

MEDENUS



Gas Pressure Regulation



Safety Relief Valve SL 10

Product information



EN

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ATTENTION

Observe the following publications in relation to installation, start-up and maintenance:
 DVGW - work sheets G 491 and G 600
 Operating and Maintenance Instructions SL 10

List of abbreviations and formula symbols

AC	Accuracy class	$p_{ds\ o}$	Upper SSV response pressure	$W_{ds\ o}$	Upper spring adjustment range (SSV)
AG_o	Upper response pressure group	$p_{ds\ u}$	Lower SSV response pressure	$W_{ds\ u}$	Lower spring adjustment range (SSV)
AG_u	Lower response pressure group	$p_{f,max}$	Maximum closing pressure	Δp	Pressure difference from inlet pressure to outlet pressure
BV	Breather valve	PS	Maximum allowable pressure	Δp_{wo}	Min. re-engagement difference between upper response pressure and normal operating pressure
GPR	Gas pressure regulator	p_u	Inlet pressure	Δp_{wu}	Min. re-engagement difference between lower response pressure and normal operating pressure
HDS	High-pressure spindle	Q_n	Standard volumetric flow rate	ρ_n	Gas density
K_G	Valve flow rate coefficient	RE	Diaphragm assembly		
p	Pressure	RSD2	Throttle valve		
p_d	Outlet pressure	SSV	Safety shut-off valve		
p_{df}	SRV closing pressure	SRV	Safety relief valve		
p_{do}	SRV opening pressure	SG	Closing pressure group		
p_{ds}	Setpoint of the response pressure	t_{Gas}	Gas inlet temperature		
		VS	Valve seat		
		w_d	Outlet gas velocity		
		w_u	Inlet gas velocity		

Application, Characteristics, Technical Data

Application

Safety relief valve (SRV), direct-acting (operating without auxiliary power), for systems acc. to DVGW work sheets G 491 (A) and G 600 (A) (TRGI)

Can be used as an equipment component on gas consumption facilities as defined in Regulation (EU) 2016/426.

Can be used for the gases defined in DVGW work sheet G 260 / G 262 and neutral non-aggressive gases.

(other gases on request)

Characteristics

- Integral pressure-tight version (IS)
- Class A
- Position-independent installation
- High level of response accuracy
- Open-air model

Type of model / Options (see page 10)

- BV breather valve
- Oxygen model
- Hydrogen model
- Coating with epoxy resin in RAL colors

Technical data

Type	SL 10
Model	Integral pressure-tight (IS)
Max. allowable pressure PS	8 bar
Max. inlet pressure $p_{u,max}$	3.5 bar
Nominal width	Rp 1" (DN 25), Rp 1½" (DN 40), Rp 2" (DN 50) (NPT thread on request)
Type of connection	Internal thread acc. to EN 10226-1
Material	
Housing / actuator housing	Al - cast alloy
Corrosivity category	DIN EN ISO 12944-2
C1 to C5-I	without additional coatings
C5-M	an epoxy resin coating is recommended (see page10)
Temperature range, Class 2 (operating/ambient temperature)	-20°C to +60°C
Accuracy class AC	5
Closing pressure group SG	10
Function, strength and tightness	DIN EN 33821
CE mark acc. to PED/ PIN number	CE-0085-AQ0879

Ex protection

The mechanical parts of the device do not have any potential ignition sources of their own and therefore do not fall within the scope of ATEX 95 (94/9/EC). Electrical components fitted to the device comply with the ATEX requirements.

Preferred installation position

The gas pressure regulators S10 shall be installed in the pipeline preferably in horizontal position. For all nominal widths, the direction of flow is indicated by an arrow on the housing.



Installation upside down only after consultation with Medenus GmbH

Note: Observe the following documents in relation to installation, start-up, and maintenance:

- DVGW - work sheets G 491 and G 600
- Operating and Maintenance Instructions SL 10

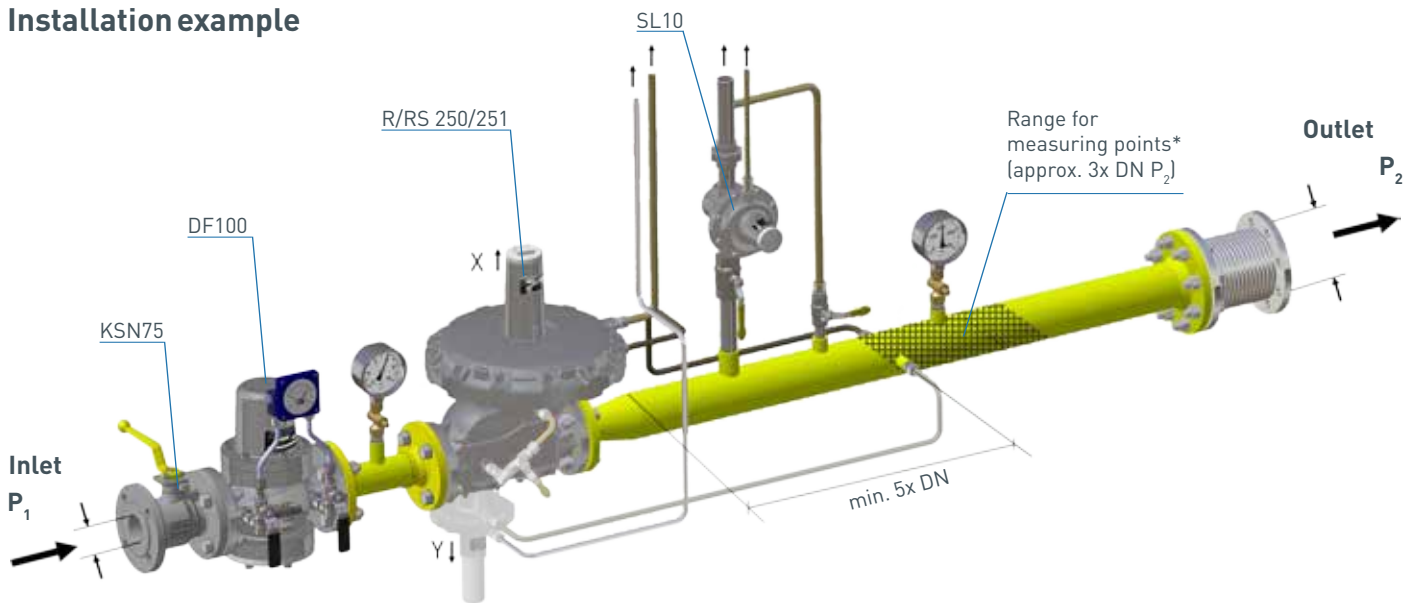
CE EAC

Structure and function

The spring-loaded safety relief valve SL 10 is used for reducing short-term pressure surges upstream of gas consumption systems or preventing an inadmissibly high pressure increase due to escaping gas, and is intended to protect downstream system components from excessive pressure levels.

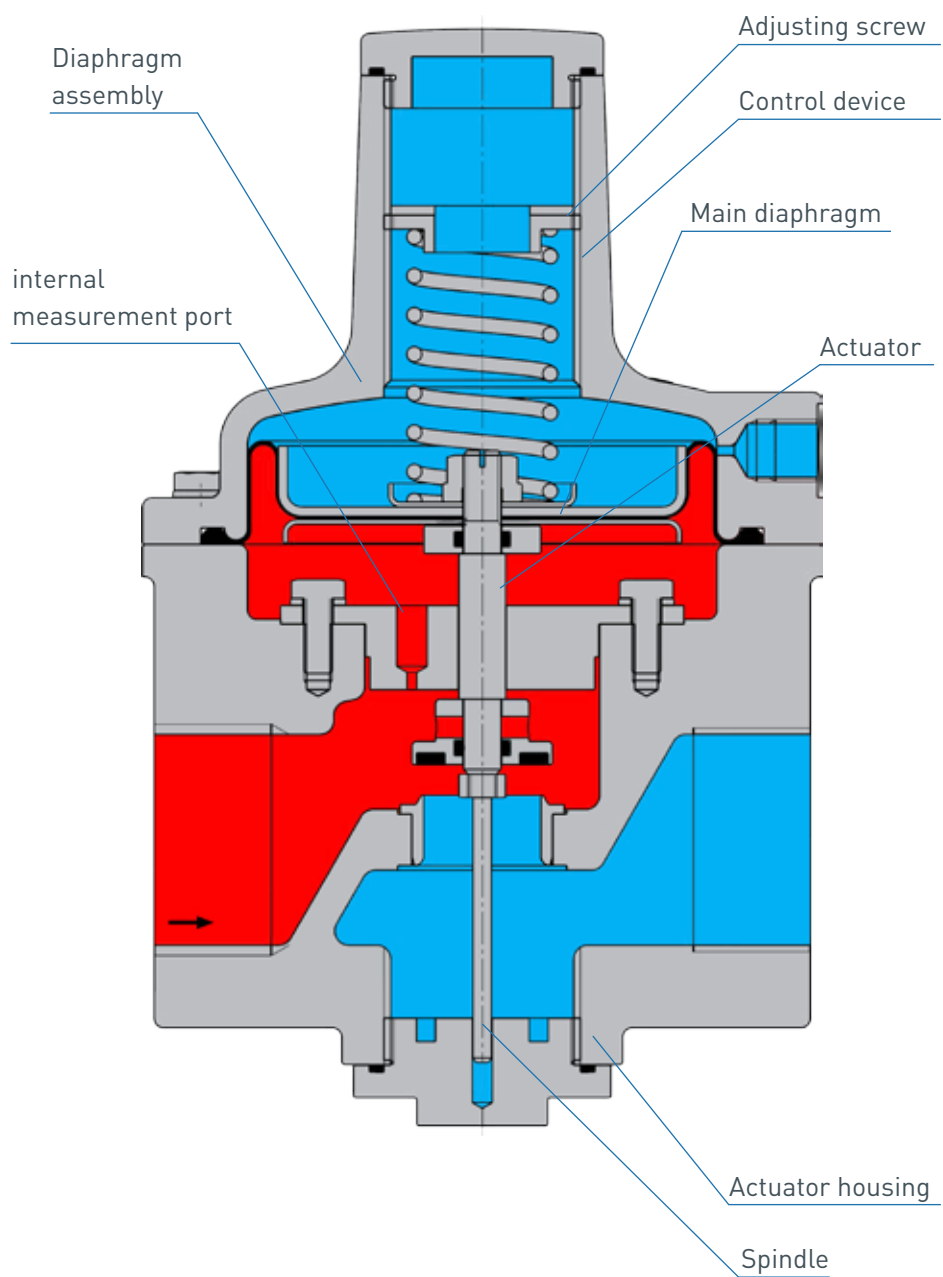
The safety relief valve is composed of the actuator housing and the "control device" functional unit. In the closed position, the gas flows into the actuator housing in the direction of the arrow. The internal measurement line port is used to pass the outlet pressure to be regulated to the bottom of the main diaphragm of the safety relief valve. It compares the actual value with the command variable preset by the force of the setpoint spring. The setpoint required in each case is set via the setting screw. When the setpoint is exceeded, the measuring unit will lift the actuator, allowing the gas to escape via the blow-off line. If the actual value falls below the setpoint, the measuring unit will close the actuator again automatically.

Installation example



*) Recommended max. velocity at the measurement line port 25 m/s

Sectional view



Valve seat diameter, measuring unit diameter

Nominal width	Connection	Valve seat Ø (mm)	maximum flow rate (Nm ³ /h)	Diaphragm assembly
DN 25	Rp 1	20	100	160
DN 40	Rp 1½	25	300	160
DN 50	Rp 2	25	300	160

Diaphragm assembly setpoint spring table

Pressure range (mbar)	Spring data	
	Spring no.	Color [RAL]
20 - 39	FG100	9006
35 - 71	FG101	5015
55 - 131	FG102	6018
105 - 275	FG103	3020
215 - 575	FG104	5010
415 - 1050	FG105*	6010
900 - 1950	FG106**	7035
1750 - 3560	FG107**	1028

*) with high-pressure spring plate (HD1)

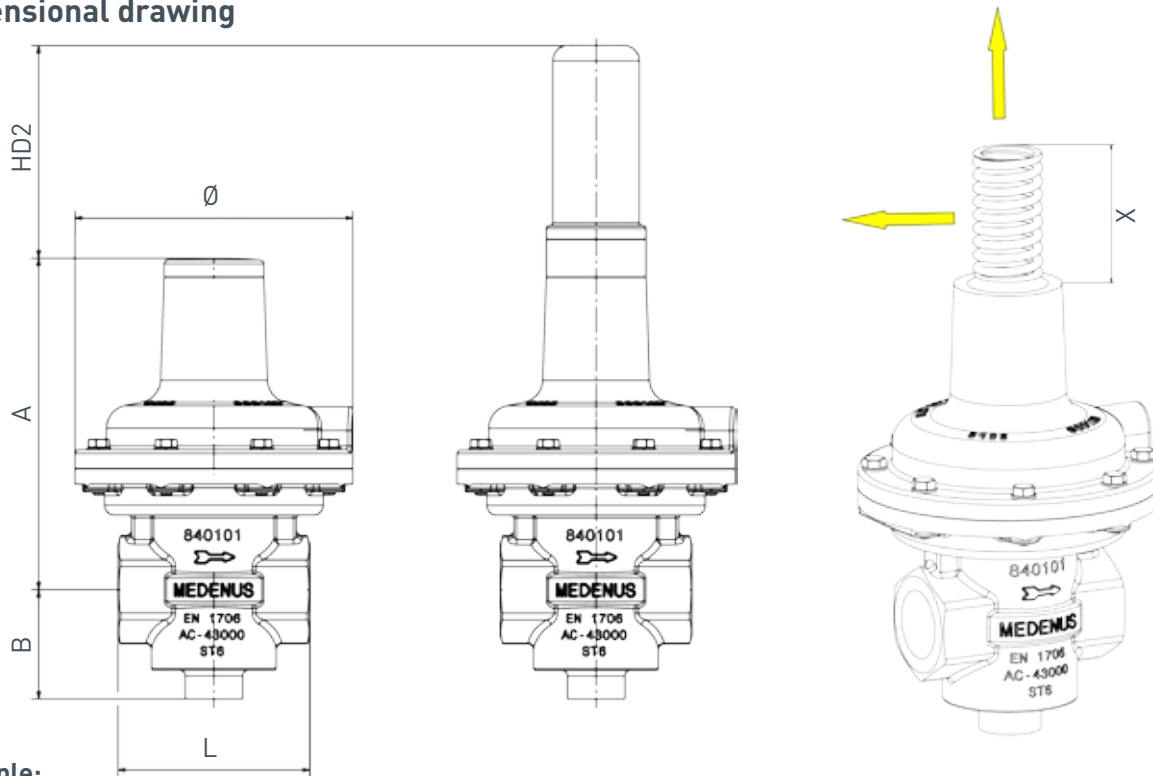
**) with high-pressure screw spindle (HD2)

Dimensions, Connection, and Weight

Dimensions and weight

Nominal width DN	Connection	∅ (mm)	A (mm)	B (mm)	L (mm)	HD2 (mm)	X (mm)	Weight (kg)	Weight HD2 (kg)
25	Rp 1	145	173	57	100	112	180	2.5	0.4
40	Rp 1½	145	173	61	140	112	180	3.5	0.4
50	Rp 2	145	173	61	160	112	180	3.5	0.4

Dimensional drawing



Example:

SL10/Rp 1" with HD2

Weight (SRV + HD2): 2.5 kg + 0.4 kg = 2.9 kg

Dimensions (A + HD2): 173 mm + 112 mm = 285 mm

Connections

Nominal width	Breather line
DN 25	Connection* for:
DN 40	Tube 10 x 1.5
DN 50	(thread G 1/4)

Note

Observe the following publications in relation to installation, start-up, and maintenance:

DVGW - work sheets G 491 and G 600

Operating and Maintenance Instructions SL 10

For all nominal widths, the direction of flow is indicated by an arrow on the housing.

*) Threaded pipe connections to DIN EN ISO 8434-1 (DIN 2353)

Types of Models / Options

BV breather valve

The BV breather valve is used to secure the installation room against inadmissible escape of gas from diaphragm comparator compartments of safety shut-off valves. In case of a defect, the impermissible escape of gas into the surrounding atmosphere is limited to a maximum of 30l/h (air).

It also serves as a substitute for an expensive and complex installation of breather lines.

(Option not available for hydrogen version H₂)



BV breather valve

Epoxy resin coating in RAL colors

To protect the safety relief valves from external influences, starting from a corrosivity category C5-M we recommend an epoxy resin coating.



Types of models

Oxygen model O₂

Hydrogen model H₂ (with helium leak test)

The Medenus gas pressure regulators are suitable for use with hydrogen as a medium up to a proportion of 100%. Further information can be found in the special edition (10/2019) of gwf Gas+Energie and on our homepage at (www.medenus.de)



Properties of Gases

- for natural gas ($\rho_n = 0.83 \text{ kg/m}^3$; $t = 15^\circ\text{C}$)
- f - natural gas conversion factor- L

Gas	f	Hs,n [kWh/m ³]	Gas	f	Hs,n [kWh/m ³]
Acetylene	0.84	16.25	Sewage gas	0.84	
Ammonia	1.04	4.83	Carbon monoxide	0.81	3.51
Butane	0.55	37.23	Carbon dioxide	0.65	-
Chlorine	0.51	-	Air	0.80	-
Landfill gas	approx. 0.80		Methane	1.08	11.06
Natural gas L	1.00	9.77	Propane	0.64	28.03
Natural gas H	1.03	11.45	Oxygen	0.76	-
Ethane	0.78	19.55	Sulphur dioxide	0.53	-
Ethylene	0.97	16.516	Nitrogen	0.81	-
Mine gas (30% CH ₄)		0.86	Hydrogen	3.04	13.43
Helium	2.15	-			

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Order Data

Example:

	Safety relief valve:	SL10/Rp1"/BV/WAZ/So			
	Order code:	SL10	Rp1"	WAZ	So
Order selection	Designation				
Type					
SL10	SL10	SL10			
DN - Nominal width	Table p. 8		Rp1"		
Acceptance test certificate to EN 10204/3.1					
without acceptance test certificate	-				
with acceptance test certificate	WAZ			WAZ	
Special model	So*				So
- Coating with epoxy resin in RAL colors - Oxygen model					

We recommend, for systems with regulators
up to DN 100 our SL10-Rp 1"
up to DN 150 our SL10-Rp 1 1/2"
up to DN 200 our SL10-Rp 2"

*] e.g.:

- Coating with epoxy resin in RAL colors
- Oxygen model

In every selection group, there is only one option that can be selected.

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