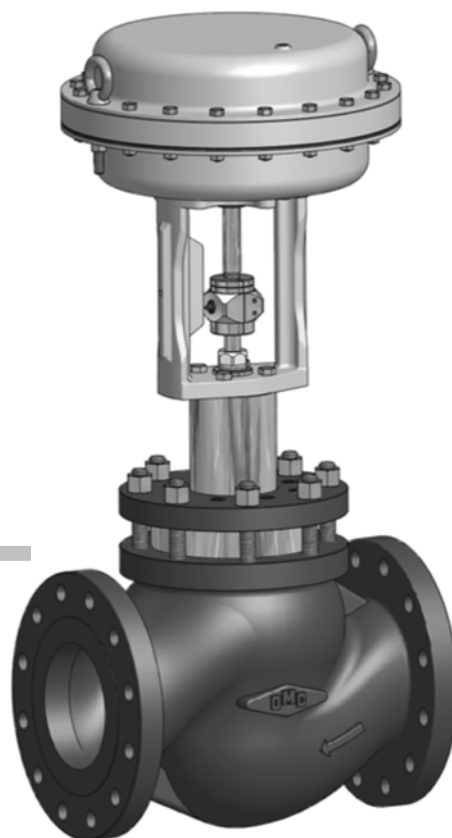
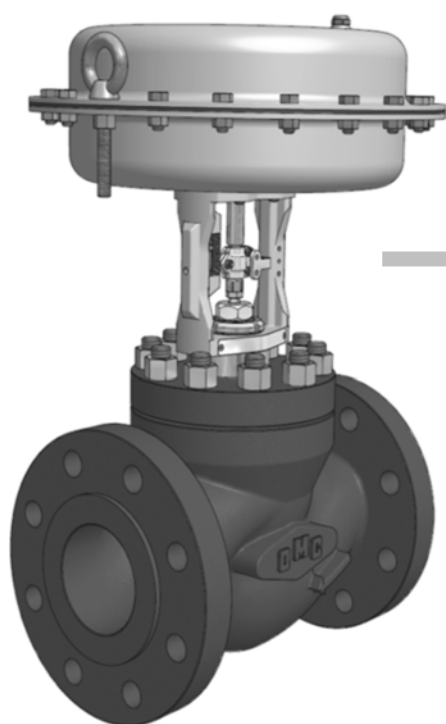


# INSTALLATION, OPERATION AND MAINTENANCE MANUAL



## Globe Valves SERIES VD10 - KD10 - KA10 KD20 - KA20

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

- that the material of which the valve is made up of is compatible with the process fluid;
- that the valve is suitable for the pressures and temperatures of the process fluid;
- that a suitable safety device is fitted to the system to prevent any hazardous overpressures or overtemperatures in the system.

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

### 1.02 ACCESS

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

### 1.03 LIGHTING

Ensure the area around the valve is adequately lit and is suitable to safely work on the valve.

### 1.04 HAZARDOUS FLUIDS IN THE PIPE

Take account of the content of the pipe (process fluid) or anything it may have previously contained. Take special safety precautions where flammable, hazardous substances are present, or where fluid pressure or temperature may be hazardous to health.

### 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.

**In particular, you must assess any proposed actions and the consequences that may result in any other part of the system, You must ensure the system remains safe at all times.**

Make sure that the control valve is isolated via shut-off valves 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. The depressurization process should include taking the valve through its full stroke, to ensure all pressure is allowed to exhaust to atmosphere.

**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

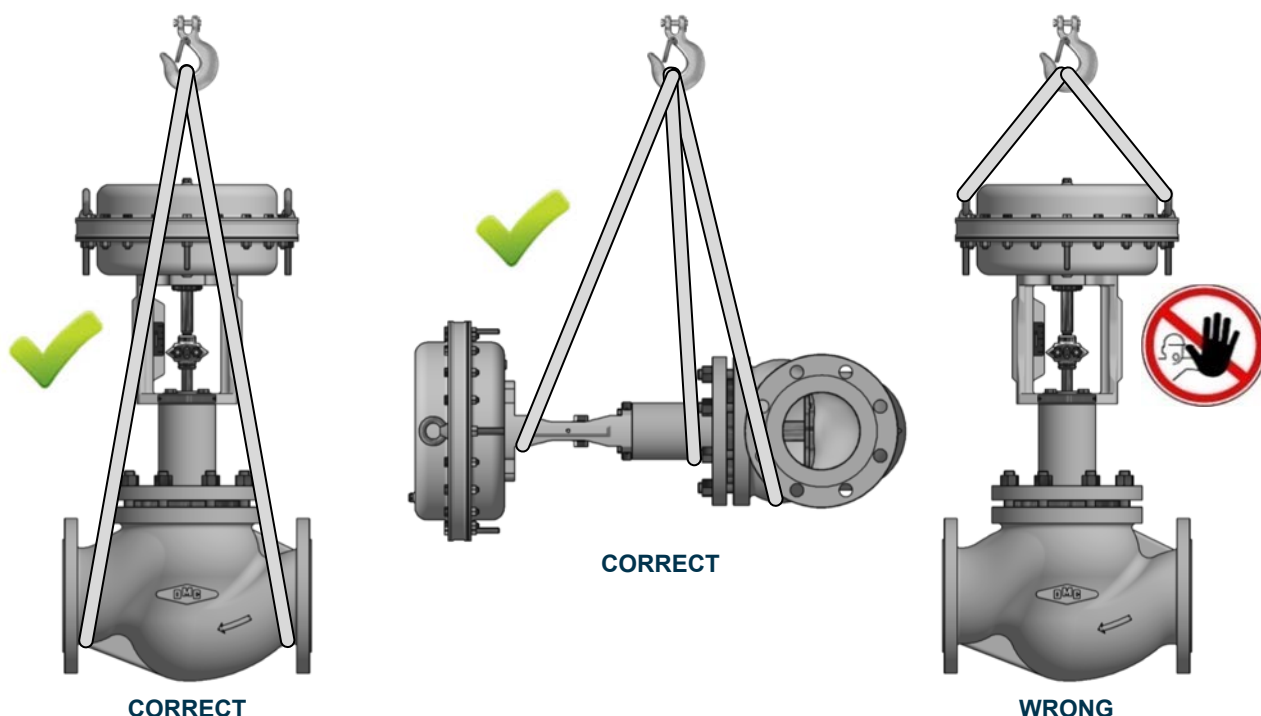
Take account of whether you and/or others need some clothes against the hazards, such as chemical products, temperatures, radiations, noise, fall of objects, risks for eyes and face.

## 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 product in freezing environments where temperatures are 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

The product should be disposed of in accordance with local legislation. This may be different in each State/Country/Nation. It is the users responsibility to dispose of the product according to local requirements.

## 1.16 RISK OF CORROSION AND/OR EROSION

Periodically verify any phenomena of internal and/or external corrosion and/or erosion as they may significantly damage the pressurized parts by locally reducing the thickness and as a consequence the safety degree.

## 2.0 INSTALLATION

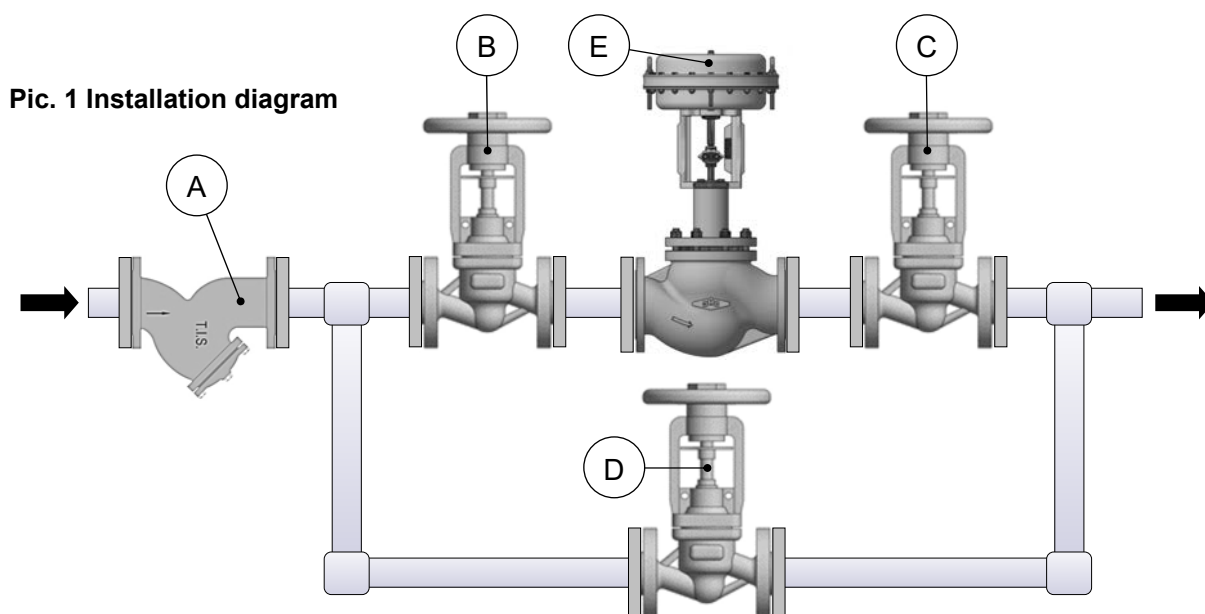
**All work must be performed and supervised by skilled, trained and competent personnel.**

The valve body casting is marked with an arrow showing the direction of flow and its normal flow path. The casting also has markings which show the type of material and maximum operating pressure.

Before installing the valve, make sure that the inside of the is clean, by performing, if required, an energetic blowing with steam or compressed air. This should be done with caution.

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

To allow periodical maintenance of valves that are installed on continuously operating systems, it is recommended to install two Isolating valves, located upstream (pos. B Pic. 1) and downstream (pos. C Pic. 1) of the control valve, and a by-pass one (pos. D Pic. 1). Use the by-pass valve (pos. D Pic. 1) to manually regulate the process when the control valve is temporarily disconnected. The two shut-off valves must have the same internal diameter of the control valve. During the installation of the valve, make sure that the flow in the pipe goes in the same direction as indicated by the arrow on the valve body.



The assembling position of the valve does not limit its operation, but it is recommended to assemble the valve with the actuator pointed upward (pos. E Pic.1) as other positions may allow the accumulation of any impurities which are contained in the fluid thus damaging the valve itself.

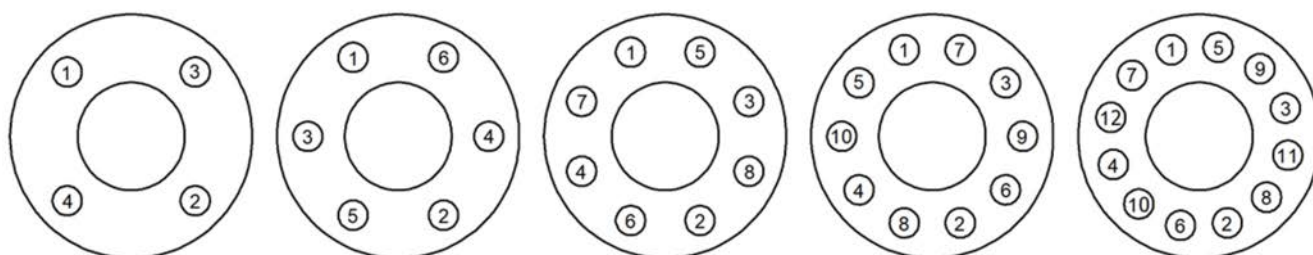
### 2.01 FITTING THE VALVE TO THE PIPE

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

**Prevent any excessive tightening. Use the recommended tightening torques. Prevent any pipe misalignment. Choose the flange gaskets according to the operating conditions.**



**ATTENTION!!!** For valves with braze-on connections, the welding operation must be performed only by qualified personnel and, in order to prevent any damages to the valves, keep the valve body cold during the above-mentioned operation.

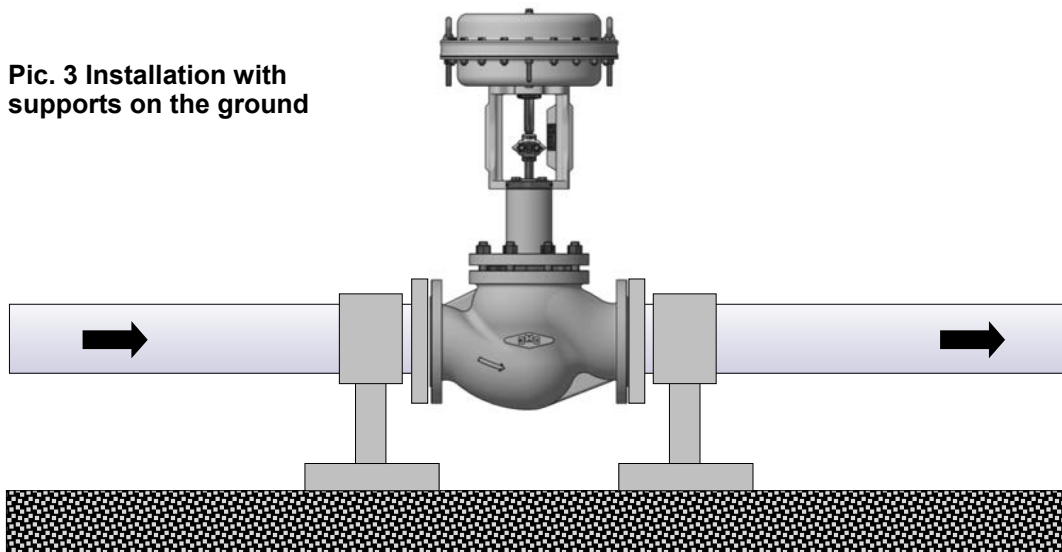


**Pic. 2 Tightening sequence**

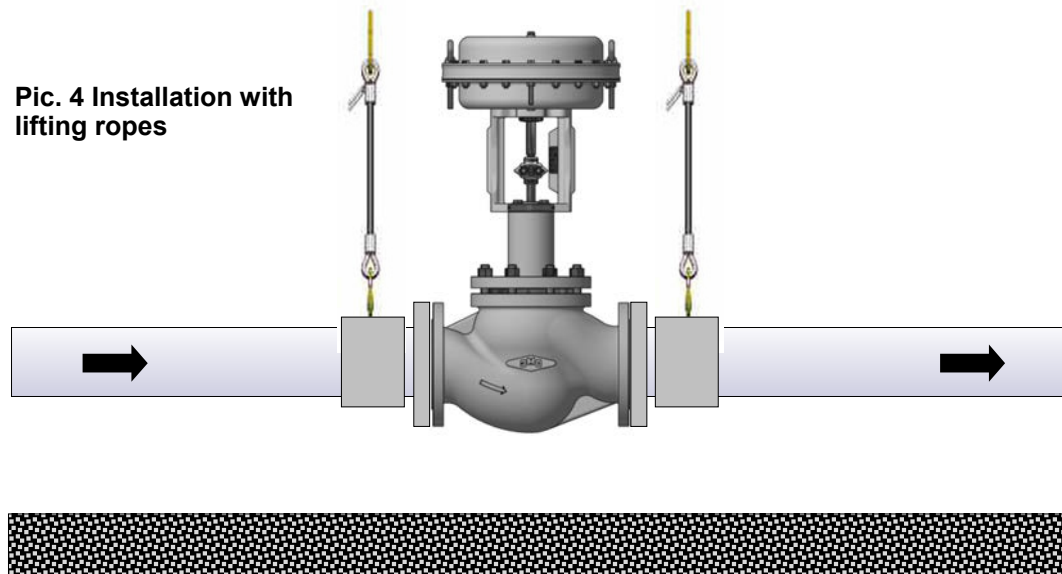


**ATTENTION!!!** Any excessive weight of the valve might damage the system structure. If required, support the valve by using suitable devices (Pic.3) and/or ropes (Pic.4)

**Pic. 3 Installation with supports on the ground**



**Pic. 4 Installation with lifting ropes**



## 3.0 ACTUATOR CONNECTION

### 3.01 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, dry and free from oil and grease 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.

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

### 3.02 CONNECTION OF ELECTRIC ACTUATOR

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



## 4.0 MAINTENANCE

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



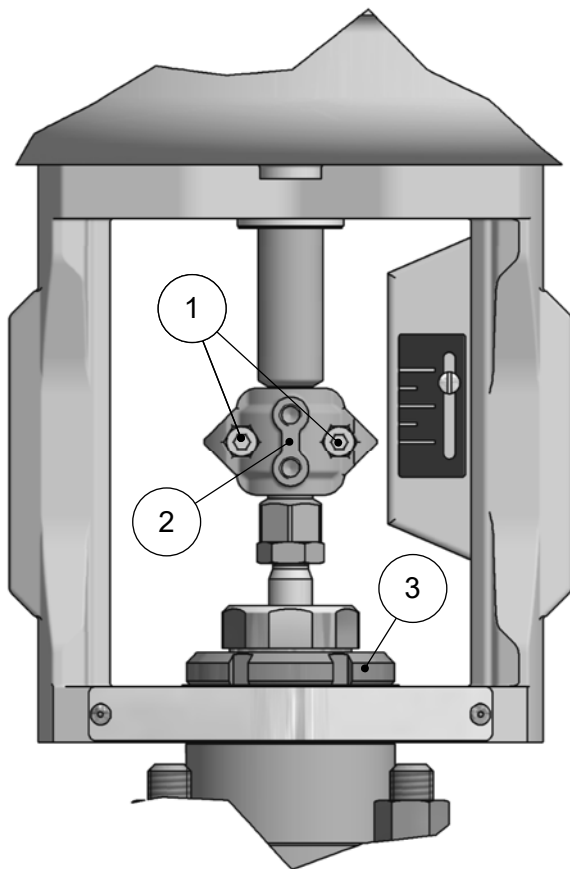
**During operation the valve is pressurized. Before performing any maintenance operation or action on any pressure retaining part, make sure that the line is depressurized (0 bar) and at ambient temperature.**

### 4.01 VALVE / ACTUATOR SEPARATION

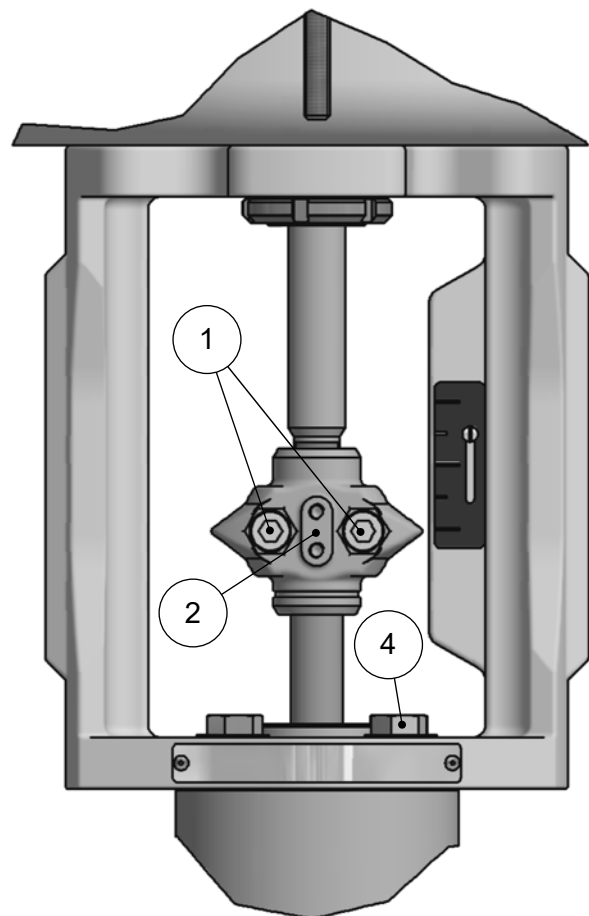
By referring to Pic. 5 (for valves DN15÷DN100 / 1/2"÷4") or to Pic. 6 (for valves DN125÷DN200 / 6"÷8") perform the following steps:

- ◆ Set the valve to the 50% stroke
- ◆ Fully unscrew the screws (1) and remove the terminals (2)
- ◆ For valves DN15 ÷ DN 100 (1/2" ÷ 4") fully unscrew the ring nut (3).
- ◆ For valves DN125 ÷ DN 200 (6" ÷ 8") fully unscrew the screws (4).
- ◆ Remove the actuator

To re-assemble the valve and actuator the above steps must be performed in the reverse order by paying attention to the alignment of stem to the valve (A)



Pic. 5 Valves DN15 ÷ 100 / 1/2" ÷ 4"



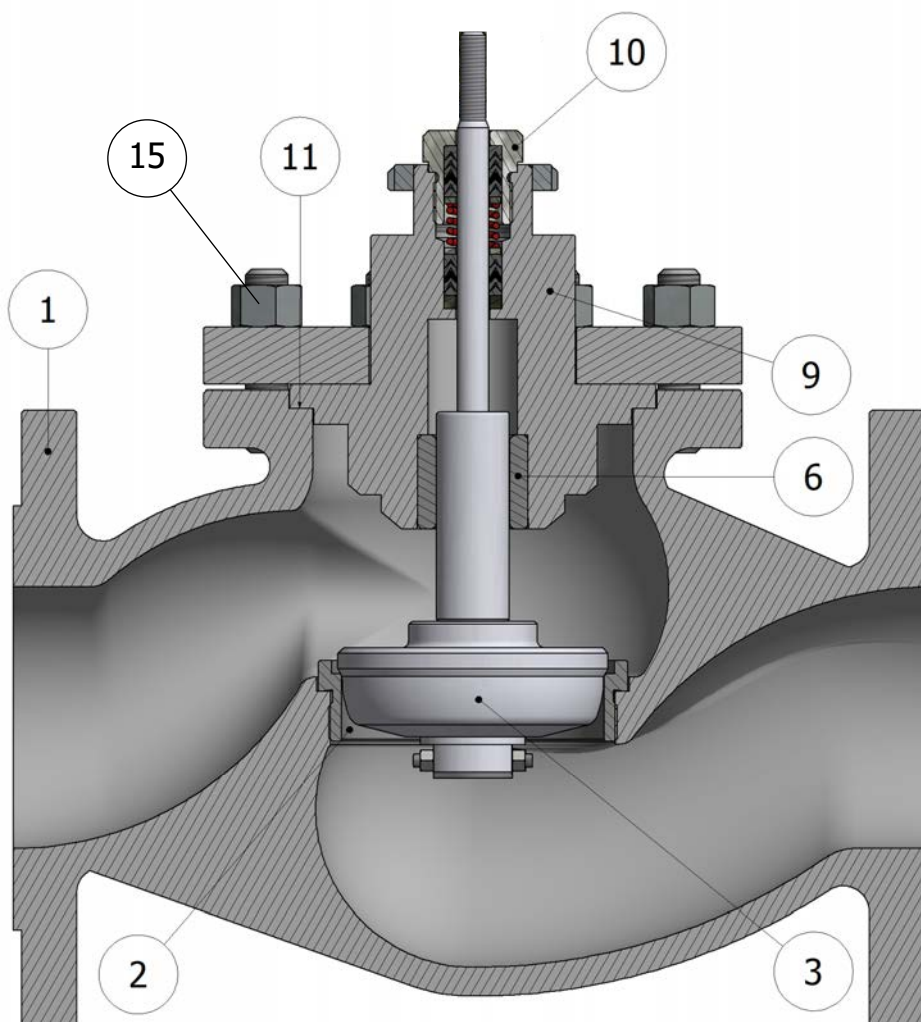
Pic. 6 Valves DN125 ÷ 200 / 6" ÷ 8"

## 4.02 REPLACEMENT OF THE SEAT/PLUG OF THE STANDARD VALVE

By referring to Pic. 7 perform the following steps:

- ◆ Separate the actuator from the valve body as described in the previous paragraph
- ◆ Loosen the nut (10) and fully unscrew the bolts (15).
- ◆ Separate the bonnet group (9) from the valve body (1).
- ◆ Remove the complete plug (3) from the bonnet (9).
- ◆ If required, unscrew and replace the seat (2) by using the specific wrenches
- ◆ Insert in the bonnet (9) the new plug by paying attention to grease the stem with some silicone oil.
- ◆ Always replace the body gasket (11) and carefully clean the supporting surfaces.
- ◆ Re-assemble everything by repeating the steps in the reverse order and pay specific attention to the re-alignment of stem, seat and plug.
- ◆ Gradually tighten the nuts (15) in criss-cross sequence, as indicated in the example in Pic.2 paragraph 2.01 by applying the torques indicated in chapter 5

**Attention:** when the plug is being replaced it is also necessary to replace the packing gland (see next paragraphs).



**Pic. 7 Standard valve**

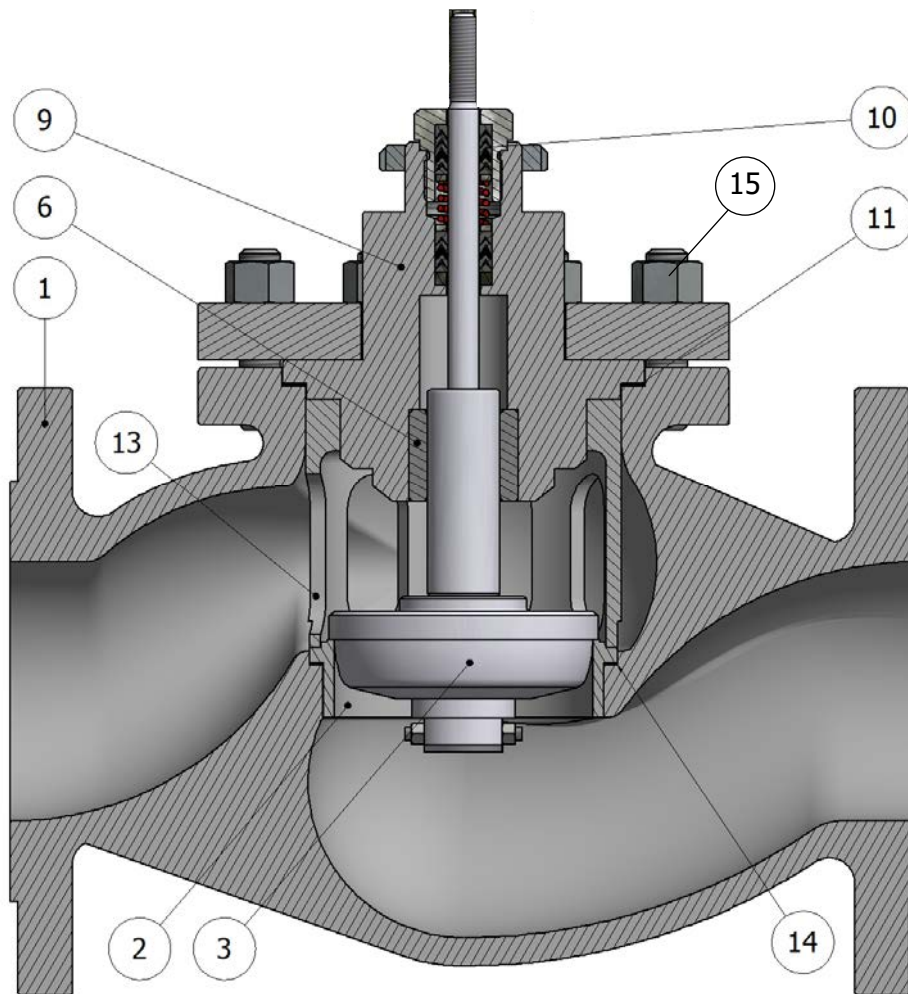


#### 4.03 REPLACEMENT OF THE SEAT/PLUG OF THE VALVE WITH QUICK CHANGE SEAT

By referring to Pic. 8 perform the following steps:

- ◆ Separate the actuator from the valve body as described in the previous paragraph
- ◆ Loosen the nut (10) and fully unscrew the bolts (15).
- ◆ Separate the bonnet group (9) from the valve body (1).
- ◆ Remove the complete plug (3) from the bonnet (9).
- ◆ Remove the seat blocking cage (13)
- ◆ If required, remove and replace the seat (2).
- ◆ Insert in the bonnet (9) the new plug by paying attention to grease the stem with silicone oil.
- ◆ Always replace the body gasket (11) and the seat gasket (14) and carefully clean the supporting surfaces.
- ◆ Re-assemble everything by repeating the steps in the reverse order and pay specific attention to the re-alignment of stem, seat and plug.
- ◆ Gradually tighten the nuts (15) in criss-cross sequence, as indicated in the example in Pic.2 paragraph 2.01 by applying the torques indicated in chapter 5

**Attention:** when the plug is being replaced it is also necessary to replace the packing gland (see next paragraphs).



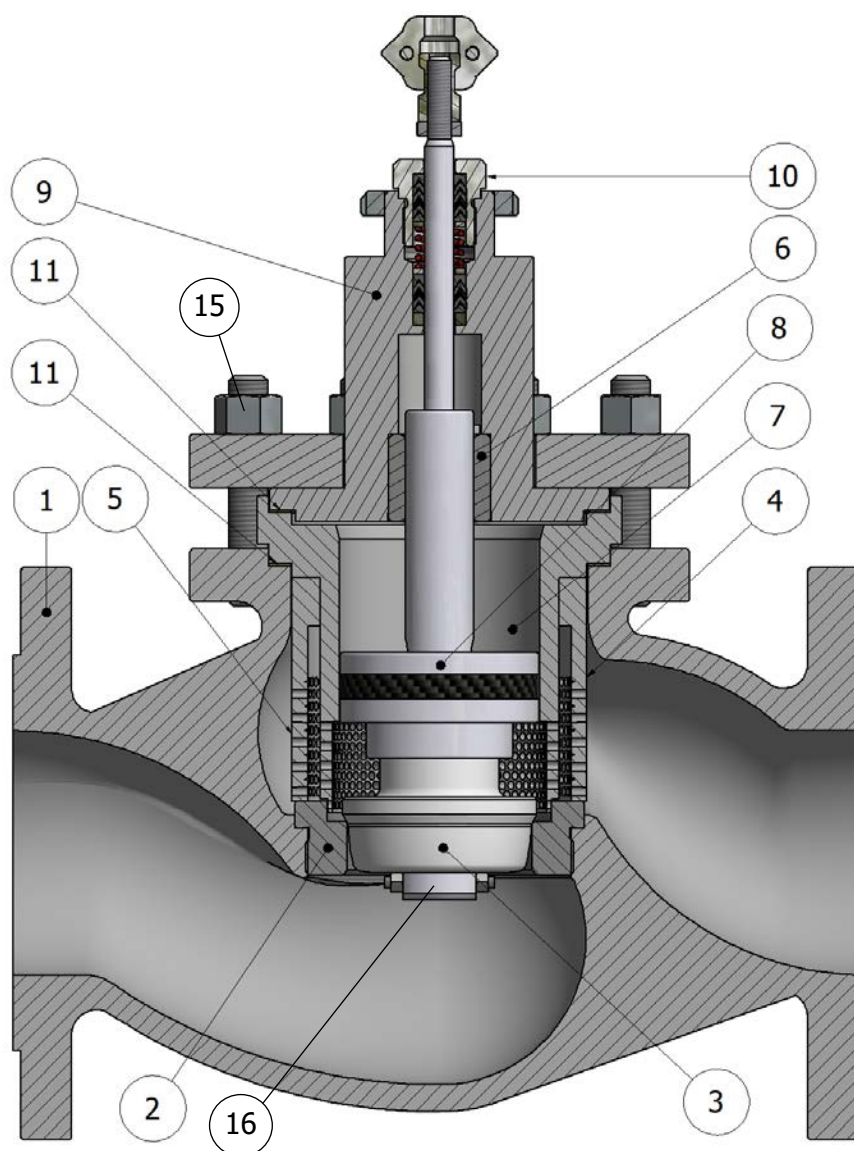
Pic. 8 Valve with Quick Change seat

## 4.04 REPLACEMENT OF THE SEAT/PLUG OF THE BALANCED VALVE

By referring to Pic. 9 perform the following operations:

- ◆ Separate the actuator from the valve body as described in the previous paragraph
- ◆ Loosen the nut (10) and fully unscrew the bolts (15).
- ◆ Separate the bonnet group (9), the balancing chamber (7), the complete plug (3) and the balancing piston (8) of the valve body (1).
- ◆ Remove any cage (5)
- ◆ Replace the sealing gasket of the balancing piston (8) by unscrewing the nut (16).
- ◆ If required, unscrew and replace the seat (2) by using the specific wrenches
- ◆ Insert in the bonnet (9) the new plug by paying attention to grease the stem with the silicone oil.
- ◆ Always replace the body gasket (11) by carefully cleaning the supporting surfaces.
- ◆ Re-assemble everything by repeating the operations in the reverse order by consequently paying attention to the re-alignment of stems, seat and plug.
- ◆ Gradually tighten the nuts (15) in criss-cross sequence, as indicated in the example in Pic.2 paragraph 2.01 by applying the torques indicated in chapter 5

**Attention:** when the plug is being replaced it is required to replace also the packing gland (see next paragraphs).



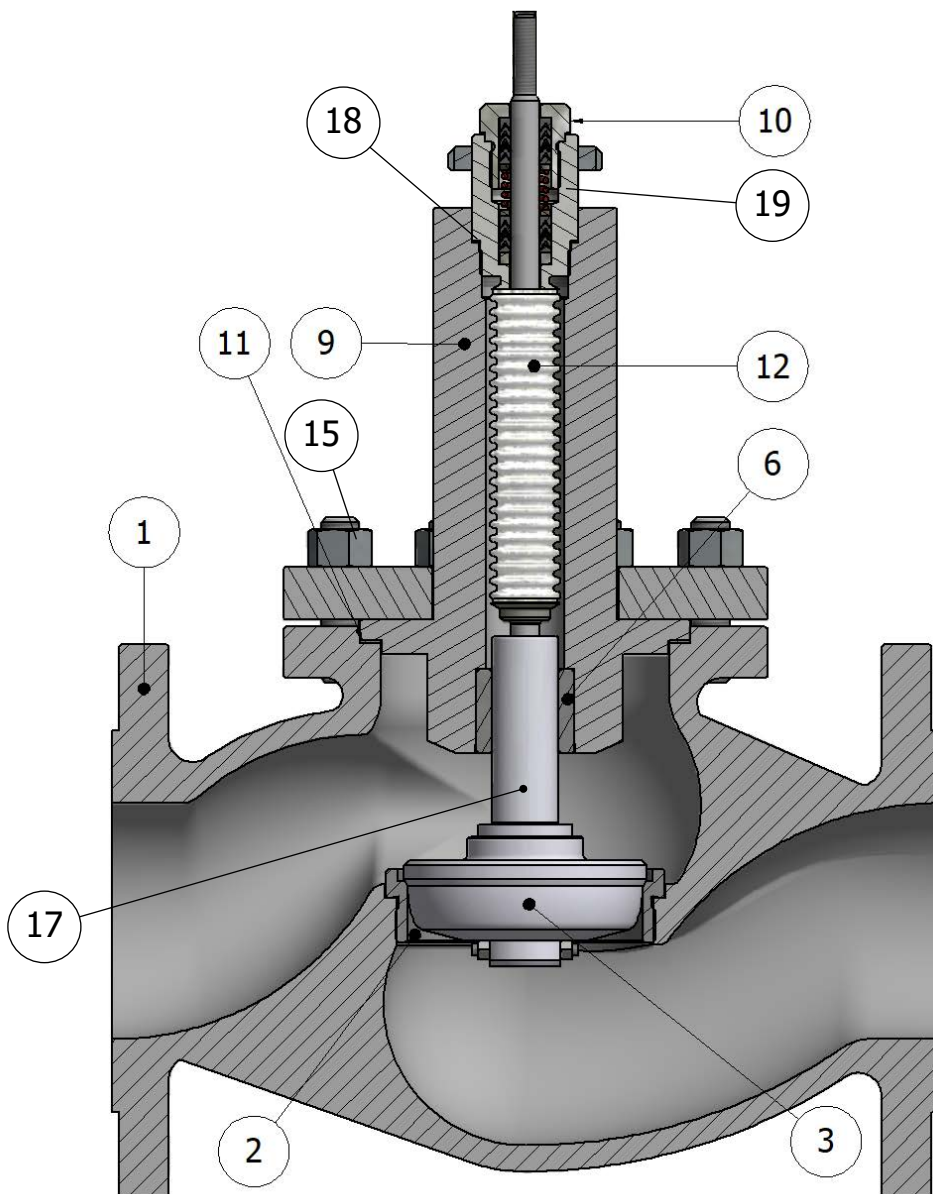
**Pic. 9 Valve with balanced plug**

## 4.05 REPLACEMENT OF THE SEAT/PLUG OF THE VALVE WITH BELLOWS

By referring to Pic. 10 perform the following steps:

- ◆ Separate the actuator from the valve body as described in the previous paragraph
- ◆ Loosen the nut (10) and fully unscrew the bolts (15).
- ◆ Separate the bonnet group (9) from the valve body (1).
- ◆ Remove the complete plug (3) from the bonnet (9).
- ◆ Remove the pin (17) and remove the plug (3)
- ◆ If required, unscrew the bellows block (19) and replace it, by replacing also the gasket (18)
- ◆ If required, unscrew and replace the seat (2) by using the specific wrenches
- ◆ Insert in the bonnet (9) the new plug by paying attention to grease the stem with the silicone oil.
- ◆ Always replace the body gasket (11) by carefully cleaning the supporting surfaces.
- ◆ Re-assemble everything by repeating the steps in the reverse order and pay specific attention to the re-alignment of stem, seat and plug.
- ◆ Gradually tighten the nuts (15) in criss-cross sequence, as indicated in the example in Pic.2 paragraph 2.01 by applying the torques indicated in chapter 5

**Attention:** when the plug is being replaced it is also necessary to replace the packing gland (see next paragraphs).



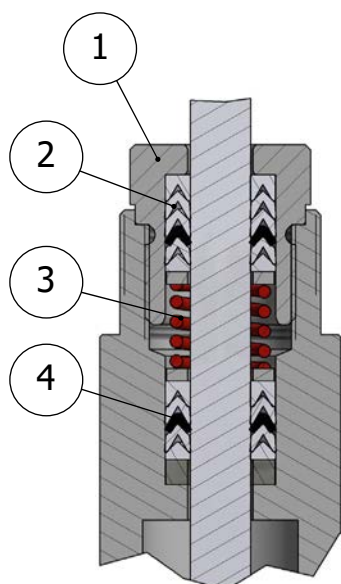
Pic. 10 Valve with bellows



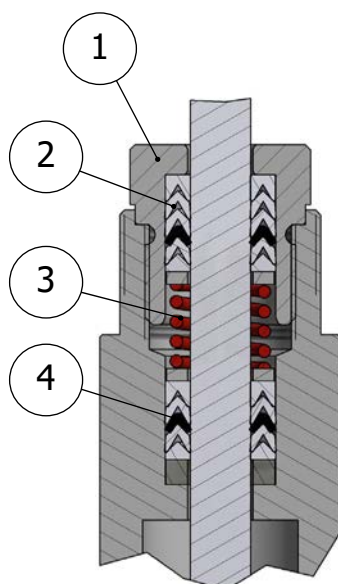
## 4.06 REPLACEMENT OF THE STEM PACKING GLAND

By referring to the picture corresponding to your packing gland model (from Pic 11 to Pic. 18) perform the following steps:

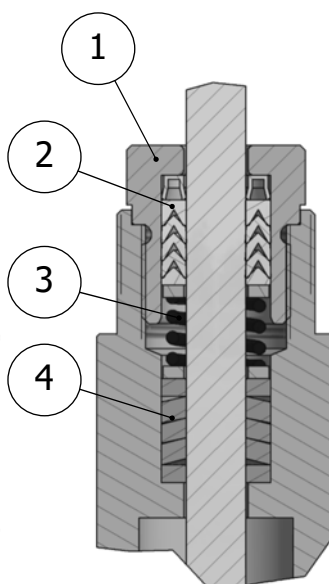
- ◆ Remove the plugs as described in the previous paragraphs
- ◆ Fully unscrew the screw (1).
- ◆ Remove the upper packing gland (2).
- ◆ Remove the spring (3)
- ◆ Remove the lower packing gland (4).
- ◆ Replace the O-ring (5) if present
- ◆ Carefully clean the housing chamber and grease it with silicone oil.
- ◆ Insert the new packing gland as indicated in the picture corresponding to your model
- ◆ Screw the nut (1) but not completely
- ◆ Insert the plug by paying attention to grease the stem with the silicone oil.
- ◆ Always replace the body gasket, and carefully cleaning the supporting surfaces.
- ◆ Re-assemble everything as described in the previous paragraphs
- ◆ Tighten the nut (1) as indicated in chapter 5



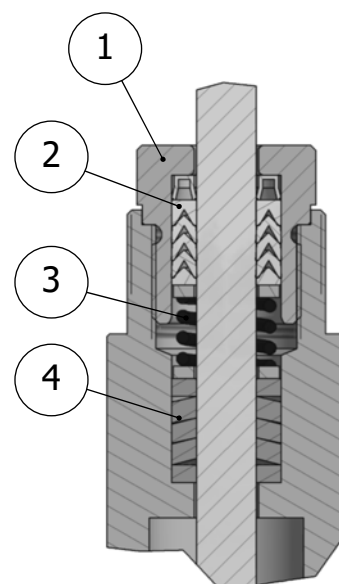
Pic. 11 "LP200"



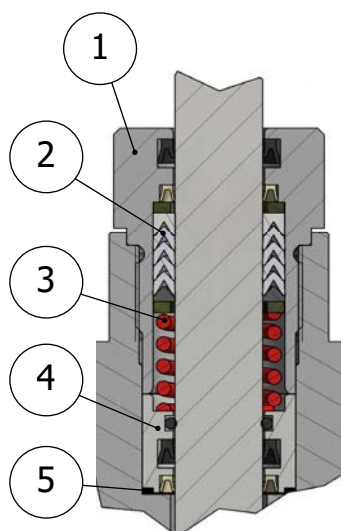
Pic. 12 "SP200"



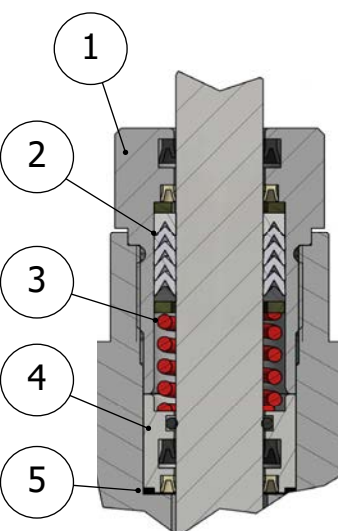
Pic. 13 "HP200"



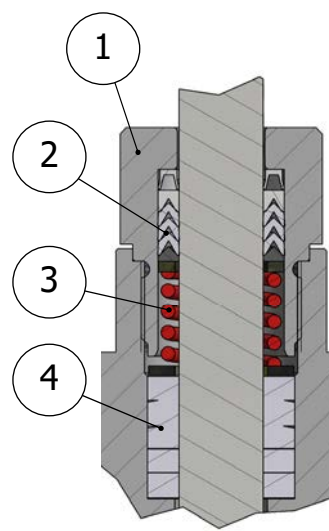
Pic. 14 "EcoPack 1"



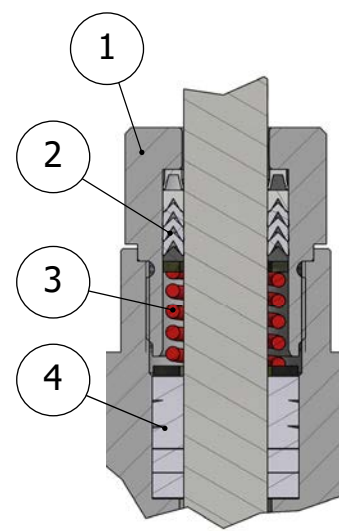
Pic. 15 "LP400"



Pic. 16 "SP400"



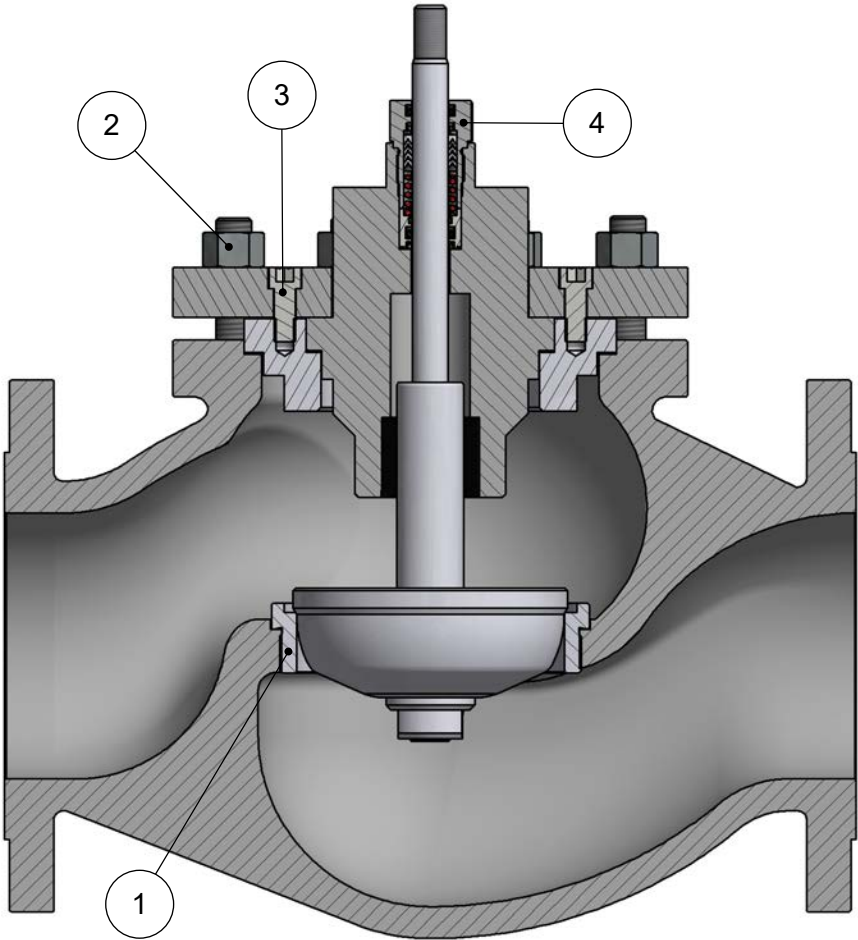
Pic. 17 "HP400"



Pic. 18 "EcoPack 2"

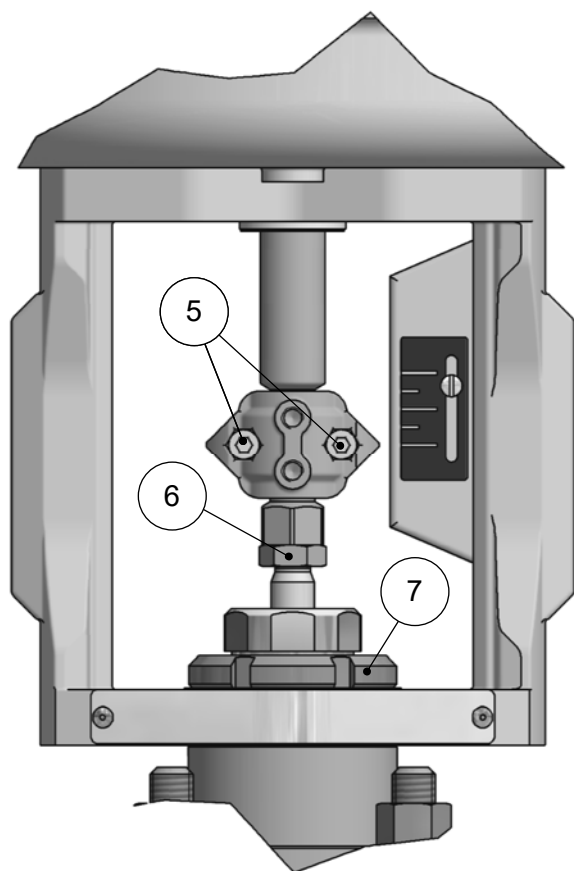
5.0 TIGHTENING TORQUES

VALVE DIAMETER		SEAT (1) Nm ±10%	BONNET NUTS (2) Nm ±10%		SCREWS (3) Nm ±10%	NUT (4) Nm ±10%
			VD10-KD10-KA10	KD20-KA20		
DN15	1/2"	190	30	45	//	190
DN20	3/4"	190	30	45	//	190
DN25	1"	240	30	45	//	190
DN32	1" 1/4	350	30	45	//	190
DN40	1" 1/2	550	50	85	//	190
DN50	2"	570	50	85	//	190
DN65	2" 1/2	700	100	110	//	190
DN80	3"	700	100	110	//	190
DN100	4"	850	100	110	//	190
DN125	5"	900	140	155	85	240
DN150	6"	900	140	160	85	240
DN200	8"	950	145	160	85	240

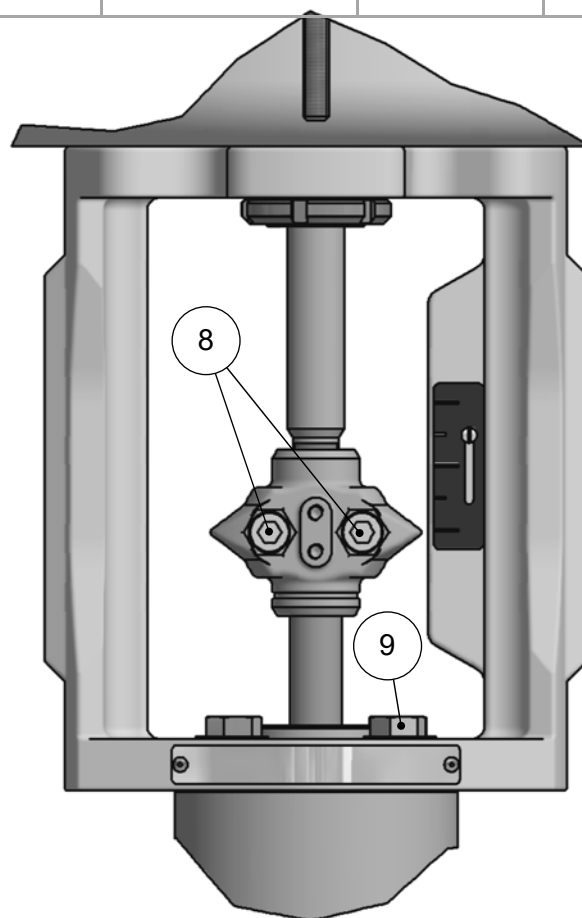


Pic. 19

VALVE DIAMETER		NUTS (9) Nm $\pm 10\%$	NUT (6) Nm $\pm 10\%$	RING NUT (7) Nm $\pm 10\%$	SCREWS (5) Nm $\pm 10\%$	SCREWS (8) Nm $\pm 10\%$
DN15	1/2"	//	40	350	5	//
DN20	3/4"	//	40	350	5	//
DN25	1"	//	40	350	5	//
DN32	1" 1/4	//	40	350	5	//
DN40	1" 1/2	//	40	350	5	//
DN50	2"	//	40	350	5	//
DN65	2" 1/2	//	40	480	5	//
DN80	3"	//	40	480	5	//
DN100	4"	//	40	480	5	//
DN125	5"	80	//	//	//	50
DN150	6"	80	//	//	//	50
DN200	8"	80	//	//	//	50



Pic. 20 Valves DN15 ÷ 100 / 1/2" ÷ 4"

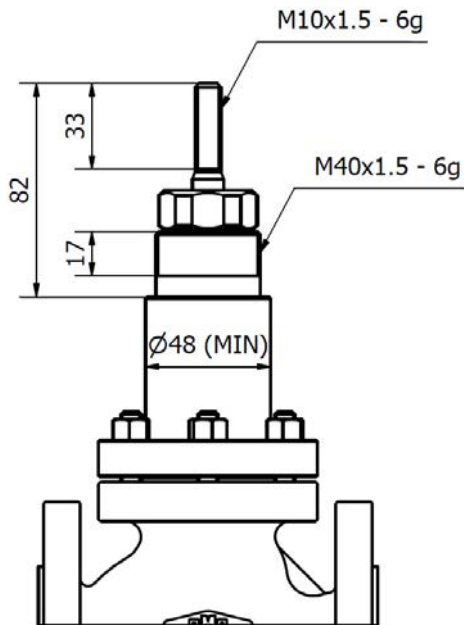


Pic. 21 Valves DN125 ÷ 200 / 6" ÷ 8"

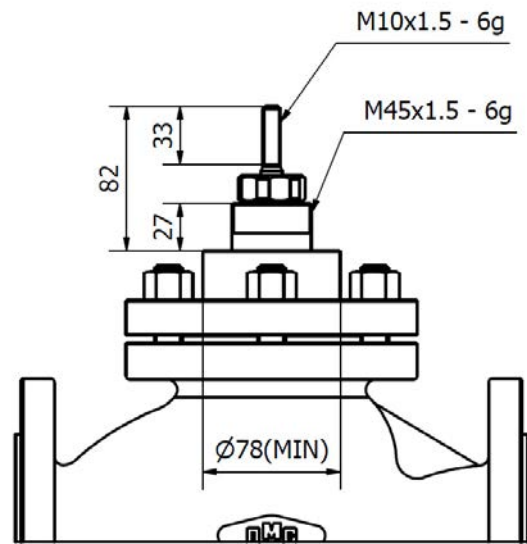


## 6.0 SIZES OF THE ACTUATOR CONNECTIONS

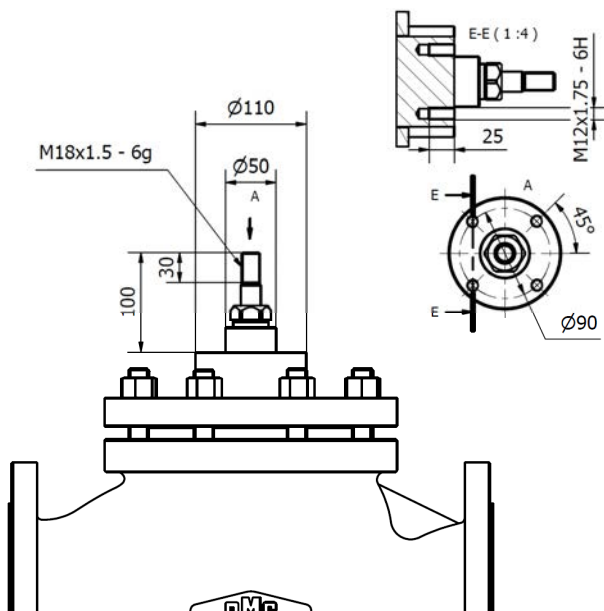
ENGLISH



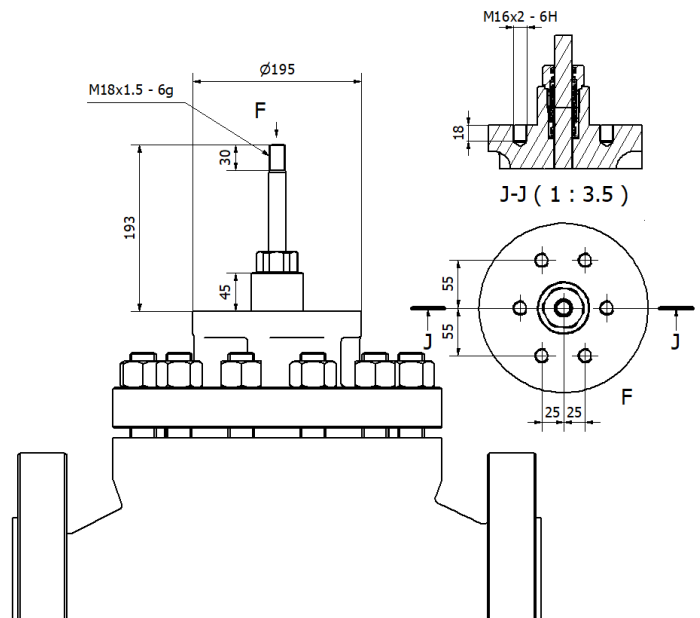
**Pic. 22 Valves DN15 ÷ 50 / 1/2" ÷ 2"**  
Closed plug



**Pic. 23 Valves DN65 ÷ 100 / 2 1/2" ÷ 4"**  
Closed plug



**Pic. 23 Valves DN125 ÷ 200 / 5" ÷ 4"**  
VD10-KD10-KA10  
Closed plug



**Pic. 23 Valves DN125 ÷ 200 / 5" ÷ 4"**  
KA20-KD20  
Closed plug

## 7.0 PERIODICAL CHECKS

24 hours after the first commissioning, check the connections to the pipe and especially ensure the flange bolts are tightened to the correct torque. Inspect the valve every year by verifying its wear and replacing any damaged parts.

Periodically verify any phenomena of internal and/or external corrosion and/or erosion as they may significantly damage the pressurized parts by locally reducing the thickness and as a consequence the safety degree.

## 8.0 AVAILABLE SPARE PARTS

DESCRIPTION	PICTURE	POSITION
Screwed seat	7	2
Plug for screwed seat	7	3
Quick-Change Seat	8	2
Plug for Quick-Change seat	8	3
Body Gasket	7	11
Gasket of Quick-Change seat	8	14
Sealing gasket of the balancing piston	9	8
ZEB20 bellows	10	12
LP200 stem packing gland	11	//
SP200 stem packing gland	12	//
HP200 stem packing gland	13	//
EcoPack 1 stem packing gland	14	//
LP400 stem packing gland	15	//
SP400 stem packing gland	16	//
HP400 stem packing gland	17	//
EcoPack 2 stem packing gland	18	//



**ATTENTION!!!** The OMC valves are uniquely identified by a serial number fixed on the plate located on the actuator's yoke. To order any spare parts or for any other need, always refer to the above-mentioned number.

## 9.0 PRESSURE/TEMPERATURE RELATIONSHIP

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

### - OMC-TUV-00

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

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

SIZE	FLUIDS	EC MARKING	PROCEDURE OF CONFORMITY EVALUATION
DN15 ÷ DN25 1/2" ÷ 1"	Gruppo 1 and 2	NO	Art. 4 Par.3
DN32 ÷ DN200 1" 1/2 ÷ 8"	Gruppo 1 and 2	YES	B + C2

## 11.0 PLATES

### 11.01 IDENTIFICATION PLATES

All OMC valves are provided with an identification plate for the identification unique of the valve.

Mod.: 1	Body: 2	Serial: 3	Char.: 4
5	Trim: 6	Seal cl.: 7	TAG: 8
T: 9	F.coeff.: 10	Stroke: 11	Fluid: 12

OMC S.p.A. - Via G. Galilei 18  
Cassina dè Pecchi (MI) - ITALY

### LEGEND

NUMBER	TEXT	DESCRIPTION
1	Mod.	Valve model
2	Body	Material of valve body
3	Serial	Valve serial number
4	Char.	Adjustment characteristic (equal percentage, linear, etc..)
5		Nominal diameter and nominal pressure of the valve
6	Trim:	Material of seat/plug
7	Seal cl.	Valve sealing class
8	TAG	Any technical identification number of the Client
9	T	Maximum and minimum allowed temperatures of the process fluid
10	F.coeff.	Outflow coefficient of the valve
11	Stroke	Plug stroke
12	Fluid	Process fluid

### 11.02 "EC" PLATE PURSUANT TO DIRECTIVE 2014/68/EU

If planned (see paragraph 10.0) the valve is provided with an "EC" plate containing the following data

	Notified body 0948 B+C2 Yr: <input type="text"/> Serial: <input type="text"/>
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### LEGEND

TEXT	DESCRIPTION
CE	It indicates the conformity to all manufacturer's obligations
Notified body	Notified Body which performs the notification of the production system's quality
0948	Number of the Notified Body which performs the notification of the production system's quality
B	EU type examination - production type (Module B) pursuant to directive 2014/68/EU
C2	Production control (Module C2) directive 2014/68/EU
Yr.	Year of manufacture
Serial	Valve serial number