

Self-operated Regulators Series 42



Differential Pressure and Temperature Regulators with Types 2421 and 2422 Valves Type 42-14 DoT · Type 42-18 DoT · Type 42-24 DoT · Type 42-28 DoT

Differential Pressure, Flow and Temperature Regulators with Type 2423 Valve Type 42-34 DoT · Type 42-36 DoT · Type 42-37 DoT · Type 42-38 DoT · Type 42-39 DoT

Application

Regulators for district heating supply networks, heat generators, heat exchangers and other building service applications or industrial plants · Valve sizes **DN 15 to DN 250** · Nominal pressure **PN 16 to 40** · Suitable for liquids and vapors from **5 °C to 220 °C**, for air and non-flammable gases up to **80 °C**

The valves close when the differential pressure or temperature increase.

Differential pressure set points from $\Delta p = 0.05$ to **2.5 bar** and temperature set points from **-10 °C to +250 °C**

The regulators consist of a valve, a double adapter, an actuator and a control thermostat. They control the differential pressure (and flow rate) according to the set point adjusted at the actuator and the temperature according to the set point adjusted at the thermostat. The largest signal is used to actuate the valve.

Versions

The regulators can either be equipped with a Type 2231 or Type 2235 Control Thermostat. Refer to Data Sheet T 2010 for more details on the thermostats.

Type 2231 (Fig. 1) with a set point adjustment directly at the bulb sensor · Type 2232 (Fig. 2) with a separate set point adjustment · Type 2233 and Type 2234 with air sensor · Type 2235 with an air duct sensor

Refer to the Data Sheets T 3001 EN, T 3003 EN, T 3013 EN, T 3015 EN, T 3017 EN, T 3018 EN and T 2650 EN for details about regulators without control thermostat.

Differential pressure and temperature regulators for installation in the return flow or flow pipe · Refer to the Data Sheets T 3001 EN and T 3003 EN for details.

Type 42-14 DoT · With Type 2421 Valve, double adapter, Type 2424 Actuator with adjustable set point and control thermostat

Type 42-18 DoT · With Type 2421 Valve, double adapter, Type 2428 Actuator with fixed set point and control thermostat

Type 42-24 DoT · With Type 2422 Valve, double adapter, Type 2424 Actuator with adjustable set point and control thermostat

Type 42-28 DoT (Fig. 2) · With Type 2422 Valve, double adapter, Type 2428 Actuator with fixed set point and control thermostat

Flow and temperature regulators for installation in the flow or return flow pipe · Refer to T 3015 EN for details.

Type 42-36 DoT (Fig. 1) · With Type 2423 Valve, double adapter, Type 2426 Actuator and control thermostat

Differential pressure, flow and temperature regulators · Refer to T 3017 EN and T 3018 EN.

Type 42-37 DoT · With Type 2423 Valve, double adapter, Type 2427 Actuator with adjustable set point and control thermostat

Type 42-39 DoT · Same as Type 42-37 DoT, but with Type 2429 Actuator



Fig. 1 · Type 42-36 DoT Differential Pressure, Flow and Temperature Regulator with Type 2231 Control Thermostat

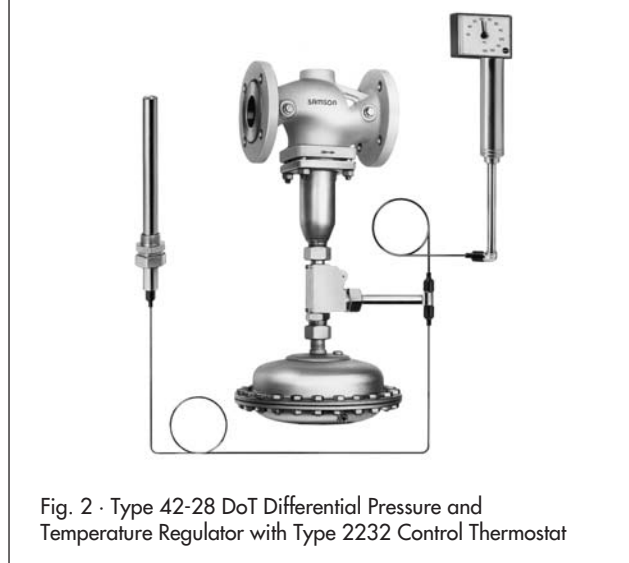


Fig. 2 · Type 42-28 DoT Differential Pressure and Temperature Regulator with Type 2232 Control Thermostat

Differential pressure and temperature regulators with flow limitation for installation in the return flow pipe · Refer to Data Sheet T 3013 EN for details

Type 42-34 DoT · With Type 2423 Valve, double adapter, Type 2424 Actuator with adjustable set point and control thermostat

Type 42-38 DoT · With Type 2423 Valve, double adapter, Type 2428 Actuator with fixed set point

Flow or/and differential pressure regulators with additional electric actuator · Refer to T 3018 EN

Type 42-36 DoT E · Flow regulator consisting of Type 2426 Diaphragm Actuator, double adapter, Type 2423 Valve · With restriction to adjust the flow rate set point · With electric or electrohydraulic actuator

Type 42-37 DoT E · Flow and differential pressure regulator consisting of Type 2427 Diaphragm Actuator, double adapter, Type 2423 Valve with integrated restriction · Setting: Flow set point at the valve restriction, differential pressure set point at the actuator · With electric or electrohydraulic actuator

Type 42-39 DoT E · Flow and differential pressure or pressure regulator consisting of Type 2429 Diaphragm Actuator, double adapter, Type 2423 Valve with integrated restriction · Setting: Flow set point at the valve restriction, differential pressure or pressure set point at the actuator · With electric or electrohydraulic actuator

Principle of operation (Fig. 3)

The principle of operation of the regulators without control thermostat is described in the data sheets specified on page 1. Data Sheet T 2010 EN, for example, contains an explanation on how the control thermostats work.

The double adapter Do2 is installed between the valve and the actuator. The control thermostat is attached to connection c. The travel is transferred either directly (connection b) or via the lever (3.6) to the coupling pin (3.5) and plug stem of the valve. The plug stem is always connected to the device with the largest travel.

In Type 42-36 DoT, Type 42-37 DoT and Type 42-39 DoT Regulators used to control the flow rate, a **distance piece** is installed between the double adapter and the bellows housing to connect the low pressure control line. As a result, installation dimensions are increased by 65 mm (for DN 15 to DN 100/see Dimensions).

The distance piece is already fitted in Type 42-34 and Type 42-38 Regulators.

Bellows housing
Distance piece
Double adapter



Ordering text

Regulator Type 42-... DoT,

DN ..., PN ..., body material ...,

Set point range or set point in bar,

With Control Thermostat Type 2231/2232/2233/2234/2235, set point range in °C

Optionally, special version ...

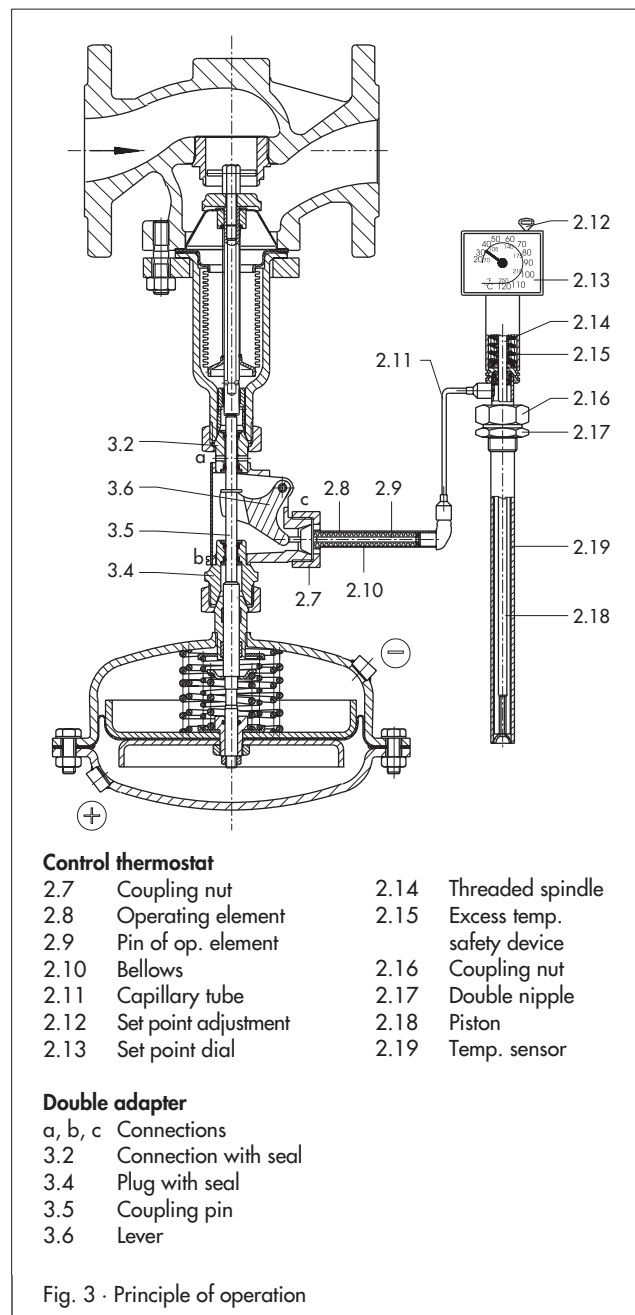
Accessories ...

Special versions

- Higher flow rate ranges
- With oil-resistant internal parts
- Valve completely in stainless steel
- ANSI and JIS versions
- Suitable for liquids and vapors up to max. 220 °C
- Other thermometer or special versions available
- Electric actuator mounted at the side, used to apply an electric signal (fail-safe position)

Accessories

- Compression-type fittings for pipe with 8, 10 and 12 mm diameters
- Needle valve G ¼ steel



Type 2231 · Type 2232 · Type 2233 · Type 2234 · Type 2235 Control Thermostats
Table 1 · Technical data

Type 2231 to Type 2235	Size 150
Set point range	-10 to 90 °C · 20 to 120 °C · 50 to 150 °C For Type 2232 also 100 to 200 °C and 150 to 250 °C
Perm. temperature at the set point adjustment	-40 to +80 °C
Perm. temperature at the sensor	100 K above the adjusted set point
Perm. pressure at the sensor	Without thermowell: PN 40 · With thermowell PN 16, PN 40, PN 63 or PN 100
Capillary tube length	3 m (special version: 5, 10, 15 m)
Weight, approx.	Type: 2231: 3.2 kg · Type: 2232: 4.0 kg · Type: 2233: 3.4 kg · Type: 2234: 3.7 kg Type: 2235: 3.6 kg · Double adapter: 1.5 kg

Table 2 · Materials · Material number acc. to DIN EN

Type 2231 to Type 2235 Control Thermostats	Standard version	Special version	
Operating element	Brass, nickel-plated		
Type 2231/2232	Bronze, nickel-plated	-	Stainless steel 1.4571
Sensor Type 2233/2234	Copper, nickel-plated		
Type 2235	Copper		
Capillary tube	Copper, nickel-plated	Copper, plastic-coated	
Thermowell with threaded connection			
Immersion tube	Bronze, nickel-plated · Steel	Copper	Stainless steel 1.4571
Threaded nipple	Copper, nickel-plated		
Thermowell with flange connection			
Immersion tube	Steel	Plastic-coated or PTFE ¹⁾	Stainless steel 1.4571
Flange	Steel with plastic-coated facings		
Double adapter			
Body	CW508L (brass)		
Coupling pin	Stainless steel 1.4305 or 1.4301		
Sealing	EPDM sealing ring between PTFE washers		

¹⁾ Plastic coating, for temperatures up to 80 °C: PVC or PPH coating. PTFE version · Thermowell: PTFE, flange: steel with PTFE sleeve

Valves
Type 2421, DN 15 to DN 50 · Type 2422/Type 2423, DN 15 to DN 250
Actuators
Type 2424 · Type 2426 · Type 2427 · Type 2428
Table 3 · Materials · Material number acc. to DIN EN

Nominal pressure	PN 16	PN 25	PN 25/40 ¹⁾		
Valve body	Cast iron EN-JL 1040	Sph. graphite iron EN-JS 1049	Cast steel 1.0619	Stainless cast steel 1.4581 ²⁾	Stainless forged steel 1.4571 ⁴⁾
Seat and plug	Stainless steel 1.4006, 1.4112, 1.4104			1.4571	
Plug stem	Stainless steel 1.4301/1.4310 (Type 2423)				
Metal bellows	Stainless steel 1.4571				
Lower part	P265GH (1.0305)			1.4571	
Body gasket	Graphite on metal core				
Type 2424 · Type 2426 · Type 2427 · Type 2428 Actuator					
Diaphragm case	Sheet steel DD11 (StW 22)			1.4301	
Diaphragm	EPDM with fabric reinforcement ³⁾				
Guide bushing	DU bushing			PTFE	

¹⁾ PN 16 on request

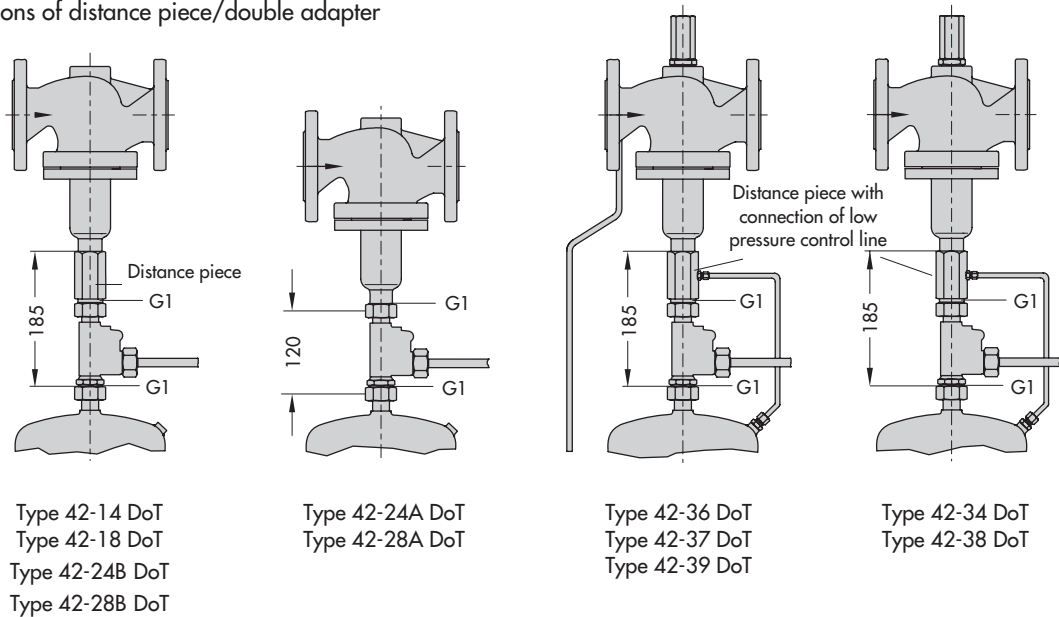
²⁾ Only up to max. DN 150

³⁾ Special version for oils (ASTM I, II, III): FPM (FKM)

⁴⁾ DN 15, 25, 40 and 50 only

Dimensions in mm

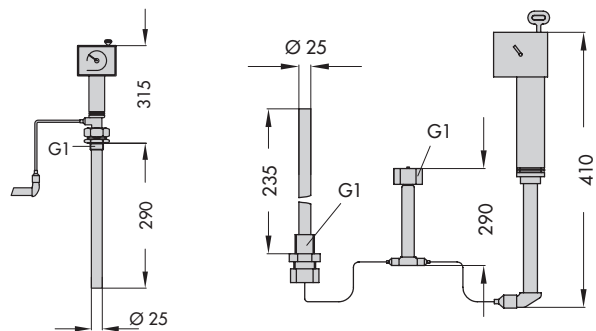
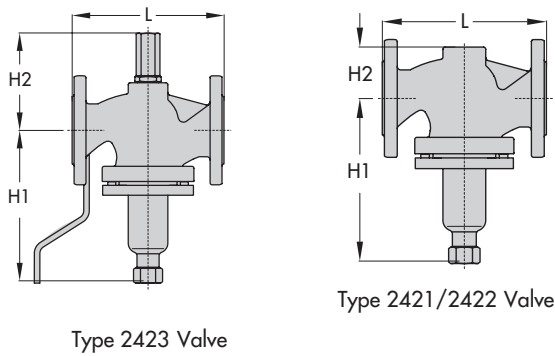
Dimensions of distance piece/double adapter



Dimensions of the complete regulators - including valve body with actuator, etc. - on request

For Type 2422/2423 with balancing bellows (DN 125 to DN 250) the external connection for the low pressure control line is already integrated into the bottom section of the valve. The external connection must be fitted onto the regulators with valves balanced by a diaphragm illustrated in T 2650 EN.

Valves



Dimensions of Type 2231 and Type 2232 Thermostats

Table 4 · Dimensions of the valves

Nominal size DN	15	20	25	32	40	50	65	80	100	125	150	200	250
Length L	130	150	160	180	200	230	290	310	350	400	480	600	730
Height H1	225						300	355	460	590	730		
Type 2423	Other materials		115		135		195	220	265	295	400		
Height H2	1.4571	113	-	130	-	170	176	-					
Type 2421/2422	Other materials		55		72		100	120	145	175	270		
Height H2	1.4571	53	-	70	-	92	98	-					

Fig. 4 · Dimensions in mm

Specifications subject to change without notice.



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