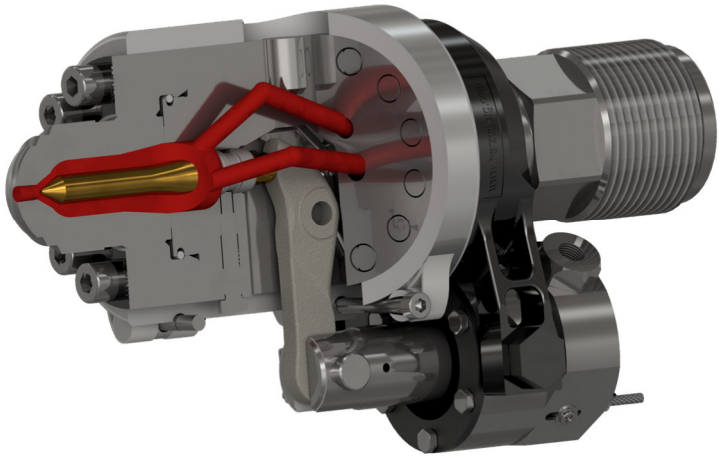
Machine needle shut-off nozzle type HP

pneumatically or hydraulically controlled



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Safety instructions

This symbol indicates explanations about important matters.
Failure to read these or false handling could result in injury or damage.

Please pay attention to the following safety instructions and precautions

Handling

- Installation and servicing to be only carried out by suitable personnel according to the installation and service instructions.
- Nozzle can become extremely hot. Full face protection and heat resistant gloves must be worn.

Damage precaution

- Nozzle is only to be used for injection molding purposes.
- Torques on screws and threaded parts must be adhered to.
- Maximum injection rate / temperature: **3000 bar at 400°C**.
- Shut-off operation according to **Melt pressure / time graph.**
- Never heat steel parts over **520°C**.
- The actuator is designed for temperatures up to **180°C**.
- No adjustment or manipulation when nozzle is in operation.
- Take care that no foreign bodies enter the working parts of the nozzle.
- Do not drop the nozzle or exert it to unnecessary forces.
- Noise emissions from the nozzle do not exceed 70 dB(A).

Explosion danger

- Some plastics produce gases if they stay for a longer time in a heated environment. There is a risk that the gas may escape explosively through the nozzle orifice.

Keep this manual in a convenient place for future reference.

Installation instructions

Read safety instructions!

Legend:

with Hand

smear with high temperature lubricant

tool

inspection

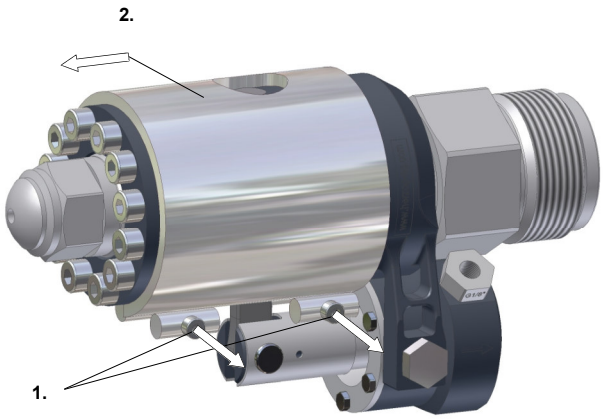
temperature equalisation

Note:
Nozzle is delivered pre-assembled. The following instructions are for installation on the machine. For easier handling remove the actuator.

Tools required:
Hexagonal wrench, allen key, ring spanner, socket wrench, pliers, punch.
See chapter **Assembly** for tool sizes and torques.

Installation steps A) - G)

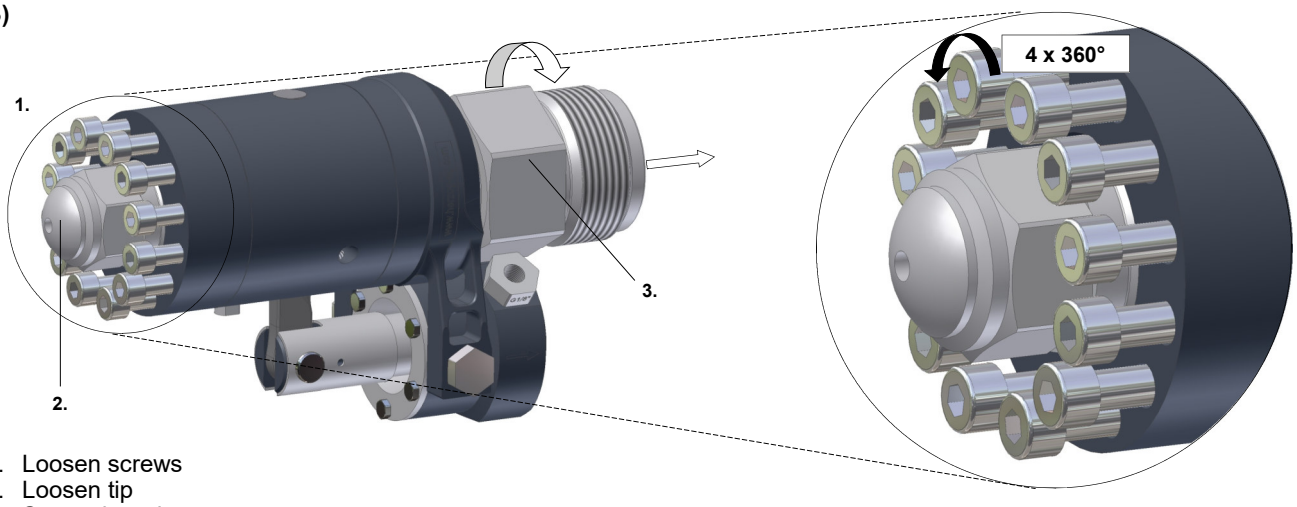
A)



1. Loosen and respectively remove heater band screws
2. Take off heater band

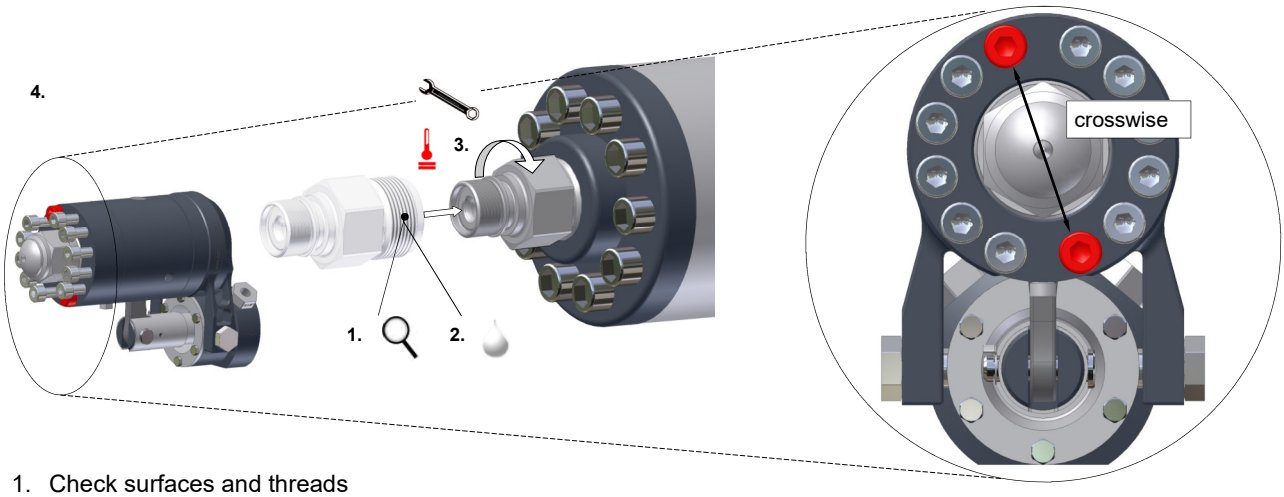
Note: Loosen the screws by four rotations.

B)



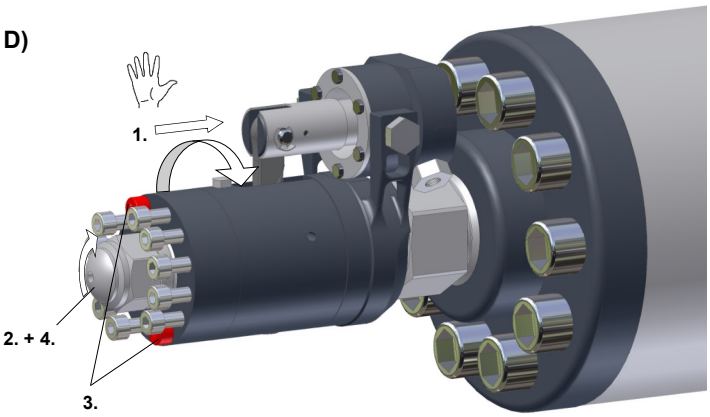
1. Loosen screws
2. Loosen tip
3. Screw the adapter out

C)



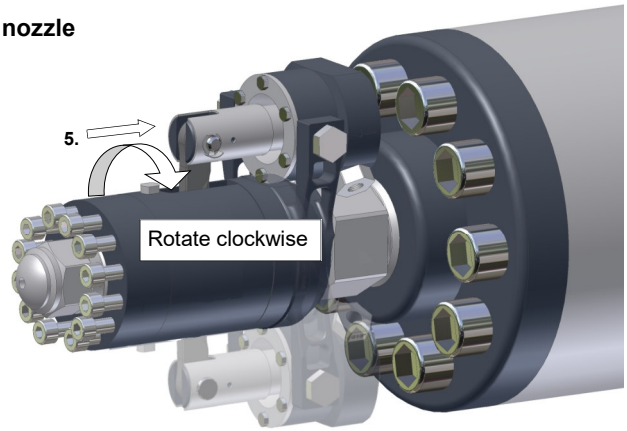
1. Check surfaces and threads
2. Smear adapter thread with high temperature lubricant
3. Mount adapter; await temperature equalisation and tighten acc. to machine handbook
4. Tighten two screws crosswise

D)



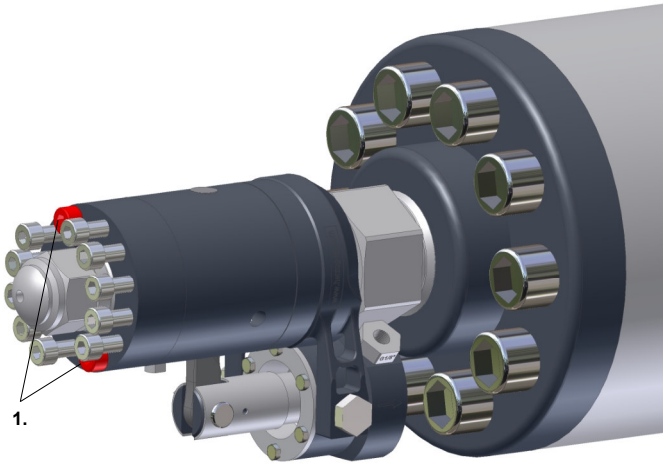
1. Screw nozzle onto the adapter until contact
2. Screw in tip further until contact
3. Loosen the two previously tightened screws by four rotations.
4. Screw in tip approx. 180° further

Align nozzle



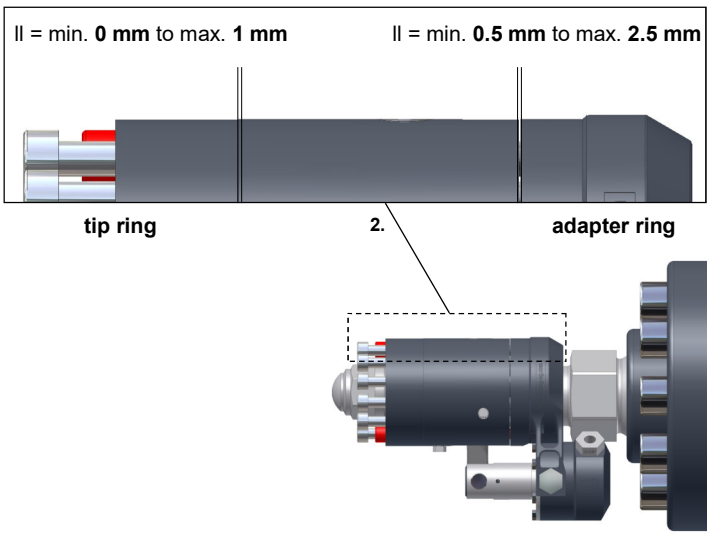
5. Align: Screw nozzle **clockwise** further onto the machine
   Note: min. ¼ rotation

E)

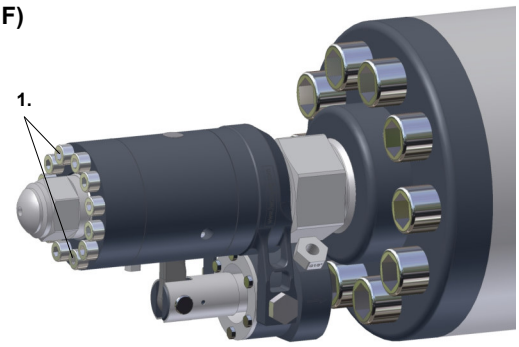


1. Tighten two crosswise screws
2. Check gap between body and adapter ring **max. 2.5 mm**

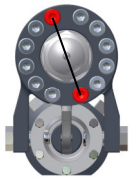
Adapter ring gap nonexistent: Loosen the two screws and screw the nozzle 360° clockwise.



F)

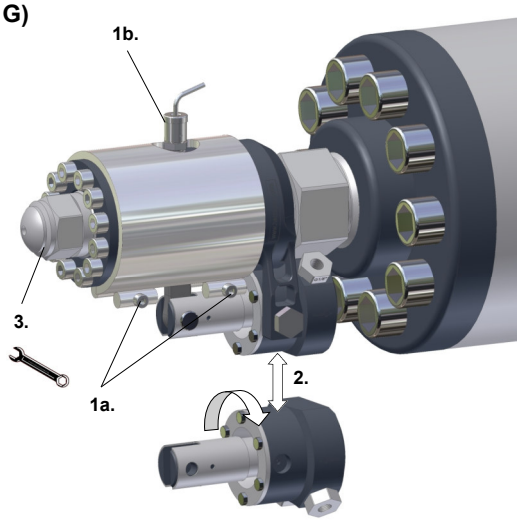


1. Tighten all screws in a crosswise fashion



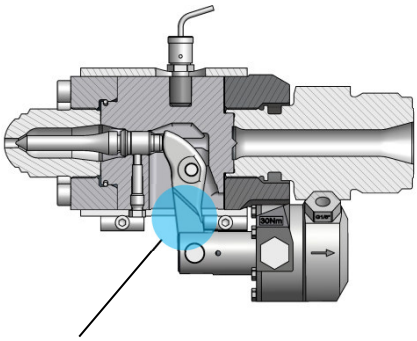
Torque	HP0	HP1	HP2
1. pass	handtight	handtight	handtight
2. pass	7 Nm	15 Nm	35 Nm
3. pass	10 Nm	22 Nm	45 Nm
4. pass	12 Nm	25 Nm	50 Nm

G)



1. Mount heater band **(1a)** and temperature sensor **(1b)**
2. Attach flexible actuator pipe connections
   Note: The actuator can be rotated 180° to suit
3. **Tighten tip with torque according to chapter Assembly***

* Tip is already tight when mounting step **E)** has been correctly observed and the required gap exists between tip-ring and the nozzle body



Leakage release area
approx. 1cm^3 per day

Initial operation

Read safety instructions!

1. Bring nozzle to operating temperature
2. **Only for first operation**: tighten 8 body screws and heater band screws to maximum recommended torques
3. Make sure that polymer is completely melted
4. Purge heated melt. This follows after extrusion at low speed (time ca. 25 - 30s) or through injecting out at three to five times injection time

Actuator: Operational data according to engraving on cylinder.

Leakage: Between needle and guide there is a melt film which prevents the needle from blocking. The melt film will be continuously renewed and will eventually leak out of the nozzle in the area indicated beside.
This melt release is completely normal, especially when low viscosity material is combined with high back pressure. The material will not affect the function of the nozzle as the actuator piston stroke and lever movement respectively keeps the area clear. If required any gathered residual material can be manually cleaned away.
While injecting no leakage should emit in this area and the nozzle is completely sealed.

Machine downtime

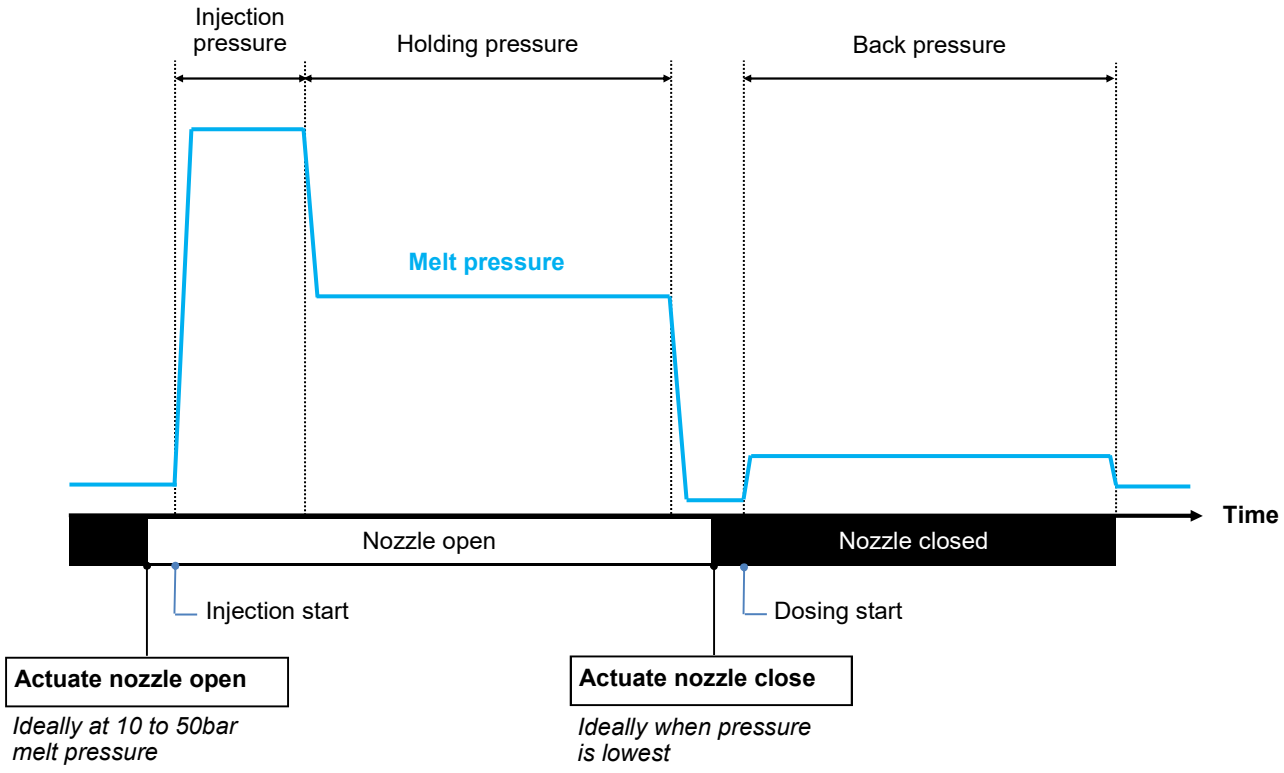
When machine is powered off or idle for a long period:

- Purge processed material from nozzle
- Open nozzle
- Reduce nozzle temperature

Nozzle actuation stages

Actuating nozzle at stages indicated in the graph helps increase longevity of wear parts.

Melt pressure / time graph:

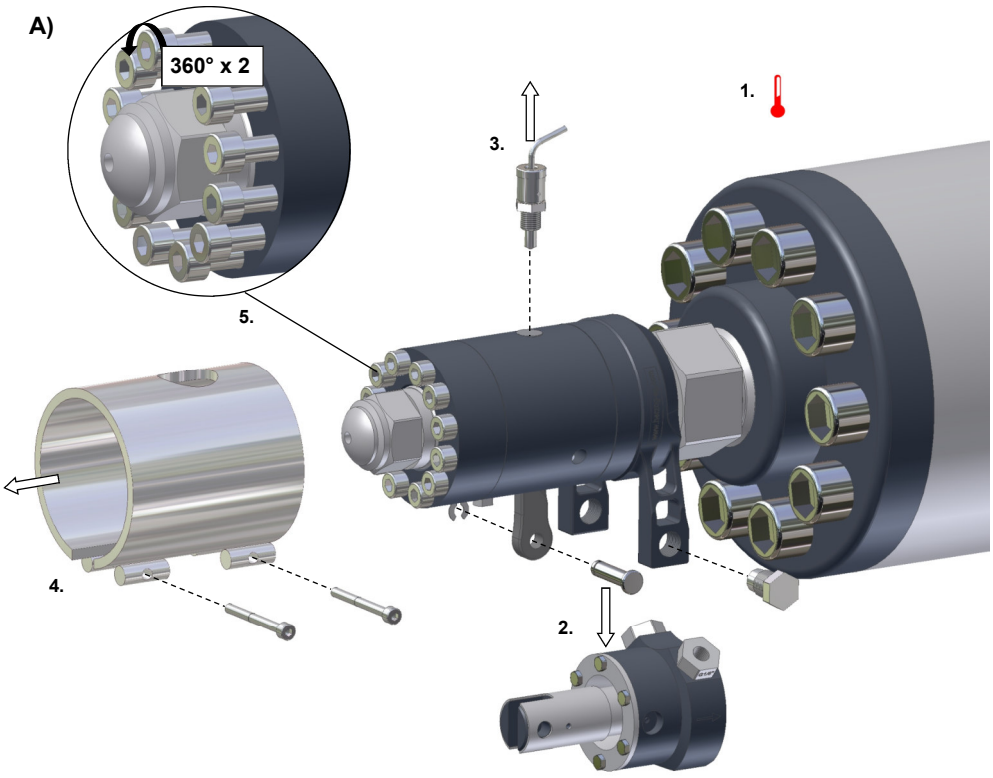


Service instructions

Read safety and cleaning instructions!
Assembly Note: Grease all threads with high temperature paste!

Disassembly A) - B)

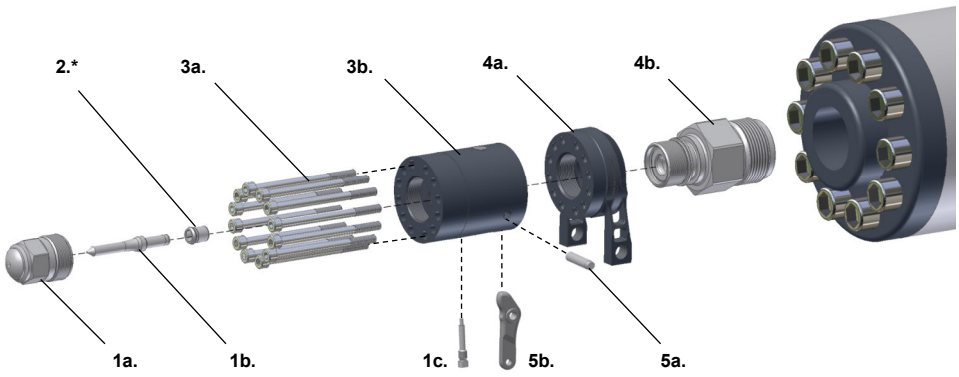
A)



Removing the nozzle from the machine:

1. Heat nozzle to operating temperature
2. Remove actuator (Actuator service information available seperately in documentation **Actuator**. See www.herzog-ag.com)
3. Remove temperature sensor
4. Remove heater band
5. Loosen screws (**two rotations**)

B)

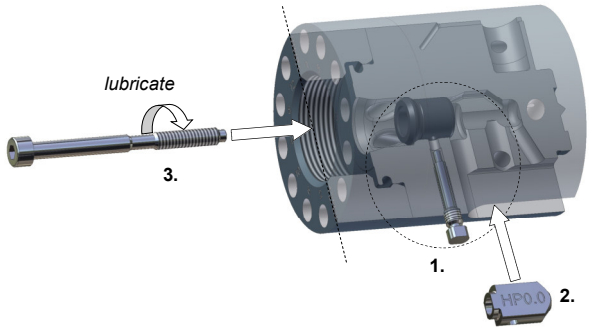


1. Remove tip (**1a.**), Needle (**1b.**) and holding pin (**1c.**)
2. Remove bushing. *If you have difficulty removing the bushing we recommend using our disassembly tool, see **Recommended disassembly tool**
3. Remove screws (**3a.**) and nozzle body (**3b.**)
4. Remove bracket (**4a.**) and adapter (**4b.**)
5. Strike out the lever bolt using a punch (**5a.**) and remove lever (**5b.**)

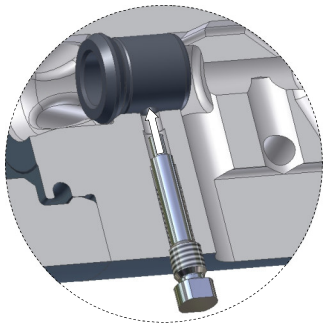
Recommended disassembly tool

Option:
Our disassembly tool eases the needle bushing removal.

1. Holding pin must be removed or min. 5 mm screwed out
2. Position removal nut
3. Screw in removal screw until the bushing is removed



Assembly Note:
Bushing bore must be aligned with holding pin. Tighten the holding pin with moderate strenght (ca. 8Nm).



The end position of the holding pin is approx. **0.5 mm** away from the body unit.

More information at www.herzog-ag.com

Cleaning instructions

While the nozzle is still installed, clean as far as possible in a heated state and finally disassemble completely and clean individual parts.

Plastics such as; LCP or PPS burn away when the nozzle is heated in an oven for tow hours at 500°C.

Never heat steel parts above 500°C!
Clean pneumatic or hydraulic actuator separately with max. 150°C!
Avoid kinking the heater band and sensor cables!

Help tools for cleaning:

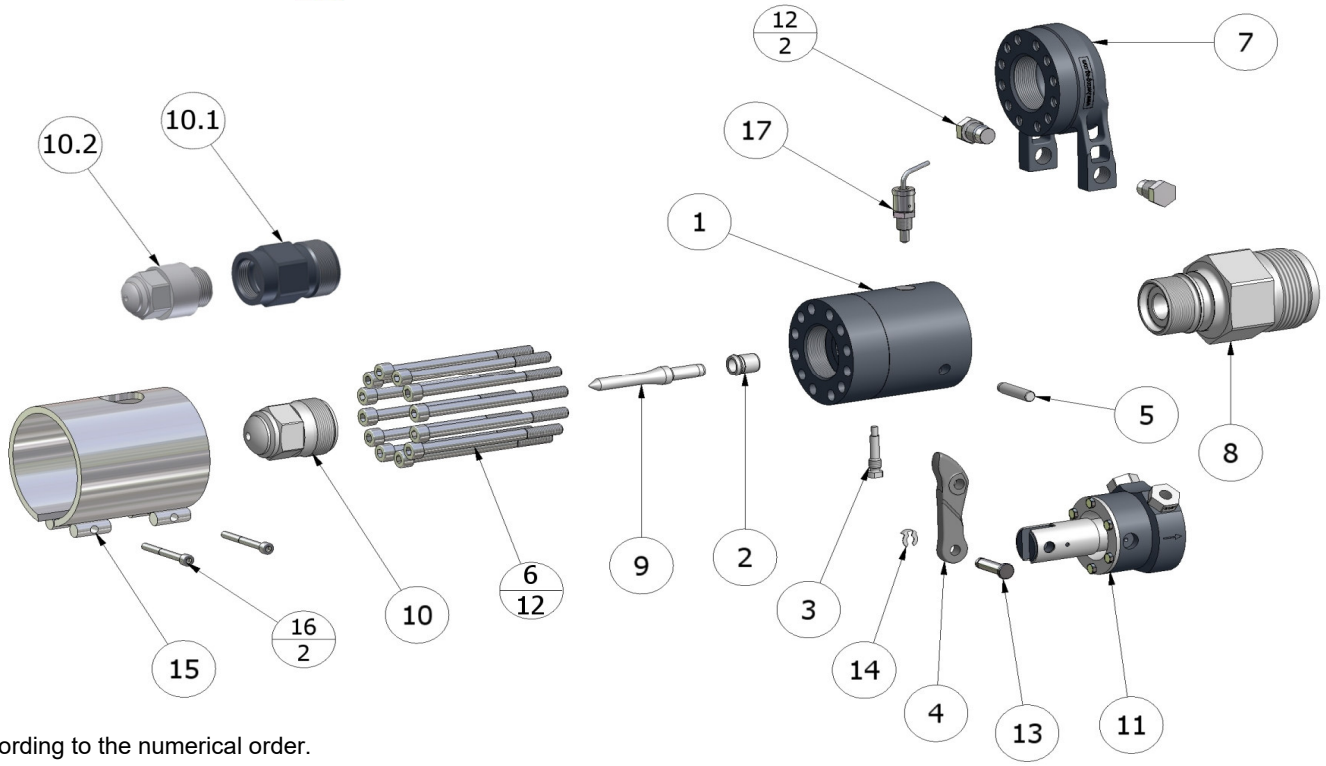
- Sand fluidized bed
- Glass bead blasting
- Cleaning oven
- Gas burner
- Wire brush
- Steel wool

Before reassembly: check all parts for damage or wear.

Profit from our cleaning service. The nozzle is disassembled, checked and repaired if necessary after customer approval.

Assembly

Note: Grease all threads with high temperature paste! See also chapter: **Disassembly.**



Assemble according to the numerical order.

Pos.	Qty.	Description	Tool size *(Torque)*					
			HP0		**HP1**		**HP2**	
			Metric *(Nm)*	**Imperial *(lbs/ft)***	**Metric *(Nm)***	**Imperial *(lbs/ft)***	**Metric *(Nm)***	**Imperial *(lbs/ft)***
1	1	Body	-	-	-	-	-	-
2	1	Needle bushing	-	-	-	-	-	-
3	1	Holding pin	SW5 *(3)*	3/16 *(2.2)*	SW5 *(3)*	3/16 *(2.2)*	SW8 *(5)*	5/16 *(3.7)*
4	1	Lever	-	-	-	-	-	-
5	1	Pivot bolt	-	-	-	-	-	-
6	12	Screws	SW5 *(12)*	3/16 *(8.8)*	SW6 *(25)*	1/4 *(18.4)*	SW10 *(50)*	13/32 *(36.8)*
7	1	Bracket / Adapter ring	-	-	-	-	-	-
8	1	Adapter *(torque acc. to machine handbook)*	SW36	1 7/16	SW46 - 60	1 13/16 - 2 3/8	SW65 - 80	2 6/16 - 3 1/8
9	1	Needle	-	-	-	-	-	-
10	1	Tip	SW27 *(220)*	1 1/16 *(162)*	SW36 *(500)*	1 7/16 *(368)*	SW55 *(1200)*	2 3/16 *(885)*
10.1	1	Base for two-piece tip	SW36 *(220)*	1 7/16 *(220)*	SW41 *(500)*	1 5/8 *(368)*	SW65 *(1200)*	2 9/16 *(885)*
10.2	1	Cap for two-piece tip	SW27 *(120)*	1 1/16 *(88.5)*	SW32 *(200)*	1 1/4 *(147)*	SW41 *(600)*	1 5/8 *(442)*
11	1	Actuator	-	-	-	-	-	-
12	2	Bolt screws	SW13 *(12)*	1/2 *(8.8)*	SW17 *(30)*	11/16 *(22.1)*	SW17 *(30)*	11/16 *(22.1)*
13	1	Bolt	-	-	-	-	-	-
14	1	Splint	-	-	-	-	-	-
15	1	Heater band	-	-	-	-	-	-
16	2	Heater band screws	SW4	5/32	SW4	5/32	SW4	5/32
17	1	Temperature sensor	SW14	9/16	SW14	9/16	SW14	9/16

Parts subject to wear / ordering spare parts

Your contact information:

Company	
Street	
City / Zip	
Contact	
Tel. / Fax	
E-Mail	

Lasered nozzle identity no.: please insert here

Quantity	**Part** (for part name, see chapter **Assembly**)

Send to:

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CH-9230 Flawil / Switzerland

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