

# Self-operated Regulators Series 42



## Differential Pressure and Temperature Regulators with Types 2421 and 2422 Valves 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 · Valves **DN 15 to 250** · Nominal pressure **PN 16 to 40** · Suitable for liquids and vapors from **5 to 220 °C**

The valves **close** when the differential pressure or temperature increases

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

The regulators consist of a valve balanced by either a bellows or diaphragm <sup>1)</sup>, 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 to Type 2235 Control Thermostat. Refer to Data Sheet T 2010 EN 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 3003 EN, T 3007 EN, T 3013 EN, T 3015 EN, T 3017 EN and T 3018 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 Sheet T 3003 EN for details.

**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

<sup>1)</sup> Valves balanced by a diaphragm in DN 125 to 250 only

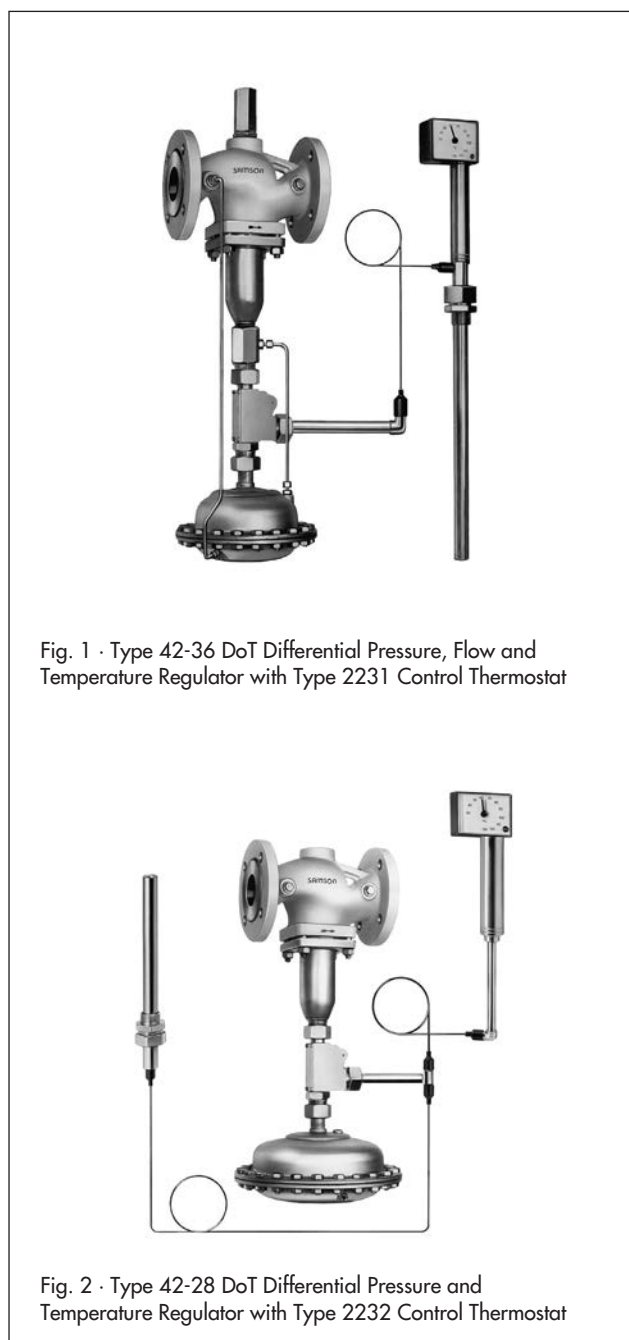


Fig. 1 · Type 42-36 DoT Differential Pressure, Flow and Temperature Regulator with Type 2231 Control Thermostat

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

**Differential pressure limiters 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

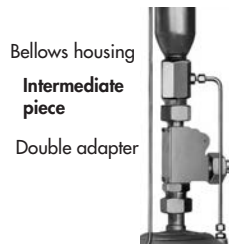
**Type 42-36 DoT E** · Flow regulator consisting of Type 2426 Diaphragm Actuator, double adapter, Type 2423 Valve · With restriction to adjust the flow rate set point · With electric or electrohydraulic actuator

### Principle of operation (Fig. 3)

The principle of operation of the regulators without control thermostat is described in the aforementioned data sheets. 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, an **intermediate 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 100/see Dimensions).



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

### 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 ...

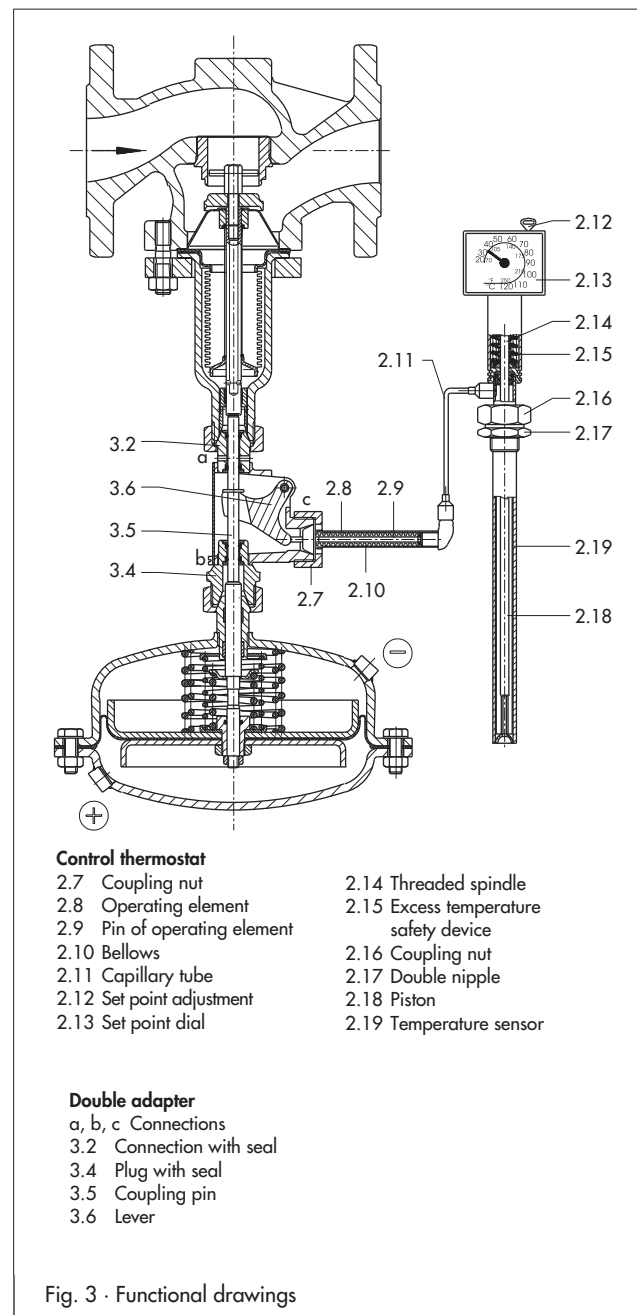
Accessories ...

### Special versions

- Higher flow rate ranges
- With internal parts resistant to mineral oil
- 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



**Table 1 · Technical data**

Type 2231 to Type 2235 Thermostats	Size 150
Set point range (set point span 100 K)	-10 to 90 °C · 20 to 120 °C · 50 to 150 °C For Type 2232, 2234, 2235 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	Type 2231/2232 Without thermowell: PN 40 · With thermowell PN 40/PN 100 With thermowell with flange: PN 40/PN 100
	Type 2233/2234 Without thermowell: PN 40 · With thermowell PN 6/PN 40
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**

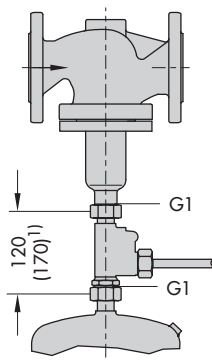
Type 2231 to Type 2235 Control Thermostats	Standard version	Special version
Operating element	Brass, nickel-plated	
Sensor	Type 2231/2232	Stainless steel 1.4571
	Type 2233/2234	
	Type 2235	-
Capillary tube	Copper, nickel-plated	Plastic-coated copper or stainless steel 1.4571
<b>Thermowell with threaded connection</b>		
Immersion tube	Bronze, nickel-plated · Steel, nickel-plated	Stainless steel 1.4571
Threaded nipple	Brass, nickel-plated · Steel, nickel-plated	
<b>Thermowell with flange connection</b>		
Immersion tube	Steel	Stainless steel 1.4571
Flange	Steel	
<b>Double adapter Do2</b>		
Body	CW508L (brass)	
Coupling pin	1.4301	
Sealing	EPDM seal between PTFE washers	

Type 2422/2423 Valve · Balanced by a bellows					
Nominal pressure	PN 16	PN 25	PN 16/25/40 <sup>1)</sup>		
Valve body	Cast iron EN-JL 1040	Sph. graphite iron EN-JS 1049	Cast steel 1.0619	Cast stainless steel 1.4408	Forged stainless steel 1.4571 <sup>2)</sup>
Seat	1.4006, 1.4104			1.4571, 1.4404	
Plug	Up to DN 100 1.4104, 1.4006 or 1.4006 <sup>3)</sup>			1.4571	
	DN 125 to 250 1.4301 with PTFE seal			1.4301, 1.4571 with PTFE seal	
Plug stem	1.4301				
Metal bellows	1.4571 · DN 125 and higher: 1.4404				
Lower part	P265GH			1.4571	
Body gasket	Graphite on metal core				
Type 2422/2423 Valve · Balanced by a diaphragm					
Nominal pressure	PN 16	PN 16/25	PN 16/25/40		
Valve body	Cast iron EN-JL 1040	Sph. graphite iron EN-JS 1049	Cast steel 1.0619	Cast stainless steel 1.4408	-
Seat	Red brass <sup>4)</sup>				
Plug	Red brass <sup>4)</sup> · With EPDM soft seal, max. 150 °C or with PTFE soft seal, max. 150 °C				
Pressure balancing	Balancing cases made of sheet steel DD11 · Balancing diaphragm made of EPDM, max. 150 °C or NBR diaphragm, max. 80 °C				
Type 2424 · Type 2426 · Type 2427 · Type 2428 Actuator					
Diaphragm case	Sheet steel DD11 (StW 22)			1.4301	
Diaphragm	EPDM with fabric reinforcement <sup>5)</sup>				
Guide bushing	DU bushing			PTFE	
Seals	EPDM, PTFE <sup>5)</sup>				

<sup>1)</sup> PN 16 on request · <sup>2)</sup> DN 15, 25, 40 and 50 only · <sup>3)</sup> Optional with soft seal for standard KVS coefficients · <sup>4)</sup> Special version: 1.4409  
<sup>5)</sup> Special version for mineral oil: FPM (FKM)

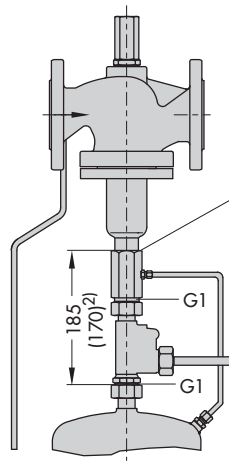
## Dimensions in mm

### Dimensions of intermediate piece/double adapter



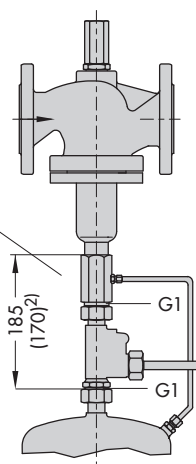
Type 42-24 A DoT  
Type 42-28 A DoT  
Type 42-24 B DoT  
Type 42-28 B DoT

<sup>1)</sup> DN 15 to 100: 120 mm  
DN 125 to 250: 170 mm



Type 42-36 DoT  
Type 42-37 DoT  
Type 42-39 DoT

<sup>2)</sup> DN 15 to 100: 185 mm  
DN 125 to 250: 170 mm

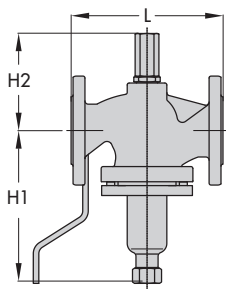


Type 42-34 DoT  
Type 42-38 DoT

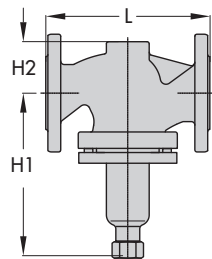
For Type 2422/2423 with balancing bellows (DN 125 to DN 250) the external connection for the low pressure control line is already integrated into the bottom section of the valve.

The external connection must be fitted onto the regulators with valves balanced by a diaphragm.

### Valves

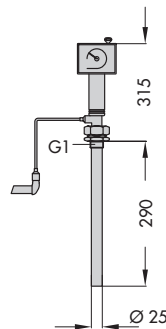


Type 2423 Valve  
balanced by a bellows

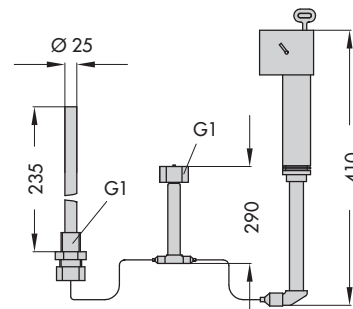


Type 2422 Valve  
balanced by a bellows

### Control thermostats



Dimensions of Type 2231 and Type 2232 Thermostats



### 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	Balanced by bellows		225						300		355		460		590		730	
	Balanced by diaphragm		-						285		310		380					
Type 2423 Height H2	Other materials		115		135		195		220		265		295		400			
	1.4571		113		-		130		-		155		161					
Type 2422 Height H2	Balanced by diaphragm		-						295		325		345		375			
	Other materials		55		72		100		120		145		175		235		260	
1.4571		53		-		70		-		92		98						
Balanced by diaphragm		-						145		175		260						

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

Fig. 4 · Dimensions in mm

Specifications subject to change without notice.



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