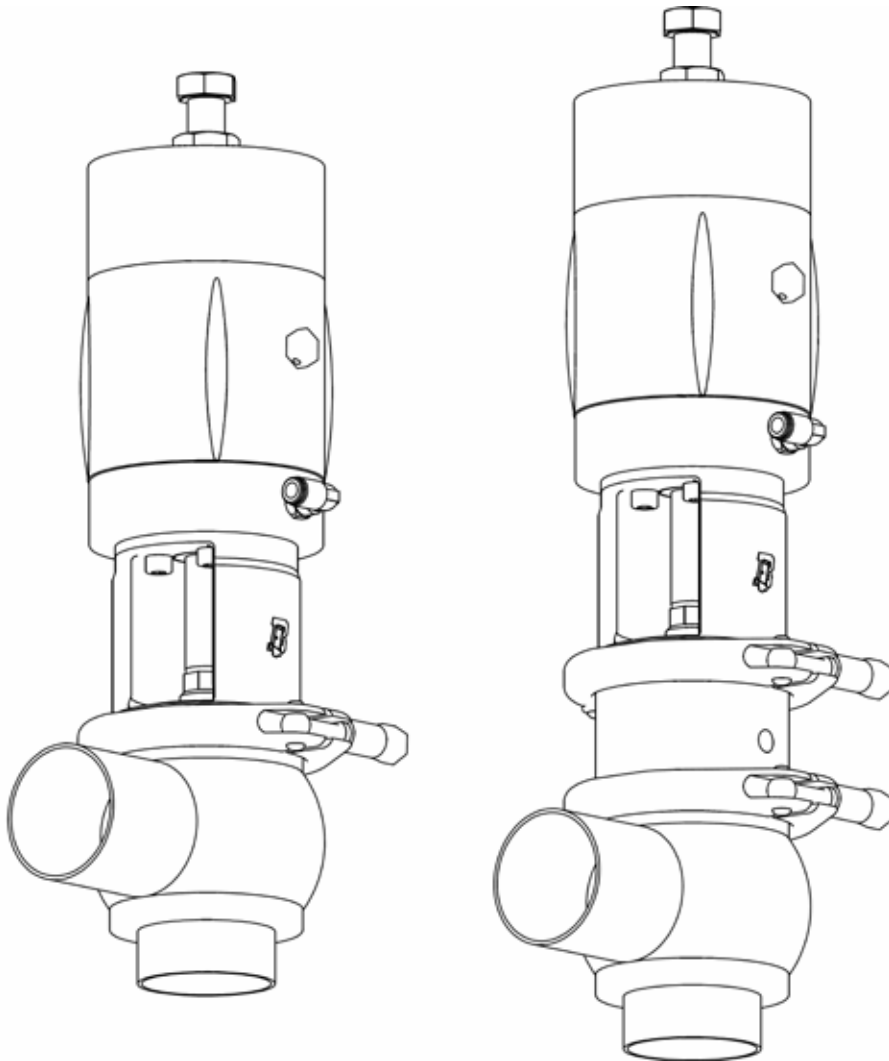


# OPERATING AND MAINTENANCE INSTRUCTIONS

## **By-pass settable pneumatic valve BBZS5 - BBYS5**



**B**ARDIANI  
VALVOLE

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## Foreword

**This instruction manual is an integral part of the valve delivery.**

- **To use the Atex valve model is obligatory to consult the appropriate manual.**
- **Always read it carefully before using the valve.**
- **Always keep it for future reference.**

All rights are reserved. It is forbidden to reproduce or transit any part of the instruction manual by any means, either electronic or mechanical, including photo copies, recording or any other memorisation or retrieval system for purposes other than the exclusively personal use by the purchaser – without prior written permission by the manufacturer.

This instruction manual is expressly intended for use by technicians. Therefore, some information which can easily be inferred by reading the text and examining the illustrations and drawings has not been further specified. The publisher is not responsible for any consequences of incorrect operations by the user.

The data and information in this instruction manual are subject to modifications or updates without any further notice or obligations on the part of the manufacturer.

## 1. Safety/Caution Signs

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General WARNING sign, which indicates that special instructions **MUST** be followed to avoid serious personal injuries.



General CAUTION sign, which indicates that special instructions **MUST** be followed to avoid damage of equipment and environment.

**NOTE!** Indicates **IMPORTANT** information, which improves the understanding of the instructions.

---

## 2. General Safety Precautions



ALWAYS read the technical data before installation, operation and maintenance.

ALWAYS use authorised personnel to install, operate and service the valve. The personal should know the valve and the instruction manual thoroughly.

ONLY use the valve for the designed purpose.

ALWAYS handle heavy valves carefully and use lifting tools where necessary.

ALWAYS pay attention to possible loose valve parts when unpacking the delivery.

NEVER touch moving valve parts.

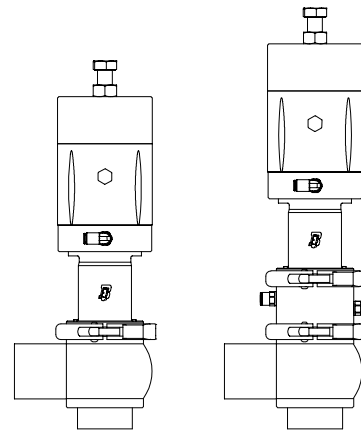
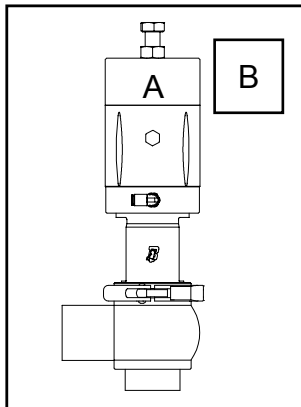
NEVER touch a hot valve.

ALWAYS handle cleaning agents carefully.

NEVER remove a valve from piping or disassemble it when the valve or piping are pressurised.

**We cannot be held liable for incorrect installation,  
operation and maintenance!**

### 3. Receiving/Unpacking/Storage



**BBZS5**

**BBYS5**

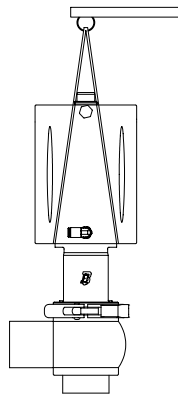
**ATTENTION!**

**1. UNPACK AND CHECK VALVE DELIVERY:**

- A. Complete valve.
- B. Instruction Manual.

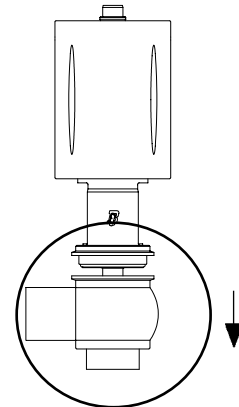
**2. IDENTIFY VALVE TYPE SUPPLIED:**

- BBZS5:** by pass settable pneumatic valve
- BBYS5:** by-pass settable pneumatic valve with steam barrier



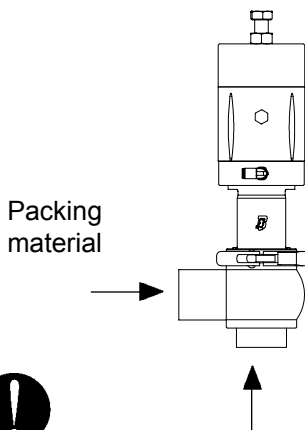
**3. LIFTING OF WEIGHY VALVES:**

- Use lifting tool, if necessary.
- Fix the valve to lifting tool.

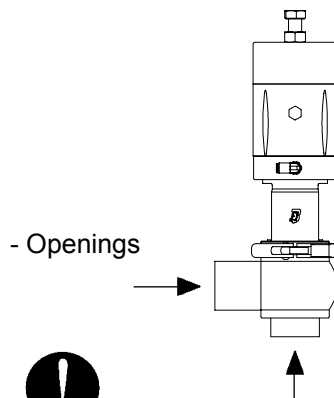


**4. HANDLING OF LOOSE VALVE PARTS:**

- Avoid falling loose valve parts
- Assemble and tighten loose valve parts.



Packing material



- Openings



**5. PACKING MATERIAL:**

- Inspect the interior of the valve.
- Remove material and dispose of according to current directives.

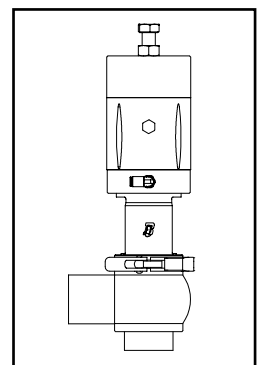


**6. INSPECTION/CLAIMS:**

- Document/check for damage, missing or wrong parts.
- Follow current claim procedures, if necessary.



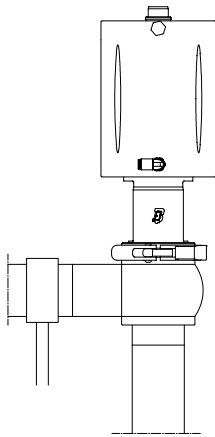
Valve safety guards!



**7. STORAGE/PROTECTION:**

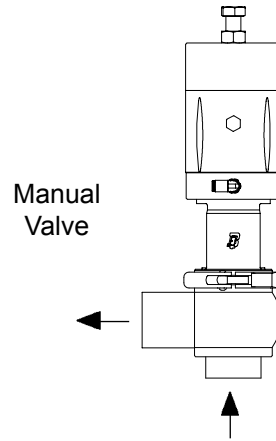
- Avoid dust, humidity, wet areas, heat etc.
- Avoid vibration.
- Min.: - 10 °C
- Max.: + 50 °C

## 4. Installation



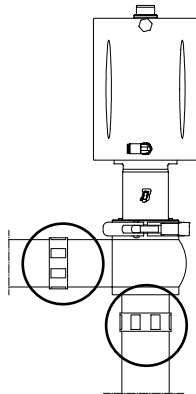
### 1. AVOID VALVE OVERLOADING AND COMPENSATE FOR:

- Vibration
- Thermal expansion



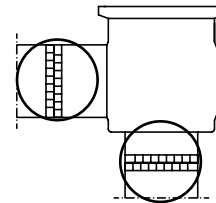
### 2. CORRECT FLOW DIRECTION:

- If possible, have flow against valve closing direction to avoid or minimise water hammer.



### 3. VALVE CONNECTIONS/UNIONS:

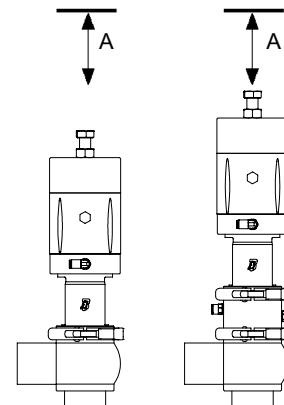
- Ensure tight connections between valve and piping.
- Remember gaskets and fit correctly.
- Tighten unions firmly and carefully.



### 4. WELDING VALVE BODY INTO PIPING:

- Remove inner valve parts.
- Weld body carefully into piping.
- Assemble valve.
- See assembly instructions.

VALVE SIZE	BBZS5 A (mm)	BBYS5 A (mm)
DN10-25	270	270
DN32-40	295	295
DN50	310	310
DN65	330	330
DN80	350	350
DN100	370	370



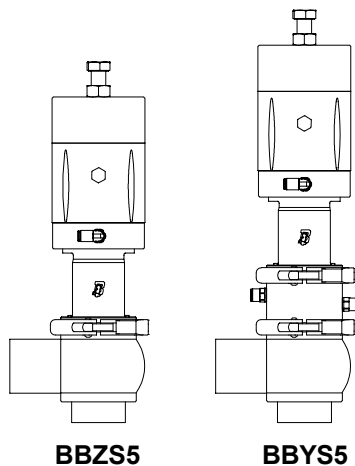
BBZS5

BBYS5

### 5. INSTALLING VALVE INTO PIPING:

- Ensure sufficient clearance for valve disassembly.

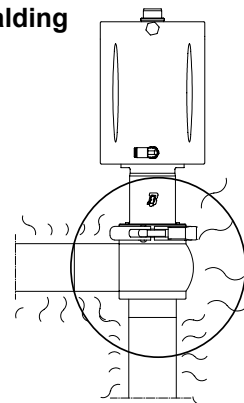
## 5. Operation



BBZS5

BBYS5

**RISK of scalding**



### 1. ONLY USE VALVE FOR DESIGNED PURPOSE

**BBZS5:** by pass settable pneumatic valve

**BBYS5:** by-pass settable pneumatic valve with steam barrier



### 2. HOT VALVE/PIPING

- Never touch hot valve or piping, if possible.
- Alternatively use protective gloves.

## 6. Troubleshooting



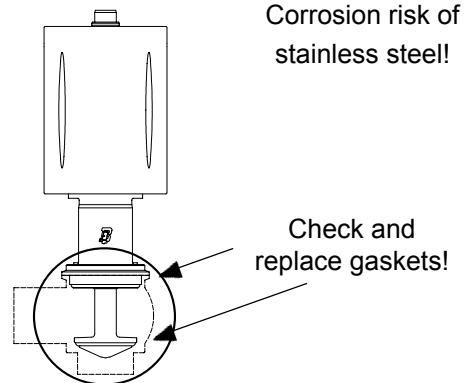
### 1. TROUBLESHOOTING VALVE:

Always study operation and maintenance instructions carefully before troubleshooting.



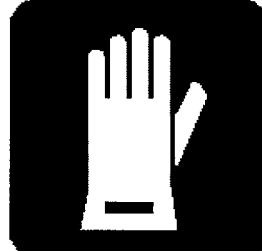
### 2. REPLACING WORN VALVE PARTS:

- See page 9 for spare parts ordering.



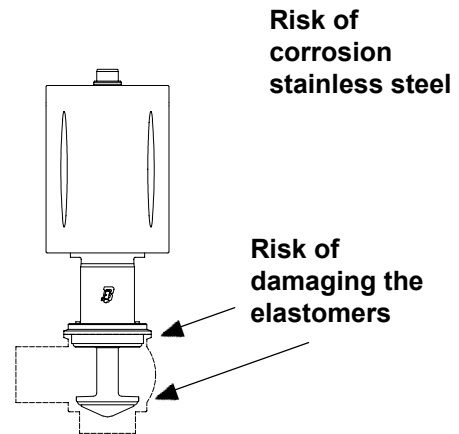
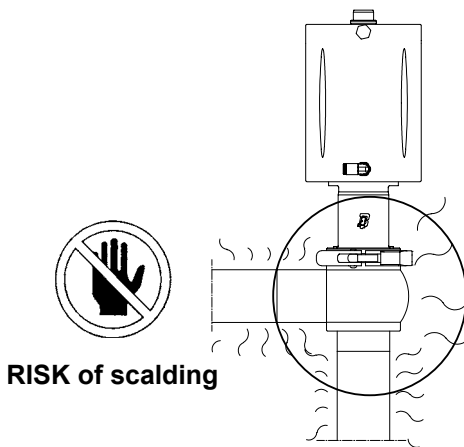
Problem	Possible cause	Possible remedy
External leakage	Worn out gasket	Replace gasket
Internal leakage with closed valve, caused by normal wear		
External leakage	Too high pressure	Replace with gasket of different elastomer type
	Too high temperature	
Internal leakage with closed valve occurring earlier than normal wear	Aggressive fluids	Modify operation conditions
	Too many active control	
Difficult opening and closing	Incorrect elastomer type of gaskets	Replace with gasket of different elastomer type
	Incorrect positioning of actuator	Assemble actuator correctly
	Incorrect operation of actuator	Change from normally open (NO) to normally closed (NC) or vice versa
	Dirt in actuator	Check and service actuator
	Incorrect positioning of valve body	Disassemble and reposition valve body

## 7. Cleaning



### 1. CLEANING VALVE WITH CLEANING AGENTS:

- Use authorised personnel to clean the valve.
- Observe concentrations of cleaning agents.
- Follow instructions of cleaning agent suppliers.
- Always use protective goggles and gloves



### 2. HOT VALVE/PIPING:

- Never touch hot valve or piping, if possible.
- Alternatively use protective gloves



### 3. HANDLING OF CLEANING AGENTS:

- Dose cleaning agents regularly to avoid excessive concentration.
- Always rinse carefully with clean water after cleaning.
- Check compatibility of valve materials.

Example of suggested CIP		
Step	Temperature °C	Cip product
First rinsing	Atmosphere	Water without chlorine or chlorids
Washing	70°	Soda (NaOH) at 1%
Intermediate washing	Atmosphere	Water without chlorine or chlorids
Washing	70°	Nitric acid (HNO3) at 0,5%
Final rinsing	Atmosphere	Water without chlorine or chlorids

Recommended claning speed = 2 m/s

## 8. General Maintenance

**1. PRESSURISED VALVE/PIPING:**  
- Always release fluid pressure from valve and piping before disassembling the valve.

**2. HOT VALVE/PIPING:**  
- Never touch hot valve or piping, if possible.  
- Alternatively use protective gloves.

**Wash and clean!**

**3. CLEANING OF DEPOSITS**  
- Wash and clean all valve parts thoroughly before disassembly and assembly!  
- Pay attention to possible deposits of cleaning agents and other aggressive fluids!  
- Always use protective goggles and gloves, if necessary.

**RISK of scalding**

**RISK of scalding**

**4. REPLACING WORN VALVE PARTS:**  
- Always use original spare parts.  
- See page 9 for spare parts ordering.

## 9. Planned Maintenance

Planned maintenance	Valve gaskets
Preventive	Replace after 12 months
In case of leak	Replace at the end of the day
Periodical	Check for proper operation and make sure there are no leaks
	Record all actions



# 10. Spare Parts Ordering Form



**NOTE!**

Please copy this page, fill it out and fax it to below address.

To:  
BARDIANI VALVOLES S.P.A. – Ufficio Ricambi  
Fax: +3905253408

From:			
Valve type:			
Serial number:			
Month/year of purchase:			
Shipping instructions:			
Quantity:		Position No.:	
Description:			
Quantity:		Position No.:	
Description:			
Quantity:		Position No.:	
Description:			
Quantity:		Position No.:	
Description:			
Quantity:		Position No.:	
Description:			
Quantity:		Position No.:	
Description:			

# 11. Disassembly of the BBZS5 - BBYS5

**1.** Fix the guide bushing (17) through 2 screw M6x10 and supply air to fitting (24).

**2.** Remove clamp (33) and body (1).

**3.** Release air pressure to air fitting (24).

**4.** Unscrew shutter (2).

**5.** Remove shutter ring (14) to the shutter (2).

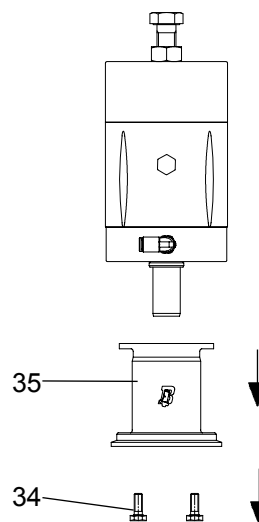
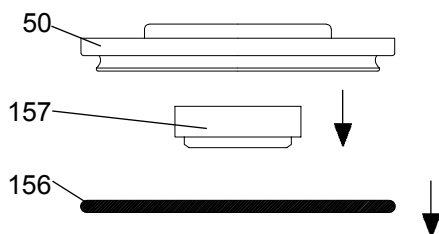
**6. P.T.F.E. SHUTTER:** Unscrew shutter nut (28) and remove shutter ring (14).

**7.** Reassemble in sequence, the pivot (11), the spring (31), the adjusting sleeve (5) and the cap (26) in to the part assembly part(15).

**8. BBYS5.** Remove the clamp (33) between steam barrier (45) and assembly (35). Remove the cap (50).

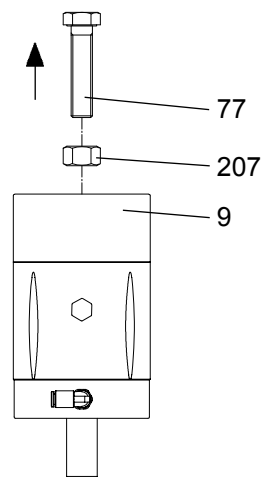
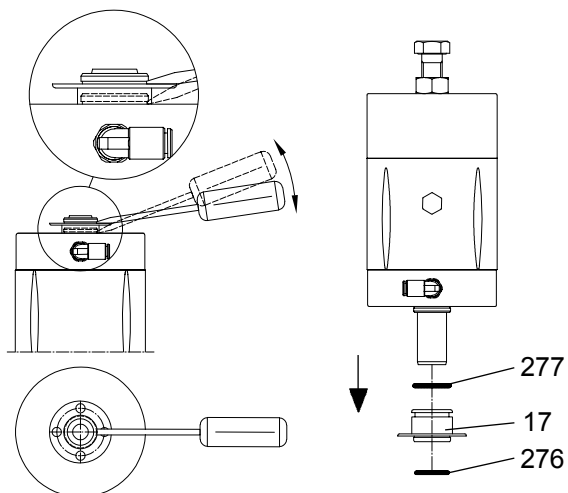
**9. BBYS5.** Remove seal rings (47, 57) and bushing (168) from steam barrier (45).

# 11. Disassembly of the BBZS5 - BBYS5



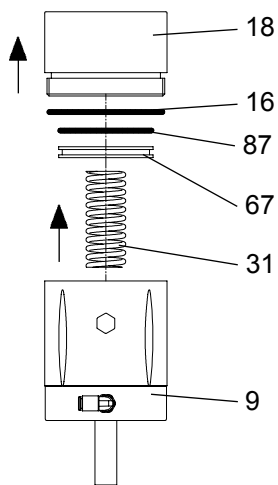
10. Remove seal rings (156 and 157) from cap (50).

11. Remove screws (34) and assembly (35).



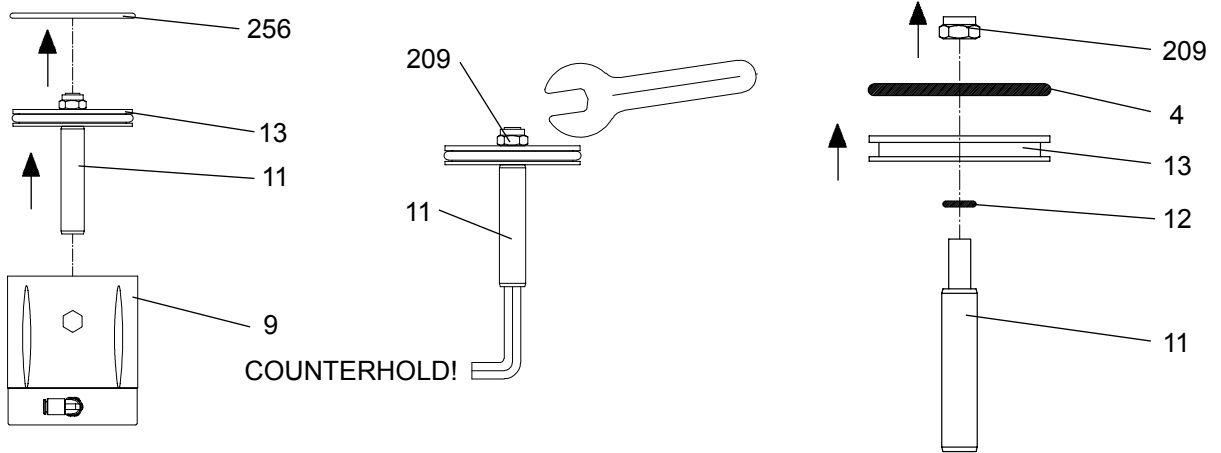
12. Remove screws M6x10 and guide bushing from the cylinder (17) with a suitable tool. Remove seal rings (277 e 276).

13. Unscrew the socket screw (77) and remove from the cylinder (9) the nut (207).



14. Unscrew from the cylinder (9) il tampone (18), **pay attention to the preload of the spring** and then remove the spring (31) and the upper piston (67). Remove the seal rings (87,16).

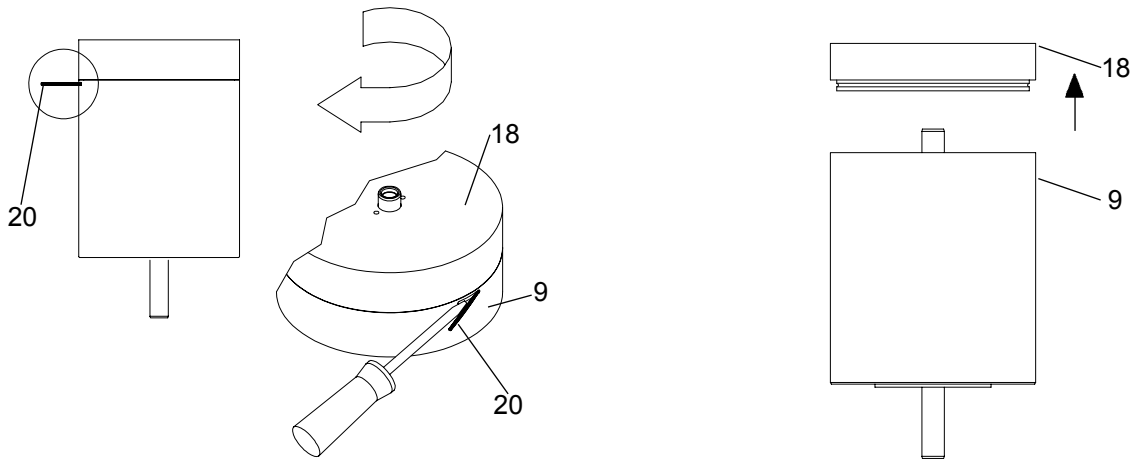
# 11. Disassembly of the BBZS5 - BBYS5



**15.** Remove the Snap ring (256) and the pivot (13-11), to cylinder (9).

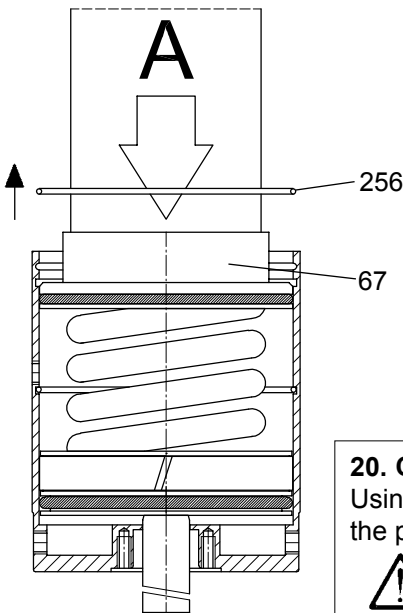
**16.** Unscrew the nut (209) counterholding the pivot (11) with an allen wrench.

**17.** Unscrew the nut (209) from the piston (11-13). Remove the seal rings (4,12).



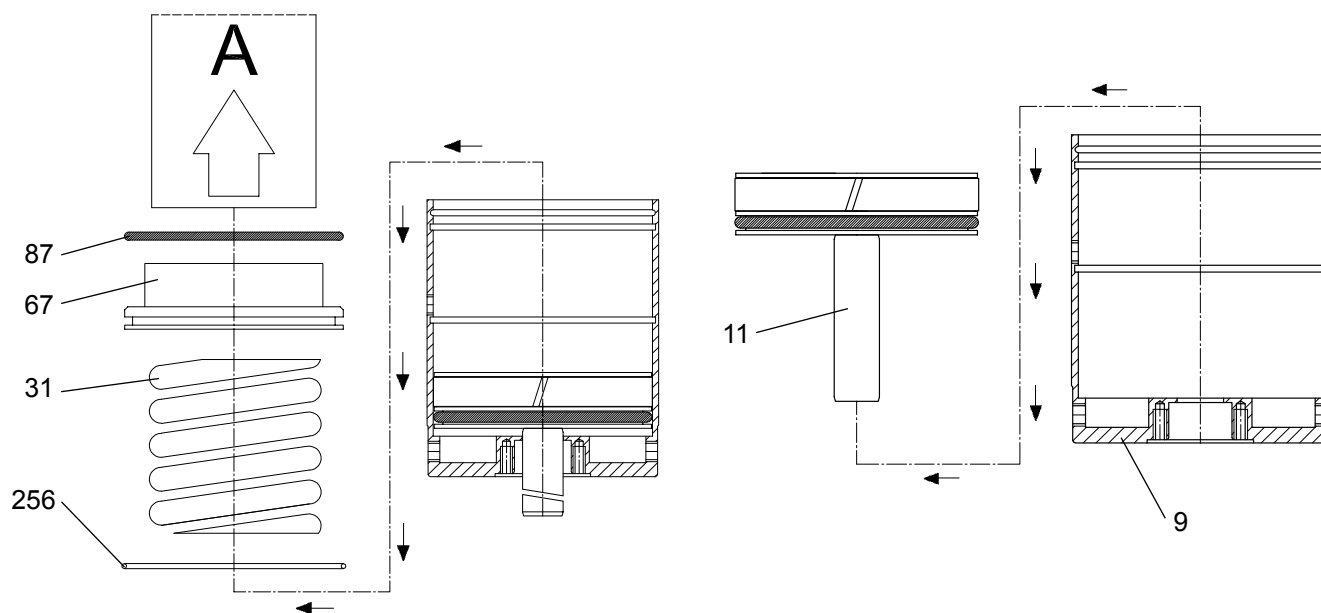
**18. CYLINDER 108-134:**  
Remove elastic thread (20) by rotating plug (18) until the end part of the elastic thread is visible through cylinder slot (9). Pull out completely the end part by a pointed tool.

**19. CYLINDER 108-134:**  
Remove plug (18) to the cilinder (9).



**20. CYLINDER 108-134:**  
Using a press with a plug specially made for the operation (A) preload the spring on the piston upper (67) and remove the seeger (256).  
 **This operation must be carried out with great care by a specialised person.**

# 11. Disassembly of the BBZS5 - BBYS5

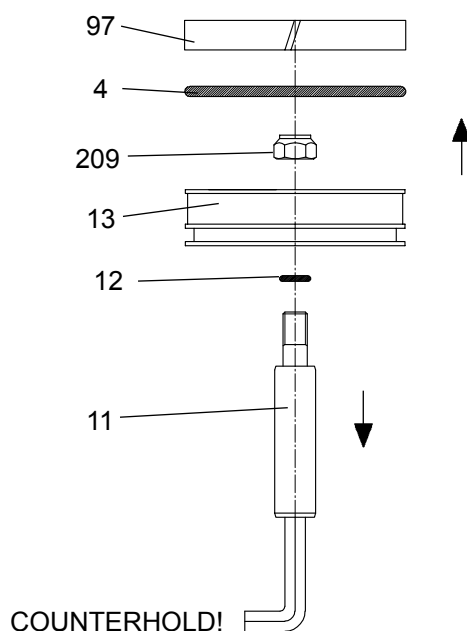


## 21. CYLINDER 108-134:

Gradually reduce the press force exercised by the device (A) on the spring (31). Remove the plate (67), seal rings (87) and spring (31). Remove the lower seeger (256).

## 22. CYLINDER 108-134:

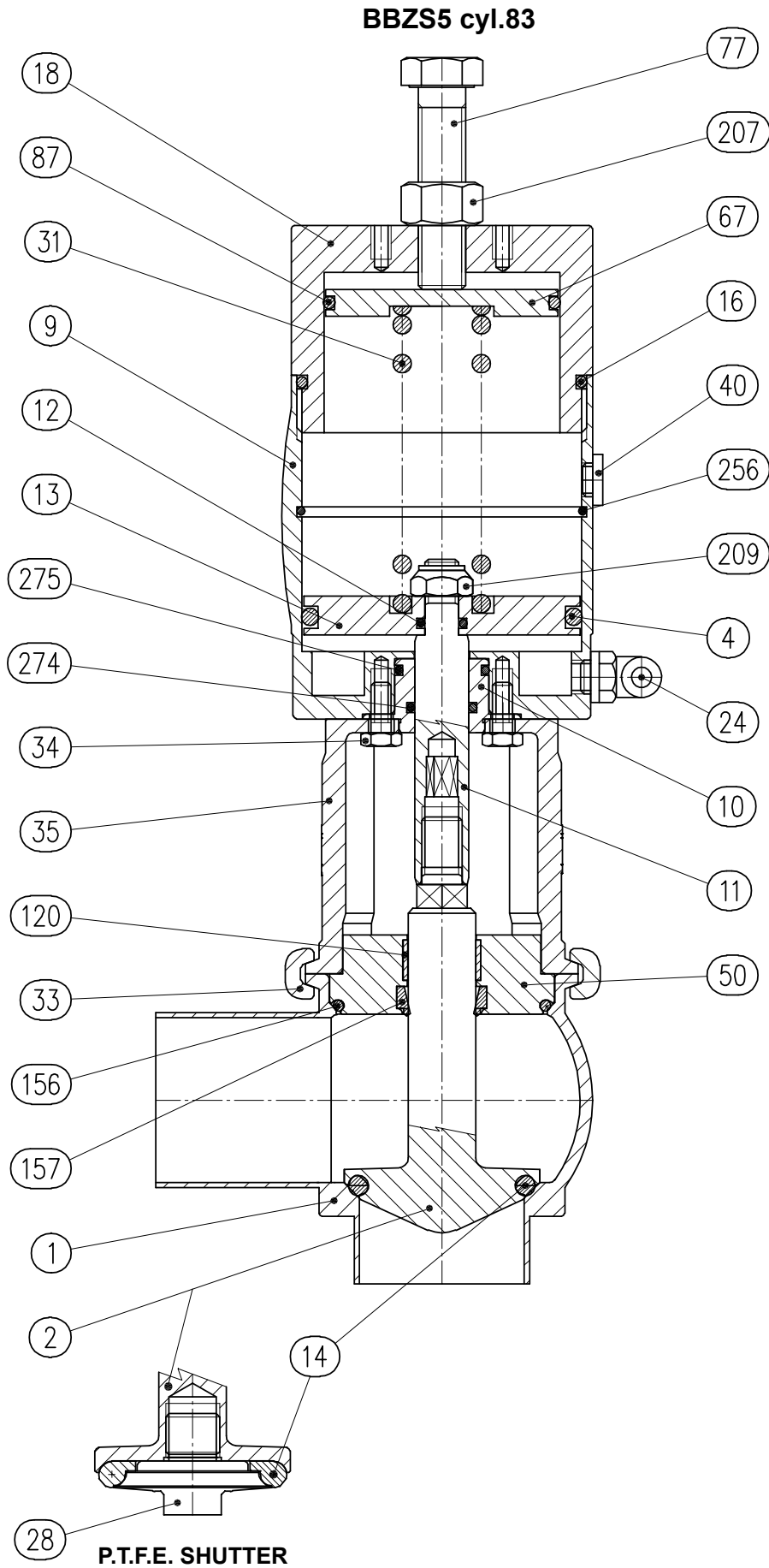
Remove from the cylinder (9) the pivot (11).



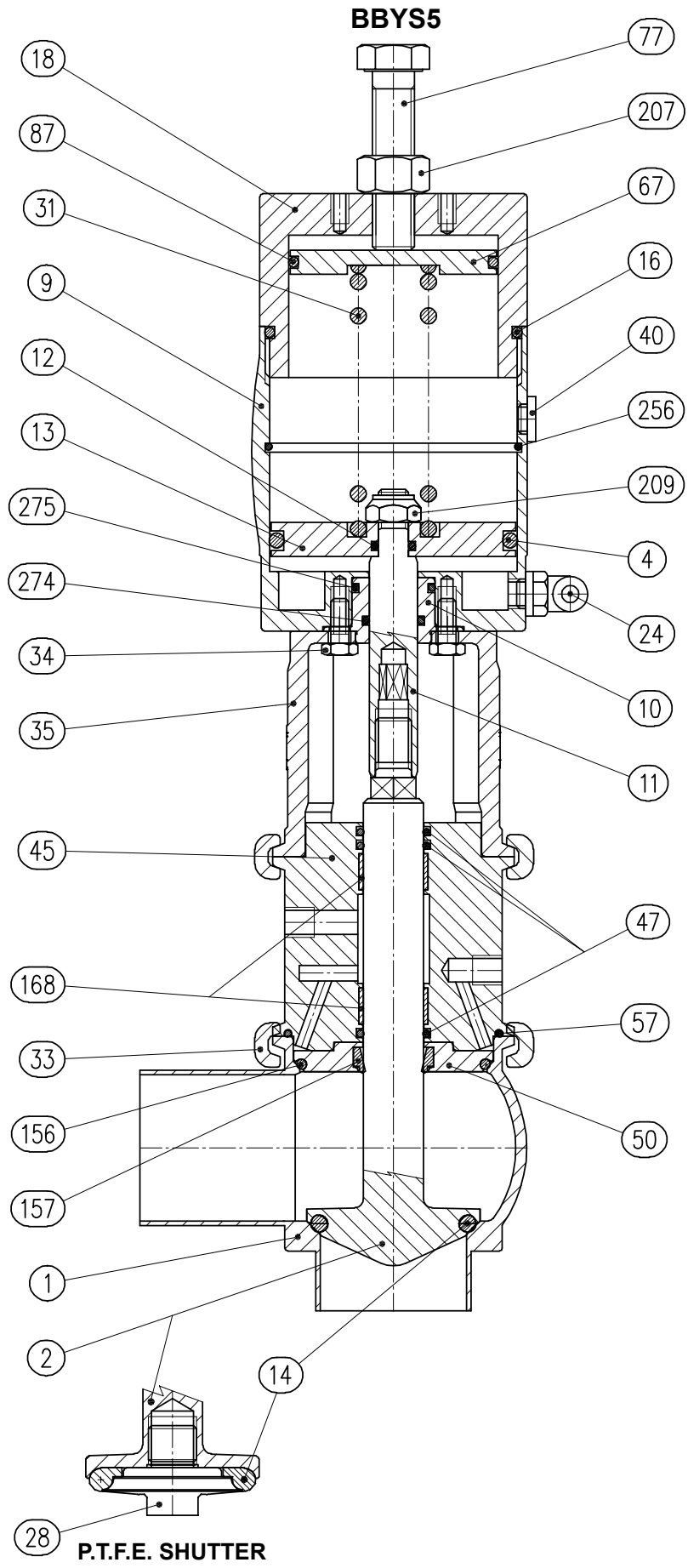
## 23. CYLINDER 108-134:

Unscrew the nut (209) from the pivot-piston(11-13) counterhold the pivot with an allen wrench. Remove the seal rings(12,4) and the guide bushing (97) from the piston (13).

# 11. Disassembly of the BBZS5 - BBYS5

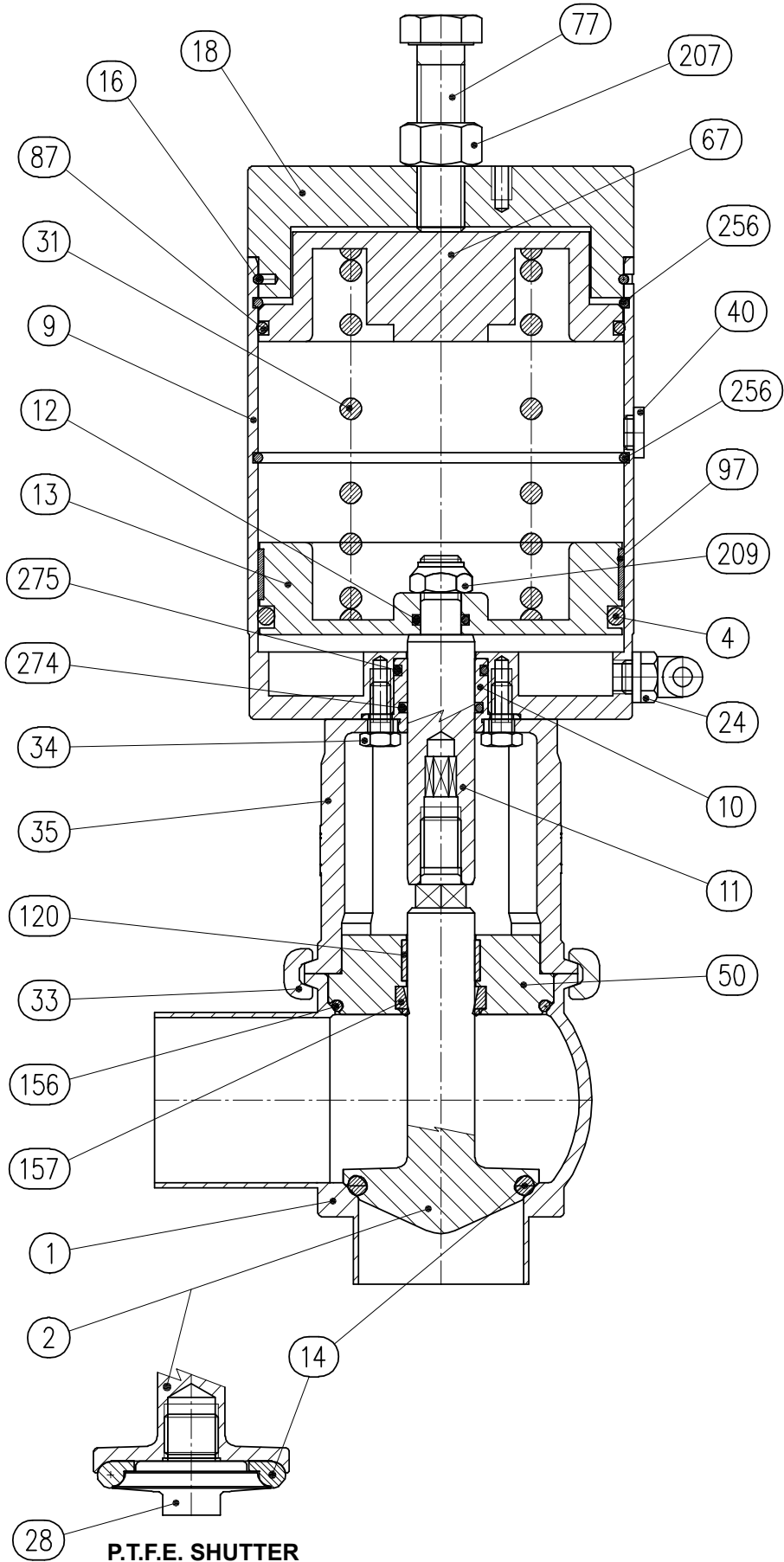


# 11. Disassembly of the BBZS5 - BBYS5



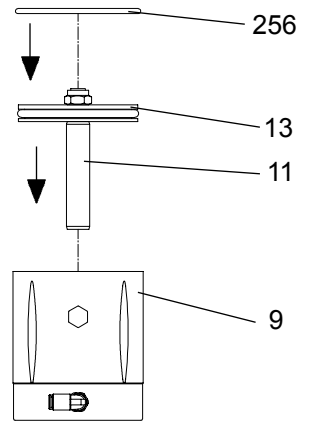
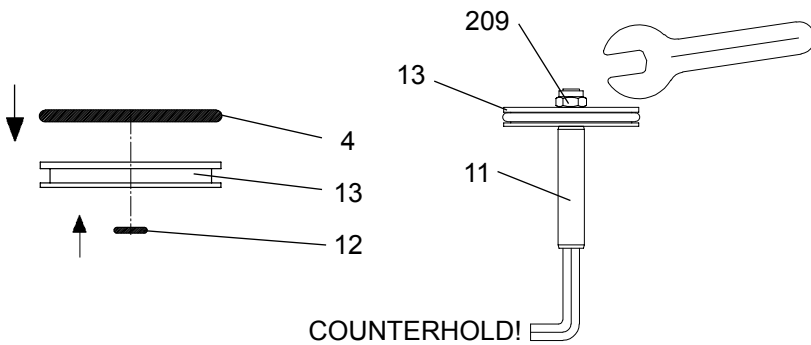
# 11. Disassembly of the BBZS5 - BBYS5

BBZS5 cyl. 108-134





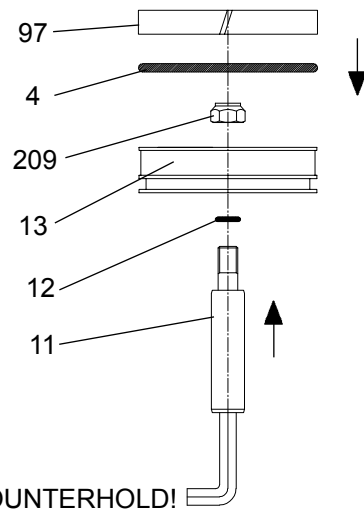
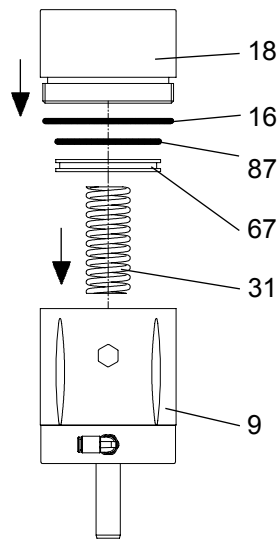
# 12. Assembly of the BBZS5 - BBYS5



**1.** Insert to the piston (13) the seal ring (4 and 12).

**2.** Assemble the piston (13) on the pivot (11) and screw the nut (209) counterholding the pivot (11) with an allen wrench.

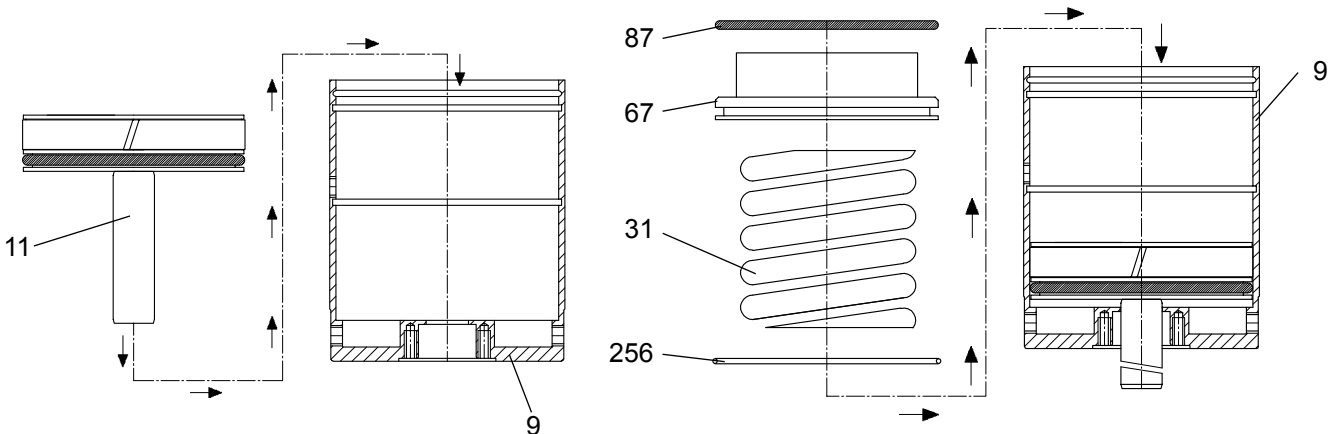
**3.** Insert into the cylinder (9) the pivot piston (11-13) and the seeger (256).



**4.** Assemble the seal ring (87) on the upper piston (67). Insert into the cylinder (9) the spring (31) and the upper piston (87). Assemble the seal ring (16) on the stopper (18) and **paying attention to the preload of the spring**, screw the stopper (18) on the cylinder (9).

**5. CYLINDER 108-134:**

Insert the seal rings (4,12) and the guide bushing (97) on the piston (13), block the piston with the nut (209) on the pivot (11), counterholding the pivot with an allen wrench.



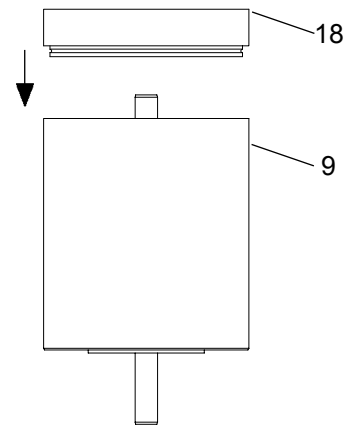
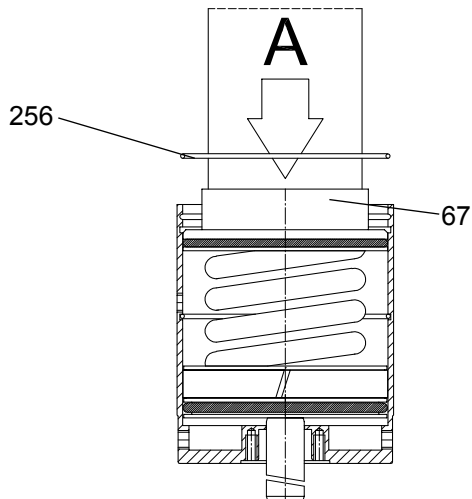
**6. CYLINDER 108-134:**

Put the pivot (11) into the cylinder (9).

**7. CYLINDER 108-134:**

Assembly on the cylinder (9) the seeger (256) and insert the spring (31). Assembly on the upper piston (67) the seal ring (87) and insert them inside the cylinder (9).

# 14. Assembly of the BBZS5 - BBYS5



### 8. CYLINDER 108-134:

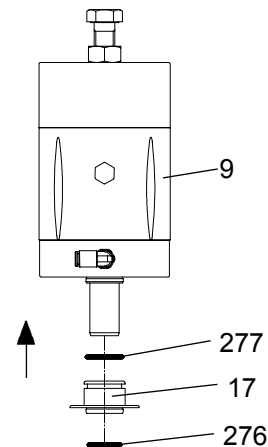
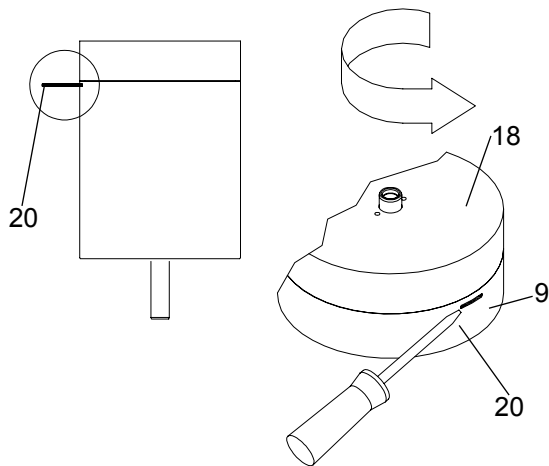
Insert the upper seeger (256) making sure it is correctly seated.



**Remove with caution the pressure exerted on the upper piston (67).**

### 9. CYLINDER 108-134:

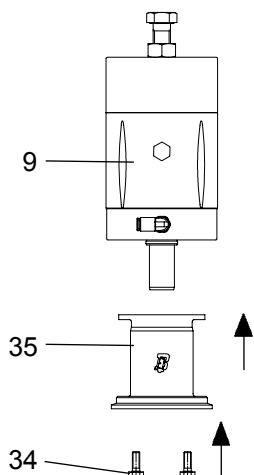
Insert the plug (18) to the cilinder (9).



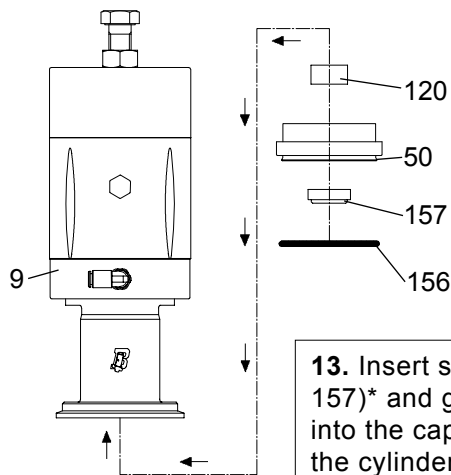
### 10. CYLINDER 108-134:

Position the retaining ring (20) in the plug (18) through the cylinder slot (9). Rotate the plug until it is completely inserted.

**11. Insert seal rings (276 and 277) on the guide bushing (17) and assembly them on the cylinder (9)**



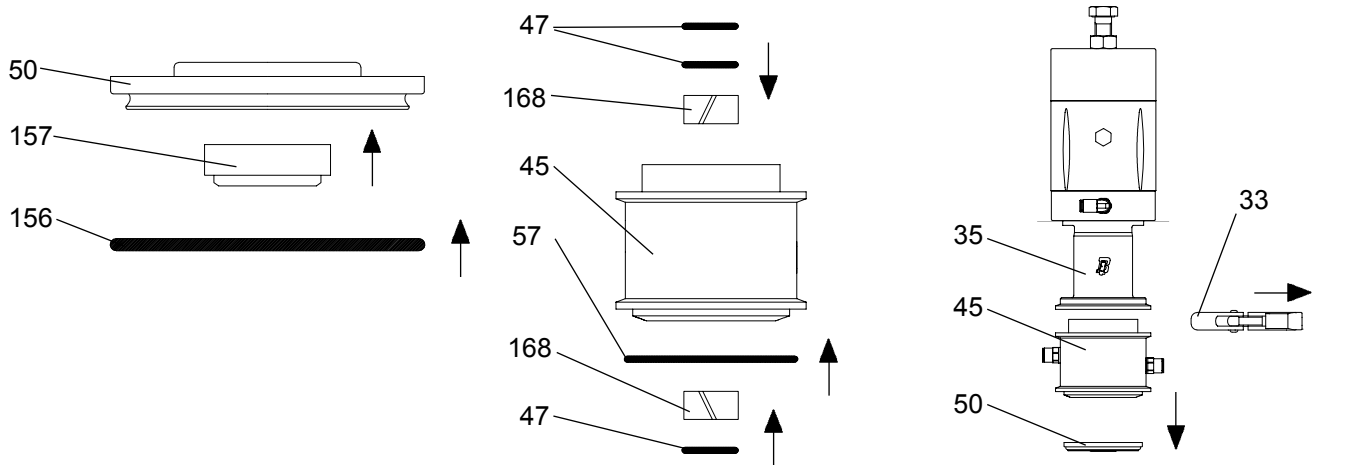
**12. Fit assembly (35) to cylinder (9) with screws (34).**



**13. Insert seal rings (156 e 157)\* and guide bushing (120)\* into the cap (50). Fit the cap on the cylinder (9).**



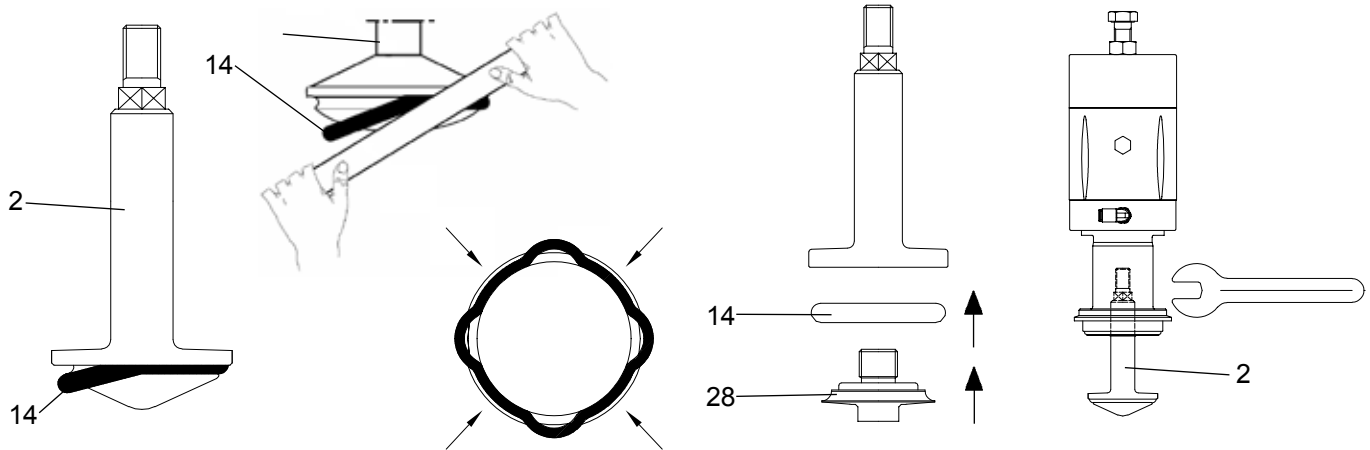
# 14. Assembly of the BBZS5 - BBYS5



**14. BBYS5.** Insert seal rings (156, 157)\* into the cap (50).

**15. BBYS5.** Insert seal rings (47, 57)\* and bushing (168) into steam barrier (45).

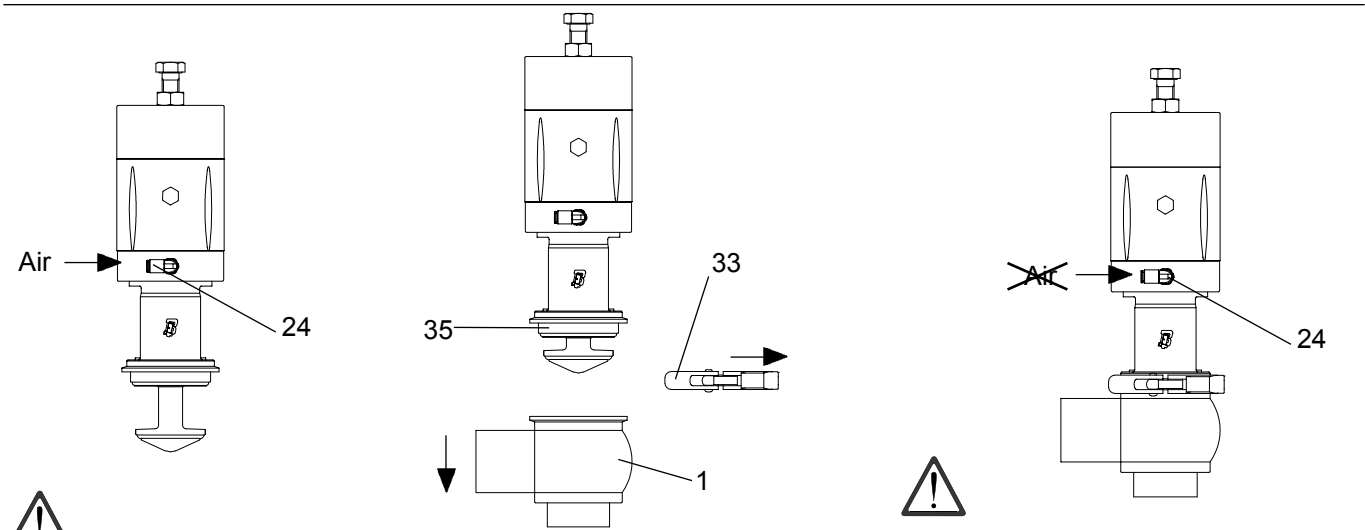
**16. BBYS5.** Insert steam barrier (45) into the assembly (35) with clamp (33) and the cap (50).



**17.** Pre-heat shutter ring (14\*) to approx. 80°C to make it softer and insert it in shutter slot (2). Insert the ring in a crosswise manner using a plastic cylindrical tool.

**18. PTFE SHUTTER:** Assemble the P.T.F.E. seal ring (14) on the shutter (2) and the shutter nut (28).

**19.** Screw shutter (2) into cylinder pivot (9).



**21.** Supply air to fitting (24).

**20.** Release air pressure to air fitting (24).

**22.** Assemble body (1) and part assembly (35) with clamp (33).

## 13. Spare Parts List

N°	Description	N°	Description
1	Lower body	156	Seal ring
2	Shutter	157	Seal ring
4	Seal ring	168	Guide bushing
9	Cylinder	207	Nut
10	Guide bushing	209	Nut
11	Pivot	256	Snap ring
12	Seal ring	274	Seal ring
13	Piston	275	Seal ring
14	Seal ring		
16	Snap ring		
18	Stopper		
24	Air fitting		
28	Shutter nut		
31	Spring		
33	Clamp		
34	Socket screw		
35	Part assembling		
40	Plug		
45	Steam barrier		
47	Seal ring		
50	Cap		
57	Seal ring		
67	Piston upper		
77	Socket screw		
97	Guide bushing		
120	Guide bushing		

## 14. Technical data

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### Valve technical specifications:

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Max. working pressure:	10 bar (145 psi)
Min. working pressure:	0 bar (0 psi) vacuum is not recommended in aseptic applications.
Max. product temperature:	140° C (284° F)
Min. product temperature:	-10° C (14°F)
Material in contact with the product:	AISI 316L (1.4404)
Seals in contact with the product (FDA homologation):	EPDM, FKM, HNBR, P.T.F.E. (other seals available upon request).
Finish on surfaces in contact with the product:	Ra 0.8 µm (other types of surface finish on request).

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### Steam barrier specifications:

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Connectors:	1/8" (BSP)
Max. steam temperature	130°C (266°F)
Seal / gasket material:	FKM

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### Pneumatic actuator specifications:

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Connectors:	1/8" (BSP) for tube 6x4mm
Air pressure:	from 6bar (87psi) to 8bar (116psi)
Material:	AISI 304L (1.4307)
Seal / gasket material:	NBR

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**PED Directive 97/23/EEC, with special reference to Annex III, Module A regarding internal production control as Conformity Assessment Procedure in force valve sizes DN10--25 are not included in accordance with Article 3 paragraph 1.3:**

Valves intended for gases, liquified gases, gases dissolved under pressure, vapours and those liquids whose vapour pressure at the maximum allowable temperature is greater than 0,5 bar above normal atmospheric pressure (1013 mbar) within the following limits

- For fluids in Group 1 with a DN greater than 25

## Foreword

**This "Instruction, Use and Maintenance Manual" forms an integral part of the valve.  
Before proceeding with installation, use or maintenance of each type of valve it is compulsory to read and understand this manual.  
Keep this manual for future reference.  
When using valves which comply with ATEX Directive 94/9/EC (ATEX) it is compulsory to read the relative manual.**

This "Instruction, Use and Maintenance Manual" has been drawn up expressly for expert technical personnel. Consequently any information which can easily be deduced from reading the text and/or examining the illustrations and/or drawings provided herein shall not be the object of further explanation.

It being understood that the essential characteristics of the valve type described herein shall remain the same, the manufacturer reserves the right to amend and/or integrate and/or update the data and/or information relative to use of the valve provided in the "Instruction, Use and Maintenance Manual", at any time and without prior notice.

The latest, updated version of the "Instruction, Use and Maintenance Manual" is always available at [www.bardiani.com](http://www.bardiani.com).

The manufacturer shall not in any way be held liable for any consequences resulting from failure to observe all the prescriptions provided in the relative manual concerning installation, use, maintenance and care of the product.

All rights are reserved. It is forbidden, without due written authorization from the manufacturer, to copy totally and/or partially and /or transfer and/or record any part of this "Instruction, Use and Maintenance Manual" using any means and/or support, including IT and/or electronic and/or mechanical and/or paper form or any other means or system for recording and/or reusing the information contained herein for any purposes other than for the purchaser's personal use.

## Warranty

### 1. VALIDITY

Bardiani Valvole S.p.A. guarantees its own products against any design and/or construction and/or material defects and/or faults for a period of 12 (twelve) months from the date of delivery.

Notification of any product defects and/or faults must be sent in writing to Bardiani Valvole S.p.A. within 8 (eight) days of coming to light, providing adequate documentation of the defect/fault encountered can be provided as evidence.

Any repairs made during the warranty period do not extend said period over the stipulated 12 (twelve) months which remains definite.

### 2. CONTENTS OF THE WARRANTY

This warranty it to be intended as limited, at the discretion of Bardiani Valvole S.p.A., to the repair and/or replacement of the product and/or part of the product and/or its components which is/are found to be defective due to design and/or manufacturing and/or material faults.

In the event of repair and/or replacement of the product and/or any one of its parts and/or components, any returned item/s shall become the property of Bardiani Valvole S.p.A and the relative shipping costs shall be at the expense of Bardiani Valvole S.p.A.

Bardiani Valvole S.p.A., shall be under no obligation to compensate for any immaterial and/or indirect damages and shall in no way be held liable for consequential damages and/or losses, such as (by way of example only), damages due to loss of business, contracts, opportunities, time, production, profits, goodwill, image etc..

No retailer or distributor or dealer or agent or representative or employee or person appointed by Bardini Valvole S.p.A. is authorized to make any amendments and/or integrations and/or extensions to this warranty.

### 3. EXCLUSIONS FROM THE WARRANTY

All purchaser rights, as established and recognized by law being understood and unaffected, elastomers and electrical components are expressly excluded from this warranty.

This warranty does not cover design faults whenever a product is built by Bardiani Valvole S.p.A. based on designs and/or technical specifications provided by the purchaser.

This warranty also does not cover:

- faults and/or defects resulting from incorrect and/or unsuitable and/or improper transport,
- faults and/or defects resulting from installation of the product which fails to observe the indications provided in the "Instruction, Use and Maintenance Manual" or in any case caused by incorrect and/or unsuitable and/or improper installation,
- faults and/or defects resulting from use and/or maintenance operations and/or storage of the products which fail to observe the prescriptions provided in the "Instruction, Use and Maintenance Manual" or in any case which are incorrect and/or unsuitable and/or improper,
- faults and/or defects ascribable to normal wear and tear of the product and/or its parts and/or its components,
- faults and/or defects in the product and/or its parts and/or its components whenever interventions and/or repairs have been performed by persons not authorized by Bardini Valvole S.p.A. and/or who are not suitably qualified,
- faults and/or defects in the product and/or its parts and/or its components ascribable to it being dropped and/or banged and/or dented and/or misuse and/or tampering and/or breakage and/or accidents caused by negligence and/or lack of care by the purchaser and in general for any causes not ascribable to design and/or manufacturing and/or material defects,
- faults and/or defects in the product and/or its parts and/or its components ascribable to negligence and/or carelessness and/or lack of care by the purchaser,
- faults and/or defects in the product and/or its parts and/or its components caused by other events outside the control of Bardiani Valvole S.p.A. or determined by force majeure **or mishap**.

## Recommendations

**1. All the information, indications, statements and technical details provided herein are based on test data which Bardiani Valvole S.p.A. holds to be reliable but which cannot be expected to cover every possible use of the product.**

**2. The illustrations and drawings provided are all indicative and are not binding, consequently they may not fully match the real appearance of the products.**

**3. Being as the conditions of product use and applications cannot be controlled by Bardiani Valvole S.p.A., the purchaser must ascertain suitability of the use he intends to make of the product beforehand and assume all risks and liabilities which may result from the same.**

**4. Customers are strongly advised to consult Bardiani Valvole S.p.A.'s technical-commercial collaborators to request any specific information concerning the technical characteristics of the products.**

**5. The information provided in this document refers to standard production Bardiani Valvole S.p.A. products and therefore cannot be considered a basic reference for products built to meet specific requirements.**