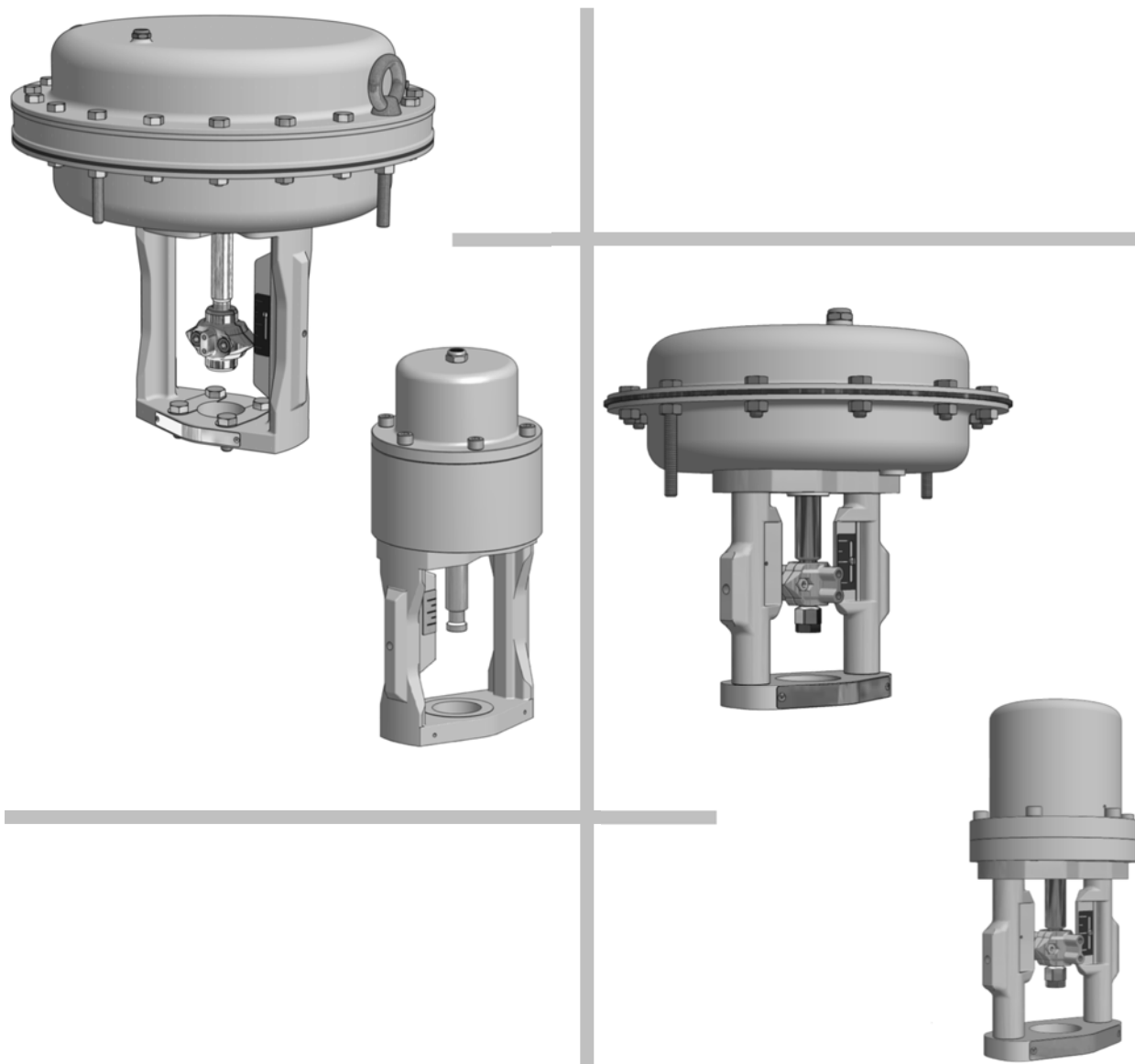


INSTALLATION, OPERATION AND MAINTENANCE MANUAL



PNEUMATIC ACTUATORS

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1.0 SAFETY INFORMATION

The safe operation of this product is ensured only if it is installed, commissioned, used and maintained in an appropriate way by qualified personnel in compliance with the operating instructions.

1.01 INTENDED USE

Verify that the actuator is suitable for the intended use and application by controlling:

- to have arranged an appropriate safety device which prevents, in case of malfunctioning of the actuator, any hazardous overpressures or overtemperatures.

The OMC actuators are not intended to withstand external stresses which may be induced by the systems in which they are inserted. The installer must take account of these stresses and take the appropriate measures.

1.02 ACCESS

Ensure a safe access and, if required, a safe working platform (with a suitable protection) before operating on the product. Arrange the suitable lifting means, if required.

1.03 LIGHTING

Ensure a lighting which is suitable to the required type of work.

1.04 HAZARDOUS FLUIDS IN THE PIPE

Take account of the content of the pipe or anything it may have previously contained. Be careful to: flammable materials, substances hazardous for the health, temperature extremes.

1.05 ENVIRONMENTAL SITUATIONS

Take account of: areas at risk of explosion, lack of oxygen (such as tanks, wells, etc....), hazardous gases, temperature limits, high or low temperature surfaces, risk of fire (for example during welding operations), excessive noise, moving machines.

1.06 TEMPERATURE

Wait until the temperature normalizes after the interception to prevent any risks of burn or freezing.

1.07 SYSTEM

Take account of the possible effects on the whole expected working system.

May the intended measure put the other parts of the system or the personnel at risk?

Make sure that the shut-off valves are gradually activated in order to prevent any abrupt variations to the system.

1.08 PRESSURIZED SYSTEMS

Make sure that the pressure is isolated and discharged to the atmospheric pressure in safe conditions. Take account of a double insulation (double block and vent) and the blocking or the labelling of the closed valves. Do not consider the system depressurized even if the pressure gauge indicates zero pressure.

During the operation the valve is pressurized. Before performing any maintenance operation or action on the flanges and closing caps, make sure that the line is depressurized (0 bar) and at ambient temperature.

1.09 TOOLS AND CONSUMABLE PARTS

Before starting the work, make sure to have at your disposal all the tools required to perform it, do not make use of inappropriate tools. Use only OMC original spare parts.

1.10 PROTECTION CLOTHES

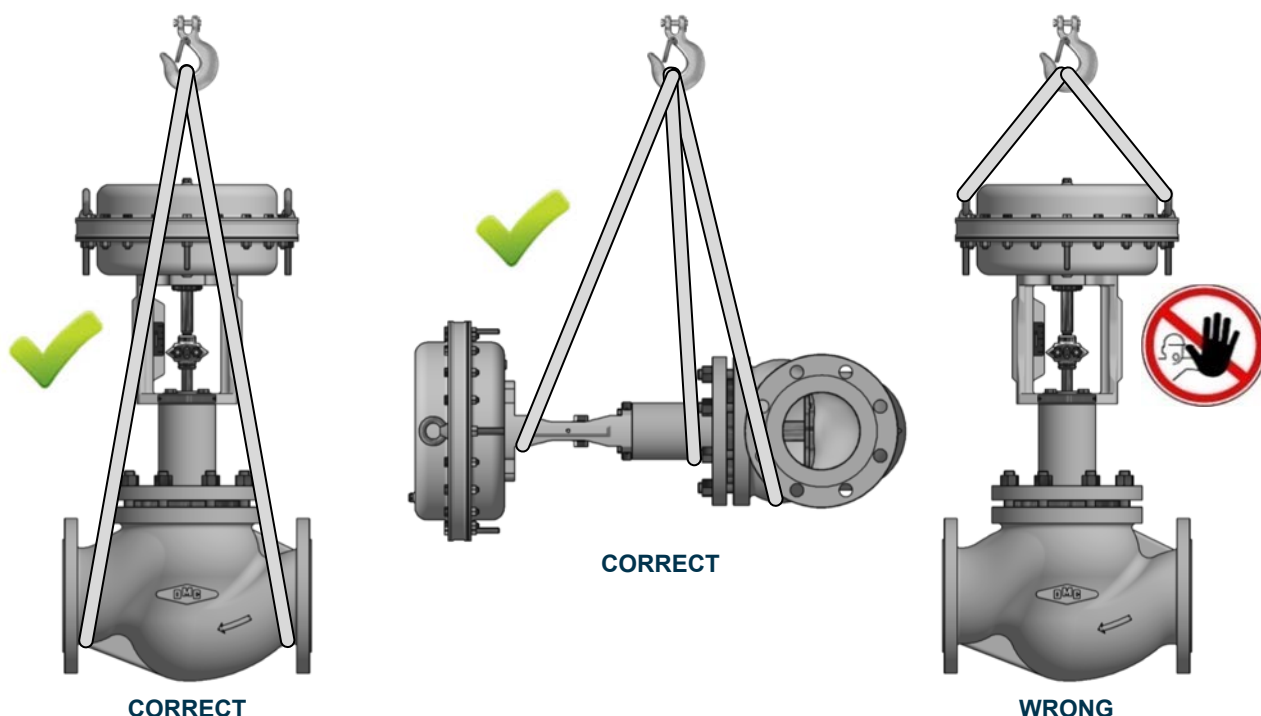
Take account of whether you and/or others need some clothes against the hazards, such as chemical products, temperatures, radiations, noise, fall of objects, risks for eyes and face.

1.11 QUALIFICATION OF THE OPERATORS IN CHARGE OF THE WORKS

All works must be performed and supervised by some skilled, trained and competent personnel.

1.12 HANDLING

Use suitable lifting means for the handling of the products by assessing all the risks concerning the lifting, the environment load, the individual and the circumstances of the work which is about to be performed.



1.13 FREEZING

Protect the products against frozen in environments with temperatures lower than the freezing point of the process fluid.

1.14 OTHER RISKS

During the operation, the external surface of the product can be at temperatures which are hazardous to touch. Take account of this risk.

1.15 DISPOSAL

For the disposal respect the legislation in force in the State/Country/Nation where the product should be disposed of.

2.0 ACTUATOR CONNECTION

2.01 PNEUMATIC ACTUATOR CONNECTION

The pneumatic actuator is provided with two 1/4"NPT connections, one of which is closed by a filter. Connect the control air pipe to the connection which has remained free. The control air must be clean, de-humidified and free from oils and greases and must not exceed an allowed maximum pressure. The signal required to control the valve is provided on the plate fixed on the actuator's yoke. If the valve is provided with a pilot positioner, refer to its manual.

3.0 ASSEMBLY

If the valve and the actuator are not supplied already assembled or if the original actuator must be replaced with one of another Type or another size, perform the operations described in paragraph 4.01.

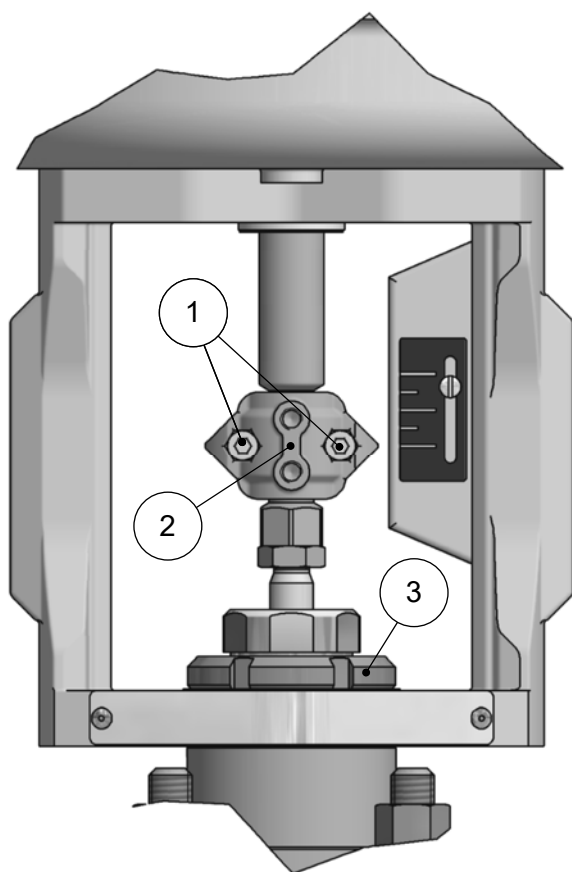
All above-described operations must be performed and supervised by skilled, trained and competent personnel. The OMC valves are univocally identified by a serial number fixed on the plate located on the actuator's yoke. To order spare parts or for any need, always refer the above-mentioned number.

During the operation the valve is pressurized. Before performing any maintenance operation or action on the flanges and closing caps, make sure that the line is depressurized (0 bar) and at ambient temperature.

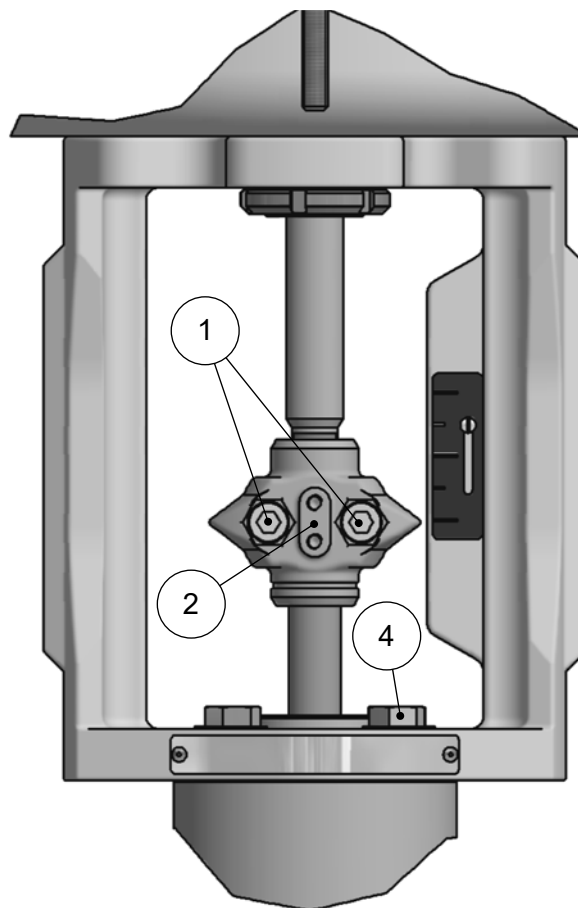
3.01 VALVE/ACTUATOR SEPARATOR

Referring to Pic. 5 or to Pic. 6, according to the available actuator, perform as follows:

- ◆ Set the valve to the 50% stroke
- ◆ Fully unscrew the screws (1) and remove the terminals (2)
- ◆ Fully unscrew the ring nut (3) or the screws (4).
- ◆ Extract the actuator



Pic. 5

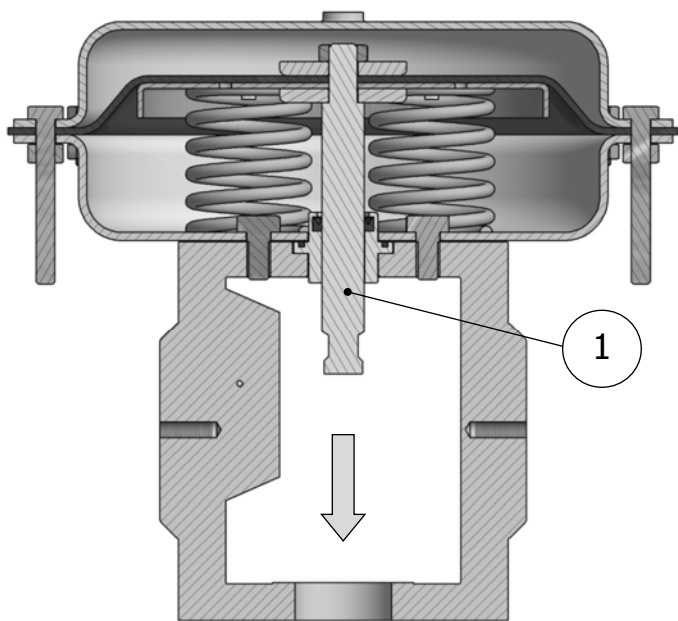


Pic. 6

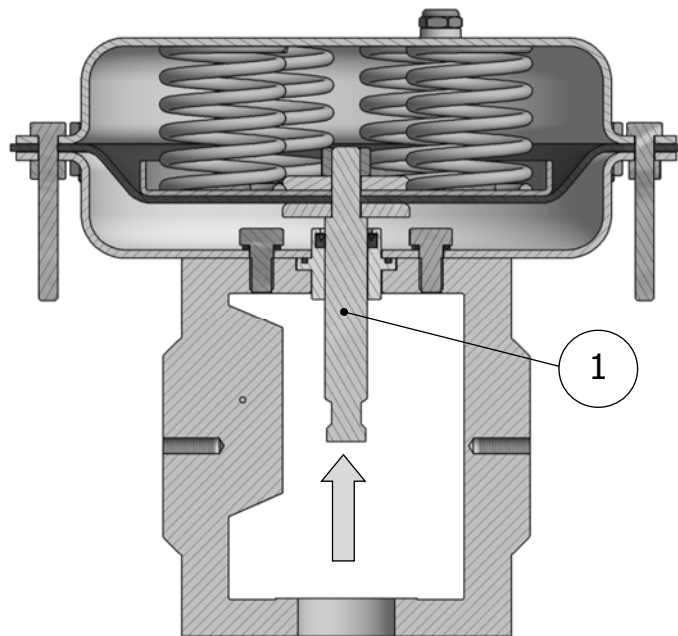
3.02 DIRECT ACTUATOR/REVERSE ACTUATOR

In the direct-action actuator the increase of the control signal lets the stem go out (1) (Pic.7 and 9)

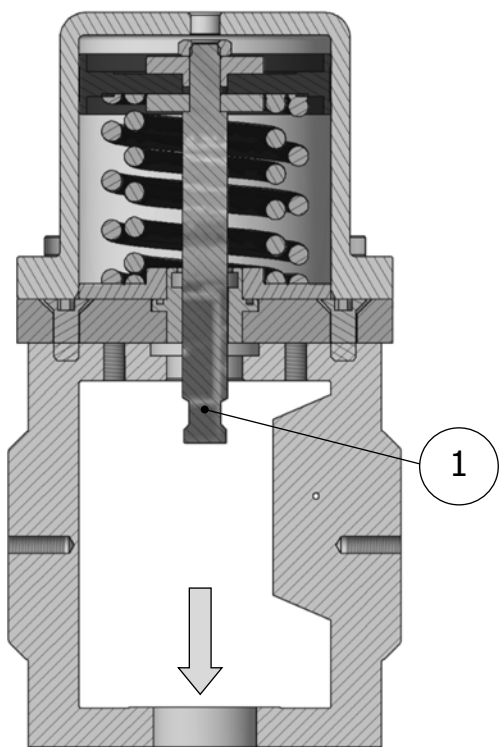
In the reverse-action actuator the increase of the control signal lets the stem go in (1) (Pic.8 and 10)



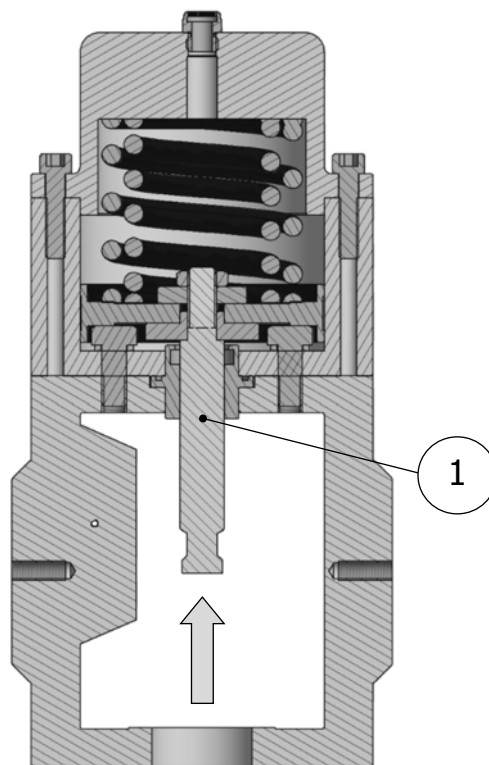
Pic. 7 Direct-action actuator



Pic. 8 Reverse-action actuator



Pic. 9 Direct-action ON/OFF actuator



Pic. 10 Reverse-action ON/OFF actuator

3.03 COUPLING TO THE DIRECT ACTUATOR'S VALVE

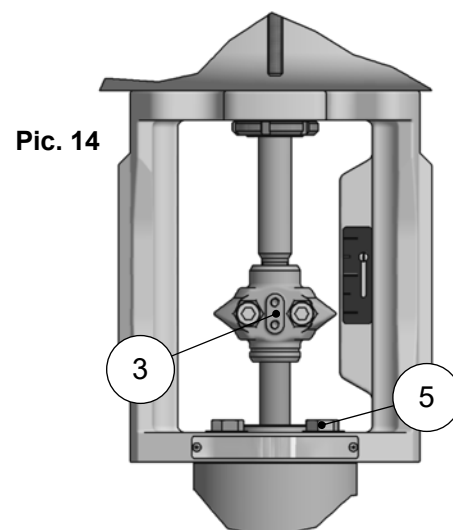
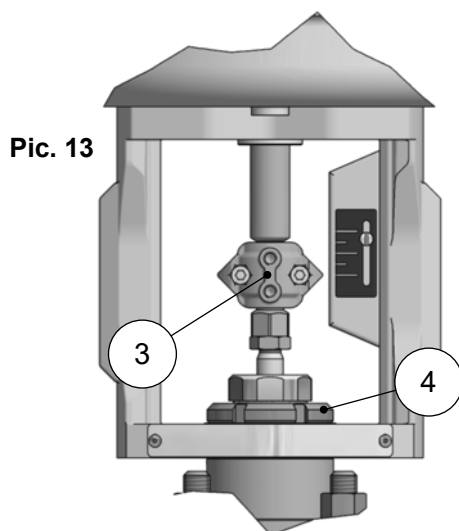
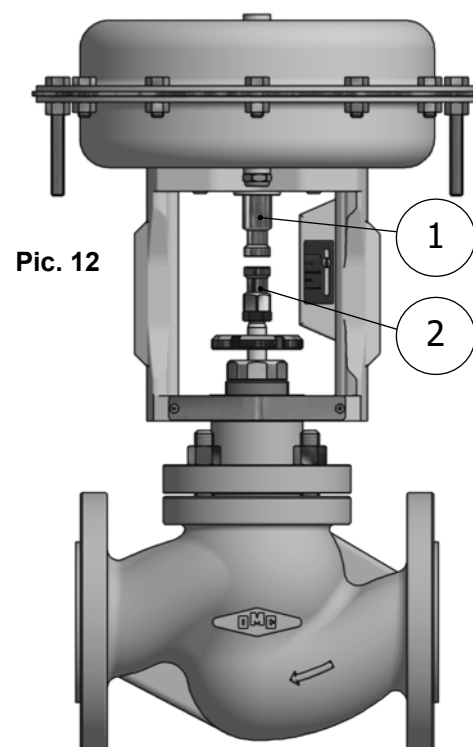
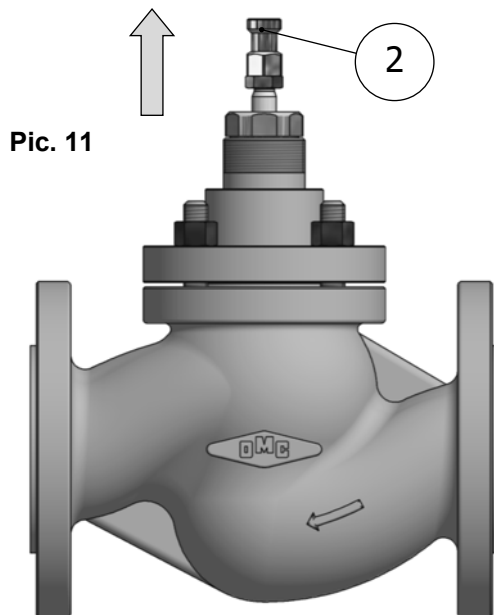
- ◆ Fully lift the stem (2) of the valve Pic. 11
- ◆ Position the actuator on the valve Pic.12
- ◆ Give air to the actuator by setting the stem (1) to touch the stem (2) Pic.12
- ◆ By referring to Pic. 13 or to Pic. 14, according to the available actuator, assemble the terminal (3) by aligning the stems (1) and (2) Pic.12.
- ◆ Remove the air from the actuator



**Attention!!! The actuator's yoke will be pressed against the valve.
Risk of crushing!!!**

- ◆ By referring to Pic. 13 or to Pic. 14, according to the available actuator, tighten the ring nut (4) or the screws (5).

For the tightening forces refer to the valve's manual



3.04 COUPLING TO THE REVERSE ACTUATOR'S VALVE

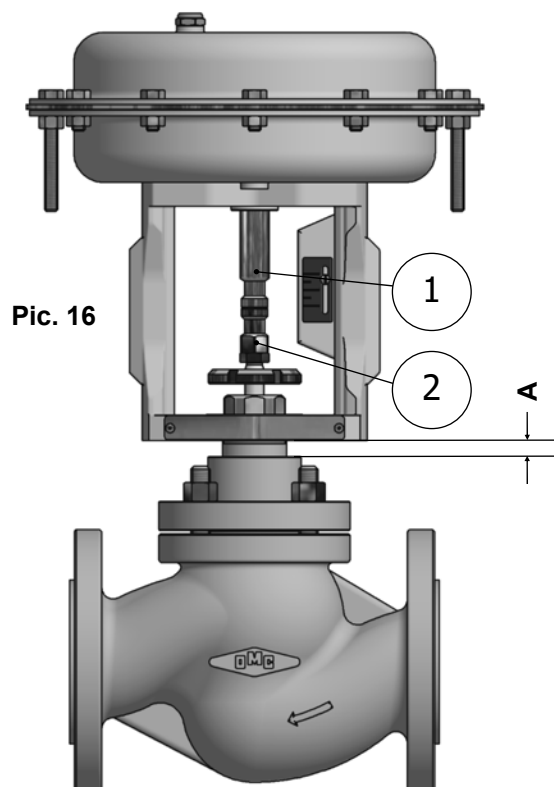
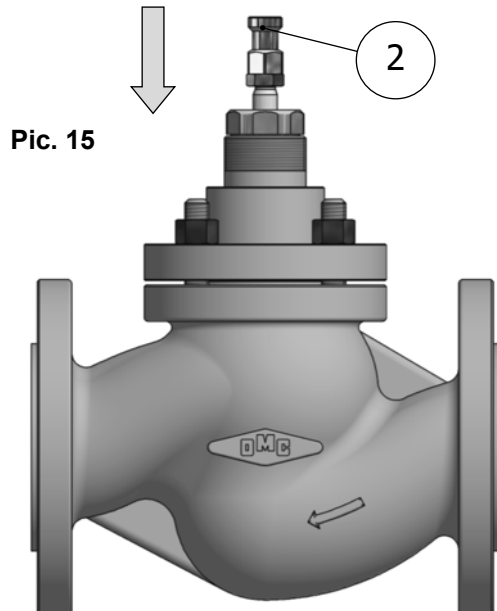
- ◆ Fully lower the stem (2) of the valve Pic. 15
- ◆ Position the actuator on the valve Pic.12
- ◆ By acting on the nut (2) set the height "A" (Fig.16) to the value indicated in "Table 1"
- ◆ By referring to Pic. 13 or to Pic. 14, according to the available actuator, assemble the terminal (3) by aligning the stems (1) and (2) Pic.12.
- ◆ Give the maximum control signal to the actuator



**Attention!!! The actuator's yoke will be pressed against the valve.
Risk of crushing!!!**

- ◆ By referring to Pic. 13 or to Pic. 14, according to the available actuator, tighten the ring nut (4) or the screws (5).

For the tightening forces refer to the valve's manual



**TABLE 1**

TYPE OF ACTUATOR	CONTROL SIGNAL (psi)	VALVE STROKE (mm)	DISTANCE "A" Pic.16 (mm)
AP23 / AM23	3÷15	20 mm	6 ÷ 7
	6÷18	20 mm	5 ÷ 6
	6÷30	20 mm	7 ÷ 8
	15÷60	20 mm	8 ÷ 9
AP28 / AM28	3÷15	20 mm	6 ÷ 7
	6÷18	20 mm	6 ÷ 7
	6÷30	20 mm	4 ÷ 5
	15÷60	20 mm	5 ÷ 6
AP34 / AM34	3÷15	20 mm	8 ÷ 9
	6÷18	20 mm	11 ÷ 12
	6÷30	20 mm	7 ÷ 8
	15÷60	20 mm	12 ÷ 13
AP35 / AM35	3÷15	30 mm	6 ÷ 7
	6÷18	30 mm	9 ÷ 10
	6÷30	30 mm	6 ÷ 7
	15÷60	30 mm	9 ÷ 10
AP43 / AM43 AP44 / AM44	3÷15	20 / 30 mm	17 ÷ 18
	6÷18	20 / 30 mm	17 ÷ 18
	6÷30	20 / 30 mm	12 ÷ 13
	15÷60	20 / 30 mm	1 ÷ 2
AP47	15÷60	35 mm	1 ÷ 2
AP45	15÷60	30 mm	1 ÷ 2
AP48	15÷60	50 mm	9 ÷ 10
	15÷60	60 mm	1 ÷ 2
AP61	15÷60	50 mm	9 ÷ 10
AP63	15÷60	60 mm	1 ÷ 2
OP10 / OL10	90÷145	20 mm	9 ÷ 10
OP16 / OL16	90÷145	30 mm	9 ÷ 10

4.0 REPLACEMENT OF THE DIAPHRAGM

Separate the actuator from the valve as described in paragraph 4.01

By referring to Pic.17 for the direct-action actuators and to Pic.18 for the reverse-action actuators, perform the following operations:

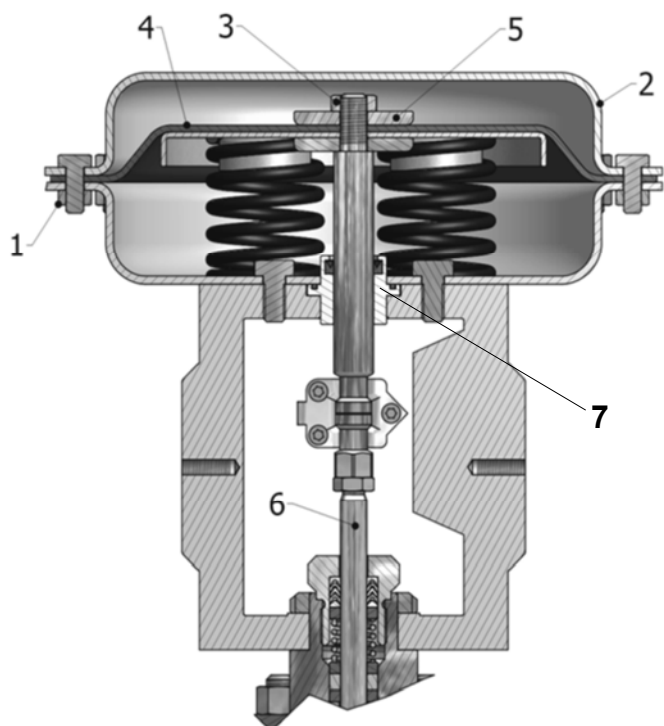


ATTENTION!!! Tensioned springs

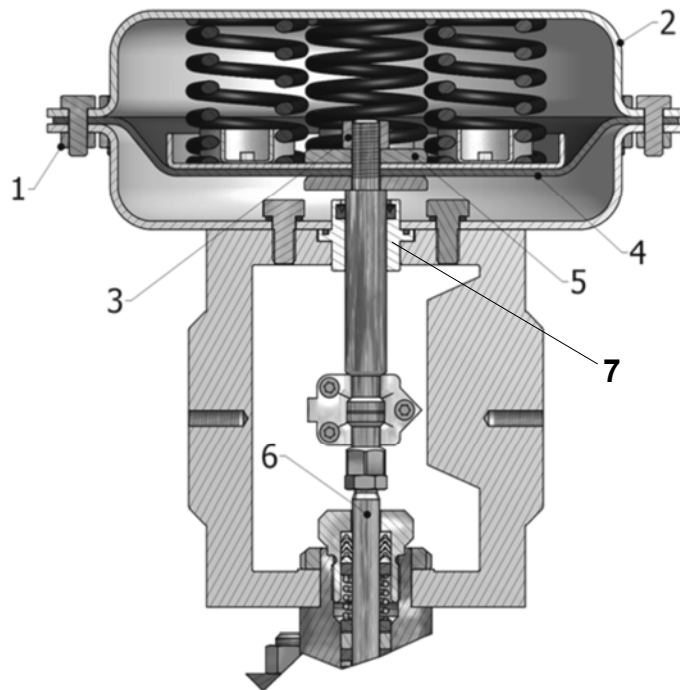
- ♦ **gradually** unscrew the bolts (1) in criss-cross sequence
- ♦ extract the lid (2) unscrew the nut (3) which blocks the plate (5) and replace the diaphragm (4).
- ♦ if required, replace the v-ring inside the stem-guide (7)
- ♦ re-assemble everything by performing the operations in the reverse order.

Attention: for valves provided with bellows, in order to prevent any damages to the bellows, make sure that the plug stem (6) does not rotate.

For the tightening forces refer to chapter 6



Pic. 17 Direct-action actuator



Pic. 18 Reverse-action actuator

5.0 REPLACEMENT OF ON/OFF PISTON DISC

Separate the actuator from the valve as described in paragraph 4.01

By referring to Pic.19 for the direct-action actuators and to Pic.20 for the reverse-action actuators, perform the following operations:

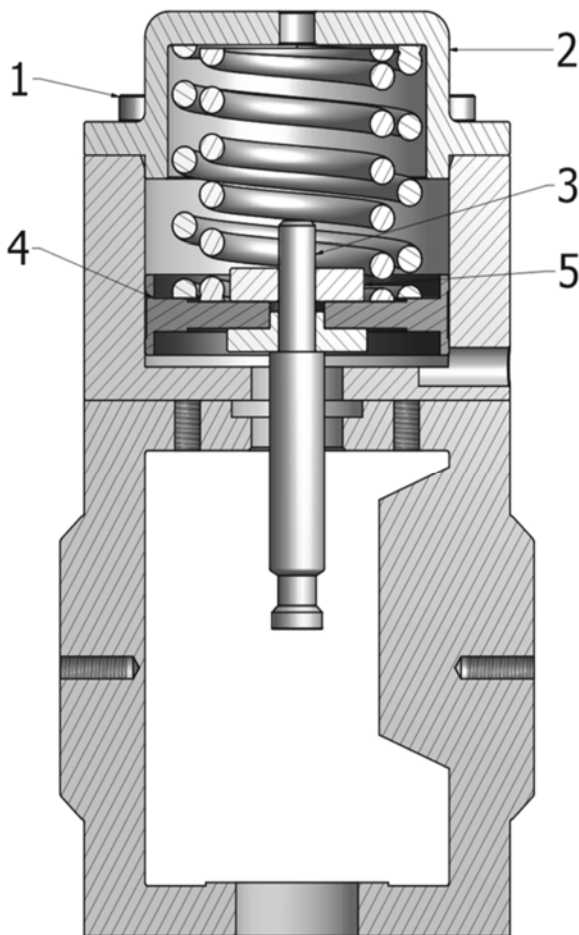


ATTENTION!!! Tensioned springs

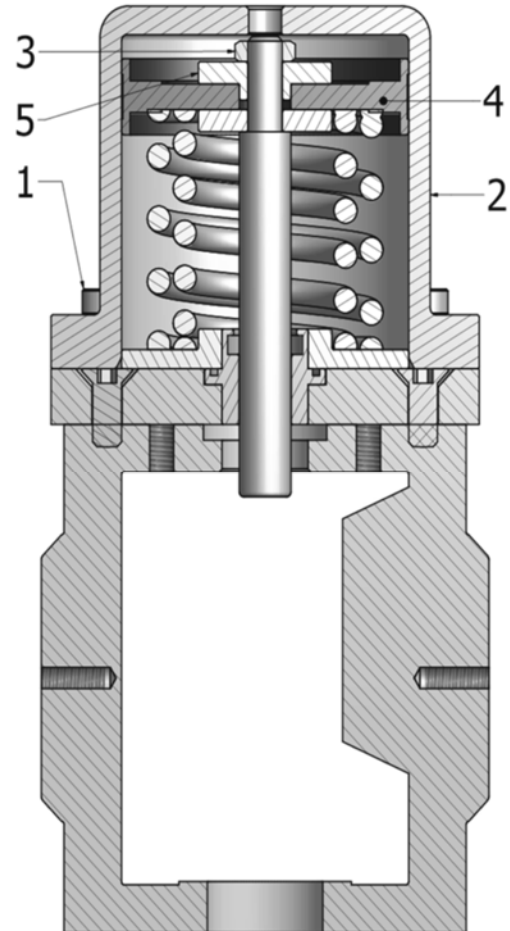
- ◆ **gradually** unscrew the bolts (1) in criss-cross sequence
- ◆ extract the lid (2) unscrew the nut (3) which blocks the plate (5) and replace the diaphragm (4).
- ◆ re-assemble everything by performing the operations in the reverse order.

Attention: for valves provided with bellows, in order to prevent any damages to the bellows, make sure that the plug stem (6) does not rotate.

For the tightening forces refer to chapter 6



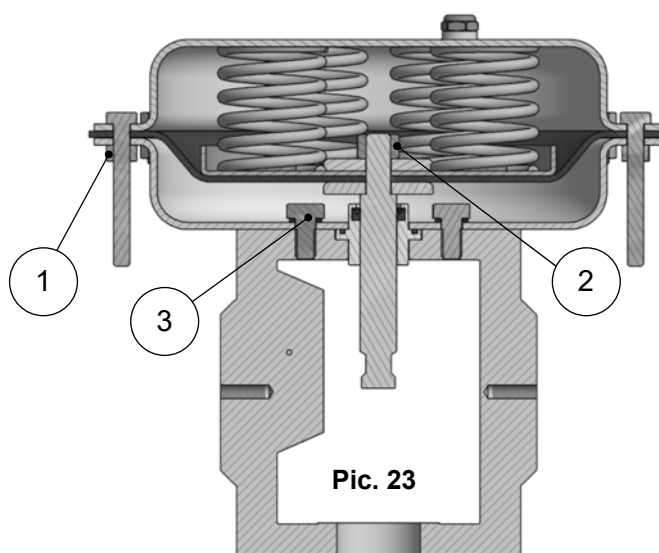
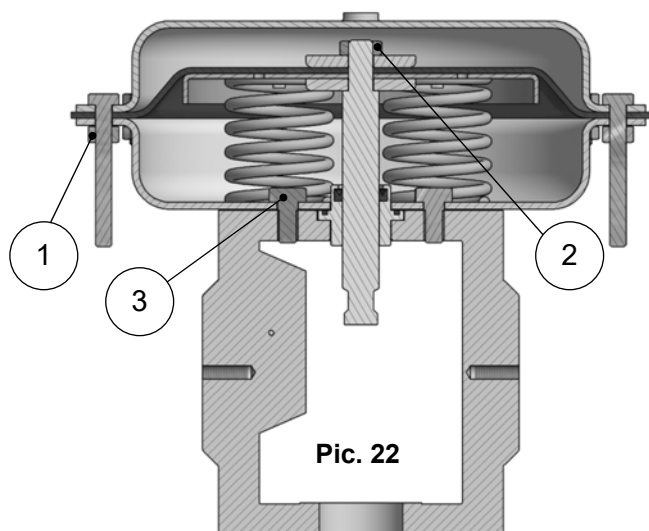
Pic. 19 Direct-action actuator



Pic. 20 Reverse-action actuator

6.0 TIGHTENING TORQUES

TYPE OF ACTUATOR	NUT (1) Pic. 22 - Pic.23 Nm $\pm 10\%$	NUT (2) Fig. 22 - Pic.23 Nm $\pm 10\%$	NUT (3) - Pic. 19 - Pic.20 Nm $\pm 10\%$	SCREW (1) - Pic. 19 - Pic.20 Nm $\pm 10\%$	SCREW (3) - Pic. 22 - Pic.23 Nm $\pm 10\%$
AP23 / AM23	12	35	//	//	70
AP28 / AM28	18	35	//	//	70
AP34 / AM34 AP35 / AM35	40	35	//	//	70
AP47 - AP45 AP48 - AP61 - AP63	50	35	//	//	70
OP10 / OL10	3÷15	//	35	80	//
OP16 / OL16	6÷18	//	35	80	//



For the tightening forces of the valve's coupling screws (stem connection terminal, actuator blocking ring nut, etc. ...) refer to the specific valve's manual.

7.0 AVAILABLE SPARE PARTS

DESCRIPTION	PICTURE	POSITION
Diaphragm	17 - 18	4
ON-Off Piston Disc	19 - 20	4
Stem-guide V-ring	17 - 18	7

8.0 REFERENCES OF THE EUROPEAN DIRECTIVE FOR PRESSURE EQUIPMENT 2014/68/EU

CATEGORIA	FLUIDS	EC MARKING	PROCEDURE OF CONFORMITY EVALUATION
Art. 4 Par.3	Gruppo 2 (Instrumental air)	NO	Art. 4 Par.3

9.0 PLATES

9.01 IDENTIFICATION PLATE

All OMC actuators are provided with a plate for their identification.

	Mod. 1	Air to: 4 5 	Diaph. Mat 6	
	Max P.: 2		Shut off: 7	
	Signal: 3		OMC S.p.A. - Via G. Galilei 18 - Cassina dè Pecchi (MI) - ITALY	

LEGEND

NUMBER	TEXT	DESCRIPTION
1	Mod.	Actuator model
2	Max P.	Maximum allowed pressure of the actuator's control air
3	Signal	Actuator's control signal
4	Air to:	The increase of the control signal lets the stem go in
5	Air to:	The increase of the control signal lets the stem go out
6	Diaph. Mat.:	Material of the actuator's diaphragm
7	Shut off:	Information indicated only if the actuator is pre-assembled by OMC on the valve. It indicates the maximum pressure to which the valve can be subjected to ensure the sealing class of the valve.