MEDENUS

Gas Pressure Regulation

MADE IN GERMANY

100% Wasserstoff geeignet

H_2

100% Hydrogen ready

Safety Relief Valve SL 20

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 20

List of abbreviations and formula symbols

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

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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)

- Breathing valve (AV) for the breathing connection (for non-dynamic control tasks)
- Acceptance test certificate according to EN 10204/3.1
- Oxygen model ($p_u \leq 10$ bar)
- Hydrogen model
- Coating with epoxy resin in RAL colors

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Technical data

Type	SL 20
Model	Integral pressure-tight (IS)
Max. allowable pressure PS	16 bar
Max. inlet pressure $p_{u,max}$	16 bar
Nominal width	DN 25
Type of connection	DIN 1092 - flanges PN 16 (ASME flanges on request)
Material Housing / actuator housing	Al - cast alloy
Corrosivity category C1 to C5-I C5-M	DIN EN ISO 12944-2 without additional coatings 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 S20 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 20

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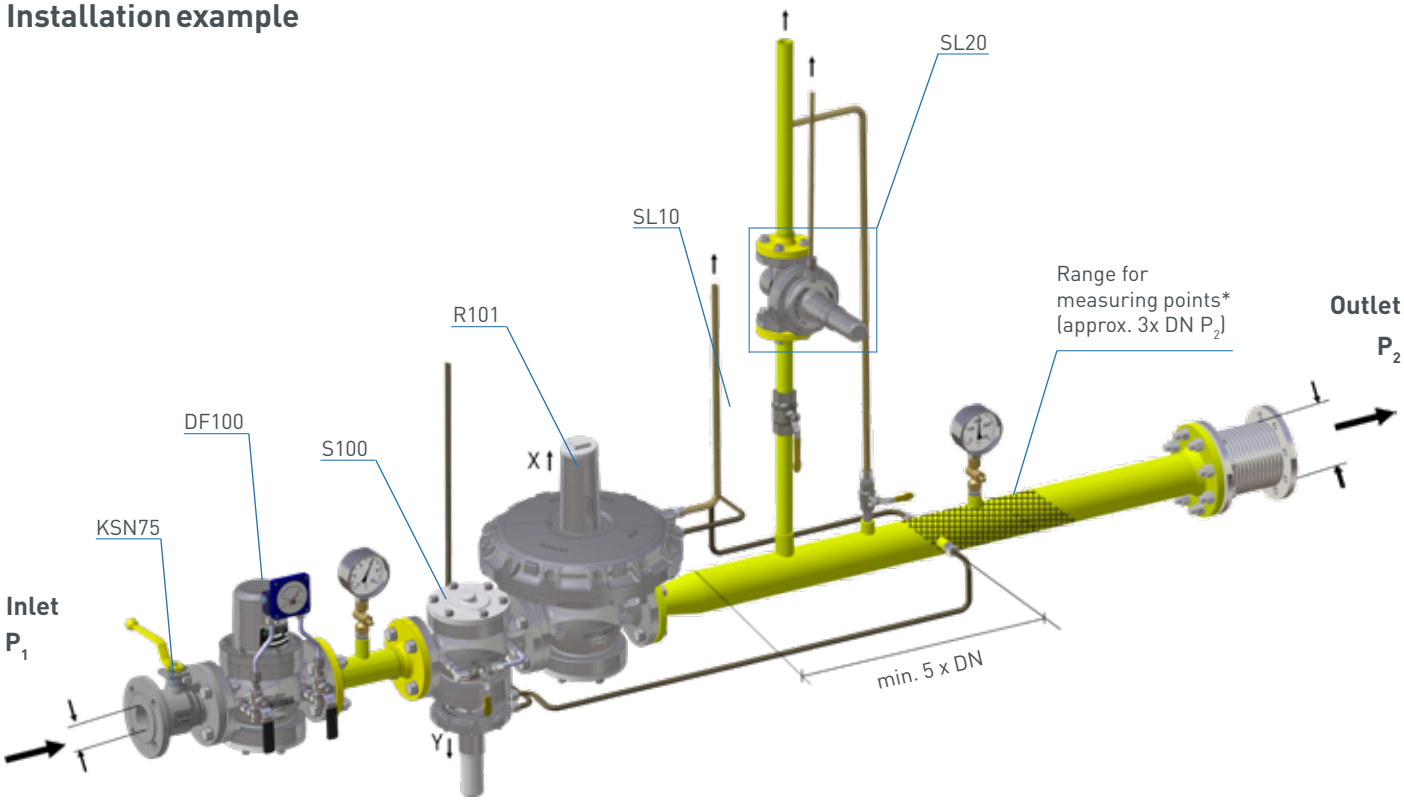
Structure and function

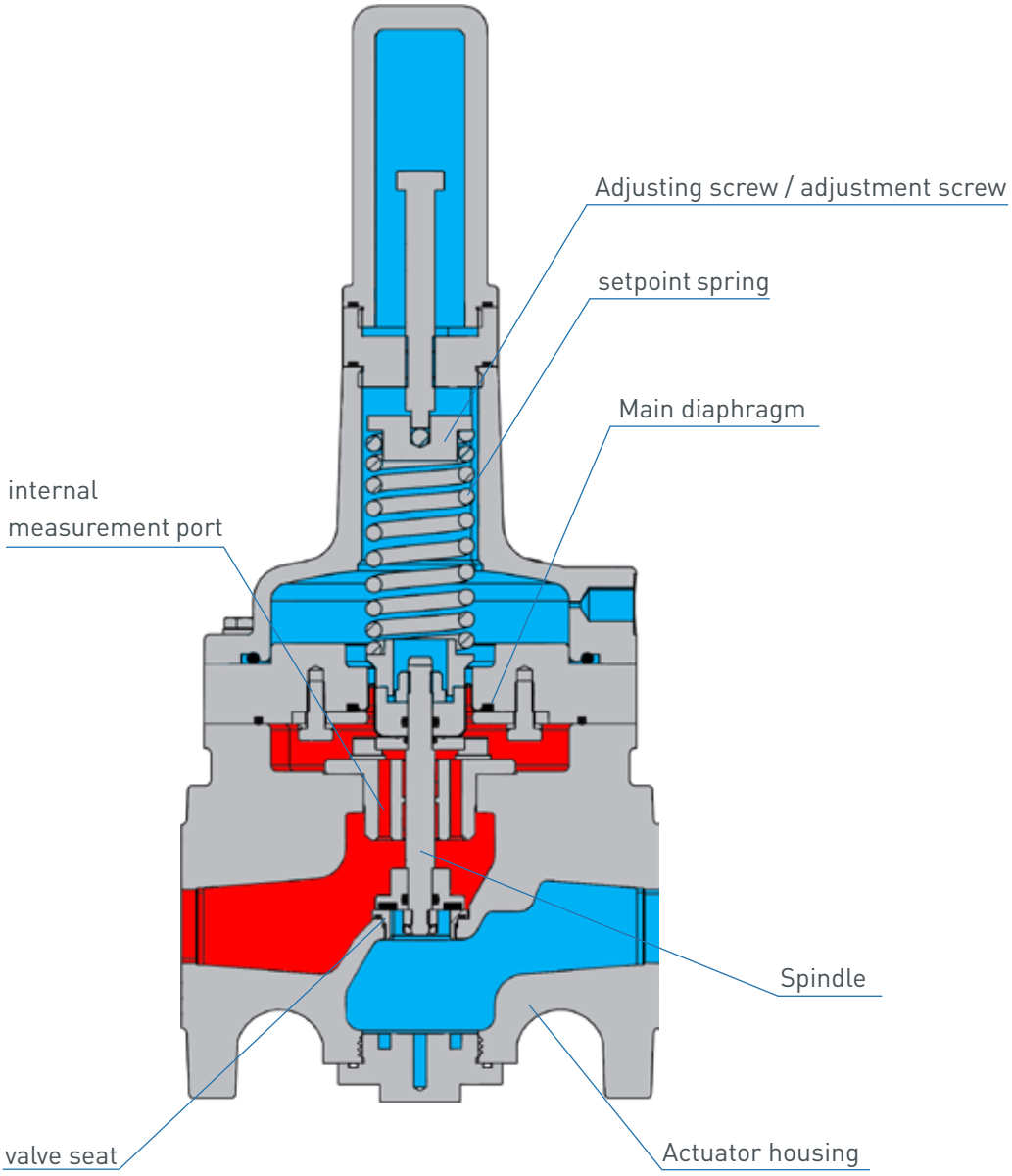
The spring-loaded safety relief valve SL 20 is used for reducing short-term pressure surges upstream of gas consumption systems or preventing an inadmissibly high pressure increase due to escaping gas, and is intended to protect downstream system components from excessive pressure levels.
The safety 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



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Valve seat diameter, measuring unit diameter

Nominal width	Valve seat Ø (mm)	maximum flow rate K_G-value [m³/(h*bar)]	Diaphragm assembly
DN 25	20	250	120

Diaphragm assembly setpoint spring table

Pressure range (mbar)	Spring data	
	Spring no.	Color [RAL]
3500 - 7610	FG104	5010
6350 -13800	FG105	6010
12600 - 16000	FG106	7035

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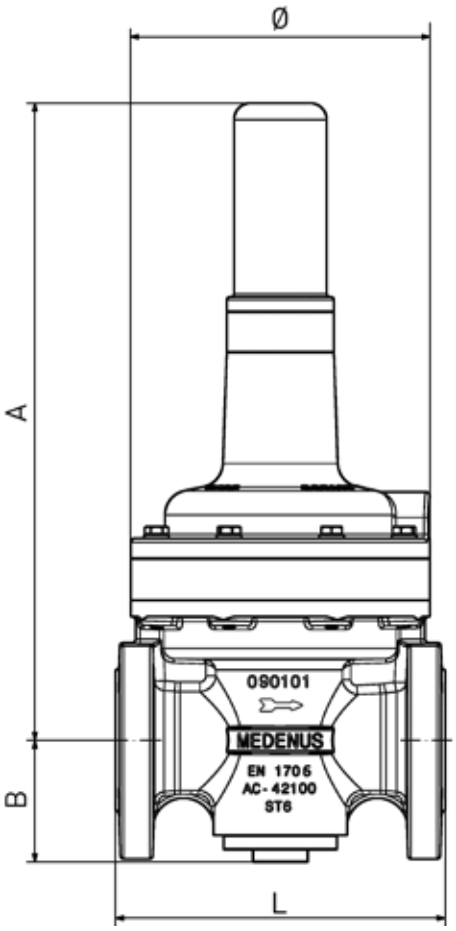
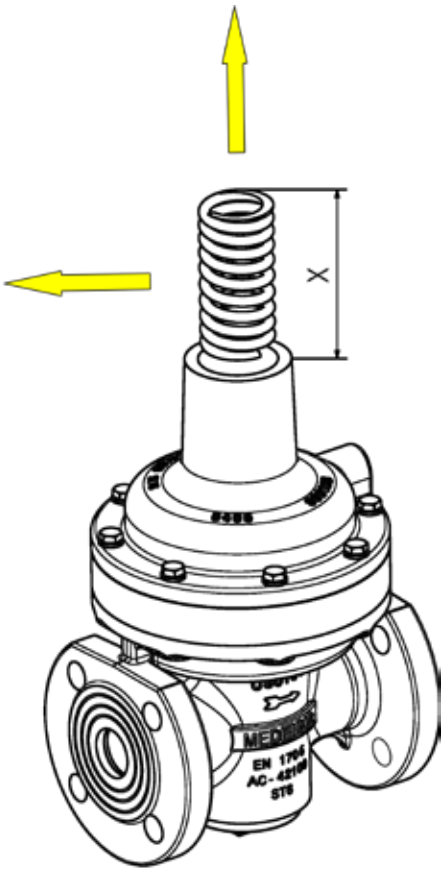
Dimensions, Connection, and Weight

Dimensions and weight

Nominal width DN	Ø (mm)	A (mm)	B (mm)	L (mm)	X (mm)	Weight (kg)
25	145	309	59	160	180	4,7

Dimensional drawing





Connections

Nominal width	Breather line
DN 25	Connection* for: Tube 10 x 1.5 (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 20

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)

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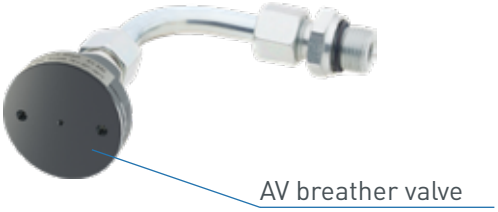
Types of Models / Options

AV breather valve

The AV 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 H_2)



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 O_2 ($p_u \leq 10$ bar)

Hydrogen model H_2 (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)

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Properties of Gases

- for natural gas (ρ_n = 0.83 kg/m³; t = 15°C)
- f - natural gas conversion factor- L

Gas	f	Hs,n [kWh/m³]	Gas	f	Hs,n [kWh/m³]
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% CH4)	0.86	Hydrogen	3.04	13.43
Helium	2.15	-			

Notes

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Order Data

Example:	**Safety relief valve:**	SL20/DN25/BV/WAZ/So			
	Order code:	SL20	DN25	WAZ	So
Order selection	**Designation**				
Type					
SL20	SL20	SL20			
DN - Nominal width	Table p. 8		DN25		
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					

*) e.g.:

- Coating with epoxy resin in RAL colors
- Oxygen model

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

Notes

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