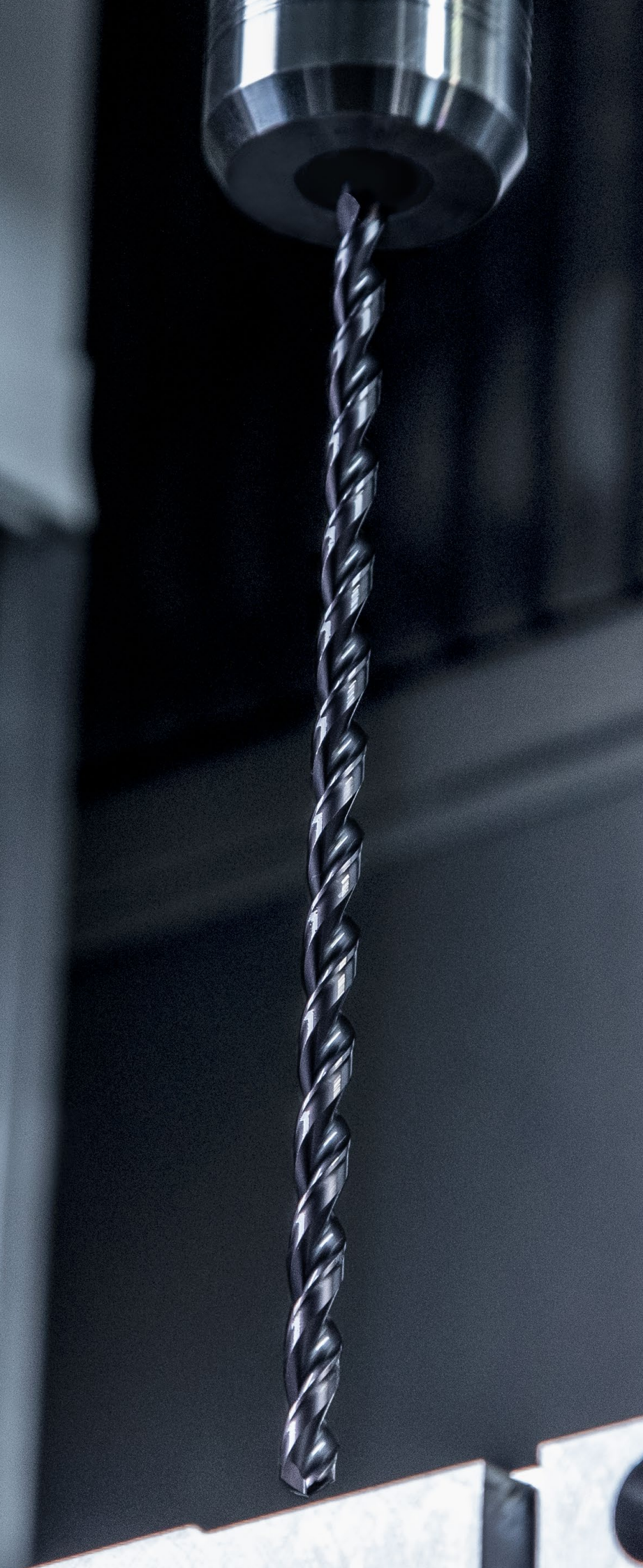






1 HSS drilling

2 Solid carbide drilling

3 Indexable insert drilling

4 Reaming and Countersinking

5 Spindle Tooling

6 Taps and thread formers

7 Circular and Thread Milling

8 Thread turning

9 Turning Tools

10 Multifunctional Tools –
EcoCut and FreeTurn

11 Grooving Tools

12 Miniature turning tools

13 HSS Milling Cutters

14 Solid Carbide milling cutters

15 Milling tools with indexable inserts

16 Adaptors and Accessories

17 Workpiece clamping

18 Material examples

Solid drilling and bore machining

Threading

Turning

Milling

Clamping technology

Table of contents

Symbol explanation	4
Toolfinder	5
List of contents	6-8
Product programme	9-42
Technical Information	
Cutting Data	43-52
Feedrate Values	53
Coatings and cutting materials	54

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



Plain cylindrical shank



Cylindrical shank with angled clamping flat
„Whistle Notch“



Morse taper



Cylindrical shank with lateral driving face „Weldon“

Version



Int. coolant supply



self-centering

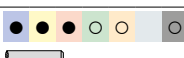
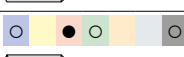
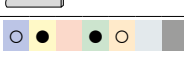
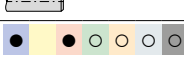
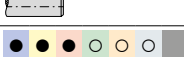
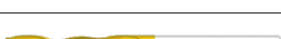
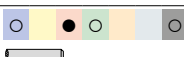
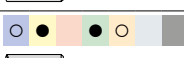
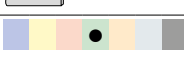
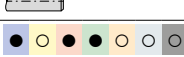
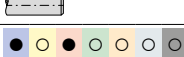
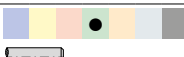
- = Main Application
- = Extended application



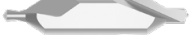
Toolfinder

	Tool type	Cutting 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	9	15				
	UNI	HSS-E-PM TiN	▲ wear-resistant due to HSS-E-PM and TiN coating ▲ universal high-performance drill	10–14	16–21				
	UNI	HSS-E TiN	▲ as for Type VX ▲ without standard shank to DIN 1835 A ▲ available as a set	10–14	16–21	24–26			
	N	HSS vap.	▲ stable twist drill ▲ also suitable for portable drills ▲ available in set	10–14	16–21				
	WT	HSS-E vap.	▲ for high alloy steel and special alloys (Hastelloy, Inconel, Nimonic)	10–14					
	WT	HSS-E TiN	▲ as Type WT HSS-E vap. ▲ higher wear resistance due to coating	10–14					
	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		16–21	24–26			
	WTL	HSS-E TiN	▲ as WTL HSS-E, but higher v_c and wear resistance due to coating ▲ suitable for steel and cast iron		16–21				
	WTL	HSS-E TiAlN	▲ special flute profile with large chip spaces ▲ higher wear resistance due to TiAlN coating				27	28	28
	WTL	HSS F.-nit	▲ special flute profile with large chip gullet ▲ nitrided cutting edge giving increased wear protection to cutting corners and guide lands				27	28	28
	WTL	HSS TiN	▲ as WTL HSS, but higher v_c and wear resistance due to coating			24–26			
	WNX	HSS-E	▲ wide chip flutes for long-chipping materials ▲ self-centring	10–14					
	NC	HSS TiAlN	▲ suitable for use with drill bushes ▲ very good chip evacuation with thro' coolant ▲ higher v_c and wear resistance due to coating			23			
Stainless steel	VA	HSS-E	▲ specialist for stainless and acid-resistant materials ▲ special geometry	10–14	16–21				
Non-ferrous metals	W	HSS	▲ specialist for non-ferrous metals		16–21				
	WTW	HSS	▲ for non-ferrous metals to 500 N/mm ² ▲ for deep holes			24–26			

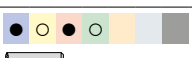
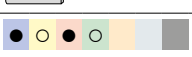
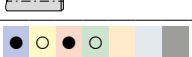
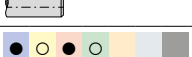
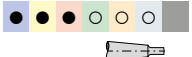
HSS Drills Overview

	Tool type	Cutting material Coating	Point angle SIG	Diameter in mm DC	Steel Stainless steel Cast iron Non-ferrous metals Heat-resistant Tempered steel Non metal materials	coated uncoated	WNT \ Performance
3xD without thro' coolant							
	VX	HSS-E TiN	118°	2–20			9
	UNI	HSS-E-PM TiN	130°	1–14			10–14
	UNI	HSS-E TiN	118°	1–14			10–14
	N	HSS vap.	118°	0,4–20			10–14
	VA	HSS-E	130°	1–12			10–14
	WNX	HSS-E	130°	1–20			10–14
	WT	HSS-E vap.	130°	0,4–25			10–14
	WT	HSS-E TiN	130°	1–20			10–14
5xD without thro' coolant							
	VX	HSS-E TiN	118°	2–20			15
	UNI	HSS-E-PM TiN	130°	1–14			16–21
	UNI	HSS-E TiN	118°	0,9–14			16–21
	N	HSS vap.	118°	0,2–20			16–21
	VA	HSS-E	130°	1–12			16–21
	W	HSS	130°	0,20–20			16–21
	WTL	HSS-E F-nit.	130°	1–16			16–21
	WTL	HSS-E TiN	130°	1–16			16–21
up to 10xD without thro' coolant							
	UNI	HSS-E TiN	118°	1–14			24–26
	WTL	HSS-E F-nit.	130°	1–12			24–26
	WTL	HSS TiN	130°	1–14			24–26
	WTW	HSS	130°	1–14			24–26

HSS Drills Overview

	Tool type	Cutting material Coating	Point angle SIG	Diameter in mm DC	Steel Stainless steel Cast iron Non-ferrous metals Heat-resistant Tempered steel Non metal materials	coated uncoated	WNT \ Performance
up to 10xD with thro' coolant							
	NC	HSS TiAlN	130°	3–13	○ ○ ○ ○ ○ ○ ○	■	23
over 10xD without thro' coolant							
	WTL	HSS F-nit. Series 1	130°	2–13	● ● ● ● ● ○ ○	■	27
	WTL	HSS F-nit. series 2	130°	2–13	● ● ● ● ● ○ ○	■	28
	WTL	HSS F-nit. series 3	130°	2,5–13	● ● ● ● ● ○ ○	■	28
	WTL	HSS-E TiAlN Series 1	130°	3–10,2	● ● ● ● ● ○ ○	■	27
	WTL	HSS-E TiAlN series 2	130°	3–12	● ● ● ● ● ○ ○	■	28
	WTL	HSS-E TiAlN series 3	130°	4–10	● ● ● ● ● ○ ○	■	28
Mini-drill							
	N	HSS-E- PM	118°	0,15–1,45	● ● ● ● ○ ○ ○	□	29
Twist Drill Sets							
	N	HSS vap.	118°	1–10	○ ○ ○ ○ ○ ○ ○	■	22
	UNI	HSS-E TiN	118°	1–10	● ● ● ● ● ○ ○ 	■	22
NC Spot Drill							
	NC-A	HSS	90°	3–20	● ○ ○ ○ ○ ○ ○	□	33–35
	NC-A	HSS TiN	90°	3–20	● ○ ○ ○ ○ ○ ○	■	33+34
	NC-A	HSS	120°	3–20	● ○ ○ ○ ○ ○ ○	□	33+34
	NC-A	HSS TiN	120°	3–20	● ○ ○ ○ ○ ○ ○	■	33+34
Centre drills							
	ZB	HSS	118°	0,5–6,3	○ ○ ○ ○ ○ ○ ○	□	DIN 333 – Form A/B/R 35–37
	ZB	HSS TiN	118°	0,5–6,3	● ○ ○ ○ ○ ○ ○	■	DIN 333 – Form A 36
	ZB	HSS-E	118°	0,5–6,3	○ ○ ○ ○ ○ ○ ○	□	DIN 333 – Form A 36

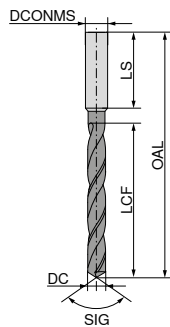
HSS Drills Overview

	Tool type	Cutting material Coating	Point angle SIG	Diameter in mm DC	Steel Stainless steel Cast iron Non-ferrous metals Heat-resistant Tempered steel Non metal materials		coated uncoated	WNT \ Performance
Stepped drills								
	SB	HSS vap.	118°	2,5–10,2		Countersinking angle 90°	☒	39
	SB	HSS	118°	2,5–10,2		Countersinking angle 90°	☐	39
	SB	HSS vap.	118°	3,2–10,5		Countersinking angle 90°	☒	39
	SB	HSS	118°	3,2–10,5		Countersinking angle 90°	☐	39
	SB	HSS vap.	118°	3,4–11		Countersinking angle 180°	☒	40
	SB	HSS	118°	3,4–11		Countersinking angle 180°	☐	40
	SB	HSS vap.	118°	3,3–17,5		Countersinking angle 60°	☒	42
Drills with Morse taper								
3xD								
	WT	HSS-E vap.	130°	13–30			☒	29
5xD								
	N	HSS vap.	118°	10–55			☒	30
	WTL	HSS-E F.-nit/vap.	130°	10–27			☒	30
10xD								
	N	HSS vap.	118°	10–50			☒	31
	WTL	HSS-E F.-nit/vap.	130°	10–25			☒	31
above 10xD								
	WTL	HSS F.-nit/vap. Series 1	130°	10–30			☒	32
	WTL	HSS F.-nit/vap. series 2	130°	10–30			☒	32
Core drills								
	N	HSS vap.	120°	12–30		3 Edges	☒	38
Stepped drills								
	SB	HSS vap.	118°	6,6–17,5		Countersinking angle 180°	☒	41

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
TiNSIG 118°
HSS-E

10 122 ...

DC _{h8} mm	OAL mm	LCF mm	DCONMS _{h6} mm	LS mm	£ T2	
2.00	44	12	3	28	11.96	020
2.10	44	12	3	28	13.55	021
2.20	45	13	3	28	14.60	022
2.30	45	13	3	28	14.60	023
2.40	46	14	3	28	15.28	024
2.50	46	14	3	28	13.36	025
2.60	46	14	3	28	15.28	026
2.70	48	16	3	28	15.81	027
2.80	48	16	3	28	15.81	028
2.90	48	16	3	28	15.81	029
3.00	48	16	3	28	14.60	030
3.10	50	18	4	28	14.60	031
3.20	50	18	4	28	14.60	032
3.30	50	18	4	28	14.60	033
3.40	52	20	4	28	14.60	034
3.50	52	20	4	28	13.88	035
3.60	52	20	4	28	15.51	036
3.70	52	20	4	28	15.81	037
3.80	54	22	4	28	15.48	038
3.90	54	22	4	28	15.81	039
4.00	54	22	4	28	12.85	040
4.10	66	22	6	36	12.85	041
4.20	66	22	6	36	13.55	042
4.30	68	24	6	36	14.24	043
4.40	68	24	6	36	16.17	044
4.50	68	24	6	36	13.36	045
4.60	68	24	6	36	16.88	046
4.70	68	24	6	36	17.22	047
4.80	70	26	6	36	17.22	048
4.90	70	26	6	36	17.22	049
5.00	70	26	6	36	14.60	050
5.10	70	26	6	36	16.88	051
5.20	70	26	6	36	17.40	052
5.30	70	26	6	36	17.59	053
5.40	72	28	6	36	19.51	054
5.50	72	28	6	36	15.48	055
5.55	72	28	6	36	19.51	055
5.60	72	28	6	36	19.51	056
5.70	72	28	6	36	19.51	057
5.80	72	28	6	36	19.51	058
5.90	72	28	6	36	19.51	059
6.00	72	28	6	36	16.35	060
6.10	75	31	8	36	25.32	061
6.20	75	31	8	36	25.32	062
6.30	75	31	8	36	30.23	063
6.40	75	31	8	36	26.25	064
6.50	75	31	8	36	19.18	065
6.60	75	31	8	36	30.77	066
6.70	75	31	8	36	30.77	067
6.80	78	34	8	36	33.66	068
6.90	78	34	8	36	33.21	069
7.00	78	34	8	36	25.32	070
7.10	78	34	8	36	37.24	071

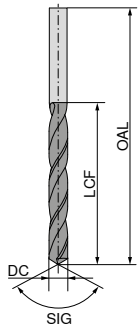
10 122 ...

DC _{h8} mm	OAL mm	LCF mm	DCONMS _{h6} mm	LS mm	£ T2	
7.20	78	34	8	36	37.82	072
7.30	78	34	8	36	37.82	073
7.40	78	34	8	36	37.82	074
7.45	78	34	8	36	37.82	0745
7.50	78	34	8	36	26.71	075
7.60	81	37	8	36	38.38	076
7.70	81	37	8	36	41.31	077
7.80	81	37	8	36	41.31	078
7.90	81	37	8	36	41.31	079
8.00	81	37	8	36	27.42	080
8.10	87	37	10	40	46.87	081
8.20	87	37	10	40	46.87	082
8.30	87	37	10	40	46.87	083
8.40	87	37	10	40	46.87	084
8.50	87	37	10	40	31.10	085
8.60	91	40	10	40	48.70	086
8.70	91	40	10	40	48.70	087
8.80	91	40	10	40	48.70	088
8.90	91	40	10	40	48.70	089
9.00	91	40	10	40	33.93	090
9.10	91	40	10	40	61.06	091
9.20	91	40	10	40	61.06	092
9.30	91	40	10	40	61.06	093
9.35	91	40	10	40	61.06	0935
9.40	91	40	10	40	61.06	094
9.50	91	40	10	40	42.40	095
9.60	93	43	10	40	45.75	096
9.70	93	43	10	40	45.75	097
9.80	93	43	10	40	45.75	098
9.90	93	43	10	40	45.75	099
10.00	93	43	10	40	40.79	100
10.20	100	43	12	45	60.36	102
10.30	100	43	12	45	61.41	103
10.50	100	43	12	45	58.63	105
10.70	104	47	12	45	64.09	107
10.80	104	47	12	45	61.61	108
11.00	104	47	12	45	58.63	110
11.10	104	47	12	45	57.35	111
11.50	104	47	12	45	61.06	115
11.70	104	47	12	45	68.65	117
11.80	104	47	12	45	71.68	118
11.90	108	51	12	45	90.65	119
12.00	108	51	12	45	70.12	120
12.10	111	51	16	48	51.07	121
12.30	111	51	16	48	93.47	123
12.50	111	51	16	48	72.23	125
12.70	111	51	16	48	160.25	127
12.80	111	51	16	48	76.09	128
13.00	111	51	16	48	77.64	130
13.50	114	54	16	48	116.25	135
14.00	114	54	16	48	116.25	140
14.50	116	56	16	48	148.88	145
15.00	116	56	16	48	140.20	150
15.50	118	58	16	48	151.63	155
16.00	118	58	16	48	146.48	160
16.50	126	60	20	50	227.09	165
17.00	126	60	20	50	227.09	170
17.50	128	62	20	50	227.09	175
18.00	128	62	20	50	227.09	180
18.50	130	64	20	50	227.09	185
19.00	130	64	20	50	227.09	190
19.50	132	66	20	50	227.09	195
20.00	132	66	20	50	201.99	200

P	●
M	●
K	●
N	○
S	○
H	
O	○

→ v_c Page 44

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

 $\leq 3xD$ 

UNI

TiN



SIG 130°
HSS-E-PM

UNI

TiN



SIG 118°
HSS-E

N

vap.



SIG 118°
HSS

VA



SIG 130°
HSS-E

WNX



SIG 130°
HSS-E

WT

vap.



SIG 130°
HSS-E

WT

TiN



SIG 130°
HSS-E

				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
0.40		19	2.5					5.62	004 ¹⁾					9.78	00400 ¹⁾		
0.50		20	3.0					4.57	005 ¹⁾					7.06	00500 ¹⁾		
0.55		21	3.5											16.66	00550 ¹⁾		
0.60		21	3.5					5.45	006 ¹⁾					8.69	00600 ¹⁾		
0.65		22	4.0											9.21	00650 ¹⁾		
0.70		23	4.5					5.11	007 ¹⁾					7.97	00700 ¹⁾		
0.75		23	4.5											8.36	00750 ¹⁾		
0.80		24	5.0					4.06	008 ¹⁾					6.90	00800 ¹⁾		
0.85		24	5.0											7.75	00850 ¹⁾		
0.90		25	5.5					4.06	009 ¹⁾					6.90	00900 ¹⁾		
0.95		25	5.5											7.75	00950 ¹⁾		
1.00		26	6.0	9.59	010 ²⁾	6.14	010 ²⁾	2.32	010 ¹⁾	6.51	010	3.48	010	4.92	01000 ¹⁾	6.35	010
1.05		26	6.0											6.53	01050 ¹⁾		
1.10		28	7.0	9.59	011 ²⁾	6.14	011 ²⁾	2.46	011 ¹⁾	6.34	011	3.79	011	4.75	01100 ¹⁾	6.69	011
1.15		28	7.0											5.26	01150 ¹⁾		
1.20		30	8.0	9.82	012 ²⁾	5.81	012 ²⁾	2.46	012 ¹⁾	5.98	012	3.79	012	4.57	01200 ¹⁾	6.35	012
1.25		30	8.0											5.26	01250 ¹⁾		
1.30		30	8.0	10.27	013 ²⁾	6.14	013 ²⁾	2.46	013 ¹⁾	6.34	013	3.71	013	4.75	01300 ¹⁾	6.69	013
1.35		32	9.0											5.26	01350 ¹⁾		
1.40		32	9.0	9.46	014 ²⁾	5.98	014 ²⁾	2.46	014 ¹⁾	6.34	014	3.71	014	4.75	01400 ¹⁾	6.69	014
1.45		32	9.0											5.26	01450 ¹⁾		
1.50		32	9.0	8.89	015 ²⁾	5.57	015 ²⁾	2.12	015 ¹⁾	5.62	015	3.48	015	4.42	01500 ¹⁾	6.35	015
1.55		34	10.0											6.90	01550 ¹⁾		
1.60		34	10.0	9.33	016 ²⁾	5.57	016 ²⁾	2.32	016 ¹⁾	5.62	016	3.71	016	4.22	01600 ¹⁾	6.35	016
1.65		34	10.0											5.61	01650 ¹⁾		
1.70		34	10.0	9.46	017 ²⁾	5.26	017 ²⁾	2.32	017 ¹⁾	5.45	017	3.71	017	4.22	01700 ¹⁾	5.98	017
1.75		36	11.0											5.11	01750 ¹⁾		
1.80		36	11.0	9.33	018 ²⁾	5.57	018 ²⁾	2.46	018 ¹⁾	5.62	018	3.71	018	4.42	01800 ¹⁾	6.35	018
1.83		36	11.0											6.53	01830 ¹⁾		
1.85		36	11.0											4.89	01850 ¹⁾		
1.90		36	11.0	9.33	019 ²⁾	5.57	019 ²⁾	2.32	019 ¹⁾	5.62	019	3.71	019	4.42	01900 ¹⁾	6.35	019
1.95		38	12.0											7.42	01950 ¹⁾		
2.00		38	12.0	7.83	020 ²⁾	4.89	020 ²⁾	1.61	020 ¹⁾	4.92	020	3.10	020	3.71	02000 ¹⁾	5.57	020
2.05		38	12.0											6.90	02050 ¹⁾		
2.10		38	12.0	9.59	021 ²⁾	5.26	021 ²⁾	2.12	021 ¹⁾	5.45	021	3.48	021	4.22	02100 ¹⁾	5.98	021
2.15		40	13.0											6.35	02150 ¹⁾		
2.20		40	13.0	9.59	022 ²⁾	5.81	022 ²⁾	2.12	022 ¹⁾	5.98	022	3.48	022	4.75	02200 ¹⁾	6.35	022
2.25		40	13.0											5.11	02250 ¹⁾		
2.30		40	13.0	8.07	023 ²⁾	5.62	023 ²⁾	2.32	023 ¹⁾	5.98	023	3.71	023	4.57	02300 ¹⁾	6.35	023
2.35		40	13.0											7.06	02350 ¹⁾		
2.38	3/32	43	14.0	8.85	238 ²⁾	5.62	238 ²⁾							4.72	02400	6.69	024
2.40		43	14.0	9.62	024 ²⁾	5.81	024 ²⁾	2.32	024	6.14	024	3.71	024	5.61	02450		
2.45		43	14.0											4.22	02500	5.81	025
2.50		43	14.0	8.41	025 ²⁾	5.26	025 ²⁾	1.75	025	5.28	025	3.48	025	7.06	02550		
2.55		43	14.0											4.72	02600	6.69	026
2.60		43	14.0	9.95	026 ²⁾	5.81	026 ²⁾	2.32	026	6.14	026	3.71	026	7.06	02650		
2.65		43	14.0											4.89	02700		
2.70		46	16.0	10.53	027 ²⁾	6.14	027 ²⁾	2.32	027	6.34	027	3.71	027			7.06	027
P					●		●		○		○		●		●		●
M							●			●					●		●
K					●		●		●			●		●		●	●
N					○		○		○		●		○		○		○
S					○		○				○		○		○		●
H					○								○		○		○
O							○		○				○				

- 1) uncoated
- 2) self-centering

→ v_c Page 44+45

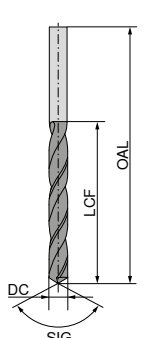
High-performance twist drills similar to DIN 1897, extra-short

≤ 3xD				UNI		UNI		N		VA		WNX		WT		WT	
				TiN		TiN		vap.						vap.		TiN	
				SIG 130° HSS-E-PM		SIG 118° HSS-E		SIG 118° HSS		SIG 130° HSS-E		SIG 130° HSS-E		SIG 130° HSS-E		SIG 130° HSS-E	
				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
2.75		46	16.0											7.06	02750		
2.78	7/64	46	16.0	10.23	278 ²⁾	6.14	278 ²⁾										
2.80		46	16.0	9.82	028 ²⁾	6.14	028 ²⁾	2.32	028	6.34	028	3.79	028	4.89	02800	7.06	028
2.85		46	16.0											7.06	02850		
2.90		46	16.0	10.43	029 ²⁾	6.14	029 ²⁾	2.32	029	6.34	029	4.17	029	4.89	02900	7.06	029
2.95		46	16.0											5.11	02950		
3.00		46	16.0	8.85	030 ²⁾	5.57	030 ²⁾	1.75	030	5.62	030	3.71	030	4.42	03000	5.98	030
3.05		49	18.0											5.28	03050		
3.10		49	18.0	9.46	031 ²⁾	5.98	031 ²⁾	2.32	031	6.34	031	4.33	031	4.89	03100	6.90	031
3.15		49	18.0											7.75	03150		
3.17	1/8	49	18.0	9.33	317 ²⁾	5.81	317 ²⁾										
3.20		49	18.0	8.89	032 ²⁾	5.62	032 ²⁾	2.12	032	6.14	032	3.71	032	4.72	03200	6.53	032
3.25		49	18.0											5.57	03250		
3.30		49	18.0	8.89	033 ²⁾	6.14	033 ²⁾	2.32	033	6.51	033	3.79	033	4.92	03300	7.06	033
3.35		49	18.0											7.06	03350		
3.40		52	20.0	10.27	034 ²⁾	6.35	034 ²⁾	2.67	034	6.51	034	4.55	034	4.92	03400	7.06	034
3.45		52	20.0											5.57	03450		
3.50		52	20.0	8.89	035 ²⁾	6.14	035 ²⁾	2.12	035	6.51	035	4.33	035	4.92	03500	6.35	035
3.55		52	20.0											5.61	03550		
3.57	9/64	52	20.0	10.10	357 ²⁾	6.35	357 ²⁾										
3.60		52	20.0	11.83	036 ²⁾	6.35	036 ²⁾	2.67	036	6.51	036	4.55	036	4.92	03600	7.06	036
3.70		52	20.0	10.23	037 ²⁾	6.68	037 ²⁾	2.67	037	7.03	037	4.55	037	5.28	03700	7.65	037
3.75		52	20.0											5.61	03750		
3.80		55	22.0	10.91	038 ²⁾	6.53	038 ²⁾	2.67	038	6.86	038	4.72	038	5.11	03800	7.06	038
3.85		55	22.0											8.69	03850		
3.90		55	22.0	12.36	039 ²⁾	7.39	039 ²⁾	2.67	039			4.72	039	5.28	03900	7.65	039
3.95		55	22.0											8.69	03950		
3.97	5/32	55	22.0	11.14	397 ²⁾	7.03	397 ²⁾										
4.00		55	22.0	10.10	040 ²⁾	6.53	040 ²⁾	2.12	040	6.86	040	4.72	040	5.26	04000	6.53	040
4.05		55	22.0											6.14	04050		
4.10		55	22.0	11.58	041 ²⁾	6.90	041 ²⁾	2.46	041	7.22	041	4.89	041	5.57	04100	7.06	041
4.15		55	22.0											8.69	04150		
4.20		55	22.0	10.10	042 ²⁾	6.68	042 ²⁾	2.46	042	7.03	042	4.33	042	5.28	04200	7.06	042
4.25		55	22.0											9.43	04250		
4.30		58	24.0	11.50	043 ²⁾	7.06	043 ²⁾	3.54	043	7.39	043	4.89	043	5.81	04300	7.97	043
4.35		58	24.0											9.43	04350		
4.37	11/64	58	24.0	15.45	437 ²⁾	9.43	437 ²⁾							5.81	04400	8.16	044
4.40		58	24.0	12.36	044 ²⁾	7.97	044 ²⁾	3.54	044			4.89	044	9.61	04450		
4.45		58	24.0											5.61	04500	6.69	045
4.50		58	24.0	11.50	045 ²⁾	7.06	045 ²⁾	2.46	045	7.39	045	4.89	045	9.43	04550		
4.55		58	24.0											6.14	04600	8.87	046
4.60		58	24.0	11.58	046 ²⁾	7.75	046 ²⁾	3.71	046	8.08	046	5.06	046	8.69	04650	9.21	465
4.65		58	24.0											6.35	04700	9.21	047
4.70		58	24.0	12.88	047 ²⁾	8.16	047 ²⁾	3.71	047	8.44	047	5.26	047	8.69	04750		
4.75		58	24.0														
4.76	3/16	62	26.0	12.88	476 ²⁾	8.16	476 ²⁾							6.69	04800	9.21	048
4.80		62	26.0	13.13	048 ²⁾	8.27	048 ²⁾	3.71	048	8.79	048	5.57	048	7.75	04850		
4.85		62	26.0														
P				●		●		○		○		●		●		●	
M						●				●				●		●	
K				●		●		●				●		●		●	
N				○		○		○		●		○		○		○	
S				○		○				○		○		○		●	
H				○								○		○		○	
O				○		○		○				○				○	

- 1) uncoated
2) self-centering

→ v_c Page 44+45

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

≤ 3xD				UNI		UNI		N		VA		WNX		WT		WT	
				TiN		TiN		vap.						vap.		TiN	
																	
				SIG 130° HSS-E-PM		SIG 118° HSS-E		SIG 118° HSS		SIG 130° HSS-E		SIG 130° HSS-E		SIG 130° HSS-E		SIG 130° HSS-E	
				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
4.90		62	26.0	13.22	049 ²⁾	9.15	049 ²⁾	3.71	049	9.48	049	5.81	049	7.39	04900	9.21	049
4.95		62	26.0											11.08	04950		
5.00		62	26.0	11.14	050 ²⁾	7.22	050 ²⁾	2.67	050	7.92	050	5.26	050	5.98	05000	7.42	050
5.05		62	26.0											12.86	05050		
5.10		62	26.0	12.26	051 ²⁾	9.66	051 ²⁾	3.71	051	10.39	051						
5.16	13/64	62	26.0	14.61	516 ²⁾	12.50	516 ²⁾										
5.20		62	26.0	13.22	052 ²⁾	11.96	052 ²⁾	3.71	052	12.66	052	5.98	052	9.43	05200	9.21	052
5.25		62	26.0											11.02	05250		
5.30		62	26.0	14.97	053 ²⁾	12.66	053 ²⁾	3.71	053	13.55	053	6.14	053	10.53	05300	9.61	053
5.40		66	28.0	14.67	054 ²⁾	12.50	054 ²⁾	4.22	054								
5.50		66	28.0	12.54	055 ²⁾	9.33	055 ²⁾	3.18	055	10.01	055	6.35	055	7.65	05500	7.97	055
5.55		66	28.0											20.06	05550	10.15	555
5.60	7/32	66	28.0	13.74	556 ²⁾	10.39	556 ²⁾			16.17	056	6.69	056	12.51	05600	10.15	056
5.65		66	28.0	14.97	056 ²⁾	15.28	056 ²⁾	4.22	056	16.54	057	6.90	057	12.92	05700	10.15	057
5.70		66	28.0	16.04	057 ²⁾	15.48	057 ²⁾	4.22	057					14.82	05750		
5.75		66	28.0											12.86	05800	10.15	058
5.80		66	28.0	15.33	058 ²⁾	16.35	058 ²⁾	4.22	058	17.22	058	6.90	058	21.58	05850		
5.85		66	28.0											13.38	05900	10.50	059
5.90		66	28.0	16.92	059 ²⁾	16.54	059 ²⁾	4.22	059	17.40	059	7.06	059	13.60	05950		
5.95	15/64	66	28.0	25.63	595 ²⁾	18.13	595 ²⁾			10.01	060	6.35	060	7.65	06000	8.69	060
6.00		66	28.0	13.51	060 ²⁾	9.33	060 ²⁾	3.18	060					21.58	06050		
6.05		70	31.0														
6.10		70	31.0	15.86	061 ²⁾	17.59	061 ²⁾	4.57	061								
6.20		70	31.0	15.86	062 ²⁾	17.92	062 ²⁾	4.57	062								
6.30		70	31.0	18.17	063 ²⁾	19.51	063 ²⁾	4.57	063								
6.35	1/4	70	31.0	16.68	635 ²⁾	19.34	635 ²⁾										
6.40		70	31.0	16.83	064 ²⁾	19.85	064 ²⁾	4.75	064	11.61	065	7.42	065	8.87	06500	14.21	064
6.50		70	31.0	15.86	065 ²⁾	10.90	065 ²⁾	3.71	065					21.91	06550	10.15	065
6.55		70	31.0														
6.60		70	31.0	17.48	066 ²⁾	20.55	066 ²⁾	4.75	066	21.81	066			23.35	06650		
6.65		70	31.0														
6.70		70	31.0	19.28	067 ²⁾	20.93	067 ²⁾	5.11	067	22.50	067						
6.75		74	34.0	23.71	675 ²⁾	16.02	675 ²⁾										
6.80		74	34.0	19.31	068 ²⁾	21.44	068 ²⁾	5.81	068	23.03	068	9.21	068	17.91	06800	14.82	068
6.90		74	34.0	19.08	069 ²⁾	21.61	069 ²⁾	6.34	069	23.21	069			9.96	07000	12.29	070
7.00		74	34.0	17.69	070 ²⁾	12.50	070 ²⁾	4.75	070	13.36	070	8.16	070				
7.10		74	34.0	21.43	071 ²⁾	22.50	071 ²⁾	6.51	071								
7.14	9/32	74	34.0	28.45	714 ²⁾	23.03	714 ²⁾										
7.20		74	34.0	22.06	072 ²⁾	22.70	072 ²⁾	6.51	072	24.42	072	11.78	072	19.20	07200	16.66	072
7.25		74	34.0											19.53	07250		
7.30		74	34.0	23.71	073 ²⁾	22.84	073 ²⁾	6.86	073								
7.40		74	34.0	22.20	074 ²⁾	22.70	074 ²⁾	7.22	074			13.38	074	19.76	07400	16.84	074
7.50		74	34.0	18.45	075 ²⁾	14.24	075 ²⁾	5.11	075	15.28	075	8.87	075	11.78	07500	12.86	075
7.60		79	37.0	28.80	076 ²⁾	21.26	076 ²⁾	8.08	076			12.92	076	21.05	07600	18.28	076
7.70		79	37.0	31.21	077 ²⁾	26.37	077 ²⁾	8.08	077	27.94	077	13.06	077	21.00	07700	18.28	077
7.75		79	37.0											26.42	07750		
7.80		79	37.0	23.79	078 ²⁾	25.47	078 ²⁾	8.08	078			13.06	078	22.15	07800	18.28	078
7.90		79	37.0	33.31	079 ²⁾	27.94	079 ²⁾	8.27	079	29.53	079	12.51	079	22.07	07900	18.28	079
P				●		●		○		○		●		●		●	
M						●				●				●		●	
K				●		●		●				●		●		●	
N				○		○		○		●		○		○		○	
S				○		○				○		○		○		●	
H				○								○		○		○	
O				○		○		○				○		○		○	

- 1) uncoated
2) self-centering

→ v_c Page 44+45

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

≤ 3xD				UNI		UNI		N		VA		WNX		WT		WT	
				TiN		TiN		vap.						vap.		TiN	
				SIG 130° HSS-E-PM		SIG 118° HSS-E		SIG 118° HSS		SIG 130° HSS-E		SIG 130° HSS-E		SIG 130° HSS-E		SIG 130° HSS-E	
				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
7.94	5/16	79	37.0	22.83	794 ²⁾	14.41	794 ²⁾										
8.00		79	37.0	22.06	080 ²⁾	13.76	080 ²⁾	5.28	080	14.08	080	9.21	080	11.08	08000	13.23	080
8.05		79	37.0											35.50	08050		
8.10		79	37.0	28.16	081 ²⁾	28.67	081 ²⁾	8.79	081								
8.15		79	37.0											35.50	08150		
8.20		79	37.0	29.32	082 ²⁾	29.90	082 ²⁾	9.15	082							18.28	082
8.30		79	37.0	30.75	083 ²⁾	32.15	083 ²⁾	9.48	083								
8.40		79	37.0	29.49	084 ²⁾	33.04	084 ²⁾	9.66	084	35.14	084	14.67	084	26.99	08400	19.20	084
8.50		79	37.0	25.63	085 ²⁾	16.35	085 ²⁾	7.22	085	17.22	085	11.08	085	13.06	08500	15.91	085
8.55		84	40.0											40.19	08550		
8.60		84	40.0			19.64	086 ²⁾	9.66	086	36.20	086						
8.70		84	40.0			22.60	087 ²⁾	9.86	087	37.24	087					19.75	087
8.73	11/32	84	40.0	40.53	873 ²⁾	25.89	873 ²⁾										
8.80		84	40.0	32.16	088 ²⁾	21.26	088 ²⁾	10.01	088			17.72	088	29.90	08800	19.75	088
8.90		84	40.0			27.96	089 ²⁾	10.39	089								
9.00		84	40.0	26.01	090 ²⁾	17.22	090 ²⁾	6.86	090	18.44	090	10.66	090	13.76	09000	16.14	090
9.10		84	40.0			23.55	091 ²⁾	11.61	091								
9.20		84	40.0			23.72	092 ²⁾	12.66	092	42.35	092	19.53	092	32.41	09200	25.85	092
9.30		84	40.0	29.49	093 ²⁾	41.82	093 ²⁾	12.85	093	44.66	093	13.76	093	34.52	09300	25.85	093
9.40		84	40.0			27.50	094 ²⁾	13.19	094			13.76	094	34.19	09400	25.85	094
9.50		84	40.0	28.80	095 ²⁾	18.44	095 ²⁾	10.90	095	19.85	095	13.06	095	15.04	09500	21.00	095
9.60		89	43.0			28.76	096 ²⁾	13.88	096			21.05	096	34.19	09600	26.25	096
9.65		89	43.0											40.21	09650		
9.70		89	43.0			27.96	097 ²⁾	14.08	097			21.05	097	34.93	09700	26.25	097
9.75		89	43.0											49.37	09750		
9.80		89	43.0	34.31	098 ²⁾	43.06	098 ²⁾	14.76	098	46.04	098	21.00	098	35.50	09800	28.08	098
9.90		89	43.0			29.88	099 ²⁾	14.76	099			21.53	099	36.54	09900	28.08	099
10.00		89	43.0	28.36	100 ²⁾	21.44	100 ²⁾	8.27	100	23.03	100	11.78	100	17.91	10000	19.75	100
10.10		89	43.0			28.76	101 ²⁾	16.35	101								
10.20		89	43.0	35.89	102 ²⁾	34.08	102 ²⁾	14.08	102	36.20	102	21.05	102	27.52	10200	27.88	102
10.30		89	43.0			26.71	103 ²⁾	17.40	103					45.01	10300		
10.40		89	43.0			31.27	104 ²⁾	18.13	104								
10.50		89	43.0	34.03	105 ²⁾	36.91	105 ²⁾	14.76	105	39.35	105	17.21	105	30.81	10500	26.57	105
10.60		95	47.0					22.70	106								
10.70		95	47.0					22.70	107					53.69	10700		
10.80		95	47.0					23.21	108							59.24	108
10.90		95	47.0					23.21	109								
11.00		95	47.0	37.83	110 ²⁾	39.35	110 ²⁾	14.76	110	41.82	110	20.29	110	32.41	11000	26.57	110
11.10		95	47.0					23.21	111								
11.11	7/16	95	47.0	44.41	111 ²⁾	46.39	111 ²⁾										
11.20		95	47.0					24.42	112					63.27	11200		
11.30		95	47.0					24.79	113					65.52	11300		
11.40		95	47.0					24.79	114					66.06	11400		
11.50		95	47.0	43.59	115 ²⁾	44.66	115 ²⁾	15.66	115	47.46	115	26.57	115	37.10	11500	27.70	115
11.60		95	47.0					24.79	116								
11.70		95	47.0					24.79	117	89.25	117			66.06	11700		
11.75		95	47.0											73.25	11750		
11.80		95	47.0					25.13	118			33.41	118	66.06	11800	33.21	118
P				●		●		○		○		●		●		●	
M						●				●				●		●	
K				●		●		●				●		●		●	
N				○		○		○		●		○		○		○	
S				○		○				○		○		○		●	
H				○								○		○			
O				○		○		○				○		○		○	

- 1) uncoated
2) self-centering

→ v. Page 44+45

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

≤ 3xD				UNI		UNI		N		VA		WNX		WT		WT	
				TiN		TiN		vap.						vap.		TiN	
				SIG 130° HSS-E-PM		SIG 118° HSS-E		SIG 118° HSS		SIG 130° HSS-E		SIG 130° HSS-E		SIG 130° HSS-E		SIG 130° HSS-E	
				10 113 ...		10 107 ...		10 105 ...		10 130 ...		10 106 ...		10 109 ...		10 110 ...	
DC h8 mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
11.90		102	51.0					25.13	119								
12.00		102	51.0	42.66	120 2)	52.53	120 2)	18.81	120	55.90	120	26.57	120	43.72	12000	31.69	120
12.10		102	51.0					26.55	121								
12.20		102	51.0					26.55	122								
12.30		102	51.0	72.29	123 2)	48.86	123 2)	26.88	123			33.41	123	51.67	12300	48.70	123
12.40		102	51.0					26.88	124								
12.50		102	51.0	46.81	125 2)	52.90	125 2)	19.85	125			27.12	125	43.82	12500	33.21	125
12.60		102	51.0					27.42	126								
12.70		102	51.0	59.74	127 2)	40.36	127 2)	26.19	127					45.06	12700		
12.80		102	51.0					28.46	128			40.79	128	67.72	12800	61.37	128
12.90		102	51.0					29.36	129								
13.00		102	51.0	46.81	130 2)	52.90	130 2)	20.24	130			30.27	130	46.30	13000	33.48	130
13.20		102	51.0					30.23	132								
13.30		107	54.0					31.10	133								
13.50		107	54.0	49.71	135 2)	52.90	135 2)	23.21	135			37.47	135	51.11	13500	36.59	135
13.80		107	54.0					31.82	138			48.71	138				
14.00		107	54.0	62.06	140 2)	56.21	140 2)	23.54	140			34.19	140	51.11	14000	38.38	140
14.50		111	56.0					26.19	145			44.27	145	64.20	14500	39.31	145
14.75		111	56.0					40.10	147								
15.00		111	56.0					25.47	150			41.15	150	61.06	15000	40.62	150
15.25		115	58.0					42.35	152								
15.50		115	58.0					28.12	155			62.37	155	76.38	15500	52.96	155
15.75		115	58.0													55.92	157
16.00		115	58.0					28.46	160			49.44	160	62.63	16000	52.23	160
16.50		119	60.0					33.57	165			49.79	165	102.95	16500	76.90	165
17.00		119	60.0					34.46	170			51.29	170	87.79	17000	75.85	170
17.50		123	62.0					36.04	175			52.40	175	104.06	17500	70.94	175
17.75		123	62.0													85.97	177
18.00		123	62.0					36.39	180			51.77	180	97.41	18000	83.00	180
18.50		127	64.0					39.71	185					124.36	18500	92.99	185
19.00		127	64.0					41.82	190			53.56	190	104.06	19000	91.11	190
19.50		131	66.0					44.27	195					121.20	19500	102.21	195
20.00		131	66.0					44.27	200			56.46	200	104.07	20000	97.77	200
20.50		136	68.0											146.85	20500		
21.00		136	68.0											140.94	21000		
21.50		141	70.0											151.10	21500		
22.00		141	70.0											152.57	22000		
23.00		146	72.0											163.79	23000		
24.00		151	75.0											180.25	24000		
25.00		151	75.0											206.26	25000		
P				●		●		○		○		●		●		●	
M						●				●				●		●	
K				●		●		●				●		●		●	
N				○		○		○		●		○		○		○	
S				○		○				○		○		○		●	
H				○								○		○		○	
O				○		○		○				○				○	

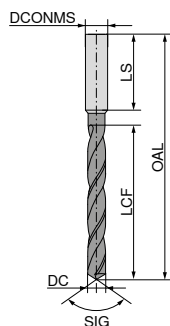
1) uncoated
2) self-centering

→ v_c Page 44+45

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



SIG 118°
HSS-E

10 124 ...

DC _{h8} mm	OAL mm	LCF mm	DCONMS _{h6} mm	LS mm	£ T2	
2.00	56	24	3	28	15.51	020
2.10	56	24	3	28	17.75	021
2.20	59	27	3	28	17.75	022
2.30	59	27	3	28	17.75	023
2.40	62	30	3	28	17.75	024
2.50	62	30	3	28	17.75	025
2.60	62	30	3	28	17.75	026
2.70	65	33	3	28	17.75	027
2.80	65	33	3	28	17.75	028
2.90	65	33	3	28	17.75	029
3.00	65	33	3	28	16.88	030
3.10	68	36	4	28	19.34	031
3.20	68	36	4	28	19.34	032
3.30	68	36	4	28	19.34	033
3.40	71	39	4	28	19.34	034
3.50	71	39	4	28	19.34	035
3.60	71	39	4	28	21.53	036
3.70	71	39	4	28	21.53	037
3.80	75	43	4	28	21.53	038
3.90	75	43	4	28	21.53	039
4.00	75	43	4	28	21.53	040
4.10	87	43	6	36	24.95	041
4.20	87	43	6	36	26.37	042
4.30	91	47	6	36	24.95	043
4.40	91	47	6	36	24.95	044
4.50	91	47	6	36	24.95	045
4.60	91	47	6	36	28.30	046
4.65	91	47	6	36	28.30	0465
4.70	91	47	6	36	28.30	047
4.80	96	52	6	36	28.30	048
4.90	96	52	6	36	28.30	049
5.00	96	52	6	36	30.77	050
5.10	96	52	6	36	30.77	051
5.20	96	52	6	36	30.77	052
5.30	96	52	6	36	33.95	053
5.40	101	57	6	36	33.95	054
5.50	101	57	6	36	30.77	055
5.55	101	57	6	36	35.31	0555
5.60	101	57	6	36	35.31	056
5.70	101	57	6	36	35.31	057
5.80	101	57	6	36	35.31	058
5.90	101	57	6	36	35.31	059
6.00	101	57	6	36	33.57	060
6.10	107	63	8	36	41.46	061
6.20	107	63	8	36	41.46	062
6.30	107	63	8	36	41.46	063
6.40	107	63	8	36	41.46	064
6.50	107	63	8	36	41.46	065
6.60	107	63	8	36	44.47	066
6.70	107	63	8	36	44.47	067
6.80	113	69	8	36	44.47	068
6.90	113	69	8	36	44.47	069
7.00	113	69	8	36	44.47	070
7.10	113	69	8	36	46.29	071
7.20	113	69	8	36	46.29	072
7.30	113	69	8	36	46.29	073

10 124 ...

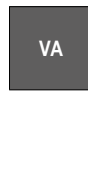
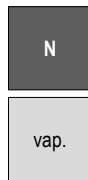
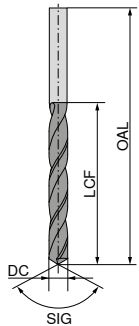
DC _{h8} mm	OAL mm	LCF mm	DCONMS _{h6} mm	LS mm	£ T2	
7.40	113	69	8	36	46.29	074
7.50	113	69	8	36	46.29	075
7.55	119	75	8	36	46.23	0755
7.60	119	75	8	36	46.23	076
7.70	119	75	8	36	46.23	077
7.80	119	75	8	36	46.23	078
7.90	119	75	8	36	46.23	079
8.00	119	75	8	36	46.23	080
8.10	125	75	10	40	51.77	081
8.20	125	75	10	40	51.77	082
8.30	125	75	10	40	51.77	083
8.40	125	75	10	40	51.77	084
8.50	125	75	10	40	52.21	085
8.60	131	81	10	40	48.17	086
8.70	131	81	10	40	48.17	087
8.80	131	81	10	40	48.17	088
8.90	131	81	10	40	48.17	089
9.00	131	81	10	40	48.17	090
9.10	131	81	10	40	51.77	091
9.20	131	81	10	40	51.77	092
9.30	131	81	10	40	51.77	093
9.40	131	81	10	40	51.77	094
9.50	131	81	10	40	51.77	095
9.55	137	87	10	40	56.46	0955
9.60	137	87	10	40	56.46	096
9.70	137	87	10	40	56.46	097
9.80	137	87	10	40	56.46	098
9.90	137	87	10	40	56.46	099
10.00	137	87	10	40	56.46	100
10.10	144	87	12	45	71.59	101
10.20	144	87	12	45	71.59	102
10.30	144	87	12	45	71.59	103
10.40	144	87	12	45	71.59	104
10.50	144	87	12	45	71.59	105
10.70	151	94	12	45	78.62	107
10.80	151	94	12	45	78.62	108
11.00	151	94	12	45	66.26	110
11.20	151	94	12	45	70.94	112
11.30	151	94	12	45	70.94	113
11.40	151	94	12	45	70.94	114
11.50	151	94	12	45	70.94	115
11.60	151	94	12	45	78.22	116
11.70	151	94	12	45	78.22	117
11.80	151	94	12	45	78.22	118
11.90	158	101	12	45	78.22	119
12.00	158	101	12	45	78.22	120
12.20	161	101	16	48	89.87	122
12.30	161	101	16	48	89.87	123
12.50	161	101	16	48	89.87	125
12.70	161	101	16	48	94.65	127
12.80	161	101	16	48	94.65	128
13.00	161	101	16	48	104.40	130
13.50	166	106	16	48	135.39	135
14.00	166	106	16	48	135.39	140
14.50	169	109	16	48	173.22	145
15.00	169	109	16	48	162.72	150
15.50	172	112	16	48	176.35	155
16.00	172	112	16	48	170.27	160
16.50	181	115	20	50	263.97	165
17.00	181	115	20	50	263.97	170
17.50	184	118	20	50	263.97	175
18.00	184	118	20	50	263.97	180
18.50	188	122	20	50	263.97	185
19.00	188	122	20	50	263.97	190
19.50	191	125	20	50	263.97	195
20.00	191	125	20	50	234.66	200

P	●
M	●
K	●
N	○
S	○
H	
O	○

→ v_c Page 46

Twist drill to DIN 338, short

≤ 5xD

SIG 130°
HSS-E-PMSIG 118°
HSS-ESIG 118°
HSSSIG 130°
HSS-ESIG 130°
HSSSIG 130°
HSS-ESIG 130°
HSS-E

DC _{h8} mm	DC inch	OAL mm	LCF mm	10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
				£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
0.20		19	2.5					4.92	00200 ¹⁾			10.53	00200				
0.25		19	3.0					4.75	00250 ¹⁾			22.50	00250				
0.30		19	3.0					3.33	00300 ¹⁾			11.78	00300				
0.35		19	4.0					3.33	00350 ¹⁾			7.42	00350				
0.40		20	5.0					2.82	00400 ¹⁾			6.14	00400				
0.45		20	5.0					3.01	00450 ¹⁾			6.53	00450				
0.50		22	6.0					2.46	00500 ¹⁾			4.72	00500				
0.55		24	7.0					3.54	00550 ¹⁾			11.44	00550				
0.60		24	7.0					2.32	00600 ¹⁾			5.06	00600				
0.65		26	8.0					3.33	00650 ¹⁾			7.97	00650				
0.70		28	9.0					2.12	00700 ¹⁾			4.55	00700				
0.75		28	9.0					2.46	00750 ¹⁾			4.89	00750				
0.80		30	10.0					2.12	00800 ¹⁾			4.17	00800				
0.85		30	10.0					2.32	00850 ¹⁾			4.72	00850				
0.90		32	11.0			5.28	009 2)	2.12	00900 ¹⁾			3.79	00900				
0.95		32	11.0					2.32	00950 ¹⁾			4.72	00950				
1.00		34	12.0	7.59	010 2)	5.28	010 2)	1.95	01000 ¹⁾	5.06	010	4.17	01000	4.33	010 1)	9.21	010
1.05		34	12.0					2.12	01050 ¹⁾			4.55	01050				
1.10		36	14.0	8.22	011 2)	5.28	011 2)	1.95	01100 ¹⁾	5.06	011	3.71	01100	4.72	011 1)	9.96	011
1.15		36	14.0					2.12	01150 ¹⁾			4.17	01150				
1.20		38	16.0	8.07	012 2)	5.98	012 2)	1.95	01200 ¹⁾	5.61	012	3.71	01200	4.72	012 1)	9.96	012
1.25		38	16.0			5.62	125 2)	2.12	01250 ¹⁾			4.17	01250				
1.30		38	16.0	8.22	013 2)	5.62	013 2)	1.95	01300 ¹⁾	5.57	013	3.71	01300	4.55	013 1)	9.78	013
1.35		40	18.0					2.12	01350 ¹⁾			4.17	01350				
1.40		40	18.0	8.31	014 2)	5.28	014 2)	1.95	01400 ¹⁾	5.06	014	3.71	01400	4.72	014 1)	9.96	014
1.45		40	18.0			5.28	145 2)	1.95	01450 ¹⁾			4.17	01450			13.01	901
1.50		40	18.0	7.83	015 2)	4.92	015 2)	1.75	01500 ¹⁾	4.72	015	3.71	01500	4.33	015 1)	9.21	015
1.55		43	20.0			5.28	155 2)	1.95	01550 ¹⁾			4.17	01550			15.28	902
1.60		43	20.0	7.83	016 2)	5.28	016 2)	1.61	01600 ¹⁾	5.06	016	3.24	01600	4.33	016 1)	9.21	016
1.65		43	20.0			5.45	165 2)	1.95	01650 ¹⁾			4.17	01650			15.51	903
1.70		43	20.0	8.41	017 2)	5.45	017 2)	1.61	01700 ¹⁾	5.26	017	3.48	01700	4.33	017 1)	9.21	017
1.75		46	22.0					1.95	01750 ¹⁾			4.17	01750				
1.80		46	22.0	8.31	018 2)	5.28	018 2)	1.61	01800 ¹⁾	5.06	018	3.48	01800	4.33	018 1)	9.21	018
1.85		46	22.0					1.75	01850 ¹⁾			4.17	01850			10.66	904
1.90		46	22.0	8.31	019 2)	5.45	019 2)	1.61	01900 ¹⁾	5.26	019	3.48	01900	4.33	019 1)	9.21	019
1.95		49	24.0					1.75	01950 ¹⁾			3.79	01950				
2.00		49	24.0	8.07	020 2)	4.89	020 2)	1.23	02000 ¹⁾	4.33	020	2.73	02000	3.79	020 1)	8.16	020
2.05		49	24.0					1.75	02050 ¹⁾			3.71	02050			11.41	905
2.10		49	24.0	8.41	021 2)	5.98	021 2)	1.61	02100 ¹⁾	5.61	021	3.24	02100	4.33	021 1)	8.69	021
2.15		53	27.0					1.75	02150 ¹⁾			3.71	02150				
2.20		53	27.0	8.85	022 2)	5.98	022 2)	1.61	02200 ¹⁾	5.61	022	3.24	02200	4.33	022 1)	8.69	022
2.25		53	27.0					1.75	02250 ¹⁾			3.71	02250				
2.30		53	27.0	8.55	023 2)	5.98	023 2)	1.61	02300 ¹⁾	5.61	023	3.24	02300	4.33	023 1)	8.69	023
2.35		53	27.0					2.32	02350 ¹⁾			4.33	02350				
2.38	3/32	57	30.0	8.55	238 2)	5.98	238 2)										
2.40		57	30.0	8.07	024 2)	5.98	024 2)	1.61	02400	5.61	024	3.24	02400	4.33	024	8.69	024

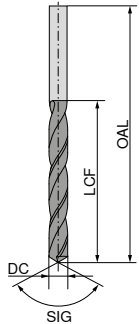
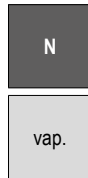
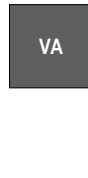
P	●	●	○	○	●	●
M	●	●	●	●	○	○
K	●	●	●	●	●	●
N	○	○	○	●	●	○
S	○	○	○	○	○	○
H	○	○	○	○	○	○
O	○	○	○	○	○	○

- 1) uncoated
2) self-centering

→ v_c Page 46+47

Twist drill to DIN 338, short

≤ 5xD

SIG 130°
HSS-E-PMSIG 118°
HSS-ESIG 118°
HSSSIG 130°
HSS-ESIG 130°
HSSSIG 130°
HSS-ESIG 130°
HSS-E

DC _{h8} mm	DC inch	OAL mm	LCF mm	10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
				£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
2.45		57	30.0					2.12	02450			4.33	02450				
2.50		57	30.0	8.22	025 ²⁾	5.06	025 ²⁾	1.61	02500	4.72	025	2.90	02500	3.79	025	8.36	025
2.55		57	30.0			5.98	255 ²⁾	2.32	02550			5.06	02550				
2.60		57	30.0	8.55	026 ²⁾	5.98	026 ²⁾	1.61	02600	5.81	026	3.48	02600	4.33	026	8.69	026
2.65		57	30.0					2.46	02650			5.06	02650				
2.70		61	33.0	9.10	027 ²⁾	5.98	027 ²⁾	1.61	02700	5.81	027	3.48	02700	4.55	027	9.61	027
2.75		61	33.0					2.12	02750			4.89	02750				
2.78	7/64	61	33.0	11.10	278 ²⁾	7.06	278 ²⁾										
2.80		61	33.0	8.89	028 ²⁾	5.98	028 ²⁾	1.61	02800	5.81	028	3.79	02800	4.55	028	9.78	028
2.85		61	33.0					2.32	02850			5.98	02850				
2.90		61	33.0	9.10	029 ²⁾	6.14	029 ²⁾	1.61	02900	5.81	029	3.79	02900	4.55	029	9.78	029
2.95		61	33.0					2.12	02950			5.06	02950				
3.00		61	33.0	8.65	030 ²⁾	5.06	030 ²⁾	1.43	03000	4.72	030	3.10	03000	4.17	030	8.69	030
3.05		65	36.0					1.95	03050			4.33	03050				
3.10		65	36.0	9.62	031 ²⁾	6.14	031 ²⁾	1.75	03100	5.98	031	3.79	03100	4.55	031	9.61	031
3.15		65	36.0					1.95	03150			4.33	03150				
3.17	1/8	65	36.0	9.59	317 ²⁾	5.81	317 ²⁾										
3.20		65	36.0	9.46	032 ²⁾	5.57	032 ²⁾	1.75	03200	5.06	032	3.48	03200	4.72	032	9.96	032
3.25		65	36.0			6.34	325 ²⁾	1.95	03250			6.34	03250				
3.30		65	36.0	9.62	033 ²⁾	5.57	033 ²⁾	1.75	03300	5.06	033	3.48	03300	4.72	033	10.15	033
3.35		65	36.0					2.12	03350			4.33	03350				
3.40		70	39.0	10.27	034 ²⁾	6.51	034 ²⁾	1.75	03400	6.14	034	3.79	03400	5.26	034	11.23	034
3.45		70	39.0					2.12	03450			4.72	03450				
3.50		70	39.0	10.43	035 ²⁾	5.57	035 ²⁾	1.61	03500	5.06	035	3.71	03500	4.55	035	9.61	035
3.55		70	39.0					2.12	03550			4.72	03550				
3.57	9/64	70	39.0	10.43	357 ²⁾	6.68	357 ²⁾										
3.60		70	39.0	10.53	036 ²⁾	6.68	036 ²⁾	1.95	03600	6.53	036	3.79	03600	5.26	036	11.02	036
3.65		70	39.0					2.12	03650			4.55	03650				
3.70		70	39.0	10.53	037 ²⁾	6.68	037 ²⁾	1.95	03700	6.53	037	4.17	03700	5.26	037	11.23	037
3.75		70	39.0					2.12	03750			4.89	03750				
3.80		75	43.0	11.14	038 ²⁾	7.06	038 ²⁾	1.95	03800	6.53	038	4.33	03800	5.61	038	12.37	038
3.85		75	43.0					2.32	03850			4.89	03850				
3.90		75	43.0	11.41	039 ²⁾	7.39	039 ²⁾	2.12	03900	6.69	039	4.33	03900	5.98	039	12.92	039
3.95		75	43.0					2.32	03950			4.89	03950				
3.97	5/32	75	43.0	11.58	397 ²⁾	7.75	397 ²⁾										
4.00		75	43.0	10.91	040 ²⁾	5.81	040 ²⁾	1.61	04000	5.57	040	3.71	04000	4.89	040	10.53	040
4.05		75	43.0					2.46	04050			6.14	04050				
4.10		75	43.0	11.14	041 ²⁾	7.03	041 ²⁾	2.12	04100	6.69	041	4.33	04100	5.98	041	12.92	041
4.15		75	43.0					2.46	04150			6.14	04150				
4.20		75	43.0	11.14	042 ²⁾	7.03	042 ²⁾	1.95	04200	6.90	042	3.79	04200	5.57	042	11.96	042
4.25		75	43.0			7.42	425 ²⁾	2.46	04250			6.14	04250				
4.30		80	47.0	11.88	043 ²⁾	7.39	043 ²⁾	2.12	04300	6.90	043	5.26	04300	6.14	043	13.38	043
4.35		80	47.0					3.18	04350			7.42	04350				
4.37	11/64	80	47.0	12.01	437 ²⁾	7.92	437 ²⁾										
4.40		80	47.0	11.88	044 ²⁾	7.42	044 ²⁾	2.12	04400	7.06	044	5.26	04400	6.14	044	13.38	044
4.45		80	47.0					3.18	04450								

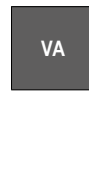
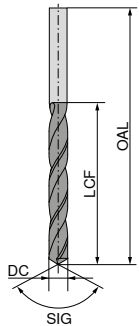
P	●	●	○	○	●	●
M	●	●	●	●	○	○
K	●	●	●	●	●	●
N	○	○	○	●	●	○
S	○	○	○	○	○	○
H	○	○	○	○	○	○
O	○	○	○	○	○	○

1) uncoated
2) self-centering

→ v_c Page 46+47

Twist drill to DIN 338, short

≤ 5xD

SIG 130°
HSS-E-PMSIG 118°
HSS-ESIG 118°
HSSSIG 130°
HSS-ESIG 130°
HSSSIG 130°
HSS-ESIG 130°
HSS-E

DC _{h8} mm	DC inch	OAL mm	LCF mm	10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
				£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
4.50		80	47.0	11.58	045 ²⁾	7.39	045 ²⁾	2.12	04500	6.90	045	4.72	04500	5.81	045	11.96	045
4.55		80	47.0					3.18	04550			9.21	04550				
4.60		80	47.0	12.26	046 ²⁾	7.92	046 ²⁾	2.12	04600	7.39	046	5.26	04600	6.53	046	14.12	046
4.65		80	47.0			8.08	046 ²⁾	3.18	04650			9.21	04650				
4.70		80	47.0	14.83	047 ²⁾	8.16	047 ²⁾	2.12	04700	7.42	047	5.26	04700	6.53	047	14.12	047
4.75		80	47.0					4.22	04750			7.39	04750				
4.76	3/16	86	52.0	12.54	047 ²⁾	8.08	047 ²⁾										
4.80		86	52.0	12.54	048 ²⁾	7.92	048 ²⁾	2.32	04800	7.42	048	5.26	04800	6.53	048	14.12	048
4.85		86	52.0					5.45	04850			9.21	04850				
4.90		86	52.0	12.75	049 ²⁾	8.08	049 ²⁾	2.32	04900	7.65	049	5.26	04900	6.69	049	14.30	049
4.95		86	52.0			8.08	049 ²⁾	3.54	04950			9.21	04950				
5.00		86	52.0	12.85	050 ²⁾	7.06	050 ²⁾	1.95	05000	6.53	050	5.06	05000	5.98	050	12.86	050
5.05		86	52.0			8.08	050 ²⁾	3.71	05050			10.66	05050				
5.10		86	52.0	12.85	051 ²⁾	8.08	051 ²⁾	4.22	05100	7.65	051	5.57	05100	6.69	051		
5.15		86	52.0					3.71	05150								
5.16	13/64	86	52.0	14.00	051 ²⁾	8.87	051 ²⁾										
5.20		86	52.0	13.22	052 ²⁾	8.69	052 ²⁾	2.46	05200	7.97	052	5.61	05200	6.90	052	15.51	052
5.25		86	52.0					3.71	05250			12.50	05250				
5.30		86	52.0	14.00	053 ²⁾	8.69	053 ²⁾	2.46	05300	7.97	053	5.61	05300				
5.35		93	57.0					4.42	05350								
5.40		93	57.0	17.17	054 ²⁾	9.43	054 ²⁾	2.82	05400			5.98	05400				
5.45		93	57.0					8.08	05450			7.42	05450				
5.50		93	57.0	14.79	055 ²⁾	9.66	055 ²⁾	2.67	05500	9.21	055	5.61	05500	6.90	055	15.04	055
5.55		93	57.0			11.02	055 ²⁾	4.57	05550			7.42	05550				
5.56	7/32	93	57.0	17.40	056 ²⁾	11.02	056 ²⁾										
5.60		93	57.0	15.76	056 ²⁾	9.61	056 ²⁾	2.82	05600	8.87	056	6.53	05600	7.65	056	16.66	056
5.65		93	57.0					4.75	05650			10.15	05650				
5.70		93	57.0	15.56	057 ²⁾	9.61	057 ²⁾	2.82	05700	8.87	057	6.53	05700	7.65	057	16.66	057
5.75		93	57.0			9.61	057 ²⁾	5.45	05750			9.96	05750				
5.80		93	57.0	15.56	058 ²⁾	9.61	058 ²⁾	2.82	05800	8.87	058	6.53	05800	7.65	058	16.84	058
5.85		93	57.0					4.75	05850			11.96	05850				
5.90		93	57.0	16.52	059 ²⁾	9.61	059 ²⁾	3.01	05900	8.87	059	6.53	05900	8.36	059	17.92	059
5.95		93	57.0	20.25	059 ²⁾	12.29	059 ²⁾	3.01	05950			6.53	05950				
6.00	15/64	93	57.0	14.97	060 ²⁾	9.43	060 ²⁾	2.67	06000	8.69	060	6.53	06000	7.65	060	17.72	060
6.05		101	63.0					5.11	06050			14.30	06050				
6.10		101	63.0	16.92	061 ²⁾	10.66	061 ²⁾	3.18	06100			6.53	06100				
6.15		101	63.0					5.11	06150			10.66	06150				
6.20		101	63.0	16.68	062 ²⁾	10.66	062 ²⁾	3.18	06200	9.96	062	6.53	06200			18.67	062
6.25		101	63.0					5.11	06250			11.28	06250				
6.30		101	63.0	18.41	063 ²⁾	10.66	063 ²⁾	3.18	06300			6.90	06300				
6.35	1/4	101	63.0	19.49	063 ²⁾	11.41	063 ²⁾	3.33	06350			6.69	06350				
6.40		101	63.0	19.52	064 ²⁾	11.41	064 ²⁾	3.33	06400			6.90	06400				
6.45		101	63.0					5.62	06450								
6.50		101	63.0	17.96	065 ²⁾	10.53	065 ²⁾	3.18	06500	9.78	065	6.69	06500	8.69	065	18.44	065
6.55		101	63.0					5.98	06550			14.82	06550				
6.60		101	63.0	19.76	066 ²⁾	11.41	066 ²⁾	3.33	06600			7.97	06600				

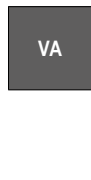
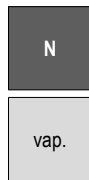
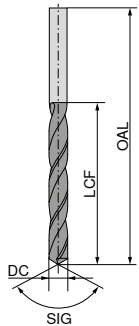
P	●	●	○	○	●	●
M	●	●	●	●	○	○
K	●	●	●	●	●	●
N	○	○	○	●	●	○
S	○	○	○	○	○	○
H	○	○	○	○	○	○
O	○	○	○	○	○	○

- 1) uncoated
2) self-centering

→ v_c Page 46+47

Twist drill to DIN 338, short

≤ 5xD

SIG 130°
HSS-E-PMSIG 118°
HSS-ESIG 118°
HSSSIG 130°
HSS-ESIG 130°
HSSSIG 130°
HSS-ESIG 130°
HSS-E

DC _{h8} mm	DC inch	OAL mm	LCF mm	10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
				£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
6.65		101	63.0					10.71	06650			20.93	06650				
6.70		101	63.0	19.72	067 ²⁾	11.41	067 ²⁾	3.54	06700			8.16	06700				
6.75		109	69.0	26.62	675 ²⁾	15.65	675 ²⁾	4.22	06750			12.50	06750				
6.80		109	69.0	20.25	068 ²⁾	12.92	068 ²⁾	4.22	06800	11.78	068	8.69	06800	10.15	068	22.15	068
6.85		109	69.0					6.51	06850			21.61	06850				
6.90		109	69.0	20.65	069 ²⁾	12.92	069 ²⁾	4.22	06900	11.78	069	8.69	06900				
6.95		109	69.0					6.68	06950			21.61	06950				
7.00		109	69.0	20.25	070 ²⁾	11.02	070 ²⁾	3.71	07000	10.15	070	7.65	07000	9.21	070	19.75	070
7.05		109	69.0					7.22	07050			12.37	07050				
7.10		109	69.0	23.31	071 ²⁾	14.67	071 ²⁾	4.22	07100			10.50	07100				
7.14	9/32	109	69.0	34.87	714 ²⁾	21.91	714 ²⁾										
7.15		109	69.0					12.50	07150								
7.20		109	69.0	23.27	072 ²⁾	14.67	072 ²⁾	4.42	07200	13.76	072	10.50	07200	14.21	072	31.30	072
7.25		109	69.0					11.96	07250			25.32	07250				
7.30		109	69.0	24.10	073 ²⁾	14.67	073 ²⁾	4.42	07300			10.50	07300				
7.35		109	69.0					7.22	07350								
7.40		109	69.0	23.54	074 ²⁾	14.67	074 ²⁾	4.57	07400	13.76	074	10.50	07400	14.21	074	30.81	074
7.45		109	69.0					7.03	07450								
7.50		109	69.0	21.43	075 ²⁾	11.78	075 ²⁾	4.22	07500	11.08	075	8.87	07500	10.53	075	22.60	075
7.55		117	75.0					8.27	07550								
7.60		117	75.0	26.01	076 ²⁾	17.22	076 ²⁾	4.92	07600	16.66	076	11.63	07600	15.51	076	33.95	076
7.65		117	75.0					8.27	07650								
7.70		117	75.0	29.61	077 ²⁾	17.72	077 ²⁾	4.92	07700	16.66	077	11.63	07700	15.51	077	33.95	077
7.75		117	75.0					7.39	07750			20.06	07750				
7.80		117	75.0	25.43	078 ²⁾	17.22	078 ²⁾	4.92	07800	16.66	078	11.63	07800	15.51	078	33.95	078
7.85		117	75.0					8.27	07850								
7.90		117	75.0	30.43	079 ²⁾	17.72	079 ²⁾	4.92	07900	16.66	079	13.38	07900	15.51	079	33.95	079
7.94	5/16	117	75.0	27.26	794 ²⁾	17.22	794 ²⁾										
7.95		117	75.0					8.62	07950								
8.00		117	75.0	24.18	080 ²⁾	14.30	080 ²⁾	4.22	08000	13.23	080	9.78	08000	11.78	080	25.89	080
8.05		117	75.0					8.79	08050			25.65	08050				
8.10		117	75.0	26.49	081 ²⁾	17.22	081 ²⁾	5.11	08100			13.76	08100				
8.15		117	75.0					8.97	08150			25.65	08150				
8.20		117	75.0	26.01	082 ²⁾	18.44	082 ²⁾	5.11	08200			14.30	08200				
8.25		117	75.0					6.14	08250			20.82	08250				
8.30		117	75.0	28.89	083 ²⁾	18.44	083 ²⁾	5.62	08300			15.04	08300				
8.35		117	75.0					9.66	08350								
8.40		117	75.0	29.10	084 ²⁾	19.34	084 ²⁾	5.62	08400	18.44	084	15.04	08400	17.92	084	39.09	084
8.45		117	75.0					9.86	08450			34.98	08450				
8.50		117	75.0	24.89	085 ²⁾	14.12	085 ²⁾	5.45	08500	13.06	085	11.28	08500	13.38	085	29.53	085
8.55		125	81.0					11.44	08550			25.30	08550				
8.60		125	81.0					6.14	08600	19.76	086	15.04	08600			43.92	086
8.65		125	81.0					20.39	08650								
8.70		125	81.0					6.14	08700			16.66	08700				
8.73	11/32	125	81.0	26.98	873 ²⁾	20.74	873 ²⁾										
8.75		125	81.0					10.18	08750			24.08	08750				

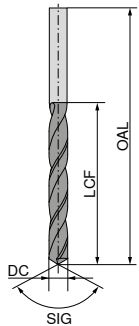
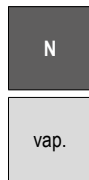
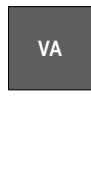
P	●	●	○	○	●	●
M	●	●	●	●	○	○
K	●	●	●	●	●	●
N	○	○	○	●	●	○
S	○	○	○	○	○	○
H	○	○	○	○	○	○
O	○	○	○	○	○	○

- 1) uncoated
2) self-centering

→ v_c Page 46+47

Twist drill to DIN 338, short

≤ 5xD

SIG 130°
HSS-E-PMSIG 118°
HSS-ESIG 118°
HSSSIG 130°
HSS-ESIG 130°
HSSSIG 130°
HSS-ESIG 130°
HSS-E

DC mm	DC inch	OAL mm	LCF mm	10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
				£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
8.80		125	81.0	29.10	088 2)	21.97	088 2)	6.34	08800	21.00	088	16.66	08800	20.06	088	44.85	088
8.90		125	81.0			27.12	089 2)	6.51	08900			16.84	08900				
8.95		125	81.0					21.26	08950								
9.00		125	81.0	27.40	090 2)	17.75	090 2)	5.81	09000	17.35	090	12.37	09000	15.56	090	33.66	090
9.05		125	81.0					11.96	09050								
9.10		125	81.0			29.49	091 2)	6.51	09100			18.67	09100				
9.15		125	81.0					21.26	09150								
9.20		125	81.0			30.27	092 2)	6.51	09200	24.63	092	18.67	09200	23.35	092	51.05	092
9.25		125	81.0					15.48	09250			29.17	09250				
9.30		125	81.0	31.63	093 2)	26.88	093 2)	6.51	09300	26.04	093	18.67	09300	23.35	093	51.29	093
9.35		125	81.0			20.93	935 2)	23.03	09350								
9.40		125	81.0			33.21	094 2)	6.51	09400	27.88	094	18.67	09400	23.35	094	51.29	094
9.45		125	81.0					12.85	09450								
9.50		125	81.0	28.80	095 2)	20.93	095 2)	6.51	09500	20.06	095	14.12	09500	16.66	095	36.04	095
9.55		133	87.0					14.41	09550								
9.60		133	87.0			30.04	096 2)	7.22	09600	28.95	096	21.58	09600	24.43	096	54.81	096
9.65		133	87.0					14.41	09650								
9.70		133	87.0			35.29	097 2)	7.22	09700	28.95	097	21.97	09700	27.12	097	58.63	097
9.75		133	87.0					9.48	09750								
9.80		133	87.0	34.31	098 2)	30.04	098 2)	8.08	09800	28.95	098	21.97	09800	27.12	098	58.63	098
9.85		133	87.0					14.08	09850								
9.90		133	87.0			27.66	099 2)	8.08	09900	28.95	099	22.33	09900	27.12	099	58.63	099
9.95		133	87.0					15.66	09950								
10.00		133	87.0	32.54	100 2)	21.05	100 2)	6.86	10000	19.02	100	14.82	10000	18.67	100	42.08	100
10.05		133	87.0					19.85	10050			38.02	10050				
10.10		133	87.0			27.16	101 2)	8.62	10100			22.72	10100				
10.15		133	87.0					35.66	10150								
10.20		133	87.0	37.57	102 2)	28.46	102 2)	8.79	10200	27.88	102	22.72	10200	25.89	102	56.83	102
10.25		133	87.0					11.78	10250			25.65	10250				
10.30		133	87.0			23.72	103 2)	10.55	10300	42.72	103	22.72	10300	34.19	103	75.85	103
10.35		133	87.0					19.85	10350								
10.40		133	87.0			29.37	104 2)	10.55	10400			22.72	10400				
10.45		133	87.0					35.66	10450								
10.50		133	87.0	37.83	105 2)	29.53	105 2)	8.97	10500	28.25	105	18.28	10500	24.19	105	52.96	105
10.55		133	87.0			32.36	955 2)	25.32	10550								
10.60		133	87.0					11.08	10600			32.67	10600				
10.70		142	94.0					12.85	10700	55.93	107	37.43	10700	37.10	107		
10.75		142	94.0					14.08	10750			43.06	10750				
10.80		142	94.0					12.50	10800			39.01	10800				
10.90		142	94.0					13.19	10900			39.01	10900				
11.00		142	94.0	39.08	110 2)	32.36	110 2)	10.18	11000	31.37	110	21.97	11000	29.53	110	61.89	110
11.10		142	94.0					13.19	11100			27.12	11100				
11.11	7/16	142	94.0	48.98	111 2)	62.39	111 2)										
11.20		142	94.0			62.39	112 2)	12.85	11200	60.51	112	34.33	11200	47.44	112	107.19	112
11.30		142	94.0			62.72	113 2)			60.88	113			47.44	113		
11.40		142	94.0			62.72	114 2)	13.55	11400	60.88	114	54.82	11400	47.44	114		

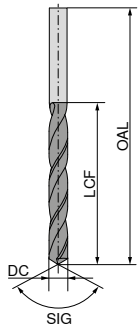
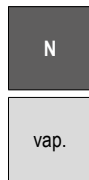
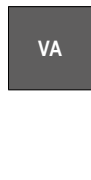
P	●	●	○	○	●	●
M	●	●	●	●	○	○
K	●	●	●	●	●	●
N	○	○	○	●	●	○
S	○	○	○	○	○	○
H	○	○	○	○	○	○
O	○	○	○	○	○	○

- 1) uncoated
2) self-centering

→ v_c Page 46+47

Twist drill to DIN 338, short

≤ 5xD

SIG 130°
HSS-E-PMSIG 118°
HSS-ESIG 118°
HSSSIG 130°
HSS-ESIG 130°
HSSSIG 130°
HSS-ESIG 130°
HSS-E

				10 173 ...		10 171 ...		10 152 ...		10 175 ...		10 161 ...		10 168 ...		10 170 ...	
DC _{h8} mm	DC inch	OAL mm	LCF mm	£ T2		£ T2		£ T2		£ T2		£ T2		£ T2		£ T2	
11.50		142	94.0	43.35	115 ²⁾	41.31	115 ²⁾	11.08	11500	40.07	115	24.43	11500	33.66	115	75.25	115
11.60		142	94.0			71.86	116 ²⁾	13.55	11600	69.57	116	38.02	11600	47.44	116		
11.70		142	94.0					14.08	11700	69.57	117	38.02	11700	47.44	117	107.19	117
11.80		142	94.0					14.24	11800	69.57	118	38.02	11800	51.29	118	112.73	118
11.90		151	101.0					15.66	11900	69.57	119	38.02	11900				
12.00		151	101.0	46.32	120 ²⁾	46.04	120 ²⁾	12.50	12000	43.82	120	26.76	12000	36.04	120	78.20	120
12.15		151	101.0			47.26	121 ²⁾										
12.20		151	101.0					16.54	12200			45.40	12200				
12.25		151	101.0					18.13	12250								
12.30		151	101.0	83.15	123 ²⁾	48.86	123 ²⁾										
12.50		151	101.0	48.20	125 ²⁾	47.26	925 ²⁾	13.88	12500			26.76	12500	44.36	125	99.06	125
12.70		151	101.0	62.96	127 ²⁾	37.07	127 ²⁾	15.48	12700			26.04	12700				
12.80		151	101.0					18.44	12800			47.80	12800	78.22	128	169.90	128
13.00		151	101.0	51.23	130 ²⁾	50.41	130 ²⁾	15.28	13000			31.73	13000	44.36	130	98.34	130
13.10		151	101.0			63.77	131 ²⁾										
13.20		151	101.0					19.85	13200			58.11	13200				
13.30		160	108.0			63.77	133 ²⁾										
13.50		160	108.0	91.08	135 ²⁾	63.77	135 ²⁾	17.59	13500			39.31	13500	59.53	135	132.47	135
13.80		160	108.0					25.32	13800			73.07	13800	69.01	138	150.51	138
14.00		160	108.0	62.06	140 ²⁾	61.15	140 ²⁾	19.51	14000			37.65	14000	54.26	140	117.73	140
14.50		169	114.0					20.93	14500			49.82	14500	66.43	145	141.50	145
14.80		169	114.0											138.29	148		
15.00		169	114.0					22.50	15000			44.67	15000	66.77	150	148.88	150
15.25		178	120.0					42.01	15250								
15.50		178	120.0					24.62	15500			62.92	15500	99.24	155	297.96	155
15.80		178	120.0					40.41	15800								
16.00		178	120.0					26.55	16000			59.61	16000	83.76	160	182.83	160
16.50		184	125.0					30.23	16500			99.24	16500				
17.00		184	125.0					32.00	17000			101.10	17000				
17.50		191	130.0					34.98	17500			199.22	17500				
18.00		191	130.0					37.24	18000			109.01	18000				
18.50		198	135.0					40.41	18500								
19.00		198	135.0					43.40	19000			124.36	19000				
19.50		205	140.0					46.04	19500								
20.00		205	140.0					50.41	20000			154.04	20000				
P				●		●		○		○				●		●	
M						●				●				○		○	
K				●		●		●						●		●	
N				○		○		○		●		●		●		○	
S				○		○				○				○		○	
H				○										○		○	
O				○		○		○						○		○	

1) uncoated

2) self-centering

→ v_c Page 46+47

Twist drill sets DIN 338, short

- ▲ In metal box
- ▲ In 0.1 mm steps

≤ 5xD



DC _{h8} mm		10 158 ...		10 158 ...	
		£ T2		£ T2	
1,0 - 5,9		92.41	050	350.48	054
6,0 - 10,0		191.96	100	548.79	104
P			○		●
M					●
K			●		●
N			○		○
S					○
H					
O			○		○

N

vap.

Drill set
type N
HSS

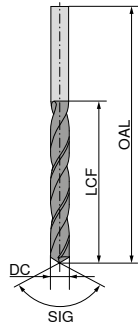
UNI

TiN

Drill set
type UNI TiN
HSS-E

→ v_c Page 46

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 drills with coolant hole,
factory standard, long $\leq 10xD$ 

NC

TiAlN

SIG 130°
HSS

10 224 ...

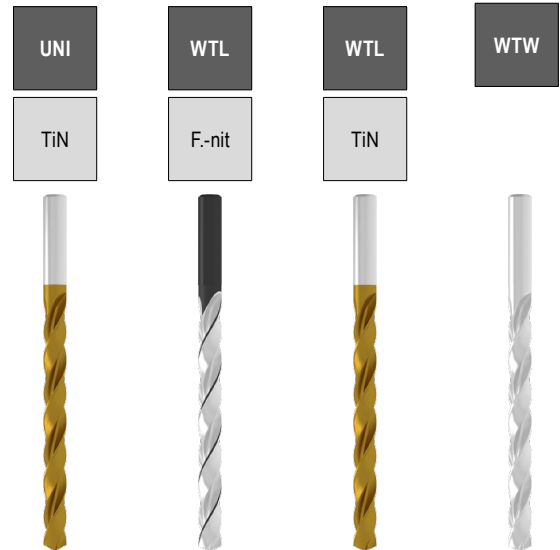
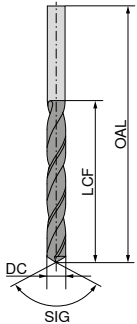
DC _{h8} mm	OAL mm	LCF mm	£ T2	
3.0	100	66	151.13	030
3.3	106	69	172.87	033
3.5	112	73	171.02	035
3.8	119	78	211.43	038
4.0	119	78	171.91	040
4.2	119	78	174.89	042
4.5	126	82	173.79	045
4.8	132	87	209.76	048
5.0	132	87	175.81	050
5.5	139	91	182.08	055
5.8	139	91	210.87	058
6.0	139	91	189.09	060
6.5	148	97	202.55	065
6.8	156	102	203.48	068
7.0	156	102	203.48	070
7.5	156	102	210.48	075
7.8	165	109	223.77	078
8.0	165	109	214.57	080
8.5	165	109	224.16	085
8.8	175	115	229.84	088
9.0	175	115	229.32	090
9.5	175	115	237.22	095
9.8	184	121	244.81	098
10.0	184	121	237.22	100
10.2	184	121	244.81	102
10.5	184	121	246.64	105
10.8	195	128	253.09	108
11.0	195	128	246.64	110
11.5	195	128	251.44	115
11.8	205	134	291.08	118
12.0	205	134	255.49	120
12.8	205	134	305.10	128
13.0	205	134	269.14	130

P	○
M	○
K	●
N	○
S	○
H	○
O	○

→ v_c Page 48

Twist drills, DIN 340, long

≤ 10xD

SIG 118°
HSS-ESIG 130°
HSS-ESIG 130°
HSSSIG 130°
HSS

DC _{h8} mm	OAL mm	LCF mm	10 270 ...		10 225 ...		10 210 ...		10 200 ...	
			£ T2		£ T2		£ T2		£ T2	
1.0	56	33	9.57	010	10.53	010 ¹⁾	18.44	010	7.65	010
1.1	60	37	10.67	011	12.86	011 ¹⁾	21.58	011	8.36	011
1.2	65	41	11.92	012	12.37	012 ¹⁾			7.65	012
1.3	65	41	11.75	013	11.96	013 ¹⁾				
1.4	70	45	11.61	014	11.41	014 ¹⁾			6.90	014
1.5	70	45	10.10	015	9.96	015 ¹⁾	15.04	015	6.90	015
1.6	76	50	11.92	016	11.02	016 ¹⁾	14.76	016	6.35	016
1.7	76	50	13.02	017	11.08	017 ¹⁾				
1.8	80	53	12.43	018	11.08	018 ¹⁾			6.14	018
1.9	80	53	13.30	019	10.15	019 ¹⁾	14.21	019	6.14	019
2.0	85	56	9.87	020	7.97	020 ¹⁾	13.23	020	5.26	020
2.1	85	56	11.39	021	9.61	021 ¹⁾	15.51	021	6.14	021
2.2	90	59	11.61	022	9.78	022 ¹⁾				
2.3	90	59	11.39	023	9.78	023 ¹⁾	16.09	023	6.14	023
2.4	95	62	10.55	024	9.96	024	16.14	024	6.14	024
2.5	95	62	10.10	025	8.36	025	14.21	025	5.57	025
2.6	95	62	11.61	026	9.96	026	16.14	026	6.14	026
2.7	100	66	12.28	027	14.24	027	16.61	027	6.14	027
2.8	100	66	11.75	028	10.15	028	16.61	028	6.14	028
2.9	100	66	12.28	029	10.15	029	16.66	029	6.14	029
3.0	100	66	10.88	030	8.69	030	14.12	030	5.81	030
3.1	106	69	13.02	031	10.53	031				
3.2	106	69	12.07	032	10.15	032				
3.3	106	69	12.79	033	11.02	033	17.91	033	6.90	033
3.4	112	73	13.30	034	10.66	034				
3.5	112	73	13.02	035	10.15	035	16.14	035	6.53	035
3.6	112	73	13.48	036	15.28	036	20.46	036	7.97	036
3.7	112	73	13.12	037	11.08	037	19.76	037	8.36	037
3.8	119	78	12.62	038	11.02	038	19.76	038	8.36	038
3.9	119	78	14.13	039	11.23	039	19.75	039	8.69	039
4.0	119	78	13.80	040	11.08	040	17.37	040	7.06	040
4.1	119	78	14.04	041	11.41	041				
4.2	119	78	13.48	042	11.96	042	19.76	042	7.42	042
4.3	126	82	15.04	043	12.37	043	22.07	043	9.61	043
4.4	126	82	13.30	044	12.29	044				
4.5	126	82	14.13	045	12.86	045	20.06	045	8.69	045
4.6	126	82	13.63	046	12.92	046	23.18	046	9.78	046
4.7	126	82	15.77	047	13.38	047	23.18	047	9.96	047
4.8	132	87	15.34	048	14.12	048	23.18	048	10.15	048
4.9	132	87	15.55	049	14.76	049	32.15	049	10.53	049
5.0	132	87	15.77	050	12.86	050	21.00	050	8.36	050
5.1	132	87	17.44	051	15.04	051				

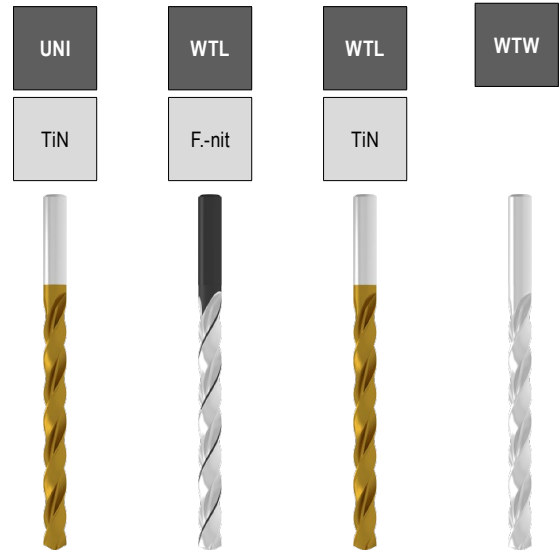
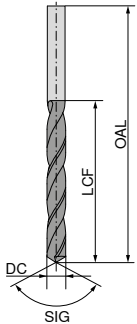
P	●	●	○
M	●	○	
K	●	●	●
N	○	●	○
S	○	○	
H		○	
O	○	○	○

1) uncoated

→ v_c Page 48+49

Twist drills, DIN 340, long

≤ 10xD

SIG 118°
HSS-ESIG 130°
HSS-ESIG 130°
HSSSIG 130°
HSS

DC _{h8} mm	OAL mm	LCF mm	10 270 ...		10 225 ...		10 210 ...		10 200 ...	
			£ T2		£ T2		£ T2		£ T2	
5.2	132	87	17.11	052	15.56	052	25.89	052	11.02	052
5.3	132	87	18.82	053	16.09	053	26.25	053	11.23	053
5.4	139	91	20.55	054	15.91	054				
5.5	139	91	16.39	055	15.51	055	25.17	055	10.66	055
5.6	139	91	21.42	056	16.66	056	30.27	056	17.22	056
5.7	139	91	23.66	057	16.84	057	31.37	057	12.92	057
5.8	139	91	20.77	058	17.35	058	31.13	058	13.38	058
5.9	139	91	23.17	059	17.37	059	33.41	059	13.76	059
6.0	139	91	19.69	060	16.09	060	25.89	060	11.08	060
6.1	148	97	23.35	061	18.44	061				
6.2	148	97	20.94	062	18.28	062				
6.3	148	97	23.35	063	18.45	063	36.54	063	16.14	063
6.4	148	97	21.24	064	19.53	064				
6.5	148	97	20.40	065	17.72	065	28.95	065	12.37	065
6.6	148	97	23.52	066	20.30	066				
6.7	148	97	24.13	067	20.29	067				
6.8	156	102	25.89	068	22.15	068	44.47	068	18.44	068
6.9	156	102	26.84	069	22.60	069				
7.0	156	102	24.36	070	19.75	070	33.95	070	14.82	070
7.1	156	102	23.52	071	23.35	071				
7.2	156	102	26.93	072	24.08	072	46.16	072	27.08	072
7.3	156	102	28.15	073	24.43	073				
7.4	156	102	29.17	074	36.39	074	46.87	074	27.59	074
7.5	156	102	29.68	075	23.35	075	41.33	075	17.72	075
7.6	165	109	31.84	076			48.17	076	20.29	076
7.7	165	109	30.07	077	28.08	077			20.82	077
7.8	165	109	33.15	078	28.95	078	49.97	078	21.00	078
7.9	165	109	31.96	079	29.53	079	48.18	079	30.23	079
8.0	165	109	27.13	080	21.91	080	39.31	080	16.61	080
8.1	165	109	29.91	081	42.55	081				
8.2	165	109	32.62	082	31.37	082				
8.3	165	109	34.58	083	31.13	083				
8.4	165	109	37.17	084	32.65	084	54.10	084	32.50	084
8.5	165	109	31.84	085	27.88	085	50.50	085	21.53	085
8.6	175	115	31.63	086	33.41	086				
8.7	175	115	31.96	087	33.95	087				
8.8	175	115	32.47	088	34.19	088	57.03	088	24.43	088
8.9	175	115	32.99	089	36.33	089				
9.0	175	115	33.46	090	27.12	090	47.44	090	20.06	090
9.1	175	115	33.46	091	51.14	091				
9.2	175	115	33.46	092	39.46	092			40.62	092
9.3	175	115	33.46	093	39.65	093			30.81	093

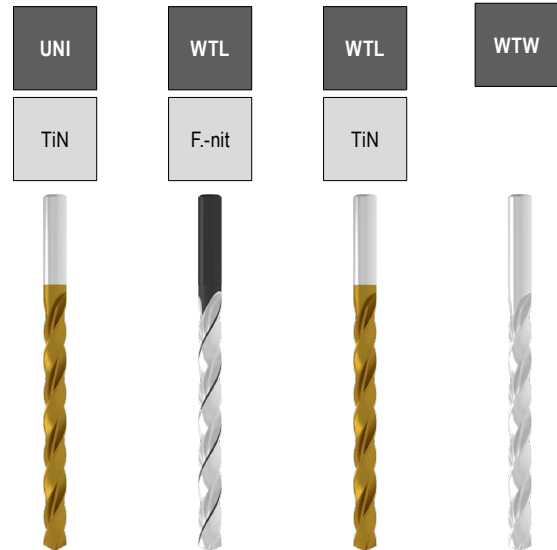
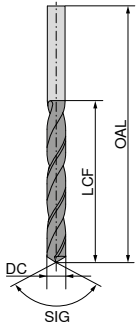
P	●	●	○
M	●	○	
K	●	●	●
N	○	●	○
S	○	○	
H		○	
O	○	○	○

1) uncoated

→ v_c Page 48+49

Twist drills, DIN 340, long

≤ 10xD

SIG 118°
HSS-ESIG 130°
HSS-ESIG 130°
HSSSIG 130°
HSS

DC _{h8} mm	OAL mm	LCF mm	10 270 ...		10 225 ...		10 210 ...		10 200 ...	
			£ T2		£ T2		£ T2		£ T2	
9.4	175	115	33.46	094	56.21	094			44.27	094
9.5	175	115	33.46	095	35.79	095	71.39	095	30.81	095
9.6	184	121	35.44	096					52.37	096
9.7	184	121	37.17	097	48.70	097	90.87	097		
9.8	184	121	39.70	098	48.70	098	97.23	098	39.65	098
9.9	184	121	43.15	099	48.70	099	138.29	099		
10.0	184	121	46.65	100	40.79	100	57.37	100	23.35	100
10.1	184	121	50.97	101						
10.2	184	121	54.44	102	52.40	102	100.45	102	102.08	102
10.3	184	121	58.73	103					69.01	103
10.4	184	121	58.73	104						
10.5	184	121	59.63	105	54.67	105	104.06	105	45.60	105
10.8	195	128			62.37	108				
11.0	195	128	70.78	110	60.08	110	83.61	110	37.10	110
11.5	195	128	71.69	115	74.89	115	139.71	115	60.51	115
11.6	195	128							81.18	116
11.8	195	128			83.00	118			72.70	118
12.0	205	134	72.53	120	75.25	120	105.88	120	45.62	120
12.2	205	134							84.86	122
12.3	205	134							72.70	123
12.5	205	134	79.44	125			108.46	125	47.97	125
13.0	205	134	86.40	130			113.83	130	51.05	130
13.5	214	140	88.08	135						
14.0	214	140	91.58	140			194.99	140	86.14	140
P			●		●		○			
M			●		○					
K			●		●		●			
N			○		●		○		●	
S			○		○					
H					○					
O			○		○		○			

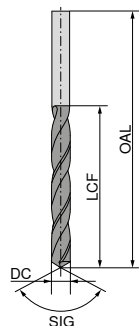
1) uncoated

→ v_c Page 48+49

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

▲ Up to diameter DC of 2.30 mm in uncoated version

> 10xD



DC _{h8} mm	OAL mm	LCF mm	£ T2	10 236 ...	£ T2	10 235 ...
2.0	125	85			11.41	020 ¹⁾
2.1	125	85			14.12	021 ¹⁾
2.2	135	90			14.12	022 ¹⁾
2.3	135	90			14.12	023 ¹⁾
2.4	140	95			14.82	024
2.5	140	95			11.41	025
2.6	140	95			14.82	026
2.7	150	100			15.56	027
2.8	150	100			15.56	028
2.9	150	100			15.56	029
3.0	150	100	22.11	03000	13.23	030
3.1	155	105			16.14	031
3.2	155	105			16.14	032
3.3	155	105	35.23	03300	16.14	033
3.4	165	115			16.61	034
3.5	165	115	25.19	03500	13.23	035
3.6	165	115			16.61	036
3.7	165	115			17.92	037
3.8	175	120			17.92	038
3.9	175	120			17.92	039
4.0	175	120	24.66	04000	13.38	040
4.1	175	120			17.92	041
4.2	175	120	36.31	04200	18.28	042
4.3	185	125			20.30	043
4.4	185	125			20.30	044
4.5	185	125	27.72	04500	14.30	045
4.6	185	125			20.30	046
4.7	185	125			21.05	047
4.8	195	135			21.00	048
4.9	195	135			21.91	049
5.0	195	135	20.69	05000	15.51	050
5.1	195	135			22.60	051
5.2	195	135			23.35	052
5.3	195	135			23.35	053
5.4	205	140			23.35	054
5.5	205	140	29.29	05500	16.66	055
5.6	205	140			23.35	056
5.7	205	140			24.19	057
5.8	205	140			24.08	058
5.9	205	140			24.08	059
6.0	205	140	31.03	06000	16.66	060
6.1	215	150			25.89	061
6.2	215	150			26.04	062
6.3	215	150			27.88	063
6.4	215	150			28.08	064
6.5	215	150	33.37	06500	22.60	065
6.6	215	150			28.08	066
6.7	215	150			29.90	067
6.8	225	155	31.44	06800	29.32	068

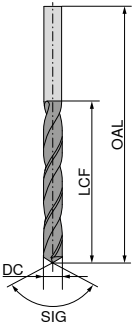
DC _{h8} mm	OAL mm	LCF mm	£ T2	10 236 ...	£ T2	10 235 ...
6.9	225	155			31.37	069
7.0	225	155	28.72	07000	24.19	070
7.1	225	155			47.97	071
7.3	225	155			47.97	073
7.4	225	155			47.97	074
7.5	225	155	32.06	07500	27.12	075
7.7	240	165			37.47	077
7.8	240	165			39.46	078
7.9	240	165			39.65	079
8.0	240	165	31.73	08000	29.32	080
8.1	240	165			45.06	081
8.2	240	165			45.06	082
8.3	240	165			45.06	083
8.4	240	165			47.44	084
8.5	240	165	40.85	08500	37.82	085
8.6	250	175			68.02	086
8.7	250	175			51.05	087
8.8	250	175			53.69	088
9.0	250	175	45.60	09000	41.15	090
9.2	250	175			60.88	092
9.4	250	175			65.31	094
9.5	250	175	45.90	09500	47.59	095
9.6	265	185			67.14	096
9.7	265	185			67.14	097
9.8	265	185			68.25	098
9.9	265	185			68.25	099
10.0	265	185	51.73	10000	42.40	100
10.2	265	185	75.84	10200		
10.5	265	185			75.25	105
11.0	280	195			55.39	110
11.5	280	195			68.07	115
12.0	295	205			64.56	120
12.5	295	205			78.96	125
13.0	295	205			78.62	130
P				●	●	
M				●	●	
K				●	●	
N				●	●	
S				●	●	
H				●	●	
O				○	○	

1) uncoated

→ v_c Page 50

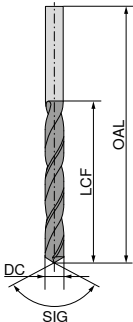
Twist drills, DIN 1869, extra-long,
series 2

▲ Up to diameter DC of 2.00 mm in uncoated version

> 10xD			WTL		WTL	
			TiAlN		F.-nit	
						
			SIG 130° HSS-E		SIG 130° HSS	
			10 246 ...		10 245 ...	
DC _{h8} mm	OAL mm	LCF mm	£ T2		£ T2	
2.0	160	110			22.60	020 ¹⁾
2.5	180	120			22.60	025
3.0	190	130	29.81	03000	17.91	030
3.5	210	145	34.97	03500	17.72	035
4.0	220	150	31.34	04000	18.67	040
4.5	235	160	34.66	04500	20.30	045
5.0	245	170	33.35	05000	20.30	050
5.5	260	180	41.24	05500	24.43	055
6.0	260	180	42.82	06000	24.08	060
6.5	275	190	40.97	06500	27.70	065
7.0	290	200	42.87	07000	30.81	070
7.5	290	200	46.13	07500	36.33	075
8.0	305	210	50.96	08000	35.79	080
8.5	305	210	50.06	08500	56.10	085
9.0	320	220	55.46	09000	54.81	090
9.5	320	220	57.77	09500	62.44	095
10.0	340	235	65.86	10000	57.75	100
10.2	340	235	74.25	10200		
10.5	340	235			83.76	105
11.0	365	250			81.75	110
11.5	365	250			94.47	115
12.0	375	260	95.56	12000	92.11	120
12.5	375	260			92.11	125
13.0	375	260			95.56	130
P				●		●
M						
K				●		●
N				●		●
S						
H						
O				○		○

1) uncoated

→ v_c Page 50+51Twist drills, DIN 1869, extra-long,
series 3

> 10xD			WTL		WTL	
			TiAlN		F.-nit	
						
			SIG 130° HSS-E		SIG 130° HSS	
			10 256 ...		10 255 ...	
DC _{h8} mm	OAL mm	LCF mm	£ T2		£ T2	
2.5	225	150			29.32	025
3.0	240	160			29.32	030
3.5	265	180			24.19	035
4.0	280	190	40.71	04000	24.19	040
4.5	295	200			28.95	045
5.0	315	210	46.08	05000	28.95	050
5.5	330	225			31.37	055
6.0	330	225	53.10	06000	32.41	060
6.5	350	235			35.79	065
7.0	370	250			45.60	070
7.5	370	250			52.40	075
8.0	390	265	63.01	08000	52.31	080
8.5	390	265			67.72	085
9.0	410	280			72.70	090
9.5	410	280			118.43	095
10.0	430	295	86.49	10000	84.86	100
10.5	430	295			92.81	105
11.0	455	310			98.34	110
11.5	455	310			109.01	115
12.0	480	330			116.25	120
12.5	480	330			109.01	125
13.0	480	330			109.96	130
P				●		●
M						
K				●		●
N				●		●
S						
H						
O				○		○

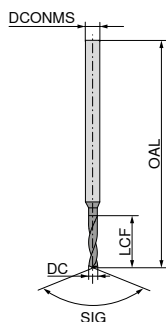
→ v_c Page 50+51

Twist drills, DIN 1899

▲ 4 facet

▲ with reinforced shank

Scope of supply:

Packing quantity 5 pieces (Ø 0.15 mm packing quantity 10 pieces)
price per pieceSIG 118°
HSS-E-PM

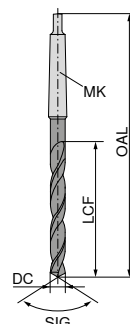
DC mm	OAL mm	LCF mm	DCONMS mm	£ T2	
0.15	25	0.8	1.0	6.77	00150
0.20	25	1.5	1.0	5.57	00200
0.25	25	1.9	1.0	3.79	00250
0.30	25	1.9	1.0	4.25	00300
0.35	25	2.4	1.0	3.91	00350
0.40	25	3.0	1.0	3.91	00400
0.45	25	3.0	1.0	3.91	00450
0.50	25	3.4	1.0	3.91	00500
0.55	25	3.9	1.0	3.91	00550
0.60	25	3.9	1.0	3.91	00600
0.65	25	4.2	1.0	3.91	00650
0.70	25	4.8	1.0	3.79	00700
0.75	25	4.8	1.0	3.79	00750
0.80	25	5.3	1.5	3.91	00800
0.85	25	5.3	1.5	4.07	00850
0.90	25	6.0	1.5	4.07	00900
0.95	25	6.0	1.5	4.07	00950
1.00	25	6.8	1.5	4.07	01000
1.05	25	6.8	1.5	4.07	01050
1.10	25	7.6	1.5	4.07	01100
1.15	25	7.6	1.5	4.07	01150
1.20	25	8.5	1.5	4.07	01200
1.25	25	8.5	1.5	4.07	01250
1.30	25	8.5	1.5	4.17	01300
1.35	25	9.5	1.5	4.07	01350
1.40	25	9.5	1.5	4.07	01400
1.45	25	9.5	1.5	4.07	01450

P	●
M	○
K	○
N	●
S	○
H	○
O	○

→ v_c Page 52

Twist drill, factory standard, short

≤ 3xD

SIG 130°
HSS-E

10 285 ...

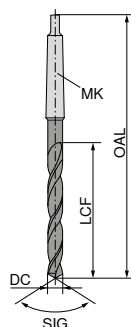
DC mm	OAL mm	LCF mm	MK	£ T2	
13.0	147	66	1	57.75	130
13.5	168	70	2	72.23	135
14.0	168	70	2	71.68	140
14.5	172	74	2	76.90	145
15.0	172	74	2	76.38	150
15.5	176	78	2	114.38	155
16.0	176	78	2	72.23	160
16.5	179	81	2	116.25	165
17.0	179	81	2	75.85	170
17.5	183	85	2	121.79	175
18.0	183	85	2	80.53	180
18.5	186	88	2	122.90	185
19.0	186	88	2	89.65	190
19.5	212	91	3	145.20	195
20.0	212	91	3	104.06	200
21.0	216	95	3	114.91	210
22.0	219	98	3	122.90	220
23.0	222	101	3	130.98	230
24.0	225	104	3	133.93	240
25.0	225	104	3	139.46	250
26.0	256	107	4	193.70	260
27.0	259	110	4	206.98	270
28.0	259	110	4	211.57	280
30.0	263	114	4	231.14	300

P	●
M	●
K	●
N	○
S	○
H	○
O	○

→ v_c Page 45

Twist drills, DIN 345

≤ 5xD



N

vap.



SIG 118°

HSS

WTL



SIG 130°

HSS-E

DC _{h8} mm	OAL mm	LCF mm	MK	10 265 ...		10 280 ...	
				£ T2		£ T2	
10.00	168	87	1	21.53	100	53.51	100 ¹⁾
10.20	168	87	1	24.43	102	54.10	102 ¹⁾
10.50	168	87	1	22.07	105	54.10	105 ¹⁾
10.80	175	94	1	29.53	108	60.51	108 ¹⁾
11.00	175	94	1	22.60	110	57.75	110 ¹⁾
11.20	175	94	1	31.37	112		
11.50	175	94	1	26.25	115	70.12	115 ¹⁾
11.80	175	94	1	33.41	118		
12.00	182	101	1	24.19	120	60.51	120 ¹⁾
12.20	182	101	1	33.66	122	64.98	122 ¹⁾
12.50	182	101	1	24.96	125	61.89	125 ¹⁾
12.80	182	101	1	34.19	128		
13.00	182	101	1	25.89	130	67.90	130 ¹⁾
13.20	182	101	1	34.77	132		
13.50	189	108	1	29.32	135	80.64	135 ¹⁾
13.80	189	108	1	37.47	138		
14.00	189	108	1	27.88	140	71.68	140 ¹⁾
14.25	212	114	2	40.72	142	108.46	142 ¹⁾
14.50	212	114	2	28.95	145	84.86	145 ¹⁾
14.75	212	114	2	44.27	147		
15.00	212	114	2	30.81	150	85.97	150 ¹⁾
15.25	218	120	2	41.15	152	108.93	152 ¹⁾
15.50	218	120	2	32.41	155	81.26	155 ¹⁾
15.75	218	120	2	37.47	157	90.87	157 ¹⁾
16.00	218	120	2	32.41	160	88.49	160 ¹⁾
16.25	223	125	2	49.79	162		
16.50	223	125	2	35.79	165	90.87	165 ²⁾
16.75	223	125	2	41.15	167		
17.00	223	125	2	37.10	170	85.97	170 ²⁾
17.25	228	130	2	45.62	172	100.45	172 ²⁾
17.50	228	130	2	37.28	175	94.47	175 ²⁾
17.75	228	130	2	46.30	177	104.06	177 ²⁾
18.00	228	130	2	39.09	180	98.86	180 ²⁾
18.25	233	135	2	47.97	182		
18.50	233	135	2	42.72	185	94.47	185 ²⁾
18.75	233	135	2	49.79	187		
19.00	233	135	2	43.15	190	100.45	190 ²⁾
19.25	238	140	2	53.69	192		
19.50	238	140	2	48.70	195		
19.75	238	140	2	56.10	197		
20.00	238	140	2	45.60	200	110.12	200 ²⁾
20.25	243	145	2	60.08	202		
20.50	243	145	2	47.44	205		
20.75	243	145	2	60.63	207		
21.00	243	145	2	51.67	210	130.26	210 ²⁾
21.25	248	150	2	64.20	212		
21.50	248	150	2	59.24	215		
21.75	248	150	2	65.52	217		
22.00	248	150	2	57.37	220	140.02	220 ²⁾
22.25	248	150	2	67.33	222		
22.50	253	155	2	60.63	225	172.29	225 ²⁾

DC _{h8} mm	OAL mm	LCF mm	MK	10 265 ...		10 280 ...	
				£ T2		£ T2	
22.75	253	155	2	69.13	227		
23.00	253	155	2	67.14	230	161.59	230 ²⁾
23.50	276	155	3	65.52	235		
23.75	281	160	3	91.87	237		
24.00	281	160	3	70.12	240	176.55	240 ²⁾
24.50	281	160	3	72.70	245		
24.75	281	160	3	100.73	247		
25.00	281	160	3	77.11	250	179.12	250 ²⁾
25.50	286	165	3	78.72	255		
25.75	286	165	3	104.40	257		
26.00	286	165	3	88.77	260	207.93	260 ²⁾
26.50	286	165	3	84.16	265		
26.75	291	170	3	132.48	267		
27.00	291	170	3	86.70	270	240.20	270 ²⁾
27.50	291	170	3	91.11	275		
27.75	291	170	3	129.68	277		
28.00	291	170	3	95.72	280		
28.50	296	175	3	119.77	285		
28.75	296	175	3	186.57	287		
29.00	296	175	3	103.55	290		
29.50	296	175	3	108.11	295		
29.75	296	175	3	137.81	297		
30.00	296	175	3	103.55	300		
30.50	301	180	3	128.97	305		
31.00	301	180	3	125.26	310		
31.50	301	180	3	142.23	315		
32.00	334	185	4	131.53	320		
32.50	334	185	4	151.46	325		
33.00	334	185	4	141.49	330		
33.50	334	185	4	156.79	335		
34.00	339	190	4	165.66	340		
34.50	339	190	4	182.83	345		
35.00	339	190	4	168.43	350		
35.50	339	190	4	194.63	355		
36.00	344	195	4	180.98	360		
36.50	344	195	4	203.48	365		
37.00	344	195	4	198.12	370		
37.50	344	195	4	223.22	375		
38.00	349	200	4	209.76	380		
38.50	349	200	4	251.82	385		
39.00	349	200	4	229.69	390		
39.50	349	200	4	287.97	395		
40.00	349	200	4	238.51	400		
41.00	354	205	4	256.61	410		
42.00	354	205	4	278.92	420		
43.00	359	210	4	296.97	430		
44.00	359	210	4	310.50	440		
45.00	359	210	4	323.94	450		
46.00	364	215	4	337.38	460		
47.00	364	215	4	359.72	470		
48.00	369	220	4	368.95	480		
49.00	369	220	4	386.84	490		
50.00	369	220	4	395.88	500		
51.00	412	225	5	476.85	510		
52.00	412	225	5	512.83	520		
53.00	412	225	5	745.23	530		
54.00	417	230	5	770.20	540		
55.00	417	230	5	782.69	550		

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

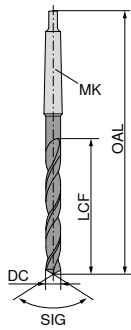
1) nitrided chamfer

2) vaporised

→ v_c Page 47

Twist drills, DIN 341, long

≤ 10xD

SIG 118°
HSSSIG 130°
HSS-E

DC _{h8} mm	OAL mm	LCF mm	MK	10 295 ...		10 297 ...	
				£ T2		£ T2	
10.00	197	116	1	29.32	100	73.28	100 ¹⁾
10.20	197	116	1	33.41	102	69.76	102 ¹⁾
10.50	197	116	1	40.23	105	78.55	105 ¹⁾
10.80	206	125	1	52.01	108		
11.00	206	125	1	31.37	110	57.03	110 ¹⁾
11.20	206	125	1	40.89	112	70.48	112 ¹⁾
11.50	206	125	1	31.37	115	59.78	115 ¹⁾
11.80	206	125	1	42.08	118	52.96	118 ¹⁾
12.00	215	134	1	31.37	120	59.78	120 ¹⁾
12.20	215	134	1	55.37	122	52.23	122 ¹⁾
12.50	215	134	1	31.13	125	80.81	125 ¹⁾
12.80	215	134	1	59.93	128	51.58	128 ¹⁾
13.00	215	134	1	31.13	130	61.89	130 ¹⁾
13.20	215	134	1	59.93	132		
13.50	223	142	1	35.25	135	64.44	135 ¹⁾
13.80	223	142	1	57.75	138	59.24	138 ¹⁾
14.00	223	142	1	34.93	140	72.70	140 ¹⁾
14.25	245	147	2	54.67	142		
14.50	245	147	2	44.36	145	70.66	145 ¹⁾
14.75	245	147	2	54.67	147		
15.00	245	147	2	43.82	150	74.89	150 ¹⁾
15.25	251	153	2	54.67	152		
15.50	251	153	2	42.72	155	73.41	155 ¹⁾
15.75	251	153	2	56.10	157		
16.00	251	153	2	45.62	160	76.22	160 ¹⁾
16.25	257	159	2	61.89	162		
16.50	257	159	2	48.17	165	75.13	165 ²⁾
16.75	257	159	2	60.51	167		
17.00	257	159	2	48.71	170	86.72	170 ²⁾
17.50	263	165	2	54.67	175	83.23	175 ²⁾
17.75	263	165	2	68.25	177		
18.00	263	165	2	54.10	180	88.49	180 ²⁾
18.50	269	171	2	60.63	185	83.23	185 ²⁾
19.00	269	171	2	60.88	190	100.45	190 ²⁾
19.50	275	177	2	70.12	195	101.63	195 ²⁾
20.00	275	177	2	66.60	200	109.38	200 ²⁾
20.50	282	184	2	83.59	205	107.57	205 ²⁾
21.00	282	184	2	76.22	210	128.60	210 ²⁾
21.50	289	191	2	88.49	215		
22.00	289	191	2	83.23	220	139.71	220 ²⁾
22.50	296	198	2	91.87	225		
23.00	296	198	2	86.36	230		
23.50	319	198	3	103.00	235		
24.00	327	206	3	105.88	240	179.12	240 ²⁾
24.50	327	206	3	113.83	245		
25.00	327	206	3	104.78	250	185.95	250 ²⁾
25.50	335	214	3	125.23	255		
26.00	335	214	3	122.49	260		

DC _{h8} mm	OAL mm	LCF mm	MK	10 295 ...		10 297 ...	
				£ T2		£ T2	
26.50	335	214	3	130.98	265		
27.00	343	222	3	130.98	270		
27.50	343	222	3	162.53	275		
28.00	343	222	3	145.92	280		
29.00	351	230	3	168.61	290		
29.50	351	230	3	188.71	295		
30.00	351	230	3	167.87	300		
30.50	360	239	3	214.92	305		
31.00	360	239	3	203.69	310		
31.50	360	239	3	227.09	315		
32.00	397	248	4	218.43	320		
33.00	397	248	4	218.43	330		
33.50	397	248	4	253.46	335		
34.00	406	257	4	270.64	340		
35.00	406	257	4	261.94	350		
36.00	416	267	4	301.23	360		
37.00	416	267	4	340.53	370		
37.50	416	267	4	366.71	375		
38.00	426	277	4	327.43	380		
39.00	426	277	4	349.36	390		
40.00	426	277	4	366.71	400		
42.00	436	287	4	414.88	420		
43.00	447	298	4	445.15	430		
44.00	447	298	4	445.15	440		
45.00	447	298	4	614.56	450		
50.00	470	321	4	611.14	500		

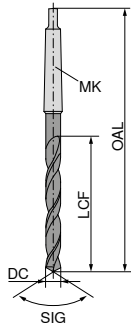
P	○	●
M	○	○
K	●	●
N	○	●
S	○	○
H	○	○
O	○	○

- 1) nitrided chamfer
2) vaporised

→ v_c Page 49

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

> 10xD



WTL

SIG 130°
HSS

10 305 ...

DC _{h8} mm	OAL mm	LCF mm	MK	£ T2	
10.0	285	185	1	56.66	100 ¹⁾
10.5	285	185	1	68.80	105 ¹⁾
11.0	300	195	1	64.44	110 ¹⁾
11.5	300	195	1	67.89	115 ¹⁾
12.0	310	205	1	73.41	120 ¹⁾
12.5	310	205	1	75.85	125 ¹⁾
13.0	310	205	1	75.13	130 ¹⁾
13.5	325	220	1	86.70	135 ¹⁾
14.0	325	220	1	85.97	140 ¹⁾
14.5	340	220	2	89.11	145 ¹⁾
15.0	340	220	2	93.74	150 ¹⁾
15.5	355	230	2	100.45	155 ¹⁾
16.0	355	230	2	96.28	160 ¹⁾
16.5	355	230	2	98.86	165 ²⁾
17.0	355	230	2	98.66	170 ²⁾
17.5	370	245	2	105.88	175 ²⁾
18.0	370	245	2	109.38	180 ²⁾
18.5	370	245	2	120.64	185 ²⁾
19.0	370	245	2	123.20	190 ²⁾
19.5	385	260	2	133.03	195 ²⁾
20.0	385	260	2	140.77	200 ²⁾
21.0	385	260	2	162.53	210 ²⁾
22.0	405	270	2	170.27	220 ²⁾
23.0	405	270	2	199.96	230 ²⁾
24.0	440	290	3	222.83	240 ²⁾
25.0	440	290	3	227.09	250 ²⁾
26.0	440	290	3	244.60	260 ²⁾
28.0	460	305	3	283.89	280 ²⁾
30.0	460	305	3	327.43	300 ²⁾

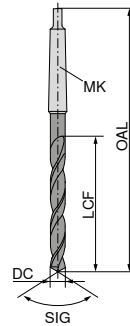
P	●
M	
K	●
N	●
S	
H	
O	○

- 1) nitrided chamfer
2) vaporised

→ v. Page 51

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

> 10xD



WTL

SIG 130°
HSS

10 315 ...

DC _{h8} mm	OAL mm	LCF mm	MK	£ T2	
10.0	360	235	1	79.46	100 ¹⁾
10.5	360	235	1	134.75	105 ¹⁾
11.0	375	250	1	90.87	110 ¹⁾
11.5	375	250	1	98.86	115 ¹⁾
12.0	395	260	1	110.77	120 ¹⁾
13.0	395	260	1	118.06	130 ¹⁾
13.5	410	275	1	126.01	135 ¹⁾
14.0	410	275	1	126.01	140 ¹⁾
14.5	425	275	2	126.73	145 ¹⁾
15.0	425	275	2	125.23	150 ¹⁾
15.5	445	295	2	133.03	155 ¹⁾
16.0	445	295	2	130.98	160 ¹⁾
16.5	445	295	2	149.42	165 ²⁾
17.0	445	295	2	140.77	170 ²⁾
17.5	465	310	2	152.01	175 ²⁾
18.0	465	310	2	158.11	180 ²⁾
18.5	465	310	2	170.27	185 ²⁾
19.0	465	310	2	173.01	190 ²⁾
19.5	490	325	2	260.91	195 ²⁾
20.0	490	325	2	194.99	200 ²⁾
21.0	490	325	2	208.81	210 ²⁾
22.0	515	345	2	248.86	220 ²⁾
23.0	515	345	2	336.45	230 ²⁾
24.0	555	365	3	283.89	240 ²⁾
25.0	555	365	3	288.15	250 ²⁾
26.0	555	365	3	336.11	260 ²⁾
28.0	580	385	3	392.90	280 ²⁾
30.0	580	385	3	454.15	300 ²⁾

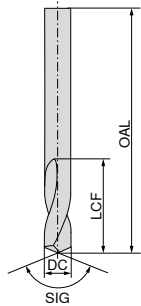
P	●
M	
K	●
N	●
S	
H	
O	○

- 1) nitrided chamfer
2) vaporised

→ v. Page 51

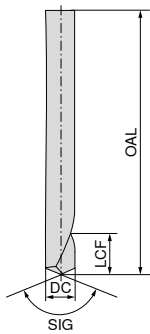
NC spot drills, factory standard

▲ helical flutes



NC-A	NC-A	NC-A	NC-A
	TiN		TiN
SIG 120° HSS	SIG 120° HSS	SIG 90° HSS	SIG 90° HSS
10 510 ...	10 512 ...	10 520 ...	10 522 ...
£ T2	£ T2	£ T2	£ T2
9.78 030	21.44 030	9.43 030	21.44 030
9.96 040	21.81 040	9.61 040	21.81 040
10.53 050	23.21 050	10.15 050	23.21 050
10.50 060	24.42 060	10.15 060	24.42 060
17.37 080	39.35 080	17.35 080	39.35 080
19.76 100	43.40 100	18.13 100	43.40 100
28.25 120	63.44 120	27.88 120	63.44 120
36.59 160	82.93 160	36.33 160	82.93 160
59.00 200	134.93 200	58.50 200	134.93 200

▲ with clamping flat to DIN 1835 B



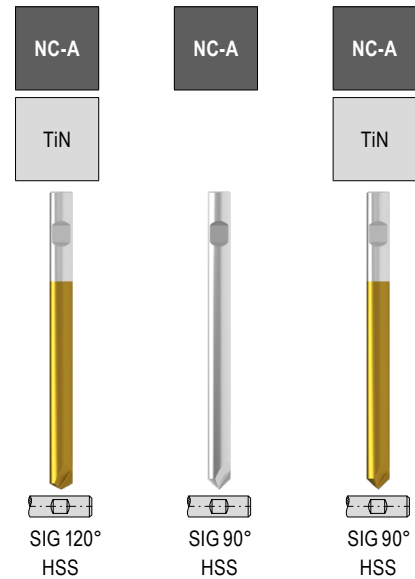
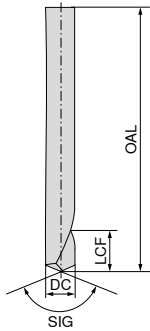
SIG 120° HSS	SIG 90° HSS	SIG 90° HSS		
10 513 ...	10 521 ...	10 523 ...		
£ T2	£ T2	£ T2		
22.23 060	9.96 060	22.23 060		
31.64 080	14.00 080	31.64 080		
35.29 100	15.68 100	35.29 100		
49.60 120	21.78 120	49.60 120		
65.28 160	28.45 160	65.28 160		
94.77 200	40.63 200	94.77 200		
P	15-35	25-55	15-35	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



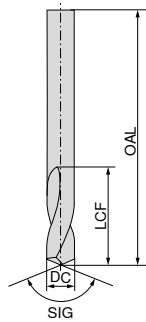
DC _{h6} mm	OAL mm	LCF mm	10 532 ...		10 526 ...		10 528 ...	
			£ T2		£ T2		£ T2	
6	93	7.0	27.70	060	12.20	060	27.70	060
8	117	9.0	43.67	080	19.02	080	43.67	080
10	133	11.5	48.22	100	21.00	100	48.22	100
12	151	14.0	57.21	120	24.95	120	57.21	120
16	178	18.0	88.53	160	38.05	160	88.53	160
20	205	23.0	124.13	200	52.80	200	124.13	200
P			25-55		15-35		25-55	
M			20		10		20	
K			30-55		20-35		30-55	
N			65-85		50-70		65-85	
S								
H								
O								



Suitable only for spot drilling!

NC spot drills, factory standard, long

▲ helical flutes



NC-A



SIG 90°
HSS

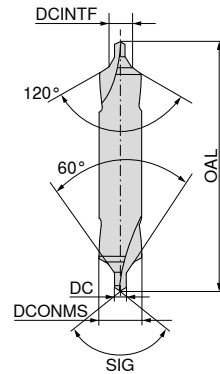
10 525 ...

DC _{h6} mm	OAL mm	LCF mm	£ T2	
6.35	105	17	16.35	025
8.00	118	21	29.90	030
9.52	132	25	30.23	040
12.70	159	30	42.71	050
15.87	186	37	37.63	060
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

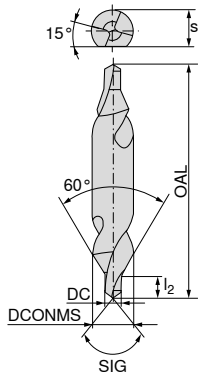


Right-hand
SIG 118°
HSS

10 480 ...

DC mm	DCONMS _{h8} mm	DCINTF _{k12} mm	OAL mm	£ T2	
1.00	4.0	2.12	35.5	9.66	100
1.25	5.0	2.65	40.0	10.71	125
1.60	6.3	3.35	45.0	10.01	160
2.00	8.0	4.25	50.0	10.71	200
2.50	10.0	5.30	56.0	13.19	250
3.15	11.2	6.70	62.0	19.18	315
4.00	14.0	8.50	69.0	25.17	400
5.00	18.0	10.60	77.0	32.65	500
P				15-35	
M				10	
K				20-35	
N				50-70	
S					
H					
O					

Centre drills, DIN 333, form A



ZB

ZB

ZB

ZB

TiN

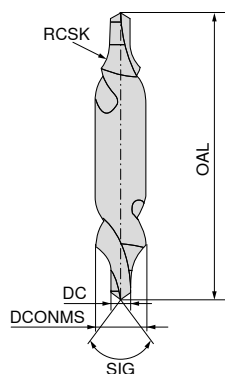
Right-hand
SIG 118°
HSSRight-hand
SIG 118°
HSSLeft-hand
SIG 118°
HSSRight-hand
SIG 118°
HSS-E

DC mm	s mm	DCONMS _{h8} mm	OAL mm	l ₂ mm	10 415 ...		10 425 ...		10 435 ...		10 445 ...	
					£ T2		£ T2		£ T2		£ T2	
0.50		3.15	25.0	0.8	6.86	050 ²⁾	16.54	050 ²⁾	9.66	050 ²⁾		
0.80		3.15	25.0	1.1	6.68	080 ²⁾	15.81	080 ²⁾	9.48	080 ²⁾		
1.00		3.15	31.5	1.3	6.14	100	14.60	100	8.62	100		
1.25		3.15	31.5	1.6	5.31	125	16.69	125	10.01	125		
1.60		4.00	35.5	2.0	5.62	160	13.76	160	9.21	160		
1.60	3.25	4.00	35.5	2.0							10.55	160 ¹⁾
2.00		5.00	40.0	2.5	4.61	200	14.08	200	9.86	200		
2.00	4.20	5.00	40.0	2.5							8.16	200 ¹⁾
2.50		6.30	45.0	3.1	5.31	250	16.54	250	10.55	250		
2.50	5.35	6.30	45.0	3.1							9.21	250 ¹⁾
3.15		8.00	50.0	3.9	8.79	315	20.55	315	13.36	315		
3.15	6.95	8.00	50.0	3.9							12.37	315 ¹⁾
4.00		10.00	56.0	5.0	13.55	400	32.36	400	17.59	400		
4.00	8.40	10.00	56.0	5.0							23.54	400 ¹⁾
5.00		12.50	63.0	6.3	19.51	500	46.39	500	27.59	500		
5.00	10.95	12.50	63.0	6.3							24.79	500 ¹⁾
6.30		16.00	71.0	8.0	28.46	630	68.87	630	40.41	630		
6.30	14.00	16.00	71.0	8.0							57.61	630 ¹⁾
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

Right-hand
SIG 118°
HSSLeft-hand
SIG 118°
HSS

DC mm	DCONMS _{h8} mm	OAL mm	RCSR mm
0.50	3.15	25.0	2.00
0.80	3.15	25.0	2.50
1.00	3.15	31.5	2.90
1.25	3.15	31.5	3.15
1.60	4.00	35.5	4.00
2.00	5.00	40.0	5.00
2.50	6.30	45.0	6.30
3.15	8.00	50.0	8.00
4.00	10.00	56.0	10.00
5.00	12.50	63.0	12.50
6.30	16.00	71.0	16.00

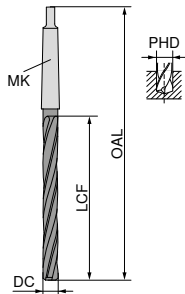
10 455 ...		10 475 ...	
£ T2		£ T2	
7.03	050 ¹⁾		
6.86	080 ¹⁾	13.76	080 ¹⁾
6.14	100	14.41	100
7.03	125	13.06	125
5.81	160	10.50	160
6.14	200	10.66	200
7.03	250	11.02	250
8.97	315	15.51	315
12.85	400	22.07	400
19.72	500	43.76	500
29.36	630		

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

1) Single ended

Core drills (spiral countersinks)

▲ 3 flute

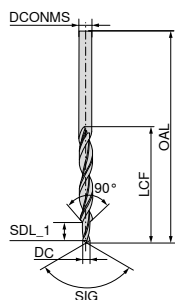
SIG 120°
HSS

10 228 ...

DC _{h8} mm	OAL mm	LCF mm	PHD mm	MK	£ T2	
12.00	182	101	8.4	1	54.64	120
12.75	182	101	9.1	1	42.61	127
13.00	182	101	9.1	1	37.28	130
13.75	189	108	9.8	1	42.56	137
14.00	189	108	9.8	1	37.82	140
14.75	212	114	10.5	2	47.44	147
15.00	212	114	10.5	2	42.56	150
15.75	218	120	11.2	2	50.00	157
16.00	218	120	11.2	2	44.47	160
16.75	223	125	11.9	2	52.31	167
17.00	223	125	11.9	2	47.44	170
17.75	228	130	12.6	2	54.81	177
18.00	228	130	12.6	2	47.44	180
18.70	233	135	13.3	2	55.37	187
19.00	233	135	13.3	2	54.26	190
19.70	238	140	14.0	2	55.37	197
20.00	238	140	14.0	2	54.26	200
20.70	243	145	14.6	2	63.18	207
21.00	243	145	14.6	2	63.46	210
21.70	248	150	15.3	2	64.75	217
22.00	248	150	15.3	2	64.02	220
22.70	253	155	16.0	2	70.38	227
23.00	253	155	16.0	2	69.67	230
23.70	281	160	16.6	3	73.31	237
24.00	281	160	16.6	3	72.23	240
24.70	281	160	17.3	3	78.20	247
25.00	281	160	17.3	3	78.22	250
25.70	286	165	18.0	3	81.80	257
26.00	286	165	18.0	3	82.48	260
26.70	291	170	18.6	3	97.23	267
27.00	291	170	18.6	3	95.38	270
27.70	291	170	19.3	3	96.28	277
28.00	291	170	19.3	3	96.15	280
28.70	296	175	20.0	3	105.32	287
29.00	296	175	20.0	3	106.45	290
29.70	296	175	20.5	3	112.00	297
30.00	296	175	20.5	3	110.12	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

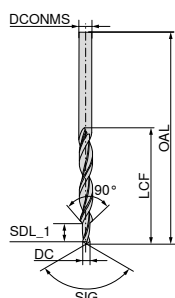


SIG 118°
HSS

10 365 ...

For threads	DC _{h9} mm	DCONMS _{h8} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	2.5	3.4	70	8.8	39	24.63	030
M4	3.3	4.5	80	11.4	47	26.99	040
M5	4.2	5.5	93	13.6	57	27.88	050
M6	5.0	6.6	101	16.5	63	31.13	060
M8	6.8	9.0	125	21.0	81	34.93	080
M10	8.5	11.0	142	25.5	94	45.60	100
M12	10.2	13.5	160	30.0	108	57.03	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



SIG 118°
HSS

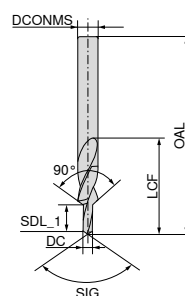
10 355 ...

For threads	DC _{h9} mm	DCONMS _{h8} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	3.2	6.0	93	9	57	28.95	030
M4	4.3	8.0	117	11	75	33.48	040
M5	5.3	10.0	133	13	87	42.08	050
M6	6.4	11.5	142	15	94	63.96	060
M8	8.4	15.0	169	19	114	79.32	080
M10	10.5	19.0	198	23	135	122.49	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

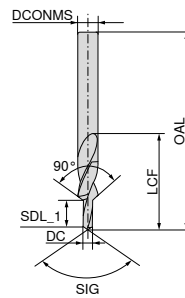


SIG 118°
HSS

10 320 ...

For threads	DC _{h6} mm	DCONMS _{h6} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	2.5	3.4	52	8.8	20	15.91	030
M4	3.3	4.5	58	11.4	24	16.14	040
M5	4.2	5.5	66	13.6	28	17.37	050
M6	5.0	6.6	70	16.5	31	18.44	060
M8	6.8	9.0	84	21.0	40	21.37	080
M10	8.5	11.0	95	25.5	47	27.70	100
M12	10.2	13.5	107	30.0	54	35.50	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



SIG 118°
HSS

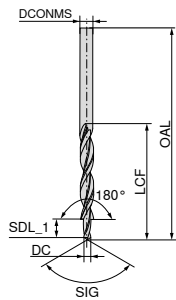
10 330 ...

For threads	DC _{h6} mm	DCONMS _{h6} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	3.2	6.0	66	9	28	18.44	030
M4	4.3	8.0	79	11	37	21.05	040
M5	5.3	10.0	89	13	43	25.89	050
M6	6.4	11.5	95	15	47	29.53	060
M8	8.4	15.0	111	19	56	33.48	080
M10	10.5	19.0	127	23	64	49.97	100

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

Stepped drills, DIN 8376

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



SB

vap.

SIG 118°
HSS

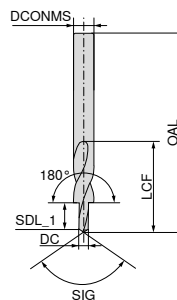
10 375 ...

For threads	DC _{h9} mm	DCONMS _{h8} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	3.4	6	93	9	57	28.95	030 ¹⁾
M4	4.5	8	117	11	75	33.48	040
M5	5.5	10	133	13	87	40.19	050
M6	6.6	11	142	15	94	46.16	060
M8	9.0	15	169	19	114	59.24	080
M10	11.0	18	191	23	130	123.20	100
P							15-35
M							10
K							20-35
N							50-80
S							
H							
O							

1) DCONMS not according to DIN 974-1

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

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



SB

SIG 118°
HSS

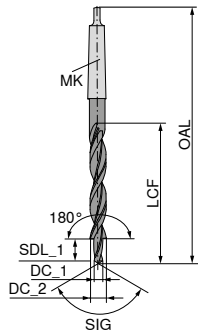
10 340 ...

For threads	DC _{h6} mm	DCONMS _{h6} mm	OAL mm	SDL_1 mm	LCF mm	£ T2	
M3	3.4	6	66	9	28	17.91	030 ¹⁾
M4	4.5	8	79	11	37	20.29	040
M5	5.5	10	89	13	43	24.63	050
M6	6.6	11	95	15	47	28.95	060
M8	9.0	15	111	19	56	36.91	080
M10	11.0	18	123	23	62	54.10	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



SIG 118°
HSS

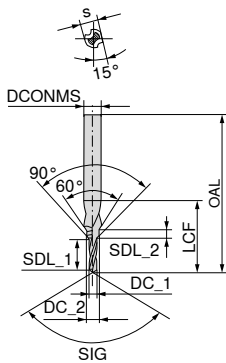
10 405 ...

For threads	DC_1 _{h9} mm	DC_2 mm	OAL mm	SDL_1 mm	LCF mm	MK	£ T2	
M6	6.6	11	175	15	94	1	59.24	060
M8	9.0	15	212	19	114	2	78.06	080
M10	11.0	18	228	23	130	2	104.06	100
M12	13.5	20	238	27	140	2	126.01	120
M14	15.5	24	281	31	160	3	161.59	140
M16	17.5	26	286	35	165	3	189.46	160

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

Stepped drills for centring, factory standard

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



SB

vap.

SIG 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	£ T2	
M4	3.3	8.0	4.3	6.75	63	11.0	23	1.60	66.99	040
M5	4.2	10.0	5.3	8.45	67	13.0	27	2.15	76.22	050
M6	5.0	12.5	6.4	10.45	71	16.0	33	2.90	83.23	060
M8	6.8	14.0	8.4	12.50	88	19.5	41	3.50	78.77	080
M10	8.5	16.0	10.5	14.85	94	23.0	47	4.70	88.49	100
M12	10.2	20.0	13.0	18.45	105	28.0	59	6.50	116.74	120
M16	14.0	25.0	17.0	23.40	132	33.0	67	8.30	166.03	160
M20	17.5	31.5	21.0	29.35	145	38.0	77	10.35	222.83	200
P										15-35
M										10
K										20-35
N										50-80
S										
H										
O										

Material examples for cutting data tables

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

* Tensile strength

Cutting data standard values – Hole depth 3xD

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



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

	Index	10 106 ...		10 109 ...		10 110 ...		10 285 ...	
		Type WNX		Type WT		Type WT-TiN		Type WT-MK	
		v_c m/min	F	v_c m/min	F	v_c m/min	F	v_c m/min	F
	P.1.1	38	6	38	6	44	6	38	6
	P.1.2	32	5	32	5	37	5	32	5
	P.1.3	29	5	29	5	33	5	29	5
	P.1.4	27	5	27	5	31	5	27	5
	P.1.5	23	5	23	5	26	5	23	5
	P.2.1	28	6	25	5	29	5	25	5
	P.2.2	20	5	18	4	20	4	18	4
	P.2.3	17	5	15	4	17	4	15	4
	P.2.4	15	4	14	3	16	3	14	3
	P.3.1	18	4	16	4	18	4	16	4
	P.3.2	14	3	12	3	14	3	12	3
	P.3.3	13	3	12	3	14	3	12	3
	P.4.1	13	3	14	3	17	3	14	3
	P.4.2	12	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	40	6	35	6	40	6	35	6
	K.1.2	32	6	28	6	32	6	28	6
	K.2.1	34	6	30	6	34	6	30	6
	K.2.2	26	5	23	5	26	5	23	5
	K.3.1	34	6	30	6	34	6	30	6
	K.3.2	26	5	23	5	26	5	23	5
	N.1.1								
	N.1.2								
	N.2.1	60	6						
	N.2.2	48	5						
	N.2.3	42	5						
	N.3.1	56	5	62	5	71	5	62	5
	N.3.2	34	4	37	4	43	4	37	4
	N.3.3	45	4						
	N.4.1	55	5						
	S.1.1	6	2	8	1	9	1	8	1
	S.1.2	5	1	6	1	7	1	6	1
	S.2.1	5	2	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	5	1	4	1	5	1	4	1
	H.1.2								
	H.1.3								
	H.1.4								
	H.2.1	9	3	8	3	9	3	8	3
	H.3.1								
	O.1.1	20	4						
	O.1.2								
	O.2.1	20	4						
	O.2.2	20	4						
	O.3.1								



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



v_c = Cutting speed in m/min.
F = Factor for feed selection
Feed approximate values see → Page 53

Cutting data standard values – Hole depth 5xD

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



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

	Index	10 161 ...		10 168 ...		10 170 ...		10 265 ...		10 280 ...	
		Type W		Type WTL		Type WTL-TiN		Type N-MK		Type WTL-MK	
		v_c m/min	F	v_c m/min	F	v_c m/min	F	v_c m/min	F	v_c m/min	F
	P.1.1			32	6	37	6	28	6	32	6
	P.1.2			27	5	31	5	24	5	27	5
	P.1.3			24	5	28	5	21	5	24	5
	P.1.4			23	5	26	5	20	5	23	5
	P.1.5			19	5	22	5	17	5	19	5
	P.2.1			20	5	22	5	17	4	20	5
	P.2.2			14	4	16	4	12	3	14	4
	P.2.3			12	4	13	4	10	3	12	4
	P.2.4			11	3	12	3	9	2	11	3
	P.3.1			15	4	17	4	13	4	15	4
	P.3.2			11	3	13	3			11	3
	P.3.3			10	3	12	3			10	3
	P.4.1			10	3	12	3			10	3
	P.4.2			10	2	11	2			10	2
	M.1.1			9	3	11	3			9	3
	M.2.1			8	2					8	2
	M.3.1										
	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			29	6	34	6	26	6	29	6
	K.2.2			22	5	26	5	20	5	22	5
	K.3.1			29	6	34	6	26	6	29	6
	K.3.2			22	5	26	5	20	5	22	5
	N.1.1	70	7	69	7					69	7
	N.1.2	70	7	69	7					69	7
	N.2.1	60	6	58	6	66	6	50	6	58	6
	N.2.2			46	5	53	5	40	5	46	5
	N.2.3			40	5	46	5	35	5	40	5
	N.3.1			69	5	79	5	60	5	69	5
	N.3.2			41	4	48	4	36	4	41	4
	N.3.3	56	4	55	4	63	4	48	4	55	4
	N.4.1	60	6	6	6	60	6	45	6	50	6
	S.1.1			7	2	8	2			7	2
	S.1.2			6	1	6	1			6	1
	S.2.1			6	2	7	2			6	2
	S.2.2			3	1	4	1			3	1
	S.2.3			4	1	5	1			4	1
	S.3.1			6	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			9	3	11	3			9	3
	H.3.1										
	O.1.1			23	4	26	4	20	5	23	4
	O.1.2			23	4	26	4	20	5	23	4
	O.2.1			23	4	26	4	20	5	23	4
	O.2.2			23	4	26	4	20	5	23	4
	O.3.1										



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



v_c = Cutting speed in m/min.
F = Factor for feed selection
Feed approximate values see → Page 53

Cutting data standard values – Hole depth 10xD

Index	10 224 ...		10 270 ...		10 225 ...		10 210 ...	
	Type NC-TiALN		Type UNI-TiN		Type WTL		Type WTL-TiN	
	v _c m/min	F	v _c m/min	F	v _c m/min	F	v _c m/min	F
P.1.1	41	7	41	6	29	6	29	6
P.1.2	34	6	35	5	25	5	25	5
P.1.3	30	6	31	5	22	5	22	5
P.1.4	28	6	29	5	20	5	20	5
P.1.5	24	6	25	5	17	5	17	5
P.2.1	25	5	31	5	18	5	18	5
P.2.2	17	4	22	4	12	4	12	4
P.2.3	15	4	19	4	11	4	11	4
P.2.4	14	3	17	3	10	3	10	3
P.3.1	19	5	16	4	13	4	13	4
P.3.2			12	3	10	3	10	3
P.3.3			10	2	8	3	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	43	7	37	6	31	6	31	6
K.1.2	35	7	30	6	25	6	25	6
K.2.1	37	7	32	6	26	6	26	6
K.2.2	28	6	24	5	20	5	20	5
K.3.1	37	7	32	6	26	6	26	6
K.3.2	28	6	24	5	20	5	20	5
N.1.1					62	7		
N.1.2					62	7		
N.2.1	72	7	67	6	52	6	52	6
N.2.2	58	6	54	5	41	5	41	5
N.2.3	51	6	47	5	36	5	36	5
N.3.1	87	6	62	5	62	5	62	5
N.3.2	52	5	37	4	37	4	37	4
N.3.3	70	5	50	4	50	4	50	4
N.4.1	50	6	50	6	50	6	50	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	29	6	26	4	21	4	21	4
O.1.2	29	6	26	4	21	4	21	4
O.2.1	29	6	26	4	21	4	21	4
O.2.2	29	6	26	4	21	4	21	4
O.3.1								



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

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



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



v_c = Cutting speed in m/min.
F = Factor for feed selection
Feed approximate values see → Page 53

Cutting data standard values – hole depth greater than 10xD

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



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

	Index	10 246 ...		10 256 ...		10 305 ...		10 315 ...	
		Type WTL-TiAlN-R2		Type WTL-TiAlN-R3		Type WTL-MK-R1		Type WTL-MK-R2	
		v_c m/min	F	v_c m/min	F	v_c m/min	F	v_c m/min	F
	P.1.1	24	5	24	5	21	5	21	5
	P.1.2	21	4	21	4	18	4	18	4
	P.1.3	18	4	18	4	16	4	16	4
	P.1.4	17	4	17	4	15	4	15	4
	P.1.5	14	4	14	4	13	4	13	4
	P.2.1	15	4	15	4	13	4	13	4
	P.2.2	10	3	10	3	9	3	9	3
	P.2.3	9	3	9	3	8	3	8	3
	P.2.4	8	2	8	2	7	2	7	2
	P.3.1	11	3	11	3	10	3	10	3
	P.3.2	8	2	8	2	7	2	7	2
	P.3.3	7	2	7	2	6	2	6	2
	P.4.1								
	P.4.2								
	M.1.1								
	M.2.1								
	M.3.1								
	K.1.1	26	5	26	5	23	5	23	5
	K.1.2	21	5	21	5	18	5	18	5
	K.2.1	22	5	22	5	19	5	19	5
	K.2.2	17	4	17	4	15	4	15	4
	K.3.1	22	5	22	5	19	5	19	5
	K.3.2	17	4	17	4	15	4	15	4
	N.1.1	52	6	52	6	45	6	45	6
	N.1.2	52	6	52	6	45	6	45	6
	N.2.1	43	5	43	5	38	5	38	5
	N.2.2	35	4	35	4	30	4	30	4
	N.2.3	30	4	30	4	26	4	26	4
	N.3.1	52	4	52	4	45	4	45	4
	N.3.2	31	3	31	3	27	3	27	3
	N.3.3	41	3	41	3	36	3	36	3
	N.4.1	60	6	60	6	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	17	3	17	3	15	3	15	3
	O.1.2	17	3	17	3	15	3	15	3
	O.2.1	17	3	17	3	15	3	15	3
	O.2.2	17	3	17	3	15	3	15	3
	O.3.1								



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



v_c = Cutting speed in m/min.
F = Factor for feed selection
Feed approximate values see → Page 53

Cutting data standard values – micro drills

Index	v _c m/min	10 103 ...						
		Ø 0,15	Ø 0,20–0,25	Ø 0,30–0,35	Ø 0,40–0,55	Ø 0,60–0,75	Ø 0,80–0,95	Ø 1,00–1,45
		f (mm/rev)						
P.1.1	33	0,009	0,011	0,015	0,019	0,026	0,031	0,050
P.1.2	28	0,007	0,009	0,011	0,014	0,020	0,024	0,041
P.1.3	25	0,007	0,009	0,011	0,014	0,020	0,024	0,041
P.1.4	23	0,007	0,009	0,011	0,014	0,020	0,024	0,041
P.1.5	20	0,007	0,009	0,011	0,014	0,020	0,024	0,041
P.2.1	20	0,005	0,007	0,009	0,011	0,015	0,020	0,035
P.2.2	14	0,004	0,005	0,007	0,008	0,012	0,016	0,029
P.2.3	12	0,004	0,005	0,007	0,008	0,012	0,016	0,029
P.2.4	11	0,003	0,004	0,005	0,007	0,009	0,013	0,024
P.3.1	15	0,005	0,007	0,009	0,011	0,015	0,020	0,035
P.3.2	11	0,004	0,005	0,007	0,008	0,012	0,016	0,029
P.3.3	10	0,004	0,005	0,007	0,008	0,012	0,016	0,029
P.4.1	11	0,004	0,005	0,007	0,008	0,012	0,016	0,029
P.4.2	10	0,003	0,004	0,005	0,007	0,009	0,013	0,024
M.1.1	9	0,004	0,005	0,007	0,008	0,012	0,016	0,029
M.2.1	8	0,004	0,005	0,007	0,008	0,012	0,016	0,029
M.3.1								
K.1.1	35	0,009	0,011	0,015	0,019	0,026	0,031	0,050
K.1.2	28	0,009	0,011	0,015	0,019	0,026	0,031	0,050
K.2.1	30	0,009	0,011	0,015	0,019	0,026	0,031	0,050
K.2.2	23	0,007	0,009	0,011	0,014	0,020	0,024	0,041
K.3.1	30	0,009	0,011	0,015	0,019	0,026	0,031	0,050
K.3.2	23	0,007	0,009	0,011	0,014	0,020	0,024	0,041
N.1.1	70	0,012	0,014	0,019	0,024	0,034	0,038	0,060
N.1.2	70	0,012	0,014	0,019	0,024	0,034	0,038	0,060
N.2.1	59	0,009	0,011	0,015	0,019	0,026	0,031	0,050
N.2.2	47	0,007	0,009	0,011	0,014	0,020	0,024	0,041
N.2.3	41	0,007	0,009	0,011	0,014	0,020	0,024	0,041
N.3.1	70	0,007	0,009	0,011	0,014	0,020	0,024	0,041
N.3.2	42	0,005	0,007	0,009	0,011	0,015	0,020	0,035
N.3.3	56	0,005	0,007	0,009	0,011	0,015	0,020	0,035
N.4.1	42	0,007	0,009	0,011	0,014	0,020	0,024	0,041
S.1.1	7	0,003	0,004	0,005	0,007	0,009	0,013	0,024
S.1.2	6	0,002	0,003	0,004	0,005	0,007	0,010	0,020
S.2.1	6	0,003	0,004	0,005	0,007	0,009	0,013	0,024
S.2.2	4	0,002	0,003	0,004	0,005	0,007	0,010	0,020
S.2.3	4	0,002	0,003	0,004	0,005	0,007	0,010	0,020
S.3.1	6	0,003	0,004	0,005	0,007	0,009	0,013	0,024
S.3.2	4	0,002	0,003	0,004	0,005	0,007	0,010	0,020
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	0,007	0,009	0,011	0,014	0,020	0,024	0,041
O.1.2	23	0,007	0,009	0,011	0,014	0,020	0,024	0,041
O.2.1	23	0,007	0,009	0,011	0,014	0,020	0,024	0,041
O.2.2	23	0,007	0,009	0,011	0,014	0,020	0,024	0,041
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



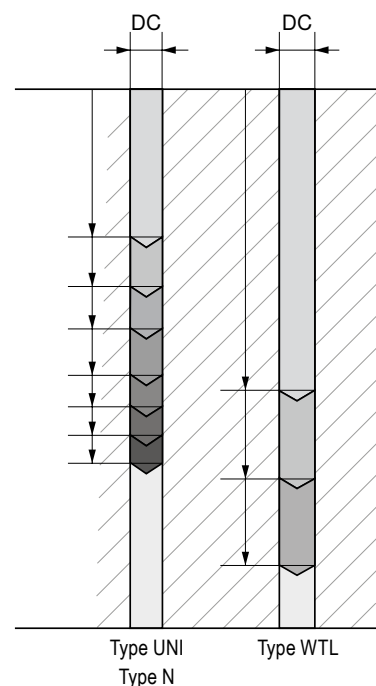
All the indicated data are guide values only and represent average values.

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	12.500	10.000	8.000	6.300	5.000	4.000	3.200	2.500	2.000	1.600	1.250	1.000	800	630	500	400	320
63	10.000	8.000	6.300	5.000	4.000	3.200	2.500	2.000	1.600	1.250	1.000	800	630	500	400	320	250
50	8.000	6.300	5.000	4.000	3.200	2.500	2.000	1.600	1.250	1.000	800	630	500	400	320	250	200
40	6.300	5.000	4.000	3.200	2.500	2.000	1.600	1.250	1.000	800	630	500	400	320	250	200	160
32	5.000	4.000	3.200	2.500	2.000	1.600	1.250	1.000	800	630	500	400	320	250	200	160	125
25	4.000	3.200	2.500	2.000	1.600	1.250	1.000	800	630	500	400	320	250	200	160	125	100
20	3.200	2.500	2.000	1.600	1.250	1.000	800	630	500	400	320	250	200	160	125	100	80
16	2.500	2.000	1.600	1.250	1.000	800	630	500	400	320	250	200	160	125	100	80	63
12	2.000	1.600	1.250	1.000	800	630	500	400	320	250	200	160	125	100	80	63	50
10	1.600	1.250	1.000	800	630	500	400	320	250	200	160	125	100	80	63	50	40
8	1.250	1.000	800	630	500	400	320	250	200	160	125	100	80	63	50	40	32
6	1.000	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

- ▲ Cutting edge needs to be sufficiently cooled; this is achieved by removing chips from the hole.
- ▲ Chip removal frequency depends on the material to be machined, the hole depth and the drill type used.
- ▲ Using a drill with a flat flute profile (WTL) significantly improves chip transport, which makes it possible to reduce the number of chip removal processes.
- ▲ When drilling into tough materials and materials that tend to jam, chips should be removed for hole depths $\geq 4xD$ and the cutting speed v_c reduced as follows: by 10% for hole depths $> 4xD$, by 15-20% for hole depths $> 6xD$. It is also recommended to cool using emulsion.
- ▲ In the case of deep holes and to improve the positional accuracy, it is recommended to bore a pilot/centring hole.
- ▲ Drills with coolant holes and a thro' coolant supply are recommended for extremely deep holes or horizontal drilling applications.



Coatings

TiN

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

TiAlN

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

vap.

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

F.-nit

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

Cutting materials

HSS

- ▲ Conventional high speed steel
- ▲ Universal cutting material

HSS-E

- ▲ Cobalt-alloyed high speed steel
- ▲ Cutting material with increased elevated-temperature hardness and heat resistance as well as wear resistance
- ▲ Suitable for high cutting temperatures and difficult-to-machine materials

HSS-E-
PM

- ▲ Cobalt-alloyed high speed steel, produced using powder metallurgy
- ▲ Cutting material with a very tight and homogeneous structure
- ▲ High hardness, heat resistance and wear resistance

