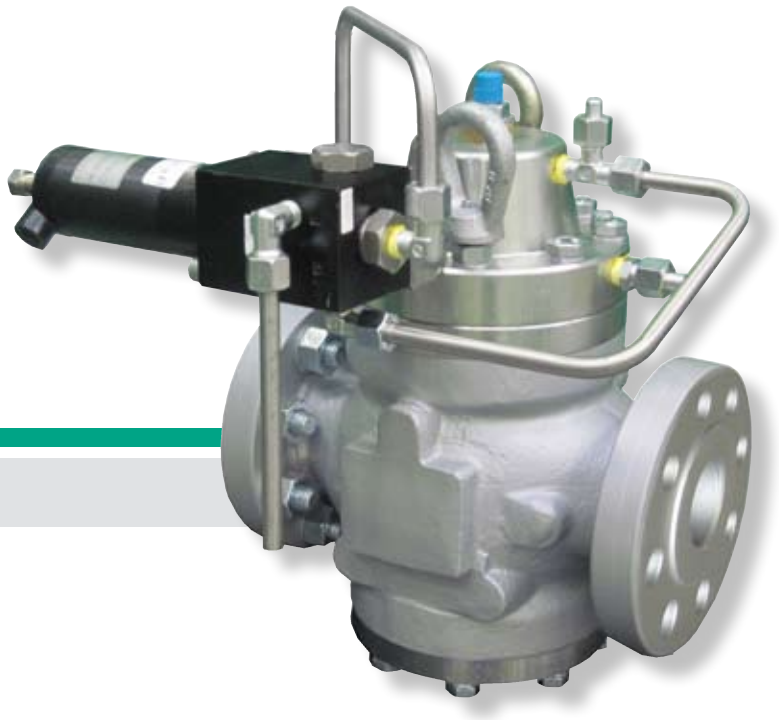
Pietro Fiorentini



PVS 803

Piloted Safety Valve

PVS 803

Classification and Application Fields

The **PVS 803** is a servo actuated safety valve in which the opening and closing of the valve are controlled by a control device sensitive to pressure variations.

The PVS 803 is a piloted safety valve to be used in all applications where rapid opening and reliable repositioning after closure are essential.

The **PVS 803** is designed for easy maintenance of its parts without removing the body from the line.

The **PVS 803** is available in a wide range of sizes and has a wide range of adjustment through two high precision pilots

Main features

- Compact design
- Easy maintenance
- Top Entry
- Fast response time
- High precision
- Low operation costs

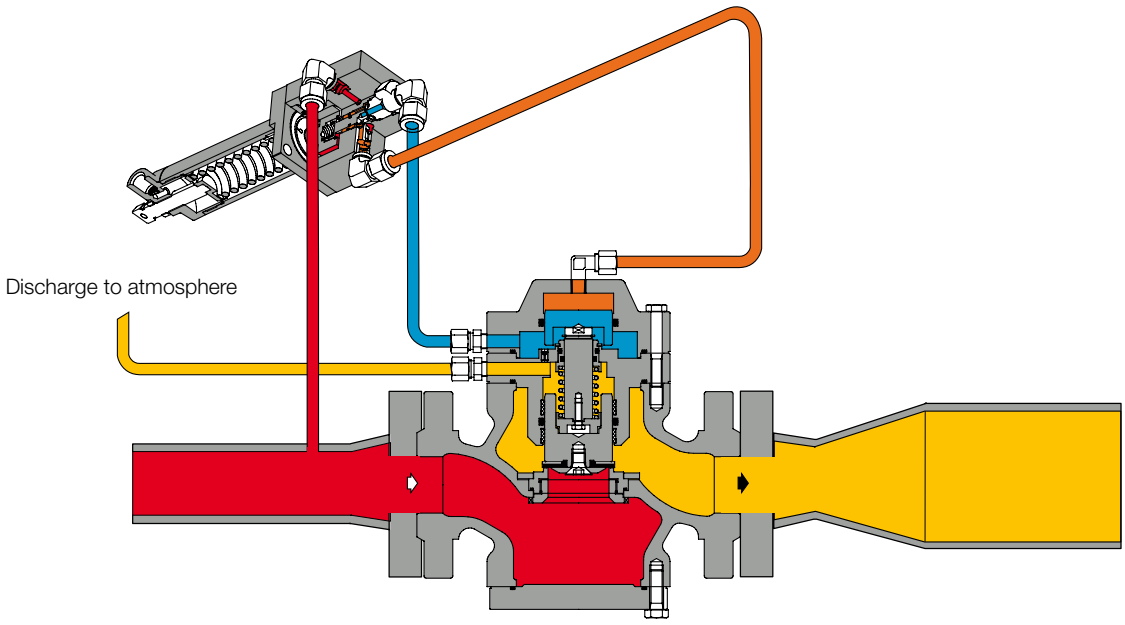


Fig.1

PVS 803

Inlet pressure Atmospheric pressure Motorisation pressure Control pressure

FEATURES

Operating Features:*

- **Maximum inlet pressure:** 100 bar
- **Opening start pressure:** ±2%
- **Minimum environmental temperature:** Up to -20°C
- **Maximum environmental temperature:** Up to +60°C
- **Inlet gas temperature:** Up to -20°C +60°C

Construction Features:

- DN Nominal dimensions: 25 (1”); 50 (2”); 80 (3”); 100 (4”); 150 (6”);
- Flanged connections: Class 150, 300, 600 according to EN1759-1 PN16, PN 50, PN 100 according to ISO 7005-1

Materials: **

- **Body:** Steel ASTM A216WCB / ASTM A352LCC
- **Plug:** Steel ASTM A350LF2
- **Etanchéité:** Nitrile rubber / Fluorocarbon

Pilots:

The **PVS 803** safety valves are, alternatively, equipped with the following pilots:

- **P16/M:** Action range 1.5-40 barg
- **P17/M:** Action range 40-74 barg

NOTE: *** Different operating features available on request.**
** The above materials refer to standard operations.
Different materials can be provided for specific needs.

Dimensioning of the safety valve

In general, the **PVS 803** valve is chosen based on the calculation of the flowrate determined using formulas and flow coefficients.

$$Q_m = p_0 \bullet C \bullet A \bullet K_{dr} \bullet \sqrt{\frac{M}{Z \bullet T_0}} \qquad Q = 23.661 \frac{Q_m}{M}$$

Where:

Q_m = maximum discharged flowrate [kg/h]
Q = maximum flowrate [Stm^3/h]
A = crossing minimum surface [mm^2] (see table 1)
K_{dr} = flowrate coefficient (0.5 see table 1)
p_0 = calibration pressure (p_{sf}) +10% in absolute bar (p_0 [bar abs] = p_{sf} [barg] • 1,1+1,013)
T_0 = temperature of fluid at valve inlet [K]
M = molecular weight of fluid [kg/kmol] (see table 2)

Z = compressibility factor of the fluid drain conditions (= 1 if unknown)
k = isentropic equation coefficient
C = expansion coefficient (see table 1)

$$C = 3.948 \bullet \sqrt{k \left(\frac{2}{k+1} \right)^{\frac{k+1}{k-1}}}$$

Calculation of the flow coefficient

Nominal diameter					
Millimetres	25	50	80	100	150
Inches	1”	2”	3”	4”	6”
A = housing [mm^2]	490	1960	4300	7850	16970
K_{dr} = flowrate coefficient	0.5	0.5	0.5	0.5	0.5

Tab.1

Molecular weight and expansion coefficient

Type of fluid	Molecular Mass (kg/kmol)	Expansion coefficient C
Carbon dioxide	44.01	2.637
Hydrogen	2.02	2.708
Methane	16.04	2.641
Natural gas*	18.04	2.641
Nitrogen	28.02	2.704
Oxygen	32.00	2.704
Propane	44.09	2.507
*** Average value**		Tab.2

Flowrate values for natural gas

The tables provide the flowrate value, expressed in Stmc/h, of a natural gas with relative density to air of 0.61, at the temperature of 15°C, at the pressure of 1.013 bar.

p_{sf} [barg]	1”	2”	3”	4”	6”
2	740	2730	5990	10935	23639
10	2766	10208	22395	40884	88383
20	5298	19555	42902	78321	169312
30	7830	28902	63408	115757	250242
40	10363	38250	83915	153194	331171
Flowrate [Stm^3/h]					Tab.3

TYPICAL CONNECTION DIAGRAMS

The following examples are provided as a recommendation to get the best performances from the **PVS 803**.

IN-LINE INSTALLATION

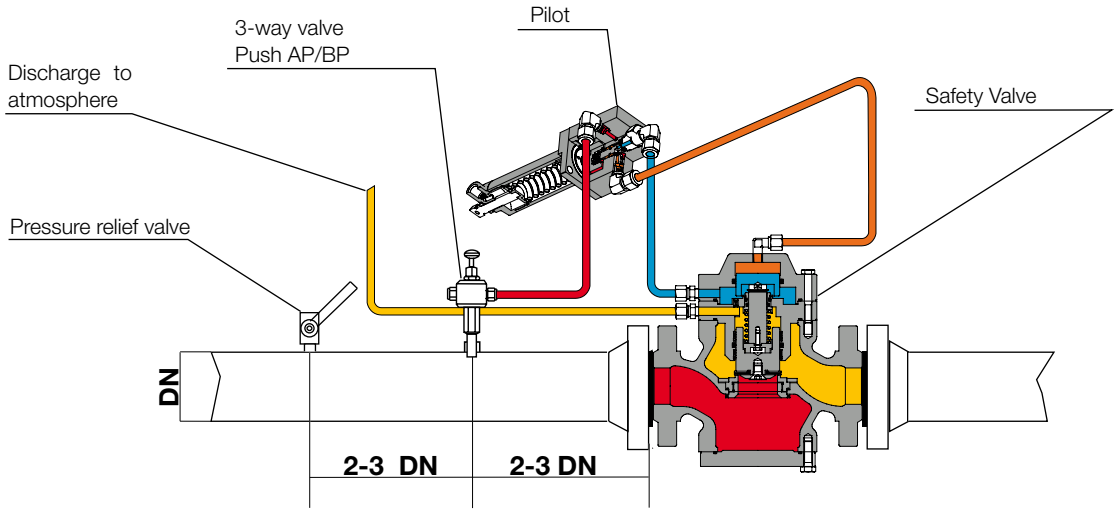


Fig.2

RECOMMENDED INSTALLATIONS

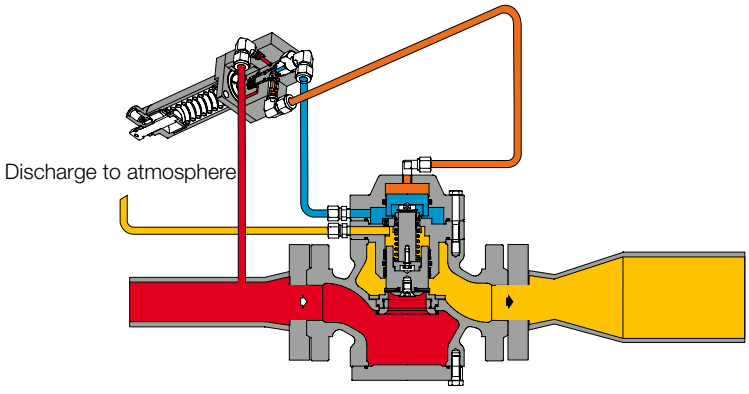
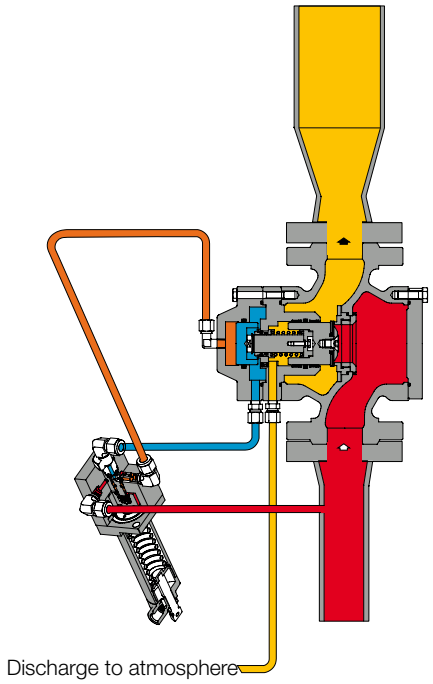


Fig.3 Horizontal installation



Vertical installation Fig.4

Inlet pressure **Atmospheric pressure** **Motorisation pressure** **Control pressure**

PVS 803

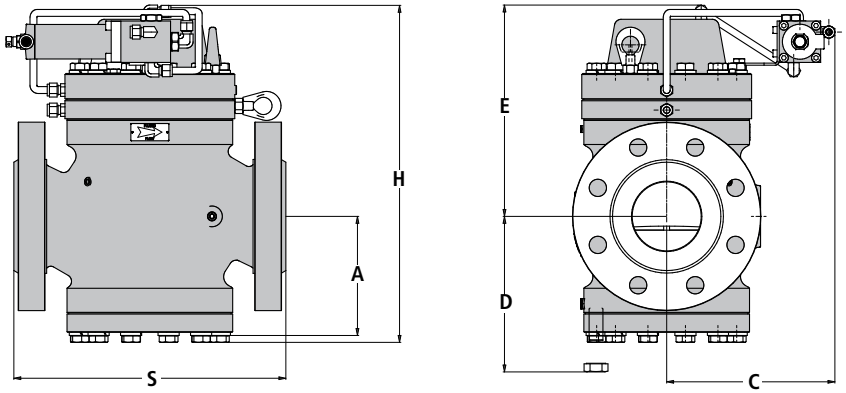


Fig.5

Diameter [mm]					
Millimetres	**25**	**50**	**80**	**100**	**150**
Inches	**1”**	**2”**	**3”**	**4”**	**6”**
S - Ansi 150	183	254	298	352	451
S - Ansi 300	197.4	267	317	368	473
S - Ansi 600	210	286	336	394	508
A	78.5	108	132	168	222
C	195	211	229	250	286
D	115	158	194	225	309
E	250	265	295	300	456
H	335	385	440	481	695

Tab.4

Dimension S according to EN 334 and IEC 534-3

Weights [kg]					
Ansi 150	18	34	63	110	128
Ansi 300	19	36	67	115	138
Ansi 600	20	38	71	126	160

Tab.5

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The data is indicative and not binding.
We reserve the right to make changes without prior notice.

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