

Single flute gundrills
Type 100, 110, 120



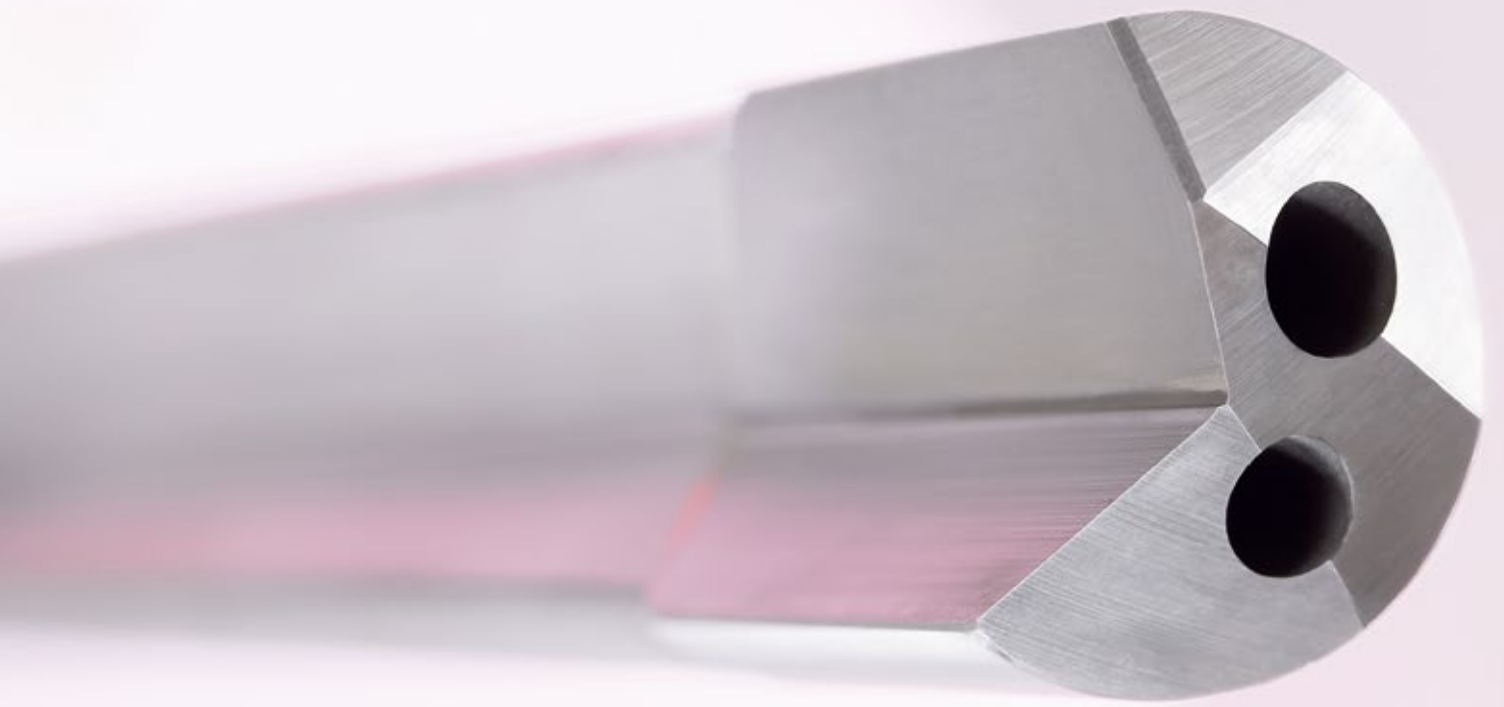
PRÄZISIONSWERKZEUGE

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BRT Präzisionswerkzeuge is a business division of TBT Tiefbohrtechnik GmbH + Co. and has extensive knowledge in this specialist sector when it comes to deep drilling tools and processes. With our comprehensive expertise, we have built up a large customer base over many years and work with them to constantly develop their deep drilling processes, providing economic solutions that meet their specific requirements.

Even today, deep drilling processes are unfamiliar territory for many machine operators, and BRT-Präzisionswerkzeuge supports them with high-quality tools and in-depth consultation.

The company produces BRT gun drills in different versions, single flute, twin flute, and since 2010 also helical drilling tools. The portfolio is rounded off with accessories for gun drills such as sealing housings, whip guide bushes, and drill bushes. We offer a full repair service for worn and broken drill heads.

We do not make
a lot of words,
we focus
on the essentials:

We involve our customers in our work; we believe excellence of product is achieved by both.

We have grown continuously with this philosophy for over 20 years. It is particularly important to us to process our customers' orders to perfection and react flexibly to the demands of the market. Our owner-oriented company management provides a sound basis for this approach, ensuring that our customers understand how we work and always know who to contact. Of course, we are aware that our clients have high expectations of our work – but our expert team means we have no trouble meeting these expectations at any time.

The size of our business means we are in the perfect position to achieve our market goals and remain relevant for the future. We want to build on this and continue to grow steadily, but still remain efficient. We are convinced that making quick decisions requires short lines of communication and excellent teamwork. So we will continue to cultivate our tried and tested methods, but of course remain open to new things.

Quality & environment

The **Quality** of our drills comes first.
Therefore only perfect quality products
are allowed to leave the plant

Customer satisfaction is paramount:
we always deliver on time

Errors are not condemned. They are meant
to be disclosed, so that **improvements** can
be made immediately. This ensures greater
losses and costs are prevented. We all learn
from our mistakes.

In order to produce as **efficiently** as
possible, our workplaces must be optimally
organized and kept clean

We work to protect the **health** and safety,
and job security of our employees

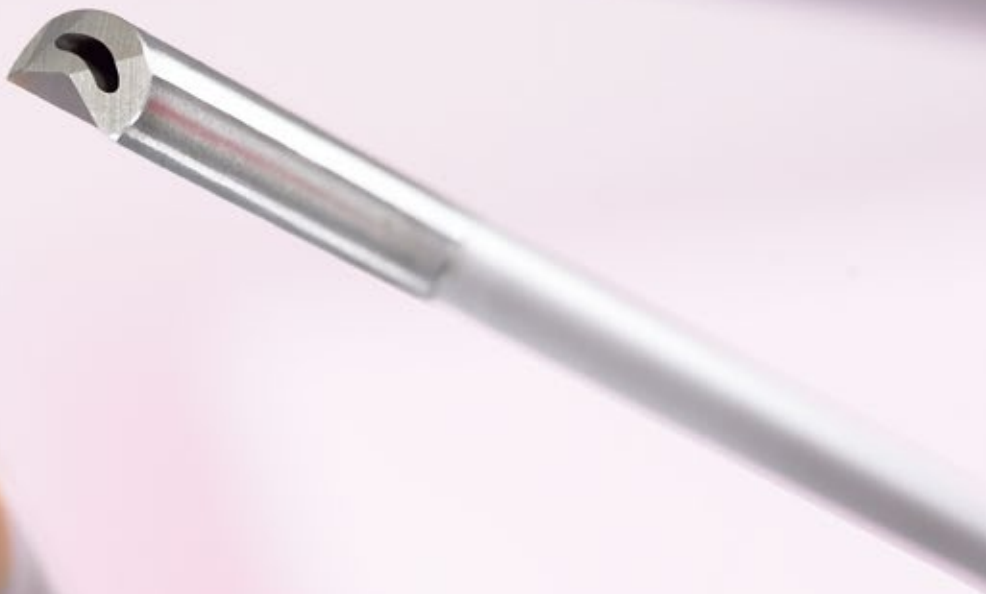
Our aim is to develop our business
through continuous improvement, so that
our **capability** and competitiveness are
maintained and extended



We always try to choose **alternatives** to
create the minimum possible impact on
mankind and the environment

We strive for continuous improvement that
contributes to ecological, economic and
technical developments

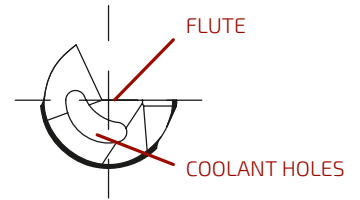
We always plan and implement our business
operations, in accordance with the **legal provisions**



Single flute drilling procedure

Single flute deep hole drilling is used today in the diameter range from 0,8 mm to 50 mm in three versions. In the diameter range below 1,9 mm drills are mainly solid carbide drills in which the cutting head and the shank used consist of one piece. For larger diameters we produce a two-piece design consisting of a carbide cutting head or a steel head with interchangeable inserts, and a steel shank.

Single flute deep hole drilling is characterized by a cooling channel in the tool through which the cooling lubricant is fed and the chips and coolant evacuated via a V-shaped flute.



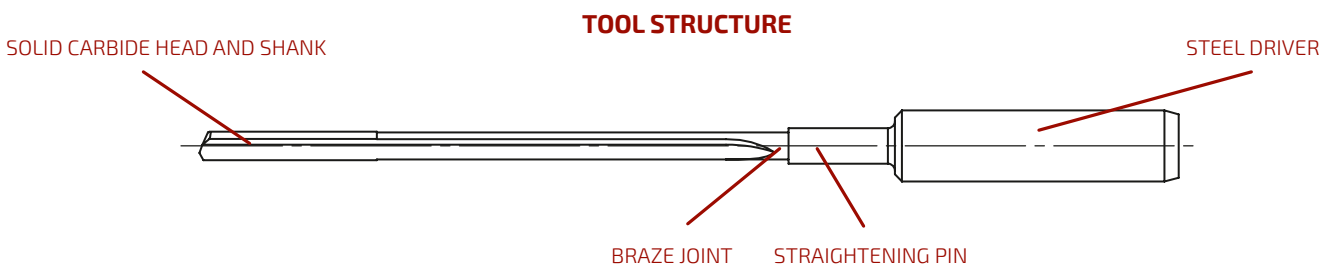
ADVANTAGE

- Easy to regrind
- Lower hole straightness deviation
- Good surface finish
- Diameter tolerances up to H7 are achievable
- Low manufacturing costs
- Can be used on universal machines
- Cross bores possible with longer drill
- Possible use of minimal lubrication
- Very good roundness (Circular shape accuracy)

Type 110 Solid carbide single flute gundrills

TYPE	DESCRIPTION	DRILL-Ø
Type 110	solid carbide boring drill	from 0,500
Type 110-01	solid carbide step boring drill	from 1,500
Type 110-02	solid carbide counterboring drill	from 0,800
Type 110-03	full solid carbide boring drill	upon request

► Tool length depending on the diameter up to 700 mm



The solid carbide single flute drill Type 110, which are connected by a braze joint, consist of the following two components:

- Drill head and drill shank made of solid carbide with a kidney-cooling channel
- Driver with straightening pin of steel

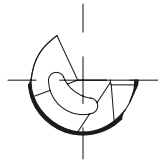
This type of tool is especially process and strong due to its construction. In addition, with low torsional longer service life can be achieved.

Available on Enquiry into completely solid carbide drill (Type 110-03).

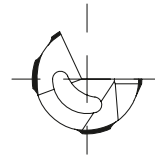
DRILL HEAD + SHANK

The peripheral shape is optimally adjusted depending on material and hole requirements for your drilling task.

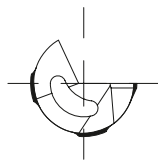
Upon request we can generate special contours for you.



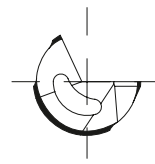
- Form G**
- universal contour
 - for all materials
 - low hole straightness deviation
 - low tendency to jam



- Form A**
- tight hole tolerance
 - angular entrance and exit bores



- Form C**
- steel
 - difficult to machine materials
 - tight hole tolerance



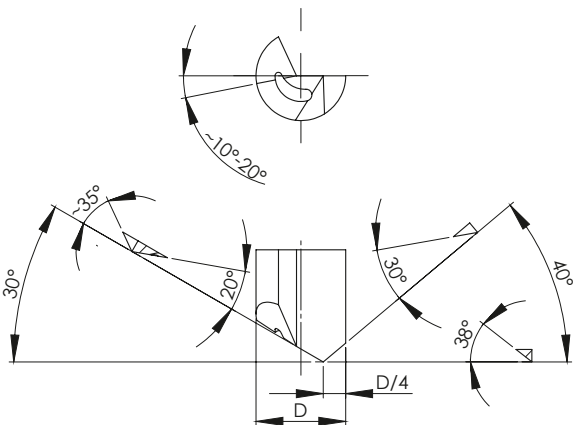
- Form EA**
- cross drilling
 - angular entrance and exit bores
 - tight hole tolerance

▲ The tool diameter is not micable for forms G and EA after finishing!

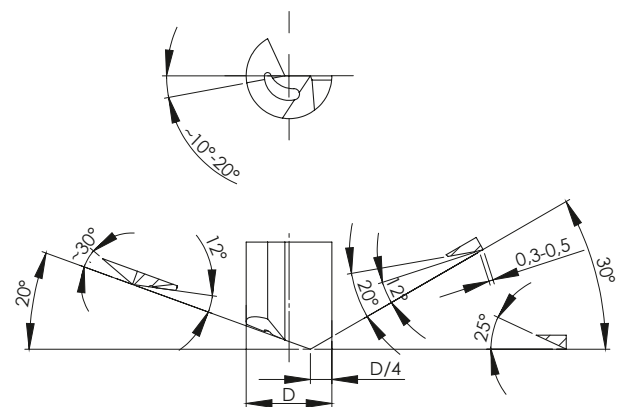
NOSE GRIND

With the change of the cutting geometry, solid carbide gundrills can be optimally adapted to your requirements. For long chipping and hard to machine materials an open special point should be used.

STANDARD NOSE GRINDS



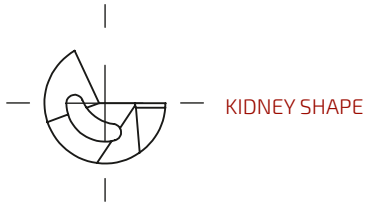
solid carbide standard nose grind 1
for drill range: 0,050 - 4,000 mm



solid carbide standard nose grind 2
for drill range: 4,001 - 12,000 mm

► More nose grinds are shown in the Technology chapter.

COOLING HOLE DESIGN



STANDARD COATINGS

TiN: Titanium Nitride
 TiCN: Titanium Carbo Nitride
 AlTiN: Aluminum-Titanium Nitride
 TiAlN: Titanium Aluminum Nitride

Driver

OVERVIEW STANDARD DRIVES

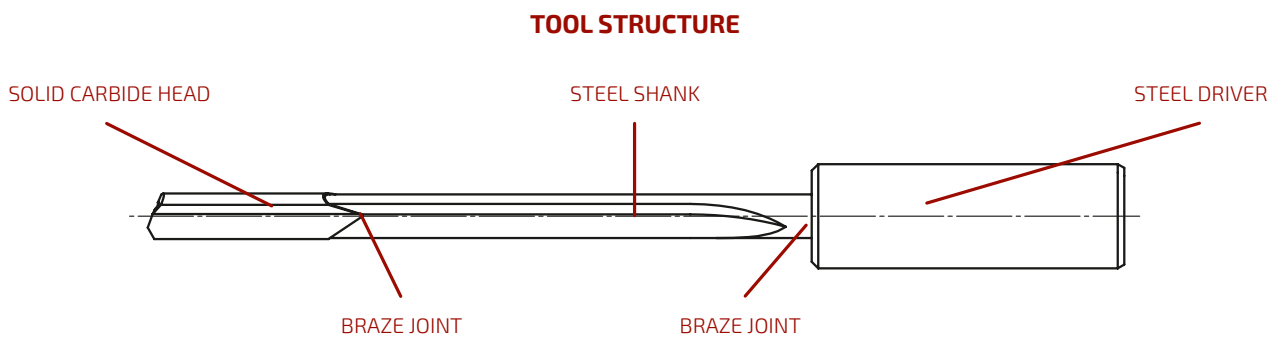
DESCRIPTION	STANDARD	SKETCH	DRILLING RANGE	L1	L2	X	G	DRAWINGNUMBER
Ø 4 x 34/46	DIN 6535-HA		0,800 - 2,905	34	46	-	-	ZH4-002
Ø 6 x 36/51			2,906 - 5,145					ZH4-016
Ø 10 x 40/55			0,900 - 4,645	36	50	-	-	ZH6-016
Ø 12 x 45/60			0,900 - 7,000	40	55	-	-	ZH10-092
Ø 16 x 48/63			0,900 - 7,000	45	60	-	-	ZH12-032
Ø 16 x 48/63			0,900 - 7,000	48	63	-	-	ZH16-095
Ø 6 x 36/50	DIN 1835-B		0,900 - 4,645	36	50	20	-	ZH6-014
Ø 10 x 40/55			0,900 - 6,349	40	55	23,5	-	ZH10-093
Ø 12 x 45/60			0,900 - 7,000	45	60	26,5	-	ZH12-031
Ø 16 x 48/63			0,900 - 7,000	48	63	29	-	ZH16-102
Ø 6 x 36/50	DIN 6535-HE		0,900 - 4,645	36	50	25	-	ZH6-028
Ø 10 x 40/55			0,900 - 6,349	40	55	28	-	ZH10-096
Ø 12 x 45/60			0,900 - 7,000	45	60	33	-	ZH12-038
Ø 16 x 48/63			0,900 - 7,000	48	63	36	-	ZH16-116
Ø 6 x 36/50	DIN 1835-E		0,900 - 4,645	36	50	25	-	ZH6-012
Ø 10 x 40/55			0,900 - 6,349	40	55	28	-	ZH10-099
Ø 12 x 45/60			0,900 - 7,000	45	60	33	-	ZH12-037
Ø 16 x 48/63			0,900 - 7,000	48	63	36	-	ZH16-117
Ø 16 x 80/105			0,900 - 7,000	80	105	37	M10x1	SH16-018

► More drivers are available on request.
 We are happy to produce for you special drivers to your drawing.

Type 100 Single flute gundrills with brazed carbide head

TYPE	DESCRIPTION	DRILL-Ø
Type 100	drill	ab 1,900
Type 100-01	step drill	ab 3,000
Type 100-02	counterboring drill	ab 3,000

► Tool length depending on the diameter up to 5000 mm



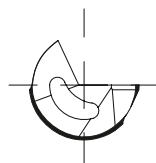
Single flute drill with a brazed carbide head Type 100 are connected by a braze joint and consist of the following three components:

- Solid carbide head
- Shank of tempered steel
- Driver of steel

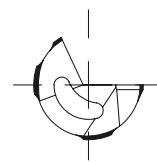
DRILL HEAD

The peripheral shape is optimally adjusted depending on material and hole requirements for your drilling task

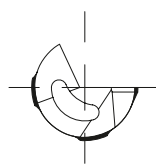
Upon request we can generate special contours for you.



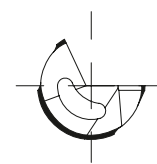
- Form G**
- universal contour
 - for all materials
 - low hole straightness deviation
 - low tendency to jam



- Form A**
- tight hole tolerance
 - angular entrance and exit bores



- Form C**
- steel
 - difficult to machine materials
 - tight hole tolerance



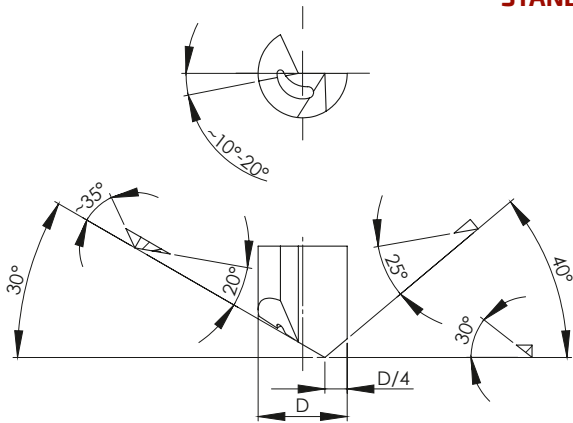
- Form EA**
- cross drilling
 - angular entrance and exit bores
 - tight hole tolerance

▲ The tool diameter is not micable for forms G and EA after finishing!

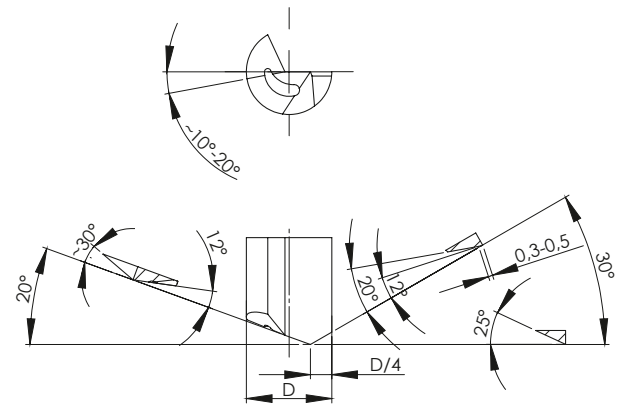
NOSE GRINDS

With the change of the cutting geometry, solid carbide gundrills can be optimally adapted to your requirements. For long chipping and hard to machine materials an open special point should be used.

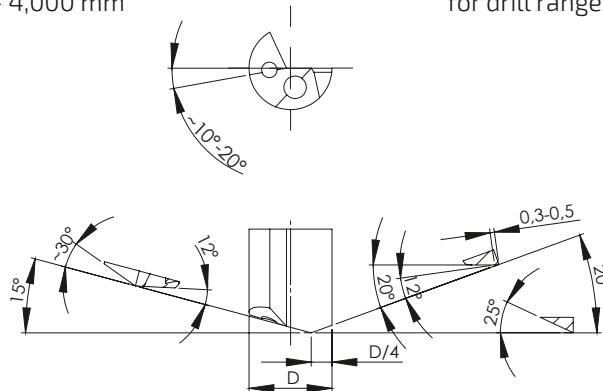
STANDARD NOSE GRINDS



Standard nose grind 1
for drill range: 1,900 - 4,000 mm



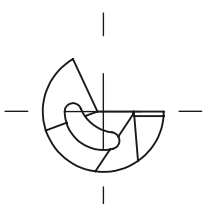
Standard nose grind 2
for drill range: 4,001 - 20,000 mm



Standard nose grind 3
for drill range: 20,001 - max. mm

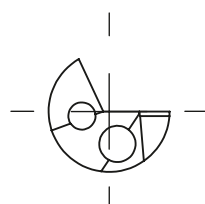
COOLING HOLE DESIGN

KIDNEY SHAPE



up to D7,059

2-HOLE SHAPE



from D7,060

STANDARD COATINGS

- TiN: Titanium Nitride
- TiCN: Titanium Carbo Nitride
- AlTiN: Aluminum-Titanium Nitride
- TiAlN: Titanium Aluminum Nitride

► More nose grinds are shown in the Technology chapter

Drivers

OVERVIEW STANDARD DRIVES

DESCRIPTION	STANDARD	SKETCH	DRILLING RANGE	L1	L2	X	G	DRAWINGNUMBER	
Ø 10 x 40	DIN 6535-HA		1,850 - 7,299	40	-	-	-	ZH10-008	
Ø 12 x 45			1,850 - 8,999	45	-	-	-	ZH12-008	
Ø 16 x 48			1,850 - 12,399	48	-	-	-	ZH16-012	
Ø 20 x 50			1,850 - 15,899	50	-	-	-	ZH20-009	
Ø 25 x 56			6,000 - 19,509	56	-	-	-	ZH25-012	
Ø 32 x 60			9,700 - 25,609	60	-	-	-	ZH32-010	
Ø 40 x 70			9,700 - 32,609	70	-	-	-	ZH40-016	
Ø 10 x 40	DIN 6535-HA with pin		7,300 - 10,799	40	57	-	-	ZH10-018	
			10,800 - 12,399						ZH10-009
Ø 12 x 45			9,000 - 12,399	45	62	-	-	ZH12-012	
			12,400 - 15,899					ZH12-009	
Ø 16 x 48			12,400 - 16,399	48	75	-	-	ZH16-088	
			16,400 - 20,509					ZH16-013	
Ø 20 x 50			15,900 - 20,509	50	77	-	-	ZH20-045	
			20,510 - 29,600					ZH20-010	
Ø 25 x 56			19,510 - 25,609	56	86	-	-	ZH25-069	
			25,610 - 34,699					ZH25-013	
Ø 32 x 60			25,610 - 32,609	60	100	-	-	ZH32-021	
			32,610 - max					ZH32-011	
Ø 40 x 70			32,610 - max	70	110	-	-	ZH40-018	
Ø 10 x 40			DIN 1835-B		1,850 - 7,299	40	-	23,5	-
Ø 12 x 45	1,850 - 8,999	45			-	26,5	-	ZH12-001	
Ø 16 x 48	1,850 - 12,399	48			-	29	-	ZH16-001	
Ø 20 x 50	1,850 - 15,899	50			-	30,5	-	ZH20-001	
Ø 25 x 56	6,000 - 19,509	56			-	38	-	ZH25-001	
Ø 32 x 60	9,700 - 25,609	60			-	43	-	ZH32-001	
Ø 40 x 70	9,700 - 32,609	70			-	47	-	ZH40-001	
Ø 10 x 40	DIN 1835-B with pin		7,300 - 10,799	40	57	23,5	-	ZH10-004	
			10,800 - 12,399					ZH10-005	
Ø 12 x 45			9,000 - 12,399	45	62	26,5	-	ZH12-002	
			12,400 - 15,899					ZH12-003	
Ø 16 x 48			12,400 - 16,399	48	75	29	-	ZH16-002	
			16,400 - 20,509					ZH16-083	
Ø 20 x 50			15,900 - 20,509	50	77	30,5	-	ZH20-027	
			20,510 - 29,600					ZH20-002	
Ø 25 x 56			19,510 - 25,609	56	86	38	-	ZH25-002	
			25,610 - 34,699					ZH25-003	
Ø 32 x 60			25,610 - 32,609	60	100	43	-	ZH32-003	
			32,610 - max					ZH32-002	
Ø 40 x 70			32,610 - max	70	110	47	-	ZH40-015	

DESCRIPTION	STANDARD	SKETCH	DRILLING RANGE	L1	L2	X	G	DRAWINGNUMBER	
Ø 10 x 40	DIN 1835-E		1,850 - 7,299	40	-	28	-	ZH10-010	
Ø 12 x 45			1,850 - 8,999	45	-	33	-	ZH12-004	
Ø 16 x 48			1,850 - 12,399	48	-	36	-	ZH16-014	
Ø 20 x 50			1,850 - 15,899	50	-	38	-	ZH20-003	
Ø 25 x 56			6,000 - 19,509	56	-	44	-	ZH25-009	
Ø 32 x 60			9,700 - 25,609	60	-	48	-	ZH32-004	
Ø 40 x 70			9,700 - 32,609	70	-	66	-	ZH40-012	
Ø 10 x 40	DIN 1835-E with pin		7,300 - 10,799	40	57	28	-	ZH10-015	
			10,800 - 12,399						ZH10-011
Ø 12 x 45			9,000 - 12,399	45	62	33	-	ZH12-010	
			12,400 - 15,899						ZH12-005
Ø 16 x 48			12,400 - 16,399	48	75	36	-	ZH16-084	
			16,400 - 20,509						ZH16-015
Ø 20 x 50			15,900 - 20,509	50	77	38	-	ZH20-043	
			20,510 - 29,600						ZH20-004
Ø 25 x 56			19,510 - 25,609	56	86	44	-	ZH25-010	
			25,610 - 34,699						ZH25-011
Ø 32 x 60	25,610 - 32,609	60	100	48	-	ZH32-006			
	32,610 - max						ZH32-005		
Ø 40 x 70	32,610 - max	70	110	66	-	ZH40-013			
Ø 10 x 40	DIN 6535-HE		1,850 - 7,299	40	-	28	-	ZH10-006	
Ø 12 x 45			1,850 - 8,999	45	-	33	-	ZH12-006	
Ø 16 x 48			1,850 - 12,399	48	-	36	-	ZH16-010	
Ø 20 x 50			1,850 - 15,899	50	-	38	-	ZH20-007	
Ø 10 x 40	DIN 6535-HE with pin		7,300 - 10,799	40	57	28	-	ZH10-016	
			10,800 - 12,399						ZH10-007
Ø 12 x 45			9,000 - 12,399	45	62	33	-	ZH12-011	
			12,400 - 15,899						ZH12-007
Ø 16 x 48			12,400 - 16,399	48	75	36	-	ZH16-088	
			16,400 - 20,509						ZH16-011
Ø 20 x 50			15,900 - 20,509	50	77	38	-	ZH20-044	
			20,510 - 29,600						ZH20-008
Ø 10 x 40			1,850 - 7,299	40	46	24	-	ZH10-001	
Ø 16 x 45			1,850 - 12,399	45	53	31	-	ZH16-073	
Ø 25 x 70			1,850 - 10,000	70	78	34	-	ZH25-031	
			10,001 - 19,509						ZH25-020
Ø 10 x 40	with pin		7,300 - 10,799	40	57	24	-	ZH10-002	
			10,800 - 12,399						ZH10-019
Ø 16 x 45			12,400 - 16,399	45	72	31	-	ZH16-089	
			16,400 - 20,500						ZH16-009
Ø 25 x 70			19,510 - 25,609	70	105	34	-	ZH25-021	
			25,610 - max						ZH25-084
Ø 16 x 50			1,850 - 12,399	50	58	47,5	-	ZH16-016	
Ø 16 x 50	with pin		12,400 - 16,399				-	ZH16-086	
			16,400 - 20,500	50	77	47,5	-	ZH16-017	

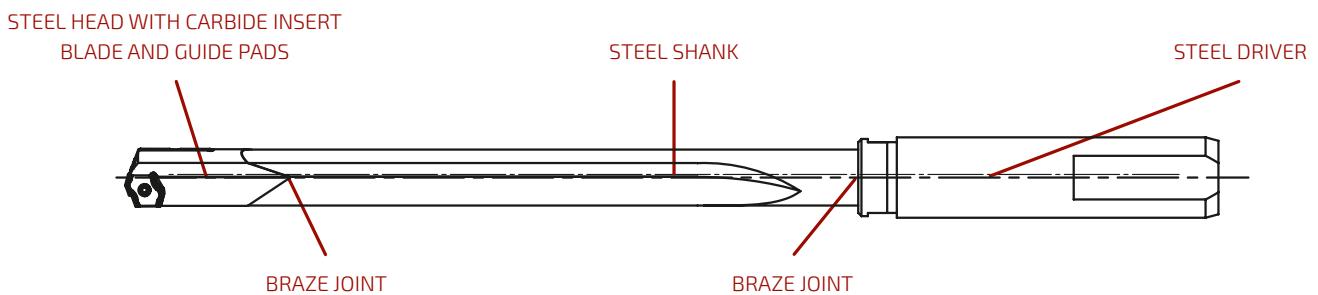
DESCRIPTION	STANDARD	SKETCH	DRILLING RANGE	L1	L2	X	G	DRAWINGNUMBER
Ø 10 x 60	GKT		1,850 - 7,299	60	-	-	M6x0,5	ZH10-013
Ø 16 x 80			1,850 - 12,399	80	-	-	M10x1	ZH16-020
Ø 25 x 100			1,850 - 20,509	100	-	-	M16x1,5	ZH25-018
Ø 10 x 60	GKT with pin		7,300 - 10,799	60	77	-	M6x0,5	ZH10-020
Ø 16 x 80			10,800 - 12,399	80	105	-	M10x1	ZH10-014
Ø 16 x 80			12,400 - 16,399					ZH16-090
Ø 16 x 80			16,400 - 20,500					ZH16-021
Ø 25 x 100			20,510 - 25,609	100	140	-	M16x1,5	ZH25-030
Ø 25 x 100	25,610 - max					ZH25-019		
Ø 12,7 x 38,1	Zoll		1,850 - 9,699	38,1	-	25,3	-	ZH12,7-001
Ø 19,05 x 70			3,960 - 14,899	70	-	45	-	ZH19,05-004
Ø 25,4 x 70			6,000 - 19,509	70	-	57,5	-	ZH25,4-006
Ø 31,7 x 70			9,700 - 25,609	70	-	57,5	-	ZH31,7-001
Ø 38,1 x 70			9,700 - 32,609	70	-	57,5	-	ZH38,1-001
Ø 19,05 x 70	Zoll with pin		14,900 - 24,609	70	97	45	-	ZH19,05-002
Ø 25,4 x 70			19,510 - max	70	100	57,5	-	ZH25,4-007
Ø 31,7 x 70			25,610 - max	70	110	57,5	-	ZH31,7-002
Ø 38,1 x 70			32,610 - max	70	110	57,5	-	ZH38,1-002
Ø 19,05 x 70			Muraki		3,960 - 14,899	70	-	45
Ø 19,05 x 70	Muraki with pin		14,900 - 24,609	70	97	45	-	ZH19,05-020
Ø 19,05 x 70	with inclined clamping surface		3,960 - 14,899	70	-	57,5	-	ZH19,05-021
Ø 19,05 x 70	with inclined clamping surface with pin		14,900 - 24,609	70	97	57,5	-	ZH19,05-022
Ø 10 x 60	VDI 3208		1,850 - 7,299	60	68	35	M6x0,5	SH10-001
Ø 16 x 80			1,850 - 10,899	80	90	37	M10x1	SH16-007
Ø 25 x 100			1,850 - 19,799	100	112	45	M16x1,5	SH25-003
Ø 16 x 80	VDI 3208 with pin		10,900 - 16,399	80	110	37	M10x1	SH16-008
Ø 25 x 100			19,800 - 25,999	100	142	45	M16x1,5	SH25-004
Ø 25 x 100			26,000 - max					SH25-005
Ø 16 x 112	adjustment driver		1,850 - 12,899	60	-	73	TR16x1,5	SH16-003
Ø 20 x 126			1,850 - 14,899	80	-	82	TR20x2	SH20-001
Ø 28 x 126			6,000 - 21,509	100	-	82	TR28x2	SH28-003
Ø 36 x 162			8,700 - 28,609	100	-	109	TR36x2	SH36-001
Ø 16 x 40	Speedbit		1,850 - 12,399	40	-	28	-	ZH16-006
Ø 25 x 50			4,000 - 19,509	50	-	35	-	ZH25-004
Ø 35 x 60			9,700 - 28,609	60	-	40	-	ZH35-003
Ø 16 x 40	Speedbit with pin		12,400 - 16,399	40	67	28	-	ZH16-007
Ø 16 x 40			16,400 - 20,509					ZH16-091
Ø 25 x 50			19,510 - 25,609	50	77	35	-	ZH25-005
Ø 25 x 50			25,610 - 30,609					ZH25-070
Ø 35 x 60			28,610 - max					60

Type 120 Single flute gundrills with indexable inserts

TYPE	DESCRIPTION	DRILL-Ø
Type 120L	standard drill with long head	from 12,000 - 28,000 mm
Type 120K	standard drill with short head	from 12,000 - 28,000 mm

► Tool length depending on the diameter, up to 5000 mm

TOOL STRUCTURE

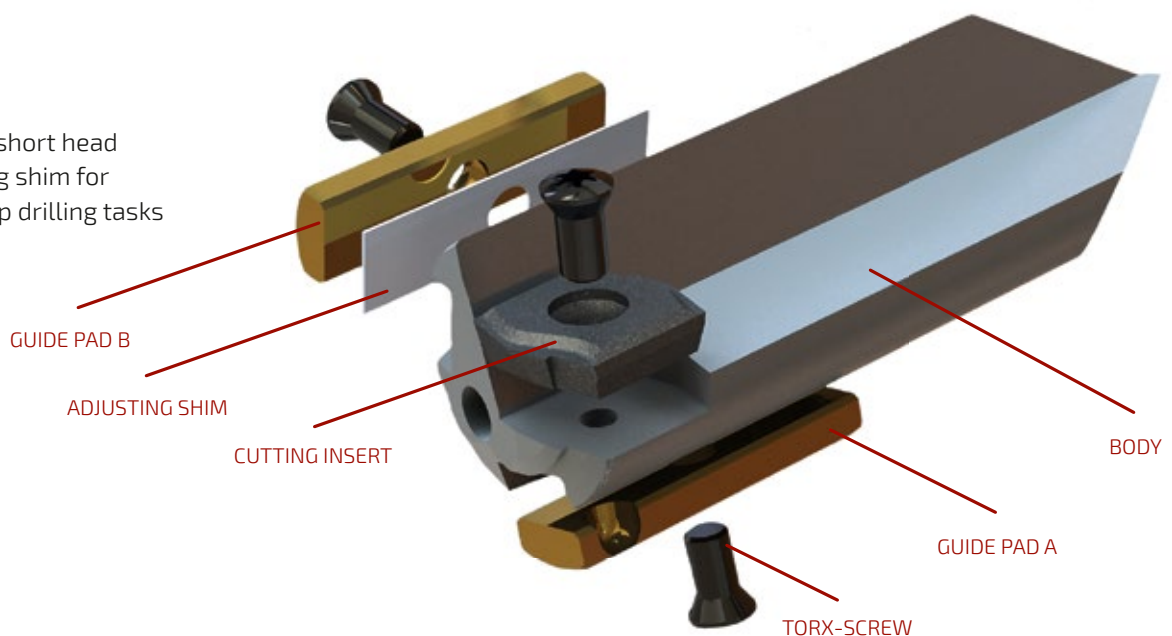


The single flute gun drills with a brazed steel body with cutting insert Type 120 are connected by braze consisting of the following components:

- Steel body made of tempered steel
- Coated cutting insert of carbide
- Coated guide pads of carbide
- Shank of tempered steel
- Driver of steel

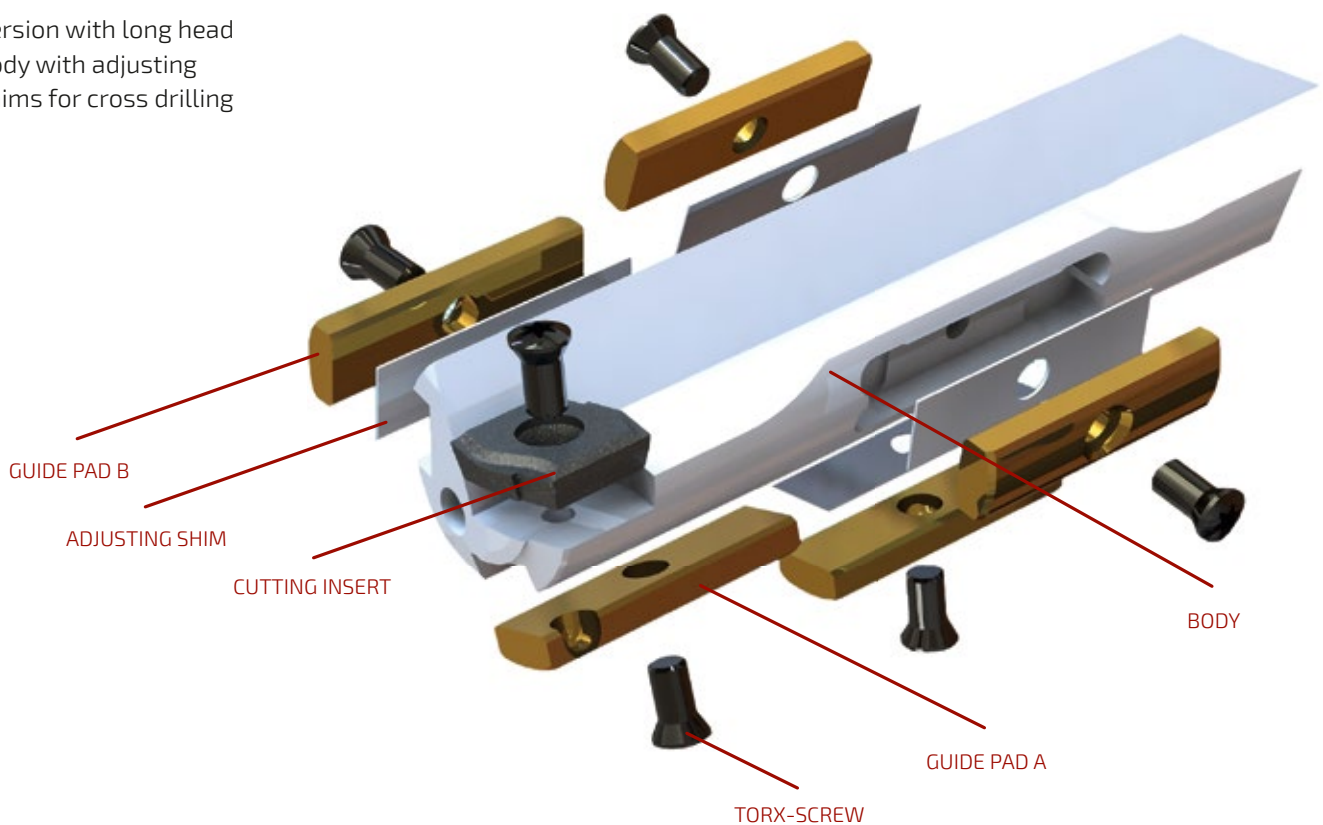
DRILL HEAD

Version with short head with adjusting shim for standard deep drilling tasks



DRILL HEAD

Version with long head body with adjusting shims for cross drilling



► Driver see **Type 100** single flute
Gundrills with brazed carbide drill head

INQUIRIES AND DELIVERY

- Please indicate the required diameter, the overall length and the driver style
- Tools fully equipped and ready to use.
- Each tool is supplied with the appropriate Torx wrench for the replacement of wear parts

Requirements Deep Hole Drilling

For good hole drilling results, cooling, lubrication and high-pressure coolant systems are required (see page 19).

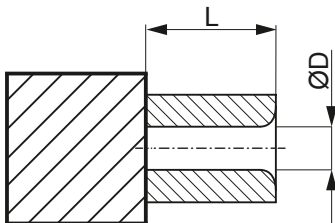
Single flute gundrilling cannot only be achieved on deep hole drilling machines but is also very good on machining centers (drilling, turning and milling centers) with

- Deep-hole drilling oil,
- Emulsion (min. 10 - 12% concentration, with additives),
- and under certain conditions, with a minimum quantity air/lubrication system.

DRILL GUIDE

The asymmetric geometry single-edged single flute gundrill is not self-starting, therefore a pilot hole or drill bushing is required.

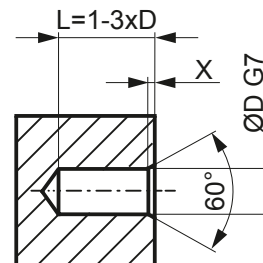
DRILL BUSH



Recommendation: Bushes DIN 179A medium (see page 30)

- ▲ Drill bushing has a form set against the workpiece

PILOT DRILLING



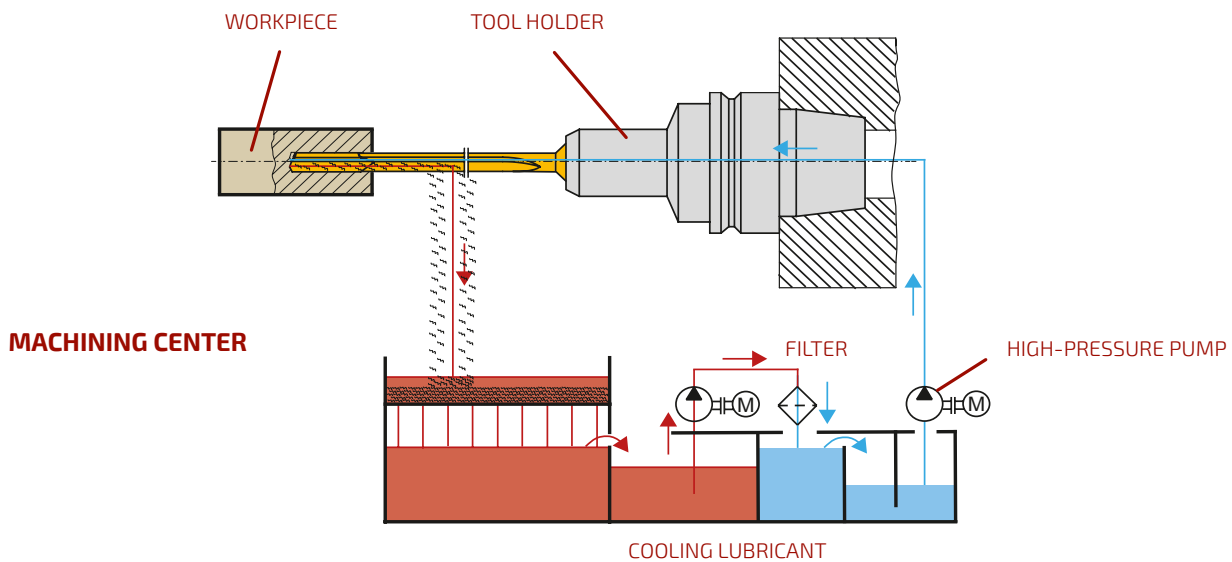
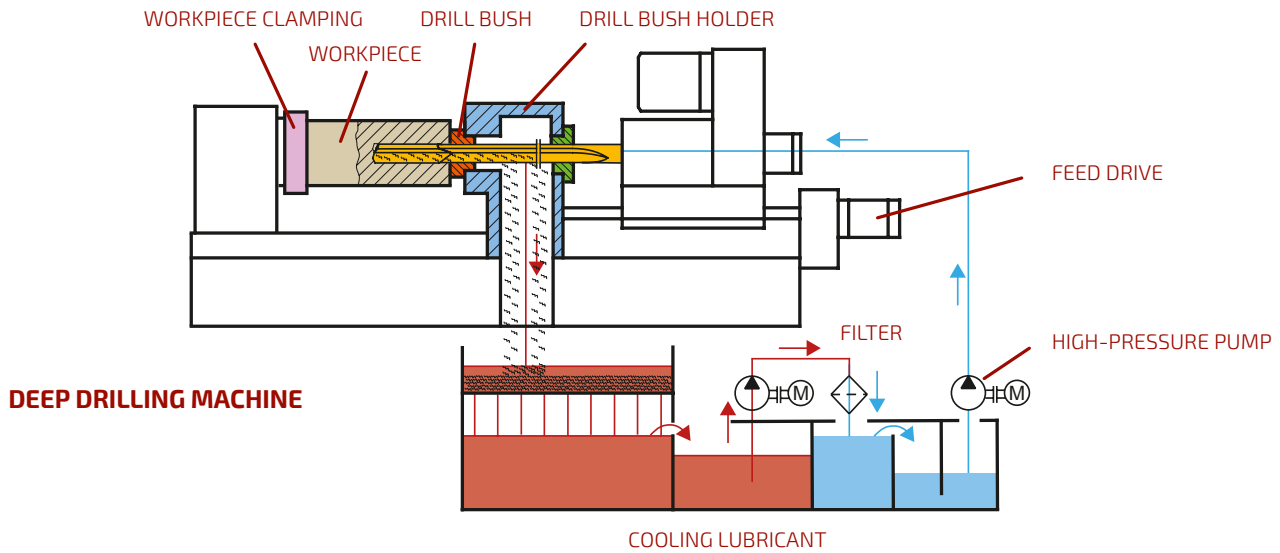
Recommendation: pilot drill with m7 tolerance (see page 32)

To prevent outbreaks during retraction of single flute gundrill we recommend a chamfer (X) of 60°

- ▲ Too big a diameter difference between the tool and drill bush or pilot hole can cause the following problems:

- poor hole quality
- excessive hole straightness deviation
- drill breakage

Applications



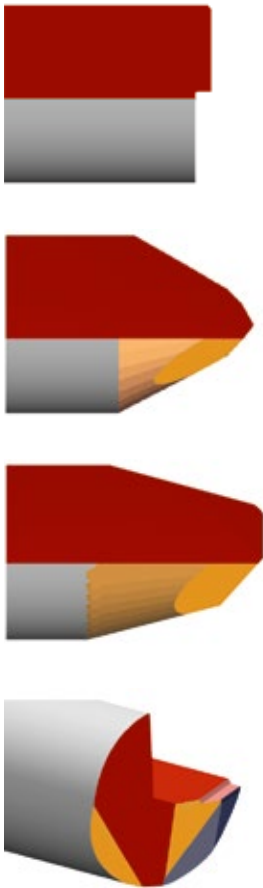
PROCEDURE

- Make a pilot hole
- Enter with stationary spindle or speed < 50 rpm
- Set coolant pressure, speed and feed
- Continuous drilling to depth without peck
- Switch off coolant supply after reaching hole depth
- Retraction with stationary spindle or < 50 rpm

▲ Failure to comply may result in tool breakage

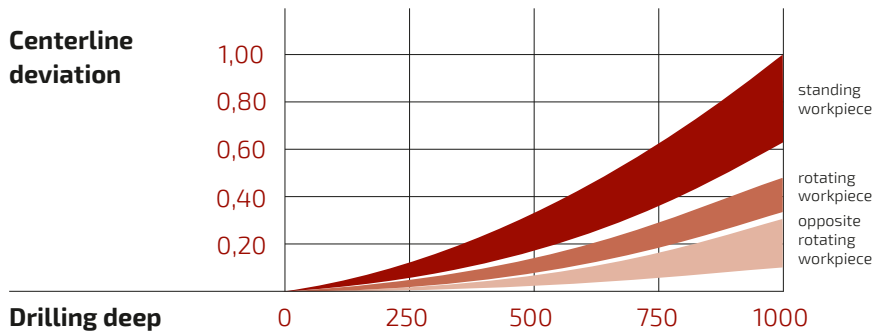
Special nose grinds

VARIOUS FORMS

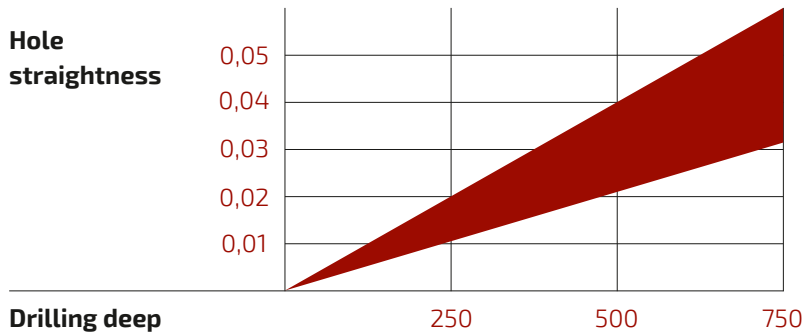


► Please contact us if you need a special grind for your tools.

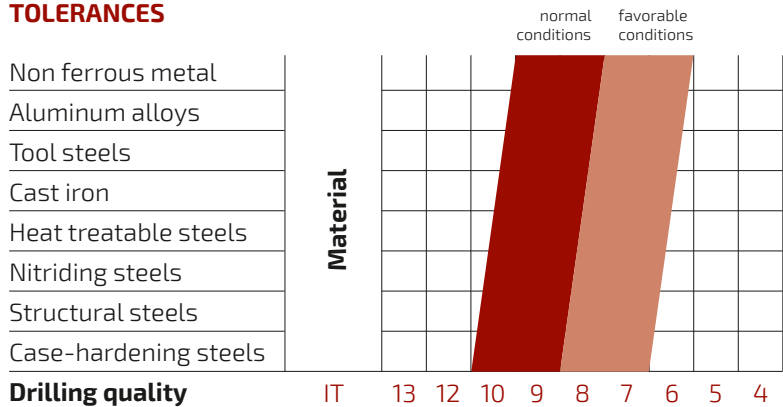
CENTERLINE DEVIATION *in mm*



HOLE STRAIGHTNESS *in mm*



ACHIEVABLE DRILLING TOLERANCES



SURFACE QUALITY

Roughness class		N8	N7	N6	N5	N4	N3
Quality area		normal conditions				favorable conditions	
Surface roughness values	Rz μm	16 - 25	10	4 - 6,3	2,5	1,6	1
	Ra μm	3,2	1,6	0,8	0,4	0,2	0,1

Type 100 Cutting parameters

The information below are average values as a guide. They depend on material, bore diameter, unsupported tool length, cooling lubricant, drilling conditions and stability of the machine.

MATERIALS GROUP	Structural steel, Carbon steel, Case hardening steel, Low alloyed steel, "good processable"			Alloyed tempered steels, case-hardened steels, nitriding steels, tool steels			Spring steels, hardened steels, high-temperature steels, cast steel / chilled cast iron, Special alloys, e.g. Nimonic, Inconel, titanium, titanium alloys			Stainless, acid-resistant steel + cast steel, austenitic 18-25% Cr, Ni > 8%			Stainless steel + cast steel, martensitic / ferritic 13-25% Cr (sulphurated) "good processable"		
	(< 900N/MM ²)			(> 900N/MM ²)											
Cutting speed in m/min	70 - 100			60 - 80			25 - 60			30 - 60			40 - 70		
Drill-Ø in mm	Feed in mm														
from - to	from - to	from - to	from - to	from - to	from - to	from - to	from - to	from - to	from - to	from - to	from - to	from - to	from - to		
1,85 - 2,49	0,003 - 0,007	0,002 - 0,005	0,001 - 0,002	0,002 - 0,005	0,002 - 0,006	0,002 - 0,007	0,002 - 0,008	0,002 - 0,009	0,002 - 0,010	0,002 - 0,011	0,002 - 0,012	0,002 - 0,013	0,002 - 0,014		
2,50 - 2,99	0,005 - 0,010	0,004 - 0,006	0,001 - 0,005	0,004 - 0,006	0,004 - 0,007	0,004 - 0,008	0,004 - 0,009	0,004 - 0,010	0,004 - 0,011	0,004 - 0,012	0,004 - 0,013	0,004 - 0,014	0,004 - 0,015		
3,00 - 3,49	0,007 - 0,013	0,005 - 0,007	0,002 - 0,007	0,005 - 0,007	0,005 - 0,008	0,005 - 0,009	0,005 - 0,010	0,005 - 0,011	0,005 - 0,012	0,005 - 0,013	0,005 - 0,014	0,005 - 0,015	0,005 - 0,016		
3,50 - 3,99	0,009 - 0,015	0,007 - 0,010	0,004 - 0,008	0,007 - 0,010	0,007 - 0,011	0,007 - 0,012	0,007 - 0,013	0,007 - 0,014	0,007 - 0,015	0,007 - 0,016	0,007 - 0,017	0,007 - 0,018	0,007 - 0,019		
4,00 - 4,49	0,012 - 0,019	0,008 - 0,012	0,006 - 0,009	0,008 - 0,012	0,008 - 0,013	0,008 - 0,014	0,008 - 0,015	0,008 - 0,016	0,008 - 0,017	0,008 - 0,018	0,008 - 0,019	0,008 - 0,020	0,008 - 0,021		
4,50 - 4,99	0,014 - 0,020	0,011 - 0,015	0,008 - 0,011	0,011 - 0,015	0,011 - 0,016	0,011 - 0,017	0,011 - 0,018	0,011 - 0,019	0,011 - 0,020	0,011 - 0,021	0,011 - 0,022	0,011 - 0,023	0,011 - 0,024		
5,00 - 5,99	0,016 - 0,026	0,013 - 0,018	0,010 - 0,014	0,013 - 0,018	0,013 - 0,019	0,013 - 0,020	0,013 - 0,021	0,013 - 0,022	0,013 - 0,023	0,013 - 0,024	0,013 - 0,025	0,013 - 0,026	0,013 - 0,027		
6,00 - 6,99	0,018 - 0,028	0,015 - 0,022	0,012 - 0,016	0,015 - 0,022	0,015 - 0,023	0,015 - 0,024	0,015 - 0,025	0,015 - 0,026	0,015 - 0,027	0,015 - 0,028	0,015 - 0,029	0,015 - 0,030	0,015 - 0,031		
7,00 - 7,99	0,021 - 0,035	0,018 - 0,025	0,015 - 0,018	0,018 - 0,025	0,018 - 0,026	0,018 - 0,027	0,018 - 0,028	0,018 - 0,029	0,018 - 0,030	0,018 - 0,031	0,018 - 0,032	0,018 - 0,033	0,018 - 0,034		
8,00 - 8,99	0,024 - 0,036	0,020 - 0,027	0,018 - 0,021	0,020 - 0,027	0,020 - 0,028	0,020 - 0,029	0,020 - 0,030	0,020 - 0,031	0,020 - 0,032	0,020 - 0,033	0,020 - 0,034	0,020 - 0,035	0,020 - 0,036		
9,00 - 9,99	0,027 - 0,040	0,023 - 0,030	0,021 - 0,025	0,023 - 0,030	0,023 - 0,031	0,023 - 0,032	0,023 - 0,033	0,023 - 0,034	0,023 - 0,035	0,023 - 0,036	0,023 - 0,037	0,023 - 0,038	0,023 - 0,039		
10,00 - 11,99	0,030 - 0,049	0,025 - 0,038	0,024 - 0,030	0,025 - 0,038	0,025 - 0,039	0,025 - 0,040	0,025 - 0,041	0,025 - 0,042	0,025 - 0,043	0,025 - 0,044	0,025 - 0,045	0,025 - 0,046	0,025 - 0,047		
12,00 - 13,99	0,036 - 0,060	0,029 - 0,044	0,027 - 0,033	0,029 - 0,044	0,029 - 0,045	0,029 - 0,046	0,029 - 0,047	0,029 - 0,048	0,029 - 0,049	0,029 - 0,050	0,029 - 0,051	0,029 - 0,052	0,029 - 0,053		
14,00 - 15,99	0,042 - 0,071	0,035 - 0,050	0,029 - 0,040	0,035 - 0,050	0,035 - 0,051	0,035 - 0,052	0,035 - 0,053	0,035 - 0,054	0,035 - 0,055	0,035 - 0,056	0,035 - 0,057	0,035 - 0,058	0,035 - 0,059		
16,00 - 17,99	0,048 - 0,079	0,039 - 0,053	0,033 - 0,044	0,039 - 0,053	0,039 - 0,054	0,039 - 0,055	0,039 - 0,056	0,039 - 0,057	0,039 - 0,058	0,039 - 0,059	0,039 - 0,060	0,039 - 0,061	0,039 - 0,062		
18,00 - 19,99	0,054 - 0,091	0,044 - 0,060	0,037 - 0,049	0,044 - 0,060	0,044 - 0,061	0,044 - 0,062	0,044 - 0,063	0,044 - 0,064	0,044 - 0,065	0,044 - 0,066	0,044 - 0,067	0,044 - 0,068	0,044 - 0,069		
20,00 - 23,99	0,060 - 0,107	0,049 - 0,069	0,041 - 0,054	0,049 - 0,069	0,049 - 0,070	0,049 - 0,071	0,049 - 0,072	0,049 - 0,073	0,049 - 0,074	0,049 - 0,075	0,049 - 0,076	0,049 - 0,077	0,049 - 0,078		
24,00 - 27,99	0,069 - 0,117	0,054 - 0,077	0,045 - 0,057	0,054 - 0,077	0,054 - 0,078	0,054 - 0,079	0,054 - 0,080	0,054 - 0,081	0,054 - 0,082	0,054 - 0,083	0,054 - 0,084	0,054 - 0,085	0,054 - 0,086		
28,00 - 31,99	0,079 - 0,134	0,059 - 0,085	0,049 - 0,062	0,059 - 0,085	0,059 - 0,086	0,059 - 0,087	0,059 - 0,088	0,059 - 0,089	0,059 - 0,090	0,059 - 0,091	0,059 - 0,092	0,059 - 0,093	0,059 - 0,094		
32,00 - 39,99	0,085 - 0,154	0,063 - 0,098	0,052 - 0,065	0,063 - 0,098	0,063 - 0,099	0,063 - 0,100	0,063 - 0,101	0,063 - 0,102	0,063 - 0,103	0,063 - 0,104	0,063 - 0,105	0,063 - 0,106	0,063 - 0,107		
40,00 - 50,00	0,091 - 0,169	0,068 - 0,105	0,055 - 0,069	0,068 - 0,105	0,068 - 0,106	0,068 - 0,107	0,068 - 0,108	0,068 - 0,109	0,068 - 0,110	0,068 - 0,111	0,068 - 0,112	0,068 - 0,113	0,068 - 0,114		

▲ Feed should be reduced at start, exit and cross holes.

Type 100 Cutting parameters

MATERIALS GROUP	Cast iron, grey cast iron (> 300N/mm ²), ductile cast iron (> 400N/mm ²), general steel casting			Cast iron, grey cast iron (< 300N/mm ²), ductile cast iron (< 400N/mm ²), malleable cast iron, whiteheart malleable iron, blackheart malleable iron, "good processable"			Copper, bronze, brass, plastics			Aluminium + cast aluminium Si content > 5%, "good processable"			Aluminium + aluminium alloy < 5%, "not hardened"					
	60 - 90			70 - 100			70 - 100			80 - 160			100 - 300					
Cutting speed in m/min				Feed in mm														
Drill-Ø in mm				from - to			from - to			from - to			von - to			von - to		
1,85 - 2,49	0,005 - 0,018	0,005 - 0,019	0,003 - 0,015	0,002 - 0,012	0,002 - 0,005													
2,50 - 2,99	0,008 - 0,028	0,008 - 0,026	0,005 - 0,020	0,004 - 0,026	0,004 - 0,008													
3,00 - 3,49	0,009 - 0,038	0,009 - 0,038	0,006 - 0,030	0,006 - 0,037	0,006 - 0,012													
3,50 - 3,99	0,011 - 0,042	0,011 - 0,046	0,007 - 0,045	0,007 - 0,055	0,007 - 0,025													
4,00 - 4,49	0,012 - 0,047	0,012 - 0,050	0,008 - 0,050	0,008 - 0,071	0,008 - 0,026													
4,50 - 4,99	0,016 - 0,052	0,016 - 0,057	0,009 - 0,057	0,009 - 0,094	0,009 - 0,028													
5,00 - 5,99	0,018 - 0,065	0,018 - 0,068	0,010 - 0,069	0,010 - 0,109	0,010 - 0,036													
6,00 - 6,99	0,024 - 0,071	0,024 - 0,074	0,012 - 0,079	0,012 - 0,125	0,012 - 0,045													
7,00 - 7,99	0,028 - 0,084	0,028 - 0,085	0,014 - 0,092	0,018 - 0,130	0,014 - 0,049													
8,00 - 8,99	0,032 - 0,092	0,032 - 0,096	0,016 - 0,101	0,020 - 0,144	0,016 - 0,056													
9,00 - 9,99	0,036 - 0,110	0,036 - 0,114	0,018 - 0,113	0,023 - 0,158	0,018 - 0,064													
10,00 - 11,99	0,045 - 0,116	0,050 - 0,120	0,020 - 0,139	0,025 - 0,174	0,020 - 0,074													
12,00 - 13,99	0,051 - 0,126	0,060 - 0,138	0,024 - 0,156	0,030 - 0,182	0,024 - 0,087													
14,00 - 15,99	0,057 - 0,138	0,070 - 0,154	0,028 - 0,179	0,035 - 0,194	0,028 - 0,099													
16,00 - 17,99	0,062 - 0,158	0,079 - 0,170	0,033 - 0,199	0,050 - 0,209	0,033 - 0,108													
18,00 - 19,99	0,066 - 0,173	0,090 - 0,191	0,036 - 0,224	0,054 - 0,228	0,036 - 0,130													
20,00 - 23,99	0,069 - 0,189	0,106 - 0,207	0,040 - 0,249	0,060 - 0,254	0,040 - 0,146													
24,00 - 27,99	0,076 - 0,210	0,120 - 0,221	0,048 - 0,291	0,072 - 0,295	0,048 - 0,169													
28,00 - 31,99	0,079 - 0,212	0,140 - 0,237	0,056 - 0,327	0,084 - 0,360	0,056 - 0,194													
32,00 - 39,99	0,086 - 0,228	0,160 - 0,245	0,064 - 0,380	0,096 - 0,455	0,064 - 0,221													
40,00 - 50,00	0,089 - 0,239	0,180 - 0,254	0,072 - 0,399	0,105 - 0,488	0,072 - 0,239													

Type 110 Cutting parameters

MATERIALS GROUP	Structural steel, Carbon steel, Case hardening steel, Low alloyed steel, "good processable"	Alloyed tempered steels, case-hardened steels, nitriding steels, tool steels	Spring steels, hardened steels, high-temperature steels, cast steel / chilled cast iron, Special alloys, e.g. Nimonic, Inconel, titanium, titanium alloys	Stainless, acid-resistant steel + cast steel, austenitic 18-25% Cr, Ni > 8%	Stainless steel + cast steel, martensitic / ferritic 13-25% Cr (sulphurated) "good processable"
	(< 900N/MM²)	(> 900N/MM²)			
Cutting speed in m/min	70 - 100	60 - 80	25 - 60	30 - 60	40 - 70
Drill-Ø in mm	Feed in mm				
from - to	from - to	from - to	from - to	from - to	from - to
0,70 - 0,79	0,0004 - 0,0018	0,0005 - 0,0012	0,0004 - 0,0012	0,0005 - 0,0012	0,0007 - 0,0012
0,80 - 0,89	0,0004 - 0,0022	0,0006 - 0,0015	0,0006 - 0,0016	0,0007 - 0,0014	0,0011 - 0,0014
0,90 - 0,99	0,0007 - 0,0026	0,0009 - 0,0019	0,0009 - 0,0020	0,0011 - 0,0019	0,0014 - 0,0017
1,00 - 1,09	0,0010 - 0,0032	0,0010 - 0,0023	0,0013 - 0,0024	0,0014 - 0,0022	0,0019 - 0,0022
1,10 - 1,19	0,0014 - 0,0038	0,0013 - 0,0029	0,0017 - 0,0028	0,0017 - 0,0025	0,0022 - 0,0026
1,20 - 1,29	0,0018 - 0,0041	0,0015 - 0,0035	0,0020 - 0,0033	0,0020 - 0,0027	0,0024 - 0,0028
1,30 - 1,39	0,0020 - 0,0050	0,0020 - 0,0041	0,0023 - 0,0036	0,0022 - 0,0029	0,0031 - 0,0035
1,40 - 1,49	0,0021 - 0,0054	0,0021 - 0,0047	0,0026 - 0,0038	0,0023 - 0,0031	0,0034 - 0,0037
1,50 - 1,59	0,0021 - 0,0067	0,0021 - 0,0051	0,0029 - 0,0042	0,0024 - 0,0035	0,0035 - 0,0042
1,60 - 1,79	0,0028 - 0,0075	0,0024 - 0,0066	0,0035 - 0,0054	0,0036 - 0,0049	0,0040 - 0,0051
1,80 - 1,99	0,0030 - 0,0095	0,0030 - 0,0075	0,0040 - 0,0065	0,0040 - 0,0065	0,0050 - 0,0065
2,00 - 2,49	0,0040 - 0,0120	0,0030 - 0,0095	0,0050 - 0,0075	0,0050 - 0,0075	0,0050 - 0,0075
2,50 - 2,99	0,0050 - 0,0160	0,0040 - 0,0110	0,0060 - 0,0095	0,0060 - 0,0095	0,0060 - 0,0110
3,00 - 3,49	0,0080 - 0,0180	0,0050 - 0,0140	0,0080 - 0,0110	0,0080 - 0,0110	0,0080 - 0,0130
3,50 - 3,99	0,0090 - 0,0230	0,0070 - 0,0160	0,0090 - 0,0125	0,0100 - 0,0160	0,0090 - 0,0160
4,00 - 4,49	0,0120 - 0,0260	0,0080 - 0,0190	0,0100 - 0,0135	0,0110 - 0,0180	0,0100 - 0,0190
4,50 - 4,99	0,0140 - 0,0280	0,0110 - 0,0210	0,0110 - 0,0160	0,0140 - 0,0220	0,0110 - 0,0220
5,00 - 5,99	0,0150 - 0,0380	0,0120 - 0,0250	0,0130 - 0,0220	0,0150 - 0,0240	0,0130 - 0,0250
6,00 - 7,99	0,0180 - 0,0490	0,0150 - 0,0330	0,0150 - 0,0290	0,0180 - 0,0290	0,0150 - 0,0370
8,00 - 12,00	0,0210 - 0,0570	0,0180 - 0,0380	0,0170 - 0,0360	0,0210 - 0,0330	0,0170 - 0,0410

Typw 110 Cutting parameters

MATERIALS GROUP	Cast iron, grey cast iron (> 300N/mm ²), ductile cast iron (> 400N/mm ²), general steel casting	Cast iron, grey cast iron (< 300N/mm ²), ductile cast iron (< 400N/mm ²), malleable cast iron, whiteheart malleable iron, blackheart malleable iron, "good processable"	Copper, bronze, brass, plastics	Aluminium + cast aluminium Si content > 5%, "good processable"	Aluminium + aluminium alloy < 5%, "not hardened"
Cutting speed in m/min	60 - 90	70 - 100	70 - 100	80 - 160	100 - 300
Drill-Ø in mm	Feed in mm				
from - to	from - to	from - to	from - to	from - to	from - to
0,70 - 0,79	0,0009 - 0,0014	0,0007 - 0,0018	0,0005 - 0,0012	0,0007 - 0,0012	0,0005 - 0,0009
0,80 - 0,89	0,0012 - 0,0018	0,0010 - 0,0023	0,0008 - 0,0015	0,0012 - 0,0014	0,0008 - 0,0012
0,90 - 0,99	0,0015 - 0,0024	0,0014 - 0,0028	0,0011 - 0,0019	0,0017 - 0,0020	0,0011 - 0,0017
1,00 - 1,09	0,0019 - 0,0029	0,0018 - 0,0032	0,0015 - 0,0024	0,0020 - 0,0024	0,0015 - 0,0024
1,10 - 1,19	0,0025 - 0,0035	0,0022 - 0,0038	0,0019 - 0,0029	0,0022 - 0,0029	0,0019 - 0,0034
1,20 - 1,29	0,0031 - 0,0041	0,0030 - 0,0048	0,0024 - 0,0034	0,0024 - 0,0034	0,0024 - 0,0041
1,30 - 1,39	0,0040 - 0,0051	0,0039 - 0,0060	0,0028 - 0,0039	0,0026 - 0,0045	0,0026 - 0,0044
1,40 - 1,49	0,0047 - 0,0060	0,0049 - 0,0079	0,0031 - 0,0047	0,0028 - 0,0055	0,0032 - 0,0048
1,50 - 1,59	0,0053 - 0,0068	0,0056 - 0,0100	0,0032 - 0,0053	0,0035 - 0,0066	0,0038 - 0,0059
1,60 - 1,79	0,0064 - 0,0095	0,0064 - 0,0150	0,0035 - 0,0095	0,0040 - 0,0085	0,0040 - 0,0075
1,80 - 1,99	0,0070 - 0,0130	0,0070 - 0,0220	0,0040 - 0,0130	0,0050 - 0,0110	0,0050 - 0,0110
2,00 - 2,49	0,0100 - 0,0220	0,0090 - 0,0330	0,0040 - 0,0180	0,0050 - 0,0200	0,0070 - 0,0130
2,50 - 2,99	0,0130 - 0,0320	0,0110 - 0,0430	0,0050 - 0,0250	0,0060 - 0,0360	0,0080 - 0,0170
3,00 - 3,49	0,0150 - 0,0390	0,0140 - 0,0530	0,0060 - 0,0370	0,0080 - 0,0540	0,0100 - 0,0200
3,50 - 3,99	0,0180 - 0,0480	0,0180 - 0,0620	0,0070 - 0,0490	0,0110 - 0,0750	0,0100 - 0,0250
4,00 - 4,49	0,0200 - 0,0560	0,0200 - 0,0690	0,0080 - 0,0600	0,0120 - 0,0950	0,0130 - 0,0300
4,50 - 4,99	0,0230 - 0,0640	0,0230 - 0,0780	0,0090 - 0,0690	0,0140 - 0,1300	0,0160 - 0,0360
5,00 - 5,99	0,0250 - 0,0760	0,0250 - 0,0950	0,0100 - 0,0800	0,0150 - 0,1550	0,0200 - 0,0470
6,00 - 7,99	0,0300 - 0,1100	0,0300 - 0,1250	0,0120 - 0,0960	0,0180 - 0,2050	0,0260 - 0,0660
8,00 - 12,00	0,0330 - 0,1190	0,0350 - 0,1360	0,0140 - 0,1100	0,0210 - 0,2080	0,0290 - 0,0780

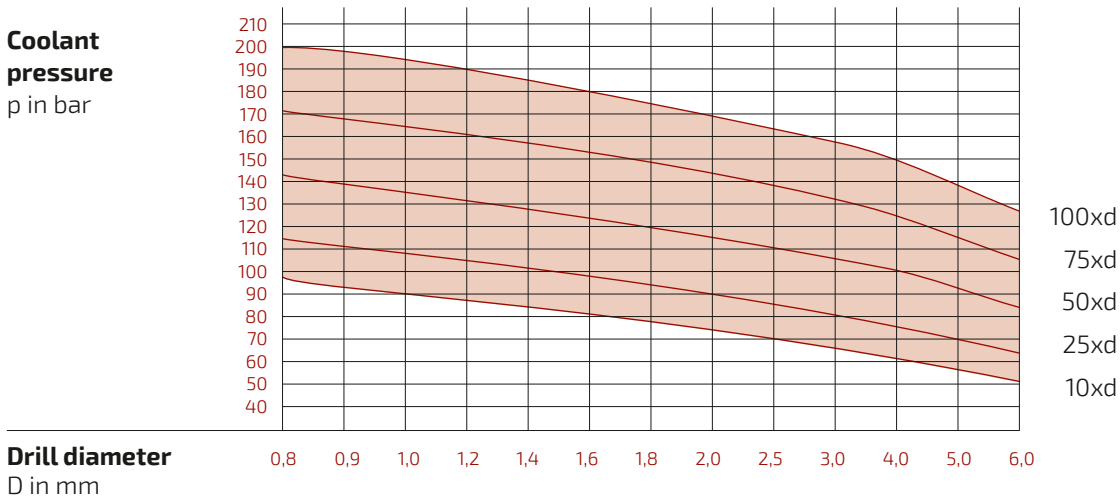
Type 120 Cutting parameters

MATERIALS GROUP	Structural steel (< 700N/mm ²)	Hardening steel (< 700N/mm ²)	Hardening steel (< 1100N/mm ²)	Heat-treated steel (< 700N/mm ²)	Heat-treated steel (< 1100N/mm ²)	Nitrating steels (< 1100N/mm ²)	Ferritic steel (< 900N/mm ²)
	70 - 100	80 - 100	70 - 80	70 - 90	55 - 75	55 - 75	60 - 80
Cutting speed in m/min							
Drill-Ø in mm	Feed in mm						
from - to	from - to	from - to	from - to	from - to	from - to	from - to	from - to
12,00 - 17,99	0,05 - 0,10	0,05 - 0,10	0,07 - 0,10	0,07 - 0,10	0,07 - 0,1	0,07 - 0,09	0,07 - 0,10
18,00 - 24,99	0,08 - 0,11	0,08 - 0,11	0,08 - 0,11	0,08 - 0,11	0,08 - 0,11	0,08 - 0,10	0,08 - 0,11
25,00 - 30,00	0,10 - 0,14	0,10 - 0,14	0,10 - 0,13	0,10 - 0,14	0,10 - 0,13	0,09 - 0,12	0,10 - 0,14

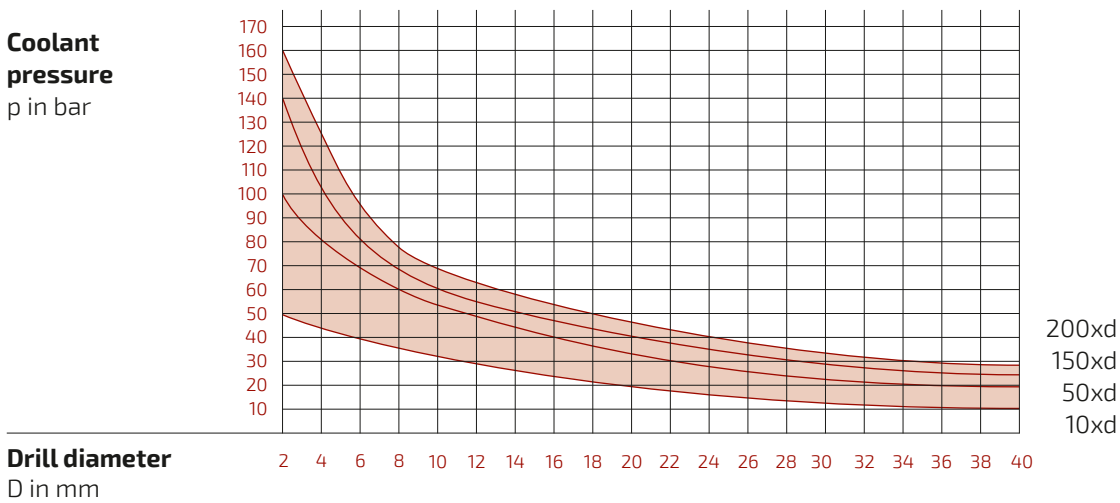
MATERIALS GROUP	Austenitic steel	Heat-resistant steel, tool steel (< 700N/mm ²)	Cast steel (< 700N/mm ²),	Spheroidal graphite iron	Cast iron	Aluminium	Copper Cu-contents < 99%
	60 - 80	50 - 70	60 - 80	65 - 80	70 - 100	100 - 120	120 - 300
Cutting speed in m/min							
Drill-Ø in mm	Feed in mm						
von - to	von - to	von - to	von - to	von - to	von - to	von - to	von - to
12,00 - 17,99	0,07 - 0,09	0,07 - 0,09	0,07 - 0,10	0,09 - 0,12	0,09 - 0,12	0,08 - 0,11	0,05 - 0,09
18,00 - 24,99	0,08 - 0,10	0,08 - 0,10	0,08 - 0,11	0,10 - 0,13	0,10 - 0,13	0,09 - 0,12	0,06 - 0,10
25,00 - 30,00	0,09 - 0,12	0,09 - 0,12	0,10 - 0,14	0,12 - 0,15	0,12 - 0,15	0,10 - 0,14	0,08 - 0,12

Required pressure

TYPE 110 for deep-hole drilling oil

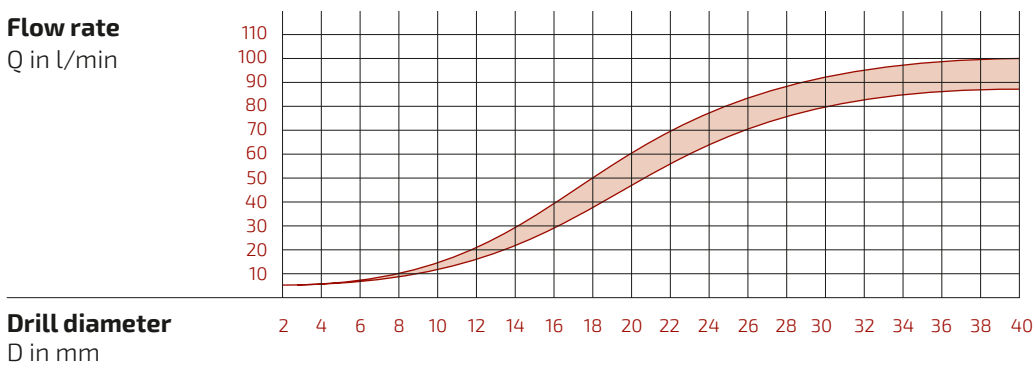


TYPE 100 + 120 for deep-hole drilling oil



▲ using emulsion pressures can be reduced by up to 20%

FLOW RATES



OIL KINEMATIC VISCOSITY

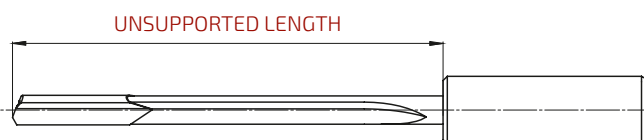
DRILL-Ø [MM] FROM - TO	KINEMATIC VISCOSITY AT 40°C [MM²/S]
0,800 - 1,500	8 - 10
1,501 - 18,000	10 - 15
18,001 - max	>15

FILTERING

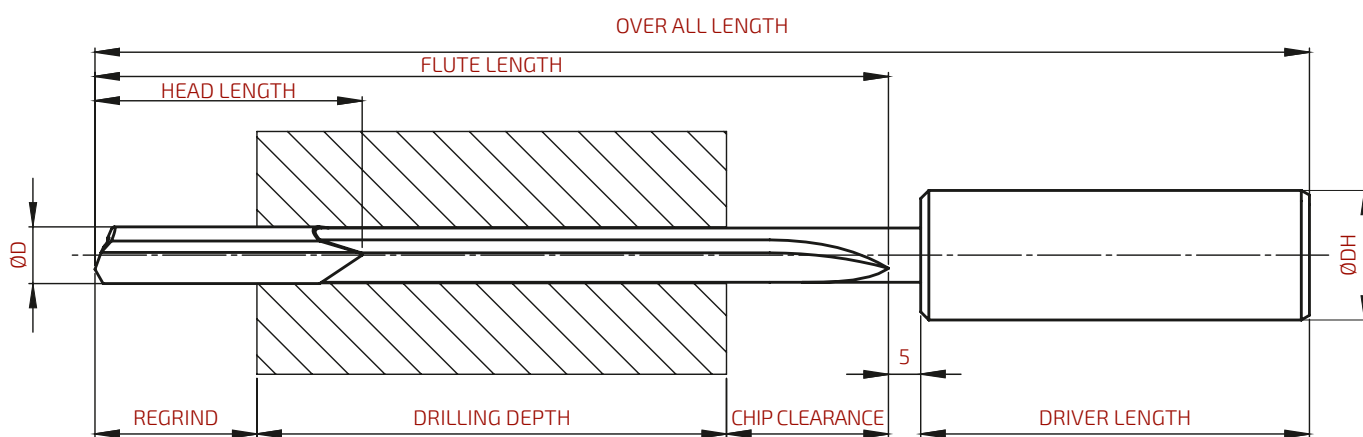
DRILL-Ø [MM] FROM - TO	FILTERING [µM]
0,800 - 2,000	5 - 10
2,001 - max	5 - 20

UNSUPPORTED LENGTH

TYPE	UNSUPPORTED LENGTH
100	30xd - 40xd
110	70xd - 100xd
120	30xd - 40xd

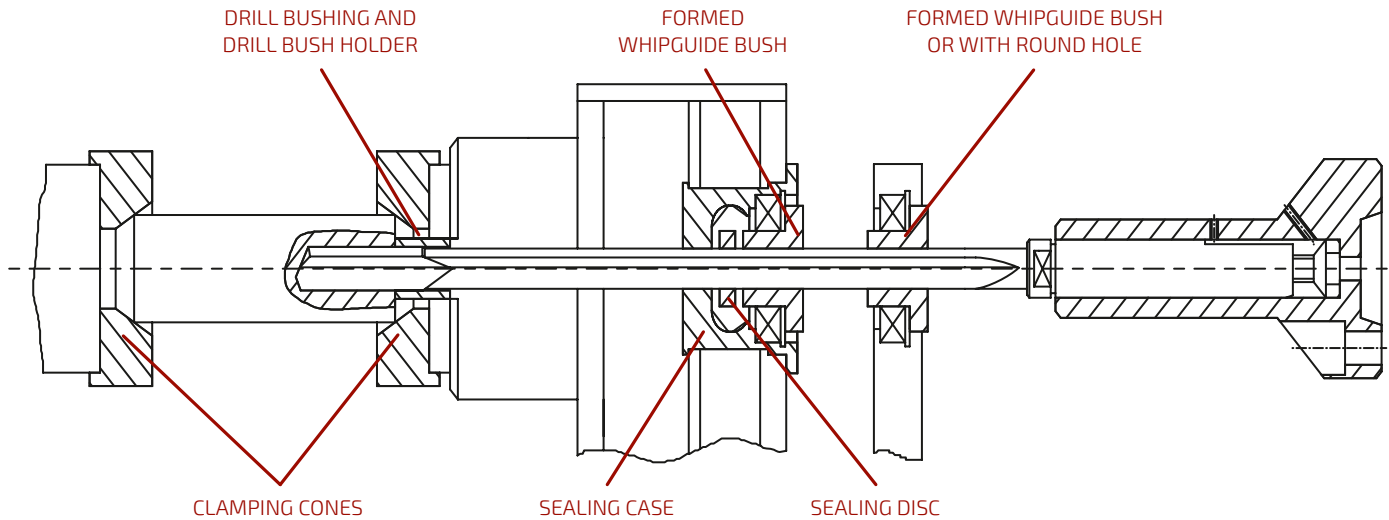


LENGTH CALCULATION OF DEPTH ON TOTAL LENGTH

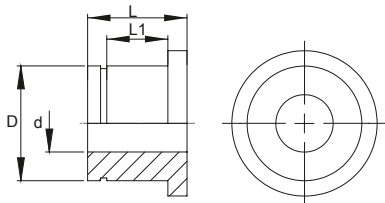


DRILL-Ø	FROM - TO 0,90 - 1,89	FROM - TO 1,90 - 2,49	FROM - TO 2,50 - 3,09	FROM - TO 3,10 - 5,09	FROM - TO 5,10 - 8,09	FROM - TO 8,10 - 18,09	FROM - TO 18,1 - MAX
regrind approx.	12	12	14	15	20	30	30
chip clearance approx.	20	22	25	30	35	55	70

Accessories for deep hole drilling machines



WHIPGUIDE BUSH

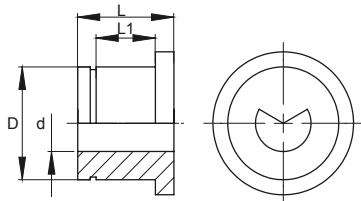


PART-NO.	TOOL-Ø [MM] FROM - TO	D [MM]	L [MM]	L ₁ [MM]
----------	--------------------------	--------	--------	---------------------

BZ0120dddd	1,850 - 11,790	20	20	12
BZ0130dddd	1,850 - 25,600	30	26	14
BZ0145dddd	1,850 - 36,690	45	26	16

► Bearing diameter 20 mm, Drill-Ø 5 mm: Part-No.: BZ01200500

FORMED WHIPGUIDE BUSH

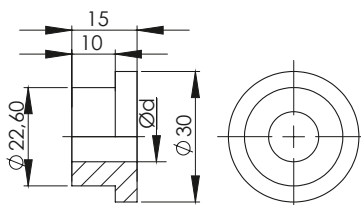


PART-NO.	TOOL-Ø [MM] FROM - TO	D [MM]	L [MM]	L ₁ [MM]
----------	--------------------------	--------	--------	---------------------

BZ0220dddd	3,960 - 12,390	20	20	12
BZ0230dddd	5,750 - 22,600	30	26	14
BZ0245dddd	7,800 - 34,699	45	26	16

► Bearing diameter 20 mm, Drill-Ø 5 mm: Part-No.: BZ02200500

WHIPGUIDE BUSH

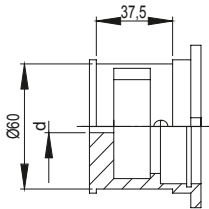


PART-NO.	TOOL-Ø [MM] FROM - TO	D [MM]	L [MM]
----------	--------------------------	--------	--------

BZ05dddd	1,850 - 12,399	22,6	15
----------	----------------	------	----

► Drill-Ø 5 mm: Part-No.: BZ050475

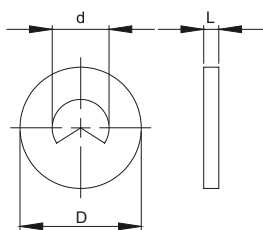
SEALING CASE



PART-NO.	D [MM]	EXECUTION
BZ08601	60	without bearing
BZ08602	60	with bearing

► Please specify tool diameter **d** when ordering

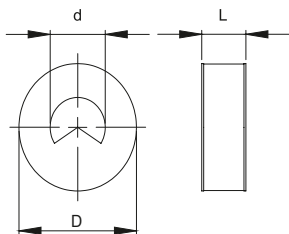
SEALING DISC



PART-NO.	TOOL-Ø [MM] FROM - TO	D [MM]	L [MM]
BZ0320dddd	1,850 - 5,749	20	3
BZ0332dddd	3,960 - 5,759	32	3
	5,750 - 20,509	32	4
BZ0340dddd	5,750 - 20,509	40	4
BZ0390dddd	23,610 - 40,999	90	4

► Outside diameter 32, Drill-Ø 5 mm: Part-No.: BZ03320500

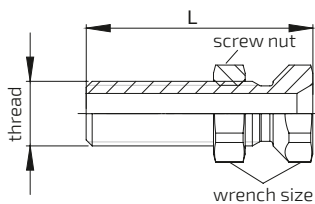
SPECIAL SEALING DISC



PART-NO.	TOOL-Ø [MM] FROM - TO	D [MM]	L [MM]
BZ0420dddd	2,900 - 5,249	20	7
BZ0432dddd	5,250 - 16,399	32	11
BZ0440dddd	16,400 - 25,609	40	12
BZ0490dddd	25,610 - 40,999	90	12

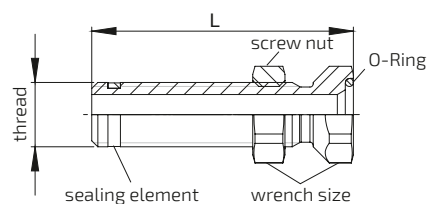
► Drill-Ø 5 mm: Part-No.: BZ04200500

**ADJUSTING SCREWS
WITHOUT SEALING ELEMENT**

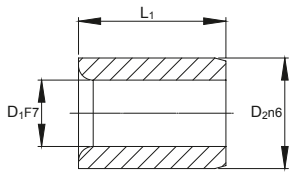


PART-NO.	THREAD	L [MM]	SW [MM]
BZ1006026-0	M6 x 0,5	26	9
BZ1006045-0	M6 x 0,5	45	9
BZ1010038-0	M10 x 1,0	38	13
BZ1016057-0	M16 x 1,5	57	22

**ADJUSTING SCREWS
WITH SEALING ELEMENT**



PART-NO.	THREAD	L [MM]	SW [MM]
BZ1010050-1	M10 x 1,0	50	13
BZ1016065-1	M16 x 1,5	65	22
BZ1024090-1	M24 x 1,5	90	30

DRILL BUSHING

Cylindrical drill bushings to DIN 179A are available in intermediate design from through hardened tool steel or carbide.

Bushes also available in tolerance G6.

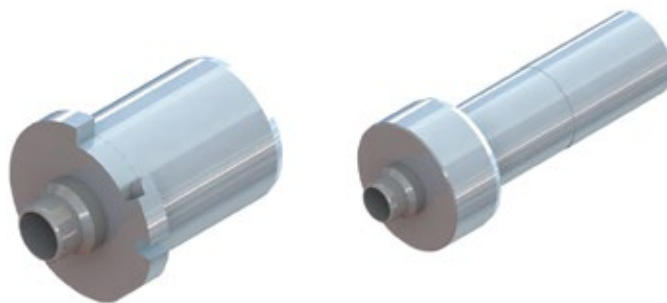
Minimum order for steel:
in 0,1 mm range: 1 piece,
in 0,01 mm range: 3 piece
Minimum order for carbide: 5 piece

PART-NO.	TOOL-Ø [MM] FROM - TO	D1 [MM]	D2 [MM]	I1 [MM]
BZ1300003-09	0,800 - 1,099	0,800 - 1,099	3,00	9,00
BZ1300004-09	1,100 - 1,899	1,100 - 1,899	4,00	9,00
BZ1300005-09	1,900 - 2,699	1,900 - 2,699	5,00	9,00
BZ1300006-12	2,700 - 3,399	2,700 - 3,399	6,00	12,00
BZ1300007-12	3,400 - 4,099	3,400 - 4,099	7,00	12,00
BZ1300008-12	4,100 - 5,099	4,100 - 5,099	8,00	12,00
BZ1300010-16	5,100 - 6,099	5,100 - 6,099	10,00	16,00
BZ1300012-16	6,100 - 8,099	6,100 - 8,099	12,00	16,00
BZ1300015-20	8,100 - 10,099	8,100 - 10,099	15,00	20,00
BZ1300018-20	10,100 - 12,099	10,100 - 12,099	18,00	20,00
BZ1300022-28	12,100 - 15,099	12,100 - 15,099	22,00	28,00
BZ1300026-28	15,100 - 18,099	15,100 - 18,099	26,00	28,00
BZ1300030-36	18,100 - 22,099	18,100 - 22,099	30,00	36,00
BZ1300035-36	22,100 - 26,099	22,100 - 26,099	35,00	36,00
BZ1300042-45	26,100 - 30,099	26,100 - 30,099	42,00	45,00
BZ1300048-45	30,100 - 35,099	30,100 - 35,099	48,00	45,00
BZ1300055-56	35,100 - 40,000	35,100 - 40,000	55,00	56,00

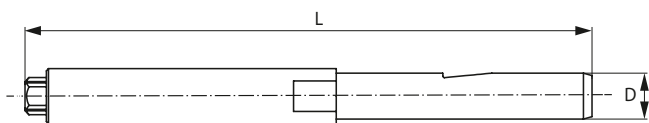
► Drill-Ø 10,00 Steel: Part-No.: BZ1300015-20ST
Carbide Part-No.: BZ1300015-20HM

DRILL BUSH HOLDER

Part-No.: BZ11

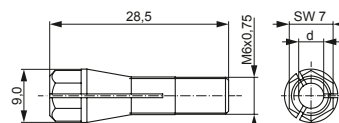


► Drill bush holders in different sizes available. Please specify when ordering machine type.

COLLET HOLDERS FOR SOLID CARBIDE SINGLE FLUTE DRILLS

Part No.: BZ07

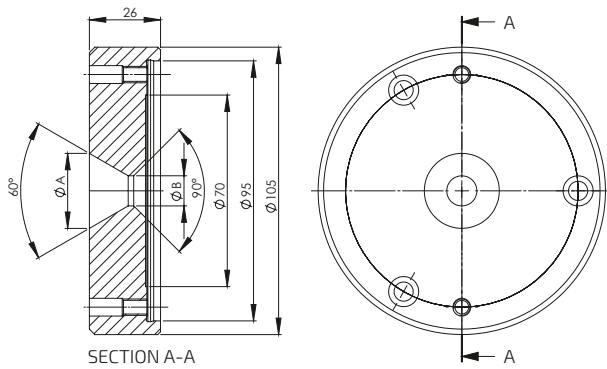
► Collet chucks in various dimensions available. Please specify when ordering dimensions.
Adaptation for collets Part-No.: BZ09

COLLETS FOR SOLID CARBIDE SINGLE FLUTE DRILLS

PART-NO.	D [MM]
BZ0900001	3
BZ0900002	4

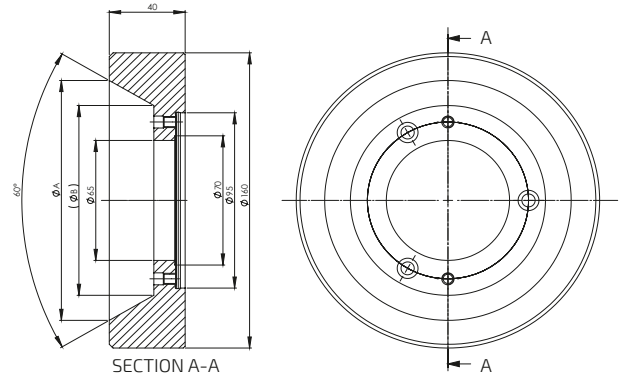
► Special versions available from 1,0 mm to 3,9 mm in a pitch of 0,1 mm

STANDARD CLAMPING CONES



PART-NO.	ØA	ØB
BZ1500001-0	8,4	1,5
BZ1500002-0	9,5	2,5
BZ1500003-0	10,4	3,5
BZ1500004-0	11,4	4,5
BZ1500005-0	13,0	5,5
BZ1500006-0	14,4	6,5
BZ1500007-0	20,0	7,5
BZ1500008-0	24,0	8,5
BZ1500009-0	27,4	11
BZ1500010-0	31,0	13
BZ1500011-0	33,5	16
BZ1500012-0	37,2	19

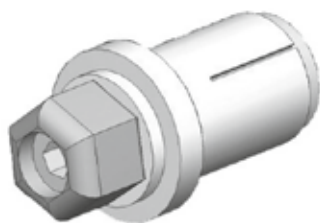
SPECIAL CLAMPING CONES



PART-NO.	ØA	ØB
BZ1500001-1	130	102,86
BZ1500002-1	150	122,86

HOLE PLUG

Minimum order 20 pieces per order
Special sizes from 25 pieces available



PART-NO.	HOLE-Ø [MM]	PART-NO.	HOLE-Ø [MM]
BZ1400008	8	BZ1400017	17
BZ1400009	9	BZ1400018	18
BZ1400010	10	BZ1400019	19
BZ1400011	11	BZ1400020	20
BZ1400012	12	BZ1400021	21
BZ1400013	13	BZ1400022	22
BZ1400014	14	BZ1400023	23
BZ1400015	15	BZ1400024	24
BZ1400016	16	BZ1400025	25

► Can plug and seal holes in the tolerance class H7, up to a maximum pressure of 130 bar.

Accessories for machining centers

PILOT DRILL from 3 mm

with internal cooling: Typ 201

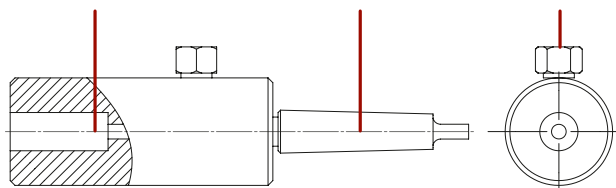


EXTERNALLY CONNECTED TOOLHOLDERS

Externally connected toolholders are available in two versions, up to 8 bar and 120 bar.

Execution to 8 bar:

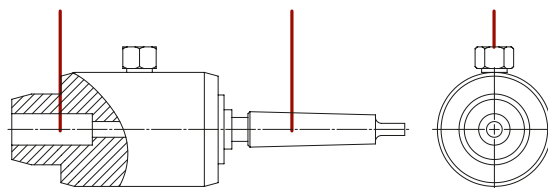
DRILL DRIVER ADAPTORS MACHINE ADAPTORS INFLOW COOLANT



Part-No.: BZ160001

Execution to 120 bar:

DRILL DRIVER ADAPTORS MACHINE ADAPTORS INFLOW COOLANT



Part-No.: BZ170001

► When ordering, please specify the machine adaptors and clamping element (driver).

MINIMUM LUBRICATION (Atomized Spraymist)



Part-No.: BZ120001

ADVANTAGE

- Simple operation
- Lowest investment costs
- Low space requirement
- Flexible use on a variety of machines
- No interruption of production flow
- Time savings through the elimination of disassembly, assembly and transportation costs

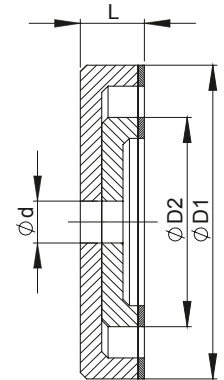
► To operate this device, you need only your in-house compressed air system.

Accessories for regrinding

GRINDING WHEEL

Tandem grinding wheels are particularly suitable for rough and finish grinding of single flute drills.

PART-NO.	ØD1	ØD2	Ød	L
BZ180001	125	75	12,7	50
BZ180002	150	100	20	30
BZ180003	200	100	20	30



GRINDING FIXTURE

These grinding devices are suitable for sharpening single flute drill in smaller quantities.

Grinding device BZ190001 from D 2,5 mm to 32 mm

Grinding device BZ190002 from D 5,0 mm to 50 mm

Grinding device BZ190001 with adapter BZ190003 from D 0,9 mm



GRINDING MACHINE

Delivered with

- Grinding fixture
- Tandem grinding wheels
- Work Light
- Cabinet upon request



We will be happy to answer
questions about your order

HEAD OF SALES**Lothar Künzel**

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verkauf@brecht-brt.de

SALES

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Germany

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verkauf@brecht-brt.de
www.brecht-brt.de

Inquiry Order Nr. _____

TOOL TYPE

- with solid carbide drill head (Type 100)
- in solid carbide version (Type 110)
- drill head with inserted carbide bearing pads (Type 120)

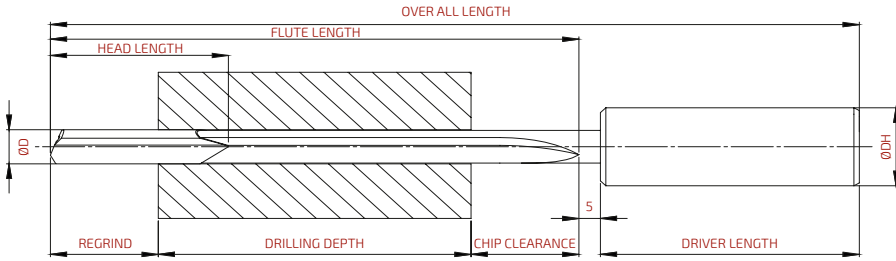
COATING

- Yes
- No
- Coating type: _____

DRIVER

- Driver-No. _____
- without
- Special driver as per drawing

TOOL DIMENSIONS



NOSE GRINDS

- Standard nose grind (see brochure)
- Special nose grind (as per drawing)

► Please enter dimensions in drawing

CALCULATION OF TOOL LENGTH [MM]

DRILL-Ø	0,9 - 1,899	1,9-2,499	2,5-3,099	3,1-5,099	5,1-8,099	8,1-18,099	18,1-30,0
Regrind approx.	12	12	14	15	20	30	30
Chip clearance approx.	20	22	25	30	35	55	70

► Consider machine-dependent lost length

INFORMATION ABOUT HOLES

- through holes
- blind holes
- angular inlet/outlet (as per drawing)
- cross holes (as per drawing)

MATERIAL

Material-No. _____
 Description _____
 Hardness _____

MACHINE

- Gundrilling machine workpiece is rotating
- Machining center tool is rotating
- both rotate

COOLANT

- Deep-hole drilling oil Emulsion Atomized spraymist
- Cooling lubricant _____
- coolant pressure (bar) _____

CUSTOMER DATA

Company _____
 Address _____
 Phone _____
 Fax _____
 Contact _____
 E-mail _____

Quantity piece(s) _____ Delivery Date week _____

Company Stamp

Date/Signature _____



PRÄZISIONSWERKZEUGE

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