HOLEMAKING TOOLS

i-ONE DRILLS, CARBIDE INSERTS & HOLDERS
i-DREAM DRILLS, CARBIDE INSERTS & HOLDERS
SOLID CARBIDE DREAM DRILLS - PRO (with & without Coolant Holes)
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 - 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
HSS Co8 & HSS-E HPD STRAIGHT SHANK DRILLS
HSS & HSS-E GOLD-P DRILLS
SUPER HSS SUPER-GP DRILLS
HSS, HSS-E & HSS Co8 STRAIGHT SHANK DRILLS
HSS & HSS-E MORSE TAPER SHANK DRILLS
SOLID CARBIDE & HSS Co8 NC-SPOTTING DRILLS
SOLID CARBIDE, HSS & HSS-E CENTER DRILLS
SPADE DRILLS, INSERTS & HOLDERS
CARBIDE, HSS & HSS-E REAMERS
HSS & HSS Co8 COUNTERSINKS
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YG-1 CO., LTD.

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HSS DRILLS

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COUNTERBORES

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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 - PRO** (with & without Coolant Holes)
For General Purpose (HRc30 to HRc50) / Extremely High hardness and Heat resistance due to YG-1 special Z-Coating echnology — DREAM DRILLS -PRO

SOLID CARBIDE **DREAM DRILLS - GENERAL** (with & without Coolant Holes)
For General Purpose (HRc30 to HRc50) — 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 — DREAM DRILLS -INOX

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

SOLID CARBIDE **DREAM DRILLS - MQL TYPE** (with Coolant Holes)
Minimum Quantity Lubrication Drilling Deep Holes (10×D ~ 40×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, DIN 338 & DIN 6539 — GENERAL CARBIDE DRILLS

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

HSS Co8 & HSS-E **HPD STRAIGHT SHANK DRILLS**
High Precision Drilling for General Steels & Stainless Steels — HPD DRILLS

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

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

HSS, HSS-E & HSS Co8 **STRAIGHT SHANK DRILLS**
For General Purpose (Soft &Tough Materials) — STRAIGHT SHANK DRILLS

HSS & HSS-E **MORSE TAPER SHANK DRILLS**
Morse Taper Shank Drills for Wide Applications — TAPER SHANK DRILLS

SOLID CARBIDE & HSS Co8 **NC-SPOTTING DRILLS**
For Centering and Chamfering of Holes — NC-SPOTTING DRILLS

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

SPADE DRILLS, INSERTS & HOLDERS
For General Machines and Drilling Large Diameters / Longer Tool Life and High Productivity — SPADE DRILLS

CARBIDE, HSS & HSS-E **REAMERS**
Carbide NC Machine Reamers / HSS Hand Reamers / HSS-E Chucking Reamers — REAMERS

HSS & HSS Co8 **COUNTERSINKS**
For Deburring, Chamfering and Countersinking — COUNTER SINKS

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

TECHNICAL DATA — TECHNICAL DATA

YG-1 CO., LTD.

SELECTION GUIDE

YG HOLEMAKING TOOLS

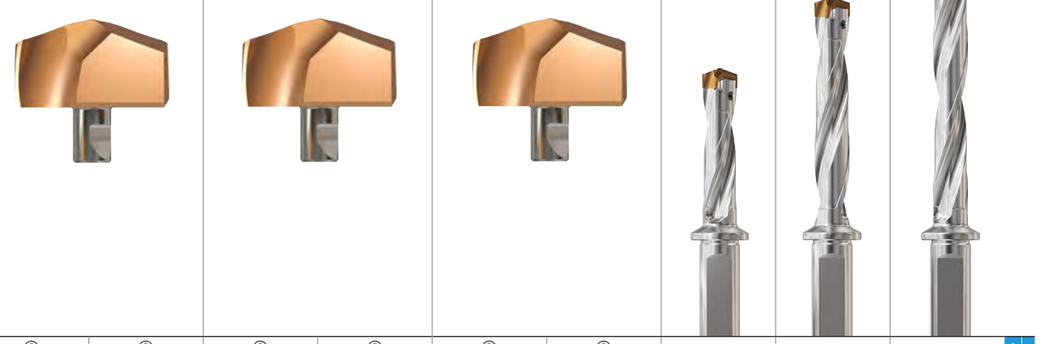
	i-ONE DRILLS INSERTS					
SERIES	Y101H	Y121H	Y141H	Y161H	Y181H	Y201H
TOOL MATERIAL	CARBIDE					
SIZE MIN	10.00	12.00	14.00	16.00	18.00	20.00
SIZE MAX	11.91	13.90	15.90	17.90	19.90	21.90
PAGE	A24	A25	A26	A27	A28	A29
SURFACE TREATMENT	H-Coating					

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						

	i-ONE DRILLS INSERTS						i-ONE DRILLS HOLDERS		
	Y221H	Y241H	Y261H	Y281H	Y301H	Y321H	ZD*3	ZD*5	ZD*8
TOOL MATERIAL	CARBIDE								
	22.00	24.00	26.00	28.00	30.00	32.00			
	23.90	25.90	27.78	29.77	31.75	33.73			
PAGE	A30	A31	A32		A33				
SURFACE TREATMENT	H-Coating						3XD	5XD	8XD



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◎	◎	◎	◎	◎	◎			2
◎	◎	◎	◎	◎	◎			3
◎	◎	◎	◎	◎	◎			4
◎	◎	◎	◎	◎	◎			5
◎	◎	◎	◎	◎	◎			6 P
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◎	◎	◎	◎	◎	◎			8
◎	◎	◎	◎	◎	◎			9
◎	◎	◎	◎	◎	◎			10
◎	◎	◎	◎	◎	◎			11
								12
								13 M
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◎	◎	◎	◎	◎	◎			15
◎	◎	◎	◎	◎	◎			16
◎	◎	◎	◎	◎	◎			17
◎	◎	◎	◎	◎	◎			18 K
◎	◎	◎	◎	◎	◎			19
◎	◎	◎	◎	◎	◎			20
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								26 N
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								34 S
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								36
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								38
								39
								40 H
								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	
TOOL MATERIAL	CARBIDE									
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	A44		A45		A46		A47		A48	
SURFACE TREATMENT	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN

i-DREAM DRILLS INSERTS

YF1A	YF2C	YG1A	YG2C	YH1A	YH2C	YI1A	YI2C	YJ1A	YJ2C
F		G		H		I		J	
CARBIDE									
22.00		24.00		26.00		28.00		30.00	
23.81		25.80		27.78		29.77		31.75	
A49		A50		A51		A52		A53	
TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN	TiAlN	TiCN

i-DREAM DRILLS HOLDERS

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

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◎ : Excellent ○ : Good

ISO		VDI 3323	Material Description	HB	HRc	YA1A TiAlN	YA2C TiCN	YB1A TiAlN	YB2C TiCN	YC1A TiAlN	YC2C TiCN	YD1A TiAlN	YD2C TiCN	YE1A TiAlN	YE2C TiCN	YF1A TiAlN	YF2C TiCN	YG1A TiAlN	YG2C TiCN	YH1A TiAlN	YH2C TiCN	YI1A TiAlN	YI2C TiCN	YJ1A TiAlN	YJ2C TiCN	ZH*3 3XD	ZH*5 5XD	ZH*7 7XD		ISO
P	1		Non-alloy steel	125		◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○				1	
	2			190	13	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○				2	
	3			250	25	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○				3	
	4			270	28	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○				4	
	5			300	32	◎		◎		◎		◎		◎		◎		◎		◎		◎		◎					5	
	6		Low alloy steel	180	10	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○				6	P
	7			275	29	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○				7	
	8			300	32	◎		◎		◎		◎		◎		◎		◎		◎		◎		◎					8	
	9			350	38	◎		◎		◎		◎		◎		◎		◎		◎		◎		◎					9	
	10		High alloyed steel, and tool steel	200	15	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○				10	
	11			325	35	◎		◎		◎		◎		◎		◎		◎		◎		◎		◎					11	
M	12		Stainless steel	200	15		◎		◎		◎		◎		◎		◎		◎		◎		◎		◎				12	
	13			240	23		◎		◎		◎		◎		◎		◎		◎		◎		◎		◎				13	M
	14			180	10		◎		◎		◎		◎		◎		◎		◎		◎		◎		◎				14	
K	15		Grey cast iron	180	10	◎		◎		◎		◎		◎		◎		◎		◎		◎		◎					15	
	16			260	26	◎		◎		◎		◎		◎		◎		◎		◎		◎		◎					16	
	17		Nodular cast iron	160	3	◎		◎		◎		◎		◎		◎		◎		◎		◎		◎					17	
	18			250	25	◎		◎		◎		◎		◎		◎		◎		◎		◎		◎					18	
	19		Malleable cast iron	130		◎		◎		◎		◎		◎		◎		◎		◎		◎		◎					19	
	20			230	21	◎		◎		◎		◎		◎		◎		◎		◎		◎		◎					20	
N	21		Aluminum-wrought alloy	60			○		○		○		○		○		○		○		○		○		○				21	
	22			100			○		○		○		○		○		○		○		○		○		○				22	
	23		Aluminum-cast, alloyed	75			○		○		○		○		○		○		○		○		○		○				23	
	24			90			○		○		○		○		○		○		○		○		○		○				24	
	25			130			○		○		○		○		○		○		○		○		○		○				25	
	26		Copper and Copper Alloys (Bronze / Brass)	110			○		○		○		○		○		○		○		○		○		○				26	N
	27			90			○		○		○		○		○		○		○		○		○		○				27	
	28			100			○		○		○		○		○		○		○		○		○		○				28	
	29		Non Metallic Materials																										29	
	30																												30	
S	31		Heat Resistant Super Alloys	200	15																								31	
	32			280	30																								32	
	33			250	25																								33	
	34			350	38																								34	S
	35			320	34																								35	
	36		Titanium Alloys	400 Rm																									36	
	37			1050 Rm																									37	
H	38		Hardened steel	550	55																								38	
	39			630	60																								39	H
	40		Chilled Cast Iron	400	42																								40	
	41		Hardened Cast Iron	550	55																								41	

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS
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YG 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
TOOL MATERIAL	HSS M4	SUPER HSS T15	PREMIUM HSS M48	CARBIDE K10	CARBIDE K20	CARBIDE P40
POINT	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD
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	A302	A308	A313	A316	A319	A323
SURFACE TREATMENT	TiN / TiCN / TiAlN					

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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						

SPADE DRILLS INSERTS

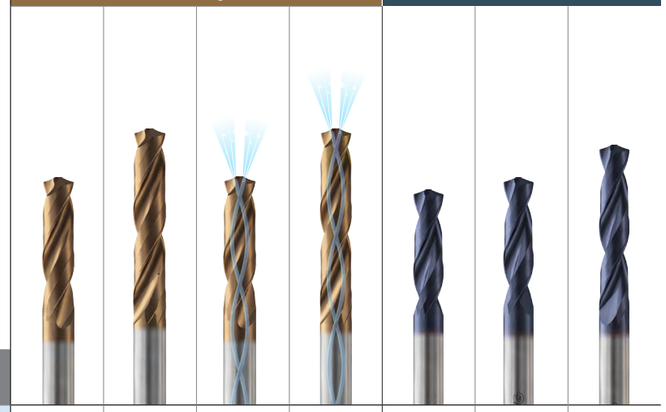
1~3	Y,Z,0,1~3	Y,Z,0,1,2	Y,Z,0,1,2	Y,Z,0,1~3	Y,Z,0,1~3	Y,Z,0,1,2
HSS M4	SUPER HSS T15	PREMIUM HSS M48	CARBIDE K10	CARBIDE K20	CARBIDE P40	SUPER COBALT T15
SM-POINT	SM-POINT	SM-POINT	SM-POINT	SM-POINT	SM-POINT	FALT BOTTOM
Ø17.86(#1)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)
Ø47.63(#3)	Ø47.63(#3)	Ø35(#2)	Ø35(#2)	Ø47.63(#3)	Ø47.63(#3)	Ø35(#2)
A328	A331	A335	A338	A341	A345	A349
TiN / TiCN / TiAlN						TiN / Hardslick / TiAl

○	◎	◎		○	◎	◎	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	N
							26	
◎	○	○		◎	○	○	27	
							28	
							29	
							30	
	◎	◎		◎	○	◎	31	
	○	◎		◎	○	○	32	
	○	◎		◎	○	○	33	
	○	◎		◎	○	○	34	S
	○	◎		◎	○	○	35	
							36	
							37	
	○	◎		○	◎	○	38	
							39	H
							40	
							41	

SELECTION GUIDE

YG HOLEMAKING TOOLS

	DREAM DRILLS -PRO				DREAM DRILLS -GENERAL		
SERIES	DGN523	DGN526	DGN506	DGN508	DH404	DH423 DH443	DH424 DH444
DRILLING DEPTH	3XD	5XD	3XD	5XD	3XD	3XD	5XD
TOOL MATERIAL	CARBIDE				CARBIDE		
LENGTH	SHORT	LONG	SHORT	LONG	STUB	SHORT	LONG
SIZE MIN	D3.0	D1.0	D3.0	D1.0	D3.0	D3.0	D1.0
SIZE MAX	D20.0	D20.0	D20.0	D20.0	D20.0	D20.0	D20.0
PAGE	A62	A65	A68	A71	A80	A82	A85
SURFACE TREATMENT	Z-Coating				TiAlN		



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◎ : Excellent ○ : Good

ISO		VDI 3323	Material Description	HB	HRc	DH404	DH423 DH443	DH424 DH444	DGN523	DGN526	DGN506	DGN508
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, 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 -GENERAL			DREAM DRILLS -HIGH FEED		DREAM DRILLS -FLAT BOTTOM		DREAM DRILLS -INOX			DREAM DRILLS -ALU		
SERIES	DH406 DH446	DH408 DH448	DH421	DGR493	DGR495	DPP447	DH450	DH451	DH452	DH453	D5432	D5433	D5434
DRILLING DEPTH	3XD	5XD	8XD	3XD	5XD	2XD	5XD	3XD	5XD	8XD	3XD	5XD	8XD
TOOL MATERIAL	CARBIDE			CARBIDE		CARBIDE		CARBIDE			CARBIDE		
LENGTH	SHORT	LONG	EXTRA LONG	SHORT	LONG	SHORT	LONG	SHORT	LONG	EXTRA LONG	SHORT	LONG	EXTRA LONG
SIZE MIN	D3.0	D1.0	D3.0	D5.0	D5.0	D3.0	D3.0	D3.0	D1.0	D3.0	D3.0	D3.0	D3.0
SIZE MAX	D20.0	D20.0	D14.0	D20.0	D20.0	D20.0	D20.0	D20.0	D20.0	D14.0	D20.0	D20.0	D14.0
PAGE	A88	A91	A94	A101	A103	A110	A112	A119	A122	A125	A131	A134	A137
SURFACE TREATMENT	TiAlN			H-Coating		X-Coating	TiAlN	TiAlN			Bright		

		DH406 DH446	DH408 DH448	DH421	DGR493	DGR495	DPP447	DH450	DH451	DH452	DH453	D5432	D5433	D5434	
	1						◎	○							1
	2	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				2
	3	◎	◎	◎	◎	◎	◎	◎	○	○	○				3
	4	◎	◎	◎	◎	◎	○	○							4
	5	○	○	○	○	○	○	○							5
P	6	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				6 P
	7	◎	◎	◎	◎	◎	○	○	○	○	○				7
	8	○	○	○	○	○	○	○							8
	9	○	○	○	○	○	○	○							9
	10	◎	◎	◎	◎	◎									10
	11	○	○	○	○	○									11
	12	○	○	○			○	○	◎	◎	◎				12
M	13	○	○	○					◎	◎	◎				13 M
	14								◎	◎	◎				14
	15	◎	◎	◎	◎	◎	◎	◎							15
	16	○	○	○	○	○	○	○							16
	17	◎	◎	◎	◎	◎									17
K	18	○	○	○	○	○									18 K
	19	◎	◎	◎	◎	◎									19
	20	○	○	○	○	○									20
	21						○	○	◎	◎	◎	◎	◎	◎	21
	22						○	○	◎	◎	◎	◎	◎	◎	22
	23								○	○	○	◎	◎	◎	23
	24								○	○	○	◎	◎	◎	24
	25								○	○	○				25
N	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
H	40														40 H
	41														41

SELECTION GUIDE

HOLEMAKING TOOLS

	DREAM DRILLS - MQL TYPE								DREAM DRILLS for HIGH HARDENED STEELS
SERIES	DH510	DH515	DH520	DHM10	DHM15	DHM20	DHM25	DHM30	DH500
DRILLING DEPTH / STANDARD	10XD	15XD	20XD	10XD	15XD	20XD	25XD	30XD	3XD
TOOL MATERIAL	CARBIDE								CARBIDE
LENGTH	EXTRA LONG								SHORT
SIZE MIN	D3.0	D3.0	D3.0	D3.0	D3.0	D3.0	D3.0	D3.0	D2.6
SIZE MAX	D14.0	D12.0	D12.0	D14.0	D12.0	D12.0	D10.0	D8.0	D14.0
PAGE	A144	A145		A146			A147		A151
SURFACE TREATMENT	TiAlN								TiAlN

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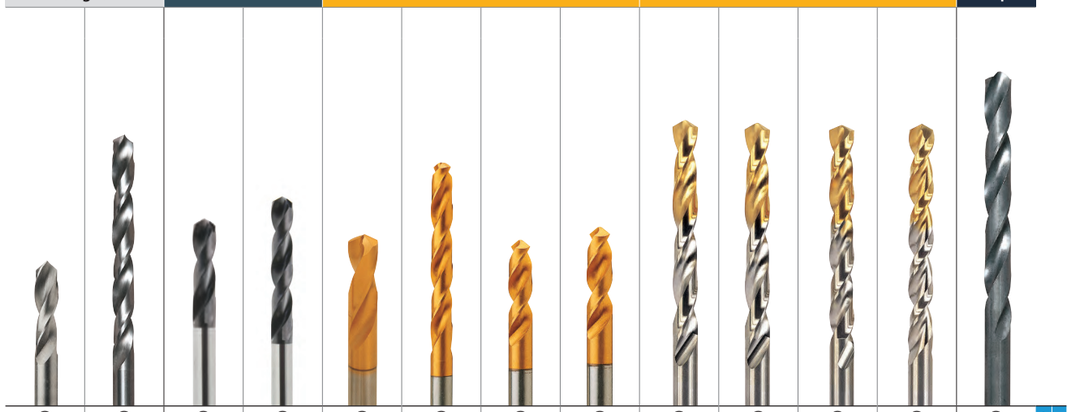
◎ : Excellent ○ : Good

ISO		VDI 3323	Material Description	HB	HRc	DH510	DH515	DH520	DHM10	DHM15	DHM20	DHM25	DHM30	DH500	
P	1		Non-alloy steel	125		◎	◎	◎	◎	◎	◎	◎	◎		1
	2			190	13	◎	◎	◎	◎	◎	◎	◎	◎		2
	3			250	25	○	○	○	○	○	○	○	○		3
	4			270	28										4
	5			300	32										5
	6		Low alloy steel	180	10	◎	◎	◎	◎	◎	◎	◎	◎		6
	7			275	29	○	○	○	○	○	○	○	○		7
	8			300	32	○	○	○	○	○	○	○	○		8
	9			350	38										9
	10		High alloyed steel, and tool steel	200	15	○	○	○	○	○	○	○	○		10
	11			325	35	○	○	○	○	○	○	○	○		11
M	12		Stainless steel	200	15										12
	13			240	23										13
	14			180	10										14
K	15		Grey cast iron	180	10	◎	◎	◎	◎	◎	◎	◎	◎		15
	16			260	26	○	○	○	○	○	○	○	○		16
	17		Nodular cast iron	160	3	◎	◎	◎	◎	◎	◎	◎	◎		17
	18			250	25	○	○	○	○	○	○	○	○		18
	19		Malleable cast iron	130		◎	◎	◎	◎	◎	◎	◎	◎		19
	20			230	21	○	○	○	○	○	○	○	○		20
N	21		Aluminum-wrought alloy	60											21
	22			100											22
	23		Aluminum-cast, alloyed	75											23
	24			90											24
	25			130											25
	26		Copper and Copper Alloys (Bronze / Brass)	110											26
	27			90											27
	28			100											28
	29		Non Metallic Materials												29
	30														30
S	31		Heat Resistant Super Alloys	200	15										31
	32			280	30										32
	33			250	25										33
	34			350	38										34
	35			320	34										35
	36		Titanium Alloys	400 Rm											36
	37			1050 Rm											37
H	38		Hardened steel	550	55									◎	38
	39			630	60									◎	39
	40		Chilled Cast Iron	400	42										40
	41		Hardened Cast Iron	550	55										41

	GENERAL CARBIDE DRILLS		MULTI-1		HPD STRAIGHT SHANK DRILLS				GOLD-P DRILLS				SUPER-GP DRILLS
	D5405	D5407	CDRA03	CDRA04	D4541	D4542	DJ543	DJ544	D1GP125	D1GP165	DLGP195	DLGP506	DSH105
DRILLING DEPTH / STANDARD	DIN 6539	DIN 338	-		-		-		DIN 338	DIN 338	DIN 338	DIN 338	DIN 338
TOOL MATERIAL	CARBIDE		HSS-PM		HSS Co8		HSS-E		HSS				HSS
LENGTH	STUB	JOBBER	STUB	JOBBER	STUB	JOBBER	STUB	JOBBER	JOBBER	JOBBER	JOBBER	JOBBER	JOBBER
SIZE MIN	D1.0	D1.0	D1.0	D2.0	D2.0	D2.0	D2.0	D2.0	D1.0	D1.6	D1.0	D2.0	D2.0
SIZE MAX	D13.0	D13.0	D13.0	D13.0	D13.0	D32.0	D13.0	D20.0	D13.0	D13.0	D13.0	D13.0	D13.0
PAGE	A155	A157	A163	A166	A173	A177	A183	A186	A194	A197	A200	A203	A211
SURFACE TREATMENT	Bright		TiAlN		TiN				TiN				Vap



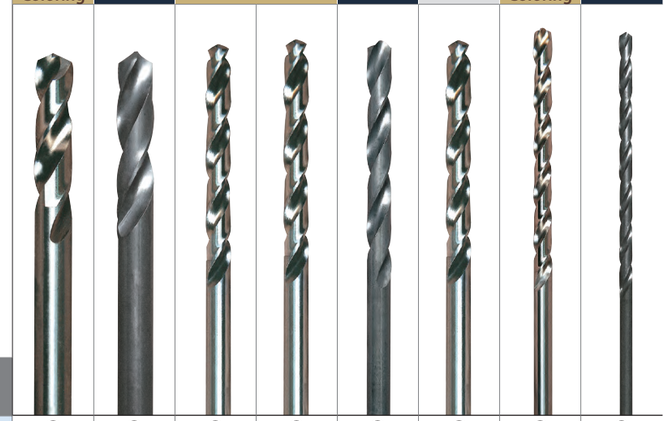
	D5405	D5407	CDRA03	CDRA04	D4541	D4542	DJ543	DJ544	D1GP125	D1GP165	DLGP195	DLGP506	DSH105		
1	◎	◎	◎	◎	◎	◎	○	○	◎	◎	◎	◎	◎	1	
2	○	○	◎	◎	◎	◎			◎	◎	◎	◎	◎	2	
3			○	○	○	○			◎	◎	◎	◎	◎	3	
4									○	○	○	○	○	4	
5														5	
6	○	○	◎	◎	◎	◎			◎	◎	◎	◎	◎	6	P
7			○	○	○	○			○	○	○	○	○	7	
8			○	○					○	○	○	○	○	8	
9			○	○										9	
10					○	○			○	○	○	○	○	10	
11														11	
12	○	○	○	○			◎	◎	◎	◎	◎		○	12	
13							○	○	○	○	○		○	13	M
14			◎	◎			◎	◎	○	○	○		○	14	
15	○	○	○	○	◎	◎			○	○	○	○	○	15	
16									○	○	○	○	○	16	
17									○	○	○	○	○	17	K
18												○		18	
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

STRAIGHT SHANK DRILLS

SERIES	D2107	D1107	D2105	DL105	D1105	D1125	D2104	D1121
STANDARD	DIN 1897	DIN 1897	DIN 338	DIN 338	DIN 338	DIN 338	DIN 340	DIN 1869/1
TOOL MATERIAL	HSS Co8	HSS	HSS Co8	HSS-E	HSS	HSS	HSS Co8	HSS
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	A220	A224	A227	A230	A233	A238	A241	A243
SURFACE TREATMENT	Gold Coloring	Vap	Gold Coloring		Vap	Bright	Gold Coloring	Vap



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◎ : Excellent ○ : Good

ISO	VDI 3323	Material Description	HB	HRc	D2107	D1107	D2105	DL105	D1105	D1125	D2104	D1121
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

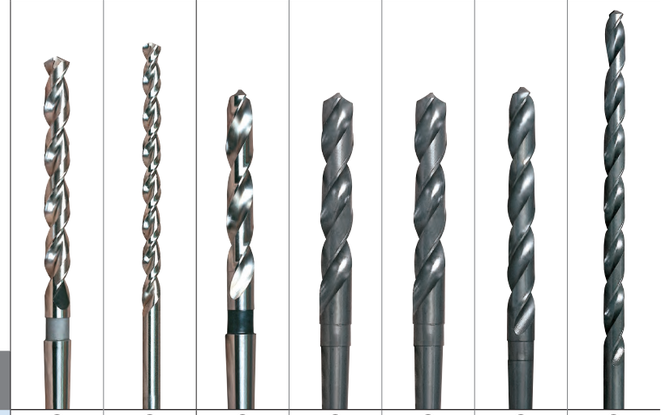
SERIES	DL109	D1100	D1106	DH100 DL510	DH100 DL508	DH100 DL509	DH100 DL505	DH100 DL504	DH100 DT600	DH100 DT692	DH100 DT693
STANDARD	DIN 338	DIN 338	DIN 338	DIN 1897	DIN 338	DIN 340	DIN 338	DIN 340	DIN 1869/1	DIN 1869/2	DIN 1869/3
TOOL MATERIAL	HSS-E	HSS		HSS-E							
LENGTH	JOBBER	JOBBER	JOBBER	STUB	JOBBER	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	A244	A245	A247	A249	A251	A253	A255	A257	A258		
SURFACE TREATMENT	Bright						Vap		TiAlN		

ISO	VDI 3323	Material Description	HB	HRc	DL109	D1100	D1106	DH100 DL510	DH100 DL508	DH100 DL509	DH100 DL505	DH100 DL504	DH100 DT600	DH100 DT692	DH100 DT693
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

YG HOLEMAKING TOOLS

	STRAIGHT SHANK DRILLS		MORSE TAPER SHANK DRILLS				
SERIES	DH100 DL608	DH50 DL507	DL205	D1205	D1206	D1209	D1210
STANDARD	DIN 341	-	DIN 345	DIN 345	DIN 341	DIN 1870/1	DIN 1870/2
TOOL MATERIAL	HSS-E		HSS-E	HSS			
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	A259	A260	A270	A271	A274	A275	A276
SURFACE TREATMENT	Bright		Bright	Vap			



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							

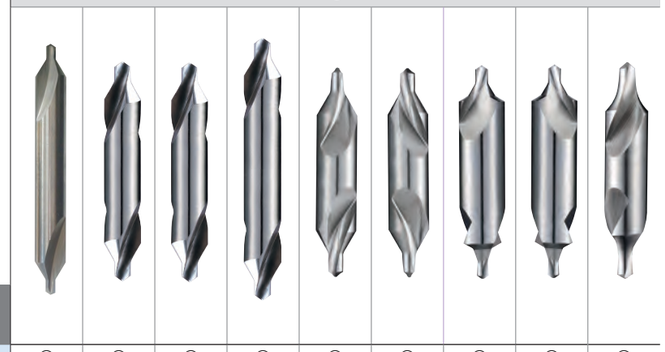
	NC-SPOTTING DRILLS					COUNTERSINKS				
	D5306 D5307	D5320	D2306 D2321	D2307 D2322	D2320 D2323	C1109 C3109	C1119 C3119	C1136 C3136	C1139 C3139	C1132 C3132
STANDARD	-	-	-	-	-	-	-	DIN 334C	DIN 335C	-
TOOL MATERIAL	CARBIDE		HSS Co8			HSS & HSS Co8				
	90° / 120°	142°	90°	120°	142°	90°	90°	60°	90°	120°
	D6.0	D3.0	D3.0	D3.0 / D6.0	D3.0 / D6.0	D10.0	D10.0	D6.3	D4.3	D8.0
	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	A281	A282	A283	A284	A285	A410	A411	A412	A413	A414
SURFACE TREATMENT	Bright					Bright				

	◎	◎	◎	◎	◎	○	○	◎	◎	◎	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	N
						○	○	○	○	○	26	
						○	○	○	○	○	27	
						○	○	○	○	○	28	
											29	
											30	
											31	
											32	
											33	
											34	S
											35	
	○	○									36	
											37	
											38	
											39	H
											40	
											41	

SELECTION GUIDE

HOLEMAKING TOOLS

	CENTER DRILLS								
SERIES	D5303	DV303	DV333	DV334	D1303	D1343	D1313	D1353	D1363
TOOL MATERIAL	CARBIDE	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS
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	A290	A291		A292	A293		A294		A295
SURFACE TREATMENT	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									

	CENTER DRILLS		REAMERS									
	D1373	DV383	K4101	K4111	K1143	K1153	K2101	K2111	K2121	K2102	K2112	K21B1
	HSS	HSS-E	CARBIDE	CARBIDE	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
	-	-										
	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
	A295	A296	A384	A385	A386	A388	A390	A392	A394	A395	A397	A399
	Bright		Bright									

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

SELECTION GUIDE

HOLEMAKING TOOLS

COUNTERBORES

SERIES	EL950
TOOL MATERIAL	HSS-E
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	A419
SURFACE TREATMENT	Bright

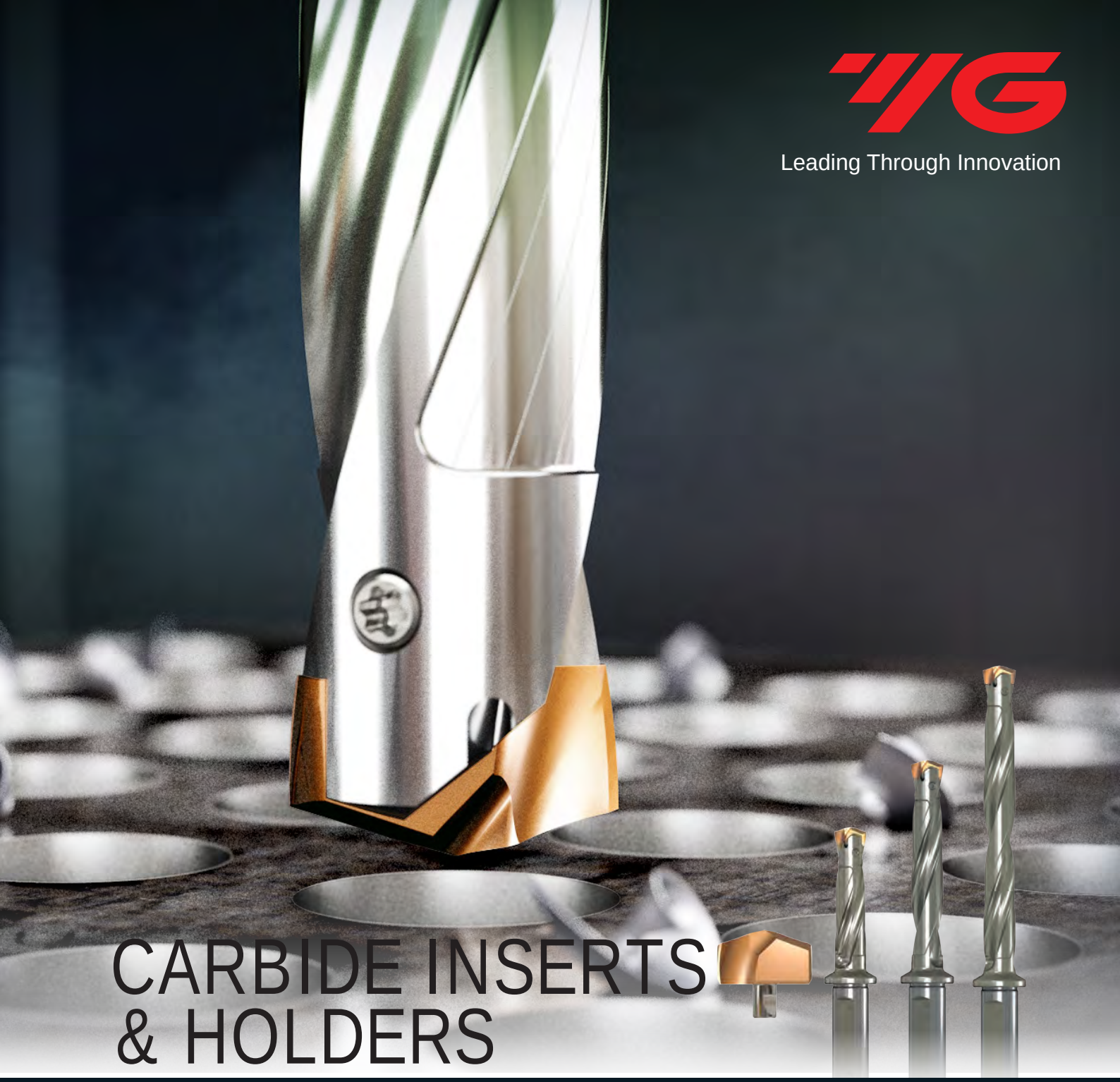
Please visit globalyg1.com/mat for material search

◎ : 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	

YG

Leading Through Innovation



CARBIDE INSERTS & HOLDERS

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

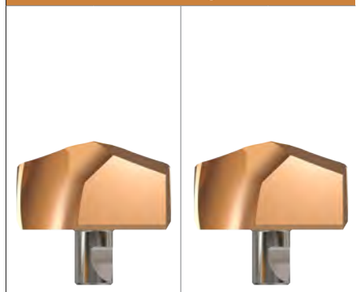
High Performance Exchangeable
for General Steels and Cast Iron

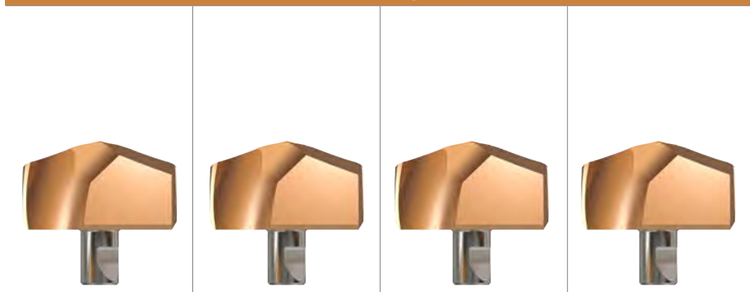
Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A34

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	A24	A25	A26	A27	A28	A29	A30	A31	A32		A33				
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		◎	◎	◎	◎	◎	◎	◎	◎				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
	13			Martensitic	Quenched & Tempered	240	23												13 M
	14			Austenitic10		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 K
	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 S
	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 H
	40		Chilled Cast Iron		Cast	400	42												40
	41		Hardened Cast Iron		Hardened	550	55												41

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

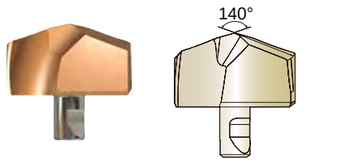
Y101H SERIES

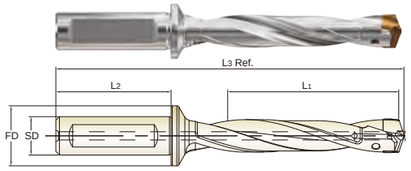
i-ONE DRILL INSERTS & HOLDERS

- 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° | H Coating | p.A34

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Unit : mm

Series Range	Insert EDP No.	Insert O.D. h7			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(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								
	Y101H1020	0.4016	-	10.20	ZD10005016				5D	52.5	123.0	
	Y101H1030	0.4055	-	10.30								
	Y101H1032	0.4063	13/32	10.32	ZD10008016				8D	84.0	153.0	
	Y101H1040	0.4094	-	10.40								
	Y101H1050	0.4134	-	10.50	ZD10503016	16	48	23	3D	33.0	104.0	
	Y101H1060	0.4173	-	10.60								
	Y101H1070	0.4213	-	10.70	ZD10505016				5D	55.0	125.0	
	Y101H1072	0.4219	27/64	10.72								
	Y101H1080	0.4252	-	10.80	ZD10508016				8D	88.0	156.5	
	Y101H1090	0.4291	-	10.90								
	Y101H1100	0.4331	-	11.00	ZD11003016	16	48	23	3D	34.5	105.0	
	Y101H1110	0.4370	-	11.10								
	Y101H1111	0.4375	7/16	11.11	ZD11005016				5D	57.5	127.0	
	Y101H1120	0.4409	-	11.20								
	Y101H1130	0.4449	-	11.30	ZD11008016				8D	92.0	160.0	
	Y101H1140	0.4488	-	11.40								
	Y101H1150	0.4528	-	11.50	ZD11503016	16	48	23	3D	36.0	106.0	
	Y101H1151	0.4531	29/64	11.51								
	Y101H1160	0.4567	-	11.60	ZD11505016				5D	60.0	129.0	
	Y101H1170	0.4606	-	11.70								
	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

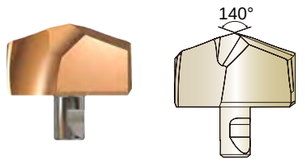
Y121H SERIES

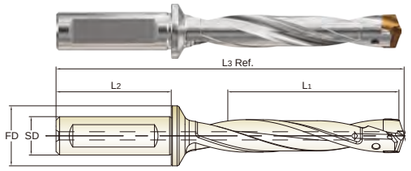
i-ONE DRILL INSERTS & HOLDERS

- 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° | H Coating | p.A34

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Unit : mm

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

i - ONE DRILLS

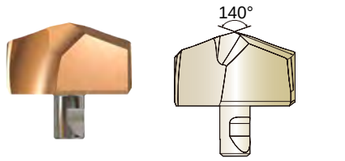
Y141H SERIES

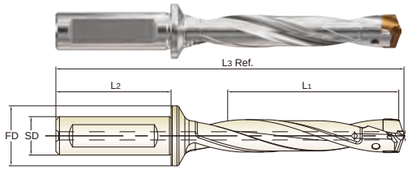
i-ONE DRILL INSERTS & HOLDERS

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° | H Coating | p.A34

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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.	
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								
	Y141H1420	0.5591	-	14.20	ZD14005016				5D	72.5	144.3	
	Y141H1429	0.5625	9/16	14.29								
	Y141H1430	0.5630	-	14.30	ZD14008016				8D	116.0	186.3	
	Y141H1440	0.5669	-	14.40								
	Y141H1450	0.5709	-	14.50	ZD14503016				3D	45.0	118.3	
	Y141H1460	0.5748	-	14.60								
	Y141H1468	0.5781	37/64	14.68	ZD14505016				5D	75.0	147.3	
	Y141H1470	0.5787	-	14.70								
	Y141H1480	0.5827	-	14.80	ZD14508016				8D	120.0	190.8	
	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								
	Y141H1510	0.5945	-	15.10								
	Y141H1520	0.5984	-	15.20	ZD15005016				5D	77.5	150.3	
	Y141H1530	0.6024	-	15.30								
	Y141H1540	0.6063	-	15.40	ZD15008016				8D	124.0	195.3	
	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								
	Y141H1570	0.6181	-	15.70								
	Y141H1580	0.6220	-	15.80	ZD15505016				5D	80.0	152.3	
	Y141H1588	0.6250	5/8	15.88								
	Y141H1590	0.6260	-	15.90	ZD15508016				8D	128.0	198.8	

▶ 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			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 -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

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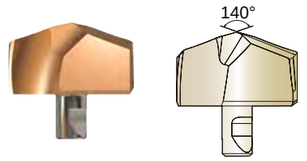
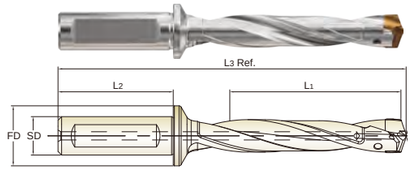
- Anwendungen
▶Für Kohlenstoffstähle, legierte Stähle und Gusseisen.
▶Halterlänge: 3xD, 5xD, 8xD
- Vorteile
▶Sicheres und schnelles Spannsystem.
▶Hohe Leistungsfähigkeit bei gleichzeitiger Kosteneffizienz.
▶Mehrschichtige Beschichtung bietet hervorragende Produktivität und Zuverlässigkeit.





CARBIDE | ISO 9766 | h7 | 140° | H Coating | p.A34

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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.	
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								
	Y161H1610	0.6339	-	16.10								
	Y161H1620	0.6378	-	16.20								
	Y161H1627	0.6406	41/64	16.27								
	Y161H1630	0.6417	-	16.30								
	Y161H1640	0.6457	-	16.40	ZD16005020				5D	85.0	160.0	
	Y161H1650	0.6496	-	16.50								
	Y161H1660	0.6535	-	16.60								
	Y161H1667	0.6563	21/32	16.67	ZD16008020				8D	136.0	209.5	
	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								
	Y161H1710	0.6732	-	17.10								
	Y161H1720	0.6772	-	17.20								
	Y161H1730	0.6811	-	17.30								
	Y161H1740	0.6850	-	17.40								
	Y161H1746	0.6875	11/16	17.46	ZD17005020				5D	90.0	165.0	
	Y161H1750	0.6890	-	17.50								
	Y161H1760	0.6929	-	17.60								
	Y161H1770	0.6969	-	17.70								
	Y161H1780	0.7008	-	17.80	ZD17008020				8D	144.0	217.5	
	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

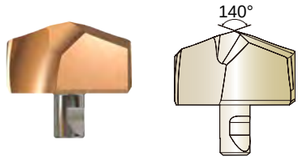
Y181H SERIES

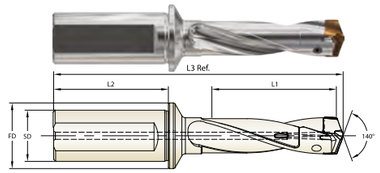
i-ONE DRILL INSERTS & HOLDERS

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

- Applications
▶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.





FULL-FLAT SHANK

CARBIDE | ISO 9766 | h7 | 140° | H Coating | p.A34

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER / ER COLLET CHUCK

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	L_2	FD	L_1		L_3 Ref.	
		dec.	frac.	mm								
S18 Ø18.00 to Ø19.99	Y181H1800	0.7087	-	18.00	ZD18003025	25	56	32	3D	57.0	141.3	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	ZD18005025				5D	95.0	178.3	
	Y181H1850	0.7283	-	18.50								
	Y181H1860	0.7323	-	18.60								
	Y181H1865	0.7344	47/64	18.65	ZD18008025				8D	152.0	233.8	
	Y181H1870	0.7362	-	18.70								
	Y181H1880	0.7402	-	18.80								
	Y181H1890	0.7441	-	18.90								
	Y181H1900	0.7480	-	19.00	ZD19003025	25	56	32	3D	60.0	145.3	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	ZD19005025				5D	100.0	184.3	
	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	ZD19008025				8D	160.0	242.8	

▶ 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			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

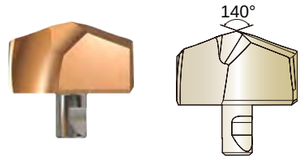
Y201H SERIES

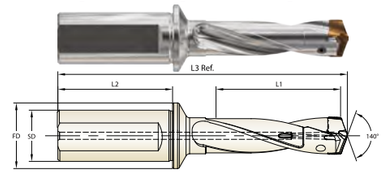
i-ONE DRILL INSERTS & HOLDERS

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

- 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.





FULL-FLAT SHANK

CARBIDE | ISO 9766 | h7 | 140° | H Coating | p.A34

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER / ER COLLET CHUCK

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	L_2	FD	L_1		L_3 Ref.	
		dec.	frac.	mm								
S20 Ø20.00 to Ø21.99	Y201H2000	0.7874	-	20.00	ZD20003025	25	56	32	3D	63.0	147.5	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	ZD20005025				5D	105.0	188.5	
	Y201H2050	0.8071	-	20.50								
	Y201H2060	0.8110	-	20.60								
	Y201H2064	0.8125	13/16	20.64	ZD20008025				8D	168.0	250.0	
	Y201H2070	0.8150	-	20.70								
	Y201H2080	0.8189	-	20.80								
	Y201H2090	0.8228	-	20.90								
	Y201H2100	0.8268	-	21.00	ZD21003025	25	56	32	3D	66.0	150.5	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	ZD21005025				5D	110.0	193.5	
	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	ZD21008025				8D	176.0	258.0	

▶ 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			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

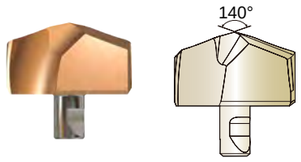
Y221H SERIES

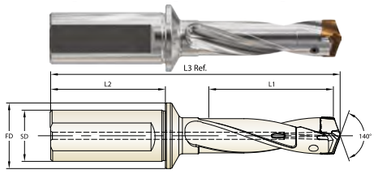
i-ONE DRILL INSERTS & HOLDERS

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.





FULL-FLAT SHANK

CARBIDE | ISO 9766 | h7 | 140° | H Coating | p.A34

Recommended ToolHolder: Flat Shank — INDEXABLE DRILL HOLDER — ER COLLET CHUCK

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	L_2	FD	L_1		L_3 Ref.	
		dec.	frac.	mm								
S22 Ø22.00 to Ø23.99	Y221H2200	0.8661	-	22.00	ZD22003025	25	56	32	3D	69.0	153.4	TX2223P9
	Y221H2210	0.8701	-	22.10								
	Y221H2220	0.8740	-	22.20								
	Y221H2223	0.8750	7/8	22.23								
	Y221H2230	0.8780	-	22.30								
	Y221H2240	0.8819	-	22.40	ZD22005025				5D	115.0	198.4	
	Y221H2250	0.8858	-	22.50								
	Y221H2260	0.8898	-	22.60								
	Y221H2262	0.8906	57/64	22.62	ZD22008025				8D	184.0	265.9	
	Y221H2270	0.8937	-	22.70								
	Y221H2280	0.8976	-	22.80								
	Y221H2290	0.9016	-	22.90								
	Y221H2300	0.9055	-	23.00	ZD23003025	25	56	32	3D	72.0	157.4	TX2324P9
	Y221H2302	0.9063	29/32	23.02								
	Y221H2310	0.9094	-	23.10								
	Y221H2320	0.9134	-	23.20								
	Y221H2330	0.9173	-	23.30								
	Y221H2340	0.9213	-	23.40	ZD23005025				5D	120.0	204.4	
	Y221H2342	0.9219	59/64	23.42								
	Y221H2350	0.9252	-	23.50								
	Y221H2360	0.9291	-	23.60								
	Y221H2370	0.9331	-	23.70	ZD23008025				8D	192.0	274.9	
	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																					

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

Y241H 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.

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▶Für Kohlenstoffstähle, legierte Stähle und Gusseisen.
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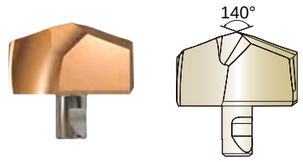
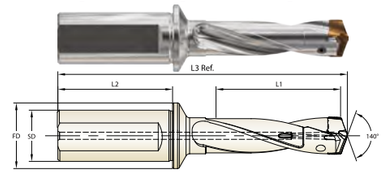
▶Sicheres und schnelles Spannsystem.
▶Hohe Leistungsfähigkeit bei gleichzeitiger Kosteneffizienz.
▶Mehrschichtige Beschichtung bietet hervorragende Produktivität und Zuverlässigkeit.





FULL-FLAT SHANK

CARBIDE | ISO 9766 | h7 | 140° | H Coating | p.A34

Recommended ToolHolder: Flat Shank — INDEXABLE DRILL HOLDER — ER COLLET CHUCK

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	L_2	FD	L_1		L_3 Ref.	
		dec.	frac.	mm								
S24 Ø24.00 to Ø25.99	Y241H2400	0.9449	-	24.00	ZD24003032	32	60	37	3D	75.0	165.8	TX2425P10
	Y241H2410	0.9488	-	24.10								
	Y241H2420	0.9528	-	24.20								
	Y241H2421	0.9531	61/64	24.21								
	Y241H2430	0.9567	-	24.30								
	Y241H2440	0.9606	-	24.40	ZD24005032				5D	125.0	214.8	
	Y241H2450	0.9646	-	24.50								
	Y241H2460	0.9685	-	24.60								
	Y241H2461	0.9688	31/32	24.61	ZD24008032				8D	200.0	288.3	
	Y241H2470	0.9724	-	24.70								
	Y241H2480	0.9764	-	24.80								
	Y241H2490	0.9803	-	24.90								
	Y241H2500	0.9844	63/64	25.00	ZD25003032	32	60	37	3D	78.0	170.8	TX2526P10
	Y241H2510	0.9882	-	25.10								
	Y241H2520	0.9921	-	25.20								
	Y241H2530	0.9961	-	25.30								
	Y241H2540	1.0000	1	25.40								
	Y241H2550	1.0039	-	25.50	ZD25005032				5D	130.0	221.8	
	Y241H2560	1.0079	-	25.60								
	Y241H2567	1.0106	-	25.67								
	Y241H2570	1.0118	-	25.70	ZD25008032				8D	208.0	298.3	
	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																					

i - ONE DRILLS

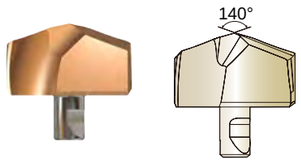
Y261H SERIES
Y281H SERIES

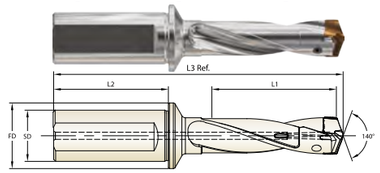
i-ONE DRILL INSERTS & HOLDERS

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.





FULL-FLAT SHANK

CARBIDE | ISO 9766 | h7 | 140° | H Coating | p.A34

Recommended ToolHolder: Flat Shank — INDEXABLE DRILL HOLDER / ER COLLET CHUCK

Unit : mm

Series Range	Insert EDP No.	Insert O.D. h7			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	H-Coating	dec.	frac.	mm		SD	L_2	FD		L_1	L_3 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								
	Y261H2650	1.0433	-	26.50	ZD26005032				5D	135.0	225.2	
	Y261H2659	1.0469	1-3/64	26.59								
	Y261H2699	1.0625	1-1/16	26.99	ZD26008032				8D	216.0	304.	
	Y261H2700	1.0630	-	27.00	ZD27003032	32	60	37	3D	84.0	175.2	TX2728P10
	Y261H2738	1.0781	1-5/64	27.38								
	Y261H2750	1.0827	-	27.50	ZD27005032				5D	140.0	230.2	
	Y261H2778	1.0938	1-3/32	27.78	ZD27008032				8D	224.0	312.7	
S28 Ø28.00 to Ø29.99	Y281H2800	1.1024	-	28.00	ZD28003032	32	60	37	3D	87.0	179.2	TX2829P10
	Y281H2818	1.1094	1-7/64	28.18								
	Y281H2850	1.1220	-	28.50	ZD28005032				5D	145.0	236.2	
	Y281H2858	1.1250	1-1/8	28.58								
	Y281H2897	1.1406	1-9/64	28.97	ZD28008032				8D	232.0	321.7	
	Y281H2900	1.1417	-	29.00	ZD29003032	32	60	37	3D	90.0	183.2	TX2930P10
	Y281H2937	1.1563	1-5/32	29.37								
	Y281H2950	1.1614	-	29.50	ZD29005032				5D	150.0	242.2	
	Y281H2977	1.1719	1-11/64	29.77	ZD29008032				8D	240.0	330.7	

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

◎ : Excellent ○ : Good

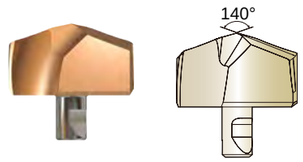
ISO	P											M				K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Duplex	Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14		15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					◎	◎	◎	◎	◎	◎

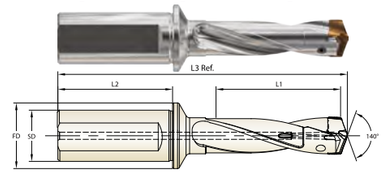
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Y301H SERIES
Y321H 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.





FULL-FLAT SHANK

CARBIDE | ISO 9766 | h7 | 140° | H Coating | p.A34

Recommended ToolHolder: Flat Shank — INDEXABLE DRILL HOLDER / ER COLLET CHUCK

Unit : mm

Series Range	Insert EDP No.	Insert O.D. h7			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
(mm)	H-Coating	dec.	frac.	mm		SD	L_2	FD		L_1	L_3 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								
	Y301H3050	1.2008	-	30.50	ZD30005032				5D	155.0	248.0	
	Y301H3056	1.2031	1-13/64	30.56								
	Y301H3096	1.2188	1-7/32	30.96	ZD30008032				8D	248.0	339.5	
	Y301H3100	1.2205	-	31.00	ZD31003032	32	60	37	3D	96.0	191.0	TX3132P15
	Y301H3135	1.2344	1-15/64	31.35								
	Y301H3150	1.2402	-	31.50	ZD31005032				5D	160.0	254.0	
	Y301H3175	1.2500	1-1/4	31.75	ZD31008032				8D	256.0	348.5	
S32 Ø32.00 to Ø33.99	Y321H3200	1.2598	-	32.00	ZD32003032	32	60	37	3D	99.0	197.2	TX3233P15
	Y321H3215	1.2656	1-17/64	32.15								
	Y321H3250	1.2795	-	32.50	ZD32005032				5D	165.0	262.2	
	Y321H3254	1.2813	1-9/32	32.54								
	Y321H3294	1.2969	1-19/64	32.94	ZD32008032				8D	264.0	359.7	
	Y321H3300	1.2992	-	33.00	ZD33003032	32	60	37	3D	102.0	201.2	TX3334P15
	Y321H3334	1.3125	1-5/16	33.34								
	Y321H3350	1.3189	-	33.50	ZD33005032				5D	170.0	268.2	
	Y321H3373	1.3281	1-21/64	33.73	ZD33008032				8D	272.0	368.7	

▶ 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 -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

ISO	VDI 3323	Material Description	Cutting Speed	Feed					
			Vc	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	**80-135**	0.13-0.29	0.18-0.33	0.23-0.37	0.28-0.43	0.34-0.50	0.36-0.52
	2		**70-120**	0.13-0.29	0.18-0.33	0.23-0.37	0.28-0.43	0.34-0.50	0.36-0.52
	3		**70-95**	0.13-0.29	0.18-0.33	0.23-0.37	0.28-0.43	0.34-0.50	0.36-0.52
	4		**70-95**	0.13-0.29	0.18-0.33	0.23-0.37	0.28-0.43	0.34-0.50	0.36-0.52
	5		**40-80**	0.13-0.29	0.18-0.33	0.23-0.37	0.28-0.43	0.34-0.50	0.36-0.52
	6	Low alloy steel	**80-100**	0.12-0.29	0.17-0.33	0.22-0.35	0.27-0.38	0.32-0.45	0.35-0.49
	7		**70-90**	0.12-0.29	0.17-0.33	0.22-0.35	0.27-0.38	0.32-0.45	0.35-0.49
	8		**60-80**	0.12-0.29	0.17-0.33	0.22-0.35	0.27-0.38	0.32-0.45	0.35-0.49
	9		**50-60**	0.12-0.29	0.17-0.33	0.22-0.35	0.27-0.38	0.32-0.45	0.35-0.49
	10	High alloyed steel, and tool steel	**45-80**	0.12-0.24	0.15-0.29	0.20-0.34	0.25-0.39	0.27-0.39	0.34-0.40
	11		**35-70**	0.12-0.24	0.15-0.29	0.20-0.34	0.25-0.39	0.27-0.39	0.34-0.40
K	15	Grey cast iron	**100-140**	0.15-0.35	0.20-0.40	0.25-0.45	0.30-0.55	0.35-0.60	0.40-0.60
	16		**90-120**	0.15-0.35	0.20-0.40	0.25-0.45	0.30-0.55	0.35-0.60	0.40-0.60
	17	Nodular cast iron	**100-135**	0.15-0.35	0.20-0.40	0.25-0.45	0.30-0.55	0.35-0.60	0.40-0.60
	18		**90-120**	0.15-0.35	0.20-0.40	0.25-0.45	0.30-0.55	0.35-0.60	0.40-0.60
	19	Malleable cast iron	**100-135**	0.15-0.35	0.20-0.40	0.25-0.45	0.30-0.55	0.35-0.60	0.40-0.60
	20		**90-120**	0.15-0.35	0.20-0.40	0.25-0.45	0.30-0.55	0.35-0.60	0.40-0.60

▶ 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.

Comparison with Split Point Drill, Spade Drill & Dream Drill

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
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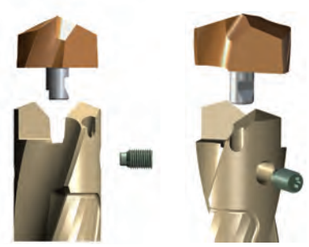
TAPER SHANK DRILLS
NC-SPOTTING DRILLS
CENTER DRILLS
SPADE DRILLS
REAMERS
COUNTER SINKS
COUNTER BORES
TECHNICAL DATA

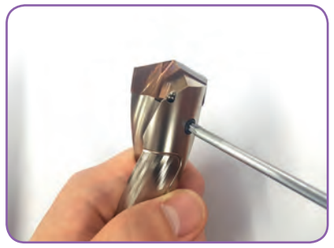
i - ONE DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

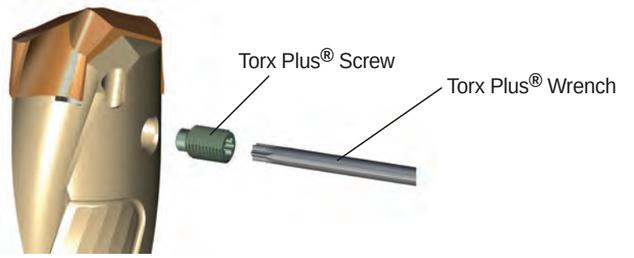
Make sure to clean the insert and insert seat.
Schneideinsatz und Haltersitz sorgfältig reinigen.



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.



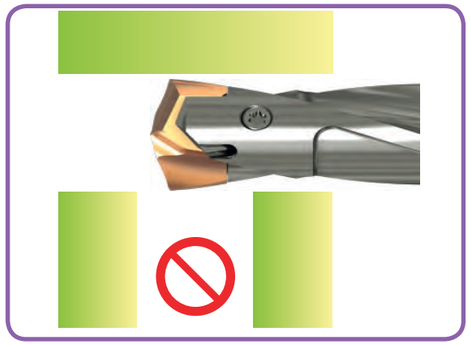
After confirming the insert is pressed down to the bottom of the slot, tighten the screw using anti-seize compound.
Wenn der Schneideinsatz fest auf den Grund des Haltersitzes gepresst ist, die Schraube fest anziehen und dabei Spezialfett verwenden.



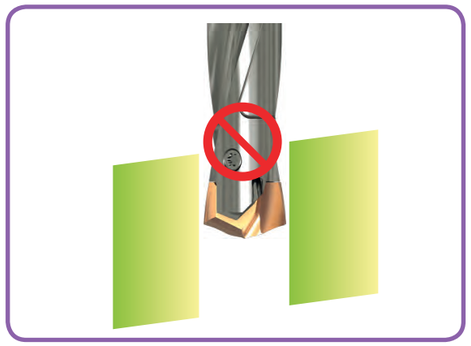
WRENCH TYPE	PRODUCT NO.	SERIES (INSERT SIZE)	TORX PLUS®	TORQUE (N·m)
	TWFP05	S10~S12 (10.00 ~ 13.90)	5 IP	0.6
	TWDP07	S14~S16 (14.00 ~ 17.90)	7 IP	1.0
	TWDP09	S18~S22 (18.00 ~ 23.90)	9 IP	1.5
	TWDP10	S24~S28 (24.00 ~ 29.77)	10 IP	2.2
	TWDP15	S30~S32 (30.00 ~ 33.73)	15 IP	3.2

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.

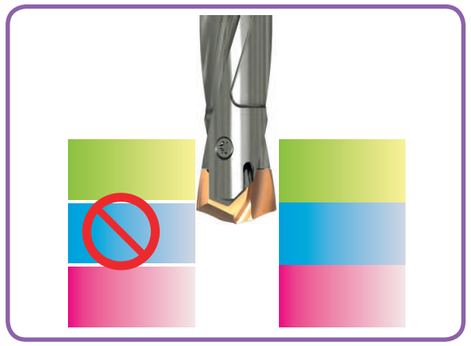
CAUTION-NOT RECOMMENDABLE APPLICATION
ACHTUNG - NICHT EMPFOHLENE ANWENDUNG



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

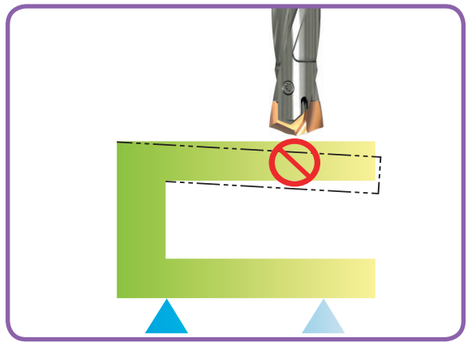


Material with slanting entrance and exit over 7 degrees. (If drilling 7 degrees or under slanting surface, reduce the feed about 30-50%)
Werkstücke mit schrägem Anschnitt oder Austritt von über 7°. (Zum Bohren von bis zu 7° Schräge den Vorschub um ca. 30-50% reduzieren).



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

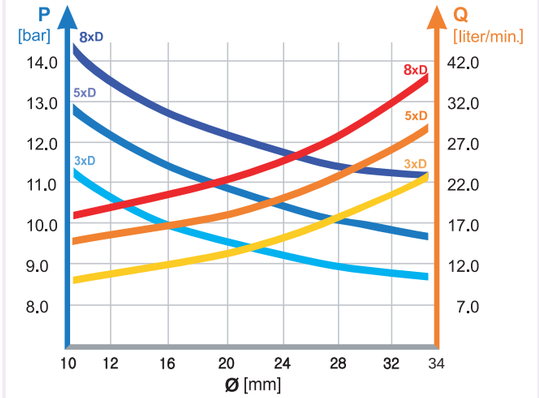
The space between stacked plates can cause insert breakage or poor chip control.
Freiraum in Blechpaketen kann den Bruch des Schneideinsatzes oder schlechte Entspanung verursachen.



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

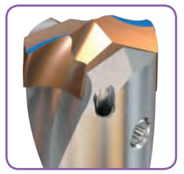
i - ONE DRILLS
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

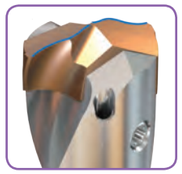


- Recommended emulsion mix is 6 - 8%.
  Empfohlene Emulsionsmischung 6 - 8%.
- For Drilling into Stainless and High Strength steels, a mix of 10% is recommended.
  Beim Bohren in rostfreie und hochfeste Stähle werden 10% empfohlen.
- For horizontal drilling, 30% reduction on the coolant pressure and 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

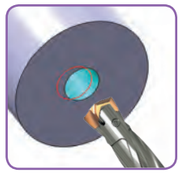


2) Chipping on cutting edge
- Reduce feed
- Check the rigidity of spindle and chuck
- Rigid clamping of workpiece

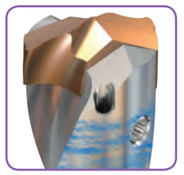
3) Build-up on cutting edge
- Increase cutting speed
- Use a coated insert

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

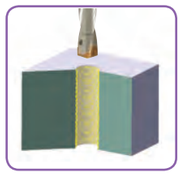
5) Wear of land margin
- Rigid clamping of workpiece
- Reduce cutting speed
- Increase coolant flow



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

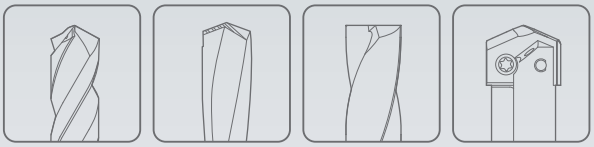


7) Scratching on holder
- Rigid clamping of workpiece
- Reduce feed
- Increase coolant flow



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

Global Cutting Tool Leader YG-1



HOLEMAKING

Leading Through Innovation

CARBIDE INSERTS
& HOLDERS

i-DREAM DRILLS

i-Dream Drills

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

SELECTION GUIDE

YG HOLEMAKING TOOLS

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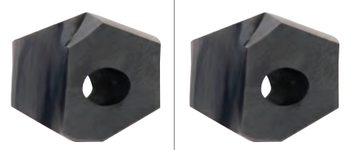
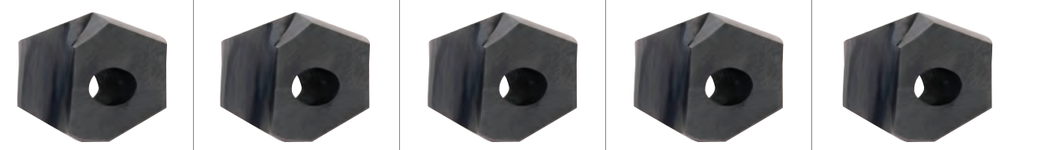
◎ : Excellent ○ : Good

Recommended cutting conditions : p.A54

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	A44		A45		A46		A47		A48		A49		A50	
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		◎	○	◎	○	◎	○	◎	○	◎	○	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

SELECTION GUIDE

YG HOLEMAKING TOOLS

CARBIDE INSERTS & HOLDERS

i-DREAM DRILLS

For General Steels and Stainless Steels

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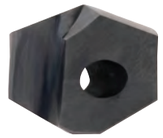
◎ : Excellent ○ : Good

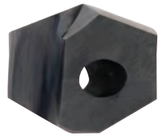
Recommended cutting conditions : p.A54

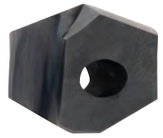
SERIES	YH1A	YH2C
TYPE	H	
SIZE MIN	26.00	
SIZE MAX	27.78	
PAGE	A51	
SURFACE TREATMENT	TiAlN	TiCN



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	YH1A	YH2C
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		

YI1A	YI2C	YJ1A	YJ2C	ZH*3	ZH*5	ZH*7
I		J				
28.00		30.00				
29.77		31.75				
A52		A53				
TiAlN	TiCN	TiAlN	TiCN	3XD	5XD	7XD





◎	○	◎	○				1	
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							39	
							40	H
							41	

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° | TiAlN | TiCN

p.A54, A55

Flat Shank — INDEXABLE DRILL HOLDER / ER COLLET CHUCK — Recommended ToolHolder

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)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 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	ZH13503020	20	50	25	3D	40.5	116.4	
	YA1A1360	YA2C1360	.5354	-	13.60	ZH13505020				5D	67.5	143.4	
	YA1A1370	YA2C1370	.5394	-	13.70	ZH13507020				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																				
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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	○	○	○	○	○	○	○	○													

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

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CARBIDE | ISO 9766 | h7 | 140° | TiAlN | TiCN

p.A54, A55

Flat Shank — INDEXABLE DRILL HOLDER / ER COLLET CHUCK — Recommended ToolHolder

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)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 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								
	YB1A1440	YB2C1440	.5669	-	14.40								
	YB1A1450	YB2C1450	.5709	-	14.50	ZH14503020	20	50	25	3D	43.5	120.9	TX1516T08
	YB1A1460	YB2C1460	.5748	-	14.60	ZH14505020				5D	72.5	149.9	
	YB1A1468	YB2C1468	.5781	37/64	14.68	ZH14507020				7D	101.5	178.9	
	YB1A1480	YB2C1480	.5827	-	14.80								
	YB1A1500	YB2C1500	.5906	-	15.00	ZH15003020	20	50	25	3D	45	122.9	
	YB1A1508	YB2C1508	.5938	19/32	15.08	ZH15005020				5D	75	152.9	
	YB1A1510	YB2C1510	.5945	-	15.10	ZH15007020				7D	105	182.9	
	YB1A1520	YB2C1520	.5984	-	15.20								
	YB1A1530	YB2C1530	.6024	-	15.30								
	YB1A1548	YB2C1548	.6094	39/64	15.48								
	YB1A1550	YB2C1550	.6102	-	15.50	ZH15503020	20	50	25	3D	46.5	123.9	
	YB1A1560	YB2C1560	.6142	-	15.60	ZH15505020				5D	77.5	154.9	
	YB1A1570	YB2C1570	.6181	-	15.70	ZH15507020				7D	108.5	185.9	
	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	○	○	○	○	○	○	○	○													

YG 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
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.
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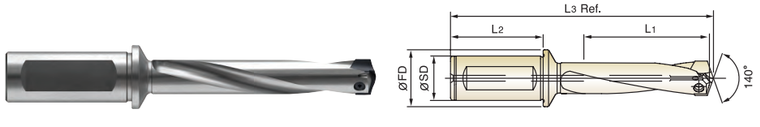
Optimierte Nutenform für maximale Spanabfuhr.



CARBIDE | ISO 9766 | h7 | 140° | TiAlN | TiCN

p.A54, A55

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 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								
	YC1A1620	YC2C1620	.6378	-	16.20	ZH16005020				5D	80	157.0	
	YC1A1627	YC2C1627	.6406	41/64	16.27	ZH16007020				7D	112	189.0	
	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	○	○	○	○	○	○	○	○													

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

YD1A SERIES
YD2C 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

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

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Für zähe, verformbare Werkstoffe und rostfreie Stähle.
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▶ 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-

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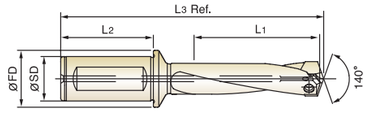

CARBIDE | ISO 9766 | h7 | 140° | TiAlN | TiCN

p.A54, A55

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 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	
						ZH18007025				7D	126	212.3	
	YD1A1850	YD2C1850	.7283	-	18.50	ZH18503025	25	56	32	3D	55.5	141.1	
	YD1A1865	YD2C1865	.7344	47/64	18.65	ZH18505025				5D	92.5	178.3	
	YD1A1880	YD2C1880	.7402	-	18.80	ZH18507025				7D	129.5	215.3	
	YD1A1900	YD2C1900	.7480	-	19.00	ZH19003025	25	56	32	3D	57	144.3	TX1920T15
	YD1A1905	YD2C1905	.7500	3/4	19.05	ZH19005025				5D	95	182.3	
	YD1A1927	YD2C1927	.7587	-	19.27								
	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	

▶ 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
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	○	○	○	○	○	○	○	○													

YG i - DREAM DRILLS

YE1A SERIES
YE2C SERIES

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i-DREAM DRILL EINSÄTZE UND HALTER
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INSERTI & PORTAINSERTI i-DREAM DRILL

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Merkmale des i-Dream Drill Einsätze

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i-Dream Drill ***General*** */ i-Dream Drill* ***allgemeinen***
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▶ Reduce built-up edge / Reduzierte Gratbildung

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

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Speziell legierter Stahl, der seine Härte und Zähigkeit auch bei hohen Temperaturen behält.
▶ Innovative surface treatment improves wear resistance and reduces corrosion.
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▶ High Performance flute design allows maximum chip evacuation and minimum interference.
Optimierte Nutenform für maximale Spanabfuhr.

CARBIDE | ISO 9766 | h7 | 140° | TiAlN | TiCN

p.A54, A55

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 mm		SD	L2	FD	L1		L3 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	○	○	○	○	○	○	○	○													

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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
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CENTER DRILLS
SPADE DRILLS
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CARBIDE | ISO 9766 | h7 | 140° | TiAlN | TiCN

p.A54, A55

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 mm		SD	L2	FD	L1		L3 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

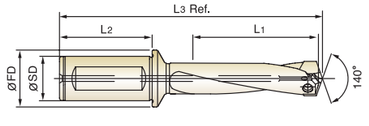
▶ Secure and accurate seating resulting in accurate repeatability and concentricity.
Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.

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° | TiAlN | TiCN

p.A54, A55

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 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	
						ZH24007032				7D	168	260.8	
	YG1A2450	YG2C2450	.9646	-	24.50	ZH24503032	32	60	37	3D	73.5	165.8	
	YG1A2461	YG2C2461	.9688	31/32	24.61	ZH24505032				5D	122.5	214.8	
	YG1A2470	YG2C2470	.9724	-	24.70	ZH24507032				7D	171.5	263.8	
	YG1A2500	YG2C2500	.9843	63/64	25.00	ZH25003032	32	60	37	3D	75	167.8	TX2526T20
	YG1A2540	YG2C2540	1.0000	1	25.40	ZH25005032				5D	125	217.8	
						ZH25007032				7D	175	267.8	
	YG1A2550	YG2C2550	1.0039	-	25.50	ZH25503032	32	60	37	3D	76.5	170.8	
	YG1A2567	YG2C2567	1.0106	-	25.67	ZH25505032				5D	127.5	221.8	
	YG1A2570	YG2C2570	1.0118	-	25.70	ZH25507032				7D	178.5	272.8	
	YG1A2580	YG2C2580	1.0156	1-1/64	25.80								

▶ 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	○	○	○	○	○	○	○	○													

YG i - DREAM DRILLS

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INSERTI & PORTAINSERTI i-DREAM DRILL

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Merkmale des i-Dream Drill Einsätze

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Für zähe, verformbare Werkstoffe und rostfreie Stähle.
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▶ 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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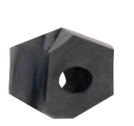

CARBIDE | ISO 9766 | h7 | 140° | TiAlN | TiCN

p.A54, A55

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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)	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 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	
						ZH26007032				7D	182	275.2	
	YH1A2650	YH2C2650	1.0433		26.50	ZH26503032	32	60	37	3D	79.5	172.2	
	YH1A2659	YH2C2659	1.0469	1-3/64	26.59	ZH26505032				5D	132.5	225.2	
	YH1A2699	YH2C2699	1.0625	1-1/16	26.99	ZH26507032				7D	185.5	278.2	
	YH1A2700	YH2C2700	1.0630	-	27.00	ZH27003032	32	60	37	3D	81	174.2	TX2728T25
						ZH27005032				5D	135	228.2	
						ZH27007032				7D	189	282.2	
	YH1A2750	YH2C2750	1.0827	-	27.50	ZH27503032	32	60	37	3D	82.5	175.2	
	YH1A2778	YH2C2778	1.0938	1-3/32	27.78	ZH27505032				5D	137.5	230.2	
						ZH27507032				7D	192.5	285.2	

▶ 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
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	○	○	○	○	○	○	○	○													

i - DREAM DRILLS

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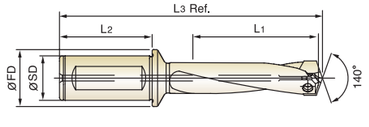

CARBIDE | ISO 9766 | h7 | 140° | TiAlN | TiCN

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Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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.
	General (TiAlN)	INOX (TiCN)	h7				SD	L2	FD	L1	L3 Ref.	
(mm)			dec.	frac.	mm							
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
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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	○	○	○	○	○	○	○	○													

i - DREAM DRILLS

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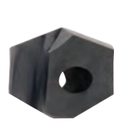
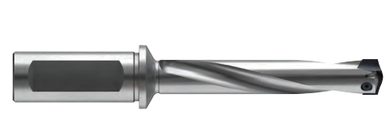




CARBIDE | ISO 9766 | h7 | 140° | TiAlN | TiCN

p.A54, A55

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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.
	General (TiAlN)	INOX (TiCN)	h7				SD	L2	FD	L1	L3 Ref.	
(mm)			dec.	frac.	mm							
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

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

ISO	VDI 3323	Material Description	Vc	Feed				
				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
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

▶ 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.

Comparison with Split Point Drill, Spade Drill & Dream Drill

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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 - DREAM DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

i-DREAM DRILLS - INOX

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

ISO	VDI 3323	Material Description	Vc	Feed				
				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
	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
	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
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
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

▶ 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.

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.

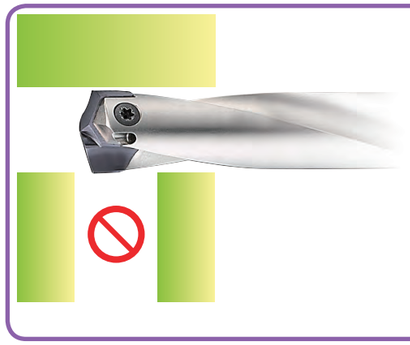
After confirming the insert is pressed down to the bottom of the slot, tighten the screw using anti-seize compound.
Wenn der Schneideinsatz fest auf den Grund des Haltersitzes gepresst ist, die Schraube fest anziehen und dabei Spezialfett verwenden.

WRENCH TYPE	PRODUCT No.	T-HANDLE No.	SERIES (SIZE)	CLAMPING TORQUE (N·m)
WING TYPE	TWWT08	—	A (Ø12.00-Ø13.99)	2.4
			B (Ø14.00-Ø15.99)	
			C (Ø16.00-Ø17.99)	
TORX BIT TYPE	TWBT15	TWH600	D (Ø18.00-Ø19.99)	6
	TWBT20		E, F, G (Ø20.00-Ø25.99)	10
	TWBT25		H, I, J (Ø26.00-Ø31.99)	13

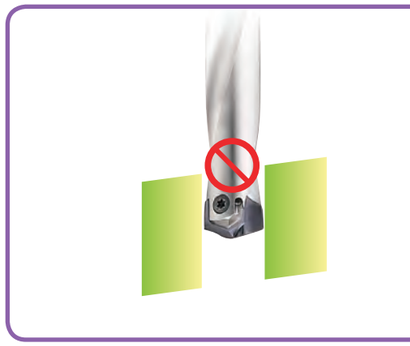
Use the wing type or T-type wrench.
Benutzen Sie den Winkeldreher oder T - Schlüsse

- ▶ 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.

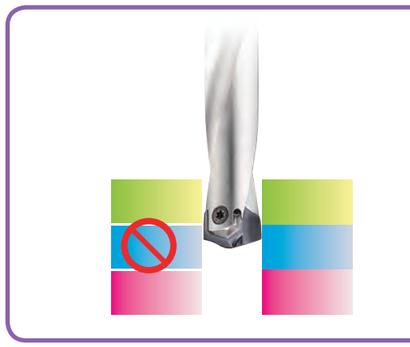
CAUTION-NOT RECOMMENDABLE APPLICATION
ACHTUNG - NICHT EMPFOHLENE ANWENDUNG



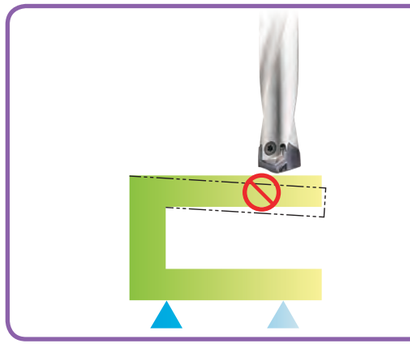
Intersecting cross hole is bigger than the drill insert's Margin Length.
Der Haltersitz ist größer als die Breite des Schneideinsatzes.



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).

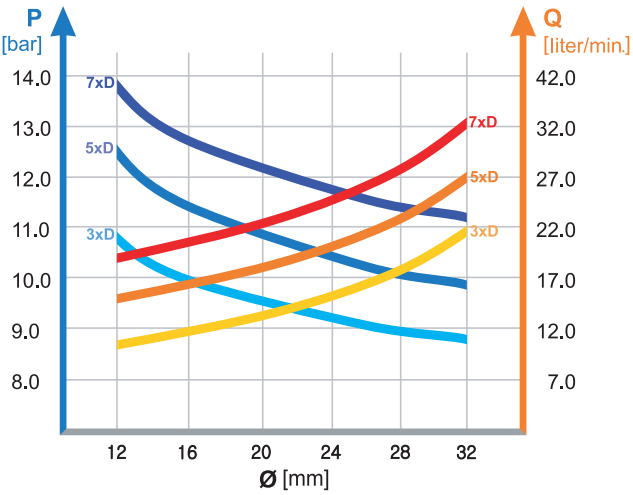


For drilling stacked plates, minimize the space between the plates.
Beim Bohren von Blechpaketen den Abstand der Bleche minimieren.
The space between stacked plates can cause insert breakage or poor chip control.
Freiraum in Blechpaketen kann den Bruch des Schneideinsatzes oder schlechte Entspanung verursachen.



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

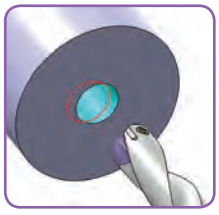
1) Heavy flank wear / Fast flank wear
- Reduce cutting speed
- Increase feed

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

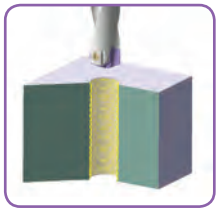
4) Chipping or break down on outer corner
- Reduce feed
- Rigid clamping of workpiece

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



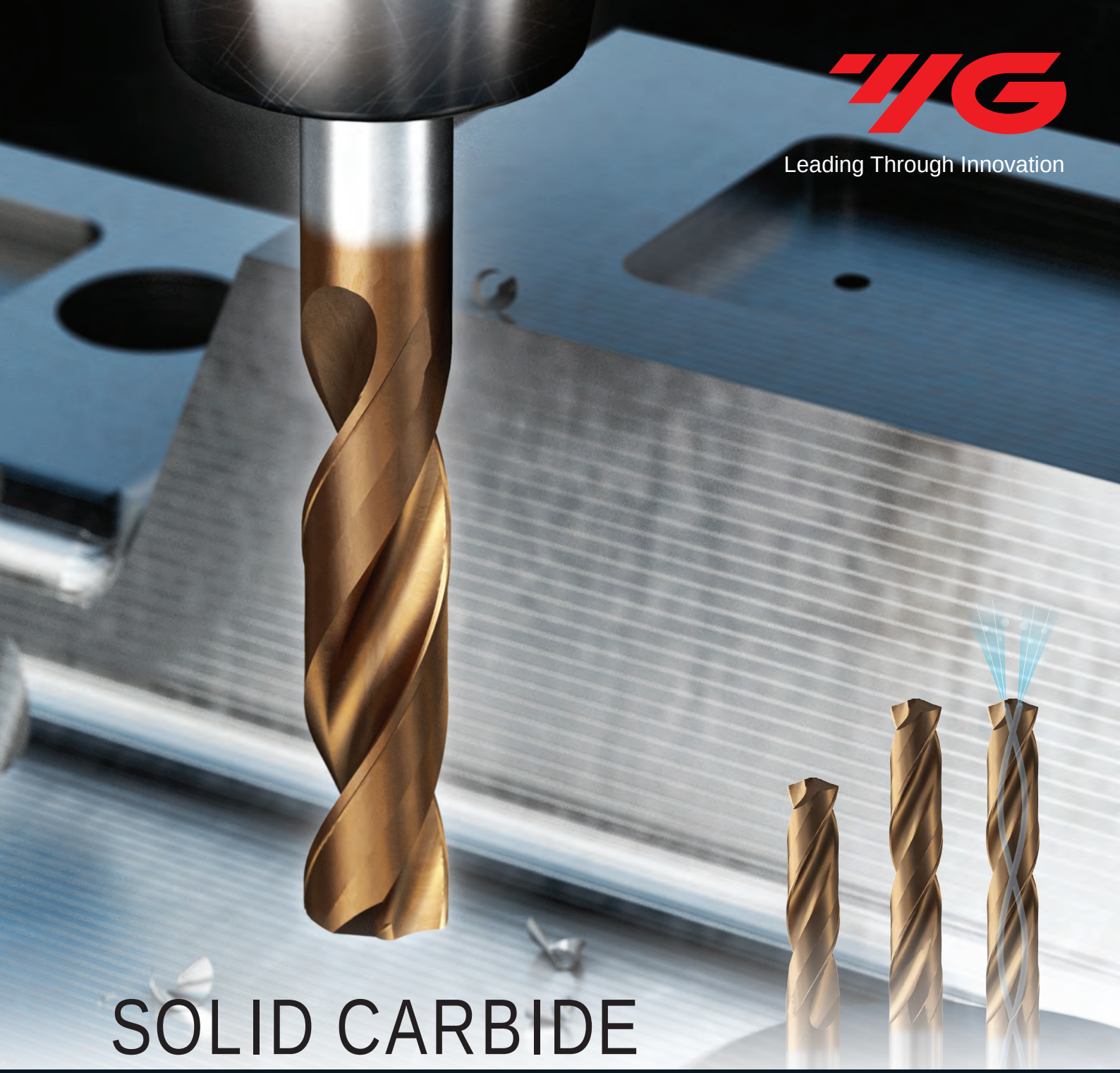
6) Unsatisfactory positioning of the hole
- Rigid clamping of workpiece
- Reduce feed during entrance or exit

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

Leading Through Innovation



SOLID CARBIDE

DREAM DRILLS -PRO

VHM DREAM DRILLS PRO BOHRER

- **For General Purpose (HRc30 to HRc50)**
- **Extremely High hardness and Heat resistance due to YG-1 special Z-Coating technology**

- Für allgemeine Zwecke (HRc30 bis HRc50)

- Extrem hohe Härte und Hitzebeständigkeit durch die spezielle Z-Beschichtungstechnologie von YG-1

SELECTION GUIDE

YG HOLEMAKING TOOLS

SERIES	DGN523	DGN526	DGN506	DGN508
DRILLING DEPTH	3XD	5XD	3XD	5XD
LENGTH	SHORT	LONG	SHORT	LONG
SIZE MIN	D3.0	D1.0	D3.0	D1.0
SIZE MAX	D20.0	D20.0	D20.0	D20.0
PAGE	A62	A65	A68	A71
SURFACE TREATMENT	Z-Coating		Z-Coating	

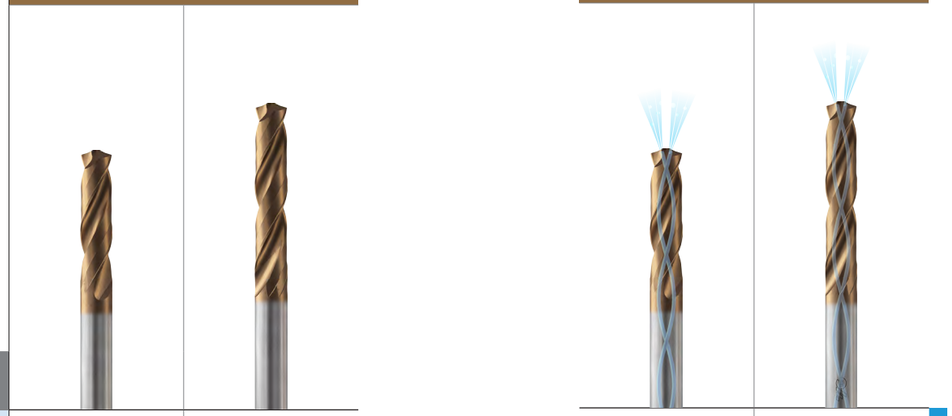
SOLID CARBIDE DREAM DRILLS PRO

For General Purpose (HRc30 to HRc50)
Extremely High hardness and Heat resistance due to YG-1 special Z-Coating technology

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A74



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	DGN523	DGN526	DGN506	DGN508	ISO
P	1	Non-alloy steel	About 0.15% C	Annealed	125						P
	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	○	○	○	○	M
	13		Martensitic	Quenched & Tempered	240	23	○	○	○	○	
	14		Austenitic		180	10					
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎	◎	◎	◎	K
	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						N
	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					S
	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	○	○	○	○	H
	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 -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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 - PRO

DGN523 SERIES

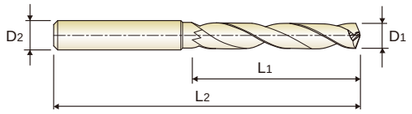
CARBIDE, DREAM DRILLS PRO

SHORT
KURZ
COURTE
CORTA

VHM DREAM DRILLS PRO BOHRER
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO
MD, DREAM DRILLS PRO

- ▶ Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRc30-50), Cast Iron
- ▶ Wave shape cutting edge to improve chip formation for low cutting force
- ▶ Helical thinning for low thrust, stable torque and good chip breakage
- ▶ Extremely high hardness and heat resistance due to YG-1 special Z-Coating technology

- ▶ Bohren für Kohlenstoffstähle, legierte Stähle (HB225-325), vorvergütete Stähle (HRc30-50), Gusseisen
- ▶ Wellenförmige Schneidkante zur Verbesserung der Spanbildung und für geringe Schnittkräfte
- ▶ Spiralförmige Ausspitzung für geringe Axialkräfte, niedrige Schnittmomente und verbesserten Spanbruch
- ▶ Extrem hohe Härte und Hitzebeständigkeit durch die spezielle Z-Beschichtungstechnologie von YG-1



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | Z Coating | p.A74

3 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN523030	3.0	6	20	62
DGN523031	3.1	6	20	62
DGN523032	3.2	6	20	62
DGN523033	3.3	6	20	62
DGN523034	3.4	6	20	62
DGN523035	3.5	6	20	62
DGN523036	3.6	6	20	62
DGN523037	3.7	6	20	62
DGN523038	3.8	6	24	66
DGN523039	3.9	6	24	66
DGN523040	4.0	6	24	66
DGN523041	4.1	6	24	66
DGN523042	4.2	6	24	66
DGN523043	4.3	6	24	66
DGN523044	4.4	6	24	66
DGN523045	4.5	6	24	66
DGN523046	4.6	6	24	66
DGN523047	4.7	6	24	66
DGN523048	4.8	6	28	66
DGN523049	4.9	6	28	66
DGN523050	5.0	6	28	66
DGN523051	5.1	6	28	66
DGN523052	5.2	6	28	66
DGN523053	5.3	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN523054	5.4	6	28	66
DGN523055	5.5	6	28	66
DGN523056	5.6	6	28	66
DGN523057	5.7	6	28	66
DGN523058	5.8	6	28	66
DGN523059	5.9	6	28	66
DGN523060	6.0	6	28	66
DGN523061	6.1	8	34	79
DGN523062	6.2	8	34	79
DGN523063	6.3	8	34	79
DGN523064	6.4	8	34	79
DGN523065	6.5	8	34	79
DGN523066	6.6	8	34	79
DGN523067	6.7	8	34	79
DGN523068	6.8	8	34	79
DGN523069	6.9	8	34	79
DGN523070	7.0	8	34	79
DGN523071	7.1	8	41	79
DGN523072	7.2	8	41	79
DGN523073	7.3	8	41	79
DGN523074	7.4	8	41	79
DGN523075	7.5	8	41	79
DGN523076	7.6	8	41	79
DGN523077	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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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 - PRO

DGN523 SERIES

CARBIDE, DREAM DRILLS PRO

SHORT
KURZ
COURTE
CORTA

VHM DREAM DRILLS PRO BOHRER
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO
MD, DREAM DRILLS PRO

- ▶ Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRc30-50), Cast Iron
- ▶ Wave shape cutting edge to improve chip formation for low cutting force
- ▶ Helical thinning for low thrust, stable torque and good chip breakage
- ▶ Extremely high hardness and heat resistance due to YG-1 special Z-Coating technology

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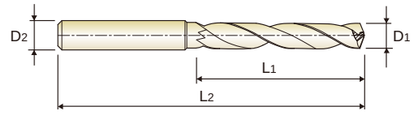

DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | Z Coating | p.A74

3 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN523078	7.8	8	41	79
DGN523079	7.9	8	41	79
DGN523080	8.0	8	41	79
DGN523081	8.1	10	47	89
DGN523082	8.2	10	47	89
DGN523083	8.3	10	47	89
DGN523084	8.4	10	47	89
DGN523085	8.5	10	47	89
DGN523086	8.6	10	47	89
DGN523087	8.7	10	47	89
DGN523088	8.8	10	47	89
DGN523089	8.9	10	47	89
DGN523090	9.0	10	47	89
DGN523091	9.1	10	47	89
DGN523092	9.2	10	47	89
DGN523093	9.3	10	47	89
DGN523094	9.4	10	47	89
DGN523095	9.5	10	47	89
DGN523096	9.6	10	47	89
DGN523097	9.7	10	47	89
DGN523098	9.8	10	47	89
DGN523099	9.9	10	47	89
DGN523100	10.0	10	47	89
DGN523101	10.1	12	55	102

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN523102	10.2	12	55	102
DGN523103	10.3	12	55	102
DGN523104	10.4	12	55	102
DGN523105	10.5	12	55	102
DGN523106	10.6	12	55	102
DGN523107	10.7	12	55	102
DGN523108	10.8	12	55	102
DGN523109	10.9	12	55	102
DGN523110	11.0	12	55	102
DGN523111	11.1	12	55	102
DGN523112	11.2	12	55	102
DGN523113	11.3	12	55	102
DGN523114	11.4	12	55	102
DGN523115	11.5	12	55	102
DGN523116	11.6	12	55	102
DGN523117	11.7	12	55	102
DGN523118	11.8	12	55	102
DGN523119	11.9	12	55	102
DGN523120	12.0	12	55	102
DGN523123	12.3	14	60	107
DGN523125	12.5	14	60	107
DGN523128	12.8	14	60	107
DGN523130	13.0	14	60	107
DGN523135	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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

DREAM DRILLS - PRO

DGN523 SERIES

CARBIDE, DREAM DRILLS PRO

SHORT
KURZ
COURTE
CORTA

VHM DREAM DRILLS PRO BOHRER
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO
MD, DREAM DRILLS PRO

- ▶ Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRc30-50), Cast Iron
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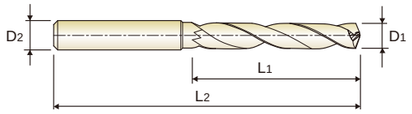

DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | Z Coating | p.A74

3 × D

Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN523138	13.8	14	60	107
DGN523140	14.0	14	60	107
DGN523145	14.5	16	65	115
DGN523148	14.8	16	65	115
DGN523150	15.0	16	65	115
DGN523155	15.5	16	65	115
DGN523158	15.8	16	65	115
DGN523160	16.0	16	65	115
DGN523165	16.5	18	73	123
DGN523168	16.8	18	73	123

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN523170	17.0	18	73	123
DGN523175	17.5	18	73	123
DGN523178	17.8	18	73	123
DGN523180	18.0	18	73	123
DGN523185	18.5	20	79	131
DGN523190	19.0	20	79	131
DGN523195	19.5	20	79	131
DGN523198	19.8	20	79	131
DGN523200	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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

DREAM DRILLS - PRO

DGN526 SERIES

CARBIDE, DREAM DRILLS PRO

LONG
LANG
LONGUE
LUNGA

VHM DREAM DRILLS PRO BOHRER
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO
MD, DREAM DRILLS PRO

- ▶ Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRc30-50), Cast Iron
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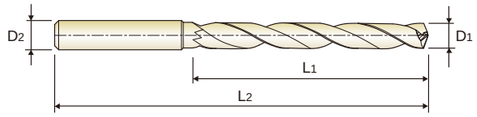

DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | Z Coating | p.A74

5 × D

Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN526010	1.0	3	8	55
DGN526011	1.1	3	12	55
DGN526012	1.2	3	12	55
DGN526013	1.3	3	12	55
DGN526014	1.4	3	12	55
DGN526015	1.5	3	16	55
DGN526016	1.6	3	16	55
DGN526017	1.7	3	16	55
DGN526018	1.8	3	16	55
DGN526019	1.9	3	16	55
DGN526020	2.0	4	21	57
DGN526021	2.1	4	21	57
DGN526022	2.2	4	21	57
DGN526023	2.3	4	21	57
DGN526024	2.4	4	21	57
DGN526025	2.5	4	21	57
DGN526026	2.6	4	21	57
DGN526027	2.7	4	21	57
DGN526028	2.8	4	21	57
DGN526029	2.9	4	21	57
DGN526030	3.0	6	28	66
DGN526031	3.1	6	28	66
DGN526032	3.2	6	28	66
DGN526033	3.3	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN526034	3.4	6	28	66
DGN526035	3.5	6	28	66
DGN526036	3.6	6	28	66
DGN526037	3.7	6	28	66
DGN526038	3.8	6	36	74
DGN526039	3.9	6	36	74
DGN526040	4.0	6	36	74
DGN526041	4.1	6	36	74
DGN526042	4.2	6	36	74
DGN526043	4.3	6	36	74
DGN526044	4.4	6	36	74
DGN526045	4.5	6	36	74
DGN526046	4.6	6	36	74
DGN526047	4.7	6	36	74
DGN526048	4.8	6	44	82
DGN526049	4.9	6	44	82
DGN526050	5.0	6	44	82
DGN526051	5.1	6	44	82
DGN526052	5.2	6	44	82
DGN526053	5.3	6	44	82
DGN526054	5.4	6	44	82
DGN526055	5.5	6	44	82
DGN526056	5.6	6	44	82
DGN526057	5.7	6	44	82

▶ 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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

DREAM DRILLS - PRO

DGN526 SERIES

CARBIDE, DREAM DRILLS PRO

LONG
LANG
LONGUE
LUNGA

VHM DREAM DRILLS PRO BOHRER
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO
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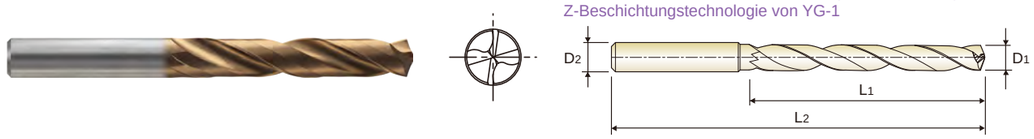


DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | Z Coating

p.A74

5 × D

Recommended ToolHolder
Plain Shank
HYDRAULIC CHUCK
SHRINK FIT HOLDER
ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN526058	5.8	6	44	82
DGN526059	5.9	6	44	82
DGN526060	6.0	6	44	82
DGN526061	6.1	8	53	91
DGN526062	6.2	8	53	91
DGN526063	6.3	8	53	91
DGN526064	6.4	8	53	91
DGN526065	6.5	8	53	91
DGN526066	6.6	8	53	91
DGN526067	6.7	8	53	91
DGN526068	6.8	8	53	91
DGN526069	6.9	8	53	91
DGN526070	7.0	8	53	91
DGN526071	7.1	8	53	91
DGN526072	7.2	8	53	91
DGN526073	7.3	8	53	91
DGN526074	7.4	8	53	91
DGN526075	7.5	8	53	91
DGN526076	7.6	8	53	91
DGN526077	7.7	8	53	91
DGN526078	7.8	8	53	91
DGN526079	7.9	8	53	91
DGN526080	8.0	8	53	91
DGN526081	8.1	10	61	103

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN526082	8.2	10	61	103
DGN526083	8.3	10	61	103
DGN526084	8.4	10	61	103
DGN526085	8.5	10	61	103
DGN526086	8.6	10	61	103
DGN526087	8.7	10	61	103
DGN526088	8.8	10	61	103
DGN526089	8.9	10	61	103
DGN526090	9.0	10	61	103
DGN526091	9.1	10	61	103
DGN526092	9.2	10	61	103
DGN526093	9.3	10	61	103
DGN526094	9.4	10	61	103
DGN526095	9.5	10	61	103
DGN526096	9.6	10	61	103
DGN526097	9.7	10	61	103
DGN526098	9.8	10	61	103
DGN526099	9.9	10	61	103
DGN526100	10.0	10	61	103
DGN526101	10.1	12	71	118
DGN526102	10.2	12	71	118
DGN526103	10.3	12	71	118
DGN526104	10.4	12	71	118
DGN526105	10.5	12	71	118

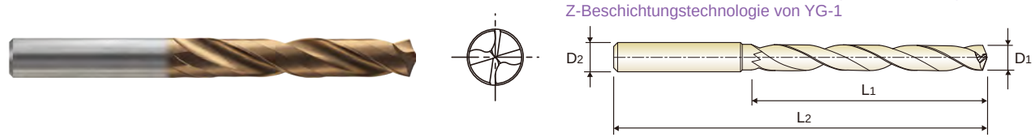
▶ Other shank types are available on your request.
▶ NEXT PAGE

◎ : 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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

DREAM DRILLS - PRO
DGN526 SERIES
CARBIDE, DREAM DRILLS PRO
LONG
LANG
LONGUE
LUNGA
VHM DREAM DRILLS PRO BOHRER
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO
MD, DREAM DRILLS PRO
▶ Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRc30-50), Cast Iron
▶ Wave shape cutting edge to improve chip formation for low cutting force
▶ Helical thinning for low thrust, stable torque and good chip breakage
▶ Extremely high hardness and heat resistance due to YG-1 special Z-Coating technology
▶ Bohren für Kohlenstoffstähle, legierte Stähle (HB225-325), vorvergütete Stähle (HRc30-50), Gusseisen
▶ Wellenförmige Schneidkante zur Verbesserung der Spanbildung und für geringe Schnittkräfte
▶ Spiralförmige Ausspitzung für geringe Axialkräfte, niedrige Schnittmomente und verbesserten Spanbruch
▶ Extrem hohe Härte und Hitzebeständigkeit durch die spezielle Z-Beschichtungstechnologie von YG-1



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | Z Coating
p.A74
5 × D
Recommended ToolHolder
Plain Shank
HYDRAULIC CHUCK
SHRINK FIT HOLDER
ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN526106	10.6	12	71	118
DGN526107	10.7	12	71	118
DGN526108	10.8	12	71	118
DGN526109	10.9	12	71	118
DGN526110	11.0	12	71	118
DGN526111	11.1	12	71	118
DGN526112	11.2	12	71	118
DGN526113	11.3	12	71	118
DGN526114	11.4	12	71	118
DGN526115	11.5	12	71	118
DGN526116	11.6	12	71	118
DGN526117	11.7	12	71	118
DGN526118	11.8	12	71	118
DGN526119	11.9	12	71	118
DGN526120	12.0	12	71	118
DGN526122	12.2	14	77	124
DGN526125	12.5	14	77	124
DGN526128	12.8	14	77	124
DGN526130	13.0	14	77	124
DGN526135	13.5	14	77	124
DGN526138	13.8	14	77	124
DGN526140	14.0	14	77	124
DGN526142	14.2	16	83	133
DGN526145	14.5	16	83	133

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN526148	14.8	16	83	133
DGN526150	15.0	16	83	133
DGN526151	15.1	16	83	133
DGN526152	15.2	16	83	133
DGN526155	15.5	16	83	133
DGN526158	15.8	16	83	133
DGN526160	16.0	16	83	133
DGN526165	16.5	18	93	143
DGN526170	17.0	18	93	143
DGN526173	17.3	18	93	143
DGN526175	17.5	18	93	143
DGN526177	17.7	18	93	143
DGN526180	18.0	18	93	143
DGN526185	18.5	20	101	153
DGN526190	19.0	20	101	153
DGN526193	19.3	20	101	153
DGN526195	19.5	20	101	153
DGN526200	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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

DREAM DRILLS - PRO

DGN506 SERIES

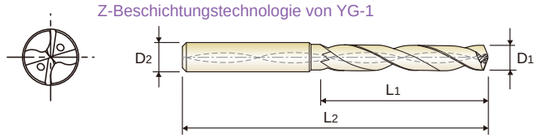
CARBIDE, DREAM DRILLS PRO WITH COOLANT HOLES

SHORT
KURZ
COURTE
CORTA

VHM DREAM DRILLS PRO BOHRER MIT INNENKÜHLUNG
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO, AVEC ARROSAGE CENTRAL
MD, DREAM DRILL PRO CON FORI DI REFRIGERAZIONE

- Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRc30-50), Cast Iron
- Wave shape cutting edge to improve chip formation for low cutting force
- Helical thinning for low thrust, stable torque and good chip breakage
- Extremely high hardness and heat resistance due to YG-1 special Z-Coating technology

- Bohren für Kohlenstoffstähle, legierte Stähle (HB225-325), vorvergütete Stähle (HRc30-50), Gusseisen
- Wellenförmige Schneidkante zur Verbesserung der Spanbildung und für geringe Schnittkräfte
- Spiralförmige Ausspitzung für geringe Axialkräfte, niedrige Schnittmomente und verbesserten Spanbruch
- Extrem hohe Härte und Hitzebeständigkeit durch die spezielle Z-Beschichtungstechnologie von YG-1



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | Z Coating | p.A75 | 3 × D

Recommended ToolHolder — Plain Shank: HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN506030	3.0	6	20	62
DGN506031	3.1	6	20	62
DGN506032	3.2	6	20	62
DGN506033	3.3	6	20	62
DGN506034	3.4	6	20	62
DGN506035	3.5	6	20	62
DGN506036	3.6	6	20	62
DGN506037	3.7	6	20	62
DGN506038	3.8	6	24	66
DGN506039	3.9	6	24	66
DGN506040	4.0	6	24	66
DGN506041	4.1	6	24	66
DGN506042	4.2	6	24	66
DGN506043	4.3	6	24	66
DGN506044	4.4	6	24	66
DGN506045	4.5	6	24	66
DGN506046	4.6	6	24	66
DGN506047	4.7	6	24	66
DGN506048	4.8	6	28	66
DGN506049	4.9	6	28	66
DGN506050	5.0	6	28	66
DGN506051	5.1	6	28	66
DGN506052	5.2	6	28	66
DGN506053	5.3	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN506054	5.4	6	28	66
DGN506055	5.5	6	28	66
DGN506056	5.6	6	28	66
DGN506057	5.7	6	28	66
DGN506058	5.8	6	28	66
DGN506059	5.9	6	28	66
DGN506060	6.0	6	28	66
DGN506061	6.1	8	34	79
DGN506062	6.2	8	34	79
DGN506063	6.3	8	34	79
DGN506064	6.4	8	34	79
DGN506065	6.5	8	34	79
DGN506066	6.6	8	34	79
DGN506067	6.7	8	34	79
DGN506068	6.8	8	34	79
DGN506069	6.9	8	34	79
DGN506070	7.0	8	34	79
DGN506071	7.1	8	41	79
DGN506072	7.2	8	41	79
DGN506073	7.3	8	41	79
DGN506074	7.4	8	41	79
DGN506075	7.5	8	41	79
DGN506076	7.6	8	41	79
DGN506077	7.7	8	41	79

▶ 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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

DREAM DRILLS - PRO
DGN506 SERIES
CARBIDE, DREAM DRILLS PRO WITH COOLANT HOLES
SHORT
KURZ
COURTE
CORTA
VHM DREAM DRILLS PRO BOHRER MIT INNENKÜHLUNG
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO, AVEC ARROSAGE CENTRAL
MD, DREAM DRILL PRO CON FORI DI REFRIGERAZIONE
- Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRc30-50), Cast Iron
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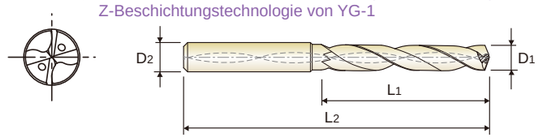
- Extrem hohe Härte und Hitzebeständigkeit durch die spezielle Z-Beschichtungstechnologie von YG-1



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | Z Coating | p.A75 | 3 × D

Recommended ToolHolder — Plain Shank: HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN506078	7.8	8	41	79
DGN506079	7.9	8	41	79
DGN506080	8.0	8	41	79
DGN506081	8.1	10	47	89
DGN506082	8.2	10	47	89
DGN506083	8.3	10	47	89
DGN506084	8.4	10	47	89
DGN506085	8.5	10	47	89
DGN506086	8.6	10	47	89
DGN506087	8.7	10	47	89
DGN506088	8.8	10	47	89
DGN506089	8.9	10	47	89
DGN506090	9.0	10	47	89
DGN506091	9.1	10	47	89
DGN506092	9.2	10	47	89
DGN506093	9.3	10	47	89
DGN506094	9.4	10	47	89
DGN506095	9.5	10	47	89
DGN506096	9.6	10	47	89
DGN506097	9.7	10	47	89
DGN506098	9.8	10	47	89
DGN506099	9.9	10	47	89
DGN506100	10.0	10	47	89
DGN506101	10.1	12	55	102

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN506102	10.2	12	55	102
DGN506103	10.3	12	55	102
DGN506104	10.4	12	55	102
DGN506105	10.5	12	55	102
DGN506106	10.6	12	55	102
DGN506107	10.7	12	55	102
DGN506108	10.8	12	55	102
DGN506109	10.9	12	55	102
DGN506110	11.0	12	55	102
DGN506111	11.1	12	55	102
DGN506112	11.2	12	55	102
DGN506113	11.3	12	55	102
DGN506114	11.4	12	55	102
DGN506115	11.5	12	55	102
DGN506116	11.6	12	55	102
DGN506117	11.7	12	55	102
DGN506118	11.8	12	55	102
DGN506119	11.9	12	55	102
DGN506120	12.0	12	55	102
DGN506125	12.5	14	60	107
DGN506130	13.0	14	60	107
DGN506135	13.5	14	60	107
DGN506140	14.0	14	60	107
DGN506145	14.5	16	65	115

▶ 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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

DREAM DRILLS - PRO

DGN506 SERIES

CARBIDE, DREAM DRILLS PRO WITH COOLANT HOLES

SHORT
KURZ
COURTE
CORTA

VHM DREAM DRILLS PRO BOHRER MIT INNENKÜHLUNG
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO, AVEC ARROSAGE CENTRAL
MD, DREAM DRILL PRO CON FORI DI REFRIGERAZIONE

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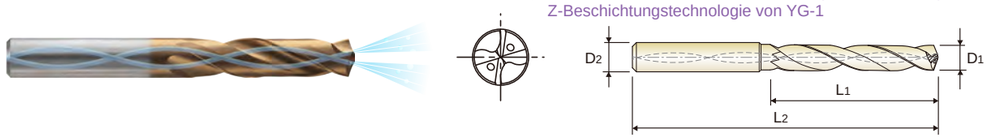
- Spiralförmige Ausspitzung für geringe Axialkräfte, niedrige Schnittmomente und verbesserten Spanbruch
- Extrem hohe Härte und Hitzebeständigkeit durch die spezielle Z-Beschichtungstechnologie von YG-1



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | Z Coating | p.A75 | 3 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D1	D2	L1	L2
DGN506150	15.0	16	65	115
DGN506155	15.5	16	65	115
DGN506160	16.0	16	65	115
DGN506165	16.5	18	73	123
DGN506170	17.0	18	73	123
DGN506175	17.5	18	73	123

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D1	D2	L1	L2
DGN506180	18.0	18	73	123
DGN506185	18.5	20	79	131
DGN506190	19.0	20	79	131
DGN506195	19.5	20	79	131
DGN506200	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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

DREAM DRILLS - PRO

DGN508 SERIES

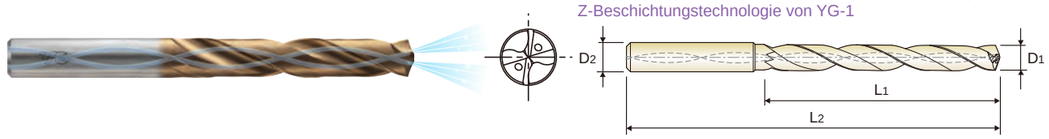
CARBIDE, DREAM DRILLS PRO WITH COOLANT HOLES

LONG
LANG
LONGUE
LUNGA

VHM DREAM DRILLS PRO BOHRER MIT INNENKÜHLUNG
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO, AVEC ARROSAGE CENTRAL
MD, DREAM DRILL PRO CON FORI DI REFRIGERAZIONE

- Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRc30-50), Cast Iron
- Wave shape cutting edge to improve chip formation for low cutting force
- Helical thinning for low thrust, stable torque and good chip breakage
- Extremely high hardness and heat resistance due to YG-1 special Z-Coating technology

- Bohren für Kohlenstoffstähle, legierte Stähle (HB225-325), vorvergütete Stähle (HRc30-50), Gusseisen
- Wellenförmige Schneidkante zur Verbesserung der Spanbildung und für geringe Schnittkräfte
- Spiralförmige Ausspitzung für geringe Axialkräfte, niedrige Schnittmomente und verbesserten Spanbruch
- Extrem hohe Härte und Hitzebeständigkeit durch die spezielle Z-Beschichtungstechnologie von YG-1



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | Z Coating | p.A75 | 5 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D1	D2	L1	L2
DGN508034	3.4	6	28	66
DGN508035	3.5	6	28	66
DGN508036	3.6	6	28	66
DGN508037	3.7	6	28	66
DGN508038	3.8	6	36	74
DGN508039	3.9	6	36	74
DGN508040	4.0	6	36	74
DGN508041	4.1	6	36	74
DGN508042	4.2	6	36	74
DGN508043	4.3	6	36	74
DGN508044	4.4	6	36	74
DGN508045	4.5	6	36	74
DGN508046	4.6	6	36	74
DGN508047	4.7	6	36	74
DGN508048	4.8	6	44	82
DGN508049	4.9	6	44	82
DGN508050	5.0	6	44	82
DGN508051	5.1	6	44	82
DGN508052	5.2	6	44	82
DGN508053	5.3	6	44	82
DGN508054	5.4	6	44	82
DGN508055	5.5	6	44	82
DGN508056	5.6	6	44	82
DGN508057	5.7	6	44	82

▶ 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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

DREAM DRILLS - PRO

DGN508 SERIES

CARBIDE, DREAM DRILLS PRO WITH COOLANT HOLES

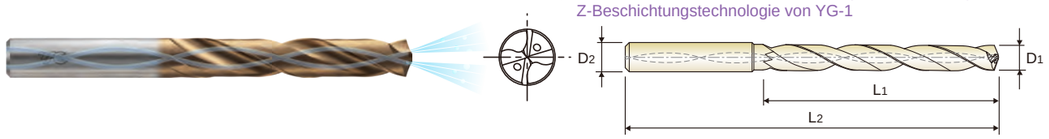
LONG

VHM DREAM DRILLS PRO BOHRER MIT INNENKÜHLUNG
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO, AVEC ARROSAGE CENTRAL
MD, DREAM DRILL PRO CON FORI DI REFRIGERAZIONE

LANG
LONGUE
LUNGA

- Drilling for Carbon Steels, Alloy Steels (HB225-325), Pre-hardened Steels (HRc30-50), Cast Iron
- Wave shape cutting edge to improve chip formation for low cutting force
- Helical thinning for low thrust, stable torque and good chip breakage
- Extremely high hardness and heat resistance due to YG-1 special Z-Coating technology

- Bohren für Kohlenstoffstähle, legierte Stähle (HB225-325), vorvergütete Stähle (HRc30-50), Gusseisen
- Wellenförmige Schneidkante zur Verbesserung der Spanbildung und für geringe Schnittkräfte
- Spiralförmige Ausspitzung für geringe Axialkräfte, niedrige Schnittmomente und verbesserten Spanbruch
- Extrem hohe Härte und Hitzebeständigkeit durch die spezielle Z-Beschichtungstechnologie von YG-1



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | Z Coating | p.A75 | 5 × D

Recommended ToolHolder — Plain Shank: HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN508058	5.8	6	44	82
DGN508059	5.9	6	44	82
DGN508060	6.0	6	44	82
DGN508061	6.1	8	53	91
DGN508062	6.2	8	53	91
DGN508063	6.3	8	53	91
DGN508064	6.4	8	53	91
DGN508065	6.5	8	53	91
DGN508066	6.6	8	53	91
DGN508067	6.7	8	53	91
DGN508068	6.8	8	53	91
DGN508069	6.9	8	53	91
DGN508070	7.0	8	53	91
DGN508071	7.1	8	53	91
DGN508072	7.2	8	53	91
DGN508073	7.3	8	53	91
DGN508074	7.4	8	53	91
DGN508075	7.5	8	53	91
DGN508076	7.6	8	53	91
DGN508077	7.7	8	53	91
DGN508078	7.8	8	53	91
DGN508079	7.9	8	53	91
DGN508080	8.0	8	53	91
DGN508081	8.1	10	61	103

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN508082	8.2	10	61	103
DGN508083	8.3	10	61	103
DGN508084	8.4	10	61	103
DGN508085	8.5	10	61	103
DGN508086	8.6	10	61	103
DGN508087	8.7	10	61	103
DGN508088	8.8	10	61	103
DGN508089	8.9	10	61	103
DGN508090	9.0	10	61	103
DGN508091	9.1	10	61	103
DGN508092	9.2	10	61	103
DGN508093	9.3	10	61	103
DGN508094	9.4	10	61	103
DGN508095	9.5	10	61	103
DGN508096	9.6	10	61	103
DGN508097	9.7	10	61	103
DGN508098	9.8	10	61	103
DGN508099	9.9	10	61	103
DGN508100	10.0	10	61	103
DGN508101	10.1	12	71	118
DGN508102	10.2	12	71	118
DGN508103	10.3	12	71	118
DGN508104	10.4	12	71	118
DGN508105	10.5	12	71	118

▶ 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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

DREAM DRILLS - PRO
DGN508 SERIES
CARBIDE, DREAM DRILLS PRO WITH COOLANT HOLES
LONG
VHM DREAM DRILLS PRO BOHRER MIT INNENKÜHLUNG
FORETS DREAM DRILLS CARBURE MONOBLOC – PRO, AVEC ARROSAGE CENTRAL
MD, DREAM DRILL PRO CON FORI DI REFRIGERAZIONE
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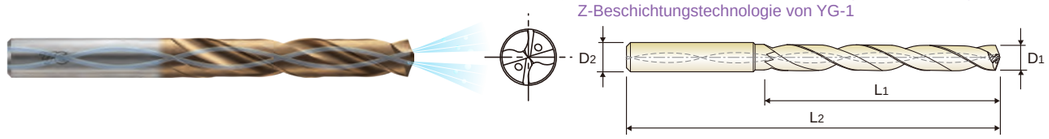


DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | Z Coating | p.A75 | 5 × D
Recommended ToolHolder — Plain Shank: HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK
Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN508106	10.6	12	71	118
DGN508107	10.7	12	71	118
DGN508108	10.8	12	71	118
DGN508109	10.9	12	71	118
DGN508110	11.0	12	71	118
DGN508111	11.1	12	71	118
DGN508112	11.2	12	71	118
DGN508113	11.3	12	71	118
DGN508114	11.4	12	71	118
DGN508115	11.5	12	71	118
DGN508116	11.6	12	71	118
DGN508117	11.7	12	71	118
DGN508118	11.8	12	71	118
DGN508119	11.9	12	71	118
DGN508120	12.0	12	71	118
DGN508125	12.5	14	77	124
DGN508130	13.0	14	77	124
DGN508135	13.5	14	77	124
DGN508140	14.0	14	77	124
DGN508145	14.5	16	83	133
DGN508150	15.0	16	83	133
DGN508155	15.5	16	83	133
DGN508160	16.0	16	83	133
DGN508165	16.5	18	93	143

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
Z-Coating	D_1	D_2	L_1	L_2
DGN508170	17.0	18	93	143
DGN508175	17.5	18	93	143
DGN508180	18.0	18	93	143
DGN508185	18.5	20	101	153
DGN508190	19.0	20	101	153
DGN508195	19.5	20	101	153
DGN508200	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
Recommend		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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
Recommend																		○			

DREAM DRILLS - PRO

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DGN523, DGN526 SERIES without COOLANT HOLES

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 1.0	2.0	Vc	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0
P	2	Non-alloy steel	85	RPM	27,060	13,530	120	RPM	12,730	9,550	7,640	6,370
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	3		85	RPM	27,060	13,530	120	RPM	12,730	9,550	7,640	6,370
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	4		85	RPM	27,060	13,530	120	RPM	12,730	9,550	7,640	6,370
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
	5		75	RPM	23,870	11,940	95	RPM	10,080	7,560	6,050	5,040
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
	6	Low alloy steel	85	RPM	27,060	13,530	120	RPM	12,730	9,550	7,640	6,370
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	7		75	RPM	23,870	11,940	95	RPM	10,080	7,560	6,050	5,040
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	8		75	RPM	23,870	11,940	95	RPM	10,080	7,560	6,050	5,040
				FEED	0.02-0.04	0.03-0.05		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
	9		36	RPM	11,460	5,730	50	RPM	5,310	3,980	3,180	2,650
				FEED	0.02-0.04	0.03-0.05		FEED	0.03-0.08	0.05-0.11	0.08-0.14	0.10-0.16
	10	High alloyed steel, and tool steel	60	RPM	19,100	9,550	80	RPM	8,490	6,370	5,090	4,240
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
	11		35	RPM	11,140	5,570	45	RPM	4,770	3,580	2,860	2,390
				FEED	0.02-0.04	0.03-0.05		FEED	0.03-0.08	0.05-0.11	0.08-0.14	0.10-0.16
M	12	Stainless steel	60	RPM	19,100	9,550	85	RPM	9,020	6,760	5,410	4,510
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	13		45	RPM	14,320	7,160	55	RPM	5,840	4,380	3,500	2,920
				FEED	0.02-0.04	0.03-0.05			0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
K	15	Grey cast iron	85	RPM	27,060	13,530	120	RPM	12,730	9,550	7,640	6,370
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
	16		80	RPM	25,460	12,730	95	RPM	10,080	7,560	6,050	5,040
				FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	17	Nodular cast iron	85	RPM	27,060	13,530	120	RPM	12,730	9,550	7,640	6,370
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
	18		60	RPM	19,100	9,550	85	RPM	9,020	6,760	5,410	4,510
				FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	19	Malleable cast iron	75	RPM	23,870	11,940	95	RPM	10,080	7,560	6,050	5,040
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
	20		60	RPM	19,100	9,550	85	RPM	9,020	6,760	5,410	4,510
				FEED	0.03-0.05	0.05-0.07			0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
H	38	Hardened steel	25	RPM	7,960	3,980	30	RPM	3,180	2,390	1,910	1,590
				FEED	0.01-0.02	0.01-0.03			0.01-0.03	0.01-0.04	0.02-0.05	0.03-0.06

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	2	Non-alloy steel	120	RPM	4,770	3,820	3,180	2,730	2,390	2,120	1,910
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	3		120	RPM	4,770	3,820	3,180	2,730	2,390	2,120	1,910
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	4		120	RPM	4,770	3,820	3,180	2,730	2,390	2,120	1,910
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	5		95	RPM	3,780	3,020	2,520	2,160	1,890	1,680	1,510
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	6	Low alloy steel	120	RPM	4,770	3,820	3,180	2,730	2,390	2,120	1,910
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	7		95	RPM	3,780	3,020	2,520	2,160	1,890	1,680	1,510
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	8		95	RPM	3,780	3,020	2,520	2,160	1,890	1,680	1,510
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	9		50	RPM	1,990	1,590	1,330	1,140	990	880	800
				FEED	0.12-0.18	0.13-0.19	0.14-0.20	0.15-0.21	0.16-0.22	0.17-0.25	0.18-0.28
	10	High alloyed steel, and tool steel	80	RPM	3,180	2,550	2,120	1,820	1,590	1,410	1,270
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	11		45	RPM	1,790	1,430	1,190	1,020	900	800	720
				FEED	0.12-0.18	0.13-0.19	0.14-0.20	0.15-0.21	0.16-0.22	0.17-0.25	0.18-0.28
M	12	Stainless steel	85	RPM	3,380	2,710	2,250	1,930	1,690	1,500	1,350
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	13		55	RPM	2,190	1,750	1,460	1,250	1,090	970	880
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
K	15	Grey cast iron	120	RPM	4,770	3,820	3,180	2,730	2,390	2,120	1,910
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	16		95	RPM	3,780	3,020	2,520	2,160	1,890	1,680	1,510
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	17	Nodular cast iron	120	RPM	4,770	3,820	3,180	2,730	2,390	2,120	1,910
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	18		85	RPM	3,380	2,710	2,250	1,930	1,690	1,500	1,350
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	19	Malleable cast iron	95	RPM	3,780	3,020	2,520	2,160	1,890	1,680	1,510
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	20		85	RPM	3,380	2,710	2,250	1,930	1,690	1,500	1,350
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
H	38	Hardened steel	30	RPM	1,190	950	800	680	600	530	480
				FEED	0.03-0.06	0.04-0.07	0.04-0.08	0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10

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

DREAM DRILLS - PRO

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DGN506, DGN508 SERIES with COOLANT HOLES

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

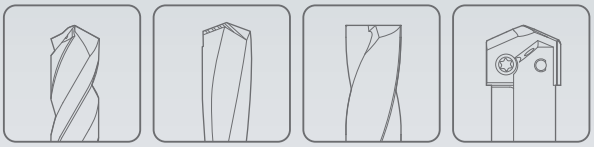
ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 1.0	2.0	Vc	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0
P	2	Non-alloy steel	95	RPM	30,240	15,120	130	RPM	13,790	10,350	8,280	6,900
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	3		95	RPM	30,240	15,120	130	RPM	13,790	10,350	8,280	6,900
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	4		95	RPM	30,240	15,120	130	RPM	13,790	10,350	8,280	6,900
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
	5		85	RPM	27,060	13,530	110	RPM	11,670	8,750	7,000	5,840
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
	6	Low alloy steel	95	RPM	30,240	15,120	130	RPM	13,790	10,350	8,280	6,900
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	7		85	RPM	27,060	13,530	110	RPM	11,670	8,750	7,000	5,840
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	8		95	RPM	30,240	15,120	110	RPM	11,670	8,750	7,000	5,840
				FEED	0.02-0.04	0.03-0.05		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
	9		50	RPM	15,920	7,960	60	RPM	6,370	4,770	3,820	3,180
				FEED	0.02-0.04	0.03-0.05		FEED	0.03-0.08	0.05-0.11	0.08-0.14	0.10-0.16
	10	High alloyed steel, and tool steel	70	RPM	22,280	11,140	90	RPM	9,550	7,160	5,730	4,770
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
	11		45	RPM	14,320	7,160	50	RPM	5,310	3,980	3,180	2,650
				FEED	0.02-0.04	0.03-0.05		FEED	0.03-0.08	0.05-0.11	0.08-0.14	0.10-0.16
M	12	Stainless steel	75	RPM	23,870	11,940	95	RPM	10,080	7,560	6,050	5,040
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	13		55	RPM	17,510	8,750	65	RPM	6,900	5,170	4,140	3,450
				FEED	0.02-0.04	0.03-0.05		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
K	15	Grey cast iron	95	RPM	30,240	15,120	130	RPM	13,790	10,350	8,280	6,900
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
	16		90	RPM	28,650	14,320	115	RPM	12,200	9,150	7,320	6,100
				FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	17	Nodular cast iron	110	RPM	35,010	17,510	145	RPM	15,380	11,540	9,230	7,690
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
	18		75	RPM	23,870	11,940	95	RPM	10,080	7,560	6,050	5,040
				FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	19	Malleable cast iron	85	RPM	27,060	13,530	110	RPM	11,670	8,750	7,000	5,840
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
	20		75	RPM	23,870	11,940	95	RPM	10,080	7,560	6,050	5,040
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
H	38	Hardened steel	30	RPM	9,550	4,770	35	RPM	3,710	2,790	2,230	1,860
				FEED	0.01-0.02	0.01-0.03		FEED	0.01-0.03	0.01-0.04	0.02-0.05	0.03-0.06

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	2	Non-alloy steel	130	RPM	5,170	4,140	3,450	2,960	2,590	2,300	2,070
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	3		130	RPM	5,170	4,140	3,450	2,960	2,590	2,300	2,070
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	4		130	RPM	5,170	4,140	3,450	2,960	2,590	2,300	2,070
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	5		110	RPM	4,380	3,500	2,920	2,500	2,190	1,950	1,750
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	6	Low alloy steel	130	RPM	5,170	4,140	3,450	2,960	2,590	2,300	2,070
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	7		110	RPM	4,380	3,500	2,920	2,500	2,190	1,950	1,750
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	8		110	RPM	4,380	3,500	2,920	2,500	2,190	1,950	1,750
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	9		60	RPM	2,390	1,910	1,590	1,360	1,190	1,060	950
				FEED	0.12-0.18	0.13-0.19	0.14-0.20	0.15-0.21	0.16-0.22	0.17-0.25	0.18-0.28
	10	High alloyed steel, and tool steel	90	RPM	3,580	2,860	2,390	2,050	1,790	1,590	1,430
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	11		50	RPM	1,990	1,590	1,330	1,140	990	880	800
				FEED	0.12-0.18	0.13-0.19	0.14-0.20	0.15-0.21	0.16-0.22	0.17-0.25	0.18-0.28
M	12	Stainless steel	95	RPM	3,780	3,020	2,520	2,160	1,890	1,680	1,510
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	13		65	RPM	2,590	2,070	1,720	1,480	1,290	1,150	1,030
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
K	15	Grey cast iron	130	RPM	5,170	4,140	3,450	2,960	2,590	2,300	2,070
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	16		115	RPM	4,580	3,660	3,050	2,610	2,290	2,030	1,830
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	17	Nodular cast iron	145	RPM	5,770	4,620	3,850	3,300	2,880	2,560	2,310
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	18		95	RPM	3,780	3,020	2,520	2,160	1,890	1,680	1,510
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	19	Malleable cast iron	110	RPM	4,380	3,500	2,920	2,500	2,190	1,950	1,750
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	20		95	RPM	3,780	3,020	2,520	2,160	1,890	1,680	1,510
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
H	38	Hardened steel	35	RPM	1,390	1,110	930	800	700	620	560
				FEED	0.03-0.06	0.04-0.07	0.04-0.08	0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10

▶ Recommend to reduce the feed rate as following **Feed 100%** : DGN506(3×D), DGN508(5×D)

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

YG

Leading Through Innovation

SOLID CARBIDE

DREAM DRILLS -GENERAL

DREAM DRILLS - UNIVERSAL

- **For General Purpose (HRc30 to HRc50)**
- **Für allgemeine Anwendungen (HRc30 bis HRc50)**

SELECTION GUIDE

YG HOLEMAKING TOOLS

SOLID CARBIDE
DREAM DRILLS GENERAL

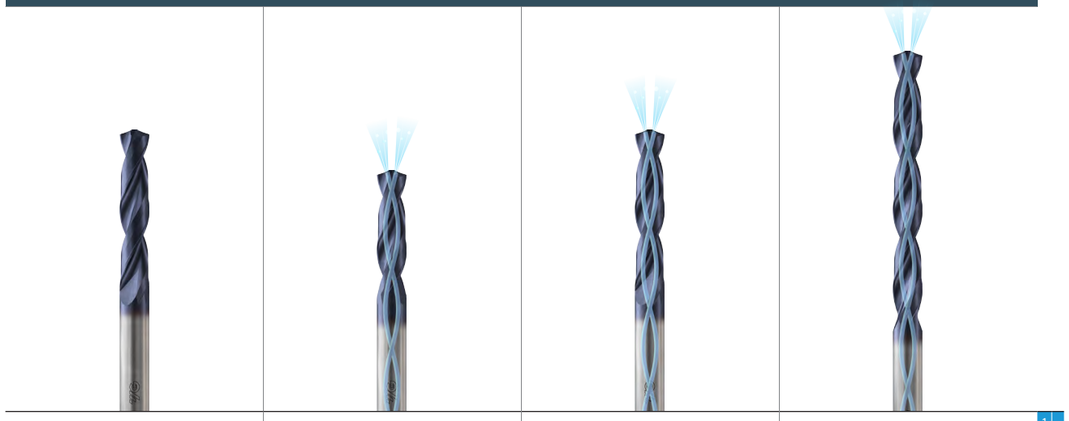
For General Purpose (HRc30 to HRc50)

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A96

SERIES	DH404	DH423 DH443	DH424 DH444	DH406 DH446	DH408 DH448	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	A80	A82	A85	A88	A91	A94
SURFACE TREATMENT	TiAlN		TiAlN			



	ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	DH404	DH423 DH443	DH424 DH444	DH406 DH446	DH408 DH448	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

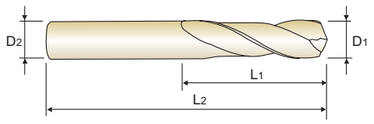
STUB

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° | TiAlN | p.A96

$D_1=D_2$
3 × D

Recommended ToolHolder

Plain Shank		Flat Shank
SHRINK FIT HOLDER		HYDRAULIC CHUCK
HYDRAULIC CHUCK		SHRINK FIT HOLDER
ER COLLET CHUCK		END MILL HOLDER

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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 - GENERAL

DH404 SERIES

CARBIDE, DREAM DRILLS

STUB

VOLLHARTMETALL DREAM SPIRALBOHRER
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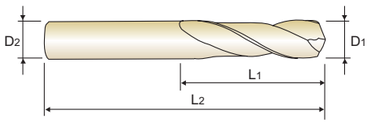

DIN 6539 | CARBIDE | 30° | h6 | h7 | 140° | TiAlN | p.A96

$D_1=D_2$
3 × D

Recommended ToolHolder

Plain Shank		Flat Shank
SHRINK FIT HOLDER		HYDRAULIC CHUCK
HYDRAULIC CHUCK		SHRINK FIT HOLDER
ER COLLET CHUCK		END MILL HOLDER

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

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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																		○			

DREAM DRILLS - GENERAL

PLAIN SHANK DH423 SERIES
FLAT SHANK DH443 SERIES

CARBIDE, DREAM DRILLS

SHORT
KURZ
COURTE
CORTA

VOLLHARTMETALL DREAM SPIRALBOHRER
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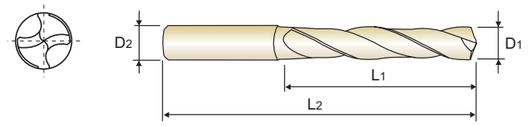

DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | TiAlN | p.A96

3 × D

Recommended ToolHolder

Plain Shank	Flat Shank
SHRINK FIT HOLDER	HYDRAULIC CHUCK
HYDRAULIC CHUCK	SHRINK FIT HOLDER
ER COLLET CHUCK	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH423030	DH443030	3.0	6	20	62
DH423031	DH443031	3.1	6	20	62
DH423032	DH443032	3.2	6	20	62
DH423033	DH443033	3.3	6	20	62
DH423034	DH443034	3.4	6	20	62
DH423035	DH443035	3.5	6	20	62
DH423036	DH443036	3.6	6	20	62
DH423037	DH443037	3.7	6	20	62
DH423038	DH443038	3.8	6	24	66
DH423039	DH443039	3.9	6	24	66
DH423040	DH443040	4.0	6	24	66
DH423041	DH443041	4.1	6	24	66
DH423042	DH443042	4.2	6	24	66
DH423043	DH443043	4.3	6	24	66
DH423044	DH443044	4.4	6	24	66
DH423045	DH443045	4.5	6	24	66
DH423046	DH443046	4.6	6	24	66
DH423047	DH443047	4.7	6	24	66
DH423048	DH443048	4.8	6	28	66
DH423049	DH443049	4.9	6	28	66
DH423050	DH443050	5.0	6	28	66
DH423051	DH443051	5.1	6	28	66
DH423052	DH443052	5.2	6	28	66
DH423053	DH443053	5.3	6	28	66

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH423054	DH443054	5.4	6	28	66
DH423055	DH443055	5.5	6	28	66
DH423056	DH443056	5.6	6	28	66
DH423057	DH443057	5.7	6	28	66
DH423058	DH443058	5.8	6	28	66
DH423059	DH443059	5.9	6	28	66
DH423060	DH443060	6.0	6	28	66
DH423061	DH443061	6.1	8	34	79
DH423062	DH443062	6.2	8	34	79
DH423063	DH443063	6.3	8	34	79
DH423064	DH443064	6.4	8	34	79
DH423065	DH443065	6.5	8	34	79
DH423066	DH443066	6.6	8	34	79
DH423067	DH443067	6.7	8	34	79
DH423068	DH443068	6.8	8	34	79
DH423069	DH443069	6.9	8	34	79
DH423070	DH443070	7.0	8	34	79
DH423071	DH443071	7.1	8	41	79
DH423072	DH443072	7.2	8	41	79
DH423073	DH443073	7.3	8	41	79
DH423074	DH443074	7.4	8	41	79
DH423075	DH443075	7.5	8	41	79
DH423076	DH443076	7.6	8	41	79
DH423077	DH443077	7.7	8	41	79

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▶ 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 - GENERAL

PLAIN SHANK DH423 SERIES
FLAT SHANK DH443 SERIES

CARBIDE, DREAM DRILLS

SHORT
KURZ
COURTE
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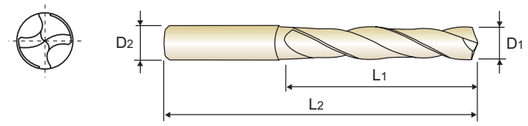

DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | TiAlN | p.A96

3 × D

Recommended ToolHolder

Plain Shank	Flat Shank
SHRINK FIT HOLDER	HYDRAULIC CHUCK
HYDRAULIC CHUCK	SHRINK FIT HOLDER
ER COLLET CHUCK	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH423078	DH443078	7.8	8	41	79
DH423079	DH443079	7.9	8	41	79
DH423080	DH443080	8.0	8	41	79
DH423081	DH443081	8.1	10	47	89
DH423082	DH443082	8.2	10	47	89
DH423083	DH443083	8.3	10	47	89
DH423084	DH443084	8.4	10	47	89
DH423085	DH443085	8.5	10	47	89
DH423086	DH443086	8.6	10	47	89
DH423087	DH443087	8.7	10	47	89
DH423088	DH443088	8.8	10	47	89
DH423089	DH443089	8.9	10	47	89
DH423090	DH443090	9.0	10	47	89
DH423091	DH443091	9.1	10	47	89
DH423092	DH443092	9.2	10	47	89
DH423093	DH443093	9.3	10	47	89
DH423094	DH443094	9.4	10	47	89
DH423095	DH443095	9.5	10	47	89
DH423096	DH443096	9.6	10	47	89
DH423097	DH443097	9.7	10	47	89
DH423098	DH443098	9.8	10	47	89
DH423099	DH443099	9.9	10	47	89
DH423100	DH443100	10.0	10	47	89
DH423101	DH443101	10.1	12	55	102

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH423102	DH443102	10.2	12	55	102
DH423103	DH443103	10.3	12	55	102
DH423104	DH443104	10.4	12	55	102
DH423105	DH443105	10.5	12	55	102
DH423106	DH443106	10.6	12	55	102
DH423107	DH443107	10.7	12	55	102
DH423108	DH443108	10.8	12	55	102
DH423109	DH443109	10.9	12	55	102
DH423110	DH443110	11.0	12	55	102
DH423111	DH443111	11.1	12	55	102
DH423112	DH443112	11.2	12	55	102
DH423113	DH443113	11.3	12	55	102
DH423114	DH443114	11.4	12	55	102
DH423115	DH443115	11.5	12	55	102
DH423116	DH443116	11.6	12	55	102
DH423117	DH443117	11.7	12	55	102
DH423118	DH443118	11.8	12	55	102
DH423119	DH443119	11.9	12	55	102
DH423120	DH443120	12.0	12	55	102
DH423123	DH443123	12.3	14	60	107
DH423125	DH443125	12.5	14	60	107
DH423128	DH443128	12.8	14	60	107
DH423130	DH443130	13.0	14	60	107
DH423135	DH443135	13.5	14	60	107

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▶ 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 - GENERAL

PLAIN SHANK DH423 SERIES
FLAT SHANK DH443 SERIES

CARBIDE, DREAM DRILLS

SHORT
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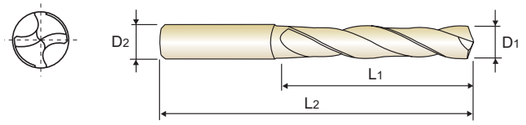
- Wellenform und Neagtivfase auf der Schneide bewirken geringen Schub, stabiles Drehmoment und lange Standzeit
- Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | TiAlN | p.A96

3 × D

Recommended ToolHolder

Plain Shank	Flat Shank
SHRINK FIT HOLDER	HYDRAULIC CHUCK
HYDRAULIC CHUCK	SHRINK FIT HOLDER
ER COLLET CHUCK	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH423138	DH443138	13.8	14	60	107
DH423140	DH443140	14.0	14	60	107
DH423145	DH443145	14.5	16	65	115
DH423148	DH443148	14.8	16	65	115
DH423150	DH443150	15.0	16	65	115
DH423155	DH443155	15.5	16	65	115
DH423158	DH443158	15.8	16	65	115
DH423160	DH443160	16.0	16	65	115
DH423165	DH443165	16.5	18	73	123
DH423168	DH443168	16.8	18	73	123
DH423170	DH443170	17.0	18	73	123
DH423175	DH443175	17.5	18	73	123
DH423178	DH443178	17.8	18	73	123
DH423180	DH443180	18.0	18	73	123
DH423185	DH443185	18.5	20	79	131
DH423190	DH443190	19.0	20	79	131
DH423195	DH443195	19.5	20	79	131
DH423198	DH443198	19.8	20	79	131
DH423200	DH443200	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 - GENERAL

PLAIN SHANK DH424 SERIES
FLAT SHANK DH444 SERIES

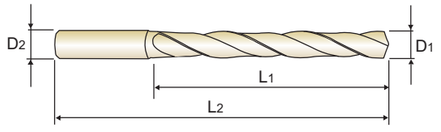
CARBIDE, DREAM DRILLS

LONG
LANG
LONGUE
LUNGA

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

- 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° | TiAlN | p.A96

5 × D

Recommended ToolHolder

Plain Shank	Flat Shank
SHRINK FIT HOLDER	HYDRAULIC CHUCK
HYDRAULIC CHUCK	SHRINK FIT HOLDER
ER COLLET CHUCK	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	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	DH444030	3.0	6	28	66
DH424031	DH444031	3.1	6	28	66
DH424032	DH444032	3.2	6	28	66
DH424033	DH444033	3.3	6	28	66
DH424034	DH444034	3.4	6	28	66
DH424035	DH444035	3.5	6	28	66
DH424036	DH444036	3.6	6	28	66
DH424037	DH444037	3.7	6	28	66
DH424038	DH444038	3.8	6	36	74
DH424039	DH444039	3.9	6	36	74
DH424040	DH444040	4.0	6	36	74
DH424041	DH444041	4.1	6	36	74
DH424042	DH444042	4.2	6	36	74
DH424043	DH444043	4.3	6	36	74
DH424044	DH444044	4.4	6	36	74
DH424045	DH444045	4.5	6	36	74
DH424046	DH444046	4.6	6	36	74
DH424047	DH444047	4.7	6	36	74
DH424048	DH444048	4.8	6	44	82
DH424049	DH444049	4.9	6	44	82
DH424050	DH444050	5.0	6	44	82
DH424051	DH444051	5.1	6	44	82
DH424052	DH444052	5.2	6	44	82
DH424053	DH444053	5.3	6	44	82
DH424054	DH444054	5.4	6	44	82
DH424055	DH444055	5.5	6	44	82
DH424056	DH444056	5.6	6	44	82
DH424057	DH444057	5.7	6	44	82

▶ 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 - GENERAL

PLAIN SHANK DH424 SERIES
FLAT SHANK DH444 SERIES

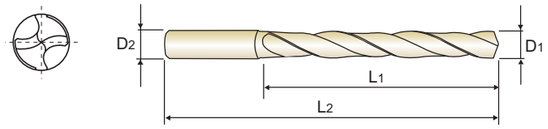
CARBIDE, DREAM DRILLS

LONG
LANG
LONGUE
LUNGA

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

- ▶ 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° | TiAlN | p.A96

5 × D

Recommended ToolHolder

Plain Shank	Flat Shank
◎ SHRINK FIT HOLDER	HYDRAULIC CHUCK
◎ HYDRAULIC CHUCK	SHRINK FIT HOLDER
○ ER COLLET CHUCK	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH424058	DH444058	5.8	6	44	82
DH424059	DH444059	5.9	6	44	82
DH424060	DH444060	6.0	6	44	82
DH424061	DH444061	6.1	8	53	91
DH424062	DH444062	6.2	8	53	91
DH424063	DH444063	6.3	8	53	91
DH424064	DH444064	6.4	8	53	91
DH424065	DH444065	6.5	8	53	91
DH424066	DH444066	6.6	8	53	91
DH424067	DH444067	6.7	8	53	91
DH424068	DH444068	6.8	8	53	91
DH424069	DH444069	6.9	8	53	91
DH424070	DH444070	7.0	8	53	91
DH424071	DH444071	7.1	8	53	91
DH424072	DH444072	7.2	8	53	91
DH424073	DH444073	7.3	8	53	91
DH424074	DH444074	7.4	8	53	91
DH424075	DH444075	7.5	8	53	91
DH424076	DH444076	7.6	8	53	91
DH424077	DH444077	7.7	8	53	91
DH424078	DH444078	7.8	8	53	91
DH424079	DH444079	7.9	8	53	91
DH424080	DH444080	8.0	8	53	91
DH424081	DH444081	8.1	10	61	103

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH424082	DH444082	8.2	10	61	103
DH424083	DH444083	8.3	10	61	103
DH424084	DH444084	8.4	10	61	103
DH424085	DH444085	8.5	10	61	103
DH424086	DH444086	8.6	10	61	103
DH424087	DH444087	8.7	10	61	103
DH424088	DH444088	8.8	10	61	103
DH424089	DH444089	8.9	10	61	103
DH424090	DH444090	9.0	10	61	103
DH424091	DH444091	9.1	10	61	103
DH424092	DH444092	9.2	10	61	103
DH424093	DH444093	9.3	10	61	103
DH424094	DH444094	9.4	10	61	103
DH424095	DH444095	9.5	10	61	103
DH424096	DH444096	9.6	10	61	103
DH424097	DH444097	9.7	10	61	103
DH424098	DH444098	9.8	10	61	103
DH424099	DH444099	9.9	10	61	103
DH424100	DH444100	10.0	10	61	103
DH424101	DH444101	10.1	12	71	118
DH424102	DH444102	10.2	12	71	118
DH424103	DH444103	10.3	12	71	118
DH424104	DH444104	10.4	12	71	118
DH424105	DH444105	10.5	12	71	118

▶ 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 - GENERAL

PLAIN SHANK DH424 SERIES
FLAT SHANK DH444 SERIES

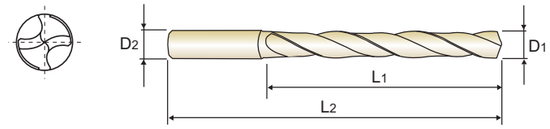
CARBIDE, DREAM DRILLS

LONG
LANG
LONGUE
LUNGA

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

- ▶ 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° | TiAlN | p.A96

5 × D

Recommended ToolHolder

Plain Shank	Flat Shank
◎ SHRINK FIT HOLDER	HYDRAULIC CHUCK
◎ HYDRAULIC CHUCK	SHRINK FIT HOLDER
○ ER COLLET CHUCK	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH424106	DH444106	10.6	12	71	118
DH424107	DH444107	10.7	12	71	118
DH424108	DH444108	10.8	12	71	118
DH424109	DH444109	10.9	12	71	118
DH424110	DH444110	11.0	12	71	118
DH424111	DH444111	11.1	12	71	118
DH424112	DH444112	11.2	12	71	118
DH424113	DH444113	11.3	12	71	118
DH424114	DH444114	11.4	12	71	118
DH424115	DH444115	11.5	12	71	118
DH424116	DH444116	11.6	12	71	118
DH424117	DH444117	11.7	12	71	118
DH424118	DH444118	11.8	12	71	118
DH424119	DH444119	11.9	12	71	118
DH424120	DH444120	12.0	12	71	118
DH424125	DH444125	12.5	14	77	124
DH424130	DH444130	13.0	14	77	124
DH424135	DH444135	13.5	14	77	124
DH424140	DH444140	14.0	14	77	124
DH424145	DH444145	14.5	16	83	133
DH424150	DH444150	15.0	16	83	133
DH424155	DH444155	15.5	16	83	133
DH424160	DH444160	16.0	16	83	133
DH424165	DH444165	16.5	18	93	143

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH424170	DH444170	17.0	18	93	143
DH424175	DH444175	17.5	18	93	143
DH424180	DH444180	18.0	18	93	143
DH424185	DH444185	18.5	20	101	153
DH424190	DH444190	19.0	20	101	153
DH424195	DH444195	19.5	20	101	153
DH424200	DH444200	20.0	20	101	153

▶ 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 - GENERAL

PLAIN SHANK DH406 SERIES
FLAT SHANK DH446 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 | TiAlN | p.A97 | 3 × D

Recommended ToolHolder

Plain Shank	Flat Shank
SHRINK FIT HOLDER	HYDRAULIC CHUCK
HYDRAULIC CHUCK	SHRINK FIT HOLDER
ER COLLET CHUCK	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH406030	DH446030	3.0	6	20	62
DH406031	DH446031	3.1	6	20	62
DH406032	DH446032	3.2	6	20	62
DH406033	DH446033	3.3	6	20	62
DH406034	DH446034	3.4	6	20	62
DH406035	DH446035	3.5	6	20	62
DH406036	DH446036	3.6	6	20	62
DH406037	DH446037	3.7	6	20	62
DH406038	DH446038	3.8	6	24	66
DH406039	DH446039	3.9	6	24	66
DH406040	DH446040	4.0	6	24	66
DH406041	DH446041	4.1	6	24	66
DH406042	DH446042	4.2	6	24	66
DH406043	DH446043	4.3	6	24	66
DH406044	DH446044	4.4	6	24	66
DH406045	DH446045	4.5	6	24	66
DH406046	DH446046	4.6	6	24	66
DH406047	DH446047	4.7	6	24	66
DH406048	DH446048	4.8	6	28	66
DH406049	DH446049	4.9	6	28	66
DH406050	DH446050	5.0	6	28	66
DH406051	DH446051	5.1	6	28	66
DH406052	DH446052	5.2	6	28	66
DH406053	DH446053	5.3	6	28	66

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH406054	DH446054	5.4	6	28	66
DH406055	DH446055	5.5	6	28	66
DH406056	DH446056	5.6	6	28	66
DH406057	DH446057	5.7	6	28	66
DH406058	DH446058	5.8	6	28	66
DH406059	DH446059	5.9	6	28	66
DH406060	DH446060	6.0	6	28	66
DH406061	DH446061	6.1	8	34	79
DH406062	DH446062	6.2	8	34	79
DH406063	DH446063	6.3	8	34	79
DH406064	DH446064	6.4	8	34	79
DH406065	DH446065	6.5	8	34	79
DH406066	DH446066	6.6	8	34	79
DH406067	DH446067	6.7	8	34	79
DH406068	DH446068	6.8	8	34	79
DH406069	DH446069	6.9	8	34	79
DH406070	DH446070	7.0	8	34	79
DH406071	DH446071	7.1	8	41	79
DH406072	DH446072	7.2	8	41	79
DH406073	DH446073	7.3	8	41	79
DH406074	DH446074	7.4	8	41	79
DH406075	DH446075	7.5	8	41	79
DH406076	DH446076	7.6	8	41	79
DH406077	DH446077	7.7	8	41	79

▶ Other shank types are available on your request.

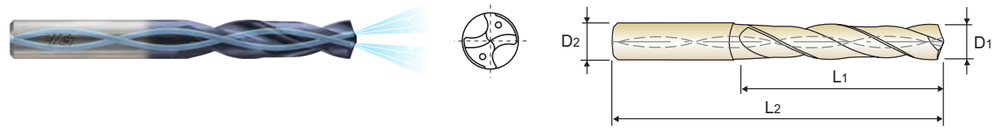
▶ NEXT PAGE

◎ : 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 - GENERAL
PLAIN SHANK DH406 SERIES
FLAT SHANK DH446 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 | TiAlN | p.A97 | 3 × D
Recommended ToolHolder

Plain Shank	Flat Shank
SHRINK FIT HOLDER	HYDRAULIC CHUCK
HYDRAULIC CHUCK	SHRINK FIT HOLDER
ER COLLET CHUCK	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH406078	DH446078	7.8	8	41	79
DH406079	DH446079	7.9	8	41	79
DH406080	DH446080	8.0	8	41	79
DH406081	DH446081	8.1	10	47	89
DH406082	DH446082	8.2	10	47	89
DH406083	DH446083	8.3	10	47	89
DH406084	DH446084	8.4	10	47	89
DH406085	DH446085	8.5	10	47	89
DH406086	DH446086	8.6	10	47	89
DH406087	DH446087	8.7	10	47	89
DH406088	DH446088	8.8	10	47	89
DH406089	DH446089	8.9	10	47	89
DH406090	DH446090	9.0	10	47	89
DH406091	DH446091	9.1	10	47	89
DH406092	DH446092	9.2	10	47	89
DH406093	DH446093	9.3	10	47	89
DH406094	DH446094	9.4	10	47	89
DH406095	DH446095	9.5	10	47	89
DH406096	DH446096	9.6	10	47	89
DH406097	DH446097	9.7	10	47	89
DH406098	DH446098	9.8	10	47	89
DH406099	DH446099	9.9	10	47	89
DH406100	DH446100	10.0	10	47	89
DH406101	DH446101	10.1	12	55	102

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D_1	D_2	L_1	L_2
DH406102	DH446102	10.2	12	55	102
DH406103	DH446103	10.3	12	55	102
DH406104	DH446104	10.4	12	55	102
DH406105	DH446105	10.5	12	55	102
DH406106	DH446106	10.6	12	55	102
DH406107	DH446107	10.7	12	55	102
DH406108	DH446108	10.8	12	55	102
DH406109	DH446109	10.9	12	55	102
DH406110	DH446110	11.0	12	55	102
DH406111	DH446111	11.1	12	55	102
DH406112	DH446112	11.2	12	55	102
DH406113	DH446113	11.3	12	55	102
DH406114	DH446114	11.4	12	55	102
DH406115	DH446115	11.5	12	55	102
DH406116	DH446116	11.6	12	55	102
DH406117	DH446117	11.7	12	55	102
DH406118	DH446118	11.8	12	55	102
DH406119	DH446119	11.9	12	55	102
DH406120	DH446120	12.0	12	55	102
DH406125	DH446125	12.5	14	60	107
DH406130	DH446130	13.0	14	60	107
DH406135	DH446135	13.5	14	60	107
DH406140	DH446140	14.0	14	60	107
DH406145	DH446145	14.5	16	65	115

▶ 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 - GENERAL

PLAIN SHANK DH406 SERIES
FLAT SHANK DH446 SERIES

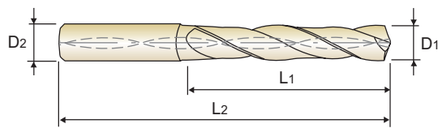
CARBIDE, DREAM DRILLS with COOLANT HOLES

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 | TiAlN | p.A97 | 3 × D

Recommended ToolHolder

Plain Shank		Flat Shank
SHRINK FIT HOLDER	◎	HYDRAULIC CHUCK
HYDRAULIC CHUCK	◎	SHRINK FIT HOLDER
ER COLLET CHUCK	○	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH406150	DH446150	15.0	16	65	115
DH406155	DH446155	15.5	16	65	115
DH406160	DH446160	16.0	16	65	115
DH406165	DH446165	16.5	18	73	123
DH406170	DH446170	17.0	18	73	123
DH406175	DH446175	17.5	18	73	123
DH406180	DH446180	18.0	18	73	123
DH406185	DH446185	18.5	20	79	131
DH406190	DH446190	19.0	20	79	131
DH406195	DH446195	19.5	20	79	131
DH406200	DH446200	20.0	20	79	131

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

ISO	P																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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 - GENERAL

PLAIN SHANK DH408 SERIES
FLAT SHANK DH448 SERIES

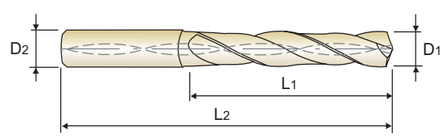
CARBIDE, DREAM DRILLS with COOLANT HOLES

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 | TiAlN | p.A97 | 5 × D

Recommended ToolHolder

Plain Shank		Flat Shank
SHRINK FIT HOLDER	◎	HYDRAULIC CHUCK
HYDRAULIC CHUCK	◎	SHRINK FIT HOLDER
ER COLLET CHUCK	○	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH408010	-	1.0	3	8	55
DH408011	-	1.1	3	12	55
DH408012	-	1.2	3	12	55
DH408013	-	1.3	3	12	55
DH408014	-	1.4	3	12	55
DH408015	-	1.5	3	16	55
DH408016	-	1.6	3	16	55
DH408017	-	1.7	3	16	55
DH408018	-	1.8	3	16	55
DH408019	-	1.9	3	16	55
DH408020	-	2.0	4	21	57
DH408021	-	2.1	4	21	57
DH408022	-	2.2	4	21	57
DH408023	-	2.3	4	21	57
DH408024	-	2.4	4	21	57
DH408025	-	2.5	4	21	57
DH408026	-	2.6	4	21	57
DH408027	-	2.7	4	21	57
DH408028	-	2.8	4	21	57
DH408029	-	2.9	4	21	57
DH408030	DH448030	3.0	6	28	66
DH408031	DH448031	3.1	6	28	66
DH408032	DH448032	3.2	6	28	66
DH408033	DH448033	3.3	6	28	66
DH408034	DH448034	3.4	6	28	66
DH408035	DH448035	3.5	6	28	66
DH408036	DH448036	3.6	6	28	66
DH408037	DH448037	3.7	6	28	66
DH408038	DH448038	3.8	6	36	74
DH408039	DH448039	3.9	6	36	74
DH408040	DH448040	4.0	6	36	74
DH408041	DH448041	4.1	6	36	74
DH408042	DH448042	4.2	6	36	74
DH408043	DH448043	4.3	6	36	74
DH408044	DH448044	4.4	6	36	74
DH408045	DH448045	4.5	6	36	74
DH408046	DH448046	4.6	6	36	74
DH408047	DH448047	4.7	6	36	74
DH408048	DH448048	4.8	6	44	82
DH408049	DH448049	4.9	6	44	82
DH408050	DH448050	5.0	6	44	82
DH408051	DH448051	5.1	6	44	82
DH408052	DH448052	5.2	6	44	82
DH408053	DH448053	5.3	6	44	82
DH408054	DH448054	5.4	6	44	82
DH408055	DH448055	5.5	6	44	82
DH408056	DH448056	5.6	6	44	82
DH408057	DH448057	5.7	6	44	82

▶ 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 - GENERAL

PLAIN SHANK DH408 SERIES
FLAT SHANK DH448 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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- Selbst zentrierend und guter Spanbruch durch die R-Ausspitzung
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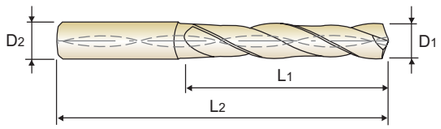
- Optimierte Nutenform für Hochleistungsbohren und leichte Spanabfuhr



DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | TiAlN | p.A97 | 5 × D

Recommended ToolHolder

Plain Shank	Flat Shank
SHRINK FIT HOLDER	HYDRAULIC CHUCK
HYDRAULIC CHUCK	SHRINK FIT HOLDER
ER COLLET CHUCK	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH408058	DH448058	5.8	6	44	82
DH408059	DH448059	5.9	6	44	82
DH408060	DH448060	6.0	6	44	82
DH408061	DH448061	6.1	8	53	91
DH408062	DH448062	6.2	8	53	91
DH408063	DH448063	6.3	8	53	91
DH408064	DH448064	6.4	8	53	91
DH408065	DH448065	6.5	8	53	91
DH408066	DH448066	6.6	8	53	91
DH408067	DH448067	6.7	8	53	91
DH408068	DH448068	6.8	8	53	91
DH408069	DH448069	6.9	8	53	91
DH408070	DH448070	7.0	8	53	91
DH408071	DH448071	7.1	8	53	91
DH408072	DH448072	7.2	8	53	91
DH408073	DH448073	7.3	8	53	91
DH408074	DH448074	7.4	8	53	91
DH408075	DH448075	7.5	8	53	91
DH408076	DH448076	7.6	8	53	91
DH408077	DH448077	7.7	8	53	91
DH408078	DH448078	7.8	8	53	91
DH408079	DH448079	7.9	8	53	91
DH408080	DH448080	8.0	8	53	91
DH408081	DH448081	8.1	10	61	103

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH408082	DH448082	8.2	10	61	103
DH408083	DH448083	8.3	10	61	103
DH408084	DH448084	8.4	10	61	103
DH408085	DH448085	8.5	10	61	103
DH408086	DH448086	8.6	10	61	103
DH408087	DH448087	8.7	10	61	103
DH408088	DH448088	8.8	10	61	103
DH408089	DH448089	8.9	10	61	103
DH408090	DH448090	9.0	10	61	103
DH408091	DH448091	9.1	10	61	103
DH408092	DH448092	9.2	10	61	103
DH408093	DH448093	9.3	10	61	103
DH408094	DH448094	9.4	10	61	103
DH408095	DH448095	9.5	10	61	103
DH408096	DH448096	9.6	10	61	103
DH408097	DH448097	9.7	10	61	103
DH408098	DH448098	9.8	10	61	103
DH408099	DH448099	9.9	10	61	103
DH408100	DH448100	10.0	10	61	103
DH408101	DH448101	10.1	12	71	118
DH408102	DH448102	10.2	12	71	118
DH408103	DH448103	10.3	12	71	118
DH408104	DH448104	10.4	12	71	118
DH408105	DH448105	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											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended																		○			

DREAM DRILLS - GENERAL

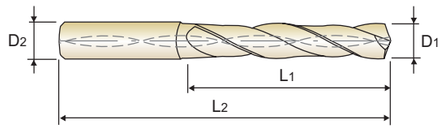
PLAIN SHANK DH408 SERIES
FLAT SHANK DH448 SERIES

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 | TiAlN | p.A97 | 5 × D

Recommended ToolHolder

Plain Shank	Flat Shank
SHRINK FIT HOLDER	HYDRAULIC CHUCK
HYDRAULIC CHUCK	SHRINK FIT HOLDER
ER COLLET CHUCK	END MILL HOLDER

Unit : mm

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH408106	DH448106	10.6	12	71	118
DH408107	DH448107	10.7	12	71	118
DH408108	DH448108	10.8	12	71	118
DH408109	DH448109	10.9	12	71	118
DH408110	DH448110	11.0	12	71	118
DH408111	DH448111	11.1	12	71	118
DH408112	DH448112	11.2	12	71	118
DH408113	DH448113	11.3	12	71	118
DH408114	DH448114	11.4	12	71	118
DH408115	DH448115	11.5	12	71	118
DH408116	DH448116	11.6	12	71	118
DH408117	DH448117	11.7	12	71	118
DH408118	DH448118	11.8	12	71	118
DH408119	DH448119	11.9	12	71	118
DH408120	DH448120	12.0	12	71	118
DH408125	DH448125	12.5	14	77	124
DH408130	DH448130	13.0	14	77	124
DH408135	DH448135	13.5	14	77	124
DH408140	DH448140	14.0	14	77	124
DH408145	DH448145	14.5	16	83	133
DH408150	DH448150	15.0	16	83	133
DH408155	DH448155	15.5	16	83	133
DH408160	DH448160	16.0	16	83	133
DH408165	DH448165	16.5	18	93	143

EDP No. (TiAlN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH408170	DH448170	17.0	18	93	143
DH408175	DH448175	17.5	18	93	143
DH408180	DH448180	18.0	18	93	143
DH408185	DH448185	18.5	20	101	153
DH408190	DH448190	19.0	20	101	153
DH408195	DH448195	19.5	20	101	153
DH408200	DH448200	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 - GENERAL

DH421 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES

EXTRA LONG
ÜBERLANG
EXTRA-LONGUE
EXTRA LUNGA

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

- 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 | TiAlN | p.A97 | 8 × D

Recommended ToolHolder

	Plain Shank	Flat Shank
◎	SHRINK FIT HOLDER	HYDRAULIC CHUCK
◎	HYDRAULIC CHUCK	SHRINK FIT HOLDER
○	ER COLLET CHUCK	END MILL HOLDER

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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
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											15	30	25	38	34			55	60	42	55								
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550								
Recommended																		○											

DREAM DRILLS - GENERAL
DH421 SERIES
CARBIDE, DREAM DRILLS with COOLANT HOLES
EXTRA LONG
ÜBERLANG
EXTRA-LONGUE
EXTRA LUNGA
VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL
Forets DREAM DRILLS carbure, avec arrosage central, série extra-longue
PUNTE ELICOIDALI IN MD - DREAM DRILLS (con fori di refrigerazione)
- Drilling for Steel, Cast Steel, Cast Iron, Malleable Cast Iron
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- 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 | TiAlN | p.A97 | 8 × D
Recommended ToolHolder
Plain Shank: ◎ SHRINK FIT HOLDER, ◎ HYDRAULIC CHUCK, ○ ER COLLET CHUCK
Flat Shank: HYDRAULIC CHUCK, SHRINK FIT HOLDER, END MILL HOLDER
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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
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											15	30	25	38	34			55	60	42	55								
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550								
Recommended																		○											

DREAM DRILLS - GENERAL

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 1.0	2.0
P	2	Non-alloy steel	70	RPM	22280	11140
				FEED	0.03-0.05	0.05-0.07
	3		70	RPM	22280	11140
				FEED	0.03-0.05	0.05-0.07
	4		70	RPM	22280	11140
				FEED	0.03-0.05	0.05-0.07
	5		60	RPM	19100	9550
				FEED	0.03-0.05	0.05-0.07
	6	Low alloy steel	70	RPM	22280	11140
				FEED	0.03-0.05	0.05-0.07
	7		60	RPM	19100	9550
				FEED	0.03-0.05	0.05-0.07
	8		60	RPM	19100	9550
				FEED	0.02-0.04	0.03-0.05
	9		30	RPM	9550	4770
				FEED	0.02-0.04	0.03-0.05
	10	High alloyed steel, and tool steel	50	RPM	15920	7960
				FEED	0.03-0.05	0.05-0.07
	11		30	RPM	9550	4770
				FEED	0.02-0.04	0.03-0.05
M	12	Stainless steel	50	RPM	15920	7960
				FEED	0.03-0.05	0.05-0.07
	13		35	RPM	11140	5570
				FEED	0.02-0.04	0.03-0.05
K	15	Grey cast iron	70	RPM	22280	11140
				FEED	0.04-0.06	0.04-0.06
	16		65	RPM	20690	10350
				FEED	0.04-0.06	0.04-0.06
	17	Nodular cast iron	70	RPM	22280	11140
				FEED	0.04-0.06	0.04-0.06
	18		50	RPM	15920	7960
				FEED	0.04-0.06	0.04-0.06
	19	Malleable cast iron	60	RPM	19100	9550
				FEED	0.04-0.06	0.04-0.06
	20		50	RPM	15920	7960
				FEED	0.03-0.05	0.05-0.07
H	38	Hardened steel	20	RPM	6370	3180
				FEED	0.01-0.02	0.01-0.03

Vc	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0
100	RPM	10610	7960	6370	5310
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
100	RPM	10610	7960	6370	5310
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
100	RPM	10610	7960	6370	5310
	FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
80	RPM	8490	6370	5090	4240
	FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
100	RPM	10610	7960	6370	5310
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
80	RPM	8490	6370	5090	4240
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
80	RPM	8490	6370	5090	4240
	FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
40	RPM	4240	3180	2550	2120
	FEED	0.03-0.08	0.05-0.11	0.08-0.14	0.10-0.16
70	RPM	7430	5570	4460	3710
	FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
40	RPM	4240	3180	2550	2120
	FEED	0.03-0.08	0.05-0.11	0.08-0.14	0.10-0.16
70	RPM	7430	5570	4460	3710
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
45	RPM	4770	3580	2860	2390
	FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
100	RPM	10610	7960	6370	5310
	FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
80	RPM	8490	6370	5090	4240
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
100	RPM	10610	7960	6370	5310
	FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
70	RPM	7430	5570	4460	3710
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
80	RPM	8490	6370	5090	4240
	FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
70	RPM	7430	5570	4460	3710
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
25	RPM	2650	1990	1590	1330
	FEED	0.01-0.03	0.01-0.04	0.02-0.05	0.03-0.06

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	2	Non-alloy steel	100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	3		100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	4		100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	5		80	RPM	3180	2550	2120	1820	1590	1410	1270
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	6	Low alloy steel	100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	7		80	RPM	3180	2550	2120	1820	1590	1410	1270
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	8		80	RPM	3180	2550	2120	1820	1590	1410	1270
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	9		40	RPM	1590	1270	1060	910	800	710	640
				FEED	0.12-0.18	0.13-0.19	0.14-0.20	0.15-0.21	0.16-0.22	0.17-0.25	0.18-0.28
	10	High alloyed steel, and tool steel	70	RPM	2790	2230	1860	1590	1390	1240	1110
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	11		40	RPM	1590	1270	1060	910	800	710	640
				FEED	0.12-0.18	0.13-0.19	0.14-0.20	0.15-0.21	0.16-0.22	0.17-0.25	0.18-0.28
M	12	Stainless steel	70	RPM	2790	2230	1860	1590	1390	1240	1110
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	13		45	RPM	1790	1430	1190	1020	900	800	720
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
K	15	Grey cast iron	100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	16		80	RPM	3180	2550	2120	1820	1590	1410	1270
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	17	Nodular cast iron	100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	18		70	RPM	2790	2230	1860	1590	1390	1240	1110
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	19	Malleable cast iron	80	RPM	3180	2550	2120	1820	1590	1410	1270
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	20		70	RPM	2790	2230	1860	1590	1390	1240	1110
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
H	38	Hardened steel	25	RPM	990	800	660	570	500	440	400
				FEED	0.03-0.06	0.04-0.07	0.04-0.08	0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10

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

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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, DH446, DH408, DH448, DH421 SERIES with COOLANT HOLES

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

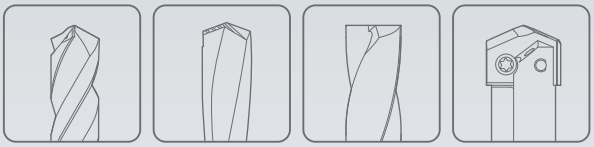
ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 1.0	2.0
P	2	Non-alloy steel	80	RPM	25460	12730
				FEED	0.03-0.05	0.05-0.07
	3		80	RPM	25460	12730
				FEED	0.03-0.05	0.05-0.07
	4		80	RPM	25460	12730
				FEED	0.03-0.05	0.05-0.07
	5		70	RPM	22280	11140
				FEED	0.03-0.05	0.05-0.07
	6	Low alloy steel	80	RPM	25460	12730
				FEED	0.03-0.05	0.05-0.07
	7		70	RPM	22280	11140
				FEED	0.03-0.05	0.05-0.07
	8		70	RPM	22280	11140
				FEED	0.02-0.04	0.03-0.05
	9		40	RPM	12730	6370
				FEED	0.02-0.04	0.03-0.05
	10	High alloyed steel, and tool steel	60	RPM	19100	9550
				FEED	0.03-0.05	0.05-0.07
	11		40	RPM	12730	6370
				FEED	0.02-0.04	0.03-0.05
M	12	Stainless steel	60	RPM	19100	9550
				FEED	0.03-0.05	0.05-0.07
	13		45	RPM	14320	7160
				FEED	0.02-0.04	0.03-0.05
K	15	Grey cast iron	80	RPM	25460	12730
				FEED	0.04-0.06	0.04-0.06
	16		75	RPM	23870	11940
				FEED	0.04-0.06	0.04-0.06
	17	Nodular cast iron	90	RPM	28650	14320
				FEED	0.04-0.06	0.04-0.06
	18		60	RPM	19100	9550
				FEED	0.04-0.06	0.04-0.06
	19	Malleable cast iron	70	RPM	22280	11140
				FEED	0.04-0.06	0.04-0.06
	20		60	RPM	19100	9550
				FEED	0.03-0.05	0.05-0.07
H	38	Hardened steel	25	RPM	7960	3980
				FEED	0.01-0.02	0.01-0.03

Vc	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0
110	RPM	11670	8750	7000	5840
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
110	RPM	11670	8750	7000	5840
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
110	RPM	11670	8750	7000	5840
	FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
90	RPM	9550	7160	5730	4770
	FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
110	RPM	11670	8750	7000	5840
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
90	RPM	9550	7160	5730	4770
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
90	RPM	9550	7160	5730	4770
	FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
50	RPM	5310	3980	3180	2650
	FEED	0.03-0.08	0.05-0.11	0.08-0.14	0.10-0.16
80	RPM	8490	6370	5090	4240
	FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
45	RPM	4770	3580	2860	2390
	FEED	0.03-0.08	0.05-0.11	0.08-0.14	0.10-0.16
80	RPM	8490	6370	5090	4240
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
55	RPM	5840	4380	3500	2920
	FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
110	RPM	11670	8750	7000	5840
	FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
95	RPM	10080	7560	6050	5040
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
120	RPM	12730	9550	7640	6370
	FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
80	RPM	8490	6370	5090	4240
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
90	RPM	9550	7160	5730	4770
	FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26
80	RPM	8490	6370	5090	4240
	FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
30	RPM	3180	2390	1910	1590
	FEED	0.01-0.03	0.01-0.04	0.02-0.05	0.03-0.06

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	2	Non-alloy steel	110	RPM	4380	3500	2920	2500	2190	1950	1750
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	3		110	RPM	4380	3500	2920	2500	2190	1950	1750
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	4		110	RPM	4380	3500	2920	2500	2190	1950	1750
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	5		90	RPM	3580	2860	2390	2050	1790	1590	1430
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	6	Low alloy steel	110	RPM	4380	3500	2920	2500	2190	1950	1750
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	7		90	RPM	3580	2860	2390	2050	1790	1590	1430
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	8		90	RPM	3580	2860	2390	2050	1790	1590	1430
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	9		50	RPM	1990	1590	1330	1140	990	880	800
				FEED	0.12-0.18	0.13-0.19	0.14-0.20	0.15-0.21	0.16-0.22	0.17-0.25	0.18-0.28
	10	High alloyed steel, and tool steel	80	RPM	3180	2550	2120	1820	1590	1410	1270
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	11		45	RPM	1790	1430	1190	1020	900	800	720
				FEED	0.12-0.18	0.13-0.19	0.14-0.20	0.15-0.21	0.16-0.22	0.17-0.25	0.18-0.28
M	12	Stainless steel	80	RPM	3180	2550	2120	1820	1590	1410	1270
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	13		55	RPM	2190	1750	1460	1250	1090	970	880
				FEED	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
K	15	Grey cast iron	110	RPM	4380	3500	2920	2500	2190	1950	1750
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	16		95	RPM	3780	3020	2520	2160	1890	1680	1510
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	17	Nodular cast iron	120	RPM	4770	3820	3180	2730	2390	2120	1910
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	18		80	RPM	3180	2550	2120	1820	1590	1410	1270
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	19	Malleable cast iron	90	RPM	3580	2860	2390	2050	1790	1590	1430
				FEED	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	20		80	RPM	3180	2550	2120	1820	1590	1410	1270
				FEED	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
H	38	Hardened steel	30	RPM	1190	950	800	680	600	530	480
				FEED	0.03-0.06	0.04-0.07	0.04-0.08	0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10

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

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**

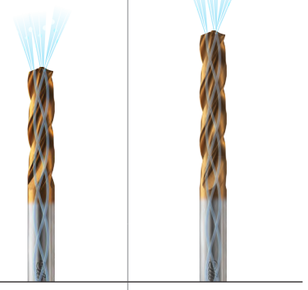
SELECTION GUIDE

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	A101	A103
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.A105

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		

DREAM DRILLS - HIGH FEED

DGR493 SERIES

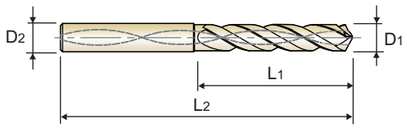
CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES

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 | H Coating | p.A105 | 3 × D

Recommended ToolHolder: Plain Shank / HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

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

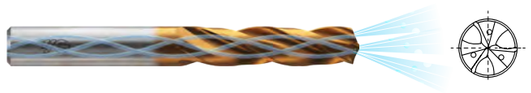
DGR493 SERIES

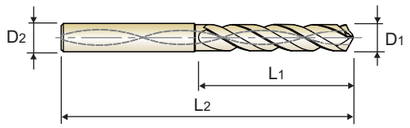
CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES — SHORT

- 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 | H Coating | p.A105 | 3 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

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

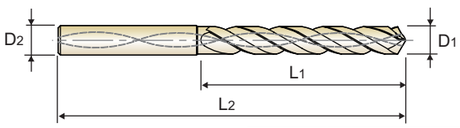
DGR495 SERIES

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
▶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 | H Coating | p.A105 | 5 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

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

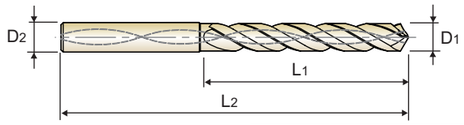
DREAM DRILLS HIGH FEED mit KÜHLKANAL — KURZ

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
- ▶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 | H Coating | p.A105 | 5 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK; SHRINK FIT HOLDER; ER COLLET CHUCK

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

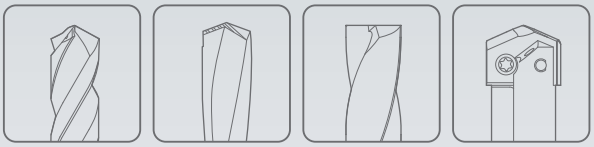
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DGR493, DGR495 SERIES with COOLANT HOLES

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	2	Non-alloy steel	100	RPM	6370	5310	3980	3180	2650	2270	1990	1770	1590
				FEED	0.2-0.25	0.24-0.3	0.32-0.4	0.4-0.5	0.48-0.6	0.56-0.7	0.56-0.72	0.63-0.81	0.7-0.88
	3		100	RPM	6370	5310	3980	3180	2650	2270	1990	1770	1590
				FEED	0.2-0.25	0.24-0.3	0.32-0.4	0.4-0.5	0.48-0.6	0.56-0.7	0.56-0.72	0.63-0.81	0.7-0.88
	4		100	RPM	6370	5310	3980	3180	2650	2270	1990	1770	1590
				FEED	0.16-0.21	0.2-0.26	0.26-0.34	0.34-0.42	0.41-0.47	0.47-0.54	0.47-0.55	0.5-0.59	0.54-0.67
	5		80	RPM	5090	4240	3180	2550	2120	1820	1590	1410	1270
				FEED	0.16-0.21	0.2-0.26	0.26-0.34	0.34-0.42	0.41-0.47	0.47-0.54	0.47-0.55	0.5-0.59	0.54-0.67
	6	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
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

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**

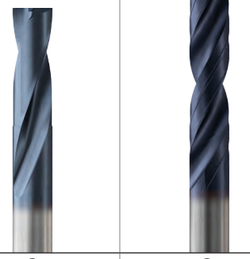
SELECTION GUIDE

YG HOLEMAKING TOOLS

SERIES	DPP447	DH450
DRILLING DEPTH	2XD	5XD
LENGTH	SHORT	LONG
SIZE MIN	D3.0	D3.0
SIZE MAX	D20.0	D20.0
PAGE	A110	A112
SURFACE TREATMENT	X-Coating	TiAlN

SOLID CARBIDE
DREAM DRILLS FLAT BOTTOM

For Holes on Various Angled Surfaces



Please visit globalyg1.com/mat for material search

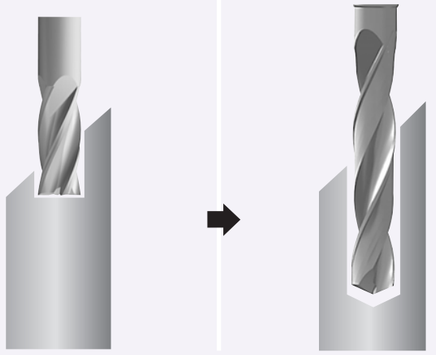
◎ : Excellent ○ : Good

Recommended cutting conditions : p.A114

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

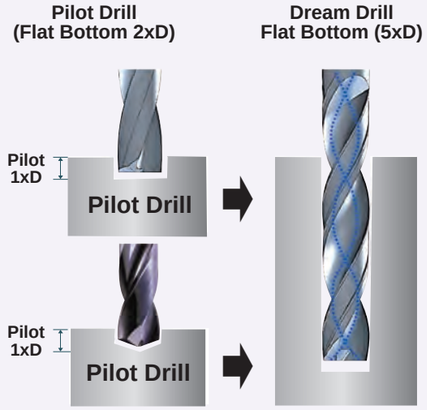
For angled surfaces, only one operation can complete the drilling with Dream Drill Flat Bottom

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

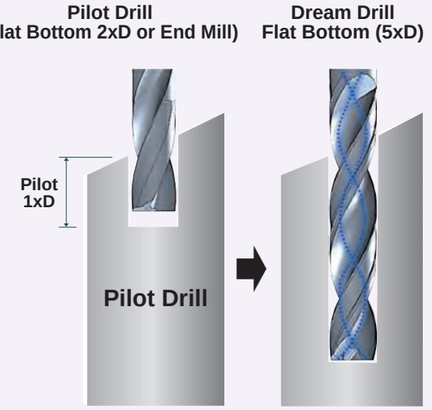
without using both an end mill and a drill

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

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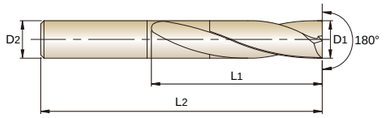

CARBIDE | 20° | h6 | h7 | 180° | X Coating | p.A114

2 × D

Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

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

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

▶ 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		
HB	125	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

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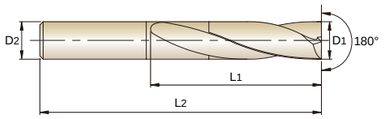
- Für Durchgangsbohrungen, minimierter Grat am Ein- und Austritt beim Bohren von dünnen Blechen.



CARBIDE | 20° | h6 | h7 | 180° | X Coating | p.A114

2 × D

Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
X-Coating	D1	D2	L1	L2
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
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
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		
HB	125	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

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- Pilot Drilling for 5XD

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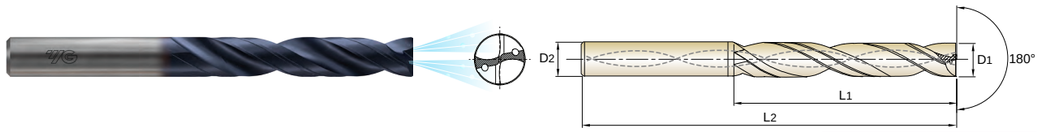
- Optimierte Nutenform für hervorragende Spanabfuhr.
- Hochfeste Schneide zur Verbesserung der Standzeit und Vielseitigkeit beim Bohren.
- Für Durchgangsbohrungen, minimierter Grat am Ein- und Austritt beim Bohren von dünnen Blechen.
- Pilotbohren 5XD



DIN 6537 | CARBIDE | 30° | h6 | h7 | 180° | 20 bar | TiAlN | p.A115 | 5 × D

Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

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

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

▶ 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		
HB	125	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

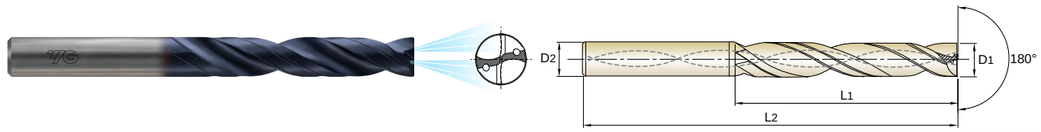
DH450 SERIES

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.
- 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.
- Pilotbohren 5XD



DIN 6537 | CARBIDE | 30° | h6 | h7 | 180° | 20 bar | TiAlN | p.A115 | 5 × D

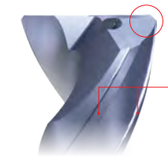
Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
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
DH450170	17.0	18	93	143
DH450175	17.5	18	93	143
DH450180	18.0	18	93	143
DH450185	18.5	20	101	153
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.



Chamfer
(Below data)

Double Margin
(2xD Single Margin)
Hole straightness and roundness provides good alignments

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		
HB	125	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	○	○																			

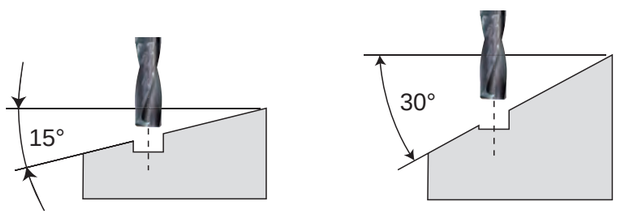
DREAM DRILLS - FLAT BOTTOM

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DPP447 SERIES — without COOLANT HOLES (2XD)

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

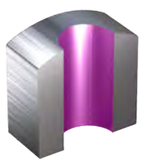
ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0
P	1	Non-alloy steel	80	RPM	8490	6370	5090	4240	3180	2550	2120	1590	1270
				FEED	0.02-0.05	0.03-0.07	0.03-0.08	0.04-0.10	0.08-0.14	0.11-0.17	0.11-0.21	0.18-0.28	0.28-0.38
	2		80	RPM	8490	6370	5090	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
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
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
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

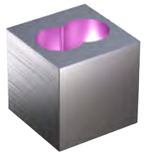


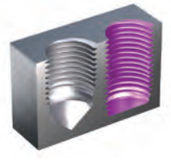
Surface Angle	Cutting Conditions RPM	FEED
0° - 15°	100%	100%
15° - 30°	100%	50%
30° -	70%	30%

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

VARIETY OF DRILLING


Curved Surface

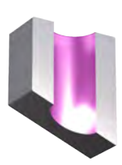

Chained Hole

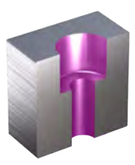

Blind Hole for Threading

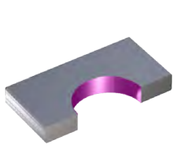
Guide Drilling

Cross Drilling

Inclined Entry


Inclined Exit


Counter Boring


Thin Plate

DREAM DRILLS - FLAT BOTTOM

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

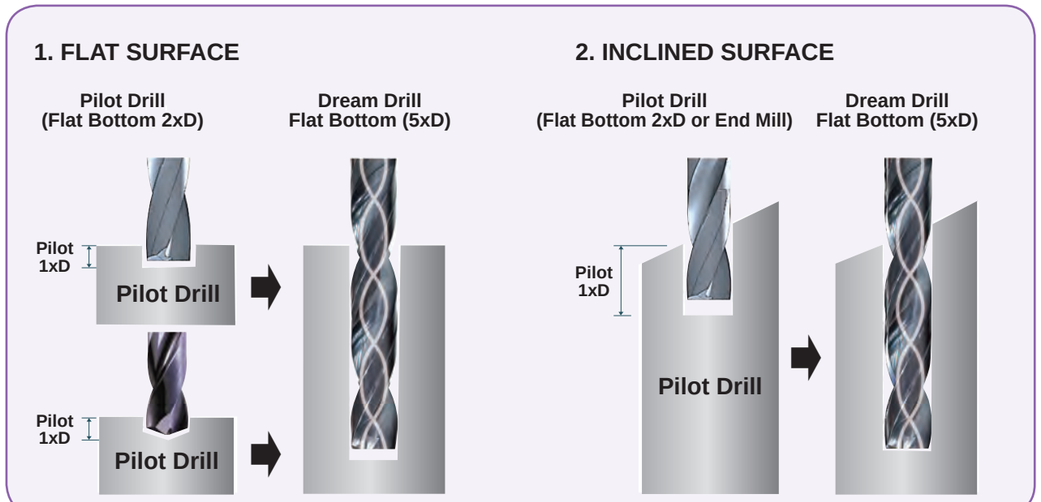
DH450 SERIES — with COOLANT HOLES (5XD)

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0
P	1	Non-alloy steel	100	RPM	10610	7960	6370	5310	3980	3180	2650	1990	1590
				FEED	0.05-0.09	0.08-0.12	0.09-0.15	0.12-0.18	0.18-0.24	0.24-0.30	0.26-0.36	0.38-0.48	0.50-0.60
	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
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
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
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

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

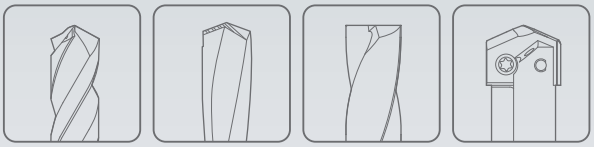
DREAM DRILLS FLAT BOTTOM - Pilot Drilling for 5 X D



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

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

SOLID CARBIDE

DREAM DRILLS -INOX

DREAM DRILLS - INOX

- **For Tough Materials like Stainless Steels**
- **Für schwierig zerspanbare Materialien wie Edelstahl**

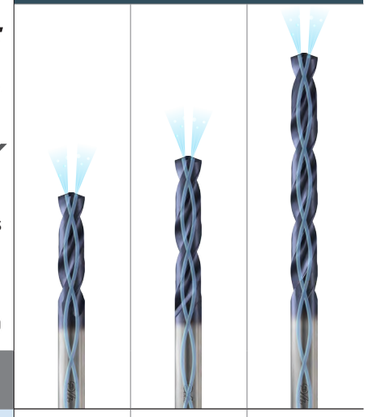
SELECTION GUIDE

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	A119	A122	A125
SURFACE TREATMENT	TiAlN		

SOLID CARBIDE
DREAM DRILLS INOX

For Tough Materials like Stainless Steels



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A127

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			

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

DH451 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

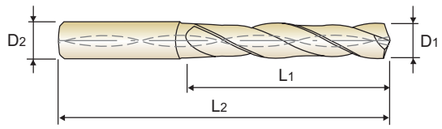
SHORT

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 | TiAlN

p.A127

3 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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
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

▶ 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
▶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 | TiAlN

p.A127

3 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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
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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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
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
DH451140	14.0	14	60	107
DH451145	14.5	16	65	115

▶ 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
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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 | TiAlN
p.A127
3 × D
Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK
Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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

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

p.A127

5 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

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
DH452032	3.2	6	28	66
DH452033	3.3	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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
DH452054	5.4	6	44	82
DH452055	5.5	6	44	82
DH452056	5.6	6	44	82
DH452057	5.7	6	44	82

▶ 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
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 | TiAlN
p.A127
5 × D
Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK
Unit : mm

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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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
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

▶ 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

DH452 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — LONG

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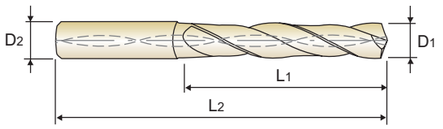

DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | TiAlN

p.A127

5 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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
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

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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
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DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | TiAlN

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8 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

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

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▶ 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

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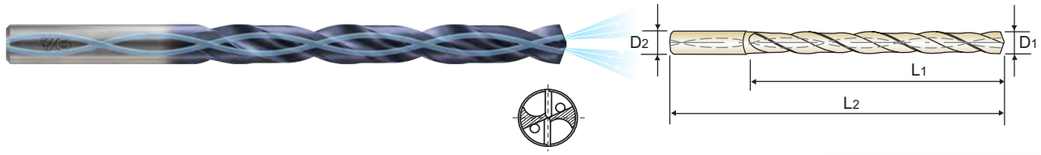


DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° | 20 bar | TiAlN

p.A127

8 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

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	◎	◎	○	○	○												○				

DREAM DRILLS - INOX

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DH451, DH452, DH453 SERIES with COOLANT HOLES

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 1.0	2.0
P	2	Non-alloy steel	70	RPM	22280	11140
				FEED	0.02-0.04	0.04-0.06
	3		70	RPM	22280	11140
				FEED	0.02-0.04	0.04-0.06
	6	Low alloy steel	70	RPM	22280	11140
				FEED	0.02-0.04	0.04-0.06
	7		50	RPM	15920	7960
				FEED	0.02-0.04	0.04-0.06
M	12	Stainless steel	40	RPM	12730	6370
				FEED	0.02-0.04	0.02-0.04
	13		25	RPM	7960	3980
				FEED	0.02-0.04	0.02-0.04
	14		45	RPM	14320	7160
				FEED	0.02-0.04	0.02-0.04
N	21	Aluminum-wrought alloy	130	RPM	41380	20690
				FEED	0.04-0.10	0.08-0.14
	22		130	RPM	41380	20690
				FEED	0.04-0.10	0.08-0.14
	23	Aluminum-cast, alloyed	110	RPM	35010	17510
				FEED	0.04-0.10	0.08-0.14
	24		110	RPM	35010	17510
				FEED	0.04-0.10	0.08-0.14
	25		90	RPM	28650	14320
				FEED	0.04-0.08	0.06-0.10
S	37	Titanium Alloys	25	RPM	7960	3980
				FEED	0.01-0.03	0.01-0.03

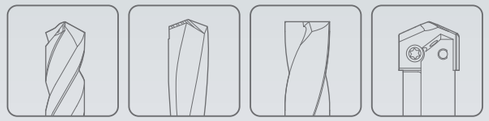
ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0
P	2	Non-alloy steel	100	RPM	10610	7960	6370	5310
				FEED	0.04-0.10	0.06-0.12	0.12-0.18	0.14-0.20
	3		100	RPM	10610	7960	6370	5310
				FEED	0.04-0.10	0.06-0.12	0.12-0.18	0.14-0.20
	6	Low alloy steel	100	RPM	10610	7960	6370	5310
				FEED	0.04-0.10	0.06-0.12	0.12-0.18	0.14-0.20
	7		70	RPM	7430	5570	4460	3710
				FEED	0.04-0.10	0.06-0.12	0.12-0.18	0.14-0.20
M	12	Stainless steel	50	RPM	5310	3980	3180	2650
				FEED	0.03-0.05	0.05-0.09	0.07-0.11	0.08-0.12
	13		40	RPM	4240	3180	2550	2120
				FEED	0.03-0.05	0.05-0.09	0.07-0.11	0.08-0.12
	14		60	RPM	6370	4770	3820	3180
				FEED	0.04-0.06	0.06-0.10	0.08-0.12	0.09-0.13
N	21	Aluminum-wrought alloy	200	RPM	21220	15920	12730	10,610
				FEED	0.14-0.20	0.19-0.25	0.20-0.26	0.22-0.28
	22		200	RPM	21220	15920	12730	10610
				FEED	0.14-0.20	0.19-0.25	0.20-0.26	0.22-0.28
	23	Aluminum-cast, alloyed	180	RPM	19100	14,320	11460	9550
				FEED	0.14-0.20	0.19-0.25	0.20-0.26	0.22-0.28
	24		180	RPM	19100	14320	11460	9550
				FEED	0.14-0.20	0.19-0.25	0.20-0.26	0.22-0.28
	25		150	RPM	15920	11940	9550	7960
				FEED	0.12-0.18	0.16-0.22	0.17-0.23	0.19-0.25
S	37	Titanium Alloys	40	RPM	4240	3180	2550	2120
				FEED	0.02-0.04	0.04-0.08	0.06-0.10	0.07-0.11

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	2	Non-alloy steel	100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.39	0.23-0.31	0.26-0.36	0.28-0.38
	3		100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.39	0.23-0.31	0.26-0.36	0.28-0.38
	6	Low alloy steel	100	RPM	3980	3180	2650	2270	1990	1770	1590
				FEED	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.39	0.23-0.31	0.26-0.36	0.28-0.38
	7		70	RPM	2790	2230	1860	1590	1390	1240	1110
				FEED	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.39	0.23-0.31	0.26-0.36	0.28-0.38
M	12	Stainless steel	50	RPM	1990	1590	1330	1140	990	880	800
				FEED	0.09-0.13	0.10-0.15	0.11-0.16	0.12-0.17	0.13-0.18	0.14-0.19	0.15-0.20
	13		40	RPM	1590	1270	1060	910	800	710	640
				FEED	0.09-0.13	0.10-0.15	0.11-0.16	0.12-0.17	0.13-0.18	0.14-0.19	0.15-0.20
	14		60	RPM	2390	1910	1590	1360	1190	1060	950
				FEED	0.10-0.14	0.11-0.16	0.12-0.17	0.13-0.18	0.14-0.19	0.15-0.20	0.16-0.21
N	21	Aluminum-wrought alloy	200	RPM	7960	6370	5310	4550	3980	3540	3180
				FEED	0.24-0.30	0.26-0.32	0.28-0.34	0.30-0.36	0.32-0.38	0.33-0.43	0.35-0.45
	22		200	RPM	7960	6370	5310	4550	3980	3540	3180
				FEED	0.24-0.30	0.26-0.32	0.28-0.34	0.30-0.36	0.32-0.38	0.33-0.43	0.35-0.45
	23	Aluminum-cast, alloyed	180	RPM	7160	5730	4770	4090	3580	3180	2860
				FEED	0.24-0.30	0.26-0.32	0.28-0.34	0.30-0.36	0.32-0.38	0.33-0.43	0.35-0.45
	24		180	RPM	7160	5730	4770	4090	3580	3180	2860
				FEED	0.24-0.30	0.26-0.32	0.28-0.34	0.30-0.36	0.32-0.38	0.33-0.43	0.35-0.45
	25		150	RPM	5970	4770	3980	3410	2980	2650	2390
				FEED	0.21-0.27	0.23-0.29	0.25-0.31	0.27-0.33	0.28-0.34	0.28-0.38	0.30-0.40
S	37	Titanium Alloys	40	RPM	1590	1270	1060	910	800	710	640
				FEED	0.08-0.12	0.09-0.14	0.10-0.15	0.11-0.16	0.12-0.17	0.13-0.18	0.14-0.19

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

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

SOLID CARBIDE

DREAM DRILLS - ALU

DREAM DRILLS - ALU

- **For Aluminum and Aluminum Alloys**
- **Für Aluminium und Aluminiumlegierungen**

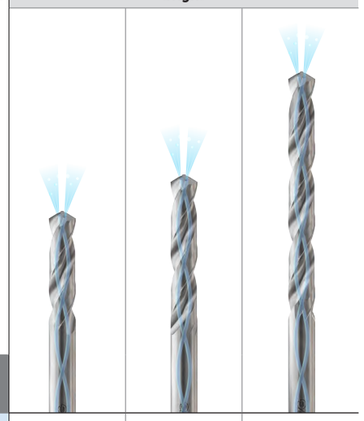
SELECTION GUIDE

YG 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	A131	A134	A137
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.A139

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			

YG DREAM DRILLS - ALU

D5432 SERIES

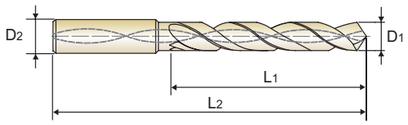
CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

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

- 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 | Bright

p.A139

3 × D

Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

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
D5432052	5.2	6	28	66
D5432053	5.3	6	28	66

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
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
D5432074	7.4	8	41	79
D5432075	7.5	8	41	79
D5432076	7.6	8	41	79
D5432077	7.7	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

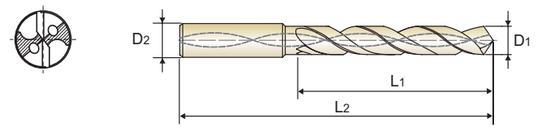
CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

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

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

- ▶ 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 | Bright | p.A139 | 3 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

Unit : mm

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

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

- ▶ DLC coating is available on your request.
- ▶ 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 - ALU

D5432 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

SHORT

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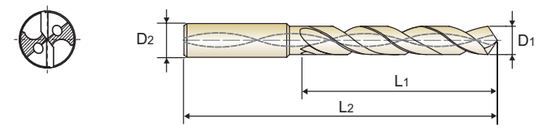


DIN 6537 | CARBIDE | 30° | h6 | m7 | 118° | 20 bar | Bright | p.A139 | 3 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5432150	15.0	16	65	115
D5432155	15.5	16	65	115
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

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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

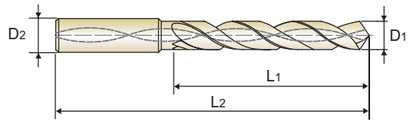
CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

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

- ▶ 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 | Bright

p.A139

5 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

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
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
D5433074	7.4	8	53	91
D5433075	7.5	8	53	91
D5433076	7.6	8	53	91
D5433077	7.7	8	53	91

- ▶ 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

D5433 SERIES

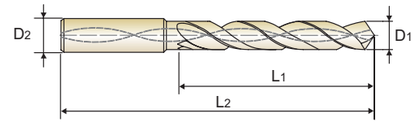
CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

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

- ▶ 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 | Bright

p.A139

5 × D

Recommended ToolHolder: Plain Shank — HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

Unit : mm

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

▶ 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

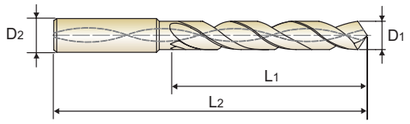
D5433 SERIES

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

- ▶ 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 | Bright | p.A139 | 5 × D

Recommended ToolHolder — Plain Shank: HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5433150	15.0	16	83	133
D5433155	15.5	16	83	133
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

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
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																			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 — *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*

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

- ▶ 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 | Bright | p.A139 | 8 × D

Recommended ToolHolder — Plain Shank: HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

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
D5434054	5.4	6	57	95

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
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
D5434078	7.8	8	76	114
D5434079	7.9	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

ÜBERLANG

Forets DREAM DRILLS carbure pour ALU, avec arrosage central, série extra-longue

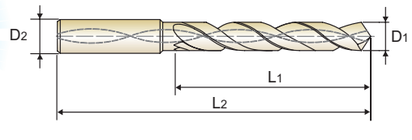
EXTRA-LONGUE

PUNTE ELICOIDALI IN MD, DREAM DRILLS - ALU (con fori di refrigerazione)

EXTRA LUNGA

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

- 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 | Bright

p.A139

8 × D

Recommended ToolHolder

Plain Shank
- HYDRAULIC CHUCK
- SHRINK FIT HOLDER
- ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
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
D5434102	10.2	12	114	162
D5434103	10.3	12	114	162
D5434104	10.4	12	114	162

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

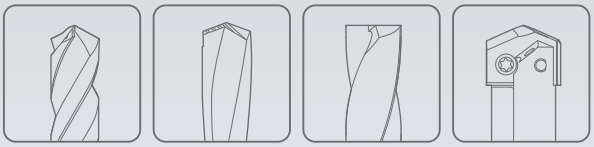
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D5432, D5433, D5434 SERIES with COOLANT HOLES

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
N	21	Aluminum-wrought alloy	200	RPM	21220	15920	12730	10610	7960	6370	5310	4550	3980	3540	3180
				FEED	0.12-0.18	0.14-0.22	0.15-0.23	0.17-0.25	0.21-0.28	0.24-0.30	0.24-0.30	0.25-0.35	0.25-0.35	0.28-0.38	0.30-0.40
	22		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

Global Cutting Tool Leader YG-1



HOLEMAKING

Leading Through Innovation

SOLID CARBIDE

DREAM DRILLS - MQL TYPE

DREAM DRILLS - MQL TYPE

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

- Minimalmengenschmierung Tieflochbohren (10×D ~ 40×D)

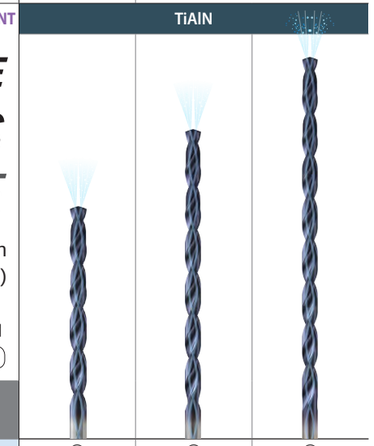
SELECTION GUIDE

YG HOLEMAKING TOOLS

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	A144	A145	
SURFACE TREATMENT	TiAlN		

SOLID CARBIDE
DREAM DRILLS
MQL TYPE

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



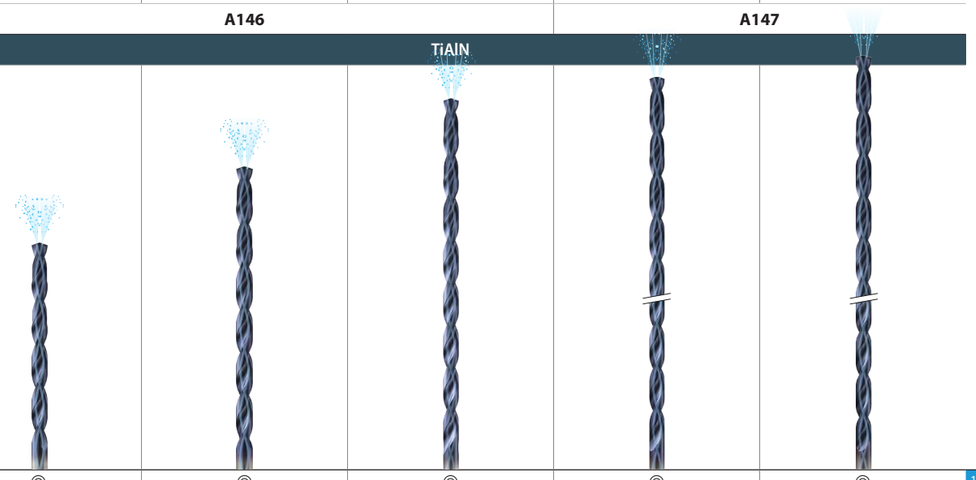
Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p. A148

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
	A146		A147	
TiAlN				



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CARBIDE

HSS

i-ONE DRILLS

i-DREAM DRILLS

DREAM DRILLS -PRO

DREAM DRILLS -GENERAL

DREAM DRILLS -HIGH FEED

DREAM DRILLS -FLAT BOTTOM

DREAM DRILLS -INOX

DREAM DRILLS -ALU

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 - MQL TYPE

DH510 SERIES

CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES

EXTRA LONG

VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL in GERADZAHLIGER SCHAFTAUSFÜHRUNG

ÜBERLANG

Forets DREAM DRILLS carbure Type MQL avec arrosage central, série extra-longue

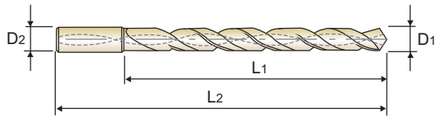
EXTRA-LONGUE

PUNTE ELICOIDALI IN MD, DREAM DRILLS MQL (con fori di refrigerazione)

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 | TiAlN p.A148

10 × D

Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
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	D_1	D_2	L_1	L_2
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	182	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

ÜBERLANG

Forets DREAM DRILLS carbure Type MQL avec arrosage central, série extra-longue

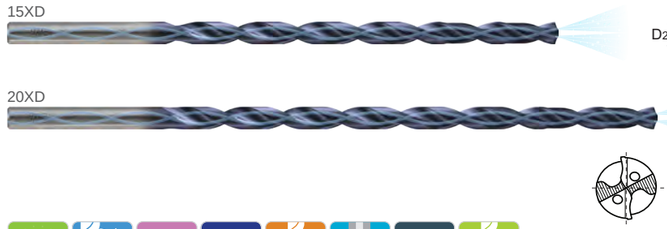
EXTRA-LONGUE

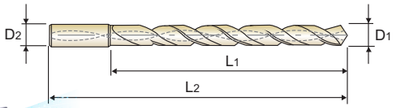
PUNTE ELICOIDALI IN MD, DREAM DRILLS MQL (con fori di refrigerazione)

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





15 × D (DH515) | 20 × D (DH520)

CARBIDE | 30° | h6 | h7 | 140° | 40 bar | TiAlN p.A148

Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

Unit : mm

DH515

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

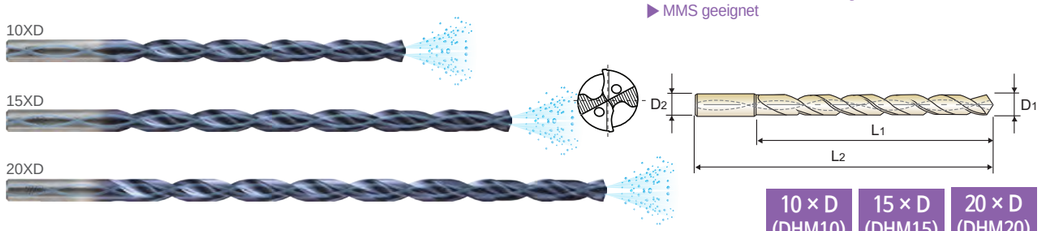
CARBIDE, DREAM DRILL MQL TYPE END MILL SHANK with COOLANT HOLE

EXTRA LONG
ÜBERLANG
EXTRA-LONGUE
EXTRA LUNGA

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

- ▶ 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



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

CARBIDE | 30° | h6 | h7 | 140° | DHM10 20 bar | DHM15 DHM20 45 bar | TiAlN

p.A148

Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

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

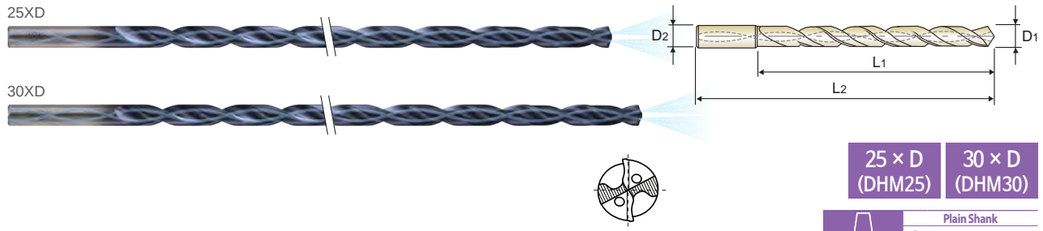
CARBIDE, DREAM DRILL MQL TYPE END MILL SHANK with COOLANT HOLE

EXTRA LONG
ÜBERLANG
EXTRA-LONGUE
EXTRA LUNGA

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

- ▶ 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



25 × D (DHM25) | 30 × D (DHM30)

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

p.A148

Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

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

▶ Made to order in depth 35 & 40D(3~6mm)

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

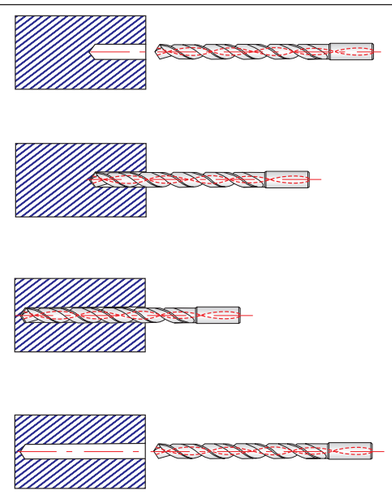
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

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

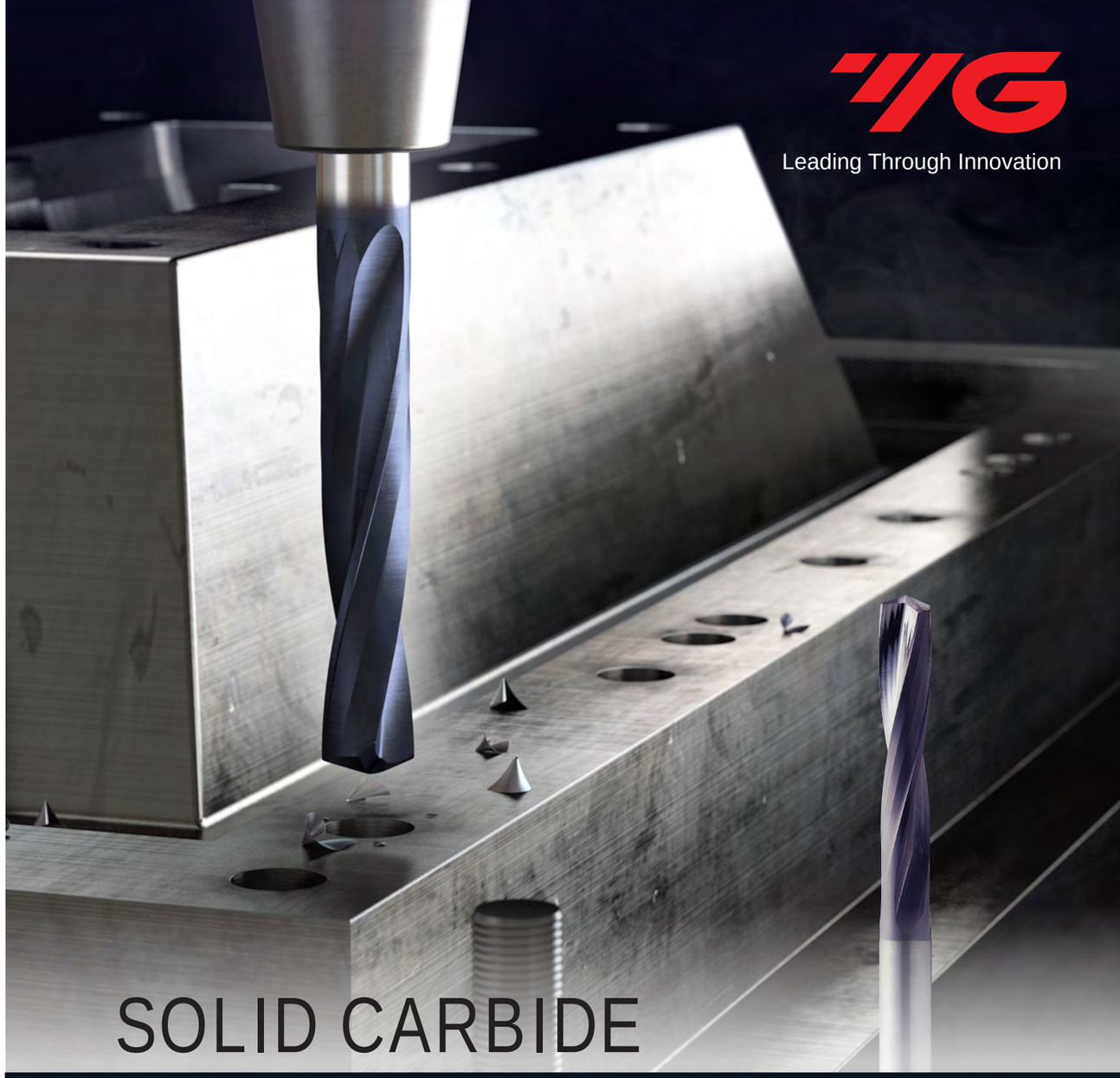
with COOLANT HOLES

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

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



1. Guide Drilling should be done as Diameter +0.01~+0.1mm between 3xD and 5xD depth.
2. For Main Drilling, proceed with low RPM at Guide Drilling segment.
   (RPM 300, FEED 400mm/min)
3. Just before the end of Guide Drilling segment, reduce feed to zero and increase the RPM according to Recommended Cutting Condition chart (See above).
4. After then, proceed main drilling by increasing feed without step drilling.
5. When coming out from Guide Drilling start point after drilling, RPM should be reduced as 300 and feed should be 1000 mm/min.
6. When coming out from Guide Drilling segment to the outside, the feed should be decreased as 50%.



DREAM DRILLS for HIGH HARDENED STEELS

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	A151
SURFACE TREATMENT	TiAlN

SOLID CARBIDE
DREAM DRILLS
for HIGH HARDENED STEELS

For High Hardened Steels (HRc50 to HRc70)

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A151

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	

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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 for HIGH HARDENED STEELS

DH500 SERIES

CARBIDE, DREAM DRILLS for HIGH HARDENED STEELS (HRC50 ~ HRC70)

SHORT

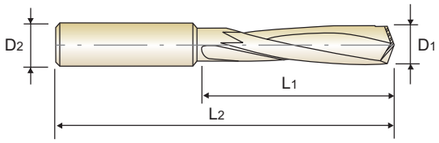
VOLLHARTMETALL DREAM SPIRALBOHRER FÜR HOCHGEHÄRTETE STAHLE — KURZ

Forets DREAM DRILLS carbure pour Aciers Trempés (50 HRc ~ 70 HRc) — COURTE

PUNTE ELICOIDALI IN MD, DREAM DRILL - ACCIAI HRC50 - 70 — CORTA

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

- ▶ Bohren von hoch gehärteten Stählen, Vergütungsstähle, angelassenen Stählen bis HRc70
- ▶Spezielle Bohrergeometrie für gehärtete Stähle
- ▶Minimaler Schnedendruck durch spezielle Ausspitzung
- ▶Gute Spanabfuhr und Hochleistungsbohren



CARBIDE | 15° | h6 | h7 | 140° | TiAlN | p.A151

3 × D

Recommended ToolHolder: Plain Shank — SHRINK FIT HOLDER / HYDRAULIC CHUCK / ER COLLET CHUCK

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

Recommended cutting conditions

EMPFOHLENE SCHNEIDPARAMETER

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

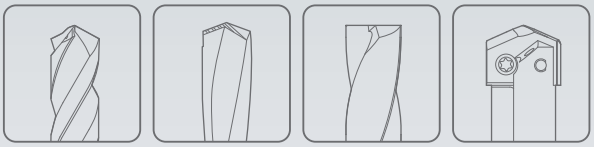
ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0
H	38	Hardened steel	20	RPM	2550	2120	1590	1270	1060	800	640	530	450
				FEED	0.01-0.03	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.05	0.01-0.05	0.01-0.05	0.01-0.06	0.01-0.06
	39.1		15	RPM	1910	1590	1190	950	800	600	480	400	340
				FEED	0.01-0.03	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.05	0.01-0.05	0.01-0.05	0.01-0.06	0.01-0.06
	39.3		12	RPM	1530	1270	950	760	640	480	380	320	270
				FEED	0.01-0.03	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.05	0.01-0.05	0.01-0.05	0.01-0.06	0.01-0.06

◎ : 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																		◎	◎	◎		

Global Cutting Tool Leader YG-1



HOLEMAKING

Leading Through Innovation

SOLID CARBIDE

GENERAL CARBIDE DRILLS

UNIVERSELLE VHM - BOHRER

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

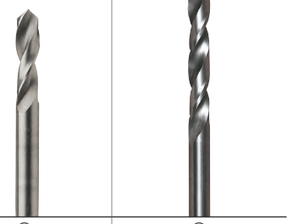
SELECTION GUIDE

HOLEMAKING TOOLS

SERIES	D5405	D5407
STANDARD	DIN 6539	DIN 338
LENGTH	STUB	JOBBER
SIZE MIN	D1.0	D1.0
SIZE MAX	D13.0	D13.0
PAGE	A155	A157
SURFACE TREATMENT	Bright	

SOLID CARBIDE
GENERAL CARBIDE DRILLS

For General Purpose, DIN 338 & DIN 6539



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A159

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		

GENERAL CARBIDE DRILLS

D5405 SERIES

CARBIDE DRILLS

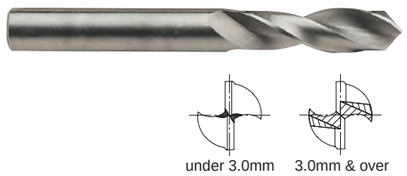
STUB

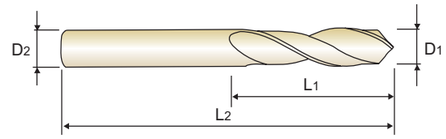
VOLLHARTMETALL-SPIRALBOHRER
Forets carbure, série extra-courte
PUNTE IN METALLO DURO

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.





D1=D2

DIN 6539 | CARBIDE | 30° | h6 | h7 | 118° | Bright

p.A159

Recommended ToolHolder: Plain Shank, HYDRAULIC CHUCK, SHRINK FIT HOLDER, ER COLLET CHUCK

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											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

D5405 SERIES

CARBIDE DRILLS

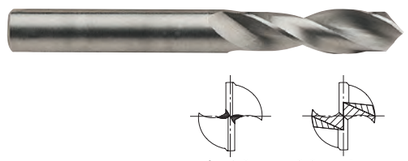
STUB

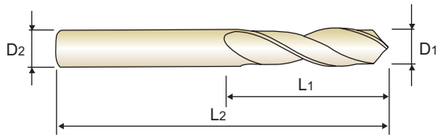
VOLLHARTMETALL-SPIRALBOHRER
Forets carbure, série extra-courte
PUNTE IN METALLO DURO

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.





$D_1=D_2$

DIN 6539 | CARBIDE | 30° | h6 | h7 | 118° | Bright

p.A159

Recommended ToolHolder: Plain Shank / HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

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

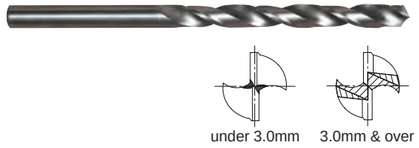
JOBBER

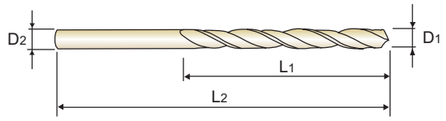
VOLLHARTMETALL-SPIRALBOHRER
Forets carbure, série courte
PUNTE IN METALLO DURO

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.





$D_1=D_2$

DIN 338 | CARBIDE | 30° | h6 | h7 | 118° | Bright

p.A159

Recommended ToolHolder: Plain Shank / HYDRAULIC CHUCK / SHRINK FIT HOLDER / ER COLLET CHUCK

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
Forets carbure, série courte
MPUNTE IN METALLO DURO

KURZ
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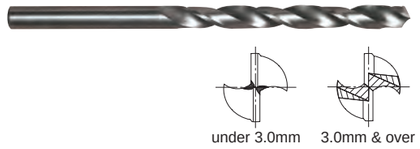
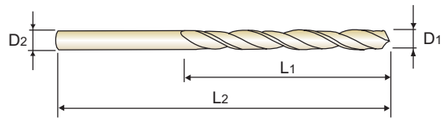




D1=D2

DIN 338 | CARBIDE | 30° | h6 | h7 | 118° | Bright | p.A159

Recommended ToolHolder: Plain Shank; HYDRAULIC CHUCK; SHRINK FIT HOLDER; ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D5407054	5.4	57	93	D5407070	7.0	69	109
D5407055	5.5	57	93	D5407075	7.5	69	109
D5407056	5.6	57	93	D5407080	8.0	75	117
D5407057	5.7	57	93	D5407085	8.5	75	117
D5407058	5.8	57	93	D5407090	9.0	81	125
D5407059	5.9	57	93	D5407095	9.5	81	125
D5407060	6.0	57	93	D5407100	10.0	87	133
D5407061	6.1	63	101	D5407102	10.2	87	133
D5407062	6.2	63	101	D5407105	10.5	87	133
D5407063	6.3	63	101	D5407110	11.0	94	142
D5407064	6.4	63	101	D5407115	11.5	94	142
D5407065	6.5	63	101	D5407120	12.0	101	151
D5407068	6.8	69	109	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

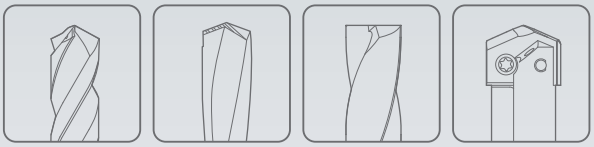
D5405, D5407 SERIES GENERAL CARBIDE DRILLS

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 1.0	2.0
P	1	Non-alloy steel	55	RPM	17510	8750
				FEED	0.02-0.03	0.02-0.04
	2		45	RPM	14320	7160
				FEED	0.02-0.03	0.02-0.04
	6	Low alloy steel	35	RPM	11140	5570
				FEED	0.02-0.03	0.02-0.04
M	12	Stainless steel	15	RPM	4770	2390
				FEED	0.01-0.02	0.01-0.03
K	15	Grey cast iron	25	RPM	7960	3980
				FEED	0.03-0.04	0.03-0.05
N	21	Aluminum-wrought alloy	100	RPM	31830	15920
				FEED	0.04-0.05	0.04-0.06
	22		90	RPM	28650	14320
				FEED	0.04-0.05	0.04-0.06
	23	Aluminum-cast, alloyed	70	RPM	22280	11140
				FEED	0.04-0.05	0.04-0.06
	24		60	RPM	19100	9550
				FEED	0.04-0.05	0.04-0.06
S	36	Titanium Alloys	10	RPM	3180	1590
				FEED	0.01-0.02	0.01-0.03

Vc	Parameter	Drill Diameter (mm) 3.0	4.0	5.0	6.0	8.0	10.0	12.0	13.0
70	RPM	7430	5570	4460	3710	2790	2230	1860	1710
	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
60	RPM	6370	4770	3820	3180	2390	1910	1590	1470
	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
50	RPM	5310	3980	3180	2650	1990	1590	1330	1220
	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
25	RPM	2650	1990	1590	1330	990	800	660	610
	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
45	RPM	4770	3580	2860	2390	1790	1430	1190	1100
	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
140	RPM	14850	11140	8910	7430	5570	4460	3710	3430
	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
120	RPM	12730	9550	7640	6370	4770	3820	3180	2940
	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
100	RPM	10610	7960	6370	5310	3980	3180	2650	2450
	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
80	RPM	8490	6370	5090	4240	3180	2550	2120	1960
	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
20	RPM	2120	1590	1270	1060	800	640	530	490
	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

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

HOLEMAKING TOOLS

SERIES	CDRA03	CDRA04
LENGTH	STUB	JOBBER
SIZE MIN	D1.0	D2.0
SIZE MAX	D13.0	D13.0
PAGE	A163	A166
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.A169

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 — *EXTRA KURZ*
Forets MULTI-1 HSS-PM Premium, série extra-courte — *EXTRA-COURTE*
PUNTA GAMBO CILINDRICO MULTI-1, HSS-PM — *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.

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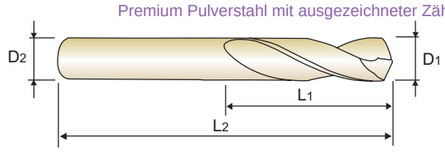
Flute design for the best chip evacuation.
Premium powder materials with excellent toughness.

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

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

up to 1.4mm over 1.4mm



HSS PM | 30° | h6 | h7 | 118° | 135° | TiAlN | p.A169

up to 1.9mm over 1.9mm

Recommended ToolHolder — Plain Shank — HYDRAULIC CHUCK

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

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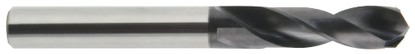
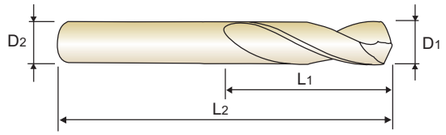


up to 1.4mm over 1.4mm



HSS PM | 30° | h6 | h7 | 118° | 135° | TiAlN

p.A169

Recommended ToolHolder — Plain Shank — HYDRAULIC CHUCK

up to 1.9mm over 1.9mm

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
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
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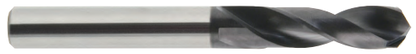
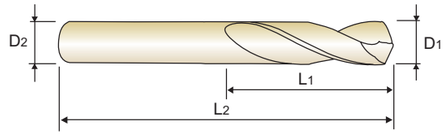


up to 1.4mm over 1.4mm



HSS PM | 30° | h6 | h7 | 118° | 135° | TiAlN

p.A169

Recommended ToolHolder — Plain Shank — HYDRAULIC CHUCK

up to 1.9mm over 1.9mm

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
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
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

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

◎ : Excellent ○ : Good

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

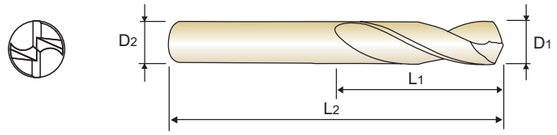
HSS-PM MULTI-1 BOHRER
Forets MULTI-1 HSS-PM Premium, série courte
PUNTA GAMBO CILINDRICO MULTI-1, HSS-PM

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

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

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

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



HSS PM | 30° | h6 | h7 | 135° | TiAlN

p.A169

Recommended ToolHolder — Plain Shank — HYDRAULIC CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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	D1	D2	L1	L2
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
KURZ
COURTE
CORTA

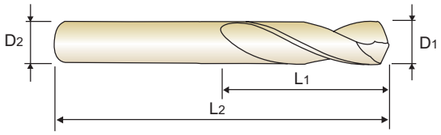
HSS-PM MULTI-1 BOHRER
Forets MULTI-1 HSS-PM Premium, série courte
PUNTA GAMBO CILINDRICO MULTI-1, HSS-PM

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

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

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

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



HSS PM | 30° | h6 | h7 | 135° | TiAlN

p.A169

Recommended ToolHolder — Plain Shank — HYDRAULIC CHUCK

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
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	D1	D2	L1	L2
CDRA04092	9.2	10	81	131
CDRA04093	9.3	10	81	131
CDRA04094	9.4	10	81	131
CDRA04095	9.5	10	81	131
CDRA04096	9.6	10	87	137
CDRA04097	9.7	10	87	137
CDRA04098	9.8	10	87	137
CDRA04099	9.9	10	87	137
CDRA04100	10.0	10	87	137
CDRA04101	10.1	12	87	144
CDRA04102	10.2	12	87	144
CDRA04103	10.3	12	87	144
CDRA04104	10.4	12	87	144
CDRA04105	10.5	12	87	144
CDRA04106	10.6	12	87	144
CDRA04107	10.7	12	94	151
CDRA04108	10.8	12	94	151
CDRA04109	10.9	12	94	151
CDRA04110	11.0	12	94	151
CDRA04111	11.1	12	94	151
CDRA04112	11.2	12	94	151
CDRA04113	11.3	12	94	151
CDRA04114	11.4	12	94	151
CDRA04115	11.5	12	94	151

▶ 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

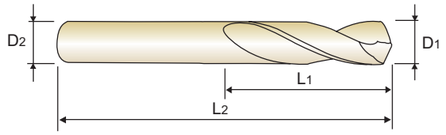
HSS-PM, MULTI-1 DRILLS

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 (HRc30~45), 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° | TiAlN

p.A169

Recommended ToolHolder — Plain Shank / HYDRAULIC CHUCK

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
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	◎	◎	○	○												○					

CDRA03, CDRA04 SERIES MULTI-1 DRILLS

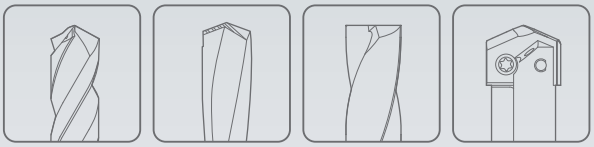
Vc = m/min.
RPM = rev./min.
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 1.0
P	1	Non-alloy steel	30	RPM	9550
				FEED	0.01-0.03
	2		28	RPM	8910
				FEED	0.01-0.03
	3		28	RPM	8910
				FEED	0.01-0.03
	6	Low alloy steel	28	RPM	8910
				FEED	0.01-0.03
	7		23	RPM	7320
				FEED	0.01-0.03
	8		20	RPM	6370
				FEED	0.01-0.02
	9		15	RPM	4770
				FEED	0.01-0.02
M	12	Stainless steel	15	RPM	4770
				FEED	0.01-0.03
	14		13	RPM	4140
				FEED	0.01-0.02
K	15	Grey cast iron	30	RPM	9550
				FEED	0.02-0.04
N	21	Aluminum-wrought alloy	68	RPM	21650
				FEED	0.09-0.13
	22		68	RPM	21650
				FEED	0.09-0.13
	23	Aluminum-cast, alloyed	60	RPM	19100
				FEED	0.09-0.13
	24		55	RPM	17510
				FEED	0.06-0.10
S	36	Titanium Alloys	5	RPM	1590
				FEED	0.01-0.02

Vc	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	5.0
40	RPM	6370	4240	3180	2550
	FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18
35	RPM	5570	3710	2790	2230
	FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18
35	RPM	5570	3710	2790	2230
	FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18
35	RPM	5570	3710	2790	2230
	FEED	0.03-0.06	0.08-0.12	0.09-0.15	0.12-0.18
30	RPM	4770	3180	2390	1910
	FEED	0.03-0.05	0.06-0.10	0.07-0.13	0.10-0.16
25	RPM	3980	2650	1990	1590
	FEED	0.02-0.05	0.03-0.07	0.04-0.10	0.06-0.12
20	RPM	3180	2120	1590	1270
	FEED	0.02-0.05	0.03-0.07	0.04-0.10	0.06-0.12
20	RPM	3180	2120	1590	1270
	FEED	0.03-0.07	0.05-0.09	0.06-0.12	0.09-0.15
15	RPM	2390	1590	1190	950
	FEED	0.02-0.05	0.03-0.07	0.04-0.10	0.06-0.12
40	RPM	6370	4240	3180	2550
	FEED	0.04-0.10	0.07-0.13	0.09-0.15	0.12-0.18
90	RPM	14320	9550	7160	5730
	FEED	0.13-0.17	0.23-0.27	0.27-0.33	0.33-0.39
90	RPM	14320	9550	7160	5730
	FEED	0.13-0.17	0.23-0.27	0.27-0.33	0.33-0.39
80	RPM	12730	8490	6370	5090
	FEED	0.13-0.17	0.23-0.27	0.27-0.33	0.33-0.39
70	RPM	11140	7430	5570	4460
	FEED	0.10-0.14	0.15-0.19	0.20-0.26	0.24-0.30
5	RPM	800	530	400	320
	FEED	0.02-0.05	0.03-0.07	0.04-0.08	0.06-0.12

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

Global Cutting Tool Leader YG-1



HOLEMAKING

Leading Through Innovation

HSS Co8 & 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
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	A173	A177	A183	A186
SURFACE TREATMENT	TiN			

HSS Co8 & 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.A189

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		◎	◎	○	○
	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 HPD DRILLS

D4541 SERIES

HSS Co8, 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.
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Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity

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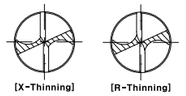
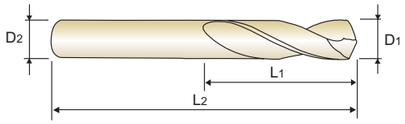
▶**Vorteile** : Durch Kreuzanschliff gute Spanentfernung, reduzierter Druck, verbesserte Genauigkeit, selbstzentriert, extra kurze Ausführung, verbesserte Stabilität, weniger Vibrationen und Abdrängung, Premium Kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere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





$D_1 = D_2$

HSS Co8 | 25° | h7 | h8 | 130° | TiN | p.A189

Recommended ToolHolder: Plain Shank, ER COLLET CHUCK

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.

▶ 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																					

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

D4541 SERIES

HSS Co8, 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
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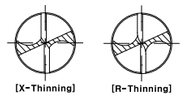

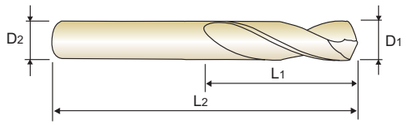

D1=D2

HSS Co8 | 25° | h7 | h8 | 130° | TiN | p.A189

Recommended ToolHolder — Plain Shank / ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D1	L1	L2
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	D1	L1	L2
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

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▶ NEXT PAGE

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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
Recommended	◎	◎	○			◎	○			○					◎					

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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

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STUB

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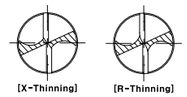

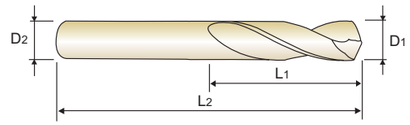

D1=D2

HSS Co8 | 25° | h7 | h8 | 130° | TiN | p.A189

Recommended ToolHolder — Plain Shank / ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D1	L1	L2
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	D1	L1	L2
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

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▶ NEXT PAGE

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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
Recommended	◎	◎	○			◎	○			○					◎					

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
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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

HSS Co8, HPD TWIST DRILLS for STEELS

STUB

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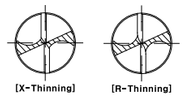
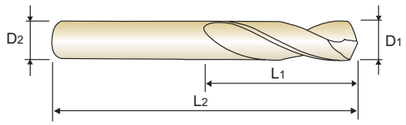


under 4mm 4mm & over



D1=D2

HSS Co8 | 25° | h7 | h8 | 130° | TiN

p.A189

Recommended ToolHolder: Plain Shank / ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D1	L1	L2
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
D4541113	11.30	47	104

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D1	L1	L2
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

HSS Co8, HPD TWIST DRILLS for STEELS

JOBBER

KURZ
COURTE
CORTA

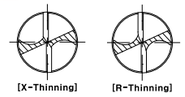
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE
Forets HPD HSSCo Premium pour Aciers, série courte
PUNTE ELICOIDALI HPD IN PREMIUM HSS Co, PER ACCIAI

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

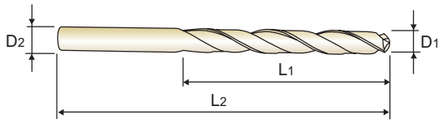
▶**Advantage** : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy.
Reinforced web and jobbers length - increasing rigidity and suitable for 4D~5D drilling
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality &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



D1=D2

HSS Co8 | 30° | h7 | h6 | h8 | 130° | TiN

p.A189

up to 13mm over 13mm

Recommended ToolHolder: Plain Shank / ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D1	L1	L2
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	D1	L1	L2
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											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

HSS Co8, 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
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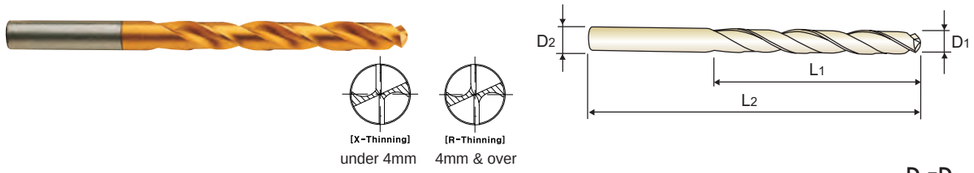
High quality & good surface finish, high productivity.

▶**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.



D1=D2

HSS Co8 | 30° | h7 | h6 | h8 | 130° | TiN | p.A189

up to 13mm over 13mm

Recommended ToolHolder: Plain Shank, ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
TiN			
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 D1	Flute Length L1	Overall Length L2
TiN			
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.

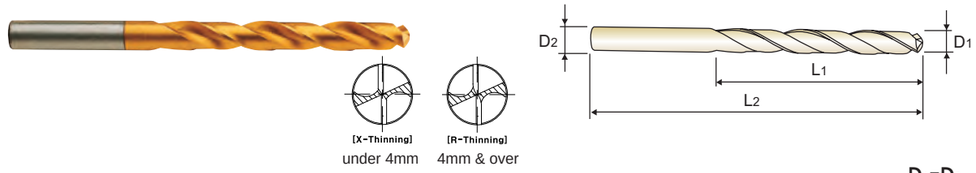
▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P											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
HSS Co8, 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.



D1=D2
HSS Co8 | 30° | h7 | h6 | h8 | 130° | TiN | p.A189
up to 13mm over 13mm
Recommended ToolHolder: Plain Shank, ER COLLET CHUCK
Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
TiN			
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 D1	Flute Length L1	Overall Length L2
TiN			
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.

▶ 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

HSS Co8, HPD TWIST DRILLS for STEELS

JOBBER
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CORTA

PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE
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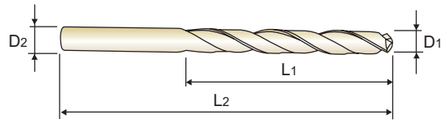
under 4mm 4mm & over



$D_1=D_2$

HSS Co8 | 30° | h7 | h6 | h8 | 130° | TiN | p.A189

up to 13mm over 13mm

Recommended ToolHolder: Plain Shank, ER COLLET CHUCK

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
D4542997	9.75	87	137
D4542098	9.80	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											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 -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

D4542 SERIES

HSS Co8, 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

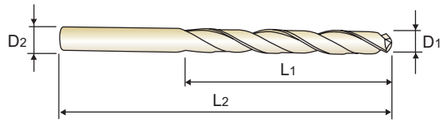
▶**Application** : Designed for high speed non-step 4D~5D drilling.
Drilling mild steels, cast iron, aluminum, alloyed tool steels, etc.

▶**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



$D_1=D_2$

HSS Co8 | 30° | h7 | h6 | h8 | 130° | TiN | p.A189

up to 13mm over 13mm

Recommended ToolHolder: Plain Shank, ER COLLET CHUCK

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

HSS Co8, 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.

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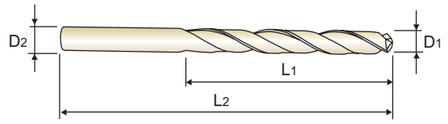
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶**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



D1=D2

HSS Co8 | 30° | h7 | h6 | h8 | 130° | TiN | p.A189

up to 13mm　over 13mm

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D1	L1	L2
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	D1	L1	L2
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 — EXTRA KURZ

Forets HPD-SUS HSS-E pour INOX, série extra-courte — EXTRA-COURTE

PUNTE ELICOIDALI HPD-SUS IN HSS-E, PER ACCIAI INOX — EXTRA CORTA

▶**Application** : Designed for drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

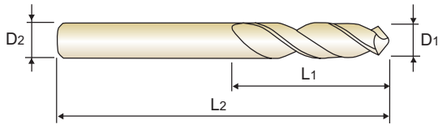
▶**Advantage** : High helix-sharp cutting edges to avoid built-up and to be suitable for high performance drilling
Wide flute and stub length-increasing chip removal and reducing vibration and deflecton.
High vanadium HSS-E material with superior TiN coating - higher speed and feed, longer tool life
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.

for STAINLESS STEELS
für rostfreier Stäle

four facet



D1=D2

HSS-E | 38° | h7 | h8 | 130° | 120° | TiN | p.A189

up to 4mm　over 4mm

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D1	L1	L2
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	D1	L1	L2
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 — EXTRA KURZ
Forets HPD-SUS HSS-E pour INOX, série extra-courte — EXTRA-COURTE
PUNTE ELICOIDALI HPD-SUS IN HSS-E, PER ACCIAI INOX — EXTRA CORTA

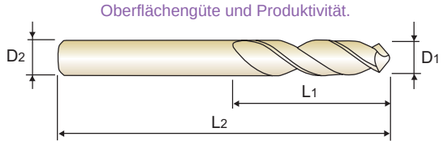
▶**Application** : Designed for drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

▶**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

$D_1 = D_2$

HSS-E | 38° | h7 | h8 | 130° | 120° | TiN | p.A189

up to 4mm | over 4mm

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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
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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 — EXTRA KURZ
Forets HPD-SUS HSS-E pour INOX, série extra-courte — EXTRA-COURTE
PUNTE ELICOIDALI HPD-SUS IN HSS-E, PER ACCIAI INOX — EXTRA CORTA

▶**Application** : Designed for drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

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High quality & good surface finish, high productivity.

▶**Anwendung** : Geeignet zum Bearbeiten von rostfreier stähle, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierungen usw.

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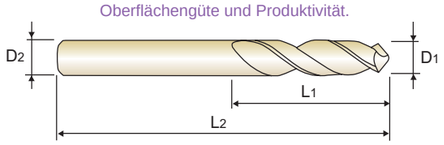
four facet



for STAINLESS STEELS
für rostfreier Stäle

$D_1 = D_2$

HSS-E | 38° | h7 | h8 | 130° | 120° | TiN | p.A189

up to 4mm | over 4mm

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

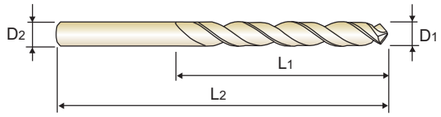
HSS-E, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE — KURZ
Forets HPD-SUS HSS-E pour INOX, série courte — COURTE
PUNTE ELICOIDALI HPD-SUS IN HSS-E, PER ACCIAI INOX — CORTA

▶**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.



for STAINLESS STEELS
für rostfreier Stäle

up to 13mm over 13mm

$D_1=D_2$

HSS-E | 38° | h7 | h8 | 130° | 120° | TiN | p.A189

up to 4mm over 4mm

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

HSS-E, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE — KURZ
Forets HPD-SUS HSS-E pour INOX, série courte — COURTE
PUNTE ELICOIDALI HPD-SUS IN HSS-E, PER ACCIAI INOX — CORTA

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▶**Anwendung** : Für 4D~5D Bohrtiefe, geeignet für rostfreier stähle, Stahl, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierung usw.

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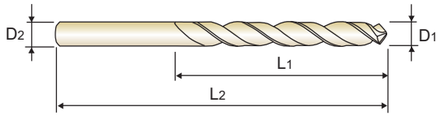

for STAINLESS STEELS
für rostfreier Stäle

up to 13mm over 13mm

$D_1=D_2$

HSS-E | 38° | h7 | h8 | 130° | 120° | TiN | p.A189

up to 4mm over 4mm

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

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▶ 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

HSS-E, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE — KURZ

Forets HPD-SUS HSS-E pour INOX, série courte — COURTE

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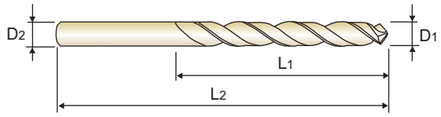


for STAINLESS STEELS
für rostfreier Stäle

HSS-E | 38° | h7 | h8 | 130° | 120° | TiN

up to 4mm over 4mm

p.A189

$D_1=D_2$

Recommended ToolHolder — Plain Shank / ER COLLET CHUCK

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
DJ544129	12.90	101	158

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
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

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

ISO	VDI 3323	Material Description	Vc	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
	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
	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
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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0
P	1	Non-alloy steel	35	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		25	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		25	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
	6	Low alloy steel	30	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		25	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
	10	High alloyed steel, and tool steel	15	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
K	15	Grey cast iron	40	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

Please decrease the feed rate (15~20%) in D4542 SERIES HPD drills.
Den Vorschub in der D4542 Gruppe HPD Bohrer bitte verringern.

DJ543, DJ544 SERIES — HPD-SUS DRILLS for STAINLESS STEELS

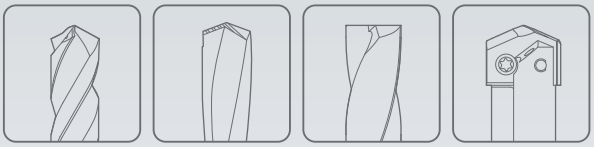
Vc = m/min.
RPM = rev./min.
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc	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	0.04-0.10	0.07-0.13	0.09-0.15	0.12-0.18	0.13-0.19
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
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
	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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	1	Non-alloy steel	35	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
M	12	Stainless steel	20	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		18	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		15	RPM	600	480	400	340	300	270	240
				FEED	0.10-0.16	0.12-0.22	0.14-0.24	0.24-0.34	0.28-0.38	0.30-0.40	0.33-0.43
N	21	Aluminum-wrought alloy	90	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		90	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
	26	Copper and Copper Alloys (Bronze / Brass)	35	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

Please decrease the feed rate (15~20%) in DJ544 SERIES HPD-SUS drills.
Den Vorschub in der DJ544 Gruppe HPD-SUS Bohrer bitte verringern

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

YG HOLEMAKING TOOLS

SERIES	D1GP125	D1GP165
STANDARD	DIN 338	DIN 338
LENGTH	JOBBER	JOBBER
SIZE MIN	D1.0	D1.6
SIZE MAX	D13.0	D13.0
PAGE	A194	A197
SURFACE TREATMENT	TiN	

HSS & HSS-E
GOLD-P DRILLS

Same Performance as Full TiN-coated Drills

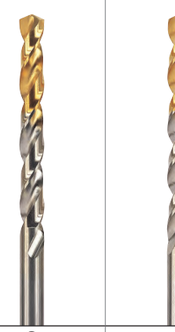
Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A207

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	D1GP125	D1GP165
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		

DLGP195	DLGP506
DIN 338	DIN 338
JOBBER	JOBBER
D1.0	D2.0
D13.0	D13.0
A200	A203
TiN	



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
A206			

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

GOLD-P DRILLS

D1GP125 SERIES

HSS, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

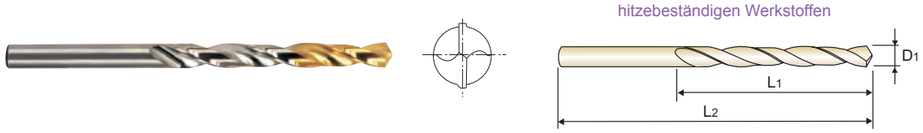
HSS SPIRALBOHRER, GOLD-P BESCHICHTET — KURZ

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 unalloyed and alloyed steels, stainless steels as well as certain cast irons, non-ferrous and heat resistant materials

- ▶**Nutenform** : Rechtsspirale
- ▶**Spitzenwinkel** : 118° Normalanschliff
- ▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶**Anwendung** : Bohren von unlegierten und legierten Stählen, nichtrostenden Stählen sowie bestimmten Gusseisen, Nichteisenmetallen und hitzebeständigen Werkstoffen



DIN 338 | HSS | N ≈ 30° | h8 | 118° | TiN

p.A207

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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
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											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 -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

GOLD-P DRILLS

D1GP125 SERIES

HSS, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

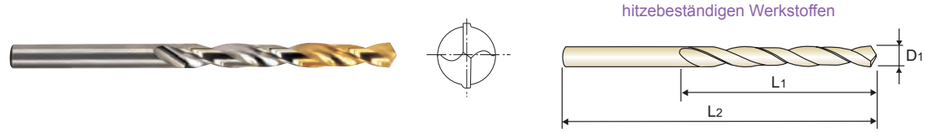
HSS SPIRALBOHRER, GOLD-P BESCHICHTET — KURZ

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 unalloyed and alloyed steels, stainless steels as well as certain cast irons, non-ferrous and heat resistant materials

- ▶**Nutenform** : Rechtsspirale
- ▶**Spitzenwinkel** : 118° Normalanschliff
- ▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶**Anwendung** : Bohren von unlegierten und legierten Stählen, nichtrostenden Stählen sowie bestimmten Gusseisen, Nichteisenmetallen und hitzebeständigen Werkstoffen



DIN 338 | HSS | N ≈ 30° | h8 | 118° | TiN

p.A207

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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
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											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	○	○	○						○							○					

GOLD-P DRILLS

D1GP125 SERIES

HSS, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

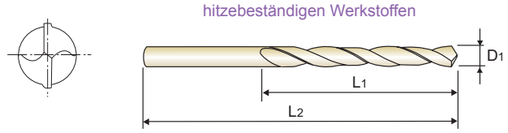
HSS SPIRALBOHRER, GOLD-P BESCHICHTET — *KURZ*

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 unalloyed and alloyed steels, stainless steels as well as certain cast irons, non-ferrous and heat resistant materials

- ▶**Nutenform** : Rechtsspirale
- ▶**Spitzenwinkel** : 118° Normalanschliff
- ▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶**Anwendung** : Bohren von unlegierten und legierten Stählen, nichtrostenden Stählen sowie bestimmten Gusseisen, Nichteisenmetallen und hitzebeständigen Werkstoffen



DIN 338 | HSS | N ≈ 30° | h8 | 118° | TiN | p.A207

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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
D1GP125123	12.3	101	151

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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											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	○	○	○						○							○					

GOLD-P DRILLS

D1GP165 SERIES

HSS, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

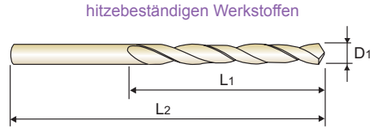
HSS SPIRALBOHRER, GOLD-P BESCHICHTET — *KURZ*

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˚, Normal point
- ▶**Surface treatment** : Bright body, TiN coating on working area
- ▶**Application** : Drilling unalloyed and alloyed steels, stainless steels as well as certain cast irons, non-ferrous and heat resistant materials

- ▶**Nutenform** : Rechtsspirale
- ▶**Spitzenwinkel** : 118° Normalanschliff
- ▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶**Anwendung** : Bohren von unlegierten und legierten Stählen, nichtrostenden Stählen sowie bestimmten Gusseisen, Nichteisenmetallen und hitzebeständigen Werkstoffen



DIN 338 | HSS | N ≈ 30° | h8 | 118° | TiN | p.A207

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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	○	○	○						○							○					

GOLD-P DRILLS

D1GP165 SERIES

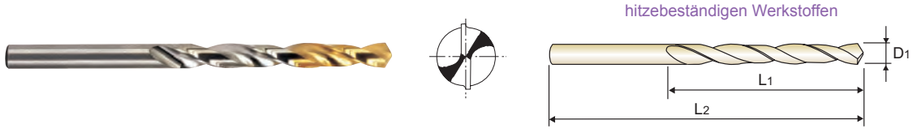
HSS, STRAIGHT SHANK DRILLS, GOLD-P COATED

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 unalloyed and alloyed steels, stainless steels as well as certain cast irons, non-ferrous and heat resistant materials

- ▶**Nutenform** : Rechtsspirale
- ▶**Spitzenwinkel** : 118° Normalanschliff
- ▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶**Anwendung** : Bohren von unlegierten und legierten Stählen, nichtrostenden Stählen sowie bestimmten Gusseisen, Nichteisenmetallen und hitzebeständigen Werkstoffen



DIN 338 | HSS | N ≈ 30° | h8 | 118° | TiN

p.A207

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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
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

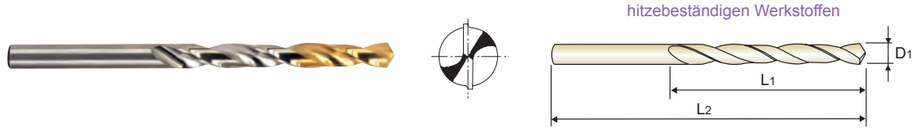
▶ NEXT PAGE

◎ : 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											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	○	○	○						○							○					

GOLD-P DRILLS
D1GP165 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 unalloyed and alloyed steels, stainless steels as well as certain cast irons, non-ferrous and heat resistant materials
▶Nutenform : Rechtsspirale
▶Spitzenwinkel : 118° Normalanschliff
▶Oberfläche : Blank mit TiN-Beschichtung im Arbeitsbereich
▶Anwendung : Bohren von unlegierten und legierten Stählen, nichtrostenden Stählen sowie bestimmten Gusseisen, Nichteisenmetallen und hitzebeständigen Werkstoffen



DIN 338 | HSS | N ≈ 30° | h8 | 118° | TiN
p.A207
Recommended ToolHolder — Plain Shank — ER COLLET CHUCK
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
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											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	○	○	○						○							○					

GOLD-P DRILLS

DLGP195 SERIES

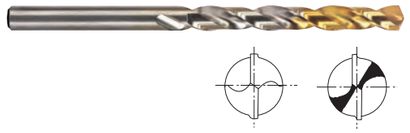
HSS-E, STRAIGHT SHANK DRILLS, GOLD-P COATED

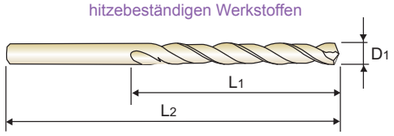
JOBBER
KURZ
COURTE
CORTA

HSS-E SPIRALBOHRER, GOLD-P BESCHICHTET
Forets GOLD-P HSS-E queue cylindrique revêtus, série courte
PUNTE IN HSS-E, GAMBO CILINDRICO, GOLD-P

▶**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** : Deep hole drilling in unalloyed and alloyed steels, stainless steels as well as certain cast irons, non-ferrous and heat resistant materials

▶**Nutenform** : Rechtsspirale
▶**Spitzenwinkel** : 135˚, unter 1.6mm : Normalanschliff
1.6mm & über : Kreuzanschliff
▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
▶**Anwendung** : Bohren tiefer Bohrungen in unlegierten und legierten Stählen, nichtrostenden Stählen sowie bestimmten Gusseisen, Nichteisenmetallen und hitzebeständigen Werkstoffen





DIN 338 | HSS-E | 33˚ | h8 | 135˚ | TiN

p.A207

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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 -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

GOLD-P DRILLS

DLGP195 SERIES

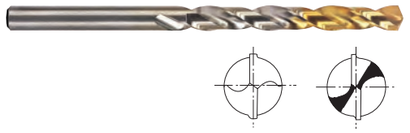
HSS-E, STRAIGHT SHANK DRILLS, GOLD-P COATED

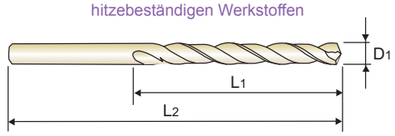
JOBBER
KURZ
COURTE
CORTA

HSS-E SPIRALBOHRER, GOLD-P BESCHICHTET
Forets GOLD-P HSS-E queue cylindrique revêtus, série courte
PUNTE IN HSS-E, GAMBO CILINDRICO, GOLD-P

▶**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** : Deep hole drilling in unalloyed and alloyed steels, stainless steels as well as certain cast irons, non-ferrous and heat resistant materials

▶**Nutenform** : Rechtsspirale
▶**Spitzenwinkel** : 135˚, unter 1.6mm : Normalanschliff
1.6mm & über : Kreuzanschliff
▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
▶**Anwendung** : Bohren tiefer Bohrungen in unlegierten und legierten Stählen, nichtrostenden Stählen sowie bestimmten Gusseisen, Nichteisenmetallen und hitzebeständigen Werkstoffen





DIN 338 | HSS-E | 33˚ | h8 | 135˚ | TiN

p.A207

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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	○	○	○						○							○					

GOLD-P DRILLS

DLGP195 SERIES

HSS-E, STRAIGHT SHANK DRILLS, GOLD-P COATED

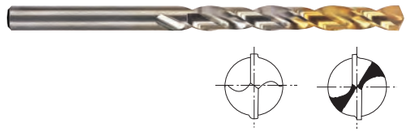
JOBBER

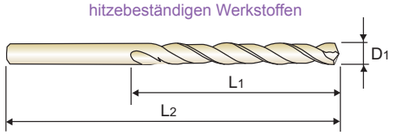
HSS-E SPIRALBOHRER, GOLD-P BESCHICHTET
Forets GOLD-P HSS-E queue cylindrique revêtus, série courte
PUNTE IN HSS-E, GAMBO CILINDRICO, GOLD-P

KURZ
COURTE
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** : Deep hole drilling in unalloyed and alloyed steels, stainless steels as well as certain cast irons, non-ferrous and heat resistant materials

▶**Nutenform** : Rechtsspirale
▶**Spitzenwinkel** : 135°, unter 1.6mm : Normalanschliff
1.6mm & über : Kreuzanschliff
▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
▶**Anwendung** : Bohren tiefer Bohrungen in unlegierten und legierten Stählen, nichtrostenden Stählen sowie bestimmten Gusseisen, Nichteisenmetallen und hitzebeständigen Werkstoffen





DIN 338 | HSS-E | 33° | h8 | 135° | TiN

p.A207

Recommended ToolHolder | Plain Shank | ER COLLET CHUCK

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
DLGP195123	12.3	101	151

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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	○	○	○						○							○					

GOLD-P DRILLS

DLGP506 SERIES

HSS-E, DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED

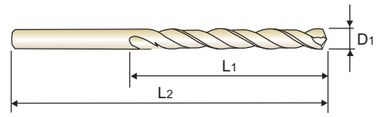
JOBBER

HSS-E DH100 SPIRALBOHRER, für TIEFLOCH mit ZYLINDERSCHAFT, GOLD-P BESCHICHTET
Forets GOLD-P HSS-E queue cylindrique revêtus, DH100 pour perçage profond, série courte
PUNTE GAMBO CILINDRICO DH100 IN HSS-E, PER FORI PROFONDI, GOLD-P

KURZ
COURTE
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** : Deep hole drilling in unalloyed and alloyed steels as well as cast irons that require support during chip removal

▶**Nutenform** : 38° Rechtsspirale, DH 100 Flachnut
▶**Spitzenwinkel** : Durch 130° Kreuzanschliff Gute Spanabfuhr
▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
▶**Anwendung** : Tieflochbohren in unlegierten und legierten Stählen sowie Gusseisen mit aktiver Unterstützung bei der Spanabfuhr



▶DH100 worm pattern drills

DIN 338 | HSS-E | 38° | h8 | 130° | TiN

p.A207

Recommended ToolHolder | Plain Shank | ER COLLET CHUCK

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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																					

GOLD-P DRILLS

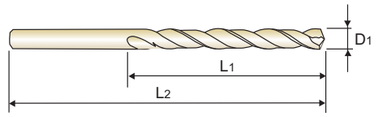
DLGP506 SERIES

HSS-E, DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED

JOBBER
KURZ
COURTE
CORTA

HSS-E DH100 SPIRALBOHRER, für TIEFLOCH mit ZYLINDERSCHAFT, GOLD-P BESCHICHTET
Forets GOLD-P HSS-E queue cylindrique revêtus, DH100 pour perçage profond, série courte
PUNTE GAMBO CILINDRICO DH100 IN HSS-E, PER FORI PROFONDI, GOLD-P

- ▶**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** : Deep hole drilling in unalloyed and alloyed steels as well as cast irons that require support during chip removal
- ▶**Nutenform** : 38° Rechtsspirale, DH 100 Flachnut
- ▶**Spitzenwinkel** : Durch 130° Kreuzanschliff Gute Spanabfuhr
- ▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶**Anwendung** : Tieflochbohren in unlegierten und legierten Stählen sowie Gusseisen mit aktiver Unterstützung bei der Spanabfuhr



▶DH100 worm pattern drills

DIN 338 | HSS-E | 38° | h8 | 130° | TiN

p.A207

Recommended ToolHolder: Plain Shank, ER COLLET CHUCK

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											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																					

GOLD-P DRILLS

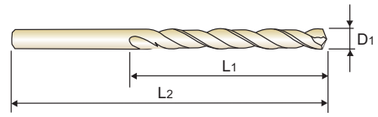
DLGP506 SERIES

HSS-E, DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED

JOBBER
KURZ
COURTE
CORTA

HSS-E DH100 SPIRALBOHRER, für TIEFLOCH mit ZYLINDERSCHAFT, GOLD-P BESCHICHTET
Forets GOLD-P HSS-E queue cylindrique revêtus, DH100 pour perçage profond, série courte
PUNTE GAMBO CILINDRICO DH100 IN HSS-E, PER FORI PROFONDI, GOLD-P

- ▶**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** : Deep hole drilling in unalloyed and alloyed steels as well as cast irons that require support during chip removal
- ▶**Nutenform** : 38° Rechtsspirale, DH 100 Flachnut
- ▶**Spitzenwinkel** : Durch 130° Kreuzanschliff Gute Spanabfuhr
- ▶**Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶**Anwendung** : Tieflochbohren in unlegierten und legierten Stählen sowie Gusseisen mit aktiver Unterstützung bei der Spanabfuhr



▶DH100 worm pattern drills

DIN 338 | HSS-E | 38° | h8 | 130° | TiN

p.A207

Recommended ToolHolder: Plain Shank, ER COLLET CHUCK

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											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																					

GOLD-P DRILLS

GOLD-P COATED DRILL SETS

- GOLD-P BESCHICHTET BOHRER SATS
- Coffrets de Forets GOLD-P revêtus
- SET DI PUNTE GOLD-P

DIN 338 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

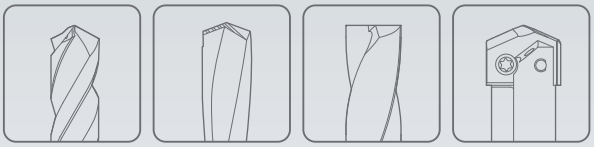
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D1GP125, D1GP165, DLGP195, DLGP506 SERIES HSS & HSS-E GOLD-P DRILLS

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 1.0	Vc	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0	10.0	13.0
P	1	Non-alloy steel	28	RPM	8910	40	RPM	6370	4240	3180	2120	1590	1270	980
				FEED	0.01-0.03		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		25	RPM	7960	35	RPM	5570	3710	2790	1860	1390	1110	860
				FEED	0.01-0.03		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		20	RPM	6370	30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.01-0.03		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		15	RPM	4770	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.01-0.02		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
	6	Low alloy steel	25	RPM	7960	35	RPM	5570	3710	2790	1860	1390	1110	860
				FEED	0.01-0.03		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		20	RPM	6370	30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.01-0.03		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		20	RPM	6370	30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.01-0.02		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
	10	High alloyed steel, and tool steel	15	RPM	4770	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.01-0.03		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
M	12	Stainless steel	18	RPM	5730	25	RPM	3980	2650	1990	1330	990	800	610
				FEED	0.01-0.03		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		15	RPM	4770	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.01-0.03		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		10	RPM	3180	15	RPM	2390	1590	1190	800	600	480	370
				FEED	0.01-0.02		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	28	RPM	8910	40	RPM	6370	4240	3180	2120	1590	1270	980
				FEED	0.01-0.03		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		25	RPM	7960	35	RPM	5570	3710	2790	1860	1390	1110	860
				FEED	0.01-0.02		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	28	RPM	8910	40	RPM	6370	4240	3180	2120	1590	1270	980
				FEED	0.01-0.03		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		20	RPM	6370	30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.01-0.02		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	25	RPM	7960	35	RPM	5570	3710	2790	1860	1390	1110	860
				FEED	0.01-0.03		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		20	RPM	6370	30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.01-0.02		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	45	RPM	14320	65	RPM	10350	6900	5170	3450	2590	2070	1590
				FEED	0.02-0.05		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		45	RPM	14320	65	RPM	10350	6900	5170	3450	2590	2070	1590
				FEED	0.02-0.05		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	35	RPM	11140	50	RPM	7960	5310	3980	2650	1990	1590	1220
				FEED	0.02-0.05		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
	29	Non Metallic Materials	20	RPM	6370	30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.01-0.03		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
S	36	Titanium Alloys	15	RPM	4770	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.01-0.02		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

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	DIN 338
LENGTH	JOBBER
SIZE MIN	D2.0
SIZE MAX	D13.0
PAGE	A211
SURFACE TREATMENT	Vap

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.A214

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 (DIN 338)

JOBBER

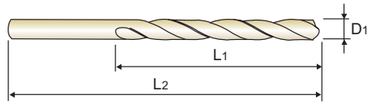
SUPER HSS, SUPER-GP DRILLS (DIN 338) — KURZ

Forets SUPER-GP Super HSS, queue cylindrique (DIN 338) — COURTE

PUNTA SUPER-GP DRILL, IN SUPER-HSS, GAMBO CILINDRICO (DIN 338) — 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° | Vap | p.A214

Plain Shank — Recommended ToolHolder — ER COLLET CHUCK

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											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	○	○	○						○							○					

SUPER-GP DRILLS

DSH105 SERIES

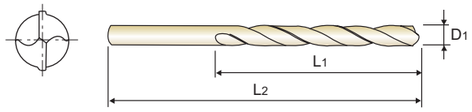
SUPER HSS, SUPER-GP DRILLS (DIN 338)

JOBBER
KURZ
COURTE
CORTA

- SUPER HSS, SUPER-GP DRILLS (DIN 338)
- Forets SUPER-GP Super HSS, queue cylindrique (DIN 338)
- PUNTA SUPER-GP DRILL, IN SUPER-HSS, GAMBO CILINDRICO (DIN 338)

▶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° | Vap | p.A214

Recommended ToolHolder — Plain Shank / ER COLLET CHUCK

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

▶ NEXT PAGE

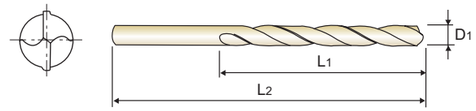
* 10pcs per package
** 5pcs per package

◎ : 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	○	○	○						○							○					

SUPER-GP DRILLS
DSH105 SERIES
SUPER HSS, SUPER-GP DRILLS (DIN 338)
JOBBER
KURZ
COURTE
CORTA
SUPER HSS, SUPER-GP DRILLS (DIN 338)
Forets SUPER-GP Super HSS, queue cylindrique (DIN 338)
PUNTA SUPER-GP DRILL, IN SUPER-HSS, GAMBO CILINDRICO (DIN 338)
▶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° | Vap | p.A214
Recommended ToolHolder — Plain Shank / ER COLLET CHUCK
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											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	○	○	○						○							○					

SUPER-GP DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DSH105 SERIES — SUPER HSS, SUPER-GP DRILLS (DIN 338)

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0	10.0	13.0
P	1	Non-alloy steel	30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17
	2		25	RPM	3980	2650	1990	1330	990	800	610
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17
	3		20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17
	4		20	RPM	3180	2120	1590	1060	800	640	490
				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
	6	Low alloy steel	25	RPM	3980	2650	1990	1330	990	800	610
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17
	7		20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17
	8		20	RPM	3180	2120	1590	1060	800	640	490
				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
	10	High alloyed steel, and tool steel	15	RPM	2390	1590	1190	800	600	480	370
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17
M	12	Stainless steel	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17
	13		15	RPM	2390	1590	1190	800	600	480	370
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17
	14		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
K	15	Grey cast iron	30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17
	16		25	RPM	3980	2650	1990	1330	990	800	610
				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	30	RPM	4770	3180	2390	1590	1190	950	730
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17
	19	Malleable cast iron	25	RPM	3980	2650	1990	1330	990	800	610
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.1-0.13	0.11-0.15	0.11-0.17
N	21	Aluminum-wrought alloy	55	RPM	8750	5840	4380	2920	2190	1750	1350
				FEED	0.03-0.06	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22
	22		55	RPM	8750	5840	4380	2920	2190	1750	1350
				FEED	0.03-0.06	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22
	23	Aluminum-cast, alloyed	40	RPM	6370	4240	3180	2120	1590	1270	980
				FEED	0.03-0.06	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22
	29	Non Metallic Materials	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17
S	36	Titanium Alloys	10	RPM	1590	1060	800	530	400	320	240
				FEED	0.01-0.03	0.02-0.04	0.03-0.05	0.04-0.07	0.05-0.08	0.05-0.09	0.06-0.10

Leading Through Innovation

HSS, HSS-E & HSS Co8

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 & HSS Co8
STRAIGHT SHANK DRILLS

For General Purpose (Soft &Tough Materials)

Please visit globalyg1.com/mat for material search

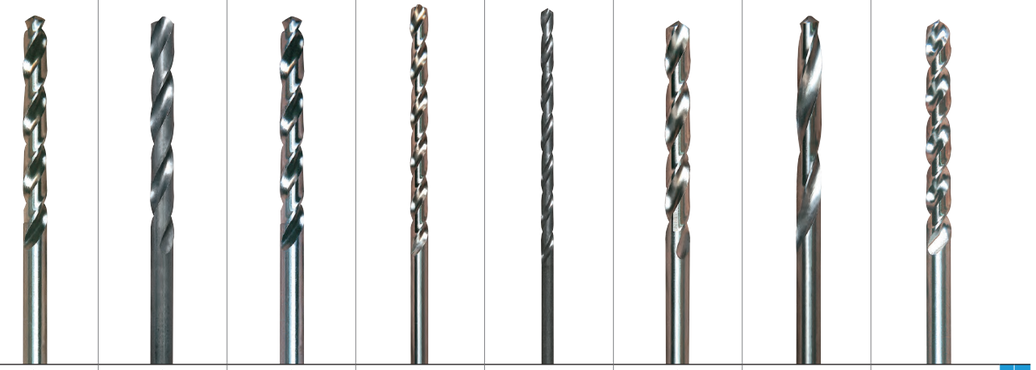
◎ : Excellent ○ : Good

Recommended cutting conditions : p.A262

SERIES	D2107	D1107	D2105
STANDARD	DIN 1897	DIN 1897	DIN 338
LENGTH	STUB	STUB	JOBBER
SIZE MIN	D1.0	D1.0	D1.0
SIZE MAX	D31.0	D13.0	D20.0
PAGE	A220	A224	A227
SURFACE TREATMENT	Gold Coloring	Vap	Gold Coloring

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	D2107	D1107	D2105
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
DIN 338	DIN 338	DIN 338	DIN 340	DIN 1869/1	DIN 338	DIN 338	DIN 338
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
A230	A233	A238	A241	A243	A244	A245	A247
Gold Coloring	Vap	Bright	Gold Coloring	Vap	Bright		



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SELECTION GUIDE

YG HOLEMAKING TOOLS

HSS-E
STRAIGHT SHANK DRILLS

For General Purpose (Soft &Tough Materials)

Please visit globalyg1.com/mat for material search

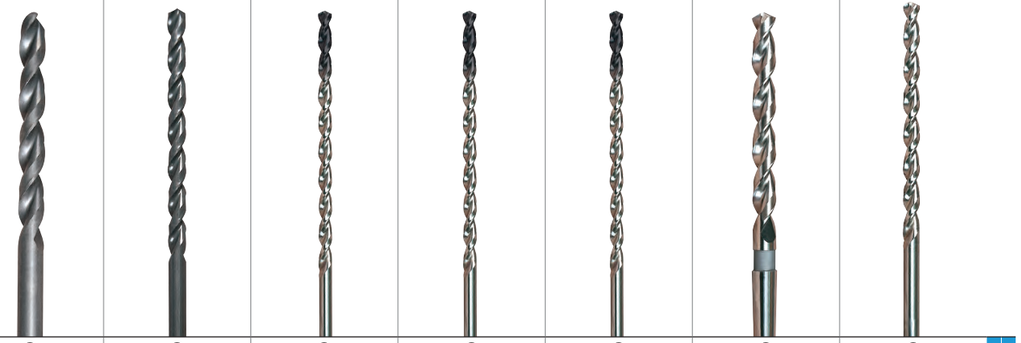
◎ : Excellent ○ : Good

Recommended cutting conditions : p.A262

SERIES	DH100 DL510	DH100 DL508	DH100 DL509
STANDARD	DIN 1897	DIN 338	DIN 340
LENGTH	STUB	JOBBER	LONG
SIZE MIN	D2.0	D2.0	D2.0
SIZE MAX	D20.0	D16.0	D12.0
PAGE	A249	A251	A253
SURFACE TREATMENT	Bright		

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	DL510	DL508	DL509
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			

SERIES	DH100 DL505	DH100 DL504	DH100 DT600	DH100 DT692	DH100 DT693	DH100 DL608	DH50 DL507
STANDARD	DIN 338	DIN 340	DIN 1869/1	DIN 1869/2	DIN 1869/3	DIN 341	-
LENGTH	JOBBER	LONG	EXTRA LONG			LONG	EXTRA LONG
SIZE MIN	D2.0	D2.0	D2.0	D3.0	D4.0	D13.0	D2.0
SIZE MAX	D13.0	D13.0	D10.5	D10.2	D10.0	D30.0	D13.0
PAGE	A255	A257	A258			A259	A260
SURFACE TREATMENT	Vap		TiAlN			Bright	



DL505	DL504	DT600	DT692	DT693	DL608	DL507	
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STRAIGHT SHANK DRILLS

D2107 SERIES

HSS Co8, STRAIGHT SHANK TWIST DRILLS

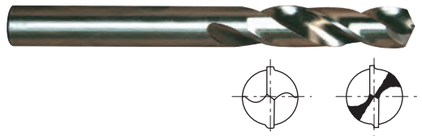
STUB

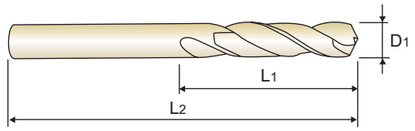
HSS Co8, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS Co8, queue cylindrique, Forme C, série extra-courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS Co8

EXTRA KURZ
EXTRA-COURTE
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° | Gold Coloring | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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.

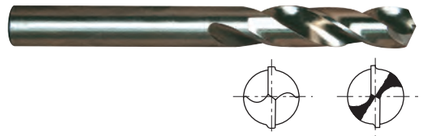
▶ NEXT PAGE

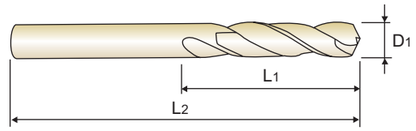
◎ : Excellent ○ : Good

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	○	○	○						○							○					

STRAIGHT SHANK DRILLS
D2107 SERIES
HSS Co8, STRAIGHT SHANK TWIST DRILLS
STUB
HSS Co8, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS Co8, queue cylindrique, Forme C, série extra-courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS Co8
EXTRA KURZ
EXTRA-COURTE
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° | Gold Coloring | p.A262
Recommended ToolHolder — Plain Shank — ER COLLET CHUCK
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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

D2107 SERIES

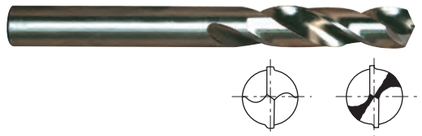
HSS Co8, STRAIGHT SHANK TWIST DRILLS

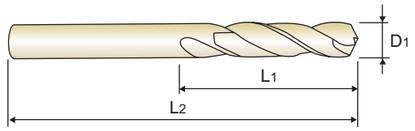
STUB
EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA

HSS Co8, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS Co8, queue cylindrique, Forme C, série extra-courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS Co8

▶**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° | Gold Coloring | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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.

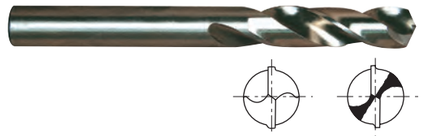
▶ NEXT PAGE

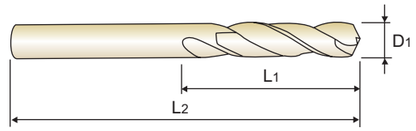
◎ : Excellent ○ : Good

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	○	○	○						○							○					

STRAIGHT SHANK DRILLS
D2107 SERIES
HSS Co8, STRAIGHT SHANK TWIST DRILLS
STUB
EXTRA KURZ
EXTRA-COURTE
EXTRA CORTA
HSS Co8, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS Co8, queue cylindrique, Forme C, série extra-courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS Co8
▶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° | Gold Coloring | p.A262
Recommended ToolHolder — Plain Shank — ER COLLET CHUCK
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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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	○	○	○						○							○					

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° | Vap | p.A262

Recommended ToolHolder: Plain Shank — ER COLLET CHUCK

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											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 -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

D1107 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS

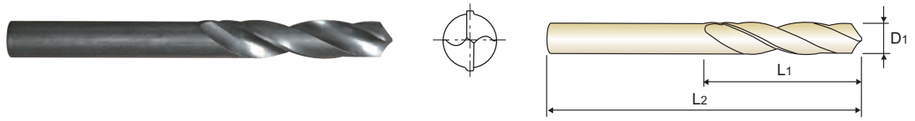
STUB

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° | Vap | p.A262

Recommended ToolHolder: Plain Shank — ER COLLET CHUCK

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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

D1107 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS

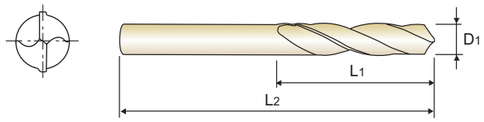
STUB

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(Scwarzoxidation)
▶**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° | Vap | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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
D1107812	11.25	47	95
D1107115	11.5	47	95
D1107817	11.75	47	95

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

D2105 SERIES

HSS Co8, STRAIGHT SHANK TWIST DRILLS

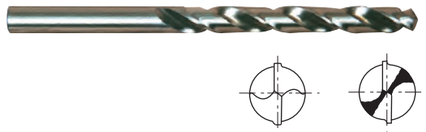
JOBBER

HSS CO8, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS Co8, queue cylindrique, Forme C, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS Co8

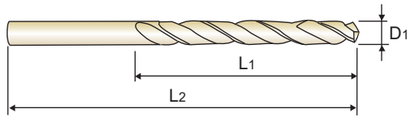
KURZ
COURTE
CORTA

▶**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° | Gold Coloring | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

D2105 SERIES

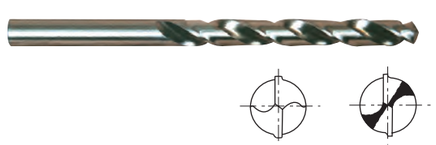
HSS Co8, STRAIGHT SHANK TWIST DRILLS

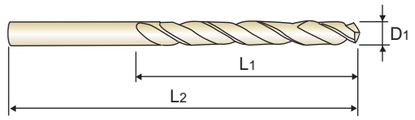
JOBBER
KURZ
COURTE
CORTA

HSS Co8, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS Co8, queue cylindrique, Forme C, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS Co8

▶**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° | Gold Coloring | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

D2105 SERIES

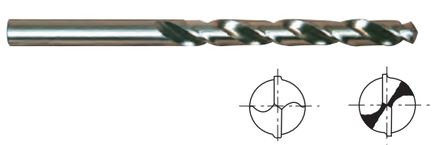
HSS Co8, STRAIGHT SHANK TWIST DRILLS

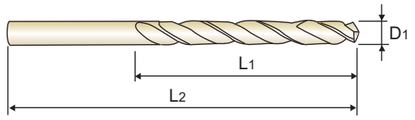
JOBBER
KURZ
COURTE
CORTA

HSS Co8, SPIRALBOHRER mit ZYLINDERSCHAFT
Forets HSS Co8, queue cylindrique, Forme C, série courte
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS Co8

▶**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° | Gold Coloring | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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
D2105140	14.0	108	160

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

DL105 SERIES

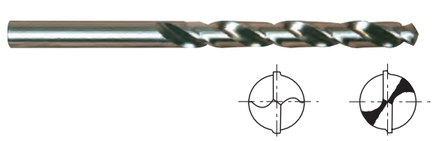
HSS-E, STRAIGHT SHANK TWIST DRILLS

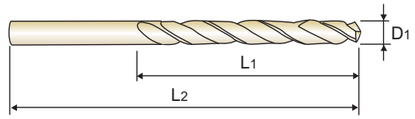
JOBBER
KURZ
COURTE
CORTA

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° | Gold Coloring | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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.

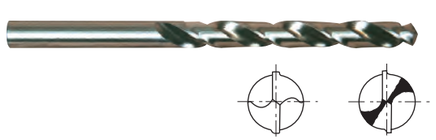
▶ NEXT PAGE

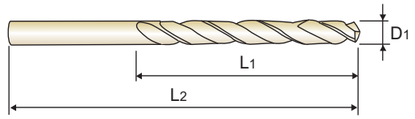
◎ : Excellent ○ : Good

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	○	○	○						○							○					

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° | Gold Coloring | p.A262
Recommended ToolHolder — Plain Shank — ER COLLET CHUCK
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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

DL105 SERIES

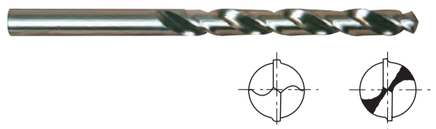
HSS-E, STRAIGHT SHANK TWIST DRILLS

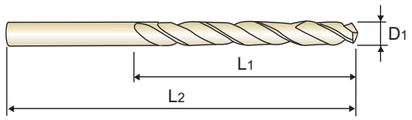
JOBBER
KURZ
COURTE
CORTA

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° | Gold Coloring | p.A262

Recommended ToolHolder: Plain Shank, ER COLLET CHUCK

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
DL105140	14.0	108	160

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

D1105 SERIES

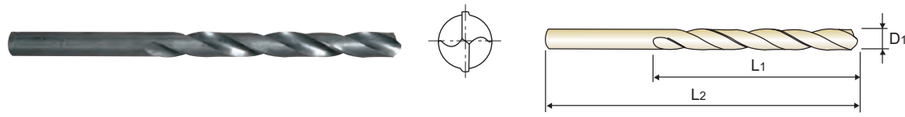
HSS, STRAIGHT SHANK TWIST DRILLS

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° | Vap | p.A262

Recommended ToolHolder: Plain Shank, ER COLLET CHUCK

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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

D1105 SERIES

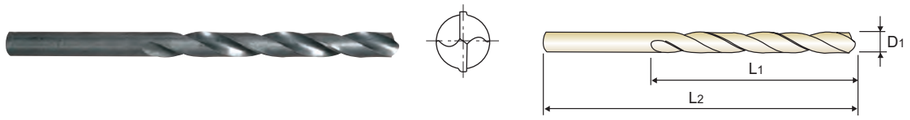
HSS, STRAIGHT SHANK TWIST DRILLS

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° | Vap | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

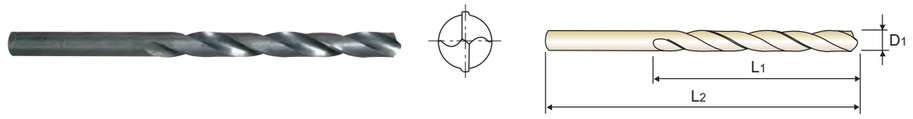
▶ NEXT PAGE

◎ : 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											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	○	○	○						○							○					

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° | Vap | p.A262
Recommended ToolHolder — Plain Shank — ER COLLET CHUCK
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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

D1105 SERIES

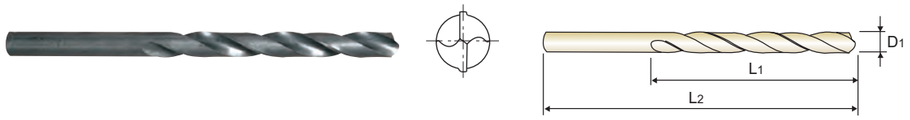
HSS, STRAIGHT SHANK TWIST DRILLS

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° | Vap | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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

▶ 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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

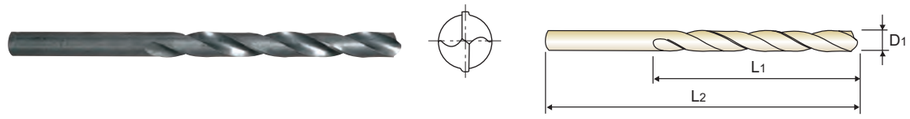
D1105 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS

JOBBER
KURZ
COURTE
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° | Vap | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

D1125 SERIES

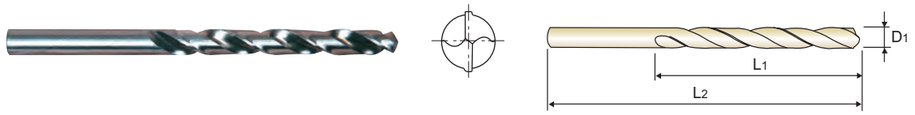
HSS, STRAIGHT SHANK TWIST DRILLS

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° | Bright | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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		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 -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

D1125 SERIES

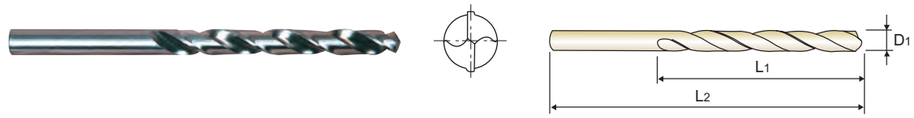
HSS, STRAIGHT SHANK TWIST DRILLS

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° | Bright | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

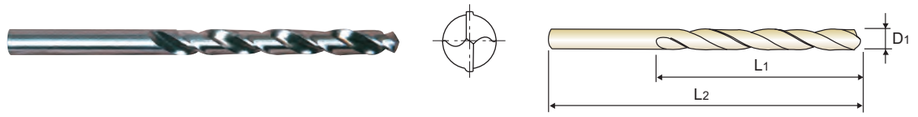
D1125 SERIES

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° | Bright | p.A262

Recommended ToolHolder — Plain Shank / ER COLLET CHUCK

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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

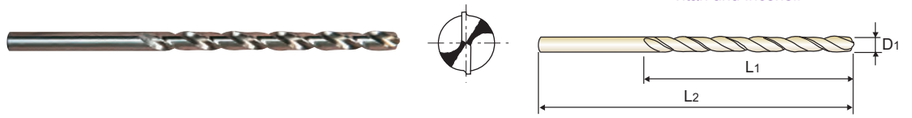
D2104 SERIES

HSS Co8, STRAIGHT SHANK TWIST DRILLS — *LONG*

HSS Co8, SPIRALBOHRER mit ZYLINDERSCHAFT — *LANG*
Forets HSS Co8, queue cylindrique, série longue — *LONGUE*
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS Co8 — *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° | Gold Coloring | p.A262

Recommended ToolHolder — Plain Shank / ER COLLET CHUCK

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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

D2104 SERIES

HSS Co8, STRAIGHT SHANK TWIST DRILLS

LONG

HSS Co8, SPIRALBOHRER mit ZYLINDERSCHAFT — *LANG*
Forets HSS Co8, queue cylindrique, série longue — *LONGUE*
PUNTE ELICOIDALI, GAMBO CILINDRICO, HSS Co8 — *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° | Gold Coloring | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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											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	○	○	○						○							○					

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(Schwarzoxidation)
▶**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° | Vap | p.A262

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

DL109 SERIES

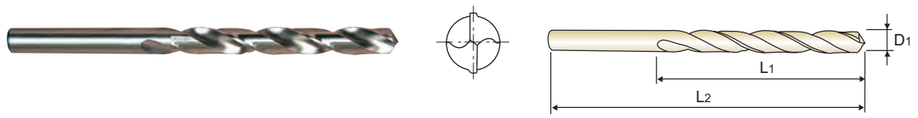
HSS-E, STRAIGHT SHANK TWIST DRILLS for HEAVY DUTY

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° | Bright p.A262

Recommended ToolHolder — Plain Shank, ER COLLET CHUCK

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
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

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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											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	○	○	○						○							○					

STRAIGHT SHANK DRILLS

D1100 SERIES

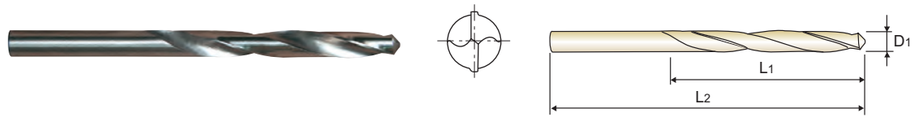
HSS, STRAIGHT SHANK TWIST DRILLS for BRASS/BRONZE

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° | Bright p.A263

Recommended ToolHolder — Plain Shank, ER COLLET CHUCK

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											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							◎	◎													

STRAIGHT SHANK DRILLS

D1100 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS for BRASS/BRONZE

JOBBER

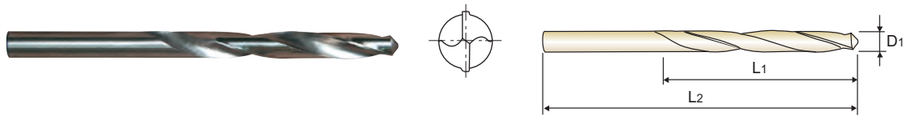
HSS, SPIRALBOHRER für MESSING/BRONZE mit ZYLINDERSCHAFT — KURZ

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° | Bright

p.A263

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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							◎	◎													

STRAIGHT SHANK DRILLS

D1106 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS for ALUMINUM

JOBBER

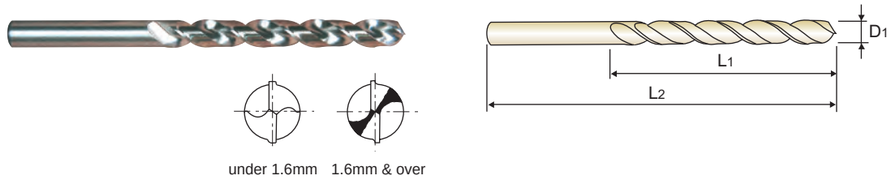
HSS, SPIRALBOHRER für ALUMINIUM mit ZYLINDERSCHAFT — KURZ

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.



under 1.6mm 1.6mm & over

DIN 338 | HSS | 38° | h8 | 135° | Bright

p.A263

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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	◎	◎	◎	◎																	

STRAIGHT SHANK DRILLS

D1106 SERIES

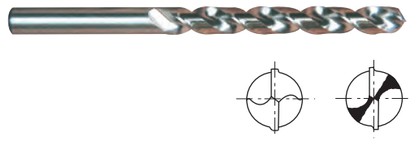
HSS, STRAIGHT SHANK TWIST DRILLS for ALUMINUM

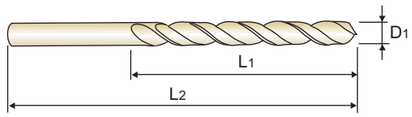
JOBBER

- 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° | Bright p.A263

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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	◎	◎	◎	◎																	

STRAIGHT SHANK DRILLS

DL510 SERIES

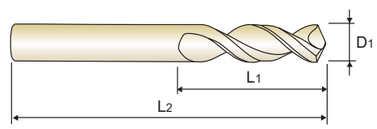
HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES

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.



▶ **DH100**
worm pattern drills

DIN 1897 | HSS-E | 42° | h8 | 130° | Bright p.A264

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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																					

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.

▶ **DH100**
worm pattern drills

DIN 1897 | HSS-E | 42° | h8 | 130° | Bright

p.A264

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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
DL510099	9.9	43	89

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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											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																					

STRAIGHT SHANK DRILLS

DL508 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES

JOBBER

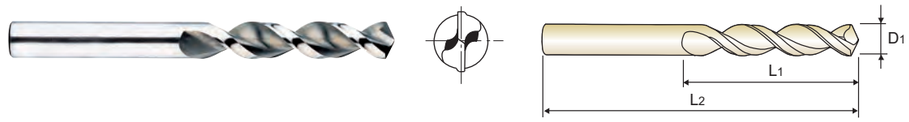
HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *KURZ*

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.



▶ **DH100**
worm pattern drills

DIN 338 | HSS-E | 42° | h8 | 130° | Bright

p.A264

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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																					

STRAIGHT SHANK DRILLS

DL508 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS

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.

▶ **DH100**
worm pattern drills

DIN 338 | HSS-E | 42° | h8 | 130° | Bright | p.A264

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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																					

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.

▶ **DH100**
worm pattern drills

DIN 340 | HSS-E | 42° | h8 | 130° | Bright | p.A264

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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																					

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, Tempergu ß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.

▶ **DH100**
worm pattern drills

DIN 340 | HSS-E | 42° | h8 | 130° | Bright | p.A264

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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
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											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																					

STRAIGHT SHANK DRILLS

DL505 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS

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, Tempergu ß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.

▶ **DH100**
worm pattern drills

DIN 338 | HSS-E | 38° | h8 | 130° | Vap | p.A264

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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
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											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																					

STRAIGHT SHANK DRILLS

DL505 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS

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, Tempergуß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.

▶ **DH100**
worm pattern drills

DIN 338 | HSS-E | 38° | h8 | 130° | Vap | p.A264

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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
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

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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																					

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, Tempergуß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.

▶ **DH100**
worm pattern drills

DIN 340 | HSS-E | 38° | h8 | 130° | Vap | p.A264

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL504020	2.0	56	85
DL504021	2.1	56	85
DL504022	2.2	59	90
DL504023	2.3	59	90
DL504024	2.4	62	95
DL504025	2.5	62	95
DL504026	2.6	62	95
DL504027	2.7	66	100
DL504028	2.8	66	100
DL504029	2.9	66	100
DL504030	3.0	66	100
DL504031	3.1	69	106
DL504032	3.2	69	106
DL504033	3.3	69	106
DL504034	3.4	73	112
DL504035	3.5	73	112
DL504036	3.6	73	112
DL504037	3.7	73	112
DL504038	3.8	78	119
DL504039	3.9	78	119
DL504040	4.0	78	119
DL504042	4.2	78	119
DL504045	4.5	82	126
DL504048	4.8	87	132
DL504050	5.0	87	132
DL504052	5.2	87	132

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
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											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																					

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.

▶ **DH100**
worm pattern drills

DIN 1869/1 | DIN 1869/2 | DIN 1869/3 | HSS-E | 38° | h8 | 130° | TiAlN

p.A265

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

Unit : mm

DT600 SERIES (DIN 1869/1)

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 (DIN 1869/2)

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 (DIN 1869/3)

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											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																					

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.

▶ **DH100**
worm pattern drills

DIN 341 | HSS-E | 38° | 1 ~ 3 | h8 | 130° | Bright

p.A264

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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																					

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.

▶DH50 worm pattern drills

HSS-E | 38° | h8 | 118° | Bright

p.A265

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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	◎	◎	○																		

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.

▶DH50 worm pattern drills

HSS-E | 38° | h8 | 118° | Bright

p.A265

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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	◎	◎	○																		

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D2107, D1107, D2105, DL105, D1105, D1125, D2104, D1121, DL109 SERIES

HSS, HSS-E & HSS Co8 COBALT DRILLS

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0	10.0	13.0	16.0	18.0	20.0	30.0
P	1	Non-alloy steel	30	RPM	4770	3180	2390	1590	1190	950	730	600	530	480	320
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		25	RPM	3980	2650	1990	1330	990	800	610	500	440	400	270
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				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	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18
	6	Low alloy steel	25	RPM	3980	2650	1990	1330	990	800	610	500	440	400	270
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				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	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18
	10	High alloyed steel, and tool steel	15	RPM	2390	1590	1190	800	600	480	370	300	270	240	160
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28
M	12	Stainless steel	20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		15	RPM	2390	1590	1190	800	600	480	370	300	270	240	160
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		10	RPM	1590	1060	800	530	400	320	240	200	180	160	110
				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	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18
K	15	Grey cast iron	30	RPM	4770	3180	2390	1590	1190	950	730	600	530	480	320
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		25	RPM	3980	2650	1990	1330	990	800	610	500	440	400	270
				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	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18
	17	Nodular cast iron	30	RPM	4770	3180	2390	1590	1190	950	730	600	530	480	320
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28
	19	Malleable cast iron	25	RPM	3980	2650	1990	1330	990	800	610	500	440	400	270
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28
N	21	Aluminum-wrought alloy	55	RPM	8750	5840	4380	2920	2190	1750	1350	1090	970	880	580
				FEED	0.03-0.06	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.18-0.24	0.20-0.28	0.20-0.30	0.28-0.38
	22		55	RPM	8750	5840	4380	2920	2190	1750	1350	1090	970	880	580
				FEED	0.03-0.06	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.18-0.24	0.20-0.28	0.20-0.30	0.28-0.38
	23	Aluminum-cast, alloyed	40	RPM	6370	4240	3180	2120	1590	1270	980	800	710	640	420
				FEED	0.03-0.06	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.18-0.24	0.20-0.28	0.20-0.30	0.28-0.38
	29	Non Metallic Materials	20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28
S	36	Titanium Alloys	10	RPM	1590	1060	800	530	400	320	240	200	180	160	110
				FEED	0.01-0.03	0.02-0.04	0.03-0.05	0.04-0.07	0.05-0.08	0.05-0.09	0.06-0.10	0.05-0.11	0.06-0.12	0.09-0.13	0.12-0.18

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D1100 SERIES

HSS, TWIST DRILLS for BRASS / BRONZE

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 1.5	2.0	3.0	4.0	5.0	6.0	8.0	10.0	13.0
N	27	Copper and Copper Alloys (Bronze / Brass)	45	RPM	9550	7160	4770	3580	2860	2390	1790	1430	1100
				FEED	0.03-0.06	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	6370	4770	3180	2390	1910	1590	1190	950	730
				FEED	0.01-0.03	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

D1106 SERIES

HSS, TWIST DRILLS for ALUMINUM

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 1.5	2.0	3.0	4.0	5.0	6.0	8.0	10.0	13.0
N	21	Aluminum-wrought alloy	50	RPM	10610	7960	5310	3980	3180	2650	1990	1590	1220
				FEED	0.03-0.06	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	10610	7960	5310	3980	3180	2650	1990	1590	1220
				FEED	0.03-0.06	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	8490	6370	4240	3180	2550	2120	1590	1270	980
				FEED	0.03-0.06	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	6370	4770	3180	2390	1910	1590	1190	950	730
				FEED	0.01-0.04	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

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DL510, DL508, DL509, DL505, DL504, DL608 SERIES — HSS-E, DH100 WORM PATTERN DRILLS

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0	10.0	13.0	16.0	18.0	20.0	30.0
P	1	Non-alloy steel	30	RPM	4770	3180	2390	1590	1190	950	730	600	530	480	320
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		25	RPM	3980	2650	1990	1330	990	800	610	500	440	400	270
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				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	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18
	6	Low alloy steel	25	RPM	3980	2650	1990	1330	990	800	610	500	440	400	270
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				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	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18
	10	High alloyed steel, and tool steel	15	RPM	2390	1590	1190	800	600	480	370	300	270	240	160
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28
K	15	Grey cast iron	30	RPM	4770	3180	2390	1590	1190	950	730	600	530	480	320
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		25	RPM	3980	2650	1990	1330	990	800	610	500	440	400	270
				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	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18
	17	Nodular cast iron	30	RPM	4770	3180	2390	1590	1190	950	730	600	530	480	320
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				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	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18
	19	Malleable cast iron	25	RPM	3980	2650	1990	1330	990	800	610	500	440	400	270
				FEED	0.02-0.04	0.03-0.05	0.04-0.06	0.05-0.08	0.10-0.13	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		20	RPM	3180	2120	1590	1060	800	640	490	400	350	320	210
				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	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

DT600, DT692, DT693 SERIES — HSS-E, DH100 WORM PATTERN DRILLS (EXTRA LONG)

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

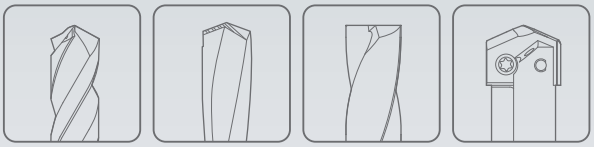
ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 2.0	3.0	4.0	6.0	8.0	10.0	13.0
P	1	Non-alloy steel	20	RPM	3180	2120	1590	1060	800	640	490
				FEED	0.01-0.03	0.03-0.05	0.04-0.06	0.05-0.08	0.08-0.11	0.09-0.13	0.10-0.16
	2		15	RPM	2390	1590	1190	800	600	480	370
				FEED	0.01-0.03	0.03-0.05	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
	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
	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
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

DL507 SERIES — HSS-E, DH50 WORM PATTERN DRILLS

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

ISO	VDI 3323	Material Description	Vc	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
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

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**

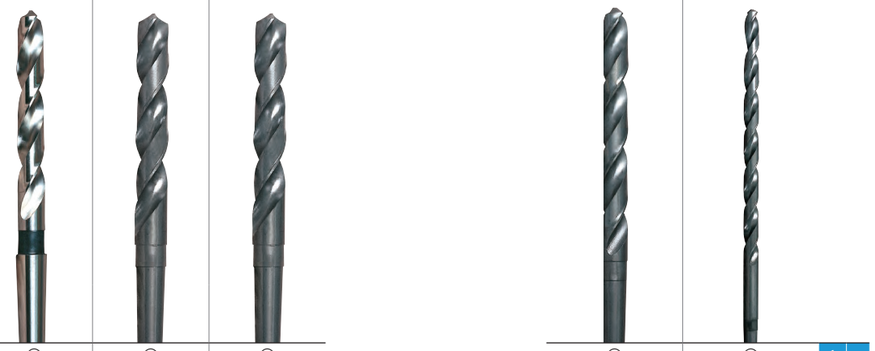
SELECTION GUIDE

YG HOLEMAKING TOOLS

SERIES	DL205	D1205	D1206	D1209	D1210
STANDARD	DIN 345	DIN 345	DIN 341	DIN 1870/1	DIN 1870/2
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	A270	A271	A274	A275	A276
SURFACE TREATMENT	Bright	Vap		Vap	

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.A277

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	

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

MORSE TAPER SHANK DRILLS

DL205 SERIES

HSS-E, MORSE TAPER SHANK TWIST DRILLS for HEAVY DUTY

JOBBER

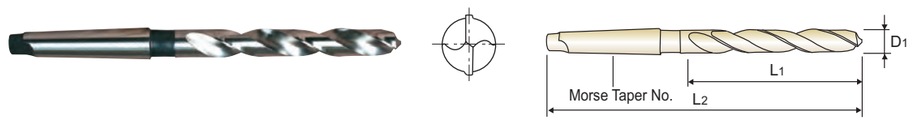
HSS-E, SPIRALBOHRER für HOHELEISTUNGEN mit MORSEKEGELSCHAFT — *KURZ*

Forets HSS-E, queue cône morse pour matériaux durs, série courte — *COURTE*

HSS-E, PUNTE ELICOIDALI, ATTACCO CM PER LAVORAZIONI GRAVOSE — *CORTA*

▶**Surface treatment** : Bright Finish
▶**Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, graphite.

▶**Oberflächenbehandlung** : Helle Beschaffenheit
▶**Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 345 | HSS-E | N ≈ 30° | 1 ~ 3 | h8 | 118° | Bright

p.A277

Recommended ToolHolder — Plain Shank — MORSE TAPER ARBOR

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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	○	○	○						○							○					

MORSE TAPER SHANK DRILLS

D1205 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS

JOBBER

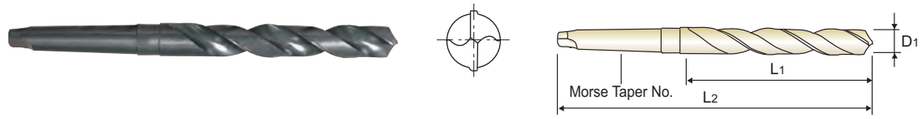
HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT — *KURZ*

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° | Vap

p.A277

Recommended ToolHolder — Plain Shank — MORSE TAPER ARBOR

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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	○	○	○						○							○					

MORSE TAPER SHANK DRILLS

D1205 SERIES

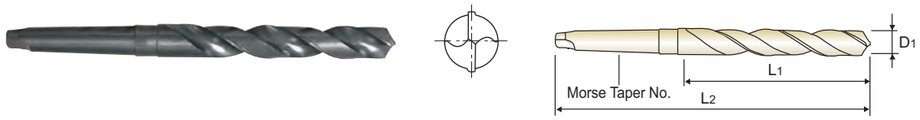
HSS, MORSE TAPER SHANK TWIST DRILLS

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° | Vap | p.A277

Recommended ToolHolder — Plain Shank — MORSE TAPER ARBOR

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

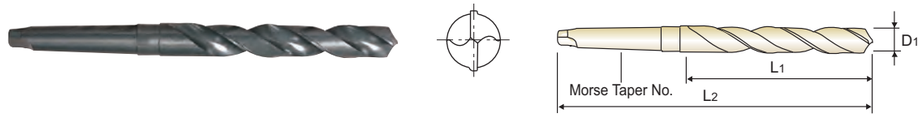
▶ NEXT PAGE

◎ : 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											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	○	○	○						○							○					

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° | Vap | p.A277
Recommended ToolHolder — Plain Shank — MORSE TAPER ARBOR
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
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

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
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											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	○	○	○						○							○					

MORSE TAPER SHANK DRILLS

D1206 SERIES

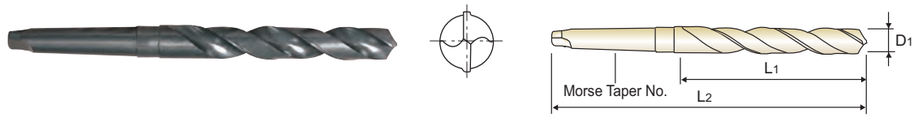
HSS, MORSE TAPER SHANK TWIST DRILLS

LONG

- HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT — LANG
- Forets HSS, queue cône morse, série longue — LONGUE
- PUNTE ELICOIDALI IN HSS, ATTACCO CM — 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° | Vap

p.A277

Recommended ToolHolder — Plain Shank — MORSE TAPER ARBOR

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											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	○	○	○						○							○					

MORSE TAPER SHANK DRILLS

D1209 SERIES

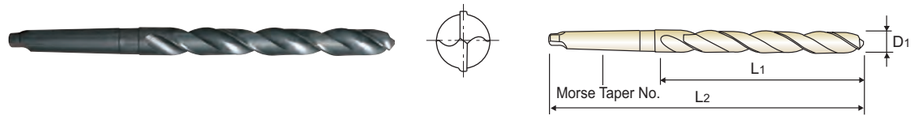
HSS, MORSE TAPER SHANK TWIST DRILLS

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** : 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° | Vap

p.A277

Recommended ToolHolder — Plain Shank — MORSE TAPER ARBOR

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

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											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	○	○	○						○							○					

MORSE TAPER SHANK DRILLS

D1210 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS

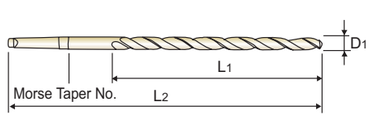
EXTRA LONG

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** : 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° | Vap | p.A277

Recommended Tool/Holder — Plain Shank — MORSE TAPER ARBOR

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											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	○	○	○						○							○					

MORSE TAPER SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

DL205, D1205, D1206, D1209, D1210 SERIES

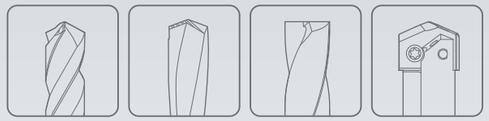
HSS&HSS-E, MORSE TAPER SHANK DRILLS

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

ISO	VDI 3323	Material Description	Vc	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
	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	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
	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
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
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
	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
S	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

Leading Through Innovation

Global Cutting Tool Leader YG-1



HOLEMAKING

SOLID CARBIDE & HSS Co8

NC-SPOTTING DRILLS

NC-ANBOHRER

- **For Centering and Chamfering of Holes**
- **Zum Zentrieren und Anfasen von Bohrungen**

SELECTION GUIDE

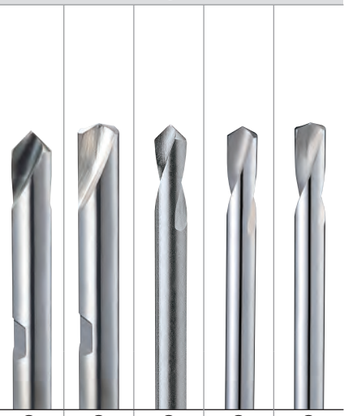
HOLEMAKING TOOLS

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	A281	A282	A283	A284	A285
SURFACE TREATMENT	Bright				

SOLID CARBIDE & HSS Co8

NC-SPOTTING DRILLS

For Centering and Chamfering of Holes



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A286

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					

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° | Bright p.A286

Recommended Toolholder — Plain Shank: NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

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°

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											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	○	○	○													○					

NC-SPOTTING DRILLS

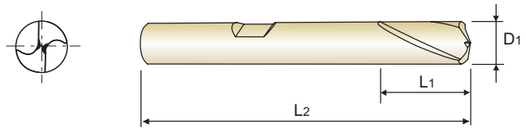
D5320 SERIES

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° | Bright | p.A286

Recommended ToolHolder — Plain Shank: NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

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											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	○	○	○													○					

NC-SPOTTING DRILLS

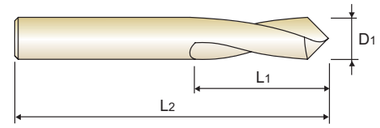
D2306 SERIES
D2321 SERIES

HSS Co8, NC-SPOTTING DRILLS 90°

- HSS Co8, NC-ANBOHRER 90°
- Forets HSS Co8 à pointer NC 90°
- PUNTE A CENTRARE NC 90°, HSS Co8

▶**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° | Bright | p.A286

Recommended ToolHolder — Plain Shank: NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

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											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	○	○	○																		

NC-SPOTTING DRILLS

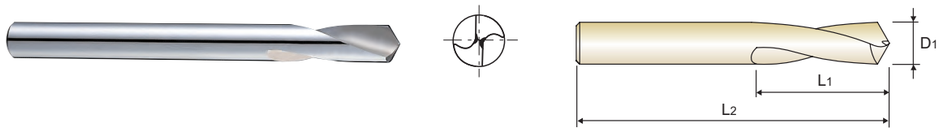
D2307 SERIES
D2322 SERIES

HSS Co8, NC-SPOTTING DRILLS 120°

HSS Co8, NC-ANBOHRER 120°
Forets HSS Co8 à pointer NC 120°
PUNTE A CENTRARE NC 120°, HSS Co8

▶**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° | Bright

p.A286

Recommended ToolHolder: Plain Shank — NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

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											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	○	○	○																		

NC-SPOTTING DRILLS

D2320 SERIES
D2323 SERIES

HSS Co8, NC-SPOTTING DRILLS 142°

HSS Co8, NC-ANBOHRER 142°
Forets HSS Co8 à pointer NC 142°
PUNTE A CENTRARE NC 142°, HSS Co8

▶**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° | Bright

p.A286

Recommended ToolHolder: Plain Shank — NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

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											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	○	○	○																		

NC-SPOTTING DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

D5306, D5307, D5320 SERIES — CARBIDE, NC-SPOTTING DRILLS

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

ISO	VDI 3323	Material Description	Vc	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
	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
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
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
	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
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
S	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

D2320, D2321, D2322, D2323, D2306, D2307 SERIES — HSS Co8, NC-SPOTTING DRILLS

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

ISO	VDI 3323	Material Description	Vc	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
	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
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
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
	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
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

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

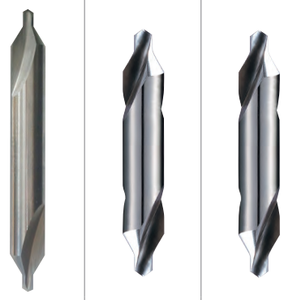
For General Purpose

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A297

SERIES	D5303	DV303	DV333
TOOL MATERIAL	CARBIDE	HSS-E	HSS-E
TYPE	FORM A	FORM A	FORM A
SIZE MIN	D1.0	D0.5	D1.6
SIZE MAX	D6.3	D6.3	D6.3
PAGE	A290	A291	
SURFACE TREATMENT	Bright		



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	D5303	DV303	DV333
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			

DV334	D1303	D1343	D1313	D1353	D1363	D1373	DV383
HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E
FORM A	FORM A	FORM A	FORM B	FORM B	FORM R	FORM R	FORM R
D1.0	D0.5	D0.5	D1.0	D2.0	D0.5	D0.8	D1.6
D5.0	D10.0	D8.0	D6.3	D6.3	D8.0	D5.0	D6.3
A292	A293		A294		A295		A296
Bright							

DV334	D1303	D1343	D1313	D1353	D1363	D1373	DV383		
◎	◎	◎	◎	◎	◎	◎	◎	1	
◎	◎	◎	◎	◎	◎	◎	◎	2	
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								5	
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								13	M
								14	
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○	○	○	○	○	○	○	○	16	
○	○	○	○	○	○	○	○	17	
								18	K
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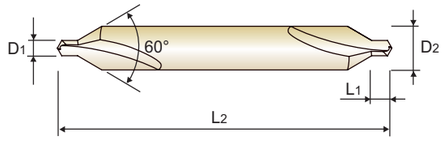
CENTER DRILLS

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° | Bright

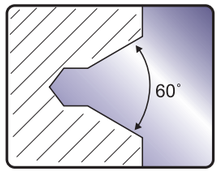
p.A297

Recommended ToolHolder — Plain Shank: NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

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											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	◎	◎	◎			◎	○					○			◎	○	○		○	

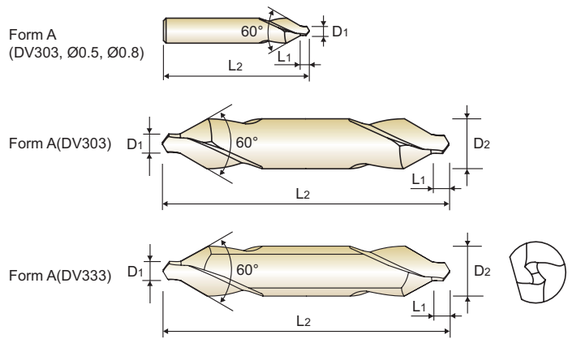
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

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° | Bright

p.A297

Recommended ToolHolder — Plain Shank: NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

FORM A (60°)

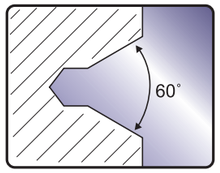
EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
DV303005	0.5	3.15	0.8	25
DV303008	0.8	3.15	1.1	25
DV303010	1.0	3.15	1.3	31.5
DV303912	1.25	3.15	1.6	31.5
DV303016	1.6	4	2	35.5
DV303020	2.0	5	2.5	40
DV303025	2.5	6.3	3.1	45
DV303931	3.15	8	3.9	50
DV303040	4.0	10	5	56
DV303050	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											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																					

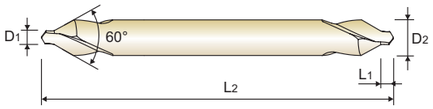
CENTER DRILLS

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

Form A(DV334)



HSS-E | h8 | k12 | 120° | Bright

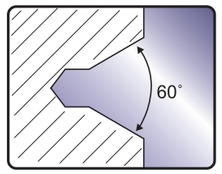
p.A297

Recommended ToolHolder: Plain Shank — NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

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	◎	◎	○			◎	○					○			◎	○	○		○	

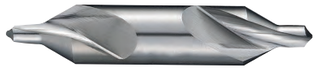
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

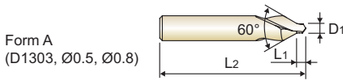
D1303 SERIES
D1343 SERIES

HSS, CENTER DRILLS / FORM A

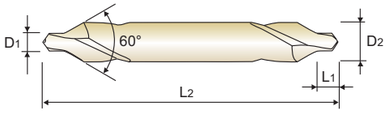
- HSS, ZENTRIERBOHRER / FORM A
- Forets HSS à centrer / Forme A
- PUNTE A CENTRARE PER TORNI IN HSS / FORMA A

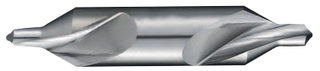


Form A (D1303, Ø0.5, Ø0.8)

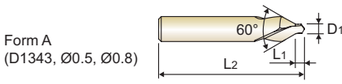


Form A(D1303)

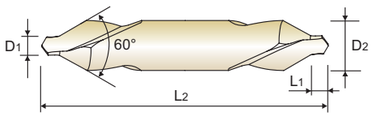




Form A (D1343, Ø0.5, Ø0.8)



Form A(D1343)



DIN 333 | HSS | h8 | k12 | 120° | Bright

p.A297

Recommended ToolHolder: Plain Shank — NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

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

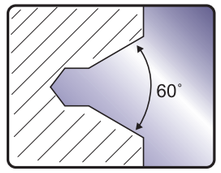
▶ Under 1.0mm : Single End

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																					

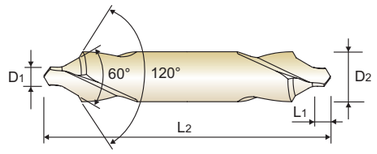
CENTER DRILLS

D1313 SERIES
D1353 SERIES

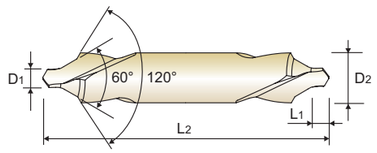
HSS, CENTER DRILLS / FORM B

- HSS, ZENTRIERBOHRER / FORM B
- Forets HSS à centrer / Forme B
- PUNTE A CENTRARE PER TORNI IN HSS / FORMA B

Form B(D1313)



Form B(D1353)



DIN 333 | HSS | h8 | k12 | 120° | Bright

p.A297

Recommended ToolHolder: Plain Shank — NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

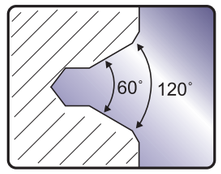
FORM B (60° + 120°)

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																					

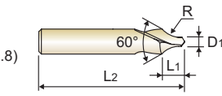
CENTER DRILLS

D1363 SERIES
D1373 SERIES

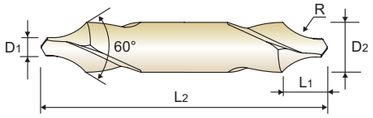
HSS, CENTER DRILLS / FORM R

- HSS, ZENTRIERBOHRER / FORM R
- Forets HSS à centrer / Forme R
- PUNTE A CENTRARE PER TORNI IN HSS / FORMA R

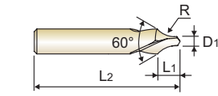
Form R (D1363, Ø0.5, Ø0.8)



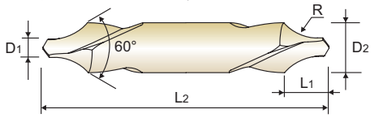
Form R(D1363)



Form R (D1373, Ø0.8)



Form R (D1373)



DIN 333 | HSS | h8 | k12 | 120° | Bright

p.A297

Recommended ToolHolder: Plain Shank — NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

FORM R

LEFT HELIX / FORM R

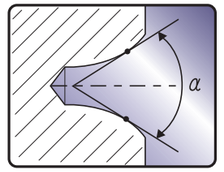
Unit : mm

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	◎	◎	○			◎	○					○			◎	○	○		○	

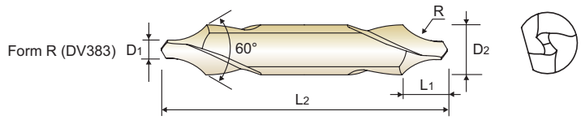
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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



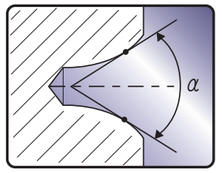
DIN 333 | HSS-E | h8 | k12 | 120° | Bright | p.A297

Recommended ToolHolder: Plain Shank — NC DRILL CHUCK & OTHER TOOL HOLDERS; ER COLLET CHUCK

FORM R / FLAT

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length (Include Radius) L1	Overall Length L2	Radius 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																					

CENTER DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

D5303 SERIES

CARBIDE, CENTER DRILLS

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 1.0	2.0	3.0	4.0	5.0	6.0
P	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
	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
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
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
	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

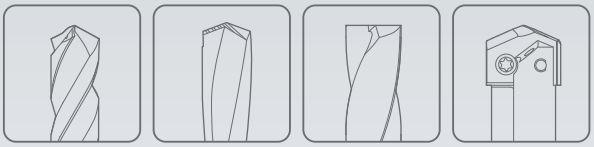
DV303, DV333, DV334, D1303, D1343, D1313, D1353, D1363, D1373, DV383 SERIES

HSS & HSS-E, CENTER DRILLS

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

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm) 0.5	Vc	Parameter	1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0
P	1	Non-alloy steel	30	RPM	19100	40	RPM	12730	6370	4240	3180	2550	2120	1590	1270
				FEED	0.01-0.03		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		25	RPM	15920	30	RPM	9550	4770	3180	2390	1910	1590	1190	950
				FEED	0.01-0.03		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		20	RPM	12730	25	RPM	7960	3980	2650	1990	1590	1330	990	800
				FEED	0.005-0.02		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
	6	Low alloy steel	25	RPM	15920	30	RPM	9550	4770	3180	2390	1910	1590	1190	950
				FEED	0.01-0.03		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		15	RPM	9550	20	RPM	6370	3180	2120	1590	1270	1060	800	640
				FEED	0.005-0.02		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
M	12	Stainless steel	8	RPM	5090	10	RPM	3180	1590	1060	800	640	530	400	320
				FEED	0.005-0.02		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
K	15	Grey cast iron	30	RPM	19100	40	RPM	12730	6370	4240	3180	2550	2120	1590	1270
				FEED	0.01-0.03		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		25	RPM	15920	30	RPM	9550	4770	3180	2390	1910	1590	1190	950
				FEED	0.005-0.02		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	30	RPM	19100	40	RPM	12730	6370	4240	3180	2550	2120	1590	1270
				FEED	0.01-0.03		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
	19	Malleable cast iron	20	RPM	12730	25	RPM	7960	3980	2650	1990	1590	1330	990	800
				FEED	0.01-0.03		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

Global Cutting Tool Leader YG-1



HOLEMAKING

Leading Through Innovation

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.A375

	ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	1~8	Y,Z,0,1~4	Y,Z,0,1,2
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								A302	A308	A313
SURFACE TREATMENT								TiN / TiCN / TiAlN		
	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	A352
FLANGED SHANK		FLANGED STRAIGHT SHANK HOLDERS - INCH/METRIC	A362
STRAIGHT SHANK		STRAIGHT SHANK HOLDERS - INCH	A369

	ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	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
SERIES								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
TOOL MATERIAL								CARBIDE K10	CARBIDE K20	CARBIDE P40	HSS M4	SUPER HSS T15	PREMIUM HSS M48	CARBIDE K10	CARBIDE K20	CARBIDE P40	SUPER COBALT T15
POINT								STANDARD	STANDARD	STANDARD	SM-POINT	SM-POINT	SM-POINT	SM-POINT	SM-POINT	SM-POINT	FALT BOTTOM
SIZE MIN								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)
SIZE MAX								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)
PAGE								A316	A319	A323	A328	A331	A335	A338	A341	A345	A349
SURFACE TREATMENT								TiN / TiCN / TiAlN									TiN / Hardslick / TiAlN
	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										

Coating	Characteristics
H	-First choice for excellent wear resistance and toughness -Preventive of chipping due to cold welding -Achieve high penetration rates even in deep holes with reliable tool life -Coefficient of friction against steel : 0.25 -Color : Bronze
TiN	-Increased tool life over non-coating -Improved wear resistance and high hardness -For normal applications -Coefficient of friction against steel : 0.4 -Color : Gold

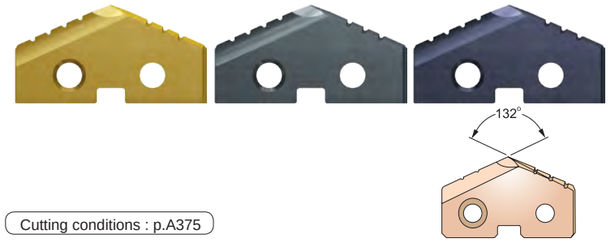
Coating	Characteristics
TiCN	-Maximum working temperature up to 400°c -Better wear resistance over non-coating -Coefficient of friction against steel : 0.4 -Color : Blue-Grey
TiAlN	-Maximum working temperature up to 800°c -Excellent heat and oxidation resisance -Coefficient of friction against steel : 0.4 -Color : Violet-Grey
Hardslick	-Better chip evauation for tapping and drilling -High hardness and improved lubrication -Coefficient of friction against steel : 0.2 -Color : Black-Gery

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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A375

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
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.
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- Für allgemeine Anwendung in Stahl und Gusseisen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A375

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
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	○	○	○	○		○	○								◎	○	◎	○	◎	○									

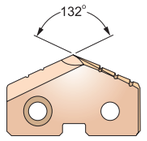
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A375

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	○	○	○	○		○	○								◎	○	◎	○	◎	○

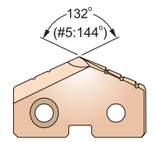
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A375

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

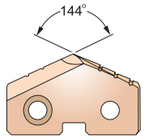
SERIES 5, 6, 7

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.A375

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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	◎	◎					◎														

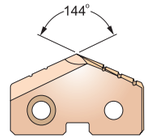
SPADE DRILLS

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.A375

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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	○	○	○	○		○	○								◎	○	◎	○	◎	○

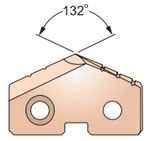
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A376

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

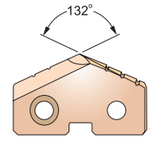
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A376

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	◎	◎	◎	◎		◎	◎	○	○	○	○	○	○	○	○	◎	○	◎	○	◎

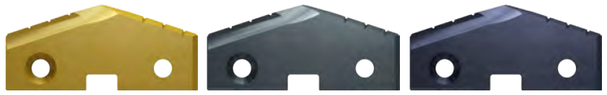
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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	○	○					○				◎	○	○	○	○			○			

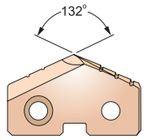
SPADE DRILLS

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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A376

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)	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	◎	◎	◎	◎		◎	◎	○	○	○	○	○	○	○	○	◎	○	◎	○	◎

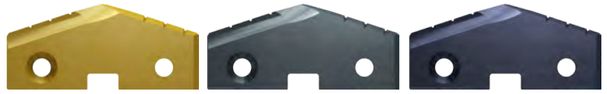
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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	○	○					○				◎	○	○	○	○			○			

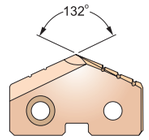
SPADE DRILLS

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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A376

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)	1-1/2	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	◎	◎	◎	◎		◎	◎	○	○	○	○	○	○	○	○	◎	○	◎	○	◎

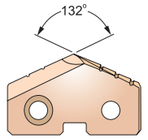
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A376

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	◎	◎	◎	◎		◎	◎	○	○	○	○	○	○	○	○	◎	○	◎	○	◎

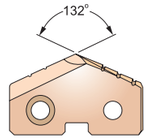
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A377

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	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	○	○	○	○	◎	○	◎	○	◎

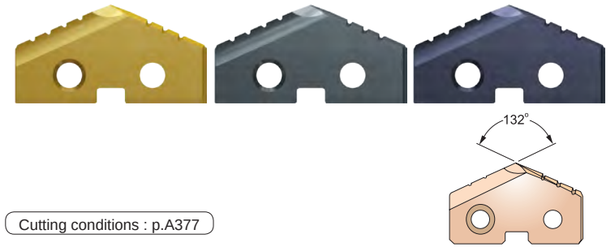
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A377

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
	45/64	17.86	.7031		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
1 Ø17.53 (.690) to Ø24.38 (.960)	51/64	20.24	.7969	4.0 (5/32)	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

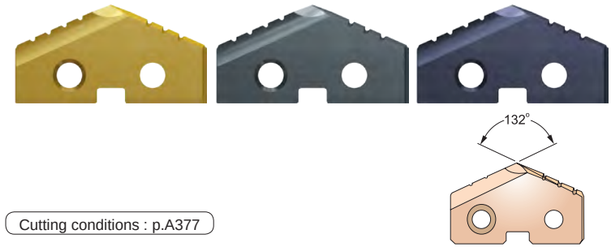
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A377

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	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	○	○	○	○	◎	○	◎	○	◎

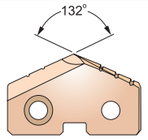
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER; ER COLLET CHUCK

Cutting conditions : p.A378

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

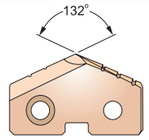
ISO	P																				
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER; ER COLLET CHUCK

Cutting conditions : p.A378

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																				
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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																					

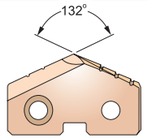
CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS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

SPADE DRILLS

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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A378

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															◎	◎	◎	◎	◎	◎

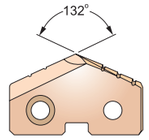
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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



- 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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A378

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	○	○	○	○		○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

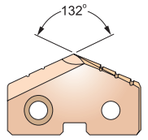
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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



- 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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A378

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	○	○	○	○		○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

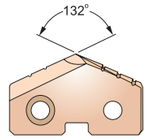
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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



- 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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A378

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	○	○	○	○		○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

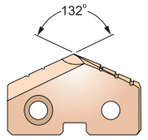
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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



- 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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A378

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	○	○	○	○		○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○	

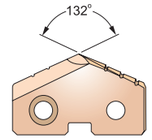
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A380

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	260	160	250	130	230	
Recommended	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

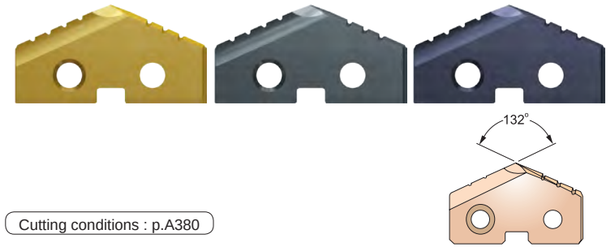
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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 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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A380

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
	45/64	17.86	.7031		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
1 Ø17.53 (.690) to Ø24.38 (.960)	25/32	19.84	.7813	4.0 (5/32)	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	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

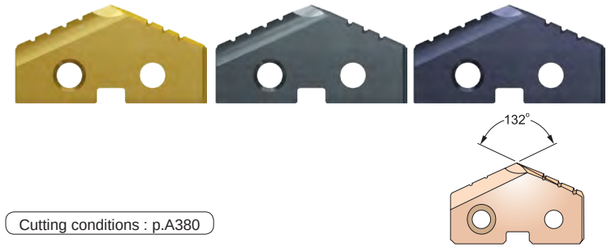
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A380

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	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

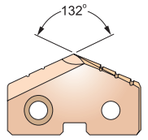
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder: Flat Shank — INDEXABLE DRILL HOLDER — ER COLLET CHUCK

Cutting conditions : p.A380

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	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

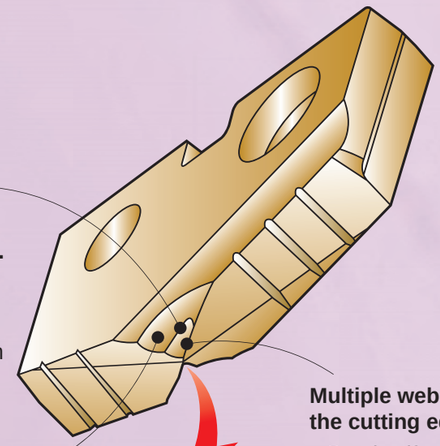
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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	○	○					○				○	○	○	○	○			◎			

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

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.

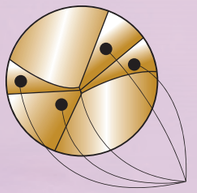
- The optimum thinning for the difference from the cutting speed, the cutting quantity and the cutting load according to the distance from the drill point to the cutting edge.

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

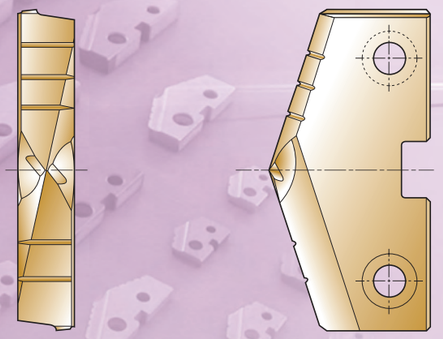
Radius back face

- Wide chip space



Four-facet point

- Self-centering
- Less thrust force



SPADE DRILLS

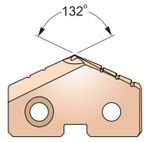
SERIES 1

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 entwickelteQ uerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : p.A375

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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
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

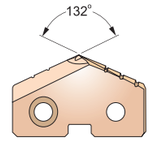
SERIES 2

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 entwickelteQ uerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : p.A375

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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
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

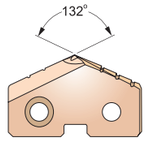
SERIES 3

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 entwickelteQ uerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A375

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)	1-13/32	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											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

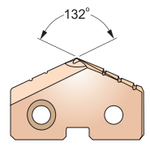
SERIES Y, Z, 0

SM-POINT SPADE DRILL INSERTS - 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 entwickelteQ uerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A376

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)	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											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	◎	◎	◎	◎		◎	◎	○	○	○	○	○	○	○	○	◎	○	◎	○	◎

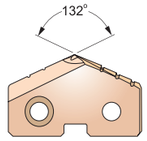
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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 - 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 entwickelteQ uerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A376

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	◎	◎	◎	◎		◎	◎	○	○	○	○	○	○	○	○	◎	○	◎	○	◎

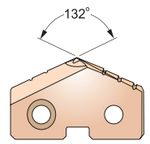
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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 entwickelteQ uerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A376

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	◎	◎	◎	◎		◎	◎	○	○	○	○	○	○	○	○	◎	○	◎	○	◎

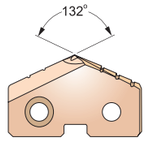
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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 entwickelteQ uerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A376

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	◎	◎	◎	◎		◎	◎	○		○	○	○	○	○	○	◎	○	◎	○	◎

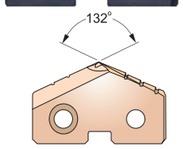
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A377

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	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	○	○	○	○	◎	○	◎	○	◎

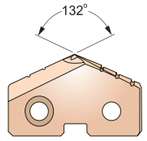
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A377

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	◎	◎	◎	◎		◎	◎	◎	◎	◎		○	○	○	○	◎	○	◎	○	◎

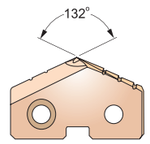
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

Cutting conditions : p.A377

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	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	○	○	○	○	◎	○	◎	○	◎

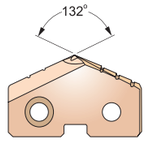
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder: Flat Shank — INDEXABLE DRILL HOLDER — ER COLLET CHUCK

cutting conditions : p.A378

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

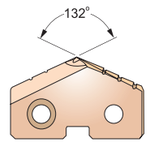
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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 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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▶ Less thrust force and excellent self-centering.
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▶ Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
▶ Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
▶ Jede Abmessung außerhalb des Kataloges lieferbar

Recommended ToolHolder: Flat Shank — INDEXABLE DRILL HOLDER — ER COLLET CHUCK

cutting conditions : p.A378

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
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	SM605045	SM610045	SM615045
		18.00	.7087		SM655180	SM660180	SM665180
	23/32	18.26	.7188		SM605046	SM610046	SM615046
		18.50	.7283		SM655185	SM660185	SM665185
	47/64	18.65	.7344		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
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																					

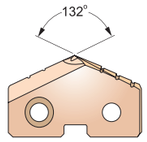
CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS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

SPADE DRILLS

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



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- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A378

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)	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															◎	◎	◎	◎	◎	◎

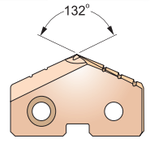
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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



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Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A378

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)	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	○	○	○	○		○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

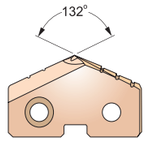
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A378

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)	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	○	○	○	○		○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

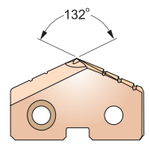
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A378

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)	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	○	○	○	○		○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

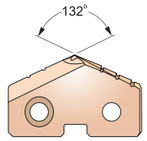
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder: Flat Shank; INDEXABLE DRILL HOLDER; ER COLLET CHUCK

cutting conditions : p.A378

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	1.4062	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	○	○	○	○		○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

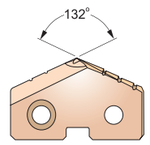
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder: Flat Shank; INDEXABLE DRILL HOLDER; ER COLLET CHUCK

cutting conditions : p.A380

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)	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	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

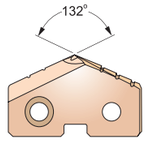
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A380

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	SM815041
		16.50	.6496		SM855165	SM860165	SM865165
	21/32	16.67	.6562		SM805042	SM810042	SM815042
		17.00	.6693		SM855170	SM860170	SM865170
	43/64	17.07	.6719		SM805043	SM810043	SM815043
	11/16	17.46	.6875		SM805044	SM810044	SM815044
		17.50	.6890		SM855175	SM860175	SM865175
1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86	.7031	4.0 (5/32)	SM805045	SM810045	SM815045
		18.00	.7087		SM855180	SM860180	SM865180
	23/32	18.26	.7188		SM805046	SM810046	SM815046
		18.50	.7283		SM855185	SM860185	SM865185
	47/64	18.65	.7344		SM805047	SM810047	SM815047
		19.00	.7480		SM855190	SM860190	SM865190
	3/4	19.05	.7500		SM805048	SM810048	SM815048
	49/64	19.45	.7656		SM805049	SM810049	SM815049
		19.50	.7677		SM855195	SM860195	SM865195
	25/32	19.84	.7812		SM805050	SM810050	SM815050
		20.00	.7874		SM855200	SM860200	SM865200
	51/64	20.24	.7969		SM805051	SM810051	SM815051
		20.50	.8071		SM855205	SM860205	SM865205
	13/16	20.64	.8125		SM805052	SM810052	SM815052
		21.00	.8268		SM855210	SM860210	SM865210
	27/32	21.43	.8438		SM805054	SM810054	SM815054
	55/64	21.83	.8594		SM805055	SM810055	SM815055
		22.00	.8661		SM855220	SM860220	SM865220
	7/8	22.23	.8750		SM805056	SM810056	SM815056
	57/64	22.62	.8906		SM805057	SM810057	SM815057
		23.00	.9055		SM855230	SM860230	SM865230
	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	260	160	250	130	230
Recommended	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

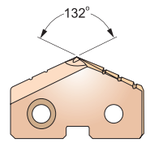
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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 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

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

cutting conditions : p.A380

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	260	160	250	130	230
Recommended	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

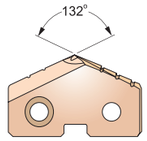
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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 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

Recommended ToolHolder: Flat Shank — INDEXABLE DRILL HOLDER; ER COLLET CHUCK

cutting conditions : p.A380

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
	1-13/32	35.72	1.4062		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
3 Ø34.37 (1.353) to Ø47.80 (1.882)				6.4 (1/4)			

◎ : Excellent ○ : Good

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

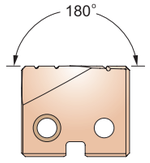
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28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

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



Recommended ToolHolder: Flat Shank — INDEXABLE DRILL HOLDER; ER COLLET CHUCK

cutting conditions : p.A379

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
		9.50	.3740		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
	7/16	11.11	.4375		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
		13.00	.5118		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
Y Ø9.50 (.374) to Ø11.07 (.436)				2.4 (3/32)			
Z Ø11.11(.437) to Ø12.95(.510)				2.4 (3/32)			
0 Ø12.98 (.511) to Ø17.65 (.695)				3.2 (1/8)			

◎ : Excellent ○ : Good

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

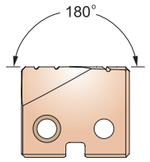
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28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

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.A379

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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
	45/64	17.86	.7031		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
1 Ø17.53 (.690) to Ø24.38 (.960)	25/32	19.84	.7812	4.0 (5/32)	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

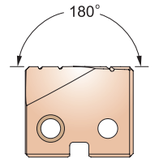
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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.A379

Recommended ToolHolder — Flat Shank: INDEXABLE DRILL HOLDER, ER COLLET CHUCK

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	◎	◎	◎	◎		◎	◎	○	○	○	○	○	○	○	○	◎	○	◎	○	◎

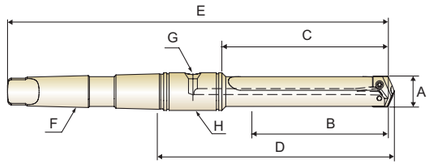
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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

Z**STSMT 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
7~8	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(Rotary Coolant Adapter) for internal cooling. (See page 374)

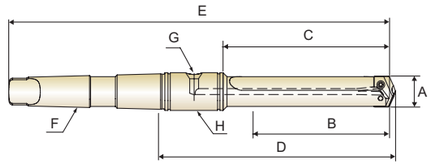
CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS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

SPADE DRILLS

Z**ITSMT SERIES
Z**ITHMT SERIES

TAPER SHANK HOLDERS

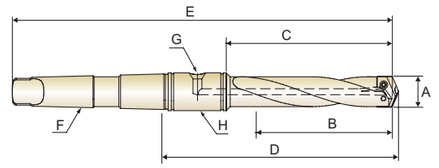
- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM



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(Rotary Coolant Adapter) for internal cooling. (See page 374)



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

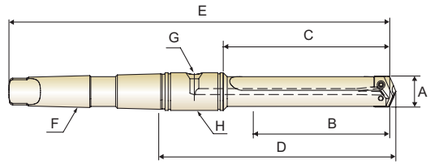
▶ You can also apply RCA(Rotary Coolant Adapter) for internal cooling. (See page 374)

SPADE DRILLS

Z**SDSMT 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
5~6	Z50SDSMT05I	2-1/2 ~ 3-1/2	10-3/4	12-1/2	15-5/16	20-15/16	#5	1/2	PR110216
7~8	Z70SDSMT05I	3-17/32 ~ 4-1/2	10-3/4	12-7/8	15-11/16	21-5/16	#5	1/2	PR110216

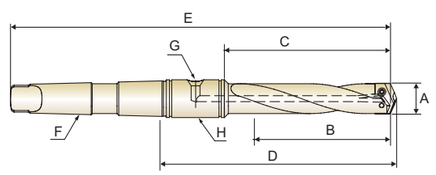
▶ You can also apply RCA(Rotary Coolant Adapter) for internal cooling. (See page 374)

SPADE DRILLS

Z**SDHMT 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

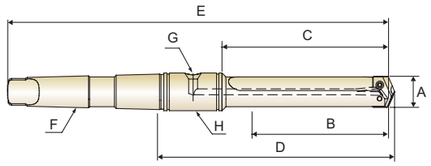
▶ You can also apply RCA(Rotary Coolant Adapter) for internal cooling. (See page 374)

SPADE DRILLS

Z**EXSMT SERIES
Z**EXHMT SERIES

TAPER SHANK HOLDERS

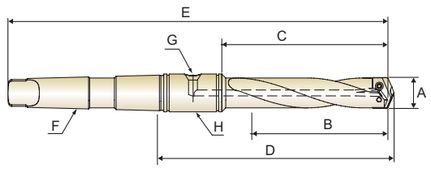
- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM



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
5~6	Z50EXSMT05I	2-1/2 ~ 3-1/2	18-1/4	20	22-13/16	28-7/16	#5	1/2	PR110216
7~8	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(Rotary Coolant Adapter) for internal cooling. (See page 374)



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	Z25EXHMT04I	1-3/16 ~ 1-3/8	11-3/8	12-1/2	14-37/64	19-1/16	#4	1/4	PR110116

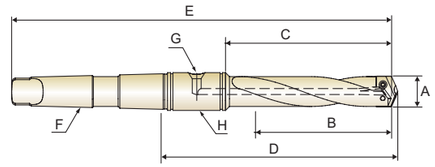
▶ You can also apply RCA(Rotary Coolant Adapter) for internal cooling. (See page 324)

SPADE DRILLS

Z**LGHMT 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

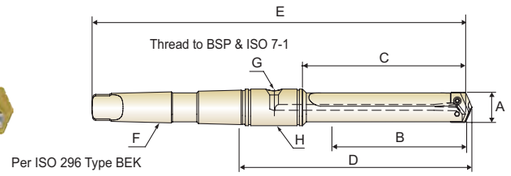
▶ You can also apply RCA(Rotary Coolant Adapter) for internal cooling. (See page 374)

SPADE DRILLS

Z**STSMT SERIES
Z**ITHMT SERIES

TAPER SHANK HOLDERS

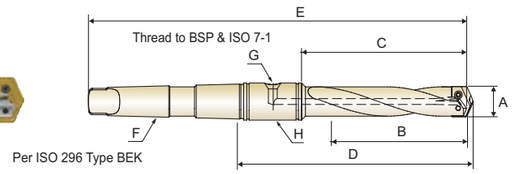
- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM



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
5~6	Z50STSMT05M	64.0 ~ 88.0	171.5	215.9	287.3	430.2	#5	1/2	PR120571
7~8	Z70STSMT05M	90.0 ~ 114.0	171.5	225.4	296.8	439.7	#5	1/2	PR120571

▶ You can also apply RCA(Rotary Coolant Adapter) for internal cooling. (See page 374)



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

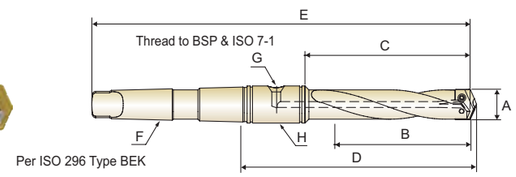
▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 374)

SPADE DRILLS

Z**SDHMT SERIES

TAPER SHANK HOLDERS

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM



STANDARD 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	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
5~6	Z50SDHMT05M	64.0 ~ 88.0	273.1	317.5	388.9	531.8	#5	1/2	PR120571
7~8	Z70SDHMT05M	90.0 ~ 114.0	273.1	327.0	398.5	541.3	#5	1/2	PR120571

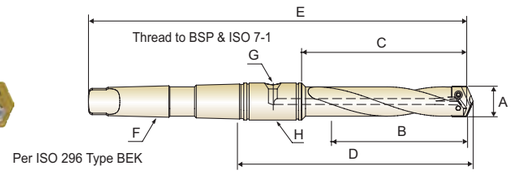
▶ You can also apply RCA(Rotary Coolant Adapter) for internal cooling. (See page 374)

SPADE DRILLS

Z**EXHMT SERIES
Z**EXSMT SERIES

TAPER SHANK HOLDERS

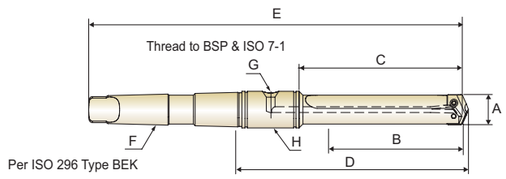
- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM



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(Rotary Coolant Adapter) for internal cooling. (See page 374)



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
5~6	Z50EXSMT05M	64.0 ~ 88.0	463.6	508.0	579.4	722.3	#5	1/2	PR120571
7~8	Z70EXSMT05M	90.0 ~ 114.0	555.6	609.6	681.1	823.9	#5	1/2	PR120571

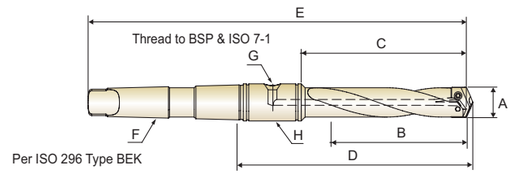
▶ You can also apply RCA(Rotary Coolant Adapter) for internal cooling. (See page 374)

SPADE DRILLS

Z**LGHMT 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

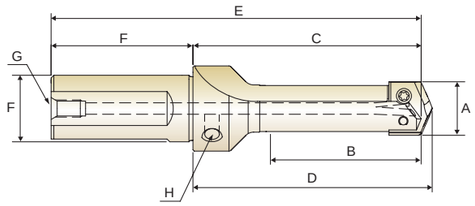
▶ You can also apply RCA(Rotary Coolant Adapter) for internal cooling. (See page 374)

SPADE DRILLS

Z**SBSF SERIES
Z**STSF SERIES

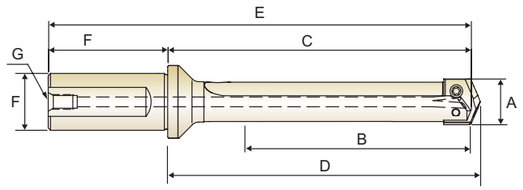
FLANGED STRAIGHT SHANK HOLDERS

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)

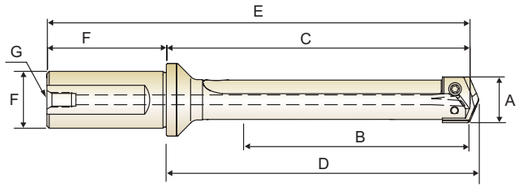
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0STSF075I	3/8 ~ 27/64	1-1/4	2-13/32	2-1/2	4-7/16	3/4	2-1/32	1/8
Z	ZZ0STSF075I	7/16 ~ 1/2	1-1/4	2-13/32	2-1/2	4-7/16	3/4	2-1/32	1/8
0	Z00STSF075I	33/64 ~ 11/16	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

Z**ITSF SERIES
Z**ITHF SERIES

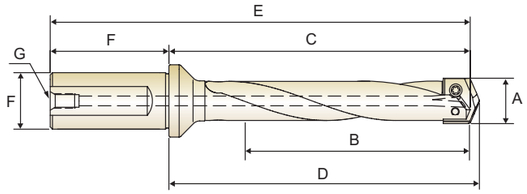
FLANGED STRAIGHT SHANK HOLDERS

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)

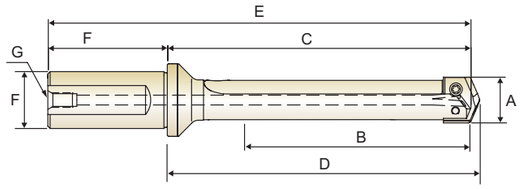
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10ITHF100I	45/64 ~ 15/16	4-5/8	6-3/32	6-15/64	8-3/8	1	2-9/32	1/8
1.5	Z15ITHF100I	55/64 ~ 15/16	4-5/8	6-3/32	6-15/64	8-3/8	1	2-9/32	1/8
2	Z20ITHF125I	31/32 ~ 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

Z**SDSF SERIES
Z**SDHF SERIES

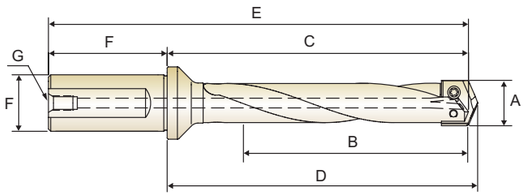
FLANGED STRAIGHT SHANK HOLDERS

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)

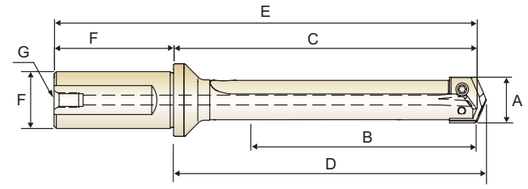
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0SDHF075I	3/8 ~ 27/64	2-3/8	3-17/32	3-5/8	5-9/16	3/4	2-1/32	1/8
Z	ZZ0SDHF075I	7/16 ~ 1/2	2-3/8	3-17/32	3-5/8	5-9/16	3/4	2-1/32	1/8
0	Z00SDHF075I	33/64 ~ 11/16	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

Z**EXSF SERIES
Z**EXHF SERIES

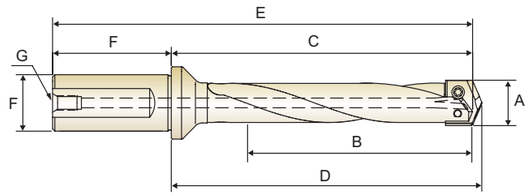
FLANGED STRAIGHT SHANK HOLDERS

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)

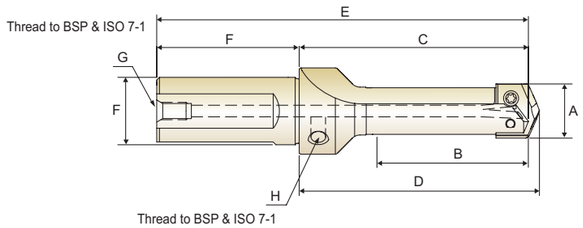
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0EXHF075I	3/8 ~ 27/64	4-3/8	5-17/32	5-5/8	7-9/16	3/4	2-1/32	1/8
Z	ZZ0EXHF075I	7/16 ~ 1/2	4-3/8	5-17/32	5-5/8	7-9/16	3/4	2-1/32	1/8
0	Z00EXHF075I	33/64 ~ 11/16	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

Z**SBSF SERIES
Z**STSF SERIES

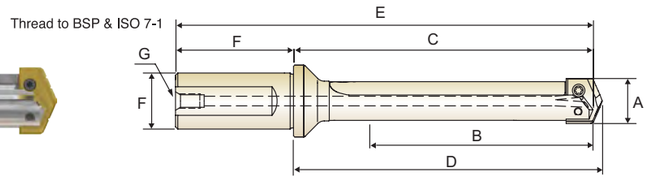
FLANGED STRAIGHT SHANK HOLDERS

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)

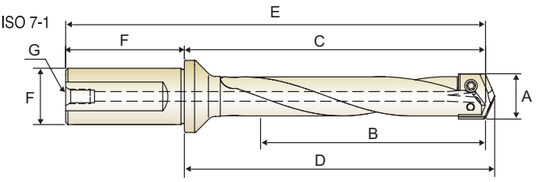
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0STSF020M	9.5 ~ 11.0	31.8	61.1	63.5	111.1	20.0	50.0	1/8
Z	ZZ0STSF020M	11.5 ~ 12.5	31.8	61.1	63.5	111.1	20.0	50.0	1/8
0	Z00STSF020M	13.0 ~ 17.5	34.9	63.5	66.3	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

Z**ITHF SERIES
Z**SDHF SERIES

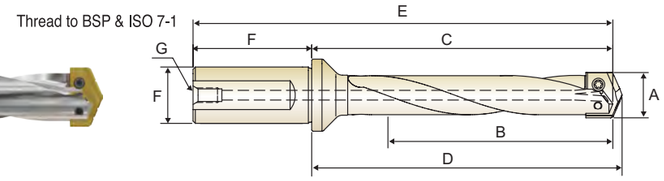
FLANGED STRAIGHT SHANK HOLDERS

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)

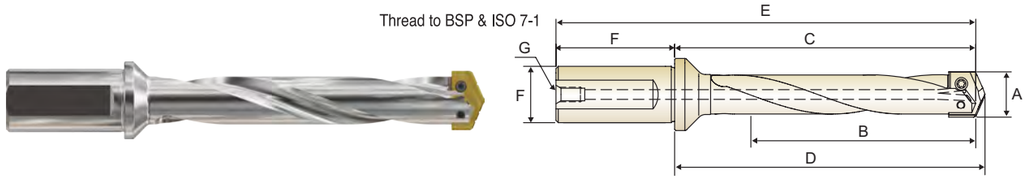
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0SDHF020M	9.5 ~ 11.0	60.3	89.7	92.1	139.7	20.0	50.0	1/8
Z	ZZ0SDHF020M	11.5 ~ 12.5	60.3	89.7	92.1	139.7	20.0	50.0	1/8
0	Z00SDHF020M	13.0 ~ 17.5	63.5	92.1	94.9	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

Z**EXHF SERIES
Z**EXSF 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)

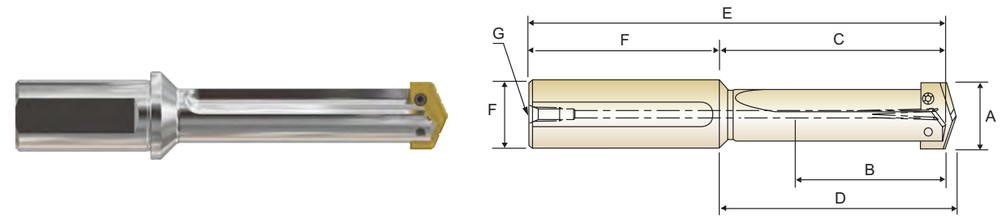
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
3	Z30EXSF040M	36.0 ~ 47.0	349.3	401.6	406.4	471.6	40.0	70.0	1/4
4	Z40EXSF040M	48.0 ~ 65.0	422.3	471.5	476.3	541.5	40.0	70.0	1/4

SPADE DRILLS

Z**STSS SERIES

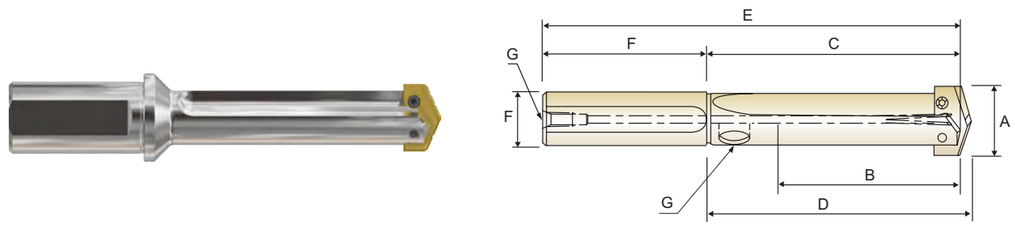
STRAIGHT SHANK HOLDERS

- 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

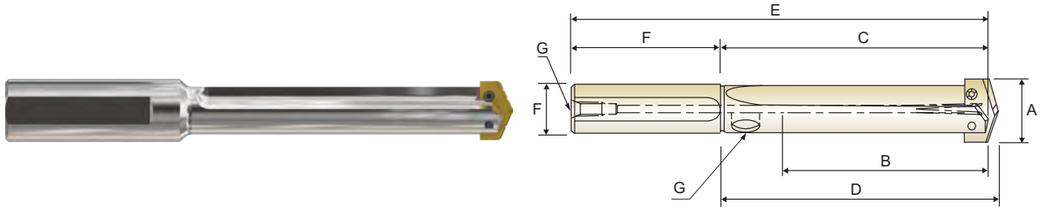
▶ * Flanged type

SPADE DRILLS

Z**ITSS 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

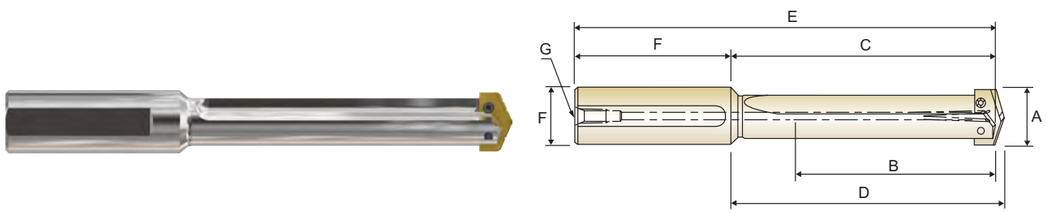
CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS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

SPADE DRILLS

Z**SDSS SERIES

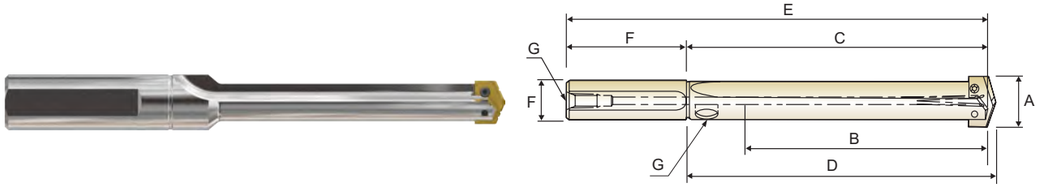
STRAIGHT SHANK HOLDERS

- 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
5~6	Z50SDSS200I	2-1/2 ~ 3-1/2	10-3/4	12-1/2	12-3/4	16-1/2	2	4	1/2
7~8	Z70SDSS300I	3-17/32 ~ 4-1/2	10-3/4	12-7/8	13-1/8	17-7/8	3	5	1/2

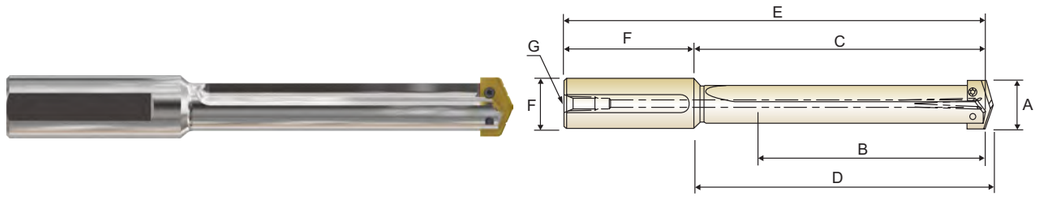
▶ * Flanged type

SPADE DRILLS

Z**EXSS SERIES

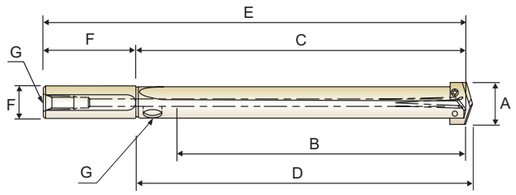
STRAIGHT SHANK HOLDERS

- 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
5~6	Z50EXSS200I	2-1/2 ~ 3-1/2	18-1/4	20	20-1/4	24	2	4	1/2
7~8	Z70EXSS300I	3-17/32 ~ 4-1/2	21-7/8	24	24-1/4	29	3	5	1/2

SPADE DRILLS

Z**LGSS SERIES

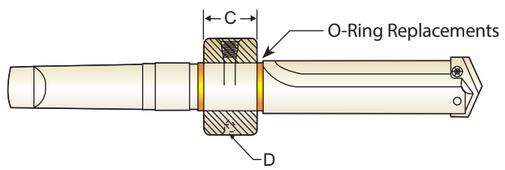
STRAIGHT SHANK HOLDERS

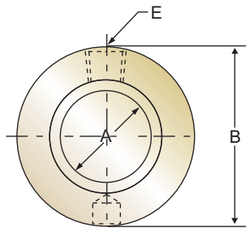
- HALTER MIT ZYLINDERSCHAFT
- Porte-plaquette à queue cylindrique
- PUNTE ATTACCO CILINDRICO FLANGIATO

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

HOLDER ACCESSORIES
ROTARY COOLANT ADAPTER (RCA) AND ACCESSORIES





Inch

Item No.	I.D.	O.D.	Length	Thread for Driving Rod	Pipe Tap
	A	B	C	D	E
PR110048	3/4	1-3/4	7/8	5/16-NC	◈1/8
PR110100	1	2-1/8	1-1/8	5/16-NC	◈1/8
PR110116	1-1/4	2-1/2	1-3/8	3/8-NC	◈1/4
PR110148	1-3/4	3	1-3/8	3/8-NC	◈1/4
PR110216	2-1/4	3-3/4	1-3/4	1/2-NC	◈1/2

Metric

Item No.	I.D.	O.D.	Length	Thread for Driving Rod	Pipe Tap
	A	B	C	D	E
PR120190	19.05	44.45	22.23	M8 ×1.25	◈1/8
PR120254	25.40	53.97	28.57	M8 ×1.25	◈1/8
PR120317	31.75	63.50	34.92	M10 ×1.5	◈1/4
PR120444	44.45	76.20	34.92	M10 ×1.5	◈1/4
PR120571	57.15	95.27	44.45	M12 ×1.75	◈1/2

◈ 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 DRILL HSS M4

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

ISO	VDI 3323	Material Description	Vc			Feed						
			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
	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
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
	27	Copper and Copper Alloys (Bronze / Brass)	95	128	142	0.19	0.31	0.43	0.53	0.64	0.74	0.79

▶ 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

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

ISO	VDI 3323	Material Description	Vc			Feed						
			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
	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
	27	Copper and Copper Alloys (Bronze / Brass)	95	128	142	0.19	0.31	0.43	0.53	0.64	0.74	0.79
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
H	38	Hardened steel	20	23	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46

▶ 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

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

ISO	VDI 3323	Material Description	Vc			Feed						
			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
	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
	27	Copper and Copper Alloys (Bronze / Brass)	95	128	142	0.19	0.31	0.43	0.53	0.64	0.74	0.79
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
H	38	Hardened steel	20	23	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46

▶ 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 K10

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

ISO	VDI 3323	Material Description	Vc			Feed				
			TiN	TiCN	TiAlN	Ø9.5~12.5	Ø13~17.5	Ø18~24	Ø25~35	Ø36~47
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

SPADE DRILL CARBIDE K20

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

ISO	VDI 3323	Material Description	Vc			Feed				
			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
	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
	27	Copper and Copper Alloys (Bronze / Brass)	136	168	193	0.15	0.24	0.29	0.39	0.47
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
H	38	Hardened steel	38	43	47	0.10	0.18	0.20	0.24	0.30

▶ 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 FLAT BOTTOM HSS T15

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

ISO	VDI 3323	Material Description	Vc		Feed			
			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
	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
	27	Copper and Copper Alloys (Bronze / Brass)	48	70	0.15	0.26	0.37	0.45
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
H	38	Hardened steel	23	25	0.13	0.15	0.18	0.22

▶ 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

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

ISO	VDI 3323	Material Description	Vc			Feed				
			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
	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
	27	Copper and Copper Alloys (Bronze / Brass)	136	168	193	0.15	0.24	0.29	0.39	0.47
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
H	38	Hardened steel	38	43	47	0.10	0.18	0.20	0.24	0.30

▶ 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

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.A405

							K4101	K4111
SERIES								
HOLE TYPE								
FLUTE TYPE							Straight	LH Spiral
SIZE MIN							D2.0	D2.0
SIZE MAX							D20.0	D20.0
PAGE							A384	A385
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
HOLE TYPE								
FLUTE TYPE	Straight	LH Spiral	Straight	LH Spiral	LH Spiral (Quick Spiral)	Straight	LH Spiral	LH Spiral
SIZE MIN	D2.0	D2.0	D2.0	D2.0	D4.0	D10.0	D10.0	D2.0
SIZE MAX	D60.0	D60.0	D20.0	D20.0	D20.0	D50.0	D50.0	D20.0
PAGE	A386	A388	A390	A392	A394	A395	A397	A399
SURFACE TREATMENT	Bright							
○	○	○	◎	◎	○	◎	◎	◎	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	N
○	○	○	○	◎	○	○	○	26	
○	○	○	○	◎	○	○	○	27	
○	○	○	○	◎	○	○	○	28	
								29	
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								41	

YG REAMERS

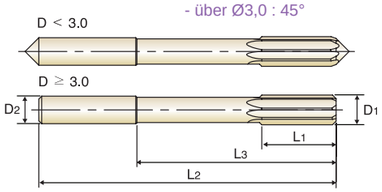
K4101 SERIES

CARBIDE, NC MACHINE REAMERS - STRAIGHT FLUTES

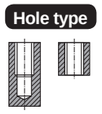
VHM, NC-MASCHINENREIBAHLEN - GERADEGENUTET
ALÉSOIRS CARBURE MACHINE CN - ENTRÉE DROITE
ALESATORI A MACCHINA IN MD - ELICA DRITTA

- 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°



Hole type



CARBIDE | H7 | 15° | 45° | Bright | p.A405

D<3.0 D≥3.0

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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

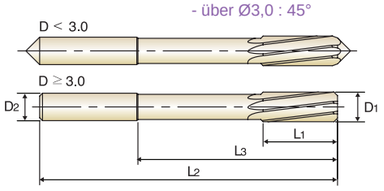
K4111 SERIES

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, rechtsssschneidend
- Ungleichteilung
- Ø Toleranzen : DIN 1420 für H7
- Schaft : DIN 6535-HA
- Anschnittwinkel - bis Ø3,0 : 15°
  - über Ø3,0 : 45°



Hole type

CARBIDE | H7 | LH7° | 15° | 45° | Bright | p.A405

D<3.0 D≥3.0

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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	○	○	○	○		○	○	○													

YG REAMERS

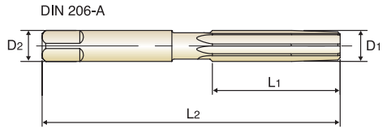
K1143 SERIES

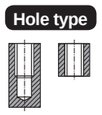
HSS, HAND REAMERS - STRAIGHT FLUTES

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





D1=D2

HSS | DIN 206 | H7 | Bright

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

Unit : mm

EDP No.	Reamer Diameter D	Flute Length L1	Overall Length L2	No. of Flute
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	○	○	○	○		○	○	○													

YG REAMERS

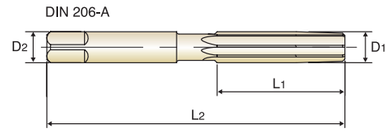
K1143 SERIES

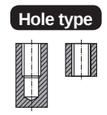
HSS, HAND REAMERS - STRAIGHT FLUTES

HSS, HANDREIBAHLEN - GERADEGENUTET
ALÉSOIRS HSS À MAIN - ENTRÉE DROITE
ALESATORI A MANO IN HSS - ELICA DRITTA

- ▶ 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





D1=D2

HSS | DIN 206 | H7 | Bright

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

Unit : mm

EDP No.	Reamer Diameter D	Flute Length L1	Overall Length L2	No. of Flute
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	○	○	○	○		○	○	○													

YG REAMERS

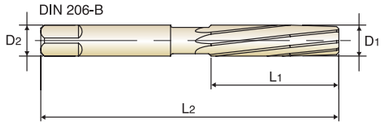
K1153 SERIES

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



Hole type

$D_1=D_2$

HSS | DIN 206 | H7 | LH7° | Bright

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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	○	○	○	○		○	○	○													

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

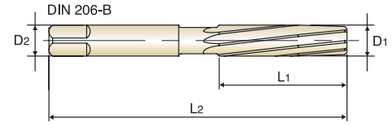
K1153 SERIES

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



Hole type

$D_1=D_2$

HSS | DIN 206 | H7 | LH7° | Bright

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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

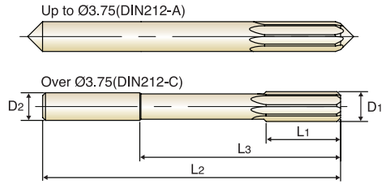
K2101 SERIES

HSS-E, STRAIGHT SHANK CHUCKING REAMERS - STRAIGHT FLUTES

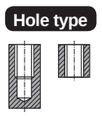
- HSS-E, MASCHINENREIBAHLE mit ZYLINDERSCHAFT - GERADEGENUTET
- ALÉSOIRS HSS-E MACHINE DROIT- ENTRÉE DROITE
- ALESATORI IN HSS-E, ATTACCO CILINDRICO - ELICA DRITTA

▶ 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°



Hole type



HSS-E | DIN 212 | H7 | 15° | 45° | Bright

up to Ø3.75 over Ø3.75

p.A406

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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											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

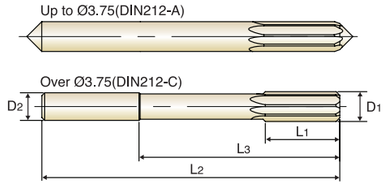
K2101 SERIES

HSS-E, STRAIGHT SHANK CHUCKING REAMERS - STRAIGHT FLUTES

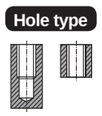
HSS-E, MASCHINENREIBAHLE mit ZYLINDERSCHAFT - GERADEGENUTET
ALÉSOIRS HSS-E MACHINE DROIT- ENTRÉE DROITE
ALESATORI IN HSS-E, ATTACCO CILINDRICO - ELICA DRITTA

▶ 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°



Hole type



HSS-E | DIN 212 | H7 | 15° | 45° | Bright

up to Ø3.75 over Ø3.75

p.A406

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

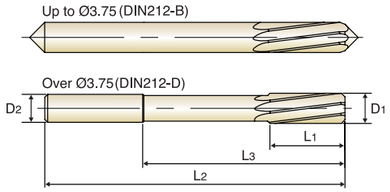
K2111 SERIES

HSS-E, STRAIGHT SHANK CHUCKING REAMERS - LH SPIRAL FLUTES

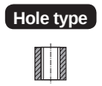
HSS-E, MASCHINENREIBAHLE mit ZYLINDERSCHAFT - SPIRALGENUTET mit LINKSDRALL
ALÉSOIRS HSS-E MACHINE DROIT- HÉLICE À GAUCHE
ALESATORI IN HSS-E, ATTACCO CILINDRICO - ELICA SINISTRA

- 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°



Hole type



HSS-E | DIN 212 | H7 | LH7° | 15° | 45° | Bright

p.A406

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

up to Ø3.75 over Ø3.75

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

▶ 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	○	○	○	○		○	○	○													

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

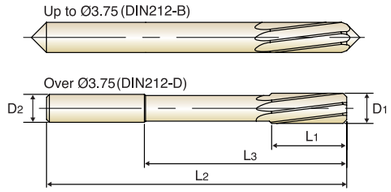
K2111 SERIES

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°



Hole type

HSS-E | DIN 212 | H7 | LH7° | 15° | 45° | Bright

p.A406

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

up to Ø3.75 over Ø3.75

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																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	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	○	○	○	○		○	○	○													

REAMERS

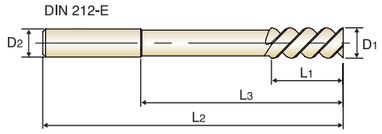
K2121 SERIES

HSS-E, STRAIGHT SHANK CHUCKING REAMERS - LH SPIRAL FLUTES (QUICK SPIRAL)

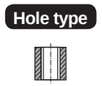
HSS-E, MASCHINEN - SCHÄLREIBAHLE mit ZYLINDERSCHAFT - SPIRALGENUTET mit LINKSDRAL
ALÉSOIRS HSS-E MACHINE DROIT- HÉLICE À GAUCHE (HÉLICE RAPIDE)
ALESATORI IN HSS-E, ATTACCO CILINDRICO - ELICA RAPIDA, SINISTRA

- ▶ 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



Hole type



HSS-E | DIN 212 | H7 | LH45° | FORM E | Bright

p.A406

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	◎	◎		◎	◎	◎													

REAMERS

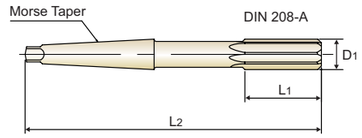
K2102 SERIES

HSS-E, MORSE TAPER SHANK CHUCKING REAMERS - STRAIGHT FLUTES

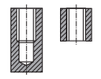
HSS-E, MASCHINENREIBAHLE mit MK - GERADEGENUTET
ALÉSOIRS HSS-E MACHINE QUEUE CONIQUE - ENTRÉE DROITE
ALESATORI IN HSS-E, ATTACCO CONICO - TAGLIENTI DRITTI

- ▶ 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°



Hole type



HSS-E | DIN 208 | H7 | 45° | FORM A | Bright

p.A406

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○		○	○	○													

YG REAMERS

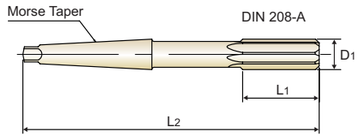
K2102 SERIES

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°



Hole type

HSS-E | DIN 208 | H7 | 45° | FORM A | Bright

p.A406

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○		○	○	○													

YG REAMERS

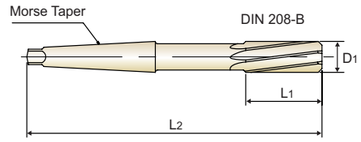
K2112 SERIES

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°



Hole type

HSS-E | DIN 208 | H7 | LH7° | 45° | FORM B | Bright

p.A406

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○		○	○	○													

REAMERS

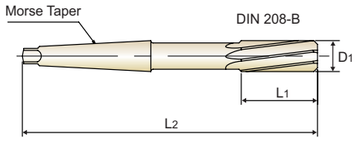
K2112 SERIES

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°



Hole type

HSS-E | DIN 208 | H7 | LH7° | 45° | FORM B | Bright

p.A406

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

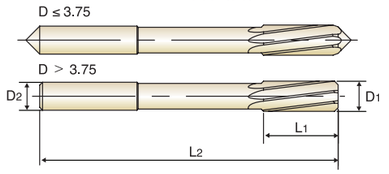
K21B1 SERIES

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°



Hole type

HSS-E | H7 | LH7° | 15° | 45° | Bright

p.A406

up to Ø3.75 over Ø3.75

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

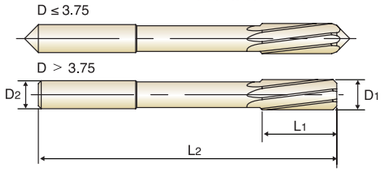
K21B1 SERIES

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°



Hole type

HSS-E | H7 | LH7° | 15° | 45° | Bright

p.A406

up to Ø3.75 over Ø3.75

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

▶ 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	○	○	○	○		○	○	○													

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

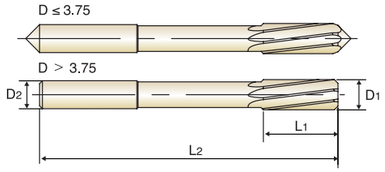
K21B1 SERIES

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°



Hole type

HSS-E | H7 | LH7° | 15° | 45° | Bright

p.A406

up to Ø3.75 over Ø3.75

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○		○	○	○													

YG REAMERS

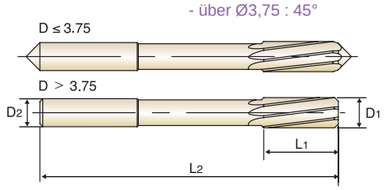
K21B1 SERIES

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°



Hole type

HSS-E | H7 | LH7° | 15° | 45° | Bright

p.A406

up to Ø3.75 over Ø3.75

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length 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

▶ 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	○	○	○	○		○	○	○													

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

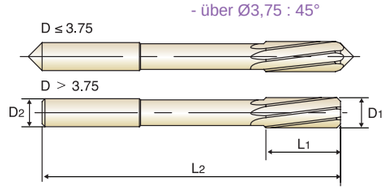
K21B1 SERIES

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°



Hole type

HSS-E | H7 | LH7° | 15° | 45° | Bright

p.A406

up to Ø3.75 over Ø3.75

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

Unit : mm

EDP No.	Reamer Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length 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											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

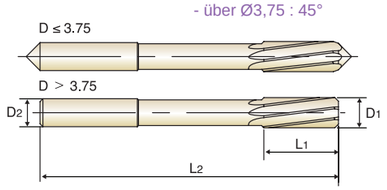
K21B1 SERIES

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°



Hole type

HSS-E | H7 | LH7° | 15° | 45° | Bright

up to Ø3.75 over Ø3.75

p.A406

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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	○	○	○	○		○	○	○													

REAMERS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

K4101, K4111 SERIES

CARBIDE, NC MACHINE REAMERS

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

ISO	VDI 3323	Material Description	Vc	Feed 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
	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
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	0.20-0.24	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	0.10-0.13	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
	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
	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

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

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

ISO	VDI 3323	Material Description	Vc	Feed														
				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
	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
	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
M	12	Stainless steel	6	0.03-0.04	0.04-0.05	0.05-0.0.6	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
	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

K2121 SERIES

HSS-E, CHUCKING REAMERS - QUICK SPIRAL

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

ISO	VDI 3323	Material Description	Vc	Feed							
				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
	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
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
	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

HSS & HSS Co8

COUNTERSINKS

SENKER

- For Deburring, Chamfering and Countersinking
- Zum Entgraten, Anfasen und Senken

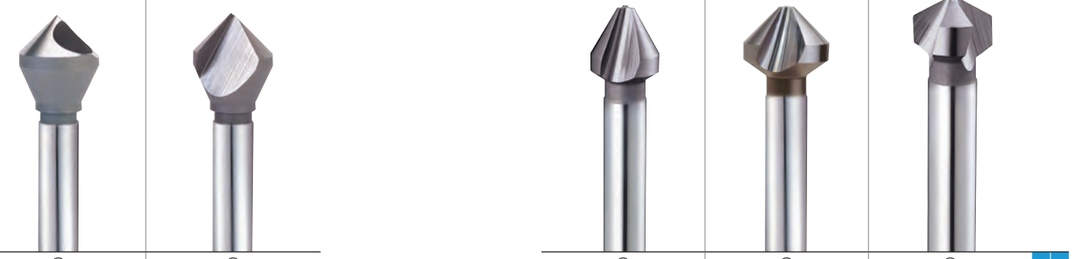
SELECTION GUIDE

YG HOLEMAKING TOOLS

HSS & HSS Co8
COUNTERSINKS

For Deburring, Chamfering and Countersinking

SERIES	C1109 C3109	C1119 C3119	C1136 C3136	C1139 C3139	C1132 C3132
STANDARD	STANDARD	STANDARD	DIN 334C	DIN 335C	STANDARD
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	A410	A411	A412	A413	A414
SURFACE TREATMENT	Bright		Bright		



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A415

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	C1109 C3109	C1119 C3119	C1136 C3136	C1139 C3139	C1132 C3132	
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

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

COUNTERSINKS

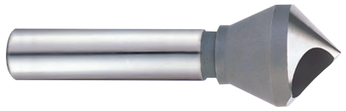
C1109 SERIES
C3109 SERIES

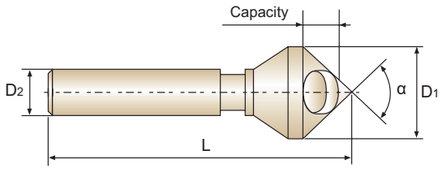
HSS & HSS Co8, DEBURRING TOOL with HOLE

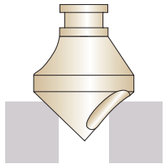
HSS, QUERLOCHSENKER
FRAISE HSS À ÉBAVURER À TROU
SVASATORI CON FORO - HSS

- 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 | HSS | HSS Co8 | Bright p.A415

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

Unit : mm

EDP No. (uncoating)		Point Angle	Cutter Diameter	Shank Diameter	Overall Length	Capacity
HSS Co8	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

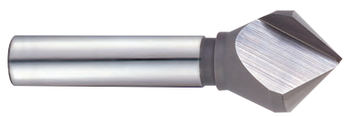
C1119 SERIES
C3119 SERIES

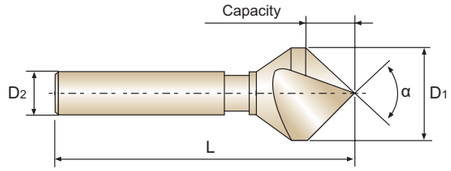
HSS & HSS CO8, SINGLE FLUTE CHAMFERING CUTTERS

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 | HSS | HSS Co8 | Bright p.A415

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

Unit : mm

EDP No. (uncoating)		Point Angle	Cutter Diameter	Shank Diameter	Overall Length	Capacity
HSS Co8	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

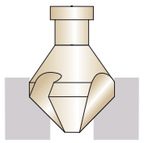
C1136 SERIES
C3136 SERIES

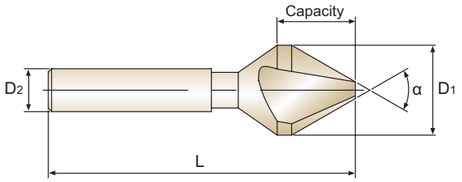
HSS & HSS Co8, THREE FLUTE COUNTERSINKS (60°)

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 334C | HSS | HSS Co8 | Bright | p.A416

Recommended ToolHolder: Plain Shank, ER COLLET CHUCK

Unit : mm

EDP No. (uncoating)		Point Angle	Cutter Diameter	Shank Diameter	Overall Length	Capacity
HSS Co8	HSS	α	D1	D2	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

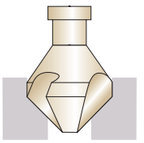
C1139 SERIES
C3139 SERIES

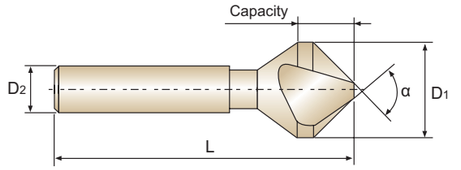
HSS & HSS Co8, THREE FLUTE COUNTERSINKS (90°)

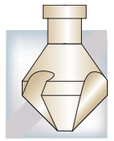
HSS, DREISCHNEIDEN KEGELSENKER (90°)
FRAISE HSS À CHANFREINER 3 DENTS (90°)
SVASATORI A TRE TAGLIENTI - HSS (90°)

- 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 335C | HSS | HSS Co8 | Bright | p.A416

Recommended ToolHolder: Plain Shank, ER COLLET CHUCK

Unit : mm

EDP No. (uncoating)		Point Angle	Cutter Diameter	Shank Diameter	Overall Length	Capacity
HSS Co8	HSS	α	D1	D2	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

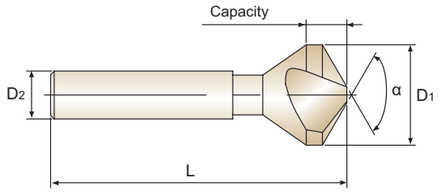
C1132 SERIES
C3132 SERIES

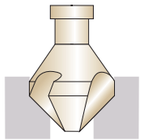
HSS & HSS Co8, THREE FLUTE COUNTERSINKS (120°)

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 | HSS | HSS Co8 | Bright

p.A416

Recommended ToolHolder: Plain Shank, ER COLLET CHUCK

Unit : mm

EDP No. (uncoating)		Point Angle	Cutter Diameter	Shank Diameter	Overall Length	Capacity
HSS Co8	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

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

ISO	VDI 3323	Material Description	Vc	Feed						
				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
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

COUNTERSINKS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

C1136, C3136, C1139, C3139, C1132, C3132 SERIES

3 FLUTE COUNTERSINKS

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

ISO	VDI 3323	Material Description	Vc	Feed							
				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
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

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	A419		
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.A421

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

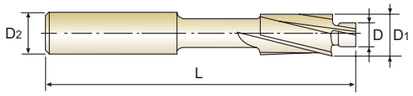
EL950 SERIES

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 | Bright | p.A421

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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

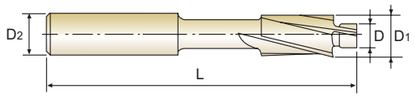
EL950 SERIES

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 | Bright p.A421

Recommended ToolHolder — Plain Shank — ER COLLET CHUCK

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	○	○	○	○																	

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
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

COUNTERBORES

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

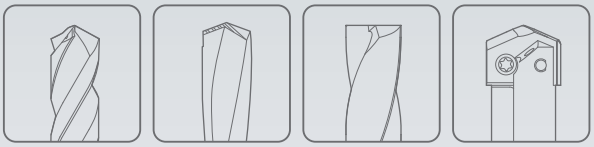
EL950 SERIES

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

Global Cutting Tool Leader YG-1



HOLEMAKING

Leading Through Innovation

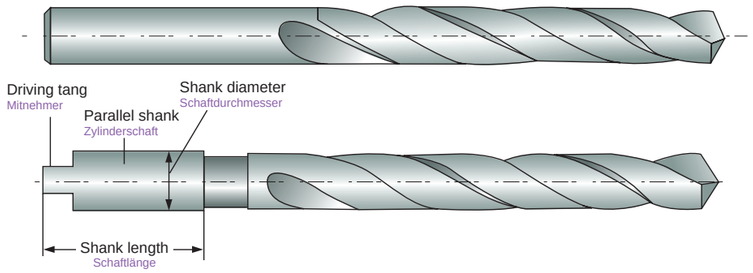
DRILLS

TECHNICAL DATA

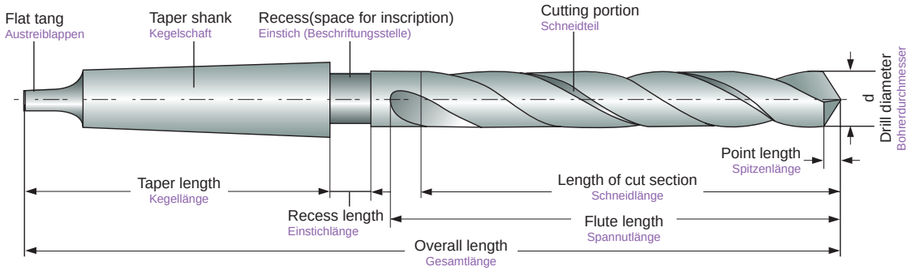
TECHNISCHE DATEN

TECHNICAL DATA

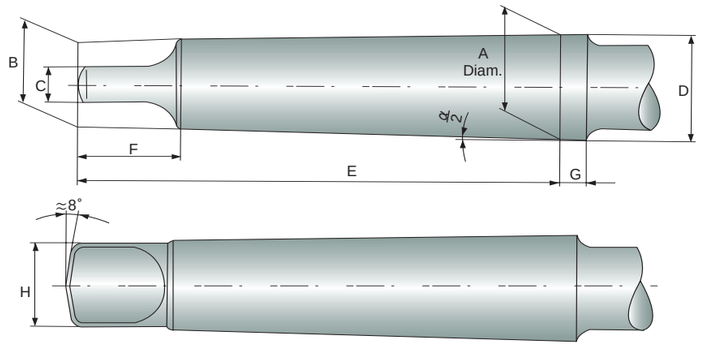
1 TWIST DRILL WITH PARALLEL SHANK
SPIRALBOHRER MIT ZYLINDERSCHAFT



2 TWIST DRILL WITH TAPER SHANK
SPIRALBOHRER MIT KEGELSCHAFT



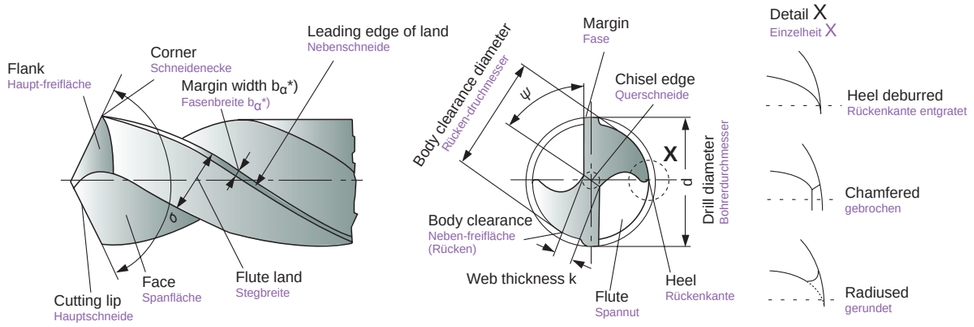
3 GENERAL DIMENSIONS OF MORSE TAPER SHANKS
TOLERANZEN DES KEGELSCHAFTES



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



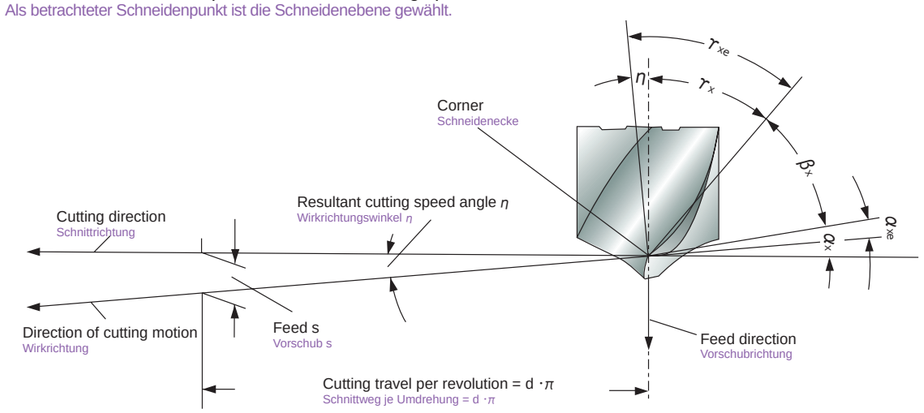
σ = Point angle (sigma) Spitzenwinkel (Sigma)

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)

γ_x = Front rake angle (gamma) Seitenspanwinkel (Gamma)

γ_{xe} = Working front rake angle Wirk-Seitenspanwinkel

η = Resultant cutting speed angle (eta) Wirkrichtungswinkel (Eta)

Clearance angle α, wedge angle β and rake angle γ 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 γ werden in der keilmeβebene gemessen.
Einzelheiten siehe DIN 6581, Begriffe der Zerspantechnik; Geometrie am Schneidkeil des Werkzeuges.

TECHNICAL DATA

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

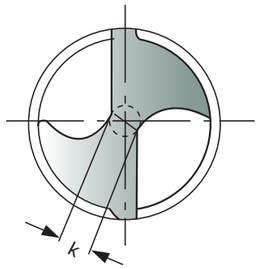


Figure 1. Web thickness k
Bild 1. kerndicke k

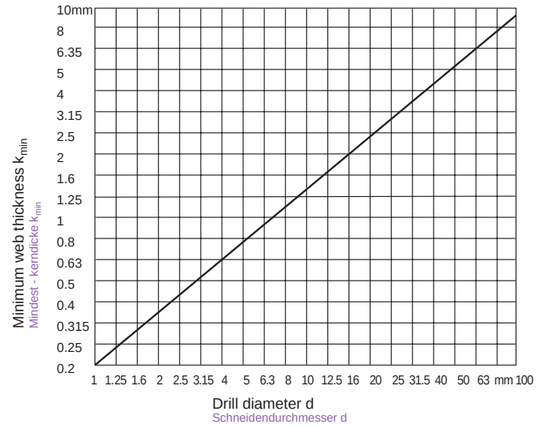


Figure 2. Web thickness k_{min}
Bild 2. Kerndicke k_{min}

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

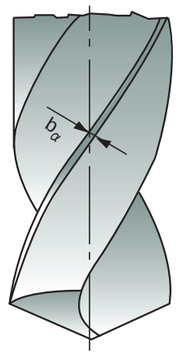


Figure 3. Margin width b_α
Bild 3. Fasenbreite b_α

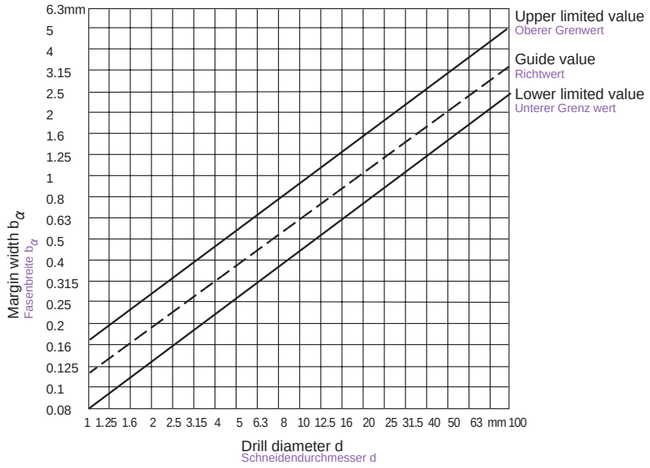


Figure 4. Margin width b_α
Bild 4. Fasenbreite b_α

TECHNICAL DATA

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)

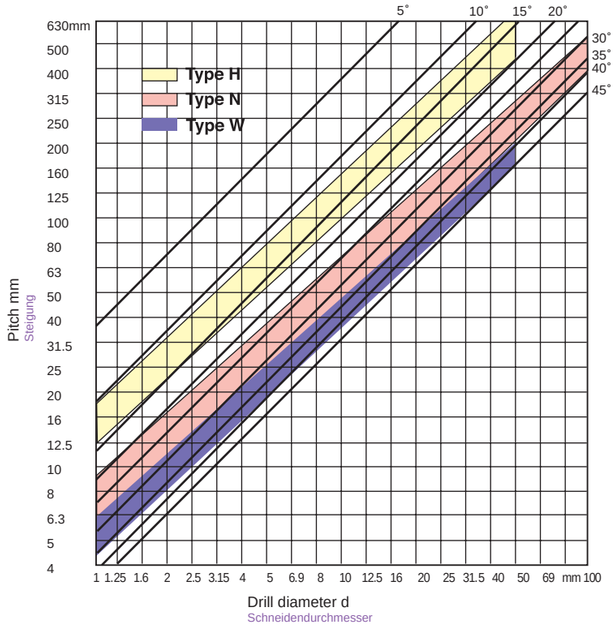


Figure 6. Side rake angle γ_f
Build 6. Seitenspanwinkel γ_f

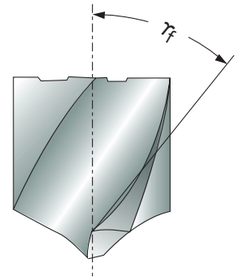


Figure 5. Side rake angle γ_f
Bild 5. Seitenspanwinkel γ_f

(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.

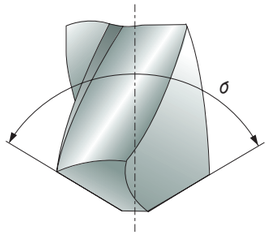


Figure 7. Point angle σ
Bild 7. Spitzenwinkel σ

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 Spltzenwinkel 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)

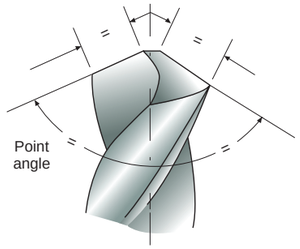


Figure 8
Bild 8

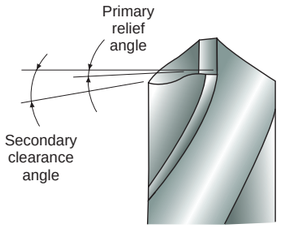


Figure 9
Bild 9

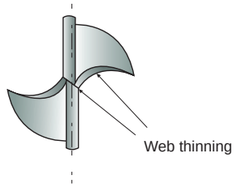


Figure 10
Bild 10

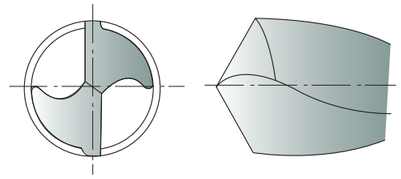
CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS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

TECHNICAL DATA

10 WEB THINNING
KEGELMANTELSCHLIFF

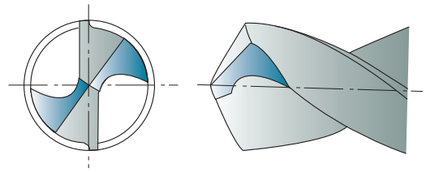
(1) Without thinning
Normalanschliff

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



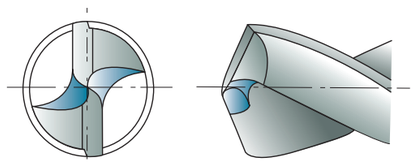
(2) Type C thinning (DIN 1412 FORM C, SPLIT POINT)
DiN 1412 Form C kegelmantelanschliff mit Kreuzanschliff

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.



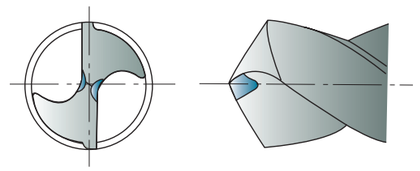
(3) Type R thinning (HELICAL THINNING)
Form R Kegelmantelanschliff (Spiralanschliff)

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 (DIN 1412 FORM A)
DIN 1412 Form A Kegelmantelanschliff mit ausgespitzer Querschneide

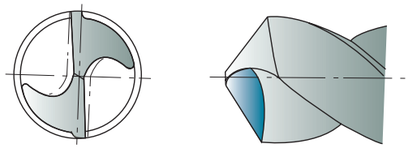
A type thinnings makes thin chisel, good chip removal and favorable centering.
This type is the easiest type to grind the thinning. In narrow web and wide fluted drills, keeping of the rigidity and smooth chip removal are possible.
Diese Form hat eine dünne Querschneide, dadurch ist gute Spanentfernung 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 (DIN 1412 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.



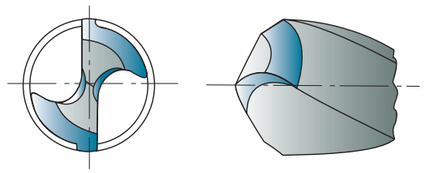
Geeignet für Werkstücke mit geringern Schneidwiderstand und guter Spanentfernung, z.B. Gusseisen, Aluminium, Plastik usw.

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 (DIN 1412 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.



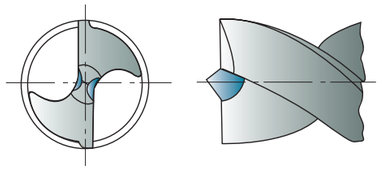
GG-Anschliff; Fasen auf dem Steg verstärken die Schneidkante.

Geeignet für medium bis hohe Härte GG und für abrasive Materialien.

(7) Type E thinning (DIN 1412 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(Vap) (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.

CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
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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 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.

Bessere Leistung im Vergleich zu unbeschichteten Werkzeugen

TiN-Beschichtung, mit guten Allround-Eigenschaften, empfohlen für die allgemeine Anwendung

(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) X-Coating — X-Beschichtung

- Coating with low hardness drop at high temperatures and stability against thermal oxidation
- Coating for superior dry and wet machining performance at high cutting speed
- Wide range of application field with stable layer structure

- Beschichtung mit geringem Härteverlust bei hohen Temperaturen und Stabilität gegen thermische Oxidation
- Hervorragende Beschichtung für Trocken- und Nassbearbeitung bei hohen Schnittgeschwindigkeiten
- Breites Anwendungsspektrum durch stabilem Schichtaufbau

TECHNICAL DATA

(5) H-Coating H Beschichtung

- AlCrN-based coating, superior mechanical properties compared to TiAl-based coating
- Improved wear resistance compared to TiAl-based, and superior physical properties(high temperature
- hardness and breaking strength)
- Superior adhesion and surface roughness, and uniform tool wear characteristics with multi-layer coating
- Possible machining with minimum quantity of coolant and dry machining to reduce production costs

- Beschichtung auf AlCrN-Basis, dadurch überlegene mechanische Eigenschaften im Vergleich zu Beschichtungen auf TiAl-Basis
- Verbesserte Verschleißfestigkeit im Vergleich zu TiAl-Beschichtungen und überlegene physikalische Eigenschaften (Hochtemperaturhärte und Bruchfestigkeit)
- Hervorragende Haftung und Oberflächenrauhigkeit sowie gleichmäßiger Werkzeugverschleiß durch mehrlagige Beschichtung
- Ermöglicht Bearbeitung mit Minimalmengenschmierung und Trockenbearbeitung zur Senkung der Produktionskosten

(6) Z-Coating Z Beschichtung

- Nanocomposite optimized among coatings for high hardness steel machining with Si grade coating
- Superior machinability at high temperatures and used in milling and drilling finishing processes
- Superior surface roughness and wear resistance for a very wide machining application
- Superior physical properties of hardness, adhesion and oxidation resistance at high temperatures

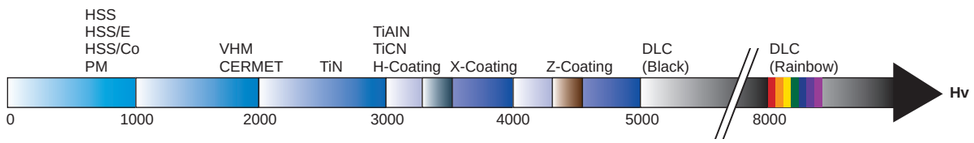
- Optimierte nanokomposit Beschichtung mit Si-Anteil für die Bearbeitung von hochharten Stählen
- Hervorragende Zerspanleistung bei hohen Temperaturen und bei Fräs- und Bohrbearbeitungsprozessen
- Hervorragende Oberflächenrauhigkeit und Verschleißfestigkeit für ein sehr breites Anwendungsspektrum
- Hervorragende physikalische Eigenschaften wie Härte, Haftung und Oxidationsbeständigkeit bei hohen Temperaturen

(7) DLC Coating DLC Beschichtung

- Suitable coating for extreme wear conditions and fast sliding speed without use of coolant
- Possible coating with high-speed machining and superior wear resistance
- Minimizes friction losses, suitable for engine components such as fuel injection system, valve train and piston

- Geeignete Beschichtung für extreme Verschleißbedingungen und hohe Gleitgeschwindigkeiten ohne Verwendung von Kühlmittel
- Beschichtung für die Hochgeschwindigkeitsbearbeitung bei überlegener Verschleißfestigkeit
- Minimale Reibung, für Motorkomponenten wie Kraftstoffeinspritzsystem, Ventiltrieb und Kolben

Properties	TiN	TiCN	TiAlN	X-Coating	H-Coating	Z-Coating	DLC	
Coating color Beschichtungsfarbe	Gold - yellow	Blue - grey	Violet - grey	Blue grey	Copper	Copper	Black	Rainbow
Hardness (Hv 0.05) härtegrad (Hv 0.05)	2300	3000	3000	3,200	3,000	4,500	5,000	8,000
Coating thickness (㎛) Beschlchtungsdicke (㎛)	1~4	1~4	1~5	1 ~ 5	1 ~ 5	1 ~ 4	1 ~ 3	0.1 ~ 0.5
Max. working temperature (°C) Max. Arbeitstemperatur (°C)	600	400	800	1,100	1,100	900	500	600
Coefficient of friction against steels (dry) Reibungskoeffizient für stahl (trocken)	0.4	0.4	0.4	0.35	0.25	0.4	~ 0.1	~ 0.1



TECHNICAL DATA

(8) Selection of coating Verschiedene Beschichtungen

Properties	HSS TWIST DRILLS	CARBIDE DRILLS
Steels < 1000 N/mm² Stahls < 1000 N/mm²	H, Z, X-Coating	H, Z, X-Coating
Steels > 1000 N/mm² Stahls > 1000 N/mm²	H, Z, X-Coating	Z, H-Coating
Stainless steels Edelstäle	H, Z, X-Coating	Z, H-Coating
Cast iron Gusseisen	H, Z, X-Coating	H, Z, X-Coating
Al-wrought alloys Al-Knetlegierungen	DLC	DLC
Al-cast alloys Al-Gusslegierungen	DLC	DLC
Copper (pure) Kupfer (pur)	DLC	DLC
Brass Messing	DLC	DLC
Bronze Bronze	DLC	DLC

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
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
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

Nominal diameter	Tap Pitch	Drill diameter
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
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

TECHNICAL DATA

(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	0 - 25
h8	0 - 14	0 - 18	0 - 22	0 - 27	0 - 33	0 - 39
m7	+ 12 + 2	+ 16 + 4	+ 21 + 6	+ 25 + 7	+ 29 + 8	+ 34 + 9

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

TECHNICAL DATA

Occurrence of trouble	Cause of trouble	Countermeasures
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

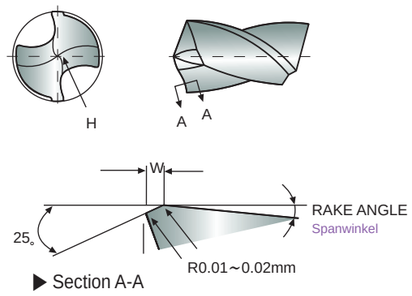
CARBIDE
HSS
i-ONE DRILLS
i-DREAM DRILLS
DREAM DRILLS -PRO
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -FLAT BOTTOM
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -MQL
DREAM DRILLS for HIGH HARDENED STEELS
GENERAL CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
SUPER-GP DRILLS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

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

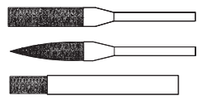
17 HONING GUIDE OF DREAM DRILLS
HINWEIS ZUM HONEN VON DREAM BOHRER

■ **Dimension of Honing**
Abmessung beim Honen



▶ Section A-A

■ **Scraper**
Schaben



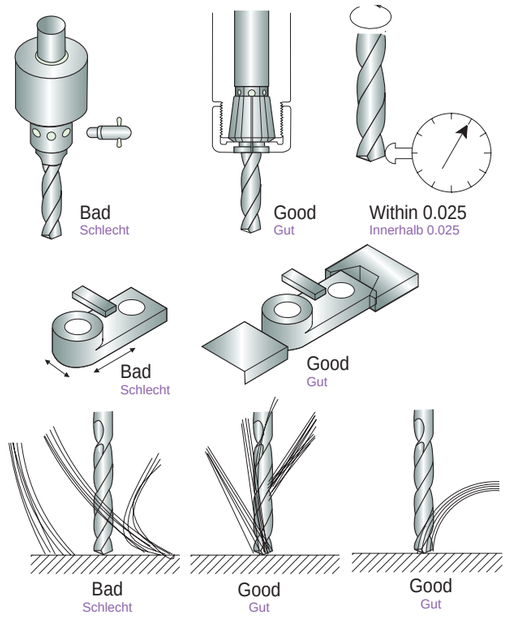
for Roughing (#140)
Grob

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.

18 USE OF DREAM DRILLS
VERWENDUNG VON DREAM BOHRER



▶ Chucking with spring collet correctly.
Richtiges Spannen mit Spannzangen.

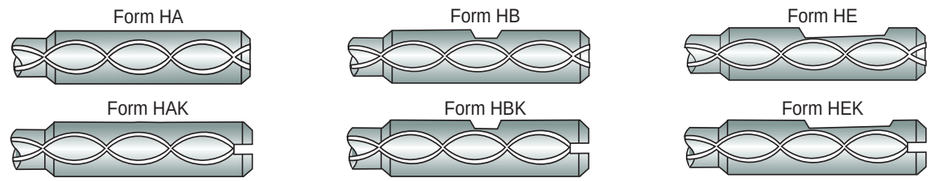
▶ Radial run out at cutting lip must not exceed 0.025 mm.
Radialer Rundlauf und der Schneidlippe darf nicht 0.025 überschreiten.

▶ 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 HAK.
Schaftausführung von lagerhaltigen Produkten ist HAK.

▶ Shank Type of DH446 & DH448 series(Dream Drill-General) is Form HBK
Schaftform der Serie DH446 & DH448 ist Form HBK.

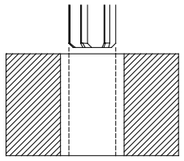
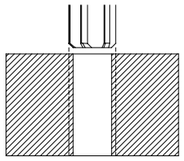
▶ Other shank types are available on your request.
Andere Schaftausführungen können geliefert werden.

REAMING - ALLOWANCE
REIBEN - AUFMASS

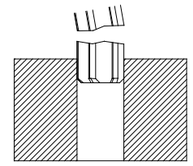
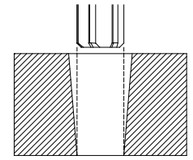
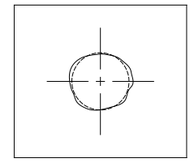
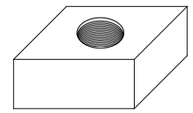
Unit : mm

Size Range Größenbereich	Up to Ø6	Ø6 ~ Ø10	Ø10 ~ Ø16	Ø16 ~ Ø25	Over Ø25
Removal Amount Zu entfernender Bereich	0.1 ~ 0.2	0.2 ~ 0.3	0.2 ~ 0.4	0.3 ~ 0.5	0.3 ~ 0.6

REAMING - TROUBLE SHOOTING
REIBEN - FEHLERBEHEBUNG

Problem Problem		Cause Ursache
Hole diameter too large Bohrungsdurchmesser zu groß		1. Run out error of the machine spindle, the chuck, or the tool. 2. Damaged adaptor. 3. Cutting speed and feed too high. 4. Build-up edges. 1. Rundlauffehler der Maschinenspindel, des Spannfutters oder des Werkzeugs. 2. Beschädigte Aufnahme. 3. Zu hohe Schnittgeschwindigkeit und zu hoher Vorschub. 4. Aufbauschneide
Hole diameter too small Bohrungsdurchmesser zu klein		1. Wrong tool tolerance or the tool is worn out. 2. Ductile material, that tightens after the reaming. 3. Insufficient cooling, or to low oil concentration. 4. Reaming stock is too little. 5. Cutting speed and feed too low. 1. Falsche Werkzeugtoleranz oder das Werkzeug ist verschlissen. 2. Duktiles Material, das sich nach dem Reiben verfestigt. 3. Unzureichende Kühlung, oder zu geringe Ölkonzentration. 4. Das Reibaufmaß ist zu gering. 5. Schnittgeschwindigkeit und Vorschub zu niedrig.

TECHNICAL DATA

Problem Problem		Cause Ursache
Reamer jams or breaks Reibahle klemmt oder bricht		1. Back taper is too small. 2. Position to pilot hole incorrect. 3. Pre-hole is too small. 4. Cutting speed and feed too high. 1.Die Verjüngung ist zu klein. 2. Position zur Vorbohrung ist falsch. 3. Die Vorbohrung ist zu klein. 4. Schnittgeschwindigkeit und Vorschub zu hoch.
Hole tapered Bohrung kegelig		1. Concentricity of pilot hole and reaming tool unsatisfactory. 2. Positioning accuracy of pre-hole insufficient. 1.Konzentrizität der Vorbohrung und Reibwerkzeug unbefriedigend. 2.Positioniergenauigkeit der Vorbohrung ungenügend.
Hole out of center or Chatter marks in hole Bohrung außerhalb der Mitte oder Rattermarken in der Bohrung		1. Cutting speed and feed too low. 2. Reaming tool running out of center. 3. Reaming stock is too small. 1.Schnittgeschwindigkeit und Vorschub zu niedrig. 2.Reibwerkzeug läuft aus der Mitte. 3.Das Reibaufmaß ist zu klein.
Feed marks in hole Vorschubspuren in der Bohrung		1. Cutting speed and feed too low 2. Build-up edges. 3. Inadequate chip evacuation 4. Insufficient lubrication. 1.Schnittgeschwindigkeit und Vorschub zu niedrig 2.Aufbauschneide. 3.Unzureichender Späneabtransport 4.Unzureichende Schmierung.