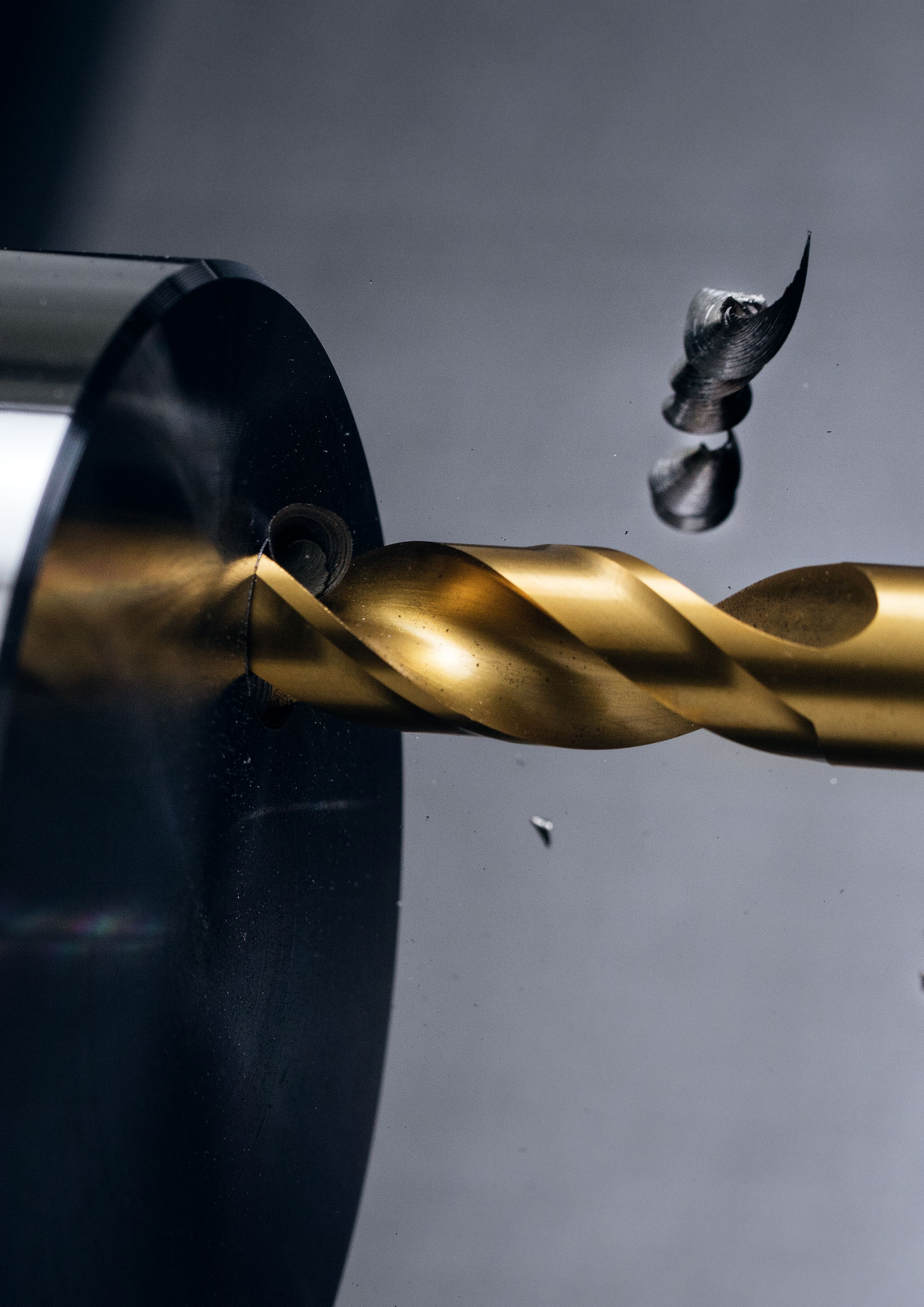


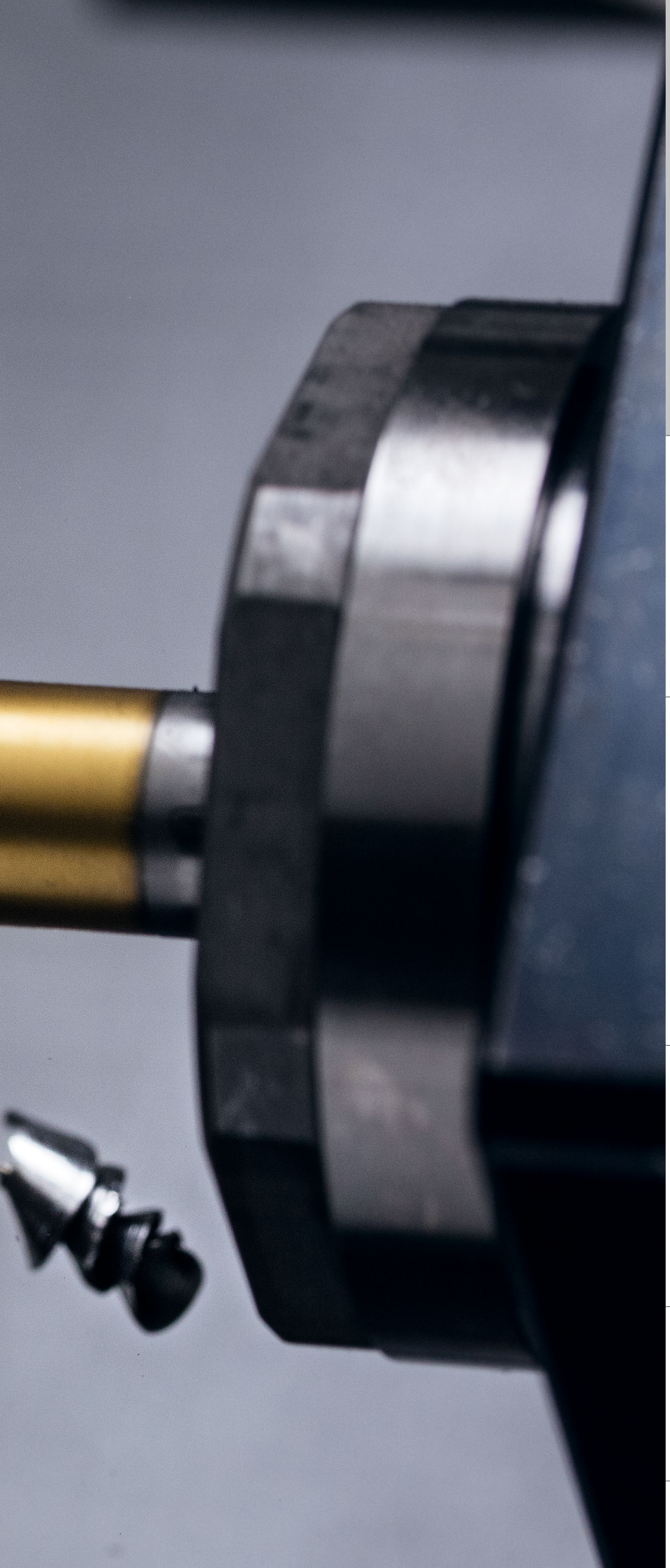


Table of contents

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/mm²		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 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 ▲ self-centring	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/mm² ▲ for deep holes			26–28			

HSS Drills Overview

3xD without thro‘ coolant

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

	Tool type	Material | Coating	Point angle	Diameter in mm DC	Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat-resistant	Hardened materials		coated	uncoated	WNT \ Performance
	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
	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
	W	HSS	130°	0,20–20				●					□	17–22
	WTL-L	HSS F-nit.	130°	1–16	●		○	○			left-hand cutting	■		23

HSS Drills Overview

	Tool type	Material | Coating	Point angle	Diameter in mm DC	Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat-resistant	Hardened materials	coated	uncoated	WNT \ Performance
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 TiN	130°	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
	WTW	HSS	130°	1–14				●		A		□	26–28
up to 10xD with thro' coolant													
	NC	HSS	130°	3–13	●	○	●	○	○	A		□	25
	NC	HSS TiAlN	130°	3–13	●	○	●	○	○	A	■		25
over 10xD without thro' coolant													
	WTL	HSS Series 1	130°	2–13	●	○	●	●		A	■		29
	WTL	HSS Series 2	130°	2–13	●	○	●	●		A	■		30
	WTL	HSS Series 3	130°	2,5–13	●	○	●	●		A	■		30
Mini-drill													
	N	HSS-E PM	118°	0,15–1,45	●	●	●	●	○	A		□	31
Twist Drill Sets													
	N	HSS vap.	118°	1–10	●		●			A	■		24
	UNI	HSS-E TiN	118°	1–10	●	●	●	●	○	A	■		24

HSS Drills Overview

	Tool type	Material | Coating	Point angle	Diameter in mm DC	Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat-resistant	Hardened materials		coated	uncoated	WNT \ Performance
NC Spot Drill														
	NC-A	HSS	90°	3–20	●	○	●	○			A ~B		□	35–37
	NC-A	HSS TiN	90°	3–20	●	○	●	○			A ~B	■		35+36
	NC-A	HSS	120°	3–20	●	○	●	○			A ~B		□	35+36
	NC-A	HSS TiN	120°	3–20	●	○	●	○			A ~B	■		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	120°	3,8–12	●	○	●	●	○		A	3 flute	□	40
Stepped drills														
	SB	HSS vap.	118°	2,5–10,2	●	○	●	○			A	Countersinking angle 90°	■	41
	SB	HSS	118°	2,5–10,2	●	○	●	○			A	Countersinking angle 90°	□	41
	SB	HSS vap.	118°	3,2–10,5	●	○	●	○			A	Countersinking angle 90°	■	41
	SB	HSS	118°	3,2–10,5	●	○	●	○			A	Countersinking angle 90°	□	41
	SB	HSS vap.	118°	3,4–11	●	○	●	○			A	Countersinking angle 180°	■	42
	SB	HSS	118°	3,4–11	●	○	●	○			A	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	Stainless steel	Cast iron	Non-ferrous metals	Heat-resistant	Hardened 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	**130°**	10–27	●	○	○	○			MK	■	32
10xD													
	N	HSS vap.	**118°**	10–50	●		●	○			MK	■	33
	WTL	HSS-E F.-nit	**130°**	10–26	●	●	●	●			MK	■	33
above 10xD													
	WTL	HSS Series 1	**130°**	10–30	●	○	●	●			MK	■	34
	WTL	HSS 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

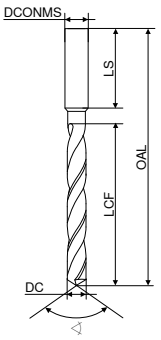
High-performance twist drills similar to DIN 1897, extra-short

- shank to DIN 1835 A
- special point thinning
- very good centering behaviour
- 4 facet
- highest Performance

≤ 3xD

VX

TiN



A

118°

HSS-E

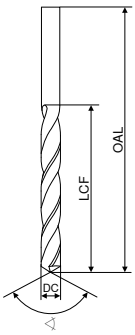
DC h8	OAL	LCF	DCONMS h6	LS	T2 Article no. 10 122 ...	
mm	mm	mm	mm	mm	£	
2.00	44	12	3	28	9.42	020
2.10	44	12	3	28	10.67	021
2.20	45	13	3	28	11.50	022
2.30	45	13	3	28	11.50	023
2.40	46	14	3	28	12.04	024
2.50	46	14	3	28	10.52	025
2.60	46	14	3	28	12.04	026
2.70	48	16	3	28	12.46	027
2.80	48	16	3	28	12.46	028
2.90	48	16	3	28	12.46	029
3.00	48	16	3	28	11.50	030
3.10	50	18	4	28	11.50	031
3.20	50	18	4	28	11.50	032
3.30	50	18	4	28	11.50	033
3.40	52	20	4	28	11.50	034
3.50	52	20	4	28	10.93	035
3.60	52	20	4	28	12.22	036
3.70	52	20	4	28	12.46	037
3.80	54	22	4	28	12.19	038
3.90	54	22	4	28	12.46	039
4.00	54	22	4	28	10.11	040
4.10	66	22	6	36	10.11	041
4.20	66	22	6	36	10.67	042
4.30	68	24	6	36	11.21	043
4.40	68	24	6	36	12.73	044
4.50	68	24	6	36	10.52	045
4.60	68	24	6	36	13.29	046
4.70	68	24	6	36	13.56	047
4.80	70	26	6	36	13.56	048
4.90	70	26	6	36	13.56	049
5.00	70	26	6	36	11.50	050
5.10	70	26	6	36	13.29	051
5.20	70	26	6	36	13.70	052
5.30	70	26	6	36	13.85	053
5.40	72	28	6	36	15.36	054
5.50	72	28	6	36	12.19	055
5.55	72	28	6	36	15.36	555
5.60	72	28	6	36	15.36	056
5.70	72	28	6	36	15.36	057
5.80	72	28	6	36	15.36	058
5.90	72	28	6	36	15.36	059
6.00	72	28	6	36	12.87	060
6.10	75	31	8	36	19.93	061
6.20	75	31	8	36	19.93	062
6.30	75	31	8	36	23.80	063
6.40	75	31	8	36	20.67	064
6.50	75	31	8	36	15.10	065
6.60	75	31	8	36	24.23	066
6.70	75	31	8	36	24.23	067
6.80	78	34	8	36	26.51	068
6.90	78	34	8	36	26.16	069
7.00	78	34	8	36	19.93	070
7.10	78	34	8	36	29.33	071
7.20	78	34	8	36	29.78	072
7.30	78	34	8	36	29.78	073
7.40	78	34	8	36	29.78	074
7.45	78	34	8	36	29.78	745
7.50	78	34	8	36	21.04	075
7.60	81	37	8	36	30.22	076
7.70	81	37	8	36	32.52	077
7.80	81	37	8	36	32.52	078
7.90	81	37	8	36	32.52	079
8.00	81	37	8	36	21.59	080
8.10	87	37	10	40	36.91	081
8.20	87	37	10	40	36.91	082
8.30	87	37	10	40	36.91	083
8.40	87	37	10	40	36.91	084
8.50	87	37	10	40	24.49	085
8.60	91	40	10	40	38.35	086
8.70	91	40	10	40	38.35	087
8.80	91	40	10	40	38.35	088
8.90	91	40	10	40	38.35	089
9.00	91	40	10	40	26.72	090
9.10	91	40	10	40	48.09	091
9.20	91	40	10	40	48.09	092
9.30	91	40	10	40	48.09	093
9.35	91	40	10	40	48.09	935
9.40	91	40	10	40	48.09	094
9.50	91	40	10	40	33.40	095
9.60	93	43	10	40	36.03	096
9.70	93	43	10	40	36.03	097
9.80	93	43	10	40	36.03	098
9.90	93	43	10	40	36.03	099
10.00	93	43	10	40	32.11	100
10.10	100	43	12	45	49.74	101
10.20	100	43	12	45	47.52	102
10.30	100	43	12	45	48.36	103
10.40	100	43	12	45	51.47	104
10.50	100	43	12	45	46.18	105
10.60	100	43	12	45	55.29	106
10.70	104	47	12	45	50.47	107
10.80	104	47	12	45	48.51	108
10.90	104	47	12	45	71.27	109
11.00	104	47	12	45	46.18	110
11.10	104	47	12	45	45.16	111
11.50	104	47	12	45	48.09	115
11.70	104	47	12	45	54.06	117
11.80	104	47	12	45	56.45	118
11.90	108	51	12	45	71.38	119
12.00	108	51	12	45	55.22	120
12.10	111	51	16	48	40.22	121
12.20	111	51	16	48	59.88	122
12.30	111	51	16	48	73.61	123
12.40	111	51	16	48	87.84	124
12.50	111	51	16	48	56.88	125
12.60	111	51	16	48	115.31	126
12.70	111	51	16	48	126.19	127
12.80	111	51	16	48	59.91	128
12.90	111	51	16	48	88.33	129
13.00	111	51	16	48	61.14	130
13.50	114	54	16	48	91.53	135
14.00	114	54	16	48	91.53	140
14.50	116	56	16	48	117.24	145
15.00	116	56	16	48	110.41	150
15.50	118	58	16	48	119.41	155
16.00	118	58	16	48	115.35	160
16.50	126	60	20	50	178.83	165
17.00	126	60	20	50	178.83	170
17.50	128	62	20	50	178.83	175
18.00	128	62	20	50	178.83	180
18.50	130	64	20	50	178.83	185
19.00	130	64	20	50	178.83	190
19.50	132	66	20	50	178.83	195
20.00	132	66	20	50	159.07	200

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○

→ v_c Page 46

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

≤ 3xD



	UNI	UNI	N	VA	WNX	WT	WT
	TiN	TiN	vap.			vap.	TiN
							
	◁ 130°	◁ 118°	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
	HSS-E-PM	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E
	T2	T2	T2	T2	T2	T2	T2

DC h8	DC	OAL	LCF	Article no. 10 113 ...		Article no. 10 107 ...		Article no. 10 105 ...		Article no. 10 130 ...		Article no. 10 106 ...		Article no. 10 109 ...		Article no. 10 110 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
0.40		19	2.5					4.43	004 [1]					7.70	00400 [1]		
0.50		20	3.0					3.60	005 [1]					5.56	00500 [1]		
0.55		21	3.5											13.11	00550 [1]		
0.60		21	3.5					4.29	006 [1]					6.84	00600 [1]		
0.65		22	4.0											7.26	00650 [1]		
0.70		23	4.5					4.02	007 [1]					6.28	00700 [1]		
0.75		23	4.5											6.57	00750 [1]		
0.80		24	5.0					3.20	008 [1]					5.43	00800 [1]		
0.85		24	5.0											6.10	00850 [1]		
0.90		25	5.5					3.20	009 [1]					5.43	00900 [1]		
0.95		25	5.5											6.10	00950 [1]		
1.00		26	6.0	7.54	010 [2]	4.84	010	1.82	010 [1]	5.12	010	2.74	010	3.88	01000 [1]	5.00	010
1.05		26	6.0											5.14	01050 [1]		
1.10		28	7.0	7.54	011 [2]	4.84	011	1.94	011 [1]	4.99	011	2.98	011	3.74	01100 [1]	5.27	011
1.15		28	7.0											4.14	01150 [1]		
1.20		30	8.0	7.72	012 [2]	4.57	012	1.94	012 [1]	4.71	012	2.98	012	3.60	01200 [1]	5.00	012
1.25		30	8.0											4.14	01250 [1]		
1.30		30	8.0	8.09	013 [2]	4.84	013	1.94	013 [1]	4.99	013	2.92	013	3.74	01300 [1]	5.27	013
1.35		32	9.0											4.14	01350 [1]		
1.40		32	9.0	7.46	014 [2]	4.71	014	1.94	014 [1]	4.99	014	2.92	014	3.74	01400 [1]	5.27	014
1.45		32	9.0											4.14	01450 [1]		
1.50		32	9.0	7.00	015 [2]	4.38	015	1.67	015 [1]	4.43	015	2.74	015	3.49	01500 [1]	5.00	015
1.55		34	10.0											5.43	01550 [1]		
1.60		34	10.0	7.34	016 [2]	4.38	016	1.82	016 [1]	4.43	016	2.92	016	3.32	01600 [1]	5.00	016
1.65		34	10.0											4.42	01650 [1]		
1.70		34	10.0	7.46	017 [2]	4.14	017	1.82	017 [1]	4.29	017	2.92	017	3.32	01700 [1]	4.71	017
1.75		36	11.0											4.02	01750 [1]		
1.80		36	11.0	7.34	018 [2]	4.38	018	1.94	018 [1]	4.43	018	2.92	018	3.49	01800 [1]	5.00	018
1.83		36	11.0											5.14	01830 [1]		
1.85		36	11.0											3.85	01850 [1]		
1.90		36	11.0	7.34	019 [2]	4.38	019	1.82	019 [1]	4.43	019	2.92	019	3.49	01900 [1]	5.00	019
1.95		38	12.0											5.84	01950 [1]		
2.00		38	12.0	6.17	020 [2]	3.85	020	1.27	020 [1]	3.88	020	2.44	020	2.92	02000 [1]	4.38	020
2.05		38	12.0											5.43	02050 [1]		
2.10		38	12.0	7.54	021 [2]	4.14	021	1.67	021 [1]	4.29	021	2.74	021	3.32	02100 [1]	4.71	021
2.15		40	13.0											5.00	02150 [1]		
2.20		40	13.0	7.54	022 [2]	4.57	022	1.67	022 [1]	4.71	022	2.74	022	3.74	02200 [1]	5.00	022
2.25		40	13.0											4.02	02250 [1]		
2.30		40	13.0	6.36	023 [2]	4.43	023	1.82	023 [1]	4.71	023	2.92	023	3.60	02300 [1]	5.00	023
2.35		40	13.0											5.56	02350 [1]		
2.38	3/32	43	14.0	6.96	238 [2]	4.43	238										
2.40		43	14.0	7.57	024 [2]	4.57	024	1.82	024	4.84	024	2.92	024	3.71	02400	5.27	024
2.45		43	14.0											4.42	02450		

Steel	●	●	●	○	●	●	●
Stainless steel	○	●		●	○	○	○
Cast iron	●	●	●	○	○	○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○	○	○	○
Hardened materials		○				○	○

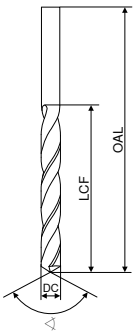
1) uncoated
2) self-centering

→ v_c Page 46+47

Continued on next page

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

≤ 3xD



UNI	UNI	N	VA	WNX	WT	WT
TiN	TiN	vap.			vap.	TiN

◁ 130°	◁ 118°	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
HSS-E-PM	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E
T2	T2	T2	T2	T2	T2	T2

DC_{h8}	DC	OAL	LCF	Article no. 10 113 ...		Article no. 10 107 ...		Article no. 10 105 ...		Article no. 10 130 ...		Article no. 10 106 ...		Article no. 10 109 ...		Article no. 10 110 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
2.50		43	14.0	6.62	025 [2]	4.14	025	1.38	025	4.16	025	2.74	025	3.32	02500	4.57	025
2.55		43	14.0											5.56	02550		
2.60		43	14.0	7.84	026 [2]	4.57	026	1.82	026	4.84	026	2.92	026	3.71	02600	5.27	026
2.65		43	14.0											5.56	02650		
2.70		46	16.0	8.29	027 [2]	4.84	027	1.82	027	4.99	027	2.92	027	3.85	02700	5.56	027
2.75		46	16.0											5.56	02750		
2.78	7/64	46	16.0	8.06	278 [2]	4.84	278										
2.80		46	16.0	7.72	028 [2]	4.84	028	1.82	028	4.99	028	2.98	028	3.85	02800	5.56	028
2.85		46	16.0											5.56	02850		
2.90		46	16.0	8.22	029 [2]	4.84	029	1.82	029	4.99	029	3.29	029	3.85	02900	5.56	029
2.95		46	16.0											4.02	02950		
3.00		46	16.0	6.96	030 [2]	4.38	030	1.38	030	4.43	030	2.92	030	3.49	03000	4.71	030
3.05		49	18.0											4.16	03050		
3.10		49	18.0	7.46	031 [2]	4.71	031	1.82	031	4.99	031	3.41	031	3.85	03100	5.43	031
3.15		49	18.0											6.10	03150		
3.17	1/8	49	18.0	7.34	317 [2]	4.57	317										
3.20		49	18.0	7.00	032 [2]	4.43	032	1.67	032	4.84	032	2.92	032	3.71	03200	5.14	032
3.25		49	18.0											4.38	03250		
3.30		49	18.0	7.00	033 [2]	4.84	033	1.82	033	5.12	033	2.98	033	3.88	03300	5.56	033
3.35		49	18.0											5.56	03350		
3.40		52	20.0	8.09	034 [2]	5.00	034	2.10	034	5.12	034	3.58	034	3.88	03400	5.56	034
3.45		52	20.0											4.38	03450		
3.50		52	20.0	7.00	035 [2]	4.84	035	1.67	035	5.12	035	3.41	035	3.88	03500	5.00	035
3.55		52	20.0											4.42	03550		
3.57	9/64	52	20.0	7.95	357 [2]	5.00	357										
3.60		52	20.0	9.31	036 [2]	5.00	036	2.10	036	5.12	036	3.58	036	3.88	03600	5.56	036
3.70		52	20.0	8.06	037 [2]	5.26	037	2.10	037	5.53	037	3.58	037	4.16	03700	6.02	037
3.75		52	20.0											4.42	03750		
3.80		55	22.0	8.60	038 [2]	5.14	038	2.10	038	5.41	038	3.71	038	4.02	03800	5.56	038
3.85		55	22.0											6.84	03850		
3.90		55	22.0	9.73	039 [2]	5.82	039	2.10	039			3.71	039	4.16	03900	6.02	039
3.95		55	22.0											6.84	03950		
3.97	5/32	55	22.0	8.78	397 [2]	5.53	397										
4.00		55	22.0	7.95	040 [2]	5.14	040	1.67	040	5.41	040	3.71	040	4.14	04000	5.14	040
4.05		55	22.0											4.84	04050		
4.10		55	22.0	9.12	041 [2]	5.43	041	1.94	041	5.69	041	3.85	041	4.38	04100	5.56	041
4.15		55	22.0											6.84	04150		
4.20		55	22.0	7.95	042 [2]	5.26	042	1.94	042	5.53	042	3.41	042	4.16	04200	5.56	042
4.25		55	22.0											7.43	04250		
4.30		58	24.0	9.05	043 [2]	5.56	043	2.78	043	5.82	043	3.85	043	4.57	04300	6.28	043
4.35		58	24.0											7.43	04350		
4.37	11/64	58	24.0	12.16	437 [2]	7.43	437										
4.40		58	24.0	9.73	044 [2]	6.28	044	2.78	044			3.85	044	4.57	04400	6.42	044

Steel	●	●	●	○	●	●	●
Stainless steel	○	●		●	○	○	○
Cast iron	●	●	●	○	○	○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○	○	○	○
Hardened materials		○				○	○

1) uncoated
2) self-centering

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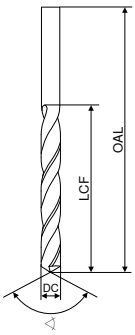
Continued on next page

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

≤ 3xD



	UNI	UNI	N	VA	WNX	WT	WT
	TiN	TiN	vap.			vap.	TiN
							
	◁ 130°	◁ 118°	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
	HSS-E-PM	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E
	T2	T2	T2	T2	T2	T2	T2

DC h8	DC	OAL	LCF	Article no. 10 113 ...		Article no. 10 107 ...		Article no. 10 105 ...		Article no. 10 130 ...		Article no. 10 106 ...		Article no. 10 109 ...		Article no. 10 110 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
4.45		58	24.0											7.56	04450		
4.50		58	24.0	9.05	045 2)	5.56	045	1.94	045	5.82	045	3.85	045	4.42	04500	5.27	045
4.55		58	24.0											7.43	04550		
4.60		58	24.0	9.12	046 2)	6.10	046	2.92	046	6.37	046	3.98	046	4.84	04600	6.98	046
4.65		58	24.0											6.84	04650	7.26	465
4.70		58	24.0	10.14	047 2)	6.42	047	2.92	047	6.65	047	4.14	047	5.00	04700	7.26	047
4.75		58	24.0											6.84	04750		
4.76	3/16	62	26.0	10.14	476 2)	6.42	476										
4.80		62	26.0	10.34	048 2)	6.51	048	2.92	048	6.93	048	4.38	048	5.27	04800	7.26	048
4.85		62	26.0											6.10	04850		
4.90		62	26.0	10.41	049 2)	7.20	049	2.92	049	7.47	049	4.57	049	5.82	04900	7.26	049
4.95		62	26.0											8.72	04950		
5.00		62	26.0	8.78	050 2)	5.69	050	2.10	050	6.23	050	4.14	050	4.71	05000	5.84	050
5.05		62	26.0											10.12	05050		
5.10		62	26.0	9.66	051 2)	7.61	051	2.92	051	8.18	051	4.71	051	6.28	05100	7.26	051
5.15		62	26.0											10.71	05150		
5.16	13/64	62	26.0	11.51	516 2)	9.84	516										
5.20		62	26.0	10.41	052 2)	9.42	052	2.92	052	9.97	052	4.71	052	7.43	05200	7.26	052
5.25		62	26.0											8.68	05250		
5.30		62	26.0	11.78	053 2)	9.97	053	2.92	053	10.67	053	4.84	053	8.29	05300	7.56	053
5.35		66	28.0											14.11	05350		
5.40		66	28.0	11.55	054 2)	9.84	054	3.32	054			5.14	054	8.68	05400	8.40	054
5.45		66	28.0											14.10	05450		
5.50		66	28.0	9.88	055 2)	7.34	055	2.50	055	7.89	055	5.00	055	6.02	05500	6.28	055
5.55		66	28.0											15.80	05550	7.99	555
5.56	7/32	66	28.0	10.82	556 2)	8.18	556										
5.60		66	28.0	11.78	056 2)	12.04	056	3.32	056	12.73	056	5.27	056	9.85	05600	7.99	056
5.70		66	28.0	12.64	057 2)	12.19	057	3.32	057	13.03	057	5.43	057	10.18	05700	7.99	057
5.75		66	28.0											11.68	05750		
5.80		66	28.0	12.08	058 2)	12.87	058	3.32	058	13.56	058	5.43	058	10.12	05800	7.99	058
5.85		66	28.0											16.99	05850		
5.90		66	28.0	13.32	059 2)	13.03	059	3.32	059	13.70	059	5.56	059	10.54	05900	8.27	059
5.95	15/64	66	28.0	20.18	595 2)	14.28	595							10.71	05950		
6.00		66	28.0	10.64	060 2)	7.34	060	2.50	060	7.89	060	5.00	060	6.02	06000	6.84	060
6.05		70	31.0											16.99	06050		
6.10		70	31.0	12.49	061 2)	13.85	061	3.60	061	14.81	061	5.82	061	11.12	06100	10.28	061
6.15		70	31.0											12.67	06150		
6.20		70	31.0	12.49	062 2)	14.11	062	3.60	062	15.23	062	5.84	062	11.68	06200	10.71	062
6.25		70	31.0											14.39	06250		
6.30		70	31.0	14.31	063 2)	15.36	063	3.60	063	16.19	063	5.84	063	12.52	06300	10.83	063
6.35	1/4	70	31.0	13.13	635 2)	15.23	635							8.68	06350		
6.40		70	31.0	13.25	064 2)	15.64	064	3.74	064	16.60	064	6.28	064	12.70	06400	11.19	064
6.45		70	31.0											14.39	06450		

Steel	●	●	●	○	●	●	●
Stainless steel	○	●		●	○	○	○
Cast iron	●	●	●	○	○	○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○	○	○	○
Hardened materials		○				○	○

1) uncoated
2) self-centering

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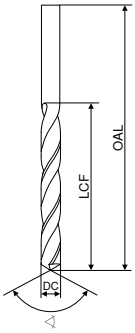
Continued on next page

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

≤ 3xD



	UNI	UNI	N	VA	WNX	WT	WT
	TiN	TiN	vap.			vap.	TiN
							
	◁ 130°	◁ 118°	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
	HSS-E-PM	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E
	T2	T2	T2	T2	T2	T2	T2

DC h8	DC	OAL	LCF	Article no. 10 113 ...		Article no. 10 107 ...		Article no. 10 105 ...		Article no. 10 130 ...		Article no. 10 106 ...		Article no. 10 109 ...		Article no. 10 110 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
6.50		70	31.0	12.49	065 2)	8.59	065	2.92	065	9.14	065	5.84	065	6.98	06500	7.99	065
6.55		70	31.0											17.25	06550		
6.60		70	31.0	13.77	066 2)	16.19	066	3.74	066	17.17	066	6.42	066	13.26	06600	11.19	066
6.65		70	31.0											18.39	06650		
6.70		70	31.0	15.18	067 2)	16.48	067	4.02	067	17.71	067	6.57	067	13.66	06700	11.19	067
6.75		74	34.0	18.67	675 2)	12.62	675							13.68	06750		
6.80		74	34.0	15.21	068 2)	16.89	068	4.57	068	18.13	068	7.26	068	14.10	06800	11.68	068
6.85		74	34.0											19.24	06850		
6.90		74	34.0	15.03	069 2)	17.02	069	4.99	069	18.28	069	7.43	069	13.96	06900	11.68	069
7.00		74	34.0	13.93	070 2)	9.84	070	3.74	070	10.52	070	6.42	070	7.85	07000	9.68	070
7.05		74	34.0											22.38	07050		
7.10		74	34.0	16.88	071 2)	17.71	071	5.12	071	18.82	071	8.68	071	14.11	07100	13.11	071
7.14	9/32	74	34.0	22.40	714 2)	18.13	714										
7.20		74	34.0	17.37	072 2)	17.87	072	5.12	072	19.23	072	9.28	072	15.12	07200	13.11	072
7.25		74	34.0											15.38	07250		
7.30		74	34.0	18.67	073 2)	17.99	073	5.41	073			9.68	073	14.97	07300	13.26	073
7.35		74	34.0											19.66	07350		
7.40		74	34.0	17.49	074 2)	17.87	074	5.69	074			10.54	074	15.56	07400	13.26	074
7.50		74	34.0	14.53	075 2)	11.21	075	4.02	075	12.04	075	6.98	075	9.28	07500	10.12	075
7.60		79	37.0	22.68	076 2)	16.74	076	6.37	076			10.18	076	16.57	07600	14.39	076
7.70		79	37.0	24.57	077 2)	20.77	077	6.37	077	22.00	077	10.28	077	16.54	07700	14.39	077
7.75		79	37.0											20.81	07750		
7.80		79	37.0	18.74	078 2)	20.07	078	6.37	078			10.28	078	17.44	07800	14.39	078
7.90		79	37.0	26.23	079 2)	22.00	079	6.51	079	23.25	079	9.85	079	17.38	07900	14.39	079
7.94	5/16	79	37.0	17.98	794 2)	11.34	794										
8.00		79	37.0	17.37	080 2)	10.83	080	4.16	080	11.09	080	7.26	080	8.72	08000	10.42	080
8.05		79	37.0											27.95	08050		
8.10		79	37.0	22.18	081 2)	22.57	081	6.93	081	24.07	081	10.83	081	18.39	08100	14.39	081
8.15		79	37.0											27.95	08150		
8.20		79	37.0	23.09	082 2)	23.54	082	7.20	082	24.90	082	11.19	082	18.96	08200	14.39	082
8.25		79	37.0											21.67	08250		
8.30		79	37.0	24.22	083 2)	25.31	083	7.47	083	26.98	083	11.12	083	20.50	08300	15.12	083
8.40		79	37.0	23.23	084 2)	26.01	084	7.61	084	27.68	084	11.55	084	21.25	08400	15.12	084
8.50		79	37.0	20.18	085 2)	12.87	085	5.69	085	13.56	085	8.72	085	10.28	08500	12.52	085
8.55		84	40.0											31.65	08550		
8.60		84	40.0			15.47	086	7.61	086	28.50	086	12.22	086	21.67	08600	15.55	086
8.70		84	40.0			17.80	087	7.76	087	29.33	087	12.67	087	23.25	08700	15.55	087
8.73	11/32	84	40.0	31.91	873 2)	20.39	873										
8.75		84	40.0											34.87	08750		
8.80		84	40.0	25.32	088 2)	16.74	088	7.89	088			13.96	088	23.54	08800	15.55	088
8.90		84	40.0			22.01	089	8.18	089			9.28	089	24.27	08900	15.98	089
8.95		84	40.0											38.88	08950		
9.00		84	40.0	20.48	090 2)	13.56	090	5.41	090	14.52	090	8.40	090	10.83	09000	12.70	090

Steel	●	●	●	○	●	●	●
Stainless steel	○	●		●	○	○	○
Cast iron	●	●	●	○	○	○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○	○	○	○
Hardened materials		○				○	○

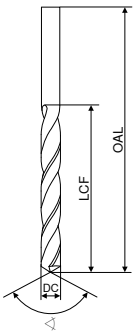
1) uncoated
2) self-centering

→ v_c Page 46+47

Continued on next page

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

≤ 3xD



UNI	UNI	N	VA	WNX	WT	WT
TiN	TiN	vap.			vap.	TiN

◁ 130°	◁ 118°	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
HSS-E-PM	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E
T2	T2	T2	T2	T2	T2	T2

DC $_{h8}$	DC	OAL	LCF	Article no. 10 113 ...		Article no. 10 107 ...		Article no. 10 105 ...		Article no. 10 130 ...		Article no. 10 106 ...		Article no. 10 109 ...		Article no. 10 110 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
9.05		84	40.0											25.52	09050		
9.10		84	40.0			18.55	091	9.14	091			14.39	091	25.27	09100	20.35	091
9.20		84	40.0			18.68	092	9.97	092	33.35	092	15.38	092	25.52	09200	20.35	092
9.25		84	40.0											29.22	09250		
9.30		84	40.0	23.23	093 [2]	32.93	093	10.11	093	35.16	093	10.83	093	27.18	09300	20.35	093
9.40		84	40.0			21.66	094	10.38	094			10.83	094	26.93	09400	20.35	094
9.50		84	40.0	22.68	095 [2]	14.52	095	8.59	095	15.64	095	10.28	095	11.85	09500	16.54	095
9.60		89	43.0			22.65	096	10.93	096			16.57	096	26.93	09600	20.67	096
9.65		89	43.0											31.67	09650		
9.70		89	43.0			22.01	097	11.09	097			16.57	097	27.50	09700	20.67	097
9.75		89	43.0											38.88	09750		
9.80		89	43.0	27.02	098 [2]	33.91	098	11.62	098	36.26	098	16.54	098	27.95	09800	22.11	098
9.90		89	43.0			23.52	099	11.62	099			16.95	099	28.78	09900	22.11	099
10.00		89	43.0	22.33	100 [2]	16.89	100	6.51	100	18.13	100	9.28	100	14.10	10000	15.55	100
10.05		89	43.0											36.47	10050		
10.10		89	43.0			22.65	101	12.87	101					38.36	10100		
10.20		89	43.0	28.27	102 [2]	26.84	102	11.09	102	28.50	102	16.57	102	21.67	10200	21.95	102
10.25		89	43.0											33.40	10250		
10.30		89	43.0			21.04	103	13.70	103					35.45	10300		
10.40		89	43.0			24.63	104	14.28	104					41.83	10400		
10.50		89	43.0	26.79	105 [2]	29.07	105	11.62	105	30.99	105	13.55	105	24.27	10500	20.92	105
10.60		95	47.0					17.87	106					42.29	10600		
10.70		95	47.0					17.87	107					42.29	10700		
10.75		95	47.0											35.92	10750		
10.80		95	47.0					18.28	108			17.97	108	41.13	10800	46.65	108
10.90		95	47.0					18.28	109					41.83	10900		
11.00		95	47.0	29.79	110 [2]	30.99	110	11.62	110	32.93	110	15.98	110	25.52	11000	20.92	110
11.10		95	47.0					18.28	111					46.46	11100		
11.11	7/16	95	47.0	34.97	111 [2]	36.53	111										
11.20		95	47.0					19.23	112					49.82	11200		
11.30		95	47.0					19.52	113					51.59	11300		
11.40		95	47.0					19.52	114					52.02	11400		
11.50		95	47.0	34.33	115 [2]	35.16	115	12.32	115	37.37	115	20.92	115	29.22	11500	21.81	115
11.60		95	47.0					19.52	116								
11.70		95	47.0					19.52	117	70.28	117			52.02	11700		
11.75		95	47.0											57.68	11750		
11.80		95	47.0					19.79	118			26.31	118	52.02	11800	26.16	118
11.90		102	51.0					19.79	119								
12.00		102	51.0	33.60	120 [2]	41.37	120	14.81	120	44.02	120	20.92	120	34.43	12000	24.95	120
12.10		102	51.0					20.90	121					51.59	12100		
12.20		102	51.0					20.90	122					52.02	12200		
12.25		102	51.0											58.55	12250		
12.30		102	51.0	56.92	123 [2]	38.48	123	21.17	123			26.31	123	40.69	12300	38.35	123

Steel	●	●	●	○	●	●	●
Stainless steel	○	●		●	○	○	○
Cast iron	●	●	●	○	○	○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○	○	○	○
Hardened materials		○				○	○

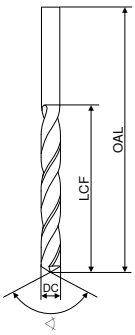
1) uncoated
2) self-centering

→ v_c Page 46+47

Continued on next page

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

≤ 3xD



UNI	UNI	N	VA	WNX	WT	WT
TiN	TiN	vap.			vap.	TiN

◁ 130°	◁ 118°	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
HSS-E-PM	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E
T2	T2	T2	T2	T2	T2	T2

DC_{h8}	DC	OAL	LCF	Article no. 10 113 ...		Article no. 10 107 ...		Article no. 10 105 ...		Article no. 10 130 ...		Article no. 10 106 ...		Article no. 10 109 ...		Article no. 10 110 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
12.40		102	51.0					21.17	124					52.02	12400		
12.50		102	51.0	36.86	125 2)	41.66	125	15.64	125			21.36	125	34.51	12500	26.16	125
12.60		102	51.0					21.59	126					35.49	12600		
12.70		102	51.0	47.05	127 2)	31.78	127	20.63	127					35.49	12700		
12.80		102	51.0					22.41	128			32.11	128	53.33	12800	48.32	128
12.90		102	51.0					23.12	129					53.33	12900		
13.00		102	51.0	36.86	130 2)	41.66	130	15.93	130			23.84	130	36.47	13000	26.37	130
13.20		102	51.0					23.80	132					53.33	13200		
13.30		107	54.0					24.49	133								
13.50		107	54.0	39.14	135 2)	41.66	135	18.28	135			29.51	135	40.26	13500	28.81	135
13.80		107	54.0					25.06	138			38.36	138			31.08	138
14.00		107	54.0	48.87	140 2)	44.27	140	18.54	140			26.93	140	40.26	14000	30.22	140
14.50		111	56.0					20.63	145			34.87	145	50.56	14500	30.95	145
14.75		111	56.0					31.57	147								
14.80		111	56.0									48.37	148				
15.00		111	56.0					20.07	150			32.41	150	48.09	15000	31.98	150
15.25		115	58.0					33.35	152					104.32	15250		
15.50		115	58.0					22.14	155			49.11	155	60.14	15500	41.70	155
15.75		115	58.0													44.04	157
16.00		115	58.0					22.41	160			38.94	160	49.32	16000	41.13	160
16.50		119	60.0					26.43	165			39.21	165	81.07	16500	60.56	165
17.00		119	60.0					27.13	170			40.39	170	69.13	17000	59.72	170
17.50		123	62.0					28.38	175			41.26	175	81.94	17500	55.87	175
17.75		123	62.0													67.70	177
18.00		123	62.0					28.66	180			40.77	180	76.71	18000	65.36	180
18.50		127	64.0					31.28	185					97.93	18500	73.23	185
19.00		127	64.0					32.93	190			42.18	190	81.94	19000	71.74	190
19.50		131	66.0					34.87	195					95.44	19500	80.49	195
19.75		131	66.0													80.52	197
20.00		131	66.0					34.87	200			44.47	200	81.95	20000	76.99	200
20.50		136	68.0											115.64	20500		
21.00		136	68.0											110.98	21000		
21.50		141	70.0											118.98	21500		
22.00		141	70.0											120.14	22000		
22.20		141	70.0											124.36	22200		
23.00		146	72.0											128.98	23000		
24.00		151	75.0											141.94	24000		
25.00		151	75.0											162.43	25000		

Steel	●	●	●	○	●	●	●
Stainless steel	○	●		●	○	○	○
Cast iron	●	●	●	○	○	○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○	○	○	○
Hardened materials		○				○	○

1) uncoated
2) self-centering

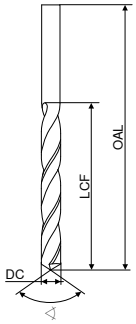
→ v_c Page 46+47

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

▲ left-hand cutting

≤ 3xD

WTL-L



DC h8	OAL	LCF	T2 Article no. 10 112 ...	
mm	mm	mm	£	
1.0	26	6	3.71	010 1)
1.1	28	7	3.98	011 1)
1.2	30	8	3.85	012 1)
1.3	30	8	3.85	013 1)
1.4	32	9	3.58	014 1)
1.5	32	9	3.29	015 1)
1.6	34	10	3.41	016 1)
1.7	34	10	4.84	017 1)
1.8	36	11	4.84	018 1)
1.9	36	11	4.57	019 1)
2.0	38	12	2.92	020 1)
2.1	38	12	2.98	021 1)
2.2	40	13	3.41	022 1)
2.3	40	13	4.99	023 1)
2.4	43	14	3.58	024 2)
2.5	43	14	2.98	025 2)
2.6	43	14	3.58	026 2)
2.7	46	16	3.71	027 2)
2.8	46	16	3.85	028 2)
2.9	46	16	3.98	029 2)
3.0	46	16	3.41	030 2)
3.1	49	18	4.14	031 2)
3.2	49	18	3.71	032 2)
3.3	49	18	4.14	033 2)
3.4	52	20	4.38	034 2)
3.5	52	20	6.10	035 2)
3.6	52	20	4.38	036 2)
3.7	52	20	4.38	037 2)
3.8	55	22	4.71	038 2)
3.9	55	22	4.71	039 2)
4.0	55	22	4.71	040 2)
4.1	55	22	5.27	041 2)
4.2	55	22	4.71	042 2)
4.3	58	24	6.42	043 2)
4.4	58	24	6.42	044 2)
4.5	58	24	5.14	045 2)
4.6	58	24	6.84	046 2)
4.7	58	24	6.84	047 2)
4.8	62	26	6.84	048 2)
4.9	62	26	9.84	049 2)
5.0	62	26	5.82	050 2)
5.1	62	26	6.84	051 2)
5.2	62	26	6.98	052 2)
5.3	62	26	7.26	053 2)
5.4	66	28	7.26	054 2)
5.5	66	28	6.57	055 2)
5.6	66	28	7.26	056 2)
5.7	66	28	10.80	057 2)
5.8	66	28	7.56	058 2)
5.9	66	28	7.70	059 2)
6.0	66	28	6.98	060 2)
6.1	70	31	8.29	061 2)
6.2	70	31	8.29	062 2)
6.3	70	31	8.29	063 2)
6.4	70	31	8.72	064 2)
6.5	70	31	7.26	065 2)
6.6	70	31	8.68	066 2)
6.7	70	31	9.28	067 2)
6.8	74	34	9.85	068 2)
6.9	74	34	11.68	069 2)
7.0	74	34	7.85	070 2)
7.2	74	34	15.38	072 2)
7.3	74	34	22.41	073 2)
7.4	74	34	15.98	074 2)
7.5	74	34	8.72	075 2)
7.7	79	37	24.07	077 2)
8.0	79	37	8.68	080 2)
8.1	79	37	17.25	081 2)
8.2	79	37	17.80	082 2)
8.3	79	37	17.80	083 2)
8.5	79	37	9.85	085 2)
8.6	84	40	18.89	086 2)
8.7	84	40	27.13	087 2)
8.8	84	40	28.66	088 2)
9.0	84	40	10.71	090 2)
9.5	84	40	12.22	095 2)
9.7	89	43	21.95	097 2)
10.0	89	43	12.26	100 2)
10.1	89	43	28.19	101 2)
10.2	89	43	20.35	102 2)
10.5	89	43	19.91	105 2)
11.0	95	47	20.35	110 2)
11.5	95	47	22.25	115 2)
11.8	95	47	29.51	118 2)
12.0	102	51	22.51	120 2)
12.5	102	51	35.42	125 2)
12.8	102	51	31.22	128 2)
13.0	102	51	27.31	130 2)
14.0	107	54	33.40	140 2)
14.5	111	56	41.19	145 2)
15.0	111	56	36.35	150 2)
16.0	115	58	43.48	160 3)
18.0	123	62	108.95	180 3)
19.0	127	64	143.67	190 3)

Steel	●
Stainless steel	○
Cast iron	○
Non ferrous metals	●
Heat resistant alloys	
Hardened materials	○

1) uncoated
2) nitrided chamfer
3) vaporised

→ v_c Page 47

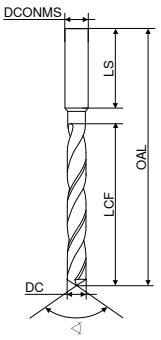
High-performance twist drill similar to DIN 338, short

- with shank to DIN 1835 A
- special point thinning
- 4 facet
- highest Performance
- very good centering behaviour

≤ 5xD

VX

TiN



HSS-E

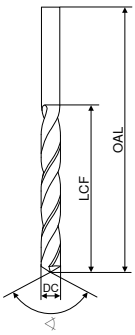
DC h8	OAL	LCF	DCONMS h6	LS	T2 Article no. 10 124 ...	
mm	mm	mm	mm	mm	£	
2.00	56	24	3	28	12.22	020
2.10	56	24	3	28	13.98	021
2.20	59	27	3	28	13.98	022
2.30	59	27	3	28	13.98	023
2.40	62	30	3	28	13.98	024
2.50	62	30	3	28	13.98	025
2.60	62	30	3	28	13.98	026
2.70	65	33	3	28	13.98	027
2.80	65	33	3	28	13.98	028
2.90	65	33	3	28	13.98	029
3.00	65	33	3	28	13.29	030
3.10	68	36	4	28	15.23	031
3.20	68	36	4	28	15.23	032
3.30	68	36	4	28	15.23	033
3.40	71	39	4	28	15.23	034
3.50	71	39	4	28	15.23	035
3.60	71	39	4	28	16.95	036
3.70	71	39	4	28	16.95	037
3.80	75	43	4	28	16.95	038
3.90	75	43	4	28	16.95	039
4.00	75	43	4	28	16.95	040
4.10	87	43	6	36	19.65	041
4.20	87	43	6	36	20.77	042
4.30	91	47	6	36	19.65	043
4.40	91	47	6	36	19.65	044
4.50	91	47	6	36	19.65	045
4.60	91	47	6	36	22.29	046
4.65	91	47	6	36	22.29	465
4.70	91	47	6	36	22.29	047
4.80	96	52	6	36	22.29	048
4.90	96	52	6	36	22.29	049
5.00	96	52	6	36	24.23	050
5.10	96	52	6	36	24.23	051
5.20	96	52	6	36	24.23	052
5.30	96	52	6	36	26.74	053
5.40	101	57	6	36	26.74	054
5.50	101	57	6	36	24.23	055
5.55	101	57	6	36	27.81	555
5.60	101	57	6	36	27.81	056
5.70	101	57	6	36	27.81	057
5.80	101	57	6	36	27.81	058
5.90	101	57	6	36	27.81	059
6.00	101	57	6	36	26.43	060
6.10	107	63	8	36	32.66	061
6.20	107	63	8	36	32.66	062
6.30	107	63	8	36	32.66	063
6.40	107	63	8	36	32.66	064
6.50	107	63	8	36	32.66	065
6.60	107	63	8	36	35.02	066
6.70	107	63	8	36	35.02	067
6.80	113	69	8	36	35.02	068
6.90	113	69	8	36	35.02	069
7.00	113	69	8	36	35.02	070
7.10	113	69	8	36	36.46	071
7.20	113	69	8	36	36.46	072
7.30	113	69	8	36	36.46	073
7.40	113	69	8	36	36.46	074
7.50	113	69	8	36	36.46	075
7.55	119	75	8	36	36.40	755
7.60	119	75	8	36	36.40	076
7.70	119	75	8	36	36.40	077
7.80	119	75	8	36	36.40	078
7.90	119	75	8	36	36.40	079
8.00	119	75	8	36	36.40	080
8.10	125	75	10	40	40.77	081
8.20	125	75	10	40	40.77	082
8.30	125	75	10	40	40.77	083
8.40	125	75	10	40	40.77	084
8.50	125	75	10	40	41.11	085
8.60	131	81	10	40	37.93	086
8.70	131	81	10	40	37.93	087
8.80	131	81	10	40	37.93	088
8.90	131	81	10	40	37.93	089
9.00	131	81	10	40	37.93	090
9.10	131	81	10	40	40.77	091
9.20	131	81	10	40	40.77	092
9.30	131	81	10	40	40.77	093
9.40	131	81	10	40	40.77	094
9.50	131	81	10	40	40.77	095
9.55	137	87	10	40	44.47	955
9.60	137	87	10	40	44.47	096
9.70	137	87	10	40	44.47	097
9.80	137	87	10	40	44.47	098
9.90	137	87	10	40	44.47	099
10.00	137	87	10	40	44.47	100
10.10	144	87	12	45	56.37	101
10.20	144	87	12	45	56.37	102
10.30	144	87	12	45	56.37	103
10.40	144	87	12	45	56.37	104
10.50	144	87	12	45	56.37	105
10.60	144	87	12	45	61.91	106
10.70	151	94	12	45	61.91	107
10.80	151	94	12	45	61.91	108
10.90	151	94	12	45	61.91	109
11.00	151	94	12	45	52.18	110
11.10	151	94	12	45	55.87	111
11.20	151	94	12	45	55.87	112
11.30	151	94	12	45	55.87	113
11.40	151	94	12	45	55.87	114
11.50	151	94	12	45	55.87	115
11.60	151	94	12	45	61.60	116
11.70	151	94	12	45	61.60	117
11.80	151	94	12	45	61.60	118
11.90	158	101	12	45	61.60	119
12.00	158	101	12	45	61.60	120
12.10	161	101	16	48	70.77	121
12.20	161	101	16	48	70.77	122
12.30	161	101	16	48	70.77	123
12.40	161	101	16	48	70.77	124
12.50	161	101	16	48	70.77	125
12.60	161	101	16	48	74.53	126
12.70	161	101	16	48	74.53	127
12.80	161	101	16	48	74.53	128
12.90	161	101	16	48	74.53	129
13.00	161	101	16	48	82.21	130
13.50	166	106	16	48	106.62	135
14.00	166	106	16	48	106.62	140
14.50	169	109	16	48	136.41	145
15.00	169	109	16	48	128.14	150
15.50	172	112	16	48	138.88	155
16.00	172	112	16	48	134.09	160
16.50	181	115	20	50	207.88	165
17.00	181	115	20	50	207.88	170
17.50	184	118	20	50	207.88	175
18.00	184	118	20	50	207.88	180
18.50	188	122	20	50	207.88	185
19.00	188	122	20	50	207.88	190
19.50	191	125	20	50	207.88	195
20.00	191	125	20	50	184.80	200

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○

→ v_c Page 48

Twist drill to DIN 338, short

≤ 5xD



	UNI	UNI	N	VA	W	WTL	WTL
	TiN	TiN	vap.			F.-nit	TiN
							
	◁ 130°	◁ 118°	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
	HSS-E-PM	HSS-E	HSS	HSS-E	HSS	HSS-E	HSS-E
	T2	T2	T2	T2	T2	T2	T2

DC h8	DC	OAL	LCF	Article no. 10 173 ...		Article no. 10 171 ...		Article no. 10 152 ...		Article no. 10 175 ...		Article no. 10 161 ...		Article no. 10 168 ...		Article no. 10 170 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
0.20		19	2.5					3.88	00200 1)			8.29	00200				
0.25		19	3.0					3.74	00250 1)			17.71	00250				
0.30		19	3.0					2.62	00300 1)			9.28	00300				
0.35		19	4.0					2.62	00350 1)			5.84	00350				
0.40		20	5.0					2.22	00400 1)			4.84	00400				
0.45		20	5.0					2.37	00450 1)			5.14	00450				
0.50		22	6.0					1.94	00500 1)			3.71	00500				
0.55		24	7.0					2.78	00550 1)			9.01	00550				
0.60		24	7.0					1.82	00600 1)			3.98	00600				
0.65		26	8.0					2.62	00650 1)			6.28	00650				
0.70		28	9.0					1.67	00700 1)			3.58	00700				
0.75		28	9.0					1.94	00750 1)			3.85	00750				
0.80		30	10.0					1.67	00800 1)			3.29	00800				
0.85		30	10.0					1.82	00850 1)			3.71	00850				
0.90		32	11.0			4.16	009	1.67	00900 1)			2.98	00900				
0.95		32	11.0					1.82	00950 1)			3.71	00950				
1.00		34	12.0	5.98	010 2)	4.16	010	1.54	01000 1)	3.98	010	3.29	01000	3.41	010 1)	7.26	010
1.05		34	12.0					1.67	01050 1)			3.58	01050				
1.10		36	14.0	6.48	011 2)	4.16	011	1.54	01100 1)	3.98	011	2.92	01100	3.71	011 1)	7.85	011
1.15		36	14.0					1.67	01150 1)			3.29	01150				
1.20		38	16.0	6.36	012 2)	4.71	012	1.54	01200 1)	4.42	012	2.92	01200	3.71	012 1)	7.85	012
1.25		38	16.0			4.43	125	1.67	01250 1)			3.29	01250				
1.30		38	16.0	6.48	013 2)	4.43	013	1.54	01300 1)	4.38	013	2.92	01300	3.58	013 1)	7.70	013
1.35		40	18.0					1.67	01350 1)			3.29	01350				
1.40		40	18.0	6.55	014 2)	4.16	014	1.54	01400 1)	3.98	014	2.92	01400	3.71	014 1)	7.85	014
1.45		40	18.0			4.16	145	1.54	01450 1)			3.29	01450			10.25	901
1.50		40	18.0	6.17	015 2)	3.88	015	1.38	01500 1)	3.71	015	2.92	01500	3.41	015 1)	7.26	015
1.55		43	20.0			4.16	155	1.54	01550 1)			3.29	01550			12.04	902
1.60		43	20.0	6.17	016 2)	4.16	016	1.27	01600 1)	3.98	016	2.55	01600	3.41	016 1)	7.26	016
1.65		43	20.0			4.29	165	1.54	01650 1)			3.29	01650			12.22	903
1.70		43	20.0	6.62	017 2)	4.29	017	1.27	01700 1)	4.14	017	2.74	01700	3.41	017 1)	7.26	017
1.75		46	22.0					1.54	01750 1)			3.29	01750				
1.80		46	22.0	6.55	018 2)	4.16	018	1.27	01800 1)	3.98	018	2.74	01800	3.41	018 1)	7.26	018
1.85		46	22.0					1.38	01850 1)			3.29	01850			8.40	904
1.90		46	22.0	6.55	019 2)	4.29	019	1.27	01900 1)	4.14	019	2.74	01900	3.41	019 1)	7.26	019
1.95		49	24.0					1.38	01950 1)			2.98	01950				
2.00		49	24.0	6.36	020 2)	3.85	020	0.97	02000 1)	3.41	020	2.15	02000	2.98	020 1)	6.42	020
2.05		49	24.0					1.38	02050 1)			2.92	02050			8.98	905
2.10		49	24.0	6.62	021 2)	4.71	021	1.27	02100 1)	4.42	021	2.55	02100	3.41	021 1)	6.84	021
2.15		53	27.0					1.38	02150 1)			2.92	02150				
2.20		53	27.0	6.96	022 2)	4.71	022	1.27	02200 1)	4.42	022	2.55	02200	3.41	022 1)	6.84	022
2.25		53	27.0					1.38	02250 1)			2.92	02250				
2.30		53	27.0	6.74	023 2)	4.71	023	1.27	02300 1)	4.42	023	2.55	02300	3.41	023 1)	6.84	023
2.35		53	27.0					1.82	02350 1)			3.41	02350				
2.38	3/32	57	30.0	6.74	238 2)	4.71	238										
2.40		57	30.0	6.36	024 2)	4.71	024	1.27	02400	4.42	024	2.55	02400	3.41	024	6.84	024

Steel	●	●	●	○		●	●
Stainless steel	○	●		●		○	○
Cast iron	●	●	●	○		○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○			
Hardened materials		○					

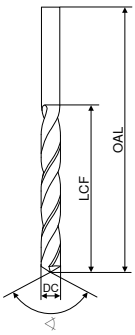
1) uncoated
2) self-centering

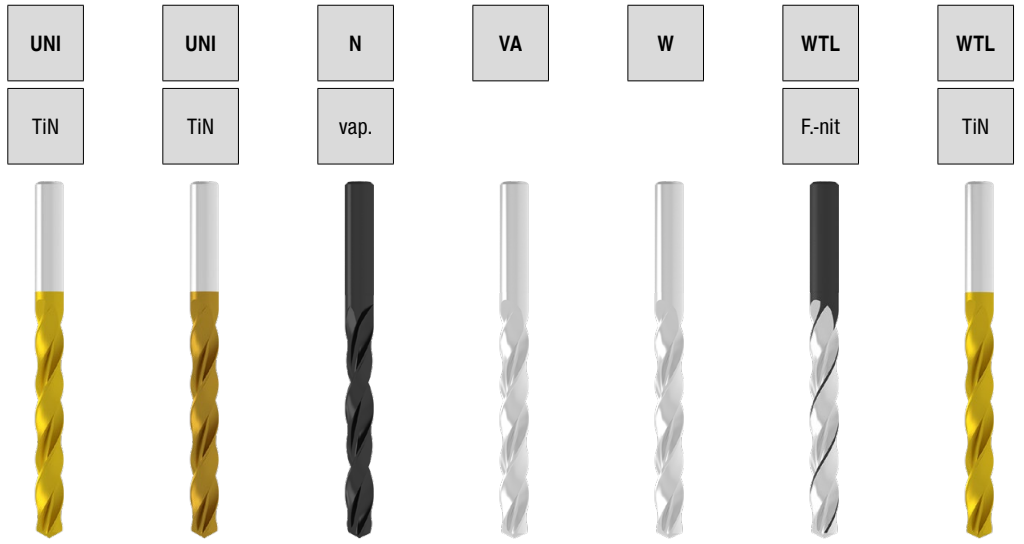
→ v_c Page 48+49

Continued on next page

Twist drill to DIN 338, short

≤ 5xD





				130° HSS-E-PM T2		118° HSS-E T2		118° HSS T2		130° HSS-E T2		130° HSS T2		130° HSS-E T2		130° HSS-E T2	
DC h8	DC	OAL	LCF	Article no. 10 173 ...		Article no. 10 171 ...		Article no. 10 152 ...		Article no. 10 175 ...		Article no. 10 161 ...		Article no. 10 168 ...		Article no. 10 170 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
2.45		57	30.0					1.67	02450			3.41	02450				
2.50		57	30.0	6.48	025 2)	3.98	025	1.27	02500	3.71	025	2.29	02500	2.98	025	6.57	025
2.55		57	30.0			4.71	255	1.82	02550			3.98	02550				
2.60		57	30.0	6.74	026 2)	4.71	026	1.27	02600	4.57	026	2.74	02600	3.41	026	6.84	026
2.65		57	30.0					1.94	02650			3.98	02650				
2.70		61	33.0	7.16	027 2)	4.71	027	1.27	02700	4.57	027	2.74	02700	3.58	027	7.56	027
2.75		61	33.0					1.67	02750			3.85	02750				
2.78	7/64	61	33.0	8.74	278 2)	5.56	278										
2.80		61	33.0	7.00	028 2)	4.71	028	1.27	02800	4.57	028	2.98	02800	3.58	028	7.70	028
2.85		61	33.0					1.82	02850			4.71	02850				
2.90		61	33.0	7.16	029 2)	4.84	029	1.27	02900	4.57	029	2.98	02900	3.58	029	7.70	029
2.95		61	33.0					1.67	02950			3.98	02950				
3.00		61	33.0	6.81	030 2)	3.98	030	1.12	03000	3.71	030	2.44	03000	3.29	030	6.84	030
3.05		65	36.0					1.54	03050			3.41	03050				
3.10		65	36.0	7.57	031 2)	4.84	031	1.38	03100	4.71	031	2.98	03100	3.58	031	7.56	031
3.15		65	36.0					1.54	03150			3.41	03150				
3.17	1/8	65	36.0	7.54	317 2)	4.57	317										
3.20		65	36.0	7.46	032 2)	4.38	032	1.38	03200	3.98	032	2.74	03200	3.71	032	7.85	032
3.25		65	36.0			4.99	325	1.54	03250			4.99	03250				
3.30		65	36.0	7.57	033 2)	4.38	033	1.38	03300	3.98	033	2.74	03300	3.71	033	7.99	033
3.35		65	36.0					1.67	03350			3.41	03350				
3.40		70	39.0	8.09	034 2)	5.12	034	1.38	03400	4.84	034	2.98	03400	4.14	034	8.85	034
3.45		70	39.0					1.67	03450			3.71	03450				
3.50		70	39.0	8.22	035 2)	4.38	035	1.27	03500	3.98	035	2.92	03500	3.58	035	7.56	035
3.55		70	39.0					1.67	03550			3.71	03550				
3.57	9/64	70	39.0	8.22	357 2)	5.26	357										
3.60		70	39.0	8.29	036 2)	5.26	036	1.54	03600	5.14	036	2.98	03600	4.14	036	8.68	036
3.65		70	39.0					1.67	03650			3.58	03650				
3.70		70	39.0	8.29	037 2)	5.26	037	1.54	03700	5.14	037	3.29	03700	4.14	037	8.85	037
3.75		70	39.0					1.67	03750			3.85	03750				
3.80		75	43.0	8.78	038 2)	5.56	038	1.54	03800	5.14	038	3.41	03800	4.42	038	9.74	038
3.85		75	43.0					1.82	03850			3.85	03850				
3.90		75	43.0	8.98	039 2)	5.82	039	1.67	03900	5.27	039	3.41	03900	4.71	039	10.18	039
3.95		75	43.0					1.82	03950			3.85	03950				
3.97	5/32	75	43.0	9.12	397 2)	6.10	397										
4.00		75	43.0	8.60	040 2)	4.57	040	1.27	04000	4.38	040	2.92	04000	3.85	040	8.29	040
4.05		75	43.0					1.94	04050			4.84	04050				
4.10		75	43.0	8.78	041 2)	5.53	041	1.67	04100	5.27	041	3.41	04100	4.71	041	10.18	041
4.15		75	43.0					1.94	04150			4.84	04150				
4.20		75	43.0	8.78	042 2)	5.53	042	1.54	04200	5.43	042	2.98	04200	4.38	042	9.42	042
4.25		75	43.0			5.84	425	1.94	04250			4.84	04250				
4.30		80	47.0	9.35	043 2)	5.82	043	1.67	04300	5.43	043	4.14	04300	4.84	043	10.54	043
4.35		80	47.0					2.50	04350			5.84	04350				
4.37	11/64	80	47.0	9.46	437 2)	6.23	437										
4.40		80	47.0	9.35	044 2)	5.84	044	1.67	04400	5.56	044	4.14	04400	4.84	044	10.54	044
4.45		80	47.0					2.50	04450								

Steel	●	●	●	○		●	●
Stainless steel	○	●		●		○	○
Cast iron	●	●	●	○		○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○			
Hardened materials		○					

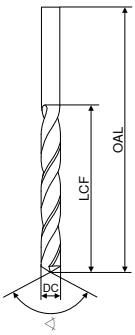
1) uncoated
2) self-centering

→ v_c Page 48+49

Continued on next page

Twist drill to DIN 338, short

≤ 5xD



UNI	UNI	N	VA	W	WTL	WTL
TiN	TiN	vap.			F.-nit	TiN

◁ 130°	◁ 118°	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
HSS-E-PM	HSS-E	HSS	HSS-E	HSS	HSS-E	HSS-E
T2	T2	T2	T2	T2	T2	T2

DC $_{h8}$	DC	OAL	LCF	Article no. 10 173 ...		Article no. 10 171 ...		Article no. 10 152 ...		Article no. 10 175 ...		Article no. 10 161 ...		Article no. 10 168 ...		Article no. 10 170 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
4.50		80	47.0	9.12	045 2)	5.82	045	1.67	04500	5.43	045	3.71	04500	4.57	045	9.42	045
4.55		80	47.0					2.50	04550			7.26	04550				
4.60		80	47.0	9.66	046 2)	6.23	046	1.67	04600	5.82	046	4.14	04600	5.14	046	11.12	046
4.65		80	47.0			6.37	465	2.50	04650			7.26	04650				
4.70		80	47.0	11.69	047 2)	6.42	047	1.67	04700	5.84	047	4.14	04700	5.14	047	11.12	047
4.75		80	47.0					3.32	04750			5.82	04750				
4.76	3/16	86	52.0	9.88	476 2)	6.37	476										
4.80		86	52.0	9.88	048 2)	6.23	048	1.82	04800	5.84	048	4.14	04800	5.14	048	11.12	048
4.85		86	52.0					4.29	04850			7.26	04850				
4.90		86	52.0	10.04	049 2)	6.37	049	1.82	04900	6.02	049	4.14	04900	5.27	049	11.26	049
4.95		86	52.0			6.37	495	2.78	04950			7.26	04950				
5.00		86	52.0	10.11	050 2)	5.56	050	1.54	05000	5.14	050	3.98	05000	4.71	050	10.12	050
5.05		86	52.0			6.37	505	2.92	05050			8.40	05050				
5.10		86	52.0	10.11	051 2)	6.37	051	3.32	05100	6.02	051	4.38	05100	5.27	051	11.26	051
5.15		86	52.0					2.92	05150								
5.16	13/64	86	52.0	11.02	516 2)	6.98	516										
5.20		86	52.0	10.41	052 2)	6.84	052	1.94	05200	6.28	052	4.42	05200	5.43	052	12.22	052
5.25		86	52.0					2.92	05250			9.84	05250				
5.30		86	52.0	11.02	053 2)	6.84	053	1.94	05300	6.28	053	4.42	05300	5.43	053	12.22	053
5.35		93	57.0					3.49	05350								
5.40		93	57.0	13.52	054 2)	7.43	054	2.22	05400	6.84	054	4.71	05400	5.84	054	12.70	054
5.45		93	57.0					6.37	05450			5.84	05450				
5.50		93	57.0	11.65	055 2)	7.61	055	2.10	05500	7.26	055	4.42	05500	5.43	055	11.85	055
5.55		93	57.0			8.68	555	3.60	05550			5.84	05550				
5.56	7/32	93	57.0	13.70	556 2)	8.68	556										
5.60		93	57.0	12.41	056 2)	7.56	056	2.22	05600	6.98	056	5.14	05600	6.02	056	13.11	056
5.65		93	57.0					3.74	05650			7.99	05650				
5.70		93	57.0	12.26	057 2)	7.56	057	2.22	05700	6.98	057	5.14	05700	6.02	057	13.11	057
5.75		93	57.0			7.56	575	4.29	05750			7.85	05750				
5.80		93	57.0	12.26	058 2)	7.56	058	2.22	05800	6.98	058	5.14	05800	6.02	058	13.26	058
5.85		93	57.0					3.74	05850			9.42	05850				
5.90		93	57.0	13.02	059 2)	7.56	059	2.37	05900	6.98	059	5.14	05900	6.57	059	14.11	059
5.95	15/64	93	57.0	15.94	595 2)	9.68	595	2.37	05950			5.14	05950				
6.00		93	57.0	11.78	060 2)	7.43	060	2.10	06000	6.84	060	5.14	06000	6.02	060	13.96	060
6.05		101	63.0					4.02	06050			11.26	06050				
6.10		101	63.0	13.32	061 2)	8.40	061	2.50	06100	7.85	061	5.14	06100	6.57	061	14.52	061
6.15		101	63.0					4.02	06150			8.40	06150				
6.20		101	63.0	13.13	062 2)	8.40	062	2.50	06200	7.85	062	5.14	06200	6.84	062	14.70	062
6.25		101	63.0					4.02	06250			8.88	06250				
6.30		101	63.0	14.50	063 2)	8.40	063	2.50	06300	7.85	063	5.43	06300	7.56	063	15.80	063
6.35	1/4	101	63.0	15.34	635 2)	8.98	635	2.62	06350			5.27	06350				
6.40		101	63.0	15.37	064 2)	8.98	064	2.62	06400	8.40	064	5.43	06400	7.56	064	15.98	064
6.45		101	63.0					4.43	06450								
6.50		101	63.0	14.15	065 2)	8.29	065	2.50	06500	7.70	065	5.27	06500	6.84	065	14.52	065
6.55		101	63.0					4.71	06550			11.68	06550				
6.60		101	63.0	15.56	066 2)	8.98	066	2.62	06600	8.40	066	6.28	06600	7.70	066	16.99	066

Steel	●	●	●	○		●	●
Stainless steel	○	●		●		○	○
Cast iron	●	●	●	○		○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○			
Hardened materials		○					

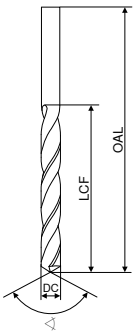
1) uncoated
2) self-centering

→ v_c Page 48+49

Continued on next page

Twist drill to DIN 338, short

≤ 5xD



	UNI	UNI	N	VA	W	WTL	WTL
	TiN	TiN	vap.			F.-nit	TiN
							
	◁ 130°	◁ 118°	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
	HSS-E-PM	HSS-E	HSS	HSS-E	HSS	HSS-E	HSS-E
	T2	T2	T2	T2	T2	T2	T2

DC h8	DC	OAL	LCF	Article no. 10 173 ...		Article no. 10 171 ...		Article no. 10 152 ...		Article no. 10 175 ...		Article no. 10 161 ...		Article no. 10 168 ...		Article no. 10 170 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
6.65		101	63.0					8.43	06650			16.48	06650				
6.70		101	63.0	15.52	067 2)	8.98	067	2.78	06700	8.40	067	6.42	06700	7.70	067	16.99	067
6.75		109	69.0	20.96	675 2)	12.31	675	3.32	06750			9.84	06750				
6.80		109	69.0	15.94	068 2)	10.18	068	3.32	06800	9.28	068	6.84	06800	7.99	068	17.44	068
6.85		109	69.0					5.12	06850			17.02	06850				
6.90		109	69.0	16.27	069 2)	10.18	069	3.32	06900	9.28	069	6.84	06900	8.40	069	17.80	069
6.95		109	69.0					5.26	06950			17.02	06950				
7.00		109	69.0	15.94	070 2)	8.68	070	2.92	07000	7.99	070	6.02	07000	7.26	070	15.55	070
7.05		109	69.0					5.69	07050			9.74	07050				
7.10		109	69.0	18.36	071 2)	11.55	071	3.32	07100	10.83	071	8.27	07100	11.19	071	24.27	071
7.14	9/32	109	69.0	27.47	714 2)	17.25	714										
7.15		109	69.0					9.84	07150								
7.20		109	69.0	18.32	072 2)	11.55	072	3.49	07200	10.83	072	8.27	07200	11.19	072	24.66	072
7.25		109	69.0					9.42	07250			19.93	07250				
7.30		109	69.0	18.97	073 2)	11.55	073	3.49	07300	10.83	073	8.27	07300	11.19	073	24.27	073
7.35		109	69.0					5.69	07350								
7.40		109	69.0	18.54	074 2)	11.55	074	3.60	07400	10.83	074	8.27	07400	11.19	074	24.27	074
7.45		109	69.0			9.28	745	5.53	07450								
7.50		109	69.0	16.88	075 2)	9.28	075	3.32	07500	8.72	075	6.98	07500	8.29	075	17.80	075
7.55		117	75.0					6.51	07550								
7.60		117	75.0	20.48	076 2)	13.56	076	3.88	07600	13.11	076	9.16	07600	12.22	076	26.74	076
7.65		117	75.0					6.51	07650								
7.70		117	75.0	23.32	077 2)	13.96	077	3.88	07700	13.11	077	9.16	07700	12.22	077	26.74	077
7.75		117	75.0					5.82	07750			15.80	07750				
7.80		117	75.0	20.03	078 2)	13.56	078	3.88	07800	13.11	078	9.16	07800	12.22	078	26.74	078
7.85		117	75.0					6.51	07850								
7.90		117	75.0	23.96	079 2)	13.96	079	3.88	07900	13.11	079	10.54	07900	12.22	079	26.74	079
7.94	5/16	117	75.0	21.47	794 2)	13.56	794										
7.95		117	75.0					6.78	07950								
8.00		117	75.0	19.04	080 2)	11.26	080	3.32	08000	10.42	080	7.70	08000	9.28	080	20.39	080
8.05		117	75.0					6.93	08050			20.20	08050				
8.10		117	75.0	20.86	081 2)	13.56	081	4.02	08100	13.11	081	10.83	08100	12.70	081	28.61	081
8.15		117	75.0					7.07	08150			20.20	08150				
8.20		117	75.0	20.48	082 2)	14.52	082	4.02	08200	14.10	082	11.26	08200	13.26	082	29.22	082
8.25		117	75.0					4.84	08250			16.39	08250				
8.30		117	75.0	22.75	083 2)	14.52	083	4.43	08300	14.10	083	11.85	08300	14.11	083	30.78	083
8.35		117	75.0					7.61	08350								
8.40		117	75.0	22.91	084 2)	15.23	084	4.43	08400	14.52	084	11.85	08400	14.11	084	30.78	084
8.45		117	75.0					7.76	08450			27.54	08450				
8.50		117	75.0	19.60	085 2)	11.12	085	4.29	08500	10.28	085	8.88	08500	10.54	085	23.25	085
8.55		125	81.0					9.01	08550			19.91	08550				
8.60		125	81.0			24.86	086	4.84	08600	15.56	086	11.85	08600	15.99	086	34.58	086
8.65		125	81.0					16.06	08650								
8.70		125	81.0			24.86	087	4.84	08700	15.56	087	13.11	08700	15.80	087	35.32	087
8.73	11/32	125	81.0	21.24	873 2)	16.33	873										
8.75		125	81.0					8.02	08750			18.96	08750				

Steel	●	●	●	○		●	●
Stainless steel	○	●		●		○	○
Cast iron	●	●	●	○		○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○			
Hardened materials		○					

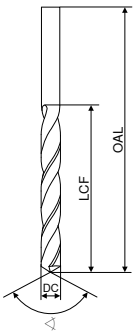
1) uncoated
2) self-centering

→ v_c Page 48+49

Continued on next page

Twist drill to DIN 338, short

≤ 5xD



UNI	UNI	N	VA	W	WTL	WTL
TiN	TiN	vap.			F.-nit	TiN

◁ 130°	◁ 118°	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
HSS-E-PM	HSS-E	HSS	HSS-E	HSS	HSS-E	HSS-E
T2	T2	T2	T2	T2	T2	T2

DC $_{h8}$	DC	OAL	LCF	Article no. 10 173 ...		Article no. 10 171 ...		Article no. 10 152 ...		Article no. 10 175 ...		Article no. 10 161 ...		Article no. 10 168 ...		Article no. 10 170 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
8.80		125	81.0	22.91	088 2)	17.30	088	4.99	08800	16.54	088	13.11	08800	15.80	088	35.32	088
8.90		125	81.0			21.36	089	5.12	08900	17.38	089	13.26	08900	15.98	089	35.90	089
8.95		125	81.0					16.74	08950								
9.00		125	81.0	21.57	090 2)	13.98	090	4.57	09000	13.66	090	9.74	09000	12.26	090	26.51	090
9.05		125	81.0					9.42	09050								
9.10		125	81.0			23.23	091	5.12	09100	18.39	091	14.70	09100	17.44	091	37.36	091
9.15		125	81.0					16.74	09150								
9.20		125	81.0			23.84	092	5.12	09200	19.39	092	14.70	09200	18.39	092	40.20	092
9.25		125	81.0					12.19	09250			22.97	09250				
9.30		125	81.0	24.90	093 2)	21.17	093	5.12	09300	20.50	093	14.70	09300	18.39	093	40.39	093
9.35		125	81.0			16.48	935	18.13	09350								
9.40		125	81.0			26.16	094	5.12	09400	21.95	094	14.70	09400	18.39	094	40.39	094
9.45		125	81.0					10.11	09450								
9.50		125	81.0	22.68	095 2)	16.48	095	5.12	09500	15.80	095	11.12	09500	13.11	095	28.38	095
9.55		133	87.0					11.34	09550								
9.60		133	87.0			23.66	096	5.69	09600	22.80	096	16.99	09600	19.24	096	43.16	096
9.65		133	87.0					11.34	09650								
9.70		133	87.0			27.79	097	5.69	09700	22.80	097	17.30	09700	21.36	097	46.18	097
9.75		133	87.0					7.47	09750								
9.80		133	87.0	27.02	098 2)	23.66	098	6.37	09800	22.80	098	17.30	09800	21.36	098	46.18	098
9.85		133	87.0					11.09	09850								
9.90		133	87.0			21.78	099	6.37	09900	22.80	099	17.59	09900	21.36	099	46.18	099
9.95		133	87.0					12.32	09950								
10.00		133	87.0	25.63	100 2)	16.57	100	5.41	10000	14.97	100	11.68	10000	14.70	100	33.13	100
10.05		133	87.0					15.64	10050			29.94	10050				
10.10		133	87.0			21.39	101	6.78	10100	25.71	101	17.89	10100	33.40	101	73.09	101
10.15		133	87.0					28.09	10150								
10.20		133	87.0	29.59	102 2)	22.41	102	6.93	10200	21.95	102	17.89	10200	20.39	102	44.75	102
10.25		133	87.0					9.28	10250			20.20	10250				
10.30		133	87.0			18.68	103	8.30	10300	33.64	103	17.89	10300	26.93	103	59.72	103
10.35		133	87.0					15.64	10350								
10.40		133	87.0			23.13	104	8.30	10400	33.64	104	17.89	10400	29.22	104	63.50	104
10.45		133	87.0					28.09	10450								
10.50		133	87.0	29.79	105 2)	23.25	105	7.07	10500	22.25	105	14.39	10500	19.05	105	41.70	105
10.55		133	87.0			25.48	955	19.93	10550								
10.60		133	87.0					8.72	10600	60.32	106	25.72	10600	29.22	106		
10.70		142	94.0					10.11	10700	44.05	107	29.48	10700	29.22	107	63.50	107
10.75		142	94.0					11.09	10750			33.91	10750				
10.80		142	94.0					9.84	10800	45.48	108	30.72	10800	27.38	108	61.02	108
10.90		142	94.0					10.38	10900	45.48	109	30.72	10900	35.32	109		
11.00		142	94.0	30.77	110 2)	25.48	110	8.02	11000	24.70	110	17.30	11000	23.25	110	48.74	110
11.10		142	94.0					10.38	11100	47.66	111	21.36	11100	33.64	111		
11.11	7/16	142	94.0	38.57	111 2)	49.13	111										
11.20		142	94.0			49.13	112	10.11	11200	47.66	112	27.04	11200	37.36	112	84.41	112
11.30		142	94.0			49.39	113			47.94	113			37.36	113		
11.40		142	94.0			49.39	114	10.67	11400	47.94	114	43.17	11400	37.36	114		

Steel	●	●	●	○		●	●
Stainless steel	○	●		●		○	○
Cast iron	●	●	●	○		○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○			
Hardened materials		○					

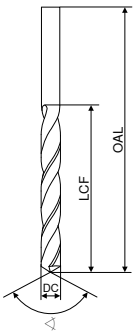
1) uncoated
2) self-centering

→ v_c Page 48+49

Continued on next page

Twist drill to DIN 338, short

≤ 5xD



	UNI	UNI	N	VA	W	WTL	WTL
	TiN	TiN	vap.			F.-nit	TiN
							
	◁ 130°	◁ 118°	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
	HSS-E-PM	HSS-E	HSS	HSS-E	HSS	HSS-E	HSS-E
	T2	T2	T2	T2	T2	T2	T2

DC h8	DC	OAL	LCF	Article no. 10 173 ...		Article no. 10 171 ...		Article no. 10 152 ...		Article no. 10 175 ...		Article no. 10 161 ...		Article no. 10 168 ...		Article no. 10 170 ...	
mm	inch	mm	mm	£		£		£		£		£		£		£	
11.50		142	94.0	34.14	115 2)	32.52	115	8.72	11500	31.55	115	19.24	11500	26.51	115	59.26	115
11.60		142	94.0			56.59	116	10.67	11600	54.78	116	29.94	11600	37.36	116		
11.70		142	94.0					11.09	11700	54.78	117	29.94	11700	37.36	117	84.41	117
11.80		142	94.0					11.21	11800	54.78	118	29.94	11800	40.39	118	88.77	118
11.90		151	101.0					12.32	11900	54.78	119	29.94	11900				
12.00		151	101.0	36.48	120 2)	36.26	120	9.84	12000	34.51	120	21.07	12000	28.38	120	61.58	120
12.15		151	101.0			37.22	121										
12.20		151	101.0					13.03	12200			35.75	12200				
12.25		151	101.0					14.28	12250								
12.30		151	101.0	65.48	123 2)	38.48	123										
12.50		151	101.0	37.96	125 2)	37.22	925	10.93	12500			21.07	12500	34.93	125	78.01	125
12.70		151	101.0	49.58	127 2)	29.19	127	12.19	12700			20.50	12700				
12.80		151	101.0					14.52	12800			37.64	12800	61.60	128	133.80	128
13.00		151	101.0	40.34	130 2)	39.70	130	12.04	13000			24.99	13000	34.93	130	77.44	130
13.10		151	101.0			50.22	131										
13.20		151	101.0					15.64	13200			45.76	13200				
13.30		160	108.0			50.22	133										
13.50		160	108.0	71.72	135 2)	50.22	135	13.85	13500			30.95	13500	46.89	135	104.31	135
13.80		160	108.0					19.93	13800			57.54	13800	54.34	138	118.53	138
14.00		160	108.0	48.87	140 2)	48.15	140	15.36	14000			29.65	14000	42.73	140	92.70	140
14.50		169	114.0					16.48	14500			39.23	14500	52.30	145	111.43	145
14.80		169	114.0											108.90	148	237.13	148
15.00		169	114.0					17.71	15000			35.17	15000	52.58	150	117.24	150
15.25		178	120.0					33.08	15250								
15.50		178	120.0					19.38	15500			49.54	15500	78.15	155	234.64	155
15.80		178	120.0					31.82	15800								
16.00		178	120.0					20.90	16000			46.94	16000	65.96	160	143.97	160
16.50		184	125.0					23.80	16500			78.15	16500				
17.00		184	125.0					25.20	17000			79.62	17000				
17.50		191	130.0					27.54	17500			156.88	17500				
18.00		191	130.0					29.33	18000			85.84	18000				
18.50		198	135.0					31.82	18500								
19.00		198	135.0					34.18	19000			97.93	19000				
19.50		205	140.0					36.26	19500								
20.00		205	140.0					39.70	20000			121.30	20000				

Steel	●	●	●	○		●	●
Stainless steel	○	●		●		○	○
Cast iron	●	●	●	○		○	○
Non ferrous metals	○	●	○	○	●	○	○
Heat resistant alloys	○	○		○			
Hardened materials		○					

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

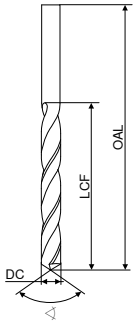
≤ 5xD

WTL

TiCN

WTL-L

F.-nit



130°
HSS-E

130°
HSS

DC h8	OAL	LCF	T2 Article no. 10 172 ...		T2 Article no. 10 169 ...	
mm	mm	mm	£		£	
1.0	34	12			5.27	010 1)
1.3	38	16			5.43	013 1)
1.4	40	18			5.43	014 1)
1.5	40	18			4.38	015 1)
1.6	43	20			4.57	016 1)
1.7	43	20			4.57	017 1)
1.8	46	22			4.71	018 1)
1.9	46	22			4.71	019 1)
2.0	49	24			3.71	020 1)
2.1	49	24			4.42	021 1)
2.2	53	27			4.84	022 1)
2.3	53	27			4.57	023 1)
2.4	57	30			4.57	024
2.5	57	30			4.14	025
2.6	57	30			4.71	026
2.7	61	33			4.71	027
2.8	61	33			4.84	028
2.9	61	33			4.84	029
3.0	61	33	8.98	030	4.42	030
3.1	65	36	9.74	031	5.27	031
3.2	65	36	10.12	032	4.84	032
3.3	65	36	10.83	033	5.14	033
3.4	70	39	11.85	034	5.56	034
3.5	70	39	9.74	035	4.71	035
3.6	70	39	11.26	036	5.84	036
3.7	70	39	11.85	037	6.02	037
3.8	75	43	12.52	038	6.42	038
3.9	75	43	13.11	039	6.84	039
4.0	75	43	10.83	040	5.14	040
4.1	75	43	13.11	041	6.84	041
4.2	75	43	12.26	042	6.28	042
4.3	80	47	13.68	043	7.85	043
4.4	80	47	13.68	044	8.29	044
4.5	80	47	12.52	045	6.57	045
4.6	80	47	14.39	046	8.40	046
4.7	80	47	14.39	047	8.40	047
4.8	86	52	14.39	048	8.40	048
4.9	86	52	14.53	049	8.72	049
5.0	86	52	13.26	050	6.28	050
5.1	86	52	14.53	051	8.72	051
5.2	86	52	15.55	052	9.42	052
5.3	86	52	15.55	053	9.42	053
5.4	93	57	16.54	054	10.18	054
5.5	93	57	15.38	055	7.85	055
5.6	93	57	16.99	056	10.54	056
5.7	93	57	16.99	057	10.54	057
5.8	93	57	17.44	058	10.54	058
5.9	93	57	18.39	059	10.54	059
6.0	93	57	17.44	060	7.85	060
6.1	101	63	19.05	061	11.26	061
6.2	101	63	19.24	062	12.52	062
6.3	101	63	21.36	063	12.52	063
6.4	101	63	21.95	064	12.52	064
6.5	101	63	19.05	065	9.42	065
6.6	101	63	22.11	066	13.66	066
6.7	101	63	22.11	067	13.66	067
6.8	109	69	22.80	068	14.39	068
6.9	109	69	24.27	069	14.70	069
7.0	109	69	20.39	070	11.19	070
7.1	109	69	30.78	071	20.39	071
7.2	109	69	30.78	072	20.39	072
7.3	109	69			20.39	073
7.4	109	69	30.78	074	20.39	074
7.5	109	69	23.54	075	12.70	075
7.7	117	75	34.58	077	21.81	077
7.8	117	75	34.58	078	21.81	078
7.9	117	75			21.81	079
8.0	117	75	26.74	080	12.26	080
8.1	117	75	35.92	081	22.11	081
8.2	117	75	37.36	082	22.11	082
8.3	117	75			22.11	083
8.4	117	75	40.20	084	22.11	084
8.5	117	75	29.35	085	15.38	085
8.6	125	81	45.18	086	24.51	086
8.7	125	81	44.90	087	24.51	087
8.8	125	81	44.90	088	24.51	088
8.9	125	81	47.08	089	24.51	089
9.0	125	81	34.87	090	15.56	090
9.2	125	81			25.71	092
9.3	125	81			25.71	093
9.5	125	81	37.78	095	19.66	095
9.8	133	87			26.93	098
9.9	133	87			28.38	099
10.0	133	87	42.60	100	17.44	100
10.1	133	87			28.38	101
10.2	133	87	56.45	102	29.51	102
10.3	133	87			29.22	103
10.4	133	87			30.22	104
10.5	133	87	54.34	105	41.24	105
11.0	142	94	77.44	110	29.35	110
11.5	142	94	77.44	115	45.67	115
12.0	151	101	82.21	120	33.64	120
12.2	151	101			53.03	122
12.5	151	101			35.92	125
13.0	151	101			37.78	130
14.0	160	108			43.05	140
14.5	169	114			47.66	145
15.0	169	114			73.05	150
16.0	178	120			59.26	160

Steel	●	●
Stainless steel	○	
Cast iron		○
Non ferrous metals		○
Heat resistant alloys		

1) uncoated

→ v_c Page 49

Twist drill sets DIN 338, short

▲ in metal box
▲ in 0.1 mm steps

≤ 5xD

	N	UNI
	vap.	TiN
		
	Drill set type N HSS	Drill set type UNI TiN HSS-E
	T2	T2
$d_{1\ h8}$	Article no. 10 158 ...	Article no. 10 158 ...
mm	£	£
1,0 - 5,9	72.77 050	276.00 054
6,0 - 10,0	151.16 100	432.16 104
Steel	●	●
Stainless steel		●
Cast iron	●	●
Non ferrous metals		●
Heat resistant alloys		○

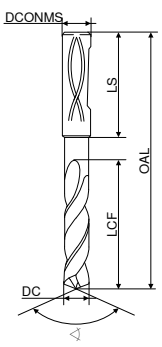
→ v_c Page 48

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 1000 N/mm²

≤ 5xD



WNXi

HSS-E

WNXi
TiN

HSS-E

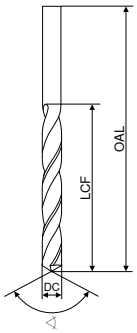
DC h8	OAL	LCF	DCONMS h6	LS	T2 Article no. 10 180 ... £		T2 Article no. 10 181 ... £	
mm	mm	mm	mm	mm				
5.0	82	44	6	38	58.69	050	87.16	050
5.5	82	44	6	38	102.39	055	88.50	055
6.0	82	44	6	38	57.68	060	83.67	060
6.5	91	53	8	38	61.14	065	92.11	065
6.8	91	53	8	38	63.34	068	94.13	068
7.0	91	53	8	38	65.10	070	93.57	070
7.5	91	53	8	38	109.71	075	95.00	075
7.8	91	53	8	38	65.10	078	96.91	078
8.0	91	53	8	38	61.47	080	91.24	080
8.5	103	61	10	42	67.70	085	100.40	085
9.0	103	61	10	42	68.29	090	100.06	090
9.5	103	61	10	42	68.28	095	103.29	095
10.0	103	61	10	42	66.24	100	98.49	100
10.2	118	71	12	47	73.40	102	110.98	102
10.5	118	71	12	47	73.40	105	111.72	105
11.0	118	71	12	47	132.53	110	113.88	110
11.5	118	71	12	47	79.32	115	117.39	115
12.0	118	71	12	47	71.55	120	107.67	120
12.5	124	77	14	47	87.66	125	135.68	125
13.0	124	77	14	47	90.67	130	137.72	130
13.5	124	77	14	47	92.70	135	139.75	135
14.0	124	77	14	47	87.31	140	132.78	140
14.5	133	83	16	50	107.96	145	163.73	145
15.0	133	83	16	50	107.16	150	166.50	150
15.5	133	83	16	50	111.85	155	169.97	155
16.0	133	83	16	50	105.91	160	162.25	160
16.5	143	93	18	50	132.35	165	196.55	165
17.0	143	93	18	50	134.23	170	203.55	170
17.5	143	93	18	50	138.29	175	210.50	175
18.0	143	93	18	50	130.31	180	193.07	180
18.5	153	101	20	52	156.88	185	235.20	185
19.0	153	101	20	52	158.62	190	238.68	190
19.5	153	101	20	52	278.64	195	242.16	195
20.0	153	101	20	52	153.55	200	231.72	200

Steel	●	●
Stainless steel	●	●
Cast iron	●	●
Non ferrous metals	○	○
Heat resistant alloys	○	○

→ v_c Page 49

Twist drills with coolant hole, factory standard, long

≤ 10xD



NC

HSS

NC
TiAlN

HSS

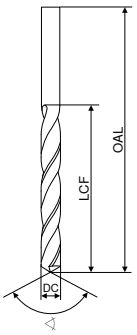
DC h8	OAL	LCF	T2 Article no. 10 223 ... £		T2 Article no. 10 224 ... £	
mm	mm	mm				
3.0	100	66	112.74	030	119.01	030
3.3	106	69	117.08	033	136.13	033
3.5	112	73	113.28	035	134.68	035
3.8	119	78			166.50	038
4.0	119	78	116.38	040	135.38	040
4.2	119	78	116.14	042	137.72	042
4.5	126	82	117.66	045	136.86	045
4.8	132	87			165.19	048
5.0	132	87	116.14	050	138.45	050
5.5	139	91	119.01	055	143.38	055
5.8	139	91			166.06	058
6.0	139	91	126.24	060	148.90	060
6.5	148	97	133.94	065	159.50	065
6.8	156	102	134.83	068	160.24	068
7.0	156	102	134.83	070	160.24	070
7.5	156	102	138.88	075	165.75	075
7.8	165	109			176.22	078
8.0	165	109	141.78	080	168.97	080
8.5	165	109	148.17	085	176.51	085
8.8	175	115			181.00	088
9.0	175	115	148.17	090	180.58	090
9.5	175	115	153.84	095	186.81	095
9.8	184	121			192.79	098
10.0	184	121	153.84	100	186.81	100
10.2	184	121	156.77	102	192.79	102
10.5	184	121	156.77	105	194.23	105
10.8	195	128			199.30	108
11.0	195	128	156.77	110	194.23	110
11.5	195	128	160.24	115	198.00	115
11.8	205	134			229.23	118
12.0	205	134	161.53	120	201.20	120
12.8	205	134			240.27	128
13.0	205	134	169.39	130	211.94	130

Steel	●	●
Stainless steel	○	○
Cast iron	●	●
Non ferrous metals	○	○
Heat resistant alloys	○	○

→ v_c Page 50

Twist drills, DIN 340, long

≤ 10xD



	UNI	WTL	WTL	WTL	WTW
	TiN	F.-nit	F.-nit	TiN	
					
	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
	HSS-E	HSS-E	HSS	HSS	HSS
	T2	T2	T2	T2	T2
DC h8	Article no. 10 270 ...	Article no. 10 225 ...	Article no. 10 215 ...	Article no. 10 210 ...	Article no. 10 200 ...
mm	£	£	£	£	£

DC h8 mm	OAL mm	LCF mm	10 270 ... £		10 225 ... £		10 215 ... £		10 210 ... £		10 200 ... £	
1.0	56	33	7.53	010	8.29	010 1)	6.57	010 1)	14.52	010	6.02	010
1.1	60	37	8.41	011	10.12	011 1)	7.26	011 1)	16.99	011	6.57	011
1.2	65	41	9.39	012	9.74	012 1)	6.84	012 1)	14.52	012	6.02	012
1.3	65	41	9.25	013	9.42	013 1)	6.84	013 1)	15.12	013	5.82	013
1.4	70	45	9.14	014	8.98	014 1)	6.28	014 1)	13.68	014	5.43	014
1.5	70	45	7.95	015	7.85	015 1)	5.43	015 1)	11.85	015	5.43	015
1.6	76	50	9.39	016	8.68	016 1)	5.27	016 1)	11.62	016	5.00	016
1.7	76	50	10.26	017	8.72	017 1)	7.07	017 1)	11.62	017	4.84	017
1.8	80	53	9.79	018	8.72	018 1)	5.14	018 1)	11.12	018	4.84	018
1.9	80	53	10.47	019	7.99	019 1)	6.93	019 1)	11.19	019	4.84	019
2.0	85	56	7.77	020	6.28	020 1)	4.84	020 1)	10.42	020	4.14	020
2.1	85	56	8.97	021	7.56	021 1)	5.43	021 1)	12.22	021	4.84	021
2.2	90	59	9.14	022	7.70	022 1)	5.56	022 1)	12.26	022	4.84	022
2.3	90	59	8.97	023	7.70	023 1)	5.56	023 1)	12.67	023	4.84	023
2.4	95	62	8.30	024	7.85	024	5.82	024	12.70	024	4.84	024
2.5	95	62	7.95	025	6.57	025	5.00	025	11.19	025	4.38	025
2.6	95	62	9.14	026	7.85	026	5.82	026	12.70	026	4.84	026
2.7	100	66	9.67	027	11.21	027	5.84	027	13.08	027	4.84	027
2.8	100	66	9.25	028	7.99	028	5.84	028	13.08	028	4.84	028
2.9	100	66	9.67	029	7.99	029	5.84	029	13.11	029	4.84	029
3.0	100	66	8.57	030	6.84	030	5.14	030	11.12	030	4.57	030
3.1	106	69	10.26	031	8.29	031	6.84	031	14.70	031	6.02	031
3.2	106	69	9.50	032	7.99	032	5.82	032	12.67	032	4.84	032
3.3	106	69	10.08	033	8.68	033	6.57	033	14.10	033	5.43	033
3.4	112	73	10.47	034	8.40	034	6.84	034	15.12	034	6.02	034
3.5	112	73	10.26	035	7.99	035	5.84	035	12.70	035	5.14	035
3.6	112	73	10.62	036	12.04	036	10.11	036	16.10	036	6.28	036
3.7	112	73	10.33	037	8.72	037	6.98	037	15.56	037	6.57	037
3.8	119	78	9.93	038	8.68	038	7.26	038	15.56	038	6.57	038
3.9	119	78	11.13	039	8.85	039	7.26	039	15.55	039	6.84	039
4.0	119	78	10.87	040	8.72	040	6.42	040	13.68	040	5.56	040
4.1	119	78	11.06	041	8.98	041	7.43	041	15.98	041	6.84	041
4.2	119	78	10.62	042	9.42	042	7.26	042	15.56	042	5.84	042
4.3	126	82	11.85	043	9.74	043	7.99	043	17.38	043	7.56	043
4.4	126	82	10.47	044	9.68	044	11.09	044	18.25	044	7.70	044
4.5	126	82	11.13	045	10.12	045	7.26	045	15.80	045	6.84	045
4.6	126	82	10.73	046	10.18	046	8.27	046	18.25	046	7.70	046
4.7	126	82	12.42	047	10.54	047	11.09	047	18.25	047	7.85	047
4.8	132	87	12.09	048	11.12	048	8.27	048	18.25	048	7.99	048
4.9	132	87	12.25	049	11.62	049	8.72	049	25.31	049	8.29	049
5.0	132	87	12.42	050	10.12	050	7.70	050	16.54	050	6.57	050
5.1	132	87	13.73	051	11.85	051	11.90	051	19.47	051	8.40	051
5.2	132	87	13.47	052	12.26	052	9.42	052	20.39	052	8.68	052
5.3	132	87	14.82	053	12.67	053	12.73	053	20.67	053	8.85	053

Steel	●	●	●	●	
Stainless steel	○	●			
Cast iron	●	●	●	●	
Non ferrous metals	○	●	●	●	●
Heat resistant alloys					

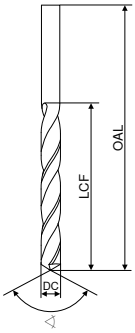
1) uncoated

→ v_c Page 50

Continued on next page

Twist drills, DIN 340, long

≤ 10xD



	UNI	WTL	WTL	WTL	WTW
	TiN	F.-nit	F.-nit	TiN	
					
	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
	HSS-E	HSS-E	HSS	HSS	HSS
	T2	T2	T2	T2	T2
DC h8	Article no. 10 270 ...	Article no. 10 225 ...	Article no. 10 215 ...	Article no. 10 210 ...	Article no. 10 200 ...
mm	£	£	£	£	£

DC h8 mm	OAL mm	LCF mm	10 270 ... £		10 225 ... £		10 215 ... £		10 210 ... £		10 200 ... £	
5.4	139	91	16.19	054	12.52	054	9.68	054	21.95	054	8.98	054
5.5	139	91	12.90	055	12.22	055	8.85	055	19.82	055	8.40	055
5.6	139	91	16.87	056	13.11	056	10.83	056	23.84	056	13.56	056
5.7	139	91	18.63	057	13.26	057	11.12	057	24.70	057	10.18	057
5.8	139	91	16.36	058	13.66	058	11.62	058	24.51	058	10.54	058
5.9	139	91	18.24	059	13.68	059	11.85	059	26.31	059	10.83	059
6.0	139	91	15.50	060	12.67	060	9.42	060	20.39	060	8.72	060
6.1	148	97	18.39	061	14.52	061	17.02	061	27.50	061	12.67	061
6.2	148	97	16.49	062	14.39	062	13.08	062	27.95	062	12.52	062
6.3	148	97	18.39	063	14.53	063	17.71	063	28.78	063	12.70	063
6.4	148	97	16.72	064	15.38	064	18.96	064	31.08	064	13.26	064
6.5	148	97	16.07	065	13.96	065	10.28	065	22.80	065	9.74	065
6.6	148	97	18.52	066	15.99	066	14.52	066	31.65	066	13.66	066
6.7	148	97	19.00	067	15.98	067	19.93	067	32.20	067	13.68	067
6.8	156	102	20.39	068	17.44	068	15.99	068	35.02	068	14.52	068
6.9	156	102	21.13	069	17.80	069	21.46	069	34.51	069	14.39	069
7.0	156	102	19.18	070	15.55	070	12.22	070	26.74	070	11.68	070
7.1	156	102	18.52	071	18.39	071	21.73	071			14.53	071
7.2	156	102	21.21	072	18.96	072	16.54	072	36.35	072	21.32	072
7.3	156	102	22.17	073	19.24	073	22.70	073	37.36	073	21.46	073
7.4	156	102	22.97	074	28.66	074	22.98	074	36.91	074	21.73	074
7.5	156	102	23.37	075	18.39	075	14.70	075	32.54	075	13.96	075
7.6	165	109	25.08	076			23.54	076	37.93	076	15.98	076
7.7	165	109	23.69	077	22.11	077	24.07	077			16.39	077
7.8	165	109	26.10	078	22.80	078	18.25	078	39.34	078	16.54	078
7.9	165	109	25.17	079	23.25	079	24.49	079	37.94	079	23.80	079
8.0	165	109	21.37	080	17.25	080	14.10	080	30.95	080	13.08	080
8.1	165	109	23.55	081	33.50	081	18.39	081	40.63	081	17.38	081
8.2	165	109	25.69	082	24.70	082	18.82	082	41.70	082	17.54	082
8.3	165	109	27.23	083	24.51	083	25.31	083	42.13	083	17.80	083
8.4	165	109	29.27	084	25.71	084	19.82	084	42.60	084	25.60	084
8.5	165	109	25.08	085	21.95	085	18.25	085	39.76	085	16.95	085
8.6	175	115	24.90	086	26.31	086	27.26	086	44.17	086	19.05	086
8.7	175	115	25.17	087	26.74	087	20.50	087	44.62	087		
8.8	175	115	25.57	088	26.93	088	20.67	088	44.90	088	19.24	088
8.9	175	115	25.99	089	28.61	089	29.48	089	63.64	089	28.66	089
9.0	175	115	26.35	090	21.36	090	16.99	090	37.36	090	15.80	090
9.1	175	115	26.35	091	40.28	091	23.25	091	49.98	091	30.16	091
9.2	175	115	26.35	092	31.08	092	34.87	092			31.98	092
9.3	175	115	26.35	093	31.22	093	26.74	093			24.27	093
9.4	175	115	26.35	094	44.27	094					34.87	094
9.5	175	115	26.35	095	28.19	095	25.52	095	56.22	095	24.27	095
9.6	184	121	27.90	096			41.24	096			41.24	096
9.7	184	121	29.27	097	38.35	097	33.13	097	71.55	097		

Steel	●	●	●	●	
Stainless steel	○	●			
Cast iron	●	●	●	●	
Non ferrous metals	○	●	●	●	●
Heat resistant alloys					

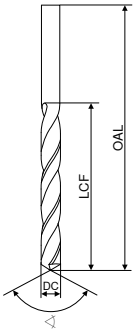
1) uncoated

→ v_c Page 50

Continued on next page

Twist drills, DIN 340, long

≤ 10xD



	UNI	WTL	WTL	WTL	WTW
	TiN	F.-nit	F.-nit	TiN	
	◁ 118°	◁ 130°	◁ 130°	◁ 130°	◁ 130°
	HSS-E	HSS-E	HSS	HSS	HSS
	T2	T2	T2	T2	T2
DC h8 / OAL / LCF	Article no. 10 270 ...	Article no. 10 225 ...	Article no. 10 215 ...	Article no. 10 210 ...	Article no. 10 200 ...
mm / mm / mm	£	£	£	£	£
9.8 / 184 / 121	31.27 098	38.35 098	35.02 098	76.56 098	31.22 098
9.9 / 184 / 121	33.98 099	38.35 099	48.97 099	108.90 099	
10.0 / 184 / 121	36.74 100	32.11 100	20.39 100	45.18 100	18.39 100
10.1 / 184 / 121	40.13 101		45.48 101	99.80 101	
10.2 / 184 / 121	42.87 102	41.26 102	35.92 102	79.10 102	80.39 102
10.3 / 184 / 121	46.25 103		54.78 103		54.34 103
10.4 / 184 / 121	46.25 104		65.82 104		78.46 104
10.5 / 184 / 121	46.95 105	43.05 105	36.35 105	81.94 105	35.90 105
10.6 / 184 / 121				150.21 106	
10.8 / 195 / 128		49.11 108	54.18 108		68.21 108
11.0 / 195 / 128	55.73 110	47.31 110	30.95 110	65.84 110	29.22 110
11.5 / 195 / 128	56.46 115	58.97 115	51.43 115	110.02 115	47.66 115
11.6 / 195 / 128					63.92 116
11.8 / 195 / 128		65.36 118	62.03 118		57.25 118
12.0 / 205 / 134	57.11 120	59.26 120	36.91 120	83.38 120	35.92 120
12.2 / 205 / 134					66.83 122
12.3 / 205 / 134					57.25 123
12.5 / 205 / 134	62.56 125		38.35 125	85.42 125	37.78 125
13.0 / 205 / 134	68.04 130		40.84 130	89.64 130	40.20 130
13.5 / 214 / 140	69.36 135		74.39 135		
14.0 / 214 / 140	72.11 140		68.29 140	153.55 140	67.84 140
Steel	●	●	●	●	
Stainless steel	○	●			
Cast iron	●	●	●	●	
Non ferrous metals	○	●	●	●	●
Heat resistant alloys					

1) uncoated

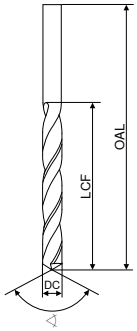
→ v_c Page 50

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

> 10xD

WTL

F.-nit



DC h8	OAL	LCF	T2 Article no. 10 235 ...	
mm	mm	mm	£	
2.0	125	85	8.98	020 1)
2.1	125	85	11.12	021 1)
2.2	135	90	11.12	022 1)
2.3	135	90	11.12	023 1)
2.4	140	95	11.68	024
2.5	140	95	8.98	025
2.6	140	95	11.68	026
2.7	150	100	12.26	027
2.8	150	100	12.26	028
2.9	150	100	12.26	029
3.0	150	100	10.42	030
3.1	155	105	12.70	031
3.2	155	105	12.70	032
3.3	155	105	12.70	033
3.4	165	115	13.08	034
3.5	165	115	10.42	035
3.6	165	115	13.08	036
3.7	165	115	14.11	037
3.8	175	120	14.11	038
3.9	175	120	14.11	039
4.0	175	120	10.54	040
4.1	175	120	14.11	041
4.2	175	120	14.39	042
4.3	185	125	15.99	043
4.4	185	125	15.99	044
4.5	185	125	11.26	045
4.6	185	125	15.99	046
4.7	185	125	16.57	047
4.8	195	135	16.54	048
4.9	195	135	17.25	049
5.0	195	135	12.22	050
5.1	195	135	17.80	051
5.2	195	135	18.39	052
5.3	195	135	18.39	053
5.4	205	140	18.39	054
5.5	205	140	13.11	055
5.6	205	140	18.39	056
5.7	205	140	19.05	057
5.8	205	140	18.96	058
5.9	205	140	18.96	059
6.0	205	140	13.11	060
6.1	215	150	20.39	061
6.2	215	150	20.50	062
6.3	215	150	21.95	063
6.4	215	150	22.11	064
6.5	215	150	17.80	065
6.6	215	150	22.11	066
6.7	215	150	23.54	067
6.8	225	155	23.09	068
6.9	225	155	24.70	069
7.0	225	155	19.05	070
7.1	225	155	37.78	071
7.3	225	155	37.78	073
7.4	225	155	37.78	074
7.5	225	155	21.36	075
7.7	240	165	29.51	077
7.8	240	165	31.08	078
7.9	240	165	31.22	079
8.0	240	165	23.09	080
8.1	240	165	35.49	081
8.2	240	165	35.49	082
8.3	240	165	35.49	083
8.4	240	165	37.36	084
8.5	240	165	29.78	085
8.6	250	175	53.57	086
8.7	250	175	40.20	087
8.8	250	175	42.29	088
9.0	250	175	32.41	090
9.2	250	175	47.94	092
9.4	250	175	51.43	094
9.5	250	175	37.48	095
9.6	265	185	52.87	096
9.7	265	185	52.87	097
9.8	265	185	53.75	098
9.9	265	185	53.75	099
10.0	265	185	33.40	100
10.5	265	185	59.26	105
11.0	280	195	43.62	110
11.5	280	195	53.60	115
12.0	295	205	50.84	120
12.5	295	205	62.18	125
13.0	295	205	61.91	130

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	

1) uncoated

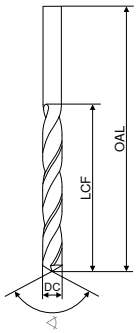
→ v_c Page 51

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

> 10xD

WTL

F.-nit



HSS

DC h8	OAL	LCF	T2 Article no. 10 245 ...	
mm	mm	mm	£	
2.0	160	110	17.80	020 1)
2.5	180	120	17.80	025
3.0	190	130	14.10	030
3.5	210	145	13.96	035
4.0	220	150	14.70	040
4.5	235	160	15.99	045
5.0	245	170	15.99	050
5.5	260	180	19.24	055
6.0	260	180	18.96	060
6.5	275	190	21.81	065
7.0	290	200	24.27	070
7.5	290	200	28.61	075
8.0	305	210	28.19	080
8.5	305	210	44.17	085
9.0	320	220	43.16	090
9.5	320	220	49.17	095
10.0	340	235	45.48	100
10.5	340	235	65.96	105
11.0	365	250	64.37	110
11.5	365	250	74.39	115
12.0	375	260	72.53	120
12.5	375	260	72.53	125
13.0	375	260	75.25	130

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	

1) uncoated

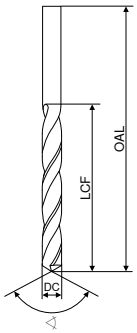
→ v_c Page 51

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

> 10xD

WTL

F.-nit



HSS

DC h8	OAL	LCF	T2 Article no. 10 255 ...	
mm	mm	mm	£	
2.5	225	150	23.09	025
3.0	240	160	23.09	030
3.5	265	180	19.05	035
4.0	280	190	19.05	040
4.5	295	200	22.80	045
5.0	315	210	22.80	050
5.5	330	225	24.70	055
6.0	330	225	25.52	060
6.5	350	235	28.19	065
7.0	370	250	35.90	070
7.5	370	250	41.26	075
8.0	390	265	41.19	080
8.5	390	265	53.33	085
9.0	410	280	57.25	090
9.5	410	280	93.26	095
10.0	430	295	66.83	100
10.5	430	295	73.09	105
11.0	455	310	77.44	110
11.5	455	310	85.84	115
12.0	480	330	91.53	120
12.5	480	330	85.84	125
13.0	480	330	86.59	130

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	

→ v_c Page 51

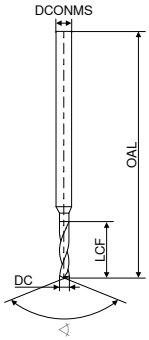
Micro drills, DIN 1899

- 4 facet
- with reinforced shank

Scope of supply:

- pack quantity 5 pieces
- price per piece

N



118°
HSS-E-PM

DC $_{-0,004}$	OAL	LCF	DCONMS $_{h8}$	T2 Article no. 10 103 ...	
mm	mm	mm	mm	£	
0.15	25	0.8	1.0	5.33	00150
0.20	25	1.5	1.0	4.38	00200
0.25	25	1.9	1.0	2.98	00250
0.30	25	1.9	1.0	3.34	00300
0.35	25	2.4	1.0	3.08	00350
0.40	25	3.0	1.0	3.08	00400
0.45	25	3.0	1.0	3.08	00450
0.50	25	3.4	1.0	3.08	00500
0.55	25	3.9	1.0	3.08	00550
0.60	25	3.9	1.0	3.08	00600
0.65	25	4.2	1.0	3.08	00650
0.70	25	4.8	1.0	2.98	00700
0.75	25	4.8	1.0	2.98	00750
0.80	25	5.3	1.5	3.08	00800
0.85	25	5.3	1.5	3.21	00850
0.90	25	6.0	1.5	3.21	00900
0.95	25	6.0	1.5	3.21	00950
1.00	25	6.8	1.5	3.21	01000
1.05	25	6.8	1.5	3.21	01050
1.10	25	7.6	1.5	3.21	01100
1.15	25	7.6	1.5	3.21	01150
1.20	25	8.5	1.5	3.21	01200
1.25	25	8.5	1.5	3.21	01250
1.30	25	8.5	1.5	3.29	01300
1.35	25	9.5	1.5	3.21	01350
1.40	25	9.5	1.5	3.21	01400
1.45	25	9.5	1.5	3.21	01450

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○

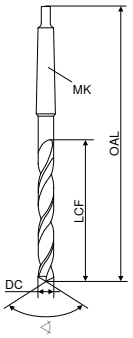
→ v_c Page 52

Twist drill, factory standard, short

≤ 3xD

WT

vap.



MK
130°
HSS-E

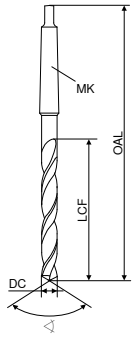
DC $_{h8}$	OAL	LCF	MK	T2 Article no. 10 285 ...	
mm	mm	mm		£	
10.0	138	57	1	43.28	100
10.5	138	57	1	62.27	105
11.0	142	61	1	37.78	110
11.5	142	61	1	49.32	115
12.0	147	66	1	43.73	120
12.5	147	66	1	47.08	125
13.0	147	66	1	45.48	130
13.5	168	70	2	56.88	135
14.0	168	70	2	56.45	140
14.5	172	74	2	60.56	145
15.0	172	74	2	60.14	150
15.5	176	78	2	90.07	155
16.0	176	78	2	56.88	160
16.5	179	81	2	91.53	165
17.0	179	81	2	59.72	170
17.5	183	85	2	95.90	175
18.0	183	85	2	63.41	180
18.5	186	88	2	96.78	185
19.0	186	88	2	70.60	190
19.5	212	91	3	114.34	195
20.0	212	91	3	81.94	200
21.0	216	95	3	90.49	210
22.0	219	98	3	96.78	220
23.0	222	101	3	103.14	230
24.0	225	104	3	105.47	240
25.0	225	104	3	109.82	250
26.0	256	107	4	152.53	260
27.0	259	110	4	162.99	270
28.0	259	110	4	166.61	280
30.0	263	114	4	182.02	300

Steel	●
Stainless steel	○
Cast iron	○
Non ferrous metals	○
Heat resistant alloys	○

→ v_c Page 47

Twist drills, DIN 345

≤ 5xD



N
vap.

MK
118°
HSS

WTL
F.-nit

MK
130°
HSS-E

DC h8	OAL	LCF	MK	T2 Article no. 10 265 ...		T2 Article no. 10 280 ...	
mm	mm	mm		£		£	
10.00	168	87	1	16.95	100	42.13	100
10.20	168	87	1	19.24	102	42.60	102
10.50	168	87	1	17.38	105	42.60	105
10.80	175	94	1	23.25	108	47.66	108
11.00	175	94	1	17.80	110	45.48	110
11.20	175	94	1	24.70	112		
11.50	175	94	1	20.67	115	55.22	115
11.80	175	94	1	26.31	118		
12.00	182	101	1	19.05	120	47.66	120
12.20	182	101	1	26.51	122	51.17	122
12.50	182	101	1	19.66	125	48.74	125
12.80	182	101	1	26.93	128		
13.00	182	101	1	20.39	130	53.47	130
13.20	182	101	1	27.38	132		
13.50	189	108	1	23.09	135	63.50	135
13.80	189	108	1	29.51	138		
14.00	189	108	1	21.95	140	56.45	140
14.25	212	114	2	32.08	142	85.42	142
14.50	212	114	2	22.80	145	66.83	145
14.75	212	114	2	34.87	147		
15.00	212	114	2	24.27	150	67.70	150
15.25	218	120	2	32.41	152	85.79	152
15.50	218	120	2	25.52	155	63.99	155
15.75	218	120	2	29.51	157	71.55	157
16.00	218	120	2	25.52	160	69.69	160
16.25	223	125	2	39.21	162		
16.50	223	125	2	28.19	165	71.55	165 1)
16.75	223	125	2	32.41	167		
17.00	223	125	2	29.22	170	67.70	170 1)
17.25	228	130	2	35.92	172	79.10	172 1)
17.50	228	130	2	29.35	175	74.39	175 1)
17.75	228	130	2	36.47	177	81.94	177 1)
18.00	228	130	2	30.78	180	77.85	180 1)
18.25	233	135	2	37.78	182		
18.50	233	135	2	33.64	185	74.39	185 1)
18.75	233	135	2	39.21	187		
19.00	233	135	2	33.98	190	79.10	190 1)
19.25	238	140	2	42.29	192		
19.50	238	140	2	38.35	195		
19.75	238	140	2	44.17	197		
20.00	238	140	2	35.90	200	86.72	200 1)
20.25	243	145	2	47.31	202		
20.50	243	145	2	37.36	205		
20.75	243	145	2	47.74	207		
21.00	243	145	2	40.69	210	102.57	210 1)
21.25	248	150	2	50.56	212		
21.50	248	150	2	46.65	215		
21.75	248	150	2	51.59	217		
22.00	248	150	2	45.18	220	110.26	220 1)
22.25	248	150	2	53.03	222		
22.50	253	155	2	47.74	225	135.68	225 1)
22.75	253	155	2	54.44	227		
23.00	253	155	2	52.87	230	127.26	230 1)
23.50	276	155	3	51.59	235		
23.75	281	160	3	72.34	237		
24.00	281	160	3	55.22	240	139.03	240 1)
24.50	281	160	3	57.25	245		
24.75	281	160	3	79.32	247		
25.00	281	160	3	60.72	250	141.05	250 1)
25.50	286	165	3	61.99	255		
25.75	286	165	3	82.21	257		
26.00	286	165	3	69.90	260	163.73	260 1)
26.50	286	165	3	66.28	265		
26.75	291	170	3	104.32	267		
27.00	291	170	3	68.28	270	189.15	270 1)
27.50	291	170	3	71.74	275		
27.75	291	170	3	102.12	277		
28.00	291	170	3	75.38	280		
28.50	296	175	3	94.31	285		
28.75	296	175	3	146.92	287		
29.00	296	175	3	81.54	290		
29.50	296	175	3	85.13	295		
29.75	296	175	3	108.52	297		
30.00	296	175	3	81.54	300		
30.50	301	180	3	101.56	305		
31.00	301	180	3	98.64	310		
31.50	301	180	3	112.01	315		
32.00	334	185	4	103.57	320		
32.50	334	185	4	119.28	325		
33.00	334	185	4	111.42	330		
33.50	334	185	4	123.48	335		
34.00	339	190	4	130.45	340		
34.50	339	190	4	143.97	345		
35.00	339	190	4	132.64	350		
35.50	339	190	4	153.27	355		
36.00	344	195	4	142.52	360		
36.50	344	195	4	160.24	365		
37.00	344	195	4	156.02	370		
37.50	344	195	4	175.78	375		
38.00	349	200	4	165.19	380		
38.50	349	200	4	198.30	385		
39.00	349	200	4	180.88	390		
39.50	349	200	4	226.77	395		
40.00	349	200	4	187.82	400		
41.00	354	205	4	202.08	410		
42.00	354	205	4	219.65	420		
43.00	359	210	4	233.86	430		
44.00	359	210	4	244.51	440		
45.00	359	210	4	255.10	450		
46.00	364	215	4	265.69	460		
47.00	364	215	4	283.28	470		
48.00	369	220	4	290.54	480		
49.00	369	220	4	304.63	490		
50.00	369	220	4	311.75	500		
51.00	412	225	5	375.51	510		
52.00	412	225	5	403.85	520		
53.00	412	225	5	586.87	530		
54.00	417	230	5	606.52	540		
55.00	417	230	5	616.35	550		
56.00	417	230	5	635.84	560		
57.00	422	235	5	665.16	570		
58.00	422	235	5	704.33	580		
59.00	422	235	5	743.35	590		
60.00	422	235	5	552.47	600		

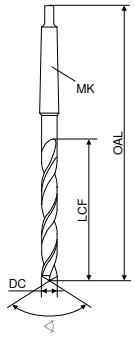
Steel	●	●
Stainless steel		○
Cast iron	●	○
Non ferrous metals	○	○
Heat resistant alloys		

1) vaporised

→ v_c Page 49

Twist drills, DIN 341, long

≤ 10xD



N
vap.

MK
118°
HSS

WTL
F.-nit

MK
130°
HSS-E

DC h8 mm	OAL mm	LCF mm	MK	T2 Article no. 10 295 ... £		T2 Article no. 10 297 ... £	
10.00	197	116	1	23.09	100	57.70	100
10.20	197	116	1	26.31	102	54.93	102
10.50	197	116	1	31.69	105	61.86	105
10.80	206	125	1	40.96	108		
11.00	206	125	1	24.70	110	44.90	110
11.20	206	125	1	32.20	112	55.50	112
11.50	206	125	1	24.70	115	47.08	115
11.80	206	125	1	33.13	118	41.70	118
12.00	215	134	1	24.70	120	47.08	120
12.20	215	134	1	43.60	122	41.13	122
12.50	215	134	1	24.51	125	63.64	125
12.80	215	134	1	47.19	128	40.63	128
13.00	215	134	1	24.51	130	48.74	130
13.20	215	134	1	47.19	132		
13.50	223	142	1	27.75	135	50.75	135
13.80	223	142	1	45.48	138	46.65	138
14.00	223	142	1	27.50	140	57.25	140
14.25	245	147	2	43.05	142		
14.50	245	147	2	34.93	145	55.64	145
14.75	245	147	2	43.05	147		
15.00	245	147	2	34.51	150	58.97	150
15.25	251	153	2	43.05	152		
15.50	251	153	2	33.64	155	57.81	155
15.75	251	153	2	44.17	157		
16.00	251	153	2	35.92	160	60.03	160
16.25	257	159	2	48.74	162		
16.50	257	159	2	37.93	165	59.15	165 [1]
16.75	257	159	2	47.66	167		
17.00	257	159	2	38.36	170	68.29	170 [1]
17.25	263	165	2	71.82	172		
17.50	263	165	2	43.05	175	65.54	175 [1]
17.75	263	165	2	53.75	177		
18.00	263	165	2	42.60	180	69.69	180 [1]
18.25	269	171	2	64.08	182		
18.50	269	171	2	47.74	185	65.54	185 [1]
18.75	269	171	2	81.35	187		
19.00	269	171	2	47.94	190	79.10	190 [1]
19.25	275	177	2	65.84	192		
19.50	275	177	2	55.22	195	80.04	195 [1]
19.75	275	177	2	75.11	197		
20.00	275	177	2	52.46	200	86.14	200 [1]
20.50	282	184	2	65.82	205	84.70	205 [1]
21.00	282	184	2	60.03	210	101.27	210 [1]
21.50	289	191	2	69.69	215		
21.75	289	191	2	126.18	217		
22.00	289	191	2	65.54	220	110.02	220 [1]
22.50	296	198	2	72.34	225		
23.00	296	198	2	68.01	230		
23.50	319	198	3	81.11	235		
24.00	327	206	3	83.38	240	141.05	240 [1]
24.50	327	206	3	89.64	245		
25.00	327	206	3	82.51	250	146.43	250 [1]
25.50	335	214	3	98.61	255		
26.00	335	214	3	96.47	260	171.27	260 [1]
26.50	335	214	3	103.14	265		
27.00	343	222	3	103.14	270		
27.50	343	222	3	127.99	275		
28.00	343	222	3	114.91	280		
29.00	351	230	3	132.78	290		
29.50	351	230	3	148.61	295		
30.00	351	230	3	132.20	300		
30.50	360	239	3	169.25	305		
31.00	360	239	3	160.40	310		
31.50	360	239	3	178.83	315		
32.00	397	248	4	172.01	320		
33.00	397	248	4	172.01	330		
33.50	397	248	4	199.60	335		
34.00	406	257	4	213.12	340		
35.00	406	257	4	206.28	350		
36.00	416	267	4	237.22	360		
37.00	416	267	4	268.16	370		
37.50	416	267	4	288.78	375		
38.00	426	277	4	257.85	380		
39.00	426	277	4	275.12	390		
40.00	426	277	4	288.78	400		
42.00	436	287	4	326.71	420		
43.00	447	298	4	350.55	430		
44.00	447	298	4	350.55	440		
45.00	447	298	4	483.96	450		
50.00	470	321	4	481.26	500		

Steel	●	●
Stainless steel		●
Cast iron	●	●
Non ferrous metals	○	●
Heat resistant alloys		

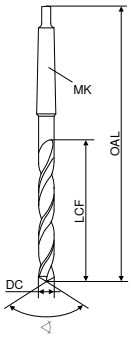
1) vaporised

→ v_c Page 50

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

> 10xD

WTL



HSS

DC h8	OAL	LCF	MK	T2 Article no. 10 305 ...	£	
mm	mm	mm				
10.0	285	185	1	44.62	100	1)
10.5	285	185	1	54.18	105	1)
11.0	300	195	1	50.75	110	1)
11.5	300	195	1	53.46	115	1)
12.0	310	205	1	57.81	120	1)
12.5	310	205	1	59.72	125	1)
13.0	310	205	1	59.15	130	1)
13.5	325	220	1	68.28	135	1)
14.0	325	220	1	67.70	140	1)
14.5	340	220	2	70.18	145	1)
15.0	340	220	2	73.81	150	1)
15.5	355	230	2	79.10	155	1)
16.0	355	230	2	75.82	160	1)
16.5	355	230	2	77.85	165	2)
17.0	355	230	2	77.69	170	2)
17.5	370	245	2	83.38	175	2)
18.0	370	245	2	86.14	180	2)
18.5	370	245	2	95.00	185	2)
19.0	370	245	2	97.02	190	2)
19.5	385	260	2	104.76	195	2)
20.0	385	260	2	110.86	200	2)
21.0	385	260	2	127.99	210	2)
22.0	405	270	2	134.09	220	2)
23.0	405	270	2	157.46	230	2)
24.0	440	290	3	175.48	240	2)
25.0	440	290	3	178.83	250	2)
26.0	440	290	3	192.62	260	2)
28.0	460	305	3	223.55	280	2)
30.0	460	305	3	257.85	300	2)

Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	

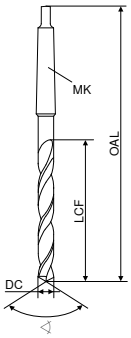
1) nitrided chamfer
2) vaporised

→ v_c Page 51

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

> 10xD

WTL



HSS

DC h8	OAL	LCF	MK	T2 Article no. 10 315 ...	£	
mm	mm	mm				
10.0	360	235	1	62.57	100	1)
10.5	360	235	1	106.11	105	1)
11.0	375	250	1	71.55	110	1)
11.5	375	250	1	77.85	115	1)
12.0	395	260	1	87.23	120	1)
13.0	395	260	1	92.97	130	1)
13.5	410	275	1	99.23	135	1)
14.0	410	275	1	99.23	140	1)
14.5	425	275	2	99.80	145	1)
15.0	425	275	2	98.61	150	1)
15.5	445	295	2	104.76	155	1)
16.0	445	295	2	103.14	160	1)
16.5	445	295	2	117.66	165	2)
17.0	445	295	2	110.86	170	2)
17.5	465	310	2	119.70	175	2)
18.0	465	310	2	124.50	180	2)
18.5	465	310	2	134.09	185	2)
19.0	465	310	2	136.25	190	2)
19.5	490	325	2	205.46	195	2)
20.0	490	325	2	153.55	200	2)
21.0	490	325	2	164.44	210	2)
22.0	515	345	2	195.97	220	2)
23.0	515	345	2	264.95	230	2)
24.0	555	365	3	223.55	240	2)
25.0	555	365	3	226.91	250	2)
26.0	555	365	3	264.68	260	2)
28.0	580	385	3	309.41	280	2)
30.0	580	385	3	357.64	300	2)

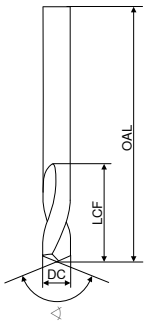
Steel	●
Stainless steel	○
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	

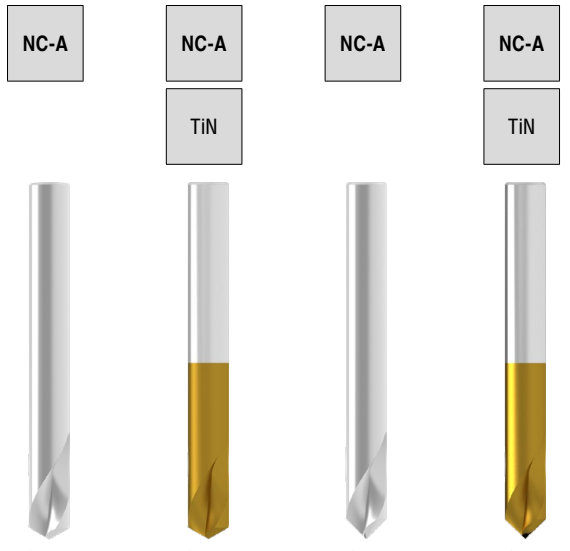
1) nitrided chamfer
2) vaporised

→ v_c Page 51

NC spot drills, factory standard

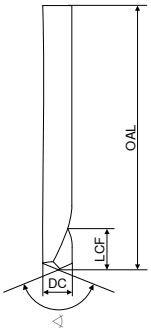
▲ helical flutes

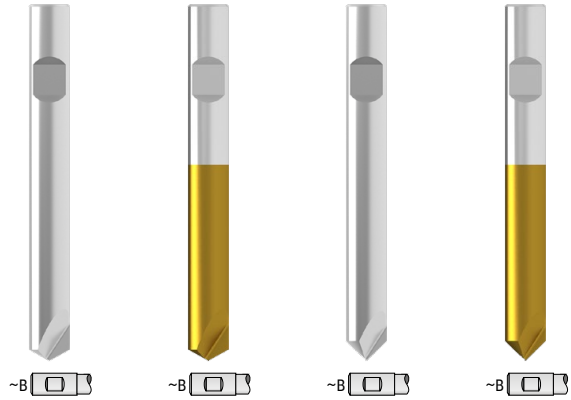




DC h6	OAL	LCF														
			120° HSS T2		120° HSS T2		90° HSS T2		90° HSS T2	
			Article no. 10 510 ...		Article no. 10 512 ...		Article no. 10 520 ...		Article no. 10 522 ...	
mm	mm	mm	£		£		£		£	
3	46	12.0	7.70	030	16.89	030	7.43	030	16.89	030
4	55	12.0	7.85	040	17.17	040	7.56	040	17.17	040
5	62	14.0	8.29	050	18.28	050	7.99	050	18.28	050
6	66	16.0	8.27	060	19.23	060	7.99	060	19.23	060
8	79	21.0	13.68	080	30.99	080	13.66	080	30.99	080
10	89	25.0	15.56	100	34.18	100	14.28	100	34.18	100
12	102	30.0	22.25	120	49.96	120	21.95	120	49.96	120
16	115	37.5	28.81	160	65.30	160	28.61	160	65.30	160
20	131	45.0	46.46	200	106.26	200	46.07	200	106.26	200

▲ with clamping flat to DIN 1835 B





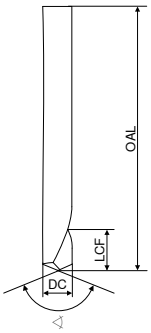
DC h6	OAL	LCF														
			120° HSS T2		120° HSS T2		90° HSS T2		90° HSS T2	
			Article no. 10 511 ...		Article no. 10 513 ...		Article no. 10 521 ...		Article no. 10 523 ...	
mm	mm	mm	£		£		£		£	
6	66	7.0	7.85	060	17.50	060	7.85	060	17.50	060
8	79	9.0	11.02	080	24.91	080	11.02	080	24.91	080
10	89	11.5	12.34	100	27.79	100	12.34	100	27.79	100
12	102	14.0	17.15	120	39.06	120	17.15	120	39.06	120
16	115	18.0	22.40	160	51.40	160	22.40	160	51.40	160
20	131	23.0	31.99	200	74.63	200	31.99	200	74.63	200

Steel	**15-35**	**25-55**	**15-35**	**25-55**
Stainless steel	10-15	20-25	10-15	20-25
Cast iron	**20-35**	**30-55**	**20-35**	**30-55**
Non ferrous metals	50-70	65-85	50-70	65-85
Heat resistant alloys				

Suitable only for spot drilling!

NC spot Drill Factory Standard Long

▲ with clamping flat to DIN 1835 B



			NC-A		NC-A TiN		NC-A		NC-A TiN							
																
			~B 120° HSS		~B 120° HSS		~B 90° HSS		~B 90° HSS							
			T2		T2		T2		T2							
DC_{h6}	OAL	LCF	Article no. 10 530 ...		Article no. 10 532 ...		Article no. 10 526 ...		Article no. 10 528 ...							
mm	mm	mm	£		£		£		£							
6	93	7.0	9.61	060	21.81	060	9.61	060	21.81	060						
8	117	9.0	14.97	080	34.38	080	14.97	080	34.38	080						
10	133	11.5	16.54	100	37.98	100	16.54	100	37.98	100						
12	151	14.0	19.65	120	45.05	120	19.65	120	45.05	120						
16	178	18.0	29.96	160	69.71	160	29.96	160	69.71	160						
20	205	23.0	41.58	200	97.75	200	41.58	200	97.75	200						

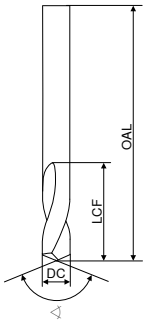
Steel	**15-35**	**25-55**	**15-35**	**25-55**
Stainless steel	10-15	20-25	10-15	20-25
Cast iron	**20-35**	**30-55**	**20-35**	**30-55**
Non ferrous metals	50-70	65-85	50-70	65-85
Heat resistant alloys				

Suitable only for spot drilling!

NC spot drills, factory standard, long

▲ helical flutes

NC-A



90°
HSS

DC h6	OAL	LCF	T2 Article no. 10 525 ...	
mm	mm	mm	£	
6.35	105	17	12.87	**025**
8.00	118	21	23.54	**030**
9.52	132	25	23.80	**040**
12.70	159	30	33.63	**050**
15.87	186	37	29.63	**060**
19.05	213	45	67.67	**075**

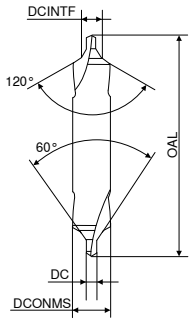
Steel	**15-35**
Stainless steel	10-15
Cast iron	**20-35**
Non ferrous metals	50-70
Heat resistant alloys	

Suitable only for spot drilling!

Centre drills, DIN 333, form B

▲ with protective countersink 120°

ZB ZB



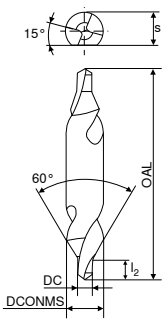
Right-hand
118°
HSS

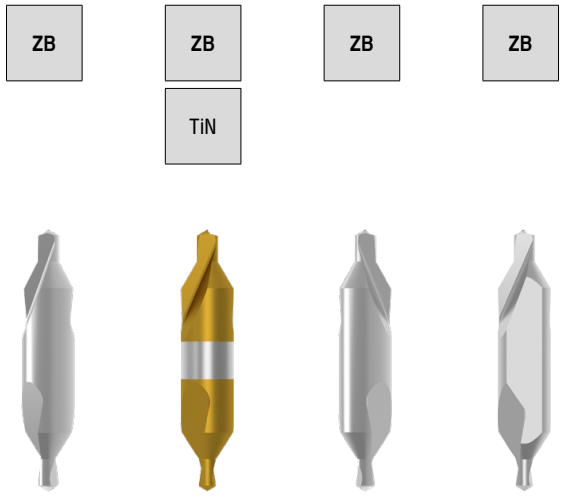
Left-hand
118°
HSS

DC	DCONMS h8	DCINTF k12	OAL	T2 Article no. 10 480 ...		T2 Article no. 10 485 ...	
mm	mm	mm	mm	£		£	
1.00	4.0	2.12	35.5	7.61	**100**	23.54	**100**
1.25	5.0	2.65	40.0	8.43	**125**	27.54	**125**
1.60	6.3	3.35	45.0	7.89	**160**	20.90	**160**
2.00	8.0	4.25	50.0	8.43	**200**	22.14	**200**
2.50	10.0	5.30	56.0	10.38	**250**	23.09	**250**
3.15	11.2	6.70	62.0	15.10	**315**	30.32	**315**
4.00	14.0	8.50	69.0	19.82	**400**	46.36	**400**
5.00	18.0	10.60	77.0	25.71	**500**	49.39	**500**

Steel	**15-35**	**15-35**
Stainless steel	10-15	10-15
Cast iron	**20-35**	**20-35**
Non ferrous metals	50-70	50-70
Heat resistant alloys		

Centre drills, DIN 333, form A



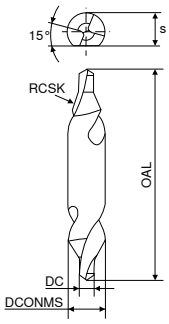


DC	s	DCONMS $_{h8}$	OAL	l_2	Right-hand ◁ 118° HSS T2 Article no. 10 415 ...		Right-hand ◁ 118° HSS T2 Article no. 10 425 ...		Left-hand ◁ 118° HSS T2 Article no. 10 435 ...		Right-hand ◁ 118° HSS-E T2 Article no. 10 445 ...	
mm	mm	mm	mm	mm	£		£		£		£	
0.50		3.15	25.0	0.8	5.41	**050** [2]	13.03	**050** [2]	7.61	**050** [2]		
0.80		3.15	25.0	1.1	5.26	**080** [2]	12.46	**080** [2]	7.47	**080** [2]		
1.00		3.15	31.5	1.3	4.84	**100**	11.50	**100**	6.78	**100**		
1.25		3.15	31.5	1.6	4.18	**125**	13.14	**125**	7.89	**125**		
1.60	3.25	4.00	35.5	2.0							8.30	**160** [1]
1.60		4.00	35.5	2.0	4.43	**160**	10.83	**160**	7.26	**160**		
2.00	4.20	5.00	40.0	2.5							6.42	**200** [1]
2.00		5.00	40.0	2.5	3.63	**200**	11.09	**200**	7.76	**200**		
2.50	5.35	6.30	45.0	3.1							7.26	**250** [1]
2.50		6.30	45.0	3.1	4.18	**250**	13.03	**250**	8.30	**250**		
3.15	6.95	8.00	50.0	3.9							9.74	**315** [1]
3.15		8.00	50.0	3.9	6.93	**315**	16.19	**315**	10.52	**315**		
4.00	8.40	10.00	56.0	5.0							18.54	**400** [1]
4.00		10.00	56.0	5.0	10.67	**400**	25.48	**400**	13.85	**400**		
5.00	10.95	12.50	63.0	6.3							19.52	**500** [1]
5.00		12.50	63.0	6.3	15.36	**500**	36.53	**500**	21.73	**500**		
6.30	14.00	16.00	71.0	8.0							45.37	**630** [1]
6.30		16.00	71.0	8.0	22.41	**630**	54.23	**630**	31.82	**630**		

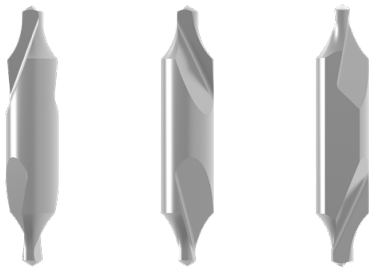
Steel	**15-35**	**25-55**	**15-35**	**15-35**
Stainless steel	10-15	20-25	10-15	10-15
Cast iron	**20-35**	**30-55**	**20-35**	**20-35**
Non ferrous metals	50-70	65-85	50-70	50-70
Heat resistant alloys				

1) with flat
2) Single ended

Centre drills, DIN 333, form R



ZB ZB ZB



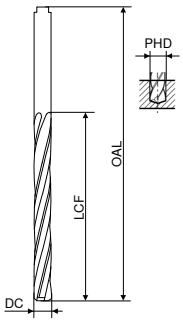
DC	s	DCONMS h8	OAL	RCSK	Right-hand ◁ 118° HSS T2 Article no. 10 455 ...		Left-hand ◁ 118° HSS T2 Article no. 10 475 ...		Right-hand ◁ 118° HSS T2 Article no. 10 465 ...	
mm	mm	mm	mm	mm	£		£		£	
0.50		3.15	25.0	2.00	5.53	**050** [2]				
0.80		3.15	25.0	2.50	5.41	**080** [2]	10.83	**080** [2]		
1.00		3.15	31.5	2.90	4.84	**100**	11.34	**100**		
1.25		3.15	31.5	3.15	5.53	**125**	10.28	**125**		
1.60	3.25	4.00	35.5	4.00					6.28	**160** [1]
1.60		4.00	35.5	4.00	4.57	**160**	8.27	**160**		
2.00	4.20	5.00	40.0	5.00					6.42	**200** [1]
2.00		5.00	40.0	5.00	4.84	**200**	8.40	**200**		
2.50	5.35	6.30	45.0	6.30					7.26	**250** [1]
2.50		6.30	45.0	6.30	5.53	**250**	8.68	**250**		
3.15	6.95	8.00	50.0	8.00					9.42	**315** [1]
3.15		8.00	50.0	8.00	7.07	**315**	12.22	**315**		
4.00	8.40	10.00	56.0	10.00					13.70	**400** [1]
4.00		10.00	56.0	10.00	10.11	**400**	17.38	**400**		
5.00	10.95	12.50	63.0	12.50					19.52	**500** [1]
5.00		12.50	63.0	12.50	15.52	**500**	34.46	**500**		
6.30	14.00	16.00	71.0	16.00					45.37	**630** [1]
6.30		16.00	71.0	16.00	23.12	**630**				

Steel	**15-35**	**15-35**	**15-35**
Stainless steel	10-15	10-15	10-15
Cast iron	**20-35**	**20-35**	**20-35**
Non ferrous metals	50-70	50-70	50-70
Heat resistant alloys			

1) with flat
2) Single ended

Core drills (spiral countersinks)

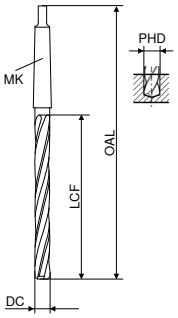
▲ with cylindrical shank, DIN 344



DC h8	OAL	LCF	PHD	T2 Article no. 10 226 ...	
mm	mm	mm	mm	£	
3.80	96	64	2.8	19.47	038
4.00	96	64	2.8	18.82	040
4.80	108	74	3.5	13.96	048
5.00	108	74	3.5	14.10	050
5.80	116	80	4.2	13.96	058
6.00	116	80	4.2	14.10	060
6.80	133	93	4.9	15.99	068
7.00	133	93	4.9	15.99	070
7.80	142	100	5.6	17.97	078
8.00	142	100	5.6	18.01	080
8.80	151	107	6.3	19.47	088
9.00	151	107	6.3	30.03	090
9.80	162	116	7.0	21.25	098
10.00	162	116	7.0	20.81	100
10.75	173	125	7.7	28.38	107
11.00	173	125	7.7	25.71	110
11.75	184	134	8.4	28.81	117
12.00	184	134	8.4	26.31	120

Steel	**15-35**
Stainless steel	10-15
Cast iron	**20-35**
Non ferrous metals	**50-80**
Heat resistant alloys	14-28

Core drills (spiral countersinks)



DC h8	OAL	LCF	PHD	MK	T2 Article no. 10 228 ...	
mm	mm	mm	mm		£	
10.00	168	87	7.0	1	25.71	100
10.75	175	94	7.7	1	30.22	107
11.00	175	94	7.7	1	43.03	110
11.75	182	101	8.4	1	30.22	117
12.00	182	101	8.4	1	43.03	120
12.75	182	101	9.1	1	33.56	127
13.00	182	101	9.1	1	29.35	130
13.75	189	108	9.8	1	33.51	137
14.00	189	108	9.8	1	29.78	140
14.75	212	114	10.5	2	37.36	147
15.00	212	114	10.5	2	33.51	150
15.75	218	120	11.2	2	39.37	157
16.00	218	120	11.2	2	35.02	160
16.75	223	125	11.9	2	41.19	167
17.00	223	125	11.9	2	37.36	170
17.75	228	130	12.6	2	43.16	177
18.00	228	130	12.6	2	37.36	180
18.70	233	135	13.3	2	43.60	187
19.00	233	135	13.3	2	42.73	190
19.70	238	140	14.0	2	43.60	197
20.00	238	140	14.0	2	42.73	200
20.70	243	145	14.6	2	49.75	207
21.00	243	145	14.6	2	49.98	210
21.70	248	150	15.3	2	50.99	217
22.00	248	150	15.3	2	50.42	220
22.70	253	155	16.0	2	55.43	227
23.00	253	155	16.0	2	54.87	230
23.70	281	160	16.6	3	57.73	237
24.00	281	160	16.6	3	56.88	240
24.70	281	160	17.3	3	61.58	247
25.00	281	160	17.3	3	61.60	250
25.70	286	165	18.0	3	64.42	257
26.00	286	165	18.0	3	64.95	260
26.70	291	170	18.6	3	76.56	267
27.00	291	170	18.6	3	75.11	270
27.70	291	170	19.3	3	75.82	277
28.00	291	170	19.3	3	75.71	280
28.70	296	175	20.0	3	82.94	287
29.00	296	175	20.0	3	83.83	290
29.70	296	175	20.5	3	88.20	297
30.00	296	175	20.5	3	86.72	300

Steel	**15-35**
Stainless steel	10-15
Cast iron	**20-35**
Non ferrous metals	**50-80**
Heat resistant alloys	14-28

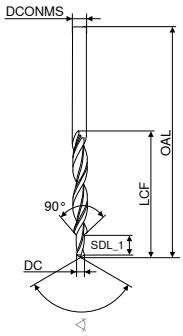
Stepped drills, DIN 8378

- 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

DIN 8378

SB

vap.



118°
HSS

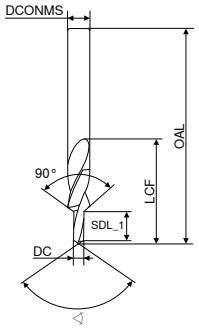
For threads	DC h9	DCONMS h8	OAL	SDL_1	LCF	T2 Article no. 10 365 ... £	
	mm	mm	mm	mm	mm		
M3	2.5	3.4	70	8.8	39	19.39	030
M4	3.3	4.5	80	11.4	47	21.25	040
M5	4.2	5.5	93	13.6	57	21.95	050
M6	5.0	6.6	101	16.5	63	24.51	060
M8	6.8	9.0	125	21.0	81	27.50	080
M10	8.5	11.0	142	25.5	94	35.90	100
M12	10.2	13.5	160	30.0	108	44.90	120

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

DIN 8378

SB

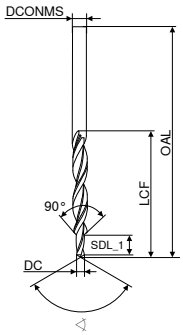


118°
HSS

For threads	DC h6	DCONMS h6	OAL	SDL_1	LCF	T2 Article no. 10 320 ... £	
	mm	mm	mm	mm	mm		
M3	2.5	3.4	52	8.8	20	12.52	030
M4	3.3	4.5	58	11.4	24	12.70	040
M5	4.2	5.5	66	13.6	28	13.68	050
M6	5.0	6.6	70	16.5	31	14.52	060
M8	6.8	9.0	84	21.0	40	16.83	080
M10	8.5	11.0	95	25.5	47	21.81	100
M12	10.2	13.5	107	30.0	54	27.95	120

- for through holes according to DIN EN 20273 – fine
- with 90° screw head countersink

DIN 8374



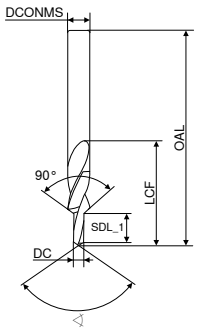
118°
HSS

For threads	DC h9	DCONMS h8	OAL	SDL_1	LCF	T2 Article no. 10 355 ... £	
	mm	mm	mm	mm	mm		
M3	3.2	6.0	93	9	57	22.80	030
M4	4.3	8.0	117	11	75	26.37	040
M5	5.3	10.0	133	13	87	33.13	050
M6	6.4	11.5	142	15	94	50.37	060
M8	8.4	15.0	169	19	114	62.47	080
M10	10.5	19.0	198	23	135	96.47	100

Steel	**10-30**
Stainless steel	10-15
Cast iron	**20-35**
Non ferrous metals	50-70
Heat resistant alloys	

- for through holes according to DIN EN 20273 – fine
- with 90° screw head countersink

DIN 8374



118°
HSS

For threads	DC h6	DCONMS h6	OAL	SDL_1	LCF	T2 Article no. 10 330 ... £	
	mm	mm	mm	mm	mm		
M3	3.2	6.0	66	9	28	14.52	030
M4	4.3	8.0	79	11	37	16.57	040
M5	5.3	10.0	89	13	43	20.39	050
M6	6.4	11.5	95	15	47	23.25	060
M8	8.4	15.0	111	19	56	26.37	080
M10	10.5	19.0	127	23	64	39.34	100

Steel	**10-30**
Stainless steel	10-15
Cast iron	**20-35**
Non ferrous metals	50-70
Heat resistant alloys	

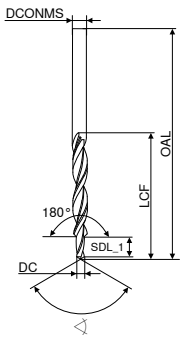
Stepped drills, DIN 8376

- countersinking angle 180°
- for through holes according to DIN EN 20273 – Medium
- for screw heads to DIN 974-1 – Series 1

DIN 8376

SB

vap.



118°
HSS

For threads	DC h9	DCONMS h8	OAL	SDL_1	LCF	T2 Article no. 10 375 ...	
	mm	mm	mm	mm	mm	£	
M3	3.4	6	93	9	57	22.80	**030** 1)
M4	4.5	8	117	11	75	26.37	**040**
M5	5.5	10	133	13	87	31.65	**050**
M6	6.6	11	142	15	94	36.35	**060**
M8	9.0	15	169	19	114	46.65	**080**
M10	11.0	18	191	23	130	97.02	**100**

Steel	**10-30**
Stainless steel	10-15
Cast iron	**20-35**
Non ferrous metals	50-70
Heat resistant alloys	

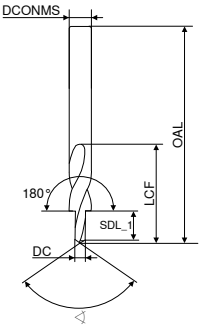
1) DCONMS not according to DIN 974-1

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

DIN 8376

SB



118°
HSS

For threads	DC h6	DCONMS h6	OAL	SDL_1	LCF	T2 Article no. 10 340 ...	
	mm	mm	mm	mm	mm	£	
M3	3.4	6	66	9	28	14.10	**030** 1)
M4	4.5	8	79	11	37	15.98	**040**
M5	5.5	10	89	13	43	19.39	**050**
M6	6.6	11	95	15	47	22.80	**060**
M8	9.0	15	111	19	56	29.07	**080**
M10	11.0	18	123	23	62	42.60	**100**

Steel	**10-30**
Stainless steel	10-15
Cast iron	**20-35**
Non ferrous metals	50-70
Heat resistant alloys	

1) DCONMS not according to DIN 974-1

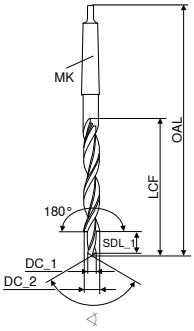
Stepped drills, DIN 8377

- countersinking angle 180°
- for through holes according to DIN EN 20273 – Medium
- for screw heads to DIN 974-1 – Series 1

DIN 8377

SB

vap.



HSS

For threads	DC_1 h9 mm	DC_2 mm	OAL mm	SDL_1 mm	LCF mm	MK	T2 Article no. 10 405 ... £	
M5	5.5	10	168	13	87	1	45.47	**050**
M6	6.6	11	175	15	94	1	46.65	**060**
M8	9.0	15	212	19	114	2	61.47	**080**
M10	11.0	18	228	23	130	2	81.94	**100**
M12	13.5	20	238	27	140	2	99.23	**120**
M14	15.5	24	281	31	160	3	127.26	**140**
M16	17.5	26	286	35	165	3	149.20	**160**
M18	20.0	30	296	39	175	3	232.98	**180**
M20	22.0	33	334	43	185	4	202.95	**200**

Steel	**10-30**
Stainless steel	10-15
Cast iron	**20-35**
Non ferrous metals	50-70
Heat resistant alloys	

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 ≥ Ø 3,3 mm

SB

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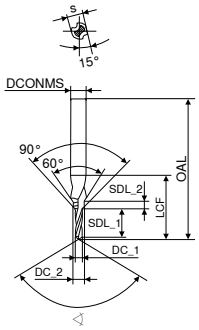


118°
HSS

For threads	DC_1 h8	DCONMS h7	DC_2	s	OAL	SDL_1	LCF	SDL_2	T2 Article no. 10 350 ...	
	mm	mm	mm	mm	mm	mm	mm	mm	£	
M4	3.3	8.0	4.3	6.75	63	11.0	23	1.60	52.75	**040**
M5	4.2	10.0	5.3	8.45	67	13.0	27	2.15	60.03	**050**
M6	5.0	12.5	6.4	10.45	71	16.0	33	2.90	65.54	**060**
M8	6.8	14.0	8.4	12.50	88	19.5	41	3.50	62.03	**080**
M10	8.5	16.0	10.5	14.85	94	23.0	47	4.70	69.69	**100**
M12	10.2	20.0	13.0	18.45	105	28.0	59	6.50	91.92	**120**
M16	14.0	25.0	17.0	23.40	132	33.0	67	8.30	130.75	**160**
M20	17.5	31.5	21.0	29.35	145	38.0	77	10.35	175.48	**200**
M24	21.0	40.0	25.0	36.50	160	45.0	90	12.00	271.79	**240**

Steel	**10-30**
Stainless steel	10-15
Cast iron	**20-35**
Non ferrous metals	50-70
Heat resistant alloys	

Material examples referring to the cutting data tables

	Index	Material	Strength N/mm² / HB / HRC	Material number	Material designation	Material number	Material designation	Material number	Material designation
P	1.1	General construction steel	< 800 N/mm²	1.0402	EN3B				
	1.2	Free cutting steel	< 800 N/mm²	1.0711	EN1A				
	1.3	Hardened steel, non alloyed	< 800 N/mm²	1.0401	EN32C				
	1.4	Alloyed hardened steel	< 1000 N/mm²	1.7325	25 CD4				
	1.5	Tempering steel, unalloyed	< 850 N/mm²	1.5752	EN36	1.0535	EN9		
	1.6	Tempering steel, unalloyed	< 1000 N/mm²	1.6582	EN24				
	1.7	Tempering steel, alloyed	< 800 N/mm²	1.7225	EN19				
	1.8	Tempering steel, alloyed	< 1300 N/mm²	1.8515	EN40B				
	1.9	Steel castings	< 850 N/mm²	0.9650	G-X 260 Cr 27	1.6750	GS-20 NiCrMo 3.7	1.6582	GS-34 CrNiMo 6
	1.10	Nitriding steel	< 1000 N/mm²	1.8509	EN41B				
	1.11	Nitriding steel	< 1200 N/mm²	1.1186	EN8	1.1160	EN14A		
	1.12	Roller bearing steel	< 1200 N/mm²	1.3505	534A99				
	1.13	Spring steel	< 1200 N/mm²		EN45		EN47		EN43
	1.14	High-speed steel	< 1300 N/mm²	1.3343	M2	1.3249	M34		
	1.15	Cold working tool steel	< 1300 N/mm²	1.2379	D2	1.2311	P20		
	1.16	Hot working tool steel	< 1300 N/mm²	1.2344	H13				
M	2.1	Cast steel and sulphured stainless steel	< 850 N/mm²	1.4581	318				
	2.2	Stainless steel, ferritic	< 750 N/mm²	1.4000	403				
	2.3	Stainless steel, martensitic	< 900 N/mm²	1.4057	EN57				
	2.4	Stainless steel, ferritic / martensitic	<1100 N/mm²	1.4028	EN56B				
	2.5	Stainless steel, austenitic / ferritic	< 850 N/mm²	1.4542	17-4PH				
	2.6	Stainless steel, austenitic	< 750 N/mm²	1.4305	303	1.4401	316	1.4301	304
	2.7	Heat resistant steel	< 1100 N/mm²	1.4876	Incoloy 800				
K	3.1	Grey cast iron with lamellar graphite	100–350 N/mm²	0.6015	Grade 150	0.6020	Grade 220	0.6025	Grade 260
	3.2	Grey cast iron with lamellar graphite	300–500 N/mm²	0.6030	Grade 300	0.6035	Grade 350	0.6040	Grade 400
	3.3	Gray cast iron with spheroidal graphite	300–500 N/mm²	0.7040	SG 400-12	0.7043	SG 370-17	0.7050	SG 500-7
	3.4	Gray cast iron with spheroidal graphite	500–900 N/mm²	0.7060	SG 600-3	0.7070	SG 700-2	0.7080	SG 800-2
	3.5	White malleable cast iron	270–450 N/mm²	0.8035	GTW-35	0.8045	GTW-45		
	3.6	White malleable cast iron	500–650 N/mm²	0.8055	GTW-55	0.8065	GTW-65		
	3.7	Black malleable cast iron	300–450 N/mm²	0.8135	GTS-35	0.8145	GTS-45		
	3.8	Black malleable cast iron	500–800 N/mm²	0.8155	GTS-55	0.8170	GTS-70		
N	4.1	Aluminium (non alloyed, low alloyed)	< 350 N/mm²	3.0255	1050 A	3.0275	1070 A	3.0285	1080 A (A8)
	4.2	Aluminium alloys < 0.5 % Si	< 500 N/mm²	3.1325	2017 A (AU4G)	3.4335	7005 (AZ5G)	3.4365	7075 (AZ5GU)
	4.3	Aluminium alloy 0.5–10 % Si	< 400 N/mm²	3.2315	A- G S1	3.2373	A-S9 G	3.2151	A-S 6 U4
	4.4	Aluminium alloys 10–15 % Si	< 400 N/mm²	3.2581	A-S12	3.2583	A-S12 U		
	4.5	Aluminum alloys > 15 % Si	< 400 N/mm²		A-S18	A-S17 U4			
	4.6	Copper (non alloyed, low alloyed)	< 350 N/mm²	2.0040	Cu-c1	2.0060	Cu-a1	2.0090	Cu-b1
	4.7	Copper wrought alloys	< 700 N/mm²	2.1247	Cub2 (Berylium Copper)	2.0855	CuN2S (Nickel Copper)	2.1310	CU-Fe2P
	4.8	Special copper alloys	< 200 HB	2.0916	Cu-A5	2.1525	Cu-S3 M		Ampco 8 (Cu-A6Fe2)
	4.9	Special copper alloys	< 300 HB	2.0978	Cu-Al11 Fe5 Ni5)		Ampco 18 (Cu- A10 Fe3)		
	4.10	Special copper alloys	> 300 HB	2.1247	Cu Be2		Ampco M4		
	4.11	Short-chipping brass, bronze, red bronze	< 600 N/mm²	2.0331	Cu Zn36 Pb1,5	2.0380	Cu Zn39 Pb2 (Ms 56)	2.0410	Cu Zn44 Pb2
	4.12	Long-chipping brass	< 600 N/mm²	2.0335	Cu Zn 36 (Ms63)	2.1293	Cu Cr1 Zr		
	4.13	Thermoplastics		PE	PVC	PS	Polystyrene		Plexiglas
	4.14	Duroplastics		PF	Bakelite		Pertinax		
	4.15	Fibre-reinforced plastics			Carbon Fibre		Fibreglass		Aramid Fibre (Kevlar)
	4.16	Magnesium and magnesium alloys	< 850 N/mm²	3.5812	Mg A7 Z1	3.5662	Mg A9	3.5105	Mg Tr3 Z2 Zn 1
	4.17	Graphite			R8500X		R8650		Technograph 15
	4.18	Tungsten and tungsten alloys			W-Ni Fe (Densimet)		W- Ni Cu (Inermet)		Denal
	4.19	Molybdenum and molybdenum alloys			TZM		MHQ		Mo W
S	5.1	Pure nickel		2.4066	Ni99 (Nickel 200)	2.4068	Lc Ni99 (Nickel 201)		
	5.2	Nickel alloys		1.3912	Fe-Ni36 (Invar)	1.3917	Fe -Ni42 (N42)	1.3922	Fe-Ni48 (N48)
	5.3	Nickel alloys	< 850 N/mm²	2.4375	Ni Cu30 Al (Monel K500)	2.4360	Ni Cu30Fe (Monel 400)	2.4668	
	5.4	Nickel molybdenum alloys		2.4600	Ni Mo30Cr2 (Hastelloy B4)	2.4617	Ni Mo28 (Hastelloy B2)	2.4819	Ni Mo16Cr16 Hastell. C276
	5.5	Nickel-chromium alloys	< 1300 N/mm²	2.4951	Ni Cr20TiAl (Nimonic 80A)	2.4858	Ni Cr21Mo (Inconel 825)	2.4856	Ni Cr22Mo9Nb Inconel 625
	5.6	Cobalt Chrome Alloys	< 1300 N/mm²	2.4964	Co Cr20 W15 Ni10		Co Cr20 Ni16 Mo7		Co Cr28 Mo 6
	5.7	Heat resistant alloys	< 1300 N/mm²	1.4718	Z45 C S 9-3	1.4747	Z80 CSN 20-02	1.4845	Z12 CN 25-20
	5.8	Nickel-cobalt-chromium alloys	< 1400 N/mm²	2.4851	Ni Cr23Fe (Inconel 601)	2.4668	Ni Cr19NbMo (Inconel 718)	2.4602	Ni Cr21Mo14 Hastelloy C22
	5.9	Pure titanium	< 900 N/mm²	3.7025	T35 (Titanium Grade 1)	3.7034	T40 (Titanium Grade 2)	3.7064	T60 (Titanium Grade 4)
	5.10	Titanium alloys	< 700 N/mm²		T-A6-Nb7 (367)		T-A5-Sn2-Mo4-Cr4 (Ti17)		T-A3-V2,5 (Gr18)
	5.11	Titanium alloys	< 1200 N/mm²	3.7165	T-A6-V4 (Ta6V)		T-A4-3V-Mo2-Fe2 (SP700)		T-A5-Sn1-Zr1-V1-Mo (Gr32)
H	6.1		< 45 HRC						
	6.2		46–55 HRC						
	6.3	Tempered steel	56–60 HRC						
	6.4		61–65 HRC						
	6.5		65–70 HRC						

Cutting data standard values – Hole depth 3xD

	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 ...	
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
1.1	**33–38**	5-6	**37-42**	**5-6**	**33–38**	5-6	**22–27**	5-6			**22–27**	5-6
1.2	**40–44**	6	**44-47**	**6-7**	**40–44**	6	**26–34**	5-6			**22–30**	5-6
1.3	**44**	6	**47**	**4**	**44**	6	**30**	6	36	6	**30**	6
1.4	**18–22**	3-4	**20-25**	**4-5**	**18–22**	3-4			18-32	3-4	**15–18**	3-4
1.5	**40–44**	6	**47**	**6**	**40–44**	6	**25**	5			**25**	5
1.6	**26**	5	**44**	**5**	**26**	5	**16**	5			**20**	5
1.7	**27**	4	**30**	**4**	**27**	4					**18**	4
1.8	**22**	3	**25**	**3**	**22**	3					**15**	3
1.9	**20**	4	**22**	**4**	**20**	4					**18**	4
1.10	**22**	4	**25**	**4**	**22**	4			20	4	**18**	4
1.11	**16**	3	**20**	**4**	**16**	3			15	3	**13**	4
1.12	**20**	4	**25**	**4**	**20**	4	**16**	4			**18**	4
1.13	**9**	2	**10**	**2**	**9**	2			12	2	**6**	2
1.14	**13**	3	**16**	**3**	**13**	3					**12**	3
1.15	**15–20**	3-4	**17-22**	**4-5**	**15–20**	3-4	**12–16**	3-4			**13–18**	3-4
1.16	**15–20**	3-4	**17-22**	**4-5**	**15–20**	3-4	**12–16**	3-4			**13–18**	3-4
2.1	**20**	4	19	**4**	**20**	4			**18**	4	13	4
2.2	**18**	4	17	**4**	**18**	4			**15**	4	11	4
2.3	**18**	4	16	**4**	**18**	4			**14**	3	12	4
2.4	**18**	4	15	**4**	**18**	4					11	4
2.5	**15**	3	14	**3**	**15**	3			**13**	3	10	3
2.6	**16**	3	15	**3**	**16**	3			**12**	3	9	3
2.7	**12**	3	13	**3**	**12**	3					8	3
3.1	**45**	6	**50**	6	**45**	6	**34**	6			31	6
3.2	**40**	6	**44**	6	**40**	6	**26**	6			28	6
3.3	**40**	6	**44**	6	**40**	6	**25**	6			21	6
3.4	**30**	6	**33**	6	**30**	6	**20**	6			17	6
3.5	**42**	6	**44**	6	**42**	6	**26**	6	45	6	21	6
3.6	**35**	6	**33**	6	**35**	6	**23**	6	32	6	18	6
3.7	**32**	6	**44**	6	**32**	6	**22**	6			24	6
3.8	**30**	6	**33**	6	**30**	6	**21**	6			23	6
4.1	**70**	7			**70**	7			90	7	**70**	7
4.2	**70**	7			**70**	7			90	7	**70**	7
4.3	**85**	7			**85**	7			80	7	**50**	7
4.4	**70**	7			**70**	7			70	6	**50**	6
4.5	**70**	6			**70**	6			70	6	**50**	6
4.6	**88**	5	88	5	**88**	5			40	5	**60**	5
4.7	**44**	5	50	5	**44**	5			38	4	**40**	4
4.8	**50**	4	33	5	**50**	4			48	4	**36**	4
4.9	**45**	4	29	5	**45**	4			43	4	**35**	4
4.10	**40**	4	28	5	**40**	4			37	4	**32**	4
4.11	**77**	5	84	5	**77**	5	36-40	4				
4.12	**44**	5	46	5	**44**	5			40	5	**40**	5
4.13	**15**	4	27	5	**15**	4					**28**	4
4.14	**25**	4	22	4	**25**	4	18	4	20	4	**18**	4
4.15												
4.16	**70**	6			**70**	6					**70**	6
4.17												
4.18	**14**	3			**14**	3						
4.19	**18**	4			**18**	4						
5.1	8	2			8	2						
5.2	10	2			10	2						
5.3	8	1			8	1						
5.4	8	1	5	**2**	8	1						
5.5	8	2			8	2						
5.6	8	2			8	2						
5.7	10	2	10	**2**	10	2			7	2	6	2
5.8	8	1			8	1						
5.9	8	1			8	1						
5.10	12	2			12	2			10	2		
5.11	8	2			8	2			6	2		
6.1	8	1			8	1						
6.2												
6.3												
6.4												
6.5												

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.

	Type WT 10 109 ...		Type WT-TiN 10 110 ...		Type WTL-L 10 112 ...		Type WT-MK 10 285 ...	
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
1.1	**30–35**	5	**35–45**	5	**22–27**	5-6	**30–35**	5
1.2	**30–35**	5	**35–45**	5	**26–34**	5-6	**30–40**	5
1.3	**36**	4	**44**	4	**30**	6	**36**	6
1.4	**15–20**	3-4	**18–22**	3-4	**13–16**	3-4	**15–20**	3-4
1.5	**40**	5	**44**	5	**25–34**	5	**35–40**	5
1.6	**35**	4	**38**	4	**16**	5	**35**	4
1.7	**20**	4	**27**	4	**16**	4	**20**	4
1.8	**16**	3	**22**	3	**13**	3	**16**	3
1.9	**16**	3	**18**	3	**16**	4	**16**	3
1.10	**16**	4	**22**	4	**16**	4	**16**	4
1.11	**12**	3	**18**	3	**11**	4	**12**	3
1.12	**15**	4	**17**	4	**16**	4	**20**	4
1.13	**8**	2	**9**	2	**12**	2	**8**	2
1.14	**12**	3	**15**	3	**12**	3	**15**	3
1.15	**12–15**	3-4	**14–19**	3-4	**12–16**	3-4	**12–20**	3-4
1.16	**12–15**	3-4	**14–19**	3-4	**12–16**	3-4	**12–20**	3-4
2.1	16	4	18	4	12	4	16	4
2.2	14	4	15	4	10	3	14	4
2.3	15	3	17	3	11	3	15	3
2.4	14	3	15	3	10	3	14	3
2.5	13	3	15	3	9	3	13	3
2.6	12	3	14	3	8	3	12	3
2.7	11	3	13	3	7	3	11	3
3.1	35	6	40	6	30	6	35	6
3.2	30	6	35	6	25	6	30	6
3.3	30	6	33	6	25	6	30	6
3.4	25	6	27	6	20	6	25	6
3.5	30	6	36	6	26	6	30	6
3.6	28	6	34	6	23	6	28	6
3.7	26	6	30	6	22	6	26	6
3.8	24	6	28	6	21	6	24	6
4.1					**70**	7		
4.2					**70**	7		
4.3					**50**	7		
4.4					**50**	6		
4.5					**45**	6		
4.6					**60**	5		
4.7	38	5	40	5	**40**	4	38	5
4.8	38	4	40	4	**32**	4	38	4
4.9	25	4	32	4	**30**	4	25	4
4.10					**28**	4		
4.11								
4.12					**40**	5		
4.13					**28**	5		
4.14	20	4	25	4	**18**	4	20	4
4.15								
4.16					**70**	6		
4.17								
4.18								
4.19								
5.1								
5.2								
5.3	7	1	8	1			7	1
5.4	7	1	8	1			7	1
5.5	7	1	8	1			7	1
5.6	8	2	10	2			8	2
5.7								
5.8								
5.9	12	2	15	2			10	2
5.10	12	2	15	2			10	2
5.11	8	2	10	2			6	2
6.1	4	1	8	1	6	1-2	4	1
6.2			4	1				
6.3								
6.4								
6.5								

When drilling tough materials which tend to jam, chips should be removed at drilling depth ≥ 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 53**

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
1.1	**33–38**	5-6	**37-42**	**5-6**	**33–38**	5-6	**22–27**	5-6					**30–35**	5
1.2	**40–44**	5-6	**44-47**	**6-7**	**40–44**	5-6	**26–34**	5-6					**40**	5
1.3	**44**	6	**47**	**4**	**44**	6	**30**	6					**36**	5
1.4	**18–22**	3-4	**20-25**	**4-5**	**18–22**	3-4			16-28	3-4			**15–20**	3-4
1.5	**40–44**	6	**47**	**6**	**40–44**	6	**25**	5					**40**	5
1.6	**26**	5	**44**	**5**	**26**	5							**35**	4
1.7	**27**	4	**30**	**4**	**27**	4							**20**	4
1.8	**22**	3	**25**	**3**	**22**	3							**16**	3
1.9	**20**	4	**22**	**4**	**20**	4							**14**	3
1.10	**22**	4	**25**	**4**	**22**	4			18	4			**16**	4
1.11	**16**	3	**20**	**4**	**16**	3			15	3			**12**	3
1.12	**20**	4	**25**	**4**	**20**	4	**16**	4					**10**	3
1.13	**9**	2	**10**	**2**	**9**	2								
1.14	**13**	3	**16**	**3**	**13**	3							**15**	3
1.15	**15–20**	3-4	**17-22**	**4-5**	**15–20**	3-4	**12–16**	3-4					**15**	4
1.16	**15–20**	3-4	**17-22**	**4-5**	**15–20**	3-4	**12–16**	3-4					**12**	3
2.1	**20**	4	19	**4**	**20**	4			**16**	4			15	4
2.2	**18**	4	17	**4**	**18**	4			**14**	4			14	4
2.3	**18**	4	16	**4**	**18**	4			**13**	4			12	3
2.4	**18**	4	15	**4**	**18**	4			**14**	3			13	3
2.5	**15**	3	14	**3**	**15**	3			**12**	3				
2.6	**16**	3	15	**3**	**16**	3			**11**	3				
2.7	**12**	3	13	**3**	**12**	3			**10**	3				
3.1	**45**	6	**50**	6	**45**	6	**34**	6					36	6
3.2	**40**	6	**44**	6	**40**	6	**26**	6					28	6
3.3	**40**	6	**44**	6	**40**	6	**25**	6					30	6
3.4	**30**	6	**33**	6	**30**	6	**20**	6					22	6
3.5	**42**	6	**44**	6	**42**	6	**26**	6	42	6			28	6
3.6	**35**	6	**33**	6	**35**	6	**23**	6	30	6			23	6
3.7	**32**	6	**44**	6	**32**	6	**22**	6					20	6
3.8	**30**	6	**33**	6	**30**	6	**21**	6					18	6
4.1	**70**	7			**70**	7					**80**	7		
4.2	**70**	7			**70**	7			90	7	**80**	7		
4.3	**85**	7			**85**	7			90	7	**63**	7	70	7
4.4	**70**	7			**70**	7			70	6			55	6
4.5	**70**	6			**70**	6			70	6			55	6
4.6	**88**	5	88	5	**88**	5			55	5	**50**	5	40	5
4.7	**44**	5	50	5	**44**	5			44	4			36	5
4.8	**47**	4	33	5	**47**	4			36	4			28	4
4.9	**43**	4	29	5	**43**	4			30	4			22	4
4.10	**38**	4	28	5	**38**	4			30	3			20	4
4.11	**77**	5	84	5	**77**	5								
4.12	**44**	5	46	5	**44**	5			45	5			45	4
4.13	**15**	4	27	5	**15**	4					**28**	5		
4.14	**25**	4	22	4	**25**	4	18	4					20	4
4.15														
4.16	**70**	6			**70**	6								
4.17														
4.18	**14**	3			**14**	3			11	3				
4.19	**18**	4			**18**	4			13	4				
5.1	8	2			8	2								
5.2	10	2			10	2								
5.3	8	1			8	1								
5.4	8	1	5	**2**	8	1								
5.5	8	2			8	2								
5.6	8	2			8	2								
5.7	10	1	10	**2**	10	1			9	2				
5.8	8	1			8	1								
5.9	8	1			8	1								
5.10	12	2			12	2			10	2				
5.11	8	2			8	2								
6.1	8	1			8	1								
6.2														
6.3														
6.4														
6.5														

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.

	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 ...	
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
1.1	**36–42**	5	**36–42**	6	**22–27**	5-6	**42–50**	6-7	**42–60**	6-7	**22–27**	5-6	**30–35**	5
1.2	**42–48**	5	**42–48**	6	**25–32**	5-6	**42–50**	6-7	**42–60**	6-7	**25–32**	5-6	**40**	5
1.3	**48**	4	**48**	7	**32**	6	**50**	7	**62**	7	**30**	6	**36**	6
1.4	**20–24**	3-4	**20–24**	4-5			**16–22**	4-5	**20–31**	4-5			**15–20**	3-4
1.5	**48**	5	**48**	6	**25**	5	**38–48**	6	**48–60**	6	**25**	5	**28–40**	5
1.6	**42**	4	**42**	5			**28**	5	**30**	5			**28**	4
1.7	**34**	4	**34**	5			**25**	5	**30**	5			**18–20**	4
1.8	**30**	3	**30**	4			**20**	4	**25**	4			**16**	3
1.9	**18**	3	**20**	4			**22**	5	**25**	5			**14**	3
1.10	**24**	4	**20**	5			**22**	5	**28**	5			**14–16**	4
1.11	**20**	3	**15**	4			**14**	4	**20**	4			**12**	3
1.12	**13**	3	**15**	4			**24**	5	**26**	5	**16**	4	**10**	3
1.13			**11**	3			**15**	3	**18**	3				
1.14	**17**	3	**17**	4			**18**	4	**20**	4			**10–15**	3
1.15	**18**	4	**21**	5	**16**	4	**16–24**	4-5	**18–30**	4-5	**12–16**	3-4	**15**	4
1.16	**14**	3	**15**	4			**16–24**	4-5	**18–30**	4-5	**12–16**	3-4	**12**	3
2.1	18	4	20	5			**20**	5	**25**	5			15	4
2.2	16	4	18	4			**18**	5	**22**	5			14	4
2.3	14	3	16	4			**16**	5	**20**	5			12	3
2.4	15	3	17	4			**18**	5	**22**	5			13	3
2.5							**15**	4	**19**	4				
2.6							**14**	4	**18**	4				
2.7							**12**	4	**17**	4				
3.1	45	6			32	6	**48**	7	**60**	7	**32**	6	36	6
3.2	36	6			25	6	**42**	7	**52**	7	**25**	6	28	6
3.3	40	6			28	6	**42**	7	**52**	7	**28**	6	30	6
3.4	28	6			20	6	**40**	7	**50**	7	**20**	6	22	6
3.5	36	6			25	6	**42**	7	**52**	7	**25**	6	28	6
3.6	30	6			22	6	**35**	7	**45**	7	**22**	6	23	6
3.7	25	6			18	6	**32**	7	**42**	7	**21**	6	20	6
3.8	22	6			16	6	**30**	7	**40**	7	**20**	6	18	6
4.1					80	7								
4.2					80	7								
4.3	85	7			63	7	95	7	120	7			70-80	7
4.4	70	6			50	6	75	8	95	8			60-70	6
4.5	70	6			50	6	75	8	95	8			60-70	6
4.6	88	5			32	5	78	6	98	6			40	5
4.7	45	5			50	5	55	6	62	6			36	5
4.8	32	4			15	4							28	4
4.9	25	4					42	5	48	5			22	4
4.10	22	4					38	5	44	5			20	4
4.11														
4.12					40	5	55	6	55	6			45	4
4.13							38	6	44	6	28	5		
4.14	24	4			16	4					18	4	18	4
4.15														
4.16														
4.17														
4.18							15	4	20	4				
4.19							18	4	22	5				
5.1							9	3	11	3				
5.2							11	3	13	3				
5.3							9	2	11	2				
5.4							9	2	11	2				
5.5							9	2	11	2				
5.6							11	3	13	3				
5.7							9	2	11	2				
5.8							9	3	11	3				
5.9							9	2	11	2				
5.10							14	3	17	3				
5.11							10	3	12	3				
6.1							8	3	10	3				
6.2							4	3	5	3				
6.3														
6.4														
6.5														

When drilling tough materials which tend to jam, chips should be removed at drilling depth ≥ 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 53**

Cutting data standard values – Hole depth 10xD and over 10xD

	Hole depth 10xD													
	Type NC 10 223 ...		Type NC-TiALN 10 224 ...		Type UNI-TiN 10 270 ...		Type WTL 10 225 ...		Type WTL 10 215 ...		Type WTL-TiN 10 210 ...		Type WTW 10 200 ...	
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
1.1	**30–40**	5-6	**50–65**	6-7	**25–32**	5-6	**28–32**	5-6	**22–28**	5-6	**24–30**	5-6		
1.2	**30–40**	5-6	**50–65**	6-7	**28–35**	6	**28–32**	5-6	**22–28**	5-6	**28–32**	5-6		
1.3	**40**	6	**65**	7	**28**	6	**32**	6	**28**	6	**32**	6		
1.4	**12–17**	3-4	**18–25**	4-5	**12–14**	3-4	**13–18**	3-4			**10–14**	4		
1.5	**30–40**	5	**45–55**	6	**25–28**	6	**26–36**	5	**22**	5	**26–36**	5		
1.6	**22**	4	**35**	5	**15**	5	**24**	4-5			**24**	4		
1.7	**20**	3	**30**	4	**13**	4	**16**	4			**18**	4		
1.8	**14**	3	**20**	4	**12**	3	**12**	3						
1.9	**14**	3	**20**	4	**13**	4	**12**	3						
1.10	**14**	4	**20**	5	**13**	4	**14**	4			**12**	4		
1.11	**10**	3	**15**	4	**8**	3	**10**	3						
1.12	**10**	3	**15**	4			**8**	3			**8**	3		
1.13	**7**	2	**12**	3			**6**	2						
1.14	**10**	3	**15**	4	**10**	3	**12**	3						
1.15	**20**	4	**30**	4	**10–13**	3-4	**16**	8	**14**	4	**15**	4		
1.16	**10**	3	**15**	4	**10–13**	3-4	**8**	3			**8**	3		
2.1	14	4	20	4	13	4	**12**	4						
2.2	14	4	20	4			**13**	4						
2.3	12	3	18	3	12	4	**10**	3						
2.4	13	3	20	3			**11**	3						
2.5	11	3	16	3			**9**	3						
2.6	10	3	15	3	8-13	3-4	**8**	3						
2.7							**7**	2-3						
3.1	**40**	6	**65**	7	**32**	6	**28**	6	**28**	6	**36**	6-7		
3.2	**30**	6	**50**	7	**26**	6	**22**	6	**22**	6	**28**	6-7		
3.3	**35**	6	**60**	7	**28**	6	**30**	6	**22**	6	**28**	6-7		
3.4	**25**	6	**40**	7	**20**	6	**24**	6	**18**	6	**22**	6-7		
3.5	**30**	6	**50**	7	**28**	6	**24**	6	**22**	6	**28**	6-7		
3.6	**32**	6	**55**	7	**20**	6	**20**	6	**16**	6	**30**	6-7		
3.7	**24**	6	**36**	7	**28**	6	**16**	6	**14**	6	**20**	6-7		
3.8	**22**	6	**32**	7	**20**	6	**15**	6	**13**	6	**18**	6-7		
4.1					50	7							**65**	7
4.2	80	6	110	7	60	7							**65**	7
4.3	80	6	110	7	60	7	**70**	7	**55**	7	**70**	7		
4.4	75	7	95	8	50	6	**60**	6	**45**	6	**55**	6		
4.5	60	6	80	7	50	6	**60**	6	**45**	6	**55**	6		
4.6	60	5	60	6	24	5	**54**	5	**54**	5	**65**	5		
4.7	40	5	60	6			**30**	5	**28**	5	**36**	5		
4.8	36	4	55	5			**26**	4	**24**	4	**28**	4		
4.9	25	4	35	5			**22**	4	**20**	4	**22**	4		
4.10	23	4	30	5			**20**	4	**18**	4	**20**	4		
4.11					35-50	4-5								
4.12	50	5	65	5	28	5	**38**	5	**34**	5	**44**	5		
4.13	30	5	40	5	12	4							**22**	5
4.14					18	4	**16**	4	**14**	4	**18**	4		
4.15														
4.16					50	6							**63**	6
4.17														
4.18	8	2	10	3										
4.19	7	2	9	3										
5.1	8	2	11	2-3										
5.2	6	2	7	2-3										
5.3	6	1	7	2										
5.4	6	2	7	2										
5.5	6	1	7	2										
5.6	5	1	6	2										
5.7	5	1	6	2										
5.8	5	1	6	1										
5.9	5	1	6	1										
5.10	6	2	7	2-3										
5.11	6	1	7	2-3										
6.1	6	3	7	3										
6.2	4	2	5	2										
6.3														
6.4														
6.5														

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.

	Hole depth 10xD				Hole depth above 10xD									
	Type N-MK 10 295 ...		Type WTL-MK 10 297 ...		Type WTL-R1 10 235 ...		Type WTL-R2 10 245 ...		Type WTL-R3 10 255 ...		Type WTL-MK-R1 10 305 ...		Type WTL-MK-R2 10 315 ...	
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
1.1	**28–36**	5-6	**28–32**	5-6	**18–22**	4-5	**18–22**	4-5	**18–22**	4-5	**18–22**	4-5	**18–22**	4-5
1.2	**28–36**	5-6	**28–32**	5-6	**18–22**	4-5	**18–22**	4-5	**18–22**	4-5	**18–22**	4-5	**18–22**	4-5
1.3	**27**	6	**32**	6	**22**	4	**22**	4	**22**	4	**22**	4	**22**	4
1.4	**14**	4	**10–14**	3-4	**10**	3	**10**	3	**10**	3	**10**	3	**10**	3
1.5	**28–36**	5	**36**	5	**18–22**	4	**18–22**	4	**18–22**	4	**18–22**	4	**18–22**	4
1.6	**22**	4	**24**	4										
1.7	**18**	4	**16**	4	**12**	3	**12**	3	**12**	3	**12**	3	**12**	3
1.8			**12**	3										
1.9			**12**	3										
1.10	**12**	4	**12**	4	**8**	3	**8**	3	**8**	3	**8**	3	**8**	3
1.11			**8**	3										
1.12	**8**	3	**8**	3										
1.13			**6**	2										
1.14			**8**	3	**6**	2	**6**	2	**6**	2	**6**	2	**6**	2
1.15	**18**	4	**16**	4										
1.16	**8**	3	**8**	3										
2.1			**12**	4	8	3	8	3	8	3	8	3	8	3
2.2			**13**	4	8	3	8	3	8	3	8	3	8	3
2.3			**10**	3										
2.4			**11**	3										
2.5			**9**	3										
2.6			**8**	3										
2.7			**7**	2-3										
3.1	**36**	6-7	**28**	6	**22**	5	**22**	5	**22**	5	**22**	5	**22**	5
3.2	**28**	6-7	**22**	6	**18**	5	**18**	5	**18**	5	**18**	5	**18**	5
3.3	**28**	6-7	**30**	6	**20**	5	**20**	5	**20**	5	**20**	5	**20**	5
3.4	**22**	6-7	**24**	6	**14**	5	**14**	5	**14**	5	**14**	5	**14**	5
3.5	**28**	6-7	**22**	6	**18**	5	**18**	5	**18**	5	**18**	5	**18**	5
3.6	**30**	6-7	**20**	6	**16**	5	**16**	5	**16**	5	**16**	5	**16**	5
3.7	**20**	6-7	**16**	6	**14**	5	**14**	5	**14**	5	**14**	5	**14**	5
3.8	**18**	6-7	**15**	6	**12**	5	**12**	5	**12**	5	**12**	5	**12**	5
4.1														
4.2														
4.3	70	7	**70**	7	**45**	6	**45**	6	**45**	6	**45**	6	**45**	6
4.4	55	6	**60**	6	**36**	5	**36**	5	**36**	5	**36**	5	**36**	5
4.5	55	6	**50**	6	**36**	5	**36**	5	**36**	5	**36**	5	**36**	5
4.6	54	5	**54**	5	**22**	4	**22**	4	**22**	4	**22**	4	**22**	4
4.7	36	5	**30**	5	**20**	3	**20**	3	**20**	3	**20**	3	**20**	3
4.8	28	4	**26**	4	**22**	3	**22**	3	**22**	3	**22**	3	**22**	3
4.9	22	4	**22**	4	**22**	3	**22**	3	**22**	3	**22**	3	**22**	3
4.10	20	4	**20**	4	**20**	3	**20**	3	**20**	3	**20**	3	**20**	3
4.11														
4.12	36	4	**38**	5	**28**	4	**28**	4	**28**	4	**28**	4	**28**	4
4.13	22	5			**20**	3	**20**	3	**20**	3	**20**	3	**20**	3
4.14	14	4	**16**	4	**14**	4	**14**	4	**14**	4	**14**	4	**14**	4
4.15														
4.16					**55**	5	**55**	5	**55**	5	**55**	5	**55**	5
4.17														
4.18														
4.19														
5.1														
5.2														
5.3														
5.4														
5.5														
5.6														
5.7														
5.8														
5.9														
5.10														
5.11														
6.1														
6.2														
6.3														
6.4														
6.5														

When drilling tough materials which tend to jam, chips should be removed at drilling depth ≥ 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 53**

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

		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
Index	v_c in m/min	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.
1.1	**18**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
1.2	**18**	0,007	0,009	0,011	0,014	0,020	0,024	0,041
1.3	**18**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
1.4	**14**	0,005	0,007	0,009	0,011	0,015	0,020	0,035
1.5	**18**	0,007	0,009	0,011	0,014	0,020	0,024	0,041
1.6	**14**	0,005	0,007	0,009	0,011	0,015	0,020	0,035
1.7	**14**	0,005	0,007	0,009	0,011	0,015	0,020	0,035
1.8	**12**	0,004	0,005	0,007	0,009	0,012	0,016	0,029
1.9	**12**	0,004	0,005	0,007	0,008	0,012	0,016	0,029
1.10	**14**	0,005	0,007	0,009	0,011	0,015	0,020	0,035
1.11	**12**	0,004	0,005	0,007	0,008	0,012	0,016	0,029
1.12	**14**	0,005	0,007	0,009	0,011	0,015	0,020	0,035
1.13	**8**	0,003	0,004	0,005	0,007	0,009	0,013	0,024
1.14	**14**	0,004	0,005	0,007	0,008	0,012	0,016	0,029
1.15	**12–14**	0,004	0,006	0,008	0,007	0,010	0,014	0,026
1.16	**12–14**	0,004	0,006	0,008	0,007	0,010	0,014	0,026
2.1	**12**	0,005	0,007	0,009	0,011	0,015	0,020	0,035
2.2	**10**	0,005	0,007	0,009	0,011	0,015	0,020	0,035
2.3	**6**	0,004	0,005	0,007	0,008	0,012	0,016	0,029
2.4	**6**	0,004	0,005	0,007	0,008	0,012	0,016	0,029
2.5	**6**	0,004	0,006	0,008	0,007	0,010	0,014	0,026
2.6	**6**	0,004	0,005	0,007	0,008	0,012	0,016	0,029
2.7	**6**	0,004	0,005	0,007	0,008	0,012	0,016	0,029
3.1	**25**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
3.2	**22**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
3.3	**18**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
3.4	**22**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
3.5	**22**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
3.6	**20**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
3.7	**22**	0,004	0,005	0,007	0,008	0,012	0,016	0,029
3.8	**20**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
4.1								
4.2								
4.3	**26**	0,012	0,014	0,019	0,024	0,034	0,038	0,060
4.4	**24**	0,012	0,014	0,019	0,024	0,034	0,038	0,060
4.5	**18**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
4.6	**42**	0,007	0,009	0,011	0,014	0,020	0,024	0,041
4.7	**38**	0,007	0,009	0,011	0,014	0,020	0,024	0,041
4.8	**45**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
4.9	**35**	0,007	0,009	0,011	0,014	0,020	0,024	0,041
4.10	**30**	0,007	0,009	0,011	0,014	0,02	0,024	0,041
4.11								
4.12	**22**	0,007	0,009	0,011	0,014	0,020	0,024	0,041
4.13	**18**	0,005	0,007	0,009	0,011	0,015	0,020	0,035
4.14	**16**	0,005	0,007	0,009	0,011	0,015	0,020	0,035
4.15								
4.16	**75**	0,009	0,011	0,015	0,019	0,026	0,031	0,050
4.17								
4.18	**6**	0,004	0,005	0,007	0,008	0,012	0,016	0,029
4.19	**6**	0,004	0,005	0,007	0,008	0,012	0,016	0,029
5.1	5	0,004	,0,005	0,007	0,008	0,012	0,016	0,029
5.2	5	0,004	0,005	0,007	0,008	0,012	0,016	0,029
5.3	5	0,004	0,005	0,007	0,008	0,012	0,016	0,029
5.4	5	0,004	0,005	0,007	0,008	0,012	0,016	0,029
5.5	5	0,004	0,005	0,007	0,008	0,012	0,016	0,029
5.6	5	0,004	0,005	0,007	0,008	0,012	0,016	0,029
5.7	6	0,005	0,007	0,009	0,011	0,015	0,020	0,035
5.8	5	0,004	0,005	0,007	0,008	0,012	0,016	0,029
5.9	5	0,004	0,005	0,007	0,008	0,012	0,016	0,029
5.10	4	0,003	0,004	0,005	0,007	0,009	0,013	0,024
5.11	4	0,003	0,004	0,005	0,007	0,009	0,013	0,024
6.1	3	0,002	0,003	0,004	0,005	0,007	0,010	0,020
6.2								
6.3								
6.4								
6.5								

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

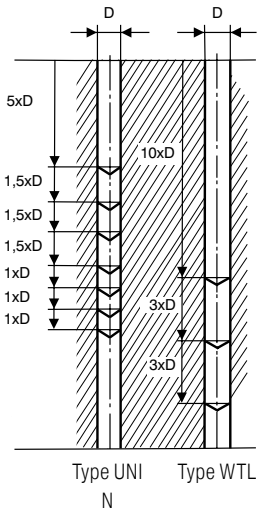
All the indicated data are guide values only and represent average values.

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