

**botek**<sup>®</sup>

DEEP HOLE DRILLING SYSTEMS  
SOLID CARBIDE TOOLS

# Deep hole drilling tools

Type 01, 02, 07, 07A



botek

NEW: Stock program Type 01



System single flute gundrills



## The botek company

Manufacturing deep and precise holes is a technical challenge when processing metal. Accordingly specialising in deep hole drilling technology was the founding idea in 1974 of botek Präzisionsbohrtechnik GmbH in Riederich.

Botek grew to be an international supplier of deep hole drilling tools. Over 550 employees in the main company develop and manufacture single and two fluted tools, deep hole drilling tools BTA and Ejector systems as well as special tools.

A complete product program, regarding all deep hole drilling aspects and a team of highly qualified and dedicated cutting specialists make botek a competent partner for the automobile industry and their suppliers, shipbuilding industry, hydraulic industry as well as motor, gear and machine building companies.



- Please note our safety pointers at [www.botek.de](http://www.botek.de).
- Our General Standard Terms and Conditions, which we assume as known, apply.
- We reserve the right to make modifications in the interest of technical improvement. Such modifications cannot, in principle, be accepted as justifiable reasons for complaints.
- Subject to change. The manufacturer accepts no responsibility for misprints and other errors.

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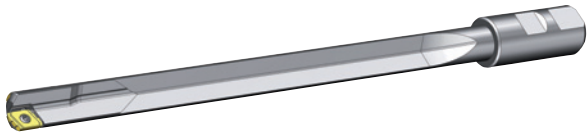

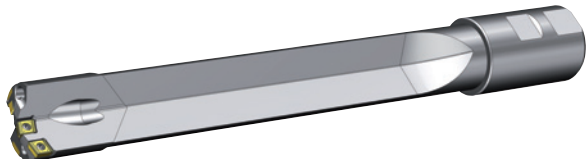

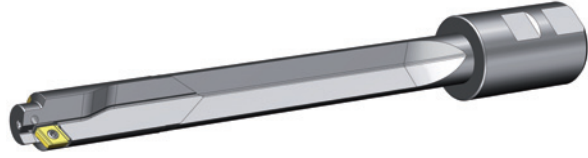

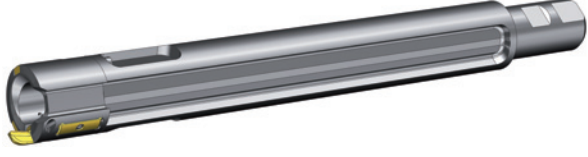
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## Overview of types

|   |   |
|---|---|
|    | <b>Solid drilling tool Type 01</b>          |
|    | <b>Gundrill for solid drilling Type 02</b>  |
|   | <b>Gundrill for solid drilling Type 07</b>  |
|  | <b>Gundrill for solid drilling Type 07A</b> |
|  | <b>Special tool Type 99-04</b>              |
|  | <b>Trepanning tool Type 99-08</b>           |
|  | <b>Core cutter Type 99-09</b>               |

## Areas of application

| Page       | Surface quality Ra | Drilling tolerance | Workpiece material |                       |            |           |       |       |
|------------|--------------------|--------------------|--------------------|-----------------------|------------|-----------|-------|-------|
|            |                    |                    | Steel              |                       |            | Cast iron | Alu   | Cu    |
|            |                    |                    | Carbon steel       | austenitic/<br>duplex | martenitic |           |       |       |
| 6          | 2 µm               | IT 8               | • • •              | • • •                 | • • •      | • • •     | • • • | • • • |
| 11         | 2 µm               | IT 8               | • • •              | •                     | • • •      | • • •     | • • • | •     |
| 14         | 2 µm               | IT 10              | • • •              | •                     | • • •      | • • •     | • • • | •     |
| 16         | 2 µm               | IT 10              | • • •              | •                     | • • •      | • • •     | • • • | •     |
| on request | 2 µm               | IT 8 (IT 7)        | • • •              | • •                   | • • •      | • • •     | • • • | • •   |
| 22         | 4 µm               | IT 10              | • • •              | •                     | • •        | • • •     | • • • | •     |
| 22         |                    |                    | • •                | •                     | • •        | • • •     | • • • | •     |

• • • = good

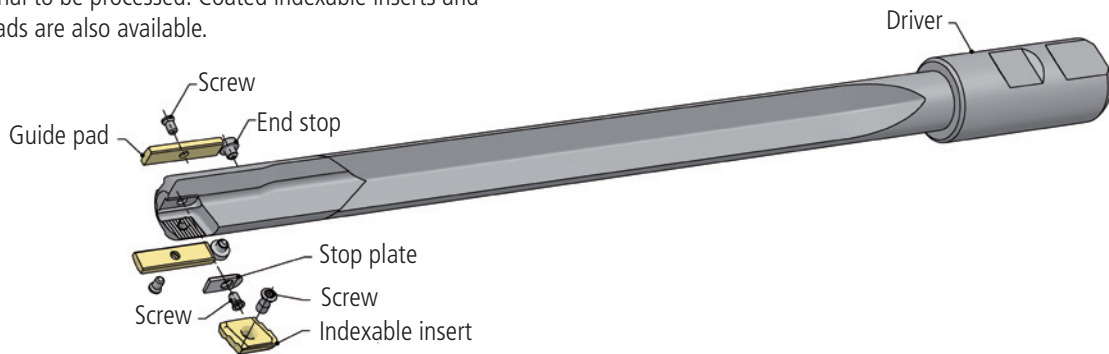
• = on average

# Advantages/Overview

## Type 01

### Advantages

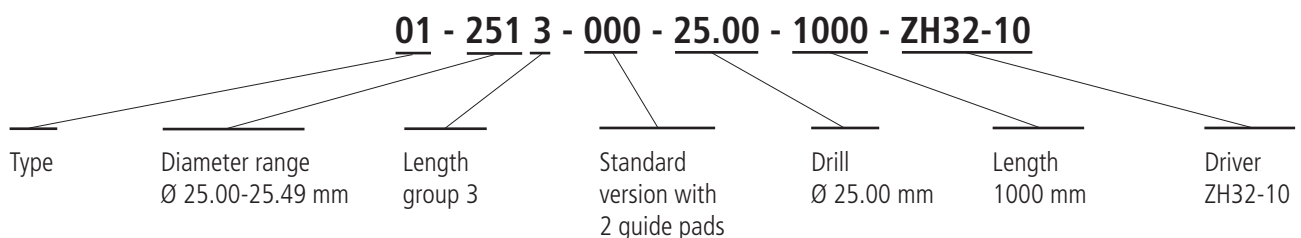
1. New, high-performance deep hole drilling tool with a modern, user-friendly design.
2. Very high operational efficiency combined with optimum cutting capacity.
3. Ideally suited to CNC machines with a coolant system. Drilling depths up to  $40 \times D$  are possible in a single drilling cycle. Tools also produce excellent results when used on deep hole drilling machines.
4. No regrinding needed.
5. Various indexable insert chip breakers are available according to material to be processed. Coated indexable inserts and guide pads are also available.
6. Easy exchange of indexable inserts and guide pads. No need to adjust setting within  $\pm 0.01$  mm diameter.
7. When using matching interchangeable parts, the drill head  $\varnothing$  may, however, be adjusted within a range of 0.5 mm.
8. The model with extended guide pads (Type 01-010) is also suitable for crosshole drilling.
9. Drilling grades up to IT 8 are possible.
10. Retipping is possible.



### Overview



| Type  | Drilling range  |  |
|---|---|--|
| <b>Type 01-001</b><br>Gundrill for solid drilling | Standard version with 2 guide pads<br><b>Drilling range: <math>\varnothing</math> 12.00 - 17.99 mm</b>  |  |
| <b>Type 01-000</b><br>Gundrill for solid drilling | Standard version with 2 guide pads<br><b>Drilling range: <math>\varnothing</math> 18.00 - 43.99 mm</b>  |  |
| <b>Type 01-011</b><br>Gundrill for solid drilling | Version with extended guide pads<br>4 pieces<br><b>Drilling range: <math>\varnothing</math> 12.00 - 17.99 mm</b>  |  |
| <b>Type 01-010</b><br>Gundrill for solid drilling | Version with extended guide pads<br>5 pieces<br><b>Drilling range: <math>\varnothing</math> 18.00 - 43.99 mm</b>  |  |
| <b>Type 01-020</b><br>Gundrill for solid drilling | Milled shank with 2 guide pads<br><b>Drilling range: <math>\varnothing</math> 18.00 - 43.99 mm</b><br>limited length depending on drill diameter,<br>on request |  |

Ordering example: 01-2513-000-25.00-1000-ZH32-10











# Ordering data Type 01

Ø 12.00 to 17.99

| Diameter range | Drilling tool   |   |
|----------------|---|---|
|                | Type 01-001<br>Standard version<br>with 2 guide pads                              | Type 01-011<br>Version with extended<br>guide pads (4 pcs)                        |
| Ø (mm)         |  |  |
| 12.00 - 12.49  | 01-121* -001  | 01-121* -011  |
| 12.50 - 12.99  | 01-122* -001  | 01-122* -011  |
| 13.00 - 13.49  | 01-131* -001  | 01-131* -011  |
| 13.50 - 13.99  | 01-132* -001  | 01-132* -011  |
| 14.00 - 14.49  | 01-141* -001  | 01-141* -011  |
| 14.50 - 14.99  | 01-142* -001  | 01-142* -011  |
| 15.00 - 15.49  | 01-151* -001  | 01-151* -011  |
| 15.50 - 15.99  | 01-152* -001  | 01-152* -011  |
| 16.00 - 16.49  | 01-161* -001  | 01-161* -011  |
| 16.50 - 16.99  | 01-162* -001  | 01-162* -011  |
| 17.00 - 17.49  | 01-171* -001  | 01-171* -011  |
| 17.50 - 17.99  | 01-172* -001  | 01-172* -011  |

The tools are available in steps of 0.05 mm in diameter.  
Dimensions in between can be achieved in steps of 0.025 mm by using smaller guide pads only.  
The tool diameter tolerance is ± 0.01 mm.

| Length (mm) up to |     |       |       |       |       |       |       |
|-------------------|-----|-------|-------|-------|-------|-------|-------|
| 500               | 800 | 1,250 | 1,600 | 2,000 | 2,500 | 3,200 | 4,500 |
| 1                 | 2   | 3     | 4     | 5     | 6     | 7     | 8     |
| * Length groups   |     |       |       |       |       |       |       |

| Drill diameter |       |       |       |       | Replaceable insert  |   |   | Indexable guide pads  |   |   | Guide pad end stop  |   |
|----------------|-------|-------|-------|-------|---|---|---|---|---|---|---|---|
| Ø (mm)         |       |       |       |       |  |  |  |  |  |  |  |  |
|                |       |       |       |       | 1x  | 1x (alternative)  | 1x  | 2x (Type 01-001)<br>4x (Type 01-011)  | 2x (Type 01-001)<br>4x (Type 01-011)  | 2x  | 2x  |   |
| 12.00          | 12.50 | 13.00 | -     | -     | 01-0675-321   | -   | Screw<br>21-0200-860 (M2.5 x 4.7)   | Key<br>22-0600-925  | 01-0500-410/12  | Screw<br>01-1300-840 (M2.2 x 4)   | Key<br>01-1300-945  |   |
| 12.05          | 12.55 | 13.05 | -     | -     | 01-0677-321   | -   |   |   | 01-0501-410/12  |   |   |   |
| 12.10          | 12.60 | 13.10 | -     | -     | 01-0680-321   | -   |   |   | 01-0502-410/12  |   |   |   |
| 12.15          | 12.65 | 13.15 | -     | -     | 01-0682-321   | -   |   |   | 01-0503-410/12  |   |   |   |
| 12.20          | 12.70 | 13.20 | -     | -     | 01-0685-321   | -   |   |   | 01-0504-410/12  |   |   |   |
| 12.25          | 12.75 | 13.25 | -     | -     | 01-0687-321   | -   |   |   | 01-0505-410/12  |   |   |   |
| 12.30          | 12.80 | 13.30 | -     | -     | 01-0690-321   | -   |   |   | 01-0506-410/12  |   |   |   |
| 12.35          | 12.85 | 13.35 | -     | -     | 01-0692-321   | -   |   |   | 01-0507-410/12  |   |   |   |
| 12.40          | 12.90 | 13.40 | -     | -     | 01-0695-321   | -   |   |   | 01-0508-410/12  |   |   |   |
| 12.45          | 12.95 | 13.45 | -     | -     | 01-0697-321   | -   |   |   | 01-0509-410/12  |   |   |   |
| 12.49          | 12.99 | 13.49 | -     | -     | 01-0699-321   | -   | 01-0510-410/12  |   |   |   |   |   |
| 13.50          | 14.00 | 14.50 | 15.00 | -     | 01-0775-321   | 01-0775-311   | Screw<br>22-0610-840 (M2.5 x 5.9)   | Key<br>22-0600-925  | 01-0500-410/13  | Screw<br>01-1300-840 (M2.2 x 4)   | Key<br>01-1300-945  |   |
| 13.55          | 14.05 | 14.55 | 15.05 | -     | 01-0777-321   | 01-0777-311   |   |   | 01-0501-410/13  |   |   |   |
| 13.60          | 14.10 | 14.60 | 15.10 | -     | 01-0780-321   | 01-0780-311   |   |   | 01-0502-410/13  |   |   |   |
| 13.65          | 14.15 | 14.65 | 15.15 | -     | 01-0782-321   | 01-0782-311   |   |   | 01-0503-410/13  |   |   |   |
| 13.70          | 14.20 | 14.70 | 15.20 | -     | 01-0785-321   | 01-0785-311   |   |   | 01-0504-410/13  |   |   |   |
| 13.75          | 14.25 | 14.75 | 15.25 | -     | 01-0787-321   | 01-0787-311   |   |   | 01-0505-410/13  |   |   |   |
| 13.80          | 14.30 | 14.80 | 15.30 | -     | 01-0790-321   | 01-0790-311   |   |   | 01-0506-410/13  |   |   |   |
| 13.85          | 14.35 | 14.85 | 15.35 | -     | 01-0792-321   | 01-0792-311   |   |   | 01-0507-410/13  |   |   |   |
| 13.90          | 14.40 | 14.90 | 15.40 | -     | 01-0795-321   | 01-0795-311   |   |   | 01-0508-410/13  |   |   |   |
| 13.95          | 14.45 | 14.95 | 15.45 | -     | 01-0797-321   | 01-0797-311   |   |   | 01-0509-410/13  |   |   |   |
| 13.99          | 14.49 | 14.99 | 15.49 | -     | 01-0799-321   | 01-0799-311   |   |   | 01-0510-410/13  |   |   |   |
| 15.50          | 16.00 | 16.50 | 17.00 | 17.50 | 01-0905-321   | 01-0905-311   |   |   | 01-0500-410/15  |   |   |   |
| 15.55          | 16.05 | 16.55 | 17.05 | 17.55 | 01-0907-321   | 01-0907-311   |   |   | 01-0501-410/15  |   |   |   |
| 15.60          | 16.10 | 16.60 | 17.10 | 17.60 | 01-0910-321   | 01-0910-311   |   |   | 01-0502-410/15  |   |   |   |
| 15.65          | 16.15 | 16.65 | 17.15 | 17.65 | 01-0912-321   | 01-0912-311   |   |   | 01-0503-410/15  |   |   |   |
| 15.70          | 16.20 | 16.70 | 17.20 | 17.70 | 01-0915-321   | 01-0915-311   |   |   | 01-0504-410/15  |   |   |   |
| 15.75          | 16.25 | 16.75 | 17.25 | 17.75 | 01-0917-321   | 01-0917-311   |   |   | 01-0505-410/15  |   |   |   |
| 15.80          | 16.30 | 16.80 | 17.30 | 17.80 | 01-0920-321   | 01-0920-311   |   |   | 01-0506-410/15  |   |   |   |
| 15.85          | 16.35 | 16.85 | 17.35 | 17.85 | 01-0922-321   | 01-0922-311   |   |   | 01-0507-410/15  |   |   |   |
| 15.90          | 16.40 | 16.90 | 17.40 | 17.90 | 01-0925-321   | 01-0925-311   | 01-0508-410/15  |   |   |   |   |   |
| 15.95          | 16.45 | 16.95 | 17.45 | 17.95 | 01-0927-321   | 01-0927-311   | 01-0509-410/15  |   |   |   |   |   |
| 15.99          | 16.49 | 16.99 | 17.49 | 17.99 | 01-0929-321   | 01-0929-311   | 01-0510-410/15  |   |   |   |   |   |

# Ordering data Single flute gundrill Type 01

Ø 18.00 to 43.99

| Drilling range from - up to | Drilling tool                                     |   | Indexable insert |                              |                          |             | Stop plate  |                           | Guide pads              |   | Guide pad end stop         |                           |             |               |                           |
|-----------------------------|---|---|------------------|------------------------------|--------------------------|-------------|---|---------------------------|-------------------------|---|----------------------------|---------------------------|-------------|---------------|---------------------------|
|                             | Type 01-000<br>Standard version with 2 guide pads | Type 01-010<br>Version with extended guide pads (5 pcs) | Indexable insert | Indexable insert alternative | Screw                    | Key         | Stop plate  | Screw                     | Guide pads              | Screw   | Screw                      |                           |             |               |                           |
| Ø (mm)                      |   |   |                  |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
|                             |   |   | 1x               | 1x                           | 1x                       |             | 1x  | 1x                        | 2x / 5x                 | 2x / 5x   | 2x                         |                           |             |               |                           |
| 18.00 - 18.49               | 01-181*-000                                       | 01-181*-010   | 01-1810-310      | 01-1810-320                  | 21-0100-830              | 22-0600-935 | 01-2050-610-S...<br>Order no. depends on drill diameter. Please specify when ordering | 01-0200-860 (M 2.5 x 4.3) | 01-1800-410             | 21-0200-860 (M 2.5 x 4.7)   | DIN 7984-M3x3              |                           |             |               |                           |
| 18.50 - 18.99               | 01-182*-000                                       | 01-182*-010   | 01-1820-310      | 01-1820-320                  | (M 3 x 6.9)              |             |   |                           | 22-0600-830 (M 3 x 8.4) | 01-1900-410   |                            | 22-0600-925               |             |               |                           |
| 19.00 - 19.49               | 01-191*-000                                       | 01-191*-010   | 01-1910-310      | 01-1910-320                  |                          |             |   |                           | 01-2000-410             | 22-0610-840 (M 2.5 x 5.9)   |                            |                           |             |               |                           |
| 19.50 - 19.99               | 01-192*-000                                       | 01-192*-010   | 01-1920-310      | 01-1920-320                  |                          |             |   |                           | 01-2100-410             | 22-0600-925   |                            |                           |             |               |                           |
| 20.00 - 20.49               | 01-201*-000                                       | 01-201*-010   | 01-2010-310      | 01-2010-320                  |                          |             |   |                           | 01-2200-410             | 22-0600-925   |                            |                           |             |               |                           |
| 20.50 - 20.99               | 01-202*-000                                       | 01-202*-010   | 01-2020-310      | 01-2020-320                  |                          |             |   |                           | 01-2300-410             |   |                            |                           |             |               |                           |
| 21.00 - 21.49               | 01-211*-000                                       | 01-211*-010   | 01-2110-310      | 01-2110-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 21.50 - 21.99               | 01-212*-000                                       | 01-212*-010   | 01-2120-310      | 01-2120-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 22.00 - 22.49               | 01-221*-000                                       | 01-221*-010   | 01-2210-310      | 01-2210-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 22.50 - 22.99               | 01-222*-000                                       | 01-222*-010   | 01-2220-310      | 01-2220-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 23.00 - 23.49               | 01-231*-000                                       | 01-231*-010   | 01-2310-310      | 01-2310-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 23.50 - 23.99               | 01-232*-000                                       | 01-232*-010   | 01-2320-310      | 01-2320-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 24.00 - 24.49               | 01-241*-000                                       | 01-241*-010   | 01-2410-310      | 01-2410-320                  | 21-0400-830 (M 4 x 9)    |             |   |                           | 22-0900-935             | 01-2400-610-S...<br>Order no. depends on drill diameter. Please specify when ordering |                            | 21-0200-860 (M 2.5 x 4.7) | 01-2400-410 | DIN 7984-M4x4 |                           |
| 24.50 - 24.99               | 01-242*-000                                       | 01-242*-010   | 01-2420-310      | 01-2420-320                  | 22-0900-830 (M 4 x 11)   |             |   |                           |                         |   |                            |                           | 01-2500-410 |               | 22-0600-820 (M 2.5 x 8.2) |
| 25.00 - 25.49               | 01-251*-000                                       | 01-251*-010   | 01-2510-310      | 01-2510-320                  |                          |             |   |                           |                         |   |                            |                           | 01-2600-410 |               |                           |
| 25.50 - 25.99               | 01-252*-000                                       | 01-252*-010   | 01-2520-310      | 01-2520-320                  |                          | 01-2700-410 | 22-0600-925   |                           |                         |   |                            |                           |             |               |                           |
| 26.00 - 26.49               | 01-261*-000                                       | 01-261*-010   | 01-2610-310      | 01-2610-320                  |                          | 01-2800-410 |   |                           |                         |   |                            |                           |             |               |                           |
| 26.50 - 26.99               | 01-262*-000                                       | 01-262*-010   | 01-2620-310      | 01-2620-320                  |                          | 01-2900-410 |   |                           |                         |   |                            |                           |             |               |                           |
| 27.00 - 27.49               | 01-271*-000                                       | 01-271*-010   | 01-2710-310      | 01-2710-320                  |                          | 01-3000-410 | 22-0800-840 (M 3 x 8.2)   |                           |                         |   |                            |                           |             |               |                           |
| 27.50 - 27.99               | 01-272*-000                                       | 01-272*-010   | 01-2720-310      | 01-2720-320                  |                          | 01-3100-410 |   |                           |                         |   |                            |                           |             |               |                           |
| 28.00 - 28.49               | 01-281*-000                                       | 01-281*-010   | 01-2810-310      | 01-2810-320                  |                          | 01-3200-410 | 22-0600-935   |                           |                         |   |                            |                           |             |               |                           |
| 28.50 - 28.99               | 01-282*-000                                       | 01-282*-010   | 01-2820-310      | 01-2820-320                  |                          | 01-3300-410 |   |                           |                         |   |                            |                           |             |               |                           |
| 29.00 - 29.49               | 01-291*-000                                       | 01-291*-010   | 01-2910-310      | 01-2910-320                  |                          | 01-3400-410 |   |                           |                         |   |                            |                           |             |               |                           |
| 29.50 - 29.99               | 01-292*-000                                       | 01-292*-010   | 01-2920-310      | 01-2920-320                  |                          | 01-3500-410 |   |                           |                         |   |                            |                           |             |               |                           |
| 30.00 - 30.49               | 01-301*-000                                       | 01-301*-010   | 01-3010-310      | 01-3010-320                  |                          | 01-3600-410 |   |                           |                         |   |                            |                           |             |               |                           |
| 30.50 - 30.99               | 01-302*-000                                       | 01-302*-010   | 01-3020-310      | 01-3020-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 31.00 - 31.49               | 01-311*-000                                       | 01-311*-010   | 01-3110-310      | 01-3110-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 31.50 - 31.99               | 01-312*-000                                       | 01-312*-010   | 01-3120-310      | 01-3120-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 32.00 - 32.49               | 01-321*-000                                       | 01-321*-010   | 01-3210-310      | 01-3210-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 32.50 - 32.99               | 01-322*-000                                       | 01-322*-010   | 01-3220-310      | 01-3220-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 33.00 - 33.49               | 01-331*-000                                       | 01-331*-010   | 01-3310-310      | 01-3310-320                  | 22-1200-830 (M 5 x 12.5) | 22-1200-935 | 01-3750-610-S...<br>Order no. depends on drill diameter. Please specify when ordering | 21-0600-860 (M 3 x 6.7)   | 01-3700-410             | DIN 7984-M5x5   |                            |                           |             |               |                           |
| 33.50 - 33.99               | 01-332*-000                                       | 01-332*-010   | 01-3320-310      | 01-3320-320                  |                          |             |   |                           | 01-3800-410             |   | 22-1200-840 (M 3.5 x 11.4) |                           |             |               |                           |
| 34.00 - 34.49               | 01-341*-000                                       | 01-341*-010   | 01-3410-310      | 01-3410-320                  |                          |             |   |                           | 01-3900-410             |   |                            |                           |             |               |                           |
| 34.50 - 34.99               | 01-342*-000                                       | 01-342*-010   | 01-3420-310      | 01-3420-320                  |                          |             |   |                           | 01-4000-410             |   | 22-0900-935                |                           |             |               |                           |
| 35.00 - 35.49               | 01-351*-000                                       | 01-351*-010   | 01-3510-310      | 01-3510-320                  |                          |             |   |                           | 01-4100-410             |   |                            |                           |             |               |                           |
| 35.50 - 35.99               | 01-352*-000                                       | 01-352*-010   | 01-3520-310      | 01-3520-320                  |                          |             |   |                           | 01-4200-410             |   |                            |                           |             |               |                           |
| 36.00 - 36.49               | 01-361*-000                                       | 01-361*-010   | 01-3610-310      | 01-3610-320                  |                          |             |   |                           | 01-4300-410             |   |                            |                           |             |               |                           |
| 36.50 - 36.99               | 01-362*-000                                       | 01-362*-010   | 01-3620-310      | 01-3620-320                  |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 37.00 - 37.49               | 01-371*-000                                       | 01-371*-010   | 01-3710-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 37.50 - 37.99               | 01-372*-000                                       | 01-372*-010   | 01-3720-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 38.00 - 38.49               | 01-381*-000                                       | 01-381*-010   | 01-3810-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 38.50 - 38.99               | 01-382*-000                                       | 01-382*-010   | 01-3820-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 39.00 - 39.49               | 01-391*-000                                       | 01-391*-010   | 01-3910-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 39.50 - 39.99               | 01-392*-000                                       | 01-392*-010   | 01-3920-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 40.00 - 40.49               | 01-401*-000                                       | 01-401*-010   | 01-4010-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 40.50 - 40.99               | 01-402*-000                                       | 01-402*-010   | 01-4020-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 41.00 - 41.49               | 01-411*-000                                       | 01-411*-010   | 01-4110-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 41.50 - 41.99               | 01-412*-000                                       | 01-412*-010   | 01-4120-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 42.00 - 42.49               | 01-421*-000                                       | 01-421*-010   | 01-4210-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 42.50 - 42.99               | 01-422*-000                                       | 01-422*-010   | 01-4220-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 43.00 - 43.49               | 01-431*-000                                       | 01-431*-010   | 01-4310-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |
| 43.50 - 43.99               | 01-432*-000                                       | 01-432*-010   | 01-4320-310      |                              |                          |             |   |                           |                         |   |                            |                           |             |               |                           |

Length (mm) up to

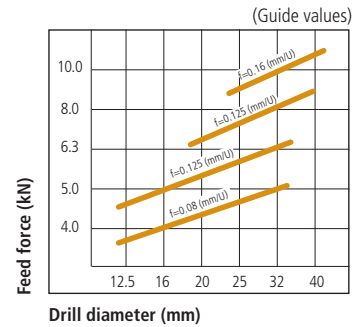
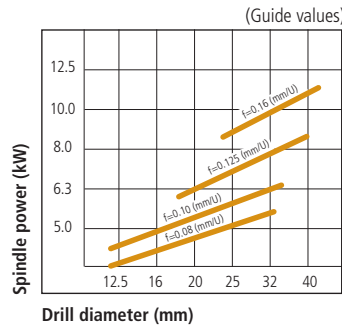
|     |     |       |       |       |       |       |       |
|-----|-----|-------|-------|-------|-------|-------|-------|
| 500 | 800 | 1.250 | 1.600 | 2.000 | 2.500 | 3.200 | 4.500 |
| 1   | 2   | 3     | 4     | 5     | 6     | 7     | 8     |

\* Length groups



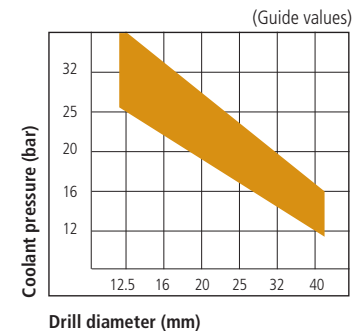
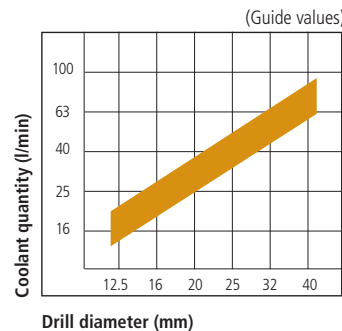
### Performance diagrams

These values are guide values for toughened steel rated  $\sim 800 \text{ N/mm}^2$  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.

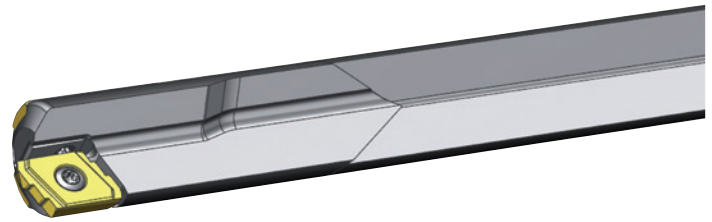
| Material / Mechanical strength properties       | Cutting speed (m/min) | Feed (mm/rev) for drill diameter (mm) |               |               |             | Carbide grades            |                          |           |
|---|-----------------------|---------------------------------------|---------------|---------------|-------------|---------------------------|--------------------------|-----------|
|   |                       | 12.00 - 17.99                         | 18.00 - 24.99 | 25.00 - 31.99 | 32.00 - ... | Indexable insert          |                          | Guide pad |
|   |                       |                                       |               |               |             | up to $\varnothing 17.99$ | from $\varnothing 18.00$ |           |
| Construction steel $\leq 700 \text{ N/mm}^2$    | 80 - 100              | 0.06 - 0.10                           | 0.08 - 0.11   | 0.10 - 0.14   | 0.13 - 0.16 | K 30 B - 1                | P 25 B - 1               | P 20 B    |
| Case hardened steel $\leq 700 \text{ N/mm}^2$   |                       |                                       |               | 0.10 - 0.13   | 0.12 - 0.15 |                           |                          |           |
| Case hardened steel $\leq 1,100 \text{ N/mm}^2$ | 70 - 80               | 0.06 - 0.09                           | 0.08 - 0.10   | 0.10 - 0.14   | 0.13 - 0.16 | K 30 BX - 91              | P 25 BX - 91             |           |
| Heat treated steel $\leq 700 \text{ N/mm}^2$    |                       |                                       |               | 0.10 - 0.13   | 0.12 - 0.15 |                           |                          |           |
| Heat treated steel $\leq 1,100 \text{ N/mm}^2$  | 55 - 75               | 0.06 - 0.09                           | 0.08 - 0.10   | 0.10 - 0.14   | 0.13 - 0.16 | K 10 B - 1                | K 10 B-2                 |           |
| Nitriding steel $\leq 1,100 \text{ N/mm}^2$     |                       |                                       |               | 0.10 - 0.12   | 0.12 - 0.14 |                           |                          |           |
| Ferritic steel $\leq 900 \text{ N/mm}^2$        | 60 - 80               | 0.06 - 0.09                           | 0.08 - 0.10   | 0.10 - 0.14   | 0.13 - 0.16 | K 30 BX - 91              | P 25 BX - 91             |           |
| Austenitic steel (stainless)                    |                       |                                       |               | 0.10 - 0.12   | 0.12 - 0.14 |                           |                          |           |
| 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 10 - 1                  | K 10 - 1                 |           |
| Steel castings $\leq 700 \text{ N/mm}^2$        | 60 - 80               | 0.06 - 0.10                           | 0.08 - 0.11   | 0.10 - 0.14   | 0.13 - 0.16 |                           |                          |           |
| Nodular cast iron $\leq 1,100 \text{ N/mm}^2$   | 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              |                                       |               |               |             |                           |                          |           |
| 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<br>Cu-content < 99%                      | 120 - ...             | 0.04 - 0.09                           | 0.06 - 0.10   | 0.08 - 0.12   | 0.10 - 0.14 |                           |                          |           |

# High performance inserts for high productivity and wide range of application

## New chip breaker SP91 for Type 01 Ø 12.00 to 43.99 mm

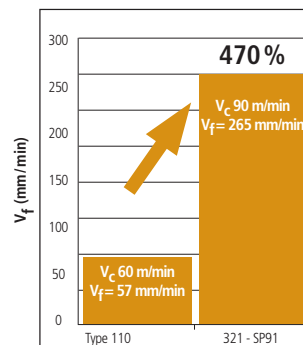
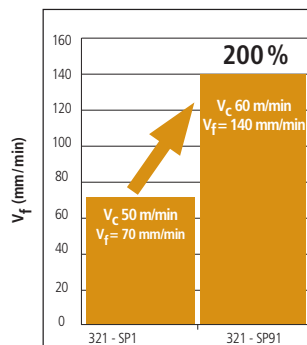
### Advantages

1. **Higher feedrate and higher cutting speed** compared to chip breakers SP1 and SP2.
2. **Up to 400% higher productivity and more** compared to conventional gundrills.
3. **Higher lifetime per insert** together with improved process reliability.
4. Positive chip breaker for good chip control also with long chipping steels.
5. Application for material groups **ISO P** and **ISO M**.
6. Available in **standard grades K30BX** (Ø 12.00 - 17.99 mm) and **P25BX** (Ø 18.00 - 43.99 mm).



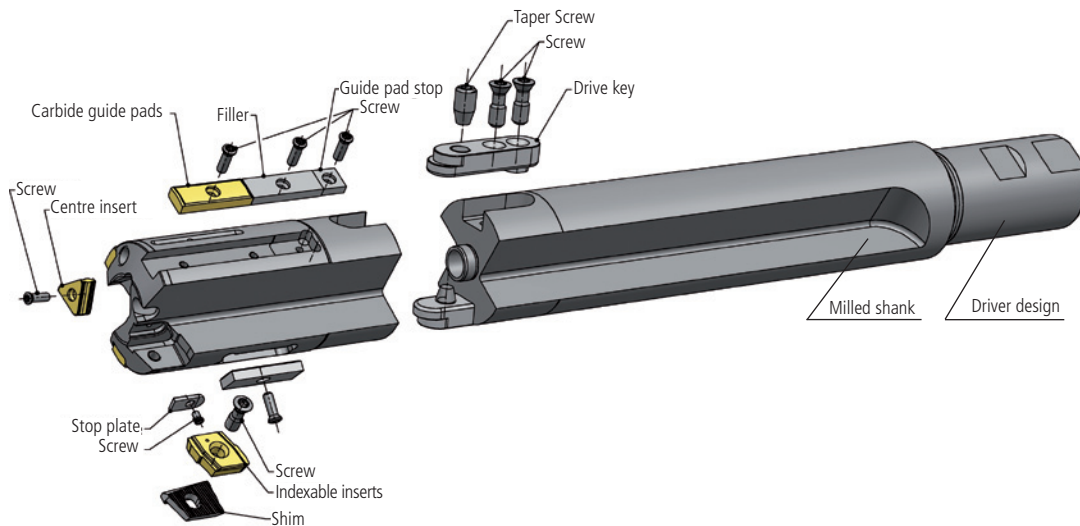
### Sample applications Type 01/Comparison

|                       |                        |                       |
|-----------------------|------------------------|-----------------------|
| Material:             | 40CrMnNiMo8-6-4/1.2738 | X17CrNi16-2/1.4057    |
| Strength:             | 1100 N/mm <sup>2</sup> | 950 N/mm <sup>2</sup> |
| Application:          | Mold production        | Special machine       |
| Type of tool:         | Type 01 (Gundrill)     | Type 01 (Gundrill)    |
| Drill-Ø:              | 15 mm                  | 13.5 mm               |
| Drilling depth:       | 1100 mm                | 260 mm                |
| Cutting speed $v_c$ : | 60 m/min               | 90 m/min              |
| Feed $f$ :            | 0.11 mm/rev.           | 0.125 mm/rev.         |
| Coolant:              | Water soluble/Emulsion | Oil                   |



### Advantages

1. New, high-performance deep hole drilling tool with a modern, user-friendly design.
2. Very high operational efficiency combined with optimum cutting capacity.
3. Ideally suited to CNC machines with a coolant system. Drilling depths up to  $40 \times D$  are possible in a single drilling cycle. Tools also produce excellent results when used on deep hole drilling machines.
4. No regrinding needed.
5. Various indexable insert chip breakers are available according to material to be processed. Coated indexable inserts and guide pads are also available.
6. Easy exchange of indexable inserts and guide pads. No need to adjust setting within  $\pm 0.01$  mm diameter.
7. When using matching interchangeable parts, the drill head diameter may, however, be adjusted within a range of 0.5 mm.
8. The model with extended guide pads (Type 02-010) is also suitable for crosshole drilling.
9. Drilling grades up to IT 8 are possible.
10. Centre insert with 6 cutting edges.



### Overview

| Type                                      | Drilling range   |  |
|---|--|--|
| <b>Type 02-000</b><br>Solid drilling tool | Standard version with 3 guide pads<br><b>Drilling range: Ø 37.00 - 74.99 mm</b><br>(larger diameters on request)       |  |
| <b>Type 02-010</b><br>Solid drilling tool | Version with extended guide pads (7 pcs)<br><b>Drilling range: Ø 37.00 - 74.99 mm</b><br>(larger diameters on request) |  |

# Ordering data Single flute gundrill Type 02

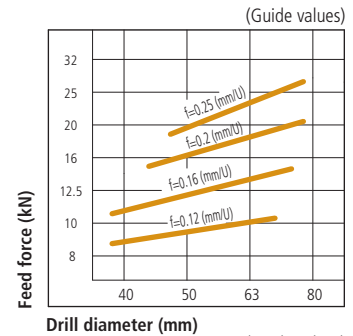
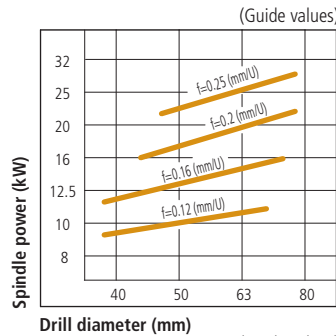
## Ø 37.00 to 74.99 mm

| Drilling range from - up to | Drill head complete<br>...000=3xHMFL<br>...010=7xHMFL | Milled shank<br>(No. assignment after order entry) | Shank spares  |  | Peripheral insert |                   |  | Stop plate  |   | Centre inserts |  | Guide pads     |   |   |
|-----------------------------|---|--|---------------|--|-------------------|-------------------|--|---|---|----------------|--|----------------|---|---|
|                             |   |  | Drive Key     | Taper screw / Screw                              | Shim              | Indexable inserts | Screw / Key                                    | Stop plate  | Screw / Key                                       | Centre inserts | Screw / Key                                      | Guide pads     | Guide pad end stop  | Screw / Key                                     |
| Ø (mm)                      |   |  |               |  |                   |                   |  |   |   |                |  |                |   |   |
|                             |   |  | 2x            | 2x   | 1x                | 1x                | 1x   | 1x  | 1x  | 1x             | 1x   | 3x (7x)        | 3x  | 3x  |
| 37.00-37.49                 | 02-3701-...   | 99-023720...                                       | 99-023713-100 | Taper screw: 99-024414-047<br>Screw: 22-1200-830 | 22-0910-710       | 02-1200-310       | Screw: 22-0900-831 (M4x12)<br>Key: 22-0900-935 | 01-2050-610S...<br>When re-ordering please state dimension S. | Screw: 01-0200-860 (M2.5x4.4)<br>Key: 22-0600-925 | 22-0800-211    | Screw: 22-0800-820 (M3x10.3)<br>Key: 22-0600-935 | 10-0800-410/36 | Guide pad end stop: 10-0800-419S...<br>S = 0.025; S = 0.05; S = 0.10<br>When re-ordering please state dimension S.<br>End stop: 10-0800-625 | Screw: 22-0800-840 (M3x8.2)<br>Key: 22-0600-935 |
| 37.50-37.99                 | 02-3703-...   | 99-023820...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 38.00-38.49                 | 02-3801-...   | 99-023820...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 38.50-38.99                 | 02-3803-...   | 99-023920...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 39.00-39.49                 | 02-3901-...   | 99-023920...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 39.50-39.99                 | 02-3903-...   | 99-024020...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 40.00-40.49                 | 02-4001-...   | 99-024020...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 40.50-40.99                 | 02-4003-...   | 99-024120...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 41.00-41.49                 | 02-4101-...   | 99-024120...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 41.50-41.99                 | 02-4103-...   | 99-024220...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 42.00-42.49                 | 02-4201-...   | 99-024220...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 42.50-42.99                 | 02-4203-...   | 99-024320...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 43.00-43.49                 | 02-4301-...   | 99-024320...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 43.50-43.99                 | 02-4303-...   | 99-024420...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 44.00-44.49                 | 02-4401-...   | 99-024420...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 44.50-44.99                 | 02-4403-...   | 99-024520...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 45.00-45.49                 | 02-4501-...   | 99-024520...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 45.50-45.99                 | 02-4503-...   | 99-024620...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 46.00-46.49                 | 02-4601-...   | 99-024620...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 46.50-46.99                 | 02-4603-...   | 99-024720...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 47.00-47.49                 | 02-4701-...   | 99-024720...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 47.50-47.99                 | 02-4703-...   | 99-024820...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 48.00-48.49                 | 02-4801-...   | 99-024820...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 48.50-48.99                 | 02-4803-...   | 99-024920...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 49.00-49.49                 | 02-4901-...   | 99-024920...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 49.50-49.99                 | 02-4903-...   | 99-025020...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 50.00-50.49                 | 02-5001-...   | 99-025020...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 50.50-50.99                 | 02-5003-...   | 99-025120...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 51.00-51.49                 | 02-5101-...   | 99-025120...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 51.50-51.99                 | 02-5103-...   | 99-025220...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 52.00-52.49                 | 02-5201-...   | 99-025220...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 52.50-52.99                 | 02-5203-...   | 99-025320...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 53.00-53.49                 | 02-5301-...   | 99-025320...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 53.50-53.99                 | 02-5303-...   | 99-025420...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 54.00-54.49                 | 02-5401-...   | 99-025420...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 54.50-54.99                 | 02-5403-...   | 99-025520...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 55.00-55.49                 | 02-5501-...   | 99-025520...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 55.50-55.99                 | 02-5503-...   | 99-025620...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 56.00-56.49                 | 02-5601-...   | 99-025620...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 56.50-56.99                 | 02-5603-...   | 99-025720...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 57.00-57.49                 | 02-5701-...   | 99-025720...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 57.50-57.99                 | 02-5703-...   | 99-025820...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 58.00-58.49                 | 02-5801-...   | 99-025820...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 58.50-58.99                 | 02-5803-...   | 99-025920...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 59.00-59.49                 | 02-5901-...   | 99-025920...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 59.50-59.99                 | 02-5903-...   | 99-026020...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 60.00-60.49                 | 02-6001-...   | 99-026020...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 60.50-60.99                 | 02-6003-...   | 99-026120...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 61.00-61.49                 | 02-6101-...   | 99-026120...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 61.50-61.99                 | 02-6103-...   | 99-026220...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 62.00-62.49                 | 02-6201-...   | 99-026220...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 62.50-62.99                 | 02-6203-...   | 99-026320...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 63.00-63.49                 | 02-6301-...   | 99-026320...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 63.50-63.99                 | 02-6303-...   | 99-026420...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 64.00-64.49                 | 02-6401-...   | 99-026420...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 64.50-64.99                 | 02-6403-...   | 99-026520...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 65.00-65.49                 | 02-6501-...   | 99-026520...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 65.50-65.99                 | 02-6503-...   | 99-026620...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 66.00-66.49                 | 02-6601-...   | 99-026620...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 66.50-66.99                 | 02-6603-...   | 99-026720...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 67.00-67.49                 | 02-6701-...   | 99-026720...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 67.50-67.99                 | 02-6703-...   | 99-026820...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 68.00-68.49                 | 02-6801-...   | 99-026820...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 68.50-68.99                 | 02-6803-...   | 99-026920...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 69.00-69.49                 | 02-6901-...   | 99-026920...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 69.50-69.99                 | 02-6903-...   | 99-027020...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 70.00-70.49                 | 02-7001-...   | 99-027020...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 70.50-70.99                 | 02-7003-...   | 99-027120...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 71.00-71.49                 | 02-7101-...   | 99-027120...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 71.50-71.99                 | 02-7103-...   | 99-027220...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 72.00-72.49                 | 02-7201-...   | 99-027220...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 72.50-72.99                 | 02-7203-...   | 99-027320...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 73.00-73.49                 | 02-7301-...   | 99-027320...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 73.50-73.99                 | 02-7303-...   | 99-027420...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 74.00-74.49                 | 02-7401-...   | 99-027420...                                       |               |  |                   |                   |  |   |   |                |  |                |   |   |
| 74.50-74.99                 | 02-7403-...   |  |               |  |                   |                   |  |   |   |                |  |                |   |   |

Larger diameters on request.

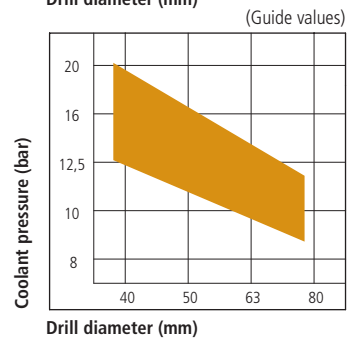
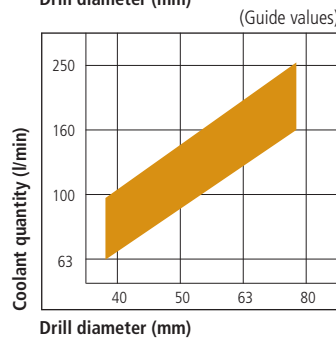
### Performance diagrams

These guide values are for drilling alloyed steel (800 N/mm<sup>2</sup>) and can vary for other workpiece materials and tool conditions (wear).



### Coolant information

Sufficient coolant must be supplied to the tool for troublefree chip removal.



### 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.

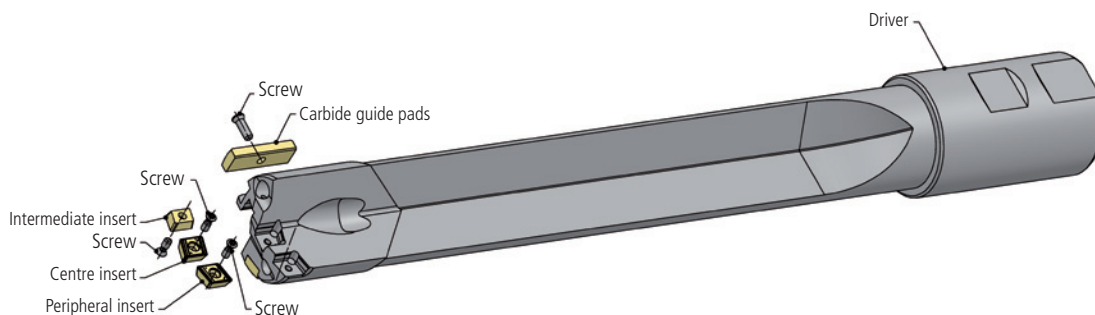
| Material / Mechanical strength properties      | Cutting speed (m/min) | Feed (mm/rev) for drill diameter (mm) |               |               | Carbide grades   |               |            |
|--|-----------------------|---------------------------------------|---------------|---------------|------------------|---------------|------------|
|  |                       | 37.00 - 51.99                         | 52.00 - 67.99 | 68.00 - 74.99 | Indexable insert | Centre insert | Guide pads |
| Free machining steel ≤ 700 N/mm <sup>2</sup>   | 80 - 100              | 0.14 - 0.20                           | 0.16 - 0.22   | 0.18 - 0.25   | P 25 B - 2       | P 40 B - 1    | P 20 B     |
| Case hardening steel ≤ 700 N/mm <sup>2</sup>   |                       |                                       |               |               |                  |               |            |
| Case hardening steel ≤ 1,100 N/mm <sup>2</sup> | 70 - 80               | 0.12 - 0.18                           | 0.14 - 0.20   | 0.16 - 0.22   | P 25 B - 5       | P 40 B - 1    |            |
| Heat treated steel ≤ 700 N/mm <sup>2</sup>     | 70 - 90               | 0.14 - 0.20                           | 0.16 - 0.22   | 0.18 - 0.25   |                  |               |            |
| Heat treated steel ≤ 1,100 N/mm <sup>2</sup>   | 55 - 75               | 0.12 - 0.18                           | 0.14 - 0.20   | 0.16 - 0.22   | K 10 B - 2       | K 10 - 1      |            |
| Nitriding steel ≤ 1,100 N/mm <sup>2</sup>      |                       |                                       |               |               |                  |               |            |
| Ferritic steel ≤ 900 N/mm <sup>2</sup>         | 60 - 80               | 0.12 - 0.16                           | 0.14 - 0.18   | 0.16 - 0.20   | P 25 B - 5       | P 40 B - 1    |            |
| Austenitic steel (stainless)                   |                       |                                       |               |               |                  |               |            |
| Heat resisting steel (stainless), Tool steel   | 50 - 70               | 0.12 - 0.18                           | 0.14 - 0.20   | 0.16 - 0.22   | P 25 B - 5       | P 40 B - 1    |            |
| Steel castings ≤ 700 N/mm <sup>2</sup>         | 60 - 80               | 0.14 - 0.20                           | 0.16 - 0.22   | 0.18 - 0.25   |                  |               |            |
| Nodular cast iron ≤ 1,100 N/mm <sup>2</sup>    | 65 - 80               | 0.16 - 0.20                           | 0.18 - 0.25   | 0.20 - 0.25   | K 10 - 1         | K 10 - 1      |            |
| Cast iron, alloyed and unalloyed               | 70 - 100              |                                       |               |               |                  |               |            |
| Aluminium and Aluminium alloys                 | 100 - 200             | 0.12 - 0.16                           | 0.14 - 0.18   | 0.16 - 0.20   | K 10 - 1         | K 10 - 1      |            |
| Copper<br>Cu-content < 99%                     | 120 - ...             | 0.10 - 0.14                           | 0.12 - 0.16   | 0.14 - 0.18   |                  |               |            |

# Advantages/Overview

## Type 07

### Advantages

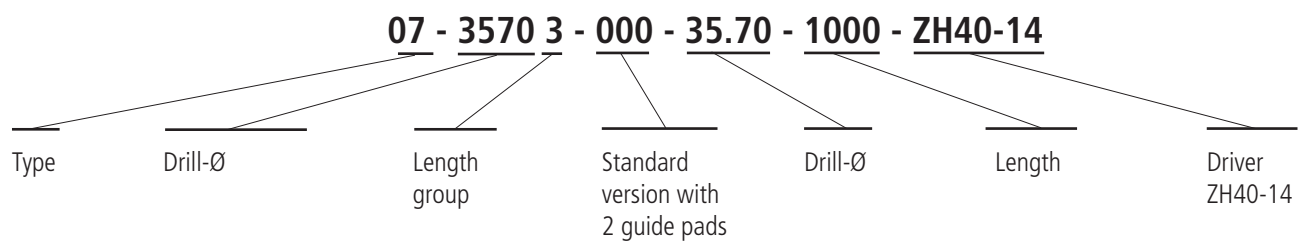
1. Newly developed high performance drilling tool for roughing.
2. Few exchangeable spare parts for the whole drilling range.
3. Minimal universal chip breaker design for high feed rates and high productivity.
4. Simple handling through fixed insert pockets.
5. Suitable for almost all machines with inner coolant supply.
6. Retipping is possible.



### Overview









| Type                                      | Drilling range  |  |
|---|---|--|
| <b>Type 07-000</b><br>Solid drilling tool | Version with 2 guide pads<br><b>Drilling range: Ø 25.00 - 50.99 mm</b><br>(larger diameters on request) |  |
| <b>Type 07-010</b><br>Solid drilling tool | Version with 5 guide pads<br><b>Drilling range: Ø 25.00 - 50.99 mm</b><br>(larger diameters on request) |  |

Ordering example: 07-35703-000-35.70-1000-ZH40-14



## Ordering data Single flute gundrill Type 07

Ø 25.00 to 50.99 mm

| Drilling range | Peripheral insert   |   | Intermediate insert   |   | Centre insert   |   | Carbide guide pads  |   |                    |
|----------------|---|---|---|---|---|---|---|---|--------------------|
| Ø (mm)         |  |  |  |  |  |  |  |  |                    |
|                | 1x  | 1x  | 1x  | 1x  | 1x  | 1x  | 2x  | 2x  |                    |
| 25.00 - 28.99  | 70-0550-310   | Screw<br>22-0610-840<br>M 2.5 x 5.9   | 70-0550-310   | Screw<br>22-0610-840<br>M 2.5 x 5.9   | 70-0550-210   | Screw<br>22-0610-840<br>M 2.5 x 5.9   | 70-0600-410/24  | Screw<br>22-0610-840<br>M 2.5 x 5.9   |                    |
| 29.00 - 29.99  |   |   |   |   | 70-0650-210   |   |   |   | Key<br>22-0600-925 |
| 30.00 - 31.99  | 70-0650-310   | Key<br>22-0600-925  | 70-0650-310   | Key<br>22-0600-925  | 70-0650-210   | Key<br>22-0600-925  | 70-0700-410/28  | Key<br>22-0600-925  |                    |
| 32.00 - 34.99  |   |   |   |   |   |   |   |   |                    |
| 35.00 - 38.99  | 70-0800-310   | Screw<br>22-0600-830<br>M 3 x 8.4   | 70-0800-310   | Screw<br>22-0600-830<br>M 3 x 8.4   | 70-0800-210   | Key<br>22-0600-935  | 10-0800-410/38  | Screw<br>22-0600-830<br>M 3 x 8.4   |                    |
| 39.00 - 41.99  |   |   |   |   | 70-0950-210   |   |   |   | Key<br>22-0600-935 |
| 42.00 - 44.99  |   |   |   |   |   |   |   |   |                    |
| 45.00 - 47.99  | 70-0950-310   | Key<br>22-0600-935  | 70-0950-310   | Key<br>22-0600-935  | 70-0950-210   | Key<br>22-0600-935  | 10-1000-410/45  | Screw<br>22-1200-840<br>M 3.5 x 11.4  |                    |
| 48.00 - 50.99  |   |   |   |   |   |   |   |   | 70-0950-310        |
|                |   |   |   |   |   |   |   | Key<br>22-0900-935  |                    |

### Length groups

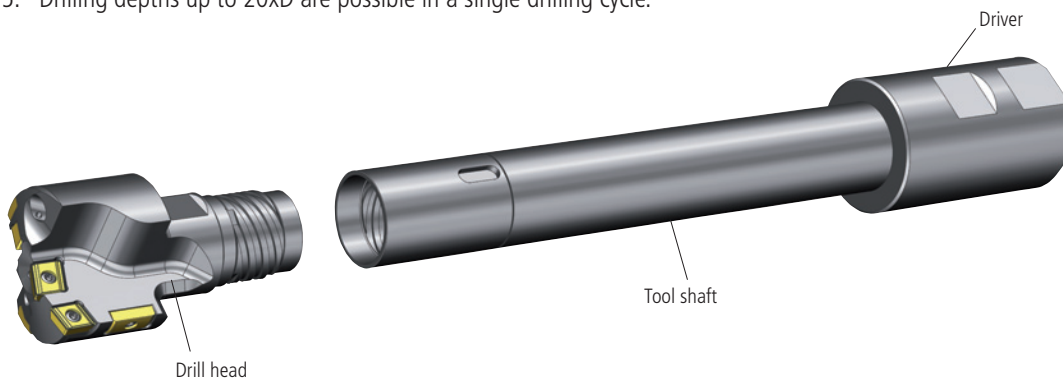
| Length (mm) up to |     |       |       |       |       |       |       |
|-------------------|-----|-------|-------|-------|-------|-------|-------|
| 500               | 800 | 1,250 | 1,600 | 2,000 | 2,500 | 3,200 | 4,500 |
| 1                 | 2   | 3     | 4     | 5     | 6     | 7     | 8     |
| Length groups     |     |       |       |       |       |       |       |

# Advantages/Overview

## Type 07 A

### Advantages

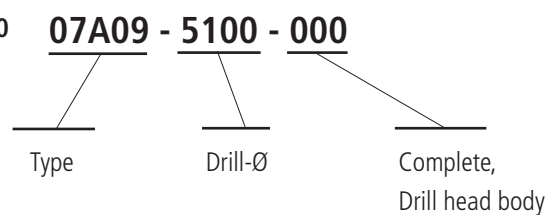
1. Suitable for almost all machines (machining center, conventional lathe, deep hole drilling machine).
2. Few and cost-effective spare parts for the whole drilling range.
3. Best dimensional accuracy at large drilling depths and smallest centerline deviation.
4. Excellent surface quality realizable.
5. Drilling depths up to 20xD are possible in a single drilling cycle.



### Overview

| Type                                    | Drilling range   |  |
|---|--|--|
| <b>Type 07 A</b><br>Solid drilling tool | Version with 3 guide pads<br><b>Drilling range: Ø 51.00 - 113.99 mm</b><br>(larger diameters on request) |  |

Drill head Ordering example: 07A09-5100-000

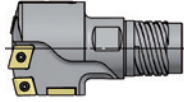
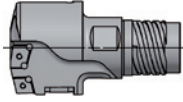





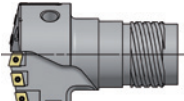
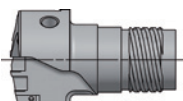

## Ordering data Type 07A

Ø 51.00 to 113.99 mm

### Type 07 A Ø 51.00 - 64.99 mm (without cassettes)

| Drill tube size | Drill tube outer Ø Da (mm) | Drilling range from - to | Solid drill head  |   |   |
|-----------------|----------------------------|--------------------------|---|---|---|
|                 |                            |                          | Complete  | Drill head body   | Key   |
| 09              | 33                         | 51.00 - 56.99            |  |  |  |
| 10              | 36                         | 57.00 - 64.99            | 07A10 - xxx - 000   | 07A10 - xxx - 100   | 32  |

### Type 07 A Ø 65.00 - 113.99 mm (with cassettes)











| Drill tube size | Drill tube outer Ø Da (mm) | Drilling range from - to | Solid drill head   |  |   |
|-----------------|----------------------------|--------------------------|--|--|---|
|                 |                            |                          | Complete   | Drill head body  | Key   |
| 12              | 43                         | 65.00 - 73.99            |  |  |  |
| 14              | 51                         | 74.00 - 84.99            | 07A14 - xxx - 000  | 07A14 - xxx - 100  | 46  |
| 16              | 56                         | 85.00 - 96.49            | 07A16 - xxx - 000  | 07A16 - xxx - 100  | 50  |
| 18              | 68                         | 96.50 - 113.99           | 07A18 - xxx - 000  | 07A18 - xxx - 100  | 34-1800-910   |










**Note:**











Drill heads beyond the drill range Ø 51.00 - 113.99 and divergent drill tube Ø may be supplied on request as **special drill head 99-07...**

# Ordering data Type 07A

Drilling range Ø 51.00 to 113.99 mm

| Drilling range | Peripheral insert   |   | Stop plate  |   | Centre insert   |   | Support pad  |   | Guide pads  |   |
|----------------|---|---|---|---|---|---|--|---|---|---|
| from - up to   |  |  |  |  |  |  |  |  |  |  |
|                | <b>1x</b>   | <b>1x</b>   | <b>1x</b>   | <b>1x</b>   | <b>1x</b>   | <b>1x</b>   | <b>1x</b>  | <b>1x</b>   | <b>2x</b>   | <b>2x</b>   |
| 51.00 - 56.99  | 70-0950-310   | 22-0600-830<br>(M 3 x 8.4)  | 70-0950-310   | 22-0600-830<br>(M 3 x 8.4)  | 70-1250-210   | 22-0600-830<br>(M 3 x 8.4)  | 10-0890-410/38   | 22-0600-830<br>(M 3 x 8.4)  | 10-1000-410/45  | 22-1200-840<br>(M 3 x 11.4)<br>22-0600-935  |
| 57.00 - 62.99  | 70-1250-310   | 22-0600-935   | 70-1250-310   | 22-0600-935   |   | 22-0600-935   |  | 22-0600-935   | 10-1200-410/62  |   |
| 63.00 - 64.99  |   |   |   |   |   |   |  |   |   |   |

| Drilling range  | Peripheral insert   |   |   |   | Intermediate insert 1+2   |  |   |   |   |
|-----------------|---|---|---|---|---|--|---|---|---|
| from - up to    |  |  |  |  |  |  |  |  |  |
|                 | <b>1x</b>   | <b>1x</b>   | <b>1x</b>   | <b>1x</b>   | <b>1x</b>   | <b>1x</b>  | <b>1x</b>   | <b>1x</b>   | <b>4x</b>   |
| 65.00 - 73.99   | 70-1250-310   | 22-0600-830<br>(M 3 x 8.4)<br>22-0600-935   | 70-1250-720   | M 4 x 10<br>(DIN 912)<br>29-0300-900  | 70-0950-310   | 70-0950-740  | 70-0950-310   | 70-0950-740   | 22-0600-830<br>(M 3 x 8.4)<br>22-0600-935   |
| 74.00 - 76.49   |   |   |   |   | 70-0800-310   | 70-0800-740  | 70-0800-310   | 70-0800-740   |   |
| 76.50 - 79.49   |   |   |   |   | 70-0950-310   | 70-0950-740  | 70-0950-310   | 70-0950-740   |   |
| 79.50 - 85.49   |   |   |   |   |   |  |   |   |   |
| 85.50 - 91.49   |   |   |   |   |   |  |   |   |   |
| 91.50 - 95.99   |   |   |   |   |   |  |   |   |   |
| 96.00 - 101.99  |   |   |   |   |   |  |   |   |   |
| 102.00 - 113.99 |   |   |   |   |   |  |   |   |   |

| Drilling range  | Intermediate insert 3   |   |   | Centre insert   |   |   | Support pad   |   | Guide pads  |   |
|-----------------|---|---|---|---|---|---|---|---|---|---|
| from - up to    |  |  |  |  |  |  |  |  |  |  |
|                 | <b>1x</b>   | <b>1x</b>   | <b>2x</b>   | <b>1x</b>   | <b>1x</b>   | <b>2x</b>   | <b>1x</b>   | <b>1x</b>   | <b>2x</b>   | <b>2x</b>   |
| 65.00 - 73.99   | –   | –   | –   | 70-0950-210   | 70-0950-750   | 22-0600-830<br>(M 3 x 8.4)<br>22-0600-935   | 10-0890-410/38  | 22-0600-830<br>(M 3 x 8.4)<br>22-0600-935   | 10-1000-410/45  | 22-1200-840<br>(M 3.5 x 11.4)<br>22-0900-935  |
| 74.00 - 76.49   | 70-0800-310   | 70-0800-740   |   |   |   |   |   |   |   |   |
| 76.50 - 79.49   | 70-0950-310   | 70-0950-740   |   |   |   |   |   |   |   |   |
| 79.50 - 85.49   |   |   | 70-1250-310   |   |   |   |   |   | 70-1250-740   |   |
| 85.50 - 91.49   |   |   |   |   |   |   |   |   |   |   |
| 91.50 - 95.99   |   |   |   |   |   |   |   |   |   |   |
| 96.00 - 101.99  |   |   |   |   |   |   |   |   |   |   |
| 102.00 - 113.99 |   |   |   |   |   |   |   |   |   |   |

**Note:**

Drill heads beyond the drill range Ø 51.00 - 113.99 and divergent drill tube Ø may be supplied on request as **special drill head 99-07...**

## Ordering data Tool shaft Type 07A

Drilling range Ø 51.00 to 113.99 mm

| Drilling range from - up to   | Size | Da | Length groups (mm) |     |      |      |      |      |                    | recommended Tool holder | Order number  |
|---|------|----|--------------------|-----|------|------|------|------|--------------------|-------------------------|---|
|  |      |    | 500                | 800 | 1250 | 1600 | 2000 | 2500 | 3200               |                         |   |
| 51.00 - 56.99   | 09   | 33 | ●                  | ●   | ●    | ●    | ●    | ●    | ●                  | Weldon Ø 32 - Ø 50      | For orders and enquiries please specify <b>drilling depth and tool holder</b> |
| 57.00 - 64.99   | 10   | 36 | ●                  | ●   | ●    | ●    | ●    | ●    | Weldon Ø 32 - Ø 50 |                         |   |
| 65.00 - 73.99   | 12   | 43 | ●                  | ●   | ●    | ●    | ●    | ●    | Weldon Ø 40 + Ø 50 |                         |   |
| 74.00 - 84.99   | 14   | 51 | ●                  | ●   | ●    | ●    | ●    | ●    | Weldon Ø 40 + Ø 50 |                         |   |
| 85.00 - 95.99   | 16   | 56 | ●                  | ●   | ●    | ●    | ●    | ●    | Weldon Ø 50        |                         |   |
| 96.00 - 113.99  | 18   | 68 | ●                  | ●   | ●    | ●    | ●    | ●    | Weldon Ø 50        |                         |   |

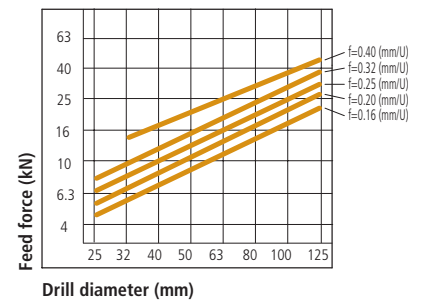
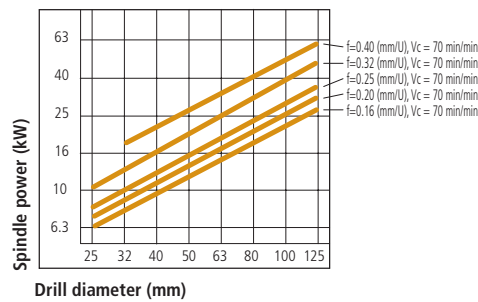
|   |                                     |   |
|---|-------------------------------------|---|
| ● | max. length for standard drill tube | Construction-, case hardening-, nitriding steel                         |
| ● | max. length for standard drill tube | easy to machine steels  |
| ● | max. length for standard drill tube | Grey cast iron to modular graphite iron<br>Aluminium / Brass / Graphite |
| ● | not recommended (at own risk)       |   |

# Technical information

## Single flute gundrill Type 07/07A

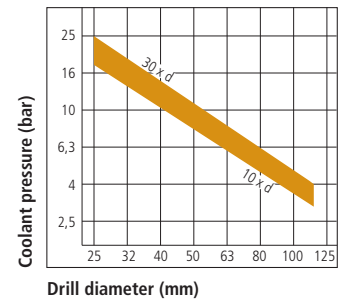
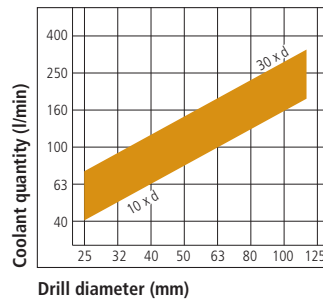
### Performance diagrams

These guide values are for drilling alloyed steel (800 N/mm<sup>2</sup>) and can vary for other workpiece materials and tool conditions (wear).



### Coolant information

Sufficient coolant must be supplied to the tool for troublefree chip removal.



### Guide values for deep hole drilling of different materials

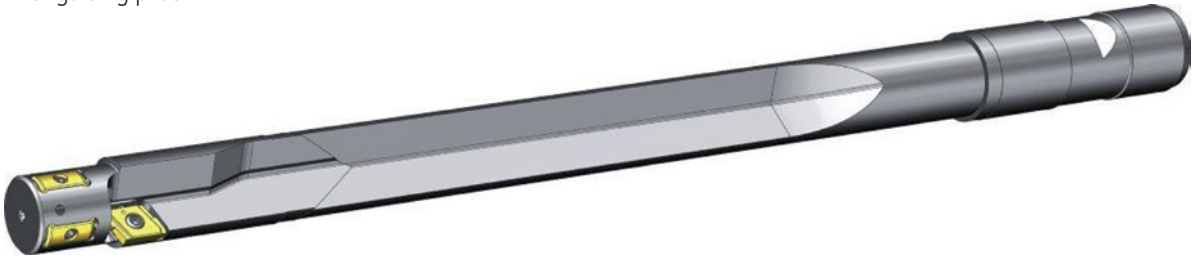
Guide values for cutting speed and feed rate are shown in the table below.

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 |              |        |
|--|-----------------------|---------------------------------------|---------------|----------------|----------------|--------------|--------|
|  |                       | 25.00 - 29.99                         | 30.00 - 44.99 | 45.00 - 113.99 | AS + ZWS       | ZS           | FL     |
| Construction steel < 700 N/mm <sup>2</sup>     | 80 - 100              | 0.10 - 0.20                           | 0.10 - 0.30   | 0.10 - 0.30    | U 225 BX - 5   |              |        |
| Case hardening steel < 750 N/mm <sup>2</sup>   |                       |                                       |               |                |                |              |        |
| Case hardening steel < 1,100 N/mm <sup>2</sup> | 70 - 80               | 0.20 - 0.25                           | 0.20 - 0.30   | 0.20 - 0.35    |                |              |        |
| Heat treated steel < 700 N/mm <sup>2</sup>     |                       |                                       |               |                |                |              |        |
| Heat treated steel < 1,100 N/mm <sup>2</sup>   | 55 - 75               | 0.15 - 0.20                           | 0.15 - 0.20   | 0.15 - 0.25    |                |              |        |
| Nitriding steel < 1,100 N/mm <sup>2</sup>      |                       |                                       |               |                |                |              |        |
| Ferritic steel < 900 N/mm <sup>2</sup>         | 60 - 80               | 0.15 - 0.25                           | 0.25 - 0.30   | 0.25 - 0.30    | U 225 BX - 2   | U 440 BX - 5 | P 20 B |
| Austenitic steel                               |                       |                                       |               |                |                |              |        |
| Heat resisting steel stainless                 | 50 - 70               | 0.15 - 0.20                           | 0.15 - 0.20   | 0.15 - 0.25    | U 225 BX - 5   |              |        |
| Steel castings < 700 N/mm <sup>2</sup>         | 60 - 80               | 0.20 - 0.25                           | 0.25 - 0.30   | 0.20 - 0.35    |                |              |        |
| Nodular cast iron < 1,100 N/mm <sup>2</sup>    | 65 - 80               | 0.20 - 0.35                           | 0.25 - 0.40   | 0.30 - 0.40    |                |              |        |
| Cast iron, alloyed and unalloyed               |                       |                                       |               |                | 70 - 100       | 0.30 - 0.40  |        |
| Aluminium and Aluminium alloys                 | 80 - 200              | 0.05 - 0.25                           | 0.05 - 0.30   | 0.05 - 0.45    |                |              |        |
| Copper Cu-content < 99%                        | 120 - ...             | 0.05 - 0.15                           | 0.05 - 0.15   | 0.05 - 0.15    |                |              |        |

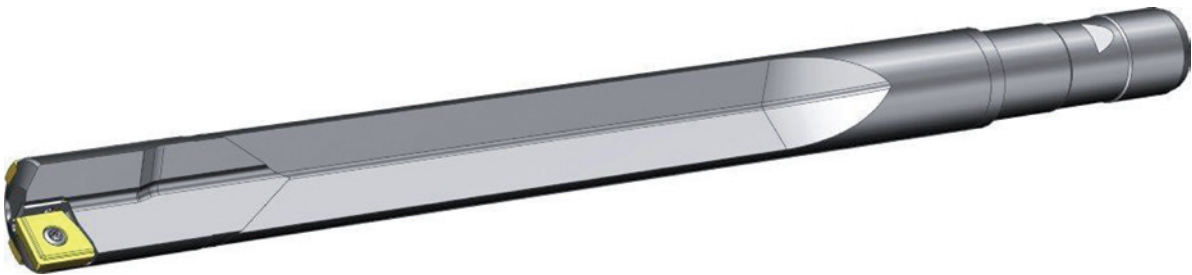
**Special tools**  
Single flute counterboring and form boring tools Type 99  
Ø 12.00 to 100.00 mm

With guiding pilot

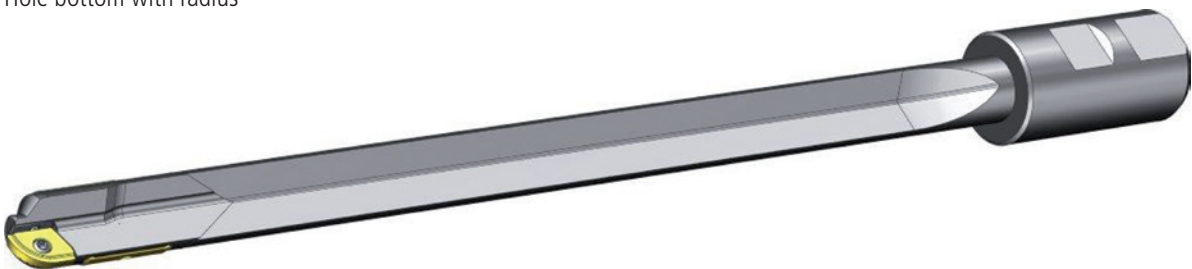


Example: Tools for exact concentricity of two holes with different diameter following each other

Flat hole bottom



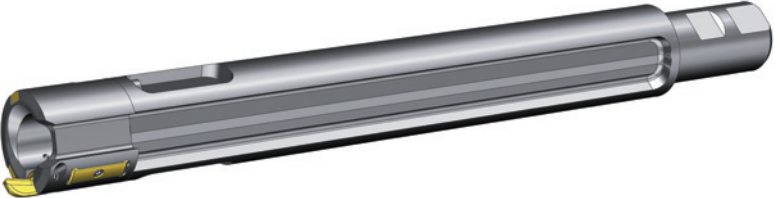
Hole bottom with radius



Tools on request

## Special tools

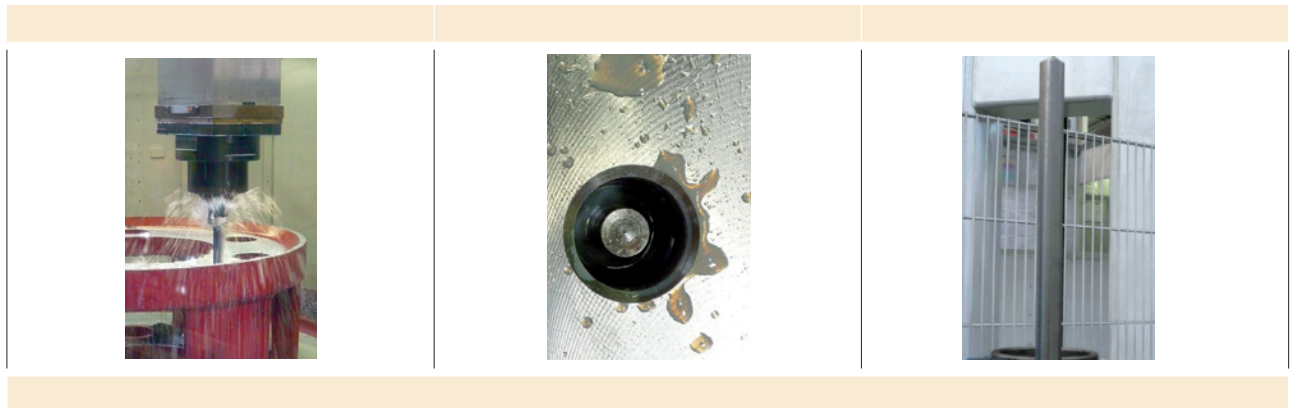
### Type 99-08 Trepanning tool/Type 99-09 Core cutter

|  |  |
|--|--|
| <p><b>Trepanning tool Type 99-08</b><br/> <math>\varnothing</math> 25.00 - 100.00 mm</p> |  |
| <p><b>Core cutter Type 99-09</b><br/> <math>\varnothing</math> 37.00 - 70.00 mm</p>      |  |

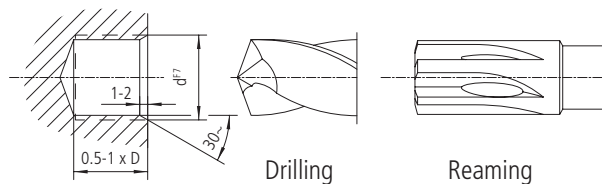
**Tool length (depending on length to diameter ratio) max. 1600 mm**

For blind holes and to remove a core for material samples  
 (not available for difficult to machine materials)

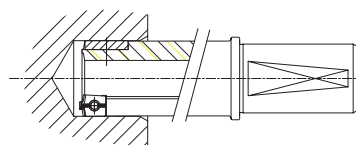
**Machining example:** Taking a sample  $\varnothing$  41.5 mm out of a cast iron francis turbine.



#### 1. Pilot hole



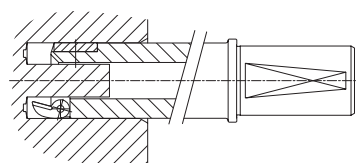
#### 2. Trepanning



Insert trepanning tool (without rotation) into the pilot hole up to approx. 3-5 mm before reaching the bottom of the bore. Start rotational speed and feed rate.

Cutting values for general construction steel  $V_c = 60$  m/min  $f = 0.10 - 0.18$  mm/rev.

#### 3. Core cutting



Insert trepanning tool (without rotation) into the pilot hole up to approx. 3-5 mm before reaching the bottom of the bore. Start rotational speed and feed rate.

Cutting values for general construction steel  $V_c = 20 - 30$  m/min  $f = 0.03 - 0.06$  mm/rev. **based on the core- $\varnothing$**

Drivers normally are supplied in compliance with DIN 1835 B or DIN 6535 HA, HB and HE, but they can also be made to order.

| DCON Driver (mm) | Type            | Illustration | botek order no. | For tool setup                   |                |
|------------------|-----------------|--------------|-----------------|----------------------------------|----------------|
|                  |                 |              |                 | For drill dia. (mm) from - up to | LS Driver (mm) |
| 25               | DIN 1835 - B 25 |              | ZH25-22         | 12.00 - 19.50                    | 56             |
| 32               | DIN 1835 - B 32 |              | ZH32-10         | 18.00 - 50.99                    | 60             |
| 40               | DIN 1835 - B 40 |              | ZH40-13         | 25.00 - 74.99                    | 70             |
| 50               | DIN 1835 - B 50 |              | ZH50-05         | 32.00 - 113.99                   | 80             |
| 25               | DIN 1835 - E 25 |              | ZH25-36         | 12.00 - 19.59                    | 56             |
| 32               | DIN 1835 - E 32 |              | ZH32-12         | 18.00 - 50.99                    | 60             |
| 25               |                 |              | ZH25-00         | 12.00 - 19.59                    | 70/78          |
| 25.4             | Inch            |              | ZH25.4-00       | 12.00 - 19.59                    | 70             |
| 31.7             | Inch            |              | ZH31.7-00       | 18.00 - 50.99                    | 70             |
| 38.1             | Inch            |              | ZH38.1-00       | 18.00 - 74.99                    | 70             |

DCON = Connection-Ø  
 LS = Shank length

## Rotating coolant connector

For deep hole drilling tools with inner coolant supply  $\varnothing$  12.00 to 113.99 mm

### High pressure (on request)

93-014/93-015

Drill range  $\varnothing$  2.5 - 25 mm

- to 100 bar
- High suitable for botek deep hole drilling tools  
Type 110/113 (01)

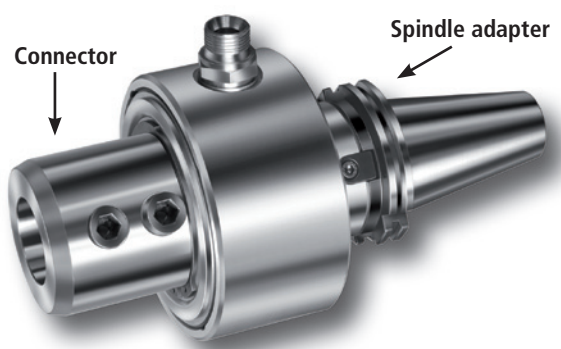


### Low pressure/high amount

93-003

Drill range  $\varnothing$  12 - 113.99 mm

- Coolant flow up to 250 l/min.
- High suitable for botek deep hole drilling tools  
Type 01/02/07/07A/08/09



| Connector for driver  | Spindle adapter                                      | Technical information  |
|---|--|--|
| <b>Weldon 25,</b><br><b>Weldon DIN 1835-B/6535-HB</b><br>Order-No. 93-003400-2563 | <b>ISO 50 DIN 69871</b><br>Order-No. 97-2001-5063027 | Max. 3000 RPM<br><b>Coolant pressure:</b> max. 20 bar<br><b>Recommended filtration:</b> 30 $\mu$ m<br><b>Coolant quantity:</b> max. 160 l/min      |
|   | <b>ISO 50 DIN 2080</b><br>Order-No. 97-2003-5063027  |  |
| <b>Weldon 32</b><br>Order-No. 93-003400-3263                                      | <b>HSK 100</b><br>Order-No. 97-2004-10063090         |  |
|   | <b>Capto C6</b><br>Order-No. 97-2005-C6-V63080       |  |
| <b>Weldon 40</b><br>Order-No. 93-003600-4080                                      | <b>ISO 50 DIN 69871</b><br>Order-No. 97-2001-5080027 | Max. 2000 U/min<br><b>Coolant pressure:</b> max. 12 bar<br><b>Recommended filtration:</b> 30 $\mu$ m<br><b>Coolant quantity:</b> max.ax. 250 l/min |
|   | <b>ISO 60 DIN 69871</b><br>Order-No. 97-2001-6080030 |  |
| <b>Weldon 50</b><br>Order-No. 93-003600-5080                                      | <b>ISO 50 DIN 2080</b><br>Order-No. 97-2003-5080027  |  |
|   | <b>HSK 100</b><br>Order-No. 97-2004-10080090         |  |
|   | <b>Capto C8</b><br>Order-No. 97-2005-C8-V80065       |  |

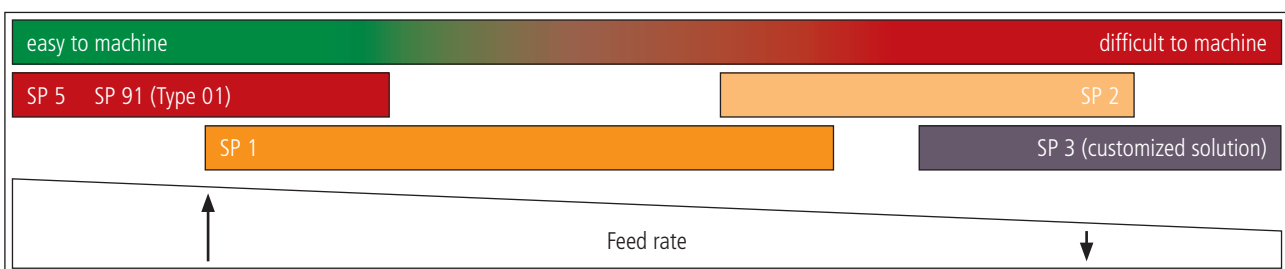
additional spindle adapters on request

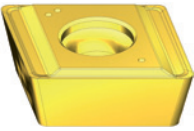
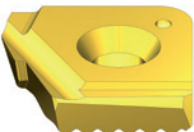
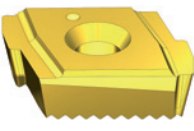
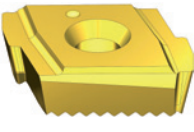
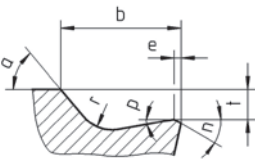


### Chip breakers

1. The chip breaker has a decisive influence on the chip form.
2. To achieve a trouble-free chip flow and optimum tool life, the aim is to produce an ideal chip form.
3. The chips should be fractured in such a way that a chip congestion is avoided.
4. Too short and compressed chips strain the cutting edges and lead to an early wear, or even destruction of the insert.

### Processed material



|  |   |   |
|--|---|---|
| <p><b>SP 5</b><br/>(positive chip breaker Type 02/07/07A)</p>  |  | <ul style="list-style-type: none"> <li>- unalloyed + alloyed steels</li> <li>- Case-hardened steel + heat treated steel</li> <li>- Nitriding steel + tool steel</li> <li>- martensitic steel</li> <li>- Grey cast iron + ductile iron</li> <li>- Aluminium alloys</li> </ul> <p><b>in combination with highest feed rates</b></p> |
| <p><b>SP 91</b><br/>(positive chip breaker Type 01)</p> <p><b>(only Type 01 available)</b></p>               |  | <ul style="list-style-type: none"> <li>- unalloyed + alloyed steels</li> <li>- Case-hardened steel + heat treated steel</li> <li>- Nitriding steel + tool steel</li> <li>- martensitic steel</li> <li>- Grey cast iron + ductile iron</li> <li>- Aluminium alloys</li> </ul> <p><b>in combination with highest feed rates</b></p> |
| <p><b>SP 1</b><br/>Chip breaker – 0° chip angle (Type 01/02/08)</p>  |  | <ul style="list-style-type: none"> <li>- unalloyed + alloyed steels</li> <li>- Case-hardened steel + heat treated steel</li> <li>- Nitriding steel + tool steel</li> <li>- martensitic + austenitic steel</li> <li>- Grey cast iron + ductile iron</li> <li>- Aluminium alloys</li> <li>- Copper alloys</li> </ul>                |
| <p><b>SP 2</b><br/>Chip breaker – 0° chip angle,<br/>Length shorter than SP 1<br/>(Type 01/02/07/07A/08)</p> |  | <ul style="list-style-type: none"> <li>- Structural steel with high elongation</li> <li>- Nickel alloyed steels</li> <li>- Stainless steel (austenitic/ferritic/duplex)</li> <li>- Aluminium + copper</li> <li>- Super-alloys</li> <li>- Titanium</li> </ul>  |
| <p><b>SP 3</b><br/>Chip breaker as per customer's choice</p>   |  | <ul style="list-style-type: none"> <li>- as per customer specifications</li> <li>→ length; width; depth; radius, angle</li> <li>→ see VU-00-0614-B</li> </ul>   |

## Technical appendix

### Requirements for application/Dimensions for the guide hole

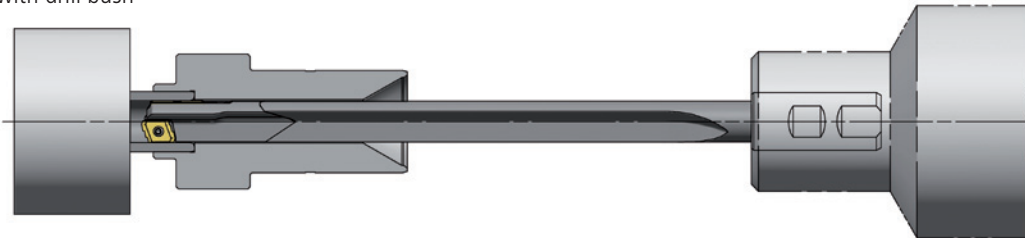
The characteristic of the single flute gundrilling process is that coolant is fed through the coolant hole in the tool and exits along with the chips in the V-shaped groove (flute) on the drill tube from the drilled hole. The coolant also provides lubrication to the drill periphery.

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.

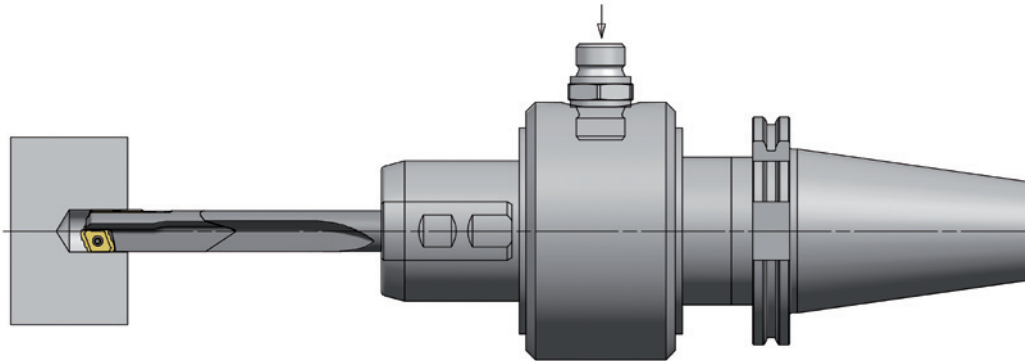
#### The quality of the guide hole affects the drilling performance:

1. An efficient coolant and filtration system with a coolant filtration of 20  $\mu\text{m}$  to 30  $\mu\text{m}$  (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

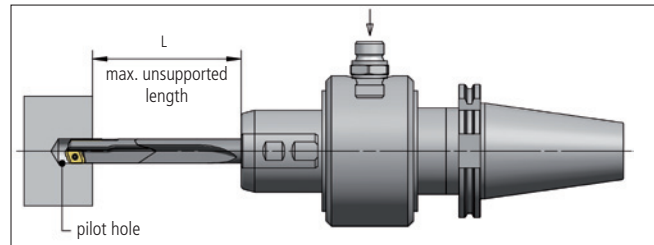
|  | Drill diameter<br>(mm) | Dimensions for guide hole (pilot hole / drill bush) |                                |
|--|------------------------|---|--------------------------------|
|  |                        | L<br>(mm)   | D (mm)<br>to tool- $\emptyset$ |
|  | 12.00 - 17.99          | approx. 1.50 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.

1. **Before using the drills make sure the machine has the necessary equipment to do proper deep hole drilling. The machine should have suitable safety guarding for protection from cutting chips and coolant for operator.** Check with machine builder!

2. **Improper use or handling of deep hole drilling tools can cause serious injuries**, e.g. skin cuts from the cutting edge

3. Deep hole drilling tools are not self centering and can be unbalanced. Therefore the drills must be guided **during the start of the drilling cycle** by means of a sufficiently long drill bush or pilot hole (see detail „Z“ on below illustration). For information on the guide hole (pilot hole).



4. **Tool support: Unsupported drill length** should never exceed the dimensions as shown on table. If the unsupported drill length is exceeded the drill might cause injury!

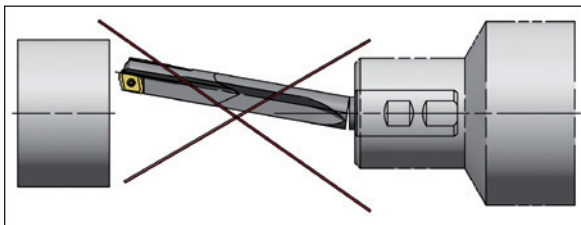
| Type            | Max. unsupported length of the tool |                           |
|-----------------|-------------------------------------|---------------------------|
|                 | Drill diameter D                    | Max. unsupported length L |
| Type 01/Type 07 | 12.00 - 20.99                       | approx. 40 x D            |
|                 | 21.00 - 30.99                       | approx. 35 x D            |
|                 | 31.00 - 40.99                       | approx. 30 x D            |
|                 | 41.00 - ...                         | approx. 25 x D            |
| Type 02         | 37.00 - 44.99                       | approx. 40 x D            |
|                 | 45.00 - 59.99                       | approx. 30 x D            |
|                 | 60.00 - 74.99                       | approx. 25 x D            |
| Type 07A        | 51.00 - 113.99                      | approx. 25 x D            |

5. The gundrill is fed into the drill bush or pilot hole **while non rotating** or rotated slowly at < 50 RPM. Then the coolant and the machine spindle should be started.

6. **After reaching the drilling depth** switch off the coolant and retract with the spindle stopped or slowly rotating at < 50 RPM.

7. Grinding of carbide produces dust (cobalt, etc.) that may be potentially hazardous. Use adequate ventilation and safety glasses during grinding.

8. **Consequences of not following** our application notes No. 1 - 7.



Using botek gundrills other than directed may cause personal injury.

Tool breakage and unsupported gundrills can be extremely dangerous. **Please use with caution and care!**

**Please note that all application notes and values contained herein are intended as guidelines only. We do not accept any liability for damages caused by improper handling of botek deep hole drilling tools, operating errors, unsuitable machinery or misuse while using our tools!**

Do you have any further queries? Please call up at +49 7123 38 08-0. We will be pleased to offer you advice.

# Technical appendix

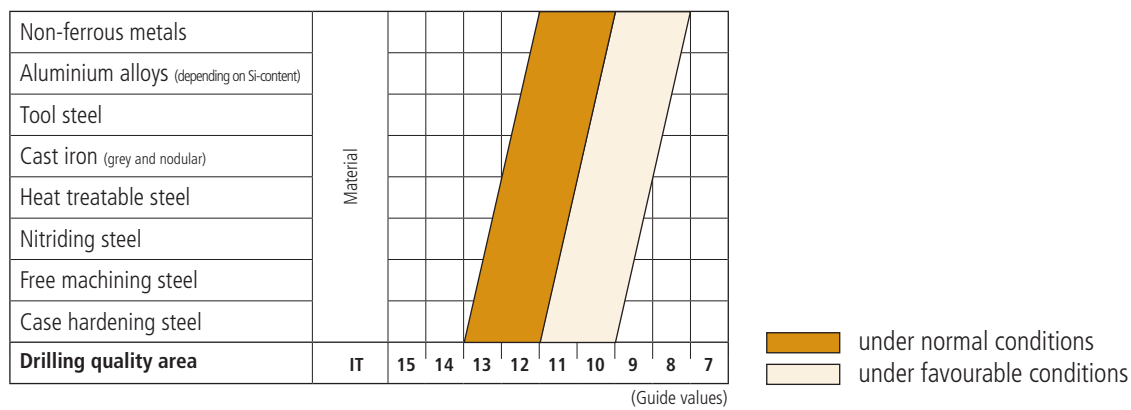
## Drilling quality

To achieve optimum drilling results when using **deep hole drilling tools** with indexable inserts and guide pads, various criteria must be applied. In addition to tool design, key factors are machine design and construction, process techniques, pressurised and filtered deep hole drilling coolant. Selection of proper cutting parameters is also a significant factor.

The key factors botek considers when designing gundrills:

1. Material type
2. Diameter, tolerance and surface finish
3. Carbide grade and coating
4. Chip breaker

### Achievable drilling tolerances



### Surface quality

| Roughness class   |                  | N8  | N7   | N6  | N5  |
|-------------------|------------------|-----|------|-----|-----|
| Quality area      |                  |     |      |     |     |
| Surface roughness | Rt $\mu\text{m}$ | 21  | 11.5 | 6.2 | 3.4 |
|                   | Ra $\mu\text{m}$ | 3.2 | 1.6  | 0.8 | 0.4 |
|                   | Rz $\mu\text{m}$ | 14  | 7.6  | 4.5 | 2.2 |

(Guide values)

under normal conditions
  under favourable conditions

### Centerline deviation (drift)

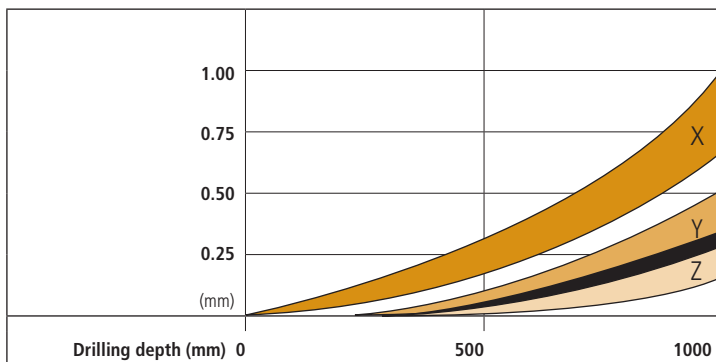
Counter-rotation: The optimum results are achieved with a rotating tool and simultaneous workpiece counter-rotation: See „Z”.

Workpiece rotating: The next best technique involves the workpiece rotating with the gundrill non-rotating: See „Y”.

Tool rotating: See „X”.

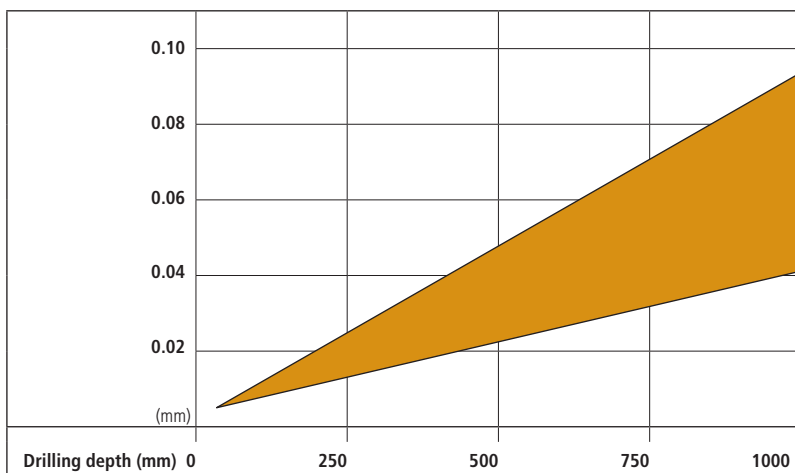
In all applications tool drift is minimised by using a close fitting pilot bore or guide bushing during gundrilling. Angular alignment of pilot bore with desired gundrill bore is imperative.

With a guide bushing, alignment and distance from the workpiece are also important.



### Hole straightness

Whipping or deflection of the gundrill flute plays a decisive role in hole straightness and run out in the workpiece. Carbide tipped gundrills must be supported by a steady rest or whip guide every 40 diameters.



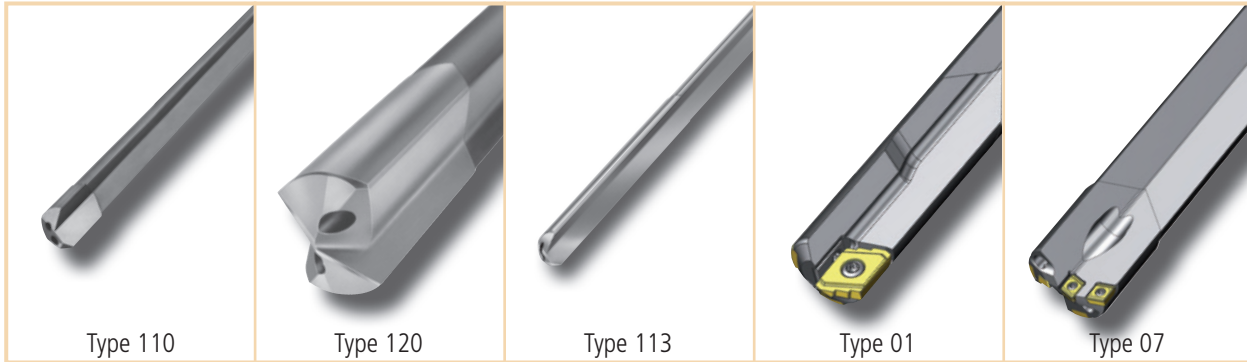
### Roundness

Hole roundness is a primary advantage of gundrilling over conventional twist drilling. Hole roundness measurements as low as 10  $\mu\text{m}$  are possible.

## Express Order Line/Stock program

### Express order line:

specialized in manufacturing **certain tools quickly**.



We have established an Express production line which specializes in manufacturing certain tools quickly.

### Product range:

- Single flute gundrills/twin fluted drills with brazed carbide tip **Type 110/Type 120**
- Single flute gundrills in solid carbide design **Type 113**
- Single flute gundrill with indexable inserts and guide pads **Type 01/Type 07**

**You can order by fax or e-Mail straightforward and quickly.**

**We are pleased to send you our order form.**

### Contact person:

Mr. Andreas Lehmann  
P +49 7123 38 08-394  
F +49 7123 38 08-138  
E-Mail [Lehmann@botek.de](mailto:Lehmann@botek.de)

### Stock program:

- **Worldwide first stock program for gundrills** with indexable inserts and guide pads **Type 01**
- **Single flute gundrills** Type 110 with brazed carbide tip – **extended size range**

**More information regarding the Express order line and our stock program please see our new homepage, [www.botek.de](http://www.botek.de).**

### Service

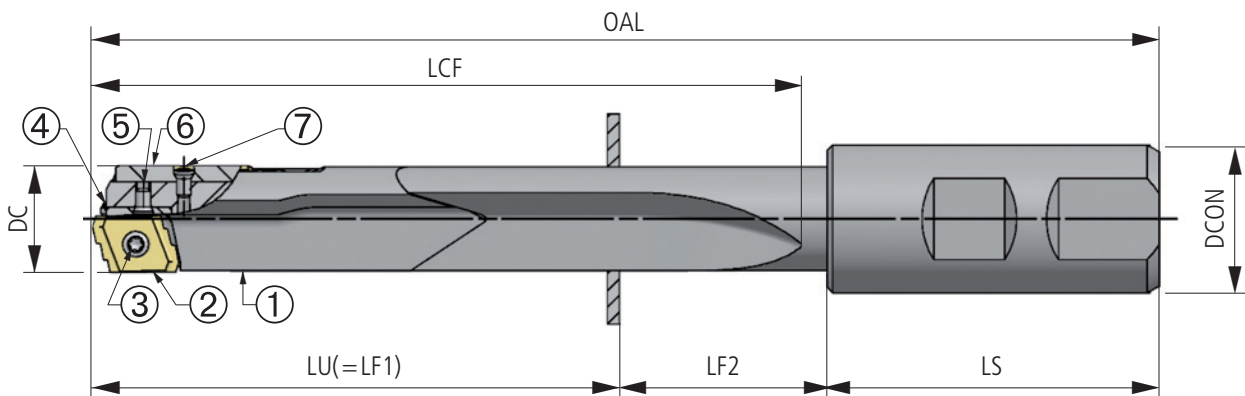
#### Retipping

Tools with brazed drill head can be refitted with a new head.  
You will receive an almost new tool – resource friendly and cost-efficient.

#### Accessories

Accessories for our deep hole drilling tools Type 01, 02, 07 are also available.

**More information can be found at [www.botek.de](http://www.botek.de)**



## Tool Components

1. Tool complete
2. Insert
3. Screw for insert
4. Stop plate
5. Screw for stop plate
6. Guide pads
7. Screw for guide pads

## Cutting tool data according to ISO 13399

- DC = Cutting diameter  
 OAL = Over all length  
 DCON = Connection-Ø  
 LS = Shank length  
 LCF = Flute length  
 LU = Usable length/Drilling depth  
 LF2 = Chip clearance min.

| LF2               | Ø 12 - 17.99 mm | Ø 18 - 31.99 mm | Ø 32 - ... mm |
|-------------------|-----------------|-----------------|---------------|
| Type 01/02/07/07A | 50 mm           | 80 mm           | 100 mm        |

## Tool length calculation

Example: 2nd Insert

$$LU + LF2 + LS = OAL$$

$$LU (330 \text{ mm}) + LF2 (65 \text{ mm}) + LS (60 \text{ mm}) = OAL (445 \text{ mm})$$

# botek<sup>®</sup>

DEEP HOLE DRILLING SYSTEMS  
SOLID CARBIDE TOOLS

botek  
Präzisionsbohrtechnik GmbH

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