HBC 975

Slam Shut
Valves

Pietro
Fiorentini®

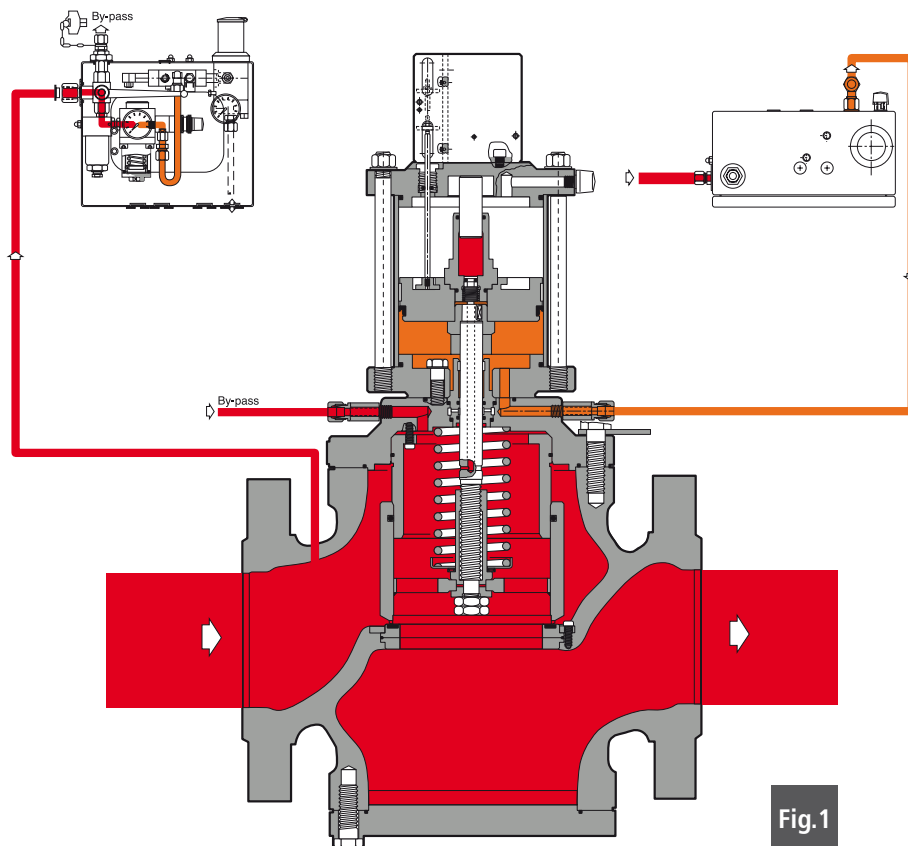# HBC 975

Introduction

HBC 975 is a compact safety device (SAV) which quickly intercepts gas flow whenever the pressure under monitoring reaches a pre-set limits, or whenever manually required by operator on site or through a remote command (optional device).

HBC 975

Fig. 1

Main Features

HBC 975 is a slam-shut valve with self operated actuation and manual resetting. It is an ideal product for transmission networks, large industrial and any high profile application. **HBC 975** is suitable for natural gas and all non-corrosive gaseous media.

Its "top entry" design allows an easy maintenance without removing the body from the pipeline.

Main features:
- Intervention for overpressure and/or underpressure;
- Manual push-botton control at installation point;
- 3 way solenoid valve for remote control (available on request);
- Manual re-setting;
- Internal by-pass for pressure equalization before resetting
- Possibility of application of devices for remote signal information (contact switches or proximity switches);

HBC 975

Designed With Your Needs In Mind

- **Compact Design**
- **Easy Maintenance**
- **Top Entry**
- **Fast Response Time**
- **High Accuracy**
- **Insensitive To Vibrations**
- **Third Party Certified By Third Party**
- **Integral By-Pass**

Main Features

-Design pressure: up to 46,8 bar (678,6 psi) for class 300
                            102 bar (1479 psi) for class 600
-Design temperature: -20 °C to +60 °C (-14 to + 140 °F)
-Ambient temperature: -20 °C to + 60 °C (-4 to + 140 °F)
-Range of intervention for the Who: 1,0 to 85 bar (14,5 - 1232 psi)
-Range of intervention for the Whu: 0,4 to 75 bar (5,8 - 1087 psi)
 (depending on installed pressure controller)
-Accuracy class AG: ± 5%
-Available size DN: 4" - 6" - 8" - 10"
-Flanging: class ANSI 300 - ANSI 600 RF or RTJ according to ANSI16.5

Materials

Body	Cast steel ASTM A352 LCC for class 300 and 600
Valve seat	AISI 416 Stainless steel
Plug	Steel + vulcanized rubber
Diaphragm	Ruberized canvans
Seals	Nitril rubber
Compression fitting	According to DIN 2353 in zinc-plated carbon steel

The characteristics listed above are referred to standard products. Special characteristics and materials for specific applications may be supplied upon request.

Calculation of the pressure drop

The following formula can be used to calculate pressure losses of the slam shut valve in fully open position:

$$\Delta p = \frac{K_G \times Pu - \sqrt{(K_G^2 \times Pu^2) - 4Q^2}}{2 \times K_G}$$

Δp = pressure loss in bar
Pu = absolute inlet pressure in bar
Q = flow rate inlet Stm^3/h
K_G = flow coefficient

Pressure loss calculated as above is referred to natural gas with specific gravity of 0.61 (air=1) temperature of 15 °C at valve inlet, for gases with different specific gravity S and temperatures t °C, pressure loss can still becalculated with the above formula, replacing the value of the flow coefficent in the table with:

$$K_G1 = K_G \times \sqrt{\frac{175.8}{S \times (273.16 + t)}}$$

Table 1: K_G valve coefficient

Nominal diameter (mm)	100	150	200	250
Size (inches)	4"	6"	8"	10"
K_G coefficient	7120	14780	23080	32470

Table 2 lists the correction factors Fc for a number of gases at 15 °C.

Table 2: Correction factors FC

Type of gas	Relative density	Fc Factor
Air	1.0	0.78
Propane	1.53	0.63
Butane	2.0	0.55
Nitrogen	0.97	0.79
Oxygen	1.14	0.73
Carbon dioxide	1.52	0.63

Caution:

in order to get optimal performance, to avoid premature erosion phenomena and limit noise emissions, it is recommended to check that the gas speed at the outlet flange does not exceed 50 m/sec.
The gas speed at the outlet flange may be calculated by means of the following formula:

$$V = 345.92 \times \frac{Q}{DN^2} \times \frac{1 - 0.002 \times Pd}{1 + Pd}$$

where:

V = gas speed in m/sec DN = nominal size of regulator in mm

Q = gas flow rate in Stm^3/h Pd = outlet pressure in barg.

Table 3: Pressure switches

Type	SH1190-103	SH1190-104	SH1190-105	SH1190-105/98
Overpressure range (OPSO).	1,3 ÷ 11	10 ÷ 31,5	25 ÷ 76	58 ÷ 85
Underpressure range (UPSO).	0,4 ÷ 6,8	4,5 ÷ 20,6	11 ÷ 50	45 ÷ 75
Press. in bar				

Installation

To ensure proper operation and declared performance, the followings should be observed when installing the **HBC 975** slam shut valves:

a) filtering: the gas flowing in the piping must be adequately filtered. It is also recommended that the piping upstream from the regulator is clean and avoids impurities;

b) sensing line: for correct operation, the sensing line nipple must be appropriately positioned. Between the valve and the downstream take-off there must be a lenght of straight pipe ≥ four times the diameter of the outlet pipe; beyond the take-off, there must be a further lenght of pipe ≥ twice the same diameter.
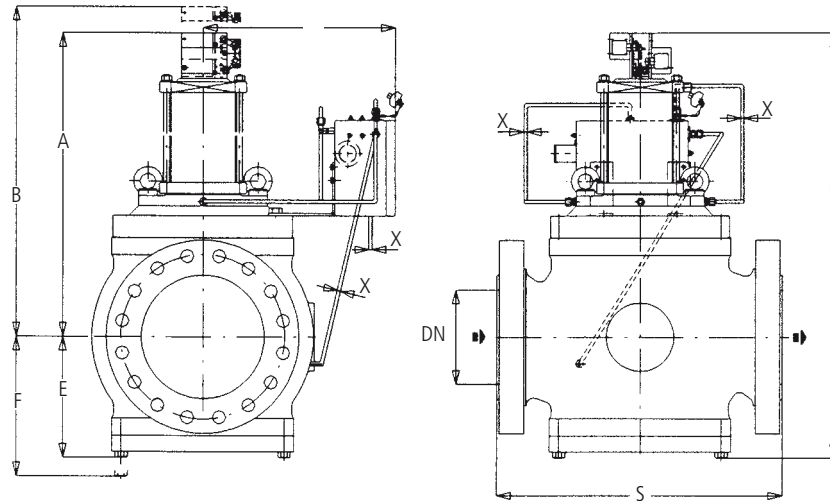
Overal dimensions in mm

Size (mm)	100	150	200	250
Inches	4″	6″	8″	10″
S - Ansi 300	368	473	568	708
S - Ansi 600	394	508	609	752
A	518	645	687	796
B	650	835	900	1060
C	358	410	445	510
D	700	870	952	1136
E	180	225	265	340
F	205	275	320	440
X				

Weights in Kgf

ANSI 300	120	239	349	650
ANSI 600	131	256	375	700

Face to face dimensions S according to IEC 534-3 and EN 334

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