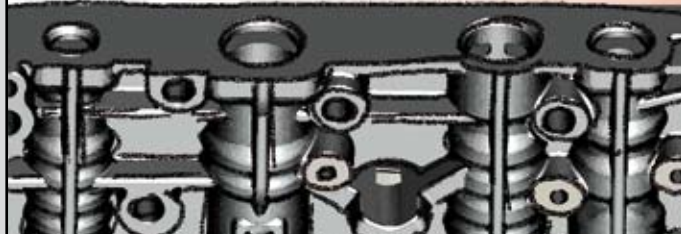


Super V70

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 new 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/mm² (8xD) or 1200 N/mm² (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.

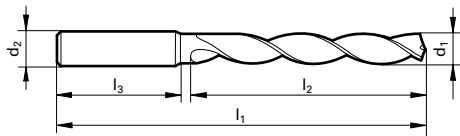


Super V70 without internal coolant



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



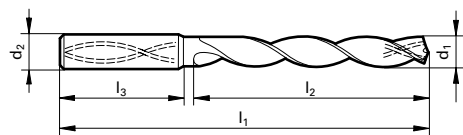
Order no.	51782
Tool material	Solid carbide
Carbide grade	K/P
Surface	FIRE
Type	SuperV70
Drilling depth	8 x D

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	●

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



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

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	●

Application Recommendations Super V70 Deep Hole Drills

Feed column										
Code-letter	A	B	C	D	E	F	G	H	I	
drill- ϕ mm	0.50	0.004	0.006	0.007	0.008	0.010	0.012	0.014	0.016	0.019
	1.00	0.006	0.008	0.012	0.014	0.016	0.018	0.020	0.023	0.025
	2.00	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.100	0.125
	2.50	0.025	0.032	0.040	0.050	0.063	0.080	0.100	0.125	0.160
	3.15	0.032	0.040	0.050	0.063	0.080	0.100	0.125	0.160	0.160
	4.00	0.040	0.050	0.063	0.080	0.100	0.125	0.160	0.200	0.200
	5.00	0.040	0.050	0.063	0.080	0.100	0.125	0.160	0.200	0.250
	6.30	0.050	0.063	0.080	0.100	0.125	0.160	0.200	0.250	0.315
	8.00	0.063	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.315
	10.00	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.400
	12.50	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500
	16.00	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630
	20.00	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.630
	25.00	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	0.800
	31.50	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000
	40.00	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000	1.250
	50.00	0.250	0.310	0.400	0.500	0.630	0.800	1.000	1.250	1.250
	63.00	0.315	0.400	0.500	0.630	0.800	1.000	1.250	1.600	1.600
80.00	0.400	0.500	0.630	0.800	1.000	1.250	1.600	1.600	2.000	

Tools 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 $\geq 7xD$:

- 1.) 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 $> 1 \times D$.
- 2.) 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:

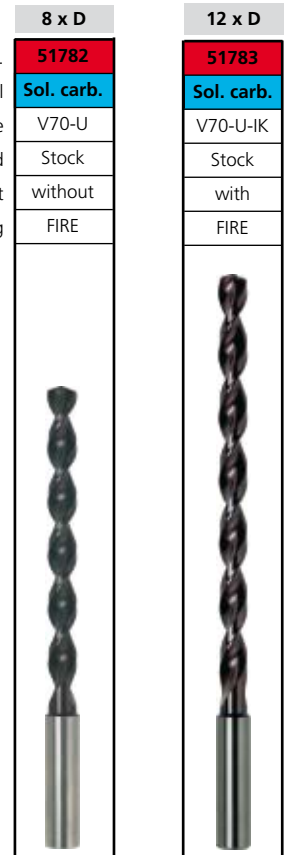
For safety reasons it is very important, that a drill does not exceed a speed of $n = 6,000$ rev/min when unsupported. The centrifugal forces can break these long tools before reaching the workpiece surface!

* 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 ²	Hard- ness	Cool- ant	v_c m/min	Feed Rate Code	v_c m/min	Feed Rate Code
Common structural steels	1.0035 S185(S13), 1.0486 P275N(S1E285), 1.0345 P235GH(H1), 1.0425 P265GH(H2) 1.0050 E295 (S10-2), 1.0070 E360 (S170-2), 1.8937 P500NH (WSTE500)	≤ 500 >500-850		<input checked="" type="checkbox"/>	100 85	E D	90 80	F E
Free-cutting steels	1.0718 115MnPb30 (95MnPb28), 1.0736 115Mn37 (95Mn36) 1.0727 46S20 (45S20), 1.0728 (60S20), 1.0757 46SPb20 (45SPb20)	≤ 850 850-1000		<input checked="" type="checkbox"/>	110 85	F F	100 90	G G
Unalloyed temper steels	1.0402 C22, 1.1178 C30E (Ck30) 1.0503 C45, 1.1191 C45E (Ck45) 1.0601 C60, 1.1221 C60E (Ck60)	≤ 700 700-850 850-1000		<input checked="" type="checkbox"/>	90 85 80	F E E	90 80 80	F G F
Alloyed temper steels	1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4	850- ≤ 1000 1000-1200		<input checked="" type="checkbox"/>	80 75	E E	80 60	F F
Unalloyed case hard. steels	1.0301 C10, 1.1121 C10E (Ck10)	≤ 750		<input checked="" type="checkbox"/>	100	F	90	G
Alloyed case hardened steels	1.7043 38Cr4 1.5752 15NiCr13 (15NiCr13), 1.7131 16MnCr5, 1.7264 20CrMo5	850- ≤ 1000 1000-1200		<input checked="" type="checkbox"/>	85 60	E C	80 60	F D
Nitrided steels	1.8504 34CrAl6 1.8519 31CrMoV9, 1.8550 34CrAlNi7	≥ 850 - ≤ 1000 >1000-1200		<input checked="" type="checkbox"/>	75 70	E D	60 50	F D
Tool steels	1.1750 C75W, 1.2067 102Cr6, 1.2307 29CrMoV9 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2767 X45NiCrMo4	≤ 850 >850-1000		<input checked="" type="checkbox"/>	50 35	D C	50 40	E D
High speed steels	1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3	≥ 650 -1000		<input checked="" type="checkbox"/>	40	B	35	D
Spring steels	1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4 (51CrV4)	≤ 330 HB		<input checked="" type="checkbox"/>	40	A	35	B
Stainless steels, sulphured , austenitic , martensitic	1.4005 X12CrS13, 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X8CrNiS18-9 1.4301 X5CrNi18-10, 1.4541 X6CrNiTi18-10, 1.4571 X6CrNiMoTi17 12 2 1.4057 X20CrNi172 (X17CrNi16-2), 1.4122 X39CrMo17-1, 1.4521 X2CrMoTi18-2	≤ 850 ≤ 850 ≤ 850		<input checked="" type="checkbox"/>	40 40 30	C C C	40 40 40	D D D
Hardened steels	-	≤ 40 -48 HRC >48-60 HRC		<input checked="" type="checkbox"/>	35 20 20	A A B		
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤ 1200		<input checked="" type="checkbox"/>	20	B		
Cast iron	0.6010 EN-GJL-100(GG10), 0.6020 EN-GJL-200(GG20) 0.6025 EN-GJL-250(GG25), 0.6035 EN-GJL-350(GG35)	≤ 240 HB <300 HB		<input checked="" type="checkbox"/>	130 110	G G	120 120	H H
Spheroidal graphite iron and malleable cast iron	0.7050 EN-GJS-500-7(GGG50), 0.8035 EN-GJMW-350-4(GTW35) 0.7070 EN-GJS-700-2(GGG70), 0.8170 EN-GJMB-700-2(GTS70)	≤ 240 HB <300 HB		<input checked="" type="checkbox"/>	90 85	G F	90 80	H G
Chilled cast iron	-	≤ 350 HB		<input checked="" type="checkbox"/>	25	A		
Titanium and Ti-alloys	3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7164 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤ 850 >850-1200		<input checked="" type="checkbox"/>	30 25	A A		
Aluminium and Al-alloys	3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1	≤ 400		<input checked="" type="checkbox"/>	220	G	150	H
Al-wrought alloys	3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	≤ 450		<input checked="" type="checkbox"/>	220	G	150	H
Al-cast alloys ≤ 10 % Si > 10 % Si	3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	≤ 600 ≤ 600		<input checked="" type="checkbox"/>	180 150	G G	150 120	H H
Magnesium alloys > 10 % Si	MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	≤ 450		<input type="checkbox"/>	210	F	150	G
Copper, low alloyed	2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb	≤ 400		<input checked="" type="checkbox"/>	85	F*	80	F
Brass, short chipping , long chipping	2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5	≤ 600 ≤ 600		<input checked="" type="checkbox"/>	220 150	G F	120 120	G F
Bronze, short chipping	2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0790 CuNi18Zn19Pb	≤ 600 >600-850		<input checked="" type="checkbox"/>	85 70	F* E*	40	F
Bronze, long chipping	2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10 2.0980 CuAl11Ni, 2.1247 CuBe2	≤ 850 >850-1000		<input checked="" type="checkbox"/>	60 55	E* E*	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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