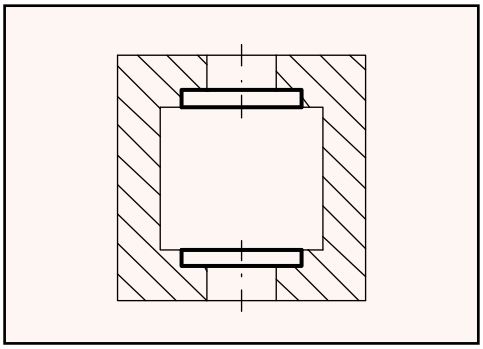
HEULE

GH-Z/E

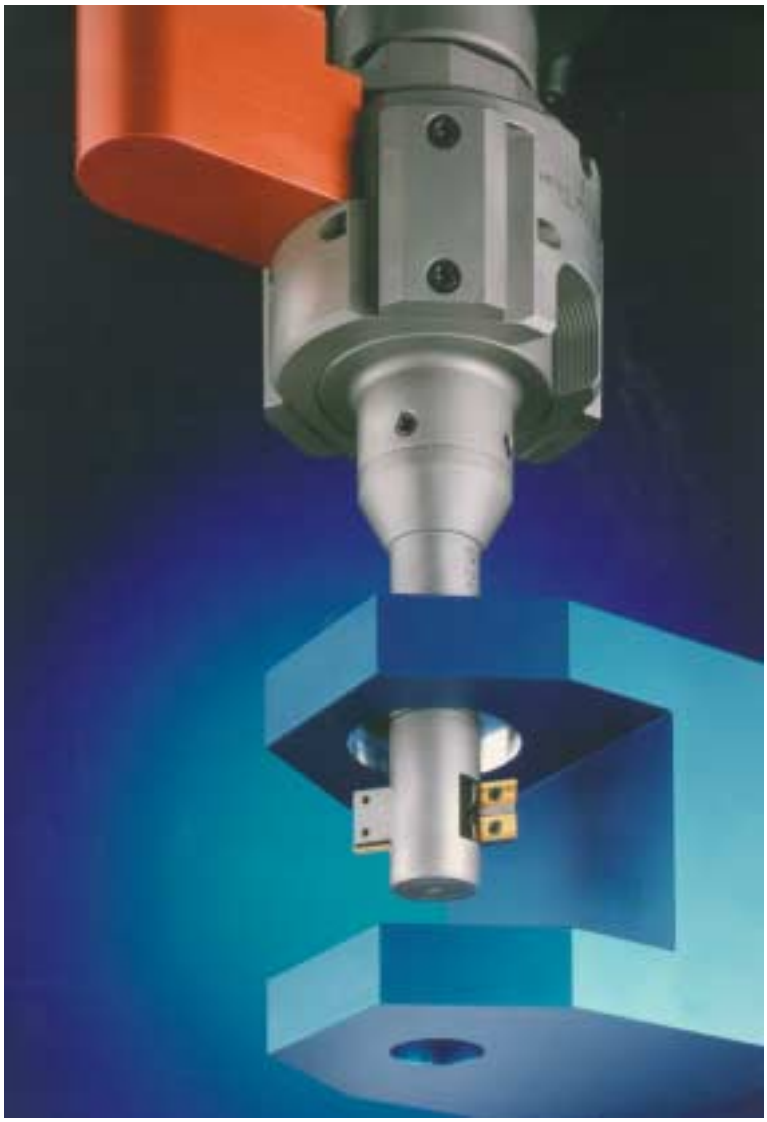
Plan- und Formsenken, vor- und rückwärts in einem Arbeitsgang. Durch Drehrichtungsänderung zwangsgesteuertes Ein- und Ausfahren der Messer.

GH-Z

Spotfacing and formsinking, forward and backward in a single work operation. Positively controlled extension and retraction of blades by changing the sense of spindle retation.



GH-Z/E REVERSER



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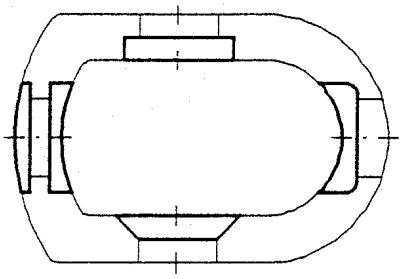
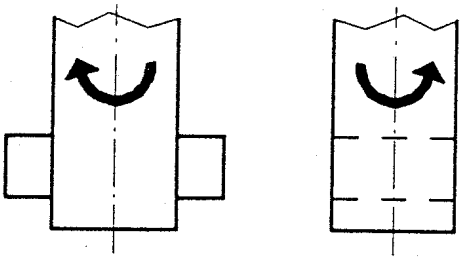
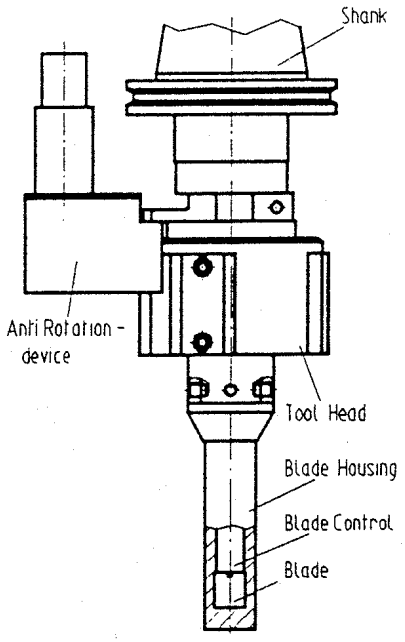
1. Tool Description



GH-Z tools are made to produce **forward** and **reverse spotfaces** as well as **form back counterbores**.



Depending on the direction of rotation of the spindle the blades are either extended (clockwise rotation of the spindle) or retracted into the tool (counter-clockwise rotation of the spindle).



A complete tool consists of the following components:

- Tool Head
- Shank
- Anti-Rotation Device
- Blade Housing
- Blade Control
- Blades / Insert Cartridges, Inserts

HEULE offers five different sizes of tool heads. The bore and countersink diameters determine the size of tool head that has to be used.

The execution of the **shank**, normally a steep taper, as well as the **anti-rotation device** are dependent of the machine tool and have to be adapted individually to your machine.

The **tool head** with shank and anti-rotation device are modular and can be used for different applications according to the working range of the tool head.

Blade housing, **blade control** and **blades** will be produced individually for each application, i.e. these parts have to conform to the bore and countersink diameter as well as to the work piece height.

Upon request GH-Z tools are available with **through tool coolant supply**. The coolant will pass through the steep taper, i.e. through the center of the spindle (not through the anti-rotation device).

4. Standard application range of GH-Z Tools

4.1. General Explanation

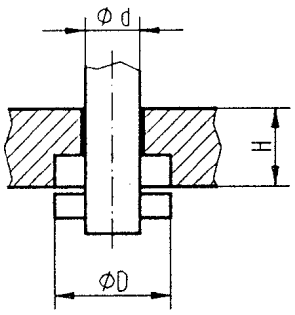
HEULE offers the GH-Z tool range with five different types of tool heads.

The choice of the tool head is basically depending on the bore diameter.

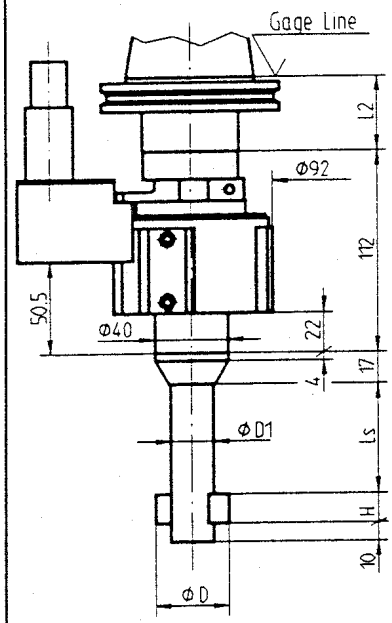
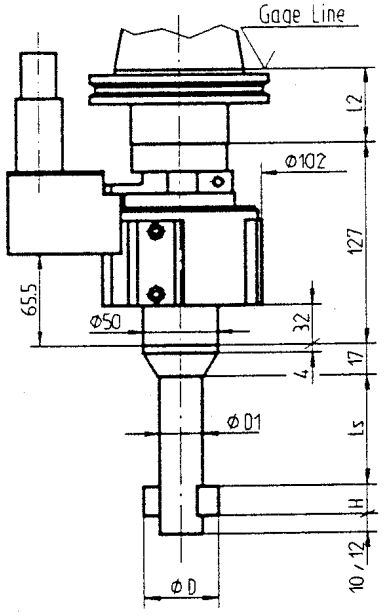
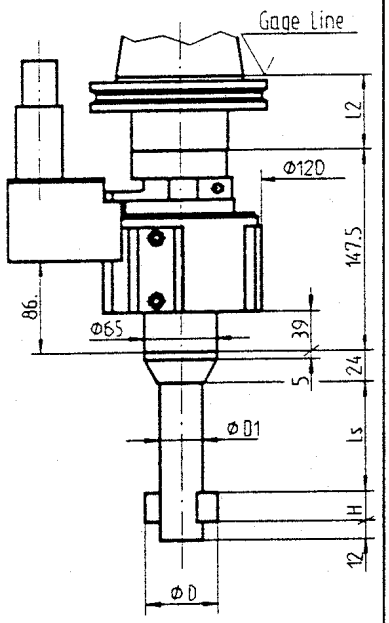
A large tool head (for example GH-Z 50) can also be used for small bores without any problems. What we do not recommend however is to use the small tool heads for machining large bores. (Due to technical reasons it is in most cases not possible to use the small tool heads above their standard range.)

From the tables on the following pages you can learn the standard application ranges of our GH-Z tools. In case that your particular application cannot be covered with these standard ranges, we will be pleased to check your inquiry individually.

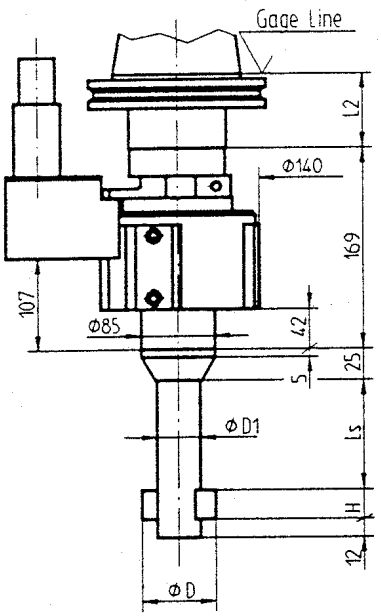
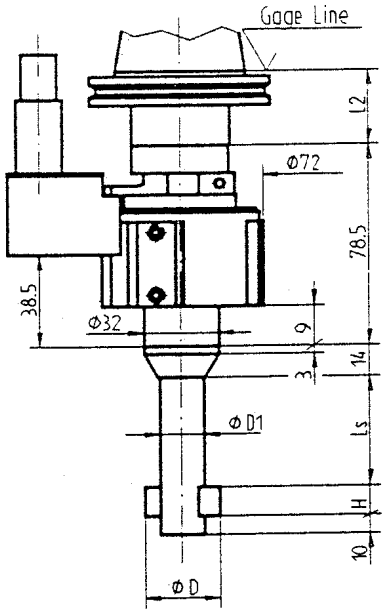
4.2. General reference



d: bore diameter
D: countersink diameter
H: workpiece height

	GH-Z 20	GH-Z 30	GH-Z 50
d *	dmin = 8 mm dmax = 23 mm	dmin = 20 mm dmax = 33 mm	dmin = 30 mm dmax = 60 mm
D **	D <= 2 * d – 1 mm	D <= 2 * d – 1 mm	D <= 2 * d – 2 mm
shank	straight shank Ø 25 mm / 1"	all current steep tapers straight shank Ø 25 mm or 1" other shanks on request	straight shank Ø 32 mm or 1½"
			
D1	blade housing diameter: dependent on the bore diameter standard value: D1 = d – 0.2 mm		
Ls *	working length: dependent on the work piece Ls >= H + 5 mm		
	Standard: Ls=60/100/150mm Lsmax: 250 mm*	**Standard**: Ls=60/100/150mm Lsmax: 250 mm*	**Standard**: Ls=60/100/150mm Lsmax: 250 mm*
Hm	blade height: dependent on the application H = 8 – 18 mm		
L2	dependent on steep taper, i.e. shank		

Data mentioned below are standard values.
HEULE is always prepared to examine applications individually which differ from the standard range.

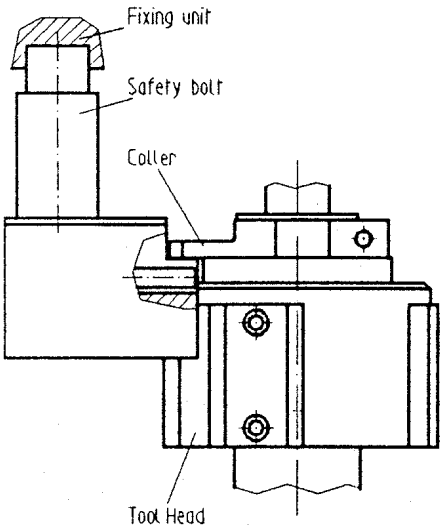
	GH-Z 70	GH-Z 10 ***
d *	d_{min} = 50 mm d_{max} = 80 mm	d_{min} = 8 mm d_{max} = 13 mm
D **	D <= 2 * d – 2 mm	D <= 2 * d – 1 mm
shank	all current steep tapers straight shank Ø 25 mm / 1½" | straight shank Ø 25 mm or 1" other shanks on request	
		
D1	blade housing diameter: dependent on the bore diameter standard value: D1 = d – 0.2 mm	
Ls *	working length: dependent on the work piece Ls >= H + 5 mm	
	Standard: Ls = 120/180mm L_{smax}: 250 mm*	**Standard**: Ls = 60mm L_{smax}: 100 mm*
Hm	blade height: dependent on the application	
	H = 8 – 18 mm	H = 6–10 mm
L2	dependent on the steep taper, i.e. shank	

* Standard application range, others than standards upon request.

** By means of a special arrangement of the blades it is also possible to offer tools with countersink diameters up to 2.2 * d.

*** The tool head GH-Z 10 is used for applications with limited clearance and restrictions in terms of weight. In any other case it is recommended to use the tool head GH-Z 20.

5. Anti-Rotation Device

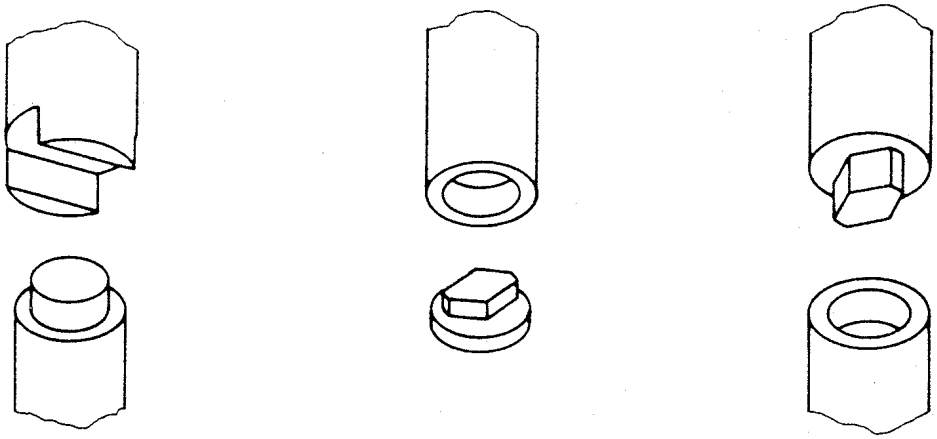


The anti-rotation device secures the tool head from twisting, i.e. the anti-rotation device takes over the torque resulting from the brake when changing the direction of rotation (similar as with tapping heads).

If the GH-Z tool is used on a CNC machine or whether the tool will be changed by hand we will provide you with the appropriate anti-rotation device in either case.

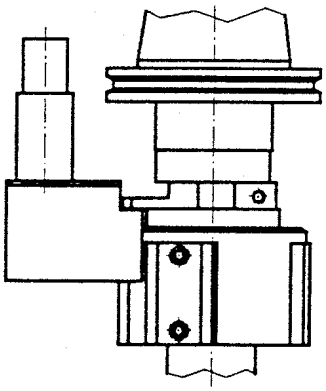
For a **CNC application** you require an anti-rotation device whose position with regard to the tool remains fixed during the tool change as well as when placed in the tool magazine.

If the **tool will be changed manually** a simple torque support is sufficiant. Such a simple support can either be produced by the customer himself or be supplied by HEULE:



The safety bolt of the anti-rotation device has to be positioned to any recess (bore) or to a bolt, i.e. screw head of the spindle nose (spindle sleeve) of the machine. Positioning facilities for coolant adapter or multiple-spindle heads are suitable anchorage points.
HEULE will design the anti-rotation device according to the customer's data.

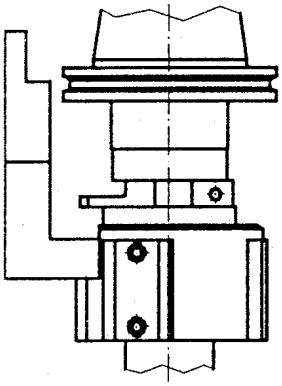
5.1. CNC Anti-Rotation Device



The anti-rotation device is designed for the **automatic tool change** and will be adjusted according to the machine tool.

The necessary data has to be made available to HEULE by the customer (see data sheet "anti-rotation device").

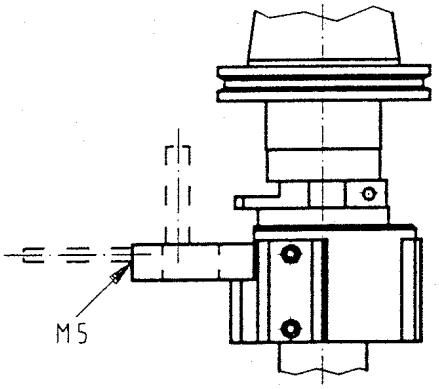
5.2. Fixed Support



The tool will be changed **manually** with a fix support on the machine. In this case the anti-rotation device will also be adjusted to the machine tool.

The necessary data has to be made available to HEULE by the customer (see data sheet "anti-rotation device").

5.3. Simple holding device



The tool will be changed **manually** with a fix support on the machine.

HEULE supplies a stop arm to which either a bar with an M5 thread can be screwed in on the face or a bolt with a slot (width 12mm) can be fastened.

With this solution there are no restrictions regarding the use of the tool, i.e. the customer will be able to use the tool universally on different machines.

5.4. The customer makes his own support

The support will be fastened to the tool head with two M5 screws.

Data sheet for GH-Z/E tools

Customer:

_____

Address:

_____

_____

Date: _____

Contact:

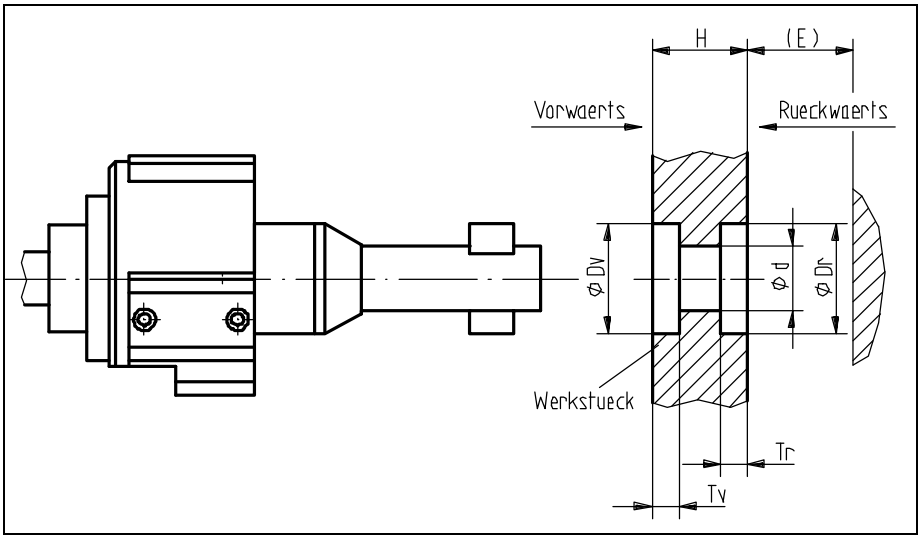
_____

Department:

_____

Telephone: _____

Telefax: _____



Work piece:

❑ Work piece drawing enclosed

Part name: _____

Bore diameter **d:**_____ mm Tolerance: _____
(prior to the countersink operation)

Countersink Ø **Dv:**_____ mm Countersink-Ø **Dr:** _____ mm

Tolerance:_____ Tolerance: _____

Countersink depth **Tv:**_____ mm Countersink depth **Tr:** _____ mm

Work piece height **H:**_____ mm Limits **E:** _____ mm

Material: _____

Machining: ❑ backwards ❑ forward and backwards

❑ spotface ❑ form countersink (enclose drawing)

Tool:

Blade material: ❑ HSS ❑ Carbide ❑ HSS-TiN

Through coolant: ❑ no ❑ yes

❑ through taper (Ex. DIN69871 B)

❑ through spindle centre

Tool-shank: _____

In case you need anti-rotation device, please fill in the necssary data as per attached data sheet

Remarks: _____

_____

Represented by:

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Data sheet for anti-rotation devices

Customer:

_____

Address:

_____

_____

Date: _____

Contact:

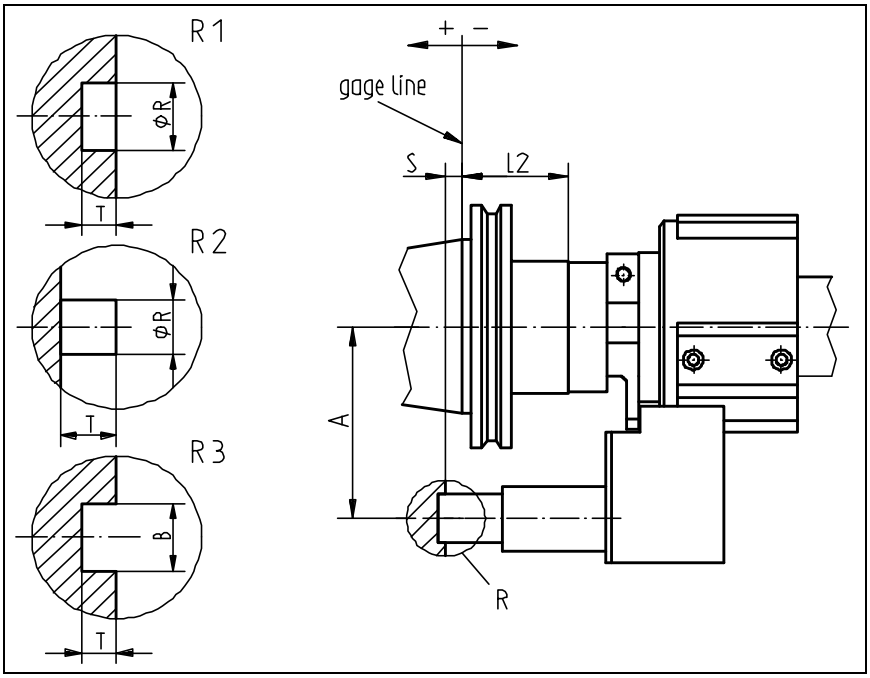
_____

Department:

_____

Telephone: _____

Telefax: _____



Execution:

- ❑ automatic tool change
- ❑ manual tool change

A: Distance spindle axis - fixing unit axis A: _____ mm

S: Distance gage line - fixing unit S: _____ mm

L2: Distance gage line- tool stop L2: _____ mm

R: Shape of the fixing unit

Please fill in the necessary data for the required type or enclose the drawing of the spindle nose.

R1:	**Bore**	diameter	R: _____ mm
		depth	T: _____ mm
R2:	**Bolt**	diameter	R: _____ mm
		height	T: _____ mm
R3:	**Slot**	width	B: _____ mm
		depth	T: _____ mm

❑ drawing of the spindle nose enclosed

Machine:

Machine type: _____

Tool shank: _____

Spindle feed only:

- ❑ Spindle housing
- ❑ table feed
- ❑ spindle feed only

Remarks: _____

_____

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