408 SERIES
CARBIDE, DREAM DRILLS with COOLANT HOLES — LONG
VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL — LANG
Forets DREAM DRILLS carbure, avec arrosage central, série longue — LONGUE
PUNTE ELICOIDALI IN MD - DREAM DRILLS (con fori di refrigerazione) — LUNGA
▶Drilling for Steel, Cast Steel, Cast Iron, Malleable Cast Iron
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▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr







DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | P.96-97
5 × D
Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH408106	10.6	12	71	118
DH408107	10.7	12	71	118
DH408108	10.8	12	71	118
DH408109	10.9	12	71	118
DH408110	11.0	12	71	118
DH408111	11.1	12	71	118
DH408112	11.2	12	71	118
DH408113	11.3	12	71	118
DH408114	11.4	12	71	118
DH408115	11.5	12	71	118
DH408116	11.6	12	71	118
DH408117	11.7	12	71	118
DH408118	11.8	12	71	118
DH408119	11.9	12	71	118
DH408120	12.0	12	71	118
DH408125	12.5	14	77	124

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH408130	13.0	14	77	124
DH408135	13.5	14	77	124
DH408140	14.0	14	77	124
DH408145	14.5	16	83	133
DH408150	15.0	16	83	133
DH408155	15.5	16	83	133
DH408160	16.0	16	83	133
DH408165	16.5	18	93	143
DH408170	17.0	18	93	143
DH408175	17.5	18	93	143
DH408180	18.0	18	93	143
DH408185	18.5	20	101	153
DH408190	19.0	20	101	153
DH408195	19.5	20	101	153
DH408200	20.0	20	101	153

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

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

DREAM DRILLS - GENERAL

DH421 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES

EXTRA LONG

VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL
ÜBERLANG

Forets DREAM DRILLS carbure, avec arrosage central, série extra-longue
EXTRA-LONGUE

PUNTE ELICOIDALI IN MD - DREAM DRILLS (con fori di refrigerazione)
EXTRA LUNGA

- ▶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

- ▶ Bohren von Stahl, Stahlguss, Gusseisen, Temperguss, Nichteisenmetallen-Leichtmetallen, abrasiven Kunststoffen
- ▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung
- ▶ Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
- ▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | P.96-97

8 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
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
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

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

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

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

DREAM DRILLS - GENERAL

DH421 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES

EXTRA LONG

VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL
ÜBERLANG

Forets DREAM DRILLS carbure, avec arrosage central, série extra-longue
EXTRA-LONGUE

PUNTE ELICOIDALI IN MD - DREAM DRILLS (con fori di refrigerazione)
EXTRA LUNGA

- ▶Drilling for Steel, Cast Steel, Cast Iron, Malleable Cast Iron
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- ▶ Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
- ▶ Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | P.96-97

8 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
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
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
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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

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

DREAM DRILLS - GENERAL

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DH404, DH423, DH424 SERIES without COOLANT HOLES

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 1.0	2.0	Vc (m/min)	Parameter	3.0	4.0	5.0
P	1										
	2	Non-alloy steel	70	RPM	22280	11140	100	RPM	10610	7960	6370
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20
	3	Non-alloy steel	70	RPM	22280	11140	100	RPM	10610	7960	6370
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20
	4	Non-alloy steel	70	RPM	22280	11140	100	RPM	10610	7960	6370
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16
	5	Non-alloy steel	60	RPM	19100	9550	80	RPM	8490	6370	5090
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16
	6	Low alloy steel	70	RPM	22280	11140	100	RPM	10610	7960	6370
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20
	7	Low alloy steel	60	RPM	19100	9550	80	RPM	8490	6370	5090
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.10-0.20
	8	Low alloy steel	60	RPM	19100	9550	80	RPM	8490	6370	5090
				FEED	0.02-0.04	0.03-0.05		FEED	0.04-0.10	0.07-0.13	0.10-0.16
	9	Low alloy steel	30	RPM	9550	4770	40	RPM	4240	3180	2550
				FEED	0.02-0.04	0.03-0.05		FEED	0.03-0.08	0.05-0.11	0.08-0.14
	10	High alloyed steel, and tool steel	50	RPM	15920	7960	70	RPM	7430	5570	4460
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16
	11	High alloyed steel, and tool steel	30	RPM	9550	4770	40	RPM	4240	3180	2550
				FEED	0.02-0.04	0.03-0.05		FEED	0.03-0.08	0.05-0.11	0.08-0.14
M	12	Stainless steel	50	RPM	15920	7960	70	RPM	7430	5570	4460
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20
	13	Stainless steel	35	RPM	11140	5570	45	RPM	4770	3580	2860
				FEED	0.02-0.04	0.03-0.05		FEED	0.04-0.10	0.07-0.13	0.10-0.16
	14	Stainless steel									
K	15	Grey cast iron	70	RPM	22280	11140	100	RPM	10610	7960	6370
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.18-0.24
	16	Grey cast iron	65	RPM	20690	10350	80	RPM	8490	6370	5090
				FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.20
	17	Nodular cast iron	70	RPM	22280	11140	100	RPM	10610	7960	6370
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.18-0.24
	18	Nodular cast iron	50	RPM	15920	7960	70	RPM	7430	5570	4460
				FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.20
	19	Malleable cast iron	60	RPM	19100	9550	80	RPM	8490	6370	5090
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.18-0.24
	20	Malleable cast iron	50	RPM	15920	7960	70	RPM	7430	5570	4460
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20
N	21	Aluminum-wrought alloy									
	22	Aluminum-wrought alloy									
	23	Aluminum-cast, alloyed									
	24	Aluminum-cast, alloyed									
	25	Aluminum-cast, alloyed									
	26	Copper and Copper Alloys (Bronze / Brass)									
	27	Copper and Copper Alloys (Bronze / Brass)									
	28	Copper and Copper Alloys (Bronze / Brass)									
	29	Non Metallic Materials									
	30	Non Metallic Materials									
S	31	Heat Resistant Super Alloys									
	32	Heat Resistant Super Alloys									
	33	Heat Resistant Super Alloys									
	34	Heat Resistant Super Alloys									
	35	Heat Resistant Super Alloys									
	36	Titanium Alloys									
	37	Titanium Alloys									
H	38	Hardened steel									
	39	Hardened steel									
	40	Chilled Cast Iron									
	41	Hardened Cast Iron									

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

DREAM DRILLS - GENERAL
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

VDI 3323	Parameter	Drill Diameter (mm) 6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
1									
2	RPM	5310	3980	3180	2650	2270	1990	1770	1590
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
3	RPM	5310	3980	3180	2650	2270	1990	1770	1590
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
4	RPM	5310	3980	3180	2650	2270	1990	1770	1590
	FEED	0.12-0.18	0.14-0.2	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
5	RPM	4240	3180	2550	2120	1820	1590	1410	1270
	FEED	0.12-0.18	0.14-0.2	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
6	RPM	5310	3980	3180	2650	2270	1990	1770	1590
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
7	RPM	4240	3180	2550	2120	1820	1590	1410	1270
	FEED	0.12-0.24	0.16-0.28	0.20-0.30	0.21-0.30	0.22-0.35	0.25-0.36	0.28-0.38	0.30-0.40
8	RPM	4240	3180	2550	2120	1820	1590	1410	1270
	FEED	0.12-0.18	0.14-0.2	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
9	RPM	2120	1590	1270	1060	910	800	710	640
	FEED	0.10-0.16	0.12-0.18	0.14-0.20	0.12-0.22	0.13-0.23	0.14-0.24	0.16-0.26	0.18-0.28
10	RPM	3710	2790	2230	1860	1590	1390	1240	1110
	FEED	0.12-0.18	0.14-0.20	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
11	RPM	2120	1590	1270	1060	910	800	710	640
	FEED	0.10-0.16	0.12-0.18	0.14-0.20	0.12-0.22	0.13-0.23	0.14-0.24	0.16-0.26	0.18-0.28
12	RPM	3710	2790	2230	1860	1590	1390	1240	1110
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
13	RPM	2390	1790	1430	1190	1020	900	800	720
	FEED	0.12-0.18	0.14-0.20	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
14									
15	RPM	5310	3980	3180	2650	2270	1990	1770	1590
	FEED	0.14-0.26	0.16-0.28	0.24-0.34	0.26-0.36	0.28-0.38	0.30-0.40	0.32-0.42	0.34-0.44
16	RPM	4240	3180	2550	2120	1820	1590	1410	1270
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
17	RPM	5310	3980	3180	2650	2270	1990	1770	1590
	FEED	0.14-0.26	0.16-0.28	0.24-0.34	0.26-0.36	0.28-0.38	0.30-0.40	0.32-0.42	0.34-0.44
18	RPM	3710	2790	2230	1860	1590	1390	1240	1110
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
19	RPM	4240	3180	2550	2120	1820	1590	1410	1270
	FEED	0.14-0.26	0.16-0.28	0.24-0.34	0.26-0.36	0.28-0.38	0.30-0.40	0.32-0.42	0.34-0.44
20	RPM	3710	2790	2230	1860	1590	1390	1240	1110
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
21									
22									
23									
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36									
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38									
39									
40									
41									

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

DREAM DRILLS - GENERAL

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DH406, DH408, DH421 SERIES with COOLANT HOLES

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 1.0	2.0	Vc (m/min)	Parameter	3.0	4.0	5.0
P	1	Non-alloy steel	80	RPM	25460	12730	110	RPM	11670	8750	7000
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20
	2		80	RPM	25460	12730	110	RPM	11670	8750	7000
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20
	3		80	RPM	25460	12730	110	RPM	11670	8750	7000
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16
	4		70	RPM	22280	11140	90	RPM	9550	7160	5730
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16
	5	Low alloy steel	80	RPM	25460	12730	110	RPM	11670	8750	7000
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20
	6		70	RPM	22280	11140	90	RPM	9550	7160	5730
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.10-0.20
	7		70	RPM	22280	11140	90	RPM	9550	7160	5730
				FEED	0.02-0.04	0.03-0.05		FEED	0.04-0.10	0.07-0.13	0.10-0.16
	8		40	RPM	12730	6370	50	RPM	5310	3980	3180
				FEED	0.02-0.04	0.03-0.05		FEED	0.03-0.08	0.05-0.11	0.08-0.14
	9	High alloyed steel, and tool steel	60	RPM	19100	9550	80	RPM	8490	6370	5090
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16
	10		40	RPM	12730	6370	45	RPM	4770	3580	2860
				FEED	0.02-0.04	0.03-0.05		FEED	0.03-0.08	0.05-0.11	0.08-0.14
M	11	Stainless steel	60	RPM	19100	9550	80	RPM	8490	6370	5090
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20
	12		45	RPM	14320	7160	55	RPM	5840	4380	3500
				FEED	0.02-0.04	0.03-0.05		FEED	0.04-0.10	0.07-0.13	0.10-0.16
	13										
	14										
K	15	Grey cast iron	80	RPM	25460	12730	110	RPM	11670	8750	7000
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.18-0.24
	16		75	RPM	23870	11940	95	RPM	10080	7560	6050
				FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.2
	17	Nodular cast iron	90	RPM	28650	14320	120	RPM	12730	9550	7640
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.18-0.24
	18		60	RPM	19100	9550	80	RPM	8490	6370	5090
				FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.2
	19	Malleable cast iron	70	RPM	22280	11140	90	RPM	9550	7160	5730
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.18-0.24
	20		60	RPM	19100	9550	80	RPM	8490	6370	5090
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20
N	21	Aluminum-wrought alloy									
	22										
	23	Aluminum-cast, alloyed									
	24										
	25										
	26	Copper and Copper Alloys (Bronze / Brass)									
	27										
	28										
	29	Non Metallic Materials									
	30										
S	31	Heat Resistant Super Alloys									
	32										
	33										
	34										
	35										
	36	Titanium Alloys									
	37										
H	38	Hardened steel									
	39										
	40	Chilled Cast Iron									
	41	Hardened Cast Iron									

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

DREAM DRILLS - GENERAL

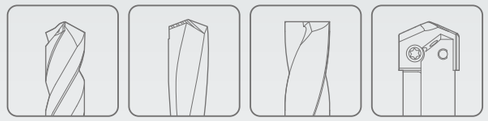
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

VDI 3323	Parameter	Drill Diameter (mm) 6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
1									
2	RPM	5840	4380	3500	2920	2500	2190	1950	1750
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
3	RPM	5840	4380	3500	2920	2500	2190	1950	1750
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
4	RPM	5840	4380	3500	2920	2500	2190	1950	1750
	FEED	0.12-0.18	0.14-0.20	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
5	RPM	4770	3580	2860	2390	2050	1790	1590	1430
	FEED	0.12-0.18	0.14-0.20	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
6	RPM	5840	4380	3500	2920	2500	2190	1950	1750
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
7	RPM	4770	3580	2860	2390	2050	1790	1590	1430
	FEED	0.12-0.24	0.16-0.28	0.20-0.30	0.21-0.30	0.22-0.35	0.25-0.36	0.28-0.38	0.30-0.40
8	RPM	4770	3580	2860	2390	2050	1790	1590	1430
	FEED	0.12-0.18	0.14-0.20	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
9	RPM	2650	1990	1590	1330	1140	990	880	800
	FEED	0.10-0.16	0.12-0.18	0.14-0.20	0.12-0.22	0.13-0.23	0.14-0.24	0.16-0.26	0.18-0.28
10	RPM	4240	3180	2550	2120	1820	1590	1410	1270
	FEED	0.12-0.18	0.14-0.20	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
11	RPM	2390	1790	1430	1190	1020	900	800	720
	FEED	0.10-0.16	0.12-0.18	0.14-0.20	0.12-0.22	0.13-0.23	0.14-0.24	0.16-0.26	0.18-0.28
12	RPM	4240	3180	2550	2120	1820	1590	1410	1270
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
13	RPM	2920	2190	1750	1460	1250	1090	970	880
	FEED	0.12-0.18	0.14-0.20	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
14									
15	RPM	5840	4380	3500	2920	2500	2190	1950	1750
	FEED	0.14-0.26	0.16-0.28	0.24-0.34	0.26-0.36	0.28-0.38	0.3-00.40	0.32-0.42	0.34-0.44
16	RPM	5040	3780	3020	2520	2160	1890	1680	1510
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
17	RPM	6370	4770	3820	3180	2730	2390	2120	1910
	FEED	0.14-0.26	0.16-0.28	0.24-0.34	0.26-0.36	0.28-0.38	0.30-0.40	0.32-0.42	0.34-0.44
18	RPM	4240	3180	2550	2120	1820	1590	1410	1270
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.2-0.3	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
19	RPM	4770	3580	2860	2390	2050	1790	1590	1430
	FEED	0.14-0.26	0.16-0.28	0.24-0.34	0.26-0.36	0.28-0.38	0.30-0.40	0.32-0.42	0.34-0.44
20	RPM	4240	3180	2550	2120	1820	1590	1410	1270
	FEED	0.16-0.22	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
21									
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CARBIDE
HSS
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i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation

SOLID CARBIDE

DREAM DRILLS -HIGH FEED

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**
- **1,5 bis 2 mal höhere Vorschubgeschwindigkeit als Bohrer mit 2 Schneiden, für Kohlenstoffstähle, legierte Stähle (bis HRc35) und Grauguss**

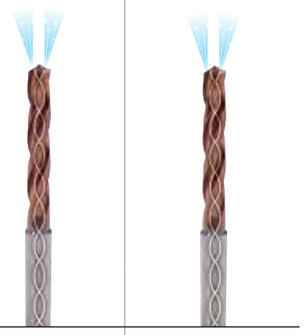
SELECTION GUIDE

HOLEMAKING TOOLS

SERIES	DGR493	DGR495
DRILLING DEPTH	3XD	5XD
LENGTH	SHORT	LONG
SIZE MIN	D5.0	D5.0
SIZE MAX	D20.0	D20.0
PAGE	101	103
SURFACE TREATMENT	H-Coating	

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



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.105

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	DGR493	DGR495
P	1	Non-alloy steel	About 0.15% C	Annealed	125			
	2		About 0.45% C	Annealed	190	13	◎	◎
	3		About 0.45% C	Quenched & Tempered	250	25	◎	◎
	4		About 0.75% C	Annealed	270	28	◎	◎
	5		About 0.75% C	Quenched & Tempered	300	32	○	○
	6	Low alloy steel		Annealed	180	10	◎	◎
	7			Quenched & Tempered	275	29	◎	◎
	8			Quenched & Tempered	300	32	○	○
	9			Quenched & Tempered	350	38	○	○
	10	High alloyed steel, and tool steel		Annealed	200	15	◎	◎
	11			Quenched & Tempered	325	35	○	○
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15		
	13		Martensitic	Quenched & Tempered	240	23		
	14		Austenitic		180	10		
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎	◎
	16		Pearlitic (Martensitic)		260	26	○	○
	17	Nodular cast iron	Ferritic		160	3	◎	◎
	18		Pearlitic		250	25	○	○
	19	Malleable cast iron	Ferritic		130		◎	◎
	20		Pearlitic		230	21	○	○
N	21	Aluminum-wrought alloy	Not Curable		60			
	22		Curable	Hardened	100			
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75			
	24		≤ 12% Si, Curable	Hardened	90			
	25		> 12% Si, Not Curable		130			
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110			
	27		CuZn, CuSnZn (Brass)		90			
	28		CuSn, lead-free copper and electrolytic copper		100			
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic					
	30		Rubber, Wood, etc.					
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15		
	32			Cured	280	30		
	33		Ni or Co Based	Annealed	250	25		
	34			Cured	350	38		
	35			Cast	320	34		
	36	Titanium Alloys	Pure Titanium		400 Rm			
	37		Alpha + Beta Alloys	Hardened	1050 Rm			
H	38	Hardened steel		Hardened	550	55		
	39			Hardened	630	60		
	40	Chilled Cast Iron		Cast	400	42		
	41	Hardened Cast Iron		Hardened	550	55		

CARBIDE
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DREAM DRILLS - HIGH FEED

DGR493 SERIES

CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES

SHORT

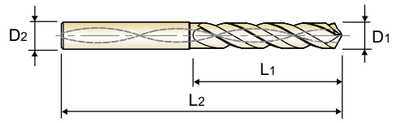
DREAM DRILLS HIGH FEED mit KÜHLKANAL — KURZ
Forets DREAM DRILLS carbure Grande Avance avec arrosage central, série courte — COURTE
PUNTE DREAM DRILL HIGH FEED (con i fori di refrigerazione) — CORTA

- ▶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

- ▶ Bohren von Kohlenstoff-Stählen, legierten Stählen(-HRc35) und Gusseisen
- ▶ Höhere Produktivität durch den 1,5 bis 2-fach höheren Vorschub gegenüber herkömmlichen zweischneidigen Bohrern
- ▶ Die Multi-Layer Beschichtung ermöglicht eine bessere Produktivität und Zuverlässigkeit
- ▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung







DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar

P.105

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
H-Coating	D1	D2	L1	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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
H-Coating	D1	D2	L1	L2
DGR493074	7.4	8	41	79
DGR493075	7.5	8	41	79
DGR493076	7.6	8	41	79
DGR493077	7.7	8	41	79
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

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

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

DREAM DRILLS - HIGH FEED

DGR493 SERIES

CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES — SHORT

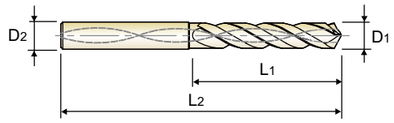
- DREAM DRILLS HIGH FEED mit KÜHLKANAL — KURZ
- Forets DREAM DRILLS carbure Grande Avance avec arrosage central, série courte — COURTE
- PUNTE DREAM DRILL HIGH FEED (con i fori di refrigerazione) — CORTA

▶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

▶ Bohren von Kohlenstoff-Stählen, legierten Stählen(-HRc35) und Gusseisen
▶ Höhere Produktivität durch den 1,5 bis 2-fach höheren Vorschub gegenüber herkömmlichen zweischneidigen Bohrern
▶ Die Multi-Layer Beschichtung ermöglicht eine bessere Produktivität und Zuverlässigkeit
▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung







DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar

P.105

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
H-Coating	D1	D2	L1	L2
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
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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
H-Coating	D1	D2	L1	L2
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
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	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended		◎	◎	◎	○	◎	◎	○	○	◎	○				◎	○	◎	○	◎	○

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

DREAM DRILLS - HIGH FEED

DGR495 SERIES

CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES — LONG

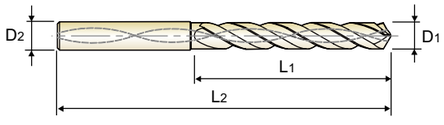
- DREAM DRILLS HIGH FEED mit KÜHLKANAL — KURZ
- Forets DREAM DRILLS carbure Grande Avance avec arrosage central, série longue — LONGUE
- PUNTE DREAM DRILL HIGH FEED (con i fori di refrigerazione) — LUNGA

▶Drilling for Carbon Steels, Alloy Steels(-HRc35) and Cast Iron
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▶ Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung







DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar

P.105

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
H-Coating	D1	D2	L1	L2
DGR495050	5.0	6	44	82
DGR495051	5.1	6	44	82
DGR495052	5.2	6	44	82
DGR495053	5.3	6	44	82
DGR495054	5.4	6	44	82
DGR495055	5.5	6	44	82
DGR495056	5.6	6	44	82
DGR495057	5.7	6	44	82
DGR495058	5.8	6	44	82
DGR495059	5.9	6	44	82
DGR495060	6.0	6	44	82
DGR495061	6.1	8	53	91
DGR495062	6.2	8	53	91
DGR495063	6.3	8	53	91
DGR495064	6.4	8	53	91
DGR495065	6.5	8	53	91
DGR495066	6.6	8	53	91
DGR495067	6.7	8	53	91
DGR495068	6.8	8	53	91
DGR495069	6.9	8	53	91
DGR495070	7.0	8	53	91
DGR495071	7.1	8	53	91
DGR495072	7.2	8	53	91
DGR495073	7.3	8	53	91

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
H-Coating	D1	D2	L1	L2
DGR495074	7.4	8	53	91
DGR495075	7.5	8	53	91
DGR495076	7.6	8	53	91
DGR495077	7.7	8	53	91
DGR495078	7.8	8	53	91
DGR495079	7.9	8	53	91
DGR495080	8.0	8	53	91
DGR495081	8.1	10	61	103
DGR495082	8.2	10	61	103
DGR495083	8.3	10	61	103
DGR495084	8.4	10	61	103
DGR495085	8.5	10	61	103
DGR495086	8.6	10	61	103
DGR495087	8.7	10	61	103
DGR495088	8.8	10	61	103
DGR495089	8.9	10	61	103
DGR495090	9.0	10	61	103
DGR495091	9.1	10	61	103
DGR495092	9.2	10	61	103
DGR495093	9.3	10	61	103
DGR495094	9.4	10	61	103
DGR495095	9.5	10	61	103
DGR495096	9.6	10	61	103
DGR495097	9.7	10	61	103

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - HIGH FEED

DGR495 SERIES

CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES

LONG

DREAM DRILLS HIGH FEED mit KÜHLKANAL — KURZ

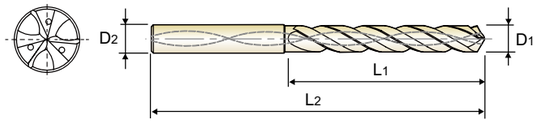
Forets DREAM DRILLS carbure Grande Avance avec arrosage central, série longue — LONGUE

PUNTE DREAM DRILL HIGH FEED (con i fori di refrigerazione) — LUNGA

- ▶Drilling for Carbon Steels, Alloy Steels(-HRc35) and Cast Iron
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DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar

P.105

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
H-Coating	D1	D2	L1	L2
DGR495098	9.8	10	61	103
DGR495099	9.9	10	61	103
DGR495100	10.0	10	61	103
DGR495101	10.1	12	71	118
DGR495102	10.2	12	71	118
DGR495103	10.3	12	71	118
DGR495104	10.4	12	71	118
DGR495105	10.5	12	71	118
DGR495106	10.6	12	71	118
DGR495107	10.7	12	71	118
DGR495108	10.8	12	71	118
DGR495109	10.9	12	71	118
DGR495110	11.0	12	71	118
DGR495111	11.1	12	71	118
DGR495112	11.2	12	71	118
DGR495113	11.3	12	71	118
DGR495114	11.4	12	71	118
DGR495115	11.5	12	71	118
DGR495116	11.6	12	71	118
DGR495117	11.7	12	71	118

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
H-Coating	D1	D2	L1	L2
DGR495118	11.8	12	71	118
DGR495119	11.9	12	71	118
DGR495120	12.0	12	71	118
DGR495125	12.5	14	77	124
DGR495130	13.0	14	77	124
DGR495135	13.5	14	77	124
DGR495140	14.0	14	77	124
DGR495145	14.5	16	83	133
DGR495150	15.0	16	83	133
DGR495155	15.5	16	83	133
DGR495160	16.0	16	83	133
DGR495165	16.5	18	93	143
DGR495170	17.0	18	93	143
DGR495175	17.5	18	93	143
DGR495180	18.0	18	93	143
DGR495185	18.5	20	101	153
DGR495190	19.0	20	101	153
DGR495195	19.5	20	101	153
DGR495200	20.0	20	101	153

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

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

DREAM DRILLS - HIGH FEED

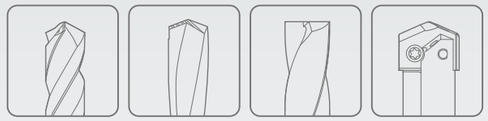
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DRG493, DRG495 SERIES with COOLANT HOLES

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	1	Non-alloy steel											
	2		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	Low 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	0.48-0.54	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	High alloyed steel, and tool steel	70	RPM	4460	3710	2790	2230	1860	1590	1390	1240	1110
				FEED	0.16-0.21	0.2-0.26	0.26-0.34	0.34-0.42	0.41-0.47	0.47-0.54	0.47-0.55	0.5-0.59	0.54-0.67
	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
M	12	Stainless steel											
	13												
	14												
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	Nodular 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
	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	Malleable cast iron	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
N	21	Aluminum-wrought alloy											
	22												
	23	Aluminum-cast, alloyed											
	24												
	25												
	26	Copper and Copper Alloys (Bronze / Brass)											
	27												
	28												
	29	Non Metallic Materials											
	30												
S	31	Heat Resistant Super Alloys											
	32												
	33												
	34												
	35												
	36	Titanium Alloys											
	37												
H	38	Hardened steel											
	39												
	40	Chilled Cast Iron											
	41	Hardened Cast Iron											

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation



SOLID CARBIDE

DREAM DRILLS -FLAT BOTTOM

DREAM DRILLS - FLACHBOHRER

- For Holes on Various Angled Surfaces
- Für Bohrungen auf verschiedenen abgewinkelten Oberflächen

SELECTION GUIDE

YG HOLEMAKING TOOLS

SOLID CARBIDE DREAM DRILLS FLAT BOTTOM

For Holes on Various Angled Surfaces

SERIES	DPP447	DH450
DRILLING DEPTH	2XD	5XD
LENGTH	SHORT	LONG
SIZE MIN	D3.0	D3.0
SIZE MAX	D20.0	D20.0
PAGE	110	113
SURFACE TREATMENT	X-Coating	TiAlN





Please visit globalyg1.com/mat for material search

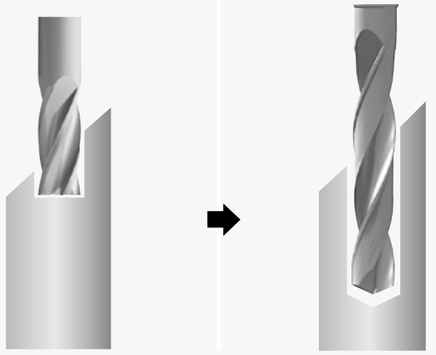
◎ : Excellent ○ : Good

Recommended cutting conditions : P.116

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

Only One Operation for Angled Surface

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



1st operation (End mill)

Counter boring to make flat surface and guide hole

2nd operation (Drill)

Drilling to required depth of hole

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

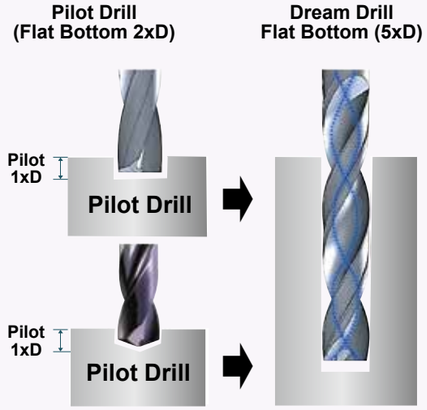


One operation (Dream Drill Flat Bottom) One Drill does it all

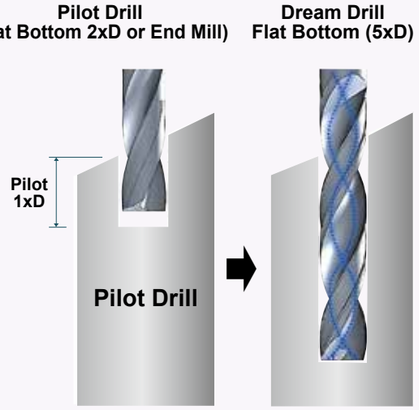
without using both an end mill and a drill

Pilot Drilling for 5 X D

1. FLAT SURFACE



2. INCLINED SURFACE



▶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

DREAM DRILLS - FLAT BOTTOM

DPP447 SERIES

CARBIDE, DREAM DRILLS - FLAT BOTTOM

SHORT

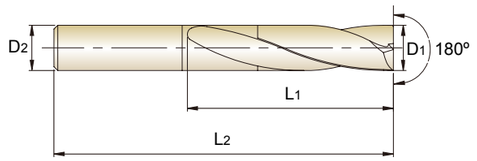
VHM, DREAM DRILLS - FLACHBOHRER — ***KURZ***
DREAM DRILLS - FOND PLAT, FORET CARBURE MONOBLOC — ***COURTE***
PUNTE IN MD DREAM DRILLS, TESTA PIANA — ***CORTA***

- 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.

- Für Bohrungen auf verschiedenen abgewinkelten Flächen.
- Der 180-Grad-Spitzenwinkel ermöglicht das Bohren von flachen, geneigten und gekrümmten Oberflächen.
- Optimierte Nutenform für hervorragende Spanabfuhr.
- Hochfeste Schneide zur Verbesserung der Standzeit und Vielseitigkeit beim Bohren.
- Für Durchgangsbohrungen, minimierter Grat am Ein- und Austritt beim Bohren von dünnen Blechen.







CARBIDE | 20° | h6 | h7 | 180° | P.116

2 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
X-Coating	D_1	D_2	L_1	L_2
DPP447030	3.0	6	16	50
DPP447031	3.1	6	16	50
DPP447032	3.2	6	16	50
DPP447033	3.3	6	16	50
DPP447034	3.4	6	18	50
DPP447035	3.5	6	18	50
DPP447036	3.6	6	18	50
DPP447037	3.7	6	18	50
DPP447038	3.8	6	18	50
DPP447039	3.9	6	18	50
DPP447040	4.0	6	18	50
DPP447041	4.1	6	20	60
DPP447042	4.2	6	20	60
DPP447043	4.3	6	20	60
DPP447044	4.4	6	20	60
DPP447045	4.5	6	22	60
DPP447046	4.6	6	22	60
DPP447047	4.7	6	22	60
DPP447048	4.8	6	22	60
DPP447049	4.9	6	22	60
DPP447050	5.0	6	22	60
DPP447051	5.1	6	24	60
DPP447052	5.2	6	24	60
DPP447053	5.3	6	24	60
DPP447054	5.4	6	24	60
DPP447055	5.5	6	24	60
DPP447056	5.6	6	24	60
DPP447057	5.7	6	26	60
DPP447058	5.8	6	26	60
DPP447059	5.9	6	26	60
DPP447060	6.0	6	26	60
DPP447061	6.1	8	28	70
DPP447062	6.2	8	28	70
DPP447063	6.3	8	28	70
DPP447064	6.4	8	30	70
DPP447065	6.5	8	30	70
DPP447066	6.6	8	30	70
DPP447067	6.7	8	30	70
DPP447068	6.8	8	30	70
DPP447069	6.9	8	30	70
DPP447070	7.0	8	30	70
DPP447071	7.1	8	34	70
DPP447072	7.2	8	34	70
DPP447073	7.3	8	34	70
DPP447074	7.4	8	34	70
DPP447075	7.5	8	34	70
DPP447076	7.6	8	34	70
DPP447077	7.7	8	34	70

▶ Other diameters and shank types are available upon request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

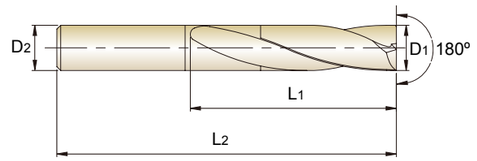
ISO	P																			
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10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

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

DREAM DRILLS - FLAT BOTTOM
DPP447 SERIES
CARBIDE, DREAM DRILLS - FLAT BOTTOM
SHORT
VHM, DREAM DRILLS - FLACHBOHRER — KURZ
DREAM DRILLS - FOND PLAT, FORET CARBURE MONOBLOC — COURTE
PUNTE IN MD DREAM DRILLS, TESTA PIANA — CORTA
- For holes on various angled surfaces.
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- Optimierte Nutenform für hervorragende Spanabfuhr.
- Hochfeste Schneide zur Verbesserung der Standzeit und Vielseitigkeit beim Bohren.
- Für Durchgangsbohrungen, minimierter Grat am Ein- und Austritt beim Bohren von dünnen Blechen.







CARBIDE | 20° | h6 | h7 | 180° | P.116

2 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
X-Coating	D_1	D_2	L_1	L_2
DPP447078	7.8	8	34	70
DPP447079	7.9	8	34	70
DPP447080	8.0	8	34	70
DPP447081	8.1	10	38	80
DPP447082	8.2	10	38	80
DPP447083	8.3	10	38	80
DPP447084	8.4	10	38	80
DPP447085	8.5	10	38	80
DPP447086	8.6	10	38	80
DPP447087	8.7	10	40	80
DPP447088	8.8	10	40	80
DPP447089	8.9	10	40	80
DPP447090	9.0	10	40	80
DPP447091	9.1	10	42	80
DPP447092	9.2	10	42	80
DPP447093	9.3	10	42	80
DPP447094	9.4	10	42	80
DPP447095	9.5	10	42	80
DPP447096	9.6	10	42	80
DPP447097	9.7	10	45	80
DPP447098	9.8	10	45	80
DPP447099	9.9	10	45	80
DPP447100	10.0	10	45	80
DPP447101	10.1	12	46	90
DPP447102	10.2	12	46	90
DPP447103	10.3	12	46	90
DPP447104	10.4	12	48	90
DPP447105	10.5	12	48	90
DPP447106	10.6	12	48	90
DPP447107	10.7	12	48	90
DPP447108	10.8	12	48	90
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
DPP447114	11.4	12	50	90
DPP447115	11.5	12	50	90
DPP447116	11.6	12	50	90
DPP447117	11.7	12	52	90
DPP447118	11.8	12	52	90
DPP447119	11.9	12	52	90
DPP447120	12.0	12	52	90
DPP447125	12.5	14	54	100
DPP447130	13.0	14	56	100
DPP447135	13.5	14	58	100
DPP447140	14.0	14	58	100
DPP447145	14.5	16	62	105

▶ Other diameters and shank types are available upon request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - FLAT BOTTOM

DPP447 SERIES

CARBIDE, DREAM DRILLS - FLAT BOTTOM

SHORT

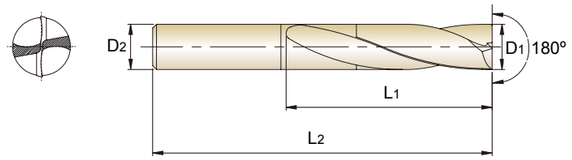
VHM, DREAM DRILLS - FLACHBOHRER
DREAM DRILLS - FOND PLAT, FORET CARBURE MONOBLOC
PUNTE IN MD DREAM DRILLS, TESTA PIANA

KURZ
COURTE
CORTA

- 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.

- Für Bohrungen auf verschiedenen abgewinkelten Flächen.
- Der 180-Grad-Spitzenwinkel ermöglicht das Bohren von flachen, geneigten und gekrümmten Oberflächen.
- Optimierte Nutenform für hervorragende Spanabfuhr.
- Hochfeste Schneide zur Verbesserung der Standzeit und Vielseitigkeit beim Bohren.
- Für Durchgangsbohrungen, minimierter Grat am Ein- und Austritt beim Bohren von dünnen Blechen.





CARBIDE | 20° | h6 | h7 | 180° | P.116

2 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
X-Coating	D1	D2	L1	L2
DPP447150	15.0	16	62	105
DPP447155	15.5	16	64	115
DPP447160	16.0	16	64	115
DPP447165	16.5	18	70	125
DPP447170	17.0	18	70	125
DPP447175	17.5	18	70	125

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
X-Coating	D1	D2	L1	L2
DPP447180	18.0	18	70	125
DPP447185	18.5	20	75	135
DPP447190	19.0	20	75	135
DPP447195	19.5	20	75	145
DPP447200	20.0	20	75	145

▶ Other diameters and shank types are available upon request.

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - FLAT BOTTOM

DH450 SERIES

CARBIDE, DREAM DRILLS - FLAT BOTTOM with COOLANT HOLES

LONG

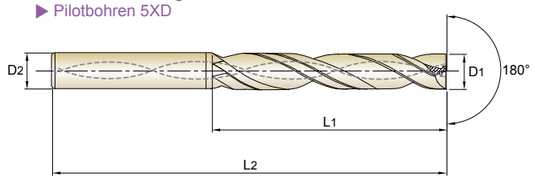
VHM, DREAM DRILLS - FLACHBOHRER
DREAM DRILLS - FOND PLAT, FORET CARBURE MONOBLOC
PUNTE IN MD DREAM DRILLS, TESTA PIANA

KURZ
LONGUE
LUNGA

- 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.
- CARBIDE, DREAM DRILLS - FLAT BOTTOM with Coolant Holes
- Pilot Drilling for 5XD

- Für Bohrungen auf verschiedenen abgewinkelten Flächen.
- Der 180-Grad-Spitzenwinkel ermöglicht das Bohren von flachen, geneigten und gekrümmten Oberflächen.
- Optimierte Nutenform für hervorragende Spanabfuhr.
- Hochfeste Schneide zur Verbesserung der Standzeit und Vielseitigkeit beim Bohren.
- Für Durchgangsbohrungen, minimierter Grat am Ein- und Austritt beim Bohren von dünnen Blechen.
- VOLLHARTMETALL, DREAM DRILLS - 180°-Spitzenwinkel nit Kühlkanalbohrungen
- Pilotbohren 5XD





CARBIDE | 30° | h6 | h7 | 180° | 20 bar | P.117

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH450030	3.0	6	28	66
DH450031	3.1	6	28	66
DH450032	3.2	6	28	66
DH450033	3.3	6	28	66
DH450034	3.4	6	28	66
DH450035	3.5	6	28	66
DH450036	3.6	6	28	66
DH450037	3.7	6	28	66
DH450038	3.8	6	36	74
DH450039	3.9	6	36	74
DH450040	4.0	6	36	74
DH450041	4.1	6	36	74
DH450042	4.2	6	36	74
DH450043	4.3	6	36	74
DH450044	4.4	6	36	74
DH450045	4.5	6	36	74
DH450046	4.6	6	36	74
DH450047	4.7	6	36	74
DH450048	4.8	6	44	82
DH450049	4.9	6	44	82
DH450050	5.0	6	44	82
DH450051	5.1	6	44	82

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH450052	5.2	6	44	82
DH450053	5.3	6	44	82
DH450054	5.4	6	44	82
DH450055	5.5	6	44	82
DH450056	5.6	6	44	82
DH450057	5.7	6	44	82
DH450058	5.8	6	44	82
DH450059	5.9	6	44	82
DH450060	6.0	6	44	82
DH450061	6.1	8	53	91
DH450062	6.2	8	53	91
DH450063	6.3	8	53	91
DH450064	6.4	8	53	91
DH450065	6.5	8	53	91
DH450066	6.6	8	53	91
DH450067	6.7	8	53	91
DH450068	6.8	8	53	91
DH450069	6.9	8	53	91
DH450070	7.0	8	53	91
DH450071	7.1	8	53	91
DH450072	7.2	8	53	91
DH450073	7.3	8	53	91

▶ Other diameters and shank types are available upon request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - FLAT BOTTOM

DH450 SERIES

CARBIDE, DREAM DRILLS - FLAT BOTTOM with COOLANT HOLES

LONG

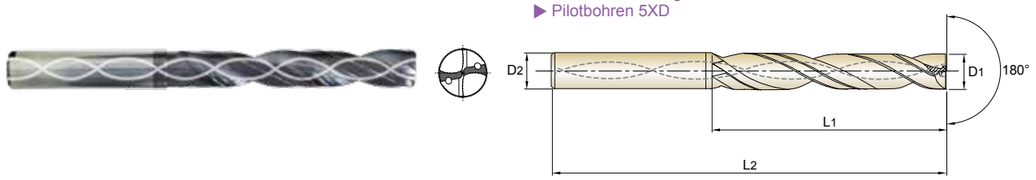
VHM, DREAM DRILLS - FLACHBOHRER *KURZ*

DREAM DRILLS - FOND PLAT, FORET CARBURE MONOBLOC *LONGUE*

PUNTE IN MD DREAM DRILLS, TESTA PIANA *LUNGA*

- 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.
- CARBIDE, DREAM DRILLS - FLAT BOTTOM with Coolant Holes
- Pilot Drilling for 5XD

- Für Bohrungen auf verschiedenen abgewinkelten Flächen.
- Der 180-Grad-Spitzenwinkel ermöglicht das Bohren von flachen, geneigten und gekrümmten Oberflächen.
- Optimierte Nutenform für hervorragende Spanabfuhr.
- Hochfeste Schneide zur Verbesserung der Standzeit und Vielseitigkeit beim Bohren.
- Für Durchgangsbohrungen, minimierter Grat am Ein- und Austritt beim Bohren von dünnen Blechen.
- VOLLHARTMETALL, DREAM DRILLS - 180°-Spitzenwinkel nit Kühlkanalbohrungen
- Pilotbohren 5XD



CARBIDE | 30° | h6 | h7 | 180° | 20 bar | P.117

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH450074	7.4	8	53	91
DH450075	7.5	8	53	91
DH450076	7.6	8	53	91
DH450077	7.7	8	53	91
DH450078	7.8	8	53	91
DH450079	7.9	8	53	91
DH450080	8.0	8	53	91
DH450081	8.1	10	61	103
DH450082	8.2	10	61	103
DH450083	8.3	10	61	103
DH450084	8.4	10	61	103
DH450085	8.5	10	61	103
DH450086	8.6	10	61	103
DH450087	8.7	10	61	103
DH450088	8.8	10	61	103
DH450089	8.9	10	61	103
DH450090	9.0	10	61	103
DH450091	9.1	10	61	103
DH450092	9.2	10	61	103
DH450093	9.3	10	61	103
DH450094	9.4	10	61	103
DH450095	9.5	10	61	103

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH450096	9.6	10	61	103
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
DH450150	15.0	16	83	133
DH450155	15.5	16	83	133
DH450160	16.0	16	83	133
DH450165	16.5	18	93	143

▶ Other diameters and shank types are available upon request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - FLAT BOTTOM

DH450 SERIES

CARBIDE, DREAM DRILLS - FLAT BOTTOM with COOLANT HOLES LONG

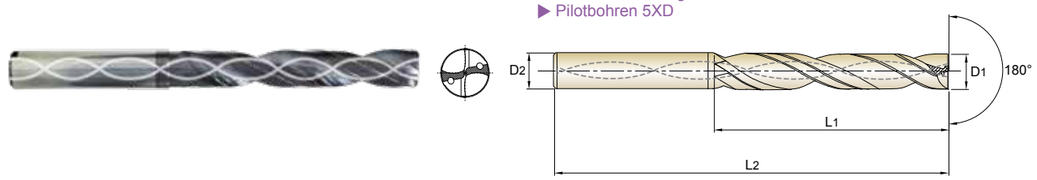
VHM, DREAM DRILLS - FLACHBOHRER KURZ

DREAM DRILLS - FOND PLAT, FORET CARBURE MONOBLOC LONGUE

PUNTE IN MD DREAM DRILLS, TESTA PIANA LUNGA

- For holes on various angled surfaces.
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- Für Durchgangsbohrungen, minimierter Grat am Ein- und Austritt beim Bohren von dünnen Blechen.
- VOLLHARTMETALL, DREAM DRILLS - 180°-Spitzenwinkel nit Kühlkanalbohrungen
- Pilotbohren 5XD



CARBIDE | 20° | h6 | h7 | 180° | P.117

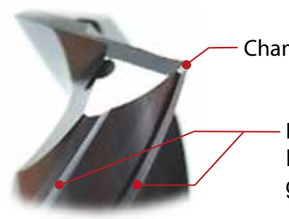
5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH450170	17.0	18	93	143
DH450175	17.5	18	93	143
DH450180	18.0	18	93	143
DH450185	18.5	20	101	153

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH450190	19.0	20	101	153
DH450195	19.5	20	101	153
DH450200	20.0	20	101	153

▶ Other diameters and shank types are available upon request.



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

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - FLAT BOTTOM

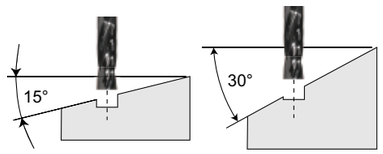
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DPP447 SERIES — without COOLANT HOLES (2XD)

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

ISO	VDI 3323	Material Description	Vc (m/min)	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
	2		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
	3		70	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
	4		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
	5		38	RPM	4030	3020	2420	2020	1510	1210	1010	760	600
				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
	6	Low alloy steel	45	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
	7		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
	8		38	RPM	4030	3020	2420	2020	1510	1210	1010	760	600
				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
	9		25	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
	10	High alloyed steel, and tool steel											
	11												
M	12	Stainless steel	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
	13												
	14												
K	15	Grey cast iron	70	RPM	7430	5570	4460	3710	2790	2230	1860	1390	1110
				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
	16		60	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
	17	Nodular cast iron											
	18												
	19	Malleable cast iron											
	20												
N	21	Aluminum-wrought alloy	165	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
	22		165	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
	23	Aluminum-cast, alloyed											
	24												
	25												
	26	Copper and Copper Alloys (Bronze / Brass)											
	27												
	28												
	29	Non Metallic Materials											
	30												
S	31	Heat Resistant Super Alloys											
	32												
	33												
	34												
	35												
	36	Titanium Alloys											
	37												
H	38	Hardened steel											
	39												
	40	Chilled Cast Iron											
	41	Hardened Cast Iron											

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



- ▶ The cutting conditions are for 2xD.
- ▶ A 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 tools. Side milling, traversing, helical milling are not usable.

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

DREAM DRILLS - FLAT BOTTOM

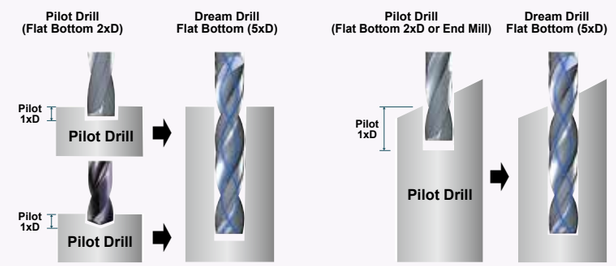
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DH450 SERIES — with COOLANT HOLES (5XD)

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

ISO	VDI 3323	Material Description	Vc (m/min)	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
	2		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
	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
	4		75	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	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
	6	Low alloy steel	85	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
	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
	8		75	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
	9		50	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
	10	High alloyed steel, and tool steel											
	11												
M	12	Stainless steel	60	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
	13												
	14												
K	15	Grey cast iron	90	RPM	9550	7160	5730	4770	3580	2860	2390	1790	1430
				FEED	0.02-0.05	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
	16		75	RPM	7960	5970	4770	3980	2980	2390	1990	1490	1190
				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
	17	Nodular cast iron											
	18												
	19	Malleable cast iron											
	20												
N	21	Aluminum-wrought alloy	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
	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
	23	Aluminum-cast, alloyed											
	24												
	25												
	26	Copper and Copper Alloys (Bronze / Brass)											
	27												
	28												
	29	Non Metallic Materials											
	30												
S	31	Heat Resistant Super Alloys											
	32												
	33												
	34												
	35												
	36	Titanium Alloys											
	37												
H	38	Hardened steel											
	39												
	40	Chilled Cast Iron											
	41	Hardened Cast Iron											

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

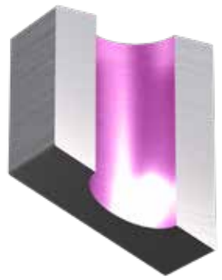
DREAM DRILLS - FLAT BOTTOM

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

VARIETY OF DRILLING
Arten von Bohrungen



Inclined Entry



Inclined Exit



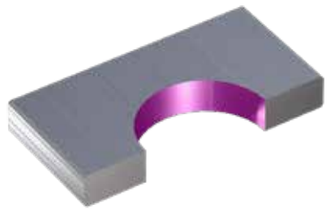
Counter Boring



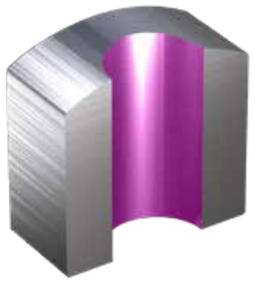
Guide Drilling



Cross Drilling



Thin Plate



Curved Surface



Chained Hole



Blind Hole for Threading

Leading Through Innovation



SOLID CARBIDE

DREAM DRILLS -INOX

DREAM DRILLS - INOX

- **For Tough Materials like Stainless Steels, Nickel Alloys and Titanium**
- **Für schwierig zerspanbare Materialien wie Edelstahl, Nickellegierungen und Titan.**

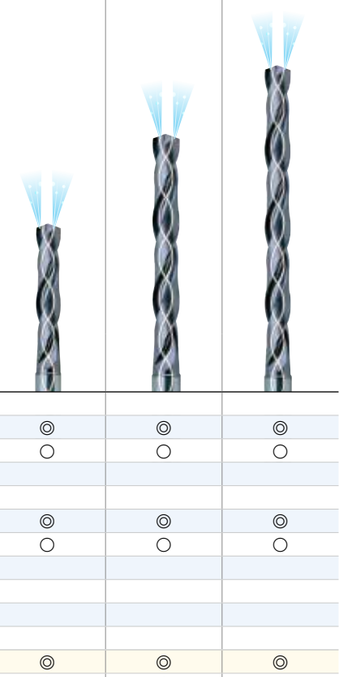
SELECTION GUIDE

HOLEMAKING TOOLS

SERIES	DH451	DH452	DH453
DRILLING DEPTH	3XD	5XD	8XD
LENGTH	SHORT	LONG	EXTRA LONG
SIZE MIN	D3.0	D1.0	D3.0
SIZE MAX	D20.0	D20.0	D14.0
PAGE	121	124	127
SURFACE TREATMENT	TiAlN		

SOLID CARBIDE DREAM DRILLS INOX

For Tough Materials like Stainless Steels, Nickel Alloys and Titanium



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.129

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	DH451	DH452	DH453
P	1	Non-alloy steel	About 0.15% C	Annealed	125				
	2		About 0.45% C	Annealed	190	13	◎	◎	◎
	3		About 0.45% C	Quenched & Tempered	250	25	○	○	○
	4		About 0.75% C	Annealed	270	28			
	5		About 0.75% C	Quenched & Tempered	300	32			
	6	Low alloy steel		Annealed	180	10	◎	◎	◎
	7			Quenched & Tempered	275	29	○	○	○
	8			Quenched & Tempered	300	32			
	9			Quenched & Tempered	350	38			
	10	High alloyed steel, and tool steel		Annealed	200	15			
	11			Quenched & Tempered	325	35			
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	◎	◎	◎
	13		Martensitic	Quenched & Tempered	240	23	◎	◎	◎
	14		Austenitic		180	10	◎	◎	◎
K	15	Grey cast iron	Pearlitic / ferritic		180	10			
	16		Pearlitic (Martensitic)		260	26			
	17	Nodular cast iron	Ferritic		160	3			
	18		Pearlitic		250	25			
	19	Malleable cast iron	Ferritic		130				
	20		Pearlitic		230	21			
N	21	Aluminum-wrought alloy	Not Curable		60		◎	◎	◎
	22		Curable	Hardened	100		◎	◎	◎
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		○	○	○
	24		≤ 12% Si, Curable	Hardened	90		○	○	○
	25		> 12% Si, Not Curable		130		○	○	○
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110				
	27		CuZn, CuSnZn (Brass)		90				
	28		CuSn, lead-free copper and electrolytic copper		100				
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic						
	30		Rubber, Wood, etc.						
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15			
	32			Cured	280	30			
	33		Ni or Co Based	Annealed	250	25			
	34			Cured	350	38			
	35			Cast	320	34			
	36	Titanium Alloys	Pure Titanium		400 Rm				
	37		Alpha + Beta Alloys	Hardened	1050 Rm		○	○	○
H	38	Hardened steel		Hardened	550	55			
	39			Hardened	630	60			
	40	Chilled Cast Iron		Cast	400	42			
	41	Hardened Cast Iron		Hardened	550	55			

DREAM DRILLS - INOX

DH451 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

SHORT

VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — KURZ

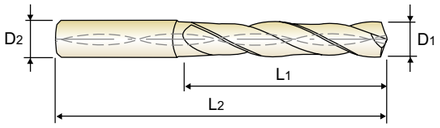
Forets DREAM DRILLS carbure pour INOX, avec arrosage central, série courte — COURTE

PUNTE ELICOIDALI IN MD, DREAM DRILLS - INOX (con fori di refrigerazione) — CORTA

- ▶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

- ▶ Spezielle Nutenform und Geometrie für die Bearbeitung von rostfreiem Stahl
- ▶ Hervorragende Spanabfuhr durch bessere Oberflächenbehandlung
- ▶ Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung
- ▶ TiAlN-Beschichtung für bessere Oberflächengüte der Bohrung und längere Standzeit





DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar

P.129-130

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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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
DH451058	5.8	6	28	66
DH451059	5.9	6	28	66
DH451060	6.0	6	28	66
DH451061	6.1	8	34	79
DH451062	6.2	8	34	79
DH451063	6.3	8	34	79
DH451064	6.4	8	34	79
DH451065	6.5	8	34	79
DH451066	6.6	8	34	79
DH451067	6.7	8	34	79
DH451068	6.8	8	34	79
DH451069	6.9	8	34	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
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended		◎	○			◎	○					◎	◎	◎						

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

DREAM DRILLS - INOX

DH451 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — SHORT

VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — KURZ
Forets DREAM DRILLS carbure pour INOX, avec arrosage central, série courte — COURTE
PUNTE ELICOIDALI IN MD, DREAM DRILLS - INOX (con fori di refrigerazione) — CORTA

- ▶Special flute shape and geometry suitable for machining stainless steel
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- ▶ Hervorragende Spanabfuhr durch bessere Oberflächenbehandlung
- ▶ Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung
- ▶ TiAlN-Beschichtung für bessere Oberflächengüte der Bohrung und längere Standzeit



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar

P.129-130

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH451070	7.0	8	34	79
DH451071	7.1	8	41	79
DH451072	7.2	8	41	79
DH451073	7.3	8	41	79
DH451074	7.4	8	41	79
DH451075	7.5	8	41	79
DH451076	7.6	8	41	79
DH451077	7.7	8	41	79
DH451078	7.8	8	41	79
DH451079	7.9	8	41	79
DH451080	8.0	8	41	79
DH451081	8.1	10	47	89
DH451082	8.2	10	47	89
DH451083	8.3	10	47	89
DH451084	8.4	10	47	89
DH451085	8.5	10	47	89
DH451086	8.6	10	47	89
DH451087	8.7	10	47	89
DH451088	8.8	10	47	89
DH451089	8.9	10	47	89

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH451090	9.0	10	47	89
DH451091	9.1	10	47	89
DH451092	9.2	10	47	89
DH451093	9.3	10	47	89
DH451094	9.4	10	47	89
DH451095	9.5	10	47	89
DH451096	9.6	10	47	89
DH451097	9.7	10	47	89
DH451098	9.8	10	47	89
DH451099	9.9	10	47	89
DH451100	10.0	10	47	89
DH451101	10.1	12	55	102
DH451102	10.2	12	55	102
DH451103	10.3	12	55	102
DH451104	10.4	12	55	102
DH451105	10.5	12	55	102
DH451106	10.6	12	55	102
DH451107	10.7	12	55	102
DH451108	10.8	12	55	102
DH451109	10.9	12	55	102

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - INOX

DH451 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — SHORT
VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — KURZ
Forets DREAM DRILLS carbure pour INOX, avec arrosage central, série courte — COURTE
PUNTE ELICOIDALI IN MD, DREAM DRILLS - INOX (con fori di refrigerazione) — CORTA

- ▶Special flute shape and geometry suitable for machining stainless steel
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- ▶ Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung
- ▶ TiAlN-Beschichtung für bessere Oberflächengüte der Bohrung und längere Standzeit



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar

P.129-130

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH451110	11.0	12	55	102
DH451111	11.1	12	55	102
DH451112	11.2	12	55	102
DH451113	11.3	12	55	102
DH451114	11.4	12	55	102
DH451115	11.5	12	55	102
DH451116	11.6	12	55	102
DH451117	11.7	12	55	102
DH451118	11.8	12	55	102
DH451119	11.9	12	55	102
DH451120	12.0	12	55	102
DH451125	12.5	14	60	107
DH451130	13.0	14	60	107
DH451135	13.5	14	60	107

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH451140	14.0	14	60	107
DH451145	14.5	16	65	115
DH451150	15.0	16	65	115
DH451155	15.5	16	65	115
DH451160	16.0	16	65	115
DH451165	16.5	18	73	123
DH451170	17.0	18	73	123
DH451175	17.5	18	73	123
DH451180	18.0	18	73	123
DH451185	18.5	20	79	131
DH451190	19.0	20	79	131
DH451195	19.5	20	79	131
DH451200	20.0	20	79	131

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - INOX

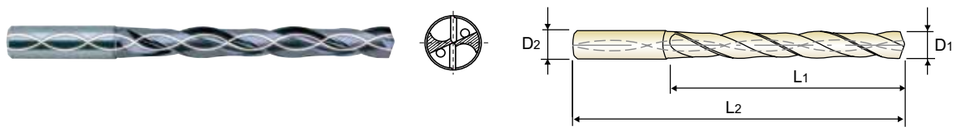
DH452 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — LONG

- VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — LANG
- Forets DREAM DRILLS carbure pour INOX, avec arrosage central, série longue — LONGUE
- PUNTE ELICOIDALI IN MD, DREAM DRILLS - INOX (con fori di refrigerazione) — LUNGA

- ▶Special flute shape and geometry suitable for machining stainless steel
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- ▶ TiAlN-Beschichtung für bessere Oberflächengüte der Bohrung und längere Standzeit



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar

P.129-130

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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
DH452038	3.8	6	36	74
DH452039	3.9	6	36	74
DH452040	4.0	6	36	74
DH452041	4.1	6	36	74
DH452042	4.2	6	36	74
DH452043	4.3	6	36	74
DH452044	4.4	6	36	74
DH452045	4.5	6	36	74
DH452046	4.6	6	36	74
DH452047	4.7	6	36	74
DH452048	4.8	6	44	82
DH452049	4.9	6	44	82
DH452050	5.0	6	44	82
DH452051	5.1	6	44	82
DH452052	5.2	6	44	82
DH452053	5.3	6	44	82

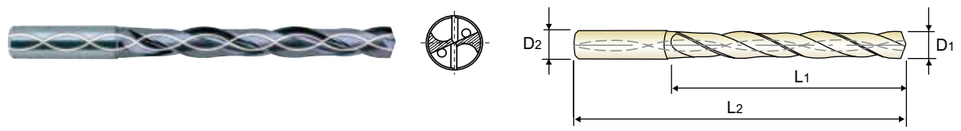
▶ Other shank types are available on your request.
▶ NEXT PAGE

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

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

DREAM DRILLS - INOX
DH452 SERIES
CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — LONG
VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — LANG
Forets DREAM DRILLS carbure pour INOX, avec arrosage central, série longue — LONGUE
PUNTE ELICOIDALI IN MD, DREAM DRILLS - INOX (con fori di refrigerazione) — LUNGA
▶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
▶ Spezielle Nutenform und Geometrie für die Bearbeitung von rostfreiem Stahl
▶ Hervorragende Spanabfuhr durch bessere Oberflächenbehandlung
▶ Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung
▶ TiAlN-Beschichtung für bessere Oberflächengüte der Bohrung und längere Standzeit



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar
P.129-130
5 × D
Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH452054	5.4	6	44	82
DH452055	5.5	6	44	82
DH452056	5.6	6	44	82
DH452057	5.7	6	44	82
DH452058	5.8	6	44	82
DH452059	5.9	6	44	82
DH452060	6.0	6	44	82
DH452061	6.1	8	53	91
DH452062	6.2	8	53	91
DH452063	6.3	8	53	91
DH452064	6.4	8	53	91
DH452065	6.5	8	53	91
DH452066	6.6	8	53	91
DH452067	6.7	8	53	91
DH452068	6.8	8	53	91
DH452069	6.9	8	53	91
DH452070	7.0	8	53	91
DH452071	7.1	8	53	91
DH452072	7.2	8	53	91
DH452073	7.3	8	53	91
DH452074	7.4	8	53	91
DH452075	7.5	8	53	91

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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
DH452094	9.4	10	61	103
DH452095	9.5	10	61	103
DH452096	9.6	10	61	103
DH452097	9.7	10	61	103

▶ Other shank types are available on your request.
▶ NEXT PAGE
◎ : Excellent ○ : Good

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

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

DREAM DRILLS - INOX

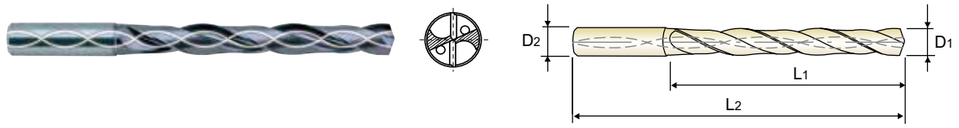
DH452 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — LONG

- VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — LANG
- Forets DREAM DRILLS carbure pour INOX, avec arrosage central, série longue — LONGUE
- PUNTE ELICOIDALI IN MD, DREAM DRILLS - INOX (con fori di refrigerazione) — LUNGA

- ▶Special flute shape and geometry suitable for machining stainless steel
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- ▶ Spezielle Nutenform und Geometrie für die Bearbeitung von rostfreiem Stahl
- ▶ Hervorragende Spanabfuhr durch bessere Oberflächenbehandlung
- ▶ Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung
- ▶ TiAlN-Beschichtung für bessere Oberflächengüte der Bohrung und längere Standzeit



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar

P.129-130

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH452098	9.8	10	61	103
DH452099	9.9	10	61	103
DH452100	10.0	10	61	103
DH452101	10.1	12	71	118
DH452102	10.2	12	71	118
DH452103	10.3	12	71	118
DH452104	10.4	12	71	118
DH452105	10.5	12	71	118
DH452106	10.6	12	71	118
DH452107	10.7	12	71	118
DH452108	10.8	12	71	118
DH452109	10.9	12	71	118
DH452110	11.0	12	71	118
DH452111	11.1	12	71	118
DH452112	11.2	12	71	118
DH452113	11.3	12	71	118
DH452114	11.4	12	71	118
DH452115	11.5	12	71	118
DH452116	11.6	12	71	118
DH452117	11.7	12	71	118

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH452118	11.8	12	71	118
DH452119	11.9	12	71	118
DH452120	12.0	12	71	118
DH452125	12.5	14	77	124
DH452130	13.0	14	77	124
DH452135	13.5	14	77	124
DH452140	14.0	14	77	124
DH452145	14.5	16	83	133
DH452150	15.0	16	83	133
DH452155	15.5	16	83	133
DH452160	16.0	16	83	133
DH452165	16.5	18	93	143
DH452170	17.0	18	93	143
DH452175	17.5	18	93	143
DH452180	18.0	18	93	143
DH452185	18.5	20	101	153
DH452190	19.0	20	101	153
DH452195	19.5	20	101	153
DH452200	20.0	20	101	153

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - INOX

DH453 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — EXTRA LONG

- VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — ÜBERLANG
- Forets DREAM DRILLS carbure pour INOX, avec arrosage central, série extra-longue — EXTRA-LONGUE
- PUNTE ELICOIDALI IN MD, DREAM DRILLS - INOX (con fori di refrigerazione) — EXTRA LUNGA

- ▶Special flute shape and geometry suitable for machining stainless steel
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- ▶TiAlN coating for better surface finishes and longer tool life

- ▶ Spezielle Nutenform und Geometrie für die Bearbeitung von rostfreiem Stahl
- ▶ Hervorragende Spanabfuhr durch bessere Oberflächenbehandlung
- ▶ Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung
- ▶ TiAlN-Beschichtung für bessere Oberflächengüte der Bohrung und längere Standzeit



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar

P.129-130

8 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH453030	3.0	6	34	72
DH453031	3.1	6	34	72
DH453032	3.2	6	34	72
DH453033	3.3	6	34	72
DH453034	3.4	6	34	72
DH453035	3.5	6	34	72
DH453036	3.6	6	34	72
DH453037	3.7	6	34	72
DH453038	3.8	6	43	81
DH453039	3.9	6	43	81
DH453040	4.0	6	43	81
DH453041	4.1	6	43	81
DH453042	4.2	6	43	81
DH453043	4.3	6	43	81
DH453044	4.4	6	43	81
DH453045	4.5	6	43	81
DH453046	4.6	6	43	81
DH453047	4.7	6	43	81
DH453048	4.8	6	57	95
DH453049	4.9	6	57	95
DH453050	5.0	6	57	95
DH453051	5.1	6	57	95
DH453052	5.2	6	57	95
DH453053	5.3	6	57	95

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH453054	5.4	6	57	95
DH453055	5.5	6	57	95
DH453056	5.6	6	57	95
DH453057	5.7	6	57	95
DH453058	5.8	6	57	95
DH453059	5.9	6	57	95
DH453060	6.0	6	57	95
DH453061	6.1	8	76	114
DH453062	6.2	8	76	114
DH453063	6.3	8	76	114
DH453064	6.4	8	76	114
DH453065	6.5	8	76	114
DH453066	6.6	8	76	114
DH453067	6.7	8	76	114
DH453068	6.8	8	76	114
DH453069	6.9	8	76	114
DH453070	7.0	8	76	114
DH453071	7.1	8	76	114
DH453072	7.2	8	76	114
DH453073	7.3	8	76	114
DH453074	7.4	8	76	114
DH453075	7.5	8	76	114
DH453076	7.6	8	76	114
DH453077	7.7	8	76	114

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - INOX

DH453 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

EXTRA LONG

VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — *ÜBERLANG*

Forets DREAM DRILLS carbure pour INOX, avec arrosage central, série extra-longue — *EXTRA-LONGUE*

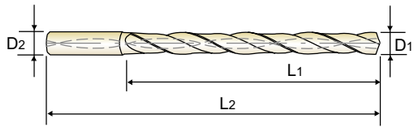
PUNTE ELICOIDALI IN MD, DREAM DRILLS - INOX (con fori di refrigerazione) — *EXTRA LUNGA*

- ▶Special flute shape and geometry suitable for machining stainless steel
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- ▶ Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung
- ▶ TiAlN-Beschichtung für bessere Oberflächengüte der Bohrung und längere Standzeit







DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar

P.129-130

8 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH453078	7.8	8	76	114
DH453079	7.9	8	76	114
DH453080	8.0	8	76	114
DH453081	8.1	10	95	142
DH453082	8.2	10	95	142
DH453083	8.3	10	95	142
DH453084	8.4	10	95	142
DH453085	8.5	10	95	142
DH453086	8.6	10	95	142
DH453087	8.7	10	95	142
DH453088	8.8	10	95	142
DH453089	8.9	10	95	142
DH453090	9.0	10	95	142
DH453091	9.1	10	95	142
DH453092	9.2	10	95	142
DH453093	9.3	10	95	142
DH453094	9.4	10	95	142
DH453095	9.5	10	95	142
DH453096	9.6	10	95	142
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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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
DH453114	11.4	12	114	162
DH453115	11.5	12	114	162
DH453116	11.6	12	114	162
DH453117	11.7	12	114	162
DH453118	11.8	12	114	162
DH453119	11.9	12	114	162
DH453120	12.0	12	114	162
DH453125	12.5	14	133	178
DH453130	13.0	14	133	178
DH453135	13.5	14	133	178
DH453140	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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended		◎	○			◎	○					◎	◎	◎						

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

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

DREAM DRILLS - INOX

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DH451, DH452, DH453 SERIES with COOLANT HOLES

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 1.0	2.0	Vc (m/min)	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0
P	1	Non-alloy steel										
	2		70	RPM FEED	22280 0.02-0.04	11140 0.04-0.06	100	RPM FEED	10610 0.04-0.10	7960 0.06-0.12	6370 0.12-0.18	5310 0.14-0.20
	3		70	RPM FEED	22280 0.02-0.04	11140 0.04-0.06	100	RPM FEED	10610 0.04-0.10	7960 0.06-0.12	6370 0.12-0.18	5310 0.14-0.20
	4											
	5											
	6	Low alloy steel	70	RPM FEED	22280 0.02-0.04	11140 0.04-0.06	100	RPM FEED	10610 0.04-0.10	7960 0.06-0.12	6370 0.12-0.18	5310 0.14-0.20
	7		50	RPM FEED	15920 0.02-0.04	7960 0.04-0.06	70	RPM FEED	7430 0.04-0.10	5570 0.06-0.12	4460 0.12-0.18	3710 0.14-0.20
	8											
	9											
	10	High alloyed steel, and tool steel										
	11											
M	12	Stainless steel	40	RPM FEED	12730 0.02-0.04	6370 0.02-0.04	50	RPM FEED	5310 0.03-0.05	3980 0.05-0.09	3180 0.07-0.11	2650 0.09-0.13
	13		25	RPM FEED	7960 0.02-0.04	3980 0.02-0.04	40	RPM FEED	4240 0.03-0.05	3180 0.05-0.09	2550 0.07-0.11	2120 0.09-0.13
	14		45	RPM FEED	14320 0.02-0.04	7160 0.02-0.04	60	RPM FEED	6370 0.04-0.06	4770 0.06-0.10	3820 0.08-0.12	3180 0.10-0.14
K	15	Grey cast iron										
	16											
	17	Nodular cast iron										
	18											
	19	Malleable cast iron										
	20											
N	21	Aluminum-wrought alloy	130	RPM FEED	41380 0.04-0.10	20690 0.08-0.14	180	RPM FEED	19100 0.14-0.20	14320 0.19-0.25	11460 0.20-0.26	9550 0.22-0.28
	22		130	RPM FEED	41380 0.04-0.10	20690 0.08-0.14	180	RPM FEED	19100 0.14-0.20	14320 0.19-0.25	11460 0.20-0.26	9550 0.22-0.28
	23	Aluminum-cast, alloyed	110	RPM FEED	35010 0.04-0.10	17510 0.08-0.14	160	RPM FEED	16980 0.14-0.20	12730 0.19-0.25	10190 0.20-0.26	8490 0.22-0.28
	24		110	RPM FEED	35010 0.04-0.10	17510 0.08-0.14	160	RPM FEED	16980 0.14-0.20	12730 0.19-0.25	10190 0.20-0.26	8490 0.22-0.28
	25		90	RPM FEED	28650 0.04-0.08	14320 0.06-0.10	130	RPM FEED	13790 0.12-0.18	10350 0.16-0.22	8280 0.17-0.23	6900 0.19-0.25
	26	Copper and Copper Alloys (Bronze / Brass)										
	27											
	28											
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys										
	32											
	33											
	34											
	35											
	36	Titanium Alloys										
	37		25	RPM FEED	7960 0.01-0.03	3980 0.01-0.03	40	RPM FEED	4240 0.02-0.04	3180 0.04-0.08	2550 0.06-0.10	2120 0.08-0.12
H	38	Hardened steel										
	39											
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										

▶ Recommend to reduce the feed rate as following

Feed 100% : DH451(3xD), DH452(5xD) **Feed 85%** : DH453(8xD)

▶ NEXT PAGE

DREAM DRILLS - INOX

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DH451, DH452, DH453 SERIES with COOLANT HOLES

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	1	Non-alloy steel									
	2		100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.16-0.22	0.20-0.26	0.18-0.28	0.20-0.30	0.22-0.32	0.26-0.36	0.28-0.38
	3		100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.16-0.22	0.20-0.26	0.18-0.28	0.20-0.30	0.22-0.32	0.26-0.36	0.28-0.38
	4										
	5										
	6	Low alloy steel	100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.16-0.22	0.20-0.26	0.18-0.28	0.20-0.30	0.22-0.32	0.26-0.36	0.28-0.38
	7		70	RPM	2790	2230	1860	1590	1390	1240	1110
				FEED	0.16-0.22	0.20-0.26	0.18-0.28	0.20-0.30	0.22-0.32	0.26-0.36	0.28-0.38
	8										
	9										
	10	High alloyed steel, and tool steel									
	11										
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
K	15	Grey cast iron									
	16										
	17	Nodular cast iron									
	18										
	19	Malleable cast iron									
	20										
N	21	Aluminum-wrought alloy	180	RPM	7160	5730	4770	4090	3580	3180	2860
				FEED	0.24-0.30	0.29-0.35	0.29-0.35	0.30-0.40	0.30-0.40	0.33-0.43	0.35-0.45
	22		180	RPM	7160	5730	4770	4090	3580	3180	2860
				FEED	0.24-0.30	0.29-0.35	0.29-0.35	0.30-0.40	0.30-0.40	0.33-0.43	0.35-0.45
	23	Aluminum-cast, alloyed	160	RPM	6370	5090	4240	3640	3180	2830	2550
				FEED	0.24-0.30	0.29-0.35	0.29-0.35	0.30-0.40	0.30-0.40	0.33-0.43	0.35-0.45
	24		160	RPM	6370	5090	4240	3640	3180	2830	2550
				FEED	0.24-0.30	0.29-0.35	0.29-0.35	0.30-0.40	0.30-0.40	0.33-0.43	0.35-0.45
	25		130	RPM	5170	4140	3450	2960	2590	2300	2070
				FEED	0.22-0.28	0.24-0.30	0.24-0.30	0.25-0.35	0.25-0.35	0.28-0.38	0.30-0.40
	26	Copper and Copper Alloys (Bronze / Brass)									
	27										
	28										
	29	Non Metallic Materials									
	30										
S	31	Heat Resistant Super Alloys									
	32										
	33										
	34										
	35										
	36	Titanium Alloys									
	37		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
H	38	Hardened steel									
	39										
	40	Chilled Cast Iron									
	41	Hardened Cast Iron									

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



DREAM DRILLS -ALU

DREAM DRILLS - ALU

- For Aluminum and Aluminum Alloys
- Für Aluminium und Aluminiumlegierungen

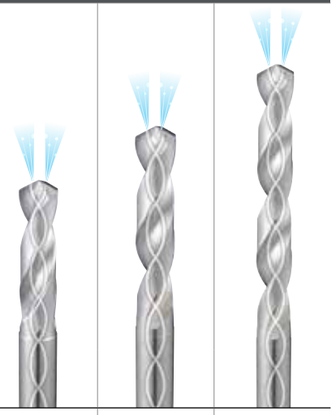
SELECTION GUIDE

HOLEMAKING TOOLS

SERIES	D5432	D5433	D5434
DRILLING DEPTH	3XD	5XD	8XD
LENGTH	SHORT	LONG	EXTRA LONG
SIZE MIN	D3.0	D3.0	D3.0
SIZE MAX	D20.0	D20.0	D14.0
PAGE	133	136	139
SURFACE TREATMENT	Bright		

SOLID CARBIDE DREAM DRILLS ALU

For Aluminum and Aluminum Alloys



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.141

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	D5432	D5433	D5434
P	1	Non-alloy steel	About 0.15% C	Annealed	125				
	2		About 0.45% C	Annealed	190	13			
	3		About 0.45% C	Quenched & Tempered	250	25			
	4		About 0.75% C	Annealed	270	28			
	5		About 0.75% C	Quenched & Tempered	300	32			
	6	Low alloy steel		Annealed	180	10			
	7			Quenched & Tempered	275	29			
	8			Quenched & Tempered	300	32			
	9			Quenched & Tempered	350	38			
	10	High alloyed steel, and tool steel		Annealed	200	15			
	11			Quenched & Tempered	325	35			
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15			
	13		Martensitic	Quenched & Tempered	240	23			
	14		Austenitic		180	10			
K	15	Grey cast iron	Pearlitic / ferritic		180	10			
	16		Pearlitic (Martensitic)		260	26			
	17	Nodular cast iron	Ferritic		160	3			
	18		Pearlitic		250	25			
	19	Malleable cast iron	Ferritic		130				
	20		Pearlitic		230	21			
N	21	Aluminum-wrought alloy	Not Curable		60		◎	◎	◎
	22		Curable	Hardened	100		◎	◎	◎
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		◎	◎	◎
	24		≤ 12% Si, Curable	Hardened	90		◎	◎	◎
	25		> 12% Si, Not Curable		130				
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110				
	27		CuZn, CuSnZn (Brass)		90				
	28		CuSn, lead-free copper and electrolytic copper		100				
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic						
	30		Rubber, Wood, etc.						
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15			
	32			Cured	280	30			
	33		Ni or Co Based	Annealed	250	25			
	34			Cured	350	38			
	35			Cast	320	34			
	36	Titanium Alloys	Pure Titanium		400 Rm				
	37		Alpha + Beta Alloys	Hardened	1050 Rm				
H	38	Hardened steel		Hardened	550	55			
	39			Hardened	630	60			
	40	Chilled Cast Iron		Cast	400	42			
	41	Hardened Cast Iron		Hardened	550	55			

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

DREAM DRILLS - ALU

D5432 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

SHORT
KURZ
COURTE
CORTA

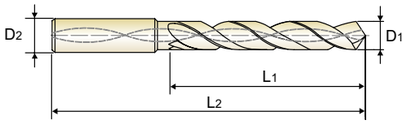
- VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL
- Forets DREAM DRILLS carbure pour ALU, avec arrosage central, série courte
- PUNTE ELICOIDALI IN MD, DREAM DRILLS - ALU (con fori di refrigerazione)

- ▶ Optimized thining 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

- ▶ Optimierte Ausspitzung für Aluminum & Aluminumlegierungen zur Vermeidung von Verstopfungen durch das Aufschweißen der Späne
- ▶ Breitere und tiefere Spannuten für maximale Spanabfuhr
- ▶ Spezielle Geometrie und glatte Beschichtung reduzieren Aufbauschneidenbildung und verbessern die Oberflächen







DIN 6537 | CARBIDE | 30° | h6 | m7 | 118° | 20 bar

P.141

3 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5432030	3.0	6	20	62
D5432031	3.1	6	20	62
D5432032	3.2	6	20	62
D5432033	3.3	6	20	62
D5432034	3.4	6	20	62
D5432035	3.5	6	20	62
D5432036	3.6	6	20	62
D5432037	3.7	6	20	62
D5432038	3.8	6	24	66
D5432039	3.9	6	24	66
D5432040	4.0	6	24	66
D5432041	4.1	6	24	66
D5432042	4.2	6	24	66
D5432043	4.3	6	24	66
D5432044	4.4	6	24	66
D5432045	4.5	6	24	66
D5432046	4.6	6	24	66
D5432047	4.7	6	24	66
D5432048	4.8	6	28	66
D5432049	4.9	6	28	66
D5432050	5.0	6	28	66
D5432051	5.1	6	28	66

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5432052	5.2	6	28	66
D5432053	5.3	6	28	66
D5432054	5.4	6	28	66
D5432055	5.5	6	28	66
D5432056	5.6	6	28	66
D5432057	5.7	6	28	66
D5432058	5.8	6	28	66
D5432059	5.9	6	28	66
D5432060	6.0	6	28	66
D5432061	6.1	8	34	79
D5432062	6.2	8	34	79
D5432063	6.3	8	34	79
D5432064	6.4	8	34	79
D5432065	6.5	8	34	79
D5432066	6.6	8	34	79
D5432067	6.7	8	34	79
D5432068	6.8	8	34	79
D5432069	6.9	8	34	79
D5432070	7.0	8	34	79
D5432071	7.1	8	41	79
D5432072	7.2	8	41	79
D5432073	7.3	8	41	79

- ▶ DLC coating is available on your request.
- ▶ 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended																				

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

DREAM DRILLS - ALU

D5432 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

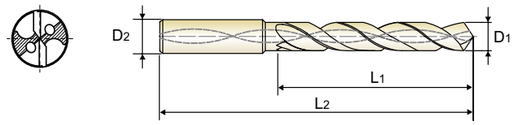
SHORT

- VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL — *KURZ*
- Forets DREAM DRILLS carbure pour ALU, avec arrosage central, série courte — *COURTE*
- PUNTE ELICOIDALI IN MD, DREAM DRILLS - ALU (con fori di refrigerazione) — *CORTA*

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DIN 6537 | CARBIDE | 30° | h6 | m7 | 118° | 20 bar | P.141

3 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5432074	7.4	8	41	79
D5432075	7.5	8	41	79
D5432076	7.6	8	41	79
D5432077	7.7	8	41	79
D5432078	7.8	8	41	79
D5432079	7.9	8	41	79
D5432080	8.0	8	41	79
D5432081	8.1	10	47	89
D5432082	8.2	10	47	89
D5432083	8.3	10	47	89
D5432084	8.4	10	47	89
D5432085	8.5	10	47	89
D5432086	8.6	10	47	89
D5432087	8.7	10	47	89
D5432088	8.8	10	47	89
D5432089	8.9	10	47	89
D5432090	9.0	10	47	89
D5432091	9.1	10	47	89
D5432092	9.2	10	47	89
D5432093	9.3	10	47	89
D5432094	9.4	10	47	89
D5432095	9.5	10	47	89

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5432096	9.6	10	47	89
D5432097	9.7	10	47	89
D5432098	9.8	10	47	89
D5432099	9.9	10	47	89
D5432100	10.0	10	47	89
D5432101	10.1	12	55	102
D5432102	10.2	12	55	102
D5432103	10.3	12	55	102
D5432104	10.4	12	55	102
D5432105	10.5	12	55	102
D5432106	10.6	12	55	102
D5432107	10.7	12	55	102
D5432108	10.8	12	55	102
D5432109	10.9	12	55	102
D5432110	11.0	12	55	102
D5432111	11.1	12	55	102
D5432112	11.2	12	55	102
D5432113	11.3	12	55	102
D5432114	11.4	12	55	102
D5432115	11.5	12	55	102
D5432116	11.6	12	55	102
D5432117	11.7	12	55	102

▶ DLC coating is available on your request.
▶ 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended																				

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

DREAM DRILLS - ALU

D5432 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

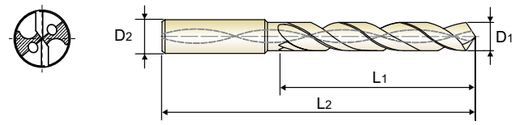
SHORT

VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL — KURZ
Forets DREAM DRILLS carbure pour ALU, avec arrosage central, série courte — COURTE
PUNTE ELICOIDALI IN MD, DREAM DRILLS - ALU (con fori di refrigerazione) — CORTA

▶ Optimized thining for Aluminum & Aluminum Alloys to prevent any clogging from chip welding
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DIN 6537 | CARBIDE | 30° | h6 | m7 | 118° | 20 bar | P.141

3 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5432118	11.8	12	55	102
D5432119	11.9	12	55	102
D5432120	12.0	12	55	102
D5432125	12.5	14	60	107
D5432130	13.0	14	60	107
D5432135	13.5	14	60	107
D5432140	14.0	14	60	107
D5432145	14.5	16	65	115
D5432150	15.0	16	65	115
D5432155	15.5	16	65	115

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5432160	16.0	16	65	115
D5432165	16.5	18	73	123
D5432170	17.0	18	73	123
D5432175	17.5	18	73	123
D5432180	18.0	18	73	123
D5432185	18.5	20	79	131
D5432190	19.0	20	79	131
D5432195	19.5	20	79	131
D5432200	20.0	20	79	131

▶ DLC coating is available on your request.
▶ 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended																				

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

DREAM DRILLS - ALU

D5433 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

LONG

VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL — *LANG*

Forets DREAM DRILLS carbure pour ALU, avec arrosage central, série longue — *LONGUE*

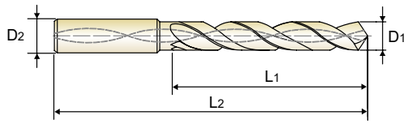
PUNTE ELICOIDALI IN MD, DREAM DRILLS - ALU (CON FORI DI REFRIGERAZIONE) — *LUNGA*

- ▶ Optimized thining 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

- ▶ Optimierte Ausspitzung für Aluminum & Aluminumlegierungen zur Vermeidung von Verstopfungen durch das Aufschweißen der Späne
- ▶ Breitere und tiefere Spannuten für maximale Spanabfuhr
- ▶ Spezielle Geometrie und glatte Beschichtung reduzieren Aufbauschneidenbildung und verbessern die Oberflächen







DIN 6537 | CARBIDE | 30° | h6 | m7 | 118° | 20 bar | P.141

5 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5433030	3.0	6	28	66
D5433031	3.1	6	28	66
D5433032	3.2	6	28	66
D5433033	3.3	6	28	66
D5433034	3.4	6	28	66
D5433035	3.5	6	28	66
D5433036	3.6	6	28	66
D5433037	3.7	6	28	66
D5433038	3.8	6	36	74
D5433039	3.9	6	36	74
D5433040	4.0	6	36	74
D5433041	4.1	6	36	74
D5433042	4.2	6	36	74
D5433043	4.3	6	36	74
D5433044	4.4	6	36	74
D5433045	4.5	6	36	74
D5433046	4.6	6	36	74
D5433047	4.7	6	36	74
D5433048	4.8	6	44	82
D5433049	4.9	6	44	82
D5433050	5.0	6	44	82
D5433051	5.1	6	44	82

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5433052	5.2	6	44	82
D5433053	5.3	6	44	82
D5433054	5.4	6	44	82
D5433055	5.5	6	44	82
D5433056	5.6	6	44	82
D5433057	5.7	6	44	82
D5433058	5.8	6	44	82
D5433059	5.9	6	44	82
D5433060	6.0	6	44	82
D5433061	6.1	8	53	91
D5433062	6.2	8	53	91
D5433063	6.3	8	53	91
D5433064	6.4	8	53	91
D5433065	6.5	8	53	91
D5433066	6.6	8	53	91
D5433067	6.7	8	53	91
D5433068	6.8	8	53	91
D5433069	6.9	8	53	91
D5433070	7.0	8	53	91
D5433071	7.1	8	53	91
D5433072	7.2	8	53	91
D5433073	7.3	8	53	91

▶ NEXT PAGE

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

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - ALU

D5433 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

LONG

VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL — LANG

Forets DREAM DRILLS carbure pour ALU, avec arrosage central, série longue — LONGUE

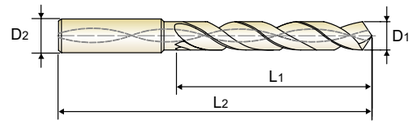
PUNTE ELICOIDALI IN MD, DREAM DRILLS - ALU (CON FORI DI REFRIGERAZIONE) — LUNGA

- ▶ Optimized thining for Aluminum & Aluminum Alloys to prevent any clogging from chip welding
- ▶ Wider and deeper flute gullets for maximum chip removal
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- ▶ Optimierte Ausspitzung für Aluminum & Aluminumlegierungen zur Vermeidung von Verstopfungen durch das Aufschweißen der Späne
- ▶ Breitere und tiefere Spannuten für maximale Spanabfuhr
- ▶ Spezielle Geometrie und glatte Beschichtung reduzieren Aufbauschneidenbildung und verbessern die Oberflächen







DIN 6537 | CARBIDE | 30° | h6 | m7 | 118° | 20 bar | P.141

5 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5433074	7.4	8	53	91
D5433075	7.5	8	53	91
D5433076	7.6	8	53	91
D5433077	7.7	8	53	91
D5433078	7.8	8	53	91
D5433079	7.9	8	53	91
D5433080	8.0	8	53	91
D5433081	8.1	10	61	103
D5433082	8.2	10	61	103
D5433083	8.3	10	61	103
D5433084	8.4	10	61	103
D5433085	8.5	10	61	103
D5433086	8.6	10	61	103
D5433087	8.7	10	61	103
D5433088	8.8	10	61	103
D5433089	8.9	10	61	103
D5433090	9.0	10	61	103
D5433091	9.1	10	61	103
D5433092	9.2	10	61	103
D5433093	9.3	10	61	103
D5433094	9.4	10	61	103
D5433095	9.5	10	61	103

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5433096	9.6	10	61	103
D5433097	9.7	10	61	103
D5433098	9.8	10	61	103
D5433099	9.9	10	61	103
D5433100	10.0	10	61	103
D5433101	10.1	12	71	118
D5433102	10.2	12	71	118
D5433103	10.3	12	71	118
D5433104	10.4	12	71	118
D5433105	10.5	12	71	118
D5433106	10.6	12	71	118
D5433107	10.7	12	71	118
D5433108	10.8	12	71	118
D5433109	10.9	12	71	118
D5433110	11.0	12	71	118
D5433111	11.1	12	71	118
D5433112	11.2	12	71	118
D5433113	11.3	12	71	118
D5433114	11.4	12	71	118
D5433115	11.5	12	71	118
D5433116	11.6	12	71	118
D5433117	11.7	12	71	118

▶ NEXT PAGE

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

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - ALU

D5433 SERIES

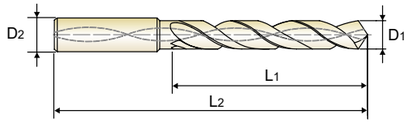
CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES — LONG

- VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL — LANG
- Forets DREAM DRILLS carbure pour ALU, avec arrosage central, série longue — LONGUE
- PUNTE ELICOIDALI IN MD, DREAM DRILLS - ALU (CON FORI DI REFRIGERAZIONE) — LUNGA

- ▶ Optimized thining for Aluminum & Aluminum Alloys to prevent any clogging from chip welding
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- ▶ Breitere und tiefere Spannuten für maximale Spanabfuhr
- ▶ Spezielle Geometrie und glatte Beschichtung reduzieren Aufbauschneidenbildung und verbessern die Oberflächen





DIN 6537 | CARBIDE | 30° | h6 | m7 | 118° | 20 bar | P.141

5 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5433118	11.8	12	71	118
D5433119	11.9	12	71	118
D5433120	12.0	12	71	118
D5433125	12.5	14	77	124
D5433130	13.0	14	77	124
D5433135	13.5	14	77	124
D5433140	14.0	14	77	124
D5433145	14.5	16	83	133
D5433150	15.0	16	83	133
D5433155	15.5	16	83	133

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5433160	16.0	16	83	133
D5433165	16.5	18	93	143
D5433170	17.0	18	93	143
D5433175	17.5	18	93	143
D5433180	18.0	18	93	143
D5433185	18.5	20	101	153
D5433190	19.0	20	101	153
D5433195	19.5	20	101	153
D5433200	20.0	20	101	153

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

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - ALU

D5434 SERIES

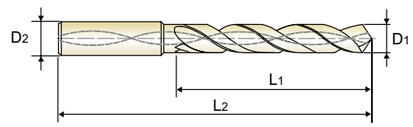
CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES — EXTRA LONG

- VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL — ÜBERLANG
- Forets DREAM DRILLS carbure pour ALU, avec arrosage central, série extra-longue — EXTRA-LONGUE
- PUNTE ELICOIDALI IN MD, DREAM DRILLS - ALU (con fori di refrigerazione) — EXTRA LUNGA

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- ▶ Spezielle Geometrie und glatte Beschichtung reduzieren Aufbauschneidenbildung und verbessern die Oberflächen





DIN 6537 | CARBIDE | 30° | h6 | m7 | 118° | 20 bar | P.141

8 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5434030	3.0	6	34	72
D5434031	3.1	6	34	72
D5434032	3.2	6	34	72
D5434033	3.3	6	34	72
D5434034	3.4	6	34	72
D5434035	3.5	6	34	72
D5434036	3.6	6	34	72
D5434037	3.7	6	34	72
D5434038	3.8	6	43	81
D5434039	3.9	6	43	81
D5434040	4.0	6	43	81
D5434041	4.1	6	43	81
D5434042	4.2	6	43	81
D5434043	4.3	6	43	81
D5434044	4.4	6	43	81
D5434045	4.5	6	43	81
D5434046	4.6	6	43	81
D5434047	4.7	6	43	81
D5434048	4.8	6	57	95
D5434049	4.9	6	57	95
D5434050	5.0	6	57	95
D5434051	5.1	6	57	95
D5434052	5.2	6	57	95
D5434053	5.3	6	57	95

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5434054	5.4	6	57	95
D5434055	5.5	6	57	95
D5434056	5.6	6	57	95
D5434057	5.7	6	57	95
D5434058	5.8	6	57	95
D5434059	5.9	6	57	95
D5434060	6.0	6	57	95
D5434061	6.1	8	76	114
D5434062	6.2	8	76	114
D5434063	6.3	8	76	114
D5434064	6.4	8	76	114
D5434065	6.5	8	76	114
D5434066	6.6	8	76	114
D5434067	6.7	8	76	114
D5434068	6.8	8	76	114
D5434069	6.9	8	76	114
D5434070	7.0	8	76	114
D5434071	7.1	8	76	114
D5434072	7.2	8	76	114
D5434073	7.3	8	76	114
D5434074	7.4	8	76	114
D5434075	7.5	8	76	114
D5434076	7.6	8	76	114
D5434077	7.7	8	76	114

- ▶ DLC coating is available on your request.
- ▶ 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended																				

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

DREAM DRILLS - ALU

D5434 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

EXTRA LONG

VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL
Forets DREAM DRILLS carbure pour ALU, avec arrosage central, série extra-longue
PUNTE ELICOIDALI IN MD, DREAM DRILLS - ALU (con fori di refrigerazione)

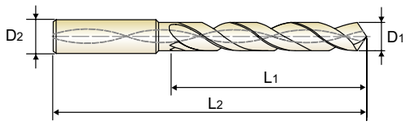
ÜBERLANG
EXTRA-LONGUE
EXTRA LUNGA

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- ▶ Spezielle Geometrie und glatte Beschichtung reduzieren Aufbauschneidenbildung und verbessern die Oberflächen







DIN 6537 | CARBIDE | 30° | h6 | m7 | 118° | 20 bar | P.141

8 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5434078	7.8	8	76	114
D5434079	7.9	8	76	114
D5434080	8.0	8	76	114
D5434081	8.1	10	95	142
D5434082	8.2	10	95	142
D5434083	8.3	10	95	142
D5434084	8.4	10	95	142
D5434085	8.5	10	95	142
D5434086	8.6	10	95	142
D5434087	8.7	10	95	142
D5434088	8.8	10	95	142
D5434089	8.9	10	95	142
D5434090	9.0	10	95	142
D5434091	9.1	10	95	142
D5434092	9.2	10	95	142
D5434093	9.3	10	95	142
D5434094	9.4	10	95	142
D5434095	9.5	10	95	142
D5434096	9.6	10	95	142
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

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
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
D5434114	11.4	12	114	162
D5434115	11.5	12	114	162
D5434116	11.6	12	114	162
D5434117	11.7	12	114	162
D5434118	11.8	12	114	162
D5434119	11.9	12	114	162
D5434120	12.0	12	114	162
D5434125	12.5	14	133	178
D5434130	13.0	14	133	178
D5434135	13.5	14	133	178
D5434140	14.0	14	133	178

- ▶ DLC coating is available on your request.
- ▶ 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended																				

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

DREAM DRILLS - ALU

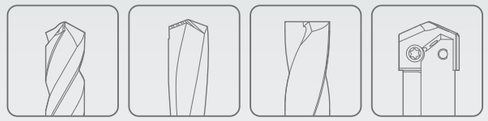
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D5432, D5433, D5434 SERIES with COOLANT HOLES

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

ISO	VDI 3323	Material Description	Vc (m/min)	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
P	1	Non-alloy steel													
	2														
	3														
	4														
	5														
	6	Low alloy steel													
	7														
	8														
	9														
	10	High alloyed steel, and tool steel													
	11														
M	12	Stainless steel													
	13														
	14														
K	15	Grey cast iron													
	16														
	17	Nodular cast iron													
	18														
	19	Malleable cast iron													
	20														
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		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		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
	25														
	26	Copper and Copper Alloys (Bronze / Brass)													
	27														
	28														
	29	Non Metallic Materials													
	30														
S	31	Heat Resistant Super Alloys													
	32														
	33														
	34														
	35														
	36	Titanium Alloys													
	37														
H	38	Hardened steel													
	39														
	40	Chilled Cast Iron													
	41	Hardened Cast Iron													

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation



SOLID CARBIDE

DREAM DRILLS -CFRP

DREAM DRILLS - CFK

- **For Composite Materials including CFRP and GFRP**
- **Für Verbundwerkstoffe einschließlich CFK und GFK**

SELECTION GUIDE

YG HOLEMAKING TOOLS

SERIES	DI473
DRILLING DEPTH	5XD
LENGTH	LONG
SIZE MIN	D2.5
SIZE MAX	D12.0
PAGE	145
SURFACE TREATMENT	Diamond Coating

SOLID CARBIDE DREAM DRILLS CFRP

For Composite Materials including CFRP and GFRP



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.146

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



Scan QR Code to See More Tools for COMPOSITE METERIALS

Dream Drill CFRP is only available till stock runs out!

DREAM DRILLS - CFRP

DI473 SERIES

CARBIDE, DREAM DRILLS - CFRP

LONG

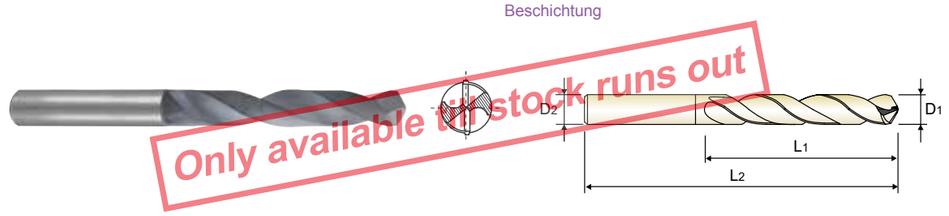
VOLLHARTMETALL DREAM SPIRALBOHRER - CFK — LANG

Forets DREAM DRILLS carbure - CFRP — LONGUE

PUNTE ELICOIDALI IN MD, DREAM DRILLS - CFRP — LUNGA

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

- ▶ Spezielle Spitzengeometrie zur Verbesserung der Qualität der Bohrung in Compsite-Materialien
- ▶ Minimierung des Grates und der Delamination am Bohrungseintritt und -austritt
- ▶ Überzeugende Performance
- ▶ Lange Standzeiten und erhöhte Produktivität duch die Diamant-Beschichtung



DIN 6537 | CARBIDE | 30° | h6 | m7 | 118° | P.146

5 × D

Unit : mm

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

▲ : Only available till stock runs out



Scan QR Code to See More Tools for COMPOSITE METERIALS

Dream Drill CFRP is only available till stock runs out!

◎ : Excellent ○ : Good

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

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel			Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39.1	39.3	40	41
HRc											15	30	25	38	34			55	60	70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630		400	550
Recommended									◎													

DREAM DRILLS - CFRP

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DI473 SERIES DREAM DRILLS - CFRP

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0	8.0	10.0	20.0
P	1	Non-alloy steel									
	2										
	3										
	4										
	5										
	6	Low alloy steel									
	7										
	8										
	9										
	10	High alloyed steel, and tool steel									
	11										
M	12	Stainless steel									
	13										
	14										
K	15	Grey cast iron									
	16										
	17	Nodular cast iron									
	18										
	19	Malleable cast iron									
	20										
N	21	Aluminum-wrought alloy									
	22										
	23	Aluminum-cast, alloyed									
	24										
	25										
	26	Copper and Copper Alloys (Bronze / Brass)									
	27										
	28										
	29	Non Metallic Materials	120	RPM	12730	9550	7640	6370	4770	3820	3180
	30			FEED	0.03-0.07	0.03-0.07	0.03-0.07	0.03-0.07	0.03-0.07	0.03-0.07	0.03-0.07
S	31	Heat Resistant Super Alloys									
	32										
	33										
	34										
	35										
	36	Titanium Alloys									
	37										
H	38	Hardened steel									
	39										
	40	Chilled Cast Iron									
	41	Hardened Cast Iron									



Leading Through Innovation

SOLID CARBIDE
DREAM DRILLS -MQL TYPE
DREAM DRILLS - MQL TYPE

- Minimum Quantity Lubrication
  Drilling Deep Holes (10×D ~ 30×D)
- Minimalmengenschmierung Tieflochbohren (10×D ~ 30×D)

SELECTION GUIDE

HOLEMAKING TOOLS

SOLID CARBIDE DREAM DRILLS MQL TYPE

Minimum Quantity Lubrication
Drilling Deep Holes (10×D ~ 30×D)

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

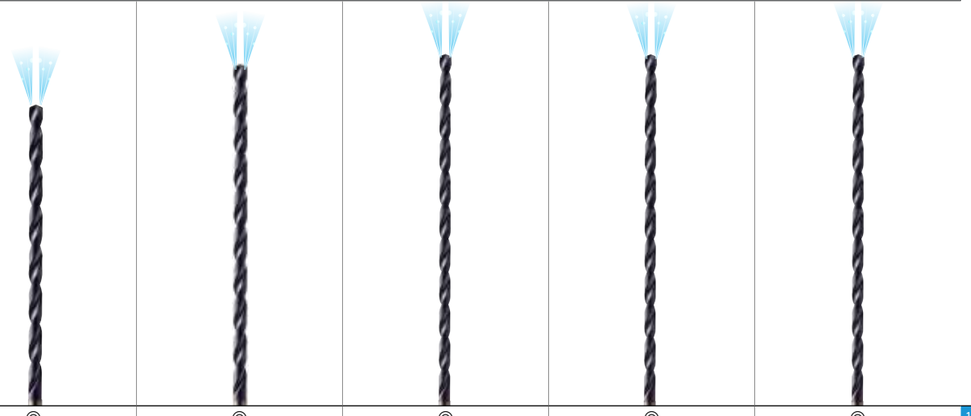
Recommended cutting conditions : P.154

SERIES	DH510	DH515	DH520
DRILLING DEPTH	10XD	15XD	20XD
LENGTH	EXTRA LONG	EXTRA LONG	EXTRA LONG
SIZE MIN	D3.0	D3.0	D3.0
SIZE MAX	D14.0	D12.0	D12.0
PAGE	150	151	151
SURFACE TREATMENT	TiAlN		



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	DH510	DH515	DH520
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎	◎
	2		About 0.45% C	Annealed	190	13	◎	◎	◎
	3		About 0.45% C	Quenched & Tempered	250	25	○	○	○
	4		About 0.75% C	Annealed	270	28			
	5		About 0.75% C	Quenched & Tempered	300	32			
	6	Low alloy steel		Annealed	180	10	◎	◎	◎
	7			Quenched & Tempered	275	29	○	○	○
	8			Quenched & Tempered	300	32	○	○	○
	9			Quenched & Tempered	350	38			
	10	High alloyed steel, and tool steel		Annealed	200	15	○	○	○
	11			Quenched & Tempered	325	35	○	○	○
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15			
	13		Martensitic	Quenched & Tempered	240	23			
	14		Austenitic		180	10			
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎	◎	◎
	16		Pearlitic (Martensitic)		260	26	○	○	○
	17	Nodular cast iron	Ferritic		160	3	◎	◎	◎
	18		Pearlitic		250	25	○	○	○
	19	Malleable cast iron	Ferritic		130		◎	◎	◎
	20		Pearlitic		230	21	○	○	○
N	21	Aluminum-wrought alloy	Not Curable		60				
	22		Curable	Hardened	100				
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75				
	24		≤ 12% Si, Curable	Hardened	90				
	25		> 12% Si, Not Curable		130				
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110				
	27		CuZn, CuSnZn (Brass)		90				
	28		CuSn, lead-free copper and electrolytic copper		100				
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic						
	30		Rubber, Wood, etc.						
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15			
	32			Cured	280	30			
	33		Ni or Co Based	Annealed	250	25			
	34			Cured	350	38			
	35			Cast	320	34			
	36	Titanium Alloys	Pure Titanium		400 Rm				
	37		Alpha + Beta Alloys	Hardened	1050 Rm				
H	38	Hardened steel		Hardened	550	55			
	39			Hardened	630	60			
	40	Chilled Cast Iron		Cast	400	42			
	41	Hardened Cast Iron		Hardened	550	55			

DHM10	DHM15	DHM20	DHM25	DHM30
10XD	15XD	20XD	25XD	30XD
EXTRA LONG	EXTRA LONG	EXTRA LONG	EXTRA LONG	EXTRA LONG
D3.0	D3.0	D3.0	D3.0	D3.0
D14.0	D12.0	D12.0	D10.0	D8.0
152	152	152	153	153
TiAlN				



◎	◎	◎	◎	◎	1	P
◎	◎	◎	◎	◎	2	
○	○	○	○	○	3	
					4	
					5	
◎	◎	◎	◎	◎	6	
○	○	○	○	○	7	
○	○	○	○	○	8	
					9	
○	○	○	○	○	10	
○	○	○	○	○	11	
					12	M
					13	
					14	
◎	◎	◎	◎	◎	15	K
○	○	○	○	○	16	
◎	◎	◎	◎	◎	17	
○	○	○	○	○	18	
◎	◎	◎	◎	◎	19	
○	○	○	○	○	20	
					21	N
					22	
					23	
					24	
					25	
					26	
					27	
					28	
					29	
					30	
					31	S
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					37	
					38	H
					39	
					40	
					41	

DREAM DRILLS - MQL TYPE

DH510 SERIES

CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES

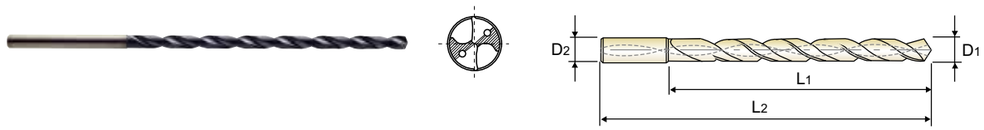
EXTRA LONG

VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL in GERADZAHLIGER SCHAFTAUSFÜHRUNG
Forets DREAM DRILLS carbure Type MQL avec arrosage central, série extra-longue
PUNTE ELICOIDALI IN MD, DREAM DRILLS MQL (con fori di refrigerazione)

ÜBERLANG
EXTRA-LONGUE
EXTRA LUNGA

- ▶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)

- ▶ 4-Facetten-Spitze für gute Zentrierfähigkeit
- ▶ Optimierte Spezialnuten für die ideale Spanabfuhr und zum produktiven Bohren
- ▶ Verbesserte Spanabfuhr durch hochglanzpolierte TiAlN-Nano-Vollbeschichtung
- ▶ MMS geeignet



CARBIDE | 30° | h6 | h7 | 140° | 20 bar

P.154-155

10 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH510030	3.0	3	39	90
DH510033	3.3	4	46	97
DH510035	3.5	4	46	97
DH510040	4.0	4	52	103
DH510042	4.2	5	59	112
DH510045	4.5	5	59	112
DH510050	5.0	5	65	118
DH510055	5.5	6	72	127
DH510060	6.0	6	78	133
DH510065	6.5	7	85	141
DH510068	6.8	7	91	147
DH510070	7.0	7	91	147
DH510075	7.5	8	98	155

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH510080	8.0	8	104	161
DH510085	8.5	9	111	169
DH510090	9.0	9	117	175
DH510095	9.5	10	124	182
DH510100	10.0	10	130	188
DH510105	10.5	11	137	201
DH510110	11.0	11	143	207
DH510115	11.5	12	150	215
DH510120	12.0	12	156	221
DH510125	12.5	13	163	229
DH510130	13.0	13	169	235
DH510135	13.5	14	176	243
DH510140	14.0	14	18	249

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - MQL TYPE

DH515 SERIES
DH520 SERIES

CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES

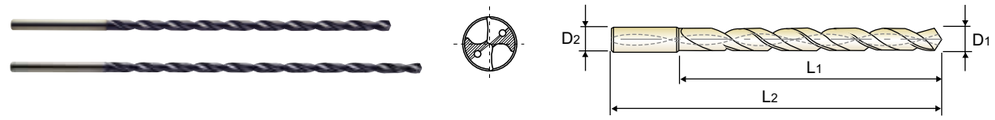
EXTRA LONG

VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL in GERADZAHLIGER SCHAFTAUSFÜHRUNG
Forets DREAM DRILLS carbure Type MQL avec arrosage central, série extra-longue
PUNTE ELICOIDALI IN MD, DREAM DRILLS MQL (con fori di refrigerazione)

ÜBERLANG
EXTRA-LONGUE
EXTRA LUNGA

- ▶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)

- ▶ 4-Facetten-Spitze für gute Zentrierfähigkeit
- ▶ Optimierte Spezialnuten für die ideale Spanabfuhr und zum produktiven Bohren
- ▶ Verbesserte Spanabfuhr durch hochglanzpolierte TiAlN-Nano-Vollbeschichtung
- ▶ MMS geeignet



CARBIDE | 30° | h6 | h7 | 140° | 45 bar

P.154-155

15 × D (DH515) | 20 × D (DH520)

Unit : mm

DH515

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH515030	3.0	3	54	105
DH515035	3.5	4	63	114
DH515040	4.0	4	72	123
DH515045	4.5	5	81	134
DH515050	5.0	5	90	143
DH515055	5.5	6	99	154
DH515060	6.0	6	108	163
DH515070	7.0	7	126	182
DH515080	8.0	8	144	201
DH515090	9.0	9	162	220
DH515100	10.0	10	180	238
DH515110	11.0	11	198	262
DH515120	12.0	12	216	281

DH520

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH520030	3.0	3	69	120
DH520035	3.5	4	81	132
DH520040	4.0	4	92	143
DH520045	4.5	5	104	157
DH520050	5.0	5	115	168
DH520055	5.5	6	127	182
DH520060	6.0	6	138	193
DH520070	7.0	7	161	217
DH520080	8.0	8	184	241
DH520090	9.0	9	207	265
DH520100	10.0	10	230	288
DH520120	12.0	12	276	341

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - MQL TYPE

DHM10 SERIES | DHM15 SERIES | DHM20 SERIES

CARBIDE, DREAM DRILL MQL TYPE END MILL SHANK with COOLANT HOLE

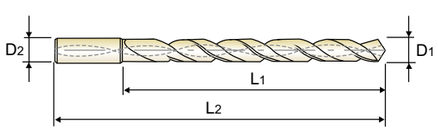
EXTRA LONG

- VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE MIT KÜHLKANAL — ÜBERLANG
- Forets DREAM DRILLS carbure Type MQL avec arrosage central, série extra-longue — EXTRA-LONGUE
- PUNTE MD, DREAM DRILLS MQL GAMBO RINFORZATO (con fori di ferigerazione) — EXTRA LUNGA

- ▶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)

- ▶ 4-Facetten-Spitze für gute Zentrierfähigkeit
- ▶ Optimierte Spezialnuten für die ideale Spanabfuhr und zum produktiven Bohren
- ▶ Verbesserte Spanabfuhr durch hochglanzpolierte TiAlN-Nano-Vollbeschichtung
- ▶ MMS geeignet





DHM10 DHM15 DHM20

CARBIDE | 30° | h6 | h7 | 140° | 20 bar | 45 bar

P.154-155

10 × D (DHM10) | 15 × D (DHM15) | 20 × D (DHM20)

Unit : mm

DHM10

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DHM10030	3.0	6	40	80
DHM10033	3.3	6	47	87
DHM10035	3.5	6	47	87
DHM10040	4.0	6	53	93
DHM10042	4.2	6	60	100
DHM10045	4.5	6	60	100
DHM10050	5.0	6	66	106
DHM10055	5.5	6	73	113
DHM10060	6.0	6	79	119
DHM10065	6.5	8	86	126
DHM10068	6.8	8	92	132
DHM10070	7.0	8	92	132
DHM10075	7.5	8	99	139
DHM10080	8.0	8	105	145
DHM10085	8.5	10	112	156
DHM10090	9.0	10	118	162
DHM10095	9.5	10	126	170
DHM10100	10.0	10	132	176
DHM10105	10.5	12	139	188
DHM10110	11.0	12	145	194
DHM10115	11.5	12	152	201
DHM10120	12.0	12	158	207
DHM10125	12.5	14	165	214
DHM10130	13.0	14	171	220
DHM10135	13.5	14	178	227
DHM10140	14.0	14	184	233

DHM15

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DHM15030	3.0	6	55	95
DHM15035	3.5	6	64	104
DHM15040	4.0	6	73	113
DHM15045	4.5	6	82	122
DHM15050	5.0	6	91	131
DHM15055	5.5	6	100	140
DHM15060	6.0	6	109	149
DHM15070	7.0	8	127	167
DHM15080	8.0	8	145	185
DHM15090	9.0	10	163	207
DHM15100	10.0	10	182	226
DHM15110	11.0	12	200	249
DHM15120	12.0	12	218	267

DHM20

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DHM20030	3.0	6	70	110
DHM20035	3.5	6	82	122
DHM20040	4.0	6	93	133
DHM20045	4.5	6	105	145
DHM20050	5.0	6	116	156
DHM20055	5.5	6	128	168
DHM20060	6.0	6	139	179
DHM20070	7.0	8	162	202
DHM20080	8.0	8	185	225
DHM20090	9.0	10	208	252
DHM20100	10.0	10	232	276
DHM20110	11.0	12	255	304
DHM20120	12.0	12	278	327

◎ : Excellent ○ : Good

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

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

DREAM DRILLS - MQL TYPE

DHM25 SERIES | DHM30 SERIES

CARBIDE, DREAM DRILL MQL TYPE END MILL SHANK with COOLANT HOLE

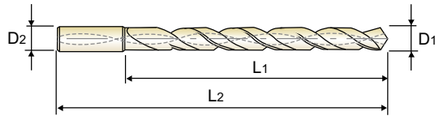
EXTRA LONG

- VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE MIT KÜHLKANAL — ÜBERLANG
- Forets DREAM DRILLS carbure Type MQL avec arrosage central, attachement type fraise, série extra-longue — EXTRA-LONGUE
- PUNTE MD, DREAM DRILLS MQL GAMBO RINFORZATO (con fori di ferigerazione) — EXTRA LUNGA

- ▶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)

- ▶ 4-Facetten-Spitze für gute Zentrierfähigkeit
- ▶ Optimierte Spezialnuten für die ideale Spanabfuhr und zum produktiven Bohren
- ▶ Verbesserte Spanabfuhr durch hochglanzpolierte TiAlN-Nano-Vollbeschichtung
- ▶ MMS geeignet





CARBIDE | 30° | h6 | h7 | 140° | 45 bar

P.154-155

25 × D (DHM25) | 30 × D (DHM30)

Unit : mm

DHM25

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DHM25030	3.0	6.0	85	125
DHM25035	3.5	6.0	99	139
DHM25040	4.0	6.0	113	153
DHM25045	4.5	6.0	127	167
DHM25050	5.0	6.0	141	181
DHM25055	5.5	6.0	155	195
DHM25060	6.0	6.0	169	209
DHM25070	7.0	8.0	197	237
DHM25080	8.0	8.0	225	265
DHM25090	9.0	10.0	253	297
DHM25100	10.0	10.0	282	326

DHM30

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DHM30030	3.0	6.0	100	140
DHM30035	3.5	6.0	117	157
DHM30040	4.0	6.0	133	173
DHM30045	4.5	6.0	150	190
DHM30050	5.0	6.0	166	206
DHM30055	5.5	6.0	183	223
DHM30060	6.0	6.0	199	239
DHM30070	7.0	8.0	232	272
DHM30080	8.0	8.0	265	305

◎ : Excellent ○ : Good

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

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

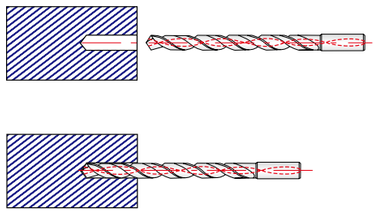
DREAM DRILLS - MQL TYPE

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DH510, DH515, DH520, DHM10, DHM15, DHM20, DHM25, DHM30 SERIES with COOLANT HOLES

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

ISO	VDI 3323	Material Description	Vc(m/min) 10xD ~ 20xD	Vc(m/min) 25xD ~ 30xD	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0
P	1	Non-alloy steel	120	100	RPM(10xD-20xD) RPM(25xD-30xD) FEED	12730 10610 0.08-0.12	9550 7960 0.10-0.14	7640 6370 0.12-0.18	6370 5310 0.14-0.20
	2		100	80	RPM(10xD-20xD) RPM(25xD-30xD) FEED	10610 8490 0.08-0.12	7960 6370 0.10-0.14	6370 5090 0.12-0.18	5310 4240 0.14-0.20
	3		80	65	RPM(10xD-20xD) RPM(25xD-30xD) FEED	8490 6900 0.06-0.10	6370 5170 0.08-0.12	5090 4140 0.10-0.16	4240 3450 0.12-0.18
	4								
	5								
	6	Low alloy steel	100	100	RPM(10xD-20xD) RPM(25xD-30xD) FEED	10610 10610 0.08-0.12	7960 7960 0.10-0.14	6370 6370 0.12-0.18	5310 5310 0.14-0.20
	7		70	60	RPM(10xD-20xD) RPM(25xD-30xD) FEED	7430 6370 0.06-0.10	5570 4770 0.08-0.12	4460 3820 0.10-0.16	3710 3180 0.12-0.18
	8		55	50	RPM(10xD-20xD) RPM(25xD-30xD) FEED	5840 5310 0.06-0.10	4380 3980 0.08-0.12	3500 3180 0.10-0.16	2920 2650 0.12-0.18
	9								
	10	High alloyed steel, and tool steel	60	50	RPM(10xD-20xD) RPM(25xD-30xD) FEED	6370 5310 0.05-0.09	4770 3980 0.07-0.11	3820 3180 0.08-0.14	3180 2650 0.10-0.16
	11		50	45	RPM(10xD-20xD) RPM(25xD-30xD) FEED	5310 4770 0.04-0.08	3980 3580 0.06-0.10	3180 2860 0.07-0.13	2650 2390 0.08-0.14
M	12	Stainless steel							
	13								
	14								
K	15	Grey cast iron	90	75	RPM(10xD-20xD) RPM(25xD-30xD) FEED	9550 7960 0.10-0.14	7160 5970 0.12-0.16	5730 4770 0.17-0.23	4770 3980 0.19-0.25
	16		70	60	RPM(10xD-20xD) RPM(25xD-30xD) FEED	7430 6370 0.10-0.14	5570 4770 0.12-0.16	4460 3820 0.17-0.23	3710 3180 0.19-0.25
	17	Nodular cast iron	100	80	RPM(10xD-20xD) RPM(25xD-30xD) FEED	10610 8490 0.10-0.14	7960 6370 0.12-0.16	6370 5090 0.17-0.23	5310 4240 0.19-0.25
	18		70	60	RPM(10xD-20xD) RPM(25xD-30xD) FEED	7430 6370 0.08-0.12	5570 4770 0.10-0.14	4460 3820 0.12-0.18	3710 3180 0.14-0.20
	19	Malleable cast iron	80	65	RPM(10xD-20xD) RPM(25xD-30xD) FEED	8490 6900 0.10-0.14	6370 5170 0.12-0.16	5090 4140 0.17-0.23	4240 3450 0.19-0.25
	20		70	55	RPM(10xD-20xD) RPM(25xD-30xD) FEED	7430 5840 0.08-0.12	5570 4380 0.10-0.14	4460 3500 0.12-0.18	3710 2920 0.14-0.20

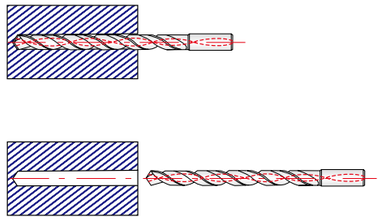


1. Guide Drilling should be done as Diameter+0.1mm between 3xD and 5xD depth.
2. For Main Drilling, proceed with low RPM at Guide Drilling segment.
   (RPM 300, FEED 400mm/min)
3. Just before the end of Guide Drilling segment, reduce feed to zero and increase the RPM according to Recommended Cutting Condition chart (See above).

DREAM DRILLS - MQL TYPE
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

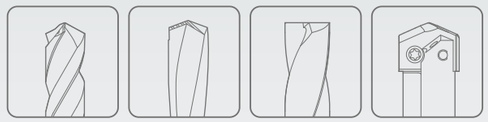
RPM = rev./min.
FEED = mm/rev.

VDI 3323	Parameter	Drill Diameter (mm) 8.0	10.0	12.0	14.0
1	RPM(10xD-20xD) RPM(25xD-30xD) FEED	4770 3980 0.18-0.24	3820 3180 0.20-0.26	3180 2650 0.22-0.26	2730 2270 0.25-0.31
2	RPM(10xD-20xD) RPM(25xD-30xD) FEED	3980 3180 0.18-0.24	3180 2550 0.20-0.26	2650 2120 0.22-0.26	2270 1820 0.25-0.31
3	RPM(10xD-20xD) RPM(25xD-30xD) FEED	3180 2590 0.14-0.20	2550 2070 0.16-0.22	2120 1720 0.18-0.24	1820 1480 0.20-0.26
4					
5					
6	RPM(10xD-20xD) RPM(25xD-30xD) FEED	3980 3980 0.18-0.24	3180 3180 0.20-0.26	2650 2650 0.22-0.26	2270 2270 0.25-0.31
7	RPM(10xD-20xD) RPM(25xD-30xD) FEED	2790 2390 0.14-0.20	2230 1910 0.16-0.22	1860 1590 0.18-0.24	1590 1360 0.20-0.26
8	RPM(10xD-20xD) RPM(25xD-30xD) FEED	2190 1990 0.14-0.20	1750 1590 0.16-0.22	1460 1330 0.18-0.24	1250 1140 0.20-0.26
9					
10	RPM(10xD-20xD) RPM(25xD-30xD) FEED	2390 1990 0.12-0.18	1910 1590 0.14-0.20	1590 1330 0.16-0.22	1360 1140 0.18-0.24
11	RPM(10xD-20xD) RPM(25xD-30xD) FEED	1990 1790 0.10-0.16	1590 1430 0.12-0.18	1330 1190 0.13-0.19	1140 1020 0.15-0.21
12					
13					
14					
15	RPM(10xD-20xD) RPM(25xD-30xD) FEED	3580 2980 0.22-0.28	2860 2390 0.24-0.30	2390 1990 0.28-0.34	2050 1710 0.30-0.36
16	RPM(10xD-20xD) RPM(25xD-30xD) FEED	2790 2390 0.22-0.28	2230 1910 0.24-0.30	1860 1590 0.28-0.34	1590 1360 0.30-0.36
17	RPM(10xD-20xD) RPM(25xD-30xD) FEED	3980 3180 0.22-0.28	3180 2550 0.24-0.30	2650 2120 0.28-0.34	2270 1820 0.30-0.36
18	RPM(10xD-20xD) RPM(25xD-30xD) FEED	2790 2390 0.18-0.24	2230 1910 0.20-0.26	1860 1590 0.22-0.26	1590 1360 0.25-0.31
19	RPM(10xD-20xD) RPM(25xD-30xD) FEED	3180 2590 0.22-0.28	2550 2070 0.24-0.30	2120 1720 0.28-0.34	1820 1480 0.30-0.36
20	RPM(10xD-20xD) RPM(25xD-30xD) FEED	2790 2190 0.18-0.24	2230 1750 0.20-0.26	1860 1460 0.22-0.26	1590 1250 0.25-0.31



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%.

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation



SOLID CARBIDE

DREAM DRILLS
- for HIGH HARDENED STEELS
DREAM DRILLS - FÜR HOCHGEHÄRTETE STÄHLE

- **For High Hardened Steels (HRc50 to HRc70)**
- **Für hochgehärtete Stähle (HRc50 bis HRc70)**

SELECTION GUIDE

HOLEMAKING TOOLS

SERIES	DH500
DRILLING DEPTH	3XD
LENGTH	SHORT
SIZE MIN	D2.6
SIZE MAX	D14.0
PAGE	159
SURFACE TREATMENT	TiAlN

SOLID CARBIDE
DREAM DRILLS
for HIGH HARDENED STEELS

For High Hardened Steels (HRc50 to HRc70)



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◎ : Excellent ○ : Good

Recommended cutting conditions : P.160

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	
P	1	Non-alloy steel	About 0.15% C	Annealed	125		
	2		About 0.45% C	Annealed	190	13	
	3		About 0.45% C	Quenched & Tempered	250	25	
	4		About 0.75% C	Annealed	270	28	
	5		About 0.75% C	Quenched & Tempered	300	32	
	6	Low alloy steel		Annealed	180	10	
	7			Quenched & Tempered	275	29	
	8			Quenched & Tempered	300	32	
	9			Quenched & Tempered	350	38	
	10	High alloyed steel, and tool steel		Annealed	200	15	
	11			Quenched & Tempered	325	35	
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	
	13		Martensitic	Quenched & Tempered	240	23	
	14		Austenitic		180	10	
K	15	Grey cast iron	Pearlitic / ferritic		180	10	
	16		Pearlitic (Martensitic)		260	26	
	17	Nodular cast iron	Ferritic		160	3	
	18		Pearlitic		250	25	
	19	Malleable cast iron	Ferritic		130		
	20		Pearlitic		230	21	
N	21	Aluminum-wrought alloy	Not Curable		60		
	22		Curable	Hardened	100		
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		
	24		≤ 12% Si, Curable	Hardened	90		
	25		> 12% Si, Not Curable		130		
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110		
	27		CuZn, CuSnZn (Brass)		90		
	28		CuSn, lead-free copper and electrolytic copper		100		
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic				
	30		Rubber, Wood, etc.				
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15	
	32			Cured	280	30	
	33		Ni or Co Based	Annealed	250	25	
	34			Cured	350	38	
	35			Cast	320	34	
	36	Titanium Alloys	Pure Titanium		400 Rm		
	37		Alpha + Beta Alloys	Hardened	1050 Rm		
H	38	Hardened steel		Hardened	550	55	◎
	39.1			Hardened	630	60	◎
	39.3			Hardened		70	◎
	40	Chilled Cast Iron		Cast	400	42	
	41	Hardened Cast Iron		Hardened	550	55	

DREAM DRILLS for HIGH HARDENED STEELS

DH500 SERIES

CARBIDE, DREAM DRILLS for HIGH HARDENED STEELS (HRc50~HRc70)

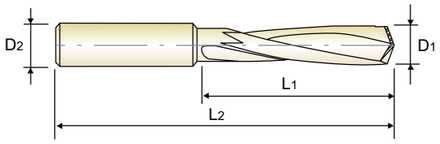
SHORT

- VOLLHARTMETALL DREAM SPIRALBOHRER FÜR HOCHGEHÄRTETE STAHLE — KURZ
- Forets DREAM DRILLS carbure pour Aciers Trempés (50 HRc ~ 70 HRc) — COURTE
- PUNTE ELICOIDALI IN MD, DREAM DRILL - ACCIAI HRC 50 - 70 — CORTA

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

- ▶ Bohren von hoch gehärteten Stählen, Vergütungsstähle, angelassenen Stählen bis HRc 70
- ▶Spezielle Bohrergeometrie für gehärtete Stähle
- ▶Minimaler Schnedendruck durch spezielle Ausspitzung
- ▶Gute Spanabfuhr und Hochleistungsbohren





CARBIDE | 15° | h6 | h7 | 140° | P.160

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH500026	2.6	3	14	44
DH500030	3.0	3	16	46
DH500033	3.3	4	18	48
DH500034	3.4	4	20	50
DH500035	3.5	4	20	50
DH500040	4.0	4	22	52
DH500042	4.2	6	25	65
DH500043	4.3	6	28	68
DH500044	4.4	6	28	68
DH500045	4.5	6	28	68
DH500050	5.0	6	32	72
DH500051	5.1	6	32	72
DH500052	5.2	6	32	72
DH500055	5.5	6	35	75
DH500060	6.0	6	35	75
DH500065	6.5	8	40	80
DH500068	6.8	8	45	85
DH500069	6.9	8	45	85

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH500070	7.0	8	45	85
DH500075	7.5	8	45	85
DH500080	8.0	8	50	98
DH500085	8.5	10	50	98
DH500086	8.6	10	57	105
DH500088	8.8	10	57	105
DH500090	9.0	10	57	105
DH500095	9.5	10	57	105
DH500100	10.0	10	63	111
DH500102	10.2	12	63	111
DH500103	10.3	12	63	111
DH500105	10.5	12	63	111
DH500108	10.8	12	71	119
DH500110	11.0	12	71	119
DH500115	11.5	12	71	119
DH500120	12.0	12	71	119
DH500140	14.0	14	77	125

◎ : Excellent ○ : Good

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

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39.1	39.3	40	41
HRc											15	30	25	38	34			55	60	70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630		400	550
Recommended																		◎	◎	◎		

DREAM DRILLS for HIGH HARDENED STEELS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DH500 SERIES — DREAM DRILLS for HIGH HARDENED STEELS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0
P	1	Non-alloy steel										
	2											
	3											
	4											
	5											
	6	Low alloy steel										
	7											
	8											
	9											
	10	High alloyed steel, and tool steel										
	11											
M	12	Stainless steel										
	13											
	14											
K	15	Grey cast iron										
	16											
	17	Nodular cast iron										
	18											
	19	Malleable cast iron										
	20											
N	21	Aluminum-wrought alloy										
	22											
	23	Aluminum-cast, alloyed										
	24											
	25											
	26	Copper and Copper Alloys (Bronze / Brass)										
	27											
	28											
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys										
	32											
	33											
	34											
	35											
	36	Titanium Alloys										
	37											
H	38	Hardened steel	20	RPM	2120	1590	1270	1060	800	640	530	450
				FEED	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.05	0.01-0.05	0.01-0.05	0.01-0.06	0.01-0.06
	39.1		15	RPM	1590	1190	950	800	600	480	400	340
				FEED	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.05	0.01-0.05	0.01-0.05	0.01-0.06	0.01-0.06
	39.3		12	RPM	1270	950	760	640	480	380	320	270
				FEED	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.05	0.01-0.05	0.01-0.05	0.01-0.06	0.01-0.06
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										



Leading Through Innovation

SOLID CARBIDE

GENERAL CARBIDE DRILLS

UNIVERSELLE VHM - BOHRER

- For General Purpose, DIN338 & DIN6539
- Für allgemeine Anwendungen, DIN 338 & DIN 6539

SELECTION GUIDE

YG HOLEMAKING TOOLS

SERIES	D5405	D5407
STANDARD	DIN6539	DIN338
LENGTH	STUB	JOBBER
SIZE MIN	D1.0	D1.0
SIZE MAX	D13.0	D13.0
PAGE	163	165
SURFACE TREATMENT	Bright	

SOLID CARBIDE GENERAL CARBIDE DRILLS

For General Purpose, DIN338 & DIN6539



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.167

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	D5405	D5407
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎
	2		About 0.45% C	Annealed	190	13	○	○
	3		About 0.45% C	Quenched & Tempered	250	25		
	4		About 0.75% C	Annealed	270	28		
	5		About 0.75% C	Quenched & Tempered	300	32		
	6	Low alloy steel		Annealed	180	10	○	○
	7			Quenched & Tempered	275	29		
	8			Quenched & Tempered	300	32		
	9			Quenched & Tempered	350	38		
	10	High alloyed steel, and tool steel		Annealed	200	15		
	11			Quenched & Tempered	325	35		
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	○	○
	13		Martensitic	Quenched & Tempered	240	23		
	14		Austenitic		180	10		
K	15	Grey cast iron	Pearlitic / ferritic		180	10	○	○
	16		Pearlitic (Martensitic)		260	26		
	17	Nodular cast iron	Ferritic		160	3		
	18		Pearlitic		250	25		
	19	Malleable cast iron	Ferritic		130			
	20		Pearlitic		230	21		
N	21	Aluminum-wrought alloy	Not Curable		60		◎	◎
	22		Curable	Hardened	100		◎	◎
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		◎	◎
	24		≤ 12% Si, Curable	Hardened	90		◎	◎
	25		> 12% Si, Not Curable		130			
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110			
	27		CuZn, CuSnZn (Brass)		90			
	28		CuSn, lead-free copper and electrolytic copper		100			
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic					
	30		Rubber, Wood, etc.					
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15		
	32			Cured	280	30		
	33		Ni or Co Based	Annealed	250	25		
	34			Cured	350	38		
	35			Cast	320	34		
	36	Titanium Alloys	Pure Titanium		400 Rm		○	○
	37		Alpha + Beta Alloys	Hardened	1050 Rm			
H	38	Hardened steel		Hardened	550	55		
	39			Hardened	630	60		
	40	Chilled Cast Iron		Cast	400	42		
	41	Hardened Cast Iron		Hardened	550	55		

GENERAL CARBIDE DRILLS

D5405 SERIES

CARBIDE DRILLS

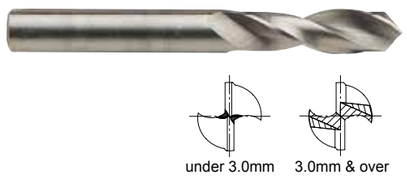
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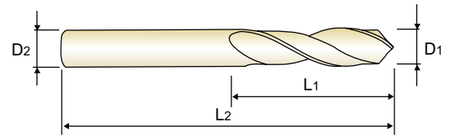
VOLLHARTMETALL-SPIRALBOHRER
Forets carbure, série extra-courte
PUNTE IN METALLO DURO

EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

▶Application : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶Verwendung : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.





DIN 6539 | CARBIDE | 30° | h6 | h7 | 118° P.167

D1=D2

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D5405010	1.0	6	26
D5405011	1.1	7	28
D5405012	1.2	8	30
D5405013	1.3	8	30
D5405014	1.4	9	32
D5405015	1.5	9	32
D5405016	1.6	10	34
D5405017	1.7	10	34
D5405018	1.8	11	36
D5405019	1.9	11	36
D5405020	2.0	12	38
D5405021	2.1	12	38
D5405022	2.2	13	40
D5405023	2.3	13	40
D5405024	2.4	14	43
D5405025	2.5	14	43
D5405026	2.6	14	43
D5405027	2.7	16	46
D5405028	2.8	16	46
D5405029	2.9	16	46
D5405030	3.0	16	46
D5405031	3.1	18	49
D5405032	3.2	18	49
D5405033	3.3	18	49

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D5405034	3.4	20	52
D5405035	3.5	20	52
D5405036	3.6	20	52
D5405037	3.7	20	52
D5405038	3.8	22	55
D5405039	3.9	22	55
D5405040	4.0	22	55
D5405041	4.1	22	55
D5405042	4.2	22	55
D5405043	4.3	24	58
D5405044	4.4	24	58
D5405045	4.5	24	58
D5405046	4.6	24	58
D5405047	4.7	24	58
D5405048	4.8	26	62
D5405049	4.9	26	62
D5405050	5.0	26	62
D5405051	5.1	26	62
D5405052	5.2	26	62
D5405053	5.3	26	62
D5405054	5.4	28	66
D5405055	5.5	28	66
D5405056	5.6	28	66
D5405057	5.7	28	66

▶ TiN(D6405), TiCN(DG405) and TiAlN(DH405) are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

GENERAL CARBIDE DRILLS

D5405 SERIES

CARBIDE DRILLS

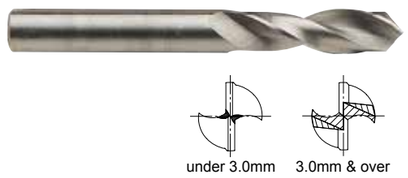
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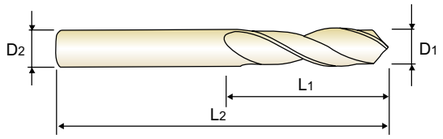
VOLLHARTMETALL-SPIRALBOHRER
Forets carbure, série extra-courte
PUNTE IN METALLO DURO

EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

▶**Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶**Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.





DIN 6539 | CARBIDE | 30° | h6 | h7 | 118° | P.167

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter D_1	Flute Length L_1	Overall Length L_2
D5405058	5.8	28	66
D5405059	5.9	28	66
D5405060	6.0	28	66
D5405061	6.1	31	70
D5405062	6.2	31	70
D5405063	6.3	31	70
D5405064	6.4	31	70
D5405065	6.5	31	70
D5405066	6.6	31	70
D5405067	6.7	31	70
D5405068	6.8	34	74
D5405069	6.9	34	74
D5405070	7.0	34	74
D5405071	7.1	34	74
D5405072	7.2	34	74
D5405073	7.3	34	74
D5405074	7.4	34	74
D5405075	7.5	34	74
D5405076	7.6	37	79
D5405077	7.7	37	79
D5405078	7.8	37	79
D5405079	7.9	37	79
D5405080	8.0	37	79
D5405081	8.1	37	79
D5405082	8.2	37	79

EDP No.	Drill Diameter D_1	Flute Length L_1	Overall Length L_2
D5405083	8.3	37	79
D5405084	8.4	37	79
D5405085	8.5	37	79
D5405086	8.6	40	84
D5405087	8.7	40	84
D5405088	8.8	40	84
D5405089	8.9	40	84
D5405090	9.0	40	84
D5405091	9.1	40	84
D5405092	9.2	40	84
D5405093	9.3	40	84
D5405094	9.4	40	84
D5405095	9.5	40	84
D5405096	9.6	43	89
D5405097	9.7	43	89
D5405098	9.8	43	89
D5405099	9.9	43	89
D5405100	10.0	43	89
D5405102	10.2	43	89
D5405105	10.5	43	89
D5405110	11.0	47	95
D5405115	11.5	47	95
D5405120	12.0	51	102
D5405130	13.0	51	102

▶ TiN(D6405), TiCN(DG405) and TiAlN(DH405) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	○				○						○			○					

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

GENERAL CARBIDE DRILLS

D5407 SERIES

CARBIDE DRILLS

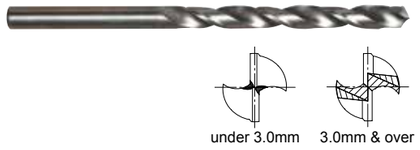
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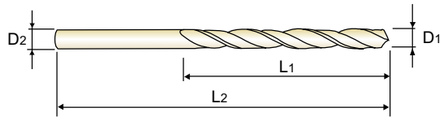
VOLLHARTMETALL-SPIRALBOHRER
Forets carbure, série courte
PUNTE IN METALLO DURO

KURZ
COURTE
CORTA

▶**Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶**Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.





DIN 338 | CARBIDE | 30° | h6 | h7 | 118° | P.167

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter D_1	Flute Length L_1	Overall Length L_2
D5407010	1.0	12	34
D5407011	1.1	14	36
D5407012	1.2	16	38
D5407013	1.3	16	38
D5407014	1.4	18	40
D5407015	1.5	18	40
D5407016	1.6	20	43
D5407017	1.7	20	43
D5407018	1.8	22	46
D5407019	1.9	22	46
D5407020	2.0	24	49
D5407021	2.1	24	49
D5407022	2.2	27	53
D5407023	2.3	27	53
D5407024	2.4	30	57
D5407025	2.5	30	57
D5407026	2.6	30	57
D5407027	2.7	33	61
D5407028	2.8	33	61
D5407029	2.9	33	61
D5407030	3.0	33	61
D5407031	3.1	36	65

EDP No.	Drill Diameter D_1	Flute Length L_1	Overall Length L_2
D5407032	3.2	36	65
D5407033	3.3	36	65
D5407034	3.4	39	70
D5407035	3.5	39	70
D5407036	3.6	39	70
D5407037	3.7	39	70
D5407038	3.8	43	75
D5407039	3.9	43	75
D5407040	4.0	43	75
D5407041	4.1	43	75
D5407042	4.2	43	75
D5407043	4.3	47	80
D5407044	4.4	47	80
D5407045	4.5	47	80
D5407046	4.6	47	80
D5407047	4.7	47	80
D5407048	4.8	52	86
D5407049	4.9	52	86
D5407050	5.0	52	86
D5407051	5.1	52	86
D5407052	5.2	52	86
D5407053	5.3	52	86

▶ TiN(D6407), TiCN(DG407) and TiAlN(DH407) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	○				○						○			○					

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

GENERAL CARBIDE DRILLS

D5407 SERIES

CARBIDE DRILLS

JOBBER

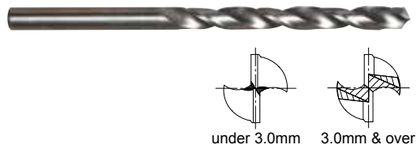
VOLLHARTMETALL-SPIRALBOHRER — *KURZ*

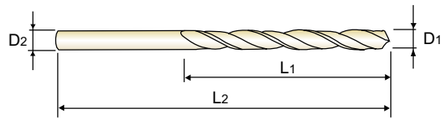
Forets carbure, série courte — *COURTE*

MPUNTE IN METALLO DURO — *CORTA*

▶**Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶**Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.





DIN 338 | CARBIDE | 30° | h6 | h7 | 118° | P.167

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter D_1	Flute Length L_1	Overall Length L_2
D5407054	5.4	57	93
D5407055	5.5	57	93
D5407056	5.6	57	93
D5407057	5.7	57	93
D5407058	5.8	57	93
D5407059	5.9	57	93
D5407060	6.0	57	93
D5407061	6.1	63	101
D5407062	6.2	63	101
D5407063	6.3	63	101
D5407064	6.4	63	101
D5407065	6.5	63	101
D5407068	6.8	69	109
D5407070	7.0	69	109
D5407075	7.5	69	109
D5407080	8.0	75	117
D5407085	8.5	75	117
D5407090	9.0	81	125
D5407095	9.5	81	125
D5407100	10.0	87	133
D5407102	10.2	87	133
D5407105	10.5	87	133
D5407110	11.0	94	142
D5407115	11.5	94	142
D5407120	12.0	101	151
D5407130	13.0	101	151

▶ TiN(D6407), TiCN(DG407) and TiAlN(DH407) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	○				○						○			○					

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

GENERAL CARBIDE DRILLS

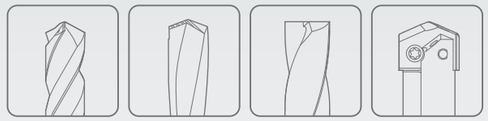
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D5405, D5407 SERIES — **GENERAL CARBIDE DRILLS**

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 1.0	2.0	Vc (m/min)	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0	8.0	10.0	12.0	13.0
P	1	Non-alloy steel	55	RPM	17510	8750	70	RPM	7430	5570	4460	3710	2790	2230	1860	1710
				FEED	0.02-0.03	0.02-0.04		FEED	0.03-0.05	0.03-0.06	0.04-0.07	0.05-0.08	0.07-0.10	0.08-0.12	0.10-0.14	0.12-0.16
	2		45	RPM	14320	7160	60	RPM	6370	4770	3820	3180	2390	1910	1590	1470
				FEED	0.02-0.03	0.02-0.04		FEED	0.03-0.05	0.03-0.06	0.04-0.07	0.05-0.08	0.07-0.10	0.08-0.12	0.10-0.14	0.12-0.16
	3															
	4															
	5															
	6	Low alloy steel	35	RPM	11140	5570	50	RPM	5310	3980	3180	2650	1990	1590	1330	1220
				FEED	0.02-0.03	0.02-0.04		FEED	0.03-0.05	0.03-0.06	0.04-0.07	0.05-0.08	0.07-0.10	0.08-0.12	0.10-0.14	0.12-0.16
	7															
	8															
	9															
	10	High alloyed steel, and tool steel														
	11															
M	12	Stainless steel	15	RPM	4770	2390	25	RPM	2650	1990	1590	1330	990	800	660	610
				FEED	0.01-0.02	0.01-0.03		FEED	0.02-0.04	0.02-0.05	0.03-0.06	0.04-0.07	0.06-0.09	0.07-0.11	0.08-0.12	0.09-0.13
	13															
	14															
K	15	Grey cast iron	25	RPM	7960	3980	45	RPM	4770	3580	2860	2390	1790	1430	1190	1100
				FEED	0.03-0.04	0.03-0.05		FEED	0.04-0.06	0.04-0.07	0.05-0.08	0.06-0.09	0.09-0.12	0.12-0.16	0.14-0.18	0.16-0.20
	16															
	17	Nodular cast iron														
	18															
	19	Malleable cast iron														
	20															
N	21	Aluminum-wrought alloy	100	RPM	31830	15920	140	RPM	14850	11140	8910	7430	5570	4460	3710	3430
				FEED	0.04-0.05	0.04-0.06		FEED	0.05-0.07	0.05-0.08	0.06-0.09	0.08-0.11	0.12-0.15	0.15-0.19	0.19-0.23	0.21-0.25
	22		90	RPM	28650	14320	120	RPM	12730	9550	7640	6370	4770	3820	3180	2940
				FEED	0.04-0.05	0.04-0.06		FEED	0.05-0.07	0.05-0.08	0.06-0.09	0.08-0.11	0.12-0.15	0.15-0.19	0.19-0.23	0.21-0.25
	23	Aluminum-cast, alloyed	70	RPM	22280	11140	100	RPM	10610	7960	6370	5310	3980	3180	2650	2450
				FEED	0.04-0.05	0.04-0.06		FEED	0.05-0.07	0.05-0.08	0.06-0.09	0.08-0.11	0.12-0.15	0.15-0.19	0.19-0.23	0.21-0.25
	24		60	RPM	19100	9550	80	RPM	8490	6370	5090	4240	3180	2550	2120	1960
				FEED	0.04-0.05	0.04-0.06		FEED	0.05-0.07	0.05-0.08	0.06-0.09	0.08-0.11	0.12-0.15	0.15-0.19	0.19-0.23	0.21-0.25
	25															
	26	Copper and Copper Alloys (Bronze / Brass)														
	27															
	28															
	29	Non Metallic Materials														
	30															
S	31	Heat Resistant Super Alloys														
	32															
	33															
	34															
	35															
	36	Titanium Alloys	10	RPM	3180	1590	20	RPM	2120	1590	1270	1060	800	640	530	490
				FEED	0.01-0.02	0.01-0.03		FEED	0.02-0.04	0.02-0.05	0.03-0.06	0.04-0.07	0.06-0.09	0.07-0.11	0.08-0.12	0.09-0.13
	37															
H	38	Hardened steel														
	39															
	40	Chilled Cast Iron														
	41	Hardened Cast Iron														

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation



HSS-PM

MULTI-1 DRILLS

MULTI-1 BOHRER

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

SELECTION GUIDE

YG HOLEMAKING TOOLS

SERIES	CDRA03	CDRA04
TOOL MATERIAL	HSS-PM	
LENGTH	STUB	JOBBER
SIZE MIN	D1.0	D2.0
SIZE MAX	D13.0	D13.0
PAGE	171	174
SURFACE TREATMENT	TiAlN	

HSS-PM
MULTI-1 DRILLS

Premium HSS-PM Drills
for Wide Range of Applications Particularly Stainless Steels and Titanium




Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.177

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	CDRA03	CDRA04
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎
	2		About 0.45% C	Annealed	190	13	◎	◎
	3		About 0.45% C	Quenched & Tempered	250	25	○	○
	4		About 0.75% C	Annealed	270	28		
	5		About 0.75% C	Quenched & Tempered	300	32		
	6	Low alloy steel		Annealed	180	10	◎	◎
	7			Quenched & Tempered	275	29	○	○
	8			Quenched & Tempered	300	32		
	9			Quenched & Tempered	350	38		
	10	High alloyed steel, and tool steel		Annealed	200	15		
	11			Quenched & Tempered	325	35		
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	○	○
	13		Martensitic	Quenched & Tempered	240	23		
	14		Austenitic		180	10	◎	◎
K	15	Grey cast iron	Pearlitic / ferritic		180	10	○	○
	16		Pearlitic (Martensitic)		260	26		
	17	Nodular cast iron	Ferritic		160	3		
	18		Pearlitic		250	25		
	19	Malleable cast iron	Ferritic		130			
	20		Pearlitic		230	21		
N	21	Aluminum-wrought alloy	Not Curable		60		◎	◎
	22		Curable	Hardened	100		◎	◎
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		○	○
	24		≤ 12% Si, Curable	Hardened	90		○	○
	25		> 12% Si, Not Curable		130			
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110			
	27		CuZn, CuSnZn (Brass)		90			
	28		CuSn, lead-free copper and electrolytic copper		100			
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic					
	30		Rubber, Wood, etc.					
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15		
	32			Cured	280	30		
	33		Ni or Co Based	Annealed	250	25		
	34			Cured	350	38		
	35			Cast	320	34		
	36	Titanium Alloys	Pure Titanium		400 Rm		○	○
	37		Alpha + Beta Alloys	Hardened	1050 Rm			
H	38	Hardened steel		Hardened	550	55		
	39			Hardened	630	60		
	40	Chilled Cast Iron		Cast	400	42		
	41	Hardened Cast Iron		Hardened	550	55		

MULTI-1 DRILLS

CDRA03 SERIES

HSS-PM, MULTI-1 DRILLS

STUB

HSS-PM MULTI-1 BOHRER
Forets MULTI-1 HSS-PM Premium, série extra-courte
PUNTA GAMBO CILINDRICO MULTI-1, HSS-PM

EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

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

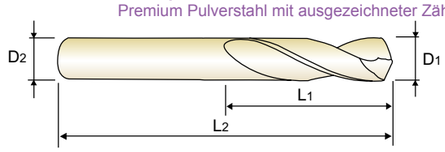
▶**Advantage** : Point shape to maximize self-centering.
Flute design for the best chip evacuation.
Premium powder materials with excellent toughness.

▶**Anwendung** : Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRc 30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.

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







HSS PM | 30° | h6 | h7 | 118° | 135° | P.177

up to 1.9mm over 1.9mm

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
CDRA03010	1.0	3	6	38
CDRA03011	1.1	3	7	39
CDRA03012	1.2	3	8	40
CDRA03013	1.3	3	8	40
CDRA03014	1.4	3	9	41
CDRA03015	1.5	3	9	41
CDRA03016	1.6	3	10	42
CDRA03017	1.7	3	10	42
CDRA03018	1.8	3	11	43
CDRA03019	1.9	3	11	43
CDRA03020	2.0	3	12	44
CDRA03021	2.1	3	12	44
CDRA03022	2.2	3	13	45
CDRA03023	2.3	3	13	45
CDRA03024	2.4	3	14	46
CDRA03025	2.5	3	14	46
CDRA03026	2.6	3	14	46
CDRA03027	2.7	3	16	48
CDRA03028	2.8	3	16	48
CDRA03029	2.9	3	16	48
CDRA03030	3.0	3	16	48
CDRA03031	3.1	4	18	50
CDRA03032	3.2	4	18	50
CDRA03033	3.3	4	18	50

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
CDRA03034	3.4	4	20	52
CDRA03035	3.5	4	20	52
CDRA03036	3.6	4	20	52
CDRA03037	3.7	4	20	52
CDRA03038	3.8	4	22	54
CDRA03039	3.9	4	22	54
CDRA03040	4.0	4	22	54
CDRA03041	4.1	6	22	66
CDRA03042	4.2	6	22	66
CDRA03043	4.3	6	24	68
CDRA03044	4.4	6	24	68
CDRA03045	4.5	6	24	68
CDRA03046	4.6	6	24	68
CDRA03047	4.7	6	24	68
CDRA03048	4.8	6	26	70
CDRA03049	4.9	6	26	70
CDRA03050	5.0	6	26	70
CDRA03051	5.1	6	26	70
CDRA03052	5.2	6	26	70
CDRA03053	5.3	6	26	70
CDRA03054	5.4	6	28	72
CDRA03055	5.5	6	28	72
CDRA03056	5.6	6	28	72
CDRA03057	5.7	6	28	72

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

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

MULTI-1 DRILLS

CDRA03 SERIES

HSS-PM, MULTI-1 DRILLS

STUB

HSS-PM MULTI-1 BOHRER
Forets MULTI-1 HSS-PM Premium, série extra-courte
PUNTA GAMBO CILINDRICO MULTI-1, HSS-PM

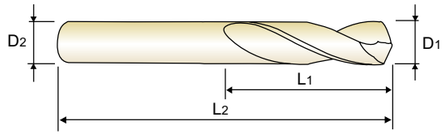
EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

▶**Application** : Structural steels, Carbon steels, Alloy steels, Pre-hardened steels, Mold steels, Stainless steels, Hardened steels(HRc30~45), Cast iron, Aluminum alloys, Nonferrous alloys, Titanium.
▶**Advantage** : Point shape to maximize self-centering.
Flute design for the best chip evacuation.
Premium powder materials with excellent toughness.

▶**Anwendung** : Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRc 30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.
▶**Vorteile** : Maximale Selbstzentrierung durch besonderen Spitzenanschliff
Bohrergeometrie für optimale Spanabfuhr.
Premium Pulverstahl mit ausgezeichneter Zähigkeit.



up to 1.4mm over 1.4mm



HSS PM | 30° | h6 | h7 | 118° | 135° P.177

up to 1.9mm over 1.9mm

Unit : mm

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

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

▶ NEXT PAGE

◎ : Excellent ○ : Good

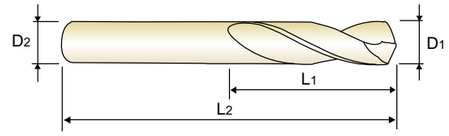
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10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

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

MULTI-1 DRILLS
CDRA03 SERIES
HSS-PM, MULTI-1 DRILLS
STUB
HSS-PM MULTI-1 BOHRER
Forets MULTI-1 HSS-PM Premium, série extra-courte
PUNTA GAMBO CILINDRICO MULTI-1, HSS-PM
EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA
▶Application : Structural steels, Carbon steels, Alloy steels, Pre-hardened steels, Mold steels, Stainless steels, Hardened steels(HRc30~45), Cast iron, Aluminum alloys, Nonferrous alloys, Titanium.
▶Advantage : Point shape to maximize self-centering.
Flute design for the best chip evacuation.
Premium powder materials with excellent toughness.
▶Anwendung : Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRc 30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.
▶Vorteile : Maximale Selbstzentrierung durch besonderen Spitzenanschliff
Bohrergeometrie für optimale Spanabfuhr.
Premium Pulverstahl mit ausgezeichneter Zähigkeit.



up to 1.4mm over 1.4mm



HSS PM | 30° | h6 | h7 | 118° | 135° P.177
up to 1.9mm over 1.9mm
Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
CDRA03106	10.6	12	43	100
CDRA03107	10.7	12	47	104
CDRA03108	10.8	12	47	104
CDRA03109	10.9	12	47	104
CDRA03110	11.0	12	47	104
CDRA03111	11.1	12	47	104
CDRA03112	11.2	12	47	104
CDRA03113	11.3	12	47	104
CDRA03114	11.4	12	47	104
CDRA03115	11.5	12	47	104
CDRA03116	11.6	12	47	104
CDRA03117	11.7	12	47	104
CDRA03118	11.8	12	47	104

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
CDRA03119	11.9	12	51	108
CDRA03120	12.0	12	51	108
CDRA03121	12.1	12	51	108
CDRA03122	12.2	12	51	108
CDRA03123	12.3	12	51	108
CDRA03124	12.4	12	51	108
CDRA03125	12.5	12	51	108
CDRA03126	12.6	12	51	108
CDRA03127	12.7	12	51	108
CDRA03128	12.8	12	51	108
CDRA03129	12.9	12	51	108
CDRA03130	13.0	12	51	108

◎ : Excellent ○ : Good

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

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

MULTI-1 DRILLS

CDRA04 SERIES

HSS-PM, MULTI-1 DRILLS

JOBBER

HSS-PM MULTI-1 BOHRER — *KURZ*
Forets MULTI-1 HSS-PM Premium, série courte — *COURTE*
PUNTA GAMBO CILINDRICO MULTI-1, HSS-PM — *CORTA*

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

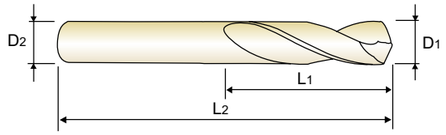
▶**Advantage** : Point shape to maximize self-centering.
Flute design for the best chip evacuation.
Premium powder materials with excellent toughness.

▶**Anwendung** : Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRc 30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.

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







HSS PM | 30° | h6 | h7 | 135° P.177

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA04020	2.0	3	24	56
CDRA04021	2.1	3	24	56
CDRA04022	2.2	3	25	56
CDRA04023	2.3	3	25	56
CDRA04024	2.4	3	30	61
CDRA04025	2.5	3	30	61
CDRA04026	2.6	3	30	61
CDRA04027	2.7	3	33	64
CDRA04028	2.8	3	33	64
CDRA04029	2.9	3	33	64
CDRA04030	3.0	3	33	64
CDRA04031	3.1	4	36	68
CDRA04032	3.2	4	36	68
CDRA04033	3.3	4	36	68
CDRA04034	3.4	4	39	71
CDRA04035	3.5	4	39	71
CDRA04036	3.6	4	39	71
CDRA04037	3.7	4	39	71
CDRA04038	3.8	4	43	75
CDRA04039	3.9	4	43	75
CDRA04040	4.0	4	43	75
CDRA04041	4.1	6	43	85
CDRA04042	4.2	6	43	85
CDRA04043	4.3	6	47	89

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA04044	4.4	6	47	89
CDRA04045	4.5	6	47	89
CDRA04046	4.6	6	47	89
CDRA04047	4.7	6	47	89
CDRA04048	4.8	6	52	94
CDRA04049	4.9	6	52	94
CDRA04050	5.0	6	52	94
CDRA04051	5.1	6	52	94
CDRA04052	5.2	6	52	94
CDRA04053	5.3	6	52	94
CDRA04054	5.4	6	57	99
CDRA04055	5.5	6	57	99
CDRA04056	5.6	6	57	99
CDRA04057	5.7	6	57	99
CDRA04058	5.8	6	57	99
CDRA04059	5.9	6	57	99
CDRA04060	6.0	6	57	99
CDRA04061	6.1	8	63	107
CDRA04062	6.2	8	63	107
CDRA04063	6.3	8	63	107
CDRA04064	6.4	8	63	107
CDRA04065	6.5	8	63	107
CDRA04066	6.6	8	63	107
CDRA04067	6.7	8	63	107

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

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

MULTI-1 DRILLS

CDRA04 SERIES

HSS-PM, MULTI-1 DRILLS

JOBBER

HSS-PM MULTI-1 BOHRER — KURZ
Forets MULTI-1 HSS-PM Premium, série courte — COURTE
PUNTA GAMBO CILINDRICO MULTI-1, HSS-PM — CORTA

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

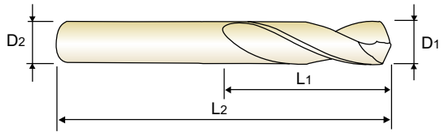
▶Advantage : Point shape to maximize self-centering.
Flute design for the best chip evacuation.
Premium powder materials with excellent toughness.

▶Anwendung : Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRc 30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.

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







HSS PM | 30° | h6 | h7 | 135° P.177

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA04068	6.8	8	69	113
CDRA04069	6.9	8	69	113
CDRA04070	7.0	8	69	113
CDRA04071	7.1	8	69	113
CDRA04072	7.2	8	69	113
CDRA04073	7.3	8	69	113
CDRA04074	7.4	8	69	113
CDRA04075	7.5	8	69	113
CDRA04076	7.6	8	75	119
CDRA04077	7.7	8	75	119
CDRA04078	7.8	8	75	119
CDRA04079	7.9	8	75	119
CDRA04080	8.0	8	75	119
CDRA04081	8.1	10	75	125
CDRA04082	8.2	10	75	125
CDRA04083	8.3	10	75	125
CDRA04084	8.4	10	75	125
CDRA04085	8.5	10	75	125
CDRA04086	8.6	10	81	131
CDRA04087	8.7	10	81	131
CDRA04088	8.8	10	81	131
CDRA04089	8.9	10	81	131
CDRA04090	9.0	10	81	131
CDRA04091	9.1	10	81	131

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA04092	9.2	10	81	131
CDRA04093	9.3	10	81	131
CDRA04094	9.4	10	81	131
CDRA04095	9.5	10	81	131
CDRA04096	9.6	10	87	137
CDRA04097	9.7	10	87	137
CDRA04098	9.8	10	87	137
CDRA04099	9.9	10	87	137
CDRA04100	10.0	10	87	137
CDRA04101	10.1	12	87	144
CDRA04102	10.2	12	87	144
CDRA04103	10.3	12	87	144
CDRA04104	10.4	12	87	144
CDRA04105	10.5	12	87	144
CDRA04106	10.6	12	87	144
CDRA04107	10.7	12	94	151
CDRA04108	10.8	12	94	151
CDRA04109	10.9	12	94	151
CDRA04110	11.0	12	94	151
CDRA04111	11.1	12	94	151
CDRA04112	11.2	12	94	151
CDRA04113	11.3	12	94	151
CDRA04114	11.4	12	94	151
CDRA04115	11.5	12	94	151

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

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

MULTI-1 DRILLS

CDRA04 SERIES

HSS-PM, MULTI-1 DRILLS

JOBBER

HSS-PM MULTI-1 BOHRER — *KURZ*
Forets MULTI-1 HSS-PM Premium, série courte — *COURTE*
PUNTA GAMBO CILINDRICO MULTI-1, HSS-PM — *CORTA*

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

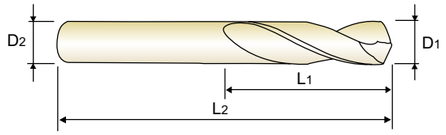
▶**Advantage** : Point shape to maximize self-centering.
Flute design for the best chip evacuation.
Premium powder materials with excellent toughness.

▶**Anwendung** : Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRc 30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.

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







HSS PM | 30° | h6 | h7 | 135° P.177

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA04116	**11.6**	12	94	151
CDRA04117	**11.7**	12	94	151
CDRA04118	**11.8**	12	94	151
CDRA04119	**11.9**	12	101	158
CDRA04120	**12.0**	12	101	158
CDRA04121	**12.1**	12	101	158
CDRA04122	**12.2**	12	101	158
CDRA04123	**12.3**	12	101	158

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA04124	**12.4**	12	101	158
CDRA04125	**12.5**	12	101	158
CDRA04126	**12.6**	12	101	158
CDRA04127	**12.7**	12	101	158
CDRA04128	**12.8**	12	101	158
CDRA04129	**12.9**	12	101	158
CDRA04130	**13.0**	12	101	158

◎ : Excellent ○ : Good

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

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

MULTI-1 DRILLS

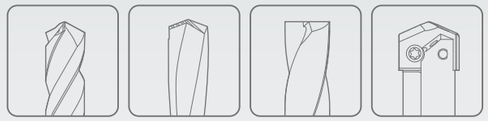
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

CDRA03, CDRA04 SERIES MULTI-1 DRILLS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
P	1	Non-alloy steel	40	RPM	6370	4240	3180	2550	2120	1590	1270	1060
				FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30
	2		35	RPM	5570	3710	2790	2230	1860	1390	1110	930
				FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30
	3		35	RPM	5570	3710	2790	2230	1860	1390	1110	930
				FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30
	4											
	5											
	6	Low alloy steel	35	RPM	5570	3710	2790	2230	1860	1390	1110	930
				FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18	0.14-0.20	0.18-0.24	0.18-0.28	0.20-0.30
	7		30	RPM	4770	3180	2390	1910	1590	1190	950	800
				FEED	0.03-0.05	0.06-0.10	0.07-0.13	0.10-0.16	0.12-0.18	0.14-0.20	0.14-0.24	0.16-0.26
	8											
	9											
	10	High alloyed steel, and tool steel										
	11											
M	12	Stainless steel	20	RPM	3180	2120	1590	1270	1060	800	640	530
				FEED	0.03-0.07	0.05-0.09	0.06-0.12	0.09-0.15	0.12-0.18	0.18-0.24	0.20-0.30	0.26-0.36
	13											
	14		15	RPM	2390	1590	1190	950	800	600	480	400
				FEED	0.02-0.05	0.03-0.07	0.04-0.10	0.06-0.12	0.07-0.13	0.10-0.20	0.12-0.22	0.14-0.24
K	15	Grey cast iron	40	RPM	6370	4240	3180	2550	2120	1590	1270	1060
				FEED	0.04-0.10	0.07-0.13	0.09-0.15	0.12-0.18	0.13-0.19	0.18-0.24	0.20-0.30	0.22-0.32
	16											
	17	Nodular cast iron										
	18											
	19	Malleable cast iron										
	20											
N	21	Aluminum-wrought alloy	90	RPM	14320	9550	7160	5730	4770	3580	2860	2390
				FEED	0.13-0.17	0.23-0.27	0.27-0.33	0.33-0.39	0.40-0.46	0.45-0.51	0.51-0.61	0.63-0.73
	22		90	RPM	14320	9550	7160	5730	4770	3580	2860	2390
				FEED	0.13-0.17	0.23-0.27	0.27-0.33	0.33-0.39	0.40-0.46	0.45-0.51	0.51-0.61	0.63-0.73
	23	Aluminum-cast, alloyed	80	RPM	12730	8490	6370	5090	4240	3180	2550	2120
				FEED	0.13-0.17	0.23-0.27	0.27-0.33	0.33-0.39	0.40-0.46	0.45-0.51	0.51-0.61	0.63-0.73
	24		70	RPM	11140	7430	5570	4460	3710	2790	2230	1860
				FEED	0.10-0.14	0.15-0.19	0.20-0.26	0.24-0.30	0.28-0.34	0.30-0.36	0.34-0.44	0.36-0.46
	25											
	26	Copper and Copper Alloys (Bronze / Brass)										
	27											
	28											
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys										
	32											
	33											
	34											
	35											
	36	Titanium Alloys	5	RPM	800	530	400	320	270	200	160	130
				FEED	0.02-0.05	0.03-0.07	0.04-0.08	0.06-0.12	0.07-0.13	0.09-0.15	0.12-0.22	0.14-0.24
	37											
H	38	Hardened steel										
	39											
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation



HSSCo8 & HSS-E

HPD STRAIGHT SHANK DRILLS

HPD BOHRER

- **High Precision Drilling for General Steels & Stainless Steels**
- **Hochpräzises Bohren für allgemeine Stähle und rostfreie Stähle**

SELECTION GUIDE

YG HOLEMAKING TOOLS

SERIES	D4541	D4542	DJ543	DJ544
TOOL MATERIAL	HSSCo8		HSS-E	
LENGTH	STUB	JOBBER	STUB	JOBBER
SIZE MIN	D2.0	D2.0	D2.0	D2.0
SIZE MAX	D13.0	D32.0	D13.0	D20.0
PAGE	182	186	192	195
SURFACE TREATMENT	TiN		TiN	

HSSCo8 & HSS-E
HPD STRAIGHT SHANK DRILLS

High Precision Drilling for General Steels & Stainless Steels





Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.198

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	D4541	D4542	DJ543	DJ544		
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎	○	○	1	P
	2		About 0.45% C	Annealed	190	13	◎	◎			2	
	3		About 0.45% C	Quenched & Tempered	250	25	○	○			3	
	4		About 0.75% C	Annealed	270	28					4	
	5		About 0.75% C	Quenched & Tempered	300	32					5	
	6	Low alloy steel		Annealed	180	10	◎	◎			6	
	7			Quenched & Tempered	275	29	○	○			7	
	8			Quenched & Tempered	300	32					8	
	9			Quenched & Tempered	350	38					9	
	10	High alloyed steel, and tool steel		Annealed	200	15	○	○			10	
	11			Quenched & Tempered	325	35					11	
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15			◎	◎	12	M
	13		Martensitic	Quenched & Tempered	240	23			○	○	13	
	14		Austenitic		180	10			◎	◎	14	
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎	◎			15	K
	16		Pearlitic (Martensitic)		260	26					16	
	17	Nodular cast iron	Ferritic		160	3					17	
	18		Pearlitic		250	25					18	
	19	Malleable cast iron	Ferritic		130						19	
	20		Pearlitic		230	21					20	
N	21	Aluminum-wrought alloy	Not Curable		60				◎	◎	21	N
	22		Curable	Hardened	100				◎	◎	22	
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75						23	
	24		≤ 12% Si, Curable	Hardened	90						24	
	25		> 12% Si, Not Curable		130						25	
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110				○	○	26	
	27		CuZn, CuSnZn (Brass)		90						27	
	28		CuSn, lead-free copper and electrolytic copper		100						28	
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic								29	
	30		Rubber, Wood, etc.								30	
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15					31	S
	32			Cured	280	30					32	
	33		Ni or Co Based	Annealed	250	25					33	
	34			Cured	350	38					34	
	35			Cast	320	34					35	
	36	Titanium Alloys	Pure Titanium		400 Rm						36	
	37		Alpha + Beta Alloys	Hardened	1050 Rm						37	
H	38	Hardened steel		Hardened	550	55					38	H
	39			Hardened	630	60					39	
	40	Chilled Cast Iron		Cast	400	42					40	
	41	Hardened Cast Iron		Hardened	550	55					41	

HPD DRILLS

D4541 SERIES

HSSCo8, HPD TWIST DRILLS for STEELS

STUB

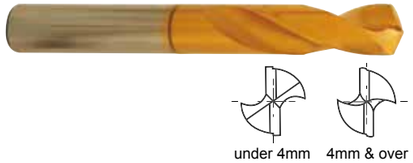
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — ***EXTRA KURZ***
Forets HPD HSSCo Premium pour Aciers, série extra-courte — ***EXTRA-COURTE***
PUNTE ELICOIDALI HPD IN PREMIUM HSS Co, PER ACCIAI — ***EXTRA CORTA***

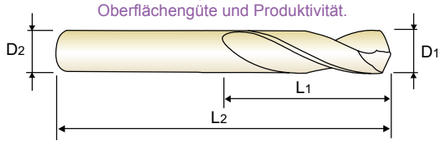
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Reinforced web and stub length - increasing rigidity, reducing vibration and deflection.
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity

▶**Anwendung** : Für präzises Bohren mit NC/CNC Maschinen, geeignet zum Bearbeiten von harten und zähen Werkstücken, Legierungen, Werkzeugstahl, Nimonic, Inconel, Gusseisen, Aluminium-Guss usw.

▶**Vorteile** : Durch Kreuzanschliff gute Spanentfernung, reduzierter Druck, verbesserte Genauigkeit, selbstzentriert, extra kurze Ausführung, verbesserte Stabilität, weniger Vibrationen und Abdrängung, Premium Kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





HSS Co8 | 25° | h7 | h8 | 130° | P.198-199

D_1=D_2

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541020	2.00	12	44
D4541920	2.05	12	44
D4541021	2.10	12	44
D4541921	2.15	13	45
D4541022	2.20	13	45
D4541922	2.25	13	45
D4541023	2.30	13	45
D4541923	2.35	13	45
D4541024	2.40	14	46
D4541924	2.45	14	46
D4541025	2.50	14	46
D4541925	2.55	14	46
D4541026	2.60	14	46
D4541926	2.65	14	46
D4541027	2.70	16	48
D4541927	2.75	16	48
D4541028	2.80	16	48
D4541928	2.85	16	48
D4541029	2.90	16	48
D4541929	2.95	16	48
D4541030	3.00	16	48
D4541930	3.05	18	50

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541031	3.10	18	50
D4541931	3.15	18	50
D4541032	3.20	18	50
D4541932	3.25	18	50
D4541033	3.30	18	50
D4541933	3.35	18	50
D4541034	3.40	20	52
D4541934	3.45	20	52
D4541035	3.50	20	52
D4541935	3.55	20	52
D4541036	3.60	20	52
D4541936	3.65	20	52
D4541037	3.70	20	52
D4541937	3.75	20	52
D4541038	3.80	22	54
D4541938	3.85	22	54
D4541039	3.90	22	54
D4541939	3.95	22	54
D4541040	4.00	22	54
D4541940	4.05	22	66
D4541041	4.10	22	66
D4541941	4.15	22	66

▶ TiCN(D7541), TiAlN(DQ541) are available on your request.

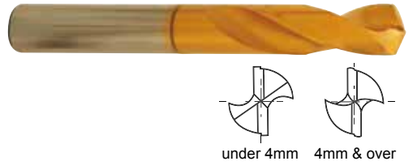
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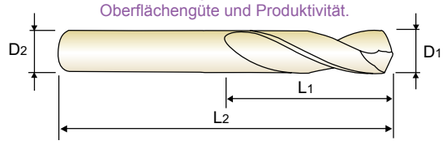
◎ : Excellent ○ : Good

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

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

HPD DRILLS
D4541 SERIES
HSSCo8, HPD TWIST DRILLS for STEELS
STUB
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — EXTRA KURZ
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PUNTE ELICOIDALI HPD IN PREMIUM HSS Co, PER ACCIAI — EXTRA CORTA
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HSS Co8 | 25° | h7 | h8 | 130° | P.198-199

D_1=D_2

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541042	4.20	22	66
D4541942	4.25	22	66
D4541043	4.30	24	68
D4541943	4.35	24	68
D4541044	4.40	24	68
D4541944	4.45	24	68
D4541045	4.50	24	68
D4541945	4.55	24	68
D4541046	4.60	24	68
D4541946	4.65	24	68
D4541047	4.70	24	68
D4541947	4.75	24	68
D4541048	4.80	26	70
D4541948	4.85	26	70
D4541049	4.90	26	70
D4541949	4.95	26	70
D4541050	5.00	26	70
D4541950	5.05	26	70
D4541051	5.10	26	70
D4541951	5.15	26	70
D4541052	5.20	26	70
D4541952	5.25	26	70

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541053	5.30	26	70
D4541953	5.35	28	72
D4541054	5.40	28	72
D4541954	5.45	28	72
D4541055	5.50	28	72
D4541955	5.55	28	72
D4541056	5.60	28	72
D4541956	5.65	28	72
D4541057	5.70	28	72
D4541957	5.75	28	72
D4541058	5.80	28	72
D4541958	5.85	28	72
D4541059	5.90	28	72
D4541959	5.95	28	72
D4541060	6.00	28	72
D4541061	6.10	31	75
D4541062	6.20	31	75
D4541063	6.30	31	75
D4541064	6.40	31	75
D4541065	6.50	31	75
D4541965	6.55	31	75
D4541066	6.60	31	75

▶ TiCN(D7541), TiAlN(DQ541) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	○			◎	○			○					◎					

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

HPD DRILLS

D4541 SERIES

HSSCo8, HPD TWIST DRILLS for STEELS

STUB

PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE
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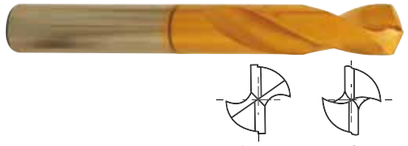
EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

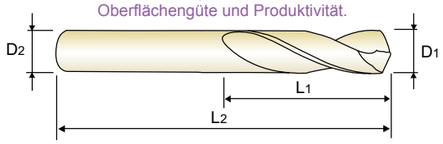
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HSS Co8 | 25° | h7 | h8 | 130° | P.198-199

D_1=D_2

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541966	6.65	31	75
D4541067	6.70	31	75
D4541068	6.80	34	78
D4541069	6.90	34	78
D4541070	7.00	34	78
D4541071	7.10	34	78
D4541072	7.20	34	78
D4541073	7.30	34	78
D4541973	7.35	34	78
D4541074	7.40	34	78
D4541075	7.50	34	78
D4541975	7.55	37	81
D4541076	7.60	37	81
D4541976	7.65	37	81
D4541077	7.70	37	81
D4541078	7.80	37	81
D4541079	7.90	37	81
D4541080	8.00	37	81
D4541081	8.10	37	87
D4541082	8.20	37	87
D4541083	8.30	37	87
D4541983	8.35	37	87

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541084	8.40	37	87
D4541085	8.50	37	87
D4541985	8.55	40	90
D4541086	8.60	40	90
D4541986	8.65	40	90
D4541087	8.70	40	90
D4541088	8.80	40	90
D4541089	8.90	40	90
D4541090	9.00	40	90
D4541091	9.10	40	90
D4541092	9.20	40	90
D4541992	9.25	40	90
D4541093	9.30	40	90
D4541993	9.35	40	90
D4541094	9.40	40	90
D4541994	9.45	40	90
D4541095	9.50	40	90
D4541995	9.55	43	93
D4541096	9.60	43	93
D4541996	9.65	43	93
D4541097	9.70	43	93
D4541098	9.80	43	93

▶ TiCN(D7541), TiAlN(DQ541) are available on your request.

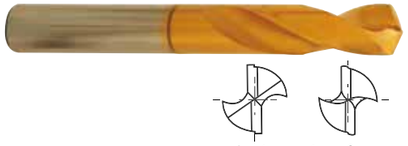
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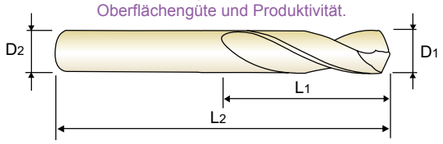
◎ : Excellent ○ : Good

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

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

HPD DRILLS
D4541 SERIES
HSSCo8, HPD TWIST DRILLS for STEELS
STUB
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE
Forets HPD HSSCo Premium pour Aciers, série extra-courte
PUNTE ELICOIDALI HPD IN PREMIUM HSS Co, PER ACCIAI
EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA
▶Application : Designed for accurate drilling on NC/CNC machines. Drilling hard and tough materials, alloyed tool steels, inconel, nimonic, cast iron, aluminum die casting, etc.
▶Advantage : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy.
Reinforced web and stub length - increasing rigidity, reducing vibration and deflection.
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity
▶Anwendung : Für präzises Bohren mit NC/CNC Maschinen, geeignet zum Bearbeiten von harten und zähen Werkstücken, Legierungen, Werkzeugstahl, Nimonic, Inconel, Gusseisen, Aluminium-Guss usw.
▶Vorteile : Durch Kreuzanschliff gute Spanentfernung, reduzierter Druck, verbesserte Genauigkeit, selbstzentriert, extra kurze Ausführung, verbesserte Stabilität, weniger Vibrationen und Abdrängung, Premium Kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





HSS Co8 | 25° | h7 | h8 | 130° | P.198-199

D_1=D_2

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541099	9.90	43	93
D4541999	9.95	43	93
D4541100	10.00	43	93
D4541101	10.10	43	100
D4541102	10.20	43	100
D4541802	10.25	43	100
D4541103	10.30	43	100
D4541803	10.35	43	100
D4541104	10.40	43	100
D4541105	10.50	43	100
D4541805	10.55	43	100
D4541106	10.60	43	100
D4541806	10.65	47	104
D4541107	10.70	47	104
D4541108	10.80	47	104
D4541109	10.90	47	104
D4541809	10.95	47	104
D4541110	11.00	47	104
D4541111	11.10	47	104
D4541112	11.20	47	104
D4541812	11.25	47	104

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541113	11.30	47	104
D4541813	11.35	47	104
D4541114	11.40	47	104
D4541115	11.50	47	104
D4541815	11.55	47	104
D4541116	11.60	47	104
D4541117	11.70	47	104
D4541118	11.80	47	104
D4541119	11.90	51	108
D4541120	12.00	51	108
D4541121	12.10	51	108
D4541122	12.20	51	108
D4541123	12.30	51	108
D4541124	12.40	51	108
D4541125	12.50	51	108
D4541126	12.60	51	108
D4541127	12.70	51	108
D4541128	12.80	51	108
D4541129	12.90	51	108
D4541130	13.00	51	108

▶ TiCN(D7541), TiAlN(DQ541) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	○			◎	○			○					◎					

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

HPD DRILLS

D4542 SERIES

HSSCo8, HPD TWIST DRILLS for STEELS

JOBBER
KURZ
COURTE
CORTA

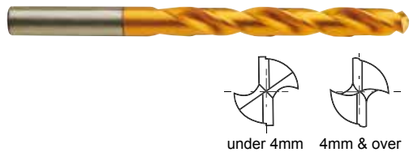
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE
Forets HPD HSSCo Premium pour Aciers, série courte
PUNTE ELICOIDALI HPD IN PREMIUM HSS Co, PER ACCIAI

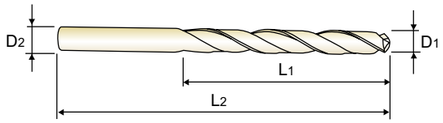
▶**Application** : Designed for high speed non-step 4D~5D drilling.
Drilling mild steels, cast iron, aluminum, alloyed tool steels, etc.

▶**Advantage** : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy.
Reinforced web and jobbers length - increasing rigidity and suitable for 4D~5D drilling
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶**Anwendung** : Zum Hochgeschwindigkeitsbohren 4D~5D Bohrtiefe geeignet zum Bearbeiten von Stahl, Gusseisen, Aluminium, Legierungen, Werkzeugstahl, usw.

▶**Vorteile** : Gute Spanabfuhr, selbstzentriert, geringere Abdrängung und verbesserte Genauigkeit, kurze Ausführung, verbesserte Stabilität, zum Bearbeiten von Premium kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





HSS Co8 | 30° | h7 | h6 | h8 | 130° | P.198-199

up to 13mm over 13mm

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542020	2.00	24	56
D4542920	2.05	24	56
D4542021	2.10	24	56
D4542921	2.15	27	59
D4542022	2.20	27	59
D4542922	2.25	27	59
D4542023	2.30	27	59
D4542923	2.35	27	59
D4542024	2.40	30	62
D4542924	2.45	30	62
D4542025	2.50	30	62
D4542925	2.55	30	62
D4542026	2.60	30	62
D4542926	2.65	30	62
D4542027	2.70	33	65
D4542927	2.75	33	65
D4542028	2.80	33	65
D4542928	2.85	33	65
D4542029	2.90	33	65
D4542929	2.95	33	65
D4542030	3.00	33	65
D4542930	3.05	36	68

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542031	3.10	36	68
D4542931	3.15	36	68
D4542032	3.20	36	68
D4542932	3.25	36	68
D4542033	3.30	36	68
D4542933	3.35	36	68
D4542034	3.40	39	71
D4542934	3.45	39	71
D4542035	3.50	39	71
D4542935	3.55	39	71
D4542036	3.60	39	71
D4542936	3.65	39	71
D4542037	3.70	39	71
D4542937	3.75	39	71
D4542038	3.80	43	75
D4542938	3.85	43	75
D4542039	3.90	43	75
D4542939	3.95	43	75
D4542040	4.00	43	75
D4542940	4.05	43	87
D4542041	4.10	43	87
D4542941	4.15	43	87

▶ TiCN(D7542), TiAlN(DQ542) are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

HPD DRILLS
D4542 SERIES
HSSCo8, HPD TWIST DRILLS for STEELS
JOBBER
KURZ
COURTE
CORTA
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE
Forets HPD HSSCo Premium pour Aciers, série courte
PUNTE ELICOIDALI HPD IN PREMIUM HSS Co, PER ACCIAI
▶Application : Designed for high speed non-step 4D~5D drilling.
Drilling mild steels, cast iron, aluminum, alloyed tool steels, etc.
▶Advantage : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy.
Reinforced web and jobbers length - increasing rigidity and suitable for 4D~5D drilling
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.
▶Anwendung : Zum Hochgeschwindigkeitsbohren 4D~5D Bohrtiefe geeignet zum Bearbeiten von Stahl, Gusseisen, Aluminium, Legierungen, Werkzeugstahl, usw.
▶Vorteile : Gute Spanabfuhr, selbstzentriert, geringere Abdrängung und verbesserte Genauigkeit, kurze Ausführung, verbesserte Stabilität, zum Bearbeiten von Premium kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.
under 4mm
4mm & over
D2
D1
L1
L2
HSS Co8 | 30° | h7 | h6 | h8 | 130°
up to 13mm over 13mm
D1=D2
Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542042	4.20	43	87
D4542942	4.25	43	87
D4542043	4.30	47	91
D4542943	4.35	47	91
D4542044	4.40	47	91
D4542944	4.45	47	91
D4542045	4.50	47	91
D4542945	4.55	47	91
D4542046	4.60	47	91
D4542946	4.65	47	91
D4542047	4.70	47	91
D4542947	4.75	47	91
D4542048	4.80	52	96
D4542948	4.85	52	96
D4542049	4.90	52	96
D4542949	4.95	52	96
D4542050	5.00	52	96
D4542950	5.05	52	96
D4542051	5.10	52	96
D4542951	5.15	52	96
D4542052	5.20	52	96
D4542952	5.25	52	96

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542053	5.30	52	96
D4542953	5.35	57	101
D4542054	5.40	57	101
D4542954	5.45	57	101
D4542055	5.50	57	101
D4542955	5.55	57	101
D4542056	5.60	57	101
D4542956	5.65	57	101
D4542057	5.70	57	101
D4542957	5.75	57	101
D4542058	5.80	57	101
D4542958	5.85	57	101
D4542059	5.90	57	101
D4542959	5.95	57	101
D4542060	6.00	57	101
D4542960	6.05	63	107
D4542061	6.10	63	107
D4542961	6.15	63	107
D4542062	6.20	63	107
D4542962	6.25	63	107
D4542063	6.30	63	107
D4542963	6.35	63	107

▶ TiCN(D7542), TiAlN(DQ542) are available on your request.
▶ NEXT PAGE
◎ : Excellent ○ : Good

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

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

HPD DRILLS

D4542 SERIES

HSSCo8, HPD TWIST DRILLS for STEELS

JOBBER

PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE
Forets HPD HSSCo Premium pour Aciers, série courte
PUNTE ELICOIDALI HPD IN PREMIUM HSS Co, PER ACCIAI

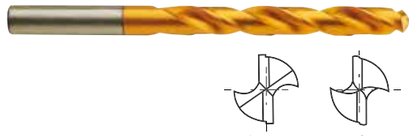
KURZ
COURTE
CORTA

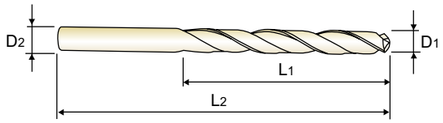
▶**Application** : Designed for high speed non-step 4D~5D drilling.
Drilling mild steels, cast iron, aluminum, alloyed tool steels, etc.

▶**Advantage** : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy.
Reinforced web and jobbers length - increasing rigidity and suitable for 4D~5D drilling
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶**Anwendung** : Zum Hochgeschwindigkeitsbohren 4D~5D Bohrtiefe geeignet zum Bearbeiten von Stahl, Gusseisen, Aluminium, Legierungen, Werkzeugstahl, usw.

▶**Vorteile** : Gute Spanabfuhr, selbstzentriert, geringere Abdrängung und verbesserte Genauigkeit, kurze Ausführung, verbesserte Stabilität, zum Bearbeiten von Premium kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





HSS Co8 | 30° | h7 | h6 | h8 | 130° | P.198-199

up to 13mm over 13mm

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542064	6.40	63	107
D4542964	6.45	63	107
D4542065	6.50	63	107
D4542965	6.55	63	107
D4542066	6.60	63	107
D4542966	6.65	63	107
D4542067	6.70	63	107
D4542967	6.75	69	113
D4542068	6.80	69	113
D4542968	6.85	69	113
D4542069	6.90	69	113
D4542969	6.95	69	113
D4542070	7.00	69	113
D4542970	7.05	69	113
D4542071	7.10	69	113
D4542971	7.15	69	113
D4542072	7.20	69	113
D4542972	7.25	69	113
D4542073	7.30	69	113
D4542973	7.35	69	113
D4542074	7.40	69	113
D4542974	7.45	69	113

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542075	7.50	69	113
D4542975	7.55	75	119
D4542076	7.60	75	119
D4542976	7.65	75	119
D4542077	7.70	75	119
D4542977	7.75	75	119
D4542078	7.80	75	119
D4542978	7.85	75	119
D4542079	7.90	75	119
D4542979	7.95	75	119
D4542080	8.00	75	119
D4542980	8.05	75	125
D4542081	8.10	75	125
D4542981	8.15	75	125
D4542082	8.20	75	125
D4542982	8.25	75	125
D4542083	8.30	75	125
D4542983	8.35	75	125
D4542084	8.40	75	125
D4542984	8.45	75	125
D4542085	8.50	75	125
D4542985	8.55	81	131

▶ TiCN(D7542), TiAlN(DQ542) are available on your request.

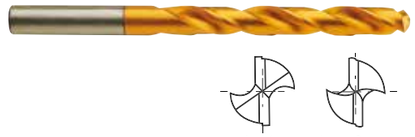
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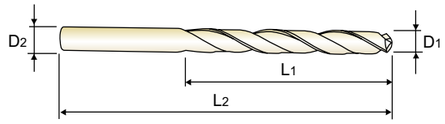
◎ : Excellent ○ : Good

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

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

HPD DRILLS
D4542 SERIES
HSSCo8, HPD TWIST DRILLS for STEELS
JOBBER
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE
Forets HPD HSSCo Premium pour Aciers, série courte
PUNTE ELICOIDALI HPD IN PREMIUM HSS Co, PER ACCIAI
KURZ
COURTE
CORTA
▶Application : Designed for high speed non-step 4D~5D drilling. Drilling mild steels, cast iron, aluminum, alloyed tool steels, etc.
▶Advantage : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy. Reinforced web and jobbers length - increasing rigidity and suitable for 4D~5D drilling Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life High quality & good surface finish, high productivity.
▶Anwendung : Zum Hochgeschwindigkeitsbohren 4D~5D Bohrtiefe geeignet zum Bearbeiten von Stahl, Gusseisen, Aluminium, Legierungen, Werkzeugstahl, usw.
▶Vorteile : Gute Spanabfuhr, selbstzentriert, geringere Abdrängung und verbesserte Genauigkeit, kurze Ausführung, verbesserte Stabilität, zum Bearbeiten von Premium kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





HSS Co8 | 30° | h7 | h6 | h8 | 130° | P.198-199
up to 13mm over 13mm
$D_1=D_2$
Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542086	8.60	81	131
D4542986	8.65	81	131
D4542087	8.70	81	131
D4542987	8.75	81	131
D4542088	8.80	81	131
D4542988	8.85	81	131
D4542089	8.90	81	131
D4542989	8.95	81	131
D4542090	9.00	81	131
D4542990	9.05	81	131
D4542091	9.10	81	131
D4542991	9.15	81	131
D4542092	9.20	81	131
D4542992	9.25	81	131
D4542093	9.30	81	131
D4542993	9.35	81	131
D4542094	9.40	81	131
D4542994	9.45	81	131
D4542095	9.50	81	131
D4542995	9.55	87	137
D4542096	9.60	87	137
D4542996	9.65	87	137

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542097	9.70	87	137
D4542998	9.85	87	137
D4542099	9.90	87	137
D4542999	9.95	87	137
D4542100	10.00	87	137
D4542800	10.05	87	144
D4542101	10.10	87	144
D4542801	10.15	87	144
D4542102	10.20	87	144
D4542802	10.25	87	144
D4542103	10.30	87	144
D4542803	10.35	87	144
D4542104	10.40	87	144
D4542804	10.45	87	144
D4542105	10.50	87	144
D4542805	10.55	87	144
D4542106	10.60	87	144
D4542806	10.65	94	151
D4542107	10.70	94	151
D4542807	10.75	94	151

▶ TiCN(D7542), TiAlN(DQ542) are available on your request.
▶ NEXT PAGE
◎ : Excellent ○ : Good

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

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

HPD DRILLS

D4542 SERIES

HSSCo8, HPD TWIST DRILLS for STEELS

JOBBER

PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — ***KURZ***

Forets HPD HSSCo Premium pour Aciers, série courte — ***COURTE***

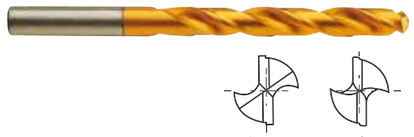
PUNTE ELICOIDALI HPD IN PREMIUM HSS Co, PER ACCIAI — ***CORTA***

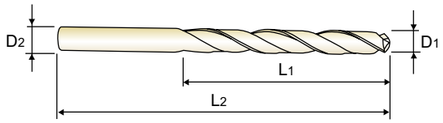
▶**Application** : Designed for high speed non-step 4D~5D drilling.
Drilling mild steels, cast iron, aluminum, alloyed tool steels, etc.

▶**Advantage** : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy.
Reinforced web and jobbers length - increasing rigidity and suitable for 4D~5D drilling
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶**Anwendung** : Zum Hochgeschwindigkeitsbohren 4D~5D Bohrtiefe geeignet zum Bearbeiten von Stahl, Gusseisen, Aluminium, Legierungen, Werkzeugstahl, usw.

▶**Vorteile** : Gute Spanabfuhr, selbstzentriert, geringere Abdrängung und verbesserte Genauigkeit, kurze Ausführung, verbesserte Stabilität, zum Bearbeiten von Premium kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





HSS Co8 | 30° | h7 | h6 | h8 | 130° | P.198-199

up to 13mm over 13mm

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542108	10.80	94	151
D4542808	10.85	94	151
D4542109	10.90	94	151
D4542809	10.95	94	151
D4542110	11.00	94	151
D4542810	11.05	94	151
D4542111	11.10	94	151
D4542811	11.15	94	151
D4542112	11.20	94	151
D4542812	11.25	94	151
D4542113	11.30	94	151
D4542813	11.35	94	151
D4542114	11.40	94	151
D4542814	11.45	94	151
D4542115	11.50	94	151
D4542815	11.55	94	151
D4542116	11.60	94	151
D4542816	11.65	94	151
D4542117	11.70	94	151
D4542817	11.75	94	151
D4542118	11.80	94	151
D4542818	11.85	101	158

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542119	11.90	101	158
D4542819	11.95	101	158
D4542120	12.00	101	158
D4542121	12.10	101	158
D4542122	12.20	101	158
D4542123	12.30	101	158
D4542124	12.40	101	158
D4542125	12.50	101	158
D4542126	12.60	101	158
D4542127	12.70	101	158
D4542128	12.80	101	158
D4542129	12.90	101	158
D4542130	13.00	101	158
D4542135	13.50	90	150
D4542140	14.00	90	150
D4542141	14.10	95	155
D4542145	14.50	95	155
D4542150	15.00	95	161
D4542155	15.50	100	166
D4542156	15.60	100	166
D4542160	16.00	100	166
D4542165	16.50	106	172

▶ TiCN(D7542), TiAlN(DQ542) are available on your request.

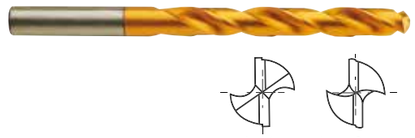
▶ NEXT PAGE

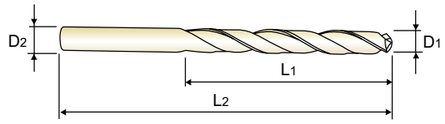
◎ : Excellent ○ : Good

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

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

HPD DRILLS
D4542 SERIES
HSSCo8, HPD TWIST DRILLS for STEELS
JOBBER
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — KURZ
Forets HPD HSSCo Premium pour Aciers, série courte — COURTE
PUNTE ELICOIDALI HPD IN PREMIUM HSS Co, PER ACCIAI — CORTA
▶Application : Designed for high speed non-step 4D~5D drilling. Drilling mild steels, cast iron, aluminum, alloyed tool steels, etc.
▶Advantage : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy. Reinforced web and jobbers length - increasing rigidity and suitable for 4D~5D drilling Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life High quality & good surface finish, high productivity.
▶Anwendung : Zum Hochgeschwindigkeitsbohren 4D~5D Bohrtiefe geeignet zum Bearbeiten von Stahl, Gusseisen, Aluminium, Legierungen, Werkzeugstahl, usw.
▶Vorteile : Gute Spanabfuhr, selbstzentriert, geringere Abdrängung und verbesserte Genauigkeit, kurze Ausführung, verbesserte Stabilität, zum Bearbeiten von Premium kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





HSS Co8 | 30° | h7 | h6 | h8 | 130° | P.198-199

up to 13mm over 13mm

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542170	17.00	106	172
D4542175	17.50	112	178
D4542176	17.60	112	178
D4542180	18.00	112	178
D4542185	18.50	118	184
D4542190	19.00	118	194
D4542195	19.50	125	201
D4542196	19.60	125	201
D4542200	20.00	125	201
D4542205	20.50	128	204
D4542210	21.00	128	204
D4542211	21.10	128	204
D4542215	21.50	132	208
D4542220	22.00	132	208
D4542225	22.50	136	212

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542230	23.00	136	212
D4542235	23.50	136	212
D4542240	24.00	140	220
D4542245	24.50	140	220
D4542250	25.00	140	220
D4542255	25.50	145	225
D4542260	26.00	145	225
D4542265	26.50	145	225
D4542270	27.00	150	230
D4542280	28.00	150	230
D4542290	29.00	155	235
D4542300	30.00	155	235
D4542310	31.00	160	240
D4542320	32.00	165	245

▶ TiCN(D7542), TiAlN(DQ542) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	○			◎	○			○					◎					

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

HPD DRILLS

DJ543 SERIES

HSS-E, HPD-SUS TWIST DRILLS for STAINLESS STEELS

STUB

HSS-E, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE
Forets HPD-SUS HSS-E pour INOX, série extra-courte
PUNTE ELICOIDALI HPD-SUS IN HSS-E, PER ACCIAI INOX

EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

▶**Application** : Designed for drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

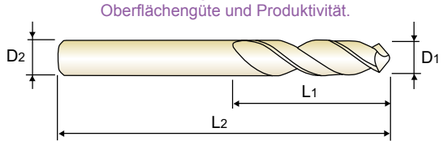
▶**Advantage** : High helix-sharp cutting edges to avoid built-up and to be suitable for high performance drilling
Wide flute and stub length-increasing chip removal and reducing vibration and deflecton.
High vanadium HSS-E material with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶Anwendung : Geeignet zum Bearbeiten von rostfreier stähle, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierungen usw.

▶Vorteile : Durch hohen Helix wird Spanstau vermieden, geeignet zum Hochleistungsbohren, durch die breiten Schneiden und die kurze Ausführung wird die Spanabfuhr erhöht und Vibrationen und Stoß reduziert. Hoch Vanadium HSS-E-Material mit TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.



four facet



for STAINLESS STEELS
für rostfreier Stäle

HSS-E | 38° | h7 | h8 | 130° (up to 4mm) | 120° (over 4mm)

P.200-201

D_1=D_2

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ543020	2.00	12	44
DJ543021	2.10	12	44
DJ543022	2.20	13	45
DJ543023	2.30	13	45
DJ543024	2.40	14	46
DJ543025	2.50	14	46
DJ543026	2.60	14	46
DJ543027	2.70	16	48
DJ543028	2.80	16	48
DJ543029	2.90	16	48
DJ543030	3.00	16	48
DJ543031	3.10	18	50
DJ543032	3.20	18	50
DJ543033	3.30	18	50
DJ543034	3.40	20	52
DJ543035	3.50	20	52
DJ543036	3.60	20	52
DJ543037	3.70	20	52
DJ543038	3.80	22	54
DJ543039	3.90	22	54
DJ543040	4.00	22	54
DJ543041	4.10	22	66

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ543042	4.20	22	66
DJ543043	4.30	24	68
DJ543044	4.40	24	68
DJ543045	4.50	24	68
DJ543046	4.60	24	68
DJ543047	4.70	24	68
DJ543048	4.80	26	70
DJ543049	4.90	26	70
DJ543050	5.00	26	70
DJ543051	5.10	26	70
DJ543052	5.20	26	70
DJ543053	5.30	26	70
DJ543054	5.40	28	72
DJ543055	5.50	28	72
DJ543056	5.60	28	72
DJ543057	5.70	28	72
DJ543058	5.80	28	72
DJ543059	5.90	28	72
DJ543060	6.00	28	72
DJ543061	6.10	31	75
DJ543062	6.20	31	75
DJ543063	6.30	31	75

▶ TiCN(DW543), TiAlN(DY543) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	○											◎	○	◎						

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

HPD DRILLS

DJ543 SERIES

HSS-E, HPD-SUS TWIST DRILLS for STAINLESS STEELS

STUB

HSS-E, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE
Forets HPD-SUS HSS-E pour INOX, série extra-courte
PUNTE ELICOIDALI HPD-SUS IN HSS-E, PER ACCIAI INOX

EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

▶Application : Designed for drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

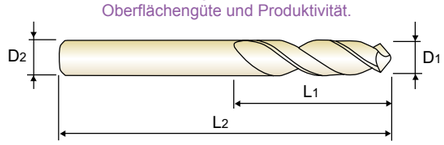
▶Advantage : High helix-sharp cutting edges to avoid built-up and to be suitable for high performance drilling
Wide flute and stub length-increasing chip removal and reducing vibration and deflecton.
High vanadium HSS-E material with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶Anwendung : Geeignet zum Bearbeiten von rostfreier stähle, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierungen usw.

▶Vorteile : Durch hohen Helix wird Spanstau vermieden, geeignet zum Hochleistungsbohren, durch die breiten Schneiden und die kurze Ausführung wird die Spanabfuhr erhöht und Vibrationen und Stoß reduziert. Hoch Vanadium HSS-E-Material mit TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.



four facet



for STAINLESS STEELS
für rostfreier Stäle

HSS-E | 38° | h7 | h8 | 130° (up to 4mm) | 120° (over 4mm)

P.200-201

D1=D2

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ543064	6.40	31	75
DJ543065	6.50	31	75
DJ543066	6.60	31	75
DJ543067	6.70	31	75
DJ543068	6.80	34	78
DJ543069	6.90	34	78
DJ543070	7.00	34	78
DJ543071	7.10	34	78
DJ543072	7.20	34	78
DJ543073	7.30	34	78
DJ543074	7.40	34	78
DJ543075	7.50	34	78
DJ543076	7.60	37	81
DJ543077	7.70	37	81
DJ543078	7.80	37	81
DJ543079	7.90	37	81
DJ543080	8.00	37	81
DJ543081	8.10	37	87
DJ543082	8.20	37	87
DJ543083	8.30	37	87
DJ543084	8.40	37	87
DJ543085	8.50	37	87

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ543086	8.60	40	90
DJ543087	8.70	40	90
DJ543088	8.80	40	90
DJ543089	8.90	40	90
DJ543090	9.00	40	90
DJ543091	9.10	40	90
DJ543092	9.20	40	90
DJ543093	9.30	40	90
DJ543094	9.40	40	90
DJ543095	9.50	40	90
DJ543096	9.60	43	93
DJ543097	9.70	43	93
DJ543098	9.80	43	93
DJ543099	9.90	43	93
DJ543100	10.00	43	93
DJ543101	10.10	43	100
DJ543102	10.20	43	100
DJ543103	10.30	43	100
DJ543104	10.40	43	100
DJ543105	10.50	43	100
DJ543106	10.60	43	100
DJ543107	10.70	47	104

▶ TiCN(DW543), TiAlN(DY543) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	○											◎	○	◎						

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

HPD DRILLS

DJ543 SERIES

HSS-E, HPD-SUS TWIST DRILLS for STAINLESS STEELS

STUB

HSS-E, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE
Forets HPD-SUS HSS-E pour INOX, série extra-courte
PUNTE ELICOIDALI HPD-SUS IN HSS-E, PER ACCIAI INOX

EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

▶**Application** : Designed for drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

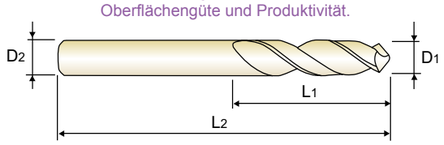
▶**Advantage** : High helix-sharp cutting edges to avoid built-up and to be suitable for high performance drilling
Wide flute and stub length-increasing chip removal and reducing vibration and deflecton.
High vanadium HSS-E material with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶Anwendung : Geeignet zum Bearbeiten von rostfreier stähle, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierungen usw.

▶Vorteile : Durch hohen Helix wird Spanstau vermieden, geeignet zum Hochleistungsbohren, durch die breiten Schneiden und die kurze Ausführung wird die Spanabfuhr erhöht und Vibrationen und Stoß reduziert. Hoch Vanadium HSS-E-Material mit TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.



four facet



for STAINLESS STEELS
für rostfreier Stäle

HSS-E | 38° | h7 | h8 | 130° | 120° | P.200-201

up to 4mm over 4mm

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ543108	10.80	47	104
DJ543109	10.90	47	104
DJ543110	11.00	47	104
DJ543111	11.10	47	104
DJ543112	11.20	47	104
DJ543113	11.30	47	104
DJ543114	11.40	47	104
DJ543115	11.50	47	104
DJ543116	11.60	47	104
DJ543117	11.70	47	104
DJ543118	11.80	47	104
DJ543119	11.90	51	108

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ543120	12.00	51	108
DJ543121	12.10	51	108
DJ543122	12.20	51	108
DJ543123	12.30	51	108
DJ543124	12.40	51	108
DJ543125	12.50	51	108
DJ543126	12.60	51	108
DJ543127	12.70	51	108
DJ543128	12.80	51	108
DJ543129	12.90	51	108
DJ543130	13.00	51	108

▶ TiCN(DW543), TiAlN(DY543) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	○											◎	○	◎						

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

HPD DRILLS

DJ544 SERIES

HSS-E, HPD-SUS TWIST DRILLS for STAINLESS STEELS

JOBBER

HSS-E, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE
Forets HPD-SUS HSS-E pour INOX, série courte
PUNTE ELICOIDALI HPD-SUS IN HSS-E, PER ACCIAI INOX

KURZ
COURTE
CORTA

▶**Application** : Designed for 4D~5D drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

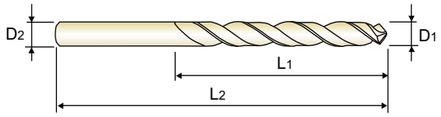
▶**Advantage** : High helix-sharp cutting edges to avoid built-up and to be suitable for high performance drilling
Reinforced web and jobbers length-increasing rigidity and suitable for 4D~5D drilling.
High vanadium HSS-E material with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶**Anwendung** : Für 4D~5D Bohrtiefe, geeignet für rostfreier stähle, Stahl, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierung usw.

▶**Vorteile** : Helixwinkel, durch scharfe Hauptschneide wird Spanstau vermieden, geeignet zum Hochleistungsbohren, verstärkte Kerndicke, kurze Ausführung, Hoch Vanadium HSS-E-Material mit TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Stabilität, Oberflächengüte und Produktivität.



up to 13mm over 13mm



for STAINLESS STEELS
für rostfreier Stäle

HSS-E | 38° | h7 | h8 | 130° | 120° | P.200-201

up to 4mm over 4mm

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ544020	2.00	24	56
DJ544021	2.10	24	56
DJ544022	2.20	27	59
DJ544023	2.30	27	59
DJ544024	2.40	30	62
DJ544025	2.50	30	62
DJ544026	2.60	30	62
DJ544027	2.70	33	65
DJ544028	2.80	33	65
DJ544029	2.90	33	65
DJ544030	3.00	33	65
DJ544031	3.10	36	68
DJ544032	3.20	36	68
DJ544033	3.30	36	68
DJ544034	3.40	39	71
DJ544035	3.50	39	71
DJ544036	3.60	39	71
DJ544037	3.70	39	71
DJ544038	3.80	43	75
DJ544039	3.90	43	75
DJ544040	4.00	43	75
DJ544041	4.10	43	87

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ544042	4.20	43	87
DJ544043	4.30	47	91
DJ544044	4.40	47	91
DJ544045	4.50	47	91
DJ544046	4.60	47	91
DJ544047	4.70	47	91
DJ544048	4.80	52	96
DJ544049	4.90	52	96
DJ544050	5.00	52	96
DJ544051	5.10	52	96
DJ544052	5.20	52	96
DJ544053	5.30	52	96
DJ544054	5.40	57	101
DJ544055	5.50	57	101
DJ544056	5.60	57	101
DJ544057	5.70	57	101
DJ544058	5.80	57	101
DJ544059	5.90	57	101
DJ544060	6.00	57	101
DJ544061	6.10	63	107
DJ544062	6.20	63	107
DJ544063	6.30	63	107

▶ TiCN(DW544), TiAlN(DY544) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	○											◎	○	◎						

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

HPD DRILLS

DJ544 SERIES

HSS-E, HPD-SUS TWIST DRILLS for STAINLESS STEELS

JOBBER
KURZ
COURTE
CORTA

HSS-E, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE
Forets HPD-SUS HSS-E pour INOX, série courte
PUNTE ELICOIDALI HPD-SUS IN HSS-E, PER ACCIAI INOX

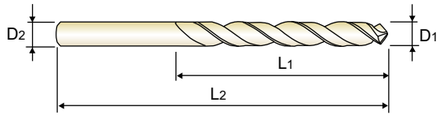
▶**Application** : Designed for 4D~5D drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

▶**Advantage** : High helix-sharp cutting edges to avoid built-up and to be suitable for high performance drilling
Reinforced web and jobbers length-increasing rigidity and suitable for 4D~5D drilling.
High vanadium HSS-E material with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶**Anwendung** : Für 4D~5D Bohrtiefe, geeignet für rostfreier stähle, Stahl, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierung usw.

▶**Vorteile** : Helixwinkel, durch scharfe Hauptschneide wird Spanstau vermieden, geeignet zum Hochleistungsbohren, verstärkte Kerndicke, kurze Ausführung, Hoch Vanadium HSS-E-Material mit TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Stabilität, Oberflächengüte und Produktivität.





for STAINLESS STEELS
für rostfreier Stäle



HSS-E | 38° | h7 | h8 | 130° | 120° | P.200-201

up to 4mm over 4mm

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ544064	6.40	63	107
DJ544065	6.50	63	107
DJ544066	6.60	63	107
DJ544067	6.70	63	107
DJ544068	6.80	69	113
DJ544069	6.90	69	113
DJ544070	7.00	69	113
DJ544071	7.10	69	113
DJ544072	7.20	69	113
DJ544073	7.30	69	113
DJ544074	7.40	69	113
DJ544075	7.50	69	113
DJ544076	7.60	75	119
DJ544077	7.70	75	119
DJ544078	7.80	75	119
DJ544079	7.90	75	119
DJ544080	8.00	75	119
DJ544081	8.10	75	125
DJ544082	8.20	75	125
DJ544083	8.30	75	125
DJ544084	8.40	75	125
DJ544085	8.50	75	125

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ544086	8.60	81	131
DJ544087	8.70	81	131
DJ544088	8.80	81	131
DJ544089	8.90	81	131
DJ544090	9.00	81	131
DJ544091	9.10	81	131
DJ544092	9.20	81	131
DJ544093	9.30	81	131
DJ544094	9.40	81	131
DJ544095	9.50	81	131
DJ544096	9.60	87	137
DJ544097	9.70	87	137
DJ544098	9.80	87	137
DJ544099	9.90	87	137
DJ544100	10.00	87	137
DJ544101	10.10	87	144
DJ544102	10.20	87	144
DJ544103	10.30	87	144
DJ544104	10.40	87	144
DJ544105	10.50	87	144
DJ544106	10.60	87	144
DJ544107	10.70	94	151

▶ TiCN(DW544), TiAlN(DY544) are available on your request.

▶ NEXT PAGE

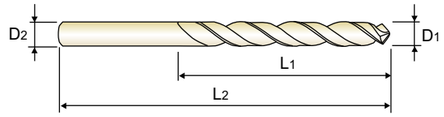
◎ : Excellent ○ : Good

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

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

HPD DRILLS
DJ544 SERIES
HSS-E, HPD-SUS TWIST DRILLS for STAINLESS STEELS
JOBBER
KURZ
COURTE
CORTA
HSS-E, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE
Forets HPD-SUS HSS-E pour INOX, série courte
PUNTE ELICOIDALI HPD-SUS IN HSS-E, PER ACCIAI INOX
▶Application : Designed for 4D~5D drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.
▶Advantage : High helix-sharp cutting edges to avoid built-up and to be suitable for high performance drilling
Reinforced web and jobbers length-increasing rigidity and suitable for 4D~5D drilling.
High vanadium HSS-E material with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.
▶Anwendung : Für 4D~5D Bohrtiefe, geeignet für rostfreier stähle, Stahl, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierung usw.
▶Vorteile : Helixwinkel, durch scharfe Hauptschneide wird Spanstau vermieden, geeignet zum Hochleistungsbohren, verstärkte Kerndicke, kurze Ausführung, Hoch Vanadium HSS-E-Material mit TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Stabilität, Oberflächengüte und Produktivität.





for STAINLESS STEELS
für rostfreier Stäle



HSS-E | 38° | h7 | h8 | 130° | 120° | P.200-201
up to 4mm over 4mm
$D_1=D_2$
Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ544108	10.80	94	151
DJ544109	10.90	94	151
DJ544110	11.00	94	151
DJ544111	11.10	94	151
DJ544112	11.20	94	151
DJ544113	11.30	94	151
DJ544114	11.40	94	151
DJ544115	11.50	94	151
DJ544116	11.60	94	151
DJ544117	11.70	94	151
DJ544118	11.80	94	151
DJ544119	11.90	101	158
DJ544120	12.00	101	158
DJ544121	12.10	101	158
DJ544122	12.20	101	158
DJ544123	12.30	101	158
DJ544124	12.40	101	158
DJ544125	12.50	101	158
DJ544126	12.60	101	158
DJ544127	12.70	101	158
DJ544128	12.80	101	158

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ544129	12.90	101	158
DJ544130	13.00	101	158
DJ544135	13.50	106	166
DJ544140	14.00	106	166
DJ544141	14.10	109	169
DJ544145	14.50	109	169
DJ544150	15.00	109	169
DJ544155	15.50	112	172
DJ544156	15.60	112	172
DJ544160	16.00	112	172
DJ544165	16.50	115	181
DJ544170	17.00	115	181
DJ544175	17.50	118	184
DJ544176	17.60	118	184
DJ544180	18.00	118	184
DJ544185	18.50	122	188
DJ544190	19.00	122	188
DJ544195	19.50	125	191
DJ544196	19.60	125	191
DJ544200	20.00	125	191

▶ TiCN(DW544), TiAlN(DY544) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	○											◎	○	◎						

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

HPD DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D4541, D4542 SERIES — HPD DRILLS for STEELS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
P	1	Non-alloy steel	35	RPM	5570	3710	2790	2230	1860	1390	1110	930
				FEED	0.04-0.10	0.07-0.13	0.09-0.15	0.12-0.18	0.13-0.19	0.18-0.24	0.20-0.30	0.22-0.32
	2		25	RPM	3980	2650	1990	1590	1330	990	800	660
				FEED	0.04-0.10	0.07-0.13	0.09-0.15	0.12-0.18	0.13-0.19	0.18-0.24	0.20-0.30	0.22-0.32
	3		25	RPM	3980	2650	1990	1590	1330	990	800	660
				FEED	0.04-0.10	0.07-0.13	0.09-0.15	0.12-0.18	0.13-0.19	0.18-0.24	0.20-0.30	0.22-0.32
	4											
	5											
	6	Low alloy steel	30	RPM	4770	3180	2390	1910	1590	1190	950	800
				FEED	0.04-0.10	0.07-0.13	0.09-0.15	0.12-0.18	0.13-0.19	0.18-0.24	0.20-0.30	0.22-0.32
	7		25	RPM	3980	2650	1990	1590	1330	990	800	660
				FEED	0.04-0.10	0.07-0.13	0.09-0.15	0.12-0.18	0.13-0.19	0.18-0.24	0.20-0.30	0.22-0.32
	8											
	9											
	10	High alloyed steel, and tool steel	15	RPM	2390	1590	1190	950	800	600	480	400
				FEED	0.04-0.10	0.07-0.13	0.09-0.15	0.12-0.18	0.13-0.19	0.18-0.24	0.20-0.30	0.22-0.32
	11											
M	12	Stainless steel										
	13											
	14											
K	15	Grey cast iron	40	RPM	6370	4240	3180	2550	2120	1590	1270	1060
				FEED	0.06-0.12	0.09-0.15	0.12-0.18	0.15-0.21	0.16-0.22	0.22-0.28	0.26-0.36	0.28-0.38
	16											
	17	Nodular cast iron										
	18											
	19	Malleable cast iron										
	20											
N	21	Aluminum-wrought alloy										
	22											
	23	Aluminum-cast, alloyed										
	24											
	25											
	26	Copper and Copper Alloys (Bronze / Brass)										
	27											
	28											
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys										
	32											
	33											
	34											
	35											
	36	Titanium Alloys										
	37											
H	38	Hardened steel										
	39											
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										

Please decrease the feed rate (15~20%) in D4542 SERIES HPD drills.
Den Vorschub in der D4542 Gruppe HPD Bohrer bitte verringern.

HPD DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

VDI 3323	Parameter	Drill Diameter (mm) 14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0
1	RPM	800	700	620	560	510	460	430	400	370	350
	FEED	0.25-0.35	0.28-0.38	0.34-0.44	0.35-0.45	0.40-0.50	0.44-0.54	0.48-0.58	0.52-0.62	0.56-0.66	0.60-0.70
2	RPM	570	500	440	400	360	330	310	280	270	250
	FEED	0.25-0.35	0.28-0.38	0.34-0.44	0.35-0.45	0.40-0.50	0.44-0.54	0.48-0.58	0.52-0.62	0.56-0.66	0.60-0.70
3	RPM	570	500	440	400	360	330	310	280	270	250
	FEED	0.25-0.35	0.28-0.38	0.34-0.44	0.35-0.45	0.40-0.50	0.44-0.54	0.48-0.58	0.52-0.62	0.56-0.66	0.60-0.70
4											
5											
6	RPM	680	600	530	480	430	400	370	340	320	300
	FEED	0.25-0.35	0.28-0.38	0.34-0.44	0.35-0.45	0.40-0.50	0.44-0.54	0.48-0.58	0.52-0.62	0.56-0.66	0.60-0.70
7	RPM	570	500	440	400	360	330	310	280	270	250
	FEED	0.25-0.35	0.28-0.38	0.34-0.44	0.35-0.45	0.40-0.50	0.44-0.54	0.48-0.58	0.52-0.62	0.56-0.66	0.60-0.70
8											
9											
10	RPM	340	300	270	240	220	200	180	170	160	150
	FEED	0.25-0.35	0.28-0.38	0.34-0.44	0.35-0.45	0.40-0.50	0.44-0.54	0.48-0.58	0.52-0.62	0.56-0.66	0.60-0.70
11											
12											
13											
14											
15	RPM	910	800	710	640	580	530	490	450	420	400
	FEED	0.32-0.42	0.35-0.45	0.42-0.52	0.44-0.54	0.50-0.60	0.54-0.64	0.59-0.69	0.64-0.74	0.69-0.79	0.74-0.84
16											
17											
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21											
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41											

Please decrease the feed rate (15~20%) in D4542 SERIES HPD drills.
Den Vorschub in der D4542 Gruppe HPD Bohrer bitte verringern.

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI 1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

HPD DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DJ543, DJ544 SERIES — HPD-SUS DRILLS for STAINLESS STEELS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	5.0	6.0
P	1	Non-alloy steel	35	RPM	5570	3710	2790	2230	1860
				FEED	0.04-0.1	0.07-0.13	0.09-0.15	0.12-0.18	0.13-0.19
	2								
	3								
	4								
	5								
	6	Low alloy steel							
	7								
	8								
	9								
	10	High alloyed steel, and tool steel							
	11								
M	12	Stainless steel	20	RPM	3180	2120	1590	1270	1060
				FEED	0.03-0.07	0.05-0.09	0.06-0.12	0.09-0.15	0.12-0.18
	13		18	RPM	2860	1910	1430	1150	950
				FEED	0.03-0.07	0.05-0.09	0.06-0.12	0.09-0.15	0.12-0.18
	14		15	RPM	2390	1590	1190	950	800
				FEED	0.02-0.05	0.03-0.07	0.04-0.10	0.06-0.12	0.07-0.13
K	15	Grey cast iron							
	16								
	17	Nodular cast iron							
	18								
	19	Malleable cast iron							
	20								
N	21	Aluminum-wrought alloy	90	RPM	14320	9550	7160	5730	4770
				FEED	0.05-0.12	0.10-0.18	0.12-0.22	0.15-0.25	0.17-0.27
	22		90	RPM	14320	9550	7160	5730	4770
				FEED	0.05-0.12	0.10-0.18	0.12-0.22	0.15-0.25	0.17-0.27
	23	Aluminum-cast, alloyed							
	24								
	25								
	26	Copper and Copper Alloys (Bronze / Brass)	35	RPM	5570	3710	2790	2230	1860
				FEED	0.03-0.06	0.05-0.09	0.05-0.11	0.08-0.14	0.11-0.17
	27								
	28								
	29	Non Metallic Materials							
	30								
S	31	Heat Resistant Super Alloys							
	32								
	33								
	34								
	35								
	36	Titanium Alloys							
	37								
H	38	Hardened steel							
	39								
	40	Chilled Cast Iron							
	41	Hardened Cast Iron							

Please decrease the feed rate (15~20%) in DJ544 SERIES HPD-SUS drills.
Den Vorschub in der DJ544 Gruppe HPD-SUS Bohrer bitte verringern

HPD DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

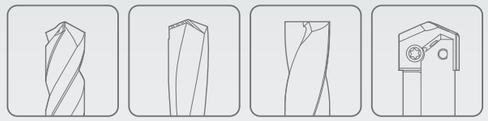
RPM = rev./min.
FEED = mm/rev.

VDI 3323	Parameter	Drill Diameter (mm) 8.0	10.0	12.0	14.0	16.0	18.0	20.0
1	RPM	1390	1110	930	800	700	620	560
	FEED	0.18-0.24	0.20-0.30	0.22-0.32	0.25-0.35	0.28-0.38	0.34-0.44	0.35-0.45
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12	RPM	800	640	530	450	400	350	320
	FEED	0.18-0.24	0.20-0.30	0.26-0.36	0.34-0.44	0.38-0.48	0.40-0.50	0.43-0.53
13	RPM	720	570	480	410	360	320	290
	FEED	0.18-0.24	0.20-0.30	0.26-0.36	0.34-0.44	0.38-0.48	0.40-0.50	0.43-0.53
14	RPM	600	480	400	340	300	270	240
	FEED	0.10-0.160	0.12-0.22	0.14-0.24	0.24-0.34	0.28-0.38	0.30-0.40	0.33-0.43
15								
16								
17								
18								
19								
20								
21	RPM	3580	2860	2390	2050	1790	1590	1430
	FEED	0.25-0.35	0.35-0.45	0.40-0.55	0.45-0.60	0.55-0.70	0.60-0.75	0.65-0.80
22	RPM	3580	2860	2390	2050	1790	1590	1430
	FEED	0.25-0.35	0.35-0.45	0.40-0.55	0.45-0.60	0.55-0.70	0.60-0.75	0.65-0.80
23								
24								
25								
26	RPM	1390	1110	930	800	700	620	560
	FEED	0.14-0.20	0.16-0.26	0.18-0.28	0.22-0.32	0.26-0.36	0.28-0.38	0.30-0.40
27								
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Please decrease the feed rate (15~20%) in DJ544 SERIES HPD-SUS drills.
Den Vorschub in der DJ544 Gruppe HPD-SUS Bohrer bitte verringern

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation



HSS & HSS-E

GOLD-P DRILLS

GOLD-P BOHRER

- Same Performance as Full TiN-coated Drills
- Gleiche Leistung, wie bei voll TiN-beschichteten Bohrern

SELECTION GUIDE

HOLEMAKING TOOLS

SERIES	D1GP125	D1GP165	DLGP195	DLGP506
STANDARD	DIN338	DIN338	DIN338	DIN338
LENGTH	JOBBER	JOBBER	JOBBER	JOBBER
SIZE MIN	D1.0	D1.6	D1.0	D2.0
SIZE MAX	D13.0	D13.0	D13.0	D13.0
PAGE	206	209	212	215
SURFACE TREATMENT	TiN		TiN	

HSS & HSS-E
GOLD-P DRILLS

Same Performance as Full TiN-coated Drills






Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.219

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	D1GP125	D1GP165	DLGP195	DLGP506	VDI 3323	ISO
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎	◎	◎	1	P
	2		About 0.45% C	Annealed	190	13	◎	◎	◎	◎	2	
	3		About 0.45% C	Quenched & Tempered	250	25	◎	◎	◎	◎	3	
	4		About 0.75% C	Annealed	270	28	○	○	○	○	4	
	5		About 0.75% C	Quenched & Tempered	300	32					5	
	6	Low alloy steel		Annealed	180	10	◎	◎	◎	◎	6	
	7			Quenched & Tempered	275	29	○	○	○	○	7	
	8			Quenched & Tempered	300	32	○	○	○	○	8	
	9			Quenched & Tempered	350	38					9	
	10	High alloyed steel, and tool steel		Annealed	200	15	○	○	○	○	10	
	11			Quenched & Tempered	325	35					11	
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	◎	◎	◎		12	M
	13		Martensitic	Quenched & Tempered	240	23	○	○	○		13	
	14		Austenitic		180	10	○	○	○		14	
K	15	Grey cast iron	Pearlitic / ferritic		180	10	○	○	○	○	15	K
	16		Pearlitic (Martensitic)		260	26	○	○	○	○	16	
	17	Nodular cast iron	Ferritic		160	3	○	○	○	○	17	
	18		Pearlitic		250	25				○	18	
	19	Malleable cast iron	Ferritic		130		○	○	○	○	19	
	20		Pearlitic		230	21				○	20	
N	21	Aluminum-wrought alloy	Not Curable		60		○	○	○		21	N
	22		Curable	Hardened	100		○	○	○		22	
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		○	○	○		23	
	24		≤ 12% Si, Curable	Hardened	90						24	
	25		> 12% Si, Not Curable		130						25	
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110						26	
	27		CuZn, CuSnZn (Brass)		90						27	
	28		CuSn, lead-free copper and electrolytic copper		100						28	
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic				○	○	○		29	
	30		Rubber, Wood, etc.								30	
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15					31	S
	32			Cured	280	30					32	
	33		Ni or Co Based	Annealed	250	25					33	
	34			Cured	350	38					34	
	35			Cast	320	34					35	
	36	Titanium Alloys	Pure Titanium		400 Rm		○	○	○		36	
	37		Alpha + Beta Alloys	Hardened	1050 Rm						37	
H	38	Hardened steel		Hardened	550	55					38	H
	39			Hardened	630	60					39	
	40	Chilled Cast Iron		Cast	400	42					40	
	41	Hardened Cast Iron		Hardened	550	55					41	

GOLD-P DRILL SETS

SET1	SET2	SET3	SET4
19pcs	25pcs	24pcs	91pcs
1.0mm ~ 10.0mm ×0.5mm step	1.0mm ~ 13.0mm ×0.5mm step	1.0mm ~ 10.5mm ×0.5mm step +3.3 +4.2 +6.8 +10.2	1.0mm ~ 10.0mm ×0.1mm step






GOLD-P DRILLS

D1GP125 SERIES

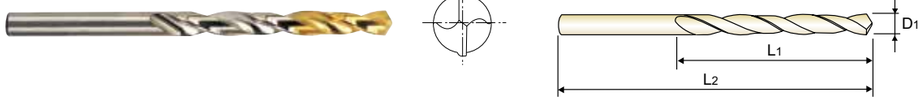
HSS, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER
KURZ
COURTE
CORTA

HSS SPIRALBOHRER, GOLD-P BESCHICHTET
Forets GOLD-P HSS queue cylindrique revêtus, série courte
PUNTE IN HSS, GAMBO CILINDRICO, GOLD-P

- ▶**Flute Geometry** : Right hand helix
- ▶**Point Angle** : 118˚, Normal point
- ▶**Surface treatment** : Bright body, TiN coating on working area
- ▶**Application** : Drilling steels, Cast steels alloyed and Non-alloyed, Grey cast iron, Graphite, Malleable cast iron

- ▶**Nutenform** : Rechtsspirale
- ▶**Spitzenwinkel** : 118° Normalanschliff
- ▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶**Anwendung** : Stahl, legierter und unlegierter Stahlguss, Grauguss, Graphit, Temperguss



DIN 338 | HSS | N ≈ 30° | h8 | 118° | P.219

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP125010	1.0	12	34
D1GP125011	1.1	14	36
D1GP125012	1.2	16	38
D1GP125013	1.3	16	38
D1GP125014	1.4	18	40
D1GP125015	1.5	18	40
D1GP125016	1.6	20	43
D1GP125017	1.7	20	43
D1GP125018	1.8	22	46
D1GP125019	1.9	22	46
D1GP125020	2.0	24	49
D1GP125021	2.1	24	49
D1GP125022	2.2	27	53
D1GP125023	2.3	27	53
D1GP125024	2.4	30	57
D1GP125025	2.5	30	57
D1GP125026	2.6	30	57
D1GP125027	2.7	33	61
D1GP125028	2.8	33	61
D1GP125029	2.9	33	61
D1GP125030	3.0	33	61
D1GP125031	3.1	36	65
D1GP125032	3.2	36	65
D1GP125033	3.3	36	65
D1GP125034	3.4	39	70
D1GP125035	3.5	39	70

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP125036	3.6	39	70
D1GP125037	3.7	39	70
D1GP125038	3.8	43	75
D1GP125039	3.9	43	75
D1GP125040	4.0	43	75
D1GP125041	4.1	43	75
D1GP125042	4.2	43	75
D1GP125043	4.3	47	80
D1GP125044	4.4	47	80
D1GP125045	4.5	47	80
D1GP125046	4.6	47	80
D1GP125047	4.7	47	80
D1GP125048	4.8	52	86
D1GP125049	4.9	52	86
D1GP125050	5.0	52	86
D1GP125051	5.1	52	86
D1GP125052	5.2	52	86
D1GP125053	5.3	52	86
D1GP125054	5.4	57	93
D1GP125055	5.5	57	93
D1GP125056	5.6	57	93
D1GP125057	5.7	57	93
D1GP125058	5.8	57	93
D1GP125059	5.9	57	93
D1GP125060	6.0	57	93
D1GP125061	6.1	63	101

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

GOLD-P DRILLS

D1GP125 SERIES

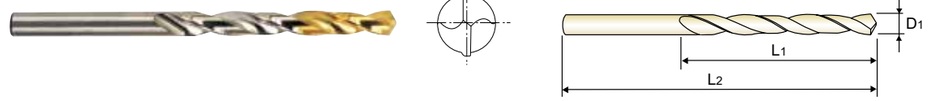
HSS, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER
KURZ
COURTE
CORTA

HSS SPIRALBOHRER, GOLD-P BESCHICHTET
Forets GOLD-P HSS queue cylindrique revêtus, série courte
PUNTE IN HSS, GAMBO CILINDRICO, GOLD-P

- ▶Flute Geometry : Right hand helix
- ▶Point Angle : 118˚, Normal point
- ▶Surface treatment : Bright body, TiN coating on working area
- ▶Application : Drilling steels, Cast steels alloyed and Non-alloyed, Grey cast iron, Graphite, Malleable cast iron

- ▶Nutenform : Rechtsspirale
- ▶Spitzenwinkel : 118° Normalanschliff
- ▶Oberfläche : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶Anwendung : Stahl, legierter und unlegierter Stahlguss, Grauguss, Graphit, Temperguss



DIN 338 | HSS | N ≈ 30° | h8 | 118° | P.219

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP125062	6.2	63	101
D1GP125063	6.3	63	101
D1GP125064	6.4	63	101
D1GP125065	6.5	63	101
D1GP125066	6.6	63	101
D1GP125067	6.7	63	101
D1GP125068	6.8	69	109
D1GP125069	6.9	69	109
D1GP125070	7.0	69	109
D1GP125071	7.1	69	109
D1GP125072	7.2	69	109
D1GP125073	7.3	69	109
D1GP125074	7.4	69	109
D1GP125075	7.5	69	109
D1GP125076	7.6	75	117
D1GP125077	7.7	75	117
D1GP125078	7.8	75	117
D1GP125079	7.9	75	117
D1GP125080	8.0	75	117
D1GP125081	8.1	75	117
D1GP125082	8.2	75	117
D1GP125083	8.3	75	117
D1GP125084	8.4	75	117
D1GP125085	8.5	75	117
D1GP125086	8.6	81	125
D1GP125087	8.7	81	125

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP125088	8.8	81	125
D1GP125089	8.9	81	125
D1GP125090	9.0	81	125
D1GP125091	9.1	81	125
D1GP125092	9.2	81	125
D1GP125093	9.3	81	125
D1GP125094	9.4	81	125
D1GP125095	9.5	81	125
D1GP125096	9.6	87	133
D1GP125097	9.7	87	133
D1GP125098	9.8	87	133
D1GP125099	9.9	87	133
D1GP125100	10.0	87	133
D1GP125101	10.1	87	133
D1GP125102	10.2	87	133
D1GP125103	10.3	87	133
D1GP125104	10.4	87	133
D1GP125105	10.5	87	133
D1GP125106	10.6	87	133
D1GP125107	10.7	94	142
D1GP125108	10.8	94	142
D1GP125109	10.9	94	142
D1GP125110	11.0	94	142
D1GP125111	11.1	94	142
D1GP125112	11.2	94	142
D1GP125113	11.3	94	142

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

GOLD-P DRILLS

D1GP125 SERIES

HSS, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

HSS SPIRALBOHRER, GOLD-P BESCHICHTET — *KURZ*

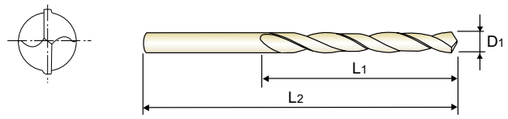
Forets GOLD-P HSS queue cylindrique revêtus, série courte — *COURTE*

PUNTE IN HSS, GAMBO CILINDRICO, GOLD-P — *CORTA*

- **Flute Geometry** : Right hand helix
- **Point Angle** : 118°, Normal point
- **Surface treatment** : Bright body, TiN coating on working area
- **Application** : Drilling steels, Cast steels alloyed and Non-alloyed, Grey cast iron, Graphite, Malleable cast iron

- **Nutenform** : Rechtsspirale
- **Spitzenwinkel** : 118° Normalanschliff
- **Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- **Anwendung** : Stahl, legierter und unlegierter Stahlguss, Grauguss, Graphit, Temperguss





DIN 338 | HSS | N ≈ 30° | h8 | 118° | P.219

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP125114	11.4	94	142
D1GP125115	11.5	94	142
D1GP125116	11.6	94	142
D1GP125117	11.7	94	142
D1GP125118	11.8	94	142
D1GP125119	11.9	101	151
D1GP125120	12.0	101	151
D1GP125121	12.1	101	151
D1GP125122	12.2	101	151

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP125123	12.3	101	151
D1GP125124	12.4	101	151
D1GP125125	12.5	101	151
D1GP125126	12.6	101	151
D1GP125127	12.7	101	151
D1GP125128	12.8	101	151
D1GP125129	12.9	101	151
D1GP125130	13.0	101	151

◎ : Excellent ○ : Good

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

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

GOLD-P DRILLS

D1GP165 SERIES

HSS, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

HSS SPIRALBOHRER, GOLD-P BESCHICHTET — *KURZ*

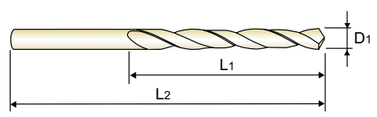
Forets GOLD-P HSS queue cylindrique revêtus, série courte — *COURTE*

PUNTE IN HSS, GAMBO CILINDRICO, GOLD-P — *CORTA*

- **Flute Geometry** : Right hand helix
- **Point Angle** : 118°, Split point
- **Surface treatment** : Bright body, TiN coating on working area
- **Application** : Drilling steels, Cast steels alloyed and Non-alloyed, Grey cast iron, Graphite, Malleable cast iron

- **Nutenform** : Rechtsspirale
- **Spitzenwinkel** : 118° Kreuzanschliff
- **Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- **Anwendung** : Stahl, legierter und unlegierter Stahlguss, Grauguss, Graphit, Temperguss





DIN 338 | HSS | N ≈ 30° | h8 | 118° | P.219

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP165016	1.6	20	43
D1GP165017	1.7	20	43
D1GP165018	1.8	22	46
D1GP165019	1.9	22	46
D1GP165020	2.0	24	49
D1GP165021	2.1	24	49
D1GP165022	2.2	27	53
D1GP165023	2.3	27	53
D1GP165024	2.4	30	57
D1GP165025	2.5	30	57
D1GP165026	2.6	30	57
D1GP165027	2.7	33	61
D1GP165028	2.8	33	61
D1GP165029	2.9	33	61
D1GP165030	3.0	33	61
D1GP165031	3.1	36	65
D1GP165032	3.2	36	65
D1GP165033	3.3	36	65
D1GP165034	3.4	39	70
D1GP165035	3.5	39	70
D1GP165036	3.6	39	70
D1GP165037	3.7	39	70
D1GP165038	3.8	43	75
D1GP165039	3.9	43	75
D1GP165040	4.0	43	75
D1GP165041	4.1	43	75

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP165042	4.2	43	75
D1GP165043	4.3	47	80
D1GP165044	4.4	47	80
D1GP165045	4.5	47	80
D1GP165046	4.6	47	80
D1GP165047	4.7	47	80
D1GP165048	4.8	52	86
D1GP165049	4.9	52	86
D1GP165050	5.0	52	86
D1GP165051	5.1	52	86
D1GP165052	5.2	52	86
D1GP165053	5.3	52	86
D1GP165054	5.4	57	93
D1GP165055	5.5	57	93
D1GP165056	5.6	57	93
D1GP165057	5.7	57	93
D1GP165058	5.8	57	93
D1GP165059	5.9	57	93
D1GP165060	6.0	57	93
D1GP165061	6.1	63	101
D1GP165062	6.2	63	101
D1GP165063	6.3	63	101
D1GP165064	6.4	63	101
D1GP165065	6.5	63	101
D1GP165066	6.6	63	101
D1GP165067	6.7	63	101

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

GOLD-P DRILLS

D1GP165 SERIES

HSS, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

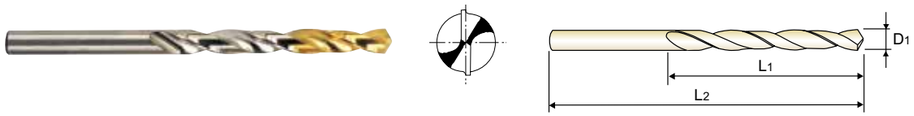
HSS SPIRALBOHRER, GOLD-P BESCHICHTET — *KURZ*

Forets GOLD-P HSS queue cylindrique revêtus, série courte — *COURTE*

PUNTE IN HSS, GAMBO CILINDRICO, GOLD-P — *CORTA*

- ▶**Flute Geometry** : Right hand helix
- ▶**Point Angle** : 118˚, Split point
- ▶**Surface treatment** : Bright body, TiN coating on working area
- ▶**Application** : Drilling steels, Cast steels alloyed and Non-alloyed, Grey cast iron, Graphite, Malleable cast iron

- ▶**Nutenform** : Rechtsspirale
- ▶**Spitzenwinkel** : 118° Kreuzanschliff
- ▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶**Anwendung** : Stahl, legierter und unlegierter Stahlguss, Grauguss, Graphit, Temperguss



DIN 338 | HSS | N ≈ 30° | h8 | 118° | P.219

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP165068	6.8	69	109
D1GP165069	6.9	69	109
D1GP165070	7.0	69	109
D1GP165071	7.1	69	109
D1GP165072	7.2	69	109
D1GP165073	7.3	69	109
D1GP165074	7.4	69	109
D1GP165075	7.5	69	109
D1GP165076	7.6	75	117
D1GP165077	7.7	75	117
D1GP165078	7.8	75	117
D1GP165079	7.9	75	117
D1GP165080	8.0	75	117
D1GP165081	8.1	75	117
D1GP165082	8.2	75	117
D1GP165083	8.3	75	117
D1GP165084	8.4	75	117
D1GP165085	8.5	75	117
D1GP165086	8.6	81	125
D1GP165087	8.7	81	125
D1GP165088	8.8	81	125
D1GP165089	8.9	81	125
D1GP165090	9.0	81	125
D1GP165091	9.1	81	125
D1GP165092	9.2	81	125
D1GP165093	9.3	81	125

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP165094	9.4	81	125
D1GP165095	9.5	81	125
D1GP165096	9.6	87	133
D1GP165097	9.7	87	133
D1GP165098	9.8	87	133
D1GP165099	9.9	87	133
D1GP165100	10.0	87	133
D1GP165101	10.1	87	133
D1GP165102	10.2	87	133
D1GP165103	10.3	87	133
D1GP165104	10.4	87	133
D1GP165105	10.5	87	133
D1GP165106	10.6	87	133
D1GP165107	10.7	94	142
D1GP165108	10.8	94	142
D1GP165109	10.9	94	142
D1GP165110	11.0	94	142
D1GP165111	11.1	94	142
D1GP165112	11.2	94	142
D1GP165113	11.3	94	142
D1GP165114	11.4	94	142
D1GP165115	11.5	94	142
D1GP165116	11.6	94	142
D1GP165117	11.7	94	142
D1GP165118	11.8	94	142
D1GP165119	11.9	101	151

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

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

GOLD-P DRILLS

D1GP165 SERIES

HSS, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

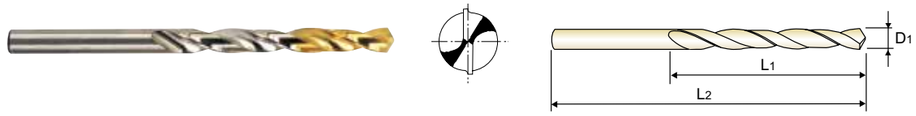
HSS SPIRALBOHRER, GOLD-P BESCHICHTET — KURZ

Forets GOLD-P HSS queue cylindrique revêtus, série courte — COURTE

PUNTE IN HSS, GAMBO CILINDRICO, GOLD-P — CORTA

▶Flute Geometry : Right hand helix
▶Point Angle : 118˚, Split point
▶Surface treatment : Bright body, TiN coating on working area
▶Application : Drilling steels, Cast steels alloyed and Non-alloyed, Grey cast iron, Graphite, Malleable cast iron

▶Nutenform : Rechtsspirale
▶Spitzenwinkel : 118° Kreuzanschliff
▶Oberfläche : Blank mit TiN-Beschichtung im Arbeitsbereich
▶Anwendung : Stahl, legierter und unlegierter Stahlguss, Grauguss, Graphit, Temperguss



DIN 338 | HSS | N ≈ 30° | h8 | 118° | P.219

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP165120	12.0	101	151
D1GP165121	12.1	101	151
D1GP165122	12.2	101	151
D1GP165123	12.3	101	151
D1GP165124	12.4	101	151
D1GP165125	12.5	101	151

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP165126	12.6	101	151
D1GP165127	12.7	101	151
D1GP165128	12.8	101	151
D1GP165129	12.9	101	151
D1GP165130	13.0	101	151

◎ : Excellent ○ : Good

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

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

GOLD-P DRILLS

DLGP195 SERIES

HSS-E, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

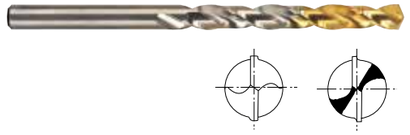
HSS-E SPIRALBOHRER, GOLD-P BESCHICHTET — *KURZ*

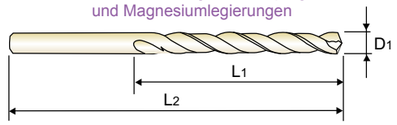
Forets GOLD-P HSS-E queue cylindrique revêtus, série courte — *COURTE*

PUNTE IN HSS-E, GAMBO CILINDRICO, GOLD-P — *CORTA*

▶**Flute Geometry** : Right hand helix
▶**Point Angle** : 135˚, under 1.6mm : Normal point
1.6mm & over : Split point
▶**Surface treatment** : Bright body, TiN coating on working area
▶**Application** : Drilling stainless steels, difficult to cut materials such as titanium alloys and inconel.

▶**Nutenform** : Rechtsspirale
▶**Spitzenwinkel** : 135°, unter 1.6mm : Normalanschliff
1.6mm & über : Kreuzanschliff
▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
▶**Anwendung** : Tiefe Bohrungen in unlegierten und legierten Stählen, Grauguss, Temperguss, Aluminium- und Magnesiumlegierungen





DIN 338 | HSS-E | 33˚ | h8 | 135˚ P.219

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP195010	1.0	12	34
DLGP195011	1.1	14	36
DLGP195012	1.2	16	38
DLGP195013	1.3	16	38
DLGP195014	1.4	18	40
DLGP195015	1.5	18	40
DLGP195016	1.6	20	43
DLGP195017	1.7	20	43
DLGP195018	1.8	22	46
DLGP195019	1.9	22	46
DLGP195020	2.0	24	49
DLGP195021	2.1	24	49
DLGP195022	2.2	27	53
DLGP195023	2.3	27	53
DLGP195024	2.4	30	57
DLGP195025	2.5	30	57
DLGP195026	2.6	30	57
DLGP195027	2.7	33	61
DLGP195028	2.8	33	61
DLGP195029	2.9	33	61
DLGP195030	3.0	33	61
DLGP195031	3.1	36	65
DLGP195032	3.2	36	65
DLGP195033	3.3	36	65
DLGP195034	3.4	39	70
DLGP195035	3.5	39	70

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP195036	3.6	39	70
DLGP195037	3.7	39	70
DLGP195038	3.8	43	75
DLGP195039	3.9	43	75
DLGP195040	4.0	43	75
DLGP195041	4.1	43	75
DLGP195042	4.2	43	75
DLGP195043	4.3	47	80
DLGP195044	4.4	47	80
DLGP195045	4.5	47	80
DLGP195046	4.6	47	80
DLGP195047	4.7	47	80
DLGP195048	4.8	52	86
DLGP195049	4.9	52	86
DLGP195050	5.0	52	86
DLGP195051	5.1	52	86
DLGP195052	5.2	52	86
DLGP195053	5.3	52	86
DLGP195054	5.4	57	93
DLGP195055	5.5	57	93
DLGP195056	5.6	57	93
DLGP195057	5.7	57	93
DLGP195058	5.8	57	93
DLGP195059	5.9	57	93
DLGP195060	6.0	57	93
DLGP195061	6.1	63	101

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

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

GOLD-P DRILLS

DLGP195 SERIES

HSS-E, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

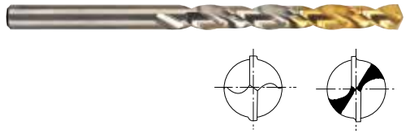
HSS-E SPIRALBOHRER, GOLD-P BESCHICHTET — KURZ

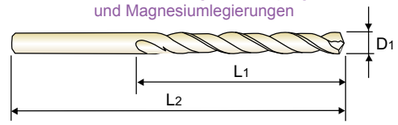
Forets GOLD-P HSS-E queue cylindrique revêtus, série courte — COURTE

PUNTE IN HSS-E, GAMBO CILINDRICO, GOLD-P — CORTA

▶Flute Geometry : Right hand helix
▶Point Angle : 135˚, under 1.6mm : Normal point
1.6mm & over : Split point
▶Surface treatment : Bright body, TiN coating on working area
▶Application : Drilling stainless steels, difficult to cut materials such as titanium alloys and inconel.

▶Nutenform : Rechtsspirale
▶Spitzenwinkel : 135°, unter 1.6mm : Normalanschliff
1.6mm & über : Kreuzanschliff
▶Oberfläche : Blank mit TiN-Beschichtung im Arbeitsbereich
▶Anwendung : Tiefe Bohrungen in unlegierten und legierten Stählen, Grauguss, Temperguss, Aluminium- und Magnesiumlegierungen





DIN 338 | HSS-E | 33˚ | h8 | 135˚ P.219

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP195062	6.2	63	101
DLGP195063	6.3	63	101
DLGP195064	6.4	63	101
DLGP195065	6.5	63	101
DLGP195066	6.6	63	101
DLGP195067	6.7	63	101
DLGP195068	6.8	69	109
DLGP195069	6.9	69	109
DLGP195070	7.0	69	109
DLGP195071	7.1	69	109
DLGP195072	7.2	69	109
DLGP195073	7.3	69	109
DLGP195074	7.4	69	109
DLGP195075	7.5	69	109
DLGP195076	7.6	75	117
DLGP195077	7.7	75	117
DLGP195078	7.8	75	117
DLGP195079	7.9	75	117
DLGP195080	8.0	75	117
DLGP195081	8.1	75	117
DLGP195082	8.2	75	117
DLGP195083	8.3	75	117
DLGP195084	8.4	75	117
DLGP195085	8.5	75	117
DLGP195086	8.6	81	125
DLGP195087	8.7	81	125

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP195088	8.8	81	125
DLGP195089	8.9	81	125
DLGP195090	9.0	81	125
DLGP195091	9.1	81	125
DLGP195092	9.2	81	125
DLGP195093	9.3	81	125
DLGP195094	9.4	81	125
DLGP195095	9.5	81	125
DLGP195096	9.6	87	133
DLGP195097	9.7	87	133
DLGP195098	9.8	87	133
DLGP195099	9.9	87	133
DLGP195100	10.0	87	133
DLGP195101	10.1	87	133
DLGP195102	10.2	87	133
DLGP195103	10.3	87	133
DLGP195104	10.4	87	133
DLGP195105	10.5	87	133
DLGP195106	10.6	87	133
DLGP195107	10.7	94	142
DLGP195108	10.8	94	142
DLGP195109	10.9	94	142
DLGP195110	11.0	94	142
DLGP195111	11.1	94	142
DLGP195112	11.2	94	142
DLGP195113	11.3	94	142

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

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

GOLD-P DRILLS

DLGP195 SERIES

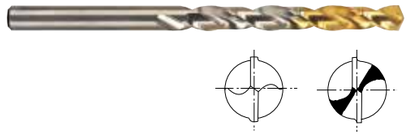
HSS-E, STRAIGHT SHANK DRILLS, GOLD-P COATED

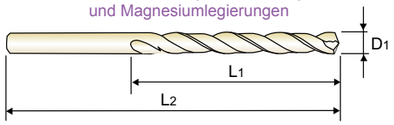
JOBBER

HSS-E SPIRALBOHRER, GOLD-P BESCHICHTET — KURZ
Forets GOLD-P HSS-E queue cylindrique revêtus, série courte — COURTE
PUNTE IN HSS-E, GAMBO CILINDRICO, GOLD-P — CORTA

▶**Flute Geometry** : Right hand helix
▶**Point Angle** : 135˚, under 1.6mm : Normal point
1.6mm & over : Split point
▶**Surface treatment** : Bright body, TiN coating on working area
▶**Application** : Drilling stainless steels, difficult to cut materials such as titanium alloys and inconel.

▶**Nutenform** : Rechtsspirale
▶**Spitzenwinkel** : 135°, unter 1.6mm : Normalanschliff
1.6mm & über : Kreuzanschliff
▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
▶**Anwendung** : Tiefe Bohrungen in unlegierten und legierten Stählen, Grauguss, Temperguss, Aluminium- und Magnesiumlegierungen





DIN 338 | HSS-E | 33˚ | h8 | 135˚ | P.219

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP195114	11.4	94	142
DLGP195115	11.5	94	142
DLGP195116	11.6	94	142
DLGP195117	11.7	94	142
DLGP195118	11.8	94	142
DLGP195119	11.9	101	151
DLGP195120	12.0	101	151
DLGP195121	12.1	101	151
DLGP195122	12.2	101	151

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP195123	12.3	101	151
DLGP195124	12.4	101	151
DLGP195125	12.5	101	151
DLGP195126	12.6	101	151
DLGP195127	12.7	101	151
DLGP195128	12.8	101	151
DLGP195129	12.9	101	151
DLGP195130	13.0	101	151

◎ : Excellent ○ : Good

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

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

GOLD-P DRILLS

DLGP506 SERIES

HSS-E, DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED

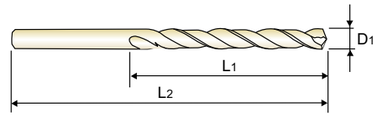
JOBBER

HSS-E DH100 SPIRALBOHRER, für TIEFLOCH mit ZYLINDERSCHAFT, GOLD-P BESCHICHTET — KURZ
Forets GOLD-P HSS-E queue cylindrique revêtus, DH100 pour perçage profond, série courte — COURTE
PUNTE GAMBO CILINDRICO DH100 IN HSS-E, PER FORI PROFONDI, GOLD-P — CORTA

▶**Flute Geometry** : Right hand, 38˚ helix, DH100 worm pattern type.
▶**Point Angle** : 130˚, Split point giving higher chip removal.
▶**Surface treatment** : Bright body, TiN coating on working area.
▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, or magnesium alloys.

▶**Nutenform** : 38° Rechtsspirale, DH 100 Flachnut
▶**Spitzenwinkel** : Durch 130° Kreuzanschliff Gute Spanabfuhr
▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
▶**Anwendung** : Tiefe Bohrungen in unlegierten und legierten Stählen, Grauguss, Temperguss, Aluminium- und Magnesiumlegierungen





DIN 338 | HSS-E | 38˚ | h8 | 130˚ | P.219

▶ **DH100 worm pattern drills**

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP506020	2.0	24	49
DLGP506021	2.1	24	49
DLGP506022	2.2	27	53
DLGP506023	2.3	27	53
DLGP506024	2.4	30	57
DLGP506025	2.5	30	57
DLGP506026	2.6	30	57
DLGP506027	2.7	33	61
DLGP506028	2.8	33	61
DLGP506029	2.9	33	61
DLGP506030	3.0	33	61
DLGP506031	3.1	36	65
DLGP506032	3.2	36	65
DLGP506033	3.3	36	65
DLGP506034	3.4	39	70
DLGP506035	3.5	39	70
DLGP506036	3.6	39	70
DLGP506037	3.7	39	70
DLGP506038	3.8	43	75
DLGP506039	3.9	43	75
DLGP506040	4.0	43	75
DLGP506041	4.1	43	75
DLGP506042	4.2	43	75
DLGP506043	4.3	47	80
DLGP506044	4.4	47	80
DLGP506045	4.5	47	80

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP506046	4.6	47	80
DLGP506047	4.7	47	80
DLGP506048	4.8	52	86
DLGP506049	4.9	52	86
DLGP506050	5.0	52	86
DLGP506051	5.1	52	86
DLGP506052	5.2	52	86
DLGP506053	5.3	52	86
DLGP506054	5.4	57	93
DLGP506055	5.5	57	93
DLGP506056	5.6	57	93
DLGP506057	5.7	57	93
DLGP506058	5.8	57	93
DLGP506059	5.9	57	93
DLGP506060	6.0	57	93
DLGP506061	6.1	63	101
DLGP506062	6.2	63	101
DLGP506063	6.3	63	101
DLGP506064	6.4	63	101
DLGP506065	6.5	63	101
DLGP506066	6.6	63	101
DLGP506067	6.7	63	101
DLGP506068	6.8	69	109
DLGP506069	6.9	69	109
DLGP506070	7.0	69	109
DLGP506071	7.1	69	109

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

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

GOLD-P DRILLS

DLGP506 SERIES

HSS-E, DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED

JOBBER

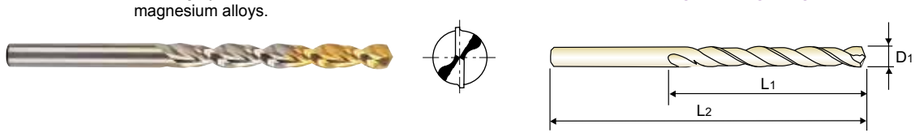
HSS-E DH100 SPIRALBOHRER, für TIEFLOCH mit ZYLINDERSCHAFT, GOLD-P BESCHICHTET — *KURZ*

Forets GOLD-P HSS-E queue cylindrique revêtus, DH100 pour perçage profond, série courte — *COURTE*

PUNTE GAMBO CILINDRICO DH100 IN HSS-E, PER FORI PROFONDI, GOLD-P — *CORTA*

▶**Flute Geometry** : Right hand, 38˚ helix, DH100 worm pattern type.
▶**Point Angle** : 130˚, Split point giving higher chip removal.
▶**Surface treatment** : Bright body, TiN coating on working area.
▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, or magnesium alloys.

▶**Nutenform** : 38° Rechtsspirale, DH 100 Flachnut
▶**Spitzenwinkel** : Durch 130° Kreuzanschliff Gute Spanabfuhr
▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
▶**Anwendung** : Tiefe Bohrungen in unlegierten und legierten Stählen, Grauguss, Temperguss, Aluminium- und Magnesiumlegierungen



DIN 338 | HSS-E | 38° | h8 | 130° | P.219

▶DH100 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP506072	7.2	69	109
DLGP506073	7.3	69	109
DLGP506074	7.4	69	109
DLGP506075	7.5	69	109
DLGP506076	7.6	75	117
DLGP506077	7.7	75	117
DLGP506078	7.8	75	117
DLGP506079	7.9	75	117
DLGP506080	8.0	75	117
DLGP506081	8.1	75	117
DLGP506082	8.2	75	117
DLGP506083	8.3	75	117
DLGP506084	8.4	75	117
DLGP506085	8.5	75	117
DLGP506086	8.6	81	125
DLGP506087	8.7	81	125
DLGP506088	8.8	81	125
DLGP506089	8.9	81	125
DLGP506090	9.0	81	125
DLGP506091	9.1	81	125
DLGP506092	9.2	81	125
DLGP506093	9.3	81	125
DLGP506094	9.4	81	125
DLGP506095	9.5	81	125
DLGP506096	9.6	87	133
DLGP506097	9.7	87	133

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP506098	9.8	87	133
DLGP506099	9.9	87	133
DLGP506100	10.0	87	133
DLGP506101	10.1	87	133
DLGP506102	10.2	87	133
DLGP506103	10.3	87	133
DLGP506104	10.4	87	133
DLGP506105	10.5	87	133
DLGP506106	10.6	87	133
DLGP506107	10.7	94	142
DLGP506108	10.8	94	142
DLGP506109	10.9	94	142
DLGP506110	11.0	94	142
DLGP506111	11.1	94	142
DLGP506112	11.2	94	142
DLGP506113	11.3	94	142
DLGP506114	11.4	94	142
DLGP506115	11.5	94	142
DLGP506116	11.6	94	142
DLGP506117	11.7	94	142
DLGP506118	11.8	94	142
DLGP506119	11.9	101	151
DLGP506120	12.0	101	151
DLGP506121	12.1	101	151
DLGP506122	12.2	101	151
DLGP506123	12.3	101	151

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

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

GOLD-P DRILLS

DLGP506 SERIES

HSS-E, DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED

JOBBER

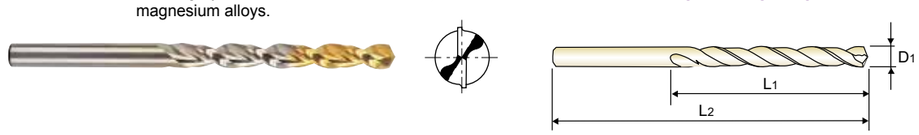
HSS-E DH100 SPIRALBOHRER, für TIEFLOCH mit ZYLINDERSCHAFT, GOLD-P BESCHICHTET — KURZ

Forets GOLD-P HSS-E queue cylindrique revêtus, DH100 pour perçage profond, série courte — COURTE

PUNTE GAMBO CILINDRICO DH100 IN HSS-E, PER FORI PROFONDI, GOLD-P — CORTA

▶Flute Geometry : Right hand, 38˚ helix, DH100 worm pattern type.
▶Point Angle : 130˚, Split point giving higher chip removal.
▶Surface treatment : Bright body, TiN coating on working area.
▶Application : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, or magnesium alloys.

▶Nutenform : 38° Rechtsspirale, DH 100 Flachnut
▶Spitzenwinkel : Durch 130° Kreuzanschliff Gute Spanabfuhr
▶Oberfläche : Blank mit TiN-Beschichtung im Arbeitsbereich
▶Anwendung : Tiefe Bohrungen in unlegierten und legierten Stählen, Grauguss, Temperguss, Aluminium- und Magnesiumlegierungen



DIN 338 | HSS-E | 38° | h8 | 130° | P.219

▶DH100 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP506124	12.4	101	151
DLGP506125	12.5	101	151
DLGP506126	12.6	101	151
DLGP506127	12.7	101	151

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP506128	12.8	101	151
DLGP506129	12.9	101	151
DLGP506130	13.0	101	151

◎ : Excellent ○ : Good

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

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

GOLD-P DRILLS

GOLD-P COATED DRILL SETS

GOLD-P BESCHICHTET BOHRER SATS
Coffrets de Forets GOLD-P revêtus
SET DI PUNTE GOLD-P



DIN338 DRILL SETS JOBBER LENGTH Gold-P coated Drills

EDP No.	DESCRIPTON	SIZE	Q'TY
D1GP165SET1	HSS Straight Shank, Split Point (Ø1.0 & Ø1.5 : NORMAL point)	1.0-10.0x0.5mm step	19 pcs
D1GP165SET2	HSS Straight Shank, Split Point (Ø1.0 & Ø1.5 : NORMAL point)	1.0-13.0x0.5mm step	25 pcs
D1GP165SET3	HSS Straight Shank, Split Point (Ø1.0 & Ø1.5 : NORMAL point)	1.0-10.5x0.5mm step +3.3 +4.2 +6.8 +10.2	24 pcs
DLGP195SET1	HSS-E Straight Shank, Split Point (Ø1.0 & Ø1.5 : NORMAL point)	1.0-10.0x0.5mm step	19 pcs
DLGP195SET2	HSS-E Straight Shank, Split Point (Ø1.0 & Ø1.5 : NORMAL point)	1.0-13.0x0.5mm step	25 pcs
DLGP195SET3	HSS-E Straight Shank, Split Point (Ø1.0 & Ø1.5 : NORMAL point)	1.0-10.5x0.5mm step +3.3 +4.2 +6.8 +10.2	24 pcs
DLGPSET982	HSS-E Straight Shank, Split Point (Ø1.0 & Ø1.5 : NORMAL point)	1.0-10.0x0.1mm step	91 pcs

GOLD-P DRILLS

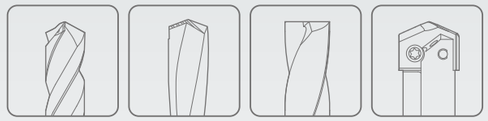
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D1GP125, D1GP165, DLGP195, DLGP506 SERIES HSS & HSS-E GOLD-P DRILLS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0	10.0	13.0
P	1	Non-alloy steel	40	RPM	6370	4240	3180	2120	1590	1270	980
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	2		35	RPM	5570	3710	2790	1860	1390	1110	860
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	3		30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	4		20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.04-0.10	0.06-0.12	0.08-0.14	0.12-0.18
	5										
	6	Low alloy steel	35	RPM	5570	3710	2790	1860	1390	1110	860
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	7		30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	8		30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.04-0.10	0.06-0.12	0.08-0.14	0.12-0.18
	9										
	10	High alloyed steel, and tool steel	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	11										
M	12	Stainless steel	25	RPM	3980	2650	1990	1330	990	800	610
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	13		20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	14		15	RPM	2390	1590	1190	800	600	480	370
				FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.04-0.10	0.06-0.12	0.08-0.14	0.12-0.18
K	15	Grey cast iron	40	RPM	6370	4240	3180	2120	1590	1270	980
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	16		35	RPM	5570	3710	2790	1860	1390	1110	860
				FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.04-0.10	0.06-0.12	0.08-0.14	0.12-0.18
	17	Nodular cast iron	40	RPM	6370	4240	3180	2120	1590	1270	980
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	18		30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.04-0.10	0.06-0.12	0.08-0.14	0.12-0.18
	19	Malleable cast iron	35	RPM	5570	3710	2790	1860	1390	1110	860
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	20		30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.04-0.10	0.06-0.12	0.08-0.14	0.12-0.18
N	21	Aluminum-wrought alloy	65	RPM	10350	6900	5170	3450	2590	2070	1590
				FEED	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.22-0.28
	22		65	RPM	10350	6900	5170	3450	2590	2070	1590
				FEED	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.22-0.28
	23	Aluminum-cast, alloyed	50	RPM	7960	5310	3980	2650	1990	1590	1220
				FEED	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.22-0.28
	24										
	25										
	26	Copper and Copper Alloys (Bronze / Brass)									
	27										
	28										
	29	Non Metallic Materials	30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	30										
S	31	Heat Resistant Super Alloys									
	32										
	33										
	34										
	35										
	36	Titanium Alloys	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.13	0.08-0.14
	37										
H	38	Hardened steel									
	39										
	40	Chilled Cast Iron									
	41	Hardened Cast Iron									

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation



SUPER HSS

SUPER-GP DRILLS

SUPER-GP DRILLS

- **All Applications Regardless of Machining Conditions; Good or Poor**
- **Für alle Anwendungen unabhängig von den Bearbeitungsbedingungen; gut oder schlecht**

SELECTION GUIDE

HOLEMAKING TOOLS

SERIES	DSH105
STANDARD	DIN338
LENGTH	JOBBER
SIZE MIN	D2.0
SIZE MAX	D13.0
PAGE	223
SURFACE TREATMENT	Steam Tempered

SUPER HSS
SUPER-GP DRILLS

All Applications Regardless of Machining Conditions; Good or Poor



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.226

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

SUPER-GP DRILLS

DSH105 SERIES

SUPER HSS, SUPER-GP DRILLS (DIN338)

JOBBER

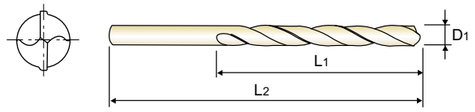
SUPER HSS, SUPER-GP DRILLS (DIN338)
Forets SUPER-GP Super HSS, queue cylindrique (DIN338)
PUNTA SUPER-GP DRILL, IN SUPER-HSS, GAMBO CILINDRICO (DIN338)

KURZ
COURTE
CORTA

- ▶Surface treatment: Steam Tempered (Black Oxide Finish)
- ▶Applications: Excellent tool performance in steels, cast iron, alloy steels and malleable cast iron.
- ▶Special HSS improves toughness, wear resistance as well as extends dramatically the tool life.
- ▶All applications regardless of machine condition: Good or Poor.

- ▶Oberflächenbehandlung: Dampfgehärtet (Schwarze Oxydschicht)
- ▶Anwendungen: Ausgezeichnete Leistung bei Stählen, Gusseisen, legierten Stählen und Temperguss.
- ▶Spezial-HSS verbessert Zähigkeit, Verschleissfestigkeit und verlängert drastisch die Standzeit.
- ▶Alle Anwendungen unabhängig vom Maschinenzustand: Gut oder schlecht.





DIN 338 | SUPER HSS | 30° | h8 | 118° | P.226-227

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
*DSH105020	2.0	24	49
*DSH105021	2.1	24	49
*DSH105022	2.2	27	53
*DSH105023	2.3	27	53
*DSH105024	2.4	30	57
*DSH105025	2.5	30	57
*DSH105026	2.6	30	57
*DSH105027	2.7	33	61
*DSH105028	2.8	33	61
*DSH105029	2.9	33	61
*DSH105030	3.0	33	61
*DSH105031	3.1	36	65
*DSH105032	3.2	36	65
*DSH105033	3.3	36	65
*DSH105034	3.4	39	70
*DSH105035	3.5	39	70
*DSH105036	3.6	39	70
*DSH105037	3.7	39	70
*DSH105038	3.8	43	75
*DSH105039	3.9	43	75
*DSH105040	4.0	43	75
*DSH105041	4.1	43	75
*DSH105042	4.2	43	75
*DSH105043	4.3	47	80

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
*DSH105044	4.4	47	80
*DSH105045	4.5	47	80
*DSH105046	4.6	47	80
*DSH105047	4.7	47	80
*DSH105048	4.8	52	86
*DSH105049	4.9	52	86
*DSH105050	5.0	52	86
*DSH105051	5.1	52	86
*DSH105052	5.2	52	86
*DSH105053	5.3	52	86
*DSH105054	5.4	57	93
*DSH105055	5.5	57	93
*DSH105056	5.6	57	93
*DSH105057	5.7	57	93
*DSH105058	5.8	57	93
*DSH105059	5.9	57	93
*DSH105060	6.0	57	93
*DSH105061	6.1	63	101
*DSH105062	6.2	63	101
*DSH105063	6.3	63	101
*DSH105064	6.4	63	101
*DSH105065	6.5	63	101
*DSH105066	6.6	63	101
*DSH105067	6.7	63	101

* 10pcs per package
** 5pcs per package

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

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

SUPER-GP DRILLS

DSH105 SERIES

SUPER HSS, SUPER-GP DRILLS (DIN338)

JOBBER

SUPER HSS, SUPER-GP DRILLS (DIN338) — ***KURZ***

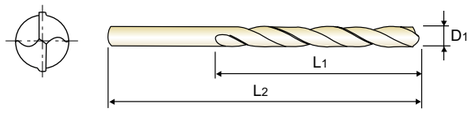
Forets SUPER-GP Super HSS, queue cylindrique (DIN338) — ***COURTE***

PUNTA SUPER-GP DRILL, IN SUPER-HSS, GAMBO CILINDRICO (DIN338) — ***CORTA***

▶Surface treatment: Steam Tempered (Black Oxide Finish)
▶Applications: Excellent tool performance in steels, cast iron, alloy steels and malleable cast iron.
▶Special HSS improves toughness, wear resistance as well as extends dramatically the tool life.
▶All applications regardless of machine condition: Good or Poor.

▶Oberflächenbehandlung: Dampfgehärtet (Schwarze Oxydschicht)
▶Anwendungen: Ausgezeichnete Leistung bei Stählen, Gusseisen, legierten Stählen und Temperguss.
▶Spezial-HSS verbessert Zähigkeit, Verschleissfestigkeit und verlängert drastisch die Standzeit.
▶Alle Anwendungen unabhängig vom Maschinenzustand: Gut oder schlecht.





DIN 338 | SUPER HSS | 30° | h8 | 118° | P.226-227

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
*DSH105068	6.8	69	109
*DSH105069	6.9	69	109
*DSH105070	7.0	69	109
*DSH105071	7.1	69	109
*DSH105072	7.2	69	109
*DSH105073	7.3	69	109
*DSH105074	7.4	69	109
*DSH105075	7.5	69	109
*DSH105076	7.6	75	117
*DSH105077	7.7	75	117
*DSH105078	7.8	75	117
*DSH105079	7.9	75	117
*DSH105080	8.0	75	117
*DSH105081	8.1	75	117
*DSH105082	8.2	75	117
*DSH105083	8.3	75	117
**DSH105084	8.4	75	117
**DSH105085	8.5	75	117
**DSH105086	8.6	81	125
**DSH105087	8.7	81	125
**DSH105088	8.8	81	125
**DSH105089	8.9	81	125
**DSH105090	9.0	81	125
**DSH105091	9.1	81	125

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
**DSH105092	9.2	81	125
**DSH105093	9.3	81	125
**DSH105094	9.4	81	125
**DSH105095	9.5	81	125
**DSH105096	9.6	87	133
**DSH105097	9.7	87	133
**DSH105098	9.8	87	133
**DSH105099	9.9	87	133
**DSH105100	10.0	87	133
**DSH105101	10.1	87	133
**DSH105102	10.2	87	133
**DSH105103	10.3	87	133
**DSH105104	10.4	87	133
**DSH105105	10.5	87	133
**DSH105106	10.6	87	133
**DSH105107	10.7	94	142
**DSH105108	10.8	94	142
**DSH105109	10.9	94	142
**DSH105110	11.0	94	142
**DSH105111	11.1	94	142
**DSH105112	11.2	94	142
**DSH105113	11.3	94	142
**DSH105114	11.4	94	142
**DSH105115	11.5	94	142

*10pcs per package
** 5pcs per package

▶ NEXT PAGE

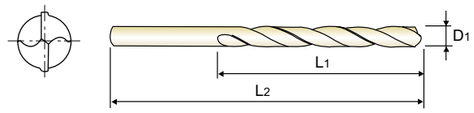
◎ : Excellent ○ : Good

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

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

SUPER-GP DRILLS
DSH105 SERIES
SUPER HSS, SUPER-GP DRILLS (DIN338)
JOBBER
SUPER HSS, SUPER-GP DRILLS (DIN338) — KURZ
Forets SUPER-GP Super HSS, queue cylindrique (DIN338) — COURTE
PUNTA SUPER-GP DRILL, IN SUPER-HSS, GAMBO CILINDRICO (DIN338) — CORTA
▶Surface treatment: Steam Tempered (Black Oxide Finish)
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DIN 338 | SUPER HSS | 30° | h8 | 118° | P.226-227

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
**DSH105116	11.6	94	142
**DSH105117	11.7	94	142
**DSH105118	11.8	94	142
**DSH105119	11.9	101	151
**DSH105120	12.0	101	151
**DSH105121	12.1	101	151
**DSH105122	12.2	101	151
**DSH105123	12.3	101	151

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
**DSH105124	12.4	101	151
**DSH105125	12.5	101	151
**DSH105126	12.6	101	151
**DSH105127	12.7	101	151
**DSH105128	12.8	101	151
**DSH105129	12.9	101	151
**DSH105130	13.0	101	151

*10pcs per package
** 5pcs per package

◎ : Excellent ○ : Good

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

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

SUPER-GP DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DSH105 SERIES — SUPER HSS, SUPER-GP DRILLS (DIN338)

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

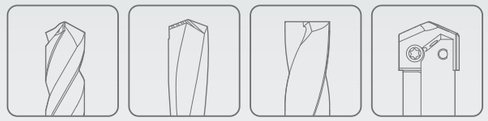
ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0
P	1	Non-alloy steel	30	RPM	4770	3180	2390	1590	1190
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13
	2		25	RPM	3980	2650	1990	1330	990
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13
	3		20	RPM	3180	2120	1590	1060	800
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13
	4		20	RPM	3180	2120	1590	1060	800
				FEED	0.01-0.02	0.01-0.03	0.02-0.04	0.02-0.05	0.03-0.06
	5								
	6	Low alloy steel	25	RPM	3980	2650	1990	1330	990
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13
	7		20	RPM	3180	2120	1590	1060	800
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13
	8		20	RPM	3180	2120	1590	1060	800
				FEED	0.01-0.02	0.01-0.03	0.02-0.04	0.02-0.05	0.03-0.06
	9								
	10	High alloyed steel, and tool steel	15	RPM	2390	1590	1190	800	600
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13
	11								
M	12	Stainless steel	20	RPM	3180	2120	1590	1060	800
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13
	13		15	RPM	2390	1590	1190	800	600
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13
	14		10	RPM	1590	1060	800	530	400
				FEED	0.01-0.02	0.01-0.03	0.02-0.04	0.02-0.05	0.03-0.06
K	15	Grey cast iron	30	RPM	4770	3180	2390	1590	1190
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13
	16		25	RPM	3980	2650	1990	1330	990
				FEED	0.01-0.02	0.01-0.03	0.02-0.04	0.02-0.05	0.03-0.06
	17	Nodular cast iron	30	RPM	4770	3180	2390	1590	1190
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13
	18								
	19	Malleable cast iron	25	RPM	3980	2650	1990	1330	990
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.1-0.13
	20								
N	21	Aluminum-wrought alloy	55	RPM	8750	5840	4380	2920	2190
				FEED	0.03-0.06	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18
	22		55	RPM	8750	5840	4380	2920	2190
				FEED	0.03-0.06	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18
	23	Aluminum-cast, alloyed	40	RPM	6370	4240	3180	2120	1590
				FEED	0.03-0.06	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18
	24								
	25								
	26	Copper and Copper Alloys (Bronze / Brass)							
	27								
	28								
	29	Non Metallic Materials	20	RPM	3180	2120	1590	1060	800
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13
	30								
S	31	Heat Resistant Super Alloys							
	32								
	33								
	34								
	35								
	36	Titanium Alloys	10	RPM	1590	1060	800	530	400
				FEED	0.01-0.03	0.02-0.04	0.03-0.05	0.04-0.07	0.05-0.08
	37								
H	38	Hardened steel							
	39								
	40	Chilled Cast Iron							
	41	Hardened Cast Iron							

SUPER-GP DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

VDI 3323	Parameter	Drill Diameter (mm) 10.0	13.0
1	RPM	950	730
	FEED	0.11-0.15	0.11-0.17
2	RPM	800	610
	FEED	0.11-0.15	0.11-0.17
3	RPM	640	490
	FEED	0.11-0.15	0.11-0.17
4	RPM	640	490
	FEED	0.03-0.06	0.04-0.10
5			
6	RPM	800	610
	FEED	0.11-0.15	0.11-0.17
7	RPM	640	490
	FEED	0.11-0.15	0.11-0.17
8	RPM	640	490
	FEED	0.03-0.06	0.04-0.10
9			
10	RPM	480	370
	FEED	0.11-0.15	0.11-0.17
11			
12	RPM	640	490
	FEED	0.11-0.15	0.11-0.17
13	RPM	480	370
	FEED	0.11-0.15	0.11-0.17
14	RPM	320	240
	FEED	0.03-0.06	0.04-0.10
15	RPM	950	730
	FEED	0.11-0.15	0.11-0.17
16	RPM	800	610
	FEED	0.03-0.06	0.04-0.10
17	RPM	950	730
	FEED	0.11-0.15	0.11-0.17
18			
19	RPM	800	610
	FEED	0.11-0.15	0.11-0.17
20			
21	RPM	1750	1350
	FEED	0.14-0.20	0.16-0.22
22	RPM	1750	1350
	FEED	0.14-0.20	0.16-0.22
23	RPM	1270	980
	FEED	0.14-0.20	0.16-0.22
24			
25			
26			
27			
28			
29	RPM	640	490
	FEED	0.11-0.15	0.11-0.17
30			
31			
32			
33			
34			
35			
36	RPM	320	240
	FEED	0.05-0.09	0.06-0.10
37			
38			
39			
40			
41			

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation



HSS, HSS-E & HSSCo8

STRAIGHT SHANK DRILLS

BOHRER MIT ZYLINDERSCHAFT

- **For General Purpose (Soft &Tough Materials)**
- **Für allgemeine Anwendungen (weiche & zähe Materialien)**

SELECTION GUIDE

YG HOLEMAKING TOOLS

HSS, HSS-E & HSSCo8
STRAIGHT SHANK DRILLS

For General Purpose (Soft &Tough Materials)

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.276

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	D2107	D1107	D2105
		SERIES					D2107	D1107	D2105
		STANDARD					DIN1897	DIN1897	DIN338
		LENGTH					STUB	STUB	JOBBER
		SIZE MIN					D1.0	D1.0	D1.0
		SIZE MAX					D31.0	D13.0	D20.0
		PAGE					234	238	241
		SURFACE TREATMENT					Gold Coloring	Steam Tempered	Gold Coloring
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎	◎
	2		About 0.45% C	Annealed	190	13	◎	◎	◎
	3		About 0.45% C	Quenched & Tempered	250	25	◎	◎	◎
	4		About 0.75% C	Annealed	270	28	○	○	○
	5		About 0.75% C	Quenched & Tempered	300	32			
	6	Low alloy steel		Annealed	180	10	◎	◎	◎
	7			Quenched & Tempered	275	29	○	○	○
	8			Quenched & Tempered	300	32	○	○	○
	9			Quenched & Tempered	350	38			
	10	High alloyed steel, and tool steel		Annealed	200	15	○	○	○
	11			Quenched & Tempered	325	35			
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	◎	○	◎
	13		Martensitic	Quenched & Tempered	240	23	○	○	○
	14		Austenitic		180	10	○	○	○
K	15	Grey cast iron	Pearlitic / ferritic		180	10	○	○	○
	16		Pearlitic (Martensitic)		260	26	○	○	○
	17	Nodular cast iron	Ferritic		160	3	○	○	○
	18		Pearlitic		250	25			
	19	Malleable cast iron	Ferritic		130		○	○	○
	20		Pearlitic		230	21			
N	21	Aluminum-wrought alloy	Not Curable		60		○	○	○
	22		Curable	Hardened	100		○	○	○
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		○	○	○
	24		≤ 12% Si, Curable	Hardened	90				
	25		> 12% Si, Not Curable		130				
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110				
	27		CuZn, CuSnZn (Brass)		90				
	28		CuSn, lead-free copper and electrolytic copper		100				
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic				○	○	○
	30		Rubber, Wood, etc.						
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15			
	32			Cured	280	30			
	33		Ni or Co Based	Annealed	250	25			
	34			Cured	350	38			
	35			Cast	320	34			
	36	Titanium Alloys	Pure Titanium		400 Rm		○	○	○
	37		Alpha + Beta Alloys	Hardened	1050 Rm				
H	38	Hardened steel		Hardened	550	55			
	39			Hardened	630	60			
	40	Chilled Cast Iron		Cast	400	42			
	41	Hardened Cast Iron		Hardened	550	55			



DL105	D1105	D1125	D2104	D1121	DL109	D1100	D1106	
DIN338	DIN338	DIN338	DIN340	DIN1869/1	DIN338	DIN338	DIN338	
JOBBER	JOBBER	JOBBER	LONG	EXTRA LONG	JOBBER	JOBBER	JOBBER	
D1.0	D0.3	D2.0	D2.0	D2.0	D1.5	D1.5	D1.5	
D20.0	D20.0	D20.0	D12.0	D13.0	D13.0	D13.0	D13.0	
244	247	252	255	257	258	259	261	
Gold Coloring	Steam Tempered	Bright	Gold Coloring	Steam Tempered	Bright			
◎	◎	◎	◎	◎	◎			1
◎	◎	◎	◎	◎	◎			2
◎	◎	◎	◎	◎	◎			3
○	○	○	○	○	○			4
								5
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								9
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								11
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								41



CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

SELECTION GUIDE

YG HOLEMAKING TOOLS

SERIES	DH100 DL510	DH100 DL508	DH100 DL509	DH100 DL505	DH100 DL504	DH100 DT600	DH100 DT692	DH100 DT693	DH100 DL608	DH50 DL507
STANDARD	DIN1897	DIN338	DIN340	DIN338	DIN340	DIN1869/1	DIN1869/2	DIN1869/3	DIN341	-
LENGTH	STUB	JOBBER	LONG	JOBBER	LONG		EXTRA LONG		LONG	EXTRA LONG
SIZE MIN	D2.0	D2.0	D2.0	D2.0	D2.0	D2.0	D3.0	D4.0	D13.0	D2.0
SIZE MAX	D20.0	D16.0	D12.0	D13.0	D13.0	D10.5	D10.2	D10.0	D30.0	D13.0
PAGE	263	265	267	269	271		272		273	274
SURFACE TREATMENT	Bright			Steam Tempered		TiAlN			Bright	

HSS-E
STRAIGHT SHANK DRILLS

For General Purpose (Soft &Tough Materials)



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.276

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

STRAIGHT SHANK DRILLS

D2107 SERIES

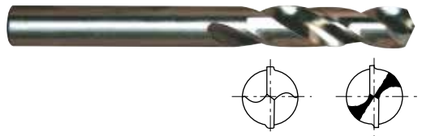
HSSCo8, STRAIGHT SHANK TWIST DRILLS

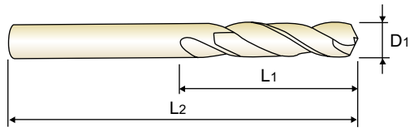
STUB

HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT — ***EXTRA KURZ***
Forets HSSCo8, queue cylindrique, Forme C, série extra-courte — ***EXTRA-COURTE***
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSSCo8 — ***EXTRA CORTA***

▶**Surface treatment** : Coloring(Gold color)
▶**Application** : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes

▶**Oberflächenbehandlung** : Coloring(Goldfarbe)
▶**Verwendung** : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken. Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.





DIN 1897 | HSS Co8 | 33° | h8 | 135° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107010	1.0	6	26
D2107011	1.1	7	28
D2107012	1.2	8	30
D2107912	1.25	8	30
D2107013	1.3	8	30
D2107014	1.4	9	32
D2107015	1.5	9	32
D2107016	1.6	10	34
D2107017	1.7	10	34
D2107917	1.75	11	36
D2107018	1.8	11	36
D2107019	1.9	11	36
D2107020	2.0	12	38
D2107021	2.1	12	38
D2107022	2.2	13	40
D2107922	2.25	13	40
D2107023	2.3	13	40
D2107024	2.4	14	43
D2107025	2.5	14	43
D2107026	2.6	14	43
D2107027	2.7	16	46
D2107927	2.75	16	46
D2107028	2.8	16	46
D2107029	2.9	16	46
D2107030	3.0	16	46
D2107031	3.1	18	49

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107032	3.2	18	49
D2107932	3.25	18	49
D2107033	3.3	18	49
D2107034	3.4	20	52
D2107035	3.5	20	52
D2107036	3.6	20	52
D2107037	3.7	20	52
D2107937	3.75	20	52
D2107038	3.8	22	55
D2107039	3.9	22	55
D2107040	4.0	22	55
D2107041	4.1	22	55
D2107042	4.2	22	55
D2107942	4.25	22	55
D2107043	4.3	24	58
D2107044	4.4	24	58
D2107045	4.5	24	58
D2107046	4.6	24	58
D2107946	4.65	24	58
D2107047	4.7	24	58
D2107947	4.75	24	58
D2107048	4.8	26	62
D2107049	4.9	26	62
D2107050	5.0	26	62
D2107051	5.1	26	62
D2107052	5.2	26	62

▶ HSS-E(DL107) is available on your request.
▶ TiN(D4107), TiCN(D7107) and TiAlN(DQ107) are available on your request.

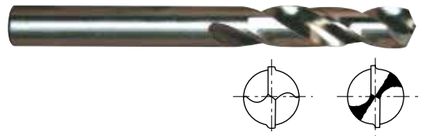
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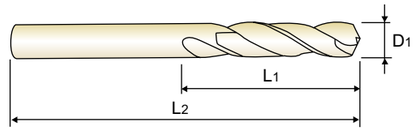
◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS
D2107 SERIES
HSSCo8, STRAIGHT SHANK TWIST DRILLS
STUB
HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT — EXTRA KURZ
Forets HSSCo8, queue cylindrique, Forme C, série extra-courte — EXTRA-COURTE
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSSCo8 — EXTRA CORTA
▶Surface treatment : Coloring(Gold color)
▶Application : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes
▶Oberflächenbehandlung : Coloring(Goldfarbe)
▶Verwendung : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken. Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.





DIN 1897 | HSS Co8 | 33° | h8 | 135° | P.276-277
Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107952	5.25	26	62
D2107053	5.3	26	62
D2107054	5.4	28	66
D2107055	5.5	28	66
D2107955	5.55	28	66
D2107056	5.6	28	66
D2107057	5.7	28	66
D2107957	5.75	28	66
D2107058	5.8	28	66
D2107059	5.9	28	66
D2107060	6.0	28	66
D2107061	6.1	31	70
D2107062	6.2	31	70
D2107962	6.25	31	70
D2107063	6.3	31	70
D2107064	6.4	31	70
D2107065	6.5	31	70
D2107066	6.6	31	70
D2107067	6.7	31	70
D2107967	6.75	34	74
D2107068	6.8	34	74
D2107069	6.9	34	74
D2107070	7.0	34	74
D2107071	7.1	34	74
D2107072	7.2	34	74
D2107972	7.25	34	74

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107073	7.3	34	74
D2107074	7.4	34	74
D2107974	7.45	34	74
D2107075	7.5	34	74
D2107076	7.6	37	79
D2107077	7.7	37	79
D2107977	7.75	37	79
D2107078	7.8	37	79
D2107079	7.9	37	79
D2107080	8.0	37	79
D2107081	8.1	37	79
D2107082	8.2	37	79
D2107982	8.25	37	79
D2107083	8.3	37	79
D2107084	8.4	37	79
D2107085	8.5	37	79
D2107086	8.6	40	84
D2107087	8.7	40	84
D2107987	8.75	40	84
D2107088	8.8	40	84
D2107089	8.9	40	84
D2107090	9.0	40	84
D2107091	9.1	40	84
D2107092	9.2	40	84
D2107992	9.25	40	84
D2107093	9.3	40	84

▶ HSS-E(DL107) is available on your request.
▶ TiN(D4107), TiCN(D7107) and TiAlN(DQ107) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	○		◎	○	○		○		◎	○	○	○	○	○		○	

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

STRAIGHT SHANK DRILLS

D2107 SERIES

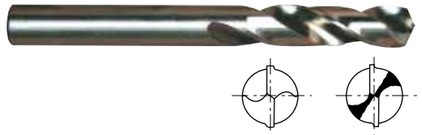
HSSCo8, STRAIGHT SHANK TWIST DRILLS

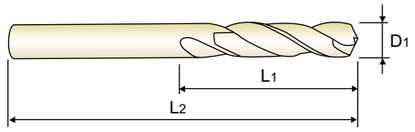
STUB

HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT — *EXTRA KURZ*
Forets HSSCo8, queue cylindrique, Forme C, série extra-courte — *EXTRA-COURTE*
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSSCo8 — *EXTRA CORTA*

▶**Surface treatment** : Coloring(Gold color)
▶**Application** : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes

▶**Oberflächenbehandlung** : Coloring(Goldfarbe)
▶**Verwendung** : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken. Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.





DIN 1897 | HSS Co8 | 33° | h8 | 135° P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107993	9.35	40	84
D2107094	9.4	40	84
D2107095	9.5	40	84
D2107096	9.6	43	89
D2107097	9.7	43	89
D2107997	9.75	43	89
D2107098	9.8	43	89
D2107099	9.9	43	89
D2107100	10.0	43	89
D2107102	10.2	43	89
D2107802	10.25	43	89
D2107105	10.5	43	89
D2107807	10.75	47	95
D2107110	11.0	47	95
D2107812	11.25	47	95
D2107115	11.5	47	95
D2107817	11.75	47	95
D2107118	11.8	47	95
D2107120	12.0	51	102
D2107822	12.25	51	102
D2107125	12.5	51	102
D2107827	12.75	51	102
D2107130	13.0	51	102
D2107832	13.25	54	107
D2107135	13.5	54	107
D2107837	13.75	54	107

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107138	13.8	54	107
D2107140	14.0	54	107
D2107842	14.25	56	111
D2107145	14.5	56	111
D2107847	14.75	56	111
D2107150	15.0	56	111
D2107852	15.25	58	115
D2107155	15.5	58	115
D2107857	15.75	58	115
D2107160	16.0	58	115
D2107862	16.25	60	119
D2107165	16.5	60	119
D2107867	16.75	60	119
D2107170	17.0	60	119
D2107872	17.25	62	123
D2107175	17.5	62	123
D2107877	17.75	62	123
D2107180	18.0	62	123
D2107882	18.25	64	127
D2107185	18.5	64	127
D2107887	18.75	64	127
D2107190	19.0	64	127
D2107892	19.25	66	131
D2107195	19.5	66	131
D2107897	19.75	66	131
D2107200	20.0	66	131

▶ HSS-E(DL107) is available on your request.
▶ TiN(D4107), TiCN(D7107) and TiAlN(DQ107) are available on your request.

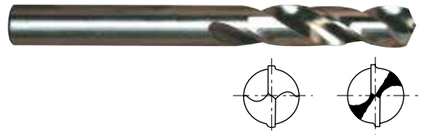
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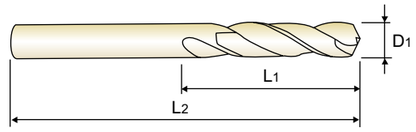
◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS
D2107 SERIES
HSSCo8, STRAIGHT SHANK TWIST DRILLS
STUB
HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT — EXTRA KURZ
Forets HSSCo8, queue cylindrique, Forme C, série extra-courte — EXTRA-COURTE
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSSCo8 — EXTRA CORTA
▶Surface treatment : Coloring(Gold color)
▶Application : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes
▶Oberflächenbehandlung : Coloring(Goldfarbe)
▶Verwendung : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken. Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.





DIN 1897 | HSS Co8 | 33° | h8 | 135° P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107205	20.5	68	136
D2107210	21.0	68	136
D2107215	21.5	70	141
D2107220	22.0	70	141
D2107225	22.5	72	146
D2107230	23.0	72	146
D2107235	23.5	72	146
D2107240	24.0	75	151

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107245	24.5	75	151
D2107250	25.0	75	151
D2107260	26.0	78	156
D2107270	27.0	81	162
D2107280	28.0	81	162
D2107290	29.0	84	168
D2107300	30.0	84	168
D2107310	31.0	87	174

▶ HSS-E(DL107) is available on your request.
▶ TiN(D4107), TiCN(D7107) and TiAlN(DQ107) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	○		◎	○	○		○		◎	○	○	○	○	○		○	

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

STRAIGHT SHANK DRILLS

D1107 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS

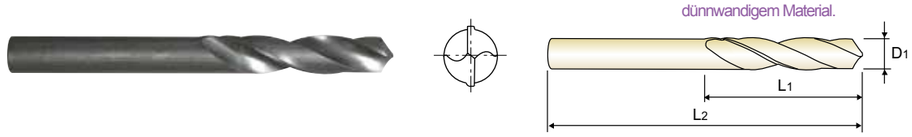
STUB

HSS, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS, queue cylindrique, série extra-courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS

EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
Bright Finish under 2mm
▶**Application** : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
Helle Beschaffenheit unter 2mm
▶**Verwendung** : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken. Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.



DIN 1897 | HSS | N 20~30° | h8 | 118° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1107010	1.0	6	26
D1107011	1.1	7	28
D1107012	1.2	8	30
D1107912	1.25	8	30
D1107013	1.3	8	30
D1107014	1.4	9	32
D1107015	1.5	9	32
D1107016	1.6	9	34
D1107017	1.7	10	34
D1107917	1.75	11	36
D1107018	1.8	11	36
D1107019	1.9	11	36
D1107020	2.0	12	38
D1107021	2.1	12	38
D1107022	2.2	13	40
D1107922	2.25	13	40
D1107023	2.3	13	40
D1107024	2.4	14	43
D1107025	2.5	14	43
D1107026	2.6	14	43
D1107027	2.7	16	46
D1107927	2.75	16	46
D1107028	2.8	16	46
D1107029	2.9	16	46
D1107030	3.0	16	46
D1107031	3.1	18	49

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1107032	3.2	18	49
D1107932	3.25	18	49
D1107033	3.3	18	49
D1107034	3.4	20	52
D1107035	3.5	20	52
D1107036	3.6	20	52
D1107037	3.7	20	52
D1107937	3.75	20	52
D1107038	3.8	22	55
D1107039	3.9	22	55
D1107040	4.0	22	55
D1107041	4.1	22	55
D1107042	4.2	22	55
D1107942	4.25	22	55
D1107043	4.3	24	58
D1107044	4.4	24	58
D1107045	4.5	24	58
D1107046	4.6	24	58
D1107047	4.7	24	58
D1107947	4.75	24	58
D1107048	4.8	26	62
D1107049	4.9	26	62
D1107050	5.0	26	62
D1107051	5.1	26	62
D1107052	5.2	26	62
D1107952	5.25	26	62

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

D1107 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS

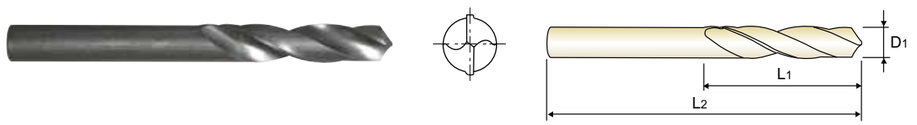
STUB

HSS, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS, queue cylindrique, série extra-courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS

EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

▶Surface treatment : Steam Tempered(Black Oxide Finish)
▶Application : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes.

▶Oberflächenbehandlung : Steam Homo(Schwarzoxidation)
▶Verwendung : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken. Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.



DIN 1897 | HSS | N 20~30° | h8 | 118° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1107053	5.3	26	62
D1107054	5.4	28	66
D1107055	5.5	28	66
D1107056	5.6	28	66
D1107057	5.7	28	66
D1107957	5.75	28	66
D1107058	5.8	28	66
D1107059	5.9	28	66
D1107060	6.0	28	66
D1107061	6.1	31	70
D1107062	6.2	31	70
D1107962	6.25	31	70
D1107063	6.3	31	70
D1107064	6.4	31	70
D1107065	6.5	31	70
D1107066	6.6	31	70
D1107067	6.7	31	70
D1107967	6.75	34	74
D1107068	6.8	34	74
D1107069	6.9	34	74
D1107070	7.0	34	74
D1107071	7.1	34	74
D1107072	7.2	34	74
D1107972	7.25	34	74
D1107073	7.3	34	74
D1107074	7.4	34	74

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1107075	7.5	34	74
D1107076	7.6	37	79
D1107077	7.7	37	79
D1107977	7.75	37	79
D1107078	7.8	37	79
D1107079	7.9	37	79
D1107080	8.0	37	79
D1107081	8.1	37	79
D1107082	8.2	37	79
D1107982	8.25	37	79
D1107083	8.3	37	79
D1107084	8.4	37	79
D1107085	8.5	37	79
D1107086	8.6	40	84
D1107087	8.7	40	84
D1107987	8.75	40	84
D1107088	8.8	40	84
D1107089	8.9	40	84
D1107090	9.0	40	84
D1107091	9.1	40	84
D1107092	9.2	40	84
D1107992	9.25	40	84
D1107093	9.3	40	84
D1107094	9.4	40	84
D1107095	9.5	40	84
D1107096	9.6	43	89

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

D1107 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS

STUB

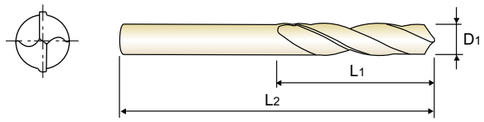
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS, queue cylindrique, série extra-courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS

EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
▶**Application** : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶**Verwendung** : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken. Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.





DIN 1897 | HSS | N 20~30° | h8 | 118° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1107097	9.7	43	89
D1107997	9.75	43	89
D1107098	9.8	43	89
D1107099	9.9	43	89
D1107100	10.0	43	89
D1107802	10.25	43	89
D1107105	10.5	43	89
D1107807	10.75	47	95
D1107110	11.0	47	95

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1107812	11.25	47	95
D1107115	11.5	47	95
D1107817	11.75	47	95
D1107120	12.0	51	102
D1107822	12.25	51	102
D1107125	12.5	51	102
D1107827	12.75	51	102
D1107130	13.0	51	102

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

D2105 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS

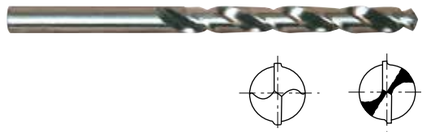
JOBBER

HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSSCo8, queue cylindrique, Forme C, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSSCo8

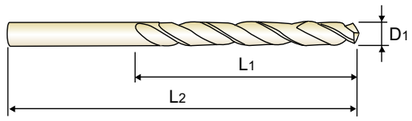
KURZ
COURTE
CORTA

▶**Surface treatment** : Coloring(Gold color)
▶**Application** : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.

▶**Oberflächenbehandlung** : Coloring(Goldfarbe)
▶**Verwendung** : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.



under 1.6mm 1.6mm & over



DIN 338 | HSS Co8 | 33° | h8 | 135° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2105010	1.0	12	34
D2105011	1.1	14	36
D2105012	1.2	16	38
D2105912	1.25	16	38
D2105013	1.3	16	38
D2105014	1.4	18	40
D2105015	1.5	18	40
D2105016	1.6	20	43
D2105017	1.7	20	43
D2105917	1.75	22	46
D2105018	1.8	22	46
D2105019	1.9	22	46
D2105020	2.0	24	49
D2105021	2.1	24	49
D2105022	2.2	27	53
D2105922	2.25	27	53
D2105023	2.3	27	53
D2105024	2.4	30	57
D2105025	2.5	30	57
D2105026	2.6	30	57
D2105027	2.7	33	61
D2105927	2.75	33	61
D2105028	2.8	33	61
D2105029	2.9	33	61
D2105030	3.0	33	61
D2105031	3.1	36	65

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2105032	3.2	36	65
D2105932	3.25	36	65
D2105033	3.3	36	65
D2105034	3.4	39	70
D2105035	3.5	39	70
D2105036	3.6	39	70
D2105037	3.7	39	70
D2105937	3.75	39	70
D2105038	3.8	43	75
D2105039	3.9	43	75
D2105040	4.0	43	75
D2105041	4.1	43	75
D2105042	4.2	43	75
D2105942	4.25	43	75
D2105043	4.3	47	80
D2105044	4.4	47	80
D2105045	4.5	47	80
D2105046	4.6	47	80
D2105047	4.7	47	80
D2105947	4.75	47	80
D2105048	4.8	52	86
D2105049	4.9	52	86
D2105050	5.0	52	86
D2105051	5.1	52	86
D2105052	5.2	52	86
D2105952	5.25	52	86

▶ TiN(D4105), TiCN(D7105) and TiAlN(DQ105) are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

D2105 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS

JOBBER

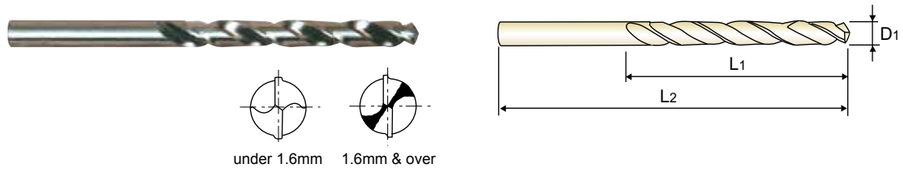
HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT — ***KURZ***

Forets HSSCo8, queue cylindrique, Forme C, série courte — ***COURTE***

PUNTE ELICOIDALI, GAMBO CILINDRICO, HSSCo8 — ***CORTA***

▶**Surface treatment** : Coloring(Gold color)
▶**Application** : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.

▶**Oberflächenbehandlung** : Coloring(Goldfarbe)
▶**Verwendung** : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.



DIN 338 | HSS Co8 | 33° | h8 | 135° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2105053	5.3	52	86
D2105054	5.4	57	93
D2105055	5.5	57	93
D2105056	5.6	57	93
D2105057	5.7	57	93
D2105957	5.75	57	93
D2105058	5.8	57	93
D2105059	5.9	57	93
D2105060	6.0	57	93
D2105061	6.1	63	101
D2105062	6.2	63	101
D2105962	6.25	63	101
D2105063	6.3	63	101
D2105064	6.4	63	101
D2105065	6.5	63	101
D2105066	6.6	63	101
D2105067	6.7	63	101
D2105967	6.75	69	109
D2105068	6.8	69	109
D2105069	6.9	69	109
D2105070	7.0	69	109
D2105071	7.1	69	109
D2105072	7.2	69	109
D2105972	7.25	69	109
D2105073	7.3	69	109
D2105074	7.4	69	109

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2105075	7.5	69	109
D2105076	7.6	75	117
D2105077	7.7	75	117
D2105977	7.75	75	117
D2105078	7.8	75	117
D2105079	7.9	75	117
D2105080	8.0	75	117
D2105081	8.1	75	117
D2105082	8.2	75	117
D2105982	8.25	75	117
D2105083	8.3	75	117
D2105084	8.4	75	117
D2105085	8.5	75	117
D2105086	8.6	81	125
D2105087	8.7	81	125
D2105987	8.75	81	125
D2105088	8.8	81	125
D2105089	8.9	81	125
D2105090	9.0	81	125
D2105091	9.1	81	125
D2105092	9.2	81	125
D2105992	9.25	81	125
D2105093	9.3	81	125
D2105094	9.4	81	125
D2105095	9.5	81	125
D2105096	9.6	87	133

▶ TiN(D4105), TiCN(D7105) and TiAlN(DQ105) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	○		◎	○	○		○		◎	○	○	○	○	○		○	

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

STRAIGHT SHANK DRILLS

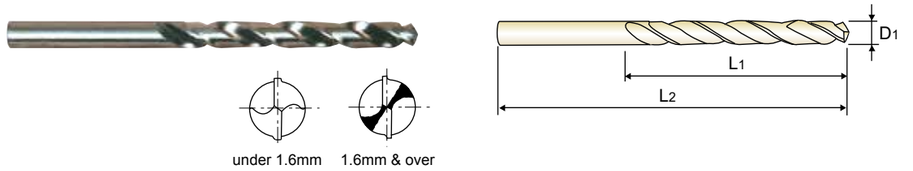
D2105 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS

JOBBER
KURZ
COURTE
CORTA

▶Surface treatment : Coloring(Gold color)
▶Application : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.

▶Oberflächenbehandlung : Coloring(Goldfarbe)
▶Verwendung : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.



DIN 338 | HSS Co8 | 33° | h8 | 135° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2105097	9.7	87	133
D2105997	9.75	87	133
D2105098	9.8	87	133
D2105099	9.9	87	133
D2105100	10.0	87	133
D2105102	10.2	87	133
D2105105	10.5	87	133
D2105110	11.0	94	142
D2105115	11.5	94	142
D2105120	12.0	101	151
D2105125	12.5	101	151
D2105130	13.0	101	151
D2105135	13.5	108	160

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2105140	14.0	108	160
D2105145	14.5	114	169
D2105150	15.0	114	169
D2105155	15.5	120	178
D2105160	16.0	120	178
D2105165	16.5	125	184
D2105170	17.0	125	184
D2105175	17.5	130	191
D2105180	18.0	130	191
D2105185	18.5	135	198
D2105190	19.0	135	198
D2105195	19.5	140	205
D2105200	20.0	140	205

▶ TiN(D4105), TiCN(D7105) and TiAlN(DQ105) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	○		◎	○	○		○		◎	○	○	○	○	○		○	

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

STRAIGHT SHANK DRILLS

DL105 SERIES

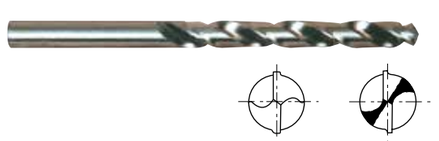
HSS-E, STRAIGHT SHANK TWIST DRILLS

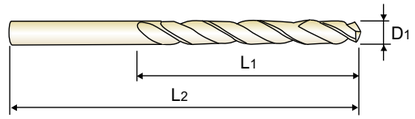
JOBBER
KURZ
COURTE
CORTA

HSS-E, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS-E, queue cylindrique, Forme C, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS - E

▶**Surface treatment** : Coloring(Gold color)
▶**Application** : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.

▶**Oberflächenbehandlung** : Coloring(Goldfarbe)
▶**Verwendung** : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.





DIN 338 | HSS-E | 33° | h8 | 135° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL105010	1.0	12	34
DL105011	1.1	14	36
DL105012	1.2	16	38
DL105912	1.25	16	38
DL105013	1.3	16	38
DL105014	1.4	18	40
DL105015	1.5	18	40
DL105016	1.6	20	43
DL105017	1.7	20	43
DL105917	1.75	22	46
DL105018	1.8	22	46
DL105019	1.9	22	46
DL105020	2.0	24	49
DL105021	2.1	24	49
DL105022	2.2	27	53
DL105922	2.25	27	53
DL105023	2.3	27	53
DL105024	2.4	30	57
DL105025	2.5	30	57
DL105026	2.6	30	57
DL105027	2.7	33	61
DL105927	2.75	33	61
DL105028	2.8	33	61
DL105029	2.9	33	61
DL105030	3.0	33	61
DL105031	3.1	36	65

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL105032	3.2	36	65
DL105932	3.25	36	65
DL105033	3.3	36	65
DL105034	3.4	39	70
DL105035	3.5	39	70
DL105036	3.6	39	70
DL105037	3.7	39	70
DL105937	3.75	39	70
DL105038	3.8	43	75
DL105039	3.9	43	75
DL105040	4.0	43	75
DL105041	4.1	43	75
DL105042	4.2	43	75
DL105942	4.25	43	75
DL105043	4.3	47	80
DL105044	4.4	47	80
DL105045	4.5	47	80
DL105046	4.6	47	80
DL105047	4.7	47	80
DL105947	4.75	47	80
DL105048	4.8	52	86
DL105049	4.9	52	86
DL105050	5.0	52	86
DL105051	5.1	52	86
DL105052	5.2	52	86
DL105952	5.25	52	86

▶ TiN(DN105), TiCN(DX105) and TiAlN(DT105) are available on your request.

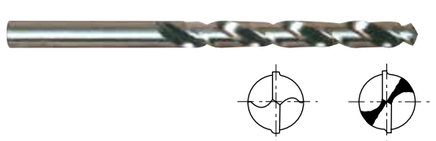
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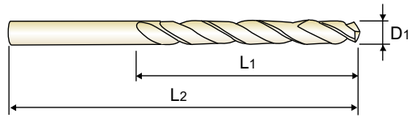
◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS
DL105 SERIES
HSS-E, STRAIGHT SHANK TWIST DRILLS
JOBBER
KURZ
COURTE
CORTA
HSS-E, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS-E, queue cylindrique, Forme C, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS - E
▶Surface treatment : Coloring(Gold color)
▶Application : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.
▶Oberflächenbehandlung : Coloring(Goldfarbe)
▶Verwendung : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.





DIN 338 | HSS-E | 33° | h8 | 135° | P.276-277
Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL105053	5.3	52	86
DL105054	5.4	57	93
DL105055	5.5	57	93
DL105056	5.6	57	93
DL105057	5.7	57	93
DL105957	5.75	57	93
DL105058	5.8	57	93
DL105059	5.9	57	93
DL105060	6.0	57	93
DL105061	6.1	63	101
DL105062	6.2	63	101
DL105962	6.25	63	101
DL105063	6.3	63	101
DL105064	6.4	63	101
DL105065	6.5	63	101
DL105066	6.6	63	101
DL105067	6.7	63	101
DL105967	6.75	69	109
DL105068	6.8	69	109
DL105069	6.9	69	109
DL105070	7.0	69	109
DL105071	7.1	69	109
DL105072	7.2	69	109
DL105972	7.25	69	109
DL105073	7.3	69	109
DL105074	7.4	69	109

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL105075	7.5	69	109
DL105076	7.6	75	117
DL105077	7.7	75	117
DL105977	7.75	75	117
DL105078	7.8	75	117
DL105079	7.9	75	117
DL105080	8.0	75	117
DL105081	8.1	75	117
DL105082	8.2	75	117
DL105982	8.25	75	117
DL105083	8.3	75	117
DL105084	8.4	75	117
DL105085	8.5	75	117
DL105086	8.6	81	125
DL105087	8.7	81	125
DL105987	8.75	81	125
DL105088	8.8	81	125
DL105089	8.9	81	125
DL105090	9.0	81	125
DL105091	9.1	81	125
DL105092	9.2	81	125
DL105992	9.25	81	125
DL105093	9.3	81	125
DL105094	9.4	81	125
DL105095	9.5	81	125
DL105096	9.6	87	133

▶ TiN(DN105), TiCN(DX105) and TiAlN(DT105) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	○		◎	○	○		○		◎	○	○	○	○	○		○	

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

STRAIGHT SHANK DRILLS

DL105 SERIES

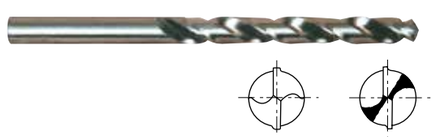
HSS-E, STRAIGHT SHANK TWIST DRILLS

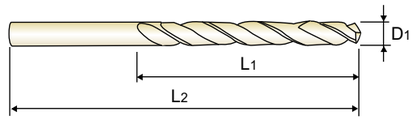
JOBBER
KURZ
COURTE
CORTA

HSS-E, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS-E, queue cylindrique, Forme C, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS - E

▶**Surface treatment** : Coloring(Gold color)
▶**Application** : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.

▶**Oberflächenbehandlung** : Coloring(Goldfarbe)
▶**Verwendung** : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.





DIN 338 | HSS-E | 33° | h8 | 135° P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL105097	9.7	87	133
DL105997	9.75	87	133
DL105098	9.8	87	133
DL105099	9.9	87	133
DL105100	10.0	87	133
DL105102	10.2	87	133
DL105105	10.5	87	133
DL105110	11.0	94	142
DL105115	11.5	94	142
DL105120	12.0	101	151
DL105125	12.5	101	151
DL105130	13.0	101	151
DL105135	13.5	108	160

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL105140	14.0	108	160
DL105145	14.5	114	169
DL105150	15.0	114	169
DL105155	15.5	120	178
DL105160	16.0	120	178
DL105165	16.5	125	184
DL105170	17.0	125	184
DL105175	17.5	130	191
DL105180	18.0	130	191
DL105185	18.5	135	198
DL105190	19.0	135	198
DL105195	19.5	140	205
DL105200	20.0	140	205

▶ TiN(DN105), TiCN(DX105) and TiAlN(DT105) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	○		◎	○	○		○		◎	○	○	○	○	○		○	

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

STRAIGHT SHANK DRILLS

D1105 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS

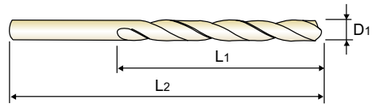
JOBBER
KURZ
COURTE
CORTA

HSS, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS, queue cylindrique, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS

▶**Surface treatment** : Steam Tempered(Black Oxide Finish) Bright Finish under 2mm
▶**Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation) Helle Beschaffenheit unter 2mm
▶**Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.





DIN 338 | HSS | N 20~30° | h8 | 118° P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105003	0.3	3	19
D1105004	0.4	5	20
D1105005	0.5	6	22
D1105006	0.6	7	24
D1105007	0.7	9	28
D1105008	0.8	10	30
D1105009	0.9	11	32
D1105010	1.0	12	34
D1105910	1.05	12	34
D1105011	1.1	14	36
D1105911	1.15	14	36
D1105012	1.2	16	38
D1105912	1.25	16	38
D1105013	1.3	16	38
D1105913	1.35	18	40
D1105014	1.4	18	40
D1105914	1.45	18	40
D1105015	1.5	18	40
D1105915	1.55	20	43
D1105016	1.6	20	43
D1105916	1.65	20	43
D1105017	1.7	20	43
D1105917	1.75	22	46
D1105018	1.8	22	46
D1105918	1.85	22	46
D1105019	1.9	22	46

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105919	1.95	24	49
D1105020	2.0	24	49
D1105920	2.05	24	49
D1105021	2.1	24	49
D1105921	2.15	27	53
D1105022	2.2	27	53
D1105922	2.25	27	53
D1105023	2.3	27	53
D1105923	2.35	27	53
D1105024	2.4	30	57
D1105924	2.45	30	57
D1105025	2.5	30	57
D1105925	2.55	30	57
D1105026	2.6	30	57
D1105926	2.65	30	57
D1105027	2.7	33	61
D1105927	2.75	33	61
D1105028	2.8	33	61
D1105928	2.85	33	61
D1105029	2.9	33	61
D1105929	2.95	33	61
D1105030	3.0	33	61
D1105930	3.05	36	65
D1105031	3.1	36	65
D1105931	3.15	36	65
D1105032	3.2	36	65

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

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

STRAIGHT SHANK DRILLS

D1105 SERIES

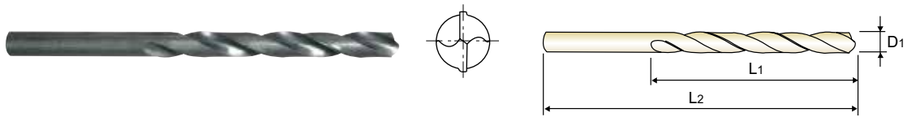
HSS, STRAIGHT SHANK TWIST DRILLS

JOBBER
KURZ
COURTE
CORTA

HSS, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS, queue cylindrique, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
Bright Finish under 2mm
▶**Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
Helle Beschaffenheit unter 2mm
▶**Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105932	3.25	36	65
D1105033	3.3	36	65
D1105933	3.35	36	65
D1105034	3.4	39	70
D1105934	3.45	39	70
D1105035	3.5	39	70
D1105935	3.55	39	70
D1105036	3.6	39	70
D1105936	3.65	39	70
D1105037	3.7	39	70
D1105937	3.75	39	70
D1105038	3.8	43	75
D1105938	3.85	43	75
D1105039	3.9	43	75
D1105939	3.95	43	75
D1105040	4.0	43	75
D1105940	4.05	43	75
D1105041	4.1	43	75
D1105941	4.15	43	75
D1105042	4.2	43	75
D1105942	4.25	43	75
D1105043	4.3	47	80
D1105943	4.35	47	80
D1105044	4.4	47	80
D1105944	4.45	47	80
D1105045	4.5	47	80

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105945	4.55	47	80
D1105046	4.6	47	80
D1105946	4.65	47	80
D1105047	4.7	47	80
D1105947	4.75	47	80
D1105048	4.8	52	86
D1105948	4.85	52	86
D1105049	4.9	52	86
D1105949	4.95	52	86
D1105050	5.0	52	86
D1105950	5.05	52	86
D1105051	5.1	52	86
D1105951	5.15	52	86
D1105052	5.2	52	86
D1105952	5.25	52	86
D1105053	5.3	52	86
D1105953	5.35	57	93
D1105054	5.4	57	93
D1105954	5.45	57	93
D1105055	5.5	57	93
D1105955	5.55	57	93
D1105056	5.6	57	93
D1105956	5.65	57	93
D1105057	5.7	57	93
D1105957	5.75	57	93
D1105058	5.8	57	93

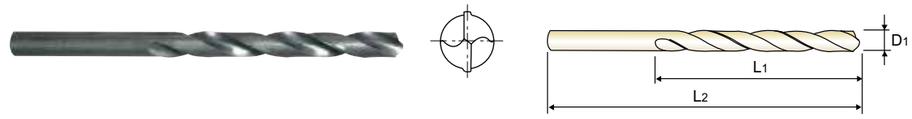
▶ NEXT PAGE

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

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

STRAIGHT SHANK DRILLS
D1105 SERIES
HSS, STRAIGHT SHANK TWIST DRILLS
JOBBER
KURZ
COURTE
CORTA
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS, queue cylindrique, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS
▶Surface treatment : Steam Tempered(Black Oxide Finish)
Bright Finish under 2mm
▶Application : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.
▶Oberflächenbehandlung : Steam Homo(Schwarzoxidation)
Helle Beschaffenheit unter 2mm
▶Verwendung : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° | P.276-277
Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105958	5.85	57	93
D1105059	5.9	57	93
D1105959	5.95	57	93
D1105060	6.0	57	93
D1105960	6.05	63	101
D1105061	6.1	63	101
D1105961	6.15	63	101
D1105062	6.2	63	101
D1105962	6.25	63	101
D1105063	6.3	63	101
D1105963	6.35	63	101
D1105064	6.4	63	101
D1105964	6.45	63	101
D1105065	6.5	63	101
D1105965	6.55	63	101
D1105066	6.6	63	101
D1105966	6.65	63	101
D1105067	6.7	63	101
D1105967	6.75	69	109
D1105068	6.8	69	109
D1105968	6.85	69	109
D1105069	6.9	69	109
D1105969	6.95	69	109
D1105070	7.0	69	109
D1105970	7.05	69	109
D1105071	7.1	69	109

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105971	7.15	69	109
D1105072	7.2	69	109
D1105972	7.25	69	109
D1105073	7.3	69	109
D1105973	7.35	69	109
D1105074	7.4	69	109
D1105974	7.45	69	109
D1105075	7.5	69	109
D1105975	7.55	75	117
D1105076	7.6	75	117
D1105976	7.65	75	117
D1105077	7.7	75	117
D1105977	7.75	75	117
D1105078	7.8	75	117
D1105978	7.85	75	117
D1105079	7.9	75	117
D1105979	7.95	75	117
D1105080	8.0	75	117
D1105081	8.1	75	117
D1105082	8.2	75	117
D1105982	8.25	75	117
D1105083	8.3	75	117
D1105084	8.4	75	117
D1105085	8.5	75	117
D1105086	8.6	81	125
D1105087	8.7	81	125

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

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

STRAIGHT SHANK DRILLS

D1105 SERIES

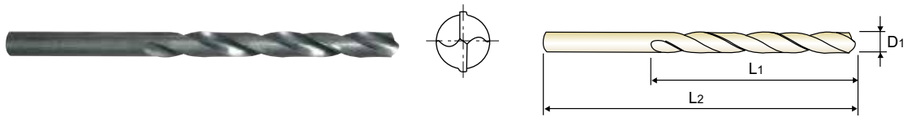
HSS, STRAIGHT SHANK TWIST DRILLS

JOBBER

HSS, SPIRALBOHRER mit ZYLINDERSCHAFT — ***KURZ***
Forets HSS, queue cylindrique, série courte — ***COURTE***
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS — ***CORTA***

▶**Surface treatment** : Steam Tempered(Black Oxide Finish) Bright Finish under 2mm
▶**Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation) Helle Beschaffenheit unter 2mm
▶**Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105987	8.75	81	125
D1105088	8.8	81	125
D1105089	8.9	81	125
D1105090	9.0	81	125
D1105091	9.1	81	125
D1105092	9.2	81	125
D1105992	9.25	81	125
D1105093	9.3	81	125
D1105094	9.4	81	125
D1105095	9.5	81	125
D1105096	9.6	87	133
D1105097	9.7	87	133
D1105997	9.75	87	133
D1105098	9.8	87	133
D1105099	9.9	87	133
D1105100	10.0	87	133
D1105101	10.1	87	133
D1105102	10.2	87	133
D1105802	10.25	87	133
D1105103	10.3	87	133
D1105104	10.4	87	133
D1105105	10.5	87	133
D1105106	10.6	87	133
D1105107	10.7	94	142
D1105807	10.75	94	142
D1105108	10.8	94	142
D1105109	10.9	94	142
D1105110	11.0	94	142
D1105111	11.1	94	142
D1105112	11.2	94	142
D1105812	11.25	94	142
D1105113	11.3	94	142
D1105114	11.4	94	142
D1105115	11.5	94	142
D1105116	11.6	94	142
D1105117	11.7	94	142
D1105817	11.75	94	142
D1105118	11.8	94	142
D1105119	11.9	101	151
D1105120	12.0	101	151
D1105121	12.1	101	151
D1105122	12.2	101	151
D1105822	12.25	101	151
D1105123	12.3	101	151
D1105124	12.4	101	151
D1105125	12.5	101	151
D1105126	12.6	101	151
D1105127	12.7	101	151
D1105827	12.75	101	151
D1105128	12.8	101	151
D1105129	12.9	101	151
D1105130	13.0	101	151

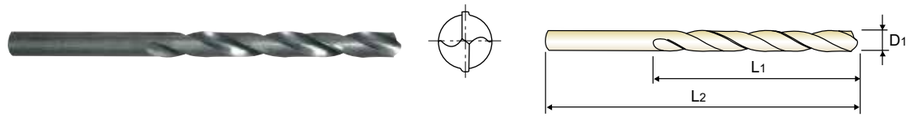
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◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS
D1105 SERIES
HSS, STRAIGHT SHANK TWIST DRILLS
JOBBER
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT — KURZ
Forets HSS, queue cylindrique, série courte — COURTE
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS — CORTA
▶Surface treatment : Steam Tempered(Black Oxide Finish) Bright Finish under 2mm
▶Application : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.
▶Oberflächenbehandlung : Steam Homo(Schwarzoxidation) Helle Beschaffenheit unter 2mm
▶Verwendung : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105832	13.25	108	160
D1105135	13.5	108	160
D1105837	13.75	108	160
D1105140	14.0	108	160
D1105842	14.25	114	169
D1105145	14.5	114	169
D1105847	14.75	114	169
D1105150	15.0	114	169
D1105852	15.25	120	178
D1105155	15.5	120	178
D1105857	15.75	120	178
D1105160	16.0	120	178
D1105862	16.25	125	184
D1105165	16.5	125	184
D1105867	16.75	125	184
D1105170	17.0	125	184
D1105872	17.25	130	191
D1105175	17.5	130	191
D1105877	17.75	130	191
D1105180	18.0	130	191
D1105882	18.25	135	198
D1105185	18.5	135	198
D1105887	18.75	135	198
D1105190	19.0	135	198
D1105892	19.25	140	205
D1105195	19.5	140	205
D1105897	19.75	140	205
D1105200	20.0	140	205

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

D1125 SERIES

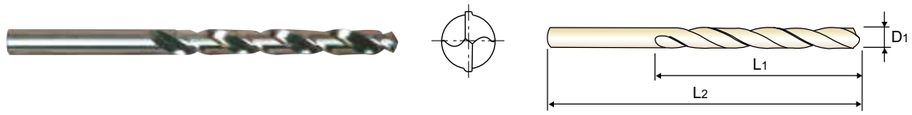
HSS, STRAIGHT SHANK TWIST DRILLS

JOBBER

HSS, SPIRALBOHRER mit ZYLINDERSCHAFT — ***KURZ***
Forets HSS, queue cylindrique, série courte — ***COURTE***
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS — ***CORTA***

▶**Surface treatment** : Bright Finish
▶**Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶**Oberflächenbehandlung** : Helle Beschaffenheit
▶**Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1125020	2.0	24	49
D1125021	2.1	24	49
D1125022	2.2	27	53
D1125023	2.3	27	53
D1125024	2.4	30	57
D1125025	2.5	30	57
D1125026	2.6	30	57
D1125027	2.7	33	61
D1125028	2.8	33	61
D1125029	2.9	33	61
D1125030	3.0	33	61
D1125031	3.1	36	65
D1125032	3.2	36	65
D1125033	3.3	36	65
D1125034	3.4	39	70
D1125035	3.5	39	70
D1125036	3.6	39	70
D1125037	3.7	39	70
D1125038	3.8	43	75
D1125039	3.9	43	75
D1125040	4.0	43	75
D1125041	4.1	43	75
D1125042	4.2	43	75
D1125043	4.3	47	80
D1125044	4.4	47	80
D1125045	4.5	47	80

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1125046	4.6	47	80
D1125047	4.7	47	80
D1125048	4.8	52	86
D1125049	4.9	52	86
D1125050	5.0	52	86
D1125051	5.1	52	86
D1125052	5.3	52	86
D1125053	5.3	52	86
D1125054	5.4	57	93
D1125055	5.5	57	93
D1125056	5.6	57	93
D1125057	5.7	57	93
D1125058	5.8	57	93
D1125059	5.9	57	93
D1125060	6.0	57	93
D1125061	6.1	63	101
D1125062	6.2	63	101
D1125063	6.3	63	101
D1125064	6.4	63	101
D1125065	6.5	63	101
D1125066	6.6	63	101
D1125067	6.7	63	101
D1125068	6.8	69	109
D1125069	6.9	69	109
D1125070	7.0	69	109
D1125071	7.1	69	109

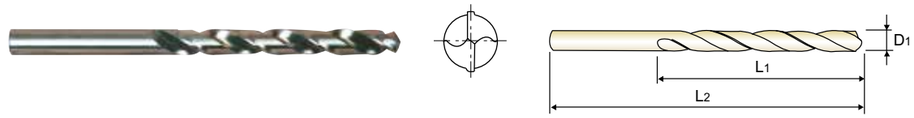
▶ NEXT PAGE

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

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

STRAIGHT SHANK DRILLS
D1125 SERIES
HSS, STRAIGHT SHANK TWIST DRILLS
JOBBER
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT — KURZ
Forets HSS, queue cylindrique, série courte — COURTE
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS — CORTA
▶Surface treatment : Bright Finish
▶Application : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.
▶Oberflächenbehandlung : Helle Beschaffenheit
▶Verwendung : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° | P.276-277
Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1125072	7.2	69	109
D1125073	7.3	69	109
D1125074	7.4	69	109
D1125075	7.5	69	109
D1125076	7.6	75	117
D1125077	7.7	75	117
D1125078	7.8	75	117
D1125079	7.9	75	117
D1125080	8.0	75	117
D1125081	8.1	75	117
D1125082	8.2	75	117
D1125083	8.3	75	117
D1125084	8.4	75	117
D1125085	8.5	75	117
D1125086	8.6	81	125
D1125087	8.7	81	125
D1125088	8.8	81	125
D1125089	8.9	81	125
D1125090	9.0	81	125
D1125091	9.1	81	125
D1125092	9.2	81	125
D1125093	9.3	81	125
D1125094	9.4	81	125
D1125095	9.5	81	125
D1125096	9.6	87	133
D1125097	9.7	87	133

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1125098	9.8	87	133
D1125099	9.9	87	133
D1125100	10.0	87	133
D1125101	10.1	87	133
D1125102	10.2	87	133
D1125103	10.3	87	133
D1125104	10.4	87	133
D1125105	10.5	87	133
D1125106	10.6	87	133
D1125107	10.7	94	142
D1125108	10.8	94	142
D1125109	10.9	94	142
D1125110	11.0	94	142
D1125111	11.1	94	142
D1125112	11.2	94	142
D1125113	11.3	94	142
D1125114	11.4	94	142
D1125115	11.5	94	142
D1125116	11.6	94	142
D1125117	11.7	94	142
D1125118	11.8	94	142
D1125119	11.9	101	151
D1125120	12.0	101	151
D1125121	12.1	101	151
D1125122	12.2	101	151
D1125123	12.3	101	151

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

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

STRAIGHT SHANK DRILLS

D1125 SERIES

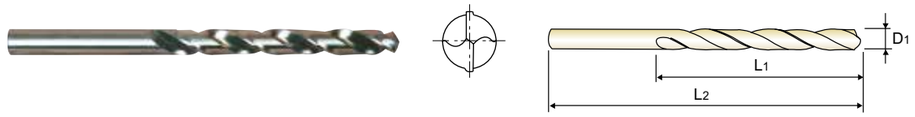
HSS, STRAIGHT SHANK TWIST DRILLS

JOBBER

HSS, SPIRALBOHRER mit ZYLINDERSCHAFT — *KURZ*
Forets HSS, queue cylindrique, série courte — *COURTE*
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS — *CORTA*

▶**Surface treatment** : Bright Finish
▶**Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶**Oberflächenbehandlung** : Helle Beschaffenheit
▶**Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1125124	12.4	101	151
D1125125	12.5	101	151
D1125126	12.6	101	151
D1125127	12.7	101	151
D1125128	12.8	101	151
D1125129	12.9	101	151
D1125130	13.0	101	151
D1125132	13.2	101	151
D1125133	13.3	108	160
D1125135	13.5	108	160
D1125140	14.0	108	160
D1125145	14.5	114	169

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1125150	15.0	114	169
D1125155	15.5	120	178
D1125160	16.0	120	178
D1125165	16.5	125	184
D1125170	17.0	125	184
D1125175	17.5	130	191
D1125180	18.0	130	191
D1125185	18.5	135	198
D1125190	19.0	135	198
D1125195	19.5	140	205
D1125200	20.0	140	205

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

D2104 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS

LONG

HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT — *LANG*
Forets HSSCo8, queue cylindrique, série longue — *LONGUE*
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSSCo8 — *LUNGA*

▶**Surface treatment** : Coloring(Gold color)
▶**Application** : Drilling deep holes in stainless steels and difficult - to - cut materials such as titanium and inconel.

▶**Oberflächenbehandlung** : Coloring(Goldfarbe)
▶**Verwendung** : Für Bohrarbeiten mit Bohrungen oder an tief liegenden Stellen. Zum Bohren von rostfreien und austenitischen Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.



DIN 340 | HSS Co8 | 33° | h8 | 135° P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2104020	2.0	56	85
D2104021	2.1	56	85
D2104022	2.2	59	90
D2104023	2.3	59	90
D2104024	2.4	62	95
D2104025	2.5	62	95
D2104026	2.6	62	95
D2104027	2.7	66	100
D2104028	2.8	66	100
D2104029	2.9	66	100
D2104030	3.0	66	100
D2104031	3.1	69	106
D2104032	3.2	69	106
D2104033	3.3	69	106
D2104034	3.4	73	112
D2104035	3.5	73	112
D2104036	3.6	73	112
D2104037	3.7	73	112
D2104038	3.8	78	119
D2104039	3.9	78	119
D2104040	4.0	78	119
D2104041	4.1	78	119
D2104042	4.2	78	119
D2104043	4.3	82	126
D2104044	4.4	82	126
D2104045	4.5	82	126

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2104046	4.6	82	126
D2104047	4.7	82	126
D2104048	4.8	87	132
D2104049	4.9	87	132
D2104050	5.0	87	132
D2104051	5.1	87	132
D2104052	5.2	87	132
D2104053	5.3	87	132
D2104054	5.4	91	139
D2104055	5.5	91	139
D2104056	5.6	91	139
D2104057	5.7	91	139
D2104058	5.8	91	139
D2104059	5.9	91	139
D2104060	6.0	91	139
D2104061	6.1	97	148
D2104062	6.2	97	148
D2104063	6.3	97	148
D2104064	6.4	97	148
D2104065	6.5	97	148
D2104066	6.6	97	148
D2104067	6.7	97	148
D2104068	6.8	102	156
D2104069	6.9	102	156
D2104070	7.0	102	156
D2104071	7.1	102	156

▶ HSS-E(DL104) is available on your request.
▶ TiN(D4104), TiCN(D7104) and TiAlN(DQ104) are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

D2104 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS

LONG

HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT — *LANG*
Forets HSSCo8, queue cylindrique, série longue — *LONGUE*
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSSCo8 — *LUNGA*

▶**Surface treatment** : Coloring(Gold color)
▶**Application** : Drilling deep holes in stainless steels and difficult - to - cut materials such as titanium and inconel.

▶**Oberflächenbehandlung** : Coloring(Goldfarbe)
▶**Verwendung** : Für Bohrarbeiten mit Bohrbuchsen oder an tief liegenden Stellen. Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.



DIN 340 | HSS Co8 | 33° | h8 | 135° P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2104072	7.2	102	156
D2104073	7.3	102	156
D2104074	7.4	102	156
D2104075	7.5	102	156
D2104076	7.6	109	165
D2104077	7.7	109	165
D2104078	7.8	109	165
D2104079	7.9	109	165
D2104080	8.0	109	165
D2104081	8.1	109	165
D2104082	8.2	109	165
D2104083	8.3	109	165
D2104084	8.4	109	165
D2104085	8.5	109	165
D2104086	8.6	115	175
D2104087	8.7	115	175
D2104088	8.8	115	175
D2104089	8.9	115	175
D2104090	9.0	115	175
D2104091	9.1	115	175
D2104092	9.2	115	175
D2104093	9.3	115	175
D2104094	9.4	115	175
D2104095	9.5	115	175
D2104096	9.6	121	184
D2104097	9.7	121	184
D2104098	9.8	121	184
D2104099	9.9	121	184
D2104100	10.0	121	184
D2104102	10.2	121	184
D2104105	10.5	121	184
D2104108	10.8	128	195
D2104110	11.0	128	195
D2104112	11.2	128	195
D2104115	11.5	128	195
D2104118	11.8	128	195
D2104120	12.0	134	205

▶ HSS-E(DL104) is available on your request.
▶ TiN(D4104), TiCN(D7104) and TiAlN(DQ104) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	○		◎	○	○		○		◎	○	○	○	○	○		○	

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

STRAIGHT SHANK DRILLS

D1121 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS

EXTRA LONG

HSS, SPIRALBOHRER MIT ZYLINDERSCHAFT — *ÜBERLANG*
Forets HSS, queue cylindrique, série extra-longue — *EXTRA-LONGUE*
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS — *EXTRA LUNGA*

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
▶**Application** : Designed for drilling deep holes or deeply located holes
Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶**Oberflächenbehandlung** : Steam Homo(Scwarzoxidation)
▶**Verwendung** : Standardbohrer zum Bohren extrem tiefer Löcher, zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 1869/1 | HSS | N 20~30° | h8 | 118° P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1121020	2.0	85	125
D1121025	2.5	95	140
D1121030	3.0	100	150
D1121035	3.5	115	165
D1121040	4.0	120	175
D1121045	4.5	125	185
D1121050	5.0	135	195
D1121055	5.5	140	205
D1121060	6.0	140	205
D1121065	6.5	150	215
D1121070	7.0	155	225
D1121075	7.5	155	225
D1121080	8.0	165	240
D1121085	8.5	165	240
D1121090	9.0	175	250
D1121095	9.5	175	250
D1121100	10.0	185	265
D1121105	10.5	185	265
D1121110	11.0	195	280
D1121115	11.5	195	280
D1121120	12.0	205	295
D1121125	12.5	205	295
D1121130	13.0	205	295

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

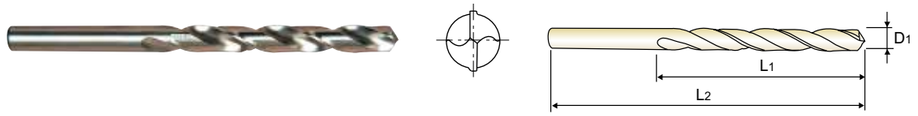
DL109 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for HEAVY DUTY — *JOBBER*

- HSS-E, SPIRALBOHRER für HOHE LEISTUNGEN mit ZYLINDERSCHAFT — *KURZ*
- Forets HSS-E, queue cylindrique pour matériaux durs, série courte — *COURTE*
- PUNTE ELICOIDALI PER IMPIEGHI GRAVOSI, GAMBO CILINDRICO, HSS - E — *CORTA*

▶**Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶**Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 338 | HSS-E | N 20~30° | h8 | 118° | P.276-277

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL109015	1.5	18	40
DL109917	1.75	22	46
DL109020	2.0	24	49
DL109922	2.25	27	53
DL109025	2.5	30	57
DL109927	2.75	33	61
DL109030	3.0	33	61
DL109932	3.25	36	65
DL109035	3.5	39	70
DL109937	3.75	39	70
DL109040	4.0	43	75
DL109942	4.25	43	75
DL109045	4.5	47	80
DL109947	4.75	47	80
DL109050	5.0	52	86
DL109952	5.25	52	86
DL109055	5.5	57	93
DL109957	5.75	57	93
DL109060	6.0	57	93
DL109962	6.25	63	101
DL109065	6.5	63	101

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL109967	6.75	69	109
DL109070	7.0	69	109
DL109972	7.25	69	109
DL109075	7.5	69	109
DL109977	7.75	75	117
DL109080	8.0	75	117
DL109982	8.25	75	117
DL109085	8.5	75	117
DL109987	8.75	81	125
DL109090	9.0	81	125
DL109992	9.25	81	125
DL109095	9.5	81	125
DL109997	9.75	87	133
DL109100	10.0	87	133
DL109105	10.5	87	133
DL109110	11.0	94	142
DL109115	11.5	94	142
DL109120	12.0	101	151
DL109125	12.5	101	151
DL109130	13.0	101	151

▶ TiN(DN109), TiCN(DX109) and TiAlN(DT109) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	○		◎	○	○		○		◎	○	○	○	○	○		○	

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

STRAIGHT SHANK DRILLS

D1100 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS for BRASS/BRONZE — *JOBBER*

- HSS, SPIRALBOHRER für MESSING/BRONZE mit ZYLINDERSCHAFT — *KURZ*
- Forets HSS, queue cylindrique pour Laiton/Bronze, série courte — *COURTE*
- PUNTE ELICOIDALI, GAMBO CILINDRICO PER OTTONE (HSS) — *CORTA*

▶**Application** : Drilling hard, brittle and short-chip materials. i.e., brass, bronze, phosphor bronze and magnesium alloys.

▶**Verwendung** : Zum Bohren von harten und spröden Werkstoffen wie Messing, Magnesium-Legierungen, Bronze, Phosphorbronze.



DIN 338 | HSS | N 15~20° | h8 | 118° | P.278

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1100015	1.5	18	40
D1100016	1.6	20	43
D1100017	1.7	20	43
D1100018	1.8	22	46
D1100019	1.9	22	46
D1100020	2.0	24	49
D1100021	2.1	24	49
D1100022	2.2	27	53
D1100023	2.3	27	53
D1100024	2.4	30	57
D1100025	2.5	30	57
D1100026	2.6	30	57
D1100027	2.7	33	61
D1100028	2.8	33	61
D1100029	2.9	33	61
D1100030	3.0	33	61
D1100031	3.1	36	65
D1100032	3.2	36	65
D1100033	3.3	36	65
D1100034	3.4	39	70
D1100035	3.5	39	70
D1100036	3.6	39	70
D1100037	3.7	39	70
D1100038	3.8	43	75
D1100039	3.9	43	75
D1100040	4.0	43	75

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1100041	4.1	43	75
D1100042	4.2	43	75
D1100043	4.3	47	80
D1100044	4.4	47	80
D1100045	4.5	47	80
D1100046	4.6	47	80
D1100047	4.7	47	80
D1100048	4.8	52	86
D1100049	4.9	52	86
D1100050	5.0	52	86
D1100051	5.1	52	86
D1100052	5.2	52	86
D1100053	5.3	52	86
D1100054	5.4	57	93
D1100055	5.5	57	93
D1100056	5.6	57	93
D1100057	5.7	57	93
D1100058	5.8	57	93
D1100059	5.9	57	93
D1100060	6.0	57	93
D1100061	6.1	63	101
D1100062	6.2	63	101
D1100063	6.3	63	101
D1100064	6.4	63	101
D1100065	6.5	63	101
D1100066	6.6	63	101

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

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

STRAIGHT SHANK DRILLS

D1100 SERIES

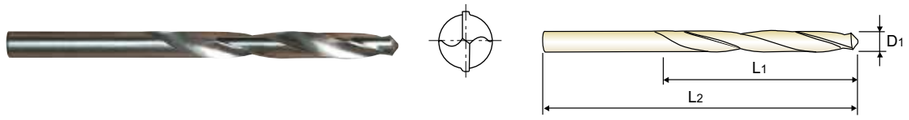
HSS, STRAIGHT SHANK TWIST DRILLS for BRASS/BRONZE

JOBBER
KURZ
COURTE
CORTA

HSS, SPIRALBOHRER für MESSING/BRONZE mit ZYLINDERSCHAFT
Forets HSS, queue cylindrique pour Laiton/Bronze, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO PER OTTONE (HSS)

▶**Application** : Drilling hard, brittle and short-chip materials. i.e., brass, bronze, phosphor bronze and magnesium alloys.

▶**Verwendung** : Zum Bohren von harten und spröden Werkstoffen wie Messing, Magnesium-Legierungen, Bronze, Phosphorbronze.



DIN 338 | HSS | N 15~20° | h8 | 118° | P.278

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1100067	6.7	63	101
D1100068	6.8	69	109
D1100069	6.9	69	109
D1100070	7.0	69	109
D1100071	7.1	69	109
D1100072	7.2	69	109
D1100073	7.3	69	109
D1100074	7.4	69	109
D1100075	7.5	69	109
D1100076	7.6	75	117
D1100077	7.7	75	117
D1100078	7.8	75	117
D1100079	7.9	75	117
D1100080	8.0	75	117
D1100081	8.1	75	117
D1100082	8.2	75	117
D1100083	8.3	75	117
D1100084	8.4	75	117
D1100085	8.5	75	117
D1100086	8.6	81	125

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1100087	8.7	81	125
D1100088	8.8	81	125
D1100089	8.9	81	125
D1100090	9.0	81	125
D1100091	9.1	81	125
D1100092	9.2	81	125
D1100093	9.3	81	125
D1100094	9.4	81	125
D1100095	9.5	81	125
D1100096	9.6	87	133
D1100097	9.7	87	133
D1100098	9.8	87	133
D1100099	9.9	87	133
D1100100	10.0	87	133
D1100105	10.5	87	133
D1100110	11.0	94	142
D1100115	11.5	94	142
D1100120	12.0	101	151
D1100125	12.5	101	151
D1100130	13.0	101	151

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

D1106 SERIES

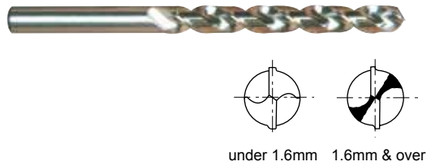
HSS, STRAIGHT SHANK TWIST DRILLS for ALUMINUM

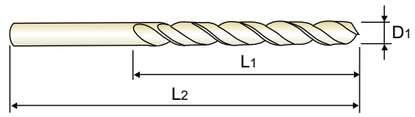
JOBBER
KURZ
COURTE
CORTA

HSS, SPIRALBOHRER für ALUMINIUM mit ZYLINDERSCHAFT
Forets HSS, queue cylindrique pour ALU, Forme C, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, PER ALLUMINIO (HSS)

▶**Application** : Drilling hard, brittle and short-chip materials. i.e., brass, bronze, phosphor bronze aluminum and magnesium alloys.

▶**Verwendung** : Zum Bohren von harten und spröden Werkstoffen wie Messing, Magnesium-Legierungen, Bronze, Phosphorbronze.





DIN 338 | HSS | 38° | h8 | 135° | P.279

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1106015	1.5	18	40
D1106016	1.6	20	43
D1106017	1.7	20	43
D1106018	1.8	22	46
D1106019	1.9	22	46
D1106020	2.0	24	49
D1106021	2.1	24	49
D1106022	2.2	27	53
D1106023	2.3	27	53
D1106024	2.4	30	57
D1106025	2.5	30	57
D1106026	2.6	30	57
D1106027	2.7	33	61
D1106028	2.8	33	61
D1106029	2.9	33	61
D1106030	3.0	33	61
D1106031	3.1	36	65
D1106032	3.2	36	65
D1106033	3.3	36	65
D1106034	3.4	39	70
D1106035	3.5	39	70
D1106036	3.6	39	70
D1106037	3.7	39	70
D1106038	3.8	43	75
D1106039	3.9	43	75
D1106040	4.0	43	75

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1106041	4.1	43	75
D1106042	4.2	43	75
D1106043	4.3	47	80
D1106044	4.4	47	80
D1106045	4.5	47	80
D1106046	4.6	47	80
D1106047	4.7	47	80
D1106048	4.8	52	86
D1106049	4.9	52	86
D1106050	5.0	52	86
D1106051	5.1	52	86
D1106052	5.2	52	86
D1106053	5.3	52	86
D1106054	5.4	57	93
D1106055	5.5	57	93
D1106056	5.6	57	93
D1106057	5.7	57	93
D1106058	5.8	57	93
D1106059	5.9	57	93
D1106060	6.0	57	93
D1106061	6.1	63	101
D1106062	6.2	63	101
D1106063	6.3	63	101
D1106064	6.4	63	101
D1106065	6.5	63	101
D1106066	6.6	63	101

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

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

STRAIGHT SHANK DRILLS

D1106 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS for ALUMINUM

JOBBER

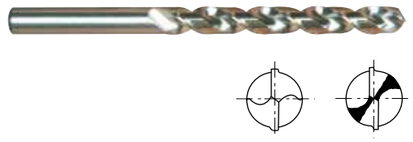
HSS, SPIRALBOHRER für ALUMINIUM mit ZYLINDERSCHAFT — *KURZ*

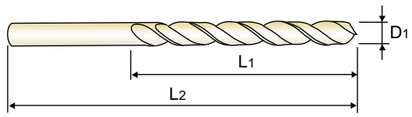
Forets HSS, queue cylindrique pour ALU, Forme C, série courte — *COURTE*

PUNTE ELICOIDALI, GAMBO CILINDRICO, PER ALLUMINIO (HSS) — *CORTA*

▶**Application** : Drilling hard, brittle and short-chip materials. i.e., brass, bronze, phosphor bronze aluminum and magnesium alloys.

▶**Verwendung** : Zum Bohren von harten und spröden Werkstoffen wie Messing, Magnesium-Legierungen, Bronze, Phosphorbronze.





DIN 338 | HSS | 38° | h8 | 135° P.279

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1106067	6.7	63	101
D1106068	6.8	69	109
D1106069	6.9	69	109
D1106070	7.0	69	109
D1106071	7.1	69	109
D1106072	7.2	69	109
D1106073	7.3	69	109
D1106074	7.4	69	109
D1106075	7.5	69	109
D1106076	7.6	75	117
D1106077	7.7	75	117
D1106078	7.8	75	117
D1106079	7.9	75	117
D1106080	8.0	75	117
D1106081	8.1	75	117
D1106082	8.2	75	117
D1106083	8.3	75	117
D1106084	8.4	75	117
D1106085	8.5	75	117
D1106086	8.6	81	125

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1106087	8.7	81	125
D1106088	8.8	81	125
D1106089	8.9	81	125
D1106090	9.0	81	125
D1106091	9.1	81	125
D1106092	9.2	81	125
D1106093	9.3	81	125
D1106094	9.4	81	125
D1106095	9.5	81	125
D1106096	9.6	87	133
D1106097	9.7	87	133
D1106098	9.8	87	133
D1106099	9.9	87	133
D1106100	10.0	87	133
D1106105	10.5	87	133
D1106110	11.0	94	142
D1106115	11.5	94	142
D1106120	12.0	101	151
D1106125	12.5	101	151
D1106130	13.0	101	151

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

DL510 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES

STUB

HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *EXTRA KURZ*

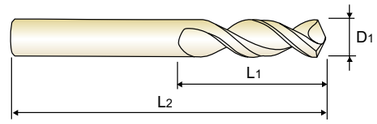
Forets HSS-E, queue cylindrique pour perçage profond, série extra-courte — *EXTRA-COURTE*

PUNTA IN HSS-E, GAMBO CILINDRICO PER FORI NON - STOP — *EXTRA CORTA*

▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶**Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.





DIN 1897 | HSS-E | 42° | h8 | 130° P.280-281

▶DH100 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL510020	2.0	12	38
DL510021	2.1	12	38
DL510022	2.2	13	40
DL510023	2.3	13	40
DL510024	2.4	14	43
DL510025	2.5	14	43
DL510026	2.6	14	43
DL510027	2.7	16	46
DL510028	2.8	16	46
DL510029	2.9	16	46
DL510030	3.0	16	46
DL510031	3.1	18	49
DL510032	3.2	18	49
DL510033	3.3	18	49
DL510034	3.4	20	52
DL510035	3.5	20	52
DL510036	3.6	20	52
DL510037	3.7	20	52
DL510038	3.8	22	55
DL510039	3.9	22	55
DL510040	4.0	22	55
DL510041	4.1	22	55
DL510042	4.2	22	55
DL510043	4.3	24	58
DL510044	4.4	24	58
DL510045	4.5	24	58

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL510046	4.6	24	58
DL510047	4.7	24	58
DL510048	4.8	26	62
DL510049	4.9	26	62
DL510050	5.0	26	62
DL510051	5.1	26	62
DL510052	5.2	26	62
DL510053	5.3	26	66
DL510054	5.4	28	66
DL510055	5.5	28	66
DL510056	5.6	28	66
DL510057	5.7	28	66
DL510058	5.8	28	66
DL510059	5.9	28	66
DL510060	6.0	28	66
DL510061	6.1	31	70
DL510062	6.2	31	70
DL510063	6.3	31	70
DL510064	6.4	31	70
DL510065	6.5	31	70
DL510066	6.6	31	70
DL510067	6.7	31	70
DL510068	6.8	34	74
DL510069	6.9	34	74
DL510070	7.0	34	74
DL510071	7.1	34	74

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

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

STRAIGHT SHANK DRILLS

DL510 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES

STUB

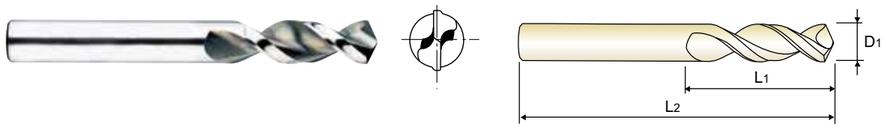
HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *EXTRA KURZ*

Forets HSS-E, queue cylindrique pour perçage profond, série extra-courte — *EXTRA-COURTE*

PUNTA IN HSS-E, GAMBO CILINDRICO PER FORI NON - STOP — *EXTRA CORTA*

▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶**Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 1897 | HSS-E | 42° | h8 | 130° | P.280-281

▶DH100 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL510072	7.2	34	74
DL510073	7.3	34	74
DL510074	7.4	34	74
DL510075	7.5	34	74
DL510076	7.6	37	79
DL510077	7.7	37	79
DL510078	7.8	37	79
DL510079	7.9	37	79
DL510080	8.0	37	79
DL510081	8.1	37	79
DL510082	8.2	37	79
DL510083	8.3	37	79
DL510084	8.4	37	79
DL510085	8.5	37	79
DL510086	8.6	40	84
DL510087	8.7	40	84
DL510088	8.8	40	84
DL510089	8.9	40	84
DL510090	9.0	40	84
DL510091	9.1	40	84
DL510092	9.2	40	84
DL510093	9.3	40	84
DL510094	9.4	40	84
DL510095	9.5	40	84
DL510096	9.6	43	89
DL510097	9.7	43	89
DL510098	9.8	43	89

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL510099	9.9	43	89
DL510100	10.0	43	89
DL510102	10.2	43	89
DL510105	10.5	43	89
DL510108	10.8	47	95
DL510110	11.0	47	95
DL510112	11.2	47	95
DL510115	11.5	47	95
DL510118	11.8	47	95
DL510120	12.0	51	102
DL510125	12.5	51	102
DL510130	13.0	51	102
DL510135	13.5	54	107
DL510140	14.0	54	107
DL510145	14.5	56	111
DL510150	15.0	56	111
DL510155	15.5	58	115
DL510160	16.0	58	115
DL510165	16.5	60	119
DL510170	17.0	60	119
DL510175	17.5	62	123
DL510180	18.0	62	123
DL510185	18.5	64	127
DL510190	19.0	64	127
DL510195	19.5	66	131
DL510200	20.0	66	131

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

DL508 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES

JOBBER

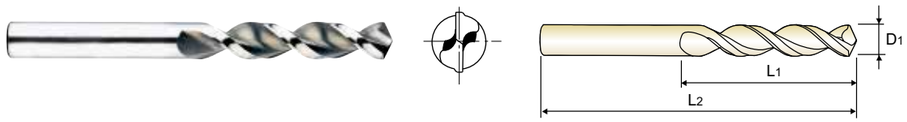
HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *KURZ*

Forets HSS-E, queue cylindrique pour perçage profond, série courte — *COURTE*

PUNTA IN HSS-E, GAMBO CILINDRICO PER FORI NON - STOP — *CORTA*

▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶**Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 338 | HSS-E | 42° | h8 | 130° | P.280-281

▶DH100 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL508020	2.0	24	49
DL508021	2.1	24	49
DL508022	2.2	27	53
DL508023	2.3	27	53
DL508024	2.4	30	57
DL508025	2.5	30	57
DL508026	2.6	30	57
DL508027	2.7	33	61
DL508028	2.8	33	61
DL508029	2.9	33	61
DL508030	3.0	33	61
DL508031	3.1	36	65
DL508032	3.2	36	65
DL508033	3.3	36	65
DL508034	3.4	39	70
DL508035	3.5	39	70
DL508036	3.6	39	70
DL508037	3.7	39	70
DL508038	3.8	43	75
DL508039	3.9	43	75
DL508040	4.0	43	75
DL508041	4.1	43	75
DL508042	4.2	43	75
DL508043	4.3	47	80
DL508044	4.4	47	80
DL508045	4.5	47	80

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL508046	4.6	47	80
DL508047	4.7	47	80
DL508048	4.8	52	86
DL508049	4.9	52	86
DL508050	5.0	52	86
DL508051	5.1	52	86
DL508052	5.2	52	86
DL508053	5.3	52	86
DL508054	5.4	57	93
DL508055	5.5	57	93
DL508056	5.6	57	93
DL508057	5.7	57	93
DL508058	5.8	57	93
DL508059	5.9	57	93
DL508060	6.0	57	93
DL508061	6.1	63	101
DL508062	6.2	63	101
DL508063	6.3	63	101
DL508064	6.4	63	101
DL508065	6.5	63	101
DL508066	6.6	63	101
DL508067	6.7	63	101
DL508068	6.8	69	109
DL508069	6.9	69	109
DL508070	7.0	69	109
DL508071	7.1	69	109

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

DL508 SERIES

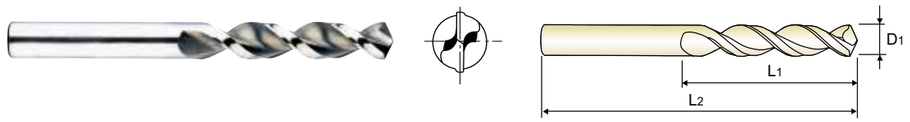
HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES

JOBBER

- HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *KURZ*
- Forets HSS-E, queue cylindrique pour perçage profond, série courte — *COURTE*
- PUNTA IN HSS-E, GAMBO CILINDRICO PER FORI NON - STOP — *CORTA*

▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶**Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 338 | HSS-E | 42° | h8 | 130° | P.280-281

▶ **DH100 worm pattern drills**

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL508072	7.2	69	109
DL508073	7.3	69	109
DL508074	7.4	69	109
DL508075	7.5	69	109
DL508076	7.6	75	117
DL508077	7.7	75	117
DL508078	7.8	75	117
DL508079	7.9	75	117
DL508080	8.0	75	117
DL508081	8.1	75	117
DL508082	8.2	75	117
DL508083	8.3	75	117
DL508084	8.4	75	117
DL508085	8.5	75	117
DL508086	8.6	81	125
DL508087	8.7	81	125
DL508088	8.8	81	125
DL508089	8.9	81	125
DL508090	9.0	81	125
DL508091	9.1	81	125
DL508092	9.2	81	125
DL508093	9.3	81	125
DL508094	9.4	81	125
DL508095	9.5	81	125
DL508096	9.6	87	133
DL508097	9.7	87	133
DL508098	9.8	87	133
DL508099	9.9	87	133
DL508100	10.0	87	133
DL508102	10.2	87	133
DL508105	10.5	87	133
DL508110	11.0	94	142
DL508112	11.2	94	142
DL508115	11.5	94	142
DL508120	12.0	101	151
DL508125	12.5	101	151
DL508130	13.0	101	151
DL508135	13.5	108	160
DL508140	14.0	108	160
DL508145	14.5	114	169
DL508150	15.0	114	169
DL508155	15.5	120	178
DL508160	16.0	120	178

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

DL509 SERIES

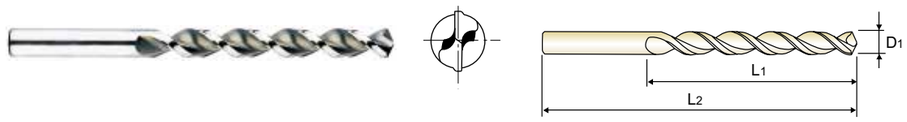
HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES

LONG

- HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *LANG*
- Forets HSS-E, queue cylindrique pour perçage profond, série longue — *LONGUE*
- PUNTA IN HSS-E, GAMBO CILINDRICO PER FORI NON - STOP — *LUNGA*

▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶**Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 340 | HSS-E | 42° | h8 | 130° | P.280-281

▶ **DH100 worm pattern drills**

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL509020	2.0	56	85
DL509021	2.1	56	85
DL509022	2.2	59	90
DL509023	2.3	59	90
DL509024	2.4	62	95
DL509025	2.5	62	95
DL509026	2.6	62	95
DL509027	2.7	66	100
DL509028	2.8	66	100
DL509029	2.9	66	100
DL509030	3.0	66	100
DL509031	3.1	69	106
DL509032	3.2	69	106
DL509033	3.3	69	106
DL509034	3.4	73	112
DL509035	3.5	73	112
DL509036	3.6	73	112
DL509037	3.7	73	112
DL509038	3.8	78	119
DL509039	3.9	78	119
DL509040	4.0	78	119
DL509041	4.1	78	119
DL509042	4.2	78	119
DL509043	4.3	82	126
DL509044	4.4	82	126
DL509045	4.5	82	126
DL509046	4.6	82	126
DL509047	4.7	82	126
DL509048	4.8	87	132
DL509049	4.9	87	132
DL509050	5.0	87	132
DL509051	5.1	87	132
DL509052	5.2	87	132
DL509053	5.3	87	132
DL509054	5.4	91	139
DL509055	5.5	91	139
DL509056	5.6	91	139
DL509057	5.7	91	139
DL509058	5.8	91	139
DL509059	5.9	91	139
DL509060	6.0	91	139
DL509061	6.1	97	148
DL509062	6.2	97	148
DL509063	6.3	97	148
DL509064	6.4	97	148
DL509065	6.5	97	148
DL509066	6.6	97	148
DL509067	6.7	97	148
DL509068	6.8	102	156
DL509069	6.9	102	156
DL509070	7.0	102	156
DL509071	7.1	102	156

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

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

STRAIGHT SHANK DRILLS

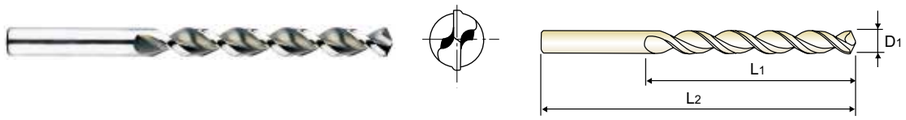
DL509 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES — *LONG*

- HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *LANG*
- Forets HSS-E, queue cylindrique pour perçage profond, série longue — *LONGUE*
- PUNTA IN HSS-E, GAMBO CILINDRICO PER FORI NON - STOP — *LUNGA*

▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶**Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 340 | HSS-E | 42° | h8 | 130° P.280-281

▶DH100 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL509072	7.2	102	156
DL509073	7.3	102	156
DL509074	7.4	102	156
DL509075	7.5	102	156
DL509076	7.6	109	165
DL509077	7.7	109	165
DL509078	7.8	109	165
DL509079	7.9	109	165
DL509080	8.0	109	165
DL509081	8.1	109	165
DL509082	8.2	109	165
DL509083	8.3	109	165
DL509084	8.4	109	165
DL509085	8.5	109	165
DL509086	8.6	115	175
DL509087	8.7	115	175
DL509088	8.8	115	175

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL509089	8.9	115	175
DL509090	9.0	115	175
DL509091	9.1	115	175
DL509092	9.2	115	175
DL509093	9.3	115	175
DL509094	9.4	115	175
DL509095	9.5	115	175
DL509096	9.6	121	184
DL509097	9.7	121	184
DL509098	9.8	121	184
DL509099	9.9	121	184
DL509100	10.0	121	184
DL509102	10.2	121	184
DL509105	10.5	121	184
DL509110	11.0	128	195
DL509115	11.5	128	195
DL509120	12.0	134	205

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

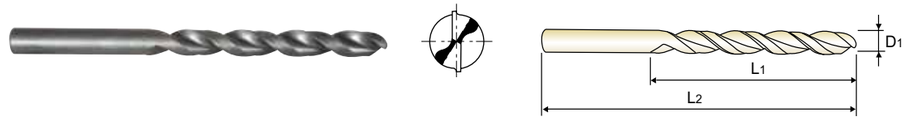
DL505 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES — *JOBBER*

- HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *KURZ*
- Forets HSS-E, queue cylindrique pour perçage profond, série courte — *COURTE*
- PUNTA IN HSS-E, GAMBO CILINDRICO PER FORI NON - STOP — *CORTA*

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶**Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 338 | HSS-E | 38° | h8 | 130° P.280-281

▶DH100 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL505020	2.0	24	49
DL505021	2.1	24	49
DL505022	2.2	27	53
DL505023	2.3	27	53
DL505024	2.4	30	57
DL505025	2.5	30	57
DL505026	2.6	30	57
DL505027	2.7	33	61
DL505028	2.8	33	61
DL505029	2.9	33	61
DL505030	3.0	33	61
DL505031	3.1	36	65
DL505032	3.2	36	65
DL505033	3.3	36	65
DL505034	3.4	39	70
DL505035	3.5	39	70
DL505036	3.6	39	70
DL505037	3.7	39	70
DL505038	3.8	43	75
DL505039	3.9	43	75
DL505040	4.0	43	75
DL505041	4.1	43	75
DL505042	4.2	43	75
DL505043	4.3	47	80
DL505044	4.4	47	80
DL505045	4.5	47	80

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL505046	4.6	47	80
DL505047	4.7	47	80
DL505048	4.8	52	86
DL505049	4.9	52	86
DL505050	5.0	52	86
DL505051	5.1	52	86
DL505052	5.2	52	86
DL505053	5.3	52	86
DL505054	5.4	57	93
DL505055	5.5	57	93
DL505056	5.6	57	93
DL505057	5.7	57	93
DL505058	5.8	57	93
DL505059	5.9	57	93
DL505060	6.0	57	93
DL505061	6.1	63	101
DL505062	6.2	63	101
DL505063	6.3	63	101
DL505064	6.4	63	101
DL505065	6.5	63	101
DL505066	6.6	63	101
DL505067	6.7	63	101
DL505068	6.8	69	109
DL505069	6.9	69	109
DL505070	7.0	69	109
DL505071	7.1	69	109

▶ TiN(DN505), TiCN(DX505) and TiAlN(DT505) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230		
Recommended	◎	◎	◎	○		◎	○	○		○					○	○	○	○	○	○		

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

STRAIGHT SHANK DRILLS

DL505 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES — *JOBBER*

HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *KURZ*
Forets HSS-E, queue cylindrique pour perçage profond, série courte — *COURTE*
PUNTA IN HSS-E, GAMBO CILINDRICO PER FORI NON - STOP — *CORTA*

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶**Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 338 | HSS-E | 38° | h8 | 130° | P.280-281

▶ **DH100 worm pattern drills**

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL505072	7.2	69	109
DL505073	7.3	69	109
DL505074	7.4	69	109
DL505075	7.5	69	109
DL505076	7.6	75	117
DL505077	7.7	75	117
DL505078	7.8	75	117
DL505079	7.9	75	117
DL505080	8.0	75	117
DL505081	8.1	75	117
DL505082	8.2	75	117
DL505083	8.3	75	117
DL505084	8.4	75	117
DL505085	8.5	75	117
DL505086	8.6	81	125
DL505087	8.7	81	125
DL505088	8.8	81	125
DL505089	8.9	81	125
DL505090	9.0	81	125
DL505091	9.1	81	125
DL505092	9.2	81	125

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL505093	9.3	81	125
DL505094	9.4	81	125
DL505095	9.5	81	125
DL505096	9.6	87	133
DL505097	9.7	87	133
DL505098	9.8	87	133
DL505099	9.9	87	133
DL505100	10.0	87	133
DL505101	10.1	87	133
DL505102	10.2	87	133
DL505105	10.5	87	133
DL505108	10.8	94	142
DL505110	11.0	94	142
DL505112	11.2	94	142
DL505115	11.5	94	142
DL505118	11.8	94	142
DL505120	12.0	101	151
DL505122	12.2	101	151
DL505125	12.5	101	151
DL505128	12.8	101	151
DL505130	13.0	101	151

▶ TiN(DN505), TiCN(DX505) and TiAlN(DT505) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21											
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230											
Recommended	◎	◎	◎	○		◎	○	○		○					○	○	○	○	○	○											

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

STRAIGHT SHANK DRILLS

DL504 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES — *LONG*

HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *LANG*
Forets HSS-E, queue cylindrique pour perçage profond, série longue — *LONGUE*
PUNTA IN HSS-E, GAMBO CILINDRICO PER FORI NON - STOP — *LUNGA*

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶**Verwendung** : Zum Bohren von legiertem und unlegiertem stahl,Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 340 | HSS-E | 38° | h8 | 130° | P.280-281

▶ **DH100 worm pattern drills**

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL504052	5.2	87	132
DL504055	5.5	91	139
DL504058	5.8	91	139
DL504060	6.0	91	139
DL504062	6.2	97	148
DL504065	6.5	97	148
DL504068	6.8	102	156
DL504070	7.0	102	156
DL504072	7.2	102	156
DL504075	7.5	102	156
DL504078	7.8	109	165
DL504080	8.0	109	165
DL504082	8.2	109	165
DL504085	8.5	109	165
DL504090	9.0	115	175
DL504095	9.5	115	175
DL504098	9.8	121	184
DL504100	10.0	121	184
DL504105	10.5	121	184
DL504110	11.0	128	195
DL504115	11.5	128	195
DL504120	12.0	134	205
DL504125	12.5	134	205
DL504130	13.0	134	205

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL504052	5.2	87	132
DL504055	5.5	91	139
DL504058	5.8	91	139
DL504060	6.0	91	139
DL504062	6.2	97	148
DL504065	6.5	97	148
DL504068	6.8	102	156
DL504070	7.0	102	156
DL504072	7.2	102	156
DL504075	7.5	102	156
DL504078	7.8	109	165
DL504080	8.0	109	165
DL504082	8.2	109	165
DL504085	8.5	109	165
DL504090	9.0	115	175
DL504095	9.5	115	175
DL504098	9.8	121	184
DL504100	10.0	121	184
DL504105	10.5	121	184
DL504110	11.0	128	195
DL504115	11.5	128	195
DL504120	12.0	134	205
DL504125	12.5	134	205
DL504130	13.0	134	205

▶ TiN(DN504), TiCN(DX504) and TiAlN(DT504) 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21											
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230											
Recommended	◎	◎	◎	○		◎	○	○		○					○	○	○	○	○	○											

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

STRAIGHT SHANK DRILLS

DT600 SERIES | **DT692** SERIES | **DT693** SERIES

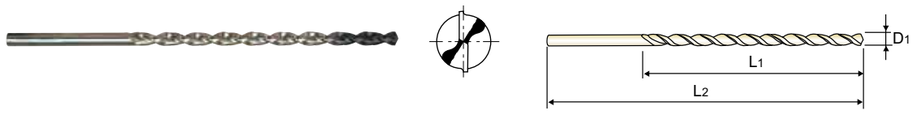
HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES

EXTRA LONG

- HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *ÜBERLANG*
- Forets HSS-E, queue cylindrique pour perçage profond, Forme C, série extra-longue — *EXTRA-LONGUE*
- PUNTA IN HSS-E, GAMBO CILINDRICO PER FORI NON - STOP — *EXTRA LUNGA*

▶**Surface treatment** : TiAlN coating on working area.
▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶**Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 1869/1 | DIN 1869/2 | DIN 1869/3 | HSS-E | 38° | h8 | 130° P.282

▶DH100 worm pattern drills

Unit : mm

DT600 SERIES **(DIN1869/1)**

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DT600020	2.0	85	125
DT600025	2.5	95	140
DT600030	3.0	100	150
DT600035	3.5	115	165
DT600040	4.0	120	175
DT600045	4.5	125	185
DT600050	5.0	135	195
DT600055	5.5	140	205
DT600060	6.0	140	205
DT600065	6.5	150	215
DT600070	7.0	155	225
DT600075	7.5	155	225
DT600080	8.0	165	240
DT600085	8.5	165	240
DT600090	9.0	175	250
DT600095	9.5	175	250
DT600100	10.0	185	265
DT600105	10.5	185	265

▶ TiN(DN600) and TiCN(DX600) are available on your request.

DT692 SERIES **(DIN1869/2)**

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DT692030	3.0	130	190
DT692035	3.5	145	210
DT692040	4.0	150	220
DT692045	4.5	160	235
DT692050	5.0	170	245
DT692055	5.5	180	260
DT692060	6.0	180	260
DT692065	6.5	190	275
DT692070	7.0	200	290
DT692075	7.5	200	290
DT692080	8.0	210	305
DT692085	8.5	210	305
DT692090	9.0	220	320
DT692095	9.5	220	320
DT692100	10.0	235	340
DT692102	10.2	235	340

DT693 SERIES **(DIN1869/3)**

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DT693040	4.0	190	280
DT693050	5.0	210	315
DT693060	6.0	225	330
DT693080	8.0	265	390
DT693100	10.0	295	430

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

DL608 SERIES

HSS-E, MORSE TAPER SHANK TWIST DRILLS for DEEP HOLES

LONG

- HSS-E, SPIRALBOHRER für TIEFLOCH mit MORSEKEGELSCHAFT — *LANG*
- Forets HSS-E, queue cône morse pour perçage profond, série longue — *LONGUE*
- PUNTE IN HSS - E, ATTACCO CONO MORSE PER FORI NON - STOP — *LUNGA*

▶**Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶**Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 341 | HSS-E | 38° | 1~3 | h8 | 130° P.280-281

▶DH100 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
DL608130	13.0	134	215	1
DL608135	13.5	142	223	1
DL608140	14.0	142	223	1
DL608145	14.5	147	245	2
DL608150	15.0	147	245	2
DL608155	15.5	153	251	2
DL608160	16.0	153	251	2
DL608165	16.5	159	257	2
DL608170	17.0	159	257	2
DL608175	17.5	165	263	2
DL608180	18.0	165	263	2
DL608185	18.5	171	269	2
DL608190	19.0	171	269	2

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
DL608195	19.5	177	275	2
DL608200	20.0	177	275	2
DL608210	21.0	184	282	2
DL608220	22.0	191	289	2
DL608230	23.0	198	296	2
DL608240	24.0	206	327	3
DL608250	25.0	206	327	3
DL608260	26.0	214	335	3
DL608270	27.0	222	343	3
DL608280	28.0	222	343	3
DL608290	29.0	230	351	3
DL608300	30.0	230	351	3

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

DL507 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for ALUMINUM DEEP HOLES

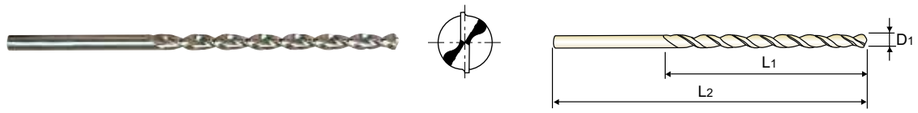
EXTRA LONG

HSS-E, SPIRALBOHRER für ALUMINIUM TIEFLOCH mit ZYLINDERSCHAFT
Forets HSS-E, queue cylindrique pour ALU, perçage profond, série extra-longue
PUNTE HSS-E, GAMBO CILINDRICO PER FORATURE NON - STOP SU ALLUMINIO

ÜBERLANG
EXTRA-LONGUE
EXTRA LUNGA

▶**Application** : Drilling deep holes in aluminum and its alloys, silumin, zinc, refined copper, wood and other soft synthetic materials.

▶**Verwendung** : Zum Bohren von weichen und langspanenden Werkstoffen wie Alu-Legierungen, Zink, Kupfer, Kunstoffe und Holz.



HSS-E | 38° | h8 | 118° | P.283

▶DH50 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL507120	2.0	40	75
DL507121	2.1	40	75
DL507220	2.0	50	100
DL507221	2.1	50	100
DL507225	2.5	50	100
DL507227	2.7	50	100
DL507230	3.0	50	100
DL507233	3.3	50	100
DL507235	3.5	50	100
DL507320	2.0	75	150
DL507321	2.1	75	150
DL507325	2.5	75	150
DL507327	2.7	75	150
DL507330	3.0	75	150
DL507333	3.3	75	150
DL507335	3.5	75	150
DL507340	4.0	75	150
DL507342	4.2	75	150
DL507345	4.5	75	150
DL507350	5.0	75	150
DL507353	5.3	75	150
DL507355	5.5	75	150
DL507360	6.0	75	150

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL507430	3.0	100	200
DL507433	3.3	100	200
DL507435	3.5	100	200
DL507440	4.0	100	200
DL507442	4.2	100	200
DL507445	4.5	100	200
DL507450	5.0	100	200
DL507453	5.3	100	200
DL507455	5.5	100	200
DL507460	6.0	100	200
DL507465	6.5	100	200
DL507468	6.8	100	200
DL507470	7.0	100	200
DL507475	7.5	100	200
DL507480	8.0	100	200
DL507485	8.5	100	200
DL507488	8.8	100	200
DL507490	9.0	100	200
DL507495	9.5	100	200
DL507700	10.0	100	200
DL507540	4.0	150	250
DL507542	4.2	150	250
DL507545	4.5	150	250
DL507550	5.0	150	250
DL507553	5.3	150	250

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

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

STRAIGHT SHANK DRILLS

DL507 SERIES

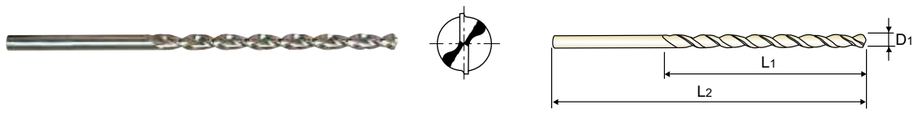
HSS-E, STRAIGHT SHANK TWIST DRILLS for ALUMINUM DEEP HOLES

EXTRA LONG
ÜBERLANG
EXTRA-LONGUE
EXTRA LUNGA

HSS-E, SPIRALBOHRER für ALUMINIUM TIEFLOCH mit ZYLINDERSCHAFT
Forets HSS-E, queue cylindrique pour ALU, perçage profond, série extra-longue
PUNTE HSS-E, GAMBO CILINDRICO PER FORATURE NON - STOP SU ALLUMINIO

▶Application : Drilling deep holes in aluminum and its alloys, silumin, zinc, refined copper, wood and other soft synthetic materials.

▶Verwendung : Zum Bohren von weichen und langspanenden Werkstoffen wie Alu-Legierungen, Zink, Kupfer, Kunstoffe und Holz.



HSS-E | 38° | h8 | 118° | P.283

▶DH50 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL507555	5.5	150	250
DL507560	6.0	150	250
DL507565	6.5	150	250
DL507568	6.8	150	250
DL507570	7.0	150	250
DL507575	7.5	150	250
DL507580	8.0	150	250
DL507585	8.5	150	250
DL507588	8.8	150	250
DL507590	9.0	150	250
DL507595	9.5	150	250
DL507800	10.0	150	250
DL507803	10.3	150	250
DL507805	10.5	150	250
DL507810	11.0	150	250
DL507815	11.5	150	250
DL507820	12.0	150	250
DL507825	12.5	150	250
DL507830	13.0	150	250

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL507650	5.0	180	300
DL507653	5.3	180	300
DL507655	5.5	180	300
DL507660	6.0	180	300
DL507665	6.5	180	300
DL507668	6.8	180	300
DL507670	7.0	180	300
DL507675	7.5	180	300
DL507680	8.0	180	300
DL507685	8.5	180	300
DL507688	8.8	180	300
DL507690	9.0	180	300
DL507695	9.5	180	300
DL507900	10.0	180	300
DL507903	10.3	180	300
DL507905	10.5	180	300
DL507910	11.0	180	300
DL507915	11.5	180	300
DL507920	12.0	180	300
DL507925	12.5	180	300
DL507930	13.0	180	300

◎ : Excellent ○ : Good

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

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

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D2107, D1107, D2105, DL105, D1105, D1125, D2104, D1121, DL109 SERIES

HSS, HSS-E & HSSCo8 COBALT DRILLS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0
P	1	Non-alloy steel	30	RPM	4770	3180	2390	1590	1190
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	2		25	RPM	3980	2650	1990	1330	990
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	3		20	RPM	3180	2120	1590	1060	800
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	4		20	RPM	3180	2120	1590	1060	800
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06
	5								
	6	Low alloy steel	25	RPM	3980	2650	1990	1330	990
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	7		20	RPM	3180	2120	1590	1060	800
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	8		20	RPM	3180	2120	1590	1060	800
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06
	9								
	10	High alloyed steel, and tool steel	15	RPM	2390	1590	1190	800	600
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	11								
M	12	Stainless steel	20	RPM	3180	2120	1590	1060	800
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	13		15	RPM	2390	1590	1190	800	600
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	14		10	RPM	1590	1060	800	530	400
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06
K	15	Grey cast iron	30	RPM	4770	3180	2390	1590	1190
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	16		25	RPM	3980	2650	1990	1330	990
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06
	17	Nodular cast iron	30	RPM	4770	3180	2390	1590	1190
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	18								
	19	Malleable cast iron	25	RPM	3980	2650	1990	1330	990
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	20								
N	21	Aluminum-wrought alloy	55	RPM	8750	5840	4380	2920	2190
				FEED	0.03~0.06	0.05~0.09	0.07~0.11	0.12~0.16	0.12~0.18
	22		55	RPM	8750	5840	4380	2920	2190
				FEED	0.03~0.06	0.05~0.09	0.07~0.11	0.12~0.16	0.12~0.18
	23	Aluminum-cast, alloyed	40	RPM	6370	4240	3180	2120	1590
				FEED	0.03~0.06	0.05~0.09	0.07~0.11	0.12~0.16	0.12~0.18
	24								
	25								
	26	Copper and Copper Alloys (Bronze / Brass)							
	27								
	28								
	29	Non Metallic Materials	20	RPM	3180	2120	1590	1060	800
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	30								
S	31	Heat Resistant Super Alloys							
	32								
	33								
	34								
	35								
	36	Titanium Alloys	10	RPM	1590	1060	800	530	400
				FEED	0.01~0.03	0.02~0.04	0.03~0.05	0.04~0.07	0.05~0.08
	37								
H	38	Hardened steel							
	39								
	40	Chilled Cast Iron							
	41	Hardened Cast Iron							

STRAIGHT SHANK DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

VDI 3323	Parameter	Drill Diameter (mm) 10.0	13.0	16.0	18.0	20.0	30.0
1	RPM	950	730	600	530	480	320
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
2	RPM	800	610	500	440	400	270
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
3	RPM	640	490	400	350	320	210
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
4	RPM	640	490	400	350	320	210
	FEED	0.03~0.06	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18
5							
6	RPM	800	610	500	440	400	270
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
7	RPM	640	490	400	350	320	210
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
8	RPM	640	490	400	350	320	210
	FEED	0.03~0.06	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18
9							
10	RPM	480	370	300	270	240	160
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
11							
12	RPM	640	490	400	350	320	210
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
13	RPM	480	370	300	270	240	160
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
14	RPM	320	240	200	180	160	110
	FEED	0.03~0.06	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18
15	RPM	950	730	600	530	480	320
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
16	RPM	800	610	500	440	400	270
	FEED	0.03~0.06	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18
17	RPM	950	730	600	530	480	320
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
18							
19	RPM	800	610	500	440	400	270
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
20							
21	RPM	1750	1350	1090	970	880	580
	FEED	0.14~0.20	0.16~0.22	0.18~0.24	0.20~0.28	0.20~0.30	0.28~0.38
22	RPM	1750	1350	1090	970	880	580
	FEED	0.14~0.20	0.16~0.22	0.18~0.24	0.20~0.28	0.20~0.30	0.28~0.38
23	RPM	1270	980	800	710	640	420
	FEED	0.14~0.20	0.16~0.22	0.18~0.24	0.20~0.28	0.20~0.30	0.28~0.38
24							
25							
26							
27							
28							
29	RPM	640	490	400	350	320	210
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
30							
31							
32							
33							
34							
35							
36	RPM	320	240	200	180	160	110
	FEED	0.05~0.09	0.06~0.10	0.05~0.11	0.06~0.12	0.09~0.13	0.12~0.18
37							
38							
39							
40							
41							

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D1100 SERIES — HSS, TWIST DRILLS for BRASS / BRONZE

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	5.0	6.0	8.0	10.0	13.0
P	1	Non-alloy steel										
	2											
	3											
	4											
	5											
	6	Low alloy steel										
	7											
	8											
	9											
	10	High alloyed steel, and tool steel										
	11											
M	12	Stainless steel										
	13											
	14											
K	15	Grey cast iron										
	16											
	17	Nodular cast iron										
	18											
	19	Malleable cast iron										
	20											
N	21	Aluminum-wrought alloy										
	22											
	23	Aluminum-cast, alloyed										
	24											
	25											
	26	Copper and Copper Alloys (Bronze / Brass)										
	27		45	RPM	7160	4770	3580	2860	2390	1790	1430	1100
				FEED	0.05~0.08	0.06~0.10	0.08~0.12	0.10~0.14	0.12~0.16	0.16~0.20	0.19~0.25	0.22~0.32
	28		30	RPM	4770	3180	2390	1910	1590	1190	950	730
				FEED	0.02~0.05	0.03~0.06	0.04~0.08	0.05~0.09	0.07~0.11	0.09~0.13	0.10~0.16	0.11~0.21
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys										
	32											
	33											
	34											
	35											
	36	Titanium Alloys										
	37											
H	38	Hardened steel										
	39											
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										

STRAIGHT SHANK DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D1106 SERIES — HSS, TWIST DRILLS for ALUMINUM

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	5.0	6.0	8.0	10.0	13.0
P	1	Non-alloy steel										
	2											
	3											
	4											
	5											
	6	Low alloy steel										
	7											
	8											
	9											
	10	High alloyed steel, and tool steel										
	11											
M	12	Stainless steel										
	13											
	14											
K	15	Grey cast iron										
	16											
	17	Nodular cast iron										
	18											
	19	Malleable cast iron										
	20											
N	21	Aluminum-wrought alloy	50	RPM	7960	5310	3980	3180	2650	1990	1590	1220
				FEED	0.05~0.08	0.06~0.10	0.08~0.12	0.10~0.14	0.14~0.18	0.14~0.20	0.19~0.25	0.25~0.35
	22		50	RPM	7960	5310	3980	3180	2650	1990	1590	1220
				FEED	0.05~0.08	0.06~0.10	0.08~0.12	0.10~0.14	0.14~0.18	0.14~0.20	0.19~0.25	0.25~0.35
	23	Aluminum-cast, alloyed	40	RPM	6370	4240	3180	2550	2120	1590	1270	980
				FEED	0.05~0.08	0.06~0.10	0.08~0.12	0.10~0.14	0.14~0.18	0.14~0.20	0.19~0.25	0.25~0.35
	24		30	RPM	4770	3180	2390	1910	1590	1190	950	730
				FEED	0.03~0.06	0.03~0.07	0.04~0.08	0.05~0.09	0.04~0.10	0.06~0.12	0.10~0.16	0.12~0.22
	25											
	26	Copper and Copper Alloys (Bronze / Brass)										
	27											
	28											
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys										
	32											
	33											
	34											
	35											
	36	Titanium Alloys										
	37											
H	38	Hardened steel										
	39											
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DL510, DL508, DL509, DL505, DL504, DL608 SERIES

HSS-E, DH100 WORM PATTERN DRILLS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0
P	1	Non-alloy steel	30	RPM	4770	3180	2390	1590	1190
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	2		25	RPM	3980	2650	1990	1330	990
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	3		20	RPM	3180	2120	1590	1060	800
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	4		20	RPM	3180	2120	1590	1060	800
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06
	5								
	6	Low alloy steel	25	RPM	3980	2650	1990	1330	990
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	7		20	RPM	3180	2120	1590	1060	800
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	8		20	RPM	3180	2120	1590	1060	800
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06
	9								
	10	High alloyed steel, and tool steel	15	RPM	2390	1590	1190	800	600
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	11								
M	12	Stainless steel							
	13								
	14								
K	15	Grey cast iron	30	RPM	4770	3180	2390	1590	1190
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	16		25	RPM	3980	2650	1990	1330	990
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06
	17	Nodular cast iron	30	RPM	4770	3180	2390	1590	1190
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	18		20	RPM	3180	2120	1590	1060	800
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06
	19	Malleable cast iron	25	RPM	3980	2650	1990	1330	990
				FEED	0.02~0.04	0.03~0.05	0.04~0.06	0.05~0.08	0.10~0.13
	20		20	RPM	3180	2120	1590	1060	800
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06
N	21	Aluminum-wrought alloy							
	22								
	23	Aluminum-cast, alloyed							
	24								
	25								
	26	Copper and Copper Alloys (Bronze / Brass)							
	27								
	28								
	29	Non Metallic Materials							
	30								
S	31	Heat Resistant Super Alloys							
	32								
	33								
	34								
	35								
	36	Titanium Alloys							
	37								
H	38	Hardened steel							
	39								
	40	Chilled Cast Iron							
	41	Hardened Cast Iron							

STRAIGHT SHANK DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

VDI 3323	Parameter	Drill Diameter (mm) 10.0	13.0	16.0	18.0	20.0	30.0
1	RPM	950	730	600	530	480	320
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
2	RPM	800	610	500	440	400	270
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
3	RPM	640	490	400	350	320	210
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
4	RPM	640	490	400	350	320	210
	FEED	0.03~0.06	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18
5							
6	RPM	800	610	500	440	400	270
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.2	0.19~0.25	0.22~0.28
7	RPM	640	490	400	350	320	210
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.2	0.19~0.25	0.22~0.28
8	RPM	640	490	400	350	320	210
	FEED	0.03~0.06	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18
9							
10	RPM	480	370	300	270	240	160
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
11							
12							
13							
14							
15	RPM	950	730	600	530	480	320
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
16	RPM	800	610	500	440	400	270
	FEED	0.03~0.06	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18
17	RPM	950	730	600	530	480	320
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
18	RPM	640	490	400	350	320	210
	FEED	0.03~0.06	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18
19	RPM	800	610	500	440	400	270
	FEED	0.11~0.15	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28
20	RPM	640	490	400	350	320	210
	FEED	0.03~0.06	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18
21							
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CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DT600, DT692, DT693 SERIES — HSS-E, DH100 WORM PATTERN DRILLS (EXTRA LONG)

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0	10.0	13.0
P	1	Non-alloy steel	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.01~0.03	0.03~0.05	0.04~0.06	0.05~0.08	0.08~0.11	0.09~0.13	0.10~0.16
	2		15	RPM	2390	1590	1190	800	600	480	370
				FEED	0.01~0.03	0.03~0.05	0.04~0.06	0.05~0.08	0.08~0.11	0.09~0.13	0.10~0.16
	3		10	RPM	1590	1060	800	530	400	320	240
				FEED	0.01~0.03	0.03~0.05	0.04~0.06	0.05~0.08	0.08~0.11	0.09~0.13	0.10~0.16
	4		10	RPM	1590	1060	800	530	400	320	240
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06	0.03~0.06	0.04~0.10
	5										
	6	Low alloy steel	15	RPM	2390	1590	1190	800	600	480	370
				FEED	0.01~0.03	0.03~0.05	0.04~0.06	0.05~0.08	0.08~0.11	0.09~0.13	0.10~0.16
	7		10	RPM	1590	1060	800	530	400	320	240
				FEED	0.01~0.03	0.03~0.05	0.04~0.06	0.05~0.08	0.08~0.11	0.09~0.13	0.10~0.16
	8		10	RPM	1590	1060	800	530	400	320	240
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06	0.03~0.06	0.04~0.10
	9										
	10	High alloyed steel, and tool steel	5	RPM	800	530	400	270	200	160	120
				FEED	0.01~0.03	0.03~0.05	0.04~0.06	0.05~0.08	0.08~0.11	0.09~0.13	0.10~0.16
	11										
M	12	Stainless steel									
	13										
	14										
K	15	Grey cast iron	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.01~0.03	0.03~0.05	0.04~0.06	0.05~0.08	0.08~0.11	0.09~0.13	0.10~0.16
	16		15	RPM	2390	1590	1190	800	600	480	370
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06	0.03~0.06	0.04~0.10
	17	Nodular cast iron	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.01~0.03	0.03~0.05	0.04~0.06	0.05~0.08	0.08~0.11	0.09~0.13	0.10~0.16
	18		10	RPM	1590	1060	800	530	400	320	240
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06	0.03~0.06	0.04~0.10
	19	Malleable cast iron	15	RPM	2390	1590	1190	800	600	480	370
				FEED	0.01~0.03	0.03~0.05	0.04~0.06	0.05~0.08	0.08~0.11	0.09~0.13	0.10~0.16
	20		10	RPM	1590	1060	800	530	400	320	240
				FEED	0.01~0.02	0.01~0.03	0.02~0.04	0.02~0.05	0.03~0.06	0.03~0.06	0.04~0.10
N	21	Aluminum-wrought alloy									
	22										
	23	Aluminum-cast, alloyed									
	24										
	25										
	26	Copper and Copper Alloys (Bronze / Brass)									
	27										
	28										
	29	Non Metallic Materials									
	30										
S	31	Heat Resistant Super Alloys									
	32										
	33										
	34										
	35										
	36	Titanium Alloys									
	37										
H	38	Hardened steel									
	39										
	40	Chilled Cast Iron									
	41	Hardened Cast Iron									

STRAIGHT SHANK DRILLS

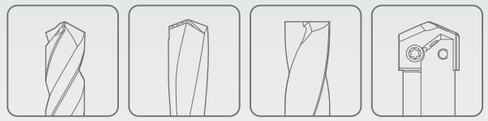
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DL507 SERIES — HSS-E, DH50 WORM PATTERN DRILLS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0	10.0	13.0
P	1	Non-alloy steel	15	RPM	2390	1590	1190	800	600	480	370
				FEED	0.01~0.03	0.02~0.04	0.03~0.06	0.04~0.08	0.04~0.10	0.07~0.13	0.09~0.15
	2										
	3										
	4										
	5										
	6	Low alloy steel									
	7										
	8										
	9										
	10	High alloyed steel, and tool steel									
	11										
M	12	Stainless steel									
	13										
	14										
K	15	Grey cast iron									
	16										
	17	Nodular cast iron									
	18										
	19	Malleable cast iron									
	20										
N	21	Aluminum-wrought alloy	55	RPM	8750	5840	4380	2920	2190	1750	1350
				FEED	0.02~0.04	0.03~0.06	0.04~0.08	0.08~0.12	0.10~0.16	0.14~0.20	0.16~0.26
	22		45	RPM	7160	4770	3580	2390	1790	1430	1100
				FEED	0.02~0.04	0.03~0.06	0.04~0.08	0.08~0.12	0.10~0.16	0.14~0.20	0.16~0.26
	23	Aluminum-cast, alloyed	40	RPM	6370	4240	3180	2120	1590	1270	980
				FEED	0.02~0.04	0.03~0.06	0.04~0.08	0.08~0.12	0.10~0.16	0.14~0.20	0.16~0.26
	24										
	25										
	26	Copper and Copper Alloys (Bronze / Brass)									
	27										
	28										
	29	Non Metallic Materials									
	30										
S	31	Heat Resistant Super Alloys									
	32										
	33										
	34										
	35										
	36	Titanium Alloys									
	37										
H	38	Hardened steel									
	39										
	40	Chilled Cast Iron									
	41	Hardened Cast Iron									

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation



HSS & HSS-E

MORSE TAPER SHANK DRILLS

BOHRER MIT MK

- **Morse Taper Shank Drills for Wide Applications**
- **Bohrer mit Morsekegel für breite Anwendungen**

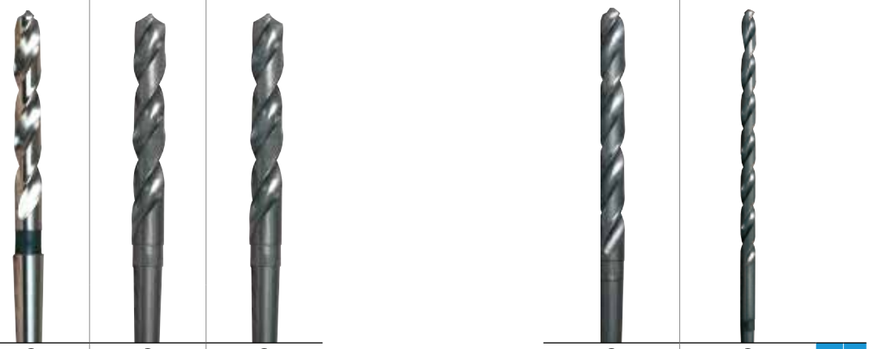
SELECTION GUIDE

YG HOLEMAKING TOOLS

SERIES	DL205	D1205	D1206	D1209	D1210
STANDARD	DIN345	DIN345	DIN341	DIN1870/1	DIN1870/2
LENGTH	JOBBER	JOBBER	LONG	EXTRA LONG	EXTRA LONG
SIZE MIN	D13.0	D5.0	D13.0	D13.0	D13.0
SIZE MAX	D30.0	D60.0	D30.0	D50.0	D50.0
PAGE	288	289	292	293	294
SURFACE TREATMENT	Bright	Steam Tempered		Steam Tempered	

HSS & HSS-E
MORSE TAPER SHANK DRILLS

Morse Taper Shank Drills for Wide Applications



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.295

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	DL205	D1205	D1206	D1209	D1210	VDI 3323	ISO
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎	◎	◎	◎	1	P
	2		About 0.45% C	Annealed	190	13	◎	◎	◎	◎	◎	2	
	3		About 0.45% C	Quenched & Tempered	250	25	◎	◎	◎	◎	◎	3	
	4		About 0.75% C	Annealed	270	28	○	○	○	○	○	4	
	5		About 0.75% C	Quenched & Tempered	300	32						5	
	6	Low alloy steel		Annealed	180	10	◎	◎	◎	◎	◎	6	
	7			Quenched & Tempered	275	29	○	○	○	○	○	7	
	8			Quenched & Tempered	300	32	○	○	○	○	○	8	
	9			Quenched & Tempered	350	38						9	
	10	High alloyed steel, and tool steel		Annealed	200	15	○	○	○	○	○	10	
	11			Quenched & Tempered	325	35						11	
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	◎	◎	◎	◎	◎	12	M
	13		Martensitic	Quenched & Tempered	240	23	○	○	○	○	○	13	
	14		Austenitic		180	10						14	
K	15	Grey cast iron	Pearlitic / ferritic		180	10	○	○	○	○	○	15	K
	16		Pearlitic (Martensitic)		260	26	○	○	○	○	○	16	
	17	Nodular cast iron	Ferritic		160	3	○	○	○	○	○	17	
	18		Pearlitic		250	25	○	○	○	○	○	18	
	19	Malleable cast iron	Ferritic		130		○	○	○	○	○	19	
	20		Pearlitic		230	21	○	○	○	○	○	20	
N	21	Aluminum-wrought alloy	Not Curable		60		○	○	○	○	○	21	N
	22		Curable	Hardened	100		○	○	○	○	○	22	
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		○	○	○	○	○	23	
	24		≤ 12% Si, Curable	Hardened	90							24	
	25		> 12% Si, Not Curable		130							25	
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110							26	
	27		CuZn, CuSnZn (Brass)		90							27	
	28		CuSn, lead-free copper and electrolytic copper		100							28	
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic				○	○	○	○	○	29	
	30		Rubber, Wood, etc.									30	
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15						31	S
	32			Cured	280	30						32	
	33		Ni or Co Based	Annealed	250	25						33	
	34			Cured	350	38						34	
	35			Cast	320	34						35	
	36	Titanium Alloys	Pure Titanium		400 Rm		○	○	○	○	○	36	
	37		Alpha + Beta Alloys	Hardened	1050 Rm							37	
H	38	Hardened steel		Hardened	550	55						38	H
	39			Hardened	630	60						39	
	40	Chilled Cast Iron		Cast	400	42						40	
	41	Hardened Cast Iron		Hardened	550	55						41	

MORSE TAPER SHANK DRILLS

DL205 SERIES

HSS-E, MORSE TAPER SHANK TWIST DRILLS for HEAVY DUTY

JOBBER

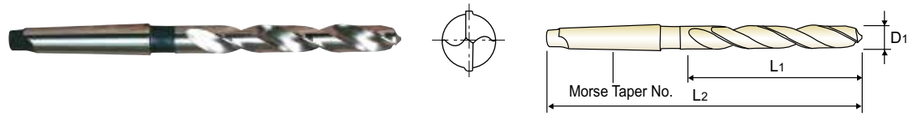
HSS-E, SPIRALBOHRER für HOHELEISTUNGEN mit MORSEKEGELSCHAFT — *KURZ*

Forets HSS-E, queue cône morse pour matériaux durs, série courte — *COURTE*

HSS-E, PUNTE ELICOIDALI, ATTACCO CM PER LAVORAZIONI GRAVOSE — *CORTA*

▶**Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, graphite.

▶**Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 345 | HSS-E | N ≈ 30° | 1 ~ 3 | h8 | 118° | P.295

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
DL205130	13.0	101	182	1
DL205135	13.5	108	189	1
DL205140	14.0	108	189	1
DL205145	14.5	114	212	2
DL205150	15.0	114	212	2
DL205155	15.5	120	218	2
DL205160	16.0	120	218	2
DL205165	16.5	125	223	2
DL205170	17.0	125	223	2
DL205175	17.5	130	228	2
DL205180	18.0	130	228	2
DL205185	18.5	135	233	2
DL205190	19.0	135	233	2
DL205195	19.5	140	238	2
DL205200	20.0	140	238	2
DL205205	20.5	145	243	2
DL205210	21.0	145	243	2
DL205215	21.5	150	248	2

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
DL205220	22.0	150	248	2
DL205225	22.5	155	253	2
DL205230	23.0	155	253	2
DL205235	23.5	155	276	3
DL205240	24.0	160	281	3
DL205245	24.5	160	281	3
DL205250	25.0	160	281	3
DL205255	25.5	165	286	3
DL205260	26.0	165	286	3
DL205265	26.5	165	286	3
DL205270	27.0	170	291	3
DL205275	27.5	170	291	3
DL205280	28.0	170	291	3
DL205285	28.5	175	296	3
DL205290	29.0	175	296	3
DL205295	29.5	175	296	3
DL205300	30.0	175	296	3

◎ : Excellent ○ : Good

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

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

MORSE TAPER SHANK DRILLS

D1205 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS

JOBBER

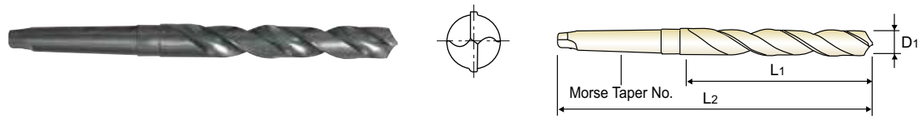
HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT — *KURZ*

Forets HSS, queue cône morse, série courte — *COURTE*

PUNTE ELICOIDALI IN HSS, ATTACCO CM — *CORTA*

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
▶**Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, graphite.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶**Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 345 | HSS | N ≈ 30° | 1 ~ 5 | h8 | 118° | P.295

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1205050	5.0	52	133	1
D1205055	5.5	57	138	1
D1205060	6.0	57	138	1
D1205065	6.5	63	144	1
D1205070	7.0	69	150	1
D1205075	7.5	69	150	1
D1205080	8.0	75	156	1
D1205085	8.5	75	156	1
D1205090	9.0	81	162	1
D1205095	9.5	81	162	1
D1205100	10.0	87	168	1
D1205105	10.5	87	168	1
D1205110	11.0	94	175	1
D1205115	11.5	94	175	1
D1205120	12.0	101	182	1
D1205125	12.5	101	182	1
D1205130	13.0	101	182	1
D1205132	13.2	101	182	1
D120513A	13.25	108	189	1
D1205135	13.5	108	189	1
D120513B	13.75	108	189	1
D1205138	13.8	108	189	1
D1205140	14.0	108	189	1
D120514A	14.25	114	212	2
D1205145	14.5	114	212	2
D120514B	14.75	114	212	2

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1205150	15.0	114	212	2
D120515A	15.25	120	218	2
D1205155	15.5	120	218	2
D120515B	15.75	120	218	2
D1205160	16.0	120	218	2
D120516A	16.25	125	223	2
D1205165	16.5	125	223	2
D120516B	16.75	125	223	2
D1205170	17.0	125	223	2
D120517A	17.25	130	228	2
D1205175	17.5	130	228	2
D120517B	17.75	130	228	2
D1205180	18.0	130	228	2
D120518A	18.25	135	233	2
D1205185	18.5	135	233	2
D120518B	18.75	135	233	2
D1205190	19.0	135	233	2
D120519A	19.25	140	238	2
D1205195	19.5	140	238	2
D120519B	19.75	140	238	2
D1205200	20.0	140	238	2
D120520A	20.25	145	243	2
D1205205	20.5	145	243	2
D120520B	20.75	145	243	2
D1205210	21.0	145	243	2
D120521A	21.25	150	248	2

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

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

MORSE TAPER SHANK DRILLS

D1205 SERIES

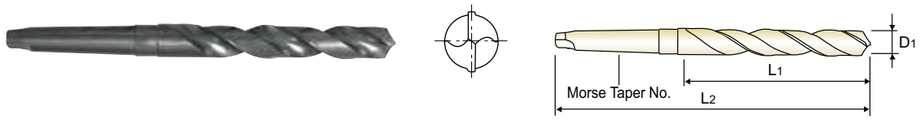
HSS, MORSE TAPER SHANK TWIST DRILLS

JOBBER
KURZ
COURTE
CORTA

HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT
Forets HSS, queue cône morse, série courte
PUNTE ELICOIDALI IN HSS, ATTACCO CM

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
▶**Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cas tiron, malleable cast iron, graphite.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶**Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 345 | HSS | N ≈30° | 1~5 | h8 | 118° | P.295

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1205215	21.5	150	248	2
D120521B	21.75	150	248	2
D1205220	22.0	150	248	2
D120522A	22.25	150	248	2
D1205225	22.5	155	253	2
D120522B	22.75	155	253	2
D1205230	23.0	155	253	2
D120523A	23.25	155	276	3
D1205235	23.5	155	276	3
D120523B	23.75	160	281	3
D1205240	24.0	160	281	3
D120524A	24.25	160	281	3
D1205245	24.5	160	281	3
D120524B	24.75	160	281	3
D1205250	25.0	160	281	3
D120525A	25.25	165	286	3
D1205255	25.5	165	286	3
D120525B	25.75	165	286	3
D1205260	26.0	165	286	3
D120526A	26.25	165	286	3
D1205265	26.5	165	286	3
D120526B	26.75	170	291	3
D1205270	27.0	170	291	3
D120527A	27.25	170	291	3
D1205275	27.5	170	291	3
D120527B	27.75	170	291	3

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1205280	28.0	170	291	3
D120528A	28.25	175	296	3
D1205285	28.5	175	296	3
D120528B	28.75	175	296	3
D1205290	29.0	175	296	3
D120529A	29.25	175	296	3
D1205295	29.5	175	296	3
D120529B	29.75	175	296	3
D1205300	30.0	175	296	3
D120530A	30.25	180	301	3
D1205305	30.5	180	301	3
D120530B	30.75	180	301	3
D1205310	31.0	180	301	3
D120531A	31.25	180	301	3
D1205315	31.5	180	301	3
D120531B	31.75	185	306	3
D1205320	32.0	185	334	4
D1205325	32.5	185	334	4
D1205330	33.0	185	334	4
D1205335	33.5	185	334	4
D1205340	34.0	190	339	4
D1205345	34.5	190	339	4
D1205350	35.0	190	339	4
D1205355	35.5	190	339	4
D1205360	36.0	195	344	4
D1205365	36.5	195	344	4

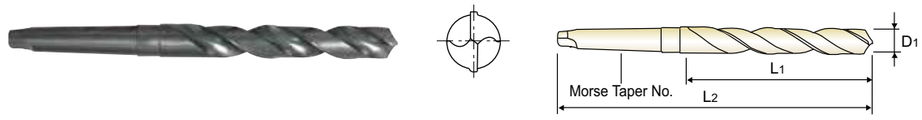
▶ NEXT PAGE

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

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

MORSE TAPER SHANK DRILLS
D1205 SERIES
HSS, MORSE TAPER SHANK TWIST DRILLS
JOBBER
KURZ
COURTE
CORTA
HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT
Forets HSS, queue cône morse, série courte
PUNTE ELICOIDALI IN HSS, ATTACCO CM
▶Surface treatment : Steam Tempered(Black Oxide Finish)
▶Application : Drilling steels, cast steels alloyed and non-alloyed, grey cas tiron, malleable cast iron, graphite.
▶Oberflächenbehandlung : Steam Homo(Schwarzoxidation)
▶Verwendung : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 345 | HSS | N ≈30° | 1~5 | h8 | 118° | P.295

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1205370	37.0	195	344	4
D1205375	37.5	195	344	4
D1205380	38.0	200	349	4
D1205385	38.5	200	349	4
D1205390	39.0	200	349	4
D1205395	39.5	200	349	4
D1205400	40.0	200	349	4
D1205405	40.5	205	354	4
D1205410	41.0	205	354	4
D1205415	41.5	205	354	4
D1205420	42.0	205	354	4
D1205425	42.5	205	354	4
D1205430	43.0	210	359	4
D1205435	43.5	210	359	4
D1205440	44.0	210	359	4
D1205445	44.5	210	359	4
D1205450	45.0	210	359	4
D1205455	45.5	215	364	4
D1205460	46.0	215	364	4

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1205465	46.5	215	364	4
D1205470	47.0	215	364	4
D1205475	47.5	215	364	4
D1205480	48.0	220	369	4
D1205485	48.5	220	369	4
D1205490	49.0	220	369	4
D1205495	49.5	220	369	4
D1205500	50.0	220	369	4
D1205505	50.5	225	374	4
D1205510	51.0	225	412	5
D1205520	52.0	225	412	5
D1205530	53.0	225	412	5
D1205540	54.0	230	417	5
D1205550	55.0	230	417	5
D1205560	56.0	230	417	5
D1205570	57.0	235	422	5
D1205580	58.0	235	422	5
D1205590	59.0	235	422	5
D1205600	60.0	235	422	5

◎ : Excellent ○ : Good

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

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

MORSE TAPER SHANK DRILLS

D1206 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS

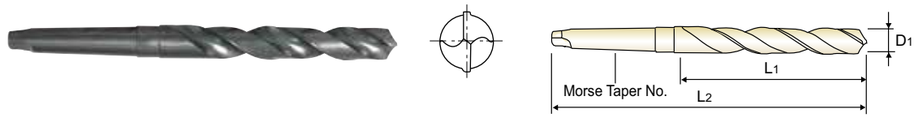
LONG

HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT
Forets HSS, queue cône morse, série longue
PUNTE ELICOIDALI IN HSS, ATTACCO CM

LANG
LONGUE
LUNGA

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
▶**Application** : Drilling deep holes in steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, graphite.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶**Verwendung** : Für Bohrungen mit Bohrbuchsen oder an tief liegenden Stellen. Zum Bohren von Stahl und Stahlguß, Grauß, Temperguß, Sphäroguß, Sintereisen, Neusilber und Graphit.



DIN 341 | HSS | N ≈ 30° | 1 ~ 3 | h8 | 118° P.295

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1206130	13.0	134	215	1
D1206135	13.5	142	223	1
D1206140	14.0	142	223	1
D1206145	14.5	147	245	2
D1206150	15.0	147	245	2
D1206155	15.5	153	251	2
D1206160	16.0	153	251	2
D1206165	16.5	159	257	2
D1206170	17.0	159	257	2
D1206175	17.5	165	263	2
D1206180	18.0	165	263	2
D1206185	18.5	171	269	2
D1206190	19.0	171	269	2

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1206195	19.5	177	275	2
D1206200	20.0	177	275	2
D1206210	21.0	184	282	2
D1206220	22.0	191	289	2
D1206230	23.0	198	296	2
D1206240	24.0	206	327	3
D1206250	25.0	206	327	3
D1206260	26.0	214	335	3
D1206270	27.0	222	343	3
D1206280	28.0	222	343	3
D1206290	29.0	230	351	3
D1206300	30.0	230	351	3

◎ : Excellent ○ : Good

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

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

MORSE TAPER SHANK DRILLS

D1209 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS

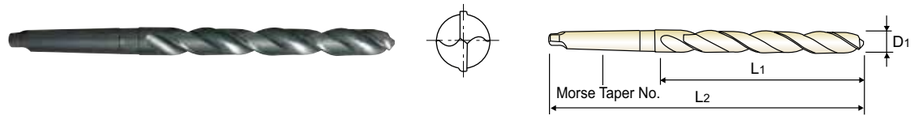
EXTRA LONG

HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT
Forets HSS, queue cône morse, série extra-longue
PUNTE ELICOIDALI IN HSS, ATTACCO CM

ÜBERLANG
EXTRA-LONGUE
EXTRA LUNGA

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
▶**Application** : Drilling deep holes in steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, graphite.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶**Verwendung** : Für Bohrungen mit Bohrbuchsen oder an tief liegenden Stellen. Zum Bohren von Stahl und Stahlguß, Grauß, Temperguß, Sphäroguß, Sintereisen, Neusilber und Graphit



DIN 1870/1 | HSS | N ≈ 30° | 1 ~ 4 | h8 | 118° P.295

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1209130	13.0	205	310	1
D1209135	13.5	220	325	1
D1209140	14.0	220	325	1
D1209145	14.5	220	340	2
D1209150	15.0	220	340	2
D1209155	15.5	230	355	2
D1209160	16.0	230	355	2
D1209165	16.5	230	355	2
D1209170	17.0	230	355	2
D1209175	17.5	245	370	2
D1209180	18.0	245	370	2
D1209185	18.5	245	370	2
D1209190	19.0	245	370	2
D1209195	19.5	260	385	2
D1209200	20.0	260	385	2
D1209205	20.5	260	385	2
D1209210	21.0	260	385	2
D1209215	21.5	270	405	2
D1209220	22.0	270	405	2
D1209225	22.5	270	405	2
D1209230	23.0	270	405	2
D1209235	23.5	270	425	3
D1209240	24.0	290	440	3
D1209245	24.5	290	440	3
D1209250	25.0	290	440	3
D1209255	25.5	290	440	3
D1209260	26.0	290	440	3
D1209265	26.5	290	440	3

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1209270	27.0	305	460	3
D1209275	27.5	305	460	3
D1209280	28.0	305	460	3
D1209285	28.5	305	460	3
D1209290	29.0	305	460	3
D1209295	29.5	305	460	3
D1209300	30.0	305	460	3
D1209305	30.5	320	480	3
D1209310	31.0	320	480	3
D1209320	32.0	320	505	4
D1209330	33.0	320	505	4
D1209340	34.0	340	530	4
D1209350	35.0	340	530	4
D1209360	36.0	340	530	4
D1209370	37.0	340	530	4
D1209380	38.0	360	555	4
D1209390	39.0	360	555	4
D1209400	40.0	360	555	4
D1209410	41.0	360	555	4
D1209420	42.0	360	555	4
D1209430	43.0	385	585	4
D1209440	44.0	385	585	4
D1209450	45.0	385	585	4
D1209460	46.0	385	585	4
D1209470	47.0	385	585	4
D1209480	48.0	405	605	4
D1209490	49.0	405	605	4
D1209500	50.0	405	605	4

◎ : Excellent ○ : Good

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

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

MORSE TAPER SHANK DRILLS

D1210 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS

EXTRA LONG

HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT — *ÜBERLANG*

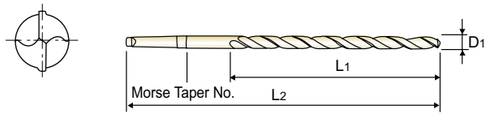
Forets HSS, queue cône morse, série extra-longue — *EXTRA-LONGUE*

PUNTE ELICOIDALI IN HSS, ATTACCO CM — *EXTRA LUNGA*

▶**Surface treatment** : Steam Tempered(Black Oxide Finish)
▶**Application** : Designed for drilling deep holes or deeply located holes. Drilling into steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, Spheriodal graphite cast iron, sintered iron, aluminum and aluminum alloys.

▶**Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶**Verwendung** : Standardbohrer zum Bohren extrem tiefer Löcher.
Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen und Graphit





DIN 1870/2 | HSS | N ≈ 30° | 1 ~ 4 | h8 | 118° | P.295

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1210130	13.0	260	395	1
D1210135	13.5	275	410	1
D1210140	14.0	275	410	1
D1210145	14.5	275	425	2
D1210150	15.0	275	425	2
D1210155	15.5	295	445	2
D1210160	16.0	295	445	2
D1210165	16.5	295	445	2
D1210170	17.0	295	445	2
D1210175	17.5	310	465	2
D1210180	18.0	310	465	2
D1210185	18.5	310	465	2
D1210190	19.0	310	465	2
D1210195	19.5	325	490	2
D1210200	20.0	325	490	2
D1210205	20.5	325	490	2
D1210210	21.0	325	490	2
D1210215	21.5	345	515	2
D1210220	22.0	345	515	2
D1210225	22.5	345	515	2
D1210230	23.0	345	515	2
D1210235	23.5	345	535	3
D1210240	24.0	365	555	3
D1210245	24.5	365	555	3
D1210250	25.0	365	555	3
D1210255	25.5	365	555	3
D1210260	26.0	365	555	3
D1210265	26.5	365	555	3

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1210270	27.0	385	580	3
D1210275	27.5	385	580	3
D1210280	28.0	385	580	3
D1210285	28.5	385	580	3
D1210290	29.0	385	580	3
D1210295	29.5	385	580	3
D1210300	30.0	385	580	3
D1210310	31.0	410	610	3
D1210320	32.0	410	635	4
D1210330	33.0	410	635	4
D1210340	34.0	430	665	4
D1210350	35.0	430	665	4
D1210360	36.0	430	665	4
D1210370	37.0	430	665	4
D1210380	38.0	460	695	4
D1210390	39.0	460	695	4
D1210400	40.0	460	695	4
D1210410	41.0	460	695	4
D1210420	42.0	460	695	4
D1210430	43.0	490	735	4
D1210440	44.0	490	735	4
D1210450	45.0	490	735	4
D1210460	46.0	490	735	4
D1210470	47.0	490	735	4
D1210480	48.0	510	765	4
D1210490	49.0	510	765	4
D1210500	50.0	510	765	4

◎ : Excellent ○ : Good

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

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

MORSE TAPER SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

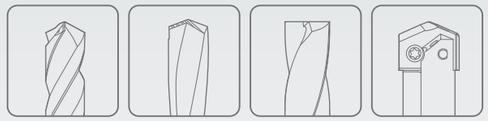
DL205, D1205, D1206, D1209, D1210 SERIES

HSS&HSS-E, MORSE TAPER SHANK DRILLS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 13.0	16.0	18.0	20.0	30.0	40.0	50.0	60.0
P	1	Non-alloy steel	30	RPM	730	600	530	480	320	240	190	160
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	2		25	RPM	610	500	440	400	270	200	160	130
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	3		20	RPM	490	400	350	320	210	160	130	110
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	4		15	RPM	370	300	270	240	160	120	100	80
				FEED	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18	0.14~0.20	0.16~0.22	0.18~0.24
	5											
	6	Low alloy steel	25	RPM	610	500	440	400	270	200	160	130
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	7		20	RPM	490	400	350	320	210	160	130	110
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	8		15	30	370	300	270	240	160	120	100	80
				320	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18	0.14~0.20	0.16~0.22	0.18~0.24
	9											
	10	High alloyed steel, and tool steel	15	RPM	370	300	270	240	160	120	100	80
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	11											
M	12	Stainless steel	20	RPM	490	400	350	320	210	160	130	110
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	13		15	RPM	370	300	270	240	160	120	100	80
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	14											
K	15	Grey cast iron	30	RPM	730	600	530	480	320	240	190	160
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	16		25	RPM	610	500	440	400	270	200	160	130
				FEED	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18	0.14~0.20	0.16~0.22	0.18~0.24
	17	Nodular cast iron	30	RPM	730	600	530	480	320	240	190	160
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	18		20	RPM	490	400	350	320	210	160	130	110
				FEED	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18	0.14~0.20	0.16~0.22	0.18~0.24
	19	Malleable cast iron	25	RPM	610	500	440	400	270	200	160	130
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	20		20	RPM	490	400	350	320	210	160	130	110
				FEED	0.04~0.10	0.06~0.12	0.08~0.14	0.10~0.16	0.12~0.18	0.14~0.20	0.16~0.22	0.18~0.24
N	21	Aluminum-wrought alloy	55	RPM	1350	1090	970	880	580	440	350	290
				FEED	0.16~0.22	0.18~0.24	0.20~0.28	0.20~0.30	0.28~0.38	0.32~0.42	0.36~0.46	0.40~0.50
	22		55	RPM	1350	1090	970	880	580	440	350	290
				FEED	0.16~0.22	0.18~0.24	0.20~0.28	0.20~0.30	0.28~0.38	0.32~0.42	0.36~0.46	0.40~0.50
	23	Aluminum-cast, alloyed	40	RPM	980	800	710	640	420	320	250	210
				FEED	0.16~0.22	0.18~0.24	0.20~0.28	0.20~0.30	0.28~0.38	0.32~0.42	0.36~0.46	0.40~0.50
	24											
	25											
	26	Copper and Copper Alloys (Bronze / Brass)										
	27											
	28											
	29	Non Metallic Materials	20	RPM	490	400	350	320	210	160	130	110
				FEED	0.11~0.17	0.12~0.18	0.14~0.20	0.19~0.25	0.22~0.28	0.24~0.30	0.28~0.34	0.36~0.40
	30											
S	31	Heat Resistant Super Alloys										
	32											
	33											
	34											
	35											
	36	Titanium Alloys	10	RPM	240	200	180	160	110	80	60	50
				FEED	0.06~0.10	0.05~0.11	0.06~0.12	0.09~0.13	0.12~0.18	0.14~0.20	0.16~0.22	0.18~0.24
	37											
H	38	Hardened steel										
	39											
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation



SOLID CARBIDE & HSSCo8

NC-SPOTTING DRILLS

NC-ANBOHRER

- For Centering and Chamfering of Holes
- Zum Zentrieren und Anfasen von Bohrungen

SELECTION GUIDE

YG HOLEMAKING TOOLS

SOLID CARBIDE & HSSCo8
NC-SPOTTING DRILLS

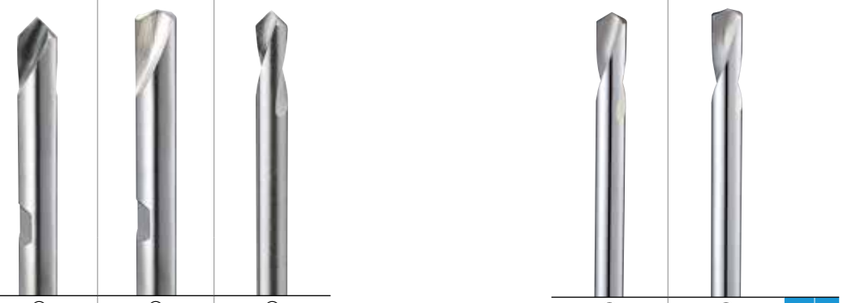
For Centering and Chamfering of Holes

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.305

SERIES	D5306 D5307	D5320	D2306 D2321	D2307 D2322	D2320 D2323
POINT ANGLE	90° / 120°	142°	90°	120°	142°
SIZE MIN	D6.0	D3.0	D3.0	D3.0 / D6.0	D3.0 / D6.0
SIZE MAX	D20.0	D20.0	D20.0	D20.0 / D12.0	D20.0 / D12.0
PAGE	300	301	302	303	304
SURFACE TREATMENT	Bright			Bright	



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	D5306 D5307	D5320	D2306 D2321	D2307 D2322	D2320 D2323	VDI 3323	ISO
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎	◎	◎	◎	1	P
	2		About 0.45% C	Annealed	190	13	◎	◎	◎	◎	◎	2	
	3		About 0.45% C	Quenched & Tempered	250	25	◎	◎	◎	◎	◎	3	
	4		About 0.75% C	Annealed	270	28						4	
	5		About 0.75% C	Quenched & Tempered	300	32						5	
	6	Low alloy steel		Annealed	180	10	◎	◎	◎	◎	◎	6	
	7			Quenched & Tempered	275	29	○	○	○	○	○	7	
	8			Quenched & Tempered	300	32						8	
	9			Quenched & Tempered	350	38						9	
	10	High alloyed steel, and tool steel		Annealed	200	15						10	
	11			Quenched & Tempered	325	35						11	
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	○	○	○	○	○	12	M
	13		Martensitic	Quenched & Tempered	240	23						13	
	14		Austenitic		180	10						14	
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎	◎	◎	◎	◎	15	K
	16		Pearlitic (Martensitic)		260	26	○	○	○	○	○	16	
	17	Nodular cast iron	Ferritic		160	3	○	○	○	○	○	17	
	18		Pearlitic		250	25						18	
	19	Malleable cast iron	Ferritic		130		○	○	○	○	○	19	
	20		Pearlitic		230	21						20	
N	21	Aluminum-wrought alloy	Not Curable		60		○	○	○	○	○	21	N
	22		Curable	Hardened	100		○	○	○	○	○	22	
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		○	○	○	○	○	23	
	24		≤ 12% Si, Curable	Hardened	90							24	
	25		> 12% Si, Not Curable		130							25	
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110							26	
	27		CuZn, CuSnZn (Brass)		90							27	
	28		CuSn, lead-free copper and electrolytic copper		100							28	
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic									29	
	30		Rubber, Wood, etc.									30	
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15						31	S
	32			Cured	280	30						32	
	33		Ni or Co Based	Annealed	250	25						33	
	34			Cured	350	38						34	
	35			Cast	320	34						35	
	36	Titanium Alloys	Pure Titanium		400 Rm		○	○				36	
	37		Alpha + Beta Alloys	Hardened	1050 Rm							37	
H	38	Hardened steel		Hardened	550	55						38	H
	39			Hardened	630	60						39	
	40	Chilled Cast Iron		Cast	400	42						40	
	41	Hardened Cast Iron		Hardened	550	55						41	

NC-SPOTTING DRILLS

D5306 SERIES
D5307 SERIES

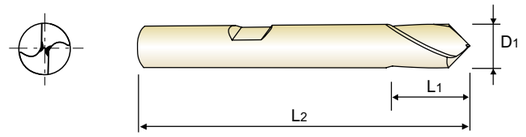
CARBIDE, NC-SPOTTING DRILLS 90°, 120°

- VOLLHARTMETALL NC-ANBOHRER 90°, 120°
- Forets carbure à pointer NC 90°, 120°
- PUNTE IN MD A CENTRARE NC 90°, 120°

▶**Application** : For more precise centering work on NC/CNC machines. The large diameter of the tool permits chamfering work after centering continuously.

▶**Verwendung** : Auf NC-Maschinen, Lehrenbohrwerken u.a. kapitalintensiven Bohrwerken, zum Zentrieren und Anfasen von Gewindebohrungen in einem Arbeitsgang. Besonders geeignet zum Anbohren von hochfesten Stählen, Stahlguß, Grauguß, Hartguß, Mangan-Hartstahl, CrNi-Stählen, Bronze, Leicht-und Buntmetallen.





CARBIDE | DIN 6535HB | h6 | 90° | 120° P.306

NC-Spotting drills 90°
NC-Anbohrer 90°

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D5306060	6.0	13	50
D5306080	8.0	23	60
D5306100	10.0	24	70
D5306120	12.0	24	70
D5306160	16.0	29	75
D5306200	20.0	35	100

NC-Spotting drills 120°
NC-Anbohrer 120°

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D5307060	6.0	13	50
D5307080	8.0	23	60
D5307100	10.0	24	70
D5307120	12.0	24	70
D5307160	16.0	29	75
D5307200	20.0	35	100

▶ TiN(D6306, D6307), TiCN(DG306, DG307) and TiAlN(DH306, DH307) are available on your request.

◎ : Excellent ○ : Good

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

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

NC-SPOTTING DRILLS

D5320 SERIES

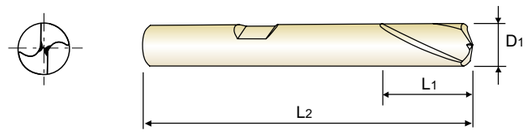
CARBIDE, NC-SPOTTING DRILLS 142°

- VOLLHARTMETALL NC-ANBOHRER 142°
- Forets carbure à pointer NC 142°
- PUNTE IN MD A CENTRARE NC 142°

▶**Application** : For more precise centering work on NC/CNC machines. The large diameter of the tool permits chamfering work after centering continuously.

▶**Verwendung** : Auf NC-Maschinen, Lehrenbohrwerken u.a. kapitalintensiven Bohrwerken, zum Zentrieren und Anfasen von Gewindebohrungen in einem Arbeitsgang. Besonders geeignet zum Anbohren von hochfesten Stählen, Stahlguß, Grauguß, Hartguß, Mangan-Hartstahl, CrNi-Stählen, Bronze, Leicht-und Buntmetallen.





CARBIDE | DIN 6535HB | h6 | 142° P.305

NC-Spotting drills 142°
NC-Anbohrer 142°

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
● D5320030	3.0	8	32
● D5320040	4.0	10	40
● D5320050	5.0	13	50
D5320060	6.0	13	50
D5320080	8.0	23	60
D5320100	10.0	24	70
D5320120	12.0	24	70
D5320160	16.0	29	75
D5320200	20.0	35	100

●with plain shank

◎ : Excellent ○ : Good

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

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

NC-SPOTTING DRILLS

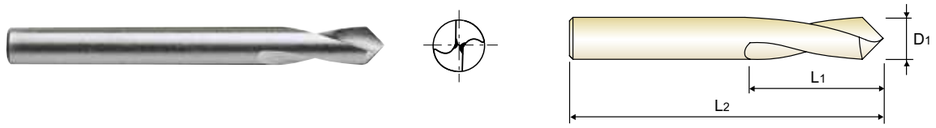
D2306 SERIES
D2321 SERIES

HSSCo8, NC-SPOTTING DRILLS 90°

- HSSCo8, NC-ANBOHRER 90°
- Forets HSSCo8 à pointer NC 90°
- PUNTE A CENTRARE NC 90°, HSSCo8

▶**Application** : For more precise centering work on NC/CNC Machines.
The large diameter of the tool permits chamfering work after centering continuously.

▶**Verwendung** : Für positionsgenaues und schnelles Anbohren mit NC/CNC-Maschinen und Bearbeitungszentren, die Ausführung mit Spitzenwinkel 90° ermöglicht sowohl ein Zentrieren, als auch das Vorbohren für einen nächstgrößeren Durchmesser.



NC | HSS Co8 | h6 | h6 | 90° | P.305-306

LONG LENGTH

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2306030	3.0	12	46
D2306040	4.0	12	55
D2306050	5.0	15	60
D2306060	6.0	20	66
D2306080	8.0	25	79
D2306100	10.0	25	89
D2306120	12.0	30	102
D2306160	16.0	35	115
D2306200	20.0	40	131

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2321030	3.0	12	80
D2321040	4.0	12	100
D2321050	5.0	15	120
D2321060	6.0	20	140
D2321080	8.0	25	140
D2321100	10.0	25	170
D2321120	12.0	30	170
D2321160	16.0	35	200
D2321200	20.0	40	200

► TiN, TiCN and TiAlN 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎			◎	○					○			◎	○	○		○	

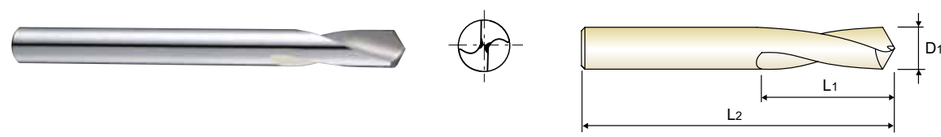
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29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

HSSCo8, NC-SPOTTING DRILLS 120°

- HSSCo8, NC-ANBOHRER 120°
- Forets HSSCo8 à pointer NC 120°
- PUNTE A CENTRARE NC 120°, HSSCo8

▶**Application** : For more precise centering work on NC/CNC Machines.
The large diameter of the tool permits chamfering work after centering continuously.

▶**Verwendung** : Für positionsgenaues und schnelles Anbohren mit NC/CNC-Maschinen und Bearbeitungszentren, die Ausführung mit Spitzenwinkel 90° ermöglicht sowohl ein Zentrieren, als auch das Vorbohren für einen nächstgrößeren Durchmesser.



NC | HSS Co8 | h6 | h6 | 120° | P.305-306

LONG LENGTH

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2307030	3.0	12	46
D2307040	4.0	12	55
D2307050	5.0	15	60
D2307060	6.0	20	66
D2307080	8.0	25	79
D2307100	10.0	25	89
D2307120	12.0	30	102
D2307160	16.0	35	115
D2307200	20.0	40	131

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2322060	6.0	20	140
D2322080	8.0	25	140
D2322100	10.0	25	170
D2322120	12.0	30	170

► TiN, TiCN and TiAlN 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎			◎	○					○			◎	○	○		○	

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

NC-SPOTTING DRILLS

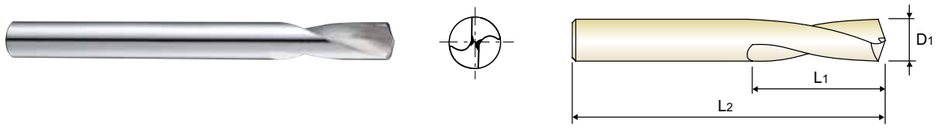
D2320 SERIES
D2323 SERIES

HSSCo8, NC-SPOTTING DRILLS 142°

- HSSCo8, NC-ANBOHRER 142°
- Forets HSSCo8 à pointer NC 142°
- PUNTE A CENTRARE NC 142°, HSSCo8

▶**Application** : For more precise centering work on NC/CNC Machines.
The large diameter of the tool permits chamfering work after centering continuously.

▶**Verwendung** : Für positionsgenaues und schnelles Anbohren mit NC/CNC-Maschinen und Bearbeitungszentren, die Ausführung mit Spitzenwinkel 90° ermöglicht sowohl ein Zentrieren, als auch das Vorbohren für einen nächstgrößeren Durchmesser.



NC | HSS Co8 | h6 | h6 | 142° | P.306

LONG LENGTH

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2320030	3.0	12	46
D2320040	4.0	12	55
D2320050	5.0	15	60
D2320060	6.0	20	66
D2320080	8.0	25	79
D2320100	10.0	25	89
D2320120	12.0	30	102
D2320160	16.0	35	115
D2320200	20.0	40	131

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2323060	6.0	20	140
D2323080	8.0	25	140
D2323100	10.0	25	170
D2323120	12.0	30	170

▶ TiN, TiCN and TiAlN 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	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎			◎	○					○			◎	○	○		○	

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

NC-SPOTTING DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D5306, D5307, D5320 SERIES CARBIDE, NC-SPOTTING DRILLS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0	10.0	12.0	16.0	20.0
P	1	Non-alloy steel	75	RPM	11940	7960	5970	3980	2980	2390	1990	1490	1190
				FEED	0.02-0.04	0.04-0.06	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19	0.15-0.21
	2		70	RPM	11140	7430	5570	3710	2790	2230	1860	1390	1110
				FEED	0.02-0.04	0.04-0.06	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19	0.15-0.21
	3		65	RPM	10350	6900	5170	3450	2590	2070	1720	1290	1030
				FEED	0.01-0.03	0.03-0.05	0.04-0.07	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19
	4												
	5												
	6	Low alloy steel	70	RPM	11140	7430	5570	3710	2790	2230	1860	1390	1110
				FEED	0.02-0.04	0.04-0.06	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19	0.15-0.21
	7		55	RPM	8750	5840	4380	2920	2190	1750	1460	1090	880
				FEED	0.01-0.03	0.03-0.05	0.04-0.07	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19
	8												
	9												
	10	High alloyed steel, and tool steel											
	11												
M	12	Stainless steel	35	RPM	5570	3710	2790	1860	1390	1110	930	700	560
				FEED	0.02-0.04	0.04-0.06	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19	0.15-0.21
	13												
	14												
K	15	Grey cast iron	90	RPM	14320	9550	7160	4770	3580	2860	2390	1790	1430
				FEED	0.03-0.05	0.05-0.07	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.16	0.15-0.20	0.18-0.24	0.22-0.28
	16		70	RPM	11140	7430	5570	3710	2790	2230	1860	1390	1110
				FEED	0.01-0.03	0.03-0.05	0.04-0.07	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19
	17	Nodular cast iron	90	RPM	14320	9550	7160	4770	3580	2860	2390	1790	1430
				FEED	0.03-0.05	0.05-0.07	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.16	0.15-0.20	0.18-0.24	0.22-0.28
	18												
	19	Malleable cast iron	60	RPM	9550	6370	4770	3180	2390	1910	1590	1190	950
				FEED	0.03-0.05	0.05-0.07	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.16	0.15-0.2	0.18-0.24	0.22-0.28
	20												
N	21	Aluminum-wrought alloy	165	RPM	26260	17510	13130	8750	6570	5250	4380	3280	2630
				FEED	0.04-0.06	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.15	0.15-0.19	0.18-0.23	0.21-0.27	0.25-0.31
	22		130	RPM	20690	13790	10350	6900	5170	4140	3450	2590	2070
				FEED	0.04-0.06	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.15	0.15-0.19	0.18-0.23	0.21-0.27	0.25-0.31
	23	Aluminum-cast, alloyed	110	RPM	17510	11670	8750	5840	4380	3500	2920	2190	1750
				FEED	0.04-0.06	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.15	0.15-0.19	0.18-0.23	0.21-0.27	0.25-0.31
	24												
	25												
	26	Copper and Copper Alloys (Bronze / Brass)											
	27												
	28												
	29	Non Metallic Materials											
	30												
S	31	Heat Resistant Super Alloys											
	32												
	33												
	34												
	35												
	36	Titanium Alloys	35	RPM	5570	3710	2790	1860	1390	1110	930	700	560
				FEED	0.01-0.03	0.03-0.05	0.04-0.06	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19
	37												
H	38	Hardened steel											
	39												
	40	Chilled Cast Iron											
	41	Hardened Cast Iron											

NC-SPOTTING DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D2320, D2321, D2322, D2323, D2306, D2307 SERIES

HSSCo8, NC-SPOTTING DRILLS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm)								
					2.0	3.0	4.0	6.0	8.0	10.0	12.0	16.0	20.0
P	1	Non-alloy steel	25	RPM	3980	2650	1990	1330	990	800	660	500	400
				FEED	0.02-0.04	0.04-0.06	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19	0.15-0.21
	2		25	RPM	3980	2650	1990	1330	990	800	660	500	400
				FEED	0.02-0.04	0.04-0.06	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19	0.15-0.21
	3		15	RPM	2390	1590	1190	800	600	480	400	300	240
				FEED	0.01-0.03	0.03-0.05	0.04-0.07	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19
	4												
	5												
	6	Low alloy steel	20	RPM	3180	2120	1590	1060	800	640	530	400	320
				FEED	0.02-0.04	0.04-0.06	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19	0.15-0.21
	7		15	RPM	2390	1590	1190	800	600	480	400	300	240
				FEED	0.01-0.03	0.03-0.05	0.04-0.07	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19
	8												
	9												
	10	High alloyed steel, and tool steel											
	11												
M	12	Stainless steel	15	RPM	2390	1590	1190	800	600	480	400	300	240
				FEED	0.02-0.04	0.04-0.06	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19	0.15-0.21
	13												
	14												
K	15	Grey cast iron	30	RPM	4770	3180	2390	1590	1190	950	800	600	480
				FEED	0.03-0.05	0.05-0.07	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.16	0.15-0.20	0.18-0.24	0.22-0.28
	16		25	RPM	3980	2650	1990	1330	990	800	660	500	400
				FEED	0.01-0.03	0.03-0.05	0.04-0.07	0.05-0.08	0.07-0.10	0.08-0.12	0.09-0.14	0.11-0.17	0.13-0.19
	17	Nodular cast iron	30	RPM	4770	3180	2390	1590	1190	950	800	600	480
				FEED	0.03-0.05	0.05-0.07	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.16	0.15-0.20	0.18-0.24	0.22-0.28
	18												
	19	Malleable cast iron	20	RPM	3180	2120	1590	1060	800	640	530	400	320
				FEED	0.03-0.05	0.05-0.07	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.16	0.15-0.20	0.18-0.24	0.22-0.28
	20												
N	21	Aluminum-wrought alloy	65	RPM	10350	6900	5170	3450	2590	2070	1720	1290	1030
				FEED	0.04-0.06	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.15	0.15-0.19	0.18-0.23	0.21-0.27	0.25-0.31
	22		60	RPM	9550	6370	4770	3180	2390	1910	1590	1190	950
				FEED	0.04-0.06	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.15	0.15-0.19	0.18-0.23	0.21-0.27	0.25-0.31
	23	Aluminum-cast, alloyed	50	RPM	7960	5310	3980	2650	1990	1590	1330	990	800
				FEED	0.04-0.06	0.06-0.09	0.08-0.11	0.10-0.13	0.12-0.15	0.15-0.19	0.18-0.23	0.21-0.27	0.25-0.31
	24												
	25												
	26	Copper and Copper Alloys (Bronze / Brass)											
	27												
	28												
	29	Non Metallic Materials											
	30												
S	31	Heat Resistant Super Alloys											
	32												
	33												
	34												
	35												
	36	Titanium Alloys											
	37												
H	38	Hardened steel											
	39												
	40	Chilled Cast Iron											
	41	Hardened Cast Iron											



Leading Through Innovation

SOLID CARBIDE, HSS & HSS-E

CENTER DRILLS

ZENTRIERBOHRER

- For General Purpose
- Für allgemeine Anwendungen

SELECTION GUIDE

YG HOLEMAKING TOOLS

SOLID CARBIDE, HSS & HSS-E CENTER DRILLS

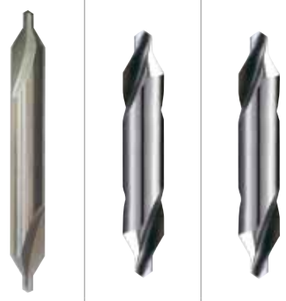
For General Purpose

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.317

SERIES	D5303	DV303	DV333	DV334	D1303	D1343	D1313	D1353	D1363	D1373	DV383
TOOL MATERIAL	CARBIDE	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E
TYPE	FORM A	FORM A	FORM A	FORM A	FORM A	FORM A	FORM B	FORM B	FORM R	FORM R	FORM R
SIZE MIN	D1.0	D0.5	D1.6	D1.0	D0.5	D0.5	D1.0	D2.0	D0.5	D0.8	D1.6
SIZE MAX	D6.3	D6.3	D6.3	D5.0	D10.0	D8.0	D6.3	D6.3	D8.0	D5.0	D6.3
PAGE	310	311	311	312	313	313	314	314	315	315	316
SURFACE TREATMENT	Bright			Bright							





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

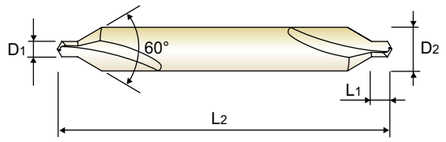
CENTER DRILLS

D5303 SERIES

CARBIDE, CENTER DRILLS / FORM A

- VOLLHARTMETALL, ZENTRIERBOHRER / FORM A
- Forets carbure à centrer / Forme A
- PUNTE A CENTRARE IN MD / FORMA A



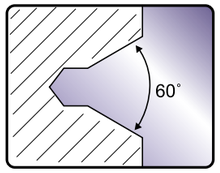


DIN 333 | CARBIDE | h8 | k12 | 120° | P.317

FORM A (60°)

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
D5303010	1.0	3.15	1.3	31.5
D5303912	1.25	3.15	1.6	31.5
D5303016	1.6	4	2	35.5
D5303020	2.0	5	2.5	40
D5303025	2.5	6.3	3.1	45
D5303931	3.15	8	3.9	50
D5303040	4.0	10	5	56
D5303050	5.0	12.5	6.3	63
D5303063	6.3	16	8	71



◎ : Excellent ○ : Good

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

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

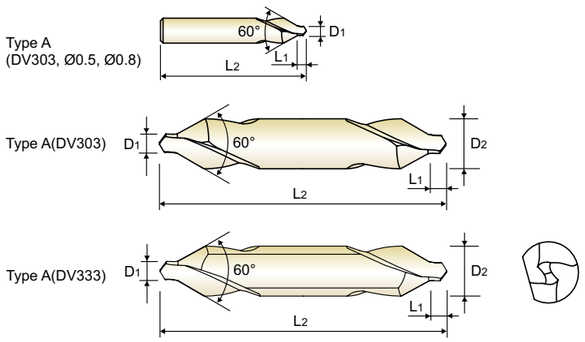
CENTER DRILLS

DV303 SERIES
DV333 SERIES

HSS-E, CENTER DRILLS / FORM A

- HSS-EX, ZENTRIERBOHRER / FORM A
- Forets HSS-EX à centrer / Forme A
- PUNTE A CENTRARE PER TORNI IN HSS-EX / FORMA A





DIN 333 | HSS-E | h8 | k12 | 120° | P.318

FORM A (60°)

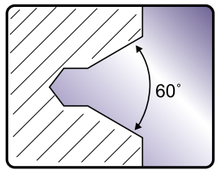
EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
DV303005	0.5	3.15	0.8	25
DV303008	0.8	3.15	1.1	25
DV303010	1.0	3.15	1.3	31.5
DV303912	1.25	3.15	1.6	31.5
DV303016	1.6	4	2	35.5
DV303020	2.0	5	2.5	40
DV303025	2.5	6.3	3.1	45
DV303931	3.15	8	3.9	50
DV303040	4.0	10	5	56
DV303050	5.0	12.5	6.3	63
DV303063	6.3	16	8	71

▶ Under 1.0mm : Single End

FORM A (60°), FLAT

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
DV333016	1.6	4	2	35.5
DV333020	2.0	5	2.5	40
DV333025	2.5	6.3	3.1	45
DV333931	3.15	8	3.9	50
DV333040	4.0	10	5	56
DV333050	5.0	12.5	6.3	63
DV333063	6.3	16	8	71



◎ : Excellent ○ : Good

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

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

CENTER DRILLS

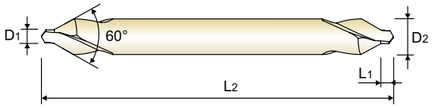
DV334 SERIES

HSS-E, CENTER DRILLS EXTRA LONG / FORM A

- HSS-EX, ZENTRIERBOHRER / FORM A
- Forets HSS-EX à centrer / Forme A, série extra-longue
- PUNTE A CENTRARE PER TORNI IN HSS-EX / FORMA A



Type A(DV334)



HSS-E | h8 | k12 | 120° | P.318

EXTRA LONG / FORM A (60°)

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
DV334010	1.0	4	1.3	120
DV334016	1.6	5	2	120
DV334020	2.0	6	2.5	120
DV334025	2.5	8	3.1	120
DV334931	3.15	10	3.9	120
DV334040	4.0	12	5	120
DV334050	5.0	14	6.3	120



◎ : Excellent ○ : Good

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

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

CENTER DRILLS

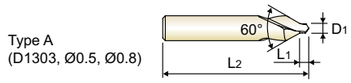
D1303 SERIES
D1343 SERIES

HSS, CENTER DRILLS / FORM A

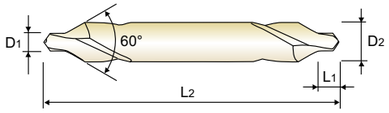
- HSS, ZENTRIERBOHRER / FORM A
- Forets HSS à centrer / Forme A
- PUNTE A CENTRARE PER TORNI IN HSS / FORMA A



Type A (D1303, Ø0.5, Ø0.8)

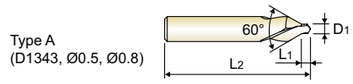


Type A(D1303)

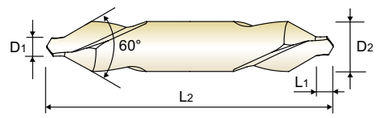




Type A (D1343, Ø0.5, Ø0.8)



Type A(D1343)



DIN 333 | HSS | h8 | k12 | 120° | P.318

FORM A (60°)

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
D1303005	0.5	3.15	0.8	25
D1303008	0.8	3.15	1.1	25
D1303010	1.0	3.15	1.3	31.5
D1303912	1.25	3.15	1.6	31.5
D1303016	1.6	4	2	35.5
D1303020	2.0	5	2.5	40
D1303025	2.5	6.3	3.1	45
D1303931	3.15	8	3.9	50
D1303040	4.0	10	5	56
D1303050	5.0	12.5	6.3	63
D1303063	6.3	16	8	71
D1303080	8.0	20	10.1	80
D1303100	10.0	25	12.8	100

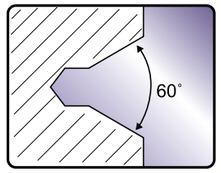
▶ Under 1.0mm : Single End

LEFT HELIX / FORM A (60°)

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
D1343005	0.5	3.15	0.8	25
D1343008	0.8	3.15	1.1	25
D1343010	1.0	3.15	1.3	31.5
D1343912	1.25	3.15	1.6	31.5
D1343016	1.6	4	2	35.5
D1343020	2.0	5	2.5	40
D1343025	2.5	6.3	3.1	45
D1343931	3.15	8	3.9	50
D1343040	4.0	10	5	56
D1343050	5.0	12.5	6.3	63
D1343063	6.3	16	8	71
D1343080	8.0	20	10.1	80

▶ Under 1.0mm : Single End



◎ : Excellent ○ : Good

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

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

CENTER DRILLS

D1313 SERIES
D1353 SERIES

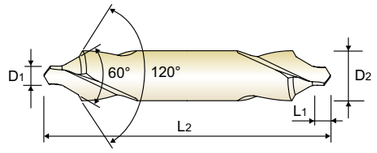
HSS, CENTER DRILLS / FORM B

- HSS, ZENTRIERBOHRER / FORM B
- Forets HSS à centrer / Forme B
- PUNTE A CENTRARE PER TORNI IN HSS / FORMA B

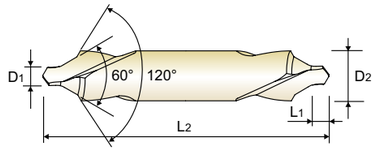




Type B(D1313)



Type B(D1353)

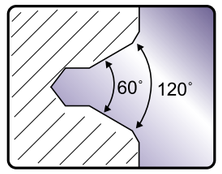


DIN 333 | HSS | h8 | k12 | 120° | P.318

FORM B (60° + 120°) — **LEFT HELIX / FORM B (60° + 120°)** — Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
D1313010	1.0	4	1.3	35.5
D1313912	1.25	5	1.6	40
D1313016	1.6	6.3	2	45
D1313020	2.0	8	2.5	50
D1313025	2.5	10	3.1	55
D1313931	3.15	11.2	3.9	60
D1313040	4.0	14	5	67
D1313050	5.0	18	6.3	75
D1313063	6.3	20	8	80

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
D1353020	2.0	8	2.5	50
D1353025	2.5	10	3.1	55
D1353931	3.15	11.2	3.9	60
D1353040	4.0	14	5	67
D1353063	6.3	20	8	80



◎ : Excellent ○ : Good

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

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

CENTER DRILLS

D1363 SERIES
D1373 SERIES

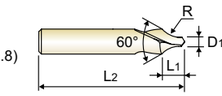
HSS, CENTER DRILLS / FORM R

- HSS, ZENTRIERBOHRER / FORM R
- Forets HSS à centrer / Forme R
- PUNTE A CENTRARE PER TORNI IN HSS / FORMA R

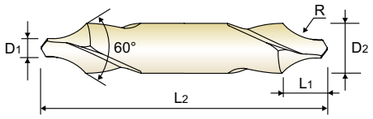




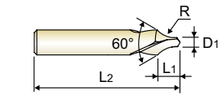
Type R (D1363, Ø0.5, Ø0.8)



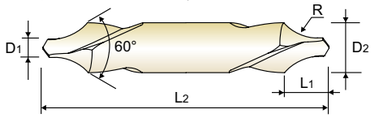
Type R(D1363)



Type R (D1373, Ø0.8)



Type R (D1373)



DIN 333 | HSS | h8 | k12 | 120° | P.318

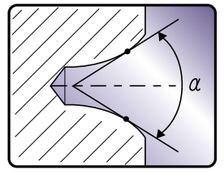
FORM R — **LEFT HELIX / FORM R** — Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length (Include Radius) L1	Overall Length L2	Radius R
D1363005	0.5	3.15	2.12	25	1.25
D1363008	0.8	3.15	2.65	25	2
D1363010	1.0	3.15	3	31.5	2.5
D1363912	1.25	3.15	3.35	31.5	3.15
D1363016	1.6	4	4.25	35.5	4
D1363020	2.0	5	5.3	40	5
D1363025	2.5	6.3	6.7	45	6.3
D1363931	3.15	8	8.5	50	8
D1363040	4.0	10	10.6	56	10
D1363050	5.0	12.5	13.2	63	12.5
D1363063	6.3	16	17	71	16
D1363080	8.0	20	21.2	80	20

▶ Under 1.0mm : Single End

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length (Include Radius) L1	Overall Length L2	Radius R
D1373008	0.8	3.15	2.65	25	2
D1373010	1.0	3.15	3	31.5	2.5
D1373912	1.25	3.15	3.35	31.5	3.15
D1373016	1.6	4	4.25	35.5	4
D1373020	2.0	5	5.3	40	5
D1373025	2.5	6.3	6.7	45	6.3
D1373931	3.15	8	8.5	50	8
D1373040	4.0	10	10.6	56	10
D1373050	5.0	12.5	13.2	63	12.5

▶ Under 1.0mm : Single End



◎ : Excellent ○ : Good

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

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

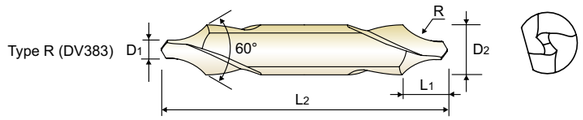
CENTER DRILLS

DV383 SERIES

HSS-E, CENTER DRILLS / FORM R

- HSS-EX, ZENTRIERBOHRER / FORM R
- Forets HSS-EX à centrer / Forme R
- PUNTE A CENTRARE PER TORNI IN HSS-EX / FORMA R



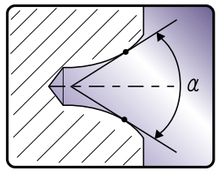


DIN 333 | HSS-E | h8 | k12 | 120° P.318

FORM R / FLAT

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Pilot Length (Include Radius)	Overall Length	Radius
	D_1	D_2	L_1	L_2	R
DV383016	1.6	4	4.25	35.5	4
DV383020	2.0	5	5.3	40	5
DV383025	2.5	6.3	6.7	45	6.3
DV383931	3.15	8	8.5	50	8
DV383040	4.0	10	10.6	56	10
DV383050	5.0	12.5	13.2	63	12.5
DV383063	6.3	16	17	71	16



◎ : Excellent ○ : Good

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

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

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

CENTER DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

D5303 SERIES CARBIDE, CENTER DRILLS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 1.0	2.0	3.0	4.0	5.0	6.0
P	1	Non-alloy steel	50	RPM	15920	7960	5310	3980	3180	2650
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12
	2		40	RPM	12730	6370	4240	3180	2550	2120
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12
	3		30	RPM	9550	4770	3180	2390	1910	1590
				FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07	0.04-0.08
	4									
	5									
	6	Low alloy steel	40	RPM	12730	6370	4240	3180	2550	2120
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12
	7		30	RPM	9550	4770	3180	2390	1910	1590
				FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07	0.04-0.08
	8									
	9									
	10	High alloyed steel, and tool steel								
	11									
M	12	Stainless steel	20	RPM	6370	3180	2120	1590	1270	1060
				FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07	0.04-0.08
	13									
	14									
K	15	Grey cast iron	60	RPM	19100	9550	6370	4770	3820	3180
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12
	16		50	RPM	15920	7960	5310	3980	3180	2650
				FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07	0.04-0.08
	17	Nodular cast iron	60	RPM	19100	9550	6370	4770	3820	3180
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12
	18									
	19	Malleable cast iron	40	RPM	12730	6370	4240	3180	2550	2120
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12
	20									
N	21	Aluminum-wrought alloy								
	22									
	23	Aluminum-cast, alloyed								
	24									
	25									
	26	Copper and Copper Alloys (Bronze / Brass)								
	27									
	28									
	29	Non Metallic Materials								
	30									
S	31	Heat Resistant Super Alloys								
	32									
	33									
	34									
	35									
	36	Titanium Alloys								
	37									
H	38	Hardened steel								
	39									
	40	Chilled Cast Iron								
	41	Hardened Cast Iron								

CENTER DRILLS

DV303, DV333, DV334, D1303, D1343, D1313, D1353, D1363, D1373, DV383 SERIES

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSS & HSS-E, CENTER DRILLS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm) 1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0
P	1	Non-alloy steel	40	RPM	12730	6370	4240	3180	2550	2120	1590	1270
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12	0.09-0.15	0.12-0.18
	2		30	RPM	9550	4770	3180	2390	1910	1590	1190	950
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12	0.09-0.15	0.12-0.18
	3		25	RPM	7960	3980	2650	1990	1590	1330	990	800
				FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07	0.04-0.08	0.06-0.12	0.08-0.14
	4											
	5											
	6	Low alloy steel	30	RPM	9550	4770	3180	2390	1910	1590	1190	950
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12	0.09-0.15	0.12-0.18
	7		20	RPM	6370	3180	2120	1590	1270	1060	800	640
				FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07	0.04-0.08	0.06-0.12	0.08-0.14
	8											
	9											
	10	High alloyed steel, and tool steel										
	11											
M	12	Stainless steel	10	RPM	3180	1590	1060	800	640	530	400	320
				FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07	0.04-0.08	0.06-0.12	0.08-0.14
	13											
	14											
K	15	Grey cast iron	40	RPM	12730	6370	4240	3180	2550	2120	1590	1270
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12	0.09-0.15	0.12-0.18
	16		30	RPM	9550	4770	3180	2390	1910	1590	1190	950
				FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07	0.04-0.08	0.06-0.12	0.08-0.14
	17	Nodular cast iron	40	RPM	12730	6370	4240	3180	2550	2120	1590	1270
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12	0.09-0.15	0.12-0.18
	18											
	19	Malleable cast iron	25	RPM	7960	3980	2650	1990	1590	1330	990	800
				FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.12	0.06-0.12	0.12-0.18
	20											
N	21	Aluminum-wrought alloy										
	22											
	23	Aluminum-cast, alloyed										
	24											
	25											
	26	Copper and Copper Alloys (Bronze / Brass)										
	27											
	28											
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys										
	32											
	33											
	34											
	35											
	36	Titanium Alloys										
	37											
H	38	Hardened steel										
	39											
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										



INSERTS & HOLDERS

SPADE DRILLS

BOHRMESSER

- For General Machines and Drilling Large Diameters Longer Tool Life and High Productivity
- Für allgemeine Maschinen und zum Bohren großer Durchmesser, längere Werkzeugstandzeiten und höhere Produktivität

SELECTION GUIDE

YG HOLEMAKING TOOLS

Please visit globalyg1.com/mat for material search

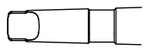
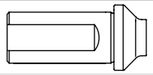
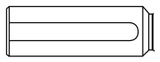
INSERTS & HOLDERS
SPADE DRILLS

For General Machines and Drilling Large Diameters
Longer Tool Life and High Productivity

◎ : Excellent ○ : Good

Recommended cutting conditions : P.395

SERIES							1~8	Y,Z,0,1~4	Y,Z,0,1,2
TOOL MATERIAL							HSS M4	SUPER HSS T15	PREMIUM HSS M48
POINT							STANDARD	STANDARD	STANDARD
SIZE MIN							Ø17.86(#1)	Ø9.5(#Y)	Ø9.5(#Y)
SIZE MAX							Ø114.3(#8)	Ø65.09(#4)	Ø35(#2)
PAGE							322	328	333
SURFACE TREATMENT							TiN / TiCN / TiAlN		
ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc			
P	1	Non-alloy steel	About 0.15% C	Annealed	125		○	◎	◎
	2		About 0.45% C	Annealed	190	13	○	◎	◎
	3		About 0.45% C	Quenched & Tempered	250	25	○	◎	◎
	4		About 0.75% C	Annealed	270	28	○	◎	◎
	5		About 0.75% C	Quenched & Tempered	300	32			
	6	Low alloy steel		Annealed	180	10	○	◎	◎
	7			Quenched & Tempered	275	29	○	◎	◎
	8			Quenched & Tempered	300	32		○	◎
	9			Quenched & Tempered	350	38		○	◎
	10	High alloyed steel, and tool steel		Annealed	200	15		○	◎
	11			Quenched & Tempered	325	35		○	◎
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	◎	○	
	13		Martensitic	Quenched & Tempered	240	23	◎	○	
	14		Austenitic		180	10	◎	○	
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎	○	○
	16		Pearlitic (Martensitic)		260	26	○	◎	◎
	17	Nodular cast iron	Ferritic		160	3	◎	○	○
	18		Pearlitic		250	25	○	◎	◎
	19	Malleable cast iron	Ferritic		130		◎	○	○
	20		Pearlitic		230	21	○	◎	◎
N	21	Aluminum-wrought alloy	Not Curable		60		◎	○	○
	22		Curable	Hardened	100		◎	○	○
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75				
	24		≤ 12% Si, Curable	Hardened	90				
	25		> 12% Si, Not Curable		130				
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110				
	27		CuZn, CuSnZn (Brass)		90		◎	○	○
	28		CuSn, lead-free copper and electrolytic copper		100				
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic						
	30		Rubber, Wood, etc.						
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15		◎	◎
	32			Cured	280	30		○	◎
	33		Ni or Co Based	Annealed	250	25		○	◎
	34			Cured	350	38		○	◎
	35			Cast	320	34		○	◎
	36	Titanium Alloys	Pure Titanium		400 Rm				
	37		Alpha + Beta Alloys	Hardened	1050 Rm				
H	38	Hardened steel		Hardened	550	55		○	◎
	39			Hardened	630	60			
	40	Chilled Cast Iron		Cast	400	42			
	41	Hardened Cast Iron		Hardened	550	55			

TAPER SHANK		TAPER SHANK HOLDERS - INCH/METRIC HALTER MIT MORSEKEGEL	372
FLANGED SHANK		FLANGED STRAIGHT SHANK HOLDERS - INCH/METRIC HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE	382
STRAIGHT SHANK		STRAIGHT SHANK HOLDERS - INCH HALTER MIT ZYLINDERSCHAFT	389

Y,Z,0,1,2	Y,Z,0,1~3	Y,Z,0,1~3	1~3	Y,Z,0,1~3	Y,Z,0,1,2	Y,Z,0,1,2	Y,Z,0,1~3	Y,Z,0,1~3	Y,Z,0,1,2	
CARBIDE K10	CARBIDE K20	CARBIDE P40	HSS M4	SUPER HSS T15	PREMIUM HSS M48	CARBIDE K10	CARBIDE K20	CARBIDE P40	SUPER COBALT T15	
STANDARD	STANDARD	STANDARD	SM-POINT	SM-POINT	SM-POINT	SM-POINT	SM-POINT	SM-POINT	FALT BOTTOM	
Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø17.86(#1)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	
Ø35(#2)	Ø47.63(#3)	Ø47.63(#3)	Ø47.63(#3)	Ø47.63(#3)	Ø35(#2)	Ø35(#2)	Ø47.63(#3)	Ø47.63(#3)	Ø35(#2)	
336	339	343	348	351	355	358	361	365	369	
TiN / TiCN / TiAlN									TiN / Hardslick / TiAlN	
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SPADE DRILLS

SERIES 1, 2

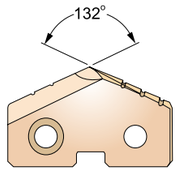
SPADE DRILL INSERTS - HSS M4

- EINWEG BOHREINSATZ - HSS M4
- Plaquettes SPADE DRILL - HSS M4
- CUSPIDI SPADE DRILL - HSS M4

- ▶ For general use in steels and cast irons.
- ▶ Set up time can be reduced due to changing inserts easily on the machine.
- ▶ Any non-standard size available.

- ▶ Für allgemeine Anwendung in Stahl und Gusseisen
- ▶ Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.395

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. HSS M4 TiN	EDP No. HSS M4 TiCN	EDP No. HSS M4 TiAlN
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	**S1405045**	**S1410045**	**S1415045**
		18.00	.7087		**S1455180**	**S1460180**	**S1465180**
	23/32	18.26	.7188		**S1405046**	**S1410046**	**S1415046**
		18.50	.7283		**S1455185**	**S1460185**	**S1465185**
	47/64	18.65	.7344		**S1405047**	**S1410047**	**S1415047**
		19.00	.7480		**S1455190**	**S1460190**	**S1465190**
	3/4	19.05	.7500		**S1405048**	**S1410048**	**S1415048**
	49/64	19.45	.7656		**S1405049**	**S1410049**	**S1415049**
		19.50	.7677		**S1455195**	**S1460195**	**S1465195**
	25/32	19.84	.7813		**S1405050**	**S1410050**	**S1415050**
		20.00	.7874		**S1455200**	**S1460200**	**S1465200**
	51/64	20.24	.7969		**S1405051**	**S1410051**	**S1415051**
		20.50	.8071		**S1455205**	**S1460205**	**S1465205**
	13/16	20.64	.8125		**S1405052**	**S1410052**	**S1415052**
		21.00	.8268		**S1455210**	**S1460210**	**S1465210**
	27/32	21.43	.8438		**S1405054**	**S1410054**	**S1415054**
	55/64	21.83	.8594		**S1405055**	**S1410055**	**S1415055**
		22.00	.8661		**S1455220**	**S1460220**	**S1465220**
	7/8	22.23	.8750		**S1405056**	**S1410056**	**S1415056**
	57/64	22.62	.8906		**S1405057**	**S1410057**	**S1415057**
		23.00	.9055		**S1455230**	**S1460230**	**S1465230**
	29/32	23.02	.9063		**S1405058**	**S1410058**	**S1415058**
	59/64	23.42	.9219		**S1405059**	**S1410059**	**S1415059**
	15/16	23.81	.9375		**S1405060**	**S1410060**	**S1415060**
		24.00	.9449		**S1455240**	**S1460240**	**S1465240**
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	**S1405062**	**S1410062**	**S1415062**
	63/64	25.00	.9843		**S1455250**	**S1460250**	**S1465250**
	1	25.40	1.0000		**S1405100**	**S1410100**	**S1415100**
	1-1/64	25.80	1.0156		**S1405101**	**S1410101**	**S1415101**
		26.00	1.0236		**S1455260**	**S1460260**	**S1465260**
	1-1/32	26.19	1.0313		**S1405102**	**S1410102**	**S1415102**
	1-3/64	26.59	1.0469		**S1405103**	**S1410103**	**S1415103**
	1-1/16	26.99	1.0625		**S1405104**	**S1410104**	**S1415104**
		27.00	1.0630		**S1455270**	**S1460270**	**S1465270**

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 2, 3

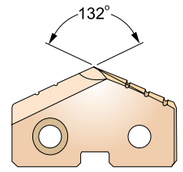
SPADE DRILL INSERTS - HSS M4

- EINWEG BOHREINSATZ - HSS M4
- Plaquettes FORETS A LAME - HSS M4
- CUSPIDI SPADE DRILL - HSS M4

- ▶ For general use in steels and cast irons.
- ▶ Set up time can be reduced due to changing inserts easily on the machine.
- ▶ Any non-standard size available.

- ▶ Für allgemeine Anwendung in Stahl und Gusseisen
- ▶ Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.395

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. HSS M4 TiN	EDP No. HSS M4 TiCN	EDP No. HSS M4 TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	1-3/32	27.78	1.0938	4.8 (3/16)	**S1405106**	**S1410106**	**S1415106**
		28.00	1.1024		**S1455280**	**S1460280**	**S1465280**
	1-7/64	28.18	1.1094		**S1405107**	**S1410107**	**S1415107**
	1-1/8	28.58	1.1250		**S1405108**	**S1410108**	**S1415108**
		29.00	1.1417		**S1455290**	**S1460290**	**S1465290**
	1-5/32	29.37	1.1563		**S1405110**	**S1410110**	**S1415110**
		30.00	1.1811		**S1455300**	**S1460300**	**S1465300**
	1-3/16	30.16	1.1875		**S1405112**	**S1410112**	**S1415112**
	1-7/32	30.96	1.2188		**S1405114**	**S1410114**	**S1415114**
		31.00	1.2205		**S1455310**	**S1460310**	**S1465310**
	1-1/4	31.75	1.2500		**S1405116**	**S1410116**	**S1415116**
		32.00	1.2598		**S1455320**	**S1460320**	**S1465320**
	1-9/32	32.54	1.2813		**S1405118**	**S1410118**	**S1415118**
		33.00	1.2992		**S1455330**	**S1460330**	**S1465330**
	1-5/16	33.34	1.3125		**S1405120**	**S1410120**	**S1415120**
		34.00	1.3386		**S1455340**	**S1460340**	**S1465340**
	1-11/32	34.13	1.3438		**S1405122**	**S1410122**	**S1415122**
	1-3/8	34.93	1.3750		**S1405124**	**S1410124**	**S1415124**
		35.00	1.3780		**S1455350**	**S1460350**	**S1465350**
3 Ø34.37 (1.353) to Ø47.80 (1.882)	1-13/32	35.72	1.4063	6.4 (1/4)	**S1405126**	**S1410126**	**S1415126**
		36.00	1.4173		**S1455360**	**S1460360**	**S1465360**
	1-7/16	36.51	1.4375		**S1405128**	**S1410128**	**S1415128**
		37.00	1.4567		**S1455370**	**S1460370**	**S1465370**
	1-15/32	37.31	1.4688		**S1405130**	**S1410130**	**S1415130**
		38.00	1.4961		**S1455380**	**S1460380**	**S1465380**
	1-1/2	38.10	1.5000		**S1405132**	**S1410132**	**S1415132**
	1-17/32	38.89	1.5313		**S1405134**	**S1410134**	**S1415134**
		39.00	1.5354		**S1455390**	**S1460390**	**S1465390**
	1-9/16	39.69	1.5625		**S1405136**	**S1410136**	**S1415136**
		40.00	1.5748		**S1455400**	**S1460400**	**S1465400**
	1-19/32	40.48	1.5938		**S1405138**	**S1410138**	**S1415138**
		41.00	1.6142		**S1455410**	**S1460410**	**S1465410**
	1-5/8	41.28	1.6250		**S1405140**	**S1410140**	**S1415140**
		42.00	1.6535		**S1455420**	**S1460420**	**S1465420**

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 3, 4

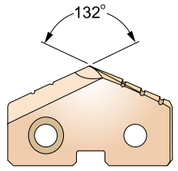
SPADE DRILL INSERTS - HSS M4

EINWEG BOHREINSATZ - HSS M4
Plaquettes FORETS A LAME - HSS M4
CUSPIDI SPADE DRILL - HSS M4

- For general use in steels and cast irons.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.395

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. HSS M4 TiN	TiCN	TiAlN
3 Ø34.37 (1.353) to Ø47.80 (1.882)	1-21/32	42.07	1.6563	6.4 (1/4)	S1405142	S1410142	S1415142
	1-11/16	42.86	1.6875		S1405144	S1410144	S1415144
		43.00	1.6929		S1455430	S1460430	S1465430
	1-23/32	43.66	1.7188		S1405146	S1410146	S1415146
		44.00	1.7323		S1455440	S1460440	S1465440
	1-3/4	44.45	1.7500		S1405148	S1410148	S1415148
		45.00	1.7717		S1455450	S1460450	S1465450
	1-25/32	45.24	1.7813		S1405150	S1410150	S1415150
		46.00	1.8110		S1455460	S1460460	S1465460
	1-13/16	46.04	1.8125		S1405152	S1410152	S1415152
	1-27/32	46.83	1.8438		S1405154	S1410154	S1415154
		47.00	1.8504		S1455470	S1460470	S1465470
	1-7/8	47.63	1.8750		S1405156	S1410156	S1415156
4 Ø46.99 (1.850) to Ø65.28 (2.570)		48.00	1.8898	7.9 (5/16)	S1455480	S1460480	S1465480
	1-29/32	48.42	1.9063		S1405158	S1410158	S1415158
		49.00	1.9291		S1455490	S1460490	S1465490
	1-15/16	49.21	1.9375		S1405160	S1410160	S1415160
		50.00	1.9685		S1455500	S1460500	S1465500
	1-31/32	50.01	1.9688		S1405162	S1410162	S1415162
	2	50.80	2.0000		S1405200	S1410200	S1415200
		51.00	2.0079		S1455510	S1460510	S1465510
	2-1/32	51.59	2.0313		S1405202	S1410202	S1415202
	2-3/64	52.00	2.0472		S1455520	S1460520	S1465520
	2-1/16	52.39	2.0625		S1405204	S1410204	S1415204
		53.00	2.0866		S1455530	S1460530	S1465530
	2-3/32	53.18	2.0938		S1405206	S1410206	S1415206
	2-1/8	53.98	2.1250		S1405208	S1410208	S1415208
		54.00	2.1260		S1455540	S1460540	S1465540
	2-5/32	54.77	2.1563		S1405210	S1410210	S1415210
		55.00	2.1654		S1455550	S1460550	S1465550
	2-3/16	55.56	2.1875		S1405212	S1410212	S1415212
		56.00	2.2047		S1455560	S1460560	S1465560
	2-7/32	56.36	2.2188		S1405214	S1410214	S1415214
		57.00	2.2441		S1455570	S1460570	S1465570

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 4, 5

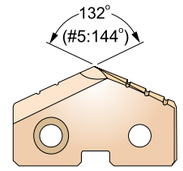
SPADE DRILL INSERTS - HSS M4

EINWEG BOHREINSATZ - HSS M4
Plaquettes FORETS A LAME - HSS M4
CUSPIDI SPADE DRILL - HSS M4

- For general use in steels and cast irons.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.395

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. HSS M4 TiN	TiCN	TiAlN
4 Ø46.99 (1.850) to Ø65.28 (2.570)	2-1/4	57.15	2.2500	7.9 (5/16)	S1405216	S1410216	S1415216
	2-9/32	57.94	2.2813		S1405218	S1410218	S1415218
		58.00	2.2835		S1455580	S1460580	S1465580
	2-5/16	58.74	2.3125		S1405220	S1410220	S1415220
		59.00	2.3228		S1455590	S1460590	S1465590
	2-11/32	59.53	2.3438		S1405222	S1410222	S1415222
		60.00	2.3622		S1455600	S1460600	S1465600
	2-3/8	60.33	2.3750		S1405224	S1410224	S1415224
		61.00	2.4016		S1455610	S1460610	S1465610
	2-13/32	61.12	2.4063		S1405226	S1410226	S1415226
	2-7/16	61.91	2.4375		S1405228	S1410228	S1415228
		62.00	2.4409		S1455620	S1460620	S1465620
	2-15/32	62.71	2.4688		S1405230	S1410230	S1415230
		63.00	2.4803		S1455630	S1460630	S1465630
	2-1/2	63.50	2.5000		S1405232	S1410232	S1415232
		64.00	2.5197		S1455640	S1460640	S1465640
	2-17/32	64.29	2.5313		S1405234	S1410234	S1415234
		65.00	2.5591		S1455650	S1460650	S1465650
	2-9/16	65.09	2.5625		S1405236	S1410236	S1415236
5 Ø62.38 (2.456) to Ø76.20 (3.000)	2-1/2	63.50	2.5000	11.1 (7/16)	S14052D2	S14102D2	S14152D2
		64.00	2.5197		S145564A	S146064A	S146564A
	2-17/32	64.29	2.5313		S14052D4	S14102D4	S14152D4
	2-9/16	65.09	2.5625		S14052D6	S14102D6	S14152D6
	2-19/32	65.88	2.5938		S1405238	S1410238	S1415238
		66.00	2.5984		S1455660	S1460660	S1465660
	2-5/8	66.68	2.6250		S1405240	S1410240	S1415240
	2-21/32	67.47	2.6563		S1405242	S1410242	S1415242
		68.00	2.6772		S1455680	S1460680	S1465680
	2-11/16	68.26	2.6875		S1405244	S1410244	S1415244
	2-23/32	69.05	2.7188		S1405246	S1410246	S1415246
	2-3/4	69.85	2.7500		S1405248	S1410248	S1415248
		70.00	2.7559		S1455700	S1460700	S1465700
	2-25/32	70.64	2.7813		S1405250	S1410250	S1415250
	2-13/16	71.44	2.8125		S1405252	S1410252	S1415252

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 5, 6, 7

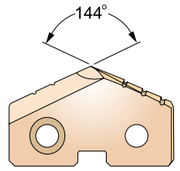
SPADE DRILL INSERTS - HSS M4

EINWEG BOHREINSATZ - HSS M4
Plaquettes FORETS A LAME - HSS M4
CUSPIDI SPADE DRILL - HSS M4

- For general use in steels and cast irons.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.395

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. HSS M4 TiN	TiCN	TiAlN
5 Ø62.38 (2.456) to Ø76.20 (3.000)		72.00	2.8346	11.1 (7/16)	S1455720	S1460720	S1465720
	2-27/32	72.23	2.8438		S1405254	S1410254	S1415254
	2-7/8	73.03	2.8750		S1405256	S1410256	S1415256
	2-29/32	73.82	2.9063		S1405258	S1410258	S1415258
		74.00	2.9134		S1455740	S1460740	S1465740
	2-15/16	74.61	2.9375		S1405260	S1410260	S1415260
	2-31/32	75.41	2.9688		S1405262	S1410262	S1415262
		76.00	2.9921		S1455760	S1460760	S1465760
	3	76.20	3.0000		S1405300	S1410300	S1415300
6 Ø76.23 (3.001) to Ø89.08 (3.507)	3-1/32	76.99	3.0313	11.1 (7/16)	S1405302	S1410302	S1415302
	3-1/16	77.79	3.0625		S1405304	S1410304	S1415304
		78.00	3.0709		S1455780	S1460780	S1465780
	3-3/32	78.58	3.0938		S1405306	S1410306	S1415306
	3-1/8	79.38	3.1250		S1405308	S1410308	S1415308
		80.00	3.1496		S1455800	S1460800	S1465800
	3-5/32	80.17	3.1563		S1405310	S1410310	S1415310
	3-3/16	80.96	3.1875		S1405312	S1410312	S1415312
	3-7/32	81.76	3.2188		S1405314	S1410314	S1415314
		82.00	3.2283		S1455820	S1460820	S1465820
	3-1/4	82.55	3.2500	11.1 (7/16)	S1405316	S1410316	S1415316
	3-9/32	83.34	3.2813		S1405318	S1410318	S1415318
		84.00	3.3071		S1455840	S1460840	S1465840
	3-5/16	84.14	3.3125		S1405320	S1410320	S1415320
	3-11/32	84.93	3.3438		S1405322	S1410322	S1415322
	3-3/8	85.73	3.3750		S1405324	S1410324	S1415324
		86.00	3.3858		S1455860	S1460860	S1465860
	3-13/32	86.52	3.4063		S1405326	S1410326	S1415326
	3-7/16	87.31	3.4375		S1405328	S1410328	S1415328
		88.00	3.4646		S1455880	S1460880	S1465880
	3-15/32	88.11	3.4688		S1405330	S1410330	S1415330
	3-1/2	88.90	3.5000		S1405332	S1410332	S1415332
7	3-17/32	89.69	3.5313	11.1 (7/16)	S1405334	S1410334	S1415334
		90.00	3.5433		S1455900	S1460900	S1465900
	3-9/16	90.49	3.5625		S1405336	S1410336	S1415336

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 7, 8

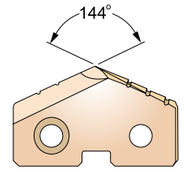
SPADE DRILL INSERTS - HSS M4

EINWEG BOHREINSATZ - HSS M4
Plaquettes FORETS A LAME - HSS M4
CUSPIDI SPADE DRILL - HSS M4

- For general use in steels and cast irons.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.395

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. HSS M4 TiN	TiCN	TiAlN
7 Ø87.76 (3.455) to Ø101.60 (4.000)	3-19/32	91.28	3.5938	11.1 (7/16)	S1405338	S1410338	S1415338
		92.00	3.6221		S1455920	S1460920	S1465920
	3-5/8	92.08	3.6250		S1405340	S1410340	S1415340
	3-21/32	92.87	3.6563		S1405342	S1410342	S1415342
	3-11/16	93.66	3.6875		S1405344	S1410344	S1415344
		94.00	3.7008		S1455940	S1460940	S1465940
	3-23/32	94.46	3.7188		S1405346	S1410346	S1415346
	3-3/4	95.25	3.7500		S1405348	S1410348	S1415348
		96.00	3.7795		S1455960	S1460960	S1465960
	3-25/32	96.04	3.7813		S1405350	S1410350	S1415350
	3-13/16	96.84	3.8125		S1405352	S1410352	S1415352
	3-27/32	97.63	3.8438		S1405354	S1410354	S1415354
		98.00	3.8583		S1455980	S1460980	S1465980
	3-7/8	98.43	3.8750		S1405356	S1410356	S1415356
	3-29/32	99.22	3.9063		S1405358	S1410358	S1415358
		100.00	3.9370		S1455A00	S1460A00	S1465A00
	3-15/16	100.01	3.9375		S1405360	S1410360	S1415360
	3-31/32	100.81	3.9688		S1405362	S1410362	S1415362
	4	101.60	4.0000		S1405400	S1410400	S1415400
8 Ø101.63 (4.001) to Ø114.48 (4.507)	4-1/64	102.00	4.0157	11.1 (7/16)	S1455A20	S1460A20	S1465A20
	4-1/16	103.19	4.0625		S1405404	S1410404	S1415404
	4-3/32	104.00	4.0945		S1455A40	S1460A40	S1465A40
	4-1/8	104.78	4.1250		S1405408	S1410408	S1415408
		106.00	4.1732		S1455A60	S1460A60	S1465A60
	4-3/16	106.36	4.1875		S1405412	S1410412	S1415412
	4-1/4	107.95	4.2500		S1405416	S1410416	S1415416
		108.00	4.2520		S1455A80	S1460A80	S1465A80
	4-5/16	109.54	4.3125		S1405420	S1410420	S1415420
		110.00	4.3307		S1455B00	S1460B00	S1465B00
	4-3/8	111.13	4.3750		S1405424	S1410424	S1415424
		112.00	4.4094		S1455B20	S1460B20	S1465B20
	4-7/16	112.71	4.4375		S1405428	S1410428	S1415428
		114.00	4.4882		S1455B40	S1460B40	S1465B40
	4-1/2	114.30	4.5000		S1405432	S1410432	S1415432

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES Y, Z, 0

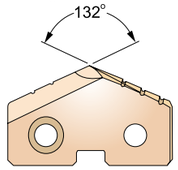
SPADE DRILL INSERTS - SUPER HSS T15

EINWEG BOHREINSATZ - SUPER HSS T15
Plaquettes SPADE DRILL - Super HSS T15
CUSPIDI SPADE DRILL - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.396

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. SUPER HSS T15 TiN	TiCN	TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)		9.50	.3740	2.4 (3/32)	S1155095	S1160095	S1165095
	3/8	9.53	.3750		S1105024	S1110024	S1115024
		9.80	.3860		S1155098	S1160098	S1165098
	25/64	9.92	.3906		S1105025	S1110025	S1115025
		10.00	.3937		S1155100	S1160100	S1165100
		10.20	.4016		S1155102	S1160102	S1165102
	13/32	10.32	.4063		S1105026	S1110026	S1115026
		10.50	.4134		S1155105	S1160105	S1165105
	27/64	10.72	.4219		S1105027	S1110027	S1115027
		10.80	.4252		S1155108	S1160108	S1165108
		11.00	.4331		S1155110	S1160110	S1165110
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.11	.4375	2.4 (3/32)	S1105028	S1110028	S1115028
		11.50	.4528		S1155115	S1160115	S1165115
	29/64	11.51	.4531		S1105029	S1110029	S1115029
	15/32	11.91	.4688		S1105030	S1110030	S1115030
		12.00	.4724		S1155120	S1160120	S1165120
	31/64	12.30	.4844		S1105031	S1110031	S1115031
		12.50	.4921		S1155125	S1160125	S1165125
	1/2	12.70	.5000		S1105032	S1110032	S1115032
0 Ø12.98 (.511) to Ø17.65 (.695)		13.00	.5118	3.2 (1/8)	S1155130	S1160130	S1165130
	33/64	13.10	.5156		S1105033	S1110033	S1115033
	17/32	13.49	.5313		S1105034	S1110034	S1115034
		13.50	.5315		S1155135	S1160135	S1165135
	35/64	13.89	.5469		S1105035	S1110035	S1115035
		14.00	.5512		S1155140	S1160140	S1165140
	9/16	14.29	.5625		S1105036	S1110036	S1115036
		14.50	.5709		S1155145	S1160145	S1165145
	37/64	14.68	.5781		S1105037	S1110037	S1115037
		15.00	.5906		S1155150	S1160150	S1165150
	19/32	15.08	.5938		S1105038	S1110038	S1115038
	39/64	15.48	.6094		S1105039	S1110039	S1115039
		15.50	.6102		S1155155	S1160155	S1165155
	5/8	15.88	.6250		S1105040	S1110040	S1115040
		16.00	.6299		S1155160	S1160160	S1165160

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 0, 1

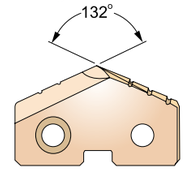
SPADE DRILL INSERTS - SUPER HSS T15

EINWEG BOHREINSATZ - SUPER HSS T15
Plaquettes SPADE DRILL - Super HSS T15
CUSPIDI SPADE DRILL - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.396

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. SUPER HSS T15 TiN	TiCN	TiAlN
0 Ø12.98 (.511) to Ø17.65 (.695)	41/64	16.27	.6406	3.2 (1/8)	S1105041	S1110041	S1115041
		16.50	.6496		S1155165	S1160165	S1165165
	21/32	16.67	.6563		S1105042	S1110042	S1115042
		17.00	.6693		S1155170	S1160170	S1165170
	43/64	17.07	.6719		S1105043	S1110043	S1115043
	11/16	17.46	.6875		S1105044	S1110044	S1115044
		17.50	.6890		S1155175	S1160175	S1165175
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	S1105045	S1110045	S1115045
		18.00	.7087		S1155180	S1160180	S1165180
	23/32	18.26	.7188		S1105046	S1110046	S1115046
		18.50	.7283		S1155185	S1160185	S1165185
	47/64	18.65	.7344		S1105047	S1110047	S1115047
		19.00	.7480		S1155190	S1160190	S1165190
	3/4	19.05	.7500		S1105048	S1110048	S1115048
	49/64	19.45	.7656		S1105049	S1110049	S1115049
		19.50	.7677		S1155195	S1160195	S1165195
	25/32	19.84	.7813		S1105050	S1110050	S1115050
		20.00	.7874		S1155200	S1160200	S1165200
	51/64	20.24	.7969		S1105051	S1110051	S1115051
		20.50	.8071		S1155205	S1160205	S1165205
	13/16	20.64	.8125		S1105052	S1110052	S1115052
		21.00	.8268		S1155210	S1160210	S1165210
	27/32	21.43	.8438		S1105054	S1110054	S1115054
	55/64	21.83	.8594		S1105055	S1110055	S1115055
		22.00	.8661		S1155220	S1160220	S1165220
	7/8	22.23	.8750		S1105056	S1110056	S1115056
	57/64	22.62	.8906		S1105057	S1110057	S1115057
		23.00	.9055		S1155230	S1160230	S1165230
	29/32	23.02	.9063		S1105058	S1110058	S1115058
	59/64	23.42	.9219		S1105059	S1110059	S1115059
	15/16	23.81	.9375		S1105060	S1110060	S1115060
		24.00	.9449		S1155240	S1160240	S1165240

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 2, 3

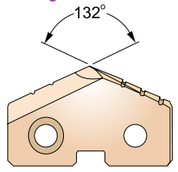
SPADE DRILL INSERTS - SUPER HSS T15

EINWEG BOHREINSATZ - SUPER HSS T15
Plaquettes SPADE DRILL - Super HSS T15
CUSPIDI SPADE DRILL - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.396

Series Min. to Max. mm (inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm, inch)	SUPER HSS T15 TiN	SUPER HSS T15 TiCN	SUPER HSS T15 TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	**S1105062**	**S1110062**	**S1115062**
	63/64	25.00	.9843		**S1155250**	**S1160250**	**S1165250**
	1	25.40	1.0000		**S1105100**	**S1110100**	**S1115100**
	1-1/64	25.80	1.0156		**S1105101**	**S1110101**	**S1115101**
		26.00	1.0236		**S1155260**	**S1160260**	**S1165260**
	1-1/32	26.19	1.0313		**S1105102**	**S1110102**	**S1115102**
	1-3/64	26.59	1.0469		**S1105103**	**S1110103**	**S1115103**
	1-1/16	26.99	1.0625		**S1105104**	**S1110104**	**S1115104**
		27.00	1.0630		**S1155270**	**S1160270**	**S1165270**
	1-3/32	27.78	1.0938		**S1105106**	**S1110106**	**S1115106**
		28.00	1.1024		**S1155280**	**S1160280**	**S1165280**
	1-7/64	28.18	1.1094		**S1105107**	**S1110107**	**S1115107**
	1-1/8	28.58	1.1250		**S1105108**	**S1110108**	**S1115108**
		29.00	1.1417		**S1155290**	**S1160290**	**S1165290**
	1-5/32	29.37	1.1563		**S1105110**	**S1110110**	**S1115110**
		30.00	1.1811		**S1155300**	**S1160300**	**S1165300**
	1-3/16	30.16	1.1875		**S1105112**	**S1110112**	**S1115112**
	1-7/32	30.96	1.2188		**S1105114**	**S1110114**	**S1115114**
		31.00	1.2205		**S1155310**	**S1160310**	**S1165310**
	1-1/4	31.75	1.2500		**S1105116**	**S1110116**	**S1115116**
		32.00	1.2598		**S1155320**	**S1160320**	**S1165320**
	1-9/32	32.54	1.2813		**S1105118**	**S1110118**	**S1115118**
	1-5/16	33.00	1.2992		**S1155330**	**S1160330**	**S1165330**
		33.34	1.3125		**S1105120**	**S1110120**	**S1115120**
		34.00	1.3386		**S1155340**	**S1160340**	**S1165340**
	1-11/32	34.13	1.3438		**S1105122**	**S1110122**	**S1115122**
	1-3/8	34.93	1.3750		**S1105124**	**S1110124**	**S1115124**
		35.00	1.3780		**S1155350**	**S1160350**	**S1165350**
3 Ø34.37(1.353) to Ø47.80(1.882)	1-13/32	35.72	1.4063	6.4 (1/4)	**S1105126**	**S1110126**	**S1115126**
		36.00	1.4173		**S1155360**	**S1160360**	**S1165360**
	1-7/16	36.51	1.4375		**S1105128**	**S1110128**	**S1115128**
		37.00	1.4567		**S1155370**	**S1160370**	**S1165370**
	1-15/32	37.31	1.4688		**S1105130**	**S1110130**	**S1115130**
		38.00	1.4961		**S1155380**	**S1160380**	**S1165380**

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 3, 4

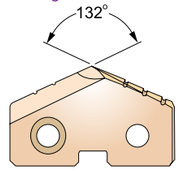
SPADE DRILL INSERTS - SUPER HSS T15

EINWEG BOHREINSATZ - SUPER HSS T15
Plaquettes SPADE DRILL - Super HSS T15
CUSPIDI SPADE DRILL - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.396

Series Min. to Max. mm (inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm, inch)	SUPER HSS T15 TiN	SUPER HSS T15 TiCN	SUPER HSS T15 TiAlN
3 Ø34.37 (1.353) to Ø47.80 (1.882)	1-1/2	38.10	1.5000	6.4 (1/4)	**S1105132**	**S1110132**	**S1115132**
	1-17/32	38.89	1.5313		**S1105134**	**S1110134**	**S1115134**
		39.00	1.5354		**S1155390**	**S1160390**	**S1165390**
	1-9/16	39.69	1.5625		**S1105136**	**S1110136**	**S1115136**
		40.00	1.5748		**S1155400**	**S1160400**	**S1165400**
	1-19/32	40.48	1.5938		**S1105138**	**S1110138**	**S1115138**
		41.00	1.6142		**S1155410**	**S1160410**	**S1165410**
	1-5/8	41.28	1.6250		**S1105140**	**S1110140**	**S1115140**
		42.00	1.6535		**S1155420**	**S1160420**	**S1165420**
	1-21/32	42.07	1.6563		**S1105142**	**S1110142**	**S1115142**
	1-11/16	42.86	1.6875		**S1105144**	**S1110144**	**S1115144**
		43.00	1.6929		**S1155430**	**S1160430**	**S1165430**
	1-23/32	43.66	1.7188		**S1105146**	**S1110146**	**S1115146**
		44.00	1.7323		**S1155440**	**S1160440**	**S1165440**
	1-3/4	44.45	1.7500		**S1105148**	**S1110148**	**S1115148**
		45.00	1.7717		**S1155450**	**S1160450**	**S1165450**
	1-25/32	45.24	1.7813		**S1105150**	**S1110150**	**S1115150**
		46.00	1.8110		**S1155460**	**S1160460**	**S1165460**
	1-13/16	46.04	1.8125		**S1105152**	**S1110152**	**S1115152**
	1-27/32	46.83	1.8438		**S1105154**	**S1110154**	**S1115154**
		47.00	1.8504		**S1155470**	**S1160470**	**S1165470**
	1-7/8	47.63	1.8750		**S1105156**	**S1110156**	**S1115156**
4 Ø46.99 (1.850) to Ø65.28 (2.570)		48.00	1.8898	7.9 (5/16)	**S1155480**	**S1160480**	**S1165480**
	1-29/32	48.42	1.9063		**S1105158**	**S1110158**	**S1115158**
		49.00	1.9291		**S1155490**	**S1160490**	**S1165490**
	1-15/16	49.21	1.9375		**S1105160**	**S1110160**	**S1115160**
		50.00	1.9685		**S1155500**	**S1160500**	**S1165500**
	1-31/32	50.01	1.9688		**S1105162**	**S1110162**	**S1115162**
	2	50.80	2.0000		**S1105200**	**S1110200**	**S1115200**
		51.00	2.0079		**S1155510**	**S1160510**	**S1165510**
	2-1/32	51.59	2.0313		**S1105202**	**S1110202**	**S1115202**
	2-3/64	52.00	2.0472		**S1155520**	**S1160520**	**S1165520**
	2-1/16	52.39	2.0625		**S1105204**	**S1110204**	**S1115204**
		53.00	2.0866		**S1155530**	**S1160530**	**S1165530**

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 4

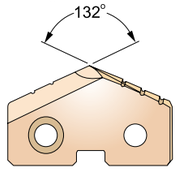
SPADE DRILL INSERTS - SUPER HSS T15

EINWEG BOHREINSATZ - SUPER HSS T15
Plaquettes SPADE DRILL - Super HSS T15
CUSPIDI SPADE DRILL - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.396

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. SUPER HSS T15 TiN	TiCN	TiAlN
4 Ø46.99 (1.850) to Ø65.28 (2.570)	2-3/32	53.18	2.0938	7.9 (5/16)	S1105206	S1110206	S1115206
	2-1/8	53.98	2.1250		S1105208	S1110208	S1115208
		54.00	2.1260		S1155540	S1160540	S1165540
	2-5/32	54.77	2.1563		S1105210	S1110210	S1115210
		55.00	2.1654		S1155550	S1160550	S1165550
	2-3/16	55.56	2.1875		S1105212	S1110212	S1115212
		56.00	2.2047		S1155560	S1160560	S1165560
	2-7/32	56.36	2.2188		S1105214	S1110214	S1115214
		57.00	2.2441		S1155570	S1160570	S1165570
	2-1/4	57.15	2.2500		S1105216	S1110216	S1115216
	2-9/32	57.94	2.2813		S1105218	S1110218	S1115218
		58.00	2.2835		S1155580	S1160580	S1165580
	2-5/16	58.74	2.3125		S1105220	S1110220	S1115220
		59.00	2.3228		S1155590	S1160590	S1165590
	2-11/32	59.53	2.3438		S1105222	S1110222	S1115222
		60.00	2.3622		S1155600	S1160600	S1165600
	2-3/8	60.33	2.3750		S1105224	S1110224	S1115224
		61.00	2.4016		S1155610	S1160610	S1165610
	2-13/32	61.12	2.4063		S1105226	S1110226	S1115226
	2-7/16	61.91	2.4375		S1105228	S1110228	S1115228
		62.00	2.4409		S1155620	S1160620	S1165620
	2-15/32	62.71	2.4688		S1105230	S1110230	S1115230
		63.00	2.4803		S1155630	S1160630	S1165630
	2-1/2	63.50	2.5000		S1105232	S1110232	S1115232
		64.00	2.5197		S1155640	S1160640	S1165640
	2-17/32	64.29	2.5313		S1105234	S1110234	S1115234
		65.00	2.5591		S1155650	S1160650	S1165650
	2-9/16	65.09	2.5625		S1105236	S1110236	S1115236

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES Y, Z, 0

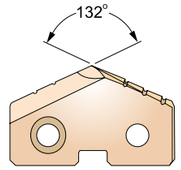
SPADE DRILL INSERTS - PREMIUM HSS M48

EINWEG BOHREINSATZ - PREMIUM HSS M48
Plaquettes SPADE DRILL - HSS Premium M48
CUSPIDI SPADE DRILL - PREMIUM HSS M48

- For use in high temperature alloys and materials with 350~500 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.397

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. PREMIUM HSS M48 TiN	TiCN	TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)		9.50	.3740	2.4 (3/32)	S1555095	S1560095	S1565095
	3/8	9.53	.3750		S1505024	S1510024	S1515024
		9.80	.3860		S1555098	S1560098	S1565098
	25/64	9.92	.3906		S1505025	S1510025	S1515025
		10.00	.3937		S1555100	S1560100	S1565100
		10.20	.4016		S1555102	S1560102	S1565102
	13/32	10.32	.4063		S1505026	S1510026	S1515026
		10.50	.4134		S1555105	S1560105	S1565105
	27/64	10.72	.4219		S1505027	S1510027	S1515027
		10.80	.4252		S1555108	S1560108	S1565108
		11.00	.4331		S1555110	S1560110	S1565110
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.11	.4375	2.4 (3/32)	S1505028	S1510028	S1515028
		11.50	.4528		S1555115	S1560115	S1565115
	29/64	11.51	.4531		S1505029	S1510029	S1515029
	15/32	11.91	.4688		S1505030	S1510030	S1515030
		12.00	.4724		S1555120	S1560120	S1565120
	31/64	12.30	.4844		S1505031	S1510031	S1515031
		12.50	.4921		S1555125	S1560125	S1565125
	1/2	12.70	.5000		S1505032	S1510032	S1515032
0 Ø12.98 (.511) to Ø17.65 (.695)		13.00	.5118	3.2 (1/8)	S1555130	S1560130	S1565130
	33/64	13.10	.5156		S1505033	S1510033	S1515033
	17/32	13.49	.5313		S1505034	S1510034	S1515034
		13.50	.5315		S1555135	S1560135	S1565135
	35/64	13.89	.5469		S1505035	S1510035	S1515035
		14.00	.5512		S1555140	S1560140	S1565140
	9/16	14.29	.5625		S1505036	S1510036	S1515036
		14.50	.5709		S1555145	S1560145	S1565145
	37/64	14.68	.5781		S1505037	S1510037	S1515037
		15.00	.5906		S1555150	S1560150	S1565150
	19/32	15.08	.5938		S1505038	S1510038	S1515038
	39/64	15.48	.6094		S1505039	S1510039	S1515039
		15.50	.6102		S1555155	S1560155	S1565155
	5/8	15.88	.6250		S1505040	S1510040	S1515040
		16.00	.6299		S1555160	S1560160	S1565160

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 0, 1

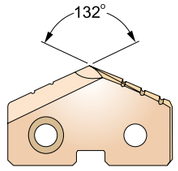
SPADE DRILL INSERTS - PREMIUM HSS M48

EINWEG BOHREINSATZ - PREMIUM HSS M48
Plaquettes SPADE DRILL - HSS Premium M48
CUSPIDI SPADE DRILL - PREMIUM HSS M48

- For use in high temperature alloys and materials with 350~500 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.397

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. PREMIUM HSS M48 TiN	TiCN	TiAlN
0 Ø12.98(.511) to Ø17.65(.695)	41/64	16.27	.6406	3.2 (1/8)	**S1505041**	**S1510041**	**S1515041**
		16.50	.6496		**S1555165**	**S1560165**	**S1565165**
	21/32	16.67	.6563		**S1505042**	**S1510042**	**S1515042**
		17.00	.6693		**S1555170**	**S1560170**	**S1565170**
	43/64	17.07	.6719		**S1505043**	**S1510043**	**S1515043**
	11/16	17.46	.6875		**S1505044**	**S1510044**	**S1515044**
		17.50	.6890		**S1555175**	**S1560175**	**S1565175**
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	**S1505045**	**S1510045**	**S1515045**
		18.00	.7087		**S1555180**	**S1560180**	**S1565180**
	23/32	18.26	.7188		**S1505046**	**S1510046**	**S1515046**
		18.50	.7283		**S1555185**	**S1560185**	**S1565185**
	47/64	18.65	.7344		**S1505047**	**S1510047**	**S1515047**
		19.00	.7480		**S1555190**	**S1560190**	**S1565190**
	3/4	19.05	.7500		**S1505048**	**S1510048**	**S1515048**
	49/64	19.45	.7656		**S1505049**	**S1510049**	**S1515049**
		19.50	.7677		**S1555195**	**S1560195**	**S1565195**
	25/32	19.84	.7813		**S1505050**	**S1510050**	**S1515050**
		20.00	.7874		**S1555200**	**S1560200**	**S1565200**
	51/64	20.24	.7969		**S1505051**	**S1510051**	**S1515051**
		20.50	.8071		**S1555205**	**S1560205**	**S1565205**
	13/16	20.64	.8125		**S1505052**	**S1510052**	**S1515052**
		21.00	.8268		**S1555210**	**S1560210**	**S1565210**
	27/32	21.43	.8438		**S1505054**	**S1510054**	**S1515054**
	55/64	21.83	.8594		**S1505055**	**S1510055**	**S1515055**
		22.00	.8661		**S1555220**	**S1560220**	**S1565220**
	7/8	22.23	.8750		**S1505056**	**S1510056**	**S1515056**
	57/64	22.62	.8906		**S1505057**	**S1510057**	**S1515057**
		23.00	.9055		**S1555230**	**S1560230**	**S1565230**
	29/32	23.02	.9063		**S1505058**	**S1510058**	**S1515058**
	59/64	23.42	.9219		**S1505059**	**S1510059**	**S1515059**
	15/16	23.81	.9375		**S1505060**	**S1510060**	**S1515060**
		24.00	.9449		**S1555240**	**S1560240**	**S1565240**

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 2

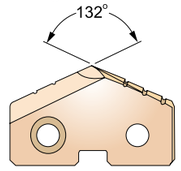
SPADE DRILL INSERTS - PREMIUM HSS M48

EINWEG BOHREINSATZ - PREMIUM HSS M48
Plaquettes SPADE DRILL - HSS Premium M48
CUSPIDI SPADE DRILL - PREMIUM HSS M48

- For use in high temperature alloys and materials with 350~500 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.397

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. PREMIUM HSS M48 TiN	TiCN	TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	**S1505062**	**S1510062**	**S1515062**
	63/64	25.00	.9843		**S1555250**	**S1560250**	**S1565250**
	1	25.40	1.0000		**S1505100**	**S1510100**	**S1515100**
	1-1/64	25.80	1.0156		**S1505101**	**S1510101**	**S1515101**
		26.00	1.0236		**S1555260**	**S1560260**	**S1565260**
	1-1/32	26.19	1.0313		**S1505102**	**S1510102**	**S1515102**
	1-3/64	26.59	1.0469		**S1505103**	**S1510103**	**S1515103**
	1-1/16	26.99	1.0625		**S1505104**	**S1510104**	**S1515104**
		27.00	1.0630		**S1555270**	**S1560270**	**S1565270**
	1-3/32	27.78	1.0938		**S1505106**	**S1510106**	**S1515106**
		28.00	1.1024		**S1555280**	**S1560280**	**S1565280**
	1-7/64	28.18	1.1094		**S1505107**	**S1510107**	**S1515107**
	1-1/8	28.58	1.1250		**S1505108**	**S1510108**	**S1515108**
		29.00	1.1417		**S1555290**	**S1560290**	**S1565290**
	1-5/32	29.37	1.1563		**S1505110**	**S1510110**	**S1515110**
		30.00	1.1811		**S1555300**	**S1560300**	**S1565300**
	1-3/16	30.16	1.1875		**S1505112**	**S1510112**	**S1515112**
	1-7/32	30.96	1.2188		**S1505114**	**S1510114**	**S1515114**
		31.00	1.2205		**S1555310**	**S1560310**	**S1565310**
	1-1/4	31.75	1.2500		**S1505116**	**S1510116**	**S1515116**
		32.00	1.2598		**S1555320**	**S1560320**	**S1565320**
	1-9/32	32.54	1.2813		**S1505118**	**S1510118**	**S1515118**
		33.00	1.2992		**S1555330**	**S1560330**	**S1565330**
	1-5/16	33.34	1.3125		**S1505120**	**S1510120**	**S1515120**
		34.00	1.3386		**S1555340**	**S1560340**	**S1565340**
	1-11/32	34.13	1.3438		**S1505122**	**S1510122**	**S1515122**
	1-3/8	34.93	1.3750		**S1505124**	**S1510124**	**S1515124**
		35.00	1.3780		**S1555350**	**S1560350**	**S1565350**

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES **Y, Z, 0**

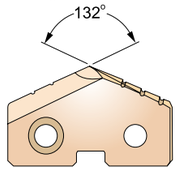
SPADE DRILL INSERTS for CAST IRON - CARBIDE K10

- EINWEG BOHREINSATZ - VOLLHARTMETALL K10
- Plaquettes SPADE DRILL pour la fonte - Carbure K10
- CUSPIDI SPADE DRILL - MD K10

- ▶ High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys.
- ▶ Set up time can be reduced due to changing inserts easily on the machine.
- ▶ Any non-standard size available.

- ▶ Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
- ▶ Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.398

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE K10 TiN	TiCN	TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)		9.50	.3740	2.4 (3/32)	S1655095	S1660095	S1665095
	3/8	9.53	.3750		S1605024	S1610024	S1615024
		9.80	.3860		S1655098	S1660098	S1665098
	25/64	9.92	.3906		S1605025	S1610025	S1615025
		10.00	.3937		S1655100	S1660100	S1665100
		10.20	.4016		S1655102	S1660102	S1665102
	13/32	10.32	.4063		S1605026	S1610026	S1615026
		10.50	.4134		S1655105	S1660105	S1665105
	27/64	10.72	.4219		S1605027	S1610027	S1615027
		10.80	.4252		S1655108	S1660108	S1665108
		11.00	.4331		S1655110	S1660110	S1665110
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.11	.4375	2.4 (3/32)	S1605028	S1610028	S1615028
		11.50	.4528		S1655115	S1660115	S1665115
	29/64	11.51	.4531		S1605029	S1610029	S1615029
	15/32	11.91	.4688		S1605030	S1610030	S1615030
		12.00	.4724		S1655120	S1660120	S1665120
	31/64	12.30	.4844		S1605031	S1610031	S1615031
		12.50	.4921		S1655125	S1660125	S1665125
	1/2	12.70	.5000		S1605032	S1610032	S1615032
0 Ø12.98 (.511) to Ø17.65 (.695)		13.00	.5118	3.2 (1/8)	S1655130	S1660130	S1665130
	33/64	13.10	.5156		S1605033	S1610033	S1615033
	17/32	13.49	.5313		S1605034	S1610034	S1615034
		13.50	.5315		S1655135	S1660135	S1665135
	35/64	13.89	.5469		S1605035	S1610035	S1615035
		14.00	.5512		S1655140	S1660140	S1665140
	9/16	14.29	.5625		S1605036	S1610036	S1615036
		14.50	.5709		S1655145	S1660145	S1665145
	37/64	14.68	.5781		S1605037	S1610037	S1615037
		15.00	.5906		S1655150	S1660150	S1665150
	19/32	15.08	.5938		S1605038	S1610038	S1615038
	39/64	15.48	.6094		S1605039	S1610039	S1615039
		15.50	.6102		S1655155	S1660155	S1665155
	5/8	15.88	.6250		S1605040	S1610040	S1615040
		16.00	.6299		S1655160	S1660160	S1665160

◎ : Excellent ○ : Good

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

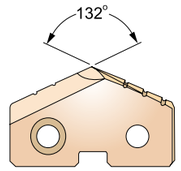
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29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

SPADE DRILLS

SERIES **0, 1**

SPADE DRILL INSERTS for CAST IRON - CARBIDE K10
EINWEG BOHREINSATZ - VOLLHARTMETALL K10
Plaquettes SPADE DRILL pour la fonte - Carbure K10
CUSPIDI SPADE DRILL - MD K10
▶ High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys.
▶ Set up time can be reduced due to changing inserts easily on the machine.
▶ Any non-standard size available.
▶ Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
▶ Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
▶ Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.398

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE K10 TiN	TiCN	TiAlN
0 Ø12.98(.511) to Ø17.65(.695)	41/64	16.27	.6406	3.2 (1/8)	S1605041	S1610041	S1615041
		16.50	.6496		S1655165	S1660165	S1665165
	21/32	16.67	.6563		S1605042	S1610042	S1615042
		17.00	.6693		S1655170	S1660170	S1665170
	43/64	17.07	.6719		S1605043	S1610043	S1615043
	11/16	17.46	.6875		S1605044	S1610044	S1615044
		17.50	.6890		S1655175	S1660175	S1665175
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	S1605045	S1610045	S1615045
		18.00	.7087		S1655180	S1660180	S1665180
	23/32	18.26	.7188		S1605046	S1610046	S1615046
		18.50	.7283		S1655185	S1660185	S1665185
	47/64	18.65	.7344		S1605047	S1610047	S1615047
		19.00	.7480		S1655190	S1660190	S1665190
	3/4	19.05	.7500		S1605048	S1610048	S1615048
	49/64	19.45	.7656		S1605049	S1610049	S1615049
		19.50	.7677		S1655195	S1660195	S1665195
	25/32	19.84	.7813		S1605050	S1610050	S1615050
		20.00	.7874		S1655200	S1660200	S1665200
	51/64	20.24	.7969		S1605051	S1610051	S1615051
		20.50	.8071		S1655205	S1660205	S1665205
	13/16	20.64	.8125		S1605052	S1610052	S1615052
		21.00	.8268		S1655210	S1660210	S1665210
	27/32	21.43	.8438		S1605054	S1610054	S1615054
	55/64	21.83	.8594		S1605055	S1610055	S1615055
		22.00	.8661		S1655220	S1660220	S1665220
	7/8	22.23	.8750		S1605056	S1610056	S1615056
	57/64	22.62	.8906		S1605057	S1610057	S1615057
		23.00	.9055		S1655230	S1660230	S1665230
	29/32	23.02	.9063		S1605058	S1610058	S1615058
	59/64	23.42	.9219		S1605059	S1610059	S1615059
	15/16	23.81	.9375		S1605060	S1610060	S1615060
		24.00	.9449		S1655240	S1660240	S1665240

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 2

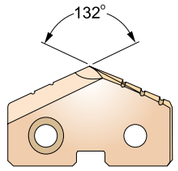
SPADE DRILL INSERTS for CAST IRON - CARBIDE K10

EINWEG BOHREINSATZ - VOLLHARTMETALL K10
Plaquettes SPADE DRILL pour la fonte - Carbure K10
CUSPIDI SPADE DRILL - MD K10

- ▶ High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys.
- ▶ Set up time can be reduced due to changing inserts easily on the machine.
- ▶ Any non-standard size available.

- ▶ Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
- ▶ Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.398

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE K10 TiN	TiCN	TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	S1605062	S1610062	S1615062
	63/64	25.00	.9843		S1655250	S1660250	S1665250
	1	25.40	1.0000		S1605100	S1610100	S1615100
	1-1/64	25.80	1.0156		S1605101	S1610101	S1615101
		26.00	1.0236		S1655260	S1660260	S1665260
	1-1/32	26.19	1.0313		S1605102	S1610102	S1615102
	1-3/64	26.59	1.0469		S1605103	S1610103	S1615103
	1-1/16	26.99	1.0625		S1605104	S1610104	S1615104
		27.00	1.0630		S1655270	S1660270	S1665270
	1-3/32	27.78	1.0938		S1605106	S1610106	S1615106
		28.00	1.1024		S1655280	S1660280	S1665280
	1-7/64	28.18	1.1094		S1605107	S1610107	S1615107
	1-1/8	28.58	1.1250		S1605108	S1610108	S1615108
		29.00	1.1417		S1655290	S1660290	S1665290
	1-5/32	29.37	1.1563		S1605110	S1610110	S1615110
		30.00	1.1811		S1655300	S1660300	S1665300
	1-3/16	30.16	1.1875		S1605112	S1610112	S1615112
	1-7/32	30.96	1.2188		S1605114	S1610114	S1615114
		31.00	1.2205		S1655310	S1660310	S1665310
	1-1/4	31.75	1.2500		S1605116	S1610116	S1615116
		32.00	1.2598		S1655320	S1660320	S1665320
	1-9/32	32.54	1.2813		S1605118	S1610118	S1615118
		33.00	1.2992		S1655330	S1660330	S1665330
	1-5/16	33.34	1.3125		S1605120	S1610120	S1615120
		34.00	1.3386		S1655340	S1660340	S1665340
	1-11/32	34.13	1.3438		S1605122	S1610122	S1615122
	1-3/8	34.93	1.3750		S1605124	S1610124	S1615124
		35.00	1.3780		S1655350	S1660350	S1665350

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES Y, Z, 0

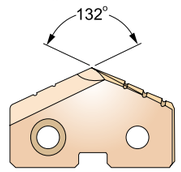
SPADE DRILL INSERTS - CARBIDE K20

EINWEG BOHREINSATZ - VOLLHARTMETALL K20
Plaquettes SPADE DRILL - Carbure K20
CUSPIDI SPADE DRILL - MD K20

- ▶ For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- ▶ Set up time can be reduced due to changing inserts easily on the machine.
- ▶ Any non-standard size available.

- ▶ Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- ▶ Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.399

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE K20 TiN	TiCN	TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)		9.50	.3740	2.4 (3/32)	S1755095	S1760095	S1765095
	3/8	9.53	.3750		S1705024	S1710024	S1715024
		9.80	.3860		S1755098	S1760098	S1765098
	25/64	9.92	.3906		S1705025	S1710025	S1715025
		10.00	.3937		S1755100	S1760100	S1765100
		10.20	.4016		S1755102	S1760102	S1765102
	13/32	10.32	.4063		S1705026	S1710026	S1715026
		10.50	.4134		S1755105	S1760105	S1765105
	27/64	10.72	.4219		S1705027	S1710027	S1715027
		10.80	.4252		S1755108	S1760108	S1765108
		11.00	.4331		S1755110	S1760110	S1765110
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.11	.4375	2.4 (3/32)	S1705028	S1710028	S1715028
		11.50	.4528		S1755115	S1760115	S1765115
	29/64	11.51	.4531		S1705029	S1710029	S1715029
	15/32	11.91	.4688		S1705030	S1710030	S1715030
		12.00	.4724		S1755120	S1760120	S1765120
	31/64	12.30	.4844		S1705031	S1710031	S1715031
		12.50	.4921		S1755125	S1760125	S1765125
	1/2	12.70	.5000		S1705032	S1710032	S1715032
0 Ø12.98 (.511) to Ø17.65 (.695)		13.00	.5118	3.2 (1/8)	S1755130	S1760130	S1765130
	33/64	13.10	.5156		S1705033	S1710033	S1715033
	17/32	13.49	.5313		S1705034	S1710034	S1715034
		13.50	.5315		S1755135	S1760135	S1765135
	35/64	13.89	.5469		S1705035	S1710035	S1715035
		14.00	.5512		S1755140	S1760140	S1765140
	9/16	14.29	.5625		S1705036	S1710036	S1715036
		14.50	.5709		S1755145	S1760145	S1765145
	37/64	14.68	.5781		S1705037	S1710037	S1715037
		15.00	.5906		S1755150	S1760150	S1765150
	19/32	15.08	.5938		S1705038	S1710038	S1715038
	39/64	15.48	.6094		S1705039	S1710039	S1715039
		15.50	.6102		S1755155	S1760155	S1765155
	5/8	15.88	.6250		S1705040	S1710040	S1715040
		16.00	.6299		S1755160	S1760160	S1765160

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 0, 1

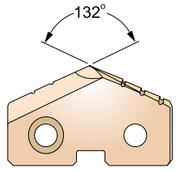
SPADE DRILL INSERTS - CARBIDE K20

EINWEG BOHREINSATZ - VOLLHARTMETALL K20
Plaquettes SPADE DRILL - Carbure K20
CUSPIDI SPADE DRILL - MD K20

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.399

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE K20 TiN	TiCN	TiAlN
0 Ø12.98(.511) to Ø17.65(.695)	41/64	16.27	.6406	3.2 (1/8)	**S1705041**	**S1710041**	**S1715041**
		16.50	.6496		**S1755165**	**S1760165**	**S1765165**
	21/32	16.67	.6563		**S1705042**	**S1710042**	**S1715042**
		17.00	.6693		**S1755170**	**S1760170**	**S1765170**
	43/64	17.07	.6719		**S1705043**	**S1710043**	**S1715043**
	11/16	17.46	.6875		**S1705044**	**S1710044**	**S1715044**
		17.50	.6890		**S1755175**	**S1760175**	**S1765175**
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	**S1705045**	**S1710045**	**S1715045**
		18.00	.7087		**S1755180**	**S1760180**	**S1765180**
	23/32	18.26	.7188		**S1705046**	**S1710046**	**S1715046**
		18.50	.7283		**S1755185**	**S1760185**	**S1765185**
	47/64	18.65	.7344		**S1705047**	**S1710047**	**S1715047**
		19.00	.7480		**S1755190**	**S1760190**	**S1765190**
	3/4	19.05	.7500		**S1705048**	**S1710048**	**S1715048**
	49/64	19.45	.7656		**S1705049**	**S1710049**	**S1715049**
		19.50	.7677		**S1755195**	**S1760195**	**S1765195**
	25/32	19.84	.7813		**S1705050**	**S1710050**	**S1715050**
		20.00	.7874		**S1755200**	**S1760200**	**S1765200**
	51/64	20.24	.7969		**S1705051**	**S1710051**	**S1715051**
		20.50	.8071		**S1755205**	**S1760205**	**S1765205**
	13/16	20.64	.8125		**S1705052**	**S1710052**	**S1715052**
		21.00	.8268		**S1755210**	**S1760210**	**S1765210**
	27/32	21.43	.8438		**S1705054**	**S1710054**	**S1715054**
	55/64	21.83	.8594		**S1705055**	**S1710055**	**S1715055**
		22.00	.8661		**S1755220**	**S1760220**	**S1765220**
	7/8	22.23	.8750		**S1705056**	**S1710056**	**S1715056**
	57/64	22.62	.8906		**S1705057**	**S1710057**	**S1715057**
		23.00	.9055		**S1755230**	**S1760230**	**S1765230**
	29/32	23.02	.9063		**S1705058**	**S1710058**	**S1715058**
	59/64	23.42	.9219		**S1705059**	**S1710059**	**S1715059**
	15/16	23.81	.9375		**S1705060**	**S1710060**	**S1715060**
		24.00	.9449		**S1755240**	**S1760240**	**S1765240**

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 2

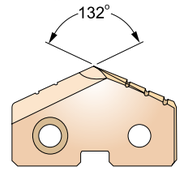
SPADE DRILL INSERTS - CARBIDE K20

EINWEG BOHREINSATZ - VOLLHARTMETALL K20
Plaquettes SPADE DRILL - Carbure K20
CUSPIDI SPADE DRILL - MD K20

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.399

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE K20 TiN	TiCN	TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	**S1705062**	**S1710062**	**S1715062**
	63/64	25.00	.9843		**S1755250**	**S1760250**	**S1765250**
	1	25.40	1.0000		**S1705100**	**S1710100**	**S1715100**
	1-1/64	25.80	1.0156		**S1705101**	**S1710101**	**S1715101**
		26.00	1.0236		**S1755260**	**S1760260**	**S1765260**
	1-1/32	26.19	1.0313		**S1705102**	**S1710102**	**S1715102**
	1-3/64	26.59	1.0469		**S1705103**	**S1710103**	**S1715103**
	1-1/16	26.99	1.0625		**S1705104**	**S1710104**	**S1715104**
		27.00	1.0630		**S1755270**	**S1760270**	**S1765270**
	1-3/32	27.78	1.0938		**S1705106**	**S1710106**	**S1715106**
		28.00	1.1024		**S1755280**	**S1760280**	**S1765280**
	1-7/64	28.18	1.1094		**S1705107**	**S1710107**	**S1715107**
	1-1/8	28.58	1.1250		**S1705108**	**S1710108**	**S1715108**
		29.00	1.1417		**S1755290**	**S1760290**	**S1765290**
	1-5/32	29.37	1.1563		**S1705110**	**S1710110**	**S1715110**
		30.00	1.1811		**S1755300**	**S1760300**	**S1765300**
	1-3/16	30.16	1.1875		**S1705112**	**S1710112**	**S1715112**
	1-7/32	30.96	1.2188		**S1705114**	**S1710114**	**S1715114**
		31.00	1.2205		**S1755310**	**S1760310**	**S1765310**
	1-1/4	31.75	1.2500		**S1705116**	**S1710116**	**S1715116**
		32.00	1.2598		**S1755320**	**S1760320**	**S1765320**
	1-9/32	32.54	1.2813		**S1705118**	**S1710118**	**S1715118**
		33.00	1.2992		**S1755330**	**S1760330**	**S1765330**
	1-5/16	33.34	1.3125		**S1705120**	**S1710120**	**S1715120**
		34.00	1.3386		**S1755340**	**S1760340**	**S1765340**
	1-11/32	34.13	1.3438		**S1705122**	**S1710122**	**S1715122**
	1-3/8	34.93	1.3750		**S1705124**	**S1710124**	**S1715124**
		35.00	1.3780		**S1755350**	**S1760350**	**S1765350**

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 3

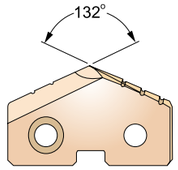
SPADE DRILL INSERTS - CARBIDE K20

EINWEG BOHREINSATZ - VOLLHARTMETALL K20
Plaquettes SPADE DRILL - Carbure K20
CUSPIDI SPADE DRILL - MD K20

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.399

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE K20 TiN	TiCN	TiAlN
3 Ø34.37 (1.353) to Ø47.80 (1.882)	1-13/32	35.72	1.4063	6.4 (1/4)	S1705126	S1710126	S1715126
		36.00	1.4173		S1755360	S1760360	S1765360
	1-7/16	36.51	1.4375		S1705128	S1710128	S1715128
		37.00	1.4567		S1755370	S1760370	S1765370
	1-15/32	37.31	1.4688		S1705130	S1710130	S1715130
		38.00	1.4961		S1755380	S1760380	S1765380
	1-1/2	38.10	1.5000		S1705132	S1710132	S1715132
	1-17/32	38.89	1.5313		S1705134	S1710134	S1715134
		39.00	1.5354		S1755390	S1760390	S1765390
	1-9/16	39.69	1.5625		S1705136	S1710136	S1715136
		40.00	1.5748		S1755400	S1760400	S1765400
	1-19/32	40.48	1.5938		S1705138	S1710138	S1715138
		41.00	1.6142		S1755410	S1760410	S1765410
	1-5/8	41.28	1.6250		S1705140	S1710140	S1715140
		42.00	1.6535		S1755420	S1760420	S1765420
	1-21/32	42.07	1.6563		S1705142	S1710142	S1715142
	1-11/16	42.86	1.6875		S1705144	S1710144	S1715144
		43.00	1.6929		S1755430	S1760430	S1765430
	1-23/32	43.66	1.7188		S1705146	S1710146	S1715146
		44.00	1.7323		S1755440	S1760440	S1765440
	1-3/4	44.45	1.7500		S1705148	S1710148	S1715148
		45.00	1.7717		S1755450	S1760450	S1765450
	1-25/32	45.24	1.7813		S1705150	S1710150	S1715150
		46.00	1.8110		S1755460	S1760460	S1765460
	1-13/16	46.04	1.8125		S1705152	S1710152	S1715152
	1-27/32	46.83	1.8438		S1705154	S1710154	S1715154
		47.00	1.8504		S1755470	S1760470	S1765470
	1-7/8	47.63	1.8750		S1705156	S1710156	S1715156

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES Y, Z, 0

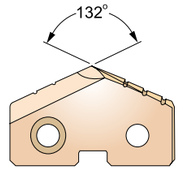
SPADE DRILL INSERTS - CARBIDE P40

EINWEG BOHREINSATZ - VOLLHARTMETALL P40
Plaquettes SPADE DRILL - Carbure P40
CUSPIDI SPADE DRILL - MD P40

- For general use in carbon steels and alloy steels.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.401

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE P40 TiN	TiCN	TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)		9.50	.3740	2.4 (3/32)	S1855095	S1860095	S1865095
	3/8	9.53	.3750		S1805024	S1810024	S1815024
		9.80	.3860		S1855098	S1860098	S1865098
	25/64	9.92	.3906		S1805025	S1810025	S1815025
		10.00	.3937		S1855100	S1860100	S1865100
		10.20	.4016		S1855102	S1860102	S1865102
	13/32	10.32	.4063		S1805026	S1810026	S1815026
		10.50	.4134		S1855105	S1860105	S1865105
	27/64	10.72	.4219		S1805027	S1810027	S1815027
		10.80	.4252		S1855108	S1860108	S1865108
		11.00	.4331		S1855110	S1860110	S1865110
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.11	.4375	2.4 (3/32)	S1805028	S1810028	S1815028
		11.50	.4528		S1855115	S1860115	S1865115
	29/64	11.51	.4531		S1805029	S1810029	S1815029
	15/32	11.91	.4688		S1805030	S1810030	S1815030
		12.00	.4724		S1855120	S1860120	S1865120
	31/64	12.30	.4844		S1805031	S1810031	S1815031
		12.50	.4921		S1855125	S1860125	S1865125
	1/2	12.70	.5000		S1805032	S1810032	S1815032
0 Ø12.98 (.511) to Ø17.65 (.695)		13.00	.5118	3.2 (1/8)	S1855130	S1860130	S1865130
	33/64	13.10	.5156		S1805033	S1810033	S1815033
	17/32	13.49	.5313		S1805034	S1810034	S1815034
		13.50	.5315		S1855135	S1860135	S1865135
	35/64	13.89	.5469		S1805035	S1810035	S1815035
		14.00	.5512		S1855140	S1860140	S1865140
	9/16	14.29	.5625		S1805036	S1810036	S1815036
		14.50	.5709		S1855145	S1860145	S1865145
	37/64	14.68	.5781		S1805037	S1810037	S1815037
		15.00	.5906		S1855150	S1860150	S1865150
	19/32	15.08	.5938		S1805038	S1810038	S1815038
	39/64	15.48	.6094		S1805039	S1810039	S1815039
		15.50	.6102		S1855155	S1860155	S1865155
	5/8	15.88	.6250		S1805040	S1810040	S1815040
		16.00	.6299		S1855160	S1860160	S1865160

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 0, 1

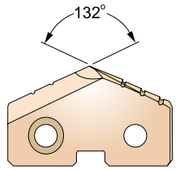
SPADE DRILL INSERTS - CARBIDE P40

EINWEG BOHREINSATZ - VOLLHARTMETALL P40
Plaquettes SPADE DRILL - Carbure P40
CUSPIDI SPADE DRILL - MD P40

- For general use in carbon steels and alloy steels.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.401

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE P40 TiN	TiCN	TiAlN
0 Ø12.98(.511) to Ø17.65(.695)	41/64	16.27	.6406	3.2 (1/8)	**S1805041**	**S1810041**	**S1815041**
		16.50	.6496		**S1855165**	**S1860165**	**S1865165**
	21/32	16.67	.6563		**S1805042**	**S1810042**	**S1815042**
		17.00	.6693		**S1855170**	**S1860170**	**S1865170**
	43/64	17.07	.6719		**S1805043**	**S1810043**	**S1815043**
	11/16	17.46	.6875		**S1805044**	**S1810044**	**S1815044**
		17.50	.6890		**S1855175**	**S1860175**	**S1865175**
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	**S1805045**	**S1810045**	**S1815045**
		18.00	.7087		**S1855180**	**S1860180**	**S1865180**
	23/32	18.26	.7188		**S1805046**	**S1810046**	**S1815046**
		18.50	.7283		**S1855185**	**S1860185**	**S1865185**
	47/64	18.65	.7344		**S1805047**	**S1810047**	**S1815047**
		19.00	.7480		**S1855190**	**S1860190**	**S1865190**
	3/4	19.05	.7500		**S1805048**	**S1810048**	**S1815048**
	49/64	19.45	.7656		**S1805049**	**S1810049**	**S1815049**
		19.50	.7677		**S1855195**	**S1860195**	**S1865195**
	25/32	19.84	.7813		**S1805050**	**S1810050**	**S1815050**
		20.00	.7874		**S1855200**	**S1860200**	**S1865200**
	51/64	20.24	.7969		**S1805051**	**S1810051**	**S1815051**
		20.50	.8071		**S1855205**	**S1860205**	**S1865205**
	13/16	20.64	.8125		**S1805052**	**S1810052**	**S1815052**
		21.00	.8268		**S1855210**	**S1860210**	**S1865210**
	27/32	21.43	.8438		**S1805054**	**S1810054**	**S1815054**
	55/64	21.83	.8594		**S1805055**	**S1810055**	**S1815055**
		22.00	.8661		**S1855220**	**S1860220**	**S1865220**
	7/8	22.23	.8750		**S1805056**	**S1810056**	**S1815056**
	57/64	22.62	.8906		**S1805057**	**S1810057**	**S1815057**
		23.00	.9055		**S1855230**	**S1860230**	**S1865230**
	29/32	23.02	.9063		**S1805058**	**S1810058**	**S1815058**
	59/64	23.42	.9219		**S1805059**	**S1810059**	**S1815059**
	15/16	23.81	.9375		**S1805060**	**S1810060**	**S1815060**
		24.00	.9449		**S1855240**	**S1860240**	**S1865240**

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 2

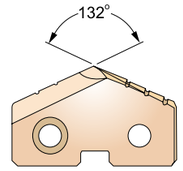
SPADE DRILL INSERTS - CARBIDE P40

EINWEG BOHREINSATZ - VOLLHARTMETALL P40
Plaquettes SPADE DRILL - Carbure P40
CUSPIDI SPADE DRILL - MD P40

- For general use in carbon steels and alloy steels.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.401

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE P40 TiN	TiCN	TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	**S1805062**	**S1810062**	**S1815062**
	63/64	25.00	.9843		**S1855250**	**S1860250**	**S1865250**
	1	25.40	1.0000		**S1805100**	**S1810100**	**S1815100**
	1-1/64	25.80	1.0156		**S1805101**	**S1810101**	**S1815101**
		26.00	1.0236		**S1855260**	**S1860260**	**S1865260**
	1-1/32	26.19	1.0313		**S1805102**	**S1810102**	**S1815102**
	1-3/64	26.59	1.0469		**S1805103**	**S1810103**	**S1815103**
	1-1/16	26.99	1.0625		**S1805104**	**S1810104**	**S1815104**
		27.00	1.0630		**S1855270**	**S1860270**	**S1865270**
	1-3/32	27.78	1.0938		**S1805106**	**S1810106**	**S1815106**
		28.00	1.1024		**S1855280**	**S1860280**	**S1865280**
	1-7/64	28.18	1.1094		**S1805107**	**S1810107**	**S1815107**
	1-1/8	28.58	1.1250		**S1805108**	**S1810108**	**S1815108**
		29.00	1.1417		**S1855290**	**S1860290**	**S1865290**
	1-5/32	29.37	1.1563		**S1805110**	**S1810110**	**S1815110**
		30.00	1.1811		**S1855300**	**S1860300**	**S1865300**
	1-3/16	30.16	1.1875		**S1805112**	**S1810112**	**S1815112**
	1-7/32	30.96	1.2188		**S1805114**	**S1810114**	**S1815114**
		31.00	1.2205		**S1855310**	**S1860310**	**S1865310**
	1-1/4	31.75	1.2500		**S1805116**	**S1810116**	**S1815116**
		32.00	1.2598		**S1855320**	**S1860320**	**S1865320**
	1-9/32	32.54	1.2813		**S1805118**	**S1810118**	**S1815118**
		33.00	1.2992		**S1855330**	**S1860330**	**S1865330**
	1-5/16	33.34	1.3125		**S1805120**	**S1810120**	**S1815120**
		34.00	1.3386		**S1855340**	**S1860340**	**S1865340**
	1-11/32	34.13	1.3438		**S1805122**	**S1810122**	**S1815122**
	1-3/8	34.93	1.3750		**S1805124**	**S1810124**	**S1815124**
		35.00	1.3780		**S1855350**	**S1860350**	**S1865350**

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 3

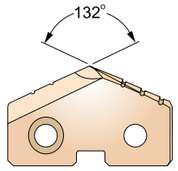
SPADE DRILL INSERTS - CARBIDE P40

EINWEG BOHREINSATZ - VOLLHARTMETALL P40
Plaquettes SPADE DRILL - Carbure P40
CUSPIDI SPADE DRILL - MD P40

- For general use in carbon steels and alloy steels.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.401

Series Min. to Max. mm (inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm, inch)	CARBIDE P40		
					TiN	TiCN	TiAlN
3 Ø34.37 (1.353) to Ø47.80 (1.882)	1-13/32	35.72	1.4063	6.4 (1/4)	S1805126	S1810126	S1815126
		36.00	1.4173		S1855360	S1860360	S1865360
	1-7/16	36.51	1.4375		S1805128	S1810128	S1815128
		37.00	1.4567		S1855370	S1860370	S1865370
	1-15/32	37.31	1.4688		S1805130	S1810130	S1815130
		38.00	1.4961		S1855380	S1860380	S1865380
	1-1/2	38.10	1.5000		S1805132	S1810132	S1815132
	1-17/32	38.89	1.5313		S1805134	S1810134	S1815134
		39.00	1.5354		S1855390	S1860390	S1865390
	1-9/16	39.69	1.5625		S1805136	S1810136	S1815136
		40.00	1.5748		S1855400	S1860400	S1865400
	1-19/32	40.48	1.5938		S1805138	S1810138	S1815138
		41.00	1.6142		S1855410	S1860410	S1865410
	1-5/8	41.28	1.6250		S1805140	S1810140	S1815140
		42.00	1.6535		S1855420	S1860420	S1865420
	1-21/32	42.07	1.6563		S1805142	S1810142	S1815142
	1-11/16	42.86	1.6875		S1805144	S1810144	S1815144
		43.00	1.6929		S1855430	S1860430	S1865430
	1-23/32	43.66	1.7188		S1805146	S1810146	S1815146
		44.00	1.7323		S1855440	S1860440	S1865440
	1-3/4	44.45	1.7500		S1805148	S1810148	S1815148
		45.00	1.7717		S1855450	S1860450	S1865450
	1-25/32	45.24	1.7813		S1805150	S1810150	S1815150
		46.00	1.8110		S1855460	S1860460	S1865460
	1-13/16	46.04	1.8125		S1805152	S1810152	S1815152
	1-27/32	46.83	1.8438		S1805154	S1810154	S1815154
		47.00	1.8504		S1855470	S1860470	S1865470
	1-7/8	47.63	1.8750		S1805156	S1810156	S1815156

◎ : Excellent ○ : Good

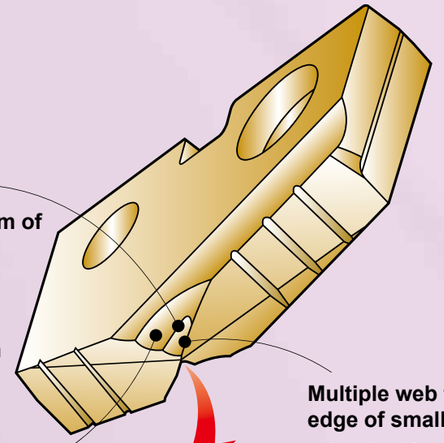
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10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

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

Special features of SM-Point Spade Drill

This new "Hybrid Point" combines the strength of the standard point with additional "Web Thinning".

This new point increases stability, reduces thrust, improves centering and allows increased speeds and feeds.



Multiple thinning form at the bottom of the large thinning.

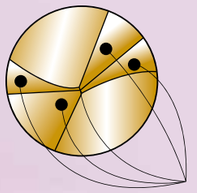
- The optimum thinning for the difference from the cutting speed, the cutting quantity and the cutting load according to the distance from the drill point to the cutting edge.

Radius back face

- Wide chip space

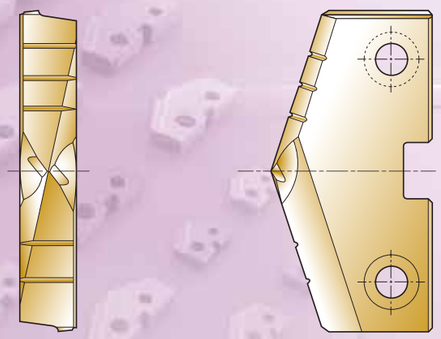
Multiple web thinning with the cutting edge of small web thinning.

- Good self-centering
- Less tool lead off
- Reduction in bell mouthing, thrust
- Increased stability



Four-facet point

- Self-centering
- Less thrust force



SPADE DRILLS

SERIES 1

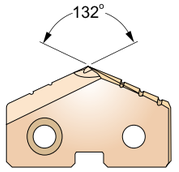
SM-POINT SPADE DRILL INSERTS - HSS M4

SM-POINT EINWEG BOHREINSATZ - HSS M4
Plaquettes SPADE DRILL, pointe SM - HSS M4
CUSPIDI, SM-POINT - HSS M4

- For general use in steels and cast irons.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuer schneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.395

Series Min. to Max. mm (inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm, inch)	HSS M4 TiN	HSS M4 TiCN	HSS M4 TiAlN
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	SM405045	SM410045	SM415045
		18.00	.7087		SM455180	SM460180	SM465180
	23/32	18.26	.7188		SM405046	SM410046	SM415046
		18.50	.7283		SM455185	SM460185	SM465185
	47/64	18.65	.7344		SM405047	SM410047	SM415047
		19.00	.7480		SM455190	SM460190	SM465190
	3/4	19.05	.7500		SM405048	SM410048	SM415048
	49/64	19.45	.7656		SM405049	SM410049	SM415049
		19.50	.7677		SM455195	SM460195	SM465195
	25/32	19.84	.7812		SM405050	SM410050	SM415050
		20.00	.7874		SM455200	SM460200	SM465200
	51/64	20.24	.7969		SM405051	SM410051	SM415051
		20.50	.8071		SM455205	SM460205	SM465205
	13/16	20.64	.8125		SM405052	SM410052	SM415052
		21.00	.8268		SM455210	SM460210	SM465210
	27/32	21.43	.8438		SM405054	SM410054	SM415054
	55/64	21.83	.8594		SM405055	SM410055	SM415055
		22.00	.8661		SM455220	SM460220	SM465220
	7/8	22.23	.8750		SM405056	SM410056	SM415056
	57/64	22.62	.8906		SM405057	SM410057	SM415057
		23.00	.9055		SM455230	SM460230	SM465230
	29/32	23.02	.9062		SM405058	SM410058	SM415058
	59/64	23.42	.9219		SM405059	SM410059	SM415059
	15/16	23.81	.9375		SM405060	SM410060	SM415060
		24.00	.9449		SM455240	SM460240	SM465240

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 2

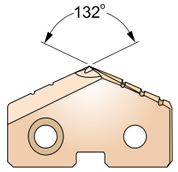
SM-POINT SPADE DRILL INSERTS - HSS M4

SM-POINT EINWEG BOHREINSATZ - HSS M4
Plaquettes SPADE DRILL, pointe SM - HSS M4
CUSPIDI, SM-POINT - HSS M4

- For general use in steels and cast irons.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuer schneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.395

Series Min. to Max. mm (inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm, inch)	HSS M4 TiN	HSS M4 TiCN	HSS M4 TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	SM405062	SM410062	SM415062
	63/64	25.00	.9843		SM455250	SM460250	SM465250
	1	25.40	1.0000		SM405100	SM410100	SM415100
	1-1/64	25.80	1.0156		SM405101	SM410101	SM415101
		26.00	1.0236		SM455260	SM460260	SM465260
	1-1/32	26.19	1.0312		SM405102	SM410102	SM415102
	1-3/64	26.59	1.0469		SM405103	SM410103	SM415103
	1-1/16	26.99	1.0625		SM405104	SM410104	SM415104
		27.00	1.0630		SM455270	SM460270	SM465270
	1-3/32	27.78	1.0938		SM405106	SM410106	SM415106
		28.00	1.1024		SM455280	SM460280	SM465280
	1-7/64	28.18	1.1094		SM405107	SM410107	SM415107
	1-1/8	28.58	1.1250		SM405108	SM410108	SM415108
		29.00	1.1417		SM455290	SM460290	SM465290
	1-5/32	29.37	1.1562		SM405110	SM410110	SM415110
		30.00	1.1811		SM455300	SM460300	SM465300
	1-3/16	30.16	1.1875		SM405112	SM410112	SM415112
	1-7/32	30.96	1.2188		SM405114	SM410114	SM415114
		31.00	1.2205		SM455310	SM460310	SM465310
	1-1/4	31.75	1.2500		SM405116	SM410116	SM415116
		32.00	1.2598		SM455320	SM460320	SM465320
	1-9/32	32.54	1.2812		SM405118	SM410118	SM415118
		33.00	1.2992		SM455330	SM460330	SM465330
	1-5/16	33.34	1.3125		SM405120	SM410120	SM415120
		34.00	1.3386		SM455340	SM460340	SM465340
	1-11/32	34.13	1.3438		SM405122	SM410122	SM415122
	1-3/8	34.93	1.3750		SM405124	SM410124	SM415124
		35.00	1.3780		SM455350	SM460350	SM465350

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 3

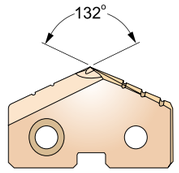
SM-POINT SPADE DRILL INSERTS - HSS M4

SM-POINT EINWEG BOHREINSATZ - HSS M4
Plaquettes SPADE DRILL, pointe SM - HSS M4
CUSPIDI, SM-POINT - HSS M4

- For general use in steels and cast irons.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuer schneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.395

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. HSS M4 TiN	EDP No. HSS M4 TiCN	EDP No. HSS M4 TiAlN
3 Ø34.37 (1.353) to Ø47.80 (1.882)	1-13/32	35.72	1.4062	6.4 (1/4)	SM405126	SM410126	SM415126
		36.00	1.4173		SM455360	SM460360	SM465360
	1-7/16	36.51	1.4375		SM405128	SM410128	SM415128
		37.00	1.4567		SM455370	SM460370	SM465370
	1-15/32	37.31	1.4688		SM405130	SM410130	SM415130
		38.00	1.4961		SM455380	SM460380	SM465380
	1-1/2	38.10	1.5000		SM405132	SM410132	SM415132
	1-17/32	38.89	1.5312		SM405134	SM410134	SM415134
		39.00	1.5354		SM455390	SM460390	SM465390
	1-9/16	39.69	1.5625		SM405136	SM410136	SM415136
		40.00	1.5748		SM455400	SM460400	SM465400
	1-19/32	40.48	1.5938		SM405138	SM410138	SM415138
		41.00	1.6142		SM455410	SM460410	SM465410
	1-5/8	41.28	1.6250		SM405140	SM410140	SM415140
		42.00	1.6535		SM455420	SM460420	SM465420
	1-21/32	42.07	1.6562		SM405142	SM410142	SM415142
	1-11/16	42.86	1.6875		SM405144	SM410144	SM415144
		43.00	1.6929		SM455430	SM460430	SM465430
	1-23/32	43.66	1.7188		SM405146	SM410146	SM415146
		44.00	1.7323		SM455440	SM460440	SM465440
	1-3/4	44.45	1.7500		SM405148	SM410148	SM415148
		45.00	1.7717		SM455450	SM460450	SM465450
	1-25/32	45.24	1.7812		SM405150	SM410150	SM415150
		46.00	1.8110		SM455460	SM460460	SM465460
	1-13/16	46.04	1.8125		SM405152	SM410152	SM415152
	1-27/32	46.83	1.8438		SM405154	SM410154	SM415154
		47.00	1.8504		SM455470	SM460470	SM465470
	1-7/8	47.63	1.8750		SM405156	SM410156	SM415156

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES Y, Z, 0

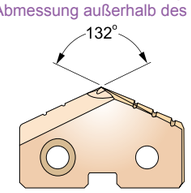
SM-POINT SPADE DRILL INSERTS - SUPER HSS T15

SM-POINT EINWEG BOHREINSATZ - SUPER HSS T15
Plaquettes SPADE DRILL, pointe SM - Super HSS T15
CUSPIDI, SM-POINT - HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuer schneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.396

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. SUPER HSS T15 TiN	EDP No. SUPER HSS T15 TiCN	EDP No. SUPER HSS T15 TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)		9.50	.3740	2.4 (3/32)	SM155095	SM160095	SM165095
	3/8	9.53	.3750		SM105024	SM110024	SM115024
		9.80	.3858		SM155098	SM160098	SM165098
	25/64	9.92	.3906		SM105025	SM110025	SM115025
		10.00	.3937		SM155100	SM160100	SM165100
		10.20	.4016		SM155102	SM160102	SM165102
	13/32	10.32	.4062		SM105026	SM110026	SM115026
		10.50	.4134		SM155105	SM160105	SM165105
	27/64	10.72	.4219		SM105027	SM110027	SM115027
		10.80	.4252		SM155108	SM160108	SM165108
		11.00	.4331		SM155110	SM160110	SM165110
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.11	.4375	2.4 (3/32)	SM105028	SM110028	SM115028
		11.50	.4528		SM155115	SM160115	SM165115
	29/64	11.51	.4531		SM105029	SM110029	SM115029
	15/32	11.91	.4688		SM105030	SM110030	SM115030
		12.00	.4724		SM155120	SM160120	SM165120
	31/64	12.30	.4844		SM105031	SM110031	SM115031
		12.50	.4921		SM155125	SM160125	SM165125
	1/2	12.70	.5000		SM105032	SM110032	SM115032
0 Ø12.98 (.511) to Ø17.65 (.695)		13.00	.5118	3.2 (1/8)	SM155130	SM160130	SM165130
	33/64	13.10	.5156		SM105033	SM110033	SM115033
	17/32	13.49	.5312		SM105034	SM110034	SM115034
		13.50	.5315		SM155135	SM160135	SM165135
	35/64	13.89	.5469		SM105035	SM110035	SM115035
		14.00	.5512		SM155140	SM160140	SM165140
	9/16	14.29	.5625		SM105036	SM110036	SM115036
		14.50	.5709		SM155145	SM160145	SM165145
	37/64	14.68	.5781		SM105037	SM110037	SM115037
		15.00	.5906		SM155150	SM160150	SM165150
	19/32	15.08	.5938		SM105038	SM110038	SM115038
	39/64	15.48	.6094		SM105039	SM110039	SM115039
		15.50	.6102		SM155155	SM160155	SM165155
	5/8	15.88	.6250		SM105040	SM110040	SM115040
		16.00	.6299		SM155160	SM160160	SM165160

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 0, 1

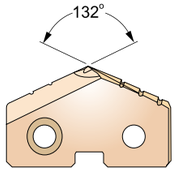
SM-POINT SPADE DRILL INSERTS - SUPER HSS T15

SM-POINT EINWEG BOHREINSATZ - SUPER HSS T15
Plaquettes SPADE DRILL, pointe SM - Super HSS T15
CUSPIDI DI FORATURA SM-POINT - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuer schneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.396

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. SUPER HSS T15 TiN	TiCN	TiAlN
0 Ø12.98(.511) to Ø17.65(.695)	41/64	16.27	.6406	3.2 (1/8)	SM105041	SM110041	SM115041
		16.50	.6496		SM155165	SM160165	SM165165
	21/32	16.67	.6562		SM105042	SM110042	SM115042
		17.00	.6693		SM155170	SM160170	SM165170
	43/64	17.07	.6719		SM105043	SM110043	SM115043
	11/16	17.46	.6875		SM105044	SM110044	SM115044
		17.50	.6890		SM155175	SM160175	SM165175
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	SM105045	SM110045	SM115045
		18.00	.7087		SM155180	SM160180	SM165180
	23/32	18.26	.7188		SM105046	SM110046	SM115046
		18.50	.7283		SM155185	SM160185	SM165185
	47/64	18.65	.7344		SM105047	SM110047	SM115047
		19.00	.7480		SM155190	SM160190	SM165190
	3/4	19.05	.7500		SM105048	SM110048	SM115048
	49/64	19.45	.7656		SM105049	SM110049	SM115049
		19.50	.7677		SM155195	SM160195	SM165195
	25/32	19.84	.7812		SM105050	SM110050	SM115050
		20.00	.7874		SM155200	SM160200	SM165200
	51/64	20.24	.7969		SM105051	SM110051	SM115051
		20.50	.8071		SM155205	SM160205	SM165205
	13/16	20.64	.8125		SM105052	SM110052	SM115052
		21.00	.8268		SM155210	SM160210	SM165210
	27/32	21.43	.8438		SM105054	SM110054	SM115054
	55/64	21.83	.8594		SM105055	SM110055	SM115055
		22.00	.8661		SM155220	SM160220	SM165220
	7/8	22.23	.8750		SM105056	SM110056	SM115056
	57/64	22.62	.8906		SM105057	SM110057	SM115057
		23.00	.9055		SM155230	SM160230	SM165230
	29/32	23.02	.9062		SM105058	SM110058	SM115058
	59/64	23.42	.9219		SM105059	SM110059	SM115059
	15/16	23.81	.9375		SM105060	SM110060	SM115060
		24.00	.9449		SM155240	SM160240	SM165240

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 2

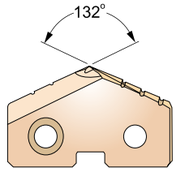
SM-POINT SPADE DRILL INSERTS - SUPER HSS T15

SM-POINT EINWEG BOHREINSATZ - SUPER HSS T15
Plaquettes SPADE DRILL, pointe SM - Super HSS T15
CUSPIDI DI FORATURA SM-POINT - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuer schneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.396

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. SUPER HSS T15 TiN	TiCN	TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	SM105062	SM110062	SM115062
	63/64	25.00	.9843		SM155250	SM160250	SM165250
	1	25.40	1.0000		SM105100	SM110100	SM115100
	1-1/64	25.80	1.0156		SM105101	SM110101	SM115101
		26.00	1.0236		SM155260	SM160260	SM165260
	1-1/32	26.19	1.0312		SM105102	SM110102	SM115102
	1-3/64	26.59	1.0469		SM105103	SM110103	SM115103
	1-1/16	26.99	1.0625		SM105104	SM110104	SM115104
		27.00	1.0630		SM155270	SM160270	SM165270
	1-3/32	27.78	1.0938		SM105106	SM110106	SM115106
		28.00	1.1024		SM155280	SM160280	SM165280
	1-7/64	28.18	1.1094		SM105107	SM110107	SM115107
	1-1/8	28.58	1.1250		SM105108	SM110108	SM115108
		29.00	1.1417		SM155290	SM160290	SM165290
	1-5/32	29.37	1.1562		SM105110	SM110110	SM115110
		30.00	1.1811		SM155300	SM160300	SM165300
	1-3/16	30.16	1.1875		SM105112	SM110112	SM115112
	1-7/32	30.96	1.2188		SM105114	SM110114	SM115114
		31.00	1.2205		SM155310	SM160310	SM165310
	1-1/4	31.75	1.2500		SM105116	SM110116	SM115116
		32.00	1.2598		SM155320	SM160320	SM165320
	1-9/32	32.54	1.2812		SM105118	SM110118	SM115118
		33.00	1.2992		SM155330	SM160330	SM165330
	1-5/16	33.34	1.3125		SM105120	SM110120	SM115120
		34.00	1.3386		SM155340	SM160340	SM165340
	1-11/32	34.13	1.3438		SM105122	SM110122	SM115122
	1-3/8	34.93	1.3750		SM105124	SM110124	SM115124
		35.00	1.3780		SM155350	SM160350	SM165350

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 3

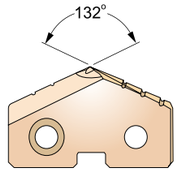
SM-POINT SPADE DRILL INSERTS - SUPER HSS T15

SM-POINT EINWEG BOHREINSATZ - SUPER HSS T15
Plaquettes SPADE DRILL, pointe SM - Super HSS T15
CUSPIDI DI FORATURA SM-POINT - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuer schneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.396

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. SUPER HSS T15 TiN	TiCN	TiAlN
3 Ø34.37 (1.353) to Ø47.80 (1.882)	1-13/32	35.72	1.4062	6.4 (1/4)	SM105126	SM110126	SM115126
		36.00	1.4173		SM155360	SM160360	SM165360
	1-7/16	36.51	1.4375		SM105128	SM110128	SM115128
		37.00	1.4567		SM155370	SM160370	SM165370
	1-15/32	37.31	1.4688		SM105130	SM110130	SM115130
		38.00	1.4961		SM155380	SM160380	SM165380
	1-1/2	38.10	1.5000		SM105132	SM110132	SM115132
	1-17/32	38.89	1.5312		SM105134	SM110134	SM115134
		39.00	1.5354		SM155390	SM160390	SM165390
	1-9/16	39.69	1.5625		SM105136	SM110136	SM115136
		40.00	1.5748		SM155400	SM160400	SM165400
	1-19/32	40.48	1.5938		SM105138	SM110138	SM115138
		41.00	1.6142		SM155410	SM160410	SM165410
	1-5/8	41.28	1.6250		SM105140	SM110140	SM115140
		42.00	1.6535		SM155420	SM160420	SM165420
	1-21/32	42.07	1.6562		SM105142	SM110142	SM115142
	1-11/16	42.86	1.6875		SM105144	SM110144	SM115144
		43.00	1.6929		SM155430	SM160430	SM165430
	1-23/32	43.66	1.7188		SM105146	SM110146	SM115146
		44.00	1.7323		SM155440	SM160440	SM165440
	1-3/4	44.45	1.7500		SM105148	SM110148	SM115148
		45.00	1.7717		SM155450	SM160450	SM165450
	1-25/32	45.24	1.7812		SM105150	SM110150	SM115150
		46.00	1.8110		SM155460	SM160460	SM165460
	1-13/16	46.04	1.8125		SM105152	SM110152	SM115152
	1-27/32	46.83	1.8438		SM105154	SM110154	SM115154
		47.00	1.8504		SM155470	SM160470	SM165470
	1-7/8	47.63	1.8750		SM105156	SM110156	SM115156

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES Y, Z, 0

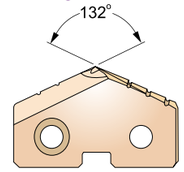
SM-POINT SPADE DRILL INSERTS - PREMIUM HSS M48

SM-POINT EINWEG BOHREINSATZ - PREMIUM HSS M48
Plaquettes SPADE DRILL, pointe SM - HSS Premium M48
CUSPIDI, SM-POINT - PREMIUM HSS M48

- For use in high temperature alloys and materials with 350~500 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.397

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. PREMIUM HSS M48 TiN	TiCN	TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)		9.50	.3740	2.4 (3/32)	SM555095	SM560095	SM565095
	3/8	9.53	.3750		SM505024	SM510024	SM515024
		9.80	.3858		SM555098	SM560098	SM565098
	25/64	9.92	.3906		SM505025	SM510025	SM515025
		10.00	.3937		SM555100	SM560100	SM565100
		10.20	.4016		SM555102	SM560102	SM565102
	13/32	10.32	.4062		SM505026	SM510026	SM515026
		10.50	.4134		SM555105	SM560105	SM565105
	27/64	10.72	.4219		SM505027	SM510027	SM515027
		10.80	.4252		SM555108	SM560108	SM565108
		11.00	.4331		SM555110	SM560110	SM565110
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.11	.4375	2.4 (3/32)	SM505028	SM510028	SM515028
		11.50	.4528		SM555115	SM560115	SM565115
	29/64	11.51	.4531		SM505029	SM510029	SM515029
	15/32	11.91	.4688		SM505030	SM510030	SM515030
		12.00	.4724		SM555120	SM560120	SM565120
	31/64	12.30	.4844		SM505031	SM510031	SM515031
		12.50	.4921		SM555125	SM560125	SM565125
	1/2	12.70	.5000		SM505032	SM510032	SM515032
0 Ø12.98 (.511) to Ø17.65 (.695)		13.00	.5118	3.2 (1/8)	SM555130	SM560130	SM565130
	33/64	13.10	.5156		SM505033	SM510033	SM515033
	17/32	13.49	.5312		SM505034	SM510034	SM515034
		13.50	.5315		SM555135	SM560135	SM565135
	35/64	13.89	.5469		SM505035	SM510035	SM515035
		14.00	.5512		SM555140	SM560140	SM565140
	9/16	14.29	.5625		SM505036	SM510036	SM515036
		14.50	.5709		SM555145	SM560145	SM565145
	37/64	14.68	.5781		SM505037	SM510037	SM515037
		15.00	.5906		SM555150	SM560150	SM565150
	19/32	15.08	.5938		SM505038	SM510038	SM515038
	39/64	15.48	.6094		SM505039	SM510039	SM515039
		15.50	.6102		SM555155	SM560155	SM565155
	5/8	15.88	.6250		SM505040	SM510040	SM515040
		16.00	.6299		SM555160	SM560160	SM565160

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 0, 1

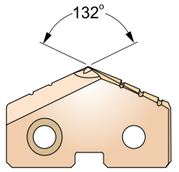
SM-POINT SPADE DRILL INSERTS - PREMIUM HSS M48

- SM-POINT EINWEG BOHREINSATZ - PREMIUM HSS M48
- Plaquettes SPADE DRILL, pointe SM - HSS Premium M48
- CUSPIDI, SM-POINT - PREMIUM HSS M48

- ▶ For use in high temperature alloys and materials with 350~500 Brinell.
- ▶ Improved stability and hole straightness by newly developed thinning design.
- ▶ Less thrust force and excellent self-centering.
- ▶ Any non-standard size available.

- ▶ Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- ▶ Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- ▶ Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.397

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. PREMIUM HSS M48 TiN	TiCN	TiAlN
0 Ø12.98(.511) to Ø17.65(.695)	41/64	16.27	.6406	3.2 (1/8)	SM505041	SM510041	SM515041
		16.50	.6496		SM555165	SM560165	SM565165
	21/32	16.67	.6562		SM505042	SM510042	SM515042
		17.00	.6693		SM555170	SM560170	SM565170
	43/64	17.07	.6719		SM505043	SM510043	SM515043
	11/16	17.46	.6875		SM505044	SM510044	SM515044
		17.50	.6890		SM555175	SM560175	SM565175
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	SM505045	SM510045	SM515045
		18.00	.7087		SM555180	SM560180	SM565180
	23/32	18.26	.7188		SM505046	SM510046	SM515046
		18.50	.7283		SM555185	SM560185	SM565185
	47/64	18.65	.7344		SM505047	SM510047	SM515047
		19.00	.7480		SM555190	SM560190	SM565190
	3/4	19.05	.7500		SM505048	SM510048	SM515048
	49/64	19.45	.7656		SM505049	SM510049	SM515049
		19.50	.7677		SM555195	SM560195	SM565195
	25/32	19.84	.7812		SM505050	SM510050	SM515050
		20.00	.7874		SM555200	SM560200	SM565200
	51/64	20.24	.7969		SM505051	SM510051	SM515051
		20.50	.8071		SM555205	SM560205	SM565205
	13/16	20.64	.8125		SM505052	SM510052	SM515052
		21.00	.8268		SM555210	SM560210	SM565210
	27/32	21.43	.8438		SM505054	SM510054	SM515054
	55/64	21.83	.8594		SM505055	SM510055	SM515055
		22.00	.8661		SM555220	SM560220	SM565220
	7/8	22.23	.8750		SM505056	SM510056	SM515056
	57/64	22.62	.8906		SM505057	SM510057	SM515057
		23.00	.9055		SM555230	SM560230	SM565230
	29/32	23.02	.9062		SM505058	SM510058	SM515058
	59/64	23.42	.9219		SM505059	SM510059	SM515059
	15/16	23.81	.9375		SM505060	SM510060	SM515060
		24.00	.9449		SM555240	SM560240	SM565240

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 2

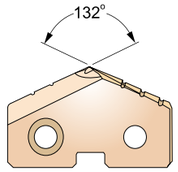
SM-POINT SPADE DRILL INSERTS - PREMIUM HSS M48

- SM-POINT EINWEG BOHREINSATZ - PREMIUM HSS M48
- Plaquettes SPADE DRILL, pointe SM - HSS Premium M48
- CUSPIDI, SM-POINT - PREMIUM HSS M48

- ▶ For use in high temperature alloys and materials with 350~500 Brinell.
- ▶ Improved stability and hole straightness by newly developed thinning design.
- ▶ Less thrust force and excellent self-centering.
- ▶ Any non-standard size available.

- ▶ Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- ▶ Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- ▶ Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.397

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. PREMIUM HSS M48 TiN	TiCN	TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	SM505062	SM510062	SM515062
	63/64	25.00	.9843		SM555250	SM560250	SM565250
	1	25.40	1.0000		SM505100	SM510100	SM515100
	1-1/64	25.80	1.0156		SM505101	SM510101	SM515101
		26.00	1.0236		SM555260	SM560260	SM565260
	1-1/32	26.19	1.0312		SM505102	SM510102	SM515102
	1-3/64	26.59	1.0469		SM505103	SM510103	SM515103
	1-1/16	26.99	1.0625		SM505104	SM510104	SM515104
		27.00	1.0630		SM555270	SM560270	SM565270
	1-3/32	27.78	1.0938		SM505106	SM510106	SM515106
		28.00	1.1024		SM555280	SM560280	SM565280
	1-7/64	28.18	1.1094		SM505107	SM510107	SM515107
	1-1/8	28.58	1.1250		SM505108	SM510108	SM515108
		29.00	1.1417		SM555290	SM560290	SM565290
	1-5/32	29.37	1.1562		SM505110	SM510110	SM515110
		30.00	1.1811		SM555300	SM560300	SM565300
	1-3/16	30.16	1.1875		SM505112	SM510112	SM515112
	1-7/32	30.96	1.2188		SM505114	SM510114	SM515114
		31.00	1.2205		SM555310	SM560310	SM565310
	1-1/4	31.75	1.2500		SM505116	SM510116	SM515116
		32.00	1.2598		SM555320	SM560320	SM565320
	1-9/32	32.54	1.2812		SM505118	SM510118	SM515118
		33.00	1.2992		SM555330	SM560330	SM565330
	1-5/16	33.34	1.3125		SM505120	SM510120	SM515120
		34.00	1.3386		SM555340	SM560340	SM565340
	1-11/32	34.13	1.3438		SM505122	SM510122	SM515122
	1-3/8	34.93	1.3750		SM505124	SM510124	SM515124
		35.00	1.3780		SM555350	SM560350	SM565350

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES **Y, Z, 0**

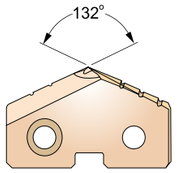
SM-POINT SPADE DRILL INSERTS for CAST IRON - CARBIDE K10

SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL K10
Plaquettes SPADE DRILL, pointe SM pour la fonte - Carbure K10
CUSPIDI SM-POINT - MD K10

- ▶ High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys.
- ▶ Improved stability and hole straightness by newly developed thinning design.
- ▶ Less thrust force and excellent self-centering.
- ▶ Any non-standard size available.

- ▶ Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
- ▶ Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- ▶ Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.398

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE K10 TiN	TiCN	TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)		9.50	.3740	2.4 (3/32)	SM655095	SM660095	SM665095
	3/8	9.53	.3750		SM605024	SM610024	SM615024
		9.80	.3858		SM655098	SM660098	SM665098
	25/64	9.92	.3906		SM605025	SM610025	SM615025
		10.00	.3937		SM655100	SM660100	SM665100
		10.20	.4016		SM655102	SM660102	SM665102
	13/32	10.32	.4062		SM605026	SM610026	SM615026
		10.50	.4134		SM655105	SM660105	SM665105
	27/64	10.72	.4219		SM605027	SM610027	SM615027
		10.80	.4252		SM655108	SM660108	SM665108
		11.00	.4331		SM655110	SM660110	SM665110
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.11	.4375	2.4 (3/32)	SM605028	SM610028	SM615028
		11.50	.4528		SM655115	SM660115	SM665115
	29/64	11.51	.4531		SM605029	SM610029	SM615029
	15/32	11.91	.4688		SM605030	SM610030	SM615030
		12.00	.4724		SM655120	SM660120	SM665120
	31/64	12.30	.4844		SM605031	SM610031	SM615031
		12.50	.4921		SM655125	SM660125	SM665125
	1/2	12.70	.5000		SM605032	SM610032	SM615032
0 Ø12.98 (.511) to Ø17.65 (.695)		13.00	.5118	3.2 (1/8)	SM655130	SM660130	SM665130
	33/64	13.10	.5156		SM605033	SM610033	SM615033
	17/32	13.49	.5312		SM605034	SM610034	SM615034
		13.50	.5315		SM655135	SM660135	SM665135
	35/64	13.89	.5469		SM605035	SM610035	SM615035
		14.00	.5512		SM655140	SM660140	SM665140
	9/16	14.29	.5625		SM605036	SM610036	SM615036
		14.50	.5709		SM655145	SM660145	SM665145
	37/64	14.68	.5781		SM605037	SM610037	SM615037
		15.00	.5906		SM655150	SM660150	SM665150
	19/32	15.08	.5938		SM605038	SM610038	SM615038
	39/64	15.48	.6094		SM605039	SM610039	SM615039
		15.50	.6102		SM655155	SM660155	SM665155
	5/8	15.88	.6250		SM605040	SM610040	SM615040
		16.00	.6299		SM655160	SM660160	SM665160

◎ : 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	12	13	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25			15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	200	240	180	180	260	160	250	130	230	
Recommended															◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎	

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

SPADE DRILLS

SERIES **0, 1**

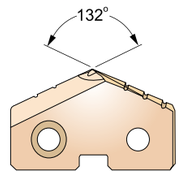
SM-POINT SPADE DRILL INSERTS for CAST IRON - CARBIDE K10

SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL K10
Plaquettes SPADE DRILL, pointe SM pour la fonte - Carbure K10
CUSPIDI SM-POINT - MD K10

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- ▶ Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
- ▶ Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- ▶ Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.398

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE K10 TiN	TiCN	TiAlN
0 Ø12.98(.511) to Ø17.65(.695)	41/64	16.27	.6406	3.2 (1/8)	SM605041	SM610041	SM615041
		16.50	.6496		SM655165	SM660165	SM665165
	21/32	16.67	.6562		SM605042	SM610042	SM615042
		17.00	.6693		SM655170	SM660170	SM665170
	43/64	17.07	.6719		SM605043	SM610043	SM615043
	11/16	17.46	.6875		SM605044	SM610044	SM615044
		17.50	.6890		SM655175	SM660175	SM665175
	45/64	17.86	.7031		SM605045	SM610045	SM615045
		18.00	.7087		SM655180	SM660180	SM665180
	23/32	18.26	.7188		SM605046	SM610046	SM615046
		18.50	.7283		SM655185	SM660185	SM665185
1 Ø17.53 (.690) to Ø24.38 (.960)	47/64	18.65	.7344	4.0 (5/32)	SM605047	SM610047	SM615047
		19.00	.7480		SM655190	SM660190	SM665190
	3/4	19.05	.7500		SM605048	SM610048	SM615048
	49/64	19.45	.7656		SM605049	SM610049	SM615049
		19.50	.7677		SM655195	SM660195	SM665195
	25/32	19.84	.7812		SM605050	SM610050	SM615050
		20.00	.7874		SM655200	SM660200	SM665200
	51/64	20.24	.7969		SM605051	SM610051	SM615051
		20.50	.8071		SM655205	SM660205	SM665205
	13/16	20.64	.8125		SM605052	SM610052	SM615052
		21.00	.8268		SM655210	SM660210	SM665210
	27/32	21.43	.8438		SM605054	SM610054	SM615054
	55/64	21.83	.8594		SM605055	SM610055	SM615055
		22.00	.8661		SM655220	SM660220	SM665220
	7/8	22.23	.8750		SM605056	SM610056	SM615056
	57/64	22.62	.8906		SM605057	SM610057	SM615057
		23.00	.9055		SM655230	SM660230	SM665230
	29/32	23.02	.9062		SM605058	SM610058	SM615058
	59/64	23.42	.9219		SM605059	SM610059	SM615059
	15/16	23.81	.9375		SM605060	SM610060	SM615060
		24.00	.9449		SM655240	SM660240	SM665240

◎ : 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	12	13	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25			15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	200	240	180	180	260	160	250	130	230	
Recommended															◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎	

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

SPADE DRILLS

SERIES 2

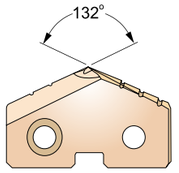
SM-POINT SPADE DRILL INSERTS for CAST IRON - CARBIDE K10

SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL K10
Plaquettes SPADE DRILL, pointe SM pour la fonte - Carbure K10
CUSPIDI SM-POINT - MD K10

- ▶ High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys.
- ▶ Improved stability and hole straightness by newly developed thinning design.
- ▶ Less thrust force and excellent self-centering.
- ▶ Any non-standard size available.

- ▶ Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
- ▶ Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- ▶ Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.398

Series Min. to Max. mm (inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm, inch)	CARBIDE K10 TiN	CARBIDE K10 TiCN	CARBIDE K10 TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	SM605062	SM610062	SM615062
	63/64	25.00	.9843		SM655250	SM660250	SM665250
	1	25.40	1.0000		SM605100	SM610100	SM615100
	1-1/64	25.80	1.0156		SM605101	SM610101	SM615101
		26.00	1.0236		SM655260	SM660260	SM665260
	1-1/32	26.19	1.0312		SM605102	SM610102	SM615102
	1-3/64	26.59	1.0469		SM605103	SM610103	SM615103
	1-1/16	26.99	1.0625		SM605104	SM610104	SM615104
		27.00	1.0630		SM655270	SM660270	SM665270
	1-3/32	27.78	1.0938		SM605106	SM610106	SM615106
		28.00	1.1024		SM655280	SM660280	SM665280
	1-7/64	28.18	1.1094		SM605107	SM610107	SM615107
	1-1/8	28.58	1.1250		SM605108	SM610108	SM615108
		29.00	1.1417		SM655290	SM660290	SM665290
	1-5/32	29.37	1.1562		SM605110	SM610110	SM615110
		30.00	1.1811		SM655300	SM660300	SM665300
	1-3/16	30.16	1.1875		SM605112	SM610112	SM615112
	1-7/32	30.96	1.2188		SM605114	SM610114	SM615114
		31.00	1.2205		SM655310	SM660310	SM665310
	1-1/4	31.75	1.2500		SM605116	SM610116	SM615116
		32.00	1.2598		SM655320	SM660320	SM665320
	1-9/32	32.54	1.2812		SM605118	SM610118	SM615118
		33.00	1.2992		SM655330	SM660330	SM665330
	1-5/16	33.34	1.3125		SM605120	SM610120	SM615120
		34.00	1.3386		SM655340	SM660340	SM665340
	1-11/32	34.13	1.3438		SM605122	SM610122	SM615122
	1-3/8	34.93	1.3750		SM605124	SM610124	SM615124
		35.00	1.3780		SM655350	SM660350	SM665350

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES Y, Z, 0

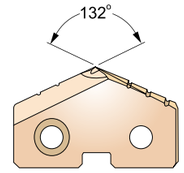
SM-POINT SPADE DRILL INSERTS - CARBIDE K20

SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL K20
Plaquettes SPADE DRILL, pointe SM - Carbure K20
CUSPIDI SM-POINT - MD K20

- ▶ For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- ▶ Improved stability and hole straightness by newly developed thinning design.
- ▶ Less thrust force and excellent self-centering.
- ▶ Any non-standard size available.

- ▶ Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- ▶ Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- ▶ Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- ▶ Jede Abmessung außerhalb des Kataloges lieferba





cutting conditions : P.399

Series Min. to Max. mm (inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm, inch)	CARBIDE K20 TiN	CARBIDE K20 TiCN	CARBIDE K20 TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)		9.50	.3740	2.4 (3/32)	SM755095	SM760095	SM765095
	3/8	9.53	.3750		SM705024	SM710024	SM715024
		9.80	.3858		SM755098	SM760098	SM765098
	25/64	9.92	.3906		SM705025	SM710025	SM715025
		10.00	.3937		SM755100	SM760100	SM765100
		10.20	.4016		SM755102	SM760102	SM765102
	13/32	10.32	.4062		SM705026	SM710026	SM715026
		10.50	.4134		SM755105	SM760105	SM765105
	27/64	10.72	.4219		SM705027	SM710027	SM715027
		10.80	.4252		SM755108	SM760108	SM765108
		11.00	.4331		SM755110	SM760110	SM765110
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.11	.4375	2.4 (3/32)	SM705028	SM710028	SM715028
		11.50	.4528		SM755115	SM760115	SM765115
	29/64	11.51	.4531		SM705029	SM710029	SM715029
	15/32	11.91	.4688		SM705030	SM710030	SM715030
		12.00	.4724		SM755120	SM760120	SM765120
	31/64	12.30	.4844		SM705031	SM710031	SM715031
		12.50	.4921		SM755125	SM760125	SM765125
	1/2	12.70	.5000		SM705032	SM710032	SM715032
0 Ø12.98 (.511) to Ø17.65 (.695)		13.00	.5118	3.2 (1/8)	SM755130	SM760130	SM765130
	33/64	13.10	.5156		SM705033	SM710033	SM715033
	17/32	13.49	.5312		SM705034	SM710034	SM715034
		13.50	.5315		SM755135	SM760135	SM765135
	35/64	13.89	.5469		SM705035	SM710035	SM715035
		14.00	.5512		SM755140	SM760140	SM765140
	9/16	14.29	.5625		SM705036	SM710036	SM715036
		14.50	.5709		SM755145	SM760145	SM765145
	37/64	14.68	.5781		SM705037	SM710037	SM715037
		15.00	.5906		SM755150	SM760150	SM765150
	19/32	15.08	.5938		SM705038	SM710038	SM715038
	39/64	15.48	.6094		SM705039	SM710039	SM715039
		15.50	.6102		SM755155	SM760155	SM765155
	5/8	15.88	.6250		SM705040	SM710040	SM715040
		16.00	.6299		SM755160	SM760160	SM765160

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 0, 1

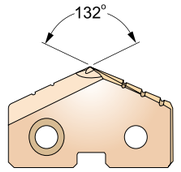
SM-POINT SPADE DRILL INSERTS - CARBIDE K20

SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL K20
Plaquettes SPADE DRILL, pointe SM - Carbure K20
CUSPIDI SM-POINT - MD K20

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferba





cutting conditions : P.399

Series Min. to Max. mm (inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm, inch)	CARBIDE K20 TiN	CARBIDE K20 TiCN	CARBIDE K20 TiAlN
0 Ø12.98(.511) to Ø17.65(.695)	41/64	16.27	.6406	3.2 (1/8)	SM705041	SM710041	SM715041
		16.50	.6496		SM755165	SM760165	SM765165
	21/32	16.67	.6562		SM705042	SM710042	SM715042
		17.00	.6693		SM755170	SM760170	SM765170
	43/64	17.07	.6719		SM705043	SM710043	SM715043
	11/16	17.46	.6875		SM705044	SM710044	SM715044
		17.50	.6890		SM755175	SM760175	SM765175
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	SM705045	SM710045	SM715045
		18.00	.7087		SM755180	SM760180	SM765180
	23/32	18.26	.7188		SM705046	SM710046	SM715046
		18.50	.7283		SM755185	SM760185	SM765185
	47/64	18.65	.7344		SM705047	SM710047	SM715047
		19.00	.7480		SM755190	SM760190	SM765190
	3/4	19.05	.7500		SM705048	SM710048	SM715048
	49/64	19.45	.7656		SM705049	SM710049	SM715049
		19.50	.7677		SM755195	SM760195	SM765195
	25/32	19.84	.7812		SM705050	SM710050	SM715050
		20.00	.7874		SM755200	SM760200	SM765200
	51/64	20.24	.7969		SM705051	SM710051	SM715051
		20.50	.8071		SM755205	SM760205	SM765205
	13/16	20.64	.8125		SM705052	SM710052	SM715052
		21.00	.8268		SM755210	SM760210	SM765210
	27/32	21.43	.8438		SM705054	SM710054	SM715054
	55/64	21.83	.8594		SM705055	SM710055	SM715055
		22.00	.8661		SM755220	SM760220	SM765220
	7/8	22.23	.8750		SM705056	SM710056	SM715056
	57/64	22.62	.8906		SM705057	SM710057	SM715057
		23.00	.9055		SM755230	SM760230	SM765230
	29/32	23.02	.9062		SM705058	SM710058	SM715058
	59/64	23.42	.9219		SM705059	SM710059	SM715059
	15/16	23.81	.9375		SM705060	SM710060	SM715060
		24.00	.9449		SM755240	SM760240	SM765240

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 2

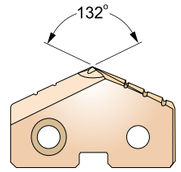
SM-POINT SPADE DRILL INSERTS - CARBIDE K20

SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL K20
Plaquettes SPADE DRILL, pointe SM - Carbure K20
CUSPIDI SM-POINT - MD K20

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferba





cutting conditions : P.399

Series Min. to Max. mm (inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm, inch)	CARBIDE K20 TiN	CARBIDE K20 TiCN	CARBIDE K20 TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	SM705062	SM710062	SM715062
	63/64	25.00	.9843		SM755250	SM760250	SM765250
	1	25.40	1.0000		SM705100	SM710100	SM715100
	1-1/64	25.80	1.0156		SM705101	SM710101	SM715101
		26.00	1.0236		SM755260	SM760260	SM765260
	1-1/32	26.19	1.0312		SM705102	SM710102	SM715102
	1-3/64	26.59	1.0469		SM705103	SM710103	SM715103
	1-1/16	26.99	1.0625		SM705104	SM710104	SM715104
		27.00	1.0630		SM755270	SM760270	SM765270
	1-3/32	27.78	1.0938		SM705106	SM710106	SM715106
		28.00	1.1024		SM755280	SM760280	SM765280
	1-7/64	28.18	1.1094		SM705107	SM710107	SM715107
	1-1/8	28.58	1.1250		SM705108	SM710108	SM715108
		29.00	1.1417		SM755290	SM760290	SM765290
	1-5/32	29.37	1.1562		SM705110	SM710110	SM715110
		30.00	1.1811		SM755300	SM760300	SM765300
	1-3/16	30.16	1.1875		SM705112	SM710112	SM715112
	1-7/32	30.96	1.2188		SM705114	SM710114	SM715114
		31.00	1.2205		SM755310	SM760310	SM765310
	1-1/4	31.75	1.2500		SM705116	SM710116	SM715116
		32.00	1.2598		SM755320	SM760320	SM765320
	1-9/32	32.54	1.2812		SM705118	SM710118	SM715118
		33.00	1.2992		SM755330	SM760330	SM765330
	1-5/16	33.34	1.3125		SM705120	SM710120	SM715120
		34.00	1.3386		SM755340	SM760340	SM765340
	1-11/32	34.13	1.3438		SM705122	SM710122	SM715122
	1-3/8	34.93	1.3750		SM705124	SM710124	SM715124
		35.00	1.3780		SM755350	SM760350	SM765350

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 3

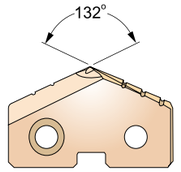
SM-POINT SPADE DRILL INSERTS - CARBIDE K20

SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL K20
Plaquettes SPADE DRILL, pointe SM - Carbure K20
CUSPIDI SM-POINT - MD K20

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferba





cutting conditions : P.399

Series Min. to Max. mm (inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm, inch)	CARBIDE K20 TiN	CARBIDE K20 TiCN	CARBIDE K20 TiAlN
3 Ø34.37 (1.353) to Ø47.80 (1.882)	1-13/32	35.72	1.4062	6.4 (1/4)	SM705126	SM710126	SM715126
		36.00	1.4173		SM755360	SM760360	SM765360
	1-7/16	36.51	1.4375		SM705128	SM710128	SM715128
		37.00	1.4567		SM755370	SM760370	SM765370
	1-15/32	37.31	1.4688		SM705130	SM710130	SM715130
		38.00	1.4961		SM755380	SM760380	SM765380
	1-1/2	38.10	1.5000		SM705132	SM710132	SM715132
	1-17/32	38.89	1.5312		SM705134	SM710134	SM715134
		39.00	1.5354		SM755390	SM760390	SM765390
	1-9/16	39.69	1.5625		SM705136	SM710136	SM715136
		40.00	1.5748		SM755400	SM760400	SM765400
	1-19/32	40.48	1.5938		SM705138	SM710138	SM715138
		41.00	1.6142		SM755410	SM760410	SM765410
	1-5/8	41.28	1.6250		SM705140	SM710140	SM715140
		42.00	1.6535		SM755420	SM760420	SM765420
	1-21/32	42.07	1.6562		SM705142	SM710142	SM715142
	1-11/16	42.86	1.6875		SM705144	SM710144	SM715144
		43.00	1.6929		SM755430	SM760430	SM765430
	1-23/32	43.66	1.7188		SM705146	SM710146	SM715146
		44.00	1.7323		SM755440	SM760440	SM765440
	1-3/4	44.45	1.7500		SM705148	SM710148	SM715148
		45.00	1.7717		SM755450	SM760450	SM765450
	1-25/32	45.24	1.7812		SM705150	SM710150	SM715150
		46.00	1.8110		SM755460	SM760460	SM765460
	1-13/16	46.04	1.8125		SM705152	SM710152	SM715152
	1-27/32	46.83	1.8438		SM705154	SM710154	SM715154
		47.00	1.8504		SM755470	SM760470	SM765470
	1-7/8	47.63	1.8750		SM705156	SM710156	SM715156

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES Y, Z, 0

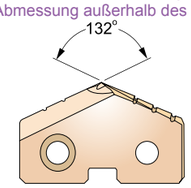
SM-POINT SPADE DRILL INSERTS - CARBIDE P40

SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL P40
Plaquettes SPADE DRILL, pointe SM - Carbure P40
CUSPIDI SM-POINT - MD P40

- For general use in carbon steels and alloys steels.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.401

Series Min. to Max. mm (inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm, inch)	CARBIDE P40 TiN	CARBIDE P40 TiCN	CARBIDE P40 TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)		9.50	.3740	2.4 (3/32)	SM855095	SM860095	SM865095
	3/8	9.53	.3750		SM805024	SM810024	SM815024
		9.80	.3858		SM855098	SM860098	SM865098
	25/64	9.92	.3906		SM805025	SM810025	SM815025
		10.00	.3937		SM855100	SM860100	SM865100
		10.20	.4016		SM855102	SM860102	SM865102
	13/32	10.32	.4062		SM805026	SM810026	SM815026
		10.50	.4134		SM855105	SM860105	SM865105
	27/64	10.72	.4219		SM805027	SM810027	SM815027
		10.80	.4252		SM855108	SM860108	SM865108
		11.00	.4331		SM855110	SM860110	SM865110
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.11	.4375	2.4 (3/32)	SM805028	SM810028	SM815028
		11.50	.4528		SM855115	SM860115	SM865115
	29/64	11.51	.4531		SM805029	SM810029	SM815029
	15/32	11.91	.4688		SM805030	SM810030	SM815030
		12.00	.4724		SM855120	SM860120	SM865120
	31/64	12.30	.4844		SM805031	SM810031	SM815031
		12.50	.4921		SM855125	SM860125	SM865125
	1/2	12.70	.5000		SM805032	SM810032	SM815032
0 Ø12.98 (.511) to Ø17.65 (.695)		13.00	.5118	3.2 (1/8)	SM855130	SM860130	SM865130
	33/64	13.10	.5156		SM805033	SM810033	SM815033
	17/32	13.49	.5312		SM805034	SM810034	SM815034
		13.50	.5315		SM855135	SM860135	SM865135
	35/64	13.89	.5469		SM805035	SM810035	SM815035
		14.00	.5512		SM855140	SM860140	SM865140
	9/16	14.29	.5625		SM805036	SM810036	SM815036
		14.50	.5709		SM855145	SM860145	SM865145
	37/64	14.68	.5781		SM805037	SM810037	SM815037
		15.00	.5906		SM855150	SM860150	SM865150
	19/32	15.08	.5938		SM805038	SM810038	SM815038
	39/64	15.48	.6094		SM805039	SM810039	SM815039
		15.50	.6102		SM855155	SM860155	SM865155
	5/8	15.88	.6250		SM805040	SM810040	SM815040
		16.00	.6299		SM855160	SM860160	SM865160

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 0, 1

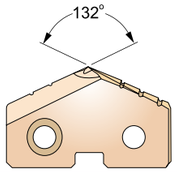
SM-POINT SPADE DRILL INSERTS - CARBIDE P40

SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL P40
Plaquettes SPADE DRILL, pointe SM - Carbure P40
CUSPIDI SM-POINT - MD P40

- For general use in carbon steels and alloys steels.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.401

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE P40 TiN	TiCN	TiAlN
0 Ø12.98(.511) to Ø17.65(.695)	41/64	16.27	.6406	3.2 (1/8)	SM805041	SM810041	SM815126
		16.50	.6496		SM855165	SM860165	SM865360
	21/32	16.67	.6562		SM805042	SM810042	SM815128
		17.00	.6693		SM855170	SM860170	SM865370
	43/64	17.07	.6719		SM805043	SM810043	SM815130
	11/16	17.46	.6875		SM805044	SM810044	SM865380
		17.50	.6890		SM855175	SM860175	SM815132
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	SM805045	SM810045	SM815134
		18.00	.7087		SM855180	SM860180	SM865390
	23/32	18.26	.7188		SM805046	SM810046	SM815136
		18.50	.7283		SM855185	SM860185	SM865400
	47/64	18.65	.7344		SM805047	SM810047	SM815138
		19.00	.7480		SM855190	SM860190	SM865410
	3/4	19.05	.7500		SM805048	SM810048	SM815140
	49/64	19.45	.7656		SM805049	SM810049	SM865420
		19.50	.7677		SM855195	SM860195	SM815142
	25/32	19.84	.7812		SM805050	SM810050	SM815144
		20.00	.7874		SM855200	SM860200	SM865430
	51/64	20.24	.7969		SM805051	SM810051	SM815146
		20.50	.8071		SM855205	SM860205	SM865440
	13/16	20.64	.8125		SM805052	SM810052	SM815148
		21.00	.8268		SM855210	SM860210	SM865450
	27/32	21.43	.8438		SM805054	SM810054	SM815150
	55/64	21.83	.8594		SM805055	SM810055	SM865460
		22.00	.8661		SM855220	SM860220	SM815152
	7/8	22.23	.8750		SM805056	SM810056	SM815154
	57/64	22.62	.8906		SM805057	SM810057	SM865470
		23.00	.9055		SM855230	SM860230	SM815156
	29/32	23.02	.9062		SM805058	SM810058	SM815058
	59/64	23.42	.9219		SM805059	SM810059	SM815059
	15/16	23.81	.9375		SM805060	SM810060	SM815060
		24.00	.9449		SM855240	SM860240	SM865240

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 2

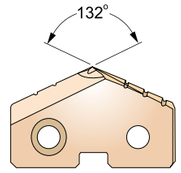
SM-POINT SPADE DRILL INSERTS - CARBIDE P40

SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL P40
Plaquettes SPADE DRILL, pointe SM - Carbure P40
CUSPIDI SM-POINT - MD P40

- For general use in carbon steels and alloys steels.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.401

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE P40 TiN	TiCN	TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	SM805062	SM810062	SM815062
	63/64	25.00	.9843		SM855250	SM860250	SM865250
	1	25.40	1.0000		SM805100	SM810100	SM815100
	1-1/64	25.80	1.0156		SM805101	SM810101	SM815101
		26.00	1.0236		SM855260	SM860260	SM865260
	1-1/32	26.19	1.0312		SM805102	SM810102	SM815102
	1-3/64	26.59	1.0469		SM805103	SM810103	SM815103
	1-1/16	26.99	1.0625		SM805104	SM810104	SM815104
		27.00	1.0630		SM855270	SM860270	SM865270
	1-3/32	27.78	1.0938		SM805106	SM810106	SM815106
		28.00	1.1024		SM855280	SM860280	SM865280
	1-7/64	28.18	1.1094		SM805107	SM810107	SM815107
	1-1/8	28.58	1.1250		SM805108	SM810108	SM815108
		29.00	1.1417		SM855290	SM860290	SM865290
	1-5/32	29.37	1.1562		SM805110	SM810110	SM815110
		30.00	1.1811		SM855300	SM860300	SM865300
	1-3/16	30.16	1.1875		SM805112	SM810112	SM815112
	1-7/32	30.96	1.2188		SM805114	SM810114	SM815114
		31.00	1.2205		SM855310	SM860310	SM865310
	1-1/4	31.75	1.2500		SM805116	SM810116	SM815116
		32.00	1.2598		SM855320	SM860320	SM865320
	1-9/32	32.54	1.2812		SM805118	SM810118	SM815118
		33.00	1.2992		SM855330	SM860330	SM865330
	1-5/16	33.34	1.3125		SM805120	SM810120	SM815120
		34.00	1.3386		SM855340	SM860340	SM865340
	1-11/32	34.13	1.3438		SM805122	SM810122	SM815122
	1-3/8	34.93	1.3750		SM805124	SM810124	SM815124
		35.00	1.3780		SM855350	SM860350	SM865350

◎ : Excellent ○ : Good

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

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

SPADE DRILLS

SERIES 3

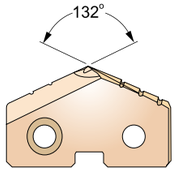
SM-POINT SPADE DRILL INSERTS - CARBIDE P40

SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL P40
Plaquettes SPADE DRILL, pointe SM - Carbure P40
CUSPIDI SM-POINT - MD P40

- For general use in carbon steels and alloys steels.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar





cutting conditions : P.401

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. CARBIDE P40 TiN	TiCN	TiAlN
3 Ø34.37 (1.353) to Ø47.80 (1.882)	1-13/32	35.72	1.4062	6.4 (1/4)	SM805126	SM810126	SM815126
		36.00	1.4173		SM855360	SM860360	SM865360
	1-7/16	36.51	1.4375		SM805128	SM810128	SM815128
		37.00	1.4567		SM855370	SM860370	SM865370
	1-15/32	37.31	1.4688		SM805130	SM810130	SM815130
		38.00	1.4961		SM855380	SM860380	SM865380
	1-1/2	38.10	1.5000		SM805132	SM810132	SM815132
	1-17/32	38.89	1.5312		SM805134	SM810134	SM815134
		39.00	1.5354		SM855390	SM860390	SM865390
	1-9/16	39.69	1.5625		SM805136	SM810136	SM815136
		40.00	1.5748		SM855400	SM860400	SM865400
	1-19/32	40.48	1.5938		SM805138	SM810138	SM815138
		41.00	1.6142		SM855410	SM860410	SM865410
	1-5/8	41.28	1.6250		SM805140	SM810140	SM815140
		42.00	1.6535		SM855420	SM860420	SM865420
	1-21/32	42.07	1.6562		SM805142	SM810142	SM815142
	1-11/16	42.86	1.6875		SM805144	SM810144	SM815144
		43.00	1.6929		SM855430	SM860430	SM865430
	1-23/32	43.66	1.7188		SM805146	SM810146	SM815146
		44.00	1.7323		SM855440	SM860440	SM865440
	1-3/4	44.45	1.7500		SM805148	SM810148	SM815148
		45.00	1.7717		SM855450	SM860450	SM865450
	1-25/32	45.24	1.7812		SM805150	SM810150	SM815150
		46.00	1.8110		SM855460	SM860460	SM865460
	1-13/16	46.04	1.8125		SM805152	SM810152	SM815152
	1-27/32	46.83	1.8438		SM805154	SM810154	SM815154
		47.00	1.8504		SM855470	SM860470	SM865470
	1-7/8	47.63	1.8750		SM805156	SM810156	SM815156

◎ : Excellent ○ : Good

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

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

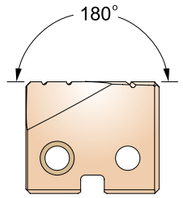
SPADE DRILLS

SERIES Y, Z, 0

SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM

SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15 (FLACH-NUT)
Plaquettes SPADE DRILL à fond plat - Super Cobalt T15
INSERTI SPADE DRILL - SUPER HSS T15 FONDO PIATTO





cutting conditions : P.400

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. SUPER HSS T15 TiN	Hardslick	TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)		9.50	.3740	2.4 (3/32)	S2155095	S2170095	S2165095
	3/8	9.53	.3750		S2105024	S2120024	S2115024
		9.80	.3858		S2155098	S2170098	S2165098
	25/64	9.92	.3906		S2105025	S2120025	S2115025
		10.00	.3937		S2155100	S2170100	S2165100
		10.20	.4016		S2155102	S2170102	S2165102
	13/32	10.32	.4062		S2105026	S2120026	S2115026
		10.50	.4134		S2155105	S2170105	S2165105
	27/64	10.72	.4219		S2105027	S2120027	S2115027
		10.80	.4252		S2155108	S2170108	S2165108
		11.00	.4331		S2155110	S2170110	S2165110
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.11	.4375	2.4 (3/32)	S2105028	S2120028	S2115028
		11.50	.4528		S2155115	S2170115	S2165115
	29/64	11.51	.4531		S2105029	S2120029	S2115029
	15/32	11.91	.4688		S2105030	S2120030	S2115030
		12.00	.4724		S2155120	S2170120	S2165120
	31/64	12.30	.4844		S2105031	S2120031	S2115031
		12.50	.4921		S2155125	S2170125	S2165125
	1/2	12.70	.5000		S2105032	S2120032	S2115032
0 Ø12.98 (.511) to Ø17.65 (.695)		13.00	.5118	3.2 (1/8)	S2155130	S2170130	S2165130
	33/64	13.10	.5156		S2105033	S2120033	S2115033
	17/32	13.49	.5312		S2105034	S2120034	S2115034
		13.50	.5315		S2155135	S2170135	S2165135
	35/64	13.89	.5469		S2105035	S2120035	S2115035
		14.00	.5512		S2155140	S2170140	S2165140
	9/16	14.29	.5625		S2105036	S2120036	S2115036
		14.50	.5709		S2155145	S2170145	S2165145
	37/64	14.68	.5781		S2105037	S2120037	S2115037
		15.00	.5906		S2155150	S2170150	S2165150
	19/32	15.08	.5938		S2105038	S2120038	S2115038
	39/64	15.48	.6094		S2105039	S2120039	S2115039
		15.50	.6102		S2155155	S2170155	S2165155
	5/8	15.88	.6250		S2105040	S2120040	S2115040
		16.00	.6299		S2155160	S2170160	S2165160

◎ : Excellent ○ : Good

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

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

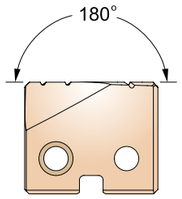
SPADE DRILLS

SERIES 0, 1

SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM

- SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15 (FLACH-NUT)
- Plaquettes SPADE DRILL à fond plat - Super Cobalt T15
- INSERTI SPADE DRILL - SUPER HSS T15 FONDO PIATTO





cutting conditions : P.400

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. SUPER HSS T15 TiN	Hardslick	TiAlN
0 Ø12.98(.511) to Ø17.65(.695)	41/64	16.27	.6406	3.2 (1/8)	**S2105041**	**S2120041**	**S2115041**
		16.50	.6496		**S2155165**	**S2170165**	**S2165165**
	21/32	16.67	.6562		**S2105042**	**S2120042**	**S2115042**
		17.00	.6693		**S2155170**	**S2170170**	**S2165170**
	43/64	17.07	.6719		**S2105043**	**S2120043**	**S2115043**
	11/16	17.46	.6875		**S2105044**	**S2120044**	**S2115044**
		17.50	.6890		**S2155175**	**S2170175**	**S2165175**
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	**S2105045**	**S2120045**	**S2115045**
		18.00	.7087		**S2155180**	**S2170180**	**S2165180**
	23/32	18.26	.7188		**S2105046**	**S2120046**	**S2115046**
		18.50	.7283		**S2155185**	**S2170185**	**S2165185**
	47/64	18.65	.7344		**S2105047**	**S2120047**	**S2115047**
		19.00	.7480		**S2155190**	**S2170190**	**S2165190**
	3/4	19.05	.7500		**S2105048**	**S2120048**	**S2115048**
	49/64	19.45	.7656		**S2105049**	**S2120049**	**S2115049**
		19.50	.7677		**S2155195**	**S2170195**	**S2165195**
	25/32	19.84	.7812		**S2105050**	**S2120050**	**S2115050**
		20.00	.7874		**S2155200**	**S2170200**	**S2165200**
	51/64	20.24	.7969		**S2105051**	**S2120051**	**S2115051**
		20.50	.8071		**S2155205**	**S2170205**	**S2165205**
	13/16	20.64	.8125		**S2105052**	**S2120052**	**S2115052**
		21.00	.8268		**S2155210**	**S2170210**	**S2165210**
	27/32	21.43	.8438		**S2105054**	**S2120054**	**S2115054**
	55/64	21.83	.8594		**S2105055**	**S2120055**	**S2115055**
		22.00	.8661		**S2155220**	**S2170220**	**S2165220**
	7/8	22.23	.8750		**S2105056**	**S2120056**	**S2115056**
	57/64	22.62	.8906		**S2105057**	**S2120057**	**S2115057**
		23.00	.9055		**S2155230**	**S2170230**	**S2165230**
	29/32	23.02	.9062		**S2105058**	**S2120058**	**S2115058**
	59/64	23.42	.9219		**S2105059**	**S2120059**	**S2115059**
	15/16	23.81	.9375		**S2105060**	**S2120060**	**S2115060**
		24.00	.9449		**S2155240**	**S2170240**	**S2165240**

◎ : Excellent ○ : Good

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

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

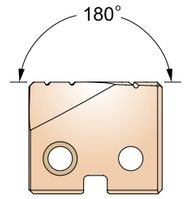
SPADE DRILLS

SERIES 2

SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM

- SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15 (FLACH-NUT)
- Plaquettes SPADE DRILL à fond plat - Super Cobalt T15
- INSERTI SPADE DRILL - SUPER HSS T15 FONDO PIATTO





cutting conditions : P.400

Series Min. to Max. mm (inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm, inch)	EDP No. SUPER HSS T15 TiN	Hardslick	TiAlN
2 Ø24.41 (.961) to Ø35.05 (1.380)	31/32	24.61	.9688	4.8 (3/16)	**S2105062**	**S2120062**	**S2115062**
	63/64	25.00	.9843		**S2105063**	**S2120063**	**S2115063**
	1	25.40	1.0000		**S2105100**	**S2120100**	**S2115100**
	1-1/64	25.80	1.0156		**S2105101**	**S2120101**	**S2115101**
		26.00	1.0236		**S2155260**	**S2170260**	**S2165260**
	1-1/32	26.19	1.0312		**S2105102**	**S2120102**	**S2115102**
	1-3/64	26.59	1.0469		**S2105103**	**S2120103**	**S2115103**
	1-1/16	26.99	1.0625		**S2105104**	**S2120104**	**S2115104**
		27.00	1.0630		**S2155270**	**S2170270**	**S2165270**
	1-3/32	27.78	1.0938		**S2105106**	**S2120106**	**S2115106**
		28.00	1.1024		**S2155280**	**S2170280**	**S2165280**
	1-7/64	28.18	1.1094		**S2105107**	**S2120107**	**S2115107**
	1-1/8	28.58	1.1250		**S2105108**	**S2120108**	**S2115108**
		29.00	1.1417		**S2155290**	**S2170290**	**S2165290**
	1-5/32	29.37	1.1562		**S2105110**	**S2120110**	**S2115110**
		30.00	1.1811		**S2155300**	**S2170300**	**S2165300**
	1-3/16	30.16	1.1875		**S2105112**	**S2120112**	**S2115112**
	1-7/32	30.96	1.2188		**S2105114**	**S2120114**	**S2115114**
		31.00	1.2205		**S2155310**	**S2170310**	**S2165310**
	1-1/4	31.75	1.2500		**S2105116**	**S2120116**	**S2115116**
		32.00	1.2598		**S2155320**	**S2170320**	**S2165320**
	1-9/32	32.54	1.2812		**S2105118**	**S2120118**	**S2115118**
		33.00	1.2992		**S2155330**	**S2170330**	**S2165330**
	1-5/16	33.34	1.3125		**S2105120**	**S2120120**	**S2115120**
		34.00	1.3386		**S2155340**	**S2170340**	**S2165340**
	1-11/32	34.13	1.3438		**S2105122**	**S2120122**	**S2115122**
	1-3/8	34.93	1.3750		**S2105124**	**S2120124**	**S2115124**
		35.00	1.3780		**S2155350**	**S2170350**	**S2165350**

◎ : Excellent ○ : Good

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

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

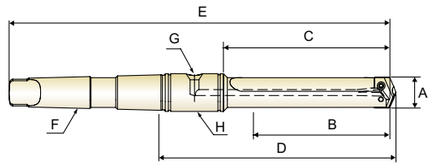
SPADE DRILLS

ZSTSMT** SERIES

TAPER SHANK HOLDERS

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM





SHORT LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0STSMT02I	3/8 ~ 27/64	1-1/4	2-1/32	3-15/32	6-5/16	#2	1/16	PR110048
Z	ZZ0STSMT02I	7/16 ~ 1/2	1-1/4	2-1/32	3-15/32	6-5/16	#2	1/16	PR110048
0	Z00STSMT02I	33/64 ~ 11/16	1-3/8	2-3/16	3-41/64	6-15/32	#2	1/16	PR110048
0.5	Z05STSMT02I	39/64 ~ 11/16	1-3/8	2-3/16	3-41/64	6-15/32	#2	1/16	PR110048
1	Z10STSMT03I	45/64 ~ 15/16	2-3/4	3-7/8	5-39/64	9-5/32	#3	1/8	PR110100
	Z10STSMT04I	45/64 ~ 15/16	2-3/4	3-7/8	5-43/64	10-5/32	#4	1/8	PR110100
1.5	Z15STSMT03I	55/64 ~ 15/16	2-3/4	3-7/8	5-39/64	9-5/32	#3	1/8	PR110100
	Z15STSMT04I	55/64 ~ 15/16	2-3/4	3-7/8	5-43/64	10-5/32	#4	1/8	PR110100
2	Z20STSMT03I	31/32 ~ 1-3/8	3-3/8	4-1/2	6-15/64	9-25/32	#3	1/8	PR110100
	Z20STSMT04I	31/32 ~ 1-3/8	3-3/8	4-1/2	6-19/64	10-25/32	#4	1/8	PR110100
2.5	Z25STSMT03I	1-3/16 ~ 1-3/8	3-3/8	4-1/2	6-15/64	9-25/32	#3	1/8	PR110100
	Z25STSMT04I	1-3/16 ~ 1-3/8	3-3/8	4-1/2	6-37/64	11-1/16	#4	1/4	PR110116
3	Z30STSMT04I	1-13/32 ~ 1-7/8	4-3/4	6	8-1/8	12-9/16	#4	1/4	PR110116
	Z30STSMT05I	1-13/32 ~ 1-7/8	4-3/4	6	8-1/8	13-13/16	#5	1/4	PR110148
4	Z40STSMT04I	1-29/32 ~ 2-9/16	5-1/8	6-1/2	8-5/8	13-1/16	#4	1/4	PR110116
	Z40STSMT05I	1-29/32 ~ 2-9/16	5-1/8	6-1/2	8-5/8	14-5/16	#5	1/4	PR110148
5	Z50STSMT05I	2-1/2 ~ 3-1/2	6-3/4	8-1/2	11-5/16	16-15/16	#5	1/2	PR110216
7	Z70STSMT05I	3-17/32 ~ 4-1/2	6-3/4	8-7/8	11-11/16	17-5/16	#5	1/2	PR110216

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

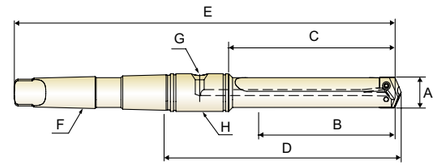
SPADE DRILLS

ZITSMT** SERIES
ZITHMT** SERIES

TAPER SHANK HOLDERS

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM



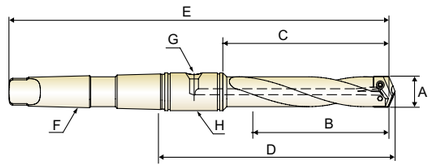


INTERMEDIATE LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
1	Z10ITSMT03I	45/64 ~ 15/16	4-3/4	5-7/8	7-39/64	11-5/32	#3	1/8	PR110100
1.5	Z15ITSMT03I	55/64 ~ 15/16	4-3/4	5-7/8	7-39/64	11-5/32	#3	1/8	PR110100
2	Z20ITSMT04I	31/32 ~ 1-3/8	5-3/8	6-1/2	8-19/64	12-25/32	#4	1/8	PR110100
2.5	Z25ITSMT04I	1-3/16 ~ 1-3/8	5-3/8	6-1/2	8-37/64	13-1/16	#4	1/4	PR110116
3	Z30ITSMT04I	1-13/32 ~ 1-7/8	6-1/2	7-3/4	9-7/8	14-5/16	#4	1/4	PR110116

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)





INTERMEDIATE LENGTH - Helical Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
1	Z10ITHMT03I	45/64 ~ 15/16	4-3/4	5-7/8	7-39/64	11-5/32	#3	1/8	PR110100
1.5	Z15ITHMT03I	55/64 ~ 15/16	4-3/4	5-7/8	7-39/64	11-5/32	#3	1/8	PR110100
2	Z20ITHMT04I	31/32 ~ 1-3/8	5-3/8	6-1/2	8-19/64	12-25/32	#4	1/8	PR110100
2.5	Z25ITHMT04I	1-3/16 ~ 1-3/8	5-3/8	6-1/2	8-37/64	13-1/16	#4	1/4	PR110116

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

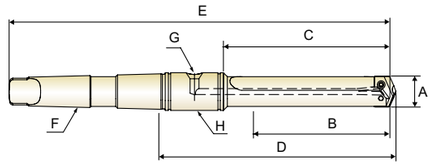
SPADE DRILLS

ZSDSMT** SERIES

TAPER SHANK HOLDERS

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM





STANDARD LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0SDSMT02I	3/8 ~ 27/64	2-3/8	3-5/32	4-19/32	7-7/16	#2	1/16	PR110048
Z	ZZ0SDSMT02I	7/16 ~ 1/2	2-3/8	3-5/32	4-19/32	7-7/16	#2	1/16	PR110048
0	Z00SDSMT02I	33/64 ~ 11/16	2-1/2	3-5/16	4-49/64	7-19/32	#2	1/16	PR110048
0.5	Z05SDSMT02I	39/64 ~ 11/16	2-1/2	3-5/16	4-49/64	7-19/32	#2	1/16	PR110048
1	Z10SDSMT03I	45/64 ~ 15/16	6-3/4	7-7/8	9-39/64	13-5/32	#3	1/8	PR110100
	Z10SDSMT04I	45/64 ~ 15/16	6-3/4	7-7/8	9-43/64	14-5/32	#4	1/8	PR110100
1.5	Z15SDSMT03I	55/64 ~ 15/16	6-3/4	7-7/8	9-39/64	13-5/32	#3	1/8	PR110100
	Z15SDSMT04I	55/64 ~ 15/16	6-3/4	7-7/8	9-43/64	14-5/32	#4	1/8	PR110100
2	Z20SDSMT03I	31/32 ~ 1-3/8	7-3/8	8-1/2	10-15/64	13-25/32	#3	1/8	PR110100
	Z20SDSMT04I	31/32 ~ 1-3/8	7-3/8	8-1/2	10-19/64	14-25/32	#4	1/8	PR110100
2.5	Z25SDSMT03I	1-3/16 ~ 1-3/8	7-3/8	8-1/2	10-15/64	13-25/32	#3	1/8	PR110100
	Z25SDSMT04I	1-3/16 ~ 1-3/8	7-3/8	8-1/2	10-37/64	15-1/16	#4	1/4	PR110116
3	Z30SDSMT04I	1-13/32 ~ 1-7/8	8-1/4	9-1/2	11-5/8	16-1/16	#4	1/4	PR110116
	Z30SDSMT05I	1-13/32 ~ 1-7/8	8-1/4	9-1/2	11-5/8	17-5/16	#5	1/4	PR110148
4	Z40SDSMT04I	1-29/32 ~ 2-9/16	9-1/8	10-1/2	12-5/8	17-1/16	#4	1/4	PR110116
	Z40SDSMT05I	1-29/32 ~ 2-9/16	9-1/8	10-1/2	12-5/8	18-5/16	#5	1/4	PR110148
5	Z50SDSMT05I	2-1/2 ~ 3-1/2	10-3/4	12-1/2	15-5/16	20-15/16	#5	1/2	PR110216
7	Z70SDSMT05I	3-17/32 ~ 4-1/2	10-3/4	12-7/8	15-11/16	21-5/16	#5	1/2	PR110216

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

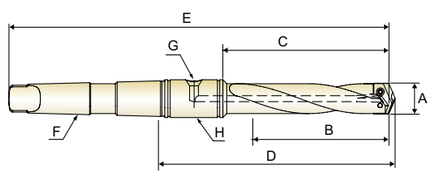
SPADE DRILLS

ZSDHMT** SERIES

TAPER SHANK HOLDERS

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM





STANDARD LENGTH - Helical Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0SDHMT02I	3/8 ~ 27/64	2-3/8	3-5/32	4-19/32	7-7/16	#2	1/16	PR110048
Z	ZZ0SDHMT02I	7/16 ~ 1/2	2-3/8	3-5/32	4-19/32	7-7/16	#2	1/16	PR110048
0	Z00SDHMT02I	33/64 ~ 11/16	2-1/2	3-5/16	4-49/64	7-19/32	#2	1/16	PR110048
0.5	Z05SDHMT02I	39/64 ~ 11/16	2-1/2	3-5/16	4-49/64	7-19/32	#2	1/16	PR110048
1	Z10SDHMT03I	45/64 ~ 15/16	6-3/4	7-7/8	9-39/64	13-5/32	#3	1/8	PR110100
	Z10SDHMT04I	45/64 ~ 15/16	6-3/4	7-7/8	9-43/64	14-5/32	#4	1/8	PR110100
1.5	Z15SDHMT03I	55/64 ~ 15/16	6-3/4	7-7/8	9-39/64	13-5/32	#3	1/8	PR110100
	Z15SDHMT04I	55/64 ~ 15/16	6-3/4	7-7/8	9-43/64	14-5/32	#4	1/8	PR110100
2	Z20SDHMT03I	31/32 ~ 1-3/8	7-3/8	8-1/2	10-15/64	13-25/32	#3	1/8	PR110100
	Z20SDHMT04I	31/32 ~ 1-3/8	7-3/8	8-1/2	10-19/64	14-25/32	#4	1/8	PR110100
2.5	Z25SDHMT03I	1-3/16 ~ 1-3/8	7-3/8	8-1/2	10-15/64	13-25/32	#3	1/8	PR110100
	Z25SDHMT04I	1-3/16 ~ 1-3/8	7-3/8	8-1/2	10-37/64	15-1/16	#4	1/4	PR110116

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

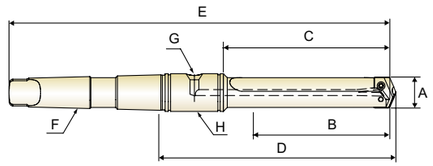
SPADE DRILLS

ZEXSMT** SERIES
ZEXHMT** SERIES

TAPER SHANK HOLDERS

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM



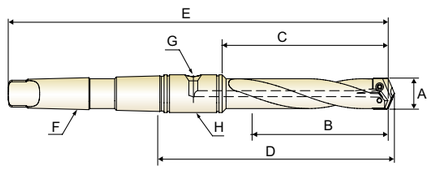


EXTENDED LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0EXSMT02I	3/8 ~ 27/64	4-3/8	5-5/32	6-19/32	9-7/16	#2	1/16	PR110048
Z	ZZ0EXSMT02I	7/16 ~ 1/2	4-3/8	5-5/32	6-19/32	9-7/16	#2	1/16	PR110048
0	Z00EXSMT02I	33/64 ~ 11/16	4-1/2	5-5/16	6-49/64	9-19/32	#2	1/16	PR110048
0.5	Z05EXSMT02I	39/64 ~ 11/16	4-1/2	5-5/16	6-49/64	9-19/32	#2	1/16	PR110048
1	Z10EXSMT03I	45/64 ~ 15/16	10-3/4	11-7/8	13-39/64	17-5/32	#3	1/8	PR110100
1.5	Z15EXSMT03I	55/64 ~ 15/16	10-3/4	11-7/8	13-39/64	17-5/32	#3	1/8	PR110100
2	Z20EXSMT04I	31/32 ~ 1-3/8	11-3/8	12-1/2	14-15/64	18-25/32	#4	1/8	PR110100
2.5	Z25EXSMT04I	1-3/16 ~ 1-3/8	11-3/8	12-1/2	14-37/64	19-1/16	#4	1/4	PR110116
3	Z30EXSMT04I	1-13/32 ~ 1-7/8	13-3/4	15	17-1/8	21-9/16	#4	1/4	PR110116
4	Z40EXSMT05I	1-29/32 ~ 2-9/16	16-5/8	18	20-1/8	25-13/16	#5	1/4	PR110148
5	Z50EXSMT05I	2-1/2 ~ 3-1/2	18-1/4	20	22-13/16	28-7/16	#5	1/2	PR110216
7	Z70EXSMT05I	3-17/32 ~ 4-1/2	21-7/8	24	26-13/16	32-7/16	#5	1/2	PR110216

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)





EXTENDED LENGTH - Helical Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0EXHMT02I	3/8 ~ 27/64	4-3/8	5-5/32	6-19/32	9-7/16	#2	1/16	PR110048
Z	ZZ0EXHMT02I	7/16 ~ 1/2	4-3/8	5-5/32	6-19/32	9-7/16	#2	1/16	PR110048
0	Z00EXHMT02I	33/64 ~ 11/16	4-1/2	5-5/16	6-49/64	9-19/32	#2	1/16	PR110048
0.5	Z05EXHMT02I	39/64 ~ 11/16	4-1/2	5-5/16	6-49/64	9-19/32	#2	1/16	PR110048
1	Z10EXHMT03I	45/64 ~ 15/16	10-3/4	11-7/8	13-39/64	17-5/32	#3	1/8	PR110100
1.5	Z15EXHMT03I	55/64 ~ 15/16	10-3/4	11-7/8	13-39/64	17-5/32	#3	1/8	PR110100
2	Z20EXHMT04I	31/32 ~ 1-3/8	11-3/8	12-1/2	14-15/64	18-25/32	#4	1/8	PR110100
2.5	Z25EXHMT04	1-3/16 ~ 1-3/8	11-3/8	12-1/2	14-37/64	19-1/16	#4	1/4	PR110116

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

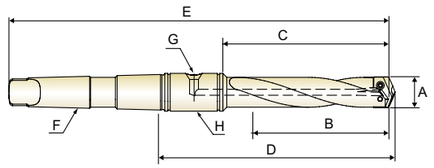
SPADE DRILLS

ZLGHMT** SERIES

TAPER SHANK HOLDERS

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM





LONG LENGTH - Helical Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
0	Z00LGHMT02I	33/64 ~ 11/16	7	7-13/16	9-17/64	12-3/32	#2	1/16	PR110048
0.5	Z05LGHMT02I	39/64 ~ 11/16	7	7-13/16	9-17/64	12-3/32	#2	1/16	PR110048

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

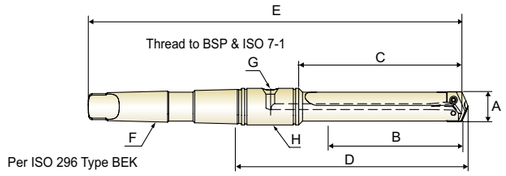
SPADE DRILLS

ZSTSMT** SERIES
ZITHMT** SERIES

TAPER SHANK HOLDERS

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM



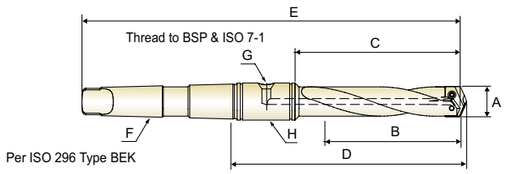


SHORT LENGTH - Straight Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0STSMT02M	9.5 ~ 11.0	31.8	51.5	88.0	160.3	#2	1/16	PR120190
Z	ZZ0STSMT02M	11.5 ~ 12.5	31.8	51.5	88.0	160.3	#2	1/16	PR120190
0	Z00STSMT02M	13.0 ~ 17.5	35.0	55.5	92.4	164.3	#2	1/16	PR120190
0.5	Z05STSMT02M	15.5 ~ 17.5	35.0	55.5	92.4	164.3	#2	1/16	PR120190
1	Z10STSMT03M	18.0 ~ 24.0	69.8	98.4	142.5	232.5	#3	1/8	PR120254
1.5	Z15STSMT03M	22.0 ~ 24.0	69.8	98.4	142.5	232.5	#3	1/8	PR120254
2	Z20STSMT04M	25.0 ~ 35.0	85.7	114.3	160.4	273.8	#4	1/8	PR120254
2.5	Z25STSMT04M	30.0 ~ 35.0	85.7	114.3	167.6	281.0	#4	1/4	PR120317
3	Z30STSMT04M	36.0 ~ 47.0	120.6	152.4	206.4	319.1	#4	1/4	PR120317
4	Z40STSMT05M	48.0 ~ 65.0	130.1	165.1	219.1	363.5	#5	1/4	PR120444
5	Z50STSMT05M	64.0 ~ 88.0	171.5	215.9	287.3	430.2	#5	1/2	PR120571
7	Z70STSMT05M	90.0 ~ 114.0	171.5	225.4	296.8	439.7	#5	1/2	PR120571

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)





INTERMEDIATE LENGTH - Helical Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
1	Z10ITHMT03M	18.0 ~ 24.0	120.7	149.2	193.3	283.3	#3	1/8	PR120254
1.5	Z15ITHMT03M	22.0 ~ 24.0	120.7	149.2	193.3	283.3	#3	1/8	PR120254
2	Z20ITHMT04M	25.0 ~ 35.0	136.5	165.1	211.2	324.6	#4	1/8	PR120254
2.5	Z25ITHMT04M	30.0 ~ 35.0	136.5	165.1	218.4	331.8	#4	1/4	PR120317
3	Z30ITHMT04M	36.0 ~ 47.0	165.1	196.9	250.9	363.6	#4	1/4	PR120317

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

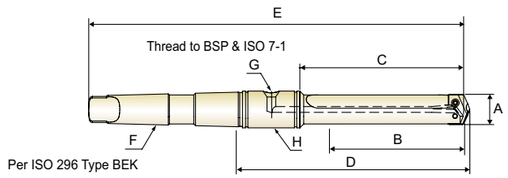
SPADE DRILLS

ZSDHMT** SERIES

TAPER SHANK HOLDERS

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM





STANDARD LENGTH - Helical Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0SDHMT02M	9.5 ~ 11.0	60.3	80.2	116.7	188.9	#2	1/16	PR120190
Z	ZZ0SDHMT02M	11.5 ~ 12.5	60.3	80.2	116.7	188.9	#2	1/16	PR120190
0	Z00SDHMT02M	13.0 ~ 17.5	63.5	84.1	121.0	192.9	#2	1/16	PR120190
0.5	Z05SDHMT02M	15.5 ~ 17.5	63.5	84.1	121.0	192.9	#2	1/16	PR120190
1	Z10SDHMT03M	18.0 ~ 24.0	171.5	200.0	244.1	334.2	#3	1/8	PR120254
1.5	Z15SDHMT03M	22.0 ~ 24.0	171.5	200.0	244.1	334.2	#3	1/8	PR120254
2	Z20SDHMT04M	25.0 ~ 35.0	187.3	215.9	262.0	375.4	#4	1/8	PR120254
2.5	Z25SDHMT04M	30.0 ~ 35.0	187.3	215.9	269.2	382.6	#4	1/4	PR120317
3	Z30SDHMT04M	36.0 ~ 47.0	209.5	241.3	295.3	408.0	#4	1/4	PR120317
4	Z40SDHMT05M	48.0 ~ 65.0	231.8	266.7	320.7	465.1	#5	1/4	PR120444
5	Z50SDHMT05M	64.0 ~ 88.0	273.1	317.5	388.9	531.8	#5	1/2	PR120571
7	Z70SDHMT05M	90.0 ~ 114.0	273.1	327.0	398.5	541.3	#5	1/2	PR120571

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for inernal cooling. (See page 324)

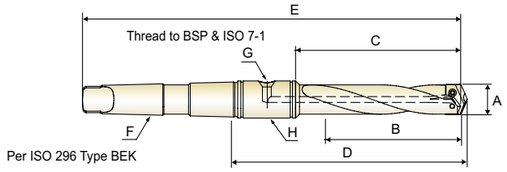
SPADE DRILLS

ZEXHMT** SERIES
ZEXSMT** SERIES

TAPER SHANK HOLDERS

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM



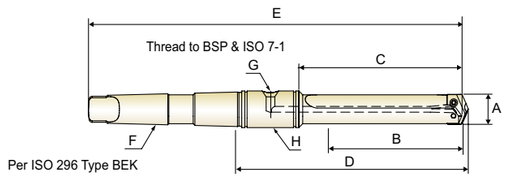


EXTENDED LENGTH - Helical Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0EXHMT02M	9.5 ~ 11.0	111.1	130.9	167.4	239.7	#2	1/16	PR120190
Z	ZZ0EXHMT02M	11.5 ~ 12.5	111.1	130.9	167.4	239.7	#2	1/16	PR120190
0	Z00EXHMT02M	13.0 ~ 17.5	114.3	135.0	171.8	243.7	#2	1/16	PR120190
0.5	Z05EXHMT02M	15.5 ~ 17.5	114.3	135.0	171.8	243.7	#2	1/16	PR120190
1	Z10EXHMT03M	18.0 ~ 24.0	273.1	301.6	345.7	435.8	#3	1/8	PR120254
1.5	Z15EXHMT03M	22.0 ~ 24.0	273.1	301.6	345.7	435.8	#3	1/8	PR120254
2	Z20EXHMT04M	25.0 ~ 35.0	289.0	317.5	363.6	477.0	#4	1/8	PR120254
2.5	Z25EXHMT04M	30.0 ~ 35.0	289.0	317.5	370.8	484.2	#4	1/4	PR120317

▶You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)





EXTENDED LENGTH - Straight Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
3	Z30EXSMT04M	36.0 ~ 47.0	349.3	381.0	435.0	547.7	#4	1/4	PR120317
4	Z40EXSMT05M	48.0 ~ 65.0	422.3	457.2	511.2	655.6	#5	1/4	PR120444
5	Z50EXSMT05M	64.0 ~ 88.0	463.6	508.0	579.4	722.3	#5	1/2	PR120571
7	Z70EXSMT05M	90.0 ~ 114.0	555.6	609.6	681.1	823.9	#5	1/2	PR120571

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

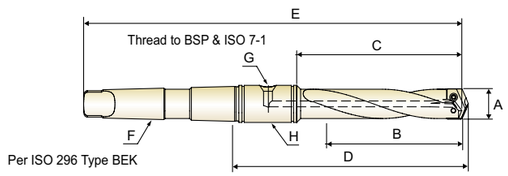
SPADE DRILLS

ZLGHMT** SERIES

TAPER SHANK HOLDERS

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM





LONG LENGTH - Helical Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
0	Z00LGHMT02M	13.0 ~ 17.5	177.8	198.5	235.3	307.2	#2	1/16	PR120190
0.5	Z05LGHMT02M	15.5 ~ 17.5	177.8	198.5	235.3	307.2	#2	1/16	PR120190

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

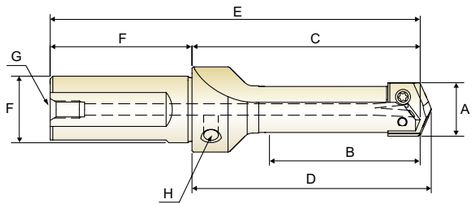
SPADE DRILLS

ZSBSF** SERIES
ZSTSF** SERIES

FLANGED STRAIGHT SHANK HOLDERS

HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE
Porte-plaquette à collerette queue cylindrique
PUNTE ATTACCO CILINDRICO FLANGIATO

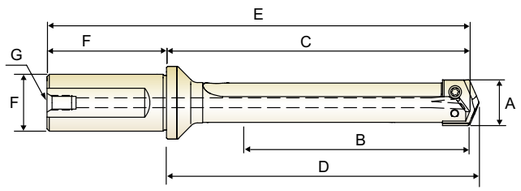




STUB LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap	
							Dia.	Length	Rear	Side
		A	B	C	D	E	F		G	H
Y	ZY0SBSF063I	3/8 ~ 27/64	3/4	1-7/8	1-31/32	3-3/4	5/8	1-7/8	1/16	1/8
Z	ZZ0SBSF063I	7/16 ~ 1/2	3/4	1-7/8	1-31/32	3-3/4	5/8	1-7/8	1/16	1/8
0	Z00SBSF075I	33/64 ~ 11/16	7/8	1-7/8	1-63/64	3-29/32	3/4	2-1/32	1/8	1/8
0.5	Z05SBSF075I	39/64 ~ 11/16	7/8	1-7/8	1-63/64	3-29/32	3/4	2-1/32	1/8	1/8
1	Z10SBSF100I	45/64 ~ 15/16	1-7/8	2-63/64	3-1/8	5-17/64	1	2-9/32	1/8	1/8
1.5	Z15SBSF100I	55/64 ~ 15/16	2-1/4	3-31/64	3-5/8	5-49/64	1	2-9/32	1/8	1/8
2	Z20SBSF125I	31/32 ~ 1-3/8	2-1/4	3-31/64	3-5/8	5-49/64	1-1/4	2-9/32	1/4	1/8
2.5	Z25SBSF125I	1-3/16 ~ 1-3/8	3-5/8	4-55/64	5	7-9/64	1-1/4	2-9/32	1/4	1/8
3	Z30SBSF150I	1-13/32 ~ 1-7/8	3	4-59/64	5-7/64	7-39/64	1-1/2	2-11/16	1/4	1/4





SHORT LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0STSF075I	3/8 ~ 27/64	1-1/4	2-13/32	2-1/2	4-7/16	3/4	2-1/32	1/8
Z	ZZ0STSF075I	7/16 ~ 1/2	1-1/4	2-13/32	2-1/2	4-7/16	3/4	2-1/32	1/8
0	Z00STSF075I	33/64 ~ 11/16	1-3/8	2-1/2	2-39/64	4-17/32	3/4	2-1/32	1/8
0.5	Z05STSF075I	39/64 ~ 11/16	1-3/8	2-1/2	2-39/64	4-17/32	3/4	2-1/32	1/8
1	Z10STSF100I	45/64 ~ 15/16	2-5/8	4-7/32	4-23/64	6-1/2	1	2-9/32	1/8
1.5	Z15STSF100I	55/64 ~ 15/16	2-5/8	4-7/32	4-23/64	6-1/2	1	2-9/32	1/8
2	Z20STSF125I	31/32 ~ 1-3/8	3-3/8	5-1/16	5-13/64	7-11/32	1-1/4	2-9/32	1/4
2.5	Z25STSF125I	1-3/16 ~ 1-3/8	3-3/8	5-1/16	5-13/64	7-11/32	1-1/4	2-9/32	1/4
3	Z30STSF150I	1-13/32 ~ 1-7/8	4-3/4	6-13/16	7	9-1/2	1-1/2	2-11/16	1/4
4	Z40STSF150I	1-29/32 ~ 2-9/16	5-1/8	7-1/16	7-1/4	9-3/4	1-1/2	2-11/16	1/4

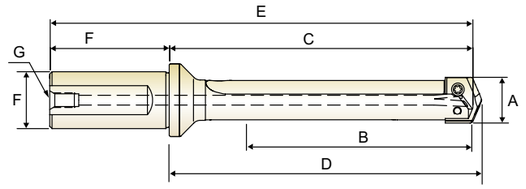
SPADE DRILLS

ZITSF** SERIES
ZITHF** SERIES

FLANGED STRAIGHT SHANK HOLDERS

HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE
Porte-plaquette à collerette queue cylindrique
PUNTE ATTACCO CILINDRICO FLANGIATO

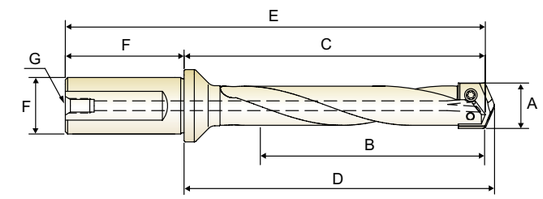




INTERMEDIATE LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10ITSF100I	45/64 ~ 15/16	4-5/8	6-3/32	6-15/64	8-3/8	1	2-9/32	1/8
1.5	Z15ITSF100I	55/64 ~ 15/16	4-5/8	6-3/32	6-15/64	8-3/8	1	2-9/32	1/8
2	Z20ITSF125I	31/32 ~ 1-3/8	5-3/8	7-1/16	7-13/64	9-11/32	1-1/4	2-9/32	1/4
2.5	Z25ITSF125I	1-3/16 ~ 1-3/8	5-3/8	7-1/16	7-13/64	9-11/32	1-1/4	2-9/32	1/4
3	Z30ITSF150I	1-13/32 ~ 1-7/8	6-1/2	8-9/16	8-3/4	11-1/4	1-1/2	2-11/16	1/4





INTERMEDIATE LENGTH - Helical Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10ITHF100I	45/64 ~ 15/16	4-5/8	6-3/32	6-15/64	8-3/8	1	2-9/32	1/8
1.5	Z15ITHF100I	55/64 ~ 15/16	4-5/8	6-3/32	6-15/64	8-3/8	1	2-9/32	1/8
2	Z20ITHF125I	31/32 ~ 1-3/8	5-3/8	7-1/16	7-13/64	9-11/32	1-1/4	2-9/32	1/4
2.5	Z25ITHF125I	1-3/16 ~ 1-3/8	5-3/8	7-1/16	7-13/64	9-11/32	1-1/4	2-9/32	1/4
3	Z30ITHF150I	1-13/32 ~ 1-7/8	6-1/2	8-9/16	8-3/4	11-1/4	1-1/2	2-11/16	1/4

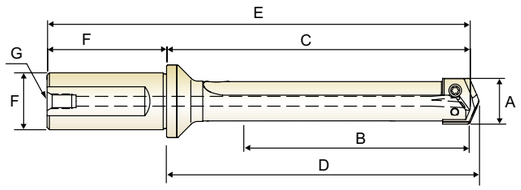
SPADE DRILLS

ZSDSF** SERIES
ZSDHF** SERIES

FLANGED STRAIGHT SHANK HOLDERS

- HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE
- Porte-plaquette à collerette queue cylindrique
- PUNTE ATTACCO CILINDRICO FLANGIATO

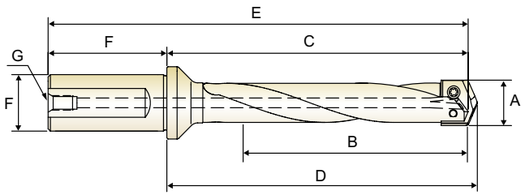




STANDARD LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0SDSF075I	3/8 ~ 27/64	2-3/8	3-17/32	3-5/8	5-9/16	3/4	2-1/32	1/8
Z	ZZ0SDSF075I	7/16 ~ 1/2	2-3/8	3-17/32	3-5/8	5-9/16	3/4	2-1/32	1/8
0	Z00SDSF075I	33/64 ~ 11/16	2-1/2	3-5/8	3-47/64	5-21/32	3/4	2-1/32	1/8
0.5	Z05SDSF075I	39/64 ~ 11/16	2-1/2	3-5/8	3-47/64	5-21/32	3/4	2-1/32	1/8
1	Z10SDSF100I	45/64 ~ 15/16	6-5/8	8-3/32	8-15/64	10-3/8	1	2-9/32	1/8
1.5	Z15SDSF100I	55/64 ~ 15/16	6-5/8	8-3/32	8-15/64	10-3/8	1	2-9/32	1/8
2	Z20SDSF125I	31/32 ~ 1-3/8	7-3/8	9-1/16	9-13/64	11-11/32	1-1/4	2-9/32	1/4
2.5	Z25SDSF125I	1-3/16 ~ 1-3/8	7-3/8	9-1/16	9-13/64	11-11/32	1-1/4	2-9/32	1/4
3	Z30SDSF150I	1-13/32 ~ 1-7/8	8-1/4	10-5/16	10-1/2	13	1-1/2	2-11/16	1/4
4	Z40SDSF150I	1-29/32 ~ 2-9/16	9-1/8	11-1/16	11-1/4	13-3/4	1-1/2	2-11/16	1/4





STANDARD LENGTH - Helical Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0SDHF075I	3/8 ~ 27/64	2-3/8	3-17/32	3-5/8	5-9/16	3/4	2-1/32	1/8
Z	ZZ0SDHF075I	7/16 ~ 1/2	2-3/8	3-17/32	3-5/8	5-9/16	3/4	2-1/32	1/8
0	Z00SDHF075I	33/64 ~ 11/16	2-1/2	3-5/8	3-47/64	5-21/32	3/4	2-1/32	1/8
0.5	Z05SDHF075I	39/64 ~ 11/16	2-1/2	3-5/8	3-47/64	5-21/32	3/4	2-1/32	1/8
1	Z10SDHF100I	45/64 ~ 15/16	6-5/8	8-3/32	8-15/64	10-3/8	1	2-9/32	1/8
1.5	Z15SDHF100I	55/64 ~ 15/16	6-5/8	8-3/32	8-15/64	10-3/8	1	2-9/32	1/8
2	Z20SDHF125I	31/32 ~ 1-3/8	7-3/8	9-1/16	9-13/64	11-11/32	1-1/4	2-9/32	1/4
2.5	Z25SDHF125I	1-3/16 ~ 1-3/8	7-3/8	9-1/16	9-13/64	11-11/32	1-1/4	2-9/32	1/4
3	Z30SDHF150I	1-13/32 ~ 1-7/8	8-1/4	10-5/16	10-1/2	13	1-1/2	2-11/16	1/4
4	Z40SDHF150I	1-29/32 ~ 2-9/16	9-1/8	11-1/16	11-1/4	13-3/4	1-1/2	2-11/16	1/4

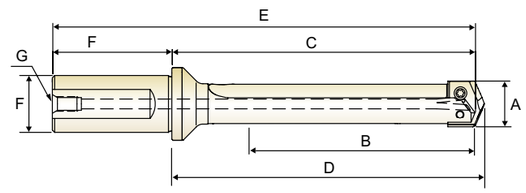
SPADE DRILLS

ZEXSF** SERIES
ZEXHF** SERIES

FLANGED STRAIGHT SHANK HOLDERS

- HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE
- Porte-plaquette à collerette queue cylindrique
- PUNTE ATTACCO CILINDRICO FLANGIATO

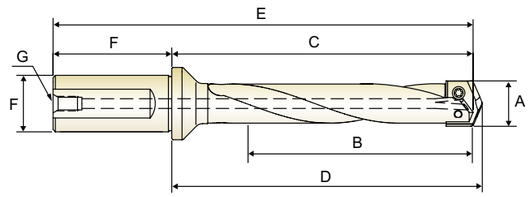




EXTENDED LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0EXSF075I	3/8 ~ 27/64	4-3/8	5-17/32	5-5/8	7-9/16	3/4	2-1/32	1/8
Z	ZZ0EXSF075I	7/16 ~ 1/2	4-3/8	5-17/32	5-5/8	7-9/16	3/4	2-1/32	1/8
0	Z00EXSF075I	33/64 ~ 11/16	4-1/2	5-5/8	5-47/64	7-21/32	3/4	2-1/32	1/8
0.5	Z05EXSF075I	39/64 ~ 11/16	4-1/2	5-5/8	5-47/64	7-21/32	3/4	2-1/32	1/8
1	Z10EXSF100I	45/64 ~ 15/16	10-5/8	12-3/32	12-15/64	14-3/8	1	2-9/32	1/8
1.5	Z15EXSF100I	55/64 ~ 15/16	10-5/8	12-3/32	12-15/64	14-3/8	1	2-9/32	1/8
2	Z20EXSF125I	31/32 ~ 1-3/8	11-3/8	13-1/16	13-13/64	15-11/32	1-1/4	2-9/32	1/4
2.5	Z25EXSF125I	1-3/16 ~ 1-3/8	11-3/8	13-1/16	13-13/64	15-11/32	1-1/4	2-9/32	1/4





EXTENDED LENGTH - Helical Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0EXHF075I	3/8 ~ 27/64	4-3/8	5-17/32	5-5/8	7-9/16	3/4	2-1/32	1/8
Z	ZZ0EXHF075I	7/16 ~ 1/2	4-3/8	5-17/32	5-5/8	7-9/16	3/4	2-1/32	1/8
0	Z00EXHF075I	33/64 ~ 11/16	4-1/2	5-5/8	5-47/64	7-21/32	3/4	2-1/32	1/8
0.5	Z05EXHF075I	39/64 ~ 11/16	4-1/2	5-5/8	5-47/64	7-21/32	3/4	2-1/32	1/8
1	Z10EXHF100I	45/64 ~ 15/16	10-5/8	12-3/32	12-15/64	14-3/8	1	2-9/32	1/8
1.5	Z15EXHF100I	55/64 ~ 15/16	10-5/8	12-3/32	12-15/64	14-3/8	1	2-9/32	1/8
2	Z20EXHF125I	31/32 ~ 1-3/8	11-3/8	13-1/16	13-13/64	15-11/32	1-1/4	2-9/32	1/4
2.5	Z25EXHF125I	1-3/16 ~ 1-3/8	11-3/8	13-1/16	13-13/64	15-11/32	1-1/4	2-9/32	1/4

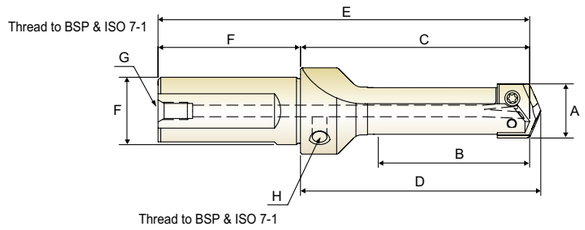
SPADE DRILLS

ZSBSF** SERIES
ZSTSF** SERIES

FLANGED STRAIGHT SHANK HOLDERS

- HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE
- Porte-plaquette à collerette queue cylindrique
- PUNTE ATTACCO CILINDRICO FLANGIATO

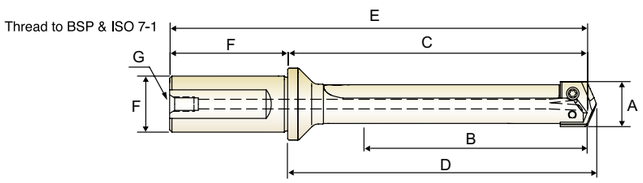




STUB LENGTH - Straight Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap	
							Dia.	Length	Rear	Side
		A	B	C	D	E	F		G	H
Y	ZY0SBSF016M	9.5 ~ 11.0	19.1	47.6	50.0	95.6	16.0	48.0	1/16	1/8
Z	ZZ0SBSF016M	11.5 ~ 12.5	19.1	47.6	50.0	95.6	16.0	48.0	1/16	1/8
0	Z00SBSF020M	13.0 ~ 17.5	22.2	47.6	50.4	97.6	20.0	50.0	1/8	1/8
0.5	Z05SBSF020M	15.5 ~ 17.5	22.2	47.6	50.4	97.6	20.0	50.0	1/8	1/8
1	Z10SBSF025M	18.0 ~ 24.0	47.6	75.8	79.4	131.8	25.0	56.0	1/8	1/8
1.5	Z15SBSF025M	22.0 ~ 24.0	57.2	88.5	92.1	144.5	25.0	56.0	1/8	1/8
2	Z20SBSF032M	25.0 ~ 35.0	57.2	88.5	92.1	148.5	32.0	60.0	1/4	1/8
2.5	Z25SBSF032M	30.0 ~ 35.0	92.1	123.4	127.0	183.4	32.0	60.0	1/4	1/8
3	Z30SBSF040M	36.0 ~ 47.0	76.2	125.0	129.8	195.0	40.0	70.0	1/4	1/4





SHORT LENGTH - Straight Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0STSF020M	9.5 ~ 11.0	31.8	61.1	63.5	111.1	20.0	50.0	1/8
Z	ZZ0STSF020M	11.5 ~ 12.5	31.8	61.1	63.5	111.1	20.0	50.0	1/8
0	Z00STSF020M	13.0 ~ 17.5	34.9	63.5	66.3	113.5	20.0	50.0	1/8
0.5	Z05STSF020M	15.5 ~ 17.5	34.9	63.5	66.3	113.5	20.0	50.0	1/8
1	Z10STSF025M	18.0 ~ 24.0	66.7	107.2	110.7	163.2	25.0	56.0	1/8
1.5	Z15STSF025M	22.0 ~ 24.0	66.7	107.2	110.7	163.2	25.0	56.0	1/8
2	Z20STSF032M	25.0 ~ 35.0	85.7	128.6	132.2	188.6	32.0	60.0	1/4
2.5	Z25STSF032M	30.0 ~ 35.0	85.7	128.6	132.2	188.6	32.0	60.0	1/4
3	Z30STSF040M	36.0 ~ 47.0	120.7	173.0	177.8	243.0	40.0	70.0	1/4
4	Z40STSF040M	48.0 ~ 65.0	130.2	179.4	184.0	249.4	40.0	70.0	1/4

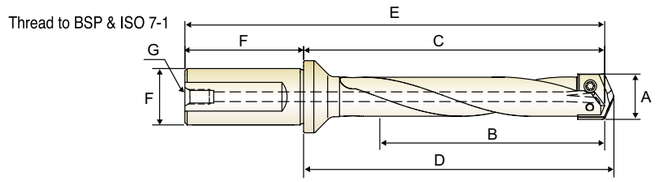
SPADE DRILLS

ZITHF** SERIES
ZSDHF** SERIES

FLANGED STRAIGHT SHANK HOLDERS

- HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE
- Porte-plaquette à collerette queue cylindrique
- PUNTE ATTACCO CILINDRICO FLANGIATO

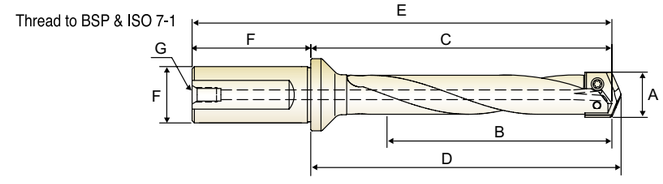




INTERMEDIATE LENGTH - Helical Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10ITHF025M	18.0 ~ 24.0	117.5	154.8	158.4	210.8	25.0	56.0	1/8
1.5	Z15ITHF025M	22.0 ~ 24.0	117.5	154.8	158.4	210.8	25.0	56.0	1/8
2	Z20ITHF032M	25.0 ~ 35.0	136.5	179.4	183.0	239.4	32.0	60.0	1/4
2.5	Z25ITHF032M	30.0 ~ 35.0	136.5	179.4	183.0	239.4	32.0	60.0	1/4
3	Z30ITHF040M	36.0 ~ 47.0	165.1	217.5	222.3	287.5	40.0	70.0	1/4





STANDARD LENGTH - Helical Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0SDHF020M	9.5 ~ 11.0	60.3	89.7	92.1	139.7	20.0	50.0	1/8
Z	ZZ0SDHF020M	11.5 ~ 12.5	60.3	89.7	92.1	139.7	20.0	50.0	1/8
0	Z00SDHF020M	13.0 ~ 17.5	63.5	92.1	94.9	142.1	20.0	50.0	1/8
0.5	Z05SDHF020M	15.5 ~ 17.5	63.5	92.1	94.9	142.1	20.0	50.0	1/8
1	Z10SDHF025M	18.0 ~ 24.0	168.3	205.6	209.2	261.6	25.0	56.0	1/8
1.5	Z15SDHF025M	22.0 ~ 24.0	168.3	205.6	209.2	261.6	25.0	56.0	1/8
2	Z20SDHF032M	25.0 ~ 35.0	187.3	230.2	233.8	290.2	32.0	60.0	1/4
2.5	Z25SDHF032M	30.0 ~ 35.0	187.3	230.2	233.8	290.2	32.0	60.0	1/4
3	Z30SDHF040M	36.0 ~ 47.0	209.6	261.9	266.7	331.9	40.0	70.0	1/4
4	Z40SDHF040M	48.0 ~ 65.0	231.8	281.0	285.8	351.0	40.0	70.0	1/4

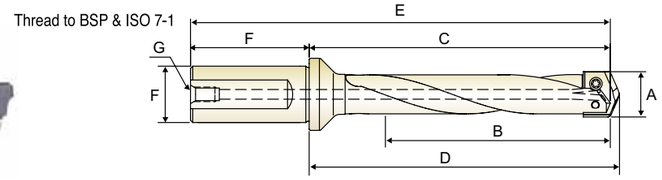
SPADE DRILLS

ZEXHF** SERIES
ZEXSF** SERIES

FLANGED STRAIGHT SHANK HOLDERS

- HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE
- Porte-plaquette à collerette queue cylindrique
- PUNTE ATTACCO CILINDRICO FLANGIATO

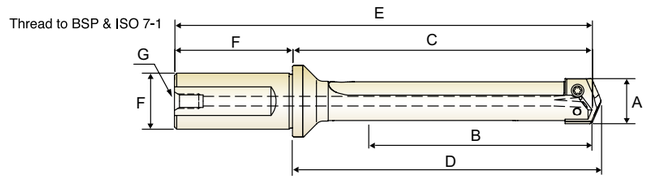




EXTENDED LENGTH - Helical Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0EXHF020M	9.5 ~ 11.0	111.1	140.5	142.9	190.5	20.0	50.0	1/8
Z	ZZ0EXHF020M	11.5 ~ 12.5	111.1	140.5	142.9	190.5	20.0	50.0	1/8
0	Z00EXHF020M	13.0 ~ 17.5	114.3	142.9	145.7	192.9	20.0	50.0	1/8
0.5	Z05EXHF020M	15.5 ~ 17.5	114.3	142.9	145.7	192.9	20.0	50.0	1/8
1	Z10EXHF025M	18.0 ~ 24.0	269.9	307.2	310.8	363.2	25.0	56.0	1/8
1.5	Z15EXHF025M	22.0 ~ 24.0	269.9	307.2	310.8	363.2	25.0	56.0	1/8
2	Z20EXHF032M	25.0 ~ 35.0	288.9	331.8	335.4	391.8	32.0	60.0	1/4
2.5	Z25EXHF032M	30.0 ~ 35.0	288.9	331.8	335.4	391.8	32.0	60.0	1/4





EXTENDED LENGTH - Straight Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
3	Z30EXSF040M	36.0 ~ 47.0	349.3	401.6	406.4	471.6	40.0	70.0	1/4
4	Z40EXSF040M	48.0 ~ 65.0	422.3	471.5	476.3	541.5	40.0	70.0	1/4

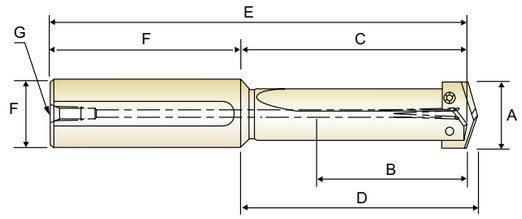
SPADE DRILLS

ZSTSS** SERIES

STRAIGHT SHANK HOLDERS

- HALTER MIT ZYLINDERSCHAFT
- Porte-plaquette à queue cylindrique
- PUNTE ATTACCO CILINDRICO FLANGIATO

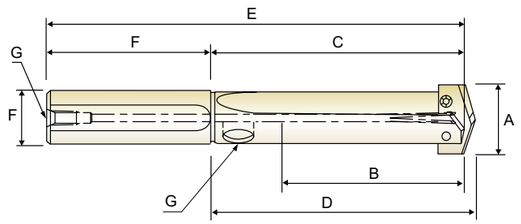




SHORT LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0STSS075I	3/8 ~ 27/64	1-1/4	2-1/32	2-1/8	4-13/32	3/4	2-3/8	1/8
Z	ZZ0STSS075I	7/16 ~ 1/2	1-1/4	2-1/32	2-1/8	4-13/32	3/4	2-3/8	1/8
0	Z00STSS075I	33/64 ~ 11/16	1-3/8	2-3/16	2-19/64	4-9/16	3/4	2-3/8	1/8
0.5	Z05STSS075I	39/64 ~ 11/16	1-3/8	2-3/16	2-19/64	4-9/16	3/4	2-3/8	1/8





SHORT LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10STSS075I	45/64 ~ 15/16	2-5/8	3-7/8	4-1/64	6-7/8	3/4	3	1/8
	Z10STSS100I	45/64 ~ 15/16	2-5/8	3-7/8	4-1/64	6-7/8	1	3	1/8
1.5	Z15STSS075I	55/64 ~ 15/16	2-5/8	3-7/8	4-1/64	6-7/8	3/4	3	1/8
	Z15STSS100I	55/64 ~ 15/16	2-5/8	3-7/8	4-1/64	6-7/8	1	3	1/8
2	Z20STSS100I	31/32 ~ 1-3/8	3-3/8	4-1/2	4-41/64	8	1	3-1/2	1/8
	Z20STSS125I	31/32 ~ 1-3/8	3-3/8	4-1/2	4-41/64	8	1-1/4	3-1/2	1/8
2.5	Z25STSS100I	1-3/16 ~ 1-3/8	3-3/8	4-1/2	4-41/64	8	1	3-1/2	1/8
	Z25STSS125I	1-3/16 ~ 1-3/8	3-3/8	4-1/2	4-41/64	8	1-1/4	3-1/2	1/8
3	Z30STSS125I	1-13/32 ~ 1-7/8	4-3/4	6	6-3/16	10	1-1/4	4	1/4
	Z30STSS150I	1-13/32 ~ 1-7/8	4-3/4	6	6-3/16	10	1-1/2	4	1/4
4	Z40STSS150I	1-29/32 ~ 2-9/16	5-1/8	6-1/2	6-11/16	10-1/2	1-1/2	4	1/4
	Z40STSS175I	1-29/32 ~ 2-9/16	5-1/8	6-1/2	6-11/16	10-1/2	1-3/4	4	1/4
5	Z50STSS200I	2-1/2 ~ 3-1/2	6-3/4	8-1/2	8-3/4	12-1/2	2	4	1/2

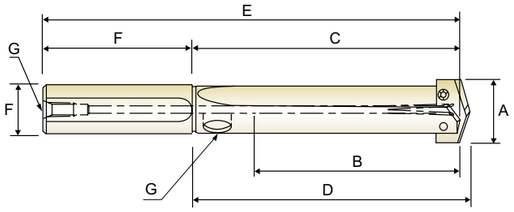
SPADE DRILLS

ZITSS** SERIES

STRAIGHT SHANK HOLDERS

- HALTER MIT ZYLINDERSCHAFT
- Porte-plaquette à queue cylindrique
- PUNTE ATTACCO CILINDRICO FLANGIATO





INTERMEDIATE LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10ITSS100I	45/64 ~ 15/16	4-5/8	5-7/8	6-1/64	8-7/8	1	3	1/8
1.5	Z15ITSS100I	55/64 ~ 15/16	4-5/8	5-7/8	6-1/64	8-7/8	1	3	1/8
2	Z20ITSS125I	31/32 ~ 1-3/8	5-3/8	6-1/2	6-41/64	10	1-1/4	3-1/2	1/8
2.5	Z25ITSS125I	1-3/16 ~ 1-3/8	5-3/8	6-1/2	6-41/64	10	1-1/4	3-1/2	1/8
3	Z30ITSS150I	1-13/32 ~ 1-7/8	6-1/2	7-3/4	7-15/16	11-3/4	1-1/2	4	1/4

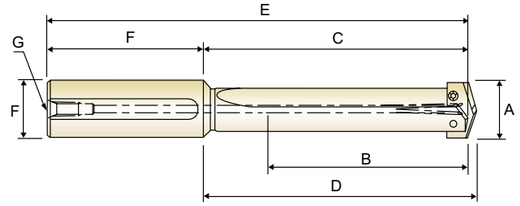
SPADE DRILLS

ZSDSS** SERIES

STRAIGHT SHANK HOLDERS

- HALTER MIT ZYLINDERSCHAFT
- Porte-plaquette à queue cylindrique
- PUNTE ATTACCO CILINDRICO FLANGIATO

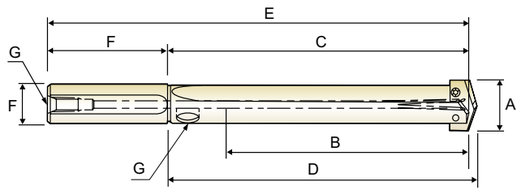




STANDARD LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0SDSS075I	3/8 ~ 27/64	2-3/8	3-5/32	3-1/4	5-17/32	3/4	2-3/8	1/8
Z	ZZ0SDSS075I	7/16 ~ 1/2	2-3/8	3-5/32	3-1/4	5-17/32	3/4	2-3/8	1/8
0	Z00SDSS075I	33/64 ~ 11/16	2-1/2	3-5/16	3-27/64	5-11/16	3/4	2-3/8	1/8
0.5	Z05SDSS075I	39/64 ~ 11/16	2-1/2	3-5/16	3-27/64	5-11/16	3/4	2-3/8	1/8





STANDARD LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10SDSS075I	45/64 ~ 15/16	6-5/8	7-7/8	8-1/64	10-7/8	3/4	3	1/8
	Z10SDSS100I	45/64 ~ 15/16	6-5/8	7-7/8	8-1/64	10-7/8	1	3	1/8
1.5	Z15SDSS075I	55/64 ~ 15/16	6-5/8	7-7/8	8-1/64	10-7/8	3/4	3	1/8
	Z15SDSS100I	55/64 ~ 15/16	6-5/8	7-7/8	8-1/64	10-7/8	1	3	1/8
2	Z20SDSS100I	31/32 ~ 1-3/8	7-3/8	8-1/2	8-41/64	12	1	3-1/2	1/8
	Z20SDSS125I	31/32 ~ 1-3/8	7-3/8	8-1/2	8-41/64	12	1-1/4	3-1/2	1/8
2.5	Z25SDSS100I	1-3/16 ~ 1-3/8	7-3/8	8-1/2	8-41/64	12	1	3-1/2	1/8
	Z25SDSS125I	1-3/16 ~ 1-3/8	7-3/8	8-1/2	8-41/64	12	1-1/4	3-1/2	1/8
3	Z30SDSS125I	1-13/32 ~ 1-7/8	8-1/4	9-1/2	9-11/16	13-1/2	1-1/4	4	1/4
	Z30SDSS150I	1-13/32 ~ 1-7/8	8-1/4	9-1/2	9-11/16	13-1/2	1-1/2	4	1/4
4	Z40SDSS150I	1-29/32 ~ 2-9/16	9-1/8	10-1/2	10-11/16	14-1/2	1-1/2	4	1/4
	Z40SDSS175I	1-29/32 ~ 2-9/16	9-1/8	10-1/2	10-11/16	14-1/2	1-3/4	4	1/4
5	Z50SDSS200I	2-1/2 ~ 3-1/2	10-3/4	12-1/2	12-3/4	16-1/2	2	4	1/2
7	Z70SDSS300I	3-17/32 ~ 4-1/2	10-3/4	12-7/8	13-1/8	17-7/8	3	5	1/2

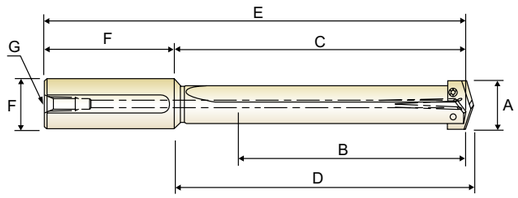
SPADE DRILLS

ZEXSS** SERIES

STRAIGHT SHANK HOLDERS

- HALTER MIT ZYLINDERSCHAFT
- Porte-plaquette à queue cylindrique
- PUNTE ATTACCO CILINDRICO FLANGIATO

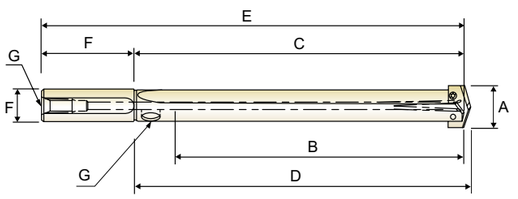




EXTENDED LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0EXSS075I	3/8 ~ 27/64	4-3/8	5-5/32	5-1/4	7-17/32	3/4	2-3/8	1/8
Z	ZZ0EXSS075I	7/16 ~ 1/2	4-3/8	5-5/32	5-1/4	7-17/32	3/4	2-3/8	1/8
0	Z00EXSS075I	33/64 ~ 11/16	4-1/2	5-5/16	5-27/64	7-11/16	3/4	2-3/8	1/8
0.5	Z05EXSS075I	39/64 ~ 11/16	4-1/2	5-5/16	5-27/64	7-11/16	3/4	2-3/8	1/8





EXTENDED LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10EXSS100I	45/64 ~ 15/16	10-5/8	11-7/8	12-1/64	14-7/8	1	3	1/8
1.5	Z15EXSS100I	55/64 ~ 15/16	10-5/8	11-7/8	12-1/64	14-7/8	1	3	1/8
2	Z20EXSS125I	31/32 ~ 1-3/8	11-3/8	12-1/2	12-41/64	16	1-1/4	3-1/2	1/8
2.5	Z25EXSS125I	1-3/16 ~ 1-3/8	11-3/8	12-1/2	12-41/64	16	1-1/4	3-1/2	1/8
3	Z30EXSS125I	1-13/32 ~ 1-7/8	13-3/4	15	15-3/16	19	1-1/4	4	1/4
4	Z40EXSS150I	1-29/32 ~ 2-9/16	16-5/8	18	18-3/16	22	1-1/2	4	1/4
5	Z50EXSS200I	2-1/2 ~ 3-1/2	18-1/4	20	20-1/4	24	2	4	1/2
7	Z70EXSS300I	3-17/32 ~ 4-1/2	21-7/8	24	24-1/4	29	3	5	1/2

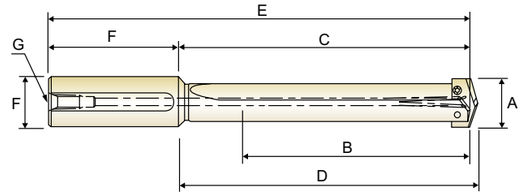
SPADE DRILLS

ZLGSS** SERIES

STRAIGHT SHANK HOLDERS

- HALTER MIT ZYLINDERSCHAFT
- Porte-plaquette à queue cylindrique
- PUNTE ATTACCO CILINDRICO FLANGIATO





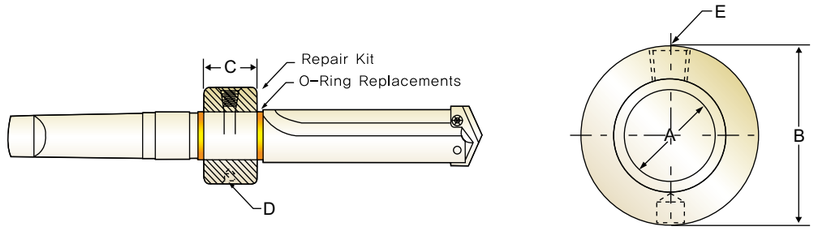
LONG LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
0	Z00LGSS075I	33/64 ~ 11/16	7	7-13/16	7-59/64	10-3/16	3/4	2-3/8	1/8
0.5	Z05LGSS075I	39/64 ~ 11/16	7	7-13/16	7-59/64	10-3/16	3/4	2-3/8	1/8

SPADE DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HOLDER ACCESSORIES
ROTARY COOLANT ADAPTER (RCA) AND ACCESSORIES



Inch

Item No.	I.D.	O.D.	Length	Thread for Driving Rod	Pipe Tap	RCA Repair Kit Item No.	RCA O-Ring Replacements Item No.
	A	B	C	D	E		
PR110048	3/4	1-3/4	7/8	5/16-NC	◈1/8	PR210048	PR310048
PR110100	1	2-1/8	1-1/8	5/16-NC	◈1/8	PR210100	PR310100
PR110116	1-1/4	2-1/2	1-3/8	3/8-NC	◈1/4	PR210116	PR310116
PR110148	1-3/4	3	1-3/8	3/8-NC	◈1/4	PR210148	PR310148
PR110216	2-1/4	3-3/4	1-3/4	1/2-NC	◈1/2	PR210216	PR310216

Metric

Item No.	I.D.	O.D.	Length	Thread for Driving Rod	Pipe Tap	RCA Repair Kit Item No.	RCA O-Ring Replacements Item No.
	A	B	C	D	E		
PR120190	19.05	44.45	22.23	M8 ×1.25	◈1/8	PR220190	PR320190
PR120254	25.40	53.97	28.57	M8 ×1.25	◈1/8	PR220254	PR320254
PR120317	31.75	63.50	34.92	M10 ×1.5	◈1/4	PR220317	PR320317
PR120444	44.45	76.20	34.92	M10 ×1.5	◈1/4	PR220444	PR320444
PR120571	57.15	95.27	44.45	M12 ×1.75	◈1/2	PR220571	PR320571

◈ Thread to BSP & ISO 7-1

TORX SCREWS

Holder Series	Item No.	TORX Hand Driver	Drill Range Used With	
			Inch	Metric
Y	J07Y0010	J05Y0070	3/8 ~ 27/64	9.5 mm ~ 11.0 mm
Z	J07Z0110		7/16 ~ 1/2	11.5 mm ~ 12.5 mm
0	J0800210	J0500080	33/64 ~ 11/16	13.0 mm ~ 17.5 mm
0.5	J0805310		39/64 ~ 11/16	15.5 mm ~ 17.5 mm
1	J0910410	J0510090	45/64 ~ 15/16	18.0 mm ~ 24.0 mm
1.5	J0915510		55/64 ~ 15/16	22.0 mm ~ 24.0 mm
2	J1520610	J0520150	31/32 ~ 1-3/8	25.0 mm ~ 35.0 mm
2.5	J1525710		1-3/16 ~ 1-3/8	30.0 mm ~ 35.0 mm
3,4	J2030810	J0530200	1-13/32 ~ 2-9/16	36.0 mm ~ 65.0 mm
5 ~ 8	J2550910	J0550250	2-1/2 ~ 4-1/2	64.0 mm ~ 114.0 mm

** Note : Replacement screws sold in packages(10 screws per package)

SPADE DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

SPADE DRILL HSS-M4

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

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)						
			TiN	TiCN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35	Ø36-47	Ø48-65	Ø66-114
P	1	Non-alloy steel	54	67	75	0.15	0.22	0.28	0.37	0.46	0.56	0.67
	2		49	58	69	0.13	0.19	0.24	0.34	0.43	0.50	0.57
	3		45	56	63	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	4		45	56	63	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	5											
	6	Low alloy steel	45	56	58	0.13	0.20	0.24	0.36	0.42	0.46	0.55
	7		41	50	56	0.13	0.16	0.23	0.35	0.41	0.44	0.55
	8											
	9											
	10	High alloyed steel, and tool steel										
	11											
M	12	Stainless steel	20	23	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46
	13		20	23	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46
	14		24	29	34	0.14	0.20	0.23	0.26	0.36	0.41	0.50
K	15	Grey cast iron	48	58	70	0.14	0.26	0.35	0.45	0.56	0.64	0.68
	16		29	35	41	0.10	0.15	0.16	0.23	0.28	0.35	0.40
	17	Nodular cast iron	48	58	70	0.14	0.26	0.35	0.45	0.56	0.64	0.68
	18		35	44	52	0.13	0.17	0.23	0.3	0.35	0.43	0.50
	19	Malleable cast iron	52	64	75	0.16	0.30	0.40	0.49	0.59	0.69	0.75
	20		35	44	52	0.13	0.17	0.23	0.30	0.35	0.43	0.50
N	21	Aluminum-wrought alloy	187	229	244	0.19	0.33	0.41	0.50	0.54	0.64	0.70
	22		92	137	137	0.19	0.33	0.41	0.46	0.54	0.64	0.70
	23	Aluminum-cast, alloyed										
	24											
	25											
	26	Copper and Copper Alloys (Bronze / Brass)										
	27		95	128	142	0.19	0.31	0.43	0.53	0.64	0.74	0.79
	28											
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys										
	32											
	33											
	34											
	35											
	36	Titanium Alloys										
	37											
H	38	Hardened steel										
	39											
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										

▶ The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

SPADE DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

SPADE DRILL HSS-T15

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

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)						
			TiN	TiCN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35	Ø36-47	Ø48-65	Ø66-114
P	1	Non-alloy steel	54	67	75	0.15	0.22	0.28	0.37	0.46	0.56	0.67
	2		49	58	69	0.13	0.19	0.24	0.34	0.43	0.50	0.57
	3		45	56	63	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	4		45	56	63	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	5											
	6	Low alloy steel	45	56	58	0.13	0.20	0.24	0.36	0.42	0.46	0.55
	7		41	50	56	0.13	0.16	0.23	0.35	0.41	0.44	0.55
	8		39	47	53	0.09	0.15	0.22	0.28	0.38	0.41	0.50
	9		36	43	46	0.08	0.15	0.21	0.27	0.38	0.40	0.51
	10	High alloyed steel, and tool steel	25	34	36	0.08	0.17	0.20	0.24	0.30	0.37	0.39
	11		19	27	29	0.08	0.14	0.18	0.19	0.25	0.29	0.34
M	12	Stainless steel	20	23	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46
	13		20	23	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46
	14		24	29	34	0.14	0.20	0.23	0.26	0.36	0.41	0.50
K	15	Grey cast iron	48	58	70	0.14	0.26	0.35	0.45	0.56	0.64	0.68
	16		29	35	41	0.10	0.15	0.16	0.23	0.28	0.35	0.40
	17	Nodular cast iron	48	58	70	0.14	0.26	0.35	0.45	0.56	0.64	0.68
	18		35	44	52	0.13	0.17	0.23	0.30	0.35	0.43	0.50
	19	Malleable cast iron	52	64	75	0.16	0.30	0.40	0.49	0.59	0.69	0.75
	20		35	44	52	0.13	0.17	0.23	0.30	0.35	0.43	0.50
N	21	Aluminum-wrought alloy	187	229	244	0.19	0.33	0.41	0.50	0.54	0.64	0.70
	22		92	137	137	0.19	0.33	0.41	0.46	0.54	0.64	0.70
	23	Aluminum-cast, alloyed										
	24											
	25											
	26	Copper and Copper Alloys (Bronze / Brass)										
	27		95	128	142	0.19	0.31	0.43	0.53	0.64	0.74	0.79
	28											
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys	9	11	12	0.08	0.17	0.20	0.24	0.30	0.37	0.39
	32		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	33		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	34		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	35		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	36	Titanium Alloys										
	37											
H	38	Hardened steel	20	23	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46
	39											
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										

▶ The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

SPADE DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

SPADE DRILL HSS-M48

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

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)						
			TiN	TiCN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35	Ø36-47	Ø48-65	Ø66-114
P	1	Non-alloy steel	54	67	75	0.15	0.22	0.28	0.37	0.46	0.56	0.67
	2		49	58	69	0.13	0.19	0.24	0.34	0.43	0.50	0.57
	3		45	56	63	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	4		45	56	63	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	5											
	6	Low alloy steel	45	56	58	0.13	0.20	0.24	0.36	0.42	0.46	0.55
	7		41	50	56	0.13	0.16	0.23	0.35	0.41	0.44	0.55
	8		39	47	53	0.09	0.15	0.22	0.28	0.38	0.41	0.50
	9		36	43	46	0.08	0.15	0.21	0.27	0.38	0.40	0.51
	10	High alloyed steel, and tool steel	25	34	36	0.08	0.17	0.20	0.24	0.30	0.37	0.39
	11		19	27	29	0.08	0.14	0.18	0.19	0.25	0.29	0.34
M	12	Stainless steel										
	13											
	14											
K	15	Grey cast iron	48	58	70	0.14	0.26	0.35	0.45	0.56	0.64	0.68
	16		29	35	41	0.10	0.15	0.16	0.23	0.28	0.35	0.40
	17	Nodular cast iron	48	58	70	0.14	0.26	0.35	0.45	0.56	0.64	0.68
	18		35	44	52	0.13	0.17	0.23	0.30	0.35	0.43	0.50
	19	Malleable cast iron	52	64	75	0.16	0.30	0.40	0.49	0.59	0.69	0.75
	20		35	44	52	0.13	0.17	0.23	0.30	0.35	0.43	0.50
N	21	Aluminum-wrought alloy	187	229	244	0.19	0.33	0.41	0.50	0.54	0.64	0.70
	22		92	137	137	0.19	0.33	0.41	0.46	0.54	0.64	0.70
	23	Aluminum-cast, alloyed										
	24											
	25											
	26	Copper and Copper Alloys (Bronze / Brass)										
	27		95	128	142	0.19	0.31	0.43	0.53	0.64	0.74	0.79
	28											
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys	9	11	12	0.08	0.17	0.20	0.24	0.30	0.37	0.39
	32		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	33		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	34		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	35		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	36	Titanium Alloys										
	37											
H	38	Hardened steel	20	23	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46
	39											
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										

▶ The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

SPADE DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

SPADE DRILL CARBIDE-K10

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

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)				
			TiN	TiCN	TiAlN	Ø9.5~12.5	Ø13~17.5	Ø18~24	Ø25~35	Ø36~47
P	1	Non-alloy steel								
	2									
	3									
	4									
	5									
	6	Low alloy steel								
	7									
	8									
	9									
	10	High alloyed steel, and tool steel								
	11									
M	12	Stainless steel								
	13									
	14									
K	15	Grey cast iron	95	101	125	0.17	0.26	0.32	0.42	0.53
	16		56	70	79	0.13	0.18	0.23	0.28	0.33
	17	Nodular cast iron	95	101	125	0.17	0.26	0.32	0.42	0.53
	18		66	81	93	0.13	0.15	0.28	0.33	0.37
	19	Malleable cast iron	98	125	137	0.18	0.30	0.37	0.46	0.56
	20		66	81	93	0.13	0.15	0.28	0.33	0.37
N	21	Aluminum-wrought alloy								
	22									
	23	Aluminum-cast, alloyed								
	24									
	25									
	26	Copper and Copper Alloys (Bronze / Brass)								
	27									
	28									
	29	Non Metallic Materials								
	30									
S	31	Heat Resistant Super Alloys								
	32									
	33									
	34									
	35									
	36	Titanium Alloys								
	37									
H	38	Hardened steel								
	39									
	40	Chilled Cast Iron								
	41	Hardened Cast Iron								

▶ The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

SPADE DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

SPADE DRILL CARBIDE-K20

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

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)				
			TiN	TiCN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35	Ø36-47
P	1	Non-alloy steel	94	110	119	0.20	0.24	0.31	0.42	0.46
	2		76	82	96	0.15	0.22	0.29	0.36	0.40
	3		66	70	84	0.15	0.22	0.28	0.36	0.40
	4		66	70	84	0.15	0.22	0.28	0.36	0.40
	5									
	6	Low alloy steel	73	81	88	0.15	0.23	0.29	0.38	0.42
	7		66	73	81	0.15	0.21	0.28	0.37	0.41
	8		62	70	78	0.12	0.20	0.27	0.33	0.40
	9		53	58	64	0.10	0.18	0.23	0.30	0.38
	10	High alloyed steel, and tool steel	50	56	67	0.09	0.18	0.22	0.28	0.31
	11		37	46	50	0.09	0.18	0.22	0.28	0.31
M	12	Stainless steel	38	43	47	0.10	0.18	0.20	0.24	0.30
	13		38	43	47	0.10	0.18	0.20	0.24	0.30
	14		43	49	55	0.12	0.20	0.23	0.27	0.35
K	15	Grey cast iron	95	101	125	0.17	0.26	0.32	0.42	0.53
	16		56	70	79	0.13	0.18	0.23	0.28	0.33
	17	Nodular cast iron	95	101	125	0.17	0.26	0.32	0.42	0.53
	18		66	81	93	0.13	0.15	0.28	0.33	0.37
	19	Malleable cast iron	98	125	137	0.18	0.30	0.37	0.46	0.56
	20		66	81	93	0.13	0.15	0.28	0.33	0.37
N	21	Aluminum-wrought alloy	366	396	427	0.24	0.38	0.45	0.50	0.53
	22		244	290	291	0.22	0.33	0.40	0.45	0.48
	23	Aluminum-cast, alloyed								
	24									
	25									
	26	Copper and Copper Alloys (Bronze / Brass)								
	27		136	168	193	0.15	0.24	0.29	0.39	0.47
	28									
	29	Non Metallic Materials								
	30									
S	31	Heat Resistant Super Alloys	50	55	62	0.19	0.19	0.21	0.24	0.30
	32		38	44	46	0.15	0.17	0.20	0.21	0.25
	33		38	44	46	0.15	0.17	0.20	0.21	0.25
	34		38	44	46	0.15	0.17	0.20	0.21	0.25
	35		38	44	46	0.15	0.17	0.20	0.21	0.25
	36	Titanium Alloys								
	37									
H	38	Hardened steel	38	43	47	0.10	0.18	0.20	0.24	0.30
	39									
	40	Chilled Cast Iron								
	41	Hardened Cast Iron								

▶ The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

SPADE DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

SPADE DRILL FLAT BOTTOM HSS-T15

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

ISO	VDI 3323	Material Description	Vc(m/min)		Feed(mm/rev)			
			TiN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35
P	1	Non-alloy steel	54	60	0.12	0.18	0.22	0.30
	2		46	55	0.10	0.15	0.19	0.27
	3		45	50	0.10	0.15	0.18	0.27
	4		42	46	0.08	0.14	0.17	0.22
	5							
	6	Low alloy steel	45	46	0.10	0.16	0.19	0.29
	7		40	45	0.10	0.13	0.18	0.28
	8		38	42	0.07	0.12	0.18	0.22
	9		34	37	0.06	0.12	0.17	0.22
	10	High alloyed steel, and tool steel	27	29	0.07	0.12	0.15	0.20
	11		22	23	0.07	0.12	0.15	0.20
M	12	Stainless steel	23	25	0.13	0.15	0.18	0.22
	13		23	25	0.13	0.15	0.18	0.22
	14		26	29	0.17	0.18	0.20	0.23
K	15	Grey cast iron	51	60	0.12	0.21	0.29	0.40
	16		38	48	0.10	0.14	0.20	0.25
	17	Nodular cast iron	51	60	0.12	0.21	0.29	0.40
	18		38	48	0.10	0.14	0.20	0.25
	19	Malleable cast iron	56	66	0.13	0.25	0.35	0.41
	20		38	48	0.10	0.14	0.20	0.25
N	21	Aluminum-wrought alloy	208	213	0.17	0.28	0.36	0.43
	22		112	121	0.17	0.28	0.36	0.41
	23	Aluminum-cast, alloyed						
	24							
	25							
	26	Copper and Copper Alloys (Bronze / Brass)						
	27		48	70	0.15	0.26	0.37	0.45
	28							
	29	Non Metallic Materials						
	30							
S	31	Heat Resistant Super Alloys	20	10	0.06	0.14	0.16	0.19
	32		7	9	0.06	0.11	0.14	0.15
	33		7	9	0.06	0.11	0.14	0.15
	34		7	9	0.06	0.11	0.14	0.15
	35		7	9	0.06	0.11	0.14	0.15
	36	Titanium Alloys						
	37							
H	38	Hardened steel	23	25	0.13	0.15	0.18	0.22
	39							
	40	Chilled Cast Iron						
	41	Hardened Cast Iron						

▶ The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

SPADE DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

SPADE DRILL CARBIDE-P40

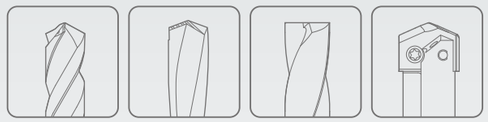
RPM = rev./min.
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)				
			TiN	TiCN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35	Ø36-47
P	1	Non-alloy steel	94	110	119	0.20	0.24	0.31	0.42	0.46
	2		76	82	96	0.15	0.22	0.29	0.36	0.40
	3		66	70	84	0.15	0.22	0.28	0.36	0.40
	4		66	70	84	0.15	0.22	0.28	0.36	0.40
	5									
	6	Low alloy steel	73	81	88	0.15	0.23	0.29	0.38	0.42
	7		66	73	81	0.15	0.21	0.28	0.37	0.41
	8		62	70	78	0.12	0.20	0.27	0.33	0.40
	9		53	58	64	0.10	0.18	0.23	0.30	0.38
	10	High alloyed steel, and tool steel	50	56	67	0.09	0.18	0.22	0.28	0.31
	11		37	46	50	0.09	0.18	0.22	0.28	0.31
M	12	Stainless steel	38	43	47	0.10	0.18	0.20	0.24	0.30
	13		38	43	47	0.10	0.18	0.20	0.24	0.30
	14		43	49	55	0.12	0.20	0.23	0.27	0.35
K	15	Grey cast iron	95	101	125	0.17	0.26	0.32	0.42	0.53
	16		56	70	79	0.13	0.18	0.23	0.28	0.33
	17	Nodular cast iron	95	101	125	0.17	0.26	0.32	0.42	0.53
	18		66	81	93	0.13	0.15	0.28	0.33	0.37
	19	Malleable cast iron	98	125	137	0.18	0.30	0.37	0.46	0.56
	20		66	81	93	0.13	0.15	0.28	0.33	0.37
N	21	Aluminum-wrought alloy	366	396	427	0.24	0.38	0.45	0.50	0.53
	22		244	290	291	0.22	0.33	0.40	0.45	0.48
	23	Aluminum-cast, alloyed								
	24									
	25									
	26	Copper and Copper Alloys (Bronze / Brass)								
	27		136	168	193	0.15	0.24	0.29	0.39	0.47
	28									
	29	Non Metallic Materials								
	30									
S	31	Heat Resistant Super Alloys	50	55	62	0.19	0.19	0.21	0.24	0.30
	32		38	44	46	0.15	0.17	0.20	0.21	0.25
	33		38	44	46	0.15	0.17	0.20	0.21	0.25
	34		38	44	46	0.15	0.17	0.20	0.21	0.25
	35		38	44	46	0.15	0.17	0.20	0.21	0.25
	36	Titanium Alloys								
	37									
H	38	Hardened steel	38	43	47	0.10	0.18	0.20	0.24	0.30
	39									
	40	Chilled Cast Iron								
	41	Hardened Cast Iron								

▶ The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

Leading Through Innovation

Global Cutting Tool Leader **YG-1**



HOLEMAKING



CARBIDE, HSS & HSS-E

REAMERS

REIBAHLEN

- **Carbide NC Machine Reamers**
  HSS Hand Reamers, HSS-E Chucking Reamers
- **Hartmetall NC Maschinenreibahlen**
  HSS-Handreibahlen, HSS-E Spannfutter-Reibahlen

SELECTION GUIDE

YG HOLEMAKING TOOLS

CARBIDE, HSS & HSS-E REAMERS

Carbide NC Machine Reamers
HSS Hand Reamers
HSS-E Chucking Reamers

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.427

	SERIES	K4101	K4111
	HOLE TYPE		
	FLUTE TYPE	Straight	LH Spiral
	SIZE MIN	D2.0	D2.0
	SIZE MAX	D20.0	D20.0
	PAGE	406	407
	SURFACE TREATMENT	Bright	
			

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

	K1143	K1153	K2101	K2111	K2121	K2102	K2112	K21B1
								
	Straight	LH Spiral	Straight	LH Spiral	LH Spiral (Quick Spiral)	Straight	LH Spiral	LH Spiral
	D2.0	D2.0	D2.0	D2.0	D4.0	D10.0	D10.0	D2.0
	D60.0	D60.0	D20.0	D20.0	D20.0	D50.0	D50.0	D20.0
	408	410	412	414	416	417	419	421
	Bright							
								

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								5	
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		○	○		○	○	○	7	
								8	
								9	
		○	○		○	○	○	10	
								11	
		○	○		○	○	○	12	M
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		○	○		○	○	○	14	
		○	○		○	○	○	15	K
		○	○		○	○	○	16	
		○	○		○	○	○	17	
		○	○		○	○	○	18	
		○	○		○	○	○	19	
		○	○		○	○	○	20	
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								25	
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○	○	○	○	◎	○	○	○	27	
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CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

YG REAMERS

K4101 SERIES

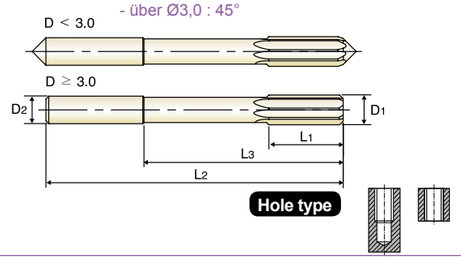
CARBIDE, NC MACHINE REAMERS - STRAIGHT FLUTES

VHM, NC-MASCHINENREIBAHLEN - GERADEGENUTET
ALÉSOIRS CARBURE MACHINE CN - ENTRÉE DROITE
ALESATORI A MACCHINA IN MD - ELICA DRITTA

- Material - Up to Ø12.0 : Solid Carbide
  - Over Ø12.0 : Carbide Head Brazed
- Straight Flutes, Right Hand Cut
- Unequal Flute Spacing
- O.D. Tolerances : DIN 1420 for H7
- Shank : DIN 6535-HA
- Chamfer Angle - D<3.0 : 15°
  - D≥3.0 : 45°

- Material - bis Ø12,0 : VHM
  - über Ø12,0 : gelötete VHM-Köpfe
- geradegenutet, rechtsschneidend
- Ungleichteilung
- Ø Toleranzen : DIN 1420 für H7
- Schaft : DIN 6535-HA
- Anschnittwinkel - bis Ø3,0 : 15°
  - über Ø3,0 : 45°





CARBIDE H7 15° 45° P.427

D<3.0 D≥3.0

Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No. of Flute
K410100200	2.0	4	11	20	50	4
K410100250	2.5	4	14	26	57	4
K410100300	3.0	4	15	31	61	6
K410100350	3.5	4	18	36	70	6
K410100400	4.0	4	19	42	75	6
K410100450	4.5	6	21	46	80	6
K410100500	5.0	6	23	51	86	6
K410100550	5.5	6	26	56	93	6
K410100600	6.0	6	26	56	93	6
K410100650	6.5	8	28	62	101	6
K410100700	7.0	8	31	68	109	6
K410100750	7.5	8	31	68	109	6
K410100800	8.0	8	33	74	117	6
K410100850	8.5	10	33	74	117	6
K410100900	9.0	10	36	80	125	6
K410100950	9.5	10	36	80	125	6
K410101000	10.0	10	38	86	133	6
K410101050	10.5	12	38	86	133	6
K410101100	11.0	12	41	95	142	6
K410101200	12.0	12	44	104	151	6
K410101300	13.0	16	44	104	151	6
K410101400	14.0	16	47	108	160	8
K410101500	15.0	16	50	110	162	8
K410101600	16.0	16	52	118	170	8
K410101700	17.0	20	54	121	175	8
K410101800	18.0	20	56	128	182	8
K410101900	19.0	20	58	129	189	8
K410102000	20.0	20	60	135	195	8

◎ : Excellent ○ : Good

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

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

YG REAMERS

K4111 SERIES

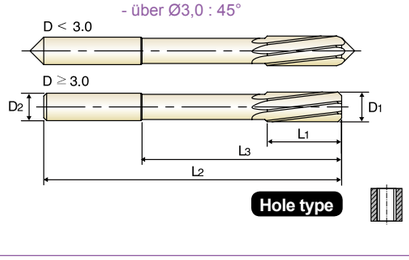
CARBIDE, NC MACHINE REAMERS - LH SPIRAL FLUTES

VHM, NC-MASCHINENREIBAHLEN - SPIRALGENUTET mit LINKSDRALL
ALÉSOIRS CARBURE MACHINE CN - HÉLICE À GAUCHE
ALESATORI A MACCHINA IN MD - ELICA SINISTRA

- Material - Up to Ø12.0 : Solid Carbide
  - Over Ø12.0 : Carbide Head Brazed
- Left Spiral Flutes, Right Hand Cut
- Unequal Flute Spacing
- O.D. Tolerances : DIN 1420 for H7
- Shank : DIN 6535-HA
- Chamfer Angle - D<3.0 : 15°
  - D≥3.0 : 45°

- Material - bis Ø12,0 : VHM
  - über Ø12,0 : gelötete VHM-Köpfe
- linksspiralig, rechtssschneidend
- Ungleichteilung
- Ø Toleranzen : DIN 1420 für H7
- Schaft : DIN 6535-HA
- Anschnittwinkel - bis Ø3,0 : 15°
  - über Ø3,0 : 45°





CARBIDE H7 LH7° 15° 45° P.427

D<3.0 D≥3.0

Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No. of Flute
K411100200	2.0	4	11	20	50	4
K411100250	2.5	4	14	26	57	4
K411100300	3.0	4	15	31	61	6
K411100350	3.5	4	18	36	70	6
K411100400	4.0	4	19	42	75	6
K411100450	4.5	6	21	46	80	6
K411100500	5.0	6	23	51	86	6
K411100550	5.5	6	26	56	93	6
K411100600	6.0	6	26	56	93	6
K411100650	6.5	8	28	62	101	6
K411100700	7.0	8	31	68	109	6
K411100750	7.5	8	31	68	109	6
K411100800	8.0	8	33	74	117	6
K411100850	8.5	10	33	74	117	6
K411100900	9.0	10	36	80	125	6
K411100950	9.5	10	36	80	125	6
K411101000	10.0	10	38	86	133	6
K411101050	10.5	12	38	86	133	6
K411101100	11.0	12	41	95	142	6
K411101200	12.0	12	44	104	151	6
K411101300	13.0	16	44	104	151	6
K411101400	14.0	16	47	108	160	8
K411101500	15.0	16	50	110	162	8
K411101600	16.0	16	52	118	170	8
K411101700	17.0	20	54	121	175	8
K411101800	18.0	20	56	128	182	8
K411101900	19.0	20	58	129	189	8
K411102000	20.0	20	60	135	195	8

◎ : Excellent ○ : Good

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

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

REAMERS

K1143 SERIES

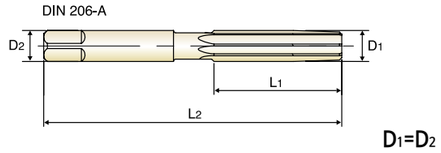
HSS, HAND REAMERS - STRAIGHT FLUTES

HSS, HANDREIBAHLEN - GERADEGENUTET
ALÉSOIRS HSS À MAIN - HÉLICE À GAUCHE
ALESATORI A MANO IN HSS - ELICA SINISTRA

- ▶ O.D. Tolerances : DIN 1420 for H7
- ▶ Shank Diameter ≒ Nominal Reamer Diameter
- ▶ Straight Flutes / Right Hand Cut
- ▶ Chamfer Angle - tapered
- ▶ Type of center - Up to Ø3.75 : external centers
  - Over Ø3.75 : internal centers

- ▶ Schneiden-Ø Toleranzen : DIN 1420 für H7
- ▶ Schaft-Ø = Nomineller Reibahlen-Ø
- ▶ Geradegenutet / Rechtsschneidend
- ▶ Anschnittwinkel - Konisch
- ▶ Zentrierungsart - bis Ø3,75 mm : Zentrierungszapfen
  - über Ø3,75 mm : Zentrierung





$D_1=D_2$

HSS | DIN 206 | H7

Hole type



Unit : mm

EDP No.	Reamer Diameter	Flute Length	Overall Length	No. of Flute
	D	L_1	L_2	
K114300200	2.0	25	50	4
K114300220	2.2	27	54	4
K114300250	2.5	29	58	4
K114300280	2.8	31	62	4
K114300300	3.0	31	62	6
K114300320	3.2	33	66	6
K114300350	3.5	35	71	6
K114300400	4.0	38	76	6
K114300450	4.5	41	81	6
K114300500	5.0	44	87	6
K114300550	5.5	47	93	6
K114300600	6.0	47	93	6
K114300700	7.0	54	107	6
K114300800	8.0	58	115	6
K114300900	9.0	62	124	6
K114301000	10.0	66	133	6
K114301100	11.0	71	142	6
K114301200	12.0	76	152	6
K114301300	13.0	76	152	6
K114301400	14.0	81	163	8
K114301500	15.0	81	163	8
K114301600	16.0	87	175	8
K114301700	17.0	87	175	8
K114301800	18.0	93	188	8
K114301900	19.0	93	188	8
K114302000	20.0	100	201	8
K114302200	22.0	107	215	8
K114302400	24.0	115	231	8

▶NEXT PAGE

◎ : Excellent ○ : Good

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

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

REAMERS

K1143 SERIES

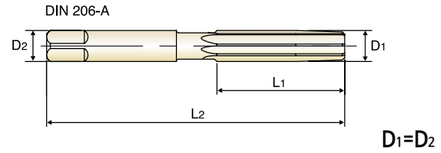
HSS, HAND REAMERS - STRAIGHT FLUTES

HSS, HANDREIBAHLEN - GERADEGENUTET
ALÉSOIRS HSS À MAIN - HÉLICE À GAUCHE
ALESATORI A MANO IN HSS - ELICA SINISTRA

- ▶ O.D. Tolerances : DIN 1420 for H7
- ▶ Shank Diameter ≒ Nominal Reamer Diameter
- ▶ Straight Flutes / Right Hand Cut
- ▶ Chamfer Angle - tapered
- ▶ Type of center - Up to Ø3.75 : external centers
  - Over Ø3.75 : internal centers

- ▶ Schneiden-Ø Toleranzen : DIN 1420 für H7
- ▶ Schaft-Ø = Nomineller Reibahlen-Ø
- ▶ Geradegenutet / Rechtsschneidend
- ▶ Anschnittwinkel - Konisch
- ▶ Zentrierungsart - bis Ø3,75 mm : Zentrierungszapfen
  - über Ø3,75 mm : Zentrierung





$D_1=D_2$

HSS | DIN 206 | H7

Hole type



Unit : mm

EDP No.	Reamer Diameter	Flute Length	Overall Length	No. of Flute
	D	L_1	L_2	
K114302500	25.0	115	231	8
K114302600	26.0	115	231	8
K114302700	27.0	124	247	10
K114302800	28.0	124	247	10
K114302900	29.0	124	247	10
K114303000	30.0	124	247	10
K114303100	31.0	133	265	10
K114303200	32.0	133	265	10
K114303300	33.0	133	265	10
K114303400	34.0	142	284	10
K114303500	35.0	142	284	10
K114303600	36.0	142	284	10
K114303700	37.0	142	284	10
K114303800	38.0	152	305	10
K114303810	38.1	152	305	10
K114303900	39.0	152	305	10
K114304000	40.0	152	305	10
K114304100	41.0	152	305	12
K114304200	42.0	152	305	12
K114304300	43.0	163	326	12
K114304400	44.0	163	326	12
K114304500	45.0	163	326	12
K114304600	46.0	163	326	12
K114304700	47.0	163	326	12
K114304800	48.0	174	347	12
K114304900	49.0	174	347	12
K114305200	52.0	174	347	12
K114306000	60.0	184	367	12

◎ : Excellent ○ : Good

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

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

REAMERS

K1153 SERIES

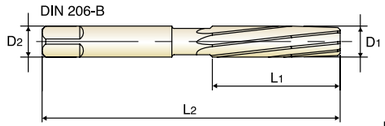
HSS, HAND REAMERS - LH SPIRAL FLUTES

- HSS, HAND REAMERS - LH SPIRAL FLUTES
- ALÉSOIRS HSS À MAIN - HÉLICE À GAUCHE
- ALESATORI A MANO IN HSS - ELICA SINISTRA

- ▶ O.D. Tolerances : DIN 1420, H7
- ▶ Shank Diameter ≒ Nominal Reamer Diameter
- ▶ LH Spiral Flutes / Right Hand Cut
- ▶ Chamfer Angle - tapered
- ▶ Type of center - Up to Ø3.75 : external centers
  - Over Ø3.75 : internal centers

- ▶ Schneiden-Ø Toleranzen : DIN 1420 für H7
- ▶ Schaft-Ø = Nomineller Reibahlen-Ø
- ▶ Spiralgenutet mit Linksdrall / Rechtsschneidend
- ▶ Anschnittwinkel - Konisch
- ▶ Zentrierungsart - bis Ø3,75 mm : Zentrierungszapfen
  - über Ø3,75 mm : Zentrierung





D1=D2

HSS | DIN 206 | H7 | LH7°

Hole type

Unit : mm

EDP No.	Reamer Diameter D	Flute Length L1	Overall Length L2	No. of Flute
K115300200	2.0	25	50	4
K115300220	2.2	27	54	4
K115300250	2.5	29	58	4
K115300280	2.8	31	62	4
K115300300	3.0	31	62	6
K115300320	3.2	33	66	6
K115300350	3.5	35	71	6
K115300400	4.0	38	76	6
K115300450	4.5	41	81	6
K115300500	5.0	44	87	6
K115300550	5.5	47	93	6
K115300600	6.0	47	93	6
K115300700	7.0	54	107	6
K115300800	8.0	58	115	6
K115300900	9.0	62	124	6
K115301000	10.0	66	133	6
K115301100	11.0	71	142	6
K115301200	12.0	76	152	6
K115301300	13.0	76	152	6
K115301400	14.0	81	163	8
K115301500	15.0	81	163	8
K115301600	16.0	87	175	8
K115301700	17.0	87	175	8
K115301800	18.0	93	188	8
K115301900	19.0	93	188	8
K115302000	20.0	100	201	8
K115302200	22.0	107	215	8
K115302400	24.0	115	231	8

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

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

REAMERS

K1153 SERIES

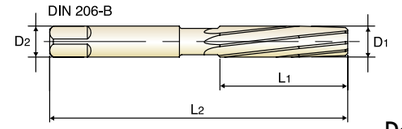
HSS, HAND REAMERS - LH SPIRAL FLUTES

HSS, HAND REAMERS - LH SPIRAL FLUTES
ALÉSOIRS HSS À MAIN - HÉLICE À GAUCHE
ALESATORI A MANO IN HSS - ELICA SINISTRA

▶ O.D. Tolerances : DIN 1420, H7
▶ Shank Diameter ≒ Nominal Reamer Diameter
▶ LH Spiral Flutes / Right Hand Cut
▶ Chamfer Angle - tapered
▶ Type of center - Up to Ø3.75 : external centers
- Over Ø3.75 : internal centers

▶ Schneiden-Ø Toleranzen : DIN 1420 für H7
▶ Schaft-Ø = Nomineller Reibahlen-Ø
▶ Geradegenutet / Rechtsschneidend
▶ Anschnittwinkel - Konisch
▶ Zentrierungsart - bis Ø3,75 mm : Zentrierungszapfen
- über Ø3,75 mm : Zentrierung





D1=D2

HSS | DIN 206 | H7 | LH7°

Hole type

Unit : mm

EDP No.	Reamer Diameter D	Flute Length L1	Overall Length L2	No. of Flute
K115302500	25.0	115	231	8
K115302600	26.0	115	231	8
K115302700	27.0	124	247	10
K115302800	28.0	124	247	10
K115302900	29.0	124	247	10
K115303000	30.0	124	247	10
K115303100	31.0	133	265	10
K115303200	32.0	133	265	10
K115303300	33.0	133	265	10
K115303400	34.0	142	284	10
K115303500	35.0	142	284	10
K115303600	36.0	142	284	10
K115303700	37.0	142	284	10
K115303800	38.0	152	305	10
K115303810	38.1	152	305	10
K115303900	39.0	152	305	10
K115304000	40.0	152	305	10
K115304100	41.0	152	305	12
K115304200	42.0	152	305	12
K115304300	43.0	163	326	12
K115304400	44.0	163	326	12
K115304500	45.0	163	326	12
K115304600	46.0	163	326	12
K115304700	47.0	163	326	12
K115304800	48.0	174	347	12
K115304900	49.0	174	347	12
K115305200	52.0	174	347	12
K115306000	60.0	184	367	12

◎ : Excellent ○ : Good

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

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

YG REAMERS

K2101 SERIES

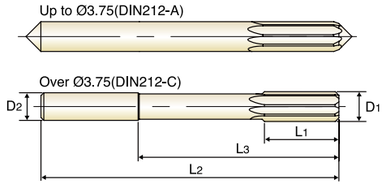
HSS-E, STRAIGHT SHANK CHUCKING REAMERS - STRAIGHT FLUTES

HSS-E, MASCHINENREIBAHLE mit ZYLINDERSCHAFT - GERADEGENUTET
ALÉSOIRS HSS-E MACHINE DROIT- ENTRÉE DROITE
ALESATORI IN HSS-E, ATTACCO CILINDRICO - ELICA DRITTA

- O.D. Tolerances : DIN 1420 for H7
- Shank Diameter Tolerances : h8
- Straight Flute / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°

- Schneiden-Ø Toleranzen : DIN 1420 für H7
- Schaft-Ø Toleranzen : h8
- Geradegenutet / Rechtsschneidend
- Anschnittwinkel - bis Ø3,75 mm : 15°
  - über Ø3,75 mm : 45°





HSS-E | DIN 212 | H7 | 15° (up to Ø3.75) | 45° (over Ø3.75) P.428

Hole type



Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No. of Flute
K210100200	2.0	2	11	-	49	4
K210100220	2.2	2.2	12	-	53	4
K210100250	2.5	2.5	14	-	57	4
K210100260	2.6	2.6	14	-	57	4
K210100280	2.8	2.8	15	-	61	4
K210100300	3.0	3	15	-	61	6
K210100310	3.1	3.1	16	-	65	6
K210100320	3.2	3.2	16	-	65	6
K210100350	3.5	3.5	18	-	70	6
K210100360	3.6	3.6	18	-	70	6
K210100370	3.7	3.7	18	-	70	6
K210100400	4.0	4	19	42	75	6
K210100430	4.3	4.5	21	46	80	6
K210100450	4.5	4.5	21	46	80	6
K210100460	4.6	4.5	21	46	80	6
K210100500	5.0	5	23	51	86	6
K210100550	5.5	5.6	26	56	93	6
K210100560	5.6	5.6	26	56	93	6
K210100600	6.0	5.6	26	56	93	6
K210100650	6.5	6.3	28	62	101	6
K210100700	7.0	7.1	31	68	109	6
K210100720	7.2	7.1	31	68	109	6
K210100800	8.0	8	33	74	117	6
K210100830	8.3	8	33	74	117	6
K210100850	8.5	8	33	74	117	6
K210100900	9.0	9	36	80	125	6

▶NEXT PAGE

◎ : Excellent ○ : Good

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

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

YG REAMERS

K2101 SERIES

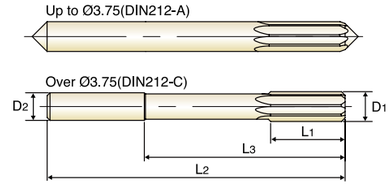
HSS-E, STRAIGHT SHANK CHUCKING REAMERS - STRAIGHT FLUTES

HSS-E, MASCHINENREIBAHLE mit ZYLINDERSCHAFT - GERADEGENUTET
ALÉSOIRS HSS-E MACHINE DROIT- ENTRÉE DROITE
ALESATORI IN HSS-E, ATTACCO CILINDRICO - ELICA DRITTA

- O.D. Tolerances : DIN 1420 for H7
- Shank Diameter Tolerances : h8
- Straight Flute / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°

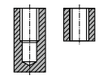
- Schneiden-Ø Toleranzen : DIN 1420 für H7
- Schaft-Ø Toleranzen : h8
- Geradegenutet / Rechtsschneidend
- Anschnittwinkel - bis Ø3,75 mm : 15°
  - über Ø3,75 mm : 45°





HSS-E | DIN 212 | H7 | 15° (up to Ø3.75) | 45° (over Ø3.75) P.428

Hole type



Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No. of Flute
K210100950	9.5	9	36	80	125	6
K210101000	10.0	10	38	86	133	6
K210101050	10.5	10	38	86	133	6
K210101100	11.0	10	41	95	142	6
K210101200	12.0	10	44	104	151	6
K210101300	13.0	10	44	104	151	6
K210101400	14.0	12.5	47	108	160	8
K210101500	15.0	12.5	50	110	162	8
K210101600	16.0	12.5	52	118	170	8
K210101700	17.0	14	54	121	175	8
K210101800	18.0	14	56	128	182	8
K210101900	19.0	16	58	129	189	8
K210102000	20.0	16	60	135	195	8

◎ : Excellent ○ : Good

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

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

YG REAMERS

K2111 SERIES

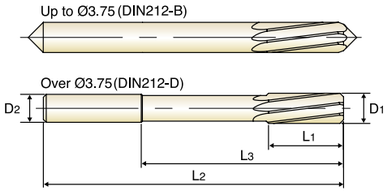
HSS-E, STRAIGHT SHANK CHUCKING REAMERS - LH SPIRAL FLUTES

HSS-E, MASCHINENREIBAHLE mit ZYLINDERSCHAFT - SPIRALGENUTET mit LINKSDRALL
ALÉSOIRS HSS-E MACHINE DROIT- HÉLICE À GAUCHE
ALESATORI IN HSS-E, ATTACCO CILINDRICO - ELICA SINISTRA

- O.D. Tolerances : DIN 1420 for H7
- Shank Diameter Tolerances : h8
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°

- Schneiden-Ø Toleranzen : DIN 1420 für H7
- Schaft-Ø Toleranzen : h8
- Spiralgenutet mit Linksdrall / Rechtsschneidend
- Anschnittwinkel - bis Ø3,75 mm : 15°
  - über Ø3,75 mm : 45°





HSS-E | DIN 212 | H7 | LH7° | 15° | 45°

up to Ø3.75 over Ø3.75

Hole type



P.428

Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No. of Flute
K211100200	2.0	2	11	-	49	4
K211100220	2.2	2.2	12	-	53	4
K211100250	2.5	2.5	14	-	57	4
K211100260	2.6	2.6	14	-	57	4
K211100280	2.8	2.8	15	-	61	4
K211100300	3.0	3	15	-	61	6
K211100310	3.1	3.1	16	-	65	6
K211100320	3.2	3.2	16	-	65	6
K211100350	3.5	3.5	18	-	70	6
K211100360	3.6	3.6	18	-	70	6
K211100370	3.7	3.7	18	-	70	6
K211100400	4.0	4	19	42	75	6
K211100430	4.3	4.5	21	46	80	6
K211100450	4.5	4.5	21	46	80	6
K211100460	4.6	4.5	21	46	80	6
K211100500	5.0	5	23	51	86	6
K211100550	5.5	5.6	26	56	93	6
K211100560	5.6	5.6	26	56	93	6
K211100600	6.0	5.6	26	56	93	6
K211100650	6.5	6.3	28	62	101	6
K211100700	7.0	7.1	31	68	109	6
K211100720	7.2	7.1	31	68	109	6
K211100800	8.0	8	33	74	117	6
K211100830	8.3	8	33	74	117	6

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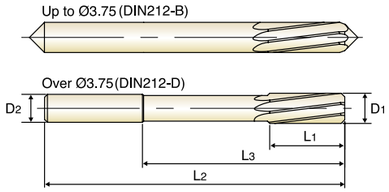
◎ : Excellent ○ : Good

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

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

YG REAMERS
K2111 SERIES
HSS-E, STRAIGHT SHANK CHUCKING REAMERS - LH SPIRAL FLUTES
HSS-E, MASCHINENREIBAHLE mit ZYLINDERSCHAFT - SPIRALGENUTET mit LINKSDRALL
ALÉSOIRS HSS-E MACHINE DROIT- HÉLICE À GAUCHE
ALESATORI IN HSS-E, ATTACCO CILINDRICO - ELICA SINISTRA
- O.D. Tolerances : DIN 1420 for H7
- Shank Diameter Tolerances : h8
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°
- Schneiden-Ø Toleranzen : DIN 1420 für H7
- Schaft-Ø Toleranzen : h8
- Spiralgenutet mit Linksdrall / Rechtsschneidend
- Anschnittwinkel - bis Ø3,75 mm : 15°
  - über Ø3,75 mm : 45°





HSS-E | DIN 212 | H7 | LH7° | 15° | 45°
up to Ø3.75 over Ø3.75
Hole type



P.428

Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No. of Flute
K211100850	8.5	8	33	74	117	6
K211100900	9.0	9	36	80	125	6
K211100950	9.5	9	36	80	125	6
K211101000	10.0	10	38	86	133	6
K211101050	10.5	10	38	86	133	6
K211101100	11.0	10	41	95	142	6
K211101200	12.0	10	44	104	151	6
K211101300	13.0	10	44	104	151	6
K211101400	14.0	12.5	47	108	160	8
K211101500	15.0	12.5	50	110	162	8
K211101600	16.0	12.5	52	118	170	8
K211101700	17.0	14	54	121	175	8
K211101800	18.0	14	56	128	182	8
K211101900	19.0	16	58	129	189	8
K211102000	20.0	16	60	135	195	8

◎ : Excellent ○ : Good

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

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

YG REAMERS

K2121 SERIES

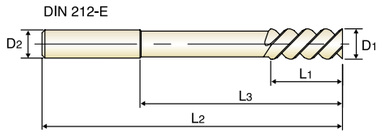
HSS-E, STRAIGHT SHANK CHUCKING REAMERS - LH SPIRAL FLUTES (QUICK SPIRAL)

HSS-E, MASCHINEN - SCHÄLREIBAHLE mit ZYLINDERSCHAFT - SPIRALGENUTET mit LINKSDRAL
ALÉSOIRS HSS-E MACHINE DROIT- HÉLICE À GAUCHE (HÉLICE RAPIDE)
ALESATORI IN HSS-E, ATTACCO CILINDRICO - ELICA RAPIDA, SINISTRA

- ▶ O.D. Tolerances : DIN 1420 for H7
- ▶ Shank Diameter Tolerances : h8
- ▶ Chamfer Angle - tapered
- ▶ LH High Spiral Flutes / Right Hand Cut

- ▶ Schneiden-Ø Toleranzen : DIN 1420 für H7
- ▶ Schaft-Ø Toleranzen : h8
- ▶ Anschnittwinkel - Konisch
- ▶ Spiralgenutet mit Linksdrall / Rechtsschneidend





HSS-E | DIN 212 | H7 | LH45° | FORM E

P.429

Hole type



Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No. of Flute
K212100400	4.0	4	19	42	75	3
K212100450	4.5	4.5	21	46	80	3
K212100500	5.0	5	23	51	86	3
K212100550	5.5	5.6	26	56	93	3
K212100600	6.0	5.6	26	56	93	3
K212100650	6.5	6.3	28	62	101	3
K212100700	7.0	7.1	31	68	109	3
K212100800	8.0	8	33	74	117	3
K212100850	8.5	8	33	74	117	3
K212100900	9.0	9	36	80	125	3
K212100950	9.5	9	36	80	125	3
K212101000	10.0	10	38	86	133	3
K212101100	11.0	10	41	95	142	3
K212101200	12.0	10	44	104	151	3
K212101300	13.0	10	44	104	151	3
K212101400	14.0	12.5	47	108	160	4
K212101500	15.0	12.5	50	110	162	4
K212101600	16.0	12.5	52	118	170	4
K212101700	17.0	14	54	121	175	4
K212101800	18.0	14	56	128	182	4
K212101900	19.0	16	58	129	189	4
K212102000	20.0	16	60	135	195	4

◎ : Excellent ○ : Good

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

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

YG REAMERS

K2102 SERIES

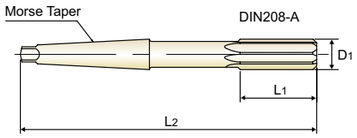
HSS-E, MORSE TAPER SHANK CHUCKING REAMERS - STRAIGHT FLUTES

HSS-E, MASCHINENREIBAHLE mit MK - GERADEGENUTET
ALÉSOIRS HSS-E MACHINE QUEUE CONIQUE - ENTRÉE DROITE
ALESATORI IN HSS-E, ATTACCO CONICO - TAGLIENTI DRITTI

- ▶ O.D. Tolerances : DIN 1420 for H7
- ▶ Straight Flute / Right Hand Cut
- ▶ Chamfer Angle : 45°

- ▶ Schneiden-Ø Toleranzen : DIN 1420 für H7
- ▶ Geradegenutet / Rechtsschneidend
- ▶ Anschnittwinkel : 45°





HSS-E | DIN 208 | H7 | 45°

P.428

Hole type



Unit : mm

EDP No.	Reamer Diameter D1	No. of Morse Taper	Cutting Length L1	Overall Length L2	No. of Flute
K210201000	10.0	1	38	168	6
K210201100	11.0	1	41	175	6
K210201200	12.0	1	44	182	6
K210201300	13.0	1	44	182	6
K210201400	14.0	1	47	189	8
K210201500	15.0	2	50	204	8
K210201600	16.0	2	52	210	8
K210201700	17.0	2	54	214	8
K210201800	18.0	2	56	219	8
K210201900	19.0	2	58	223	8
K210202000	20.0	2	60	228	8
K210202100	21.0	2	62	232	8
K210202200	22.0	2	64	237	8
K210202300	23.0	2	66	241	8
K210202400	24.0	3	68	268	8
K210202500	25.0	3	68	268	8
K210202600	26.0	3	70	273	8
K210202700	27.0	3	71	277	10
K210202800	28.0	3	71	277	10
K210202900	29.0	3	73	281	10
K210203000	30.0	3	73	281	10
K210203100	31.0	3	75	285	10
K210203200	32.0	4	77	317	10
K210203400	34.0	4	78	321	10
K210203500	35.0	4	78	321	10
K210203600	36.0	4	79	325	10

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

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

YG REAMERS

K2102 SERIES

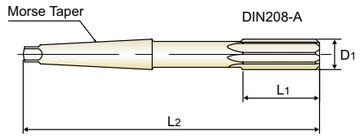
HSS-E, MORSE TAPER SHANK CHUCKING REAMERS - STRAIGHT FLUTES

HSS-E, MASCHINENREIBAHLE mit MK - GERADEGENUTET
ALÉSOIRS HSS-E MACHINE QUEUE CONIQUE - ENTRÉE DROITE
ALESATORI IN HSS-E, ATTACCO CONICO - TAGLIENTI DRITTI

- O.D. Tolerances : DIN 1420 for H7
- Straight Flute / Right Hand Cut
- Chamfer Angle : 45°

- Schneiden-Ø Toleranzen : DIN 1420 für H7
- Geradegenutet / Rechtsschneidend
- Anschnittwinkel : 45°





HSS-E | DIN 208 | H7 | 45° P.428

Hole type 

Unit : mm

EDP No.	Reamer Diameter D1	No. of Morse Taper	Cutting Length L1	Overall Length L2	No. of Flute
K210203800	38.0	4	81	329	10
K210204000	40.0	4	81	329	10
K210204100	41.0	4	82	333	12
K210204200	42.0	4	82	333	12
K210204300	43.0	4	83	336	12
K210204400	44.0	4	83	336	12
K210204500	45.0	4	83	336	12
K210204600	46.0	4	84	340	12
K210204700	47.0	4	84	340	12
K210204800	48.0	4	86	344	12
K210205000	50.0	4	86	344	12

◎ : Excellent ○ : Good

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

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

YG REAMERS

K2112 SERIES

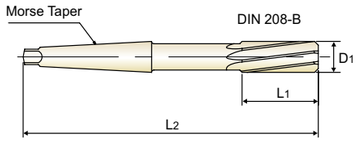
HSS-E, MORSE TAPER SHANK CHUCKING REAMERS - LH SPIRAL FLUTES

HSS-E, MASCHINENREIBAHLE mit MK - SPIRALGENUTET mit LINKSDRALL
ALÉSOIRS HSS-E MACHINE QUEUE CONIQUE - HÉLICE À GAUCHE
ALESATORI IN HSS-E, ATTACCO CONICO - ELICA SINISTRA

- O.D. Tolerances : DIN 1420 for H7
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle : 45°

- Schneiden-Ø Toleranzen : DIN 1420 für H7
- Spiralgenutet mit Linksdrall / Rechtsschneidend
- Anschnittwinkel : 45°





HSS-E | DIN 208 | H7 | LH7° | 45° P.428

Hole type 

Unit : mm

EDP No.	Reamer Diameter D1	No. of Morse Taper	Cutting Length L1	Overall Length L2	No. of Flute
K211201000	10.0	1	38	168	6
K211201100	11.0	1	41	175	6
K211201200	12.0	1	44	182	6
K211201300	13.0	1	44	182	6
K211201400	14.0	1	47	189	8
K211201500	15.0	2	50	204	8
K211201600	16.0	2	52	210	8
K211201700	17.0	2	54	214	8
K211201800	18.0	2	56	219	8
K211201900	19.0	2	58	223	8
K211202000	20.0	2	60	228	8
K211202100	21.0	2	62	232	8
K211202200	22.0	2	64	237	8
K211202300	23.0	2	66	241	8
K211202400	24.0	3	68	268	8
K211202500	25.0	3	68	268	8
K211202600	26.0	3	70	273	8
K211202700	27.0	3	71	277	10
K211202800	28.0	3	71	277	10
K211202900	29.0	3	73	281	10
K211203000	30.0	3	73	281	10
K211203100	31.0	3	75	285	10
K211203200	32.0	4	77	317	10
K211203400	34.0	4	78	321	10
K211203500	35.0	4	78	321	10
K211203600	36.0	4	79	325	10

▶NEXT PAGE

◎ : Excellent ○ : Good

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

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

REAMERS

K2112 SERIES

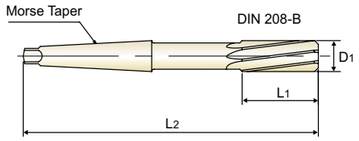
HSS-E, MORSE TAPER SHANK CHUCKING REAMERS - LH SPIRAL FLUTES

- HSS-E, MASCHINENREIBAHLE mit MK - SPIRALGENUTET mit LINKSDRALL
- ALÉSOIRS HSS-E MACHINE QUEUE CONIQUE - HÉLICE À GAUCHE
- ALESATORI IN HSS-E, ATTACCO CONICO - ELICA SINISTRA

▶ O.D. Tolerances : DIN 1420 for H7
▶ LH Spiral Flutes / Right Hand Cut
▶ Chamfer Angle : 45°

▶ Schneiden-Ø Toleranzen : DIN 1420 für H7
▶ Spiralgenutet mit Linksdrall / Rechtsschneidend
▶ Anschnittwinkel : 45°





HSS-E | DIN 208 | H7 | LH7° | 45° | P.428

Hole type

Unit : mm

EDP No.	Reamer Diameter D1	No. of Morse Taper	Cutting Length L1	Overall Length L2	No. of Flute
K211203800	38.0	4	81	329	10
K211204000	40.0	4	81	329	10
K211204100	41.0	4	82	333	12
K211204200	42.0	4	82	333	12
K211204300	43.0	4	83	336	12
K211204400	44.0	4	83	336	12
K211204500	45.0	4	83	336	12
K211204600	46.0	4	84	340	12
K211204700	47.0	4	84	340	12
K211204800	48.0	4	86	344	12
K211205000	50.0	4	86	344	12

◎ : Excellent ○ : Good

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

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

REAMERS

K21B1 SERIES

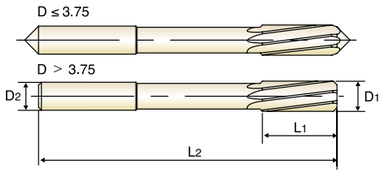
HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø

- HSS-E, NC-MASCHINENREIBAHLEN mit GERADZAHLIGEN SCHAFT Ø
- ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
- ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI

▶ O.D. Tolerances
Whole-number Ø and 1/10 size : DIN 1420 for H7
1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
from Ø5.97 to Ø12.03 : +0.005/-0.000mm
▶ Shank Diameter Tolerances : h6
▶ LH Spiral Flutes / Right Hand Cut
▶ Chamfer Angle - Up to Ø3.75 : 15°
- Over Ø3.75 : 45°

▶ Ø Toleranzen:
ganzzahlige Ø und 1/10 Größen : DIN 1420 für H7
1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
▶ Schaft-Durchmesser Toleranzen : h6
▶ linksspiralig/ rechtsscheidend
▶ Anschnittwinkel - bis Ø3,75 : 15°
- über Ø3,75 : 45°





HSS-E | H7 | LH7° | 15° | 45° | P.428

up to Ø3.75 over Ø3.75

Hole type

Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
K21B100200	2.0	2	11	49
K21B100201	2.01	2	11	49
K21B100202	2.02	2	11	49
K21B100203	2.03	2	11	49
K21B100210	2.1	2	11	49
K21B100220	2.2	3	12	53
K21B100230	2.3	3	12	53
K21B100240	2.4	3	14	57
K21B100247	2.47	3	14	57
K21B100248	2.48	3	14	57
K21B100249	2.49	3	14	57
K21B100250	2.5	3	14	57
K21B100251	2.51	3	14	57
K21B100252	2.52	3	14	57
K21B100253	2.53	3	14	57
K21B100260	2.6	3	14	57
K21B100270	2.7	3	15	61
K21B100280	2.8	3	15	61
K21B100290	2.9	3	15	61
K21B100297	2.97	3	15	61
K21B100298	2.98	3	15	61
K21B100299	2.99	3	15	61
K21B100300	3.0	3	15	61
K21B100301	3.01	4	16	65

▶NEXT PAGE

◎ : Excellent ○ : Good

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

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

YG REAMERS

K21B1 SERIES

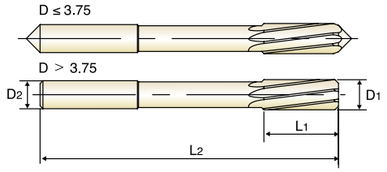
HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø

HSS-E, NC-MASCHINENREIBAHLEN mit GERADZAHLIGEN SCHAFT Ø
ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI

- O.D. Tolerances
  Whole-number Ø and 1/10 size : DIN 1420 for H7
  1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
  from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- Shank Diameter Tolerances : h6
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°

- Ø Toleranzen:
  ganzzahlige Ø und 1/10 Größen : DIN 1420 für H7
  1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
  von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- Schaft-Durchmesser Toleranzen : h6
- linksspiralig/ rechtsscheidend
- Anschnittwinkel - bis Ø3,75 : 15°
  - über Ø3,75 : 45°





HSS-E | H7 | LH7° | 15° | 45°

up to Ø3.75 over Ø3.75

P.428

Hole type

Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
K21B100302	3.02	4	16	65
K21B100303	3.03	4	16	65
K21B100310	3.1	4	16	65
K21B100320	3.2	4	16	65
K21B100330	3.3	4	16	65
K21B100340	3.4	4	18	70
K21B100350	3.5	4	18	70
K21B100360	3.6	4	18	70
K21B100370	3.7	4	18	70
K21B100380	3.8	4	19	75
K21B100390	3.9	4	19	75
K21B100397	3.97	4	19	75
K21B100398	3.98	4	19	75
K21B100399	3.99	4	19	75
K21B100400	4.0	4	19	75
K21B100401	4.01	4	19	75
K21B100402	4.02	4	19	75
K21B100403	4.03	4	19	75
K21B100410	4.1	4	19	75
K21B100420	4.2	4	19	75
K21B100430	4.3	5	21	80
K21B100440	4.4	5	21	80
K21B100450	4.5	5	21	80
K21B100460	4.6	5	21	80

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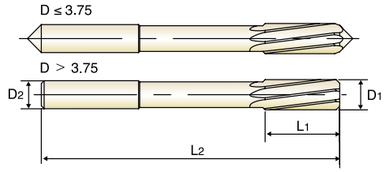
◎ : Excellent ○ : Good

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

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

YG REAMERS
K21B1 SERIES
HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø
HSS-E, NC-MASCHINENREIBAHLEN mit GERADZAHLIGEN SCHAFT Ø
ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI
- O.D. Tolerances
  Whole-number Ø and 1/10 size : DIN 1420 for H7
  1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
  from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- Shank Diameter Tolerances : h6
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°
- Ø Toleranzen:
  ganzzahlige Ø und 1/10 Größen : DIN 1420 für H7
  1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
  von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- Schaft-Durchmesser Toleranzen : h6
- linksspiralig/ rechtsscheidend
- Anschnittwinkel - bis Ø3,75 : 15°
  - über Ø3,75 : 45°





HSS-E | H7 | LH7° | 15° | 45°

up to Ø3.75 over Ø3.75

P.428

Hole type

Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
K21B100470	4.7	5	21	80
K21B100480	4.8	5	23	86
K21B100490	4.9	5	23	86
K21B100497	4.97	5	23	86
K21B100498	4.98	5	23	86
K21B100499	4.99	5	23	86
K21B100500	5.0	5	23	86
K21B100501	5.01	5	23	86
K21B100502	5.02	5	23	86
K21B100503	5.03	5	23	86
K21B100510	5.1	5	23	86
K21B100520	5.2	5	23	86
K21B100530	5.3	5	23	86
K21B100540	5.4	6	26	93
K21B100550	5.5	6	26	93
K21B100560	5.6	6	26	93
K21B100570	5.7	6	26	93
K21B100580	5.8	6	26	93
K21B100590	5.9	6	26	93
K21B100597	5.97	6	26	93
K21B100598	5.98	6	26	93
K21B100599	5.99	6	26	93
K21B100600	6.0	6	26	93
K21B100601	6.01	6	28	101

▶NEXT PAGE

◎ : Excellent ○ : Good

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

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

YG REAMERS

K21B1 SERIES

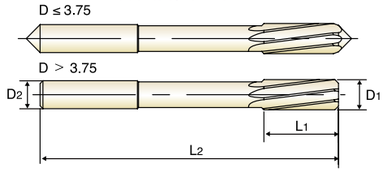
HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø

- HSS-E, NC-MASCHINENREIBAHLEN mit GERADZAHLIGEN SCHAFT Ø
- ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
- ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI

▶ O.D. Tolerances
Whole-number Ø and 1/10 size : DIN 1420 for H7
1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
from Ø5.97 to Ø12.03 : +0.005/-0.000mm
▶ Shank Diameter Tolerances : h6
▶ LH Spiral Flutes / Right Hand Cut
▶ Chamfer Angle - Up to Ø3.75 : 15°
- Over Ø3.75 : 45°

▶ Ø Toleranzen:
ganzzahlige Ø und 1/10 Größen : DIN 1420 für H7
1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
▶ Schaft-Durchmesser Toleranzen : h6
▶ linksspiralig/ rechtsscheidend
▶ Anschnittwinkel - bis Ø3,75 : 15°
- über Ø3,75 : 45°





HSS-E H7 LH7° 15° 45° P.428
up to Ø3.75 over Ø3.75

Hole type

Unit : mm

EDP No.	Reamer Diameter	Shank Diameter	Flute Length	Overall Length
	D1	D2	L1	L2
K21B100602	6.02	6	28	101
K21B100603	6.03	6	28	101
K21B100610	6.1	6	28	101
K21B100620	6.2	6	28	101
K21B100630	6.3	6	28	101
K21B100640	6.4	6	28	101
K21B100650	6.5	6	28	101
K21B100660	6.6	6	28	101
K21B100670	6.7	6	28	101
K21B100680	6.8	8	31	109
K21B100690	6.9	8	31	109
K21B100700	7.0	8	31	109
K21B100710	7.1	8	31	109
K21B100720	7.2	8	31	109
K21B100730	7.3	8	31	109
K21B100740	7.4	8	31	109
K21B100750	7.5	8	31	109
K21B100760	7.6	8	33	117
K21B100770	7.7	8	33	117
K21B100780	7.8	8	33	117
K21B100790	7.9	8	33	117
K21B100797	7.97	8	33	117
K21B100798	7.98	8	33	117
K21B100799	7.99	8	33	117

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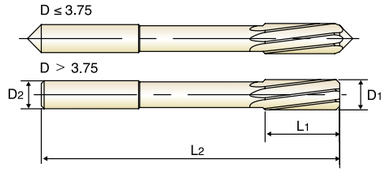
◎ : Excellent ○ : Good

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

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

YG REAMERS
K21B1 SERIES
HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø
HSS-E, NC-MASCHINENREIBAHLEN mit GERADZAHLIGEN SCHAFT Ø
ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI
▶ O.D. Tolerances
Whole-number Ø and 1/10 size : DIN 1420 for H7
1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
from Ø5.97 to Ø12.03 : +0.005/-0.000mm
▶ Shank Diameter Tolerances : h6
▶ LH Spiral Flutes / Right Hand Cut
▶ Chamfer Angle - Up to Ø3.75 : 15°
- Over Ø3.75 : 45°
▶ Ø Toleranzen:
ganzzahlige Ø und 1/10 Größen : DIN 1420 für H7
1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
▶ Schaft-Durchmesser Toleranzen : h6
▶ linksspiralig/ rechtsscheidend
▶ Anschnittwinkel - bis Ø3,75 : 15°
- über Ø3,75 : 45°





HSS-E H7 LH7° 15° 45° P.428
up to Ø3.75 over Ø3.75

Hole type

Unit : mm

EDP No.	Reamer Diameter	Shank Diameter	Flute Length	Overall Length
	D1	D2	L1	L2
K21B100800	8.0	8	33	117
K21B100801	8.01	8	33	117
K21B100802	8.02	8	33	117
K21B100803	8.03	8	33	117
K21B100810	8.1	8	33	117
K21B100820	8.2	8	33	117
K21B100830	8.3	8	33	117
K21B100840	8.4	8	33	117
K21B100850	8.5	8	33	117
K21B100860	8.6	10	36	125
K21B100870	8.7	10	36	125
K21B100880	8.8	10	36	125
K21B100890	8.9	10	36	125
K21B100900	9.0	10	36	125
K21B100901	9.01	10	36	125
K21B100902	9.02	10	36	125
K21B100903	9.03	10	36	125
K21B100910	9.1	10	36	125
K21B100920	9.2	10	36	125
K21B100930	9.3	10	36	125
K21B100940	9.4	10	36	125
K21B100950	9.5	10	36	125
K21B100960	9.6	10	38	133
K21B100970	9.7	10	38	133

▶NEXT PAGE

◎ : Excellent ○ : Good

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

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

YG REAMERS

K21B1 SERIES

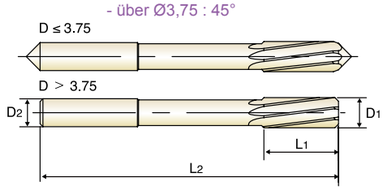
HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø

HSS-E, NC-MASCHINENREIBAHLEN mit GERADZAHLIGEN SCHAFT Ø
ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI

- O.D. Tolerances
  Whole-number Ø and 1/10 size : DIN 1420 for H7
  1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
  from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- Shank Diameter Tolerances : h6
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°

- Ø Toleranzen:
  ganzzahlige Ø und 1/10 Größen : DIN 1420 für H7
  1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
  von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- Schaft-Durchmesser Toleranzen : h6
- linksspiralig/ rechtsscheidend
- Anschnittwinkel - bis Ø3,75 : 15°
  - über Ø3,75 : 45°





HSS-E | H7 | LH7° | 15° (up to Ø3.75) | 45° (over Ø3.75) | P.428

Hole type

Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
K21B100980	9.8	10	38	133
K21B100990	9.9	10	38	133
K21B100997	9.97	10	38	133
K21B100998	9.98	10	38	133
K21B100999	9.99	10	38	133
K21B101000	10.0	10	38	133
K21B101001	10.01	10	38	133
K21B101002	10.02	10	38	133
K21B101003	10.03	10	38	133
K21B101100	11.0	10	41	142
K21B101197	11.97	10	41	151
K21B101198	11.98	10	41	151
K21B101199	11.99	10	41	151
K21B101200	12.0	10	44	151
K21B101201	12.01	10	44	151
K21B101202	12.02	10	44	151
K21B101203	12.03	10	44	151
K21B101300	13.0	10	44	151
K21B101400	14.0	14	47	160
K21B101500	15.0	14	50	162
K21B101600	16.0	14	52	170
K21B101700	17.0	14	54	175
K21B101800	18.0	14	56	182
K21B101900	19.0	16	58	189
K21B102000	20.0	16	60	195

◎ : Excellent ○ : Good

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

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

YG REAMERS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

K4101, K4111 SERIES CARBIDE, NC MACHINE REAMERS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Feed(mm/rev) 2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0
P	1	Non-alloy steel	18	0.08-0.10	0.10-0.12	0.12-0.16	0.16-0.20	0.20-0.24	0.24-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	2		17	0.08-0.10	0.10-0.12	0.12-0.16	0.16-0.20	0.20-0.24	0.24-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	3		15	0.08-0.10	0.10-0.12	0.12-0.16	0.16-0.20	0.20-0.24	0.24-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	4		15	0.08-0.10	0.10-0.12	0.12-0.16	0.16-0.20	0.20-0.24	0.24-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	5		15	0.08-0.10	0.10-0.12	0.12-0.16	0.16-0.20	0.20-0.24	0.24-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	6	Low alloy steel	17	0.06-0.08	0.08-0.10	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30
	7		14	0.06-0.08	0.08-0.10	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30
	8		14	0.06-0.08	0.08-0.10	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30
	9											
	10	High alloyed steel, and tool steel	13	0.06-0.08	0.08-0.10	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30
	11											
M	12	Stainless steel	8	0.06-0.08	0.08-0.10	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30
	13		7	0.06-0.08	0.08-0.10	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30
	14		6	0.06-0.08	0.08-0.10	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30
K	15	Grey cast iron	20	0.08-0.10	0.10-0.12	0.12-0.16	0.16-0.20	0.20-0.24	0.24-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	16		15	0.08-0.10	0.10-0.12	0.12-0.16	0.16-0.20	0.20-0.24	0.24-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	17	Nodular cast iron	18	0.08-0.10	0.10-0.12	0.12-0.16	0.16-0.20	0.20-0.24	0.24-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	18		13	0.08-0.10	0.10-0.12	0.12-0.16	0.16-0.20	0.20-0.24	0.24-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	19	Malleable cast iron	18	0.08-0.10	0.10-0.12	0.12-0.16	0.16-0.20	0.20-0.24	0.24-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	20		13	0.08-0.10	0.10-0.12	0.12-0.16	0.16-0.20	0.2-0.240	0.24-0.28	0.28-0.32	0.32-0.36	0.36-0.40
N	21	Aluminum-wrought alloy	30	0.10-0.13	0.13-0.16	0.16-0.20	0.20-0.25	0.25-0.30	0.30-0.35	0.35-0.40	0.40-0.45	0.45-0.50
	22		30	0.1-0.130	0.13-0.16	0.16-0.20	0.20-0.25	0.25-0.30	0.30-0.35	0.35-0.40	0.40-0.45	0.45-0.50
	23	Aluminum-cast, alloyed	30	0.10-0.13	0.13-0.16	0.16-0.20	0.20-0.25	0.25-0.30	0.30-0.35	0.35-0.40	0.40-0.45	0.45-0.50
	24		25	0.10-0.13	0.13-0.16	0.16-0.20	0.20-0.25	0.25-0.30	0.30-0.35	0.35-0.40	0.40-0.45	0.45-0.50
	25											
	26	Copper and Copper Alloys (Bronze / Brass)	25	0.10-0.13	0.13-0.16	0.16-0.20	0.20-0.25	0.25-0.30	0.30-0.35	0.35-0.40	0.40-0.45	0.45-0.50
	27		22	0.10-0.13	0.13-0.16	0.16-0.20	0.20-0.25	0.25-0.30	0.30-0.35	0.35-0.40	0.40-0.45	0.45-0.50
	28		23	0.10-0.13	0.13-0.16	0.16-0.20	0.20-0.25	0.25-0.30	0.30-0.35	0.35-0.40	0.40-0.45	0.45-0.50
	29	Non Metallic Materials										
	30											
S	31	Heat Resistant Super Alloys										
	32											
	33											
	34											
	35											
	36	Titanium Alloys										
	37											
H	38	Hardened steel										
	39											
	40	Chilled Cast Iron										
	41	Hardened Cast Iron										

YG REAMERS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

K2101, K2111, K21B1, K2102, K2112 SERIES

HSS-E, STRAIGHT & LH SPIRAL FLUTE CHUCKING REAMERS
HSS-E, NC MACHINE REAMERS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Feed(mm/rev) 2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	45.0	50.0
P	1	Non-alloy steel	14	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.32	0.32-0.35	0.35-0.38	0.38-0.41	0.41-0.44	0.44-0.47	0.47-0.50
	2		14	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.32	0.32-0.35	0.35-0.38	0.38-0.41	0.41-0.44	0.44-0.47	0.47-0.50
	3		10	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	4		8	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	5																		
	6	Low alloy steel	12	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	7		8	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	8																		
	9																		
	10	High alloyed steel, and tool steel	6	0.03-0.04	0.04-0.05	0.05-0.06	0.06-0.07	0.07-0.08	0.08-0.10	0.10-0.12	0.12-0.14	0.14-0.16	0.16-0.18	0.18-0.20	0.20-0.22	0.22-0.24	0.24-0.26	0.26-0.28	0.28-0.30
	11																		
M	12	Stainless steel	6	0.03-0.04	0.04-0.05	0.05-0.06	0.06-0.07	0.07-0.08	0.08-0.10	0.10-0.12	0.12-0.14	0.14-0.16	0.16-0.18	0.18-0.20	0.20-0.22	0.22-0.24	0.24-0.26	0.26-0.28	0.28-0.30
	13		5	0.03-0.04	0.04-0.05	0.05-0.06	0.06-0.07	0.07-0.08	0.08-0.10	0.10-0.12	0.12-0.14	0.14-0.16	0.16-0.18	0.18-0.20	0.20-0.22	0.22-0.24	0.24-0.26	0.26-0.28	0.28-0.30
	14		4	0.03-0.04	0.04-0.05	0.05-0.06	0.06-0.07	0.07-0.08	0.08-0.10	0.10-0.12	0.12-0.14	0.14-0.16	0.16-0.18	0.18-0.20	0.20-0.22	0.22-0.24	0.24-0.26	0.26-0.28	0.28-0.30
K	15	Grey cast iron	14	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.32	0.32-0.35	0.35-0.38	0.38-0.41	0.41-0.44	0.44-0.47	0.47-0.50
	16		11	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	17	Nodular cast iron	12	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.32	0.32-0.35	0.35-0.38	0.38-0.41	0.41-0.44	0.44-0.47	0.47-0.50
	18		10	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	19	Malleable cast iron	12	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.32	0.32-0.35	0.35-0.38	0.38-0.41	0.41-0.44	0.44-0.47	0.47-0.50
	20		10	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
N	21	Aluminum-wrought alloy	18	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	22		18	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	23	Aluminum-cast, alloyed	18	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	24		17	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	25																		
	26	Copper and Copper Alloys (Bronze / Brass)	18	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	27		16	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	28		20	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	29	Non Metallic Materials																	
	30																		
S	31	Heat Resistant Super Alloys																	
	32																		
	33																		
	34																		
	35																		
	36	Titanium Alloys																	
	37																		
H	38	Hardened steel																	
	39																		
	40	Chilled Cast Iron																	
	41	Hardened Cast Iron																	

YG REAMERS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

K2121 SERIES

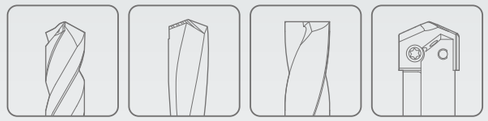
HSS-E, CHUCKING REAMERS - QUICK SPIRAL

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

ISO	VDI 3323	Material Description	Vc (m/min)	Feed(mm/rev) 2.0	4.0	8.0	10.0	12.0	14.0	16.0	20.0
P	1	Non-alloy steel	18	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	2		16	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.32	0.32-0.36	0.36-0.40
	3										
	4										
	5										
	6	Low alloy steel	14	0.10-0.12	0.12-0.14	0.14-0.16	0.16-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30
	7										
	8										
	9										
	10	High alloyed steel, and tool steel									
	11										
M	12	Stainless steel									
	13										
	14										
K	15	Grey cast iron									
	16										
	17	Nodular cast iron									
	18										
	19	Malleable cast iron									
	20										
N	21	Aluminum-wrought alloy	20	0.15-0.20	0.20-0.25	0.25-0.30	0.30-0.36	0.36-0.42	0.42-0.48	0.48-0.54	0.54-0.60
	22		20	0.15-0.20	0.20-0.25	0.25-0.30	0.30-0.36	0.36-0.42	0.42-0.48	0.48-0.54	0.54-0.60
	23	Aluminum-cast, alloyed	20	0.15-0.20	0.20-0.25	0.25-0.30	0.30-0.36	0.36-0.42	0.42-0.48	0.48-0.54	0.54-0.60
	24		18	0.15-0.20	0.20-0.25	0.25-0.30	0.30-0.36	0.36-0.42	0.42-0.48	0.48-0.54	0.54-0.60
	25										
	26	Copper and Copper Alloys (Bronze / Brass)	19	0.15-0.20	0.20-0.25	0.25-0.30	0.30-0.36	0.36-0.42	0.42-0.48	0.48-0.54	0.54-0.60
	27		18	0.15-0.20	0.20-0.25	0.25-0.30	0.30-0.36	0.36-0.42	0.42-0.48	0.48-0.54	0.54-0.60
	28		20	0.15-0.20	0.20-0.25	0.25-0.30	0.30-0.36	0.36-0.42	0.42-0.48	0.48-0.54	0.54-0.60
	29	Non Metallic Materials									
	30										
S	31	Heat Resistant Super Alloys									
	32										
	33										
	34										
	35										
	36	Titanium Alloys									
	37										
H	38	Hardened steel									
	39										
	40	Chilled Cast Iron									
	41	Hardened Cast Iron									

Leading Through Innovation

Global Cutting Tool Leader **YG-1**



HOLEMAKING



HSS & HSSCo8

COUNTERSINKS

SENKER

- For Deburring, Chamfering and Countersinking
- Zum Entgraten, Anfasen und Senken

SELECTION GUIDE

YG HOLEMAKING TOOLS

HSS & HSSCo8
COUNTERSINKS

For Deburring, Chamfering and Countersinking

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.439

	SERIES	C1109 C3109	C1119 C3119	C1136 C3136	C1139 C3139	C1132 C3132
	STANDARD	-	-	DIN334C	DIN335C	-
	POINT ANGLE	90°	90°	60°	90°	120°
	SIZE MIN	D10.0	D10.0	D6.3	D4.3	D8.0
	SIZE MAX	D50.0	D50.0	D25.0	D31.0	D25.0
	PAGE	434	435	436	437	438
	SURFACE TREATMENT	Bright		Bright		







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

COUNTERSINKS

C1109 SERIES
C3109 SERIES

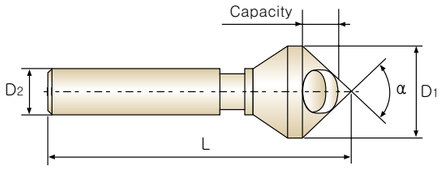
HSS & HSSCo8, DEBURRING TOOL with HOLE

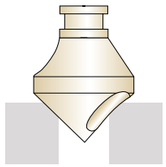
- HSS, QUERLOCHSENKER
- FRAISE HSS À ÉBAVURER À TROU
- SVASATORI CON FORO - HSS

- ▶ For light metals and plastics.
- ▶ For deburring and small chamfers.
- ▶ Best surface finish.
- ▶ Works without vibrations.

- ▶ Für Leichtmetall und Plastik
- ▶ Zum Entgraten und Abfasen
- ▶ Bestes Oberflächenfinish
- ▶ Arbeitet ohne Vibration







YG STD  P.439

Unit : mm

EDP No. (uncoating)		Point Angle	Cutter Diameter	Shank Diameter	Overall Length	Capacity
HSSCo8	HSS	α	D1	D2	L(±1)	min/max
C1109100	**C3109100**	90°	**10.0**	6	45	2 - 5
C1109150	**C3109150**	90°	**15.0**	8	55	6 - 14
C1109200	**C3109200**	90°	**20.0**	10	65	8 - 18
C1109250	**C3109250**	90°	**25.0**	12	78	10 - 23
C1109300	**C3109300**	90°	**30.0**	12	88	12 - 28
C1109350	**C3109350**	90°	**35.0**	16	110	14 - 33
C1109400	**C3109400**	90°	**40.0**	16	115	16 - 38
C1109450	**C3109450**	90°	**45.0**	16	120	18 - 43
C1109500	**C3109500**	90°	**50.0**	16	130	20 - 48

▶TiN & TiCN coating are available on your request.

Cutter Dia. Tolerance(mm)	Shank Dia. Tolerance(mm)	Point Angle Tolerance(˚)
+0.3/-0	h9	+0/-1

◎ : Excellent ○ : Good

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

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

COUNTERSINKS

C1119 SERIES
C3119 SERIES

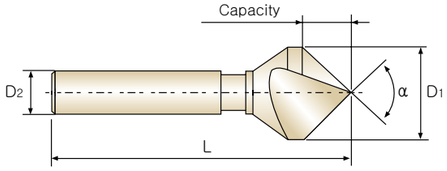
HSS & HSSCo8, SINGLE FLUTE CHAMFERING CUTTERS

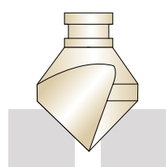
- HSS, EINSCHNEIDEN KEGELSENKER
- FRAISE HSS À CHANFREINER 1 DENT
- SVASATORI MONOTAGLIENTE - HSS

- ▶ For wood and hard plastics.
- ▶ Can drill in sheet materials.
- ▶ Easy to resharp.
- ▶ Works without vibrations.

- ▶ Für Holz und Hartplastik
- ▶ Kann in Bleche bohren
- ▶ Leicht nachzuschärfen
- ▶ Arbeitet ohne Vibration







YG STD  P.439

Unit : mm

EDP No. (uncoating)		Point Angle	Cutter Diameter	Shank Diameter	Overall Length	Capacity
HSSCo8	HSS	α	D1	D2	L(±1)	min/max
C1119100	**C3119100**	90°	**10.0**	6	45	1 - 10
C1119150	**C3119150**	90°	**15.0**	8	55	2 - 15
C1119200	**C3119200**	90°	**20.0**	10	65	2 - 20
C1119250	**C3119250**	90°	**25.0**	12	78	3 - 25
C1119300	**C3119300**	90°	**30.0**	12	88	3 - 30
C1119350	**C3119350**	90°	**35.0**	16	110	4 - 35
C1119400	**C3119400**	90°	**40.0**	16	115	5 - 40
C1119450	**C3119450**	90°	**45.0**	16	120	10 - 45
C1119500	**C3119500**	90°	**50.0**	16	130	12 - 50

▶TiN & TiCN coating are available on your request.

Cutter Dia. Tolerance(mm)	Shank Dia. Tolerance(mm)	Point Angle Tolerance(˚)
+0.3/-0	h9	+0/-1

◎ : Excellent ○ : Good

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

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

COUNTERSINKS

C1136 SERIES
C3136 SERIES

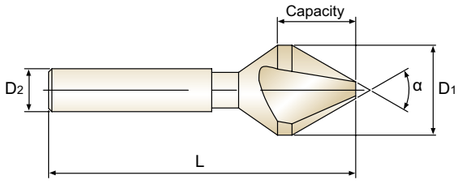
HSS & HSSCo8, THREE FLUTE COUNTERSINKS (60°)

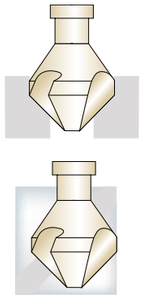
HSS, DREISCHNEIDEN KEGELSENKER (60°)
FRAISE HSS À CHANFREINER 3 DENTS (60°)
SVASATORI A TRE TAGLIENTI - HSS (60°)

- ▶ Self-centering(3 flutes)
- ▶ For deburring, chamfering and countersinking
- ▶ Hand using
- ▶ Longitudinal chamfers and contouring
- ▶ Works without vibrations

- ▶ Selbstzentrierend
- ▶ Besonders geeignet zum 90˚ Ansenken für Senkkopfschrauben
- ▶ Manueller Einsatz möglich
- ▶ Zum Entgraten von Längs- und Profilkanten
- ▶ Arbeitet ohne Vibration







DIN 334 C P.440

Unit : mm

EDP No. (uncoating)		Point Angle	Cutter Diameter	Shank Diameter	Overall Length	Capacity
HSSCo8	HSS	α	D_1	D_2	L(±1)	min/max
C1136063	**C3136063**	60°	**6.3**	5	45	1.6~6.3
C1136080	**C3136080**	60°	**8.0**	6	50	2.0~8.0
C1136100	**C3136100**	60°	**10.0**	6	50	2.5~10.0
C1136125	**C3136125**	60°	**12.5**	8	56	3.2~12.5
C1136160	**C3136160**	60°	**16.0**	10	63	4.0~16.0
C1136200	**C3136200**	60°	**20.0**	10	67	5.0~20.0
C1136250	**C3136250**	60°	**25.0**	10	71	6.3~25.0

▶TiN & TiCN coating are available on your request.

Cutter Dia. Tolerance(mm)	Shank Dia. Tolerance(mm)	Point Angle Tolerance(˚)
±0.05	h9	+0/-1

◎ : Excellent ○ : Good

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

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

COUNTERSINKS

C1139 SERIES
C3139 SERIES

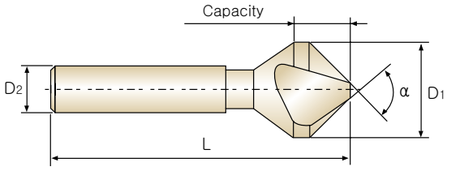
HSS & HSSCo8, THREE FLUTE COUNTERSINKS (90°)

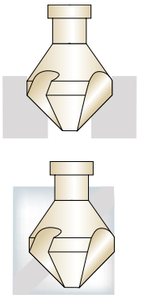
HSS, DREISCHNEIDEN KEGELSENKER (90°)
FRAISE HSS À CHANFREINER 3 DENTS (90°)
SVASATORI A TRE TAGLIENTI - HSS (90°)

- ▶ Self-centering(3 flutes).
- ▶ Designed for 90°capscrews countersinking.
- ▶ Hand using.
- ▶ Longitudinal chamfers and contouring.
- ▶ Works without vibrations

- ▶ Selbstzentrierend
- ▶ Besonders geeignet zum 90˚ Ansenken für Senkkopfschrauben
- ▶ Manueller Einsatz möglich
- ▶ Zum Entgraten von Längs- und Profilkanten
- ▶ Arbeitet ohne Vibration







DIN 335 C P.440

Unit : mm

EDP No. (uncoating)		Point Angle	Cutter Diameter	Shank Diameter	Overall Length	Capacity
HSSCo8	HSS	α	D_1	D_2	L(±1)	min/max
C1139043	**C3139043**	90°	**4.3**	4	40	1.3 - 4.3
C1139050	**C3139050**	90°	**5.0**	4	40	1.5 - 5.0
C1139060	**C3139060**	90°	**6.0**	5	45	1.5 - 6.0
C1139063	**C3139063**	90°	**6.3**	5	45	1.5 - 6.3
C1139070	**C3139070**	90°	**7.0**	6	50	1.8 - 7.0
C1139080	**C3139080**	90°	**8.0**	6	50	2.0 - 8.0
C1139083	**C3139083**	90°	**8.3**	6	50	2.0 - 8.3
C1139100	**C3139100**	90°	**10.0**	6	50	2.5 - 10.0
C1139104	**C3139104**	90°	**10.4**	6	50	2.5 - 10.4
C1139115	**C3139115**	90°	**11.5**	8	56	2.8 - 11.5
C1139124	**C3139124**	90°	**12.4**	8	56	2.8 - 12.4
C1139150	**C3139150**	90°	**15.0**	10	60	3.2 - 15.0
C1139165	**C3139165**	90°	**16.5**	10	60	3.2 - 16.5
C1139190	**C3139190**	90°	**19.0**	10	63	3.5 - 19.0
C1139205	**C3139205**	90°	**20.5**	10	63	3.5 - 20.5
C1139230	**C3139230**	90°	**23.0**	10	67	3.8 - 23.0
C1139250	**C3139250**	90°	**25.0**	10	67	3.8 - 25.0
C1139300	**C3139300**	90°	**30.0**	12	71	4.2 - 30.0
C1139310	**C3139310**	90°	**31.0**	12	71	4.2 - 31.0

▶TiN & TiCN coating are available on your request.

Cutter Dia. Tolerance(mm)	Shank Dia. Tolerance(mm)	Point Angle Tolerance(˚)
±0.05	h9	+0/-1

◎ : Excellent ○ : Good

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

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

COUNTERSINKS

C1132 SERIES
C3132 SERIES

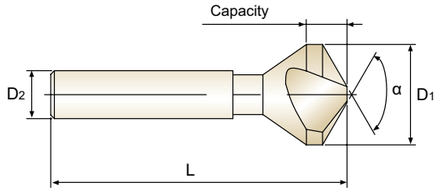
HSS & HSSCo8, THREE FLUTE COUNTERSINKS (120°)

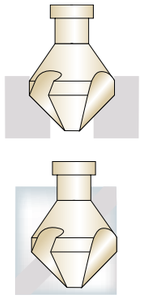
HSS, DREISCHNEIDEN KEGELSENKER (120°)
FRAISE HSS À CHANFREINER 3 DENTS (120°)
SVASATORI A TRE TAGLIENTI - HSS (120°)

- ▶ Self-centering(3 flutes)
- ▶ For deburring, chamfering and countersinking
- ▶ Hand using
- ▶ Longitudinal chamfers and contouring
- ▶ Works without vibrations

- ▶ Selbstzentrierend
- ▶ Zum Entgraten, Abfasen und Senkkopfschrauben
- ▶ Manueller Einsatz möglich
- ▶ Zum Entgraten von Längs- und Profilkanten
- ▶ Arbeitet ohne Vibration







YG STD P.440

Unit : mm

EDP No. (uncoating)		Point Angle	Cutter Diameter	Shank Diameter	Overall Length	Capacity
HSSCo8	HSS	α	D1	D2	L(±1)	min/max
C1132080	**C3132080**	120°	**8.0**	6	49	2.0~8.0
C1132125	**C3132125**	120°	**12.5**	8	54	2.8~12.5
C1132160	**C3132160**	120°	**16.0**	10	57	3.2~16.0
C1132200	**C3132200**	120°	**20.0**	10	59	3.5~20.0
C1132250	**C3132250**	120°	**25.0**	10	65	3.8~25.0

▶TiN & TiCN coating are available on your request.

Cutter Dia. Tolerance(mm)	Shank Dia. Tolerance(mm)	Point Angle Tolerance(°)
±0.05	h9	+0/-1

◎ : Excellent ○ : Good

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

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

COUNTERSINKS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

C1109, C3109, C1119, C3119 SERIES

DEBURRING TOOL with HOLE
1 FLUTE CHAMFERING CUTTERS

R.P.M = rev./min.
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc (m/min)	Feed(mm/rev) 10.0	15.0	20.0	25.0	30.0	40.0	50.0
P	1	Non-alloy steel	**40**	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30
	2		**40**	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30
	3		**25**	0.08-0.10	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27
	4		**18**	0.06-0.08	0.08-0.10	0.10-0.12	0.12-0.14	0.14-0.16	0.16-0.18	0.18-0.20
	5		**18**	0.06-0.08	0.08-0.10	0.10-0.12	0.12-0.14	0.14-0.16	0.16-0.18	0.18-0.20
	6	Low alloy steel								
	7									
	8									
	9									
	10	High alloyed steel, and tool steel								
	11									
M	12	Stainless steel	**8**	0.05-0.07	0.07-0.09	0.07-0.09	0.09-0.11	0.09-0.11	0.11-0.14	0.11-0.14
	13		**7**	0.05-0.07	0.07-0.09	0.07-0.09	0.09-0.11	0.09-0.11	0.11-0.14	0.11-0.14
	14		**6**	0.05-0.07	0.07-0.09	0.07-0.09	0.09-0.11	0.09-0.11	0.11-0.14	0.11-0.14
K	15	Grey cast iron	**28**	0.13-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30	0.30-0.34
	16		**24**	0.12-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.33
	17	Nodular cast iron	**24**	0.13-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30	0.30-0.34
	18		**20**	0.12-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.33
	19	Malleable cast iron	**24**	0.13-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30	0.30-0.34
	20		**20**	0.12-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.33
N	21	Aluminum-wrought alloy	**56**	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30	0.30-0.33	0.33-0.36
	22		**56**	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30	0.30-0.33	0.33-0.36
	23	Aluminum-cast, alloyed	**54**	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30	0.30-0.33	0.33-0.36
	24		**52**	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30	0.30-0.33	0.33-0.36
	25		**50**	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30	0.30-0.33	0.33-0.36
	26	Copper and Copper Alloys (Bronze / Brass)	**38**	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37
	27		**35**	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37
	28		**25**	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.30	0.30-0.33	0.33-0.36
	29	Non Metallic Materials								
	30									
S	31	Heat Resistant Super Alloys								
	32									
	33									
	34									
	35									
	36	Titanium Alloys								
	37									
H	38	Hardened steel								
	39									
	40	Chilled Cast Iron								
	41	Hardened Cast Iron								

COUNTERSINKS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

C1136, C3136, C1139, C3139, C1132, C3132 SERIES

3 FLUTE COUNTERSINKS

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

ISO	VDI 3323	Material Description	Vc (m/min)	Feed(mm/rev) 5.0	10.0	15.0	20.0	25.0	30.0	40.0	50.0
P	1	Non-alloy steel	20	0.12-0.16	0.16-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.33	0.33-0.37	0.37-0.41
	2		20	0.12-0.16	0.16-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.33	0.33-0.37	0.37-0.41
	3		13	0.10-0.14	0.14-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.31	0.31-0.35	0.35-0.39
	4		10	0.06-0.10	0.10-0.14	0.14-0.17	0.17-0.21	0.21-0.24	0.24-0.27	0.27-0.31	0.31-0.35
	5		10	0.06-0.10	0.10-0.14	0.14-0.17	0.17-0.21	0.21-0.24	0.24-0.27	0.27-0.31	0.31-0.35
	6	Low alloy steel									
	7										
	8										
	9										
	10	High alloyed steel, and tool steel									
	11										
M	12	Stainless steel	6	0.06-0.08	0.06-0.08	0.08-0.10	0.08-0.10	0.10-0.12	0.10-0.12	0.12-0.15	0.12-0.15
	13		5	0.06-0.08	0.06-0.08	0.08-0.10	0.08-0.10	0.10-0.12	0.10-0.12	0.12-0.15	0.12-0.15
	14		4	0.06-0.08	0.06-0.08	0.08-0.10	0.08-0.10	0.10-0.12	0.10-0.12	0.12-0.15	0.12-0.15
K	15	Grey cast iron	22	0.09-0.11	0.11-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.32
	16		17	0.08-0.10	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.31
	17	Nodular cast iron	17	0.09-0.11	0.11-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.32
	18		15	0.08-0.10	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.31
	19	Malleable cast iron	17	0.09-0.11	0.11-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.32
	20		15	0.08-0.10	0.10-0.12	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.31
N	21	Aluminum-wrought alloy	42	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.31	0.31-0.35	0.35-0.40	0.40-0.45
	22		42	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.31	0.31-0.35	0.35-0.40	0.40-0.45
	23	Aluminum-cast, alloyed	39	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.31	0.31-0.35	0.35-0.40	0.40-0.45
	24		37	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.28	0.28-0.32	0.32-0.37	0.37-0.42
	25		35	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.27	0.27-0.31	0.31-0.35	0.35-0.40	0.40-0.45
	26	Copper and Copper Alloys (Bronze / Brass)	28	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.28	0.28-0.32	0.32-0.37	0.37-0.42
	27		25	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.28	0.28-0.32	0.32-0.37	0.37-0.42
	28		15	0.12-0.15	0.15-0.18	0.18-0.21	0.21-0.24	0.24-0.28	0.28-0.32	0.32-0.37	0.37-0.42
	29	Non Metallic Materials									
	30										
S	31	Heat Resistant Super Alloys									
	32										
	33										
	34										
	35										
	36	Titanium Alloys									
	37										
H	38	Hardened steel									
	39										
	40	Chilled Cast Iron									
	41	Hardened Cast Iron									

Leading Through Innovation



HSS-E

COUNTERBORES

FLACHSENKER

- For Machining Screw Head Seats
- Zur Herstellung von Schraubenkopfsenkungen

SELECTION GUIDE

YG HOLEMAKING TOOLS

SERIES	EL950		
TYPE	MEDIUM	FINE	BEOFRE THREADING
PILOT DIA.	3.4~14.0	3.2~13.0	2.5~10.2
CUTTER DIA.	6.0~20.0		
PAGE	443		
SURFACE TREATMENT	Bright		

HSS-E COUNTERBORES

For Machining Screw Head Seats



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.445

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

YG COUNTERBORES

EL950 SERIES

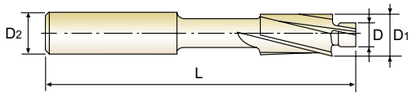
HSS-E, 3 FLUTE COUNTERBORES for 180° CAPSCREW

HSS-E, 3 SCHNEIDEN FLACHSENKER MIT FESTEM FÜHRUNGSZAPFEN
FRAISES À LAMER HSS-E 3 DENTS TÊTE DE VIS À 180°
LAMATORI A TRE TAGLIENTI IN HSS-E per sedi di viti a testa cilindrica a 180°

▶ The counterbores with solid pilot are designed for machining as fillister screw caps or ejector caps in molds.

▶ Die Flachsenker mit festem Führungszapfen dienen dem 180° Ansenken für Zylinderkopfschrauben und Auswerferstiften in Formen





HSS-E | DIN 373 | 3 | PLAIN

P.445

MEDIUM

Unit : mm

EDP No.	ITEM No.	Screw Size	Pilot Diameter	Cutter Diameter	Shank Diameter	Overall Length
PLAIN	PLAIN		D(e8)	D1(z9)	D2(h9)	L
EL950003	YG54M3-M	M3	3.4	6.0	5	71
EL950035	YG54M3.5-M	M3.5	3.9	6.5	5	71
EL950004	YG54M4-M	M4	4.5	8.0	5	71
EL950005	YG54M5-M	M5	5.5	10.0	8	80
EL950006	YG54M6-M	M6	6.6	11.0	8	80
EL950008	YG54M8-M	M8	9.0	15.0	12.5	100
EL950010	YG54M10-M	M10	11.0	18.0	12.5	100
EL950012	YG54M12-M	M12	14.0	20.0	12.5	100

FINE

Unit : mm

EDP No.	ITEM No.	Screw Size	Pilot Diameter	Cutter Diameter	Shank Diameter	Overall Length
PLAIN	PLAIN		D(e8)	D1(z9)	D2(h9)	L
EL950901	YG54M3-F	M3	3.2	6.0	5	71
EL950902	YG54M3.5-F	M3.5	3.7	6.5	5	71
EL950903	YG54M4-F	M4	4.3	8.0	5	71
EL950904	YG54M5-F	M5	5.3	10.0	8	80
EL950905	YG54M6-F	M6	6.4	11.0	8	80
EL950906	YG54M8-F	M8	8.4	15.0	12.5	100
EL950907	YG54M10-F	M10	10.5	18.0	12.5	100
EL950908	YG54M12-F	M12	13.0	20.0	12.5	100

▶NEXT PAGE

◎ : Excellent ○ : Good

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

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

COUNTERBORES

EL950 SERIES

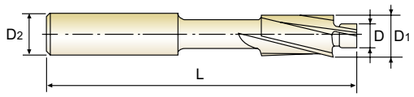
HSS-E, 3 FLUTE COUNTERBORES for 180° CAPSCREW

- HSS-E, 3 SCHNEIDEN FLACHSENKER MIT FESTEM FÜHRUNGSZAPFEN
- FRAISES À LAMER HSS-E 3 DENTS TÊTE DE VIS À 180°
- LAMATORI A TRE TAGLIENTI IN HSS-E per sedi di viti a testa cilindrica a 180°

▶ The counterbores with solid pilot are designed for machining as fillister screw caps or ejector caps in molds.

▶ Die Flachsenker mit festem Führungszapfen dienen dem 180° Ansenken für Zylinderkopfschrauben und Auswerferstiften in Formen





HSS-E | DIN 373 | 3 | PLAIN P.445

BEFORE THREADING

Unit : mm

EDP No.	ITEM No.	Screw Size	Pilot Diameter	Cutter Diameter	Shank Diameter	Overall Length
PLAIN	PLAIN		D(e8)	D1(z9)	D2(h9)	L
EL950909	YG54M3-T	M3	2.5	6.0	5	71
EL950910	YG54M3.5-T	M3.5	2.9	6.5	5	71
EL950911	YG54M4-T	M4	3.3	8.0	5	71
EL950912	YG54M5-T	M5	4.2	10.0	8	80
EL950913	YG54M6-T	M6	5.0	11.0	8	80
EL950914	YG54M8-T	M8	6.8	15.0	12.5	100
EL950915	YG54M10-T	M10	8.5	18.0	12.5	100
EL950916	YG54M12-T	M12	10.2	20.0	12.5	100

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜				
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18
Tolerance range in ㎛ / Toleranzwerte in ㎛				
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59
h9	0 - 25	0 - 30	0 - 36	0 - 43

Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜				
	from 6 to 10 von 6 bis 10	over 10 to 14 über 10 bis 14	over 14 to 18 über 14 bis 18	over 18 to 24 über 18 bis 24
Tolerance range in ㎛ / Toleranzwerte in ㎛				
z9	+ 78 + 42	+ 93 + 50	+ 103 + 60	+ 125 + 73

◎ : Excellent ○ : Good

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

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

COUNTERBORES

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

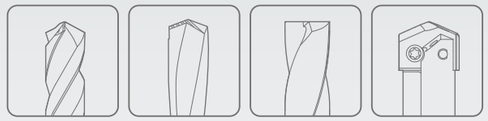
EL950 SERIES HSS-E, 3 FLUTE COUNTERBORES for 180° CAPSCREW

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

ISO	VDI 3323	Material Description	Parameter	Cutter Diameter (Ø) 6.0	6.5	8.0	10.0	11.0	15.0	18.0	20.0
P	1	Non-alloy steel	Vc	25	25	25	25	25	25	25	25
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	1326	1224	995	796	723	531	442	398
			FEED	322	297	242	258	234	172	167	150
	2		Vc	24	24	24	24	24	24	24	24
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	1273	1175	955	764	694	509	424	382
			FEED	309	286	232	248	225	165	160	144
	3		Vc	18	18	18	18	18	18	18	18
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	955	881	716	573	521	382	318	286
			FEED	232	214	174	186	169	124	120	108
	4		Vc	18	18	18	18	18	18	18	18
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	955	881	716	573	521	382	318	286
			FEED	232	214	174	186	169	124	120	108
	5		Vc	18	18	18	18	18	18	18	18
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	955	881	716	573	521	382	318	286
			FEED	232	214	174	186	169	124	120	108
	6	Low alloy steel	Vc	24	24	24	24	24	24	24	24
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	1273	1175	955	764	694	509	424	382
			FEED	309	286	232	248	225	165	160	144
	7		Vc	18	18	18	18	18	18	18	18
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	955	881	716	573	521	382	318	286
			FEED	232	214	174	186	169	124	120	108
	8		Vc	18	18	18	18	18	18	18	18
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	955	881	716	573	521	382	318	286
			FEED	232	214	174	186	169	124	120	108
	9		Vc	15	15	15	15	15	15	15	15
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	796	735	597	477	434	318	265	239
			FEED	193	178	145	155	141	103	100	90
	10	High alloyed steel, and tool steel	Vc	24	24	24	24	24	24	24	24
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	1273	1175	955	764	694	509	424	382
			FEED	309	286	232	248	225	165	160	144
	11		Vc	18	18	18	18	18	18	18	18
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	955	881	716	573	521	382	318	286
			FEED	232	214	174	186	169	124	120	108
N	21	Aluminum-wrought alloy	Vc	30	30	30	30	30	30	30	30
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	1592	1469	1194	955	868	637	531	477
			FEED	382	353	286	315	286	210	207	186
	22		Vc	30	30	30	30	30	30	30	30
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	1592	1469	1194	955	868	637	531	477
			FEED	382	353	286	315	286	210	207	186
	23	Aluminum-cast, alloyed	Vc	20	20	20	20	20	20	20	20
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	1061	979	796	637	579	424	354	318
			FEED	255	235	191	210	191	140	138	124
	24		Vc	20	20	20	20	20	20	20	20
			fz	0.08	0.08	0.08	0.11	0.11	0.11	0.13	0.13
			RPM	1061	979	796	637	579	424	354	318
			FEED	255	235	191	210	191	140	138	124

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
STRAIGHT SHANK DRILLS
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

Global Cutting Tool Leader **YG-1**



HOLEMAKING

Leading Through Innovation



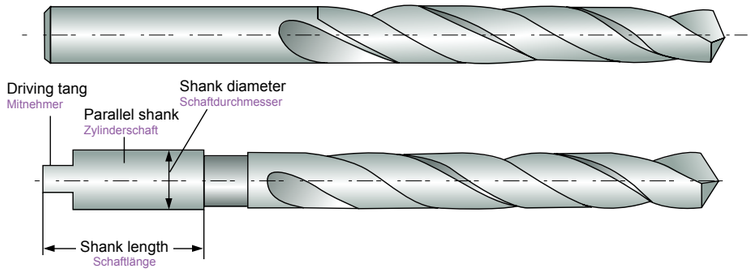
DRILLS

TECHNICAL DATA

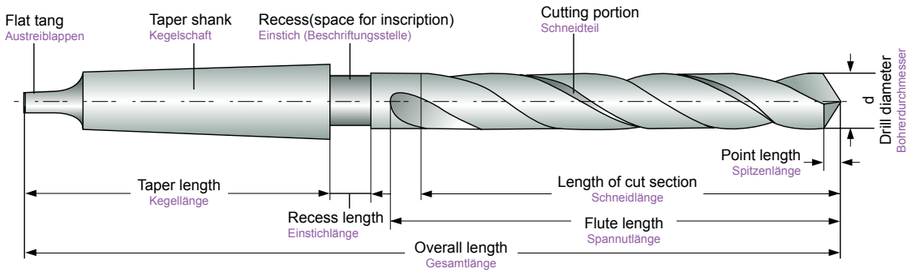
TECHNISCHE DATEN

TECHNICAL DATA

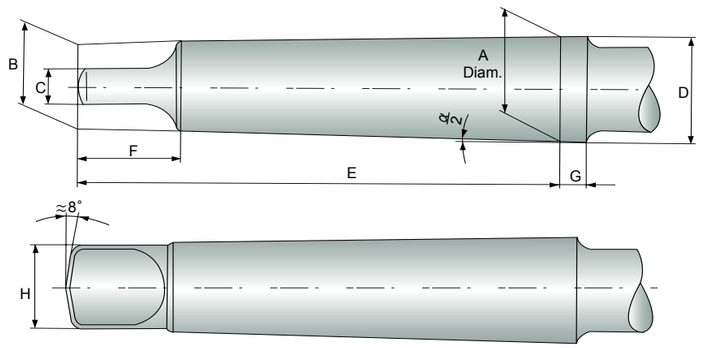
1 TWIST DRILL WITH PARALLEL SHANK
SPIRALBOHRER MIT ZYLINDERSCHAFT



2 TWIST DRILL WITH TAPER SHANK
SPIRALBOHRER MIT KEGELSCHAFT



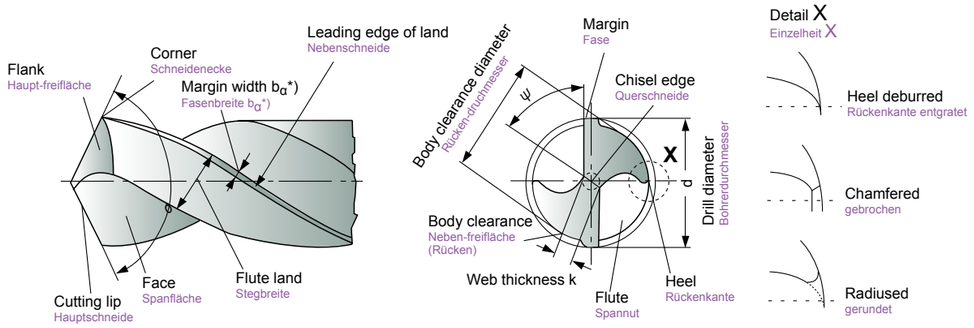
3 GENERAL DIMENSIONS OF MORSE TAPER SHANKS
TOLERANZEN DES KEGELSCHAFTES



Morse Taper Shank Morsekegelschaft	A mm	B mm	C(h13) mm	D mm	E mm	F(max.) mm	G mm	H(max.) mm	$\alpha/2$
No.1	12.065	9	5.2	12.2	62	13.5	3.5	8.7	1°25'43"
No.2	17.780	14	6.3	18.0	75	16	5	13.5	1°25'50"
No.3	23.825	19.1	7.9	24.1	94	20	5	18.5	1°26'16"
No.4	31.267	25.2	11.9	31.6	117.5	24	6.5	24.5	1°29'15"
No.5	44.399	36.5	15.9	44.7	149.5	29	6.5	35.7	1°30'26"
No.6	63.348	52.4	19	63.8	210	40	8	51	1°29'36"

TECHNICAL DATA

4 CUTTING PORTION
SCHNEIDTEIL



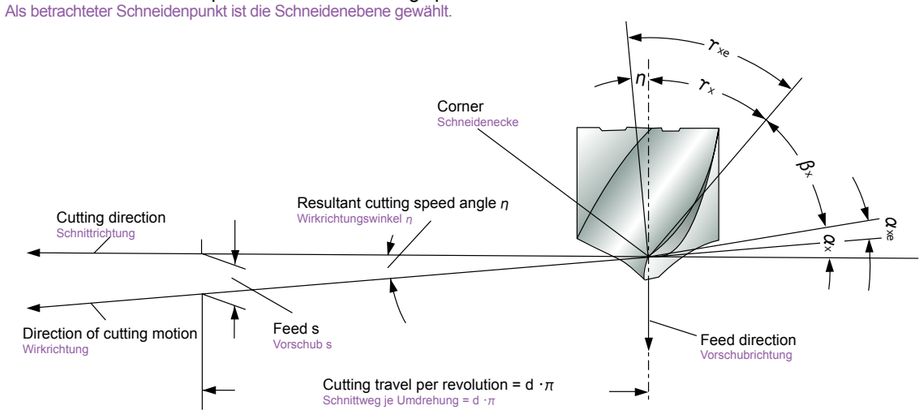
σ = Point angle (sigma) Spitzenwinkel (Sigma)

ψ = Chisel edge angle (psi) Querschneidenwinkel(Psi)

* In the context of cutting technology, land width b_α is the body clearance land width which is to be by b_{fan}, see DIN 6581.
Die Fasenbreite b_α ist bei zerspanungstechnischen Betrachtungen die Fasenbreite der Nebenfreifläche und mit b_{fan} zu bezeichnen, siehe DIN 6581.

5 ANGLE AT THE CUTTING EDGES
WINKEL AN DEN SCHNEIDEN

The corner has been adopted as the observed edge point.
Als betrachteter Schneidenpunkt ist die Schneidenebene gewählt.



α_x = Side clearance angle (alpha) Seitenfreiwinkel (Alpa)

α_{xe} = Effective side clearance angle Wirk-Seitenfreiwin

β_x = Side wedge angle (beta) Seitenkeilwinkel (Beta)

τ_x = Front rake angle (gamma) Seitenspanwinkel (Gamma)

τ_{xe} = Working front rake angle Wirk-Seitenspanwinkel

η = Resultant cutting speed angle (eta) Wirkrichtungswinkel (Eta)

Clearance angle α, wedge angle β and rake angle τ are measured in the tool orthogonal plane. For details, see DIN 6581, definitions of metal-cutting technology; geometry at the tool edge.

Freiwinkel α, keilwinkel β und Spanwinkel τ werden in der keilmeβebene gemessen.
Einzelheiten siehe DIN 6581, Begriffe der Zerspantechnik; Geometrie am Schneidkeil des Werkzeuges.

6 WEB THICKNESS K
KERNDICKE K

Test values : The web thickness according to Fig. 1 shall not be less than the minimum value k_{min} indicated in Fig. 2.
Prüfwerte : Die kerndicke nach Bild 1 soll den Bild 2 angegebenen Mindestwert k_{min} nicht unterschreiten.
Test point : At the point of the drill. **Prüfstelle :** An der Bohrerspitze
Testing equipment : Slide gauge with measuring points. **Prüfmittel :** Meβschieber (Schieblehre) mit Messerspitzen

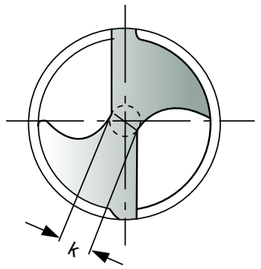


Figure 1. Web thickness k
Bild 1. kerndicke k

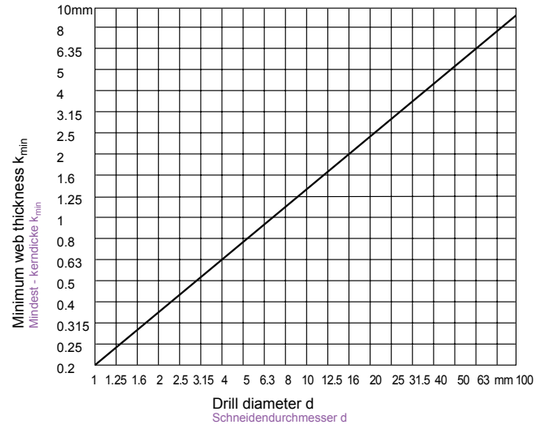


Figure 2. Web thickness k_{min}
Bild 2. Kerndicke k_{min}

7 MARGIN WIDTH bα
Fasenbreite b_α

Test values : The land width as in Fig. 3 shall lie within the limitting values indicated in Fig. 4.
Prüfwerte : Die Fasenbreite nach Bild 3 soll im Bereich der Grenzwerte liegen, die im Bild 4 angegeben sind.
Test point : 5mm behind the corner **Prüfstell :** 5mm hinter der Schneidenecke
Testing equipment : Slide gauge **Prüfmittel :** Meβschieber

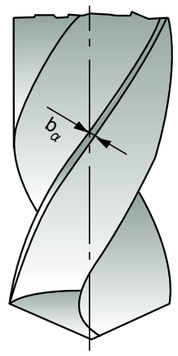


Figure 3. Margin width b_α
Bild 3. Fasenbreite b_α

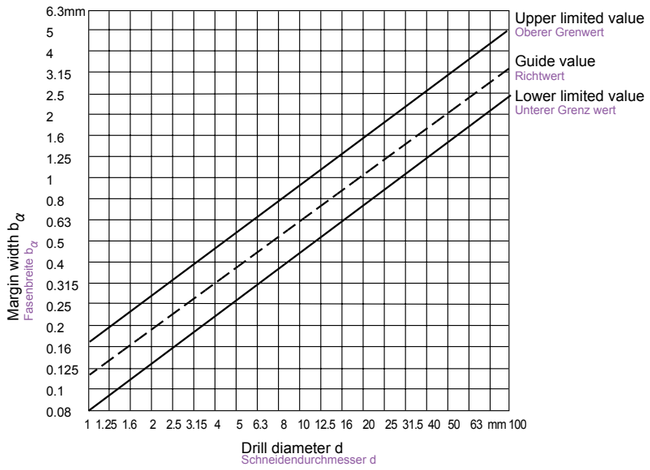


Figure 4. Margin width b_α
Bild 4. Fasenbreite b_α

8 ANGLE ON TWIST DRILLS
WINKEL AN SPIRALBOHRERN

(1) Side rake angle γ_f (Helix angle)
Seitenspanwinkel (Spiralwinkel) γ_f

Recommended test value : Recommended ranges depending on the tool types N,H and W according to DIN 1836 and the diameter of the drill included in Fig. 5.
Empfohlene Prüfwerte : Empfohlene Bereiche in Abhängigkeit der Werzeugtypen N, H und W nach DIN 1836 und des Schneidendurchmessers sind in Bild 5.

Test point : At the corner, see Fig. 6.
Prüfstell : An der Schneidenecke, siehe Bild 6

Testing equipment : According to VDI Guideline 3331 Part 1, Section Margin width b_α
Prüfmittel : Nach der VDI-Richtlinie 3331 Blatt 1, Abschnitt Fasenbreite b_α

Note : The side rake angle γ_f is measured in place of the orthogonal rake angle γ_O found in the wedge measuring plane (see DIN 6581), as this changes along the cutting edge (becoming smaller towards the point of the drill).
Anmerkung : Der Seitenspanwinkel γ_f wird an Stelle des in der Keilmeβebene befindlichen Orthogonal-Spanwinkels γ_O (Siehe DIN 6581) gemessen, da sich dieser entlang der Hauptschneide Verändert (er wird zur Bohrerspitze hin kleiner)

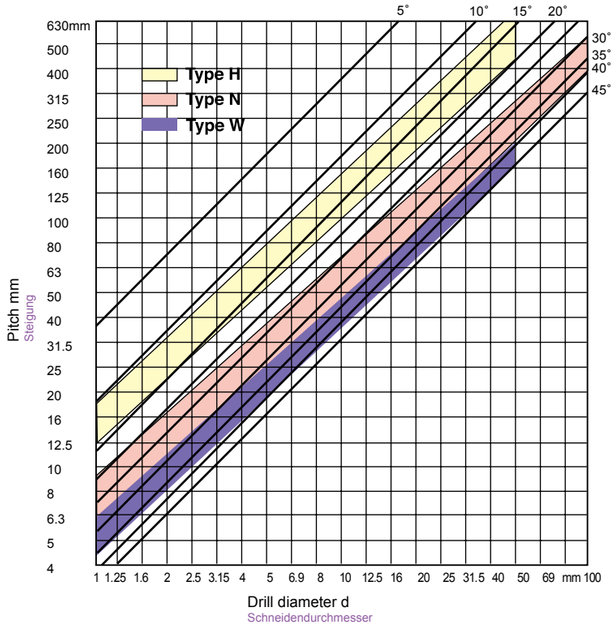


Figure 6. Side rake angle γ_f
Build 6. Seitenspanwinkel γ_f

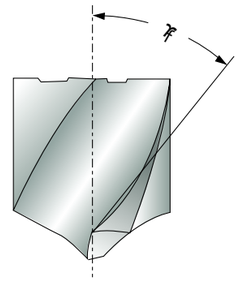


Figure 5. Side rake angle γ_f
Bild 5. Seitenspanwinkel γ_f

(2) Point angle σ
Spitzenwinkel σ

Test value : Usual execution for tool types N and H : σ=118°, for tool type W : σ=130°
Prüfwerte : Regelausführung bei Werkzeugtyp N und H : σ=118° bei Werkzeugtyp W : σ=130°

Test point : At the cutting, see Fig. 7.
Prüfstelle : An den Hauptschneiden, siehe Bild 7.

Testing equipment : According to VDI Guideline 3331 Part 1, Section Margin width b_α.
Prüfmittel : Nach der VDI-Richtlinie 3331 Blatt 1, Abschnitt Fasenbreite b_α.

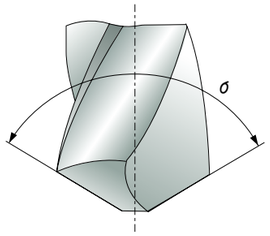


Figure 7. Point angle σ
Bild 7. Spitzenwinkel σ

9 RESHARPENING TWIST DRILLS
NACHSCHLEIFEN VON SPIRALBOHRERN

(1) Drills are worn off irregularly. It should be sharpened prior to developing into excessive wear.
Unregelmäßiger Verschleiß von Bohrern. Bohrer soll vor übermäßigern Verschleiß nachgeschilffen werden.

(2) Resharpening (Nachschleifen)

① Grind the correct point angle to suit your application.(figure 8)
Den für Ihre Anwendung passenden korrekten Spitzenwinkel schleifen (Bild 8)

② Check that both cutting lips have the same angle. On a 130° point, each lip should be 65° toward the axis. The point must be on center, i.e., the chisel edge must produce cutting lips of equal length.(figure 8)
Überprüfen, dass beide Hauptschneiden den gleichen Winkel haben. Bei einem 130° Spitzenwinkel, sollte jede Hauptschneide 65° haben (Bild 8)

③ Grind Primary relief and Secondary clearance.(figure 9)
Primärer Hinterschliff und Sekundärer Freiwinkel (Bild 9)

④ Grind web thinning. (figure 10)
Den ausgespitzten Kern schleifen (Bild 10)

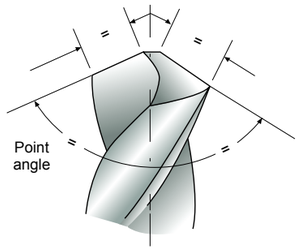


Figure 8
Bild 8

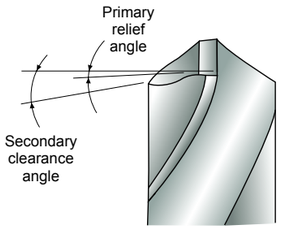


Figure 9
Bild 9

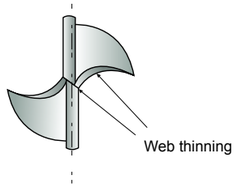


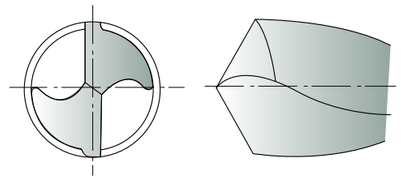
Figure 10
Bild 10

TECHNICAL DATA

10 WEB THINNING
KEGELMANTELSCHLIFF

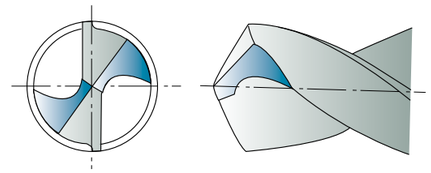
(1) Without thinning
Normalanschliff

Suitable for drill of general purpose.
Thanks to thin web thickness, web thinning is not needed.
This without web thinning type is applied to design of drills for mild steels, alloy steels, cast iron, stainless steels, titanium, inconel, etc. and conventional cutting conditons.
Zum Bohren für allgemeine Zwecke.
Dank dünner Kerndicke, ist Kegelmantelanschliff nicht nötig.
Geeignet für Stahl, Stahl-Legierungen, Gusseisen, Edeistahl, Tian, Inconel usw, und für konventionelle Schneidbedingungen



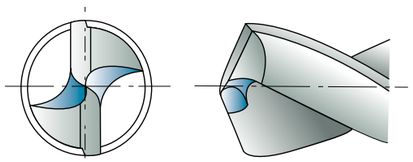
(2) Type C thinning (DIN1412 FORM C, SPLIT POINT)
DiN 1412 Form C kegelmantelanschliff mit Kreuzanschliff

Because Split point enables good centering when drilling and breaks the chips, chip removals are easy.
Suitable for drill design in high hardened tough materials, i.e, heat treated steels, titanium alloys, stainless steels, incoroy inconel, nimonic, etc.
Da Kreuzanschliff gute Zentrierung und Spanbruch während des Bohrens ermöglicht, wird die Spanentfernung erleichtert.
Geeignet für zähe Werkstücke oder Werkstücke mit hoher Härte, z.B. hitzebehandelten Stahl, Titan-Legierungen, Edelstahl, Incoroy Inconel, Nimonic usw.



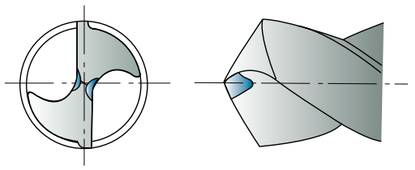
(3) Type R thinning (HELICAL THINNING)
Form R Kegelmantelanschliff (Spiralanschliff)

Helical thinning ensures to frequent chip breaking and removal. The different direction force of cutting edges and helical thinning parts enable that chips curl, break and remove through the flutes. In addition, helical thinning makes the chip room up to center, remove the chisel and enables good centering
Häufiger Spanbruch und Spanentfernung durch Spiralanschliff, es wird ausreichend Raum für Späne geschaffen, und gute Zentrierung ist möglich.



(4) Type A thinning (DIN1412 FORM A)
DIN 1412 Form A Kegelmantelanschliff mit ausgespitzer Querschneide

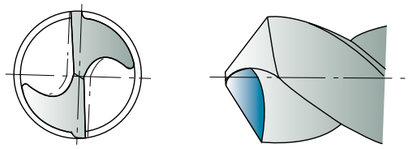
A type thinnings makes thin chisel, good chip removal and favorable centering.
This type is the easiest type to grind the thinning. In narrow web and wide fluted drills, keeping of the rigidity and smooth chip removal are possible.
Diese Form hat eine dünne Querschneide, dadurch ist gute Spanentfernung und Zentrierung möglich.
Der Kegelmantelschliff ist bei dieser Form am einfachsten nachszuchleifen, Ein enger Kern und breite Schneiden erhalten die Stabilität.



(5) Type B thinning (DIN1412 FORM B)

DIN 1412 Form B Kegelmantelanschliff mit ausgespitzer Querschneide

In case of work materials with low cutting resistance and good chip removal, i.e., cast iron, aluminum, plastic etc., B type thinning is suitable.
Especially when drills for high hardended steels are designed, this type is applied to decrease rake angle and avoid chipping of cutting lips.

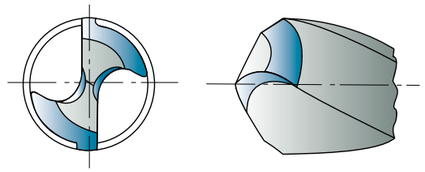


Geeignet für Werkstücke mit geringern Schneidwiderstand und guter Spanentfernung, z.B. Gusseisen, Aluminium, Plastik usw.
Diese Form wird besonders dann angewendet, wenn der Bohrer für Stähle mit hoher Härte produziert wurde, da dadurch der Seitenspanwinkel verkleinert wird und Brüche an der Schneidkante vermieden werden.

(6) Type D thinning (DIN1412 FORM D)

DIN 1412 Form D Kegelmantelanschliff mit ausgespitzern Kern

Grey cast iron thinning; bevelling of external edges strengthens the cutting edge.
Used for medium to high grey cast iron hardness and for abrasives.

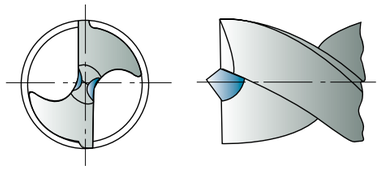


GG-Anschliff; Fasen auf dem Steg verstärken die Schneidkante.
Geeignet für medium bis hohe Härte GG und für abrasive Materialien.

(7) Type E thinning (DIN1412 FORM E)

DIN 1412 Form E Zentrumspitze

Center drill bit thinning; ensures optimal center drilling and does not leave burs in through holes.
As the bit and cutting edges are delicate, this bit should be used far drilling thin sheet metal.



Zentrisches Bohren, Niedrige Gratbildung, Geeignet zum Bohren von dünnen Blechen und Rohren.

Surface Finishes for high speed steels Twist Drills
Oberflächenbeschaffenbeit von HSS-Spiralbohrern

(1) Bright Finish — Helle Beschaffenheit

Drills with a bright finish are without surface treatment and ground condition.
Especially bright finished drills are used in machining of non ferrous materials.
Ohne Oberflächenbehandlung, geeignet zum Bearbeiten von Nichteisen Materiallen.

(2) Coloring (Gold color) — Farbe (Bernstein)

The coloring is a thin oxide layer formed on the tool surfaces. Dies ist eine dünne Oxidschicht.
This is often applied to cobalt high speed steels twist drills. Geeignet für Kobalt-HSS-Spiralbohrer.

(3) Steam Tempered (black oxide finish) — Dampfoxidierte Ausführung

This is a black oxide layer 1-2㎛ formed on the tool surfaces.
Steam Tempered treated drill is the result of a steam tempering operation. Because the oxide layer retains some coolant on the tool surface, and aids chip flow, helps to dissipate heat, steam homo treated drills are recommended for ferrous applications.
Eine schwarze Oxidschicht 1-2㎛.
Da die Oxidschicht Kühlmitteleigenschaften auf der Werkzeugoberfläche beinhaltet und den Spanfluss verbessert und die Hitze verteilt, sind diese Bohrer für die Bearbeitung von Metal-Werkstücken empfohlen.

TECHNICAL DATA

COATING
BESCHICHTUNGEN

The use of coated cutting tools reduce production costs.
For example
- Avoidance of machine downtime due to premature tool wear.
- Higher cutting capabilities to reduce actual machining times.
- Reproducible tool life.
- Improvement of component surface quality.

Durch den Gebrauch von beschichteten Werkzeugen werden Produktionskosten reduziert, z.B.
- Vermeidung von Maschinen-Ausfallzeiten wegen frühzeitigem Verschieiß des Bohrers.
- Höhere Bohrleistung, dadurch Verminderung von Arbeitszeit.
- Längere Standzeit.
- Verbesserte Oberflächengüte des Werkstücks.

(1) TiN (Titanium Nitride) coating — TiN (Titan-Nitrid) Beschichtung

Titanium Nitride gives the tool a higher performance in comparison to traditional non-coated drills.
TiN coating, with good all-around properties, is recommended for the general application, i.e., attack by abrasive, adhesive and chemical wear in equal proportions.
Bessere Leistung im Vergleich zu unbeschichteten Werkzeugen
TiN-Beschichtung wird für allgemeine Anwendungen empfohlen guten.

(2) TiCN (Titanium Carbon Nitride) coating — TiCN (Titan karbon Nitrid) Beschichtung

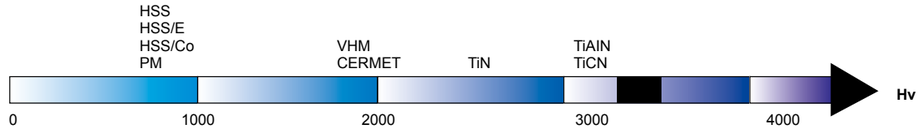
TiCN coating should be employed when severe thermodynamic stress is expected, for example when drilling in high hardened steels or in mild steels with high speed and feed.
Diese Beschichtung soll bei extremen thermodynamischen Bedingungen verwendet werden, z.B. bei Bohren von Stählen mit hoher Härte und Stähle mit hoher Geschwindigkeit und Vorschub.

(3) TiAlN (Titanium Alumium Nitride) coating — TiAlN (Titan Aluminium Nitrid) Beschichtung

The addition of Aluminum to the Titanium Nitride produces an increase in hardness and an exceptional increase in resistance to oxidation at high temperature.
TiAlN coating is applied to drilling with severe thermal stress on cutting edges when continuous non-step feed, dry cutting or high speed cutting.
Der Zusatz von Aluminium zum Titan-Nitrid ermöglicht eine höhere Härte und einen auß erordentlich guten Widerstand gegen Oxidation und hohe Temperaturen.
Geeignet zum Bohren unter extremen thermischen Bedingungen auf der Hauptschneide bei kontinuierlichem Vorschub, Trockenschnitt oder Hochgeschwindigkeitsbohren.

(4) Properties of coating — Beschichtungs-Eigenschaften

Properties	TiN	TiCN	TiAlN
Coating color Beschichtungsfarbe	gold - yellow	blue - grey	violet - grey
Hardness (Hv 0.05) härtegrad (Hv 0.05)	2300	3000	3000
Coating thickness (㎛) Beschichtungsdicke (㎛)	1~4	1~4	1~5
Max. working temperature (°C) Max. Arbeitstemperatur (°C)	600	400	800
Coefficient of friction against steels (dry) Reibungskoeffizient für stahl (trocken)	0.4	0.4	0.4



TECHNICAL DATA

(5) Selection of coating Verschiedene Beschichtungen

Properties	TiAlN	
Unalloyed steels Unlegierter Stahl	TiCN, TiAlN	TiCN, TiAlN
Steels < 1000 N/mm² Stahls < 1000 N/mm²	TiCN, TiAlN	TiCN, TiAlN
Steels > 1000 N/mm² Stahls > 1000 N/mm²	TiCN, TiAlN	TiCN, TiAlN
Stainless steels Edelstäle	TiCN, TiAlN	TiCN, TiAlN
Cast iron Gusseisen	TiCN, TiAlN	TiAlN
Al-wrought alloys Al-Knetlegierungen	TiN	TiN
Al-cast alloys Al-Gusslegierungen	TiCN	TiCN
Copper (pure) Kupfer (pur)	CrN	CrN
Brass Messing	TiCN	TiCN
Bronze Bronze	TiCN	TiCN

DRILL SIZES BEFORE TAPPING
DURCHMESSER FÜR BOHRWERKZEUGE FÜR GEWINDEKERNLÖCHER

(1) Metric - ISO threads coarse pitch Metrisch - ISO Gewinde, grobverzahnt

Nominal diameter	Drill diameter	Nominal diameter	Drill diameter	Nominal diameter	Drill diameter	Nominal diameter	Drill diameter
		M3	2.5	**M11**	9.5	**M30**	26.5
M1	0.75	**M3.5**	2.9	**M12**	10.2	**M33**	29.5
M1.2	0.95	**M4**	3.3	**M14**	12.0	**M36**	32.0
M1.4	1.1	**M5**	4.2	**M16**	14.0	**M39**	35.0
M1.6	1.25	**M6**	5.0	**M18**	15.5	**M42**	37.5
M1.8	1.45	**M7**	6.0	**M20**	17.5	**M45**	40.5
M2	1.6	**M8**	6.8	**M22**	19.5	**M48**	43.0
M2.2	1.75	**M9**	7.8	**M24**	21.0	**M52**	47.0
M2.5	2.05	**M10**	8.5	**M27**	24.0	**M56**	50.5

(2) Metric ISO threads fine pitch
Metrisch - ISO Gewinde, feinverzahnt

Nominal diameter	Tap Pitch	Drill diameter
2.5	0.35	2.15
3	0.35	2.65
3.5	0.35	3.15
4	0.5	3.5
4.5	0.5	4
5	0.5	4.5
5.5	0.5	5
6	0.75	5.2

Nominal diameter	Tap Pitch	Drill diameter
7	0.75	6.2
8	0.75	7.2
8	1	7
9	0.75	8.2
9	1	8
10	0.75	9.2
10	1	9
10	1.25	8.8

TECHNICAL DATA

Nominal diameter	Tap Pitch	Drill diameter
11	0.75	10.2
11	1	10
12	1	11
12	1.25	10.8
12	1.5	10.5
14	1	13
14	1.25	12.8
14	1.5	12.5
15	1	14
15	1.5	13.5
16	1	15
16	1.5	14.5
17	1	16
17	1.5	15.5
18	1	17
18	1.5	16.5
18	2	16
20	1	19
20	1.5	18.5
20	2	18
22	1	21
22	1.5	20.5
22	2	20
24	1	23
24	1.5	22.5
24	2	22
25	1	24
25	1.5	23.5
25	2	23
26	1.5	24.5
27	1	26
27	1.5	25.5
27	2	25
28	1	27
28	1.5	26.5
28	2	26

Nominal diameter	Tap Pitch	Drill diameter
30	1	29
30	1.5	28.5
30	2	28
30	3	27
32	1.5	30.5
32	2	30
33	1.5	31.5
33	2	31
33	3	30
35	1.5	33.5
36	1.5	34.5
36	2	34
36	3	33
38	1.5	36.5
39	1.5	37.5
39	2	37
39	3	36
40	1.5	38.5
40	2	38
40	3	37
42	1.5	40.5
42	2	40
42	3	39
45	1.5	43.5
45	2	43
45	3	42
48	1.5	46.5
48	2	46
48	3	45
50	1.5	48.5
50	2	48
50	3	47
52	1.5	50.5
52	2	50
52	3	49

(3) WITHWORTH pipe threads (BSP)
WITHWORTH Rohrgewinde (BSP)

Nominal size	Drill diameter	Nominal size	Drill diameter
inches	mm	inches	mm
G1/8	8.8	G1-1/4	39.5
G1/4	11.8	G1-3/8	42.0
G3/8	15.25	G1-1/2	45.0
G1/2	19.0	G1-3/4	51.0
G5/8	21.0	G2	57.0
G3/4	24.5	G2-1/4	63.0
G7/8	28.25	G2-1/2	73.0
G1	30.75	G2-3/4	79.0
G11/8	35.5	G3	85.0

(4) American unified coarse threads Amerikanischer Standard, Grobverzahnung

UNC	Drill diameter		UNC	Drill diameter	
	inches	mm		inches	mm
No. 1	53	1.51	**7/16**	U	9.35
No. 2	50	1.78	**1/2**	27/64	10.71
No. 3	47	1.99	**9/16**	31/64	12.30
No. 4	43	2.26	**5/8**	17/32	13.49
No. 5	38	2.58	**3/4**	21/32	16.67
No. 6	36	2.71	**7/8**	49/64	19.44
No. 8	29	3.45	**1**	7/8	22.22
No. 10	25	3.8	**1-1/8**	63/64	25.00
No. 12	16	4.5	**1-1/4**	1-7/64	28.18
1/4	7	5.11	**1-3/8**	1-7/32	30.95
5/16	F	6.53	**1-1/2**	1-11/32	34.13
3/8	5/16	7.94			

(5) American unified fine threads Amerikanischer Standard, Feinverzahnung

NF	Drill diameter		NF	Drill diameter	
	inches	mm		inches	mm
No. 0	3/64	1.19	**3/8**	Q	8.43
No. 1	53	1.51	**7/16**	25/64	9.92
No. 2	50	1.78	**1/2**	29/64	11.51
No. 3	45	2.08	**9/16**	33/64	13.10
No. 4	42	2.37	**5/8**	37/64	14.86
No. 5	37	2.64	**3/4**	11/16	17.46
No. 6	33	2.87	**7/8**	13/16	20.64
No. 8	29	3.45	**1**	59/64	23.42
No. 10	21	4.04	**1-1/8**	1-3/64	26.59
No. 12	14	4.62	**1-1/4**	1-11/32	29.76
1/4	3	5.41	**1-3/8**	1-19/32	32.94
5/16	1	6.91	**1-1/2**	1-27/64	36.11

ISO TOLERANCE
ISO TOLERANZ

㎛=1/1000mm

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

TECHNICAL DATA

TROUBLE SHOOTING IN DRILLING
PROBLEME UND ABHILFE

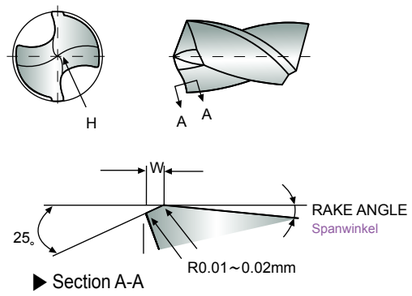
Occurrence of trouble	Cause of trouble	Countermeasures
Drill will not enter work **Bohrer dringt nicht durch werkstück**	1. Drill is dull. 2. Lip relief too small. 3. Too thick a web. 1. Bohrer ist stumpf 2. Hauptschneide ist zu klein 3. Kern ist zu dick	1. Grind lip relief sufficiently. 2. Grind web thinning. 3. Choose a drill with narrow web. 1. Schleifen der Hauptschneide 2. Kegeimantel schleifen 3. Bohrer mit engerem kern wählen
Margin chipping **Fasenbruch**	1.Oversized jig bushing. 1. Bohrbuchse ist zu ungleich.	1. Choose the suitable jig bushing for drill diameter 1. Den passenden Bohrbuchse wählen.
Cutting lip breaks **Bruch der Hauptschneide**	1. Lip relief too much. 2. Feed too heavy. 1. Zu große Entlastung der Hauptschneide 2. Vorschub zu stark	1. Grind lip relief sufficiently. 2. Decrease feed rate. 1. Schleifen der Hauptschneide 2. Vorschub verringern
Tang breaks **Bruch der Austrieblappen am kagelschaft**	1. Imperfect fit between taper shank and socket. 2. Burred or Badly worn sockets. 1. Befestigung zwischen Morsekegel und Aufnahme ungenügend 2. Verschleiß der Aufnahme	1. Clean the dirt or chips in sockets. 2. Change the worn sockets to new ones. 1. Schmutz oder Späne in der Aufnahme entfernen 2. Aufnahme wechseln
Drill breaks in brass **Bohrer bricht in Messing**	1. Unsuitable drill 2. Flutes clogged with chips 1. Unpassender Bohrer 2. Schneiden durch Späne verstopft	1. Choose the suitable drill for work material. 1. Den passenden Bohrer wählen
Chipping of drill center **Brüche auf der Querschneide**	1. Lip relief too much. 2. Feed too heavy. 1. Zu große Entlastung der Hauptschneide 2. Vorschub zu stark	1. Grind lip relief sufficiently. 2. Decrease feed rate. 1. Schleifen der Hauptschneide 2. Vorschub verringern
Hole oversize **Übergröße des Lochs**	1. Unequal angle or length of cutting edges. 2. Loosen spindle. 1. Ungleicher Winkel oder Länge der Hauptschneiden 2. Lockere Spindel	1. Resharpening point, choose correct drills. 2. Tighten spindle sufficiently. 1. Nachschleifen der Bohrspitze, passenden Bohrer wählen 2. Spindel ausreichend befestigen
Outer corners broken down. **Brüche in der Schneidenecke**	1. Cutting speed too high. 2. Hard spots in work material. 3. Flutes clogged with chips. 4. Too wear of drills. 1. Schnittgeschwindigkeit zu hoch 2. Harte Flächen im Werkstück 3. Schneiden durch Späne verstopft 4. Verschieiß des Bohrers zu groß	1. Grind point to suit work material. 2. Decrease the feed rates. 3. Resharpening early beforce too wear. 1. Bohrspitge nachschleifen und ans Werkstück anpassen 2. Vorschub verringern 3. Nachschleifen vor zu groß ern Verschleiß
Large chip of one flute and small chip of other flute **Ungleiche Späne auf den Schneiden**	1. Improperly ground point. 2. Only one lip doing all the cutting 1. Bohrspitze nicht richtig geschliffen 2. Nur eine Schneide bohrt	1. Properly grind point. 2. Grind point with same point angle and length of lip 3. Grind with small lip height. 1. Bohrspitze richtig schleifen 2. Bohrspitze mit dern gleichen Spitzenwinkel und Länge nachschleifen 3. Schleifen mit geringer Hauptschneidenhöhe
Hole rough **Grobes Loch**	1. Improperly ground point. 2. Unenough coolant supply 3. Too much feed. 4. Fixture not rigid. 1. Bohrspitze nicht richtig geschliffen 2. Ungenügende Kühlmittelzufuhr 3. Vorschub zu hoch 4. Befestigung nicht stabil	1. Properly grind point. 2. Supply coolant enough. 3. Decrease the feed rate. 4. Tighten the fixture or replace. 1. Bohrspitze richtig schleifen 2. Genügend Kühlmittel züfuren 3. Vorschub verringern 4. Befestigung stabilisieren oder erneuern

16 CHARACTERISTIC OF DREAM DRILLS
MERKMALE VON DREAM BOHRER

- YG-1's Dream Drill Series are suitable for high speed and accurate drilling operations by special design and high quality.
  YG-1's DREAM Bohrer Serien sind durch ihre spezielle konstruktion und höchste Genauigkeit geeignet zum Hochgeschwindigkeitsbohren und für genaue Bohrvorgänge.
- Good performance for Steels, Cast Irons, Tool steels, Alloy steels and Stainless steels.
  Gute Leistung bei Stählen, Grauguss, Werkzeugstählen, Stahllegierungen sowie bei Rost-und Säurebeständigen Stählen.
- Rapid chip evacuation and excellent chip breaking can be achieved by special designed cutting edges on point and chip breakers on leading edges.
  Schnelle Spanabfuhr und hervorragender Spanbruch durch speziell entwickelte Schneidengeometrien und Spanbrechern.
- High accuracy and stability.
  Hohe Genauigkeit und Stabilität.
- Longer tool life with TiAlN coating.
  Höhere Standzeiten mit TiAlN-Beschichtungen.
- Self-centering
  Selbstzentrierend

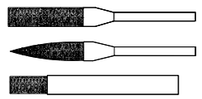
17 HONING GUIDE OF DREAM DRILLS
HINWEIS ZUM HONEN VON DREAM BOHRER

■ **Dimension of Honing**
Abmessung beim Honen



▶ Section A-A

■ **Scraper**
Schaben



for Roughing (#140)
Grob

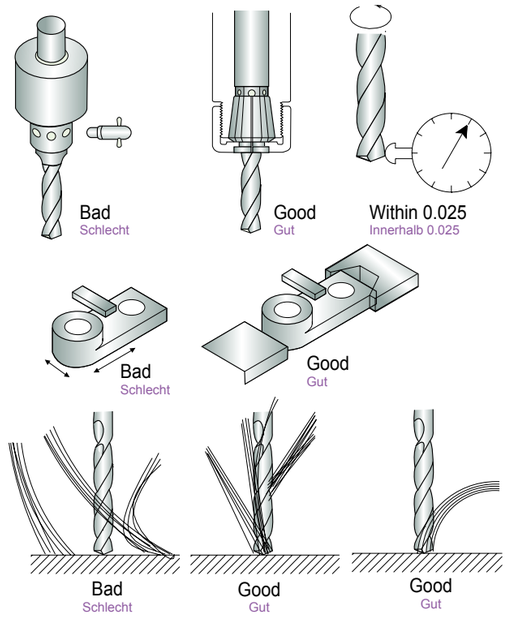
for Finishing (#230~#400)
Finish

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

▶The dimension W of stocked products is 0.1~0.15.
Das Maß w ist bei lagerhaltigen Produkten 0.1~0.15.

TECHNICAL DATA

18 USE OF DREAM DRILLS
VERWENDUNG VON DREAM BOHRER



▶ Chucking with spring collet correctly.
Richtiges Spannen mit Spannzangen.

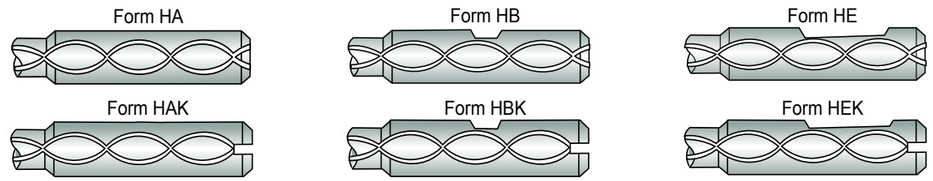
▶ Radial run out at cutting lip must not exceed 0.025 mm.
Radialer Rundlauf und der Schneidlippe darf nicht 0.025 überschreiten.

▶ Tighten clamp of work piece.
Sicheres Spannen des Werkstückes

▶ Supply coolant enough to the entrance of hole.
Ausreichend Kühlmittelzufluss am Bohrloch.

▶ When using Dream Drills with Coolant holes, supply high pressure coolant.
Beim Verwenden von DREAM BOHRER mit Kühlkanal wird Hochdruckkühlung benötigt.

19 SHANK TYPE DREAM DRILLS WITH COOLANT HOLES
SCHAFTAUSFÜHRUNG DREAM BOHRER MIT KÜHLKANAL



▶ Shank Type of stocked products is Form HA.
Schaftausführung von lagerhaltigen Produkten ist HA.

▶ Other shank types are available on your request.
Andere Schaftausführungen können geliefert werden.

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	Examples
P	1	Non-alloyed steel	About 0.15% C	Annealed	125		S15C, C15, 1015
	2		About 0.45% C	Annealed	190	13	S45C, C45, 1045
	3		About 0.45% C	Quenched & tempered	250	25	
	4		About 0.75% C	Annealed	270	28	SK5, Ck75, 1080
	5		About 0.75% C	Quenched & Tempered	300	32	
	6	Low-alloyed Steel		Annealed	180	10	SCM440, 42CrMo4, 410
	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	SKD, D2
	11			Quenched & Tempered	325	35	SKH, SUH, M42
M	12	Stainless Steel	Ferritic / Martensitic	Annealed	200	15	SUS 420, X40Cr13, 420
	13		Martensitic	Quenched & Tempered	240	23	
	14		Austenitic		180	10	SUS 316, 316, X5CrNiMo 17 12 2
K	15	Grey cast iron	Pearlitic / Ferritic		180	10	FC, GG, EN-GJL-250
	16		Pearlitic (Martensitic)		260	26	
	17	Nodular cast iron	Ferritic		160	3	FCD, GGG, EN-GJS-500-7
	18		Pearlitic		250	25	
	19	Malleable cast iron	Ferritic		130		FCMW, FCMP, GTS, GJMB350-10
	20		Pearlitic		230	21	
N	21	Aluminum-wrought alloy	Not Curable		60		SAE 1000, AlMg 1, 3.3315
	22		Curable	Hardened	100		SAE 7050, AlCuMg 1, 3.1325
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		ADC12, G-AlSi12, 3.2581
	24		≤ 12% Si, Curable	Hardened	90		C4BS, G-AlSi10Mg, 3.2381
	25		> 12% Si, Not Curable		130		
	26	Copper and copper alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110		CuZn36Pb 3, 2.0375
	27		CuZn, CuSnZn (Brass)		90		CuZn 15, 2.0240
	28		CuSn, lead-free copper and electrolytic copper		100		G-CuZn40Fe, 2.0590
	29	Non-metallic materials	Duroplastic, Fiber Reinforced Plastic				CFRP
	30		Rubber, Wood, etc.				
S	31	Heat resistant super alloys	Fe Based	Annealed	200	15	X12 NiCrSi 36-16, 1.4864
	32			Aged	280	30	
	33		Ni or Co Based	Annealed	250	25	Inconel 718, NiCr20TiAl, 2.4631
	34			Aged	350	38	NiCu30Al, 2.4375
	35			Cast	320	34	G-X120Mn12, 1.3401
	36	Titanium alloys	Pure Titanium		400 Rm		
	37		Alpha + Beta Alloys	Hardened	1050Rm		TiAl6V4, 3.7165
H	38	Hardened steel		Hardened	550	55	SK3
	39			Hardened	630	60	
	40	Chilled cast iron		Cast	400	42	
	41	Hardened cast iron		Hardened	550	55	

P	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	1	Non-alloyed steel	About 0.15% C, Annealed	125	

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.0037	STKM 12 C	St 37-2	-	4360 40 B	S235JR	E24-2	1311	Fe 360 B			16D	
1.0038	STKM 12 A	St 37-3	A570.36	4360 40 C	S275J2G3	E28-3	1312	Fe 360 D FF			ST14KP	
1.0045	SM 490 YA	S 355 JR	-	-	S 1207	E36-2	-	Fe 510 BFN				
1.0050	SS 50	St 50-2	A570 Gr. 50	4360 50 B	E 295	A50-2	2172	Fe 490			ST5PS	
1.0060	SM 58	St 60-2	A572 Gr. 65	4360 55 E	-	A60-2	1650	Fe 60-2			ST6PS	
1.0114		S 235 J0	-	En 40C	S 235 J0	E24-3		Fe 360 CFN				
1.0143		S 275 J0	-	-	S 275 J0	E28-3	1414	Fe 430 C				
1.0144	SM41C, SM400	St 44-3 N	A573 Gr. 81	4360 43C	S 275 J2 G3	E28-3	1412	Fe 430 D FF			ST14KP	
1.0149		Ro St 44-2	-	43C	S 275 J0 H	-	1412	Fe430C				
1.0301	S10C	C10	1010	045M10	C10	34C10, XC10		C10	F.1511	G10100	10	
1.0330	SPCC	St 12	-	DC 01	Fe P01	DC 01/Fe P01	1142	Fe P01			15KP	
1.0335	SPHE	D D 13 (StW 24)	A622(1008)	H S 3	D D 13	3C		FeP13			08KP	
1.0338	SPCE	St 4	A620(1008)	14491CR	Fe P04	Fe 14	1147	DC04/FeP04			08JU	
1.0345	SPV 50	P235 GH	A516 Gr. 65	P 235 GH	P 235 GH	A 37 CP	1330	Fe E 235		K02503		
1.0401	S15C	C15	1015	080M15	-	C18RR, XC18	1350	C15, C16	F.1110	G10170	15	
1.0402	S20C	C22	1020	050 A 20	1 C 22	C20	1450	C 20	F.1120	G10200	20	
1.0425	SPV315	P265GH/HII				A42CP	1430	Fe4101KW		K02801	16K	
1.0443	SC 450	GS-45	A2765-35	A1		E23-45M	1305					
1.0539		S355NH				TSE355-4	2134	Fe510B				
1.0545		S355N		4360-50E		E355R	2334	FeE355KG				
1.0546		S355NL		4360-50EE		E355FP	2135	FeE355KT				
1.0547		S355J0H		4360-50C		TSE355-3	2172	Fe510C				
1.0549		S355NLH					2135	Fe510D				
1.0553	SM 520 M	St52-3U	A14880-40	4360-50C		320-560M	1606	Fe510C				
1.0562	SM490A	St E 355	A633 Gr. C	P 355 N		FeE355KGN	2132	Fe E 355 KG		K12000	15GF	
1.0565		W St E 355		P 355 NH		P 355 NH	2106	Fe E 355 KW		K01600		
1.0566	SLA 37	T St E 355		P 355 NL1		P 355 NL1	2107	Fe E 355 KT				
1.0570	SM 50 YA	St 52-3	1	4360-50 C	S355JR	E36-3	2172	Fe 510 B			17G1S	
1.0715	SUM22	9SMn28	1213	230M07		S250	1912	CFSMn28	F.2111	G12130		
1.0718	SUM22L	9SMnPb28	12L13			S250Pb	1914	CF9SMnPb28	F.2112	G12134		
1.0721		10S20	1108	10S20		10S20		CF10S20	F.2121	G11080		
1.0722		10SPb20	11L08			10PbF2		CF10SPb20		G11084		
1.0736	SUM25	9SMn36	1215			S300		CF9Mn36	F.2113	G12150		
1.0737		9SMnPb36	12L14			S300Pb	1926	CF9SMnPb36	F.2114	G12144		
1.0972		S315MC		1501-40F30		E315D						
1.0976		S355MC		1501-43F35		E355D	2642	FeE355TM				
1.0982		S460MC		1501-50F45								
1.0984		S500MC				E490D	2662	FeE490TM				
1.0986		S500MC		1501-60F55		E560D		FeE560TM				
1.1121	S10C	Ck10	1010	040A10		XC10	1265	C10	F.1510	G10100	10	
1.1141	S15	Ck15	1015	040A15	32C	XC15	1370	C15	F.1110	G10150	15	
1.1151	S20C	C22E	1020	055M15		2C22	1450	C20	F.1120	G10230	20	
1.8900	S25C	StE380	A572-60	436055E			2145	FeE390KG				
		St44-2	A36	436043A		NFA35-501E28	1411					
		StE320-3Z		1501160			1421					

P — VDI 3323: 2

Material Description: Non-alloyed steel
Composition / Structure / Heat Treatment: About 0.45% C, Annealed
HB: 190
HRc: 13

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.0501	S35C	C35	1035	080A32		1C35	1572	C35	F.113	G10350	35	
1.0503	S45C	C45	1045	060A47		XC42H1TS	1672	C45	F.114	G10450	45	
1.0511	S40C	C40	1040	080M40		1C40		C40	F.114.A	G10400	40	
1.0540	S 50 C	C50					1674	C50		G10500		
1.0551		GS-52	A2770-36	A2		280-480M	1505					
1.0553	SM 520 M	St52-3U	A14880-40	4360-50C		320-560M	1606	Fe510C				
1.0577		S 355 J 2 G 4	A738	Fe 510 D 2 FF		A52FP	2107					
1.0726		35S20	1140	212M36	8M	35MF6	1957			G11400	40	
1.0727		45S20	1146			45MF4	1973			G11460		
1.1157		40Mn4	1039	150M36	15	40M5				G10390	40G	
1.1158	S25C	C25E	1025	070M25		XC25		C25	F.1120	G10250	25	
1.1166	SMn433H	34Mn5	1536						T0.B	G15360		
1.1167	SMn438(H)	36Mn5	1335	150M36		40M5	2120	36Mn6	F.1203	G13350	35G2	
1.1170	SCMn1	28Mn6	1330	150M28	14A	20M5		C28Mn	28Mn6	G13300	30G	
1.1178	S 30 C	C30E		080M30		XC32		C30	2C30	G10300		
1.1180		C35R	1035	080A35		3C35	1572		F.1135	G10350		
1.1181	S35C	C35E	1035	080A35		XC38	1572	C36	F.1130	G10340	35	
1.1191	S45C	Ck45	1045	080A46		XC45	1672	C45	F.1140		45	
1.1206	S 50 C	C50E	1050	080M50		2C50	1674	C50		G10500	50	
1.1213	S50C	Cf53	1050	070M55		XC48HTS	1674	C53		G10500	50	

P — VDI 3323: 3

Material Description: Non-alloyed steel
Composition / Structure / Heat Treatment: About 0.45% C, Annealed
HB: 250
HRc: 25

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.0481	SG365	17 Mn 4/P 295 GH	A516 Gr. 70	224-460B	P 295 GH	A 48 CP	2102	Fe E 295	A47RCI	K03501	14G2	
1.0501	S35C	C35	1035	080A32		1C35	1572	C35	F.1130	G10350	35	
1.0503	S45C	C45	1045	060A47		XC42H1TS	1672	C45	F.1140	G10450	45	
1.0614		C76D	1074			XC75				G10750		
1.0616		C86D	1086			XC80		C85		G10860		
1.0618		C92D	1095			XC90				G10950		
1.0726		35S20	1140	212M36	8M	35MF6	1957			G11400	40	
1.1157		40Mn4	1039	150M36	15	40M5				G10390	40G	
1.1165	SMn433H	30Mn5	1036	120M36		35M5		30Mn5	F.8211	K13300	30G2	
1.1167	SMn438(H)	36Mn5	1335	150M36		40M5	2120	36Mn6	F.1203	G13350	35G2	
1.1186	S40C	C40E	1040	060A40		2C40		C40		G10400		
1.1191	S45C	Ck45	1045	080M46		2C45	1672	C45	F.1140		45	
1.1201	S50C	C45R	1049	080M46		3C45	1660	C45	F.1145		38HM	
1.1213	S50C	Cf53	1050	070M55		XC48HTS	1674	C53		G10500	50	
1.7242	SCM 418 H	18CrMo4										
1.7337		16CrMo4-4	A387 Gr.12					A18CrMo45KW		K11564	15C M	
1.7362	SCMV 6	12CrMo195		3606-625		Z10CD5-05		16CrMo205		K41545		
		17MnV6	A572-60	436055E		NFA35-501E36	2142					

P — VDI 3323: 4

Material Description: Non-alloyed steel
Composition / Structure / Heat Treatment: About 0.75% C, Annealed
HB: 270
HRc: 28

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.0603	S 70 C -CSP	C67	107	080A67		XC65		C67		G10700		
1.0605		C75	1075	144980HS				C75		G10740	75	
1.1203	S55C	Ck55	1055	060A57		2C55	1655	C55	F.1150	G10550	55	
1.1209		C55R	1055	070M55		3C55		C55	F.1155	G10550		
1.1221	S58C	Ck60	1060	060A62	43D	2C60	1678	C60	F.1150	G10640	60	
1.1231	S 70 C-CSP	C67E	1070	060A67		XC68	1770	C70	F.5103	G10700	65GA	
1.1248	C 75	C75E	1074	060A78		XC75	1774	C75	F.5107	G10800	75(A)	
1.1269	SK 5 -CSP	C85E	1086			XC90		C90		G10900	85(A)	
1.1274	SUP4	Ck 101	1095	060 A 96	C 100S	XC100	1870	C100	F.5117	G10950		
1.1545	SK 3	C 105 W1	W1	BW 2	C 105U	Y1 105	1880	C 100 KU	F.5118		U10A	
1.1663	SK 2	C125W	W112			Y2120					U13	

P — VDI 3323: 5

Material Description: Non-alloyed steel
Composition / Structure / Heat Treatment: About 0.75% C, Quenched & Tempered
HB: 300
HRc: 32

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.0070		St 70-2	1055	Fe690-2FN	-	A70-2	1655	Fe 690	F.1150		55	
1.0535	S55C	C55	1055	070M55		1C55	1655	C55		J05000	55	
1.0601	S58C	C60	1060	060A62	43D	1C60		C60		G10600	60(G)	
1.1203	S55C	Ck55	1055	060A57		2C55	1655	C55	F.1150	G10550	55	
1.1221	S58C	Ck60	1060	060A62	43D	2C60	1678	C60	F.1150	G10640	60	
1.1274	SUP4	Ck 101	1095	060 A 96	C 100S	XC100	1870	C100	F.5117	G10950		
1.1545	SK 3	C 105 W1	W1	BW 2	C 105U	Y1 105	1880	C 100 KU	F.5118		U10A	
1.1663	SK 2	C125W	W112			Y2120					U13	
1.5120		38MnSi4										
1.5710	SNC236	36NiCr6	3135	640A35	111A	35NC6						
1.7701		51CrMoV4						51CrMoV4				

P	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	6	Low-alloyed Steel	Annealed	180	10

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.0116		St 37-3	A570 Gr. 36	4360-40C	S 235 J2 G3	E24-3	1312	Fe 360 D1(2)	AE235D		ST3KP	
1.0904	SKH 1, SKT 4	55Si7	9255	250A53	45	55S7	2085	55Si8	56Si7	G92550	55S2	
1.0961	SUP 7	60SiCr7	9262			60SC6		60SiCr8	60SiCr8	G92620		
1.2067		100Cr6	L3	BL3		Y100C6			100Cr6			
1.2108		90CrSi5	L1				2092	105WCR5				
1.2210		115CrV3	L2			100C3		107CrV3KU	F.520L		11KHF	
1.2241		51CrV4										
1.2330	SCM435TK	35CrMo4	4135	708A37		34CD4	2234	35CrMo4			35KHM	
1.2419	SKS31	105WCr6		105WC13		105WC13	2140	10WCr6			C WG	
1.2510	SKS3	100MnCrW4	01	BO1		90 MWCV 5	2140	95 MnWCr 5 KU	F.5220		9KHVG	
1.2542		45WCrV7	S1	BS1			2710	45WCrV8KU			5C W25F	
1.2550		60WCrV7	S1			55WC20	2710	58WCr9KU			5KHV2SF	
1.2713	SKT4	55NiCrMoV6	L6			55NCDV7			F.520S		5C NM	
1.2721		50NiCr13	L6			55NCV6	2550		F.528			
1.2842		90MnCrV8	O2	BO2		90MV8				T31502	9G2F	
1.3501		100Cr2	E50100									
1.3505	SUJ2	100Cr6	52100	2S135	31	100C6	2258	100Cr6	F.1310		5C C 15	
1.5024		46Si7				45S7		46SI7	F.1451			
1.5025		51Si7	9259H		50Si7	51S7	2090	50Si7	F.1450			
1.5026		55Si7			56Si7	55S7	2085	55Si7	F.1440	G92550	55S2	
1.5027		60Si7	9260	251A60	60Si7	60S7		60Si7	F.1441	G92600	60S2	
1.5028	SUP7	65Si7	9260H									
1.5415	STFA 12	15Mo3	A204Gr.A	1503-243B		15D3	2912	16Mo3(KG)	F.2601	K11820		
1.5419	SCPH11	20Mo4	4419	1503-243-430			2512	G20Mo5		G44190		
1.5423	SB450M	16Mo5	4520	1503-245-420				16Mo5(KG)	F.2602	K11522		
1.5622		14Ni6	A350-LF5			16N6		14Ni6(KG)	F.2641			
1.5732	SNC415(H)	14NiiCr10	3415			14NC11		16NiCr11				
1.5752	SNC815(H)	14NiCr14	3310	655M13	36A	12NC15					20X2H4A	
1.6511	SUP10	36CrNiMo4	9840	816M40	110	40NCD3		36NiCrMo4(KB)			40C N2MA	
1.6523	SNCM220(H)	21NiCrMo2	8620	805M20	362	20NCD2	2506	20NiCrMo2			20C GNM	
1.6546	SNCM240	40NiCrMo2-2	8740	311-Tyre7				40NiCrMo2(KB)			38C GNM	
1.6566		17NiCrMo6-4										
1.6587		17CrNiMo6		820A16		18NCD6		14NiCrMo13				
1.6657		10NiCrMo13-4						14NiCrMo131				
1.7015	SCr415(H)	10Cr3	5015	523M15		12C3				G50150	15C	
1.7033	SCr430(H)	34Cr4	5132	530A32	18B	32C4		34Cr4(KB)		G51300	35C	
1.7035	SCr440(H)	41Cr4	5140	530M40	18	42C4	2245	41Cr4		G51400	40H	
1.7131	SCR 415	16MnCr5	5115	527M17		16MC5	2511	16MnCr5		G51150	12KHN2	
1.7139		16MnCrS5					2127				18HG	
1.7176	SUP9(A)	55Cr3	5155	527A60	48	55C3	2253	55Cr3			50C GA	
1.7218	SCM420	25CrMo4	4130	CDS110		25CD4	2225	25CrMo4(KB)			20C M	
1.7220	SCM432	34CrMo4	4135	708 A 37		35CD4	2234	34CrMo4			35C M	
1.7223	SNB22-1	41CrMo4	4142					41CrMo4			40C FA	
1.7225	SCM 440 (H)	42CrMo4	4140	708 M 40	42 CrMo 4	42 CD 4	2244	42 CrMo 4	F.1252		38HM	
1.7228		55NiCrMoV6G		823M30	33		2512	653M31				
1.7262	SCM415(H)	15CrMo5				12CD4	2216	12CrMo4				
1.7321		20mOcR4					2625					
1.7335	SCM415(H)	13CrMo4-4	A182-F11	1501-620		15CD4-5	2216	14CrMo45			12C M	
1.7361		32CrMo12		722M24	40B	30CD12	2240	30CrMo12	F.124A			
1.7380		10CrMo9-10	A182F22	1501-622		12CD9-10	2218	12CrMo9			12KH8	

P	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	6	Low-alloyed Steel	Annealed	180	10

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.7715		14MoV6-3		1503-660-440				13MoCrV6				
1.8159	SUP 10	50CrV4	6150	735A50	47	50CrV4	2230	50CrV4		G61500	50C GFA	
1.8161		58CrV4										
1.8509	SACM 645	41CrAlMo7	A355A	905M39	41B	40CAD6-12	2940	41CrAlMo7				
1.8523		39CrMoV13-9		897M39	40C			36CrMoV12				

P	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	7	Low-alloyed Steel	Quenched & Tempered	275	29

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.5415	STFA 12	15Mo3	A204Gr.A	1503-243B		15D3	2912	16Mo3(KG)	F.2601	K11820		
1.5423	SB450M	16Mo5	4520	1503-245-420				16Mo5(KG)	F.2602	K11522		
1.5622		14Ni6	A350-LF5			16N6		14Ni6(KG)	F.2641			
1.5732	SNC415(H)	14NiiCr10	3415			14NC11		16NiCr11				
1.5752	SNC815(H)	14NiCr14	3310	655M13	36A	12NC15					20X2H4A	
1.5755	SNC236	31NiCr14		653M31		18NC13	2534		F.1270			
1.6565	SNCM447	40NiCrMo6	4340	817M40	24	35NCD6	2541	35NiCrMo6(KB)			38C 2N2MA	
1.6587		17CrNiMo6		820A16		18NCD6		14NiCrMo13				
1.6657		10NiCrMo13-4						14NiCrMo131				
1.6957		26NiCrMoV14-5										
1.7015	SCr415(H)	10Cr3	5015	523M15		12C3				G50150	15C	
1.7262	SCM415(H)	15CrMo5				12CD4	2216	12CrMo4				
1.7335	SCM415(H)	13CrMo4-4	A182-F11	1501-620		15CD4-5	2216	14CrMo45			12C M	
1.7380		10CrMo9-10	A182F22	1501-622		12CD9-10	2218	12CrMo9			12KH8	
1.7715		14MoV6-3		1503-660-440				13MoCrV6				
1.7733		24CrMoV55				20CDV6		21CrMoV511				
1.7755		GS-45CrMoV10-4										
1.8070		21CrMoV511						35NiCr9				

P	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	8	Low-alloyed Steel	Quenched & tempered	300	32

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.1730		C45W3	C45W			XC48						
1.2332	SCM(440)	47CrMo4	4142	708M40	19A	42CD4	2244	42CrMo4				
1.5736	SNC 631 (H)	36NiCr10	3435			30NC11						
1.6523	SNCM220(H)	21NiCrMo2	8620	805M20	362	20NCD2	2506	20NiCrMo2			20C GNM	
1.7033	SCr430(H)	34Cr4	5132	530A32	18B	32C4		34Cr4(KB)		G51300	35C	
1.7218	SCM420	25CrMo4	4130	CDS110		25CD4	2225	25CrMo4(KB)			20C M	
1.8515		32CrMo12		722M24	40B	30CD12	2240	32CrMo12	F.124A			

P	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	9	Low-alloyed Steel	Quenched & Tempered	350	38

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.0904	SKH 1, SKT 4	55Si7	9255	250A53	45	55S7	2085	55Si8		G92550	55S2	
1.0961	SUP 7	60SiCr7	9262			60SC6		60SiCr8		G92620		
1.2067		100Cr6	L3	BL3		Y100C6		100Cr6				
1.2419	SKS31	105WCr6		105WC13		105WC13	2140	10WCr6			C WG	
1.2542		45WCrV7	S1	BS1			2710	45WCrV8KU			5C W25F	
1.2713	SKT4	55NiCrMoV6	L6			55NCDV7			F.520S		5C NM	
1.4882		X50CrMnNiNbN219				Z50CMNNb21-09						
1.5120		38MnSi4										
1.5710	SNC236	36NiCr6	3135	640A35	111A	35NC6						
1.5755	SNC236	31NiCr14		830m31		18NC13	2534		F.1270			
1.6511	SUP10	36CrNiMo4	9840	816M40	110	40NCD3		36NiCrMo4(KB)			40C N2MA	
1.6546	SNCM240	40NiCrMo2-2	8740	311-Tyre7				40NiCrMo2(KB)			38C GNM	
1.7035	SCr440(H)	41Cr4	5140	530M40	18	42C4	2245	41Cr4		G51400	40H	
1.7176	SUP9(A)	55Cr3	5155	527A60	48	55C3	2253	55Cr3			50C GA	
1.7220	SCM432	34CrMo4	4135	708Aa37		35CD4	2234	34CrMo4			35C M	
1.7223	SNB22-1	41CrMo4	4142					41CrMo4			40C FA	
1.7225	SCM 440 (H)	42CrMo4	4140	708 M 40	42 CrMo 4	42 CD 4	2244	42 CrMo 4	F.1252		38HM	
1.7361		32CrMo12		722M24	40B	30CD12	2240	30CrMo12	F.124A			
1.8159	SUP 10	50CrV4	6150	735A50	47	50CrV4	2230	50CrV4	51CrV4	G61500	50C GFA	
1.8161		58CrV4										
1.8509	SACM 645	41CrAlMo7	A355A	905M39	41B	40CAD6-12	2940	41CrAlMo7				
1.8523		39CrMoV13-9		897M39	40C			36CrMoV12				

P	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	10	High-alloyed steel, and tool steel	Annealed	200	15

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.0347	SPCD	RR St 3	A619	CR 3	Fe P03	F 13		DC03/FeP03			08JU	
1.0723	SUM32	15S22		210A15			1922		F.210F			
1.2080	SKD1	X210Cr12	D3	BD3	X210Cr12	Z200C12		X205Cr12KU		T30403	KH12	
1.2162	SCR 420 H	21MnCr5				20MC5						
1.2311		40CrMnMo7				40CMD8		35cRmO8KU				
1.2312		40CrMnMoS8.6	P20+S			40CMD8S						
1.2316		X36CrMo17			X38CrMo16							
1.2343	SKD 6	X38CrMoV5-1	H11	BH11		Z38CDV5		X37CrMoV51KU		T20811	4C 5MFS	
1.2344	SKD61	X40CrMoV5-1	H13	BH13		Z40CDV5	2242	X40CrMoV511KU	F.5318	T20813	4C 5MF1S	
1.2363	SKD12	X100CrMoV5-1	A2	BA2		Z100CDV5	2260	X100CrMoV51KU	F.5227		9KH5VF	
1.2379	SKD11	X155CrVMo121	D2	BD2		Z160CDV12	2310	X165CrMoW12KU		T30402	KH12MF	KRUPP2379
1.2436	SKD 2	X210CrW12	D4(D6)	BD6		Z200CD12	2312	X215CrW121KU	F.5213		KH12	

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P	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	10	High-alloyed steel, and tool steel	Annealed	200	15

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.2510	SKS3	100MnCrW4	O1	BO1		90 MWCV 5	2140	95 MnWCr 5 KU	F.5220		9KHVG	
1.2581	SKD5	X30WCrV9-3	H21	BH21		Z30WCV9		X30WCrV93KU	F.526	T20821	3C 2W8F	
1.2601		X165CrMoV12					2310	X160CrMoV12			KH12MF	
1.2606	SKD 62	X37CrMoW51	H12	BH12		Z35CWDV5		X35CrMoW05KU	F.537	T20812	5C NM	
1.2764		X19NiCrMo4										
1.2767		X45NiCrMo4				45NCD16		40NiCrMoV8KU				
1.2842		90MnCrV8	O2	BO2		90MV8		90MnVCr8KU		T31502	9G2F	
1.3243	SKH55	S6-5-2-5	T15			KCV06-05-05-04-02	2723	HS6-5-2-5			R6M5K5	
1.3249	SKH 3	S18-1-2-5	T4	BT4		Z80WKCV18-05-04					R18K5F2	
1.3343	SKH51, SKH9	S6-5-2	M2	BM2		Z85WDCV	2722	HS652	F.5604		R6M5	
1.3348	SKH 58	S2-9-2	M7			Z100DCWV09-04-02	2782	HS292	F.5607			
1.3355	SKH 2	S18-0-1	T1	BT1		Z80WCV18-4-01					R18	
1.4718	SUH1	X45CrSi9-3	HNV3	401S45	52	Z45CS9		X45CrSi8	F.322		40C 9S2	
1.5662	SL9N60(53)	X8Ni9	ASMA353	502-650		9Ni		X10Ni9	F.2645			
1.5680		12Ni19	2515	12Ni19		Z18N5						

P	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	11	High-alloyed steel, and tool steel	Quenched & Tempered	325	35

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.2080	SKD1	X210Cr12	D3	BD3	X210Cr12	Z200C12		X205Cr12KU		T30403	KH12	
1.2344	SKD61	X40CrMoV5-1	H13	BH13		Z40CDV5	2242	X40CrMoV511KU	F.5318	T20813	4C 5MF1S	
1.2363	SKD12	X100CrMoV5-1	A2	BA2		Z100CDV5	2260	X100CrMoV51KU	F.5227		9KH5VF	
1.2436	SKD 2	X210CrW12	D4(D6)	BD6		Z200CD12	2312	X215CrW121KU	F.5213		KH12	
1.2581	SKD5	X30WCrV9-3	H21	BH21		Z30WCV9		X30WCrV93KU	F.526	T20821	3C 2W8F	
1.2601		X165CrMoV12					2310	X160CrMoV12			KH12MF	
1.2714	SKT 4	55NiCrMoV7	6F3/L6			55NiCrMoV7			F.520S		5KHNV	
1.3202		S12-1-4-5		BT15				HS12-1-5-5				
1.3207		S10-4-3-10		BT42		Z130WKCDV						
1.3243	SKH55	S6-5-2-5	T15			KCV06-05-05-04-02	2723	HS6-5-2-5			R6M5K5	
1.3246		S7-4-2-5	M35			Z110WKCDV07-05-04		HS7-4-2-5				
1.3247	SKH 51	S2-10-1-8	M42	BM42		Z110DKCWV09-08-04		HS2-9-1-8			R2AM9K5	
1.3255	SKH 3	S18-1-2-5	T4	BT4		Z80WKCV18-05-04					R18K5F2	
1.3343	SKH51, SKH9	S6-5-2	M2	BM2		Z85WDCV	2722	HS652	F.5604		R6M5	
1.3348	SKH 58	S2-9-2	M7			Z100DCWV09-04-02	2782	HS292	F.5607			
1.3355	SKH 2	S18-0-1	T1	BT1		Z80WCV18-4-01					R18	
1.4718	SUH1	X45CrSi9-3	HNV3	401S45	52	Z45CS9		X45CrSi8	F.322		40C 9S2	
1.4935	SUH 616	X20CrMoWV121	422							S42200		
1.5680		12Ni19	2515	12Ni19		Z18N5						

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VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
12	Stainless steel	Ferritic / Martensitic, Annealed	200	15

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.4000	SUS403	X6Cr13	403	403S17		Z6C13	2301	X6Cr13	F.3110	S40300	08C 13	ATI 410S
1.4001		X7Cr14	410 S	403S7		Z8C13	2301		F.8401		08C 13	
1.4002	SUS 405	X6CrAl13	405	405S17		Z6CA13	2302	X6CrAl13		S40500		
1.4005	SUS416	X12CrS13	416	416S21		Z11CF13	2380	X12CrSC13	F.3411	S41600		ATI 416
1.4006	SUS410	X12Cr13	410	410S21	56A	Z10C13	2302	X12Cr13	F.3401	S41000	12C 13	ATI 410
1.4016	SUS430	X6Cr17	430	430S15	X8Cr17	Z8C17	2320	X8Cr17	F3113	S43000	12C 17	ATI 430
1.4027	SCS 2	GX20Cr14		420C29		Z20C13M					20C 13L	
1.4028	SUS420J2	X30Cr13	420	420S45		Z30C13	2304			S42020	20C 13	
1.4034	SUS420J2	X46Cr13		420S45		Z40C14		X40Cr14	F.3405			
1.4057	SUS431	X19CrNi17-2	431	431S29	57	Z15CN16-02	2321	X16CrNi16	F.3427	S43100	20C 17N2	431 (HT)
1.4086		GX120Cr29		452C11								
1.4104	SUS430F	X12CrMoS17	430F	420S37		Z10CF17	2383	X10CrS17	F.3117	S43020		
1.4112	SUS 440 B	X90CrMoV18	440B							S44003	95KH18	
1.4113	SUS434	X6CrMo17	434	434S17		Z8CD17-01	2325	X8CrMo17		S43400		AL 434
1.4313	SCS5	X3CrNi13-4	CA6-NM	425C11		Z4CND13-04M	2385	(G)X6CrNi304		J91540		
1.4340		GX40CrNi274								J92615		
1.4417		X2CrNiM0Si195	S31500				2376			S39215		
1.4418		X4CrNiMo165				Z6CND16-04-01	2387					APX4
1.4510	SUS430LX	X6CrTi17	XM8			Z4CT17		X6CrTi17	F.3115	S43035	08C 17T	430 Ti
1.4511	SUS430LK	X6CrNb17				Z4CNb17		X6CrNb17	F.3122			AXC525
1.4512	SUH409	X6CrTi12	409	LW19		Z3CT12		X6CrTi12		S40900		
1.4720		X20CrMo13										
1.4724	SUS 405	X10CrA113	405	403S17		Z10C13		X10CrA112	F.311		10C 13SJU	
1.4742	SUS430	X10CrA118	430	439S15	60	Z10CAS18		X8Cr17	F.3113	S43000	15C 13SJU	
1.4747	SUH4	X80CrNiSi20	HNV6	443S65	59	Z80CSN20-02		X80CrSiNi20	F.320B	S65006		
1.4749		X18CrN28	446								15KH28	
1.4762	SUH446	X10CrA124	446			Z10CAS24	2322	X16Cr26		S44600		
1.4871	SUH35,SUH36	X53CrMnNiN21-9	EV8	349S54		Z52CMN21-09		X53CrMnNiN219		S63008	55C 20G9AN4	
		X10CrNi15	429									
		X12CrNi18-9	302	302S31		Z10CN18-09	2330					

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VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
13	Stainless steel	Martensitic, Quenched & Tempered	240	23

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.4000	SUS403	X6Cr13	403	403S17		Z6C13	2301	X6Cr13	F.3110	S40300	08C 13	ATI 410S
1.4001		X7Cr14	410 S	403S7		Z8C13	2301		F.8401		08C 13	
1.4006	SUS410	X12Cr13	410	410S21	56A	Z10C13	2302	X12Cr13	F.3401	S41000	12C 13	ATI 410
1.4016	SUS430	X6Cr17	430	430S15	X8Cr17	Z8C17	2320	X8Cr17	F.3113	S43000	12C 17	ATI 430
1.4021	SUS 420J1	X20Cr13	420	420S37		Z20C13	2303	14210	F.5261	S42000	20C 13	ATI 420
1.4027	SCS 2	GX20Cr14		420C29		Z20C13M					20C 13L	
1.4031	SUS 420 J2	X40Cr13	420			Z40C14	-2304		F.3404	S42080	40C 13	
1.4034	SUS420J2	X46Cr13		420S45		Z40C14		X40Cr14	F.3405			
1.4057	SUS431	X19CrNi17-2	431	431S29	57	Z15CN16-02	2321	X16CrNi16	F.3427	S43100	20C 17N2	431 (HT)
1.4104	SUS430F	X12CrMoS17	430F	420S37		Z10CF17	2383	X10CrS17	F.3117	S43020		
1.4113	SUS434	X6CrMo17	434	434S17		Z8CD17-01	2325	X8CrMo17		S43400		AL 434
1.4313	SCS5	X3CrNi13-4	CA6-NM	425C11		Z4CND13-04M	2385	(G)X6CrNi304		J91540		
1.4544		A 700	321	S.524		Z 10 CNT 18 11		X6CrNiTi1811		J92630	08C 18N12T	
1.4546		X5CrNiNb18-10	348	347S31				X6CrNiNb1811		J92640		ATI 348
1.4871	SUH35,SUH36	X53CrMnNiN21-9	EV8	349S54		Z52CMN21-09		X53CrMnNiN219		S63008	55C 20G9AN4	
1.4922		X20cRmV12-1					2317	x20cRmOnl1201				
1.4923		X22CrMoV121										Jethete X20

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VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
14	Stainless steel	Austenitic	180	10

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.4301	SUS 304	X5CrNi18-10	304	304S15		Z5CN18-09	2332		F.3551	S30409	08C 18N10	
1.4305	SUS303	X10CrNiS18-10	303	303S21	58M	Z8CNF18-09	2346	X10CrNiS18.09	F.3508	S30300	30C 18N11	ATI 303
1.4306	SCS19	X2CrNi1911	304L	304C12	X3CrNi1810KD	Z2CN18-09	2352	GX2CrNi1910	F.3503	S30403	03KH18N11	ATI 304L
1.4308	SUS304L	GX6CrNi18-9	CF-8	304C15	58E	Z6CN18-10M	2333					CF-8
1.4310	SUS 301	X10CrNi18-8	301	301S21		Z12CN17-07	2331	X2CrNi1807	F.3517	S30100	07KH16N6	ATI 301
1.4311	SUS304LN	X2CrNiN18 10	304LN	304S62		Z2CN18-10	2371	X2CrNiN1810	F.3541	S30453	03KH18N11	
1.4312	SCS12	GX10CrNi188	305	302C25		Z10CN18-9M					10C 18N9L	ATI 305
1.4350	SUS304	X5CrNi18-9	304	304S15	58E	Z6CN18-09	2332	X5CrNi1810	F.3551	S30400		ATI 304
1.4362		X2CrNiN234	S32304			Z2CN23-04AZ	2327			S32304		ATI 2304TM
1.4371		X3CrMnNiN18887	202	284S16		Z8CMN18-08-05						
1.4401	SUS316	X5CrNiMo17-12-2	316	316S13		Z3CND17-11-01	2347	X5CrNiMo17 12 2	F.3534	S31600	08KH17H13M2T	ATI 316
1.4404	SUS316L	X2CrNiMo17-13-2	316L	316S11		Z2CND17-12	2348	X2CrNiMo1712	F.3533	S31603		ATI 316L
1.4406	SUS316LN	X2CrNiMoN17122	316LN	316S61		Z2CND17-12AZ		X2CrNiMoN1712	F.3542	S31653	07C 18N	ATI 316LN
1.4408	SCS14	GX6CrNiMo18-10	CF-8M	316C16			2343	X7CrNiMo2010	F.8414	J92900	10G2S2MSL	
1.4410	SCS 14 A	GX10CrNiMo18-9				Z5CND20-12M	2328			S32750		
1.4429	SUS316LN	X2CrNiMoN17-13-3	316Ln	316S62		Z2CND17-13AZ	2375	X2CrNiMoN17133	F.3543		03KH16N15M3	
1.4435	SUS316L	X2CrNiMo18143	316L	316S11		Z3CND17-12-03	2375	X2CrNiMo17 13 2	F.3533	S31603	03C 17N14M3	
1.4436	SUS316	X3CrNiMo17-13-3	316	316S19		Z6CND18-12-03	2343	X5CrNiMo17 12 2	F.3543	S31600		
1.4438	SUS317L	X2CrNiMo18164	317L	317S12		Z2CND19-15-04	2367	X2CrNiMo18 16 4	F.3539	S31703		ATI 317L
1.4439		X2CrNiMoN17135	(s31726)			Z3CND18-14-06AZ						
1.4440		X2CrNiMo18-16										
1.4449	SUS317	X5CrNiMo17133	317	317S16				X5CrNiMo1815		S31700		ATI 317
1.4460	SUS 329 J1	X8CrNiMo275	329				2324			S32900		10RE51
1.4462	SUS329J3L	X2CrNiMoN2253		318S13		Z3CND22-05Az	2377			S31803		ATI 2205TM
1.4500		X7NiCrMoCuNb2520				23NCDU25-20M				J95150		
1.4521	SUS444	X2CrMoTi18-2	443444				2326	X2CrMoTiNb18 2	F.3123			
1.4539		X1NiCrMoCuN25205				Z2NCDU25-20	2562			N08904		ATI 904L
1.4541	SUS321	X14CrNiTi18-10	321	321S31		Z6CNT18-10	2337	X6CrNiTi18 11	F.3523	S32100	06C 18N10T	ATI 321
1.4542	SUS630	X5CrNiCuNb174	630			Z7CNU15-05						UGIMA 4542
1.4545		Z7CNU15.05	15-5PH							S15500		ATI 15-5
1.4547		X1CrNiMoN20187	S31254				2378			S31254		Uranus B25 6Mo
1.4550	SUS347	X6CrNiNb18-10	347	347S17	58F	Z6CNNb18-10	2338	X6CrNiNb18 11	F.3552	S34700	08C 18N12B	ATI 347
1.4552	SCS 21	GX7CrNiNb18-9				Z4CNNb19-10M				J92710		
1.4568	SUS 631	X 7 CrNiAl 17 7		316S111		Z 9 CAN 17-7	2388	Z8CNA17-07		S17700	09C 17NJU1	17-7PH
1.4571	SUS 316Ti	X6CrNiMoTi17-12-2	316Ti	320S31	58J	Z6NDT17-12	2350	X6CrNiMoTi17 12	F.3535		10C 17N13M2T	ATI 316Ti
1.4581	SCS 22	GX5CrNiMoNb18		318C17		Z4CNDNb18-12M						
1.4583		X6CrNiMoNB18-12	318	303S21		Z15CNS20-12		X15CrNiSi2 12				
1.4585		GX7CrNiMoCuNb1818						X6CrNiMoTi17 12		J94651		
1.4821		X20CrNiSi254				Z20CNS25-04				S44635		
1.4823		GX40CrNiSi274								J92605		
1.4828	SCS17	X15CrNiSi20-12	309	309S24	58C	Z15CNS20-12			F.8414	S30900	20C 20N14S2	ATI 309
1.4833	SUS 309 S	X6CrNi2213	309S	309S13		Z15CN24-13				J93400		
1.4845	SUH310	X12CrNi25-21	310S	310S24		Z12CN25-20	2361	X6CrNi2520	F.331	S31008	20C 23N18	ATI 310S
1.4878	SUS321	X12CrNiTi18-9	321	321S20	58B	Z6CNT18-12(B)	2337	X6CrNiTi1811	F.3553	S32100		ACX315
1.4891		X5CrNiNb18-10	Ss30415				2372					
1.4893		X8CrNiNb11	S30815				2368					
1.4948		X6CrNi1811	304H	304S51		Z5CN18-09	2333			S30480		
1.4980		X5NiCrTi2515	660				2570			S66286		Incoloy A 286
		X5NiCrN3525										
		X2CrNiMoN18134	S31753									
		X2CrNiMoN25227										

K — VDI 3323 15

Material Description: Grey cast iron
Composition / Structure / Heat Treatment: Pearlitic / Ferritic
HB: 180
HRc: 10

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

K — VDI 3323 16

Material Description: Grey cast iron
Composition / Structure / Heat Treatment: Pearlitic (Martensitic)
HB: 260
HRc: 26

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
0.6025	FC250	GG25	A48 40 B	Grade 260	GJL-250	Ft 25 D	0125	G25	FG25		Sc 25	
0.6030	FC300	GG30	A48 45 B	Grade 300	GJL-300	Ft 30 D	0130	G30	FG30		Sc 30	
0.6035	FC350	GG35	A48 50 B	Grade 350	GJL-350	Ft 35 D	0135	G35	FG35		Sc 35	
0.6040	FC400	GG40	A48 60 B	Grade 400	GJL-400	Ft 40 D	0140	G40	FC40		Sc 40	

K — VDI 3323 17

Material Description: Nodular cast iron
Composition / Structure / Heat Treatment: Ferritic
HB: 160
HRc: 3

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
0.7033	FCD350-22L	GGG35.3	-	350/22L40	GJS-350-22-LT	FGS 370-17	0717-15	-				
0.7040	FCD400	GGG40	60-40-18	SNG 420-12	GJS-400-15	FCS 400-12	0717-02	GS 400-12	FG E38-17	F32800	Vc 42-12	
0.7043	FCD 370	GGG40.3	60-40-18	SNG 370-17	GJS-400-18-LT	FGS 370-17	0717-12	GSO 42-17			Vc 42-12	
0.6040	FC400	GG40	A48 60 B	Grade 400	GJL-400	Ft 40 D	0140	G40	FC40		Sc 40	

K — VDI 3323 18

Material Description: Nodular cast iron
Composition / Structure / Heat Treatment: Pearlitic
HB: 250
HRc: 25

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
0.7050	FCD500	GGG50	80-55-06	SNG 500-7	GJS-500-7	FGS 500-7	0727-02	GS 500-7	FG E50-7	F33100	Vc 50-2	
0.7060	FCD600	GGG60	80-55-06	SNG 600-3	GJS-600-3	FGS 600-3	0732-03	GS 600-3	FG E60-2		Vc 60-2	
0.7070	FCD700	GGG70	100-70-03	SNG 700-2	GJS-700-2	FGS 700-2	0737-01	GS 700-2	FG S70-2	F34800	Vc 70-2	
0.7652	FCDA-NiMn 13 7	GGG NiMn 13-7	-	Grade S6	GJSA-XNiMn 13-7	FGS Ni13 Mn7	0772	-				Nodumag
0.7660		GGG NiCr 20-2	A436 D2	Grade S2	GJSA-XNiCr 20-2	FGS Ni20 Cr2	0776	-				Ni-Resist D-2

K — VDI 3323 19

Material Description: Malleable cast iron
Composition / Structure / Heat Treatment: Ferritic
HB: 130
HRc:

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
0.8135	FCMW330	GTS-35	32510	B 340-12	GJMB350-10	MN 35-10	0815	GMN 35	GTS35		Kc 35-10	

K — VDI 3323 20

Material Description: Malleable cast iron
Composition / Structure / Heat Treatment: Pearlitic
HB: 230
HRc: 21

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
0.8145	FCMW370	GTS-45	A220-40010	P 440-7	GJMB450-6	MN 450	0852	GMN 45				
0.8155	FCMP490	GTS-55	50005	P 510-4	GJMB-550-4	MP 50-5	0854	GMN 55			Kc 60-3	
0.8165	FCMP590	GTS-65	70003	P 570-3	GJMB-650-2	MN 650-3	0856	GMN 65				
0.8170	FCMP690	GTS-70	90001	P 690-2	GJMB-700-2	MN 700-2	0862	GMN 70			Kc 70-2	

N — VDI 3323 21

Material Description: Aluminum-wrought alloy
Composition / Structure / Heat Treatment: Not Curable
HB: 60
HRc:

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
3.0205		Al99	Al99									
3.0255	(A1050)	Al99.5	1000	L31		A59050C					D1	
3.3315		AlMg1										

N — VDI 3323 22

Material Description: Aluminum-wrought alloy
Composition / Structure / Heat Treatment: Curable, Hardened
HB: 100
HRc:

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
3.1325		AlCuMg1									AD35	
3.1655	A2011	AlCuSiPb										
3.2315		AlMgSi1									AK9	
3.4345		AlZnMgCu0,5	7050	L86		AZ4GU/9051		811-04				
3.4365	7075	AlZnMgCu1,5	7075	7075		7075		AlZn5.8MgCuCr			B95	

N — VDI 3323 23

Material Description: Aluminum-cast, alloyed
Composition / Structure / Heat Treatment: ≤ 12% Si, Not Curable
HB: 75
HRc:

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
3.2163		G-AlSi9Cu3									VAL8	
3.2382		GD-AlSi10Mg										
3.2383		G-AlSi0Mg(Cu)	A360.2	LM9			4253					
3.2581		G-AlSi12										
3.3561		G-AlMg5										
3.5101		G-MgZn4sE1Zr1	ZE41	MAG5								
3.5103		MgSE3Zn27r1	EZ33	MAG6		G-TR3Z2						
3.5812		G-MgAl8Zn1	AZ81	NMAG1								
3.5912		G-MgAl9Zn1	AZ91	MAG7								
			A356-72	2789		NFA32-201						
	A5052		356.1	LM25			4244				AK7	
		G-AlSi12	A413.2	LM6			4261					
	ADC12	G-AlSi12(Cu)	A413.1	LM20			4260				AK12	
	A6061	GD-AlSi12	A413.0				4247					
	A7075	GD-AlSi8Cu3	A380.1	LM24			4250					

N — VDI 3323 24

Material Description: Aluminum-cast, alloyed
Composition / Structure / Heat Treatment: ≤ 12% Si, Curable, Hardened
HB: 90
HRc:

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.1871		G-AlCu4TiMg										
3.1754		G-AlCu5Ni1,5										
3.2371		G-AlSi7Mg	4218B								AK8	
3.2373	C4BS	G-AlSI9MGWA	SC64D			A-S7G	4251				AK9	
3.2381		G-AlSi10Mg									AK12	
3.5106		G-MgAg3SE2Zr1	QE22	mag12								
		G-ALMG5	GD-AlSI12	LM5		A-SU12	4252					

N — VDI 3323 26

Material Description: Copper and Copper Alloys (Bronze / Brass)
Composition / Structure / Heat Treatment: Cutting alloys, PB>1%
HB: 110
HRc:

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.0375		CuZn36Pb3									LS60-2	
2.1090		G-CuSn75pb	C93200			U-E7Z5pb4						
2.1096		G-CuSn5ZnPb	c83600	LG2								
2.1098		G-CuSn2Znpb	C83600									
2.1182		G-CuPb15Sn	C23000	LB1		U-pb15E8						

N — VDI 3323 27

Material Description: Copper and copper alloys (Bronze / Brass)
Composition / Structure / Heat Treatment: CuZn, CuSnZn (Brass)
HB: 90
HRc:

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.0240	C2300	CuZn15									L90	
2.0321		CuZn37	C27200	cz108		CuZn36,CuZn37		C2700			L63	
2.0590		G-CuZn40Fe										
2.0592		G-CuZn35Al1	C86500	U-Z36N3		HTB1						
2.0596		G-CuZn34Al2	C86200	HTB1		U-Z36N3					LTs23AD	
2.1293		CuCrZr	C18200	CC102		U-Cr0-8Zr						

N — VDI 3323 28

Material Description: Copper and copper alloys (Bronze / Brass)
Composition / Structure / Heat Treatment: CuSn, lead-free copper and electrolytic copper
HB: 100
HRc:

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.0060		E-Cu57										
2.0966		CuAl10Ni5Fe4	C63000	Ca104		U-A10N					BrAD	
2.0975		G-CuAl10Ni	B-148-52									
2.1050		G-CuSn10	c90700	CT1								
2.1052		G-CuSn12	C90800	pb2		UE12P						
2.1292		G-CuCrF35	C81500	CC1-FF								

S — VDI 3323 31

Material Description: Heat resistant super alloys
Composition / Structure / Heat Treatment: Fe Based, Annealed
HB: 200
HRc: 15

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.4558	NCF 800 TB	X2NiCrAlTi3220	N08800	NA15								
1.4562		X1NiCrMoCu32287	N08031									
1.4563		X1NiCrMoCuN31274	N08028			Z1NCDU31-27-03	2584				EK77	
1.4864	SUH330	X12NiCrSi36-16	330	NA17		Z12NCS37-18				N08330		
1.4865	SCH15	GX40NiCrSi38-18		330C40				XG50NiCr3919		J94605		
1.4958		X5NiCrAlTi3120										

S — VDI 3323 32

Material Description: Heat resistant super alloys
Composition / Structure / Heat Treatment: Fe Based, Aged
HB: 280
HRc: 30

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.4977		X40CoCrNi2020				Z42CNKDWNb						

S — VDI 3323 33

Material Description: Heat resistant super alloys
Composition / Structure / Heat Treatment: Ni or Co Based, Annealed
HB: 250
HRc: 25

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.4360		NiCu30Fe		NA13		NU30				N04400		Monel400
2.4603		NiCr 30 FeMo	5390A			NC22FeD						Hastelloy G-30
2.4610		NiMo16cR16Ti								N26455		HastelloyC-4
2.4630		NiCr20Ti		HR5,203-4		NC20T				N06075		Nimonic75
2.4631	NCF 80A	NiCr20TiAl		Hr40		NC20TA				N07080	KHN77TYuR	Nimonic 80A
2.4642	NCF 690	NiC29Fe				Nnc30Fe				N06690		Inconel 690
2.4856		NiCr22Mo9Nb		NA21		NC22FeDNb				N06625		Inconel 625
2.4858		NiCr21Mo		NA16		NC21FeDU				N08825	KHN38VT	Incoloy 825

S — VDI 3323 34

Material Description: Heat resistant super alloys
Composition / Structure / Heat Treatment: Ni or Co Based, Aged
HB: 350
HRc: 38

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.4375		NiCu30Al	4676	NA18		NU30AT				N05500		Monelk500
2.4662		NiFe35Cr14MoTi	5660			ZSNCDT42				N09901		Incoloy 901
2.4668		NiCr19Fe19NbMo	5383	HR8		NC19eNB				N07718		Inconel 718
2.4670		S-NiCr13A16MoNb	5391	Mar-46		NC12AD						Nimocast 713
2.4694		NiCr16fE7TiAl								N07751		Inconel 751
2.4955		NiFe25Cr20NbTi										
2.4964		CoCr20W15Ni	5772			KC20WN						Haynes 25
		CoCr22W14Ni	AMS 5772			KC22WN						

S — VDI 3323 35

Material Description: Heat resistant super alloys
Composition / Structure / Heat Treatment: Ni or Co Based, Cast
HB: 320
HRc: 34

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.4669		NiCr15Fe7TiAl				NC15TNbA				N07750		Inconel X750
2.4685		G-NiMo28								N10665		Hastelloy B
2.4810		G-NiMo30										Hastelloy C
2.4973		NiCr19Co11MoTi	AMS 5399			NC19KDT					VT5-1	
3.7115		TiAl5Sn2								R54520	VT1-00	ATI Grade 6

S — VDI 3323 36

Material Description: Titanium alloys
Composition / Structure / Heat Treatment: Pure Titanium
HB: 400 Rm
HRc:

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.4674		NiCo15Cr10MoAlTi	AMS 5397							N13100		IN 100
3.7025		Ti1	R50250	2TA1						R50250		ATI 30 CP Gr. 1
3.7225		Ti1pd	R52250	TP1						R52250		

S — VDI 3323 37

Material Description: Titanium alloys
Composition / Structure / Heat Treatment: Alpha + Beta Alloys, Hardened
HB: 1050 Rm
HRc:

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
3.7124		TiCu2		2TA21-24								
3.7145		TiAl6Sn2Zr4Mo2Si	R54620							R54620		
3.7165		TiAl6V4	AMS R56400	TA10-13		T-A6V					VT6	
3.7185		TiAl4Mo4Sn2		TA45-51								
3.7195		TiAl3V2.5								R56320		ATI 3-2.5
		TiAl4Mo4Sn4Si0.5										
		TiAl5Sn2.5	AMS R54520	TA14/17		T-A5E						
		Ti6Al4VELI	AMS R56401	TA11								

Technical Information
Material Groups

H	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	38	Hardened steel	Hardened	550	55

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.1231	S 70 C-CSP	Ck 67	1070	060 A 67	C 67S	XC 68	1770	C 70	F.5103		70	
1.1248	C 75	Ck 75	1078, 1080	060 A 78	C 75S	XC 75	1774	C 75	F.5107		75	
1.1274	SUP 4	Ck 101	1095	060 A 96	C 100S	XC100	1870	C100	F.5117			
1.1545	SK 3	C 105 W1	W1	BW 2	C 105U	Y1 105	1880	C 100 KU	F.5118		U10A	
1.2762		75CrMoNiW67	-	-	-	-	-	-				
1.3401	SCMnH1	GX120Mn12	A128(A)			Z120M12	2183	GX120Mn12	F.8251		110G13L	
1.4021	SUS 420 J1	X 20 Cr 13	420	420 S 37	X 20 Cr 13	Z 20 C 13	2303	X 20 Cr 13	F.5261		20KH13	ATI 420
1.4109	SUS 440 A	X 65 CrMo 14	440 A	-	X 70 CrMo 15	Z 70 D 14	-	-				ATI 440A
1.4112	SUS 440 B	X 90 CrMoV 18	440 B	409 S 19	X 90 CrMoV 18	Z 2 CND 18 05	2327	X CrTi 12				
1.4125	SUS 440 C	X 105 CrMo 17	440 C	-	X 105 CrMo 17	Z 100 CD 17	-	X 105 CrMo 17			95KH18	ATI 440C
1.6746		32NiCrMo14-5	-	832M31	32nlcRm0145	35NCD14	-	-				
1.7176	SUP9(A)	55Cr3	5155	527A60	48	55C3	2253	55Cr3				
1.7225	SCM 440 (H)	42CrMo4	4140	708 M 40	42 CrMo 4	42 CD 4	2244	42 CrMo 4	F.1252		38HM	

H	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	40	Chilled cast iron	Cast	400	42

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
0.9620		GX260NiCr42	A532 IB	Grade 2 A	GJN-HV520	FB Ni4 Cr2 BC	0512	-		F45001		Ni-Hard2
0.9625		GX330NiCr42	A532 IA	Grade 2 B	GJN-HV550	FB Ni4 Cr2 HC	0513	-		F45000		Ni-Hard1
0.9630		GX300 CrNiSi 9 5 2	A532 ID	Grade 2 C	GJN-HV600	FB Cr9 Ni5	0457	-		F45003		Ni-Hard 4
0.9640		GX300CrMoNi1521	-	-	-	-	-	-		F45005		
0.9650		GX260Cr27	-	Grade 3 D		-	0466	-				
0.9655		GX300CrNMo271	-	Grade 3 E		-	-	-			20C 25N20S2	
1.4841	SUH 310	X15CrNiSi25-20	310	314S31	X 15 CrNiSi 25 20	Z15CNS25-20	-	-		S31400		Cronifer 2520

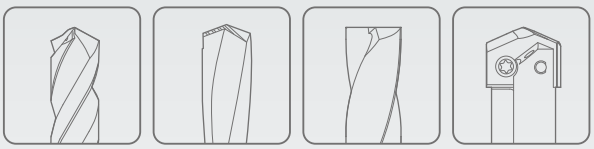
H	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
	41	Hardened cast iron	Hardened	550	55

Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
0.9635		GX300 CrMo 15 3	-	-	-	-	-	-				
0.9645		GX260 CrMoNi 20 21	-	-	-	-	-	-		F45007		

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Global Cutting Tool Leader **YG-1**



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