GUHRING


# EB 800 - Gun Drill System

GUHRING - YOUR WORLD-WIDE PARTNER

# Single-fluted gun drills EB 800

NEW

- As special solution now available up to 52.0 mm Ø
- Inserts and supporting strips in 1/10 diameters as standard, in 1/100 diameters as special tools with fixed additional charges

Guhring single-fluted gun drills with interchangeable inserts and supporting strips are also produced as special tools according to customer requirements. They are suitable for nearly every material and available from diameter 12.0 to 52.0 mm up to a maximum total length of 3000 mm.

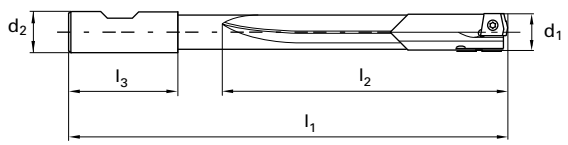
Your special advantages are:

- The interchangeable component technology for inserts and supporting strips makes any combination of carbide grade and coating possible.
- The precision interchangeable inserts and supporting strips eliminate complicated adjustments.
- The precision supporting strips are produced in a special carbide for your individual deep drilling task. They can be reverse-fitted, providing double tool life. In addition, they can be provided with any of the Guhring coatings.
- Thanks to the precision insert seatings and the interchangeable inserts there is only a small number of interchangeable components. The tool is therefore extremely rigid.
- Expensive stoppages are eliminated because the worn components can be replaced without removing the tool from the machine.
- The expensive re-grinding process is eliminated thanks to the interchangeable insert technology.
- The application orientated selection of the most suitable interchangeable insert always ensures optimal chip breaking – even in problematic materials.
- Specifically optimised to your individual deep drilling task, the precision inter-changeable inserts are also produced in a special carbide. In addition, all GUHRING coatings are available.
- Within the diameter range it is possible to modify the nominal diameter at any time by simply interchanging the individual components.
- The driver is produced in heat-treatable steel acc. to:
  - DIN 6535 HA
  - DIN 6535 HB
  - DIN 6535 HE
  - DIN 1835 E

  Also, all the forms generally required for deep drilling machines are possible to be manufactured.

## Stock program from Ø 12.0 to 24.0 mm suitable for almost every material

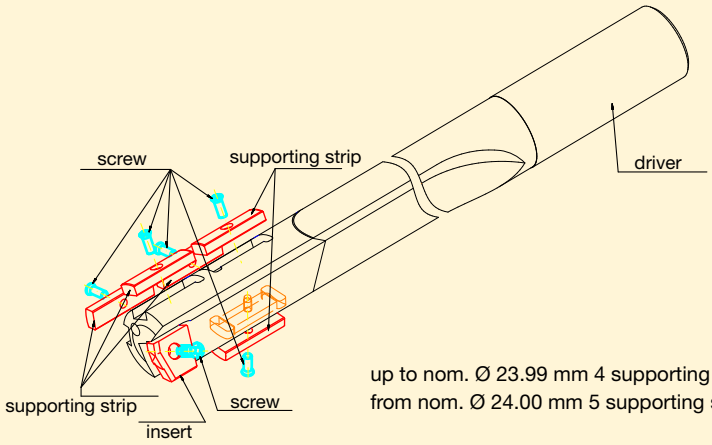
| | |
|---|---|
| Guhring no. | 5644 |
| Standard | Guhring std. |
| Tool material | Carbide |
| Carbide grade | K20/K40 |
| Surface | S |
| Type | EB 800 |
| Drilling depth | 30xD |
| Cutting direction | right-hand |
| Tolerance | h8 |
| Discount group | 123 |




| d1 | | d2 | l1 | l2 | l3 | Availability |
|---|---|---|---|---|---|---|
| mm | inch | mm | mm | mm | mm | |
| 12.000 | | 20.000 | 446.00 | 384.00 | 50.00 | ● |
| 12.700 | 1/2 | 20.000 | 468.00 | 384.00 | 50.00 | ● |
| 14.000 | | 20.000 | 510.00 | 448.00 | 50.00 | ● |
| 15.000 | | 25.000 | 548.00 | 480.00 | 56.00 | ● |
| 16.000 | | 25.000 | 580.00 | 512.00 | 56.00 | ● |
| 18.000 | | 25.000 | 644.00 | 576.00 | 56.00 | ● |
| 20.000 | | 32.000 | 712.00 | 640.00 | 60.00 | ● |
| 24.000 | | 32.000 | 840.00 | 768.00 | 60.00 | ● |

**Attention: - shortest flute length 15 x D**
**- possible diameter tolerance IT9/IT10**

Drawing, all Guhring nos. and specifications
included with every quote.




up to nom. Ø 23.99 mm 4 supporting strips
from nom. Ø 24.00 mm 5 supporting strips

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## Gun drills

with interchangeable insert and
supporting strip, internal cooling

Diameter range: 12.00 mm - 52.00 mm

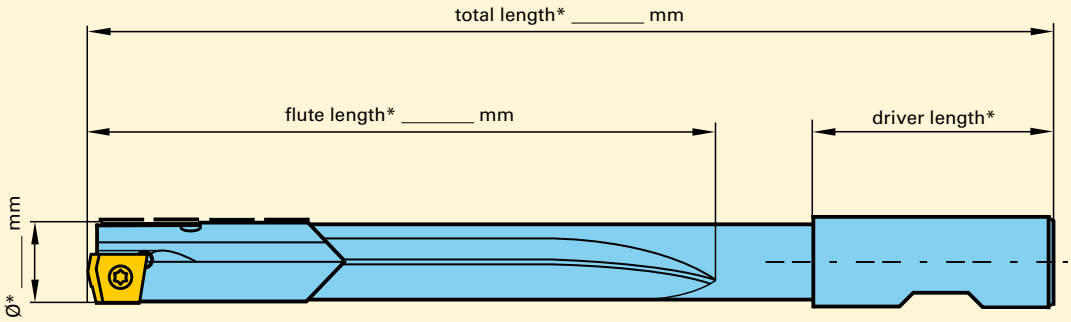
# Fax Enquiry / Order
# simply photo-copy, complete and fax …

❑ **Enquiry** ❑ **Order** ❑ **Repeat order, no. of initial order**

**Gun drill:** ❑ **EB 800** 

**Quantity required:** _____ **tools**
_____ **interchangeable inserts**
_____ **guide pads**

* Ø 12.0 - 52.0 mm
Flute length min. 15 x D
Total length max. 3000 mm
Total length and driver length are dependent on the driver selected, see page 66.




**Drawing of lay-out**

required in special cases only

**Driver:** ❑ **no** ❑ **code no.** _____ ❑ **to enclosed drawing**

**Coating:** ❑ **TiN** Ⓢ ❑ **Fire** Ⓕ ❑ **Signum** Ⓨ ❑ **TiAlN nanoA** ⓐ

**Workpiece:** **Drilling depth:** _____ **Hole tolerance:** _____ **Material/designation:** _____

**Surface finish:** _____ **Projecting edges :** ❑ **no** ❑ **yes** _____

**Machine type:** ❑ **Deep hole drilling machine** ❑ **Conventional machine tool**
❑ **Pilot hole** ❑ **Drilling bush**

**Coolant:** ❑ **Deep hole drilling oil** ❑ **Soluble oil**
**Pressure** _____ **bar** **Quantity** _____ **l/min**

**Company:** _____ **Company stamp:**

**Telephone/fax:** _____

**Contact:** _____ **Signature:** _____

| Drill Ø mm from | Feed column no. 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|
| | f (mm/rev.) | | | | | | | |
| **1.50** | 0.002 | 0.004 | 0.006 | 0.008 | 0.012 | 0.020 | 0.032 | 0.045 |
| **2.00** | 0.003 | 0.005 | 0.007 | 0.010 | 0.016 | 0.028 | 0.046 | 0.055 |
| **2.50** | 0.004 | 0.006 | 0.008 | 0.012 | 0.018 | 0.030 | 0.054 | 0.070 |
| **4.00** | 0.005 | 0.007 | 0.010 | 0.016 | 0.025 | 0.043 | 0.065 | 0.085 |
| **6.00** | 0.007 | 0.009 | 0.013 | 0.024 | 0.035 | 0.061 | 0.085 | 0.120 |
| **8.00** | 0.010 | 0.014 | 0.022 | 0.032 | 0.045 | 0.068 | 0.100 | 0.150 |
| **10.00** | 0.012 | 0.016 | 0.028 | 0.040 | 0.055 | 0.075 | 0.120 | 0.160 |
| **14.00** | 0.020 | 0.025 | 0.035 | 0.050 | 0.065 | 0.085 | 0.130 | 0.180 |
| **18.00** | 0.025 | 0.030 | 0.040 | 0.055 | 0.070 | 0.095 | 0.145 | 0.200 |
| **20.00** | 0.026 | 0.035 | 0.045 | 0.060 | 0.080 | 0.110 | 0.180 | 0.250 |
| **24.00** | 0.027 | 0.036 | 0.047 | 0.065 | 0.085 | 0.130 | 0.185 | 0.300 |
| **28.00** | 0.028 | 0.038 | 0.049 | 0.068 | 0.090 | 0.140 | 0.195 | 0.350 |
| **30.00** | 0.030 | 0.040 | 0.050 | 0.070 | 0.100 | 0.150 | 0.200 | 0.400 |
| **35.00** | 0.035 | 0.045 | 0.055 | 0.075 | 0.120 | 0.180 | 0.250 | 0.450 |
| **52.00** | 0.040 | 0.050 | 0.060 | 0.080 | 0.150 | 0.200 | 0.300 | 0.500 |

*The feed rates always relate to tools with the recommended coating. In some cases the successful application of un-coated tools cannot be guaranteed.

STOP All deep hole drills must have support for the pilot hole. Deep hole drills must never operate at full speed without support in the machine shop.

**The sequence of operations for deep hole drilling**

- production of pilot hole (L = 1.5 x D, tolerance H8)
- enter at low revolutions, approx. 200 rev./min, feed rate approx. 500 mm/min. With tools for drilling depths in excess than 40 x D enter the pilot hole revolving in left hand direction.
- setting of coolant pressure and revolutions
- uninterrupted drilling to required drilling depth without wood pecking. When applying gun drills with increased length-diameter-ratio, we recommend machining with reduced cutting parameters (approx. 75% of the optimal cutting speed) up to a drilling depth of approx. 25 mm.
- switching off coolant supply after reaching the required hole depth
- withdrawal in top gear with stationary spindle

Material dependent coolants
○ air
● neat oil
◍ soluble oil

**Application advice**
- For drilling depths in excess than 40 x D we recommend the use of two or more gun drills, e. g. Ø 10 x 400 mm and Ø 9.95 x 800 mm.
- Gun drills for drilling depths of more than 40 x D should enter the pilot hole revolving in the left hand direction.
- When changing tools for drilling depths of more than 40 x D, the tool can be damped by switching on coolant supply for just one second.
- For machining of long-chipping materials we recommend the use of gun drills with polished flutes.
- Generally we recommend the use of soluble oil with a minimum oil content of 10 %.
- Single-fluted gun drills for long-chipping aluminium should be supplied with point grind 180° and coolant chamber.
- When spotting in aluminium with an Si-content of less than 1%, i.e. with recommended cutting rates $v_c$ > 160 m/min we recommend to advance to the final speed in several steps. In addition, a deeper pilot hole of approximately 3 x D should be produced.

# EB800

single-fluted gun drill
**with indexable inserts**
12.0 ... 52.0

| Material group | Material examples Figures in bold = material no. to DIN EN 10 027 | Tens.str. Hardn. N/mm² | Cool-ant | recom. coating* | ≤35xD $v_c$ m/min | ≤35xD Feed col. no. | >35xD $v_c$ m/min | >35xD Feed col. no. |
|---|---|---|---|---|---|---|---|---|
| Common structural steels | **1.0035** S185, **1.0486** P275N, **1.0345** P235GH, **1.0425** | ≤500 | ◍ | S | 90 | 15 | 85 | 15 |
| | **1.0050** E295), **1.0070** E360, **1.8937** P500NH | ≤1000 | ◍ | S | 80 | 15 | 75 | 15 |
| Free-cutting steels | **1.0718** 11SMnPb30, **1.0736** 11SMn37 | ≤850 | ◍ | S | 85 | 16 | 80 | 16 |
| | **1.0727** 46S20, **1.0728** 60S20, **1.0757** 46SPb20 | ≤1000 | ◍ | S | 75 | 16 | 70 | 16 |
| Unalloyed heat-treatable steels | **1.0402** C22, **1.1178** C30E | ≤700 | ◍ | S | 85 | 15 | 80 | 15 |
| | **1.0503** C45, **1.1191** C45E | ≤850 | ◍ | S | 80 | 15 | 75 | 15 |
| | **1.0601** C60, **1.1221** C60E | ≤1000 | ◍ | S | 75 | 15 | 70 | 15 |
| Alloyed heat-treatable steels | **1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 | ≤1000 | ◍ | F | 75 | 15 | 70 | 15 |
| | **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4 | ≤1400 | ◍ | F | 65 | 15 | 60 | 15 |
| Unalloyed case hard. steels | **1.0301**, **1.1121** C10E | ≤850 | ◍ | F | 80 | 15 | 75 | 15 |
| Alloyed case hardened steels | **1.7276** 10CrMo11, **1.5125** 11MnSi6 | ≤1000 | ● | a | 75 | 15 | 70 | 15 |
| | **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5 | ≤1400 | ● | a | 70 | 15 | 65 | 15 |
| Nitriding steels | **1.8504** 34CrAl6 | ≤1000 | ◍ | a | 70 | 15 | 65 | 15 |
| | **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7 | ≤1400 | ● | a | 60 | 15 | 55 | 15 |
| Tool steels | **1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 | ≤850 | ◍ | Y | 65 | 14 | 60 | 14 |
| | **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419**, **1.2767** | ≤1400 | ● | Y | 60 | 14 | 55 | 14 |
| High speed steels | **1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3 | ≤1400 | ● | Y | 55 | 14 | 50 | 14 |
| Spring steels | **1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 | ≤350 HB | ● | F | 65 | 15 | 60 | 15 |
| Stainless steels, sulphured | **1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** | ≤900 | ● | a | 50 | 14 | 45 | 14 |
| austenitic | **1.4301** X5CrNi18-10, **1.4541** X6CrNiTi18-10, **1.4571** | ≤1100 | ● | a | 45 | 14 | 40 | 14 |
| martensitic | **1.4057** X20CrNi172, **1.4122** X39CrMo17-1, **1.4521** | ≤1500 | ● | a | 40 | 14 | 35 | 14 |
| Hardened steels | – | ≤48 HRC | ● | Y | 30 | 13 | 25 | 13 |
| | | ≤66 HRC | ● | Y | 25 | 12 | 20 | 12 |
| Special alloys | Nimonic, Inconel, Monel, Hastelloy | ≤2000 | ● | Y | 20 | 13 | 20 | 13 |
| Cast iron | **0.6010** EN-GJL-100, **0.6020** EN-GJL-200 | ≤240 HB | ◍○ | Y | 85 | 16 | 80 | 16 |
| | **0.6025** EN-GJL-250, **0.6035** EN-GJL-350 | ≤350 HB | ◍○ | Y | 80 | 16 | 75 | 16 |
| Spheroidal graphite iron and | **0.7050** EN-GJS-500-7, **0.8035** EN-GJMW-350-4 | ≤240 HB | ◍ | Y | 75 | 16 | 70 | 16 |
| malleable cast iron | **0.7070** EN-GJS-700-2, **0.8170** EN-GJMB-700-2 | ≤350 HB | ◍ | Y | 70 | 16 | 65 | 16 |
| Chilled cast iron | – | ≤350 HB | ◍ | Y | 55 | 15 | 50 | 15 |
| Ti and Ti-alloys | **3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 | ≤850 | ● | F | 35 | 13 | 30 | 13 |
| | **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** | ≤1400 | ● | F | 30 | 12 | 25 | 12 |
| Aluminium and Al-alloys | **3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1 | ≤400 | ◍ | S | 140 | 16 | 135 | 16 |
| Al wrought alloys | **3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245**, **3.4365** | ≤650 | ◍ | S | 125 | 16 | 120 | 16 |
| Al cast alloys ≤ 10 % Si | **3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 | ≤600 | ◍ | S | 170 | 17 | 165 | 17 |
| ≤ 24 % Si | **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg | ≤600 | ◍ | S | 140 | 17 | 135 | 17 |
| Magnesium alloys | **3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** | ≤400 | ○ | S | 115 | 16 | 110 | 16 |
| Copper, low-alloyed | **2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb | ≤500 | ◍ | Y | 75 | 15 | 70 | 15 |
| Brass, short-chipping | **2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** | ≤600 | ◍ | S | 120 | 17 | 115 | 17 |
| long-chipping | **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5 | ≤600 | ◍ | S | 90 | 17 | 85 | 17 |
| Bronze, short-chipping | **2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** | ≤600 | ◍● | Y | 95 | 17 | 90 | 17 |
| | **2.0790** CuNi18Zn19Pb | ≤850 | ● | Y | 75 | 17 | 70 | 17 |
| Bronze, long-chipping | **2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 | ≤850 | ● | Y | 70 | 17 | 65 | 17 |
| | **2.0980** CuAl11Ni, **2.1247** CuBe2 | ≤1000 | ● | Y | 60 | 17 | 55 | 17 |
| Duroplastics | Bakelit, Resopal, Pertinax, Moltopren | ≤150 | ○ | S | 75 | 16 | 70 | 16 |
| Thermoplastics | Plexiglas, Hostalen, Novodur, Makralon | ≤100 | ◍○ | S | 70 | 16 | 65 | 16 |
| New cast materials GGV | **EN-GJV250** (GGV25), **EN-GJV350** (GGV35) | ≤220 HB | ◍○ | Y | | | | |
| | **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6 | ≤300 HB | ◍○ | Y | | | | |
| New cast materials ADI | **EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) | ≤1000 | ◍○ | Y | | | | |
| | **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400) | ≤1400 | ◍○ | Y | | | | |
| Kevlar | Kevlar | ≤1000 | ○ | Y | 60 | 15 | 55 | 15 |
| Glass, carbon concentr. plastics | GFK/CFK | ≤1000 | ○ | a | 50 | 15 | 45 | 15 |

F FIRE/nanoFIRE S TiN Y Signum a TiAlN nanoA

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MILLING

REAMING

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