Self-operated Regulators

Excess Pressure Valve Type M 44-7

Fig. 1 · Type M 44-7 Excess Pressure Valve, connection G 1, Kvs 3.6

Mounting and Operating Instructions

EB 2532 EN

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General safety instructions

- *The regulators must be installed, started up and serviced by fully trained and qualified personnel only, observing the accepted industry codes and practices. Make sure employees or third persons are not exposed to any danger All safety instructions and warnings in these instructions, particularly those concerning installation, start-up, and maintenance, must be observed.*
- *The regulator complies with the requirements of the European Pressure Equipment Directive 97/23/EC. The declaration of conformity issued for a valve bearing the CE marking includes information on the applied conformity assessment procedure.*
  The declaration of conformity can be provided on request.
- *For appropriate operation, make sure that the regulator is only used in applications where the operating pressure and temperatures do not exceed the operating values based on the sizing data submitted in the order.*
- *Note that the manufacturer does not assume any responsibility for damage caused by external forces or any other external factors.*
  Any hazards which could be caused in the regulator by the process medium or operating pressure are to be prevented by means of appropriate measures.
- *Proper shipping and appropriate storage are assumed.*

1 Design and principle of operation

The Type M 44-7 Excess Pressure Valves consist of a spring-loaded, single-seated globe valve with positioning spring and operating diaphragm.

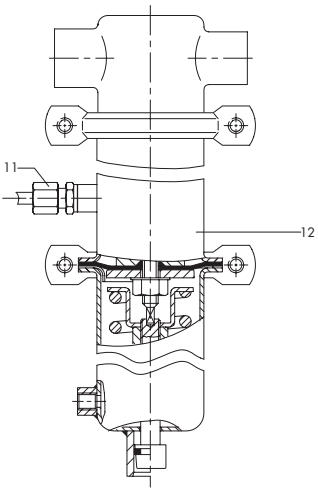
The pressure regulators are used to maintain the upstream pressure of the valve at the adjusted set point.

The medium flows through the valve in the direction indicated by the arrow. The position of the plug (3) determines the flow rate over the cross-sectional area between plug (3) and seat (2).

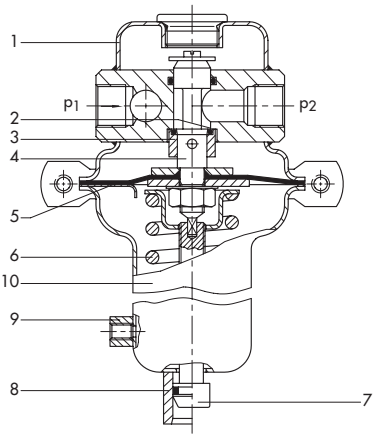
At the diaphragm, the upstream pressure p_1 to be regulated creates a force which is balanced by the spring force under standard operating conditions.

If the upstream pressure exceeds the value adjusted by the set point adjustment screw (7), the valve opens. If it falls below the set point, the valve closes.

Type M 44-7 · Set point ranges 0.005 to 0.025 bar · 0.02 to 0.12 bar · 0.1 to 0.5 bar 0.2 to 1.1 bar · 1 to 5 bar · 4 to 12 bar 10 to 20 bar · Steam version



Type M 44-7 · Set point ranges 0.02 to 0.12 bar · 0.1 to 0.5 bar · 0.3 to 1.1 bar 0.8 to 2.5 bar · 2 to 5 bar · 4 to 8 bar 6 to 12 bar



1 Valve body
2 Seat
3 Plug
4 Plug stem
5 Operating diaphragm
6 Positioning spring
7 Set point adjustment screw
8 Adjustment screw seal with sleeve and O-ring (optional)
9 Leak-off connection G ⅛ (optional)
10 Actuator housing (spring housing)
11 Control line connection G ¼
12 Distance piece (for steam version only Kvs = 0.15 to 1.5)

Fig. 2 · Sectional drawings

If no pressure is applied, the valve is closed by the force of the actuator spring.

Turning the set point adjustment screw (7) clockwise raises the upstream pressure set point.

2 Installation and assembly

Flush the pipeline thoroughly before installing the regulator to ensure that any sealing parts, weld spatter and other impurities carried along by the process medium do not impair the proper functioning of the valve, above all the tight shut-off.

Remove packing material including any plastic stoppers you may find.

Do not install any instruments (e.g. elbows, shut-off valves or other restrictions) directly upstream or downstream of the excess pressure valve which restrict the cross-section of the pipe.

Make sure that the excess pressure valve can still be easily accessed after completion of the plant.

2.1 Strainer

We recommend that a strainer (e.g. SAMSON Type 1NI) be installed upstream of the excess pressure valve.
Make sure the direction of medium flow corresponds with the direction indicated by the arrow on the strainer.
The filter element must be suspended to hang downwards. Remember to leave enough space to remove it.

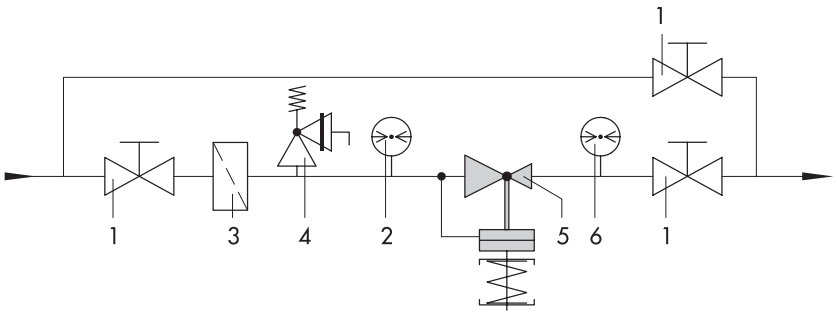
2.2 Shut-off valve

We recommend installing a hand-operated shut-off valve both upstream of the strainer and downstream of the regulator to be able to shut down the plant for cleaning and maintenance, and when the plant is not used for longer periods of time.

2.3 Pressure gauge

To monitor the prevailing pressures in the plant, we recommend to install pressure gauges both upstream and downstream of the excess pressure valve.
The pressure gauge upstream of the regulator then allows the pressure set point to be monitored for the regulation of the upstream pressure p_1.

NOTICE
The permissible pressure in the whole system must not be exceeded. Use the appropriate safety equipment (e.g. safety valves).
Safeguard the excess pressure valve, if not specified otherwise, to ensure that pressure does not exceed ***1.5 times higher than the maximum set point pressure*** *or the* ***nominal pressure of the body****.*
Do not insulate valves intended for steam.



1 Shut-off valve
2 Upstream pressure gauge
3 Strainer
4 Safety valve
5 Type M 44-7 Excess Pressure Valve (Kvs = 0.15 to 1.5)
6 Downstream pressure gauge

Fig. 3 · Installation schematics

2.4 Mounting position

CAUTION!

On controlling toxic, explosive or flammable media, use an actuator housing with a leak-off connection and an adjustment screw seal.

In the event of a diaphragm rupture, make sure that the medium can be discharged over the leak-off connection to a safe location.

Liquids, gases and steam

– Install the excess pressure valve in the horizontal pipeline free of stress. If necessary, support the pipeline near the mounting location of the regulator.
– Observe the direction of flow as indicated by the arrow on the valve body.
– In case of steam and liquids:
  Install the actuator housing with the set point adjuster suspended downwards (to avoid pockets of gas that can cause oscillations).
  In case of gases:
  Install the actuator housing either to point upwards or downwards.

Steam

– Prior to start-up, pour water into the control line connection to fill the diaphragm chamber.
– Route and connect the external control lines of the regulator version for 0.005 to 12 bar on site. The distance between the pressure tapping point in the control line and the excess pressure valve must be **at least one meter**.

2.4.1 Control line connection

The control line connection G ¼ is located at the side of the body. In the case of the steam version, it is located at the side of the distance piece.

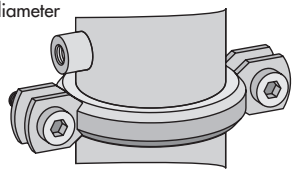


Fig. 4 · Control line connection G ¼

Use compression-type fitting with cylindrical male stud according to DIN 2353 for stainless steel pipes.

2.4.2 Leak-off connection

On controlling toxic, explosive or flammable media, use a closed spring housing (actuator housing) with a leak-off connection and an adjustment screw seal.

Route the leak-off line on site to allow any medium that escapes after a diaphragm rupture to be discharged to a safe location. The leak-off connection G ⅛ is located at the side of the spring housing.

3 Start-up

Function and tightness of the pressure regulator are tested by the manufacturer prior to delivery.

The positioning spring is not tensioned on delivery.

- Open all valves on the consumer side.
- Slowly open shut-off valves in any order.

CAUTION!
Avoid pressure surges!

CAUTION!
Do not apply a pressure more than 1.5 times higher than the maximum set point pressure on performing a pressure test on the plant.

3.1 Operation

3.1.1 Set point adjustment

Use the set point adjustment screw to adjust the set point pressure. Monitor the adjusted set point pressure at the upstream pressure gauge.

Fig. 5 · Set point adjustment screw

- Turn the screw clockwise to raise the set point pressure.
- Turn the screw counterclockwise to reduce the set point pressure.

NOTICE
Do not tighten the set point adjustment screw too tightly. Otherwise, the valve travel will be restricted or the valve blocked.

3.1.2 Decommissioning

Close shut-off valves on the supply side in any order.

4 Customer service

Should any malfunctions or any defect occur, SAMSON's After-Sales Service is prepared to help you on site.

You can also send the defective regulator directly to your local SAMSON representative for repair. Addresses of SAMSON subsidiaries, agencies and service centers are listed in the product catalogs and in the Internet at www.samson.de.

To allow SAMSON to find the fault and to have an idea of the installation situation, specify the following details (refer to the nameplate):

- Type, nominal size of the valve and set point range
- Model number with index
- Flow rate (Kvs coefficient) in m^3/h
- Upstream and downstream pressure
- Temperature and control medium
- Minimum and maximum flow rate
- Has a strainer been installed?
- Sketch of the installation with exact position of regulator and all additional installed components (shut-off valves, pressure gauges, etc.).

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