

Application

Excess pressure valve for set points from **5 mbar** to **10 bar** · Valves in **DN 15** to **50** · Nominal pressure **PN 16** to **40** · Suitable for gases at temperatures from **-20** to **+60 °C** (**+150 °C**)¹⁾



This regulator is used to control the pressure of flammable gases used as a source of energy, e.g. in boilers, driers, vaporizers, heat exchangers or industrial ovens. Alternatively, it can control the compressed air supply in process engineering applications.

An additional application of the regulator is the pressure control of inert gas used for inerting or blanketing reaction or storage tanks to protect the product in the tank from oxidation, explosion or escaping.

To achieve an economical consumption of the inert gas, its pressure must be controlled to always remain slightly higher than atmospheric pressure while the tank is being filled or emptied.

Special features

- Low-maintenance proportional regulators
- Compact regulator design providing excellent control accuracy
- Internal set point springs with set point adjustment using a nut on the actuator
- Spring-loaded, single-seated valve balanced by a balancing diaphragm
- External connection of a control line
- Fulfills stricter fugitive emission requirements (TA-Luft)
- Minimum leakage class IV
- Suitable for vacuum

Versions

Valve DN 15 to 50 · Flanged connections · Soft-sealed plug
Body made of cast iron EN JL1040, spheroidal graphite iron EN-JS1049, cast steel 1.0619, forged steel 1.4571 or CrNiMo steel 1.4408

Special versions

- Version with FDA-compliant materials for food processing and pharmaceutical industries
- Version to comply with NACE (sour gas)
- Actuator with seal and leakage line connection (also for vacuum)
- Version with force limiter (for higher pressures across the operating diaphragm)

¹⁾ For unbalanced versions with FPM diaphragm or FPM soft seal



Fig. 1 · Type 2406 Excess Pressure Valve

Ordering text

Excess Pressure Valve Type 2406

Nominal size DN ..., set point range ... mbar (bar), K_{VS} coefficient ...

Body material ..., optional special version

Materials:

Plug sealing ..., balancing diaphragm ..., operating diaphragm ...

Principle of operation

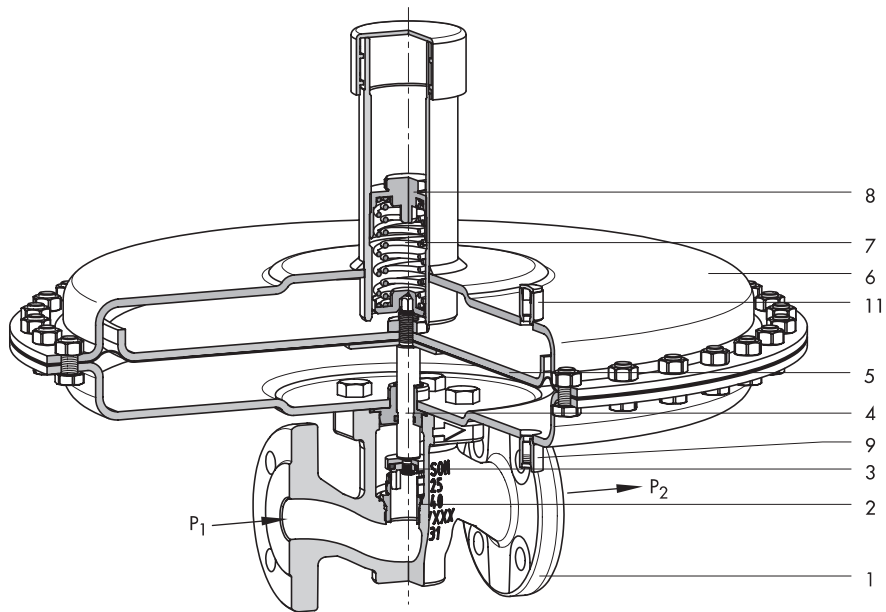
The medium flows through the valve as indicated by the arrow. The position of the valve plug and the area released between the plug (3) and seat (2) determine the flow rate.

In the pressureless state (control line not connected and no pressure applied) the valve is closed by the force of the set point spring (7).

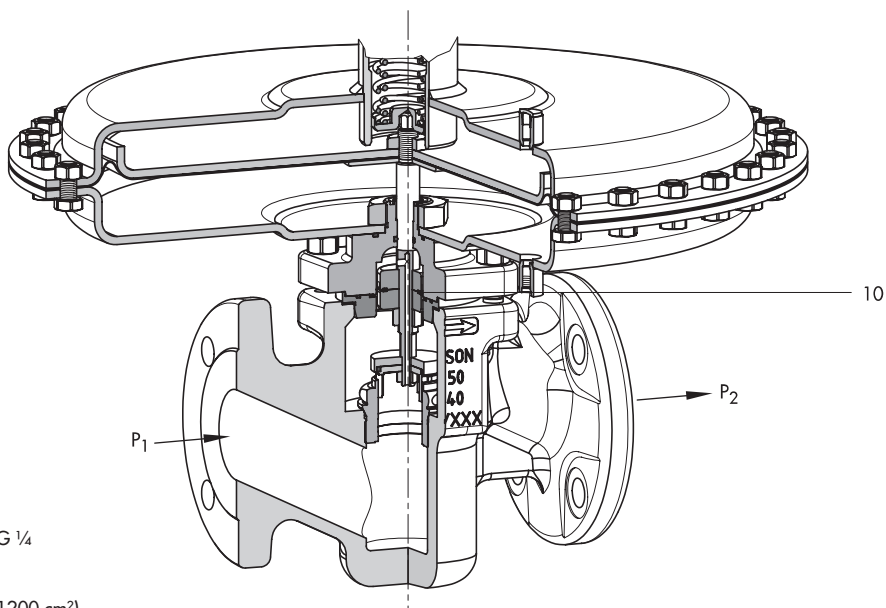
The upstream pressure p_1 to be controlled is tapped upstream of the valve and transmitted via the external control line ¹⁾ to the actuator where it is converted into a positioning force. This force is used to move the valve plug according to the force of the set point springs (7). The spring force can be adjusted at the set point adjuster (8). When the force resulting from the upstream pressure p_1 rises above the adjusted set point, the valve opens proportionally to the change in pressure.

¹⁾ Optional internal pressure tapping

In the version with pressure balancing, the forces produced by the upstream and downstream pressures acting on the plug are eliminated by the balancing diaphragm (10). The plug is fully balanced.



Type 2406 Excess Pressure Valve · **without** pressure balancing



Type 2406 Excess Pressure Valve · **with** pressure balancing

- 1 Valve body
- 2 Valve seat
- 3 Plug
- 4 Plug stem
- 4.1 Plug stem with hole
- 5 Operating diaphragm
- 6 Actuator housing
- 7 Set point spring
- 8 Set point adjuster
- 9 Control line connection G 1/4
- 10 Balancing diaphragm
- 11 Vent plug
(only with actuator A = 1200 cm²)

Fig. 2 · Functional diagram of Type 2406

Table 1 · Technical data

Nominal size	DN 15	DN 20	DN 25	DN 32 to 50 ¹⁾	
Nominal pressure (body)	PN 16 · PN 25 · PN 40				
K _{VS} coefficients	0.4 · 1 1.6 · 2.5	0.4 · 1 · 1.6 2.5 · 4 · 6.3	0.4 · 1 · 1.6 2.5 · 4 · 6.3 · 8	6.3 · 8 · 16 20 · 32	
Max. perm. temperature range (medium temperature)	-20 to +60 °C (+150 °C) ²⁾				
Leakage class acc. to IEC 60534-4	Soft sealing, min. class IV				
Set point ranges	5 to 15 mbar · 10 to 30 mbar · 25 to 60 mbar · 50 to 200 mbar 0.1 to 0.6 bar · 0.2 to 1 bar · 0.8 to 2.5 bar · 2 to 5 bar · 4.5 to 10 bar				
Pressure balancing	Without balancing diaphragm				
	With balancing diaphragm				
Pressure tapping	External control line · Optional internal pressure tapping				
Control line connection	G ¼				
Max. perm. pressure across operating diaphragm	1200 cm ² · 5 to 15 mbar	2 bar			
	1200 cm ² /640 cm ² · 10 to 30 mbar				
	320 cm ² · 25 to 60 mbar				
	320 cm ² · 50 to 200 mbar				
	320 cm ² · 0.1 to 0.6 bar				5 bar
	160 cm ² · 0.2 to 1 bar				10 bar
	80 cm ² · 0.8 to 2.5 bar				16 bar
	40 cm ² · 2 to 5 bar				16 bar
40 cm ² · 4.5 to 10 bar	16 bar				

¹⁾ Larger nominal sizes on request

²⁾ For unbalanced versions with FPM diaphragm or FPM soft seal

Table 2 · Materials

Body	EN-JL1040, EN-JS1049, 1.0619	1.4408, 1.4571
Seat	1.4112 ¹⁾	1.4404
Plug	1.4305 ¹⁾	1.4404
Plug stem	1.4404	
Seal	EPDM · FPM · NBR	
Balancing diaphragm	EPDM · FPM · NBR	
Actuator housing	1.0332	1.4301
Operating diaphragm	EPDM · FPM · NBR	

¹⁾ Optionally 1.4404

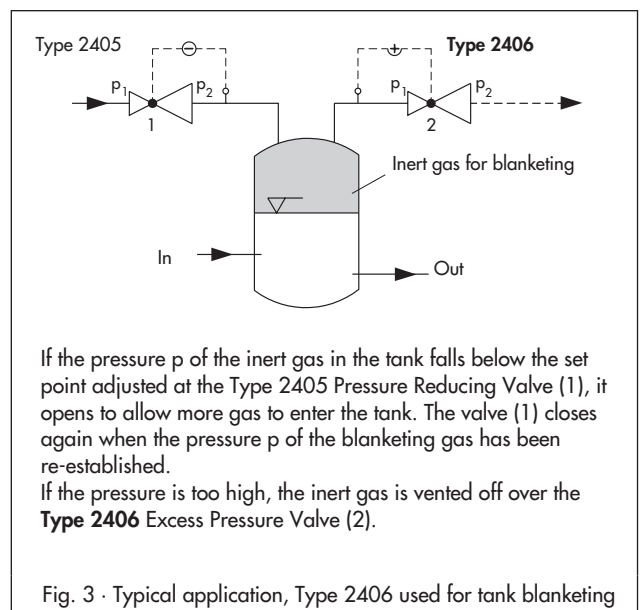
Installation

Preferably the regulator is to be installed in horizontal pipelines



- Actuator housing on top, facing upwards
- The direction of medium flow must correspond with the arrow on the valve body.
- In applications in which the blanketing gas can liquefy, the condensate can form in the control line which may damage the regulator. To allow condensate to run back into the tank, install the control line with an approximate 10 % slope to the pressure tapping point at the tank.
- Distance between the pressure tapping point and regulator min. 2 x DN.

In exceptional cases, the regulator can also be installed in vertical pipelines with the direction of flow from the top (more details in EB 2522 EN).



Dimensions

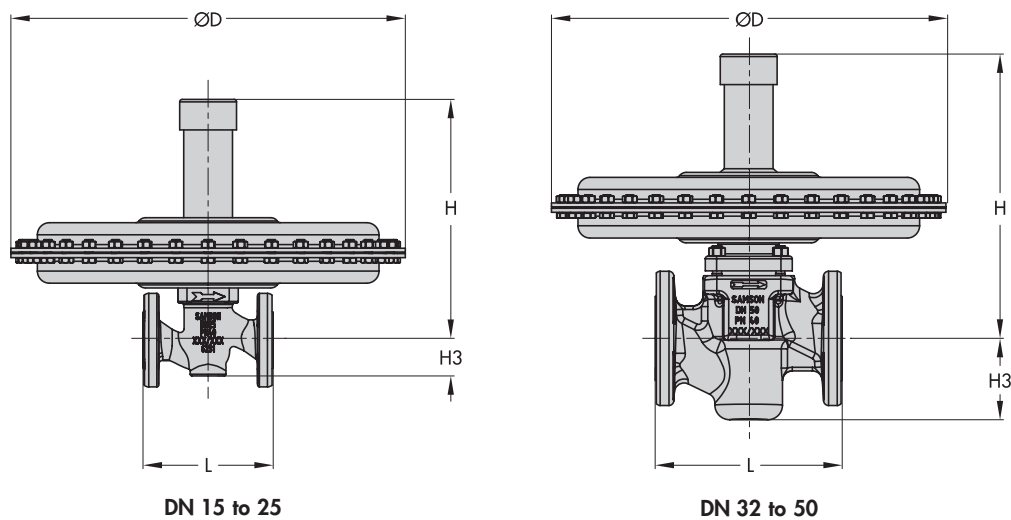


Table 3 · Dimensions in mm and weights in kg

Nominal size		DN	15	20	25	32	40	50
Set point range	Length L		130	150	160	180	200	230
	Height H3	Other materials	55				72	
		Forged steel	53	-	70	-	92	98
5 to 15 mbar	Height H		330			365		
	Actuator		Ø D = 490, A = 1200 cm ²					
10 to 30 mbar	Height H		-			365		
	Actuator		Ø D = 490, A = 1200 cm ²					
10 to 30 mbar	Height H		325			-		
	Actuator		Ø D = 380, A = 640 cm ²					
25 to 60 mbar	Height H		325					
	Actuator		Ø D = 380, A = 640 cm ²					
50 to 200 mbar	Height H		325			360		
	Actuator		Ø D = 285, A = 320 cm ²					
0.1 to 0.6 bar	Height H		325			360		
	Actuator		Ø D = 285, A = 320 cm ²					
0.2 to 1 bar	Height H		325			360		
	Actuator		Ø D = 225, A = 160 cm ²					
0.8 to 2.5 bar	Height H		320			355		
	Actuator		Ø D = 170, A = 80 cm ²					
2 to 5 bar	Height H		320			355		
	Actuator		Ø D = 170, A = 40 cm ²					
4.5 to 10 bar	Height H		420			455		
	Actuator		Ø D = 170, A = 40 cm ²					
5 to 15 mbar	Weight ¹⁾ in kg, approx.		28			40		
10 to 30 mbar			18					
25 to 60 mbar						30		
50 to 200 mbar			14					
0.1 to 0.6 bar						26		
0.2 to 1 bar			10			22		
0.8 to 2.5 bar			8			20		
2 to 5 bar			8			20		
4.5 to 10 bar			9			21		

¹⁾ Body made of cast steel 1.0619: +10 %

Fig. 4 · Dimensions of Type 2406

Specifications subject to change without notice.



SAMSON AG · MESS- UND REGELTECHNIK
 Weismüllerstraße 3 · 60314 Frankfurt am Main · Germany
 Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
 Internet: <http://www.samson.de>

T 2522 EN

2011-08