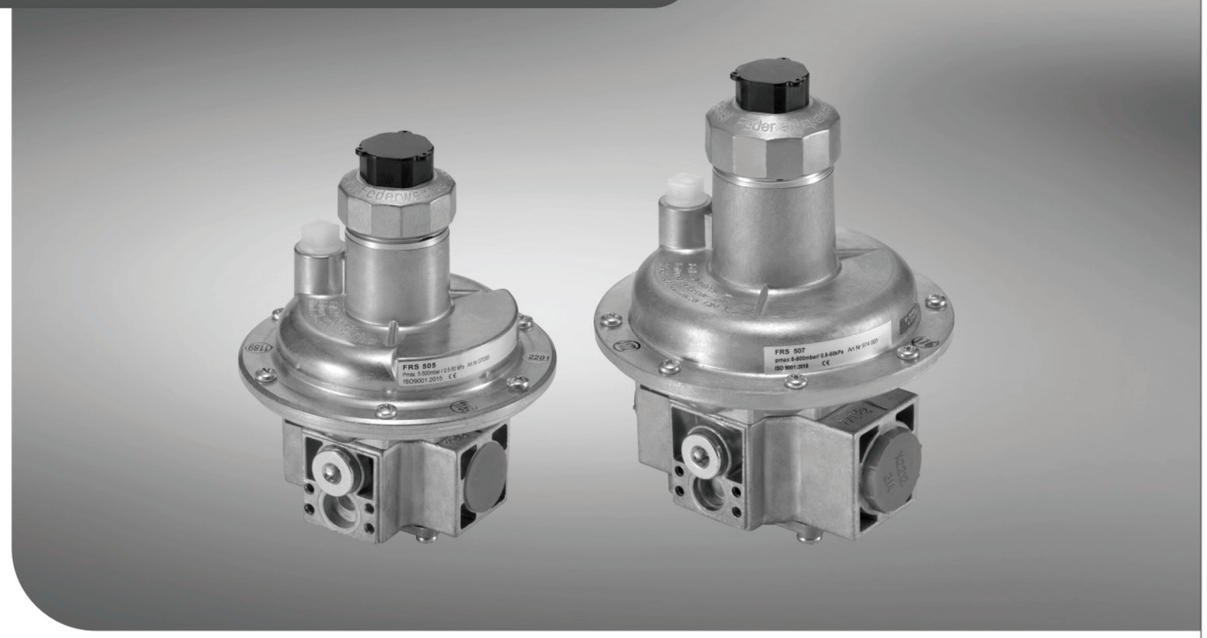
Sudick

Pressure Regulator

FRS



Overview

The FRS pressure regulator is a pressure regulator with an adjustable spring-loaded valve.

- Input pressure up to 500 mbar
- High flow rate
- Stable, precise and sensitive regulation of the regulator's outlet pressure
- Pre - pressurized balanced diaphragm
- Safety diaphragm

  Modular inner pulse for regulator outlet pressure, with optional outer pulse connections on both sides

  Threaded connections Rp 3/8-Rp 2

  Flanged connections DN 15-DN 150

  3, as well as other neutral gaseous media.

Applications

Gas pressure regulators are suitable for gas burners and gas appliances. They do not contain metallic elements and are suitable for gases with up to 0.1% H2S by volume. They are suitable for gases in groups 1, 2, and 3, as well as other neutral gaseous media.

Description

Function

The working principle is based on the balance between the following forces:

Adjustable spring pressure setting

Pressure differential acting on the working diaphragm

Weight of the moving parts

The adjusting spring operates in conjunction with the weight of the moving parts. The outlet pressure is determined by the pre - compression of the adjusting spring and the installation position.

Illustrate

Gas piping, pulses and connecting pipes must be made of steel. The pipeline must be able to withstand heat, chemicals and mechanical loads. The pipeline must have crack resistance and deformation resistance.

!The condensate of the pipeline must not enter the pressure regulator. The pressure regulator should be equipped with a suitable contaminant sedimentation device to avoid contamination.

!The spring housing of the regulator must not be affected by gas or gas-air mixtures. Otherwise, consultation on the application of the pressure regulator in such cases is required first.

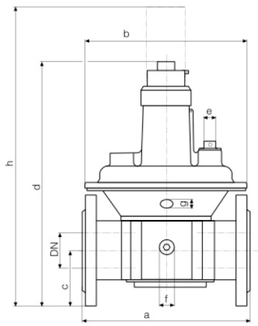
Technical Parameters

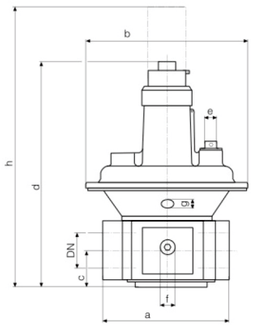
FRS is a spring loaded pressure regulator with adjustable rating spring and internal tap for regulator outlet pressure. An external impulse connection is also available to suit regulation of regulator outlet pressure.

Nominal Bore	DN 40 50 65 80 100 125 150
Pipe Threads Compliant with ISO701	Rp 3/8 1/2 3/4 1 1 1/2 2 2 1/2
Flange	Connection flanges that meet the requirements of DIN 2501 Part 1, suitable for DN2633 (PN 16) DN40 to DN150, ISO 7005-2 (PN 16)
Maximum Working Pressure	Up to 500mbar (50kPa)
Pressure Regulator	The pressure regulator complies with EN88A Class 2, DIN3380, RG 10.
Input Pressure Range	+5mbar and P2+2.5mbar to 500mbar
Output Pressure Range	2.5mbar to 200mbar, depending on the adjustable spring
Materials of Parts Contacting Gas	Shell: Aluminum, Steel Seals and Diaphragm: NBR
Ambient Temperature	-15°C to +70°C
Installation Position	The regulator should be installed in a vertical or horizontal position
Measurement and Ignition Gas Connection	G1/4, in accordance with ISO228, located on both sides of the outlet
Pulse Connection	It is internally located at the outlet. It can also be externally connected on both sides of the shell
Exhaust Pipe	The exhaust pipe is only required in special cases. A safety diaphragm has been installed. Connection: G 1/4 ISO 228 to Rp 1, from Rp1 1/2, DN40: G 1/2 ISO 228

Installation Dimensions

Model	Pmax (mbar)	Rp/DN	Installation Dimensions								Weight [kg]
			a	b	c	d	e	f	g	h	
FRS 503	500	Rp 3/8	75	115	24	143	G 1/4	G 1/4	G 1/8	225	0.60
FRS 505	500	Rp 1/2	75	115	24	143	G 1/4	G 1/4	G 1/8	225	0.60
FRS 507	500	Rp 3/4	100	130	28	165	G 1/4	G 1/4	G 1/8	245	1.00
FRS 510	500	Rp 1	110	145	33	190	G 1/4	G 1/4	G 1/8	310	1.20
FRS 515	500	Rp 1 1/2	150	195	40	250	G 1/2	G 1/4	G 1/4	365	2.50
FRS 520	500	Rp 2	170	250	47	310	G 1/2	G 1/4	G 1/4	450	3.50
FRS 5065	500	DN65	290	285	95	405	G 1/2	G 1/4	G 1/4	590	10.00
FRS 5080	500	DN80	310	285	95	405	G 1/2	G 1/4	G 1/4	590	16.00





Spring selection

The outlet pressure is generated by the force of the installed adjusting spring and the weight of the moving parts.

The pressure regulator is already installed with a No. 4 blue spring.

Rating spring range	2.5···9	5···13	5···20	10···30	25···55	30···70	60···110	100···150	140···200
(mbar)	Spring 1	Spring 2	Spring 3	Spring 4	Spring 5	Spring 6	Spring 7	Spring 8	Spring 9
Spring color	Brown	White	Orange	Blue	Red	Yellow	Black	Rose	Grey
Nominal inner diameter Rp/DN	Standard								
Rp 3/8, Rp 1/2	229 817	229 818	229 820	229 821	229 822	229 823	229 824	229 825	229 826
Rp 3/4	229 833	229 834	229 835	229 836	229 837	229 838	229 839	229 840	229 841
Rp 1	229 842	229 843	229 844	229 845	229 846	229 847	229 848	229 849	229 850
Rp 1 1/2, DN 40	229 851	229 852	229 853	229 854	229 869	229 870	229 871	229 872	229 873
Rp 2, DN 50	229 874	229 875	229 876	229 877	229 878	229 879	229 880	229 881	229 882
Rp 2 1/2, DN 65, 80	229 883	229 884	229 885	229 886	229 887	229 888	229 889	229 890	229 891
DN 100	229 892	229 893	229 894	229 895	229 896	229 897	229 898	229 899	229 900
DN 125	229 901	229 902	229 903	229 904	229 905	229 906	229 907	229 908	243 416
DN 150	229 909	229 910	229 911	229 912	229 913	229 914	229 915	229 916	243 417

Pressure and Flow Curve Chart

Equipment pre-selection, interlocked pressure regulator

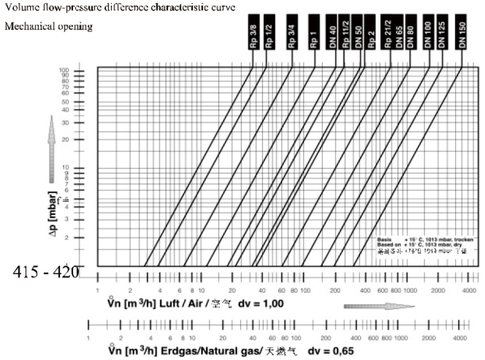
The nominal inner diameter can be preselected based on the volume flow-pressure difference characteristic curve of the pressure regulator in the mechanically open state. The nominal inner diameter of the pressure regulator is determined by the pressure difference formed by the inlet pressure P1 and the regulator outlet pressure P2 in combination with the maximum volume flow Vmax. The operating point described by Pmin and Vmax is located to the left of the preselected nominal inner diameter of the pressure regulator.

The pressure drop of the interlocked pressure regulator is represented by the characteristic line "Mechanical opening".

Ultimately it will be determined by the standards of the gas equipment manufacturer.

Volume flow-pressure difference characteristic curve

Mechanical opening



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$$\Gamma = \sqrt{\frac{\text{Dichte Luft / Spec. Weight air}}{\text{Dichte des verwendeten Gases / Spec. weight of the gas used}}}$$

Gas Types	Spec. Gravity	dv	f
Natural	0.8	0.65	1.24
Gas	0.58	0.47	1.46
Town Gas	2.08	1.67	0.77
LPG	1.24	1.00	1.00
Air			