

# MEDENUS

Gas Pressure Regulation



## Safety shut-off valve S 50



Product information

EN



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## List of abbreviations and formula symbols

AG <sub>o</sub>	Upper response pressure group	PS	Maximum allowable pressure	Δp <sub>wo</sub>	Min. re-engagement difference
AG <sub>u</sub>	Lower response pressure group	p <sub>u</sub>	Inlet pressure		between upper response pressure and normal operating pressure
K <sub>G</sub>	Value	Q <sub>n</sub>	Standard volumetric flow rate		
p <sub>d</sub>	Outlet pressure	SSV	Safety shut-off valve		
p <sub>ds</sub>	Setpoint of the response pressure	t <sub>gas</sub>	Gas inlet temperature	Δp <sub>wu</sub>	Min. re-engagement difference
p <sub>ds o</sub>	Upper SSV response pressure	VS	Valve seat		between lower response pressure and normal operating pressure
p <sub>ds u</sub>	Lower SSV response pressure	w <sub>d</sub>	Outlet gas velocity		
p <sub>f,max</sub>	Maximum closing pressure	w <sub>u</sub>	Inlet gas velocity		
BV	Breather valve	W <sub>dsu</sub>	Upper adjustment range (SSV)	ρ <sub>n</sub>	Gas density
			Lower adjustment range (SSV)		

# Application, Characteristics, Technical Data

## Application

Safety shut-off valve (SSV), direct-acting (operating without auxiliary power), for systems acc. to DVGW - work sheet G 491 (A) and G 600 (A) (TRGI)

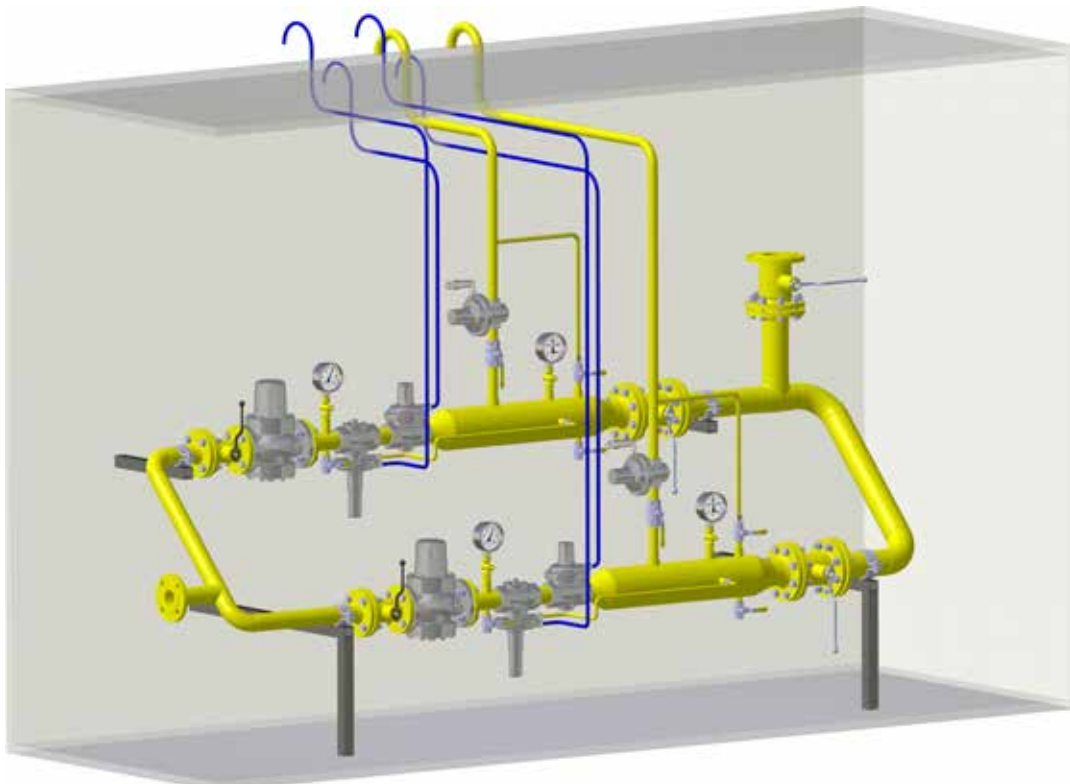
Can be used for the gases defined in DVGW - work sheet G 260 / G 262 and neutral non aggressive gases. (other gases on request)

## Characteristics

- Integral pressure-tight version (IS)
- High flow rate capacity
- outdoor version as standard

## Type of model (options)

- with BV breather valve
- with electric position indicator SSV 'Closed' via inductive proximity initiator or via Reed contact
- with SSV manual release
- with SSV electromagnetic remote release when power is applied, or in case of power failure
- Oxygen model



double gas train

## Technical Data

<b>Type</b>	S 50		
<b>Model</b>	Integral pressure-tight (IS)		
<b>Max. allowable pressure PS</b>	3 bar		
<b>Max. inlet pressure <math>p_{u,max}</math></b>	3 bar		
<b>Nominal size</b>	Rp 1" (DN 25), Rp 1½" (DN 40), Rp 2" (DN 50) (NPT thread on request)		
<b>Standard volumetric flow rate <math>Q_{n,max}</math></b>	Rp 1": 100m³/h, Rp 1½": 300m³/h, Rp 2": 300m³/h		
<b>Type of connection</b>	Internal thread acc. to EN 10226-1		
<b>Material</b>	Housing / actuator housing/ control device housing		
	Al - cast alloy*		
<b>Temperature range, Class 2</b> (operating/ambient temperature)	-20°C to +60°C		
<b>Response pressure groups</b>			
Upper response pressure group $AG_o$ in command area $w_{dso}$	$AG_o$	Lower response pressure $AG_u$ in command area $w_{dsu}$	$AG_u$
50 mbar to 500 mbar	10	10 mbar to 50 mbar	20
> 500 mbar	5	> 50 mbar	10
<b>Function, Strength and Tightness</b>	DIN EN 14382		
<b>CE mark acc. to PED/ PIN number</b>	CE-0085-BS0420		
<b>Ex protection</b>	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.		

\*) Corrosivity category according to DIN EN ISO 12944-2.  
The categories C1 to C5-I including guaranteed without additional coatings.  
For the category C5-M a coating with epoxy resin is recommended.



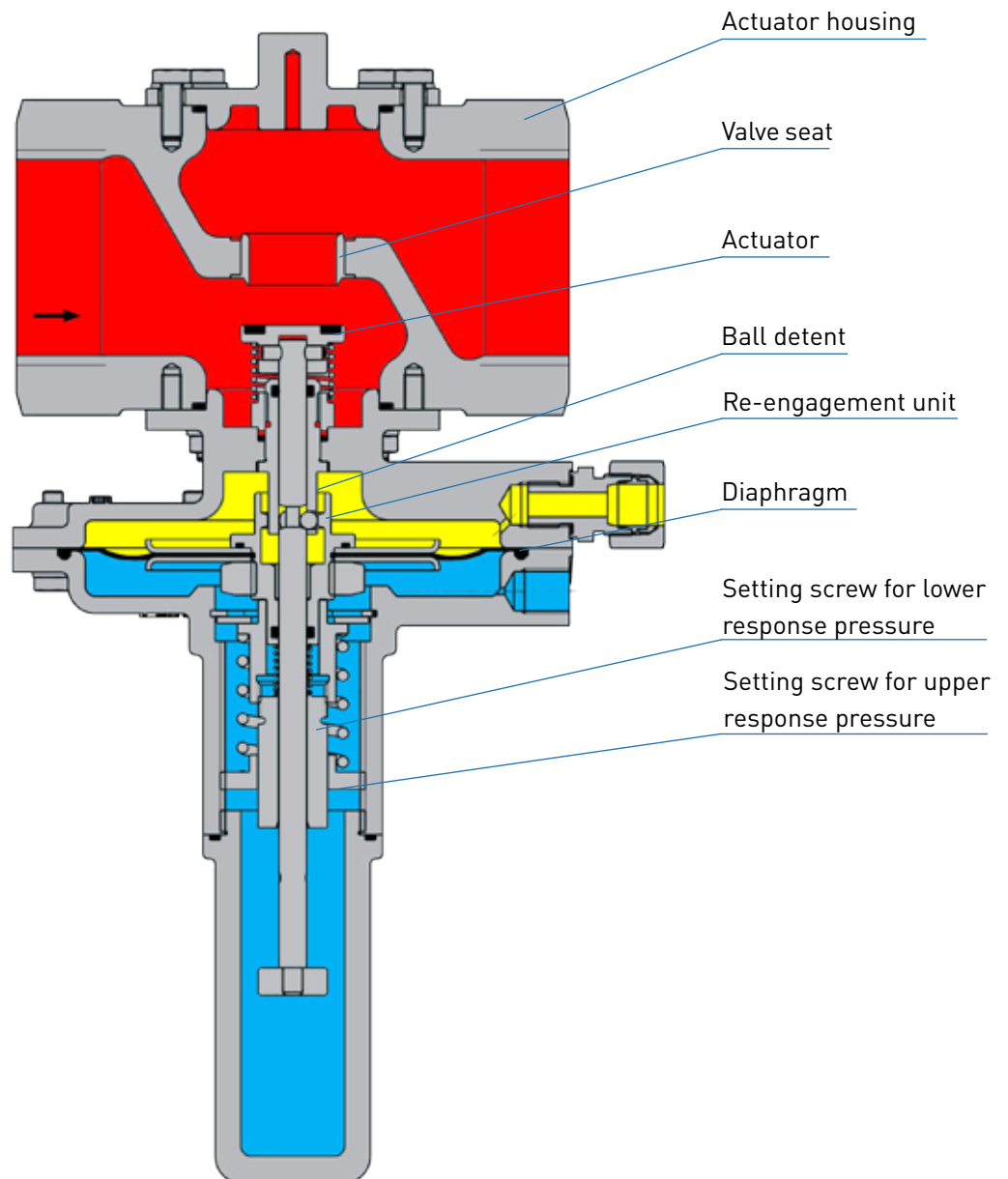
# Application, Characteristics, Technical Data

## Design and function

The safety shut-off valve S 50 shuts off the gas flow when the outlet pressure in the regulating section exceeds or falls below a certain response pressure. To this end, the outlet pressure to be monitored is passed on to the SSV controller via a separate measurement line. As a function of the change in pressure, the main diaphragm in the controller is raised or lowered. When the outlet pressure in the regulating section falls below the lower switch-off point or exceeds the upper switch-off point, the switch socket connected to the SSV diaphragm will move to the corresponding disengaging position, the balls of the engaging mechanism will release the SSV screw spindle, and the closing spring will press the SSV valve plate against the valve seat. The SSV actuator shuts off the gas flow gas-tight. The SSV can only be opened by hand and engaged in the open position. To do so, the outlet pressure at the measuring point must be lowered below the upper response pressure or raised above the lower response pressure by at least the re-engaging differential amount ( $\Delta p$ ).

The SSV can, except where otherwise stipulated in national legislation, be used in either functional class A (with diaphragm rupture protection) and B (without diaphragm rupture protection).

There is also the option of using a remote display for SSV position 'CLOSED' and a manual and remote release when power is applied, or in case of power failure.



## Options

### Breathing valve BV

The breathing valve BV serves to protect the room of installation against inadmissible gas leakage from the venting space of safety shut-off valves.

It is also an alternative to the cost- and work intensive installation of breathing pipes.



Breathing valve BV

### Signal transmitter / Inductive Sensor

Signal and inductive sensors are used to monitor the position (closed or open position) of the safety shut-off valve by remote display.



Signal transmitter



Inductive sensor

### SAV remote release

The direct-acting solenoid valve serves as an electromagnetic remote release for closing the safety shut-off valve in case of power flow and power failure.



Remote release

## Setpoint spring table - SSV

Type	Upper response pressure		Lower response pressure		Spring data		
	$W_{dso}$ [mbar]	$\Delta p_{wo}^{**}$ [mbar]	$W_{dsu}$ [mbar]	$\Delta p_{wu}^{**}$ [mbar]	Spring no.	Colour [RAL]	
<b>MD*</b> small ball lock  S50: Rp 1"-2"			1 - 8	15	FE 900	1028	
			6 - 17	15	FE 901	2002	
			12 - 24	20	FE 902	6010	
			22 - 40	30	FE 903	5015	
			30 - 50	30	FE 904	9005	
			45 - 70	40	FE 905	9010	
			65 - 100	50	FE 906	4002	
	20 - 40	20			FD 910	1028	
	35 - 70	20			FD 911	2002	
	65 - 110	30			FD 912	6010	
	100 - 160	30			FD 913	5015	
	150 - 235	40			FD 914	9005	
	225 - 355	60			FD 915	9010	
	345 - 510	80			FD 916	3020	
	500 - 710	80			FD 917	5010	
	655 - 1205	100			FD 918	9006	
	760 - 1550	200			FD 919	4002	
	<b>MD-R</b> small ball lock  S50: Rp 1"-2"			30 - 55	30	FE 900	1028
				50 - 80	40	FE 901	2002
			70 - 105	50	FE 902	6010	
			100 - 140	80	FE 903	5015	
			110 - 160	80	FE 904	9005	
			150 - 205	100	FE 905	9010	
			200 - 300	100	FE 906	4002	
90 - 125		30			FD 910	1028	
120 - 210		40			FD 911	2002	
200 - 330		60			FD 912	6010	
285 - 460		80			FD 913	5015	
450 - 680		80			FD 914	9005	
640 - 1040		100			FD 915	9010	
1030 - 1480		200			FD 916	3020	
1450 - 2200		200			FD 917	5010	
1900 - 3500		200			FD 918	9006	
2200 - 4500		200			FD 919	4002	

### Determining the upper response pressure

Outlet pressure $P_d$ (mbar)	Upper response pressure $W_{dso}$ ***
$\leq 200$	$P_d + 100$ mbar
$> 200 - \leq 800$	$P_d \times 1.5$
$> 800 - \leq 1600$	$P_d \times 1.3$
$> 1600$	$P_d + 500$ mbar

\*) If the control device is set up simultaneously for the upper and lower response pressure, the difference between the setpoints of the upper and lower response pressure ( $p_{dso}$  and  $p_{dsu}$ ) should be at least 10% greater than the total of values given for  $\Delta p_{wo}$  and  $\Delta p_{wu}$ .



# Dimensions, Connection and Weight

## Dimensions and weight

Nominal size	DN 25 Rp 1"	DN 40 Rp 1½"	DN 50 Rp 2"
Dimensions			
A [mm]	261	268	268
B [mm]	59	65	65
L [mm]	100	140	160
Y [mm]	100	100	100
Weight [kg]	2.5	3.5	4.0

## Connection of the measuring lines and breather lines

Nominal size	Measuring line	Breather line
DN 025 Rp 1"	Connection* for: pipe 12 x 1.5 (thread G 1/4)	
DN 040 Rp 1½"		
DN 050 Rp 2"		

### Note

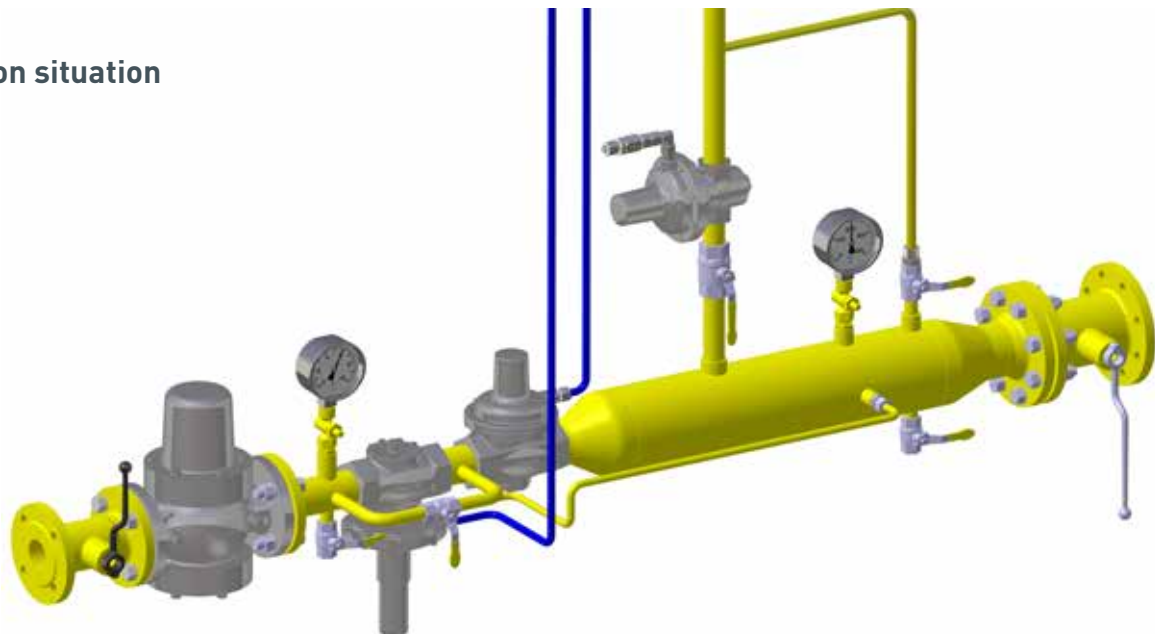
Observe the following publications in relation to installation, start-up and maintenance:

DVGW - work sheets G 491 and G 600

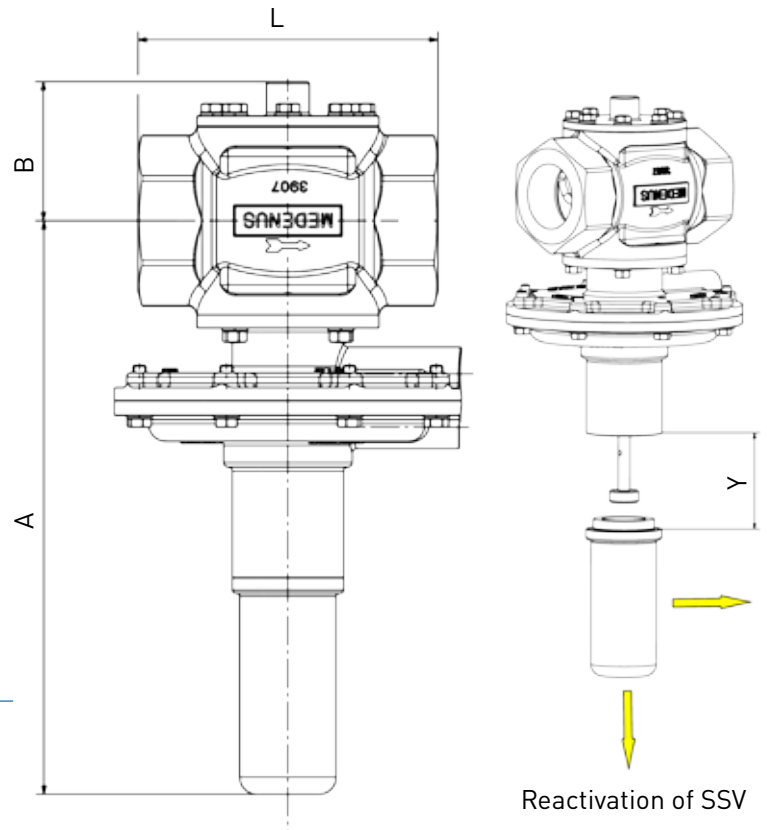
Operating and Maintenance Instructions S 50

The safety shut-off valve S 50 shall be installed in the pipeline preferably in horizontal position with vertical position of the safety shut-off spring cap. For all nominal sizes, the direction of flow is indicated by an arrow on the housing.

## Installation situation



## Dimensional drawing



## Selection

### Checking the gas velocities

$$w = 380 \cdot Q_n / (DN^2 \cdot p_{abs})$$

Note: The factor 380 refers to an operating gas temperature from approx. 15°C to 20°C. For other temperatures, the velocity must be corrected as follows:  $w_{corr} = w \cdot (t_{gas} + 273.15) / 290$

Recommended max. gas velocity at the inlet flange:  
50 - 70 m/s Lower value for redirections upstream of the SSV

### Example:

Inlet and outlet nominal size of the pipeline according to the selected device: 25 mm

$$Q_n = 70 \text{ m}^3/\text{h} \quad p_u / (p_d) = 5 \text{ bar}$$

$$w_u = 380 \cdot 70 / (25^2 \cdot 6) = 7.1 \text{ m/s}$$

## Order data

### Example:

Safety shut-off valve: S50/Rp1"/MD-R/links/BV/N/H/WAZ/So

Order selection	Order code:	S50	Rp1"	MD-R	-	links	BV	N	H	WAZ	So
<b>Designation</b>											
Type											
S50	S50	S50									
<b>DN - nominal size</b>	Table S.10		Rp1"								
SSV											
with MD control device	MD										
with MD-R control device	MD-R			MD-R							
<b>SSV functional class</b>											
A	-				-						
B	B										
<b>Direction of flow</b>											
Right (from left to right)	-										
Left (from right to left)	links					links					
<b>SSV valve accessories</b>											
without	-										
Breather valve	BV						BV				
<b>Electrical position indicator, SSV 'Closed'</b>											
without	-										
with ... , via proximity switch	N							N			
with ... , via Reed contact	R										
<b>SSV release</b>											
without	-										
with manual release	H								H		
with electromagnetic remote release, when power is supplied	SG										
with electromagnetic remote release, in case of power failure	SA										
<b>Acceptance test certificate to EN 10204/3.1</b>											
without	-										
with acceptance test certificate	WAZ									WAZ	
<b>Special model</b>	So*										So

### DN - Nominal size

Type	Rp 1"	Rp 1½"	Rp 2"
S50	X	X	X

- \*) e.g.:
- Coating with epoxy resin in RAL colours
  - Oxygen model

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



## Contact

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