

**Safety Shut-off Valve with
Pressure Reducing Valve (SSV)
Type 36-3**

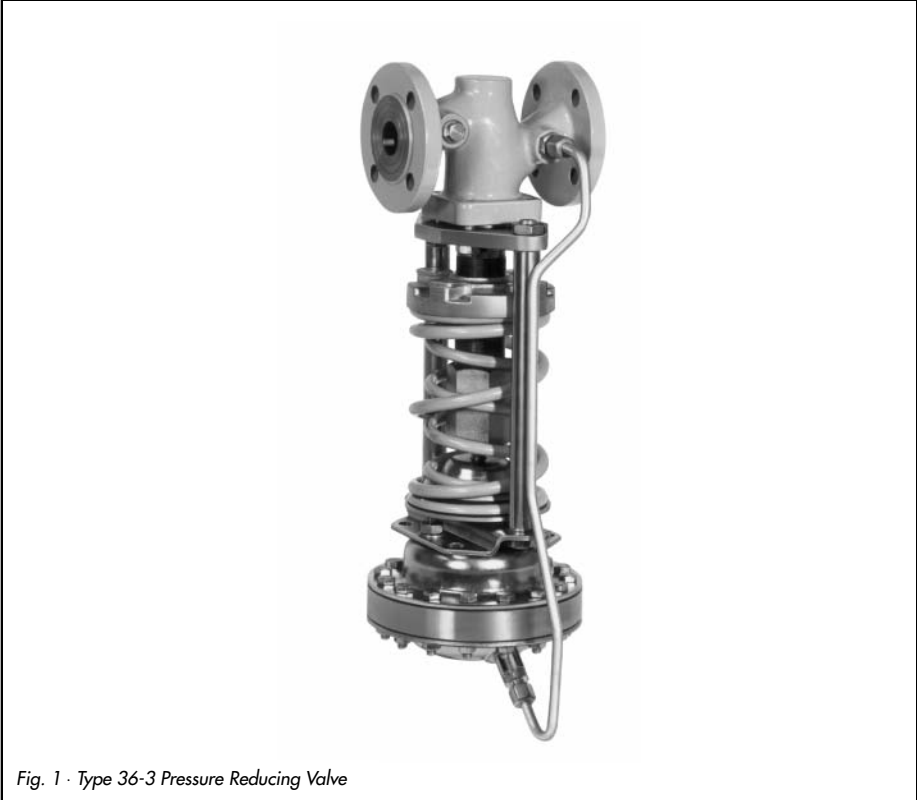


Fig. 1 · Type 36-3 Pressure Reducing Valve

**Mounting and
Operating Instructions**

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1. Design and principle of operation

The pressure reducing valve consists of a spring-loaded globe valve with a balanced plug and an actuator with an operating diaphragm and a safety diaphragm.

The pressure reducing valve is used to maintain the pressure downstream of the valve to an adjusted set point value.

The valve closes when the downstream pressure rises.

The process medium flows through the valve between the seat (2) and the plug (3).

The downstream pressure p_2 is transmitted via the control line (12) to the operating diaphragm (11.1) and is converted into a positioning force. This force is used to move the plug, opposing the force of the positioning

springs (7). The spring force is adjustable at the set point adjustment (6).

The regulator has two diaphragms (11.1) operating independently from one another. A continued operation is possible even should one diaphragm fail. To recognize a ruptured diaphragm, a diaphragm rupture indicator or optionally a pressure switch to signalize a rupture is installed in the intermediate ring (11.3).

Typetested:

The regulator has been typetested as a safety shut-off valve (SSV) by the German Technical Inspectorate (TÜV).

(The test mark is available on request).



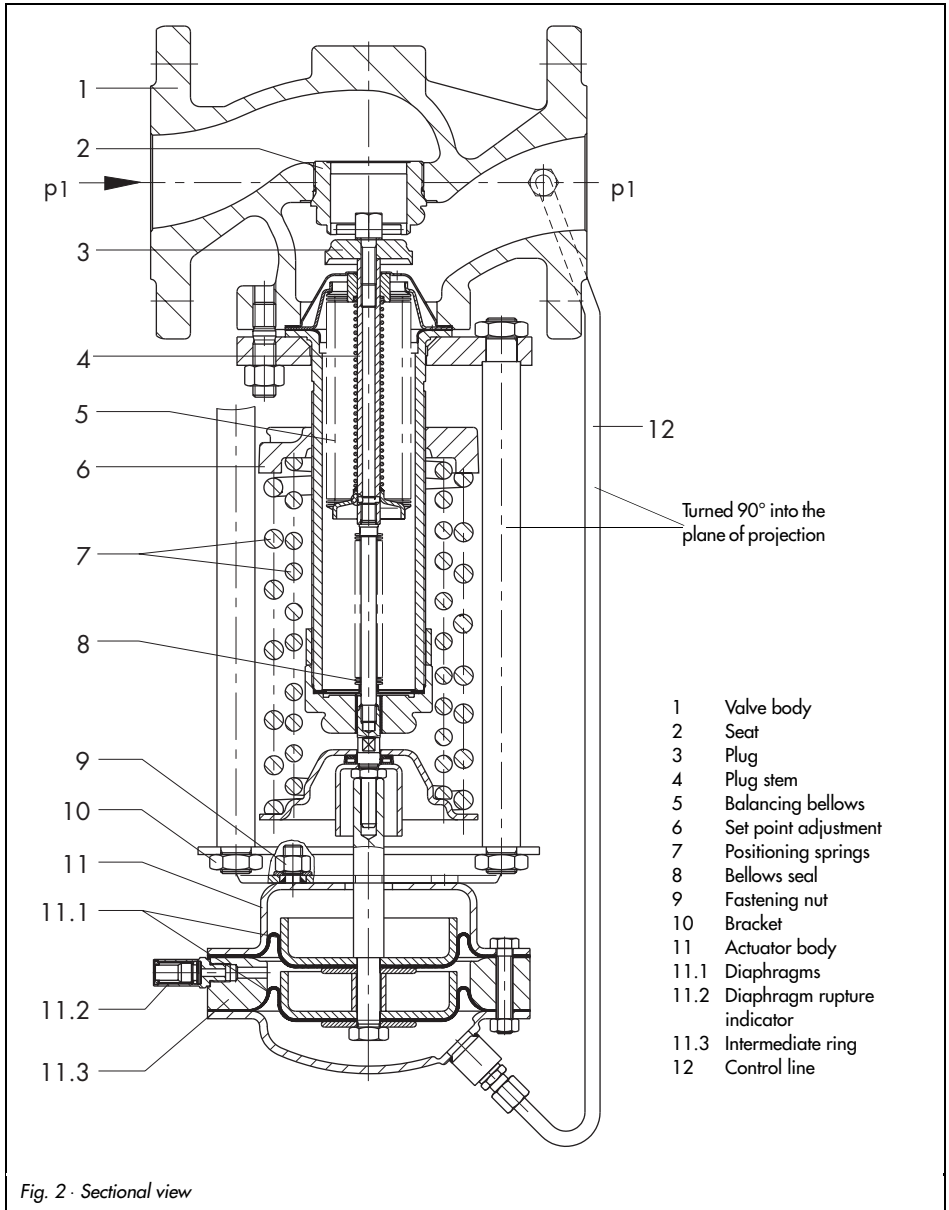
The device may only be assembled, started up or operated by trained and experienced personnel familiar with the product.

According to these mounting and operating instructions, trained personnel is referred to as individuals who are able to judge the work they are assigned to and recognize possible dangers due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Any hazards which could be caused in the pressure reducing valve by the process medium and operating pressure are to be prevented by means of the appropriate measures.

In addition, it is necessary to make sure that the regulator is only used in areas where the operating pressure and temperatures do not exceed the operating values which are based on the valve sizing data submitted in the order.

Proper shipping and appropriate storage are assumed.



2. Installation

2.1 Position of installation

Caution!

Flush the pipeline thoroughly prior to installation of the regulator, ensuring that sealing particles and other impurities carried along by the process medium do not impair proper operation, especially tight shut-off. A strainer (SAMSON Type 2) must be installed upstream of the pressure reducing valve (see section 2.2).

Install the pressure reducing valve in horizontal pipelines with the actuator suspended downwards.

On installing the valve, check that the medium flows in the same direction as indicated by the arrow on the valve body.

On choosing the point of installation, it is important to make sure that the regulator can still be easily accessed after completion of the plant.

The regulator must be installed free of stress. If necessary, support the piping near the connecting flanges.

Caution!

Never attach supports to the valve or actuator.

2.2 Strainer

The strainer must be installed upstream of the pressure reducing valve.

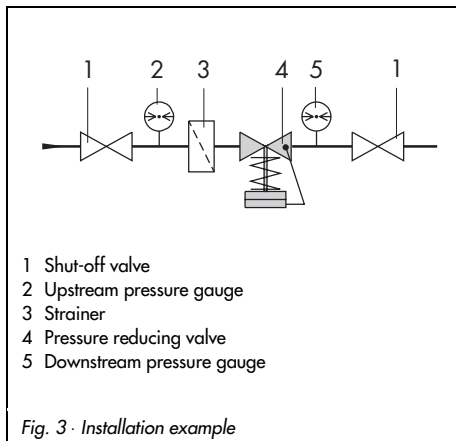
Make sure the process medium flow corresponds with the direction indicated by the arrow on the strainer. The filter element must be vertically suspended.

Ensure that ample space is available to remove the filter.

2.3 Shut-off valve, pressure gauge

Ideally hand-operated shut-off valves should be installed both upstream of the strainer and downstream of the regulator. This allows the plant to be shut down for cleaning and maintenance routines, or when the plant is not operated for long periods of time.

To monitor the pressures in the plant, pressure gauges should be installed upstream and downstream of the regulator.



3. Operation

3.1 Start up

Open the hand-operated shut-off valve downstream of the pressure reducing valve. Then open slowly the shut-off valve upstream of the pressure reducing valve.

3.2 Set point adjustment

The downstream pressure required is set by turning the set point adjustment (6) using a wrench, up to DN 50 with SW19 and from DN 65 upwards with SW 22.

Turning it clockwise increases the downstream pressure and turning it counterclockwise reduces it.

The pressure gauge located on the downstream pressure side allows the adjusted set point to be monitored.

4. Troubleshooting

Should the downstream pressure (pressure gauge located on the downstream pressure side) deviate significantly from the adjusted set point value, check first the control line (12) for any blockages (section 4.1). If the diaphragms are damaged, the actuator can be disassembled and the diaphragms (11.1) can be replaced (section 4.2).

If other causes such as a damaged seat or plug are found, we recommend that you contact our customer service center or return the regulator to the manufacturer for repair.

Caution!

If the repair is to be performed by the plant operator, it is important to take into account on assembling and disassembling the regulator that the valve springs (7) for valve nominal sizes DN 15 to 50 are preloaded by up to 70 mm.

To remove the springs, use only a suitable tool, for example, the SAMSON disassembly tool 9.129-2747.

Additionally it is important to make sure that no torque is transmitted to the bellows (8), otherwise the metal bellows will be irreparably damaged.

Do not disassemble/assemble the regulator without removing it first from the pipeline!



Prior to disassembling the pressure reducing valve, shut down the plant by slowly closing the shut-off valves. Relieve the corresponding part of the plant from pressure and drain it, if necessary.

1. Unscrew the control line and clean.
2. Unscrew the fastening nuts (9) on the bracket (10) and remove the actuator body (11).
3. Disassemble the actuator body and replace the diaphragm(s).

4.1 Cleaning the control line

1. Loosen the screw joints connecting the control line to the actuator and the valve body, and remove the control line.
2. Blow through the control line to remove any blockages and clean it. Reattach it to the actuator and valve body.

To reassemble the regulator, proceed in the reverse order. To start up, proceed as described in section 3.1.

4.2 Replacing the diaphragms

Note!

When the lower diaphragm fails, the atmospheric pressure in the intermediate chamber between the diaphragms rises to the level of the downstream pressure. A red mark becomes visible in the mechanical rupture indicator.

For versions with an installed pressure switch, a visual or acoustic signal is triggered.

When the rupture indicator is activated, the lower diaphragm must be replaced.

Nominal sizes, set point range and spare parts for the actuator

Set point range bar	Valve nominal size DN						Actuator				
	15...25		32...50		65 to 100		Diaphragm material				
							EPDM		FKM		
	Compl. actuator		Dia-phragm		Compl. actuator		Dia-phragm		Dia-phragm		
	Spring(s) required						80	Order No.			
	Order No. 0270-										
2 to 4.2	2166	2167	2166	2167	1410	2203		1070-9500	0520-0868	1070-9508	0520-0869
2.5 to 6.3	2166	2168	2166	2199	1410	1417					
6 to 10.5	2200	2201	2200	2201	1416	2204					

5. Dimensions in mm and weights

Nominal size DN	15	20	25	32	40	50	65	80	100
Length L	130	150	160	180	200	230	290	310	350
Height H	415		470		600		615		
Weight ¹⁾ apprx. kg	13	14	14.5	20	22	22.5	41.5	48.5	57.5

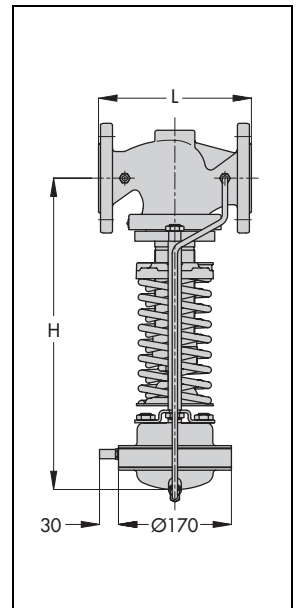
¹⁾ Weights for PN 16,
+10 % for spheroidal graphite iron PN 25 and cast steel PN 40

6. Customer inquiries

Should you have any inquiries regarding the regulator, please submit the following details:

(see also name plate)

- ▶ Type and nominal size
- ▶ Order no. and product no.
- ▶ Upstream and downstream pressure
- ▶ Flow rate in m³/h
- ▶ Has a strainer been installed?
- ▶ Installation drawing





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