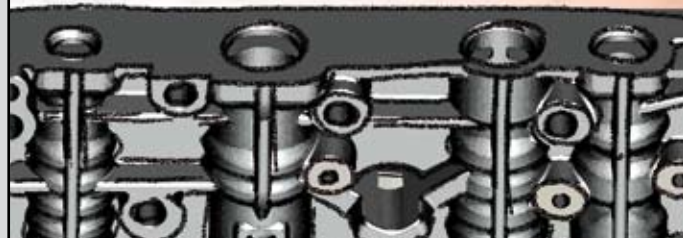


## **Super V70**

Solid Carbide Deep Hole Drills



Chip – by Chip – to the Top

# Super V70

## Deep Hole Drills

### Efficient drilling of deep holes

Especially for the efficient drilling of deep holes up to 8xD and 12xD STOCK has developed two solid carbide twist drills: SuperV70 deep hole drills. They are designed to machine nearby every short and long chipping material, e. g. :

- common structural and case hardened steels
- tempering steels
- alloyed steels up to a tensile strength of appr. 1000 N/mm<sup>2</sup> (8xD) or 1200 N/mm<sup>2</sup> (12xD)
- tool steels
- carbon steels
- cast steels
- cast iron
- aluminium and aluminium alloys

The geometry of both tools is based on the well known and reliable STOCK V70 profile with special flute design, optimized for drilling depths up to 8xD or 12xD.

This optimization of the new SuperV70 deep hole drills results in the following characteristics:

- **The 8xD drill machines appr. 70 percent of all materials without internal coolant and without swarf removal!**
- **It is excellently suited for dry machining.**
- **The 12xD drill gains an optimum chip break also under difficult conditions! Moreover the internal coolant supply supports safe chip evacuation while drilling tough and long chipping materials.**

Another characteristic of our SuperV70 deep hole drills is the SuperV point geometry, that replenishes the common V70 profile perfectly. This combination offers further outstanding advantages to both drills:

- **safe chip break also with long chipping materials**
- **excellent self centering**
- **tight hole tolerances**
- **high concentricity**
- **improved surface qualities**
- **high drilling performance**

Our recommendations for the successful application of SuperV70 deep hole drills are:

- **powerful machines**
- **minimum play in spindle bearings**
- **accurate aligned tool holders**
- **maximum concentricity error of clamped tool should be 0,02 mm**

Furthermore we recommend the application of hydraulic chucks and chatterfree feeds. Therefore STOCK offers both drills with plain shanks according to DIN 6535 HA as standard.

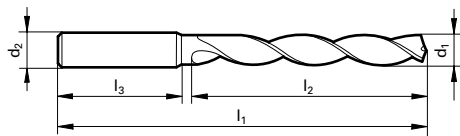


# Super V70 without internal coolant



solid carbide  
 FIRE coated  
 optimized V70 flute design  
 SuperV point geometry, form U  
 standard point angle with  
 defined angles  
 point angle 140°

helix angle 40°  
 web thickness larger than  
 standard  
 without web taper  
 Ø tolerance m7  
 shank to DIN 6535, form HA  
 shank tolerance h6



Catalogue no.	51782
Tool material	Solid carbide
Carbide grade	K/P
Surface	FIRE
Type	SuperV70
Drilling depth	8 x D

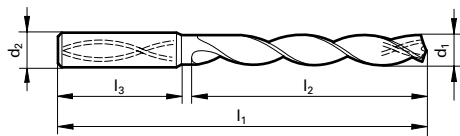
d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Availability
4.00	6	83	45	36	●
4.20	6	83	45	36	●
4.30	6	83	45	36	●
4.50	6	83	45	36	●
5.00	6	97	57	36	●
5.20	6	97	57	36	●
5.50	6	97	57	36	●
6.00	6	97	57	36	●
6.50	8	117	78	36	●
6.80	8	117	78	36	●
7.00	8	117	78	36	●
7.50	8	117	78	36	●
7.80	8	117	78	36	●
8.00	8	117	78	36	●
8.50	10	143	96	40	●
8.80	10	143	96	40	●
9.00	10	143	96	40	●
9.50	10	143	96	40	●
9.80	10	143	96	40	●
10.00	10	143	96	40	●
10.20	12	163	114	45	●
10.50	12	163	114	45	●
10.80	12	163	114	45	●
11.00	12	163	114	45	●
11.50	12	163	114	45	●
11.80	12	163	114	45	●
12.00	12	163	114	45	●
12.50	14	182	133	45	●
13.00	14	182	133	45	●
13.50	14	182	133	45	●
14.00	14	182	133	45	●
14.50	16	204	152	48	●
15.00	16	204	152	48	●
15.50	16	204	152	48	●
16.00	16	204	152	48	●
16.50	18	223	171	48	●
17.00	18	223	171	48	●
17.50	18	223	171	48	●
18.00	18	223	171	48	●
18.50	20	244	190	50	●
19.00	20	244	190	50	●
19.50	20	244	190	50	●
20.00	20	244	190	50	●

\*intermediate diameters on request

# Super V70 with internal coolant



solid carbide	helix angle 40°
FIRE coated	web thickness larger than standard
optimized V70 flute design	without web taper
SuperV point geometry, form U	Ø tolerance m7
standard point angle with defined angles	shank to DIN 6535, form HA
point angle 140°	shank tolerance h6



Catalogue no.	<b>51783</b>
Tool material	<b>Solid carbide</b>
Carbide grade	<b>K/P</b>
Surface	<b>FIRE</b>
Type	<b>SuperV70</b>
Drilling depth	<b>12 x D</b>

d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Availability
4.00	6	102	64	36	●
4.20	6	102	64	36	●
4.30	6	102	64	36	●
4.50	6	102	64	36	●
5.00	6	116	78	36	●
5.50	6	116	78	36	●
6.00	6	116	78	36	●
6.50	8	146	108	36	●
6.80	8	146	108	36	●
7.00	8	146	108	36	●
7.50	8	146	108	36	●
8.00	8	146	108	36	●
8.50	10	162	120	40	●
9.00	10	162	120	40	●
9.50	10	162	120	40	●
10.00	10	162	120	40	●
10.20	12	204	156	45	●
10.50	12	204	156	45	●
11.00	12	204	156	45	●
11.50	12	204	156	45	●
12.00	12	204	156	45	●
12.50	14	230	182	45	●
12.70	14	230	182	45	●
13.00	14	230	182	45	●
13.50	14	230	182	45	●
14.00	14	230	182	45	●
14.50	16	260	208	48	●
15.00	16	260	208	48	●
16.00	16	260	208	48	●
16.50	18	285	234	48	●
17.00	18	285	234	48	●
18.00	18	285	234	48	●
19.00	20	310	258	50	●
20.00	20	310	258	50	●

\*intermediate diameters on request

# Application Recommendations

## Super V70 Deep Hole Drills

Feed column										
Code-letter	A	B	C	D	E	F	G	H	I	
drill- $\phi$ 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	

NX-Drills with feed rate code **in bold** are the preferred choices for the respective material group.

### Application recommendations for 8xD and 12xD drills:

Pilot holes are necessary for extra length drills  $\geq 7 \times D$ :

- the pilot hole can be produced with a short, rigid drill. The diameter should be 0.01 - 0.02 mm larger than the diameter of the Super V drill, the drilling depth  $> 1 \times D$ .
- alternatively Super V drills can produce their own pilot hole. Cutting speed and feed rate should be reduced by 30-40%. The recommended minimum coolant pressure is 40 bar. The universal applicability of the new K-grade means that we now define the carbide application groups with K or K/P only.

### General recommendations:

For safety reasons it is very important, that a drill does not exceed a speed of  $n = 6,000$  rev/min when unsupported. The centrifugal forces can break these long tools before reaching the workpiece surface!

\* use tools with large back taper

### Coolants & Lubricants:

- Cutting oil, highly activated
- Soluble oil (emulsion)
- None

Material Group	Material Group Example, new designation (old designation in brackets) Codes in bold = material to DIN EN	Tensile str. N/mm <sup>2</sup>	Hard- ness	Cool- ant	$v_c$ m/min	Feed Rate Code	$v_c$ m/min	Feed Rate Code
Common structural steels	<b>1.0035</b> S185(S13), <b>1.0486</b> P275N(S1E285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	$\leq 500$		<input checked="" type="checkbox"/>	100	<b>E</b>	90	<b>F</b>
	<b>1.0050</b> E295 (S150-2), <b>1.0070</b> E360 (S170-2), <b>1.8937</b> P500NH (WSTE500)	$> 500-850$		<input checked="" type="checkbox"/>	85	<b>D</b>	80	<b>E</b>
Free-cutting steels	<b>1.0718</b> 115MnPB30 (9SMnPb28), <b>1.0736</b> 115Mn37 (9SMn36)	$\leq 850$		<input checked="" type="checkbox"/>	110	<b>F</b>	100	<b>G</b>
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	850-1000		<input checked="" type="checkbox"/>	85	<b>F</b>	90	<b>G</b>
Unalloyed temper steels	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	$\leq 700$		<input checked="" type="checkbox"/>	90	<b>F</b>	90	<b>G</b>
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	700-850		<input checked="" type="checkbox"/>	85	<b>E</b>	80	<b>F</b>
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	850-1000		<input checked="" type="checkbox"/>	80	<b>E</b>	80	<b>F</b>
Alloyed temper steels	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	850- $\leq 1000$		<input checked="" type="checkbox"/>	80	<b>E</b>	80	<b>F</b>
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	1000-1200		<input checked="" type="checkbox"/>	75	<b>E</b>	60	<b>F</b>
Unalloyed case hard. steels	<b>1.0301</b> C10, <b>1.1121</b> C10E (Ck10)	$\leq 750$		<input checked="" type="checkbox"/>	100	<b>F</b>	90	<b>G</b>
Alloyed case hardened steels	<b>1.7043</b> 38Cr4	850- $\leq 1000$		<input checked="" type="checkbox"/>	85	<b>E</b>	80	<b>F</b>
	<b>1.5752</b> 15NiCr13 (15NiCr13), <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	1000-1200		<input checked="" type="checkbox"/>	60	<b>C</b>	60	<b>D</b>
Nitrided steels	<b>1.8504</b> 34CrAl6	$\geq 850-\leq 1000$		<input checked="" type="checkbox"/>	75	<b>E</b>	60	<b>F</b>
Tool steels	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	$> 1000-1200$		<input checked="" type="checkbox"/>	70	<b>D</b>	50	<b>D</b>
	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	$\leq 850$		<input checked="" type="checkbox"/>	50	D	50	E
High speed steels	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	$> 850-1000$		<input checked="" type="checkbox"/>	35	C	40	D
	<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	$\geq 650-1000$		<input checked="" type="checkbox"/>	40	B	35	D
Spring steels	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)	$\leq 330$ HB		<input checked="" type="checkbox"/>	40	A	35	B
Stainless steels, sulphured , austenitic , martensitic	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	$\leq 850$		<input checked="" type="checkbox"/>	40	C	40	D
	<b>1.4301</b> X5CrNi18-10, <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi17 12 2	$\leq 850$		<input checked="" type="checkbox"/>	40	C	40	D
	<b>1.4057</b> X20CrNi17 12 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	$\leq 850$		<input checked="" type="checkbox"/>	30	C	40	D
Hardened steels	-	$\leq 40-48$ HRC		<input checked="" type="checkbox"/>	35	A		
	-	$> 48-60$ HRC		<input checked="" type="checkbox"/>	20	A		
Special alloys	Nimonic, Inconel, Monel, Hastelloy	$\leq 1200$		<input checked="" type="checkbox"/>	20	B		
Cast iron	<b>0.6010</b> EN-GJL-100(GG10), <b>0.6020</b> EN-GJL-200(GG20)	$\leq 240$ HB		<input checked="" type="checkbox"/>	130	<b>G</b>	120	<b>H</b>
	<b>0.6025</b> EN-GJL-250(GG25), <b>0.6035</b> EN-GJL-350(GG35)	$< 300$ HB		<input checked="" type="checkbox"/>	110	<b>G</b>	120	<b>H</b>
Spheroidal graphite iron and malleable cast iron	<b>0.7050</b> EN-GJS-500-7(GGG50), <b>0.8035</b> EN-GJMW-350-4(GTW35)	$\leq 240$ HB		<input checked="" type="checkbox"/>	90	<b>G</b>	90	<b>H</b>
	<b>0.7070</b> EN-GJS-700-2(GGG70), <b>0.8170</b> EN-GJMB-700-2(GTS70)	$< 300$ HB		<input checked="" type="checkbox"/>	85	<b>F</b>	80	<b>G</b>
Chilled cast iron	-	$\leq 350$ HB		<input checked="" type="checkbox"/>	25	A		
Titanium and Ti-alloys	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	$\leq 850$		<input checked="" type="checkbox"/>	30	A		
	<b>3.7154</b> TiAl6Zr5, <b>3.7164</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	$> 850-1200$		<input checked="" type="checkbox"/>	25	A		
Aluminium and Al-alloys	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	$\leq 400$		<input checked="" type="checkbox"/>	220	<b>G</b>	150	H
	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	$\leq 450$		<input checked="" type="checkbox"/>	220	<b>G</b>	150	H
Al-cast alloys $\leq 10$ % Si $> 10$ % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	$\leq 600$		<input checked="" type="checkbox"/>	180	<b>G</b>	150	H
	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	$\leq 600$		<input checked="" type="checkbox"/>	150	<b>G</b>	120	H
Magnesium alloys $> 10$ % Si	MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	$\leq 450$		<input type="checkbox"/>	210	<b>F</b>	150	<b>G</b>
Copper, low alloyed	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	$\leq 400$		<input checked="" type="checkbox"/>	85	<b>F*</b>	80	F
Brass, short chipping , long chipping	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	$\leq 600$		<input checked="" type="checkbox"/>	220	<b>G</b>	120	<b>G</b>
	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	$\leq 600$		<input checked="" type="checkbox"/>	150	<b>F</b>	120	<b>F</b>
Bronze, short chipping	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	$\leq 600$		<input checked="" type="checkbox"/>	85	<b>F*</b>	40	F
	<b>2.0790</b> CuNi18Zn19Pb	$> 600-850$		<input checked="" type="checkbox"/>	70	<b>E*</b>		
Bronze, long chipping	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	$\leq 850$		<input checked="" type="checkbox"/>	60	<b>E*</b>		
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	$> 850-1000$		<input checked="" type="checkbox"/>	55	<b>E*</b>	40	E
Duroplastics	Bakelint, Resopal, Pertinax, Moltopren	-		<input type="checkbox"/>				
Thermoplastics	Plexiglass, Hostalen, Novodur, Makralon	-		<input checked="" type="checkbox"/>				
Kevlar	-	-		<input type="checkbox"/>				
Glass/carbon-plastics	GFK/CFK	-		<input type="checkbox"/>				



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Chip – by Chip – to the Top