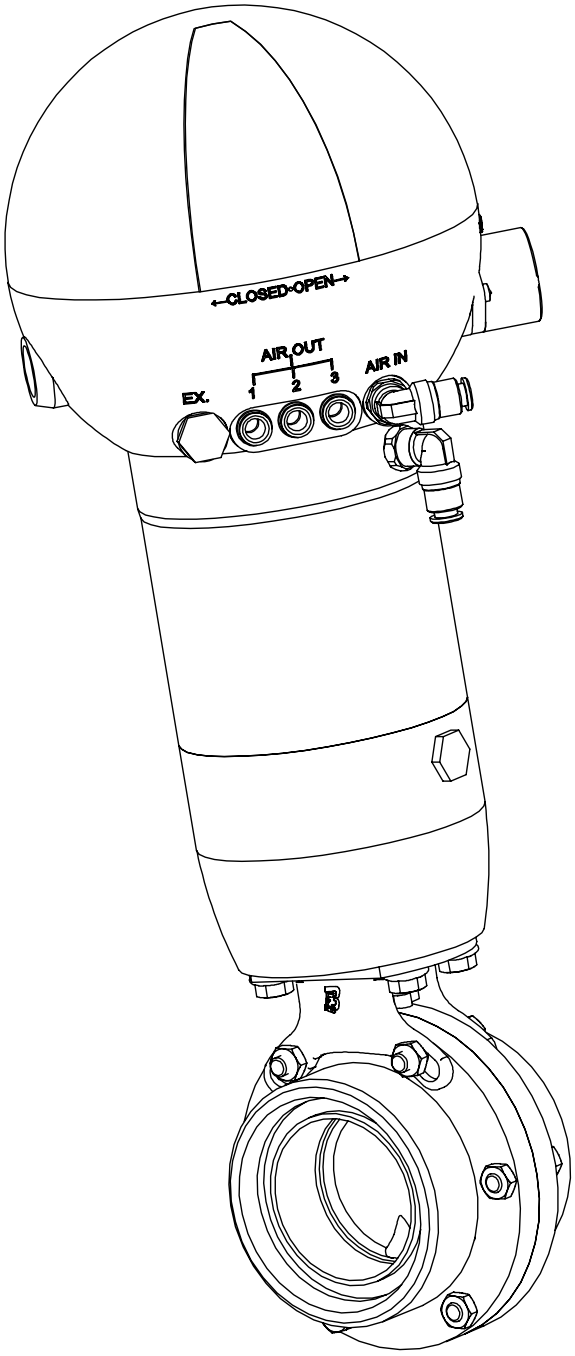
INSTRUCTION MANUAL

ZVF Pneumatic Butterfly Valve



BARDIANI VALVOLE

Table of Contents

Foreword

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

- **Always read it carefully before using the valve.**
- **Always keep it for future reference.**

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

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 personal 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.

ALWAYS connect air supply carefully and disconnect after use.

ALWAYS connect electrical supply carefully and disconnect after use.

NEVER touch moving valve parts.

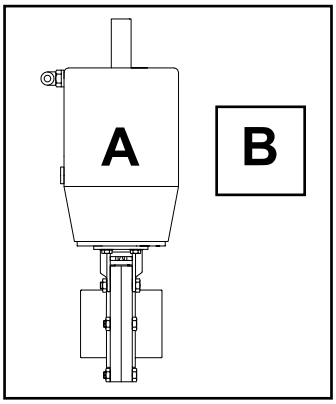
NEVER touch a hot valve.

ALWAYS handle cleaning agents carefully.

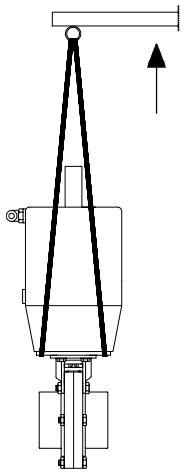
NEVER remove a valve from piping or disassemble it when the valve or piping are pressurised.

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

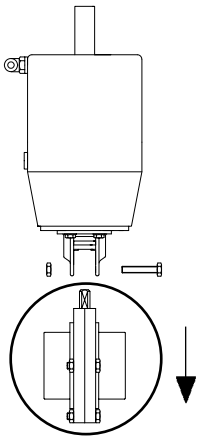
3.Receiving/Unpacking/Storage



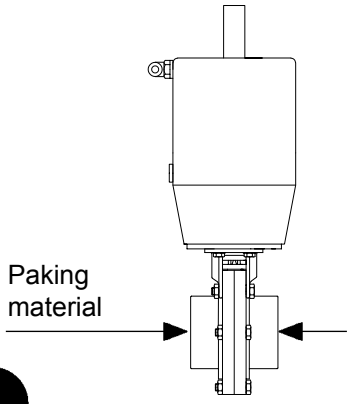
1. UNPACK AND CHECK VALVE DELIVERY:
A. Complete valve
B. Instruction manual



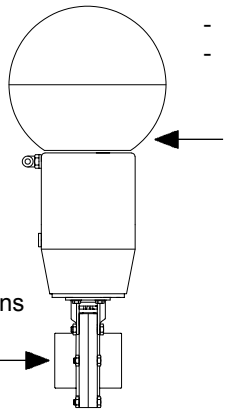
2. LIFTING OF HEAVY VALVE:
- Use lifting tool, if necessary.
- Fix valve to lifting tool.
- Lift valve carefully.



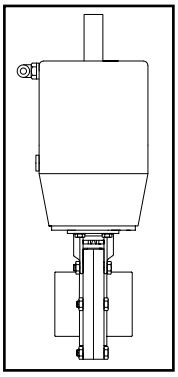
3. HANDLING OF LOOSE VALVE PARTS:
- Avoid falling loose valve parts.
- Assemble and tighten loose parts.
- See assembly instructions.



4. PACKING MATERIAL:
- Inspect internal of valve.
- Remove material and dispose of according to current directives.

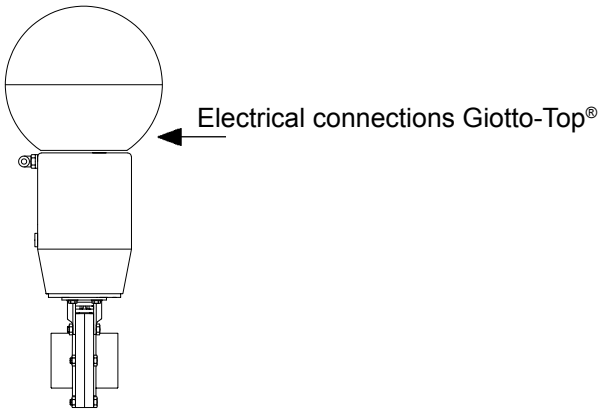


5. INSPECTION/CLAIM:
- Inspect valve connections.
- Document /verify damage, missing or wrong parts.
- Use current claim procedure if necessary.

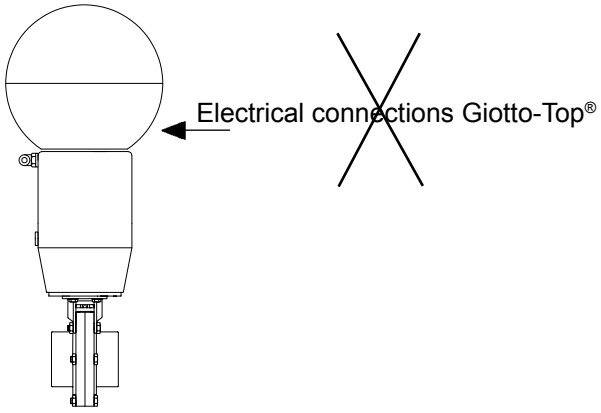


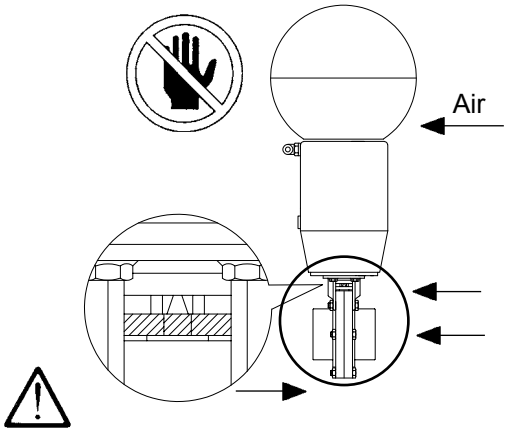
6. STORAGE/PROTECTION:
- Avoid dust, humidity, wet areas, heat and similar.
- Avoid vibration.
- Min.: - 10 °C
- Max.: + 50 °C

4. Installation



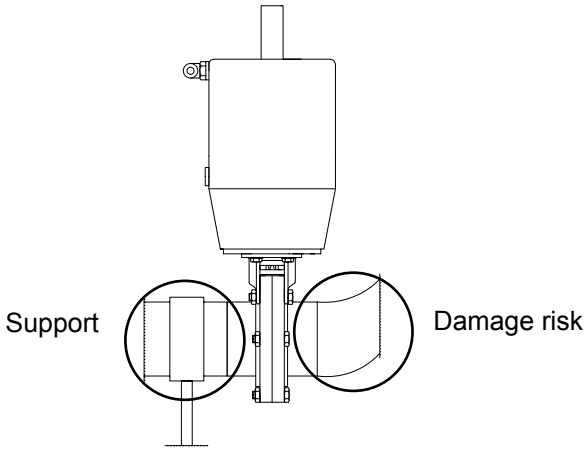
1. CONNECTION OF AIR AND EL SUPPLY:
- Use authorised personnel to install/connect the valve.
- Ensure correct air pressure and quality (see page 23).
- Ensure correct electrical supply for Giotto-Top® (see Giotto-Top® instruction manual).



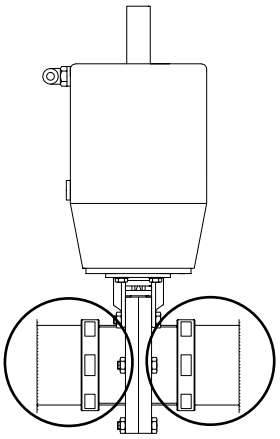


2. DISCONNECT SUPPLIES AFTER USE:
- Disconnect air supply.
- Disconnect electrical supply for Giotto-Top®

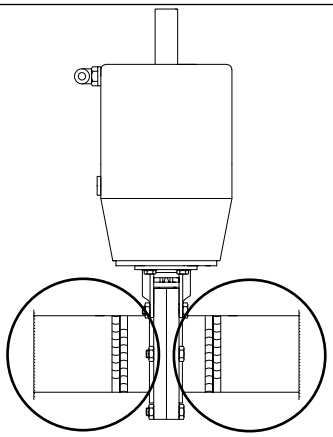
3. MOVING VALVE PARTS:
- Never stick fingers into valve ports.
- Never touch moving valve shutter/stem.



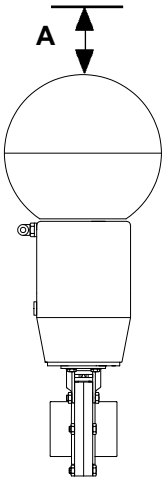
4. AVOID VALVE OVERLOADING AND COMPENSATE FOR:
- Vibration
- Thermal expansion



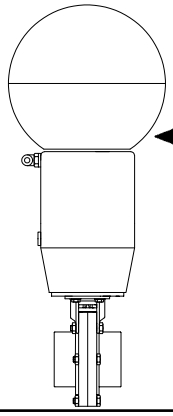
5. VALVE CONNECTIONS/UNIONS:
- Ensure tight connections between valve and piping.
- Remember gaskets and fit correctly.
- Tighten unions firmly and carefully.



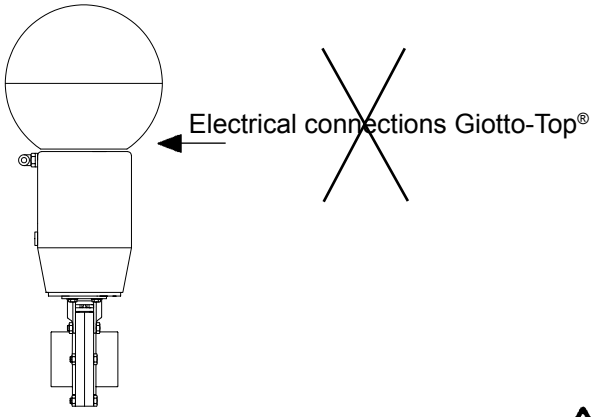
6. WELDING VALVE BODY INTO PIPING:
- Remove inner valve parts.
- Weld body carefully into piping.
- Assemble valve.
- See assembly instructions.



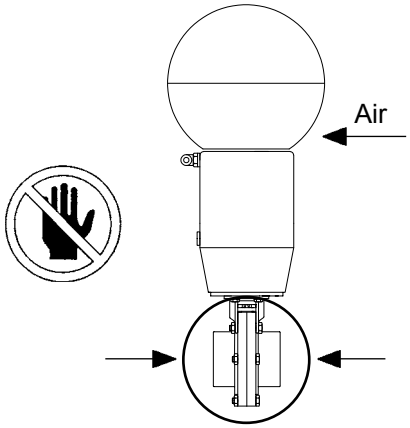
7. INSTALLING VALVE INTO PIPING:
Ensure sufficient clearance for valve disassembly.



1. CONNECTION OF AIR AND EL SUPPLY:
- Use authorised personnel to install/connect the valve.
- Ensure correct air pressure and quality (see page 24).
- Ensure correct electrical supply for Giotto-Top® (see Giotto-Top® instruction manual).

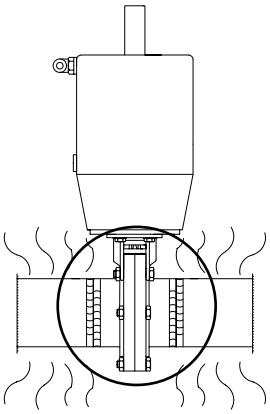


2. DISCONNECT SUPPLIES AFTER USE:
- Disconnect air supply.
- Disconnect electrical supply for Giotto-Top®



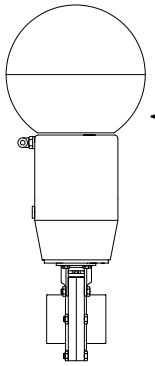
3. MOVING VALVE PARTS:
- Never stick fingers into valve ports.

BURNING RISK!



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

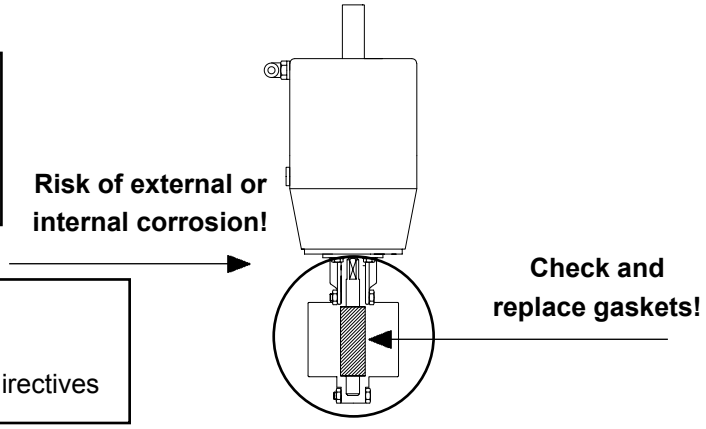
5. Operation



5. PRE-USE CHECK VALVE BEFORE OPERATION:
- Supply air to the valve.
- Supply el to the valve(with Giotto-Top®).
- Open and close the valve several times.
- Check that the valve functions operate correctly and smoothly.

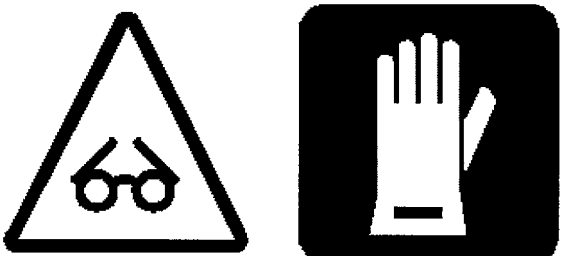
1. TROUBLESHOOTING VALVE:
Always study operation and maintenance instructions carefully before troubleshooting.

2. REPLACING WORN VALVE PARTS:
- See page 13 for spare parts ordering.
- Dispose of worn parts according to current directives

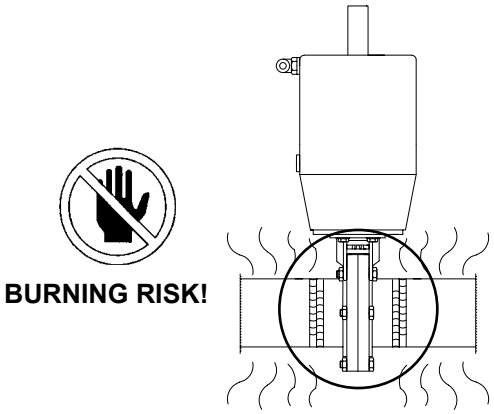


PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
External leakage	Worn out gasket	Replace gasket
Internal leakage withh closed valve, caused by normal wear		
External leakage	Too high pressure	Replace with gasket of different elastomer type
	Too high temperature	
Internal leakage with closed valve occuring earlier 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 positiong 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

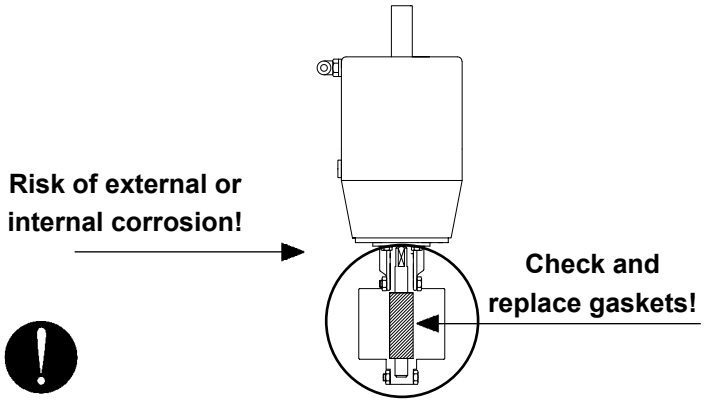
7. Cleaning



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.

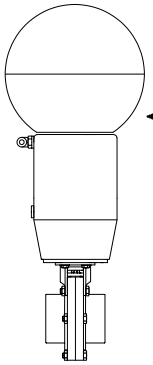


3. HANDLING OF CLEANING AGENTS:
- Dose cleaning agents regularly to avoid excessive concentration.
- Always rinse carefully with clean water after cleaning.
- Check compatibility of valve materials.

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



Electrical connections Giotto-Top®

1. CONNECTION OF AIR AND EL SUPPLY:
- Use authorised personnel to install/connect the valve.
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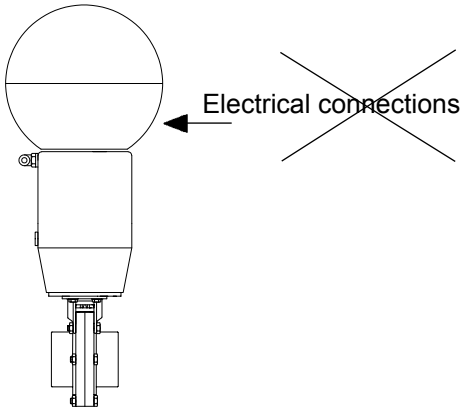
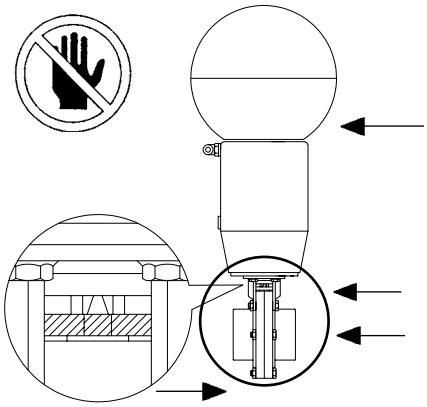
- Ensure correct electrical supply for Giotto-Top® (see Giotto-Top® instruction manual).



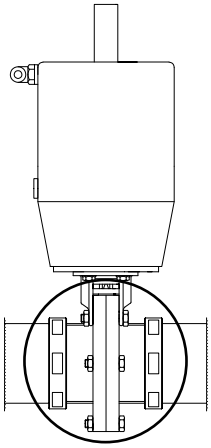
Electrical connections Giotto-Top®

2. DISCONNECT SUPPLIES AFTER USE:
- Disconnect air supply.
- Disconnect electrical supply for Giotto-Top®



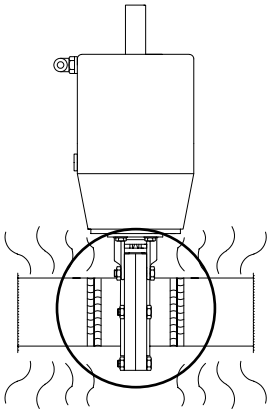
3. MOVING VALVE PARTS:
- Never stick fingers into valve ports.
- Never touch moving valve shutter/stem.

Atmospheric pressure required!



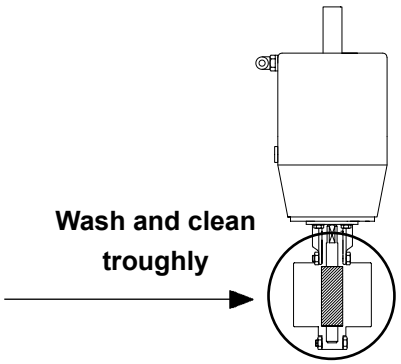
4. PRESSURISED VALVE/PIPING:
Always release fluid pressure from valve and piping before disassembling the valve.

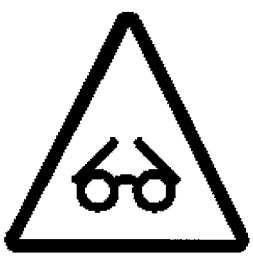
BURNING RISK!



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

8. General Maintenance





6. 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.

7. REPLACING WORN VALVE PARTS:
- Always use original spare parts.
- See page 13 for spare parts ordering.
- Dispose of worn parts according to current directives.

9. Planned Maintenance

Planned maintenance	Valve gaskets	Actuator gaskets
Preventive	Replace after 12 months	Replace after 24 months
In case of leakage	Replace at the end of the day	Replace in case of leakage
Periodical	Check for correct operation and absence of leakage	Check for correct operation and absence of leakage
	Record all actions taken	Record all actions taken

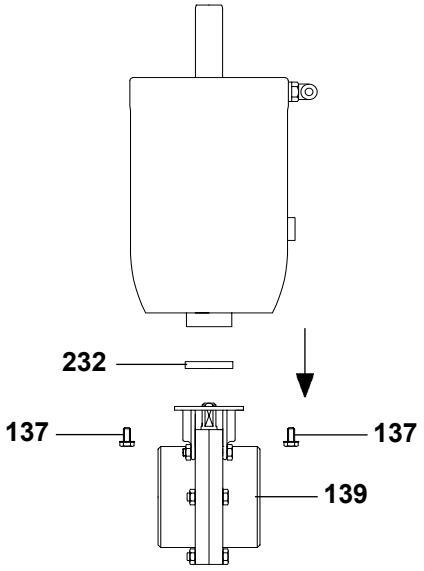
10. Spare Parts Ordering

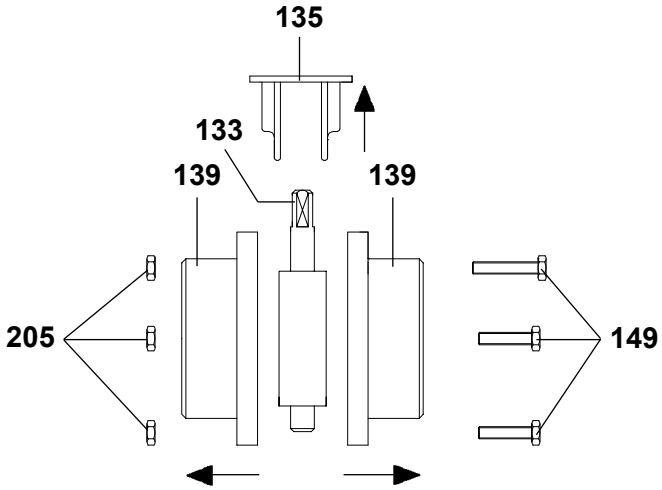
NOTE!
Please copy this page, fill it out and fax it to below address.

TO:
BARDIANI VALVOLE 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:			

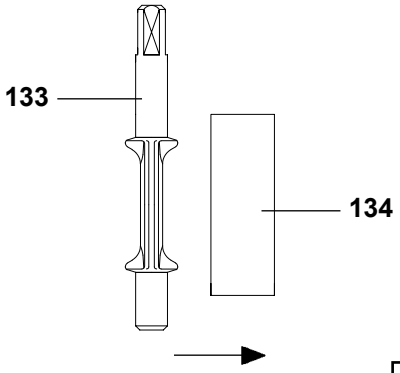
11. Disassembly of valve type ZVF (DN15--100)

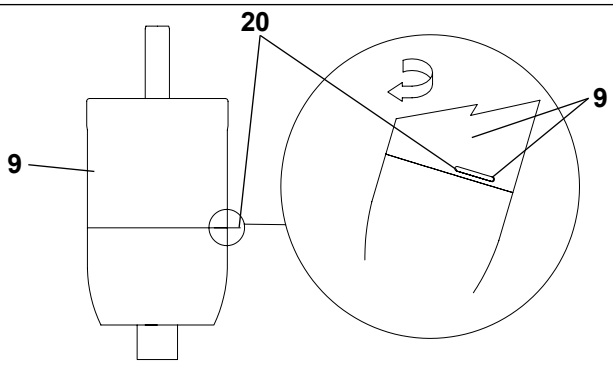




1. Remove the body (139) and butterfly indicator (232) having unscrewed the bolts (137). Dispose of worn parts according to current directives.

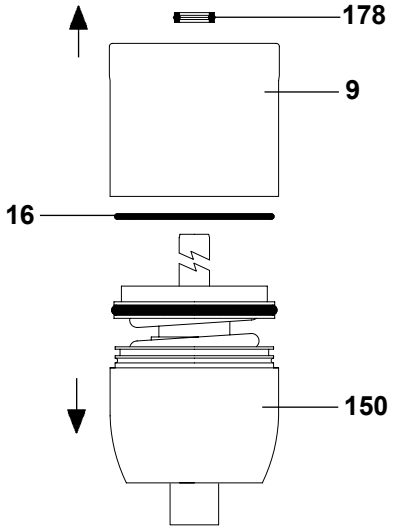
2. Remove the bolts (149) and nuts (205) in order to open the two parts of the body (139) and remove the butterfly (133) and it's support (135).

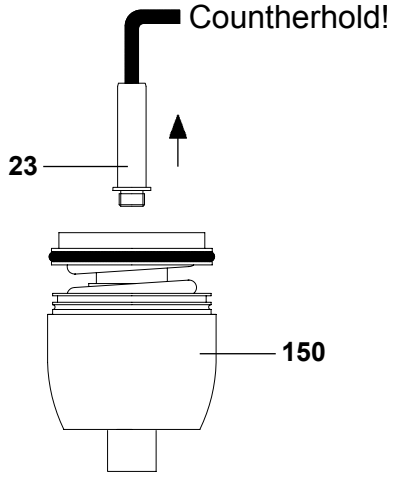




3. Remove the seal/gasket (134) from the butterfly (133).

4. Unscrew the shaft (23) of the cylinder (9). Lock wire (20) by rotating the cylinder (9) until the end of the wire (20) is no longer visible through the cylinder slot (9). Remove completely the end part using a pointed tool.

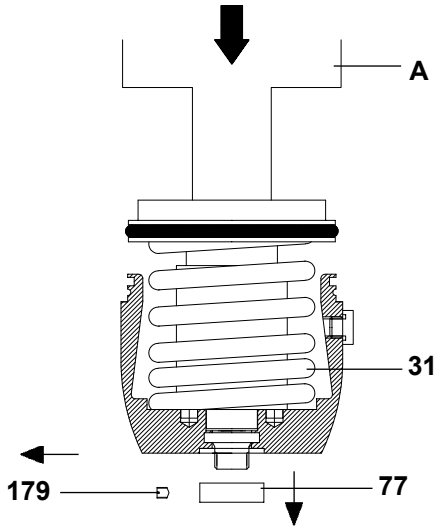




5. Remove the sealing ring (178), the cylinder (9) and the sealing ring (16) from the plug (150).

6. Unscrew the shaft (23) from the plug (150). Counterhold the shaft with an allen wrench.

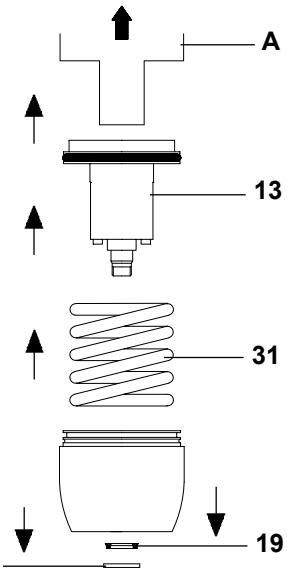
11. Disassembly of valve type ZVF (DN15--100)



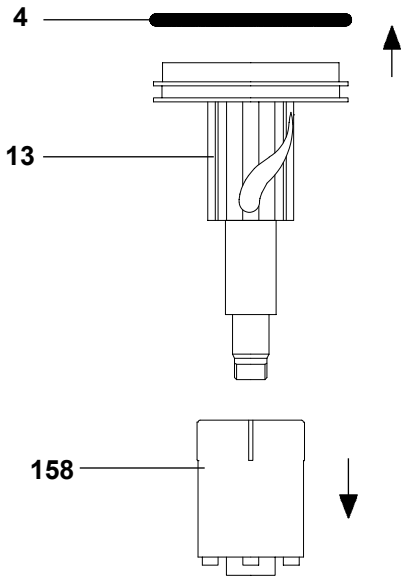
7. Using a press or special tool (A) compress the spring a few millimetres (31).

This operation must be carried out with great care by a specialised technician.

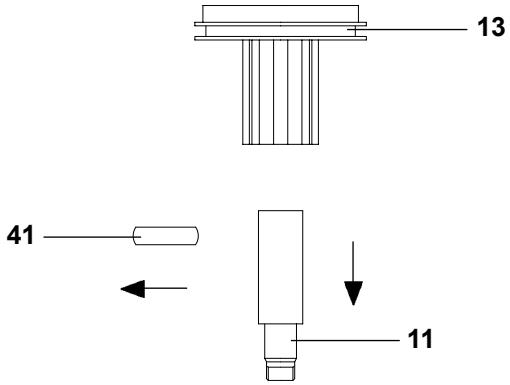
Remove the grub screw (179) and unscrew the ring nut (77).



8. Having carefully reduced the pressure exerted on the special tool (A) by the spring (31), remove the piston (13) and the spring itself (31). Remove the washer (98), the seal (19).

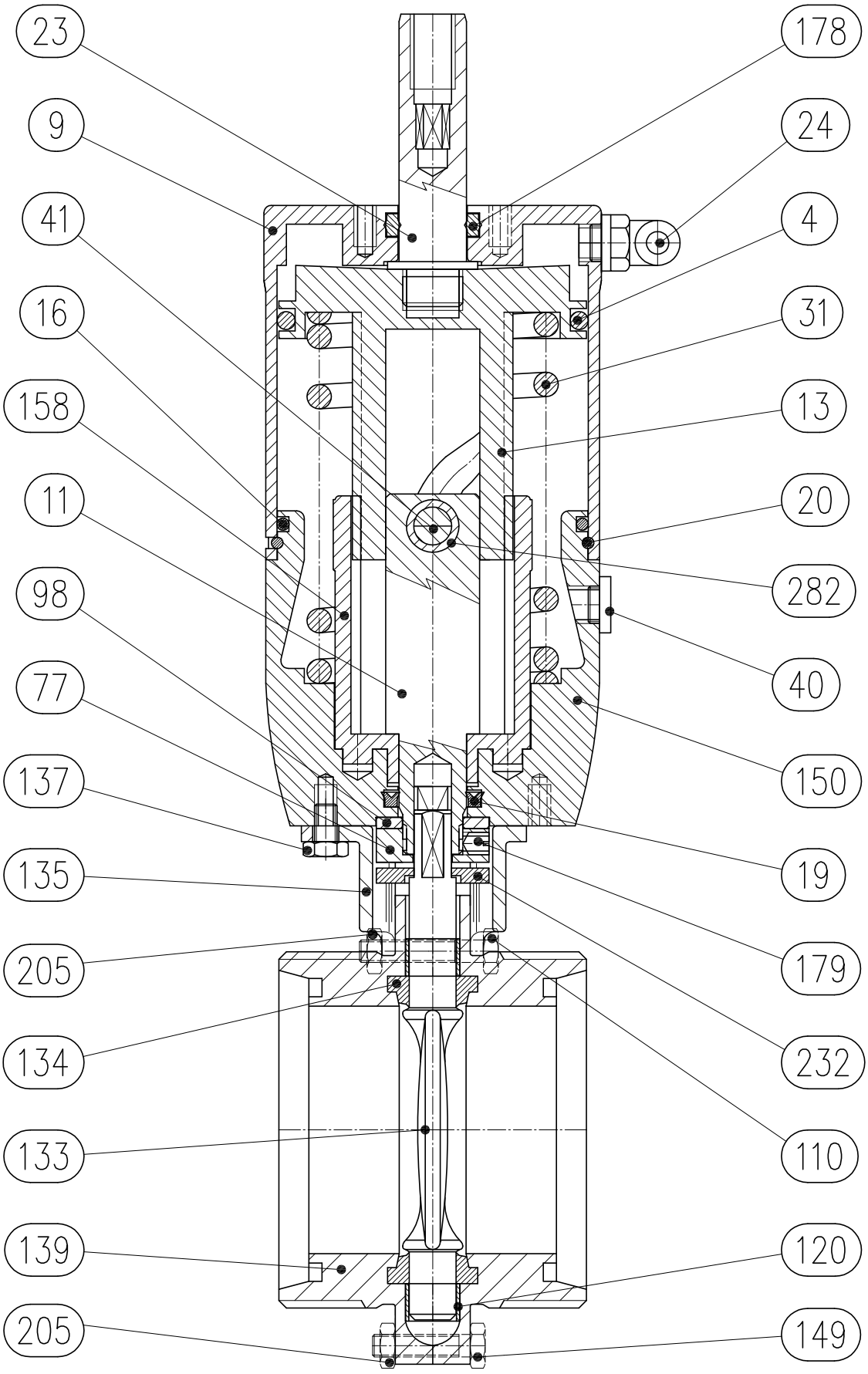


9. Remove the sealing (4) and tube (158) from the piston (13).

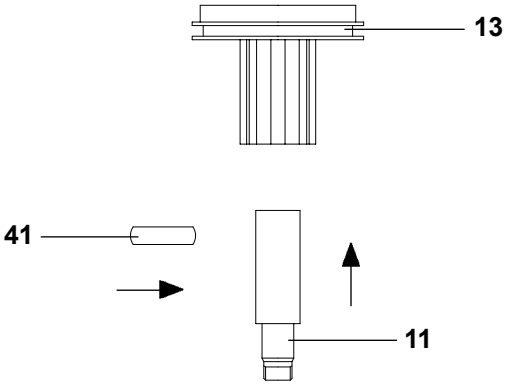


10. Remove the pin (41) and slide out the shaft (11) from the piston (13).

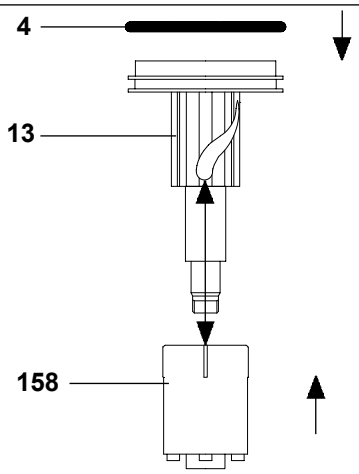
ZVF Pneumatic Butterfly (DN15--100)



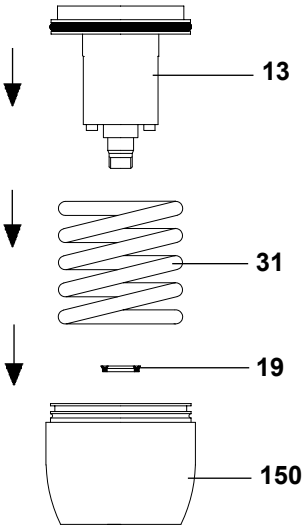
12. Assembly of valve type ZVF (DN15--100)



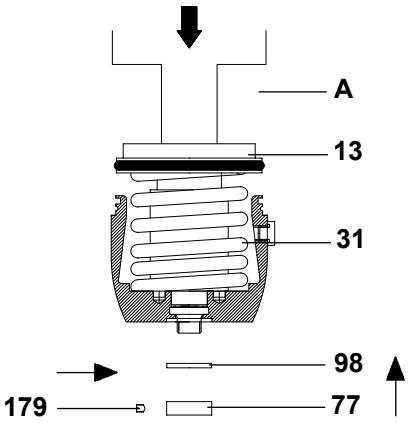
1. Fit the shaft (11) on the piston (13) and insert locking pin (41).



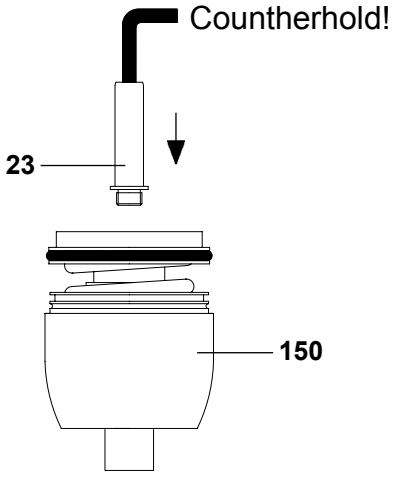
2. Fit the sealing ring (4) and tube (158) on the piston (13).



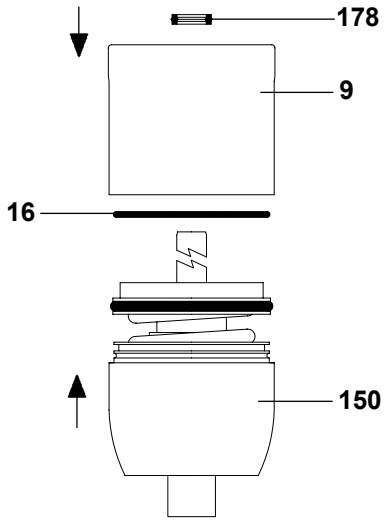
3. Fit in the following order the seal (19), the spring (31) and the piston (13) in the plug (150).



4. Using the special tool (A) compress the piston (13) as indicated in the above diagram so the spring (31) closes. Fit the washer (98) and tighten the ring nut (77).
N.B. The ring nut must be tighten up to it's seat but do not over tighten.
Finally lock the whole assembly tightening the grub screw (179) and with caution remove the special tool (A).

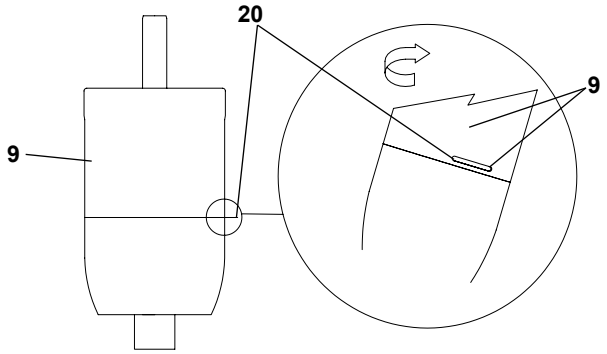


5. shaft (23) into the plug (150). Counterhold the pivot with an allen wrench.

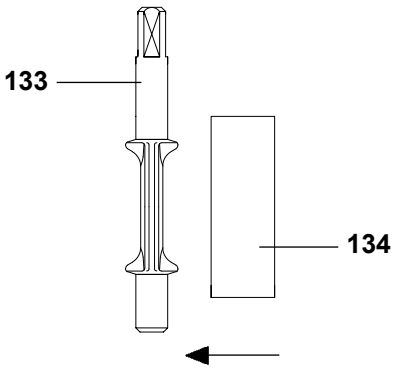


6. Fit in the following order the sealing ring (16), plug (150), the cylinder (9) and sealing ring (178).

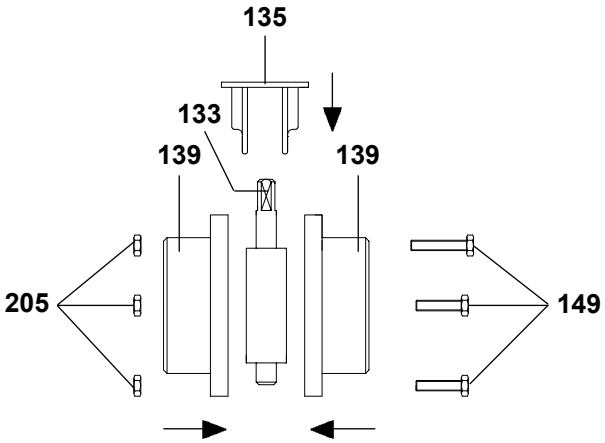
12. Assembly of valve type ZVF (DN15--100)



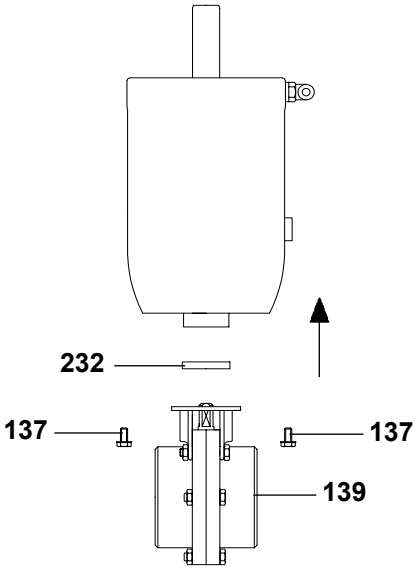
7. Fit the lock wire (20) in the plug (150) through the slot in the cylinder (9). Rotate the cylinder (9) until the wire (20) is completely inserted,tighten the shaft (23) on the cylinder (9).



8. Insert the seal/gasket (134) on the butterfly (133).

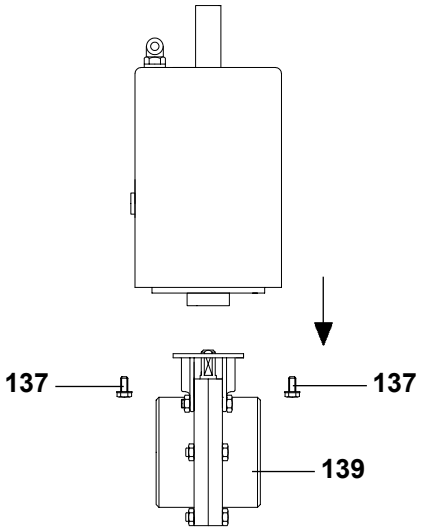


9. Fit the two halves of the body (139) inserting the butterfly (133). Tighten all parts including the support (135) with the bolts (149) and nuts (205).

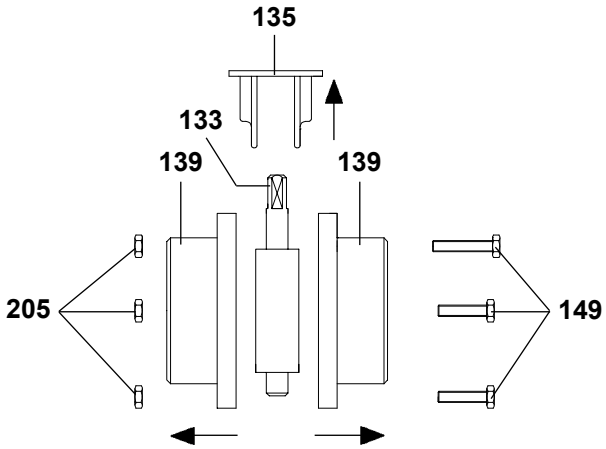


10. Fit the valve body (139) on the actuator remembering to insert the butterfly indicator (232). Close and tighten bolts (137).

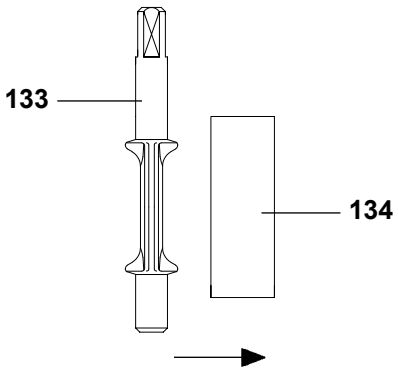
13. Disassembly of valve type ZVF (DN125-150)



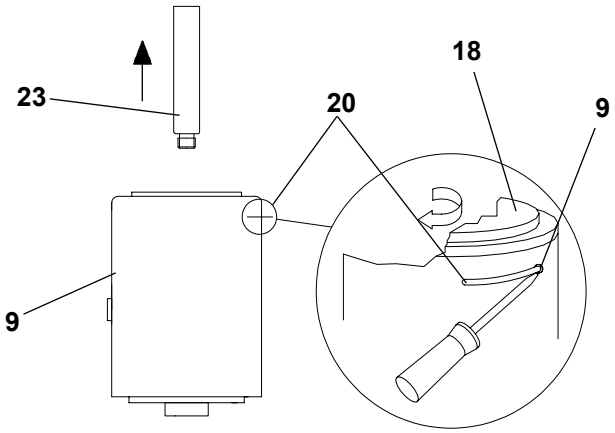
1. Remove the body (139) having unscrewed the bolt (137).



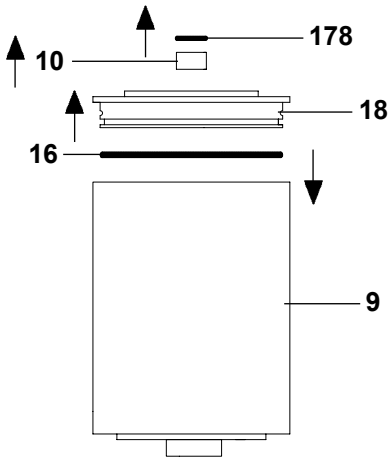
2. Remove the bolts (149) and nuts (205) in order to open the two parts of the body (139) and remove the butterfly (133) and it's support (135).



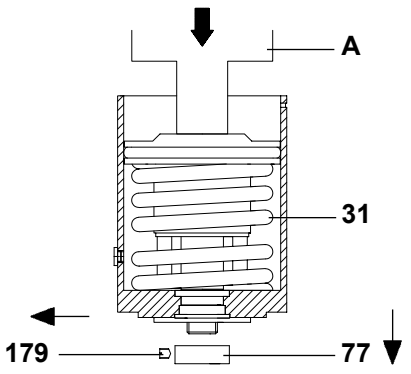
3. Remove the seal/gasket (134) from the butterfly (133).



4. Unscrew the shaft (23) of the cylinder (9). Lock wire (20) by rotating the plug (18) until the end of the wire (20) is no longer visible through the cylinder slot (9). Remove completely the end part using a pointed tool.



5. Remove the sealing ring (178), the bush (10), the plug (18) and the sealing ring (16) from the cylinder body (9).

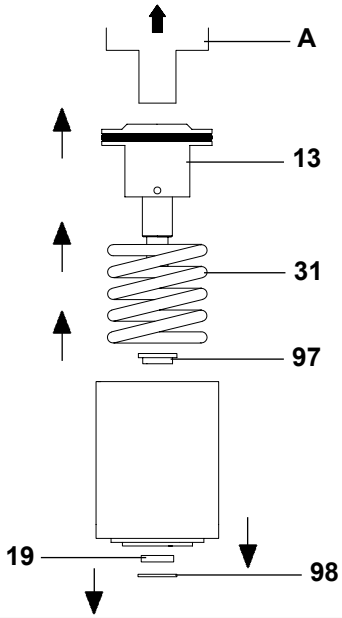


6. Using a press or special tool (A) compress the spring a few millimetres (31).

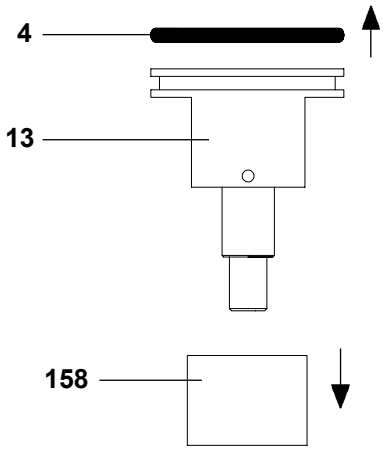
This operation must be carried out with great care by a specialised technician.

Remove the grub screw (179) and unscrew the ring nut (77).

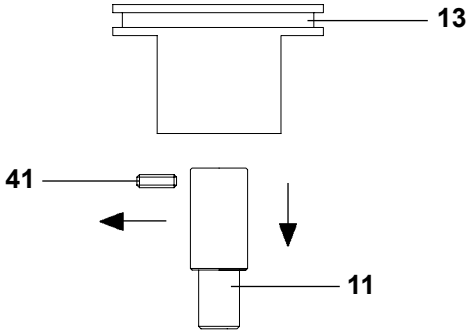
13. Disassembly of valve type ZVF (DN125-150)



7. Having carefully reduced the pressure exerted on the special tool (A) by the spring (31), remove the piston (13) and the spring itself (31). Remove the washer (98), the seal (19) and the bush (97).

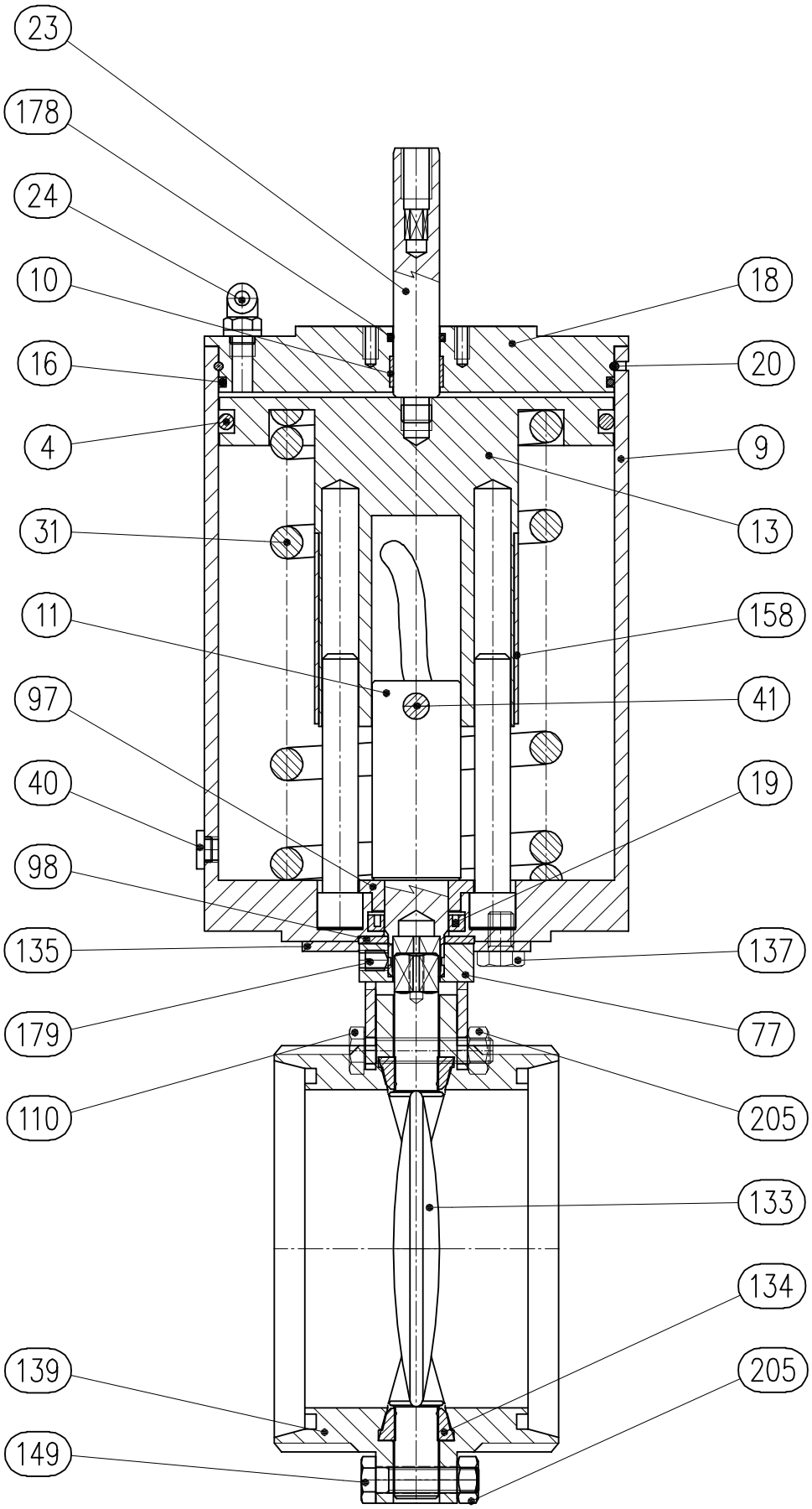


8. Remove the sealing (4) and tube (158) from the piston (13).

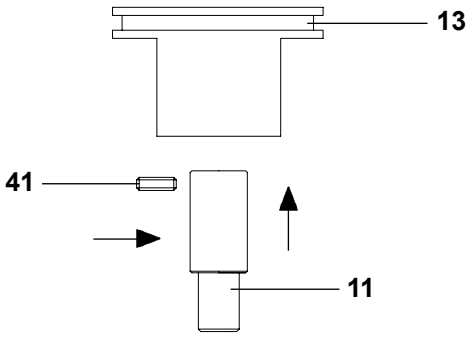


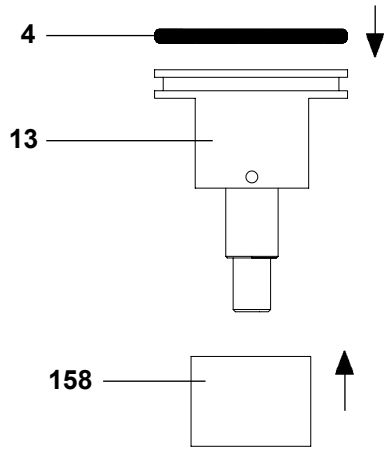
9. Remove the pin (41) and slide out the shaft (11) from the piston (13).

ZVF Pneumatic Butterfly (DN125--150)



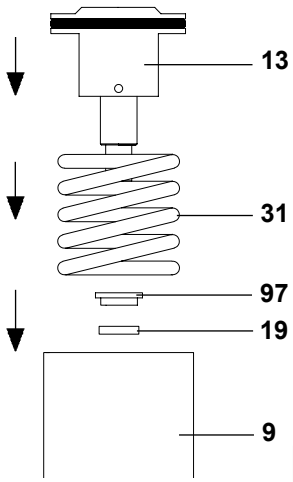
14. Assembly of valve type ZVF (DN125--150)



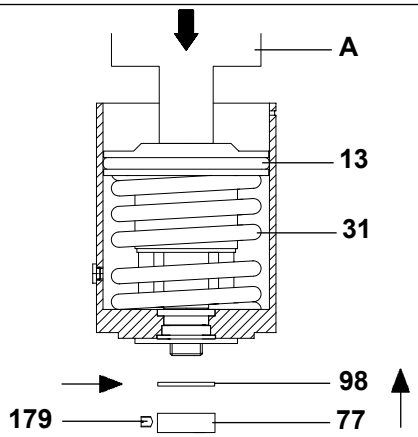


1. Fit the shaft (11) on the piston (13) and insert locking pin (41).

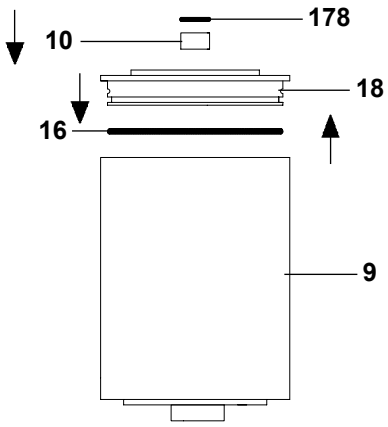
2. Fit the sealing ring (4) and tube (158) on the piston (13).



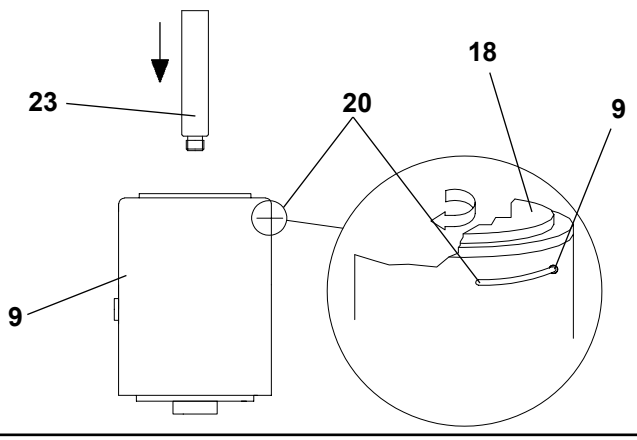
3. Fit in the following order the seal (19), the bush (97), the spring (31) and the piston (13) in the cylinder (9).



4. Using the special tool (A) compress the piston (13) as indicated in the above diagram so the spring (31) closes. Fit the washer (98) and tighten the ring nut (77).
N.B. The ring nut must be tighten up to it's seat but do not over tighten.
Finally lock the whole assembly tightening the grub screw (179) and with caution remove the special tool (A).

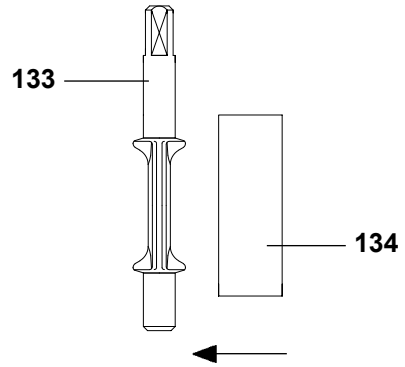


5. Fit in the following order the sealing ring (16), plug (18), bush (10) and sealing ring (178).

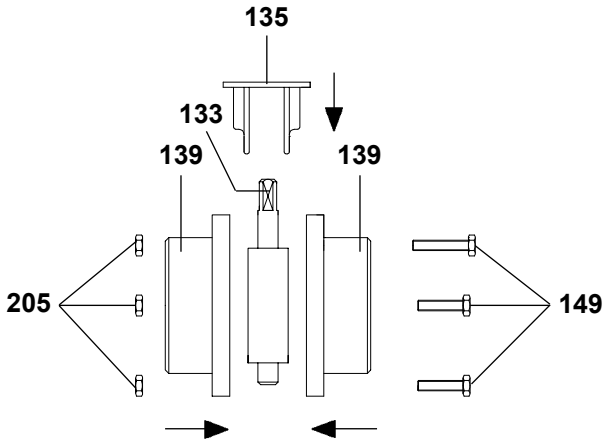


6. Fit the lock wire (20) in the plug (18) through the slot in the cylinder (9). Rotate the plug (18) until the wire is completely inserted, tighten the shaft (23) on the cylinder (9).

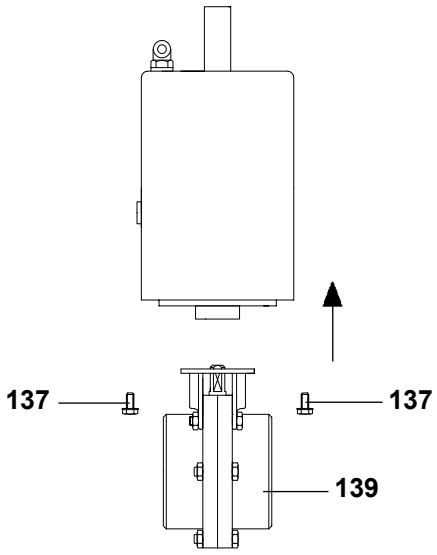
14. Assembly of valve type ZVF (DN125--150)



7. Insert the seal/gasket (134) on the butterfly (133).

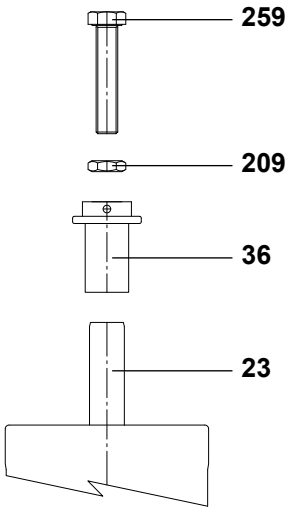


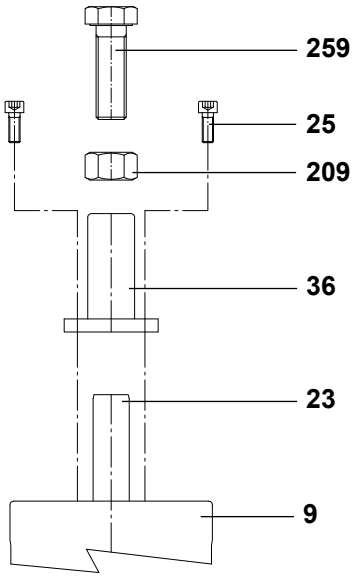
8. Fit the two halves of the body (139) inserting the butterfly (133). Tighten all parts including the support (135) with the bolts (149) and nuts (205).



9. Fit the valve body (139) on the actuator. Close and tighten bolts (137).

15. Assembly/Disassembly shaft stroke limiter





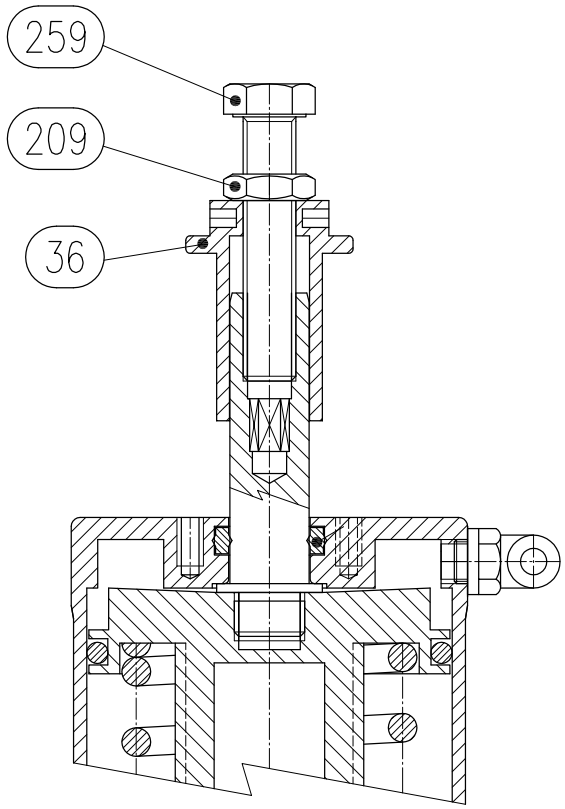
Dismantlement of stroke limiter in inlet
Unscrew the screw (259) and remove the mecchanical stop (36) from the upper shaft (23).

Assembly of stroke limiter in inlet
Screw on the mecchanical stop (36) the screw (259) and the nut (209). Lock the screw (259) on the shaft (23). Adjust the inlet with the mecchanical stop (36) and block it with the nut (209).

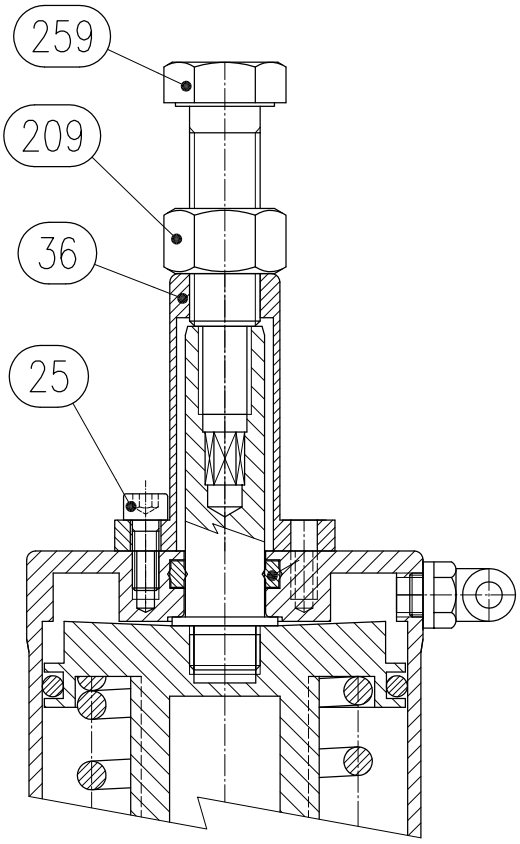
Dismantlement of stroke limiter in outlet
Unscrew the nut (209) and the screw (259), unscrew the screws (25)and remove the mecchanical stop (36) from the upper shaft (23).

Assembly of stroke limiter in outlet
Assembly the mecchanical stop (36) on the cilinder (9) with the screws (25). Screw on the mecchanical stop the screw (259) with the nut (209). Make the regulation with the screw and then block the nut (209).

SHAFT STROKE LIMITER IN INLET



SHAFT STROKE LIMITER IN OUTLET



16. Technical Data

Valve Specifications:

Max. working pressure :	10 bar (145 psi)
Min. working pressure :	Full vacuum
Max. product temperature :	120° C (248° F)
Min. product temperature :	-10° C (14°F)
Material in contact with the product :	AISI 316L (1.4404)
Gasket in contact with the product (FDA homologation) : (other seals avaiable upon request).	EPDM, FKM, MVQ(silicon), HNBR
Finish on surfaces in contact with the product :	Ra 0.8 µm (other types of surface finish upon request).

Pneumatic Actuator Specifications:

Connectors :	1/8” (BSP)
Air Pressure :	from 6 bar (87 psi) to 8 bar (116 psi)
Material :	AISI 304L (1.4307)
Gasket Material :	NBR
Power Supply (Giotto-Top®) :	See Giotto-Top® Instruction manual

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 DN15--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
- Valve size DN125--150 only for fluids in Group 2)

17. Part List

Item	Description	Item	Description
4	Sealing ring	179	Grub screw
9	Cylinder	205	Nut
10	Bush	209	Nut
11	Shaft	232	Butterfly indicator
13	Piston	259	Socket screw
16	Sealing ring		
18	Threaded plug		
19	Sealing ring		
20	Lock wire		
23	Upper shaft		
24	Air fitting		
25	Socket screw		
31	Spring		
36	Mecchanical stop		
40	Plug		
41	Pin		
77	Nut		
97	Bush		
98	Insert		
110	Bolt		
133	Butterfly		
134	Gasket		
135	Support		
137	Bolt		
139	Half bodies		
149	Socket screw		
150	Threaded plug		
158	Pipe		
178	Sealing ring		

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 deducted 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 .
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.

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.

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