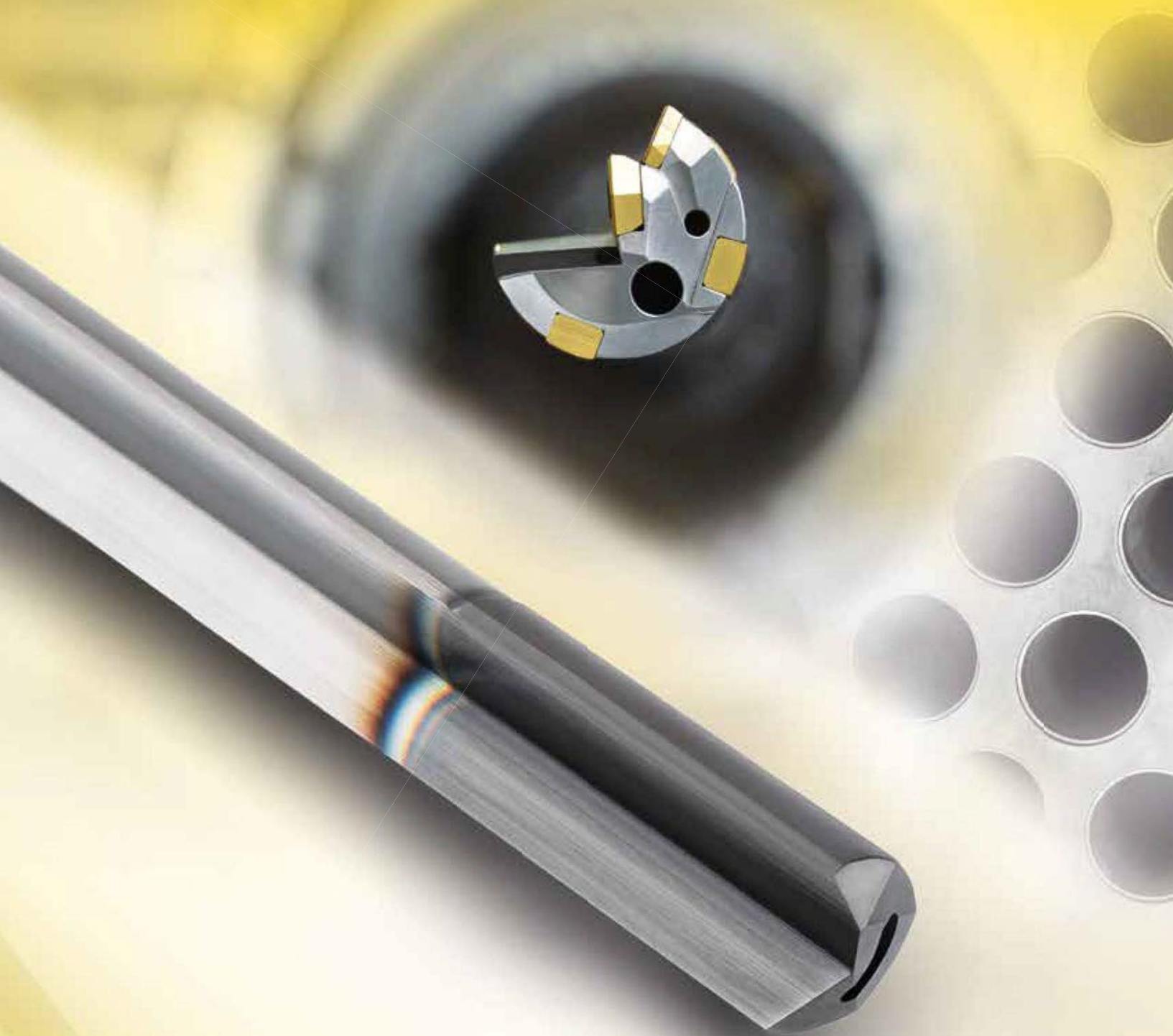


GÜHRING

DEEP HOLE DRILLING TOOLS







EXCELLENT SOLUTIONS
FOR DEMANDING
TECHNOLOGIES



DR. JÖRG GÜHRING

President



OLIVER GÜHRING

Sales and Marketing
Director

8.000

Employees world-wide



3.500

Employees Germany



Internal training and further
programme of education



International knowledge transfer thanks
to world-wide exchange programme for
employees



DIETMAR PFRÄNGER

R&D, Logistics, Technical and
Production Director



BERND SCHATZ

Financial and Commercial
Director

CORE SEGMENT
Tools



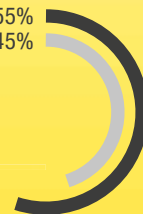
100.000

Standard tools

4.500

Tool types

55%
45%



■ Standard tools
■ Special tools

GÜHRING – YOUR PARTNER AROUND THE WORLD

With a global network of manufacturing sites Gühring develops and produces precision tools for all the important markets. Users from the automotive industry, the aerospace industry or the machine tool and general industry rely on the trend-setting tools.

48 SUBSIDIARIES

70 PRODUCTION
AND SERVICE
CENTRES



CANADA



USA

BROOKFIELD



USA

NOVI



MEXICO



BRAZIL



SOUTH AFRICA



SWEDEN



GREAT BRITAIN



NETHERLANDS



BELGIUM



SWITZERLAND

ROTKREUZ



SWITZERLAND

ALTDORF



GERMANY

ALBSTADT
HEAD-
QUARTER



GERMANY

ALBSTADT
FACTORY II



GERMANY

ALBSTADT
FACTORY III



GERMANY

GEISLINGEN



GERMANY

MINDELHEIM



GERMANY

NÜRNBERG



GERMANY

RAMSTEIN-
MIESENBACH



GERMANY

CHEMNITZ



GERMANY

KULMBACH



GERMANY

MARKT ERLBACH



GERMANY

TREUEN
FACTORY I



GERMANY

TREUEN
FACTORY II



GERMANY

TREUEN
FACTORY III

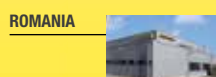


GERMANY

TREUEN
FACTORY IV




With innovative technologies Gühring meets specific customer requirements from process proposal to series application of the precision tools – **flexibly, promptly, globally**. For this, experts are in action internationally looking after customers on site. Production, service and contact persons are available from one supplier world-wide.





TOOL MATERIALS
Own carbide production

MACHINE & EQUIPMENT DIVISION
Own machine tool and equipment divisions



GEOMETRIES

Own R&D for tool development



COATINGS

Own coating systems and own coating development



WE OFFER **EVERYTHING** **FROM ONE** **SINGLE SOURCE.**

Our wide range of products extends from the smallest deep hole drills with \varnothing 0.900 mm to special solutions with \varnothing 52.000 mm. Whether made of solid carbide or HSS - our specialists are suitable for most materials and applications.



EB 100
EB 100 M

THE SMALLEST AND THE ROBUST



EB 80

THE CONVENTIONAL



ZB 80

THE SPECIALIST
FOR CAST IRON

EB 800
THE FLEXIBLE



SOLID CARBIDE
SPIRAL-FLUTED
DEEP HOLE DRILLS



HSS/HSCO
SPIRAL-FLUTED
DEEP HOLE DRILLS



PILOT
TOOLS



ISO codes

P	Steel, high-alloyed steel
M	Stainless steel
K	Grey cast iron, spheroidal graphite iron and malleable cast iron
N	Aluminium and other non-ferrous metals
S	Special, super and titanium alloys
H	Hardened steel and chilled cast iron

On the programme pages you will find for every tool recommendations regarding suitability for the application groups and details of max. tensile strength and hardness.

- optimal suitability
- limited suitability

Pictograms

Tool material	VHM Solid carbide				HM Carbide				HSCO HSS High-speed steel						
Drilling depth	3xD	4xD	5xD	15xD	20xD	25xD	30xD	40xD	50xD	75xD	80xD	~3xD	~15xD	~20xD	~25xD
Flute length	SPL 30,00	SPL 45,00	SPL 80,00	SPL 120,00	SPL 160,00										
Overall length	GL 600	GL 800	GL 1000	GL 1200	GL 1400	GL 1600	GL 1800	GL 2000							
Tolerance on Ø	h5	h7	h8	m7											
Cutting direction	right														
Point angle	130°	135°	140°	145°											
Web thinning															
Standard	DIN 1869, DIN 1897, DIN 6527L, DIN 6537L, DIN 6539, DIN 8037, DIN 8374 to DIN							 to Gühring Standard							
Type	EB 80	EB 80 XXL	EB 100	EB 100 M	ZB 80	EB 800	GT 100	GV 120	HT 800 WP	N	NH	RT 100 T	RT 100 U		
Internal coolant	with internal coolant							without internal coolant							
Drivers Deep hole drilling machines	TBM- SEH	TBM- SEV	TBM- SFM	TBM- SGI	TBM- SKM	TBM- SPB	TBM- SV	TBM- TRG							
	Standard- recess- back side	Standard- recess- -front side	Standard- recess - area centre	Standard- thread - inside	Standard- cone- centre	Speed-Bit	Standard- front side	Trapezoidal thread							

Surfaces

- bright
- nitrided lands
- FIRE/nano FIRE
- Signum
- TiAlN
- TiAlN-nanoA
- TiAlN-SuperA
- TiCN
- TiN
- nickel-plated

Select & order

Product page

All data at a glance!

EB 100 M single-fluted gun drills

25xD
EB 100 M
WN
R
h5

P

○

solid carbide shank with MQL shank end • head form G

M

○

K

○

N

●

S

●

H

○

Tool material
Solid carbide

Surface finish
○

Shank form
HA

NEW

GÜHRING NAVIGATOR
Cutting data page 184

Application recommendation:

- optimal suitability
- limited suitability

Article no. **5685**

d1 h5		d2 h6		l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	mm	
1.000		3.000	65.00	32.00	28.00	1.000	
1.191	3/64	3.000	70.00	39.00	28.00	1.190	
1.500		4.000	80.00	49.00	28.00	1.500	
1.588	1/16	4.000	85.00	51.00	28.00	1.590	
1.984	5/64	4.000	95.00	64.00	28.00	1.980	
2.000		4.000	95.00	65.00	28.00	2.000	
2.381	3/32	4.000	100.00	70.00	28.00	2.380	
2.500		4.000	115.00	85.00	28.00	2.500	
2.778	7/64	4.000	115.00	85.00	28.00	2.780	
3.000		6.000	145.00	105.00	36.00	3.000	
3.175	1/8	6.000	145.00	105.00	36.00	3.170	
3.500		6.000	145.00	105.00	36.00	3.500	
3.572	9/64	6.000	160.00	120.00	36.00	3.570	
3.969	5/32	6.000	160.00	120.00	36.00	3.970	
4.000		6.000	160.00	120.00	36.00	4.000	
4.366	11/64	6.000	220.00	180.00	36.00	4.370	
4.763	3/16	6.000	220.00	180.00	36.00	4.760	
5.000		6.000	220.00	180.00	36.00	5.000	
5.159	13/64	6.000	220.00	180.00	36.00	5.160	
5.556	7/32	6.000	220.00	180.00	36.00	5.560	
5.953	15/64	6.000	220.00	180.00	36.00	5.950	

When ordering please always state the **article no. and the nominal size**,
i.e.: Single-fluted gun drill EB 100 M for nominal size 2.0 = **5685 2.000**

2
Nominal size

1
Article No.

For our latest prices, please refer to our separate price list.

Re-production – even in part – is not permitted.

Possible misprints or any type of intermediate changes do not entitle to any claims. All DIN marked products can be supplied deviating from the catalogue dimensions as long as they correspond to the specified DIN standard.

Printed in Germany

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Internet: www.guehring.com
E-Mail: info@guehring.de



Standard:
Diameter range: 0.900 - 16.000 mm



Standard:
Diameter range: 3.000 - 32.000 mm



Standard:
Diameter range: 8.000 - 12.000 mm



Standard:
Diameter range: 12.000 - 31.900 mm



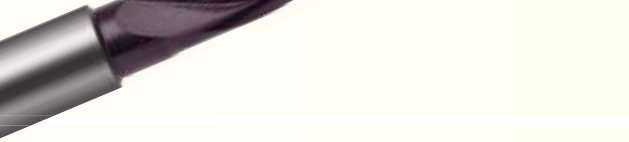
Standard:
Diameter range: 1.400 - 16.000 mm



Standard:
Diameter range: 2.500 - 13.000 mm



Standard:
Diameter range: 0.500 - 40.000 mm



Solid carbide single-fluted gun drills

EB 100 M: The robust | EB 100: The smallest from page 11

Brazed single-fluted gun drills

EB 80: The conventional from page 31

Brazed two-fluted gun drills

ZB 80: The specialist for cast ironfrom page 55

Modular single-fluted gun drills

EB 800: The flexible from page 61

Solid carbide spiral-fluted deep hole drills from page 107

HSS/HSCO spiral-fluted deep hole drills from page 117

Pilot tools from page 127

Accessories from page 145

Grinding equipment from page 177

GUHRING NAVIGATOR from page 183

Technical section from page 197

Article no. index from page 239

EB 100 M: THE ROBUST

- \ solid carbide single-fluted gun drill
- \ for extra tight drilling tolerances
- \ manufactured from 1.000 to 16.000 mm nominal diameter
- \ flute length to 580 mm
- \ up to 80xD with only one tool
- \ MQL shank end
- \ suitable for most materials
- \ wide range of dimensions

EB 100: THE SMALLEST

- \ brazed solid carbide single-fluted gun drills
- \ for extra tight drilling tolerances
- \ manufactured from 0.900 to 16.000 mm nominal diameter
- \ flute length to 580 mm
- \ up to 80xD with only one tool
- \ suitable for most materials
- \ wide range of inch dimensions
- \ fast service programme EB 100

EB 100
EB 100 M

EB 100

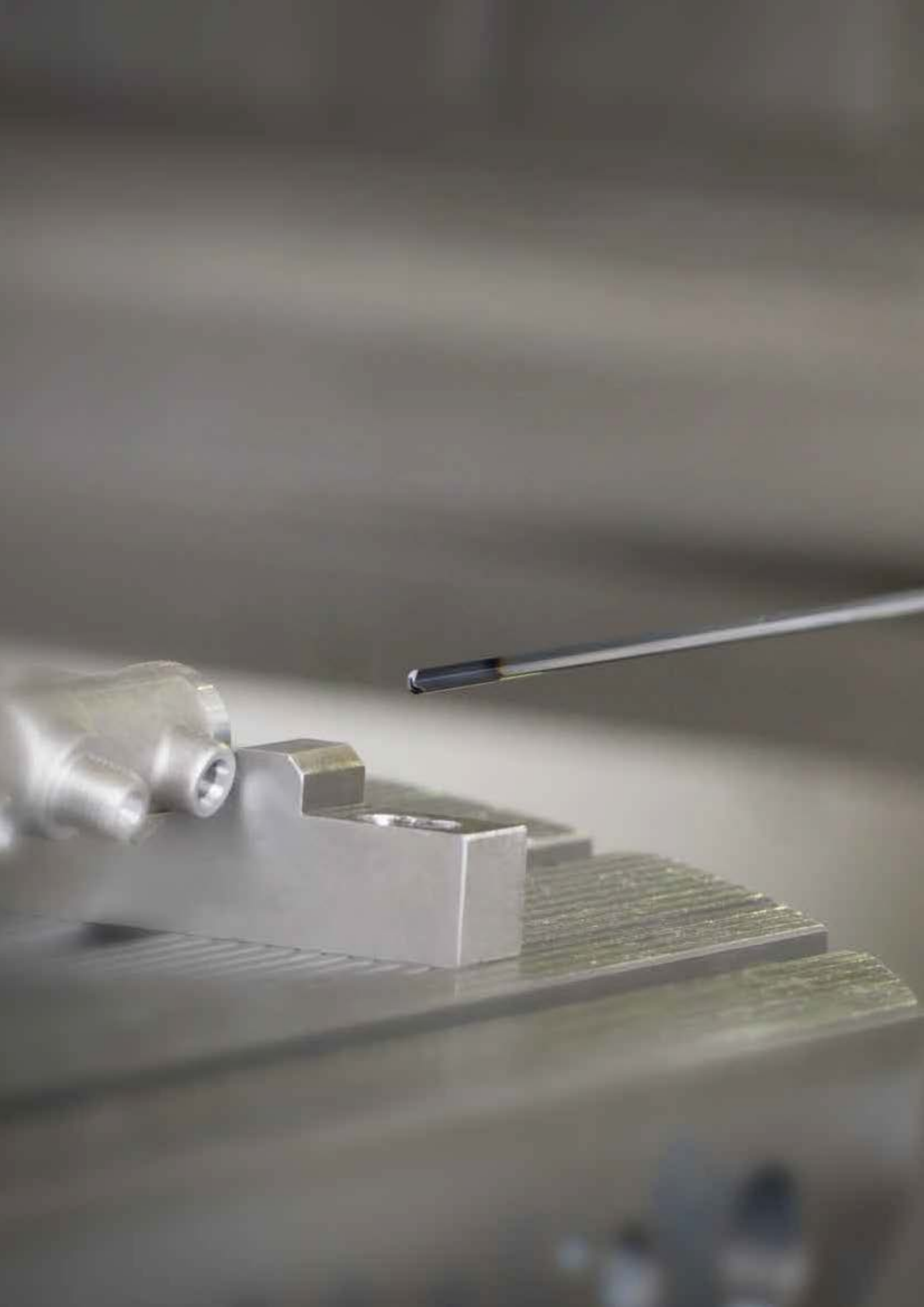
THE ROBUST
THE SMALLEST



P	M	K	N	S	H	Tool illustration	Drilling depth	Standard	Type	Cutting direction	Tool material	Surface	d1/mm	Article no.	Cutting data page	Page
○	○	○	●	●	○		25xD	WN	EB 100 M	R	VHM	○	1.000 - 16.000	5685	184	14
●	●	○	○	○	○		25xD	WN	EB 100 M	R	VHM	ⓐ	1.000 - 16.000	5646	184	15
○	○	○	●	●	○		50xD	WN	EB 100 M	R	VHM	○	1.000 - 10.000	5686	184	16
●	●	○	○	○	○		50xD	WN	EB 100 M	R	VHM	ⓐ	1.000 - 10.000	5647	184	17
○	○	○	●	●	○		75xD	WN	EB 100 M	R	VHM	○	1.000 - 7.144	5687	184	18
●	●	○	○	○	○		75xD	WN	EB 100 M	R	VHM	ⓐ	1.000 - 7.144	5648	184	19

EB 100 single-fluted gun drills

○	○	○	●	●	○		SPL 30,00	WN	EB 100	R	VHM	○	0.900 - 2.000	5684	184	21
○	○	○	●	●	○		SPL 45,00	WN	EB 100	R	VHM	○	0.900 - 3.200	5024	184	22
●	○	●	○	○	○		SPL 45,00	WN	EB 100	R	VHM	ⓐ	1.000 - 3.200	5632	184	23
○	○	○	●	●	○		SPL 80,00	WN	EB 100	R	VHM	○	1.000 - 5.000	5020	184	24
●	○	●	○	○	○		SPL 80,00	WN	EB 100	R	VHM	ⓐ	1.000 - 5.000	5633	184	25
○	○	○	●	●	○		SPL 120,00	WN	EB 100	R	VHM	○	1.500 - 5.000	5026	184	26
●	○	●	○	○	○		SPL 120,00	WN	EB 100	R	VHM	ⓐ	1.500 - 5.000	5637	184	27
○	○	○	●	●	○		SPL 160,00	WN	EB 100	R	VHM	○	1.500 - 8.000	5021	184	28
●	○	●	○	○	○		SPL 160,00	WN	EB 100	R	VHM	ⓐ	1.500 - 8.000	5638	184	29



EB 100 M single-fluted gun drills



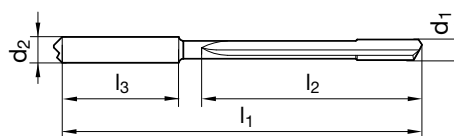
P	○	solid carbide shank with MQL shank end • head form G
M	○	
K	○	
N	●	
S	●	
H	○	

Tool material	Solid carbide
Surface	○
Shank form	HA



GÜHRING NAVIGATOR

Cutting data page 184



Article no. **5685**

d1 h5		d2 h6		l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	mm	
1.000		3.000	65.00	32.00	28.00	1.000	
1.191	3/64	3.000	70.00	39.00	28.00	1.190	
1.500		4.000	80.00	49.00	28.00	1.500	
1.588	1/16	4.000	85.00	51.00	28.00	1.590	
1.984	5/64	4.000	95.00	64.00	28.00	1.980	
2.000		4.000	95.00	65.00	28.00	2.000	
2.381	3/32	4.000	100.00	70.00	28.00	2.380	
2.500		4.000	115.00	85.00	28.00	2.500	
2.778	7/64	4.000	115.00	85.00	28.00	2.780	
3.000		6.000	145.00	105.00	36.00	3.000	
3.175	1/8	6.000	145.00	105.00	36.00	3.170	
3.500		6.000	145.00	105.00	36.00	3.500	
3.572	9/64	6.000	160.00	120.00	36.00	3.570	
3.969	5/32	6.000	160.00	120.00	36.00	3.970	
4.000		6.000	160.00	120.00	36.00	4.000	
4.366	11/64	6.000	220.00	180.00	36.00	4.370	
4.763	3/16	6.000	220.00	180.00	36.00	4.760	
5.000		6.000	220.00	180.00	36.00	5.000	
5.159	13/64	6.000	220.00	180.00	36.00	5.160	
5.556	7/32	6.000	220.00	180.00	36.00	5.560	
5.953	15/64	6.000	220.00	180.00	36.00	5.950	
6.000		6.000	220.00	180.00	36.00	6.000	
6.350	1/4	8.000	260.00	210.00	36.00	6.350	
6.500		8.000	260.00	210.00	36.00	6.500	
6.747	17/64	8.000	260.00	210.00	36.00	6.750	
7.000		8.000	260.00	210.00	36.00	7.000	
7.144	9/32	8.000	285.00	240.00	36.00	7.140	
7.541	19/64	8.000	285.00	240.00	36.00	7.540	
7.938	5/16	8.000	285.00	240.00	36.00	7.940	
8.000		8.000	285.00	240.00	36.00	8.000	
9.000		10.000	350.00	300.00	40.00	9.000	
10.000		10.000	350.00	300.00	40.00	10.000	
11.000		12.000	420.00	360.00	45.00	11.000	
11.113	7/16	12.000	420.00	360.00	45.00	11.113	
12.000		12.000	420.00	360.00	45.00	12.000	
12.700	1/2	14.000	455.00	396.00	45.00	12.700	
14.000		14.000	500.00	437.00	45.00	14.000	
15.000		16.000	535.00	468.00	48.00	15.000	
15.875	5/8	16.000	560.00	495.00	48.00	15.875	
16.000		16.000	565.00	499.00	48.00	16.000	

EB 100 M single-fluted gun drills



Tool material **Solid carbide**

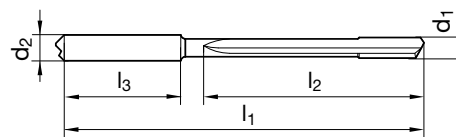
Surface **a**

Shank form HA

P	•	solid carbide shank with MQL shank end • head form G
M	•	
K	○	
N	○	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



Article no. **5646**

d1 h5		d2 h6		l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	mm	
1.000		3.000	65.00	32.00	28.00		1.000
1.191	3/64	3.000	70.00	39.00	28.00		1.190
1.500		4.000	80.00	49.00	28.00		1.500
1.588	1/16	4.000	85.00	51.00	28.00		1.590
1.984	5/64	4.000	95.00	64.00	28.00		1.980
2.000		4.000	95.00	65.00	28.00		2.000
2.381	3/32	4.000	100.00	70.00	28.00		2.380
2.500		4.000	115.00	85.00	28.00		2.500
2.778	7/64	4.000	115.00	85.00	28.00		2.780
3.000		6.000	145.00	105.00	36.00		3.000
3.175	1/8	6.000	145.00	105.00	36.00		3.170
3.500		6.000	145.00	105.00	36.00		3.500
3.572	9/64	6.000	160.00	120.00	36.00		3.570
3.969	5/32	6.000	160.00	120.00	36.00		3.970
4.000		6.000	160.00	120.00	36.00		4.000
4.366	11/64	6.000	220.00	180.00	36.00		4.370
4.763	3/16	6.000	220.00	180.00	36.00		4.760
5.000		6.000	220.00	180.00	36.00		5.000
5.159	13/64	6.000	220.00	180.00	36.00		5.160
5.556	7/32	6.000	220.00	180.00	36.00		5.560
5.953	15/64	6.000	220.00	180.00	36.00		5.950
6.000		6.000	220.00	180.00	36.00		6.000
6.350	1/4	8.000	260.00	210.00	36.00		6.350
6.500		8.000	260.00	210.00	36.00		6.500
6.747	17/64	8.000	260.00	210.00	36.00		6.750
7.000		8.000	260.00	210.00	36.00		7.000
7.144	9/32	8.000	285.00	240.00	36.00		7.140
7.541	19/64	8.000	285.00	240.00	36.00		7.540
7.938	5/16	8.000	285.00	240.00	36.00		7.940
8.000		8.000	285.00	240.00	36.00		8.000
9.000		10.000	350.00	300.00	40.00		9.000
10.000		10.000	350.00	300.00	40.00		10.000
11.000		12.000	420.00	360.00	45.00		11.000
11.113	7/16	12.000	420.00	360.00	45.00		11.113
12.000		12.000	420.00	360.00	45.00		12.000
12.700	1/2	14.000	455.00	396.00	45.00		12.700
14.000		14.000	500.00	437.00	45.00		14.000
15.000		16.000	535.00	468.00	48.00		15.000
15.875	5/8	16.000	560.00	495.00	48.00		15.875
16.000		16.000	565.00	499.00	48.00		16.000

EB 100 M single-fluted gun drills



P	○	solid carbide shank with MQL shank end • head form G
M	○	
K	○	
N	●	
S	●	
H	○	

Tool material **Solid carbide**

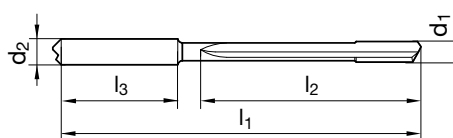
Surface ○

Shank form HA



GÜHRING NAVIGATOR

Cutting data page 184



Article no. **5686**

d1 h5		d2 h6		l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	mm	
1.000		3.000	90.00	57.00	28.00	1.000	
1.191	3/64	3.000	100.00	68.00	28.00	1.190	
1.500		4.000	120.00	86.00	28.00	1.500	
1.588	1/16	4.000	125.00	91.00	28.00	1.590	
1.984	5/64	4.000	145.00	114.00	28.00	1.980	
2.000		4.000	145.00	115.00	28.00	2.000	
2.381	3/32	4.000	160.00	130.00	28.00	2.380	
2.500		4.000	185.00	155.00	28.00	2.500	
2.778	7/64	4.000	185.00	155.00	28.00	2.780	
3.000		6.000	230.00	190.00	36.00	3.000	
3.175	1/8	6.000	230.00	190.00	36.00	3.170	
3.500		6.000	230.00	190.00	36.00	3.500	
3.572	9/64	6.000	260.00	220.00	36.00	3.570	
3.969	5/32	6.000	260.00	220.00	36.00	3.970	
4.000		6.000	260.00	220.00	36.00	4.000	
4.366	11/64	6.000	290.00	245.00	36.00	4.370	
4.763	3/16	6.000	310.00	268.00	36.00	4.760	
5.000		6.000	370.00	330.00	36.00	5.000	
5.159	13/64	6.000	370.00	330.00	36.00	5.160	
5.556	7/32	6.000	370.00	330.00	36.00	5.560	
5.953	15/64	6.000	370.00	330.00	36.00	5.950	
6.000		6.000	370.00	330.00	36.00	6.000	
6.350	1/4	8.000	430.00	385.00	36.00	6.350	
6.500		8.000	430.00	385.00	36.00	6.500	
6.747	17/64	8.000	430.00	385.00	36.00	6.750	
7.000		8.000	430.00	385.00	36.00	7.000	
7.144	9/32	8.000	485.00	440.00	36.00	7.140	
7.541	19/64	8.000	485.00	440.00	36.00	7.540	
7.938	5/16	8.000	485.00	440.00	36.00	7.940	
8.000		8.000	485.00	440.00	36.00	8.000	
9.000		10.000	555.00	506.00	40.00	9.000	
10.000		10.000	615.00	562.00	40.00	10.000	

EB 100 M single-fluted gun drills



Tool material **Solid carbide**

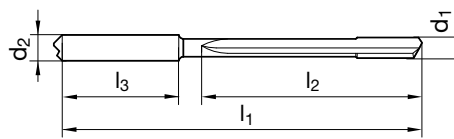
Surface **a**

Shank form HA

P	•	solid carbide shank with MQL shank end • head form G
M	•	
K	○	
N	○	
S	○	
H	○	

GUHRING NAVIGATOR

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Article no. **5647**

d1 h5		d2 h6		l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	mm	
1.000		3.000	90.00	57.00	28.00	1.000	
1.191	3/64	3.000	100.00	68.00	28.00	1.190	
1.500		4.000	120.00	86.00	28.00	1.500	
1.588	1/16	4.000	125.00	91.00	28.00	1.590	
1.984	5/64	4.000	145.00	114.00	28.00	1.980	
2.000		4.000	145.00	115.00	28.00	2.000	
2.381	3/32	4.000	160.00	130.00	28.00	2.380	
2.500		4.000	185.00	155.00	28.00	2.500	
2.778	7/64	4.000	185.00	155.00	28.00	2.780	
3.000		6.000	230.00	190.00	36.00	3.000	
3.175	1/8	6.000	230.00	190.00	36.00	3.170	
3.500		6.000	230.00	190.00	36.00	3.500	
3.572	9/64	6.000	260.00	220.00	36.00	3.570	
3.969	5/32	6.000	260.00	220.00	36.00	3.970	
4.000		6.000	260.00	220.00	36.00	4.000	
4.366	11/64	6.000	290.00	245.00	36.00	4.370	
4.763	3/16	6.000	310.00	268.00	36.00	4.760	
5.000		6.000	370.00	330.00	36.00	5.000	
5.159	13/64	6.000	370.00	330.00	36.00	5.160	
5.556	7/32	6.000	370.00	330.00	36.00	5.560	
5.953	15/64	6.000	370.00	330.00	36.00	5.950	
6.000		6.000	370.00	330.00	36.00	6.000	
6.350	1/4	8.000	430.00	385.00	36.00	6.350	
6.500		8.000	430.00	385.00	36.00	6.500	
6.747	17/64	8.000	430.00	385.00	36.00	6.750	
7.000		8.000	430.00	385.00	36.00	7.000	
7.144	9/32	8.000	485.00	440.00	36.00	7.140	
7.541	19/64	8.000	485.00	440.00	36.00	7.540	
7.938	5/16	8.000	485.00	440.00	36.00	7.940	
8.000		8.000	485.00	440.00	36.00	8.000	
9.000		10.000	555.00	506.00	40.00	9.000	
10.000		10.000	615.00	562.00	40.00	10.000	

EB 100 M single-fluted gun drills



P	○	solid carbide shank with MQL shank end • head form G
M	○	
K	○	
N	●	
S	●	
H	○	

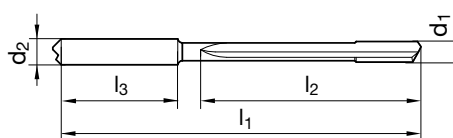
GÜHRING NAVIGATOR

Cutting data page 184

Tool material **Solid carbide**

Surface ○

Shank form HA



Article no. **5687**

d1 h5		d2 h6		l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	mm	
1.000		3.000	115.00	82.00	28.00	1.000	
1.191	3/64	3.000	130.00	98.00	28.00	1.190	
1.500		4.000	155.00	124.00	28.00	1.500	
1.588	1/16	4.000	165.00	131.00	28.00	1.590	
1.984	5/64	4.000	195.00	163.00	28.00	1.980	
2.000		4.000	195.00	165.00	28.00	2.000	
2.381	3/32	4.000	220.00	190.00	28.00	2.380	
2.500		4.000	255.00	220.00	28.00	2.500	
2.778	7/64	4.000	255.00	220.00	28.00	2.780	
3.000		6.000	290.00	247.00	36.00	3.000	
3.175	1/8	6.000	320.00	280.00	36.00	3.170	
3.500		6.000	320.00	280.00	36.00	3.500	
3.572	9/64	6.000	360.00	320.00	36.00	3.570	
3.969	5/32	6.000	360.00	320.00	36.00	3.970	
4.000		6.000	360.00	320.00	36.00	4.000	
4.366	11/64	6.000	395.00	355.00	36.00	4.370	
4.763	3/16	6.000	430.00	387.00	36.00	4.760	
5.000		6.000	450.00	406.00	36.00	5.000	
5.159	13/64	6.000	465.00	419.00	36.00	5.160	
5.556	7/32	6.000	525.00	485.00	36.00	5.560	
5.953	15/64	6.000	525.00	485.00	36.00	5.950	
6.000		6.000	525.00	485.00	36.00	6.000	
6.350	1/4	8.000	560.00	516.00	36.00	6.350	
6.500		8.000	575.00	528.00	36.00	6.500	
6.747	17/64	8.000	595.00	548.00	36.00	6.750	
7.000		8.000	615.00	568.00	36.00	7.000	
7.144	9/32	8.000	625.00	580.00	36.00	7.140	

EB 100 M single-fluted gun drills



Tool material **Solid carbide**

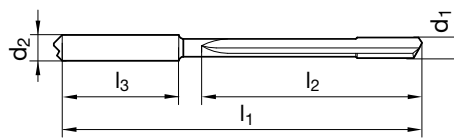
Surface **a**

Shank form HA

P	•	solid carbide shank with MQL shank end • head form G
M	•	
K	○	
N	○	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



Article no. **5648**

d1 h5		d2 h6		l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	mm	
1.000		3.000	115.00	82.00	28.00	1.000	
1.191	3/64	3.000	130.00	98.00	28.00	1.190	
1.500		4.000	155.00	124.00	28.00	1.500	
1.588	1/16	4.000	165.00	131.00	28.00	1.590	
1.984	5/64	4.000	195.00	163.00	28.00	1.980	
2.000		4.000	195.00	165.00	28.00	2.000	
2.381	3/32	4.000	220.00	190.00	28.00	2.380	
2.500		4.000	255.00	220.00	28.00	2.500	
2.778	7/64	4.000	255.00	220.00	28.00	2.780	
3.000		6.000	290.00	247.00	36.00	3.000	
3.175	1/8	6.000	320.00	280.00	36.00	3.170	
3.500		6.000	320.00	280.00	36.00	3.500	
3.572	9/64	6.000	360.00	320.00	36.00	3.570	
3.969	5/32	6.000	360.00	320.00	36.00	3.970	
4.000		6.000	360.00	320.00	36.00	4.000	
4.366	11/64	6.000	395.00	355.00	36.00	4.370	
4.763	3/16	6.000	430.00	387.00	36.00	4.760	
5.000		6.000	450.00	406.00	36.00	5.000	
5.159	13/64	6.000	465.00	419.00	36.00	5.160	
5.556	7/32	6.000	525.00	485.00	36.00	5.560	
5.953	15/64	6.000	525.00	485.00	36.00	5.950	
6.000		6.000	525.00	485.00	36.00	6.000	
6.350	1/4	8.000	560.00	516.00	36.00	6.350	
6.500		8.000	575.00	528.00	36.00	6.500	
6.747	17/64	8.000	595.00	548.00	36.00	6.750	
7.000		8.000	615.00	568.00	36.00	7.000	
7.144	9/32	8.000	625.00	580.00	36.00	7.140	

EB 100

EB 100 FAST SERVICE PROGRAMME

Your tailor-made solid carbide single-fluted gun drills within a few working days: Gühring's super quick gun drill offer makes it possible. Special tools within 15 working days!

EB 100 – THE SMALLEST

Design options:

- Flute length:
 - ▶ 30 mm Ø 0.900|1.000|1.100|1.191|1.200|1.300|1.400|1.500|1.588|1.600|1.900|1.984|2.000
 - ▶ 45 mm Ø 0.900|1.000|1.100|1.191|1.200|1.300|1.400|1.500|1.588|1.600|1.900|1.984|2.000|2.500|2.700|3.000|3.200
 - ▶ 80 mm Ø 1.000|1.100|1.191|1.200|1.300|1.400|1.500|1.588|1.600|1.900|1.984|2.000|2.500|2.700|3.000|3.200|3.500|4.000|4.200|4.500|5.000
 - ▶ 120 mm Ø 1.500|1.588|1.600|1.984|2.000|2.500|2.700|3.000|3.200|3.500|4.000|4.200|4.500|5.000
 - ▶ 160 mm Ø 1.500|1.588|1.600|1.984|2.000|2.500|2.700|3.000|3.200|3.500|4.000|4.200|4.500|5.000|6.000|8.000
- carbide grade: K30/K40
- head form: G
- bright or coated
- in combination with standard drivers

▶ Conditions of the fast service available on request or on our EB 100 fast service flyer.



EB 100 single-fluted gun drills



Tool material **Solid carbide**

Surface ○

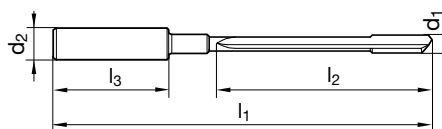
Shank form HA



P	○	flute length 30 mm • head form G
M	○	
K	○	
N	●	
S	●	
H	○	

GUHRING NAVIGATOR

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Article no. **5684**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
0.900		4.000	75.00	30.00	28.00	0.900
1.000		4.000	75.00	30.00	28.00	1.000
1.100		4.000	75.00	30.00	28.00	1.100
1.191	3/64	4.000	75.00	30.00	28.00	1.190
1.200		4.000	75.00	30.00	28.00	1.200
1.300		4.000	75.00	30.00	28.00	1.300
1.400		4.000	75.00	30.00	28.00	1.400
1.500		4.000	75.00	30.00	28.00	1.500
1.588	1/16	4.000	75.00	30.00	28.00	1.590
1.600		4.000	75.00	30.00	28.00	1.600
1.900		4.000	75.00	30.00	28.00	1.900
1.984	5/64	4.000	75.00	30.00	28.00	1.980
2.000		4.000	75.00	30.00	28.00	2.000

EB 100 single-fluted gun drills



P	○	flute length 45 mm • head form G
M	○	
K	○	
N	●	
S	●	
H	○	

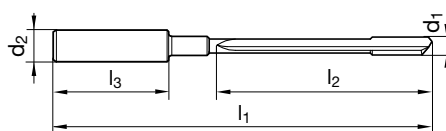
GÜHRING NAVIGATOR

Cutting data page 184

Tool material **Solid carbide**

Surface ○

Shank form HA



Article no. **5024**

d1 h5		d2 h6		l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	mm	
0.900		4.000		90.00	45.00	28.00	0.900
1.000		4.000		90.00	45.00	28.00	1.000
1.100		4.000		90.00	45.00	28.00	1.100
1.191	3/64	4.000		90.00	45.00	28.00	1.190
1.200		4.000		90.00	45.00	28.00	1.200
1.300		4.000		90.00	45.00	28.00	1.300
1.400		4.000		90.00	45.00	28.00	1.400
1.500		4.000		90.00	45.00	28.00	1.500
1.588	1/16	4.000		90.00	45.00	28.00	1.590
1.600		4.000		90.00	45.00	28.00	1.600
1.900		4.000		90.00	45.00	28.00	1.900
1.984	5/64	4.000		90.00	45.00	28.00	1.980
2.000		4.000		90.00	45.00	28.00	2.000
2.500		10.000		100.00	45.00	40.00	2.500
2.700		10.000		100.00	45.00	40.00	2.700
3.000		10.000		100.00	45.00	40.00	3.000
3.200		10.000		100.00	45.00	40.00	3.200

EB 100 single-fluted gun drills



Tool material **Solid carbide**

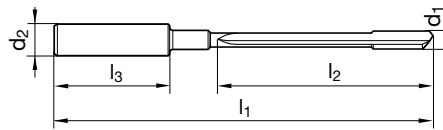
Surface **A**

Shank form HA

P	•	flute length 45 mm • head form G
M	○	
K	•	
N	○	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



Article no. **5632**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
1.000		4.000	90.00	45.00	28.00	1.000
1.100		4.000	90.00	45.00	28.00	1.100
1.191	3/64	4.000	90.00	45.00	28.00	1.190
1.200		4.000	90.00	45.00	28.00	1.200
1.300		4.000	90.00	45.00	28.00	1.300
1.400		4.000	90.00	45.00	28.00	1.400
1.500		4.000	90.00	45.00	28.00	1.500
1.588	1/16	4.000	90.00	45.00	28.00	1.590
1.600		4.000	90.00	45.00	28.00	1.600
1.900		4.000	90.00	45.00	28.00	1.900
1.984	5/64	4.000	90.00	45.00	28.00	1.980
2.000		4.000	90.00	45.00	28.00	2.000
2.500		10.000	100.00	45.00	40.00	2.500
2.700		10.000	100.00	45.00	40.00	2.700
3.000		10.000	100.00	45.00	40.00	3.000
3.200		10.000	100.00	45.00	40.00	3.200

EB 100 single-fluted gun drills



P	<input type="radio"/>	flute length 80 mm • head form G
M	<input type="radio"/>	
K	<input type="radio"/>	
N	<input checked="" type="radio"/>	
S	<input checked="" type="radio"/>	
H	<input type="radio"/>	

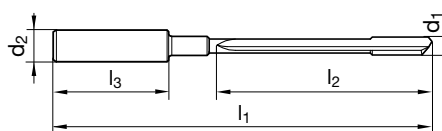
GÜHRING NAVIGATOR

Cutting data page 184

Tool material **Solid carbide**

Surface

Shank form HA



Article no. **5020**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
1.000		4.000	125.00	80.00	28.00	1.000
1.100		4.000	125.00	80.00	28.00	1.100
1.191	3/64	4.000	125.00	80.00	28.00	1.190
1.200		4.000	125.00	80.00	28.00	1.200
1.300		4.000	125.00	80.00	28.00	1.300
1.400		4.000	125.00	80.00	28.00	1.400
1.500		4.000	125.00	80.00	28.00	1.500
1.588	1/16	4.000	125.00	80.00	28.00	1.590
1.600		4.000	125.00	80.00	28.00	1.600
1.900		4.000	125.00	80.00	28.00	1.900
1.984	5/64	4.000	125.00	80.00	28.00	1.980
2.000		4.000	125.00	80.00	28.00	2.000
2.500		10.000	135.00	80.00	40.00	2.500
2.700		10.000	135.00	80.00	40.00	2.700
3.000		10.000	135.00	80.00	40.00	3.000
3.200		10.000	135.00	80.00	40.00	3.200
3.500		10.000	135.00	80.00	40.00	3.500
4.000		10.000	135.00	80.00	40.00	4.000
4.200		10.000	135.00	80.00	40.00	4.200
4.500		10.000	135.00	80.00	40.00	4.500
5.000		10.000	135.00	80.00	40.00	5.000

EB 100 single-fluted gun drills



Tool material **Solid carbide**

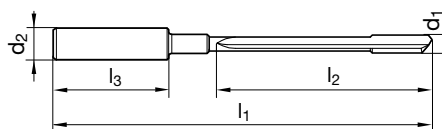
Surface **A**

Shank form HA

P	•	flute length 80 mm • head form G
M	○	
K	•	
N	○	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



Article no. **5633**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
1.000		4.000	125.00	80.00	28.00	1.000
1.100		4.000	125.00	80.00	28.00	1.100
1.191	3/64	4.000	125.00	80.00	28.00	1.190
1.200		4.000	125.00	80.00	28.00	1.200
1.300		4.000	125.00	80.00	28.00	1.300
1.400		4.000	125.00	80.00	28.00	1.400
1.500		4.000	125.00	80.00	28.00	1.500
1.588	1/16	4.000	125.00	80.00	28.00	1.590
1.600		4.000	125.00	80.00	28.00	1.600
1.900		4.000	125.00	80.00	28.00	1.900
1.984	5/64	4.000	125.00	80.00	28.00	1.980
2.000		4.000	125.00	80.00	28.00	2.000
2.500		10.000	135.00	80.00	40.00	2.500
2.700		10.000	135.00	80.00	40.00	2.700
3.000		10.000	135.00	80.00	40.00	3.000
3.200		10.000	135.00	80.00	40.00	3.200
3.500		10.000	135.00	80.00	40.00	3.500
4.000		10.000	135.00	80.00	40.00	4.000
4.200		10.000	135.00	80.00	40.00	4.200
4.500		10.000	135.00	80.00	40.00	4.500
5.000		10.000	135.00	80.00	40.00	5.000

EB 100 single-fluted gun drills



P	<input type="radio"/>	flute length 120 mm • head form G
M	<input type="radio"/>	
K	<input type="radio"/>	
N	<input checked="" type="radio"/>	
S	<input checked="" type="radio"/>	
H	<input type="radio"/>	

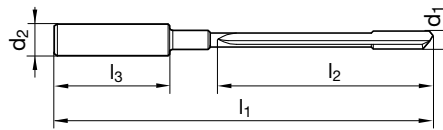
GÜHRING NAVIGATOR

Cutting data page 184

Tool material **Solid carbide**

Surface

Shank form HA



Article no. **5026**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
1.500		4.000	165.00	120.00	28.00	1.500
1.588	1/16	4.000	165.00	120.00	28.00	1.590
1.600		4.000	165.00	120.00	28.00	1.600
1.984	5/64	4.000	165.00	120.00	28.00	1.980
2.000		4.000	165.00	120.00	28.00	2.000
2.500		10.000	175.00	120.00	40.00	2.500
2.700		10.000	175.00	120.00	40.00	2.700
3.000		10.000	175.00	120.00	40.00	3.000
3.200		10.000	175.00	120.00	40.00	3.200
3.500		10.000	175.00	120.00	40.00	3.500
4.000		10.000	175.00	120.00	40.00	4.000
4.200		10.000	175.00	120.00	40.00	4.200
4.500		10.000	175.00	120.00	40.00	4.500
5.000		10.000	175.00	120.00	40.00	5.000

EB 100 single-fluted gun drills



Tool material **Solid carbide**

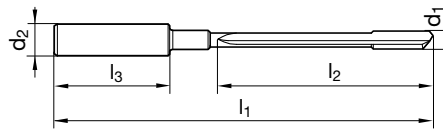
Surface **A**

Shank form HA

P	•	flute length 120 mm • head form G
M	○	
K	•	
N	○	
S	○	
H	○	

GUHRING NAVIGATOR

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Article no. **5637**

d1 h5		d2 h6		l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	mm	
1.500		4.000	165.00	120.00	28.00	1.500	
1.588	1/16	4.000	165.00	120.00	28.00	1.590	
1.600		4.000	165.00	120.00	28.00	1.600	
1.984	5/64	4.000	165.00	120.00	28.00	1.980	
2.000		4.000	165.00	120.00	28.00	2.000	
2.500		10.000	175.00	120.00	40.00	2.500	
2.700		10.000	175.00	120.00	40.00	2.700	
3.000		10.000	175.00	120.00	40.00	3.000	
3.200		10.000	175.00	120.00	40.00	3.200	
3.500		10.000	175.00	120.00	40.00	3.500	
4.000		10.000	175.00	120.00	40.00	4.000	
4.200		10.000	175.00	120.00	40.00	4.200	
4.500		10.000	175.00	120.00	40.00	4.500	
5.000		10.000	175.00	120.00	40.00	5.000	

EB 100 single-fluted gun drills



P	○	flute length 160 mm • head form G
M	○	
K	○	
N	●	
S	●	
H	○	

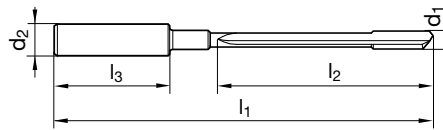
GÜHRING NAVIGATOR

Cutting data page 184

Tool material **Solid carbide**

Surface ○

Shank form HA



Article no. **5021**

d1 h5		d2 h6		l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	mm	
1.500		4.000	205.00	160.00	28.00	1.500	
1.588	1/16	4.000	205.00	160.00	28.00	1.590	
1.600		4.000	205.00	160.00	28.00	1.600	
1.984	5/64	4.000	205.00	160.00	28.00	1.980	
2.000		4.000	205.00	160.00	28.00	2.000	
2.500		10.000	215.00	160.00	40.00	2.500	
2.700		10.000	215.00	160.00	40.00	2.700	
3.000		10.000	215.00	160.00	40.00	3.000	
3.200		10.000	215.00	160.00	40.00	3.200	
3.500		10.000	215.00	160.00	40.00	3.500	
4.000		10.000	215.00	160.00	40.00	4.000	
4.200		10.000	215.00	160.00	40.00	4.200	
4.500		10.000	215.00	160.00	40.00	4.500	
5.000		10.000	215.00	160.00	40.00	5.000	
6.000		16.000	225.00	160.00	48.00	6.000	
8.000		16.000	225.00	160.00	48.00	8.000	

EB 100 single-fluted gun drills

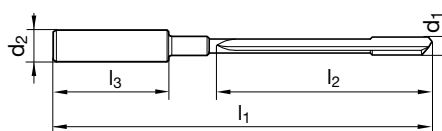


Tool material	Solid carbide
Surface	A
Shank form	HA

P	•	flute length 160 mm • head form G
M	○	
K	•	
N	○	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



Article no. **5638**

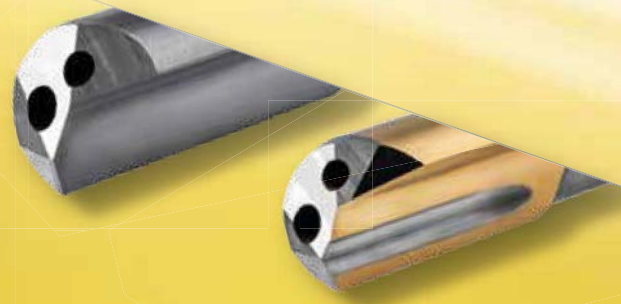
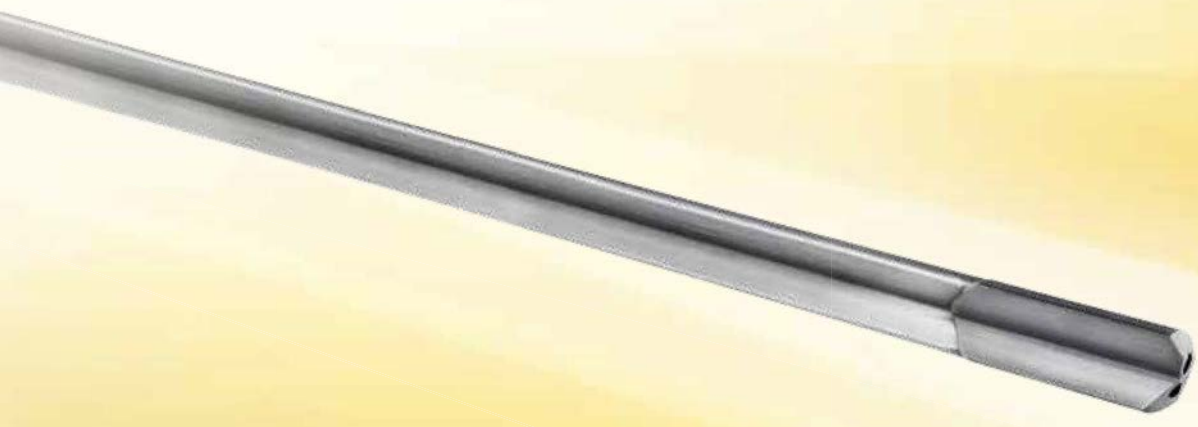
d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
1.500		4.000	205.00	160.00	28.00	1.500
1.588	1/16	4.000	205.00	160.00	28.00	1.590
1.600		4.000	205.00	160.00	28.00	1.600
1.984	5/64	4.000	205.00	160.00	28.00	1.980
2.000		4.000	205.00	160.00	28.00	2.000
2.500		10.000	215.00	160.00	40.00	2.500
2.700		10.000	215.00	160.00	40.00	2.700
3.000		10.000	215.00	160.00	40.00	3.000
3.200		10.000	215.00	160.00	40.00	3.200
3.500		10.000	215.00	160.00	40.00	3.500
4.000		10.000	215.00	160.00	40.00	4.000
4.200		10.000	215.00	160.00	40.00	4.200
4.500		10.000	215.00	160.00	40.00	4.500
5.000		10.000	215.00	160.00	40.00	5.000
6.000		16.000	225.00	160.00	48.00	6.000
8.000		16.000	225.00	160.00	48.00	8.000



EB 80: THE CONVENTIONAL

- \ single-fluted gun drills with brazed carbide head
- \ total length up to 3,600 mm
- \ manufactured from 2.000 to 40.000 mm nominal diameter
- \ wide range of options, i.e. ball nosed or step drill
- \ suitable for most materials
- \ wide range of drivers for machining centres and deep hole drilling machines
- \ wide range of inch dimensions
- \ fast service programme EB 80

EB 80
EB 80 XXL



EB 80

THE CONVENTIONAL

P	M	K	N	S	H	Tool illustration	Drilling depth	Standard	Type	Cutting direction	Tool material	Surface	d1/mm	Article no.	Cutting data page	Page
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EB 80 single-fluted gun drills

EB 80

●	○	○	○	○	○		20xD	WN	EB 80	R	HM	S	4.000 - 12.000	5018	184	33
○	●	○	○	○	○		20xD	WN	EB 80	R	HM	C	3.969 - 12.700	5639	184	34
●	○	○	○	○	○		30xD	WN	EB 80	R	HM	S	4.000 - 12.000	5460	184	35
○	●	○	○	○	○		30xD	WN	EB 80	R	HM	C	3.969 - 12.700	5640	184	36
○	○	○	●	○	○		40xD	WN	EB 80	R	HM	○	4.000 - 12.000	5689	184	37
●	○	○	○	○	○		40xD	WN	EB 80	R	HM	S	4.000 - 12.000	5022	184	38
○	●	○	○	○	○		40xD	WN	EB 80	R	HM	C	3.969 - 12.700	5641	184	39
○	○	○	○	●	○		80xD	WN	EB 80	R	HM	○	3.969 - 11.950	5690	184	40
●	○	○	○	○	○		80xD	WN	EB 80	R	HM	S	4.950 - 11.950	5023	184	41
○	●	○	○	○	○		80xD	WN	EB 80	R	HM	C	4.950 - 12.650	5642	184	42

EB 80 XXL single-fluted gun drills

●	○	○	○	○	○		GL 600	WN	EB 80 XXL	R	HM	S	3.000 - 25.000	5688	184	44
●	○	○	○	○	○		GL 800	WN	EB 80 XXL	R	HM	S	3.000 - 25.000	5691	184	45
●	○	○	○	○	○		GL 1000	WN	EB 80 XXL	R	HM	S	3.000 - 25.000	5164	184	46
●	○	○	○	○	○		GL 1200	WN	EB 80 XXL	R	HM	S	3.000 - 25.000	5692	184	47
●	○	○	○	○	○		GL 1400	WN	EB 80 XXL	R	HM	S	4.000 - 25.000	5681	184	48
●	○	○	○	○	○		GL 1600	WN	EB 80 XXL	R	HM	S	4.000 - 25.000	5693	184	49
●	○	○	○	○	○		GL 1800	WN	EB 80 XXL	R	HM	S	4.000 - 32.000	5682	184	50
●	○	○	○	○	○		GL 2000	WN	EB 80 XXL	R	HM	S	4.000 - 32.000	5694	184	51

EB 80 single-fluted gun drills



Tool material **Carbide**

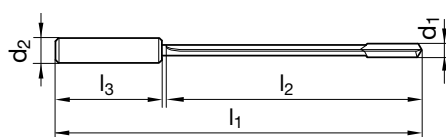
Surface **S**

Shank form HA

P	•	with recessed coolant chamber • head form G • with lateral chip breaker
M	○	
K	•	
N	○	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



EB 80

Article no. **5018**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
4.000		12.000	150.00	100.00	45.00	4.000
4.200		12.000	160.00	110.00	45.00	4.200
4.500		12.000	170.00	120.00	45.00	4.500
5.000		16.000	180.00	130.00	48.00	5.000
5.500		16.000	190.00	140.00	48.00	5.500
6.000		16.000	210.00	160.00	48.00	6.000
6.500		16.000	220.00	170.00	48.00	6.500
7.000		16.000	235.00	185.00	48.00	7.000
8.000		16.000	260.00	210.00	48.00	8.000
9.000		16.000	280.00	230.00	48.00	9.000
10.000		20.000	320.00	260.00	50.00	10.000
12.000		20.000	370.00	310.00	50.00	12.000

EB 80 single-fluted gun drills



Tool material **Carbide**

Surface

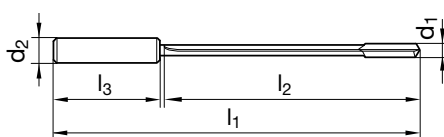
Shank form HA

EB 80

P	○	head form G
M	●	
K	○	
N	○	
S	●	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



Article no. **5639**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
3.969	5/32	10.000	150.00	100.00	40.00	3.970
4.000		12.000	150.00	100.00	45.00	4.000
4.200		12.000	160.00	110.00	45.00	4.200
4.500		12.000	170.00	120.00	45.00	4.500
5.000		16.000	180.00	130.00	48.00	5.000
5.159	13/64	16.000	180.00	130.00	48.00	5.156
5.500		16.000	190.00	140.00	48.00	5.500
6.000		16.000	210.00	160.00	48.00	6.000
6.350	1/4	16.000	220.00	170.00	48.00	6.350
6.500		16.000	220.00	170.00	48.00	6.500
7.000		16.000	235.00	185.00	48.00	7.000
7.938	5/16	16.000	260.00	210.00	48.00	7.938
8.000		16.000	260.00	210.00	48.00	8.000
9.000		16.000	280.00	230.00	48.00	9.000
9.525	3/8	16.000	290.00	240.00	48.00	9.525
10.000		20.000	320.00	260.00	50.00	10.000
11.000		20.000	340.00	290.00	50.00	11.000
11.113	7/16	20.000	340.00	290.00	50.00	11.113
12.000		20.000	370.00	310.00	50.00	12.000
12.700	1/2	20.000	385.00	330.00	50.00	12.700

EB 80 single-fluted gun drills



Tool material **Carbide**

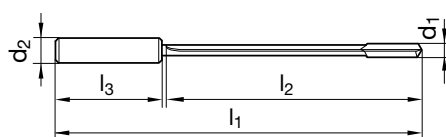
Surface **S**

Shank form HA

P	•	with recessed coolant chamber • head form G • with lateral chip breaker
M	○	
K	•	
N	○	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



EB 80

Article no. **5460**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
4.000		12.000	200.00	155.00	45.00	4.000
4.200		12.000	210.00	165.00	45.00	4.200
4.500		12.000	220.00	175.00	45.00	4.500
5.000		16.000	230.00	182.00	48.00	5.000
5.500		16.000	245.00	197.00	48.00	5.500
6.000		16.000	260.00	212.00	48.00	6.000
6.500		16.000	275.00	227.00	48.00	6.500
7.000		16.000	290.00	242.00	48.00	7.000
8.000		16.000	320.00	272.00	48.00	8.000
9.000		16.000	350.00	302.00	48.00	9.000
10.000		20.000	400.00	350.00	50.00	10.000
12.000		20.000	450.00	400.00	50.00	12.000

EB 80 single-fluted gun drills



Tool material **Carbide**

Surface

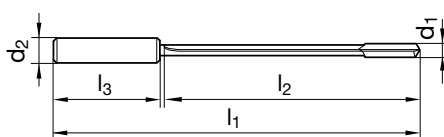
Shank form HA

EB 80

P	○	head form G
M	●	
K	○	
N	○	
S	●	
H	○	

GUHRING NAVIGATOR

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Article no. **5640**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
3.969	5/32	10.000	200.00	155.00	40.00	3.970
4.000		12.000	200.00	155.00	45.00	4.000
4.200		12.000	210.00	165.00	45.00	4.200
4.500		12.000	220.00	175.00	45.00	4.500
5.000		16.000	230.00	182.00	48.00	5.000
5.159	13/64	16.000	230.00	182.00	48.00	5.156
5.500		16.000	245.00	197.00	48.00	5.500
6.000		16.000	260.00	212.00	48.00	6.000
6.350	1/4	16.000	275.00	227.00	48.00	6.350
6.500		16.000	275.00	227.00	48.00	6.500
7.000		16.000	290.00	242.00	48.00	7.000
7.938	5/16	16.000	320.00	272.00	48.00	7.938
8.000		16.000	320.00	272.00	48.00	8.000
9.000		16.000	350.00	302.00	48.00	9.000
9.525	3/8	16.000	380.00	330.00	48.00	9.525
10.000		20.000	400.00	350.00	50.00	10.000
11.000		20.000	430.00	380.00	50.00	11.000
11.113	7/16	20.000	430.00	380.00	50.00	11.113
12.000		20.000	450.00	400.00	50.00	12.000
12.700	1/2	20.000	500.00	450.00	50.00	12.700

EB 80 single-fluted gun drills



P	○	head form G
M	○	
K	○	
N	●	
S	●	
H	○	

GÜHRING NAVIGATOR

Cutting data page 184

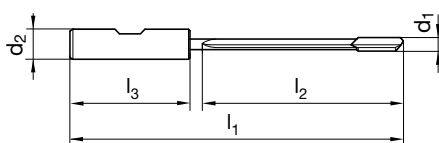
Tool material **Carbide**

Surface ○

Shank form HB



EB 80



Article no. **5689**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
4.000		12.000	230.00	185.00	45.00	4.000
5.000		16.000	280.00	232.00	48.00	5.000
6.000		16.000	320.00	272.00	48.00	6.000
7.000		16.000	370.00	322.00	48.00	7.000
8.000		16.000	420.00	372.00	48.00	8.000
9.000		16.000	450.00	402.00	48.00	9.000
10.000		20.000	510.00	460.00	50.00	10.000
12.000		20.000	600.00	550.00	50.00	12.000

EB 80 single-fluted gun drills



Tool material **Carbide**

Surface **S**

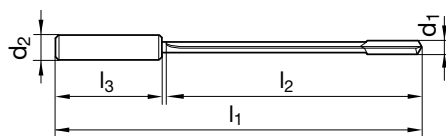
Shank form HA

EB 80

P	•	with recessed coolant chamber • head form G • with lateral chip breaker
M	○	
K	•	
N	○	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



Article no. **5022**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
4.000		12.000	230.00	185.00	45.00	4.000
4.200		12.000	240.00	195.00	45.00	4.200
4.500		12.000	250.00	205.00	45.00	4.500
5.000		16.000	280.00	232.00	48.00	5.000
5.500		16.000	300.00	252.00	48.00	5.500
6.000		16.000	320.00	272.00	48.00	6.000
6.500		16.000	340.00	292.00	48.00	6.500
7.000		16.000	370.00	322.00	48.00	7.000
8.000		16.000	420.00	372.00	48.00	8.000
9.000		16.000	450.00	402.00	48.00	9.000
10.000		20.000	510.00	460.00	50.00	10.000
12.000		20.000	600.00	550.00	50.00	12.000

EB 80 single-fluted gun drills



Tool material **Carbide**

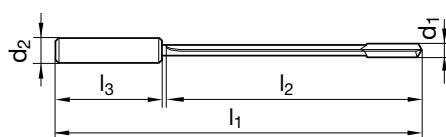
Surface

Shank form HA

P	○	head form G
M	●	
K	○	
N	○	
S	●	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



EB 80

Article no. **5641**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
3.969	5/32	10.000	230.00	185.00	40.00	3.970
4.000		12.000	230.00	185.00	45.00	4.000
4.200		12.000	240.00	195.00	45.00	4.200
4.500		12.000	250.00	205.00	45.00	4.500
5.000		16.000	280.00	232.00	48.00	5.000
5.159	13/64	16.000	280.00	232.00	48.00	5.156
5.500		16.000	300.00	252.00	48.00	5.500
6.000		16.000	320.00	272.00	48.00	6.000
6.350	1/4	16.000	340.00	292.00	48.00	6.350
6.500		16.000	340.00	292.00	48.00	6.500
7.000		16.000	370.00	322.00	48.00	7.000
7.938	5/16	16.000	420.00	372.00	48.00	7.938
8.000		16.000	420.00	372.00	48.00	8.000
9.000		16.000	450.00	402.00	48.00	9.000
9.525	3/8	16.000	480.00	432.00	48.00	9.525
10.000		20.000	510.00	460.00	50.00	10.000
11.000		20.000	550.00	500.00	50.00	11.000
11.113	7/16	20.000	550.00	500.00	50.00	11.113
12.000		20.000	600.00	550.00	50.00	12.000
12.700	1/2	20.000	635.00	585.00	50.00	12.700

EB 80 single-fluted gun drills



P	○	head form G
M	○	
K	○	
N	●	max. flute length per tool 40 x D, for larger drilling depths apply art. no. 5689 as first tool
S	●	
H	○	

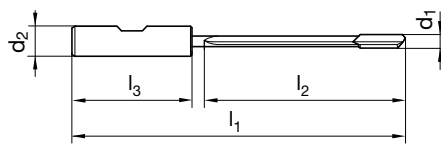
GUHRING NAVIGATOR

Cutting data page 184

Tool material **Carbide**

Surface ○

Shank form HB



Article no. **5690**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
3.969	5/32	10.000	390.00	350.00	40.00	3.970
4.950		16.000	480.00	432.00	48.00	4.950
5.953	15/64	16.000	560.00	512.00	48.00	5.950
6.950		16.000	740.00	692.00	48.00	6.950
7.950		16.000	740.00	692.00	48.00	7.950
8.950		16.000	910.00	860.00	48.00	8.950
9.950		20.000	910.00	860.00	50.00	9.950
11.950		20.000	1080.00	1030.00	50.00	11.950

EB 80 single-fluted gun drills



Tool material **Carbide**

Surface **S**

Shank form HA

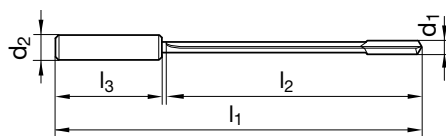
P • with recessed coolant chamber • head form G • with lateral chip breaker

P	•
M	○
K	•
N	○
S	○
H	○

max. flute length per tool 40 x D, for larger drilling depths apply art. no. 5022 as first tool

GUHRING NAVIGATOR

Cutting data page 184



EB 80

Article no. **5023**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
4.950		16.000	480.00	432.00	48.00	4.950
5.953	15/64	16.000	560.00	512.00	48.00	5.950
7.950		16.000	740.00	692.00	48.00	7.950
9.950		20.000	910.00	860.00	50.00	9.950
11.950		20.000	1080.00	1030.00	50.00	11.950

EB 80 single-fluted gun drills



Tool material **Carbide**

Surface **C**

Shank form HA

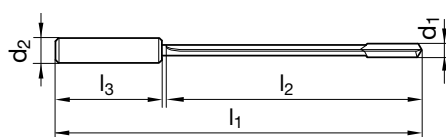
EB 80

P	○	head form G
M	●	
K	○	
N	○	
S	●	
H	○	

max. flute length per tool 40 x D, for larger drilling depths apply art. no. 5641 as first tool

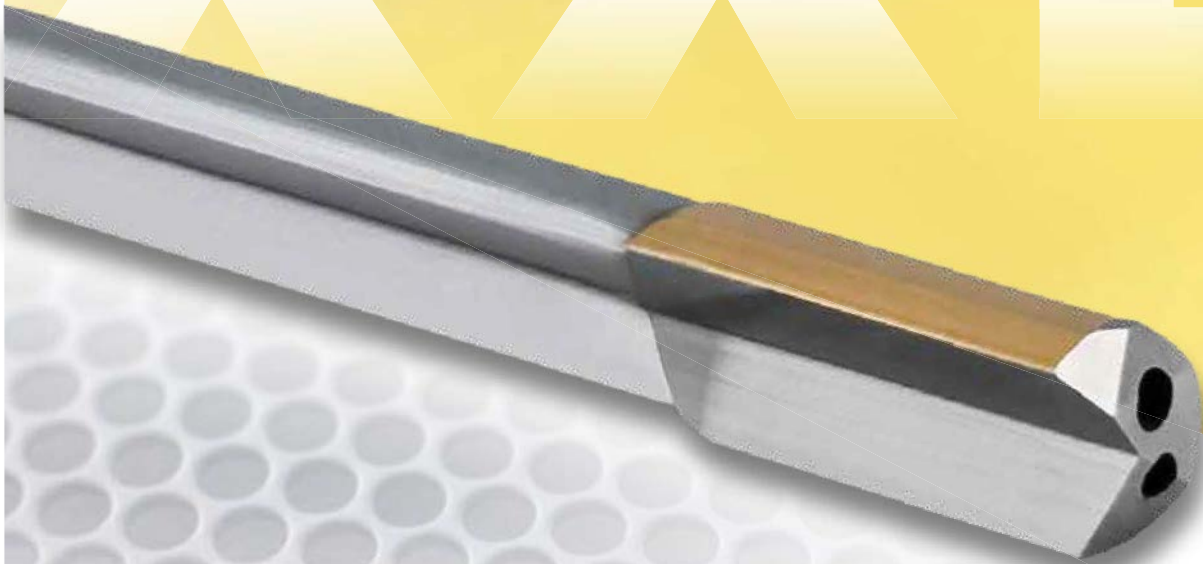
GUHRING NAVIGATOR

Cutting data page 184



Article no. **5642**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
4.950		16.000	480.00	432.00	48.00	4.950
5.106		16.000	480.00	432.00	48.00	5.106
5.450		16.000	520.00	470.00	48.00	5.450
5.953	15/64	16.000	560.00	512.00	48.00	5.950
6.300		16.000	590.00	542.00	48.00	6.300
6.450		16.000	605.00	556.00	48.00	6.450
6.950		16.000	650.00	602.00	48.00	6.950
7.888		16.000	740.00	692.00	48.00	7.888
7.950		16.000	740.00	692.00	48.00	7.950
8.950		16.000	820.00	772.00	48.00	8.950
9.475		16.000	870.00	822.00	48.00	9.475
9.950		20.000	910.00	860.00	50.00	9.950
10.950		20.000	995.00	945.00	50.00	10.950
11.063		20.000	995.00	945.00	50.00	11.063
11.950		20.000	1080.00	1030.00	50.00	11.950
12.650		20.000	1140.00	1090.00	50.00	12.650



NEW XXL STOCK PROGRAMME

▶ **600 mm** ▶ **1,000 mm** ▶ **1,400 mm** ▶ **1,800 mm**
▶ **800 mm** ▶ **1,200 mm** ▶ **1,600 mm** ▶ **2,000 mm**

The new EB 80 XXL

Design options:

- up to 1,500x quicker machining times than with conventional spiral-fluted deep hole drills
- ideal for deep drilling machines
- optimal use in die and mould industry
- polished long flute for the application in steel and non-ferrous metals with excellent chip control and optimal wear protection
- TiN coating for long tool life
- including driver for deep drilling machines

EB 80 XXL single-fluted gun drills



Tool material **Carbide**
 Surface **S**
 Shank form **TBM-SEH**

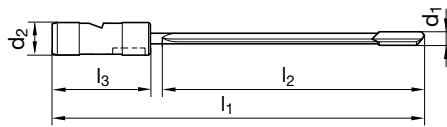


EB 80 XXL

P	•	bright flute • head form G • driver for deep drilling machines
M	○	
K	•	
N	•	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



Article no. **5688**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
3.000		25.000	600.00	500.00	70.00	3.000
4.000		25.000	600.00	500.00	70.00	4.000
5.000		25.000	600.00	500.00	70.00	5.000
6.000		25.000	600.00	500.00	70.00	6.000
7.000		25.000	600.00	500.00	70.00	7.000
8.000		25.000	600.00	500.00	70.00	8.000
9.000		25.000	600.00	500.00	70.00	9.000
10.000		25.000	600.00	500.00	70.00	10.000
11.000		25.000	600.00	500.00	70.00	11.000
11.500		25.000	600.00	500.00	70.00	11.500
12.000		25.000	600.00	500.00	70.00	12.000
13.000		25.000	600.00	500.00	70.00	13.000
14.000		25.000	600.00	500.00	70.00	14.000
15.000		25.000	600.00	500.00	70.00	15.000
16.000		25.000	600.00	500.00	70.00	16.000
17.000		25.000	600.00	500.00	70.00	17.000
18.000		25.000	600.00	500.00	70.00	18.000
19.000		25.000	600.00	500.00	70.00	19.000
20.000		25.000	600.00	500.00	70.00	20.000
21.000		25.000	600.00	500.00	70.00	21.000
22.000		25.000	600.00	500.00	70.00	22.000
23.000		25.000	600.00	500.00	70.00	23.000
24.000		25.000	600.00	500.00	70.00	24.000
25.000	63/64	25.000	600.00	500.00	70.00	25.000

EB 80 XXL single-fluted gun drills

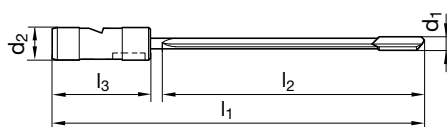


Tool material	Carbide
Surface	S
Shank form	TBM-SEH

P	•	bright flute • head form G • driver for deep drilling machines
M	○	
K	•	
N	•	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



EB 80 XXL

Article no. **5691**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
3.000		25.000	800.00	700.00	70.00	3.000
4.000		25.000	800.00	700.00	70.00	4.000
5.000		25.000	800.00	700.00	70.00	5.000
6.000		25.000	800.00	700.00	70.00	6.000
7.000		25.000	800.00	700.00	70.00	7.000
8.000		25.000	800.00	700.00	70.00	8.000
9.000		25.000	800.00	700.00	70.00	9.000
10.000		25.000	800.00	700.00	70.00	10.000
11.000		25.000	800.00	700.00	70.00	11.000
11.500		25.000	800.00	700.00	70.00	11.500
12.000		25.000	800.00	700.00	70.00	12.000
13.000		25.000	800.00	700.00	70.00	13.000
14.000		25.000	800.00	700.00	70.00	14.000
15.000		25.000	800.00	700.00	70.00	15.000
16.000		25.000	800.00	700.00	70.00	16.000
17.000		25.000	800.00	700.00	70.00	17.000
18.000		25.000	800.00	700.00	70.00	18.000
19.000		25.000	800.00	700.00	70.00	19.000
20.000		25.000	800.00	700.00	70.00	20.000
21.000		25.000	800.00	700.00	70.00	21.000
22.000		25.000	800.00	700.00	70.00	22.000
23.000		25.000	800.00	700.00	70.00	23.000
24.000		25.000	800.00	700.00	70.00	24.000
25.000	63/64	25.000	800.00	700.00	70.00	25.000

EB 80 XXL single-fluted gun drills



Tool material **Carbide**

Surface **S**

Shank form TBM-SEH

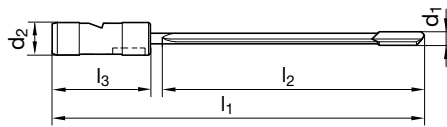
P • bright flute • head form G • driver for deep drilling machines

P	•
M	○
K	•
N	•
S	○
H	○

EB 80 XXL

GÜHRING NAVIGATOR

Cutting data page 184



Article no. **5164**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
3.000		25.000	1000.00	900.00	70.00	3.000
4.000		25.000	1000.00	900.00	70.00	4.000
5.000		25.000	1000.00	900.00	70.00	5.000
6.000		25.000	1000.00	900.00	70.00	6.000
7.000		25.000	1000.00	900.00	70.00	7.000
8.000		25.000	1000.00	900.00	70.00	8.000
9.000		25.000	1000.00	900.00	70.00	9.000
10.000		25.000	1000.00	900.00	70.00	10.000
11.000		25.000	1000.00	900.00	70.00	11.000
11.500		25.000	1000.00	900.00	70.00	11.500
12.000		25.000	1000.00	900.00	70.00	12.000
13.000		25.000	1000.00	900.00	70.00	13.000
14.000		25.000	1000.00	900.00	70.00	14.000
15.000		25.000	1000.00	900.00	70.00	15.000
16.000		25.000	1000.00	900.00	70.00	16.000
17.000		25.000	1000.00	900.00	70.00	17.000
18.000		25.000	1000.00	900.00	70.00	18.000
19.000		25.000	1000.00	900.00	70.00	19.000
20.000		25.000	1000.00	900.00	70.00	20.000
21.000		25.000	1000.00	900.00	70.00	21.000
22.000		25.000	1000.00	900.00	70.00	22.000
23.000		25.000	1000.00	900.00	70.00	23.000
24.000		25.000	1000.00	900.00	70.00	24.000
25.000	63/64	25.000	1000.00	900.00	70.00	25.000

EB 80 XXL single-fluted gun drills



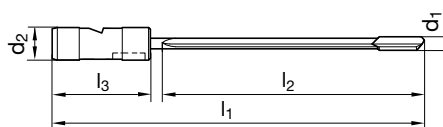
Tool material	Carbide
Surface	S
Shank form	TBM-SEH

P	•	bright flute • head form G • driver for deep drilling machines
M	○	
K	•	
N	•	
S	○	
H	○	

GÜHRING NAVIGATOR

Cutting data page 184

EB 80 XXL



Article no. **5692**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
3.000		25.000	1200.00	1100.00	70.00	3.000
4.000		25.000	1200.00	1100.00	70.00	4.000
5.000		25.000	1200.00	1100.00	70.00	5.000
6.000		25.000	1200.00	1100.00	70.00	6.000
7.000		25.000	1200.00	1100.00	70.00	7.000
8.000		25.000	1200.00	1100.00	70.00	8.000
9.000		25.000	1200.00	1100.00	70.00	9.000
10.000		25.000	1200.00	1100.00	70.00	10.000
11.000		25.000	1200.00	1100.00	70.00	11.000
11.500		25.000	1200.00	1100.00	70.00	11.500
12.000		25.000	1200.00	1100.00	70.00	12.000
13.000		25.000	1200.00	1100.00	70.00	13.000
14.000		25.000	1200.00	1100.00	70.00	14.000
15.000		25.000	1200.00	1100.00	70.00	15.000
16.000		25.000	1200.00	1100.00	70.00	16.000
17.000		25.000	1200.00	1100.00	70.00	17.000
18.000		25.000	1200.00	1100.00	70.00	18.000
19.000		25.000	1200.00	1100.00	70.00	19.000
20.000		25.000	1200.00	1100.00	70.00	20.000
21.000		25.000	1200.00	1100.00	70.00	21.000
22.000		25.000	1200.00	1100.00	70.00	22.000
23.000		25.000	1200.00	1100.00	70.00	23.000
24.000	63/64	25.000	1200.00	1100.00	70.00	24.000
25.000		25.000	1200.00	1100.00	70.00	25.000

EB 80 XXL single-fluted gun drills



Tool material **Carbide**
 Surface **S**
 Shank form **TBM-SEH**

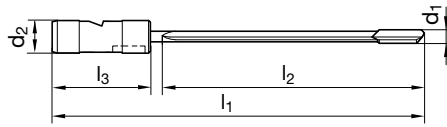


EB 80 XXL

P	•	bright flute • head form G • driver for deep drilling machines
M	○	
K	•	
N	•	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



Article no. **5681**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
4.000		25.000	1400.00	1300.00	70.00	4.000
5.000		25.000	1400.00	1300.00	70.00	5.000
6.000		25.000	1400.00	1300.00	70.00	6.000
7.000		25.000	1400.00	1300.00	70.00	7.000
8.000		25.000	1400.00	1300.00	70.00	8.000
9.000		25.000	1400.00	1300.00	70.00	9.000
10.000		25.000	1400.00	1300.00	70.00	10.000
11.000		25.000	1400.00	1300.00	70.00	11.000
11.500		25.000	1400.00	1300.00	70.00	11.500
12.000		25.000	1400.00	1300.00	70.00	12.000
13.000		25.000	1400.00	1300.00	70.00	13.000
14.000		25.000	1400.00	1300.00	70.00	14.000
15.000		25.000	1400.00	1300.00	70.00	15.000
16.000		25.000	1400.00	1300.00	70.00	16.000
17.000		25.000	1400.00	1300.00	70.00	17.000
18.000		25.000	1400.00	1300.00	70.00	18.000
19.000		25.000	1400.00	1300.00	70.00	19.000
20.000		25.000	1400.00	1300.00	70.00	20.000
21.000		25.000	1400.00	1300.00	70.00	21.000
22.000		25.000	1400.00	1300.00	70.00	22.000
23.000		25.000	1400.00	1300.00	70.00	23.000
24.000		25.000	1400.00	1300.00	70.00	24.000
25.000	63/64	25.000	1400.00	1300.00	70.00	25.000

EB 80 XXL single-fluted gun drills

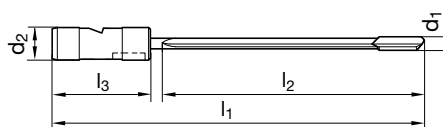


Tool material	Carbide
Surface	S
Shank form	TBM-SEH

P	•	bright flute • head form G • driver for deep drilling machines
M	○	
K	•	
N	•	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



EB 80 XXL

Article no. **5693**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
4.000		25.000	1600.00	1500.00	70.00	4.000
5.000		25.000	1600.00	1500.00	70.00	5.000
5.500		25.000	1600.00	1500.00	70.00	5.500
6.000		25.000	1600.00	1500.00	70.00	6.000
6.500		25.000	1600.00	1500.00	70.00	6.500
7.000		25.000	1600.00	1500.00	70.00	7.000
7.500		25.000	1600.00	1500.00	70.00	7.500
8.000		25.000	1600.00	1500.00	70.00	8.000
9.000		25.000	1600.00	1500.00	70.00	9.000
9.500		25.000	1600.00	1500.00	70.00	9.500
10.000		25.000	1600.00	1500.00	70.00	10.000
11.000		25.000	1600.00	1500.00	70.00	11.000
11.500		25.000	1600.00	1500.00	70.00	11.500
12.000		25.000	1600.00	1500.00	70.00	12.000
13.000		25.000	1600.00	1500.00	70.00	13.000
14.000		25.000	1600.00	1500.00	70.00	14.000
15.000		25.000	1600.00	1500.00	70.00	15.000
16.000		25.000	1600.00	1500.00	70.00	16.000
17.000		25.000	1600.00	1500.00	70.00	17.000
18.000		25.000	1600.00	1500.00	70.00	18.000
19.000		25.000	1600.00	1500.00	70.00	19.000
20.000		25.000	1600.00	1500.00	70.00	20.000
21.000		25.000	1600.00	1500.00	70.00	21.000
22.000		25.000	1600.00	1500.00	70.00	22.000
23.000		25.000	1600.00	1500.00	70.00	23.000
24.000		25.000	1600.00	1500.00	70.00	24.000
25.000	63/64	25.000	1600.00	1500.00	70.00	25.000

EB 80 XXL single-fluted gun drills



Tool material **Carbide**
 Surface **S**
 Shank form TBM-SEH

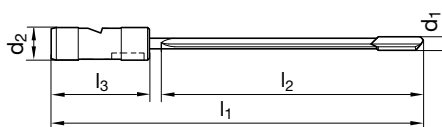


EB 80 XXL

P	•	bright flute • head form G • driver for deep drilling machines
M	○	
K	•	
N	•	
S	○	
H	○	

GÜHRING NAVIGATOR

Cutting data page 184



Article no. **5682**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
4.000		25.000	1800.00	1700.00	70.00	4.000
5.000		25.000	1800.00	1700.00	70.00	5.000
6.000		25.000	1800.00	1700.00	70.00	6.000
7.000		25.000	1800.00	1700.00	70.00	7.000
8.000		25.000	1800.00	1700.00	70.00	8.000
9.000		25.000	1800.00	1700.00	70.00	9.000
10.000		25.000	1800.00	1700.00	70.00	10.000
11.000		25.000	1800.00	1700.00	70.00	11.000
11.500		25.000	1800.00	1700.00	70.00	11.500
12.000		25.000	1800.00	1700.00	70.00	12.000
13.000		25.000	1800.00	1700.00	70.00	13.000
14.000		25.000	1800.00	1700.00	70.00	14.000
15.000		25.000	1800.00	1700.00	70.00	15.000
16.000		25.000	1800.00	1700.00	70.00	16.000
17.000		25.000	1800.00	1700.00	70.00	17.000
18.000		25.000	1800.00	1700.00	70.00	18.000
19.000		25.000	1800.00	1700.00	70.00	19.000
20.000		25.000	1800.00	1700.00	70.00	20.000
21.000		25.000	1800.00	1700.00	70.00	21.000
22.000		25.000	1800.00	1700.00	70.00	22.000
23.000		25.000	1800.00	1700.00	70.00	23.000
24.000		25.000	1800.00	1700.00	70.00	24.000
25.000	63/64	25.000	1800.00	1700.00	70.00	25.000
26.000		25.000	1800.00	1695.00	70.00	26.000
27.000		25.000	1800.00	1695.00	70.00	27.000
28.000		25.000	1800.00	1695.00	70.00	28.000
29.000		25.000	1800.00	1695.00	70.00	29.000
30.000		25.000	1800.00	1695.00	70.00	30.000
31.000		25.000	1800.00	1695.00	70.00	31.000
32.000		25.000	1800.00	1695.00	70.00	32.000

EB 80 XXL single-fluted gun drills

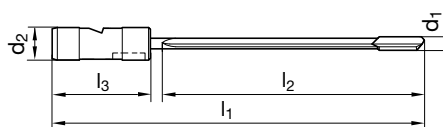


Tool material	Carbide
Surface	S
Shank form	TBM-SEH

P	•	bright flute • head form G • driver for deep drilling machines
M	○	
K	•	
N	•	
S	○	
H	○	

GUHRING NAVIGATOR

Cutting data page 184



EB 80 XXL

Article no. **5694**

d1 h5		d2 h6	l1	l2	l3	Code no.
mm	inch	mm	mm	mm	mm	
4.000		25.000	2000.00	1900.00	70.00	4.000
5.000		25.000	2000.00	1900.00	70.00	5.000
6.000		25.000	2000.00	1900.00	70.00	6.000
7.000		25.000	2000.00	1900.00	70.00	7.000
8.000		25.000	2000.00	1900.00	70.00	8.000
9.000		25.000	2000.00	1900.00	70.00	9.000
10.000		25.000	2000.00	1900.00	70.00	10.000
11.000		25.000	2000.00	1900.00	70.00	11.000
11.500		25.000	2000.00	1900.00	70.00	11.500
12.000		25.000	2000.00	1900.00	70.00	12.000
13.000		25.000	2000.00	1900.00	70.00	13.000
14.000		25.000	2000.00	1900.00	70.00	14.000
15.000		25.000	2000.00	1900.00	70.00	15.000
16.000		25.000	2000.00	1900.00	70.00	16.000
17.000		25.000	2000.00	1900.00	70.00	17.000
18.000		25.000	2000.00	1900.00	70.00	18.000
19.000		25.000	2000.00	1900.00	70.00	19.000
20.000		25.000	2000.00	1900.00	70.00	20.000
21.000		25.000	2000.00	1900.00	70.00	21.000
22.000		25.000	2000.00	1900.00	70.00	22.000
23.000		25.000	2000.00	1900.00	70.00	23.000
24.000		25.000	2000.00	1900.00	70.00	24.000
25.000	63/64	25.000	2000.00	1900.00	70.00	25.000
26.000		25.000	2000.00	1895.00	70.00	26.000
27.000		25.000	2000.00	1895.00	70.00	27.000
28.000		25.000	2000.00	1895.00	70.00	28.000
29.000		25.000	2000.00	1895.00	70.00	29.000
30.000		25.000	2000.00	1895.00	70.00	30.000
31.000		25.000	2000.00	1895.00	70.00	31.000
32.000		25.000	2000.00	1895.00	70.00	32.000

EB 80

EB 80- FAST SERVICE PROGRAMME

Your tailor-made single-fluted gun drills within a few working days:
Gühring's super quick gun drill offer makes it possible.
Special tools within 10 working days!

EB 80 – THE CONVENTIONAL

Design options:

- ▶ nominal diameter 2,000 - 13,900 mm increasing by 0.1 mm
- ▶ nominal diameter 14,000 - 22,000 mm increasing by 0.5 mm
- total length up to 2.000 mm
- standard driver
- carbide grade: K15
- bright or in combination with standard coatings
- option with lateral chip breaker for long-chipping steels

On request:

- ▶ wide range of inch dimensions
- ▶ carbide heads with overlength

➤ Conditions of the fast service available on request
or on our EB 80 fast service flyer.



PCD corner tipped

Dimensions:

- ▶ EB 80 \varnothing 5.000 - 20.000mm
- ▶ EB 100 \varnothing 4.000 - 16.000mm

Suitable for the machining of:

- Aluminium alloys
- Magnesium
- Copper alloys
- Reinforced plastics (CFK, GFK)
and much more (Non-ferrous and non-metal materials)

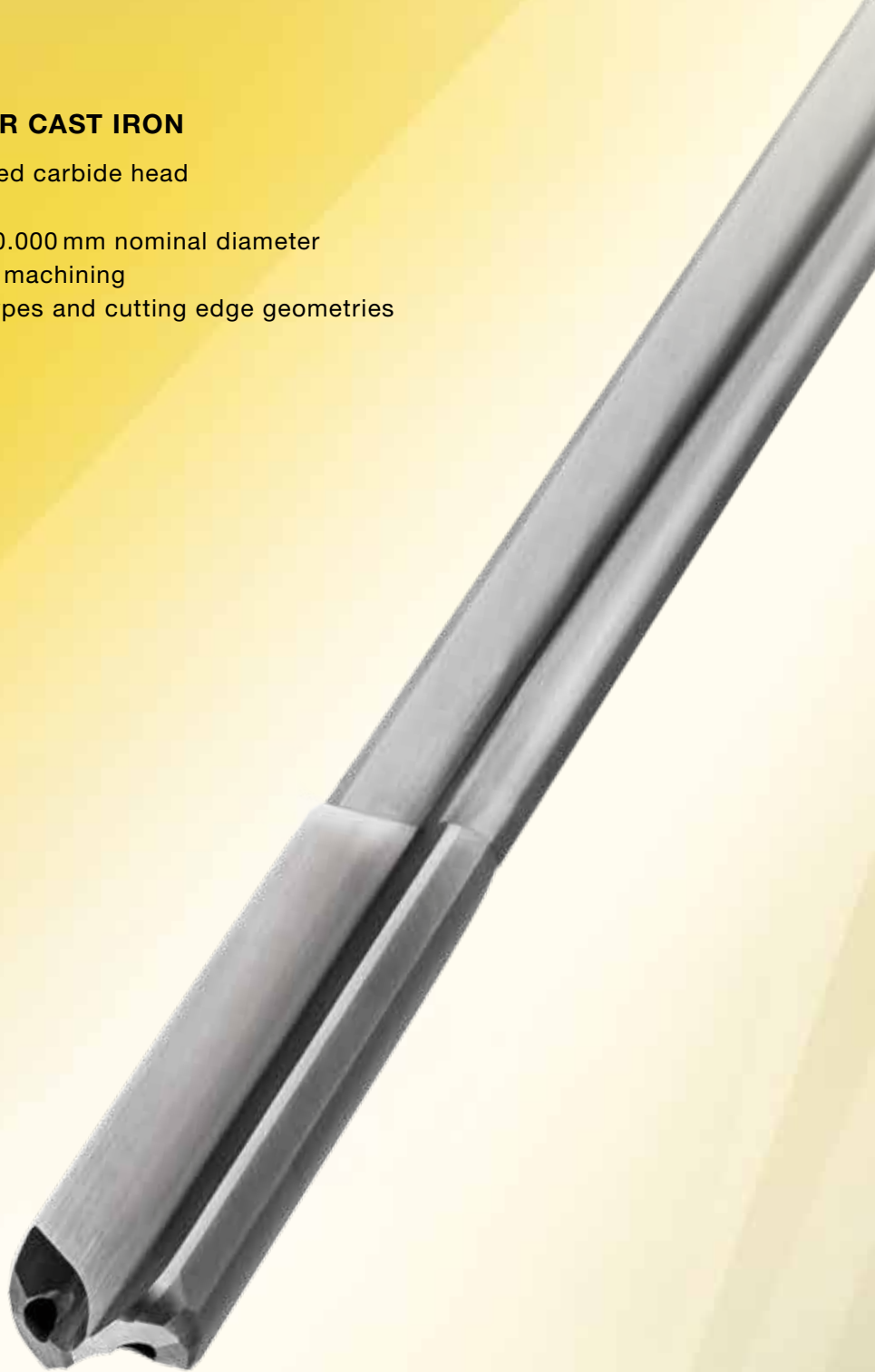
Tool properties:

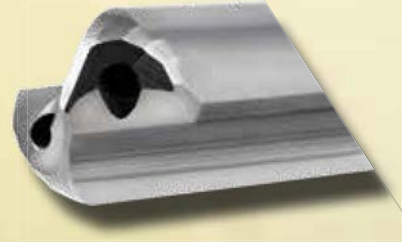
- long tool life
- high wear resistance at the cutting edge
- highest cutting speeds possible
- short machining times due to high feed rate
- very good surface finish
- high diameter accuracy
- less built up edges
- cost reductions thanks to shortened cycle times



ZB 80: THE SPECIALIST FOR CAST IRON

- \ two-fluted gun drills with brazed carbide head
- \ total length to 1,000 mm
- \ manufactured from 6.000 to 30.000 mm nominal diameter
- \ perfectly suitable for cast iron machining
- \ specially developed carbide types and cutting edge geometries





ZB 80

THE SPECIALIST FOR CAST IRON

P	M	K	N	S	H	Tool illustration	Drilling depth	Standard	Type	Cutting direction	Tool material	Surface	d1/mm	Article no.	Cutting data page	Page
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Two-fluted gun drills ZB 80

							30xD	WN	ZB 80	R	HM	○	8.000 - 12.000	5019	184	57
							30xD	WN	ZB 80	R	HM	○	8.000 - 12.000	5643	184	58

ZB 80

Two-fluted gun drills ZB 80



Tool material **Carbide**

Surface ○

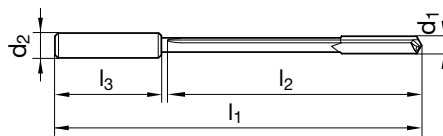
Shank form HA

P 4-facet gun drills • for aluminium

P	
M	
K	
N	•
S	
H	

GUHRING NAVIGATOR

Cutting data page 184



ZB 80

Article no. **5019**

d1 h5	d2	l1	l2	l3	Code no.
mm	mm	mm	mm	mm	
8.000	16.000	330.00	280.00	48.00	8.000
10.000	20.000	390.00	340.00	50.00	10.000
12.000	20.000	450.00	400.00	50.00	12.000

Two-fluted gun drills ZB 80



Tool material **Carbide**

Surface ○

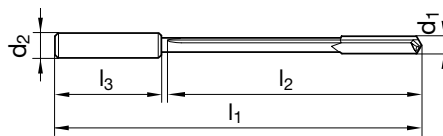
Shank form HA

P	4-facet gun drills • for cast materials
M	
K	•
N	
S	
H	

GUHRING NAVIGATOR

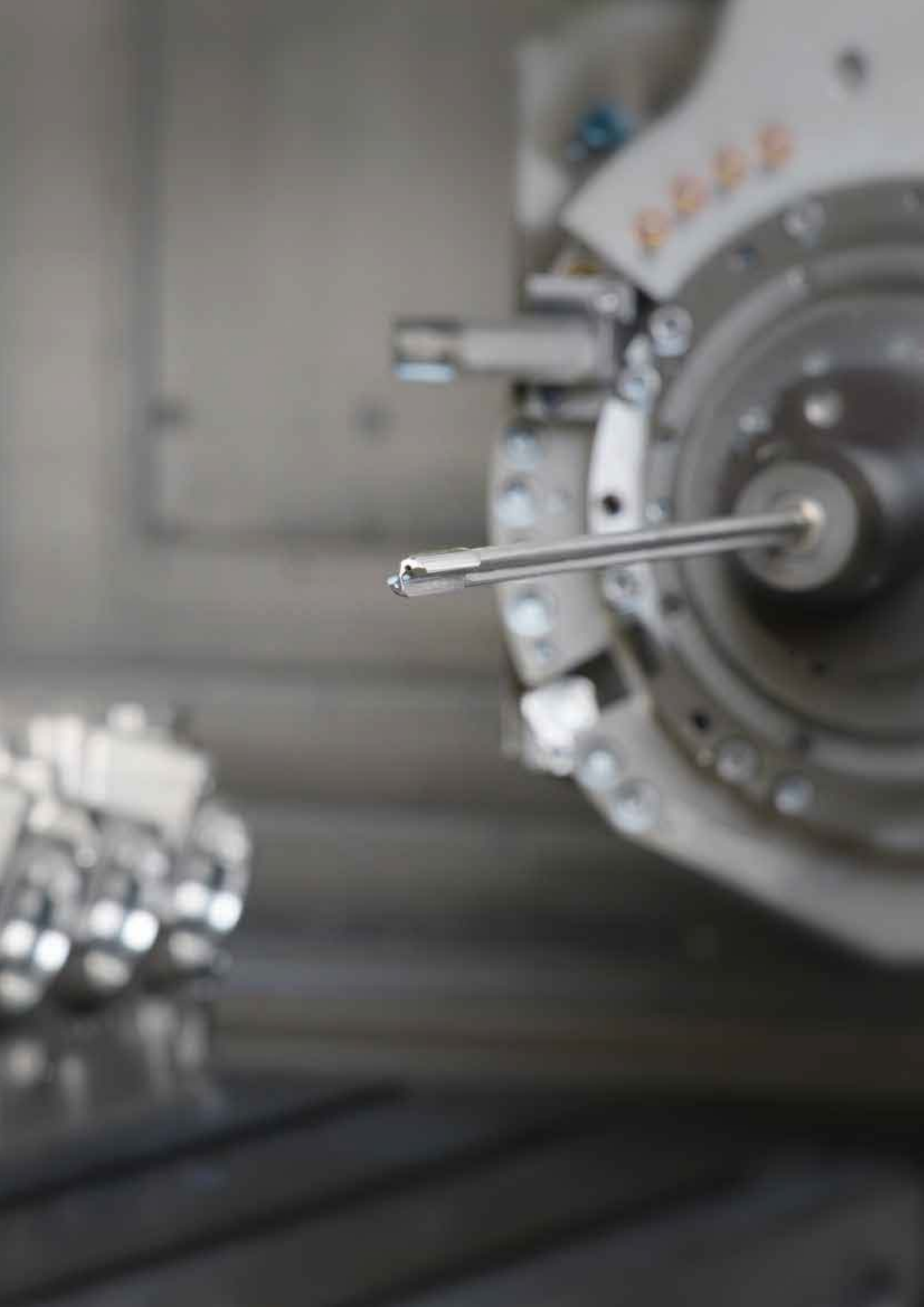
Cutting data page 184

ZB 80



Article no. **5643**

d1 h5	d2	l1	l2	l3	Code no.
mm	mm	mm	mm	mm	
8.000	16.000	330.00	280.00	48.00	8.000
10.000	20.000	390.00	340.00	50.00	10.000
12.000	20.000	450.00	400.00	50.00	12.000





EB 800: THE FLEXIBLE

- \ single-fluted gun drills with interchangeable inserts and interchangeable guide pads
- \ total length up to 3,600 mm
- \ manufactured from 12.000 to 52.000 mm nominal diameter
- \ each body covers 0.5mm dia. insert range
- \ any coating possible
- \ suitable for most materials

EB 800

THE FLEXIBLE

EB 800



EB 800 – THE FLEXIBLE

- up to nom. \varnothing 52.000 mm
- inserts and guide pads in 1/10 diameters as standard, in 1/100 diameters as special tools
- for each nominal diameter, both the appropriate inserts and interchangeable guide pads must be used



EB 800

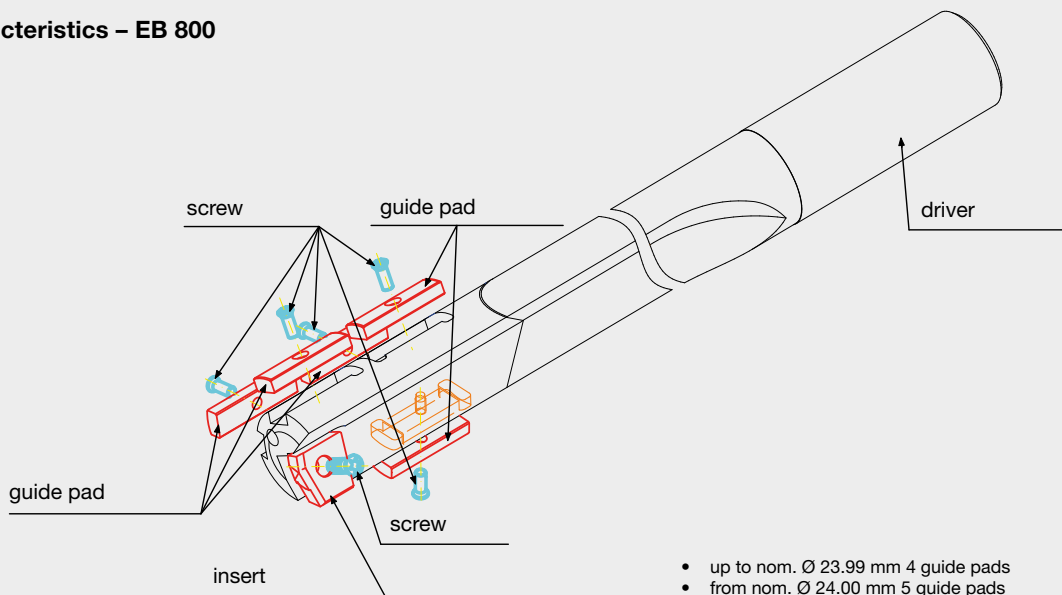
Gühring single-fluted gun drills with interchangeable inserts and guide pads are also produced as special tools according to customer requirements. They are suitable for nearly every material and available from diameter 12.000 to 52.000 mm up to a maximum total length of 3,600 mm.

Advantages:

- Due to the interchangeable inserts and supporting strips, coatings can be individually applied.
- Thanks to the precision interchangeable inserts and guide pads complicated adjustments are no longer necessary
- The guide pads and the inner inserts can be mounted laterally inverted, thus providing a doubled tool life.
- Small number of exchangeable parts makes construction extremely stable.
- From 40.001 mm \varnothing with additional inner cutting edge
- Parts can be changed within the machine: expensive downtimes are eliminated.
- Less storage space required for tools
- User-oriented selection of the insert ensures optimum chip breaking - even with problematic materials.
- The nominal diameter can be changed by replacing the exchange parts.
- The driver is produced in heat-treatable steel according to:
 - DIN 6535 HA
 - DIN 6535 HB
 - DIN 6535 HE
 - DIN 1835 A
 - DIN 1835 B
 - DIN 1835 E

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

Characteristics – EB 800



- up to nom. \varnothing 23.99 mm 4 guide pads
- from nom. \varnothing 24.00 mm 5 guide pads

P	M	K	N	S	H	Tool illustration	Drilling depth	Standard	Type	Cutting direction	Tool material	Surface	d1/mm	Article no.	Cutting data page	Page
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EB 800 single-fluted gun drills with indexable inserts

•	○	○	•	○		30xD	WN	EB 800	R	HM	S	12.000 - 31.900	5644	184	64
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Outer inserts for single-fluted gun drills EB 800

•	○	○	•	○		WN	EB 800	R	VHM	S	12.000 - 52.000	5029	184	69
•	•	•	•	○		WN	EB 800	R	VHM	Y	12.000 - 52.000	5702	184	73
•	○	•	○	○		WN	EB 800	R	VHM	F	12.000 - 52.000	5704	184	77
○	•	○	○	•		WN	EB 800	R	VHM	a	12.000 - 52.000	5706	184	81

Guide pads for single-fluted gun drills EB 800

•	○	○	•	○		WN	EB 800		VHM	S	12.000 - 52.000	5030	184	85
•	•	•	•	○		WN	EB 800		VHM	Y	12.000 - 52.000	5703	184	89
•	○	•	○	○		WN	EB 800		VHM	F	12.000 - 52.000	5705	184	93
○	•	○	○	•		WN	EB 800		VHM	a	12.000 - 52.000	5707	184	97

Inner inserts for single-fluted gun drills EB 800

•	○	○	•	○		WN	EB 800	R	VHM	S	40.001 - 52.000	5665	184	101
•	•	•	•	○		WN	EB 800	R	VHM	Y	40.001 - 52.000	5667	184	102
•	○	•	○	○		WN	EB 800	R	VHM	F	40.001 - 52.000	5666	184	103
○	•	○	○	•		WN	EB 800	R	VHM	a	40.001 - 52.000	5668	184	104

EB 800

EB 800 single-fluted gun drills with indexable inserts



Tool material **Carbide**

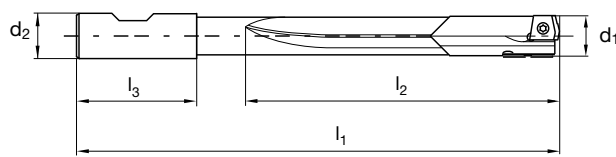
Surface **S**

Shank form **HB**

P	•	with interchangeable inserts • with interchangeable guide pads • with screw driver • with screws • for universal application • order torque wrench set art. no. 4966 separately
M	○	
K	○	
N	•	
S	○	
H	○	

GÜHRING NAVIGATOR

Cutting data page 184










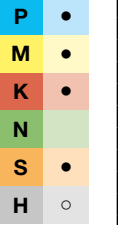
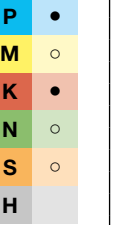
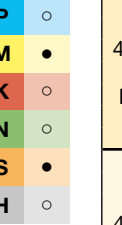
Article no. **5644**

d1 h8		Ø-range	d2	l1	l2	l3	Code no.
mm	inch		mm	mm	mm	mm	
12.000		12,000-12,499	20.000	446.00	384.00	50.00	12.000
12.100		12,000-12,499	20.000	446.00	384.00	50.00	12.100
12.200		12,000-12,499	20.000	446.00	384.00	50.00	12.200
12.300	31/64	12,000-12,499	20.000	446.00	384.00	50.00	12.300
12.400		12,000-12,499	20.000	446.00	384.00	50.00	12.400
12.500		12,500-12,999	20.000	468.00	406.00	50.00	12.500
12.600		12,500-12,999	20.000	468.00	406.00	50.00	12.600
12.700	1/2	12,500-12,999	20.000	468.00	406.00	50.00	12.700
12.800		12,500-12,999	20.000	468.00	406.00	50.00	12.800
12.900		12,500-12,999	20.000	468.00	406.00	50.00	12.900
14.000		14,000-14,499	20.000	510.00	448.00	50.00	14.000
14.100		14,000-14,499	20.000	510.00	448.00	50.00	14.100
14.200		14,000-14,499	20.000	510.00	448.00	50.00	14.200
14.300		14,000-14,499	20.000	510.00	448.00	50.00	14.300
14.400		14,000-14,499	20.000	510.00	448.00	50.00	14.400
15.000		15,000-15,499	25.000	548.00	480.00	56.00	15.000
15.100		15,000-15,499	25.000	548.00	480.00	56.00	15.100
15.200		15,000-15,499	25.000	548.00	480.00	56.00	15.200
15.300		15,000-15,499	25.000	548.00	480.00	56.00	15.300
15.400		15,000-15,499	25.000	548.00	480.00	56.00	15.400
15.500		15,500-15,999	25.000	580.00	515.00	56.00	15.500
15.600		15,500-15,999	25.000	580.00	515.00	56.00	15.600
15.700		15,500-15,999	25.000	580.00	515.00	56.00	15.700
15.800		15,500-15,999	25.000	580.00	515.00	56.00	15.800
15.900		15,500-15,999	25.000	580.00	515.00	56.00	15.900
16.000		16,000-16,499	25.000	580.00	512.00	56.00	16.000
16.100		16,000-16,499	25.000	580.00	512.00	56.00	16.100
16.200		16,000-16,499	25.000	580.00	512.00	56.00	16.200
16.300		16,000-16,499	25.000	580.00	512.00	56.00	16.300
16.400		16,000-16,499	25.000	580.00	512.00	56.00	16.400
18.000		18,000-18,499	25.000	644.00	576.00	56.00	18.000
18.100		18,000-18,499	25.000	644.00	576.00	56.00	18.100
18.200		18,000-18,499	25.000	644.00	576.00	56.00	18.200
18.300		18,000-18,499	25.000	644.00	576.00	56.00	18.300
18.400		18,000-18,499	25.000	644.00	576.00	56.00	18.400
19.000		19,000-19,499	25.000	695.00	635.00	56.00	19.000
19.050	3/4	19,000-19,499	25.000	695.00	635.00	56.00	19.050
19.100		19,000-19,499	25.000	695.00	635.00	56.00	19.100
19.200		19,000-19,499	25.000	695.00	635.00	56.00	19.200
19.300		19,000-19,499	25.000	695.00	635.00	56.00	19.300
19.400		19,000-19,499	25.000	695.00	635.00	56.00	19.400
20.000		20,000-20,499	32.000	712.00	640.00	60.00	20.000










EB 800

d1 h8		Ø-range	d2	l1	l2	l3	Code no.
mm	inch						
20.100		20,000-20,499	32.000	712.00	640.00	60.00	20.100
20.200		20,000-20,499	32.000	712.00	640.00	60.00	20.200
20.300		20,000-20,499	32.000	712.00	640.00	60.00	20.300
20.400		20,000-20,499	32.000	712.00	640.00	60.00	20.400
24.000		24,000-24,499	32.000	840.00	768.00	60.00	24.000
24.100		24,000-24,499	32.000	840.00	768.00	60.00	24.100
24.200		24,000-24,499	32.000	840.00	768.00	60.00	24.200
24.300		24,000-24,499	32.000	840.00	768.00	60.00	24.300
24.400		24,000-24,499	32.000	840.00	768.00	60.00	24.400
25.000	63/64	25,000-25,499	32.000	875.00	810.00	60.00	25.000
25.100		25,000-25,499	32.000	875.00	810.00	60.00	25.100
25.200		25,000-25,499	32.000	875.00	810.00	60.00	25.200
25.300		25,000-25,499	32.000	875.00	810.00	60.00	25.300
25.400	1	25,000-25,499	32.000	875.00	810.00	60.00	25.400
31.500		31,500-31,999	40.000	1080.00	1005.00	70.00	31.500
31.600		31,500-31,999	40.000	1080.00	1005.00	70.00	31.600
31.700		31,500-31,999	40.000	1080.00	1005.00	70.00	31.700
31.800		31,500-31,999	40.000	1080.00	1005.00	70.00	31.800
31.900		31,500-31,999	40.000	1080.00	1005.00	70.00	31.900

Ø 12.000-52.000 mm, total length max. 3,600 mm

Hoder size	Diameter range	Body / holder	Outer inserts				Inserts	
								
			TiN-coated	Signum-coated	FIRE-coated	TiAlN nanoA-coated		
0.	Ø12.000 - Ø12.499	Standard range Art. no. 5644 from diameter 12.000 mm up to 31.900 mm in preferred sizes complete with TiN inserts and TiN guide pads Alternative: Body/holder especially to customer re-quirements. Total length up to 3,600 mm					Art. no. 4071 2.502 T8 M2.5x 5.2	Art. no. 1612 8.001
	Ø12.500 - Ø12.999							
	Ø13.000 - Ø13.499							
	Ø13.500 - Ø13.999							
	Ø14.000 - Ø14.499							
	Ø14.500 - Ø14.999							
	Ø15.000 - Ø15.499							
	Ø15.500 - Ø15.999							
	Ø16.000 - Ø16.499							
	Ø16.500 - Ø16.999							
	Ø17.000 - Ø17.499							
1.	Ø17.500 - Ø17.999						Art. no. 4071 3.002 T9 M3x6.4	Art. no. 1612 9.001
	Ø18.000 - Ø18.499							
	Ø18.500 - Ø18.999							
	Ø19.000 - Ø19.499							
	Ø19.500 - Ø19.999							
	Ø20.000 - Ø20.499							
	Ø20.500 - Ø20.999							
	Ø21.000 - Ø21.499							
	Ø21.500 - Ø21.999							
	Ø22.000 - Ø22.499							
2.	Ø22.500 - Ø22.999						Art. no. 4071 4.001 T15 M4x7.7	Art. no. 1612 15.001
	Ø23.000 - Ø23.499							
	Ø23.500 - Ø23.999							
	Ø24.000 - Ø24.499							
	Ø24.500 - Ø24.999							
	Ø25.000 - Ø25.499							
	Ø25.500 - Ø25.999							
	Ø26.000 - Ø26.499							
	Ø26.500 - Ø26.999							
	Ø27.000 - Ø27.499							
3.	Ø27.500 - Ø27.999						Art. no. 4071 4.002 T15 M4x10.6	Art. no. 1612 20.001
	Ø28.000 - Ø28.499							
	Ø28.500 - Ø28.999							
	Ø29.000 - Ø29.499							
	Ø29.500 - Ø29.999							
	Ø30.000 - Ø30.499							
	Ø30.500 - Ø30.999							
	Ø31.000 - Ø31.499							
	Ø31.500 - Ø31.999							
	Ø32.000 - Ø32.499							
4.	Ø32.500 - Ø32.999						Art. no. 4071 5.002 T20 M5x14.2	Art. no. 1612 20.001
	Ø33.000 - Ø33.499							
	Ø33.500 - Ø33.999							
	Ø34.000 - Ø34.499							
	Ø34.500 - Ø34.999							
	Ø35.000 - Ø35.499							
	Ø35.500 - Ø35.999							
	Ø36.000 - Ø36.499							
	Ø36.500 - Ø36.999							
	Ø37.000 - Ø37.499							
5.	Ø37.500 - Ø37.999						Art. no. 4071 4.001 T15 M4x7.7	Art. no. 1612 15.001
	Ø38.000 - Ø38.499							
	Ø38.500 - Ø38.999							
	Ø39.000 - Ø39.499							
	Ø39.500 - Ø40.000							
	Ø40.001 - Ø40.499							
	Ø40.500 - Ø40.999							
	Ø41.000 - Ø41.499							
	Ø41.500 - Ø41.999							
	Ø42.000 - Ø42.499							
6.	Ø42.500 - Ø42.999						Art. no. 4071 4.002 T15 M4x10.6	Art. no. 1612 15.001
	Ø43.000 - Ø43.499							
	Ø43.500 - Ø43.999							
	Ø44.000 - Ø44.499							
	Ø44.500 - Ø44.999							
	Ø45.000 - Ø45.499							
	Ø45.500 - Ø45.999							
	Ø46.000 - Ø46.499							
	Ø46.500 - Ø46.999							
	Ø47.000 - Ø47.499							
7.	Ø47.500 - Ø47.999							
	Ø48.000 - Ø48.499							
	Ø48.500 - Ø48.999							
	Ø49.000 - Ø49.499							
	Ø49.500 - Ø49.999							
	Ø50.000 - Ø50.499							
	Ø50.500 - Ø50.999							
	Ø51.000 - Ø51.499							
	Ø51.500 - Ø52.000							
	Ø51.500 - Ø52.000							

EB 800

Inner inserts	Screw	Screw driver	Guide pads				Screw	Screw driver																																																
			TiN-coated	Signum-coated	FIRE-coated	TiAIN nanoA-coated																																																		
																																																								
			<table border="1"> <tr><td>P</td><td>•</td></tr> <tr><td>M</td><td>○</td></tr> <tr><td>K</td><td>○</td></tr> <tr><td>N</td><td>•</td></tr> <tr><td>S</td><td>○</td></tr> <tr><td>H</td><td></td></tr> </table>	P	•	M	○	K	○	N	•	S	○	H		<table border="1"> <tr><td>P</td><td>•</td></tr> <tr><td>M</td><td>•</td></tr> <tr><td>K</td><td>•</td></tr> <tr><td>N</td><td></td></tr> <tr><td>S</td><td>•</td></tr> <tr><td>H</td><td>○</td></tr> </table>	P	•	M	•	K	•	N		S	•	H	○	<table border="1"> <tr><td>P</td><td>•</td></tr> <tr><td>M</td><td>○</td></tr> <tr><td>K</td><td>•</td></tr> <tr><td>N</td><td>○</td></tr> <tr><td>S</td><td>○</td></tr> <tr><td>H</td><td></td></tr> </table>	P	•	M	○	K	•	N	○	S	○	H		<table border="1"> <tr><td>P</td><td>○</td></tr> <tr><td>M</td><td>•</td></tr> <tr><td>K</td><td>○</td></tr> <tr><td>N</td><td>○</td></tr> <tr><td>S</td><td>•</td></tr> <tr><td>H</td><td>○</td></tr> </table>	P	○	M	•	K	○	N	○	S	•	H	○	<p>Art. no. 4071 1.601 T5 M1.6x4.4</p>	<p>Art. no. 1612 5.001</p>
P	•																																																							
M	○																																																							
K	○																																																							
N	•																																																							
S	○																																																							
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H	○																																																							
							<p>Art. no. 4071 2.203 T7 / M2.2x 4.6</p>	<p>Art. no. 1612 7.001</p>																																																
							<p>Art. no. 4071 2.202 T7 / M2.2x5.6</p>																																																	
							<p>Art. no. 4071 2.502 T8 M2.5x 5.2</p>	<p>Art. no. 1612 8.001</p>																																																
							<p>Art. no. 4071 2.501 T8 M2.5x6.4</p>																																																	
			<p>Art. no. 5030 + nom.-Ø = order no.</p>	<p>Art. no. 5703 + nom.-Ø = order no.</p>	<p>Art. no. 5705 + nom.-Ø = order no.</p>	<p>Art. no. 5707 + nom.-Ø = order no.</p>																																																		
<p>TiN Art. no. 5665 1.000</p> <p>Signum Art. no. 5667 1.000</p> <p>FIRE Art. no. 5666 1.000</p> <p>TiAIN nanoA Art. no. 5668 1.000</p>	<p>Art. no. 4071 4.501 T15 M4.5x11.8</p>	<p>Art. no. 1612 15.001</p>					<p>Art. no. 4071 3.003 T9 M3x8</p>	<p>Art. no. 1612 9.001</p>																																																

EB 800

Tightening torque-guide values

Outer insert

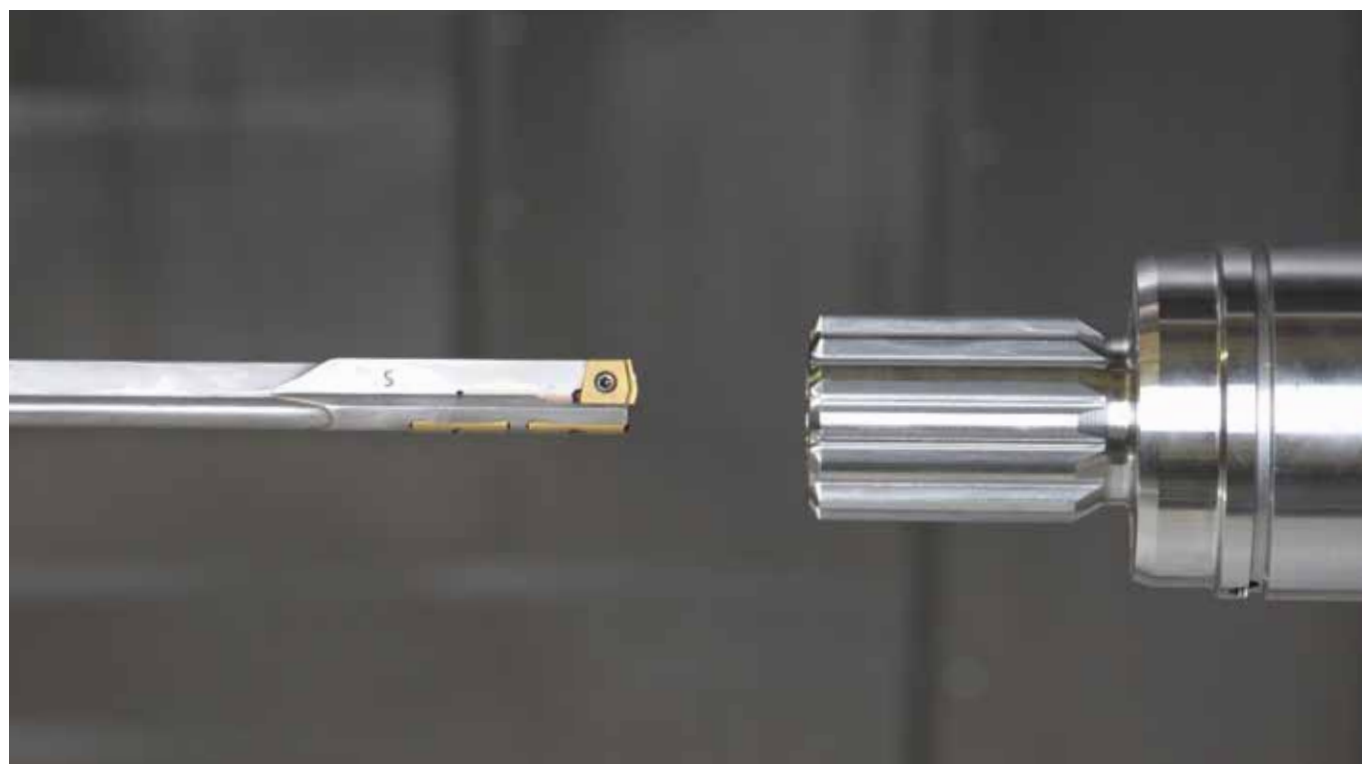
Size	Diameter in mm	ISO metric thread in mm	Torx size	Tightening torque in Nm
0.	12.000-15.999	M2.5 x 5.2	T8	1.0
1.	16.000-19.999	M3.0 x 6.4	T9	1.4
2.	20.000-25.999	M4.0 x 7.7	T15	2.5
3.	26.000-29.999	M4.0 x 10.6	T15	2.5
4.	30.000-33.999	M4.0 x 10.6	T15	2.5
5.	34.000-37.999	M5.0 x 14.2	T20	5.0
6.	38.000-40.000	M5.0 x 14.2	T20	5.0
7.	40.001-43.999	M4.0 x 7.7	T15	2.5
8.	44.000-47.999	M4.0 x 10.6	T15	2.5
9.	48.000-52.000	M4.0 x 10.6	T15	2.5

Inner insert

Size	Diameter in mm	ISO metric thread in mm	Torx size	Tightening torque in Nm
7.-9.	40.001-52.000	M4.5 x 11.8	T15	3.0

Guide pads

Size	Diameter in mm	ISO metric thread in mm	Torx size	Tightening torque in Nm
0.	12.000-15.999	M1.6 x 4.4	T5	0.4
1.	16.000-17.999	M2.2 x 4.6	T7	0.6
1.	18.000-19.999	M2.2 x 5.6	T7	0.6
2.	20.000-22.499	M2.5 x 5.2	T8	1.0
2.	22.500-25.999	M2.5 x 6.4	T8	1.0
3.	26.000-29.999	M2.5 x 6.4	T8	1.0
4.-9.	30.000-52.000	M3.0 x 8.0	T9	1.4



Outer inserts for single-fluted gun drills EB 800

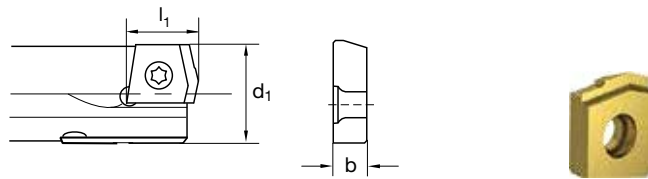


Tool material **Solid carbide**
Surface **S**

- P** ● interchangeable insert with 1 cutting edge • observe tightening torques • order torque wrench set art. no. 4966 separately
- M** ○
- K** ○
- N** ●
- S** ○
- H** ○

GÜHRING NAVIGATOR

Cutting data page 184



Article no. **5029**

d1	b	l1	Code no.	d1	b	l1	Code no.
mm	mm	mm		mm	mm	mm	
12.000	2.80	10.00	12.000	16.200	3.00	12.00	16.200
12.100	2.80	10.00	12.100	16.300	3.00	12.00	16.300
12.200	2.80	10.00	12.200	16.400	3.00	12.00	16.400
12.300	2.80	10.00	12.300	16.500	3.00	12.00	16.500
12.400	2.80	10.00	12.400	16.600	3.00	12.00	16.600
12.500	2.80	10.00	12.500	16.700	3.00	12.00	16.700
12.600	2.80	10.00	12.600	16.800	3.00	12.00	16.800
12.700	2.80	10.00	12.700	16.900	3.00	12.00	16.900
12.800	2.80	10.00	12.800	17.000	3.00	12.00	17.000
12.900	2.80	10.00	12.900	17.100	3.00	12.00	17.100
13.000	2.80	10.00	13.000	17.200	3.00	12.00	17.200
13.100	2.80	10.00	13.100	17.300	3.00	12.00	17.300
13.200	2.80	10.00	13.200	17.400	3.00	12.00	17.400
13.300	2.80	10.00	13.300	17.500	3.00	12.00	17.500
13.400	2.80	10.00	13.400	17.600	3.00	12.00	17.600
13.500	2.80	10.00	13.500	17.700	3.00	12.00	17.700
13.600	2.80	10.00	13.600	17.800	3.00	12.00	17.800
13.700	2.80	10.00	13.700	17.900	3.00	12.00	17.900
13.800	2.80	10.00	13.800	18.000	3.00	12.00	18.000
13.900	2.80	10.00	13.900	18.100	3.00	12.00	18.100
14.000	2.80	10.00	14.000	18.200	3.00	12.00	18.200
14.100	2.80	10.00	14.100	18.300	3.00	12.00	18.300
14.200	2.80	10.00	14.200	18.400	3.00	12.00	18.400
14.300	2.80	10.00	14.300	18.500	3.00	12.00	18.500
14.400	2.80	10.00	14.400	18.600	3.00	12.00	18.600
14.500	2.80	10.00	14.500	18.700	3.00	12.00	18.700
14.600	2.80	10.00	14.600	18.800	3.00	12.00	18.800
14.700	2.80	10.00	14.700	18.900	3.00	12.00	18.900
14.800	2.80	10.00	14.800	19.000	3.00	12.00	19.000
14.900	2.80	10.00	14.900	19.050	3.00	12.00	19.050
15.000	2.80	10.00	15.000	19.100	3.00	12.00	19.100
15.100	2.80	10.00	15.100	19.200	3.00	12.00	19.200
15.200	2.80	10.00	15.200	19.300	3.00	12.00	19.300
15.300	2.80	10.00	15.300	19.400	3.00	12.00	19.400
15.400	2.80	10.00	15.400	19.500	3.00	12.00	19.500
15.500	2.80	10.00	15.500	19.600	3.00	12.00	19.600
15.600	2.80	10.00	15.600	19.700	3.00	12.00	19.700
15.700	2.80	10.00	15.700	19.800	3.00	12.00	19.800
15.800	2.80	10.00	15.800	19.900	3.00	12.00	19.900
15.900	2.80	10.00	15.900	20.000	4.00	15.00	20.000
16.000	3.00	12.00	16.000	20.100	4.00	15.00	20.100
16.100	3.00	12.00	16.100	20.200	4.00	15.00	20.200

EB 800

d1	b	l1	Code no.
mm	mm	mm	
20.300	4.00	15.00	20.300
20.400	4.00	15.00	20.400
20.500	4.00	15.00	20.500
20.600	4.00	15.00	20.600
20.700	4.00	15.00	20.700
20.800	4.00	15.00	20.800
20.900	4.00	15.00	20.900
21.000	4.00	15.00	21.000
21.100	4.00	15.00	21.100
21.200	4.00	15.00	21.200
21.300	4.00	15.00	21.300
21.400	4.00	15.00	21.400
21.500	4.00	15.00	21.500
21.600	4.00	15.00	21.600
21.700	4.00	15.00	21.700
21.800	4.00	15.00	21.800
21.900	4.00	15.00	21.900
22.000	4.00	15.00	22.000
22.100	4.00	15.00	22.100
22.200	4.00	15.00	22.200
22.300	4.00	15.00	22.300
22.400	4.00	15.00	22.400
22.500	4.00	15.00	22.500
22.600	4.00	15.00	22.600
22.700	4.00	15.00	22.700
22.800	4.00	15.00	22.800
22.900	4.00	15.00	22.900
23.000	4.00	15.00	23.000
23.100	4.00	15.00	23.100
23.200	4.00	15.00	23.200
23.300	4.00	15.00	23.300
23.400	4.00	15.00	23.400
23.500	4.00	15.00	23.500
23.600	4.00	15.00	23.600
23.700	4.00	15.00	23.700
23.800	4.00	15.00	23.800
23.900	4.00	15.00	23.900
24.000	4.00	15.00	24.000
24.100	4.00	15.00	24.100
24.200	4.00	15.00	24.200
24.300	4.00	15.00	24.300
24.400	4.00	15.00	24.400
24.500	4.00	15.00	24.500
24.600	4.00	15.00	24.600
24.700	4.00	15.00	24.700
24.800	4.00	15.00	24.800
24.900	4.00	15.00	24.900
25.000	4.00	15.00	25.000
25.100	4.00	15.00	25.100
25.200	4.00	15.00	25.200
25.300	4.00	15.00	25.300
25.400	4.00	15.00	25.400
25.500	4.00	15.00	25.500
25.600	4.00	15.00	25.600
25.700	4.00	15.00	25.700
25.800	4.00	15.00	25.800
25.900	4.00	15.00	25.900
26.000	5.00	16.00	26.000
26.100	5.00	16.00	26.100
26.200	5.00	16.00	26.200
26.300	5.00	16.00	26.300
26.400	5.00	16.00	26.400
26.500	5.00	16.00	26.500
26.600	5.00	16.00	26.600
26.700	5.00	16.00	26.700
26.800	5.00	16.00	26.800
26.900	5.00	16.00	26.900
27.000	5.00	16.00	27.000
27.100	5.00	16.00	27.100
27.200	5.00	16.00	27.200
27.300	5.00	16.00	27.300
27.400	5.00	16.00	27.400

d1	b	l1	Code no.
mm	mm	mm	
27.500	5.00	16.00	27.500
27.600	5.00	16.00	27.600
27.700	5.00	16.00	27.700
27.800	5.00	16.00	27.800
27.900	5.00	16.00	27.900
28.000	5.00	16.00	28.000
28.100	5.00	16.00	28.100
28.200	5.00	16.00	28.200
28.300	5.00	16.00	28.300
28.400	5.00	16.00	28.400
28.500	5.00	16.00	28.500
28.600	5.00	16.00	28.600
28.700	5.00	16.00	28.700
28.800	5.00	16.00	28.800
28.900	5.00	16.00	28.900
29.000	5.00	16.00	29.000
29.100	5.00	16.00	29.100
29.200	5.00	16.00	29.200
29.300	5.00	16.00	29.300
29.400	5.00	16.00	29.400
29.500	5.00	16.00	29.500
29.600	5.00	16.00	29.600
29.700	5.00	16.00	29.700
29.800	5.00	16.00	29.800
29.900	5.00	16.00	29.900
30.000	6.00	18.00	30.000
30.100	6.00	18.00	30.100
30.200	6.00	18.00	30.200
30.300	6.00	18.00	30.300
30.400	6.00	18.00	30.400
30.500	6.00	18.00	30.500
30.600	6.00	18.00	30.600
30.700	6.00	18.00	30.700
30.800	6.00	18.00	30.800
30.900	6.00	18.00	30.900
31.000	6.00	18.00	31.000
31.100	6.00	18.00	31.100
31.200	6.00	18.00	31.200
31.300	6.00	18.00	31.300
31.400	6.00	18.00	31.400
31.500	6.00	18.00	31.500
31.600	6.00	18.00	31.600
31.700	6.00	18.00	31.700
31.800	6.00	18.00	31.800
31.900	6.00	18.00	31.900
32.000	6.00	18.00	32.000
32.100	6.00	18.00	32.100
32.200	6.00	18.00	32.200
32.300	6.00	18.00	32.300
32.400	6.00	18.00	32.400
32.500	6.00	18.00	32.500
32.600	6.00	18.00	32.600
32.700	6.00	18.00	32.700
32.800	6.00	18.00	32.800
32.900	6.00	18.00	32.900
33.000	6.00	18.00	33.000
33.100	6.00	18.00	33.100
33.200	6.00	18.00	33.200
33.300	6.00	18.00	33.300
33.400	6.00	18.00	33.400
33.500	6.00	18.00	33.500
33.600	6.00	18.00	33.600
33.700	6.00	18.00	33.700
33.800	6.00	18.00	33.800
33.900	6.00	18.00	33.900
34.000	6.50	19.00	34.000
34.100	6.50	19.00	34.100
34.200	6.50	19.00	34.200
34.300	6.50	19.00	34.300
34.400	6.50	19.00	34.400
34.500	6.50	19.00	34.500
34.600	6.50	19.00	34.600

d1	b	l1	Code no.
mm	mm	mm	
34.700	6.50	19.00	34.700
34.800	6.50	19.00	34.800
34.900	6.50	19.00	34.900
35.000	6.50	19.00	35.000
35.100	6.50	19.00	35.100
35.200	6.50	19.00	35.200
35.300	6.50	19.00	35.300
35.400	6.50	19.00	35.400
35.500	6.50	19.00	35.500
35.600	6.50	19.00	35.600
35.700	6.50	19.00	35.700
35.800	6.50	19.00	35.800
35.900	6.50	19.00	35.900
36.000	6.50	19.00	36.000
36.100	6.50	19.00	36.100
36.200	6.50	19.00	36.200
36.300	6.50	19.00	36.300
36.400	6.50	19.00	36.400
36.500	6.50	19.00	36.500
36.600	6.50	19.00	36.600
36.700	6.50	19.00	36.700
36.800	6.50	19.00	36.800
36.900	6.50	19.00	36.900
37.000	6.50	19.00	37.000
37.100	6.50	19.00	37.100
37.200	6.50	19.00	37.200
37.300	6.50	19.00	37.300
37.400	6.50	19.00	37.400
37.500	6.50	19.00	37.500
37.600	6.50	19.00	37.600
37.700	6.50	19.00	37.700
37.800	6.50	19.00	37.800
37.900	6.50	19.00	37.900
38.000	7.00	20.00	38.000
38.100	7.00	20.00	38.100
38.200	7.00	20.00	38.200
38.300	7.00	20.00	38.300
38.400	7.00	20.00	38.400
38.500	7.00	20.00	38.500
38.600	7.00	20.00	38.600
38.700	7.00	20.00	38.700
38.800	7.00	20.00	38.800
38.900	7.00	20.00	38.900
39.000	7.00	20.00	39.000
39.100	7.00	20.00	39.100
39.200	7.00	20.00	39.200
39.300	7.00	20.00	39.300
39.400	7.00	20.00	39.400
39.500	7.00	20.00	39.500
39.600	7.00	20.00	39.600
39.700	7.00	20.00	39.700
39.800	7.00	20.00	39.800
39.900	7.00	20.00	39.900
40.000	7.00	20.00	40.000
40.100	4.00	15.00	40.100
40.200	4.00	15.00	40.200
40.300	4.00	15.00	40.300
40.400	4.00	15.00	40.400
40.500	4.00	15.00	40.500
40.600	4.00	15.00	40.600
40.700	4.00	15.00	40.700
40.800	4.00	15.00	40.800
40.900	4.00	15.00	40.900
41.000	4.00	15.00	41.000
41.100	4.00	15.00	41.100
41.200	4.00	15.00	41.200
41.300	4.00	15.00	41.300
41.400	4.00	15.00	41.400
41.500	4.00	15.00	41.500
41.600	4.00	15.00	41.600
41.700	4.00	15.00	41.700
41.800	4.00	15.00	41.800

d1	b	l1	Code no.
mm	mm	mm	
41.900	4.00	15.00	41.900
42.000	4.00	15.00	42.000
42.100	4.00	15.00	42.100
42.200	4.00	15.00	42.200
42.300	4.00	15.00	42.300
42.400	4.00	15.00	42.400
42.500	4.00	15.00	42.500
42.600	4.00	15.00	42.600
42.700	4.00	15.00	42.700
42.800	4.00	15.00	42.800
42.900	4.00	15.00	42.900
43.000	4.00	15.00	43.000
43.100	4.00	15.00	43.100
43.200	4.00	15.00	43.200
43.300	4.00	15.00	43.300
43.400	4.00	15.00	43.400
43.500	4.00	15.00	43.500
43.600	4.00	15.00	43.600
43.700	4.00	15.00	43.700
43.800	4.00	15.00	43.800
43.900	4.00	15.00	43.900
44.000	5.00	16.00	44.000
44.100	5.00	16.00	44.100
44.200	5.00	16.00	44.200
44.300	5.00	16.00	44.300
44.400	5.00	16.00	44.400
44.500	5.00	16.00	44.500
44.600	5.00	16.00	44.600
44.700	5.00	16.00	44.700
44.800	5.00	16.00	44.800
44.900	5.00	16.00	44.900
45.000	5.00	16.00	45.000
45.100	5.00	16.00	45.100
45.200	5.00	16.00	45.200
45.300	5.00	16.00	45.300
45.400	5.00	16.00	45.400
45.500	5.00	16.00	45.500
45.600	5.00	16.00	45.600
45.700	5.00	16.00	45.700
45.800	5.00	16.00	45.800
45.900	5.00	16.00	45.900
46.000	5.00	16.00	46.000
46.100	5.00	16.00	46.100
46.200	5.00	16.00	46.200
46.300	5.00	16.00	46.300
46.400	5.00	16.00	46.400
46.500	5.00	16.00	46.500
46.600	5.00	16.00	46.600
46.700	5.00	16.00	46.700
46.800	5.00	16.00	46.800
46.900	5.00	16.00	46.900
47.000	5.00	16.00	47.000
47.100	5.00	16.00	47.100
47.200	5.00	16.00	47.200
47.300	5.00	16.00	47.300
47.400	5.00	16.00	47.400
47.500	5.00	16.00	47.500
47.600	5.00	16.00	47.600
47.700	5.00	16.00	47.700
47.800	5.00	16.00	47.800
47.900	5.00	16.00	47.900
48.000	6.00	18.00	48.000
48.100	6.00	18.00	48.100
48.200	6.00	18.00	48.200
48.300	6.00	18.00	48.300
48.400	6.00	18.00	48.400
48.500	6.00	18.00	48.500
48.600	6.00	18.00	48.600
48.700	6.00	18.00	48.700
48.800	6.00	18.00	48.800
48.900	6.00	18.00	48.900
49.000	6.00	18.00	49.000

d1	b	l1	Code no.
mm	mm	mm	
49.100	6.00	18.00	49.100
49.200	6.00	18.00	49.200
49.300	6.00	18.00	49.300
49.400	6.00	18.00	49.400
49.500	6.00	18.00	49.500
49.600	6.00	18.00	49.600
49.700	6.00	18.00	49.700
49.800	6.00	18.00	49.800
49.900	6.00	18.00	49.900
50.000	6.00	18.00	50.000
50.100	6.00	18.00	50.100
50.200	6.00	18.00	50.200
50.300	6.00	18.00	50.300
50.400	6.00	18.00	50.400
50.500	6.00	18.00	50.500
50.600	6.00	18.00	50.600
50.700	6.00	18.00	50.700
50.800	6.00	18.00	50.800

d1	b	l1	Code no.
mm	mm	mm	
50.900	6.00	18.00	50.900
51.000	6.00	18.00	51.000
51.100	6.00	18.00	51.100
51.200	6.00	18.00	51.200
51.300	6.00	18.00	51.300
51.400	6.00	18.00	51.400
51.500	6.00	18.00	51.500
51.600	6.00	18.00	51.600
51.700	6.00	18.00	51.700
51.800	6.00	18.00	51.800
51.900	6.00	18.00	51.900
52.000	6.00	18.00	52.000

EB 800

Outer inserts for single-fluted gun drills EB 800

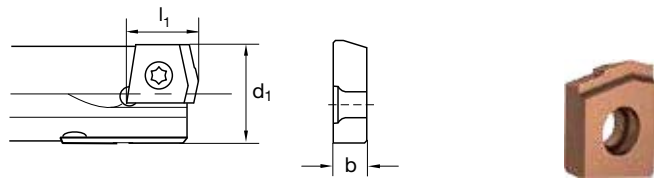


Tool material **Solid carbide**
Surface **Y**

- P** • interchangeable insert with 1 cutting edge • observe tightening torques • order torque wrench set art. no. 4966 separately
- M** •
- K** •
- N** •
- S** •
- H** ○

GÜHRING NAVIGATOR

Cutting data page 184



Article no. **5702**

d1	b	l1	Code no.
mm	mm	mm	
12.000	2.80	10.00	12.000
12.100	2.80	10.00	12.100
12.200	2.80	10.00	12.200
12.300	2.80	10.00	12.300
12.400	2.80	10.00	12.400
12.500	2.80	10.00	12.500
12.600	2.80	10.00	12.600
12.700	2.80	10.00	12.700
12.800	2.80	10.00	12.800
12.900	2.80	10.00	12.900
13.000	2.80	10.00	13.000
13.100	2.80	10.00	13.100
13.200	2.80	10.00	13.200
13.300	2.80	10.00	13.300
13.400	2.80	10.00	13.400
13.500	2.80	10.00	13.500
13.600	2.80	10.00	13.600
13.700	2.80	10.00	13.700
13.800	2.80	10.00	13.800
13.900	2.80	10.00	13.900
14.000	2.80	10.00	14.000
14.100	2.80	10.00	14.100
14.200	2.80	10.00	14.200
14.300	2.80	10.00	14.300
14.400	2.80	10.00	14.400
14.500	2.80	10.00	14.500
14.600	2.80	10.00	14.600
14.700	2.80	10.00	14.700
14.800	2.80	10.00	14.800
14.900	2.80	10.00	14.900
15.000	2.80	10.00	15.000
15.100	2.80	10.00	15.100
15.200	2.80	10.00	15.200
15.300	2.80	10.00	15.300
15.400	2.80	10.00	15.400
15.500	2.80	10.00	15.500
15.600	2.80	10.00	15.600
15.700	2.80	10.00	15.700
15.800	2.80	10.00	15.800
15.900	2.80	10.00	15.900
16.000	3.00	12.00	16.000
16.100	3.00	12.00	16.100

d1	b	l1	Code no.
mm	mm	mm	
16.200	3.00	12.00	16.200
16.300	3.00	12.00	16.300
16.400	3.00	12.00	16.400
16.500	3.00	12.00	16.500
16.600	3.00	12.00	16.600
16.700	3.00	12.00	16.700
16.800	3.00	12.00	16.800
16.900	3.00	12.00	16.900
17.000	3.00	12.00	17.000
17.100	3.00	12.00	17.100
17.200	3.00	12.00	17.200
17.300	3.00	12.00	17.300
17.400	3.00	12.00	17.400
17.500	3.00	12.00	17.500
17.600	3.00	12.00	17.600
17.700	3.00	12.00	17.700
17.800	3.00	12.00	17.800
17.900	3.00	12.00	17.900
18.000	3.00	12.00	18.000
18.100	3.00	12.00	18.100
18.200	3.00	12.00	18.200
18.300	3.00	12.00	18.300
18.400	3.00	12.00	18.400
18.500	3.00	12.00	18.500
18.600	3.00	12.00	18.600
18.700	3.00	12.00	18.700
18.800	3.00	12.00	18.800
18.900	3.00	12.00	18.900
19.000	3.00	12.00	19.000
19.050	3.00	12.00	19.050
19.100	3.00	12.00	19.100
19.200	3.00	12.00	19.200
19.300	3.00	12.00	19.300
19.400	3.00	12.00	19.400
19.500	3.00	12.00	19.500
19.600	3.00	12.00	19.600
19.700	3.00	12.00	19.700
19.800	3.00	12.00	19.800
19.900	3.00	12.00	19.900
20.000	4.00	15.00	20.000
20.100	4.00	15.00	20.100
20.200	4.00	15.00	20.200

EB 800

d1	b	l1	Code no.
mm	mm	mm	
20.300	4.00	15.00	20.300
20.400	4.00	15.00	20.400
20.500	4.00	15.00	20.500
20.600	4.00	15.00	20.600
20.700	4.00	15.00	20.700
20.800	4.00	15.00	20.800
20.900	4.00	15.00	20.900
21.000	4.00	15.00	21.000
21.100	4.00	15.00	21.100
21.200	4.00	15.00	21.200
21.300	4.00	15.00	21.300
21.400	4.00	15.00	21.400
21.500	4.00	15.00	21.500
21.600	4.00	15.00	21.600
21.700	4.00	15.00	21.700
21.800	4.00	15.00	21.800
21.900	4.00	15.00	21.900
22.000	4.00	15.00	22.000
22.100	4.00	15.00	22.100
22.200	4.00	15.00	22.200
22.300	4.00	15.00	22.300
22.400	4.00	15.00	22.400
22.500	4.00	15.00	22.500
22.600	4.00	15.00	22.600
22.700	4.00	15.00	22.700
22.800	4.00	15.00	22.800
22.900	4.00	15.00	22.900
23.000	4.00	15.00	23.000
23.100	4.00	15.00	23.100
23.200	4.00	15.00	23.200
23.300	4.00	15.00	23.300
23.400	4.00	15.00	23.400
23.500	4.00	15.00	23.500
23.600	4.00	15.00	23.600
23.700	4.00	15.00	23.700
23.800	4.00	15.00	23.800
23.900	4.00	15.00	23.900
24.000	4.00	15.00	24.000
24.100	4.00	15.00	24.100
24.200	4.00	15.00	24.200
24.300	4.00	15.00	24.300
24.400	4.00	15.00	24.400
24.500	4.00	15.00	24.500
24.600	4.00	15.00	24.600
24.700	4.00	15.00	24.700
24.800	4.00	15.00	24.800
24.900	4.00	15.00	24.900
25.000	4.00	15.00	25.000
25.100	4.00	15.00	25.100
25.200	4.00	15.00	25.200
25.300	4.00	15.00	25.300
25.400	4.00	15.00	25.400
25.500	4.00	15.00	25.500
25.600	4.00	15.00	25.600
25.700	4.00	15.00	25.700
25.800	4.00	15.00	25.800
25.900	4.00	15.00	25.900
26.000	5.00	16.00	26.000
26.100	5.00	16.00	26.100
26.200	5.00	16.00	26.200
26.300	5.00	16.00	26.300
26.400	5.00	16.00	26.400
26.500	5.00	16.00	26.500
26.600	5.00	16.00	26.600
26.700	5.00	16.00	26.700
26.800	5.00	16.00	26.800
26.900	5.00	16.00	26.900
27.000	5.00	16.00	27.000
27.100	5.00	16.00	27.100
27.200	5.00	16.00	27.200
27.300	5.00	16.00	27.300
27.400	5.00	16.00	27.400

d1	b	l1	Code no.
mm	mm	mm	
27.500	5.00	16.00	27.500
27.600	5.00	16.00	27.600
27.700	5.00	16.00	27.700
27.800	5.00	16.00	27.800
27.900	5.00	16.00	27.900
28.000	5.00	16.00	28.000
28.100	5.00	16.00	28.100
28.200	5.00	16.00	28.200
28.300	5.00	16.00	28.300
28.400	5.00	16.00	28.400
28.500	5.00	16.00	28.500
28.600	5.00	16.00	28.600
28.700	5.00	16.00	28.700
28.800	5.00	16.00	28.800
28.900	5.00	16.00	28.900
29.000	5.00	16.00	29.000
29.100	5.00	16.00	29.100
29.200	5.00	16.00	29.200
29.300	5.00	16.00	29.300
29.400	5.00	16.00	29.400
29.500	5.00	16.00	29.500
29.600	5.00	16.00	29.600
29.700	5.00	16.00	29.700
29.800	5.00	16.00	29.800
29.900	5.00	16.00	29.900
30.000	6.00	18.00	30.000
30.100	6.00	18.00	30.100
30.200	6.00	18.00	30.200
30.300	6.00	18.00	30.300
30.400	6.00	18.00	30.400
30.500	6.00	18.00	30.500
30.600	6.00	18.00	30.600
30.700	6.00	18.00	30.700
30.800	6.00	18.00	30.800
30.900	6.00	18.00	30.900
31.000	6.00	18.00	31.000
31.100	6.00	18.00	31.100
31.200	6.00	18.00	31.200
31.300	6.00	18.00	31.300
31.400	6.00	18.00	31.400
31.500	6.00	18.00	31.500
31.600	6.00	18.00	31.600
31.700	6.00	18.00	31.700
31.800	6.00	18.00	31.800
31.900	6.00	18.00	31.900
32.000	6.00	18.00	32.000
32.100	6.00	18.00	32.100
32.200	6.00	18.00	32.200
32.300	6.00	18.00	32.300
32.400	6.00	18.00	32.400
32.500	6.00	18.00	32.500
32.600	6.00	18.00	32.600
32.700	6.00	18.00	32.700
32.800	6.00	18.00	32.800
32.900	6.00	18.00	32.900
33.000	6.00	18.00	33.000
33.100	6.00	18.00	33.100
33.200	6.00	18.00	33.200
33.300	6.00	18.00	33.300
33.400	6.00	18.00	33.400
33.500	6.00	18.00	33.500
33.600	6.00	18.00	33.600
33.700	6.00	18.00	33.700
33.800	6.00	18.00	33.800
33.900	6.00	18.00	33.900
34.000	6.50	19.00	34.000
34.100	6.50	19.00	34.100
34.200	6.50	19.00	34.200
34.300	6.50	19.00	34.300
34.400	6.50	19.00	34.400
34.500	6.50	19.00	34.500
34.600	6.50	19.00	34.600

d1	b	l1	Code no.
mm	mm	mm	
49.100	6.00	18.00	49.100
49.200	6.00	18.00	49.200
49.300	6.00	18.00	49.300
49.400	6.00	18.00	49.400
49.500	6.00	18.00	49.500
49.600	6.00	18.00	49.600
49.700	6.00	18.00	49.700
49.800	6.00	18.00	49.800
49.900	6.00	18.00	49.900
50.000	6.00	18.00	50.000
50.100	6.00	18.00	50.100
50.200	6.00	18.00	50.200
50.300	6.00	18.00	50.300
50.400	6.00	18.00	50.400
50.500	6.00	18.00	50.500
50.600	6.00	18.00	50.600
50.700	6.00	18.00	50.700
50.800	6.00	18.00	50.800

d1	b	l1	Code no.
mm	mm	mm	
50.900	6.00	18.00	50.900
51.000	6.00	18.00	51.000
51.100	6.00	18.00	51.100
51.200	6.00	18.00	51.200
51.300	6.00	18.00	51.300
51.400	6.00	18.00	51.400
51.500	6.00	18.00	51.500
51.600	6.00	18.00	51.600
51.700	6.00	18.00	51.700
51.800	6.00	18.00	51.800
51.900	6.00	18.00	51.900
52.000	6.00	18.00	52.000

EB 800

Outer inserts for single-fluted gun drills EB 800



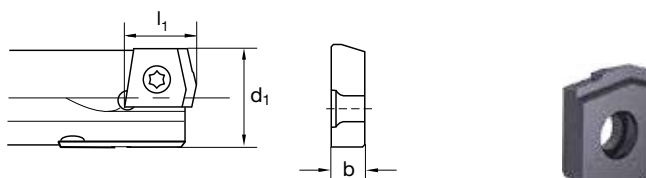
Tool material **Solid carbide**

Surface **F**

- P** ● interchangeable insert with 1 cutting edge • observe tightening torques • order torque wrench set art. no. 4966 separately
- M** ○
- K** ●
- N** ○
- S** ○
- H** ○

GÜHRING NAVIGATOR

Cutting data page 184



Article no. **5704**

d1	b	l1	Code no.	d1	b	l1	Code no.
mm	mm	mm		mm	mm	mm	
12.000	2.80	10.00	12.000	16.200	3.00	12.00	16.200
12.100	2.80	10.00	12.100	16.300	3.00	12.00	16.300
12.200	2.80	10.00	12.200	16.400	3.00	12.00	16.400
12.300	2.80	10.00	12.300	16.500	3.00	12.00	16.500
12.400	2.80	10.00	12.400	16.600	3.00	12.00	16.600
12.500	2.80	10.00	12.500	16.700	3.00	12.00	16.700
12.600	2.80	10.00	12.600	16.800	3.00	12.00	16.800
12.700	2.80	10.00	12.700	16.900	3.00	12.00	16.900
12.800	2.80	10.00	12.800	17.000	3.00	12.00	17.000
12.900	2.80	10.00	12.900	17.100	3.00	12.00	17.100
13.000	2.80	10.00	13.000	17.200	3.00	12.00	17.200
13.100	2.80	10.00	13.100	17.300	3.00	12.00	17.300
13.200	2.80	10.00	13.200	17.400	3.00	12.00	17.400
13.300	2.80	10.00	13.300	17.500	3.00	12.00	17.500
13.400	2.80	10.00	13.400	17.600	3.00	12.00	17.600
13.500	2.80	10.00	13.500	17.700	3.00	12.00	17.700
13.600	2.80	10.00	13.600	17.800	3.00	12.00	17.800
13.700	2.80	10.00	13.700	17.900	3.00	12.00	17.900
13.800	2.80	10.00	13.800	18.000	3.00	12.00	18.000
13.900	2.80	10.00	13.900	18.100	3.00	12.00	18.100
14.000	2.80	10.00	14.000	18.200	3.00	12.00	18.200
14.100	2.80	10.00	14.100	18.300	3.00	12.00	18.300
14.200	2.80	10.00	14.200	18.400	3.00	12.00	18.400
14.300	2.80	10.00	14.300	18.500	3.00	12.00	18.500
14.400	2.80	10.00	14.400	18.600	3.00	12.00	18.600
14.500	2.80	10.00	14.500	18.700	3.00	12.00	18.700
14.600	2.80	10.00	14.600	18.800	3.00	12.00	18.800
14.700	2.80	10.00	14.700	18.900	3.00	12.00	18.900
14.800	2.80	10.00	14.800	19.000	3.00	12.00	19.000
14.900	2.80	10.00	14.900	19.050	3.00	12.00	19.050
15.000	2.80	10.00	15.000	19.100	3.00	12.00	19.100
15.100	2.80	10.00	15.100	19.200	3.00	12.00	19.200
15.200	2.80	10.00	15.200	19.300	3.00	12.00	19.300
15.300	2.80	10.00	15.300	19.400	3.00	12.00	19.400
15.400	2.80	10.00	15.400	19.500	3.00	12.00	19.500
15.500	2.80	10.00	15.500	19.600	3.00	12.00	19.600
15.600	2.80	10.00	15.600	19.700	3.00	12.00	19.700
15.700	2.80	10.00	15.700	19.800	3.00	12.00	19.800
15.800	2.80	10.00	15.800	19.900	3.00	12.00	19.900
15.900	2.80	10.00	15.900	20.000	4.00	15.00	20.000
16.000	3.00	12.00	16.000	20.100	4.00	15.00	20.100
16.100	3.00	12.00	16.100	20.200	4.00	15.00	20.200

EB 800

d1	b	l1	Code no.
mm	mm	mm	
49.100	6.00	18.00	49.100
49.200	6.00	18.00	49.200
49.300	6.00	18.00	49.300
49.400	6.00	18.00	49.400
49.500	6.00	18.00	49.500
49.600	6.00	18.00	49.600
49.700	6.00	18.00	49.700
49.800	6.00	18.00	49.800
49.900	6.00	18.00	49.900
50.000	6.00	18.00	50.000
50.100	6.00	18.00	50.100
50.200	6.00	18.00	50.200
50.300	6.00	18.00	50.300
50.400	6.00	18.00	50.400
50.500	6.00	18.00	50.500
50.600	6.00	18.00	50.600
50.700	6.00	18.00	50.700
50.800	6.00	18.00	50.800

d1	b	l1	Code no.
mm	mm	mm	
50.900	6.00	18.00	50.900
51.000	6.00	18.00	51.000
51.100	6.00	18.00	51.100
51.200	6.00	18.00	51.200
51.300	6.00	18.00	51.300
51.400	6.00	18.00	51.400
51.500	6.00	18.00	51.500
51.600	6.00	18.00	51.600
51.700	6.00	18.00	51.700
51.800	6.00	18.00	51.800
51.900	6.00	18.00	51.900
52.000	6.00	18.00	52.000

EB 800

Outer inserts for single-fluted gun drills EB 800



Tool material **Solid carbide**

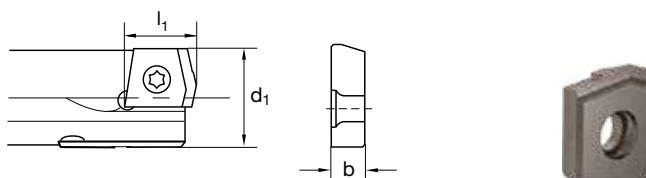
Surface **a**

P ◦ interchangeable insert with 1 cutting edge • observe tightening torques • order torque wrench set art. no. 4966 separately

- M** •
- K** ◦
- N** ◦
- S** •
- H** ◦

GÜHRING NAVIGATOR

Cutting data page 184



Article no. **5706**

d1	b	l1	Code no.	d1	b	l1	Code no.
mm	mm	mm		mm	mm	mm	
12.000	2.80	10.00	12.000	16.200	3.00	12.00	16.200
12.100	2.80	10.00	12.100	16.300	3.00	12.00	16.300
12.200	2.80	10.00	12.200	16.400	3.00	12.00	16.400
12.300	2.80	10.00	12.300	16.500	3.00	12.00	16.500
12.400	2.80	10.00	12.400	16.600	3.00	12.00	16.600
12.500	2.80	10.00	12.500	16.700	3.00	12.00	16.700
12.600	2.80	10.00	12.600	16.800	3.00	12.00	16.800
12.700	2.80	10.00	12.700	16.900	3.00	12.00	16.900
12.800	2.80	10.00	12.800	17.000	3.00	12.00	17.000
12.900	2.80	10.00	12.900	17.100	3.00	12.00	17.100
13.000	2.80	10.00	13.000	17.200	3.00	12.00	17.200
13.100	2.80	10.00	13.100	17.300	3.00	12.00	17.300
13.200	2.80	10.00	13.200	17.400	3.00	12.00	17.400
13.300	2.80	10.00	13.300	17.500	3.00	12.00	17.500
13.400	2.80	10.00	13.400	17.600	3.00	12.00	17.600
13.500	2.80	10.00	13.500	17.700	3.00	12.00	17.700
13.600	2.80	10.00	13.600	17.800	3.00	12.00	17.800
13.700	2.80	10.00	13.700	17.900	3.00	12.00	17.900
13.800	2.80	10.00	13.800	18.000	3.00	12.00	18.000
13.900	2.80	10.00	13.900	18.100	3.00	12.00	18.100
14.000	2.80	10.00	14.000	18.200	3.00	12.00	18.200
14.100	2.80	10.00	14.100	18.300	3.00	12.00	18.300
14.200	2.80	10.00	14.200	18.400	3.00	12.00	18.400
14.300	2.80	10.00	14.300	18.500	3.00	12.00	18.500
14.400	2.80	10.00	14.400	18.600	3.00	12.00	18.600
14.500	2.80	10.00	14.500	18.700	3.00	12.00	18.700
14.600	2.80	10.00	14.600	18.800	3.00	12.00	18.800
14.700	2.80	10.00	14.700	18.900	3.00	12.00	18.900
14.800	2.80	10.00	14.800	19.000	3.00	12.00	19.000
14.900	2.80	10.00	14.900	19.050	3.00	12.00	19.050
15.000	2.80	10.00	15.000	19.100	3.00	12.00	19.100
15.100	2.80	10.00	15.100	19.200	3.00	12.00	19.200
15.200	2.80	10.00	15.200	19.300	3.00	12.00	19.300
15.300	2.80	10.00	15.300	19.400	3.00	12.00	19.400
15.400	2.80	10.00	15.400	19.500	3.00	12.00	19.500
15.500	2.80	10.00	15.500	19.600	3.00	12.00	19.600
15.600	2.80	10.00	15.600	19.700	3.00	12.00	19.700
15.700	2.80	10.00	15.700	19.800	3.00	12.00	19.800
15.800	2.80	10.00	15.800	19.900	3.00	12.00	19.900
15.900	2.80	10.00	15.900	20.000	4.00	15.00	20.000
16.000	3.00	12.00	16.000	20.100	4.00	15.00	20.100
16.100	3.00	12.00	16.100	20.200	4.00	15.00	20.200

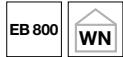
EB 800

d1	b	l1	Code no.
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49.400	6.00	18.00	49.400
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49.600	6.00	18.00	49.600
49.700	6.00	18.00	49.700
49.800	6.00	18.00	49.800
49.900	6.00	18.00	49.900
50.000	6.00	18.00	50.000
50.100	6.00	18.00	50.100
50.200	6.00	18.00	50.200
50.300	6.00	18.00	50.300
50.400	6.00	18.00	50.400
50.500	6.00	18.00	50.500
50.600	6.00	18.00	50.600
50.700	6.00	18.00	50.700
50.800	6.00	18.00	50.800

d1	b	l1	Code no.
mm	mm	mm	
50.900	6.00	18.00	50.900
51.000	6.00	18.00	51.000
51.100	6.00	18.00	51.100
51.200	6.00	18.00	51.200
51.300	6.00	18.00	51.300
51.400	6.00	18.00	51.400
51.500	6.00	18.00	51.500
51.600	6.00	18.00	51.600
51.700	6.00	18.00	51.700
51.800	6.00	18.00	51.800
51.900	6.00	18.00	51.900
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EB 800

Guide pads for single-fluted gun drills EB 800



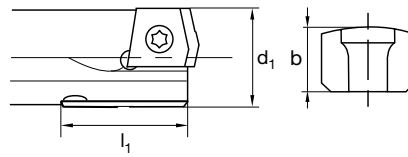
Tool material	Solid carbide
Surface	S

P ● interchangeable guide pad • observe tightening torques • order torque wrench set art. no. 4966 separately

- M** ○
- K** ○
- N** ●
- S** ○
- H** ○

GÜHRING NAVIGATOR

Cutting data page 184



Article no. **5030**

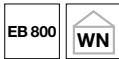
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12.100	2.20	19.95	12.100	16.300	3.00	20.00	16.300
12.200	2.25	19.95	12.200	16.400	3.05	20.00	16.400
12.300	2.30	19.95	12.300	16.500	2.85	20.00	16.500
12.400	2.35	19.95	12.400	16.600	2.90	20.00	16.600
12.500	2.15	19.95	12.500	16.700	2.95	20.00	16.700
12.600	2.20	19.95	12.600	16.800	3.00	20.00	16.800
12.700	2.25	19.95	12.700	16.900	3.05	20.00	16.900
12.800	2.30	19.95	12.800	17.000	2.85	20.00	17.000
12.900	2.35	19.95	12.900	17.100	2.90	20.00	17.100
13.000	2.15	19.95	13.000	17.200	2.95	20.00	17.200
13.100	2.20	19.95	13.100	17.300	3.00	20.00	17.300
13.200	2.25	19.95	13.200	17.400	3.05	20.00	17.400
13.300	2.30	19.95	13.300	17.500	2.85	20.00	17.500
13.400	2.35	19.95	13.400	17.600	2.90	20.00	17.600
13.500	2.15	19.95	13.500	17.700	2.95	20.00	17.700
13.600	2.20	19.95	13.600	17.800	3.00	20.00	17.800
13.700	2.25	19.95	13.700	17.900	3.05	20.00	17.900
13.800	2.30	19.95	13.800	18.000	2.85	20.00	18.000
13.900	2.35	19.95	13.900	18.100	2.90	20.00	18.100
14.000	2.15	19.95	14.000	18.200	2.95	20.00	18.200
14.100	2.20	19.95	14.100	18.300	3.00	20.00	18.300
14.200	2.25	19.95	14.200	18.400	3.05	20.00	18.400
14.300	2.30	19.95	14.300	18.500	2.85	20.00	18.500
14.400	2.35	19.95	14.400	18.600	2.90	20.00	18.600
14.500	2.15	19.95	14.500	18.700	2.95	20.00	18.700
14.600	2.20	19.95	14.600	18.800	3.00	20.00	18.800
14.700	2.25	19.95	14.700	18.900	3.05	20.00	18.900
14.800	2.30	19.95	14.800	19.000	2.85	20.00	19.000
14.900	2.35	19.95	14.900	19.050	2.87	20.00	19.050
15.000	2.15	19.95	15.000	19.100	2.90	20.00	19.100
15.100	2.20	19.95	15.100	19.200	2.95	20.00	19.200
15.200	2.25	19.95	15.200	19.300	3.00	20.00	19.300
15.300	2.30	19.95	15.300	19.400	3.05	20.00	19.400
15.400	2.35	19.95	15.400	19.500	2.85	20.00	19.500
15.500	2.15	19.95	15.500	19.600	2.90	20.00	19.600
15.600	2.20	19.95	15.600	19.700	2.95	20.00	19.700
15.700	2.25	19.95	15.700	19.800	3.00	20.00	19.800
15.800	2.30	19.95	15.800	19.900	3.05	20.00	19.900
15.900	2.35	19.95	15.900	20.000	3.35	25.00	20.000
16.000	2.85	20.00	16.000	20.100	3.40	25.00	20.100
16.100	2.90	20.00	16.100	20.200	3.45	25.00	20.200

EB 800

d1	b	l1	Code no.
mm	mm	mm	
49.100	5.40	30.00	49.100
49.200	5.45	30.00	49.200
49.300	5.50	30.00	49.300
49.400	5.55	30.00	49.400
49.500	5.35	30.00	49.500
49.600	5.40	30.00	49.600
49.700	5.45	30.00	49.700
49.800	5.50	30.00	49.800
49.900	5.55	30.00	49.900
50.000	5.35	30.00	50.000
50.100	5.40	30.00	50.100
50.200	5.45	30.00	50.200
50.300	5.50	30.00	50.300
50.400	5.55	30.00	50.400
50.500	5.35	30.00	50.500
50.600	5.40	30.00	50.600
50.700	5.45	30.00	50.700
50.800	5.50	30.00	50.800

d1	b	l1	Code no.
mm	mm	mm	
50.900	5.55	30.00	50.900
51.000	5.35	30.00	51.000
51.100	5.40	30.00	51.100
51.200	5.45	30.00	51.200
51.300	5.50	30.00	51.300
51.400	5.55	30.00	51.400
51.500	5.35	30.00	51.500
51.600	5.40	30.00	51.600
51.700	5.45	30.00	51.700
51.800	5.50	30.00	51.800
51.900	5.55	30.00	51.900
52.000	5.60	30.00	52.000

Guide pads for single-fluted gun drills EB 800

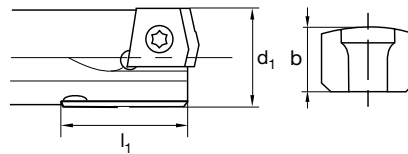

 Tool material **Solid carbide**

Surface

P • interchangeable guide pad • observe tightening torques • order torque wrench set art. no. 4966 separately


GÜHRING NAVIGATOR

Cutting data page 184


 Article no. **5703**

d1	b	l1	Code no.	d1	b	l1	Code no.
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12.100	2.20	19.95	12.100	16.300	3.00	20.00	16.300
12.200	2.25	19.95	12.200	16.400	3.05	20.00	16.400
12.300	2.30	19.95	12.300	16.500	2.85	20.00	16.500
12.400	2.35	19.95	12.400	16.600	2.90	20.00	16.600
12.500	2.15	19.95	12.500	16.700	2.95	20.00	16.700
12.600	2.20	19.95	12.600	16.800	3.00	20.00	16.800
12.700	2.25	19.95	12.700	16.900	3.05	20.00	16.900
12.800	2.30	19.95	12.800	17.000	2.85	20.00	17.000
12.900	2.35	19.95	12.900	17.100	2.90	20.00	17.100
13.000	2.15	19.95	13.000	17.200	2.95	20.00	17.200
13.100	2.20	19.95	13.100	17.300	3.00	20.00	17.300
13.200	2.25	19.95	13.200	17.400	3.05	20.00	17.400
13.300	2.30	19.95	13.300	17.500	2.85	20.00	17.500
13.400	2.35	19.95	13.400	17.600	2.90	20.00	17.600
13.500	2.15	19.95	13.500	17.700	2.95	20.00	17.700
13.600	2.20	19.95	13.600	17.800	3.00	20.00	17.800
13.700	2.25	19.95	13.700	17.900	3.05	20.00	17.900
13.800	2.30	19.95	13.800	18.000	2.85	20.00	18.000
13.900	2.35	19.95	13.900	18.100	2.90	20.00	18.100
14.000	2.15	19.95	14.000	18.200	2.95	20.00	18.200
14.100	2.20	19.95	14.100	18.300	3.00	20.00	18.300
14.200	2.25	19.95	14.200	18.400	3.05	20.00	18.400
14.300	2.30	19.95	14.300	18.500	2.85	20.00	18.500
14.400	2.35	19.95	14.400	18.600	2.90	20.00	18.600
14.500	2.15	19.95	14.500	18.700	2.95	20.00	18.700
14.600	2.20	19.95	14.600	18.800	3.00	20.00	18.800
14.700	2.25	19.95	14.700	18.900	3.05	20.00	18.900
14.800	2.30	19.95	14.800	19.000	2.85	20.00	19.000
14.900	2.35	19.95	14.900	19.050	2.87	20.00	19.050
15.000	2.15	19.95	15.000	19.100	2.90	20.00	19.100
15.100	2.20	19.95	15.100	19.200	2.95	20.00	19.200
15.200	2.25	19.95	15.200	19.300	3.00	20.00	19.300
15.300	2.30	19.95	15.300	19.400	3.05	20.00	19.400
15.400	2.35	19.95	15.400	19.500	2.85	20.00	19.500
15.500	2.15	19.95	15.500	19.600	2.90	20.00	19.600
15.600	2.20	19.95	15.600	19.700	2.95	20.00	19.700
15.700	2.25	19.95	15.700	19.800	3.00	20.00	19.800
15.800	2.30	19.95	15.800	19.900	3.05	20.00	19.900
15.900	2.35	19.95	15.900	20.000	3.35	25.00	20.000
16.000	2.85	20.00	16.000	20.100	3.40	25.00	20.100
16.100	2.90	20.00	16.100	20.200	3.45	25.00	20.200

d1	b	l1	Code no.
mm	mm	mm	
49.100	5.40	30.00	49.100
49.200	5.45	30.00	49.200
49.300	5.50	30.00	49.300
49.400	5.55	30.00	49.400
49.500	5.35	30.00	49.500
49.600	5.40	30.00	49.600
49.700	5.45	30.00	49.700
49.800	5.50	30.00	49.800
49.900	5.55	30.00	49.900
50.000	5.35	30.00	50.000
50.100	5.40	30.00	50.100
50.200	5.45	30.00	50.200
50.300	5.50	30.00	50.300
50.400	5.55	30.00	50.400
50.500	5.35	30.00	50.500
50.600	5.40	30.00	50.600
50.700	5.45	30.00	50.700
50.800	5.50	30.00	50.800

d1	b	l1	Code no.
mm	mm	mm	
50.900	5.55	30.00	50.900
51.000	5.35	30.00	51.000
51.100	5.40	30.00	51.100
51.200	5.45	30.00	51.200
51.300	5.50	30.00	51.300
51.400	5.55	30.00	51.400
51.500	5.35	30.00	51.500
51.600	5.40	30.00	51.600
51.700	5.45	30.00	51.700
51.800	5.50	30.00	51.800
51.900	5.55	30.00	51.900
52.000	5.60	30.00	52.000

EB 800

Guide pads for single-fluted gun drills EB 800


 Tool material **Solid carbide**

 Surface **F**
P ● interchangeable guide pad • observe tightening torques • order torque wrench set art. no. 4966 separately

M ○

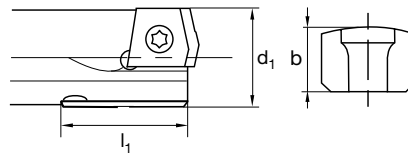
K ●

N ○

S ○

H
GUHRING NAVIGATOR

Cutting data page 184


 Article no. **5705**

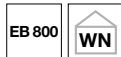
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12.100	2.20	19.95	12.100	16.300	3.00	20.00	16.300
12.200	2.25	19.95	12.200	16.400	3.05	20.00	16.400
12.300	2.30	19.95	12.300	16.500	2.85	20.00	16.500
12.400	2.35	19.95	12.400	16.600	2.90	20.00	16.600
12.500	2.15	19.95	12.500	16.700	2.95	20.00	16.700
12.600	2.20	19.95	12.600	16.800	3.00	20.00	16.800
12.700	2.25	19.95	12.700	16.900	3.05	20.00	16.900
12.800	2.30	19.95	12.800	17.000	2.85	20.00	17.000
12.900	2.35	19.95	12.900	17.100	2.90	20.00	17.100
13.000	2.15	19.95	13.000	17.200	2.95	20.00	17.200
13.100	2.20	19.95	13.100	17.300	3.00	20.00	17.300
13.200	2.25	19.95	13.200	17.400	3.05	20.00	17.400
13.300	2.30	19.95	13.300	17.500	2.85	20.00	17.500
13.400	2.35	19.95	13.400	17.600	2.90	20.00	17.600
13.500	2.15	19.95	13.500	17.700	2.95	20.00	17.700
13.600	2.20	19.95	13.600	17.800	3.00	20.00	17.800
13.700	2.25	19.95	13.700	17.900	3.05	20.00	17.900
13.800	2.30	19.95	13.800	18.000	2.85	20.00	18.000
13.900	2.35	19.95	13.900	18.100	2.90	20.00	18.100
14.000	2.15	19.95	14.000	18.200	2.95	20.00	18.200
14.100	2.20	19.95	14.100	18.300	3.00	20.00	18.300
14.200	2.25	19.95	14.200	18.400	3.05	20.00	18.400
14.300	2.30	19.95	14.300	18.500	2.85	20.00	18.500
14.400	2.35	19.95	14.400	18.600	2.90	20.00	18.600
14.500	2.15	19.95	14.500	18.700	2.95	20.00	18.700
14.600	2.20	19.95	14.600	18.800	3.00	20.00	18.800
14.700	2.25	19.95	14.700	18.900	3.05	20.00	18.900
14.800	2.30	19.95	14.800	19.000	2.85	20.00	19.000
14.900	2.35	19.95	14.900	19.050	2.87	20.00	19.050
15.000	2.15	19.95	15.000	19.100	2.90	20.00	19.100
15.100	2.20	19.95	15.100	19.200	2.95	20.00	19.200
15.200	2.25	19.95	15.200	19.300	3.00	20.00	19.300
15.300	2.30	19.95	15.300	19.400	3.05	20.00	19.400
15.400	2.35	19.95	15.400	19.500	2.85	20.00	19.500
15.500	2.15	19.95	15.500	19.600	2.90	20.00	19.600
15.600	2.20	19.95	15.600	19.700	2.95	20.00	19.700
15.700	2.25	19.95	15.700	19.800	3.00	20.00	19.800
15.800	2.30	19.95	15.800	19.900	3.05	20.00	19.900
15.900	2.35	19.95	15.900	20.000	3.35	25.00	20.000
16.000	2.85	20.00	16.000	20.100	3.40	25.00	20.100
16.100	2.90	20.00	16.100	20.200	3.45	25.00	20.200

d1	b	l1	Code no.
mm	mm	mm	
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49.200	5.45	30.00	49.200
49.300	5.50	30.00	49.300
49.400	5.55	30.00	49.400
49.500	5.35	30.00	49.500
49.600	5.40	30.00	49.600
49.700	5.45	30.00	49.700
49.800	5.50	30.00	49.800
49.900	5.55	30.00	49.900
50.000	5.35	30.00	50.000
50.100	5.40	30.00	50.100
50.200	5.45	30.00	50.200
50.300	5.50	30.00	50.300
50.400	5.55	30.00	50.400
50.500	5.35	30.00	50.500
50.600	5.40	30.00	50.600
50.700	5.45	30.00	50.700
50.800	5.50	30.00	50.800

d1	b	l1	Code no.
mm	mm	mm	
50.900	5.55	30.00	50.900
51.000	5.35	30.00	51.000
51.100	5.40	30.00	51.100
51.200	5.45	30.00	51.200
51.300	5.50	30.00	51.300
51.400	5.55	30.00	51.400
51.500	5.35	30.00	51.500
51.600	5.40	30.00	51.600
51.700	5.45	30.00	51.700
51.800	5.50	30.00	51.800
51.900	5.55	30.00	51.900
52.000	5.60	30.00	52.000

EB 800

Guide pads for single-fluted gun drills EB 800


 Tool material **Solid carbide**

 Surface **a**

P ◯ interchangeable guide pad • observe tightening torques • order torque wrench set art. no. 4966 separately

M •

K ◯

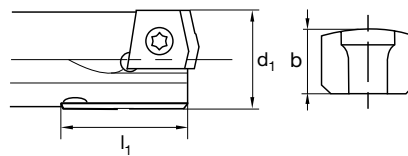
N ◯

S •

H ◯

GÜHRING NAVIGATOR

Cutting data page 184


 Article no. **5707**

d1	b	l1	Code no.	d1	b	l1	Code no.
mm	mm	mm		mm	mm	mm	
12.000	2.15	19.95	12.000	16.200	2.95	20.00	16.200
12.100	2.20	19.95	12.100	16.300	3.00	20.00	16.300
12.200	2.25	19.95	12.200	16.400	3.05	20.00	16.400
12.300	2.30	19.95	12.300	16.500	2.85	20.00	16.500
12.400	2.35	19.95	12.400	16.600	2.90	20.00	16.600
12.500	2.15	19.95	12.500	16.700	2.95	20.00	16.700
12.600	2.20	19.95	12.600	16.800	3.00	20.00	16.800
12.700	2.25	19.95	12.700	16.900	3.05	20.00	16.900
12.800	2.30	19.95	12.800	17.000	2.85	20.00	17.000
12.900	2.35	19.95	12.900	17.100	2.90	20.00	17.100
13.000	2.15	19.95	13.000	17.200	2.95	20.00	17.200
13.100	2.20	19.95	13.100	17.300	3.00	20.00	17.300
13.200	2.25	19.95	13.200	17.400	3.05	20.00	17.400
13.300	2.30	19.95	13.300	17.500	2.85	20.00	17.500
13.400	2.35	19.95	13.400	17.600	2.90	20.00	17.600
13.500	2.15	19.95	13.500	17.700	2.95	20.00	17.700
13.600	2.20	19.95	13.600	17.800	3.00	20.00	17.800
13.700	2.25	19.95	13.700	17.900	3.05	20.00	17.900
13.800	2.30	19.95	13.800	18.000	2.85	20.00	18.000
13.900	2.35	19.95	13.900	18.100	2.90	20.00	18.100
14.000	2.15	19.95	14.000	18.200	2.95	20.00	18.200
14.100	2.20	19.95	14.100	18.300	3.00	20.00	18.300
14.200	2.25	19.95	14.200	18.400	3.05	20.00	18.400
14.300	2.30	19.95	14.300	18.500	2.85	20.00	18.500
14.400	2.35	19.95	14.400	18.600	2.90	20.00	18.600
14.500	2.15	19.95	14.500	18.700	2.95	20.00	18.700
14.600	2.20	19.95	14.600	18.800	3.00	20.00	18.800
14.700	2.25	19.95	14.700	18.900	3.05	20.00	18.900
14.800	2.30	19.95	14.800	19.000	2.85	20.00	19.000
14.900	2.35	19.95	14.900	19.050	2.87	20.00	19.050
15.000	2.15	19.95	15.000	19.100	2.90	20.00	19.100
15.100	2.20	19.95	15.100	19.200	2.95	20.00	19.200
15.200	2.25	19.95	15.200	19.300	3.00	20.00	19.300
15.300	2.30	19.95	15.300	19.400	3.05	20.00	19.400
15.400	2.35	19.95	15.400	19.500	2.85	20.00	19.500
15.500	2.15	19.95	15.500	19.600	2.90	20.00	19.600
15.600	2.20	19.95	15.600	19.700	2.95	20.00	19.700
15.700	2.25	19.95	15.700	19.800	3.00	20.00	19.800
15.800	2.30	19.95	15.800	19.900	3.05	20.00	19.900
15.900	2.35	19.95	15.900	20.000	3.35	25.00	20.000
16.000	2.85	20.00	16.000	20.100	3.40	25.00	20.100
16.100	2.90	20.00	16.100	20.200	3.45	25.00	20.200

EB 800

d1	b	l1	Code no.
mm	mm	mm	
49.100	5.40	30.00	49.100
49.200	5.45	30.00	49.200
49.300	5.50	30.00	49.300
49.400	5.55	30.00	49.400
49.500	5.35	30.00	49.500
49.600	5.40	30.00	49.600
49.700	5.45	30.00	49.700
49.800	5.50	30.00	49.800
49.900	5.55	30.00	49.900
50.000	5.35	30.00	50.000
50.100	5.40	30.00	50.100
50.200	5.45	30.00	50.200
50.300	5.50	30.00	50.300
50.400	5.55	30.00	50.400
50.500	5.35	30.00	50.500
50.600	5.40	30.00	50.600
50.700	5.45	30.00	50.700
50.800	5.50	30.00	50.800

d1	b	l1	Code no.
mm	mm	mm	
50.900	5.55	30.00	50.900
51.000	5.35	30.00	51.000
51.100	5.40	30.00	51.100
51.200	5.45	30.00	51.200
51.300	5.50	30.00	51.300
51.400	5.55	30.00	51.400
51.500	5.35	30.00	51.500
51.600	5.40	30.00	51.600
51.700	5.45	30.00	51.700
51.800	5.50	30.00	51.800
51.900	5.55	30.00	51.900
52.000	5.60	30.00	52.000

EB 800

Inner inserts for single-fluted gun drills EB 800



Tool material **Solid carbide**

Surface **S**

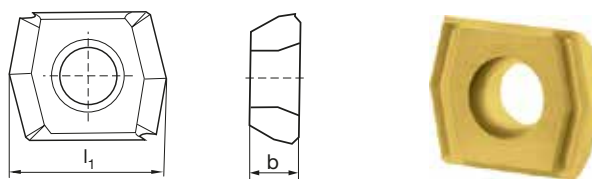
P • indexable insert with 2 cutting edges • observe tightening torques
 • order torque wrench set art. no. 4966 separately

- M** ○
- K** ○
- N** •
- S** ○
- H** ○



GUHRING NAVIGATOR

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Article no. **5665**

Ø-range	b	l1	Code no.
	mm	mm	
40,001 - 52,000	4.763	15.000	1.000

EB 800

Inner inserts for single-fluted gun drills EB 800



Tool material **Solid carbide**

Surface

P • indexable insert with 2 cutting edges • observe tightening torques
 • order torque wrench set art. no. 4966 separately

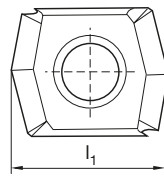
- M** •
- K** •
- N** •
- S** •
- H** ○



GÜHRING NAVIGATOR

Cutting data page 184

EB 800



Article no. **5667**

Ø-range	b mm	l1 mm	Code no.
40,001 - 52,000	4.763	15.000	1.000

Inner inserts for single-fluted gun drills EB 800



Tool material **Solid carbide**

Surface **F**



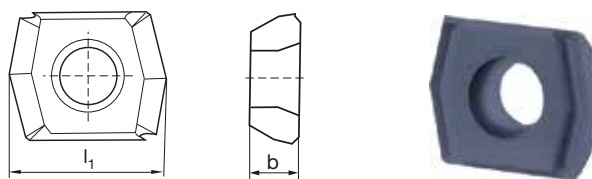
P ● indexable insert with 2 cutting edges • observe tightening torques

• order torque wrench set art. no. 4966 separately

- M** ○
- K** ●
- N** ○
- S** ○
- H** ○

GUHRING NAVIGATOR

Cutting data page 184



Article no. **5666**

Ø-range	b	l1	Code no.
	mm	mm	
40,001 - 52,000	4.763	15.000	1.000

EB 800

Inner inserts for single-fluted gun drills EB 800



Tool material **Solid carbide**

Surface **a**

P ○ indexable insert with 2 cutting edges • observe tightening torques
 • order torque wrench set art. no. 4966 separately

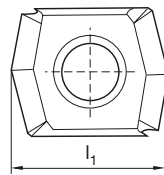
- M** ●
- K** ○
- N** ○
- S** ●
- H** ○



GÜHRING NAVIGATOR

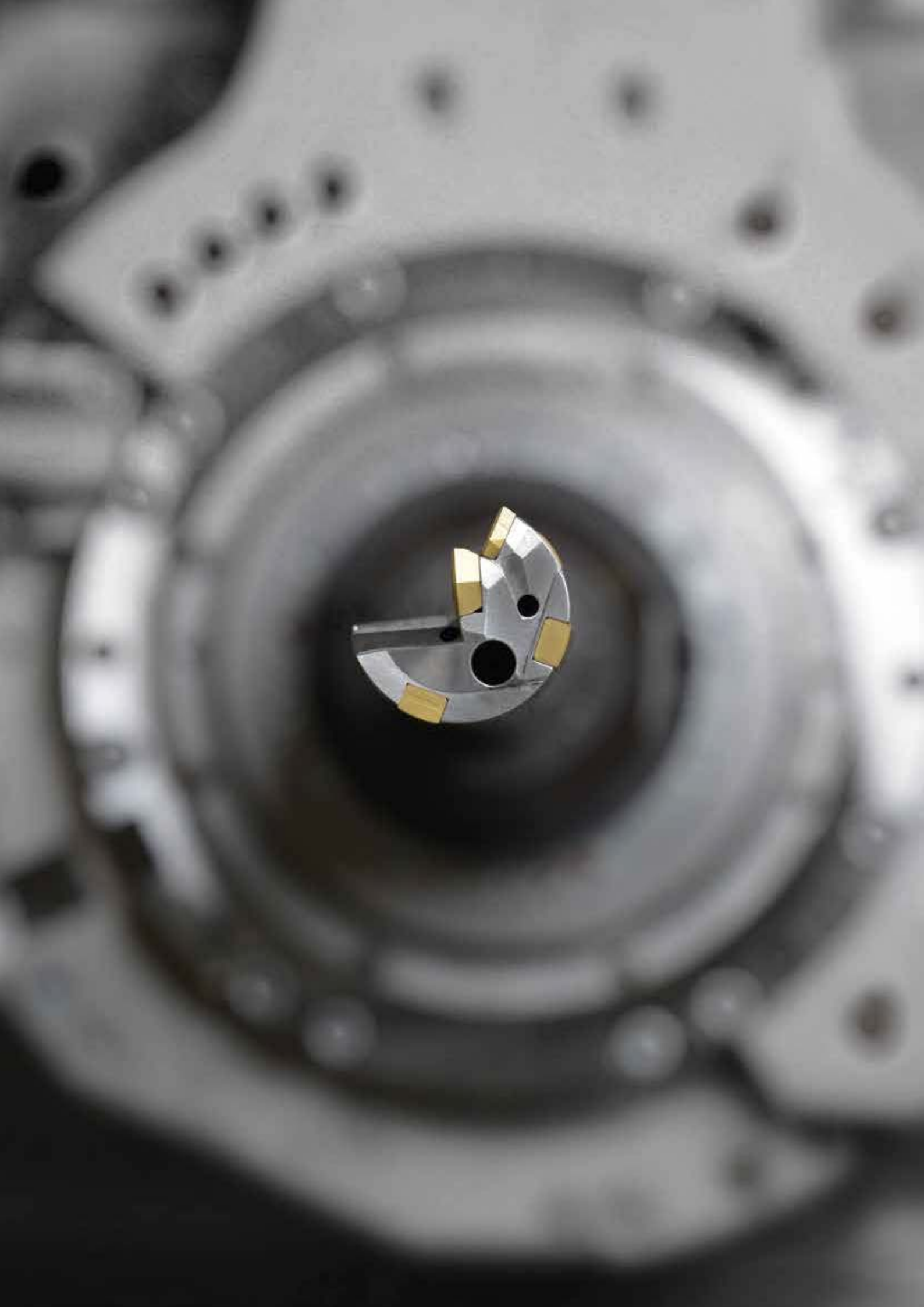
Cutting data page 184

EB 800



Article no. **5668**

Ø-range	b mm	l1 mm	Code no.
40,001 - 52,000	4.763	15.000	1.000



SOLID CARBIDE SPIRAL-FLUTED DEEP HOLE DRILLS

- \ for highest cutting speeds and feed rates
- \ drilling depths of 15xD up to 40xD
- \ nominal diameter 1.400 - 16.000 mm
- \ optimal tool stability and cooling
- \ long tool life with reduced machining times
- \ suitable for most materials
- \ special solutions up to 50xD





Solid carbide spiral-fluted deep hole drills

SOLID CARBIDE
SPIRAL-FLUTED
DEEP HOLE DRILLS

P	M	K	N	S	H	Tool illustration	Drilling depth	Standard	Type	Cutting direction	Tool material	Surface	d1/mm	Article no.	Cutting data page	Page
•	•	•	○	○	○		15xD	WN	RT 100 T	R	VHM	A	3.000 - 16.000	6509	186	109
•	•	•	○	○	○		20xD	WN	RT 100 T	R	VHM	A	3.000 - 16.000	6511	186	110
•	•	•	○	○	○		25xD	WN	RT 100 T	R	VHM	A	3.000 - 16.000	6512	186	111
•	•	•	○	○	○		30xD	WN	RT 100 T	R	VHM	A	3.000 - 14.000	6513	186	112
•	•	•	○	○	○		40xD	WN	RT 100 T	R	VHM	A	3.000 - 10.000	6514	186	113
ExclusiveLine micro-precision drills with coolant ducts																
•	•	•	○	○	○		15xD	WN	N	R	VHM	A	1.400 - 3.000	6412	186	114

Solid carbide spiral-fluted deep hole drills

Ratio drills with coolant ducts

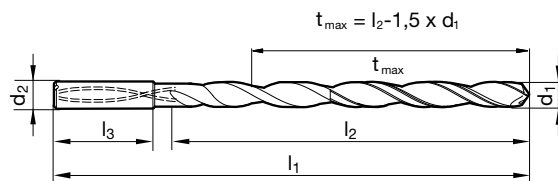


Tool material	Solid carbide
Surface	A
Shank form	HA

- P** • web thinning $\geq \varnothing 3.000$ • main cutting edge form concave • optimised flute design • maximum diameter of coolant ducts • observe coolant pressure
- M** •
- K** •
- N** ○ structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials
- S** ○
- H** ○

GÜHRING NAVIGATOR

Cutting data page 186



Article no. **6509**

d1		d2	l1	l2	l3	d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3.000		6.000	94.00	55.00	36.00	8.730	11/32	10.000	204.00	160.00	40.00
3.100		6.000	106.00	66.00	36.00	8.800		10.000	204.00	160.00	40.00
3.170	1/8	6.000	106.00	66.00	36.00	9.000		10.000	204.00	160.00	40.00
3.200		6.000	106.00	66.00	36.00	9.130	23/64	10.000	221.00	177.00	40.00
3.300		6.000	106.00	66.00	36.00	9.500		10.000	221.00	177.00	40.00
3.500		6.000	116.00	76.00	36.00	9.520	3/8	10.000	221.00	177.00	40.00
3.570	9/64	6.000	116.00	76.00	36.00	9.800		10.000	221.00	177.00	40.00
3.700		6.000	116.00	76.00	36.00	9.920	25/64	10.000	221.00	177.00	40.00
3.800		6.000	116.00	76.00	36.00	10.000		10.000	221.00	177.00	40.00
3.970	5/32	6.000	116.00	76.00	36.00	10.200		12.000	247.00	198.00	45.00
4.000		6.000	116.00	76.00	36.00	10.320	13/32	12.000	247.00	198.00	45.00
4.200		6.000	133.00	93.00	36.00	10.500		12.000	247.00	198.00	45.00
4.300		6.000	133.00	93.00	36.00	10.720	27/64	12.000	247.00	198.00	45.00
4.370	11/64	6.000	133.00	93.00	36.00	11.000		12.000	247.00	198.00	45.00
4.500		6.000	133.00	93.00	36.00	11.110	7/16	12.000	263.00	214.00	45.00
4.600		6.000	133.00	93.00	36.00	11.510	29/64	12.000	263.00	214.00	45.00
4.760	3/16	6.000	133.00	93.00	36.00	11.800		12.000	263.00	214.00	45.00
4.800		6.000	133.00	93.00	36.00	11.910	15/32	12.000	263.00	214.00	45.00
5.000		6.000	133.00	93.00	36.00	12.000		12.000	263.00	214.00	45.00
5.100		6.000	150.00	110.00	36.00	12.300	31/64	14.000	297.00	248.00	45.00
5.160	13/64	6.000	150.00	110.00	36.00	12.500		14.000	297.00	248.00	45.00
5.410		6.000	150.00	110.00	36.00	12.700	1/2	14.000	297.00	248.00	45.00
5.500		6.000	150.00	110.00	36.00	13.000		14.000	297.00	248.00	45.00
5.560	7/32	6.000	150.00	110.00	36.00	13.100	33/64	14.000	297.00	248.00	45.00
5.600		6.000	150.00	110.00	36.00	13.490	17/32	14.000	297.00	248.00	45.00
5.800		6.000	150.00	110.00	36.00	13.890	35/64	14.000	297.00	248.00	45.00
5.950	15/64	6.000	150.00	110.00	36.00	14.000		14.000	297.00	248.00	45.00
6.000		6.000	150.00	110.00	36.00	14.290	9/16	16.000	333.00	281.00	48.00
6.300		8.000	167.00	127.00	36.00	15.000		16.000	333.00	281.00	48.00
6.350	1/4	8.000	167.00	127.00	36.00	15.870	5/8	16.000	333.00	281.00	48.00
6.500		8.000	167.00	127.00	36.00	16.000		16.000	333.00	281.00	48.00
6.750	17/64	8.000	167.00	127.00	36.00						
6.800		8.000	167.00	127.00	36.00						
7.000		8.000	167.00	127.00	36.00						
7.140	9/32	8.000	183.00	143.00	36.00						
7.500		8.000	183.00	143.00	36.00						
7.540	19/64	8.000	183.00	143.00	36.00						
7.800		8.000	183.00	143.00	36.00						
7.940	5/16	8.000	183.00	143.00	36.00						
8.000		8.000	183.00	143.00	36.00						
8.330	21/64	10.000	204.00	160.00	40.00						
8.500		10.000	204.00	160.00	40.00						

Solid carbide spiral-fluted deep hole drills

Ratio drills with coolant ducts

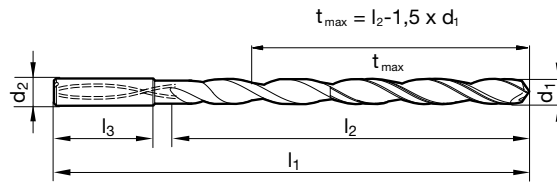


Tool material	Solid carbide
Surface	A
Shank form	HA

- P** • web thinning $\geq \varnothing 3.000$ • main cutting edge form concave • optimised flute design • maximum diameter of coolant ducts • observe coolant pressure
- M** •
- K** •
- N** ○ structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials
- S** ○
- H** ○

GÜHRING NAVIGATOR

Cutting data page 186



Article no. **6511**

Solid carbide spiral-fluted deep hole drills

d1		d2	l1	l2	l3	d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3.000		6.000	110.00	70.00	36.00	7.800		8.000	223.00	183.00	36.00
3.100		6.000	123.00	83.00	36.00	7.940	5/16	8.000	223.00	183.00	36.00
3.170	1/8	6.000	123.00	83.00	36.00	8.000		8.000	223.00	183.00	36.00
3.200		6.000	123.00	83.00	36.00	8.330	21/64	10.000	249.00	205.00	40.00
3.300		6.000	123.00	83.00	36.00	8.500		10.000	249.00	205.00	40.00
3.500		6.000	136.00	96.00	36.00	8.730	11/32	10.000	249.00	205.00	40.00
3.570	9/64	6.000	136.00	96.00	36.00	8.800		10.000	249.00	205.00	40.00
3.700		6.000	136.00	96.00	36.00	9.000		10.000	249.00	205.00	40.00
3.800		6.000	136.00	96.00	36.00	9.130	23/64	10.000	271.00	227.00	40.00
3.970	5/32	6.000	136.00	96.00	36.00	9.520	3/8	10.000	271.00	227.00	40.00
4.000		6.000	136.00	96.00	36.00	9.920	25/64	10.000	271.00	227.00	40.00
4.200		6.000	158.00	118.00	36.00	10.000		10.000	271.00	227.00	40.00
4.300		6.000	158.00	118.00	36.00	10.200		12.000	302.00	253.00	45.00
4.370	11/64	6.000	158.00	118.00	36.00	10.320	13/32	12.000	302.00	253.00	45.00
4.500		6.000	158.00	118.00	36.00	10.500		12.000	302.00	253.00	45.00
4.600		6.000	158.00	118.00	36.00	10.720	27/64	12.000	302.00	253.00	45.00
4.760	3/16	6.000	158.00	118.00	36.00	11.000		12.000	302.00	253.00	45.00
4.800		6.000	158.00	118.00	36.00	11.110	7/16	12.000	323.00	274.00	45.00
5.000		6.000	158.00	118.00	36.00	11.510	29/64	12.000	323.00	274.00	45.00
5.100		6.000	180.00	140.00	36.00	11.800		12.000	323.00	274.00	45.00
5.160	13/64	6.000	180.00	140.00	36.00	11.910	15/32	12.000	323.00	274.00	45.00
5.410		6.000	180.00	140.00	36.00	12.000		12.000	323.00	274.00	45.00
5.500		6.000	180.00	140.00	36.00	12.300	31/64	14.000	367.00	318.00	45.00
5.560	7/32	6.000	180.00	140.00	36.00	12.500		14.000	367.00	318.00	45.00
5.800		6.000	180.00	140.00	36.00	12.700	1/2	14.000	367.00	318.00	45.00
5.950	15/64	6.000	180.00	140.00	36.00	13.000		14.000	367.00	318.00	45.00
6.000		6.000	180.00	140.00	36.00	13.100	33/64	14.000	367.00	318.00	45.00
6.300		8.000	202.00	162.00	36.00	13.490	17/32	14.000	367.00	318.00	45.00
6.350	1/4	8.000	202.00	162.00	36.00	13.890	35/64	14.000	367.00	318.00	45.00
6.500		8.000	202.00	162.00	36.00	14.000		14.000	367.00	318.00	45.00
6.750	17/64	8.000	202.00	162.00	36.00	14.290	9/16	16.000	413.00	361.00	48.00
6.800		8.000	202.00	162.00	36.00	15.000		16.000	413.00	361.00	48.00
7.000		8.000	202.00	162.00	36.00	15.870	5/8	16.000	413.00	361.00	48.00
7.140	9/32	8.000	223.00	183.00	36.00	16.000		16.000	413.00	361.00	48.00
7.500		8.000	223.00	183.00	36.00						
7.540	19/64	8.000	223.00	183.00	36.00						

Ratio drills with coolant ducts

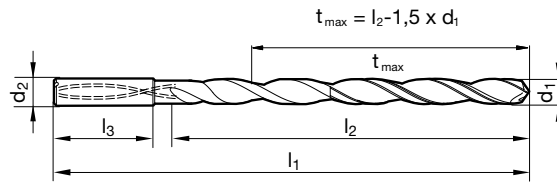


Tool material	Solid carbide
Surface	A
Shank form	HA

- P** • web thinning $\geq \varnothing 3.000$ • main cutting edge form concave • optimised flute design • maximum diameter of coolant ducts • observe coolant pressure
- M** •
- K** •
- N** ○ structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials
- S** ○
- H** ○

GÜHRING NAVIGATOR

Cutting data page 186



Article no. **6512**

d1		d2	l1	l2	l3	d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3.000		6.000	125.00	85.00	36.00	7.940	5/16	8.000	263.00	223.00	36.00
3.100		6.000	141.00	101.00	36.00	8.000		8.000	263.00	223.00	36.00
3.170	1/8	6.000	141.00	101.00	36.00	8.330	21/64	10.000	294.00	250.00	40.00
3.200		6.000	141.00	101.00	36.00	8.500		10.000	294.00	250.00	40.00
3.300		6.000	141.00	101.00	36.00	8.730	11/32	10.000	294.00	250.00	40.00
3.500		6.000	156.00	116.00	36.00	8.800		10.000	294.00	250.00	40.00
3.570	9/64	6.000	156.00	116.00	36.00	9.000		10.000	294.00	250.00	40.00
3.700		6.000	156.00	116.00	36.00	9.130	23/64	10.000	321.00	277.00	40.00
3.800		6.000	156.00	116.00	36.00	9.520	3/8	10.000	321.00	277.00	40.00
3.970	5/32	6.000	156.00	116.00	36.00	9.920	25/64	10.000	321.00	277.00	40.00
4.000		6.000	156.00	116.00	36.00	10.000		10.000	321.00	277.00	40.00
4.200		6.000	183.00	143.00	36.00	10.320	13/32	12.000	359.00	310.00	45.00
4.300		6.000	183.00	143.00	36.00	10.720	27/64	12.000	359.00	310.00	45.00
4.370	11/64	6.000	183.00	143.00	36.00	11.000		12.000	359.00	310.00	45.00
4.500		6.000	183.00	143.00	36.00	11.110	7/16	12.000	386.00	337.00	45.00
4.600		6.000	183.00	143.00	36.00	11.510	29/64	12.000	386.00	337.00	45.00
4.760	3/16	6.000	183.00	143.00	36.00	11.910	15/32	12.000	386.00	337.00	45.00
4.800		6.000	183.00	143.00	36.00	12.000		12.000	386.00	337.00	45.00
5.000		6.000	183.00	143.00	36.00	12.300	31/64	14.000	437.00	388.00	45.00
5.100		6.000	210.00	170.00	36.00	12.700	1/2	14.000	437.00	388.00	45.00
5.160	13/64	6.000	210.00	170.00	36.00	13.000		14.000	437.00	388.00	45.00
5.410		6.000	210.00	170.00	36.00	13.100	33/64	14.000	437.00	388.00	45.00
5.500		6.000	210.00	170.00	36.00	13.490	17/32	14.000	437.00	388.00	45.00
5.560	7/32	6.000	210.00	170.00	36.00	13.890	35/64	14.000	437.00	388.00	45.00
5.800		6.000	210.00	170.00	36.00	14.000		14.000	437.00	388.00	45.00
5.950	15/64	6.000	210.00	170.00	36.00	14.290	9/16	16.000	493.00	441.00	48.00
6.000		6.000	210.00	170.00	36.00	15.000		16.000	493.00	441.00	48.00
6.300		8.000	237.00	197.00	36.00	15.870	5/8	16.000	493.00	441.00	48.00
6.350	1/4	8.000	237.00	197.00	36.00	16.000		16.000	493.00	441.00	48.00
6.500		8.000	237.00	197.00	36.00						
6.750	17/64	8.000	237.00	197.00	36.00						
6.800		8.000	237.00	197.00	36.00						
7.000		8.000	237.00	197.00	36.00						
7.140	9/32	8.000	263.00	223.00	36.00						
7.500		8.000	263.00	223.00	36.00						
7.540	19/64	8.000	263.00	223.00	36.00						

Solid carbide spiral-fluted deep hole drills

Ratio drills with coolant ducts



Tool material **Solid carbide**

Surface **A**

Shank form HA

P • web thinning $\geq \varnothing 3.000$ • main cutting edge form concave • optimised flute design • maximum diameter of coolant ducts • observe coolant pressure

M •

K •

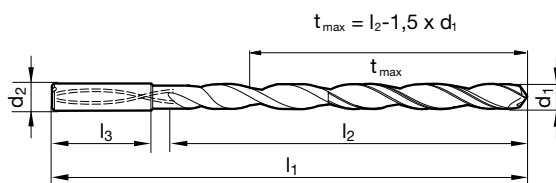
N ○ structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials

S ○

H ○

GÜHRING NAVIGATOR

Cutting data page 186



Article no. **6513**

d1		d2	l1	l2	l3	d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3.000		6.000	140.00	100.00	36.00	7.500		8.000	303.00	263.00	36.00
3.100		6.000	158.00	118.00	36.00	7.540	19/64	8.000	303.00	263.00	36.00
3.170	1/8	6.000	158.00	118.00	36.00	7.940	5/16	8.000	303.00	263.00	36.00
3.200		6.000	158.00	118.00	36.00	8.000		8.000	303.00	263.00	36.00
3.300		6.000	158.00	118.00	36.00	8.330	21/64	10.000	339.00	295.00	40.00
3.500		6.000	176.00	136.00	36.00	8.500		10.000	339.00	295.00	40.00
3.570	9/64	6.000	176.00	136.00	36.00	8.730	11/32	10.000	339.00	295.00	40.00
3.700		6.000	176.00	136.00	36.00	8.800		10.000	339.00	295.00	40.00
3.800		6.000	176.00	136.00	36.00	9.000		10.000	339.00	295.00	40.00
3.970	5/32	6.000	176.00	136.00	36.00	9.130	23/64	10.000	371.00	327.00	40.00
4.000		6.000	176.00	136.00	36.00	9.520	3/8	10.000	371.00	327.00	40.00
4.200		6.000	208.00	168.00	36.00	9.920	25/64	10.000	371.00	327.00	40.00
4.370	11/64	6.000	208.00	168.00	36.00	10.000		10.000	371.00	327.00	40.00
4.500		6.000	208.00	168.00	36.00	10.320	13/32	12.000	412.00	363.00	45.00
4.760	3/16	6.000	208.00	168.00	36.00	10.720	27/64	12.000	412.00	363.00	45.00
5.000		6.000	208.00	168.00	36.00	11.000		12.000	412.00	363.00	45.00
5.100		6.000	240.00	200.00	36.00	11.110	7/16	12.000	443.00	394.00	45.00
5.160	13/64	6.000	240.00	200.00	36.00	11.510	29/64	12.000	443.00	394.00	45.00
5.410		6.000	240.00	200.00	36.00	11.910	15/32	12.000	443.00	394.00	45.00
5.500		6.000	240.00	200.00	36.00	12.000		12.000	443.00	394.00	45.00
5.560	7/32	6.000	240.00	200.00	36.00	12.300	31/64	14.000	507.00	458.00	45.00
5.950	15/64	6.000	240.00	200.00	36.00	12.700	1/2	14.000	507.00	458.00	45.00
6.000		6.000	240.00	200.00	36.00	13.000		14.000	507.00	458.00	45.00
6.300		8.000	272.00	232.00	36.00	13.100	33/64	14.000	507.00	458.00	45.00
6.350	1/4	8.000	272.00	232.00	36.00	13.490	17/32	14.000	507.00	458.00	45.00
6.500		8.000	272.00	232.00	36.00	13.890	35/64	14.000	507.00	458.00	45.00
6.750	17/64	8.000	272.00	232.00	36.00	14.000		14.000	507.00	458.00	45.00
6.800		8.000	272.00	232.00	36.00						
7.000		8.000	272.00	232.00	36.00						
7.140	9/32	8.000	303.00	263.00	36.00						

Solid carbide spiral-fluted deep hole drills

Ratio drills with coolant ducts

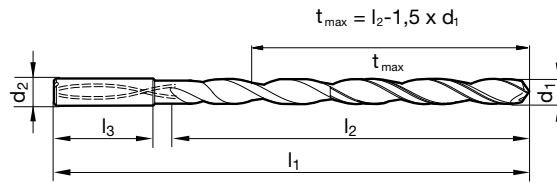


Tool material	Solid carbide
Surface	A
Shank form	HA

- P** • web thinning $\geq \varnothing 3.000$ • main cutting edge form concave • optimised flute design • maximum diameter of coolant ducts • observe coolant pressure
- M** •
- K** •
- N** ○ structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials
- S** ○
- H** ○

GÜHRING NAVIGATOR

Cutting data page 186



Article no. **6514**

d1		d2	l1	l2	l3	d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3.000		6.000	170.00	130.00	36.00	5.500		6.000	280.00	240.00	36.00
3.100		6.000	193.00	153.00	36.00	5.560	7/32	6.000	300.00	260.00	36.00
3.170	1/8	6.000	193.00	153.00	36.00	5.950	15/64	6.000	300.00	260.00	36.00
3.200		6.000	193.00	153.00	36.00	6.000		6.000	300.00	260.00	36.00
3.300		6.000	193.00	153.00	36.00	6.300		8.000	322.00	282.00	36.00
3.500		6.000	193.00	153.00	36.00	6.350	1/4	8.000	322.00	282.00	36.00
3.570	9/64	6.000	216.00	176.00	36.00	6.500		8.000	322.00	282.00	36.00
3.800		6.000	216.00	176.00	36.00	6.750	17/64	8.000	342.00	302.00	36.00
3.970	5/32	6.000	216.00	176.00	36.00	6.800		8.000	342.00	302.00	36.00
4.000		6.000	216.00	176.00	36.00	7.000		8.000	342.00	302.00	36.00
4.200		6.000	238.00	198.00	36.00	7.140	9/32	8.000	363.00	323.00	36.00
4.370	11/64	6.000	238.00	198.00	36.00	7.500		8.000	363.00	323.00	36.00
4.500		6.000	238.00	198.00	36.00	7.540	19/64	8.000	383.00	343.00	36.00
4.760	3/16	6.000	258.00	218.00	36.00	7.940	5/16	8.000	383.00	343.00	36.00
5.000		6.000	258.00	218.00	36.00	8.000		8.000	383.00	343.00	36.00
5.100		6.000	280.00	240.00	36.00	8.500		10.000	409.00	365.00	40.00
5.160	13/64	6.000	280.00	240.00	36.00	9.000		10.000	429.00	386.00	40.00
5.410		6.000	280.00	240.00	36.00	10.000		10.000	471.00	427.00	40.00

Solid carbide spiral-fluted deep hole drills

ExclusiveLine micro-precision drills with coolant ducts

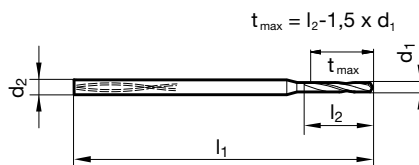


- P** • web thinning $\geq \varnothing 1.400$ • facet point grind • main cutting edge form straight • edge preparation
- M** •
- K** •
- N** ○ structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials
- S** ○
- H**

GÜHRING NAVIGATOR

Cutting data page 186

Tool material	Solid carbide
Surface	A
Cutting direction	R



Article no. **6412**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1.400	4.000	62.00	25.00
1.500	4.000	62.00	27.00
1.590	4.000	62.00	29.00
1.600	4.000	62.00	29.00
1.700	4.000	70.00	31.00
1.750	4.000	70.00	32.00
1.800	4.000	70.00	32.00
1.900	4.000	70.00	34.00
1.980	4.000	70.00	36.00
2.000	4.000	70.00	36.00
2.100	4.000	78.00	38.00
2.200	4.000	78.00	40.00

d1	d2 h6	l1	l2
mm	mm	mm	mm
2.300	4.000	78.00	42.00
2.380	4.000	78.00	44.00
2.400	4.000	78.00	44.00
2.500	4.000	78.00	45.00
2.600	4.000	87.00	47.00
2.700	4.000	87.00	48.00
2.780	4.000	87.00	50.00
2.800	4.000	87.00	50.00
2.900	4.000	87.00	52.00
3.000	4.000	87.00	54.00

Solid carbide spiral-fluted deep hole drills























HSS/HSCO SPIRAL-FLUTED DEEP HOLE DRILLS

- \ for stable machining processes
- \ diameter range from 2.500 - 13.000 mm
- \ flute length up to 850 mm
- \ available with straight shank or morse taper shank
- \ suitable for many materials

HSS/HSCO
SPIRAL-FLUTED
DEEP HOLE DRILLS

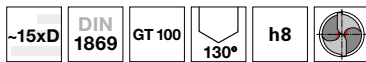


HSS/HSCO spiral-
fluted deep hole drills

P	M	K	N	S	H	Tool illustration	Drilling depth	Standard	Type	Cutting direction	Tool material	Surface	d1/mm	Article no.	Cutting data page	Page
						Extra length twist drills, series 1										
•	•	•	•	•	•		-15xD	DIN 1869	GT 100		HSCO		2.700 - 10.000	618	188	119
						Extra length twist drills, series 2										
•	•	•	•	•	•		-20xD	DIN 1869	GT 100		HSCO		3.000 - 10.000	619	188	120
						Extra length twist drills, series 3										
•	•	•	•	•	•		-25xD	DIN 1869	GT 100		HSCO		2.500 - 13.000	571	188	121
						Extra length twist drills										
•	•	•	•	•	•		>25xD	WN	GT 100		HSS		6.000 - 12.000	242	188	122
•	•	•	•	•	•		>25xD	WN	GT 100		HSS		8.000 - 12.000	243	188	123
•	•	•	•	•	•		>25xD	WN	GT 100		HSS		10.000 - 12.000	244	188	124

HSS/HSCO spiral-fluted deep hole drills

Extra length twist drills, series 1



- P** • web thinning $\geq \varnothing 2.700$ • relieved cone • Co-alloyed high speed steel
- M** • wide flutes • increased wear resistance • for extremely deep holes • in case of poor chip evacuation
- K** •
- N** • high tensile steels and cast steels • grey cast iron, malleable and spheroidal iron
- S** •
- H** ○

Tool material **HSCO**

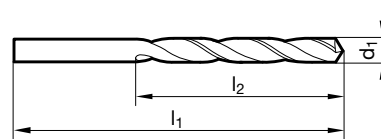
Surface

Cutting direction



GUHRING NAVIGATOR

Cutting data page 188



Article no. **618**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
2.700		150.00	100.00	5.800		205.00	140.00
2.900		150.00	100.00	6.000		205.00	140.00
3.000		150.00	100.00	6.100		215.00	150.00
3.100		155.00	105.00	6.200		215.00	150.00
3.170	1/8	155.00	105.00	6.300		215.00	150.00
3.200		155.00	105.00	6.350	1/4	215.00	150.00
3.300		155.00	105.00	6.400		215.00	150.00
3.400		165.00	115.00	6.500		215.00	150.00
3.500		165.00	115.00	6.600		215.00	150.00
3.570	9/64	165.00	115.00	6.700		215.00	150.00
3.600		165.00	115.00	6.750	17/64	225.00	155.00
3.700		165.00	115.00	6.800		225.00	155.00
3.750		165.00	115.00	7.000		225.00	155.00
3.800		175.00	120.00	7.140	9/32	225.00	155.00
3.970	5/32	175.00	120.00	7.400		225.00	155.00
4.000		175.00	120.00	7.500		225.00	155.00
4.100		175.00	120.00	7.540	19/64	240.00	165.00
4.200		175.00	120.00	7.700		240.00	165.00
4.300		185.00	125.00	7.800		240.00	165.00
4.370	11/64	185.00	125.00	7.940	5/16	240.00	165.00
4.400		185.00	125.00	8.000		240.00	165.00
4.500		185.00	125.00	8.200		240.00	165.00
4.600		185.00	125.00	8.330	21/64	240.00	165.00
4.760	3/16	195.00	135.00	8.500		240.00	165.00
4.800		195.00	135.00	8.700		250.00	175.00
4.850		195.00	135.00	8.730	11/32	250.00	175.00
5.000		195.00	135.00	8.800		250.00	175.00
5.100		195.00	135.00	9.000		250.00	175.00
5.160	13/64	195.00	135.00	9.130	23/64	250.00	175.00
5.200		195.00	135.00	9.400		250.00	175.00
5.300		195.00	135.00	9.500		250.00	175.00
5.400		205.00	140.00	9.520	3/8	265.00	185.00
5.500		205.00	140.00	9.700		265.00	185.00
5.560	7/32	205.00	140.00	10.000		265.00	185.00
5.600		205.00	140.00				
5.700		205.00	140.00				

HSS/HSCO spiral-fluted deep hole drills

Extra length twist drills, series 2



- P** • web thinning $\geq \varnothing 3.000$ • relieved cone • Co-alloyed high speed steel
- M** • wide flutes • increased wear resistance • for extremely deep holes • in case of poor chip evacuation
- K** •
- N** • high tensile steels and cast steels • grey cast iron, malleable and spheroidal iron
- S** •
- H** ○

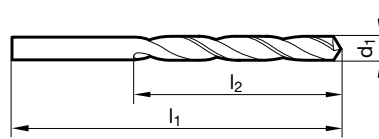
Tool material **HSCO**

Surface

Cutting direction

GÜHRING NAVIGATOR

Cutting data page 188



Article no. **619**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
3.000		190.00	130.00	6.500		275.00	190.00
3.170	1/8	200.00	135.00	6.750	17/64	290.00	200.00
3.200		200.00	135.00	6.800		290.00	200.00
3.300		200.00	135.00	7.000		290.00	200.00
3.500		210.00	145.00	7.140	9/32	290.00	200.00
3.570	9/64	210.00	145.00	7.500		290.00	200.00
3.970	5/32	220.00	150.00	7.540	19/64	305.00	210.00
4.000		220.00	150.00	7.600		305.00	210.00
4.100		220.00	150.00	7.940	5/16	305.00	210.00
4.200		220.00	150.00	8.000		305.00	210.00
4.370	11/64	235.00	160.00	8.200		305.00	210.00
4.500		235.00	160.00	8.500		305.00	210.00
4.760	3/16	245.00	170.00	8.730	11/32	320.00	220.00
4.800		245.00	170.00	9.000		320.00	220.00
4.900		245.00	170.00	9.130	23/64	320.00	220.00
5.000		245.00	170.00	9.500		320.00	220.00
5.200		245.00	170.00	9.520	3/8	340.00	235.00
5.500		260.00	180.00	9.600		340.00	235.00
5.560	7/32	260.00	180.00	10.000		340.00	235.00
5.950	15/64	260.00	180.00				
6.000		260.00	180.00				
6.100		275.00	190.00				
6.200		275.00	190.00				
6.350	1/4	275.00	190.00				

HSS/HSCO spiral-fluted deep hole drills

Extra length twist drills, series 3



- P** • web thinning $\geq \varnothing 2.500$ • relieved cone • Co-alloyed high speed steel
- M** • wide flutes • increased wear resistance • for extremely deep holes • in case of poor chip evacuation
- K** •
- N** • high tensile steels and cast steels • grey cast iron, malleable and spheroidal iron
- S** •
- H** ○

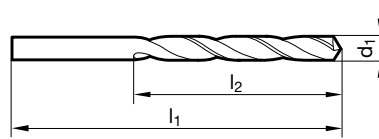
Tool material **HSCO**

Surface

Cutting direction

GUHRING NAVIGATOR

Cutting data page 188



Article no. **571**

d1		l1	l2
mm	inch	mm	mm
2.500		225.00	150.00
3.000		240.00	160.00
3.100		250.00	170.00
3.170	1/8	250.00	170.00
3.200		250.00	170.00
3.300		250.00	170.00
3.400		265.00	180.00
3.500		265.00	180.00
3.700		265.00	180.00
3.800		280.00	190.00
3.900		280.00	190.00
3.970	5/32	280.00	190.00
4.000		280.00	190.00
4.100		280.00	190.00
4.200		280.00	190.00
4.300		295.00	200.00
4.500		295.00	200.00
4.600		295.00	200.00
4.760	3/16	315.00	210.00
4.800		315.00	210.00
4.900		315.00	210.00
5.000		315.00	210.00
5.100		315.00	210.00
5.200		315.00	210.00
5.500		330.00	225.00
5.560	7/32	330.00	225.00
5.800		330.00	225.00
5.950	15/64	330.00	225.00
6.000		330.00	225.00
6.100		350.00	235.00
6.200		350.00	235.00
6.300		350.00	235.00
6.350	1/4	350.00	235.00
6.400		350.00	235.00
6.500		350.00	235.00
6.700		350.00	235.00

d1		l1	l2
mm	inch	mm	mm
6.750	17/64	370.00	250.00
6.800		370.00	250.00
7.000		370.00	250.00
7.140	9/32	370.00	250.00
7.200		370.00	250.00
7.500		370.00	250.00
7.750		390.00	265.00
7.800		390.00	265.00
7.940	5/16	390.00	265.00
8.000		390.00	265.00
8.200		390.00	265.00
8.500		390.00	265.00
8.600		410.00	280.00
8.730	11/32	410.00	280.00
8.800		410.00	280.00
9.000		410.00	280.00
9.500		410.00	280.00
9.520	3/8	430.00	295.00
10.000		430.00	295.00
10.320	13/32	430.00	295.00
10.500		430.00	295.00
10.720	27/64	455.00	310.00
11.000		455.00	310.00
11.110	7/16	455.00	310.00
11.500		455.00	310.00
12.000		480.00	330.00
12.200		480.00	330.00
12.500		480.00	330.00
13.000		480.00	330.00

HSS/HSCO spiral-fluted deep hole drills

Extra length twist drills



Tool material **HSS**

Surface

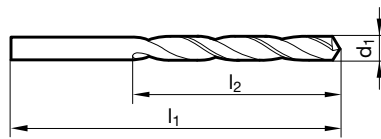
Cutting direction

P • web thinning $\geq \varnothing 6.000$ • relieved cone • wide flutes • for extremely deep holes • in case of poor chip evacuation

- M**
- K** •
- N** • grey cast iron and steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels
- S**
- H**

GUHRING NAVIGATOR

Cutting data page 188



Article no. **242**

d1		l1		l2	
mm	inch	mm	mm	mm	mm
6.000		500.00		400.00	
8.000		500.00		400.00	
10.000		600.00		500.00	
11.000		600.00		500.00	
12.000		600.00		500.00	

HSS/HSCO spiral-fluted deep hole drills

Extra length twist drills



Tool material **HSS**

Surface ○

Cutting direction

P • web thinning $\geq \varnothing 8.000$ • relieved cone • wide flutes • for extremely deep holes • in case of poor chip evacuation

M

K •

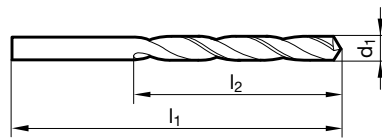
N • grey cast iron and steels up to 1000 N/mm^2 • Not recommended for: CrNi steels, stainless steels

S

H

GUHRING NAVIGATOR

Cutting data page 188

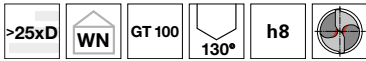


Article no. **243**

d1		l1		l2	
mm	inch	mm	mm	mm	mm
8.000		750.00		650.00	
10.000		750.00		650.00	
11.000		750.00		650.00	
12.000		750.00		650.00	

HSS/HSCO spiral-fluted deep hole drills

Extra length twist drills

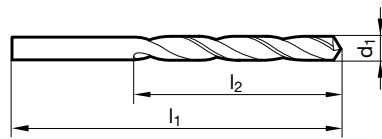


- P** • web thinning $\geq \varnothing 10.000$ • relieved cone • wide flutes • for extremely deep holes • in case of poor chip evacuation
- M**
- K** •
- N** • grey cast iron and steels up to 1000 N/mm^2 • Not recommended for: CrNi steels, stainless steels
- S**
- H**

GÜHRING NAVIGATOR

Cutting data page 188

Tool material	HSS
Surface	○
Cutting direction	Ⓜ



Article no. **244**

d1		l1		l2	
mm	inch	mm	mm	mm	mm
10.000		1000.00		850.00	
11.000		1000.00		850.00	
12.000		1000.00		850.00	

HSS/HSCO spiral-fluted deep hole drills












PILOT TOOLS

- \ drills and milling cutter
- \ the right pilot tool for every application
- \ nominal diameter 0.500 - 40.000 mm
- \ perfectly adjusted tolerances
- \ suitable for most materials



Pilot tools

PILOT TOOLS

P	M	K	N	S	H	Tool illustration	Drilling depth	Standard	Type	Cutting direction	Tool material	Surface	d1/mm	Article no.	Cutting data page	Page
ExclusiveLine micro-precision drills without coolant ducts							4xD	WN	N	R	VHM	A	0.500 - 3.000	6400	190	129
ExclusiveLine micro-precision drills with coolant ducts							5xD	WN	N	R	VHM	A	1.400 - 3.000	6405	190	130
Ratio drills without coolant ducts							3xD	DIN 6539	RT 100 U	R	VHM	F	3.000 - 15.500	2473	190	131
Ratio drills with coolant ducts							5xD	DIN 6537L	RT 100 U	R	VHM	F	3.000 - 20.000	2479	190	132
Tool holders for interchangeable inserts HT 800							3xD	WN	HT 800 WP	R		Ni		4107	192	134
Interchangeable inserts HT 800								WN	HT 800 WP	R	VHM	a	11.000 - 40.000	4111	192	136
Pilot end mills RF 100 P								WN	NH	R	VHM	A	1.400 - 12.000	6716	194	139
Ratio end mills RF 100 DIVER								DIN 6527L	NH	R	VHM	Y	4.000 - 20.000	6737	194	140
Stub drills							~3xD	DIN 1897	GV 120	R	HSCO	S	0.500 - 15.500	659	190	141

ExclusiveLine micro-precision drills without coolant ducts



Tool material **Solid carbide**

Surface **A**

Cutting direction **R**

P • web thinning $\geq \varnothing 0.500$ • facet point grind • main cutting edge form straight • edge preparation

M •

K •

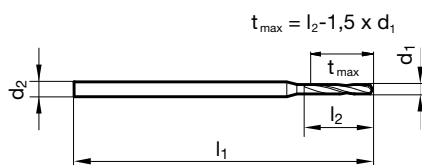
N ○ structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials

S ○

H

GUHRING NAVIGATOR

Cutting data page 190



Article no. **6400**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0.500	3.000	47.00	3.00
0.550	3.000	47.00	3.30
0.600	3.000	47.00	3.60
0.650	3.000	47.00	3.90
0.700	3.000	47.00	4.20
0.750	3.000	47.00	4.50
0.800	3.000	47.00	4.80
0.850	3.000	47.00	5.10
0.900	3.000	47.00	5.40
0.950	3.000	47.00	5.70
1.000	3.000	47.00	6.00
1.050	3.000	47.00	6.30
1.100	3.000	47.00	6.60
1.150	3.000	47.00	6.90
1.200	3.000	47.00	7.20
1.250	3.000	47.00	7.50
1.300	3.000	47.00	7.80
1.350	3.000	47.00	8.10
1.400	3.000	47.00	8.40
1.450	3.000	47.00	8.70
1.500	3.000	47.00	9.00
1.550	3.000	47.00	9.30
1.590	3.000	47.00	9.60
1.600	3.000	47.00	9.60
1.650	3.000	47.00	9.90
1.700	3.000	47.00	10.20
1.750	3.000	47.00	10.50
1.800	3.000	52.00	10.80
1.850	3.000	52.00	11.10
1.900	3.000	52.00	11.40

d1	d2 h6	l1	l2
mm	mm	mm	mm
1.950	3.000	52.00	11.70
1.980	4.000	59.00	12.00
2.000	4.000	59.00	12.00
2.050	4.000	59.00	12.30
2.100	4.000	59.00	12.60
2.150	4.000	59.00	12.90
2.200	4.000	59.00	13.20
2.250	4.000	59.00	13.50
2.300	4.000	59.00	13.80
2.350	4.000	59.00	14.10
2.380	4.000	59.00	14.40
2.400	4.000	59.00	14.40
2.450	4.000	59.00	14.70
2.500	4.000	59.00	15.00
2.550	4.000	59.00	15.30
2.600	4.000	59.00	15.60
2.650	4.000	59.00	15.90
2.700	4.000	59.00	16.20
2.750	4.000	59.00	16.50
2.780	4.000	59.00	16.80
2.800	4.000	59.00	16.80
2.850	4.000	59.00	17.10
2.900	4.000	59.00	17.40
2.950	4.000	59.00	17.70
3.000	4.000	59.00	18.00

Pilot tools

ExclusiveLine micro-precision drills with coolant ducts



Tool material **Solid carbide**

Surface **A**

Cutting direction **R**

P • web thinning $\geq \varnothing 1.400$ • facet point grind • main cutting edge form straight • edge preparation

M •

K •

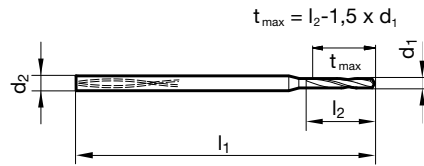
N ○ structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials

S ○

H

GÜHRING NAVIGATOR

Cutting data page 190

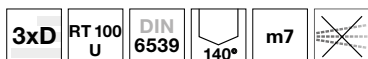


Article no. **6405**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1.400	4.000	52.00	11.00
1.450	4.000	52.00	12.00
1.500	4.000	52.00	12.00
1.550	4.000	52.00	12.00
1.590	4.000	52.00	13.00
1.600	4.000	52.00	13.00
1.650	4.000	52.00	13.00
1.700	4.000	56.00	14.00
1.750	4.000	56.00	14.00
1.800	4.000	56.00	14.00
1.850	4.000	56.00	15.00
1.900	4.000	56.00	15.00
1.950	4.000	56.00	16.00
1.980	4.000	56.00	16.00
2.000	4.000	56.00	16.00
2.050	4.000	56.00	16.00
2.100	4.000	62.00	17.00
2.150	4.000	62.00	17.00
2.200	4.000	62.00	18.00
2.250	4.000	62.00	18.00
2.300	4.000	62.00	18.00
2.350	4.000	62.00	19.00
2.380	4.000	62.00	19.00
2.400	4.000	62.00	19.00

d1	d2 h6	l1	l2
mm	mm	mm	mm
2.450	4.000	62.00	20.00
2.500	4.000	62.00	20.00
2.550	4.000	62.00	20.00
2.600	4.000	66.00	21.00
2.650	4.000	66.00	21.00
2.700	4.000	66.00	22.00
2.750	4.000	66.00	22.00
2.780	4.000	66.00	22.00
2.800	4.000	66.00	22.00
2.850	4.000	66.00	23.00
2.900	4.000	66.00	23.00
2.950	4.000	66.00	24.00
3.000	4.000	66.00	24.00

Ratio drills without coolant ducts



Tool material **Solid carbide**

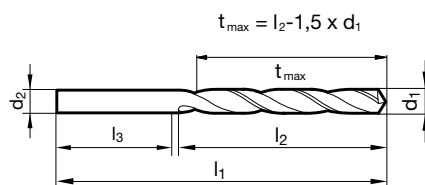
Surface **F**

Shank form cyl.

- P** ● web thinning ≥ Ø 3.000 • facet point grind • main cutting edge form straight • optimised cutting geometry
- M** ○
- K** ●
- N** ○ structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • cast materials • bronze, brass
- S** ○ • high-alloyed AISi alloys
- H** ○

GÜHRING NAVIGATOR

Cutting data page 190

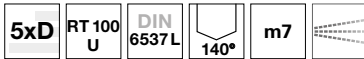


Article no. **2473**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3.000		3.000	46.00	16.00	30.00	6.200		6.200	70.00	31.00	39.00
3.200		3.200	49.00	18.00	31.00	6.400		6.400	70.00	31.00	39.00
3.300		3.300	49.00	18.00	31.00	7.000		7.000	74.00	34.00	40.00
3.500		3.500	52.00	20.00	32.00	7.400		7.400	74.00	34.00	40.00
3.800		3.800	55.00	22.00	33.00	8.100		8.100	79.00	37.00	42.00
3.900		3.900	55.00	22.00	33.00	8.500		8.500	79.00	37.00	42.00
4.000		4.000	55.00	22.00	33.00	8.800		8.800	84.00	40.00	44.00
4.200		4.200	55.00	22.00	33.00	9.100		9.100	84.00	40.00	44.00
4.500		4.500	58.00	24.00	34.00	9.400		9.400	84.00	40.00	44.00
4.600		4.600	58.00	24.00	34.00	10.000		10.000	89.00	43.00	46.00
4.900		4.900	62.00	26.00	36.00	10.200		10.200	89.00	43.00	46.00
5.000		5.000	62.00	26.00	36.00	10.500		10.500	89.00	43.00	46.00
5.200		5.200	62.00	26.00	36.00	11.500		11.500	95.00	47.00	48.00
5.300		5.300	62.00	26.00	36.00	11.800		11.800	95.00	47.00	48.00
5.500		5.500	66.00	28.00	38.00	12.000		12.000	102.00	51.00	51.00
5.800		5.800	66.00	28.00	38.00	12.500		12.500	102.00	51.00	51.00
6.000		6.000	66.00	28.00	38.00	14.000		14.000	107.00	54.00	53.00
6.100		6.100	70.00	31.00	39.00	15.500		15.500	115.00	58.00	57.00

Pilot tools

Ratio drills with coolant ducts

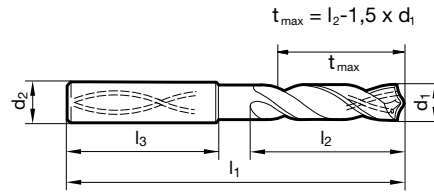


Tool material	Solid carbide
Surface	F
Shank form	HA

- P** • web thinning ≥ Ø 3.000 • facet point grind • main cutting edge form straight • optimised cutting geometry
- M** ○
- K** •
- N** ○ structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • cast materials • bronze, brass
- S** ○ • high-alloyed AISi alloys
- H** ○

GÜHRING NAVIGATOR

Cutting data page 190



Article no. **2479**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3.000		6.000	66.00	28.00	36.00	5.800		6.000	82.00	44.00	36.00
3.100		6.000	66.00	28.00	36.00	5.900		6.000	82.00	44.00	36.00
3.170	1/8	6.000	66.00	28.00	36.00	5.950	15/64	6.000	82.00	44.00	36.00
3.200		6.000	66.00	28.00	36.00	6.000		6.000	82.00	44.00	36.00
3.250		6.000	66.00	28.00	36.00	6.100		8.000	91.00	53.00	36.00
3.300		6.000	66.00	28.00	36.00	6.200		8.000	91.00	53.00	36.00
3.400		6.000	66.00	28.00	36.00	6.300		8.000	91.00	53.00	36.00
3.500		6.000	66.00	28.00	36.00	6.350	1/4	8.000	91.00	53.00	36.00
3.570	9/64	6.000	66.00	28.00	36.00	6.400		8.000	91.00	53.00	36.00
3.600		6.000	66.00	28.00	36.00	6.500		8.000	91.00	53.00	36.00
3.700		6.000	66.00	28.00	36.00	6.530		8.000	91.00	53.00	36.00
3.800		6.000	74.00	36.00	36.00	6.600		8.000	91.00	53.00	36.00
3.900		6.000	74.00	36.00	36.00	6.700		8.000	91.00	53.00	36.00
3.970	5/32	6.000	74.00	36.00	36.00	6.750	17/64	8.000	91.00	53.00	36.00
4.000		6.000	74.00	36.00	36.00	6.800		8.000	91.00	53.00	36.00
4.040		6.000	74.00	36.00	36.00	6.900		8.000	91.00	53.00	36.00
4.100		6.000	74.00	36.00	36.00	7.000		8.000	91.00	53.00	36.00
4.200		6.000	74.00	36.00	36.00	7.100		8.000	91.00	53.00	36.00
4.300		6.000	74.00	36.00	36.00	7.140	9/32	8.000	91.00	53.00	36.00
4.370	11/64	6.000	74.00	36.00	36.00	7.200		8.000	91.00	53.00	36.00
4.400		6.000	74.00	36.00	36.00	7.300		8.000	91.00	53.00	36.00
4.500		6.000	74.00	36.00	36.00	7.400		8.000	91.00	53.00	36.00
4.600		6.000	74.00	36.00	36.00	7.500		8.000	91.00	53.00	36.00
4.650		6.000	74.00	36.00	36.00	7.540	19/64	8.000	91.00	53.00	36.00
4.700		6.000	74.00	36.00	36.00	7.550		8.000	91.00	53.00	36.00
4.760	3/16	6.000	82.00	44.00	36.00	7.600		8.000	91.00	53.00	36.00
4.800		6.000	82.00	44.00	36.00	7.650		8.000	91.00	53.00	36.00
4.900		6.000	82.00	44.00	36.00	7.700		8.000	91.00	53.00	36.00
5.000		6.000	82.00	44.00	36.00	7.800		8.000	91.00	53.00	36.00
5.100		6.000	82.00	44.00	36.00	7.900		8.000	91.00	53.00	36.00
5.110		6.000	82.00	44.00	36.00	7.940	5/16	8.000	91.00	53.00	36.00
5.160	13/64	6.000	82.00	44.00	36.00	8.000		8.000	91.00	53.00	36.00
5.200		6.000	82.00	44.00	36.00	8.100		10.000	103.00	61.00	40.00
5.300		6.000	82.00	44.00	36.00	8.200		10.000	103.00	61.00	40.00
5.400		6.000	82.00	44.00	36.00	8.300		10.000	103.00	61.00	40.00
5.410		6.000	82.00	44.00	36.00	8.330	21/64	10.000	103.00	61.00	40.00
5.500		6.000	82.00	44.00	36.00	8.400		10.000	103.00	61.00	40.00
5.550		6.000	82.00	44.00	36.00	8.500		10.000	103.00	61.00	40.00
5.560	7/32	6.000	82.00	44.00	36.00	8.600		10.000	103.00	61.00	40.00
5.600		6.000	82.00	44.00	36.00	8.700		10.000	103.00	61.00	40.00
5.650		6.000	82.00	44.00	36.00	8.730	11/32	10.000	103.00	61.00	40.00
5.700		6.000	82.00	44.00	36.00	8.800		10.000	103.00	61.00	40.00

Tool holders for interchangeable inserts HT 800

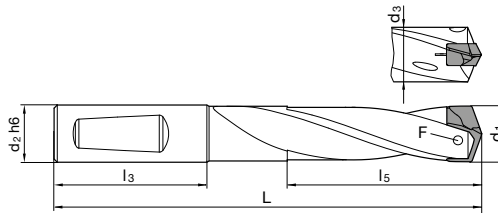


Surface **(Ni)**
Shank form HE

especially high wear resistance • optimised coolant duct exit • optimised flute design • nickel-plated • screwdriver art. no. 1612 included • clamping screws art. no. 4071 included

GÜHRING NAVIGATOR

Cutting data page 192



Article no. **4107**

d1	d2 h6	d3	L	l3	l5	F	Code no.
mm	mm	mm	mm	mm	mm		
11.00-11.49	12.000	10.700	101.000	45.000	36.600	4071 2.200	11.000
11.00-11.49	12.700	10.700	101.000	45.000	36.600	4071 2.200	11.005
11.50-11.99	12.000	11.200	103.000	45.000	38.100	4071 2.200	11.500
11.50-11.99	12.700	11.200	103.000	45.000	38.100	4071 2.200	11.505
12.00-12.49	12.000	11.700	106.000	45.000	39.700	4071 2.201	12.000
12.00-12.49	12.700	11.700	106.000	45.000	39.700	4071 2.201	12.005
12.50-12.99	14.000	12.200	108.000	45.000	41.300	4071 2.201	12.500
12.50-12.99	15.875	12.200	108.000	45.000	41.300	4071 2.201	12.505
13.00-13.49	14.000	12.700	110.000	45.000	42.900	4071 2.500	13.000
13.00-13.49	15.875	12.700	110.000	45.000	42.900	4071 2.500	13.005
13.50-13.99	14.000	13.200	113.000	45.000	44.600	4071 2.500	13.500
13.50-13.99	15.875	13.200	113.000	45.000	44.600	4071 2.500	13.505
14.00-14.49	14.000	13.700	115.000	45.000	46.200	4071 3.000	14.000
14.00-14.49	15.875	13.700	115.000	45.000	46.200	4071 3.000	14.005
14.50-14.99	16.000	14.200	120.000	48.000	47.800	4071 3.000	14.500
14.50-14.99	15.875	14.200	120.000	48.000	47.800	4071 3.000	14.505
15.00-15.49	16.000	14.700	123.000	48.000	49.300	4071 3.001	15.000
15.00-15.49	15.875	14.700	123.000	48.000	49.300	4071 3.001	15.005
15.50-15.99	16.000	15.200	125.000	48.000	50.900	4071 3.001	15.500
15.50-15.99	15.875	15.200	125.000	48.000	50.900	4071 3.001	15.505
16.00-16.49	16.000	15.700	127.000	48.000	52.900	4071 3.500	16.000
16.00-16.49	15.875	15.700	127.000	48.000	52.900	4071 3.500	16.005
16.50-16.99	18.000	16.200	130.000	48.000	54.100	4071 3.500	16.500
16.50-16.99	19.050	16.200	130.000	48.000	54.100	4071 3.500	16.505
17.00-17.49	18.000	16.700	132.000	48.000	55.800	4071 3.500	17.000
17.00-17.49	19.050	16.700	132.000	48.000	55.800	4071 3.500	17.005
17.50-17.99	18.000	17.200	134.000	48.000	57.400	4071 3.500	17.500
17.50-17.99	19.050	17.200	134.000	48.000	57.400	4071 3.500	17.505
18.00-18.49	18.000	17.700	137.000	48.000	58.900	4071 4.000	18.000
18.00-18.49	19.050	17.700	137.000	48.000	58.900	4071 4.000	18.005
18.50-18.99	20.000	18.200	141.000	50.000	60.500	4071 4.000	18.500
18.50-18.99	19.050	18.200	141.000	50.000	60.500	4071 4.000	18.505
19.00-19.49	20.000	18.700	143.000	50.000	62.100	4071 4.000	19.000
19.00-19.49	19.050	18.700	143.000	50.000	62.100	4071 4.000	19.005
19.50-19.99	20.000	19.200	146.000	50.000	63.700	4071 4.000	19.500
19.50-19.99	19.050	19.200	146.000	50.000	63.700	4071 4.000	19.505
20.00-20.49	20.000	19.700	148.000	50.000	65.300	4071 4.500	20.000
20.00-20.49	19.050	19.700	148.000	50.000	65.300	4071 4.500	20.005
20.50-20.99	25.000	20.200	159.000	56.000	67.000	4071 4.500	20.500
20.50-20.99	25.400	20.200	159.000	56.000	67.000	4071 4.500	20.505
21.00-21.49	25.000	20.700	161.000	56.000	68.600	4071 4.500	21.000
21.00-21.49	25.400	20.700	161.000	56.000	68.600	4071 4.500	21.005

d1	d2 h6	d3	L	l3	l5	F	Code no.
mm	mm	mm	mm	mm	mm		
21.50-21.99	25.000	21.200	163.000	56.000	70.100	4071 4.500	21.500
21.50-21.99	25.400	21.200	163.000	56.000	70.100	4071 4.500	21.505
22.00-22.49	25.000	21.700	165.000	56.000	71.700	4071 5.000	22.000
22.00-22.49	25.400	21.700	165.000	56.000	71.700	4071 5.000	22.005
22.50-22.99	25.000	22.200	168.000	56.000	73.300	4071 5.000	22.500
22.50-22.99	25.400	22.200	168.000	56.000	73.300	4071 5.000	22.505
23.00-23.49	25.000	22.700	170.000	56.000	74.900	4071 5.000	23.000
23.00-23.49	25.400	22.700	170.000	56.000	74.900	4071 5.000	23.005
23.50-23.99	25.000	23.200	173.000	56.000	76.500	4071 5.000	23.500
23.50-23.99	25.400	23.200	173.000	56.000	76.500	4071 5.000	23.505
24.00-24.49	25.000	23.700	175.000	56.000	78.100	4071 5.001	24.000
24.00-24.49	25.400	23.700	175.000	56.000	78.100	4071 5.001	24.005
24.50-24.99	25.000	24.200	177.000	56.000	79.700	4071 5.001	24.500
24.50-24.99	25.400	24.200	177.000	56.000	79.700	4071 5.001	24.505
25.00-25.49	25.000	24.700	180.000	56.000	81.300	4071 5.001	25.000
25.00-25.49	25.400	24.700	180.000	56.000	81.300	4071 5.001	25.005
25.50-25.99	32.000	25.200	187.000	60.000	82.900	4071 5.001	25.500
25.50-25.99	31.750	25.200	187.000	60.000	82.900	4071 5.001	25.505
26.00-26.49	32.000	25.700	191.000	60.000	84.000	4071 5.003	26.000
26.00-26.49	31.750	25.700	191.000	60.000	84.000	4071 5.003	26.005
26.50-26.99	32.000	26.200	193.000	60.000	86.100	4071 5.003	26.500
26.50-26.99	31.750	26.200	193.000	60.000	86.100	4071 5.003	26.505
27.00-27.49	32.000	26.700	196.000	60.000	87.200	4071 5.003	27.000
27.00-27.49	31.750	26.700	196.000	60.000	87.200	4071 5.003	27.005
27.50-27.99	32.000	27.200	198.000	60.000	88.900	4071 5.003	27.500
27.50-27.99	31.750	27.200	198.000	60.000	88.900	4071 5.003	27.505
28.00-28.49	32.000	27.700	200.000	60.000	90.400	4071 5.003	28.000
28.00-28.49	31.750	27.700	200.000	60.000	90.400	4071 5.003	28.005
28.50-28.99	32.000	28.200	202.000	60.000	92.500	4071 5.003	28.500
28.50-28.99	31.750	28.200	202.000	60.000	92.500	4071 5.003	28.505
29.00-29.49	32.000	28.700	205.000	60.000	94.600	4071 5.003	29.000
29.00-29.49	31.750	28.700	205.000	60.000	94.600	4071 5.003	29.005
29.50-29.99	32.000	29.200	207.000	60.000	95.100	4071 5.003	29.500
29.50-29.99	31.750	29.200	207.000	60.000	95.100	4071 5.003	29.505
30.00-30.49	32.000	29.700	210.000	60.000	96.700	4071 6.000	30.000
30.00-30.49	31.750	29.700	210.000	60.000	96.700	4071 6.000	30.005
30.50-30.99	32.000	30.200	212.000	60.000	98.300	4071 6.000	30.500
30.50-30.99	31.750	30.200	212.000	60.000	98.300	4071 6.000	30.505
31.00-31.49	32.000	30.700	214.000	60.000	99.800	4071 6.000	31.000
31.00-31.49	31.750	30.700	214.000	60.000	99.800	4071 6.000	31.005
31.50-31.99	32.000	31.200	216.000	60.000	101.400	4071 6.000	31.500
31.50-31.99	31.750	31.200	216.000	60.000	101.400	4071 6.000	31.505
32.00-32.99	32.000	31.700	221.000	60.000	104.600	4071 6.001	32.000
32.00-32.99	31.750	31.700	221.000	60.000	104.600	4071 6.001	32.005
33.00-33.99	32.000	32.700	226.000	60.000	107.800	4071 6.001	33.000
33.00-33.99	31.750	32.700	226.000	60.000	107.800	4071 6.001	33.005
34.00-34.99	32.000	33.700	230.000	60.000	111.000	4071 6.001	34.000
34.00-34.99	31.750	33.700	230.000	60.000	111.000	4071 6.001	34.005
35.00-35.99	32.000	34.700	235.000	60.000	114.200	4071 6.001	35.000
35.00-35.99	31.750	34.700	235.000	60.000	114.200	4071 6.001	35.005
36.00-36.99	32.000	35.700	240.000	60.000	117.300	4071 6.002	36.000
36.00-36.99	31.750	35.700	240.000	60.000	117.300	4071 6.002	36.005
37.00-37.99	32.000	36.700	245.000	60.000	120.500	4071 6.002	37.000
37.00-37.99	31.750	36.700	245.000	60.000	120.500	4071 6.002	37.005
38.00-38.99	32.000	37.700	249.000	60.000	123.700	4071 6.002	38.000
38.00-38.99	31.750	37.700	249.000	60.000	123.700	4071 6.002	38.005
39.00-40.00	32.000	38.700	254.000	60.000	126.900	4071 6.002	39.000
39.00-40.00	31.750	38.700	254.000	60.000	126.900	4071 6.002	39.005

Pilot tools

Interchangeable inserts HT 800



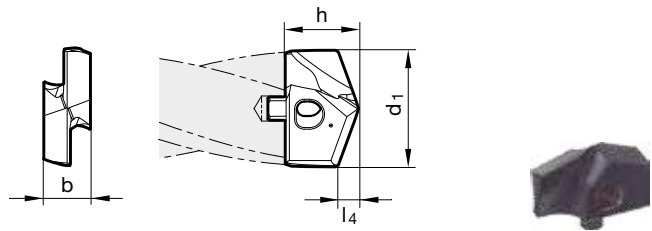
Tool material **Solid carbide**

Surface **a**

- P** ○ web thinning $\geq \varnothing 11.000$ • facet point grind • main cutting edge form straight (after correction) • clamping screws art. no. 4071 included
- M** ○ included
- K** ○
- N** ○
- S** ○ Piloting in all materials
- H** ○

GÜHRING NAVIGATOR

Cutting data page 192



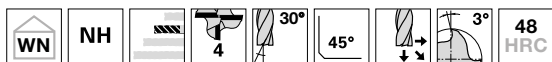
Article no. **4111**

d1		l4		b		h		Code no.
mm	inch	mm	mm	mm	mm	mm	mm	
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11.200		1.800		4.500		7.200		11.200
11.500		1.900		4.500		7.200		11.500
11.510	29/64	1.900		4.500		7.200		11.510
11.700		1.900		4.500		7.200		11.700
11.800		1.900		4.500		7.200		11.800
11.910	15/32	1.900		4.500		7.200		11.910
12.000		1.900		5.000		7.400		12.000
12.100		2.000		5.000		7.400		12.100
12.200		2.000		5.000		7.400		12.200
12.300	31/64	2.000		5.000		7.400		12.300
12.500		2.000		5.000		7.400		12.500
12.600		2.000		5.000		7.400		12.600
12.700	1/2	2.100		5.000		7.400		12.700
12.800		2.100		5.000		7.400		12.800
12.900		2.100		5.000		7.400		12.900
13.000		2.100		5.500		8.200		13.000
13.100	33/64	2.100		5.500		8.200		13.100
13.490	17/32	2.200		5.500		8.200		13.490
13.500		2.200		5.500		8.200		13.500
13.600		2.200		5.500		8.200		13.600
13.700		2.200		5.500		8.200		13.700
13.800		2.200		5.500		8.200		13.800
13.890	35/64	2.200		5.500		8.200		13.890
14.000		2.300		6.000		9.400		14.000
14.100		2.300		6.000		9.400		14.100
14.290	9/16	2.300		6.000		9.400		14.290
14.400		2.300		6.000		9.400		14.400
14.500		2.300		6.000		9.400		14.500
14.600		2.400		6.000		9.400		14.600
14.680	37/64	2.400		6.000		9.400		14.680
14.700		2.400		6.000		9.400		14.700
14.800		2.400		6.000		9.400		14.800
15.000		2.400		6.000		9.400		15.000
15.080	19/32	2.400		6.000		9.400		15.080
15.100		2.400		6.000		9.400		15.100
15.200		2.400		6.000		9.400		15.200
15.300		2.500		6.000		9.400		15.300
15.480	39/64	2.500		6.000		9.400		15.480
15.500		2.500		6.000		9.400		15.500
15.600		2.500		6.000		9.400		15.600
15.700		2.500		6.000		9.400		15.700

d1		l4	b	h	Code no.
mm	inch	mm	mm	mm	
15.800		2.500	6.000	9.400	15.800
15.870	5/8	2.600	6.000	9.400	15.870
16.000		2.600	7.000	10.600	16.000
16.270	41/64	2.600	7.000	10.600	16.270
16.500		2.700	7.000	10.600	16.500
16.670	21/32	2.700	7.000	10.600	16.670
17.000		2.700	7.000	10.600	17.000
17.070	43/64	2.700	7.000	10.600	17.070
17.460	11/16	2.800	7.000	10.600	17.460
17.500		2.800	7.000	10.600	17.500
17.600		2.800	7.000	10.600	17.600
17.860	45/64	2.900	7.000	10.600	17.860
18.000		2.900	8.000	12.100	18.000
18.260	23/32	2.900	8.000	12.100	18.260
18.500		3.000	8.000	12.100	18.500
18.650	47/64	3.000	8.000	12.100	18.650
19.000		3.000	8.000	12.100	19.000
19.050	3/4	3.100	8.000	12.100	19.050
19.450	49/64	3.100	8.000	12.100	19.450
19.500		3.100	8.000	12.100	19.500
19.600		3.100	8.000	12.100	19.600
19.840	25/32	3.200	8.000	12.100	19.840
20.000		3.200	9.000	13.300	20.000
20.240	51/64	3.200	9.000	13.300	20.240
20.500		3.300	9.000	13.300	20.500
20.640	13/16	3.300	9.000	13.300	20.640
21.000		3.400	9.000	13.300	21.000
21.030	53/64	3.400	9.000	13.300	21.030
21.100		3.400	9.000	13.300	21.100
21.430	27/32	3.400	9.000	13.300	21.430
21.500		3.400	9.000	13.300	21.500
21.830	55/64	3.500	9.000	13.300	21.830
22.000		3.500	10.000	14.800	22.000
22.220	7/8	3.600	10.000	14.800	22.220
22.500		3.600	10.000	14.800	22.500
22.620	57/64	3.600	10.000	14.800	22.620
23.000		3.700	10.000	14.800	23.000
23.020	29/32	3.700	10.000	14.800	23.020
23.420	59/64	3.700	10.000	14.800	23.420
23.500		3.800	10.000	14.800	23.500
23.810	15/16	3.800	10.000	14.800	23.810
24.000		3.800	11.000	15.300	24.000
24.100		3.800	11.000	15.300	24.100
24.210	61/64	3.900	11.000	15.300	24.210
24.500		3.900	11.000	15.300	24.500
24.610	31/32	3.900	11.000	15.300	24.610
25.000	63/64	4.000	11.000	15.300	25.000
25.400	1	4.100	11.000	15.300	25.400
25.500		4.100	11.000	15.300	25.500
25.700		4.100	11.000	15.300	25.700
26.000		4.100	12.000	19.400	26.000
26.190	1 1/32	4.200	12.000	19.400	26.190
26.500		4.200	12.000	19.400	26.500
26.590	1 3/64	4.200	12.000	19.400	26.590
27.000		4.300	12.000	19.400	27.000
27.500		4.400	12.000	19.400	27.500
27.700		4.400	12.000	19.400	27.700
27.780	1 3/32	4.400	12.000	19.400	27.780
28.000		4.500	13.000	20.100	28.000
28.180	1 7/64	4.500	13.000	20.100	28.180
28.500		4.500	13.000	20.100	28.500
28.580		4.600	13.000	20.100	28.580
29.000		4.600	13.000	20.100	29.000
29.370	1 5/32	4.700	13.000	20.100	29.370
29.500		4.700	13.000	20.100	29.500
29.770	1 11/64	4.700	13.000	20.100	29.770
30.000		4.800	14.000	21.700	30.000
30.160	1 3/16	4.800	14.000	21.700	30.160
30.500		4.900	14.000	21.700	30.500
30.960	1 7/32	4.900	14.000	21.700	30.960
31.000		4.900	14.000	21.700	31.000
31.500		5.000	14.000	21.700	31.500

d1		l4	b	h	Code no.
mm	inch	mm	mm	mm	
31.750	1 1/4	5.100	14.000	21.700	31.750
32.000		5.100	15.000	22.400	32.000
32.500		5.200	15.000	22.400	32.500
32.540	1 9/32	5.200	15.000	22.400	32.540
32.940	1 19/64	5.200	15.000	22.400	32.940
33.000		5.300	15.000	22.400	33.000
33.340	1 5/16	5.300	15.000	22.400	33.340
33.500		5.300	15.000	22.400	33.500
34.000		5.400	15.000	22.400	34.000
34.130	1 11/32	5.400	15.000	22.400	34.130
34.500		5.500	15.000	22.400	34.500
34.930		5.600	15.000	22.400	34.930
35.000		5.600	15.000	22.400	35.000
35.500		5.600	15.000	22.400	35.500
35.720	1 13/32	5.700	15.000	22.400	35.720
36.000		5.700	16.000	23.200	36.000
36.500		5.800	16.000	23.200	36.500
36.510	1 7/16	5.800	16.000	23.200	36.510
37.000		5.900	16.000	23.200	37.000
37.310	1 15/32	5.900	16.000	23.200	37.310
37.500		6.000	16.000	23.200	37.500
38.000		6.000	16.000	23.200	38.000
38.100	1 1/2	6.100	16.000	23.200	38.100
38.500	1 33/64	6.100	16.000	23.200	38.500
39.000		6.200	16.000	23.200	39.000
39.500		6.300	16.000	23.200	39.500
40.000		6.400	16.000	23.200	40.000

Pilot end mills RF 100 P

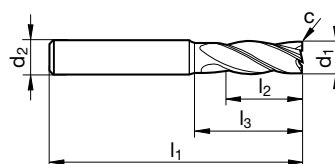


- P** • for piloting, drilling, finishing
- M** ○ special pilot geometry
- K** • centre cutting
- N** •
- S** ○
- H** ○

Tool material	Solid carbide
Surface	A
Type	NH
Shank form	HA

GUHRING NAVIGATOR

Cutting data page 194

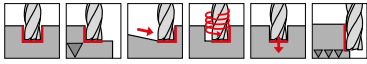


Article no. **6716**

d1 m8	d2 h6	l1	l2	l3	c	Z	Code no.
mm	mm	mm	mm	mm	mm x 45°		
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1.50	3.00	38	4.0	6.9	0.02	4	1.500
1.80	3.00	38	6.0	8.9	0.02	4	1.800
2.00	3.00	38	6.5	9.4	0.02	4	2.000
2.10	3.00	38	6.5	9.9	0.02	4	2.100
2.30	3.00	38	6.5	9.9	0.02	4	2.300
2.50	3.00	38	6.5	9.9	0.03	4	2.500
2.80	3.00	38	6.5	10.0	0.03	4	2.800
3.00	6.00	57	8.0	12.4	0.03	4	3.000
3.50	6.00	57	10.0	14.9	0.04	4	3.500
4.00	6.00	57	11.0	15.9	0.04	4	4.000
4.50	6.00	57	11.0	17.4	0.05	4	4.500
5.00	6.00	57	13.0	19.4	0.05	4	5.000
5.50	6.00	57	13.0	20.4	0.06	4	5.500
6.00	8.00	63	13.0	20.4	0.06	4	6.000
6.50	8.00	63	13.0	20.9	0.07	4	6.500
7.00	8.00	63	16.0	23.9	0.07	4	7.000
7.50	8.00	63	16.0	23.9	0.08	4	7.500
8.00	10.00	72	19.0	26.9	0.08	4	8.000
8.50	10.00	72	19.0	28.4	0.09	4	8.500
9.00	10.00	72	19.0	28.4	0.09	4	9.000
10.00	12.00	83	22.0	31.4	0.10	4	10.000
11.00	12.00	83	26.0	36.4	0.11	4	11.000
12.00	14.00	83	26.0	37.4	0.12	4	12.000

Pilot tools

Ratio end mills RF 100 DIVER

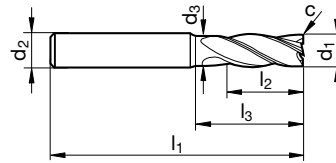


P	•	• neck clearance
M	•	• centre cutting
K	•	
N	•	
S	•	
H	○	

Tool material	Solid carbide
Surface	Y
Type	NH
Shank form	HA

GUHRING NAVIGATOR

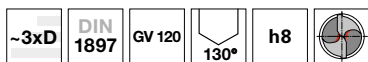
Cutting data page 194



Article no. **6737**

d1 h10	d2 h6	d3	l1	l2	l3	c	Z	Code no.
mm	mm	mm	mm	mm	mm	mm x 45°		
4.00	6.00	3.80	57	11.0	18.0	0.04	4	4.000
5.00	6.00	4.80	57	13.0	18.0	0.05	4	5.000
5.70	6.00	5.50	57	13.0	19.6	0.06	4	5.700
6.00	6.00	5.70	57	13.0	20.0	0.06	4	6.000
7.70	8.00	7.40	63	19.0	25.5	0.08	4	7.700
8.00	8.00	7.70	63	19.0	26.0	0.08	4	8.000
9.70	10.00	9.40	72	22.0	30.5	0.10	4	9.700
10.00	10.00	9.50	72	22.0	30.0	0.10	4	10.000
11.70	12.00	11.20	83	26.0	35.3	0.12	4	11.700
12.00	12.00	11.50	83	26.0	36.0	0.12	4	12.000
13.70	14.00	13.20	83	26.0	35.3	0.14	4	13.700
14.00	14.00	13.50	83	26.0	36.0	0.14	4	14.000
15.60	16.00	15.10	92	32.0	41.2	0.16	4	15.600
16.00	16.00	15.50	92	32.0	42.0	0.16	4	16.000
19.50	20.00	19.00	104	38.0	51.1	0.20	4	19.500
20.00	20.00	19.50	104	38.0	52.0	0.20	4	20.000

Stub drills

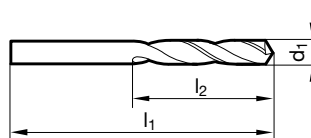


- P** • web thinning $\geq \varnothing 1.000$ • relieved cone • Co-alloyed high speed steel • increased wear resistance
- M** •
- K** •
- N** ○ acid resist./stainless steels • spring steels • austenitic stainless steels • Hastelloy, Inconel, Nimonic
- S** •
- H** ○

Tool material	HSC0
Surface	S
Cutting direction	R

GUHRING NAVIGATOR

Cutting data page 190



Article no. **659**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
0.500		20.00	3.00	2.000		38.00	12.00
0.600		21.00	3.50	2.050		38.00	12.00
0.650		22.00	4.00	2.080		38.00	12.00
0.700		23.00	4.50	2.100		38.00	12.00
0.740		23.00	4.50	2.180		40.00	13.00
0.750		23.00	4.50	2.200		40.00	13.00
0.790	1/32	24.00	5.00	2.250		40.00	13.00
0.800		24.00	5.00	2.260		40.00	13.00
0.850		24.00	5.00	2.300		40.00	13.00
0.900		25.00	5.50	2.350		40.00	13.00
0.950		25.00	5.50	2.370		43.00	14.00
1.000		26.00	6.00	2.380	3/32	43.00	14.00
1.020		26.00	6.00	2.400		43.00	14.00
1.070		28.00	7.00	2.440		43.00	14.00
1.090		28.00	7.00	2.450		43.00	14.00
1.100		28.00	7.00	2.490		43.00	14.00
1.150		28.00	7.00	2.500		43.00	14.00
1.180		28.00	7.00	2.530		43.00	14.00
1.190	3/64	30.00	8.00	2.550		43.00	14.00
1.200		30.00	8.00	2.580		43.00	14.00
1.250		30.00	8.00	2.600		43.00	14.00
1.300		30.00	8.00	2.640		43.00	14.00
1.320		30.00	8.00	2.700		46.00	16.00
1.400		32.00	9.00	2.710		46.00	16.00
1.450		32.00	9.00	2.780	7/64	46.00	16.00
1.500		32.00	9.00	2.800		46.00	16.00
1.510		34.00	10.00	2.820		46.00	16.00
1.530		34.00	10.00	2.850		46.00	16.00
1.550		34.00	10.00	2.900		46.00	16.00
1.570		34.00	10.00	2.950		46.00	16.00
1.590	1/16	34.00	10.00	3.000		46.00	16.00
1.600		34.00	10.00	3.030		49.00	18.00
1.610		34.00	10.00	3.050		49.00	18.00
1.700		34.00	10.00	3.100		49.00	18.00
1.780		36.00	11.00	3.170	1/8	49.00	18.00
1.800		36.00	11.00	3.200		49.00	18.00
1.850		36.00	11.00	3.250		49.00	18.00
1.900		36.00	11.00	3.260		49.00	18.00
1.930		38.00	12.00	3.300		49.00	18.00
1.970		38.00	12.00	3.350		49.00	18.00
1.980	5/64	38.00	12.00	3.400		52.00	20.00
1.990		38.00	12.00	3.450		52.00	20.00

d1		l1	l2
mm	inch	mm	mm
3.500		52.00	20.00
3.570	9/64	52.00	20.00
3.600		52.00	20.00
3.660		52.00	20.00
3.700		52.00	20.00
3.730		52.00	20.00
3.800		55.00	22.00
3.860		55.00	22.00
3.900		55.00	22.00
3.910		55.00	22.00
3.970	5/32	55.00	22.00
3.990		55.00	22.00
4.000		55.00	22.00
4.040		55.00	22.00
4.050		55.00	22.00
4.090		55.00	22.00
4.100		55.00	22.00
4.150		55.00	22.00
4.200		55.00	22.00
4.250		55.00	22.00
4.300		58.00	24.00
4.370	11/64	58.00	24.00
4.390		58.00	24.00
4.400		58.00	24.00
4.500		58.00	24.00
4.600		58.00	24.00
4.620		58.00	24.00
4.700		58.00	24.00
4.760	3/16	62.00	26.00
4.800		62.00	26.00
4.850		62.00	26.00
4.900		62.00	26.00
4.920		62.00	26.00
5.000		62.00	26.00
5.060		62.00	26.00
5.100		62.00	26.00
5.160	13/64	62.00	26.00
5.200		62.00	26.00
5.220		62.00	26.00
5.300		62.00	26.00
5.310		66.00	28.00
5.400		66.00	28.00
5.500		66.00	28.00
5.560	7/32	66.00	28.00
5.600		66.00	28.00
5.610		66.00	28.00
5.700		66.00	28.00
5.800		66.00	28.00
5.900		66.00	28.00
5.940		66.00	28.00
6.000		66.00	28.00
6.040		70.00	31.00
6.050		70.00	31.00
6.100		70.00	31.00
6.150		70.00	31.00
6.200		70.00	31.00
6.300		70.00	31.00
6.350	1/4	70.00	31.00
6.400		70.00	31.00
6.500		70.00	31.00
6.530		70.00	31.00
6.600		70.00	31.00
6.700		70.00	31.00
6.750	17/64	74.00	34.00
6.800		74.00	34.00
6.900		74.00	34.00
7.000		74.00	34.00
7.100		74.00	34.00
7.140	9/32	74.00	34.00
7.200		74.00	34.00
7.300		74.00	34.00
7.370		74.00	34.00

d1		l1	l2
mm	inch	mm	mm
7.400		74.00	34.00
7.490		74.00	34.00
7.500		74.00	34.00
7.540	19/64	79.00	37.00
7.600		79.00	37.00
7.700		79.00	37.00
7.800		79.00	37.00
7.900		79.00	37.00
7.940	5/16	79.00	37.00
8.000		79.00	37.00
8.100		79.00	37.00
8.200		79.00	37.00
8.300		79.00	37.00
8.400		79.00	37.00
8.500		79.00	37.00
8.600		84.00	40.00
8.610		84.00	40.00
8.700		84.00	40.00
8.730	11/32	84.00	40.00
8.800		84.00	40.00
8.840		84.00	40.00
9.000		84.00	40.00
9.100		84.00	40.00
9.130	23/64	84.00	40.00
9.200		84.00	40.00
9.300		84.00	40.00
9.400		84.00	40.00
9.500		84.00	40.00
9.520	3/8	89.00	43.00
9.600		89.00	43.00
9.700		89.00	43.00
9.800		89.00	43.00
9.900		89.00	43.00
9.920	25/64	89.00	43.00
10.000		89.00	43.00
10.100		89.00	43.00
10.200		89.00	43.00
10.250		89.00	43.00
10.320	13/32	89.00	43.00
10.500		89.00	43.00
10.720	27/64	95.00	47.00
10.800		95.00	47.00
10.900		95.00	47.00
11.000		95.00	47.00
11.110	7/16	95.00	47.00
11.500		95.00	47.00
12.000		102.00	51.00
12.100		102.00	51.00
12.200		102.00	51.00
12.300	31/64	102.00	51.00
12.500		102.00	51.00
12.700	1/2	102.00	51.00
12.800		102.00	51.00
13.000		102.00	51.00
13.300		107.00	54.00
13.490	17/32	107.00	54.00
13.500		107.00	54.00
14.000		107.00	54.00
14.290	9/16	111.00	56.00
14.500		111.00	56.00
15.000		111.00	56.00
15.500		115.00	58.00







































ACCESSORIES

- \ comprehensive accessories for deep hole drilling operations
- \ wear-resistant alternatives with metal chip protection
- \ special accessories for our EB 800

ACCESSORIES



Tool illustration	Standard	Tool material	Article no.	Page
Drill bushes				
		VHM	5748	148
		HSS	5747	149
Steady rest bushings for single- and double-fluted gun drills				
			5749	151
Moulded steady rest bushings for single-fluted gun drills				
			5750	154
			5767	157
Moulded steady rest bushing for two-fluted gun drills				
			5751	159
Sealing disks for single-fluted gun drills				
			5752	161
			5770	163
			5772	165
Sealing disks for two-fluted gun drills				
			5753	166
Adjustment screws				
			5754	168
			5755	169
Sealing plugs				
			5766	170
Torque wrenches set				
			4966	171
Torque wrenches				
			4915	172

Tool illustration	Standard	Tool material	Article no.	Page
Torx screwdriver			1612	173
Torx socket sets			4917	174
Clamping screws			4071	175

Drill bushes



Tool material

Solid carbide

special dimensions on request



Article no.

5748

d2 F7 mm	d1 n6 mm	l1 mm	Code no.
0.900	3.000	9.00	0.900
1.590	4.000	9.00	1.590
1.600	4.000	9.00	1.600
1.605	4.000	9.00	1.605
2.000	5.000	9.00	2.000
2.030	5.000	9.00	2.030
2.040	5.000	9.00	2.040
2.500	5.000	9.00	2.500
3.000	6.000	12.00	3.000
3.500	7.000	12.00	3.500
3.750	7.000	12.00	3.750
4.000	7.000	12.00	4.000
4.500	8.000	12.00	4.500
5.000	8.000	12.00	5.000
5.200	10.000	16.00	5.200
5.500	10.000	16.00	5.500
5.515	10.000	16.00	5.515
5.525	10.000	16.00	5.525
6.000	10.000	16.00	6.000
6.100	12.000	16.00	6.100
6.900	12.000	16.00	6.900
7.100	12.000	16.00	7.100
8.000	12.000	16.00	8.000
8.015	12.000	16.00	8.015
8.510	15.000	20.00	8.510
10.000	15.000	20.00	10.000
10.100	18.000	20.00	10.100
10.920	18.000	20.00	10.920
11.000	18.000	20.00	11.000
12.000	18.000	20.00	12.000

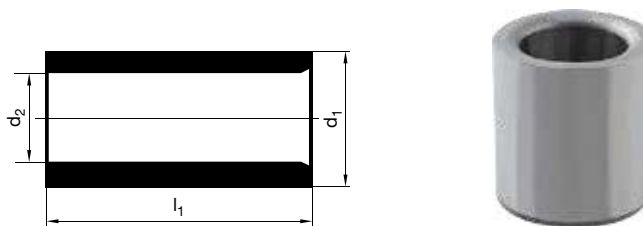
d2 F7 mm	d1 n6 mm	l1 mm	Code no.
12.030	18.000	20.00	12.030
12.100	22.000	28.00	12.100
12.600	22.000	28.00	12.600
13.000	22.000	28.00	13.000
14.000	22.000	28.00	14.000
14.030	22.000	28.00	14.030
14.400	22.000	28.00	14.400
16.000	26.000	28.00	16.000
16.030	26.000	28.00	16.030
16.200	26.000	28.00	16.200
18.000	26.000	28.00	18.000
18.030	26.000	28.00	18.030
18.050	26.000	28.00	18.050
18.100	30.000	36.00	18.100
20.000	30.000	36.00	20.000
20.030	30.000	36.00	20.030
22.000	30.000	36.00	22.000
22.030	30.000	36.00	22.030
22.120	35.000	36.00	22.120
23.500	35.000	36.00	23.500
24.000	35.000	36.00	24.000
24.030	35.000	36.00	24.030
25.000	35.000	36.00	25.000
26.000	35.000	36.00	26.000
28.000	42.000	45.00	28.000
30.000	42.000	45.00	30.000
34.000	48.000	45.00	34.000
35.000	48.000	45.00	35.000
40.000	55.000	55.00	40.000

Drill bushes



Tool material **HSS**

special dimensions on request



Article no. **5747**

d2 F7 mm	d1 n6 mm	l1 mm	Code no.	d2 F7 mm	d1 n6 mm	l1 mm	Code no.
0.900	3.000	9.00	0.900	5.950	10.000	16.00	5.950
1.110	4.000	9.00	1.110	6.000	10.000	16.00	6.000
1.210	4.000	9.00	1.210	6.050	10.000	16.00	6.050
1.310	4.000	9.00	1.310	6.100	12.000	16.00	6.100
1.410	4.000	9.00	1.410	6.300	12.000	16.00	6.300
1.510	4.000	9.00	1.510	6.350	12.000	16.00	6.350
1.600	4.000	9.00	1.600	6.370	12.000	16.00	6.370
1.650	4.000	9.00	1.650	6.450	12.000	16.00	6.450
1.710	4.000	9.00	1.710	6.502	12.000	16.00	6.502
1.810	4.000	9.00	1.810	6.600	12.000	16.00	6.600
2.000	5.000	9.00	2.000	6.730	12.000	16.00	6.730
2.200	5.000	9.00	2.200	6.731	12.000	16.00	6.731
2.340	5.000	9.00	2.340	6.750	12.000	16.00	6.750
2.700	6.000	12.00	2.700	6.800	12.000	16.00	6.800
2.800	6.000	12.00	2.800	6.950	12.000	16.00	6.950
3.000	6.000	12.00	3.000	7.000	12.000	16.00	7.000
3.100	6.000	12.00	3.100	7.100	12.000	16.00	7.100
3.255	6.000	12.00	3.255	7.400	12.000	16.00	7.400
3.300	6.000	12.00	3.300	7.500	12.000	16.00	7.500
3.400	7.000	12.00	3.400	7.550	12.000	16.00	7.550
3.500	7.000	12.00	3.500	7.600	12.000	16.00	7.600
3.650	7.000	12.00	3.650	7.800	12.000	16.00	7.800
3.700	7.000	12.00	3.700	7.830	12.000	16.00	7.830
3.710	7.000	12.00	3.710	7.850	12.000	16.00	7.850
3.800	7.000	12.00	3.800	7.938	12.000	16.00	7.938
4.000	7.000	12.00	4.000	8.000	12.000	16.00	8.000
4.100	8.000	12.00	4.100	8.020	12.000	16.00	8.020
4.300	8.000	12.00	4.300	8.050	12.000	16.00	8.050
4.500	8.000	12.00	4.500	8.100	15.000	20.00	8.100
4.600	8.000	12.00	4.600	8.500	15.000	20.00	8.500
4.760	8.000	12.00	4.760	8.530	15.000	20.00	8.530
4.763	8.000	12.00	4.763	8.800	15.000	20.00	8.800
4.800	8.000	12.00	4.800	8.950	15.000	20.00	8.950
5.000	8.000	12.00	5.000	9.000	15.000	20.00	9.000
5.020	8.000	12.00	5.020	9.100	15.000	20.00	9.100
5.100	10.000	16.00	5.100	9.200	15.000	20.00	9.200
5.200	10.000	16.00	5.200	9.300	15.000	20.00	9.300
5.300	10.000	16.00	5.300	9.500	15.000	20.00	9.500
5.400	10.000	16.00	5.400	9.525	15.000	20.00	9.525
5.500	10.000	16.00	5.500	9.530	15.000	20.00	9.530
5.600	10.000	16.00	5.600	9.570	15.000	20.00	9.570
5.800	10.000	16.00	5.800	9.652	15.000	20.00	9.652

Accessories

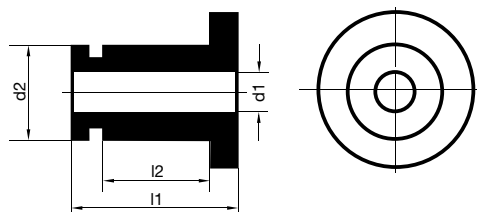
d2 F7	d1 n6	l1	Code no.
mm	mm	mm	
9.800	15.000	20.00	9.800
10.000	15.000	20.00	10.000
10.100	18.000	20.00	10.100
10.420	18.000	20.00	10.420
10.600	18.000	20.00	10.600
10.725	18.000	20.00	10.725
11.000	18.000	20.00	11.000
11.080	18.000	20.00	11.080
11.100	18.000	20.00	11.100
11.113	18.000	20.00	11.113
11.500	18.000	20.00	11.500
11.600	18.000	20.00	11.600
12.000	18.000	20.00	12.000
12.020	18.000	20.00	12.020
12.100	22.000	28.00	12.100
12.530	22.000	28.00	12.530
12.600	22.000	28.00	12.600
12.700	22.000	28.00	12.700
12.800	22.000	28.00	12.800
12.954	22.000	28.00	12.954
13.000	22.000	28.00	13.000
13.400	22.000	28.00	13.400
13.500	22.000	28.00	13.500
13.700	22.000	28.00	13.700
13.800	22.000	28.00	13.800
14.000	22.000	28.00	14.000
14.310	22.000	28.00	14.310
14.620	22.000	28.00	14.620
14.770	22.000	28.00	14.770
15.000	22.000	28.00	15.000
15.875	26.000	28.00	15.875
16.000	26.000	28.00	16.000
16.330	26.000	28.00	16.330
17.040	26.000	28.00	17.040
17.080	26.000	28.00	17.080
18.000	26.000	28.00	18.000

d2 F7	d1 n6	l1	Code no.
mm	mm	mm	
18.100	30.000	36.00	18.100
18.255	30.000	36.00	18.255
18.450	30.000	36.00	18.450
19.000	30.000	36.00	19.000
19.050	30.000	36.00	19.050
19.300	30.000	36.00	19.300
19.500	30.000	36.00	19.500
19.700	30.000	36.00	19.700
20.000	30.000	36.00	20.000
21.050	30.000	36.00	21.050
22.000	30.000	36.00	22.000
22.100	35.000	36.00	22.100
22.120	35.000	36.00	22.120
22.225	35.000	36.00	22.225
23.500	35.000	36.00	23.500
24.000	35.000	36.00	24.000
24.500	35.000	36.00	24.500
25.000	35.000	36.00	25.000
25.250	35.000	36.00	25.250
25.400	35.000	36.00	25.400
26.000	35.000	36.00	26.000
28.000	42.000	45.00	28.000
28.169	42.000	45.00	28.169
30.000	42.000	45.00	30.000
30.100	48.000	45.00	30.100
32.000	48.000	45.00	32.000
34.000	48.000	45.00	34.000
35.000	48.000	45.00	35.000
38.100	55.000	55.00	38.100
40.000	55.000	55.00	40.000

Steady rest bushings for single- and double-fluted gun drills



special dimensions on request
d1 = gun drill nominal diameter



Article no. **5749**

d1	d2 n6	l1	l2	Code no.
mm	mm	mm	mm	
1,850-1,999	20.000	20.00	12.00	201.800
2.000-2.099	20.000	20.00	12.00	201.900
2,100-2,199	20.000	20.00	12.00	202.000
2.200-2.299	20.000	20.00	12.00	202.100
2.300-2.399	20.000	20.00	12.00	202.200
2,400-2,499	20.000	20.00	12.00	202.300
2,500-2,599	20.000	20.00	12.00	202.400
2,600-2,699	20.000	20.00	12.00	202.500
2,700-2,799	20.000	20.00	12.00	202.600
2,800-2,899	20.000	20.00	12.00	202.700
2,900-3,099	20.000	20.00	12.00	202.800
3,100-3,359	20.000	20.00	12.00	203.000
3,360-3,459	20.000	20.00	12.00	203.200
3,460-3,559	20.000	20.00	12.00	203.300
3,560-3,799	20.000	20.00	12.00	203.400
3,800-3,959	20.000	20.00	12.00	203.600
3,960-4,259	20.000	20.00	12.00	203.700
4,260-4,499	20.000	20.00	12.00	204.000
4,500-4,749	20.000	20.00	12.00	204.200
4,750-4,999	20.000	20.00	12.00	204.500
5,000-5,249	20.000	20.00	12.00	204.700
5,250-5,499	20.000	20.00	12.00	205.000
5,500-5,749	20.000	20.00	12.00	205.200
5,750-5,999	20.000	20.00	12.00	205.500
6,000-6,249	20.000	20.00	12.00	205.700
6,250-6,449	20.000	20.00	12.00	206.000
6,450-6,749	20.000	20.00	12.00	206.200
6,750-6,999	20.000	20.00	12.00	206.500
7,000-7,299	20.000	20.00	12.00	206.700
7,300-7,599	20.000	20.00	12.00	207.000
7,600-7,799	20.000	20.00	12.00	207.300
7,800-7,999	20.000	20.00	12.00	207.500
8,000-8,299	20.000	20.00	12.00	207.700
8,300-8,699	20.000	20.00	12.00	208.000
8,700-8,999	20.000	20.00	12.00	208.400
9,000-9,299	20.000	20.00	12.00	208.700
9,300-9,699	20.000	20.00	12.00	209.000
9,700-9,999	20.000	20.00	12.00	209.400
10,000-10,299	20.000	20.00	12.00	209.700
10,300-10,799	20.000	20.00	12.00	210.000
10,800-11,299	20.000	20.00	12.00	210.500
11,300-11,799	20.000	20.00	12.00	211.000
11,800-12,399	20.000	20.00	12.00	211.500
1,850-1,999	30.000	26.00	14.00	301.800
2.000-2.099	30.000	26.00	14.00	301.900
2,100-2,199	30.000	26.00	14.00	302.000
2.200-2.299	30.000	26.00	14.00	302.100
2.300-2.399	30.000	26.00	14.00	302.200

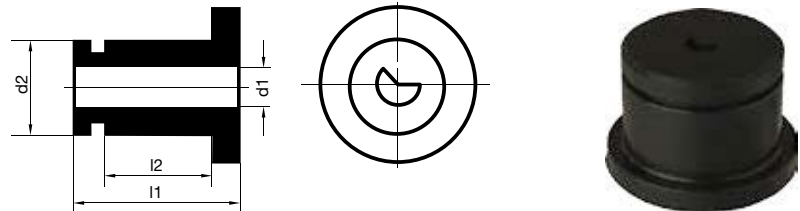
d1	d2 n6	l1	l2	Code no.
mm	mm	mm	mm	
2,400-2,499	30.000	26.00	14.00	302.300
2,500-2,599	30.000	26.00	14.00	302.400
2,600-2,699	30.000	26.00	14.00	302.500
2,700-2,799	30.000	26.00	14.00	302.600
2,800-2,899	30.000	26.00	14.00	302.700
2,900-3,099	30.000	26.00	14.00	302.800
3,100-3,359	30.000	26.00	14.00	303.000
3,360-3,459	30.000	26.00	14.00	303.200
3,460-3,559	30.000	26.00	14.00	303.300
3,560-3,799	30.000	26.00	14.00	303.400
3,800-3,959	30.000	26.00	14.00	303.600
3,960-4,259	30.000	26.00	14.00	303.700
4,260-4,499	30.000	26.00	14.00	304.000
4,500-4,749	30.000	26.00	14.00	304.200
4,750-4,999	30.000	26.00	14.00	304.500
5,000-5,249	30.000	26.00	14.00	304.700
5,250-5,499	30.000	26.00	14.00	305.000
5,500-5,749	30.000	26.00	14.00	305.200
5,750-5,999	30.000	26.00	14.00	305.500
6,000-6,249	30.000	26.00	14.00	305.700
6,250-6,449	30.000	26.00	14.00	306.000
6,450-6,749	30.000	26.00	14.00	306.200
6,750-6,999	30.000	26.00	14.00	306.500
7,000-7,299	30.000	26.00	14.00	306.700
7,300-7,599	30.000	26.00	14.00	307.000
7,600-7,799	30.000	26.00	14.00	307.300
7,800-7,999	30.000	26.00	14.00	307.500
8,000-8,299	30.000	26.00	14.00	307.700
8,300-8,699	30.000	26.00	14.00	308.000
8,700-8,999	30.000	26.00	14.00	308.400
9,000-9,299	30.000	26.00	14.00	308.700
9,300-9,699	30.000	26.00	14.00	309.000
9,700-9,999	30.000	26.00	14.00	309.400
10,000-10,299	30.000	26.00	14.00	309.700
10,300-10,799	30.000	26.00	14.00	310.000
10,800-11,299	30.000	26.00	14.00	310.500
11,300-11,799	30.000	26.00	14.00	311.000
11,800-12,399	30.000	26.00	14.00	311.500
12,400-12,899	30.000	26.00	14.00	312.000
12,900-13,399	30.000	26.00	14.00	312.500
13,400-13,899	30.000	26.00	14.00	313.000
13,900-14,399	30.000	26.00	14.00	313.500
14,400-14,899	30.000	26.00	14.00	314.000
14,900-15,399	30.000	26.00	14.00	314.500
15,400-15,899	30.000	26.00	14.00	315.000
15,900-16,399	30.000	26.00	14.00	315.500
16,400-16,899	30.000	26.00	14.00	316.000
16,900-17,399	30.000	26.00	14.00	316.500
17,400-17,899	30.000	26.00	14.00	317.000
17,900-18,399	30.000	26.00	14.00	317.500
18,400-19,509	30.000	26.00	14.00	318.000
19,510-20,509	30.000	26.00	14.00	319.000
20,510-21,509	30.000	26.00	14.00	320.000
21,510-22,609	30.000	26.00	14.00	321.000
22,610-23,609	30.000	26.00	14.00	322.000
23,610-24,609	30.000	26.00	14.00	323.000
24,610-25,609	30.000	26.00	14.00	324.000
1,850-1,999	45.000	26.00	16.00	401.800
2,000-2,099	45.000	26.00	16.00	401.900
2,100-2,199	45.000	26.00	16.00	402.000
2,200-2,299	45.000	26.00	16.00	402.100
2,300-2,399	45.000	26.00	16.00	402.200
2,400-2,499	45.000	26.00	16.00	402.300
2,500-2,599	45.000	26.00	16.00	402.400
2,600-2,699	45.000	26.00	16.00	402.500
2,700-2,799	45.000	26.00	16.00	402.600
2,800-2,899	45.000	26.00	16.00	402.700
2,900-3,099	45.000	26.00	16.00	402.800
3,100-3,359	45.000	26.00	16.00	403.000
3,360-3,459	45.000	26.00	16.00	403.200
3,460-3,559	45.000	26.00	16.00	403.300
3,560-3,799	45.000	26.00	16.00	403.400

d1	d2 n6	l1	l2	Code no.
mm	mm	mm	mm	
3.800-3.959	45.000	26.00	16.00	403.600
3.960-4.259	45.000	26.00	16.00	403.700
4.260-4.499	45.000	26.00	16.00	404.000
4.500-4.749	45.000	26.00	16.00	404.200
4.750-4.999	45.000	26.00	16.00	404.500
5.000-5.249	45.000	26.00	16.00	404.700
5.250-5.499	45.000	26.00	16.00	405.000
5.500-5.749	45.000	26.00	16.00	405.200
5.750-5.999	45.000	26.00	16.00	405.500
6.000-6.249	45.000	26.00	16.00	405.700
6.250-6.449	45.000	26.00	16.00	406.000
6.450-6.749	45.000	26.00	16.00	406.200
6.750-6.999	45.000	26.00	16.00	406.500
7.000-7.299	45.000	26.00	16.00	406.700
7.300-7.599	45.000	26.00	16.00	407.000
7.600-7.799	45.000	26.00	16.00	407.300
7.800-7.999	45.000	26.00	16.00	407.500
8.000-8.299	45.000	26.00	16.00	407.700
8.300-8.699	45.000	26.00	16.00	408.000
8.700-8.999	45.000	26.00	16.00	408.400
9.000-9.299	45.000	26.00	16.00	408.700
9.300-9.699	45.000	26.00	16.00	409.000
9.700-9.999	45.000	26.00	16.00	409.400
10.000-10.299	45.000	26.00	16.00	409.700
10.300-10.799	45.000	26.00	16.00	410.000
10.800-11.299	45.000	26.00	16.00	410.500
11.300-11.799	45.000	26.00	16.00	411.000
11.800-12.399	45.000	26.00	16.00	411.500
12.400-12.899	45.000	26.00	16.00	412.000
12.900-13.399	45.000	26.00	16.00	412.500
13.400-13.899	45.000	26.00	16.00	413.000
13.900-14.399	45.000	26.00	16.00	413.500
14.400-14.899	45.000	26.00	16.00	414.000
14.900-15.399	45.000	26.00	16.00	414.500
15.400-15.899	45.000	26.00	16.00	415.000
15.900-16.399	45.000	26.00	16.00	415.500
16.400-16.899	45.000	26.00	16.00	416.000
16.900-17.399	45.000	26.00	16.00	416.500
17.400-17.899	45.000	26.00	16.00	417.000
17.900-18.399	45.000	26.00	16.00	417.500
18.400-19.509	45.000	26.00	16.00	418.000
19.510-20.509	45.000	26.00	16.00	419.000
20.510-21.509	45.000	26.00	16.00	420.000
21.510-22.609	45.000	26.00	16.00	421.000
22.610-23.609	45.000	26.00	16.00	422.000
23.610-24.609	45.000	26.00	16.00	423.000
24.610-25.609	45.000	26.00	16.00	424.000
25.610-26.609	45.000	26.00	16.00	425.000
26.610-27.609	45.000	26.00	16.00	426.000
27.610-28.609	45.000	26.00	16.00	427.000
28.610-29.609	45.000	26.00	16.00	428.000
29.610-30.609	45.000	26.00	16.00	429.000
30.610-32.609	45.000	26.00	16.00	430.000
32.610-34.699	45.000	26.00	16.00	432.000
34.700-36.699	45.000	26.00	16.00	434.000
34.700-36.699	55.000	26.00	14.50	534.000
36.700-38.699	55.000	26.00	14.50	536.000
38.700-42.699	55.000	26.00	14.50	538.000
42.700-45.699	55.000	26.00	14.50	542.000
45.700-48.999	55.000	26.00	14.50	545.000

Moulded steady rest bushings for single-fluted gun drills



special dimensions on request
d1 = gun drill nominal diameter



Article no. **5750**

d1	d2 n6	l1	l2	Code no.
mm	mm	mm	mm	
2.000-2.099	20.000	20.00	12.00	201.900
2.100-2.199	20.000	20.00	12.00	202.000
2.200-2.299	20.000	20.00	12.00	202.100
2.300-2.399	20.000	20.00	12.00	202.200
2.400-2.499	20.000	20.00	12.00	202.300
2.500-2.599	20.000	20.00	12.00	202.400
2.600-2.699	20.000	20.00	12.00	202.500
2.700-2.799	20.000	20.00	12.00	202.600
2.800-2.899	20.000	20.00	12.00	202.700
2.900-3.099	20.000	20.00	12.00	202.800
3.100-3.359	20.000	20.00	12.00	203.000
3.360-3.459	20.000	20.00	12.00	203.200
3.460-3.559	20.000	20.00	12.00	203.300
3.560-3.799	20.000	20.00	12.00	203.400
3.800-3.959	20.000	20.00	12.00	203.600
3.960-4.259	20.000	20.00	12.00	203.700
4.260-4.499	20.000	20.00	12.00	204.000
4.500-4.749	20.000	20.00	12.00	204.200
4.750-4.999	20.000	20.00	12.00	204.500
5.000-5.249	20.000	20.00	12.00	204.700
5.250-5.499	20.000	20.00	12.00	205.000
5.500-5.749	20.000	20.00	12.00	205.200
5.750-5.999	20.000	20.00	12.00	205.500
6.000-6.249	20.000	20.00	12.00	205.700
6.250-6.449	20.000	20.00	12.00	206.000
6.450-6.749	20.000	20.00	12.00	206.200
6.750-6.999	20.000	20.00	12.00	206.500
7.000-7.299	20.000	20.00	12.00	206.700
7.300-7.599	20.000	20.00	12.00	207.000
7.600-7.799	20.000	20.00	12.00	207.300
7.800-7.999	20.000	20.00	12.00	207.500
8.000-8.299	20.000	20.00	12.00	207.700
8.300-8.699	20.000	20.00	12.00	208.000
8.700-8.999	20.000	20.00	12.00	208.400
9.000-9.299	20.000	20.00	12.00	208.700
9.300-9.699	20.000	20.00	12.00	209.000
9.700-9.999	20.000	20.00	12.00	209.400
10.000-10.299	20.000	20.00	12.00	209.700
10.300-10.799	20.000	20.00	12.00	210.000
10.800-11.299	20.000	20.00	12.00	210.500
11.300-11.799	20.000	20.00	12.00	211.000
11.800-12.399	20.000	20.00	12.00	211.500
2.900-3.099	30.000	26.00	14.00	302.800
3.100-3.359	30.000	26.00	14.00	303.000
3.360-3.459	30.000	26.00	14.00	303.200
3.460-3.559	30.000	26.00	14.00	303.300
3.560-3.799	30.000	26.00	14.00	303.400
3.800-3.959	30.000	26.00	14.00	303.600

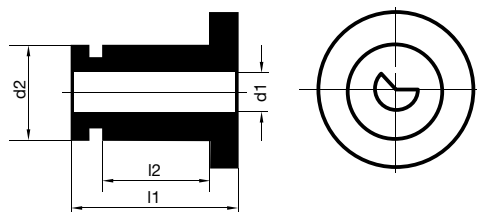
d1	d2 n6	l1	l2	Code no.
mm	mm	mm	mm	
3.960-4.259	30.000	26.00	14.00	303.700
4.260-4.499	30.000	26.00	14.00	304.000
4.500-4.749	30.000	26.00	14.00	304.200
4.750-4.999	30.000	26.00	14.00	304.500
5.000-5.249	30.000	26.00	14.00	304.700
5.250-5.499	30.000	26.00	14.00	305.000
5.500-5.749	30.000	26.00	14.00	305.200
5.750-5.999	30.000	26.00	14.00	305.500
6.000-6.249	30.000	26.00	14.00	305.700
6.250-6.449	30.000	26.00	14.00	306.000
6.450-6.749	30.000	26.00	14.00	306.200
6.750-6.999	30.000	26.00	14.00	306.500
7.000-7.299	30.000	26.00	14.00	306.700
7.300-7.599	30.000	26.00	14.00	307.000
7.600-7.799	30.000	26.00	14.00	307.300
7.800-7.999	30.000	26.00	14.00	307.500
8.000-8.299	30.000	26.00	14.00	307.700
8.300-8.699	30.000	26.00	14.00	308.000
8.700-8.999	30.000	26.00	14.00	308.400
9.000-9.299	30.000	26.00	14.00	308.700
9.300-9.699	30.000	26.00	14.00	309.000
9.700-9.999	30.000	26.00	14.00	309.400
10.000-10.299	30.000	26.00	14.00	309.700
10.300-10.799	30.000	26.00	14.00	310.000
10.800-11.299	30.000	26.00	14.00	310.500
11.300-11.799	30.000	26.00	14.00	311.000
11.800-12.399	30.000	26.00	14.00	311.500
12.400-12.899	30.000	26.00	14.00	312.000
12.900-13.399	30.000	26.00	14.00	312.500
13.400-13.899	30.000	26.00	14.00	313.000
13.900-14.399	30.000	26.00	14.00	313.500
14.400-14.899	30.000	26.00	14.00	314.000
14.900-15.399	30.000	26.00	14.00	314.500
15.400-15.899	30.000	26.00	14.00	315.000
15.900-16.399	30.000	26.00	14.00	315.500
16.400-16.899	30.000	26.00	14.00	316.000
16.900-17.399	30.000	26.00	14.00	316.500
17.400-17.899	30.000	26.00	14.00	317.000
17.900-18.399	30.000	26.00	14.00	317.500
18.400-19.509	30.000	26.00	14.00	318.000
19.510-20.509	30.000	26.00	14.00	319.000
20.510-21.509	30.000	26.00	14.00	320.000
21.510-22.609	30.000	26.00	14.00	321.000
22.610-23.609	30.000	26.00	14.00	322.000
23.610-24.609	30.000	26.00	14.00	323.000
24.610-25.609	30.000	26.00	14.00	324.000
3.100-3.359	45.000	26.00	16.00	403.000
3.360-3.459	45.000	26.00	16.00	403.200
3.460-3.559	45.000	26.00	16.00	403.300
3.560-3.799	45.000	26.00	16.00	403.400
3.800-3.959	45.000	26.00	16.00	403.600
3.960-4.259	45.000	26.00	16.00	403.700
4.260-4.499	45.000	26.00	16.00	404.000
4.500-4.749	45.000	26.00	16.00	404.200
4.750-4.999	45.000	26.00	16.00	404.500
5.000-5.249	45.000	26.00	16.00	404.700
5.250-5.499	45.000	26.00	16.00	405.000
5.500-5.749	45.000	26.00	16.00	405.200
5.750-5.999	45.000	26.00	16.00	405.500
6.000-6.249	45.000	26.00	16.00	405.700
6.250-6.449	45.000	26.00	16.00	406.000
6.450-6.749	45.000	26.00	16.00	406.200
6.750-6.999	45.000	26.00	16.00	406.500
7.000-7.299	45.000	26.00	16.00	406.700
7.300-7.599	45.000	26.00	16.00	407.000
7.600-7.799	45.000	26.00	16.00	407.300
7.800-7.999	45.000	26.00	16.00	407.500
8.000-8.299	45.000	26.00	16.00	407.700
8.300-8.699	45.000	26.00	16.00	408.000
8.700-8.999	45.000	26.00	16.00	408.400
9.000-9.299	45.000	26.00	16.00	408.700
9.300-9.699	45.000	26.00	16.00	409.000

d1	d2 n6	l1	l2	Code no.
mm	mm	mm	mm	
9.700-9.999	45.000	26.00	16.00	409.400
10.000-10.299	45.000	26.00	16.00	409.700
10.300-10.799	45.000	26.00	16.00	410.000
10.800-11.299	45.000	26.00	16.00	410.500
11.300-11.799	45.000	26.00	16.00	411.000
11.800-12.399	45.000	26.00	16.00	411.500
12.400-12.899	45.000	26.00	16.00	412.000
12.900-13.399	45.000	26.00	16.00	412.500
13.400-13.899	45.000	26.00	16.00	413.000
13.900-14.399	45.000	26.00	16.00	413.500
14.400-14.899	45.000	26.00	16.00	414.000
14.900-15.399	45.000	26.00	16.00	414.500
15.400-15.899	45.000	26.00	16.00	415.000
15.900-16.399	45.000	26.00	16.00	415.500
16.400-16.899	45.000	26.00	16.00	416.000
16.900-17.399	45.000	26.00	16.00	416.500
17.400-17.899	45.000	26.00	16.00	417.000
17.900-18.399	45.000	26.00	16.00	417.500
18.400-19.509	45.000	26.00	16.00	418.000
19.510-20.509	45.000	26.00	16.00	419.000
20.510-21.509	45.000	26.00	16.00	420.000
21.510-22.609	45.000	26.00	16.00	421.000
22.610-23.609	45.000	26.00	16.00	422.000
23.610-24.609	45.000	26.00	16.00	423.000
24.610-25.609	45.000	26.00	16.00	424.000
25.610-26.609	45.000	26.00	16.00	425.000
26.610-27.609	45.000	26.00	16.00	426.000
27.610-28.609	45.000	26.00	16.00	427.000
28.610-29.609	45.000	26.00	16.00	428.000
29.610-30.609	45.000	26.00	16.00	429.000
30.610-32.609	45.000	26.00	16.00	430.000
32.610-34.699	45.000	26.00	16.00	432.000
34.700-36.699	45.000	26.00	16.00	434.000
34.700-36.699	55.000	26.00	14.50	534.000
36.700-38.699	55.000	26.00	14.50	536.000
38.700-42.699	55.000	26.00	14.50	538.000
42.700-45.699	55.000	26.00	14.50	542.000
45.700-48.999	55.000	26.00	14.50	545.000

Moulded steady rest bushings for single-fluted gun drills



with metal chip protection
special dimensions on request
d1 = gun drill nominal diameter

Article no. **5767**

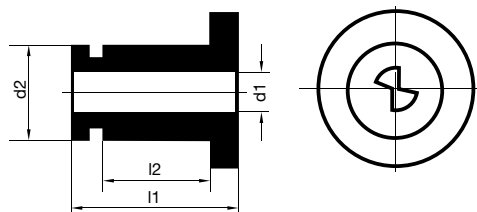
d1	d2 n6	l1	l2	Code no.
mm	mm	mm	mm	
2.000-2.099	20.000	20.00	12.00	201.900
2.100-2.199	20.000	20.00	12.00	202.000
2.200-2.299	20.000	20.00	12.00	202.100
2.300-2.399	20.000	20.00	12.00	202.200
2.400-2.499	20.000	20.00	12.00	202.300
2.500-2.599	20.000	20.00	12.00	202.400
2.600-2.699	20.000	20.00	12.00	202.500
2.700-2.799	20.000	20.00	12.00	202.600
2.800-2.899	20.000	20.00	12.00	202.700
2.900-3.099	20.000	20.00	12.00	202.800
3.100-3.359	20.000	20.00	12.00	203.000
3.360-3.459	20.000	20.00	12.00	203.200
3.460-3.559	20.000	20.00	12.00	203.300
3.560-3.799	20.000	20.00	12.00	203.400
3.800-3.959	20.000	20.00	12.00	203.600
3.960-4.259	20.000	20.00	12.00	203.700
4.260-4.499	20.000	20.00	12.00	204.000
4.500-4.749	20.000	20.00	12.00	204.200
4.750-4.999	20.000	20.00	12.00	204.500
5.000-5.249	20.000	20.00	12.00	204.700
5.250-5.499	20.000	20.00	12.00	205.000
5.500-5.749	20.000	20.00	12.00	205.200
5.750-5.999	20.000	20.00	12.00	205.500
6.000-6.249	20.000	20.00	12.00	205.700
6.250-6.449	20.000	20.00	12.00	206.000
6.450-6.749	20.000	20.00	12.00	206.200
6.750-6.999	20.000	20.00	12.00	206.500
7.000-7.299	20.000	20.00	12.00	206.700
7.300-7.599	20.000	20.00	12.00	207.000
7.600-7.799	20.000	20.00	12.00	207.300
7.800-7.999	20.000	20.00	12.00	207.500
8.000-8.299	20.000	20.00	12.00	207.700
8.300-8.699	20.000	20.00	12.00	208.000
8.700-8.999	20.000	20.00	12.00	208.400
9.000-9.299	20.000	20.00	12.00	208.700
9.300-9.699	20.000	20.00	12.00	209.000
9.700-9.999	20.000	20.00	12.00	209.400
10.000-10.299	20.000	20.00	12.00	209.700
10.300-10.799	20.000	20.00	12.00	210.000
10.800-11.299	20.000	20.00	12.00	210.500
11.300-11.799	20.000	20.00	12.00	211.000
11.800-12.399	20.000	20.00	12.00	211.500
3.100-3.359	30.000	26.00	14.00	303.000
3.360-3.459	30.000	26.00	14.00	303.200
3.460-3.559	30.000	26.00	14.00	303.300
3.560-3.799	30.000	26.00	14.00	303.400
3.800-3.959	30.000	26.00	14.00	303.600
3.960-4.259	30.000	26.00	14.00	303.700

d1	d2 n6	l1	l2	Code no.
mm	mm	mm	mm	
4.260-4.499	30.000	26.00	14.00	304.000
4.500-4.749	30.000	26.00	14.00	304.200
4.750-4.999	30.000	26.00	14.00	304.500
5.000-5.249	30.000	26.00	14.00	304.700
5.250-5.499	30.000	26.00	14.00	305.000
5.500-5.749	30.000	26.00	14.00	305.200
5.750-5.999	30.000	26.00	14.00	305.500
6.000-6.249	30.000	26.00	14.00	305.700
6.250-6.449	30.000	26.00	14.00	306.000
6.450-6.749	30.000	26.00	14.00	306.200
6.750-6.999	30.000	26.00	14.00	306.500
7.000-7.299	30.000	26.00	14.00	306.700
7.300-7.599	30.000	26.00	14.00	307.000
7.600-7.799	30.000	26.00	14.00	307.300
7.800-7.999	30.000	26.00	14.00	307.500
8.000-8.299	30.000	26.00	14.00	307.700
8.300-8.699	30.000	26.00	14.00	308.000
8.700-8.999	30.000	26.00	14.00	308.400
9.000-9.299	30.000	26.00	14.00	308.700
9.300-9.699	30.000	26.00	14.00	309.000
9.700-9.999	30.000	26.00	14.00	309.400
10.000-10.299	30.000	26.00	14.00	309.700
10.300-10.799	30.000	26.00	14.00	310.000
10.800-11.299	30.000	26.00	14.00	310.500
11.300-11.799	30.000	26.00	14.00	311.000
11.800-12.399	30.000	26.00	14.00	311.500
12.400-12.899	30.000	26.00	14.00	312.000
12.900-13.399	30.000	26.00	14.00	312.500
13.400-13.899	30.000	26.00	14.00	313.000
13.900-14.399	30.000	26.00	14.00	313.500
14.400-14.899	30.000	26.00	14.00	314.000
14.900-15.399	30.000	26.00	14.00	314.500
15.400-15.899	30.000	26.00	14.00	315.000
15.900-16.399	30.000	26.00	14.00	315.500
16.400-16.899	30.000	26.00	14.00	316.000
16.900-17.399	30.000	26.00	14.00	316.500
17.400-17.899	30.000	26.00	14.00	317.000
17.900-18.399	30.000	26.00	14.00	317.500
18.400-19.509	30.000	26.00	14.00	318.000
19.510-20.509	30.000	26.00	14.00	319.000
20.510-21.509	30.000	26.00	14.00	320.000
21.510-22.609	30.000	26.00	14.00	321.000
22.610-23.609	30.000	26.00	14.00	322.000
23.610-24.609	30.000	26.00	14.00	323.000
20.510-21.509	45.000	26.00	16.00	420.000
21.510-22.609	45.000	26.00	16.00	421.000
22.610-23.609	45.000	26.00	16.00	422.000
23.610-24.609	45.000	26.00	16.00	423.000
24.610-25.609	45.000	26.00	16.00	424.000
25.610-26.609	45.000	26.00	16.00	425.000
26.610-27.609	45.000	26.00	16.00	426.000
27.610-28.609	45.000	26.00	16.00	427.000
28.610-29.609	45.000	26.00	16.00	428.000
29.610-30.609	45.000	26.00	16.00	429.000
30.610-32.609	45.000	26.00	16.00	430.000
32.610-34.699	45.000	26.00	16.00	432.000
34.700-36.699	45.000	26.00	16.00	434.000
36.700-38.699	45.000	26.00	16.00	436.000

Moulded steady rest bushing for two-fluted gun drills



special dimensions on request
d1 = gun drill nominal diameter



Article no. **5751**

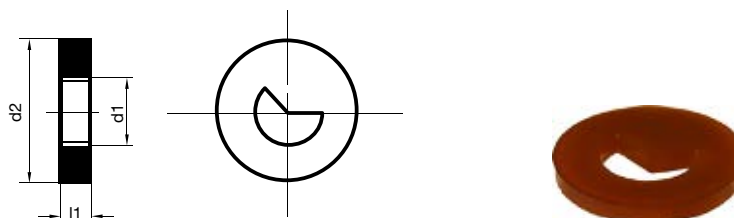
d1	d2 n6	l1	l2	Code no.
mm	mm	mm	mm	
4,960-5,499	20.000	22.00	12.00	205.000
5,500-5,999	20.000	22.00	12.00	205.500
6,000-6,499	20.000	22.00	12.00	206.000
6,500-6,999	20.000	22.00	12.00	206.500
7,000-7,499	20.000	22.00	12.00	207.000
7,500-7,949	20.000	22.00	12.00	207.500
7,950-8,499	20.000	22.00	12.00	208.000
8,500-8,979	20.000	22.00	12.00	208.700
8,980-9,499	20.000	22.00	12.00	209.000
9,500-9,979	20.000	22.00	12.00	209.700
9,980-10,499	20.000	22.00	12.00	210.000
10,500-10,979	20.000	22.00	12.00	210.500
10,980-11,499	20.000	22.00	12.00	211.000
11,500-11,979	20.000	22.00	12.00	211.500
11,980-12,499	20.000	22.00	12.00	212.000
12,500-12,979	20.000	22.00	12.00	212.500
12,980-13,499	20.000	22.00	12.00	213.000
4,960-5,499	30.000	26.00	14.00	305.000
5,500-5,999	30.000	26.00	14.00	305.500
6,000-6,499	30.000	26.00	14.00	306.000
6,500-6,999	30.000	26.00	14.00	306.500
7,000-7,499	30.000	26.00	14.00	307.000
7,500-7,949	30.000	26.00	14.00	307.500
7,950-8,499	30.000	26.00	14.00	308.000
8,500-8,979	30.000	26.00	14.00	308.700
8,980-9,499	30.000	26.00	14.00	309.000
9,500-9,979	30.000	26.00	14.00	309.700
9,980-10,499	30.000	26.00	14.00	310.000
10,500-10,979	30.000	26.00	14.00	310.500
10,980-11,499	30.000	26.00	14.00	311.000
11,500-11,979	30.000	26.00	14.00	311.500
11,980-12,499	30.000	26.00	14.00	312.000
12,500-12,979	30.000	26.00	14.00	312.500
12,980-13,499	30.000	26.00	14.00	313.000
13,500-13,979	30.000	26.00	14.00	313.500
13,980-14,499	30.000	26.00	14.00	314.000
14,500-14,979	30.000	26.00	14.00	314.500
14,980-15,979	30.000	26.00	14.00	315.000
15,980-16,999	30.000	26.00	14.00	316.000
17,000-17,999	30.000	26.00	14.00	317.000
18,000-18,999	30.000	26.00	14.00	318.000
19,000-19,999	30.000	26.00	14.00	319.000
20,000-20,999	30.000	26.00	14.00	320.000
21,000-21,999	30.000	26.00	14.00	321.000
22,000-22,999	30.000	26.00	14.00	322.000
23,000-23,999	30.000	26.00	14.00	323.000
24,000-24,999	30.000	26.00	14.00	324.000
25,000-25,999	30.000	26.00	14.00	325.000

d1	d2 n6	l1	l2	Code no.
mm	mm	mm	mm	
26,000-26,999	30.000	26.00	14.00	326.000
4,960-5,499	45.000	26.00	16.00	405.000
5,500-5,999	45.000	26.00	16.00	405.500
6,000-6,499	45.000	26.00	16.00	406.000
6,500-6,999	45.000	26.00	16.00	406.500
7,000-7,499	45.000	26.00	16.00	407.000
7,500-7,949	45.000	26.00	16.00	407.500
7,950-8,499	45.000	26.00	16.00	408.000
8,500-8,979	45.000	26.00	16.00	408.700
8,980-9,499	45.000	26.00	16.00	409.000
9,500-9,979	45.000	26.00	16.00	409.700
9,980-10,499	45.000	26.00	16.00	410.000
10,500-10,979	45.000	26.00	16.00	410.500
10,980-11,499	45.000	26.00	16.00	411.000
11,500-11,979	45.000	26.00	16.00	411.500
11,980-12,499	45.000	26.00	16.00	412.000
12,500-12,979	45.000	26.00	16.00	412.500
12,980-13,499	45.000	26.00	16.00	413.000
13,500-13,979	45.000	26.00	16.00	413.500
13,980-14,499	45.000	26.00	16.00	414.000
14,500-14,979	45.000	26.00	16.00	414.500
14,980-15,979	45.000	26.00	16.00	415.000
15,980-16,999	45.000	26.00	16.00	416.000
17,000-17,999	45.000	26.00	16.00	417.000
18,000-18,999	45.000	26.00	16.00	418.000
19,000-19,999	45.000	26.00	16.00	419.000
20,000-20,999	45.000	26.00	16.00	420.000
21,000-21,999	45.000	26.00	16.00	421.000
22,000-22,999	45.000	26.00	16.00	422.000
23,000-23,999	45.000	26.00	16.00	423.000
24,000-24,999	45.000	26.00	16.00	424.000
25,000-25,999	45.000	26.00	16.00	425.000
26,000-26,999	45.000	26.00	16.00	426.000
27,000-27,999	45.000	26.00	16.00	427.000
28,000-28,999	45.000	26.00	16.00	428.000
29,000-29,999	45.000	26.00	16.00	429.000

Sealing disks for single-fluted gun drills



special dimensions on request
d1 = gun drill nominal diameter



Article no. **5752**

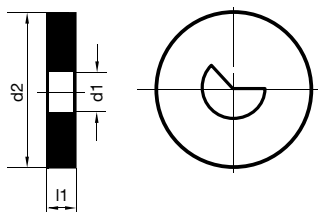
d1	d2 n6	l1	Code no.
mm	mm	mm	
1,850-1,999	20.000	3.00	101.800
2,000-2,099	20.000	3.00	101.900
2,100-2,199	20.000	3.00	102.000
2,200-2,299	20.000	3.00	102.100
2,300-2,399	20.000	3.00	102.200
2,400-2,499	20.000	3.00	102.300
2,500-2,599	20.000	3.00	102.400
2,600-2,699	20.000	3.00	102.500
2,700-2,799	20.000	3.00	102.600
2,800-2,899	20.000	3.00	102.700
2,900-3,099	20.000	3.00	102.800
3,100-3,359	20.000	3.00	103.000
3,360-3,459	20.000	3.00	103.200
3,460-3,559	20.000	3.00	103.300
3,560-3,799	20.000	3.00	103.400
3,800-3,959	20.000	3.00	103.600
3,960-4,259	20.000	3.00	103.700
4,260-4,499	20.000	3.00	104.000
4,500-4,749	20.000	3.00	104.200
4,750-4,999	20.000	3.00	104.500
5,000-5,249	20.000	3.00	104.700
5,250-5,499	20.000	3.00	105.000
5,000-5,249	32.000	3.00	204.700
5,250-5,499	32.000	3.00	205.000
5,500-5,749	32.000	4.00	305.200
5,750-5,999	32.000	4.00	305.500
6,000-6,249	32.000	4.00	305.700
6,250-6,449	32.000	4.00	306.000
6,450-6,749	32.000	4.00	306.200
6,750-6,999	32.000	4.00	306.500
7,000-7,299	32.000	4.00	306.700
7,300-7,599	32.000	4.00	307.000
7,600-7,799	32.000	4.00	307.300
7,800-7,999	32.000	4.00	307.500
8,000-8,299	32.000	4.00	307.700
8,300-8,699	32.000	4.00	308.000
8,700-8,999	32.000	4.00	308.400
9,000-9,299	32.000	4.00	308.700
9,300-9,699	32.000	4.00	309.000
9,700-9,999	32.000	4.00	309.400
10,000-10,299	32.000	4.00	309.700
10,300-10,799	32.000	4.00	310.000
10,800-11,299	32.000	4.00	310.500
11,300-11,799	32.000	4.00	311.000
11,800-12,399	32.000	4.00	311.500
12,400-12,899	32.000	4.00	312.000
12,900-13,399	32.000	4.00	312.500
13,400-13,899	32.000	4.00	313.000

d1	d2 n6	l1	Code no.
mm	mm	mm	
13.900-14.399	32.000	4.00	313.500
14.400-14.899	32.000	4.00	314.000
14.900-15.399	32.000	4.00	314.500
15.400-15.899	32.000	4.00	315.000
15.900-16.399	32.000	4.00	315.500
16.400-16.899	32.000	4.00	316.000
16.900-17.399	32.000	4.00	316.500
17.400-17.899	32.000	4.00	317.000
17.900-18.399	32.000	4.00	317.500
18.400-19.509	32.000	4.00	318.000
19.510-20.509	32.000	4.00	319.000
5.500-5.749	40.000	4.00	405.200
5.750-5.999	40.000	4.00	405.500
6.000-6.249	40.000	4.00	405.700
6,250-6,499	40.000	4.00	406.000
6.450-6.749	40.000	4.00	406.200
6.750-6.999	40.000	4.00	406.500
7.000-7.299	40.000	4.00	406.700
7.300-7.599	40.000	4.00	407.000
7.600-7.799	40.000	4.00	407.300
7.800-7.999	40.000	4.00	407.500
8.000-8.299	40.000	4.00	407.700
8.300-8.699	40.000	4.00	408.000
8.700-8.999	40.000	4.00	408.400
9.000-9.299	40.000	4.00	408.700
9.300-9.699	40.000	4.00	409.000
9.700-9.999	40.000	4.00	409.400
10.000-10.299	40.000	4.00	409.700
10.300-10.799	40.000	4.00	410.000
10.800-11.299	40.000	4.00	410.500
11.300-11.799	40.000	4.00	411.000
11.800-12.399	40.000	4.00	411.500
12.400-12.899	40.000	4.00	412.000
12.900-13.399	40.000	4.00	412.500
13,400-13,899	40.000	4.00	413.000
13.900-14.399	40.000	4.00	413.500
14.400-14.899	40.000	4.00	414.000
14.900-15.399	40.000	4.00	414.500
15.400-15.899	40.000	4.00	415.000
15.900-16.399	40.000	4.00	415.500
16,400-16,899	40.000	4.00	416.000
16.900-17.399	40.000	4.00	416.500
17.400-17.899	40.000	4.00	417.000
17.900-18.399	40.000	4.00	417.500
18.400-19.509	40.000	4.00	418.000
19.510-20.509	40.000	4.00	419.000
20.510-21.509	40.000	4.00	420.000
21.510-22.609	40.000	4.00	421.000
22.610-23.609	40.000	4.00	422.000
23.610-24.609	40.000	4.00	423.000
23.610-24.609	90.000	4.00	923.000
24.610-25.609	90.000	4.00	924.000
25.610-26.609	90.000	4.00	925.000
26.610-27.609	90.000	4.00	926.000
27.610-28.609	90.000	4.00	927.000
28.610-29.609	90.000	4.00	928.000
29.610-30.609	90.000	4.00	929.000
30.610-32.609	90.000	4.00	930.000
32.610-34.699	90.000	4.00	932.000
34.700-36.699	90.000	4.00	934.000
36.700-38.699	90.000	4.00	936.000
38,700-42,699	90.000	4.00	938.000
42,700-45,699	90.000	4.00	942.000
45,700-48,999	90.000	4.00	945.000

Sealing disks for single-fluted gun drills



with metal chip protection
 special dimensions on request
 d1 = gun drill nominal diameter



Article no. **5770**

d1	d2 n6	l1	Code no.
mm	mm	mm	
4,000-4,259	26.000	4.00	203.700
4.260-4.499	26.000	4.00	204.000
4.500-4.749	26.000	4.00	204.200
4.750-4.999	26.000	4.00	204.500
5.000-5.249	26.000	4.00	204.700
5.250-5.499	26.000	4.00	205.000
5.500-5.749	26.000	4.00	205.200
5.750-5.999	26.000	4.00	205.500
6.000-6.249	26.000	4.00	205.700
6.250-6.449	26.000	4.00	206.000
6.450-6.749	26.000	4.00	206.200
6.750-6.999	26.000	4.00	206.500
7.000-7.299	26.000	4.00	206.700
7.300-7.599	26.000	4.00	207.000
7.600-7.799	26.000	4.00	207.300
7.800-7.999	26.000	4.00	207.500
8.000-8.299	26.000	4.00	207.700
6.000-6.249	46.000	4.00	405.700
6.450-6.749	46.000	4.00	406.200
7.000-7.299	46.000	4.00	406.700
8.000-8.299	46.000	4.00	407.700
9.000-9.299	46.000	4.00	408.700
9.300-9.699	46.000	4.00	409.000
9.700-9.999	46.000	4.00	409.400
10.000-10.299	46.000	4.00	409.700
10.300-10.799	46.000	4.00	410.000
10.800-11.299	46.000	4.00	410.500
11.300-11.799	46.000	4.00	411.000
11.800-12.399	46.000	4.00	411.500
12.400-12.899	46.000	4.00	412.000
12.900-13.399	46.000	4.00	412.500
13.400-13.899	46.000	4.00	413.000
13.900-14.399	46.000	4.00	413.500
14.400-14.899	46.000	4.00	414.000
14.900-15.399	46.000	4.00	414.500
15.400-15.899	46.000	4.00	415.000
15.900-16.399	46.000	4.00	415.500
16.400-16.899	46.000	4.00	416.000
16.900-17.399	46.000	4.00	416.500
17.400-17.899	46.000	4.00	417.000
17.900-18.399	46.000	4.00	417.500
18.400-19.509	46.000	4.00	418.000
19.510-20.509	46.000	4.00	419.000
20.510-21.509	46.000	4.00	420.000
21.510-22.609	46.000	4.00	421.000
12.400-12.899	56.000	4.00	512.000
20.510-21.509	56.000	4.00	520.000
21.510-22.609	56.000	4.00	521.000

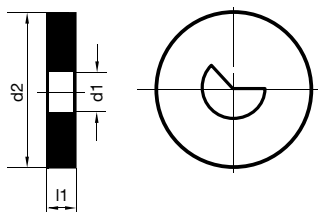
Accessories

d1	d2 n6	l1	Code no.
mm	mm	mm	
22.610-23.609	56.000	4.00	522.000
23.610-24.609	56.000	4.00	523.000
24.610-25.609	56.000	4.00	524.000
25.610-26.609	56.000	4.00	525.000
26.610-27.609	56.000	4.00	526.000
27.610-28.609	56.000	4.00	527.000
28.610-29.609	56.000	4.00	528.000
29.610-30.609	56.000	4.00	529.000
30.610-32.609	56.000	4.00	530.000
32.610-34.699	56.000	4.00	532.000
34.700-36.699	56.000	4.00	534.000
6.000-6.249	65.000	4.00	605.700
8.000-8.299	65.000	4.00	607.700
9.000-9.299	65.000	4.00	608.700
10.000-10.299	65.000	4.00	609.700
10.800-11.299	65.000	4.00	610.500
12.400-12.899	65.000	4.00	612.000
12.900-13.399	65.000	4.00	612.500
13.900-14.399	65.000	4.00	613.500
14.400-14.899	65.000	4.00	614.000
14.900-15.399	65.000	4.00	614.500
15.900-16.399	65.000	4.00	615.500
16,400-16,899	65.000	4.00	616.000
16.900-17.399	65.000	4.00	616.500
17.900-18.399	65.000	4.00	617.500
20.510-21.509	65.000	4.00	620.000
21.510-22.609	65.000	4.00	621.000
7.000-7.299	76.000	4.00	706.700
21.510-22.609	76.000	4.00	721.000
22.610-23.609	76.000	4.00	722.000
25.610-26.609	76.000	4.00	725.000
26.610-27.609	76.000	4.00	726.000
27.610-28.609	76.000	4.00	727.000
28.610-29.609	76.000	4.00	728.000
29.610-30.609	76.000	4.00	729.000
34.700-36.699	76.000	4.00	734.000
36.700-38.699	76.000	4.00	736.000
38,700-42,699	76.000	4.00	738.000

Sealing disks for single-fluted gun drills



with metal chip protection on both sides
 special dimensions on request
 d1 = gun drill nominal diameter



Article no. **5772**

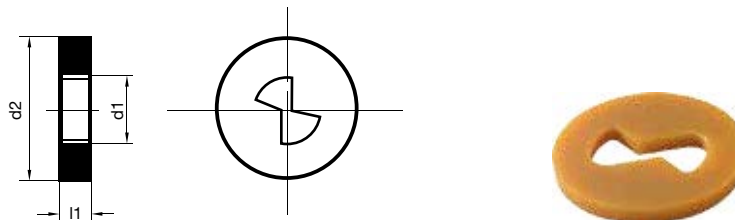
d1	d2 n6	l1	Code no.
mm	mm	mm	
2,900-3,599	20.000	7.00	2.800
3,600-4,399	20.000	7.00	3.600
4,400-5,249	20.000	7.00	4.500
5,250-5,999	32.000	11.00	5.200
6,000-6,799	32.000	11.00	6.000
6,800-7,699	32.000	11.00	6.700
7,700-8,699	32.000	11.00	7.700
8,700-9,999	32.000	11.00	8.700
10,000-11,399	32.000	11.00	10.000
11,400-12,949	32.000	11.00	11.500
12,950-14,449	32.000	11.00	13.000
14,450-16,399	32.000	11.00	14.500
16,400-17,999	40.000	12.00	16.500
18,000-19,799	40.000	12.00	18.000
19,800-21,799	40.000	12.00	20.000
21,800-23,799	40.000	12.00	22.000
23,800-25,999	40.000	12.00	24.000
26,000-27,999	90.000	12.00	26.000
28,000-29,999	90.000	12.00	28.000
30,000-31,999	90.000	12.00	30.000
32,000-34,999	90.000	12.00	32.000
35,000-36,999	90.000	12.00	36.000
37,000-38,999	90.000	12.00	38.000
39,000-40,999	90.000	12.00	42.000

Accessories

Sealing disks for two-fluted gun drills



special dimensions on request
d1 = gun drill nominal diameter



Article no. **5753**

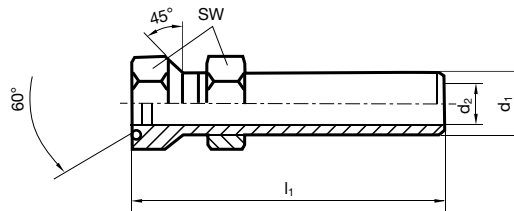
d1	d2 n6	l1	Code no.
mm	mm	mm	
5.000-5.249	32.000	4.00	304.700
5.250-5.499	32.000	4.00	305.000
5.500-5.749	32.000	4.00	305.200
5.750-5.999	32.000	4.00	305.500
6.000-6.249	32.000	4.00	305.700
6.250-6.449	32.000	4.00	306.000
6.450-6.749	32.000	4.00	306.200
6.750-6.999	32.000	4.00	306.500
7.000-7.299	32.000	4.00	306.700
7.300-7.599	32.000	4.00	307.000
7.600-7.799	32.000	4.00	307.300
7.800-7.999	32.000	4.00	307.500
8.000-8.299	32.000	4.00	307.700
8.300-8.699	32.000	4.00	308.000
8.700-8.999	32.000	4.00	308.400
9.000-9.299	32.000	4.00	308.700
9.300-9.699	32.000	4.00	309.000
9.700-9.999	32.000	4.00	309.400
10.000-10.299	32.000	4.00	309.700
10.300-10.799	32.000	4.00	310.000
10.800-11.299	32.000	4.00	310.500
11.300-11.799	32.000	4.00	311.000
11.800-12.399	32.000	4.00	311.500
12.400-12.899	32.000	4.00	312.000
12.900-13.399	32.000	4.00	312.500
13.400-13.899	32.000	4.00	313.000
13.900-14.399	32.000	4.00	313.500
14.400-14.899	32.000	4.00	314.000
14.900-15.399	32.000	4.00	314.500
15.400-15.899	32.000	4.00	315.000
15.900-16.399	32.000	4.00	315.500
16.400-16.899	32.000	4.00	316.000
16.900-17.399	32.000	4.00	316.500
17.400-17.899	32.000	4.00	317.000
17.900-18.399	32.000	4.00	317.500
18.400-19.499	32.000	4.00	318.000
19.500-20.799	32.000	4.00	319.000
5.000-5.249	40.000	4.00	404.700
5.250-5.499	40.000	4.00	405.000
5.500-5.749	40.000	4.00	405.200
5.750-5.999	40.000	4.00	405.500
6.000-6.249	40.000	4.00	405.700
6.250-6.449	40.000	4.00	406.000
6.450-6.749	40.000	4.00	406.200
6.750-6.999	40.000	4.00	406.500
7.000-7.299	40.000	4.00	406.700
7.300-7.599	40.000	4.00	407.000
7.600-7.799	40.000	4.00	407.300

d1	d2 n6	l1	Code no.
mm	mm	mm	
7.800-7.999	40.000	4.00	407.500
8.000-8.299	40.000	4.00	407.700
8.300-8.699	40.000	4.00	408.000
8.700-8.999	40.000	4.00	408.400
9.000-9.299	40.000	4.00	408.700
9.300-9.699	40.000	4.00	409.000
9.700-9.999	40.000	4.00	409.400
10.000-10.299	40.000	4.00	409.700
10.300-10.799	40.000	4.00	410.000
10.800-11.299	40.000	4.00	410.500
11.300-11.799	40.000	4.00	411.000
11.800-12.399	40.000	4.00	411.500
12.400-12.899	40.000	4.00	412.000
12.900-13.399	40.000	4.00	412.500
13.400-13.899	40.000	4.00	413.000
13.900-14.399	40.000	4.00	413.500
14.400-14.899	40.000	4.00	414.000
14.900-15.399	40.000	4.00	414.500
15.400-15.899	40.000	4.00	415.000
15.900-16.399	40.000	4.00	415.500
16.400-16.899	40.000	4.00	416.000
16.900-17.399	40.000	4.00	416.500
17.400-17.899	40.000	4.00	417.000
17.900-18.399	40.000	4.00	417.500
18.400-19.499	40.000	4.00	418.000
19.500-20.799	40.000	4.00	419.000
20.800-21.799	40.000	4.00	420.000
21.800-22.799	40.000	4.00	421.000
22.800-23.999	40.000	4.00	422.000
24.000-24.899	40.000	4.00	423.000
24.900-25.899	40.000	4.00	424.000
25.900-27.000	40.000	4.00	425.000

Adjustment screws



Adjustment screws without sealing element
special dimensions on request



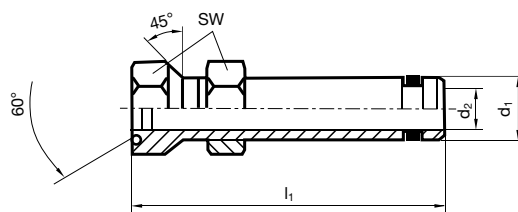
Article no. **5754**

d1	d2	l1	SW	Code no.
	mm	mm	mm	
M6 x 0,5	3.500	26.00	9.000	6.000
M6 x 0,5	3.500	45.00	9.000	6.001
M10 x 1	6.000	38.00	13.000	10.000
M16 x 1,5	10.000	57.00	22.000	16.000

Adjustment screws



Adjusting screws with sealing element
special dimensions on request



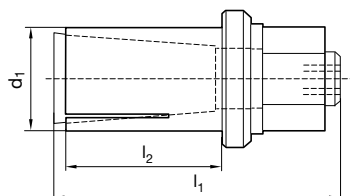
Article no. **5755**

d1	d2	l1	SW	Code no.
	mm	mm	mm	
M10 x 1	6.000	50.00	13.000	10.000
M16 X1.5	10.000	65.00	22.000	16.000
M24X1.5	16.000	90.00	30.000	24.000

Sealing plugs



sealing plugs for sealing coolant bores
special dimensions on request



Article no. **5766**

d1	l1	l2	Code no.
mm	mm	mm	
8.000	28.00	15.00	108.000
9.000	30.00	15.00	109.000
10.000	30.00	15.00	110.000
11.000	34.00	18.00	111.000
12.000	34.00	18.00	112.000
13.000	37.00	20.00	113.000
14.000	37.00	20.00	114.000
15.000	37.00	20.00	115.000
16.000	37.00	20.00	116.000
17.000	37.00	20.00	117.000
18.000	37.00	20.00	118.000
19.000	44.00	20.00	119.000
20.000	44.00	20.00	120.000
21.000	44.00	20.00	121.000
22.000	44.00	20.00	122.000
23.000	44.00	20.00	123.000
24.000	44.00	20.00	124.000
25.000	44.00	20.00	125.000
8.000	71.00	58.00	208.000
9.000	76.00	63.00	209.000
10.000	89.00	73.00	210.000
11.000	89.00	73.00	211.000
12.000	99.00	83.00	212.000
13.000	110.00	93.00	213.000
14.000	110.00	93.00	214.000
15.000	115.00	98.00	215.000
16.000	115.00	98.00	216.000
17.000	115.00	98.00	217.000
18.000	120.00	98.00	218.000
19.000	120.00	98.00	219.000
20.000	120.00	98.00	220.000
21.000	120.00	98.00	221.000
22.000	120.00	98.00	222.000
23.000	120.00	98.00	223.000
24.000	120.00	98.00	224.000
25.000	120.00	98.00	225.000

Torque wrenches set



with torque wrench • incl. torque setting tool, bit holder and bits



Article no. **4966**

Drive	Bit sizes	Torque	Code no.
mm		Nm	
1/4	T5/T7/T8	0,4-1	1.000
1/4	T8/T9/T15/T20	1-5	2.000

Torque wrenches



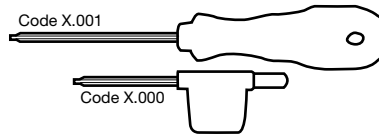
incl. torque setting tool and bit holder



Article no. **4915**

Drive	Key size	Torque	Type	Code no.
mm		Nm		
	hexagonal	0,4-1	A	1.001
	hexagonal	0,8-5	A	5.001

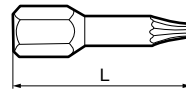
Torx screwdriver



Article no. **1612**

Size	Code no.
T5	5.001
T7	7.001
T8	8.001
T9	9.001
T15	15.001
T20	20.001

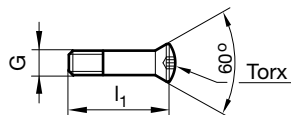
Torx socket sets



Article no. **4917**

Drive	Key size	Torx	L	Code no.
mm			mm	
1/4	hexagonal	T5	25.000	5.000
1/4	hexagonal	T7	25.000	7.000
1/4	hexagonal	T8	25.000	8.000
1/4	hexagonal	T9	25.000	9.000
1/4	hexagonal	T15	25.000	15.000
1/4	hexagonal	T20	25.000	20.000

Clamping screws



Article no.

4071

G	l1	Torx	Code no.
mm	mm		
M 1.6	4.400	T5	1.601
M 2.2	5.600	T7	2.202
M 2.2	4.600	T7	2.203
M2,5	6.400	T8	2.501
M2,5	5.200	T8	2.502
M 3	6.400	T9	3.002
M 3	8.000	T9	3.003
M4	7.700	T15	4.001
M4	10.600	T15	4.002
M4,5	11.800	T15	4.501
M 5	14.200	T20	5.002

GRINDING EQUIPMENT

- \ fast and simple for perfect regrinding
- \ all standard geometries possible
- \ many special geometries achievable
- \ regrinding of tools from Ø 0.500 to 32.000 mm

GRINDING EQUIPMENT



Grinding machine TBM 116 for single-fluted gun drills

The grinding machine TBM 116 is a manually operated, universal grinding machine. Its compact design combined with Gühring's single-fluted gun drill grinding systems TBV 116 and TBV 216 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 TBM 116

CE marking

Two high-powered light units

Two 220 V sockets

Adaptor for Gühring grinding discs

Holder for suction unit

Machine data:

Input power requirements 380 V/50 Hz

Grinding wheel no. of revolutions 2,850 rev./min

Max. diameter of grinding wheel 150 mm

Material no.: 600 127 170



Grinding machine TBV 116 for single-fluted gun drills for Ø 3 to 32 mm

The fixture is designed for the re-grinding of single-fluted gun drills in the diameter range from 3 mm to 32 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 truly universal and can be applied on any commercial, manual tool grinding machine.

With TBV 116 we recommend our double grinding wheel DSS 125.

Supplied items:

- Grinding system TBV 116
- Tool support tube

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.

Material no.: 600 127 171



Grinding machine TBV 216 for single-fluted gun drills for Ø 0.5 to 6 mm

The TBV 216 grinding fixture for small diameter single-fluted gun drills from 0.5 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 mechanism, 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.

Supplied items:

- Grinding system TBV 216
- A set of guide bushes with the diameters 1,000 mm/2,000 mm und 3,000 mm
Further guide bushes on request.
- Various adaptors
- Centering microscope
- Spotlight and magnifier

Material no.: 600 132 346



Images may differ from the original.

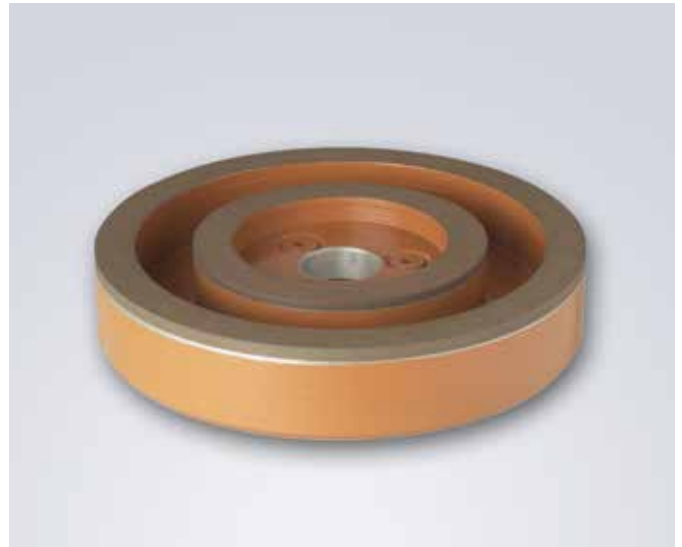
Double grinding wheel DSS 125

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 proportion 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 to remove any grinding dust, otherwise too much heat is created and the carbide cutting edge destroyed.

The 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

Material no.: 400 110 098



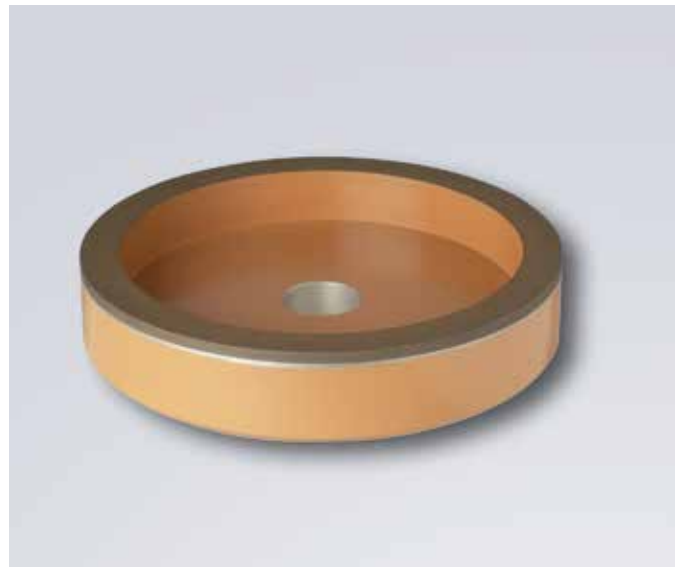
Single grinding wheel ESS 125

The ESS 125 grinding wheel is a fine diamond wheel that gives the cutting edges a good finish. It is advisable to remove the grinding dust from the wheel with a cleaning stone from time to time, otherwise too much heat is created destroying the carbide cutting edge.

The ESS 125 consists of:

- a disc Ø 125 mm, coating width 10 mm, coating thickness 3 mm, hole Ø 20 mm, grade D 25

Material no.: 400 119 203











NAVI- GATOR



>10xD drilling depth

242	243	244
C. S.	C. S.	C. S.
HSS	HSS	HSS
		
GT 100	GT 100	GT 100
-	-	-
122	123	124

618	619
1869 R1	1869 R2
HSCO	HSCO
	
GT 100	GT 100
-	-
119	120

571
1869 R3
HSCO

GT 100
-
121



V _c m/min	Feed column no.		
22	5	5	5
18	4	4	4
22	5	5	5
18	4	4	4
22	4	4	4
18	4	4	4
22	5	5	5
12	3	3	3
6	2	2	2
22	5	5	5
18	5	5	5
20	5	5	5
14	5	5	5
45	6	6	6
36	5	5	5
55	5	5	5
22	4	4	4
28	4	4	4
22	3	3	3
20	3	3	3
18	3	3	3
12	3	3	3
18	4	4	4

V _c m/min	Feed column no.	
30	4	4
25	4	4
33	4	4
30	4	4
33	4	4
33	4	4
20	3	3
14	3	3
10	2	2
29	4	4
14	3	3
10	2	2
10	3	3
8	2	2
11	3	3
8	2	2
8	2	2
5	1	1
3	1	1
10	3	3
8	2	2
10	2	2
20	5	5
16	5	5
5	2	2
5	1	1
6	1	1
5	1	1
50	6	6
40	5	5
30	4	4
45	4	4
30	4	4
25	4	4
20	4	4
16	3	3
10	3	3
14	3	3
20	3	3

V _c m/min	Feed column no.
30	4
25	4
33	4
30	4
33	4
33	4
20	3
14	3
10	2
29	4
14	3
10	2
10	3
8	2
11	3
8	2
8	2
5	1
3	1
10	3
8	2
10	2
20	5
16	5
5	2
5	1
6	1
5	1
50	6
40	5
30	4
45	4
30	4
25	4
20	4
16	3
10	3
14	3
20	3

≤4xD

6400
C. S.
solid carbide
K/P
N
A
-
129



≤5xD

6405
C. S.
solid carbide
K/P
N
A
with
130



≤3xD

2473
6539
solid carbide
K/P
RT 100 U
F
-
131



≤5xD

2479
6537L
solid carbide
K/P
RT 100 U
F
axial
132



≤3xD

659
1897
HSCO
GV 120
S
-
141



V _c m/min	Feed column no.
100	64
100	64
100	64
90	63
90	64
90	64
90	63
90	63
70	62
100	63
85	63
70	62
70	62
60	62
50	62
60	62
60	57
60	57
30	57
15	56
30	57
130	68
130	68
130	68
120	67
10	56
15	56
15	56
70	68
70	68
135	59
135	59

V _c m/min	Feed column no.
105	62
100	62
105	62
90	61
95	62
95	62
90	61
90	61
70	60
100	61
85	61
70	60
70	60
60	60
50	60
50	60
50	57
50	57
70	57
60	56
70	57
150	60
140	60
140	60
130	60
25	56
35	56
35	56
70	68
70	68
135	59
135	59

V _c m/min	Feed column no.
130	7
110	6
145	8
110	7
120	7
110	7
105	7
105	7
100	6
130	8
120	7
85	5
100	6
90	5
65	6
55	5
55	5
45	3
40	1
20	1
40	2
15	1
35	2
210	8
155	8
155	7
125	7
35	3
25	4
15	1
15	1
260	9
260	9
220	8
180	8
260	8
105	7
270	8
180	7
105	6
85	6
80	5
60	5

V _c m/min	Feed column no.
145	7
120	6
170	8
145	8
130	8
125	7
120	7
120	7
105	7
105	7
145	8
120	7
85	5
105	7
100	5
70	6
55	5
60	5
60	3
55	3
35	2
60	5
55	2
50	5
195	9
160	9
140	9
130	8
40	3
35	4
45	4
40	3
310	9
310	9
260	9
220	9
280	8
125	7
325	8
220	7
125	7
105	6
90	6
80	6

V _c m/min	Feed column no.
38	5
33	4
44	5
38	5
44	5
44	5
38	4
27	4
22	3
44	4
22	4
18	3
22	4
18	3
19	4
14	3
14	3
9	2
4	1
20	4
15	3
18	3
40	6
35	6
33	6
27	6
12	3
6	2
11	2
7	2
45	5
40	4
23	4
17	4

Drilling depth $\leq 3 \times D$

4111
C. S.
solid carbide
K/P
4107
a
Piloting
136



V _c m/min	Feed column no.
130	6
110	5
130	7
110	6
130	6
125	6
110	5
110	6
90	5
130	7
110	6
70	4
105	5
70	4
60	5
55	4
55	3
50	2
25	2
55	3
40	3
35	3
100	6
90	6
120	7
100	6
90	6
80	5
80	5
80	5
80	5
25	2
40	3
35	2
200	7
180	7
150	7
120	7
180	7
70	6
180	7
120	6
70	6
50	6
45	6
35	5



The modular tooling system HT 800 WP

Navigator

Ratio end mills RF 100 Diver



Article no. 6737

Ramping, Helix, Grooving

Material/ISO material	Hardness	a _p	Ramping max. angle	v _c	fz (mm/z) with nom. Ø							
					4	5	6	8	10	12	16	20
Struct./free-cutting steels, unall. heat-treat./case hard. steels	≤ 850 N/mm ²	1 x D	45°	270	0.015	0.019	0.023	0.030	0.045	0.054	0.072	0.090
P Free-cutting steels, unalloyed case hard. steels, nitr. steels	850 - 1200 N/mm ²	1 x D	45°	230	0.013	0.017	0.020	0.026	0.040	0.048	0.064	0.080
Alloyed heat-treatable, tool and high speed steels	850 - 1400 N/mm ²	1 x D	30°	180	0.011	0.014	0.017	0.022	0.030	0.036	0.048	0.060
M Stainless steel - easy to machine / sulphured	≤ 750 N/mm ²	1 x D	10°	120	0.009	0.012	0.014	0.018	0.030	0.036	0.048	0.060
Stainless steel - moderately difficult to machine	750 - 950 N/mm ²	1 x D	5°	80	0.007	0.009	0.011	0.014	0.025	0.030	0.040	0.050
K Cast iron, grey cast iron, spher. graphite/malleable cast iron	≥ 240 HB	1 x D	45°	150	0.015	0.019	0.023	0.030	0.045	0.054	0.072	0.090
N Aluminium, Al-wrought alloys, Al-alloys	≤ 7% Si	1 x D	30°	500	0.013	0.017	0.020	0.026	0.040	0.048	0.064	0.080
Aluminium-cast alloys	≥ 7% Si	1 x D	45°	340	0.015	0.019	0.023	0.030	0.045	0.054	0.072	0.090
S Titanium, Titanium alloys	≤ 1300 N/mm ²	1 x D	10°	60	0.007	0.009	0.011	0.014	0.025	0.030	0.040	0.050

Drilling

Material/ISO material	Hardness	Drilling depth (a _p max.)	v _c	fz (mm/z) with nom. Ø							
				4	5	6	8	10	12	16	20
Struct./free-cutting steels, unall. heat-treat./case hard. steels	≤ 850 N/mm ²	1,5 x D	270	0.014	0.018	0.021	0.028	0.040	0.048	0.064	0.080
P Free-cutting steels, unalloyed case hard. steels, nitr. steels	850 - 1200 N/mm ²	1,5 x D	230	0.012	0.015	0.018	0.024	0.035	0.042	0.056	0.070
Alloyed heat-treatable, tool and high speed steels	850 - 1400 N/mm ²	1,0 x D	180	0.008	0.010	0.012	0.016	0.025	0.030	0.040	0.050
K Cast iron, grey cast iron, spher. graphite/malleable cast iron	≥ 240 HB	1,5 x D	150	0.014	0.018	0.021	0.028	0.040	0.048	0.064	0.080
N Aluminium, Al-wrought alloys, Al-alloys	≤ 7% Si	1,0 x D	500	0.012	0.015	0.018	0.024	0.035	0.042	0.056	0.070
Aluminium-cast alloys	≥ 7% Si	1,0 x D	340	0.014	0.018	0.021	0.028	0.040	0.048	0.064	0.080

Pilot end mills RF 100 P



Article no. 6716

Drilling

Material/ISO material	Hardness	max. drilling depth without pecking	v _c	fz (mm/z) with nom. Ø							
				3	6	8	10	12	16	20	
Struct./free-cutting steels, unall. heat-treat./case hard. steels	≤ 850 N/mm ²	1 x D	135	0,008	0,016	0,021	0,030	0,036	0,048	0,060	
P Free-cutting steels, unalloyed case hard. steels, nitr. steels	850 - 1200 N/mm ²	1 x D	100	0,007	0,014	0,018	0,025	0,030	0,040	0,050	
M Stainless steel - easy to machine / sulphured	≤ 750 N/mm ²	1 x D	90	0,007	0,014	0,018	0,025	0,030	0,040	0,050	
Stainless steel - moderately difficult to machine	750 - 950 N/mm ²	1 x D	45	0,005	0,011	0,014	0,020	0,024	0,032	0,040	
K Cast iron, grey cast iron, spher. graphite/malleable cast iron	≥ 240 HB	1 x D	105	0,008	0,015	0,020	0,028	0,033	0,044	0,055	
N Aluminium, Al-wrought alloys, Al-alloys	≤ 7% Si	1 x D	375	0,010	0,020	0,026	0,040	0,048	0,064	0,080	
Aluminium-cast alloys	≥ 7% Si	1 x D	175	0,008	0,017	0,022	0,030	0,036	0,048	0,060	
S Titanium, Titanium alloys	≤ 1300 N/mm ²	1 x D	45	0,006	0,012	0,016	0,023	0,027	0,036	0,045	

Grooving

Material/ISO material	Hardness	max. drilling depth without pecking	v _c	fz (mm/z) with nom. Ø							
				3	6	8	10	12	16	20	
Struct./free-cutting steels, unall. heat-treat./case hard. steels	≤ 850 N/mm ²	1 x D	180	0,016	0,031	0,042	0,060	0,07	0,10	0,12	
P Free-cutting steels, unalloyed case hard. steels, nitr. steels	850 - 1200 N/mm ²	1 x D	135	0,014	0,027	0,036	0,050	0,06	0,08	0,10	
M Stainless steel - easy to machine / sulphured	≤ 750 N/mm ²	1 x D	120	0,014	0,027	0,036	0,050	0,06	0,08	0,10	
Stainless steel - moderately difficult to machine	750 - 950 N/mm ²	1 x D	60	0,011	0,021	0,028	0,040	0,05	0,06	0,08	
K Cast iron, grey cast iron, spher. graphite/malleable cast iron	≥ 240 HB	1 x D	140	0,015	0,030	0,040	0,055	0,07	0,09	0,11	
N Aluminium, Al-wrought alloys, Al-alloys	≤ 7% Si	1 x D	500	0,020	0,039	0,052	0,080	0,10	0,13	0,16	
Aluminium-cast alloys	≥ 7% Si	1 x D	230	0,017	0,033	0,044	0,060	0,07	0,10	0,12	
S Titanium, Titanium alloys	≤ 1300 N/mm ²	1 x D	60	0,012	0,024	0,032	0,045	0,05	0,07	0,09	

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RF 100 *diver*



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Ramping
Roughing
Finishing
Slotting

Ratio®



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AND INTERNAL COOLING**



TECHNIICAL SECTION

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Quality features

In machining technology, if the drilling depth is 15xD or deeper, this is referred to as deep hole drilling.

Today, Gühring's range comprises:

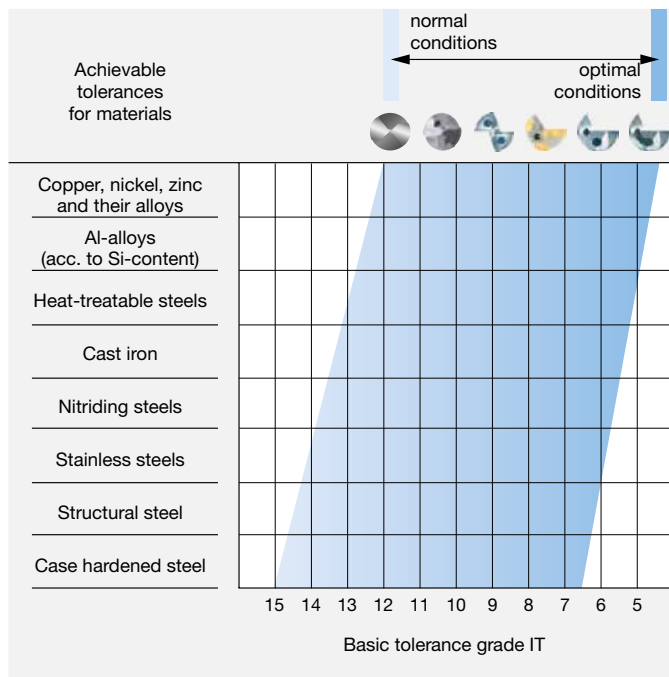
- classical single-fluted gun drills made of solid carbide or with a brazed carbide head
- classical two-fluted gun drills with a brazed carbide head
- replacement system with replaceable solid carbide cutting edges and supporting strips
- spiralled solid carbide or HSS/HSCO deep hole drills

The right tool is selected depending on the type of application and the required quality of the drilled hole.

The following diagrams provide guidance on which tool to choose:

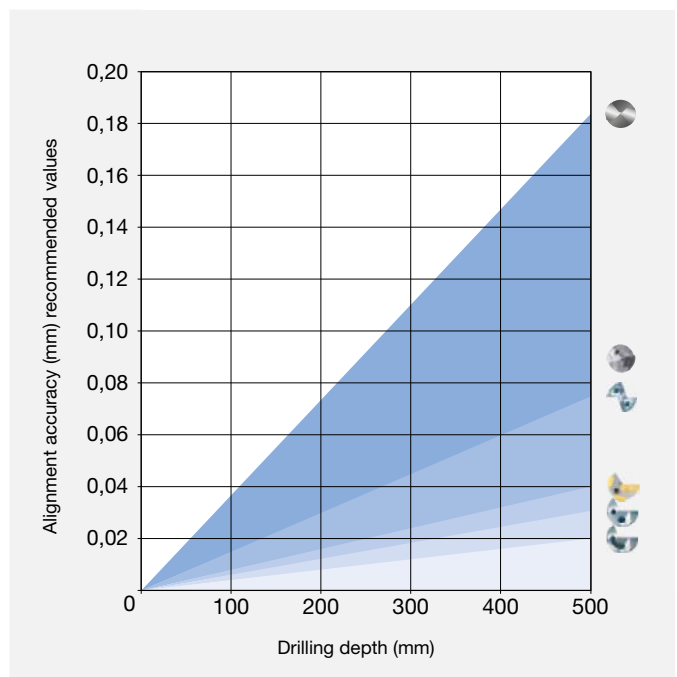
Basic tolerances

Depending on their shape and design, different types of tool result in different basic tolerances. The single-fluted drill creates extremely precise drilled holes. Under optimum conditions, it is possible to achieve tolerance grades of up to IT5 with a single-fluted gun drill.



Alignment accuracy

The straightness of hole describes a deviation in direction. This is influenced by the centring of the tool during spot drilling and depends on the shape and position of the pilot hole or drill bush. The properties of the material or workpiece as well as the stability of the tool and machine also influence the straightness.



Peak-to-valley height class	N12	N11	N10	N9	N8	N7	N6	N5	N4	N3	
EB 100/EB 80 deep hole drilling											
EB 800 deep hole drilling											
ZB 80/RT 100T deep hole drilling											
HSS/HSCO deep hole drilling											
EB 100/80/800 Pilot drilling											
Surface values	Rz (µm)	160	100	63	40	15,6	7,87	4,65	2,60	1,74	0,81
Roughness values	Ra (µm)	50	25	12,5	6,3	3,2	1,6	0,8	0,4	0,2	0,1

normal conditions (recommended values)
 ideal conditions

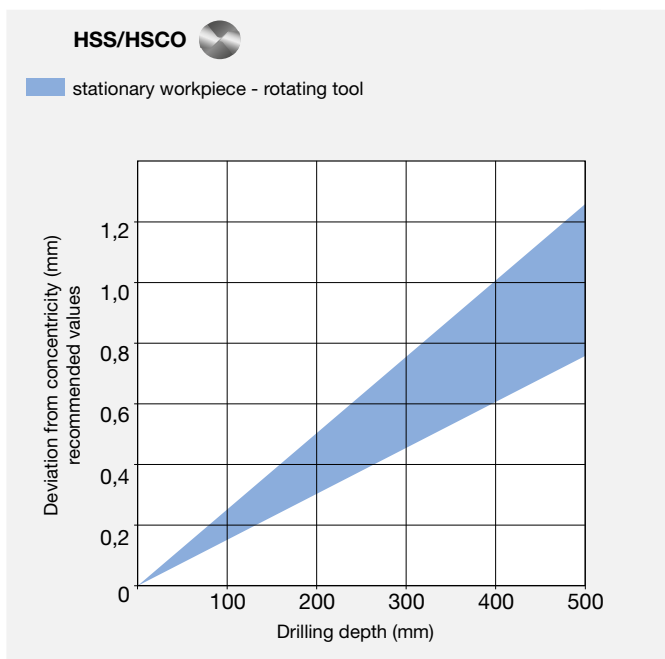
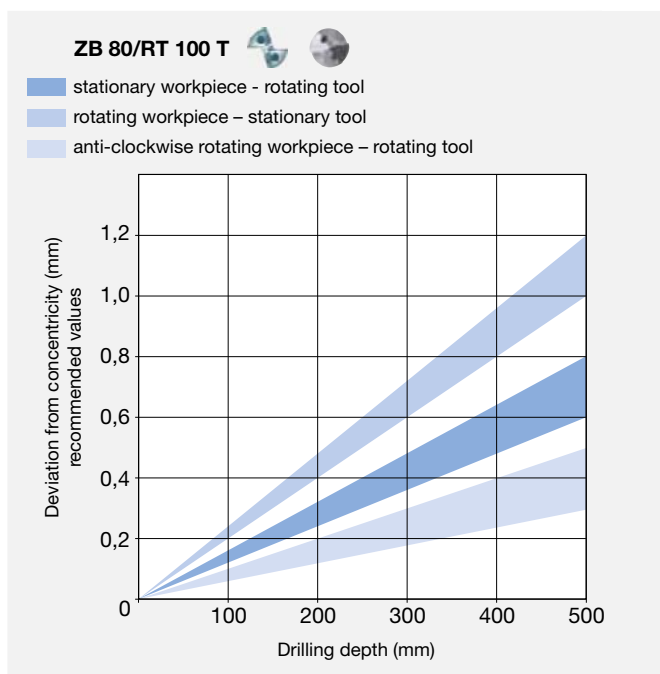
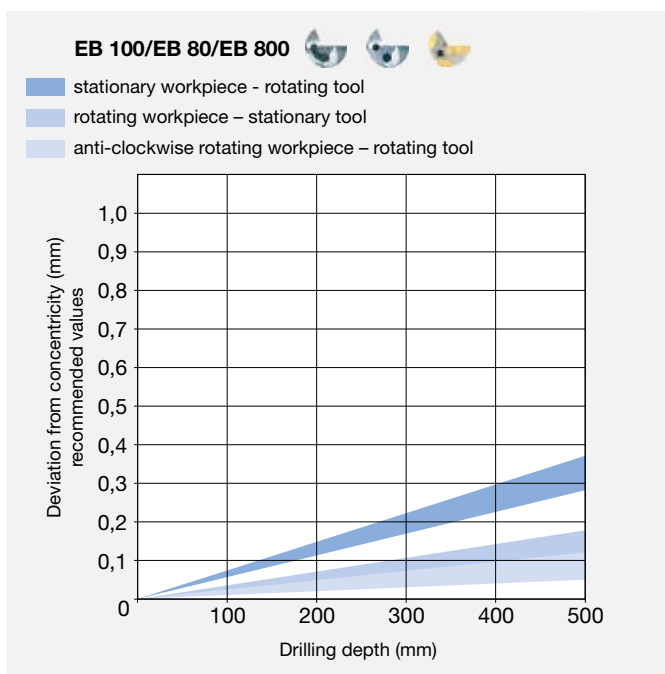
Surface quality

The roughness of the drilled hole is influenced by many factors. The most important of these are the material, the cooling lubricant and the type and geometry of the tool. When drilling with single-fluted drills, the guide pads smooth the bore wall further. This is not the case for drills with several cutting edges. The final quality of the surface is dependent on the surfaces of the tool (e.g. coating) or edge conditions (wear) on the primary and secondary cutting edges.

Deviation from concentricity

The deviation from concentricity describes a continuous displacement of the tool with increasing drilling depth. This curve is affected not only by the drill's geometric properties, but also by the cutting conditions, the material structure and the temperatures. Optimum results are achieved when machining

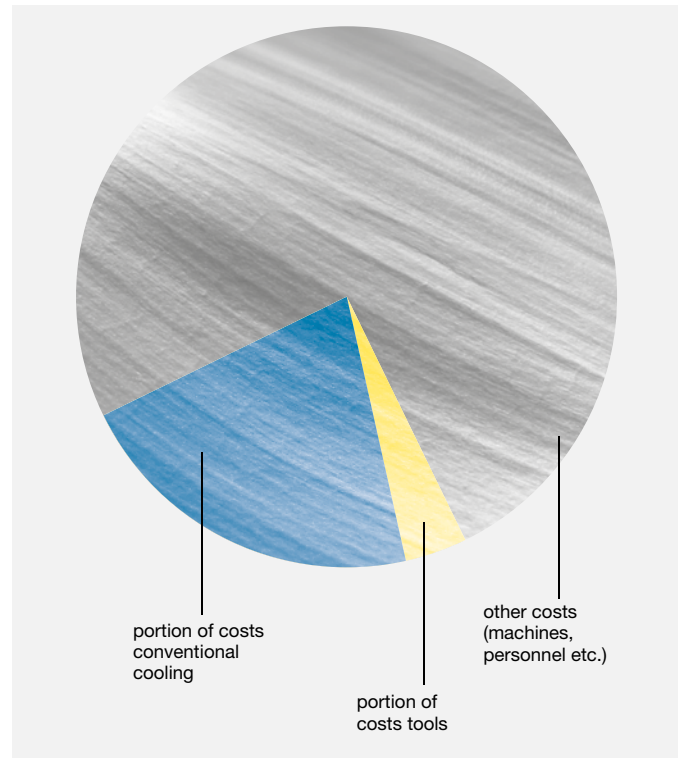
with counter-rotating speeds of the workpiece and tool. A single-fluted drill achieves lower deviation from concentricity values than drills with several cutting edges.



MQL Technology

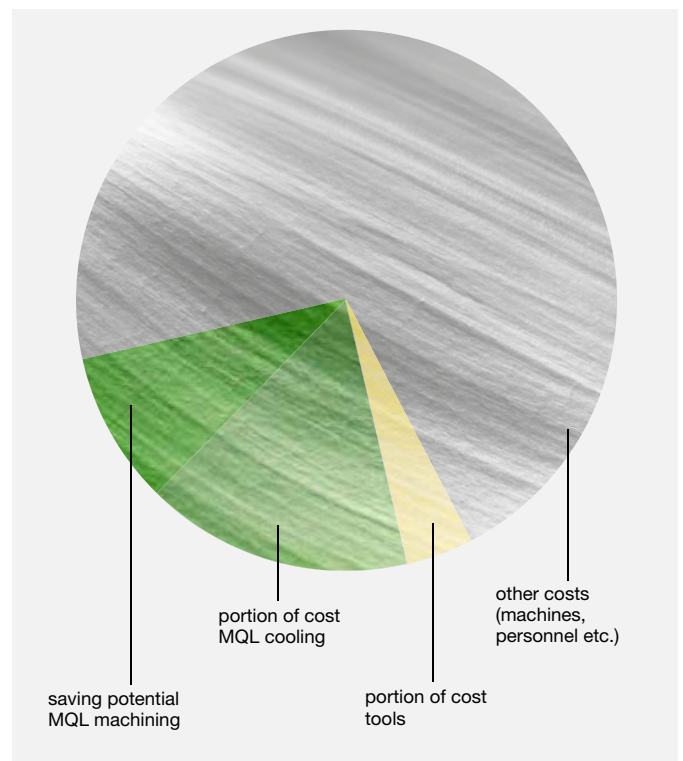
Basics

Minimal Quantity Lubrication (MQL) uses an aerosol comprising oil and air for cooling purposes during machining processes. Its cooling effect is assisted by the chip removal. The frictional heat generated during machining is removed with the chip. The costs associated with cooling lubrication combined with the machine and tool costs represent a significant proportion of the overall machining process costs. Reducing the required amount of cooling lubricant therefore offers various potential savings and also contributes to environmental and health protection.



The aim of MQL machining

- reduction of thermal stresses at the tool point
- less tool wear/longer service life possible
- effective chip evacuation from deep holes
- reduction of cooling lubricant requirement
- high cooling and lubrication effect especially in deep holes
- reduction in consequential costs such as:
 - reduction in component cleaning costs
 - reduction in cooling lubricant disposal costs
 - reduction in cost of disposal of swarf contaminated with cooling lubricant
- protection of environment and health



A direct comparison of emulsion vs. MQL

	Medium	Purpose	Standard pressure	Usage (during process)
Soluble oil	Soluble oil	Chip removal, cooling and lubrication	approx. 40-80 bar	approx. 800-1.500 l/h
MQL	Oil/air mixture	Chip removal and lubrication	approx. 4-10 bar	Oil: approx. 5-100 ml/h Air: approx. 3-6 Nm ³ /h

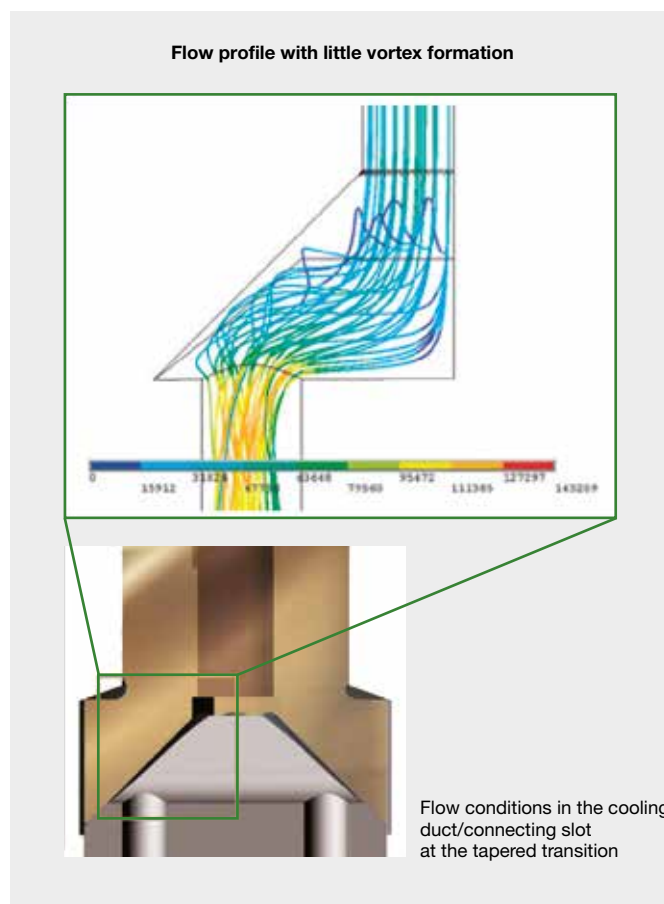
MQL Technology

Perfectly shaped shaft end for reliable MQL transfer

It is important to feed the extremely small amount of oil directly to the point of action. The geometric shape of the shank end plays a vital role here. The tapered shank end designed by Gühring establishes ideal conditions for MQL. In addition, a special connecting slot at the shank end was developed especially for Deep hole drills. This is adapted to the shape of the cooling ducts and ensures optimal distribution into the individual ducts.

Advantages of the tapered shank end:

- a practically positive-fit connection ensures optimal sealing
- minimised dead zones ensure low-resistance flow with no consolidation
- excellent distribution to the individual cooling ducts
- easy handling/cost-effective production
- optimal response times/short time for aerosol delivery



A cool head at all times

With MQL, the process temperature compared to dry machining can be significantly reduced. This results in longer tool life and improved process reliability.








Tool diameter/pressure ratio inlet/outlet pressure

The oil to air ratio of the mixture is set according to the difference between the inlet and outlet pressure. This depends on the process and therefore varies greatly.

The following factors are considered:

- tool (dimensions of the kidney shape/cooling ducts)
- manufacturer of the MQL generator
- manufacturer of the MQL lubricant
- compressor capacity (6 bar standard/10 bar optimal)
- machine factors (connection to the tool)

Application of Guhring coatings

Material	ISO groups	EB/ZB	RT 100 T	HSS
C-steels, Free-cutting steels, Mn-steels		TiN Endurum Congressor	Endurum Raptor FIRE	FIRE – –
Steel, low-alloyed		bright TiN FIRE	FIRE Endurum Raptor	FIRE TiN –
Steel, alloyed		FIRE Signum Congressor	FIRE Signum nanoA	FIRE TiN –
Steel, hardened, <55 HRC		Signum FIRE TiAlN	Signum FIRE TiAlN	– – –
Steel, hardened, 55 – 65 HRC		Signum FIRE TiAlN	Signum FIRE TiAlN	– – –
Steel, stainless and acid-resistant		SuperA Sirius Congressor	nanoA Sirius Endurum	Sirius FIRE TiN
Cast iron		Signum Endurum FIRE	Signum FIRE nanoA	FIRE – –
Nickel-based alloys (i.e. Inconel)		nanoA Sirius Endurum	nanoA Signum FIRE	FIRE – –
Titanium /titanium-alloys		bright Zenit nanoA	Zenit nanoA	FIRE –
Cobalt-chromium-alloys		nanoA FIRE Congressor	nanoA Signum FIRE	– – –
Precious metals		nanoA Carbo	nanoA	–
Aluminium-wrought-alloys		bright Carbo –	bright Carbo Cristall	bright Carbo –
Aluminium-cast-alloys (<12% Silizium)		bright Zenit Carbo	bright Zenit Carbo	bright Zenit Carbo
Aluminium-cast-alloys (≥12% Silizium)		Cristall Signum –	Cristall – –	– – –
Copper /bronze /brass		bright Carbo ICE	ICE Carbo	TiN –
Ceramics		Cristall Signum	Cristall	–
Plastics, not reinforced		bright	Carbo	–
Plastics, fibre-reinforced		Cristall Signum	Cristall Signum	– –
Graphite		bright	–	–

Note: The overview shows the general application recommendations for Guhring coatings. Prioritisation is from top to bottom.

A brief introduction to the subject of deep hole drilling

In the machining world, drilling depths of $15 \times D$ 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.



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 in the chapter GÜHRINGNAVIGATOR.

Application advice

- When using classical deep hole drills with a steel shank, EB 80, EB 800 and ZB 80, to drill to depths greater than $40 \times D$, we recommend the use of two or more deep hole drills, e.g. $\varnothing 10 \times 400 \text{ mm}$ und $\varnothing 9,95 \times 800 \text{ mm}$.
- The EB 100 M solid carbide deep hole drills and the brazed EB 100 can achieve a maximum drilling depth of $80 \times D$ with only one tool.
- Deep hole drills for drilling to depths greater than $40 \times D$ should be introduced into the pilot hole with anti-clockwise rotation.
- When changing tools at a depth greater than $40 \times D$, the tool can be damped by switching on the high-pressure internal cooling for approximately one second.
- For machining long-chipping materials, we recommend the use of Deep hole drills with polished flutes.
- As a general rule, we recommend setting the oil content of the emulsion to at least 8%.
- Single-fluted gun drills for long-chipping aluminium should be ordered with a 180° point grind and coolant chamber.
- Firmly seated steady rest bushings dampen the drilling process and improve the quality of the bore.
- To avoid a step between the pilot hole and the deep hole, a smooth transition can be achieved with head form G and a pilot hole that is slightly undersized.
- In the case of long chip formation, a periodic interruption in the feed (without withdrawal) can facilitate the machining process.

The drilling process on conventional machines (BAZ)

The work steps for deep hole drilling

- production of pilot hole
- enter at low revolutions
- setting of coolant pressure and speed
- continuous drilling to required drilling depth without pecking
- switching off coolant supply after reaching the required hole depth
- retraction of the tool from the hole

Procedure

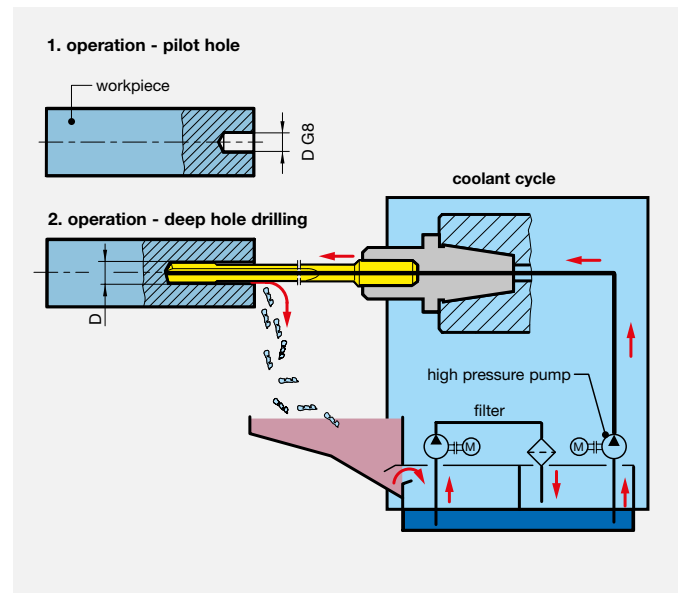
In order to achieve optimal machining results when producing deep holes especially spotting on radii and/or on an uneven surface structure, we recommend the following machining steps:

1. Initial milling of the surface, e.g. with the RF 100 Diver including centre cut. The surface must be machined at right angles to the entry angle of the drilling operation.
2. Drilling of a cylindrical pilot hole, e.g. with the RT 100 U. Thanks to its point angle of 140° and its Ø tolerance m7, this drill is ideally suited for this machining step.
3. Drilling into the pilot hole with a speed of approximately 200rpm and a feed rate of approximately 500mm/min with anti-clockwise rotation.
4. Adjustment of the cooling lubricant pressure and the rotational speed.
5. Uninterrupted drilling to the required drilling depth without chip removal. When using deep hole drills with a very large length/diameter ratio (e.g. solid carbide single-fluted drills with flute lengths greater than 160mm), we recommend drilling with reduced cutting parameters (approx. 75% of the optimal cutting speed) to a drilling depth of around 25mm.
6. For through holes with a straight exit, i.e. 90°, reduce the feed speed v_f to 50% approximately 1 mm before breaking through.
7. For through holes with an inclined exit, reduce the feed speed v_f to 40% approximately 1 mm before breaking through.
8. After reaching the required drilling depth, switch off the speed and cooling lubricant and retract the drill at a speed of no more than 5,000mm/min.

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



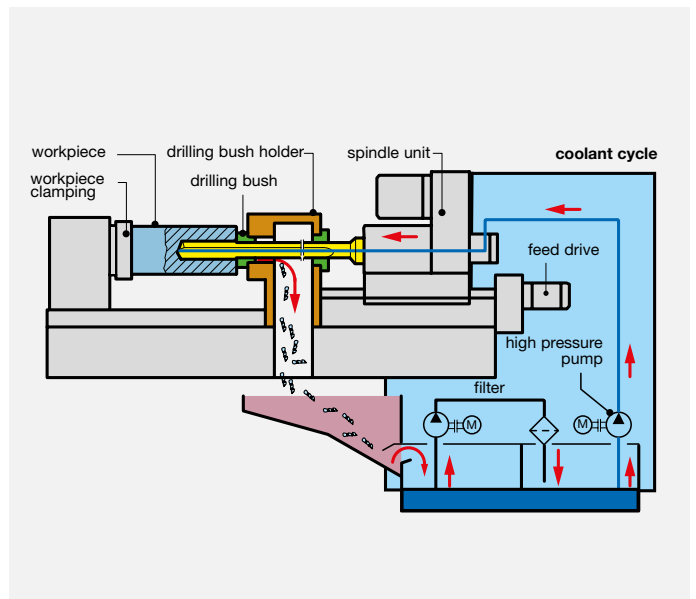
Technical section



The drilling process on deep hole drilling machines

Where mass production, milling of very deep holes and high quality surface finishes are required, deep-hole drilling machines are used. A nearly endless range of drilling depth becomes available. The gun drill is guided by steady rest bushes. The accordion-like movement of the bushes allows a continuous drilling. „Drilling without pecking“.

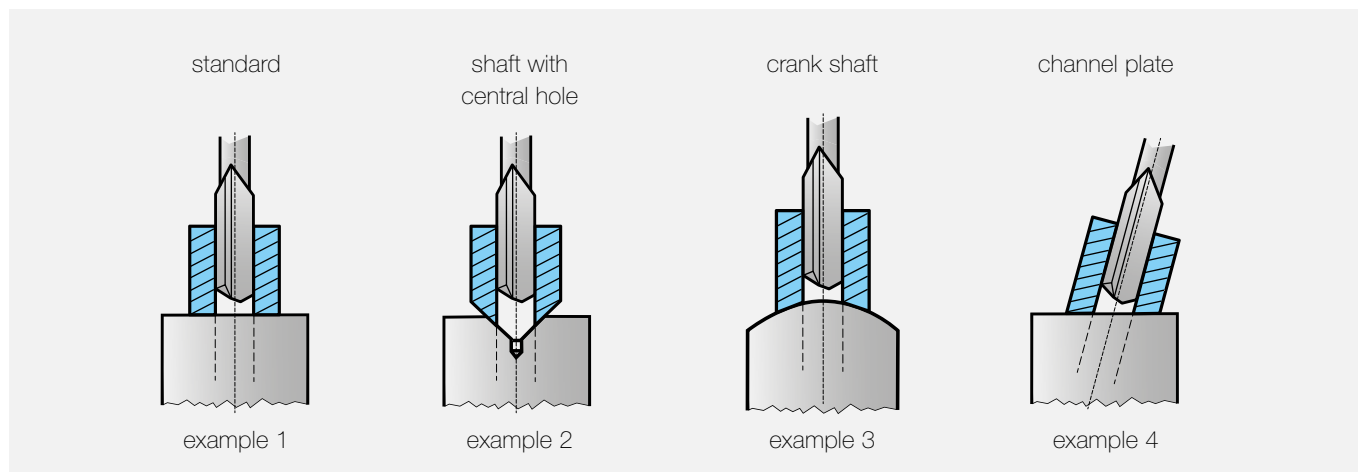
Pilot holes are not needed, thus reducing, time and costs for tool change. Offering a greater drilling depth (up to a couple of meters), and at the same time, an excellent drilling quality. High pressure pumps and a coolant filter system guarantee maximum process security. The total length of the steady rest bushings and the drill bush support equals the so-called length loss, which is decisive for calculating the length of the tool.



Pilot hole and drill bush

Since the single-fluted gun drill is a tool with only one cutting edge and cannot centre itself automatically, the tool must be guided with a drill bush or pilot hole. Self-centering two-fluted drills also have to be guided by drill bushes or pilot holes, however, as they could otherwise start to vibrate.

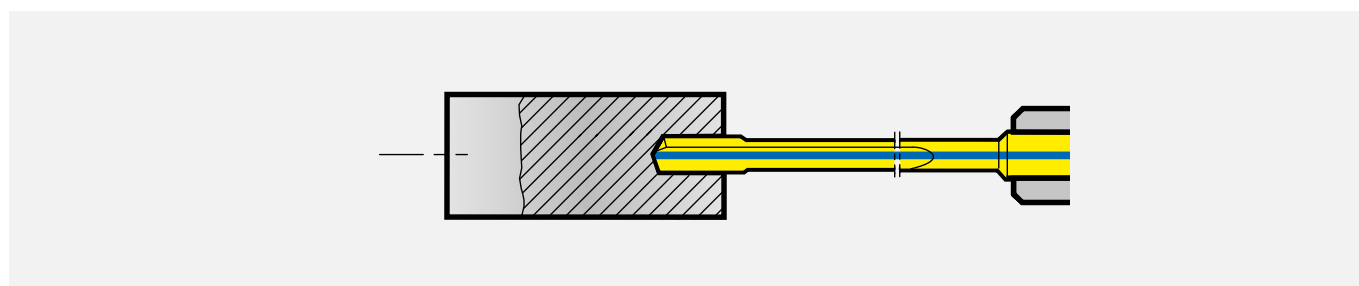
Example drill bush with art. no. 5747 (HSS) /5748 (solid carbide)



To take into account when using drill bushes

- The drill bush must be in positive contact with the spot drilling contour.
- There should be as little play as possible between the drill bush and the tool.
- If the deep hole drill has a guide diameter, the drill bush should be at least long enough to guide both head types when spot drilling.
- The condition of the drill bush must be regularly checked to prevent any negative effects on the tool.
- We recommend HSS drill bushes for small series and solid carbide drill bushes for large series.

Example Pilot drilling



Guide values for the pilot hole depth

conv. deep hole drills	Ø nom. follow-on tool				
drilling depth	Ø 0.900-1.799	Ø 1.800-3.999	Ø 4.000-7.999	Ø 8.000-11.999	Ø 12.000-52.000
up to 20xD	3.0xD	2.5xD	2.0xD	1.5xD	1.5xD
up to 30xD		3.0xD	2.5xD	2.0xD	
up to 40xD		4.0xD	3.0xD	2.5xD	

Pilot hole and drill bush

Range of applications for pilot tools

	Diameter range [mm]																			
	0.9	1.0	1.4	2.0	3.0	6.0	8.0	11.0	12.0	15.5	16.0	19.5	20.0	25.0	30.0	35.0	40.0	45.0	50.0	52.0
ExclusiveLine Micro-precision drills	art. 6400 without IC 6405 with IC																			
RT 100 U	art. no. 2473 without IC art. no. 2479 with IC																			
HT 800	art. no. 4111 insert for pilot drilling																			
RF 100 P	art. no. 6716 4-fluted without IC																			
RF 100 Diver	art. no. 6737 4-fluted without IC																			
GV 120	art. no. 659 HSCO without IC																			

ExclusiveLine Micro-precision drills

- for pilot holes \varnothing3.000/EB 100, EB 80
- for standard situations/flat spotting surface

RT 100 U

- universal pilot tool \varnothing 3.000-19.500/EB 100, EB 80, ZB 80, EB 800, RT 100 T
- for standard situations/flat spotting surface

HT 800

- insert pilot tool \varnothing 11.000-40.000/EB 100, EB 80, ZB 80, EB 800, RT 100 T
- for standard situations/flat spotting surface

RF 100 P

- milling cutter for high-precision pilot holes \varnothing 1.400-12.000/EB 100, EB 80, ZB 80, EB 800, RT 100 T
- for standard and special situations/flat, angled, cubic or other spot drilling surfaces

RF 100 Diver

- milling cutter for high-precision pilot holes \varnothing 4.000-52.000/EB 100, EB 80, ZB 80, EB 800, RT 100 T
- for standard and special situations/flat, angled, cubic or other spot drilling surfaces

GV 120

- HSS pilot drills \varnothing 0.900-15.500/HSS deep hole drills
- for standard situations/flat spotting surface

Please observe the following for pilot holes

- The pilot hole diameter tolerance should be G8 and the nominal tool tolerance always \varnothing m7.
- If the single-fluted gun drill has a guide diameter, the pilot hole should be at least deep enough to support both head forms when spot drilling.
- Depending on the application, it may be advantageous if the pilot hole has an entry chamfer.
- If there are strict requirements regarding the position and concentricity of the deep drilled hole, then the pilot hole should be milled or be drilled on a lathe.

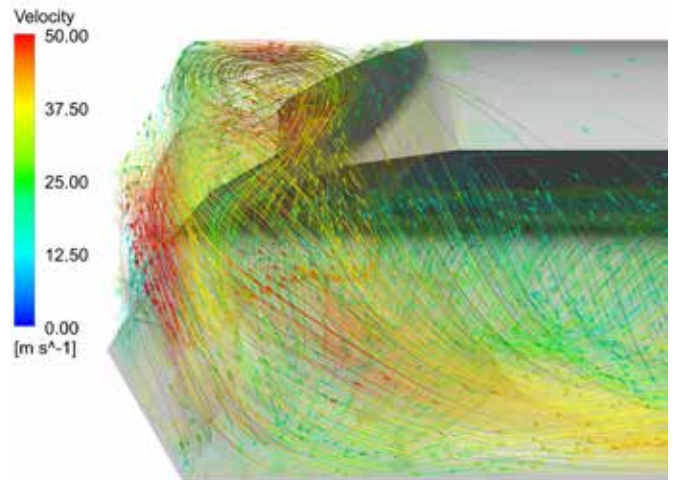
Important:

The quality of the drill bush and of the pilot hole has a very large influence on the deviation from concentricity and the tool life of the follow-on tool.

Cooling lubricant

Introduction

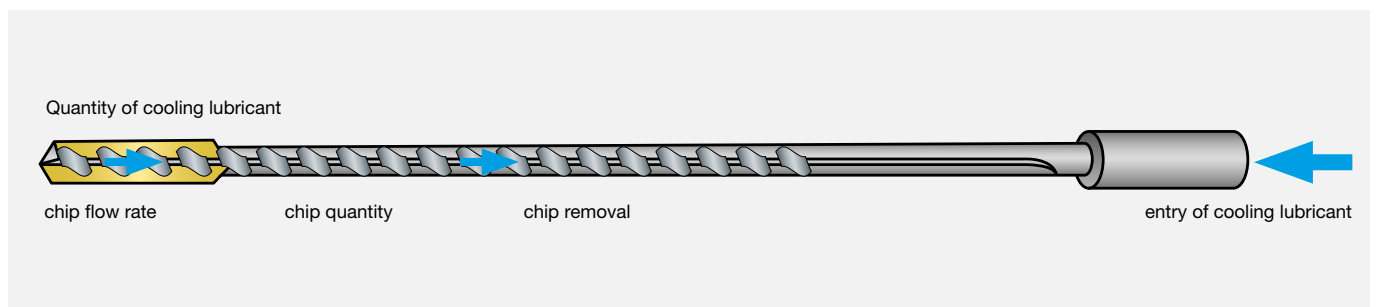
The cooling lubricant is one of the most important elements when it comes to drilling holes with an LxD ratio of more than 15xD and for drilling deep holes. The selection of the cooling lubricant, taking into account its properties and performance such as pressure and flow rate, is decisive for process performance and thus also for the quality of the drilled hole. If the cooling lubricant pressure is too high, it can result in waviness and a larger deviation from concentricity.



Function

The cooling lubricant (oil, emulsion, MQL, air) flushes the chips out of the bore and lubricates all the parts of the tool (head and cutting edges) that come into contact with the workpiece. Drilling takes place under high pressure. However, the pressure is “only” the sum of the amount of cooling lubricant produced and existing resistances such as cooling duct cross-section or tool length and chip mass. Due to the amount of cooling lubricant and the resistances mentioned, a flow velocity occurs from a hydraulic point of view. When used correctly, this minimises the time that the chip is in contact with the cutting edge, prevents the drill from

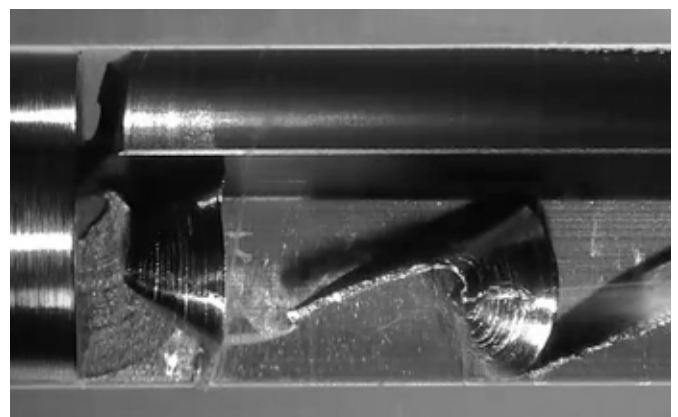
clogging and thus has a direct influence on the machining process. The lubricating properties of the cooling lubricant have a crucial effect on chip formation and the surface result. Appropriate additives such as EP additives (Extreme Pressure) ensure good sliding of the guide pads, which may be exposed to enormous surface pressure and rolling forces.



Filtration

If safe and reliable drilling processes are to be guaranteed, it is imperative to ensure that the cooling lubricant is sufficiently clean with reference to the tool diameter:

- $\varnothing 2.000$ max. 15 μm
- $\varnothing 2.000$ up to $\leq \varnothing 6.000$ max. 40 μm
- $> \varnothing 6.000$ up to 100 μm



Types of cooling lubricant

Soluble oil

Various types of water-miscible cooling lubricants are available, such as mineral, synthetic or natural compositions, and these, in addition to the selected oil proportion, significantly influence

the drilling process. The ideal oil content for deep hole drilling is between 8 and 12%. Lower values lead to a loss in performance or even to malfunctions.



Emulsion properties*

- At high pressures, EP additives (Extreme Pressure) should be used in the emulsion. Otherwise, foaming and an associated loss of lubrication may occur.
- Emulsions have a lower viscosity than oil, which means that pressures can be reduced by approximately 5% to achieve comparable flushing properties.
- For materials that have a chrome content of more than 12%, a tool life of less than 1.5m must be expected.

Oil

Like the emulsions, deep drilling oils differ in their mineral, synthetic and natural composition. The higher viscosity of deep drilling oils compared to emulsions partly determines the increased coolant resistance, which in the case of low-viscosity oils leads to high flow rates (small diameters) and in the case of high-viscosity oils to larger hydraulic forces (significant in the case of larger diameters). The viscosity and lubricating properties of oils are strongly dependent on temperature. Overheating $>50^{\circ}\text{C}$ must be avoided in order to be able to drill reliably.

Oil properties*

- $< \varnothing 2\text{mm}$ 7-10mm²/s
- $> \varnothing 2\text{mm}$ 10-20mm²/s

MQL / Dry

Deep holes can be drilled dry or with MQL. The type of process depends on the material, diameter and drilling depth. The shape, size and mass of the chips are decisive.

Dry machining is only possible if dust-like chips are produced (e.g. with graphite or HM green compacts).

- For MQL 1-channel applications, the length adjustment screw #4937 (see GM 300 catalogue) can be selected.
- For MQL 2-channel applications, the length adjustment screw #4621 (see GM 300 catalogue) can be selected.

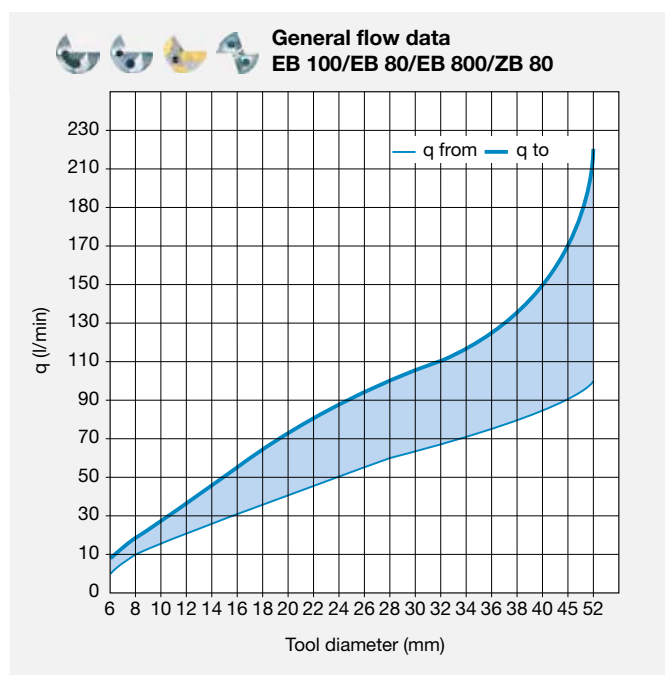
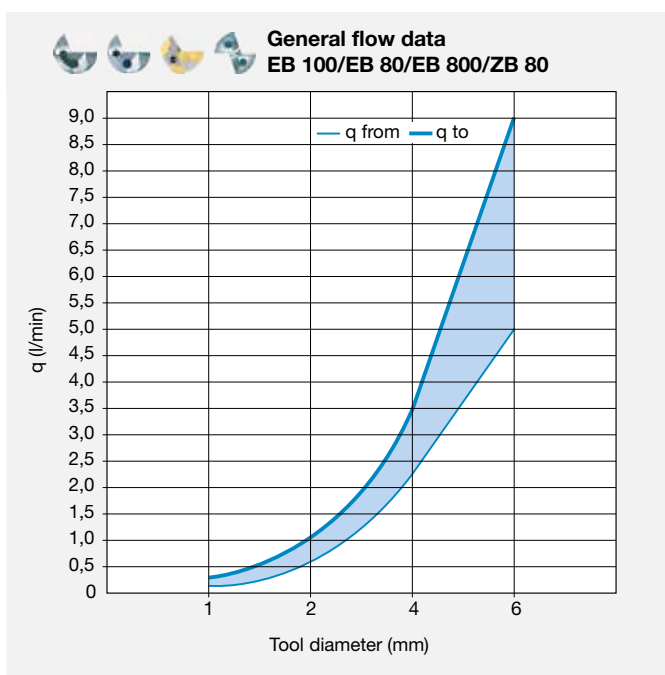


*No liability will be accepted in the case of deviations from the manufacturer's specifications

Cooling lubricant data

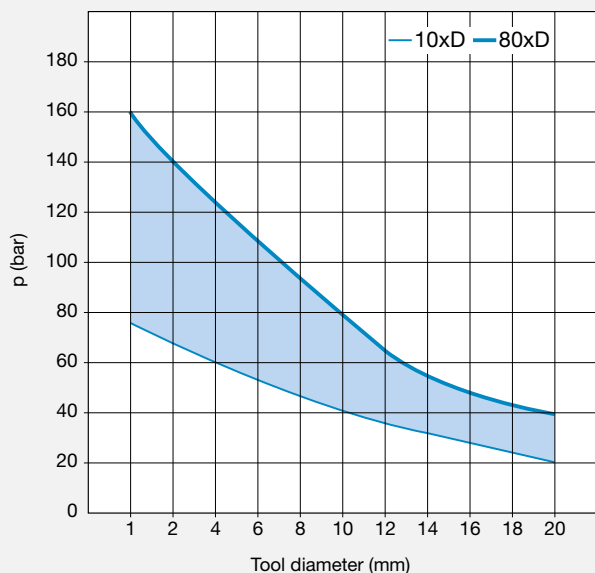
Please note:

- All gun drills must be applied with internal cooling, either air, water or oil. Internal cooling ensures better chip removal.
- All gun drills can be applied with oil as the medium for internal cooling. In this case, however, a higher pressure is required than with emulsions in order to obtain the same amount of coolant.
- When MQL is applied with gun drills an increase in pressure may be necessary for smaller nominal diameters dependent on the pressure of the MQL system.
- If the cooling lubricant data is insufficient the cutting parameters may be reduced. Pressure boosting systems are also possible.
- With increased gun drill length a pressure increase has to be expected to transport the required coolant volume through the coolant ducts.

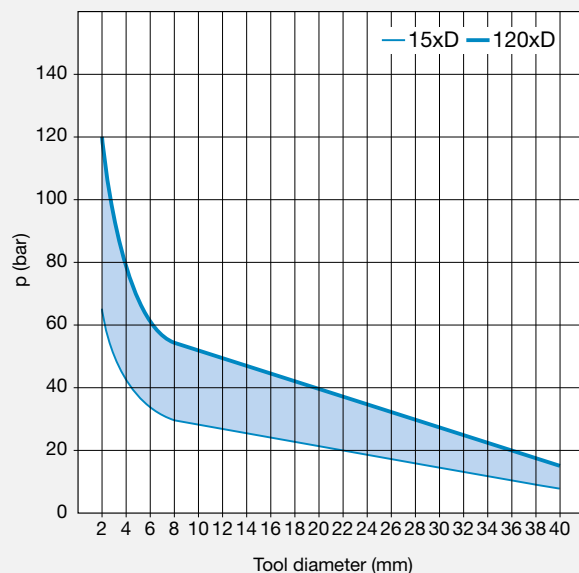




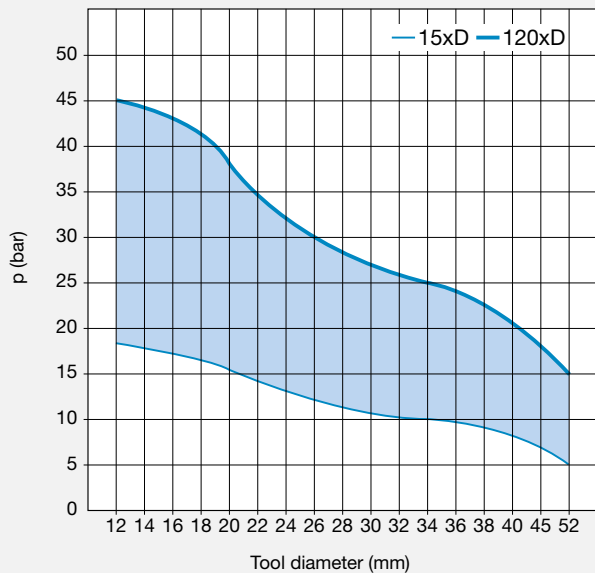
EB 100 Pressure specifications
depending on tool length



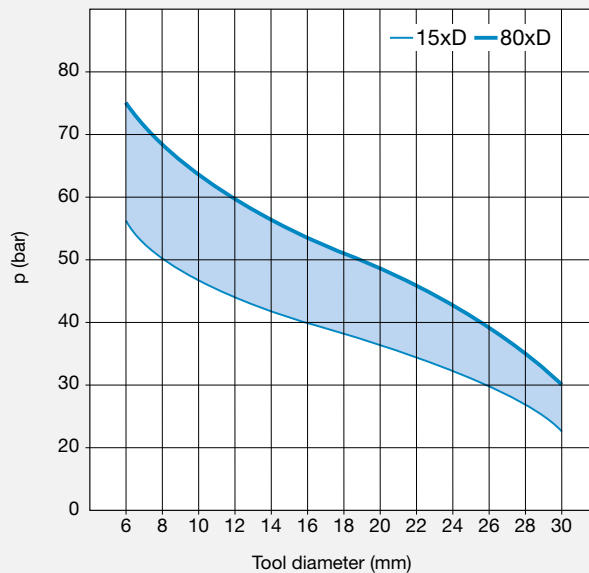
EB 80 Pressure specifications
depending on tool length



EB 800 Pressure specifications
depending on tool length



ZB 80 Pressure specifications
depending on tool length

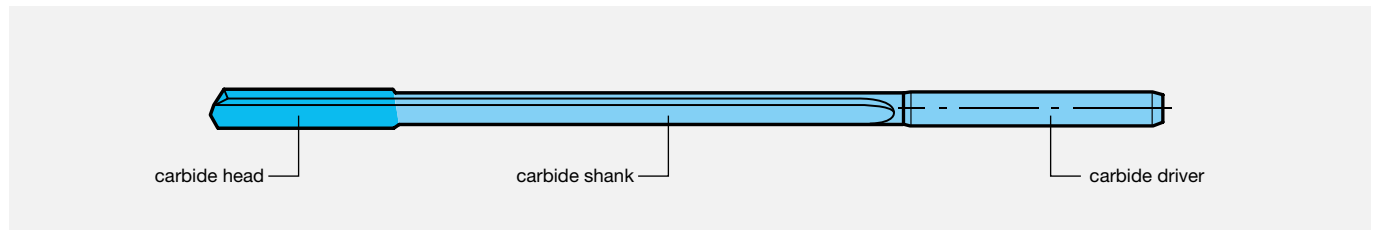


Characteristics

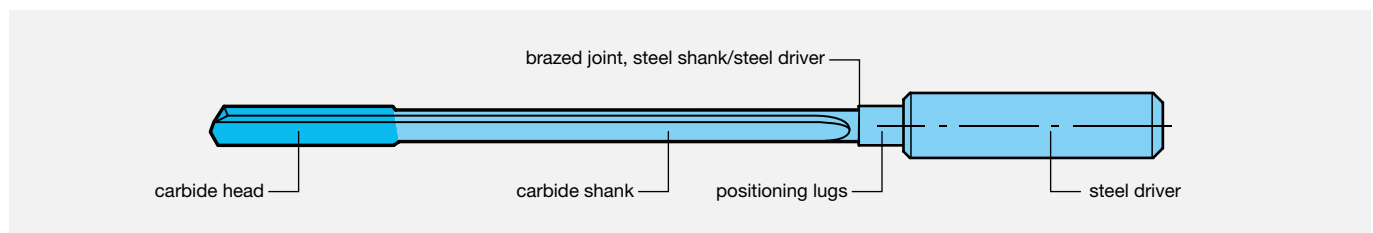
Range of applications

	Diameter range																	
	0.9	1.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0
EB 100 M	max. total length 615 mm																	
EB 100	max. total length 615 mm																	
EB 80	max. total length 3.600 mm																	
ZB 80	max. total length 1.000 mm																	
EB 800	max. total length 3.600 mm																	

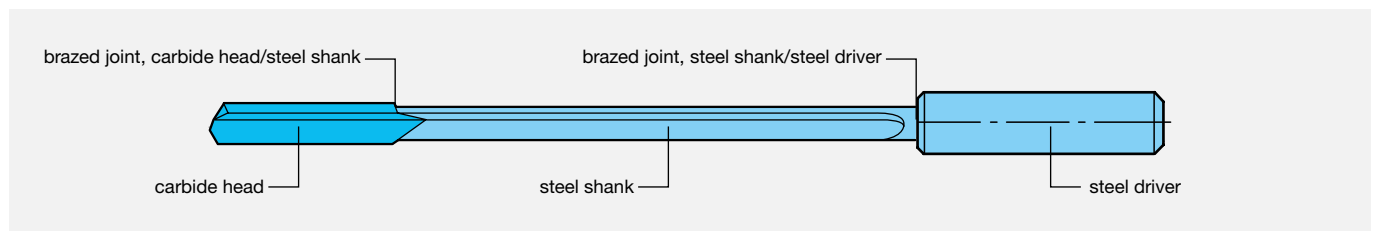
EB 100 M



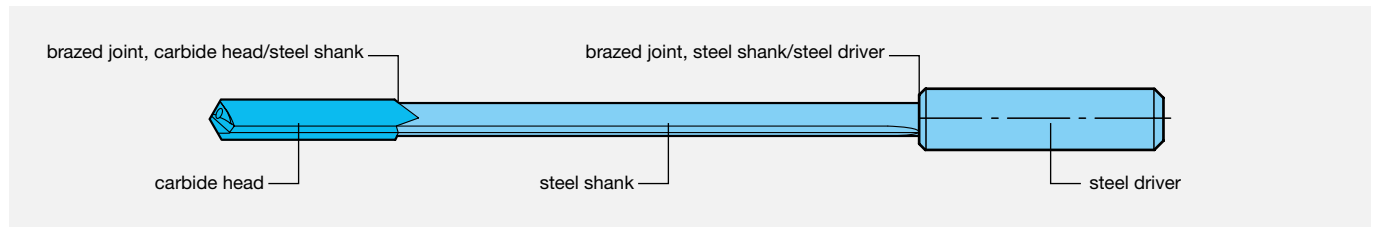
EB 100



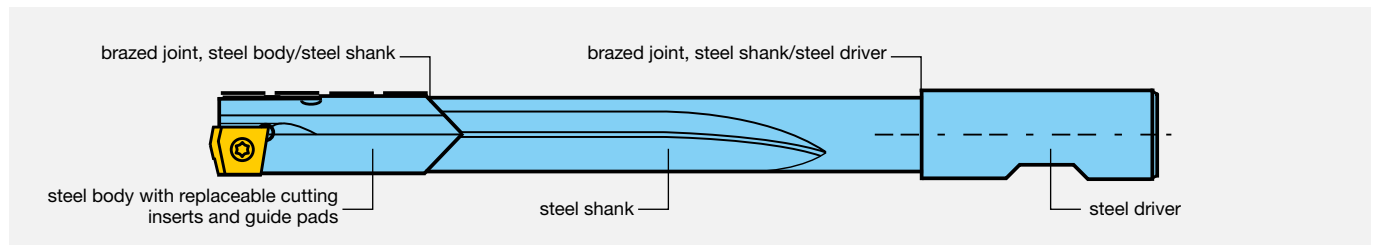
EB 80



ZB 80

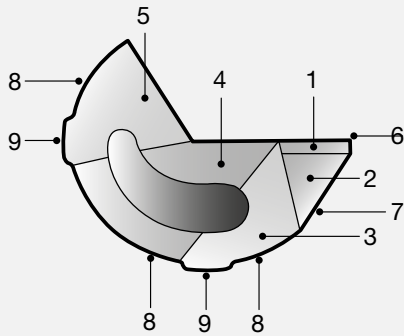


EB 800

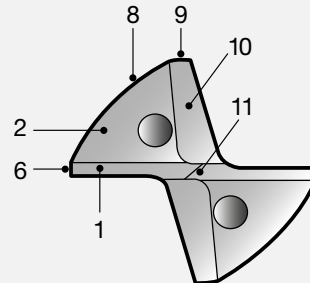


Characteristics

Characteristics – point grind EB



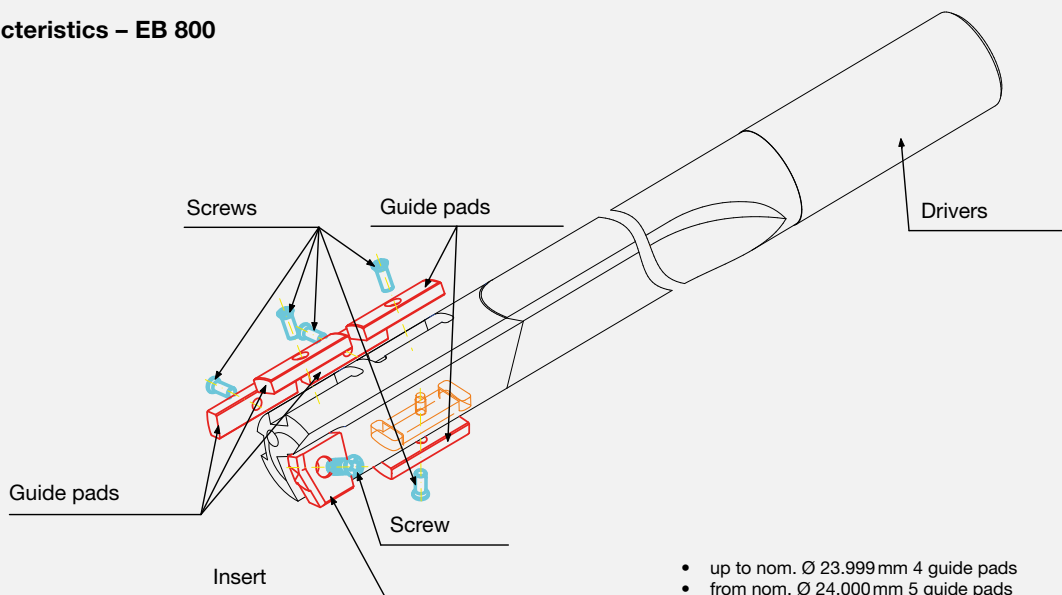
Characteristics – point grind ZB



Explanation:

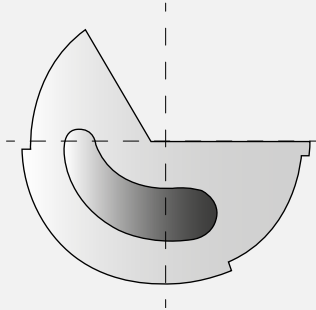
- 1 - Outer cutting edge, 1st flank
- 2 - Outer cutting edge, 2nd flank
- 3 - Flank, tip
- 4 - Inner cutting edge
- 5 - Oil chamber
- 6 - Secondary cutting edge (circular grinding chamfer)
- 7 - Primary clearance (oil pocket)
- 8 - Body clearance diameter
- 9 - Supporting strips (head form)
- 10 - Web thinning
- 11 - Chisel edge

Characteristics – EB 800



- up to nom. Ø 23.999 mm 4 guide pads
- from nom. Ø 24.000 mm 5 guide pads

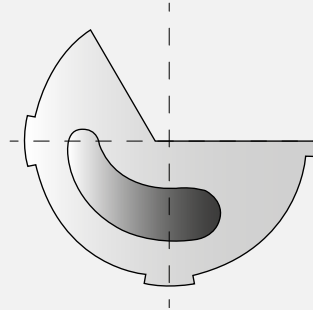
Standard head forms



Head form G

Standard head form. Suitable for most materials and drilling tasks. With this form, the tool diameter cannot be measured once it has been manufactured.

- suitable for most drilling tasks
- for all materials
- low deviation from concentricity
- reduced tendency to jam
- tight hole tolerances

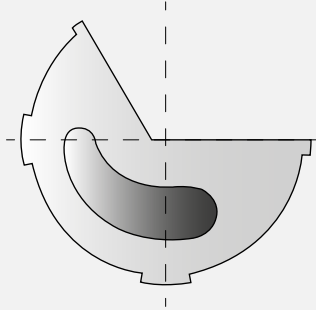


Head form C

This head form is preferred where drilling tolerances are tight with regard to drill hole diameter and surface quality.

- for all materials
- steel, stainless steel, aluminium
- low deviation from concentricity
- reduced tendency to jam

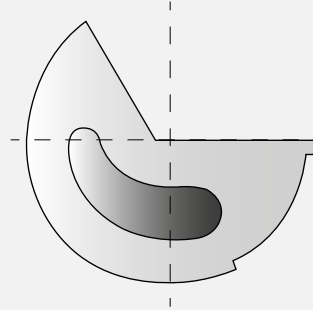
Special head forms



Head form A

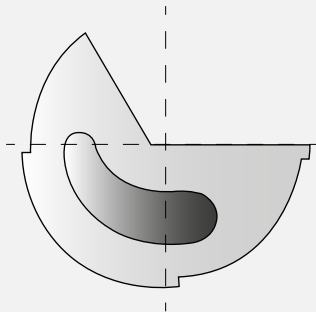
Head form for difficult drilling conditions when spot drilling and cross drilling. Machining of soft materials and/or where the lubrication performance of the cooling lubricant is poor. Used where tight drilling tolerances apply and as a guide part where extra long cutting heads are used.

- aluminium
- copper



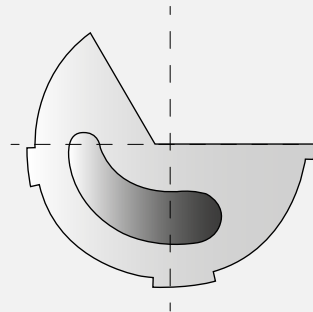
Head form D

This head form is used almost exclusively for soft materials such as grey cast iron, graphite etc. – especially in connection with tight drilling tolerances.



Head form E

Suitable for all materials, but for less stringent drilling tolerances.



Head form F

Head form for softer materials, lower friction and stable guidance, such as with aluminium.

This is just a small selection of our special head forms. Further special head forms for your particular application are available on enquiry.

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 EB 80

Drivers for deep drilling machines

1
TBM-SEV

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

5
TBM-SGI

Code no.	d ₁	l ₁	l ₂
5.1	10	60	20
5.2	16	80	28
5.3	25	100	50
5.4	10	100	20
5.5	10	110	24

2
TBM-SV

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

6
TBM-SKM

Code no.	d ₁	l ₁
6.1	12.7	38
6.2	19.05	70
6.3	38.1	70

3
TBM-SEH

Code no.	d ₁	l ₁	l ₂	l ₃
3.1	25	70	34	-
3.2	25	70	34	100
3.3	25	70	34	105

7
TBM-TRG

Code no.	d ₁	l ₁	l ₂
7.1	16	112	73
7.2	20	126	82

4
TBM-SFM

Code no.	d ₁	l ₁
4.1	19,05	70
4.2	12,7	70
4.3	25,4	70
4.4	31,75	70
4.5	38,1	70

Drivers to DIN 1835

form HE

9
TBM-SEV

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
9.8	31.75	70
9.9	38.1	70
9.10	40	70

Drivers to VDI-drafterf

12
TBM-VDI

Code no.	d ₁	l ₁	l ₂
12.1	10	68	40
12.2	16	90	40
12.3	25	112	50

also be used for deep hole drilling machines

Drivers to Speed-Bit-System

13
TBM-SPB

Code no.	d ₁	l ₁	l ₂
13.1	16	40	14
13.2	25	50	25
13.2	35,6	60	20

also be used for deep hole drilling machines

Drivers for EB 80

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
10.8	25	70
10.9	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
11.6	25.4	70
11.7	25	56
11.8	32	60
11.9	40	70

8 form HB

from code no. 8.6

Code no.	d ₁	l ₁	l ₂
8.1	8	36	-
8.2	10	40	-
8.3	12	45	-
8.4	16	48	-
8.5	20	50	-
8.6	25	56	17
8.7	32	60	19
8.8	40	70	19
8.9	50	80	23
8.10	63	90	23

16 sim. form HA (shrinkable)

Code no.	d ₁	l ₁
16.1	10	50
16.2	16	64
16.3	20	70
16.4	25	81
16.5	32	92

17 sim. form HE

Code no.	d ₁	l ₁
17.1	19.05	70
17.2	25.4	70
17.3	31.75	70
17.4	38.1	70

also be used for deep hole drilling machines

Drivers for EB 100

Drivers with positioning lugs to DIN 6535

18 form HA

Code no.	d ₁	l ₁	l ₂
4	4	28	40
6	6	36	51
10	10	40	55
12	12	45	60
16	16	48	63

19 form HB

Code no.	d ₁	l ₁	l ₂
4	4	28	40
6	6	36	51
10	10	40	55
12	12	45	60
16	16	48	63

20 form HE

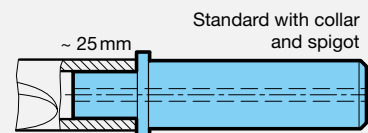
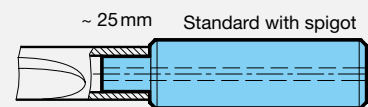
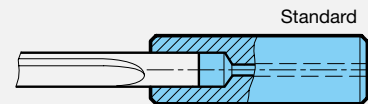
Code no.	d ₁	l ₁	l ₂
4	4	28	40
6	6	36	51
10	10	40	55
12	12	45	60
16	16	48	63

Driver variations to suit gun drill tubes

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



Re-grinding and re-tipping

Even modern high-performance tools will wear at some point due to the enormous stresses they have to withstand. Guhring reproduces the tool performance thanks to professional re-grinding.

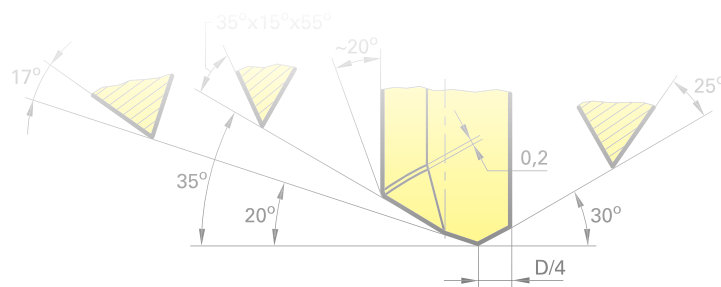
Thanks to the installation of identical machines and equipment in all re-grind centres a universal standard is ensured for gun drills of the highest quality.

Solid carbide deep hole drills or deep hole drills with a brazed head can be re-ground up to 10 times, depending on the head length and wear mark width.

The following points must be taken into account:



- The tool must be properly and cleanly re-ground, so that there are no traces of wear.
- The face of the tool must be smooth and shiny after re-grinding.
- At extra cost, the tools can also be coated after grinding.
- Deep hole drills with a brazed head can be fitted with a new one if the wear is severe or there is damage.
- Deep hole drills with positioning lugs are checked for concentricity after re-grinding and adjusted if necessary.
- Guideline values for the minimum head length when re-grinding, to ensure that the required quality of the drilled hole is achieved:

Diameter range	min. head length
Ø0.900 - Ø1.999	5 - 7 mm
Ø2.000 - Ø3.999	8 - 10 mm
Ø4.000 - Ø16.999	10 - 14 mm
Ø17.000 - Ø25.999	14 - 16 mm
Ø26.000 - Ø40.000	16 - 18 mm




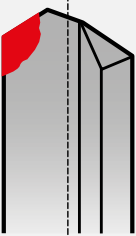
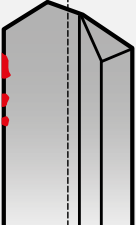
	- 25°	+ 30°	0°	
	+ 20°	+ 17°	0°	D/4
	+ 35°	+ 15°	+ 55°	

Application hints/Troubleshooting

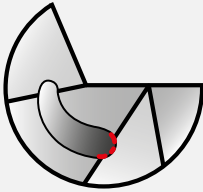
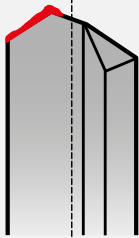
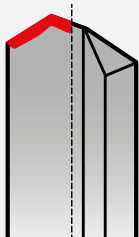
Problem	Cause	Remedy
1. Tool breakage during spotting operation 	Tool <ul style="list-style-type: none"> - blunt cutting edge - incorrect point geometry - excessive feed rate - spotting at rapid feed rate - pre-damaged tool (breakage etc.) - too high length/diameter relation (LxD) 	<ul style="list-style-type: none"> - re-grinding - correct point geometry - reduce feed rate - select drill feed - regrind- if necessary new tool - use several tools /support
	Pilot hole <ul style="list-style-type: none"> - too small diameter - too large diameter - too poor drill hole quality (worn tool) - incorrect threading method 	<ul style="list-style-type: none"> - different tool (bigger Ø) - different tool (smaller Ø) - use new tool - correct programme
	Drill bush <ul style="list-style-type: none"> - worn - broken - insufficient contact pressure /lifts off when spotting and chips get jammed - gap between bushes and workpiece /chips get entangled, chip jam 	<ul style="list-style-type: none"> - new drill bush - new drill bush - increase contact pressure - correct position drill bushes
	Workpiece <ul style="list-style-type: none"> - clamping not correct 	<ul style="list-style-type: none"> - clamp workpiece correctly
	KSS <ul style="list-style-type: none"> - coolant pressure too low, blockage - medium too contaminated --> blockage 	<ul style="list-style-type: none"> - increase coolant pressure - control filtering
2. Tool breaks on the shank (drivers) 	Tool <ul style="list-style-type: none"> - too high length/diameter relation (LxD) 	<ul style="list-style-type: none"> - use several tools / support
	Workpiece <ul style="list-style-type: none"> - axis position of hole incorrect 	<ul style="list-style-type: none"> - control workpiece clamping
	Machine <ul style="list-style-type: none"> - machine to workpiece offset - drilling depth too deep (programming error) 	<ul style="list-style-type: none"> - control offset and correct if necessary - control programming

Technical section

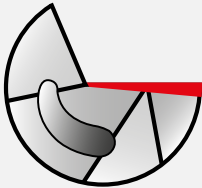
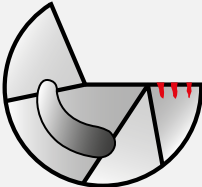
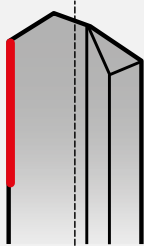
Application hints/Troubleshooting

Problem	Cause	Remedy
3. Tube bent/displaced 	Tool <ul style="list-style-type: none"> - too high length / diameter relation (LxD) - excessive cutting forces (spec. torque) 	<ul style="list-style-type: none"> - use several tools / support - reduce cutting data
	KSS <ul style="list-style-type: none"> - coolant pressure too low, chip jam 	<ul style="list-style-type: none"> - increase coolant pressure
4. Tool breaks/ flakes off 	Tool <ul style="list-style-type: none"> - overheating during grinding - side cutting edge (circular land) too blunt - tool not firmly clamped, oscillates axially - tool jams, flakes off during withdrawal - maximum tool life exceeded - machining performance too high - interrupted cut - deviation from concentricity too large 	<ul style="list-style-type: none"> - correct parameters during grinding - control edge rounding on side cutting edge - optimise workpiece clamping - change cutting edge geometry or head form - shorten tool change intervals - reduce cutting data - reduce feed rates - check and correct concentricity if possible
	Pilot hole <ul style="list-style-type: none"> - too large diameter (excessive play) 	<ul style="list-style-type: none"> - different tool (smaller Ø)
	Drill bush <ul style="list-style-type: none"> - too large diameter (excessive play) 	<ul style="list-style-type: none"> - different drilling bush (smaller Ø)
	Workpiece <ul style="list-style-type: none"> - insufficient clamping 	<ul style="list-style-type: none"> - clamp workpiece correctly
5. Crumbling on round land 	Tool <ul style="list-style-type: none"> - interrupted cut 	<ul style="list-style-type: none"> - reduce feed rates
	Pilot hole <ul style="list-style-type: none"> - too large diameter (excessive play) 	<ul style="list-style-type: none"> - different tool (smaller Ø)
	Drill bush <ul style="list-style-type: none"> - too large diameter (excessive play) - gap between bushes and workpiece too large 	<ul style="list-style-type: none"> - different drilling bush (smaller Ø) - reduce gap (drilling bush should ideally be in contact)
	Workpiece <ul style="list-style-type: none"> - non-rigid conditions / insufficient workpiece clamping - transverse holes non closed (coolant loss) 	<ul style="list-style-type: none"> - clamp workpiece correctly - seal transverse holes (Gühring sealing plugs)
KSS <ul style="list-style-type: none"> - unsuitable coolant for abrasive material 	<ul style="list-style-type: none"> - choose suitable coolant, increase oil content of the emulsion / use oil 	

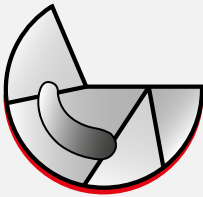
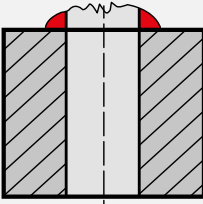
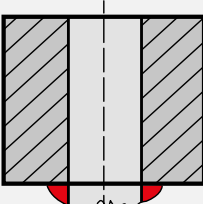
Application hints/Troubleshooting

Problem	Cause	Remedy
6. Crumbling on coolant duct 	Tool <ul style="list-style-type: none"> - clearance angle too small - angle of oil space too small (insufficient oil flow) - material adhesions on face 	<ul style="list-style-type: none"> - increase clearance angle - increase/adjust angle of oil space - tool coating if necessary
	KSS <ul style="list-style-type: none"> - unsuitable coolant, improper oil (viscosity) or too thin emulsion (material deposits) - impure coolant due to small chips or other contamination 	<ul style="list-style-type: none"> - choose suitable coolant, increase oil content of the emulsion / use oil - check filtering of the coolant, improve/ refine if necessary
7. Build-up on cutting edges 	Tool <ul style="list-style-type: none"> - cutting speed too low - edge preparation / rounding of cutting edges too large - bright cutting edges - unsuitable cutting material - unsuitable coating 	<ul style="list-style-type: none"> - increase cutting speed - reduce edge preparation / rounding of cutting edges - tool coating if necessary - suitable cutting material - choose different type of coating
	KSS <ul style="list-style-type: none"> - unsuitable coolant, improper oil (viscosity) or too thin emulsion 	<ul style="list-style-type: none"> - choose suitable coolant, increase oil content of the emulsion / use oil
8. Heavy crater wear 	Tool <ul style="list-style-type: none"> - cutting speed too high - unsuitable chip shape - unsuitable cutting material 	<ul style="list-style-type: none"> - reduce cutting speed - adjust point geometry - choose suitable cutting material, tool coating if necessary
	KSS <ul style="list-style-type: none"> - unsuitable coolant, improper oil (viscosity) or too thin emulsion - coolant pressure / flow too low 	<ul style="list-style-type: none"> - choose suitable coolant, increase oil content of the emulsion / use oil - increase coolant pressure / flow

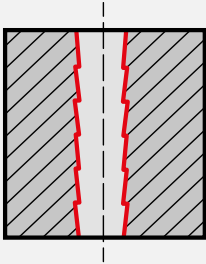
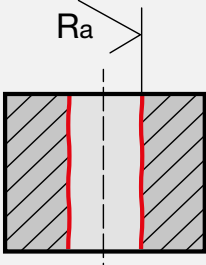
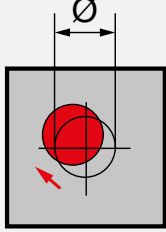
Application hints/Troubleshooting

Problem	Cause	Remedy
9. Wear at flank 	Tool <ul style="list-style-type: none"> - cutting speed too high - chip brakes too strongly at the face - feed rate too small - clearance angle too small 	<ul style="list-style-type: none"> - reduce cutting speed - remove coating on face - increase the feed rate - increase clearance angle
	KSS <ul style="list-style-type: none"> - unsuitable coolant, improper oil (viscosity) or too thin emulsion 	<ul style="list-style-type: none"> - choose suitable coolant, increase oil content of the emulsion / use oil
10. Comb cracks/chipping 	Tool <ul style="list-style-type: none"> - excessive cutting forces - interrupted cut - wrong type of carbide selected - excessive cutting forces 	<ul style="list-style-type: none"> - reduce cutting data - reduce feed rate - choose different type of carbide - reduce cutting data / change point geometry (angle of oil space)
	KSS <ul style="list-style-type: none"> - unsuitable coolant, improper oil (viscosity) or too thin emulsion (too high temperatures due to insufficient lubrication) 	<ul style="list-style-type: none"> - choose suitable coolant, increase oil content of the emulsion / use oil
11. Land wear 	Tool <ul style="list-style-type: none"> - deviation from concentricity too large - back taper too small - edge preparation/ rounding of cutting edges too large - unsuitable point geometry for oil space (flow rate too low) 	<ul style="list-style-type: none"> - check and correct concentricity if possible - enlarge back taper - reduce edge preparation / rounding of cutting edges - adjust oil space geometry (angle / recess / groove / 2. area)
	Workpiece <ul style="list-style-type: none"> - non-rigid conditions / insufficient workpiece clamping 	<ul style="list-style-type: none"> - clamp workpiece correctly
	KSS <ul style="list-style-type: none"> - unsuitable coolant, improper oil (viscosity) or too thin emulsion 	<ul style="list-style-type: none"> - choose suitable coolant, increase oil content of the emulsion / use oil

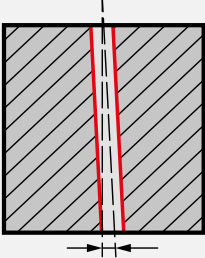
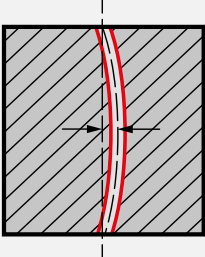
Application hints/Troubleshooting

Problem	Cause	Remedy
12. Wear on head form 	Tool <ul style="list-style-type: none"> - deviation from concentricity too large - interrupted cut - wrong type of carbide selected - back taper too small - wrong coating selected Workpiece <ul style="list-style-type: none"> - non-rigid conditions / insufficient work-piece clamping KSS <ul style="list-style-type: none"> - unsuitable coolant for abrasive material 	<ul style="list-style-type: none"> - check and correct concentricity if possible - reduce feed rates - correct carbide selection - enlarge back taper - correct coating selection <ul style="list-style-type: none"> - clamp workpiece correctly <ul style="list-style-type: none"> - choose suitable coolant, increase oil content of the emulsion / use oil
13. Large drill burr 	Tool <ul style="list-style-type: none"> - excessive feed rate during spotting - maximum tool life exceeded (tool is blunt) - edge preparation / rounding of cutting edges too large - clearance angle too small Pilot hole <ul style="list-style-type: none"> - too large diameter (excessive play) Drill bush <ul style="list-style-type: none"> - too large diameter (excessive play) 	<ul style="list-style-type: none"> - reduce feed rate during spotting - shorten tool change intervals - reduce edge preparation / rounding of cutting edges - increase clearance angle <ul style="list-style-type: none"> - different tool (smaller Ø) <ul style="list-style-type: none"> - different drilling bush (smaller Ø)
14. Large drill burr 	Tool <ul style="list-style-type: none"> - excessive feed rate during drilling - maximum tool life exceeded (tool is blunt) - edge preparation / rounding of cutting edges too large 	<ul style="list-style-type: none"> - reduce feed rate during drilling - shorten tool change intervals - reduce edge preparation / rounding of cutting edges

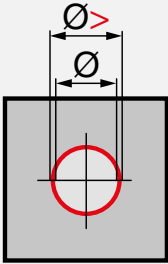
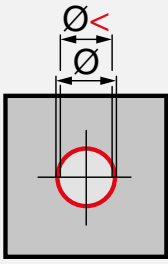

Application hints/Troubleshooting

Problem	Cause	Remedy
15. Tool drills in steps 	Tool <ul style="list-style-type: none"> - drill head does not sit axially centered on the drill pipe (eb 80/eb 800) - coaxiality between head and shaft is too large 	<ul style="list-style-type: none"> - re-braze the head / new tool - check coaxiality / use new tool
	Machine <ul style="list-style-type: none"> - axis offset between spindle mount and drill bushes or pilot hole too large 	<ul style="list-style-type: none"> - correct axis shifting, optimal is 0.02 mm offset
	KSS <ul style="list-style-type: none"> - coolant pressure too high 	<ul style="list-style-type: none"> - reduce coolant pressure
16. Unsatisfactory surface quality 	Tool <ul style="list-style-type: none"> - cutting edge broken - chamfer of side cutting edge (circular land) too large - weakly formed warping chamfer - too little pressure on the rear guide pads - deviation from concentricity too large - wrong coating selected 	<ul style="list-style-type: none"> - regrind the tool - correct tool design - optimise warping chamfer - increase pressure by point geometry or by peeling chamfer/corner radius - check and correct concentricity if possible - correct coating selection
	Workpiece <ul style="list-style-type: none"> - non-rigid conditions / insufficient workpiece clamping 	<ul style="list-style-type: none"> - clamp workpiece correctly
	KSS <ul style="list-style-type: none"> - coolant type / emulsion not sufficient - coolant quantity not sufficient 	<ul style="list-style-type: none"> - use oil if possible - increase coolant quantity (volume/pressure)
17. Centre offset 	Tool <ul style="list-style-type: none"> - deviation from concentricity too large 	<ul style="list-style-type: none"> - check and correct concentricity if possible
	Pilot hole <ul style="list-style-type: none"> - spotting on transverse area - wrong tool design 	<ul style="list-style-type: none"> - apply pilot hole with milling cutter - optimize LxD / check tool-Ø
	Drill bush <ul style="list-style-type: none"> - spotting on transverse area - worn drilling bush (inner Ø too large) 	<ul style="list-style-type: none"> - use corrected drill bush - use new drill bush
	Workpiece <ul style="list-style-type: none"> - non-rigid conditions / insufficient workpiece clamping 	<ul style="list-style-type: none"> - clamp workpiece correctly
	Machine <ul style="list-style-type: none"> - axis offset between spindle mount and drill bushes / pilot hole too large 	<ul style="list-style-type: none"> - correct axis shifting, optimal is 0.02 mm offset

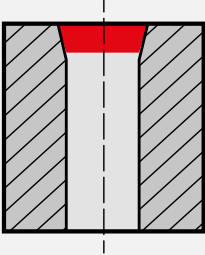
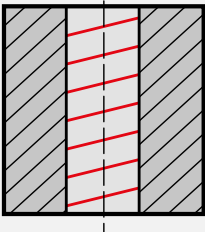
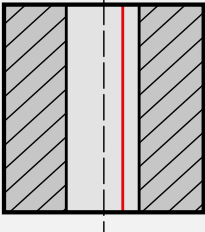
Application hints/Troubleshooting

Problem	Cause	Remedy
18. Large drilling path 	Tool <ul style="list-style-type: none"> - blunt cutting edge - incorrect point geometry - wrong head form - excessive feed rate - insufficient guidance - deviation from concentricity too large 	<ul style="list-style-type: none"> - re-grinding - correct point geometry - correct head form - reduce feed rate - use long head section - check and correct concentricity if possible
	Pilot hole <ul style="list-style-type: none"> - displacement of pilot hole - pilot hole non-circular 	<ul style="list-style-type: none"> - check pilot hole if necessary - different tool - adjust pilot tool
	Drill bush <ul style="list-style-type: none"> - unsatisfactory drill bushing / drill bushing to drill bushing holder not correct 	<ul style="list-style-type: none"> - change drilling bush if necessary also drill bush holder
	Workpiece <ul style="list-style-type: none"> - non-rigid conditions / insufficient work-piece clamping - unfavourable drilling position / very thin walls - workpiece overheated (sharp rise in temperature) 	<ul style="list-style-type: none"> - clamp workpiece correctly - consider drilling position if necessary correct - reduce cutting data
	Machine <ul style="list-style-type: none"> - axis offset between spindle mount and drill bushes / pilot hole too large 	<ul style="list-style-type: none"> - correct axis shifting, optimal is 0.02 mm offset
19. Unsatisfactory straightness of hole 	Tool <ul style="list-style-type: none"> - blunt cutting edge - incorrect point geometry - wrong head form - excessive feed rate - insufficient guidance - deviation from concentricity too large - wrong coating selected - too high length/diameter relation (LxD) 	<ul style="list-style-type: none"> - re-grinding - correct point geometry - correct head form - reduce feed rate - use long head section - check and correct concentricity if possible - correct coating selection - use several tools / support
	Workpiece <ul style="list-style-type: none"> - non-rigid conditions / insufficient work-piece clamping - unfavourable drilling position / very thin walls - workpiece overheated (sharp rise in temperature) 	<ul style="list-style-type: none"> - clamp workpiece correctly - consider drilling position if necessary correct - reduce cutting data
	Machine <ul style="list-style-type: none"> - workpiece without anti-clockwise rotating - axis offset between spindle mount and drill bushes / pilot hole too large 	<ul style="list-style-type: none"> - if mechanically possible, drilling with anti-clockwise rotating - correct axis shifting, optimal is 0.02 mm offset

Application hints/Troubleshooting

Problem	Cause	Remedy
<p>20. Hole too large</p> 	<p>Tool</p> <ul style="list-style-type: none"> - too much pressure on the side cutting edge - deviation from concentricity too large <p>KSS</p> <ul style="list-style-type: none"> - coolant pressure too high 	<ul style="list-style-type: none"> - change point geometry/ reduce pressure on the side cutting edge (change D/4 to D/3) - check and correct concentricity if possible - reduce coolant pressure
<p>21. Hole too tight</p> 	<p>Tool</p> <ul style="list-style-type: none"> - too little pressure on the side cutting edge - wrong head form - tool reground too much (often back taper) 	<ul style="list-style-type: none"> - change point geometry / increase pressure on side cutting edge (change D/3 to D/4) - correct head form (form "C") - use new tool
<p>22. Chip jam/ tool is blocked</p> 	<p>Tool</p> <ul style="list-style-type: none"> - ratio of cutting speed to feed rate does not fit - unsuitable point geometrie - flow chips - flow chips with coated tools - unsuitable point geometry for oil space (flow rate too low) - tool clamping leaking (coolant loss) <p>KSS</p> <ul style="list-style-type: none"> - coolant qauntity not sufficient 	<ul style="list-style-type: none"> - correct/adjust ratio of cutting speed to feed - adjust point geometry to favor chip breaking - if necessary program Hiccup/Pecking - remove coating on face - adjust oil space geometry angle / recess / groove / 2. area - optimise workpiece clamping - increase coolant quantity (volume / pressure)

Application hints/Troubleshooting

Problem	Cause	Remedy
23. Large drilling width 	<ul style="list-style-type: none"> ■ Tool ■ Pilot hole ■ Drill bush ■ Workpiece 	<ul style="list-style-type: none"> ■ - excessive feed rate during spotting ■ - displacement of pilot hole / non-circular ■ - unsatisfactory drill bushing / drill bushing to drill bushing holder not correct ■ - non-rigid conditions / insufficient workpiece clamping, vibrations during spotting ■ - reduce feed rate during spotting ■ - check pilot hole if necessary use different tool ■ - change drill bush if necessary also drill bush holder ■ - clamp workpiece correctly
24. Spiralling 	<ul style="list-style-type: none"> ■ Tool ■ Workpiece 	<ul style="list-style-type: none"> ■ - machining performance too high ■ - blunt cutting edge ■ - drill head does not sit axially centered on the drill pipe (EB80/EB800) ■ - coaxiality between head and shaft is too large ■ - wrong head form ■ - non-rigid conditions / insufficient workpiece clamping, vibrations during spotting ■ - reduce cutting data ■ - regrind tool / if necessary change ■ - re-braze the head / new tool ■ - check coaxiality / use new tool ■ - correct head form ■ - clamp workpiece correctly / place vibration damper
25. Tool leaves retraction marks 	<ul style="list-style-type: none"> ■ Tool ■ Workpiece ■ Machine 	<ul style="list-style-type: none"> ■ - feed rate too high when pulling out ■ - cutting edges too sharp ■ - deviation from concentricity too large ■ - wrong head form ■ - non-rigid conditions / insufficient workpiece clamping ■ - axis offset between spindle mount and drill bushes / pilot hole too large ■ - reduce feed rate ■ - cutting edge rounding ■ - check and correct concentricity if possible ■ - correct head form ■ - clamp workpiece correctly ■ - correct axis shifting, optimal is 0.02 mm offset

Application recommendations

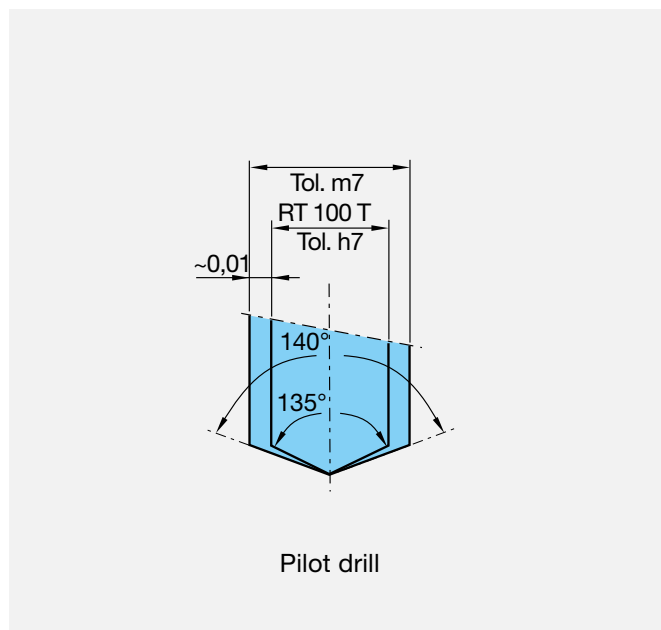
The sequence of operations for deep hole drilling

- production of pilot hole ($L = 1,5 \times D$ bis $L = 3,0 \times D$, tolerance G8)
- switching on coolant supply
- enter at revolutions of approx. 300 U/min, feed rate approx. 500 mm/min
- setting of revolutions and feed rate
- uninterrupted drilling to required drilling depth without wood pecking
- reducing revolutions to approx. 300 U/min
- withdrawal with max. 5,000 mm/min and rotating spindle

Procedure

In order to achieve optimal machining results when producing deep holes especially spotting on radii or on an uneven surface structure, we recommend the following machining steps:

1. Initial milling of surface, i.e. with our centre cutting Ratio end mill RF 100 Diver. The surface must be machined at right angles to the entry angle of the drilling operation.
2. Producing of a cylindrical pilot hole, with a drilling depth of at least $1.5 \times D$ to $3 \times D$ (tolerance G8). For this operation we recommend our Ratio drills. Thanks to a 140° point angle and a m7 tolerance on diameter these Ratio drills are especially suitable for this machining task.
3. Setting of coolant pressure (see diagram „RT 100 T Pressure specifications“) and switching on coolant supply.
4. Entry in the pilot hole at a speed of approx. 300 U/min and with a feed rate of approx. 500 mm/min.
5. Setting of speed and feed rate.
6. Uninterrupted drilling to required drilling depth without wood pecking.
7. For through holes with plain - i.e. 90° - exit, reduce feed rate v_f to 50% approx. 1 mm prior to break-through.
For through holes with oblique exit, reduce the feed rate v_f to 40% approx. 1 mm prior to break-through.
8. For through holes, reduce the speed to approx. 300 rpm after the final depth has been reached, or for blind holes, withdraw 1 mm from the bottom of the hole and then reduce the speed to approx. 300 rpm.
9. Withdrawal with max. 5,000 mm/min and rotating spindle.



All gun drills must have support for the pilot hole. Gun drills must never operate at full speed without support in the machine shop.

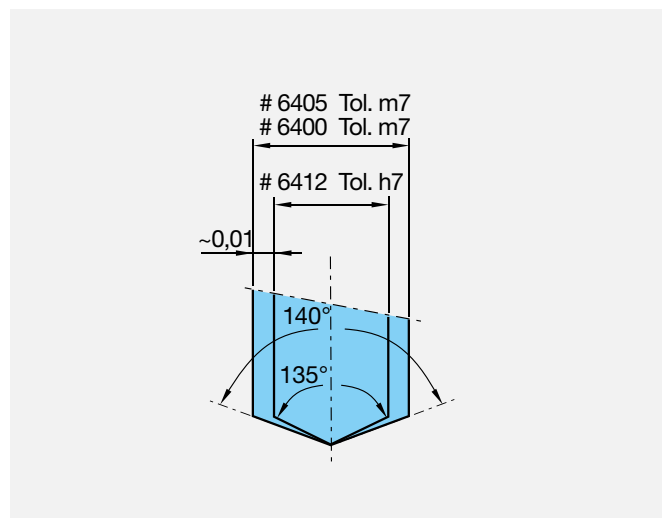
Application recommendations

Solid carbide micro-precision drills

Pilot drilling

For the application of solid carbide micro-precision drills 15xD we recommend a pilot hole 1xD up to 2xD depth.

For this pilot hole, the solid carbide micro-precision drill 4xD is optimally suitable. His point angle and his diameter tolerance are perfectly adapted.



Filter quality

When applying solid carbide micro-precision drills we recommend constant monitoring of the lubricant's filter quality due to the extremely small coolant duct diameters, for example with our check instrument CC 3000 (fig. right).

General hints:

Play-free spindles, alignment accurate tool holders.
We recommend the use of hydraulic expansion chucks or shrink chucks.



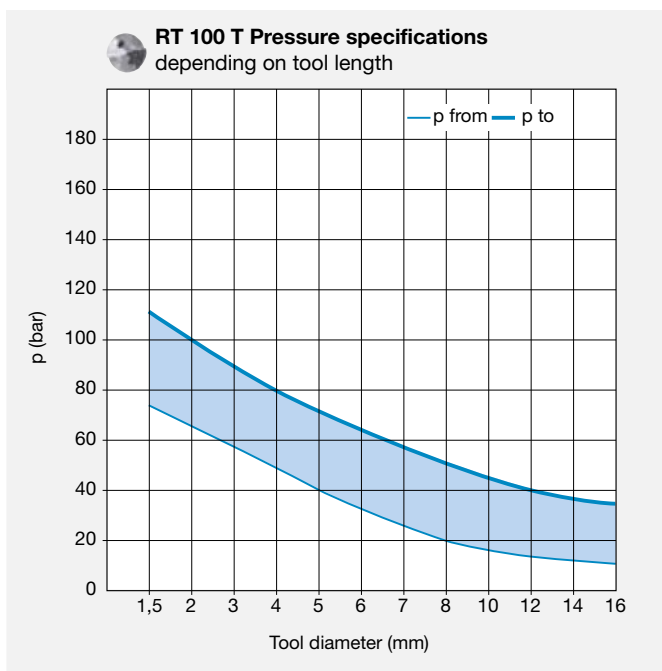
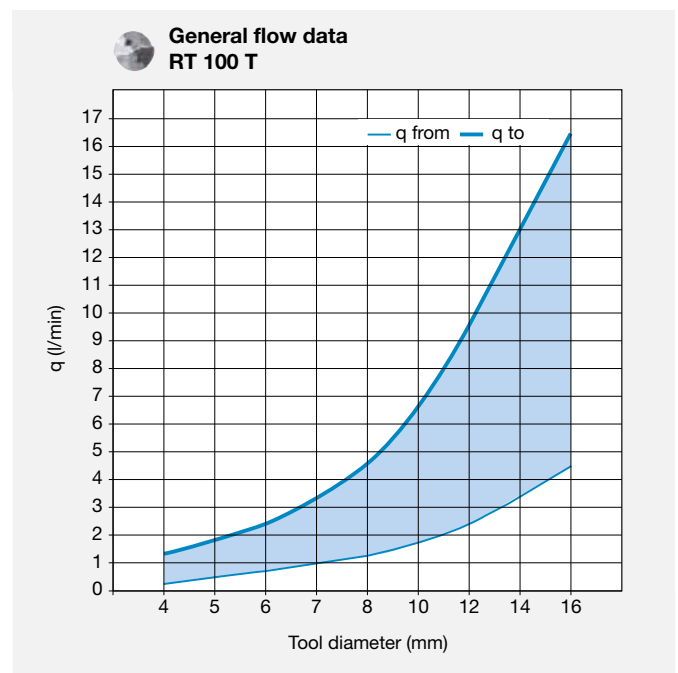
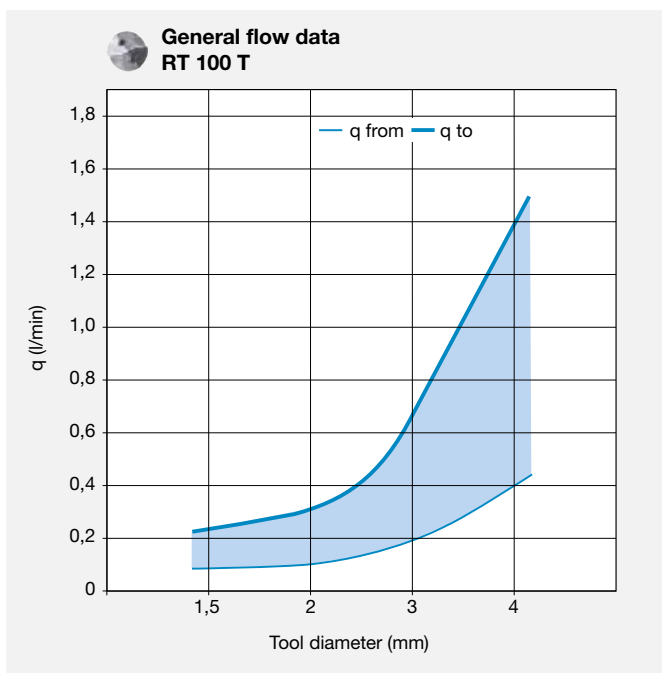
Notes regarding cooling:

We recommend using an emulsion for cooling lubrication:
lubricant pressure at least 40 bar.

Coolant values

Please note:

- All gun drills must be applied with internal cooling, either air, soluble oil or oil. Without internal cooling the chips cannot be evacuated.
- All gun drills can be applied with oil as the medium for internal cooling.
In this case, however, a higher pressure is required than with emulsions in order to obtain the same amount of coolant.
- When MQL is applied with gun drills an increase in pressure may be necessary for smaller nominal diameters dependent on the pressure of the MQL system.
- If the cooling lubricant data is insufficient the cutting parameters may be reduced. Pressure boosting systems are also possible.
- With increased gun drill length a pressure increase has to be expected to transport the required coolant volume through the coolant ducts.





Application recommendations

Pilot holes for drill lengths greater than DIN 1869

Before using the extra long HSS/HSCO drills according to DIN 1869 and factory standard, we recommend drilling a pilot hole.

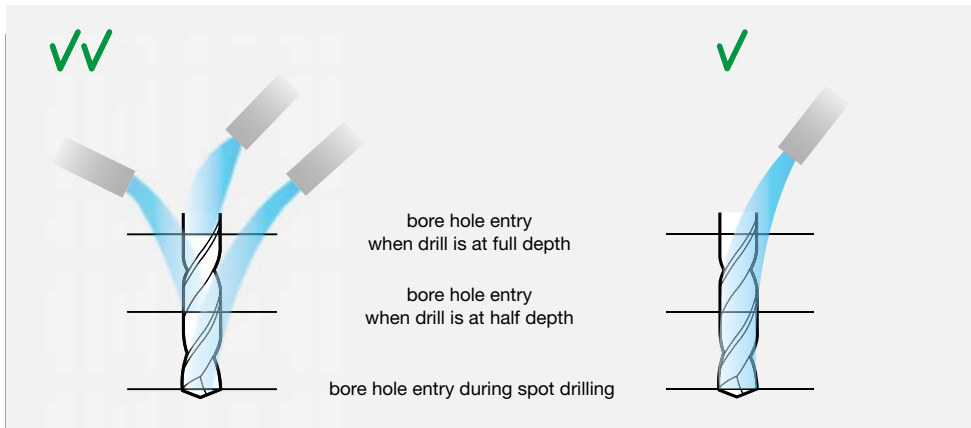
The following must be observed:

- The depth of the pilot hole should be 2-3xD.
- The point angle of the pilot drill should be at least as large or larger than the point angle of the deep hole drill.
- The diameter of the pilot drill should be equal to or up to 0.1 mm larger than the diameter of the deep hole drill.
- We recommend the use of an extra short twist drill according to DIN 1897 to drill the pilot hole, or alternatively a short twist drill according to DIN 338.

Procedure

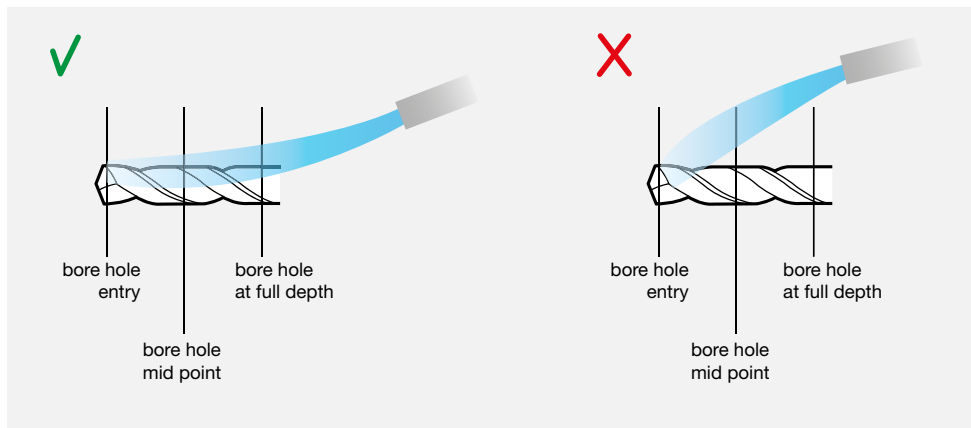
- The cooling lubricant supply must be adjusted in such a way that the entire cutting section of the deep hole drill is supplied with coolant.
- The approach to the component should be made with reduced rapid traverse, to avoid vibration of the deep hole drill.
- When introducing the deep hole drill into the pilot hole, we recommend reducing the rotational speed and feed speed by 50%.
- As soon as the deep hole drill has reached 2/3 of the pilot hole depth, the rotational speed should be increased to the full working speed.
- Depending on the machining situation (vertical/horizontal machining) and the material to be machined, the chip removal cycles should be selected to allow optimum chip removal and avoid chip jams.
- The chip removal cycles can be run at working rotational speed and with an increased feed rate, making sure that a part of the deep hole drill – at least 1xD – always remains in the hole to keep it guided. Afterwards it is possible to advance to a depth of 2 mm before the previously drilled depth with the increased feed rate and the working rotational speed. The next drilling cycle is then started with the working feed rate and the working rotational speed.
- After the full drilling depth has been reached, it is possible to withdraw from the hole at the working speed and increased feed rate, provided that the hole was drilled with chip removal cycles.
If drilling was carried out without chip removal cycles, we recommend reducing the rotational speed to 25% of the working speed and slightly increasing the feed rate when withdrawing from the full drilling depth.

Vertical machining



Supplying the coolant via several nozzles is the ideal way to ensure constant cooling and lubrication.

Horizontal machining



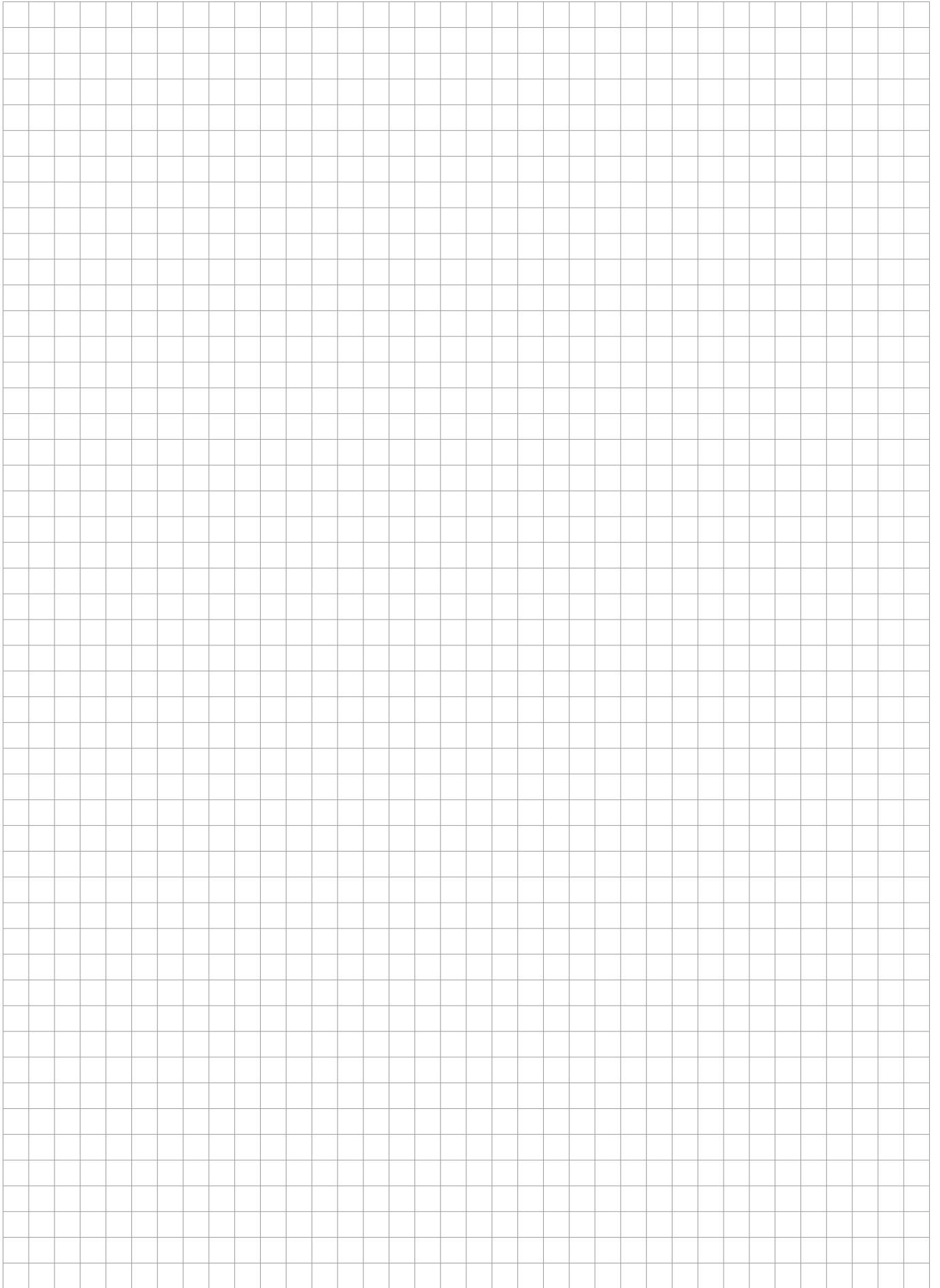
If there is only one coolant nozzle, it is recommended to set the nozzle so that the drill still receives coolant when drilling to depth.



INDEX

Article no.	Page	Drilling depth	Standard	Description	Tool material	Type	Form
5755	169		Company std.	Adjustment screws			
5766	170		Company std.	Sealing plugs			
5767	157		Company std.	Moulded steady rest bushings for single-fluted gun drills	Plastic		
5770	163		Company std.	Sealing disks for single-fluted gun drills	Plastic-metal		
5772	165		Company std.	Sealing disks for single-fluted gun drills	Plastic		
6400	129	4xD	Company std.	ExclusiveLine micro-precision drills without coolant ducts	Solid carbide	N	
6405	130	5xD	Company std.	ExclusiveLine micro-precision drills with coolant ducts	Solid carbide	N	
6412	114	15xD	Company std.	ExclusiveLine micro-precision drills with coolant ducts	Solid carbide	N	
6509	109	15xD	Company std.	Ratio drills with coolant ducts	Solid carbide	RT 100 T	
6511	110	20xD	Company std.	Ratio drills with coolant ducts	Solid carbide	RT 100 T	
6512	111	25xD	Company std.	Ratio drills with coolant ducts	Solid carbide	RT 100 T	
6513	112	30xD	Company std.	Ratio drills with coolant ducts	Solid carbide	RT 100 T	
6514	113	40xD	Company std.	Ratio drills with coolant ducts	Solid carbide	RT 100 T	
6716	139		Company std.	Pilot end mills RF 100 P	Solid carbide	NH	A
6737	140		DIN 6527L	Ratio end mills RF 100 DIVER	Solid carbide	NH	A



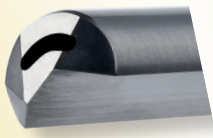




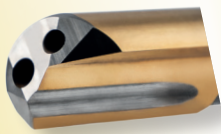
**OUR DEEP
HOLE DRILLS...**

...OFFER YOU
BEST QUALITY
AND OPTIMAL
SOLUTIONS.

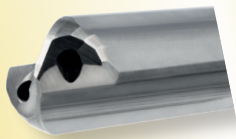




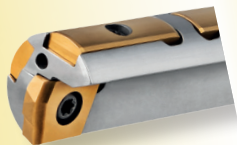
EB 100 & EB 100 M
THE SMALLEST AND THE ROBUST



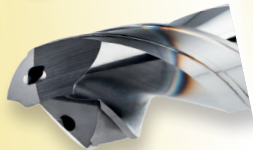
EB 80
THE CONVENTIONAL



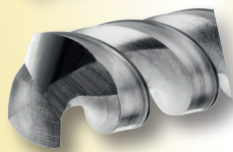
ZB 80
THE SPECIALIST FOR CAST IRON



EB 800
THE FLEXIBLE



SOLID CARBIDE **SPIRAL-FLUTED**
DEEP HOLE DRILLS



HSS/HSCO **SPIRAL-FLUTED**
DEEP HOLE DRILLS