

New products for machining technicians

NEW WTL twist drill, extra-long, TiAlN



The new WTL twist drill with proven TiAlN multilayer coating increases your productivity and process-security.

→ Page **29+30**



Solid drilling and bore machining	1	HSS drilling	1
	2	Solid carbide drilling	
	3	Indexable insert drilling	
	4	Reaming and Countersinking	
	5	Spindle Tooling	
Threading	6	Taps and thread formers	
	7	Circular and Thread Milling	
	8	Thread turning	
Turning	9	Turning Tools	
	10	Multifunctional Tools – EcoCut and FreeTurn	
	11	Grooving Tools	
	12	Miniature turning tools	
Milling	13	HSS Milling Cutters	
	14	Solid Carbide milling cutters	
	15	Milling tools with indexable inserts	
Catalogue – Clamping technology	16	Adaptors and Accessories	
	17	Workpiece clamping	
	18	Material examples and article no. Index	

Table of contents

Symbol explanation	2
Toolfinder	3
List of contents	4-7
Product programme	8-44
Technical Information	
Cutting Data	45-54
Feedrate Values	55
Coatings	56

WNT \ Performance

Premium quality tools for high performance.

The premium quality tools from the **WNT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

Symbol explanation

Shank



Version



Int. coolant supply



self-centering

- = Main Application
- = Extended application



Toolfinder

	Tool type	Material/ Coating	Description	DIN 1897	DIN 338	DIN 340	Series 1	series 2	series 3
				3xD	5xD	10xD	> 10xD		
Steel – Universal	VX	HSS-E TiN	▲ Universal high-performance drill ▲ Shank DIN 1835A ▲ self centering	8	16				
	UNI	HSS-E-PM TiN	▲ Wear-resistant due to HSS-E-PM and TiN coating ▲ Universal high-performance drill	9–14	17–22				
	UNI	HSS-E TiN	▲ As for Type VX ▲ Without standard shank to DIN 1835 A ▲ Available as a set	9–14	17–22	26–28			
	N	HSS vap.	▲ stable twist drill ▲ also suitable for portable drills ▲ available in set	9–14	17–22				
	WT	HSS-E vap.	▲ for high alloy steel and special alloys (Hastelloy, Inconel, Nimonic)	9–14					
	WT	HSS-E TiN	▲ as Type WT HSS-E vap. ▲ higher wear resistance due to coating	9–14					
	WTL-L	HSS F-nit	▲ left-hand cutting ▲ nitrided cutting edge giving increased wear protection to cutting corners and guide lands	15	23				
	WNXi	HSS-E	▲ very good chip evacuation with thro' coolant ▲ for long chipping materials to 1000 N/mm ²		25				
	WNXi	HSS-E TiN	▲ as Type WNXi HSS-E ▲ higher wear resistance due to coating		25				
	WTL	HSS-E F-nit	▲ special flute profile with large chip gullet ▲ nitrided cutting edge giving increased wear protection to cutting corners and guide lands		17–22	26–28			
	WTL	HSS-E TiN	▲ as WTL HSS-E, but higher v _c and wear resistance due to coating ▲ suitable for steel and cast iron		17–22				
	WTL	HSS-E TiCN	▲ as WTL TiN, but higher v _c and wear resistance possible with high alloy steels		23				
	WTL	HSS-E TiAlN	▲ Special flute profile with large chip spaces ▲ Higher wear resistance due to TiAlN coating				29	30	30
	WTL	HSS F-nit	▲ special flute profile with large chip gullet ▲ nitrided cutting edge giving increased wear protection to cutting corners and guide lands			26–28	29	30	30
	WTL	HSS TiN	▲ as WTL HSS, but higher v _c and wear resistance due to coating			26–28			
	WNX	HSS-E	▲ Wide chip flutes for long-chipping materials	9–14					
	NC	HSS	▲ suitable for use with drill bushes ▲ very good chip evacuation with thro' coolant			25			
	NC	HSS TiAlN	▲ as NC, but higher v _c and wear resistance due to coating			25			
Stainless steel	VA	HSS-E	▲ Specialist for stainless and acid-resistant materials ▲ special geometry	9–14	17–22				
Non ferrous metals	W	HSS	▲ Specialist for non-ferrous metals		17–22				
	WTW	HSS	▲ for non-ferrous metals to 500 N/mm ² ▲ for deep holes			26–28			

HSS Drills Overview

Tool type	Material Coating	Point angle	Diameter in mm	DC	Performance
				Steel P Stainless steel M Cast iron K Non ferrous metals N Heat resistant S hardened materials H Non metal materials O	coated uncoated WNT \ Performance

3xD without thro' coolant

	VX	HSS-E TiN	118°	2-20				8
	UNI	HSS-E-PM TiN	130°	1-14				9-14
	UNI	HSS-E TiN	118°	1-14				9-14
	N	HSS vap.	118°	0,4-20				9-14
	VA	HSS-E	130°	1-12				9-14
	WNX	HSS-E	130°	1-20				9-14
	WT	HSS-E vap.	130°	0,4-25				9-14
	WT	HSS-E TiN	130°	1-20				9-14
	WTL-L	HSS F-nit	130°	1-19		left-hand cutting		15

5xD without thro' coolant

	VX	HSS-E TiN	118°	2-20				16
	UNI	HSS-E-PM TiN	130°	1-14				17-22
	UNI	HSS-E TiN	118°	0,9-14				17-22
	N	HSS vap.	118°	0,2-20				17-22
	VA	HSS-E	130°	1-12				17-22
	W	HSS	130°	0,20-20				17-22
	WTL	HSS-E F-nit	130°	1-16				17-22
	WTL	HSS-E TiN	130°	1-16				17-22
	WTL	HSS-E TiCN	130°	3-12				23
	WTL-L	HSS F-nit	130°	1-16		left-hand cutting		23

5xD with thro' coolant

	Tool type	Material Coating	Point angle	Diameter in mm	DC	Steel Stainless steel Cast iron Non ferrous metals Heat resistant hardened materials Non metal materials	coated uncoated	Performance
						P M K N S H O		
5xD with thro' coolant								
	WNXi	HSS-E	130°	5-20		● ● ○ ○ ○ ○ ○ E 		25
	WNXi	HSS-E TiN	130°	5-20		● ● ○ ○ ○ ○ ○ E 		25
up to 10xD without thro' coolant								
	UNI	HSS-E TiN	118°	1-14		● ● ● ○ ○ ○ ○ A 		26-28
	WTL	HSS-E F-nit.	130°	1-12		● ○ ● ● ○ ○ ○ A 		26-28
	WTL	HSS F-nit.	130°	1-14		○ ○ ● ● ○ ○ ○ A 		26-28
	WTL	HSS TiN	130°	1-14		○ ○ ● ○ ○ ○ ○ A 		26-28
	WTW	HSS	130°	1-14		● ○ ○ ○ ○ ○ ○ A 		26-28
up to 10xD with thro' coolant								
	NC	HSS	130°	3-13		○ ○ ● ○ ○ ○ ○ A 		25
	NC	HSS TiAIN	130°	3-13		○ ○ ● ○ ○ ○ ○ A 		25
over 10xD without thro' coolant								
	WTL	HSS F-nit. Series 1	130°	2-13		● ○ ● ● ○ ○ ○ A 		29
	WTL	HSS F-nit. series 2	130°	2-13		● ○ ● ● ○ ○ ○ A 		30
	WTL	HSS F-nit. series 3	130°	2,5-13		● ○ ● ● ○ ○ ○ A 		30
	WTL	HSS-E TiAIN Series 1	130°	3-10,2		● ○ ● ○ ○ ○ ○ A 		29
	WTL	HSS-E TiAIN series 2	130°	3-12		● ○ ● ○ ○ ○ ○ A 		30
	WTL	HSS-E TiAIN series 3	130°	4-10		● ○ ● ○ ○ ○ ○ A 		30
Mini-drill								
	N	HSS-E-PM	118°	0,15-1,45		● ○ ● ○ ○ ○ ○ A 		31

HSS Drills Overview

Tool type	
Material Coating	
	Point angle
	Diameter in mm
	Steel
	Stainless steel
	Cast iron
	Non ferrous metals
	Heat resistant
	Hardened materials
	Non metal materials
	coated
	uncoated
WNT \ Performance	

Twist Drill Sets



N	HSS vap.	118°	1-10				24
UNI	HSS-E TiN	118°	1-10				24

NC Spot Drill



NC-A	HSS	90°	3-20					35-37
NC-A	HSS TiN	90°	3-20					35+36
NC-A	HSS	120°	3-20					35+36
NC-A	HSS TiN	120°	3-20					35+36

Centre drills



ZB	HSS	118°	0,5-6,3		DIN 333 - Form A/B/R		37-39
ZB	HSS TiN	118°	0,5-6,3		DIN 333 - Form A		38
ZB	HSS-E	118°	0,5-6,3		DIN 333 - Form A		38

Core drills



N	HSS vap.	120°	3,8-12			3 flute		40
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Stepped drills



SB	HSS vap.	118°	2,5-10,2			Countersinking angle 90°		41
SB	HSS	118°	2,5-10,2			Countersinking angle 90°		41
SB	HSS vap.	118°	3,2-10,5			Countersinking angle 90°		41
SB	HSS	118°	3,2-10,5			Countersinking angle 90°		41
SB	HSS vap.	118°	3,4-11			Countersinking angle 180°		42
SB	HSS	118°	3,4-11			Countersinking angle 180°		42
SB	HSS vap.	118°	3,3-21			Countersinking angle 60°		44

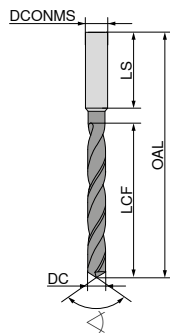
HSS Drills Overview

	Tool type	Material Coating	Point angle	Diameter in mm DC	Steel M Stainless steel K Cast iron N Non ferrous metals S Heat resistant H hardened materials O Non metal materials	coated uncoated	WNT \ Performance
Drills with Morse taper							
3xD		WT HSS-E vap.	130°	10-30	 MK 		31
5xD		N HSS vap.	118°	10-60	 MK 		32
		WTL HSS-E F-nit/vap.	130°	10-27	 MK 		32
10xD		N HSS vap.	118°	10-50	 MK 		33
		WTL HSS-E F-nit/vap.	130°	10-26	 MK 		33
above 10xD		WTL HSS F-nit/vap. Series 1	130°	10-30	 MK 		34
		WTL HSS F-nit/vap. series 2	130°	10-30	 MK 		34
Core drills		N HSS vap.	120°	10-30	 MK 	3 flute 	40
Stepped drills		SB HSS vap.	118°	5,5-22	 MK 	Countersinking angle 180° 	43

High-performance twist drills similar to DIN 1897, extra-short

- ▲ Shank to DIN 1835 A
- ▲ Special point thinning
- ▲ Very good centering behaviour
- ▲ 4 facet
- ▲ Highest Performance

≤ 3xD

VX
TiNA
118°
HSS-E

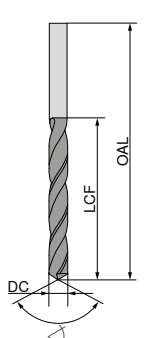
DC _{h8} mm	OAL mm	LCF mm	DCONMS _{h6} mm	LS mm	£ T2	10 122 ...
2.00	44	12	3	28	9.89	020
2.10	44	12	3	28	11.20	021
2.20	45	13	3	28	12.08	022
2.30	45	13	3	28	12.08	023
2.40	46	14	3	28	12.64	024
2.50	46	14	3	28	11.05	025
2.60	46	14	3	28	12.64	026
2.70	48	16	3	28	13.08	027
2.80	48	16	3	28	13.08	028
2.90	48	16	3	28	13.08	029
3.00	48	16	3	28	12.08	030
3.10	50	18	4	28	12.08	031
3.20	50	18	4	28	12.08	032
3.30	50	18	4	28	12.08	033
3.40	52	20	4	28	12.08	034
3.50	52	20	4	28	11.48	035
3.60	52	20	4	28	12.83	036
3.70	52	20	4	28	13.08	037
3.80	54	22	4	28	12.80	038
3.90	54	22	4	28	13.08	039
4.00	54	22	4	28	10.62	040
4.10	66	22	6	36	10.62	041
4.20	66	22	6	36	11.20	042
4.30	68	24	6	36	11.77	043
4.40	68	24	6	36	13.37	044
4.50	68	24	6	36	11.05	045
4.60	68	24	6	36	13.95	046
4.70	68	24	6	36	14.24	047
4.80	70	26	6	36	14.24	048
4.90	70	26	6	36	14.24	049
5.00	70	26	6	36	12.08	050
5.10	70	26	6	36	13.95	051
5.20	70	26	6	36	14.39	052
5.30	70	26	6	36	14.54	053
5.40	72	28	6	36	16.13	054
5.50	72	28	6	36	12.80	055
5.55	72	28	6	36	16.13	055
5.60	72	28	6	36	16.13	056
5.70	72	28	6	36	16.13	057
5.80	72	28	6	36	16.13	058
5.90	72	28	6	36	16.13	059
6.00	72	28	6	36	13.51	060
6.10	75	31	8	36	20.93	061
6.20	75	31	8	36	20.93	062
6.30	75	31	8	36	24.99	063
6.40	75	31	8	36	21.70	064
6.50	75	31	8	36	15.86	065
6.60	75	31	8	36	25.44	066
6.70	75	31	8	36	25.44	067
6.80	78	34	8	36	27.84	068
6.90	78	34	8	36	27.47	069
7.00	78	34	8	36	20.93	070
7.10	78	34	8	36	30.80	071

10 122 ...

DC _{h8} mm	OAL mm	LCF mm	DCONMS _{h6} mm	LS mm	£ T2	10 122 ...
7.20	78	34	8	36	31.27	072
7.30	78	34	8	36	31.27	073
7.40	78	34	8	36	31.27	074
7.45	78	34	8	36	31.27	075
7.50	78	34	8	36	22.09	075
7.60	81	37	8	36	31.73	076
7.70	81	37	8	36	34.15	077
7.80	81	37	8	36	34.15	078
7.90	81	37	8	36	34.15	079
8.00	81	37	8	36	22.67	080
8.10	87	37	10	40	38.76	081
8.20	87	37	10	40	38.76	082
8.30	87	37	10	40	38.76	083
8.40	87	37	10	40	38.76	084
8.50	87	37	10	40	25.71	085
8.60	91	40	10	40	40.27	086
8.70	91	40	10	40	40.27	087
8.80	91	40	10	40	40.27	088
8.90	91	40	10	40	40.27	089
9.00	91	40	10	40	28.06	090
9.10	91	40	10	40	50.49	091
9.20	91	40	10	40	50.49	092
9.30	91	40	10	40	50.49	093
9.35	91	40	10	40	50.49	093
9.40	91	40	10	40	50.49	094
9.50	91	40	10	40	35.07	095
9.60	93	43	10	40	37.83	096
9.70	93	43	10	40	37.83	097
9.80	93	43	10	40	37.83	098
9.90	93	43	10	40	37.83	099
10.00	93	43	10	40	33.72	100
10.10	100	43	12	45	52.23	101
10.20	100	43	12	45	49.90	102
10.30	100	43	12	45	50.78	103
10.40	100	43	12	45	54.04	104
10.50	100	43	12	45	48.49	105
10.60	100	43	12	45	58.05	106
10.70	104	47	12	45	52.99	107
10.80	104	47	12	45	50.94	108
10.90	104	47	12	45	74.83	109
11.00	104	47	12	45	48.49	110
11.10	104	47	12	45	47.42	111
11.50	104	47	12	45	50.49	115
11.70	104	47	12	45	56.76	117
11.80	104	47	12	45	59.27	118
11.90	108	51	12	45	74.95	119
12.00	108	51	12	45	57.98	120
12.10	111	51	16	48	42.23	121
12.20	111	51	16	48	62.87	122
12.30	111	51	16	48	77.29	123
12.40	111	51	16	48	92.23	124
12.50	111	51	16	48	59.72	125
12.60	111	51	16	48	121.08	126
12.70	111	51	16	48	132.50	127
12.80	111	51	16	48	62.91	128
12.90	111	51	16	48	92.75	129
13.00	111	51	16	48	64.20	130
13.50	114	54	16	48	96.11	135
14.00	114	54	16	48	96.11	140
14.50	116	56	16	48	123.10	145
15.00	116	56	16	48	115.93	150
15.50	118	58	16	48	125.38	155
16.00	118	58	16	48	121.12	160
16.50	126	60	20	50	187.77	165
17.00	126	60	20	50	187.77	170
17.50	128	62	20	50	187.77	175
18.00	128	62	20	50	187.77	180
18.50	130	64	20	50	187.77	185
19.00	130	64	20	50	187.77	190
19.50	132	66	20	50	187.77	195
20.00	132	66	20	50	167.02	200

P	●
M	●
K	●
N	○
S	○
H	
O	○

High-performance twist drills similar to DIN 1897, extra-short

≤ 3xD				UNI		UNI		N		VA		WNX		WT		WT	
				TiN		TiN		vap.						vap.		TiN	
																	
				130° HSS-E-PM		118° HSS-E		118° HSS		130° HSS-E		130° HSS-E		130° HSS-E		130° HSS-E	
				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
0.40		19	2.5					4.65	004 ¹⁾					8.09	00400 ¹⁾		
0.50		20	3.0					3.78	005 ¹⁾					5.84	00500 ¹⁾		
0.55		21	3.5											13.77	00550 ¹⁾		
0.60		21	3.5					4.50	006 ¹⁾					7.18	00600 ¹⁾		
0.65		22	4.0											7.62	00650 ¹⁾		
0.70		23	4.5					4.22	007 ¹⁾					6.59	00700 ¹⁾		
0.75		23	4.5											6.90	00750 ¹⁾		
0.80		24	5.0					3.36	008 ¹⁾					5.70	00800 ¹⁾		
0.85		24	5.0											6.41	00850 ¹⁾		
0.90		25	5.5					3.36	009 ¹⁾					5.70	00900 ¹⁾		
0.95		25	5.5											6.41	00950 ¹⁾		
1.00		26	6.0	7.92	010 ²⁾	5.08	010 ²⁾	1.91	010 ¹⁾	5.38	010	2.88	010	4.07	01000 ¹⁾	5.25	010
1.05		26	6.0											5.40	01050 ¹⁾		
1.10		28	7.0	7.92	011 ²⁾	5.08	011 ²⁾	2.04	011 ¹⁾	5.24	011	3.13	011	3.93	01100 ¹⁾	5.53	011
1.15		28	7.0											4.35	01150 ¹⁾		
1.20		30	8.0	8.11	012 ²⁾	4.80	012 ²⁾	2.04	012 ¹⁾	4.95	012	3.13	012	3.78	01200 ¹⁾	5.25	012
1.25		30	8.0											4.35	01250 ¹⁾		
1.30		30	8.0	8.49	013 ²⁾	5.08	013 ²⁾	2.04	013 ¹⁾	5.24	013	3.07	013	3.93	01300 ¹⁾	5.53	013
1.35		32	9.0											4.35	01350 ¹⁾		
1.40		32	9.0	7.83	014 ²⁾	4.95	014 ²⁾	2.04	014 ¹⁾	5.24	014	3.07	014	3.93	01400 ¹⁾	5.53	014
1.45		32	9.0											4.35	01450 ¹⁾		
1.50		32	9.0	7.35	015 ²⁾	4.60	015 ²⁾	1.75	015 ¹⁾	4.65	015	2.88	015	3.66	01500 ¹⁾	5.25	015
1.55		34	10.0											5.70	01550 ¹⁾		
1.60		34	10.0	7.71	016 ²⁾	4.60	016 ²⁾	1.91	016 ¹⁾	4.65	016	3.07	016	3.49	01600 ¹⁾	5.25	016
1.65		34	10.0											4.64	01650 ¹⁾		
1.70		34	10.0	7.83	017 ²⁾	4.35	017 ²⁾	1.91	017 ¹⁾	4.50	017	3.07	017	3.49	01700 ¹⁾	4.95	017
1.75		36	11.0											4.22	01750 ¹⁾		
1.80		36	11.0	7.71	018 ²⁾	4.60	018 ²⁾	2.04	018 ¹⁾	4.65	018	3.07	018	3.66	01800 ¹⁾	5.25	018
1.83		36	11.0											5.40	01830 ¹⁾		
1.85		36	11.0											4.04	01850 ¹⁾		
1.90		36	11.0	7.71	019 ²⁾	4.60	019 ²⁾	1.91	019 ¹⁾	4.65	019	3.07	019	3.66	01900 ¹⁾	5.25	019
1.95		38	12.0											6.13	01950 ¹⁾		
2.00		38	12.0	6.48	020 ²⁾	4.04	020 ²⁾	1.33	020 ¹⁾	4.07	020	2.56	020	3.07	02000 ¹⁾	4.60	020
2.05		38	12.0											5.70	02050 ¹⁾		
2.10		38	12.0	7.92	021 ²⁾	4.35	021 ²⁾	1.75	021 ¹⁾	4.50	021	2.88	021	3.49	02100 ¹⁾	4.95	021
2.15		40	13.0											5.25	02150 ¹⁾		
2.20		40	13.0	7.92	022 ²⁾	4.80	022 ²⁾	1.75	022 ¹⁾	4.95	022	2.88	022	3.93	02200 ¹⁾	5.25	022
2.25		40	13.0											4.22	02250 ¹⁾		
2.30		40	13.0	6.68	023 ²⁾	4.65	023 ²⁾	1.91	023 ¹⁾	4.95	023	3.07	023	3.78	02300 ¹⁾	5.25	023
2.35		40	13.0											5.84	02350 ¹⁾		
2.38	3/32	43	14.0	7.31	238 ²⁾	4.65	238 ²⁾							3.90	02400	5.53	024
2.40		43	14.0	7.95	024 ²⁾	4.80	024 ²⁾	1.91	024	5.08	024	3.07	024	4.64	02450		
2.45		43	14.0											3.49	02500	4.80	025
2.50		43	14.0	6.95	025 ²⁾	4.35	025 ²⁾	1.45	025	4.37	025	2.88	025	5.84	02550		
2.55		43	14.0														
P				●		●		○		○		●		●		●	
M						●				●				●		●	
K				●		●		●				●		●		●	
N				○		○		○		●		○		○		○	
S				○		○				○		○		○		●	
H				○								○		○		○	
O				○		○		○				○				○	

- 1) uncoated
2) self-centering

→ v_c Page 46+47

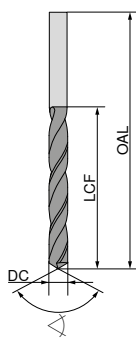
High-performance twist drills similar to DIN 1897, extra-short

≤ 3xD				UNI		UNI		N		VA		WNX		WT		WT	
				TiN		TiN		vap.						vap.		TiN	
				130° HSS-E-PM		118° HSS-E		118° HSS		130° HSS-E		130° HSS-E		130° HSS-E		130° HSS-E	
				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
2.60		43	14.0	8.23	026 ²⁾	4.80	026 ²⁾	1.91	026	5.08	026	3.07	026	3.90	02600	5.53	026
2.65		43	14.0											5.84	02650		
2.70		46	16.0	8.70	027 ²⁾	5.08	027 ²⁾	1.91	027	5.24	027	3.07	027	4.04	02700	5.84	027
2.75		46	16.0											5.84	02750		
2.78	7/64	46	16.0	8.46	278 ²⁾	5.08	278 ²⁾										
2.80		46	16.0	8.11	028 ²⁾	5.08	028 ²⁾	1.91	028	5.24	028	3.13	028	4.04	02800	5.84	028
2.85		46	16.0											5.84	02850		
2.90		46	16.0	8.63	029 ²⁾	5.08	029 ²⁾	1.91	029	5.24	029	3.45	029	4.04	02900	5.84	029
2.95		46	16.0											4.22	02950		
3.00		46	16.0	7.31	030 ²⁾	4.60	030 ²⁾	1.45	030	4.65	030	3.07	030	3.66	03000	4.95	030
3.05		49	18.0											4.37	03050		
3.10		49	18.0	7.83	031 ²⁾	4.95	031 ²⁾	1.91	031	5.24	031	3.58	031	4.04	03100	5.70	031
3.15		49	18.0											6.41	03150		
3.17	1/8	49	18.0	7.71	317 ²⁾	4.80	317 ²⁾										
3.20		49	18.0	7.35	032 ²⁾	4.65	032 ²⁾	1.75	032	5.08	032	3.07	032	3.90	03200	5.40	032
3.25		49	18.0											4.60	03250		
3.30		49	18.0	7.35	033 ²⁾	5.08	033 ²⁾	1.91	033	5.38	033	3.13	033	4.07	03300	5.84	033
3.35		49	18.0											5.84	03350		
3.40		52	20.0	8.49	034 ²⁾	5.25	034 ²⁾	2.21	034	5.38	034	3.76	034	4.07	03400	5.84	034
3.45		52	20.0											4.60	03450		
3.50		52	20.0	7.35	035 ²⁾	5.08	035 ²⁾	1.75	035	5.38	035	3.58	035	4.07	03500	5.25	035
3.55		52	20.0											4.64	03550		
3.57	9/64	52	20.0	8.35	357 ²⁾	5.25	357 ²⁾										
3.60		52	20.0	9.78	036 ²⁾	5.25	036 ²⁾	2.21	036	5.38	036	3.76	036	4.07	03600	5.84	036
3.70		52	20.0	8.46	037 ²⁾	5.52	037 ²⁾	2.21	037	5.81	037	3.76	037	4.37	03700	6.32	037
3.75		52	20.0											4.64	03750		
3.80		55	22.0	9.03	038 ²⁾	5.40	038 ²⁾	2.21	038	5.68	038	3.90	038	4.22	03800	5.84	038
3.85		55	22.0											7.18	03850		
3.90		55	22.0	10.22	039 ²⁾	6.11	039 ²⁾	2.21	039			3.90	039	4.37	03900	6.32	039
3.95		55	22.0											7.18	03950		
3.97	5/32	55	22.0	9.22	397 ²⁾	5.81	397 ²⁾										
4.00		55	22.0	8.35	040 ²⁾	5.40	040 ²⁾	1.75	040	5.68	040	3.90	040	4.35	04000	5.40	040
4.05		55	22.0											5.08	04050		
4.10		55	22.0	9.58	041 ²⁾	5.70	041 ²⁾	2.04	041	5.97	041	4.04	041	4.60	04100	5.84	041
4.15		55	22.0											7.18	04150		
4.20		55	22.0	8.35	042 ²⁾	5.52	042 ²⁾	2.04	042	5.81	042	3.58	042	4.37	04200	5.84	042
4.25		55	22.0											7.80	04250		
4.30		58	24.0	9.50	043 ²⁾	5.84	043 ²⁾	2.92	043	6.11	043	4.04	043	4.80	04300	6.59	043
4.35		58	24.0											7.80	04350		
4.37	11/64	58	24.0	12.77	437 ²⁾	7.80	437 ²⁾										
4.40		58	24.0	10.22	044 ²⁾	6.59	044 ²⁾	2.92	044			4.04	044	4.80	04400	6.74	044
4.45		58	24.0											7.94	04450		
4.50		58	24.0	9.50	045 ²⁾	5.84	045 ²⁾	2.04	045	6.11	045	4.04	045	4.64	04500	5.53	045
4.55		58	24.0											7.80	04550		
4.60		58	24.0	9.58	046 ²⁾	6.41	046 ²⁾	3.07	046	6.69	046	4.18	046	5.08	04600	7.33	046
P				●		●		○		○		●		●		●	
M						●				●				●		●	
K				●		●		●				●		●		●	
N				○		○		○		●		○		○		○	
S				○		○				○		○		○		●	
H				○								○		○		○	
O				○		○		○				○				○	

- 1) uncoated
2) self-centering

→ v_c Page 46+47

High-performance twist drills similar to DIN 1897, extra-short

≤ 3xD				UNI		UNI		N		VA		WNX		WT		WT	
				TiN		TiN		vap.						vap.		TiN	
																	
				130° HSS-E-PM		118° HSS-E		118° HSS		130° HSS-E		130° HSS-E		130° HSS-E		130° HSS-E	
				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
4.65		58	24.0											7.18	04650	7.62	465
4.70		58	24.0	10.65	047 ²⁾	6.74	047 ²⁾	3.07	047	6.98	047	4.35	047	5.25	04700	7.62	047
4.75		58	24.0											7.18	04750		
4.76	3/16	62	26.0	10.65	476 ²⁾	6.74	476 ²⁾	3.07	048	7.28	048	4.60	048	5.53	04800	7.62	048
4.80		62	26.0	10.86	048 ²⁾	6.84	048 ²⁾							6.41	04850		
4.85		62	26.0					3.07	049	7.84	049	4.80	049	6.11	04900	7.62	049
4.90		62	26.0	10.93	049 ²⁾	7.56	049 ²⁾							9.16	04950		
4.95		62	26.0					2.21	050	6.54	050	4.35	050	4.95	05000	6.13	050
5.00		62	26.0	9.22	050 ²⁾	5.97	050 ²⁾							10.63	05050		
5.05		62	26.0					3.07	051	8.59	051	4.95	051	6.59	05100	7.62	051
5.10		62	26.0	10.14	051 ²⁾	7.99	051 ²⁾							11.25	05150		
5.15		62	26.0											7.80	05200	7.62	052
5.16	13/64	62	26.0	12.09	516 ²⁾	10.33	516 ²⁾	3.07	052	10.47	052	4.95	052	9.11	05250		
5.20		62	26.0	10.93	052 ²⁾	9.89	052 ²⁾							8.70	05300	7.94	053
5.25		62	26.0					3.07	053	11.20	053	5.08	053	14.82	05350		
5.30		62	26.0	12.37	053 ²⁾	10.47	053 ²⁾							9.11	05400	8.82	054
5.35		66	28.0					3.49	054			5.40	054	14.81	05450		
5.40		66	28.0	12.13	054 ²⁾	10.33	054 ²⁾							6.32	05500	6.59	055
5.45		66	28.0					2.63	055	8.28	055	5.25	055	16.59	05550	8.39	055
5.50		66	28.0	10.37	055 ²⁾	7.71	055 ²⁾										
5.55		66	28.0											10.34	05600	8.39	056
5.56	7/32	66	28.0	11.36	556 ²⁾	8.59	556 ²⁾	3.49	056	13.37	056	5.53	056	10.69	05700	8.39	057
5.60		66	28.0	12.37	056 ²⁾	12.64	056 ²⁾			13.68	057	5.70	057	12.26	05750		
5.70		66	28.0	13.27	057 ²⁾	12.80	057 ²⁾	3.49	057					10.63	05800	8.39	058
5.75		66	28.0							14.24	058	5.70	058	17.84	05850		
5.80		66	28.0	12.68	058 ²⁾	13.51	058 ²⁾	3.49	058					11.07	05900	8.68	059
5.85		66	28.0							14.39	059	5.84	059	11.25	05950		
5.90		66	28.0	13.99	059 ²⁾	13.68	059 ²⁾	3.49	059					6.32	06000	7.18	060
5.95	15/64	66	28.0	21.19	595 ²⁾	14.99	595 ²⁾			8.28	060	5.25	060	17.84	06050		
6.00		66	28.0	11.17	060 ²⁾	7.71	060 ²⁾	2.63	060					11.68	06100	10.79	061
6.05		70	31.0							15.55	061	6.11	061	13.30	06150		
6.10		70	31.0	13.11	061 ²⁾	14.54	061 ²⁾	3.78	061					12.26	06200	11.25	062
6.15		70	31.0							15.99	062	6.13	062	15.11	06250		
6.20		70	31.0	13.11	062 ²⁾	14.82	062 ²⁾	3.78	062					13.15	06300	11.37	063
6.25		70	31.0							17.00	063	6.13	063	9.11	06350		
6.30		70	31.0	15.03	063 ²⁾	16.13	063 ²⁾	3.78	063					13.34	06400	11.75	064
6.35	1/4	70	31.0	13.79	635 ²⁾	15.99	635 ²⁾			17.43	064	6.59	064	15.11	06450		
6.40		70	31.0	13.91	064 ²⁾	16.42	064 ²⁾	3.93	064					7.33	06500	8.39	065
6.45		70	31.0					3.07	065	9.60	065	6.13	065	18.11	06550		
6.50		70	31.0	13.11	065 ²⁾	9.02	065 ²⁾							13.92	06600	11.75	066
6.55		70	31.0					3.93	066	18.03	066	6.74	066	19.31	06650		
6.60		70	31.0	14.46	066 ²⁾	17.00	066 ²⁾							14.34	06700	11.75	067
6.65		70	31.0					4.22	067	18.60	067	6.90	067	14.36	06750		
6.70		70	31.0	15.94	067 ²⁾	17.30	067 ²⁾										
6.75		74	34.0	19.60	675 ²⁾	13.25	675 ²⁾										
P				●		●		○		○		●		●		●	
M						●				●				●		●	
K				●		●		●				●		●		●	
N				○		○		○		●		○		○		○	
S				○		○				○		○		○		●	
H				○								○		○		○	
O				○		○		○				○				○	

- 1) uncoated
2) self-centering

→ v_c Page 46+47

High-performance twist drills similar to DIN 1897, extra-short

$\leq 3xD$				UNI		UNI		N		VA		WNX		WT		WT	
				TiN		TiN		vap.						vap.		TiN	
				$\angle 130^\circ$ HSS-E-PM		$\angle 118^\circ$ HSS-E		$\angle 118^\circ$ HSS		$\angle 130^\circ$ HSS-E		$\angle 130^\circ$ HSS-E		$\angle 130^\circ$ HSS-E		$\angle 130^\circ$ HSS-E	
				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
6.80		74	34.0	15.97	068 2)	17.73	068 2)	4.80	068	19.04	068	7.62	068	14.81	06800	12.26	068
6.85		74	34.0											20.20	06850		
6.90		74	34.0	15.78	069 2)	17.87	069 2)	5.24	069	19.19	069	7.80	069	14.66	06900	12.26	069
7.00		74	34.0	14.63	070 2)	10.33	070 2)	3.93	070	11.05	070	6.74	070	8.24	07000	10.16	070
7.05		74	34.0											23.50	07050		
7.10		74	34.0	17.72	071 2)	18.60	071 2)	5.38	071	19.76	071	9.11	071	14.82	07100	13.77	071
7.14	9/32	74	34.0	23.52	714 2)	19.04	714 2)										
7.20		74	34.0	18.24	072 2)	18.76	072 2)	5.38	072	20.19	072	9.74	072	15.88	07200	13.77	072
7.25		74	34.0											16.15	07250		
7.30		74	34.0	19.60	073 2)	18.89	073 2)	5.68	073			10.16	073	15.72	07300	13.92	073
7.35		74	34.0											20.64	07350		
7.40		74	34.0	18.36	074 2)	18.76	074 2)	5.97	074			11.07	074	16.34	07400	13.92	074
7.50		74	34.0	15.26	075 2)	11.77	075 2)	4.22	075	12.64	075	7.33	075	9.74	07500	10.63	075
7.60		79	37.0	23.81	076 2)	17.58	076 2)	6.69	076			10.69	076	17.40	07600	15.11	076
7.70		79	37.0	25.80	077 2)	21.81	077 2)	6.69	077	23.10	077	10.79	077	17.37	07700	15.11	077
7.75		79	37.0											21.85	07750		
7.80		79	37.0	19.68	078 2)	21.07	078 2)	6.69	078			10.79	078	18.31	07800	15.11	078
7.90		79	37.0	27.54	079 2)	23.10	079 2)	6.84	079	24.41	079	10.34	079	18.25	07900	15.11	079
7.94	5/16	79	37.0	18.88	794 2)	11.91	794 2)										
8.00		79	37.0	18.24	080 2)	11.37	080 2)	4.37	080	11.64	080	7.62	080	9.16	08000	10.94	080
8.05		79	37.0											29.35	08050		
8.10		79	37.0	23.29	081 2)	23.70	081 2)	7.28	081	25.27	081	11.37	081	19.31	08100	15.11	081
8.15		79	37.0											29.35	08150		
8.20		79	37.0	24.24	082 2)	24.72	082 2)	7.56	082	26.15	082	11.75	082	19.91	08200	15.11	082
8.25		79	37.0											22.75	08250		
8.30		79	37.0	25.43	083 2)	26.58	083 2)	7.84	083	28.33	083	11.68	083	21.53	08300	15.88	083
8.40		79	37.0	24.39	084 2)	27.31	084 2)	7.99	084	29.06	084	12.13	084	22.31	08400	15.88	084
8.50		79	37.0	21.19	085 2)	13.51	085 2)	5.97	085	14.24	085	9.16	085	10.79	08500	13.15	085
8.55		84	40.0											33.23	08550		
8.60		84	40.0			16.24	086 2)	7.99	086	29.93	086	12.83	086	22.75	08600	16.33	086
8.70		84	40.0			18.69	087 2)	8.15	087	30.80	087	13.30	087	24.41	08700	16.33	087
8.73	11/32	84	40.0	33.51	873 2)	21.41	873 2)										
8.75		84	40.0											36.61	08750		
8.80		84	40.0	26.59	088 2)	17.58	088 2)	8.28	088			14.66	088	24.72	08800	16.33	088
8.90		84	40.0			23.11	089 2)	8.59	089			9.74	089	25.48	08900	16.78	089
8.95		84	40.0											40.82	08950		
9.00		84	40.0	21.50	090 2)	14.24	090 2)	5.68	090	15.25	090	8.82	090	11.37	09000	13.34	090
9.05		84	40.0											26.80	09050		
9.10		84	40.0			19.48	091 2)	9.60	091			15.11	091	26.53	09100	21.37	091
9.20		84	40.0			19.61	092 2)	10.47	092	35.02	092	16.15	092	26.80	09200	21.37	092
9.25		84	40.0											30.68	09250		
9.30		84	40.0	24.39	093 2)	34.58	093 2)	10.62	093	36.92	093	11.37	093	28.54	09300	21.37	093
9.40		84	40.0			22.74	094 2)	10.90	094			11.37	094	28.28	09400	21.37	094
9.50		84	40.0	23.81	095 2)	15.25	095 2)	9.02	095	16.42	095	10.79	095	12.44	09500	17.37	095
9.60		89	43.0			23.78	096 2)	11.48	096			17.40	096	28.28	09600	21.70	096
P				●		●		○		○		●		●		●	
M						●				●				●		●	
K				●		●		●				●		●		●	
N				○		○		○		●		○		○		○	
S				○		○				○		○		○		○	
H				○								○		○			
O				○		○		○				○				○	

- 1) uncoated
2) self-centering

→ v_c Page 46+47

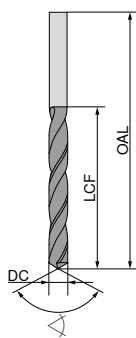
High-performance twist drills similar to DIN 1897, extra-short

≤ 3xD				UNI		UNI		N		VA		WNX		WT		WT	
				TiN		TiN		vap.						vap.		TiN	
				130° HSS-E-PM		118° HSS-E		118° HSS		130° HSS-E		130° HSS-E		130° HSS-E		130° HSS-E	
				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
9.65		89	43.0											33.25	09650		
9.70		89	43.0			23.11	097 ²⁾	11.64	097			17.40	097	28.88	09700	21.70	097
9.75		89	43.0											40.82	09750		
9.80		89	43.0	28.37	098 ²⁾	35.61	098 ²⁾	12.20	098	38.07	098	17.37	098	29.35	09800	23.22	098
9.90		89	43.0			24.70	099 ²⁾	12.20	099			17.80	099	30.22	09900	23.22	099
10.00		89	43.0	23.45	100 ²⁾	17.73	100 ²⁾	6.84	100	19.04	100	9.74	100	14.81	10000	16.33	100
10.05		89	43.0											38.29	10050		
10.10		89	43.0			23.78	101 ²⁾	13.51	101					40.28	10100		
10.20		89	43.0	29.68	102 ²⁾	28.18	102 ²⁾	11.64	102	29.93	102	17.40	102	22.75	10200	23.05	102
10.25		89	43.0											35.07	10250		
10.30		89	43.0			22.09	103 ²⁾	14.39	103					37.22	10300		
10.40		89	43.0			25.86	104 ²⁾	14.99	104					43.92	10400		
10.50		89	43.0	28.13	105 ²⁾	30.52	105 ²⁾	12.20	105	32.54	105	14.23	105	25.48	10500	21.97	105
10.60		95	47.0					18.76	106					44.40	10600		
10.70		95	47.0					18.76	107					44.40	10700		
10.75		95	47.0											37.72	10750		
10.80		95	47.0					19.19	108			18.87	108	43.19	10800	48.98	108
10.90		95	47.0					19.19	109					43.92	10900		
11.00		95	47.0	31.28	110 ²⁾	32.54	110 ²⁾	12.20	110	34.58	110	16.78	110	26.80	11000	21.97	110
11.10		95	47.0					19.19	111					48.78	11100		
11.11	7/16	95	47.0	36.72	111 ²⁾	38.36	111 ²⁾										
11.20		95	47.0					20.19	112					52.31	11200		
11.30		95	47.0					20.50	113					54.17	11300		
11.40		95	47.0					20.50	114					54.62	11400		
11.50		95	47.0	36.05	115 ²⁾	36.92	115 ²⁾	12.94	115	39.24	115	21.97	115	30.68	11500	22.90	115
11.60		95	47.0					20.50	116								
11.70		95	47.0					20.50	117	73.79	117			54.62	11700		
11.75		95	47.0											60.56	11750		
11.80		95	47.0					20.78	118			27.63	118	54.62	11800	27.47	118
11.90		102	51.0					20.78	119								
12.00		102	51.0	35.28	120 ²⁾	43.44	120 ²⁾	15.55	120	46.22	120	21.97	120	36.15	12000	26.20	120
12.10		102	51.0					21.95	121					54.17	12100		
12.20		102	51.0					21.95	122					54.62	12200		
12.25		102	51.0											61.48	12250		
12.30		102	51.0	59.77	123 ²⁾	40.40	123 ²⁾	22.23	123			27.63	123	42.72	12300	40.27	123
12.40		102	51.0					22.23	124					54.62	12400		
12.50		102	51.0	38.70	125 ²⁾	43.74	125 ²⁾	16.42	125			22.43	125	36.24	12500	27.47	125
12.60		102	51.0					22.67	126					37.26	12600		
12.70		102	51.0	49.40	127 ²⁾	33.37	127 ²⁾	21.66	127					37.26	12700		
12.80		102	51.0					23.53	128			33.72	128	56.00	12800	50.74	128
12.90		102	51.0					24.28	129					56.00	12900		
13.00		102	51.0	38.70	130 ²⁾	43.74	130 ²⁾	16.73	130			25.03	130	38.29	13000	27.69	130
13.20		102	51.0					24.99	132					56.00	13200		
13.30		107	54.0					25.71	133								
13.50		107	54.0	41.10	135 ²⁾	43.74	135 ²⁾	19.19	135			30.99	135	42.27	13500	30.25	135
P				●		●		○		○		●		●		●	
M						●				●				●		●	
K				●		●		●				●		●		●	
N				○		○		○		●		○		○		○	
S				○		○				○		○		○		○	
H				○								○		○			
O				○		○		○				○				○	

1) uncoated
2) self-centering

→ v_c Page 46+47

High-performance twist drills similar to DIN 1897, extra-short

≤ 3xD				UNI		UNI		N		VA		WNX		WT		WT	
				TiN		TiN		vap.						vap.		TiN	
																	
				130° HSS-E-PM		118° HSS-E		118° HSS		130° HSS-E		130° HSS-E		130° HSS-E		130° HSS-E	
				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
13.80		107	54.0					26.31	138			40.28	138			32.63	138
14.00		107	54.0	51.31	140 ²⁾	46.48	140 ²⁾	19.47	140			28.28	140	42.27	14000	31.73	140
14.50		111	56.0					21.66	145			36.61	145	53.09	14500	32.50	145
14.75		111	56.0					33.15	147								
14.80		111	56.0									50.79	148				
15.00		111	56.0					21.07	150			34.03	150	50.49	15000	33.58	150
15.25		115	58.0					35.02	152					109.54	15250		
15.50		115	58.0					23.25	155			51.57	155	63.15	15500	43.79	155
15.75		115	58.0													46.24	157
16.00		115	58.0					23.53	160			40.89	160	51.79	16000	43.19	160
16.50		119	60.0					27.75	165			41.17	165	85.12	16500	63.59	165
17.00		119	60.0					28.49	170			42.41	170	72.59	17000	62.71	170
17.50		123	62.0					29.80	175			43.32	175	86.04	17500	58.66	175
17.75		123	62.0													71.09	177
18.00		123	62.0					30.09	180			42.81	180	80.55	18000	68.63	180
18.50		127	64.0					32.84	185					102.83	18500	76.89	185
19.00		127	64.0					34.58	190			44.29	190	86.04	19000	75.33	190
19.50		131	66.0					36.61	195					100.21	19500	84.51	195
19.75		131	66.0													84.55	197
20.00		131	66.0						200			46.69	200	86.05	20000	80.84	200
20.50		136	68.0											121.42	20500		
21.00		136	68.0											116.53	21000		
21.50		141	70.0											124.93	21500		
22.00		141	70.0											126.15	22000		
22.20		141	70.0											130.58	22200		
23.00		146	72.0											135.43	23000		
24.00		151	75.0											149.04	24000		
25.00		151	75.0											170.55	25000		
P				●		●		○		○		●		●		●	
M						●				●				●		●	
K				●		●		●				●		●		●	
N				○		○		○		●		○		○		○	
S				○		○				○		○		○		●	
H				○								○		○		○	
O				○		○		○				○					

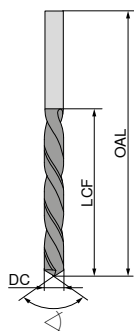
- 1) uncoated
2) self-centering

→ v_c Page 46+47

High-performance twist drills similar to DIN 1897, extra-short

▲ left-hand cutting

≤ 3xD



WTL-L

F-nit

130°
HSS

10 112 ...

DC _{h8} mm	OAL mm	LCF mm	£ T2	
1.0	26	6	3.90	010 ¹⁾
1.1	28	7	4.18	011 ¹⁾
1.2	30	8	4.04	012 ¹⁾
1.3	30	8	4.04	013 ¹⁾
1.4	32	9	3.76	014 ¹⁾
1.5	32	9	3.45	015 ¹⁾
1.6	34	10	3.58	016 ¹⁾
1.7	34	10	5.08	017 ¹⁾
1.8	36	11	5.08	018 ¹⁾
1.9	36	11	4.80	019 ¹⁾
2.0	38	12	3.07	020 ¹⁾
2.1	38	12	3.13	021 ¹⁾
2.2	40	13	3.58	022 ¹⁾
2.3	40	13	5.24	023 ¹⁾
2.4	43	14	3.76	024
2.5	43	14	3.13	025
2.6	43	14	3.76	026
2.7	46	16	3.90	027
2.8	46	16	4.04	028
2.9	46	16	4.18	029
3.0	46	16	3.58	030
3.1	49	18	4.35	031
3.2	49	18	3.90	032
3.3	49	18	4.35	033
3.4	52	20	4.60	034
3.5	52	20	6.41	035
3.6	52	20	4.60	036
3.7	52	20	4.60	037
3.8	55	22	4.95	038
3.9	55	22	4.95	039
4.0	55	22	4.95	040
4.1	55	22	5.53	041
4.2	55	22	4.95	042
4.3	58	24	6.74	043
4.4	58	24	6.74	044
4.5	58	24	5.40	045
4.6	58	24	7.18	046
4.7	58	24	7.18	047
4.8	62	26	7.18	048
4.9	62	26	10.33	049
5.0	62	26	6.11	050
5.1	62	26	7.18	051
5.2	62	26	7.33	052
5.3	62	26	7.62	053
5.4	66	28	7.62	054
5.5	66	28	6.90	055
5.6	66	28	7.62	056
5.7	66	28	11.34	057
5.8	66	28	7.94	058
5.9	66	28	8.09	059

10 112 ...

DC _{h8} mm	OAL mm	LCF mm	£ T2	
6.0	66	28	7.33	060
6.1	70	31	8.70	061
6.2	70	31	8.70	062
6.3	70	31	8.70	063
6.4	70	31	9.16	064
6.5	70	31	7.62	065
6.6	70	31	9.11	066
6.7	70	31	9.74	067
6.8	74	34	10.34	068
6.9	74	34	12.26	069
7.0	74	34	8.24	070
7.2	74	34	16.15	072
7.3	74	34	23.53	073
7.4	74	34	16.78	074
7.5	74	34	9.16	075
7.7	79	37	25.27	077
8.0	79	37	9.11	080
8.1	79	37	18.11	081
8.2	79	37	18.69	082
8.3	79	37	18.69	083
8.5	79	37	10.34	085
8.6	84	40	19.83	086
8.7	84	40	28.49	087
8.8	84	40	30.09	088
9.0	84	40	11.25	090
9.5	84	40	12.83	095
9.7	89	43	23.05	097
10.0	89	43	12.87	100
10.1	89	43	29.60	101
10.2	89	43	21.37	102
10.5	89	43	20.91	105
11.0	95	47	21.37	110
11.5	95	47	23.36	115
11.8	95	47	30.99	118
12.0	102	51	23.64	120
12.5	102	51	37.19	125
12.8	102	51	32.78	128
13.0	102	51	28.68	130
14.0	107	54	35.07	140
14.5	111	56	43.25	145
15.0	111	56	38.17	150
16.0	115	58	45.65	160 ²⁾
18.0	123	62	114.40	180 ²⁾
19.0	127	64	150.85	190 ²⁾

P	○
M	
K	●
N	●
S	
H	
O	○

1) uncoated

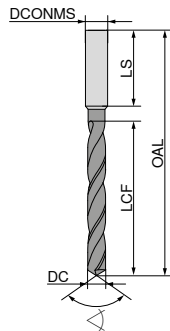
2) vaporised

→ v_c Page 47

High-performance twist drill similar to DIN 338, short

- ▲ With shank to DIN 1835 A
- ▲ Special point thinning
- ▲ 4 facet
- ▲ Highest Performance
- ▲ Very good centering behaviour

≤ 5xD



10 124 ...

DC _{h8} mm	OAL mm	LCF mm	DCONMS _{h6} mm	LS mm	£ T2	
2.00	56	24	3	28	12.83	020
2.10	56	24	3	28	14.68	021
2.20	59	27	3	28	14.68	022
2.30	59	27	3	28	14.68	023
2.40	62	30	3	28	14.68	024
2.50	62	30	3	28	14.68	025
2.60	62	30	3	28	14.68	026
2.70	65	33	3	28	14.68	027
2.80	65	33	3	28	14.68	028
2.90	65	33	3	28	14.68	029
3.00	65	33	3	28	13.95	030
3.10	68	36	4	28	15.99	031
3.20	68	36	4	28	15.99	032
3.30	68	36	4	28	15.99	033
3.40	71	39	4	28	15.99	034
3.50	71	39	4	28	15.99	035
3.60	71	39	4	28	17.80	036
3.70	71	39	4	28	17.80	037
3.80	75	43	4	28	17.80	038
3.90	75	43	4	28	17.80	039
4.00	75	43	4	28	17.80	040
4.10	87	43	6	36	20.63	041
4.20	87	43	6	36	21.81	042
4.30	91	47	6	36	20.63	043
4.40	91	47	6	36	20.63	044
4.50	91	47	6	36	20.63	045
4.60	91	47	6	36	23.40	046
4.65	91	47	6	36	23.40	0465
4.70	91	47	6	36	23.40	047
4.80	96	52	6	36	23.40	048
4.90	96	52	6	36	23.40	049
5.00	96	52	6	36	25.44	050
5.10	96	52	6	36	25.44	051
5.20	96	52	6	36	25.44	052
5.30	96	52	6	36	28.08	053
5.40	101	57	6	36	28.08	054
5.50	101	57	6	36	25.44	055
5.55	101	57	6	36	29.20	0555
5.60	101	57	6	36	29.20	056
5.70	101	57	6	36	29.20	057
5.80	101	57	6	36	29.20	058
5.90	101	57	6	36	29.20	059
6.00	101	57	6	36	27.75	060
6.10	107	63	8	36	34.29	061
6.20	107	63	8	36	34.29	062
6.30	107	63	8	36	34.29	063
6.40	107	63	8	36	34.29	064
6.50	107	63	8	36	34.29	065
6.60	107	63	8	36	36.77	066
6.70	107	63	8	36	36.77	067
6.80	113	69	8	36	36.77	068
6.90	113	69	8	36	36.77	069
7.00	113	69	8	36	36.77	070
7.10	113	69	8	36	38.28	071
7.20	113	69	8	36	38.28	072
7.30	113	69	8	36	38.28	073

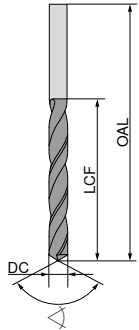
10 124 ...

DC _{h8} mm	OAL mm	LCF mm	DCONMS _{h6} mm	LS mm	£ T2	
7.40	113	69	8	36	38.28	074
7.50	113	69	8	36	38.28	075
7.55	119	75	8	36	38.22	0755
7.60	119	75	8	36	38.22	076
7.70	119	75	8	36	38.22	077
7.80	119	75	8	36	38.22	078
7.90	119	75	8	36	38.22	079
8.00	119	75	8	36	38.22	080
8.10	125	75	10	40	42.81	081
8.20	125	75	10	40	42.81	082
8.30	125	75	10	40	42.81	083
8.40	125	75	10	40	42.81	084
8.50	125	75	10	40	43.17	085
8.60	131	81	10	40	39.83	086
8.70	131	81	10	40	39.83	087
8.80	131	81	10	40	39.83	088
8.90	131	81	10	40	39.83	089
9.00	131	81	10	40	39.83	090
9.10	131	81	10	40	42.81	091
9.20	131	81	10	40	42.81	092
9.30	131	81	10	40	42.81	093
9.40	131	81	10	40	42.81	094
9.50	131	81	10	40	42.81	095
9.55	137	87	10	40	46.69	0955
9.60	137	87	10	40	46.69	096
9.70	137	87	10	40	46.69	097
9.80	137	87	10	40	46.69	098
9.90	137	87	10	40	46.69	099
10.00	137	87	10	40	46.69	100
10.10	144	87	12	45	59.19	101
10.20	144	87	12	45	59.19	102
10.30	144	87	12	45	59.19	103
10.40	144	87	12	45	59.19	104
10.50	144	87	12	45	59.19	105
10.60	144	87	12	45	65.01	106
10.70	151	94	12	45	65.01	107
10.80	151	94	12	45	65.01	108
10.90	151	94	12	45	65.01	109
11.00	151	94	12	45	54.79	110
11.10	151	94	12	45	58.66	111
11.20	151	94	12	45	58.66	112
11.30	151	94	12	45	58.66	113
11.40	151	94	12	45	58.66	114
11.50	151	94	12	45	58.66	115
11.60	151	94	12	45	64.68	116
11.70	151	94	12	45	64.68	117
11.80	151	94	12	45	64.68	118
11.90	158	101	12	45	64.68	119
12.00	158	101	12	45	64.68	120
12.10	161	101	16	48	74.31	121
12.20	161	101	16	48	74.31	122
12.30	161	101	16	48	74.31	123
12.40	161	101	16	48	74.31	124
12.50	161	101	16	48	74.31	125
12.60	161	101	16	48	78.26	126
12.70	161	101	16	48	78.26	127
12.80	161	101	16	48	78.26	128
12.90	161	101	16	48	78.26	129
13.00	161	101	16	48	86.32	130
13.50	166	106	16	48	111.95	135
14.00	166	106	16	48	111.95	140
14.50	169	109	16	48	143.23	145
15.00	169	109	16	48	134.55	150
15.50	172	112	16	48	145.82	155
16.00	172	112	16	48	140.79	160
16.50	181	115	20	50	218.27	165
17.00	181	115	20	50	218.27	170
17.50	184	118	20	50	218.27	175
18.00	184	118	20	50	218.27	180
18.50	188	122	20	50	218.27	185
19.00	188	122	20	50	218.27	190
19.50	191	125	20	50	218.27	195
20.00	191	125	20	50	194.04	200

P	●
M	●
K	●
N	○
S	○
H	
O	○

Twist drill to DIN 338, short

≤ 5xD



				UNI		UNI		N		VA		W		WTL		WTL	
				TiN		TiN		vap.						F-nit		TiN	
				130° HSS-E-PM		118° HSS-E		118° HSS		130° HSS-E		130° HSS		130° HSS-E		130° HSS-E	
				10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
0.20		19	2.5					4.07	00200 ¹⁾			8.70	00200				
0.25		19	3.0					3.93	00250 ¹⁾			18.60	00250				
0.30		19	3.0					2.75	00300 ¹⁾			9.74	00300				
0.35		19	4.0					2.75	00350 ¹⁾			6.13	00350				
0.40		20	5.0					2.33	00400 ¹⁾			5.08	00400				
0.45		20	5.0					2.49	00450 ¹⁾			5.40	00450				
0.50		22	6.0					2.04	00500 ¹⁾			3.90	00500				
0.55		24	7.0					2.92	00550 ¹⁾			9.46	00550				
0.60		24	7.0					1.91	00600 ¹⁾			4.18	00600				
0.65		26	8.0					2.75	00650 ¹⁾			6.59	00650				
0.70		28	9.0					1.75	00700 ¹⁾			3.76	00700				
0.75		28	9.0					2.04	00750 ¹⁾			4.04	00750				
0.80		30	10.0					1.75	00800 ¹⁾			3.45	00800				
0.85		30	10.0					1.91	00850 ¹⁾			3.90	00850				
0.90		32	11.0			4.37	009	1.75	00900 ¹⁾			3.13	00900				
0.95		32	11.0					1.91	00950 ¹⁾			3.90	00950				
1.00		34	12.0	6.28	010	4.37	010	1.62	01000 ¹⁾	4.18	010	3.45	01000	3.58	010	7.62	010
1.05		34	12.0					1.75	01050 ¹⁾			3.76	01050				
1.10		36	14.0	6.80	011	4.37	011	1.62	01100 ¹⁾	4.18	011	3.07	01100	3.90	011	8.24	011
1.15		36	14.0					1.75	01150 ¹⁾			3.45	01150				
1.20		38	16.0	6.68	012	4.95	012	1.62	01200 ¹⁾	4.64	012	3.07	01200	3.90	012	8.24	012
1.25		38	16.0			4.65	125	1.75	01250 ¹⁾			3.45	01250				
1.30		38	16.0	6.80	013	4.65	013	1.62	01300 ¹⁾	4.60	013	3.07	01300	3.76	013	8.09	013
1.35		40	18.0					1.75	01350 ¹⁾			3.45	01350				
1.40		40	18.0	6.88	014	4.37	014	1.62	01400 ¹⁾	4.18	014	3.07	01400	3.90	014	8.24	014
1.45		40	18.0			4.37	145	1.62	01450 ¹⁾			3.45	01450			10.76	901
1.50		40	18.0	6.48	015	4.07	015	1.45	01500 ¹⁾	3.90	015	3.07	01500	3.58	015	7.62	015
1.55		43	20.0			4.37	155	1.62	01550 ¹⁾			3.45	01550			12.64	902
1.60		43	20.0	6.48	016	4.37	016	1.33	01600 ¹⁾	4.18	016	2.68	01600	3.58	016	7.62	016
1.65		43	20.0			4.50	165	1.62	01650 ¹⁾			3.45	01650			12.83	903
1.70		43	20.0	6.95	017	4.50	017	1.33	01700 ¹⁾	4.35	017	2.88	01700	3.58	017	7.62	017
1.75		46	22.0					1.62	01750 ¹⁾			3.45	01750				
1.80		46	22.0	6.88	018	4.37	018	1.33	01800 ¹⁾	4.18	018	2.88	01800	3.58	018	7.62	018
1.85		46	22.0					1.45	01850 ¹⁾			3.45	01850			8.82	904
1.90		46	22.0	6.88	019	4.50	019	1.33	01900 ¹⁾	4.35	019	2.88	01900	3.58	019	7.62	019
1.95		49	24.0					1.45	01950 ¹⁾			3.13	01950				
2.00		49	24.0	6.68	020	4.04	020	1.02	02000 ¹⁾	3.58	020	2.26	02000	3.13	020	6.74	020
2.05		49	24.0					1.45	02050 ¹⁾			3.07	02050			9.43	905
2.10		49	24.0	6.95	021	4.95	021	1.33	02100 ¹⁾	4.64	021	2.68	02100	3.58	021	7.18	021
2.15		53	27.0					1.45	02150 ¹⁾			3.07	02150				
2.20		53	27.0	7.31	022	4.95	022	1.33	02200 ¹⁾	4.64	022	2.68	02200	3.58	022	7.18	022
2.25		53	27.0					1.45	02250 ¹⁾			3.07	02250				
2.30		53	27.0	7.08	023	4.95	023	1.33	02300 ¹⁾	4.64	023	2.68	02300	3.58	023	7.18	023
2.35		53	27.0					1.91	02350 ¹⁾			3.58	02350				
2.38	3/32	57	30.0	7.08	238	4.95	238										
2.40		57	30.0	6.68	024	4.95	024	1.33	02400	4.64	024	2.68	02400	3.58	024	7.18	024

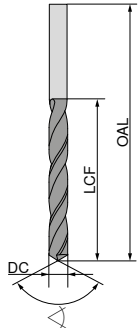
P	●	●	○	○	●	●
M		●		●	○	○
K	●	●	●		●	●
N	○	○	○	●	●	○
S	○	○		○	○	○
H	○				○	○
O	○	○	○		○	○

- 1) uncoated
2) self-centering

→ v_c Page 48+49

Twist drill to DIN 338, short

≤ 5xD



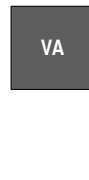
130°
HSS-E-PM



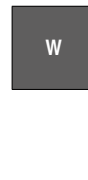
118°
HSS-E



118°
HSS



130°
HSS-E



130°
HSS



130°
HSS-E



130°
HSS-E

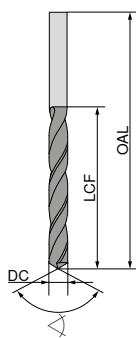
DC _{h8} mm	DC inch	OAL mm	LCF mm	10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
				£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
2.45		57	30.0					1.75	02450			3.58	02450				
2.50		57	30.0	6.80	025 2)	4.18	025 2)	1.33	02500	3.90	025	2.40	02500	3.13	025	6.90	025
2.55		57	30.0			4.95	255 2)	1.91	02550			4.18	02550				
2.60		57	30.0	7.08	026 2)	4.95	026 2)	1.33	02600	4.80	026	2.88	02600	3.58	026	7.18	026
2.65		57	30.0					2.04	02650			4.18	02650				
2.70		61	33.0	7.52	027 2)	4.95	027 2)	1.33	02700	4.80	027	2.88	02700	3.76	027	7.94	027
2.75		61	33.0					1.75	02750			4.04	02750				
2.78	7/64	61	33.0	9.18	278 2)	5.84	278 2)										
2.80		61	33.0	7.35	028 2)	4.95	028 2)	1.33	02800	4.80	028	3.13	02800	3.76	028	8.09	028
2.85		61	33.0					1.91	02850			4.95	02850				
2.90		61	33.0	7.52	029 2)	5.08	029 2)	1.33	02900	4.80	029	3.13	02900	3.76	029	8.09	029
2.95		61	33.0					1.75	02950			4.18	02950				
3.00		61	33.0	7.15	030 2)	4.18	030 2)	1.18	03000	3.90	030	2.56	03000	3.45	030	7.18	030
3.05		65	36.0					1.62	03050			3.58	03050				
3.10		65	36.0	7.95	031 2)	5.08	031 2)	1.45	03100	4.95	031	3.13	03100	3.76	031	7.94	031
3.15		65	36.0					1.62	03150			3.58	03150				
3.17	1/8	65	36.0	7.92	317 2)	4.80	317 2)										
3.20		65	36.0	7.83	032 2)	4.60	032 2)	1.45	03200	4.18	032	2.88	03200	3.90	032	8.24	032
3.25		65	36.0			5.24	325 2)	1.62	03250			5.24	03250				
3.30		65	36.0	7.95	033 2)	4.60	033 2)	1.45	03300	4.18	033	2.88	03300	3.90	033	8.39	033
3.35		65	36.0					1.75	03350			3.58	03350				
3.40		70	39.0	8.49	034 2)	5.38	034 2)	1.45	03400	5.08	034	3.13	03400	4.35	034	9.29	034
3.45		70	39.0					1.75	03450			3.90	03450				
3.50		70	39.0	8.63	035 2)	4.60	035 2)	1.33	03500	4.18	035	3.07	03500	3.76	035	7.94	035
3.55		70	39.0					1.75	03550			3.90	03550				
3.57	9/64	70	39.0	8.63	357 2)	5.52	357 2)										
3.60		70	39.0	8.70	036 2)	5.52	036 2)	1.62	03600	5.40	036	3.13	03600	4.35	036	9.11	036
3.65		70	39.0					1.75	03650			3.76	03650				
3.70		70	39.0	8.70	037 2)	5.52	037 2)	1.62	03700	5.40	037	3.45	03700	4.35	037	9.29	037
3.75		70	39.0					1.75	03750			4.04	03750				
3.80		75	43.0	9.22	038 2)	5.84	038 2)	1.62	03800	5.40	038	3.58	03800	4.64	038	10.23	038
3.85		75	43.0					1.91	03850			4.04	03850				
3.90		75	43.0	9.43	039 2)	6.11	039 2)	1.75	03900	5.53	039	3.58	03900	4.95	039	10.69	039
3.95		75	43.0					1.91	03950			4.04	03950				
3.97	5/32	75	43.0	9.58	397 2)	6.41	397 2)										
4.00		75	43.0	9.03	040 2)	4.80	040 2)	1.33	04000	4.60	040	3.07	04000	4.04	040	8.70	040
4.05		75	43.0					2.04	04050			5.08	04050				
4.10		75	43.0	9.22	041 2)	5.81	041 2)	1.75	04100	5.53	041	3.58	04100	4.95	041	10.69	041
4.15		75	43.0					2.04	04150			5.08	04150				
4.20		75	43.0	9.22	042 2)	5.81	042 2)	1.62	04200	5.70	042	3.13	04200	4.60	042	9.89	042
4.25		75	43.0			6.13	425 2)	2.04	04250			5.08	04250				
4.30		80	47.0	9.82	043 2)	6.11	043 2)	1.75	04300	5.70	043	4.35	04300	5.08	043	11.07	043
4.35		80	47.0					2.63	04350			6.13	04350				
4.37	11/64	80	47.0	9.93	437 2)	6.54	437 2)										
4.40		80	47.0	9.82	044 2)	6.13	044 2)	1.75	04400	5.84	044	4.35	04400	5.08	044	11.07	044
4.45		80	47.0					2.63	04450								

P	●	●	○	○	●	●
M		●		●	○	○
K	●	●	●		●	●
N	○	○	○	●	●	○
S	○	○		○	○	○
H	○				○	○
O	○	○	○		○	○

1) uncoated
2) self-centering

→ v_c Page 48+49

Twist drill to DIN 338, short

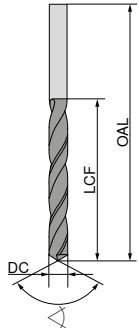
≤ 5xD				UNI		UNI		N		VA		W		WTL		WTL	
				TiN		TiN		vap.						F-nit		TiN	
																	
				130° HSS-E-PM		118° HSS-E		118° HSS		130° HSS-E		130° HSS		130° HSS-E		130° HSS-E	
				10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
4.50		80	47.0	9.58	045 ²⁾	6.11	045 ²⁾	1.75	04500	5.70	045	3.90	04500	4.80	045	9.89	045
4.55		80	47.0			6.54	046 ²⁾	2.63	04550			7.62	04550				
4.60		80	47.0	10.14	046 ²⁾	6.54	046 ²⁾	1.75	04600	6.11	046	4.35	04600	5.40	046	11.68	046
4.65		80	47.0			6.69	0465	2.63	04650			7.62	04650				
4.70		80	47.0	12.27	047 ²⁾	6.74	047 ²⁾	1.75	04700	6.13	047	4.35	04700	5.40	047	11.68	047
4.75		80	47.0					3.49	04750			6.11	04750				
4.76	3/16	86	52.0	10.37	476 ²⁾	6.69	476 ²⁾	1.91	04800	6.13	048	4.35	04800	5.40	048	11.68	048
4.80		86	52.0	10.37	048 ²⁾	6.54	048 ²⁾	4.50	04850			7.62	04850				
4.85		86	52.0					1.91	04900	6.32	049	4.35	04900	5.53	049	11.82	049
4.90		86	52.0	10.54	049 ²⁾	6.69	495 ²⁾	2.92	04950			7.62	04950				
4.95		86	52.0			5.84	050 ²⁾	1.62	05000	5.40	050	4.18	05000	4.95	050	10.63	050
5.00		86	52.0	10.62	050 ²⁾	6.69	0505	3.07	05050			8.82	05050				
5.05		86	52.0			6.69	051 ²⁾	3.49	05100	6.32	051	4.60	05100	5.53	051	11.82	051
5.10		86	52.0	10.62	051 ²⁾			3.07	05150								
5.15		86	52.0			7.33	516 ²⁾	2.04	05200	6.59	052	4.64	05200	5.70	052	12.83	052
5.16	13/64	86	52.0	11.57	516 ²⁾	7.18	052 ²⁾	3.07	05250			10.33	05250				
5.20		86	52.0	10.93	052 ²⁾			2.04	05300	6.59	053	4.64	05300	5.70	053	12.83	053
5.25		86	52.0			7.18	053 ²⁾	3.66	05350								
5.30		86	52.0	11.57	053 ²⁾			2.33	05400	7.18	054	4.95	05400	6.13	054	13.34	054
5.35		93	57.0			7.80	054 ²⁾	6.69	05450			6.13	05450				
5.40		93	57.0	14.20	054 ²⁾	7.99	055 ²⁾	2.21	05500	7.62	055	4.64	05500	5.70	055	12.44	055
5.45		93	57.0			9.11	555 ²⁾	3.78	05550			6.13	05550				
5.50		93	57.0	12.23	055 ²⁾			2.33	05600	7.33	056	5.40	05600	6.32	056	13.77	056
5.55		93	57.0			7.94	056 ²⁾	3.93	05650			8.39	05650				
5.56	7/32	93	57.0	14.39	556 ²⁾	9.11	556 ²⁾	2.33	05700	7.33	057	5.40	05700	6.32	057	13.77	057
5.60		93	57.0	13.03	056 ²⁾			4.50	05750			8.24	05750				
5.65		93	57.0			7.94	575 ²⁾	2.33	05800	7.33	058	5.40	05800	6.32	058	13.92	058
5.70		93	57.0	12.87	057 ²⁾	7.94	058 ²⁾	3.93	05850			9.89	05850				
5.75		93	57.0			7.94	059 ²⁾	2.49	05900	7.33	059	5.40	05900	6.90	059	14.82	059
5.80		93	57.0	12.87	058 ²⁾	10.16	595 ²⁾	2.49	05950			5.40	05950				
5.85		93	57.0			7.80	060 ²⁾	2.21	06000	7.18	060	5.40	06000	6.32	060	14.66	060
5.90	15/64	93	57.0	13.67	059 ²⁾			4.22	06050			11.82	06050				
5.95		93	57.0	16.74	595 ²⁾			2.63	06100	8.24	061	5.40	06100	6.90	061	15.25	061
6.00		93	57.0	12.37	060 ²⁾			4.22	06150			8.82	06150				
6.05		101	63.0			8.82	061 ²⁾	2.63	06200	8.24	062	5.40	06200	7.18	062	15.44	062
6.10		101	63.0	13.99	061 ²⁾			4.22	06250			9.32	06250				
6.15		101	63.0			8.82	062 ²⁾	2.63	06300	8.24	063	5.70	06300	7.94	063	16.59	063
6.20		101	63.0	13.79	062 ²⁾	9.43	635 ²⁾	2.75	06350			5.53	06350				
6.25		101	63.0			9.43	064 ²⁾	2.75	06400	8.82	064	5.70	06400	7.94	064	16.78	064
6.30	1/4	101	63.0	15.23	063 ²⁾			4.65	06450								
6.35		101	63.0	16.11	635 ²⁾			2.63	06500	8.09	065	5.53	06500	7.18	065	15.25	065
6.40		101	63.0	16.14	064 ²⁾			4.95	06550			12.26	06550				
6.45		101	63.0			8.70	065 ²⁾	2.75	06600	8.82	066	6.59	06600	8.09	066	17.84	066
6.50		101	63.0	14.86	065 ²⁾												
6.55		101	63.0			9.43	066 ²⁾										
6.60		101	63.0	16.34	066 ²⁾												
P				●		●		○		○				●		●	
M						●				●				○		○	
K				●		●		●						●		●	
N				○		○		○		●		●		●		○	
S				○		○				○				○		○	
H				○										○		○	
O				○		○		○						○		○	

1) uncoated
2) self-centering

→ v_c Page 48+49

Twist drill to DIN 338, short

≤ 5xD



UNI

TiN

 $\angle 130^\circ$
HSS-E-PM

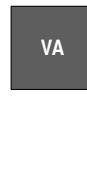

UNI

TiN

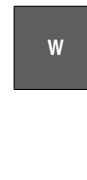
 $\angle 118^\circ$
HSS-E


N

vap.

 $\angle 118^\circ$
HSS


VA

 $\angle 130^\circ$
HSS-E


W

 $\angle 130^\circ$
HSS


WTL

F-nit

 $\angle 130^\circ$
HSS-E


WTL

TiN

 $\angle 130^\circ$
HSS-E

DC _{h8} mm	DC inch	OAL mm	LCF mm	10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
				£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
6.65		101	63.0					8.85	06650			17.30	06650				
6.70		101	63.0	16.30	067 2)	9.43	067 2)	2.92	06700	8.82	067	6.74	06700	8.09	067	17.84	067
6.75		109	69.0	22.01	675 2)	12.93	675 2)	3.49	06750			10.33	06750				
6.80		109	69.0	16.74	068 2)	10.69	068 2)	3.49	06800	9.74	068	7.18	06800	8.39	068	18.31	068
6.85		109	69.0					5.38	06850			17.87	06850				
6.90		109	69.0	17.08	069 2)	10.69	069 2)	3.49	06900	9.74	069	7.18	06900	8.82	069	18.69	069
6.95		109	69.0					5.52	06950			17.87	06950				
7.00		109	69.0	16.74	070 2)	9.11	070 2)	3.07	07000	8.39	070	6.32	07000	7.62	070	16.33	070
7.05		109	69.0					5.97	07050			10.23	07050				
7.10		109	69.0	19.28	071 2)	12.13	071 2)	3.49	07100	11.37	071	8.68	07100	11.75	071	25.48	071
7.14	9/32	109	69.0	28.84	714 2)	18.11	714 2)										
7.15		109	69.0					10.33	07150								
7.20		109	69.0	19.24	072 2)	12.13	072 2)	3.66	07200	11.37	072	8.68	07200	11.75	072	25.89	072
7.25		109	69.0					9.89	07250			20.93	07250				
7.30		109	69.0	19.92	073 2)	12.13	073 2)	3.66	07300	11.37	073	8.68	07300	11.75	073	25.48	073
7.35		109	69.0					5.97	07350								
7.40		109	69.0	19.47	074 2)	12.13	074 2)	3.78	07400	11.37	074	8.68	07400	11.75	074	25.48	074
7.45		109	69.0			9.74	745 2)	5.81	07450								
7.50		109	69.0	17.72	075 2)	9.74	075 2)	3.49	07500	9.16	075	7.33	07500	8.70	075	18.69	075
7.55		117	75.0					6.84	07550								
7.60		117	75.0	21.50	076 2)	14.24	076 2)	4.07	07600	13.77	076	9.62	07600	12.83	076	28.08	076
7.65		117	75.0					6.84	07650								
7.70		117	75.0	24.49	077 2)	14.66	077 2)	4.07	07700	13.77	077	9.62	07700	12.83	077	28.08	077
7.75		117	75.0					6.11	07750			16.59	07750				
7.80		117	75.0	21.03	078 2)	14.24	078 2)	4.07	07800	13.77	078	9.62	07800	12.83	078	28.08	078
7.85		117	75.0					6.84	07850								
7.90		117	75.0	25.16	079 2)	14.66	079 2)	4.07	07900	13.77	079	11.07	07900	12.83	079	28.08	079
7.94	5/16	117	75.0	22.54	794 2)	14.24	794 2)										
7.95		117	75.0					7.12	07950								
8.00		117	75.0	19.99	080 2)	11.82	080 2)	3.49	08000	10.94	080	8.09	08000	9.74	080	21.41	080
8.05		117	75.0					7.28	08050			21.21	08050				
8.10		117	75.0	21.90	081 2)	14.24	081 2)	4.22	08100	13.77	081	11.37	08100	13.34	081	30.04	081
8.15		117	75.0					7.42	08150			21.21	08150				
8.20		117	75.0	21.50	082 2)	15.25	082 2)	4.22	08200	14.81	082	11.82	08200	13.92	082	30.68	082
8.25		117	75.0					5.08	08250			17.21	08250				
8.30		117	75.0	23.89	083 2)	15.25	083 2)	4.65	08300	14.81	083	12.44	08300	14.82	083	32.32	083
8.35		117	75.0					7.99	08350								
8.40		117	75.0	24.06	084 2)	15.99	084 2)	4.65	08400	15.25	084	12.44	08400	14.82	084	32.32	084
8.45		117	75.0					8.15	08450			28.92	08450				
8.50		117	75.0	20.58	085 2)	11.68	085 2)	4.50	08500	10.79	085	9.32	08500	11.07	085	24.41	085
8.55		125	81.0					9.46	08550			20.91	08550				
8.60		125	81.0			26.10	086 2)	5.08	08600	16.34	086	12.44	08600	16.79	086	36.31	086
8.65		125	81.0					16.86	08650								
8.70		125	81.0			26.10	087 2)	5.08	08700	16.34	087	13.77	08700	16.59	087	37.09	087
8.73	11/32	125	81.0	22.30	873 2)	17.15	873 2)										
8.75		125	81.0					8.42	08750			19.91	08750				

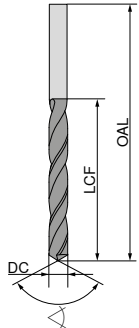
P	●	●	○	○	●	●
M		●		●	○	○
K	●	●	●		●	●
N	○	○	○	●	●	○
S	○	○		○	○	○
H	○				○	○
O	○	○	○		○	○

- 1) uncoated
2) self-centering

→ v_c Page 48+49

Twist drill to DIN 338, short

≤ 5xD



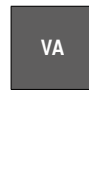
130°
HSS-E-PM



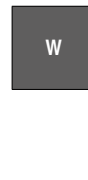
118°
HSS-E



118°
HSS



130°
HSS-E



130°
HSS



130°
HSS-E



130°
HSS-E

DC _{h8} mm	DC inch	OAL mm	LCF mm	10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
				£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
8.80		125	81.0	24.06	088 2)	18.17	088 2)	5.24	08800	17.37	088	13.77	08800	16.59	088	37.09	088
8.90		125	81.0			22.43	089 2)	5.38	08900	18.25	089	13.92	08900	16.78	089	37.70	089
8.95		125	81.0					17.58	08950								
9.00		125	81.0	22.65	090 2)	14.68	090 2)	4.80	09000	14.34	090	10.23	09000	12.87	090	27.84	090
9.05		125	81.0					9.89	09050								
9.10		125	81.0			24.39	091 2)	5.38	09100	19.31	091	15.44	09100	18.31	091	39.23	091
9.15		125	81.0					17.58	09150								
9.20		125	81.0			25.03	092 2)	5.38	09200	20.36	092	15.44	09200	19.31	092	42.21	092
9.25		125	81.0					12.80	09250			24.12	09250				
9.30		125	81.0	26.15	093 2)	22.23	093 2)	5.38	09300	21.53	093	15.44	09300	19.31	093	42.41	093
9.35		125	81.0			17.30	935 2)	19.04	09350								
9.40		125	81.0			27.47	094 2)	5.38	09400	23.05	094	15.44	09400	19.31	094	42.41	094
9.45		125	81.0					10.62	09450								
9.50		125	81.0	23.81	095 2)	17.30	095 2)	5.38	09500	16.59	095	11.68	09500	13.77	095	29.80	095
9.55		133	87.0					11.91	09550								
9.60		133	87.0			24.84	096 2)	5.97	09600	23.94	096	17.84	09600	20.20	096	45.32	096
9.65		133	87.0					11.91	09650								
9.70		133	87.0			29.18	097 2)	5.97	09700	23.94	097	18.17	09700	22.43	097	48.49	097
9.75		133	87.0					7.84	09750								
9.80		133	87.0	28.37	098 2)	24.84	098 2)	6.69	09800	23.94	098	18.17	09800	22.43	098	48.49	098
9.85		133	87.0					11.64	09850								
9.90		133	87.0			22.87	099 2)	6.69	09900	23.94	099	18.47	09900	22.43	099	48.49	099
9.95		133	87.0					12.94	09950								
10.00		133	87.0	26.91	100 2)	17.40	100 2)	5.68	10000	15.72	100	12.26	10000	15.44	100	34.79	100
10.05		133	87.0					16.42	10050			31.44	10050				
10.10		133	87.0			22.46	101 2)	7.12	10100	27.00	101	18.78	10100	35.07	101	76.74	101
10.15		133	87.0					29.49	10150								
10.20		133	87.0	31.07	102 2)	23.53	102 2)	7.28	10200	23.05	102	18.78	10200	21.41	102	46.99	102
10.25		133	87.0					9.74	10250			21.21	10250				
10.30		133	87.0			19.61	103 2)	8.72	10300	35.32	103	18.78	10300	28.28	103	62.71	103
10.35		133	87.0					16.42	10350								
10.40		133	87.0			24.29	104 2)	8.72	10400	35.32	104	18.78	10400	30.68	104	66.68	104
10.45		133	87.0					29.49	10450								
10.50		133	87.0	31.28	105 2)	24.41	105 2)	7.42	10500	23.36	105	15.11	10500	20.00	105	43.79	105
10.55		133	87.0			26.75	955 2)	20.93	10550								
10.60		133	87.0					9.16	10600	63.34	106	27.01	10600	30.68	106		
10.70		142	94.0					10.62	10700	46.25	107	30.95	10700	30.68	107	66.68	107
10.75		142	94.0					11.64	10750			35.61	10750				
10.80		142	94.0					10.33	10800	47.75	108	32.26	10800	28.75	108	64.07	108
10.90		142	94.0					10.90	10900	47.75	109	32.26	10900	37.09	109		
11.00		142	94.0	32.31	110 2)	26.75	110 2)	8.42	11000	25.94	110	18.17	11000	24.41	110	51.18	110
11.10		142	94.0					10.90	11100	50.04	111	22.43	11100	35.32	111		
11.11	7/16	142	94.0	40.50	111 2)	51.59	111 2)										
11.20		142	94.0			51.59	112 2)	10.62	11200	50.04	112	28.39	11200	39.23	112	88.63	112
11.30		142	94.0			51.86	113 2)			50.34	113			39.23	113		
11.40		142	94.0			51.86	114 2)	11.20	11400	50.34	114	45.33	11400	39.23	114		

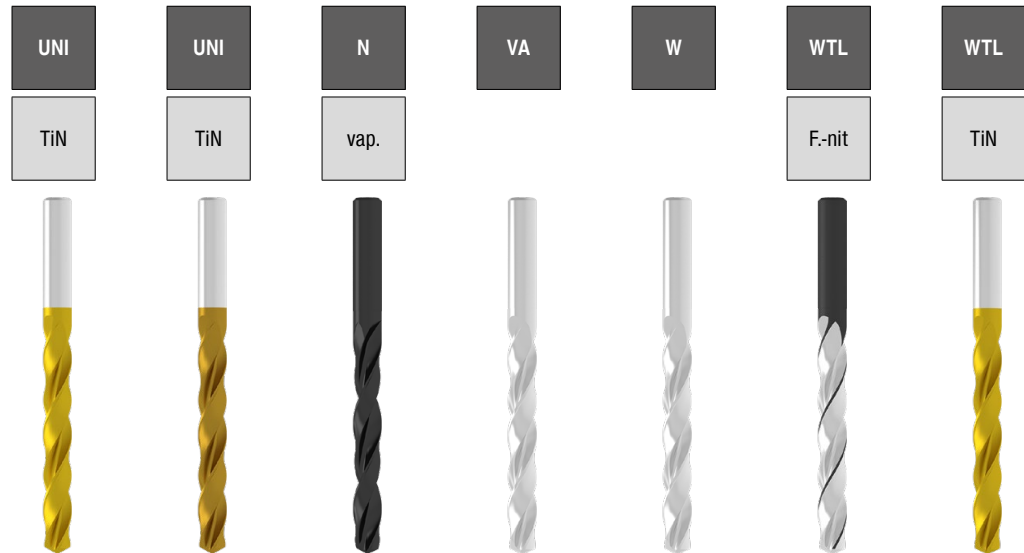
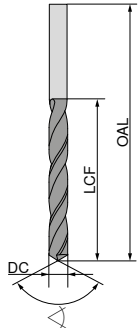
P	●	●	○	○	●	●
M		●		●	○	○
K	●	●	●		●	●
N	○	○	○	●	●	○
S	○	○		○	○	○
H	○				○	○
O	○	○	○		○	○

- 1) uncoated
2) self-centering

→ v_c Page 48+49

Twist drill to DIN 338, short

≤ 5xD


 $\angle 130^\circ$
HSS-E-PM

 $\angle 118^\circ$
HSS-E

 $\angle 118^\circ$
HSS

 $\angle 130^\circ$
HSS-E

 $\angle 130^\circ$
HSS

 $\angle 130^\circ$
HSS-E

 $\angle 130^\circ$
HSS-E

				10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
11.50		142	94.0	35.85	115 ²⁾	34.15	115 ²⁾	9.16	11500	33.13	115	20.20	11500	27.84	115	62.22	115
11.60		142	94.0			59.42	116 ²⁾	11.20	11600	57.52	116	31.44	11600	39.23	116		
11.70		142	94.0					11.64	11700	57.52	117	31.44	11700	39.23	117	88.63	117
11.80		142	94.0					11.77	11800	57.52	118	31.44	11800	42.41	118	93.21	118
11.90		151	101.0					12.94	11900	57.52	119	31.44	11900				
12.00		151	101.0	38.30	120 ²⁾	38.07	120 ²⁾	10.33	12000	36.24	120	22.12	12000	29.80	120	64.66	120
12.15		151	101.0			39.08	121 ²⁾										
12.20		151	101.0					13.68	12200			37.54	12200				
12.25		151	101.0					14.99	12250								
12.30		151	101.0	68.75	123 ²⁾	40.40	123 ²⁾										
12.50		151	101.0	39.86	125 ²⁾	39.08	925 ²⁾	11.48	12500			22.12	12500	36.68	125	81.91	125
12.70		151	101.0	52.06	127 ²⁾	30.65	127 ²⁾	12.80	12700			21.53	12700				
12.80		151	101.0					15.25	12800			39.52	12800	64.68	128	140.49	128
13.00		151	101.0	42.36	130 ²⁾	41.69	130 ²⁾	12.64	13000			26.24	13000	36.68	130	81.31	130
13.10		151	101.0			52.73	131 ²⁾										
13.20		151	101.0					16.42	13200			48.05	13200				
13.30		160	108.0			52.73	133 ²⁾										
13.50		160	108.0	75.31	135 ²⁾	52.73	135 ²⁾	14.54	13500			32.50	13500	49.23	135	109.53	135
13.80		160	108.0					20.93	13800			60.42	13800	57.06	138	124.46	138
14.00		160	108.0	51.31	140 ²⁾	50.56	140 ²⁾	16.13	14000			31.13	14000	44.87	140	97.34	140
14.50		169	114.0					17.30	14500			41.19	14500	54.92	145	117.00	145
14.80		169	114.0											114.35	148	248.99	148
15.00		169	114.0					18.60	15000			36.93	15000	55.21	150	123.10	150
15.25		178	120.0					34.73	15250								
15.50		178	120.0					20.35	15500			52.02	15500	82.06	155	246.37	155
15.80		178	120.0					33.41	15800								
16.00		178	120.0					21.95	16000			49.29	16000	69.26	160	151.17	160
16.50		184	125.0					24.99	16500			82.06	16500				
17.00		184	125.0					26.46	17000			83.60	17000				
17.50		191	130.0					28.92	17500			164.72	17500				
18.00		191	130.0					30.80	18000			90.13	18000				
18.50		198	135.0					33.41	18500								
19.00		198	135.0					35.89	19000			102.83	19000				
19.50		205	140.0					38.07	19500								
20.00		205	140.0					41.69	20000			127.37	20000				
P				●		●		○		○				●		●	
M						●				●				○		○	
K				●		●		●						●		●	
N				○		○		○		●		●		●		○	
S				○		○				○				○		○	
H				○										○		○	
O				○		○		○						○		○	

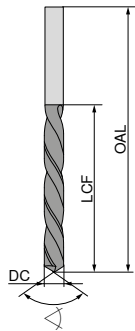
- 1) uncoated
2) self-centering

→ v_c Page 48+49

Twist drill to DIN 338, short

▲ Article no. 10 169 ... WTL-L – left-hand cutting drill

≤ 5xD

WTL
TiCN130°
HSS-EWTL-L
F-nit130°
HSS

DC _{h8} mm	OAL mm	LCF mm	10 172 ... £ T2	10 169 ... £ T2	
1.0	34	12		5.53	010 ¹⁾
1.3	38	16		5.70	013 ¹⁾
1.4	40	18		5.70	014 ¹⁾
1.5	40	18		4.60	015 ¹⁾
1.6	43	20		4.80	016 ¹⁾
1.7	43	20		4.80	017 ¹⁾
1.8	46	22		4.95	018 ¹⁾
1.9	46	22		4.95	019 ¹⁾
2.0	49	24		3.90	020 ¹⁾
2.1	49	24		4.64	021 ¹⁾
2.2	53	27		5.08	022 ¹⁾
2.3	53	27		4.80	023 ¹⁾
2.4	57	30		4.80	024
2.5	57	30		4.35	025
2.6	57	30		4.95	026
2.7	61	33		4.95	027
2.8	61	33		5.08	028
2.9	61	33		5.08	029
3.0	61	33	9.43	4.64	030
3.1	65	36	10.23	5.53	031
3.2	65	36	10.63	5.08	032
3.3	65	36	11.37	5.40	033
3.4	70	39	12.44	5.84	034
3.5	70	39	10.23	4.95	035
3.6	70	39	11.82	6.13	036
3.7	70	39	12.44	6.32	037
3.8	75	43	13.15	6.74	038
3.9	75	43	13.77	7.18	039
4.0	75	43	11.37	5.40	040
4.1	75	43	13.77	7.18	041
4.2	75	43	12.87	6.59	042
4.3	80	47	14.36	8.24	043
4.4	80	47	14.36	8.70	044
4.5	80	47	13.15	6.90	045
4.6	80	47	15.11	8.82	046
4.7	80	47	15.11	8.82	047
4.8	86	52	15.11	8.82	048
4.9	86	52	15.26	9.16	049
5.0	86	52	13.92	6.59	050
5.1	86	52	15.26	9.16	051
5.2	86	52	16.33	9.89	052
5.3	86	52	16.33	9.89	053
5.4	93	57	17.37	10.69	054
5.5	93	57	16.15	8.24	055
5.6	93	57	17.84	11.07	056
5.7	93	57	17.84	11.07	057
5.8	93	57	18.31	11.07	058
5.9	93	57	19.31	11.07	059
6.0	93	57	18.31	8.24	060
6.1	101	63	20.00	11.82	061

DC _{h8} mm	OAL mm	LCF mm
6.2	101	63
6.3	101	63
6.4	101	63
6.5	101	63
6.6	101	63
6.7	101	63
6.8	109	69
6.9	109	69
7.0	109	69
7.1	109	69
7.2	109	69
7.3	109	69
7.4	109	69
7.5	109	69
7.7	117	75
7.8	117	75
7.9	117	75
8.0	117	75
8.1	117	75
8.2	117	75
8.3	117	75
8.4	117	75
8.5	117	75
8.6	125	81
8.7	125	81
8.8	125	81
8.9	125	81
9.0	125	81
9.2	125	81
9.3	125	81
9.5	125	81
9.8	133	87
9.9	133	87
10.0	133	87
10.1	133	87
10.2	133	87
10.3	133	87
10.4	133	87
10.5	133	87
11.0	142	94
11.5	142	94
12.0	151	101
12.2	151	101
12.5	151	101
13.0	151	101
14.0	160	108
14.5	169	114
15.0	169	114
16.0	178	120

10 172 ...

£
T2

062

10 169 ...

£
T2

062

20.20	062	13.15	062
22.43	063	13.15	063
23.05	064	13.15	064
20.00	065	9.89	065
23.22	066	14.34	066
23.22	067	14.34	067
23.94	068	15.11	068
25.48	069	15.44	069
21.41	070	11.75	070
32.32	071	21.41	071
32.32	072	21.41	072
		21.41	073
32.32	074	21.41	074
24.72	075	13.34	075
36.31	077	22.90	077
36.31	078	22.90	078
		22.90	079
28.08	080	12.87	080
37.72	081	23.22	081
39.23	082	23.22	082
		23.22	083
42.21	084	23.22	084
30.82	085	16.15	085
47.44	086	25.74	086
47.15	087	25.74	087
47.15	088	25.74	088
49.43	089	25.74	089
36.61	090	16.34	090
		27.00	092
		27.00	093
39.67	095	20.64	095
		28.28	098
		29.80	099
44.73	100	18.31	100
		29.80	101
59.27	102	30.99	102
		30.68	103
		31.73	104
57.06	105	43.30	105
81.31	110	30.82	110
81.31	115	47.95	115
86.32	120	35.32	120
		55.68	122
		37.72	125
		39.67	130
		45.20	140
		50.04	145
		76.70	150
		62.22	160

P	●	○
M	○	○
K	●	●
N	○	●
S	○	○
H	○	○
O	○	○

1) uncoated

→ v_c Page 49

Twist drill sets DIN 338, short

- ▲ In metal box
- ▲ In 0.1 mm steps

≤ 5xD



DC _{h8} mm	10 158 ...			10 158 ...		
	£ T2			£ T2		
1,0 - 5,9	76.41	050		289.80	054	
6,0 - 10,0	158.72	100		453.77	104	
P		○	●		○	●
M			●			●
K		●	●		●	●
N		○	○		○	○
S					○	
H						
O		○	○		○	○



→ v_c Page 48

 Set of type N vap. contains the drills of Art. No. 10 152 ...
Set of type UNI TiN contains the drills of Art. No. 10 171 ...

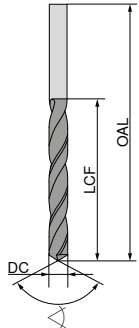
Twist drill with thro' coolant ~ DIN 338,
short

- ▲ Relief ground
- ▲ Special point thinning
- ▲ Wide chip flutes
- ▲ Rounded flute edges
- ▲ For long chipping materials up to 1000N/mm²

≤ 5xD					WNXi		WNXi	
							TiN	
					E		E	
					◁ 130°		◁ 130°	
					HSS-E		HSS-E	
					10 180 ...		10 181 ...	
					£		£	
					T2		T2	
DC	h_b	OAL	LCF	DCONMS	h_b	LS		
mm	mm	mm	mm	mm	mm	mm		
5.0	82	44	6	38	61.62	050	91.52	050
5.5	82	44	6	38	107.51	055	92.93	055
6.0	82	44	6	38	60.56	060	87.85	060
6.5	91	53	8	38	64.20	065	96.72	065
6.8	91	53	8	38	66.51	068	98.84	068
7.0	91	53	8	38	68.36	070	98.25	070
7.5	91	53	8	38	115.20	075	99.75	075
7.8	91	53	8	38	68.36	078	101.76	078
8.0	91	53	8	38	64.54	080	95.80	080
8.5	103	61	10	42	71.09	085	105.42	085
9.0	103	61	10	42	71.70	090	105.06	090
9.5	103	61	10	42	71.69	095	108.45	095
10.0	103	61	10	42	69.55	100	103.41	100
10.2	118	71	12	47	77.07	102	116.53	102
10.5	118	71	12	47	77.07	105	117.31	105
11.0	118	71	12	47	139.16	110	119.57	110
11.5	118	71	12	47	83.29	115	123.26	115
12.0	118	71	12	47	75.13	120	113.05	120
12.5	124	77	14	47	92.04	125	142.46	125
13.0	124	77	14	47	95.20	130	144.61	130
13.5	124	77	14	47	97.34	135	146.74	135
14.0	124	77	14	47	91.68	140	139.42	140
14.5	133	83	16	50	113.36	145	171.92	145
15.0	133	83	16	50	112.52	150	174.83	150
15.5	133	83	16	50	117.44	155	178.47	155
16.0	133	83	16	50	111.21	160	170.36	160
16.5	143	93	18	50	138.97	165	206.38	165
17.0	143	93	18	50	140.94	170	213.73	170
17.5	143	93	18	50	145.20	175	221.03	175
18.0	143	93	18	50	136.83	180	202.72	180
18.5	153	101	20	52	164.72	185	246.96	185
19.0	153	101	20	52	166.55	190	250.61	190
19.5	153	101	20	52	292.57	195	254.27	195
20.0	153	101	20	52	161.23	200	243.31	200
P							●	●
M								
K							●	●
N							○	○
S								
H								
O							○	○

Twist drills, DIN 340, long

≤ 10xD


 $\angle 118^\circ$
HSS-E

10 270 ...


 $\angle 130^\circ$
HSS-E

10 225 ...


 $\angle 130^\circ$
HSS

10 215 ...


 $\angle 130^\circ$
HSS

10 210 ...


 $\angle 130^\circ$
HSS

10 200 ...

DC _{h8} mm	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2	
1.0	56	33	7.91	010	8.70	010 ¹⁾	6.90	010 ¹⁾	15.25	010	6.32	010
1.1	60	37	8.83	011	10.63	011 ¹⁾	7.62	011 ¹⁾	17.84	011	6.90	011
1.2	65	41	9.86	012	10.23	012 ¹⁾	7.18	012 ¹⁾	15.25	012	6.32	012
1.3	65	41	9.71	013	9.89	013 ¹⁾	7.18	013 ¹⁾	15.88	013	6.11	013
1.4	70	45	9.60	014	9.43	014 ¹⁾	6.59	014 ¹⁾	14.36	014	5.70	014
1.5	70	45	8.35	015	8.24	015 ¹⁾	5.70	015 ¹⁾	12.44	015	5.70	015
1.6	76	50	9.86	016	9.11	016 ¹⁾	5.53	016 ¹⁾	12.20	016	5.25	016
1.7	76	50	10.77	017	9.16	017 ¹⁾	7.42	017 ¹⁾	12.20	017	5.08	017
1.8	80	53	10.28	018	9.16	018 ¹⁾	5.40	018 ¹⁾	11.68	018	5.08	018
1.9	80	53	10.99	019	8.39	019 ¹⁾	7.28	019 ¹⁾	11.75	019	5.08	019
2.0	85	56	8.16	020	6.59	020 ¹⁾	5.08	020 ¹⁾	10.94	020	4.35	020
2.1	85	56	9.42	021	7.94	021 ¹⁾	5.70	021 ¹⁾	12.83	021	5.08	021
2.2	90	59	9.60	022	8.09	022 ¹⁾	5.84	022 ¹⁾	12.87	022	5.08	022
2.3	90	59	9.42	023	8.09	023 ¹⁾	5.84	023 ¹⁾	13.30	023	5.08	023
2.4	95	62	8.72	024	8.24	024	6.11	024	13.34	024	5.08	024
2.5	95	62	8.35	025	6.90	025	5.25	025	11.75	025	4.60	025
2.6	95	62	9.60	026	8.24	026	6.11	026	13.34	026	5.08	026
2.7	100	66	10.15	027	11.77	027	6.13	027	13.73	027	5.08	027
2.8	100	66	9.71	028	8.39	028	6.13	028	13.73	028	5.08	028
2.9	100	66	10.15	029	8.39	029	6.13	029	13.77	029	5.08	029
3.0	100	66	9.00	030	7.18	030	5.40	030	11.68	030	4.80	030
3.1	106	69	10.77	031	8.70	031	7.18	031	15.44	031	6.32	031
3.2	106	69	9.98	032	8.39	032	6.11	032	13.30	032	5.08	032
3.3	106	69	10.58	033	9.11	033	6.90	033	14.81	033	5.70	033
3.4	112	73	10.99	034	8.82	034	7.18	034	15.88	034	6.32	034
3.5	112	73	10.77	035	8.39	035	6.13	035	13.34	035	5.40	035
3.6	112	73	11.15	036	12.64	036	10.62	036	16.91	036	6.59	036
3.7	112	73	10.85	037	9.16	037	7.33	037	16.34	037	6.90	037
3.8	119	78	10.43	038	9.11	038	7.62	038	16.34	038	6.90	038
3.9	119	78	11.69	039	9.29	039	7.62	039	16.33	039	7.18	039
4.0	119	78	11.41	040	9.16	040	6.74	040	14.36	040	5.84	040
4.1	119	78	11.61	041	9.43	041	7.80	041	16.78	041	7.18	041
4.2	119	78	11.15	042	9.89	042	7.62	042	16.34	042	6.13	042
4.3	126	82	12.44	043	10.23	043	8.39	043	18.25	043	7.94	043
4.4	126	82	10.99	044	10.16	044	11.64	044	19.16	044	8.09	044
4.5	126	82	11.69	045	10.63	045	7.62	045	16.59	045	7.18	045
4.6	126	82	11.27	046	10.69	046	8.68	046	19.16	046	8.09	046
4.7	126	82	13.04	047	11.07	047	11.64	047	19.16	047	8.24	047
4.8	132	87	12.69	048	11.68	048	8.68	048	19.16	048	8.39	048
4.9	132	87	12.86	049	12.20	049	9.16	049	26.58	049	8.70	049
5.0	132	87	13.04	050	10.63	050	8.09	050	17.37	050	6.90	050
5.1	132	87	14.42	051	12.44	051	12.50	051	20.44	051	8.82	051

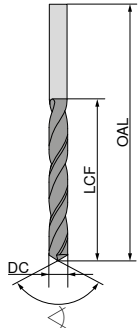
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M	●	○		
K	●	●	●	●
N	○	●	●	○
S	○	○		
H		○		
O	○	○	○	○

1) uncoated

→ v_c Page 50+51

Twist drills, DIN 340, long

≤ 10xD



118°
HSS-E

10 270 ...



130°
HSS-E

10 225 ...



130°
HSS

10 215 ...



130°
HSS

10 210 ...



130°
HSS

10 200 ...

DC _{h8} mm	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2	
5.2	132	87	14.14	052	12.87	052	9.89	052	21.41	052	9.11	052
5.3	132	87	15.56	053	13.30	053	13.37	053	21.70	053	9.29	053
5.4	139	91	17.00	054	13.15	054	10.16	054	23.05	054	9.43	054
5.5	139	91	13.55	055	12.83	055	9.29	055	20.81	055	8.82	055
5.6	139	91	17.71	056	13.77	056	11.37	056	25.03	056	14.24	056
5.7	139	91	19.56	057	13.92	057	11.68	057	25.94	057	10.69	057
5.8	139	91	17.18	058	14.34	058	12.20	058	25.74	058	11.07	058
5.9	139	91	19.15	059	14.36	059	12.44	059	27.63	059	11.37	059
6.0	139	91	16.28	060	13.30	060	9.89	060	21.41	060	9.16	060
6.1	148	97	19.31	061	15.25	061	17.87	061	28.88	061	13.30	061
6.2	148	97	17.31	062	15.11	062	13.73	062	29.35	062	13.15	062
6.3	148	97	19.31	063	15.26	063	18.60	063	30.22	063	13.34	063
6.4	148	97	17.56	064	16.15	064	19.91	064	32.63	064	13.92	064
6.5	148	97	16.87	065	14.66	065	10.79	065	23.94	065	10.23	065
6.6	148	97	19.45	066	16.79	066	15.25	066	33.23	066	14.34	066
6.7	148	97	19.95	067	16.78	067	20.93	067	33.81	067	14.36	067
6.8	156	102	21.41	068	18.31	068	16.79	068	36.77	068	15.25	068
6.9	156	102	22.19	069	18.69	069	22.53	069	36.24	069	15.11	069
7.0	156	102	20.14	070	16.33	070	12.83	070	28.08	070	12.26	070
7.1	156	102	19.45	071	19.31	071	22.82	071			15.26	071
7.2	156	102	22.27	072	19.91	072	17.37	072	38.17	072	22.39	072
7.3	156	102	23.28	073	20.20	073	23.84	073	39.23	073	22.53	073
7.4	156	102	24.12	074	30.09	074	24.13	074	38.76	074	22.82	074
7.5	156	102	24.54	075	19.31	075	15.44	075	34.17	075	14.66	075
7.6	165	109	26.33	076		076	24.72	076	39.83	076	16.78	076
7.7	165	109	24.87	077	23.22	077	25.27	077			17.21	077
7.8	165	109	27.41	078	23.94	078	19.16	078	41.31	078	17.37	078
7.9	165	109	26.43	079	24.41	079	25.71	079	39.84	079	24.99	079
8.0	165	109	22.44	080	18.11	080	14.81	080	32.50	080	13.73	080
8.1	165	109	24.73	081	35.18	081	19.31	081	42.66	081	18.25	081
8.2	165	109	26.97	082	25.94	082	19.76	082	43.79	082	18.42	082
8.3	165	109	28.59	083	25.74	083	26.58	083	44.24	083	18.69	083
8.4	165	109	30.73	084	27.00	084	20.81	084	44.73	084	26.88	084
8.5	165	109	26.33	085	23.05	085	19.16	085	41.75	085	17.80	085
8.6	175	115	26.15	086	27.63	086	28.62	086	46.38	086	20.00	086
8.7	175	115	26.43	087	28.08	087	21.53	087	46.85	087		
8.8	175	115	26.85	088	28.28	088	21.70	088	47.15	088	20.20	088
8.9	175	115	27.29	089	30.04	089	30.95	089	66.82	089	30.09	089
9.0	175	115	27.67	090	22.43	090	17.84	090	39.23	090	16.59	090
9.1	175	115	27.67	091	42.29	091	24.41	091	52.48	091	31.67	091
9.2	175	115	27.67	092	32.63	092	36.61	092			33.58	092
9.3	175	115	27.67	093	32.78	093	28.08	093			25.48	093

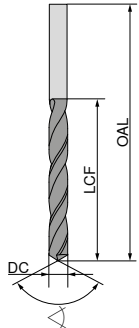
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K	●	●	●	●
N	○	●	●	○
S	○	○		
H		○		
Q	○	○	○	○

1) uncoated

→ v_c Page 50+51

Twist drills, DIN 340, long

≤ 10xD



118°
HSS-E

10 270 ...



130°
HSS-E

10 225 ...



130°
HSS

10 215 ...



130°
HSS

10 210 ...



130°
HSS

10 200 ...

DC _{h8} mm	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2	
9.4	175	115	27.67	094	46.48	094			36.61	094		
9.5	175	115	27.67	095	29.60	095	26.80	095	59.03	095	25.48	095
9.6	184	121	29.30	096			43.30	096			43.30	096
9.7	184	121	30.73	097	40.27	097	34.79	097	75.13	097		
9.8	184	121	32.83	098	40.27	098	36.77	098	80.39	098	32.78	098
9.9	184	121	35.68	099	40.27	099	51.42	099	114.35	099		
10.0	184	121	38.58	100	33.72	100	21.41	100	47.44	100	19.31	100
10.1	184	121	42.14	101			47.75	101	104.79	101		
10.2	184	121	45.01	102	43.32	102	37.72	102	83.06	102	84.41	102
10.3	184	121	48.56	103			57.52	103			57.06	103
10.4	184	121	48.56	104			69.11	104			82.38	104
10.5	184	121	49.30	105	45.20	105	38.17	105	86.04	105	37.70	105
10.6	184	121							157.72	106		
10.8	195	128			51.57	108	56.89	108			71.62	108
11.0	195	128	58.52	110	49.68	110	32.50	110	69.13	110	30.68	110
11.5	195	128	59.28	115	61.92	115	54.00	115	115.52	115	50.04	115
11.6	195	128									67.12	116
11.8	195	128			68.63	118	65.13	118			60.11	118
12.0	205	134	59.97	120	62.22	120	38.76	120	87.55	120	37.72	120
12.2	205	134									70.17	122
12.3	205	134									60.11	123
12.5	205	134	65.69	125			40.27	125	89.69	125	39.67	125
13.0	205	134	71.44	130			42.88	130	94.12	130	42.21	130
13.5	214	140	72.83	135			78.11	135				
14.0	214	140	75.72	140			71.70	140	161.23	140	71.23	140

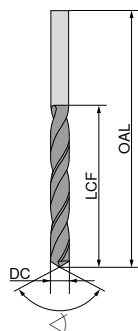
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S	○	○		
H		○		
O	○	○	○	○

1) uncoated

→ v_c Page 50+51

Twist drills, DIN 1869, extra-long, series 1

> 10xD



NEW

WTL

TiAlN

130°
HSS-E

WTL

F-nit

130°
HSS

DC _{h8} mm	OAL mm	LCF mm	10 236 ... £ T2	10 235 ... £ T2	
2.0	125	85		9.43	020 ¹⁾
2.1	125	85		11.68	021 ¹⁾
2.2	135	90		11.68	022 ¹⁾
2.3	135	90		11.68	023 ¹⁾
2.4	140	95		12.26	024
2.5	140	95		9.43	025
2.6	140	95		12.26	026
2.7	150	100		12.87	027
2.8	150	100		12.87	028
2.9	150	100		12.87	029
3.0	150	100	18.29	10.94	030
3.1	155	105		13.34	031
3.2	155	105		13.34	032
3.3	155	105	29.13	13.34	033
3.4	165	115		13.73	034
3.5	165	115	20.83	10.94	035
3.6	165	115		13.73	036
3.7	165	115		14.82	037
3.8	175	120		14.82	038
3.9	175	120		14.82	039
4.0	175	120	20.39	11.07	040
4.1	175	120		14.82	041
4.2	175	120	30.03	15.11	042
4.3	185	125		16.79	043
4.4	185	125		16.79	044
4.5	185	125	22.92	11.82	045
4.6	185	125		16.79	046
4.7	185	125		17.40	047
4.8	195	135		17.37	048
4.9	195	135		18.11	049
5.0	195	135	17.10	12.83	050
5.1	195	135		18.69	051
5.2	195	135		19.31	052
5.3	195	135		19.31	053
5.4	205	140		19.31	054
5.5	205	140	24.22	13.77	055
5.6	205	140		19.31	056
5.7	205	140		20.00	057
5.8	205	140		19.91	058
5.9	205	140		19.91	059
6.0	205	140	25.66	13.77	060
6.1	215	150		21.41	061
6.2	215	150		21.53	062
6.3	215	150		23.05	063
6.4	215	150		23.22	064
6.5	215	150	27.59	18.69	065
6.6	215	150		23.22	066
6.7	215	150		24.72	067

DC _{h8} mm	OAL mm	LCF mm	10 236 ... £ T2	10 235 ... £ T2	
6.8	225	155	25.99	24.24	068
6.9	225	155		25.94	069
7.0	225	155	23.75	20.00	070
7.1	225	155		39.67	071
7.3	225	155		39.67	073
7.4	225	155		39.67	074
7.5	225	155	26.51	22.43	075
7.7	240	165		30.99	077
7.8	240	165		32.63	078
7.9	240	165		32.78	079
8.0	240	165	26.24	24.24	080
8.1	240	165		37.26	081
8.2	240	165		37.26	082
8.3	240	165		37.26	083
8.4	240	165		39.23	084
8.5	240	165	33.77	31.27	085
8.6	250	175		56.25	086
8.7	250	175		42.21	087
8.8	250	175		44.40	088
9.0	250	175	37.70	34.03	090
9.2	250	175		50.34	092
9.4	250	175		54.00	094
9.5	250	175	37.95	39.35	095
9.6	265	185		55.51	096
9.7	265	185		55.51	097
9.8	265	185		56.44	098
9.9	265	185		56.44	099
10.0	265	185	42.77	35.07	100
10.2	265	185	62.70		
10.5	265	185		62.22	105
11.0	280	195		45.80	110
11.5	280	195		56.28	115
12.0	295	205		53.38	120
12.5	295	205		65.29	125
13.0	295	205		65.01	130

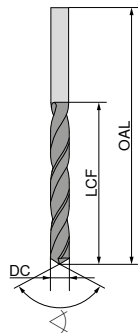
P	•	•
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S		
H		
O	○	○

1) uncoated

→ v_c Page 52

Twist drills, DIN 1869, extra-long,
series 2Twist drills, DIN 1869, extra-long,
series 3

> 10xD

NEW
WTL
TiAlN130°
HSS-EWTL
F-nit130°
HSS

10 246 ...

10 245 ...

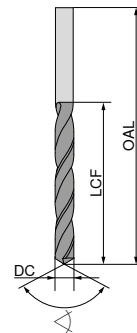
DC _{h8} mm	OAL mm	LCF mm	£ T2		£ T2	
2.0	160	110			18.69	020 ¹⁾
2.5	180	120			18.69	025
3.0	190	130	24.65	03000	14.81	030
3.5	210	145	28.91	03500	14.66	035
4.0	220	150	25.91	04000	15.44	040
4.5	235	160	28.67	04500	16.79	045
5.0	245	170	27.57	05000	16.79	050
5.5	260	180	34.10	05500	20.20	055
6.0	260	180	35.41	06000	19.91	060
6.5	275	190	33.88	06500	22.90	065
7.0	290	200	35.45	07000	25.48	070
7.5	290	200	38.14	07500	30.04	075
8.0	305	210	42.13	08000	29.60	080
8.5	305	210	41.39	08500	46.38	085
9.0	320	220	45.86	09000	45.32	090
9.5	320	220	47.76	09500	51.63	095
10.0	340	235	54.46	10000	47.75	100
10.2	340	235	61.39	10200		
10.5	340	235			69.26	105
11.0	365	250			67.59	110
11.5	365	250			78.11	115
12.0	375	260	79.01	12000	76.16	120
12.5	375	260			76.16	125
13.0	375	260			79.01	130

P	•	•
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O	○	○

1) uncoated

→ v_c Page 52

> 10xD

NEW
WTL
TiAlN130°
HSS-EWTL
F-nit130°
HSS

10 256 ...

10 255 ...

DC _{h8} mm	OAL mm	LCF mm	£ T2		£ T2	
2.5	225	150			24.24	025
3.0	240	160			24.24	030
3.5	265	180			20.00	035
4.0	280	190	33.67	04000	20.00	040
4.5	295	200			23.94	045
5.0	315	210	38.10	05000	23.94	050
5.5	330	225			25.94	055
6.0	330	225	43.90	06000	26.80	060
6.5	350	235			29.60	065
7.0	370	250			37.70	070
7.5	370	250			43.32	075
8.0	390	265	52.10	08000	43.25	080
8.5	390	265			56.00	085
9.0	410	280			60.11	090
9.5	410	280			97.92	095
10.0	430	295	71.51	10000	70.17	100
10.5	430	295			76.74	105
11.0	455	310			81.31	110
11.5	455	310			90.13	115
12.0	480	330			96.11	120
12.5	480	330			90.13	125
13.0	480	330			90.92	130

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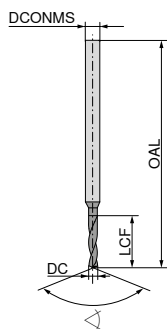
→ v_c Page 52

Twist drills, DIN 1899

- ▲ 4 facet
- ▲ with reinforced shank

Scope of supply:

- ▲ Pack quantity 5 pieces
- ▲ price per piece



118°
HSS-E-PM

10 103 ...

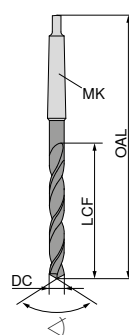
DC _{-0,004} mm	OAL mm	LCF mm	DCONMS _{h8} mm	£ T2	
0.15	25	0.8	1.0	5.60	00150
0.20	25	1.5	1.0	4.60	00200
0.25	25	1.9	1.0	3.13	00250
0.30	25	1.9	1.0	3.51	00300
0.35	25	2.4	1.0	3.23	00350
0.40	25	3.0	1.0	3.23	00400
0.45	25	3.0	1.0	3.23	00450
0.50	25	3.4	1.0	3.23	00500
0.55	25	3.9	1.0	3.23	00550
0.60	25	3.9	1.0	3.23	00600
0.65	25	4.2	1.0	3.23	00650
0.70	25	4.8	1.0	3.13	00700
0.75	25	4.8	1.0	3.13	00750
0.80	25	5.3	1.5	3.23	00800
0.85	25	5.3	1.5	3.37	00850
0.90	25	6.0	1.5	3.37	00900
0.95	25	6.0	1.5	3.37	00950
1.00	25	6.8	1.5	3.37	01000
1.05	25	6.8	1.5	3.37	01050
1.10	25	7.6	1.5	3.37	01100
1.15	25	7.6	1.5	3.37	01150
1.20	25	8.5	1.5	3.37	01200
1.25	25	8.5	1.5	3.37	01250
1.30	25	8.5	1.5	3.45	01300
1.35	25	9.5	1.5	3.37	01350
1.40	25	9.5	1.5	3.37	01400
1.45	25	9.5	1.5	3.37	01450

P	●
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O	○

→ v_c Page 54

Twist drill, factory standard, short

≤ 3xD



130°
HSS-E

10 285 ...

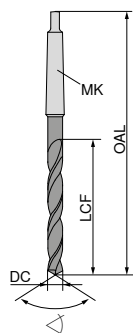
DC _{h8} mm	OAL mm	LCF mm	MK	£ T2	
10.0	138	57	1	45.44	100
10.5	138	57	1	65.38	105
11.0	142	61	1	39.67	110
11.5	142	61	1	51.79	115
12.0	147	66	1	45.92	120
12.5	147	66	1	49.43	125
13.0	147	66	1	47.75	130
13.5	168	70	2	59.72	135
14.0	168	70	2	59.27	140
14.5	172	74	2	63.59	145
15.0	172	74	2	63.15	150
15.5	176	78	2	94.57	155
16.0	176	78	2	59.72	160
16.5	179	81	2	96.11	165
17.0	179	81	2	62.71	170
17.5	183	85	2	100.70	175
18.0	183	85	2	66.58	180
18.5	186	88	2	101.62	185
19.0	186	88	2	74.13	190
19.5	212	91	3	120.06	195
20.0	212	91	3	86.04	200
21.0	216	95	3	95.01	210
22.0	219	98	3	101.62	220
23.0	222	101	3	108.30	230
24.0	225	104	3	110.74	240
25.0	225	104	3	115.31	250
26.0	256	107	4	160.16	260
27.0	259	110	4	171.14	270
28.0	259	110	4	174.94	280
30.0	263	114	4	191.12	300

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→ v_c Page 47

Twist drills, DIN 345

≤ 5xD

N
vap.MK
118°
HSS

WTL

MK
130°
HSS-E

				10 265 ...		10 280 ...	
DC _{h8} mm	OAL mm	LCF mm	MK	£ T2		£ T2	
10.00	168	87	1	17.80	100	44.24	100 ¹⁾
10.20	168	87	1	20.20	102	44.73	102 ¹⁾
10.50	168	87	1	18.25	105	44.73	105 ¹⁾
10.80	175	94	1	24.41	108	50.04	108 ¹⁾
11.00	175	94	1	18.69	110	47.75	110 ¹⁾
11.20	175	94	1	25.94	112		
11.50	175	94	1	21.70	115	57.98	115 ¹⁾
11.80	175	94	1	27.63	118		
12.00	182	101	1	20.00	120	50.04	120 ¹⁾
12.20	182	101	1	27.84	122	53.73	122 ¹⁾
12.50	182	101	1	20.64	125	51.18	125 ¹⁾
12.80	182	101	1	28.28	128		
13.00	182	101	1	21.41	130	56.14	130 ¹⁾
13.20	182	101	1	28.75	132		
13.50	189	108	1	24.24	135	66.68	135 ¹⁾
13.80	189	108	1	30.99	138		
14.00	189	108	1	23.05	140	59.27	140 ¹⁾
14.25	212	114	2	33.68	142	89.69	142 ¹⁾
14.50	212	114	2	23.94	145	70.17	145 ¹⁾
14.75	212	114	2	36.61	147		
15.00	212	114	2	25.48	150	71.09	150 ¹⁾
15.25	218	120	2	34.03	152	90.08	152 ¹⁾
15.50	218	120	2	26.80	155	67.19	155 ¹⁾
15.75	218	120	2	30.99	157	75.13	157 ¹⁾
16.00	218	120	2	26.80	160	73.17	160 ¹⁾
16.25	223	125	2	41.17	162		
16.50	223	125	2	29.60	165	75.13	165 ²⁾
16.75	223	125	2	34.03	167		
17.00	223	125	2	30.68	170	71.09	170 ²⁾
17.25	228	130	2	37.72	172	83.06	172 ²⁾
17.50	228	130	2	30.82	175	78.11	175 ²⁾
17.75	228	130	2	38.29	177	86.04	177 ²⁾
18.00	228	130	2	32.32	180	81.74	180 ²⁾
18.25	233	135	2	39.67	182		
18.50	233	135	2	35.32	185	78.11	185 ²⁾
18.75	233	135	2	41.17	187		
19.00	233	135	2	35.68	190	83.06	190 ²⁾
19.25	238	140	2	44.40	192		
19.50	238	140	2	40.27	195		
19.75	238	140	2	46.38	197		
20.00	238	140	2	37.70	200	91.06	200 ²⁾
20.25	243	145	2	49.68	202		
20.50	243	145	2	39.23	205		
20.75	243	145	2	50.13	207		
21.00	243	145	2	42.72	210	107.70	210 ²⁾
21.25	248	150	2	53.09	212		
21.50	248	150	2	48.98	215		
21.75	248	150	2	54.17	217		
22.00	248	150	2	47.44	220	115.77	220 ²⁾
22.25	248	150	2	55.68	222		
22.50	253	155	2	50.13	225	142.46	225 ²⁾

				10 265 ...		10 280 ...	
DC _{h8} mm	OAL mm	LCF mm	MK	£ T2		£ T2	
22.75	253	155	2	57.16	227		
23.00	253	155	2	55.51	230	133.62	230 ²⁾
23.50	276	155	3	54.17	235		
23.75	281	160	3	75.96	237		
24.00	281	160	3	57.98	240	145.98	240 ²⁾
24.50	281	160	3	60.11	245		
24.75	281	160	3	83.29	247		
25.00	281	160	3	63.76	250	148.10	250 ²⁾
25.50	286	165	3	65.09	255		
25.75	286	165	3	86.32	257		
26.00	286	165	3	73.40	260	171.92	260 ²⁾
26.50	286	165	3	69.59	265		
26.75	291	170	3	109.54	267		
27.00	291	170	3	71.69	270	198.61	270 ²⁾
27.50	291	170	3	75.33	275		
27.75	291	170	3	107.23	277		
28.00	291	170	3	79.15	280		
28.50	296	175	3	99.03	285		
28.75	296	175	3	154.27	287		
29.00	296	175	3	85.62	290		
29.50	296	175	3	89.39	295		
29.75	296	175	3	113.95	297		
30.00	296	175	3	85.62	300		
30.50	301	180	3	106.64	305		
31.00	301	180	3	103.57	310		
31.50	301	180	3	117.61	315		
32.00	334	185	4	108.75	320		
32.50	334	185	4	125.24	325		
33.00	334	185	4	116.99	330		
33.50	334	185	4	129.65	335		
34.00	339	190	4	136.97	340		
34.50	339	190	4	151.17	345		
35.00	339	190	4	139.27	350		
35.50	339	190	4	160.93	355		
36.00	344	195	4	149.65	360		
36.50	344	195	4	168.25	365		
37.00	344	195	4	163.82	370		
37.50	344	195	4	184.57	375		
38.00	349	200	4	173.45	380		
38.50	349	200	4	208.22	385		
39.00	349	200	4	189.92	390		
39.50	349	200	4	238.11	395		
40.00	349	200	4	197.21	400		
41.00	354	205	4	212.18	410		
42.00	354	205	4	230.63	420		
43.00	359	210	4	245.55	430		
44.00	359	210	4	256.74	440		
45.00	359	210	4	267.86	450		
46.00	364	215	4	278.97	460		
47.00	364	215	4	297.44	470		
48.00	369	220	4	305.07	480		
49.00	369	220	4	319.86	490		
50.00	369	220	4	327.34	500		
51.00	412	225	5	394.29	510		
52.00	412	225	5	424.04	520		
53.00	412	225	5	616.21	530		
54.00	417	230	5	636.85	540		
55.00	417	230	5	647.17	550		
56.00	417	230	5	667.63	560		
57.00	422	235	5	698.42	570		
58.00	422	235	5	739.55	580		
59.00	422	235	5	780.52	590		
60.00	422	235	5	580.09	600		

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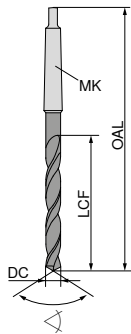
1) nitrided chamfer

2) vaporised

→ v_c Page 49

Twist drills, DIN 341, long

≤ 10xD



DC _{h8} mm	OAL mm	LCF mm	MK	10 295 ...		10 297 ...	
				£ T2		£ T2	
10.00	197	116	1	24.24	100	60.59	100 ¹⁾
10.20	197	116	1	27.63	102	57.68	102 ¹⁾
10.50	197	116	1	33.27	105	64.95	105 ¹⁾
10.80	206	125	1	43.01	108		
11.00	206	125	1	25.94	110	47.15	110 ¹⁾
11.20	206	125	1	33.81	112	58.28	112 ¹⁾
11.50	206	125	1	25.94	115	49.43	115 ¹⁾
11.80	206	125	1	34.79	118	43.79	118 ¹⁾
12.00	215	134	1	25.94	120	49.43	120 ¹⁾
12.20	215	134	1	45.78	122	43.19	122 ¹⁾
12.50	215	134	1	25.74	125	66.82	125 ¹⁾
12.80	215	134	1	49.55	128	42.66	128 ¹⁾
13.00	215	134	1	25.74	130	51.18	130 ¹⁾
13.20	215	134	1	49.55	132		
13.50	223	142	1	29.14	135	53.29	135 ¹⁾
13.80	223	142	1	47.75	138	48.98	138 ¹⁾
14.00	223	142	1	28.88	140	60.11	140 ¹⁾
14.25	245	147	2	45.20	142		
14.50	245	147	2	36.68	145	58.42	145 ¹⁾
14.75	245	147	2	45.20	147		
15.00	245	147	2	36.24	150	61.92	150 ¹⁾
15.25	251	153	2	45.20	152		
15.50	251	153	2	35.32	155	60.70	155 ¹⁾
15.75	251	153	2	46.38	157		
16.00	251	153	2	37.72	160	63.03	160 ¹⁾
16.25	257	159	2	51.18	162		
16.50	257	159	2	39.83	165	62.11	165 ²⁾
16.75	257	159	2	50.04	167		
17.00	257	159	2	40.28	170	71.70	170 ²⁾
17.25	263	165	2	75.41	172		
17.50	263	165	2	45.20	175	68.82	175 ²⁾
17.75	263	165	2	56.44	177		
18.00	263	165	2	44.73	180	73.17	180 ²⁾
18.25	269	171	2	67.28	182		
18.50	269	171	2	50.13	185	68.82	185 ²⁾
18.75	269	171	2	85.42	187		
19.00	269	171	2	50.34	190	83.06	190 ²⁾
19.25	275	177	2	69.13	192		
19.50	275	177	2	57.98	195	84.04	195 ²⁾
19.75	275	177	2	78.87	197		
20.00	275	177	2	55.08	200	90.45	200 ²⁾
20.50	282	184	2	69.11	205	88.94	205 ²⁾
21.00	282	184	2	63.03	210	106.33	210 ²⁾
21.50	289	191	2	73.17	215		
21.75	289	191	2	132.49	217		
22.00	289	191	2	68.82	220	115.52	220 ²⁾
22.50	296	198	2	75.96	225		
23.00	296	198	2	71.41	230		

DC _{h8} mm	OAL mm	LCF mm	MK	10 295 ...		10 297 ...	
				£ T2		£ T2	
23.50	319	198	3	85.17	235		
24.00	327	206	3	87.55	240	148.10	240 ²⁾
24.50	327	206	3	94.12	245		
25.00	327	206	3	86.64	250	153.75	250 ²⁾
25.50	335	214	3	103.54	255		
26.00	335	214	3	101.29	260	179.83	260 ²⁾
26.50	335	214	3	108.30	265		
27.00	343	222	3	108.30	270		
27.50	343	222	3	134.39	275		
28.00	343	222	3	120.66	280		
29.00	351	230	3	139.42	290		
29.50	351	230	3	156.04	295		
30.00	351	230	3	138.81	300		
30.50	360	239	3	177.71	305		
31.00	360	239	3	168.42	310		
31.50	360	239	3	187.77	315		
32.00	397	248	4	180.61	320		
33.00	397	248	4	180.61	330		
33.50	397	248	4	209.58	335		
34.00	406	257	4	223.78	340		
35.00	406	257	4	216.59	350		
36.00	416	267	4	249.08	360		
37.00	416	267	4	281.57	370		
37.50	416	267	4	303.22	375		
38.00	426	277	4	270.74	380		
39.00	426	277	4	288.88	390		
40.00	426	277	4	303.22	400		
42.00	436	287	4	343.05	420		
43.00	447	298	4	368.08	430		
44.00	447	298	4	368.08	440		
45.00	447	298	4	508.16	450		
50.00	470	321	4	505.32	500		

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N	○	●
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H		○
O	○	○

1) nitrided chamfer

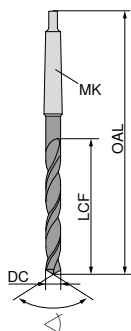
2) vaporised

→ v_c Page 51

Twist drills, DIN 1870, extra-long, series 1

Twist drills, DIN 1870, extra-long, series 2

> 10xD

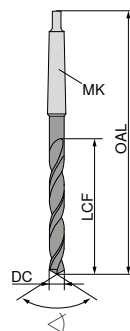


WTL



130°
HSS

> 10xD



WTL



130°
HSS

DC _{h8} mm	OAL mm	LCF mm	MK	£ T2	10 305 ...
10.0	285	185	1	46.85	100 ¹⁾
10.5	285	185	1	56.89	105 ¹⁾
11.0	300	195	1	53.29	110 ¹⁾
11.5	300	195	1	56.13	115 ¹⁾
12.0	310	205	1	60.70	120 ¹⁾
12.5	310	205	1	62.71	125 ¹⁾
13.0	310	205	1	62.11	130 ¹⁾
13.5	325	220	1	71.69	135 ¹⁾
14.0	325	220	1	71.09	140 ¹⁾
14.5	340	220	2	73.69	145 ¹⁾
15.0	340	220	2	77.50	150 ¹⁾
15.5	355	230	2	83.06	155 ¹⁾
16.0	355	230	2	79.61	160 ¹⁾
16.5	355	230	2	81.74	165 ²⁾
17.0	355	230	2	81.57	170 ²⁾
17.5	370	245	2	87.55	175 ²⁾
18.0	370	245	2	90.45	180 ²⁾
18.5	370	245	2	99.75	185 ²⁾
19.0	370	245	2	101.87	190 ²⁾
19.5	385	260	2	110.00	195 ²⁾
20.0	385	260	2	116.40	200 ²⁾
21.0	385	260	2	134.39	210 ²⁾
22.0	405	270	2	140.79	220 ²⁾
23.0	405	270	2	165.33	230 ²⁾
24.0	440	290	3	184.25	240 ²⁾
25.0	440	290	3	187.77	250 ²⁾
26.0	440	290	3	202.25	260 ²⁾
28.0	460	305	3	234.73	280 ²⁾
30.0	460	305	3	270.74	300 ²⁾

P	●
M	●
K	●
N	●
S	●
H	●
O	○

1) nitrided chamfer

2) vaporised

→ v_c Page 53

DC _{h8} mm	OAL mm	LCF mm	MK	£ T2	10 315 ...
10.0	360	235	1	65.70	100 ¹⁾
10.5	360	235	1	111.42	105 ¹⁾
11.0	375	250	1	75.13	110 ¹⁾
11.5	375	250	1	81.74	115 ¹⁾
12.0	395	260	1	91.59	120 ¹⁾
13.0	395	260	1	97.62	130 ¹⁾
13.5	410	275	1	104.19	135 ¹⁾
14.0	410	275	1	104.19	140 ¹⁾
14.5	425	275	2	104.79	145 ¹⁾
15.0	425	275	2	103.54	150 ¹⁾
15.5	445	295	2	110.00	155 ¹⁾
16.0	445	295	2	108.30	160 ¹⁾
16.5	445	295	2	123.54	165 ²⁾
17.0	445	295	2	116.40	170 ²⁾
17.5	465	310	2	125.69	175 ²⁾
18.0	465	310	2	130.73	180 ²⁾
18.5	465	310	2	140.79	185 ²⁾
19.0	465	310	2	143.06	190 ²⁾
19.5	490	325	2	215.73	195 ²⁾
20.0	490	325	2	161.23	200 ²⁾
21.0	490	325	2	172.66	210 ²⁾
22.0	515	345	2	205.77	220 ²⁾
23.0	515	345	2	278.20	230 ²⁾
24.0	555	365	3	234.73	240 ²⁾
25.0	555	365	3	238.26	250 ²⁾
26.0	555	365	3	277.91	260 ²⁾
28.0	580	385	3	324.88	280 ²⁾
30.0	580	385	3	375.52	300 ²⁾

P	●
M	●
K	●
N	●
S	●
H	●
O	○

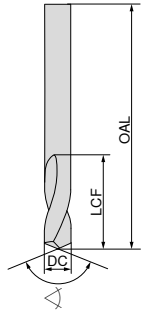
1) nitrided chamfer

2) vaporised

→ v_c Page 53

NC spot drills, factory standard

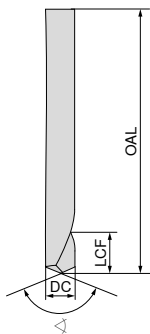
▲ helical flutes



DC _{h6} mm	OAL mm	LCF mm
3	46	12.0
4	55	12.0
5	62	14.0
6	66	16.0
8	79	21.0
10	89	25.0
12	102	30.0
16	115	37.5
20	131	45.0

NC-A	NC-A TiN	NC-A	NC-A TiN
120° HSS	120° HSS	90° HSS	90° HSS
10 510 ...	10 512 ...	10 520 ...	10 522 ...
£ T2	£ T2	£ T2	£ T2
8.09 030	17.73 030	7.80 030	17.73 030
8.24 040	18.03 040	7.94 040	18.03 040
8.70 050	19.19 050	8.39 050	19.19 050
8.68 060	20.19 060	8.39 060	20.19 060
14.36 080	32.54 080	14.34 080	32.54 080
16.34 100	35.89 100	14.99 100	35.89 100
23.36 120	52.46 120	23.05 120	52.46 120
30.25 160	68.57 160	30.04 160	68.57 160
48.78 200	111.57 200	48.37 200	111.57 200

▲ with clamping flat to DIN 1835 B



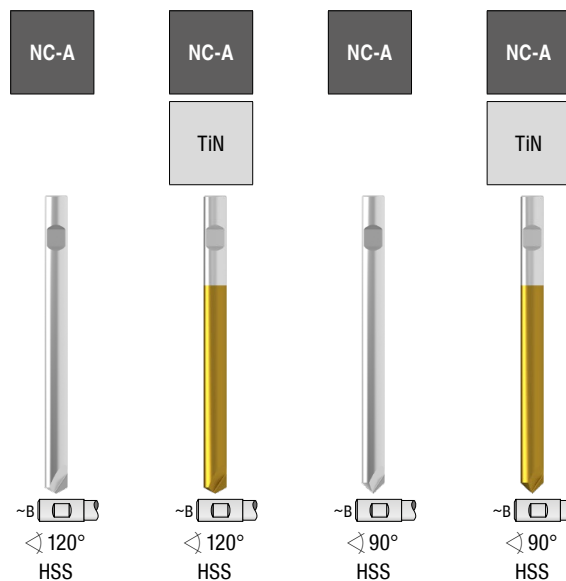
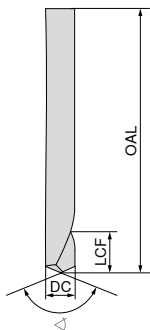
DC _{h6} mm	OAL mm	LCF mm	10 511 ...	10 513 ...	10 521 ...	10 523 ...
			£ T2	£ T2	£ T2	£ T2
6	66	7.0	8.24 060	18.38 060	8.24 060	18.38 060
8	79	9.0	11.57 080	26.16 080	11.57 080	26.16 080
10	89	11.5	12.96 100	29.18 100	12.96 100	29.18 100
12	102	14.0	18.01 120	41.01 120	18.01 120	41.01 120
16	115	18.0	23.52 160	53.97 160	23.52 160	53.97 160
20	131	23.0	33.59 200	78.36 200	33.59 200	78.36 200
P			15-35	25-55	15-35	25-55
M			10	20	10	20
K			20-35	30-55	20-35	30-55
N			50-70	65-85	50-70	65-85
S						
H						
O						



Suitable only for spot drilling!

NC spot drill factory standard long

▲ with clamping flat to DIN 1835 B



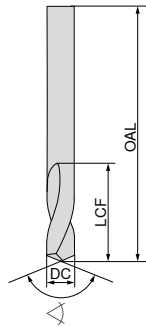
DC _{h6} mm	OAL mm	LCF mm	10 530 ...		10 532 ...		10 526 ...		10 528 ...	
			£ T2		£ T2		£ T2		£ T2	
6	93	7.0	10.09	060	22.90	060	10.09	060	22.90	060
8	117	9.0	15.72	080	36.10	080	15.72	080	36.10	080
10	133	11.5	17.37	100	39.88	100	17.37	100	39.88	100
12	151	14.0	20.63	120	47.30	120	20.63	120	47.30	120
16	178	18.0	31.46	160	73.20	160	31.46	160	73.20	160
20	205	23.0	43.66	200	102.64	200	43.66	200	102.64	200
P			15-35		25-55		15-35		25-55	
M			10		20		10		20	
K			20-35		30-55		20-35		30-55	
N			50-70		65-85		50-70		65-85	
S										
H										
O										



Suitable only for spot drilling!

NC spot drills, factory standard, long

▲ helical flutes



NC-A

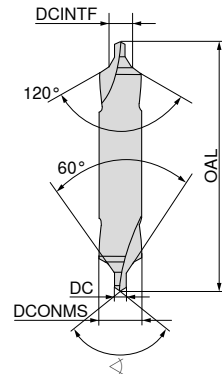
90°
HSS

DC _{h8} mm	OAL mm	LCF mm	£ T2	
6.35	105	17	13.51	025
8.00	118	21	24.72	030
9.52	132	25	24.99	040
12.70	159	30	35.31	050
15.87	186	37	31.11	060
19.05	213	45	71.05	075
P				15-35
M				10
K				20-35
N				50-70
S				
H				
O				

Suitable only for spot drilling!

Centre drills, DIN 333, form B

▲ with protective countersink 120°



ZB

ZB

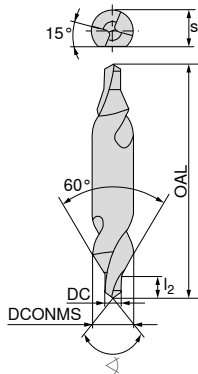
Right-hand
118°
HSSLeft-hand
118°
HSS

10 480 ...

10 485 ...

DC mm	DCONMS _{h8} mm	DCINTF _{k12} mm	OAL mm	£ T2		£ T2	
1.00	4.0	2.12	35.5	7.99	100	24.72	100
1.25	5.0	2.65	40.0	8.85	125	28.92	125
1.60	6.3	3.35	45.0	8.28	160	21.95	160
2.00	8.0	4.25	50.0	8.85	200	23.25	200
2.50	10.0	5.30	56.0	10.90	250	24.24	250
3.15	11.2	6.70	62.0	15.86	315	31.84	315
4.00	14.0	8.50	69.0	20.81	400	48.68	400
5.00	18.0	10.60	77.0	27.00	500	51.86	500
P					15-35		15-35
M					10		10
K					20-35		20-35
N					50-70		50-70
S							
H							
O							

Centre drills, DIN 333, form A



ZB

ZB

ZB

ZB

TiN

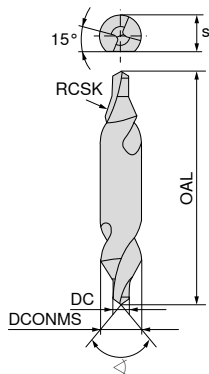
Right-hand
118°
HSSRight-hand
118°
HSSLeft-hand
118°
HSSRight-hand
118°
HSS-E

DC mm	s mm	DCONMS _{h8} mm	OAL mm	l ₂ mm	10 415 ... £ T2	10 425 ... £ T2	10 435 ... £ T2	10 445 ... £ T2
0.50		3.15	25.0	0.8	5.68	050 2)	13.68	050 2)
0.80		3.15	25.0	1.1	5.52	080 2)	13.08	080 2)
1.00		3.15	31.5	1.3	5.08	100	12.08	100
1.25		3.15	31.5	1.6	4.39	125	13.80	125
1.60	3.25	4.00	35.5	2.0				8.72 160 1)
1.60		4.00	35.5	2.0	4.65	160	11.37	160
2.00	4.20	5.00	40.0	2.5				7.62 160 1)
2.00		5.00	40.0	2.5	3.81	200	11.64	200
2.50	5.35	6.30	45.0	3.1				7.62 250 1)
2.50		6.30	45.0	3.1	4.39	250	13.68	250
3.15	6.95	8.00	50.0	3.9				10.23 315 1)
3.15		8.00	50.0	3.9	7.28	315	17.00	315
4.00	8.40	10.00	56.0	5.0				19.47 400 1)
4.00		10.00	56.0	5.0	11.20	400	26.75	400
5.00	10.95	12.50	63.0	6.3				20.50 500 1)
5.00		12.50	63.0	6.3	16.13	500	38.36	500
6.30	14.00	16.00	71.0	8.0				47.64 630 1)
6.30		16.00	71.0	8.0	23.53	630	56.94	630
P					15-35	25-55	15-35	15-35
M					10	20	10	10
K					20-35	30-55	20-35	20-35
N					50-70	65-85	50-70	50-70
S								
H								
O								

1) with flat

2) Single ended

Centre drills, DIN 333, form R



ZB

ZB

ZB

Right-hand
118°
HSSLeft-hand
118°
HSSRight-hand
118°
HSS

10 455 ...

10 475 ...

10 465 ...

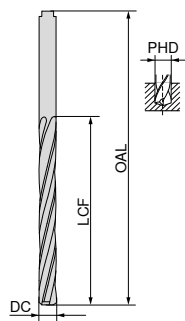
DC mm	s mm	DCONMS _{h8} mm	OAL mm	RCSK mm	£ T2		£ T2		£ T2	
0.50		3.15	25.0	2.00	5.81	050 ²⁾				
0.80		3.15	25.0	2.50	5.68	080 ²⁾	11.37	080 ²⁾		
1.00		3.15	31.5	2.90	5.08	100	11.91	100		
1.25		3.15	31.5	3.15	5.81	125	10.79	125		
1.60	3.25	4.00	35.5	4.00					6.59	160 ¹⁾
1.60		4.00	35.5	4.00	4.80	160	8.68	160		
2.00	4.20	5.00	40.0	5.00					6.74	200 ¹⁾
2.00		5.00	40.0	5.00	5.08	200	8.82	200		
2.50	5.35	6.30	45.0	6.30					7.62	250 ¹⁾
2.50		6.30	45.0	6.30	5.81	250	9.11	250		
3.15	6.95	8.00	50.0	8.00					9.89	315 ¹⁾
3.15		8.00	50.0	8.00	7.42	315	12.83	315		
4.00	8.40	10.00	56.0	10.00					14.39	400 ¹⁾
4.00		10.00	56.0	10.00	10.62	400	18.25	400		
5.00	10.95	12.50	63.0	12.50					20.50	500 ¹⁾
5.00		12.50	63.0	12.50	16.30	500	36.18	500		
6.30	14.00	16.00	71.0	16.00					47.64	630 ¹⁾
6.30		16.00	71.0	16.00	24.28	630				
P						15-35		15-35		15-35
M						10		10		10
K						20-35		20-35		20-35
N						50-70		50-70		50-70
S										
H										
O										

1) with flat

2) Single ended

Core drills (spiral countersinks)

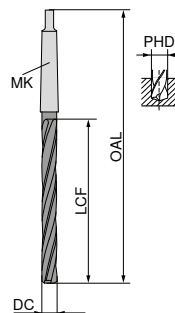
▲ with cylindrical shank, DIN 344

120°
HSS

10 226 ...

DC _{h8} mm	OAL mm	LCF mm	PHD mm	£ T2	
3.80	96	64	2.8	20.44	038
4.00	96	64	2.8	19.76	040
4.80	108	74	3.5	14.66	048
5.00	108	74	3.5	14.81	050
5.80	116	80	4.2	14.66	058
6.00	116	80	4.2	14.81	060
6.80	133	93	4.9	16.79	068
7.00	133	93	4.9	16.79	070
7.80	142	100	5.6	18.87	078
8.00	142	100	5.6	18.91	080
8.80	151	107	6.3	20.44	088
9.00	151	107	6.3	31.53	090
9.80	162	116	7.0	22.31	098
10.00	162	116	7.0	21.85	100
10.75	173	125	7.7	29.80	107
11.00	173	125	7.7	27.00	110
11.75	184	134	8.4	30.25	117
12.00	184	134	8.4	27.63	120
P	15-35				
M	10				
K	20-35				
N	50-80				
S	14-28				
H					
O					

Core drills (spiral countersinks)

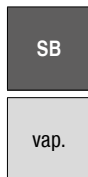
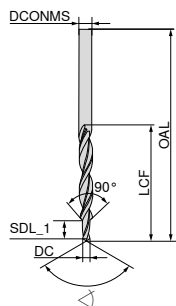
120°
HSS

10 228 ...

DC _{h8} mm	OAL mm	LCF mm	PHD mm	MK	£ T2	
10.00	168	87	7.0	1	27.00	100
10.75	175	94	7.7	1	31.73	107
11.00	175	94	7.7	1	45.18	110
11.75	182	101	8.4	1	31.73	117
12.00	182	101	8.4	1	45.18	120
12.75	182	101	9.1	1	35.24	127
13.00	182	101	9.1	1	30.82	130
13.75	189	108	9.8	1	35.19	137
14.00	189	108	9.8	1	31.27	140
14.75	212	114	10.5	2	39.23	147
15.00	212	114	10.5	2	35.19	150
15.75	218	120	11.2	2	41.34	157
16.00	218	120	11.2	2	36.77	160
16.75	223	125	11.9	2	43.25	167
17.00	223	125	11.9	2	39.23	170
17.75	228	130	12.6	2	45.32	177
18.00	228	130	12.6	2	39.23	180
18.75	233	135	13.3	2	45.78	187
19.00	233	135	13.3	2	44.87	190
19.75	238	140	14.0	2	45.78	197
20.00	238	140	14.0	2	44.87	200
20.75	243	145	14.6	2	52.24	207
21.00	243	145	14.6	2	52.48	210
21.75	248	150	15.3	2	53.54	217
22.00	248	150	15.3	2	52.94	220
22.75	253	155	16.0	2	58.20	227
23.00	253	155	16.0	2	57.61	230
23.75	281	160	16.6	3	60.62	237
24.00	281	160	16.6	3	59.72	240
24.75	281	160	17.3	3	64.66	247
25.00	281	160	17.3	3	64.68	250
25.75	286	165	18.0	3	67.64	257
26.00	286	165	18.0	3	68.20	260
26.75	291	170	18.6	3	80.39	267
27.00	291	170	18.6	3	78.87	270
27.75	291	170	19.3	3	79.61	277
28.00	291	170	19.3	3	79.50	280
28.75	296	175	20.0	3	87.09	287
29.00	296	175	20.0	3	88.02	290
29.75	296	175	20.5	3	92.61	297
30.00	296	175	20.5	3	91.06	300
P	15-35					
M	10					
K	20-35					
N	50-80					
S	14-28					
H						
O						

Stepped drills, DIN 8378

- ▲ Countersinking angle 90°
- ▲ for tapping drill holes according to DIN 336, Table 1 with 90° chamfer and for through holes according to DIN EN 20273 – medium
- ▲ the feed rate has to be selected based on the small Ø DC

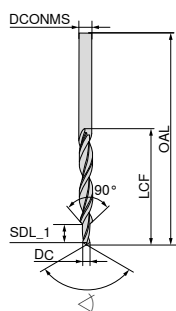


118°
HSS

10 365 ...

For threads	DC _{h6} mm	DCONMS _{h8} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	2.5	3.4	70	8.8	39	20.36	030
M4	3.3	4.5	80	11.4	47	22.31	040
M5	4.2	5.5	93	13.6	57	23.05	050
M6	5.0	6.6	101	16.5	63	25.74	060
M8	6.8	9.0	125	21.0	81	28.88	080
M10	8.5	11.0	142	25.5	94	37.70	100
M12	10.2	13.5	160	30.0	108	47.15	120

- ▲ for through holes according to DIN EN 20273 – fine
- ▲ with 90° screw head countersink
- ▲ the feed rate has to be selected based on the small Ø DC



118°
HSS

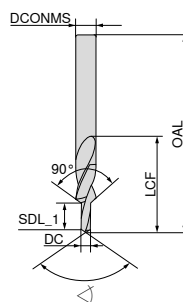
10 355 ...

For threads	DC _{h6} mm	DCONMS _{h8} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	3.2	6.0	93	9	57	23.94	030
M4	4.3	8.0	117	11	75	27.69	040
M5	5.3	10.0	133	13	87	34.79	050
M6	6.4	11.5	142	15	94	52.89	060
M8	8.4	15.0	169	19	114	65.59	080
M10	10.5	19.0	198	23	135	101.29	100

P	15-35
M	10
K	20-35
N	50-80
S	
H	
O	

Stepped drills, overall length to DIN 1897

- ▲ Countersinking angle 90°
- ▲ for tapping drill holes according to DIN 336, Table 1 with 90° chamfer and for through holes according to DIN EN 20273 – medium
- ▲ the feed rate has to be selected based on the small Ø DC

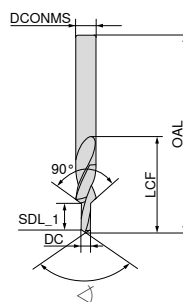


118°
HSS

10 320 ...

For threads	DC _{h6} mm	DCONMS _{h6} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	2.5	3.4	52	8.8	20	13.15	030
M4	3.3	4.5	58	11.4	24	13.34	040
M5	4.2	5.5	66	13.6	28	14.36	050
M6	5.0	6.6	70	16.5	31	15.25	060
M8	6.8	9.0	84	21.0	40	17.67	080
M10	8.5	11.0	95	25.5	47	22.90	100
M12	10.2	13.5	107	30.0	54	29.35	120

- ▲ for through holes according to DIN EN 20273 – fine
- ▲ with 90° screw head countersink
- ▲ the feed rate has to be selected based on the small Ø DC



118°
HSS

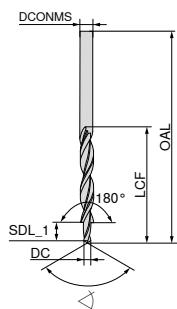
10 330 ...

For threads	DC _{h6} mm	DCONMS _{h6} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	3.2	6.0	66	9	28	15.25	030
M4	4.3	8.0	79	11	37	17.40	040
M5	5.3	10.0	89	13	43	21.41	050
M6	6.4	11.5	95	15	47	24.41	060
M8	8.4	15.0	111	19	56	27.69	080
M10	10.5	19.0	127	23	64	41.31	100

P	15-35
M	10
K	20-35
N	50-80
S	
H	
O	

Stepped drills, DIN 8376

- ▲ Countersinking angle 180°
- ▲ for through holes according to DIN EN 20273 - Medium
- ▲ for screw heads to DIN 974-1 - Series 1
- ▲ the feed rate has to be selected based on the small Ø DC



SB

vap.



118°
HSS

10 375 ...

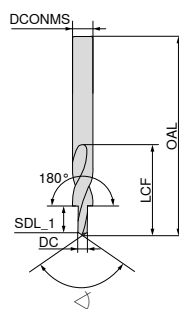
For threads	DC _{h9} mm	DCONMS _{h8} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	3.4	6	93	9	57	23.94	030 ¹⁾
M4	4.5	8	117	11	75	27.69	040
M5	5.5	10	133	13	87	33.23	050
M6	6.6	11	142	15	94	38.17	060
M8	9.0	15	169	19	114	48.98	080
M10	11.0	18	191	23	130	101.87	100

P	15-35
M	10
K	20-35
N	50-80
S	
H	
O	

1) DCONMS not according to DIN 974-1

Stepped drills, factory standard, total length according to DIN 1897

- ▲ Countersinking angle 180°
- ▲ for through holes according to DIN EN 20273 - Medium
- ▲ for screw heads to DIN 974-1 - Series 1
- ▲ the feed rate has to be selected based on the small Ø DC



SB



118°
HSS

10 340 ...

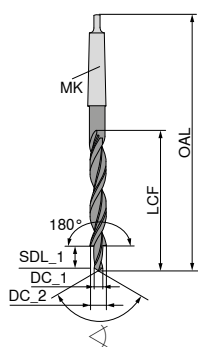
For threads	DC _{h6} mm	DCONMS _{h6} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	3.4	6	66	9	28	14.81	030 ¹⁾
M4	4.5	8	79	11	37	16.78	040
M5	5.5	10	89	13	43	20.36	050
M6	6.6	11	95	15	47	23.94	060
M8	9.0	15	111	19	56	30.52	080
M10	11.0	18	123	23	62	44.73	100

P	15-35
M	10
K	20-35
N	50-80
S	
H	
O	

1) DCONMS not according to DIN 974-1

Stepped drills, DIN 8377

- ▲ Countersinking angle 180°
- ▲ for through holes according to DIN EN 20273 - Medium
- ▲ for screw heads to DIN 974-1 - Series 1
- ▲ the feed rate has to be selected based on the small Ø DC



118°
HSS

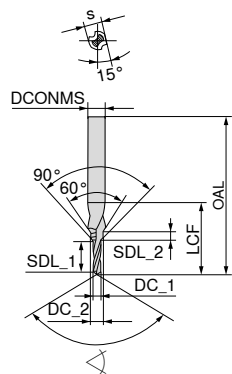
10 405 ...

For threads	DC_1 mm	DC_2 mm	OAL mm	SDL_1 mm	LCF mm	MK	£ T2	
M5	5.5	10	168	13	87	1	47.74	050
M6	6.6	11	175	15	94	1	48.98	060
M8	9.0	15	212	19	114	2	64.54	080
M10	11.0	18	228	23	130	2	86.04	100
M12	13.5	20	238	27	140	2	104.19	120
M14	15.5	24	281	31	160	3	133.62	140
M16	17.5	26	286	35	165	3	156.66	160
M18	20.0	30	296	39	175	3	244.63	180
M20	22.0	33	334	43	185	4	213.10	200

P	15-35
M	10
K	20-35
N	50-80
S	
H	
O	

Stepped drills for centring, factory standard

- ▲ with flat
- ▲ Countersinking angle 60°
- ▲ Special drill for creating tapping drill holes with centring, 60° countersinking angle according to DIN 332, sheet 2, form D.
- ▲ Point thinning $\geq \varnothing 3,3$ mm
- ▲ the feed rate has to be selected based on the small $\varnothing$ DC



SB

vap.



118°
HSS

10 350 ...

For threads	DC_1 _{h8} mm	DCONMS _{h7} mm	DC_2 mm	s mm	OAL mm	SDL_1 mm	LCF mm	SDL_2 mm
M4	3.3	8.0	4.3	6.75	63	11.0	23	1.60
M5	4.2	10.0	5.3	8.45	67	13.0	27	2.15
M6	5.0	12.5	6.4	10.45	71	16.0	33	2.90
M8	6.8	14.0	8.4	12.50	88	19.5	41	3.50
M10	8.5	16.0	10.5	14.85	94	23.0	47	4.70
M12	10.2	20.0	13.0	18.45	105	28.0	59	6.50
M16	14.0	25.0	17.0	23.40	132	33.0	67	8.30
M20	17.5	31.5	21.0	29.35	145	38.0	77	10.35
M24	21.0	40.0	25.0	36.50	160	45.0	90	12.00

£
T2

040
050
060
080
100
120
160
200
240

P	15-35
M	10
K	20-35
N	50-80
S	
H	
O	

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment	Tensile strength N/mm ² / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm ² / 125 HB	1.0401	C15	1.1141 Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm ² / 190 HB	1.1191	C45E	1.0718 9SMnPb28
		P.1.3		Tempered	840 N/mm ² / 250 HB	1.1191	C45E	1.0535 C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm ² / 270 HB	1.1223	C60R	1.0535 C55
		P.1.5		Tempered	1010 N/mm ² / 300 HB	1.1223	C60R	1.0727 45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm ² / 180 HB	1.7131	16MnCr5	1.6587 17CrNiMo6
		P.2.2		Tempered	930 N/mm ² / 275 HB	1.7131	16MnCr5	1.6587 17CrNiMo6
		P.2.3		Tempered	1010 N/mm ² / 300 HB	1.7225	42CrMo4	1.3505 100Cr6
		P.2.4		Tempered	1200 N/mm ² / 375 HB	1.7225	42CrMo4	1.3505 100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm ² / 200 HB	1.4021	X20Cr13	1.4034 X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm ² / 300 HB	1.2343	X38CrMoV5-1	1.4034 X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm ² / 400 HB	1.2343	X38CrMoV5-1	1.4034 X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm ² / 200 HB	1.4016	X6Cr17	1.2316 X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm ² / 300 HB	1.4112	X90CrMoV18	1.2316 X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm ² / 180 HB	1.4301	X5CrNi18-10	1.4571 X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539 X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm ² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501 X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm ² / 180 HB	0.6010	GG-10	0.6025 GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm ² / 260 HB	0.6030	GG-30	0.6045 GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm ² / 160 HB	0.7040	GGG-40	0.7060 GGG-60
		K.2.2	Pearlitic		845 N/mm ² / 250 HB	0.7070	GGG-70	0.7080 GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm ² / 130 HB	0.8035	GTW-35-04	0.8045 GTW-45
		K.3.2	Pearlitic		780 N/mm ² / 230 HB	0.8165	GTS-65-02	0.8170 GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315 AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm ² / 100 HB	3.1355	AlCuMg2	3.2315 AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm ² / 75 HB	3.2581	G-AlSi12	3.2163 G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm ² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373 G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm ² / 130 HB		G-AlSi17Cu4Mg	G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm ² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410 CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm ² / 90 HB	2.0331	CuZn15	2.4070 CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm ² / 100 HB	2.0060	E-Cu57	2.0590 CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312 MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm ² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865 G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm ² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876 X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm ² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856 NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm ² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955 NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm ² / 320 HB	2.4765	CoCr20W15Ni	1.3401 G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm ²	3.7025	Ti99,8	3.7034 Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm ² / 320 HB	3.7165	TiAl6V4	Ti-6246 Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm ² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410 Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46-55 HRC			
		H.1.2		Hardened and tempered	56-60 HRC			
		H.1.3		Hardened and tempered	61-65 HRC			
		H.1.4		Hardened and tempered	66-70 HRC			
	Chilled iron	H.2.1		Cast	400 HB			
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC			
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm ²			
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm ²			
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm ²			
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm ²			
		O.3.1	Graphite					

* Tensile strength

Cutting data standard values – Hole depth 3xD

Index	Type VX-TiN 10 122 ...		Type UNI-PM-TiN 10 113 ...		Type UNI-TiN 10 107 ...		Type N 10 105 ...		Type VA 10 130 ...		Type WNX 10 106 ...	
	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F
P.1.1	46	6	44	6	46	6	28	6	38	5	38	6
P.1.2	39	5	37	5	39	5	24	5	32	4	32	5
P.1.3	35	5	33	5	35	5	21	5	29	4	29	5
P.1.4	32	5	31	5	32	5	20	5	27	4	27	5
P.1.5	28	5	26	5	28	5	17	5			23	5
P.2.1	35	5	32	6	35	5	17	4	25	5	28	6
P.2.2	24	4	23	5	24	4	12	3	18	4	20	5
P.2.3	21	4	19	5	21	4	10	3			17	5
P.2.4	19	3	18	4	19	3	9	2			15	4
P.3.1	17	4	21	4	17	4	13	4			18	4
P.3.2	13	3	16	3	13	3					14	3
P.3.3	12	3	15	3	12	3					13	3
P.4.1	18	4	14	3	18	4			15	3	13	3
P.4.2	17	3	14	2	17	3			14	2	12	2
M.1.1	15	4			15	4			13	3		
M.2.1	12	3			12	3			11	2		
M.3.1	10	3			10	3			9	2		
K.1.1	41	6	46	6	41	6	30	6			40	6
K.1.2	33	6	37	6	33	6	24	6			32	6
K.2.1	35	6	39	6	35	6	26	6			34	6
K.2.2	27	5	30	5	27	5	20	5			26	5
K.3.1	35	6	39	6	35	6	26	6			34	6
K.3.2	27	5	30	5	27	5	20	5			26	5
N.1.1									80	7		
N.1.2									80	7		
N.2.1	75	6	69	6	75	6	50	6	65	6	60	6
N.2.2	60	5	55	5	60	5	40	5	52	5	48	5
N.2.3	52	5	48	5	52	5	35	5	46	5	42	5
N.3.1	69	5	64	5	69	5	60	5	60	5	56	5
N.3.2	41	4	39	4	41	4	36	4	36	4	34	4
N.3.3	55	4	52	4	55	4	48	4	48	4	45	4
N.4.1	70	5	60	5	70	5	45	5	6	5	55	5
S.1.1			7	2					8	1	6	2
S.1.2			6	1					6	1	5	1
S.2.1			6	2					7	1	5	2
S.2.2												
S.2.3												
S.3.1	9	2			9	2			10	2		
S.3.2	6	1			6	1			7	1		
S.3.3									6	2		
H.1.1			6	1							5	1
H.1.2												
H.1.3												
H.1.4												
H.2.1			10	3							9	3
H.3.1												
O.1.1	29	4	23	4	29	4	20	5			20	4
O.1.2	29	4			29	4	20	5				
O.2.1	29	4	23	4	29	4	20	5			20	4
O.2.2	29	4	23	4	29	4	20	5			20	4
O.3.1												



The cutting data depends extremely on the external conditions, e.g. stability of the tool and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Index	Type WT 10 109 ...		Type WT-TiN 10 110 ...		Type WTL-L 10 112 ...		Type WT-MK 10 285 ...	
	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F
P.1.1	38	6	44	6	28	6	38	6
P.1.2	32	5	37	5	24	5	32	5
P.1.3	29	5	33	5	21	5	29	5
P.1.4	27	5	31	5	20	5	27	5
P.1.5	23	5	26	5	17	5	23	5
P.2.1	25	5	29	5	17	4	25	5
P.2.2	18	4	20	4	12	3	18	4
P.2.3	15	4	17	4	10	3	15	4
P.2.4	14	3	16	3	9	2	14	3
P.3.1	16	4	18	4	13	4	16	4
P.3.2	12	3	14	3			12	3
P.3.3	12	3	14	3			12	3
P.4.1	14	3	17	3			14	3
P.4.2	14	2	16	2			14	2
M.1.1	12	3	14	3			12	3
M.2.1	10	2	12	2			10	2
M.3.1	8	2	10	2			8	2
K.1.1	35	6	40	6	30	6	35	6
K.1.2	28	6	32	6	24	6	28	6
K.2.1	30	6	34	6	26	6	30	6
K.2.2	23	5	26	5	20	5	23	5
K.3.1	30	6	34	6	26	6	30	6
K.3.2	23	5	26	5	20	5	23	5
N.1.1					60	7		
N.1.2					60	7		
N.2.1					50	6		
N.2.2					40	5		
N.2.3					35	5		
N.3.1	62	5	71	5	60	5	62	5
N.3.2	37	4	43	4	36	4	37	4
N.3.3					48	4		
N.4.1					45	5		
S.1.1	8	1	9	1			8	1
S.1.2	6	1	7	1			6	1
S.2.1	7	1	8	1			7	1
S.2.2			5	1				
S.2.3			6	1				
S.3.1	10	2	12	2			10	2
S.3.2	7	1	7	1			7	1
S.3.3	6	2	7	2			6	2
H.1.1	4	1	5	1			4	1
H.1.2								
H.1.3								
H.1.4								
H.2.1	8	3	9	3			8	3
H.3.1								
O.1.1					20	4		
O.1.2								
O.2.1					20	4		
O.2.2					20	4		
O.3.1								



When drilling tough materials which tend to jam, chips should be removed at drilling depth $\geq 4xD$ and the cutting speed v_c should be reduced as follows: at drilling depths $> 4xD$ by 10%, at drilling depths $> 6xD$ by 15–20%.
It is also recommended to use an emulsion for cooling.



v_c = Cutting speed in m/min.
F = Factor for feed selection
Feed approximate values see → Page 55

Cutting data standard values – Hole depth 5xD

	Type VX-TiN 10 124 ...		Type UNI-PM-TiN 10 173 ...		Type UNI-TiN 10 171 ...		Type N 10 152 ...		Type VA 10 175 ...		Type W 10 161 ...		Type WTL 10 168 ...	
Index	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F
P.1.1	46	6	44	6	46	6	28	6	38	5			32	6
P.1.2	39	5	37	5	39	5	24	5	32	4			27	5
P.1.3	35	5	33	5	35	5	21	5	29	4			24	5
P.1.4	32	5	31	5	32	5	20	5	27	4			23	5
P.1.5	28	5	26	5	28	5	17	5					19	5
P.2.1	35	5	32	6	35	5	17	4	25	5			20	5
P.2.2	24	4	23	5	24	4	12	3	18	4			14	4
P.2.3	21	4	19	5	21	4	10	3					12	4
P.2.4	19	3	18	4	19	3	9	2					11	3
P.3.1	17	4	21	4	17	4	13	4					15	4
P.3.2	13	3	16	3	13	3							11	3
P.3.3	12	3	15	3	12	3							10	3
P.4.1	18	4	14	3	18	4			15	3			10	3
P.4.2	17	3	14	2	17	3			14	2			10	2
M.1.1	15	4			15	4			13	3			9	3
M.2.1	14	4			14	4			12	3			8	2
M.3.1	10	3			10	3			9	2				
K.1.1	41	6	46	6	41	6	30	6					35	6
K.1.2	33	6	37	6	33	6	24	6					28	6
K.2.1	35	6	39	6	35	6	26	6					29	6
K.2.2	27	5	30	5	27	5	20	5					22	5
K.3.1	35	6	39	6	35	6	26	6					29	6
K.3.2	27	5	30	5	27	5	20	5					22	5
N.1.1									80	7	70	7	69	7
N.1.2									80	7	70	7	69	7
N.2.1	75	6	69	6	75	6	50	6	65	6	60	6	58	6
N.2.2	60	5	55	5	60	5	40	5	52	5			46	5
N.2.3	52	5	48	5	52	5	35	5	46	5			40	5
N.3.1	69	5	64	5	69	5	60	5	60	5			69	5
N.3.2	41	4	39	4	41	4	36	4	36	4			41	4
N.3.3	55	4	52	4	55	4	48	4	48	4	56	4	55	4
N.4.1	75	6	65	6	70	6	45	6	60	6	60	6	6	6
S.1.1			7	2					8	1			7	2
S.1.2			6	1					6	1			6	1
S.2.1			6	2					7	1			6	2
S.2.2													3	1
S.2.3													4	1
S.3.1	9	2			9	2			10	2			6	2
S.3.2	6	1			6	1			7	1			4	1
S.3.3									6	1				
H.1.1			6	1									5	1
H.1.2														
H.1.3														
H.1.4														
H.2.1			10	3									9	3
H.3.1														
O.1.1	29	4	23	4	29	4	20	5					23	4
O.1.2	29	4			29	4	20	5					23	4
O.2.1	29	4	23	4	29	4	20	5					23	4
O.2.2	29	4	23	4	29	4	20	5					23	4
O.3.1														



The cutting data depends extremely on the external conditions, e.g. stability of the tool and tool clamping, material and machine type. The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Index	Type WTL-TiN 10 170 ...		Type WTL-TiCN 10 172 ...		Type WTL-L 10 169 ...		Type WNXi 10 180 ...		Type WNXi-TiN 10 181 ...		Type N-MK 10 265 ...		Type WTL-MK 10 280 ...	
	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F
P.1.1	37	6	37	6	28	6	45	7	52	7	28	6	32	6
P.1.2	31	5	31	5	24	5	38	6	44	6	24	5	27	5
P.1.3	28	5	28	5	21	5	34	6	39	6	21	5	24	5
P.1.4	26	5	26	5	20	5	32	6	36	6	20	5	23	5
P.1.5	22	5	22	5	17	5	27	6	31	6	17	5	19	5
P.2.1	22	5	22	5	17	5	27	5	31	5	17	4	20	5
P.2.2	16	4	16	4	12	4	19	4	22	4	12	3	14	4
P.2.3	13	4	13	4	10	4	16	4	19	4	10	3	12	4
P.2.4	12	3	12	3	9	3	15	3	17	3	9	2	11	3
P.3.1	17	4	17	4	13	4	21	5	24	5	13	4	15	4
P.3.2	13	3	13	3	10	3	16	4	18	4			11	3
P.3.3	12	3	12	3			15	4	17	4			10	3
P.4.1	12	3	12	3			14	4	17	4			10	3
P.4.2	11	2	11	2			14	3	16	3			10	2
M.1.1	11	3	11	3									9	3
M.2.1													8	2
M.3.1														
K.1.1	40	6	40	6	30	6	48	7	56	7	30	6	35	6
K.1.2	32	6	32	6	24	6	39	7	44	7	24	6	28	6
K.2.1	34	6	34	6	26	6	41	7	47	7	26	6	29	6
K.2.2	26	5	26	5	20	5	31	6	36	6	20	5	22	5
K.3.1	34	6	34	6	26	6	41	7	47	7	26	6	29	6
K.3.2	26	5	26	5	20	5	31	6	36	6	20	5	22	5
N.1.1					60	7							69	7
N.1.2					60	7							69	7
N.2.1	66	6	66	6	50	6	81	7	93	7	50	6	58	6
N.2.2	53	5	53	5	40	5	64	6	74	6	40	5	46	5
N.2.3	46	5	46	5	35	5	56	6	65	6	35	5	40	5
N.3.1	79	5	79	5	60	5	97	6	111	6	60	5	69	5
N.3.2	48	4	48	4	36	4	58	5	67	5	36	4	41	4
N.3.3	63	4	63	4	48	4	77	5	89	5	48	4	55	4
N.4.1	60	6	60	6	45	6	70	7	80	7	45	6	50	6
S.1.1	8	2	8	2									7	2
S.1.2	6	1	6	1									6	1
S.2.1	7	2	7	2									6	2
S.2.2	4	1	4	1									3	1
S.2.3	5	1	5	1									4	1
S.3.1	7	2	7	2									6	2
S.3.2	4	1	4	1									4	1
S.3.3														
H.1.1	5	1	5	1									5	1
H.1.2														
H.1.3														
H.1.4														
H.2.1	11	3	11	3									9	3
H.3.1														
O.1.1	26	4	26	4	20	4	32	5	37	5	20	5	23	4
O.1.2	26	4	26	4	20	4					20	5	23	4
O.2.1	26	4	26	4	20	4	32	5	37	5	20	5	23	4
O.2.2	26	4	26	4	20	4	32	5	37	5	20	5	23	4
O.3.1														



When drilling tough materials which tend to jam, chips should be removed at drilling depth $\geq 4xD$ and the cutting speed v_c should be reduced as follows: at drilling depths $> 4xD$ by 10%, at drilling depths $> 6xD$ by 15-20%.
It is also recommended to use an emulsion for cooling.



v_c = Cutting speed in m/min.
F = Factor for feed selection
Feed approximate values see → Page 55

Cutting data standard values – Hole depth 10xD

Index	Type NC 10 223 ...		Type NC-TiALN 10 224 ...		Type UNI-TiN 10 270 ...		Type WTL 10 225 ...		Type WTL 10 215 ...	
	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F	v _c in m/min	F
P.1.1	35	7	41	7	41	6	29	6	25	6
P.1.2	30	6	34	6	35	5	25	5	21	5
P.1.3	26	6	30	6	31	5	22	5	19	5
P.1.4	25	6	28	6	29	5	20	5	18	5
P.1.5	21	6	24	6	25	5	17	5	15	5
P.2.1	21	5	25	5	31	5	18	5	15	5
P.2.2	15	4	17	4	22	4	12	4	11	4
P.2.3	13	4	15	4	19	4	11	4	9	4
P.2.4	12	3	14	3	17	3	10	3	8	3
P.3.1	16	5	19	5	16	4	13	4	12	4
P.3.2					12	3	10	3	9	3
P.3.3					10	2	8	3		
P.4.1			13	4	16	4	9	3		
P.4.2			12	3	15	3	9	2		
M.1.1			12	4	13	4	8	3		
M.2.1			8	3	8	3	2	2		
M.3.1					9	3				
K.1.1	38	7	43	7	37	6	31	6	27	6
K.1.2	30	7	35	7	30	6	25	6	22	6
K.2.1	32	7	37	7	32	6	26	6	23	6
K.2.2	25	6	28	6	24	5	20	5	18	5
K.3.1	32	7	37	7	32	6	26	6	23	6
K.3.2	25	6	28	6	24	5	20	5	18	5
N.1.1							62	7	54	7
N.1.2							62	7	54	7
N.2.1	63	7	72	7	67	6	52	6	45	6
N.2.2	50	6	58	6	54	5	41	5	36	5
N.2.3	44	6	51	6	47	5	36	5	32	5
N.3.1	76	6	87	6	62	5	62	5	54	5
N.3.2	45	5	52	5	37	4	37	4	32	4
N.3.3	60	5	70	5	50	4	50	4	43	4
N.4.1	60	5	50	6	50	6	50	6	45	5
S.1.1							6	2		
S.1.2							5	1		
S.2.1							5	2		
S.2.2							3	1		
S.2.3							4	1		
S.3.1					8	2	5	2		
S.3.2					5	1	3	1		
S.3.3										
H.1.1							4	1		
H.1.2										
H.1.3										
H.1.4										
H.2.1							8	3		
H.3.1										
O.1.1	25	6	29	6	26	4	21	4	18	4
O.1.2	25	6	29	6	26	4	21	4	18	4
O.2.1	25	6	29	6	26	4	21	4	18	4
O.2.2	25	6	29	6	26	4	21	4	18	4
O.3.1										



The cutting data depends extremely on the external conditions, e.g. stability of the tool and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Index	Type WTL-TiN 10 210 ...		Type WTW 10 200 ...		Type N-MK 10 295 ...		Type WTL-MK 10 297 ...	
	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F
P.1.1	29	6			25	6	29	6
P.1.2	25	5			21	5	25	5
P.1.3	22	5			19	5	22	5
P.1.4	20	5			18	5	20	5
P.1.5	17	5			15	5	17	5
P.2.1	18	5			15	4	18	5
P.2.2	12	4			11	3	12	4
P.2.3	11	4			9	3	11	4
P.2.4	10	3			8	2	10	3
P.3.1	13	4			12	4	13	4
P.3.2	10	3					10	3
P.3.3	8	3					8	3
P.4.1							9	3
P.4.2							9	2
M.1.1							8	3
M.2.1							2	2
M.3.1								
K.1.1	31	6			27	6	31	6
K.1.2	25	6			22	6	25	6
K.2.1	26	6			23	6	26	6
K.2.2	20	5			18	5	20	5
K.3.1	26	6			23	6	26	6
K.3.2	20	5			18	5	20	5
N.1.1			72	7			62	7
N.1.2			72	7			62	7
N.2.1	52	6			45	6	52	6
N.2.2	41	5			36	5	41	5
N.2.3	36	5			32	5	36	5
N.3.1	62	5			54	5	62	5
N.3.2	37	4			32	4	37	4
N.3.3	50	4			43	4	50	4
N.4.1	50	5			60	6	50	6
S.1.1							6	2
S.1.2							5	1
S.2.1							5	2
S.2.2							3	1
S.2.3							4	1
S.3.1							5	2
S.3.2							3	1
S.3.3								
H.1.1							4	1
H.1.2								
H.1.3								
H.1.4								
H.2.1							8	3
H.3.1								
O.1.1	21	4			18	5	21	4
O.1.2	21	4			18	5	21	4
O.2.1	21	4			18	5	21	4
O.2.2	21	4			18	5	21	4
O.3.1								



When drilling tough materials which tend to jam, chips should be removed at drilling depth $\geq 4xD$ and the cutting speed v_c should be reduced as follows: at drilling depths $> 4xD$ by 10%, at drilling depths $> 6xD$ by 15–20%.
It is also recommended to use an emulsion for cooling.



v_c = Cutting speed in m/min.
F = Factor for feed selection
Feed approximate values see → Page 55

Cutting data standard values – hole depth greater than 10xD

Index	Type WTL-R1 10 235 ...		Type WTL-R2 10 245 ...		Type WTL-R3 10 255 ...		Type WTL-TiAlN-R1 10 236 ...		Type WTL-TiAlN-R2 10 246 ...		Type WTL-TiAlN-R3 10 256 ...	
	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F
P.1.1	21	5	21	5	21	5	24	5	24	5	24	5
P.1.2	18	4	18	4	18	4	21	4	21	4	21	4
P.1.3	16	4	16	4	16	4	18	4	18	4	18	4
P.1.4	15	4	15	4	15	4	17	4	17	4	17	4
P.1.5	13	4	13	4	13	4	14	4	14	4	14	4
P.2.1	13	4	13	4	13	4	15	4	15	4	15	4
P.2.2	9	3	9	3	9	3	10	3	10	3	10	3
P.2.3	8	3	8	3	8	3	9	3	9	3	9	3
P.2.4	7	2	7	2	7	2	8	2	8	2	8	2
P.3.1	10	3	10	3	10	3	11	3	11	3	11	3
P.3.2	7	2	7	2	7	2	8	2	8	2	8	2
P.3.3	6	2	6	2	6	2	7	2	7	2	7	2
P.4.1												
P.4.2												
M.1.1												
M.2.1												
M.3.1												
K.1.1	23	5	23	5	23	5	26	5	26	5	26	5
K.1.2	18	5	18	5	18	5	21	5	21	5	21	5
K.2.1	19	5	19	5	19	5	22	5	22	5	22	5
K.2.2	15	4	15	4	15	4	17	4	17	4	17	4
K.3.1	19	5	19	5	19	5	22	5	22	5	22	5
K.3.2	15	4	15	4	15	4	17	4	17	4	17	4
N.1.1	45	6	45	6	45	6	52	6	52	6	52	6
N.1.2	45	6	45	6	45	6	52	6	52	6	52	6
N.2.1	38	5	38	5	38	5	43	5	43	5	43	5
N.2.2	30	4	30	4	30	4	35	4	35	4	35	4
N.2.3	26	4	26	4	26	4	30	4	30	4	30	4
N.3.1	45	4	45	4	45	4	52	4	52	4	52	4
N.3.2	27	3	27	3	27	3	31	3	31	3	31	3
N.3.3	36	3	36	3	36	3	41	3	41	3	41	3
N.4.1	55	5	55	5	55	5	60	6	60	6	60	6
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1	15	3	15	3	15	3	17	3	17	3	17	3
O.1.2	15	3	15	3	15	3	17	3	17	3	17	3
O.2.1	15	3	15	3	15	3	17	3	17	3	17	3
O.2.2	15	3	15	3	15	3	17	3	17	3	17	3
O.3.1												



The cutting data depends extremely on the external conditions, e.g. stability of the tool and tool clamping, material and machine type. The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Index	Type WTL-MK-R1 10 305 ...		Type WTL-MK-R2 10 315 ...	
	v_c in m/min	F	v_c in m/min	F
P.1.1	21	5	21	5
P.1.2	18	4	18	4
P.1.3	16	4	16	4
P.1.4	15	4	15	4
P.1.5	13	4	13	4
P.2.1	13	4	13	4
P.2.2	9	3	9	3
P.2.3	8	3	8	3
P.2.4	7	2	7	2
P.3.1	10	3	10	3
P.3.2	7	2	7	2
P.3.3	6	2	6	2
P.4.1				
P.4.2				
M.1.1				
M.2.1				
M.3.1				
K.1.1	23	5	23	5
K.1.2	18	5	18	5
K.2.1	19	5	19	5
K.2.2	15	4	15	4
K.3.1	19	5	19	5
K.3.2	15	4	15	4
N.1.1	45	6	45	6
N.1.2	45	6	45	6
N.2.1	38	5	38	5
N.2.2	30	4	30	4
N.2.3	26	4	26	4
N.3.1	45	4	45	4
N.3.2	27	3	27	3
N.3.3	36	3	36	3
N.4.1	55	5	55	5
S.1.1				
S.1.2				
S.2.1				
S.2.2				
S.2.3				
S.3.1				
S.3.2				
S.3.3				
H.1.1				
H.1.2				
H.1.3				
H.1.4				
H.2.1				
H.3.1				
O.1.1	15	3	15	3
O.1.2	15	3	15	3
O.2.1	15	3	15	3
O.2.2	15	3	15	3
O.3.1				



When drilling tough materials which tend to jam, chips should be removed at drilling depth $\geq 4xD$ and the cutting speed v_c should be reduced as follows: at drilling depths $> 4xD$ by 10%, at drilling depths $> 6xD$ by 15–20%.
It is also recommended to use an emulsion for cooling.



v_c = Cutting speed in m/min.
F = Factor for feed selection
Feed approximate values see → **Page 55**

Cutting data standard values – micro drills 10 103 ...

Index	v _c in m/min	Nominal Ø in mm						
		Ø 0,15	Ø 0,20–0,25	Ø 0,30–0,35	Ø 0,40–0,55	Ø 0,60–0,75	Ø 0,80–0,95	Ø 1,00–1,45
		f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.
P.1.1	33	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
P.1.2	28	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.1.3	25	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.1.4	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.1.5	20	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.2.1	20	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
P.2.2	14	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.2.3	12	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.2.4	11	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
P.3.1	15	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
P.3.2	11	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.3.3	10	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.4.1	11	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.4.2	10	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
M.1.1	9	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
M.2.1	8	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
M.3.1								
K.1.1	35	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.1.2	28	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.2.1	30	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.2.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
K.3.1	30	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.3.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.1.1	70	0,0120	0,0140	0,0190	0,0240	0,0340	0,0380	0,0600
N.1.2	70	0,0120	0,0140	0,0190	0,0240	0,0340	0,0380	0,0600
N.2.1	59	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
N.2.2	47	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.2.3	41	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.3.1	70	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.3.2	42	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
N.3.3	56	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
N.4.1	42	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
S.1.1	7	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
S.1.2	6	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.2.1	6	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
S.2.2	4	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.2.3	4	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.3.1	6	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
S.3.2	4	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.3.3								
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.1.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.2.1	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.2.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.3.1								



The cutting data depends extremely on the external conditions, e.g. stability of the tool and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Feed rate guide values for HSS twist drills

Factor F	Drill diameter in mm															
	0,5	1	2	3	4	5	6	8	10	12	14	16	18	20	26	30
	Feed rate f in mm/rev.															
1	0,004	0,006	0,02	0,03	0,04	0,04	0,05	0,06	0,08	0,08	0,09	0,1	0,12	0,15	0,18	0,19
2	0,006	0,008	0,02	0,03	0,05	0,05	0,05	0,08	0,1	0,1	0,1	0,12	0,12	0,2	0,2	0,2
3	0,007	0,012	0,03	0,05	0,06	0,069	0,08	0,1	0,12	0,13	0,13	0,16	0,16	0,25	0,25	0,25
4	0,008	0,014	0,04	0,06	0,08	0,09	0,1	0,14	0,16	0,16	0,16	0,2	0,2	0,3	0,3	0,3
5	0,01	0,016	0,06	0,08	0,1	0,12	0,13	0,16	0,2	0,2	0,22	0,25	0,25	0,4	0,4	0,4
6	0,012	0,018	0,06	0,1	0,12	0,14	0,16	0,2	0,25	0,25	0,25	0,3	0,3	0,5	0,5	0,5
7	0,014	0,02	0,08	0,13	0,16	0,18	0,2	0,25	0,35	0,35	0,35	0,4	0,4	0,6	0,6	0,6
8	0,016	0,023	0,1	0,16	0,2	0,2	0,25	0,35	0,4	0,4	0,4	0,4	0,5	0,6	0,7	0,8
9	0,019	0,025	0,13	0,17	0,2	0,23	0,32	0,4	0,4	0,5	0,5	0,5	0,6	0,8	0,9	0,9



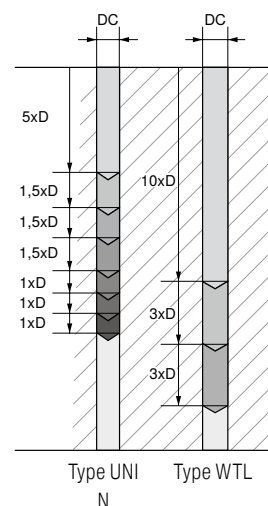
All the indicated data are guide values only and represent average values.

Speed for HSS drills

v _c m/min	Drill diameter in mm																
	2,0	2,5	3,15	4,0	5,0	6,3	8,0	10,0	12,5	16,0	20,0	25,0	31,5	40,0	50,0	63,0	80,0
	Speed in U/min																
80	12500	10000	8000	6300	5000	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320
63	10000	8000	6300	5000	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250
50	8000	6300	5000	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250	200
40	6300	5000	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250	200	160
32	5000	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250	200	160	125
25	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250	200	160	125	100
20	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250	200	160	125	100	80
16	2500	2000	1600	1250	1000	800	630	500	400	320	250	200	160	125	100	80	63
12	2000	1600	1250	1000	800	630	500	400	320	250	200	160	125	100	80	63	50
10	1600	1250	1000	800	630	500	400	320	250	200	160	125	100	80	63	50	40
8	1250	1000	800	630	500	400	320	250	200	160	125	100	80	63	50	40	32
6	1000	800	630	500	400	320	250	200	160	125	100	80	63	50	40	32	25
5	800	630	500	400	320	250	200	160	125	100	80	63	50	40	32	25	20
4	630	500	400	320	250	200	160	125	100	80	63	50	40	32	25	20	16
3	500	400	320	250	200	160	125	100	80	63	50	40	32	25	20	16	12

Peck frequency for deep drilling

- ▲ Drill must be sufficiently cooled
- ▲ By use of a drill with flat chip gullet profile (type WTL) chip transport is substantially improved
- ▲ For extremely deep drilling or when machining horizontally through coolant drills with internal coolant supply are recommended



Coatings

TiN

- ▲ TiN coating
- ▲ Maximum application temperature: 450 °C

TiAlN

- ▲ TiAlN multilayer coating
- ▲ Maximum application temperature: 900 °C

vap.

- ▲ Vaporised
- ▲ Vaporisation (vapour-deposition) prevents cold welds from forming on the tool and increases the surface hardness and thus the wear resistance

TiCN

- ▲ TiCN multilayer coating
- ▲ Maximum application temperature: 450 °C

F-nit

- ▲ Titanium carbon nitride based PVD coating particularly suitable for steel machining
- ▲ Applicable up to approx. 450 °C

