SAV

Safety Shut-off Valve

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Combustion Controls

Safety Shut-off Valve Type SAV

Direct acting shut-off device with
adjustable setpoint springs for over-pressure and
under-pressure monitoring

In compliance with EN 14382

- Inlet pressures up to 20 bar (2 000 kPa)
- High flow rat
- Manual reset
- External impulse
- Maintenance-friendly
- Flange connection DN 25 - DN 50
- Threaded connection Rp 1" - Rp 2"

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SAV

Spring-loaded, shut-off valve with adjustable setpoint springs for limitation of the upper and lower pressure downstream. External impulse of the valve downstream pressure.

Application

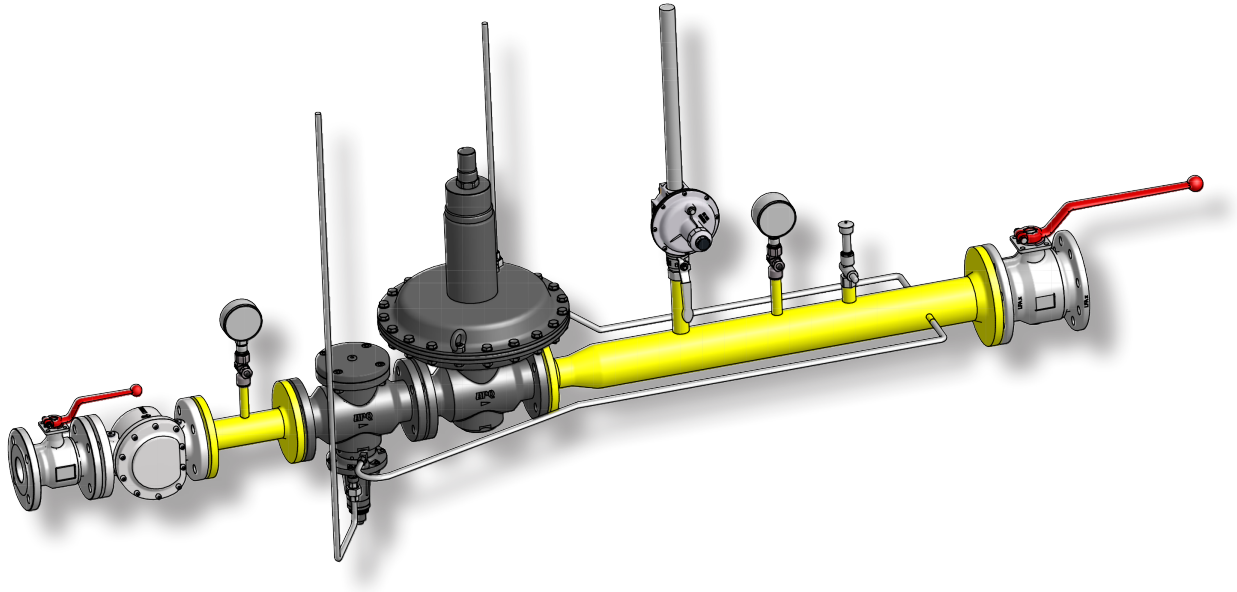
Safety valve closes when over and under pressures occurs in industrial gas burners and gas heating appliances. Also for installation in the municipal and commercial gas supply.

Suitable for gases of gas families 1, 2, 3 and other neutral gases.

Approval

EC type testing certificate as per:

- EC-Pressure Equipment Directive



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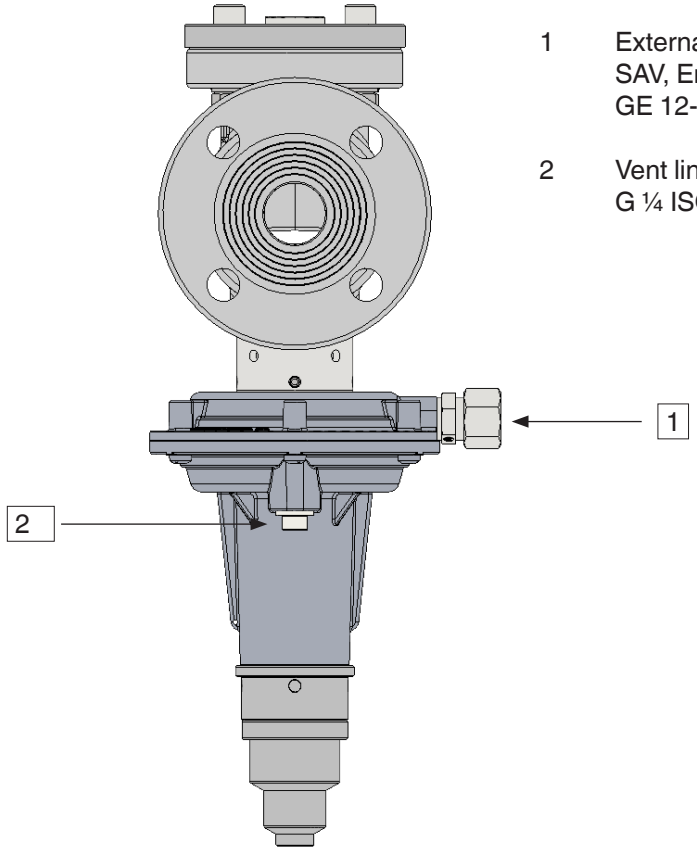
Safety shut-off valve in compliance with EN14382

Type	SAV 100... IS (integral strength range) / SAV 250... DS (differential strength range)
Type of gas	Family 1+2+3
Nominal diameters Flanges	Connecting flange PN 25 according to EN1092-1or ANSI 150 lbs (B16.5) DN 25 40 50
Nominal diameters threaded	Connecting thread Rp (EN 10226-1) or NPT (B1.20.1) Rp/NPT 1" 1 ½" 2"
Max. inlet pressure	SAV 100... 10 bar (1 000 kPa) / SAV 250... 20 bar (2 000 kPa)*
Response time	< 2 s
Lower adjustment range W_{du}	10 mbar up to 3 000 mbar (1-300 kPa)
Upper adjustment range W_{do}	60 mbar up to 5 000 mbar (6-500 kPa)
Materials	Main body housing: cast iron GJS 400-15 (GJS 400-18 on request) Diaphragm housing: aluminium (steel on request) Diaphragms: NBR
Ambient temperature	-20 °C to +60 °C

*19 bar (1900 kPa) with ANSI 150 flanges



1 External impulse line connection of the SAV, Ermeto screw connection GE 12- ¼ for tubes 12 x 1.5

2 Vent line connection of the SAV, G ¼ ISO 228

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Example SAV 100025 ND	SAV		100	025	ND	ANSI
Type	**Safety shut-off valve**					
MOP	100 …	**10 000 mbar (1 000 kPa)**				
	250 …	**20 000 mbar (2 000 kPa)**				
Nominal diameter	10	1”				
	15	1½”				
	20	2”				
	025	DN 25				
	040	DN 40				
	050	DN 50				
Pressure ranges	ND-MD	Low and medium pressure				
	HD-UHD	High and ultra high pressure				
Thread / flange type		with Standard PN 25 flanges or thread Rp				
	ANSI	with ANSI 150 lbs				
	NPT	with NPT threads				

Type	Connection	Version	Order number	Lower switching point	Upper switching point
				W_{du}	W_{do}
SAV 100025 ND-MD	DN 25	ND-MD	270291	10-500 mbar	60-999 mbar
SAV 250025 HD-UHD	DN 25	HD-UHD	271122	150-3 000 mbar	600-5 000 mbar
SAV 100040 ND-MD	DN 40	ND-MD	270294	10-500 mbar	60-999 mbar
SAV 250040 HD-UHD	DN 40	HD-UHD	271123	150-3 000 mbar	600-5 000 mbar
SAV 100050 ND-MD	DN 50	ND-MD	270297	10-500 mbar	60-999 mbar
SAV 250050 HD-UHD	DN 50	HD-UHD	271124	150-3 000 mbar	600-5 000 mbar
SAV 100025 ND-MD ANSI	NPS 1”	ND-MD	277799	10-500 mbar	60-999 mbar
SAV 250025 HD-UHD ANSI	NPS 1”	HD-UHD	275186	150-3 000 mbar	600-5 000 mbar
SAV 100040 ND-MD ANSI	NPS 1½”	ND-MD	277802	10-500 mbar	60-999 mbar
SAV 250040 HD-UHD ANSI	NPS 1½”	HD-UHD	275184	150-3 000 mbar	600-5000 mbar
SAV 100050 ND-MD ANSI	NPS 2”	ND-MD	277805	10-500 mbar	60-999 mbar
SAV 250050 HD-UHD ANSI	NPS 2”	HD-UHD	273855	150-3 000 mbar	600-5 000 mbar

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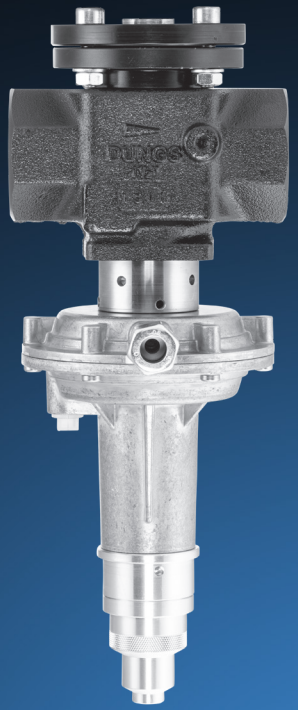
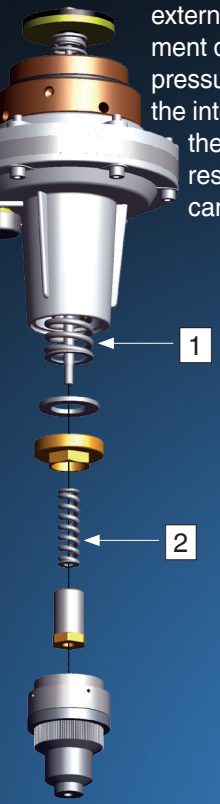


Type	Connection	Version	Order number	Lower switching point	Upper switching point
				W_{du}	W_{do}
SAV 10010 ND-MD	Rp 1”	ND-MD	287908	10-500 mbar	60-999 mbar
SAV 10010 HD-UHD	Rp 1”	HD-UHD	287909	150-3 000 mbar	600-5 000 mbar
SAV 10015 ND-MD	Rp 1½”	ND-MD	287911	10-500 mbar	60-999 mbar
SAV 10015 HD-UHD	Rp 1½”	HD-UHD	287912	150-3 000 mbar	600-5 000 mbar
SAV 10020 ND-MD	Rp 2”	ND-MD	287914	10-500 mbar	60-999 mbar
SAV 10020 HD-UHD	Rp 2”	HD-UHD	287915	150-3 000 mbar	600-5 000 mbar
SAV 10010 ND-MD NPT	NPT 1”	ND-MD	287917	10-500 mbar	60-999 mbar
SAV 10010 HD-UHD NPT	NPT 1”	HD-UHD	287918	150-3 000 mbar	600-5 000 mbar
SAV 10015 ND-MD NPT	NPT 1.1/2”	ND-MD	287920	10-500 mbar	60-999 mbar
SAV 10015 HD-UHD NPT	NPT 1.1/2”	HD-UHD	287921	150-3 000 mbar	600-5000 mbar
SAV 10020 ND-MD NPT	NPT 2”	ND-MD	287923	10-500 mbar	60-999 mbar
SAV 10020 HD-UHD NPT	NPT 2”	HD-UHD	287924	150-3 000 mbar	600-5 000 mbar

Selection of SAV springs

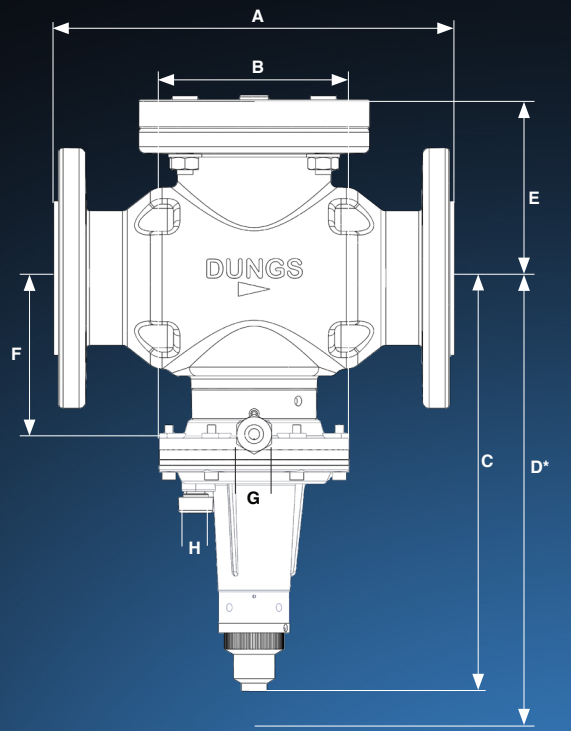
The response pressure results from the force of the installed adjusting spring. The upper response pressure (overpressure) is set on the external **spring 1** of the measurement device. The lower response pressure (vacuum) can be set on the internal **spring 2**. By changing the setpoint springs, different response pressures can be set.



Specific adjustment range, underpressure W_{dsu}						
Spring colour	Order number	Wire diameter [mm]	Length [mm]	Diameter [mm]	Setpoint range [mbar]	
					ND-MD	HD-UHD
Yellow	303335	1,4	58,5	13	10 - 30	-
Blue	303336	1,6	58,2	13	25 - 90	150 - 290
Black	303337	1,8	58,3	13	70 - 160	250 - 560
Purple	303338	2	58,3	13	140 - 310	520 - 1100
Orange	303339	2,25	58,3	13	290 - 500	1 050 - 1 800
Pink	303340	2,5	58,2	13	-	1 650 - 3 000

Specific adjustment range, overpressure W_{dso}						
Spring colour	Order number	Wire diameter [mm]	Length [mm]	Diameter [mm]	Setpoint range [mbar]	
					ND-MD	HD-UHD
Silver	303321	2,4	55,2	30	60 - 140	-
Green	303322	2,8	55	30	80 - 220	-
Red	303323	3,2	54,6	30	160 - 450	600 - 1 700
Yellow	303324	3,6	54,5	30	300 - 680	1 250 - 2 500
Blue	303325	4	54,5	30	500 - 999	1 900 - 4 500
Black	303326	4,25	54,4	30	-	3 500 - 5 000

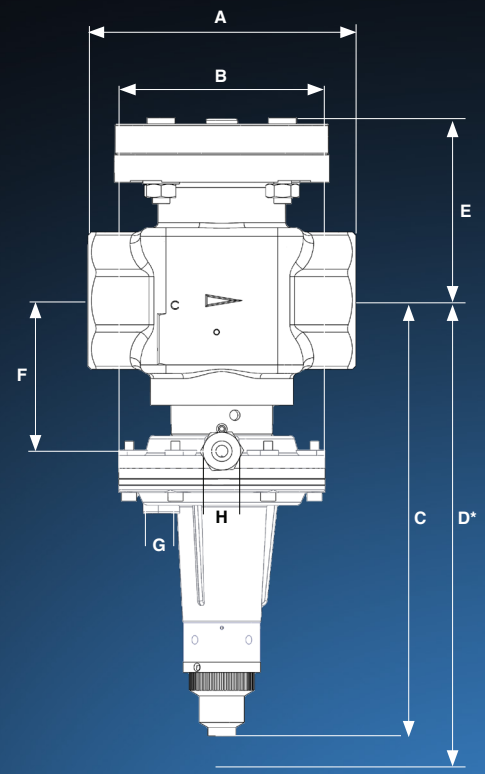
Installation dimensions SAV flanged



* Space required for unlocking

Type	Order number		p máx. [bar/kPa]	DN	Dimensions [mm]								Weight [kg]
	DN	NPS			A	B	C	D	E	F	G	H	
SAV 100025 ND-MD	270291	277799	10 / 1 000	25	184	122	267	317	88	86,5	12	G ¼	7,6
SAV 250025 HD-UHD	271122	275186	20 / 2 000	25	184	122	267	317	88	86,5	12	G ¼	7,6
SAV 100040 ND-MD	270294	277802	10 / 1 000	40	223	122	273	323	104	96,5	12	G ¼	13,3
SAV 250040 HD-UHD	271123	275184	20 / 2 000	40	223	122	273	323	104	96,5	12	G ¼	13,3
SAV 100050 ND-MD	270297	277805	10 / 1 000	50	254	122	276	326	116	105	12	G ¼	16,0
SAV 250050 HD-UHD	271124	273855	20 / 2 000	50	254	122	276	326	116	105	12	G ¼	16,0

Installation dimensions SAV threaded



* Space required for unlocking

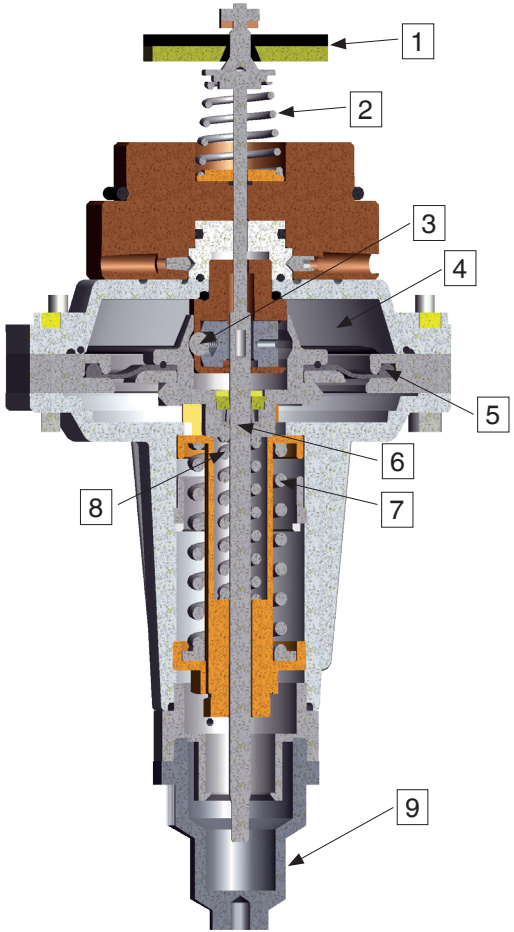
Type	Order number		p máx. [bar/kPa]	Con-nection	Dimensions [mm]								Weight [kg]
	Rp	NPT			A	B	C	D	E	F	G	H	
SAV 10010 ND-MD	287908	287917	10 / 1 000	1"	104	122	267	317	69,5	86,5	12	G ¼	4,1
SAV 10010 HD-UHD	287909	287918	10 / 1 000	1"	104	122	267	317	69,5	86,5	12	G ¼	4,1
SAV 10015 ND-MD	287911	287920	10 / 1 000	1½"	132	122	263	313	69,5	86,5	12	G ¼	5,4
SAV 10015 HD-UHD	287912	287921	10 / 1 000	1½"	132	122	263	313	69,5	86,5	12	G ¼	5,4
SAV 10020 ND-MD	287914	287923	10 / 1 000	2"	156	122	268	318	103	97,5	12	G ¼	8,7
SAV 10020 HD-UHD	287915	287924	10 / 1 000	2"	156	122	268	318	103	97,5	12	G ¼	8,7

Information
Gas carrying, impulse lines and connecting lines must be resistant to thermal, chemical and mechanical stresses. They must also be durable and resistant to deformation and cracks.

Any condensate from impulse lines must not flow into closing device (ASE).

Combustible gas and gas/air mixtures must not enter the installation space of the adjusting spring.

Sectional drawing SAV
Device in the closed position



Chamber 4 is connected to the outlet pressure via an impulse line. The pressure being monitored acts on the working diaphragm 5. The force of the setpoint springs 7 and 8 acts as counterforce. In case of an unbalance of forces (overpressure or underpressure), the SAV is actuated and the gas supply is blocked.

1	Valve disc
2	Closing spring
3	Ball catch / trigger mechanism
4	Chamber with the pressure to be monitored
5	Working diaphragm
6	Push rod
7	Setpoint spring for pd_o
8	Setpoint spring for pd_u
9	Protective cap

The following flow rate tables can be used to select the device. With required flow at a certain inlet pressure, it can be defined the corresponding pressure drop. Flows are defined in natural gas (ρ=0,81kg/m³) or air (ρ=1,24kg/m³) at a temperature of 15° C. In case of different types of gases, a conversion of the volume flow according to the equation on page 14 is carried out.

Design a straight stabilisation section with the equal diameter.

Impulse connection at a distance of > 5 x DN.

Maximum flow velocity = 50 m/s

Max. pressure difference Δp = 500 mbar

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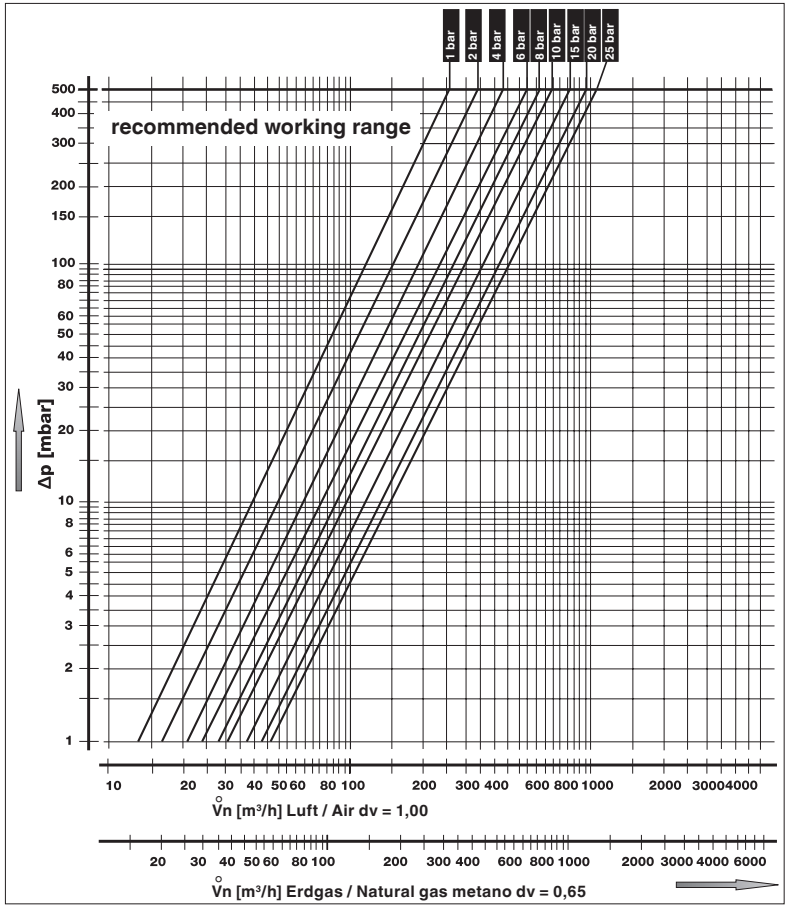
SAV DN 25



Based on + 15° C, 1 013 mbar, dry

max. pressure difference Δp = 500 mbar
max. flow velocity = 50 m/s

Flow diagram

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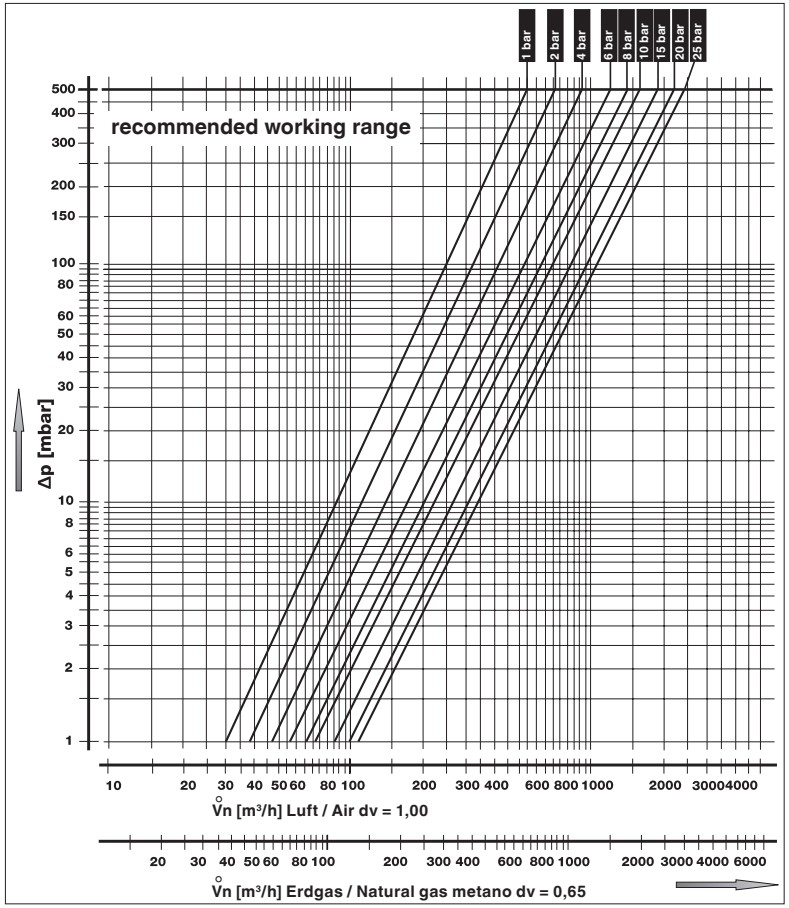
SAV DN 40



Based on + 15° C, 1 013 mbar, dry

max. pressure difference
Δp = 500 mbar
max. flow velocity
= 50 m/s

Flow diagram

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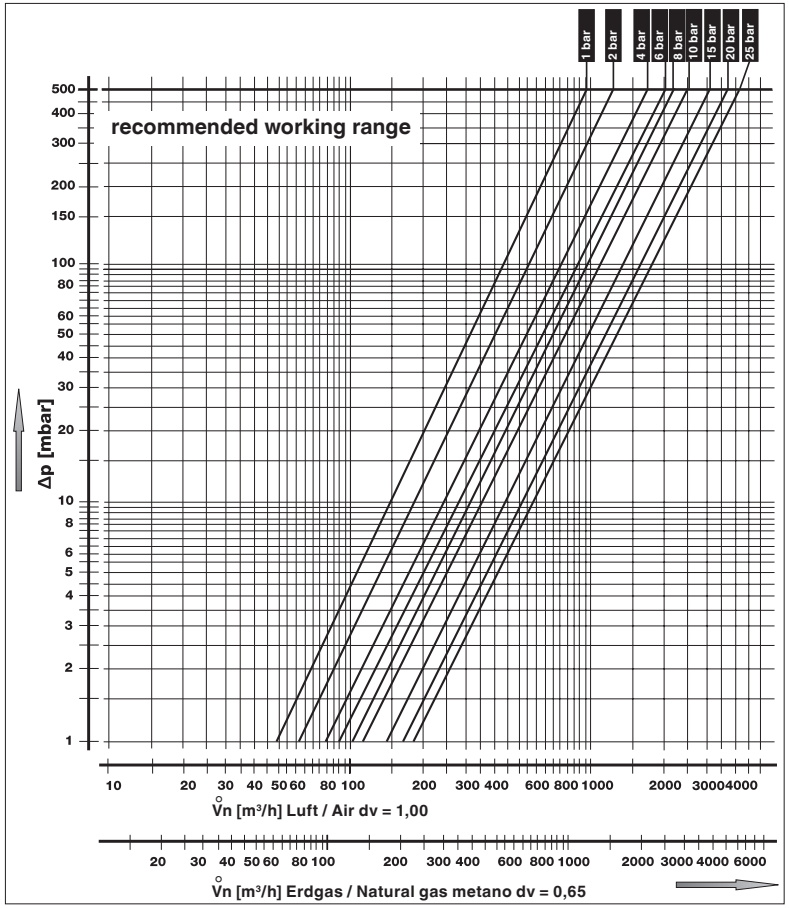
SAV DN 50



Based on + 15° C, 1 013 mbar, dry

max. pressure difference
Δp = 500 mbar
max. flow velocity
= 50 m/s

Flow diagram

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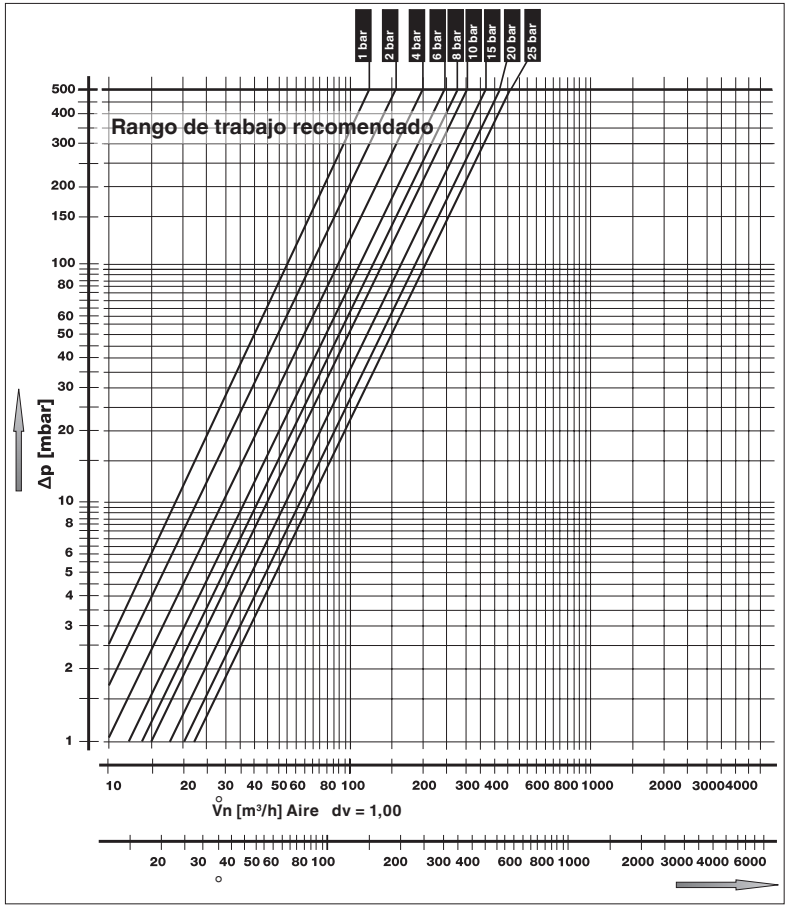
SAV 1" , SAV 1.1/2"



Based on + 15° C, 1 013 mbar, dry

max. pressure difference
Δp = 500 mbar
max. flow velocity
= 50 m/s

Flow diagram

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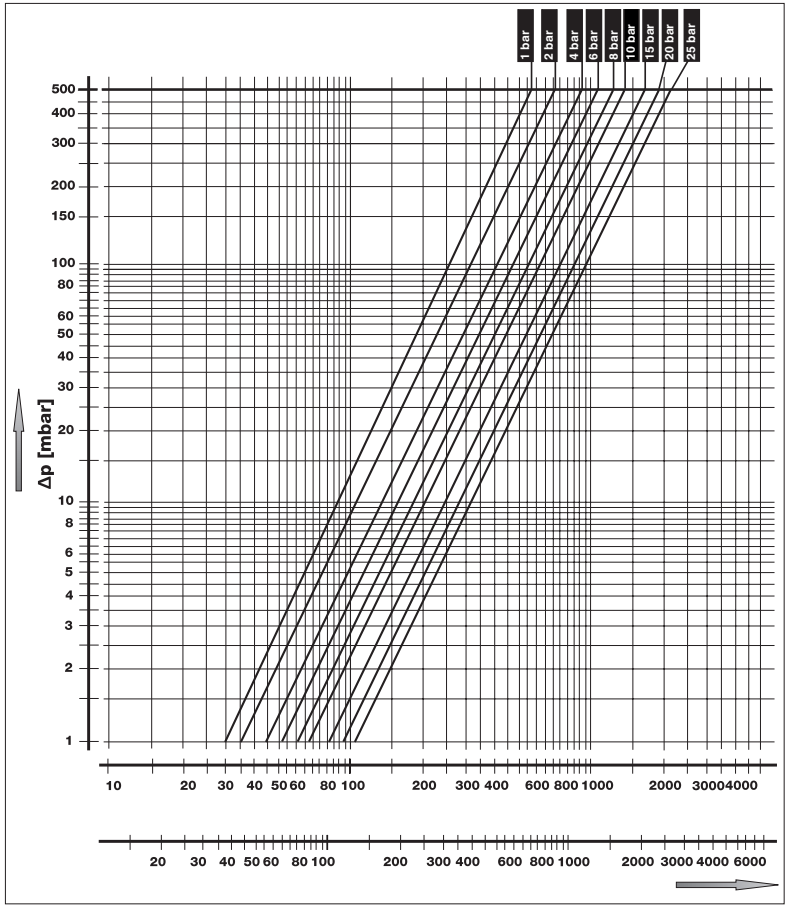
SAV 2"



Based on + 15° C, 1 013 mbar, dry

max. pressure difference
Δp = 500 mbar
max. flow velocity
= 50 m/s

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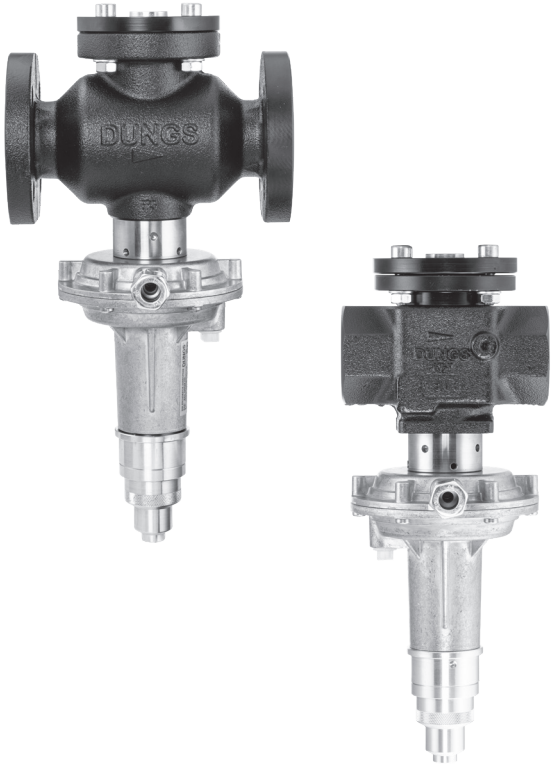
$$\dot{V}_{used\ gas} = \dot{V}_{air} \times f$$

$$f = \sqrt{\frac{\text{air density}}{\text{spec. weight of the gas used}}}$$

Type of gas	Spec. Wgt. [kg/m³]	dv	f
Natural gas	0.81	0.65	1.24
City gas	0.58	0.47	1.46
NDG	2.08	1.67	0.77
Air	1.24	1.00	1.00



Subject to technical modification in the interest of technical progress.

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