

Self-operated Pressure Regulators Series 45



Differential Pressure Regulator with closing actuator

Type 45-1 N Fixed set point · For installation in the flow pipe (high-pressure pipe)

Type 45-3 N Fixed set point · For installation in the return flow pipe (low-pressure pipe)

Application

Differential pressure regulator for local heat supply and large heating networks · Valve size **DN 15** · Differential pressure set point fixed at **0.15 or 0.3 bar** · **PN 10** · Suitable for treated water up to **110 °C** and non-flammable gases up to **80 °C**

Valve **closes** when the differential pressure increases

The Type 45-1 N/Type 45-3 N Differential Pressure Regulators are self-operated proportional regulators for heating systems. They are designed to keep differential pressure between the flow and return flow pipes of a pipeline section at a constant level in order to protect the heating system from inadmissible differential pressures.

The regulators consist of a valve with integral actuator.

Special features

- Self-operated proportional regulator requiring little maintenance
- Fixed set point
- Suitable for water and non-flammable gases
- Single-seated valve with soft-seated unbalanced plug
- Especially suitable for local heat supply networks
- Low-noise, reliable and low-maintenance regulator

Versions

Differential pressure regulator with closing actuator · Valve DN 15 with ISO 228/1 - G 3/4 B connection threads on both sides for attachment of threaded ends G 1/2, welding ends or soldering ends

Type 45-1 N · Differential pressure regulator, fixed set point · For installation in the high-pressure pipe, e.g. flow pipe (see "Application and installation")

Type 45-3 N · Differential pressure regulator, fixed set point · For installation in the low-pressure pipe, e.g. return flow pipe (see "Application and installation")

Accessories

- Welding ends, soldering ends or threaded ends G 1/2

ANSI versions available on request



Fig. 1 · Type 45-1 N Differential Pressure Regulator



Fig. 2 · Type 45-3 N Differential Pressure Regulator, version with soldering ends

Principle of operation

The medium flows through the valve body (1) in the direction indicated by the arrow.

45-1 N · Installed in high-pressure pipe

The pressure in the outlet (high pressure) is transmitted to the high-pressure side (6) of the diaphragm (4) over the attached control line (10). The low pressure is transmitted to the opposite side of the diaphragm (7) through an external control line to be attached on installation (5) and the hole in the valve body.

45-3 N · Installed in low-pressure pipe

The low pressure in the inlet is transmitted to the low-pressure side (7) of the diaphragm (4) through a hole (8) in the valve body (1). The high pressure is transmitted to the bottom of the diaphragm (6) through an external control line to be attached on installation (5).

The diaphragm (4) is in a normal position if the differential pressure between flow and return flow pipes determined by the set point spring is not exceeded.

As soon as the pressure in the section of the pipeline rises, e.g. because a thermostatic valve closes, the force on the high-pressure side (6) of the diaphragm (4) increases. The plug (2), which is connected to the diaphragm over the plug stem, closes the valve. In the opposite case, the valve opens as soon as the differential pressure in the section of the pipeline decreases, e.g. because a thermostatic valve opens.

The set point spring (3), which is installed in the valve, determines the differential pressure set point.

- 1 Valve body
- 2 Plug
- 3 Set point spring
- 4 Diaphragm
- 5 Control line, to be attached on installation
- 6 Actuator, high-pressure side
- 7 Actuator, low-pressure side
- 8 Hole, upstream pressure line
- 9 Connection nut with seal and welding ends, soldering ends or threaded ends on both sides (accessories)
- 10 Control line, delivered attached

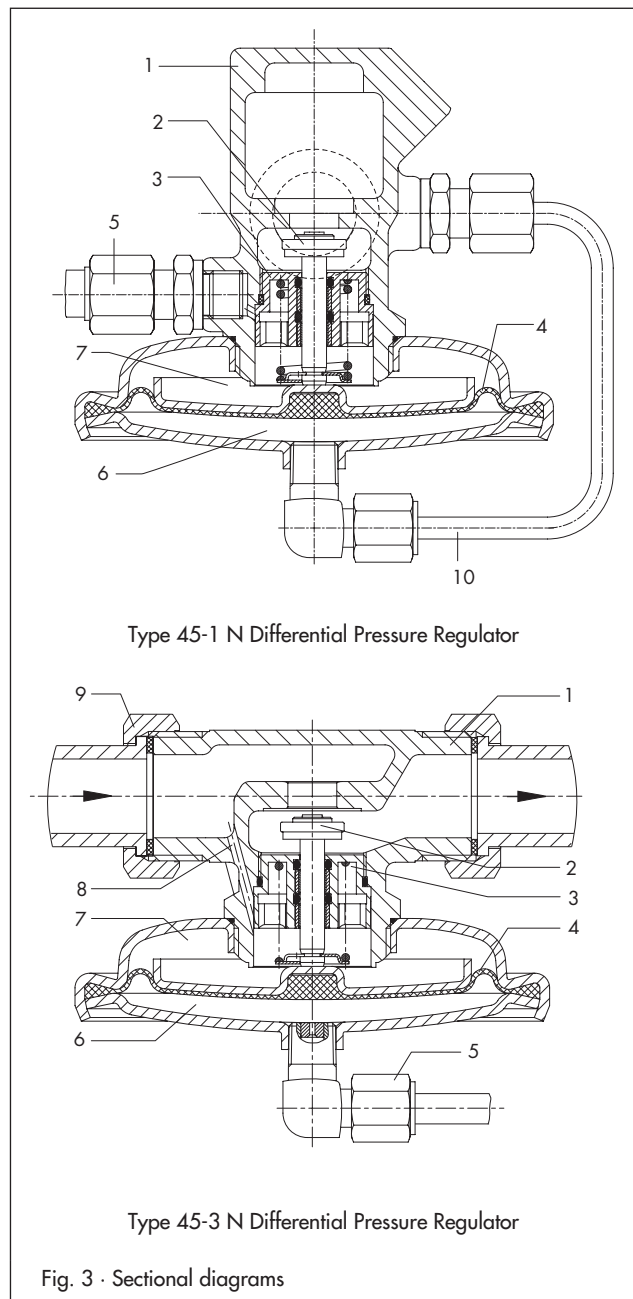


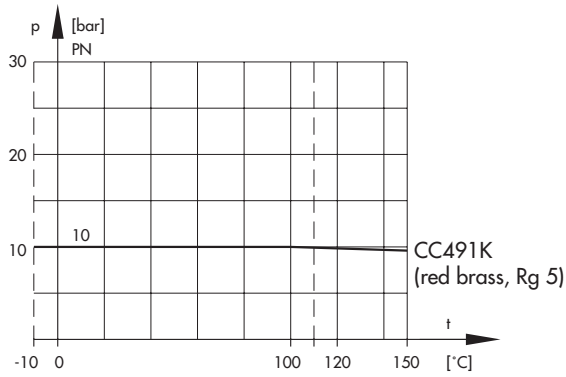
Table 1 · Technical data · All pressures stated in bar (gauge)

Nominal size	DN 15
Connection	ISO 228/1- G 3/4 B
Type of end connection	Threaded ends G 1/2 · Welding ends · Soldering ends
K _{VS}	2.5
Nominal pressure	PN 10
Max. perm. diff. pressure Δp	4 bar
Max. perm. temperature	
Treated water	110 °C
Non-flammable gases	80 °C
z value	0.43
Differential pressure set point, fixed (optional)	0.15/0.3 bar ¹⁾

¹⁾ Additional differential pressure set points on request

Table 2 · Materials · Material no. acc. to DIN EN

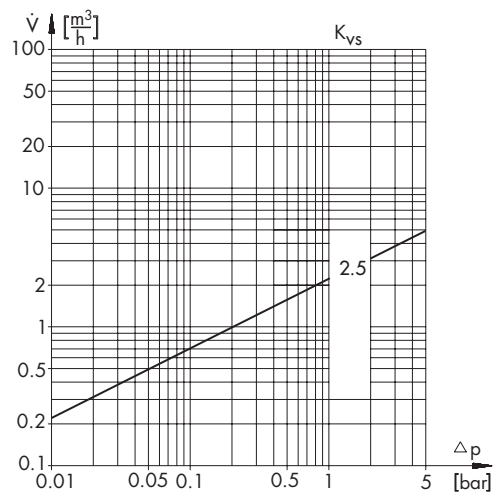
Body	CC491K (G-CuSn5ZnPb, Rg 5)
Actuator	1.4301 h
Plug	1.4301 and CW617N (CuZn40Pb2Zn) with EPDM sealing
Plug stem	1.4305
Seat	CC491K (G-CuSn5ZnPb, Rg 5)
Valve spring	1.4310 K
Diaphragm	EPDM without fabric reinforcement
Threaded ends	Brass
Soldering ends	Red casting brass
Welding ends	St 37



The range of application, the permissible pressures and temperatures are limited by the specifications in the pressure-temperature diagram and the pressure ratings.

Fig. 4 · Pressure-temperature diagram

Flow rate diagram for water

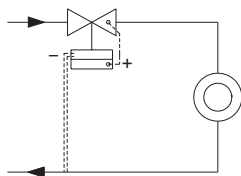


Specifications apply to a fully opened valve.

Fig. 5 · Flow rate diagram for water

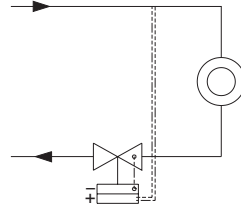
Application and installation

Differential pressure control with
Type 45-1 N



Installed in **high-pressure pipe**

Differential pressure control with
Type 45-3 N



Installed in **low-pressure pipe**

----- Fixed connection attached to actuator

==== To be attached on installation

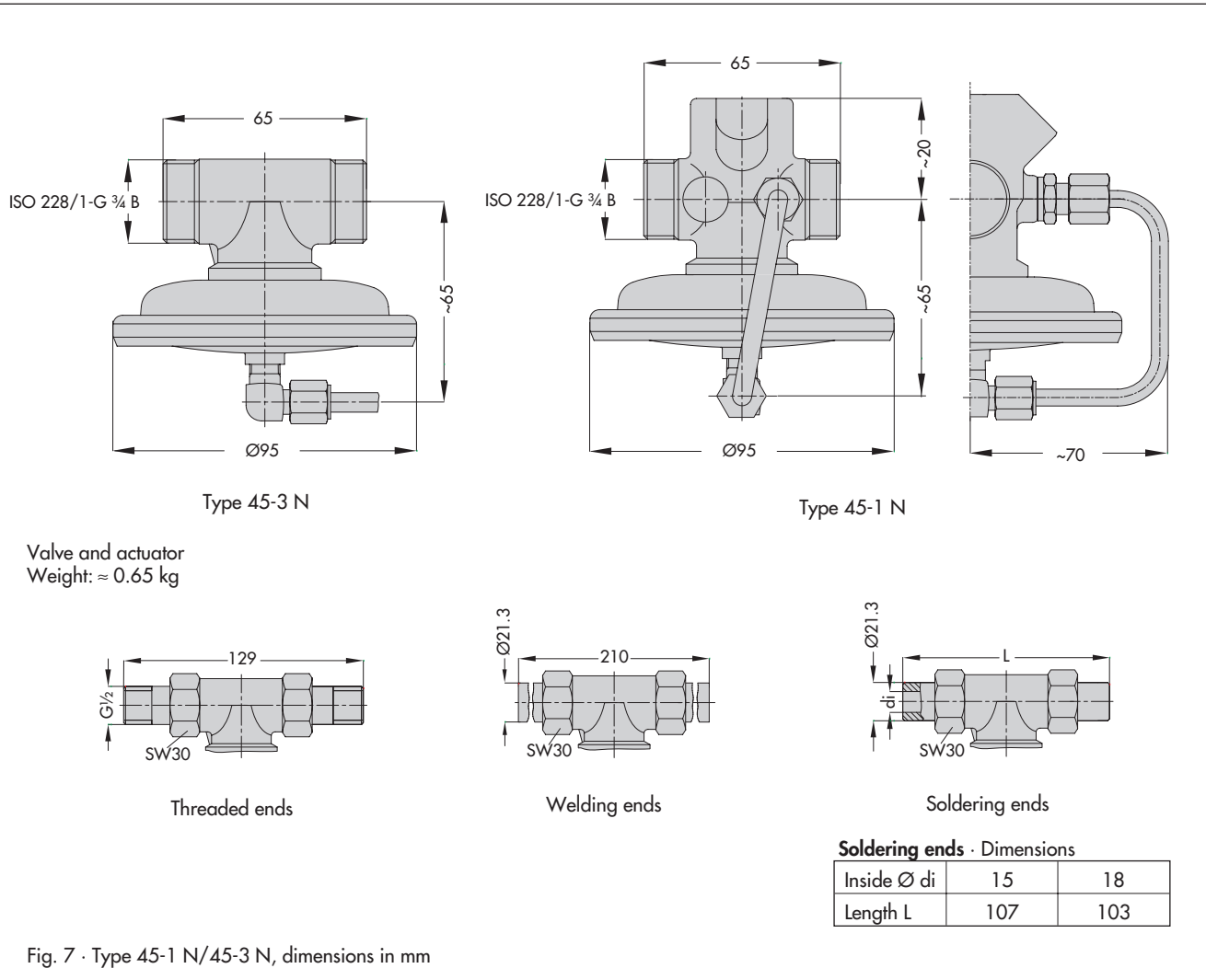
Fig. 6 · Application of the differential pressure regulators

Installation

Regulator for

- Installation in horizontal pipelines
- Direction of flow indicated by the arrow on the body
- Actuator suspended downward (recommended).

Dimensions



Ordering text

Differential Pressure Regulator Type 45-1 N/45-3 N
Differential pressure set point ...

Accessories

G $\frac{3}{4}$ connection threads on both sides with welding ends/
threaded ends G $\frac{1}{2}$ /soldering ends (inside diameter =
15 mm/18 mm)

Specifications subject to change without notice.



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