

Self-operated Pressure Regulators

Excess Pressure Valve Type M 44-7



Applications

Pressure regulators for set points from **0.005** to **20 bar** · K_{VS} **0.2** to **22** · Valve sizes **DN 15** to **50** or **G ½** to **G 2** · Suitable for liquids and gases up to **130 °C**, steam up to **200 °C** · Nominal pressure **PN 25**

The valve opens when the **upstream** pressure rises

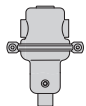
Special features

- Diaphragm-controlled, spring-loaded proportional regulators requiring no auxiliary energy
- Particularly favorable control properties, while the offset remains small
- All parts made of CrNiMo steel with smooth surfaces

Versions

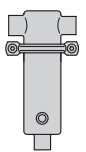
Excess pressure valve as diaphragm-controlled, spring-loaded proportional regulator to regulate the upstream pressure p_1 to the adjusted set point. The valve opens when the upstream pressure rises.

K_{VS} coefficients from 3.5 to 22 · Set points from **0.02** to **12 bar**:



Connection DN 15, 25, 32, 40 and 50 or G ½, G 1, G 1¼, G 1½ and G 2 · Soft-seated plug · Suitable for liquids and gases up to 130 °C · Balanced

K_{VS} coefficients 0.2 to 1.5 · Set points from **0.005** to **12 bar**:



Connection DN 15 and DN 25 or G ½ · Metal-seated plug · Suitable for steam up to 200 °C and for liquids and gases up to 130 °C · Not balanced · Only version for steam with external control line

Connection G ½ · Soft-seated plug · Suitable for liquids and gases up to 130 °C · Not balanced · With external control line

Special versions

- Version free of oil and grease for oxygen
- Version for sterilized steam on request
- With welded-on flanges with raised face, ANSI Class 150
- Special connections according to customer specifications
- NPT connections for pressure and control lines



Fig. 1 · Type M 44-7 Excess Pressure Valve, K_{VS} 4, set point range 2 to 5 bar, connection G 1

Principle of operation

The medium flows through the valve as indicated by the arrow. The position of the valve plug (3) determines the flow rate across the area released between the plug and seat (2). The valve is closed when it is relieved of pressure ($p_1 = p_2$) by the force of the positioning spring (6). An increase in the upstream pressure p_1 causes the valve to open.

The upstream pressure p_1 to be regulated is transmitted to the diaphragm (5) over the control line (in versions with K_{VS} 0.2, 0.5, 0.9 and 1.5/set point ranges 0.005 to 20 bar) or internally in the other version. The diaphragm converts it into a positioning force used to adjust the valve plug depending on the spring force, which is adjustable at the set point adjuster (7). If the force resulting from p_1 exceeds the value adjusted at the set point adjuster, the valve plug moves away from the seat and the valve opens.

Turning the set point adjuster clockwise raises the set point for the upstream pressure.

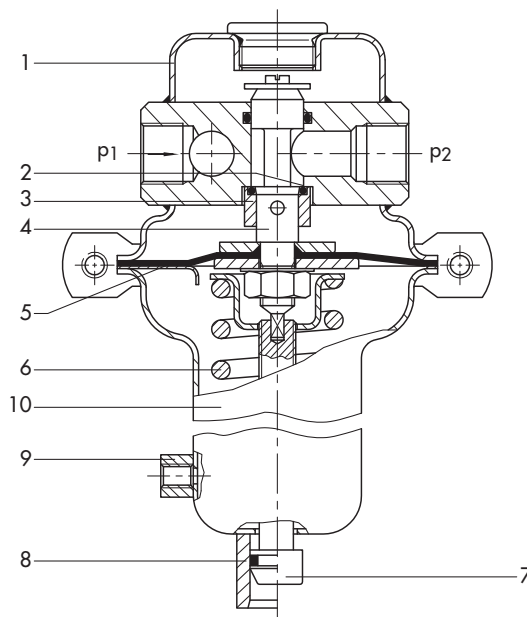
Installation

Type M 44-7 for steam up to 200 °C in versions with K_{VS} 0.2, 0.5, 0.9 and 1.5/set points 0.005 to 20 bar require an external control line attached on site of installation

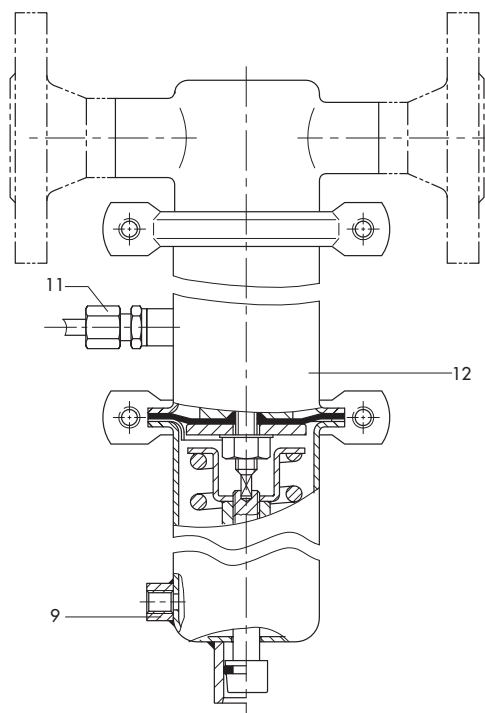
On installation, the following must be observed:

- Install regulator in horizontal pipeline free of stress. Install regulators for steam applications with a slight downward slope on both sides for drainage of the condensate.
- The direction of medium flow must correspond with the arrow on the valve body.
- For *toxic, explosive or flammable media*, a spring housing must be equipped with a venting bore (9) and an adjusting screw seal (8). The venting bore $G \frac{1}{8}$ (9) must be connected to a leakage line for a safe discharge of any medium that may escape
- With *steam and liquids*, install the spring housing (10) with set point adjuster (7) suspended downwards. With *gases*, the set point adjuster may point upwards or downwards, if not otherwise specified.
- Version for steam
Type M 44-7 in version: K_{VS} 0.2, 0.5, 0.9 and 1.5/set point ranges 0.005 to 20 bar
Only connect with control line on site (connection $G \frac{1}{4}$ for compression-type fitting) · Distance between the pressure tapping point of the control line and the regulator must be min. $10 \times DN$.
- The control line must be equipped with an equalizing tank for upstream pressures up to 1.1 bar.
To protect the diaphragm from excessive high temperatures, the chamber above the diaphragm must be filled with water.

- | | |
|---|--|
| 1 Valve body | 9 Venting bore $G \frac{1}{8}$ as leakage line connection (optional) |
| 2 Valve seat | |
| 3 Valve plug | |
| 4 Plug stem | 10 Spring housing |
| 5 Operating diaphragm | 11 Control line connection $G \frac{1}{4}$ |
| 6 Positioning spring | 12 Intermediate piece (for steam only) |
| 7 Set point adjuster | |
| 8 Adjusting screw seal with sleeve with O-ring (optional) | |



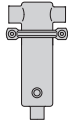
Type M 44-7 Excess Pressure Valve
(K_{VS} 3.5, 4 and 22)
Set point ranges 0.02 to 0.12 · 0.1 to 0.5 · 0.3 to 1.1 ·
0.8 to 2.5 · 2 to 5 · 4 to 8 · 6 to 12 bar)

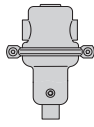


Type M 44-7 Excess Pressure Valve
(K_{VS} 0.2, 0.5, 0.9 and 1.5)
Set point ranges 0.005 to 0.025 · 0.02 to 0.12 · 0.1 to 0.5 ·
0.2 to 1.1 · 1 to 5 · 4 to 12 · 10 to 20 bar)
With external control line for steam

Fig. 2 · Sectional views of Type M 44-7 Excess Pressure Valve


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

Connection	Nominal size	DN 15		DN 25		
	Female thread	G ½				
	K _{V5} coefficient	0.2 · 0.5 · 0.9 · 1.5				
	Nominal pressure ¹⁾	Max. PN 25				
	Set point ranges in bar	0.005 to 0.025 · 0.02 to 0.12 · 0.1 to 0.5 · 0.2 to 1.1 · 1 to 5 · 4 to 12 · 10 to 20				
	Leakage rate acc. to IEC 60534-4	≤ 0.05 % of K _{V5}				
Max. perm. temperature	Liquids/gases	130 °C				
	Steam	200 °C				

Connection	Nominal size	DN 15	DN 25	DN 32	DN 40	DN 50
	Female thread	G ½	G 1	G 1¼	G 1½	G 2
	K _{V5} coefficient	3.5	4	22	22	22
	Nominal pressure ¹⁾	PN 16				
	Set point ranges in bar	0.02 to 0.12 · 0.1 to 0.5 · 0.3 to 1.1 · 0.8 to 2.5 · 2 to 5 · 4 to 8 · 6 to 12				
	Leakage rate acc. to IEC 60534-4	≤ 0.05 % of K _{V5}				
Max. perm. temperature	Liquids/gases	130 °C				
	Steam	-				

¹⁾ Nominal pressures depending on set point range - see Table 2

Table 2 · Maximum upstream pressures in bar
Versions with K_{V5} 0.2, 0.5, 0.9 and 1.5/set point ranges 0.005 to 20 bar

Set point range in bar	0.005 to 0.025	0.02 to 0.12	0.1 to 0.5	0.2 to 1.1	1 to 5	4 to 12	10 to 20
		Max. perm. upstream pressure p ₁ in bar	0.04	0.18	0.75	1.65	7.5 (13 with steam)
	Nominal pressure	PN 1	PN 1	PN 1	PN 2.5	PN 10 (PN 16 with steam)	PN 25

Versions with K_{V5} 3.5, 4 and 22/set point ranges 0.02 to 12 bar

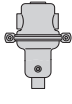

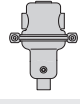
Set point range in bar	0.02 to 0.12	0.1 to 0.5	0.3 to 1.1	0.8 to 2.5	2 to 5	4 to 8	6 to 12
		Max. perm. upstream pressure p ₁ in bar	0.18	0.75	1.65	3.75	7.5
	Nominal pressure	PN 1	PN 1	PN 2.5	PN 6	PN 10	PN 16

Table 3 · Materials

Type								
Connection	Nominal size	DN 15	DN 25	DN 15	DN 25	DN 32	DN 40	DN 50
	Female thread	G ½		G ½	G 1	G 1¼	G 1½	G 2
Body and all metal parts		CrNiMo steel						
Plug sealing	Max. 130 °C	FPM · EPDM · Metal seal		FPM · EPDM · PTFE				
	Max. 200 °C	Metal seal		-				
Diaphragm		FPM · EPDM						
Protective foil (optional)		PTFE						

Ordering text

 Excess Pressure Valve **Type M 44-7**

Nominal pressure PN ...

 Set point range ..., K_{V5} ...

Connection G ... or DN with welded-on flanges PN 16 acc. to DIN 2633/with flanges with raised face ANSI Class 150

Max. perm. temperature ...

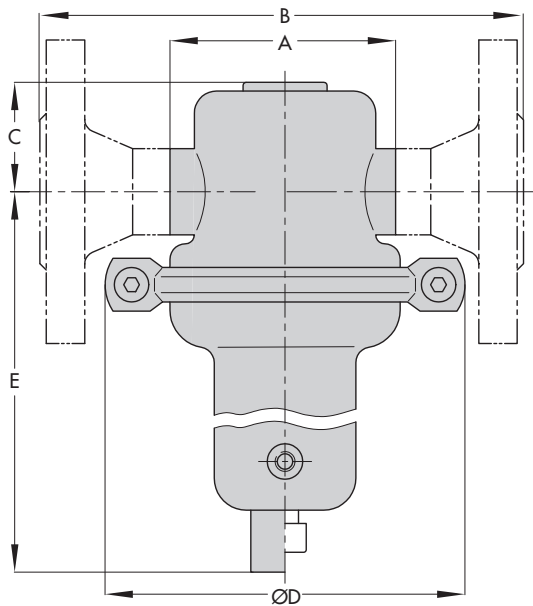
Plug sealing made of EPDM/FPM/PTFE/metal seal

Process medium ...

Spring housing standard/optional with seal and leakage line connection (for toxic, explosive or flammable media)

Optional special version ...

Dimensions

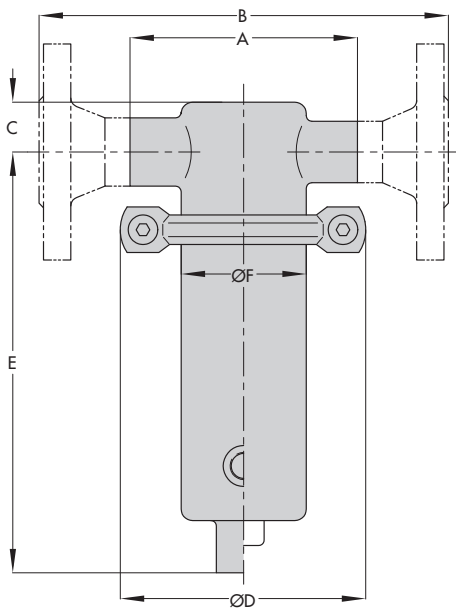


Type M 44-7 · Version with K_{VS} 3.5 to 22
Set point ranges 0.02 to 0.12 · 0.1 to 0.5 · 0.3 to 1.1 · 0.8 to 2.5 · 2 to 5 · 4 to 8 · 6 to 12 bar

Fig 3.1 · Dimensions

Connection	G	½	1	1¼	1½	2
	DN	15	25	32	40	50
K_{VS} coefficients		3.5	4	22	22	22
Set point range in bar	Dimensions in mm · Weights in kg					
All ranges	A	90	136	130	145	185
	B	200	200	180	200	230
	C	46		110		
0.02 to 0.12	E	265		285		
	Ø D	360				
Weight in kg, approx.	G	13		14.4		
	DN	14		16.4		
0.1 to 0.5	E	265		285		
	Ø D	264/210				
Weight in kg, approx.	G	6.5		8		
	DN	7.5		10		
0.3 to 1.1	E	265		285		
	Ø D	200/155				
Weight in kg, approx.	G	5.5		7		
	DN	6.5		9		
0.8 to 2.5 2 to 5 · 4 to 8 6 to 12	E	200		220		
	Ø D	138/110				
Weight in kg, approx.	G	2.5		4		
	DN	3.5		6		

A = With threaded connection G ... · B = With welded-on flanges acc. to DIN EN 1092-1 · Ø D = Clamp/diaphragm outer diameter



Type M 44-7 · Version with K_{VS} 0.2, 0.5, 0.9 and 1.5
Set point ranges 0.005 to 0.025 · 0.02 to 0.12 · 0.1 to 0.5 · 0.2 to 1.1 · 1 to 5 · 4 to 12 · 10 to 20 bar

Fig. 3.2 · Dimensions

Connection	G ½	DN 15	DN 25
		Flanges PN 16	
K_{VS} coefficients	0.15 · 0.4 · 0.9 · 1.5		
Set point range in bar	Dimensions in mm · Weights in kg		
All ranges	A	100	–
	C	20	
	Ø F	55	
0.005 to 0.025 0.02 to 0.12	B	–	130 160
	Ø D	360	
	E	275 ¹⁾	
Weight ²⁾ in kg, approx.	B	6	7.5 8
	Ø D	–	130 160
0.1 to 0.5	Ø D	264/210	
	E	275 ¹⁾	
Weight ²⁾ in kg, approx.	B	5.5	7 7.5
	Ø D	–	130 160
0.2 to 1.1	Ø D	200/155	
	E	275 ¹⁾	
Weight ²⁾ in kg, approx.	B	4.5	6 6.5
	Ø D	–	130 160
1 to 5 4 to 12 10 to 20	Ø D	108/80	
	E	205 ¹⁾	
Weight ²⁾ in kg, approx.		1.5	3 3.5

A = With threaded connection G ½ · B = With welded-on flanges PN 40 acc. to DIN EN 1092-1 · Ø D = Clamp/diaphragm outer diameter

¹⁾ +130 mm (version for steam) · ²⁾ +1 kg (version for steam)

Specifications subject to change without notice.



SAMSON AG · MESS- UND REGELTECHNIK
Weismüllerstraße 3 · 60314 Frankfurt am Main · Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
Internet: <http://www.samson.de>

T 2532 EN

2012-10