Pietro Fiorentini®

UNEQUALLED HIGH TURNDOWN (1:500)

LOW-NOISE TRIM

REFLUX 919 CONTROL

Pietro Fiorentini®

- ABSOLUTE TIGHT SHUT OFF
- UNEQUALLED HIGH TURNDOWN (1:500)
- LONG TRIM LIFE
- EASY MAINTENANCE
- STANDARDIZED PARTS
- LOW-NOISE TRIM
- HIGH CAPACITY
- HIGH ACCURACY
- HIGH STABILITY
- PRESSURE CLASSES: S150, S300, S600

The Reflux 919 Control is a pneumatic control valve, specifically designed for use of natural gas, commonly operated by a direct acting type diaphragm actuator (mod. 200) or reverse acting type diaphragm actuator (mod. 300).

- The control loop is 6-30 psig: other signals available on application
- The absolute tight shut off is obtained by the soft seated patented Fiorentini design
- Very high rangeability due to special plug guiding (1:500)
- The actuator design has a special balanced valve plug for minimum actuator requirement
- Maximum inlet pressure 85 bar
- Maximum pressure drop 83 bar
- Nace MR 01/75 version available on request
- Retrofitting capability by built-in special silencer and Fiorentini patented **channel flow** trim.

Table 1 - Capacity information

Size	1”	2”	3”	4”	6”	8”	10”
Kg	605	2.335	5.194	8.416	17.471	27.282	38.425
Cg	575	2.200	4.937	8.000	16.607	25.933	36.525
Cv	18	69	154	250	519	810	1141

CHOOSING THE SIZE OF THE VALVE

Choise of the valve is usually on the basis of Cg valve and K_G flow rate coefficients. Cg coefficient corresponds numerically to the value of air flow in SCF/H in critical conditions with full open valve operating with an upstream pressure of 1 psia at a temperature of 15°C. K_G coefficient corresponds numerically to the value of natural gas flow rate in Stm/h in critical conditions with full open valve operating with an upstream pressure of 2 bar abs at a temperature of 15°C.
Flow rates at full open position and various working conditions, are bound by the following formule where:

Pe = inlet pressure in bar (abs)
Pa = outlet pressure in bar (abs)
Q = flow rate in Stm/h
K_G, Cg = valve coefficients

1. When valve’s Cg and K_G and values of Pe and Pa are known

1.1 in non critical conditions:

$$Q = K_G \sqrt{(Pe - Pa)\,Pa}$$

(valid for Pe < 2 • Pa)

$$Q = 0{,}525 \bullet Cg \bullet Pe \bullet \sin\left(106{,}78 \sqrt{\frac{Pe - Pa}{Pe}}\right)$$

(valid for Pe < 2 • Pa)

1.2 in critical conditions:

$$Q = \frac{K_G}{2} Pe$$

(valid for Pe ≥ 2 Pa)

Q = 0.525 • Cg • Pe (valid for Pe ≥ 2 Pa)

2 Viceversa, when values of Pe, Pa and Q are known calculate the values of Cg or K_G with:

2.1 in non critical-conditions:

$$KG = \frac{Q}{\sqrt{Pa\,(Pe - Pa)}}$$

(valid for Pe < 2 • Pa)

$$Cg = \frac{Q}{0{,}525 \times Pe \times \sin\left(\sqrt{\frac{Pe - Pa}{Pe}}\right)}$$

(valid for Pe < 2 • Pa)

2.2 in critical conditions:

$$KG = \frac{2Q}{Pe}$$

$$Cg = \frac{Q}{0{,}525 \bullet Pe}$$

(valid for Pe ≥ 2 • Pa)

A oversizing of 20% on calculated values is raccomanded.

Cg formulae give flow rate values more correct while KG formulae give values 5% higher than real ones only in noncritical conditions.
In the case of noise limitation level a speed at the outlet flange of 130 m/sec. it is also raccomanded.
Above formulae are valid for natural gas with a relative specific gravity of 0,61 compared to air and temperature of 15°C at inlet.
For gases with different relative specific gravity (S) and temperature t (in °C), value of flow rate calculated as above, must be adjusted multiplying by:

$$K = \sqrt{\frac{175{,}8}{S\,(273{,}16 + t)}}$$

As already mentioned Cg and KG values are related to a fully-open valve.
Diagram of fig. 1 gives the values of Cg and KG coefficients in function of plug lift. Both coefficient values and plug lift are expressed in percentage of the maximum value.

VALVE CHARACTERISTICS Cg and KG

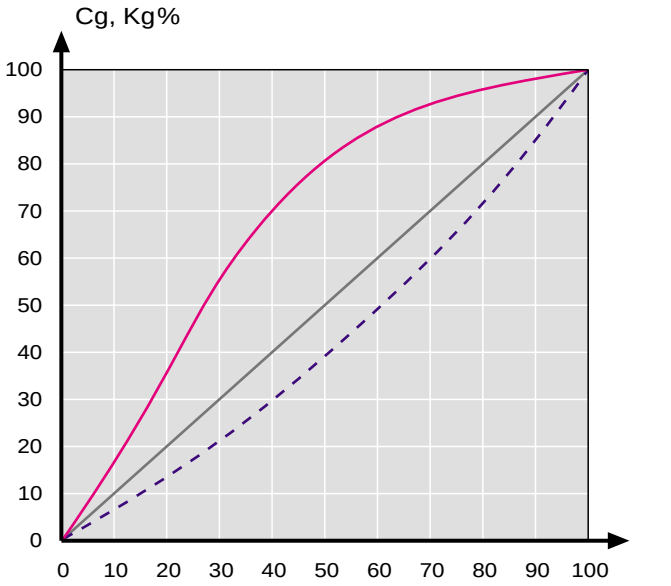


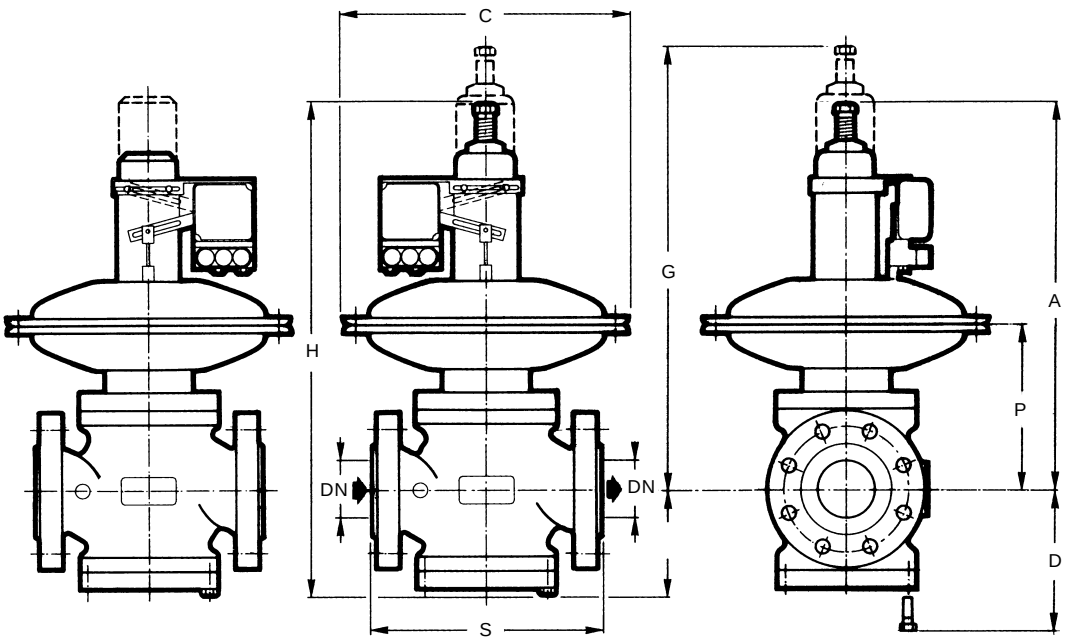
Fig. 1

VALVE CHARACTERISTICS

Modified equal percent, inherent linear (easily) characterizable with positioner CAM)

Table 2- STD MATERIAL INFORMATION

PART	MATERIAL
SEAT RING	Vulcanized nitril TN040
BODY	ASTM A216 WCB
VALVE STEM	AISI 416
PISTON	Carbon steel
DIAPHRAGM PLATES	Carbon stell
SEALS	Viton



Direct action version

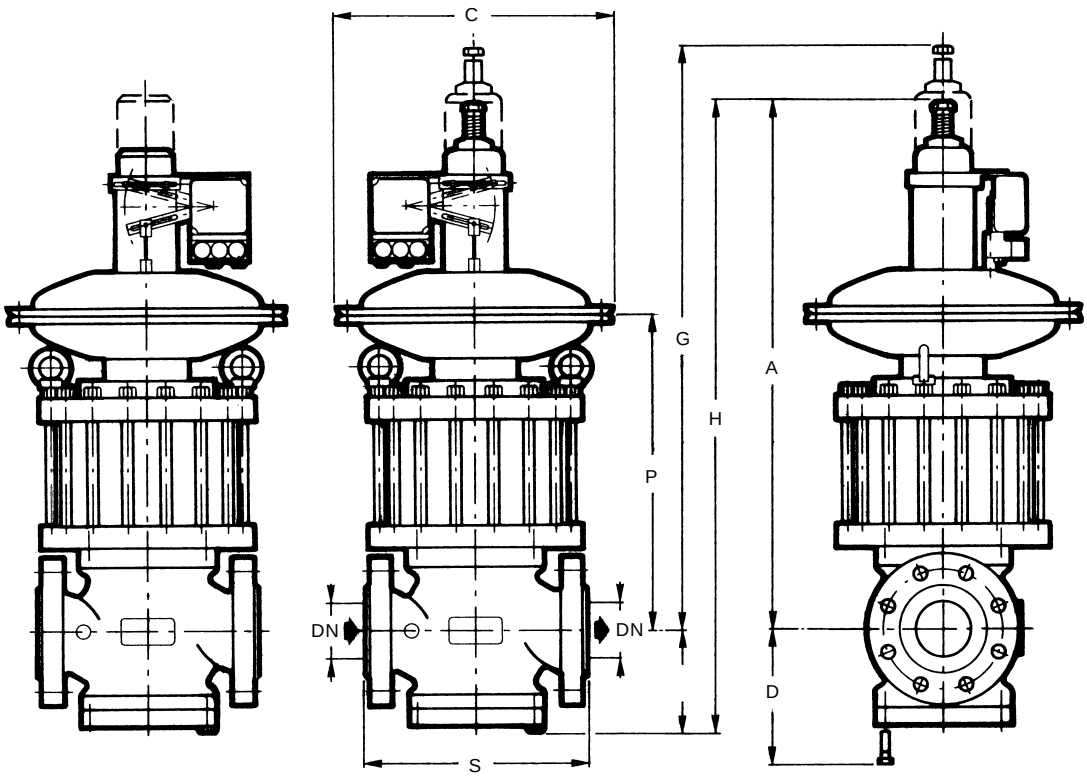
OVERALL DIMENSIONS in mm. WEIGHTS

Size		25	50	80	100	150	200	250
		1”	**2”**	**3”**	**4”**	**6”**	**8”**	**10”**
S	**ANSI 150**	183	254	298	352	451	543	673
	ANSI 300	197	267	317	368	473	568	708
	ANSI 600	210	286	336	394	508	609	752
A		550	580	615	645	670	720	830
A*		503	533	568	598	657	707	817
B		100	130	150	190	225	265	340
C		375	375	375	375	495	495	630
D		130	160	200	250	275	320	440
G		640	660	715	755	755	820	930
G*		593	613	668	708	742	807	917
H		650	710	765	835	895	985	1170
H*		603	663	718	788	882	972	1157
P		170	200	235	265	300	350	460

* dimensions only for direct action

Weights - Kgf

ANSI 150	35	53	75	117	210	330	/
ANSI 300	40	58	85	140	280	390	600
ANSI 600	41	60	90	145	300	420	700



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	ANSI 300	197	267	317	368	473	568	708
	ANSI 600	210	286	336	394	508	609	752
A		750	805	885	955	955	1055	1330
A*		703	758	838	908	942	1042	1317
B		100	130	150	190	225	265	340
C		375	375	375	375	495	495	630
D		130	160	200	250	275	320	440
G		840	885	985	1065	1040	1155	1430
G*		793	838	938	1018	1027	1142	1417
H		850	935	1035	1145	1180	1320	1670
H*		803	888	988	1098	1167	1307	1657
P		370	425	505	575	585	685	960

* dimensions only for direct action

Weights - Kgf

ANSI 150	58	93	135	207	405	620	/
ANSI 300	63	108	167	240	480	665	1000
ANSI 600	64	112	175	263	500	705	1130

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I dati sono indicativi e non impegnativi. Ci riserviamo di apportare eventuali modifiche senza preavviso.
The data are not binding. We reserve the right to make modification without prior notice.

Pietro Fiorentini **S.p.A.**

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