GUHRING

GUN DRILLS

EX-STOCK RANGES, FAST SERVICE, SPECIAL SOLUTIONS

- Single fluted deep hole gun drills EB 80 & EB 100
- Two fluted deep hole gun drills ZB 80
- Gun drills with interchangeable insert EB 800

Tailor-made and ex-stock tools

More than 25 years experience in the production of gun drills

In the past, deep hole gun drilling was one of the most difficult cutting tasks that could only be achieved on special machines. Those times are long gone, because Guhring has overcome this problem by providing flexible, customised solutions ensuring tailor-made precision and ex-stock gun drills for different applications as a reasonable offer with short delivery times.

Tailor-made precision as well as ex-stock gun drills offer high cutting accuracy, alignment accuracy and surface quality even for extreme drilling depths. At Guhring, single-fluted gun drills for example are designed specifically according to the circumstances of each cutting task. Their speciality: On rigid machines Guhring gun drills prove to be especially flexible, powerful and effective.

Guhring solutions even make deep hole drilling possible in high-alloyed steel and extreme types of chilled cast iron. Or if we take the solid carbide EB 100 gun drill which is capable of, to a certain extent, extreme cutting parameters with equally high process safety.

Especially suitable for mass-production Guhring has developed the EB 800 gun drill with interchangeable inserts. This gun drill system can be adapted to different applications and offers highest performance.

More than twentyfive years, Guhring is dedicated to the subject of "deep hole drilling". The experiences gained have subsequently always been invested in more advanced products. Many take part in Guhring's progress: The R&D centre, which sets new standards with up-to-date cutting technology, the carbide production that continuously adapts improved substrates to the increasing requirements and the coating technology department which is responsible for finely synchronising the design of the tool and the coating process.

However, Guhring is not just satisfied to supply high quality tools. Guhring experts are available world-wide and on-site for customers and associates:

- Coating plants
- Re-grinding centres
- Tool management for all cutting tools

Take advantage!

Production Sigmaringen-Laiz

Carbide production G-Elit Berlin

Production G-Elit Berlin

Production Sulkov/ Czech Republic

Production Brookfield/USA

Production Nagoya/Japan

Production Chungnam/Korea

Production Bangalore/India

Production Brazil

Contents

A brief introduction to the subject of deep hole gun drilling

In the machining world, drilling depths of 10 x D and deeper are regarded as deep hole drilling operations, whereby smaller drilling depths can naturally also be produced with gun drills. Advantage is taken of the positive side effects, as for example good surface quality, low deviation from concentricity and optimised alignment accuracy.

High pressure cooling -
has become a matter of course.

In recent years, internal cooling has established itself for all drilling tools. Coolants are now living up to their name and being supplied via coolant ducts to where they are urgently required. Considerable improvements in tool life and less breakages have been achieved by this measure for twist drills, taps etc.

Every conventional machine tool currently on the market can be supplied with high pressure internal cooling and is therefore also suitable for deep hole drilling.

The share of gun drills on machining centres, lathes etc. is forever gaining more importance. The process is therefore increasing in popularity in the machining world.

Typical procedure with all gun drills on conventional machine tools:

- production of pilot hole (tol. H8). Enter at low revolutions, approx. 200 rev./min, feed rate approx. 500 mm/min.
- setting coolant pressure and speed.
- continuous drilling to complete hole depth without wood pecking.
- switch off coolant supply after reaching hole depth.
- rapid withdrawal with stationary spindle.

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.
- For machining of long-chipping materials we recommend the use of gun drills with polished flutes.
- Single-fluted gun drills for long-chipping aluminium should be supplied with point grind 180° and coolant chamber.
- Generally we recommend the use of soluble oil with a minimum oil content of 10 %.

STOP

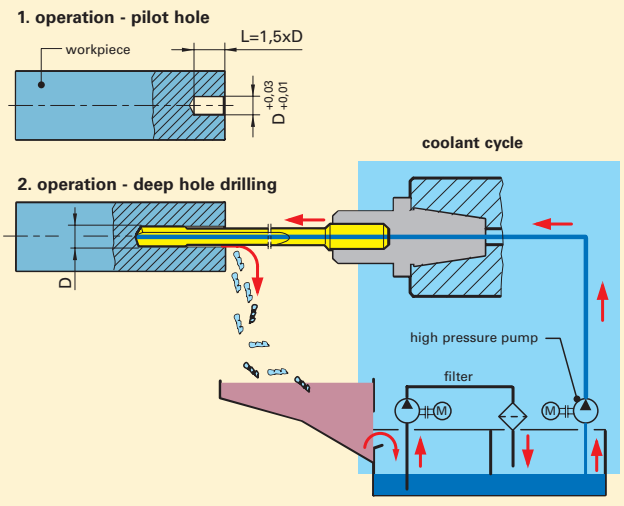
All gun drills must have support for the pilot hole.

Gun drills must never operate at full speed without support in the machine shop.

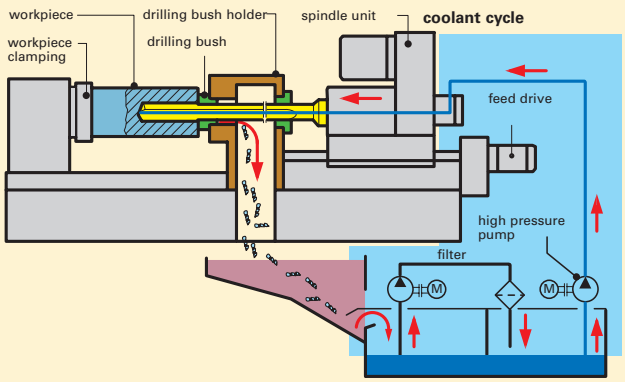
Deep hole drilling is not a closed book, but can be mastered by anybody as long as certain conditions are adhered to.

Recommended cutting rates for the application of Guhring gun drills can be found on the pages for the individual types!

Deep hole drilling on conventional machine tools

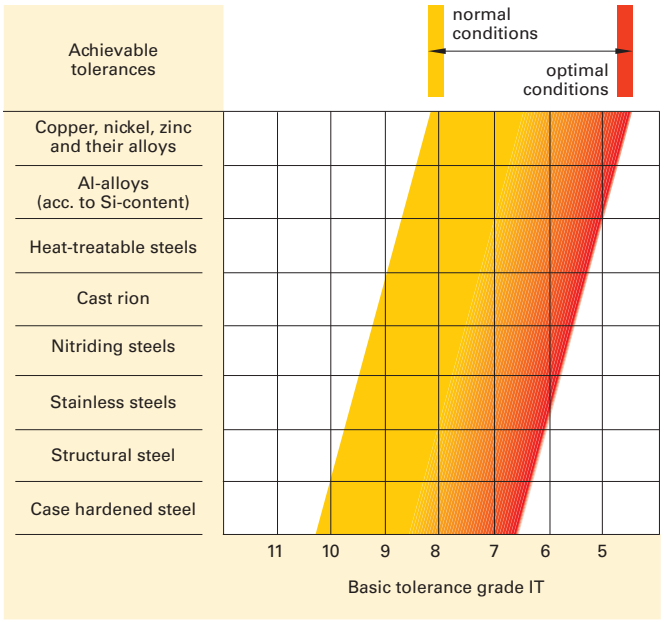


Deep hole drilling machines



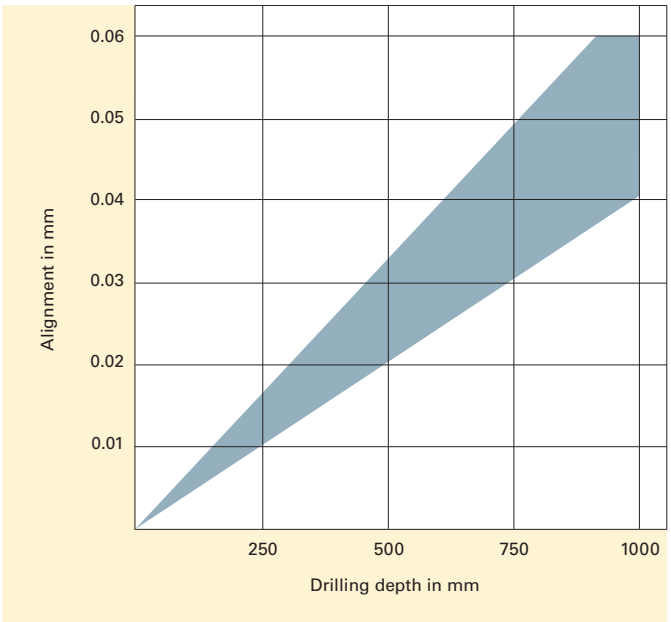
Basic tolerances

The application of single-fluted gun drills can achieve a lower basic tolerance, as the cutting forces at the cutting edge are absorbed by the supporting strips, unlike twist drills where the slightest deviation of the two cutting edges causes a larger hole.



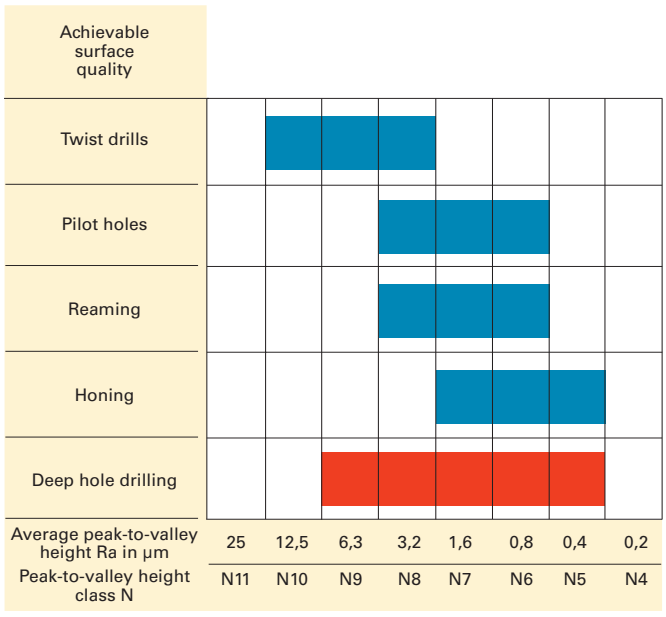
Alignment accuracy

Because brazed single-fluted gun drills always have the precision carbide head brazed on to a flexible tube, the tool achieves very accurate aligned holes remaining unaffected by possible concentricity errors.
However, extreme material fluctuations and other influencing factors can impair the alignment accuracy.



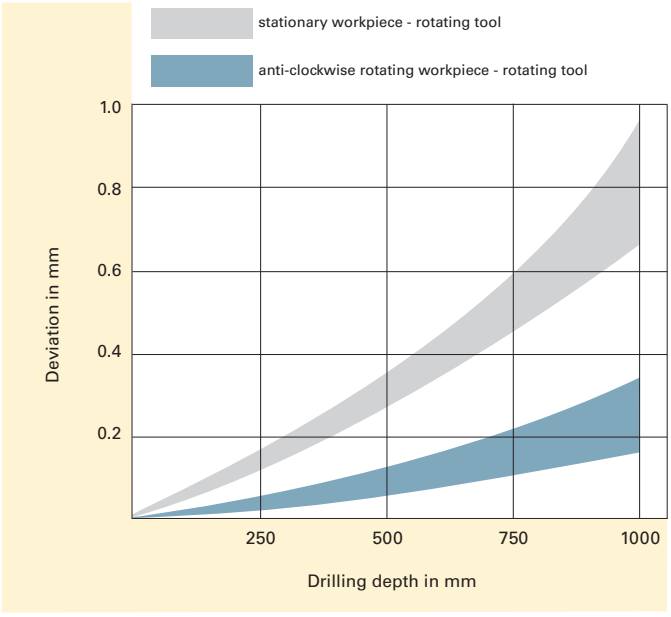
Surface quality

The forces at the cutting edge are absorbed by the support bushes, which in return burnishes the surface.
Lubrication between the supporting strips and hole surface is therefore very important.
The better the lubricant, the better the surface quality.



Deviation from concentricity

When a hole is produced with, for example, a commercial twist drill, the quality of the point grind affects the concentricity of the hole. An imbalance of forces is created at the cutting edges. With gun drills, these cutting forces are absorbed by the supporting strips, resulting in excellent concentricity.



SINGLE-FLUTED GUN DRILL EB 100

Gun drills EB 100

Standard	Type	Tool illustration	Flute length	Tool material	Surface	Diameter range	Guhring no.	Discount group	Standard range. page
Guhring std.	EB 100		45	Solid carbide	○	1.200 - 3.200	**5024**	123	10
Guhring std.	EB 100	NEW	45	Solid carbide	A	2.000 - 3.200	**5632**	123	10
Guhring std.	EB 100		80	Solid carbide	○	1.200 - 5.000	**5020**	123	11
Guhring std.	EB 100	NEW	80	Solid carbide	A	2.000 - 5.000	**5633**	123	11
Guhring std.	EB 100		120	Solid carbide	○	1.500 - 5.000	**5026**	123	12
Guhring std.	EB 100	NEW	120	Solid carbide	A	2.000 - 5.000	**5637**	123	12
Guhring std.	EB 100		160	Solid carbide	○	1.500 - 8.000	**5021**	123	13
Guhring std.	EB 100	NEW	160	Solid carbide	A	2.000 - 8.000	**5638**	123	13

SuperA-coated
for alloyed and high-alloyed steels

bright
for all other materials

○ bright S TiN A AlTiN NEW available 05/2008

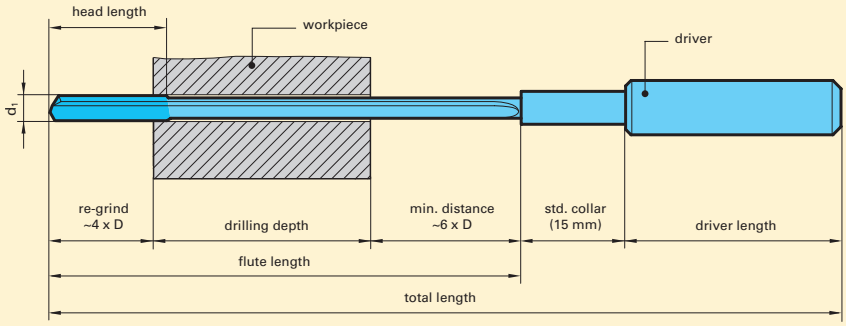
Ex-stock range from Ø 1.2 to 8.0 mm, available with 45 and 160 mm flute length bright and SuperA-coated

Since the introduction of the EB 100 ex-stock range, Guhring has successfully broken the rule that gun drills are special tools. This success gave us the incentive to expand the range continuously and be able to provide our customers with a greater choice of gun drills from stock.

All single-fluted gun drills EB 100 in the ex-stock range are supplied with head form G as well as a standard point geometry. The driver complies with DIN 6535 HA. Herewith, the tools in the ex-stock range cover a multitude of gun drill applications in a wide range of materials.

In addition, HB or HE shank designs can be supplied with short notice within 10 days. We can naturally also produce any required gun drill as a special tool especially suited to your application from diameter 1.0 to 8.0 mm with max. flute lenghts up to 300 mm.

The dimensions required to calculate the length for conventional machine tools



EB 100 Head form

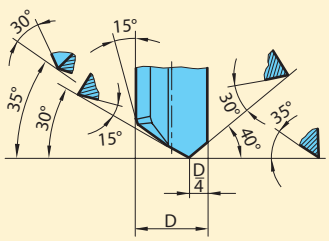
(Position of supporting strips. Special head forms available)

suitable for all materials, but for smaller hole tolerances

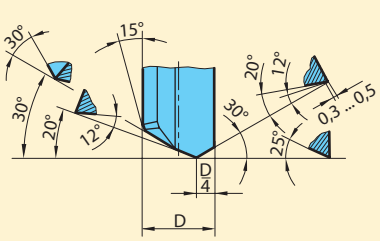
EB 100 Standard point grind

(special point grinds on request)

Ø 2...4.00 mm



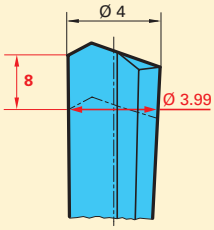
Ø 4.01...8 mm



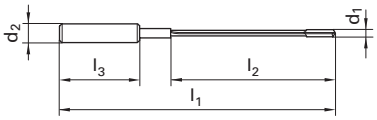
EB 100 Back taper ratio

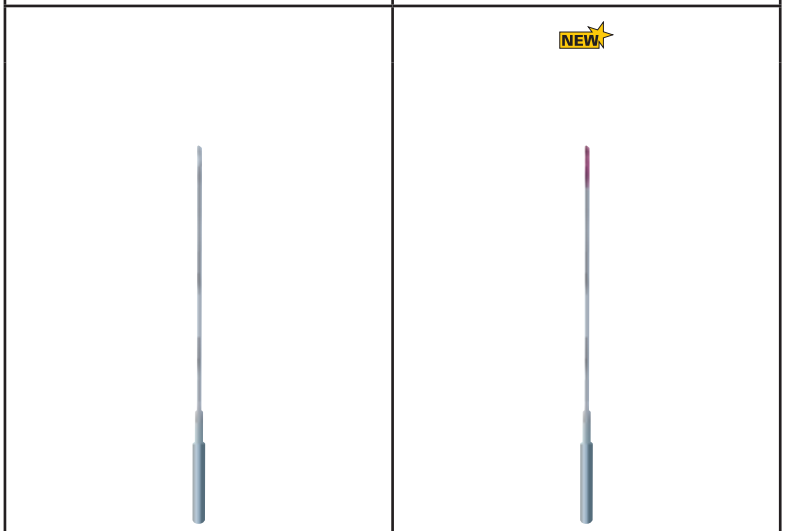
(dimensions in mm)

1:800 (standard)



Guhring no.	5024	5632
Standard	Guhring std.	Guhring std.
Tool material	Solid carbide	Solid carbide
Carbide grade	K30/K40	K30/K40
Surface	○	(A)
Type	EB 100	EB 100
Flute lengths (mm)	45	45
Tolerance	h5	h5
Discount group	123	123
Techn. data page	9	9

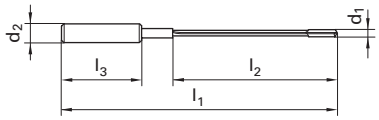




d1	d2	l1	l2	l3	Availability	
mm	mm	mm	mm	mm		
1.200	4.000	90.00	45.00	28.00	●	
1.500	4.000	90.00	45.00	28.00	●	
1.600	4.000	90.00	45.00	28.00	●	
2.000	4.000	90.00	45.00	28.00	●	●
2.500	10.000	100.00	45.00	40.00	●	●
2.700	10.000	100.00	45.00	40.00	●	●
3.000	10.000	100.00	45.00	40.00	●	●
3.200	10.000	100.00	45.00	40.00	●	●

○ bright (S) TiN (A) AlTiN NEW available 05/2008

Guhring no.	5020	5633
Standard	Guhring std.	Guhring std.
Tool material	Solid carbide	Solid carbide
Carbide grade	K30/K40	K30/K40
Surface	◯	Ⓐ
Type	EB 100	EB 100
Flute lengths (mm)	80	80
Tolerance	h5	h5
Discount group	123	123
Techn. data page	9	9

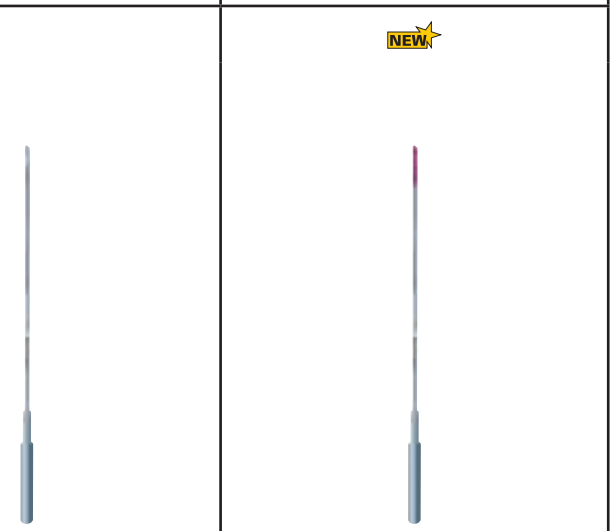


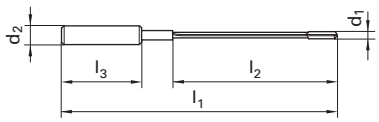
NEW

d1	d2	l1	l2	l3	Availability	
mm	mm	mm	mm	mm		
1.200	4.000	125.00	80.00	28.00	●	
1.500	4.000	125.00	80.00	28.00	●	
1.600	4.000	125.00	80.00	28.00	●	
2.000	4.000	125.00	80.00	28.00	●	●
2.500	10.000	135.00	80.00	40.00	●	●
2.700	10.000	135.00	80.00	40.00	●	●
3.000	10.000	135.00	80.00	40.00	●	●
3.200	10.000	135.00	80.00	40.00	●	●
3.500	10.000	135.00	80.00	40.00	●	●
4.000	10.000	135.00	80.00	40.00	●	●
4.200	10.000	135.00	80.00	40.00	●	●
4.500	10.000	135.00	80.00	40.00	●	●
5.000	10.000	135.00	80.00	40.00	●	●

◯ bright Ⓢ TiN Ⓐ AlTiN NEW available 05/2008

Guhring no.	5026	5637
Standard	Guhring std.	Guhring std.
Tool material	Solid carbide	Solid carbide
Carbide grade	K30/K40	K30/K40
Surface	○	(A)
Type	EB 100	EB 100
Flute lengths (mm)	120	120
Tolerance	h5	h5
Discount group	123	123
Techn. data page	9	9

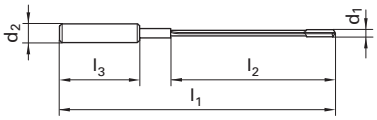




d1	d2	l1	l2	l3	Availability	
mm	mm	mm	mm	mm		
1.500	4.000	165.00	120.00	28.00	●	
1.600	4.000	165.00	120.00	28.00	●	
2.000	4.000	165.00	120.00	28.00	●	●
2.500	10.000	175.00	120.00	40.00	●	●
2.700	10.000	175.00	120.00	40.00	●	●
3.000	10.000	175.00	120.00	40.00	●	●
3.200	10.000	175.00	120.00	40.00	●	●
3.500	10.000	175.00	120.00	40.00	●	●
4.000	10.000	175.00	120.00	40.00	●	●
4.200	10.000	175.00	120.00	40.00	●	●
4.500	10.000	175.00	120.00	40.00	●	●
5.000	10.000	175.00	120.00	40.00	●	●

○ bright (S) TiN (A) AlTiN NEW available 05/2008

Guhring no.	5021	5638
Standard	Guhring std.	Guhring std.
Tool material	Solid carbide	Solid carbide
Carbide grade	K30/K40	K30/K40
Surface	○	Ⓐ
Type	EB 100	EB 100
Flute lengths (mm)	160	160
Tolerance	h5	h5
Discount group	123	123
Techn. data page	9	9



d1	d2	l1	l2	l3	Availability	
mm	mm	mm	mm	mm		
1.500	4.000	205.00	160.00	28.00	●	
1.600	4.000	205.00	160.00	28.00	●	
2.000	4.000	205.00	160.00	28.00	●	●
2.500	10.000	215.00	160.00	40.00	●	●
2.700	10.000	215.00	160.00	40.00	●	●
3.000	10.000	215.00	160.00	40.00	●	●
3.200	10.000	215.00	160.00	40.00	●	●
3.500	10.000	215.00	160.00	40.00	●	●
4.000	10.000	215.00	160.00	40.00	●	●
4.200	10.000	215.00	160.00	40.00	●	●
4.500	10.000	215.00	160.00	40.00	●	●
5.000	10.000	215.00	160.00	40.00	●	●
6.000	16.000	225.00	160.00	48.00	● NEW	●
8.000	16.000	225.00	160.00	48.00	● NEW	●

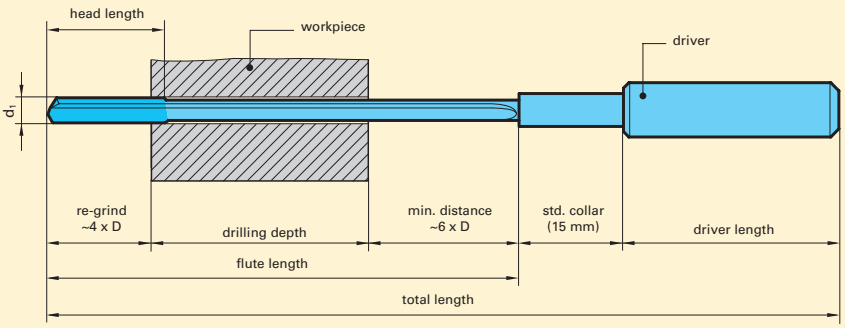
○ bright Ⓢ TiN Ⓐ AlTiN NEW available 05/2008

suitable for almost every material, from Ø 1.0 - 8.0 mm, max. flute length 300 mm

For certain materials a coating is required, as the successful application of gun drills with a bright surface finish cannot be guaranteed.
For coating definitions see GuhringNavigator.

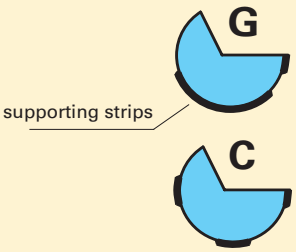
(S) TiN-coat (F) FIRE (M) MolyGlide (A) AlTiN

The dimensions required to calculate the length for conventional machine tools



EB 100 Head forms

(Position of supporting strips. Special head forms on request.)



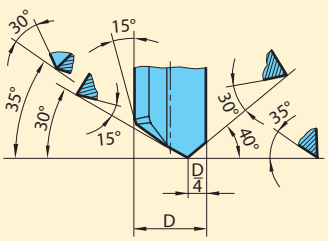
suitable for all materials, but for smaller hole tolerances

suitable for difficult-to-machine materials, i. e. high-alloyed steel

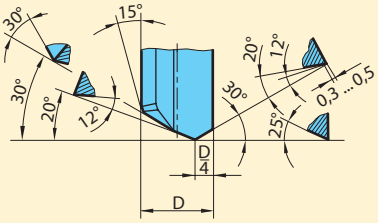
EB 100 Standard point grinds

(special point grinds on request)

Ø 2...4.00 mm



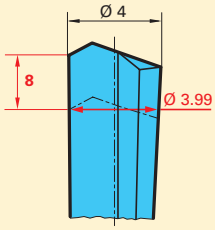
Ø > 4.01...20 mm



EB 100 Back taper ratio

1:800 (standard)

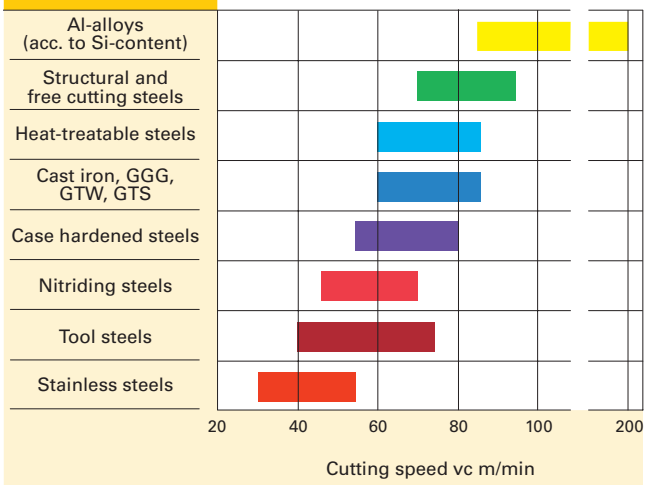
(dimensions in mm)



To ensure EB 100 is designed and produced specifically for your application, please complete the questionaire and use for your inquiry/order.

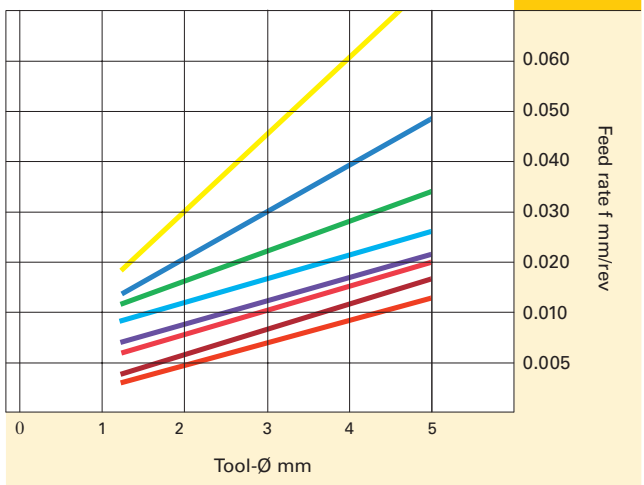
Cutting parameters for

EB 100
cutting speeds



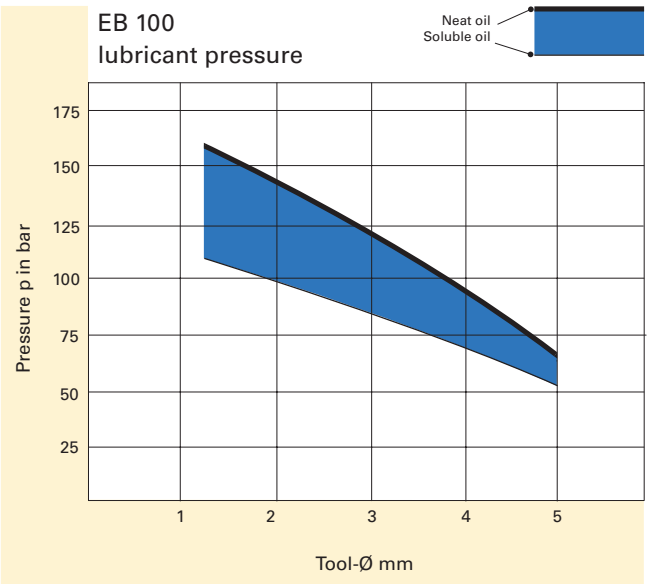
EB 100
feed rates

Reduced feed rate for spotting!

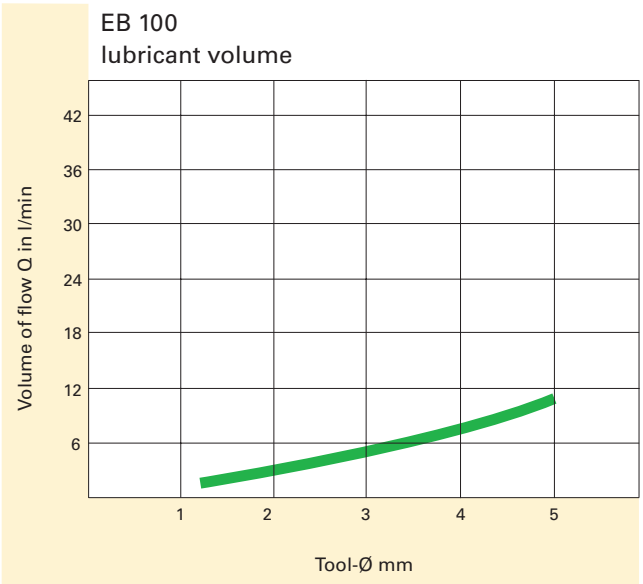


(Detailed cutting parameters see GuhringNavigator)

EB 100
lubricant pressure

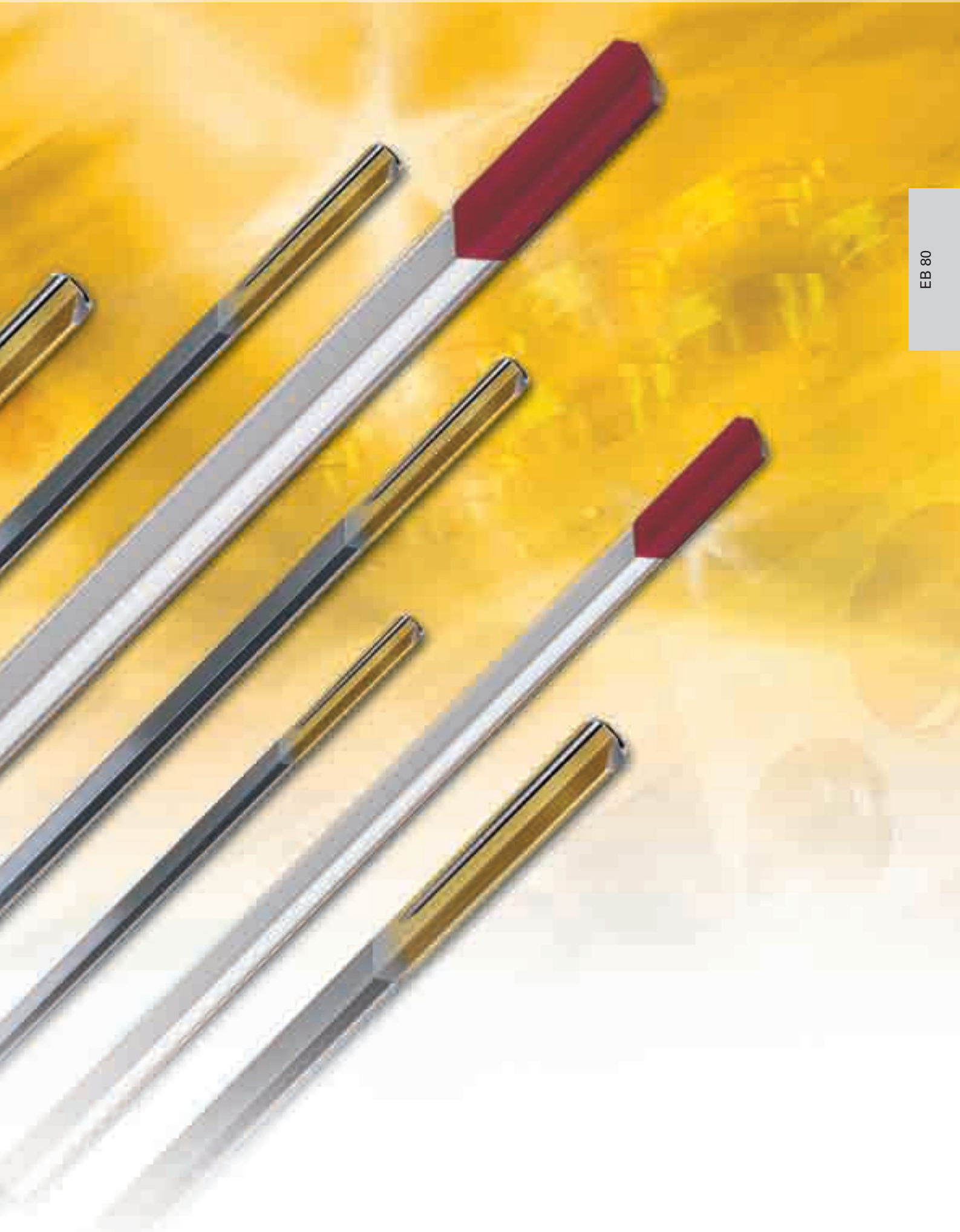


EB 100
lubricant volume



BRAZED SINGLE-FLUTED GUN DRILL EB 8

80 WITH CARBIDE HEAD



Standard	Type	Tool illustration	Drilling depth	Tool material	Surface	Diameter range	Guhring no.	Discount group	Standard range. page
Gun drills EB 80									
Guhring std.	EB 80		20 x D	**Carbide**	S	4.000 - 12.000	**5018**	123	20
Guhring std.	EB 80	 NEW	20 x D	**Carbide**	C	4.000 - 12.000	**5639**	123	20
Guhring std.	EB 80		30 x D	**Carbide**	S	4.000 - 12.000	**5460**	123	21
Guhring std.	EB 80	 NEW	30 x D	**Carbide**	C	4.000 - 12.000	**5640**	123	21
Guhring std.	EB 80		40 x D	**Carbide**	S	4.000 - 12.000	**5022**	123	22
Guhring std.	EB 80	 NEW	40 x D	**Carbide**	C	4.000 - 12.000	**5641**	123	22
Guhring std.	EB 80		80 x D	**Carbide**	S	4.950 - 11.950	**5023**	123	23
Guhring std.	EB 80	 NEW	80 x D	**Carbide**	C	4.950 - 11.950	**5642**	123	23

TiN-coated
for long-chipping steels

TiCN-coated
for alloyed and high-alloyed steels

○ bright S TiN C TiCN NEW available 05/2008

Ex-stock range from Ø 4,0 to 12,0 mm total lengths up to 1080 mm with TiN and TiCN coatings

Suitable for almost every material, Guhring's EB 80 brazed single-fluted gun drills are available ex-stock within a diameter range from 4,00 to 12,00 mm and with total lengths up to 1080 mm.

Since their introduction, the gun drill ex-stock ranges are astoundingly sucessful. Meanwhile, they made deep hole drilling a standard operation with obvious advantages for the customer:

- very favourable prices even for small volume orders
- low stock and low storage costs in your production
- available ex-stock within 24 hours
- in addition: a sensational price-performance ratio

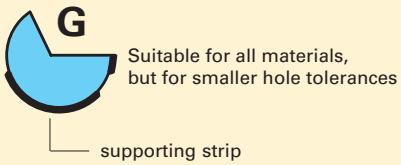
This success leads to another expanding of the EB 80 ex-stock range. Now, Guhring offers EB 80 gun drills as special ex-stock tools with TiCN-coating for alloyed and high-alloyed steels.

All versions have a carbide head with carbide grade K15. Therefore, they are optimally suited for high demanding drilling operations with cooling by soluble oil and suitable for nearby all materials.

The driver is according to DIN 6535 HA. This enables the clamping of these single-fluted gun drills in hydraulic expansion chucks or sealed collet holders.

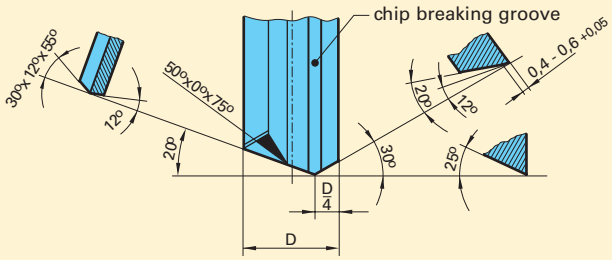
We can naturally also produce any required gun drill as a special tool.

Head form
(position of supporting strips)
The ex-stock range is produced with head form G, providing excellent results in all materials with small hole tolerances.



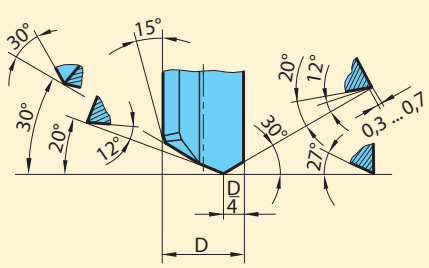
Point grind ex-stock range with TiN-coating

Ø 4,0...12,0 mm

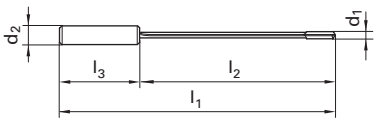


Point grind ex-stock range with TiCN-coating

Ø 4,0...12,0 mm



Guhring no.	5018	5639
Standard	Guhring std.	Guhring std.
Tool material	Carbide	Carbide
Carbide grade	K15	K 15
Surface	S	C
Type	EB 80	EB 80
Drilling depth	20 x D	20 x D
Tolerance	h5	h5
Discount group	123	123
Techn. data page	19	19

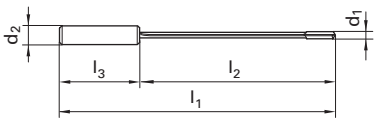


NEW

d1	d2	l1	l2	l3	Availability	
mm	mm	mm	mm	mm		
4.000	12.000	150.00	100.00	45.00	●	●
4.200	12.000	160.00	110.00	45.00	●	
4.500	12.000	170.00	120.00	45.00	●	
5.000	16.000	180.00	130.00	48.00	●	●
5.500	16.000	190.00	140.00	48.00	●	
6.000	16.000	210.00	160.00	48.00	●	●
6.500	16.000	220.00	170.00	48.00	●	
7.000	16.000	235.00	185.00	48.00	●	
8.000	16.000	260.00	210.00	48.00	●	●
9.000	16.000	280.00	230.00	48.00	●	
10.000	20.000	320.00	260.00	50.00	●	●
12.000	20.000	370.00	310.00	50.00	●	●

○ bright S TiN C TiCN NEW available 05/2008

Guhring no.	5460	5640
Standard	Guhring std.	Guhring std.
Tool material	Carbide	Carbide
Carbide grade	K15	K 15
Surface	S	C
Type	EB 80	EB 80
Drilling depth	30 x D	30 x D
Tolerance	h5	h5
Discount group	123	123
Techn. data page	19	19

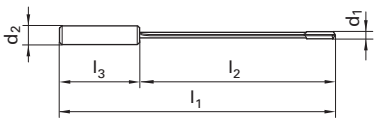


NEW

d1	d2	l1	l2	l3	Availability	
mm	mm	mm	mm	mm		
4.000	12.000	200.00	155.00	45.00	●	●
4.200	12.000	210.00	165.00	45.00	●	
4.500	12.000	220.00	175.00	45.00	●	
5.000	16.000	230.00	182.00	48.00	●	●
5.500	16.000	245.00	197.00	48.00	●	
6.000	16.000	260.00	212.00	48.00	●	●
6.500	16.000	275.00	227.00	48.00	●	
7.000	16.000	290.00	242.00	48.00	●	
8.000	16.000	320.00	272.00	48.00	●	●
9.000	16.000	350.00	302.00	48.00	●	
10.000	20.000	400.00	350.00	50.00	●	●
12.000	20.000	450.00	400.00	50.00	●	●

○ bright S TiN C TiCN NEW available 05/2008

Guhring no.	5022	5641
Standard	Guhring std.	Guhring std.
Tool material	Carbide	Carbide
Carbide grade	K15	K 15
Surface	S	C
Type	EB 80	EB 80
Drilling depth	40 x D	40 x D
Tolerance	h5	h5
Discount group	123	123
Techn. data page	19	19

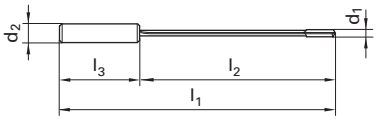


NEW

d1	d2	l1	l2	l3	Availability	
mm	mm	mm	mm	mm		
4.000	12.000	230.00	185.00	45.00	●	●
4.200	12.000	240.00	195.00	45.00	●	
4.500	12.000	250.00	205.00	45.00	●	
5.000	16.000	280.00	232.00	48.00	●	●
5.500	16.000	300.00	252.00	48.00	●	
6.000	16.000	320.00	272.00	48.00	●	●
6.500	16.000	340.00	292.00	48.00	●	
7.000	16.000	370.00	322.00	48.00	●	
8.000	16.000	420.00	372.00	48.00	●	●
9.000	16.000	450.00	402.00	48.00	●	
10.000	20.000	510.00	460.00	50.00	●	●
12.000	20.000	600.00	550.00	50.00	●	●

○ bright S TiN C TiCN NEW available 05/2008

Guhring no.	5023	5642
Standard	Guhring std.	Guhring std.
Tool material	Carbide	Carbide
Carbide grade	K15	K 15
Surface	S	C
Type	EB 80	EB 80
Drilling depth	80 x D	80 x D
Tolerance	h5	h5
Discount group	123	123
Techn. data page	19	19



NEW

d1	d2	l1	l2	l3	Availability	
mm	mm	mm	mm	mm		
4.950	16.000	480.00	432.00	48.00	●	●
5.950	16.000	560.00	512.00	48.00	●	●
7.950	16.000	740.00	692.00	48.00	●	●
9.950	20.000	910.00	860.00	50.00	●	●
11.950	20.000	1080.00	1030.00	50.00	●	●

○ bright S TiN C TiCN NEW available 05/2008

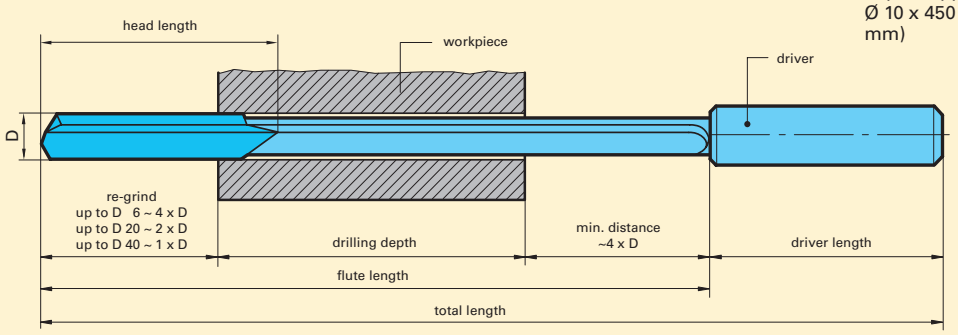
suitable for almost every material, from Ø 2 - 40.0 mm, max. total length 3000 mm

For certain materials a coating is required, as the successful application of gun drills with a bright surface finish cannot be guaranteed.
For coating definitions see GuhringNavigator.

(S) TiN-coat (F) FIRE (M) MolyGlide (C) TiCN

The dimensions required to calculate the length for conventional machine tools

* max. flute length per tool 40 x D, for larger drilling depths apply two tools. (i.e. Ø 10 x 450 and Ø 9.95 x 850 mm)



EB 80
Head forms
(position of supporting strips)

Standard designs

Suitable for all materials, but for smaller hole tolerances

Suitable for difficult-to-machine materials, i.e. high-alloyed steels

Supporting strip

Special designs

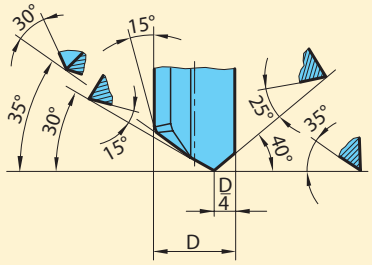
Suitable for all materials, but for larger hole tolerances

Suitable for all materials, but only when spotting conditions are unfavourable

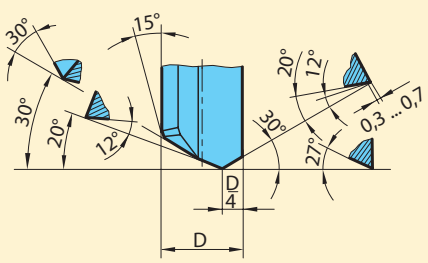
This design is predominantly suitable for grey cast iron

EB 80
Standard point grinds
special point grinds available)

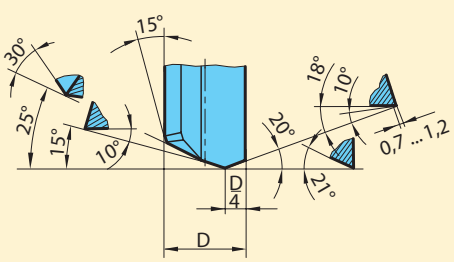
Ø 2...4.00 mm



Ø 4.01...20.00 mm



Ø 20.01...40 mm



To ensure EB 80 is designed and produced specifically for your application, please complete the questionaire and use for your inquiry/order. From Ø 6.0…20.0 mm we can fit PCD or CBN cutting edges on request. With AlSi-alloys for example, tool life subsequently increases multi-fold.

Fast service for brazed single-fluted gun drills

In addition to the ex-stock range Guhring offers a fast service for gun drills with standard point grind and standard driver in the following dimensions. Delivery time is max. 3 weeks.

nom.-Ø-mm	in increments of mm	head form	total length
2.00...12.90	0.1	G	≤ 7.5 mm Ø: 650 max
4.00...13.90	0.1	C	> 7.5 mm Ø: 1000 max
13.00...16.00	1.0	G	1000 max
14.00...22.00	0.5	C	

Prices on request

Tool material: solid carbide/K15

Surface finish: ○

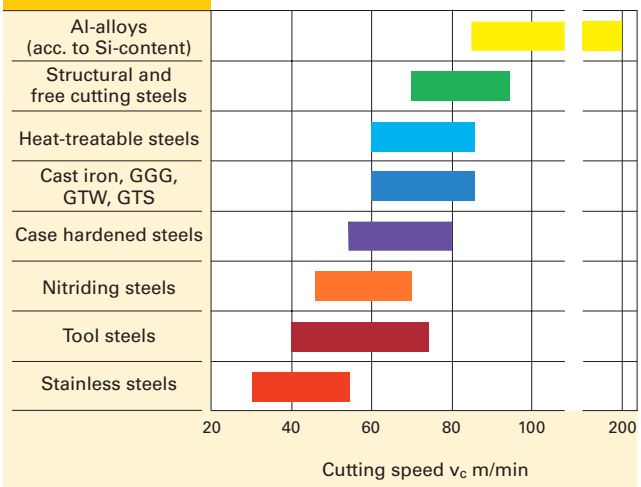
Standard head lengths (mm)

Ø-range	length	Ø-range	length
2.00...2.49	15	10.00...10.99	35
2.50...2.99	18	11.00...17.00	40
3.00...3.99	20	17.01...20.00	45
4.00...5.19	25	20.01...23.00	50
5.20...6.99	30	23.01...26.00	55
7.00...9.99	35	26.01...40.00	65

Flute length: min. 20 x D

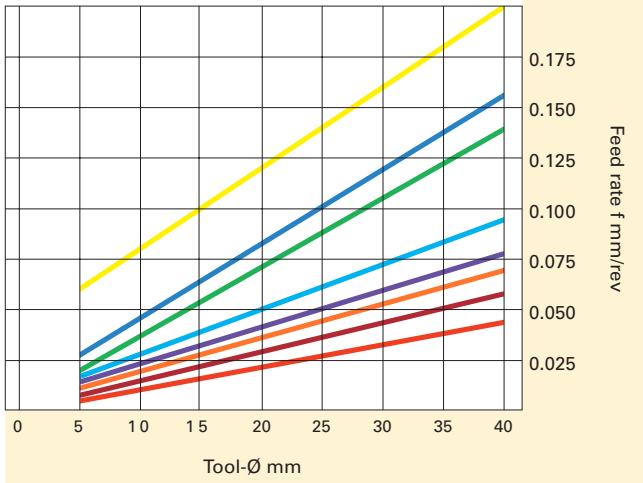
Cutting parameters for

EB 80
cutting speeds

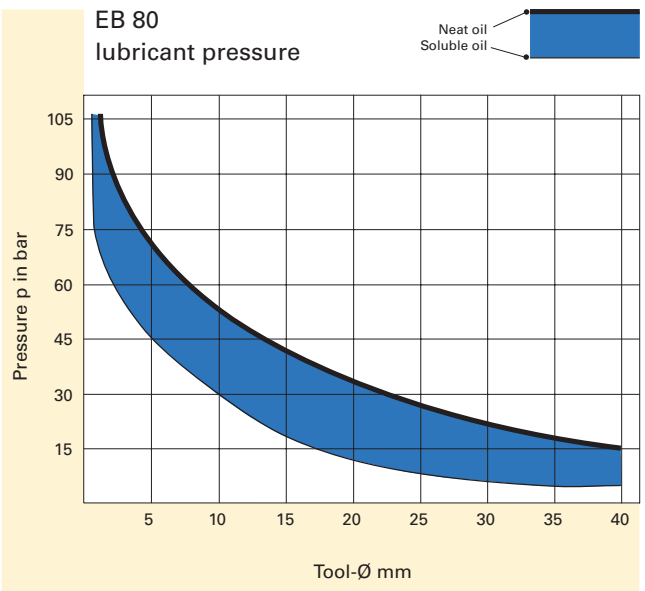


(Detailed cutting parameters see GuhringNavigator)

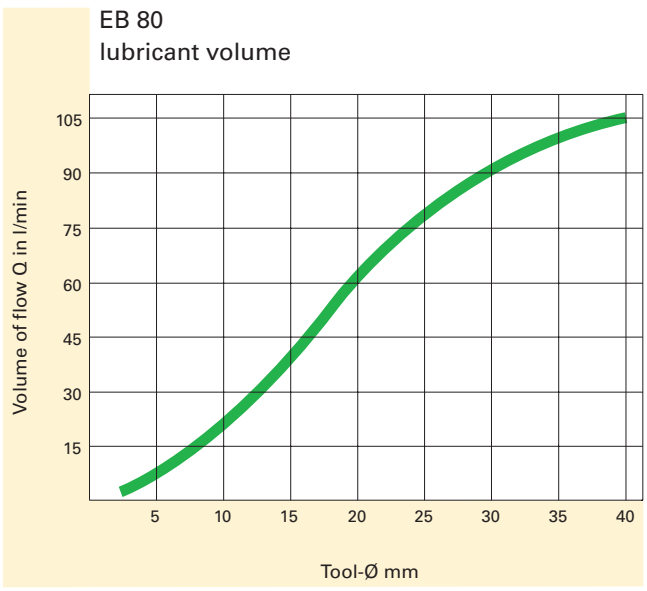
EB 80
feed rates



EB 80
lubricant pressure



EB 80
lubricant volume



GUN DRILLS WITH 2 CUTTING LIPS AND C

CARBIDE HEAD ZB 80

Standard	Type	Tool illustration	Drilling depth	Tool material	Surface	Diameter range	Guhring no.	Discount group	Standard range. page
Gun drills with 2 cutting lips ZB 80									
Guhring std.	ZB 80	Aluminium	30 x D	**Carbide**	◯	8.000 - 12.000	**5019**	123	29
Guhring std.	ZB 80	Cast materials NEW	30 x D	**Carbide**	◯	8.000 - 12.000	**5643**	123	29

Ex-stock range with Ø 8.0/10.0/12.0 mm for drilling depths up to 30 x D with point grinds for cast materials and aluminium

point grind for cast materials

Gun drills with 2 cutting lips and carbide head ex-stock are a world's innovation by Guhring, setting the standard again. Keep your production planning more flexible and your stock low. This way, not only your direct tooling costs are reduced but also your storage costs!
The advantages:
- very favourable prices even for small volume orders
- available ex-stock with 24 hours
- high cutting parameters
- a sensational price-performance ratio

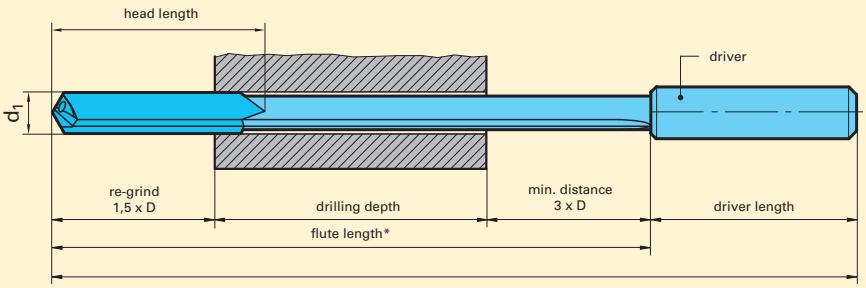
The main advantage of two-fluted gun drills compared to single-fluted gun drills is the substantially higher feed rate that can be applied during the production of the hole. This is due to the design of the two-fluted gun drill, it has two cutting edges and two flutes.

point grind for aluminium

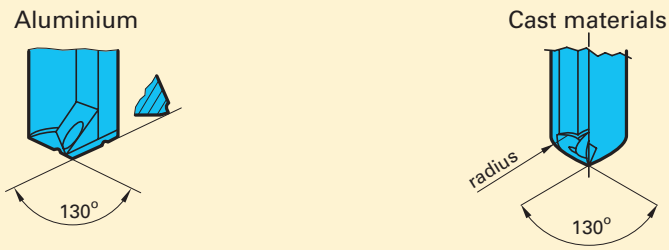
The ZB 80's special point grind realizes an optimal chip break. However, this increase in machining speed is combined with a reduction in hole accuracy. This is also a direct consequence of a drill design with two cutting edges. As the cutting edges are positioned opposite each other, there is less of a smoothing effect and less support in comparison to a single-fluted gun drill.
Ex-stock gun drills ZB 80 have a driver to DIN 6535 HA.

We can naturally also produce any required gun drill as a special tool especially suited to your application.

The dimensions required to calculate the length for conventional machine tools

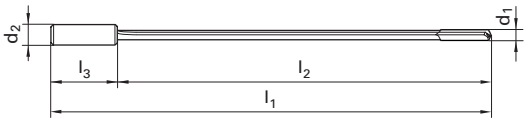


ZB 80
Point grind



◯ bright (S) TiN (A) AlTiN NEW available 05/2008

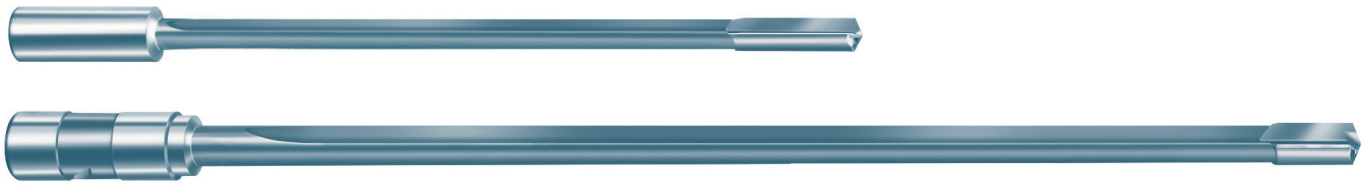
Guhring no.	5019	5643
Standard	Guhring std.	Guhring std.
Tool material	Carbide	Carbide
Carbide grade	K15	K 15
Surface	◯	◯
Type	ZB 80	ZB 80
Drilling depth	30 x D	30 x D
Tolerance	h5	h5
Discount group	123	123
Techn. data page	28	28
		NEW
	Aluminium	Cast materials
		



d1	d2	l1	l2	l3	Availability	
mm	mm	mm	mm	mm		
8.000	16.000	330.00	280.00	48.00	●	●
10.000	20.000	390.00	340.00	50.00	●	●
12.000	20.000	450.00	400.00	50.00	●	●

◯ bright Ⓢ TiN Ⓐ AlTiN NEW available 05/2008

suitable for cast iron, aluminium and short-chipping non-ferrous metals, from Ø 6.0 - 27.0 mm, max. total length 1000 mm

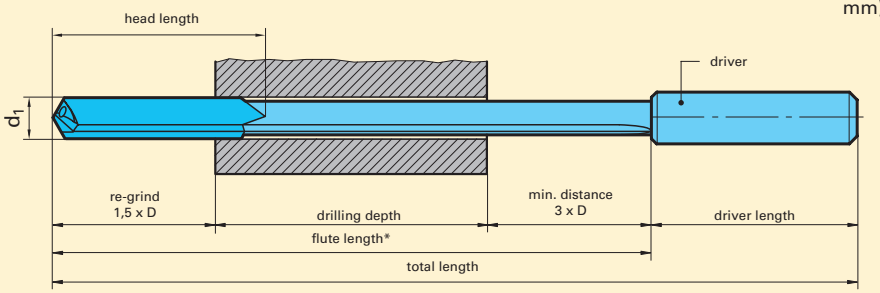


MolyGlide
For certain materials a coating is required, as the successful application of gun drills with a bright surface finish cannot be guaranteed. For chilled cast iron and Al cast alloys with a Si-content above 10% we recommend our MolyGlide-coating. However, two-fluted gun drills type ZB80 can only be coated with MolyGlide up to an overall length of maximum 500 mm due to the technical production process. See also the GuhringNavigator.

The main advantage of two-fluted gun drills compared to single-fluted gun drills is the substantially higher feed rate that can be applied during the production of the hole. This is due to the design of the two-fluted gun drill, it has two cutting edges and two flutes. Holes can therefore be produced considerably faster. However, this increase in machining speed is combined with a reduction in hole accuracy. This is also a direct consequence of a drill design with two cutting edges. As the cutting edges are positioned opposite each other, there is less of a smoothing effect and less support in comparison to a single-fluted gun drill. For drilling depths ≤ 10 x D we recommend our Ratio drill RT 150 GG, available ex stock and more cost-effective for these drilling depths than brazed gun drills. In addition, RT 150 GG does not require a pilot hole in most applications.

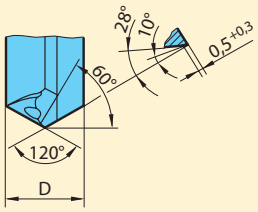
The dimensions required to calculate the length for conventional machine tools

* max. flute length per tool 40 x D, for larger drilling depths apply two tools. (i.e. Ø 10 x 450 and Ø 9.95 x 850 mm)

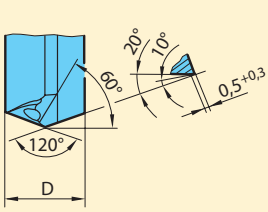


ZB 80
Standard point grinds
(special point grinds available)

Point grind G
for machining
cast iron



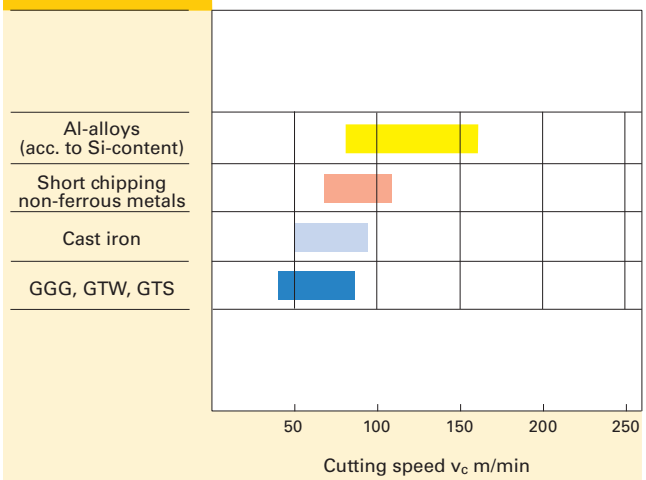
Point grind A
for machining
aluminium



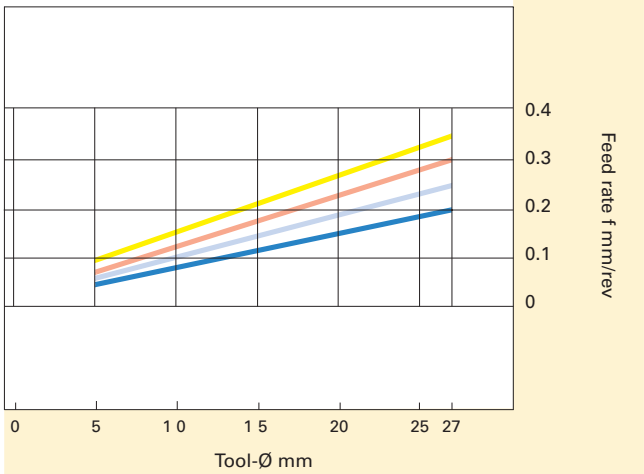
To ensure ZB 80 is designed and produced specifically for your application, please complete the questionaire and use for your inquiry/order.

Cutting parameters for

ZB 80
cutting speeds

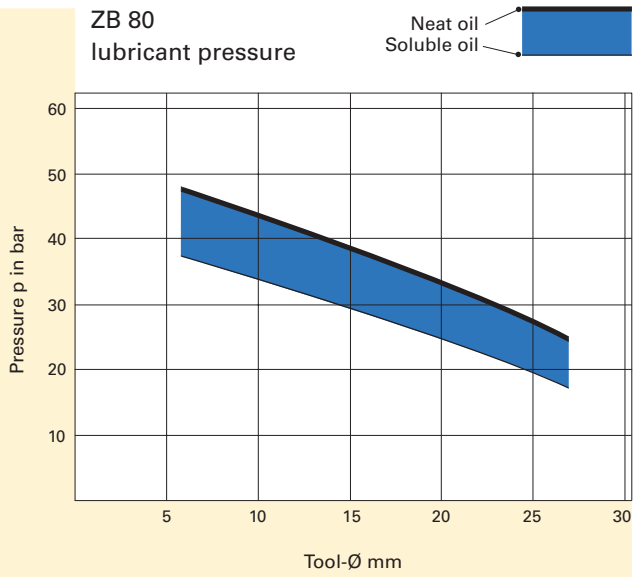


ZB 80
feed rates

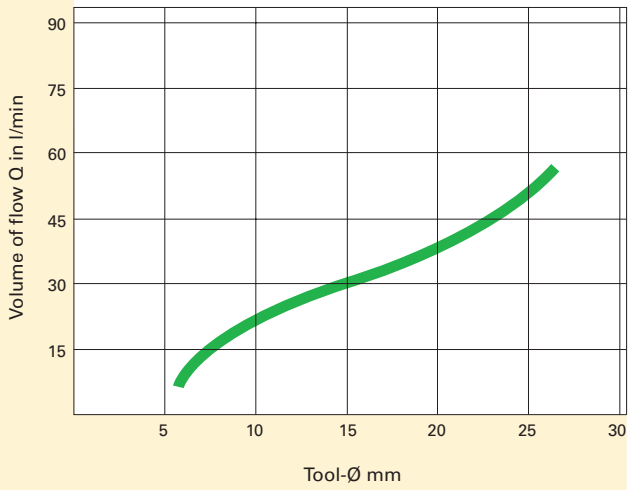


(Detailed cutting parameters see GuhringNavigator)

ZB 80
lubricant pressure



ZB 80
lubricant volume



SINGLE-FLUTED GUN DRILLS EB 800

EB 800

Standard	Type	Tool illustration	Drilling depth	Tool material	Surface	Diameter range	Guhring no.	Discount group	Standard range. page
Gun drills EB 800									
Guhring std.	EB 800	 NEW	30 x D	**Carbide**	S	16,000 - 24,000	**5644**	123	35

Ex-stock range from Ø 16.0 to 24.0 mm up to a total length of 840 mm with TiN-coating

Guhring single-fluted gun drills with interchangeable inserts and supporting strips now are available as an ex-stock range for the first time. They are suitable for machining a wide range of materials and available from diameter 16.0 to 24.0 mm up to a total length of 840 mm.

Your special advantages are:

- The precision interchangeable inserts and supporting strips eliminate complicated adjustments.
- 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.
- 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 HE.

We can naturally also produce any required gun drill as a special tool.

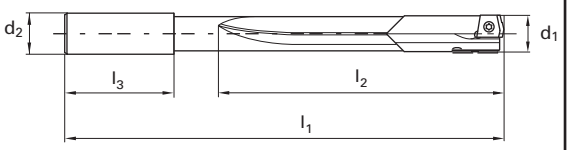
Size	Diameter range (mm)
1.00	16.00 - 16.49
1.01	16.50 - 16.99
1.02	17.00 - 17.49
1.03	17.50 - 17.99
1.04	18.00 - 18.49
1.05	18.50 - 18.99
1.06	19.00 - 19.49
1.07	19.50 - 19.99
2.00	20.00 - 20.49
2.01	20.50 - 20.99
2.02	21.00 - 21.49
2.03	21.50 - 21.99
2.04	22.00 - 22.49
2.05	22.50 - 22.99
2.06	23.00 - 23.49
2.07	23.50 - 23.99
2.08	24.00 - 24.49
2.09	24.50 - 24.99
2.10	25.00 - 25.49
2.11	25.50 - 25.99
3.00	26.00 - 26.49
3.01	26.50 - 26.99
3.02	27.00 - 27.49
3.03	27.50 - 27.99
3.04	28.00 - 28.49
3.05	28.50 - 28.99
3.06	29.00 - 29.49
3.07	29.50 - 29.99
4.00	30.00 - 30.49
4.01	30.50 - 30.99
4.02	31.00 - 31.49
4.03	31.50 - 31.99
4.04	32.00 - 32.49
4.05	32.50 - 32.99
4.06	33.00 - 33.49
4.07	33.50 - 33.99
5.00	34.00 - 34.49
5.01	34.50 - 34.99
5.02	35.00 - 35.49
5.03	35.50 - 35.99
5.04	36.00 - 36.49
5.05	36.50 - 36.99
5.06	37.00 - 37.49
5.07	37.50 - 37.99
6.00	38.00 - 38.49
6.01	38.50 - 38.99
6.02	39.00 - 39.49
6.03	39.50 - 40.00

Every tool can be modified within the diameter range

bright S TiN F FIRE NEW available 05/2008

Guhring no.	5644
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K20/K40
Surface	S
Type	EB 800
Drilling depth	30 x D
Tolerance	h
Discount group	123
Techn. data page	34

NEW



d1	d2	l1	l2	l3	Availability
mm	mm	mm	mm	mm	
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	●

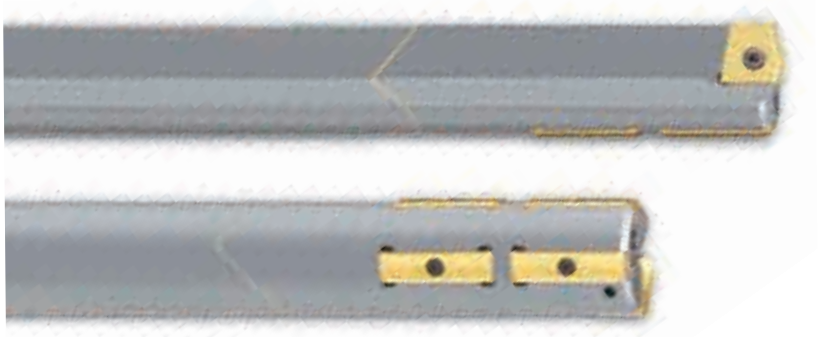
Accessories

With the initial order the EB 800 gun drill with interchangeable inserts is delivered as a complete tool with interchangeable inserts, supporting strips and accessories. For your repeat order please use the following Guhring numbers:

Ø	Interchangeable insert	Screw for insert	Screwdriver for insert	Supporting strips	Screw for supporting strips	Screwdriver for supporting strips
16	No. 5029 Ø 16,0 +TiN	900710030028	400077161	No. 5030 Ø 16,0 +TiN	900710022038	400077160
18	No. 5029 Ø 18,0 +TiN	900710030028	400077161	No. 5030 Ø 18,0 +TiN	900710022038	400077160
20	No. 5029 Ø 20,0 +TiN	900710040018	400077162	No. 5030 Ø 20,0 +TiN	900710025028	400110773
24	No. 5029 Ø 24,0 +TiN	900710040018	400077162	No. 5030 Ø 24,0 +TiN	900710025028	400110773

○ bright S TiN F FIRE NEW available 05/2008

with interchangeable inserts and supporting strips, suitable for most materials, from Ø 16.0 - 40.0 mm, max. total length 3000 mm



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 16.0 to 40.0 mm up to a maximum total length of 3000 mm.

Your special advantages are:

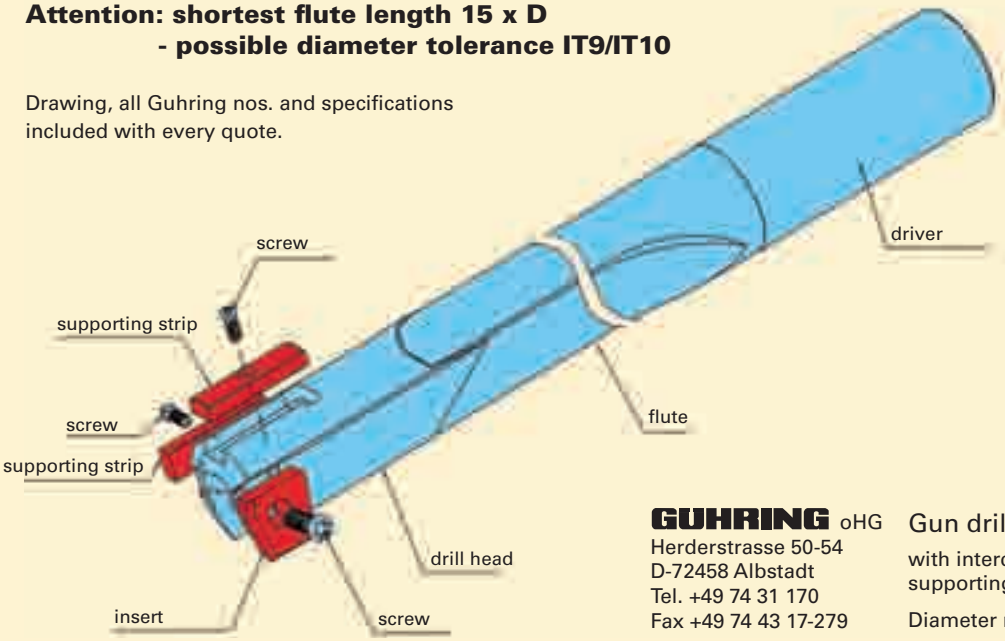
- The interchangeable component technology for inserts and supporting strips makes any combination of carbide grade and coating possible.
- The precision interchangeable inserts and supporting strips eliminate complicated adjustments.
- The precision supporting strips are produced in a special carbide 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 Gühring 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.

GUHRING EB 800 for your application

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

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

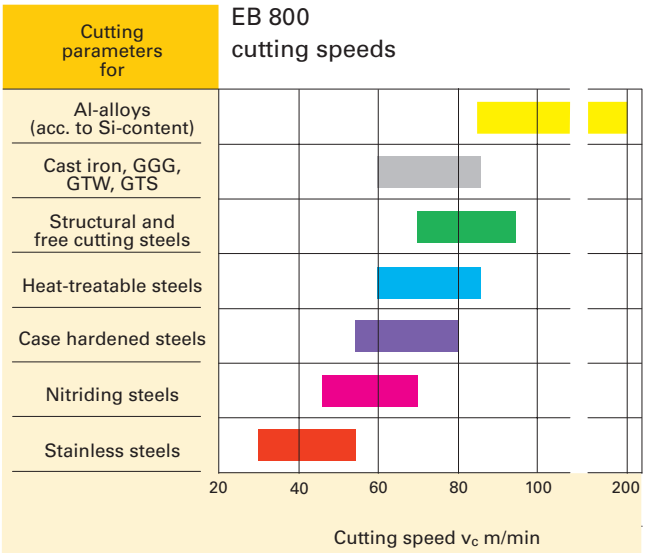


GUHRING oHG
Herderstrasse 50-54
D-72458 Albstadt
Tel. +49 74 31 170
Fax +49 74 43 17-279

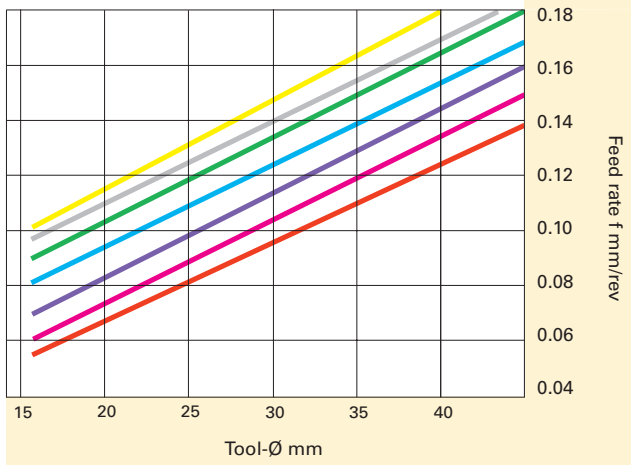
Gun drills
with interchangeable insert and supporting strip, internal cooling
Diameter range: 16.00 mm - 40.00 mm

To ask for or to order the EB 800 especially suited to your application, please complete the fax inquiry.

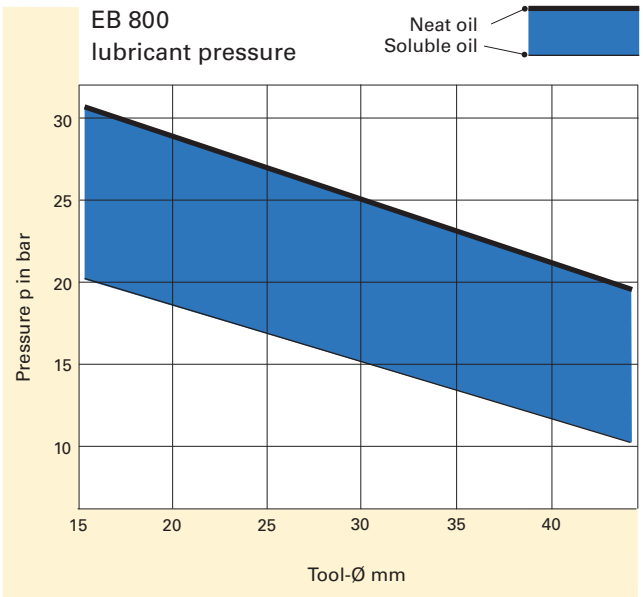
EB 800
cutting speeds



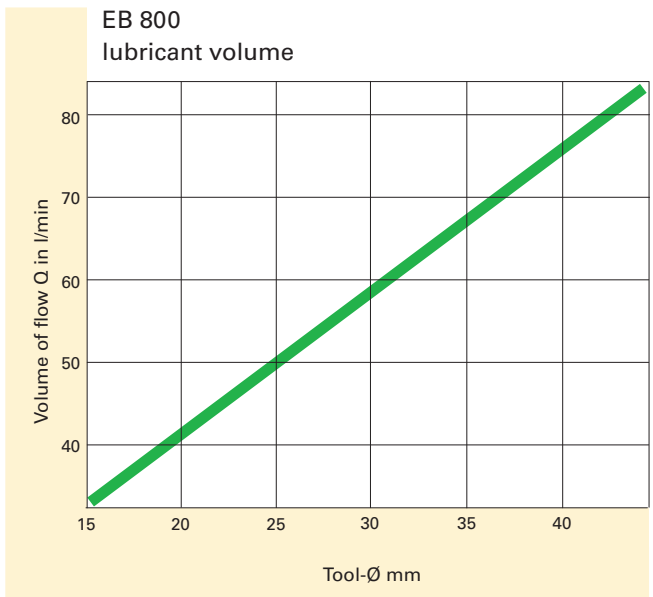
EB 800
feed rates



EB 800
lubricant pressure



EB 800
lubricant volume



ACCESSORIES

TBM 116
TBM 116 is a manually operated, universal grinding machine. Its compact design combined with Guhring's single-fluted gun drill grinding system and Guhring's double grinding wheel makes this a perfect unit to re-grind single-fluted gun drills. It is especially suitable for the re-grinding of a small to medium number of items of varying diameters and lengths. Furthermore, it also allows the fairly simple addition of transverse chip breakers to single-fluted gun drills as well as other modifications.

Supplied items:
Grinding machine with two high-powered light units as well as two 220 V sockets (grinding system and grinding wheel not included)
Machine data:
Input power requirements 380 V/50 Hz, Grinding wheel 2850 rev./min, Max. diameter of grinding wheel 150 mm

TBV 116
The fixture is designed for the re-grinding of single-fluted gun drills in the diameter range from 3 mm to 30 mm. It is ideally suitable for standard and special point grinds. A minimum flute length is of no importance thanks to a short center sleeve. In addition, the fixture is supplied with a supporting bar for long tools. TBV 116 is therefore truely universal and can be applied on any commercial, manual tool grinding machine.
With TBV 116 we recommend our double grinding wheel DSS 125.

Attention:
Single-fluted gun drills have a flute spacing angle of 120° and can therefore not be clamped in a collet in a separate unit. You could possibly destroy the tool.

TBV 216
The new TBV 216 universal grinding fixture for small diameter single-fluted gun drills from 1.0 to 6.0 mm and a maximum length of 350 mm is simple to handle and enables the re-grinding or modifying of single-fluted gun drills in only four operations. Grinding is achieved with a 3-axis swivel mechansim, enabling the grinding of various point angles. It is possible to adjust and if necessary correct any angle individually.

We recommend the application of our single grinding wheel ESS 125.
To include:
- A set of guide bushes with the diameters 1.0 / 1.5 / 2.0 / 2.5 / 3.0 / 3.5 mm
- Various adaptors
- Centering microscope
- Spotlight and magnifier

DSS 125
The DSS double grinding wheel is a firmly clamped and balanced grinding wheel set. It consists of a rough outer diamond disc, with which the main proprtion of wear is removed and a fine diamond disc that then gives a good finish to the cutting edges. It is advisable to use a cleaning stone from time to time remove any grinding dust, otherwise too much heat is created and the carbide cutting edge destroyed.

Die DSS 125 consists of:
- an outer disc Ø 125 mm, coating width 10 mm, coating thickness 3 mm, hole Ø 20 mm, grade D 126,
- an inner disc Ø 75 mm, coating width 10 mm, coating thickness 2 mm, hole Ø 20 mm, grade D 46

Accessories for deep hole drilling machines
In contrast to conventional machine tools, certain accessories, i.e. drilling bushes, seal discs, steady rest bushings etc., are part of the standard equipment on deep hole drilling machines. A selection of these products are shown on the left. Because of the multitude of accessories currently available, it is impossible to list tables with dimensions for each item in this brochure. However, we can supply most of products generally applied on request (with drawing if possible).

TECHNICAL SECTION AND GUHRINGNAV

GATOR

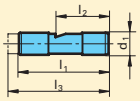

Werkstoffdatenbank
Werkstoffnorm:
DIN
Werkstoffe:
9SMn36
Automatenstähle
Werkstoff:
Alle Vergleichswerkstoffe
Festigkeit:
700
1000
208
N/mm²
HB
weiter

Additional technical parameters

The range of drivers introduced below is available ex stock. However, it only represents a small selection of drivers from our complete range. We naturally also produce individual drivers of the highest precision to customer drawings. Attention! EB 100 requires drivers with positioning lugs. Further information on request.

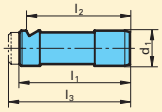
Drivers for deep drilling machines

1



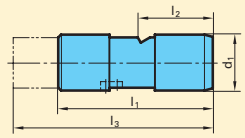
code no.	d_1	l_1	l_2	l_3
1.1	10	40	24	-
1.2	10	40	24	45
1.3	10	40	24	55
1.4	16	45	31,2	-
1.5	25	70	34	-
1.6	25	70	34	78

2



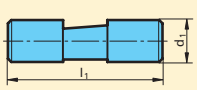
code no.	d_1	l_1	l_2	l_3
2.1	16	50	47	-
2.2	16	50	47	55
2.3	16	50	47	70

3



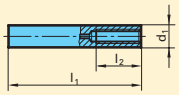
code no.	d_1	l_1	l_2	l_3
3.1	25	70	34	100

4



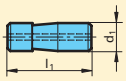
code no.	d_1	l_1
4.1	19,05	70

5



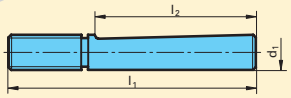
code no.	d_1	l_1	l_2
5.1	10	60	20
5.2	16	80	28
5.3	25	100	50

6



code no.	d_1 (inch)	l_1
6.1	1/2	38
6.2	3/4	70

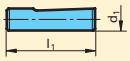
7



code no.	d_1	l_1	l_2
7.1	16	112	73
7.2	20	126	82

Drivers to DIN 1835

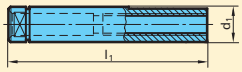
9 form E



code no.	d_1	l_1
9.1	8	36
9.2	10	40
9.3	12	45
9.4	16	48
9.5	20	50
9.6	25	56
9.7	32	60

Drivers to VDI draft

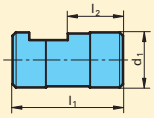
12



code no.	d_1	l_1
12.1	10	68
12.2	16	90
12.3	25	112

Drivers to Speed-Bit-System

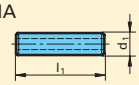
13



code no.	d_1	l_1	l_2
13.1	16	40	16
13.2	25	50	25

Drivers to DIN 6535

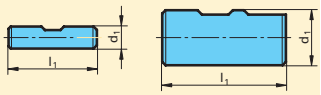
10 form HA



code no.	d_1	l_1
10.1	8	36
10.2	10	40
10.3	12	45
10.4	16	48
10.5	20	50
10.6	25	56
10.7	32	60

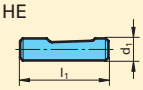
8 form HB

with code no. 8.6, 8.7, 8.8



code no.	d_1	l_1
8.1	8	36
8.2	10	40
8.3	12	45
8.4	16	48
8.5	20	50
8.6	25	56
8.7	32	60
8.8	40	70

11 form HE

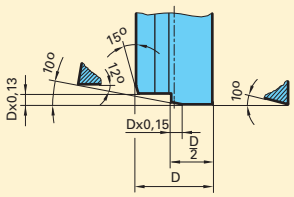


code no.	d_1	l_1
11.1	8	36
11.2	10	40
11.3	12	45
11.4	16	48
11.5	20	50

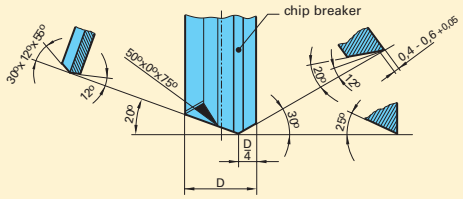
Examples for special point geometries for single-fluted gun drills

(further geometries on request)

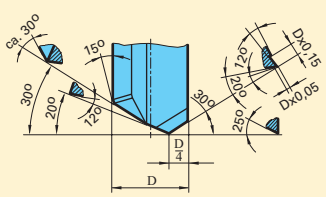
with recessed coolant chamber



with chip breaker

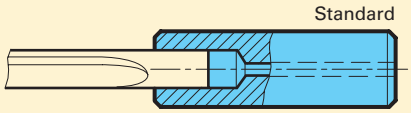


with chip guiding step

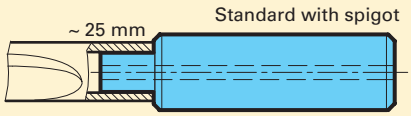


Driver variations to suit gun drill tubes

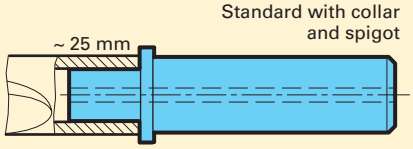
Solution for nom.-Ø < driver-Ø (difference must be appr. 6 mm):
tube shank installed in driver



Solution for nom.-Ø ≠ driver-Ø (close to parallel):
tube shank installed over spigot



Solution for nom.-Ø > driver-Ø:
tube shank installed over spigot, inside-Ø of tube shank >driver-Ø,
tube shank fits against collar shoulder.

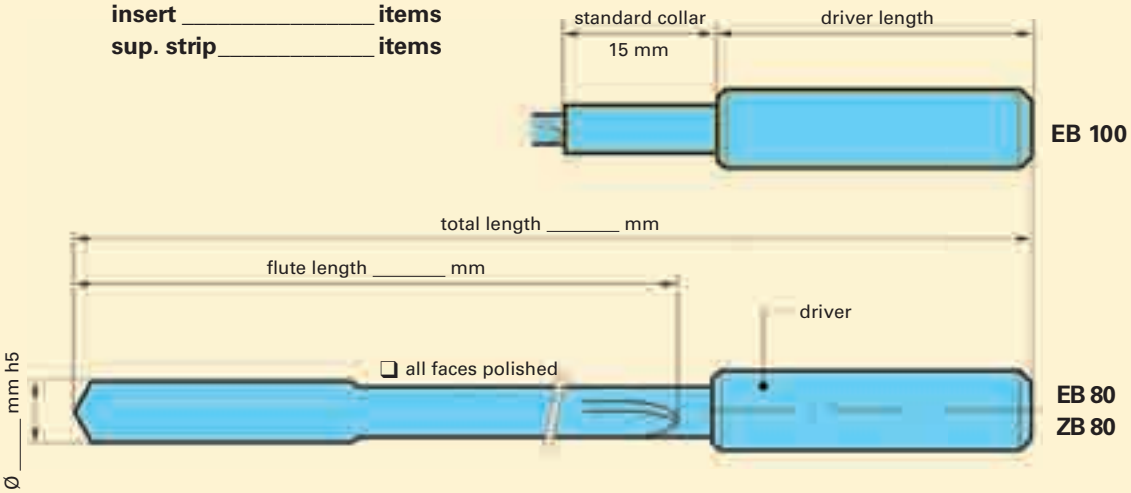


Fax Inquiry / Order
simply photo-copy, complete and fax…

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

Deep hole gun drill: ❑ **EB 100** ❑ **EB 80** ❑ polished ❑ **ZB 80** ❑ polished ❑ **EB 800**

Number required:
tool_____**items**
insert _____**items**
sup. strip_____**items**



Drawing of lay-out

required in special cases only

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

Coating: ❑ **TiN** ❑ **Fire** ❑ **TiCN** ❑ **MolyGlide** ❑ **TiAlN** ❑ **AlTiN** ❑ _____

Workpiece: **drill. depth:**_____ **hole tolerance:**_____ **material/designation:**_____

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
40.00	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.

Gun drills must be guided during spot-drilling.
Gun drills must never operate at full speed without support in the machine shop.

Cutting parameters can be reduced if cooling parameters are insufficient.
Pressure increase systems are also an option.

EB100

single-fluted gun drill
solid carbide
1.0 ... 8.0

Material dependent coolants
○ soluble oil
● neat oil
○ air

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
- 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 group	Material examples *Figures in bold = material no. to DIN EN 10 027*	Tens. str. N/mm²	Hard-ness	Cool-ant	recom-mended coating*	≤35×D v_c m/min	≤35×D Feed col. no.	>35×D v_c m/min	>35×D Feed col. no.
Common structural steels	**1.0035** S185, **1.0486** StE P275N, **1.0345** P235GH, **1.0425**	≤500		○		100	14	95	13
	1.0050 E295, **1.0070** E360, **1.8937** P500NH	>500-850		○		85	14	80	13
Free-cutting steels	**1.0718** 11SMnPb30, **1.0736** 115Mn37	≤850		○		90	14	85	13
	1.0727 46 S20, **1.0728** 60 S20, **1.0757** 46SPb20	850-1000		○		80	14	75	13
Unalloyed heat-treatable steels	**1.0402** C22, **1.1178** C30E	≤ 700		○		90	13	85	12
	1.0503 C45, **1.1191** C45E	700-850		○		80	13	75	12
	1.0601 C60, **1.1221** C60E	850-1000		○		75	13	70	12
Alloyed heat-treatable steels	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-1000		○		75	13	70	12
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		○	A	65	13	60	12
Unalloyed case hard. steels	**1.0301** C10, **1.1121** C10E	≤750		○	A	80	14	75	13
Alloyed case hardened steels	**1.7043** 38Cr4	850-1000		●		75	13	70	12
	1.5752 14NiCr14, **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		●		65	13	60	12
Nitriding steels	**1.8504** 34CrAl6	≥850-1000		○		75	13	70	12
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	1000-1200		●	A	65	13	60	12
Tool steels	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		○		75	12	70	11
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767**	850-1000		●	A	65	12	60	11
High speed steels	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** 61CrV4	≥650-1000		●	A	55	11	50	11
Spring steels	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4		≤330 HB	●	A	65	12	60	12
Stainless steels, sulphured	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17	≤850		●		55	13	50	12
austenitic	**1.4301** X5CrNi18 10, **1.4541** X6CrNiTi18 10, **1.4571**	≤850		●	A	45	13	40	12
martensitic	**1.4057** X17CrNi16-1, **1.4122** X39CrMo17-1, **1.4521**	≤850		●		35	13	35	12
Hardened steels	–		≤40-48 HRC	●		30	12	25	11
			>48-60 HRC	●		25	11	20	11
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤1200		●		35	11	30	11
Cast iron	EN-GJL-100 ... EN-GJL-200		≤240 HB	○○		85	15	80	14
	EN-GJL-250 ... EN-GJL-350		<300 HB	○○		80	15	75	14
Spheroidal graphite iron and	EN-GJMW-350-4, EN-GJMB-550-4, EN-GJS-500-7		≤240 HB	○		80	14	75	13
malleable cast iron	EN-GJMB-700-2, EN-GJS-700-2		<300 HB	○	A	70	14	65	13
Chilled cast iron	–		≤350 HB	○		55	13	50	12
Ti and Ti alloys	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		●		35	11	30	11
	3.7154 TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	850-1200		●	A	30	11	25	11
Al and Al-alloys	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○		150	16	140	14
Al-wrought alloys	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365**	≤450		○		120	16	115	14
Al-cast alloys ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		○		150	17	140	16
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○		130	17	120	16
Magnesium-alloys	MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	≤450		○		110	16		15
Copper, low alloyed	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		○	A	75	14	70	13
Brass, short-chipping	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		○		120	17	115	16
long-chipping	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		○		90	17	85	16
Bronze, short-chipping	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		○●		95	16	90	15
	2.0790 CuNi18Zn19Pb	>600-850		●		75	16	70	15
Bronze, long-chipping	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		●		70	16	65	15
	2.0980 CuAl11Ni, **2.1247** CuBe2	850-1000		●		60	16	55	15
Duroplastics	Bakelit, Resopal, Pertinax, Moltopren		–	○		75	14	70	13
Thermoplastics	Plexiglass, Hostalen, Novodur, Makralon		–	○○		70	14	65	13
Kevlar	Kevlar		–	○		60	13	55	12
Glass/carbon fibre	GFK/CFK		–	○		50	13	45	12

○ bright ○ steam tempered ◒ nitrided lands ● nitrided ● golden brown A TiAlN

To select the optimal tool and the recommended machining parameters for your application, please also use the electronic version of the GuhringNavigator on the internet: www.guehring.de.

Application advises
With drilling depths of more 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 left handed.
For machining of long chipping materials we recommend the order of gun drills with polished flutes.
Single-fluted gun drills for long chipping aluminium should be ordered with point grind 180° and coolant chamber.
Generally we recomment the use of soluble oil with a minimum oil content of 10 %.

EB80

single-fluted gun drill
solid carbide head
2.0 ... 40.0

recommended coating*	≤35×D v_c m/min	≤35×D Feed col. no.	>35×D v_c m/min	>35×D Feed col. no.
S	100	14	95	13
	85	14	80	13
S	90	14	85	13
	80	14	75	13
S	90	13	85	12
	80	13	75	12
	75	13	70	12
S	75	13	70	12
	65	13	60	12
S	80	14	75	13
S	75	13	70	12
	65	13	60	12
C	75	13	70	12
	65	13	60	12
C	75	12	70	11
	65	12	60	11
C	55	11	50	11
C	65	12	60	12
C	55	13	50	12
	45	13	40	12
	35	13	35	12
C	30	12	25	11
	25	11	20	11
C	35	11	30	11
	85	15	80	14
	80	15	75	14
	80	14	75	13
	70	14	65	13
	55	13	50	12
C	35	11	30	11
	30	11	25	11
	150	16	140	14
	120	16	115	14
	150	17	140	16
	130	17	120	16
	110	16	100	15
C	75	14	70	13
	120	17	115	16
	90	17	85	16
	95	16	90	15
	75	16	70	15
	70	16	65	15
	60	16	55	15
	75	14	70	13
	70	14	65	13
	60	13	55	12
	50	13	45	12

ZB80

two-fluted gun drill
solid carbide head
6.0 ... 27.0

recommended coating*	≤35×D v_c m/min	≤35×D Feed col. no.	>35×D v_c m/min	>35×D Feed col. no.
	85	18	80	17
	80	18	75	17
	75	17	70	16
	70	17	65	16
	65	16	60	15
	120	18	115	17
	110	18	105	17
	135	18	130	17
	120	17	115	16
	130	18	125	17
	120	18	115	17
	110	17	105	16
	110	17	105	16
	95	17	90	16
	95	17	90	16

EB800

single-fluted gun drill
with indexable inserts
16.0 ... 40.0

recommended coating*	≤35×D v_c m/min	≤35×D Feed col. no.	>35×D v_c m/min	>35×D Feed col. no.
S	90	15	85	15
	80	15	75	15
S	85	16	80	16
	75	16	70	16
S	85	15	80	15
	80	15	75	15
	75	15	70	15
S	75	15	70	15
	65	15	60	15
S	80	15	75	15
S	75	15	70	15
	70	15	65	15
S	70	15	65	15
	60	15	55	15
S	65	14	60	14
	60	14	55	14
S	55	14	50	14
S	65	15	60	15
F	50	14	45	14
	45	14	40	14
	40	14	35	14
S	30	13	25	13
	25	12	20	12
F	25	13	20	13
	85	16	80	16
	80	16	75	16
S	75	16	70	16
	70	16	65	16
	55	15	50	15
F	35	13	30	13
	30	12	25	12
	140	16	135	16
	125	16	120	16
	170	17	165	17
	140	17	135	17
	115	16	110	16
F	75	15	70	15
	120	17	115	17
	90	17	85	17
	95	17	90	17
	75	17	70	17
	70	17	65	17
	60	17	55	17
	75	16	70	16
	70	16	65	16
	60	15	55	15
	50	15	45	15

A AlTiN C TiCN F FIRE P AlCrN S TiN M MolyGlide

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in High Speed Steel and Carbide

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in High Speed Steel and Carbide

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C-tools, TiCN-coated
F-tools, FIRE-coated (allround)
P-tools, AlCrNN-coated
S-tools, TiN-coated (allround)
M-tools, MolyGlide-coated

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for precision cutting tools

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for the forming, machining and wear protection industry

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