

Pressure relief valves



Type FRSBV pressure relief valves

Safety pressure relief device with adjustable spring index value for releasing overpressure into the open air.

In compliance with DIN 33821

- Input pressure up to 20 bar (2 000 kPa)
- Tolerates high flow rates
- Internal pulse
- Threaded connection 1"



Applications	3
Approval	3
Technical data	4-5
Pressure taps	6
Nomenclature	7
Adjustment ranges	8
Spring selection	9-10
Dimensions	11
Function	12
Section FRSBV	12
Device selection / flow tables	13-14
Calculation of the gas type	15
Contact data	16

FRSBV

The FRSBV type is a pressure relief valve (SBV) with an adjustable response pressure. The valve has an internal response pressure tap.



Applications

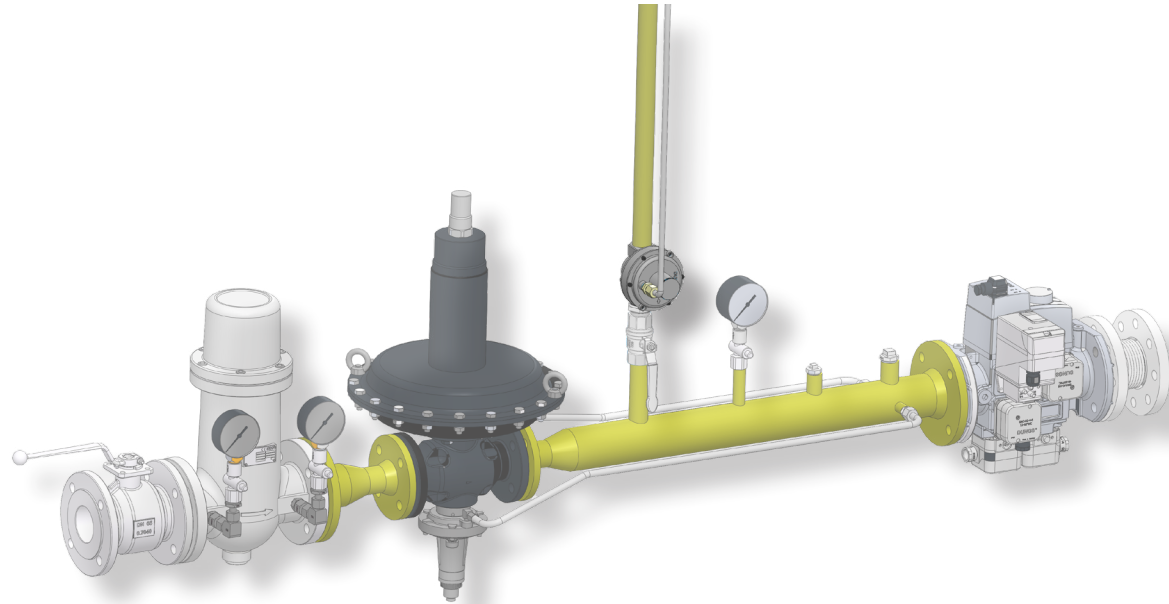
Pressure safety relief valve for gas burners and gas equipment. Also used in gas supply and distribution systems.

It is suitable for gases of gas families 1, 2, 3 and other neutral gases.

Approval

EC type-examination certificate according to:

- EC Pressure Equipment Directive



Safety pressure relief valve according to DIN 33821



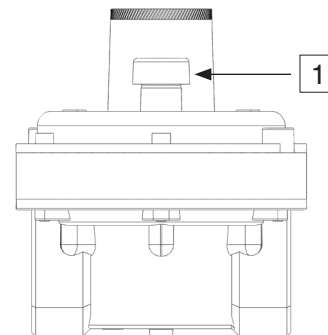
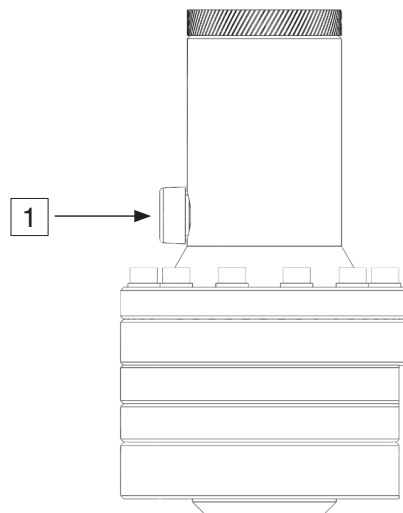
Type	FRSBV 5010...	
Type of gas	Family 1+2+3	
Nominal diameters Thread	Connecting threads according to BSP (ISO 228/1) or NPT (B1.20.1) G1" NPT 1"	
Max. input pressure	FRSBV 5010... 5 bar (500 kPa)	
Trigger range	45 mbar to 2 bar (4.5-200 kPa)	
Materials	Housing:	Aluminium Al 2521, Al 2011
	Diaphragm housing:	Aluminium Al 2011
	Diaphragms:	NBR according to EN 549
Ambient temperature	-20 °C to + 60 °C	



Safety pressure relief valve according to DIN 33821

Type	FRSBV 20010...	
Type of gas	Family 1+2+3	
Nominal diameters Thread	Connecting threads according to BSP (ISO 228/1) or NPT (B1.20.1) G1" NPT 1"	
Max. input pressure	FRSBV 20010... 20 bar (2 000 kPa)	
Trigger range	200 mbar to 8 bar (20-800 kPa)	
Materials	Housing:	steel F-114 (FRSBV 200...)
	Diaphragm housing:	steel F-114 (FRSBV 200...)
	Diaphragms:	NBR according to EN 549
Ambient temperature	-20 °C to + 60 °C	

Pressure taps



1 FRSBV vent line connection,
G¼ ISO 228

Nomenclature



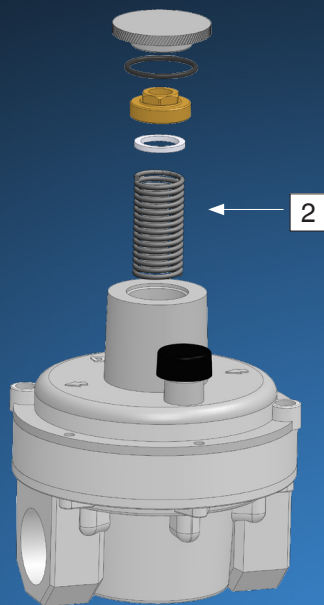
Using the FRSBV 5010 HD as an example	FRSBV	50	10	HD	NPT
Type	Pressure relief valve				
MOP	50 ...	5 bar			
	200 ...	20 bar			
Nominal diameter	10	1"			
Pressure range	ND	Low pressure			
	HD	High pressure			
Thread type		With BSP thread			
	NPT	With NPT threads			



Type	Threaded connection	Model	Item number	Closing pressure [SG]	Specific adjustment range
FRSBV 5010 ND	G1"	ND	289263	SG 20	45-2 000 mbar
FRSBV 20010 HD	G1"	HD	on request	SG 20	200-8 000 mbar
FRSBV 5010 ND NPT	NPT 1"	ND	289268	SG 20	45-2 000 mbar
FRSBV 20010 HD NPT	NPT 1"	HD	on request	SG 20	200-8 000 mbar

Spring selection

The response pressure results from the force that the movable parts exert on the adjusting spring (2) installed. The full response pressure range can be covered by changing the adjusting springs.

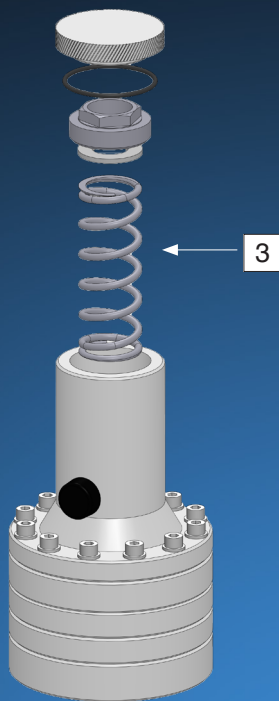


FRSBV 5010...

Setpoint range for springs FRSBV 5010 ...					
Spring colour	Replacement item number	Wire diameter [mm]	Length [mm]	Diameter [mm]	Setpoint range [mbar]
					ND
Yellow	290942	1.3	60	20	45-65
Black	290943	1.5	60	20	65-95
Purple	290944	1.6	60	20	85-125
Pink	290945	1.8	60	20	125-185
White	290946	2.2	60	20	185-350
Blue	290947	2.5	50	20	350-580
Orange	290948	2.8	50	20	580-1 000
Silver	290950	3.5	45	20	1 000-1 700
Grey	290951	3.8	45	20	1 600-2 000

Spring selection

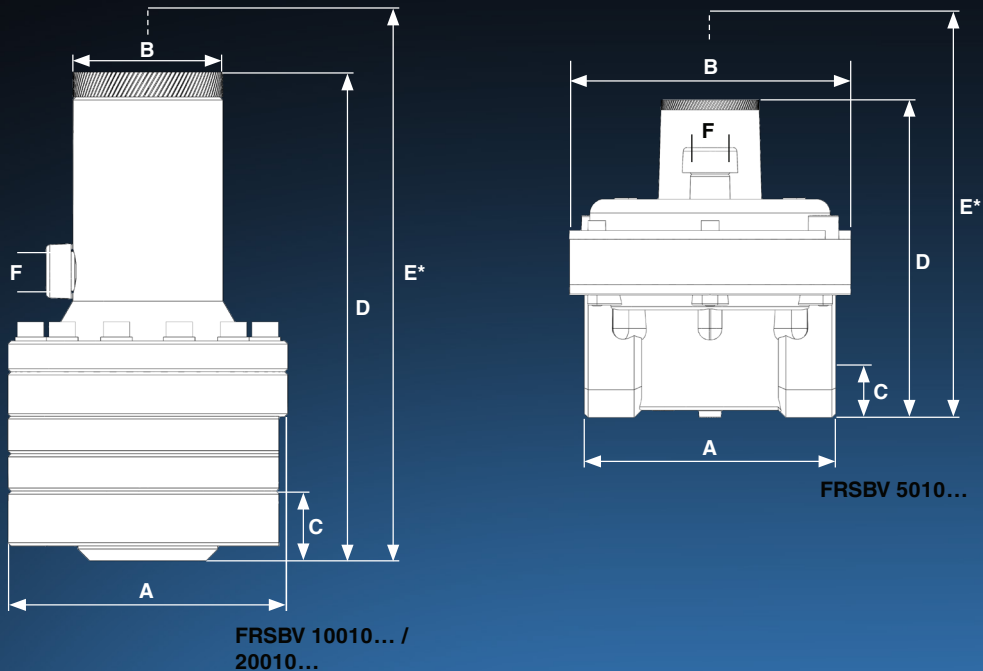
The response pressure results from the force that the movable parts exert on the adjusting spring (3) installed. The full response pressure range can be covered by changing the adjusting springs.



FRSBV 20010...

Setpoint range for springs FRSBV 10010 / 20010 ...					
Spring colour	Replacement item number	Wire diameter [mm]	Length [mm]	Diameter [mm]	Setpoint range [mbar]
					HD
Green	290952	3.5	110	35	200-1 000
Red	290953	4.0	100	35	250-1 500
White	290954	4.5	100	35	300-2 000
Yellow	290955	5.0	100	35	500-3 000
Blue	290956	5.5	100	35	750-4 000
Black	290957	6.0	100	35	1 000-8 000

Dimensions FRSBV

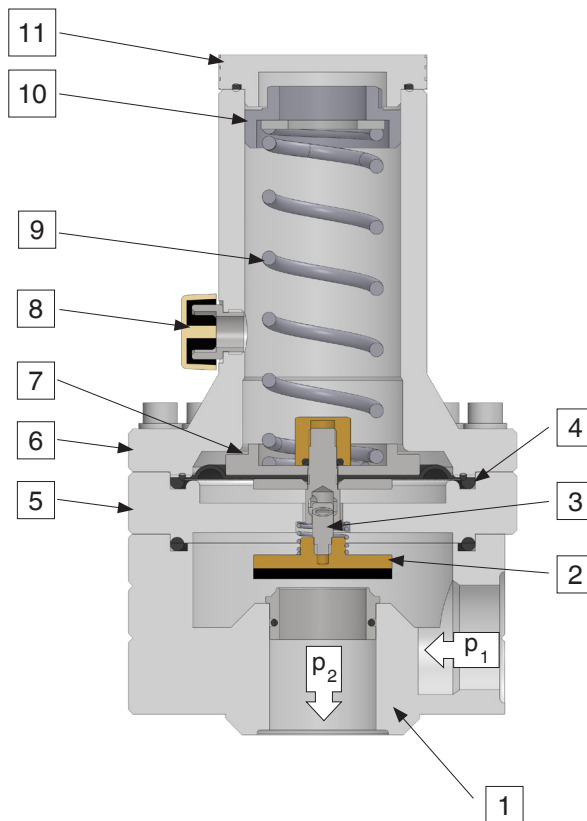


* Space required for adjusting the spring

Type	Item number		p _{max.} [bar / kPa]	Thread	Dimensions [mm]						Weight [kg]
	BSP	NPT			A	B	C	D	E	F	
FRSBV 5010 ND	289263	289268	5 / 500	1"	100	112	22	127	227	G¼"	0.89
FRSBV 20010 HD	on request		20 / 2 000	1"	112	60	28	197	297	G¼"	6.15

Function

Sectional drawing FRSBV
Cutaway of the device



- 1 Housing
- 2 Regulating cup
- 3 Push rod
- 4 Working diaphragm
- 5 Intermediate housing
- 6 Upper protective cover
- 7 Upper diaphragm case
- 8 Vent connection
- 9 Adjusting spring
- 10 Adjusting nut
- 11 Protective cap



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

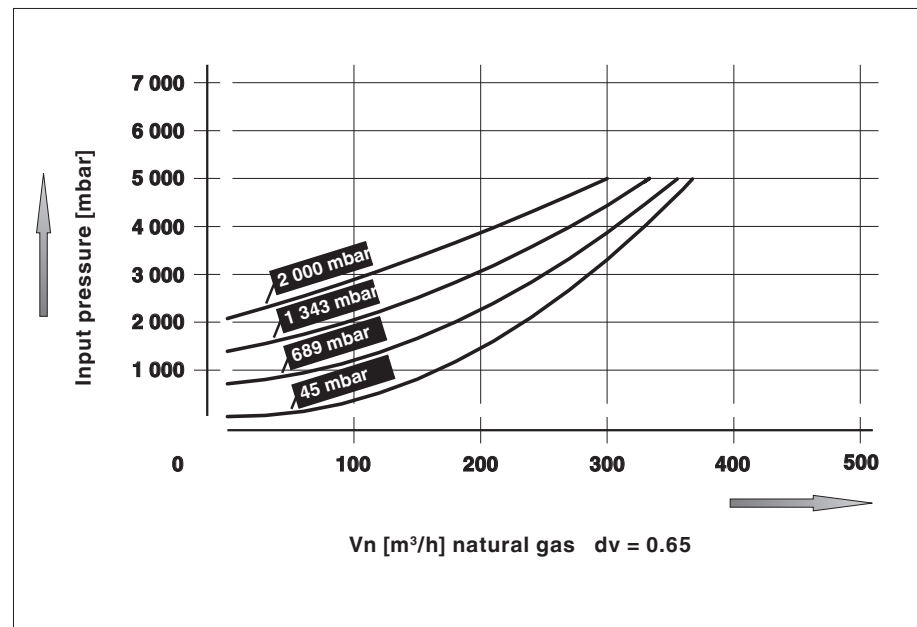
Device selection

The flow rate that releases the pressure relief valve is subject to the opening pressure and the overpressure in the pipe.



Flow tables

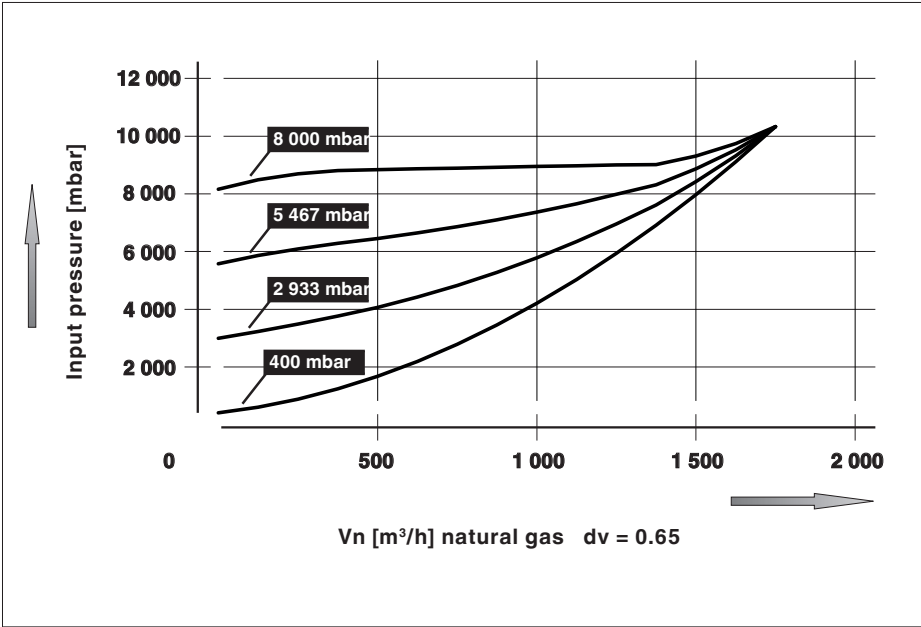
FRSBV 5010 ND



Device selection

Flow tables

FRSBV 20010 HD



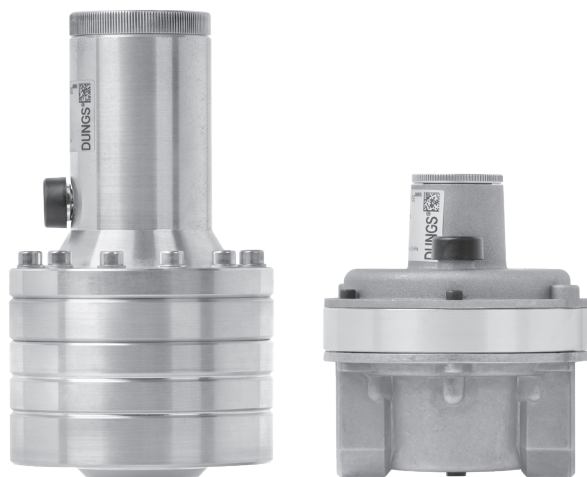
Calculation of gas types



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

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

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



Subject to technical modifications that are contingent upon technical progress.

Headquarters and subsidiary

Karl Dungs GmbH & Co. KG
Karl-Dungs-Platz 1
D-73660 Urbach
Germany
Telephone +49 (0)7181-804-0
Telefax +49 (0)7181-804-166
E-mail: info@dungs.com
Internet: www.dungs.com