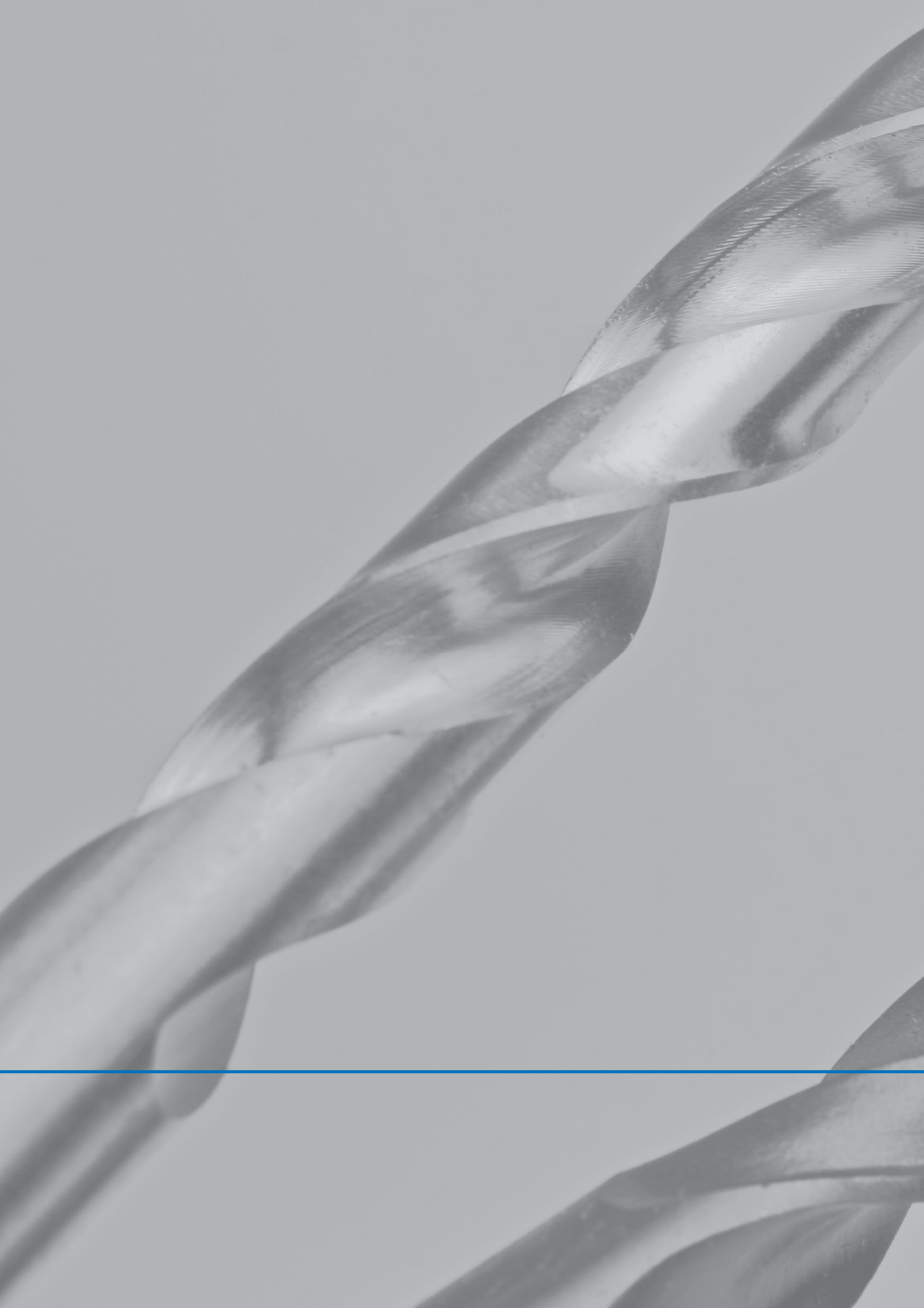


► DRILLING



A close-up, grayscale photograph of a metal drill bit, showing its sharp, double-fluted design. The bit is oriented diagonally from the top left towards the bottom right, filling the background of the page. The lighting highlights the metallic texture and the precision of the manufacturing.

DRILLING

Drilling is a mechanic separation processes, aimed at producing circular holes into a material by machining. The hole is referred to as bore. There is a differentiation between through holes and blind holes. In order to cut a thread into those bores, a tap hole has to be drilled. Tap holes have a distinctive size, matched with the required thread. Those drills are referred to as tap hole drills. Corresponding tap hole sizes can be found in the tap tables. These dimensions have to be maintained in any case while cutting threads.

► DRILLS

DRILLS DIN 345 · 20 · HSS

Description

DIN 345 = Twist drill with
Morse taper shank
20 = Diameter $d = 20$ mm
HSS = High-speed steel

► TWIST DRILLS

DIN 345

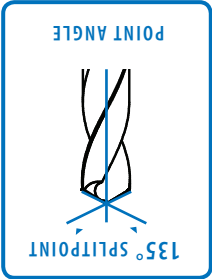
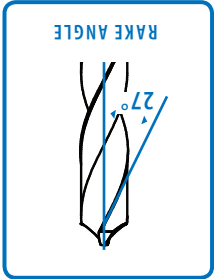
Twist drills according to DIN 345 have a rake angle of 27° , a point angle of 118° , as well as a Morse taper shank according to DIN 228 form B. The spiral coils are milled when the material is still soft.



MORSE TAPER SHANK

▶ SHORT TWIST DRILLS

DIN 338



Short twist drills have a rank angle (sometimes referred to as angle of twist) of 27°, a point angle between 118° and 135° as well as a cylindrical shank. Type N is suitable for standard chipping materials. A distinction is made between roll forged and fully ground twist drills, depending on the production process.

When producing roll forged drills, the slugs are heated and formed into spiral coils. Fully ground drills get their spiral coil cut while being fully hardened. For a better distinction between the different types of twist drills, the following finishes are assigned to the different drills:

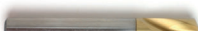
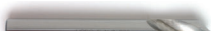
FULLY GROUND
= bright finish

ROLL FORGED
= black finish

FULLY GROUND HSSE
= amber finish



APPLICATION TABLE TWIST DRILLS

DIN		ARTICLE NO.	MATERIAL	COATING
DIN 338		03440	HSSR	Burnished
DIN 338		03445	HSSG	
DIN 338		03446	HSSG	TiN
DIN 338		03447	HSSE	HSS-Co
DIN 338		03460	HSSR	Burnished
DIN 338		03461	HSSR	Burnished
DIN 338		03462	HSSR	Burnished
DIN 340		03452	HSSG	
DIN 345		03454	HSS	Burnished
DIN 345		03463	HSSG	Burnished
DIN 345		03464	HSSE	HSS-Co
Factory Standard		03453	HSSG	
DIN 1897		03458	HSSR	Burnished
DIN 1897		03456	HSSG	
DIN 1897		03459	HSSE	HSS-Co
~DIN 1897		03466	HSS	Burnished
~DIN 1897		03465	HSSG	HSS-Co
Factory Standard		03467	HSSE	HSS-Co
Factory Standard		03468	HSSE	Tin HSS-Co
Factory Standard		03469	HSSE	HSS-Co
Factory Standard		03470	HSSE	Tin HSS-Co

POINT ANGLE	DESCRIPTION	APPLICATION	PAGE
118°	Short twist drill, roll forged, chisel edge	Standard bore – steel and cast steel up to 800 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	348
135°	Short twist drill, fully ground, split point	Standard bore – steel and cast steel up to 900 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	348
135°	Short twist drill, fully ground with TiN coating, split point	Standard bore – steel and cast steel up to 900 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	348
135°	Short twist drill, fully ground (gold-finish), cobalt alloyed, split point	Standard bore – alloyed and unalloyed steels and casts over 800 N/mm ² , high-alloyed steels and Q&T steels, case hardening steels	348
118°	Short twist drill red. 8mm, roll forged with reduced shank, chisel edge	Standard bore – steel and cast steel up to 800 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	352
118°	Short twist drill red. 10mm, roll forged with reduced shank, chisel edge	Standard bore – steel and cast steel up to 800 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	352
118°	Short twist drill red. 13mm, roll forged with reduced shank, chisel edge	Standard bore – steel and cast steel up to 800 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	352
135°	Long twist drill, fully ground, split point	Deep bore – steel and cast steel, grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	353
118°	Morse taper drill, extruded, chisel edge	Standard bore – steel and cast steel up to 900 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	354
118°	Morse taper drill, milled, split point DIN 1412A, chisel edge	Standard bore – steel and cast steel up to 900 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	354
118°	Morse taper drill, milled, cobalt alloyed, split point DIN 1412A, chisel edge	Standard machine bore – alloyed and unalloyed steels and casts over 800 N/mm ² , high-alloyed steels and Q&T steels, case hardening steels	354
118°	Double end drill, fully ground, split point	Thin materials at body construction or rivet holes	357
135°	Extra short twist drill, roll forged, chisel edge	Thin materials at body construction or rivet holes	358
135°	Extra short twist drill, fully ground, split point	Thin materials at body construction or rivet holes	358
135°	Extra short twist drill, fully ground (gold-finish), cobalt alloyed, split point	Thin materials – alloyed and unalloyed steels and casts over 800 N/mm ² , high-alloyed steels and Q&T steels, case hardening steels	358
118°	Extra short twist drill, point angle	Extra thin materials – metal sheet (steel, brass, aluminium), plastic sheets, body and metal construction	361
118°	Extra short twist drill, fully ground, split point	Extra thin materials – metal sheet (steel, brass, aluminium), plastic sheets, body and metal construction	361
90°	NC spot drill 90°, fully ground, cobalt alloyed	For usage in CNC machines and for centring and chamfering	362
90°	NC spot drill 90°, fully ground with TiN coating, cobalt alloyed	For usage in CNC machines and for centring and chamfering	362
120°	NC spot drill 120°, fully ground, cobalt alloyed	For usage in CNC machines and for centring and chamfering	362
120°	NC spot drill 120°, fully ground with TiN coating, cobalt alloyed	For usage in CNC machines and for centring and chamfering	362

APPLICATION TABLE TWIST DRILLS

DIN		ARTICLE NO.	MATERIAL	COATING
DIN 1869/1		03471	HSSG	
DIN 1869/2		03472	HSSG	
DIN 1869/3		03473	HSSG	
Factory Standard		03474	HSS	
Factory Standard		03475	HSS	TiN
~DIN 1897		03478	HSSE	HSS-Co
~DIN 1897		03479	HSSE	TiN HSS-Co
Factory Standard		03480	HSSE	HSS-Co
Factory Standard		03490	HSSE	TiN HSS-Co
DIN 8374		03486	HSS	Burnished
DIN 8376		03488	HSS	Burnished
DIN 8378		03489	HSS	Burnished
Factory Standard		04502	HSSG	

POINT ANGLE	DESCRIPTION	APPLICATION	PAGE
130°	Deep-hole twist drill series 1, fully ground, split point	Extra deep bore – grey cast iron and steels up to 1000 N/mm ²	363
130°	Deep-hole twist drill series 2, fully ground, split point	Extra deep bore – grey cast iron and steels up to 1000 N/mm ²	363
130°	Deep-hole twist drill series 3, fully ground, split point	Extra deep bore – grey cast iron and steels up to 1000 N/mm ²	364
118°	Milling drill, fully ground	Special milling drill – drilling and milling of metal, wood and plastic	364
118°	Milling drill, fully ground with TiN coating	Special milling drill – drilling and milling of metal, wood and plastic	364
	Spot weld drill, fully ground, cobalt alloyed, special tip	Alloyed and unalloyed steels and casts up to 900 N/mm ² , high-alloyed steels and Q&T steels, case hardening steels	365
	Spot weld drill, fully ground with TiN coating, special tip DIN 1412E	Alloyed and unalloyed steels and casts up to 900 N/mm ² , high-alloyed steels and Q&T steels, case hardening steels	365
	Spotle/Vario spot weld drill, fully ground, cobalt alloyed, special tip	Spotle-drill for Spotle T575, Vario-drill for Vario WS90	365
	Spotle/Vario spot weld drill, fully ground, cobalt alloyed with TiN coating, special tip DIN 1412	Spotle-drill for Spotle T575, Vario-drill for Vario WS90	365
90°	Subland drill 90°, milled	Steel and cast steel up to 900 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	365
180°	Subland drill 180°, milled	Steel and cast steel up to 900 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	366
90°	Subland drill 90°, milled	Steel and cast steel up to 900 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	366
130°	Twist drill bit, fully ground, split point	Steel and cast steel up to 900 N/mm ² , grey cast iron, malleable cast iron, ductile iron, sintered iron, nickel silver, graphite	367

TWIST DRILLS

TWIST DRILLS



TECHNICAL INFORMATION

Standard	DIN 338	Raw material	Steel / Stainless steel
Material	HSSR / HSSG /	Form	Typ N
HSSG-TiN / HSSE			
short version, chisel edge at HSSR			
split point over 3mm at HSSG / HSSG-TiN / HSSE			

			Art.-No. HSSR	Art.-No. HSSG	Art.-No. HSSG-TiN	Art.-No. HSSE
0,5	22	6	03440005	03445005	03446005	03447005
0,6	24	7	03440006	03445006	03446006	03447006
0,7	28	9	03440007	03445007	03446007	03447007
0,8	30	10	03440008	03445008	03446008	03447008
0,9	32	11	03440009	03445009	03446009	03447009
1,0	34	12	03440010	03445010	03446010	03447010
1,1	36	14	03440011	03445011	03446011	03447011
1,2	38	16	03440012	03445012	03446012	03447012
1,3	38	16	03440013	03445013	03446013	03447013
1,4	40	18	03440014	03445014	03446014	03447014
1,5	40	18	03440015	03445015	03446015	03447015
1,6	43	20	03440016	03445016	03446016	03447016
1,7	43	20	03440017	03445017	03446017	03447017
1,8	46	22	03440018	03445018	03446018	03447018
1,9	46	22	03440019	03445019	03446019	03447019
2,0	49	24	03440020	03445020	03446020	03447020
2,1	49	24	03440021	03445021	03446021	03447021
2,2	53	27	03440022	03445022	03446022	03447022
2,3	53	27	03440023	03445023	03446023	03447023
2,4	57	30	03440024	03445024	03446024	03447024
2,5	57	30	03440025	03445025	03446025	03447025
2,6	57	30	03440026	03445026	03446026	03447026
2,7	61	33	03440027	03445027	03446027	03447027
2,8	61	33	03440028	03445028	03446028	03447028
2,9	61	33	03440029	03445029	03446029	03447029
3,0	65	33	03440030	03445030	03446030	03447030
3,1	65	36	03440031	03445031	03446031	03447031
3,2	65	36	03440032	03445032	03446032	03447032
3,3	70	36	03440033	03445033	03446033	03447033
3,4	70	39	03440034	03445034	03446034	03447034
3,5	70	39	03440035	03445035	03446035	03447035
3,6	70	39	03440036	03445036	03446036	03447036
3,7	70	39	03440037	03445037	03446037	03447037
3,8	75	43	03440038	03445038	03446038	03447038
3,9	75	43	03440039	03445039	03446039	03447039
4,0	75	43	03440040	03445040	03446040	03447040

			Art.-No. HSSR	Art.-No. HSSG	Art.-No. HSSG-TiN	Art.-No. HSSE
4,1	75	43	03440041	03445041	03446041	03447041
4,2	75	43	03440042	03445042	03446042	03447042
4,3	80	47	03440043	03445043	03446043	03447043
4,4	80	47	03440044	03445044	03446044	03447044
4,5	80	47	03440045	03445045	03446045	03447045
4,6	80	47	03440046	03445046	03446046	03447046
4,7	80	47	03440047	03445047	03446047	03447047
4,8	86	52	03440048	03445048	03446048	03447048
4,9	86	52	03440049	03445049	03446049	03447049
5,0	86	52	03440050	03445050	03446050	03447050
5,1	86	52	03440051	03445051	03446051	03447051
5,2	86	52	03440052	03445052	03446052	03447052
5,3	86	52	03440053	03445053	03446053	03447053
5,4	93	57	03440054	03445054	03446054	03447054
5,5	93	57	03440055	03445055	03446055	03447055
5,6	93	57	03440056	03445056	03446056	03447056
5,7	93	57	03440057	03445057	03446057	03447057
5,8	93	57	03440058	03445058	03446058	03447058
5,9	93	57	03440059	03445059	03446059	03447059
6,0	93	57	03440060	03445060	03446060	03447060
6,1	101	63	03440061	03445061	03446061	03447061
6,2	101	63	03440062	03445062	03446062	03447062
6,3	101	63	03440063	03445063	03446063	03447063
6,4	101	63	03440064	03445064	03446064	03447064
6,5	101	63	03440065	03445065	03446065	03447065
6,6	101	63	03440066	03445066	03446066	03447066
6,7	101	63	03440067	03445067	03446067	03447067
6,8	109	69	03440068	03445068	03446068	03447068
6,9	109	69	03440069	03445069	03446069	03447069
7,0	109	69	03440070	03445070	03446070	03447070
7,1	109	69	03440071	03445071	03446071	03447071
7,2	109	69	03440072	03445072	03446072	03447072
7,3	109	69	03440073	03445073	03446073	03447073
7,4	109	69	03440074	03445074	03446074	03447074
7,5	109	69	03440075	03445075	03446075	03447075
7,6	117	75	03440076	03445076	03446076	03447076
7,7	117	75	03440077	03445077	03446077	03447077
7,8	117	75	03440078	03445078	03446078	03447078
7,9	117	75	03440079	03445079	03446079	03447079
8,0	117	75	03440080	03445080	03446080	03447080
8,1	117	75	03440081	03445081	03446081	03447081
8,2	117	75	03440082	03445082	03446082	03447082
8,3	117	75	03440083	03445083	03446083	03447083
8,4	117	75	03440084	03445084	03446084	03447084

TWIST DRILLS

			Art.-No. HSSR	Art.-No. HSSG	Art.-No. HSSG-TiN	Art.-No. HSSE
8,5	117	75	03440085	03445085	03446085	03447085
8,6	125	81	03440086	03445086	03446086	03447086
8,7	125	81	03440087	03445087	03446087	03447087
8,8	125	81	03440088	03445088	03446088	03447088
8,9	125	81	03440089	03445089	03446089	03447089
9,0	125	81	03440090	03445090	03446090	03447090
9,1	125	81	03440091	03445091	03446091	03447091
9,2	125	81	03440092	03445092	03446092	03447092
9,3	125	81	03440093	03445093	03446093	03447093
9,4	125	81	03440094	03445094	03446094	03447094
9,5	125	81	03440095	03445095	03446095	03447095
9,6	133	87	03440096	03445096	03446096	03447096
9,7	133	87	03440097	03445097	03446097	03447097
9,8	133	87	03440098	03445098	03446098	03447098
9,9	133	87	03440099	03445099	03446099	03447099
10,0	133	87	03440100	03445100	03446100	03447100
10,1	133	87	03440101	03445101	03446101	03447101
10,2	133	87	03440102	03445102	03446102	03447102
10,3	133	87	03440103	03445103	03446103	03447103
10,4	133	87	03440104	03445104	03446104	03447104
10,5	133	87	03440105	03445105	03446105	03447105
10,6	142	94	03440106	03445106	03446106	03447106
10,7	142	94	03440107	03445107	03446107	03447107
10,8	142	94	03440108	03445108	03446108	03447108
10,9	142	94	03440109	03445109	03446109	03447109
11,0	142	94	03440110	03445110	03446110	03447110
11,1	142	94	03440111	03445111	03446111	03447111
11,2	142	94	03440112	03445112	03446112	03447112
11,3	142	94	03440113	03445113	03446113	03447113
11,4	142	94	03440114	03445114	03446114	03447114
11,5	142	94	03440115	03445115	03446115	03447115
11,6	142	94	03440116	03445116	03446116	03447116
11,7	142	94	03440117	03445117	03446117	03447117
11,8	142	94	03440118	03445118	03446118	03447118
11,9	151	101	03440119	03445119	03446119	03447119
12,0	151	101	03440120	03445120	03446120	03447120
12,1	151	101	03440121	03445121	03446121	03447121
12,2	151	101	03440122	03445122	03446122	03447122
12,3	151	101	03440123	03445123	03446123	03447123
12,4	151	101	03440124	03445124	03446124	03447124
12,5	151	101	03440125	03445125	03446125	03447125
12,6	151	101	03440126	03445126	03446126	03447126
12,7	151	101	03440127	03445127	03446127	03447127
12,8	151	101	03440128	03445128	03446128	03447128

			Art.-No. HSSR	Art.-No. HSSG	Art.-No. HSSG-TiN	Art.-No. HSSE
12,9	151	101	03440129	03445129	03446129	03447129
13,0	151	101	03440130	03445130	03446130	03447130
13,5	160	108	03440135	03445135	03446135	03447135
14,0	160	108	03440140	03445140	03446140	03447140
14,5	169	114	03440145	03445145	03446145	03447145
15,0	169	114	03440150	03445150	03446150	03447150
15,5	178	120	03440155	03445155	03446155	03447155
16,0	178	120	03440160	03445160	03446160	03447160
16,5	184	125	03440165			
17,0	184	125	03440170			
17,5	191	130	03440175			
18,0	191	130	03440180			
18,5	198	135	03440185			
19,0	198	135	03440190			
19,5	205	140	03440195			
20,0	205	140	03440200			



TWIST DRILLS

TWIST DRILLS



TECHNICAL INFORMATION

Standard	DIN 338	Hole type	Through hole
Material	HSS	Direction	Right
Raw material	Steel	Form	Typ N

with reduced shank, roll forged, black

			Art.-No. 8 mm	Art.-No. 10 mm	Art.-No. 13 mm
8,5	117	75	03460085	—	—
9,0	125	81	03460090	—	—
9,5	125	81	03460095	—	—
10,0	133	87	03460100	03461100	—
10,5	133	87	03460105	03461105	—
11,0	142	94	03460110	03461110	—
11,5	142	94	03460115	03461115	—
12,0	151	101	03460120	03461120	—
12,5	151	101	03460125	03461125	—
13,0	151	101	03460130	03461130	—
13,5	160	108	—	03461135	03462135
14,0	160	108	—	03461140	03462140
14,5	169	114	—	03461145	03462145
15,0	169	114	—	03461150	03462150
15,5	178	120	—	03461155	03462155
16,0	178	120	—	03461160	03462160
16,5	184	125	—	03461165	03462165
17,0	184	125	—	03461170	03462170
17,5	191	130	—	03461175	03462175
18,0	191	130	—	03461180	03462180
18,5	198	135	—	03461185	03462185
19,0	198	135	—	03461190	03462190
19,5	205	140	—	03461195	03462195
20,0	205	140	—	03461200	03462200
20,5	205	145	—	—	03462205
21,0	205	145	—	—	03462210
21,5	210	150	—	—	03462215
22,0	210	150	—	—	03462220
23,0	215	155	—	—	03462230
24,0	220	160	—	—	03462240
25,0	220	160	—	—	03462250
26,0	235	165	—	—	03462260
27,0	235	170	—	—	03462270
28,0	235	170	—	—	03462280
29,0	240	175	—	—	03462290
30,0	240	175	—	—	03462300

TWIST DRILLS

TECHNICAL INFORMATION

Standard	DIN 340	Form	Typ N
Material	HSSG		
Raw material	Steel		

with split point, long version, fully ground

			Art.-No.
0,7	42	21	03452007
1,0	56	33	03452010
1,5	70	45	03452015
2,0	85	56	03452020
2,5	95	62	03452025
2,9	100	66	03452029
3,0	100	66	03452030
3,1	106	69	03452031
3,2	106	69	03452032
3,3	106	69	03452033
3,5	112	73	03452035
3,8	119	78	03452038
3,9	119	78	03452039
4,0	119	78	03452040
4,1	119	78	03452041
4,2	119	78	03452042
4,3	126	80	03452043
4,5	126	82	03452045
4,8	132	87	03452048
4,9	132	87	03452049
5,0	132	87	03452050
5,1	132	87	03452051
5,2	132	87	03452052
5,3	132	87	03452053
5,5	139	91	03452055
5,8	139	91	03452058
6,0	139	91	03452060
6,2	148	97	03452062
6,3	148	97	03452063
6,5	148	97	03452065
6,8	156	102	03452068
7,0	156	102	03452070
7,2	156	102	03452072
7,5	156	102	03452075
7,8	165	109	03452078
8,0	165	109	03452080

TWIST DRILLS

			Art.-No.
8,2	165	109	03452082
8,5	165	109	03452085
9,0	175	115	03452090
9,5	175	115	03452095
9,8	184	121	03452098
10,0	184	121	03452100
10,2	184	121	03452102
10,5	184	121	03452105
11,0	195	128	03452110
11,5	195	128	03452115
12,0	205	134	03452120
12,5	205	134	03452125
13,0	205	134	03452130
14,0	214	140	03452140
15,0	220	144	03452150

TWIST DRILLS



TECHNICAL INFORMATION

Standard	DIN 345	Raw material	Steel / Stainless steel
Material	HSS / HSSG / HSSE	Form	Typ N

with Morse taper shank

			Art.-No. HSS	Art.-No. HSSG	Art.-No. HSSE
6	138	57	03454060	03463060	03464060
6,5	144	63	03454065	03463065	03464065
6,8	150	69	03454068	03463068	03464068
7	150	69	03454070	03463070	03464070
7,5	150	69	03454075	03463075	03464075
8	156	75	03454080	03463080	03464080
8,5	156	75	03454085	03463085	03464085
9	162	81	03454090	03463090	03464090
9,5	162	81	03454095	03463095	03464095
10	168	87	03454100	03463100	03464100
10,2	168	87	03454102	03463102	03464102
10,5	168	87	03454105	03463105	03464105
11	175	94	03454110	03463110	03464110
11,5	175	94	03454115	03463115	03464115
12	182	101	03454120	03463120	03464120
12,5	182	101	03454125	03463125	03464125
13	182	101	03454130	03463130	03464130

			Art.-No. HSS	Art.-No. HSSG	Art.-No. HSSE
13,5	189	108	03454135	03463135	03464135
14	189	108	03454140	03463140	03464140
14,5	212	114	03454145	03463145	03464145
15	212	114	03454150	03463150	03464150
15,5	218	120	03454155	03463155	03464155
16	218	120	03454160	03463160	03464160
16,5	223	125	03454165	03463165	03464165
17	223	125	03454170	03463170	03464170
17,5	228	130	03454175	03463175	03464175
18	228	130	03454180	03463180	03464180
18,5	233	135	03454185	03463185	03464185
19	233	135	03454190	03463190	03464190
19,5	238	140	03454195	03463195	03464195
20	238	140	03454200	03463200	03464200
20,5	243	145	03454205	03463205	03464205
21	243	145	03454210	03463210	03464210
21,5	248	150	03454215	03463215	03464215
22	248	150	03454220	03463220	03464220
22,5	253	155	03454225	03463225	03464225
23	253	155	03454230	03463230	03464230
23,5	276	155	03454235	03463235	03464235
24	281	160	03454240	03463240	03464240
24,5	281	160	03454245	03463245	03464245
25	281	160	03454250	03463250	03464250
25,5	286	165	03454255	03463255	03464255
26	286	165	03454260	03463260	03464260
26,5	286	165	03454265	03463265	03464265
27	291	170	03454270	03463270	03464270
27,5	291	170	03454275	03463275	03464275
28	291	170	03454280	03463280	03464280
28,5	296	175	03454285	03463285	03464285
29	296	175	03454290	03463290	03464290
29,5	296	175	03454295	03463295	03464295
30	296	175	03454300	03463300	03464300
30,5	301	180	03454305	03463305	03464305
31	301	180	03454310	03463310	03464310
31,5	301	180	03454315	03463315	03464315
32	334	185	03454320	03463320	03464320
32,5	334	185	03454325	03463325	03464325
33	334	185	03454330	03463330	03464330
33,5	334	185	03454335	03463335	03464335
34	339	190	03454340	03463340	03464340
34,5	339	190	03454345	03463345	03464345
35	339	190	03454350	03463350	03464350

TWIST DRILLS

			Art.-No. HSS	Art.-No. HSSG	Art.-No. HSSE
35,5	339	190	03454355	03463355	03464355
36	344	195	03454360	03463360	03464360
36,5	344	195	03454365	03463365	03464365
37	344	195	03454370	03463370	03464370
37,5	344	195	03454375	03463375	03464375
38	349	200	03454380	03463380	03464380
38,5	349	200	03454385	03463385	03464385
39	349	200	03454390	03463390	03464390
39,5	349	200	03454395	03463395	03464395
40	349	200	03454400	03463400	03464400
40,5	354	205	03454405	03463405	03464405
41	354	205	03454410	03463410	03464410
41,5	354	205	03454415	03463415	03464415
42	354	205	03454420	03463420	03464420
42,5	354	205	03454425	03463425	03464425
43	359	210	03454430	03463430	03464430
43,5	359	210	03454435	03463435	03464435
44	359	210	03454440	03463440	03464440
44,5	359	210	03454445	03463445	03464445
45	359	210	03454450	03463450	03464450
45,5	364	215	03454455	03463455	03464455
46	364	215	03454460	03463460	03464460
46,5	364	215	03454465	03463465	03464465
47	364	215	03454470	03463470	03464470
47,5	364	215	03454475	03463475	03464475
48	369	220	03454480	03463480	03464480
48,5	369	220	03454485	03463485	03464485
49	369	220	03454490	03463490	03464490
49,5	369	220	03454495	03463495	03464495
50	369	220	03454500	03463500	03464500
51	412	225	03454510	03463510	03464510
52	412	225	03454520	03463520	03464520
53	412	225	03454530	03463530	03464530
54	417	230	03454540	03463540	03464540
55	417	230	03454550	03463550	03464550
56	417	230	03454560	03463560	03464560
57	422	235	03454570	03463570	03464570
58	422	235	03454580	03463580	03464580
59	422	235	03454590	03463590	03464590
60	422	235	03454600	03463600	03464600
61	427	240	03454610	—	—
62	427	240	03454620	—	—
63	427	240	03454630	—	—
64	432	245	03454640	—	—
65	432	245	03454650	—	—

			Art.-No. HSS	Art.-No. HSSG	Art.-No. HSSE
66	432	245	03454660	—	—
67	432	245	03454670	—	—
68	437	250	03454680	—	—
69	437	250	03454690	—	—
70	437	250	03454700	—	—
71	437	250	03454710	—	—
72	442	255	03454720	—	—
73	442	255	03454730	—	—
74	442	255	03454740	—	—
75	442	255	03454750	—	—

DOUBLE END DRILLS

TECHNICAL INFORMATION

Material HSSG

Raw material Steel

double-sided, fully ground, with split point

			Art.-No.
2,0	38	7,5	03453020
2,5	43	9,5	03453025
2,7	46	9,5	03453027
3,0	46	9,5	03453030
3,1	49	9,5	03453031
3,2	49	9,5	03453032
3,3	49	9,5	03453033
3,4	52	13	03453034
3,5	52	13	03453035
3,8	55	13	03453038
4,0	55	13	03453040
4,1	55	13	03453041
4,2	55	13	03453042
4,5	58	16	03453045
4,8	62	16	03453048
4,9	62	16	03453049
5,0	62	16	03453050
5,1	62	16	03453051
5,2	62	16	03453052
5,5	66	16	03453055
6,0	66	16	03453060
6,5	70	18	03453065
7,0	74	19	03453070
8,0	79	20	03453080

TWIST DRILLS

TWIST DRILLS



TECHNICAL INFORMATION

Standard	DIN 1897	Raw material	Steel / Stainless steel
Material	HSSR / HSSG /	Form	Typ N
HSSG-TiN / HSSE			

with cylindrical shank, short version, with split point

			Art.-No. HSSR	Art.-No. HSSG	Art.-No. HSSG-TiN	Art.-No. HSSE
1,0	26	6	03458010	03456010	03457010	03459010
1,5	32	9	03458015	03456015	03457015	03459015
2,0	38	12	03458020	03456020	03457020	03459020
2,1	38	12	03458021	03456021	03457021	03459021
2,2	40	13	03458022	03456022	03457022	03459022
2,3	40	13	03458023	03456023	03457023	03459023
2,4	43	14	03458024	03456024	03457024	03459024
2,5	43	14	03458025	03456025	03457025	03459025
2,6	43	14	03458026	03456026	03457026	03459026
2,7	46	16	03458027	03456027	03457027	03459027
2,8	46	16	03458028	03456028	03457028	03459028
2,9	46	16	03458029	03456029	03457029	03459029
3,0	46	16	03458030	03456030	03457030	03459030
3,1	49	18	03458031	03456031	03457031	03459031
3,2	49	18	03458032	03456032	03457032	03459032
3,3	49	18	03458033	03456033	03457033	03459033
3,4	52	20	03458034	03456034	03457034	03459034
3,5	52	20	03458035	03456035	03457035	03459035
3,6	52	20	03458036	03456036	03457036	03459036
3,7	52	20	03458037	03456037	03457037	03459037
3,8	55	22	03458038	03456038	03457038	03459038
3,9	55	22	03458039	03456039	03457039	03459039
4,0	55	22	03458040	03456040	03457040	03459040
4,1	55	22	03458041	03456041	03457041	03459041
4,2	55	22	03458042	03456042	03457042	03459042
4,3	58	24	03458043	03456043	03457043	03459043
4,4	58	24	03458044	03456044	03457044	03459044
4,5	58	24	03458045	03456045	03457045	03459045
4,6	58	24	03458046	03456046	03457046	03459046
4,7	58	24	03458047	03456047	03457047	03459047
4,8	62	26	03458048	03456048	03457048	03459048
4,9	62	26	03458049	03456049	03457049	03459049
5,0	62	26	03458050	03456050	03457050	03459050
5,1	62	26	03458051	03456051	03457051	03459051
5,2	62	26	03458052	03456052	03457052	03459052
5,3	62	26	03458053	03456053	03457053	03459053

			Art.-No. HSSR	Art.-No. HSSG	Art.-No. HSSG-TiN	Art.-No. HSSE
5,4	66	28	03458054	03456054	03457054	03459054
5,5	66	28	03458055	03456055	03457055	03459055
5,6	66	28	03458056	03456056	03457056	03459056
5,7	66	28	03458057	03456057	03457057	03459057
5,8	66	28	03458058	03456058	03457058	03459058
5,9	66	28	03458059	03456059	03457059	03459059
6,0	66	28	03458060	03456060	03457060	03459060
6,1	70	31	03458061	03456061	03457061	03459061
6,2	70	31	03458062	03456062	03457062	03459062
6,3	70	31	03458063	03456063	03457063	03459063
6,4	70	31	03458064	03456064	03457064	03459064
6,5	70	31	03458065	03456065	03457065	03459065
6,6	70	31	03458066	03456066	03457066	03459066
6,7	70	31	03458067	03456067	03457067	03459067
6,8	74	34	03458068	03456068	03457068	03459068
6,9	74	34	03458069	03456069	03457069	03459069
7,0	74	34	03458070	03456070	03457070	03459070
7,1	74	34	03458071	03456071	03457071	03459071
7,2	74	34	03458072	03456072	03457072	03459072
7,3	74	34	03458073	03456073	03457073	03459073
7,4	74	34	03458074	03456074	03457074	03459074
7,5	74	34	03458075	03456075	03457075	03459075
7,6	79	37	03458076	03456076	03457076	03459076
7,7	79	37	03458077	03456077	03457077	03459077
7,8	79	37	03458078	03456078	03457078	03459078
7,9	79	37	03458079	03456079	03457079	03459079
8,0	79	37	03458080	03456080	03457080	03459080
8,1	79	37	03458081	03456081	03457081	03459081
8,2	79	37	03458082	03456082	03457082	03459082
8,3	79	37	03458083	03456083	03457083	03459083
8,4	79	37	03458084	03456084	03457084	03459084
8,5	79	37	03458085	03456085	03457085	03459085
8,6	84	40	03458086	03456086	03457086	03459086
8,7	84	40	03458087	03456087	03457087	03459087
8,8	84	40	03458088	03456088	03457088	03459088
8,9	84	40	03458089	03456089	03457089	03459089
9,0	84	40	03458090	03456090	03457090	03459090
9,1	84	40	03458091	03456091	03457091	03459091
9,2	84	40	03458092	03456092	03457092	03459092
9,3	84	40	03458093	03456093	03457093	03459093
9,4	84	40	03458094	03456094	03457094	03459094
9,5	84	40	03458095	03456095	03457095	03459095
9,6	89	43	03458096	03456096	03457096	03459096
9,7	89	43	03458097	03456097	03457097	03459097

TWIST DRILLS

			Art.-No. HSSR	Art.-No. HSSG	Art.-No. HSSG-TiN	Art.-No. HSSE
9,8	89	43	03458098	03456098	03457098	03459098
9,9	89	43	03458099	03456099	03457099	03459099
10,0	89	43	03458100	03456100	03457100	03459100
10,1	89	43	03458101	03456101	03457101	03459101
10,2	89	43	03458102	03456102	03457102	03459102
10,3	89	43	03458103	03456103	03457103	03459103
10,4	89	43	03458104	03456104	03457104	03459104
10,5	89	43	03458105	03456105	03457105	03459105
10,6	89	43	03458106	03456106	03457106	03459106
10,7	95	47	03458107	03456107	03457107	03459107
10,8	95	47	03458108	03456108	03457108	03459108
10,9	95	47	03458109	03456109	03457109	03459109
11,0	95	47	03458110	03456110	03457110	03459110
11,1	95	47	03458111	03456111	03457111	03459111
11,2	95	47	03458112	03456112	03457112	03459112
11,3	95	47	03458113	03456113	03457113	03459113
11,4	95	47	03458114	03456114	03457114	03459114
11,5	95	47	03458115	03456115	03457115	03459115
11,6	95	47	03458116	03456116	03457116	03459116
11,7	95	47	03458117	03456117	03457117	03459117
11,8	95	47	03458118	03456118	03457118	03459118
11,9	102	51	03458119	03456119	03457119	03459119
12,0	102	51	03458120	03456120	03457120	03459120
12,1	102	51	03458121	03456121	03457121	03459121
12,2	102	51	03458122	03456122	03457122	03459122
12,3	102	51	03458123	03456123	03457123	03459123
12,4	102	51	03458124	03456124	03457124	03459124
12,5	102	51	03458125	03456125	03457125	03459125
12,6	102	51	03458126	03456126	03457126	03459126
12,7	102	51	03458127	03456127	03457127	03459127
12,8	102	51	03458128	03456128	03457128	03459128
12,9	102	51	03458129	03456129	03457129	03459129
13,0	102	51	03458130	03456130	03457130	03459130

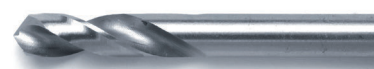
SPOT DRILLS

TECHNICAL INFORMATION

Standard	~ DIN 1897	Raw material	Steel
Material	HSS / HSSG	Form	Typ N

with cylindrical shank, extra short version, with split point

			Art.-No. HSS	Art.-No. HSSG
3,0	37	14	03466030	03465030
3,1	37	14	03466031	03465031
3,2	37	14	03466032	03465032
3,3	40	16	03466033	03465033
3,4	40	16	03466034	03465034
3,5	42	16	03466035	03465035
3,6	42	16	03466036	03465036
3,7	42	16	03466037	03465037
3,8	42	16	03466038	03465038
4,0	42	16	03466040	03465040
4,1	44	18	03466041	03465041
4,2	44	18	03466042	03465042
4,5	48	20	03466045	03465045
4,8	48	20	03466048	03465048
4,9	50	22	03466049	03465049
5,0	50	22	03466050	03465050
5,1	52	24	03466051	03465051
5,2	52	24	03466052	03465052
5,3	52	24	03466053	03465053
5,5	52	24	03466055	03465055
5,6	55	26	03466056	03465056
5,7	55	26	03466057	03465057
5,8	55	26	03466058	03465058
6,0	55	26	03466060	03465060



TWIST DRILLS

NC SPOT DRILLS 90°



TECHNICAL INFORMATION

Standard	Factory Standard	Raw material	VA-Steel
Material	HSSE / HSSE-TiN	Form	Typ N

with cylindrical shank, right, bright finish

			Art.-No. HSSE	Art.-No. HSSE-TiN
2,0	40	8	03467020	03468020
3,0	46	12	03467030	03468030
4,0	55	12	03467040	03468040
5,0	62	14	03467050	03468050
6,0	66	16	03467060	03468060
8,0	79	21	03467080	03468080
10,0	89	25	03467100	03468100
12,0	102	30	03467120	03468120
14,0	107	34	03467140	03468140
16,0	115	38	03467160	03468160
20,0	131	45	03467200	03468200
25,0	151	53	03467250	03468250

NC SPOT DRILLS 120°



TECHNICAL INFORMATION

Standard	Factory Standard	Raw material	VA-Steel
Material	HSSE / HSSE-TiN	Form	Typ N

with cylindrical shank, right, bright finish

			Art.-No. HSSE	Art.-No. HSSE-TiN
2,0	40	8	03469020	03470020
3,0	46	12	03469030	03470030
4,0	55	12	03469040	03470040
5,0	62	14	03469050	03470050
6,0	66	16	03469060	03470060
8,0	79	21	03469080	03470080
10,0	89	25	03469100	03470100
12,0	102	30	03469120	03470120
14,0	107	34	03469140	03470140
16,0	115	38	03469160	03470160
20,0	131	45	03469200	03470200
25,0	151	53	03469250	03470250

DEEP-HOLE TWIST DRILLS SERIES 1



TECHNICAL INFORMATION

Standard	DIN 1869	Raw material	Steel
Material	HSSG	Form	Typ TS
with cylindrical shank, extra long version			
fully ground, with split point			

			Art.-No.
1,0	100	60	03471010
1,5	100	60	03471015
2,0	125	85	03471020
2,5	140	95	03471025
3,0	150	100	03471030
3,1	155	105	03471031
3,2	155	105	03471032
3,3	155	105	03471033
3,5	165	115	03471035
4,0	175	120	03471040
4,2	175	120	03471042
4,5	185	125	03471045
5,0	195	135	03471050
5,5	205	140	03471055
6,0	205	140	03471060
6,5	215	150	03471065
6,8	225	155	03471068
7,0	225	155	03471070
7,5	225	155	03471075
8,0	240	165	03471080
8,5	240	165	03471085
9,0	250	175	03471090
9,5	250	175	03471095
10,0	265	185	03471100
10,2	265	185	03471102
10,5	265	185	03471105
11,0	280	195	03471110
11,5	280	195	03471115
12,0	295	205	03471120
12,5	295	205	03471125
13,0	295	205	03471130

DEEP-HOLE TWIST DRILLS SERIES 2



TECHNICAL INFORMATION

Standard	DIN 1869	Raw material	Steel
Material	HSSG	Form	Typ TS
with cylindrical shank, extra long			
fully ground, with split point			

			Art.-No.
1,5	150	100	03472015
2,0	160	110	03472020
2,5	180	120	03472025
3,0	190	130	03472030
3,2	200	135	03472032
3,5	210	145	03472035
4,0	220	150	03472040
4,2	220	150	03472042
4,5	235	160	03472045
5,0	245	170	03472050
5,5	260	180	03472055
6,0	260	180	03472060
6,5	275	190	03472065
6,8	290	200	03472068
7,0	290	200	03472070
7,5	290	200	03472075
8,0	305	210	03472080
8,5	305	210	03472085
9,0	320	220	03472090
9,5	320	220	03472095
10,0	340	235	03472100
10,2	340	235	03472102
10,5	340	235	03472105
11,0	365	250	03472110
11,5	365	250	03472115
12,0	375	260	03472120
12,5	375	260	03472125
13,0	375	260	03472130

TWIST DRILLS / SUBLAND DRILLS

DEEP-HOLE TWIST DRILLS SERIES 3



TECHNICAL INFORMATION

Standard	DIN 1869	Raw material	Steel
Material	HSSG	Form	Typ TS
with cylindrical shank, extra long version			
fully ground, with split point			

			Art.-No.
2,0	200	135	03473020
2,5	225	150	03473025
3,0	240	160	03473030
3,2	250	170	03473032
3,5	265	180	03473035
4,0	280	190	03473040
4,2	280	190	03473042
4,5	295	200	03473045
5,0	315	210	03473050
5,5	330	225	03473055
6,0	330	225	03473060
6,5	350	235	03473065
6,8	370	250	03473068
7,0	370	250	03473070
7,5	370	250	03473075
8,0	390	265	03473080
8,5	390	265	03473085
9,0	410	280	03473090
9,5	410	280	03473095
10,0	430	295	03473100
10,2	430	295	03473102
10,5	430	295	03473105
11,0	455	310	03473110
11,5	455	310	03473115
12,0	480	330	03473120
12,5	480	330	03473125
13,0	480	330	03473130

MILLING DRILLS



TECHNICAL INFORMATION

Standard	Factory Standard
Material	HSSG / HSSG-TiN
Raw material	Steel, metal, wood, plastic

	Art.-No. HSSG	Art.-No. HSSG-TiN
6,0 × 90 mm	03474060	03475060
8,0 × 90 mm	03474080	03475080

SPOT WELD DRILLS



TECHNICAL INFORMATION

Standard	Dimensions according to DIN 1897
Material	HSSE / HSSE-TiN
Raw material	Steel
	Fully ground

	Art.-No. HSSE	Art.-No. HSSE-TiN
6,0 × 66 mm	03478060	03479060
7,0 × 74 mm	03478070	03479070
8,0 × 79 mm	03478080	03479080
10,0 × 89 mm	03478100	03479100

SPOT WELD DRILLS



TECHNICAL INFORMATION

Standard	Drills for Spotle/Vario	Raw material	Steel
Material	HSSE / HSSE-TiN		
Form	Spotle T575 / Vario WS90		
	Fully ground, 8mm shank		

	Art.-No. HSSE	Art.-No. HSSE-TiN
Spotle drill 6,0 × 40 mm	03480060	03490060
Spotle drill 8,0 × 40 mm	03480080	03490080
Vario drill 8,0 × 44 mm	03480081	03490081
Vario drill 10,0 × 44 mm	03480101	03490101

SUBLAND DRILLS



TECHNICAL INFORMATION

Standard	DIN 8374	Raw material	Steel
Material	HSS	Form	Typ N
	with cylindrical shank		
	right		

black version – fine, countersink angle 90°

Size	Countersink ø	Drill ø	Total length	Flute length	Step length	Art.-No.
M 3	6	3,2	93	57	9	03486130
M 4	8	4,3	117	75	11	03486150
M 5	10	5,3	133	87	13	03486170
M 6	11,5	6,4	142	94	15	03486190
M 8	15	8,4	169	114	19	03486210
M 10	19	10,5	198	135	23	03486230

SUBLAND DRILLS

SUBLAND DRILLS			TECHNICAL INFORMATION			
			Standard	DIN 8376	Raw material	Steel
			Material	HSS	Form	Typ N
			with cylindrical shank			
			right			
			black version – countersink angle 180°			
Size	Countersink ø	Drill ø	Total length	Flute length	Step length	Art.-No.
M 3	6	3,4	93	57	9	03488130
M 4	8	4,5	117	75	11	03488150
M 5	10	5,5	133	87	13	03488170
M 6	11	6,6	142	94	15	03488190
M 8	15	9	169	114	19	03488210
M 10	18	11	191	130	23	03488230

SUBLAND DRILLS



TECHNICAL INFORMATION

Standard

DIN 8378

Raw material

Steel

Material

HSS

Form

Typ N

with cylindrical shank

right

black version – countersink angle 90°

Size	Countersink ø	Drill ø	Total length	Flute length	Step length	Art.-No.
M 3	3,4	2,5	70	39	8,8	03489130
M 4	4,5	3,3	80	47	11,4	03489150
M 5	5,5	4,2	93	57	13,6	03489170
M 6	6,6	5	101	63	16,5	03489190
M 8	9	6,8	125	81	21	03489210
M 10	11	8,5	142	94	25,5	03489230
M 12	13,5	10,2	160	108	30	03489250