

T 2630 EN

Type 44-9 Safety Shut-off Valve (SSV) with integrated pressure reducing valve Series 44 Self-operated Pressure Regulators



Application

Pressure regulator for set points from **1 to 10.5 bar** · Valves in **DN 15 to 50** · **PN 25** · Suitable for liquids, air, and nitrogen up to **150 °C** Safety shut-off valve (SSV) for protecting district heating plants

The valve **closes** when the downstream pressure rises

The Type 44-9 Safety Shut-off Valve with integrated pressure reducing valve controls the pressure downstream of the valve, especially in district heating plants and large heating systems. It blocks the heat flow when a set point is reached. The valve closes when the downstream pressure rises and opens again when this pressure drops.

In the event of a ruptured operating diaphragm in the actuator, the valve closes at a downstream pressure above 0.5 bar. An indicator at the actuator shows that the actuator is damaged.

As a result, the regulators comply with AGFW (German District Heating Association) requirements for district heating plants in accordance with DIN 4747-1.

Special features

- Suitable for water and other liquids, provided these do not cause the materials used to corrode
- Single-seated valve with balanced plug
- The regulator complies with AGFW (German District Heating Association) requirements for district heating plants in accordance with DIN 4747-1.

Versions (see Fig. 2 and Fig. 3)

Series 44 Pressure Regulators with actuators for set point ranges from 1 to 10.5 bar · Valves in nominal sizes DN 15 to 50 · With welding ends (special version with threaded ends or flanges) · DN 32, 40, and 50 versions also available with flanged valve body

Special version

- Restricted flow cross-section with lower K_{VS} coefficient for DN 15, 20, and 25
- With internal parts made of FKM, e.g. for use with mineral oils

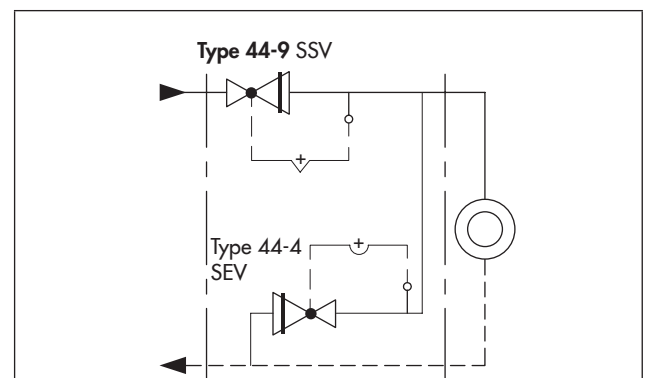


Fig. 1: Protection of a house substation with a SSV and SEV



Fig. 2: Type 44-9 Safety Shut-off Valve

Principle of operation

The medium flows through the valve (1) as indicated by the arrow. The position of the plug determines the flow rate across the area released between plug (3) and seat (2).

The downstream pressure p_2 to be controlled is transmitted over the externally routed control line (11) to the operating diaphragm (6.1) where it is converted into a positioning force. This force moves the valve plug depending on the force of spring assembly (8) which can be adjusted at the set point adjuster (10).

The valve closes when the downstream pressure rises and opens again when this pressure drops.

The valve has a balanced plug (3). As a result, the forces generated by the upstream pressure which act on the valve plug are eliminated.

After the operating diaphragm (6.1) ruptures and the downstream pressure rises above 0.5 bar, the backup diaphragm (6.2) closes the plug and shuts off the flow.

To recognize a ruptured diaphragm, a diaphragm rupture indicator (12) is installed in the intermediate ring.

Type test

The Type 44-9 Safety Shut-off Valves for K_{VS} 2.5 and higher have been typetested for water by the German Technical Inspectorate (TÜV). The test mark is available on request.

Installation

Install the regulator in horizontal pipelines.

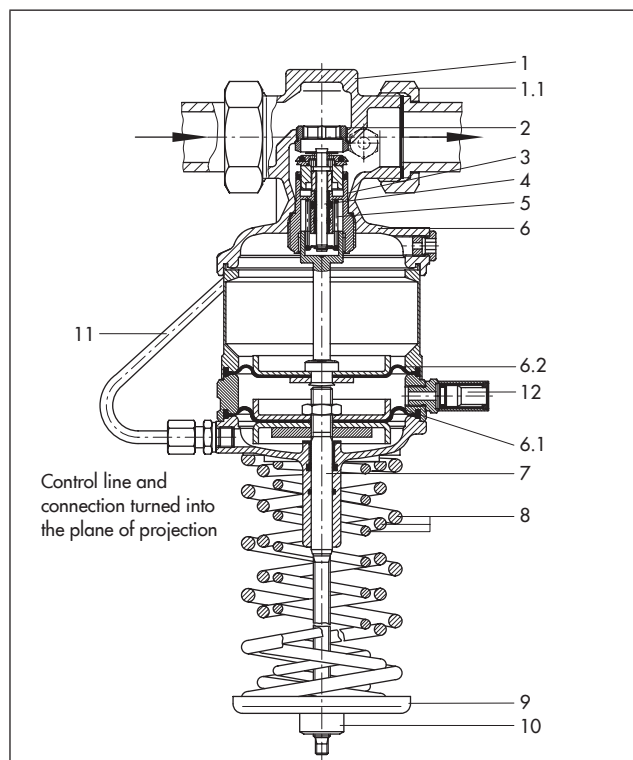
The following points must be observed:

- The direction of flow must match the direction indicated by the arrow on the body
- Install a strainer (e.g. SAMSON Type 2 NI) upstream of the valve.
- The actuator must be suspended downwards.

Further details can be found in ► EB 2630.



- | | |
|-------------------------|--------------------------------|
| 1 Valve body | 7 Actuator stem |
| 2 Seat (exchangeable) | 8 Spring assembly |
| 3 Plug (balanced) | 9 Spring plate |
| 4 Plug stem | 10 Set point adjuster |
| 5 Plug spring | 11 Control line |
| 6 Actuator | 12 Diaphragm rupture indicator |
| 6.1 Operating diaphragm | |
| 6.2 Backup diaphragm | |



Type 44-9 SSV (DN 32), body with threaded connections

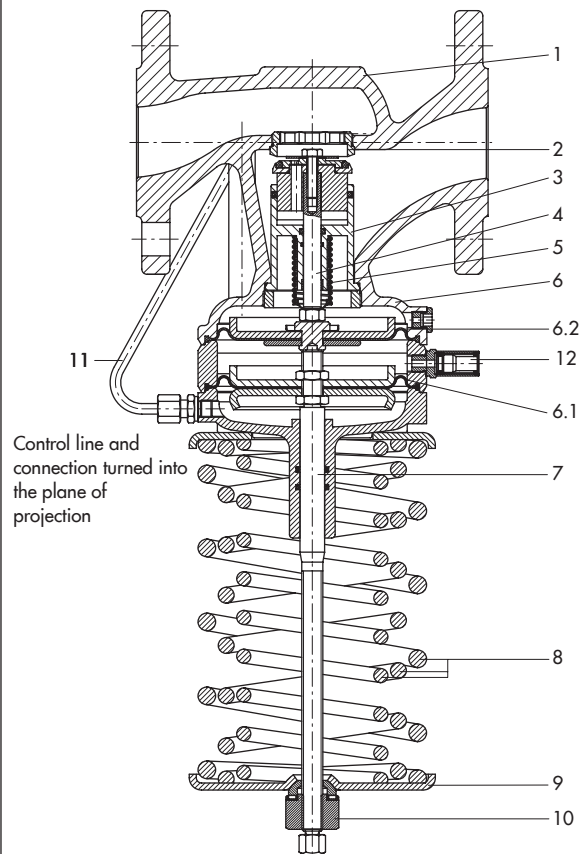


Fig. 3: Functional diagram

Table 1: Technical data · All pressures in bar (gauge)

| Nominal size | DN | 15 | 20 | 25 | 32 | 40 | 50 |
|--|------------------|--|-----|------|--------|-----|------|
| K _{VS} coefficient | Standard version | 4 | 6.3 | 8 | 12.5 | 16 | 20 |
| | Special version | 1 · 2.5 | | | – | – | – |
| | Flanged body | – | – | – | 12.5 | 20 | 25 |
| x _{FZ} value | | 0.6 | | 0.55 | | 0.5 | 0.45 |
| Nominal pressure | | PN 25 | | | | | |
| Max. perm. differential pressure Δp | | 20 bar | | | 12 bar | | |
| Max. permissible temperature | | 150 °C ¹⁾ | | | | | |
| Leakage class according to IEC 60534-4 | | ≤ 0.05 % of K _{VS} coefficient | | | | | |
| Set point ranges ²⁾ , continuously adjustable | | 1 to 4 bar · 2 to 4.2 bar · 2.4 to 6.3 bar · 6 to 10.5 bar | | | | | |
| Compliance | | CE · EAC | | | | | |

¹⁾ Only the version for mineral oils can be used when air or nitrogen are used.

²⁾ Special set point ranges, without type test, on request.

Table 2: Materials · Material numbers according to DIN EN

| Type 44-9 Pressure Regulator (SSV) | |
|------------------------------------|---|
| Valve body | Red brass CC499K · Spheroidal graphite iron EN-JS1049 ¹⁾ |
| Actuator housing/intermediate ring | Red brass CC499K |
| Seat | Stainless steel 1.4305 |
| Plug | Brass 2.0402 and stainless steel 1.4305 with EPDM soft seal ²⁾ |
| Valve spring | Stainless steel 1.4310 |
| Operating diaphragm | EPDM with fabric reinforcement ²⁾ |
| Seals | EPDM ²⁾ |

¹⁾ Additional version for DN 32, 40, and 50: valve with flanged body made of spheroidal graphite iron

²⁾ Special version, e.g. for mineral oils: FKM

Flow rate diagram for water

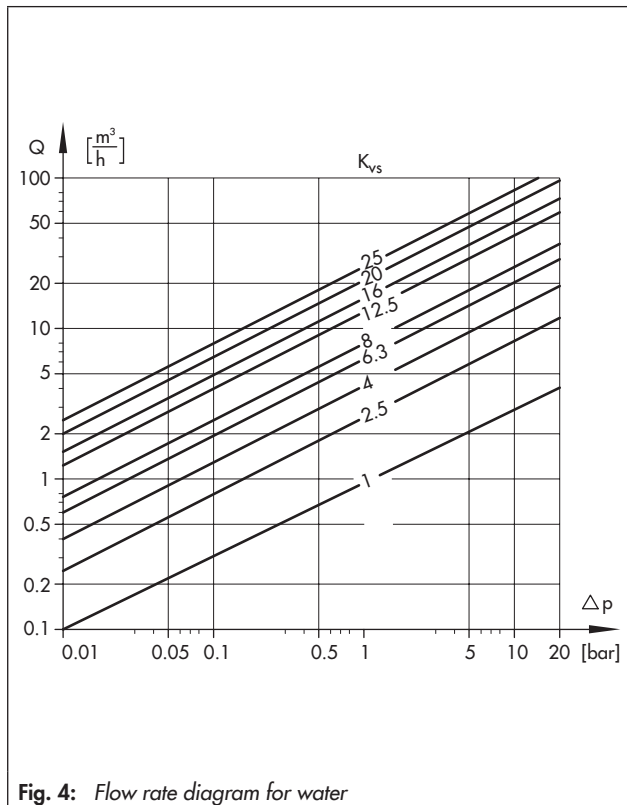


Fig. 4: Flow rate diagram for water

Dimensional drawings

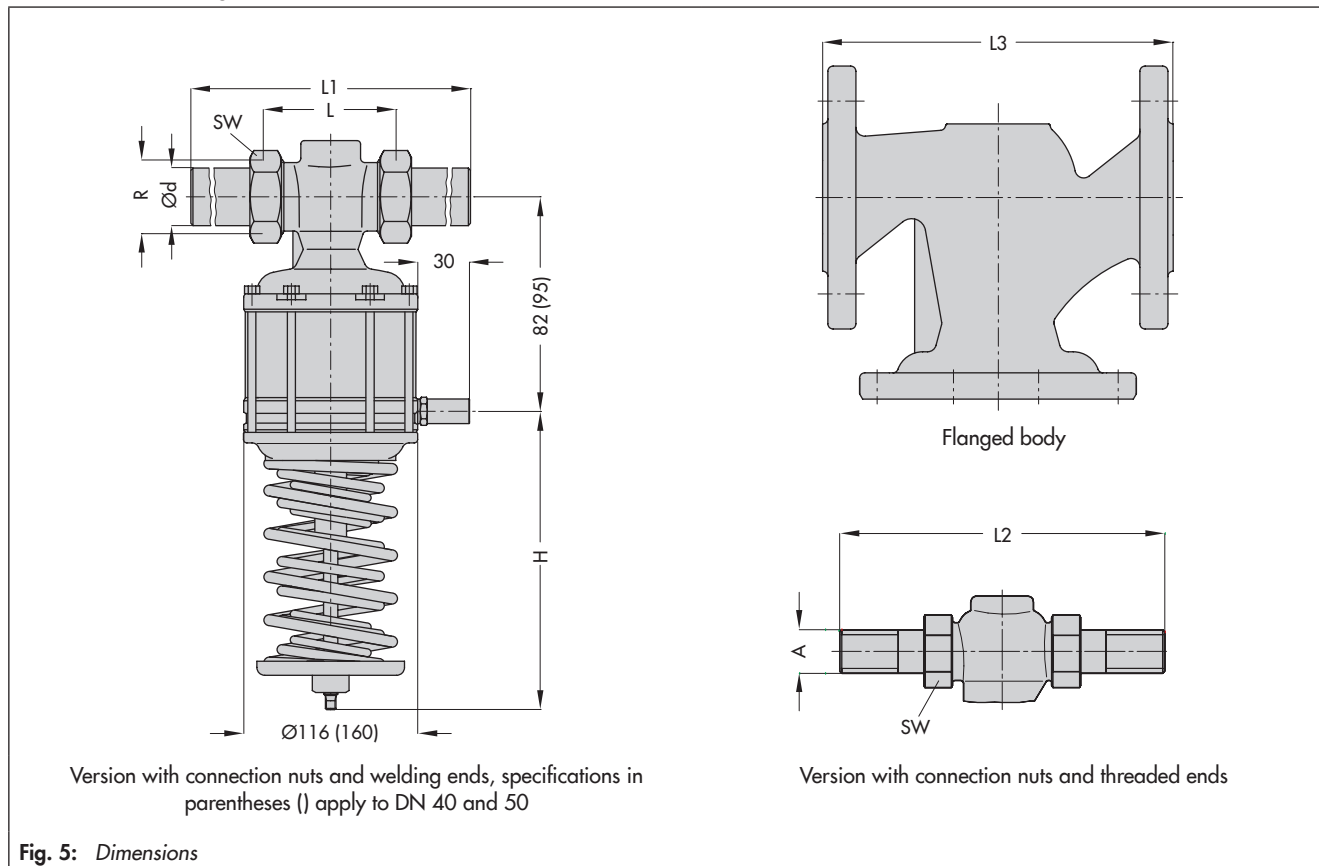


Table 3: Dimensions in mm and weights

| Valve size | DN | 15 | 20 | 25 | 32 | 40 | 50 |
|---|-----------------------|-------------------|------|------|------|------|------|
| Pipe Ød | | 21.3 | 26.9 | 33.7 | 42.4 | 48.3 | 60.3 |
| Connection R | | G ¾ | G 1 | G 1¼ | G 1¾ | G 2 | G 2½ |
| Width across flats SW | | 30 | 36 | 46 | 59 | 65 | 82 |
| Length L | | 65 | 70 | 75 | 100 | 110 | 130 |
| L1 with welding ends | | 210 | 234 | 244 | 268 | 294 | 330 |
| Dimension H | | 235 ¹⁾ | | | 393 | | |
| Weight, approx. kg | | 2.0 | 2.1 | 2.2 | 8.5 | 9.0 | 9.5 |
| Special versions | | | | | | | |
| With threaded ends (male thread) | | | | | | | |
| Length L2 | | 129 | 144 | 159 | 192 | 206 | 228 |
| Male thread A | | G ½ | G ¾ | G 1 | G 1¼ | G 1½ | G 2 |
| Weight, approx. kg | | 2.0 | 2.1 | 2.2 | 8.5 | 9.0 | 9.5 |
| With screwed-on flanges ²⁾ or with flanged body (DN 32 to 50) | | | | | | | |
| Length L3 | | 130 | 150 | 160 | 180 | 200 | 230 |
| Weight, approx. kg | With screw-on flanges | 3.4 | 4.1 | 4.7 | 7 | 13 | 14.5 |
| | With flanged body | - | - | - | 6.5 | 11 | 12.5 |

¹⁾ Set point range 6 to 11 bar: 273 mm

²⁾ Flanges are already mounted on valves in DN 40 and 50

Ordering text

Type 44-9 Safety Shut-off Valve (SSV) with pressure reducing valve

DN ... with welding ends, threaded ends or flanges or with flanged body (DN 32, 40, and 50 only)

Set point range ... bar

Special version ...