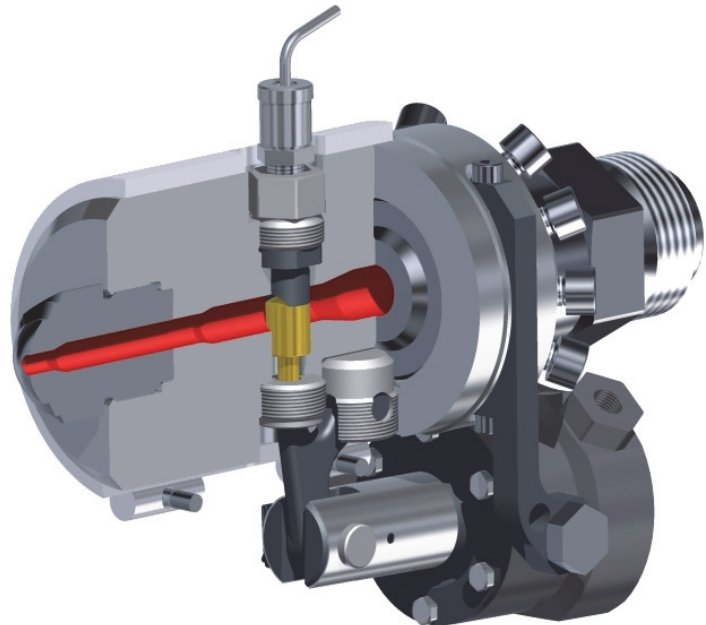


Machine bolt shut-off nozzle type BHP pneumatically or hydraulically controlled



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.

Nozzle highlights included: Cycle time reduction, melt-stream shut-off with retracted injection unit while dosing. 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).

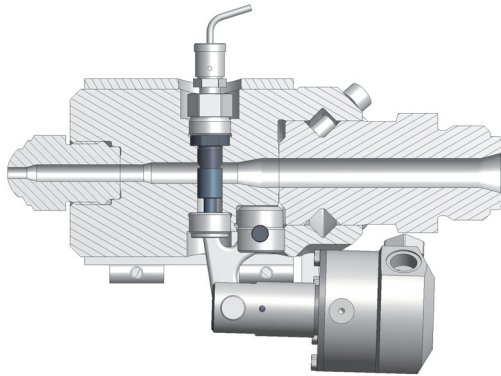
Finds application in: high speed - high through-put applications, sheer sensitive materials, high viscosity materials. Ideal for packaging, automotive, white goods and medicinal.

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 injection.

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

Prevents:

- Material leakage when dosing with a retracted injection unit

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)

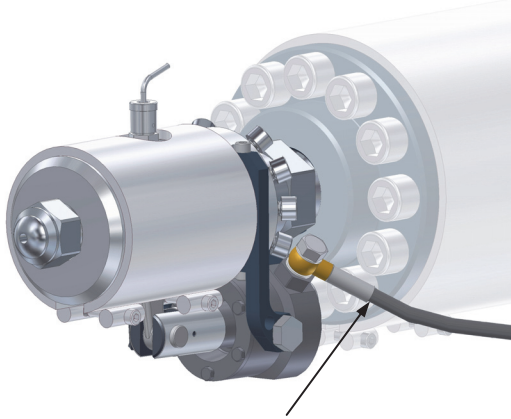
Options:

- 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

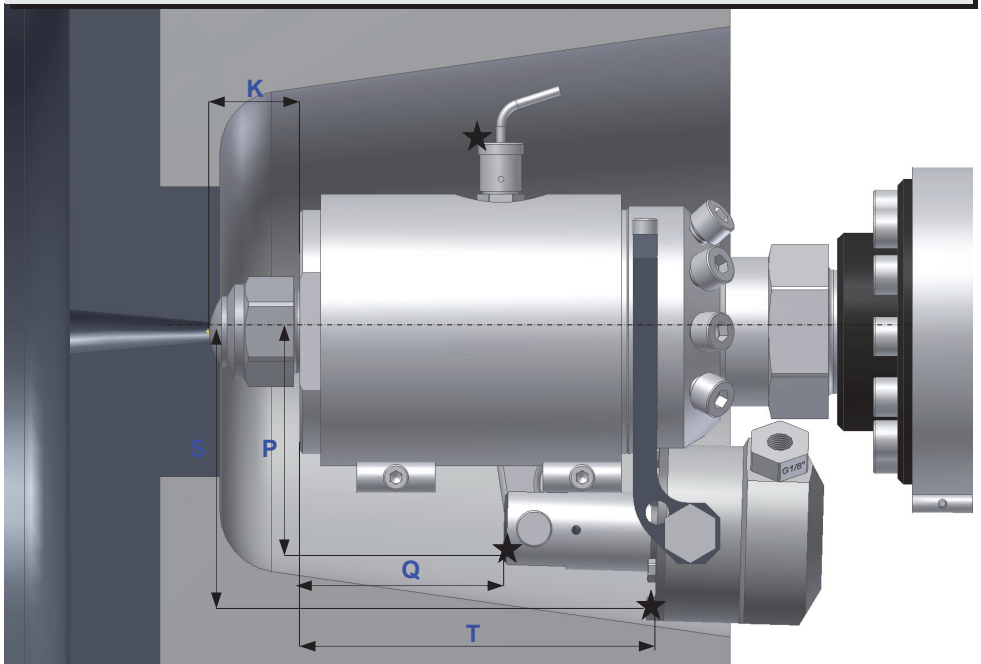
If a machine-side actuator is to be applied, the leverage installation and connection (range, force and alignment) with the nozzle must be carefully carried out.

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**

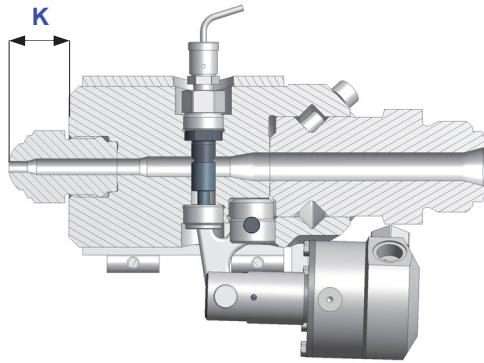
Risk of collision by diving into the mold



In certain circumstances a longer tip can ensure the collision avoidance. In this case the tip dimension **K** would be adjusted. For standard sizes see **Tip types**.

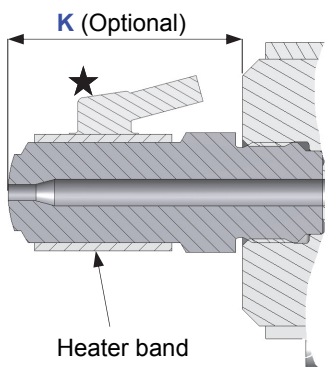
★ The stars in the graphic represent exposed areas of the nozzle. The required area should be checked in the machine plate.

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



Tip types

Tip dimensions	Standard dimensions (mm) BHP0 + BHP1	Standard dimensions (mm) BHP2
thread	M30 x 2	M45 x 3
Thread length	24	28
Orifice	BHP0 Ø6 / BHP1 Ø10	Ø18
K -dimension in mm (other dimensions on request)	30	50



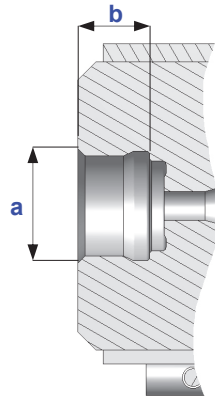
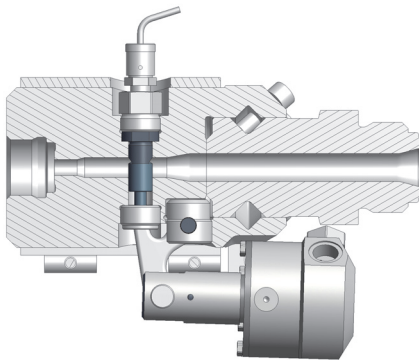
Option: Other lengths are custom manufactured
Note: Extensions require an adjustable heating system

★ The star represents an exposed area

For restricted spaces there exist different heating possibilities, see **Alternative tip heating systems** on page 6.

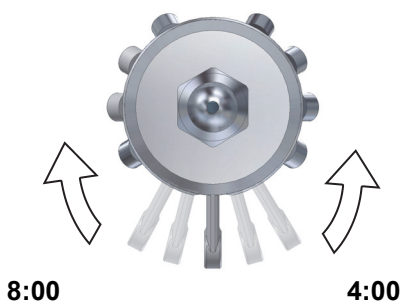
(See **Optional Extras, Heating Systems**)

Optional variant: without tip, supplied by customer



	max. dimensions (mm):		
	BHP0	BHP1	BHP2
a max. screw in thread	Ø40	Ø60	Ø80
b max. depth	30	35	60

← 360° →



Assembly alignment

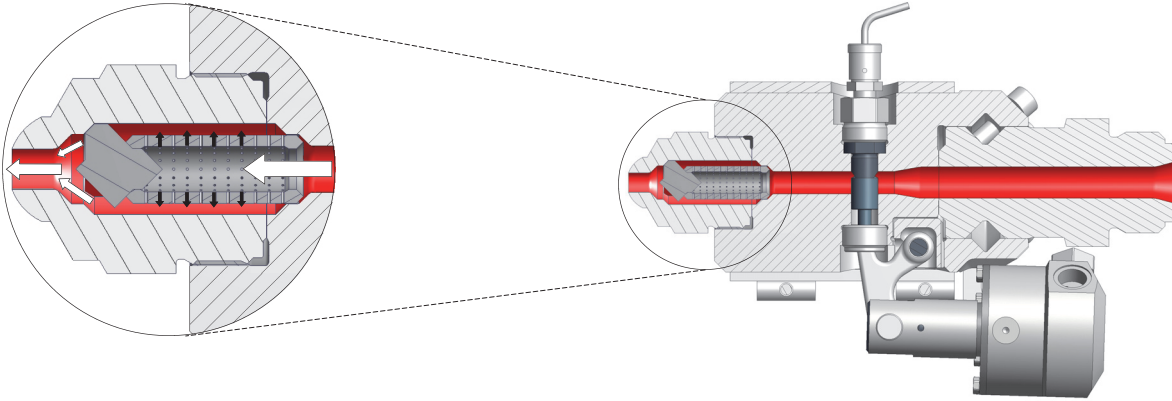
The actuator position is rotational within 360°.

Proven and tested between 4 and 8 o'clock.

Optional Extras

Filter → preventive strategy

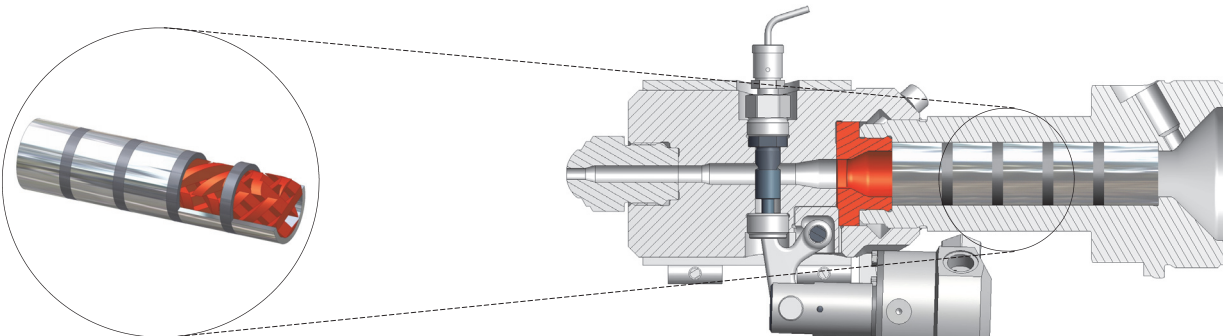
Keep gates in hot runners free of foreign bodies or filter out unwanted fragments when using re-grinded material. We offer a low pressure drop screen filter.



(See document **Open machine nozzles, type FN**)

Mixer → improved quality on injection molded parts

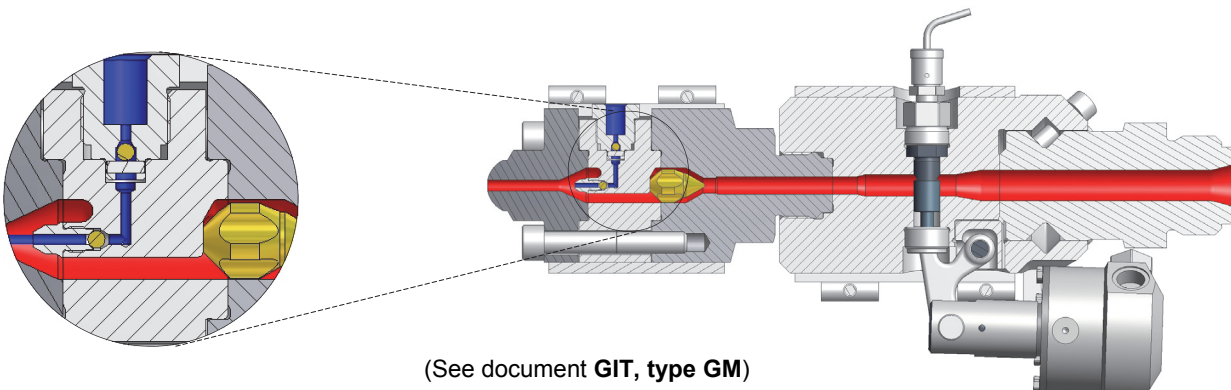
A **homogenized** melt (in colour and temperature) reduces the reject rate and produces a considerable improvement in the quality of the molded part. The installation of the mixer takes place either before or after the nozzle. We use a static mixer.



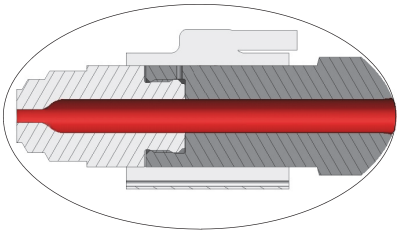
(See document **Open machine nozzles, type M**)

GIT Gas Module (Type GM) → material saving, quality on 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. The robust, maintenance free gas module ensures a safe process. Optimally the module is used in combination with the shut-off nozzle, but for certain processes the module can also be used without the shut-off nozzle.



(See document **GIT, type GM**)

Alternative tip heating systems - Note: requires adjustable heating

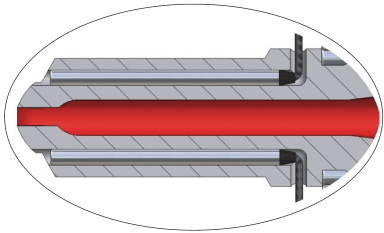
- **Space saving external heating system**

A standard heater band requires space in the nozzle immersion area (machine plate - mold).

Possibility for restricted spaces:

Heater band with flat cap connection and wedge clamping or cylindrical heat cartridges.

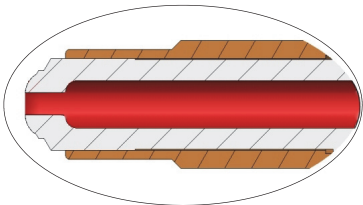
(See document **Optional Extras, Heating systems**)



- **Integrated tip heating system**

Tip mounted heater bands have exposed areas. When injecting out the problem of over injecting can arise. This requires time consuming cleaning which can result in damage to the heater band.

An alternative to this is a tip with integrated heat cartridges.



- **Tip with heat conduction jacket**

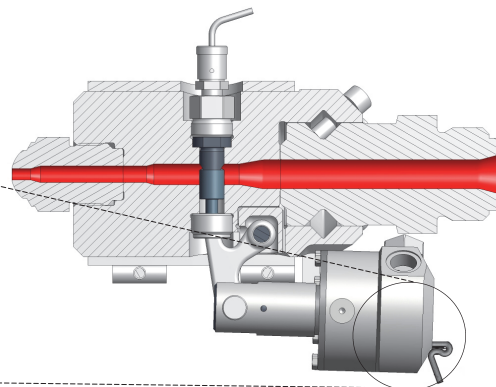
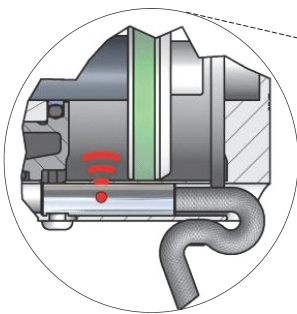
Heat conduction tips are applied in situations of tight mold clearance.

These enable heat distribution until the end of the tip in the immersion area without extra heating.

(See document **Open machine nozzle, type W**)

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.

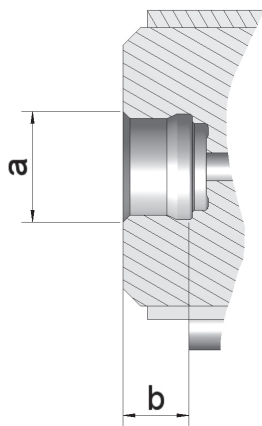


(See document **Optional Extras for shut-off nozzles**)

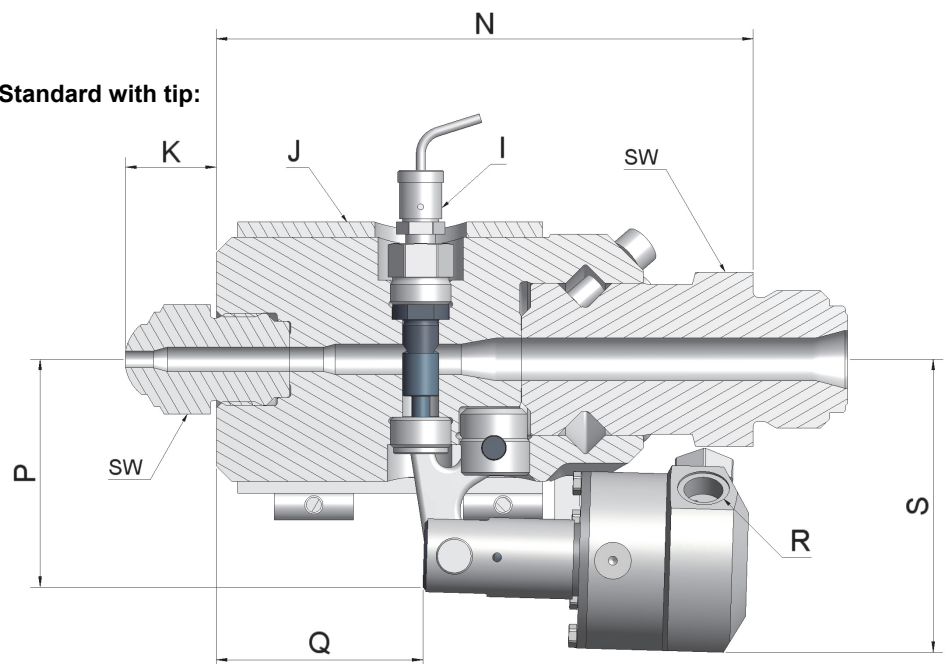
Data sheet - machine shut-off nozzle, type BHP, pneumatically / hydraulically controlled

Operating data	BHP0	BHP1	BHP2
max. injection rate cm ³ / s based on Polystyrol (PS)	500	3500	5000
approx. screw diameter (mm)	Up to 50	50 - 120	120 - 200
flow channel cm ³	10	30	360
max. contact force (kN)	120	160	260
smallest nozzle orifice (mm) M 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 (manufactured acc. to drawing)	Ø60*75 600W	Ø80*100 1250W	Ø110*200 2000W
P	71	77	132
Q	57	68	93
R	pneumatic	G1/8"	
	hydraulic / water cooling	G1/4" / G1/8"	
S	84	96	175
Optional variant - customer specific tip dimensions			
a max. thread Ø	40	60	80
b max. thread length incl. centering	30	35	60

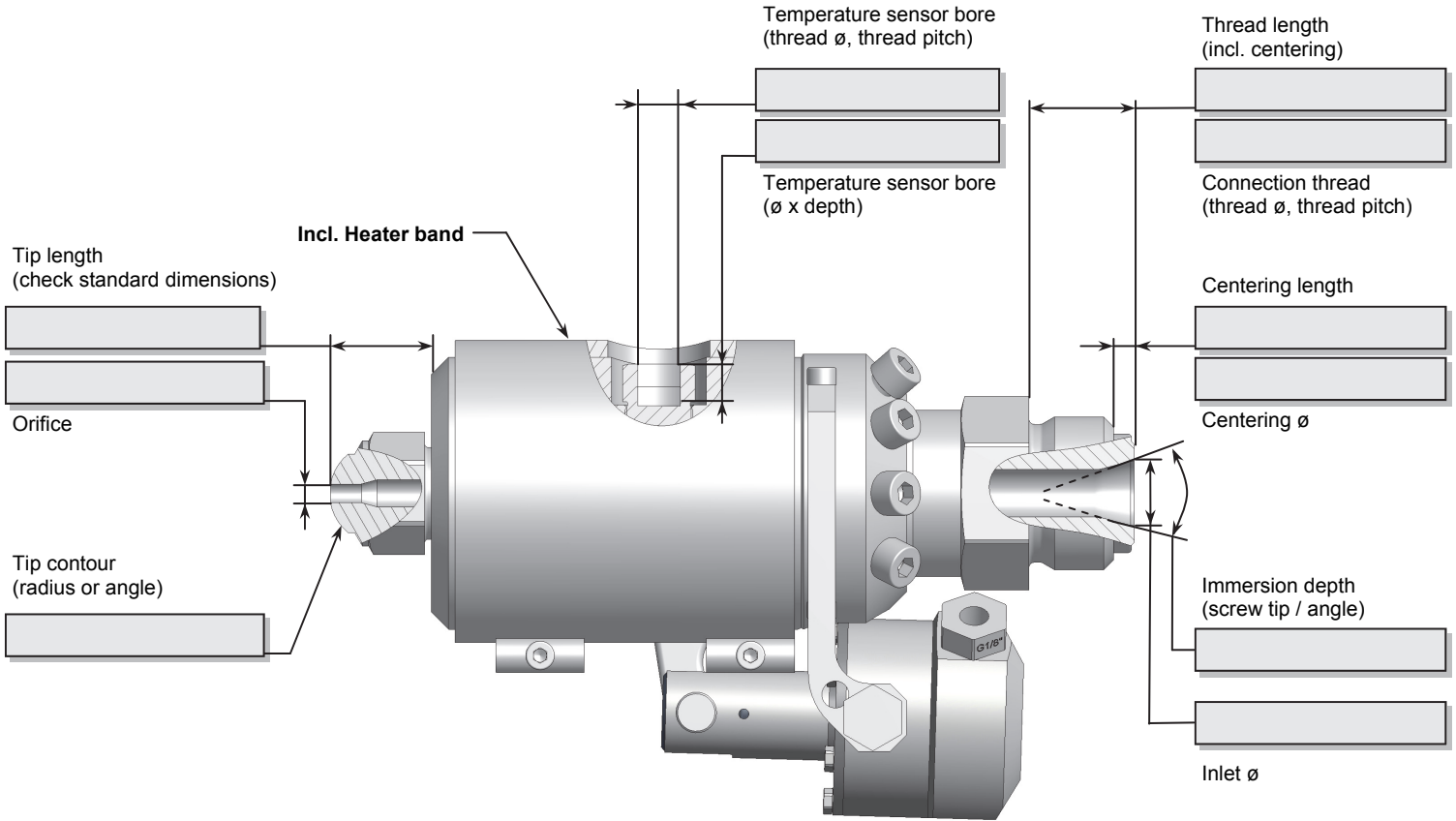
Technical modifications reserved. For orders or enquiries please fill out the **Dimension sheet**.

Dimension Sheet for enquiry		or order	Machine shut-off nozzle type BHP, pneu. / hydr. operated
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Company:
Street:
City / Zip:
Land:

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

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



Nozzle size

<input type="checkbox"/>	BHP0 (up to 500 cm ³ /s with PS)
<input type="checkbox"/>	BHP1 (up to 3500 cm ³ /s with PS)
<input type="checkbox"/>	BHP2 (up to 5000 cm ³ /s with PS)

Actuation

<input type="checkbox"/>	pneumatic (integrated)
<input type="checkbox"/>	hydraulic (integrated)
<input type="checkbox"/>	none (machine-side)

Screw Ø

Processed material

Option

Temperature sensor– type J(FeCuNi) Cable length 2m	Yes <input type="checkbox"/>
--	------------------------------

Optional Extras:

Filter, mixer, GIT (Gas Injection Technology), alternative tip heating, position sensor for actuator

If optional extras are required please enter here:

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.

Optional variant without tip (customer specific)

