

Self-operated Regulators Series 45

Differential Pressure Regulator Type 45-6

With opening actuator

For installation in short-circuit or bypass pipes



Application

Differential pressure regulators for large pipeline networks and industrial plants · Differential pressure set points from 0.1 to 4 bar · Valves in nominal sizes DN 15 to DN 50 · Nominal pressure PN 25 · Suitable for liquids up to 150 °C and gases up to 80 °C

The valve **opens** when the differential pressure rises.

The regulators consist of a globe valve and an actuator. They control the differential pressure to the set point adjusted at the actuator.

Special features

- Low-maintenance P-regulators requiring no auxiliary energy
- Suitable for water and other non-flammable liquids and gases, provided they do not cause the materials used to corrode
- Special version for oil
- Single-seated valve with a balanced valve plug
- Regulator ready to use; control lines do not need to be routed on installation
- Exchangeable operating diaphragm
- Low overall height achieved by using a compact spring assembly

Versions

Differential pressure regulators for installation in short-circuit pipes or bypass pipes (see typical applications).

Valves in nominal sizes DN 15 to DN 50 · Connection nuts with weld-on fittings (special version with threaded ends or screwed-on flanges) · Nominal sizes DN 32, 40 and 50 also with flanged valve bodies made of spheroidal graphite iron

With an opening actuator and an adjustable set point · Attached control line for the low (–) pressure and a connection for the high (+) pressure through a bore in the valve body · Plug balanced by a piston

Special versions

- Version according to ANSI
- With oil-resistant internal parts
- Special K_{vs} for DN 15



Fig. 1 · Type 45-6 Differential Pressure Regulator, version with weld-on fittings

Principle of operation (see Fig. 3)

The medium flows through the valve (1) in the direction indicated by the arrow. The position of the valve plug (3) determines the differential pressure Δp over the area between seat (2) and plug.

The differential pressure to be controlled is transmitted to the operating actuator (6.1) where it is converted into a positioning force. For this purpose, the downstream pressure (low pressure) is transmitted to the lower diaphragm chamber (low pressure side) in the actuator (6) through the attached control line. The upstream pressure (high pressure) acts on the high pressure side of the operating diaphragm (6.1) over a bore (11.1) in the valve body.

The resulting positioning force is used to adjust the position of the valve plug, depending on the spring rate of the spring assembly (8) and the set point adjusted at the set point adjustment (10).

The valve plug is pressure balanced. In this way, forces generated by the differential pressure and acting on the plug are eliminated.

Installation

The regulator is suitable for installation in horizontal pipes as well as vertically running pipes.

Regulators in sizes DN 32 and larger may only be installed horizontal pipes with the actuator pointing downwards.

The following points must be observed:

- The medium must flow through the valve in the direction indicated by the arrow on the valve body.
- Install a strainer (e.g. SAMSON Type 1 NI) upstream of the valve, if possible.

Further details can be found in EB 3126 EN.



Typical applications

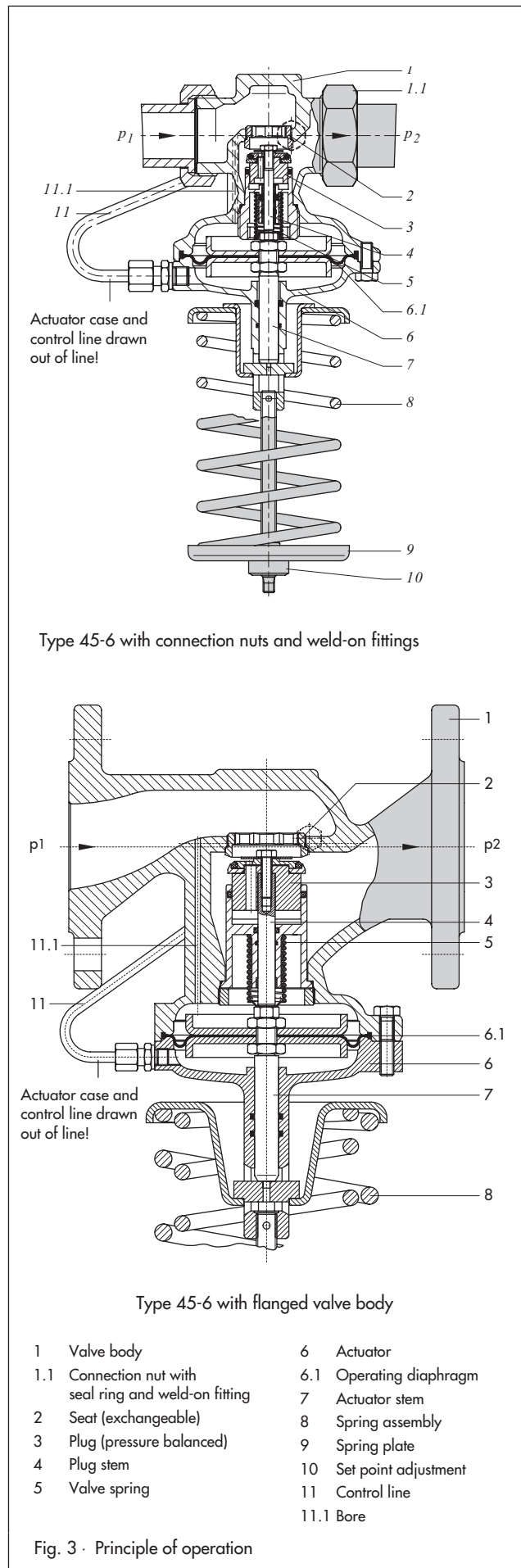
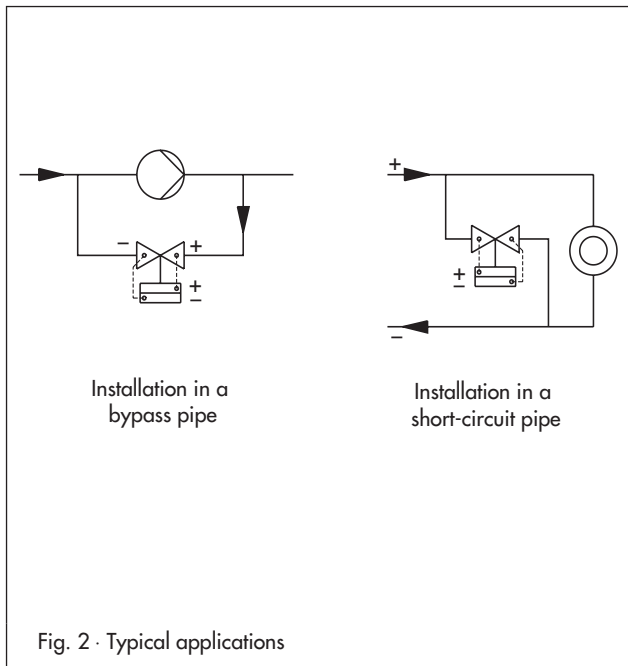


Table 1 Technical data

Nominal size	DN	15	20	25	32 ¹⁾	40 ¹⁾	50 ¹⁾
K _{VS} value		2.5	6.3	8	12.5	16	20
Special versions		0.4 · 1 · 4		-			
Flanged valve body		-			12.5	20	25
z value	Standard	0.6		0.55	0.55		0.45
	Flanged	-			0.45		0.4
Nominal pressure	PN	25					
Max. perm. differential pressure Δp at valve		20 bar				16 bar	
Max. perm. temperature		Liquids: 130 °C · Non-flammable gases: 80 °C					
Differential pressure set point ranges							
Continuously adjustable		0.1 to 1 bar				0.2 to 1 bar	
		0.5 to 2 bar · 1 to 4 bar					

¹⁾ Additional version: Valve with flanged body made of spheroidal graphite iron (EN-JS1049)

Table 2 Materials · Material numbers acc. to DIN EN

Body		Red brass CC491K (G-CuSn5ZnPb, Rg 5)	Spheroidal graphite iron EN-JS1049 (GGG-40.3)
Seat		Stainless steel 1.4305	
Plug	PN 25	Brass, free of dezincification, with EPDM soft sealing ¹⁾	
	PN 16	Brass, free of dezincification, and plastic with EPDM soft sealing ¹⁾	
Valve springs		Stainless steel 1.4310	
Operating diaphragm		EPDM with fabric reinforcement ¹⁾	
Sealing rings		EPDM ¹⁾	

¹⁾ Special version for oils (ASTM I, II, III): FPM (fluorocarbon rubber)

Pressure-temperature diagram

The range of application, the permissible pressures and temperatures are limited by the specifications in the pressure-temperature diagram and the pressure ratings (acc. to DIN 2401).

EN-JS1049 (GGG-40.3)	°C	50	100
Perm. pressure	bar	25	21

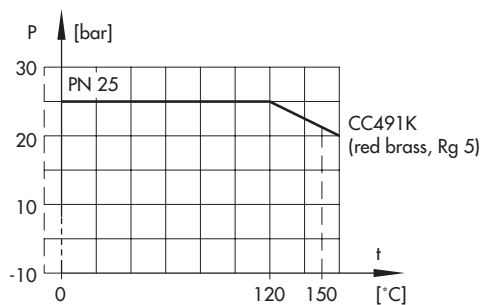


Fig. 4 · Pressure-temperature diagram

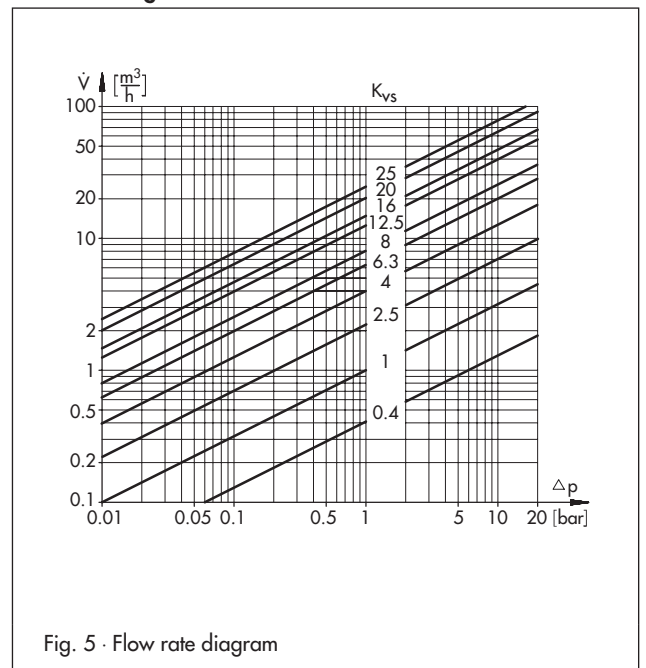
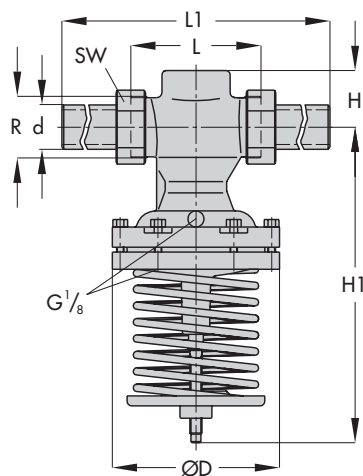
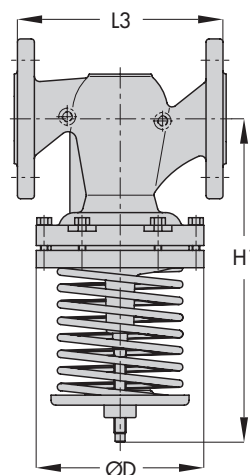
Flow rate diagram for water


Fig. 5 · Flow rate diagram

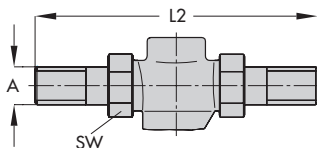
Dimensions



Type 45-6 with connection nuts and weld-on fittings (standard version)



Type 45-6 with flanged valve body (DN 32 to 50)



Version with connection nuts and threaded ends

Dimensions in mm Standard version

Nominal size DN	15	20	25	32 ¹⁾	40 ¹⁾	50 ¹⁾
Pipe \varnothing d	21.3	26.8	32.7	42	48	60
Width a. flats SW	30	36	46	59	65	82
Length L	65	70	75	100	110	130
Height H	32			45		
Height H1	240			260	405	
\varnothing D	116			160		

¹⁾ Additional version: Valve with flanged body

The dimensions and weights of valves with flanged body (DN 32, 40 and 50) are identical to those valves with screwed-on flanges!

Dimensions in mm and weights in kg Including connections

Nominal size DN	15	20	25	32	40	50
With weld-on fittings						
Length L1	210	234	244	268	294	330
Weight, approx. kg	2.0	2.1	2.2	8.5	9	9.5
With threaded ends						
Length L2	129	144	159	180	196	228
Male thread A	G $\frac{1}{2}$	G $\frac{3}{4}$	G 1	G $1\frac{1}{4}$	G $1\frac{1}{2}$	G 2
Weight, approx. kg	2.0	2.1	2.2	8.5	9.0	9.5
With flanges^{1) 2)} or with flanged body (DN 32 to 50)						
Length L3	130	150	160	180	200	230
Weight, approx. kg	3.4	4.1	4.7	11.7	13.0	14.5

¹⁾ PN 16/25

²⁾ Valves in DN 40 and 50 already have flanges mounted

Fig. 6 - Dimensions

Ordering text

Differential Pressure Regulator Type 45-6

DN ..., PN ...

K_{VS} ..., perm. temperature ... °C

With weld-on fittings/threaded ends/flanges/
flanged body in DN 32, 40 and 50

Set point range ... bar

On option, special version

Specifications subject to change without notice.

