

# GUHRING



**Edition  
EMO 2013**

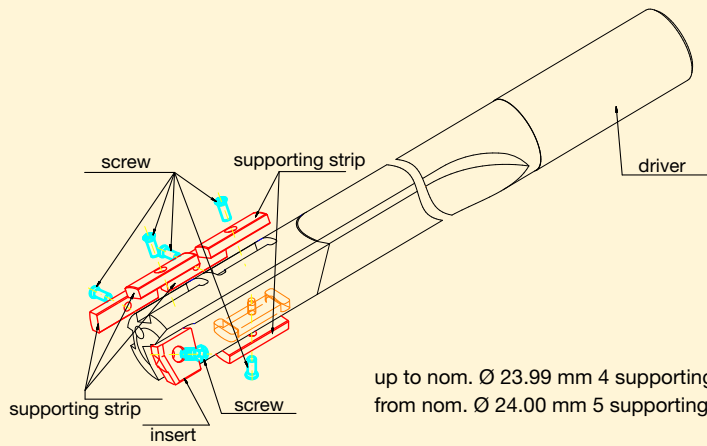
## EB 800 - Gun Drill System

GUHRING - YOUR WORLD-WIDE PARTNER



**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.  $\varnothing$  23.99 mm 4 supporting strips  
from nom.  $\varnothing$  24.00 mm 5 supporting strips

**GUHRING** oHG  
Herderstrasse 50-54  
D-72458 Albstadt  
Tel. +49 74 31 170  
Fax +49 74 43 17-21 279

#### 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

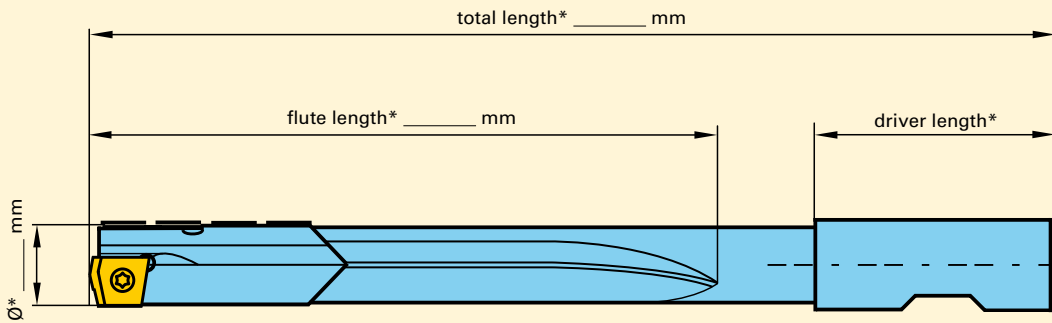
\_\_\_\_\_ guide pads

\* Ø 12.0 - 52.0 mm

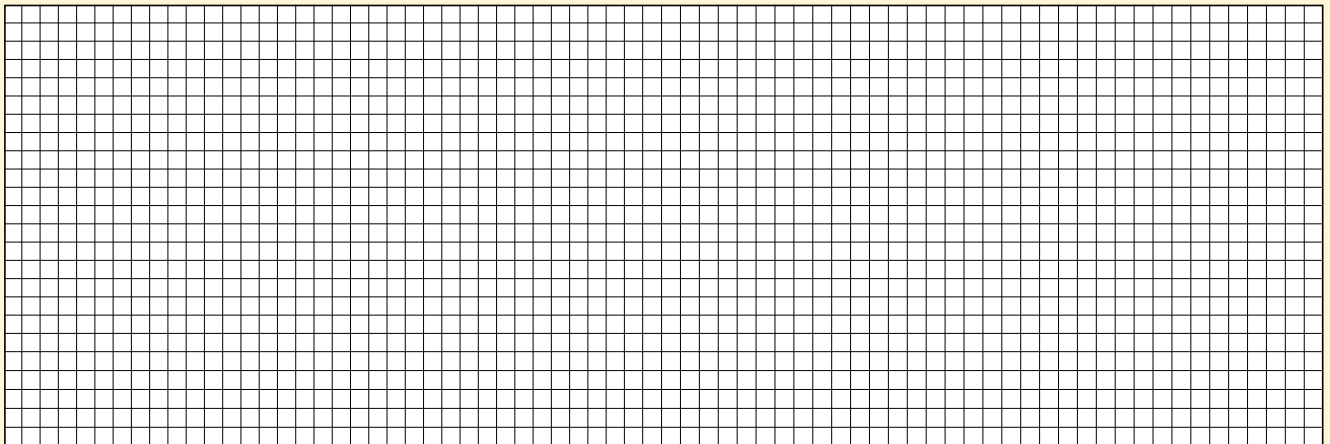
Flute length min. 15 x D

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.



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.

**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.

**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

**EB800**

single-fluted gun drill  
with indexable inserts

12.0 ... 52.0



≤35xD >35xD

Material group	Material examples Figures in bold = material no. to DIN EN 10 027	Tens.str. Hardn. N/mm <sup>2</sup>	Coolant	recom. coating*	≤35xD		>35xD	
					$v_c$ m/min	Feed col. no.	$v_c$ m/min	Feed col. no.
Common structural steels	<b>1.0035</b> S185, <b>1.0486</b> P275N, <b>1.0345</b> P235GH, <b>1.0425</b> <b>1.0050</b> E295), <b>1.0070</b> E360, <b>1.8937</b> P500NH	≤500 ≤1000	○	Ⓢ	90 80	15 15	85 75	15 15
Free-cutting steels	<b>1.0718</b> 11SMnPb30, <b>1.0736</b> 11SMn37 <b>1.0727</b> 46S20, <b>1.0728</b> 60S20, <b>1.0757</b> 46SPb20	≤850 ≤1000	○	Ⓢ	85 75	16 16	80 70	16 16
Unalloyed heat-treatable steels	<b>1.0402</b> C22, <b>1.1178</b> C30E <b>1.0503</b> C45, <b>1.1191</b> C45E <b>1.0601</b> C60, <b>1.1221</b> C60E	≤700 ≤850 ≤1000	○	Ⓢ	85 80 75	15 15 15	80 75 70	15 15 15
Alloyed heat-treatable steels	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400	○	Ⓢ	75 65	15 15	70 60	15 15
Unalloyed case hard. steels	<b>1.0301</b> , <b>1.1121</b> C10E	≤850	○	Ⓢ	80	15	75	15
Alloyed case hardened steels	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400	○	Ⓢ	75 70	15 15	70 65	15 15
Nitriding steels	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400	○	Ⓢ	70 60	15 15	65 55	15 15
Tool steels	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> , <b>1.2767</b>	≤850 ≤1400	○	Ⓢ	65 60	14 14	60 55	14 14
High speed steels	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400	○	Ⓢ	65	14	50	14
Spring steels	<b>1.5026</b> 56Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4	≤350 HB	○	Ⓢ	55	15	60	15
Stainless steels, sulphured	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b>	≤900	○	Ⓢ	50	14	45	14
austenitic	<b>1.4301</b> X5CrNi18-10, <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b>	≤1100	○	Ⓢ	45	14	40	14
martensitic	<b>1.4057</b> X20CrNi172, <b>1.4122</b> X39CrMo17-1, <b>1.4521</b>	≤1500	○	Ⓢ	40	14	35	14
Hardened steels	-	≤48 HRC ≤66 HRC	○	Ⓢ	30 25	13 12	25 20	13 12
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤2000	○	Ⓢ	20	13	20	13
Cast iron	<b>0.6010</b> EN-GJL-100, <b>0.6020</b> EN-GJL-200 <b>0.6025</b> EN-GJL-250, <b>0.6035</b> EN-GJL-350	≤240 HB ≤350 HB	○	Ⓢ	85 80	16 16	80 75	16 16
Spheroidal graphite iron and malleable cast iron	<b>0.7050</b> EN-GJS-500-7, <b>0.8035</b> EN-GJMW-350-4 <b>0.7070</b> EN-GJS-700-2, <b>0.8170</b> EN-GJMB-700-2	≤240 HB ≤350 HB	○	Ⓢ	75 70	16 16	70 65	16 16
Chilled cast iron	-	≤350 HB	○	Ⓢ	55	15	50	15
Ti and Ti-alloys	<b>3.7024</b> Ti99.5, <b>3.7114</b> TiAl5Sn2.5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b>	≤850 ≤1400	○	Ⓢ	35 30	13 12	30 25	13 12
Aluminium and Al-alloys	<b>3.0255</b> Al99.5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400	○	Ⓢ	140	16	135	16
Al wrought alloys	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> , <b>3.4365</b>	≤650	○	Ⓢ	125	16	120	16
Al cast alloys ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600	○	Ⓢ	170	17	165	17
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600	○	Ⓢ	140	17	135	17
Magnesium alloys	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b>	≤400	○	Ⓢ	115	16	110	16
Copper, low-alloyed	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500	○	Ⓢ	75	15	70	15
Brass, short-chipping	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b>	≤600	○	Ⓢ	120	17	115	17
long-chipping	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0.5	≤600	○	Ⓢ	90	17	85	17
Bronze, short-chipping	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850	○	Ⓢ	95 75	17 17	90 70	17 17
Bronze, long-chipping	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000	○	Ⓢ	70 60	17 17	65 55	17 17
Duroplastics	Bakelitt, Resopal, Pertinax, Moltopren	≤150	○	Ⓢ	75	16	70	16
Thermoplastics	Plexiglas, Hostalen, Novodur, Makralon	≤100	○	Ⓢ	70	16	65	16
New cast materials GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6	≤220 HB ≤300 HB	○	Ⓢ				
New cast materials ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400	○	Ⓢ				
Kevlar	GFK/CFK	≤1000	○	Ⓢ	60	15	55	15
Glass, carbon concentr. plastics	GFK/CFK	≤1000	○	Ⓢ	50	15	45	15

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# GUHRING

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