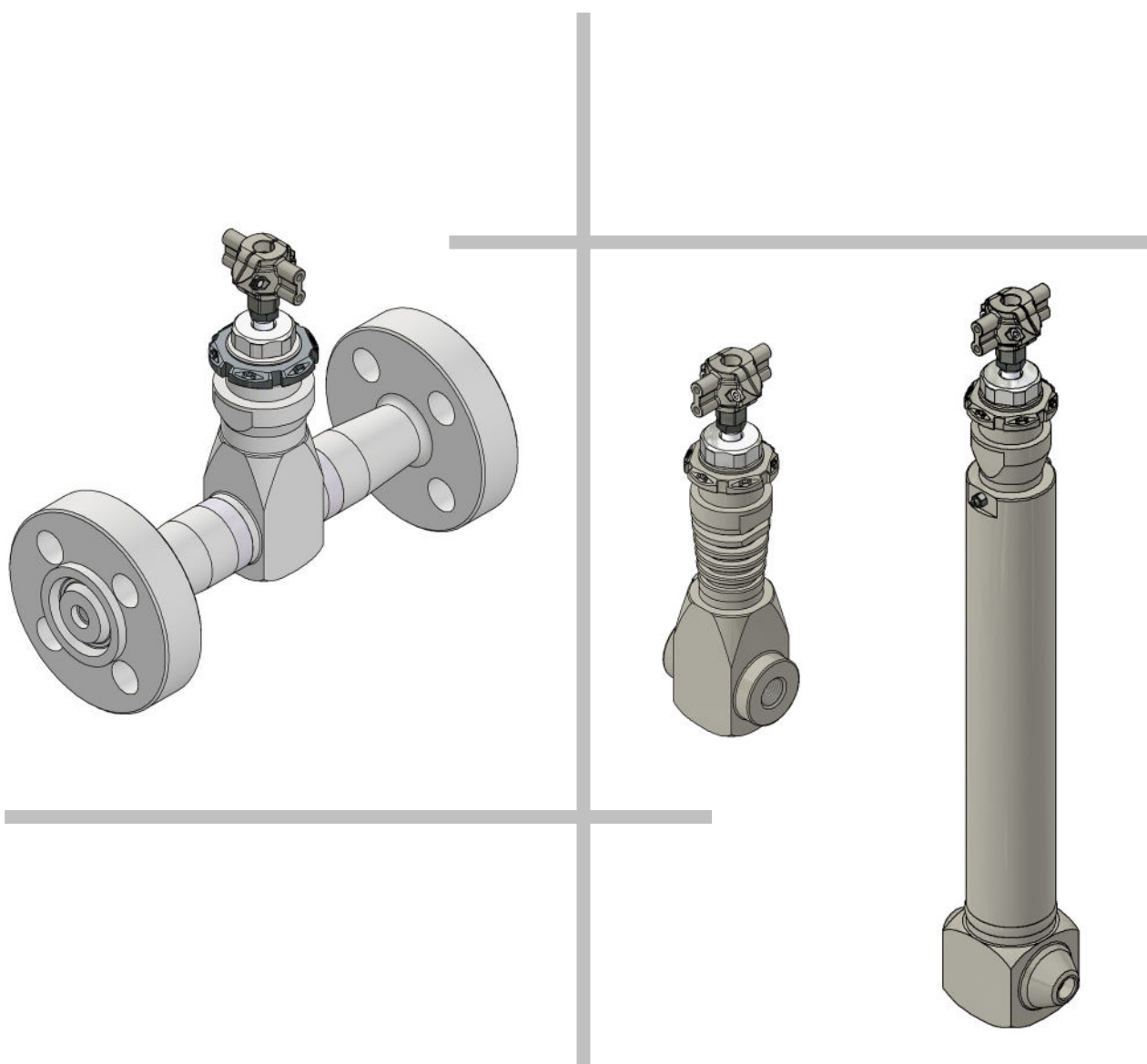




INSTALLATION, USE AND MAINTENANCE MANUAL



Micro valve **MF40 SERIES**



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11.0 PLATES

11.01 IDENTIFICATION PLATE



1.0 SAFETY INFORMATION

Safe operation of this product is only guaranteed if it is properly installed, commissioned, used and maintained by qualified staff in accordance with the operating instructions.

INTENDED USE

Check that the valve is suitable for the intended use and application by checking:

that the material of which the valve is made is compatible with the process fluid;

that the valve is suitable for the pressures and temperatures of the process fluid;

that an adequate safety device has been installed to prevent hazardous overpressures or overheating in the event of valve malfunction.

OMC valves are not designed to cope with external stresses that can be induced by the systems in which they are inserted. It is the installer's responsibility to take these efforts into account and to take appropriate precautions.

ACCESS

Ensure safe access and, if necessary, a safe work platform (with suitable protection) before starting to work on the product. Provide suitable lifting equipment, if necessary.

LIGHTING

Ensure adequate lighting for the type of work required.

HAZARDOUS FLUIDS IN THE PIPE

Take into account the contents of the pipe or what it may have previously contained. Pay attention to: flammable materials, substances which are hazardous to health, extreme temperatures.

ENVIRONMENTAL SITUATIONS

Take into consideration: areas at risk of explosion, lack of oxygen (e.g. tanks, wells, etc....), hazardous gases, temperature limits, high or low temperature surfaces, fire hazard (e.g. during welding), excessive noise, moving machines.

TEMPERATURE

Wait for the temperature to normalize after isolation to avoid the risk of burns or frostbite.

SYSTEM

Consider the possible effects on the whole planned work system.

Could the planned action put other parts of the system or the staff at risk?

Make sure that the shut-off valves are operated gradually in order to avoid abrupt changes to the system.

PRESSURIZED SYSTEMS

Make sure that pressure is isolated and safely vented to atmospheric pressure. Consider double isolation (double block and vent) and locking or labeling of closed valves. Do not consider the system depressurized even if the pressure gauge indicates zero pressure.

The valve is under pressure during operation. Before carrying out any maintenance or operations on the flanges and closing caps, make sure that the line is depressurized (0 bar) and at room temperature.



1.09 TOOLS AND CONSUMABLES

Before starting the work, make sure you have all the necessary equipment to carry it out, do not use makeshift equipment. Use only original OMC spare parts.

1.10 PROTECTIVE CLOTHING

Consider whether you and/or others need protective clothing, for example, against chemicals, extreme temperatures, radiation, noise, falling objects, hazards to eyes and face.

1.11 QUALIFICATION OF WORKERS

All work must be carried out and supervised by experienced, trained and competent staff.

1.12 HANDLING

Use adequate means for handling the products, assessing all the risks related to lifting, the environment load, the individual and the circumstances of the work that is about to be performed.

1.13 FREEZING

Plan to protect products from frost in environments with temperatures below the freezing point of the process fluid.

OTHER RISKS

During operation, the external surface of the product may be at dangerous temperatures. Be aware of this risk

DISPOSAL

For disposal, comply with the laws in force in the state/country/nation where you intend to dispose of the product.

RISK OF CORROSION AND/OR EROSION

Periodically check any internal and/or external corrosion and/or erosion phenomena as they may significantly damage the pressurized parts, locally reducing their thickness and therefore the degree of safety.



2.0 INSTALLATION

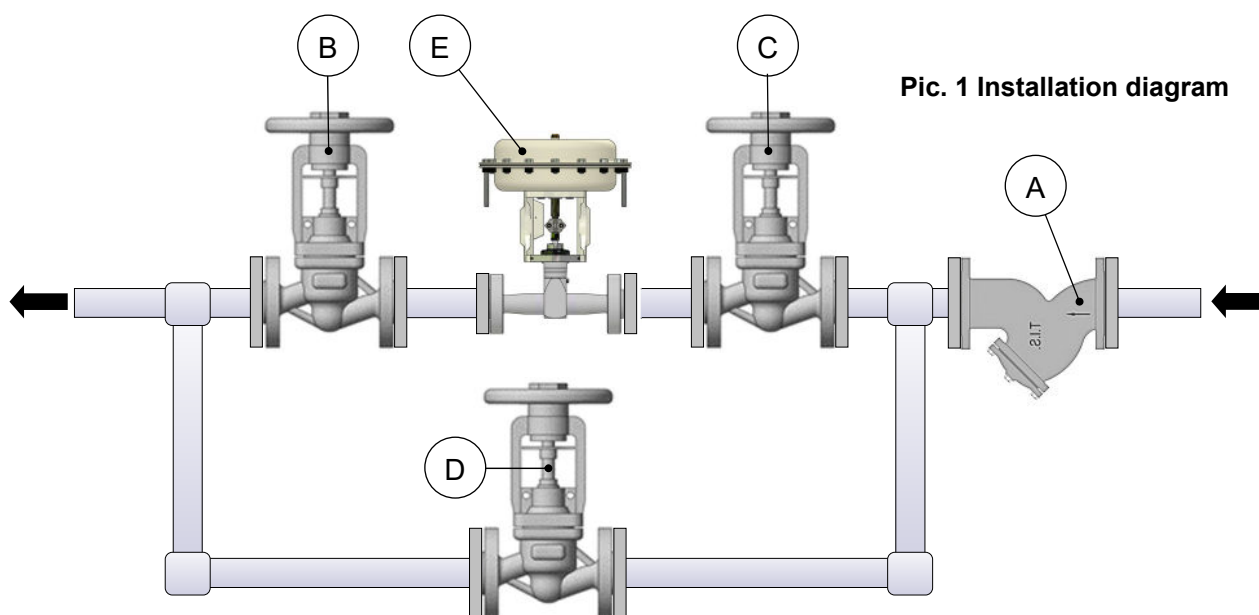
All work must be carried out and supervised by experienced, trained and competent staff.

The OMC valves' body casting highlights the flow direction, the nominal passage, the maximum operating pressure and the material.

Before installing the valve, make sure that the pipe that conveys the process fluid is clean, proceeding, if possible, to an energetic blowing with steam or compressed air.

The installation of a filter (pos. A Pic. 1) upstream of the valve will prevent any dirt from entering the plug.

To allow for the periodic maintenance of the valves mounted on systems with continuous operation, it is recommended to install two shut-off valves, located upstream (pos. B Pic. 1) and downstream (pos. C Pic. 1) of the control valve, and a bypass one (pos. D Pic. 1). Use the bypass valve (pos. D Pic. 1) to manually adjust the process when the control valve is temporarily switched off. The two shut-off valves must have the same internal diameter as the control valve. When installing the valve, make sure that the flow in the pipe goes in the same direction as indicated by the arrow on the valve body.



Pic. 1 Installation diagram

The valve mounting position does not limit its operation, however it is recommended to mount the valve with the actuator facing upwards (pos. E Pic.1) as other positions may entail the accumulation of any impurities present in the fluid, damaging the valve itself.

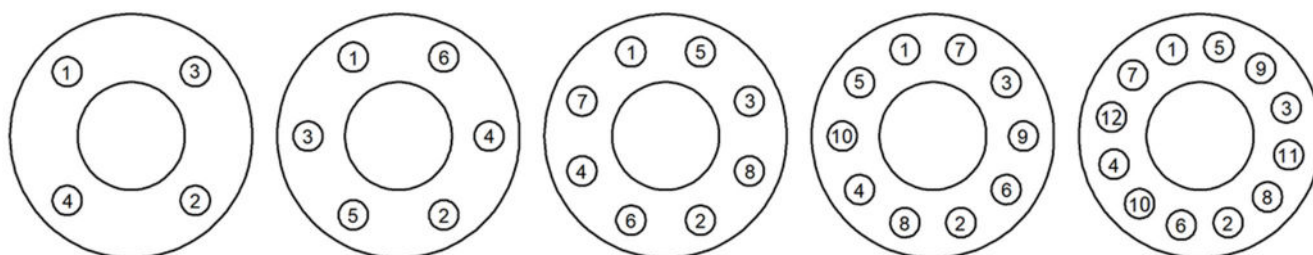
2.01 MOUNTING THE VALVE ON THE PIPE

To ensure uniformity of load and alignment, the flange bolts must be tightened gradually and in a criss-cross sequence, as shown in Pic. 2.

Avoid overtightening. Use the recommended tightening torques. Avoid misalignment of the pipes. Choose the flange gaskets according to the operating conditions.



WARNING!!! For valves with braze-on connections, have the welding operation carried out only by qualified staff and, in order to avoid any damage to the valve, keep the valve body cold during such operation.

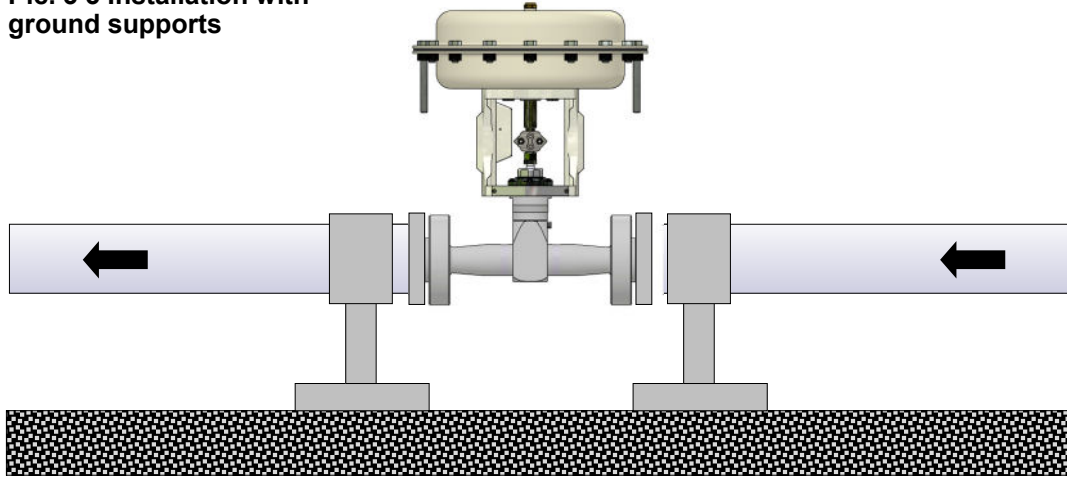


Pic. 2 Tightening sequence

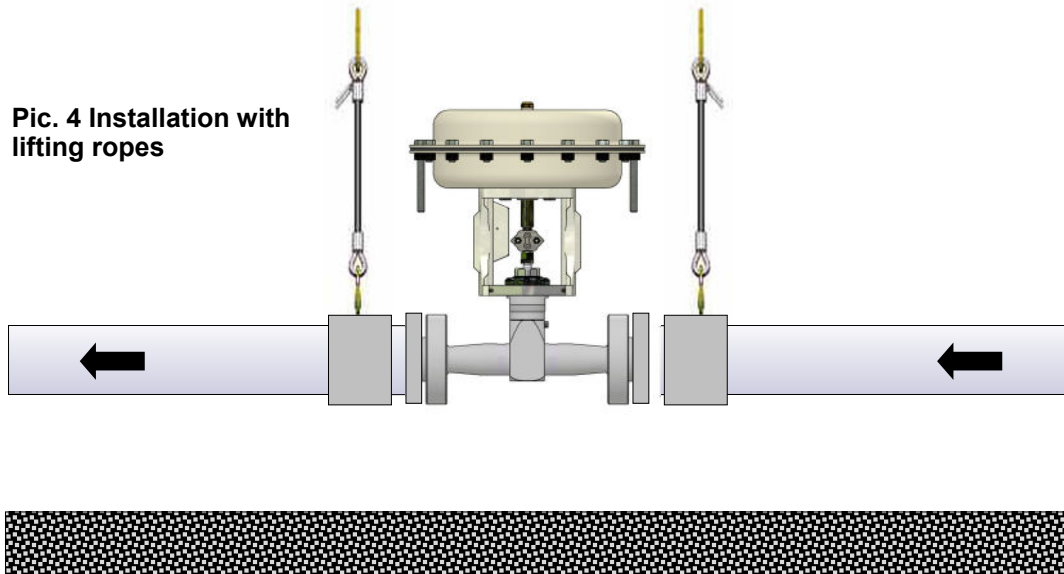


WARNING!!! An excessive weight of the valve could compromise the structure of the system. If necessary, support the valve using suitable supports (Pic. 3) and/or ropes (Pic. 4)

Pic. 3 Installation with ground supports



Pic. 4 Installation with lifting ropes



3.0 ACTUATOR CONNECTION

3.01 PNEUMATIC ACTUATOR CONNECTION

The pneumatic actuator is equipped with two 1/4"NPT connections, one of which is closed by a filter. Connect the control air pipe to the connection that remains free. The control air must be clean and dehumidified, free of oils and greases and must not exceed a maximum permissible pressure. The signal necessary to control the valve is shown on the plate on the actuator's yoke. If the valve is equipped with a pilot positioner, refer to its manual.

For maintenance operations of OMC pneumatic actuators refer to the specific manual .

3.02 ELECTRICAL ACTUATOR CONNECTION

For the connection of the electric actuator refer to its specific manual.



4.0 MAINTENANCE

All the operations described below must be carried out and supervised by expert, trained and competent staff. OMC valves are uniquely identified by a serial number shown on the plate located on the actuator's yoke. To order spare parts or for any need, always refer to the aforementioned number.

The valve is pressurized during operation. Before carrying out any maintenance or operations on the flanges and closing caps, make sure that the line is depressurized (0 bar) and at room temperature.

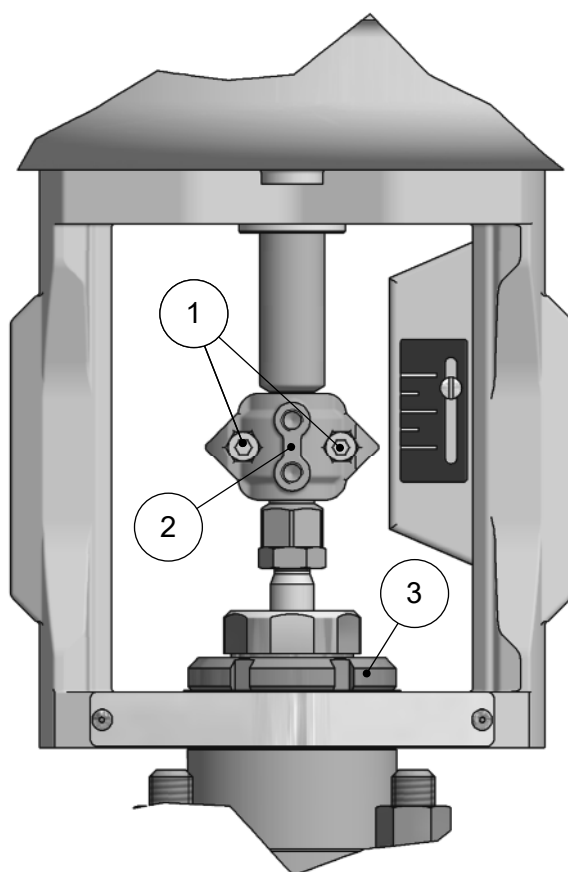


4.01 VALVE/ACTUATOR SEPARATION

Referring to Pic. 5 proceed as follows:

- ◆ Bring the valve to 50% of the stroke
- ◆ Unscrew the screws (1) completely and remove the clamps (2)
- ◆ Completely unscrew the ring nut (3).
- ◆ Remove the actuator .

To reassemble everything, repeat the operations in reverse order, paying attention to the re-alignment of shafts.



Pic. 5

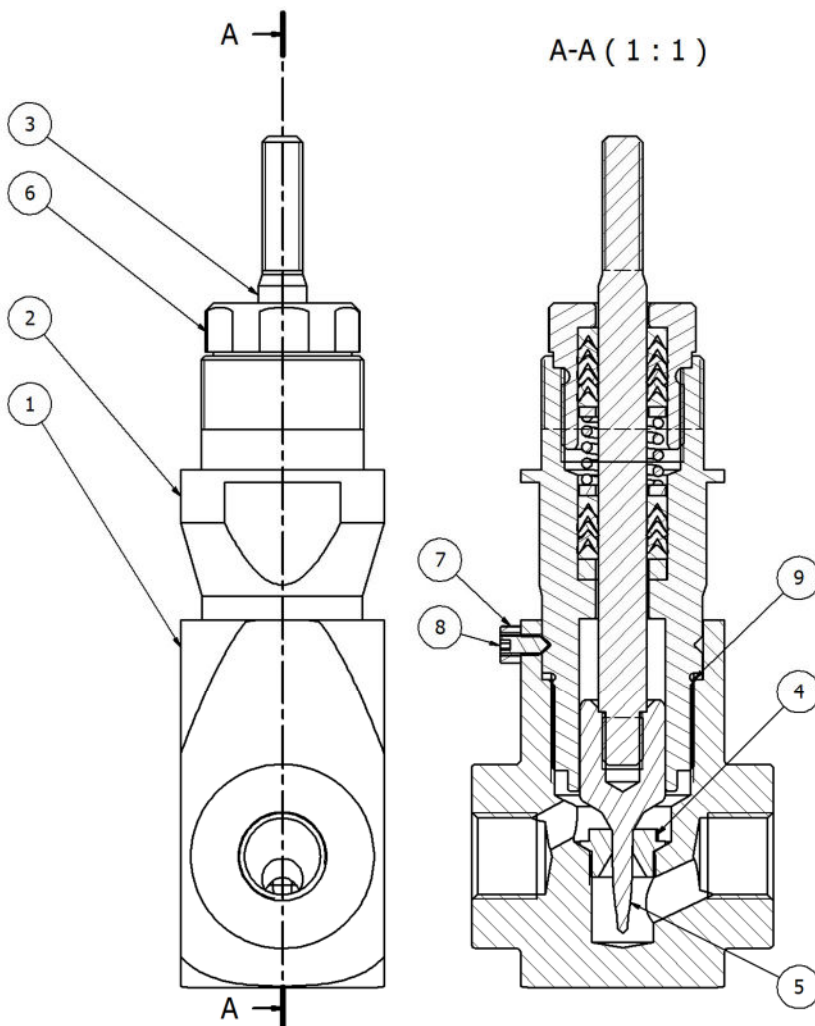


4.02 REPLACEMENT OF SEAT/PLUG OF STANDARD VALVE

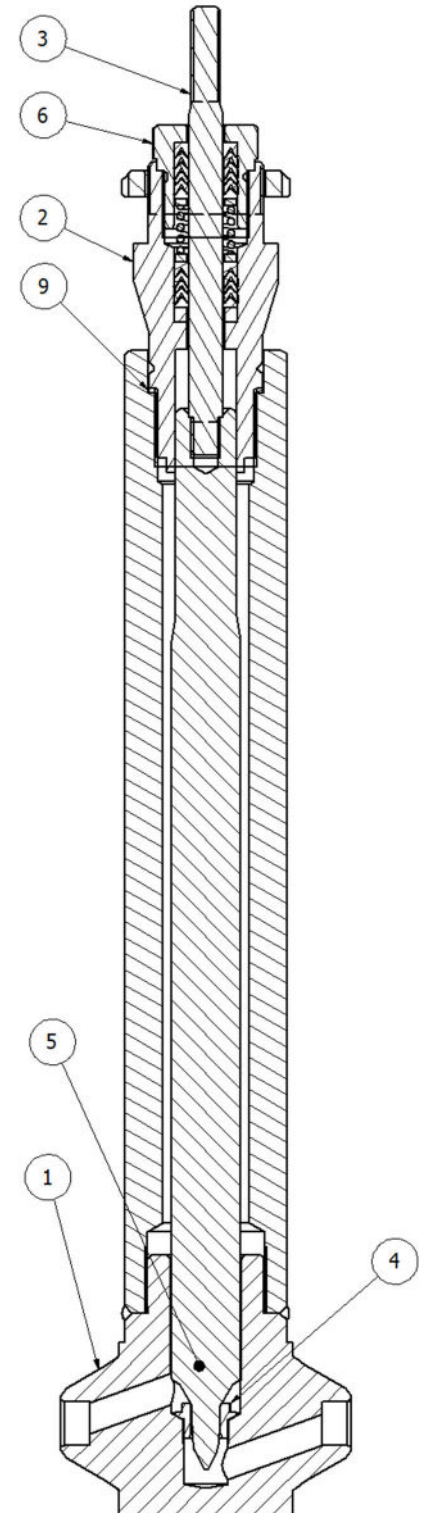
Referring to Pic. 6 / 6.1 proceed as follows:

- ◆ Separate the actuator from the valve body as described in the previous paragraph
- ◆ Unscrew the nut (6) completely
- ◆ Loosen the nut (7) and completely unscrew the grub screw (8).
- ◆ Unscrew the bonnet (2) from the valve body (1).
- ◆ Remove the complete plug (5) from the bonnet (2).
- ◆ If necessary, unscrew and replace the seat (4) using the special spanners.
- ◆ Insert the new plug into the bonnet (2) taking care to grease the rod (3) with oil compatible with the process fluid.
- ◆ Always replace the body gasket (9) by thoroughly cleaning the support surfaces.
- ◆ Reassemble everything by repeating the operations in reverse order, paying attention to the realignment of shafts, seat and plug, consequently.
- ◆ Tighten the bonnet (2) by applying a tightening torque of 250 Nm.

Warning: when replacing the plug it is also necessary to replace the packing gland (see following paragraphs).



Pic. 6 Standard valve



Pic. 6.1 Top-Entry valve

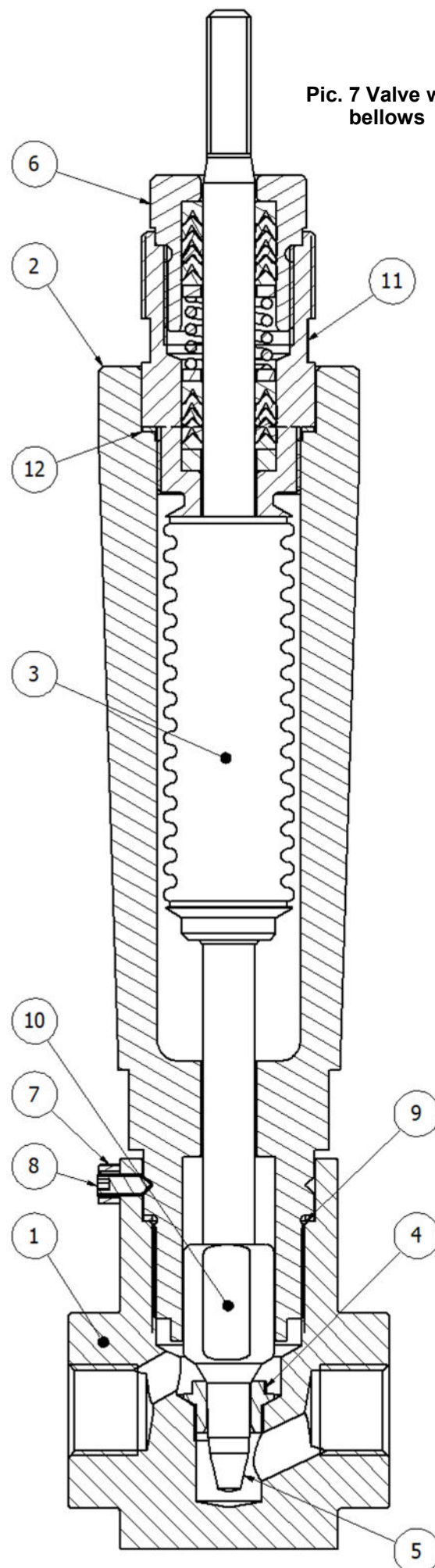


4.03 REPLACEMENT OF SEAT/PLUG WITH VALVE WITH BELLOWS

Referring to Pic. 7 proceed as follows:

- ◆ Separate the actuator from the valve body as described in the previous paragraph
- ◆ Unscrew the nut completely (6)
- ◆ Loosen the nut (7) and completely unscrew the grub screw (8).
- ◆ Unscrew the bonnet (2) from the valve body (1).
- ◆ Remove the pin (10) and unscrew the plug (5)
- ◆ If necessary, unscrew the bellows block (11) and replace it, also replacing the gasket (12)
- ◆ If necessary, unscrew and replace the seat (4) using the special spanners.
- ◆ Always replace the body gasket (9) by thoroughly cleaning the support surfaces.
- ◆ Reassemble everything by repeating the operations in reverse order, paying attention to the realignment of shafts, seat and plug, consequently.
- ◆ Tighten the bonnet (2) by applying a tightening torque of 250 Nm.

Warning: when replacing the plug it is also necessary to replace the packing gland (see following paragraphs).



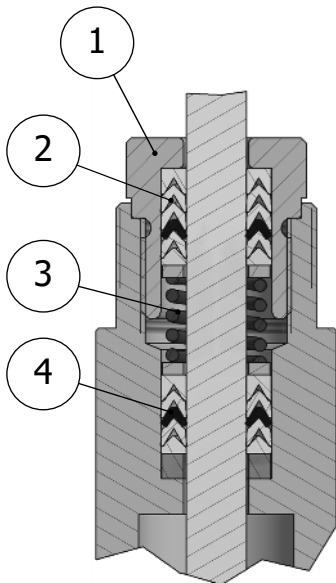
Pic. 7 Valve with bellows



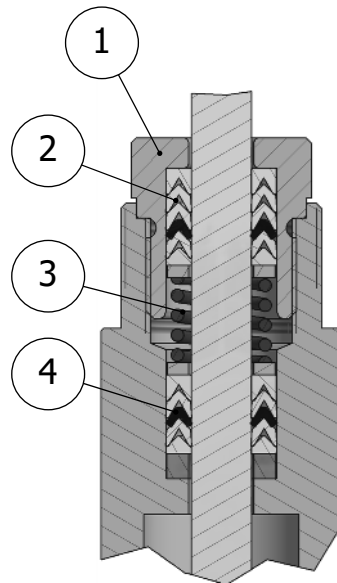
4.04 REPLACEMENT OF STEM PACKING GLAND

Referring to the picture corresponding to your packing gland model (from Pic. 11 to Pic. 18) proceed as follows:

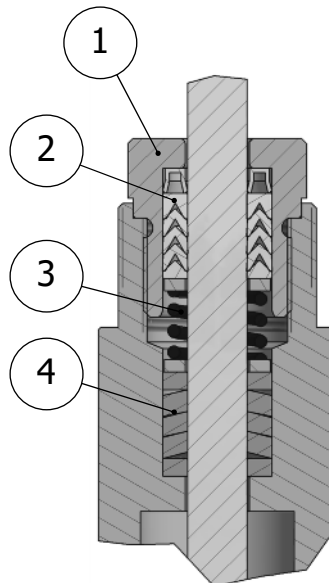
- ◆ Remove the plug as described in the previous paragraphs
- ◆ Completely unscrew the screw (1).
- ◆ Remove the upper packing gland (2).
- ◆ Extract the spring (3)
- ◆ Extract the lower packing gland (4).
- ◆ Replace the O-ring (5) if present
- ◆ Carefully clean the housing chamber and grease it with silicone oil.
- ◆ Insert the new packing gland as indicated in the pictures corresponding to your model
- ◆ Screw the nut (1) without bringing it to the end of the stroke
- ◆ Insert the plug taking care to grease the rod with silicone oil.
- ◆ Always replace the body gasket by carefully cleaning the support surfaces.
- ◆ Reassemble everything as described in the previous paragraphs
- ◆ Tighten the nut (1) as indicated in chapter 5



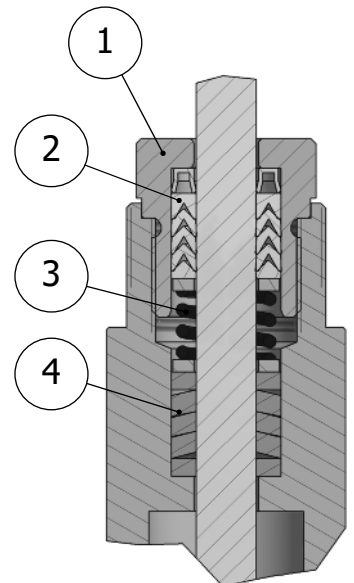
Pic. 8
LP200 - C-Pack1



Pic. 9
SP200



Pic. 10
HP200

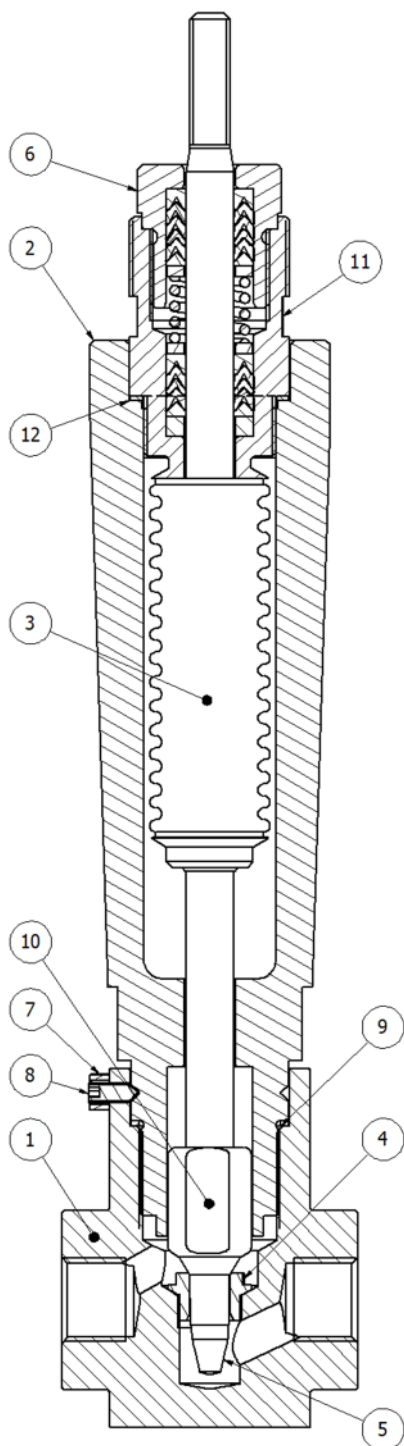
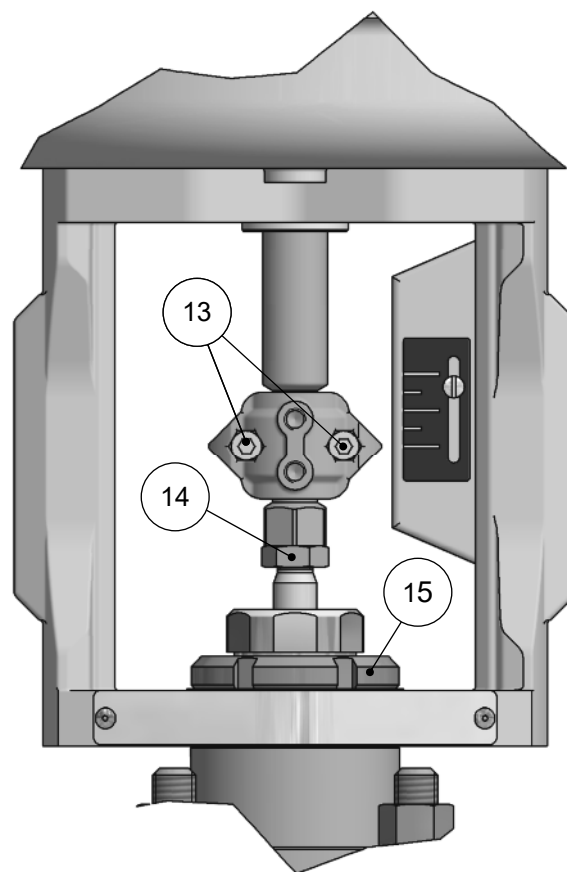


Pic. 11
EcoPack1 - H-Pack1



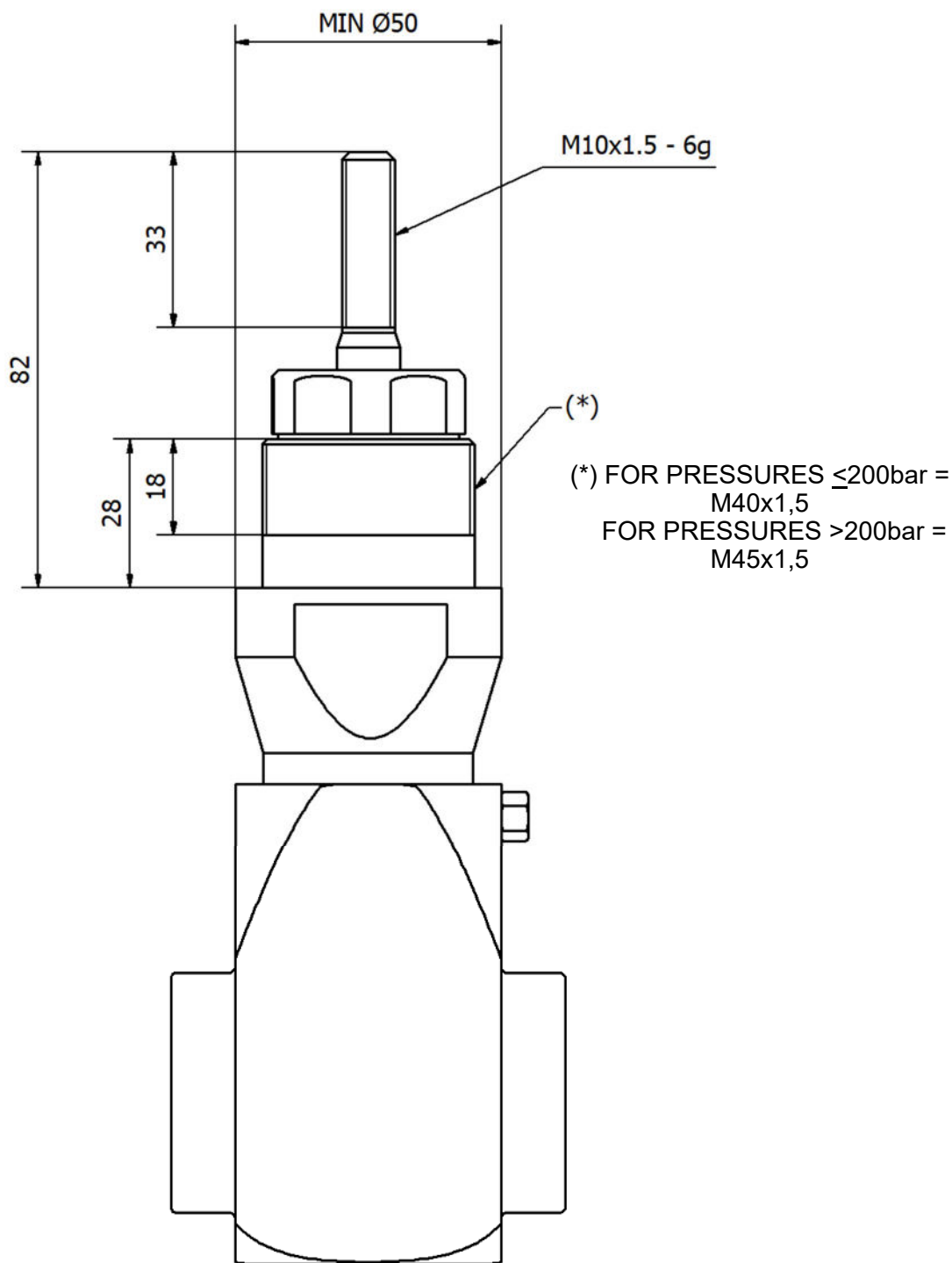
5.0 TIGHTENING TORQUES

SEAT (5) Nm $\pm 10\%$	BONNET(2) Nm $\pm 10\%$	CAP (6) Nm $\pm 10\%$	BELLOWS (11) Nm $\pm 10\%$	NUT (14) Nm $\pm 10\%$	RING NUT (15) Nm $\pm 10\%$	SCREWS (13 and 8) Nm $\pm 10\%$
90	250	250	180	40	350	5

**Pic. 12****Pic. 13**



6.0 ACTUATOR CONNECTION DIMENSIONS



Pic. 14 Valves with plug closed



7.0 PERIODIC OPERATIONS

After 24 hours from the first start-up, check the connections to the pipe and check the tightness of the flange bolts. Inspect the valve annually, checking for wear and replacing any damaged parts.

Periodically check for any internal and/or external corrosion and/or erosion phenomena as they may significantly damage the pressurized parts, locally reducing their thickness and consequently the degree of safety .

8.0 AVAILABLE SPARE PARTS

DESCRIPTION	PICTURE	POSITION
Seat	6	4
Plug	6	5
Body gasket	6	9
ZEB20 bellows	12	3
LP200 stem packing gland	8	//
SP200 stem packing gland	9	//
HP200 stem packing gland	10	//
EcoPack 1 stem packing gland	11	//



WARNING!!! OMC valves are uniquely identified by a serial number, to order spare parts or for any other need, always refer to the aforementioned number.

9.0 PRESSURE/TEMPERATURE RELATIONSHIP

For the regression of pressure in relation to temperature refer to the document:

- OMC-RPT-001

The actual use of the valve depends on the combination of the materials of which it is made.

10.0 REFERENCES OF EUROPEAN DIRECTIVE FOR PRESSURE EQUIPMENT 2014/68/EU

FLUIDS	CE MARKING	CONFORMITY ASSESSMENT PROCEDURE
Group 1	NO	Art. 4 Par.3



11.0 PLATES

11.01 IDENTIFICATION PLATE

All OMC valves are provided with an identification plate to make the identification of the valve univocal.

KEY

NUMBER	TEXT	DESCRIPTION
1	Mod.	Valve model
2	Body	Valve body material
3	Serial	Valve serial number
4	Char.	Regulation characteristic (equal percentage, linear, etc.)
5		Nominal diameter and nominal pressure of the valve
6	Trim:	Seat/plug material
7	Seal cl.	Valve seal class
8	TAG	Any technical identification of the Customer
9	T	Minimum and maximum permissible temperature of the process fluid
10	F.coeff.	Valve outflow coefficient
11	Stroke	Plug stroke
12	Fluid	Process fluid