

botek[®]

DEEP HOLE DRILLING SYSTEMS
SOLID CARBIDE TOOLS

Deep hole drilling tools Type 01 Stock program



Single flute gundrills
with indexable inserts and guide pads



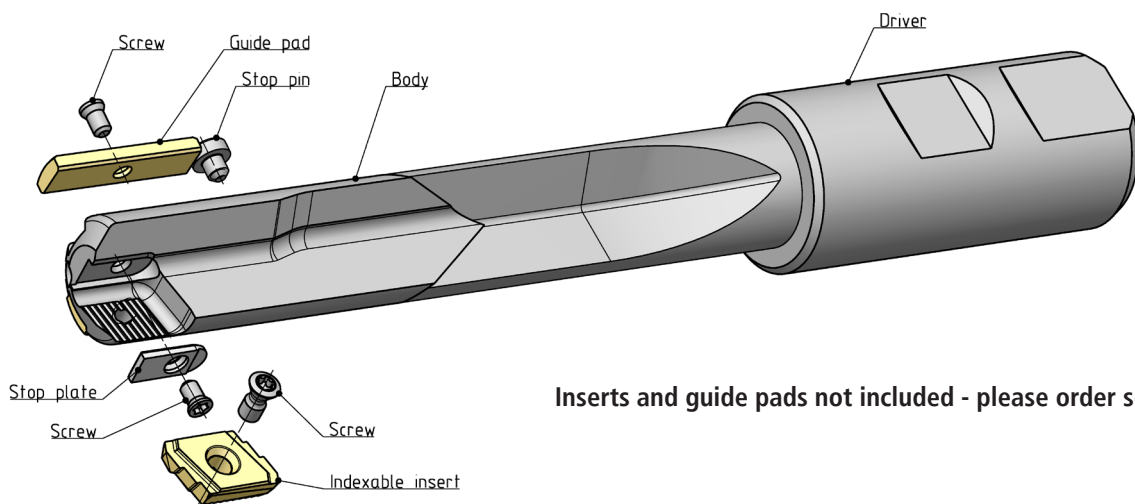
Information / Advantages

Information Stock program Deep hole drilling tools Type 01

- Modern high performance deep hole drilling tools Type 01 now available as new stock program.
- **Ex stock (subject to prior sale).**
- Dimensions ideally suited for machining centers with inner coolant supply.
- Type 01 stock tools are standard version with 2 guide pads.
- Driver Weldon as per DIN1835-B/DIN6535-HB.
- Type 01 stock tools **do not include inserts and guide pads - please order separately.**
- All screws and stop plate - where applicable - are included.

Advantages

- New, high-performance deep hole drilling tool with a modern, user-friendly design.
- Very high operational efficiency combined with optimum cutting capacity.
- **NEW:** High performance inserts with chip breaker **SP91** for high productivity and wide range of application.
- Various indexable insert chip breakers are available according to the processed material.
- No regrinding needed.
- Easy exchange of indexable inserts and guide pads on the machine. No need to adjust setting within $\pm 0,01$ mm diameter.
- By using interchangeable parts, the drill head diameter may be adjusted within a range of 0.5 mm.
- Wide range of accessories available for use on machining centers and deep hole drilling machines.



Inserts and guide pads not included - please order separately

For technical information and requirements for application, please refer to our catalogue "Deep hole drilling tools Type 01, 02, 07" for download at www.botek.de.

Ordering data Type 01 - spare parts

Inserts and guide pads not included - please order separately

| Drill-Ø mm | Insert | | Guide pads |
|---------------|-------------|------------------|--------------------|
| | 1x | 1x (alternative) | 2x |
| 12.00 | 01-0675-321 | - | 01-0500-410/12 |
| 12.50 | 01-0675-321 | - | 01-0500-410/12 |
| 12.70 | 01-0685-321 | - | 01-0504-410/12 |
| 13.00 | 01-0675-321 | - | 01-0500-410/12 |
| 13.50 | 01-0775-321 | 01-0775-311 | 01-0500-410/13 |
| 14.00 | 01-0775-321 | 01-0775-311 | 01-0500-410/13 |
| 14.50 | 01-0775-321 | 01-0775-311 | 01-0500-410/13 |
| 15.00 | 01-0775-321 | 01-0775-311 | 01-0500-410/13 |
| 15.50 | 01-0905-321 | 01-0905-311 | 01-0500-410/15 |
| 16.00 | 01-0905-321 | 01-0905-311 | 01-0500-410/15 |
| 16.25 | 01-0917-321 | 01-0917-311 | 01-0505-410/15 |
| 16.50 | 01-0905-321 | 01-0905-311 | 01-0500-410/15 |
| 17.00 | 01-0905-321 | 01-0905-311 | 01-0500-410/15 |
| 17.50 | 01-0905-321 | 01-0905-311 | 01-0500-410/15 |
| 18.00 | 01-1810-310 | 01-1810-320 | 01-1800-410-D18.00 |
| 18.50 | 01-1820-310 | 01-1820-320 | 01-1800-410-D18.50 |
| 19.00 | 01-1910-310 | 01-1910-320 | 01-1900-410-D19.00 |
| 19.05 | 01-1910-310 | 01-1910-320 | 01-1900-410-D19.05 |
| 19.50 | 01-1920-310 | 01-1920-320 | 01-1900-410-D19.50 |
| 20.00 | 01-2010-310 | 01-2010-320 | 01-2000-410-D20.00 |
| 20.50 | 01-2020-310 | 01-2020-320 | 01-2000-410-D20.50 |
| 21.00 | 01-2110-310 | 01-2110-320 | 01-2100-410-D21.00 |
| 22.00 | 01-2210-310 | 01-2210-320 | 01-2200-410-D22.00 |
| 23.00 | 01-2310-310 | 01-2310-320 | 01-2300-410-D23.00 |
| 24.00 | 01-2410-310 | 01-2410-320 | 01-2400-410-D24.00 |
| 25.00 | 01-2510-310 | 01-2510-320 | 01-2500-410-D25.00 |
| 25.40 | 01-2510-310 | 01-2510-320 | 01-2500-410-D25.40 |
| 26.00 | 01-2610-310 | 01-2610-320 | 01-2600-410-D26.00 |
| 27.00 | 01-2710-310 | 01-2710-320 | 01-2700-410-D27.00 |
| 28.00 | 01-2810-310 | 01-2810-320 | 01-2800-410-D28.00 |
| 29.00 | 01-2910-310 | 01-2910-320 | 01-2900-410-D29.00 |
| 30.00 | 01-3010-310 | 01-3010-320 | 01-3000-410-D30.00 |
| 31.00 | 01-3110-310 | 01-3110-320 | 01-3100-410-D31.00 |
| 31.75 | 01-3120-310 | 01-3120-320 | 01-3100-410-D31.75 |
| 32.00 | 01-3210-310 | 01-3210-320 | 01-3200-410-D32.00 |
| 33.00 | 01-3310-310 | 01-3310-320 | 01-3300-410-D33.00 |
| 34.00 | 01-3410-310 | 01-3410-320 | 01-3400-410-D34.00 |
| 35.00 | 01-3510-310 | 01-3510-320 | 01-3500-410-D35.00 |
| 38.00 | 01-3810-310 | - | 01-3800-410-D38.00 |
| 38.10 | 01-3810-310 | - | 01-3800-410-D38.10 |
| 40.00 | 01-4010-310 | - | 01-4000-410-D40.00 |

| Drill-Ø mm | Screw for insert (1x) | |
|---------------|-----------------------|--------------|
| | Screw | Size |
| 12.00 - 13.00 | 21-0200-860 | M2.5x4.7-TX8 |
| 13.50 - 17.50 | 22-0610-840 | M2.5x5.9-TX8 |
| 18.00 - 18.50 | 21-0100-830 | M3x6.9-TX9 |
| 19.00 - 23.00 | 22-0600-830 | M3x8.4-TX9 |
| 24.00 - 25.40 | 21-0400-830 | M4x9-TX15 |
| 26.00 - 29.00 | 22-0900-830 | M4x11-TX15 |
| 30.00 - 35.00 | 22-1200-830 | M5x12.5-TX20 |
| 38.00 - 40.00 | 22-1500-830 | M6x14-TX25 |

| Drill-Ø mm | Screw for guide pad (2x) | |
|---------------|--------------------------|----------------|
| | Screw | Size |
| 12.00 - 17.50 | 01-1300-840 | M2.2x4-TX7 |
| 18.00 - 19.50 | 21-0200-860 | M2.5x4.7-TX8 |
| 20.00 - 23.00 | 22-0610-840 | M2.5x5.9-TX8 |
| 24.00 - 29.00 | 22-0600-820 | M2.5x8.2-TX8 |
| 30.00 - 33.00 | 22-0800-840 | M3x8.2-TX9 |
| 34.00 - 40.00 | 22-1200-840 | M3.5x11.4-TX15 |

| Drill-Ø mm | Guide pad end stop and screw (2x) | | |
|---------------|-----------------------------------|-------------|------------|
| | End stop | Screw | Size |
| 12.00 - 17.50 | 01-0500-150 | 01-1300-840 | M2.2x4-TX7 |
| 18.00 - 23.00 | DIN 7984 M3x3 | - | M3x3-S2.0 |
| 24.00 - 33.00 | DIN 7984 M4x4 | - | M4x4-S2.5 |
| 34.00 - 38.10 | DIN 7984 M5x5 | - | M5x5-S3.0 |
| 40.00 - 40.00 | DIN 7984 M6x6 | - | M6x6-S4.0 |

| Drill-Ø mm | Stop plate and screw (1x) | | |
|---------------|---------------------------|-------------|--------------|
| | Stop plate | Screw | Size |
| 12.00 - 17.50 | - | - | - |
| 18.00 - 23.00 | 01-2050-610-S... | 01-0200-860 | M2.5x4.3-TX8 |
| 24.00 - 35.00 | 01-2400-610-S... | 21-0200-860 | M2.5x4.7-TX8 |
| 38.00 - 40.00 | 01-3750-610-S... | 21-0600-860 | M3x6.7-TX9 |

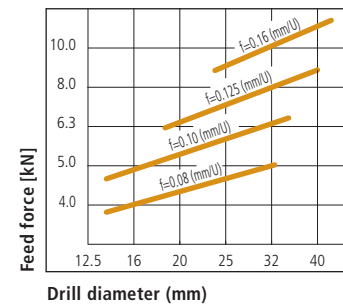
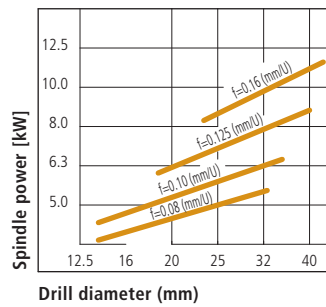
| Torx-Size | Driver |
|-----------|-------------|
| TX7 | 01-1300-945 |
| TX8 | 22-0600-925 |
| TX9 | 22-0600-935 |
| TX15 | 22-0900-935 |
| TX20 | 22-1200-935 |
| TX25 | 22-1500-935 |

Technical information

Type 01

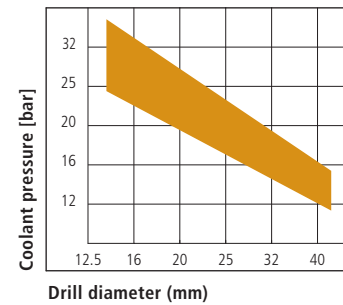
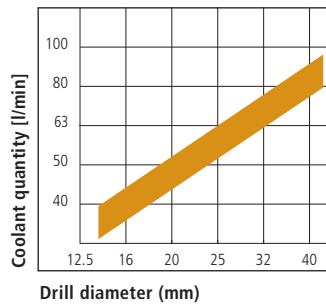
Performance diagrams

These values are guide values for toughened steel rated ~ 800 N/mm² and may deviate depending on workpiece material and characteristics, as well as tool condition.



Coolant information

Proper chip removal is only assured if the coolant is supplied to the tool in sufficient quantity and under sufficient pressure.



Guide values for deep hole drilling of different materials:

Guide values for cutting speed and feed rate are shown in the table below.

As there are many factors that can affect the results of deep-hole drilling, these values must be adjusted if necessary.

| Material / Mechanical strength properties | Cutting speed (m/min) | Feed (mm/rev) for drill diameter (mm) | | | | Carbide grades | | | | |
|---|-----------------------|---------------------------------------|---------------|---------------|-------------|-----------------------------------|--------------|-----------|----------|-------|
| | | 12.00 - 18.00 | 18.00 - 25.00 | 25.00 - 32.00 | 32.00 - ... | Indexable insert up to Ø 17.99 | from Ø 18.00 | Guide pad | | |
| Construction steel ≤ 700 N/mm ² | 80 - 100 | 0.06 - 0.10 | 0.08 - 0.11 | 0.10 - 0.14 | 0.13 - 0.16 | K 30B-1 | P 25B-1 | P 20 | | |
| Case hardened steel ≤ 700 N/mm ² | | | | | | | | | | |
| Case hardened steel ≤ 1,100 N/mm ² | 70 - 80 | 0.06 - 0.10 | 0.08 - 0.11 | 0.10 - 0.13 | 0.12 - 0.15 | | | | P 25B-1* | P 20 |
| Heat treated steel ≤ 700 N/mm ² | 70 - 90 | 0.06 - 0.10 | 0.08 - 0.11 | 0.10 - 0.14 | 0.13 - 0.16 | | | | P 25B-1 | |
| Heat treated steel ≤ 1,100 N/mm ² | 55 - 75 | 0.06 - 0.10 | 0.08 - 0.11 | 0.10 - 0.13 | 0.12 - 0.15 | | | | P 25B-1* | P 20B |
| Nitriding steel ≤ 1,100 N/mm ² | 55 - 75 | 0.06 - 0.09 | 0.08 - 0.10 | 0.09 - 0.12 | 0.11 - 0.14 | | | | P 40B-1 | |
| Ferritic steel ≤ 900 N/mm ² | 60 - 80 | 0.06 - 0.10 | 0.08 - 0.11 | 0.10 - 0.14 | 0.13 - 0.16 | | | | P 25B-1 | P 20 |
| Austenitic steel (stainless) | 60 - 80 | 0.06 - 0.09 | 0.08 - 0.10 | 0.10 - 0.12 | 0.12 - 0.14 | K 10-1 | P 25-1 | | | |
| Heat resisting steel (stainless), Tool steel | 50 - 70 | 0.06 - 0.09 | 0.08 - 0.10 | 0.10 - 0.12 | 0.12 - 0.14 | K 30B-1 | P 25B-1* | P 20 | | |
| Steel castings ≤ 700 N/mm ² | 60 - 80 | 0.06 - 0.10 | 0.08 - 0.11 | 0.10 - 0.14 | 0.13 - 0.16 | | | | | |
| Nodular cast iron ≤ 1,100 N/mm ² | 65 - 80 | 0.08 - 0.12 | 0.10 - 0.13 | 0.12 - 0.15 | 0.14 - 0.18 | K 10-1 | K 10-1 | | | |
| Cast iron, alloyed and unalloyed | 70 - 100 | 0.08 - 0.12 | 0.10 - 0.13 | 0.12 - 0.15 | 0.14 - 0.18 | | | | | |
| Aluminium and Aluminium alloys | 100 - 200 | 0.07 - 0.11 | 0.09 - 0.12 | 0.10 - 0.14 | 0.12 - 0.18 | K 10-1 | K 10-1 | | | |
| Copper Cu-content < 99% | 120 - ... | 0.04 - 0.09 | 0.06 - 0.10 | 0.08 - 0.12 | 0.10 - 0.14 | | | | | |

*first recommendation

Technical appendix

Requirements for application / Dimensions for the guide hole

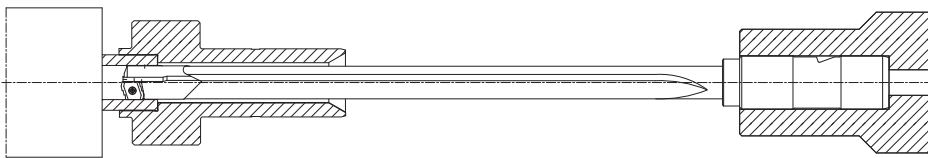
The characteristic of the single flute gundrilling process is that coolant is fed through the coolant hole in the tool and exits along with the chips in the V-shaped groove (flute) on the drill tube from the drilled hole. The coolant also provides lubrication to the drill periphery.

The gundrill is a single-edged tool without self-centering. When positioning the drill, the tool must be guided through a drill bush or a pilot hole.

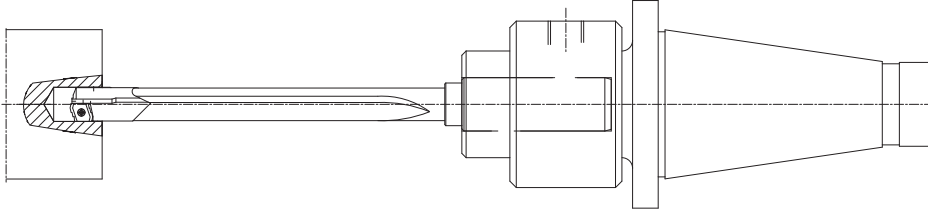
The quality of the guide hole affects the drilling performance.

1. An efficient coolant and filtration system with a coolant filtration of 20 μm to 30 μm (the smaller the drill diameter, the better the coolant and filtration system should be).
2. **Suitable coolant**, i.e. deep hole drilling oil or emulsion (min. 10-12% concentration, with additives) has to be provided in sufficient quantity and pressure. Minimum quantity lubrication (MQL) may be used under certain conditions.
3. **Guidance** with a drill bush (deep hole drilling machine) or a pilot hole (machining centre).

with drill bush



In application with deep hole drilling machine we recommend to use drill bush with F7 hole tolerance.



Dimensions for the guide hole

| | Drill diameter (mm) | Dimensions for guide hole (pilot hole / drill bush) | |
|--|------------------------|---|--------------------------------|
| | | L (mm) | D (mm) to tool- \emptyset |
| | 12.00 - 17.99 | approx. 1.50 x D | + 0.016 to 0.034 |
| | 18.00 - 29.99 | approx. 1.50 x D | + 0.020 to 0.041 |
| | 30.00 - 49.99 | approx. 1.25 x D | + 0.025 to 0.050 |
| | 50.00 - ... | approx. 1.00 x D | + 0.030 to 0.060 |

The dimensions specified in the table are guide values and comply with ISO tolerance field F7. ISO tolerance F8 is possible under specific conditions. To avoid chipping of the cutting edge, a chamfered pilot hole (F) is recommended depending on machining requirements.