# SuperV-T

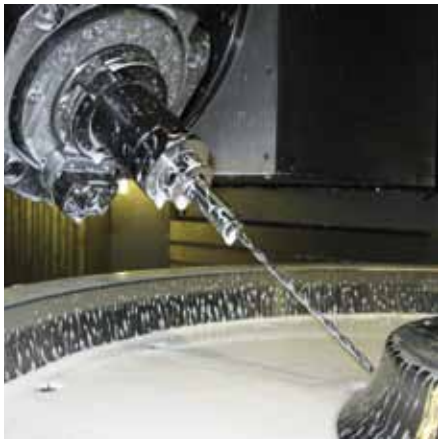
Solid Carbide Spiral-Flute
Deep Hole Drills for
drilling depths
from 15 up to 40xD

Chip – by Chip – to the Top

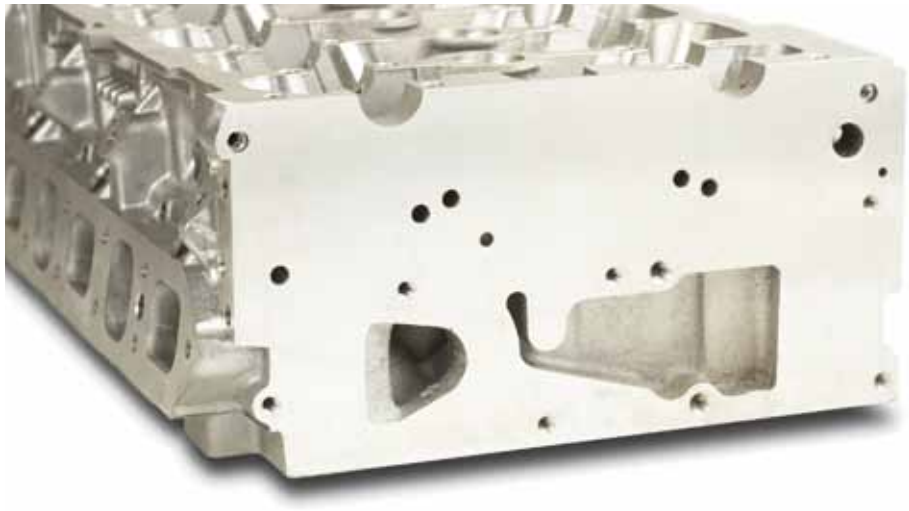
# Spiralised solid carbide deep hole drill SuperV-T

## Overwiew

| Type | DIN | Tool material | Surface finish | Drilling depth | Shank form | Coolant | Point grinding | Point angle | Tolerance | Diameter range mm | Catalogue no. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SuperV-T** | Stock std. | Solid carbide | AlTiN-Tip-coated | 15 x D | HA | with | relieved cone | 135° | h7 | 3.000-14.000 | **51764** |
| | Stock std. | Solid carbide | AlTiN-Tip-coated | 20 x D | HA | with | relieved cone | 135° | h7 | 3.000-14.000 | **51765** |
| | Stock std. | Solid carbide | AlTiN-Tip-coated | 25 x D | HA | with | relieved cone | 135° | h7 | 3.000-12.000 | **51766** |
| | Stock std. | Solid carbide | AlTiN-Tip-coated | 30 x D | HA | with | relieved cone | 135° | h7 | 3.000-10.000 | **51767** |
| | Stock std. | Solid carbide | AlTiN-Tip-coated | 40 x D | HA | with | relieved cone | 135° | h7 | 3.000-8.000 | **51768** |



The STOCK SuperV-T in use:
At Bochumer Verein Verkehrstechnik the spiralised deep hole drill convinces above all with very small, near crumb-like chips machining rail and tram wheels (diameter 6 mm, drilling depths 106 mm, tool life 12 m).



For the production of deep holes in aluminium the STOCK SuperV-T is also available as a special Alu version with application orientated geometry and flutes.

# Spiralised solid carbide deep hole drill SuperV-T

## Application recommendations

**Feed column**

| Drill-Ø mm | Code-letter A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| **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 |

Feed f (mm/rev)

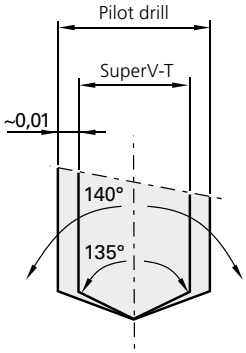
Tools with feed column no. **in bold** are preferred choices for listed material group.

**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.

**Generally 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!

Application recommendations for SuperV-T-drills:
In order to achieve optimal machining results when producing deep holes, we recommend:

1. Production of a cylindrical pilot hole (tolerance F9) with a min. drilling depth of 1 x D with our SuperF-UT type U or VA (140° point angle, tolerance m7).
2. Entry in the pilot hole: speed approx. 300 rev./min, feed rate approx. 500 mm/min.
3. Setting of coolant pressure and speed.
4. Continuous drilling to complete hole depth without wood pecking.
5. For through holes with plain - i.e. 90° - exit, reduce feed rate vf to 50 % approx. 1 mm prior to break-through.
6. For through holes with oblique exit, reduce the feed rate $v_f$ to 40% approx. 1 mm prior to break-through.
7. After reaching hole depth stop machine spindle and coolant supply, withdrawal in top gear.




**Lubricants:**
cutting oil, highly activated ■
soluble oil (emulsion) ■
without lubricant □
air only [!]

| Material group | Materials examples, **new designations** (old designation in brackets) Figures in bold = material no. to DIN EN | Tensile strength MPa (N/mm²) | Hard-ness | Cool-ant |
|---|---|---|---|---|
| General purpose steels | **1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2) | ≤500 | | ■ |
| | **1.0050** E295 (St50-2). **1.0070** E360 (St70-2). **1.8937** P500NH (WStE500) | >500-850 | | |
| Free-cutting steels | **1.0718** 11SMnPb30 (9SMnPb28). **1.0736** 11SMn37 (9SMn36) | ≤850 | | ■ |
| | **1.0727** 46S20 (45S20). **1.0728** (60S20). **1.0757** 46SPb20 (45SPb20) | 850-1000 | | |
| Unalloyed tempering steels | **1.0402** C22, **1.1178** C30E (Ck30) | ≤ 700 | | |
| | **1.0503** C45, **1.1191** C45E (Ck45) | 700-850 | | ■ |
| | **1.0601** C60, **1.1221** C60E (Ck60) | 850-1000 | | |
| Alloyed tempering steels | **1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 | 850-≤1000 | | ■ |
| | **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4 | 1000-1200 | | |
| Unalloyed case hardened steels | **1.0301** (C10). **1.1121** C10E (Ck10) | ≤750 | | ■ |
| Alloyed case hardened steels | **1.7043** 38Cr4 | 850-≤1000 | | ■ ■ |
| | **1.5752** 15NiCr13 (15NiCr13). **1.7131** 16MnCr5, **1.7264** 20CrMo5 | 1000-1200 | | |
| Nitriding steels | **1.8504** 34CrAl6 | ≥850-≤1000 | | ■ |
| | **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7 | >1000-1200 | | ■ ■ |
| Tool steels | **1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 | ≤850 | | ■ |
| | **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4 | >850-1000 | | ■ ■ |
| High speed steels | **1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3 | ≥650-1000 | | ■ |
| Spring steels | **1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4) | | ≤330 HB | ■ ■ |
| Stainless steels, sulphured | **1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 | ≤850 | | |
| austenitic | **1.4301** X5CrNi18-10 (V2A). **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) | ≤850 | | ■ |
| martensitic | **1.4057** X20CrNi 17 2 (X17CrNi16-2). **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2 | ≤850 | | |
| Hardened steels | – | | ≤40-48 HRC | ■ |
| | | | >48-60 HRC | |
| Special alloys | Nimonic, Inconel, Monel, Hastelloy | ≤1200 | | ■ |
| Cast iron | **0.6010** EN-GJL-100(GG10). **0.6020** EN-GJL-200(GG20) | 850-≤1000 | | ■ □ |
| | **0.6025** EN-GJL-250(GG25). **0.6035** EN-GJL-350(GG35) | 1000-1200 | | |
| New Cast iron GGV | **EN-GJV250** (GGV25). **EN-GJV350** (GGV35) | | | |
| | **EN-GJV400** (GGV40). **EN-GJV500** (GGV50). SiMo6 | | | |
| New Cast iron ADI | **EN-GJS-800-8** (ADI800). **EN-GJS-1000-5** (ADI1000) | 800-1000 | | |
| | **EN-GJS-1200-2** (ADI1200). **EN-GJS-1400-1** (ADI1400) | 1200-1400 | | |
| Spheroidal graphit iron and | **0.7050** EN-GJS-500-7(GGG50). **0.8035** EN-GJMW-350-4(GTW35) | | ≤240 HB | ■ |
| maleable cast iron | **0.7070** EN-GJS-700-2(GGG70). **0.8170** EN-GJMB-700-2(GTS70) | | <300 HB | |
| Chilled cast iron | – | | ≤350 HB | ■ |
| Ti and Ti-alloys | **3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 | ≤850 | | ■ |
| | **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1 | >850-1200 | | |
| Aluminium and Al-alloys | **3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1 | ≤400 | | ■ |
| Al wrought alloys | **3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5 | ≤450 | | ■ |
| Al cast alloys ≤ 10 % Si | **3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 | ≤600 | | ■ |
| > 10 % Si | **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg | ≤600 | | |
| Magnesium alloys | **3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1 | ≤450 | | [!] |
| Copper, low alloyed | **2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb | ≤400 | | ■ ■ |
| Brass, short-chipping | **2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 | ≤600 | | ■ ■ |
| long-chipping | **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5 | ≤600 | | |
| Bronze, short-chipping | **2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn | ≤600 | | ■ ■ |
| | **2.0790** CuNi18Zn19Pb | >600-850 | | ■ |
| Bronze, long-chipping | **2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 | ≤850 | | ■ |
| | **2.0980** CuAl11Ni, **2.1247** CuBe2 | >850-1000 | | |

## Pilot drilling

| | ≤15×D | ≤20×D | ≤25×D | ≤30×D | ≤40×D | ≤3×D | | ≤3×D | |
|---|---|---|---|---|---|---|---|---|---|
| Catalogue no. | 51764 | 51765 | 51766 | 51767 | 51768 | 51776 | 51876 | 51770 | 51771 |
| Tool material | STC | STC | STC | STC | STC | STC | STC | STC | STC |
| Carbide grade | K/P | K/P | K/P | K/P | K/P | K/P | K/P | K/P | K/P |
| Surface finish | AlTiN | AlTiN | AlTiN | AlTiN | AlTiN | TiAlN nano | TiAlN nano | AlTiN nano | AlTiN nano |
| DIN | Stock std. | Stock std. | Stock std. | Stock std. | Stock std. | 6537 | 6537 | 6537 | 6537 |
| Type | SuperV-T | SuperV-T | SuperV-T | SuperV-T | SuperV-T | SuperV-U | SuperV-U | SuperV-VA | SuperV-VA |
| Coolant | with | with | with | with | with | with | with | with | with |

| $v_c$ m/min | Feed col. no. | $v_c$ m/min | Feed col. no. | $v_c$ m/min | Feed col. no. | $v_c$ m/min | Feed col. no. | $v_c$ m/min | Feed col. no. |
|---|---|---|---|---|---|---|---|---|---|
| 110 | H | 110 | H | 100 | H | 80 | G | 80 | G |
| 110 | H | 110 | H | 100 | H | 80 | G | 80 | G |
| 120 | H | 120 | H | 120 | H | 100-120 | H | 100 | H |
| 120 | H | 120 | H | 100 | H | 100 | H | 100 | H |
| 110 | F | 110 | F | 110 | F | 110 | F | 110 | F |
| 110 | H | 110 | H | 100 | H | 80 | G | 80 | G |
| 100 | G | 100 | G | 100 | G | 80 | G | 80 | G |
| 110 | G | 110 | G | 100 | G | 80 | G | 80 | F-G |
| 110 | F | 110 | F | 100 | F | 80 | F | 80 | F |
| 110 | H | 110 | H | 100 | H | 80 | G | 80 | G |
| 110 | G | 110 | G | 100 | G | 80 | F | 80 | F |
| 110 | F | 110 | F | 100 | F | 80 | F | 80 | F |
| 100 | E | 100 | E | 80 | E | 80 | E | 80 | E |
| 80 | E | 80 | E | 60 | E | 60 | E | 60 | E |
| 100 | F-G | 100 | F-G | 90 | F-G | 80 | F-G | 80 | F-G |
| 80 | E | 80 | E | 70 | D | 70 | D | 70 | D |
| 50 | E | 50 | E | 50 | D | 50 | D | 50 | D |
| 50 | E | 50 | E | 50 | D | 50 | D | 50 | D |
| 100 | E | 100 | E | 100 | E | 80 | E | 80 | E |
| 60-80 | B-C | 60-80 | B-C | 60-80 | B-C | 60-80 | B-C | 60-80 | B-C |
| 100 | E | 100 | E | 100 | E | 80 | E | 80 | E |
| 50 | D | 50 | D | 50 | D | 50 | D | 50 | D |
| 30 | B | 30 | B | 30 | B | 30 | B | 30 | B |
| 140 | H | 140 | H | 130 | H | 120 | H | 120 | H |
| 100 | H | 100 | H | 90 | H | 80 | H | 80 | H |
| 100 | F | 100 | F | 90 | F | 80 | F | 80 | F |
| 100 | F | 100 | F | 90 | F | 80 | F | 80 | F |
| 90 | H | 90 | H | 80 | H | 70 | H | 70 | H |
| 140 | H | 140 | H | 130 | H | 120 | H | 120 | H |
| 100 | H | 100 | H | 90 | H | 80 | H | 80 | H |
| 120 | A | 120 | A | 120 | A | 120 | A | 120 | A |
| 120 | H | 120 | H | 110 | H | 100 | H | 100 | H |
| 120 | H | 120 | H | 110 | H | 100 | H | 100 | H |
| 120 | H | 120 | H | 110 | H | 100 | H | 100 | H |

| $v_c$ m/min | Feed column no. | |
|---|---|---|
| 145 | G | G |
| 120 | F | F |
| 170 | H | H |
| 145 | G | G |
| 130 | G | G |
| 125 | G | G |
| 120 | G | G |
| 120 | G | G |
| 105 | F | F |
| 145 | H | H |
| 120 | G | G |
| 85 | E | E |
| 110 | F | F |
| 105 | E | E |
| 80 | F | F |
| 65 | E | E |
| 60 | C | C |
| 60 | D | D |
| 55 | C | C |
| 35 | D | D |
| 195 | H | H |
| 160 | H | H |
| 110 | F | F |
| 90 | F | F |
| 70 | H | H |
| 140 | G | G |
| 130 | G | G |
| 40 | C | C |
| 45 | D | D |
| 40 | C | C |
| 310 | I | I |
| 310 | I | I |
| 260 | H | H |
| 220 | H | H |
| 280 | H | H |
| 125 | G | G |
| 325 | H | H |
| 220 | G | G |
| 125 | F | F |
| 105 | F | F |
| 90 | E | E |
| 80 | E | E |

| $v_c$ m/min | Feed column no. | |
|---|---|---|
| 110 | F | F |
| 100 | E | E |
| 125 | G | G |
| 110 | F | F |
| 105 | F | F |
| 100 | F | F |
| 95 | F | F |
| 100 | F | F |
| 110 | G | G |
| 100 | F | F |
| 95 | E | E |
| 65 | E | E |
| 80 | E | E |
| 60-90 | B-C | B-C |
| 80 | E | E |
| 30 | B | B |
| 195 | H | H |
| 160 | H | H |
| 110 | F | F |
| 90 | F | F |
| 70 | H | H |
| 140 | G | G |
| 130 | G | G |
| 40 | C | C |
| 35 | B | B |
| 310 | I | I |
| 310 | I | I |
| 260 | H | H |
| 220 | H | H |
| 280 | H | H |
| 125 | G | G |
| 325 | H | H |
| 220 | G | G |
| 125 | F | F |
| 105 | F | F |
| 90 | E | E |
| 80 | E | E |

# Spiralised solid carbide deep hole drill SuperV-T

## Advantages

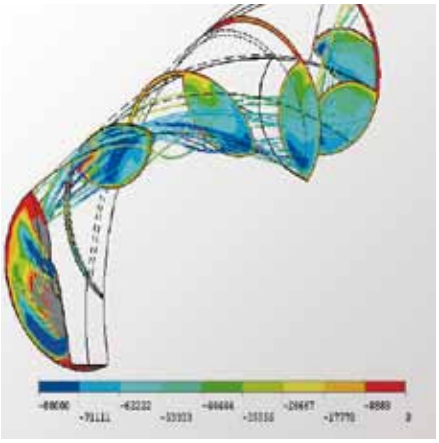


Fig. 1: Optimised flute geometry for optimal chip evacuation.

Fig. 2: Maximised coolant duct profile for effective cooling/lubrication.

Fig. 3: Problem-free chips preventing chip congestion and jamming of the tool.

**Optimised flute geometry**

The spiral-flute deep hole drills possess a special flute geometry that is optimised to the specific demand for optimal chip evacuation from the deep hole. (fig. 1)

**Maximised coolant duct profile**

To provide the cutting edge with an optimum coolant supply, the tools possess a maximised coolant duct profile. It ensures an effecient coolant supply to the cutting edge as well as excellent chip evacuation. (fig. 2)

**Problem-free swarf**

The factors described above – in combination with the cutting parameters optimally adapted to the application task – result in chips that are evacuated problem-free even from deep holes. Chip congestion and a subsequent jamming of the tool is effectively prevented. (fig. 3)

**Wear resistant cutting edges**

Thanks to the AlTiN-tip coating (fig. 4) the cutting edges, that are exposed to maximum forces, are protected against wear.

**Reinforced shank for high precision clamping**

Drills from the SuperV-T ex-stock range have a re-inforced shank to DIN 6535 HA, tolerance h6. This enables the powerful clamping of the tools with hydraulic expansion chucks. The combination SuperV-T plus hydraulic expansion chuck guarantees highest concentricity, extreme clamping forces, minimal imbalance and optimal economic efficiency.

**Intermediate diameters**

In addition to the ex-stock range Stock still offers SuperV-T drills as special tools to specific customer requirements. We realise intermediate diameters with maximum drilling depths up to 40 x D or a total length up to max. 400 mm. The modification of the shank to the MQL shank end offers optimal suitability of the ex-stock range for MQL machining.

Fig. 4: TiAlN-tip-coating prevents wear

**Special solutions for aluminium wet machining**

For the production of deep holes in aluminium > 1% Si content the spiralised deep hole drill SuperV-T is available with a special flute geometry within a diameter range 3-14 mm and up to drilling depths of 30 x D or maximum length of 320 mm.

# Our Program

**Products**

- Twist Drills
- Taps
- Milling Cutters
- Reamers
- Countersinks & -bores
- Faswerkzeuge
- Special HSS and Carbide Tools (to your specifications, or our solutions)

**Services**

- Regrinding
- Modifications
- Recoating
- Coating
- Coating removal
- Technical assistance schriftlich, telefonisch oder vor Ort
- Intelligent Tool Depot Systems

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