

PARESTO



Drilling

Twist Drills with Straight Shank
Twist Drills with Taper Shank
Sets of Jobber Length Drills
Annular Cutters



Twist Drills HSS / HSCo

Twist Drills with Straight Shank

	Description	Standard	Type	Material	Dia.	Dia.	Surface	Web	List-No.	Page		
Countersinks		DIN 1897	Std. Helix	HSS	1.0 - 30.0	3/64 - 1	P1	Form C	02000	13		
			Std. Helix	HSS	3.0 - 20.0		P5	Form C	02005	13		
			Heavy Duty	HSCo	1.0 - 13.0	1/16 - 1/2	P2	Form C	02111	17		
			Heavy Duty	HSCo	1.0 - 13.0	1/16 - 1/2	P5	Form C	02115	17		
			SM 200	HSCo-8	3.0 - 20.0	1/8 - 1/2	P0	Form C	02401	13		
			SM 200	HSCo-8	3.0 - 13.0	1/8 - 1/2	P5	Form C	02405	13		
			SM 200	HSCo-8	3.0 - 13.0	1/8 - 1/2	P8	Form C	02408	13		
	Reaming			Factory Standard	Std. Helix	HSS	2.0 - 10.0	3/32 - 9/32	P1	Form C	08150	20
		Std. Helix	HSS		3.0 - 6.0	3/32 - 1/4	P1	Form C	08100	20		
		Std Helix	HSS			3/32 - 5/16	P1	Form C	08300	20		
		Std Helix	HSCo		6.0-10.0		P2	Form E	02181	21		
		90°	HSCo		3.0 - 20.0		P0		08050	21		
Threading			DIN338		Std. Helix	HSS	0.3 - 20.0	1/64 - 3/4	P0		01030	22
		Std. Helix		HSS	0.3 - 20.0	1/64 - 3/4	P1		01000	22		
		Cotter Pin		HSS	1.0 - 13.0	1/64 - 1/2	P1	Form C	01100	22		
		Std. Helix		HSS	1.0 - 20.0	1/16 - 1/2	P5		01005	22		
		No Drills		HSS		1-60	P1	Form C	01020	27		
		Letter Drills		HSS	A-Z		P1	Form C	01040	28		
		Tri - Quad		HSS	1.0-13.0	1/32 - 1/2	P1/P2	Form C	01150	28		
		Elite		HSS	3.0-13.0	1/8-1/2	P0	Form C	01001	29		
		Elite		HSS	3.0 - 13.0	1/8 - 1/2	P1	Form C	01002	29		
		Std. Helix Left Hand		HSS	1.0 - 13.0	1/16 - 1/2	P1		01010	29		
		Low Helix		HSS	1.0 - 13.0	1/16 - 1/2	P0		01200	29		
		High Helix		HSS	1.0 - 13.0	1/16 - 1/2	P0		01300	29		
		Elite Plus		HSS	1.0 - 13.0	1/16 - 1/2	P5	Form C	01065	29		
		Heavy Duty		HSCo	1.0 - 13.0	1/16 - 1/2	P2	Form C	01111	34		
		Heavy Duty		HSCo	1.0 - 13.0	1/16 - 1/2	P5	Form C	01115	34		
	Miscellaneous			Worm Pattern	SM 200	HSCo-8	3.0 - 13.0	1/8 - 1/2	P0	Form C	01401	38
					SM 200	HSCo-8	3.0 - 13.0	1/8 - 1/2	P5	Form C	01405	38
					SM 200	HSCo-8	3.0 - 13.0	1/8 - 1/2	P8	Form C	01408	38
		Hi-Nox	HSS		3.0 - 13.0	1/8 - 1/2	P1/P0		01320	41		

P0-Bright • P1-Steem Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills HSS Precision Carbide Tipped / Solid Carbide DIN338 Jobber Length

Twist Drills with Straight Shank

	Description	Standard	Type	Material	Dia.	Dia.	Surface	Web	List-No.	Page
	Carbide Tipped	DIN 338	Jobber Drill	HSS/Carbide	1.0 - 20.0	1/8 - 1/4	P0		01217	42
	Solid Carbide	DIN 338	Jobber Drill	Carbide	1.0 - 13.0		P0		20100	43

Twist Drills HSS / HSCo

Twist Drills with Straight Shank

	Description	Standard	Type	Material	Dia.	Dia.	Surface	Web	List-No.	Page
	Centre Drills	BS 328	Form A	HSS	1.0-12.5	BS1—BS7	P0		07000	43
	Blank	DIN 338	Jobber Blank	HSS	1.0 - 13.0		P0		01900	44
	Long Series	DIN 340	Std. Helix	HSS	1.0 - 16.0	3/64 - 41/64	P1	Form A	04000	45
			SM 100	HSS	3.0 - 13.0	1/8 - 1/2	P0	Form C	04150	45
			Heavy Duty	HSCo	1.0 - 13.0		P2	Form C	04111	45
	Long Series Parabolic	DIN 340	SM 200	HSCo-8	3.0 - 13.0	1/8 - 1/2	P0	Form C	04161	48
			SM 200	HSCo-8	3.0 - 13.0		P5	Form C	04165	48
			SM 200	HSCo-8	3.0 - 13.0		P8	Form C	04168	48
	Extra Length	BS 328	Std. Helix-125-400	HSS	1.5 - 14.0	1/16 - 1/2	P1		05000	50
	Blacksmith's Drills	Factory Standard	Std. Helix	HSS	13.0 - 32.0	17/32 - 1 1/2	P1	Form A	08610	52

Twist Drills HSS / HSCo

Twist Drills with Taper Shank, Core Drills

	Description	Standard	Type	Material	Dia.	Dia.	Surface	Web	List-No.	Page
	HSS Taper Shank	DIN 345	Std. Helix	HSS	6.0 - 100.0	1/4 - 3	P1		11000	53
	HSS Tin Taper Shank		Std. Helix	HSS	8.0 - 25.0		P5	Form A	11005	53
	Core Drills 3 Flutes		Std. Helix	HSS	7.8 - 40.0	1/4 - 1 1/2	P1		17000	56
	HSCo Taper Shank		Heavy Duty	HSCo-8	8.0 - 40.0	11/32 - 1	P2	Form C	11111	57
	Armour Piercing	Factory Standard	Low Helix	HSCo-8	5.0 - 40.0	1/4 - 1 1/2	P1	Form C	11211	58
	Bushing	DIN 341	Std. Helix	HSS	5.0 - 50.0		P1		11400	59
	Extra Length	BS 328	Std. Helix-200 - 630	HSS	6.0 - 9.5	1/4 - 1/2	P1	Form A	15000	60


Jobber Drills, HSS, DIN 338

Skin Pack


	No. of Drills	Range	Increments	List-No.	Page
	1-2	1.5 - 13.0 mm	0.5 mm	09530	62
	1 Drill - 1 Tap	3.0 - 12.0 mm	Tapping sizes	09536	62

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB


Sets of Jobber Length Drills HSS

	No. of Drills	Increments	Range	List-No.	Page
	50	0.1 mm	1.0 - 5.9 mm	09500M50	63
	41	0.1 mm	6.0 - 10.0 mm	09500M41	63
	19	0.5 mm	1.0 - 10.0 mm	09500M19	63
	25	0.5 mm	1.0 - 13.0 mm	09500M25	63
	15	1/32"	1/16" - 1/2"	0950015	63
	21	1/64"	1/16" - 3/8"	0950021	63
	13	1/64"	1/16" - 1/4"	0950013	63
	29	1/64"	1/16" - 1/2"	0950029	63
	19	0.5mm	1.0 - 10.0 mm	09510M19	64
	55	0.5mm + Tap Sizes	1.0-13.0 mm	09902M25	64
	425	0.5mm + Tap Sizes	1.0 - 13.0 mm	09540M29	64

Sets of Jobber Length Drills HSCo

	No. of Drills	Increments	Range	List-No.	Page
	50	0.1 mm	1.0 - 5.9 mm	09501M50	64
	41	0.1 mm	6.0 - 10.0 mm	09501M41	64
	19	0.5 mm	1.0 - 10.0 mm	09501M19	64
	25	0.5 mm	1.0 - 13.0 mm	09501M25	64
	29	1/64"	1/16" - 1/2"	0950129	65
	15	1/32"	1/16" - 1/2"	0950115	65

Sets of Jobber Length Drills HSS - Type Hi-Nox

	No. of Drills	Range	Increments	List-No.	Page
	25	1.0 - 13.0 mm	0.5 mm	09502M25	65
	19	1.0 - 10.0 mm	0.5 mm	09502M19	65
	55	1.0 - 13.0 mm	0.5mm + Tap Sizes	09902M25	65

Sets of Jobber Drills DIN 338, HSS Tri-Quad



No. of Drills	Range	Increments	List-No.	Page
19	1.0 - 10.0 mm	0.5 mm	09503M19	65
25	1.0 - 13.0 mm	0.5 mm	09503M25	65

Sets of Jobber Drills DIN 338, HSS TiN



No. of Drills	Range	Increments	List-No.	Page
19	1.0 - 10.0 mm	0.5 mm	09505M19	66
25	1.0 - 13.0 mm	0.5 mm	09505M25	66
15	1/16" - 1/2"	1/32"	0950515	66

Jobber Drills DIN 338, HSS, Elite Jobber



No. of Drills	Range	Increments	List-No.	Page
19	1.0 - 10.0 mm	0.5 mm	09522M19	66
25	1.0 - 13.0 mm	0.5 mm	09522M25	66
41	0.1 mm	6.0 - 10.0 mm	09522M41	66
50	0.1 mm	1.0 - 5.9 mm	09522M50	66

Jobber Drills DIN 338, Elite Plus Jobber Drill Set



No. of Drills	Range	Increments	List-No.	Page
19	1.0 - 10.0 mm	0.5 mm	09565M19	67
25	1.0 - 13.0 mm	0.5 mm	09565M25	67
15	1/16" - 1/2"	1/32"	0956515	67
55	1.0 - 13.0 mm	0.5mm + Tap Sizes	09965M25	67

Annular Cutters with Weldon Shank, Factory Length HSS, Short Series / Long Series



Description	Standard	Material	Range	Surface	List-No.	Page
Short Series	Factory	HSS	12.0 - 52.0 mm	Black Oxide	49010	68
Long Series	Factory	HSS	12.0 - 52.0 mm	Black Oxide	49020	68

Application Recommendations for Twist Drills HSS, HSCo

Application

- Excellent
- ⊙ Suitable
- ≈ For unstable rough duty application. (Hand held, flimsy parts, poor jiggling, machine vibrates)
- ◆ Wear resistant (A coating will resist wear or P4 on request)
- ⊕ Thin material application (Use a split point, Hi-Nox or Rivbit stub drill)
- ⊛ Drill stationary. Part revolving. (Use worm pattern or slow spiral on short holes)
- ♪ NOTE: Only if no alternative available

List Number **01000** **01030**










Feed Column (mm/rev)						
Feed Letter	Nominal Diameter In mm					
	2.50	4.00	6.30	10.0	12.0	16.0
A	0.025	0.040	0.050	0.080	0.100	0.100
B	0.032	0.050	0.063	0.100	0.110	0.125
C	0.040	0.063	0.080	0.125	0.140	0.160
D	0.050	0.080	0.100	0.160	0.180	0.200
E	0.063	0.100	0.125	0.200	1.230	0.250
F	0.080	0.125	0.160	0.250	0.280	0.315
G	0.100	0.160	0.200	0.315	0.350	0.400
H	0.125	0.200	0.250	0.400	0.450	0.500

		Recommended Depth Of Cut				3 - 5 X D				3- 5 X D			
Main	Material			Hardness		HSS N P1				HSS N P0			
Group	Material Group	ISO, DIN, BS EN	BS and ANSI	N/mm ²	HB	A	B	C	D	A	B	C	D
1 Steel	1.1 Magnetic soft	95MnPb28;St33;St37: RFe80	BS590 230M07Pb;En1A leaded	<400	120	● 34	F	80		⊙ 30	F	79	
	1.2 structural	35S20 St37-2 St50	BS4360-50C 55C En3A En8 En32	<750	220	● 29	E	80		⊙ 27	E	70	
	1.3 Plain Carbon Steel	C10;14NiCr14;18CrNi8;16MnCr5	080M46;080A62;En9En43	<850	250	● 22	D	75		⊙ 20	D	60	
	1.4 Low Alloy Engineering	C35; C45; C60	708M40; En16; 534A99;En31; 4140	<850	250	● 20	C	75		⊙ 18	C	65	
	1.5 Alloy Steel	110WCrV5; S6-5-2 GS-34CrMo4	EN24T;En25T M2; M42; 4340;D2	<1000	300	⊙ 10	B	60					
	1.6 Alloy Steel Heat treated	X210Cr12; 55NiCrMoV6, 32CrMo12	826M40; 830M31; S95; En25w	<1200	350	♪ 7	B	50					
	1.7 Heat treated Steel	CrMo4V; 50Cr4;36CrNiMo4	Hardox 400	<1450	425								
	1.8 Wear resistant steel	Weldox 960, XAR500	Hardox 500	<1650	500								
2 Stainless Steel	2.1 Austenitic	X5CrNi18.10;X6CrNiMoTi17.12.2	316; 304; 321 En58J	<850	250	♪ 7	E	50					
	2.2 Ferritic	XcrCrAl13; X6CrTi;X1CrMoNb18.2	303; S33; En56 303	<1000	300	⊙ 12	D	60					
	2.3 Duplex	X8CrNiMo2.7.5		<1000	300	♪ 9	C	55					
	2.4 Martensitic	X20Cr13; G-X10crmo13; X105CrMo17	420S29			⊙ 12	D	60					
3 Cast Iron	3.1 Soft Grey Iron	GG10 ...GG40 Meehanite GF-20	Bs1452 Grade 350 / 400	<500	140	● 27	E	80					
	3.2 Grey and heat treated Irons	GG20 ...GG40 GTS GTW	Black/Whiteheart Malleable iron	<850	250	● 22	D	75					
	3.3 Spheroidal Graphite	GGG-25...GGG-70	Bs2789Grade699;Bs6681 GradeP70	<750	220	⊙ 19	C	65					
4 Titanium	4.1 Pure Titanium	Ti99.5;Ti99.2		<700	200	⊙ 14	D	65					
	4.2 Titanium Alloy	TiCu2; TiAl6V4; TiAl6Zr5		<1000	300	⊙ 6	A	55					
5 Nickel	5.1 Pure Nickel	Ni99CSi; Monel400; Hastelloy; Inconel600		<850	250	⊙ 10	D	65		⊙ 10	D	65	
	5.2 Nickel Alloys	Nimonic 80/90; Inconel780; NimocastPk24		<1200	350	⊙ 5	A	55		⊙ 5	A	55	
6 & Brasses	6.1 Pure Copper	E-Cu57; Se-Cu; CuMn3	Bs2874-C101.c103, c106	<350	100			0	⊛	33	E	80	
	6.2 Short chip Brass	CuZn40; CuZn39Pb2(Ms58) CuZn40Mn1Pb	Bs2874 -Cz122;CZ128	<700	200				●	38	D		
	6.3 Long Chipping Brass	CuZn20; CuZn37; CuSn6	Bs2874 CZ108, CZ106	<700	200				⊙	34	D		
	6.4 High strength bronze	Ampco18; Ampco20...26	AB1 type	<1350	400				⊙	21	D		
7 Aluminium	7.1 Aluminium	Al99.9;9Mg05	1050A; 6082; LM0; LM1B	<350	100				⊙	35	D	60	
	7.2 Aluminium Cast Si<0.5	AlMg3	LM5; LM10; LM12;LM16;	<500	140				●	30	G	70	
	7.3 Aluminium Cast Si =0.5 -10%	G-AlSi8Cu4	LM2; LM4; LM18; LM21;	>400	120				●	27	F	70	
	7.4 Aluminium Cast Si>10%	G-AlSi10NMg	LM6; LM13; LM20; LM28...30	>400	120				⊙	25	D	65	
8 Plastics	Thermo Plastics	Ulramit; Merkalo; Polystrol; Degola				♪	25	F	60	⊙	25	F	60
	Thermo setting Plastics	akalite, Pertiax; Ferrozell; Alkbanit				⊙	16	E	60	⊙	16	E	60
	Reinforced Plastics	FK; GFK; AFK	Kevlar Printed circuit board			♪	12	D	45	♪	12	D	45

* Please see page 70 for a guide to speeds and feeds.

Application Recommendations for Twist Drills HSS, HSCo

01005	01010	01002	01065	01100	01320	01200	
							
3 - 5 x D	3 - 5 X D	3- 5 X D	3 - 5 X D	3- 5 X D	1½ - 2X D	3 - 5 X D	
HSS N P5	HSS Left-N P0	HSS Elite P1	HSS Elite Plus P5	HSS Cotterpin P1	HSS Hinox P1+	HSS Slow Spiral P0	
● 45 F 82	● 32 F 80	⊙ 34 F 80	● 42 G 85	⊙ 32 F 65	Φ 30 F 78	☼ 27 E 65	
● 40 E 81	● 28 E 80	● 29 E 80	● 38 G 85	≈ 29 E 75	Φ 27 E 78	☼ 25 E	
● 35 D 80	● 21 D 79	● 27 D 79	● 33 E 80	≈ 22 D 78	Φ 21 D 76		
● 29 C 76	● 19 B 75	● 24 C 75	● 28 D 75	≈ 20 C 79			
● 19 B 78	♪ 10 B 55	● 12 B 75	⊙ 18 C 65	≈ 10 B 79			
⊙ 11 B 65	♪ 7 B 50	⊙ 8 B 65	⊙ 10 C 65	≈ 7 B 75			
				♪ 4 B 50			
⊙ 11 E 60	♪ 7 E 50	♪ 7 55 60	⊙ 11 E 56	⊙ 9 E 65	● 9 F 90		
⊙ 20 D 61	♪ 12 D 50	⊙ 12 65	⊙ 20 D 65	≈ 17 D 70	● 17 D 80		
⊙ 15 C 60	♪ 9 C 50	♪ 9 60	⊙ 15 C 65	≈ 12 C 68	● 12 C 70		
⊙ 18 E 61	♪ 12 D 50	⊙ 12 65	⊙ 18 E 65	≈ 14 D 70	● 14 D 80		
● 40 F 85	⊙ 27 E 80	● 27 E	● 37 F 86	≈ 30 F 75		☼ 25 E 65	
● 35 D 80	⊙ 22 D 75	● 22 D	● 28 D 81	≈ 22 D 70		☼ 20 D 60	
● 28 C 79	⊙ 19 C 65	⊙ 19 C	⊙ 25 C 80	≈ 20 D 70		☼ 15 C 60	
	⊙ 14 D 65		⊙ 23 D 65	≈ 14 D 70	● 16 E 75		
	♪ 6 A 55		♪ 7 C 50	≈ 7 A 70	⊙ 7 A 65		
	⊙ 10 D 65		⊙ 13 E 65	⊙ 12 D 70	● 12 E 75		
	♪ 5 A 55		♪ 6 C 55	⊙ 6 D 70	⊙ 6 D 65		
⊙ 52 E 75	♪ 33 E 40		● 50 E 80				
● 60 D	⊙ 38 D 45		● 34 G 80			● 40 G 90	
● 52 D	⊙ 34 D 45		⊙ 40 F 65			● 35 E	
⊙ 33 D	⊙ 21 D 45		⊙ 30 E 65			⊙ 20 D	
● 40 G 65	♪ 35 D 45		● 40 G 80				
● 37 G 65	♪ 30 G 45		● 37 G 80				
⊙ 38 F 55	♪ 27 F 45		● 38 F 80				
⊙ 32 E 55	♪ 25 D 45		⊙ 32 E 75				
● 40 F 65	⊙ 30 F 50	♪ 30 F 45	● 32 G 75		⊙ 30 F 65		
◆ 35 E 70	⊙ 16 E 50	⊙ 25 F 65	◆ 35 F 75	⊙ 20 D 55	♪ 16 F	● 30 E 75	
◆ 35 D 70	♪ 12 D 50	♪ 12 D 50	◆ 35 D 75		♪ 14 D	⊙ 15 E 60	
A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	

Application Recommendations for Twist Drills HSS, HSCo

Application

- Excellent
- ⊙ Suitable
- ≈ For unstable rough duty application. (Hand held, flimsy parts, poor jiggling, machine vibrates etc)
- ◆ Wear resistant (A coating will resist wear or P4 on request)
- Φ Thin material application (Use a split point, Hi-Nox or Rivbit stub drill)
- ⊛ Drill stationary. Part revolving. (Use worm pattern or slow spiral on short holes)
- ♪ NOTE: Only if no alternative available

List Number

01300

01111



Feed Column (mm/rev)

Feed Letter	Nominal Diameter In mm					
	2.50	4.00	6.30	10.0	12.0	16.0
A	0.025	0.040	0.050	0.080	0.900	0.100
B	0.032	0.050	0.063	0.100	0.110	0.125
C	0.040	0.063	0.080	0.125	0.140	0.160
D	0.050	0.080	0.100	0.160	0.180	0.200
E	0.063	0.100	0.125	0.200	1.230	0.250
F	0.080	0.125	0.160	0.250	0.280	0.315
G	0.100	0.160	0.200	0.315	0.350	0.400
H	0.125	0.200	0.250	0.400	0.450	0.500

Recommended Depth Of Cut





3 - 5 X D

3- 5 X D


Main Group	Material			Hardness		Recommended Depth Of Cut							
	Material Group	ISO, DIN, BS EN	BS and ANSI	N/mm ²	HB	HSS Quick Spl P0							
1 Steel	1.1 Magnetic soft	95MnPb28;S133;St37: RFe80	BS590 230M07Pb;En1A leaded	<400	120	⊙	29	E	65	⊙	34	F	70
	1.2 structural	35S20 St37-2 St50	BS4360-50C 55C En3A En8 En32	<750	220	⊙	25	D	60	⊙	30	E	70
	1.3 Plain Carbon Steel	C10;14NiCr14;18CrNi8;16MnCr5	080M46;080A62;En9En43	<850	250					⊙	26	D	77
	1.4 Low Alloy Engineering	C35; C45; C60	708M40; En16; 534A99;En31; 4140	<850	250					●	23	D	80
	1.5 Alloy Steel	110WCrV5; S6-5-2 GS-34CrMo4	EN24T;En25T M2; M42; 4340;D2	<1000	300					●	15	C	80
	1.6 Alloy Steel Heat treated	X210Cr12; 55NiCrMoV6, 32CrMo12	826M40; 830M31; S95; En25w	<1200	350					●	8	C	80
	1.7 Heat treated Steel	CrMo4V; 50Cr4;36CrNiMo4	Hardox 400	<1450	425					⊙	5	B	75
	1.8 Wear resistant steel	Weldox 960, XAR500	Hardox 500	<1650	500								
2 Stainless Steel	2.1 Austenitic	X5CrNi18.10;X6CrNiMoTi17.12.2	316; 304; 321 En58J	<850	250					⊙	11	E	75
	2.2 Ferritic	XcrCrAl13; X6CrTi;X1CrMoNb18.2	303; S33; En56 303	<1000	300					⊙	22	D	70
	2.3 Duplex	X8CrNiMo2.7.5		<1000	300					⊙	15	C	65
	2.4 Martensitic	X20Cr13; G-X10CrMo13; X105CrMo17	420S29							⊙	20	D	70
3 Cast Iron	3.1 Soft Grey Iron	GG10...GG40 Meehanite GF-20	Bs1452 Grade 350 / 400	<500	140					⊙	35	F	65
	3.2 Grey and heat treated Irons	GG20...GG40 GTS GTW	Black/Whiteheart Malleable iron	<850	250					⊙	30	D	70
	3.3 Spheroidal Graphite	GGG-25...GGG-70	Bs2789Grade699;Bs6681 GradeP70	<750	220					⊙	22	C	69
4 Titanium	4.1 Pure Titanium	Ti99.5;Ti99.2		<700	200					●	25	E	80
	4.2 Titanium Alloy	TiCu2; TiAl6V4; TiAl6Zr5		<1000	300					⊙	12	B	70
5 Nickel	5.1 Pure Nickel	Ni99CSi; Monel400; Hastelloy; Inconel600		<850	250					●	14	E	80
	5.2 Nickel Alloys	Nimonic 80/90; Inconel780; NimocastPk24		<1200	350					⊙	6	C	75
6 Copper & Brasses	6.1 Pure Copper	E-Cu57; Se-Cu; CuMn3	Bs2874-C101,c103, c106	<350	100	●	35	D	80				
	6.2 Short chip Brass	CuZn40; CuZn39Pb2(Ms58) CuZn40Mn1Pb	Bs2874 -Cz122;CZ128	<700	200								
	6.3 Long Chipping Brass	CuZn20; CuZn37; CuSn6	Bs2874 CZ108, CZ106	<700	200								
	6.4 High strength bronze	Ampco18; Ampco20...26	AB1 type	<1350	400								
7 Aluminium	7.1 Aluminium	Al99.9;9Mg05	1050A; 6082; LM0; LM1B	<350	100	●	35	E	80				
	7.2 Aluminium Cast Si<0.5	AlMg3	LM5; LM10; LM12;LM16;	<500	140	●	40	F	80				
	7.3 Aluminium Cast Si=0.5 -10%	G-AlSi8Cu4	LM2; LM4; LM18; LM21;	>400	120	●	33	E	80				
	7.4 Aluminium Cast Si>10%	G-AlSi10NMg	LM6; LM13; LM20; LM28...30	>400	120	⊙	18	D	75				
8 Plastics	Thermo Plastics	Ultranit; Merkalo; Polystrol; Degola				●	35	G	75				
	Thermo setting Plastics	akalite, Pertiax; Ferrozell; Alkbanit											
	Reinforced Plastics	FK; GFK; AFK	Kevlar Printed circuit board										

* Please see page 70 for a guide to speeds and feeds.

Application Recommendations for Twist Drills HSS, HSCo

01115	01401	01405	01408				
							
3 - 5 x D	3- 5 X D	3- 5 X D	3 - 5 X D				
HSCo N-HD + P5	HSCo8 SM200 P2	HSCo8 SM200 + P5	HSCo8 SM200 + P8				
⊙ 55 F 70	● 32 G 80	● 55 G 90	⊙ 65 G 85				
⊙ 44 E 70	● 29 G 80	● 44 G 90	● 58 G 89				
⊙ 35 D 77	● 25 F 80	● 35 F 85	● 45 F 86				
● 33 D 82	● 23 E 80	● 34 E 85	● 48 E 86				
● 22 C 81	● 16 D 75	● 20 D 80	● 28 D 81				
● 13 C 80	● 8 B 74	● 12 B 75	● 14 B 76				
⊙ 7 B 75	⊙ 4 A 65	⊙ 6 A 66	● 6 A 67				
	● 15 F 90	● 16 F 90	● 16 G 90				
	● 18 D 80	● 24 D 80	● 35 E 78				
	● 25 D 75	● 17 D 75	● 22 E 75				
	● 16 D 80	● 18 D 80	● 31 E 78				
● 42 F 85	⊙ 34 F 80	● 42 F 85	◆ 48 F 90				
● 37 D 80	⊙ 28 D 80	● 34 E 85	◆ 38 E 90				
● 30 C 79	⊙ 22 C 80	● 24 C 85	◆ 28 D 90				
● 32 E 80	● 22 E 85	● 28 E 80	● 32 E 80				
⊙ 16 B	⊙ 8 B 79	⊙ 10 B 75	⊙ 11 B 75				
● 19 E 80	● 11 E 80	● 15 E 80	● 20 E 80				
⊙ 10 C 75	⊙ 4 C 75	⊙ 7 C 75	⊙ 8 C 75				
	● 38 G 80	● 50 D 80	● 50 D 80				
	☼ 38 G 75	☼ 45 F 75	☼ 45 D 75				
	☼ 34 E	☼ 48 D	☼ 48 E				
	⊙ 20 D	⊙ 27 D	⊙ 35 E				
	● 40 F 80	● 60 G 75	● 65 G 75				
	● 35 F 80	● 45 G 75	● 50 G 75				
	● 33 E 80	● 38 F 75	● 40 F 80				
	⊙ 18 E 65	⊙ 32 F 75	◆ 40 F 80				
	⊙ 55 E 70	⊙ 70 E 75	● 80 E 76				
A B C D	A B C D	A B C D	A B C D				

Twist Drills with Straight Shank HSS & HSCo8, Stub Length, DIN 1897

List-No.	02000	02005	02401	02405	02408			
Product Group	02	35	02	36	36			
								
Type	Std. Helix	Std. Helix	SM 200	SM 200	SM 200			
Material	HSS	HSS	HSCo-8	HSCo-8	HSCo-8			
Cutting Direction	Right	Right	Right	Right	Right			
Surface	P1	P5	P0	P5	P8			
Point Geometry	118° Form C > 14.0 Form A	118° Form C > 14.0 Form A	135° Form C	135° Form C	135° Form C			
Helix Angle	Normal	Normal	High	High	High			
Web Thickness	Normal	Normal	Strengthened	Strengthened	Strengthened			
Web Taper	Normal	Normal	Reduced	Reduced	Reduced			
Flute Form	Normal	Normal	Parabolic	Parabolic	Parabolic			
Tolerance of Dia.	h8	h8	h8	h8	h8			
Tolerance of Shank	f11	f11	f11	f11	f11			
Packing Unit	≤ d 6.35 · 10 pc > d 6.35 - d 13 · 5 pc > d 13 · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc			
d mm	d ins	l1 mm	l2 mm	Availability	Availability	Availability	Availability	Availability
1.00		26	6	•				
1.10		28	7	•				
1.191	3/64	30	8	•				
1.20		30	8	•				
1.30		30	8	•				
1.40		32	9	•				
1.50		32	9	•				
1.588	1/16	34	10	•				
1.60		34	10	•				
1.70		34	10	•				
1.80		36	11	•				
1.90		36	11	•				
1.984	5/64	38	12	•				
2.00		38	12	•				
2.10		38	12	•				
2.20		40	13	•				
2.30		40	13	•				
2.381	3/32	43	14	•				
2.40		43	14	•				
2.45		43	14	•				
2.50		43	14	•				
2.55		43	14	•				
2.60		43	14	•				
2.70		46	16	•				
2.778	7/64	46	16	•				
2.80		46	16	•				
2.90		46	16	•				
3.00		46	16	•	•	•	•	•
3.10		49	18	•				
3.175	1/8	49	18	•				
3.20		49	18	•				

Twist Drills with Straight Shank HSS & HSCo8, Stub Length, DIN 1897

List-No.				02000	02005	02401	02405	02408
Product Group				02	35	02	36	36
d mm	d ins	l1 mm	l2 mm	Availability	Availability	Availability	Availability	Availability
3.25		49	18	•				
3.30		49	18	•		•	•	•
3.40		52	20	•		•		
3.50		52	20	•	•	•	•	•
3.572	9/64	52	20	•				
3.60		52	20	•		•		
3.70		52	20	•	•	•		
3.80		55	22	•	•	•		
3.90		55	22	•		•		
3.969	5/32	55	22	•			•	•
4.00		55	22	•	•	•	•	•
4.10		55	22	•		•		
4.20		55	22	•	•	•	•	•
4.25		55	22	•				
4.30		58	24	•		•		
4.366	11/64	58	24	•				
4.40		58	24	•		•		
4.50		58	24	•	•	•	•	•
4.60		58	24	•		•		
4.70		58	24	•		•		
4.763	3/16	62	26	•			•	•
4.80		62	26	•		•		
4.90		62	26	•		•		
5.00		62	26	•	•	•	•	•
5.10		62	26	•		•		
5.159	13/64	62	26	•				
5.20		62	26	•		•		
5.30		62	26	•		•		
5.40		66	28	•		•		
5.50		66	28	•	•	•	•	•
5.556	7/32	66	28	•			•	•
5.60		66	28	•		•		
5.70		66	28	•		•		
5.80		66	28	•		•		
5.90		66	28	•		•		
5.953	15/64	66	28	•				
6.00		66	28	•	•	•	•	•
6.10		70	31	•		•		
6.20		70	31	•		•		
6.30		70	31	•		•		
6.350	1/4	70	31	•			•	•
6.40		70	31	•		•		
6.50		70	31	•	•	•	•	•
6.60		70	31	•		•		
6.70		70	31	•		•		
6.747	17/64	74	34	•				
6.80		74	34	•	•	•	•	•
6.90		74	34	•		•		
7.00		74	34	•	•	•	•	•
7.10		74	34	•		•		
7.144	9/32	74	34	•			•	•
7.20		74	34	•		•		
7.30		74	34	•		•		
7.40		74	34	•		•		
7.50		74	34	•	•	•	•	•
7.541	19/64	79	37	•				
7.60		79	37	•		•		
7.70		79	37	•		•		
7.80		79	37	•		•		
7.90		79	37	•		•		
7.938	5/16	79	37	•			•	•
8.00		79	37	•	•	•	•	•
8.10		79	37	•		•		

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills with Straight Shank HSS & HSCo8, Stub Length, DIN 1897

List-No.				02000	02005	02401	02405	02408
Product Group				02	35	02	36	36
d	d	l1	l2	Availability	Availability	Availability	Availability	Availability
mm	ins	mm	mm					
8.20		79	37	•		•		
8.30		79	37	•		•		
8.334	21/64	79	37	•				
8.40		79	37	•		•		
8.50		79	37	•	•	•	•	•
8.60		84	40	•		•		
8.70		84	40	•		•		
8.731	11/32	84	40	•			•	•
8.80		84	40	•		•		
8.90		84	40	•		•		
9.00		84	40	•	•	•	•	•
9.10		84	40	•		•		
9.128	23/64	84	40	•				
9.20		84	40	•		•		
9.30		84	40	•		•		
9.40		84	40	•		•		
9.50		84	40	•	•	•	•	•
9.525	3/8	89	43	•			•	•
9.60		89	43	•		•		
9.70		89	43	•		•		
9.80		89	43	•		•		
9.90		89	43	•		•		
9.922	25/64	89	43	•				
10.00		89	43	•	•	•	•	•
10.10		89	43	•				
10.20		89	43	•	•	•	•	•
10.30		89	43	•				
10.319	13/32	89	43	•			•	•
10.40		89	43	•				
10.50		89	43	•	•	•	•	•
10.60		89	43	•				
10.70		95	47	•				
10.716	27/64	95	47	•				
10.80		95	47	•				
10.90		95	47	•				
11.00		95	47	•	•	•	•	•
11.10		95	47	•				
11.113	7/16	95	47	•			•	•
11.20		95	47	•				
11.30		95	47	•				
11.40		95	47	•				
11.50		95	47	•	•	•	•	•
11.509	29/64	95	47	•				
11.60		95	47	•				
11.70		95	47	•				
11.80		95	47	•				
11.90		102	51	•				
11.906	15/32	102	51	•			•	•
12.00		102	51	•	•	•	•	•
12.10		102	51	•				
12.20		102	51	•				
12.30		102	51	•				
12.303	31/64	102	51	•				
12.40		102	51	•				
12.50		102	51	•	•	•	•	•
12.60		102	51	•				
12.700	1/2	102	51	•			•	•
12.80		102	51	•				
12.90		102	51	•				
13.00		102	51	•	•	•	•	•
13.494	17/32	107	54	•				
13.50		107	54	•	•			
14.00		107	54	•	•			

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills with Straight Shank HSCo , Stub Length, DIN 1897

List-No.	02111	02115			
Product Group	01	36			
Type	Heavy Duty	Heavy Duty			
Material	HSCo	HSCo			
Cutting Direction	Right	Right			
Surface	P2	P5			
Point Geometry	135° Form C	135° Form C			
Helix Angle	Normal	Normal			
Web Thickness	Strengthened	Strengthened			
Web Taper	Strengthened	Strengthened			
Flute Form	Normal	Normal			
Tolerance of Dia.	h8	h8			
Tolerance of Shank	f11	f11			
Packing Unit	<d 13 · 5 pc > d 13 · 1 pc	All Diam. · 1 pc			
d	d	l1	l2	Availability	Availability
mm	ins	mm	mm		
1.00		26	6	•	•
1.10		28	7	•	•
1.20		30	8	•	•
1.30		30	8	•	•
1.40		32	9	•	•
1.50		32	9	•	•
1.588	1/16	34	10	•	•
1.60		34	10	•	•
1.70		34	10	•	•
1.80		36	11	•	•
1.90		36	11	•	•
2.00		38	12	•	•
2.10		38	12	•	•
2.20		40	13	•	•
2.30		40	13	•	•
2.381	3/32	43	14	•	•
2.40		43	14	•	•
2.50		43	14	•	•
2.60		43	14	•	•
2.70		46	16	•	•
2.80		46	16	•	•
2.90		46	16	•	•
3.00		46	16	•	•
3.10		49	18	•	•
3.175	1/8	49	18	•	•
3.20		49	18	•	•
3.30		49	18	•	•
3.40		52	20	•	•
3.50		52	20	•	•
3.60		52	20	•	•
3.70		52	20	•	•

Twist Drills with Straight Shank HSCo , Stub Length, DIN 1897

List-No.				02111	02115		
Product Group				01	36		
d	d	l1	l2	Availability	Availability		
mm	ins	mm	mm				
3.80		55	22	•	•		
3.90		55	22	•	•		
3.969	5/32	55	22	•	•		
4.00		55	22	•	•		
4.10		55	22	•	•		
4.20		55	22	•	•		
4.30		58	24	•	•		
4.40		58	24	•	•		
4.50		58	24	•	•		
4.60		58	24	•	•		
4.70		58	24	•	•		
4.763	3/16	62	26	•	•		
4.80		62	26	•	•		
4.90		62	26	•	•		
5.00		62	26	•	•		
5.10		62	26	•	•		
5.20		62	26	•	•		
5.30		62	26	•	•		
5.40		66	28	•	•		
5.50		66	28	•	•		
5.556	7/32	66	28	•	•		
5.60		66	28	•	•		
5.70		66	28	•	•		
5.80		66	28	•	•		
5.90		66	28	•	•		
6.00		66	28	•	•		
6.10		70	31	•	•		
6.20		70	31	•	•		
6.30		70	31	•	•		
6.350	1/4	70	31	•	•		
6.40		70	31	•	•		
6.50		70	31	•	•		
6.60		70	31	•	•		
6.70		70	31	•	•		
6.80		74	34	•	•		
6.90		74	34	•	•		
7.00		74	34	•	•		
7.10		74	34	•	•		
7.144	9/32	74	34	•	•		
7.20		74	34	•	•		
7.30		74	34	•	•		
7.40		74	34	•	•		
7.50		74	34	•	•		
7.60		79	37	•	•		
7.70		79	37	•	•		
7.80		79	37	•	•		
7.90		79	37	•	•		
7.938	5/16	79	37	•	•		
8.00		79	37	•	•		
8.10		79	37	•	•		
8.20		79	37	•	•		
8.30		79	37	•	•		
8.40		79	37	•	•		
8.50		79	37	•	•		
8.60		84	40	•	•		
8.70		84	40	•	•		
8.731	11/32	84	40	•	•		
8.80		84	40	•	•		
8.90		84	40	•	•		
9.00		84	40	•	•		
9.10		84	40	•	•		
9.20		84	40	•	•		
9.30		84	40	•	•		

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB


Sheet Drills, HSS, Factory Standard

List-No.	08150		08100			
Product Group	02		02			
Type	Std. Helix		Std. Helix			
Material	HSS		HSS			
Cutting Direction	Right		Right			
Surface	P1		P1			
Point Geometry	135° Form C		135° Form C			
Helix Angle	Normal		Normal			
Web Thickness	Normal		Normal			
Web Taper	Normal		Normal			
Flute Form	Normal		Normal			
Tolerance of Dia.	h8		h8			
Tolerance of Shank	f11		f11			
Packing Unit	$\leq d \cdot 6.35 \cdot 10 \text{ pc}$ $> d \cdot 6.35 - d \cdot 13 \cdot 5 \text{ pc}$ $> d \cdot 13 \cdot 1 \text{ pc}$		$\leq d \cdot 6.35 \cdot 10 \text{ pc}$ $> d \cdot 6.35 - d \cdot 13 \cdot 5 \text{ pc}$ $> d \cdot 13 \cdot 1 \text{ pc}$			
	d	d	l1	l2		
	mm	ins	mm	mm		
	Availability					
2.00			38	9	•	
2.381	3/32		43	10	•	•
2.50			43	10	•	
3.00			46	11	•	•
3.10			49	12	•	
3.175	1/8		49	12	•	•
3.20			49	12	•	•
3.25			49	12	•	
3.30			49	12	•	•
3.50			52	14	•	•
3.969	5/32		55	14	•	•
4.00			55	14	•	•
4.10			55	14	•	•
4.20			55	14	•	•
4.50			58	16	•	
4.763	3/16		62	17.5	•	•
4.90			62	17.5	•	•
5.00			62	17.5	•	•
5.10			62	17.5	•	
5.20			62	17.5	•	
5.50			66	19	•	•
5.556	7/32		66	19	•	
6.00			66	19	•	•
6.20			70	21	•	
6.350	1/4		70	21	•	•
6.50			70	21	•	
6.80			74	23.5	•	
7.00			74	23.5	•	
7.144	9/32		74	23.5	•	
8.00			79	25	•	
9.00			84	25	•	
10.00			89	28	•	

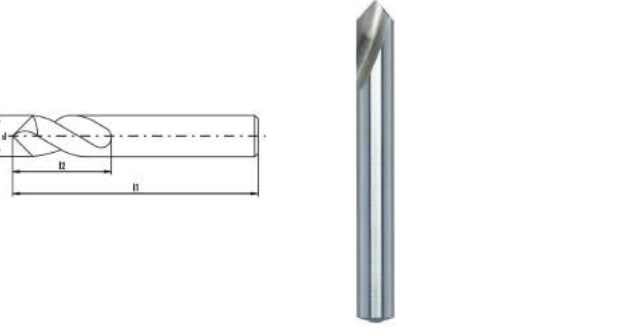
Panel Drills, HSS, Factory Standard

List-No.	08300				
Product Group	02				
Type	Std. Helix				
Material	HSS				
Cutting Direction	Right				
Surface	P1				
Point Geometry	118°				
Helix Angle	Normal				
Web Thickness	Normal				
Web Taper	Normal				
Flute Form	Normal				
Tolerance of Dia.	h8				
Tolerance of Shank	f11				
Packing Unit	$\leq d \cdot 6.35 \cdot 10 \text{ pc}$ $> d \cdot 6.35 - d \cdot 13 \cdot 5 \text{ pc}$ $> d \cdot 13 \cdot 1 \text{ pc}$				
	d	d	l1	l2	
	mm	ins	mm	mm	
	Availability				
		3/32	43	10	•
		1/8	49	12	•
		5/32	55	14	•
		3/16	62	17.5	•
		7/32	66	19	•
		1/4	70	21	•
		5/16	79	25	•

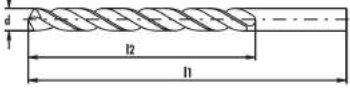




Welding Point Drills with Straight Shank HSCo Factory Standard

List-No.	02181		
Product Group	01		
			
Type	Std. Helix		
Material	HSCo		
Cutting Direction	Right		
Surface	P2		
Point Geometry	180° Form E		
Helix Angle	Normal		
Web Thickness	Normal		
Web Taper	Normal		
Flute Form	Normal		
Tolerance of Dia.	h8		
Tolerance of Shank	f11		
Packing Unit	All Diam. · 1 pc		
d	l1	l2	Availability
mm	mm	mm	
6.00	66	28	•
8.00	79	37	•
10.00	89	43	•

NC-Spotting Drills with Straight Shank HSCo Stub Length, Factory Standard

List-No.	08050		
Product Group	02		
			
Type	Std. Helix		
Material	HSCo		
Cutting Direction	Right		
Surface	P0		
Point Geometry	90°		
Helix Angle	Low		
Web Thickness	Normal		
Web Taper	Strengthened		
Flute Form	Normal		
Tolerance of Dia.	h8		
Tolerance of Shank	f11		
Packing Unit	All Diam. · 1 pc		
d	l1	l2	Availability
mm	mm	mm	
3.00	46	12	•
4.00	55	12	•
5.00	62	14	•
6.00	66	16	•
8.00	79	21	•
10.00	89	25	•
12.00	102	30	•
16.00	115	37	•
20.00	131	45	•

Twist Drills with Straight Shank, Jobber Length HSS, DIN 338

List-No.	01030	01000	01100	01005	
Product Group	00	00	02	35	
					
					
Type	Std. Helix	Std. Helix	Cotter-Pin	Std. Helix	
Material	HSS	HSS	HSS	HSS	
Cutting Direction	Right	Right	Right	Right	
Surface	P0	P1	P1	P5	
Point Geometry	118° > 14.0 Form A	118° > 14.0 Form A	135° Form C	118° Form C	
Helix Angle	Normal	Normal	Normal	Normal	
Web Thickness	Normal	Normal	Dual, Strengthened	Normal	
Web Taper	Normal	Normal	Dual	Normal	
Flute Form	Normal	Normal	Normal	Normal	
Tolerance of Dia.	h8	h8	h8	h8	
Tolerance of Shank	f11	f11	f11	f11	
Packing Unit	≤ d 8.50 · 10 pc > d 8.50 - d 13 · 5 pc > d 13 · 1 pc	≤ d 8.50 · 10 pc > d 8.50 - d 13 · 5 pc > d 13 · 1 pc	≤ d 8.50 · 10 pc > d 8.50 - d 13 · 5 pc > d 13 · 1 pc	All Diam. · 1 pc	
d mm	d ins	l1 mm	l2 mm	Availability	Availability
0.30		19	3	•	•
0.35		19	4	•	•
0.397	1/64	20	5	•	•
0.40		20	5	•	•
0.45		20	5	•	•
0.50		22	6	•	•
0.55		24	7	•	•
0.60		24	7	•	•
0.65		26	8	•	•
0.70		28	9	•	•
0.75		28	9	•	•
0.794	1/32	30	10	•	•
0.80		30	10	•	•
0.85		30	10	•	•
0.90		32	11	•	•
0.95		32	11	•	•
1.00		34	12	•	•
1.05		34	12	•	•
1.10		36	14	•	•
1.15		36	14	•	•
1.191	3/64	38	16	•	•
1.20		38	16	•	•
1.25		38	16	•	•
1.30		38	16	•	•
1.35		40	18	•	•
1.40		40	18	•	•
1.45		40	18	•	•
1.50		40	18	•	•
1.55		43	20	•	•
1.588	1/16	43	20	•	•
1.60		43	20	•	•

Twist Drills with Straight Shank, Jobber Length HSS, DIN 338

List-No.				01030	01000	01100	01005
Product Group				00	00	02	35
d mm	d ins	l1 mm	l2 mm	Availability	Availability	Availability	Availability
1.65		43	20	•	•		
1.70		43	20	•	•	•	•
1.75		46	22	•	•		
1.80		46	22	•	•	•	•
1.85		46	22	•	•		
1.90		46	22	•	•	•	•
1.95		49	24	•	•		
1.984	5/64	49	24	•	•	•	
2.00		49	24	•	•	•	•
2.05		49	24	•	•		
2.10		49	24	•	•	•	•
2.15		53	27	•	•		
2.20		53	27	•	•	•	•
2.25		53	27	•	•		
2.30		53	27	•	•	•	•
2.35		53	27	•	•		
2.381	3/32	57	30	•	•	•	•
2.40		57	30	•	•	•	•
2.45		57	30	•	•		
2.50		57	30	•	•	•	•
2.55		57	30	•	•		
2.60		57	30	•	•	•	•
2.65		57	30	•	•		
2.70		61	33	•	•	•	•
2.75		61	33	•	•		
2.778	7/64	61	33	•	•	•	
2.80		61	33	•	•	•	•
2.85		61	33	•	•		
2.90		61	33	•	•	•	•
2.95		61	33	•	•		
3.00		61	33	•	•	•	•
3.05		65	36	•	•		
3.10		65	36	•	•	•	•
3.15		65	36	•	•		
3.175	1/8	65	36	•	•	•	•
3.20		65	36	•	•	•	•
3.25		65	36	•	•		
3.30		65	36	•	•	•	•
3.35		65	36	•	•		
3.40		70	39	•	•	•	•
3.45		70	39	•	•		
3.50		70	39	•	•	•	•
3.55		70	39	•	•		
3.572	9/64	70	39	•	•	•	
3.60		70	39	•	•	•	•
3.65		70	39	•	•		
3.70		70	39	•	•	•	•
3.75		70	39	•	•		
3.80		75	43	•	•	•	•
3.85		75	43	•	•		
3.90		75	43	•	•	•	•
3.95		75	43	•	•		
3.969	5/32	75	43	•	•	•	•
4.00		75	43	•	•	•	•
4.05		75	43	•	•		
4.10		75	43	•	•	•	•
4.15		75	43	•	•		
4.20		75	43	•	•	•	•
4.25		75	43	•	•		
4.30		80	47	•	•	•	•
4.35		80	47	•	•		
4.366	11/64	80	47	•	•	•	
4.40		80	47	•	•	•	•

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills with Straight Shank, Jobber Length HSS, DIN 338

List-No.				01030	01000	01100	01005	
Product Group				00	00	02	35	
d	d	l1	l2	Availability	Availability	Availability	Availability	
mm	ins	mm	mm					
4.45		80	47	•	•			
4.50		80	47	•	•		•	
4.55		80	47	•	•			
4.60		80	47	•	•		•	
4.65		80	47	•	•			
4.70		80	47	•	•		•	
4.75		80	47	•	•			
4.763	3/16	86	52	•	•		•	
4.80		86	52	•	•		•	
4.85		86	52	•	•			
4.90		86	52	•	•		•	
4.95		86	52	•	•			
5.00		86	52	•	•		•	
5.10		86	52	•	•		•	
5.159	13/64	86	52	•	•			
5.20		86	52	•	•		•	
5.25		86	52	•	•			
5.30		86	52	•	•		•	
5.40		93	57	•	•		•	
5.50		93	57	•	•		•	
5.556	7/32	93	57	•	•		•	
5.60		93	57	•	•		•	
5.70		93	57	•	•		•	
5.75		93	57	•	•			
5.80		93	57	•	•		•	
5.90		93	57	•	•		•	
5.953	15/64	93	57	•	•		•	
6.00		93	57	•	•		•	
6.10		101	63	•	•		•	
6.20		101	63	•	•		•	
6.25		101	63	•	•			
6.30		101	63	•	•		•	
6.350	1/4	101	63	•	•		•	
6.40		101	63	•	•		•	
6.50		101	63	•	•		•	
6.60		101	63	•	•		•	
6.70		101	63	•	•		•	
6.747	17/64	109	69	•	•		•	
6.75		109	69	•	•			
6.80		109	69	•	•		•	
6.90		109	69	•	•		•	
7.00		109	69	•	•		•	
7.10		109	69	•	•		•	
7.144	9/32	109	69	•	•		•	
7.20		109	69	•	•		•	
7.25		109	69	•	•			
7.30		109	69	•	•		•	
7.40		109	69	•	•		•	
7.50		109	69	•	•		•	
7.541	19/64	117	75	•	•		•	
7.60		117	75	•	•		•	
7.70		117	75	•	•		•	
7.75		117	75	•	•			
7.80		117	75	•	•		•	
7.90		117	75	•	•		•	
7.938	5/16	117	75	•	•		•	
8.00		117	75	•	•		•	
8.10		117	75	•	•		•	
8.20		117	75	•	•		•	
8.25		117	75	•	•			
8.30		117	75	•	•		•	
8.334	21/64	117	75	•	•		•	
8.40		117	75	•	•		•	

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills with Straight Shank, Jobber Length HSS, DIN 338

List-No.				01030	01000	01100	01005	
Product Group				00	00	02	35	
d	d	l1	l2	Availability	Availability	Availability	Availability	
mm	ins	mm	mm					
8.50		117	75	•	•	•	•	
8.60		125	81	•	•	•	•	
8.70		125	81	•	•	•	•	
8.731	11/32	125	81	•	•	•	•	
8.75		125	81	•	•	•	•	
8.80		125	81	•	•	•	•	
8.90		125	81	•	•	•	•	
9.00		125	81	•	•	•	•	
9.10		125	81	•	•	•	•	
9.128	23/64	125	81	•	•	•	•	
9.20		125	81	•	•	•	•	
9.25		125	81	•	•	•	•	
9.30		125	81	•	•	•	•	
9.40		125	81	•	•	•	•	
9.50		125	81	•	•	•	•	
9.525	3/8	133	87	•	•	•	•	
9.60		133	87	•	•	•	•	
9.70		133	87	•	•	•	•	
9.75		133	87	•	•	•	•	
9.80		133	87	•	•	•	•	
9.90		133	87	•	•	•	•	
9.922	25/64	133	87	•	•	•	•	
10.00		133	87	•	•	•	•	
10.10		133	87	•	•	•	•	
10.20		133	87	•	•	•	•	
10.25		133	87	•	•	•	•	
10.30		133	87	•	•	•	•	
10.319	13/32	133	87	•	•	•	•	
10.40		133	87	•	•	•	•	
10.50		133	87	•	•	•	•	
10.60		133	87	•	•	•	•	
10.70		142	94	•	•	•	•	
10.716	27/64	142	94	•	•	•	•	
10.75		142	94	•	•	•	•	
10.80		142	94	•	•	•	•	
10.90		142	94	•	•	•	•	
11.00		142	94	•	•	•	•	
11.10		142	94	•	•	•	•	
11.113	7/16	142	94	•	•	•	•	
11.20		142	94	•	•	•	•	
11.25		142	94	•	•	•	•	
11.30		142	94	•	•	•	•	
11.40		142	94	•	•	•	•	
11.50		142	94	•	•	•	•	
11.509	29/64	142	94	•	•	•	•	
11.60		142	94	•	•	•	•	
11.70		142	94	•	•	•	•	
11.75		142	94	•	•	•	•	
11.80		142	94	•	•	•	•	
11.90		151	101	•	•	•	•	
11.906	15/32	151	101	•	•	•	•	
12.00		151	101	•	•	•	•	
12.10		151	101	•	•	•	•	
12.20		151	101	•	•	•	•	
12.25		151	101	•	•	•	•	
12.30		151	101	•	•	•	•	
12.303	31/64	151	101	•	•	•	•	
12.40		151	101	•	•	•	•	
12.50		151	101	•	•	•	•	
12.60		151	101	•	•	•	•	
12.700	1/2	151	101	•	•	•	•	
12.75		151	101	•	•	•	•	
12.80		151	101	•	•	•	•	

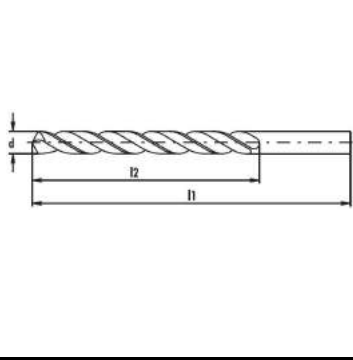
P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills with Straight Shank, Number Sizes, Jobber Length HSS, DIN 338

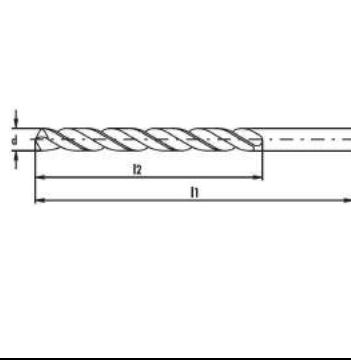
List-No.	01020			
Product Group	01			
Type	Std. Helix			
Material	HSS			
Cutting Direction	Right			
Surface	P1			
Point Geometry	118° > 14.0 Form A			
Helix Angle	Normal			
Web Thickness	Normal			
Web Taper	Normal			
Flute Form	Normal			
Tolerance of Dia.	h8			
Tolerance of Shank	f11			
Packing Unit	≤ d 8.5 10 pc > d 8.50 - d 13 · 5 pc > d 13 · 1 pc			
d	d	l1	l2	Availability
No	ins	mm	mm	
60		34	12	•
59		34	12	•
58		34	12	•
57		34	12	•
56		36	14	•
55		38	16	•
54		40	18	•
53		40	18	•
52		43	20	•
51		43	20	•
50		46	22	•
49		46	22	•
48		49	24	•
47		49	24	•
46		49	24	•
45		49	24	•
44		53	27	•
43		53	27	•
42		57	30	•
41		57	30	•
40		57	30	•
39		57	30	•
38		57	30	•
37		57	30	•
36		61	33	•
35		61	33	•
34		61	33	•
33		61	33	•
32		61	33	•
31		61	33	•
30		65	36	•
29		70	39	•
28		70	39	•
27		70	39	•

List-No.	01020			
Product Group	01			
d	d	l1	l2	Availability
mm	ins	mm	mm	
26		70	39	•
25		70	39	•
24		75	43	•
23		75	43	•
22		75	43	•
21		75	43	•
20		75	43	•
19		75	43	•
18		80	47	•
17		80	47	•
16		80	47	•
15		80	47	•
14		80	47	•
13		80	47	•
12		86	52	•
11		86	52	•
10		86	52	•
9		86	52	•
8		86	52	•
7		86	52	•
6		86	52	•
5		86	52	•
4		86	52	•
3		93	57	•
2		93	57	•
1		93	57	•


Twist Drills with Straight Shank, Letter Sizes Jobber Length HSS, DIN 338

List-No.	01040			
Product Group	01			
				
Type	Std. Helix			
Material	HSS			
Cutting Direction	Right			
Surface	P1			
Point Geometry	118° > 14.0 Form A			
Helix Angle	Normal			
Web Thickness	Normal			
Web Taper	Normal			
Flute Form	Normal			
Tolerance of Dia.	h8			
Tolerance of Shank	f11			
Packing Unit	$\leq d 8.50 \cdot 10$ pc $> d 8.50 - d 13 \cdot 5$ pc $> d 13 \cdot 1$ pc			
d	d	l1	l2	Availability
Letter	ins	mm	mm	
A		93	57	•
B		93	57	•
C		101	63	•
D		101	63	•
E		101	63	•
F		101	63	•
G		101	63	•
H		109	69	•
I		109	69	•
J		109	69	•
K		109	69	•
L		109	69	•
M		109	69	•
N		117	75	•
O		117	75	•
P		117	75	•
Q		117	75	•
R		125	81	•
S		125	81	•
T		125	81	•
U		133	87	•
V		133	87	•
W		133	87	•
X		133	87	•
Y		133	87	•
Z		133	87	•

Tri Quad Drills, Jobber Length, HSS, DIN 338

List-No.	01150			
Product Group	01			
				
Type	Std. Helix			
Material	HSS			
Cutting Direction	Right			
Surface	P1 / P2			
Point Geometry	135° Form C			
Flute Form	Factory Standard			
Shank Type	< d 5.00 Straight - > d 5.00 Tri			
Tolerance.	h8			
Packing Unit	$\leq d 8.50 \cdot 10$ pc $> d 8.50 - d 13 \cdot 5$ pc			
d	d	l1	l2	Availability
mm	ins	mm	mm	
1.00		34	12	•
1.50		40	18	•
1.588	1/16	43	20	•
2.00		49	24	•
2.381	3/32	57	30	•
2.50		57	30	•
3.00		61	33	•
3.175	1/8	65	36	•
3.50		70	39	•
3.969	5/32	75	45	•
4.00		75	45	•
4.50		80	48	•
4.763	3/16	86	51	•
5.00		86	54	•
5.50		93	58	•
5.556	7/32	93	58	•
6.00		93	61	•
6.350	1/4	101	51	•
6.50		101	54	•
7.00		109	58	•
7.144	9/32	109	58	•
7.50		109	58	•
7.938	5/16	117	64	•
8.00		117	64	•
8.50		117	67	•
8.731	11/32	125	67	•
9.00		125	69	•
9.50		125	69	•
9.525	3/8	133	69	•
10.00		133	69	•
10.319	13/32	133	70	•
10.50		133	70	•
11.00		142	73	•
11.113	7/16	142	73	•
11.50		142	77	•
11.906	15/32	151	80	•
12.00		151	80	•
12.50		151	86	•
12.70	1/2	151	86	•
13.00		151	86	•

Twist Drills with Straight Shank, Jobber Length HSS, DIN 338

List-No.	01001/2 ELITE	01010	01065 ELITE +	01200	01300
Product Group	05	00	05	02	02
					
Type	Elite	Std. Helix	Elite Plus	Low Helix	High Helix
Material	HSS	HSS	HSS	HSS	HSS
Cutting Direction	Right	Left	Right	Right	Right
Surface	P1/P0	P1	P5	P0	P0
Point Geometry	118° Form C	118° > 14.0 Form A	118° > 14.0 Form C	118° > 14.0 Form A	118° > 14.0 Form A
Helix Angle	Normal	Normal	Normal	Low	High
Web Thickness	Strengthened	Normal	Strengthened	Normal	Normal
Web Taper	Normal	Normal	Normal	Normal	Normal
Flute Form	Normal	Normal	Normal	Normal	Normal
Tolerance of Dia.	h8	h8	h8	h8	h8
Tolerance of Shank	f11	f11	f11	f11	f11
Packing Unit	≤ d 8.50 · 10 pc > d 8.50 - d 13 · 5 pc > d 13 · 1 pc	≤ d 8.50 · 10 pc > d 8.50 - d 13 · 5 pc > d 13 · 1 pc	≤ d 8.50 · 10 pc > d 8.50 - d 13 · 5 pc > d 13 · 1 pc	≤ d 8.50 · 10 pc > d 8.50 - d 13 · 5 pc > d 13 · 1 pc	≤ d 8.50 · 10 pc > d 8.50 - d 13 · 5 pc > d 13 · 1 pc
d mm	d ins	l1 mm	l2 mm	Availability	Availability
0.30		19	3		
0.35		19	4		
0.397	1/64	20	5		
0.40		20	5		
0.45		20	5		
0.50		22	6		
0.55		24	7		
0.60		24	7		
0.65		26	8		
0.70		28	9		
0.75		28	9		
0.794	1/32	30	10		
0.80		30	10		
0.85		30	10		
0.90		32	11		
0.95		32	11		
1.00		34	12	•	•
1.05		34	12		
1.10		36	14	•	•
1.15		36	14		
1.191	3/64	38	16		
1.20		38	16	•	•
1.25		38	16		
1.30		38	16	•	•
1.35		40	18		
1.40		40	18	•	•
1.45		40	18		
1.50		40	18	•	•
1.55		43	20		
1.588	1/16	43	20	•	•
1.60		43	20	•	•

Twist Drills with Straight Shank, Jobber Length HSS, DIN 338

List-No.				01001/2 ELITE	01010	01065 ELITE +	01200	01300
Product Group				05	00	05	02	02
d mm	d ins	l1 mm	l2 mm	Availability	Availability	Availability	Availability	Availability
1.65		43	20					
1.70		43	20					
1.75		46	22					
1.80		46	22			•		
1.85		46	22					
1.90		46	22			•		
1.95		49	24					
1.984	5/64	49	24					
2.00		49	24	•		•		
2.05		49	24					
2.10		49	24			•		
2.15		53	27					
2.20		53	27			•		
2.25		53	27					
2.30		53	27			•		
2.35		53	27					
2.381	3/32	57	30			•		
2.40		57	30			•		
2.45		57	30					
2.50		57	30	•		•		
2.55		57	30					
2.60		57	30			•		
2.65		57	30					
2.70		61	33			•		
2.75		61	33					
2.778	7/64	61	33					
2.80		61	33			•		
2.85		61	33					
2.90		61	33			•		
2.95		61	33					
3.00		61	33	•	•	•	•	•
3.05		65	36					
3.10		65	36	•		•		
3.15		65	36					
3.175	1/8	65	36	•	•	•	•	•
3.20		65	36	•		•		
3.25		65	36					
3.30		65	36	•		•		
3.35		65	36					
3.40		70	39	•		•		
3.45		70	39					
3.50		70	39	•	•	•	•	•
3.55		70	39					
3.572	9/64	70	39					
3.60		70	39	•		•		
3.65		70	39					
3.70		70	39	•		•		
3.75		70	39					
3.80		75	43	•		•		
3.85		75	43					
3.90		75	43	•		•		
3.95		75	43					
3.969	5/32	75	43	•		•		
4.00		75	43	•	•	•	•	•
4.05		75	43					
4.10		75	43	•		•		
4.15		75	43					
4.20		75	43	•		•		
4.25		75	43					
4.30		80	47	•		•		
4.35		80	47					
4.366	11/64	80	47					
4.40		80	47	•		•		

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Drilling

Countersinks

Reaming

Threading

Milling

Miscellaneous

Twist Drills with Straight Shank, Jobber Length HSS, DIN 338

List-No.				01001/2 ELITE	01010	01065 ELITE +	01200	01300
Product Group				05	00	05	02	02
d	d	l1	l2	Availability	Availability	Availability	Availability	Availability
mm	ins	mm	mm					
4.45		80	47					
4.50		80	47	.		.		
4.55		80	47					
4.60		80	47	.		.		
4.65		80	47					
4.70		80	47	.		.		
4.75		80	47					
4.763	3/16	86	52	.	.	.	.	.
4.80		86	52	.		.		
4.85		86	52					
4.90		86	52	.		.		
4.95		86	52					
5.00		86	52	.	.	.	.	.
5.10		86	52	.		.		
5.159	13/64	86	52					
5.20		86	52	.		.		
5.25		86	52					
5.30		86	52	.		.		
5.40		93	57	.		.		
5.50		93	57	.	.	.	.	.
5.556	7/32	93	57	.		.		
5.60		93	57	.		.		
5.70		93	57	.		.		
5.75		93	57					
5.80		93	57	.		.		
5.90		93	57	.		.		
5.953	15/64	93	57					
6.00		93	57	.	.	.	.	.
6.10		101	63	.		.		
6.20		101	63	.		.		
6.25		101	63					
6.30		101	63	.		.		
6.350	1/4	101	63	.	.	.	.	.
6.40		101	63	.		.		
6.50		101	63	.	.	.	.	.
6.60		101	63	.		.		
6.70		101	63	.		.		
6.747	17/64	109	69					
6.75		109	69					
6.80		109	69	.		.		
6.90		109	69	.		.		
7.00		109	69	.	.	.	.	.
7.10		109	69	.		.		
7.144	9/32	109	69	.		.		
7.20		109	69	.		.		
7.25		109	69					
7.30		109	69	.		.		
7.40		109	69	.		.		
7.50		109	69	.	.	.	.	.
7.541	19/64	117	75					
7.60		117	75	.		.		
7.70		117	75	.		.		
7.75		117	75					
7.80		117	75	.		.		
7.90		117	75	.		.		
7.938	5/16	117	75	.	.	.	.	.
8.00		117	75	.	.	.	.	.
8.10		117	75	.		.		
8.20		117	75	.		.		
8.25		117	75					
8.30		117	75	.		.		
8.334	21/64	117	75					
8.40		117	75	.		.		

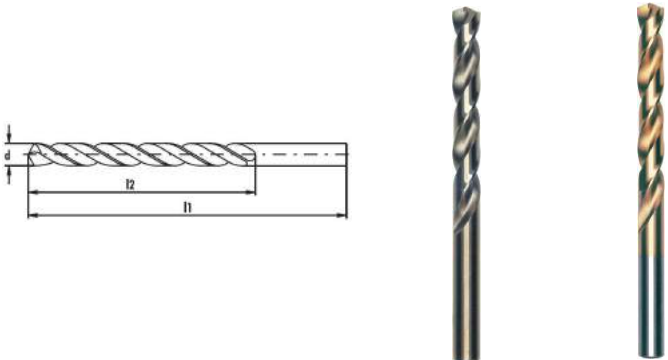
P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN• P9 TiB

Twist Drills with Straight Shank, Jobber Length HSS, DIN 338

List-No.				01001/2 ELITE	01010	01065 ELITE +	01200	01300
Product Group				05	00	05	02	02
d	d	l1	l2	Availability	Availability	Availability	Availability	Availability
mm	ins	mm	mm					
8.50		117	75	.	.	.	.	.
8.60		125	81	.	.	.	.	.
8.70		125	81	.	.	.	.	.
8.731	11/32	125	81	.	.	.	.	.
8.75		125	81	.	.	.	.	.
8.80		125	81	.	.	.	.	.
8.90		125	81	.	.	.	.	.
9.00		125	81	.	.	.	.	.
9.10		125	81	.	.	.	.	.
9.128	23/64	125	81	.	.	.	.	.
9.20		125	81	.	.	.	.	.
9.25		125	81	.	.	.	.	.
9.30		125	81	.	.	.	.	.
9.40		125	81	.	.	.	.	.
9.50		125	81	.	.	.	.	.
9.525	3/8	133	87	.	.	.	.	.
9.60		133	87	.	.	.	.	.
9.70		133	87	.	.	.	.	.
9.75		133	87	.	.	.	.	.
9.80		133	87	.	.	.	.	.
9.90		133	87	.	.	.	.	.
9.922	25/64	133	87	.	.	.	.	.
10.00		133	87	.	.	.	.	.
10.10		133	87	.	.	.	.	.
10.20		133	87	.	.	.	.	.
10.25		133	87	.	.	.	.	.
10.30		133	87	.	.	.	.	.
10.319	13/32	133	87	.	.	.	.	.
10.40		133	87	.	.	.	.	.
10.50		133	87	.	.	.	.	.
10.60		133	87	.	.	.	.	.
10.70		142	94	.	.	.	.	.
10.716	27/64	142	94	.	.	.	.	.
10.75		142	94	.	.	.	.	.
10.80		142	94	.	.	.	.	.
10.90		142	94	.	.	.	.	.
11.00		142	94	.	.	.	.	.
11.10		142	94	.	.	.	.	.
11.113	7/16	142	94	.	.	.	.	.
11.20		142	94	.	.	.	.	.
11.25		142	94	.	.	.	.	.
11.30		142	94	.	.	.	.	.
11.40		142	94	.	.	.	.	.
11.50		142	94	.	.	.	.	.
11.509	29/64	142	94	.	.	.	.	.
11.60		142	94	.	.	.	.	.
11.70		142	94	.	.	.	.	.
11.75		142	94	.	.	.	.	.
11.80		142	94	.	.	.	.	.
11.90		151	101	.	.	.	.	.
11.906	15/32	151	101	.	.	.	.	.
12.00		151	101	.	.	.	.	.
12.10		151	101	.	.	.	.	.
12.20		151	101	.	.	.	.	.
12.25		151	101	.	.	.	.	.
12.30		151	101	.	.	.	.	.
12.303	31/64	151	101	.	.	.	.	.
12.40		151	101	.	.	.	.	.
12.50		151	101	.	.	.	.	.
12.60		151	101	.	.	.	.	.
12.700	1/2	151	101	.	.	.	.	.
12.75		151	101	.	.	.	.	.
12.80		151	101	.	.	.	.	.

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills with Straight Shank HSCo , Jobber Length, DIN 338

List-No.	01111	01115			
Product Group	01	36			
					
Type	Heavy Duty	Heavy Duty			
Material	HSCo	HSCo			
Cutting Direction	Right	Right			
Surface	P2	P5			
Point Geometry	135° Form C	135° Form C			
Helix Angle	Normal	Normal			
Web Thickness	Strengthened	Strengthened			
Web Taper	Strengthened	Strengthened			
Flute Form	Normal	Normal			
Tolerance of Dia.	h8	h8			
Tolerance of Shank	f11	f11			
Packing Unit	All Diam. · 5 pc	All Diam. · 1 pc			
d mm	d ins	l1 mm	l2 mm	Availability	Availability
1.00		34	12	•	•
1.05		34	12		
1.10		36	14	•	
1.15		36	14		
1.191	3/64	38	16	•	
1.20		38	16	•	
1.25		38	16		
1.30		38	16	•	
1.35		40	18		
1.40		40	18	•	
1.45		40	18		
1.50		40	18	•	•
1.55		43	20		
1.588	1/16	43	20	•	•
1.60		43	20	•	
1.65		43	20		
1.70		43	20	•	
1.75		46	22		
1.80		46	22	•	
1.85		46	22		
1.90		46	22	•	
1.95		49	24		
1.984	5/64	49	24	•	
2.00		49	24	•	•
2.05		49	24		
2.10		49	24	•	
2.15		53	27		
2.20		53	27	•	
2.25		53	27		
2.30		53	27	•	
2.35		53	27		
2.381	3/32	57	30	•	•
2.40		57	30	•	

Twist Drills with Straight Shank HSCo, Jobber Length, DIN 338

List-No.				01111	01115			
Product Group				01	36			
d	d	l1	l2	Availability	Availability			
mm	ins	mm	mm					
2.45		57	30					
2.50		57	30	•	•			
2.55		57	30					
2.60		57	30	•				
2.65		57	30					
2.70		61	33	•				
2.75		61	33					
2.778	7/64	61	33	•				
2.80		61	33	•				
2.85		61	33					
2.90		61	33	•				
2.95		61	33					
3.00		61	33	•	•			
3.05		65	36					
3.10		65	36	•				
3.15		65	36					
3.175	1/8	65	36	•	•			
3.20		65	36	•	•			
3.25		65	36					
3.30		65	36	•	•			
3.35		65	36					
3.40		70	39	•				
3.45		70	39					
3.50		70	39	•	•			
3.55		70	39					
3.572	9/64	70	39	•				
3.60		70	39	•				
3.65		70	39					
3.70		70	39	•	•			
3.75		70	39					
3.80		75	43	•				
3.85		75	43					
3.90		75	43	•	•			
3.95		75	43					
3.969	5/32	75	43	•	•			
4.00		75	43	•	•			
4.05		75	43					
4.10		75	43	•	•			
4.15		75	43					
4.20		75	43	•	•			
4.25		75	43					
4.30		80	47	•	•			
4.35		80	47					
4.366	11/64	80	47	•				
4.40		80	47	•				
4.45		80	47					
4.50		80	47	•	•			
4.55		80	47					
4.60		80	47	•				
4.65		80	47					
4.70		80	47	•				
4.75		80	47					
4.763	3/16	86	52	•	•			
4.80		86	52	•				
4.85		86	52					
4.90		86	52	•	•			
4.95		86	52					
5.00		86	52	•	•			
5.10		86	52	•				
5.159	13/64	86	52	•				
5.20		86	52	•	•			
5.25		86	52					
5.30		86	52	•				

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Drilling

Countersinks

Reaming

Threading

Milling

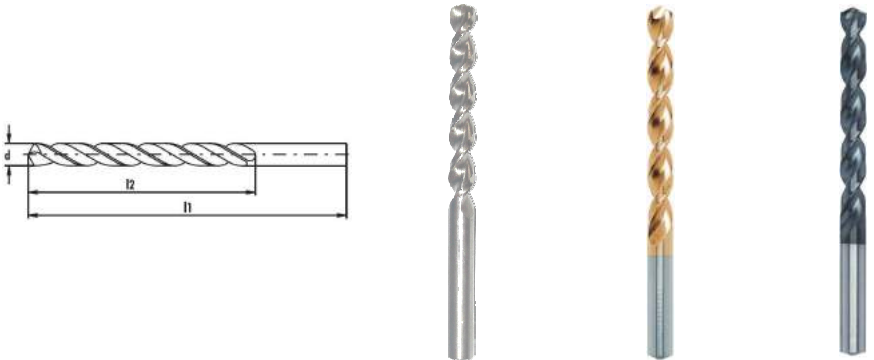
Miscellaneous

Twist Drills with Straight Shank HSCo, Jobber Length HSS, DIN 338

List-No.				01111	01115		
Product Group				01	36		
d	d	l1	l2	Availability	Availability		
mm	ins	mm	mm				
5.40		93	57	•			
5.50		93	57	•	•		
5.556	7/32	93	57	•	•		
5.60		93	57	•			
5.70		93	57	•			
5.75		93	57				
5.80		93	57	•			
5.90		93	57	•			
5.953	15/64	93	57	•			
6.00		93	57	•	•		
6.10		101	63	•			
6.20		101	63	•	•		
6.25		101	63				
6.30		101	63	•			
6.350	1/4	101	63	•	•		
6.40		101	63	•			
6.50		101	63	•	•		
6.60		101	63	•			
6.70		101	63	•			
6.747	17/64	109	69	•			
6.75		109	69				
6.80		109	69	•	•		
6.90		109	69	•			
7.00		109	69	•	•		
7.10		109	69	•			
7.144	9/32	109	69	•	•		
7.20		109	69	•			
7.25		109	69				
7.30		109	69	•			
7.40		109	69	•			
7.50		109	69	•	•		
7.541	19/64	117	75	•			
7.60		117	75	•			
7.70		117	75	•			
7.75		117	75				
7.80		117	75	•			
7.90		117	75	•			
7.938	5/16	117	75	•	•		
8.00		117	75	•	•		
8.10		117	75	•			
8.20		117	75	•			
8.25		117	75				
8.30		117	75	•			
8.334	21/64	117	75	•			
8.40		117	75	•			
8.50		117	75	•	•		
8.60		125	81	•			
8.70		125	81	•			
8.731	11/32	125	81	•	•		
8.75		125	81				
8.80		125	81	•			
8.90		125	81	•			
9.00		125	81	•	•		
9.10		125	81	•			
9.128	23/64	125	81	•			
9.20		125	81	•			
9.25		125	81				
9.30		125	81	•			
9.40		125	81	•			
9.50		125	81	•	•		
9.525	3/8	133	87	•	•		
9.60		133	87	•			
9.70		133	87	•			

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills with Straight Shank HSCo-8, Jobber Length, DIN 338

List-No.	01401	01405	01408		
Product Group	02	36	36		
					
Type	SM 200	SM 200	SM 200		
Material	HSCo-8	HSCo-8	HSCo-8		
Cutting Direction	Right	Right	Right		
Surface	P0	P5	P8		
Point Geometry	135° Form C	135° Form C	135° Form C		
Helix Angle	High	High	High		
Web Thickness	Strengthened	Strengthened	Strengthened		
Web Taper	Reduced	Reduced	Reduced		
Flute Form	Parabolic	Parabolic	Parabolic		
Tolerance of Dia.	h8	h8	h8		
Tolerance of Shank	f11	f11	f11		
Packing Unit	All Diam. · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc		
d mm	d ins	l1 mm	l2 mm	Availability	Availability
3.00		61	33	•	•
3.05		65	36	•	•
3.10		65	36	•	•
3.15		65	36	•	•
3.175	1/8	65	36	•	•
3.20		65	36	•	•
3.25		65	36	•	•
3.30		65	36	•	•
3.35		65	36	•	•
3.40		70	39	•	•
3.45		70	39	•	•
3.50		70	39	•	•
3.55		70	39	•	•
3.572	9/64	70	39	•	•
3.60		70	39	•	•
3.65		70	39	•	•
3.70		70	39	•	•
3.75		70	39	•	•
3.80		75	43	•	•
3.85		75	43	•	•
3.90		75	43	•	•
3.95		75	43	•	•
3.969	5/32	75	43	•	•
4.00		75	43	•	•
4.05		75	43	•	•
4.10		75	43	•	•
4.15		75	43	•	•
4.20		75	43	•	•
4.25		75	43	•	•
4.30		80	47	•	•
4.35		80	47	•	•

Drilling

Countersinks

Reaming

Threading

Milling

Miscellaneous

Twist Drills with Straight Shank HSCo-8, Jobber Length, DIN 338

List-No.				01401	01405	01408		
Product Group				02	36	36		
d	d	l1	l2	Availability	Availability	Availability		
mm	ins	mm	mm					
4.366	11/64	80	47					
4.40		80	47	•	•	•		
4.45		80	47					
4.50		80	47	•	•	•		
4.55		80	47					
4.60		80	47	•	•	•		
4.65		80	47					
4.70		80	47	•	•	•		
4.75		80	47					
4.763	3/16	86	52	•	•	•		
4.80		86	52	•	•	•		
4.85		86	52					
4.90		86	52	•	•	•		
4.95		86	52					
5.00		86	52	•	•	•		
5.10		86	52	•	•	•		
5.159	13/64	86	52	•	•	•		
5.20		86	52	•	•	•		
5.25		86	52					
5.30		86	52	•	•	•		
5.40		93	57	•	•	•		
5.50		93	57	•	•	•		
5.556	7/32	93	57	•	•	•		
5.60		93	57	•	•	•		
5.70		93	57	•	•	•		
5.75		93	57					
5.80		93	57	•	•	•		
5.90		93	57	•	•	•		
5.953	15/64	93	57	•	•	•		
6.00		93	57	•	•	•		
6.10		101	63	•	•	•		
6.20		101	63	•	•	•		
6.25		101	63					
6.30		101	63	•	•	•		
6.350	1/4	101	63	•	•	•		
6.40		101	63	•	•	•		
6.50		101	63	•	•	•		
6.60		101	63	•	•	•		
6.70		101	63	•	•	•		
6.747	17/64	109	69					
6.75		109	69					
6.80		109	69	•	•	•		
6.90		109	69	•	•	•		
7.00		109	69	•	•	•		
7.10		109	69	•	•	•		
7.144	9/32	109	69	•	•	•		
7.20		109	69	•	•	•		
7.25		109	69					
7.30		109	69	•	•	•		
7.40		109	69	•	•	•		
7.50		109	69	•	•	•		
7.541	19/64	117	75					
7.60		117	75	•	•	•		
7.70		117	75	•	•	•		
7.75		117	75					
7.80		117	75	•	•	•		
7.90		117	75	•	•	•		
7.938	5/16	117	75	•	•	•		
8.00		117	75	•	•	•		
8.10		117	75	•	•	•		
8.20		117	75	•	•	•		
8.25		117	75					
8.30		117	75	•	•	•		

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills with Straight Shank HSCo-8, Jobber Length, DIN 338

List-No.				01401	01405	01408		
Product Group				02	36	36		
d	d	l1	l2	Availability	Availability	Availability		
mm	ins	mm	mm					
8.334	21/64	117	75					
8.40		117	75	•	•	•		
8.50		117	75	•	•	•		
8.60		125	81	•	•	•		
8.70		125	81	•	•	•		
8.731	11/32	125	81	•	•	•		
8.75		125	81					
8.80		125	81	•	•	•		
8.90		125	81	•	•	•		
9.00		125	81	•	•	•		
9.10		125	81	•	•	•		
9.128	23/64	125	81					
9.20		125	81	•	•	•		
9.25		125	81					
9.30		125	81	•	•	•		
9.40		125	81	•	•	•		
9.50		125	81	•	•	•		
9.525	3/8	133	87	•	•	•		
9.60		133	87	•	•	•		
9.70		133	87	•	•	•		
9.75		133	87					
9.80		133	87	•	•	•		
9.90		133	87	•	•	•		
9.922	25/64	133	87					
10.00		133	87	•	•	•		
10.10		133	87					
10.20		133	87	•	•	•		
10.25		133	87					
10.30		133	87					
10.319	13/32	133	87	•	•	•		
10.40		133	87					
10.50		133	87	•	•	•		
10.60		133	87					
10.70		142	94					
10.716	27/64	142	94					
10.75		142	94					
10.80		142	94	•				
10.90		142	94					
11.00		142	94	•	•	•		
11.10		142	94					
11.113	7/16	142	94	•	•	•		
11.20		142	94	•				
11.25		142	94					
11.30		142	94					
11.40		142	94					
11.50		142	94	•	•	•		
11.509	29/64	142	94					
11.60		142	94					
11.70		142	94					
11.75		142	94					
11.80		142	94	•				
11.90		151	101					
11.906	15/32	151	101	•	•	•		
12.00		151	101	•	•	•		
12.10		151	101					
12.20		151	101	•				
12.303	31/64	151	101					
12.40		151	101					
12.50		151	101	•	•	•		
12.60		151	101					
12.700	1/2	151	101	•	•	•		
12.80		151	101	•				
13.00		151	101	•	•	•		

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Drilling

Countersinks

Reaming

Threading

Milling

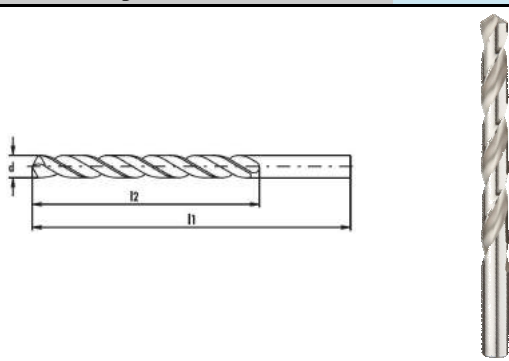
Miscellaneous

Hi-Nox Twist Drills with Straight Shank HSS, Short Flute, Factory Standard


List-No.	01320			
Product Group	02			
Type	Hi-Nox			
Material	HSS			
Cutting Direction	Right			
Surface	P1+			
Point Geometry	130°			
Helix Angle	High			
Web Thickness	Dual Strengthened			
Web Taper	Dual			
Flute Form	Rolled Heel			
Tolerance of Dia.	h8			
Tolerance of Shank	f11			
Packing Unit	≤ d 8.5 · 10 pc > d 8.5 - d 13 · 5 pc			
d	d	l1	l2	Availability
mm	ins	mm	mm	
3.00		61	18	•
3.10		65	20	•
3.175	1/8	65	20	•
3.20		65	20	•
3.30		65	20	•
3.40		70	22	•
3.50		70	22	•
3.60		70	22	•
3.70		70	22	•
3.80		75	25	•
3.90		75	25	•
3.969	5/32	75	25	•
4.00		75	25	•
4.10		75	25	•
4.20		75	25	•
4.30		80	28	•
4.40		80	28	•
4.50		80	28	•
4.60		80	28	•
4.70		80	28	•
4.763	3/16	86	32	•
4.80		86	32	•
4.90		86	32	•
5.00		86	32	•
5.10		86	32	•
5.20		86	32	•
5.30		86	32	•
5.40		93	36	•
5.50		93	36	•
5.556	7/32	93	36	•
5.60		93	36	•
5.70		93	36	•
5.80		93	36	•
5.90		93	36	•
6.00		93	36	•

List-No.	01320			
Product Group	02			
d	d	l1	l2	Availability
mm	ins	mm	mm	
6.10		101	40	•
6.20		101	40	•
6.30		101	40	•
6.350	1/4	101	40	•
6.40		101	40	•
6.50		101	40	•
6.60		101	40	•
6.70		101	40	•
6.80		109	45	•
6.90		109	45	•
7.00		109	45	•
7.10		109	45	•
7.144	9/32	109	45	•
7.20		109	45	•
7.30		109	45	•
7.40		109	45	•
7.50		109	45	•
7.60		117	51	•
7.70		117	51	•
7.80		117	51	•
7.90		117	51	•
7.938	5/16	117	51	•
8.00		117	51	•
8.10		117	51	•
8.20		117	51	•
8.30		117	51	•
8.40		117	51	•
8.50		117	51	•
8.60		125	51	•
8.70		125	57	•
8.731	11/32	125	57	•
8.80		125	57	•
8.90		125	57	•
9.00		125	57	•
9.10		125	57	•
9.20		125	57	•
9.30		125	57	•
9.40		125	57	•
9.50		125	57	•
9.525	3/8	133	63	•
9.60		133	63	•
9.70		133	63	•
9.80		133	63	•
9.90		133	63	•
10.00		133	63	•
10.20		133	63	•
10.319	13/32	133	63	•
10.50		133	63	•
10.80		142	71	•
11.00		142	71	•
11.113	7/16	142	71	•
11.20		142	71	•
11.50		142	71	•
11.80		142	71	•
11.906	15/32	151	78	•
12.00		151	78	•
12.20		151	78	•
12.50		151	78	•
12.700	1/2	151	78	•
12.80		151	78	•
13.00		151	78	•


Twist Drills with Straight Shank, Solid Carbide, Jobber Length HSS, DIN 338

List-No.	20100				
Product Group	47				
					
Type	Std. Helix				
Material	Carbide K15				
Cutting Direction	Right				
Surface	P0				
Point Geometry	135°				
Helix Angle	Normal				
Web Thickness	Normal				
Web Taper	Normal				
Flute Form	Normal				
Tolerance of Dia.	h8				
Tolerance of Shank	f11				
Packing Unit	1 pc				
	d	d	l1	l2	Availability
	mm	ins	mm	mm	
	1.00		30	10	•
	1.50		35	15	•
	2.00		40	18	•
	2.50		40	18	•
	3.00		50	28	•
	3.50		50	28	•
	4.00		50	28	•
	4.50		50	28	•
	5.00		50	28	•
	5.50		60	35	•
	6.00		60	35	•
	6.50		60	35	•
	7.00		60	35	•
	7.50		70	40	•
	8.00		70	40	•
	8.50		70	40	•
	9.00		70	40	•
	9.50		70	40	•
	10.00		70	40	•
	10.50		70	40	•
	11.00		70	40	•
	11.50		80	45	•
	12.00		80	45	•
	12.50		80	45	•
	13.00		80	45	•

Centre Drills HSS, DIN 333A / BS 328

List-No.	07000			
Product Group	34			
				
Form	A			
Material	HSS			
Cutting Direction	Right			
Surface	P0			
Point Angle	118°			
Helix Angle				
Web Thickness				
Web Taper				
Flute Form				
Tolerance of Pilot	k12			
Tolerance of Body	h8			
Packing Unit	All Diam. · 1 pc			
	d1	l1	d2	Availability
	mm	mm	mm	
	1.00	31.5	3,15	•
	1.25	31.5	3,15	•
	1.60	35.5	4,00	•
	2.00	40.0	5,00	•
	2.50	45.0	6,30	•
	3.15	50.0	8,00	•
	4.00	56.0	10,00	•
	5.00	63.0	12,50	•
	6.30	71.0	16,00	•
	8.00	80.0	20,00	•
	10.00	100.0	25,00	•
	12.50	125.0	31,50	•
BS1	3/64	1 1/2	1/8	•
BS2	1/16	1 3/4	3/16	•
BS3	3/32	2	1/4	•
BS4	1/8	2 1/4	5/16	•
BS5	3/16	2 1/2	7/16	•
BS6	1/4	3	5/8	•
BS7	5/16	3 1/2	3/4	•

Jobber Blanks HSS, DIN 338

List-No.			01900		
Product Group			02		
					
Material			HSS		
Surface			P0		
Tolerance of Dia.			h8		
Packing Unit			≤ d 8.50 · 10 pc > d 8.50 - d 13 · 5 pc > d 13 · 1 pc		
d	d	l1	Availability		
mm	ins	mm			
1.00		34	•		
1.10		36	•		
1.20		38	•		
1.30		38	•		
1.40		40	•		
1.50		40	•		
1.588	1/16	43	•		
1.60		43	•		
1.70		43	•		
1.80		46	•		
1.90		46	•		
2.00		49	•		
2.10		49	•		
2.20		53	•		
2.30		53	•		
2.381	3/32	57	•		
2.40		57	•		
2.50		57	•		
2.60		57	•		
2.70		61	•		
2.80		61	•		
2.90		61	•		
3.00		61	•		
3.10		65	•		
3.175	1/8	65	•		
3.20		65	•		
3.30		65	•		
3.40		70	•		
3.50		70	•		
3.60		70	•		
3.70		70	•		
3.80		75	•		
3.90		75	•		
3.969	5/32	75	•		
4.00		75	•		
4.10		75	•		
4.20		75	•		
4.30		80	•		
4.40		80	•		
4.50		80	•		
4.60		80	•		
4.70		80	•		
4.763	3/16	86	•		
4.80		86	•		

4.90		86	•
5.00		86	•
5.10		86	•
5.20		86	•
5.30		86	•
5.40		93	•
5.50		93	•
5.556	7/32	93	•
5.60		93	•
5.70		93	•
5.80		93	•
5.90		93	•
6.00		93	•
6.10		101	•
6.20		101	•
6.30		101	•
6.350	1/4	101	•
6.40		101	•
6.50		101	•
6.60		101	•
6.70		101	•
6.80		109	•
6.90		109	•
7.00		109	•
7.10		109	•
7.144	9/32	109	•
7.20		109	•
7.30		109	•
7.40		109	•
7.50		109	•
7.60		117	•
7.70		117	•
7.80		117	•
7.90		117	•
7.938	5/16	117	•
8.00		117	•
8.10		117	•
8.20		117	•
8.30		117	•
8.40		117	•
8.50		117	•
8.60		125	•
8.70		125	•
8.731	11/32	125	•
8.80		125	•
8.90		125	•
9.00		125	•
9.10		125	•
9.20		125	•
9.30		125	•
9.40		125	•
9.50		125	•
9.525	3/8	133	•
9.60		133	•
9.70		133	•
9.80		133	•
9.90		133	•
10.00		133	•
10.319	13/32	133	•
10.50		133	•
11.00		142	•
11.113	7/16	142	•
11.50		142	•
11.906	15/32	151	•
12.00		151	•
12.50		151	•
12.70	1/2	151	•
13.00		151	•

Twist Drills with Straight Shank HSS, Long Series, DIN 340

List-No.	04000	04111	04150		
Product Group	02	01	02		
Type	Std. Helix	Heavy Duty	SM 100		
Material	HSS	HSCo	HSS		
Cutting Direction	Right	Right	Right		
Surface	P1	P2	P0		
Point Geometry	118° Form A	135° Form C	135° Form C		
Helix Angle	Normal	Normal	High		
Web Thickness	Normal	Strengthened	Strengthened		
Web Taper	Normal	Strengthened	Reduced		
Flute Form	Normal	Normal	Parabolic		
Tolerance of Dia.	h8	h8	h8		
Tolerance of Shank	f11	f11	f11		
Packing Unit	≤ d 13.0 · 5 pc > d 13.0 · 1 pc	≤ d 13.0 · 5 pc > d 13.0 · 1 pc	All Diam. · 1 pc		
d mm	d ins	l1 mm	l2 mm	Availability	Availability
1.00		56	33	•	•
1.10		60	37	•	•
1.191	3/64	65	41	•	•
1.20		65	41	•	•
1.30		65	41	•	•
1.40		70	45	•	•
1.50		70	45	•	•
1.588	1/16	76	50	•	•
1.60		76	50	•	•
1.70		76	50	•	•
1.80		80	53	•	•
1.90		80	53	•	•
1.984	5/64	85	56	•	•
2.00		85	56	•	•
2.10		85	56	•	•
2.20		90	59	•	•
2.30		90	59	•	•
2.381	3/32	95	62	•	•
2.40		95	62	•	•
2.50		95	62	•	•
2.60		95	62	•	•
2.70		100	66	•	•
2.778	7/64	100	66	•	•
2.80		100	66	•	•
2.90		100	66	•	•
3.00		100	66	•	•
3.10		106	69	•	•
3.175	1/8	106	69	•	•
3.20		106	69	•	•
3.30		106	69	•	•
3.40		112	73	•	•

Twist Drills with Straight Shank HSS, Long Series, DIN 340

List-No.				04000	04111	04150		
Product Group				02	01	02		
d	d	l1	l2	Availability	Availability	Availability		
mm	ins	mm	mm					
3.50		112	73	•	•	•		
3.572	9/64	112	73	•				
3.60		112	73	•	•	•		
3.70		112	73	•	•	•		
3.80		119	78	•	•	•		
3.90		119	78	•	•	•		
3.969	5/32	119	78	•		•		
4.00		119	78	•	•	•		
4.10		119	78	•	•	•		
4.20		119	78	•	•	•		
4.30		126	82	•	•	•		
4.366	11/64	126	82	•				
4.40		126	82	•	•	•		
4.50		126	82	•	•	•		
4.60		126	82	•	•	•		
4.70		126	82	•	•	•		
4.763	3/16	132	87	•		•		
4.80		132	87	•	•	•		
4.90		132	87	•	•	•		
5.00		132	87	•	•	•		
5.10		132	87	•	•	•		
5.159	13/64	132	87	•				
5.20		132	87	•	•	•		
5.30		132	87	•	•	•		
5.40		139	91	•	•	•		
5.50		139	91	•	•	•		
5.556	7/32	139	91	•		•		
5.60		139	91	•	•	•		
5.70		139	91	•	•	•		
5.80		139	91	•	•	•		
5.90		139	91	•	•	•		
5.953	15/64	139	91	•				
6.00		139	91	•	•	•		
6.10		148	97	•		•		
6.20		148	97	•		•		
6.30		148	97	•		•		
6.350	1/4	148	97	•		•		
6.40		148	97	•		•		
6.50		148	97	•	•	•		
6.60		148	97	•		•		
6.70		148	97	•		•		
6.747	17/64	156	102	•				
6.80		156	102	•	•	•		
6.90		156	102	•		•		
7.00		156	102	•	•	•		
7.10		156	102	•				
7.144	9/32	156	102	•		•		
7.20		156	102	•				
7.30		156	102	•				
7.40		156	102	•				
7.50		156	102	•	•	•		
7.541	19/64	165	109	•				
7.60		165	109	•				
7.70		165	109	•				
7.80		165	109	•				
7.90		165	109	•				
7.938	5/16	165	109	•		•		
8.00		165	109	•	•	•		
8.10		165	109	•				
8.20		165	109	•				
8.30		165	109	•				
8.334	21/64	165	109	•				
8.40		165	109	•				

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Drilling

Countersinks

Reaming

Threading

Milling

Miscellaneous

Twist Drills with Straight Shank HSS, Long Series, DIN 340

List-No.		04000	04111	04150		
Product Group		02	01	02		
d	d	l1	l2	Availability	Availability	Availability
mm	ins	mm	mm			
8.50		165	109	•	•	•
8.60		175	115	•		
8.70		175	115	•		
8.731	11/32	175	115	•		•
8.80		175	115	•		
8.90		175	115	•		
9.00		175	115	•	•	•
9.10		175	115	•		
9.128	23/64	175	115	•		
9.20		175	115	•		
9.30		175	115	•		
9.40		175	115	•		
9.50		175	115	•	•	•
9.525	3/8	184	121	•		•
9.60		184	121	•		
9.70		184	121	•		
9.80		184	121	•		
9.90		184	121	•		
9.922	25/64	184	121	•		
10.00		184	121	•	•	•
10.10		184	121	•		
10.20		184	121	•	•	•
10.319	13/32	184	121	•		•
10.50		184	121	•	•	•
10.716	27/64	195	128	•		
10.80		195	128	•		
11.00		195	128	•	•	•
11.113	7/16	195	128	•		•
11.20		195	128	•		
11.50		195	128	•	•	•
11.509	29/64	195	128	•		
11.80		195	128	•		
11.906	15/32	205	134	•		•
12.00		205	134	•	•	•
12.20		205	134	•		
12.303	31/64	205	134	•		
12.50		205	134	•	•	•
12.700	1/2	205	134	•		•
12.80		205	134	•		
13.00		205	134	•	•	•
13.097	33/64	205	134	•		
13.494	17/32	214	140	•		
13.50		214	140	•		
13.891	35/64	214	140	•		
14.00		214	140	•		
14.288	9/16	220	144	•		
14.50		220	144	•		
14.684	37/64	220	144	•		
15.00		220	144	•		
15.081	19/32	227	149	•		
15.478	39/64	227	149	•		
15.50		227	149	•		
15.875	5/8	227	149	•		
16.00		227	149	•		

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills with Straight Shank HSCo8, Long Series, DIN 340

List-No.	04161	04165	04168		
Product Group	02	36	36		
Type	SM 200	SM 200	SM 200		
Material	HSCo-8	HSCo-8	HSCo-8		
Cutting Direction	Right	Right	Right		
Surface	P0	P5	P8		
Point Geometry	135° Form C	135° Form C	135° Form C		
Helix Angle	High	High	High		
Web Thickness	Strengthened	Strengthened	Strengthened		
Web Taper	Reduced	Reduced	Reduced		
Flute Form	Parabolic	Parabolic	Parabolic		
Tolerance of Dia.	h8	h8	h8		
Tolerance of Shank	f11	f11	f11		
Packing Unit	All Diam. · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc		
d mm	d ins	l1 mm	l2 mm	Availability	Availability
3.00		100	66	•	•
3.10		106	69	•	•
3.175	1/8	106	69	•	•
3.20		106	69	•	•
3.30		106	69	•	•
3.40		112	73	•	•
3.50		112	73	•	•
3.60		112	73	•	•
3.70		112	73	•	•
3.80		119	78	•	•
3.90		119	78	•	•
4.00		119	78	•	•
4.10		119	78	•	•
4.20		119	78	•	•
4.30		126	82	•	•
4.40		126	82	•	•
4.50		126	82	•	•
4.60		126	82	•	•
4.70		126	82	•	•
4.763	3/16	132	87	•	•
4.80		132	87	•	•
4.90		132	87	•	•
5.00		132	87	•	•
5.10		132	87	•	•
5.20		132	87	•	•
5.30		132	87	•	•
5.40		139	91	•	•
5.50		139	91	•	•
5.60		139	91	•	•
5.70		139	91	•	•
5.80		139	91	•	•
5.90		139	91	•	•
6.00		139	91	•	•

Drilling

Countersinks

Reaming

Threading

Milling

Miscellaneous

Twist Drills with Straight Shank HSCo8, Long Series, DIN 340

Drilling

Countersinks

Reaming

Threading

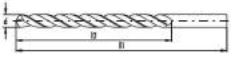

Milling

Miscellaneous

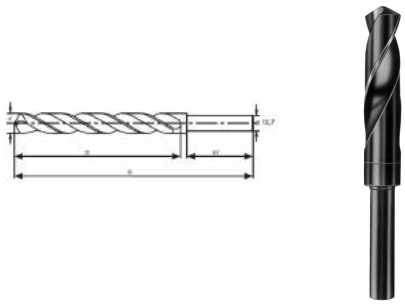
List-No.				04161	04165	04168		
Product Group				02	36	36		
d	d	l1	l2	Availability	Availability	Availability		
mm	ins	mm	mm					
6.10		148	97	•	•	•		
6.20		148	97	•	•	•		
6.30		148	97	•	•	•		
6.350	1/4	148	97	•				
6.40		148	97	•	•	•		
6.50		148	97	•	•	•		
6.60		148	97	•	•	•		
6.70		148	97	•	•	•		
6.80		156	102	•	•	•		
6.90		156	102	•	•	•		
7.00		156	102	•	•	•		
7.10		156	102	•				
7.20		156	102	•				
7.30		156	102	•				
7.40		156	102	•				
7.50		156	102	•	•	•		
7.60		165	109	•				
7.70		165	109	•				
7.80		165	109	•				
7.90		165	109	•				
7.938	5/16	165	109	•				
8.00		165	109	•	•	•		
8.10		165	109	•				
8.20		165	109	•				
8.30		165	109	•				
8.40		165	109	•				
8.50		165	109	•	•	•		
8.60		175	115	•				
8.70		175	115	•				
8.80		175	115	•				
8.90		175	115	•				
9.00		175	115	•	•	•		
9.10		175	115	•				
9.20		175	115	•				
9.30		175	115	•				
9.40		175	115	•				
9.50		175	115	•	•	•		
9.525	3/8	184	121	•				
9.60		184	121	•				
9.70		184	121	•				
9.80		184	121	•				
9.90		184	121	•				
10.00		184	121	•	•	•		
10.20		184	121	•	•	•		
10.50		184	121	•	•	•		
11.00		195	128	•	•	•		
11.113	7/16	195	128	•				
11.50		195	128	•	•	•		
12.00		205	134	•	•	•		
12.50		205	134	•	•	•		
12.70	1/2	205	134	•				
13.00		205	134	•	•	•		

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills with Straight Shank HSS, Extra Length BS 328.

List-No.	05000	05000	05000	05000	05000	05000
Product Group	02	02	02	02	02	02
 						
11 mm / 12 mm	125 / 80	160 / 100	200 / 150	250 / 200	315 / 250	400 / 300
Material	HSS	HSS	HSS	HSS	HSS	HSS
Cutting Direction	Right	Right	Right	Right	Right	Right
Surface	P1	P1	P1	P1	P1	P1
Point Geometry	118°	118°	118°	118°	118°	118°
Helix Angle	Normal	Normal	Normal	Normal	Normal	Normal
Web Thickness	Strengthened	Strengthened	Strengthened	Strengthened	Strengthened	Strengthened
Web Taper	Reduced	Reduced	Reduced	Reduced	Reduced	Reduced
Flute Form	Normal	Normal	Normal	Normal	Normal	Normal
Tolerance of Dia.	h8	h8	h8	h8	h8	h8
Tolerance of Shank	f11	f11	f11	f11	f11	f11
Packing Unit	All Diam. · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc
d mm	d ins	Availability	Availability	Availability	Availability	Availability
1.50		•	•			
1.588	1/16	•	•			
1.984	5/64	•	•			
2.00		•	•			
2.381	3/32	•	•	•		
2.50		•	•			
2.778	7/64	•	•			
3.00		•	•	•		
3.175	1/8	•	•	•	•	
3.30			•			
3.50			•	•		
3.572	9/64		•	•		
3.969	5/32		•	•	•	
4.00			•	•	•	
4.366	11/64		•	•		
4.50			•	•	•	
4.763	3/16		•	•	•	•
5.00			•	•	•	•
5.159	13/64			•		
5.50				•	•	
5.556	7/32			•	•	
5.953	15/64			•		
6.00				•	•	•
6.350	1/4			•	•	•
6.50				•	•	
6.747	17/64			•		
7.00				•	•	•
7.144	9/32			•	•	
7.50				•	•	
7.938	5/16			•	•	•
8.00				•	•	•

Blacksmith's Drills HSS, Factory Standard

List-No.	08610			
Product Group	02			
				
Type	Std. Helix			
Material	HSS			
Cutting Direction	Right			
Surface	P1			
Point Geometry	118°			
Helix Angle	Normal			
Web Thickness	Normal			
Web Taper	Normal			
Flute Form	Normal			
Tolerance of Dia.	h8			
Shank Dia.	1/2" (12.70mm)			
Packing Unit	All Diam. · 1 pc			
d mm	d ins	H mm	L mm	Availability
13.00		152	79	•
13.494	17/32	152	79	•
13.50		152	79	•
14.00		152	79	•
14.288	9/16	152	79	•
14.50		152	79	•
15.00		152	79	•
15.081	19/32	152	79	•
15.50		152	79	•
15.875	5/8	152	79	•
16.00		152	79	•
16.50		152	79	•
16.669	21/32	152	79	•
17.00		152	79	•
17.463	11/16	152	79	•
17.50		152	79	•
18.00		152	79	•
18.256	23/32	152	79	•
18.50		152	79	•
19.00		152	79	•
19.050	3/4	152	79	•
19.50		152	79	•
19.844	25/32	152	79	•
20.00		152	79	•
20.638	13/16	152	79	•
21.00		152	79	•
21.431	27/32	152	79	•
22.00		152	79	•
22.225	7/8	152	79	•
23.00		152	79	•
23.019	29/32	152	79	•
23.813	15/16	152	79	•
24.00		152	79	•
24.606	31/32	152	79	•
25.00		152	79	•
25.40	1	152	79	•

List-No.	08610			
Product Group	02			
d mm	d ins	H mm	L mm	Availability
26.00		152	79	•
26.988	1 1/16	152	79	•
27.00		152	79	•
28.00		152	79	•
28.575	1 1/8	152	79	•
29.00		152	79	•
30.00		152	79	•
30.163	1 3/16	152	79	•
31.75	1 1/4	152	79	•
32.00		152	79	•
33.338	1 5/16	152	79	•
34.925	1 3/8	152	79	•
36.513	1 7/16	152	79	•
38.10	1 1/2	152	79	•

Drilling

Countersinks

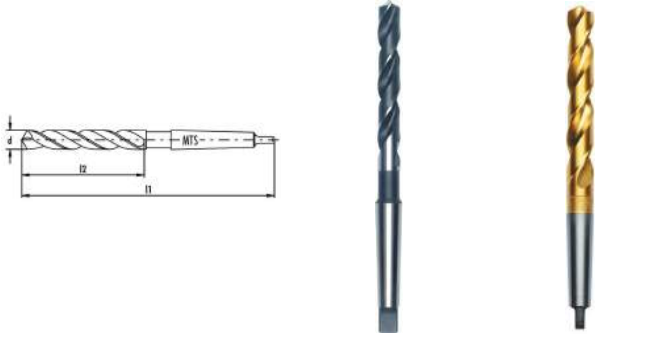
Reaming

Threading

Milling

Miscellaneous

Twist Drills with Taper Shank HSS, Standard Length, DIN 345

List-No.	11000	11005				
Product Group	41	43				
						
Type	Std. Helix	Std. Helix				
Material	HSS	HSS				
Cutting Direction	Right	Right				
Surface	P1	P5				
Point Geometry	118°	118°				
Helix Angle	Normal	Normal				
Web Thickness	Normal	Normal				
Web Taper	Normal	Normal				
Flute Form	Normal	Normal				
Tolerance of Dia.	h8	h8				
Packing Unit	All Diam. · 1 pc	All Diam. · 1 pc				
d mm	d ins	l1 mm	l2 mm	MTS	Availability	Availability
6.00		138	57	1	•	
6.10		144	63	1	•	
6.20		144	63	1	•	
6.25		144	63	1	•	
6.30		144	63	1	•	
6.35	1/4	144	63	1	•	
6.40		144	63	1	•	
6.50		144	63	1	•	
6.60		144	63	1	•	
6.70		144	63	1	•	
6.747	17/64	150	69	1	•	
6.75		150	69	1	•	
6.80		150	69	1	•	
6.90		150	69	1	•	
7.00		150	69	1	•	
7.10		150	69	1	•	
7.144	9/32	150	69	1	•	
7.20		150	69	1	•	
7.25		150	69	1	•	
7.30		150	69	1	•	
7.40		150	69	1	•	
7.50		150	69	1	•	
7.541	19/64	156	75	1	•	
7.60		156	75	1	•	
7.70		156	75	1	•	
7.75		156	75	1	•	
7.80		156	75	1	•	
7.90		156	75	1	•	
7.938	5/16	156	75	1	•	
8.00		156	75	1	•	•
8.10		156	75	1	•	
8.20		156	75	1	•	
8.25		156	75	1	•	
8.30		156	75	1	•	
8.334	21/64	156	75	1	•	
8.40		156	75	1	•	

List-No.	11000	11005				
Product Group	41	43				
d mm	d ins	l1 mm	l2 mm	MTS	Availability	Availability
8.50		156	75	1	•	•
8.60		162	81	1	•	
8.70		162	81	1	•	
8.731	11/32	162	81	1	•	
8.75		162	81	1	•	
8.80		162	81	1	•	
8.90		162	81	1	•	
9.00		162	81	1	•	•
9.10		162	81	1	•	
9.128	23/64	162	81	1	•	
9.20		162	81	1	•	
9.25		162	81	1	•	
9.30		162	81	1	•	
9.40		162	81	1	•	
9.50		162	81	1	•	•
9.525	3/8	168	87	1	•	
9.60		168	87	1	•	
9.70		168	87	1	•	
9.75		168	87	1	•	
9.80		168	87	1	•	
9.90		168	87	1	•	
9.922	25/64	168	87	1	•	
10.00		168	87	1	•	•
10.10		168	87	1	•	
10.20		168	87	1	•	•
10.25		168	87	1	•	
10.30		168	87	1	•	
10.319	13/32	168	87	1	•	
10.40		168	87	1	•	
10.50		168	87	1	•	•
10.60		168	87	1	•	
10.70		175	94	1	•	
10.716	27/64	175	94	1	•	
10.75		175	94	1	•	
10.80		175	94	1	•	
10.90		175	94	1	•	
11.00		175	94	1	•	•
11.10		175	94	1	•	
11.113	7/16	175	94	1	•	
11.20		175	94	1	•	
11.25		175	94	1	•	
11.30		175	94	1	•	
11.40		175	94	1	•	
11.50		175	94	1	•	•
11.509	29/64	175	94	1	•	
11.60		175	94	1	•	
11.70		175	94	1	•	
11.75		175	94	1	•	
11.80		175	94	1	•	
11.90		182	101	1	•	
11.906	15/32	182	101	1	•	
12.00		182	101	1	•	•
12.10		182	101	1	•	
12.20		182	101	1	•	
12.25		182	101	1	•	
12.303	31/64	182	101	1	•	
12.40		182	101	1	•	
12.50		182	101	1	•	•
12.60		182	101	1	•	
12.70	1/2	182	101	1	•	
12.75		182	101	1	•	
12.80		182	101	1	•	
12.90		182	101	1	•	
13.00		182	101	1	•	•

Twist Drills with Taper Shank HSS, Standard Length, DIN 345

List-No.					11000	11005
Product Group					41	43
d mm	d ins	l1 mm	l2 mm	MTS	Availability	Availability
13.097	33/64	182	101	1	•	
13.20		182	101	1	•	
13.25		189	108	1	•	
13.30		189	108	1	•	
13.40		189	108	1	•	
13.494	17/32	189	108	1	•	
13.50		189	108	1	•	•
13.60		189	108	1	•	
13.70		189	108	1	•	
13.75		189	108	1	•	
13.80		189	108	1	•	
13.891	35/64	189	108	1	•	
13.90		189	108	1	•	
14.00		189	108	1	•	•
14.10		212	114	2	•	
14.20		212	114	2	•	
14.25		212	114	2	•	
14.288	9/16	212	114	2	•	
14.50		212	114	2	•	•
14.684	37/64	212	114	2	•	
14.75		212	114	2	•	
15.00		212	114	2	•	•
15.081	19/32	218	120	2	•	
15.25		218	120	2	•	
15.478	39/64	218	120	2	•	
15.50		218	120	2	•	•
15.75		218	120	2	•	
15.875	5/8	218	120	2	•	
16.00		218	120	2	•	•
16.25		223	125	2	•	
16.272	41/64	223	125	2	•	
16.50		223	125	2	•	•
16.669	21/32	223	125	2	•	
16.75		223	125	2	•	
17.00		223	125	2	•	•
17.066	43/64	228	130	2	•	
17.25		228	130	2	•	
17.463	11/16	228	130	2	•	
17.50		228	130	2	•	•
17.75		228	130	2	•	
17.859	45/64	228	130	2	•	
18.00		228	130	2	•	•
18.25		233	135	2	•	
18.256	23/32	233	135	2	•	
18.50		233	135	2	•	•
18.653	47/64	233	135	2	•	
18.75		233	135	2	•	
19.00		233	135	2	•	•
19.05	3/4	238	140	2	•	
19.25		238	140	2	•	
19.447	49/64	238	140	2	•	
19.50		238	140	2	•	•
19.75		238	140	2	•	
19.844	25/32	238	140	2	•	
20.00		238	140	2	•	•
20.241	51/64	243	145	2	•	
20.25		243	145	2	•	
20.50		243	145	2	•	•
20.638	13/16	243	145	2	•	
20.75		243	145	2	•	
21.00		243	145	2	•	•
21.034	53/64	243	145	2	•	
21.25		248	150	2	•	
21.431	27/32	248	150	2	•	

List-No.					11000	11005
Product Group					41	43
d mm	d ins	l1 mm	l2 mm	MTS	Availability	Availability
21.50		248	150	2	•	•
21.75		248	150	2	•	
21.828	55/64	248	150	2	•	
22.00		248	150	2	•	•
22.225	7/8	248	150	2	•	
22.25		248	150	2	•	
22.50		253	155	2	•	•
22.622	57/64	253	155	2	•	
22.75		253	155	2	•	
23.00		253	155	2	•	•
23.019	29/32	253	155	2	•	
23.25		276	155	3	•	
23.416	59/64	276	155	3	•	
23.50		276	155	3	•	•
23.75		281	160	3	•	
23.813	15/16	281	160	3	•	
24.00		281	160	3	•	•
24.209	61/64	281	160	3	•	
24.25		281	160	3	•	
24.50		281	160	3	•	•
24.606	31/32	281	160	3	•	
24.75		281	160	3	•	
25.00		281	160	3	•	•
25.003	63/64	286	165	3	•	
25.25		286	165	3	•	
25.40	1	286	165	3	•	
25.50		286	165	3	•	
25.75		286	165	3	•	
26.00		286	165	3	•	
26.194	1 1/32	286	165	3	•	
26.25		286	165	3	•	
26.50		286	165	3	•	
26.75		291	170	3	•	
26.988	1 1/16	291	170	3	•	
27.00		291	170	3	•	
27.25		291	170	3	•	
27.50		291	170	3	•	
27.75		291	170	3	•	
27.781	1 3/32	291	170	3	•	
28.00		291	170	3	•	
28.25		296	175	3	•	
28.50		296	175	3	•	
28.575	1 1/8	296	175	3	•	
28.75		296	175	3	•	
29.00		296	175	3	•	
29.25		296	175	3	•	
29.369	1 5/32	296	175	3	•	
29.50		296	175	3	•	
29.75		296	175	3	•	
30.00		296	175	3	•	
30.163	1 3/16	301	180	3	•	
30.25		301	180	3	•	
30.50		301	180	3	•	
30.75		301	180	3	•	
30.956	1 7/32	301	180	3	•	
31.00		301	180	3	•	
31.25		301	180	3	•	
31.50		301	180	3	•	
31.750	1 1/4	306	185	3	•	
32.00		334	185	4	•	
32.50		334	185	4	•	
32.544	1 9/32	334	185	4	•	
33.00		334	185	4	•	
33.338	1 5/16	334	185	4	•	

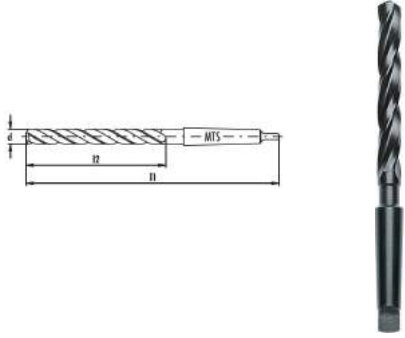
P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Twist Drills with Taper Shank HSS, Standard Length, DIN 345

List-No.					11000	11005
Product Group					41	43
d mm	d ins	l1 mm	l2 mm	MTS	Availability	Availability
33.50		334	185	4	•	
34.00		339	190	4	•	
34.131	1 11/32	339	190	4	•	
34.50		339	190	4	•	
34.925	1 3/8	339	190	4	•	
35.00		339	190	4	•	
35.50		339	190	4	•	
35.719	1 13/32	344	195	4	•	
36.00		344	195	4	•	
36.50		344	195	4	•	
36.513	1 7/16	344	195	4	•	
37.00		344	195	4	•	
37.306	1 15/32	344	195	4	•	
37.50		344	195	4	•	
38.00		349	200	4	•	
38.10	1 1/2	349	200	4	•	
38.50		349	200	4	•	
38.894	1 17/32	349	200	4	•	
39.00		349	200	4	•	
39.50		349	200	4	•	
39.688	1 9/16	349	200	4	•	
40.00		349	200	4	•	
40.481	1 19/32	354	205	4	•	
40.50		354	205	4	•	
41.00		354	205	4	•	
41.275	1 5/8	354	205	4	•	
41.50		354	205	4	•	
42.00		354	205	4	•	
42.069	1 21/32	354	205	4	•	
42.50		354	205	4	•	
42.863	1 11/16	359	210	4	•	
43.00		359	210	4	•	
43.50		359	210	4	•	
43.656	1 23/32	359	210	4	•	
44.00		359	210	4	•	
44.450	1 3/4	359	210	4	•	
44.50		359	210	4	•	
45.00		359	210	4	•	
45.244	1 25/32	364	215	4	•	
45.50		364	215	4	•	
46.00		364	215	4	•	
46.038	1 13/16	364	215	4	•	
46.50		364	215	4	•	
46.831	1 27/32	364	215	4	•	
47.00		364	215	4	•	
47.50		364	215	4	•	
47.625	1 7/8	369	220	4	•	
48.00		369	220	4	•	
48.419	1 29/32	369	220	4	•	
48.50		369	220	4	•	
49.00		369	220	4	•	
49.213	1 15/16	369	220	4	•	
49.50		369	220	4	•	
50.00		369	220	4	•	
50.006	1 31/32	374	225	4	•	
50.80	2	374	225	4	•	
51.00		412	225	5	•	
52.00		412	225	5	•	
52.388	2 1/16	412	225	5	•	
53.00		412	225	5	•	
53.975	2 1/8	417	230	5	•	
54.00		417	230	5	•	
55.00		417	230	5	•	

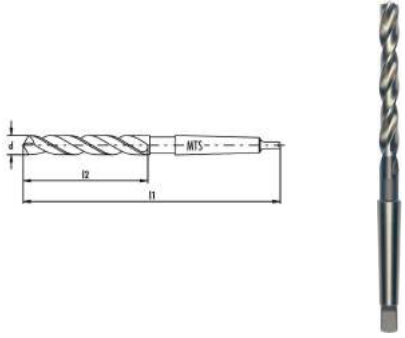
List-No.					11000	11005
Product Group					41	43
d mm	d ins	l1 mm	l2 mm	MTS	Availability	Availability
55.563	2 3/16	417	230	5	•	
56.00		417	230	5	•	
57.00		422	235	5	•	
57.15	2 1/4	422	235	5	•	
58.00		422	235	5	•	
58.738	2 5/16	422	235	5	•	
59.00		422	235	5	•	
60.00		422	235	5	•	
60.325	2 3/8	427	240	5	•	
61.00		427	240	5	•	
61.913	2 7/16	427	240	5	•	
62.00		427	240	5	•	
63.00		427	240	5	•	
63.50	2 1/2	432	245	5	•	
64.00		432	245	5	•	
65.00		432	245	5	•	
65.088	2 9/16	432	245	5	•	
66.00		432	245	5	•	
66.675	2 5/8	432	245	5	•	
67.00		432	245	5	•	
68.00		437	250	5	•	
68.263	2 11/16	437	250	5	•	
69.00		437	250	5	•	
69.85	2 3/4	437	250	5	•	
70.00		437	250	5	•	
71.00		437	250	5	•	
71.438	2 13/16	442	255	5	•	
72.00		442	255	5	•	
73.00		442	255	5	•	
73.025	2 7/8	442	255	5	•	
74.00		442	255	5	•	
74.613	2 15/16	442	255	5	•	
75.00		442	255	5	•	
76.00		447	260	5	•	
76.20	3	447	260	5	•	
77.00		514	260	6	•	
78.00		514	260	6	•	
79.00		514	260	6	•	
80.00		514	260	6	•	
85.00		519	265	6	•	
90.00		524	270	6	•	
95.00		529	275	6	•	
100.00		534	280	6	•	

3-Fluted Core Drills with Taper Shank, HSS, DIN 343

List-No.	17000				
Product Group	25				
					
Type	Std. Helix				
Material	HSS				
Cutting Direction	Right				
Surface	P1				
Helix Angle	Normal				
Web Thickness	Normal				
Web Taper					
Flute Form	Normal				
Tolerance of Dia.					
Tolerance of Shank					
Packing Unit	All Diam. · 1 pc				
d mm	d ins	l1 mm	l2 mm	MTS	Availability
6.350	1/4	144	63	1	•
7.144	9/32	150	69	1	•
7.80		156	75	1	•
7.938	5/16	156	75	1	•
8.00		156	75	1	•
8.731	11/32	162	81	1	•
8.80		162	81	1	•
9.00		162	81	1	•
9.525	3/8	168	87	1	•
9.80		168	87	1	•
10.00		168	87	1	•
10.319	13/32	168	87	1	•
10.75		175	94	1	•
11.00		175	94	1	•
11.113	7/16	175	94	1	•
11.75		175	94	1	•
11.906	15/32	182	101	1	•
12.00		182	101	1	•
12.70	1/2	182	101	1	•
12.75		182	101	1	•
13.00		182	101	1	•
13.494	17/32	189	108	1	•
13.75		189	108	1	•
14.00		189	108	1	•
14.288	9/16	212	114	2	•
14.75		212	114	2	•
15.00		212	114	2	•
15.081	19/32	218	120	2	•
15.75		218	120	2	•
15.875	5/8	218	120	2	•
16.00		218	120	2	•
16.669	21/32	223	125	2	•
16.75		223	125	2	•
17.00		223	125	2	•
17.463	11/16	228	130	2	•
17.75		228	130	2	•

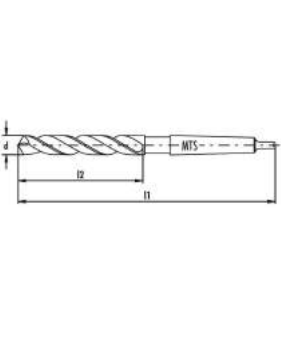
List-No.	17000				
Product Group	25				
d mm	d ins	l1 mm	l2 mm	MTS	Availability
18.00		228	130	2	•
18.256	23/32	233	135	2	•
18.70		233	135	2	•
19.00		233	135	2	•
19.05	3/4	238	140	2	•
19.70		238	140	2	•
19.844	25/32	238	140	2	•
20.00		238	140	2	•
20.638	13/16	243	145	2	•
20.70		243	145	2	•
21.00		243	145	2	•
21.431	27/32	248	150	2	•
21.70		248	150	2	•
22.00		248	150	2	•
22.225	7/8	248	150	2	•
22.70		253	155	2	•
23.00		253	155	2	•
23.019	29/32	253	155	2	•
23.813	15/16	281	160	3	•
24.00		281	160	3	•
24.606	31/32	281	160	3	•
24.70		281	160	3	•
25.00		281	160	3	•
25.40	1	286	165	3	•
25.70		286	165	3	•
26.00		286	165	3	•
26.70		291	170	3	•
26.988	1 1/16	291	170	3	•
27.00		291	170	3	•
27.70		291	170	3	•
28.00		291	170	3	•
28.575	1 1/8	296	175	3	•
29.00		296	175	3	•
29.369	1 5/32	296	175	3	•
29.70		296	175	3	•
30.00		296	175	3	•
30.163	1 3/16	301	180	3	•
30.60		301	180	3	•
31.00		301	180	3	•
31.60		306	185	3	•
31.75	1 1/4	306	185	3	•
32.00		334	185	4	•
32.544	1 9/32	334	185	4	•
32.60		334	185	4	•
33.00		334	185	4	•
33.338	1 5/16	334	185	4	•
34.00		339	190	4	•
34.925	1 3/8	339	190	4	•
35.00		339	190	4	•
35.60		344	195	4	•
36.00		344	195	4	•
36.513	1 7/16	344	195	4	•
36.60		344	195	4	•
37.00		344	195	4	•
37.60		349	200	4	•
38.00		349	200	4	•
38.10	1 1/2	349	200	4	•
38.60		349	200	4	•
39.00		349	200	4	•
40.00		349	200	4	•

Twist Drills with Taper Shank HSCo-8, Standard Length, DIN 345

List-No.	11111				
Product Group	42				
					
Type	Heavy Duty				
Material	HSCo-8				
Cutting Direction	Right				
Surface	P2				
Point Geometry	135° Form C				
Web Thickness	Strengthened				
Web Taper	Strengthened				
Flute Form	Normal				
Tolerance of Dia.	h8				
Tolerance of Shank					
Packing Unit	All Diam. · 1 pc				
d	d	l1	l2	MTS	Availability
mm	ins	mm	mm		
10.00		168	87	1	•
10.20		168	87	1	•
10.319	13/32	168	87	1	•
10.50		168	87	1	•
10.80		175	94	1	•
11.00		175	94	1	•
11.113	7/16	175	94	1	•
11.20		175	94	1	•
11.50		175	94	1	•
11.80		175	94	1	•
11.906	15/32	182	101	1	•
12.00		182	101	1	•
12.50		182	101	1	•
12.70	1/2	182	101	1	•
12.80		182	101	1	•
13.00		182	101	1	•
13.25		189	108	1	•
13.494	17/32	189	108	1	•
13.50		189	108	1	•
13.75		189	108	1	•
14.00		189	108	1	•
14.25		212	114	2	•
14.288	9/16	212	114	2	•
14.50		212	114	2	•
14.75		212	114	2	•
15.00		212	114	2	•
15.081	19/32	218	120	2	•
15.25		218	120	2	•
15.50		218	120	2	•
15.75		218	120	2	•
15.875	5/8	218	120	2	•
16.00		218	120	2	•
16.25		223	125	2	•
16.50		223	125	2	•
16.669	21/32	223	125	2	•


List-No.	11111				
Product Group	42				
d	d	l1	l2	MTS	Availability
mm	ins	mm	mm		
16.75		223	125	2	•
17.00		223	125	2	•
17.25		228	130	2	•
17.463	11/16	228	130	2	•
17.50		228	130	2	•
17.75		228	130	2	•
18.00		228	130	2	•
18.25		233	135	2	•
18.256	23/32	233	135	2	•
18.50		233	135	2	•
18.75		233	135	2	•
19.00		233	135	2	•
19.05	3/4	238	140	2	•
19.25		238	140	2	•
19.50		238	140	2	•
19.75		238	140	2	•
19.844	25/32	238	140	2	•
20.00		238	140	2	•
20.50		243	145	2	•
20.638	13/16	243	145	2	•
21.00		243	145	2	•
21.431	27/32	248	150	2	•
21.50		248	150	2	•
22.00		248	150	2	•
22.225	7/8	248	150	2	•
22.50		253	155	2	•
23.00		253	155	2	•
23.019	29/32	253	155	2	•
23.50		276	155	3	•
23.813	15/16	281	160	3	•
24.00		281	160	3	•
24.50		281	160	3	•
24.606	31/32	281	160	3	•
25.00		281	160	3	•
25.40	1	286	165	3	•
25.50		286	165	3	•
26.00		286	165	3	•
26.50		286	165	3	•
27.00		291	170	3	•
27.50		291	170	3	•
28.00		291	170	3	•
28.50		296	175	3	•
29.00		296	175	3	•
29.50		296	175	3	•
30.00		296	175	3	•
31.00		301	180	3	•
32.00		334	185	4	•
33.00		334	185	4	•
34.00		339	190	4	•
35.00		339	190	4	•
36.00		344	195	4	•
37.00		344	195	4	•
38.00		349	200	4	•
39.00		349	200	4	•
40.00		349	200	4	•

Twist Drills with Taper Shank HSS, Bushing Length, DIN 341

List-No.	11400			
Product Group	40			
				
Type	Std. Helix			
Material	HSS			
Cutting Direction	Right			
Surface	P1			
Point Geometry	118°			
Helix Angle	Normal			
Web Thickness	Normal			
Web Taper	Normal			
Flute Form	Normal			
Tolerance of Dia.	h8			
Tolerance of Shank				
Packing Unit	All Diam. · 1 pc			
d	l1	l2	MTS	Availability
mm	mm	mm		
5.00	155	74	1	•
5.50	161	80	1	•
6.00	161	80	1	•
6.50	167	86	1	•
7.00	174	93	1	•
7.50	174	93	1	•
8.00	181	100	1	•
8.50	181	100	1	•
8.80	188	107	1	•
9.00	188	107	1	•
9.50	188	107	1	•
10.00	197	116	1	•
10.20	197	116	1	•
10.30	197	116	1	•
10.50	197	116	1	•
11.00	206	125	1	•
11.50	206	125	1	•
11.80	206	125	1	•
12.00	215	134	1	•
12.50	215	134	1	•
12.80	215	134	1	•
13.00	215	134	1	•
13.50	223	142	1	•
14.00	223	142	1	•
14.25	245	147	2	•
14.50	245	147	2	•
14.75	245	147	2	•
15.00	245	147	2	•
15.25	251	153	2	•
15.50	251	153	2	•
15.75	251	153	2	•
16.00	251	153	2	•

List-No.	11400			
Product Group	40			
d	l1	l2	MTS	Availability
mm	mm	mm		
16.25	257	159	2	•
16.50	257	159	2	•
16.75	257	159	2	•
17.00	257	159	2	•
17.25	263	165	2	•
17.50	263	165	2	•
17.75	263	165	2	•
18.00	263	165	2	•
18.25	269	171	2	•
18.50	269	171	2	•
18.75	269	171	2	•
19.00	269	171	2	•
19.25	275	177	2	•
19.50	275	177	2	•
19.75	275	177	2	•
20.00	275	177	2	•
20.50	282	184	2	•
21.00	282	184	2	•
21.50	289	191	2	•
22.00	289	191	2	•
22.50	296	198	2	•
23.00	296	198	2	•
23.50	319	198	3	•
24.00	327	206	3	•
24.50	327	206	3	•
25.00	327	206	3	•
25.50	335	214	3	•
26.00	335	214	3	•
26.50	335	214	3	•
27.00	343	222	3	•
27.50	343	222	3	•
28.00	343	222	3	•
28.50	351	230	3	•
29.00	351	230	3	•
29.50	351	230	3	•
30.00	351	230	3	•
31.00	360	239	3	•
32.00	397	248	4	•
33.00	397	248	4	•
34.00	406	257	4	•
35.00	406	257	4	•
36.00	416	267	4	•
37.00	416	267	4	•
38.00	426	277	4	•
39.00	426	277	4	•
40.00	426	277	4	•
41.00	436	287	4	•
42.00	436	287	4	•
43.00	447	298	4	•
44.00	447	298	4	•
45.00	447	298	4	•
46.00	459	310	4	•
47.00	459	310	4	•
48.00	470	321	4	•
49.00	470	321	4	•
50.00	470	321	4	•

Twist Drills with Taper Shank HSS, Extra Length BS 328, Std. Helix

List-No.	15000	15000	15000	15000	15000
Product Group	40	40	40	40	40
					
11 mm	200	250	315	400	500
Material	HSS	HSS	HSS	HSS	HSS
Cutting Direction	Right	Right	Right	Right	Right
Surface	P1	P1	P1	P1	P1
Point Angle	118°	118°	118°	118°	118°
Helix Angle	Normal	Normal	Normal	Normal	Normal
Web Thickness	Strengthened	Strengthened	Strengthened	Strengthened	Strengthened
Web Taper	Normal	Normal	Normal	Normal	Normal
Flute Form	Normal	Normal	Normal	Normal	Normal
Tolerance of Dia.	h8	h8	h8	h8	h8
Tolerance of Shank					
Packing Unit	All Diam. · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc	All Diam. · 1 pc
d mm	d ins	Availability	Availability	Availability	Availability
MTS 1	12 mm	110	160	225	310
6.00		•	•	•	
6.35	1/4	•	•	•	
6.50		•	•	•	
6.747	17/64	•	•	•	
7.00		•	•	•	
7.144	9/32	•	•	•	
7.50		•	•	•	
7.541	19/64	•	•	•	
7.938	5/16	•	•	•	
8.00		•	•	•	
8.334	21/64	•	•	•	
8.50		•	•	•	
8.731	11/32	•	•	•	
9.00		•	•	•	
9.128	23/64	•	•	•	
9.50		•	•	•	
9.525	3/8	•	•	•	
9.922	25/64	•	•	•	
10.00		•	•	•	
10.319	13/32	•	•	•	
10.716	27/64	•	•	•	
11.00		•	•	•	
11.113	7/16	•	•	•	
11.509	29/64	•	•	•	
11.906	15/32	•	•	•	
12.00		•	•	•	
12.303	31/64	•	•	•	
12.70	1/2	•	•	•	
13.00		•	•	•	
13.097	33/64	•	•	•	
13.494	17/32	•	•	•	•
13.891	35/64	•	•	•	•
14.00		•	•	•	•

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Drilling

Countersinks

Reaming

Threading

Milling


Miscellaneous

Twist Drills with Taper Shank HSS, Extra Length BS 328, Std. Helix


List-No.	15000		15000	15000	15000	15000
Product Group	40		40	40	40	40
l1 mm	200		250	315	400	500
d mm	d ins	Availability	Availability	Availability	Availability	Availability
MTS 2	l2 mm			215	300	400
14.288	9/16			•	•	•
14.684	37/64			•	•	•
15.00				•	•	•
15.081	19/32			•	•	•
15.478	39/64			•	•	•
15.875	5/8			•	•	•
16.00				•	•	•
16.272	41/64			•	•	•
16.669	21/32			•	•	•
17.00				•	•	•
17.066	43/64			•	•	•
17.463	11/16			•	•	•
17.859	45/64			•	•	•
18.00				•	•	•
18.256	23/32			•	•	•
18.653	47/64			•	•	•
19.00				•	•	•
19.05	3/4			•	•	•
19.447	49/64			•	•	•
19.844	25/32			•	•	•
20.00				•	•	•
20.638	13/16			•	•	•
21.00				•	•	•
21.431	27/32			•	•	•
22.00				•	•	•
22.225	7/8			•	•	•
23.00				•	•	•
23.019	29/32			•	•	•
MTS 3	l2 mm			190	275	375
23.813	15/16			•	•	•
24.00				•	•	•
24.606	31/32			•	•	•
25.00				•	•	•
25.40	1			•	•	•
26.00				•	•	•
26.988	1 1/16			•	•	•
27.00				•	•	•
28.00				•	•	•
28.575	1 1/8			•	•	•
30.00				•	•	•
30.163	1 3/16			•	•	•
31.75	1 1/4			•	•	•
MTS 4	l2 mm				250	350
32.00					•	•
34.925	1 3/8				•	•
35.00					•	•
38.00					•	•
38.10	1 1/2				•	•
40.00					•	•
41.275	1 5/8				•	•
42.00					•	•
44.45	1 3/4				•	•
45.00					•	•
47.625	1 7/8				•	•
48.00					•	•
50.00					•	•
50.80	2				•	•

Drilling
Countersinks
Reaming
Threading
Milling
Miscellaneous








**Jobber Drills, HSS, DIN 338
Skin Pack**

List-No.	09530			
Product Group	09			
				
Type	Std. Helix			
Material	HSS			
Cutting Direction	Right			
Surface	P1			
Point Geometry	118° > 14.0 Form A			
Helix Angle	Normal			
Web Thickness	Normal			
Web Taper	Normal			
Flute Form	Normal			
Tolerance of Dia.	h8			
Tolerance of Shank	f11			
Packing Unit	≤ d 6.00 2pc > d 6.00 1 pc			
d mm	d ins	l1 mm	l2 mm	Availability
1.50		40	18	•
2.00		49	24	•
2.50		57	30	•
3.00		61	33	•
3.50		70	39	•
4.00		75	43	•
4.50		80	47	•
5.00		86	52	•
5.50		93	57	•
6.00		93	57	•
6.50		101	63	•
7.00		109	69	•
7.50		109	69	•
8.00		117	75	•
8.50		117	75	•
9.00		125	81	•
9.50		125	81	•
10.00		133	87	•
10.50		133	87	•
11.00		142	94	•
11.50		142	94	•
12.00		151	101	•
12.50		151	101	•
13.00		151	101	•

**Jobber Drills, HSS, DIN 338, ISO
529 Second Tap, Skin Pack**




List-No.		09536		
Product Group		09		
				
Product Group		10		
Type		STF Second		
Type		STF Second		
Type of Hole		TH		
Length of Chamfer Lead (Thread)		4 - 5		
Tolerance		ISO2/6H		
Surface		P0		
Tap Dia	Drill Dia	1 pc		
d mm	d ins	d mm	d ins	Availability
M3		2.50		•
M4		3.30		•
M5		4.20		•
M6		5.00		•
M8		6.00		•
M10		8.00		•
M12		10.20		•

Jobber Drills DIN 338, HSS, Std. Helix





List-No.	No. of Drills	Range	Increments	Unit		Availability	Product Group
09500M50	50	1.0 - 5.9 mm	0.1 mm	1		•	49
09500M41	41	6.0 - 10.0 mm	0.1 mm	1		•	49
09500M19	19	1.0 - 10.0 mm	0.5 mm	1		•	49
09500M25	25	1.0 - 13.0 mm	0.5 mm	1		•	49
0950029	29	1/16" - 1/2"	1/64"	1		•	49
0950015	15	1/16" - 1/2"	1/32"	1		•	49
0950021	21	1/16" - 3/8"	1/64"	1		•	49
0950013	13	1/16" - 1/4"	1/64"	1		•	49

P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Jobber Drills DIN 338, HSS


List-No.	No. of Drills	Range	Increments	Unit		Availability	Product Group
09510M19	19	1.0 - 10.0 mm	0.5 mm	1		•	49
09900M25	55	1.0-13.0 mm	0.5 mm+ Tapping Sizes	1		•	49
09540M29	425	1.0-13.0 mm	0.5 mm+ Tapping Sizes	1		•	49


Jobber Drills DIN 338, HSCo

List-No.	No. of Drills	Range	Increments	Unit		Availability	Product Group
09501M50	50	1.0 - 5.9 mm	0.1 mm	1		•	49
09501M41	41	6.0 - 10.0 mm	0.1 mm	1		•	49
09501M19	19	1.0 - 10.0 mm	0.5 mm	1		•	49
09501M25	25	1.0 - 13.0 mm	0.5 mm	1		•	49




P0-Bright • P1-Steam Tempered • P2-Bronze • P3-Moc • P4-Nitrided • P5-TiN • P6-TiCN • P7 / P8 TiAlN • P9 TiB

Jobber Drills DIN 338, HSCo

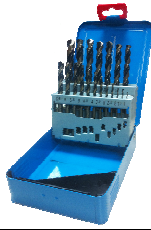

Drilling	0950129	29	1/16" - 1/2"	1/64"	1		•	49
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Countersinks	0950115	15	1/16" - 1/2"	1/32"	1		•	49
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Jobber Drills DIN 338, HSS, Type Hi-Nox

List-No.	No. of Drills	Range	Increments	Unit		Availability	Product Group
09502M25	25	1.0 - 13.0 mm	0.5 mm	1		•	49
09502M19	19	1.0 - 10.0 mm	0.5 mm	1		•	49
09902M25	55	1.0 - 13.0mm	0.5 mm+ Tapping Sizes	1			





Jobber Drills DIN 338, HSS Tri-Quad

List-No.	No. of Drills	Range	Increments	Unit		Availability	Product Group
09503M19	19	1.0 - 10.0 mm	0.5 mm	1		•	49
09503M25	25	1.0 - 13.0 mm	0.5 mm	1		•	49

Jobber Drills DIN 338, HSS TiN

List-No.	No. of Drills	Range	Increments	Unit		Availability	Product Group
09505M19	19	1.0 - 10.0 mm	0.5 mm	1		•	49
09505M25	25	1.0 - 13.0 mm	0.5 mm	1		•	49
0950515	15	1/16" - 1/2"	1/32"	1		•	49

Jobber Drills DIN 338, HSS, Elite Jobber

List-No.	No. of Drills	Range	Increments	Unit		Availability	Product Group
09522M19	19	1.0 - 10.0 mm	0.5 mm	1		•	49
09522M25	25	1.0 - 13.0 mm	0.5 mm	1		•	49
09522M41	41	6.0 - 10.0 mm	0.1 mm	1		•	49
09522M50	50	1.0 - 5.9 mm	0.1 mm	1		•	49

Jobber Drills DIN 338, Elite Plus Jobber Drill Set

Drilling

Countersinks

Reaming

Threading

Milling

Miscellaneous

List-No.	No. of Drills	Range	Increments	Unit		Availability	Product Group
09565M19	19	1.0 - 10.0 mm	0.5 mm	1		•	05
09565M25	25	1.0 - 13.0 mm	0.5 mm	1		•	05
09965M25	55	1.0 - 13.0 mm	0.5 mm	1		•	05

Annular Cutters, HSS, Short Series,

List-No.	49010	49010PIN		
Product Group	22	22		
Material	HSS	HSS		
Cutting Direction	Right			
Surface	Black Oxide	Bright		
Helix Angle	Normal			
Flute Form	Normal			
Packing Unit	All Diam. · 1 pc	All Diam. · 1 pc		
d1 mm	l1 mm	l2 mm	d2 mm	Availability
12	30	23	19	•
13	30	23	19	•
14	30	23	19	•
15	30	23	19	•
16	30	23	19	•
17	30	23	19	•
18	30	23	19	•
19	30	23	19	•
20	30	23	19	•
21	30	23	19	•
22	30	23	19	•
23	30	23	19	•
24	30	23	19	•
25	30	23	19	•
26	30	23	19	•
27	30	23	19	•
28	30	23	19	•
29	30	23	19	•
30	30	23	19	•
31	30	23	19	•
32	30	23	19	•
33	30	23	19	•
34	30	23	19	•
35	30	23	19	•
36	30	23	19	•
37	30	23	19	•
38	30	23	19	•
39	30	23	19	•
40	30	23	19	•
41	30	23	19	•
42	30	23	19	•
43	30	23	19	•
44	30	23	19	•
45	30	23	19	•
46	30	23	19	•
47	30	23	19	•
48	30	23	19	•
49	30	23	19	•
50	30	23	19	•
51	30	23	19	•
52	30	23	19	•

Annular Cutters, HSS, Long Series

List-No.	49020	49020PIN		
Product Group	22	22		
Material	HSS	HSS		
Cutting Direction	Right			
Surface	Black Oxide	Bright		
Helix Angle	Normal			
Flute Form	Normal			
Packing Unit	All Diam. · 1 pc	All Diam. · 1 pc		
d mm	l1 mm	l2 mm	d2 mm	Availability
12	50	23	19	•
13	50	23	19	•
14	50	23	19	•
15	50	23	19	•
16	50	23	19	•
17	50	23	19	•
18	50	23	19	•
19	50	23	19	•
20	50	23	19	•
21	50	23	19	•
22	50	23	19	•
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31	50	23	19	•
32	50	23	19	•
33	50	23	19	•
34	50	23	19	•
35	50	23	19	•
36	50	23	19	•
37	50	23	19	•
38	50	23	19	•
39	50	23	19	•
40	50	23	19	•
41	50	23	19	•
42	50	23	19	•
43	50	23	19	•
44	50	23	19	•
45	50	23	19	•
46	50	23	19	•
47	50	23	19	•
48	50	23	19	•
49	50	23	19	•
50	50	23	19	•
51	50	23	19	•
52	50	23	19	•

Drilling

Countersinks

Reaming

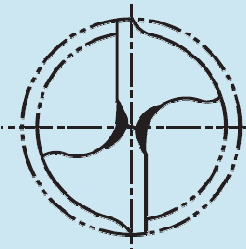
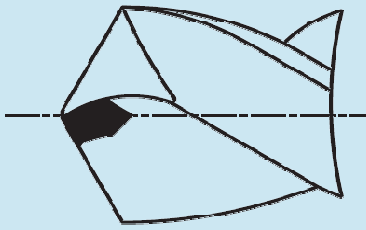
Threading

Milling

Miscellaneous

Point Thinning According to DIN 1412 / Factory Standard

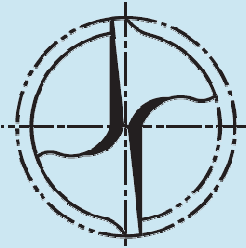
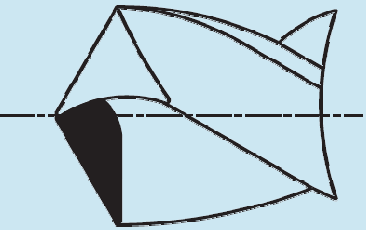
Drilling



DIN 1412 Form A Point Thinning

Form A point thinning - reduction of the chisel edge length. Thinning of the web helps the drill to self-center and decreases the amount of force required to penetrate material.

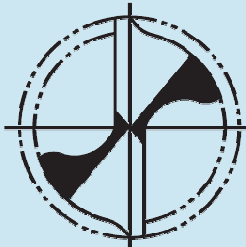
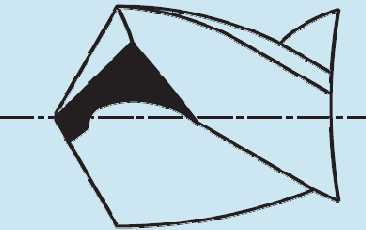
Countersinks



DIN 1412 Form B

For edge correction or to reduce cutting edge rake to suit brittle / hard materials.

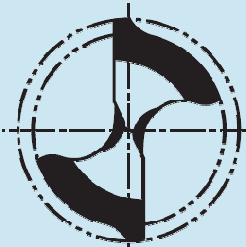
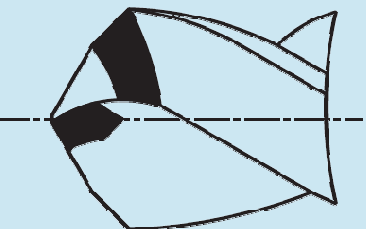
Reaming



DIN 1412 Form C & ANSI Split Point

Drills with split points have better penetration capabilities, improved starting / self centering ability and improved hole accuracy.

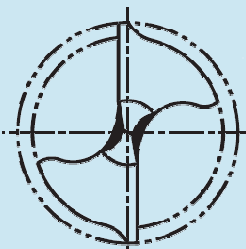
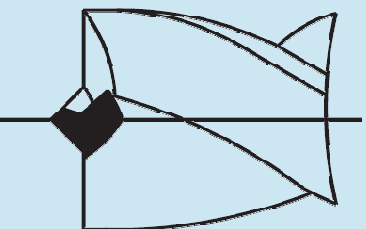
Threading



DIN 1412 Form D Double Angle Point

Point for cast iron, the outer corner stops frittering of the iron on breakthrough, and resists abrasive wear.

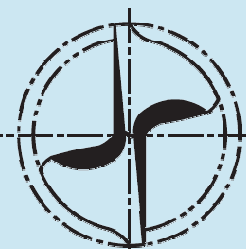
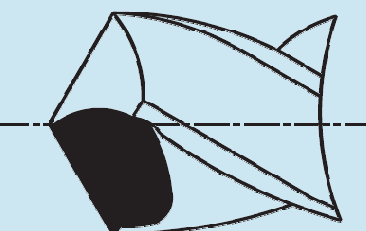
Milling



DIN 1412 Form E Spot Weld Point

Special drill point for removing spot welds in sheet metal.

Miscellaneous



DIN 1412 Form S Special Web Thinning For Parabolic Flutes

Factory standard point for use on parabolic flute drills.

Drill Cutting Speeds

MATERIAL	HARD'S	SPEEDS & (FEEDS)		
		Stub	Jobber	Long S
Steel				
Leaded Free Cutting	120Hb	36 (5)	33 (4)	22 (3)
Low Carbon	150Hb	32 (5)	27 (4)	20 (3)
Medium Carbon	250Hb	27 (4)	22 (3)	17 (3)
Alloy Steel	250Hb	21 (4)	18 (3)	16 (2)
Alloy Steel Treated	300Hb	14 (3)*	11 (2)*	9 (2)*
Alloy Steel Treaded	350Hb	9 (2)*	7 (2)*	6 (2)*
Stainless Steel				
Free Cutting	250Hb	16 (4)	14 (2)	12 (2)
Austenitic Non-Mag	250Hb	9 (4)	7 (4)	6 (3)
Duplex Alloys	300Hb	12 (3)	9 (3)	7 (2)
Cast Irons				
Plain Gray Cast	150Hb	35 (4)	33 (4)	25 (3)
SG & Malleable	250Hb	30 (4)	22 (4)	20 (3)
Alloy Cast	300Hb	19 (4)	17 (3)	15 (3)
Titanium				
Pure Titanium	200Hb	28 (4)*	18 (4)*	15 (3)*
Titanium Alloys	300Hb	9 (2)*	7 (2)*	6 (2)*
Nickel				
Pure Nickel	200Hb	12 (4)*	14 (4)*	10 (3)*
Nimonic 75, Hasteloy	300Hb	10 (4)*	9 (4)*	7 (3)*
Inconel 718	300Hb	7 (3)*	5 (3)*	3 (2)*
Copper Alloys				
Pure Copper	100Hb	42 (5)	40 (4)	30 (3)
Brass Soft Yellow	150Hb	40 (5)	40 (5)	
Brass Tough Red	200Hb	37 (5)	37 (5)	
Hi-tensile Bronze	250Hb	25 (4)	25 (4)	23 (3)
Aluminium				
Soft & Extruded	100Hb	55 (7)	50 (6)	40 (5)
Wrought & Treated	150Hb	45 (5)	40 (5)	30 (3)
Cast 5% Si	120Hb	40 (5)	35 (4)	30 (3)
Cast 10% Si	150Hb	33 (4)	30 (4)	27 (3)

Speeds given in Meters / min. Feeds in brackets(4). Specialist drills are available for most material or difficult applications please consult page 10 for application orientated drills. Use quick spiral Bright finish on aluminium, copper. Use slow spiral Bright finish on brasses. If quick or slow spiral not available, bright finish is a good alternative for non ferrous materials.

* Cobalt drill must be used. Where cobalt is not available use HSS drills at reduced speed of 66%.

Speed Chart

Diameter Meters / min	1/8" 3	3/16" 5	1/4" 6	5/16" 8	3/8" 10	1/2" 12	5/8" 16	3/4" 19
5	530	318	265	199	159	133	99	84
7	743	446	371	279	223	186	139	117
9	955	573	477	358	286	239	179	151
12	1273	764	637	477	382	318	239	201
15	1591	955	796	597	477	398	298	251
20	2122	1273	1061	796	637	530	398	335
22	2334	1401	1167	875	700	584	438	369
25	2652	1591	1326	995	796	663	497	419
27	2865	1719	1432	1074	859	716	537	452
30	3183	1910	1591	1194	955	796	597	503
35	3713	2228	1857	1393	1114	928	696	586
40	4244	2546	2122	1591	1273	1061	796	670
45	4774	2865	2387	1790	1432	1194	895	754
50	5305	3183	2652	1989	1591	1326	995	838

Feed Chart

Diameter Feed Code	3	5	6	8	10	12	16	19
(1)	0.030	0.035	0.045	0.055	0.062	0.070	0.085	0.110
(2)	0.045	0.060	0.065	0.070	0.100	0.110	0.130	0.160
(3)	0.062	0.080	0.095	0.120	0.140	0.150	0.160	0.210
(4)	0.085	0.110	0.120	0.160	0.190	0.200	0.240	0.280
(5)	0.120	0.150	0.170	0.220	0.260	0.280	0.320	0.360
(6)	0.150	0.190	0.210	0.280	0.330	0.350	0.400	0.450
(7)	0.180	0.230	0.250	0.330	0.390	0.420	0.460	0.520

Feeds in Brackets (4) from speed chart above. Figure in **bold** are the best general purpose speed and feed for use on steel as a good starting point.

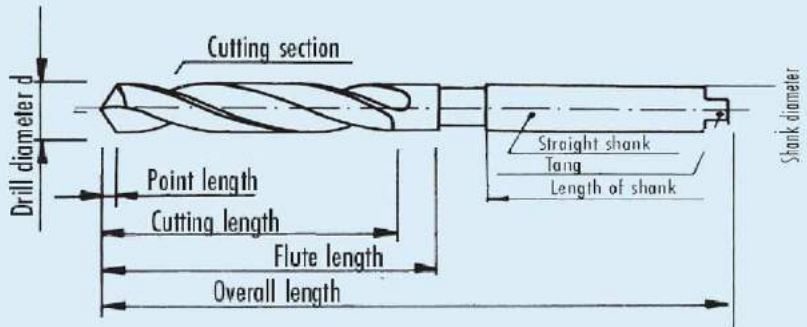
To convert Meters / Minute peripheral speed to RPM use formula:
Meters Per Minute x 1000

$$RPM = \frac{\text{Meters Per Minute} \times 1000}{3.1416 (\pi) \times \text{Diameter in MM's}}$$

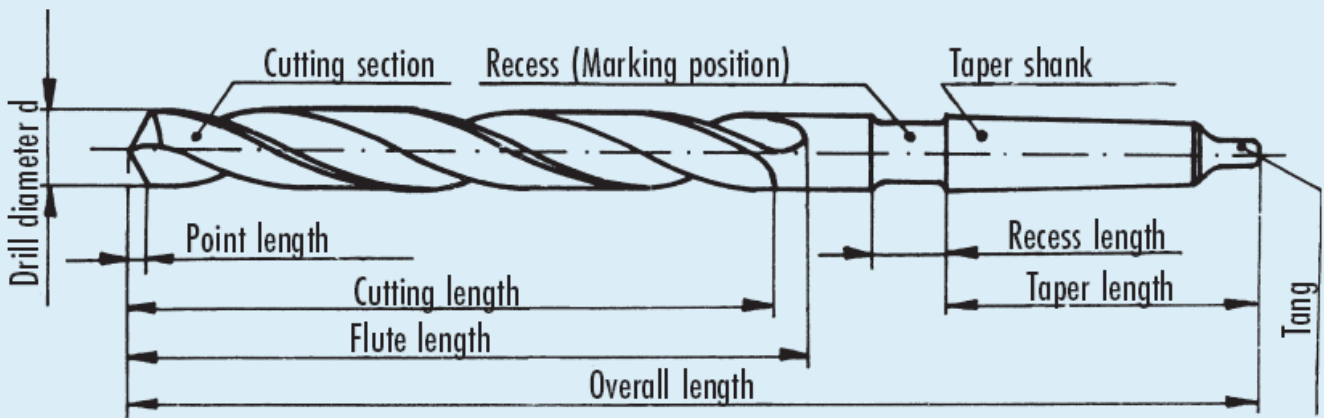
Penetration rate = RPM x Feed per revolution. Speeds and Feeds are given as starting points, the design of the drill can effect the performance and life.

Twist Drill Nomenclature

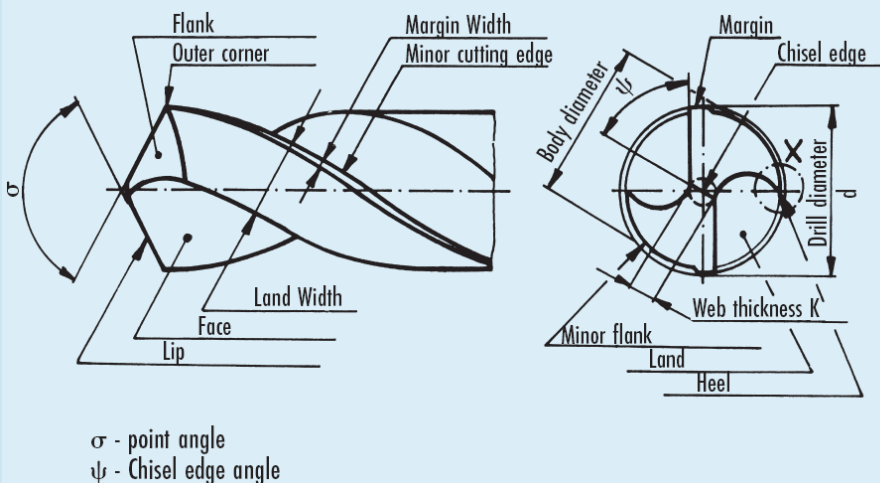
Straight Shank Drill



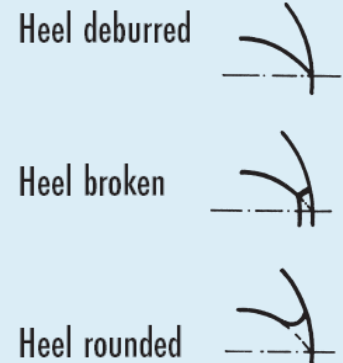
Morse Taper Shank Drill



Cutting Section

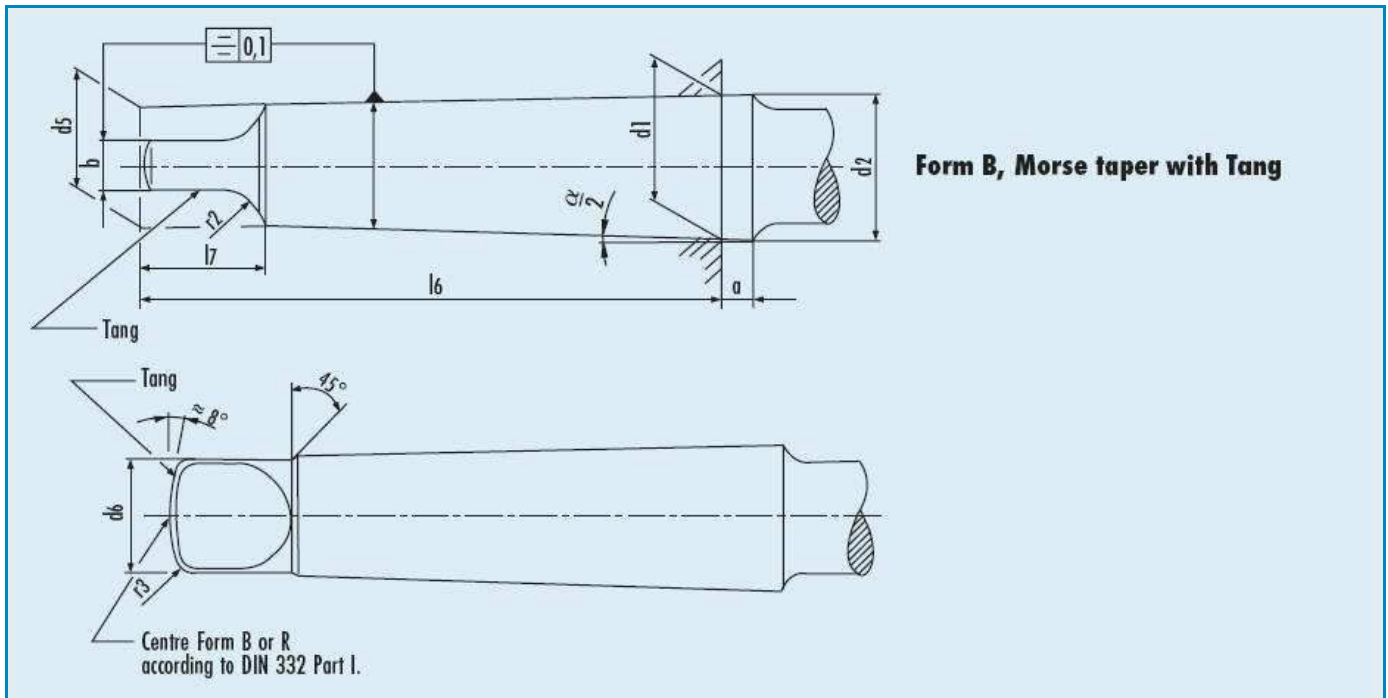


Heel Forms (Detail)



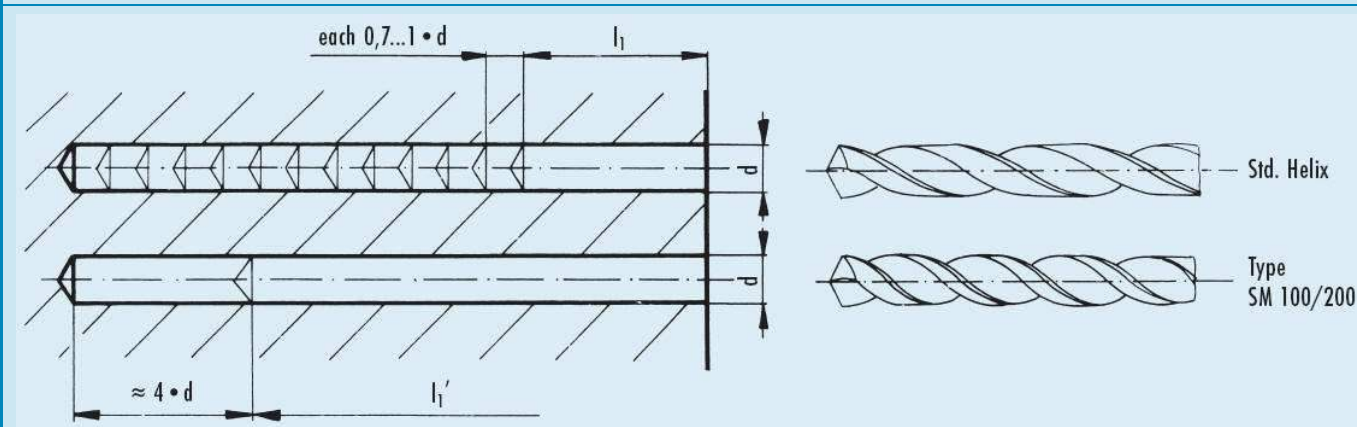
Morse Taper Shanks DIN 228, Form B and BK

Morse Taper Form B, BK Size	a	Tol. of a	b	d1	d2	d5	d6	d12	d13	d14	16	17	18	19	110	r2	r3	$\alpha/2$
			h13		≈	≈	max			0 -0.1	0 -0.1	max						
MT 0	3.0	+1.2 0	3.9	9.045	9.2	6.1	6.0				56.5	10.5				4.0	1.0	1°29'27"
MT 1	3.5	+1.4 0	5.2	12.065	12.2	9.0	8.7				62.0	13.5				5.0	1.2	1°25'43"
MT 2	5.0	+1.4 0	6.3	17.780	18.0	14.0	13.5	4.2	4.2	15.0	75.0	16.0	20.0	34.0	27.0	6.0	1.6	1°25'50"
MT 3	5.0	+1.7 0	7.9	23.825	24.1	19.1	18.5	5.0	5.0	21.0	94.0	20.0	29.0	43.0	36.0	7.0	2.0	1°26'16"
MT 4	6.5	+1.9 0	11.9	31.267	31.6	25.2	24.5	6.8	6.8	28.0	117.5	24.0	39.0	55.0	47.0	8.0	8.0	1°29'15"
MT 5	6.5	+1.9 0	15.9	44.399	44.7	36.5	35.7	8.5	8.5	40.0	149.5	29.0	51.0	69.0	60.0	10.0	10.0	1°30'26"
MT 6	8.0	+2.3 0	19.0	63.348	63.8	52.4	51.0	10.2	10.2	56.0	210.0	40.0	81.0	99.0	90.0	13.0	13.0	1°29'36"



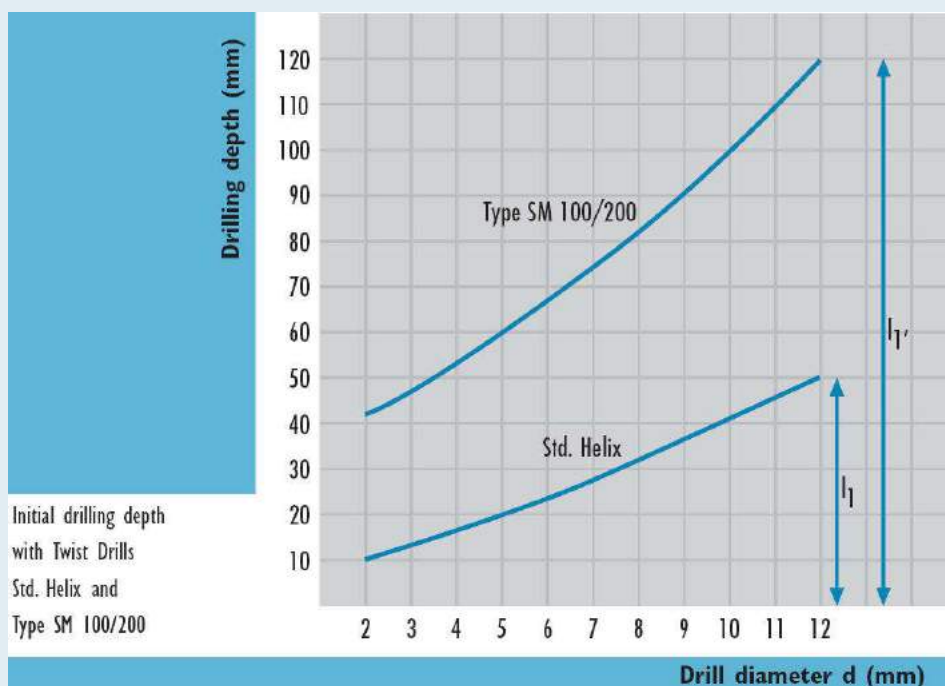
Deep Hole Drilling ($> 5 \times d$) / Material Specification

Deep Hole Drilling ($> 5 \times d$)



For the production of deep holes we recommend Type SM 200 and SM 100 instead of Std. Helix and High Helix Drills.

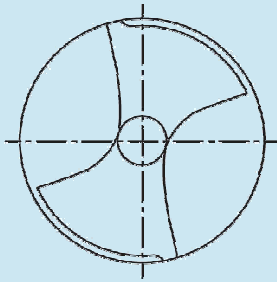
This allows drilling up to $10 \times d$ without pecking.



Material Specification

Description	Steel Designation	Material Number	USA Description	Approximate Analysis in % (Mean Values)							
				C	Si	Mn	Cr	Mo	V	W	Co
HSS	S 6-5-2	1.3343	M2	0.90	-	-	4.15	4.95	1.85	6.35	-
HSCo	S 6-5-2-5	1.3243	M35	0.92	-	-	4.15	4.95	1.85	6.35	4.75
HSS-E	S 6-5-3	1.3344	M3	1.22	-	-	4.15	4.95	2.95	6.35	-
HSCo-8	S 2-10-1-8	1.3247	M42	1.08	-	-	4.00	9.50	1.15	1.50	8.00
HSSE-PM	ASP60	-	-	2.30	-	-	4.00	7.00	6.50	6.50	10.50
Shank material	C 60	1.0601	-	0.61	< 0.40	0.75	< 0.40	-	-	-	-

Twist Drill Profiles



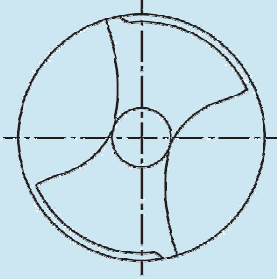
Std. Helix, Low Helix, High Helix

Design: helix angle based on DIN 1414, web thickness normal, normal flutes

Application:
Std. Helix: normal machinable materials (e.g. steel, cast steel, grey cast iron)
Low Helix: hard, short chipping materials (e.g. brass, bronze)
High Helix: soft, long chipping materials (e.g. aluminium, aluminium alloys, copper)

Point angle, point grinding:
Std. Helix and Low Helix: 118°, cone relief point
High Helix: 130°, cone relief point

Material: HSS, HSCo



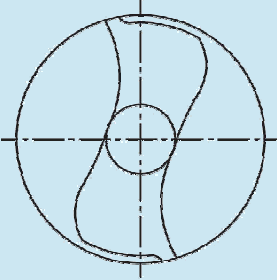
Type Cotter Pin

Design: standard helix angle, dual web, normal flutes

Application:
 for difficult drilling conditions, to drill normal machinable materials

Point angle, point grinding:
 135°, cone relief point, web thinning form C

Material: HSS



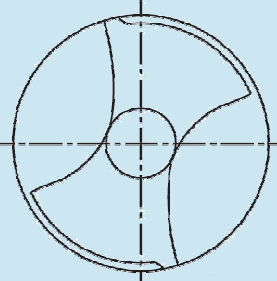
Type SM 200

Design: high helix, extremely strengthened web, wide and open flutes with strongly rounded heels

Application:
 for difficult drilling jobs, to drill steel and cast steel with tensile strength up to 1.000 (1.300) N/mm², drilling up to 10 times diameter deep without pecking

Point angle, point grinding:
 135°, cone relief point, web thinning form C

Material: HSS, HSCo-8



Type Heavy Duty and VHD

Design: standard helix angle, (extremely) strengthened web, normal profile

Application:
 for difficult drilling conditions, to drill steels with tensile strength up to 1.400 N/mm²

Point angle, point grinding:
 135°, cone relief point, web thinning form C

Material: HSCo

Drilling

Countersinks

Reaming

Threading

Milling

Miscellaneous

Surface Finishes

Surface treatments and Coatings play an important role in the performance of the product. The correct choice of surface finish for the work piece offers the user the following advantages:

- Reduction of power requirement and the possibility of an increase in cutting parameters.
- Avoidance of built up edges and cold chip welding
- Protection from abrasive and adhesive wear and tear
- Provides a heat barrier to the cutting edge
- Possibility of dry machining or the use of minimal coolant
- Improvement in surface finish of the workpiece and higher productivity

P0	Bright	Characteristic: Bright surface
		The bright finish is primarily supplied for working on non-ferrous metals, Nickel Chrome steels and soft plastics. This surface finish enables optimum chip flow.
P1	Steam Temper	Characteristic: Dark blue to black colour surface
		Tools are tempered in a steam atmosphere. The resultant oxidization of the surface layer provides increased wear resistance, reduces the possibility of cold chip welding and permits a freer flow of lubrication to the workpiece. Steam temper is not recommended for working on Aluminium. This surface treatment is the most common used.
P4	Nitrided, Nitrided Lands	Characteristic: Dark grey to black colour surface
		Taps and part finished drills are treated in a Nitrogen atmosphere and then steam tempered. This provides a hard surface and consequently improves wear resistance at the cutting edge. The subsequent flute and point grinding provide optimal chip evacuation. This surface treatment is particularly effective when drilling deep holes and also when drilling and tapping abrasive materials.
P5	TiN	Characteristic: Gold / yellow colour over flute length
		A coating of Titanium Nitride of between 1.5 - 3 µm is applied to the surface by a PVD process. This gives a surface hardness of approx 2.300 HV on the treated surface and offers the possibility of up to 400% increase in tool life when used on free cutting steels. This finish also enables increase of up to 60% in cutting speeds with resultant benefits in production capabilities.
P6	TiCN	Characteristic: Grey violet colour over flute length
		The Titanium Carbo-Nitride surface is approx 2 to 3 µm thick and provides a hardness of approx 3000HV. This enables higher cutting speeds to be employed with a resultant considerable increase in productivity.
P7 / P8	TiAlN (HY)	Characteristic: Black violet colour over flute length
		The Titanium-Aluminium Nitride finish is a multi nano layer surface finish of TiAlN and TiN. It has a thickness of approx 2 to 5 µm and a hardness of approx 3.300HV. It will withstand higher working temperatures (up to 800°C) and therefore is particularly suitable when using minimal cutting fluid or dry machining. Recommended for use on abrasive materials such as Cast Iron or Al-Si alloys. Good all round coating.
P2	Bronze	Characteristic: Bronze colour surface
		This is a stress relieving treatment and is the normal surface treatment for drills in Cobalt.
P3	Moc	Characteristic: Blue black colour over flute length
		The Molybdenum Sulphide surface finish is an extra coating applied over a previous coating (TiN or TiCN). It offers superior anti frictional qualities and is particularly recommended for use on materials which are difficult to machine and also where minimal lubrication or dry machining is in operation.
P9	TiB	Characteristic: Metallic colour on surface
		This coating has proven excellent for use on non-ferrous metals. With its higher hardness it is particularly recommended for use on Copper, long chipping Aluminium (without Si), and on Titanium.