

July 2018

# Type OS/66 Slam-Shut Controller

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## INTRODUCTION

### Scope of the Manual

This manual provides installation, startup, maintenance, troubleshooting, and spare parts for the slam-shut controller series OS/66.

### Product Description

Designed for pressure regulators and slam-shut valves control, the following types are available:

- **Types OS/66 and OS/66-AP**  
Spring loaded.

Tightness cover version available on request.

The full range of Type OS/66 slam-shut controller can be installed in the following equipment:

M Series - A/100 Series - A/140 Series - B/240 Series  
RP Series - BM7 Series



Figure 1. Type OS/66 Slam-Shut Controller

This product has been designed to be used with fuel gases of 1st and 2nd family according to EN 437, and with other non aggressive and non fuel gases. For any other gases, other than natural gas, please contact your local sales agent.

## CHARACTERISTICS

Table 1. Type OS/66 Characteristics

| TYPE     | BODY<br>RESISTANCE<br>bar | OVERPRESSURE<br>SET RANGE<br>W <sub>do</sub> bar |      | UNDERPRESSURE<br>SET RANGE<br>W <sub>du</sub> bar |      |
|----------|---------------------------|--|------|---|------|
|          |                           | Min.   | Max. | Min.  | Max. |
| OS/66    | 6                         | 0.022  | 0.6  | 0.007   | 0.45 |
| OS/66-AP |                           | 0.2  | 5    | 0.1   | 2.5  |

1/8" BSP female threaded connections.

### Materials

Body: Aluminum  
Cover: Aluminum  
Diaphragm: Nitrile (NBR) rubber

# Type OS/66

## LABELLING

|                                    |           |                                |              |
|------------------------------------|-----------|--------------------------------|--------------|
| <b>TARTARINI</b>                   |           | APPARECCHIO TIPO / DEVICE TYPE |              |
| MATRICOLA SERIAL Nr.               |           | Note 1                         |              |
| ANNO YEAR                          | Note 2    | DN1                            |              |
| NORME ARMONIZ. HARMONIZED STD.     | EN        | DN2                            |              |
| CLASSE DI PERDITA LEAKAGE CLASS    |           | Wa                             | Note 4 bar   |
| CLASSE FUNZIONALE FUNCTIONAL CLASS | Cg        | Wao                            | Note 5 bar   |
| FLUIDO GRUPPO FLUID GROUP          | 1         | Wau                            | Note 5 bar   |
| TS                                 | Note 3 °C | pmax                           | bar          |
|                                    | PS body   | pao                            | bar          |
|                                    | PS covers | PT=                            | 1.5 x PS bar |

Figure 2. Type OS/66 Series Label

**Note 1:** See “Characteristics”

**Note 2:** Year of Manufacture

**Note 3:** Class 1: -10° to 60°C  
Class 2: -20° to 60°C

**Note 4:** Specific set-point according to order

**Note 5:** See “Characteristics”

## DIMENSIONS AND WEIGHT

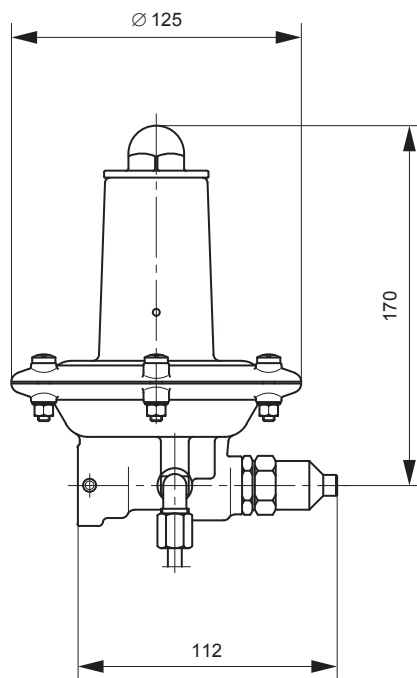


Figure 3. Type OS/66 Series Dimensions (mm)

OS/66 SERIES FULL RANGE WEIGHT: 1 kg

## INSTALLATION

- Install the actuator in a covered area and, in any case, protect it against weather agents.
- Make sure that data shown on actuator label is compatible with actual operating requirements.
- In case of impulse line not being incorporated in the pressure regulator, connect the (A) from the pipe downstream of the actuator to a straight pipe section possibly away from restrictions, curves or branches in order to avoid any variations in device triggering values which might be caused by gas turbulence (see Figure 7).

## STARTUP

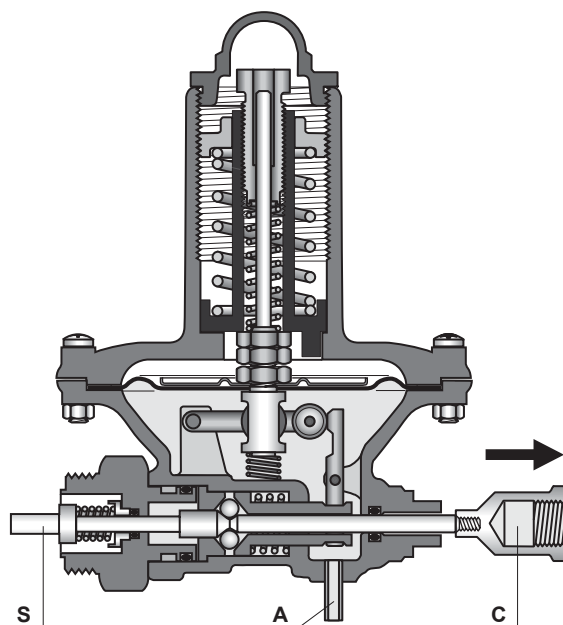


Figure 4. Type OS/66 Series Startup

- Carefully follow the instructions contained in the instruction manual relating to the regulator or to the slam-shut valve on which the controller has been installed.
- Remove cap (C) reverse and screw it onto stem (S).
- Pull cap and keep it pulled several seconds until outlet pressure stabilizes, then release it.
- Repeat the above procedure, making sure that Controller remains properly latched, then mount cap back in its original position.

## PERIODICAL CHECKS

It is recommended that slam-shut controller efficiency be checked periodically.

## Cut-off Test

- Close inlet and outlet valves and disconnect impulse line (A). The controller should trigger at minimum pressure (only if so set).
- Using a small pump or other appropriate means, raise pressure in the line to normal operating level. Relatch controller in case it has triggered following on step a above.
- Simulate pressure increase until maximum triggering pressure is reached.
- Connect the impulse line (A) and bring the line back to full operating conditions as described in Startup paragraph.

## Controller-seal Check

- Slowly close the valve located downstream.
- Loosen cap (key 1) and trip the controller by exerting a slight pressure on stem unit (key 41).
- Loosen one fitting in the line downstream of the slam-shut valve and apply soapy water in order to make sure that there are no leaks. In case of any leak being detected, proceed with the necessary maintenance of the controller.

## SEP STATEMENT


Emerson declares this product conforms to Pressure Equipment Directive PED 2014/68/UE Article 4 section 3 and have been designed and manufactured in accordance with sound engineering practice (SEP).

Per Article 4 section 3, this "SEP" product must not bear the CE marking.

## ATEX REQUIREMENTS

Application of ATEX Product Directive:

**Table 2. Overview**

| TYPE                              | CLASSIFICATION   | ATEX ASSEMBLIES   | ATEX LABELLING  |
|-----------------------------------|--|---|---|
| Regulator/SSD                     | Non-electrical equipment   | Not falling under the 2014/34/EU Directive                    | No  |
| Regulator/SSD + electrical device | Non-electric equipment equipped with an electrical device falling under the scope of the ATEX Directive 2014/34/EU | Constitutes an assembly according to the 2014/34/EU Directive | CE  II 2 G T |



### WARNING

Carefully follow below instructions for the usage of "ATEX Assembly" in an explosive atmosphere.

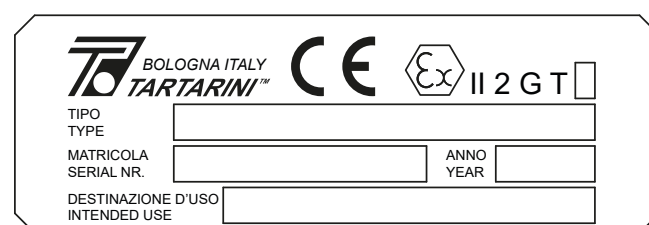
A non-electrical equipment incorporating an electrical device (proximity, microswitch...) is an "ATEX Assembly", and in the scope of the ATEX Directive 2014/34/EU.

When such equipment(s) is used in a natural gas pressure control and/or measuring station in compliance with the following European standards: EN12186, EN12279 and EN 1776, can be installed in any type of classified zones according to the Directive 1999/92/EC dated 16 December 1999, in the following conditions:

- the equipment(s) / electrical circuit is connected to a suitable and certified intrinsically safe apparatus (suitable zener barrier)
- the equipment(s) / electrical circuit is used according to this instruction manual issued by the manufacturer and / or available on our website

## ATEX Labelling

The nameplate will be installed on the ATEX assembly.



**Figure 5. Label for ATEX Assembly**

Where:

- Manufacturer:** Name and address and/or logo of the manufacturer
- CE:** Conformity marking to European Directive
- Type:** Description of the ATEX Assembly
- Serial Number and Year of Construction
- Ex:** Specific marking of explosion protection
- II:** Equipment group
- 2:** Equipment Category/level of protection 2 = suitable for zone 1
- G:** For gases, vapor or mists
- T:** Temperature Class (i.e.: T6 > 85 ... ≤ 100 °C)
- Intended Use:** Natural Gas infrastructures

## MAINTENANCE



### WARNING

Call a gas service person to service the unit. Only a qualified person must install or service the device.

**Before starting maintenance, disconnect impulse connection (A) to make sure there is no gas under pressure in the pilot.**

**When maintenance operations are finished check the tightness with suds.**

## General Maintenance



### WARNING

**Do not bend or otherwise damage stem (S) when disassembling and reassembling.**

- a. Remove impulse line (A) and make sure that controller is not latched by exerting a slight pressure on stem unit (key 41).
- b. Loosen screws (key 29) and slide out the controller.
- c. Remove cap (key 1), adjusting screw (key 2), ring nut (key 4), spring (key 5), spring holder (key 3) and spring (key 6).
- d. Remove screws (key 27) nuts (key 25) and washers (key 26), take off cover (key 7).
- e. Slide out diaphragm unit and remove spring (key 23).
- f. In order to replace diaphragm (key 36), unscrew nuts (key 39 and 40) and disassemble the components. Check O-ring (key 34) and replace it if worn.
- g. Check that plate unit (key 8) and lever (key 24) can move freely and are not worn, otherwise replace them together with pins (key 22 and 9).
- h. Loosen balls holder (key 12) using the appropriate tool and check O-ring (key 11).
- i. Remove the balls (key 12), the spring holder (key 13) and the spring (key 14). Clean with petrol and check surfaces if worn or scored, replace.
- j. Unscrew guide (key 20) and check O-rings (key 18 and 19), replace if necessary.

## Reassembling

Reassemble by reversing the above steps.

As you proceed, make sure that parts move freely and without friction.

In addition:

- a. Lubricate all seals with Molykote 55 M or equivalent and be very careful not to damage them when reassembling.
- b. Place the balls holder (key 10) on the special tool, grease it thoroughly to prevent balls from falling out and lodge the balls (key 12) in their seats. Hold the special tool in a vertical position and tighten the balls holder.
- c. Adjust the position of balls holder (key 10) so that, with lever (key 24) held down at travel end, plate unit (key 8) moves freely and has a clearance of 0,2 to 0,3 mm.

- d. Place the adjusting nut (key 40) back in its original position as shown in Figure 4.
- e. Hold stem unit (key 41) slightly pressed to ensure proper fitting of diaphragm (key 36). Mount cover (key 7) and check that stem unit (key 41) is duly centered.
- f. Tighten cover screws (key 27) nuts (key 25) and washers (key 26) to ensure proper sealing.
- g. Check that all movements are smooth and friction free.
- h. Fit the mounting stem in order to prevent balls from falling out and to facilitate remounting of the controller on the sam-shut valve.
- i. Remount the controller and secure it by means of screws (key 29).

## Setting

- a. Use ring nut (key 4) to completely load maximum pressure spring (key 5). Loosen adjusting screw (key 2) to completely relieve minimum pressure spring (key 6).
- b. Disconnect impulse line (A).
- c. Use a small pump or other appropriate means to raise pressure to normal operating level.
- d. Relatch controller and allow pressure to drop to minimum pressure triggering level.
- e. Using adjusting screw (key 2), slowly load minimum pressure spring (key 6) until actuator triggers.
- f. Repeat steps c. and d. above, making any necessary adjustments in setting.
- g. Bring pressure back to normal values.
- h. Relatch controller and raise pressure until it reaches maximum pressure triggering level.
- i. Using ring nut (key 4), slowly unload spring (key 5) until actuator triggers.
- j. Repeat steps g. and h. above, making any necessary adjustments in setting.



### CAUTION

**Whenever minimum or maximum pressure triggering is not required, omit corresponding steps.**

**It should be borne in mind that minimum pressure triggering can be eliminated by simply removing spring (key 6) and that maximum pressure triggering can be eliminated by fully loading spring (key 5).**

## SPARE PARTS

Spare parts storage shall be done by proper procedures according to national standard/rules to avoid over aging or any damage.

## TROUBLESHOOTING

**Table 3.** Troubleshooting for Type OS/66 Series Slam-Shut Controller

| SYMPTOMS                           | CAUSE  | ACTIONS              |
|------------------------------------|--|----------------------|
| Controller does not remain latched | The impulse intake (A) is not connected properly                             | Check connection (A) |
|                                    | Downstream pressure coincides with the maximum or minimum slam-shut settings | Check settings       |
|                                    | Minimum or maximum pressure setting is above or below required values        | Check settings       |
|                                    | Diaphragm (key 36) is damaged (minimum pressure triggering)                  | Replace diaphragm    |
|                                    | Gap between plate unit (key 8) and lever (key 24) is not as required         | Check gap            |

## PARTS LIST

### Type OS/66 Slam-Shut Controller (See Figure 6)

#### Key Description

- 1 Cap
- 2 Adjusting screw
- 3 Spring holder
- 4 Ring nut
- 5 Maximum pressure spring
- 6 Minimum pressure spring
- 7 Cover
- 8 Plate unit
- 9 Pin
- 10 Balls holder
- 11\* O-ring
- 12 Ball
- 13 Spring holder
- 14 Spring
- 15 Body
- 17 Pipe
- 18\* O-ring
- 19\* O-ring
- 20 Guide
- 21 Cover
- 22 Pin
- 23 Spring
- 24 Lever
- 25 Nut

#### Key Description

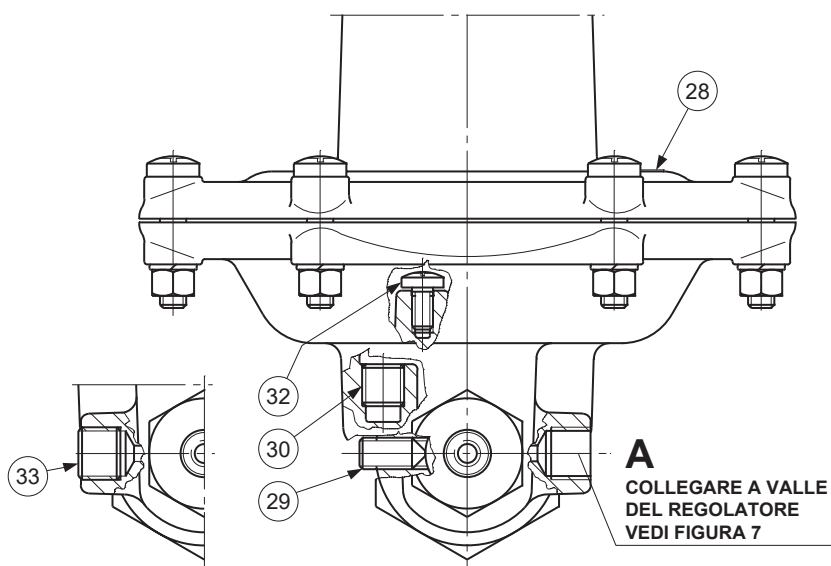
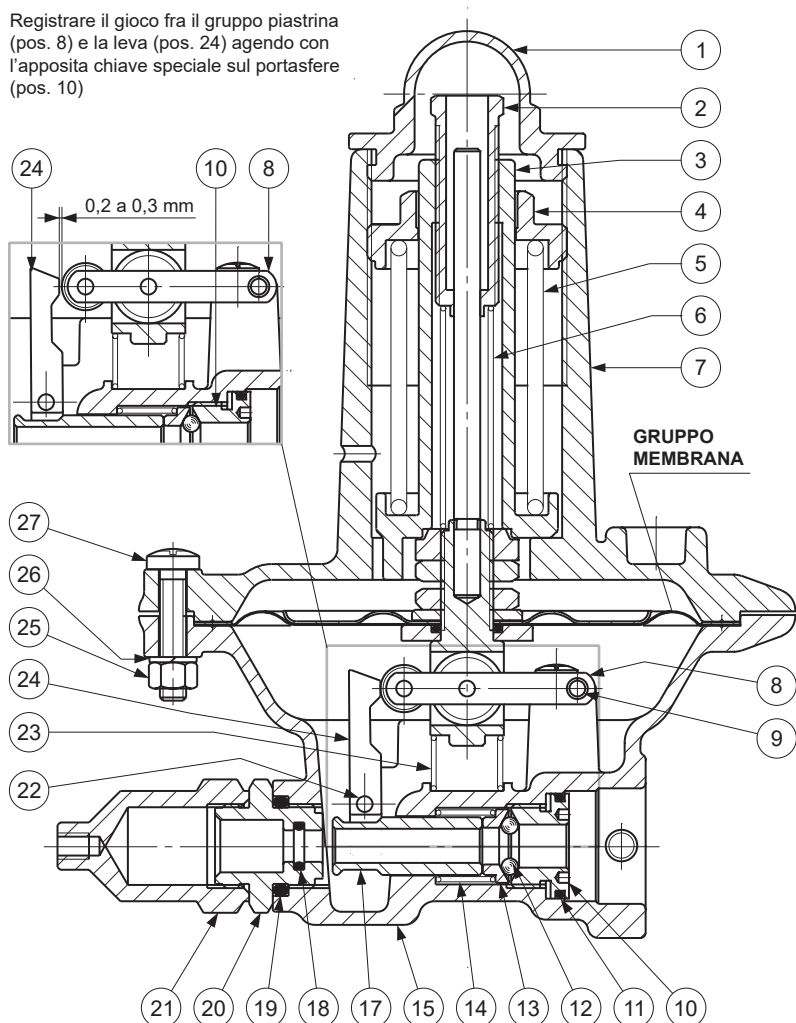
- 26 Washer
- 27 Screw
- 28 Label
- 29 Screw
- 30 Screw
- 32 Screw
- 33 Screw
- 34\* O-ring
- 35 Washer
- 36\* Diaphragm
- 37 Plate
- 38 Washer
- 39 Nut
- 40 Adjusting nut
- 41 Stem unit
- 200 Proximity switch
- 201 Disc
- 202 Nut
- 203 Bracket

Rubber parts marked with (\*) are supplied in the “spare parts kit”, recommended as stock.

To order the kit it is necessary to communicate to us the type of the controller and its serial number.

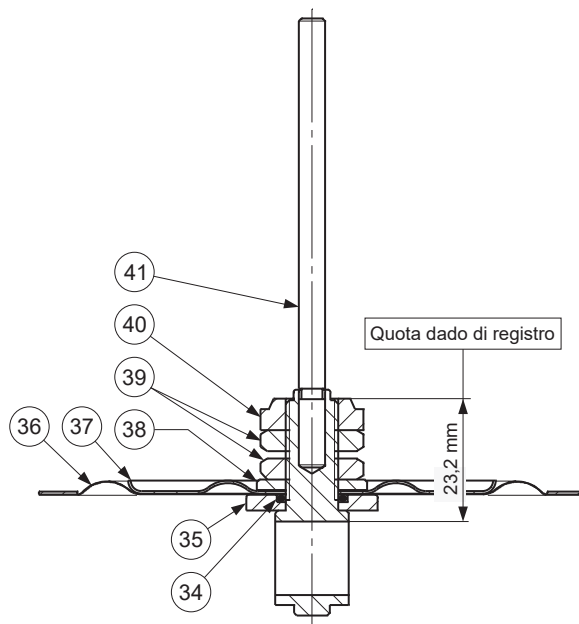
## SCHEMATIC ASSEMBLIES

Registrare il gioco fra il gruppo piastrina (pos. 8) e la leva (pos. 24) agendo con l'apposita chiave speciale sul portasfera (pos. 10)

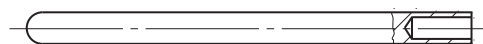


LM/1345

### GRUPPO MEMBRANA OS/66



### FALSO STELO



### GRUPPO MEMBRANA OS/66-AP

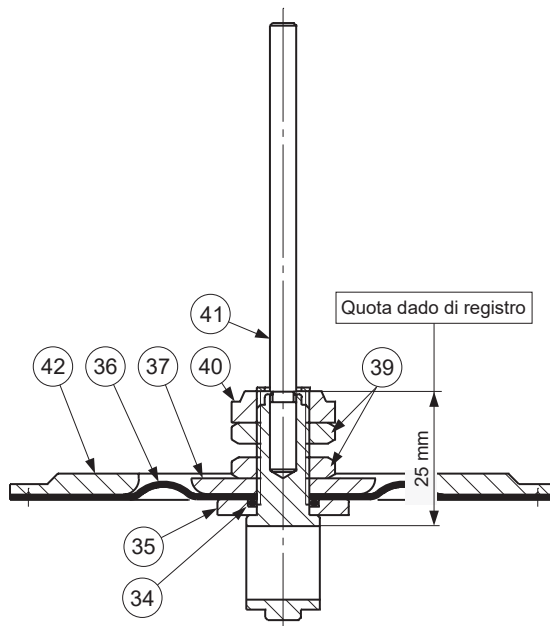
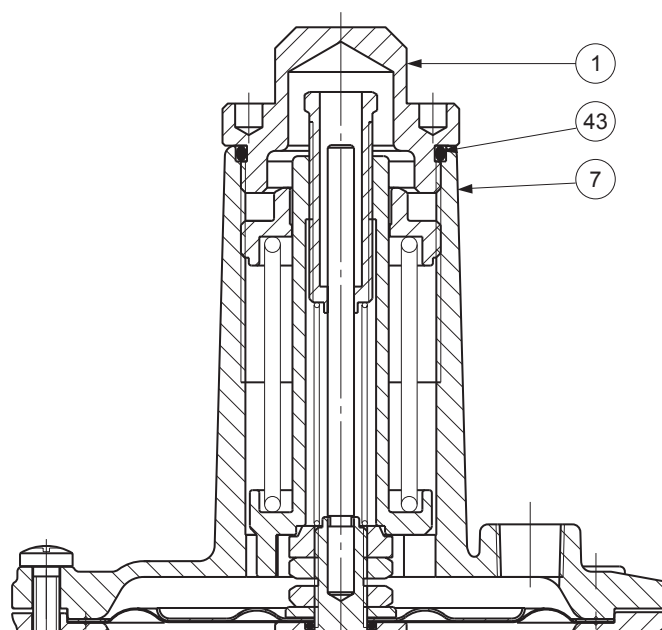
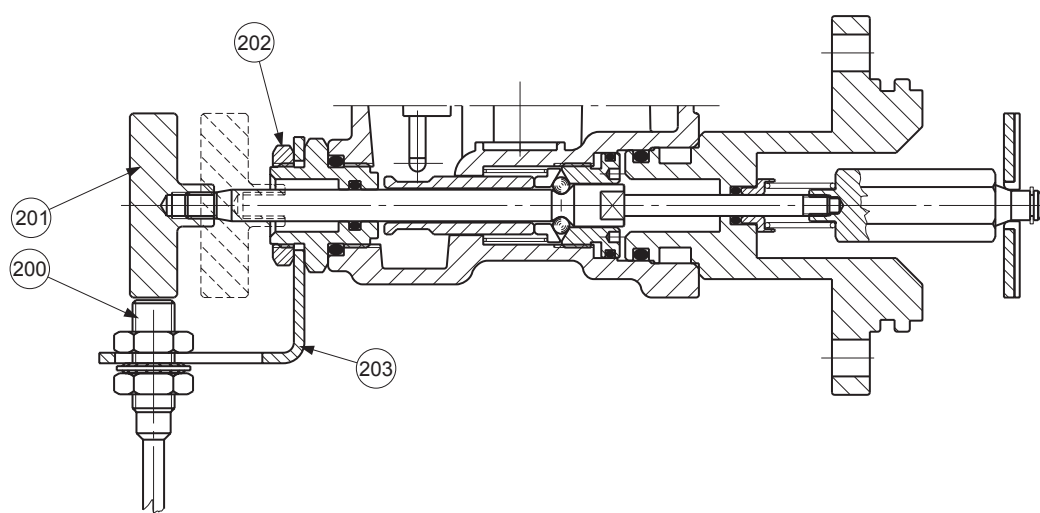


Figure 6. Type OS/66 Series Slam-Shut Controller

VERSIONE CON COPERCHIO A TENUTA



VERSIONE CON PROXIMITY



# Type OS/66

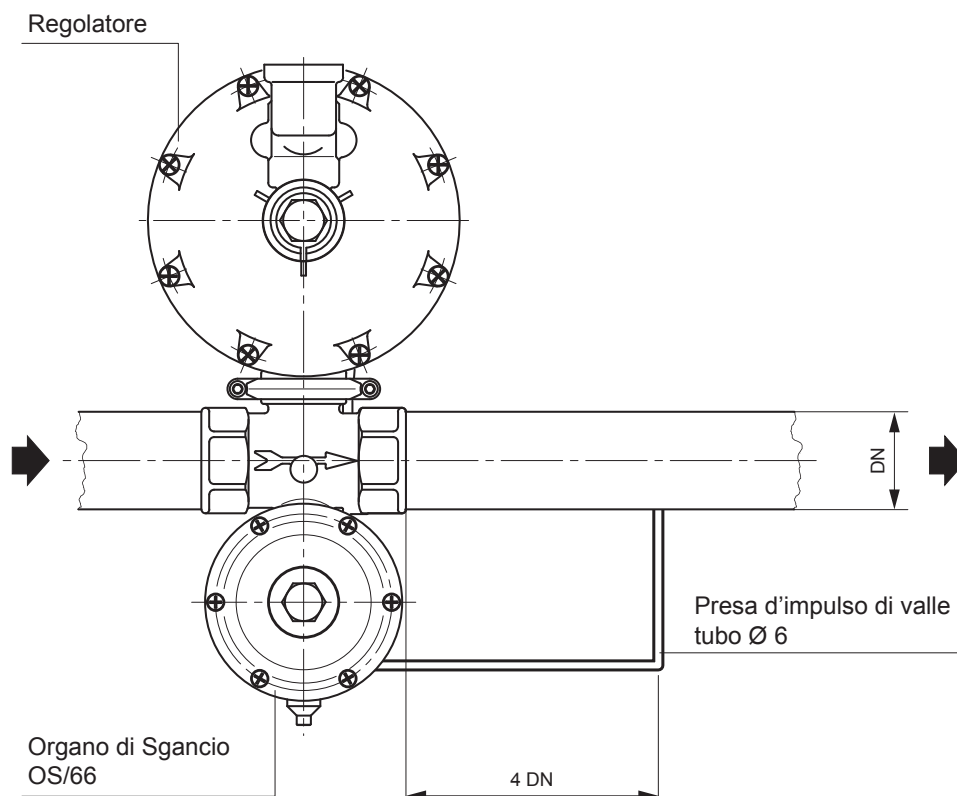


Figure 7. Type OS/66 Series Impulse Line Connection Schematic

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