

Self-operated Temperature Regulators Series 43



Temperature Regulators Type 43-5 · Type 43-7 · Valve closes when the temperature rises

Temperature Regulator Type 43-6 · Valve opens when the temperature rises

Application

Temperature set points from **0** to **150 °C** · Valves **G ½** to **G 1** · **DN 15** to **DN 50** · Nominal pressure **PN 25** · For liquids and steam up to **200 °C** and non-flammable gases up to **80 °C** · For cooling and heating installations

Note

Typetested temperature regulators (TR), safety temperature monitors (STM) and safety temperature limiters (STL) are available.



Special features

- Self-operated P regulators requiring little maintenance
- Temperature sensor suitable for installation in any position and for operation at high permissible ambient temperature (50 K above the adjusted set point), designed for operating pressures up to 40 bar
- Globe valves with a plug balanced by a bellows
- Compact design and a particularly low overall height
- For liquids, gases and steam

Versions (Figs. 1 to 3)

The regulators consist of a globe valve and a control thermostat with set point adjuster, capillary tube and a temperature sensor which functions according to the adsorption principle.

Versions with double adapter or manual adjuster for attaching additional control thermostats (see Data Sheet T 2176 EN).

Temperature regulators with Type 2430 K Control Thermostat and valve with connection **G ½**, **G ¾** or **G 1** female thread.

Type 43-5 · For heating installations · Type 2435 K Valve for PN 25 · For liquids and steam up to 200 °C

Type 43-6 · For cooling installations · Type 2436 K Valve for PN 16 · For gases up to 80 °C and liquids up to 150 °C

Temperature regulators with Type 2430 K Control Thermostat and valve DN 15 to DN 50 with connection nuts and welding ends (special version with threaded ends, flanges or valve with flanged body)

Type 43-6 · For cooling installations · Type 2436 K Valve for PN 25 · Nominal sizes DN 32, 40, 50 · For gases up to 80 °C and liquids up to 150 °C

Type 43-7 · For heating installations · Type 2437 K Valve for PN 25 · Nominal sizes DN 15 to 50 · For liquids and steam up to 200 °C

Typetested safety devices

Register numbers are available on request.

Type 43-5 and Type 43-7 Temperature Regulators (TR) whose maximum operating pressures must not exceed the maximum differential pressure Δp specified in the technical data. Only SAMSON thermowells may be used for sensors requiring thermowells.

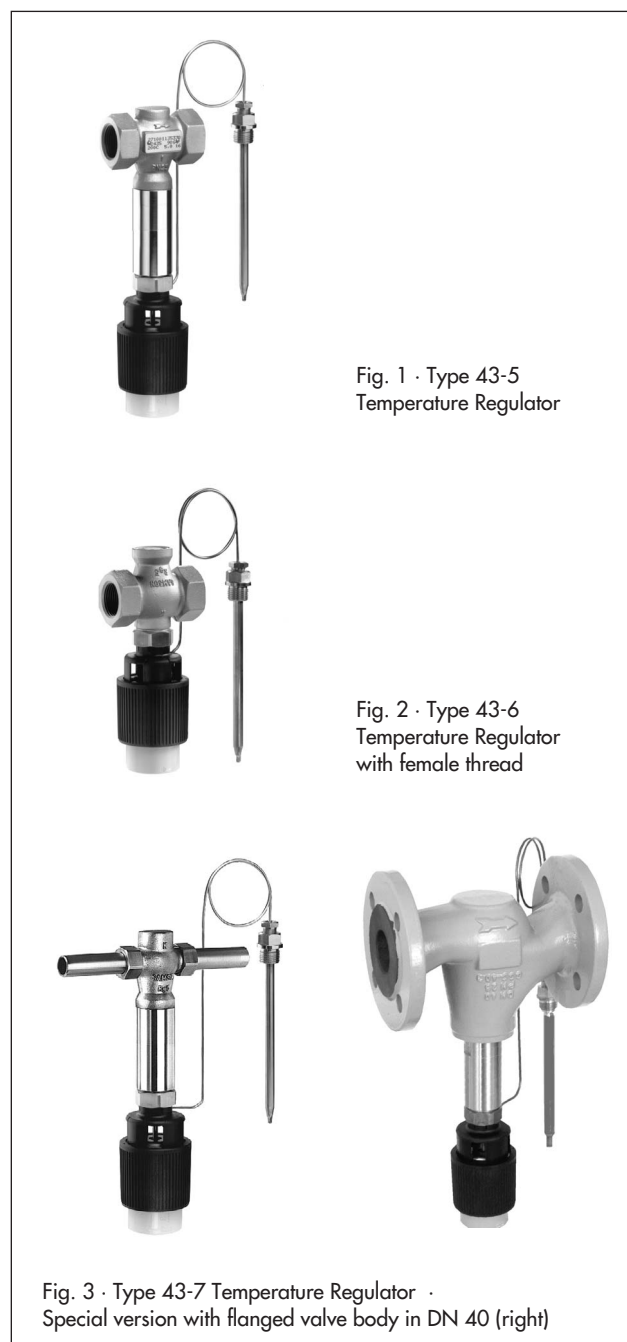


Fig. 1 · Type 43-5
Temperature Regulator

Fig. 2 · Type 43-6
Temperature Regulator
with female thread

Fig. 3 · Type 43-7 Temperature Regulator ·
Special version with flanged valve body in DN 40 (right)

Safety temperature monitors (STM) and safety temperature limiters (STL) are also available. Further details can be found in Data Sheets T 2183 EN and T 2185 EN.

Special versions

- 5 meter capillary tube
- Reduced K_{VS} value for DN 15 or G 1/2
- Oil-resistant internal parts for Type 43-6
- ANSI version available on request (see Data Sheet T 2174 EN)
- Stainless steel body for Type 43-6
- Flanged body made of EN-JS1049 for Types 43-6/43-7

Principle of operation (Fig. 4)

The temperature regulators work according to the adsorption principle.

The temperature of the medium produces a pressure in the measuring sensor which is proportional to the actual temperature measured. This pressure is transmitted through the capillary tube (11) to the operating element (9) where it is converted into a positioning force. This force acts via the pin of the operating element (10) on the plug stem (4) and the valve plug (3). The point of response of the valve spring (5) is changed by turning the set point adjuster (8).

The valves are pressure-balanced by the metal bellows (6). The balancing bellows compensates for any changes in pressure upstream of the valve since a hole in the valve plug (3) allows the upstream pressure also to act on the inside of the bellows.

The Type 43-5 and Type 43-7 Regulators are suitable for heating installations. The valves close when the temperature rises.

The Type 43-6 Regulator has a valve which opens when the temperature rises. This regulator is therefore suitable for cooling installations.

Installation

Only the same sort of materials can be combined, e.g. a stainless steel heat exchanger with thermowells made of stainless steel 1.4571.

Valve

Install valves in horizontal pipelines. The direction of flow should correspond with the arrow on the valve body. The control thermostat must be installed suspended; other installation positions are also possible for Type 2436 K with temperatures up to 110 °C.

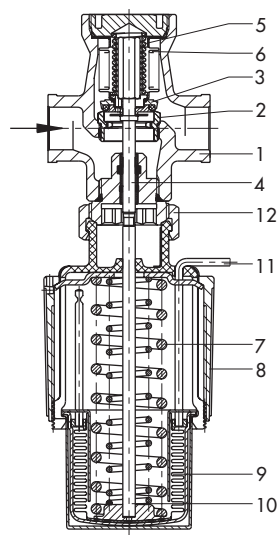
Temperature sensor

The temperature sensor can be installed in any position. However, the entire sensor must be immersed in the medium to be controlled. Choose a point of installation where overheating or noticeable idle times cannot occur.

Capillary tube

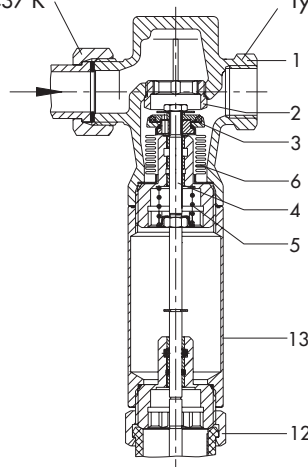
Run the capillary tube in such a way that the permissible ambient temperature range is not exceeded, temperature deviations cannot occur and the tube cannot be damaged. The smallest possible bending radius is 50 mm.

Type 2436 K Valve

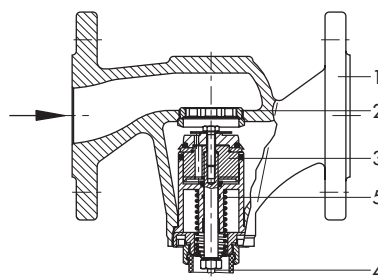


Type 43-6 Temperature Regulator, principle of operation

Type 2437 K Type 2435 K



Type 43-5/-7, principle of operation (thermostat not shown)



Type 43-6/-7, valve with flanged body (thermostat not shown)

- | | |
|-----------------------|-----------------------------|
| 1 Valve body | 8 Set point adjuster |
| 2 Seat (exchangeable) | 9 Operating element |
| 3 Plug | 10 Pin of operating element |
| 4 Plug stem | 11 Capillary tube |
| 5 Valve spring | 12 Coupling nut |
| 6 Balancing bellows | 13 Insulating pipe |
| 7 Positioning springs | |

Fig. 4 · Type 43-5/-6/-7 Temperature Regulators

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

Temperature Regulator	Type	43-6	43-5	43-7
Valve	Type	2436 K	2435 K	2437 K
Connection size		G ½ to 1		–
Nominal size		DN 32 to 50	–	DN 15 to 50
Flanged valve body		DN 15 to 50	–	DN 15 to 50
Nominal pressure		PN 25		
Max. perm. differential pressure Δp		With stainless steel bellows: 16 bar ²⁾		
Max. perm. temperature range of valve		0 to 150 °C ¹⁾	0 to 200 °C	
Type 2430 K Control Thermostat				
Set point range ³⁾		Continuously adjustable 0 to 35 °C, 25 to 70 °C, 40 to 100 °C, 50 to 120 °C or 70 to 150 °C		
Capillary tube		2 m (special version 5 m)		
Max. perm. temperature at the sensor		50 K above the adjusted set point		
Max. perm. ambient temperature range		–20 to 80 °C		
Perm. pressure at sensor/at thermowell		PN 25 / PN 40		

¹⁾ With intermediate insulating piece: –15 to 150 °C · ²⁾ Type 43-6, 43-7: max. 8 bar · ³⁾ Other set point ranges available on request

Table 2 · K_{VS} coefficients

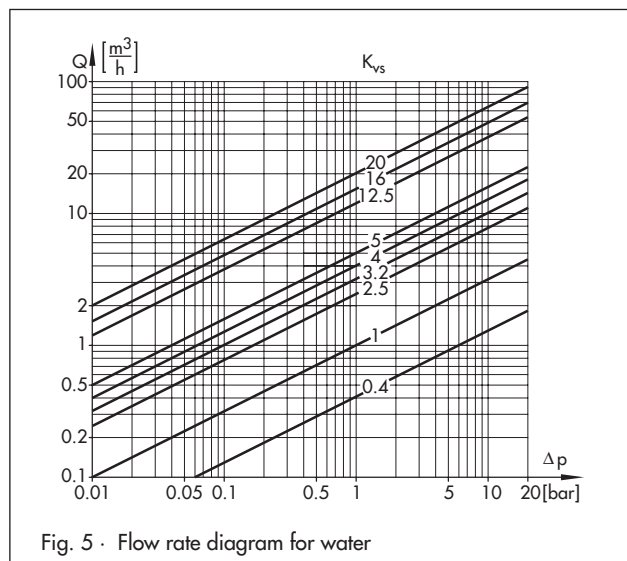
K_{VS} coefficients with ...							
Thread size	G	½	¾	1	–		
Nominal size	DN	15	20	25	32	40	50
K_{VS} values		3.2	4	5	12.5	16	20
Special version		0.4 · 1.0 · 2.5 ¹⁾					

¹⁾ On request

Table 3 · Materials · Material no. acc. to DIN EN

Body		CC491K (red brass Rg 5) ¹⁾ /EN-JS1049 (GGG-40.3) ⁵⁾	Stainless steel 1.4408 ⁶⁾
Seat		Stainless steel 1.4104 ²⁾	
Plug	Type 43-6	Brass, free of dezincification, CW617N (CuZn40Pb) and 1.4104 with EPDM soft sealing ^{3) 4)}	1.4408
	Type 43-5/-7	Brass, free of dezincification, CW617N (CuZn40Pb) and 1.4104 with EPDM soft sealing ⁴⁾	–
Balancing bellows		Stainless steel 1.4571	1.4571
Valve spring		Stainless steel 1.4310	1.4310
Sensor	Capillary tube	Copper	
	Thermowell	Copper or stainless steel 1.4571	
Set point adjuster		PETP, glass fiber-reinforced	

¹⁾ For Type 43-6 G ½ to 1: CC491K · ²⁾ For Type 43-6 G ½ to 1: 1.4305 · ³⁾ Special version for oils (ASTM I, II, III): FPM (FKM) soft sealing · ⁴⁾ For K_{VS} = 0.4 and 1.0: 1.4305 · ⁵⁾ Type 43-6/-7: Version with flanged body · ⁶⁾ Special version for Type 43-6

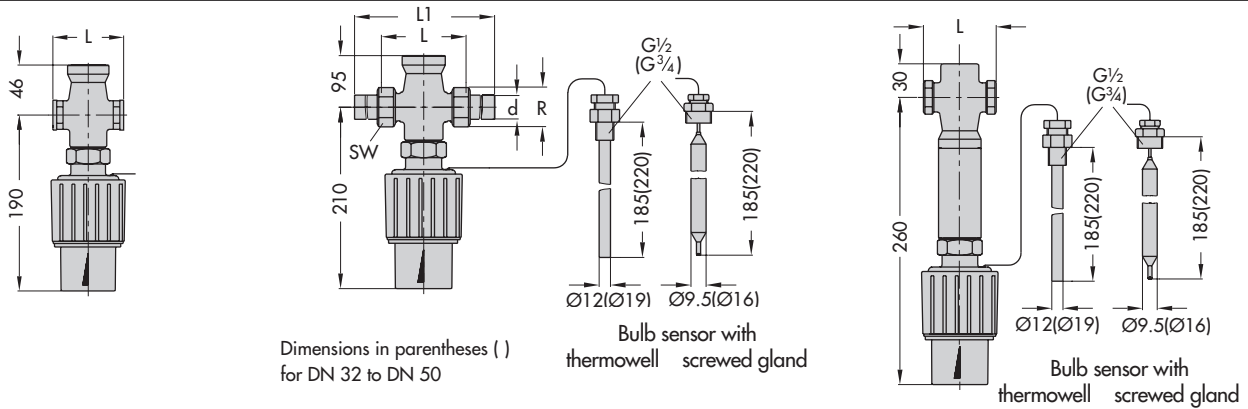
Flow rate diagram for water**Ordering text****Temperature Regulator Type 43-6**

G ... or
 DN ... with connection nuts and welding ends/threaded ends/flanges or flanged valve body
 With stainless steel bellows
 Set point range ... °C
 Optionally, accessories ... /special version ...

Temperature Regulator Type 43-5/Type 43-7

G ... or
 for **Type 43-7** DN ... with connection nuts and welding ends/threaded ends/flanges or flanged valve body
 With stainless steel bellows
 Set point range ... °C
 Optionally, accessories ... /special version ...

Dimensions and weights



Dimensions in parentheses ()
for DN 32 to DN 50

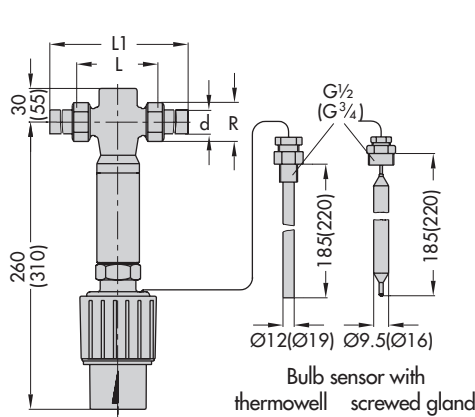
Bulb sensor with
thermowell screwed gland

Bulb sensor with
thermowell screwed gland

Type 43-6 · G 1/2 to G 1

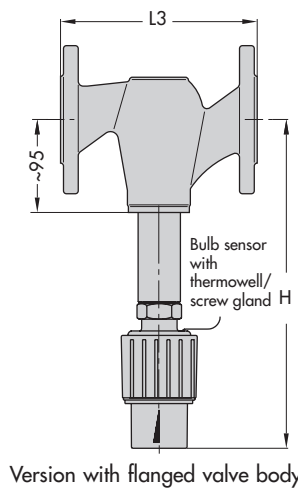
Type 43-6 · DN 32 to DN 50
Version with welding ends

Type 43-5

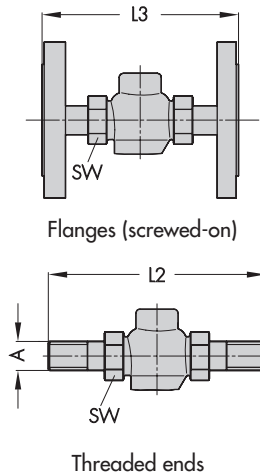


Dimensions in parentheses ()
for DN 32 to DN 50

Type 43-7 · Version with welding ends



Version with flanged valve body



Flanges (screwed-on)

Threaded ends

Special versions for Type 43-6 · Type 43-7

Dimensions in mm and weights

Type 43-5 and **Type 43-6** (G 1/2 to G 1)

Thread size		G 1/2	G 3/4	G 1
Length L		65	75	90
Type	Height H	Weight, approx. in kg · Version with bulb sensor and thermowell ¹⁾		
43-5	260	1.8	1.9	2
43-6	190	1.8	1.9	2

¹⁾ Version without thermowell: minus 0.2 kg

Type 43-6 and **Type 43-7** · Special version with flanged body

Type		DN	Height H	Sensor Ø
43-6	Without distance piece	15 to 25	190	Ø 9.5
43-6		32 to 50	210	Ø 12
43-7	With distance piece	15 to 25	260	Ø 9.5
43-7		32 to 50	310	Ø 12

Type 43-7 (DN 15 to 50) and **Type 43-6** (DN 32 to 50)

Nominal size DN	15	20	25	32	40	50
Pipe diameter	21.3	26.8	32.7	42	48	60
Connection R	G 3/4	G 1	G 1 1/4	G 1 3/4	G 2	G 2 1/2
Width across flats	30	36	46	59	65	82
Length L	65	70	75	100	110	130
L1 with welding ends	210	234	244	268	294	330
Weight ¹⁾ , approx. in kg	2	2.3	2.8	4.7	5.1	7.5
Special versions						
... with connection nuts and threaded ends (male thread)						
Length L2	129	144	159	180	196	228
Male thread A	G 1/2	G 3/4	G 1	G 1 1/4	G 1 1/2	G 2
Weight ¹⁾ , approx. in kg	2	2.3	2.8	4.7	5.1	7.5
... with connection nuts and flanges ²⁾ (PN 16/25)						
Length L3	130	150	160	180	200	230
Weight ¹⁾ , approx. in kg	3.1	3.9	4.6	7.6	8.4/ 9.8 ³⁾	11.4/ 14.1 ³⁾

¹⁾ Version without thermowell: minus 0.2 kg · ²⁾ Valve also available with flanged body · ³⁾ Weight of flanged valve body version

Fig. 6 · Dimensions in mm

Specifications subject to change without notice.



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