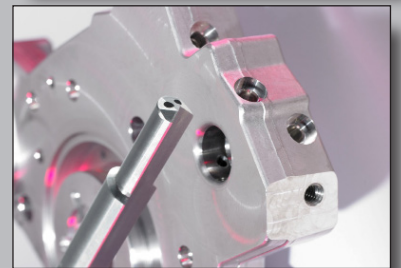


Single flute gundrills

Type 100, 110, 120



PRÄZISIONSWERKZEUGE

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1. Company presentation

1.1. Company profile

Brecht GmbH was founded in 1984 by the couple Hans and Gisela Brecht in Pfullingen. The initial business focus was on the production of special industrial tools and gun drills. With its comprehensive know-how and quality-oriented approach Brecht GmbH soon prospered and quickly established itself in the market. It was not long until the company specialized in the development and manufacture of single flute gun drills, which are marketed under the BRT brand.

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.



1.2. Corporate philosophy

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

→ Perfection and our close customer commitment

We involve our customers in our work; we believe excellence of product is achieved by both. For over 20 years our company has grown with this philosophy. We place our attention, in particular, to the perfect execution of our orders. We have created a business of a size, capability and flexibility to be able to react, at any time, to the demands of the market now and into the future. Of course we are aware that these demands are high and our professional team is ready and waiting to transpose them into precision products. With a constant strive to perfection and reliability we work for continuous growth - yet retain manageability. For quick decisions require fast, precise instruction and excellent teamwork. We believe communication and excellent teamwork are key to future success while staying open to new ideas and opportunity.

Our owner-oriented management team is always available to our customers.

1.3. Quality and environment

Quality:

- The Quality of our drills comes first. Therefore only perfect quality products are allowed to leave the plant
- Customer satisfaction in 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

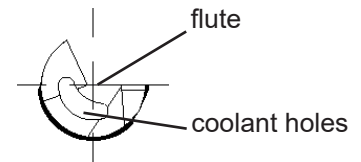
Environment:

- 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

2. 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 though 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)

In the next sections, the three main types are explained and described in more detail.

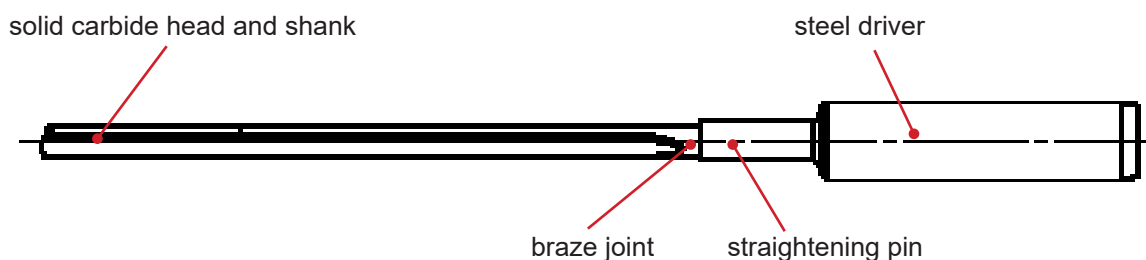
2.1. Type 110 Solid carbide single flute gundrills

Versions

Type	Description	Drill-Ø
Type 110	solid carbide boring drill	from 0,800
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 400 mm.

Tool Structure



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

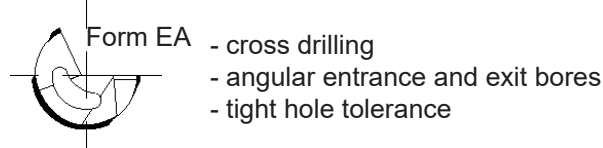
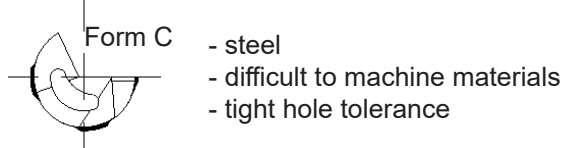
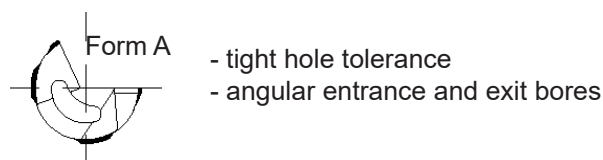
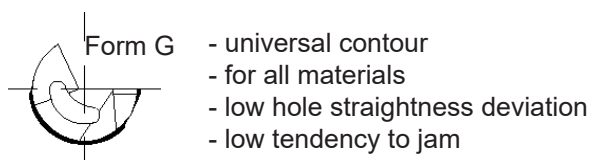
This type of tool is especially process and strong due to its construction. In addition, with low torsional longer service life can be achieved.

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

Drill head + Shank

Contour

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.

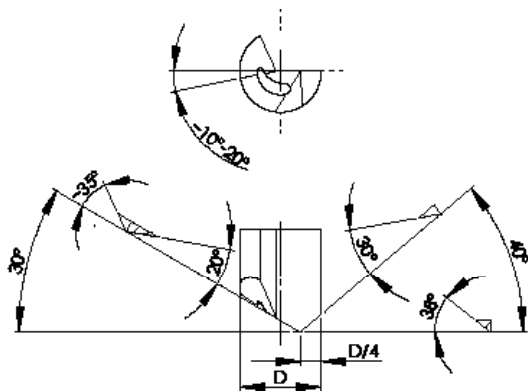
Attention: The tool diameter is not micable for forms G and EA after finishing!

Nose grind

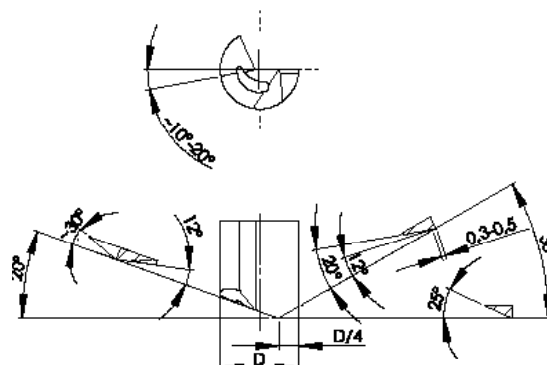
With the change of the cutting geometry, solid carbide gundrills can be optimally adapted to your requirements.

For long chipping and hard to machine materials an open special point should be used.

Standard nose grinds



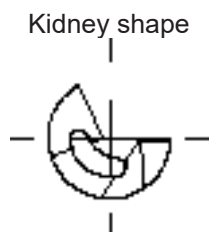
solid carbide standard nose grind 1 (AS-0023)
 for drill range: 0,800 - 4,000 mm



solid carbide standard nose grind 2 (AS-0002)
 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 from - to	L1	L2	X	G	Drawing- number
Ø 4 x 34/46	DIN 6535-HA		0,800 - 2,905	34	46	-	-	ZH4-002
			2,906 - 5,145					ZH4-018
Ø 6 x 36/51			0,900 - 4,645	36	50	-	-	ZH6-016
Ø 10 x 40/55			0,900 - 7,000	40	55	-	-	ZH10-092
Ø 12 x 45/60			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.

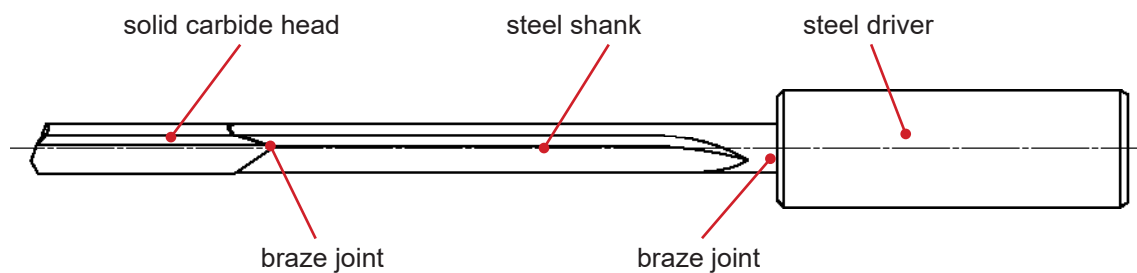
2.2. Type 100 Single flute gundrills with brazed carbide head

Versions

Type	Description	Drill-Ø
Type 100	drill	from 1,850
Type 100-01	step drill	from 3,000
Type 100-02	counterboring drill	from 3,000

Tool length depending on the diameter up to 5000 mm.

Tool Structure



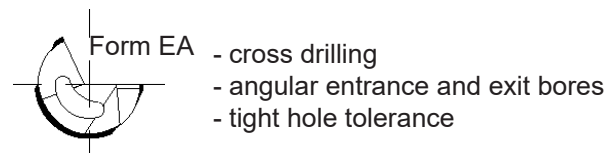
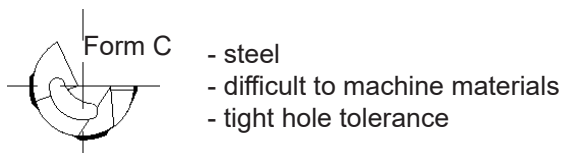
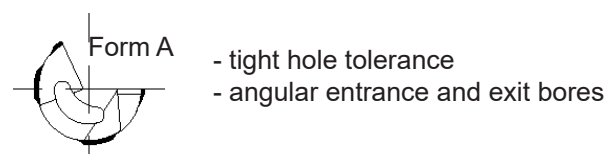
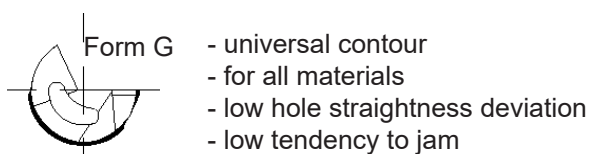
Single flute drill with a brazed carbide head Type 100 are connected by a braze joint and consist of the following three components:

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

Drill head

Contour

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.

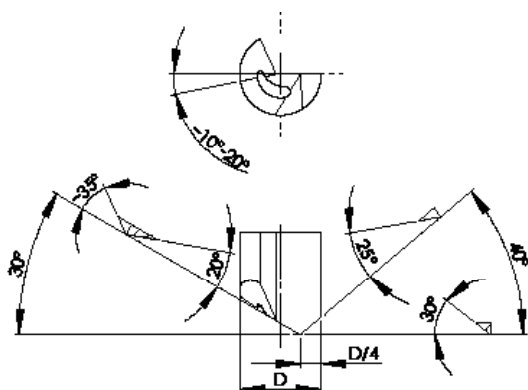
Attention: The tool diameter is not micable for forms G and EA after finishing!

Nose grinds

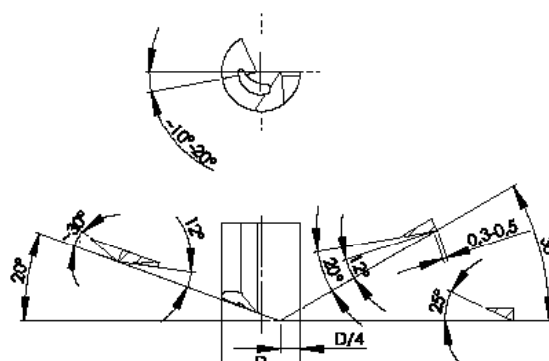
With the change of the cutting geometry, solid carbide gundrills can be optimally adapted to your requirements.

For long chipping and hard to machine materials an open special point should be used.

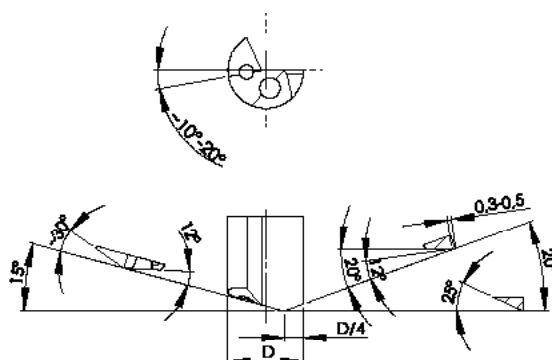
Standard nose grinds



Standard nose grind 1 (AS-0001)
for drill range: 1,850 - 4,000 mm



Standard nose grind 2 (AS-0002)
for drill range: 4,001 - 20,000 mm



Standard nose grind 3 (AS-0002)
for drill range: 20,001 - max mm

More nose grinds are shown in the Technology chapter.

Cooling hole design

Kidney shape



up to D7,059

2-hole shape



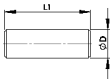
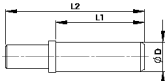
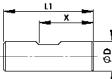
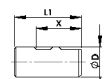
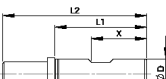
from D7,060

Standard coatings

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

Drivers

Overview Standard Drives

Description	Standard	Sketch	Drilling range from - to	L1	L2	X	G	Drawing- number
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 from - to	L1	L2	X	G	Drawing- number	
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 - 20,509						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	50	77	47,5	-	ZH16-086	
			16,400 - 20,509					ZH16-017	

Description	Standard	Sketch	Drilling range from - to	L1	L2	X	G	Drawing- number
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
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	-	ZH19,05-005
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 26,000 - max	100	142	45	M16x1,5	SH25-004 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
			25,610 - 30,609					ZH25-070
			28,610 - 36,999					ZH35-005
Ø 35 x 60	37,000 - max	60	100	40	-	ZH35-002		

We are happy to produce for you special drivers to your drawing.

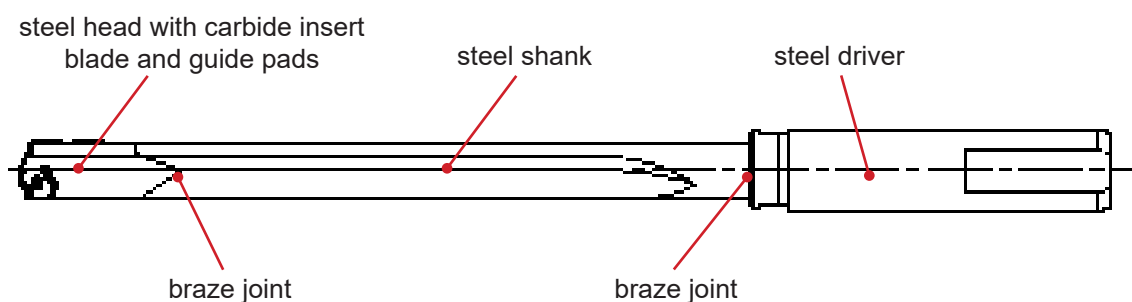
2.3. Type 120 Single flute gundrills with indexable inserts

Versions

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

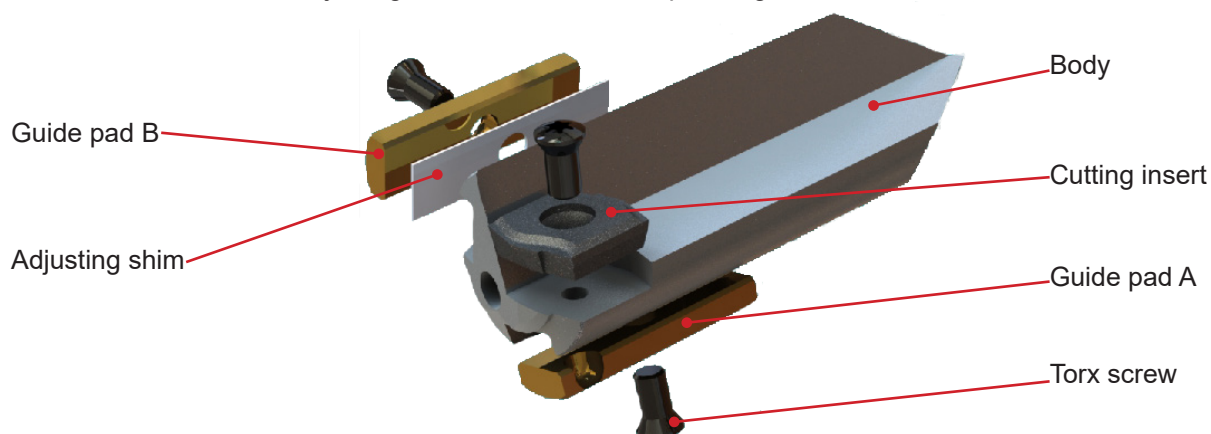


The single flute gun drills with a brazed steel body with cutting insert Type 120 are connected by braze consisting of the following components:

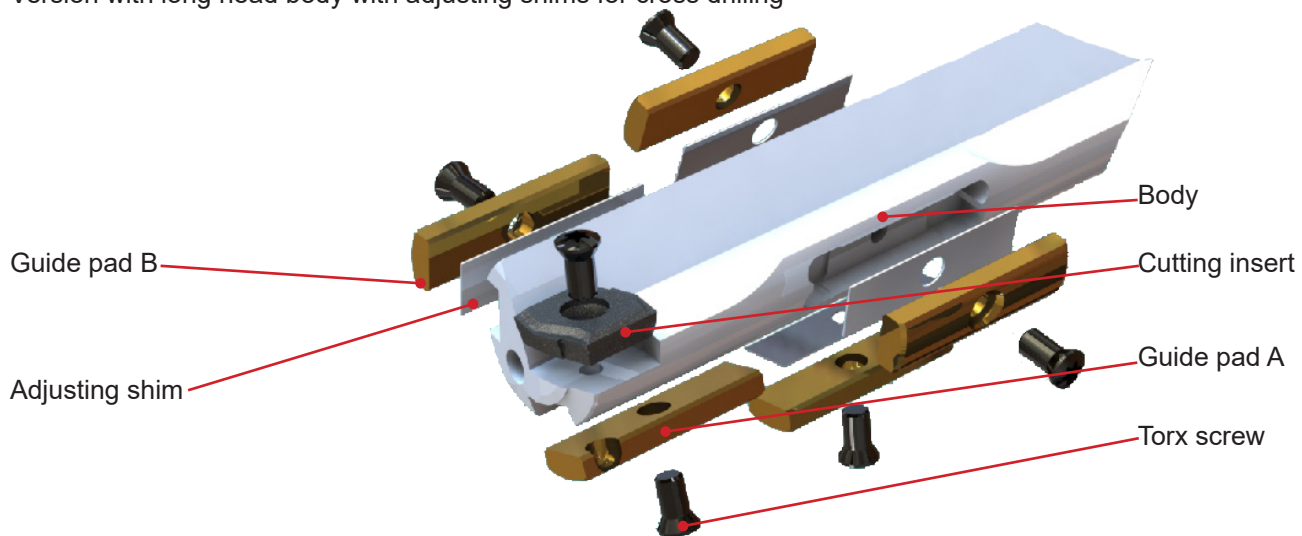
- Steel body made of tempered steel
- Coated cutting insert of carbide
- Coated guide pads of carbide
- Shank of tempered steel
- Driver of steel

Drill head

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



Version with long head body with adjusting shims for cross drilling



Driver

See section 2.2 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

3. Technology

Requirements Deep Hole Drilling

For good hole drilling results, cooling, lubrication and high-pressure coolant systems are required (see p.16).

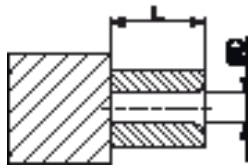
Single flute gundrilling cannot only be achieved on deep hole drilling machines but is also very good on machining centers (drilling, turning and milling centers) with:

- 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.

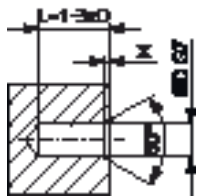
Drill bush



Recommendation: Bushes DIN 179A medium (see page 25)

Important: Drill bushing has a form set against the workpiece

Pilot drilling



Recommendation: pilot drill with m7 tolerance (see page 27)

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

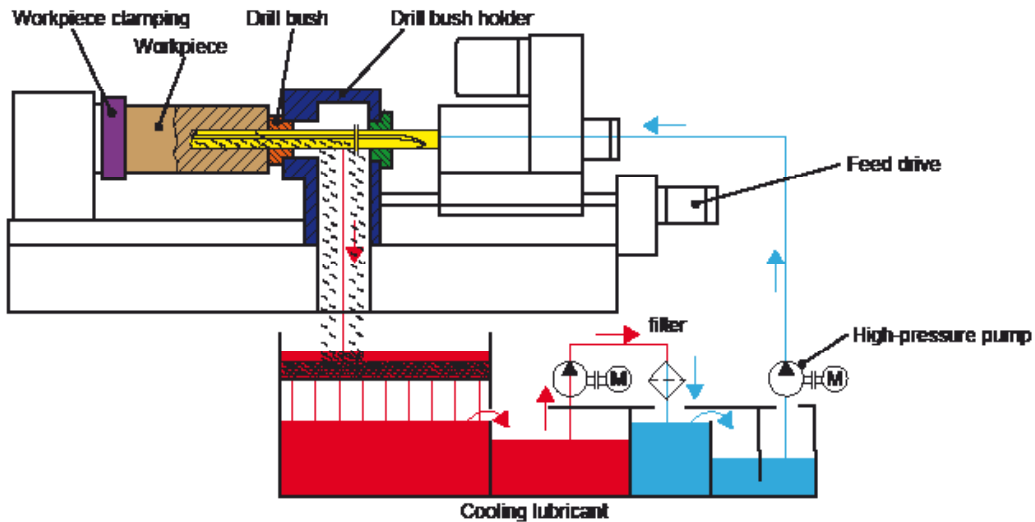
Important:

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

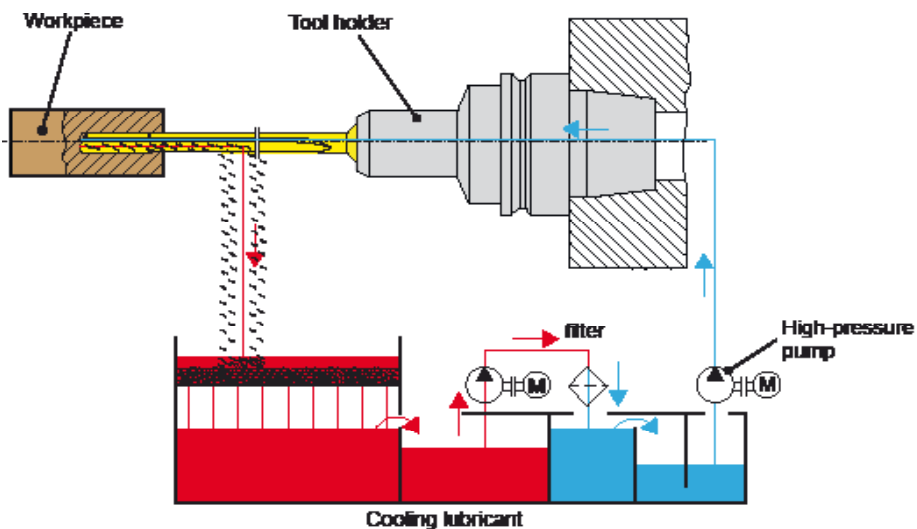
- poor hole quality
- excessive hole straightness deviation
- drill breakage

Applications

Deep drilling machine



Machining center



Procedure:

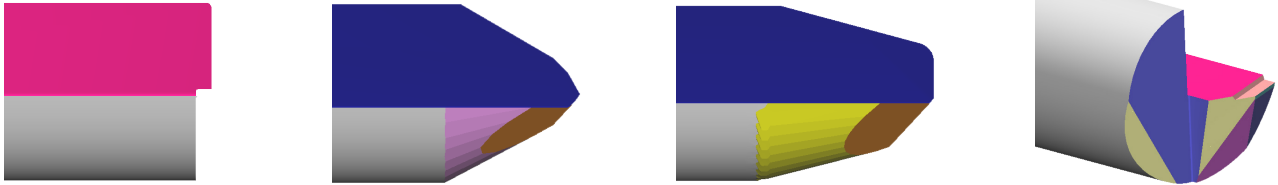
- Make a pilot hole
- Enter with stationary spindle or speed < 50 rpm
- Set coolant pressure, speed and feed
- Continuous drilling to depth without peck
- Switch off coolant supply after reaching hole depth
- Retraction with stationary spindle or < 50 rpm

Important: Failure to comply may result in tool breakage.

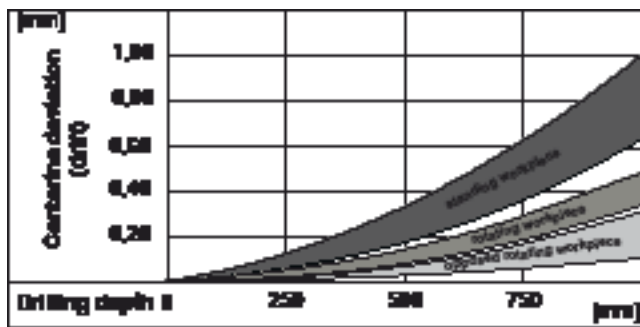
Special nose grinds

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

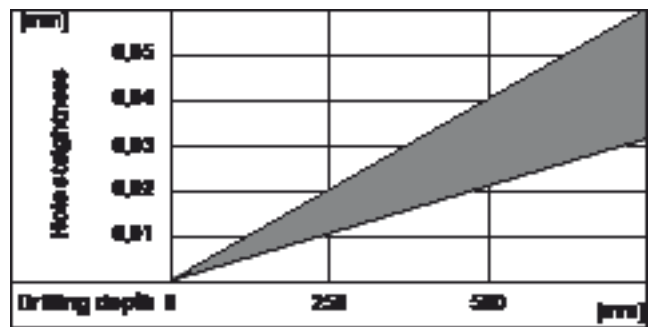
In the following examples, various forms are shown:



Centerline deviation (drift)



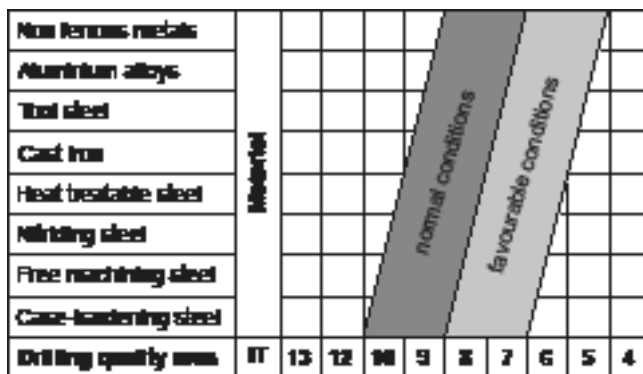
Hole straightness



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

Achievable drilling tolerances



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.

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

Type 100

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, harde- ned steels, high-tem- perature 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
1,85 - 2,49	0,003 - 0,007	0,002 - 0,005	0,001 - 0,002	0,002 - 0,005	0,002 - 0,006
2,50 - 2,99	0,005 - 0,010	0,004 - 0,006	0,001 - 0,005	0,004 - 0,007	0,004 - 0,007
3,00 - 3,49	0,007 - 0,013	0,005 - 0,007	0,002 - 0,007	0,006 - 0,008	0,005 - 0,009
3,50 - 3,99	0,009 - 0,015	0,007 - 0,010	0,004 - 0,008	0,008 - 0,009	0,007 - 0,011
4,00 - 4,49	0,012 - 0,019	0,008 - 0,012	0,006 - 0,009	0,009 - 0,010	0,008 - 0,013
4,50 - 4,99	0,014 - 0,020	0,011 - 0,015	0,008 - 0,011	0,010 - 0,013	0,009 - 0,017
5,00 - 5,99	0,016 - 0,026	0,013 - 0,018	0,010 - 0,014	0,012 - 0,015	0,013 - 0,019
6,00 - 6,99	0,018 - 0,028	0,015 - 0,022	0,012 - 0,016	0,014 - 0,017	0,015 - 0,023
7,00 - 7,99	0,021 - 0,035	0,018 - 0,025	0,015 - 0,018	0,016 - 0,019	0,018 - 0,026
8,00 - 8,99	0,024 - 0,036	0,020 - 0,027	0,018 - 0,021	0,018 - 0,021	0,020 - 0,031
9,00 - 9,99	0,027 - 0,040	0,023 - 0,030	0,021 - 0,025	0,020 - 0,028	0,023 - 0,034
10,00 - 11,99	0,030 - 0,049	0,025 - 0,038	0,024 - 0,030	0,025 - 0,033	0,025 - 0,041
12,00 - 13,99	0,036 - 0,060	0,029 - 0,044	0,027 - 0,033	0,030 - 0,038	0,030 - 0,045
14,00 - 15,99	0,042 - 0,071	0,035 - 0,050	0,029 - 0,040	0,035 - 0,044	0,035 - 0,052
16,00 - 17,99	0,048 - 0,079	0,039 - 0,053	0,033 - 0,044	0,041 - 0,050	0,042 - 0,060
18,00 - 19,99	0,054 - 0,091	0,044 - 0,060	0,037 - 0,049	0,045 - 0,062	0,045 - 0,067
20,00 - 23,99	0,060 - 0,107	0,049 - 0,069	0,041 - 0,054	0,049 - 0,071	0,050 - 0,079
24,00 - 27,99	0,069 - 0,117	0,054 - 0,077	0,045 - 0,057	0,052 - 0,083	0,054 - 0,090
28,00 - 31,99	0,079 - 0,134	0,059 - 0,085	0,049 - 0,062	0,057 - 0,091	0,059 - 0,098
32,00 - 39,99	0,085 - 0,154	0,063 - 0,098	0,052 - 0,065	0,063 - 0,098	0,065 - 0,107
40,00 - 50,00	0,091 - 0,169	0,068 - 0,105	0,055 - 0,069	0,068 - 0,105	0,071 - 0,113

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 malleab- le 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
Drill-Ø in mm	Feed in mm				
from - to	from - to	from - to	from - to	from - to	from - 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

Materials group	Structural steel, Carbon steel, Case hardening steel, Low alloyed steel, „good processable“ (< 900N/mm ²)	Alloyed tempered steels, case-hardened steels, nitriding steels, tool steels (> 900N/mm ²)	Spring steels, harde- ned steels, high-tem- perature 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“
	Cutting speed in m/min	70 - 100	60 - 80	25 - 60	30 - 60
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

Materials group	Structural steel, Carbon steel, Case hardening steel, Low alloyed steel, „good processable“ (< 900N/mm ²)	Alloyed tempered steels, case-hardened steels, nitriding steels, tool steels (> 900N/mm ²)	Spring steels, harde- ned steels, high-tem- perature 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“
	Cutting speed in m/min	70 - 100	60 - 80	25 - 60	30 - 60
Drill-Ø in mm	Feed in mm				
from - to	from - to	from - to	from - to	from - to	from - to
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

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 malleab- le 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
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

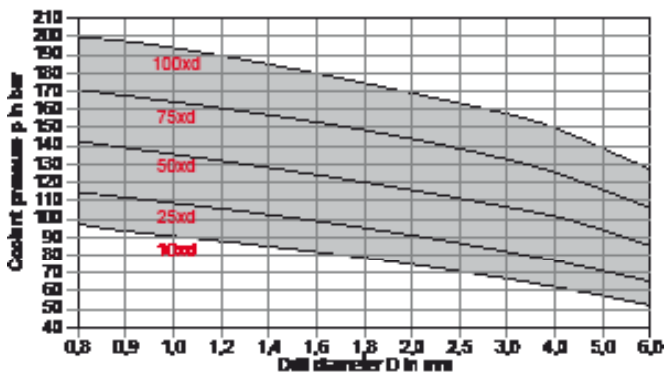
Type 120

Materials group	Structural steel ($< 700\text{N/mm}^2$)	Hardening steel ($< 700\text{N/mm}^2$)	Hardening steel ($< 1100\text{N/mm}^2$)	Heat-treated steel ($< 700\text{N/mm}^2$)	Heat-treated steel ($< 1100\text{N/mm}^2$)	Nitriding steels ($< 1100\text{N/mm}^2$)	Ferritic steel ($< 900\text{N/mm}^2$)
Cutting speed in m/min	70 - 100	80 - 100	70 - 80	70 - 90	55 - 75	55 - 75	60 - 80
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	0,1 - 0,14	0,10 - 0,13	0,10 - 0,14	0,10 - 0,13	0,09 - 0,12	0,10 - 0,14

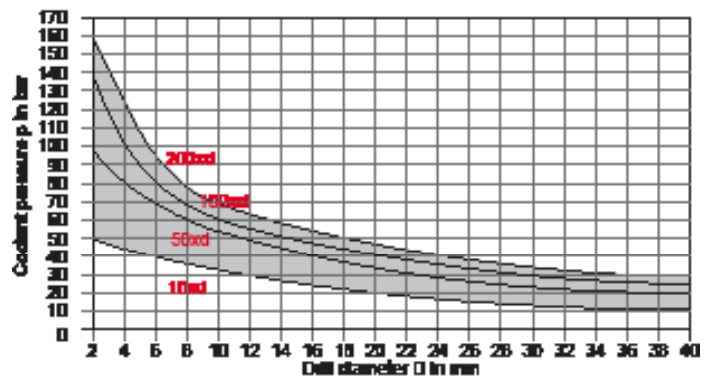
Materials group	Austenitic steel	Heat-resistant steel, tool steel ($< 700\text{N/mm}^2$)	Cast steel ($< 700\text{N/mm}^2$)	Spheroidal graphite iron	Cast iron	Aluminium	Copper Cu-contents <99%
Cutting speed in m/min	60 - 80	50 - 70	60 - 80	65 - 80	70 - 100	100 - 120	120 - 300
Drill-Ø in mm	Feed in mm						
from - to	from - to	from - to	from - to	from - to	from - to	from - to	from - to
12,00 - 17,99	0,07 - 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	0,1 - 0,14	0,12 - 0,15	0,12 - 0,15	0,1 - 0,14	0,08 - 0,12

Required pressure

for Type 110 for deep-hole drilling oil

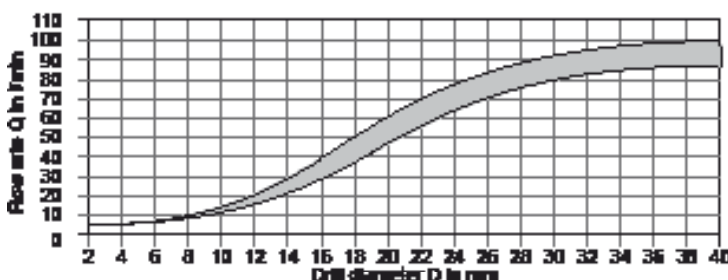


for Type 100 und 120 for deep-hole drilling oil



Important: using emulsion pressures can be reduced by up to 20%

Flow rate



Oil kinematic viscosity

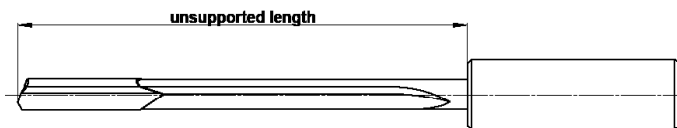
drill-Ø [mm] form - bis	kinematic viscosity at 40°C [mm²/s]
0,800 - 1,500	8 - 10
1,501 - 18,000	10 - 15
18,001 - max	>15

Filtering

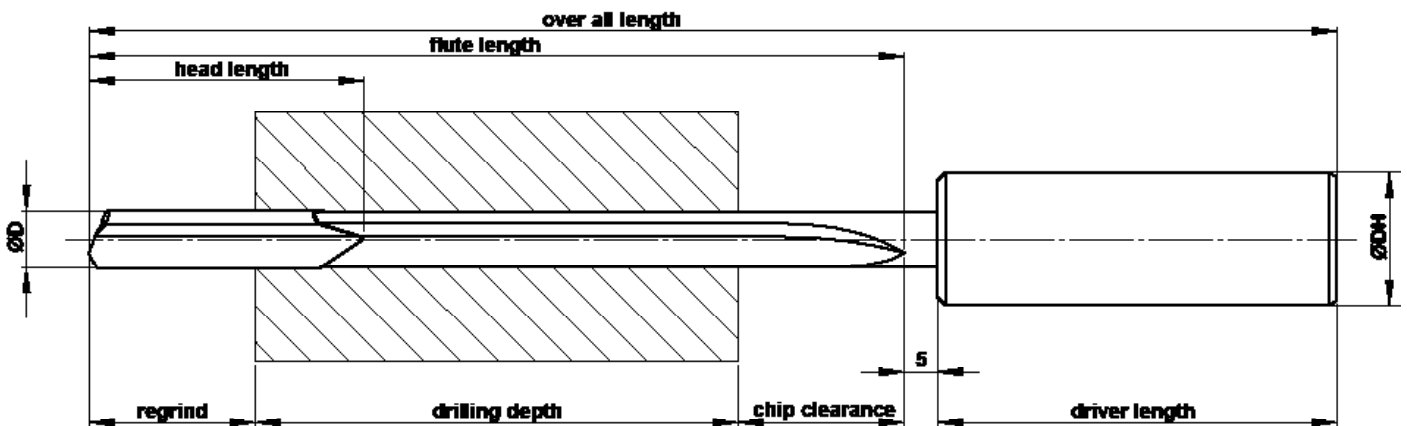
drill-Ø [mm] form - bis	filtering [µm]
0,800 - 2,000	5 - 10
2,001 - max	5 - 20

Unsupported length

Type	unsupported length
100	30 x d - 40 x d
110	70 x d - 100 x d
120	30 x d - 40 x d



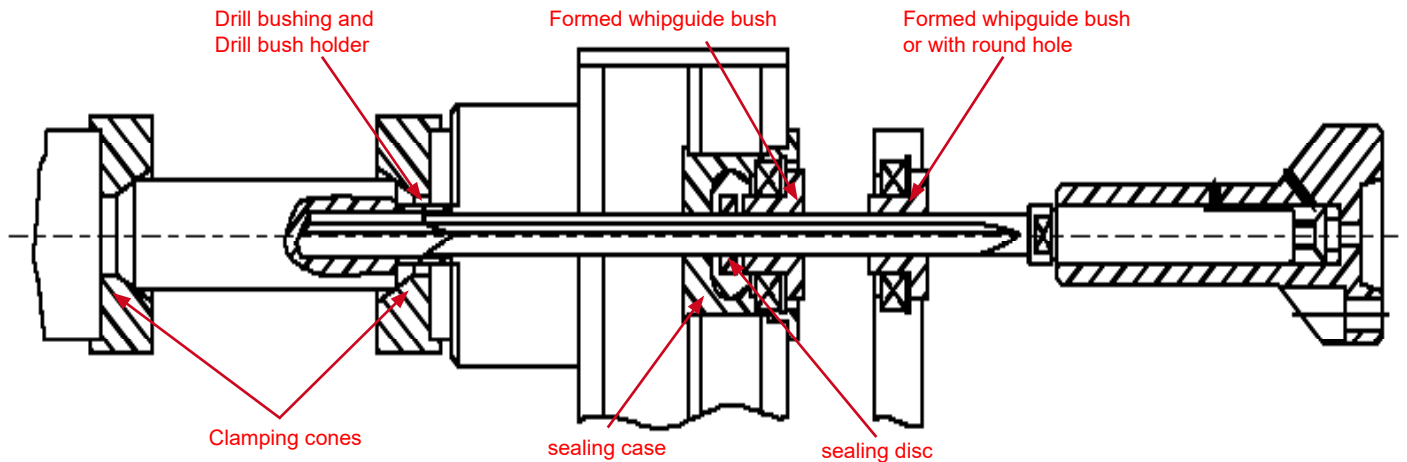
Length calculation of depth on total length



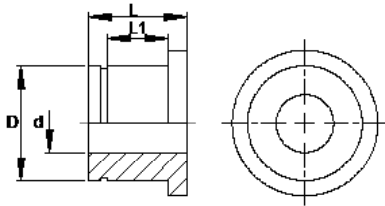
drill-Ø	from - to	from - to	from - to	from - to	from - to	from - to	from - to
	0,90 - 1,89	1,90 - 2,49	2,50 - 3,09	3,10 - 5,09	5,10 - 8,09	8,10 - 18,09	18,1 - max
regrind approx.	12	12	14	15	20	30	30
chip clearance approx.	20	22	25	30	35	55	70

4. Accessories

4.1. Accessories deep hole drilling machines



Whipguide bush

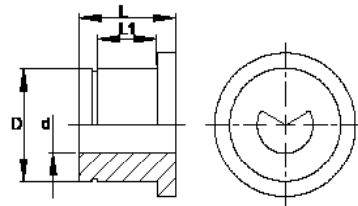


Part-No.	Tool-Ø [mm] form - to	D [mm]	L [mm]	L ₁ [mm]
BZ0120dddd	1,850 - 11,790	20	20	12
BZ0130dddd	1,850 - 25,600	30	26	14
BZ0145dddd	1,850 - 36,690	45	26	16

Ordering note:

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

Formed whipguide bush

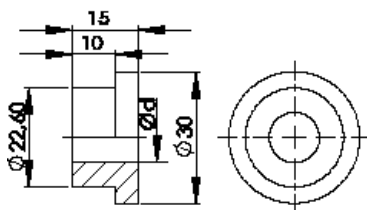


Part-No.	Tool-Ø [mm] form - to	D [mm]	L [mm]	L ₁ [mm]
BZ0220dddd	3,960 - 12,390	20	20	12
BZ0230dddd	5,750 - 22,600	30	26	14
BZ0245dddd	7,800 - 34,699	45	26	16

Ordering note:

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

Whipguide bush

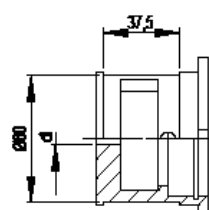


Part-No.	Tool-Ø [mm] form - to	D [mm]	L [mm]
BZ05dddd	1,850 - 12,399	22,6	15

Ordering note:

Drill-Ø 5 mm
--> Part-No.: BZ050475

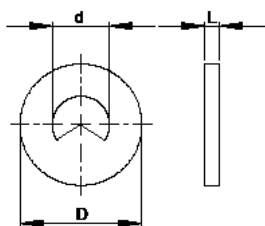
Sealing case



Part-No.	D [mm]	Execution
BZ08601	60	without bearing
BZ08602		with bearing

Please specify tool diameter when ordering

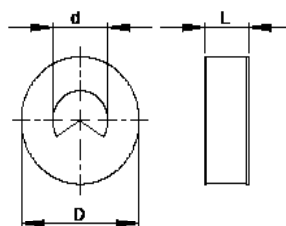
Sealing disc



Part-No.	Tool-Ø [mm] form - 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 - 25,609	40	4
BZ0390dddd	23,610 - 40,999	90	4

Ordering note:
 Outside diameter 32
 Drill-Ø 5 mm
 --> Part-No.: BZ03320500

Special sealing disc

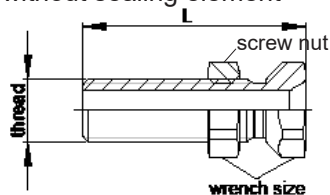


Part-No.	Tool-Ø [mm] form - to	D [mm]	L [mm]
BZ0420dddd	2,900 - 5,249	20	7
BZ0432dddd	5,250 - 16,399	32	11
BZ0440dddd	16,400 - 25,609	40	12
BZ0490dddd	25,610 - 40,999	90	12

Ordering note:
 Drill-Ø 5 mm
 --> Part-No.: BZ04200500

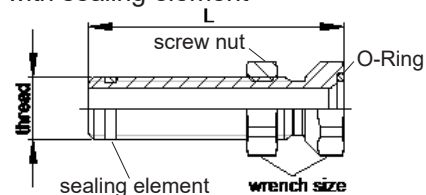
Adjusting screws

without sealing element



Part-No.	Thread	L [mm]	SW [mm]
BZ1006026-0	M6x0,5	26,00	9
BZ1006045-0	M6x0,5	45,00	9
BZ1010038-0	M10x1,0	38,00	13
BZ1016057-0	M16x1,5	57,00	22

with sealing element

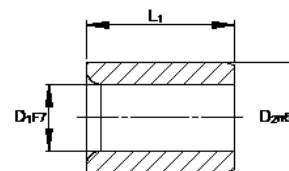


Part-No.	Thread	L [mm]	SW [mm]
BZ1010050-1	M10x1,0	50,00	13
BZ1016065-1	M16x1,5	65,00	22
BZ1024090-1	M24x1,5	90,00	30

Drill bushing

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

Part-No.	Tool-Ø [mm] form - to	d1 [mm]	d2 [mm]	l1 [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



Ordering note:

Drill-Ø 10,00

Steel

--> Artikel-No.: BZ1300015-20ST

Carbide

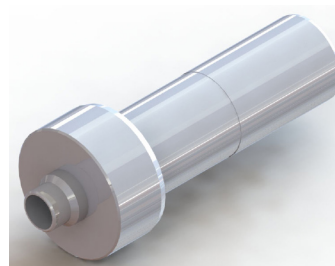
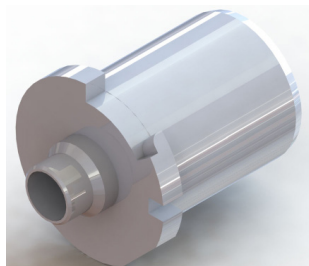
--> Artikel-No.: BZ1300015-20HM

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

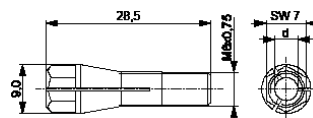
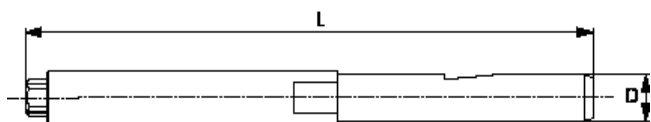
Drill bush holder



Part-No.: BZ11

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

Collet holders for solid carbide single flute drills Collets for solid carbide single flute drills



Part-No.: BZ07

Collet chucks in various dimensions available. Please specify when ordering Dimensions.

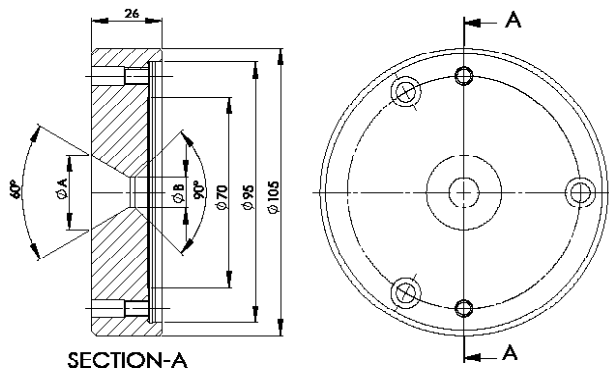
Part-No.	d
BZ0900001	3,0
BZ0900002	4,0

Adaptation for collets Article BZ09

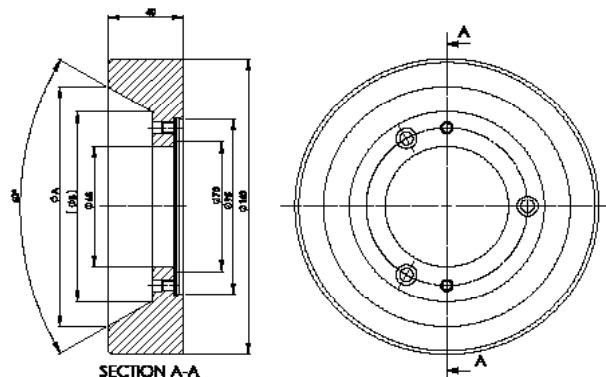
Special versions available from 1,0 mm to 3,9 mm in a pitch of 0,1 mm

Clamping cones

Standard



Special



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

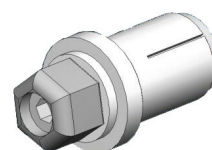
Part-No.	ØA	ØB
BZ1500013-0	41,0	23
BZ1500014-0	43,0	27
BZ1500015-0	53,0	27
BZ1500016-0	65,0	27
BZ1500017-0	75,0	27
BZ1500018-0	82,0	31
BZ1500019-0	93,0	31
BZ1500020-0	104,0	31
BZ1500022-0	115,0	31
BZ1500022-0	126,0	31
BZ1500023-0	132,0	31

Part-No.	ØA	ØB
BZ1500001-1	130	102,86
BZ1500002-1	150	122,86

Hole plug

Part-No.	Hole Diameter [mm]
BZ1400008	8
BZ1400009	9
BZ1400010	10
BZ1400011	11
BZ1400012	12
BZ1400013	13
BZ1400014	14
BZ1400015	15
BZ1400016	16

Part-No.	Hole Diameter [mm]
BZ1400017	17
BZ1400018	18
BZ1400019	19
BZ1400020	20
BZ1400021	21
BZ1400022	22
BZ1400023	23
BZ1400024	24
BZ1400025	25



Can plug and seal holes in the tolerance class H7, up to a maximum pressure of 120 bar.

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

4.2. Accessories machining center

Pilot drill

Pilot drill form 0,5 to 3 mm



without internal cooling: Type 300

Pilot drill from 3 mm



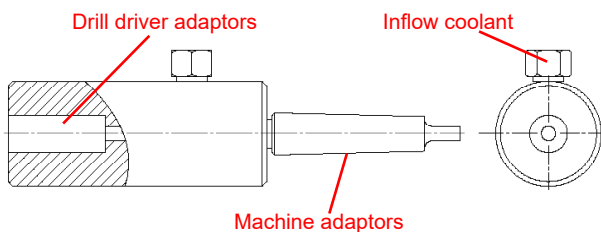
without internal cooling: Type 200
with internal cooling: Type 201

External

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

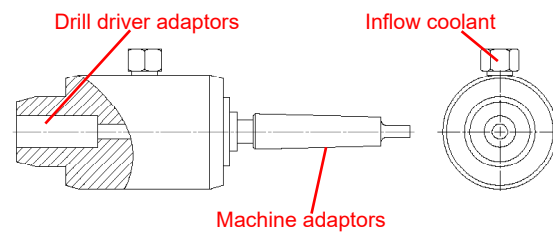
When ordering, please specify the machine adaptors and clamping element (driver).

Execution to 8 bar:



Part-No: BZ160001

Execution to 120 bar:



Part-No.: BZ170001

Minimum lubrication (Atomized Spraymist)

Description:

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

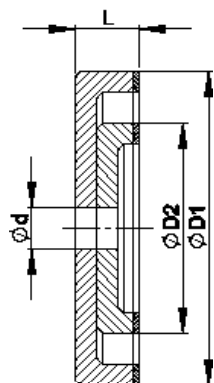
To operate this device, you need only your in-house compressed air system.

Part-No.: BZ120001



4.3. Accessories regrinding

Grinding wheel



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

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 D0,9 mm



Grinding machine

Delivered with

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



5. Blank Form

Inquiry Order No.: _____
 FAX to +49-(0)-7121-83525

Tool type

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

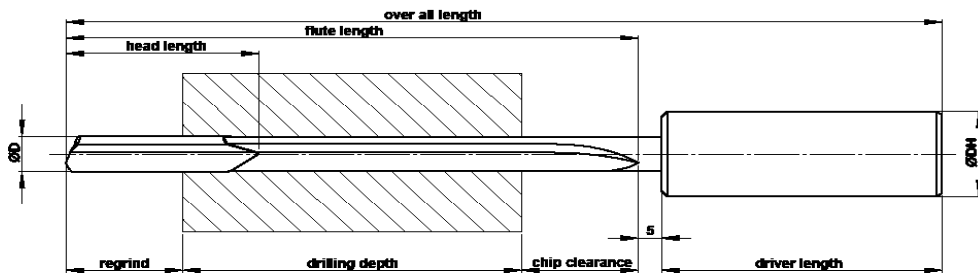
Coating

- Yes Coating Type: _____
- No _____

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 fill in

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

Coolant

- Deep-hole drilling oil
- Emulsion
- Atomized spraymist

Cooling lubricant _____ coolant pressure _____ bar

Quantity

Delivery date

_____ piece(s)

week _____

Customer data

Customer _____

Company Stamp

Address _____

Phone/Fax _____

Contact _____

Date/Signature _____

E-Mail _____



PRÄZISIONSWERKZEUGE

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