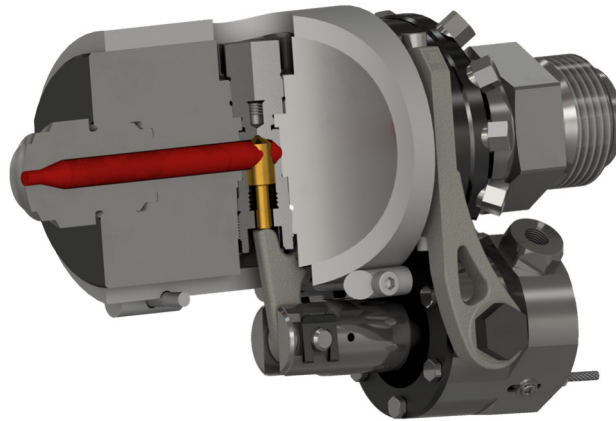


## Machine bolt shut-off nozzle type BHP pneumatically or hydraulically controlled



### Applications:

Thermoplastics (not applicable for PVC)

### Shut-off mechanism:

Bolt shut-off with integrated 2-way actuator  
pneumatically or hydraulically operated

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## Technical description

The pneumatically or hydraulically actuated machine bolt shut-off nozzles type BHP are used in processing of thermoplastics.

With the BHP nozzle Herzog has designed a system which allows a single straight-through melt flow channel. Therefore a much larger flow channel is possible which results in low pressure drop. With this single channel principle the so called "Memory effect" can be avoided.

Purging and colour changes can be achieved in a very short time (similar to an open nozzle).

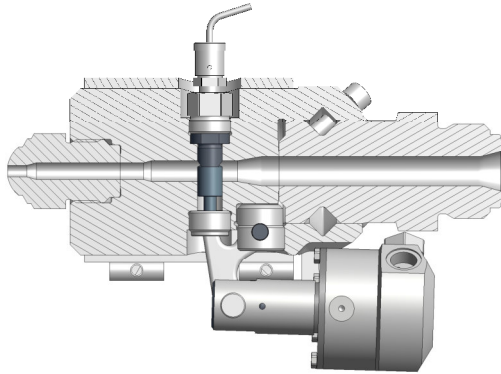
Finds application in: high speed - high through-put applications, sheer sensitive materials, high viscosity materials. Ideal for packaging, automotive, white goods and medicinal.

Operation: The assembly integrated actuator (pneumatically or hydraulically activated) controls a bolt which is located at a 90° angle to the melt stream, via a lever mechanism. The melt flow is therefore process independently separated. The bolt mechanism is constructed in such a way, that with over-pressure an automatic opening of the nozzle is ensured. In contrast to a needle shut-off system, the separation takes place further away from the mold. For some applications this may not be suitable due to potential residual material after the shut-off mechanism.

Modules for filters, mixers and GAIM-applications broaden the range of shut-off nozzle products.

### Note:

Values and measurements in this documentation refer to standard applications.



### Highlights:

- Excellent color change properties
- Operating pressure: 3000bar at 400°C
- Proven shut-off with high-speed units
- Robust, reliable separation
- Can be adapted to the mold with existing open nozzle
- Compact, interchangeable design

## Advantages of bolt shut-off type BHP

### Supported process control:

- Actuator piston position sensors (indicates if nozzle is "open" or "closed").

### Productivity factors:

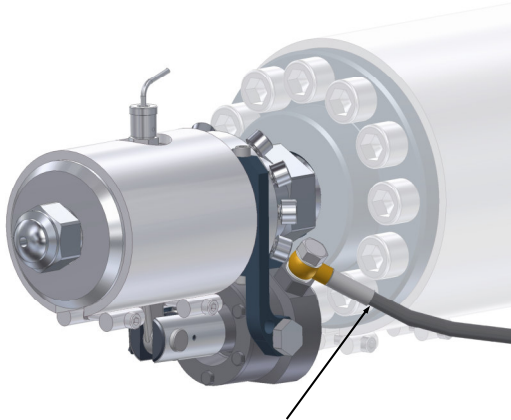
- Shorter cycle times - increase in productivity
- Increased process reliability and repeatability
- Usability with increased back pressure - improved homogenization
- Add-on capability (on tool side)

### Options:

- Filter module
- Mixer
- GIT
- Process monitoring with piston position sensors on the actuator

## What speaks for Herzog

- Nozzle activity is the core business
- Many years market presence
- Design and assemblies matching today's requirements
- Development for special applications
- Fast delivery
- Service performance



## Integrated Actuator

Specially manufactured two-way piston cylinders with temperature resistant seals (up to 180°C) are applied for the pneumatic and hydraulic actuators. The actuator together with the nozzle assembly forms a compact unit. The cylinders are operated from input data on the machine control unit.

### Advantages on an integrated actuator:

- No installation errors
- Adjustments such as; stroke, force, etc. on the control unit are eliminated
- No alignment between nozzle and cylinder is required

### Control cylinder construction (acc. to usual energy sources):

- Pneumatic: 5 - 10 bar
- Hydraulic: 40 - 70 bar

### Water cooling on the hydraulic cylinder

Heat conduction from the nozzle warms the cylinder. To ensure the hydraulic oil does not degenerate, the cylinder temperature should remain between 20 - 60°C.

### Cylinder supply:

Cylinder supply length and cross-section can influence the speed of the shut-off mechanism!

### Important: Use a flexible cylinder supply!

- Air connection G1/8"
- Oil connection G1/4"
- Water connection G1/8"

(See **Optional Extras, Flexible Actuator Supply**)

## Machine-side actuator

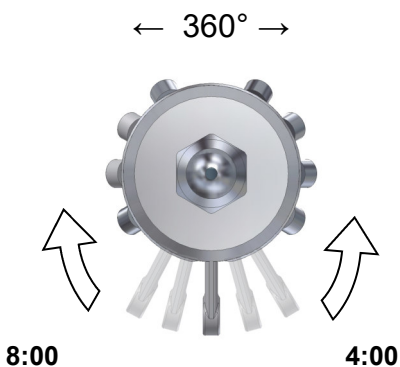
If a machine-side actuator is to be applied, the leverage installation and connection (range, force and alignment) with the nozzle must be carefully carried out. For a smooth, trouble-free operation, the following requirements must be met:

### Two-way actuator:

- Max. force on lever: **BHP0 = 800N, BHP1 = 900N, BHP2 = 4000N**
- Min. cylinder range: **BHP0 = 18mm, BHP1 = 20mm, BHP2 = 40mm**

## Assembly alignment

The actuator position is rotational within 360°. Proven and tested between 4 and 8 o'clock.

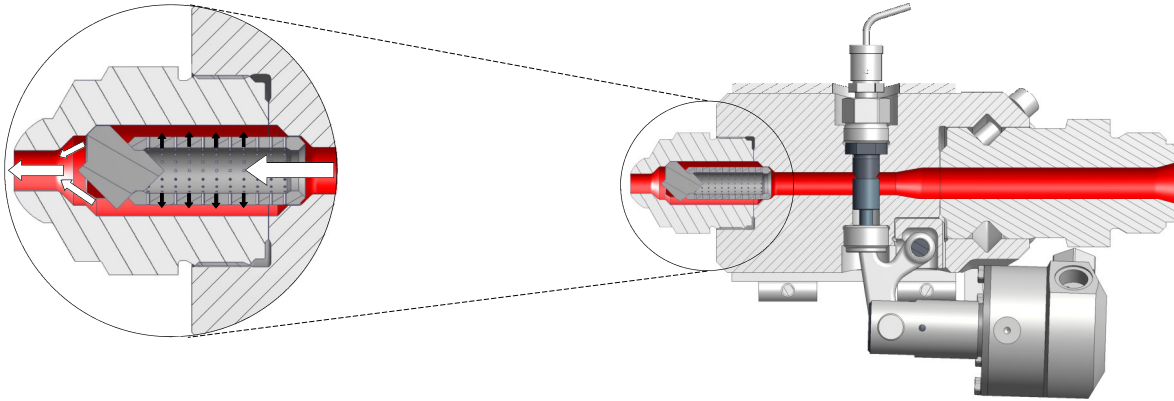


## Optional Extras

### Filter → preventive strategy

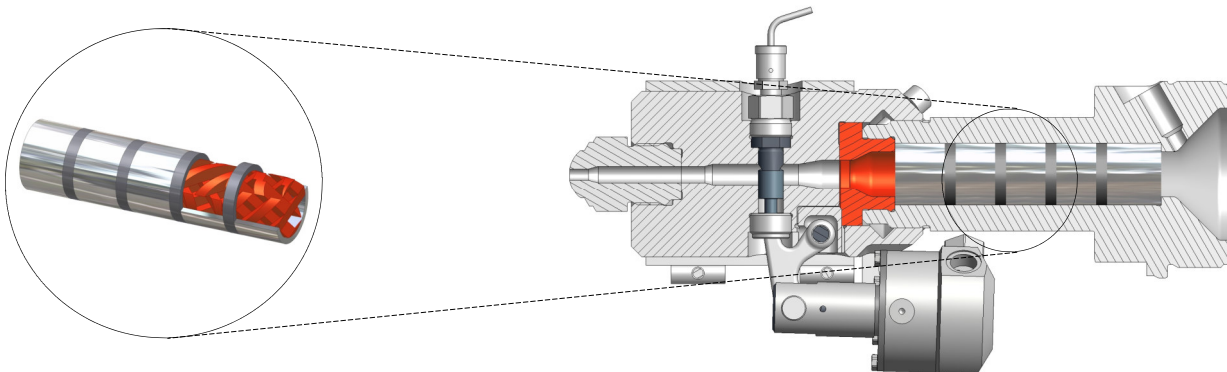
Keep gates in hot runners free of foreign bodies or filter out unwanted fragments when using re-grounded material. We offer a low pressure drop screen filter. Standard filter hole sizes are  $\varnothing 0.6\text{mm}$  and  $\varnothing 0.9\text{mm}$ . Other sizes available on request.

More information under **Optional Extras, Melt filter**



### Mixer → improved quality on injection molded parts

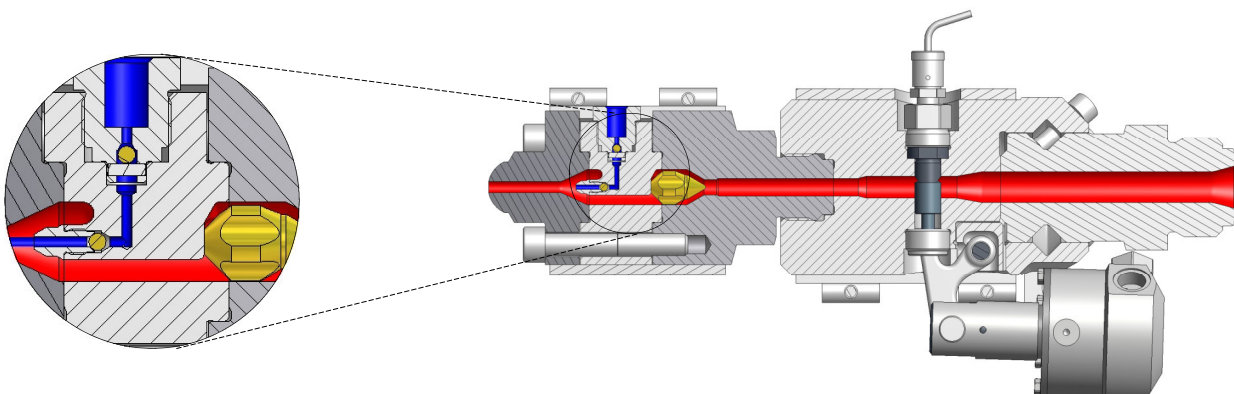
A homogenized melt (in colour and temperature) reduces the reject rate and produces a considerable improvement in the quality of the molded part. The installation of the mixer takes place either before or after the nozzle. We use a static mixer.



### GIT (Gas Injection Technology) → cycle time, quality on injection molded parts

Gas is injected through the gate core. To use the nozzle for the GIT process, the tip is changed. A special valve closes the gas feed area to make it completely polymer-sealed.

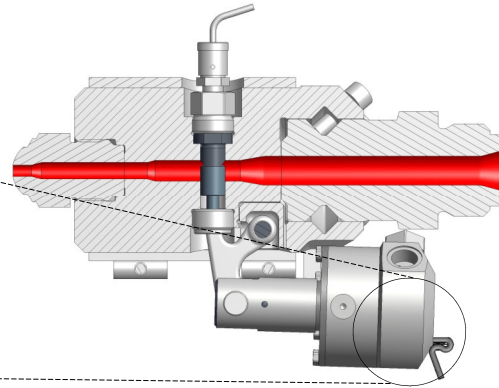
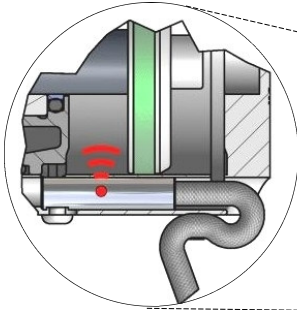
More information under **Open machine nozzles, type GM**



## Position sensor for actuator → process control

A temperature resistant cylinder houses the sensor which detects the position of the piston ensuring that the nozzle is in an "open" or "closed" position.

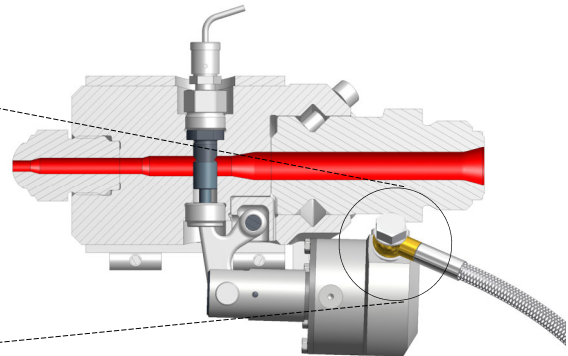
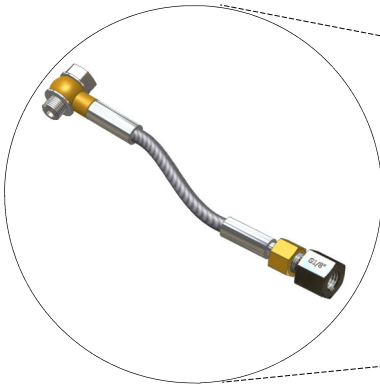
More information under **Optional Extras, Piston position sensor type SHE**



## Flexible actuator feed → supports actuator performance

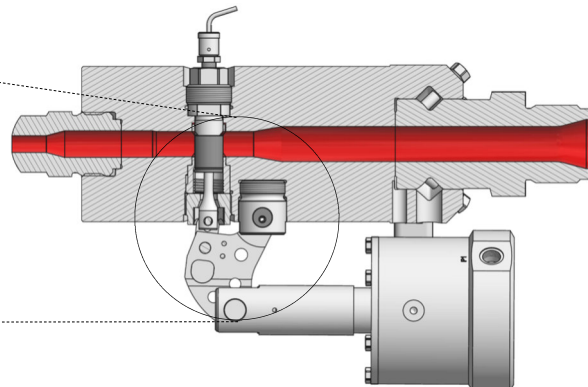
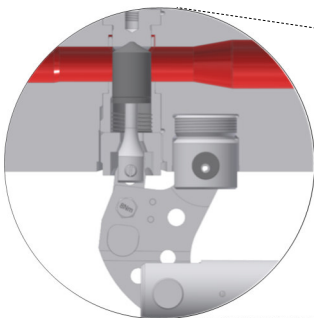
Our pneumatic and hydraulic actuators rotate slightly and system-dependently during the piston stroke. If this pivotal movement is restricted, the piston rod and seals will wear out in a short period of time. Therefore it is important to use flexible piping.

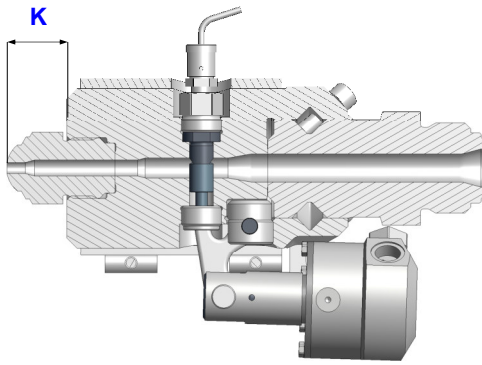
More information under **Optional Extras, Flexible actuator feed**



## Retractable bolt mechanism → active opening (*BHP1 | BHP2 size*)

The standard bolt system is not directly connected to the actuator. Once the actuator is opened melt pressure (up to 50bar) ensures that the bolt moves into its sealed open position. For certain applications where no melt pressure exists before injection (some decompression phases achieve this) the bolt may remain in the closed position. Therefore to ensure it is in the open sealed position it must be retracted by the lever.



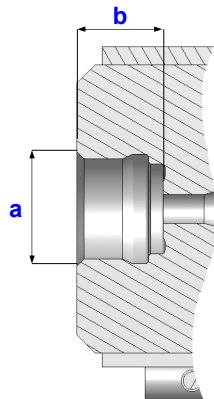
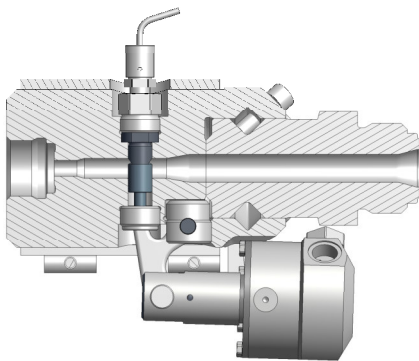


### Tip types

| Tip standard dimensions (mm) | BHP0            | BHP1             | BHP2             |
|------------------------------|-----------------|------------------|------------------|
| Thread                       | M30 x 2         | M30 x 2          | M45 x 3          |
| Thread length                | 24              | 24               | 28               |
| Inlet $\varnothing$          | $\varnothing 6$ | $\varnothing 10$ | $\varnothing 19$ |
| <b>K</b> (length)            | 30              | 30               | 50               |

Other lengths are custom manufactured and available on request.  
**Note:** Extended tip lengths require additional heating with separate regulation.

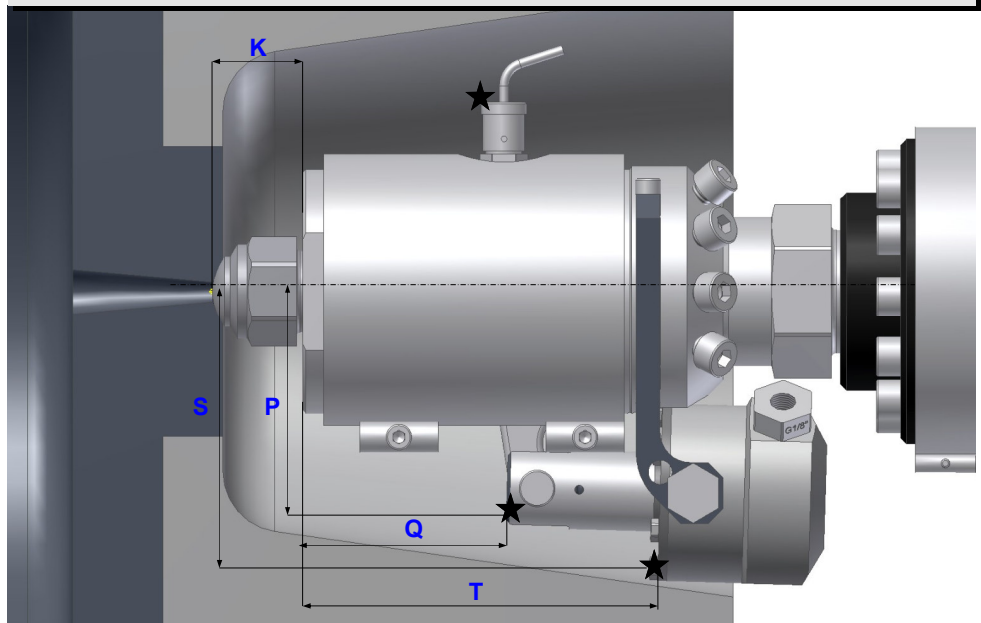
**Optional variant:** without tip, supplied by customer



| Max. dimensions (mm)     | BHP0             | BHP1             | BHP2             |
|--------------------------|------------------|------------------|------------------|
| <b>a</b> Screw in thread | $\varnothing 40$ | $\varnothing 60$ | $\varnothing 80$ |
| <b>b</b> Depth           | 30               | 35               | 60               |

★ The stars in the graphic represent exposed areas of the nozzle. The required area should be checked in the machine platen.  
 In certain circumstances a longer tip can avoid collision. In this case the tip dimension **K** would be adjusted.  
 For standard sizes see **Tip types**.

### Risk of collision by diving into the mold

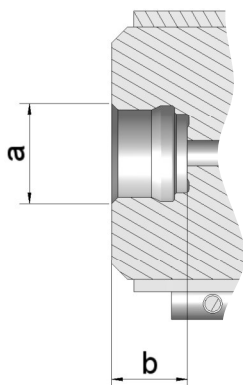


| Dimension (mm) | BHP 0  | BHP 1 | BHP 2 |
|----------------|--|-------|-------|
| <b>P</b>       | 71   | 77    | 132   |
| <b>Q</b>       | 57   | 68    | 93    |
| <b>S</b>       | 84   | 96    | 175   |
| <b>T</b>       | 87   | 115   | 201   |
| <b>K</b>       | Tip length variable to immersion depth (see <b>Tip types</b> ) |       |       |

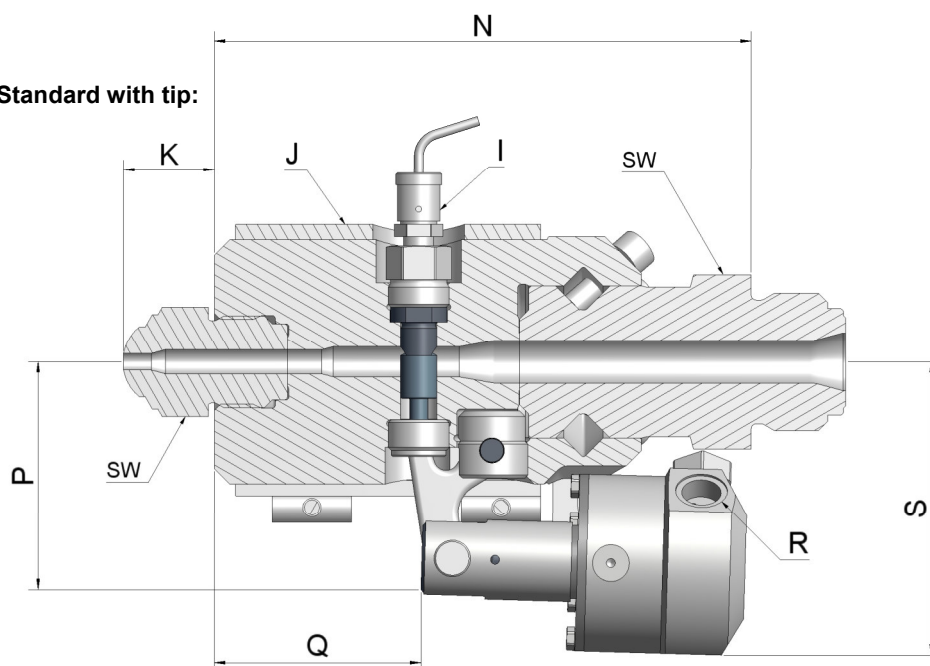
Data sheet - machine shut-off nozzle, type BHP, pneumatically / hydraulically controlled

| Operating Data   | BHP0              | BHP1     | BHP2      |
|--|-------------------|----------|-----------|
| max. injection rate cm <sup>3</sup> / s based on Polystyrol (PS) | 500               | 3500     | 5000      |
| approx. screw diameter (mm)                                      | Up to 50          | 50 - 120 | 120 - 200 |
| flow channel cm <sup>3</sup>                                     | 10                | 30       | 360       |
| max. contact force (kN)  | 120               | 160      | 260       |
| smallest nozzle orifice (mm) <b>M</b> at max. injection rate     | Ø4                | Ø7       | Ø10       |
| max. back pressure   | 400 bar           | 200 bar  | 400 bar   |
| max. injection pressure / temperature                            | 3000 bar at 400°C |          |           |

**Optional variant without tip:**  
Customer specific installation thread



**Standard with tip:**



Standard dimensions (mm)

| Key Description  | BHP0            | BHP1          | BHP2           |
|--|-----------------|---------------|----------------|
| K tip length (other sizes on request)                      | 30              | 30            | 50             |
| N body length  | 138             | 176           | 314            |
| I temperature sensor                                       | type J (FeCuNi) |               |                |
| J heater band (custom made)                                | Ø60*75 600W     | Ø80*100 1250W | Ø110*200 2000W |
| P  | 71              | 77            | 132            |
| Q  | 57              | 68            | 93             |
| R pneumatic  | G1/8"           |               |                |
| R hydraulic / water cooling                                | G1/4" / G1/8"   |               |                |
| S  | 84              | 96            | 175            |
| <b>Optional variant - customer specific tip dimensions</b> |                 |               |                |
| a max. thread Ø  | 40              | 60            | 80             |
| b max. thread length incl. centering                       | 30              | 35            | 60             |

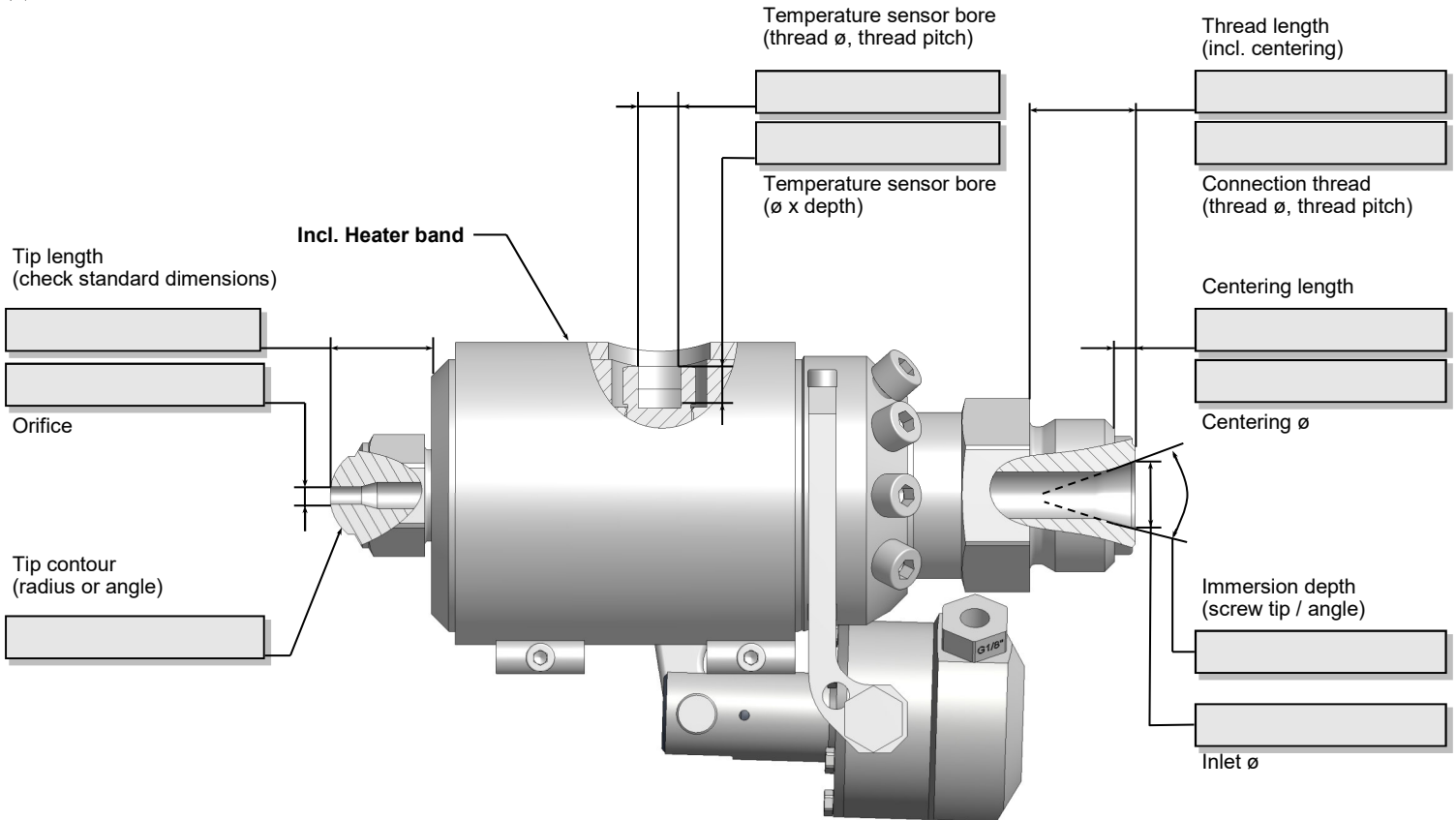
Technical modifications reserved. For orders or enquiries please fill out the **Dimension sheet**.

|                             |  |          |  |
|-----------------------------|--|----------|--|
| Dimension Sheet for enquiry |  | or order | Machine shut-off nozzle type BHP, pneu. / hydr. operated |
|-----------------------------|--|----------|--|

|             |
|-------------|
| Company:    |
| Street:     |
| City / Zip: |
| Land:       |

|                 |
|-----------------|
| Contact person: |
| Tel.:           |
| Fax:            |
| E-Mail:         |

★ Standard dimensions, see **Datasheet**. Measurements in



### Nozzle size

- BHP0** (up to 500 cm<sup>3</sup>/s with PS)
- BHP1** (up to 3500 cm<sup>3</sup>/s with PS)
- BHP2** (up to 5000 cm<sup>3</sup>/s with PS)

### Actuation

- pneumatic (integrated)
- hydraulic (integrated)
- none (machine-side)

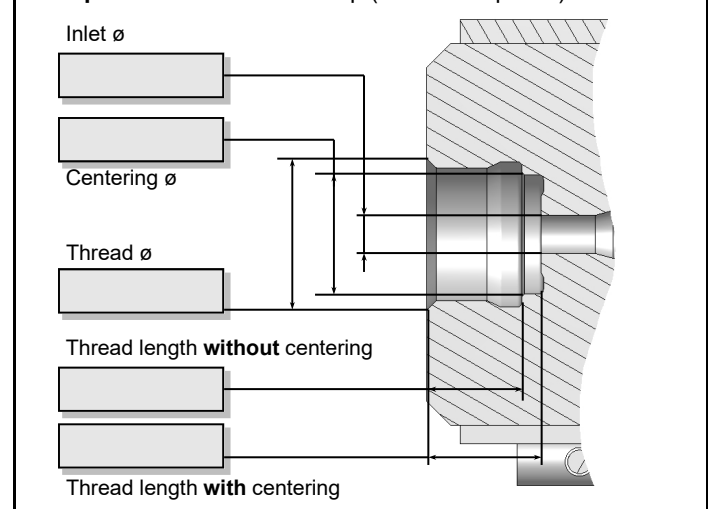
### Screw Ø

### Processed material

### Options

|   |     |                          |
|---|-----|--------------------------|
| Temperature sensor - type J(FeCuNi) Cable length 2m | Yes | <input type="checkbox"/> |
| Filter (standard hole size ø0.6mm or ø0.9mm)        | Yes | <input type="checkbox"/> |
| Mixer   | Yes | <input type="checkbox"/> |
| Gas injection tip, type GM                          | Yes | <input type="checkbox"/> |
| Piston position sensors, type SHE                   | Yes | <input type="checkbox"/> |
| Flexible actuator feed pipes                        | Yes | <input type="checkbox"/> |
| Retractable bolt mechanism (BHP2 size only)         | Yes | <input type="checkbox"/> |

### Optional variant without tip (customer specific)



### Customer information:

We need additional information for requirements which vary from our standard range e.g. drawing sample. Our customer services will be pleased to help you.





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