



# CARBIDE DRILLS

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## Carbide drills

Type	Cutting direction	Point angle °	Tool material	Surface	Standard	Diameter range (mm)	Catalog no.	Discount group	Standard range, page
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### Stub drills



N	right-hand	118	Solid Carbide	bright	DIN 6539	1,000 - 15,000	<b>71184</b>	102	186
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N	right-hand	118	Solid Carbide	TiAlN nano	DIN 6539	1,000 - 12,000	<b>51184</b>	102	186
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### Jobber drills



N	right-hand	118	Solid Carbide	bright	Stock std.	1,000 - 12,000	<b>71290</b>	102	189
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### NC-spotting drills



N	right-hand	90	Solid Carbide	bright	Stock std.	5,000 - 20,000	<b>71190</b>	102	192
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N	right-hand	120	Solid Carbide	bright	Stock std.	5,000 - 20,000	<b>71191</b>	102	192
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N	right-hand	142	Solid Carbide	bright	Stock std.	4,000 - 20,000	<b>71189</b>	102	192
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### Special drills with carbide blade



N	right-hand	118	Carbide	bright	DIN 8037	1,500 - 20,000	<b>71180</b>	102	194
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### Special drills with carbide blade



N	right-hand	118	Carbide	bright	DIN 8041	11,000 - 33,000	<b>71380</b>	102	196
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## Solid carbide centre drills

Form	Cutting direction		Tool material	Surface	Standard	Diameter range (mm)	Catalog no.	Discount group	Standard range, page
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## Center drills without flat



A	right-hand		Solid Carbide	bright	Stock std.	1,000 - 6,300	<b>71616</b>	102	197
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# Application

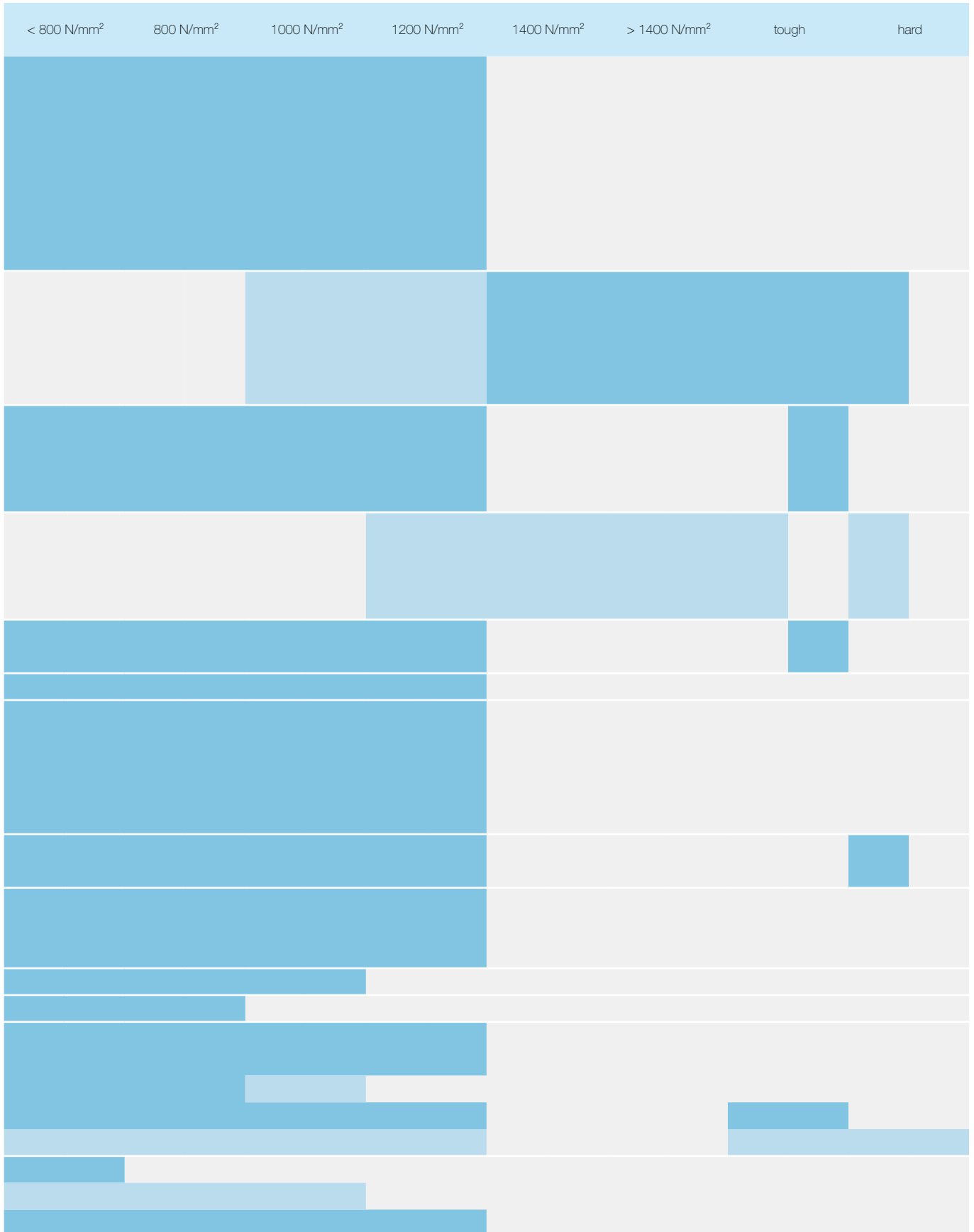
by materials

Type	Catalogue no.		Non-ferrous metals, Aluminium	Steels	Cast iron	Stainless and acid- resistant steels	Nickel, Ti-alloys	Hardened steels
	without IC	with IC						
SuperV-U	51873	51776		optimal				
	51871	51876		optimal				
	51787	51781		optimal				
	51887	51881		optimal				
		51789		optimal				
		51889		optimal				
		51893		optimal				
		61889		optimal				
SuperV-S	51750	51752		optimal			well suited	
		51753		optimal			well suited	
		51754		optimal			well suited	
		51755		optimal			well suited	
		51756		optimal			well suited	
SuperV-VA		51770		optimal		well suited		
		51771		optimal		well suited		
		51772		optimal		well suited		
		51773		optimal		well suited		
SuperV-F	61888	61875		well suited		well suited		optimal
		51875		well suited		well suited		optimal
		61880		well suited		well suited		optimal
		51880		well suited		well suited		optimal
SuperV-NX	71998	51998		optimal				
	71999	51999		optimal				
SuperV70	51782	51783		optimal				
SuperV-T		51764		optimal				
		51765		optimal				
		51766		optimal				
		51767		optimal				
		51768		optimal				
SuperV-GR		51760		well suited				
		51761		well suited				
SuperV95-GG		71995		well suited				
		71994		well suited				
		71996		well suited				
SuperV95-GN		71997		well suited				
SuperV83-GAL	71862			well suited				
SuperV-AP mini		67011		well suited	well suited			
		57011		well suited	well suited			
		77012		well suited	well suited			
		67012		well suited	well suited	well suited		
		77011		well suited	well suited	well suited	well suited	
SuperV-AP maxi		76012		well suited		well suited		
		76011		well suited		well suited		
		56011		well suited	well suited			

NC-indexable insert for centering and pilot holes

■ optimal    ■ well suited

### by tensile strength



# Application recommendations for carbide drills

		Feed column								
Code-letter	A	B	C	D	E	F	G	H	I	
Drill-Ø mm	<b>0,50</b>	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
	<b>1,00</b>	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
	<b>2,00</b>	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
	<b>2,50</b>	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
	<b>3,15</b>	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
	<b>4,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
	<b>5,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
	<b>6,30</b>	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
	<b>8,00</b>	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
	<b>10,00</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
	<b>12,50</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
	<b>16,00</b>	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
	<b>20,00</b>	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
	<b>25,00</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
	<b>31,50</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
	<b>40,00</b>	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
	<b>50,00</b>	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
	<b>63,00</b>	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
	<b>80,00</b>	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Tools with feed column no. in bold are preferred choices for listed material group.

**K, P, K/P**  
Since our new carbide grades are universally applicable we now define our carbide application groups as K or K/P only.

### Lubricants:

- cutting oil, highly activated ■
- soluble oil (emulsion) ■
- without lubricant
- air only

Material group	Materials examples, <b>new designations</b> (old designation in brackets) Figures in bold = material no. to DIN EN	Tensile strength MPa (N/mm <sup>2</sup> )	Hard- ness	Coolant
General purpose steels	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 >500-850		■
Free-cutting steels	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 850-1000		■
Unalloyed tempering steels	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤ 700 700-850 850-1000		■
Alloyed tempering steels	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	850-≤1000 1000-1200		■
Unalloyed case hardened steels	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤750		■
Alloyed case hardened steels	<b>1.7043</b> 38Cr4 <b>1.5752</b> 15NiCr13 (15NiCr13), <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	850-≤1000 1000-1200		■ ■
Nitriding steels	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≥850-≤1000 >1000-1200		■ ■
Tool steels	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 >850-1000		■ ■
High speed steels	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≥650-1000		■ ■
Spring steels	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤330 HB	■ ■
Stainless steels, sulphured	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤850		■
austenitic	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitic	<b>1.4057</b> X20CrNi 17 2 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤850		■
Hardened steels	-		≤40-48 HRC >48-60 HRC	■ ■
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Cast iron	<b>0.6010</b> EN-GJL-100(GG10), <b>0.6020</b> EN-GJL-200(GG20) <b>0.6025</b> EN-GJL-250(GG25), <b>0.6035</b> EN-GJL-350(GG35)	850-≤1000 1000-1200		■ □
Spheroidal graphite iron and maleable cast iron	<b>0.7050</b> EN-GJS-500-7(GGG50), <b>0.8035</b> EN-GJMW-350-4(GTW35)		≤240 HB <300 HB	■ ■
Chilled cast iron	-		≤350 HB	■ ■
Ti and Ti-alloys	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 >850-1200		■ ■
Aluminium and Al-alloys	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		■ ■
Al wrought alloys	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤450		■ ■
Al cast alloys ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		■ ■
> 10 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■ ■
Magnesium alloys	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤450		□
Copper, low alloyed	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤400		■ ■
Brass, short-chipping	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		■ ■
long-chipping	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		■ ■
Bronze, short-chipping	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		■ ■
	<b>2.0790</b> CuNi18Zn19Pb	>600-850		■ ■
Bronze, long-chipping	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 >850-1000		■ ■
Duroplastics	Epoxy resin, Resopal, Pertinax, Moltopren		-	□
Thermoplastics	Plexiglass, Hostalen, Novodur, Makralon		-	□
New Cast iron GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo6			■ □
New Cast iron ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	800-1000 1200-1400		■ □
Kevlar	Kevlar		-	□
Glass/carbon-concentr. plastics	GFK/CFK		-	□

# ≤3×D drilling depth

# ≤5×D

Catalogue no.	<b>71184</b>	<b>51184</b>	<b>71380</b>	<b>71180</b>	<b>71290</b>
Tool material	<b>STC</b>	<b>STC</b>	<b>TCT</b>	<b>TCT</b>	<b>STC</b>
Carbide grade	K10/K20	K/P	K10/K20	K10/K20	K10/K20
Surface finish	bright	TiAlN nano	bright	bright	bright
DIN/Form	<b>6539</b>	<b>6539</b>	<b>8041</b>	<b>8037</b>	<b>Stock std.</b>
Type	N	N	N	N	N
Coolant					
Page	186	186	196	194	189



V <sub>c</sub> m/min	Feed column no.	V <sub>c</sub> m/min	Feed column no.	V <sub>c</sub> m/min	Feed column no.		V <sub>c</sub> m/min	Feed column no.
80	D	104	E				80	D
70	D	91	E				70	D
80	<b>E</b>	104	<b>F</b>	80	D	D	80	<b>E</b>
70	<b>D</b>	91	<b>E</b>	70	C	C	70	<b>D</b>
80	D	104	E				80	D
70	D	91	E				70	D
60	D	78	E				60	D
60	D	78	E				60	D
80	E	104	F				80	E
60	D	78	E				60	D
50	D	65	E				50	D
50	C	65	D				50	C
25	B	32	C	25	<b>B</b>	<b>B</b>	25	B
25	<b>D</b>	32	<b>E</b>				25	<b>D</b>
25	C	32	<b>D</b>				25	C
25	C	32	<b>D</b>				25	C
20	C	26	D	20	C	C	20	C
				10	B	B		
15	B	20	C				15	B
90	<b>D</b>	117	<b>E</b>	90	D	D	90	<b>D</b>
80	<b>D</b>	104	<b>E</b>	80	D	D	80	<b>D</b>
80	<b>D</b>	91	<b>E</b>	80	D	D	80	<b>D</b>
70	<b>D</b>	104	<b>E</b>	70	D	D	70	<b>D</b>
				10	<b>A</b>	<b>A</b>	80	<b>D</b>
20	C	26	D				20	C
15	B	20	C				15	B
200	<b>G</b>	260	<b>H</b>				200	<b>G</b>
200	<b>G</b>	260	<b>H</b>				200	<b>G</b>
150	<b>F</b>	195	<b>G</b>				150	<b>F</b>
120	<b>F</b>	156	<b>G</b>				120	<b>F</b>
180	<b>F</b>	234	<b>F</b>				180	<b>E</b>
80	<b>E</b>	104	<b>F</b>				80	<b>E</b>
180	<b>E</b>	234	<b>F</b>	180	E	E	180	E
180	<b>E</b>	234	<b>F</b>	180	E	E	180	E
120	<b>E</b>	156	<b>F</b>				120	E
120	<b>E</b>	156	<b>F</b>				120	E
70	D	91	E				70	D
50	C	65	D				50	C
50	D	65	E				50	D
40	C	52	D				40	C
80	C	104	D				80	C

## Carbide drills

### Stub drills

#### Catalog no. 71184



A very rigid drill for use in automatic and capstan lathes. Especially suitable for the drilling of high tensile steel, cast steel, grey cast iron, CrNi-steels, bronzes, light metals and non-ferrous metals. Ideally suited to the economic machining of abrasive materials (AlSi-alloys), fibre-reinforced plastics and other Duroplastics that are liable to cause severe abrasion on cutting lips and lands.

### DIN 6539

Tool material	Solid Carbide
Surface	bright
Type	N
Cutting direction	right-hand
Point grinding	2-facet
Point angle °	118
Web thinned $\geq \emptyset$	1.00
Tolerance on $\emptyset$	h7

Helix angle: normal  
 Web thickness: normal  
 Web taper: normal  
 Flute form: normal  
 Web thinning: to DIN 1412, form A

### Stub drills

#### Catalog no. 51184



A very rigid drill for use in automatic and capstan lathes. Especially suitable for the drilling of high tensile steel, cast steel, grey cast iron, CrNi-steels, bronzes, light metals and non-ferrous metals. Ideally suited to the economic machining of abrasive materials (AlSi-alloys), fibre-reinforced plastics and other duroplastics that are liable to cause severe abrasion on cutting lips and lands. Long tool life thanks to TiAlN nano coating.

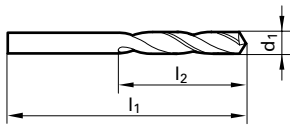
### DIN 6539

Tool material	Solid Carbide
Surface	TiAlN nano
Type	N
Cutting direction	right-hand
Point grinding	2-facet
Point angle °	118
Web thinned $\geq \emptyset$	2.00
Tolerance on $\emptyset$	h7

Helix angle: normal  
 Web thickness: normal  
 Web taper: normal  
 Flute form: normal  
 Web thinning: to DIN 1412, form A



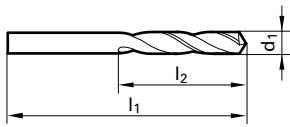
## Stub drills



Catalog no.	71184	51184
Tool material	Solid Carbide	
Discount group	102	102
Cutting direction	right-hand	right-hand
Surface	bright	TiAlN nano

d1 inch	d1 mm	l1 mm	l2 mm	price per piece	
	1.000	26.00	6.00	●	●
	1.100	28.00	7.00	●	●
	1.200	30.00	8.00	●	●
	1.300	30.00	8.00	●	●
	1.400	32.00	9.00	●	●
	1.500	32.00	9.00	●	●
	1.600	34.00	10.00	●	●
	1.700	34.00	10.00	●	●
	1.800	36.00	11.00	●	●
	1.900	36.00	11.00	●	●
	2.000	38.00	12.00	●	●
	2.100	38.00	12.00	●	●
	2.200	40.00	13.00	●	●
	2.300	40.00	13.00	●	●
3/32	2.380	43.00	14.00	●	●
	2.400	43.00	14.00	●	●
	2.500	43.00	14.00	●	●
	2.600	43.00	14.00	●	●
	2.700	46.00	16.00	●	●
7/64	2.780	46.00	16.00	●	●
	2.800	46.00	16.00	●	●
	2.900	46.00	16.00	●	●
	3.000	46.00	16.00	●	●
	3.100	49.00	18.00	●	●
1/8	3.170	49.00	18.00	●	●
	3.200	49.00	18.00	●	●
	3.300	49.00	18.00	●	●
	3.400	52.00	20.00	●	●
	3.500	52.00	20.00	●	●
9/64	3.570	52.00	20.00	●	●
	3.600	52.00	20.00	●	●
	3.700	52.00	20.00	●	●
	3.800	55.00	22.00	●	●
	3.900	55.00	22.00	●	●
5/32	3.970	55.00	22.00	●	●
	4.000	55.00	22.00	●	●
	4.100	55.00	22.00	●	●
	4.200	55.00	22.00	●	●
	4.300	58.00	24.00	●	●
11/64	4.370	58.00	24.00	●	●
	4.400	58.00	24.00	●	●
	4.500	58.00	24.00	●	●
	4.600	58.00	24.00	●	●
	4.700	58.00	24.00	●	●
3/16	4.760	62.00	26.00	●	●
	4.800	62.00	26.00	●	●
	4.900	62.00	26.00	●	●
	5.000	62.00	26.00	●	●
	5.100	62.00	26.00	●	●
	5.200	62.00	26.00	●	●
	5.300	62.00	26.00	●	●
	5.400	66.00	28.00	●	●
	5.500	66.00	28.00	●	●
	5.600	66.00	28.00	●	●
	5.700	66.00	28.00	●	●
	5.800	66.00	28.00	●	●
	5.900	66.00	28.00	●	●
	6.000	66.00	28.00	●	●
	6.100	70.00	31.00	●	●
	6.200	70.00	31.00	●	●

## Stub drills



Catalog no.	71184	51184
Tool material	Solid Carbide	
Discount group	102	102
Cutting direction	right-hand	right-hand
Surface	bright	TiAlN nano

d1 inch	d1 mm	l1 mm	l2 mm	price per piece	
1/4	6.300	70.00	31.00	●	●
	6.350	70.00	31.00	●	●
	6.400	70.00	31.00	●	●
	6.500	70.00	31.00	●	●
	6.600	70.00	31.00	●	●
	6.700	70.00	31.00	●	●
	6.800	74.00	34.00	●	●
9/32	6.900	74.00	34.00	●	●
	7.000	74.00	34.00	●	●
	7.100	74.00	34.00	●	●
	7.140	74.00	34.00	●	●
	7.200	74.00	34.00	●	●
	7.300	74.00	34.00	●	●
	7.400	74.00	34.00	●	●
5/16	7.500	74.00	34.00	●	●
	7.600	79.00	37.00	●	●
	7.700	79.00	37.00	●	●
	7.800	79.00	37.00	●	●
	7.900	79.00	37.00	●	●
	7.940	79.00	37.00	●	●
	8.000	79.00	37.00	●	●
11/32	8.100	79.00	37.00	●	●
	8.200	79.00	37.00	●	●
	8.300	79.00	37.00	●	●
	8.400	79.00	37.00	●	●
	8.500	79.00	37.00	●	●
	8.600	84.00	40.00	●	●
	8.700	84.00	40.00	●	●
7/16	8.730	84.00	40.00	●	●
	8.800	84.00	40.00	●	●
	8.900	84.00	40.00	●	●
	9.000	84.00	40.00	●	●
	9.100	84.00	40.00	●	●
	9.200	84.00	40.00	●	●
	9.300	84.00	40.00	●	●
15/32	9.400	84.00	40.00	●	●
	9.500	84.00	40.00	●	●
	9.600	89.00	43.00	●	●
	9.700	89.00	43.00	●	●
	9.800	89.00	43.00	●	●
	9.900	89.00	43.00	●	●
	10.000	89.00	43.00	●	●
7/8	10.100	89.00	43.00	●	●
	10.200	89.00	43.00	●	●
	10.300	89.00	43.00	●	●
	10.500	89.00	43.00	●	●
	11.000	95.00	47.00	●	●
	11.110	95.00	47.00	●	●
	11.500	95.00	47.00	●	●
1 1/8	11.910	102.00	51.00	●	●
	12.000	102.00	51.00	●	●
	13.000	102.00	51.00	●	●
	15.000	111.00	56.00	●	●

## Carbide drills

### Jobber drills

#### Catalog no. 71290



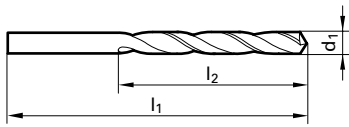
A standard drill for the drilling of high tensile steels, cast steel, grey cast iron, chilled cast iron, austenitic and manganese steel, CrNi-steels, bronzes, light metals and nonferrous metals. Ideally suited to the economic machining of abrasive materials (AlSi-alloys), fiber-reinforced plastics and other Duroplastics liable to cause severe abrasion on cutting lip and lands.

### Stock std.

Tool material	Solid Carbide
Surface	bright
Type	N
Cutting direction	right-hand
Point grinding	2-facet
Point angle °	118
Web thinned $\geq \emptyset$	2.00
Tolerance on $\emptyset$	h7

**Helix angle: normal**  
**Web thickness: normal**  
**Web taper: normal**  
**Flute form: normal**  
**Web thinning: to DIN 1412, form A**

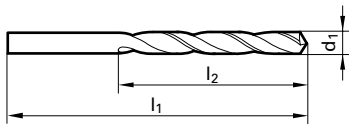
## Jobber drills



Catalog no.	71290
Tool material	Solid Carbide
Discount group	102
Cutting direction	right-hand
Surface	bright

d1 inch	d1 mm	l1 mm	l2 mm	price per piece
	1.000	34.00	12.00	●
	1.100	36.00	14.00	●
	1.200	38.00	16.00	●
	1.300	38.00	16.00	●
	1.400	40.00	18.00	●
	1.500	40.00	18.00	●
	1.600	43.00	20.00	●
	1.700	43.00	20.00	●
	1.800	46.00	22.00	●
	1.900	46.00	22.00	●
	2.000	49.00	24.00	●
	2.100	49.00	24.00	●
	2.200	53.00	27.00	●
	2.300	53.00	27.00	●
3/32	2.380	57.00	30.00	●
	2.400	57.00	30.00	●
	2.500	57.00	30.00	●
	2.600	57.00	30.00	●
	2.700	61.00	33.00	●
7/64	2.780	61.00	33.00	●
	2.800	61.00	33.00	●
	2.900	61.00	33.00	●
	3.000	61.00	33.00	●
	3.100	65.00	36.00	●
1/8	3.170	65.00	36.00	●
	3.200	65.00	36.00	●
	3.300	65.00	36.00	●
	3.400	70.00	39.00	●
	3.500	70.00	39.00	●
9/64	3.570	70.00	39.00	●
	3.600	70.00	39.00	●
	3.700	70.00	39.00	●
	3.800	75.00	43.00	●
	3.900	75.00	43.00	●
5/32	3.970	75.00	43.00	●
	4.000	75.00	43.00	●
	4.100	75.00	43.00	●
	4.200	75.00	43.00	●
	4.300	80.00	47.00	●
11/64	4.370	80.00	47.00	●
	4.400	80.00	47.00	●
	4.500	80.00	47.00	●
	4.600	80.00	47.00	●
	4.700	80.00	47.00	●
3/16	4.760	86.00	52.00	●
	4.800	86.00	52.00	●
	4.900	86.00	52.00	●
	5.000	86.00	52.00	●
	5.100	86.00	52.00	●
13/64	5.160	86.00	52.00	●
	5.200	86.00	52.00	●
	5.300	86.00	52.00	●
	5.400	93.00	57.00	●
	5.500	93.00	57.00	●
7/32	5.560	93.00	57.00	●
	5.600	93.00	57.00	●
	5.700	93.00	57.00	●
	5.800	93.00	57.00	●
	5.900	93.00	57.00	●
15/64	5.950	93.00	57.00	●

## Jobber drills



Catalog no.	71290
Tool material	Solid Carbide
Discount group	102
Cutting direction	right-hand
Surface	bright

d1 inch	d1 mm	l1 mm	l2 mm	price per piece
	6.000	93.00	57.00	●
	6.100	101.00	63.00	●
	6.200	101.00	63.00	●
1/4	6.300	101.00	63.00	●
	6.350	101.00	63.00	●
	6.400	101.00	63.00	●
	6.500	101.00	63.00	●
	6.600	101.00	63.00	●
	6.700	101.00	63.00	●
	6.800	109.00	69.00	●
	6.900	109.00	69.00	●
	7.000	109.00	69.00	●
9/32	7.100	109.00	69.00	●
	7.140	109.00	69.00	●
	7.200	109.00	69.00	●
	7.300	109.00	69.00	●
	7.400	109.00	69.00	●
	7.500	109.00	69.00	●
	7.600	117.00	75.00	●
	7.700	117.00	75.00	●
	7.800	117.00	75.00	●
5/16	7.900	117.00	75.00	●
	7.940	117.00	75.00	●
	8.000	117.00	75.00	●
	8.100	117.00	75.00	●
	8.200	117.00	75.00	●
	8.300	117.00	75.00	●
	8.400	117.00	75.00	●
	8.500	117.00	75.00	●
	8.600	125.00	81.00	●
11/32	8.700	125.00	81.00	●
	8.730	125.00	81.00	●
	8.800	125.00	81.00	●
	8.900	125.00	81.00	●
	9.000	125.00	81.00	●
	9.100	125.00	81.00	●
	9.200	125.00	81.00	●
	9.300	125.00	81.00	●
	9.400	125.00	81.00	●
	9.500	125.00	81.00	●
	9.600	133.00	87.00	●
	9.700	133.00	87.00	●
	9.800	133.00	87.00	●
	9.900	133.00	87.00	●
	10.000	133.00	87.00	●
	10.200	133.00	87.00	●
	10.300	133.00	87.00	●
	10.500	133.00	87.00	●
7/16	11.000	142.00	94.00	●
	11.110	142.00	94.00	●
	11.500	142.00	94.00	●
15/32	11.910	151.00	101.00	●
	12.000	151.00	101.00	●

## Carbide drills

### NC-spotting drills

#### Catalog no. 71190



Special drill for accurate and fast spotting on NC-machines, jig drills and other capital-intensive boring machines. For centring and chamfering tapping holes in one operation. Especially suitable for spotting in high tensile steels, cast steels, grey cast iron, chilled cast iron, austenitic and manganese steel, CrNi-steels, bronzes, light metals and non-ferrous metals.

Please note: Only suitable for shallow drilling depth.

### Stock std.

Tool material	Solid Carbide
Surface	bright
Type	N
Cutting direction	right-hand
Point grinding	Facet point grind
Point angle °	90
Web thinned $\geq \emptyset$	
Tolerance on $\emptyset$	h6
Helix angle: smaller than normal Web thickness: considerably smaller than normal Flute form: normal Web thinning: none	

### NC-spotting drills

#### Catalog no. 71191



Special drill for accurate and fast spotting on NC-machines, jig drills and other capital-intensive boring machines. For centring and chamfering tapping holes in one operation. Especially suitable for spotting in high tensile steels, cast steels, grey cast iron, chilled cast iron, austenitic and manganese steel, CrNi-steels, bronzes, light metals and non-ferrous metals.

Please note: Only suitable for shallow drilling depth.

### Stock std.

Tool material	Solid Carbide
Surface	bright
Type	N
Cutting direction	right-hand
Point grinding	Facet point grind
Point angle °	120
Web thinned $\geq \emptyset$	
Tolerance on $\emptyset$	h6
Helix angle: smaller than normal Web thickness: considerably smaller than normal Flute form: normal Web thinning: none	

### NC-spotting drills

#### Catalog no. 71189



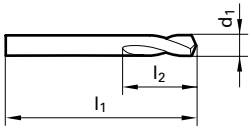
Special drill for accurate and fast spotting on NC-machines, jig drills and other capital-intensive boring machines. For centring and chamfering tapping holes in one operation. Especially suitable for spotting in high tensile steels, cast steels, grey cast iron, chilled cast iron, austenitic and manganese steel, CrNi-steels, bronzes, light metals and non-ferrous metals.

Please note: Only suitable for shallow drilling depth.

### Stock std.

Tool material	Solid Carbide
Surface	bright
Type	N
Cutting direction	right-hand
Point grinding	Facet point grind
Point angle °	142
Web thinned $\geq \emptyset$	
Tolerance on $\emptyset$	h6
Helix angle: smaller than normal Web thickness: considerably smaller than normal Flute form: normal Web thinning: none	

## NC-spotting drills



Catalog no.	71190	71191	71189
Tool material	Solid Carbide		
Discount group	102	102	102
Cutting direction	right-hand	right-hand	right-hand
Surface	bright	bright	bright

d1	l1	l2	price per piece		
mm	mm	mm			
4.000	55.00	12.00			●
5.000	62.00	14.00	●	●	●
6.000	66.00	16.00	●	●	●
8.000	79.00	21.00	●	●	●
10.000	89.00	25.00	●	●	●
12.000	102.00	30.00	●	●	●
16.000	115.00	37.50	●	●	●
20.000	131.00	45.00	●	●	●

## Carbide drills

### Special drills with carbide blade

#### Catalog no. 71180



Designed for drilling spring steel, hard cast iron of more than 300 HB, pure molybdenum, hard bronze and other materials with similar properties.

With tang acc. DIN 1809

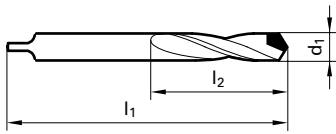
### DIN 8037

Tool material	Carbide
Surface	bright
Type	N
Cutting direction	right-hand
Point grinding	Relieved cone
Point angle °	118
Web thinned $\geq \emptyset$	1.50
Tolerance on $\emptyset$	h8

Helix angle: normal  
 Web thickness: normal  
 Web taper: normal  
 Web thinning: to DIN 1412, form A



## Special drills with carbide blade



Catalog no.	71180
Tool material	Carbide
Discount group	102
Cutting direction	right-hand
Surface	bright

d1	l1	l2	price per piece
mm	mm	mm	
1.500	40.00	14.00	○
3.000	50.00	20.00	●
3.500	56.00	25.00	●
4.000	56.00	25.00	●
4.500	63.00	28.00	●
5.000	63.00	28.00	●
5.500	71.00	32.00	●
6.000	71.00	32.00	●
6.500	71.00	32.00	●
7.000	80.00	40.00	●
7.500	80.00	40.00	●
8.000	80.00	40.00	●
8.500	90.00	50.00	●
9.000	90.00	50.00	●
9.500	90.00	50.00	●
10.000	100.00	56.00	●
10.500	100.00	56.00	●
11.000	100.00	56.00	●
11.500	112.00	63.00	●
12.000	112.00	63.00	●
12.500	112.00	63.00	●
13.000	112.00	63.00	●
13.500	125.00	71.00	●
14.000	125.00	71.00	●
14.500	125.00	71.00	●
15.000	125.00	71.00	●
16.000	140.00	80.00	●
16.500	140.00	80.00	●
20.000	160.00	90.00	●

## Carbide drills

### Special drills with carbide blade

### DIN 8041

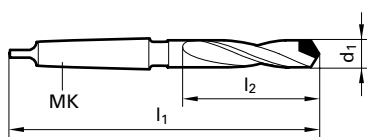
#### Catalog no. 71380



Specially designed for drilling spring steel, hard cast iron of more than 300 HB, pure molybdenum, very hard bronze and similar difficult materials as well as synthetic materials reinforced with glass fibres (e.g. printed circuit boards) and other resin based thermo-hardened products likely to cause rapid wear on the lands and cutting edges of high speed steel drills.

Tool material	<b>Carbide</b>
Surface	bright
Type	<b>N</b>
Cutting direction	right-hand
Point grinding	Relieved cone
Point angle °	118
Web thinned $\geq \emptyset$	10.00
Tolerance on $\emptyset$	h8

Helix angle: normal  
 Web thickness: normal  
 Web taper: normal  
 Flute form: normal  
 Web thinning: to DIN 1412, form A



Catalog no.	71380
Tool material	<b>Carbide</b>
Discount group	102
Cutting direction	right-hand
Surface	bright

d1 mm	MT	l1 mm	l2 mm	price per piece
11.000	1	140.00	50.00	○
12.500	1	146.00	56.00	○
13.000	1	146.00	56.00	○
16.000	2	175.00	70.00	○
17.000	2	175.00	70.00	○
18.000	2	185.00	80.00	○
20.000	3	215.00	90.00	○
30.000	4	275.00	125.00	○
33.000	4	290.00	140.00	○

## Solid carbide centre drills

### Center drills without flat

#### Catalog no. 71616



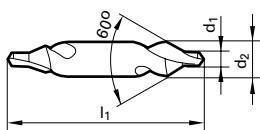
Standard drill for producing centre holes to DIN 332, sheet 1, form A (without protecting chamfer). Especially suitable for the drilling of high tensile steels, cast steel, grey cast iron, chilled cast iron, austenitic manganese steel, CrNi-steels, bronzes, light metals and nonferrous metals. Also suited for the machining of abrasive materials (AlSi-alloys), fiber-reinforced plastics and other Duroplastics likely to cause severe abrasion on cutting lips and lands.

Center drills with  $\varnothing$  0.5 and 0.8 mm are only single-sided.

### Stock std.

Tool material	Solid Carbide
Surface	bright
Form	A
Cutting direction	right-hand
Point grinding	Relieved cone
Point angle °	118
Web thinned $\geq \varnothing$	1.60
Tolerance on $\varnothing$	

tol. on body  $\varnothing$ : h7 (to DIN h9)  
 tol. on pilot  $\varnothing$  (to new standard):  
 $\varnothing$  0,50 – 2,50 = + 0,14 mm  
 $\varnothing$  3,15 – 5,00 = + 0,18 mm  
 $\varnothing$  6,30 – 10,0 = + 0,22 mm  
 $\varnothing$  12,50 = + 0,27 mm  
 Web thinning: to DIN 1412, form A



Catalog no.	71616
Tool material	Solid Carbide
Discount group	102
Cutting direction	right-hand
Surface	bright

d1	d2	l1	price per piece
mm	mm	mm	
1.000	3.150	31.50	●
1.250	3.150	31.50	●
1.600	4.000	35.50	●
2.000	5.000	40.00	●
2.500	6.300	45.00	●
3.150	8.000	50.00	●
4.000	10.000	56.00	●
5.000	12.500	63.00	●
6.300	16.000	71.00	●

## One-Shot-Drill Application Range

Our One-Shot-Drills are a special development for applications in hardened steel with a hardness of 40 to 65 HRC at drilling depths of up to  $3 \times D$ .

This drill is also extremely well suited for producing bores in mining bore heads. Such bores are required to hold rockbits. Here the One-Shot-Drills convince by their outstanding accuracy:

- diameter tolerances of  $\pm 0.005$  mm ( $\leq$  IT 7) and a process stability/ accuracy of 0.002 – 0.003 mm from bore to bore
- surface quality of the bore to ca.  $R_a$  1.0 – 0.2  $\mu$ m to class N6/N7 of DIN ISO 1302
- high positioning accuracy

The One-Shot-Drill achieves these results continuously, throughout its tool life, without reaming. The minimum target tool life is 3000 bores. This is a lot considering that this is achieved in steels of 47 HRC and more.

What's more, the One-Shot-Drill is a well proven drill in steels of 60 HRC and more as well. Required for such performance are performance machines, accurately aligned tool holders and spindles as well as steady, defined feeds.

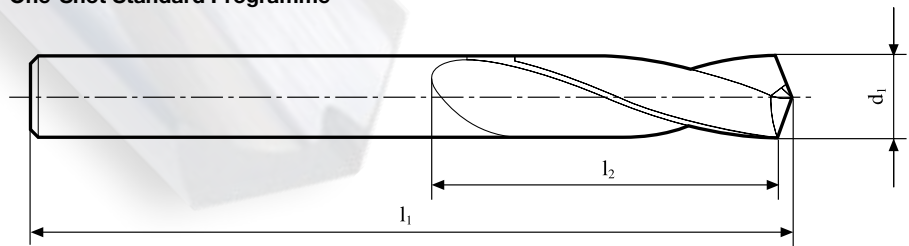
You can support the precision requirements by using hydraulic chucks.



### Specifications

Point Geometry:	with secondary flank/ relieve cone
Point Angle:	140°
Web thinning:	FL
Flute Form:	FL
Shank:	straight h6
Carbide:	solid K40
Coating:	TiAlN

### One-Shot Standard Programme



Size-Ø mm $d_1$	Overall Length mm $l_1$	Flute Length mm $l_2$
4.0	55	22
4.3	55	22
5.0	62	26
5.1	62	26
6.0	66	28
6.9	74	34
7.0	74	34
8.0	79	37
8.6	84	40
9.0	84	40
10.0	89	43
10.3	89	43
11.0	95	47
12.0	102	51