

T 3140 EN

Type 45-1 N and Type 45-3 N Differential Pressure Regulators

Series 45 Self-operated Regulators



Application

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

The valve **closes** when the differential pressure **increases**.

The Type 45-1 N and 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 to protect the heating system from inadmissible differential pressures.

The regulators consist of a valve with integrated actuator.

Special features

- Low-maintenance proportional regulators requiring no auxiliary energy
- 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 regulators with closing actuator · Valve DN 15 with ISO 228/1 - G 3/4 B connecting thread on both sides for attachment of G 1/2 threaded ends and welding ends.

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

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

ANSI version on request

Accessories

- Threaded ends G 1/2 · Welding ends



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



Fig. 2: Type 45-3 N Differential Pressure Regulator, version with welding ends

Principle of operation

The medium flows through the valve body (1) as indicated by the arrow (Fig. 5).

Type 45-1 N · Installation in the high-pressure line

The pressure in the valve outlet (high pressure) acts on the high-pressure side (6) of the operating 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 (5) to be attached on installation and the hole in the valve body.

Type 45-3 N · Installation in the low-pressure line

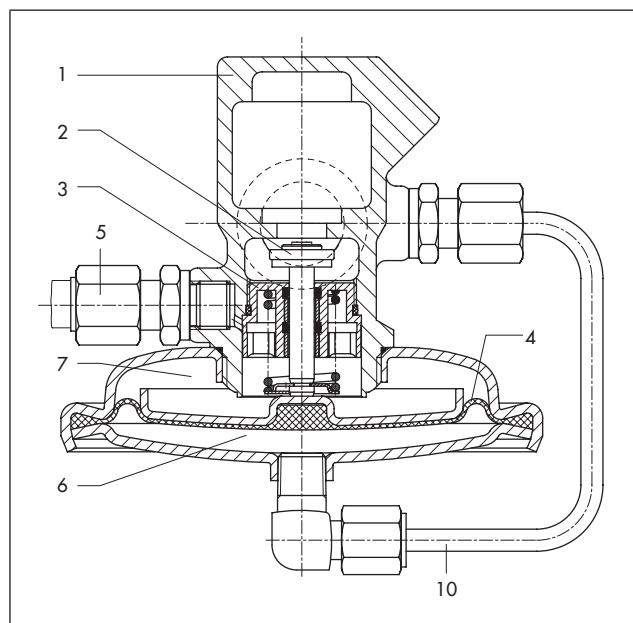
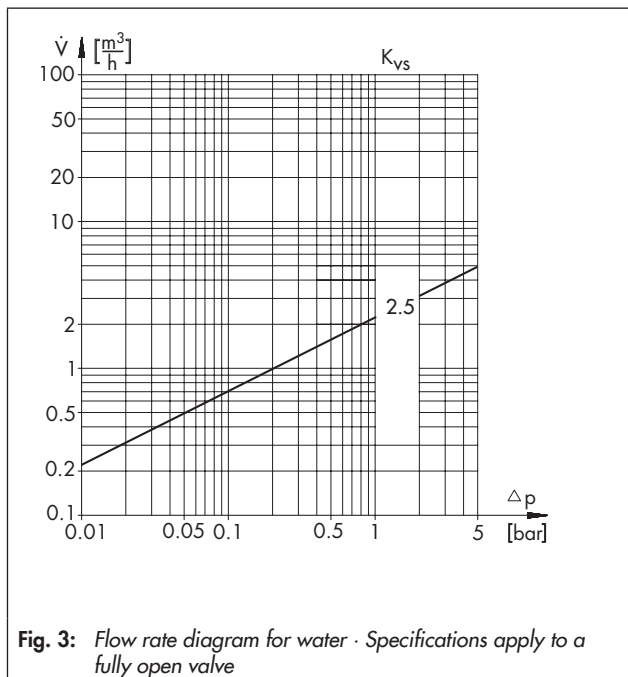
The low pressure in the inlet is transmitted to the low-pressure side (7) of the operating diaphragm (4) through a hole (8) in the valve body (1). The high pressure is transmitted to the bottom of the diaphragm (6) through an external control line (5) to be attached on installation.

The diaphragm (4) is in the idle state when the differential pressure between flow and return flow pipes determined by the set point spring is not exceeded.

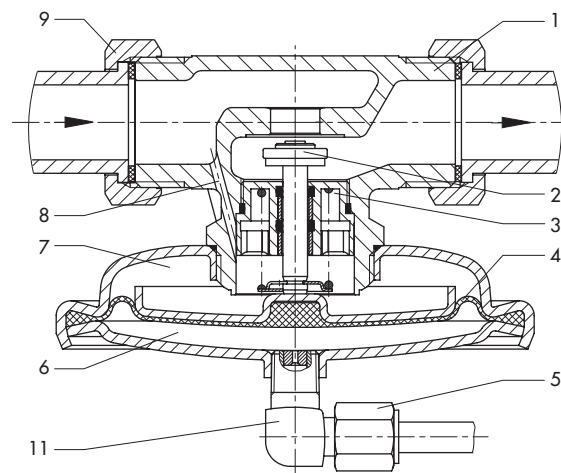
As soon as the pressure in the section of the pipeline rises, e.g. because a thermostatic valve closes, the force on the high-pressure side (6) of the diaphragm (4) increases. The plug (2), which is connected to the diaphragm over the plug stem, closes the valve. In the same manner, the valve opens as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

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

Flow rate diagram for water



Type 45-1 N Differential Pressure Regulator,
view in the direction of flow



Type 45-3 N Differential Pressure Regulator

- | | | | |
|---|-------------------------------|----|--|
| 1 | Valve body | 8 | Hole (upstream pressure line) |
| 2 | Plug | 9 | Connection nut with seal and welding ends or threaded ends on both sides |
| 3 | Set point spring | 10 | Control line (attached to the regulator) |
| 4 | Actuator diaphragm | 11 | Angular screw joint |
| 5 | External control line | | |
| 6 | Actuator (high-pressure side) | | |
| 7 | Actuator (low-pressure side) | | |

Fig. 4: Functional diagrams

Table 1: Technical data · All pressures (gauge)

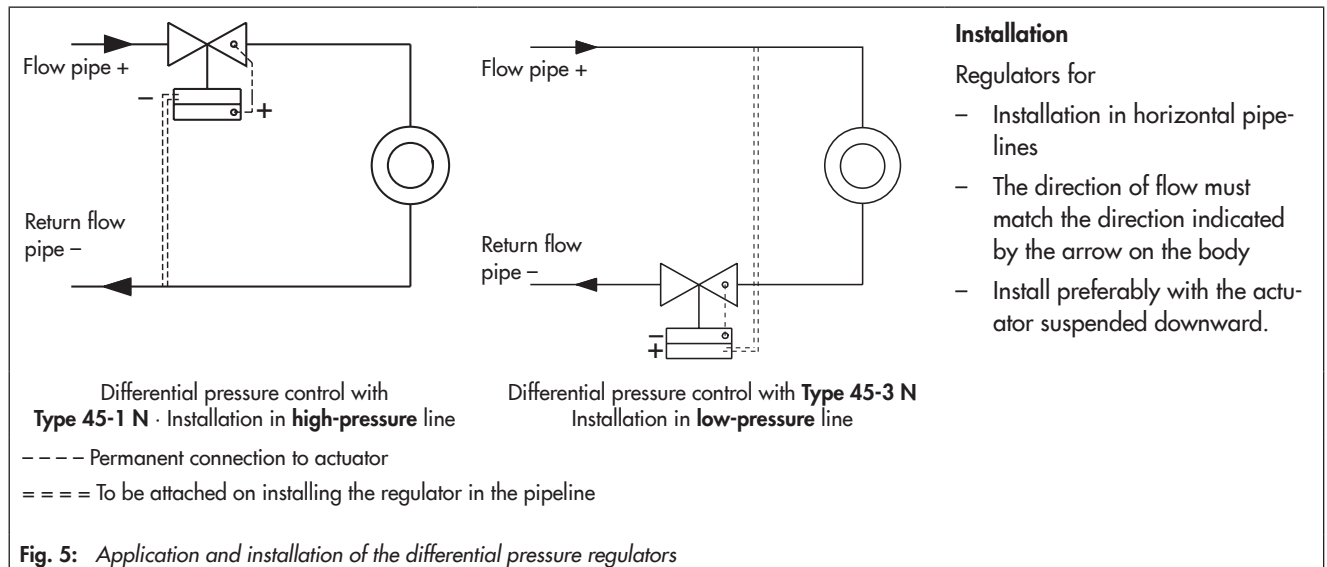
Valve size	DN 15
Connection	ISO 228/1- G 3/4 B
Type of connection	Threaded ends G 1/2 · Welding ends
K _{V5} coefficient	2.5
Pressure rating	PN 10
Max. perm. differential pressure Δp	4 bar
Max. perm. temperature	
Treated water	110 °C
Non-flammable gases	80 °C
Leakage class according to IEC 60534-4	Class I (≤0.05 % of K _{V5} coefficient)
x _{FZ} value	0.43
Fixed differential pressure set point (optional)	0.15/0.3 bar ¹⁾

¹⁾ Other differential pressure set points available on request

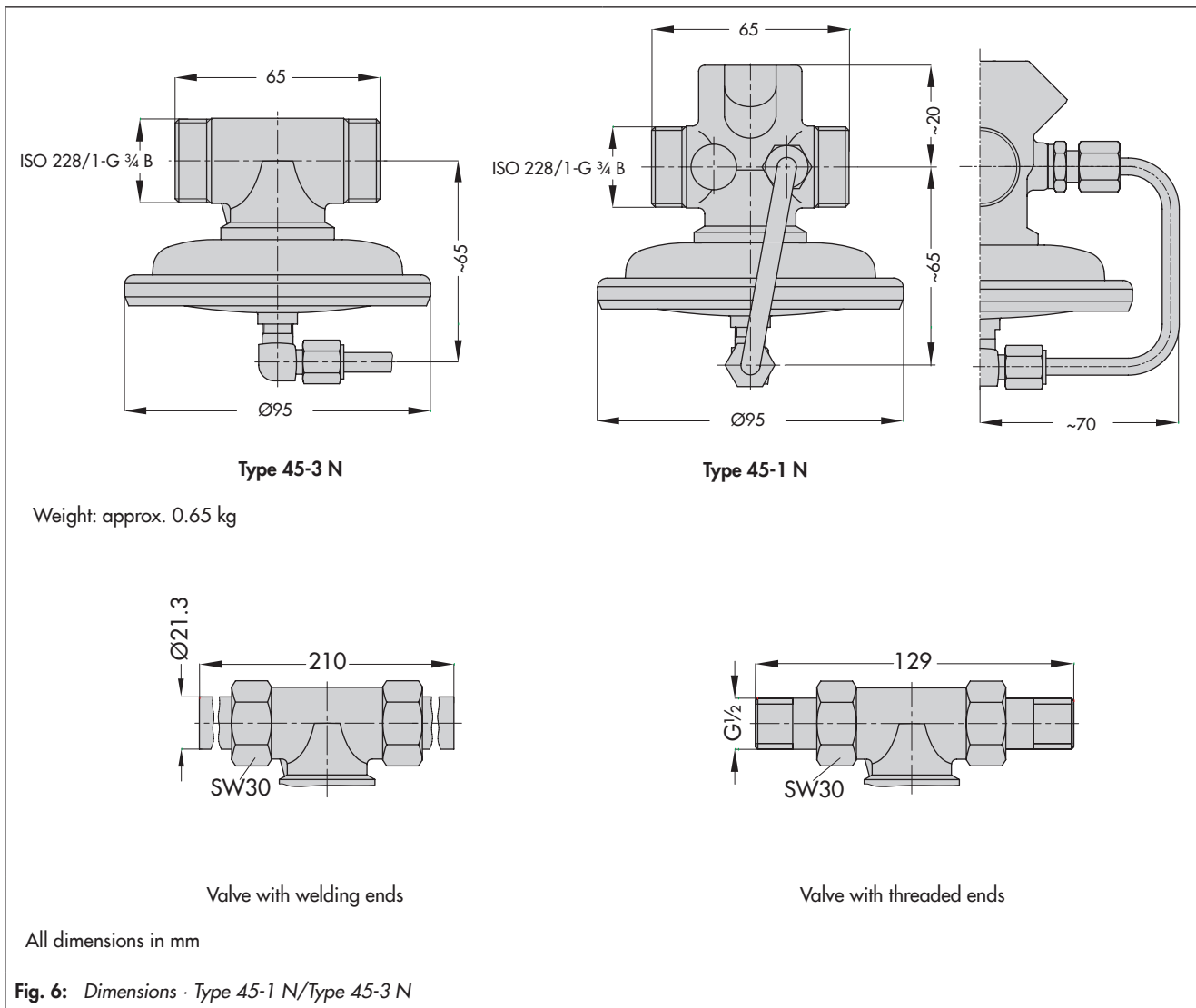
Table 2: Materials · Material numbers according to DIN EN

Valve body	CC499K (Rg 5)
Actuator	1.4301h
Plug	1.4301 and CW617N with EPDM seal
Plug stem	1.4305
Seat	CC499K
Valve spring	1.4310 K
Diaphragm	EPDM without fabric reinforcement
Threaded ends	Brass
Welding ends	S235JR (St 37-2)
Weight, approx. kg	0.65

Application and installation



Dimensions



Ordering text

Type 45-1 N/45-3 N Differential Pressure Regulator

Differential pressure set point ... bar

Accessories:

- G $\frac{3}{4}$ connecting threads on both sides, with G $\frac{1}{2}$ threaded ends or welding ends