

## Pressure Reducing Valves

Type 44-0

Type 44-1

Type 44-5

**SAMSON**

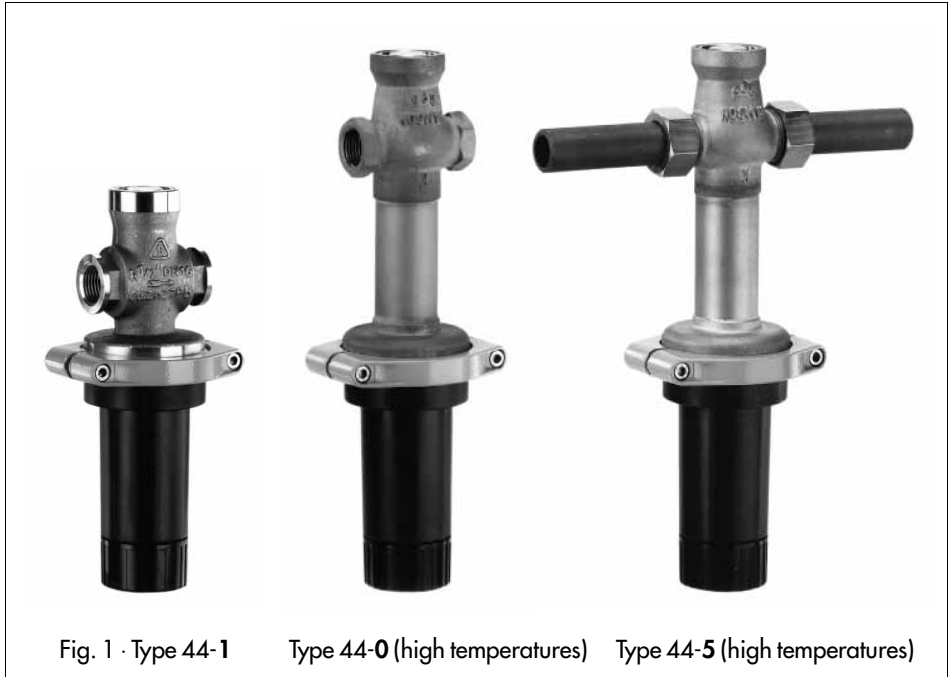


Fig. 1 · Type 44-1

Type 44-0 (high temperatures)

Type 44-5 (high temperatures)

### 1. Design and principle of operation

The pressure reducing valves essentially consist of a globe valve with plug, stem and balancing bellows, plus the black plastic actuator section containing the spring-loaded operating diaphragm and setpoint adjuster.

Types 44-0 and 44-5 are designed for higher temperatures and therefore contain an intermediate valve-actuator extension piece. The pressure reducing valves are deployed in control applications to maintain the downstream pressure at a constant, pre-set value.

The process medium flows through the valve in the direction indicated by the arrow. In this case, the valve plug position determines the cross-sectional area of flow between the seat (2) and the plug (3) and, thus, the pressure ratio across the valve. The downstream pressure is transmitted to the operating diaphragm (7) via the internal opening (6) and converted into a displacement force. This positioning force is consequently used to adjust the valve plug with dependence on the force of the operating springs (8). The spring force can be adjusted using the setpoint adjuster (9).

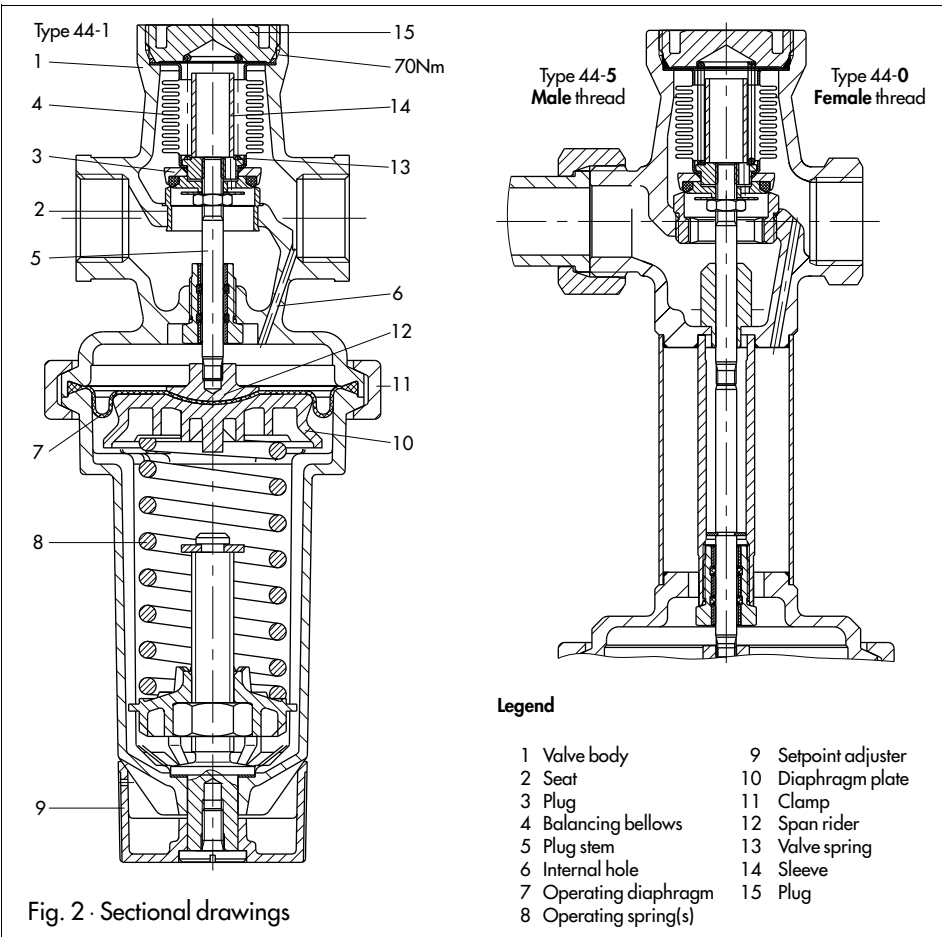
## 2. Installation

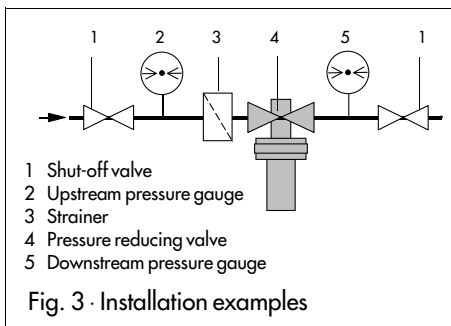
### 2.1 Mounting position

**Type 44-1:** This pressure reducing valve can be installed at almost any position, except in the case of liquids and temperature exceeding 60 °C and horizontal pipelines. In this case, install the actuator vertically suspended (hanging).

**Type 44-0 and 44-5:** These pressure reducing valves must be installed with the black plastic actuator section vertically suspended. If the valve is to be insulated, two thirds of the intermediate valve-actuator extension must be uncovered.

Always ensure that the direction of flow agrees with the arrow on the body!





## 2.2 Strainers

Always install a strainer (SAMSON Type 1N) upstream of the pressure reducing valve in order to prevent sealing parts such as globe and other contaminants from impairing proper functioning of the valve, especially tight shut-off.

Install the strainer upstream of the pressure reducing valves. Ensure that the direction of flow agrees with the arrow on the body. The filter element must be installed either vertically suspended (with horizontal installation) or vertically upright (with vertical installation). Make certain that ample space is available to remove the filter.

## 2.3 Shut-off valve, pressure gauge

We recommend that a manually operated shut-off valve be installed both upstream of the strainer and downstream of the pressure reducing valve in order to isolate the plant when cleaning and servicing, and when not used for extended periods of time.

To observe the pressures prevailing in the plant, install a pressure gauge both upstream and downstream of the controller.

## 3. Operation

### 3.1 Setpoint adjustment

The desired downstream pressure can be adjusted by turning the setpoint adjuster (9) accordingly. Turning to the right (clockwise direction) increases the downstream pressure, whereas turning to the left (counter clockwise) reduces the pressure. The pressure gauge attached on the low-pressure

side (downstream) facilitates checking of the adjusted setpoint.

### 3.2 Faults

If the downstream pressure (pressure gauge on the low-pressure side) deviates considerably from the adjusted setpoint, the reason for untight fit might be a dirty or naturally worn seat or plug. If external leaks occur, check the diaphragm and, when necessary, replace.



**Remove the pressure reducing valve from the pipe when performing assembly work. For this purpose, first relieve the corresponding section of the plant of pressure and drain!**

#### 3.2.1 Cleaning and replacing the plug

Completely relieve the setpoint spring(s) of tension by turning the setpoint adjuster (9) to the left (counter clockwise).

Unscrew the clamp (11). CAREFUL: Spring is still slightly pre-loaded!

Remove the entire black plastic section containing spring (8), diaphragm plate (10) and diaphragm (7). Remove the span rider (12).

Unscrew the plug (15), and remove the sleeve (14). Then, remove the metal bellows (4) along with the plug (3) and stem (5).

Thoroughly clean the seat and plug.

If either the plug or the metal bellows are damaged, the complete section must be replaced.

Proceed in the reverse order to re-assemble. Note the tightening torques as indicated in Fig. 2.

#### 3.2.2 Exchanging the diaphragm

Completely relieve the setpoint spring of tension by turning the setpoint adjuster (9) to the left (counter clockwise).

Unscrew the clamp (11). CAREFUL: Spring is still slightly pre-loaded!

Remove the black plastic section containing the spring (8) and diaphragm plate (10). Remove the diaphragm and replace.

Proceed in the reverse order to re-assemble.  
Note the tightening torques as indicated in Fig. 2.

#### 4. Dimensions and weights

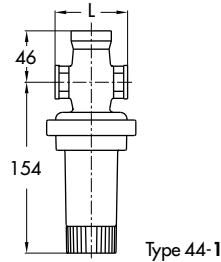
Type 44-1			
Thread size	G1/2	G3/4	G1
Overall length L	65	75	90
Approx. weight kg	0.9	1	1.15

Type 44-0 ad 44-5 (for high temperatures)			
Nominal size DN	15	20	25
Pipe diameter d	21.3	26.8	33.7
Thread size D	G3/4	G1	G1 1/4
Width across flats SW	30	36	46
Length L	65	70	75
L1 with <b>welding ends</b>	210	234	244
Weight of Type 44-0	1.0	1.1	1.25
Weight of Type 44-5	1	1.1	1.2
Special version			
L2 with <b>threaded ends</b>	129	144	159
Male thread A	G1/2	G3/4	G1
Weight	1	1.1	1.2
L3 with <b>flanges</b>	130	150	160
Weight	2.4	3	3.7

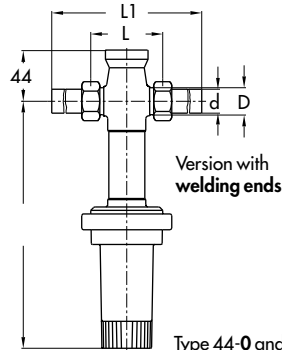
#### 5. Customer inquiries

Always specify the following important information:

1. Type and nominal size of the pressure reducing valve
2. Order and product number (entered on the nameplate)
3. Upstream and downstream pressure
4. Rate of flow in  $m^3/h$
5. Indication whether or not a strainer is installed
6. Installation drawing

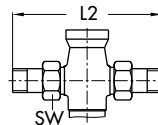


Type 44-1

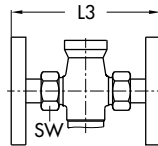


Version with **welding ends**

Type 44-0 and 44-5 (high temperature) with valve-actuator extension



Version with **threaded ends**



Version with **flanges**



SAMSON AG · MESS- UND REGELTECHNIK  
Weismüllerstraße 3 · D-60314 Frankfurt am Main  
Postfach 10 19 01 · D-60019 Frankfurt am Main  
Telefon (0 69) 4 00 90 · Telefax (0 69) 4 00 95 07

EB 2621-1 E

S/C 07.95