New products for machining technicians

NEW WTL twist drill, extra-long, TiAlN

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

→ Page 29+30

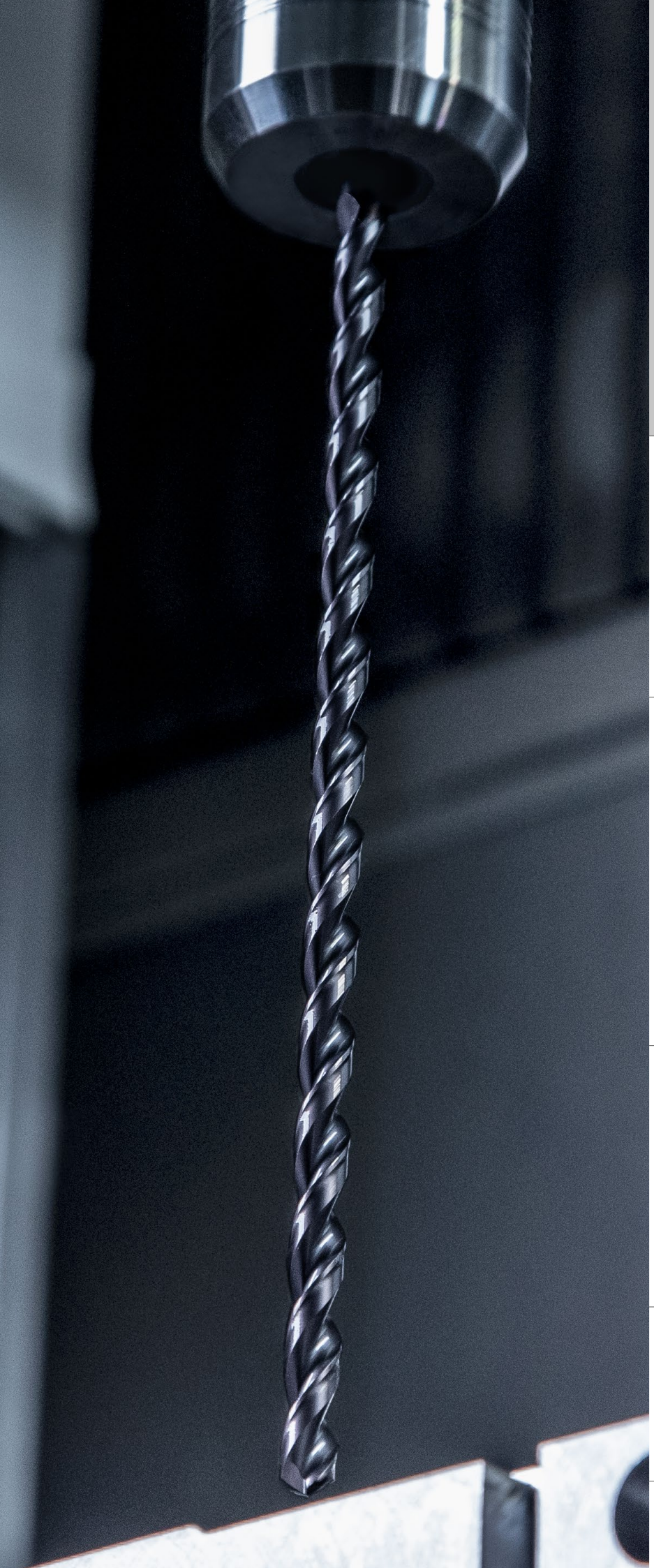


Table of contents

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				
Steel – Universal	UNI	HSS-E-PM TiN	▲ Wear-resistant due to HSS-E-PM and TiN coating ▲ Universal high-performance drill	9–14	17–22				
Steel – Universal	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			
Steel – Universal	N	HSS vap.	▲ stable twist drill ▲ also suitable for portable drills ▲ available in set	9–14	17–22				
Steel – Universal	WT	HSS-E vap.	▲ for high alloy steel and special alloys (Hastelloy, Inconel, Nimonic)	9–14					
Steel – Universal	WT	HSS-E TiN	▲ as Type WT HSS-E vap. ▲ higher wear resistance due to coating	9–14					
Steel – Universal	WTL-L	HSS F.-nit	▲ left-hand cutting ▲ nitrided cutting edge giving increased wear protection to cutting corners and guide lands	15	23				
Steel – Universal	WNXi	HSS-E	▲ very good chip evacuation with thro' coolant ▲ for long chipping materials to 1000 N/mm²		25				
Steel – Universal	WNXi	HSS-E TiN	▲ as Type WNXi HSS-E ▲ higher wear resistance due to coating		25				
Steel – Universal	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			
Steel – Universal	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				
Steel – Universal	WTL	HSS-E TiCN	▲ as WTL TiN, but higher v_c and wear resistance possible with high alloy steels		23				
Steel – Universal	WTL	HSS-E TiAlN	▲ Special flute profile with large chip spaces ▲ Higher wear resistance due to TiAlN coating				29	30	30
Steel – Universal	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
Steel – Universal	WTL	HSS TiN	▲ as WTL HSS, but higher v_c and wear resistance due to coating			26–28			
Steel – Universal	WNX	HSS-E	▲ Wide chip flutes for long-chipping materials	9–14					
Steel – Universal	NC	HSS	▲ suitable for use with drill bushes ▲ very good chip evacuation with thro' coolant			25			
Steel – Universal	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				
Non ferrous metals	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 P	Stainless steel M	Cast iron K	Non ferrous metals N	Heat resistant S	hardened materials H	Non metal materials O		coated ■	uncoated □	WNT \ Performance
	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 P	Stainless steel M	Cast iron K	Non ferrous metals N	Heat resistant S	hardened materials H	Non metal materials O		coated ■	uncoated □	WNT \ Performance
	VX	HSS-E TiN	118°	2–20	●	●	●	○	○		○		■		16
	UNI	HSS-E-PM TiN	130°	1–14	●		●	○	○	○	○		■		17–22
	UNI	HSS-E TiN	118°	0,9–14	●	●	●	○	○		○		■		17–22
	N	HSS vap.	118°	0,2–20	○		●	○			○		■		17–22
	VA	HSS-E	130°	1–12	○	●		●	○					□	17–22
	W	HSS	130°	0,20–20				●						□	17–22
	WTL	HSS-E F-nit.	130°	1–16	●	○	●	●	○	○	○		■		17–22
	WTL	HSS-E TiN	130°	1–16	●	○	●	○	○	○	○		■		17–22
	WTL	HSS-E TiCN	130°	3–12	●	○	●	○	○	○	○		■		23
	WTL-L	HSS F-nit.	130°	1–16	○		●	●			○	left-hand cutting	■		23

HSS Drills Overview

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

HSS Drills Overview

	Tool type	Material | Coating	Point angle	Diameter in mm DC	Steel P / Stainless steel M / Cast iron K / Non ferrous metals N / Heat resistant S / hardened materials H / Non metal materials O		coated ■ / uncoated □	WNT \ Performance
Twist Drill Sets								
	N	HSS vap.	118°	1–10	○ ● ○ ○		■	24
	UNI	HSS-E TiN	118°	1–10	● ● ● ○ ○ ○		■	24
NC Spot Drill								
	NC-A	HSS	90°	3–20	● ○ ● ○		□	35–37
	NC-A	HSS TiN	90°	3–20	● ○ ● ○		■	35+36
	NC-A	HSS	120°	3–20	● ○ ● ○		□	35+36
	NC-A	HSS TiN	120°	3–20	● ○ ● ○		■	35+36
Centre drills								
	ZB	HSS	118°	0,5–6,3	● ○ ● ○	DIN 333 – Form A/B/R	□	37–39
	ZB	HSS TiN	118°	0,5–6,3	● ○ ● ○	DIN 333 – Form A	■	38
	ZB	HSS-E	118°	0,5–6,3	● ○ ● ○	DIN 333 – Form A	□	38
Core drills								
	N	HSS vap.	120°	3,8–12	● ○ ● ○ ○	3 flute	■	40
Stepped drills								
	SB	HSS vap.	118°	2,5–10,2	● ○ ● ○	Countersinking angle 90°	■	41
	SB	HSS	118°	2,5–10,2	● ○ ● ○	Countersinking angle 90°	□	41
	SB	HSS vap.	118°	3,2–10,5	● ○ ● ○	Countersinking angle 90°	■	41
	SB	HSS	118°	3,2–10,5	● ○ ● ○	Countersinking angle 90°	□	41
	SB	HSS vap.	118°	3,4–11	● ○ ● ○	Countersinking angle 180°	■	42
	SB	HSS	118°	3,4–11	● ○ ● ○	Countersinking angle 180°	□	42
	SB	HSS vap.	118°	3,3–21	● ○ ● ○	Countersinking angle 60°	■	44

HSS Drills Overview

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

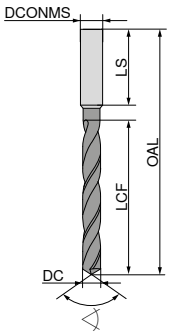
High-performance twist drills similar to DIN 1897, extra-short

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

≤ 3xD

VX

TiN



HSS-E

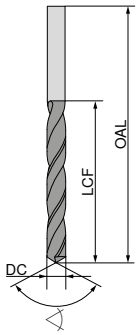
DC h8 mm	OAL mm	LCF mm	DCONMS h6 mm	LS mm	10 122 ... EUR T2	
2,00	44	12	3	28	9,28	020
2,10	44	12	3	28	10,21	021
2,20	45	13	3	28	11,13	022
2,30	45	13	3	28	11,13	023
2,40	46	14	3	28	11,68	024
2,50	46	14	3	28	10,05	025
2,60	46	14	3	28	11,68	026
2,70	48	16	3	28	12,23	027
2,80	48	16	3	28	12,23	028
2,90	48	16	3	28	12,23	029
3,00	48	16	3	28	11,13	030
3,10	50	18	4	28	11,13	031
3,20	50	18	4	28	11,13	032
3,30	50	18	4	28	11,25	033
3,40	52	20	4	28	11,25	034
3,50	52	20	4	28	10,71	035
3,60	52	20	4	28	11,57	036
3,70	52	20	4	28	12,11	037
3,80	54	22	4	28	11,79	038
3,90	54	22	4	28	12,11	039
4,00	54	22	4	28	9,88	040
4,10	66	22	6	36	9,88	041
4,20	66	22	6	36	10,32	042
4,30	68	24	6	36	10,91	043
4,40	68	24	6	36	12,23	044
4,50	68	24	6	36	9,98	045
4,60	68	24	6	36	13,10	046
4,70	68	24	6	36	13,20	047
4,80	70	26	6	36	13,20	048
4,90	70	26	6	36	13,20	049
5,00	70	26	6	36	11,13	050
5,10	70	26	6	36	13,20	051
5,20	70	26	6	36	13,42	052
5,30	70	26	6	36	13,75	053
5,40	72	28	6	36	14,96	054
5,50	72	28	6	36	11,79	055
5,55	72	28	6	36	14,96	555
5,60	72	28	6	36	14,96	056
5,70	72	28	6	36	14,96	057
5,80	72	28	6	36	14,96	058
5,90	72	28	6	36	14,96	059
6,00	72	28	6	36	12,33	060
6,10	75	31	8	36	19,21	061
6,20	75	31	8	36	19,21	062
6,30	75	31	8	36	23,36	063
6,40	75	31	8	36	19,76	064
6,50	75	31	8	36	14,63	065
6,60	75	31	8	36	23,68	066
6,70	75	31	8	36	23,68	067
6,80	78	34	8	36	25,43	068
6,90	78	34	8	36	25,76	069
7,00	78	34	8	36	19,44	070
7,10	78	34	8	36	28,60	071
7,20	78	34	8	36	28,49	072
7,30	78	34	8	36	28,49	073
7,40	78	34	8	36	28,60	074
7,45	78	34	8	36	28,60	745
7,50	78	34	8	36	20,53	075
7,60	81	37	8	36	28,71	076
7,70	81	37	8	36	31,98	077
7,80	81	37	8	36	31,98	078
7,90	81	37	8	36	31,98	079
8,00	81	37	8	36	21,07	080
8,10	87	37	10	40	35,14	081
8,20	87	37	10	40	35,14	082
8,30	87	37	10	40	35,14	083
8,40	87	37	10	40	35,14	084
8,50	87	37	10	40	23,79	085
8,60	91	40	10	40	36,68	086
8,70	91	40	10	40	36,68	087
8,80	91	40	10	40	36,68	088
8,90	91	40	10	40	36,68	089
9,00	91	40	10	40	26,20	090
9,10	91	40	10	40	45,07	091
9,20	91	40	10	40	45,07	092
9,30	91	40	10	40	45,07	093
9,35	91	40	10	40	45,07	935
9,40	91	40	10	40	45,07	094
9,50	91	40	10	40	31,44	095
9,60	93	43	10	40	33,95	096
9,70	93	43	10	40	33,95	097
9,80	93	43	10	40	33,95	098
9,90	93	43	10	40	33,95	099
10,00	93	43	10	40	30,12	100
10,10	100	43	12	45	47,37	101
10,20	100	43	12	45	44,42	102
10,30	100	43	12	45	46,06	103
10,40	100	43	12	45	49,01	104
10,50	100	43	12	45	43,33	105
10,60	100	43	12	45	52,61	106
10,70	104	47	12	45	48,03	107
10,80	104	47	12	45	46,16	108
10,90	104	47	12	45	67,78	109
11,00	104	47	12	45	43,33	110
11,10	104	47	12	45	43,01	111
11,50	104	47	12	45	45,07	115
11,70	104	47	12	45	51,52	117
11,80	104	47	12	45	54,03	118
11,90	108	51	12	45	67,90	119
12,00	108	51	12	45	51,95	120
12,10	111	51	16	48	38,32	121
12,20	111	51	16	48	57,08	122
12,30	111	51	16	48	70,18	123
12,40	111	51	16	48	83,62	124
12,50	111	51	16	48	54,36	125
12,60	111	51	16	48	110,20	126
12,70	111	51	16	48	120,10	127
12,80	111	51	16	48	56,98	128
12,90	111	51	16	48	84,05	129
13,00	111	51	16	48	58,40	130
13,50	114	54	16	48	86,23	135
14,00	114	54	16	48	86,23	140
14,50	116	56	16	48	110,20	145
15,00	116	56	16	48	103,90	150
15,50	118	58	16	48	113,50	155
16,00	118	58	16	48	108,80	160
16,50	126	60	20	50	169,20	165
17,00	126	60	20	50	169,20	170
17,50	128	62	20	50	169,20	175
18,00	128	62	20	50	169,20	180
18,50	130	64	20	50	169,20	185
19,00	130	64	20	50	169,20	190
19,50	132	66	20	50	169,20	195
20,00	132	66	20	50	149,60	200

P	●
M	●
K	●
N	○
S	○
H	
O	○

→ 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° HSS-E-PM	◁ 118° HSS-E	◁ 118° HSS	◁ 130° HSS-E	◁ 130° HSS-E	◁ 130° HSS-E	◁ 130° HSS-E
	10 113 ...	**10 107 ...**	**10 105 ...**	**10 130 ...**	**10 106 ...**	**10 109 ...**	**10 110 ...**

DC h8 mm	DC inch	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
0,40		19	2,5					4,14	004 [1]			6,94	00400 [1]		
0,50		20	3,0					3,10	005 [1]			5,13	00500 [1]		
0,55		21	3,5									12,01	00550 [1]		
0,60		21	3,5					3,81	006 [1]			6,11	00600 [1]		
0,65		22	4,0									6,65	00650 [1]		
0,70		23	4,5					3,54	007 [1]			5,60	00700 [1]		
0,75		23	4,5									5,83	00750 [1]		
0,80		24	5,0					2,72	008 [1]			4,87	00800 [1]		
0,85		24	5,0									5,50	00850 [1]		
0,90		25	5,5					2,72	009 [1]			4,87	00900 [1]		
0,95		25	5,5									5,50	00950 [1]		
1,00		26	6,0	8,14	010 [2]	4,89	010 [2]	1,50	010 [1]	2,07	010	3,15	010	3,46	01000 [1]	4,80	010
1,05		26	6,0											4,66	01050 [1]		
1,10		28	7,0	8,14	011 [2]	4,89	011 [2]	1,59	011 [1]	2,07	011	3,45	011	3,31	01100 [1]	5,01	011
1,15		28	7,0											3,71	01150 [1]		
1,20		30	8,0	8,34	012 [2]	5,02	012 [2]	1,59	012 [1]	1,88	012	3,42	012	3,22	01200 [1]	4,68	012
1,25		30	8,0											3,71	01250 [1]		
1,30		30	8,0	8,79	013 [2]	5,27	013 [2]	1,59	013 [1]	1,88	013	3,32	013	3,31	01300 [1]	5,01	013
1,35		32	9,0											3,71	01350 [1]		
1,40		32	9,0	8,04	014 [2]	4,82	014 [2]	1,59	014 [1]	1,88	014	3,32	014	3,31	01400 [1]	5,01	014
1,45		32	9,0											3,71	01450 [1]		
1,50		32	9,0	7,59	015 [2]	4,55	015 [2]	1,25	015 [1]	1,88	015	3,04	015	3,07	01500 [1]	4,68	015
1,55		34	10,0											4,82	01550 [1]		
1,60		34	10,0	7,95	016 [2]	4,76	016 [2]	1,46	016 [1]	2,30	016	3,29	016	2,99	01600 [1]	4,53	016
1,65		34	10,0											3,97	01650 [1]		
1,70		34	10,0	8,04	017 [2]	4,82	017 [2]	1,46	017 [1]	2,30	017	3,25	017	2,96	01700 [1]	4,46	017
1,75		36	11,0											3,66	01750 [1]		
1,80		36	11,0	7,95	018 [2]	4,76	018 [2]	1,55	018 [1]	2,30	018	3,25	018	3,01	01800 [1]	4,59	018
1,83		36	11,0											5,41	01830 [1]		
1,85		36	11,0											3,43	01850 [1]		
1,90		36	11,0	7,95	019 [2]	4,76	019 [2]	1,46	019 [1]	2,30	019	3,22	019	3,01	01900 [1]	4,59	019
1,95		38	12,0											5,35	01950 [1]		
2,00		38	12,0	6,65	020 [2]	3,99	020 [2]	0,96	020 [1]	2,30	020	2,74	020	2,65	02000 [1]	3,89	020
2,05		38	12,0											4,82	02050 [1]		
2,10		38	12,0	8,14	021 [2]	4,89	021 [2]	1,39	021 [1]	2,30	021	3,04	021	2,93	02100 [1]	4,39	021
2,15		40	13,0											4,53	02150 [1]		
2,20		40	13,0	8,14	022 [2]	4,89	022 [2]	1,39	022 [1]	2,30	022	3,07	022	3,41	02200 [1]	4,80	022
2,25		40	13,0											3,66	02250 [1]		
2,30		40	13,0	6,85	023 [2]	4,14	023 [2]	1,46	023 [1]	2,30	023	3,20	023	3,15	02300 [1]	4,80	023
2,35		40	13,0											5,13	02350 [1]		
2,38	3/32	43	14,0	7,54	238 [2]	4,50	238 [2]										
2,40		43	14,0	8,19	024 [2]	4,94	024 [2]	1,46	024	2,30	024	3,25	024	3,28	02400	4,96	024
2,45		43	14,0											3,89	02450		
2,50		43	14,0	7,15	025 [2]	4,34	025 [2]	1,09	025	2,30	025	3,04	025	2,80	02500	4,25	025
2,55		43	14,0											5,13	02550		

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

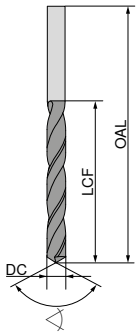
1) uncoated
2) self-centering

→ 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
	10 113 ...	**10 107 ...**	**10 105 ...**	**10 130 ...**	**10 106 ...**	**10 109 ...**	**10 110 ...**

DC h8 mm	DC inch	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
2,60		43	14,0	8,45	**026** [2]	5,10	**026** [2]	1,50	**026**	2,30	**026**	3,25	**026**	3,28	**02600**	4,96	**026**
2,65		43	14,0											5,13	**02650**		
2,70		46	16,0	8,99	**027** [2]	5,42	**027** [2]	1,50	**027**	2,30	**027**	3,29	**027**	3,43	**02700**	5,26	**027**
2,75		46	16,0											5,13	**02750**		
2,78	7/64	46	16,0	8,73	**278** [2]	5,24	**278** [2]										
2,80		46	16,0	8,34	**028** [2]	5,02	**028** [2]	1,50	**028**	2,30	**028**	3,45	**028**	3,43	**02800**	5,26	**028**
2,85		46	16,0											5,10	**02850**		
2,90		46	16,0	8,88	**029** [2]	5,35	**029** [2]	1,50	**029**	2,30	**029**	3,58	**029**	3,43	**02900**	5,26	**029**
2,95		46	16,0											3,66	**02950**		
3,00		46	16,0	7,54	**030** [2]	4,50	**030** [2]	1,09	**030**	2,30	**030**	3,25	**030**	3,01	**03000**	4,48	**030**
3,05		49	18,0											3,78	**03050**		
3,10		49	18,0	8,04	**031** [2]	4,82	**031** [2]	1,50	**031**	2,30	**031**	3,73	**031**	3,43	**03100**	5,16	**031**
3,15		49	18,0											5,50	**03150**		
3,17	1/8	49	18,0	7,95	**317** [2]	4,76	**317** [2]										
3,20		49	18,0	7,59	**032** [2]	4,55	**032** [2]	1,39	**032**	2,30	**032**	3,20	**032**	3,28	**03200**	4,87	**032**
3,25		49	18,0											3,81	**03250**		
3,30		49	18,0	7,59	**033** [2]	4,55	**033** [2]	1,46	**033**	2,30	**033**	3,45	**033**	3,54	**03300**	5,26	**033**
3,35		49	18,0											5,10	**03350**		
3,40		52	20,0	8,79	**034** [2]	5,27	**034** [2]	1,85	**034**	2,30	**034**	3,93	**034**	3,51	**03400**	5,26	**034**
3,45		52	20,0											3,81	**03450**		
3,50		52	20,0	7,59	**035** [2]	4,55	**035** [2]	1,25	**035**	2,30	**035**	3,84	**035**	3,46	**03500**	4,77	**035**
3,55		52	20,0											3,89	**03550**		
3,57	9/64	52	20,0	8,59	**357** [2]	5,17	**357** [2]										
3,60		52	20,0	10,08	**036** [2]	6,06	**036** [2]	1,85	**036**	2,65	**036**	3,93	**036**	3,54	**03600**	5,26	**036**
3,70		52	20,0	8,73	**037** [2]	5,24	**037** [2]	1,85	**037**	2,65	**037**	3,93	**037**	3,78	**03700**	5,67	**037**
3,75		52	20,0											3,97	**03750**		
3,80		55	22,0	9,28	**038** [2]	5,58	**038** [2]	1,85	**038**	2,65	**038**	4,17	**038**	3,66	**03800**	5,39	**038**
3,85		55	22,0											6,11	**03850**		
3,90		55	22,0	10,52	**039** [2]	6,33	**039** [2]	1,85	**039**			4,17	**039**	3,75	**03900**	5,67	**039**
3,95		55	22,0											6,18	**03950**		
3,97	5/32	55	22,0	9,47	**397** [2]	5,67	**397** [2]										
4,00		55	22,0	8,59	**040** [2]	5,17	**040** [2]	1,31	**040**	3,92	**040**	4,14	**040**	3,71	**04000**	4,87	**040**
4,05		55	22,0											4,36	**04050**		
4,10		55	22,0	9,83	**041** [2]	5,92	**041** [2]	1,59	**041**	3,92	**041**	4,20	**041**	3,85	**04100**	5,39	**041**
4,15		55	22,0											6,14	**04150**		
4,20		55	22,0	8,59	**042** [2]	5,17	**042** [2]	1,55	**042**	3,92	**042**	3,84	**042**	3,78	**04200**	5,39	**042**
4,25		55	22,0											6,68	**04250**		
4,30		58	24,0	9,79	**043** [2]	5,88	**043** [2]	2,48	**043**	3,92	**043**	4,33	**043**	4,00	**04300**	5,98	**043**
4,35		58	24,0											6,71	**04350**		
4,37	11/64	58	24,0	13,20	**437** [2]	7,91	**437** [2]										
4,40		58	24,0	10,52	**044** [2]	6,33	**044** [2]	2,48	**044**			4,33	**044**	4,16	**04400**	6,14	**044**
4,45		58	24,0											6,90	**04450**		
4,50		58	24,0	9,79	**045** [2]	5,88	**045** [2]	1,59	**045**	4,13	**045**	4,33	**045**	3,97	**04500**	5,08	**045**
4,55		58	24,0											6,71	**04550**		
4,60		58	24,0	9,83	**046** [2]	5,92	**046** [2]	2,51	**046**	4,13	**046**	4,49	**046**	4,41	**04600**	6,68	**046**

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

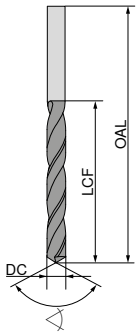
1) uncoated
2) self-centering

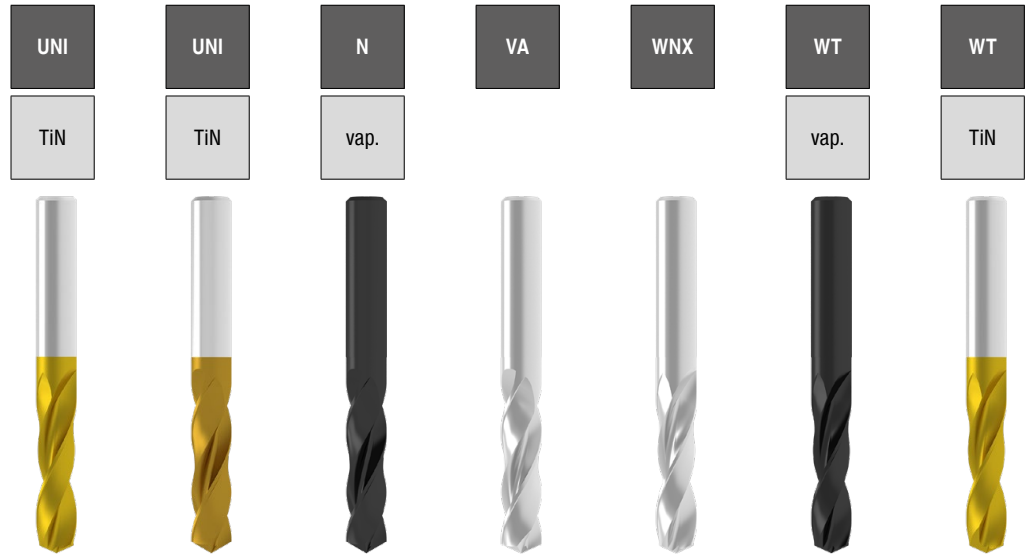
→ v_c Page 46+47

Continued on next page

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

≤ 3xD





				130° HSS-E-PM		118° HSS-E		118° HSS		130° HSS-E		130° HSS-E		130° HSS-E		130° HSS-E	
				10 113 ...		**10 107 ...**		**10 105 ...**		**10 130 ...**		**10 106 ...**		**10 109 ...**		**10 110 ...**	
DC $_{h8}$ **mm**	**DC inch**	**OAL mm**	**LCF mm**	**EUR T2**		**EUR T2**		**EUR T2**		**EUR T2**		**EUR T2**		**EUR T2**		**EUR T2**	
4,65		58	24,0											6,00	**04650**	6,79	**465**
4,70		58	24,0	11,02	**047** [2]	6,59	**047** [2]	2,51	**047**	4,13	**047**	4,80	**047**	4,55	**04700**	6,79	**047**
4,75		58	24,0											6,00	**04750**		
4,76	3/16	62	26,0	11,02	**476** [2]	6,59	**476** [2]										
4,80		62	26,0	11,13	**048** [2]	6,71	**048** [2]	2,51	**048**	4,26	**048**	5,02	**048**	4,77	**04800**	6,76	**048**
4,85		62	26,0											5,50	**04850**		
4,90		62	26,0	11,25	**049** [2]	6,77	**049** [2]	2,51	**049**	4,26	**049**	5,24	**049**	5,23	**04900**	6,76	**049**
4,95		62	26,0											7,84	**04950**		
5,00		62	26,0	9,47	**050** [2]	5,67	**050** [2]	1,69	**050**	4,26	**050**	4,64	**050**	4,25	**05000**	5,50	**050**
5,05		62	26,0											9,26	**05050**		
5,10		62	26,0	10,42	**051** [2]	6,27	**051** [2]	2,56	**051**	4,26	**051**	5,37	**051**	5,67	**05100**	6,96	**051**
5,15		62	26,0											9,83	**05150**		
5,16	13/64	62	26,0	12,44	**516** [2]	7,46	**516** [2]										
5,20		62	26,0	11,25	**052** [2]	6,77	**052** [2]	2,56	**052**	4,84	**052**	5,44	**052**	6,79	**05200**	7,08	**052**
5,25		62	26,0											8,03	**05250**		
5,30		62	26,0	12,77	**053** [2]	7,69	**053** [2]	2,56	**053**	4,84	**053**	5,60	**053**	7,47	**05300**	7,20	**053**
5,35		66	28,0											13,32	**05350**		
5,40		66	28,0	12,44	**054** [2]	7,50	**054** [2]	2,93	**054**			5,88	**054**	8,03	**05400**	7,95	**054**
5,45		66	28,0											12,88	**05450**		
5,50		66	28,0	10,68	**055** [2]	6,41	**055** [2]	2,22	**055**	4,84	**055**	5,80	**055**	5,41	**05500**	5,92	**055**
5,55		66	28,0											14,63	**05550**	7,70	**555**
5,56	7/32	66	28,0	11,68	**556** [2]	7,00	**556** [2]										
5,60		66	28,0	12,77	**056** [2]	7,69	**056** [2]	2,93	**056**	4,87	**056**	6,17	**056**	8,95	**05600**	7,70	**056**
5,70		66	28,0	13,65	**057** [2]	8,18	**057** [2]	2,93	**057**	4,87	**057**	6,22	**057**	9,11	**05700**	7,70	**057**
5,75		66	28,0											10,74	**05750**		
5,80		66	28,0	13,10	**058** [2]	7,88	**058** [2]	2,93	**058**	4,87	**058**	6,32	**058**	9,26	**05800**	7,70	**058**
5,85		66	28,0											15,60	**05850**		
5,90		66	28,0	14,41	**059** [2]	8,64	**059** [2]	2,93	**059**	4,87	**059**	6,39	**059**	9,69	**05900**	7,93	**059**
5,95	15/64	66	28,0	21,84	**595** [2]	13,20	**595** [2]							9,83	**05950**		
6,00		66	28,0	11,57	**060** [2]	6,89	**060** [2]	2,22	**060**	5,25	**060**	5,64	**060**	5,41	**06000**	6,21	**060**
6,05		70	31,0											15,60	**06050**		
6,10		70	31,0	13,54	**061** [2]	8,12	**061** [2]	3,15	**061**	5,25	**061**	6,65	**061**	10,22	**06100**	9,95	**061**
6,15		70	31,0											11,35	**06150**		
6,20		70	31,0	13,54	**062** [2]	8,12	**062** [2]	3,15	**062**	5,25	**062**	6,74	**062**	10,74	**06200**	10,25	**062**
6,25		70	31,0											13,42	**06250**		
6,30		70	31,0	15,50	**063** [2]	9,27	**063** [2]	3,15	**063**	5,25	**063**	6,79	**063**	11,46	**06300**	10,44	**063**
6,35	1/4	70	31,0	14,19	**635** [2]	8,54	**635** [2]							8,03	**06350**		
6,40		70	31,0	14,30	**064** [2]	8,61	**064** [2]	3,27	**064**	5,99	**064**	7,14	**064**	11,68	**06400**	10,50	**064**
6,45		70	31,0											15,17	**06450**		
6,50		70	31,0	13,54	**065** [2]	8,12	**065** [2]	2,64	**065**	5,99	**065**	6,76	**065**	6,32	**06500**	7,78	**065**
6,55		70	31,0											16,05	**06550**		
6,60		70	31,0	14,84	**066** [2]	8,96	**066** [2]	3,27	**066**	5,99	**066**	7,35	**066**	12,23	**06600**	10,48	**066**
6,65		70	31,0											16,91	**06650**		
6,70		70	31,0	16,38	**067** [2]	9,82	**067** [2]	3,58	**067**	5,99	**067**	7,60	**067**	12,44	**06700**	10,65	**067**
6,75		74	34,0	20,19	**675** [2]	12,01	**675** [2]							12,56	**06750**		

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

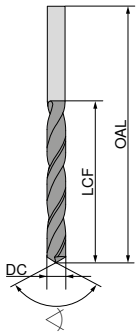
1) uncoated
2) self-centering

→ 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
	10 113 ...	**10 107 ...**	**10 105 ...**	**10 130 ...**	**10 106 ...**	**10 109 ...**	**10 110 ...**

DC h8 mm	DC inch	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
6,80		74	34,0	16,49	**068** [2]	9,87	**068** [2]	4,14	**068**	6,20	**068**	8,48	**068**	12,88	**06800**	11,35	**068**
6,85		74	34,0											18,13	**06850**		
6,90		74	34,0	16,26	**069** [2]	9,72	**069** [2]	4,45	**069**	6,20	**069**	8,69	**069**	13,10	**06900**	11,35	**069**
7,00		74	34,0	15,06	**070** [2]	9,06	**070** [2]	3,23	**070**	6,20	**070**	7,35	**070**	7,20	**07000**	9,31	**070**
7,05		74	34,0											20,30	**07050**		
7,10		74	34,0	18,23	**071** [2]	11,02	**071** [2]	4,60	**071**	6,20	**071**	10,25	**071**	13,32	**07100**	12,56	**071**
7,14	9/32	74	34,0	24,23	**714** [2]	14,51	**714** [2]										
7,20		74	34,0	18,78	**072** [2]	11,35	**072** [2]	4,68	**072**	6,60	**072**	10,74	**072**	13,86	**07200**	12,56	**072**
7,25		74	34,0											16,49	**07250**		
7,30		74	34,0	20,19	**073** [2]	12,11	**073** [2]	4,81	**073**			11,35	**073**	13,97	**07300**	12,66	**073**
7,35		74	34,0											18,33	**07350**		
7,40		74	34,0	18,89	**074** [2]	11,46	**074** [2]	5,16	**074**			12,44	**074**	14,19	**07400**	12,66	**074**
7,50		74	34,0	15,72	**075** [2]	9,45	**075** [2]	3,58	**075**	6,60	**075**	8,06	**075**	8,37	**07500**	9,74	**075**
7,60		79	37,0	24,57	**076** [2]	14,74	**076** [2]	5,72	**076**			11,68	**076**	14,84	**07600**	14,09	**076**
7,70		79	37,0	26,52	**077** [2]	15,94	**077** [2]	5,72	**077**	6,95	**077**	12,01	**077**	15,50	**07700**	14,09	**077**
7,75		79	37,0											19,21	**07750**		
7,80		79	37,0	20,30	**078** [2]	12,23	**078** [2]	5,72	**078**			12,01	**078**	15,83	**07800**	14,19	**078**
7,90		79	37,0	28,38	**079** [2]	17,04	**079** [2]	5,80	**079**	6,95	**079**	11,46	**079**	16,15	**07900**	14,19	**079**
7,94	5/16	79	37,0	19,44	**794** [2]	11,68	**794** [2]										
8,00		79	37,0	18,78	**080** [2]	11,35	**080** [2]	3,67	**080**	7,50	**080**	8,24	**080**	7,84	**08000**	10,12	**080**
8,05		79	37,0											25,87	**08050**		
8,10		79	37,0	24,02	**081** [2]	14,41	**081** [2]	6,23	**081**	7,50	**081**	12,66	**081**	16,91	**08100**	14,30	**081**
8,15		79	37,0											25,87	**08150**		
8,20		79	37,0	25,00	**082** [2]	14,96	**082** [2]	6,67	**082**	7,50	**082**	13,00	**082**	17,69	**08200**	14,30	**082**
8,25		79	37,0											20,09	**08250**		
8,30		79	37,0	26,20	**083** [2]	15,72	**083** [2]	6,77	**083**	7,50	**083**	13,32	**083**	18,66	**08300**	14,51	**083**
8,40		79	37,0	25,11	**084** [2]	15,17	**084** [2]	6,94	**084**	8,30	**084**	13,86	**084**	19,54	**08400**	14,51	**084**
8,50		79	37,0	21,84	**085** [2]	13,20	**085** [2]	5,27	**085**	8,30	**085**	10,02	**085**	9,43	**08500**	12,11	**085**
8,55		84	40,0											29,57	**08550**		
8,60		84	40,0			14,74	**086** [2]	6,94	**086**	8,30	**086**	14,19	**086**	20,09	**08600**	14,84	**086**
8,70		84	40,0			16,91	**087** [2]	7,09	**087**	8,30	**087**	14,63	**087**	21,07	**08700**	14,84	**087**
8,73	11/32	84	40,0	34,49	**873** [2]	20,73	**873** [2]										
8,75		84	40,0											25,87	**08750**		
8,80		84	40,0	27,40	**088** [2]	16,38	**088** [2]	7,16	**088**			16,38	**088**	21,94	**08800**	14,96	**088**
8,90		84	40,0			20,95	**089** [2]	7,45	**089**			10,74	**089**	22,38	**08900**	15,72	**089**
8,95		84	40,0											28,71	**08950**		
9,00		84	40,0	22,17	**090** [2]	13,42	**090** [2]	4,81	**090**	9,52	**090**	9,80	**090**	10,03	**09000**	12,23	**090**
9,05		84	40,0											23,68	**09050**		
9,10		84	40,0			17,69	**091** [2]	8,35	**091**			17,04	**091**	22,93	**09100**	19,44	**091**
9,20		84	40,0			17,79	**092** [2]	9,02	**092**	10,03	**092**	18,33	**092**	23,68	**09200**	19,44	**092**
9,25		84	40,0											26,63	**09250**		
9,30		84	40,0	25,11	**093** [2]	15,17	**093** [2]	9,41	**093**	10,03	**093**	12,66	**093**	24,88	**09300**	19,44	**093**
9,40		84	40,0			20,63	**094** [2]	9,57	**094**			12,66	**094**	25,21	**09400**	19,44	**094**
9,50		84	40,0	24,57	**095** [2]	14,74	**095** [2]	8,03	**095**	10,16	**095**	12,01	**095**	10,92	**09500**	16,05	**095**
9,60		89	43,0			21,62	**096** [2]	10,10	**096**			19,10	**096**	25,21	**09600**	20,19	**096**

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

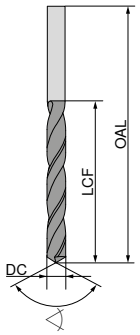
1) uncoated
2) self-centering

→ 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

				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC h8 mm	DC inch	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
9,65		89	43,0											28,71	09650		
9,70		89	43,0			20,95	097 2)	10,25	097			19,10	097	25,53	09700	20,19	097
9,75		89	43,0											28,71	09750		
9,80		89	43,0	29,25	098 2)	17,69	098 2)	10,80	098	11,13	098	19,44	098	25,87	09800	21,62	098
9,90		89	43,0			22,38	099 2)	10,80	099			20,09	099	26,20	09900	21,62	099
10,00		89	43,0	24,12	100 2)	14,51	100 2)	5,80	100	11,57	100	10,74	100	12,88	10000	14,96	100
10,05		89	43,0											34,05	10050		
10,10		89	43,0			21,62	101 2)	11,79	101					34,93	10100		
10,20		89	43,0	30,56	102 2)	18,45	102 2)	10,25	102	11,57	102	19,10	102	20,09	10200	20,95	102
10,25		89	43,0											30,67	10250		
10,30		89	43,0			20,09	103 2)	12,56	103					32,41	10300		
10,40		89	43,0			23,47	104 2)	13,32	104					38,32	10400		
10,50		89	43,0	29,04	105 2)	17,58	105 2)	10,80	105	12,44	105	15,94	105	22,38	10500	19,98	105
10,60		95	47,0					16,05	106					38,53	10600		
10,70		95	47,0					16,49	107					38,53	10700		
10,75		95	47,0											33,51	10750		
10,80		95	47,0					16,91	108			21,18	108	37,44	10800	44,87	108
10,90		95	47,0					16,91	109					38,32	10900		
11,00		95	47,0	32,20	110 2)	19,21	110 2)	10,80	110	12,88	110	18,89	110	23,68	11000	19,98	110
11,10		95	47,0					16,91	111					43,45	11100		
11,11	7/16	95	47,0	37,87	111 2)	22,81	111 2)										
11,20		95	47,0					17,79	112					45,52	11200		
11,30		95	47,0					18,13	113					48,14	11300		
11,40		95	47,0					18,13	114					48,46	11400		
11,50		95	47,0	37,12	115 2)	22,48	115 2)	11,35	115	14,74	115	24,57	115	26,63	11500	21,18	115
11,60		95	47,0					18,13	116								
11,70		95	47,0					18,13	117	15,94	117			48,46	11700		
11,75		95	47,0											52,73	11750		
11,80		95	47,0					18,66	118			30,56	118	48,46	11800	25,21	118
11,90		102	51,0					18,89	119								
12,00		102	51,0	36,35	120 2)	21,94	120 2)	13,86	120	16,05	120	24,57	120	31,44	12000	24,57	120
12,10		102	51,0					19,32	121					48,14	12100		
12,20		102	51,0					19,32	122					48,46	12200		
12,25		102	51,0											53,49	12250		
12,30		102	51,0	61,56	123 2)	36,58	123 2)	19,54	123			30,56	123	37,22	12300	37,54	123
12,40		102	51,0					19,54	124					48,46	12400		
12,50		102	51,0	39,84	125 2)	23,91	125 2)	14,41	125			25,00	125	32,09	12500	25,21	125
12,60		102	51,0					19,98	126					32,96	12600		
12,70		102	51,0	50,87	127 2)	30,34	127 2)	19,10	127					32,96	12700		
12,80		102	51,0					20,73	128			37,44	128	48,90	12800	47,60	128
12,90		102	51,0					21,62	129					48,90	12900		
13,00		102	51,0	39,84	130 2)	23,91	130 2)	14,63	130			27,61	130	34,05	13000	25,87	130
13,20		102	51,0					22,38	132					48,90	13200		
13,30		107	54,0					22,71	133								
13,50		107	54,0	42,35	135 2)	25,53	135 2)	16,91	135			34,49	135	36,78	13500	28,16	135

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

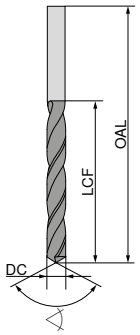
1) uncoated
2) self-centering

→ v_c Page 46+47

Continued on next page

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

≤ 3xD



	UNI TiN	UNI TiN	N vap.	VA	WNX	WT vap.	WT TiN
							
	∢ 130° HSS-E-PM	∢ 118° HSS-E	∢ 118° HSS	∢ 130° HSS-E	∢ 130° HSS-E	∢ 130° HSS-E	∢ 130° HSS-E
	10 113 ...	10 107 ...	10 105 ...	10 130 ...	10 106 ...	10 109 ...	10 110 ...

DC h8 mm	DC inch	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
13,80		107	54,0					23,36	138			44,54	138			29,91	138
14,00		107	54,0	52,83	140 [2]	31,87	140 [2]	17,24	140			32,09	140	36,78	14000	29,25	140
14,50		111	56,0					19,10	145			40,61	145	46,16	14500	29,80	145
14,75		111	56,0					29,47	147								
14,80		111	56,0									56,54	148				
15,00		111	56,0					18,89	150			37,67	150	44,10	15000	30,79	150
15,25		115	58,0					32,64	152					97,58	15250		
15,50		115	58,0					20,53	155			57,41	155	56,22	15500	40,27	155
15,75		115	58,0													42,13	157
16,00		115	58,0					20,73	160			45,41	160	45,96	16000	39,73	160
16,50		119	60,0					24,78	165			46,61	165	74,34	16500	59,61	165
17,00		119	60,0					25,21	170			47,05	170	64,19	17000	57,53	170
17,50		123	62,0					26,20	175			48,25	175	74,99	17500	55,01	175
17,75		123	62,0													66,80	177
18,00		123	62,0					26,42	180			48,57	180	70,41	18000	62,87	180
18,50		127	64,0					29,15	185					89,62	18500	71,06	185
19,00		127	64,0					30,67	190			50,33	190	74,99	19000	69,32	190
19,50		131	66,0					32,64	195					87,54	19500	77,83	195
19,75		131	66,0													79,25	197
20,00		131	66,0					32,64	200			52,94	200	76,62	20000	74,22	200
20,50		136	68,0											122,30	20500		
21,00		136	68,0											117,90	21000		
21,50		141	70,0											125,60	21500		
22,00		141	70,0											126,60	22000		
22,20		141	70,0											133,20	22200		
23,00		146	72,0											140,90	23000		
24,00		151	75,0											149,60	24000		
25,00		151	75,0											171,40	25000		

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

1) uncoated
2) self-centering

→ v_c Page 46+47

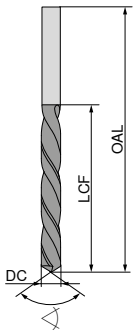
High-performance twist drills similar to DIN 1897, extra-short

▲ left-hand cutting

≤ 3xD

WTL-L

F.-nit



130°
HSS

DC h8 mm	OAL mm	LCF mm	10 112 ... EUR T2	
1,0	26	6	3,78	010 1)
1,1	28	7	4,19	011 1)
1,2	30	8	3,89	012 1)
1,3	30	8	3,89	013 1)
1,4	32	9	3,68	014 1)
1,5	32	9	3,25	015 1)
1,6	34	10	3,63	016 1)
1,7	34	10	3,48	017 1)
1,8	36	11	3,46	018 1)
1,9	36	11	3,31	019 1)
2,0	38	12	2,87	020 1)
2,1	38	12	3,11	021 1)
2,2	40	13	3,48	022 1)
2,3	40	13	3,63	023 1)
2,4	43	14	3,71	024
2,5	43	14	3,15	025
2,6	43	14	3,78	026
2,7	46	16	3,81	027
2,8	46	16	4,02	028
2,9	46	16	4,19	029
3,0	46	16	3,51	030
3,1	49	18	4,41	031
3,2	49	18	3,81	032
3,3	49	18	4,41	033
3,4	52	20	4,48	034
3,5	52	20	4,34	035
3,6	52	20	4,48	036
3,7	52	20	4,61	037
3,8	55	22	4,87	038
3,9	55	22	4,87	039
4,0	55	22	4,87	040
4,1	55	22	5,60	041
4,2	55	22	4,92	042
4,3	58	24	6,79	043
4,4	58	24	6,79	044
4,5	58	24	5,53	045
4,6	58	24	7,03	046
4,7	58	24	7,03	047
4,8	62	26	7,20	048
4,9	62	26	7,20	049
5,0	62	26	6,18	050
5,1	62	26	7,27	051
5,2	62	26	7,42	052
5,3	62	26	7,57	053
5,4	66	28	7,57	054
5,5	66	28	7,00	055
5,6	66	28	7,81	056
5,7	66	28	7,95	057
5,8	66	28	8,14	058
5,9	66	28	8,30	059
6,0	66	28	7,42	060
6,1	70	31	8,87	061
6,2	70	31	8,87	062
6,3	70	31	8,87	063
6,4	70	31	9,22	064
6,5	70	31	7,81	065
6,6	70	31	9,36	066
6,7	70	31	10,01	067
6,8	74	34	10,55	068
6,9	74	34	12,88	069
7,0	74	34	8,52	070
7,2	74	34	16,91	072
7,3	74	34	16,91	073
7,4	74	34	17,58	074
7,5	74	34	9,22	075
7,7	79	37	18,13	077
8,0	79	37	9,36	080
8,1	79	37	18,89	081
8,2	79	37	19,44	082
8,3	79	37	19,44	083
8,5	79	37	10,55	085
8,6	84	40	20,30	086
8,7	84	40	20,30	087
8,8	84	40	21,28	088
9,0	84	40	11,68	090
9,5	84	40	13,32	095
9,7	89	43	23,68	097
10,0	89	43	13,42	100
10,1	89	43	30,46	101
10,2	89	43	21,94	102
10,5	89	43	21,28	105
11,0	95	47	21,94	110
11,5	95	47	24,57	115
11,8	95	47	31,98	118
12,0	102	51	24,88	120
12,5	102	51	26,63	125
12,8	102	51	34,49	128
13,0	102	51	29,69	130
14,0	107	54	36,35	140
14,5	111	56	45,52	145
15,0	111	56	39,95	150
16,0	115	58	48,14	160 2)
18,0	123	62	119,00	180 2)
19,0	127	64	155,00	190 2)

	10 112 ...
P	○
M	
K	●
N	●
S	
H	
O	○

1) uncoated
2) vaporised

→ v_c Page 47

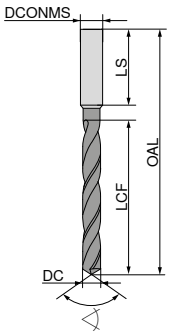
High-performance twist drill similar to DIN 338, short

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

≤ 5xD

VX

TiN



HSS-E

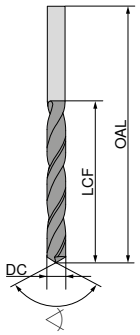
DC h8 mm	OAL mm	LCF mm	DCONMS h6 mm	LS mm	10 124 ... EUR T2	
2,00	56	24	3	28	11,35	020
2,10	56	24	3	28	13,32	021
2,20	59	27	3	28	13,32	022
2,30	59	27	3	28	13,32	023
2,40	62	30	3	28	13,32	024
2,50	62	30	3	28	13,32	025
2,60	62	30	3	28	13,32	026
2,70	65	33	3	28	13,32	027
2,80	65	33	3	28	13,32	028
2,90	65	33	3	28	13,32	029
3,00	65	33	3	28	12,66	030
3,10	68	36	4	28	14,41	031
3,20	68	36	4	28	14,41	032
3,30	68	36	4	28	14,41	033
3,40	71	39	4	28	14,41	034
3,50	71	39	4	28	14,41	035
3,60	71	39	4	28	15,72	036
3,70	71	39	4	28	15,72	037
3,80	75	43	4	28	15,72	038
3,90	75	43	4	28	15,72	039
4,00	75	43	4	28	15,72	040
4,10	87	43	6	36	18,78	041
4,20	87	43	6	36	19,54	042
4,30	91	47	6	36	18,78	043
4,40	91	47	6	36	18,78	044
4,50	91	47	6	36	18,78	045
4,60	91	47	6	36	21,07	046
4,65	91	47	6	36	21,07	465
4,70	91	47	6	36	21,07	047
4,80	96	52	6	36	21,07	048
4,90	96	52	6	36	21,07	049
5,00	96	52	6	36	23,25	050
5,10	96	52	6	36	23,25	051
5,20	96	52	6	36	23,25	052
5,30	96	52	6	36	24,57	053
5,40	101	57	6	36	24,57	054
5,50	101	57	6	36	23,25	055
5,55	101	57	6	36	26,42	555
5,60	101	57	6	36	26,42	056
5,70	101	57	6	36	26,42	057
5,80	101	57	6	36	26,42	058
5,90	101	57	6	36	26,42	059
6,00	101	57	6	36	25,21	060
6,10	107	63	8	36	30,34	061
6,20	107	63	8	36	30,34	062
6,30	107	63	8	36	30,34	063
6,40	107	63	8	36	30,34	064
6,50	107	63	8	36	30,34	065
6,60	107	63	8	36	31,98	066
6,70	107	63	8	36	31,98	067
6,80	113	69	8	36	31,98	068
6,90	113	69	8	36	31,98	069
7,00	113	69	8	36	31,98	070
7,10	113	69	8	36	33,19	071
7,20	113	69	8	36	33,19	072
7,30	113	69	8	36	33,19	073
7,40	113	69	8	36	33,19	074
7,50	113	69	8	36	33,19	075
7,55	119	75	8	36	34,71	755
7,60	119	75	8	36	34,71	076
7,70	119	75	8	36	34,71	077
7,80	119	75	8	36	34,71	078
7,90	119	75	8	36	34,71	079
8,00	119	75	8	36	34,71	080
8,10	125	75	10	40	37,87	081
8,20	125	75	10	40	37,87	082
8,30	125	75	10	40	37,87	083
8,40	125	75	10	40	37,87	084
8,50	125	75	10	40	39,41	085
8,60	131	81	10	40	35,14	086
8,70	131	81	10	40	35,14	087
8,80	131	81	10	40	35,14	088
8,90	131	81	10	40	35,14	089
9,00	131	81	10	40	35,14	090
9,10	131	81	10	40	37,99	091
9,20	131	81	10	40	37,99	092
9,30	131	81	10	40	37,99	093
9,40	131	81	10	40	37,99	094
9,50	131	81	10	40	37,99	095
9,55	137	87	10	40	41,70	955
9,60	137	87	10	40	41,70	096
9,70	137	87	10	40	41,70	097
9,80	137	87	10	40	41,70	098
9,90	137	87	10	40	41,70	099
10,00	137	87	10	40	41,70	100
10,10	144	87	12	45	51,63	101
10,20	144	87	12	45	51,63	102
10,30	144	87	12	45	51,63	103
10,40	144	87	12	45	51,63	104
10,50	144	87	12	45	51,63	105
10,60	144	87	12	45	56,66	106
10,70	151	94	12	45	56,66	107
10,80	151	94	12	45	56,66	108
10,90	151	94	12	45	56,66	109
11,00	151	94	12	45	48,57	110
11,10	151	94	12	45	52,28	111
11,20	151	94	12	45	52,28	112
11,30	151	94	12	45	52,28	113
11,40	151	94	12	45	52,28	114
11,50	151	94	12	45	52,28	115
11,60	151	94	12	45	56,43	116
11,70	151	94	12	45	56,43	117
11,80	151	94	12	45	56,43	118
11,90	158	101	12	45	56,43	119
12,00	158	101	12	45	56,43	120
12,10	161	101	16	48	64,29	121
12,20	161	101	16	48	64,29	122
12,30	161	101	16	48	64,29	123
12,40	161	101	16	48	64,29	124
12,50	161	101	16	48	64,29	125
12,60	161	101	16	48	68,00	126
12,70	161	101	16	48	68,00	127
12,80	161	101	16	48	68,00	128
12,90	161	101	16	48	68,00	129
13,00	161	101	16	48	75,53	130
13,50	166	106	16	48	97,58	135
14,00	166	106	16	48	97,58	140
14,50	169	109	16	48	125,60	145
15,00	169	109	16	48	117,90	150
15,50	172	112	16	48	127,70	155
16,00	172	112	16	48	123,40	160
16,50	181	115	20	50	189,90	165
17,00	181	115	20	50	189,90	170
17,50	184	118	20	50	189,90	175
18,00	184	118	20	50	189,90	180
18,50	188	122	20	50	189,90	185
19,00	188	122	20	50	189,90	190
19,50	191	125	20	50	189,90	195
20,00	191	125	20	50	170,40	200

P	●
M	●
K	●
N	○
S	○
H	
O	○

→ 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
	10 173 ...	**10 171 ...**	**10 152 ...**	**10 175 ...**	**10 161 ...**	**10 168 ...**	**10 170 ...**

DC h8 mm	DC inch	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
0,20		19	2,5					4,66	**00200** [1]			8,03	**00200**				
0,25		19	3,0					4,46	**00250** [1]			12,01	**00250**				
0,30		19	3,0					3,31	**00300** [1]			6,21	**00300**				
0,35		19	4,0					3,19	**00350** [1]			5,77	**00350**				
0,40		20	5,0					2,69	**00400** [1]			4,79	**00400**				
0,45		20	5,0					2,73	**00450** [1]			5,02	**00450**				
0,50		22	6,0					2,29	**00500** [1]			3,51	**00500**				
0,55		24	7,0					3,44	**00550** [1]			6,13	**00550**				
0,60		24	7,0					2,19	**00600** [1]			3,78	**00600**				
0,65		26	8,0					3,19	**00650** [1]			6,13	**00650**				
0,70		28	9,0					1,97	**00700** [1]			3,45	**00700**				
0,75		28	9,0					2,38	**00750** [1]			3,56	**00750**				
0,80		30	10,0					1,88	**00800** [1]			3,00	**00800**				
0,85		30	10,0					2,19	**00850** [1]			3,47	**00850**				
0,90		32	11,0			3,07	**009** [2]	1,79	**00900** [1]			2,87	**00900**				
0,95		32	11,0					2,19	**00950** [1]			3,47	**00950**				
1,00		34	12,0	6,45	**010** [2]	3,07	**010** [2]	1,75	**01000** [1]	3,68	**010**	2,98	**01000**	3,11	**010** [1]	6,85	**010**
1,05		34	12,0					1,92	**01050** [1]			3,40	**01050**				
1,10		36	14,0	6,99	**011** [2]	3,37	**011** [2]	1,69	**01100** [1]	3,77	**011**	2,79	**01100**	3,45	**011** [1]	7,66	**011**
1,15		36	14,0					1,97	**01150** [1]			3,15	**01150**				
1,20		38	16,0	6,85	**012** [2]	3,29	**012** [2]	1,75	**01200** [1]	4,17	**012**	2,79	**01200**	3,45	**012** [1]	7,66	**012**
1,25		38	16,0			3,37	**125** [2]	1,92	**01250** [1]			3,07	**01250**				
1,30		38	16,0	6,99	**013** [2]	3,37	**013** [2]	1,63	**01300** [1]	3,97	**013**	2,79	**01300**	3,40	**013** [1]	7,46	**013**
1,35		40	18,0					1,84	**01350** [1]			3,15	**01350**				
1,40		40	18,0	7,05	**014** [2]	3,39	**014** [2]	1,60	**01400** [1]	3,75	**014**	2,79	**01400**	3,45	**014** [1]	7,66	**014**
1,45		40	18,0			3,19	**145** [2]	1,69	**01450** [1]			3,11	**01450**			6,63	**901**
1,50		40	18,0	6,65	**015** [2]	3,19	**015** [2]	1,44	**01500** [1]	3,45	**015**	2,79	**01500**	3,09	**015** [1]	6,78	**015**
1,55		43	20,0			3,19	**155** [2]	1,60	**01550** [1]			3,11	**01550**			6,68	**902**
1,60		43	20,0	6,65	**016** [2]	3,19	**016** [2]	1,40	**01600** [1]	3,75	**016**	2,48	**01600**	3,11	**016** [1]	6,85	**016**
1,65		43	20,0			3,43	**165** [2]	1,60	**01650** [1]			3,11	**01650**			11,79	**903**
1,70		43	20,0	7,15	**017** [2]	3,43	**017** [2]	1,40	**01700** [1]	3,86	**017**	2,60	**01700**	3,11	**017** [1]	6,85	**017**
1,75		46	22,0					1,60	**01750** [1]			3,00	**01750**				
1,80		46	22,0	7,05	**018** [2]	3,39	**018** [2]	1,24	**01800** [1]	3,75	**018**	2,56	**01800**	3,11	**018** [1]	6,85	**018**
1,85		46	22,0					1,49	**01850** [1]			3,00	**01850**			8,13	**904**
1,90		46	22,0	7,05	**019** [2]	3,39	**019** [2]	1,28	**01900** [1]	3,86	**019**	2,56	**01900**	3,11	**019** [1]	6,85	**019**
1,95		49	24,0					1,49	**01950** [1]			2,87	**01950**				
2,00		49	24,0	6,85	**020** [2]	3,29	**020** [2]	1,05	**02000** [1]	3,14	**020**	2,07	**02000**	2,80	**020** [1]	6,13	**020**
2,05		49	24,0					1,44	**02050** [1]			2,71	**02050**			8,80	**905**
2,10		49	24,0	7,15	**021** [2]	3,43	**021** [2]	1,24	**02100** [1]	4,12	**021**	2,38	**02100**	3,06	**021** [1]	6,68	**021**
2,15		53	27,0					1,49	**02150** [1]			2,71	**02150**				
2,20		53	27,0	7,54	**022** [2]	3,58	**022** [2]	1,28	**02200** [1]	4,12	**022**	2,38	**02200**	3,06	**022** [1]	6,68	**022**
2,25		53	27,0					1,49	**02250** [1]			2,65	**02250**				
2,30		53	27,0	7,29	**023** [2]	3,50	**023** [2]	1,28	**02300** [1]	4,12	**023**	2,38	**02300**	3,06	**023** [1]	6,68	**023**
2,35		53	27,0					2,09	**02350** [1]			3,23	**02350**				
2,38	3/32	57	30,0	7,29	**238** [2]	3,50	**238** [2]										
2,40		57	30,0	6,85	**024** [2]	3,29	**024** [2]	1,35	**02400**	4,14	**024**	2,48	**02400**	3,06	**024**	6,68	**024**

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

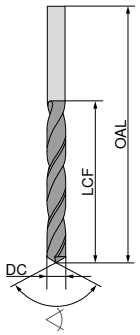
1) uncoated
2) self-centering

→ 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
	10 173 ...	**10 171 ...**	**10 152 ...**	**10 175 ...**	**10 161 ...**	**10 168 ...**	**10 170 ...**

DC h8 mm	DC inch	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
2,45		57	30,0					2,09	**02450**			3,29	**02450**				
2,50		57	30,0	6,99	**025** [2]	3,37	**025** [2]	1,35	**02500**	3,31	**025**	2,10	**02500**	2,83	**025**	6,27	**025**
2,55		57	30,0			3,50	**255** [2]	2,12	**02550**			3,81	**02550**				
2,60		57	30,0	7,29	**026** [2]	3,50	**026** [2]	1,40	**02600**	4,22	**026**	2,56	**02600**	3,06	**026**	6,68	**026**
2,65		57	30,0					2,29	**02650**			3,81	**02650**				
2,70		61	33,0	7,74	**027** [2]	3,70	**027** [2]	1,40	**02700**	4,22	**027**	2,63	**02700**	3,25	**027**	7,30	**027**
2,75		61	33,0					1,79	**02750**			3,69	**02750**				
2,78	7/64	61	33,0	9,42	**278** [2]	4,50	**278** [2]										
2,80		61	33,0	7,59	**028** [2]	3,61	**028** [2]	1,40	**02800**	4,34	**028**	2,87	**02800**	3,40	**028**	7,46	**028**
2,85		61	33,0					2,12	**02850**			4,46	**02850**				
2,90		61	33,0	7,74	**029** [2]	3,70	**029** [2]	1,40	**02900**	4,34	**029**	2,87	**02900**	3,40	**029**	7,46	**029**
2,95		61	33,0					1,79	**02950**			3,81	**02950**				
3,00		61	33,0	7,40	**030** [2]	3,54	**030** [2]	1,17	**03000**	3,31	**030**	2,31	**03000**	3,00	**030**	6,63	**030**
3,05		65	36,0					1,63	**03050**			3,23	**03050**				
3,10		65	36,0	8,19	**031** [2]	3,92	**031** [2]	1,49	**03100**	4,38	**031**	2,87	**03100**	3,25	**031**	7,30	**031**
3,15		65	36,0					1,63	**03150**			3,23	**03150**				
3,17	1/8	65	36,0	8,14	**317** [2]	3,90	**317** [2]										
3,20		65	36,0	8,04	**032** [2]	3,75	**032** [2]	1,49	**03200**	3,75	**032**	2,60	**03200**	3,45	**032**	7,66	**032**
3,25		65	36,0			3,92	**325** [2]	1,69	**03250**			3,23	**03250**				
3,30		65	36,0	8,19	**033** [2]	3,81	**033** [2]	1,49	**03300**	3,77	**033**	2,63	**03300**	3,53	**033**	7,79	**033**
3,35		65	36,0					1,79	**03350**			3,29	**03350**				
3,40		70	39,0	8,79	**034** [2]	4,21	**034** [2]	1,49	**03400**	4,61	**034**	2,91	**03400**	3,94	**034**	8,66	**034**
3,45		70	39,0					1,84	**03450**			3,47	**03450**				
3,50		70	39,0	8,88	**035** [2]	4,26	**035** [2]	1,35	**03500**	3,68	**035**	2,69	**03500**	3,25	**035**	7,30	**035**
3,55		70	39,0					1,92	**03550**			3,47	**03550**				
3,57	9/64	70	39,0	8,88	**357** [2]	4,26	**357** [2]										
3,60		70	39,0	8,99	**036** [2]	4,32	**036** [2]	1,60	**03600**	4,79	**036**	2,91	**03600**	3,78	**036**	8,53	**036**
3,65		70	39,0					1,92	**03650**			3,31	**03650**				
3,70		70	39,0	8,99	**037** [2]	4,32	**037** [2]	1,69	**03700**	4,81	**037**	2,98	**03700**	3,97	**037**	8,66	**037**
3,75		70	39,0					1,97	**03750**			3,63	**03750**				
3,80		75	43,0	9,47	**038** [2]	4,52	**038** [2]	1,75	**03800**	4,89	**038**	3,23	**03800**	4,20	**038**	9,36	**038**
3,85		75	43,0					2,09	**03850**			3,65	**03850**				
3,90		75	43,0	9,68	**039** [2]	4,61	**039** [2]	1,84	**03900**	5,10	**039**	3,23	**03900**	4,46	**039**	9,72	**039**
3,95		75	43,0					2,19	**03950**			3,69	**03950**				
3,97	5/32	75	43,0	9,83	**397** [2]	4,72	**397** [2]										
4,00		75	43,0	9,28	**040** [2]	4,44	**040** [2]	1,40	**04000**	4,02	**040**	2,73	**04000**	3,56	**040**	7,95	**040**
4,05		75	43,0					2,29	**04050**			4,79	**04050**				
4,10		75	43,0	9,47	**041** [2]	4,52	**041** [2]	1,92	**04100**	5,10	**041**	3,23	**04100**	4,44	**041**	9,72	**041**
4,15		75	43,0					2,29	**04150**			4,79	**04150**				
4,20		75	43,0	9,47	**042** [2]	4,52	**042** [2]	1,69	**04200**	5,15	**042**	2,87	**04200**	4,16	**042**	9,22	**042**
4,25		75	43,0			4,84	**425** [2]	2,38	**04250**			4,66	**04250**				
4,30		80	47,0	10,14	**043** [2]	4,84	**043** [2]	1,97	**04300**	5,15	**043**	3,98	**04300**	4,61	**043**	10,24	**043**
4,35		80	47,0					3,03	**04350**			5,74	**04350**				
4,37	11/64	80	47,0	10,23	**437** [2]	4,90	**437** [2]										
4,40		80	47,0	10,14	**044** [2]	4,84	**044** [2]	1,97	**04400**	5,24	**044**	3,98	**04400**	4,61	**044**	10,24	**044**
4,45		80	47,0					3,03	**04450**								

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

1) uncoated
2) self-centering

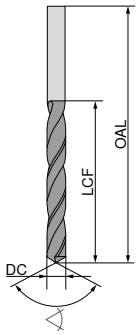
→ v_c Page 48+49

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° HSS-E-PM	◁ 118° HSS-E	◁ 118° HSS	◁ 130° HSS-E	◁ 130° HSS	◁ 130° HSS-E	◁ 130° HSS-E
10 173 ...	**10 171 ...**	**10 152 ...**	**10 175 ...**	**10 161 ...**	**10 168 ...**	**10 170 ...**

DC h8 mm	DC inch	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
4,50		80	47,0	9,83	**045** [2]	4,72	**045** [2]	1,79	**04500**	5,12	**045**	3,47	**04500**	4,26	**045**	9,22	**045**
4,55		80	47,0					3,03	**04550**			6,98	**04550**				
4,60		80	47,0	10,42	**046** [2]	5,00	**046** [2]	1,97	**04600**	5,44	**046**	3,98	**04600**	4,84	**046**	10,91	**046**
4,65		80	47,0			5,00	**465** [2]	3,03	**04650**			6,98	**04650**				
4,70		80	47,0	12,66	**047** [2]	6,06	**047** [2]	2,09	**04700**	5,51	**047**	3,98	**04700**	4,84	**047**	10,91	**047**
4,75		80	47,0					3,03	**04750**			5,58	**04750**				
4,76	3/16	86	52,0	10,68	**476** [2]	5,10	**476** [2]										
4,80		86	52,0	10,68	**048** [2]	5,10	**048** [2]	2,09	**04800**	5,57	**048**	3,98	**04800**	4,84	**048**	10,91	**048**
4,85		86	52,0					2,76	**04850**			6,98	**04850**				
4,90		86	52,0	10,82	**049** [2]	5,18	**049** [2]	2,19	**04900**	5,77	**049**	3,98	**04900**	5,05	**049**	11,13	**049**
4,95		86	52,0			5,04	**495** [2]	3,40	**04950**			6,98	**04950**				
5,00		86	52,0	10,92	**050** [2]	5,23	**050** [2]	1,75	**05000**	4,89	**050**	3,78	**05000**	4,49	**050**	9,88	**050**
5,05		86	52,0			5,23	**505** [2]	3,51	**05050**			8,40	**05050**				
5,10		86	52,0	10,92	**051** [2]	5,23	**051** [2]	2,29	**05100**	5,77	**051**	4,19	**05100**	5,05	**051**	11,13	**051**
5,15		86	52,0					3,67	**05150**								
5,16	13/64	86	52,0	11,90	**516** [2]	5,71	**516** [2]										
5,20		86	52,0	11,25	**052** [2]	5,38	**052** [2]	2,29	**05200**	5,82	**052**	4,33	**05200**	5,23	**052**	11,79	**052**
5,25		86	52,0					3,51	**05250**			6,68	**05250**				
5,30		86	52,0	11,90	**053** [2]	5,71	**053** [2]	2,29	**05300**	5,94	**053**	4,33	**05300**	5,23	**053**	11,79	**053**
5,35		93	57,0					4,17	**05350**								
5,40		93	57,0	14,63	**054** [2]	6,97	**054** [2]	2,52	**05400**	6,43	**054**	4,62	**05400**	5,69	**054**	12,56	**054**
5,45		93	57,0					4,33	**05450**			5,74	**05450**				
5,50		93	57,0	12,66	**055** [2]	6,00	**055** [2]	2,43	**05500**	6,96	**055**	4,23	**05500**	5,23	**055**	11,68	**055**
5,55		93	57,0			7,06	**555** [2]	4,33	**05550**			5,74	**05550**				
5,56	7/32	93	57,0	14,84	**556** [2]	7,06	**556** [2]										
5,60		93	57,0	13,42	**056** [2]	6,41	**056** [2]	2,60	**05600**	6,65	**056**	5,10	**05600**	5,75	**056**	13,00	**056**
5,65		93	57,0					4,46	**05650**			7,91	**05650**				
5,70		93	57,0	13,20	**057** [2]	6,34	**057** [2]	2,63	**05700**	6,65	**057**	5,10	**05700**	5,75	**057**	13,00	**057**
5,75		93	57,0			6,34	**575** [2]	4,46	**05750**			7,78	**05750**				
5,80		93	57,0	13,20	**058** [2]	6,34	**058** [2]	2,69	**05800**	6,65	**058**	5,10	**05800**	5,81	**058**	13,10	**058**
5,85		93	57,0					4,46	**05850**			9,34	**05850**				
5,90		93	57,0	14,09	**059** [2]	6,74	**059** [2]	2,73	**05900**	6,65	**059**	5,10	**05900**	6,25	**059**	14,09	**059**
5,95	15/64	93	57,0	17,24	**595** [2]	8,25	**595** [2]	2,76	**05950**			5,10	**05950**				
6,00		93	57,0	12,77	**060** [2]	6,10	**060** [2]	2,43	**06000**	6,38	**060**	5,02	**06000**	5,79	**060**	13,86	**060**
6,05		101	63,0					4,85	**06050**			10,92	**06050**				
6,10		101	63,0	14,41	**061** [2]	6,88	**061** [2]	2,98	**06100**	7,44	**061**	5,10	**06100**	6,30	**061**	14,19	**061**
6,15		101	63,0					4,85	**06150**			8,40	**06150**				
6,20		101	63,0	14,19	**062** [2]	6,78	**062** [2]	2,98	**06200**	7,44	**062**	5,10	**06200**	6,65	**062**	14,63	**062**
6,25		101	63,0					4,85	**06250**			8,73	**06250**				
6,30		101	63,0	15,72	**063** [2]	7,51	**063** [2]	3,03	**06300**	7,44	**063**	5,40	**06300**	7,30	**063**	15,72	**063**
6,35	1/4	101	63,0	16,59	**635** [2]	7,93	**635** [2]	3,23	**06350**			5,18	**06350**				
6,40		101	63,0	16,59	**064** [2]	7,95	**064** [2]	3,19	**06400**	8,13	**064**	5,40	**06400**	7,30	**064**	15,83	**064**
6,45		101	63,0					5,51	**06450**								
6,50		101	63,0	15,39	**065** [2]	7,33	**065** [2]	3,03	**06500**	7,30	**065**	5,16	**06500**	6,33	**065**	14,19	**065**
6,55		101	63,0					5,77	**06550**			11,79	**06550**				
6,60		101	63,0	16,81	**066** [2]	8,04	**066** [2]	3,31	**06600**	8,13	**066**	6,19	**06600**	7,46	**066**	16,38	**066**

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

1) uncoated
2) self-centering

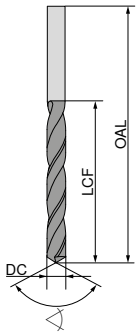
→ v_c Page 48+49

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
	10 173 ...	**10 171 ...**	**10 152 ...**	**10 175 ...**	**10 161 ...**	**10 168 ...**	**10 170 ...**

DC_{h8} mm	DC inch	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
6,65		101	63,0					5,85	06650			11,35	06650		
6,70		101	63,0	16,81	067 [2]	8,02	067 [2]	3,44	06700	8,13	067	6,23	06700	7,46	067	16,38	067
6,75		109	69,0	22,71	675 [2]	10,84	675 [2]	4,02	06750			6,68	06750				
6,80		109	69,0	17,24	068 [2]	8,25	068 [2]	3,98	06800	8,80	068	6,68	06800	7,79	068	16,70	068
6,85		109	69,0					6,57	06850			11,79	06850				
6,90		109	69,0	17,58	069 [2]	8,39	069 [2]	3,98	06900	8,80	069	6,68	06900	8,13	069	17,79	069
6,95		109	69,0					6,66	06950			11,79	06950				
7,00		109	69,0	17,24	070 [2]	8,25	070 [2]	3,67	07000	7,60	070	5,92	07000	6,92	070	15,29	070
7,05		109	69,0					7,11	07050			9,53	07050				
7,10		109	69,0	19,87	071 [2]	9,49	071 [2]	4,02	07100	10,41	071	8,21	07100	10,73	071	23,58	071
7,14	9/32	109	69,0	29,69	714 [2]	14,19	714 [2]										
7,15		109	69,0					6,78	07150								
7,20		109	69,0	19,76	072 [2]	9,46	072 [2]	4,17	07200	10,41	072	8,21	07200	10,73	072	23,58	072
7,25		109	69,0					6,57	07250			13,97	07250				
7,30		109	69,0	20,53	073 [2]	9,82	073 [2]	4,17	07300	10,41	073	8,21	07300	10,73	073	23,58	073
7,35		109	69,0					7,11	07350								
7,40		109	69,0	20,09	074 [2]	9,60	074 [2]	4,37	07400	10,41	074	8,21	07400	10,73	074	23,58	074
7,45		109	69,0			8,74	745 [2]	6,98	07450								
7,50		109	69,0	18,23	075 [2]	8,74	075 [2]	3,98	07500	8,28	075	6,80	07500	7,95	075	17,79	075
7,55		117	75,0					8,13	07550								
7,60		117	75,0	22,17	076 [2]	10,61	076 [2]	4,56	07600	12,56	076	9,02	07600	11,79	076	25,98	076
7,65		117	75,0					8,13	07650								
7,70		117	75,0	25,21	077 [2]	12,11	077 [2]	4,56	07700	12,56	077	9,02	07700	11,79	077	25,98	077
7,75		117	75,0					7,41	07750			15,83	07750				
7,80		117	75,0	21,62	078 [2]	10,35	078 [2]	4,66	07800	12,56	078	9,02	07800	11,79	078	25,98	078
7,85		117	75,0					8,13	07850								
7,90		117	75,0	25,87	079 [2]	12,33	079 [2]	4,72	07900	12,56	079	10,44	07900	11,79	079	25,98	079
7,94	5/16	117	75,0	23,25	794 [2]	11,13	794 [2]										
7,95		117	75,0					8,50	07950								
8,00		117	75,0	20,63	080 [2]	9,86	080 [2]	3,98	08000	10,16	080	7,59	08000	8,99	080	20,09	080
8,05		117	75,0					8,66	08050			19,98	08050				
8,10		117	75,0	22,48	081 [2]	10,77	081 [2]	4,85	08100	12,56	081	10,82	08100	12,56	081	27,61	081
8,15		117	75,0					8,79	08150			19,98	08150				
8,20		117	75,0	22,17	082 [2]	10,61	082 [2]	5,02	08200	13,65	082	11,35	08200	13,10	082	28,38	082
8,25		117	75,0					6,12	08250			16,38	08250				
8,30		117	75,0	24,67	083 [2]	11,79	083 [2]	5,44	08300	13,65	083	11,90	08300	14,09	083	30,56	083
8,35		117	75,0					9,29	08350								
8,40		117	75,0	24,78	084 [2]	11,79	084 [2]	5,44	08400	14,09	084	11,90	08400	14,09	084	30,56	084
8,45		117	75,0					9,81	08450			18,99	08450				
8,50		117	75,0	21,18	085 [2]	10,15	085 [2]	5,16	08500	9,95	085	8,73	08500	10,24	085	22,59	085
8,55		125	81,0					11,46	08550			19,54	08550				
8,60		125	81,0			17,79	086 [2]	5,90	08600	14,74	086	11,90	08600	15,50	086	33,84	086
8,65		125	81,0					11,46	08650								
8,70		125	81,0			17,79	087 [2]	5,90	08700	14,74	087	13,32	08700	15,72	087	34,38	087
8,73	11/32	125	81,0	22,93	873 [2]	10,92	873 [2]										
8,75		125	81,0					10,22	08750			18,99	08750				

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

1) uncoated
2) self-centering

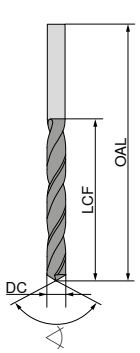
→ v_c Page 48+49

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° HSS-E-PM	118° HSS-E	118° HSS	130° HSS-E	130° HSS	130° HSS-E	130° HSS-E
	10 173 ...	10 171 ...	10 152 ...	10 175 ...	10 161 ...	10 168 ...	10 170 ...

DC h8 mm	DC inch	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
8,80		125	81,0	24,78	088 2)	11,79	088 2)	6,12	08800	16,05	088	13,32	08800	15,72	088	34,38	088
8,90		125	81,0			16,49	089 2)	6,39	08900	16,91	089	13,42	08900	15,83	089	34,93	089
8,95		125	81,0					11,90	08950								
9,00		125	81,0	23,36	090 2)	11,13	090 2)	5,62	09000	13,00	090	9,53	09000	12,01	090	26,31	090
9,05		125	81,0					11,90	09050								
9,10		125	81,0			18,33	091 2)	6,39	09100	18,00	091	14,74	09100	16,70	091	37,12	091
9,15		125	81,0					11,90	09150								
9,20		125	81,0			18,33	092 2)	6,39	09200	18,89	092	14,74	09200	18,23	092	39,95	092
9,25		125	81,0					8,50	09250			22,81	09250				
9,30		125	81,0	26,85	093 2)	12,88	093 2)	6,49	09300	19,44	093	14,74	09300	18,23	093	39,41	093
9,35		125	81,0			11,68	935 2)	12,66	09350								
9,40		125	81,0			18,78	094 2)	6,49	09400	20,85	094	14,74	09400	18,23	094	39,41	094
9,45		125	81,0					12,66	09450								
9,50		125	81,0	24,57	095 2)	11,68	095 2)	6,42	09500	15,29	095	11,13	09500	13,00	095	28,06	095
9,55		133	87,0					14,41	09550								
9,60		133	87,0			13,97	096 2)	7,11	09600	21,94	096	16,70	09600	18,99	096	42,02	096
9,65		133	87,0					14,41	09650								
9,70		133	87,0			20,19	097 2)	7,11	09700	21,94	097	17,14	09700	20,73	097	44,87	097
9,75		133	87,0					9,29	09750								
9,80		133	87,0	29,25	098 2)	13,97	098 2)	7,93	09800	21,94	098	17,14	09800	20,73	098	44,87	098
9,85		133	87,0					15,60	09850								
9,90		133	87,0			16,59	099 2)	7,93	09900	21,94	099	17,58	09900	20,73	099	44,87	099
9,95		133	87,0					15,60	09950								
10,00		133	87,0	27,73	100 2)	13,20	100 2)	6,78	10000	14,63	100	11,79	10000	14,63	100	32,31	100
10,05		133	87,0					20,95	10050			29,80	10050				
10,10		133	87,0			18,89	101 2)	8,50	10100	24,67	101	17,79	10100	32,64	101	71,39	101
10,15		133	87,0					20,95	10150								
10,20		133	87,0	31,98	102 2)	15,29	102 2)	8,66	10200	20,85	102	17,79	10200	20,09	102	43,66	102
10,25		133	87,0					11,68	10250			19,98	10250				
10,30		133	87,0			16,49	103 2)	10,45	10300	32,74	103	17,79	10300	26,85	103	58,29	103
10,35		133	87,0					20,95	10350								
10,40		133	87,0			20,41	104 2)	10,45	10400	32,74	104	17,79	10400	28,38	104	62,21	104
10,45		133	87,0					20,95	10450								
10,50		133	87,0	32,20	105 2)	15,39	105 2)	8,79	10500	21,62	105	14,51	10500	18,45	105	40,61	105
10,55		133	87,0			15,94	955 2)	14,74	10550								
10,60		133	87,0					11,02	10600	43,76	106	17,79	10600	28,38	106		
10,70		142	94,0					12,66	10700	43,12	107	20,19	10700	28,38	107	62,21	107
10,75		142	94,0					14,09	10750			23,47	10750				
10,80		142	94,0					12,33	10800	43,76	108	21,07	10800	27,07	108	59,61	108
10,90		142	94,0					13,32	10900	43,76	109	21,07	10900	34,38	109		
11,00		142	94,0	33,29	110 2)	15,94	110 2)	10,22	11000	23,47	110	17,14	11000	22,59	110	48,57	110
11,10		142	94,0					13,32	11100	45,62	111	21,07	11100	33,40	111		
11,11	7/16	142	94,0	41,70	111 2)	19,98	111 2)										
11,20		142	94,0			17,69	112 2)	12,66	11200	45,62	112	26,97	11200	37,12	112	82,64	112
11,30		142	94,0			17,69	113 2)			45,96	113			37,12	113		
11,40		142	94,0			17,69	114 2)	13,75	11400	45,96	114	29,80	11400	37,12	114		

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

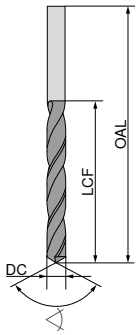
1) uncoated
2) self-centering

→ 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
	10 173 ...	**10 171 ...**	**10 152 ...**	**10 175 ...**	**10 161 ...**	**10 168 ...**	**10 170 ...**

DC h8 mm	DC inch	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
11,50		142	94,0	36,89	**115** 2)	17,69	**115** 2)	11,02	**11500**	30,12	**115**	19,21	**11500**	26,31	**115**	58,07	**115**
11,60		142	94,0			18,89	**116** 2)	13,75	**11600**	52,61	**116**	29,80	**11600**	37,12	**116**		
11,70		142	94,0					14,09	**11700**	52,61	**117**	29,80	**11700**	37,12	**117**	82,64	**117**
11,80		142	94,0					14,30	**11800**	52,61	**118**	29,80	**11800**	39,41	**118**	86,56	**118**
11,90		151	101,0					15,60	**11900**	52,61	**119**	29,80	**11900**				
12,00		151	101,0	39,52	**120** 2)	18,89	**120** 2)	12,33	**12000**	33,95	**120**	20,85	**12000**	28,06	**120**	61,35	**120**
12,15		151	101,0			19,64	**121** 2)										
12,20		151	101,0					16,49	**12200**			35,47	**12200**				
12,25		151	101,0					18,45	**12250**								
12,30		151	101,0	70,84	**123** 2)	33,84	**123** 2)										
12,50		151	101,0	41,04	**125** 2)	19,64	**925** 2)	13,97	**12500**			20,85	**12500**	34,71	**125**	76,52	**125**
12,70		151	101,0	53,70	**127** 2)	25,66	**127** 2)	15,50	**12700**			20,19	**12700**				
12,80		151	101,0					18,66	**12800**			37,33	**12800**	58,83	**128**	128,80	**128**
13,00		151	101,0	43,66	**130** 2)	20,85	**130** 2)	15,29	**13000**			24,78	**13000**	34,71	**130**	75,76	**130**
13,10		151	101,0			37,12	**131** 2)										
13,20		151	101,0					19,98	**13200**			45,62	**13200**				
13,30		160	108,0			37,12	**133** 2)										
13,50		160	108,0	77,61	**135** 2)	37,12	**135** 2)	17,69	**13500**			30,67	**13500**	45,74	**135**	99,98	**135**
13,80		160	108,0					25,43	**13800**			57,41	**13800**	52,07	**138**	114,60	**138**
14,00		160	108,0	52,83	**140** 2)	25,33	**140** 2)	19,54	**14000**			29,57	**14000**	41,16	**140**	88,73	**140**
14,50		169	114,0					20,95	**14500**			39,08	**14500**	50,00	**145**	109,00	**145**
14,80		169	114,0											75,76	**148**	163,80	**148**
15,00		169	114,0					22,81	**15000**			34,82	**15000**	51,41	**150**	112,50	**150**
15,25		178	120,0					42,35	**15250**								
15,50		178	120,0					24,78	**15500**			49,23	**15500**	74,99	**155**	162,60	**155**
15,80		178	120,0					40,82	**15800**								
16,00		178	120,0					26,63	**16000**			46,61	**16000**	62,98	**160**	139,70	**160**
16,50		184	125,0					30,46	**16500**			77,94	**16500**				
17,00		184	125,0					32,20	**17000**			79,03	**17000**				
17,50		191	130,0					35,14	**17500**			157,20	**17500**				
18,00		191	130,0					37,44	**18000**			85,58	**18000**				
18,50		198	135,0					40,82	**18500**								
19,00		198	135,0					44,10	**19000**			97,48	**19000**				
19,50		205	140,0					46,61	**19500**								
20,00		205	140,0					51,09	**20000**			121,10	**20000**				

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

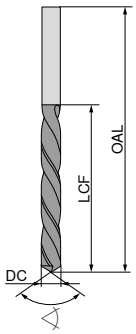
1) uncoated
2) self-centering

→ v_c Page 48+49

Twist drill to DIN 338, short

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

≤ 5xD



WTL
TiCN

130°
HSS-E

WTL-L
F.-nit

130°
HSS

DC h8 mm	OAL mm	LCF mm	10 172 ... EUR T2		10 169 ... EUR T2	
1,0	34	12			5,11	010 1)
1,3	38	16			5,17	013 1)
1,4	40	18			5,17	014 1)
1,5	40	18			4,16	015 1)
1,6	43	20			4,35	016 1)
1,7	43	20			4,40	017 1)
1,8	46	22			4,46	018 1)
1,9	46	22			4,53	019 1)
2,0	49	24			3,53	020 1)
2,1	49	24			4,20	021 1)
2,2	53	27			4,61	022 1)
2,3	53	27			4,35	023 1)
2,4	57	30			4,35	024
2,5	57	30			3,94	025
2,6	57	30			4,46	026
2,7	61	33			4,46	027
2,8	61	33			4,61	028
2,9	61	33			4,61	029
3,0	61	33	8,80	030	4,20	030
3,1	65	36	9,36	031	5,13	031
3,2	65	36	9,88	032	4,66	032
3,3	65	36	10,62	033	4,84	033
3,4	70	39	11,68	034	5,50	034
3,5	70	39	9,36	035	4,49	035
3,6	70	39	11,13	036	5,69	036
3,7	70	39	11,68	037	5,86	037
3,8	75	43	12,33	038	6,11	038
3,9	75	43	13,00	039	6,40	039
4,0	75	43	10,62	040	4,84	040
4,1	75	43	13,00	041	6,65	041
4,2	75	43	12,01	042	5,88	042
4,3	80	47	13,42	043	7,66	043
4,4	80	47	13,42	044	7,95	044
4,5	80	47	12,33	045	6,18	045
4,6	80	47	14,30	046	8,13	046
4,7	80	47	14,30	047	8,13	047
4,8	86	52	14,30	048	8,13	048
4,9	86	52	14,51	049	8,31	049
5,0	86	52	13,10	050	5,92	050
5,1	86	52	14,51	051	8,31	051
5,2	86	52	15,29	052	9,22	052
5,3	86	52	15,29	053	9,22	053
5,4	93	57	16,26	054	9,72	054
5,5	93	57	15,17	055	7,66	055
5,6	93	57	16,38	056	10,24	056
5,7	93	57	16,38	057	10,24	057
5,8	93	57	16,70	058	10,24	058
5,9	93	57	18,23	059	10,24	059
6,0	93	57	16,70	060	7,66	060
6,1	101	63	18,45	061	11,13	061
6,2	101	63	18,99	062	12,33	062
6,3	101	63	20,73	063	12,33	063
6,4	101	63	21,07	064	12,33	064
6,5	101	63	18,45	065	9,22	065
6,6	101	63	21,94	066	13,32	066
6,7	101	63	21,94	067	13,32	067
6,8	109	69	22,38	068	14,30	068
6,9	109	69	23,58	069	14,63	069
7,0	109	69	20,09	070	10,73	070
7,1	109	69	30,56	071	20,09	071
7,2	109	69	30,56	072	20,09	072
7,3	109	69			20,09	073
7,4	109	69	30,56	074	20,09	074
7,5	109	69	23,25	075	12,56	075
7,7	117	75	33,84	077	21,28	077
7,8	117	75	33,84	078	21,28	078
7,9	117	75			21,28	079
8,0	117	75	25,98	080	12,01	080
8,1	117	75	35,69	081	21,94	081
8,2	117	75	37,12	082	21,94	082
8,3	117	75			21,94	083
8,4	117	75	39,95	084	21,94	084
8,5	117	75	29,25	085	15,17	085
8,6	125	81	44,10	086	24,45	086
8,7	125	81	44,65	087	24,45	087
8,8	125	81	44,65	088	24,45	088
8,9	125	81	45,74	089	24,45	089
9,0	125	81	34,17	090	14,84	090
9,2	125	81			25,11	092
9,3	125	81			25,11	093
9,5	125	81	36,78	095	19,32	095
9,8	133	87			26,85	098
9,9	133	87			28,06	099
10,0	133	87	42,35	100	16,70	100
10,1	133	87			28,06	101
10,2	133	87	56,32	102	28,71	102
10,3	133	87			28,38	103
10,4	133	87			29,91	104
10,5	133	87	53,05	105	29,25	105
11,0	142	94	75,76	110	29,25	110
11,5	142	94	75,76	115	32,31	115
12,0	151	101	80,66	120	33,40	120
12,2	151	101			52,73	122
12,5	151	101			35,69	125
13,0	151	101			36,78	130
14,0	160	108			42,67	140
14,5	169	114			46,39	145
15,0	169	114			51,74	150
16,0	178	120			58,07	160

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

1) uncoated

→ v_c Page 49

Twist drill sets DIN 338, short

▲ In metal box
▲ In 0.1 mm steps

≤ 5xD

Drill set type N HSS

Drill set type UNI TiN HSS-E

DC h8 mm	10 158 ... EUR T2		10 158 ... EUR T2	
1,0 - 5,9	92,45	050	275,10	054
6,0 - 10,0	203,00	100	433,30	104
P	○		●	
M			●	
K	●		●	
N	○		○	
S			○	
H				
O	○		○	

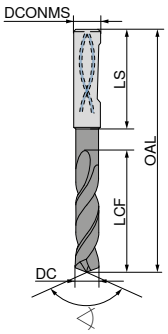
→ v_c Page 48

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

Twist drill with thro' coolant ~ DIN 338, short

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

≤ 5xD



WNXi

E
130°
HSS-E

WNXi
TiN

E
130°
HSS-E

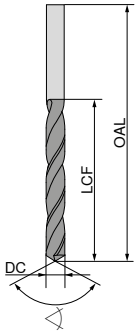
DC h8 mm	OAL mm	LCF mm	DCONMS h6 mm	LS mm	10 180 ... EUR T2		10 181 ... EUR T2	
5,0	82	44	6	38	69,64	050	97,58	050
5,5	82	44	6	38	70,51	055	99,33	055
6,0	82	44	6	38	66,69	060	93,66	060
6,5	91	53	8	38	74,12	065	103,20	065
6,8	91	53	8	38	75,43	068	105,60	068
7,0	91	53	8	38	75,43	070	104,70	070
7,5	91	53	8	38	75,64	075	106,40	075
7,8	91	53	8	38	77,17	078	108,80	078
8,0	91	53	8	38	72,81	080	102,50	080
8,5	103	61	10	42	80,44	085	113,50	085
9,0	103	61	10	42	81,10	090	114,60	090
9,5	103	61	10	42	82,74	095	115,70	095
10,0	103	61	10	42	78,70	100	110,20	100
10,2	118	71	12	47	88,96	102	124,50	102
10,5	118	71	12	47	88,96	105	125,60	105
11,0	118	71	12	47	91,36	110	127,70	110
11,5	118	71	12	47	94,53	115	133,20	115
12,0	118	71	12	47	86,56	120	120,10	120
12,5	124	77	14	47	106,40	125	151,70	125
13,0	124	77	14	47	108,10	130	154,00	130
13,5	124	77	14	47	110,20	135	157,20	135
14,0	124	77	14	47	104,00	140	148,40	140
14,5	133	83	16	50	128,80	145	184,50	145
15,0	133	83	16	50	131,00	150	186,70	150
15,5	133	83	16	50	134,20	155	189,90	155
16,0	133	83	16	50	125,60	160	183,40	160
16,5	143	93	18	50	158,30	165	222,70	165
17,0	143	93	18	50	159,40	170	229,30	170
17,5	143	93	18	50	163,80	175	235,80	175
18,0	143	93	18	50	155,00	180	218,40	180
18,5	153	101	20	52	186,70	185	263,10	185
19,0	153	101	20	52	188,90	190	268,50	190
19,5	153	101	20	52	191,00	195	271,80	195
20,0	153	101	20	52	183,40	200	259,80	200

P	●	●
M		
K	●	●
N	○	○
S		
H		
O	○	○

→ v_c Page 49

Twist drills with coolant hole, factory standard, long

≤ 10xD



NC

130°
HSS

NC
TiAlN

130°
HSS

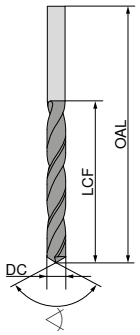
DC h8 mm	OAL mm	LCF mm	10 223 ... EUR T2		10 224 ... EUR T2	
3,0	100	66	110,20	030	122,30	030
3,3	106	69	114,60	033	138,60	033
3,5	112	73	113,50	035	136,50	035
3,8	119	78			167,00	038
4,0	119	78	114,60	040	138,60	040
4,2	119	78	115,70	042	140,90	042
4,5	126	82	115,70	045	139,70	045
4,8	132	87			164,90	048
5,0	132	87	115,70	050	140,90	050
5,5	139	91	119,00	055	145,10	055
5,8	139	91			167,00	058
6,0	139	91	123,40	060	149,60	060
6,5	148	97	132,10	065	160,50	065
6,8	156	102	133,20	068	161,50	068
7,0	156	102	133,20	070	161,50	070
7,5	156	102	138,60	075	167,00	075
7,8	165	109			179,00	078
8,0	165	109	140,90	080	170,40	080
8,5	165	109	145,10	085	179,00	085
8,8	175	115			183,40	088
9,0	175	115	145,10	090	183,40	090
9,5	175	115	149,60	095	188,90	095
9,8	184	121			193,20	098
10,0	184	121	149,60	100	188,90	100
10,2	184	121	152,90	102	193,20	102
10,5	184	121	152,90	105	194,40	105
10,8	195	128			199,80	108
11,0	195	128	152,90	110	194,40	110
11,5	195	128	157,20	115	198,70	115
11,8	205	134			231,30	118
12,0	205	134	158,30	120	203,00	120
12,8	205	134			243,40	128
13,0	205	134	164,90	130	212,90	130

P	○	○
M		○
K	●	●
N	○	○
S		
H		
O	○	○

→ v_c Page 50

Twist drills, DIN 340, long

≤ 10xD



	UNI	WTL	WTL	WTL	WTW
	TiN	F.-nit	F.-nit	TiN	
					
	◁ 118° HSS-E	◁ 130° HSS-E	◁ 130° HSS	◁ 130° HSS	◁ 130° HSS
	10 270 ...	10 225 ...	10 215 ...	10 210 ...	10 200 ...

DC h8 mm	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
1,0	56	33	5,51	010	7,95	010 1)	5,98	010 1)	13,42	010	5,75	010
1,1	60	37	6,21	011	9,88	011 1)	6,58	011 1)	14,30	011	6,25	011
1,2	65	41	6,90	012	9,36	012 1)	6,11	012 1)	13,75	012	5,86	012
1,3	65	41	6,79	013	9,22	013 1)	6,24	013 1)	14,09	013	5,54	013
1,4	70	45	6,71	014	8,80	014 1)	5,79	014 1)	12,88	014	5,17	014
1,5	70	45	5,80	015	7,66	015 1)	4,97	015 1)	11,02	015	5,19	015
1,6	76	50	6,90	016	8,53	016 1)	4,78	016 1)	10,73	016	4,77	016
1,7	76	50	7,50	017	8,31	017 1)	4,76	017 1)	10,73	017	4,68	017
1,8	80	53	7,20	018	8,31	018 1)	4,72	018 1)	10,39	018	4,68	018
1,9	80	53	7,70	019	7,79	019 1)	4,64	019 1)	10,25	019	4,66	019
2,0	85	56	5,72	020	5,92	020 1)	4,36	020 1)	9,80	020	3,83	020
2,1	85	56	6,60	021	7,30	021 1)	5,02	021 1)	11,25	021	4,59	021
2,2	90	59	6,71	022	7,46	022 1)	5,12	022 1)	11,46	022	4,68	022
2,3	90	59	6,60	023	7,46	023 1)	5,16	023 1)	11,57	023	4,68	023
2,4	95	62	6,12	024	7,66	024	5,26	024	11,90	024	4,68	024
2,5	95	62	5,80	025	6,30	025	4,53	025	10,25	025	4,16	025
2,6	95	62	6,71	026	7,66	026	5,30	026	11,90	026	4,68	026
2,7	100	66	7,11	027	7,79	027	5,33	027	12,01	027	4,68	027
2,8	100	66	6,79	028	7,79	028	5,35	028	12,01	028	4,68	028
2,9	100	66	7,11	029	7,79	029	5,40	029	12,23	029	4,68	029
3,0	100	66	6,30	030	6,63	030	4,64	030	10,39	030	4,35	030
3,1	106	69	7,50	031	7,95	031	6,20	031	13,97	031	5,79	031
3,2	106	69	7,00	032	7,79	032	5,24	032	11,57	032	4,66	032
3,3	106	69	7,41	033	8,53	033	5,88	033	13,10	033	5,23	033
3,4	112	73	7,70	034	8,13	034	6,24	034	14,09	034	5,86	034
3,5	112	73	7,50	035	7,79	035	5,33	035	11,90	035	4,91	035
3,6	112	73	7,80	036	8,31	036	6,89	036	14,96	036	6,00	036
3,7	112	73	7,60	037	8,31	037	6,40	037	14,30	037	6,18	037
3,8	119	78	7,30	038	8,53	038	6,58	038	14,30	038	6,25	038
3,9	119	78	8,20	039	8,66	039	6,74	039	14,51	039	6,37	039
4,0	119	78	8,00	040	8,31	040	5,81	040	12,88	040	5,35	040
4,1	119	78	8,11	041	8,80	041	6,89	041	14,84	041	6,63	041
4,2	119	78	7,80	042	9,22	042	6,58	042	14,30	042	5,72	042
4,3	126	82	8,69	043	9,36	043	7,35	043	16,26	043	7,30	043
4,4	126	82	7,70	044	9,56	044	7,69	044	17,04	044	7,46	044
4,5	126	82	8,20	045	9,88	045	6,74	045	14,74	045	6,58	045
4,6	126	82	7,89	046	9,72	046	7,69	046	17,04	046	7,46	046
4,7	126	82	9,08	047	10,24	047	7,69	047	17,04	047	7,66	047
4,8	132	87	8,89	048	10,91	048	7,69	048	17,04	048	7,79	048
4,9	132	87	9,01	049	11,35	049	8,01	049	17,69	049	7,95	049
5,0	132	87	9,08	050	9,88	050	7,06	050	15,60	050	6,27	050
5,1	132	87	10,11	051	11,68	051	8,13	051	18,13	051	8,13	051

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

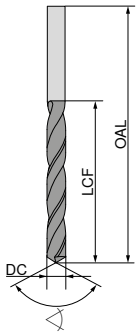
1) uncoated

→ v_c Page 50+51

Continued on next page

Twist drills, DIN 340, long

≤ 10xD



	UNI	WTL	WTL	WTL	WTW
	TiN	F.-nit	F.-nit	TiN	
					
	◁ 118° HSS-E	◁ 130° HSS-E	◁ 130° HSS	◁ 130° HSS	◁ 130° HSS
	10 270 ...	10 225 ...	10 215 ...	10 210 ...	10 200 ...

DC h8 mm	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
5,2	132	87	9,90	052	12,01	052	8,64	052	19,21	052	8,53	052
5,3	132	87	10,91	053	12,23	053	8,82	053	19,44	053	8,66	053
5,4	139	91	11,90	054	12,33	054	8,98	054	20,19	054	8,80	054
5,5	139	91	9,50	055	11,79	055	8,30	055	18,66	055	8,13	055
5,6	139	91	12,44	056	13,00	056	10,09	056	22,27	056	9,56	056
5,7	139	91	13,86	057	13,10	057	10,39	057	22,81	057	9,72	057
5,8	139	91	12,01	058	13,32	058	10,73	058	23,03	058	10,24	058
5,9	139	91	13,42	059	13,42	059	11,02	059	24,57	059	10,62	059
6,0	139	91	11,46	060	12,23	060	8,64	060	19,21	060	8,31	060
6,1	148	97	13,65	061	14,19	061	11,90	061	25,98	061	12,23	061
6,2	148	97	12,11	062	14,30	062	12,01	062	26,20	062	12,33	062
6,3	148	97	13,65	063	14,51	063	12,23	063	26,42	063	12,56	063
6,4	148	97	12,33	064	15,17	064	13,20	064	28,71	064	13,10	064
6,5	148	97	11,79	065	13,86	065	9,65	065	21,07	065	9,36	065
6,6	148	97	13,75	066	15,50	066	13,75	066	29,80	066	13,32	066
6,7	148	97	14,09	067	15,83	067	14,09	067	30,46	067	13,42	067
6,8	156	102	14,96	068	16,70	068	14,63	068	32,31	068	14,19	068
6,9	156	102	15,60	069	17,79	069	14,84	069	32,64	069	14,30	069
7,0	156	102	14,19	070	15,29	070	11,25	070	24,78	070	11,46	070
7,1	156	102	13,75	071	18,23	071	14,96	071			14,51	071
7,2	156	102	15,60	072	18,78	072	15,60	072	34,38	072	14,84	072
7,3	156	102	16,26	073	18,99	073	15,83	073	34,60	073	15,17	073
7,4	156	102	16,91	074	20,09	074	16,05	074	34,93	074	15,29	074
7,5	156	102	17,14	075	18,23	075	13,97	075	30,12	075	13,86	075
7,6	165	109	18,45	076			16,26	076	35,92	076	15,83	076
7,7	165	109	17,58	077	21,94	077	16,49	077			16,05	077
7,8	165	109	19,21	078	22,38	078	17,04	078	37,12	078	16,26	078
7,9	165	109	18,55	079	22,59	079	17,04	079	37,44	079	16,70	079
8,0	165	109	15,72	080	17,04	080	13,10	080	28,49	080	12,66	080
8,1	165	109	17,24	081	23,58	081	17,24	081	38,42	081	17,14	081
8,2	165	109	18,89	082	23,91	082	17,69	082	38,64	082	17,58	082
8,3	165	109	20,09	083	24,45	083	17,69	083	39,29	083	17,79	083
8,4	165	109	21,50	084	25,11	084	18,66	084	40,27	084	18,23	084
8,5	165	109	18,45	085	21,07	085	17,04	085	37,44	085	16,70	085
8,6	175	115	18,45	086	25,76	086	18,89	086	41,16	086	18,45	086
8,7	175	115	18,55	087	25,98	087	18,89	087	41,48	087		
8,8	175	115	18,89	088	26,85	088	19,44	088	42,57	088	18,99	088
8,9	175	115	19,10	089	27,61	089	20,53	089	44,42	089	20,09	089
9,0	175	115	19,32	090	20,73	090	15,72	090	34,60	090	15,72	090
9,1	175	115	19,32	091	28,38	091	21,28	091	46,39	091	21,07	091
9,2	175	115	19,32	092	30,12	092	24,57	092			22,59	092
9,3	175	115	19,32	093	30,79	093	24,78	093			23,58	093

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

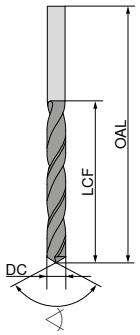
1) uncoated

→ v_c Page 50+51

Continued on next page

Twist drills, DIN 340, long

≤ 10xD



	UNI	WTL	WTL	WTL	WTW
	TiN	F.-nit	F.-nit	TiN	
					
	◁ 118° HSS-E	◁ 130° HSS-E	◁ 130° HSS	◁ 130° HSS	◁ 130° HSS
	10 270 ...	10 225 ...	10 215 ...	10 210 ...	10 200 ...

DC h8 mm	OAL mm	LCF mm	EUR T2		EUR T2		EUR T2		EUR T2		EUR T2	
9,4	175	115	19,32	094	31,11	094					24,78	094
9,5	175	115	19,32	095	27,40	095	23,91	095	52,28	095	23,58	095
9,6	184	121	20,53	096			28,71	096			29,25	096
9,7	184	121	21,50	097	38,09	097	30,79	097	67,78	097		
9,8	184	121	23,03	098	38,09	098	32,31	098	71,17	098	30,79	098
9,9	184	121	25,00	099	38,09	099	34,38	099	76,20	099		
10,0	184	121	27,07	100	31,11	100	19,21	100	41,92	100	18,23	100
10,1	184	121	29,69	101			42,35	101	92,90	101		
10,2	184	121	31,55	102	40,17	102	34,05	102	74,99	102	33,84	102
10,3	184	121	34,17	103			50,97	103			53,05	103
10,4	184	121	34,17	104			61,24	104			55,34	104
10,5	184	121	34,60	105	42,67	105	34,38	105	76,20	105	34,93	105
10,6	184	121							127,70	106		
10,8	195	128			48,03	108	50,33	108			48,25	108
11,0	195	128	41,16	110	47,15	110	28,49	110	62,44	110	28,38	110
11,5	195	128	41,58	115	57,63	115	47,81	115	104,30	115	46,39	115
11,6	195	128									62,44	116
11,8	195	128			63,64	118	57,63	118			55,89	118
12,0	205	134	42,02	120	58,07	120	34,93	120	77,50	120	35,69	120
12,2	205	134									65,50	122
12,3	205	134									55,89	123
12,5	205	134	46,06	125			36,24	125	79,25	125	36,78	125
13,0	205	134	50,10	130			37,67	130	83,29	130	39,95	130
13,5	214	140	50,97	135			70,51	135				
14,0	214	140	53,05	140			63,20	140	144,10	140	66,48	140

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

1) uncoated

→ v_c Page 50+51

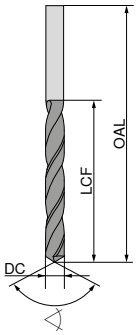
Twist drills, DIN 1869, extra-long, series 1

> 10xD

NEW

WTL
TiAlN

WTL
F.-nit



130°
HSS-E

130°
HSS

DC h8 mm	OAL mm	LCF mm	10 236 ... EUR T2		10 235 ... EUR T2	
2,0	125	85			8,80	020 1)
2,1	125	85			10,91	021 1)
2,2	135	90			10,91	022 1)
2,3	135	90			10,91	023 1)
2,4	140	95			11,46	024
2,5	140	95			8,80	025
2,6	140	95			11,46	026
2,7	150	100			12,01	027
2,8	150	100			12,01	028
2,9	150	100			12,01	029
3,0	150	100	19,94	03000	10,03	030
3,1	155	105			12,56	031
3,2	155	105			12,56	032
3,3	155	105	31,74	03300	12,56	033
3,4	165	115			12,66	034
3,5	165	115	22,70	03500	10,03	035
3,6	165	115			12,66	036
3,7	165	115			14,09	037
3,8	175	120			14,09	038
3,9	175	120			14,09	039
4,0	175	120	22,23	04000	10,24	040
4,1	175	120			14,09	041
4,2	175	120	32,73	04200	14,30	042
4,3	185	125			15,50	043
4,4	185	125			15,50	044
4,5	185	125	24,98	04500	11,13	045
4,6	185	125			15,50	046
4,7	185	125			15,94	047
4,8	195	135			16,26	048
4,9	195	135			17,04	049
5,0	195	135	18,64	05000	11,79	050
5,1	195	135			17,79	051
5,2	195	135			18,23	052
5,3	195	135			18,23	053
5,4	205	140			18,23	054
5,5	205	140	26,40	05500	13,00	055
5,6	205	140			18,23	056
5,7	205	140			18,45	057
5,8	205	140			18,78	058
5,9	205	140			18,78	059
6,0	205	140	27,97	06000	13,00	060
6,1	215	150			20,09	061
6,2	215	150			19,76	062
6,3	215	150			21,07	063
6,4	215	150			21,94	064
6,5	215	150	30,08	06500	17,79	065
6,6	215	150			21,94	066
6,7	215	150			23,25	067
6,8	225	155	28,33	06800	22,93	068
6,9	225	155			23,91	069
7,0	225	155	25,88	07000	18,45	070
7,1	225	155			26,85	071
7,3	225	155			26,85	073
7,4	225	155			26,85	074
7,5	225	155	28,89	07500	20,73	075
7,7	240	165			28,71	077
7,8	240	165			30,12	078
7,9	240	165			30,79	079
8,0	240	165	28,60	08000	22,93	080
8,1	240	165			35,37	081
8,2	240	165			35,37	082
8,3	240	165			35,37	083
8,4	240	165			37,12	084
8,5	240	165	36,80	08500	29,57	085
8,6	250	175			37,87	086
8,7	250	175			39,95	087
8,8	250	175			41,36	088
9,0	250	175	41,09	09000	31,55	090
9,2	250	175			46,94	092
9,4	250	175			50,33	094
9,5	250	175	41,35	09500	36,45	095
9,6	265	185			51,74	096
9,7	265	185			51,74	097
9,8	265	185			52,40	098
9,9	265	185			52,40	099
10,0	265	185	46,62	10000	32,64	100
10,2	265	185	68,33	10200		
10,5	265	185			58,07	105
11,0	280	195			43,45	110
11,5	280	195			53,37	115
12,0	295	205			49,55	120
12,5	295	205			60,80	125
13,0	295	205			60,26	130

	10 236 ...	10 235 ...
P	●	●
M		
K	●	●
N	●	●
S		
H		
O	○	○

1) uncoated

→ v_c Page 52

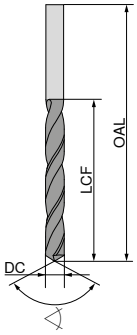
Twist drills, DIN 1869, extra-long, series 2

> 10xD

NEW

WTL
TiAlN

WTL
F.-nit



130°
HSS-E

130°
HSS

			10 246 ...		10 245 ...	
DC h8 mm	OAL mm	LCF mm	EUR T2		EUR T2	
2,0	160	110			17,79	020 1)
2,5	180	120			17,79	025
3,0	190	130	26,87	03000	13,75	030
3,5	210	145	31,51	03500	13,86	035
4,0	220	150	28,24	04000	14,63	040
4,5	235	160	31,24	04500	15,50	045
5,0	245	170	30,06	05000	15,50	050
5,5	260	180	37,17	05500	18,99	055
6,0	260	180	38,59	06000	18,78	060
6,5	275	190	36,94	06500	21,28	065
7,0	290	200	38,64	07000	23,58	070
7,5	290	200	41,57	07500	27,61	075
8,0	305	210	45,92	08000	27,40	080
8,5	305	210	45,11	08500	43,12	085
9,0	320	220	49,99	09000	42,02	090
9,5	320	220	52,06	09500	48,90	095
10,0	340	235	59,36	10000	44,31	100
10,2	340	235	66,92	10200		
10,5	340	235			64,29	105
11,0	365	250			62,76	110
11,5	365	250			74,22	115
12,0	375	260	86,12	12000	72,04	120
12,5	375	260			72,04	125
13,0	375	260			73,68	130
P			●		●	
M						
K			●		●	
N			●		●	
S						
H						
O			○		○	

1) uncoated

→ v_c Page 52

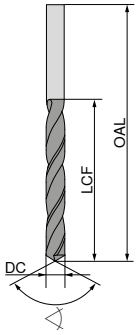
Twist drills, DIN 1869, extra-long, series 3

> 10xD

NEW

WTL
TiAlN

WTL
F.-nit



130°
HSS-E

130°
HSS

			10 256 ...		10 255 ...	
DC h8 mm	OAL mm	LCF mm	EUR T2		EUR T2	
2,5	225	150			22,93	025
3,0	240	160			22,93	030
3,5	265	180			18,45	035
4,0	280	190	36,70	04000	18,45	040
4,5	295	200			22,38	045
5,0	315	210	41,53	05000	22,38	050
5,5	330	225			23,91	055
6,0	330	225	47,84	06000	25,43	060
6,5	350	235			27,40	065
7,0	370	250			34,93	070
7,5	370	250			40,17	075
8,0	390	265	56,78	08000	41,16	080
8,5	390	265			52,07	085
9,0	410	280			55,89	090
9,5	410	280			66,04	095
10,0	430	295	77,94	10000	65,50	100
10,5	430	295			71,39	105
11,0	455	310			75,76	110
11,5	455	310			83,93	115
12,0	480	330			89,51	120
12,5	480	330			83,93	125
13,0	480	330			84,82	130
P			●		●	
M						
K			●		●	
N			●		●	
S						
H						
O			○		○	

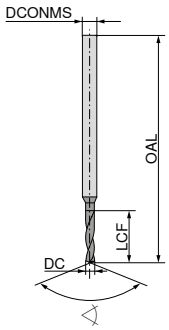
→ v_c Page 52

Twist drills, DIN 1899

- 4 facet
- with reinforced shank

Scope of supply:

- Pack quantity 5 pieces
- price per piece



N

118°
HSS-E-PM

10 103 ...

DC $_{-0,004}$ mm	OAL mm	LCF mm	DCONMS $_{h8}$ mm	EUR T2	
0,15	25	0,8	1,0	6,42	00150
0,20	25	1,5	1,0	5,15	00200
0,25	25	1,9	1,0	3,51	00250
0,30	25	1,9	1,0	4,08	00300
0,35	25	2,4	1,0	3,63	00350
0,40	25	3,0	1,0	3,63	00400
0,45	25	3,0	1,0	3,69	00450
0,50	25	3,4	1,0	3,63	00500
0,55	25	3,9	1,0	3,69	00550
0,60	25	3,9	1,0	3,67	00600
0,65	25	4,2	1,0	3,63	00650
0,70	25	4,8	1,0	3,38	00700
0,75	25	4,8	1,0	3,43	00750
0,80	25	5,3	1,5	3,77	00800
0,85	25	5,3	1,5	3,83	00850
0,90	25	6,0	1,5	3,83	00900
0,95	25	6,0	1,5	3,85	00950
1,00	25	6,8	1,5	3,85	01000
1,05	25	6,8	1,5	3,83	01050
1,10	25	7,6	1,5	3,94	01100
1,15	25	7,6	1,5	3,94	01150
1,20	25	8,5	1,5	3,85	01200
1,25	25	8,5	1,5	3,83	01250
1,30	25	8,5	1,5	3,97	01300
1,35	25	9,5	1,5	3,94	01350
1,40	25	9,5	1,5	3,85	01400
1,45	25	9,5	1,5	3,83	01450

P	●
M	○
K	●
N	●
S	○
H	
O	○

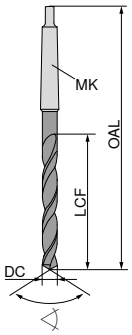
→ v_c Page 54

Twist drill, factory standard, short

≤ 3xD

WT

vap.



130°
HSS-E

10 285 ...

DC $_{h8}$ mm	OAL mm	LCF mm	MK	EUR T2	
10,0	138	57	1	39,73	100
10,5	138	57	1	43,12	105
11,0	142	61	1	35,14	110
11,5	142	61	1	46,06	115
12,0	147	66	1	40,07	120
12,5	147	66	1	43,12	125
13,0	147	66	1	41,70	130
13,5	168	70	2	53,17	135
14,0	168	70	2	52,94	140
14,5	172	74	2	56,66	145
15,0	172	74	2	55,13	150
15,5	176	78	2	82,74	155
16,0	176	78	2	53,17	160
16,5	179	81	2	84,05	165
17,0	179	81	2	55,89	170
17,5	183	85	2	88,09	175
18,0	183	85	2	59,27	180
18,5	186	88	2	88,73	185
19,0	186	88	2	64,84	190
19,5	212	91	3	105,10	195
20,0	212	91	3	75,43	200
21,0	216	95	3	84,82	210
22,0	219	98	3	88,73	220
23,0	222	101	3	94,75	230
24,0	225	104	3	97,04	240
25,0	225	104	3	101,10	250
26,0	256	107	4	141,90	260
27,0	259	110	4	149,60	270
28,0	259	110	4	152,90	280
30,0	263	114	4	167,00	300

P	●
M	●
K	●
N	○
S	○
H	○
O	

→ v_c Page 47

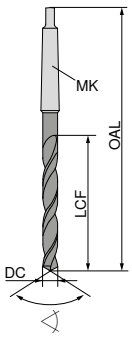
Twist drills, DIN 345

≤ 5xD

N

vap.

WTL



HSS

HSS-E

DC h8 mm	OAL mm	LCF mm	MK	10 265 ... EUR T2		10 280 ... EUR T2	
10,00	168	87	1	16,26	100	38,53	100 1)
10,20	168	87	1	18,89	102	39,95	102 1)
10,50	168	87	1	17,04	105	39,95	105 1)
10,80	175	94	1	22,38	108	43,76	108 1)
11,00	175	94	1	17,79	110	41,81	110 1)
11,20	175	94	1	23,79	112		
11,50	175	94	1	20,09	115	50,76	115 1)
11,80	175	94	1	25,43	118		
12,00	182	101	1	18,33	120	43,76	120 1)
12,20	182	101	1	25,98	122	47,92	122 1)
12,50	182	101	1	19,10	125	45,62	125 1)
12,80	182	101	1	26,20	128		
13,00	182	101	1	19,76	130	49,23	130 1)
13,20	182	101	1	26,97	132		
13,50	189	108	1	22,59	135	58,29	135 1)
13,80	189	108	1	28,38	138		
14,00	189	108	1	20,95	140	52,94	140 1)
14,25	212	114	2	31,55	142	78,59	142 1)
14,50	212	114	2	22,17	145	61,67	145 1)
14,75	212	114	2	33,84	147		
15,00	212	114	2	23,25	150	63,20	150 1)
15,25	218	120	2	31,11	152	80,66	152 1)
15,50	218	120	2	25,11	155	59,81	155 1)
15,75	218	120	2	28,38	157	67,14	157 1)
16,00	218	120	2	25,11	160	65,50	160 1)
16,25	223	125	2	38,32	162		
16,50	223	125	2	27,17	165	67,14	165 2)
16,75	223	125	2	31,11	167		
17,00	223	125	2	28,06	170	63,20	170 2)
17,25	228	130	2	35,14	172	74,12	172 2)
17,50	228	130	2	28,60	175	69,64	175 2)
17,75	228	130	2	35,47	177	75,53	177 2)
18,00	228	130	2	30,34	180	71,61	180 2)
18,25	233	135	2	36,45	182		
18,50	233	135	2	32,64	185	69,64	185 2)
18,75	233	135	2	38,32	187		
19,00	233	135	2	32,41	190	74,12	190 2)
19,25	238	140	2	40,72	192		
19,50	238	140	2	37,54	195		
19,75	238	140	2	42,57	197		
20,00	238	140	2	34,60	200	79,69	200 2)
20,25	243	145	2	46,61	202		
20,50	243	145	2	36,68	205		
20,75	243	145	2	47,05	207		
21,00	243	145	2	39,08	210	94,42	210 2)
21,25	248	150	2	48,46	212		
21,50	248	150	2	44,65	215		
21,75	248	150	2	50,76	217		
22,00	248	150	2	43,56	220	101,50	220 2)
22,25	248	150	2	52,07	222		
22,50	253	155	2	47,05	225	124,50	225 2)
22,75	253	155	2	53,37	227		
23,00	253	155	2	51,09	230	117,90	230 2)
23,50	276	155	3	50,76	235		
23,75	281	160	3	69,74	237		
24,00	281	160	3	53,17	240	127,70	240 2)
24,50	281	160	3	55,23	245		
24,75	281	160	3	76,75	247		
25,00	281	160	3	58,62	250	131,00	250 2)
25,50	286	165	3	60,90	255		
25,75	286	165	3	79,46	257		
26,00	286	165	3	67,34	260	151,70	260 2)
26,50	286	165	3	64,95	265		
26,75	291	170	3	102,60	267		
27,00	291	170	3	67,34	270	174,60	270 2)
27,50	291	170	3	69,32	275		
27,75	291	170	3	98,79	277		
28,00	291	170	3	74,22	280		
28,50	296	175	3	90,82	285		
28,75	296	175	3	102,60	287		
29,00	296	175	3	80,56	290		
29,50	296	175	3	82,30	295		
29,75	296	175	3	105,10	297		
30,00	296	175	3	80,56	300		
30,50	301	180	3	98,03	305		
31,00	301	180	3	95,18	310		
31,50	301	180	3	108,20	315		
32,00	334	185	4	100,10	320		
32,50	334	185	4	115,70	325		
33,00	334	185	4	107,40	330		
33,50	334	185	4	119,00	335		
34,00	339	190	4	125,60	340		
34,50	339	190	4	140,90	345		
35,00	339	190	4	127,70	350		
35,50	339	190	4	148,40	355		
36,00	344	195	4	139,70	360		
36,50	344	195	4	154,00	365		
37,00	344	195	4	151,70	370		
37,50	344	195	4	170,40	375		
38,00	349	200	4	160,50	380		
38,50	349	200	4	191,00	385		
39,00	349	200	4	176,90	390		
39,50	349	200	4	221,70	395		
40,00	349	200	4	183,40	400		
41,00	354	205	4	193,20	410		
42,00	354	205	4	211,80	420		
43,00	359	210	4	225,90	430		
44,00	359	210	4	237,90	440		
45,00	359	210	4	248,90	450		
46,00	364	215	4	256,60	460		
47,00	364	215	4	274,00	470		
48,00	369	220	4	280,60	480		
49,00	369	220	4	293,70	490		
50,00	369	220	4	303,40	500		
51,00	412	225	5	364,60	510		
52,00	412	225	5	390,80	520		
53,00	412	225	5	414,80	530		
54,00	417	230	5	425,70	540		
55,00	417	230	5	433,30	550		
56,00	417	230	5	444,20	560		
57,00	422	235	5	462,90	570		
58,00	422	235	5	494,50	580		
59,00	422	235	5	518,50	590		
60,00	422	235	5	535,90	600		

	10 265 ...	10 280 ...
P	○	●
M		○
K	●	●
N	○	●
S		○
H		○
O	○	○

1) nitrided chamfer
2) vaporised

→ v_c Page 49

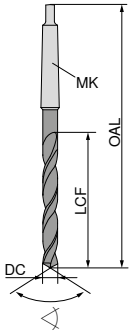
Twist drills, DIN 341, long

≤ 10xD

N

vap.

WTL



HSS

HSS-E

DC h8 mm	OAL mm	LCF mm	MK	10 295 ... EUR T2		10 297 ... EUR T2	
10,00	197	116	1	21,62	100	39,95	100 1)
10,20	197	116	1	24,02	102	37,99	102 1)
10,50	197	116	1	21,94	105	43,01	105 1)
10,80	206	125	1	28,06	108		
11,00	206	125	1	22,59	110	42,13	110 1)
11,20	206	125	1	30,12	112	38,32	112 1)
11,50	206	125	1	22,59	115	43,22	115 1)
11,80	206	125	1	30,46	118	38,32	118 1)
12,00	215	134	1	22,59	120	43,22	120 1)
12,20	215	134	1	30,12	122	37,67	122 1)
12,50	215	134	1	22,81	125	43,88	125 1)
12,80	215	134	1	32,64	128	37,99	128 1)
13,00	215	134	1	22,81	130	45,62	130 1)
13,20	215	134	1	32,64	132		
13,50	223	142	1	25,43	135	47,70	135 1)
13,80	223	142	1	41,81	138	43,01	138 1)
14,00	223	142	1	25,76	140	52,50	140 1)
14,25	245	147	2	40,17	142		
14,50	245	147	2	32,64	145	51,09	145 1)
14,75	245	147	2	40,17	147		
15,00	245	147	2	32,31	150	54,03	150 1)
15,25	251	153	2	40,17	152		
15,50	251	153	2	31,44	155	53,17	155 1)
15,75	251	153	2	40,61	157		
16,00	251	153	2	33,84	160	55,01	160 1)
16,25	257	159	2	45,62	162		
16,50	257	159	2	35,47	165	55,34	165 2)
16,75	257	159	2	43,76	167		
17,00	257	159	2	35,14	170	62,65	170 2)
17,25	263	165	2	49,66	172		
17,50	263	165	2	40,17	175	60,04	175 2)
17,75	263	165	2	49,45	177		
18,00	263	165	2	39,95	180	65,50	180 2)
18,25	269	171	2	58,83	182		
18,50	269	171	2	44,65	185	60,04	185 2)
18,75	269	171	2	56,43	187		
19,00	269	171	2	43,88	190	74,12	190 2)
19,25	275	177	2	61,89	192		
19,50	275	177	2	50,76	195	73,68	195 2)
19,75	275	177	2	69,20	197		
20,00	275	177	2	48,14	200	79,03	200 2)
20,50	282	184	2	60,57	205	77,94	205 2)
21,00	282	184	2	55,01	210	93,11	210 2)
21,50	289	191	2	65,50	215		
21,75	289	191	2	87,54	217		
22,00	289	191	2	60,04	220	103,30	220 2)
22,50	296	198	2	66,69	225		
23,00	296	198	2	62,44	230		
23,50	319	198	3	76,08	235		
24,00	327	206	3	76,75	240	131,00	240 2)
24,50	327	206	3	82,41	245		
25,00	327	206	3	77,29	250	136,50	250 2)
25,50	335	214	3	92,67	255		
26,00	335	214	3	88,63	260	158,30	260 2)
26,50	335	214	3	95,07	265		
27,00	343	222	3	95,07	270		
27,50	343	222	3	117,90	275		
28,00	343	222	3	105,80	280		
29,00	351	230	3	122,30	290		
29,50	351	230	3	138,60	295		
30,00	351	230	3	122,30	300		
30,50	360	239	3	155,00	305		
31,00	360	239	3	147,40	310		
31,50	360	239	3	163,80	315		
32,00	397	248	4	158,30	320		
33,00	397	248	4	158,30	330		
33,50	397	248	4	184,50	335		
34,00	406	257	4	195,40	340		
35,00	406	257	4	189,90	350		
36,00	416	267	4	219,40	360		
37,00	416	267	4	247,80	370		
37,50	416	267	4	266,30	375		
38,00	426	277	4	236,80	380		
39,00	426	277	4	253,30	390		
40,00	426	277	4	266,30	400		
42,00	436	287	4	301,30	420		
43,00	447	298	4	323,10	430		
44,00	447	298	4	323,10	440		
45,00	447	298	4	337,30	450		
50,00	470	321	4	443,20	500		

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

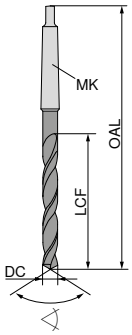
1) nitrided chamfer
2) vaporised

→ v_c Page 51

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

> 10xD

WTL



130°
HSS

10 305 ...

DC h8 mm	OAL mm	LCF mm	MK	EUR T2	
10,0	285	185	1	40,82	100 1)
10,5	285	185	1	49,66	105 1)
11,0	300	195	1	47,70	110 1)
11,5	300	195	1	50,10	115 1)
12,0	310	205	1	53,17	120 1)
12,5	310	205	1	54,80	125 1)
13,0	310	205	1	55,34	130 1)
13,5	325	220	1	63,85	135 1)
14,0	325	220	1	62,11	140 1)
14,5	340	220	2	64,29	145 1)
15,0	340	220	2	67,68	150 1)
15,5	355	230	2	74,12	155 1)
16,0	355	230	2	71,06	160 1)
16,5	355	230	2	71,61	165 2)
17,0	355	230	2	72,81	170 2)
17,5	370	245	2	76,75	175 2)
18,0	370	245	2	79,03	180 2)
18,5	370	245	2	87,54	185 2)
19,0	370	245	2	89,40	190 2)
19,5	385	260	2	96,49	195 2)
20,0	385	260	2	102,10	200 2)
21,0	385	260	2	117,90	210 2)
22,0	405	270	2	123,40	220 2)
23,0	405	270	2	145,10	230 2)
24,0	440	290	3	161,50	240 2)
25,0	440	290	3	163,80	250 2)
26,0	440	290	3	177,90	260 2)
28,0	460	305	3	206,30	280 2)
30,0	460	305	3	236,80	300 2)

P	●
M	
K	●
N	●
S	
H	
O	○

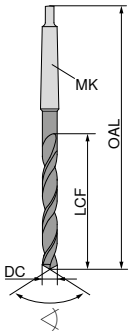
1) nitrided chamfer
2) vaporised

→ v_c Page 53

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

> 10xD

WTL



130°
HSS

10 315 ...

DC h8 mm	OAL mm	LCF mm	MK	EUR T2	
10,0	360	235	1	58,62	100 1)
10,5	360	235	1	73,68	105 1)
11,0	375	250	1	67,14	110 1)
11,5	375	250	1	71,61	115 1)
12,0	395	260	1	81,65	120 1)
13,0	395	260	1	85,58	130 1)
13,5	410	275	1	91,26	135 1)
14,0	410	275	1	91,26	140 1)
14,5	425	275	2	92,02	145 1)
15,0	425	275	2	92,67	150 1)
15,5	445	295	2	96,49	155 1)
16,0	445	295	2	95,07	160 1)
16,5	445	295	2	108,50	165 2)
17,0	445	295	2	102,10	170 2)
17,5	465	310	2	110,20	175 2)
18,0	465	310	2	114,60	180 2)
18,5	465	310	2	123,40	185 2)
19,0	465	310	2	125,60	190 2)
19,5	490	325	2	143,00	195 2)
20,0	490	325	2	141,90	200 2)
21,0	490	325	2	151,70	210 2)
22,0	515	345	2	182,30	220 2)
23,0	515	345	2	184,50	230 2)
24,0	555	365	3	206,30	240 2)
25,0	555	365	3	208,50	250 2)
26,0	555	365	3	244,50	260 2)
28,0	580	385	3	283,80	280 2)
30,0	580	385	3	328,60	300 2)

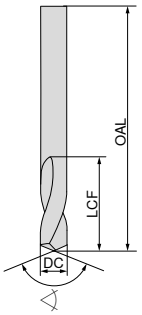
P	●
M	
K	●
N	●
S	
H	
O	○

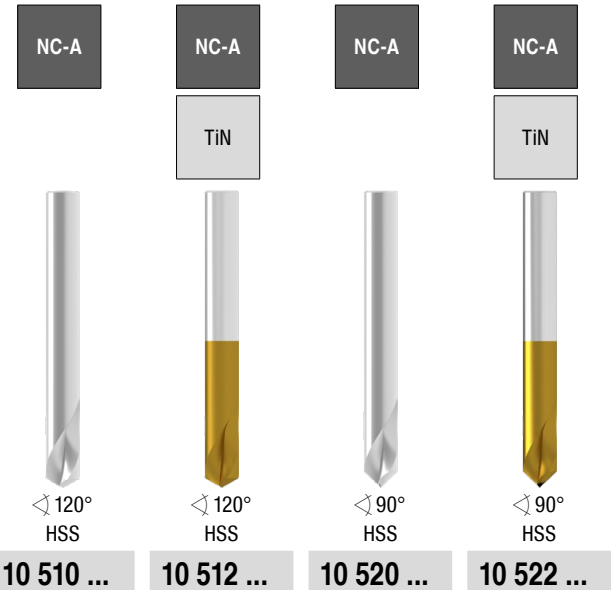
1) nitrided chamfer
2) vaporised

→ v_c Page 53

NC spot drills, factory standard

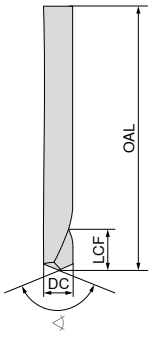
▲ helical flutes

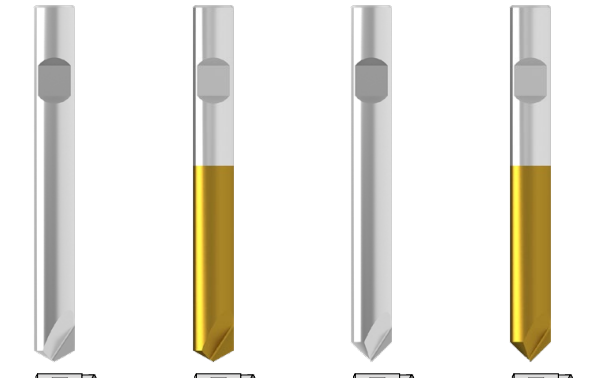




DC h6 mm	OAL mm	LCF mm	10 510 ... EUR T2		10 512 ... EUR T2		10 520 ... EUR T2		10 522 ... EUR T2	
			120° HSS		120° HSS		90° HSS		90° HSS	
3	46	12,0	7,05	030	10,23	030	7,05	030	10,23	030
4	55	12,0	7,16	040	10,46	040	7,16	040	10,46	040
5	62	14,0	7,49	050	10,90	050	7,49	050	10,90	050
6	66	16,0	7,67	060	11,02	060	7,67	060	11,02	060
8	79	21,0	12,88	080	18,66	080	12,88	080	18,66	080
10	89	25,0	14,30	100	20,63	100	14,30	100	20,63	100
12	102	30,0	20,73	120	30,24	120	20,73	120	30,24	120
16	115	37,5	27,17	160	39,52	160	27,17	160	39,52	160
20	131	45,0	43,76	200	63,53	200	43,76	200	63,53	200

▲ with clamping flat to DIN 1835 B



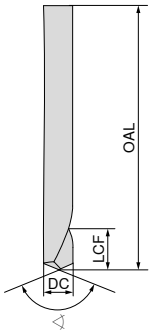


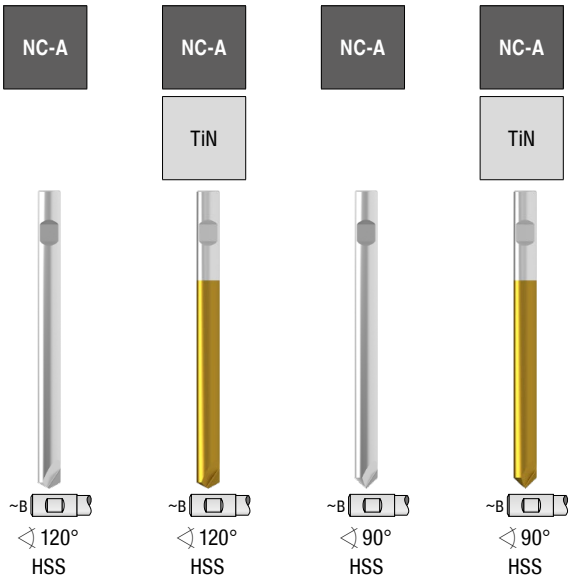
DC h6 mm	OAL mm	LCF mm	10 511 ... EUR T2		10 513 ... EUR T2		10 521 ... EUR T2		10 523 ... EUR T2	
			120° HSS		120° HSS		90° HSS		90° HSS	
6	66	7,0	7,89	060	11,02	060	7,89	060	11,02	060
8	79	9,0	11,13	080	15,72	080	11,13	080	15,72	080
10	89	11,5	12,44	100	17,36	100	12,44	100	17,36	100
12	102	14,0	17,24	120	24,67	120	17,24	120	24,67	120
16	115	18,0	22,59	160	32,20	160	22,59	160	32,20	160
20	131	23,0	32,20	200	46,94	200	32,20	200	46,94	200
P			15-35		25-55		15-35		25-55	
M			10		20		10		20	
K			20-35		30-55		20-35		30-55	
N			50-70		65-85		50-70		65-85	
S										
H										
O										

Suitable only for spot drilling!

NC spot drill factory standard long

▲ with clamping flat to DIN 1835 B





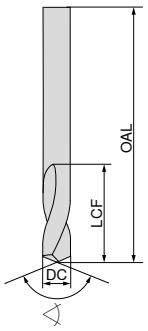
DC h6 mm	OAL mm	LCF mm	10 530 ... EUR T2		10 532 ... EUR T2		10 526 ... EUR T2		10 528 ... EUR T2	
6	93	7,0	9,68	**060**	13,75	**060**	9,68	**060**	13,75	**060**
8	117	9,0	15,06	**080**	21,72	**080**	15,06	**080**	21,72	**080**
10	133	11,5	16,59	**100**	23,79	**100**	16,59	**100**	23,79	**100**
12	151	14,0	19,76	**120**	28,16	**120**	19,76	**120**	28,16	**120**
16	178	18,0	30,24	**160**	43,66	**160**	30,24	**160**	43,66	**160**
20	205	23,0	41,92	**200**	61,45	**200**	41,92	**200**	61,45	**200**

P	**15-35**	**25-55**	**15-35**	**25-55**
M	10	20	10	20
K	**20-35**	**30-55**	**20-35**	**30-55**
N	50-70	65-85	50-70	65-85
S				
H				
O				

Suitable only for spot drilling!

NC spot drills, factory standard, long

▲ helical flutes



NC-A

90°
HSS

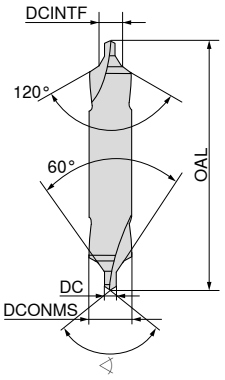
DC h6 mm	OAL mm	LCF mm	10 525 ... EUR T2	
6,35	105	17	11,90	**025**
8,00	118	21	21,84	**030**
9,52	132	25	22,17	**040**
12,70	159	30	31,44	**050**
15,87	186	37	27,40	**060**
19,05	213	45	63,10	**075**

P	**15-35**
M	10
K	**20-35**
N	50-70
S	
H	
O	

Suitable only for spot drilling!

Centre drills, DIN 333, form B

▲ with protective countersink 120°



ZB

Right-hand
118°
HSS

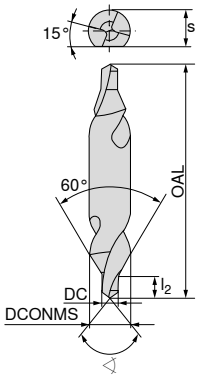
ZB

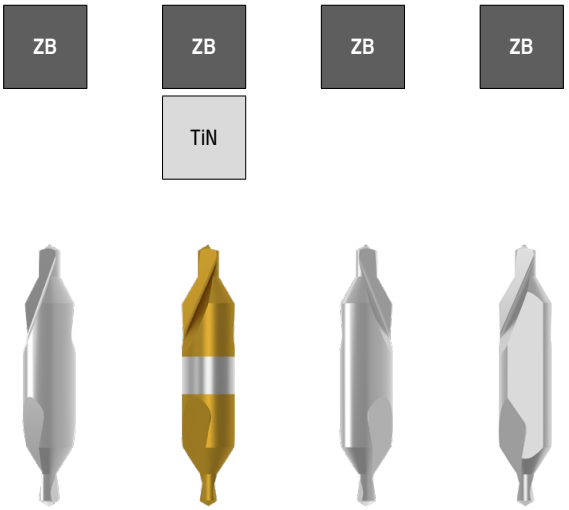
Left-hand
118°
HSS

DC mm	DCONMS h8 mm	DCINTF k12 mm	OAL mm	10 480 ... EUR T2		10 485 ... EUR T2	
1,00	4,0	2,12	35,5	7,23	**100**	16,49	**100**
1,25	5,0	2,65	40,0	8,18	**125**	19,32	**125**
1,60	6,3	3,35	45,0	7,56	**160**	20,30	**160**
2,00	8,0	4,25	50,0	8,18	**200**	21,62	**200**
2,50	10,0	5,30	56,0	9,98	**250**	21,94	**250**
3,15	11,2	6,70	62,0	14,51	**315**	29,80	**315**
4,00	14,0	8,50	69,0	18,66	**400**	32,53	**400**
5,00	18,0	10,60	77,0	23,91	**500**	34,93	**500**

P	**15-35**	**15-35**
M	10	10
K	**20-35**	**20-35**
N	50-70	50-70
S		
H		
O		

Centre drills, DIN 333, form A



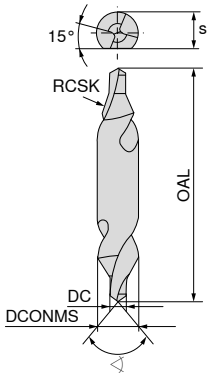


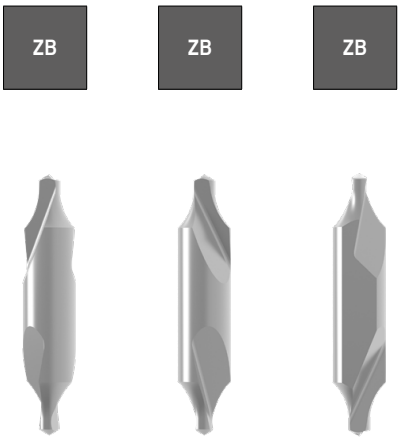
DC mm	s mm	DCONMS $_{h8}$ mm	OAL mm	l_2 mm	Right-hand ◁ 118° HSS 10 415 ... EUR T2		Right-hand ◁ 118° HSS 10 425 ... EUR T2		Left-hand ◁ 118° HSS 10 435 ... EUR T2		Right-hand ◁ 118° HSS-E 10 445 ... EUR T2	
0,50		3,15	25,0	0,8	5,31	**050** [2]	12,56	**050** [2]	7,23	**050** [2]		
0,80		3,15	25,0	1,1	5,11	**080** [2]	12,11	**080** [2]	7,11	**080** [2]		
1,00		3,15	31,5	1,3	4,64	**100**	11,13	**100**	6,42	**100**		
1,25		3,15	31,5	1,6	5,31	**125**	12,66	**125**	7,56	**125**		
1,60	3,25	4,00	35,5	2,0							5,72	**160** [1]
1,60		4,00	35,5	2,0	4,26	**160**	10,16	**160**	6,63	**160**		
2,00	4,20	5,00	40,0	2,5							5,85	**200** [1]
2,00		5,00	40,0	2,5	4,54	**200**	10,82	**200**	7,43	**200**		
2,50	5,35	6,30	45,0	3,1							6,78	**250** [1]
2,50		6,30	45,0	3,1	5,27	**250**	12,56	**250**	8,03	**250**		
3,15	6,95	8,00	50,0	3,9							8,91	**315** [1]
3,15		8,00	50,0	3,9	6,78	**315**	15,94	**315**	10,16	**315**		
4,00	8,40	10,00	56,0	5,0							13,00	**400** [1]
4,00		10,00	56,0	5,0	10,64	**400**	25,00	**400**	13,65	**400**		
5,00	10,95	12,50	63,0	6,3							18,99	**500** [1]
5,00		12,50	63,0	6,3	15,29	**500**	35,80	**500**	21,18	**500**		
6,30	14,00	16,00	71,0	8,0							31,87	**630** [1]
6,30		16,00	71,0	8,0	22,71	**630**	53,27	**630**	31,22	**630**		

P	**15-35**	**25-55**	**15-35**	**15-35**
M	10	20	10	10
K	**20-35**	**30-55**	**20-35**	**20-35**
N	50-70	65-85	50-70	50-70
S				
H				
O				

1) with flat
2) Single ended

Centre drills, DIN 333, form R





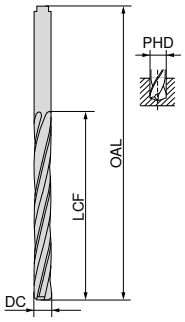
DC mm	s mm	DCONMS h8 mm	OAL mm	RCSK mm	Right-hand ◁ 118° HSS 10 455 ... EUR T2		Left-hand ◁ 118° HSS 10 475 ... EUR T2		Right-hand ◁ 118° HSS 10 465 ... EUR T2	
0,50		3,15	25,0	2,00	5,31	**050** [2]				
0,80		3,15	25,0	2,50	5,11	**080** [2]	10,16	**080** [2]		
1,00		3,15	31,5	2,90	4,57	**100**	7,93	**100**		
1,25		3,15	31,5	3,15	5,21	**125**	9,52	**125**		
1,60	3,25	4,00	35,5	4,00					5,72	**160** [1]
1,60		4,00	35,5	4,00	4,26	**160**	7,74	**160**		
2,00	4,20	5,00	40,0	5,00					5,85	**200** [1]
2,00		5,00	40,0	5,00	4,54	**200**	7,93	**200**		
2,50	5,35	6,30	45,0	6,30					6,78	**250** [1]
2,50		6,30	45,0	6,30	5,27	**250**	8,18	**250**		
3,15	6,95	8,00	50,0	8,00					8,71	**315** [1]
3,15		8,00	50,0	8,00	6,78	**315**	11,35	**315**		
4,00	8,40	10,00	56,0	10,00					13,32	**400** [1]
4,00		10,00	56,0	10,00	9,86	**400**	16,49	**400**		
5,00	10,95	12,50	63,0	12,50					18,99	**500** [1]
5,00		12,50	63,0	12,50	14,96	**500**	24,12	**500**		
6,30	14,00	16,00	71,0	16,00					31,87	**630** [1]
6,30		16,00	71,0	16,00	22,71	**630**				

P	**15-35**	**15-35**	**15-35**
M	10	10	10
K	**20-35**	**20-35**	**20-35**
N	50-70	50-70	50-70
S			
H			
O			

1) with flat
2) Single ended

Core drills (spiral countersinks)

▲ with cylindrical shank, DIN 344



N

vap.

120°

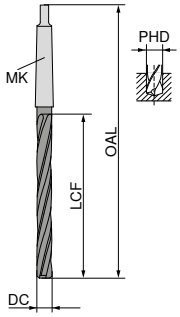
HSS

10 226 ...

DC h8 mm	OAL mm	LCF mm	PHD mm	EUR T2	
3,80	96	64	2,8	21,62	**038**
4,00	96	64	2,8	21,07	**040**
4,80	108	74	3,5	15,72	**048**
5,00	108	74	3,5	15,50	**050**
5,80	116	80	4,2	15,72	**058**
6,00	116	80	4,2	15,50	**060**
6,80	133	93	4,9	17,69	**068**
7,00	133	93	4,9	17,69	**070**
7,80	142	100	5,6	20,30	**078**
8,00	142	100	5,6	19,98	**080**
8,80	151	107	6,3	21,62	**088**
9,00	151	107	6,3	21,07	**090**
9,80	162	116	7,0	23,91	**098**
10,00	162	116	7,0	23,58	**100**
10,75	173	125	7,7	32,20	**107**
11,00	173	125	7,7	28,38	**110**
11,75	184	134	8,4	32,53	**117**
12,00	184	134	8,4	29,25	**120**

P	**15-35**
M	10
K	**20-35**
N	50-80
S	14-28
H	
O	

Core drills (spiral countersinks)



N

vap.

MK

120°

HSS

10 228 ...

DC h8 mm	OAL mm	LCF mm	PHD mm	MK	EUR T2	
10,00	168	87	7,0	1	28,38	**100**
10,75	175	94	7,7	1	34,28	**107**
11,00	175	94	7,7	1	30,46	**110**
11,75	182	101	8,4	1	34,28	**117**
12,00	182	101	8,4	1	30,46	**120**
12,75	182	101	9,1	1	37,33	**127**
13,00	182	101	9,1	1	33,40	**130**
13,75	189	108	9,8	1	37,67	**137**
14,00	189	108	9,8	1	33,95	**140**
14,75	212	114	10,5	2	42,35	**147**
15,00	212	114	10,5	2	37,67	**150**
15,75	218	120	11,2	2	43,88	**157**
16,00	218	120	11,2	2	39,29	**160**
16,75	223	125	11,9	2	46,83	**167**
17,00	223	125	11,9	2	41,58	**170**
17,75	228	130	12,6	2	48,03	**177**
18,00	228	130	12,6	2	42,35	**180**
18,70	233	135	13,3	2	48,36	**187**
19,00	233	135	13,3	2	47,70	**190**
19,70	238	140	14,0	2	48,36	**197**
20,00	238	140	14,0	2	47,70	**200**
20,70	243	145	14,6	2	56,43	**207**
21,00	243	145	14,6	2	55,77	**210**
21,70	248	150	15,3	2	57,08	**217**
22,00	248	150	15,3	2	56,22	**220**
22,70	253	155	16,0	2	62,98	**227**
23,00	253	155	16,0	2	62,21	**230**
23,70	281	160	16,6	3	65,70	**237**
24,00	281	160	16,6	3	64,29	**240**
24,70	281	160	17,3	3	69,86	**247**
25,00	281	160	17,3	3	68,66	**250**
25,70	286	165	18,0	3	73,13	**257**
26,00	286	165	18,0	3	72,15	**260**
26,70	291	170	18,6	3	85,37	**267**
27,00	291	170	18,6	3	83,73	**270**
27,70	291	170	19,3	3	86,13	**277**
28,00	291	170	19,3	3	84,70	**280**
28,70	296	175	20,0	3	94,31	**287**
29,00	296	175	20,0	3	93,44	**290**
29,70	296	175	20,5	3	98,13	**297**
30,00	296	175	20,5	3	96,83	**300**

P	**15-35**
M	10
K	**20-35**
N	50-80
S	14-28
H	
O	

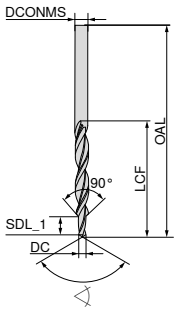
Stepped drills, DIN 8378

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

DIN 8378

SB

vap.



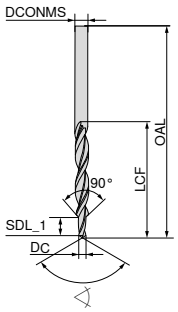
118°
HSS

10 365 ...

For threads	DC h9 mm	DCONMS h8 mm	OAL mm	SDL_1 mm	LCF mm	EUR T2	
M3	2,5	3,4	70	8,8	39	18,23	030
M4	3,3	4,5	80	11,4	47	19,54	040
M5	4,2	5,5	93	13,6	57	20,09	050
M6	5,0	6,6	101	16,5	63	22,93	060
M8	6,8	9,0	125	21,0	81	25,76	080
M10	8,5	11,0	142	25,5	94	32,96	100
M12	10,2	13,5	160	30,0	108	42,35	120

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

DIN 8374



118°
HSS

10 355 ...

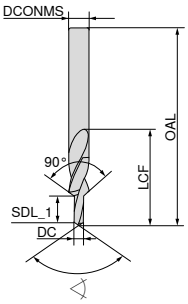
For threads	DC h9 mm	DCONMS h8 mm	OAL mm	SDL_1 mm	LCF mm	EUR T2	
M3	3,2	6,0	93	9	57	20,95	030
M4	4,3	8,0	117	11	75	24,88	040
M5	5,3	10,0	133	13	87	30,56	050
M6	6,4	11,5	142	15	94	34,93	060
M8	8,4	15,0	169	19	114	57,63	080
M10	10,5	19,0	198	23	135	88,96	100

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

Stepped drills, overall length to DIN 1897

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

SB



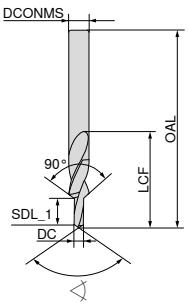
118°
HSS

10 320 ...

For threads	DC h6 mm	DCONMS h6 mm	OAL mm	SDL_1 mm	LCF mm	EUR T2	
M3	2,5	3,4	52	8,8	20	11,68	030
M4	3,3	4,5	58	11,4	24	11,79	040
M5	4,2	5,5	66	13,6	28	12,66	050
M6	5,0	6,6	70	16,5	31	13,65	060
M8	6,8	9,0	84	21,0	40	15,72	080
M10	8,5	11,0	95	25,5	47	20,30	100
M12	10,2	13,5	107	30,0	54	26,08	120

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

DIN 8374



118°
HSS

10 330 ...

For threads	DC h6 mm	DCONMS h6 mm	OAL mm	SDL_1 mm	LCF mm	EUR T2	
M3	3,2	6,0	66	9	28	13,65	030
M4	4,3	8,0	79	11	37	15,17	040
M5	5,3	10,0	89	13	43	19,10	050
M6	6,4	11,5	95	15	47	21,18	060
M8	8,4	15,0	111	19	56	24,88	080
M10	10,5	19,0	127	23	64	36,78	100

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

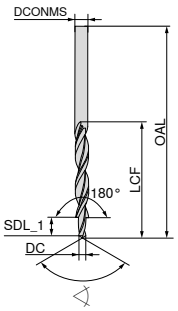
Stepped drills, DIN 8376

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

DIN 8376

SB

vap.



HSS

10 375 ...

For threads	DC h9 mm	DCONMS h8 mm	OAL mm	SDL_1 mm	LCF mm	EUR T2		
M3	3,4	6	93	9	57	20,95	**030**	1)
M4	4,5	8	117	11	75	24,88	**040**	
M5	5,5	10	133	13	87	29,69	**050**	
M6	6,6	11	142	15	94	34,17	**060**	
M8	9,0	15	169	19	114	43,12	**080**	
M10	11,0	18	191	23	130	89,72	**100**	

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

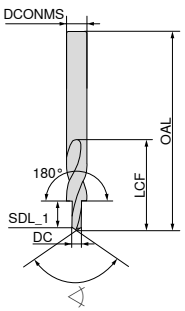
1) DCONMS not according to DIN 974-1

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

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

DIN 8376

SB



HSS

10 340 ...

For threads	DC h6 mm	DCONMS h6 mm	OAL mm	SDL_1 mm	LCF mm	EUR T2		
M3	3,4	6	66	9	28	13,00	**030**	1)
M4	4,5	8	79	11	37	14,74	**040**	
M5	5,5	10	89	13	43	18,23	**050**	
M6	6,6	11	95	15	47	20,95	**060**	
M8	9,0	15	111	19	56	26,85	**080**	
M10	11,0	18	123	23	62	40,07	**100**	

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

1) DCONMS not according to DIN 974-1

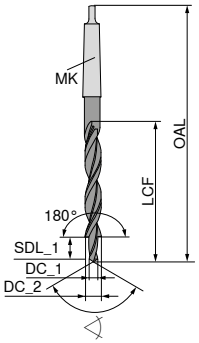
Stepped drills, DIN 8377

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

DIN 8377

SB

vap.



HSS

							10 405 ...	
For threads	DC_1 h9 mm	DC_2 mm	OAL mm	SDL_1 mm	LCF mm	MK	EUR T2	
M5	5,5	10	168	13	87	1	42,57	**050**
M6	6,6	11	175	15	94	1	43,12	**060**
M8	9,0	15	212	19	114	2	56,66	**080**
M10	11,0	18	228	23	130	2	75,76	**100**
M12	13,5	20	238	27	140	2	91,80	**120**
M14	15,5	24	281	31	160	3	117,90	**140**
M16	17,5	26	286	35	165	3	139,70	**160**
M18	20,0	30	296	39	175	3	161,50	**180**
M20	22,0	33	334	43	185	4	187,80	**200**

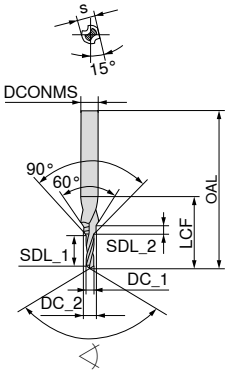
P	**15-35**
M	10
K	**20-35**
N	50-80
S	
H	
O	

Stepped drills for centring, factory standard

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

SB

vap.



118°
HSS

10 350 ...

For threads	DC_1 h8 mm	DCONMS h7 mm	DC_2 mm	s mm	OAL mm	SDL_1 mm	LCF mm	SDL_2 mm	EUR T2	
M4	3,3	8,0	4,3	6,75	63	11,0	23	1,60	50,33	**040**
M5	4,2	10,0	5,3	8,45	67	13,0	27	2,15	55,23	**050**
M6	5,0	12,5	6,4	10,45	71	16,0	33	2,90	60,47	**060**
M8	6,8	14,0	8,4	12,50	88	19,5	41	3,50	57,31	**080**
M10	8,5	16,0	10,5	14,85	94	23,0	47	4,70	65,70	**100**
M12	10,2	20,0	13,0	18,45	105	28,0	59	6,50	86,45	**120**
M16	14,0	25,0	17,0	23,40	132	33,0	67	8,30	121,10	**160**
M20	17,5	31,5	21,0	29,35	145	38,0	77	10,35	161,50	**200**
M24	21,0	40,0	25,0	36,50	160	45,0	90	12,00	258,70	**240**

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

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3		Tempered	840 N/mm² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5		Tempered	1010 N/mm² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2		Tempered	930 N/mm² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3		Tempered	1010 N/mm² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4		Tempered	1200 N/mm² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic		845 N/mm² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic		780 N/mm² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865	G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC				
		H.1.2		Hardened and tempered	56–60 HRC				
		H.1.3		Hardened and tempered	61–65 HRC				
		H.1.4		Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1		Cast	400 HB				
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²				
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²				
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²				
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²				
		O.3.1	Graphite						

*** Tensile strength**

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
P.1.1	**46**	6	**44**	6	**46**	6	28	6	38	5	**38**	6
P.1.2	**39**	5	**37**	5	**39**	5	24	5	32	4	**32**	5
P.1.3	**35**	5	**33**	5	**35**	5	21	5	29	4	**29**	5
P.1.4	**32**	5	**31**	5	**32**	5	20	5	27	4	**27**	5
P.1.5	**28**	5	**26**	5	**28**	5	17	5			**23**	5
P.2.1	**35**	5	**32**	6	**35**	5	17	4	25	5	**28**	6
P.2.2	**24**	4	**23**	5	**24**	4	12	3	18	4	**20**	5
P.2.3	**21**	4	**19**	5	**21**	4	10	3			**17**	5
P.2.4	**19**	3	**18**	4	**19**	3	9	2			**15**	4
P.3.1	**17**	4	**21**	4	**17**	4	13	4			**18**	4
P.3.2	**13**	3	**16**	3	**13**	3					**14**	3
P.3.3	**12**	3	**15**	3	**12**	3					**13**	3
P.4.1	**18**	4	**14**	3	**18**	4			15	3	**13**	3
P.4.2	**17**	3	**14**	2	**17**	3			14	2	**12**	2
M.1.1	**15**	4			**15**	4			**13**	3		
M.2.1	**12**	3			**12**	3			**11**	2		
M.3.1	**10**	3			**10**	3			**9**	2		
K.1.1	**41**	6	**46**	6	**41**	6	**30**	6			**40**	6
K.1.2	**33**	6	**37**	6	**33**	6	**24**	6			**32**	6
K.2.1	**35**	6	**39**	6	**35**	6	**26**	6			**34**	6
K.2.2	**27**	5	**30**	5	**27**	5	**20**	5			**26**	5
K.3.1	**35**	6	**39**	6	**35**	6	**26**	6			**34**	6
K.3.2	**27**	5	**30**	5	**27**	5	**20**	5			**26**	5
N.1.1									**80**	7		
N.1.2									**80**	7		
N.2.1	75	6	69	6	75	6	50	6	**65**	6	60	6
N.2.2	60	5	55	5	60	5	40	5	**52**	5	48	5
N.2.3	52	5	48	5	52	5	35	5	**46**	5	42	5
N.3.1	69	5	64	5	69	5	60	5	**60**	5	56	5
N.3.2	41	4	39	4	41	4	36	4	**36**	4	34	4
N.3.3	55	4	52	4	55	4	48	4	**48**	4	45	4
N.4.1	70	5	60	5	70	5	45	5	**6**	5	55	5
S.1.1			7	2					8	1	6	2
S.1.2			6	1					6	1	5	1
S.2.1			6	2					7	1	5	2
S.2.2												
S.2.3												
S.3.1	9	2			9	2			10	2		
S.3.2	6	1			6	1			7	1		
S.3.3									6	2		
H.1.1			6	1							5	1
H.1.2												
H.1.3												
H.1.4												
H.2.1			10	3							9	3
H.3.1												
O.1.1	29	4	23	4	29	4	20	5			20	4
O.1.2	29	4			29	4	20	5				
O.2.1	29	4	23	4	29	4	20	5			20	4
O.2.2	29	4	23	4	29	4	20	5			20	4
O.3.1												

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

	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
P.1.1	**38**	6	**44**	6	28	6	**38**	6
P.1.2	**32**	5	**37**	5	24	5	**32**	5
P.1.3	**29**	5	**33**	5	21	5	**29**	5
P.1.4	**27**	5	**31**	5	20	5	**27**	5
P.1.5	**23**	5	**26**	5	17	5	**23**	5
P.2.1	**25**	5	**29**	5	17	4	**25**	5
P.2.2	**18**	4	**20**	4	12	3	**18**	4
P.2.3	**15**	4	**17**	4	10	3	**15**	4
P.2.4	**14**	3	**16**	3	9	2	**14**	3
P.3.1	**16**	4	**18**	4	13	4	**16**	4
P.3.2	**12**	3	**14**	3			**12**	3
P.3.3	**12**	3	**14**	3			**12**	3
P.4.1	**14**	3	**17**	3			**14**	3
P.4.2	**14**	2	**16**	2			**14**	2
M.1.1	**12**	3	**14**	3			**12**	3
M.2.1	**10**	2	**12**	2			**10**	2
M.3.1	**8**	2	**10**	2			**8**	2
K.1.1	**35**	6	**40**	6	**30**	6	**35**	6
K.1.2	**28**	6	**32**	6	**24**	6	**28**	6
K.2.1	**30**	6	**34**	6	**26**	6	**30**	6
K.2.2	**23**	5	**26**	5	**20**	5	**23**	5
K.3.1	**30**	6	**34**	6	**26**	6	**30**	6
K.3.2	**23**	5	**26**	5	**20**	5	**23**	5
N.1.1					**60**	7		
N.1.2					**60**	7		
N.2.1					**50**	6		
N.2.2					**40**	5		
N.2.3					**35**	5		
N.3.1	62	5	71	5	**60**	5	62	5
N.3.2	37	4	43	4	**36**	4	37	4
N.3.3					**48**	4		
N.4.1					**45**	5		
S.1.1	8	1	**9**	1			8	1
S.1.2	6	1	**7**	1			6	1
S.2.1	7	1	**8**	1			7	1
S.2.2			**5**	1				
S.2.3			**6**	1				
S.3.1	10	2	**12**	2			10	2
S.3.2	7	1	**7**	1			7	1
S.3.3	6	2	**7**	2			6	2
H.1.1	4	1	5	1			4	1
H.1.2								
H.1.3								
H.1.4								
H.2.1	8	3	9	3			8	3
H.3.1								
O.1.1					20	4		
O.1.2								
O.2.1					20	4		
O.2.2					20	4		
O.3.1								

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

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

Cutting data standard values – Hole depth 5xD

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

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

	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
P.1.1	**37**	6	**37**	6	28	6	**45**	7	**52**	7	28	6	**32**	6
P.1.2	**31**	5	**31**	5	24	5	**38**	6	**44**	6	24	5	**27**	5
P.1.3	**28**	5	**28**	5	21	5	**34**	6	**39**	6	21	5	**24**	5
P.1.4	**26**	5	**26**	5	20	5	**32**	6	**36**	6	20	5	**23**	5
P.1.5	**22**	5	**22**	5	17	5	**27**	6	**31**	6	17	5	**19**	5
P.2.1	**22**	5	**22**	5	17	5	**27**	5	**31**	5	17	4	**20**	5
P.2.2	**16**	4	**16**	4	12	4	**19**	4	**22**	4	12	3	**14**	4
P.2.3	**13**	4	**13**	4	10	4	**16**	4	**19**	4	10	3	**12**	4
P.2.4	**12**	3	**12**	3	9	3	**15**	3	**17**	3	9	2	**11**	3
P.3.1	**17**	4	**17**	4	13	4	**21**	5	**24**	5	13	4	**15**	4
P.3.2	**13**	3	**13**	3	10	3	**16**	4	**18**	4			**11**	3
P.3.3	**12**	3	**12**	3			**15**	4	**17**	4			**10**	3
P.4.1	**12**	3	**12**	3			**14**	4	**17**	4			**10**	3
P.4.2	**11**	2	**11**	2			**14**	3	**16**	3			**10**	2
M.1.1	11	3	11	3									9	3
M.2.1													8	2
M.3.1														
K.1.1	**40**	6	**40**	6	**30**	6	**48**	7	**56**	7	**30**	6	**35**	6
K.1.2	**32**	6	**32**	6	**24**	6	**39**	7	**44**	7	**24**	6	**28**	6
K.2.1	**34**	6	**34**	6	**26**	6	**41**	7	**47**	7	**26**	6	**29**	6
K.2.2	**26**	5	**26**	5	**20**	5	**31**	6	**36**	6	**20**	5	**22**	5
K.3.1	**34**	6	**34**	6	**26**	6	**41**	7	**47**	7	**26**	6	**29**	6
K.3.2	**26**	5	**26**	5	**20**	5	**31**	6	**36**	6	**20**	5	**22**	5
N.1.1					**60**	7							**69**	7
N.1.2					**60**	7							**69**	7
N.2.1	66	6	66	6	**50**	6	81	7	93	7	50	6	**58**	6
N.2.2	53	5	53	5	**40**	5	64	6	74	6	40	5	**46**	5
N.2.3	46	5	46	5	**35**	5	56	6	65	6	35	5	**40**	5
N.3.1	79	5	79	5	**60**	5	97	6	111	6	60	5	**69**	5
N.3.2	48	4	48	4	**36**	4	58	5	67	5	36	4	**41**	4
N.3.3	63	4	63	4	**48**	4	77	5	89	5	48	4	**55**	4
N.4.1	60	6	60	6	**45**	6	70	7	80	7	45	6	**50**	6
S.1.1	8	2	8	2									7	2
S.1.2	6	1	6	1									6	1
S.2.1	7	2	7	2									6	2
S.2.2	4	1	4	1									3	1
S.2.3	5	1	5	1									4	1
S.3.1	7	2	7	2									6	2
S.3.2	4	1	4	1									4	1
S.3.3														
H.1.1	5	1	5	1									5	1
H.1.2														
H.1.3														
H.1.4														
H.2.1	11	3	11	3									9	3
H.3.1														
O.1.1	26	4	26	4	20	4	32	5	37	5	20	5	23	4
O.1.2	26	4	26	4	20	4					20	5	23	4
O.2.1	26	4	26	4	20	4	32	5	37	5	20	5	23	4
O.2.2	26	4	26	4	20	4	32	5	37	5	20	5	23	4
O.3.1														

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

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

Cutting data standard values – Hole depth 10xD

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

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

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

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

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

Cutting data standard values – hole depth greater than 10xD

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

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

	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
P.1.1	**21**	5	**21**	5
P.1.2	**18**	4	**18**	4
P.1.3	**16**	4	**16**	4
P.1.4	**15**	4	**15**	4
P.1.5	**13**	4	**13**	4
P.2.1	**13**	4	**13**	4
P.2.2	**9**	3	**9**	3
P.2.3	**8**	3	**8**	3
P.2.4	**7**	2	**7**	2
P.3.1	**10**	3	**10**	3
P.3.2	**7**	2	**7**	2
P.3.3	**6**	2	**6**	2
P.4.1				
P.4.2				
M.1.1				
M.2.1				
M.3.1				
K.1.1	**23**	5	**23**	5
K.1.2	**18**	5	**18**	5
K.2.1	**19**	5	**19**	5
K.2.2	**15**	4	**15**	4
K.3.1	**19**	5	**19**	5
K.3.2	**15**	4	**15**	4
N.1.1	**45**	6	**45**	6
N.1.2	**45**	6	**45**	6
N.2.1	**38**	5	**38**	5
N.2.2	**30**	4	**30**	4
N.2.3	**26**	4	**26**	4
N.3.1	**45**	4	**45**	4
N.3.2	**27**	3	**27**	3
N.3.3	**36**	3	**36**	3
N.4.1	**55**	5	**55**	5
S.1.1				
S.1.2				
S.2.1				
S.2.2				
S.2.3				
S.3.1				
S.3.2				
S.3.3				
H.1.1				
H.1.2				
H.1.3				
H.1.4				
H.2.1				
H.3.1				
O.1.1	15	3	15	3
O.1.2	15	3	15	3
O.2.1	15	3	15	3
O.2.2	15	3	15	3
O.3.1				

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

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

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

		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.
P.1.1	33	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
P.1.2	28	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.1.3	25	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.1.4	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.1.5	20	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.2.1	20	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
P.2.2	14	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.2.3	12	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.2.4	11	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
P.3.1	15	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
P.3.2	11	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.3.3	10	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.4.1	11	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.4.2	10	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
M.1.1	9	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
M.2.1	8	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
M.3.1								
K.1.1	35	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.1.2	28	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.2.1	30	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.2.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
K.3.1	30	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.3.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.1.1	70	0,0120	0,0140	0,0190	0,0240	0,0340	0,0380	0,0600
N.1.2	70	0,0120	0,0140	0,0190	0,0240	0,0340	0,0380	0,0600
N.2.1	59	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
N.2.2	47	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.2.3	41	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.3.1	70	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.3.2	42	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
N.3.3	56	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
N.4.1	42	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
S.1.1	7	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
S.1.2	6	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.2.1	6	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
S.2.2	4	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.2.3	4	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.3.1	6	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
S.3.2	4	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.3.3								
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.1.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.2.1	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.2.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.3.1								

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

Feed rate guide values for HSS twist drills

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

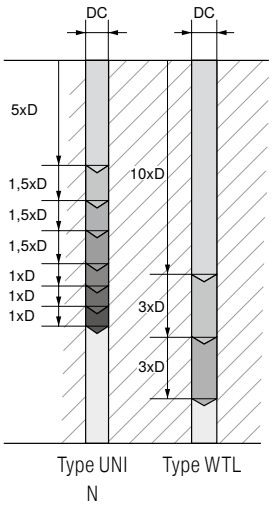
All the indicated data are guide values only and represent average values.

Speed for HSS drills

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

Peck frequency for deep drilling

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



Coatings

TiN

- TiN coating
- Maximum application temperature: 450 °C

TiCN

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

TiAlN

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

F.-nit

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

vap.

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