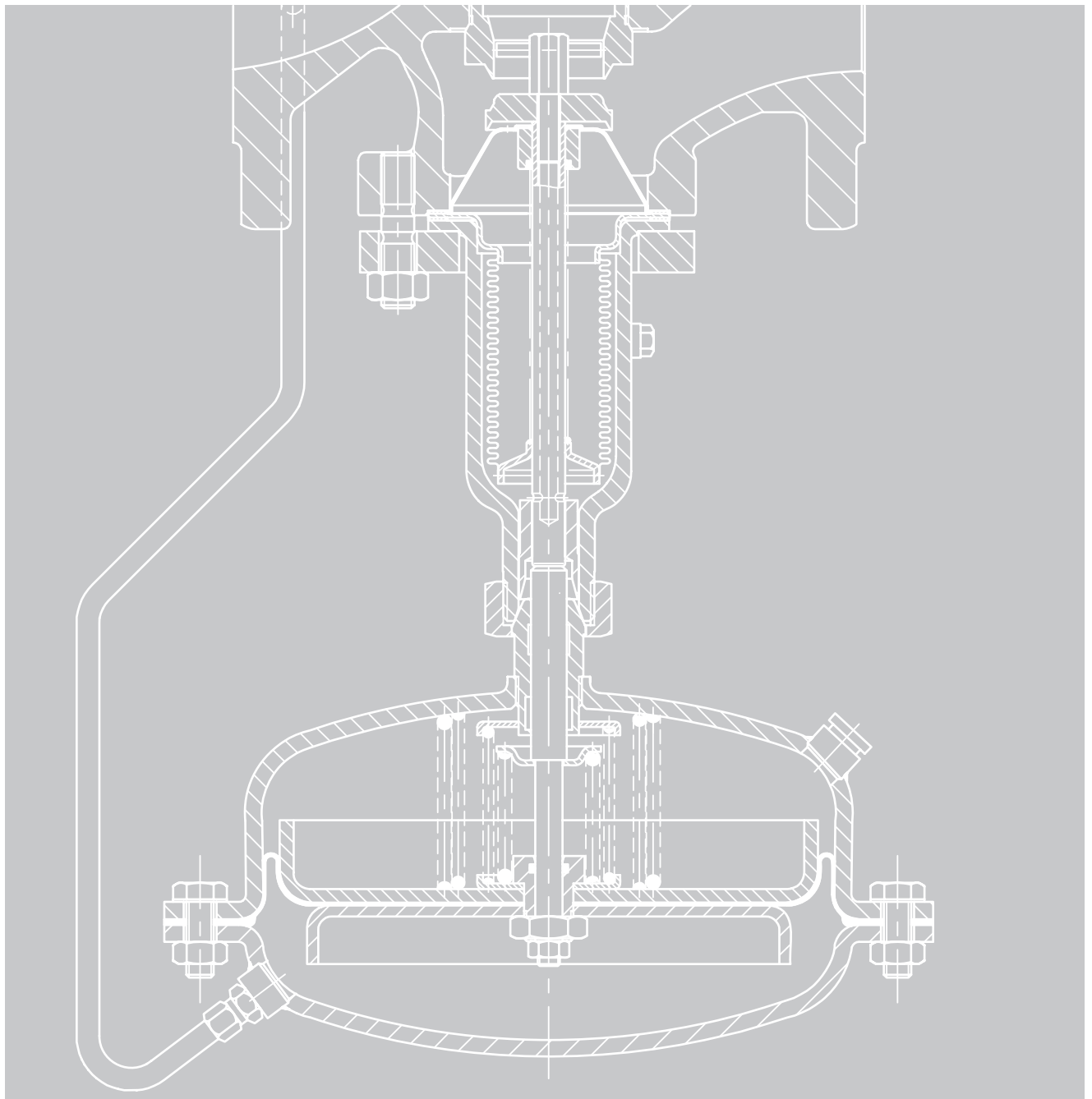


Self-operated Differential Pressure and Flow Regulators

Series 42



PN 16 to PN 40
DN 15 to DN 250
Up to 220 °C






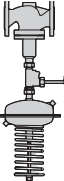




Edition April 2006

Information Sheet

T 3000 EN

Overview · Series 42 Differential Pressure and Flow Regulators

Valve	Applicable for ...	Steam	•	•	•	•	•	•
		Water and other liquids	•	•	•	•	•	•
		Oil	•	•	•	•	•	•
		Air and other non-flammable gases	•	•	•	•	•	•
	Connection	Globe valve with flanges	•	•	•	•	•	•
		Nominal size	DN 15 to 50	DN 15 to 25	DN 15 to 250	DN 15 to 100	DN 15 to 25	
		Nominal pressure	PN 16 to 40					
	Max. permissible temperature ⁵⁾	220 °C						
	Pressure balanced			•	•			
	Unbalanced	•	•				•	
With force limiting device ¹⁾	•	•	•	•				
Body material ²⁾	Cast iron EN-JL 1040	•	•	•	•	•		
	Sph. graphite iron EN-JS 1049	•	•	•	•	•		
	Cast steel 1.0619	•	•	•	•	•		
	Stainless steel 1.4581 ⁶⁾	•	•	•	•	•		
Application	Differential pressure Δp	•	•	•	•	•		
	Flow rate	Control						
		Limitation						
	Installation in	Flow pipe	•	•	•	•	•	Short-circuit or bypass pipe
		Return flow pipe	•	•	•	•	•	
	Set point ³⁾	Fixed		•		•	•	
		Adjustable	•		•			
	Δp (bar)	Min.	0.05	0.2	0.05	0.2	0.2	
Max.		1.5	0.5	10	0.5	0.5		
For details, see Data Sheet ...								
		Type 42-14 T 3001 EN	Type 42-18 T 3001 EN	A B Type 42-24 T 3003 EN/ T 2650 EN	A B Type 42-28 T 3003 EN/ T 2650 EN	Type 42-10 T 3005 EN		
Regulators with additional temperature control								
For details, see Data Sheet ...		Type 42-14 DoT T 3019 EN		Type 42-24 DoT T 3019 EN/ T 2650 EN	Type 42-28 DoT T 3019 EN/ T 2650 EN			

¹⁾ The force limiter with internal excess pressure limiter in the actuator protects the seat and plug against damage on exceeding the permissible differential pressure.

²⁾ Cast iron EN-JL 1040 only in PN 16 · Spheroidal graphite iron EN-JS 1049 only in PN 25

³⁾ Temperature set points can be adjusted in all versions

⁴⁾ Optionally applicable as a flow and pressure regulator

⁵⁾ Higher temperatures on request

⁶⁾ For some sizes also available of stainless forged steel 1.4571 (see associated data sheet)

Refer to Data Sheet T 2650 EN for more details on versions of **Type 2422** and **Type 2423** Valves **balanced by a diaphragm**.

SAMSON offers the pilot-operated **Type 2334** Universal Regulator for all the applications listed in this Information Sheet.

Refer to Data Sheet T 3210 EN for more details about this regulator.

Design · Principle of operation and application

Self-operated differential pressure and flow regulators are medium-controlled proportional regulators. Each deviation from the adjusted set point is assigned to a certain valve plug position.

The medium to be controlled delivers the necessary energy to adjust the valve. When the actual value deviates from the set point (set point \neq actual value), the released force moves the plug.

The differential pressure Δp to be controlled generates a force F_m at the diaphragm surface of the actuator which is proportional to the actual value (controlled variable x). This force is compared to the spring force F_S (set point w) at the plug stem. The spring force corresponds to the set point and can be adjusted at the set point adjuster. When the differential pressure Δp and thus the force F_m change, the plug stem is moved until $F_m = F_S$. With a predetermined diaphragm area A , the spring rate of the set point spring determines the rated travel and thus also the proportional-action coefficient K_p and the proportional band x_p .

The flow rate is controlled according to the differential pressure method.

The control accuracy and stability depend on the disturbances that occur. The regulators are designed in such a way that the effect of these disturbances is relatively small. Amongst other things, this is also achieved by balancing the plug with a metal bellows. As a result, the force acting on the plug, which depends on the upstream or differential pressure, is eliminated by an equal opposing force. In unbalanced versions, the disturbance effect is a force resulting from the cross-section of the seat and the differential pressure.

The regulators can be designed to function as:

- Differential pressure regulators
- Flow regulators
- Differential pressure and flow regulators
- Differential pressure regulators and flow limiters
- Differential pressure, flow and temperature regulators
- Combined differential pressure or flow regulators with additional electric actuator

Fig. 1.1

Differential pressure regulator with closing actuator. This actuator closes the valve when the adjusted differential pressure set point is exceeded. The top of the diagram shows a closing actuator with an adjustable set point, the bottom an actuator with a fixed set point.

Actuators without set point adjustment are appropriately suitable for fixed set point control. The installed set point spring determines the set point.

Fig. 1.2

Differential pressure regulator with opening actuator. This actuator opens the valve when the differential pressure rises. The valve is closed when relieved of pressure ($\Delta p = 0$).

Fig. 1.3

Valve with metal bellows. The downstream pressure acts on the inner bellows surface, the upstream pressure acts on the outer bellows surface. As a result, the forces acting on the plug are

balanced, the plug is fully balanced and not affected by any pressure or flow rate changes in the process medium.

Thanks to the fully balanced valves, the Series 42 Regulators can be used for nominal sizes up to DN 250 and flow rates up to 300 m³/h.

Fig. 1.4

Flow regulators are especially suitable for district heating supply systems.

Contrary to the usual flow regulators, the measuring system is designed for a fixed differential pressure at the restriction of, for example, 0.2 bar.

The set point is adjusted at the restriction. As a result, the regulator operates with an adjustable orifice bore, i.e. with an opening ratio which is adapted to the set point.

Fig. 1.5

Principle of flow control according to the differential pressure method. The differential pressure $\Delta p_{\text{restriction}}$ generated at the restriction (orifice plate) is transferred to the diaphragm surface of the actuator. The difference between the force at the diaphragm and the spring force of the set point spring causes the plug position to change. For the flow rate, the differential pressure $\Delta p_{\text{restriction}}$ acting on the restriction and the force F_m acting on the diaphragm, the following applies:

$$\dot{V} = K \times \sqrt{\Delta p_{\text{restriction}}} \hat{=} K \times \sqrt{F_m} \quad \text{or} \quad \dot{V}^2 = K' \times \Delta p \hat{=} K' \times F_m$$

$$\Delta p_{\text{restriction}} = \frac{F_m}{A}$$

\dot{V} = Flow rate

F_m = Force at the diaphragm surface

$\Delta p_{\text{restriction}}$ = Differential pressure generated at the restriction to measure the flow rate

K, K' = Constants

A = Diaphragm area

Figs. 1.6 and 1.7

Flow and differential pressure or pressure regulators. These regulators are equipped with two diaphragms. The top diaphragm is used to control the flow rate, the bottom diaphragm is used to control the differential pressure or pressure. The largest signal is used to actuate the valve.

Depending on the intended application, these regulators are equipped with the necessary control lines.

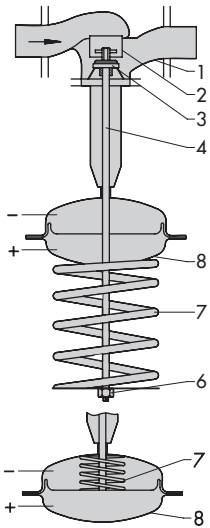


Fig. 1.1 · Differential pressure regulator with closing actuator and adjustable set point (top)/fixed set point (bottom)

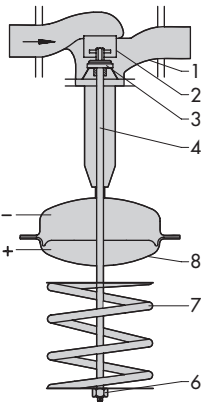


Fig. 1.2 · Differential pressure regulator with opening actuator and adjustable set point

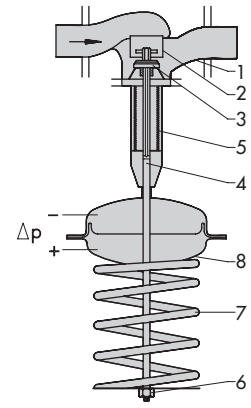


Fig. 1.3 · Differential pressure regulator with metal bellows for pressure balancing

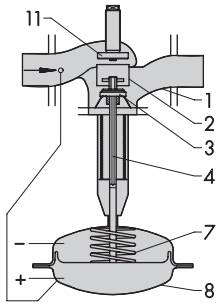


Fig. 1.4 · Flow regulator

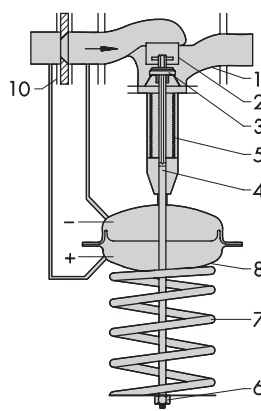


Fig. 1.5 · Differential pressure regulator used as flow regulator (with external orifice plate)

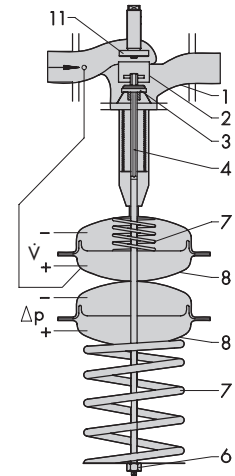


Fig. 1.6 · Flow and differential pressure regulator (flow pipe)

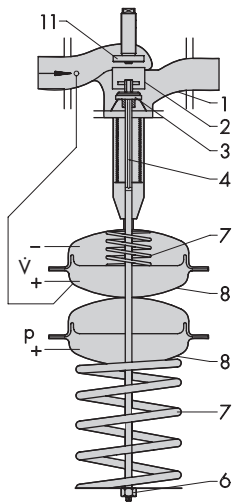


Fig. 1.7 · Flow and pressure regulator

Legend

- 1 Valve body
- 2 Seat
- 3 Plug
- 4 Plug stem
- 5 Balancing bellows
- 6 Set point adjuster
- 7 Set point spring
- 8 Actuator
- 10 Restriction (orifice)
- 11 Adjustable restriction

Differential pressure and flow control · Regulators and their methods of control

The Series 42 Self-operated Differential Pressure and Flow Regulators consist of a valve with flanges and an actuator which closes or opens the valve when the differential pressure/flow rate increases.

The medium flows through the valve in the direction indicated by the arrow. The areas released by the valve plug influence the differential pressure/flow rate.

In pressure-balanced regulators, the plug is largely unaffected by pressure changes in the medium. The pressure downstream of the restriction acts on the outer surface of the balancing bellows, the downstream pressure acts on the inner surface of the bellows. As a result, the forces acting on the bellows and the plug are balanced.

The actuators can be equipped with force limiters to limit the force acting on the plug stem and protect the seat and plug against damage.

A similar effect is achieved by an excess pressure limiter integrated into the actuator. A bypass opens, if necessary, and balances the forces which prevents excessive positioning forces.

Differential pressure control

Differential pressure regulators are used to maintain the differential pressure between two pipes at a constant value depending on the adjusted set point. They are designed for installation in the high-pressure or low-pressure pipe (flow or return flow pipe) of a district heating station, for example.

The differential pressure to be controlled acts on the operating diaphragm and is converted into a force, which moves the plug depending on the force of the set point springs (set point).

Depending on the regulator type, the set point is either adjusted at the set point adjuster or fixed by the installed set point spring. External control lines transmit the high and low pressures.

Flow control

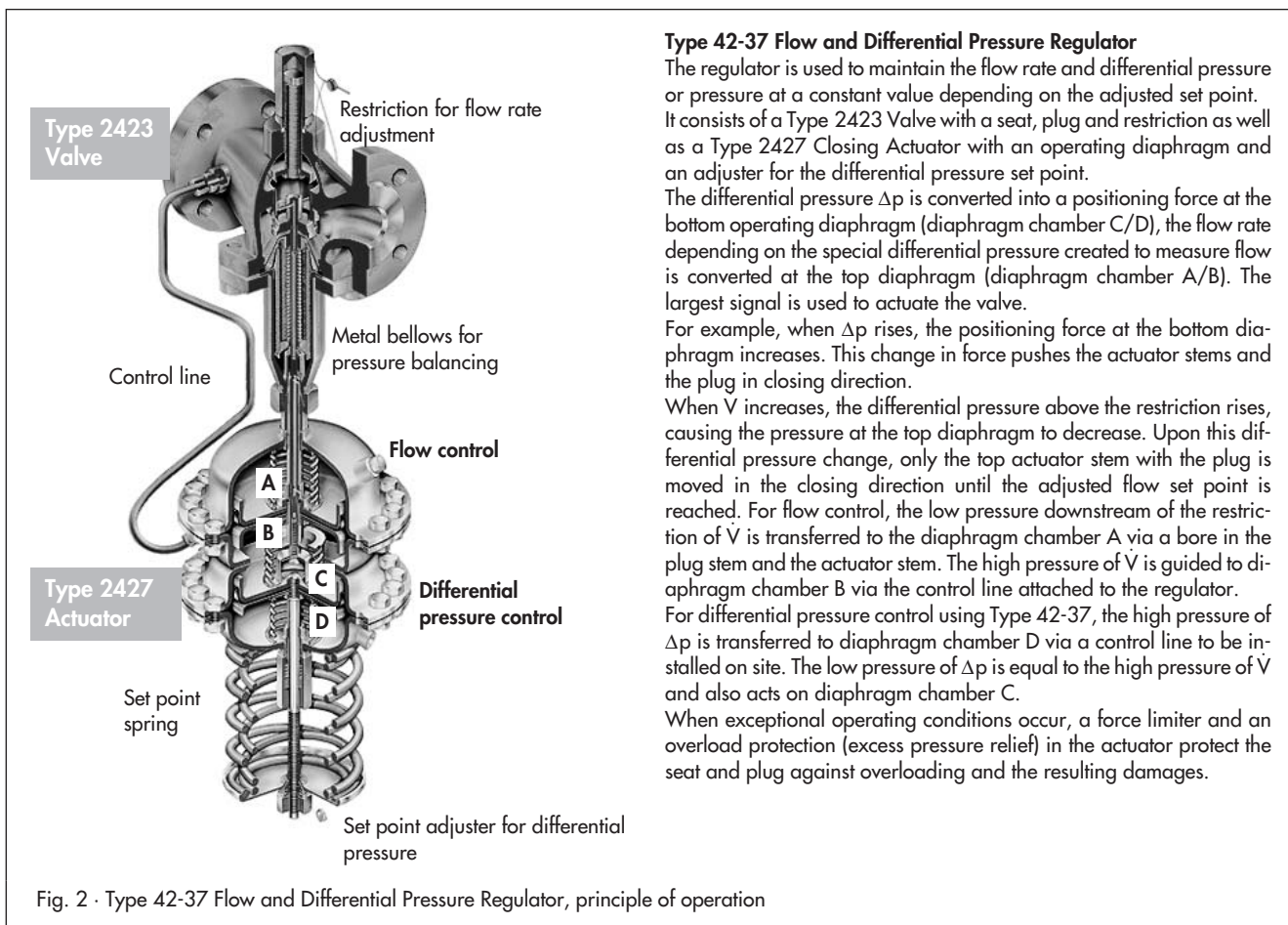
The flow rate is determined according to the differential pressure method. This is achieved by a standard orifice plate in the pipe through which the medium flows or by an adjustable restriction integrated into the valve.

The areas released by the restriction and the valve plug influence the flow rate. In this case, the high pressure upstream of the restriction is transferred through the control line to the high-pressure side of the diaphragm, whereas the low pressure downstream of the restriction is transferred through a bore in the valve plug to the low-pressure side of the diaphragm.

When the pressure difference now acting on the operating diaphragm exceeds the differential pressure set point of the set point spring, i.e. the flow rate increases, the diaphragm moves together with the plug stem and the plug. The cross-sectional area of flow is reduced until the pressure drop created above the restriction and the preset differential pressure created to measure flow are identical.

Combined regulators applicable for differential pressure/pressure and flow control as well as regulators suitable for one or more of these control tasks are commonly used.

Fig. 2 illustrates how the SAMSON Type 42-37 Flow and Differential Pressure Regulator works.



Type 42-37 Flow and Differential Pressure Regulator

The regulator is used to maintain the flow rate and differential pressure or pressure at a constant value depending on the adjusted set point. It consists of a Type 2423 Valve with a seat, plug and restriction as well as a Type 2427 Closing Actuator with an operating diaphragm and an adjuster for the differential pressure set point.

The differential pressure Δp is converted into a positioning force at the bottom operating diaphragm (diaphragm chamber C/D), the flow rate depending on the special differential pressure created to measure flow is converted at the top diaphragm (diaphragm chamber A/B). The largest signal is used to actuate the valve.

For example, when Δp rises, the positioning force at the bottom diaphragm increases. This change in force pushes the actuator stems and the plug in closing direction.

When V increases, the differential pressure above the restriction rises, causing the pressure at the top diaphragm to decrease. Upon this differential pressure change, only the top actuator stem with the plug is moved in the closing direction until the adjusted flow set point is reached. For flow control, the low pressure downstream of the restriction of V is transferred to the diaphragm chamber A via a bore in the plug stem and the actuator stem. The high pressure of V is guided to diaphragm chamber B via the control line attached to the regulator.

For differential pressure control using Type 42-37, the high pressure of Δp is transferred to diaphragm chamber D via a control line to be installed on site. The low pressure of Δp is equal to the high pressure of V and also acts on diaphragm chamber C.

When exceptional operating conditions occur, a force limiter and an overload protection (excess pressure relief) in the actuator protect the seat and plug against overloading and the resulting damages.

Fig. 2 · Type 42-37 Flow and Differential Pressure Regulator, principle of operation

Series 42 Self-operated Regulators

Differential pressure and flow regulators

SAMSON differential pressure and flow regulators are suitable for industrial, public and domestic applications, especially for district heating supply systems, for heating, ventilation and air-conditioning systems, for steam and heat generators, heat exchangers, energy supply units in power plants and chemical plants as well as for large pipeline systems.

- Low-noise and low-maintenance proportional regulators requiring no auxiliary energy
- Body optionally made of cast iron, spheroidal graphite iron, cast steel or stainless cast steel/forged steel
- Suitable for water, steam, air and other liquids or gases, provided they do not influence the properties of the operating diaphragm
- Special version for oil/heat transfer oil
- Flanges

Differential Pressure Regulators

Type 42-14 · With adjustable set point

Type 42-18 · With fixed set point

- Type 2421 Valve and Type 2424/2428 Actuator each with force limiter and internal excess pressure limiter
- Differential pressure regulator with closing actuator for installation in the flow and return flow pipes
- Single-seated valve without pressure balancing
- Actuator with force limiter and overload protection

Technical data	Data Sheet T 3001 EN
Nominal size	
Type 42-14	DN 15 to 50
Type 42-18	DN 15 to 25
Nominal pressure	PN 16 to 40
Differential pressure set points	
Type 42-14	0.05 to 1.5 bar
Type 42-18	0.2 · 0.3 · 0.4 · 0.5 bar
Temperature ranges	
Steam and liquids	Up to 220 °C
Liquids	Up to 150 °C
Air and non-flammable gases	Up to 80 °C



Type 42-18
Differential Pressure Regulator



Type 42-10 RS
Check Valve
(Backflow Prevention)

Fig. 3 · Series 42 Differential Pressure Regulators

Differential Pressure Regulators

Type 42-10 · With fixed set point

Type 42-15 · With adjustable set point

- Type 2421 Valve and Type 2420/2425 Actuator
- Differential pressure regulator with opening actuator for installation in a bypass or short-circuit pipe
- Single-seated valve without pressure balancing
- A distance piece (see photo) separates the pressure in the valve from the pressure in the actuator



Technical data	Data Sheet T 3005 EN
Nominal size	
Type 42-10	DN 15 to 25
Type 42-15	DN 15 to 50
Nominal pressure	PN 16 to 40
Differential pressure set points	
Type 42-10	0.2 · 0.3 · 0.4 · 0.5 bar
Type 42-15	0.05 to 1.5 bar
Temperature ranges	
Steam and liquids	Up to 220 °C
Liquids	Up to 150 °C
Air and non-flammable gases	Up to 80 °C

Check Valve (Backflow Prevention)

Type 42-10 RS · With fixed set point

- Type 2421 Valve and Type 2420 Actuator
- Differential pressure regulator with opening actuator for installation in the flow pipe
- Regulator closes when the downstream pressure rises and when the upstream pressure rises to or above the level of the downstream pressure
- Single-seated valve without pressure balancing

Technical data	Data Sheet T 3009 EN
Nominal size	
Type 42-10	DN 15 to 150
Nominal pressure	PN 16 to 40
Differential pressure set points	
Type 42-10	0.2 bar
Temperature ranges	
Compressed air and nitrogen	Up to 80 °C

Differential Pressure Regulators

Type 42-24 A · Type 42-24 B · With adjustable set point

Type 42-28 A · Type 42-28 B · With fixed set point

- Type 2422 Valve and Type 2424/2428 Actuator
- Differential pressure regulator with closing actuator for installation in the return flow pipe (Type 42-24 A or Type 42-28 A)
- Single-seated valve balanced by a stainless steel bellows
- Types 42-24 B/42-28 B: preferable installed in the flow pipe. A distance piece separates the pressure in the valve from the pressure in the actuator
- Actuator with two diaphragms for increased safety

Type 42-24 A · Type 42-24 B · With adjustable set point

Type 42-28 A · Type 42-28 B · With fixed set point

- Actuator with force limiter and overload protection

Technical data	Data Sheet T 3003 EN
Nominal size	
Type 42-24 A/B	DN 15 to 250
Type 42-28 A/B	DN 15 to 100
Nominal pressure	PN 16 to 40
Differential pressure set points	
Type 42-24 A/B	0.05 to 10 bar
Type 42-28 A/B	0.2 · 0.3 · 0.4 · 0.5 bar
Temperature ranges	
Steam and liquids	Up to 220 °C
Liquids	Up to 150 °C
Air and non-flammable gases	Up to 80 °C

Refer to T 2650 EN for valves balanced by a diaphragm

Differential Pressure Regulators

Type 42-20 · With fixed set point

Type 42-25 · With adjustable set point

- Type 2422 Valve and Type 2420/2425 Actuator
- Differential pressure regulator with opening actuator for installation in a bypass or short-circuit pipe
- Single-seated valve balanced by a stainless steel bellows

Technical data	Data Sheet T 3007 EN
Nominal size	
Type 42-20	DN 15 to 100
Type 42-25	DN 15 to 250
Nominal pressure	PN 16 to 40
Differential pressure set points	
Type 42-20	0.2 · 0.3 · 0.4 · 0.5 bar
Type 42-25	0.05 to 10 bar
Temperature ranges	
Steam and liquids	Up to 220 °C
Liquids	Up to 150 °C
Air and non-flammable gases	Up to 80 °C

Refer to T 2650 EN for valves balanced by a diaphragm

Differential Pressure Regulators with Flow Limitation

Type 42-38 · With fixed set point

Type 42-34 · With adjustable set point

- Type 2423 Valve and Type 2424/2428 Actuator
- Actuator with force limiter and overload protection
- Differential pressure regulator with flow limitation and closing actuator for installation in the return flow pipe with indirectly connected transfer stations
- Single-seated valve balanced by a stainless steel bellows

Technical data	Data Sheet T 3013 EN
Nominal size	
Type 42-38	DN 15 to 100
Type 42-34	DN 15 to 250
Nominal pressure	PN 16 to 40
Differential pressure set points	
Type 42-38	0.2 · 0.3 · 0.4 · 0.5 bar
Type 42-34	0.1 to 1.5 bar
Temperature ranges	
Liquids	Up to 220 °C

Flow Regulator

Type 42-36

- Type 2423 Valve and Type 2426 Actuator
- Flow regulator with closing actuator for installation in the flow or return flow pipe
- Single-seated valve balanced by a stainless steel bellows

Technical data	Data Sheet T 3015 EN
Nominal size	DN 15 to 250
Nominal pressure	PN 16 to 40
Flow set point ranges	0.05 to 300 m ³ /h
Differential pressure at the restriction	0.2 or 0.5 bar
Temperature ranges	
Steam and liquids	Up to 220 °C
Air and non-flammable gases	Up to 80 °C

Refer to T 2650 EN for valves balanced by a diaphragm



Type 42-25
Differential Pressure Regulator



Type 42-36
Flow Regulator



Type 42-34
Differential Pressure Regulator
with Flow Limitation

Fig. 4 · Series 42 Differential Pressure and Flow Regulators

Flow and Differential Pressure or Flow and Pressure Regulators

Type 42-37 · Type 42-39

- Single-seated valve balanced by a stainless steel bellows

Type 42-37 Flow and Differential Pressure Regulator

- Type 2423 Valve and Type 2427 Actuator
- Flow and differential pressure regulator with closing actuator for installation in the return flow pipe of a district heating substation
- Flow set point adjustable at the restriction; differential pressure set point adjustable at the actuator
- Actuator with force limiter and overload protection

Technical data Data Sheet T 3017 EN

Nominal size	DN 15 to 250
Nominal pressure	PN 16 to 40
Flow set point ranges	0.05 to 300 m ³ /h
Differential pressure at the restriction	0.2 or 0.5 bar
Differential pressure set points	0.1 to 10 bar
Temperature ranges	
Liquids	Up to 220 °C

Refer to T 2650 EN for valves balanced by a diaphragm

Type 42-39 Flow and Differential Pressure or Pressure Regulator

- Type 2423 Valve with restriction and Type 2429 Actuator
- Flow and differential pressure or pressure regulator with closing actuator for installation in the flow pipe of a district heating substation
- Flow set point adjustable at the restriction; differential pressure or pressure set point adjustable at the actuator

Technical data Data Sheet T 3017 EN

Nominal size	DN 15 to 250
Nominal pressure	PN 16 to 40
Flow set point ranges	0.05 to 300 m ³ /h
Differential pressure at the restriction	0.2 or 0.5 bar
Differential pressure or pressure set point ranges	0.1 to 10 bar
Temperature ranges	
Liquids	Up to 220 °C

Refer to T 2650 EN for valves balanced by a diaphragm

Differential Pressure and Temperature Regulators

Type 42-14 DoT · Type 42-24 DoT · Type 42-28 DoT

- Differential pressure and temperature regulator with closing actuator for installation in the flow or return flow pipe
- Actuator with force limiter and overload protection

Type 42-14 DoT

- Type 2421 Valve and double adapter with Type 2424 Actuator, adjustable set point and Type 2231/2232 Control Thermostat
- Single-seated valve without pressure balancing

Type 42-24 DoT

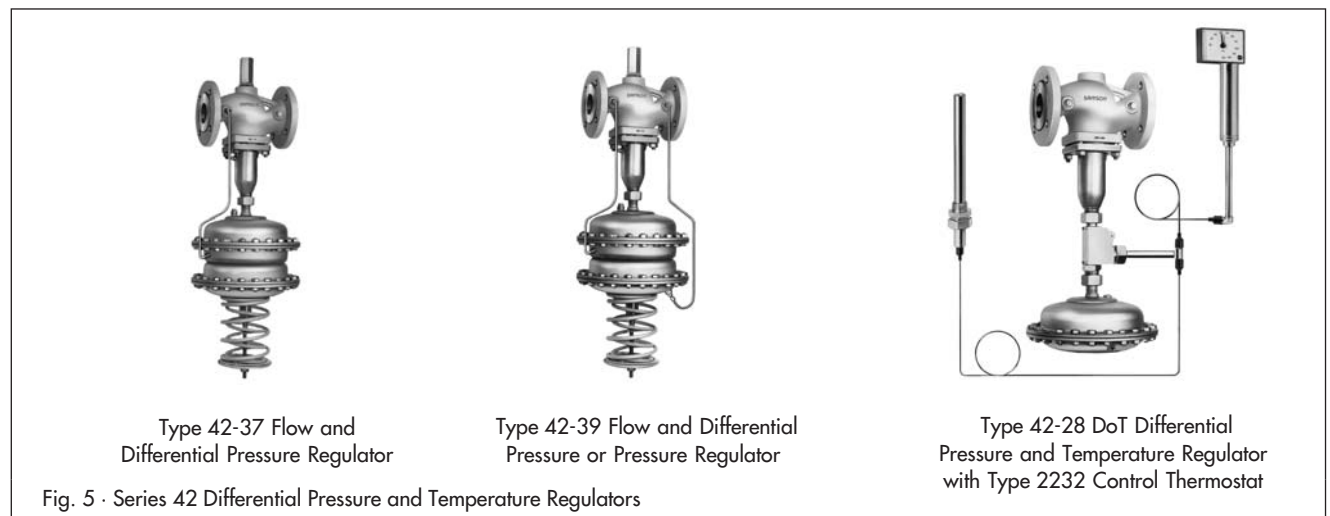
- Type 2422 Valve and double adapter with Type 2424 Actuator, adjustable set point and Type 2231/2232 Control Thermostat
- Single-seated valve balanced by a stainless steel bellows

Type 42-28 DoT

- Type 2422 Valve and double adapter with Type 2428 Actuator, fixed set point and Type 2231/2232 Control Thermostat
- Single-seated valve balanced by a stainless steel bellows

Technical data Data Sheets T 3001 EN · T 3003 EN · T 3019 EN

Nominal size	
Type 42-14	DN 15 to 50
Type 42-24	DN 15 to 250
Type 42-28	DN 15 to 100
Nominal pressure	PN 16 to 40
Differential pressure set points	
Type 42-14	0.05 to 1.5 bar
Type 42-24	0.05 to 10 bar
Type 42-28	0.2 · 0.3 · 0.4 · 0.5
Type 2231/2232 Temperature Regulator	
Set point ranges	-10 to +250 °C
Temperature ranges	
Steam and liquids	Up to 220 °C
Liquids	Up to 150 °C
Air and gases	Up to 80 °C



Differential Pressure, Flow and Temperature Regulators

Type 42-34 DoT · Type 42-36 DoT · Type 42-37 DoT

Type 42-38 DoT · Type 42-39 DoT

- Single-seated valves balanced by a stainless steel bellows

Flow and Temperature Regulator

Type 42-36 DoT

- Flow and temperature regulator with closing actuator for installation in the flow and return flow pipe
- Type 2423 Valve and double adapter with Type 2426 Actuator and Type 2231/2232 Control Thermostat

Differential Pressure, Flow and Temperature Regulator

Type 42-37 DoT

- Differential pressure, flow and temperature regulator with closing actuator for installation in the return flow pipe of a district heating substation
- Type 2423 Valve and double adapter with Type 2427 Actuator, adjustable set point and Type 2231/2232 Control Thermostat
- Actuator with force limiter and overload protection

Flow and Differential Pressure or Pressure and Temperature Regulator

Type 42-39 DoT

- Same as 42-37 DoT, but with Type 2429 Actuator
- Regulator for installation in the flow pipe of a district heating substation

Differential Pressure and Temperature Regulators with Flow Limitation

Type 42-34 DoT · Type 42-38 DoT

- For installation in the return flow pipe

Type 42 -34 DoT

- Type 2423 Valve and double adapter with Type 2424 Actuator, adjustable set point and Type 2231/2232 Control Thermostat
- Actuator with force limiter and overload protection

Type 42 -38 DoT

- Type 2423 Valve and double adapter with Type 2428 Actuator, fixed set point and Type 2231/2232 Control Thermostat
- Actuator with force limiter and overload protection

Technical data

Data Sheets T 3013 EN · T 3015 EN
T 3017 EN · T 3019 EN

Nominal size	
Type 42-34	DN 15 to 250
Type 42-36	DN 15 to 250
Type 42-37	DN 15 to 250
Type 42-38	DN 15 to 100
Type 42-39	DN 15 to 250
Nominal pressure	PN 16 to 40
Differential pressure set points	
Type 42-34	0.1 to 1.5 bar
Type 42-36	–
Type 42-38	0.2 · 0.3 · 0.4 · 0.5 bar
Type 42-37/Type 42-39	0.1 to 10 bar
Flow set point ranges	
At 0.2/0.5 bar differential pressure at the restriction	0.05 to 300 m ³ /h
Type 2231/2232 Temperature Regulator	
Set point ranges	–10 to +250 °C
Temperature ranges	
Steam and liquids	Up to 220 °C
Air and gases	Up to 80 °C



Type 42-24 DoT Differential Pressure and Temperature Regulator with Type 2231 Control Thermostat



Type 42-36 DoT Flow and Temperature Regulator with Type 2231 Control Thermostat



Type 42-37 DoT Differential Pressure, Flow and Temperature Regulator with Type 2231 Control Thermostat

Fig. 6 · Series 42 Differential Pressure, Flow and Temperature Regulators

Combined Self-operated Regulators for Differential Pressure or Flow with Additional Electric Actuator
Type 42-36 E · Type 42-37 E · Type 42-39 E

- The valve closes when the differential pressure, flow rate and output signal of the electric actuator increase. The largest signal is used to actuate the valve.
- Typetested regulators are available; register no. available on request.
- The regulators are available with the following electric actuators:
 - **DN 15 to 50**
Type 5824 or Type 5825 Electric Actuator
 - **DN 65 to 100**
Type 3374 Electric Actuator
 - **DN 125 to 250**
Type 3274 Electrohydraulic Actuator

Type 5824 · Type 5825 · Type 3374 Electric Actuator
Type 3274 Electrohydraulic Actuator

Technical data	Data Sheets T 5824 EN · T 8331 EN T 8340 EN · T 3018 EN		
	5824 - .../ 5825 - ...	3374 - ...	3274 - ...
For valve sizes ...	DN 15 to 50	DN 65 to 100	DN 125 to 250
Electrical connection	24 V or 230 V, 50 Hz	230 V, 50/60 Hz ±10 %	
Perm. ambient temperature	0 to 50 °C	5 to 60 °C	-35 ¹⁾ to 60 °C

¹⁾ With heating

Type 42-36 E

- Flow regulator with closing actuator for installation in the flow or return flow pipe
- Type 2423 Valve with restriction and Type 2426 Diaphragm Actuator

Type 42-37 E

- Flow and differential pressure regulator with closing actuator for installation in the return flow pipe
- Type 2423 Valve with restriction and Type 2427 Diaphragm Actuator
- Actuator with force limiter and overload protection

Type 42-39 E

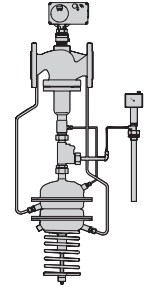
- Flow and differential pressure or pressure regulator with closing actuator for installation in the flow pipe
- Type 2423 Valve with restriction and Type 2429 Diaphragm Actuator

Combined Self-operated Regulators for Differential Pressure or Flow and Temperature with Additional Electric Actuator

The **Type 42-3... DoT E** Regulators are additionally equipped with a double adapter and a **Type 2231** or **Type 2232 Control Thermostat** with temperature sensor, set point adjuster, capillary tube and operating element.

The temperature adjusted at the thermostat serves as an additional controlled variable.

The largest signal is used to actuate the valve.



Type 42-39 DoT E Flow and Differential Pressure or Pressure and Temperature Regulator with Type 5825 Electric Actuator

Technical data	Data Sheets T 3013 EN · T 3015 EN T 3017 EN · T 3018 EN
	Nominal size
Nominal pressure	PN 16 to 40
Differential pressure set points	
Type 42-36	–
Type 42-37/Type 42-39	0.1 to 10 bar
Flow set point ranges	
0.2/0.5 bar differential pressure at the restriction	0.05 to 220 m ³ /h
Type 2231/2232 Temperature Regulator	
Set point ranges	-10 to +250 °C
Temperature ranges	
Liquids	Up to 220 °C (DN 125 to 250) Up to 150 °C (DN 15 to DN 100)

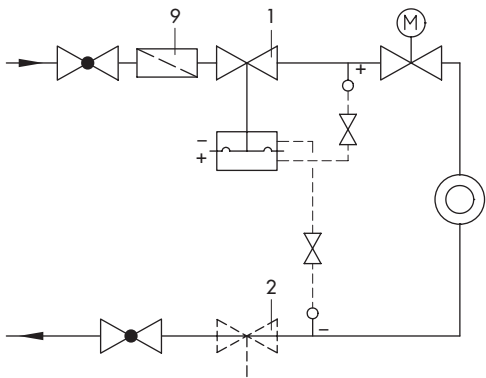


Type 42-36 E Flow Regulator with Type 5825 Actuator

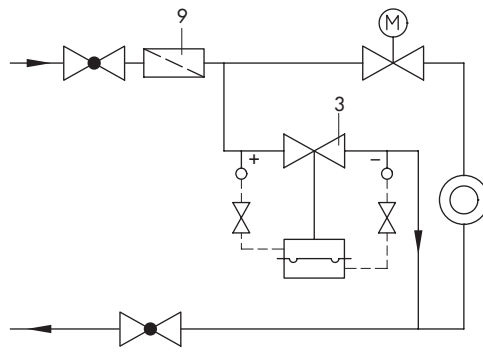


Type 42-39 E Flow and Differential Pressure or Pressure Regulator with Type 3274 Actuator

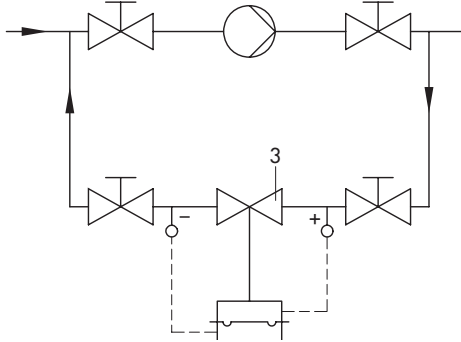
Fig. 7 · Combined regulators with additional electric actuator



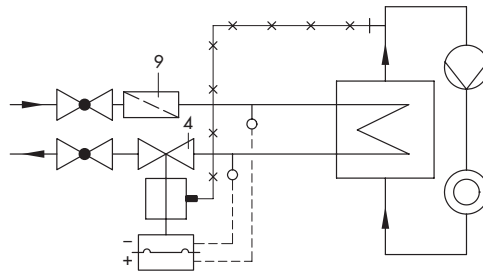
Differential pressure control in the flow or return flow pipe of a heating or cooling system



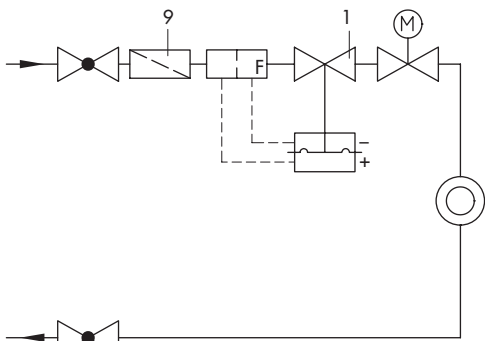
Differential pressure control in the short-circuit pipe of a heating or cooling system



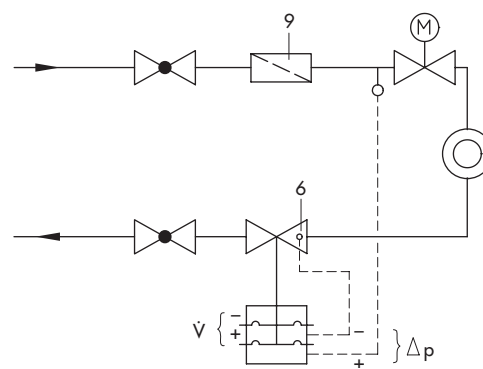
Differential pressure control in the bypass pipe of a centrifugal pump



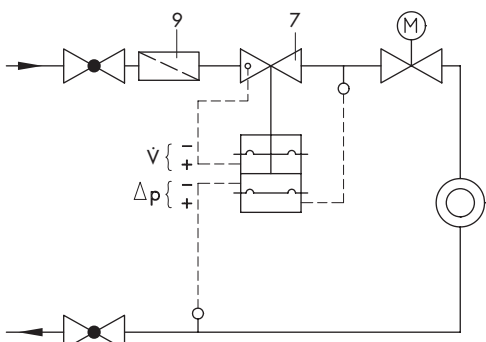
Differential pressure and temperature control



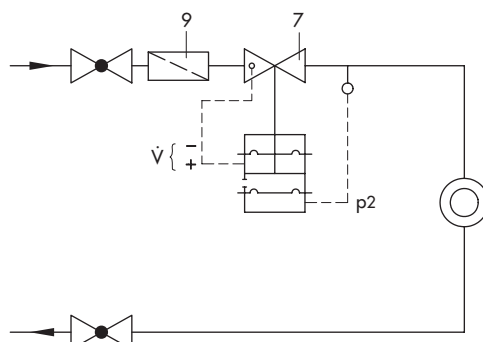
Flow rate control with external orifice plate



Combined flow rate and differential pressure control in the return flow pipe of a heating or cooling system



Combined flow rate and differential pressure control in the flow pipe of a heating or cooling system



Combined flow rate and pressure control

Legend for the figures

- 1 Type 42-14/18, 42-24 B or 28 B
- 2 Type 42-14/18, 42-24 A or 28 A
- 3 Type 42-10/15 or 42-20/25

- 4 Type 42-14 DoT or 42-24A/28A DoT
- 6 Type 42-37
- 7 Type 42-39
- 9 SAMSON strainer

Fig. 8 · Typical applications

