Pietro Fiorentini

Reflux 819/FO

Pressure Regulators

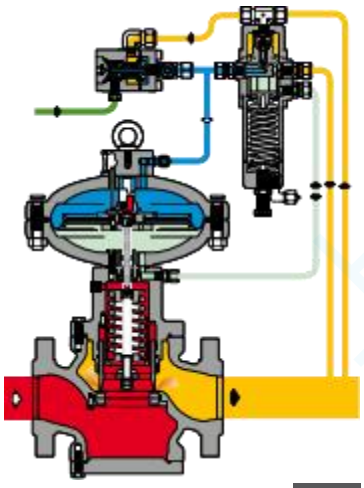
Reflux 819/FO

Reflux 819/FO is pilot-controlled pressure regulator for medium and high pressure applications.
Reflux 819/FO is normally a fail to open regulator and specificaly will open under the following conditions:
- breakage of main diaphragm;
- lack of feeding to the pilot loop.

This regulator is suitable for use with previously filtered, non-corrosive gases.

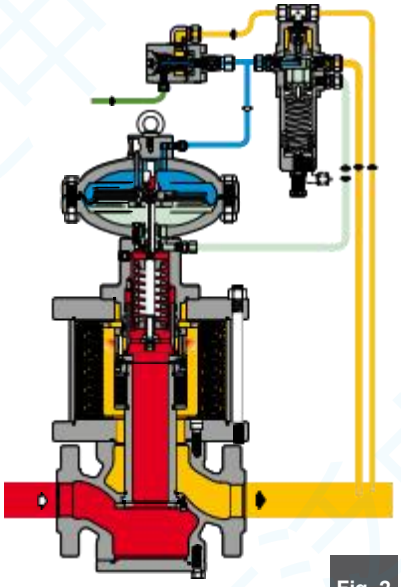
Modular Design

The modular design of pressure regulator Reflux 819/FO allows retrofiting of an emergency monitor PM/819 or slam shut valve and/or silencer on the same body. The Reflux 819/FO regulator is truly a “top entry design” which allows easy maintenance and/or retrofiting options in the field. The unique dynamic balancing system ensures an outstanding turn down ratio combined with an extreme accurate outlet pressure control.



Reflux 819/FO

Fig. 1



Reflux 819/FO + DB

Fig. 2

DESIGNED WITH YOUR NEEDS IN MIND

- COMPaCT DESIGN
- EaSY MaINTENaNCE
- TOP ENTRY
- LOW NOISE
- OUTSTaNDING TURN DOWN RaTIO
- HIGH aCCURaCY
- LOW OPERaTION COST
- ExTREME FLExIbILITY

UNIQUE FULLY FaIL TO OPEN DESIGN

SILENCER Db/819 — Reflux 819/FO

Whenever certain noise limit is desired, the silencer allows you to considerably reduce the noise level (dBA) up to the required value.

The Reflux 819/FO pressure regulator can be supplied with an incorporated silencer in either the standard version or version with incorporated slam-shut or incorporated monitor regulator.

With the built-in silencer, the Cg and KG valve coefficients are 5% lower than the corresponding version without the silencer. Given the modular arrangement of the regulator, the silencer may be retrofited to both standard Reflux 819/FO version as well as those with incorporated slam-shut or monitor, without any need to piping modification.

Pressure reduction and control operate the same manner as in standard version.

SLaM SHUT Sb/82 OR Hb/97 — Reflux 819/FO

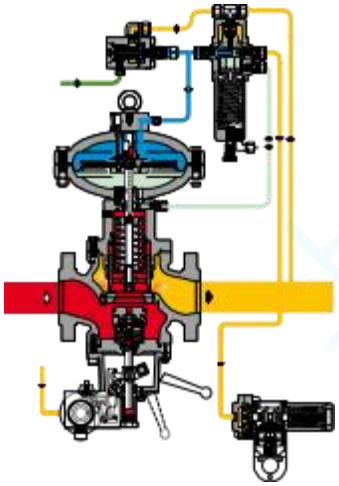


Fig. 3

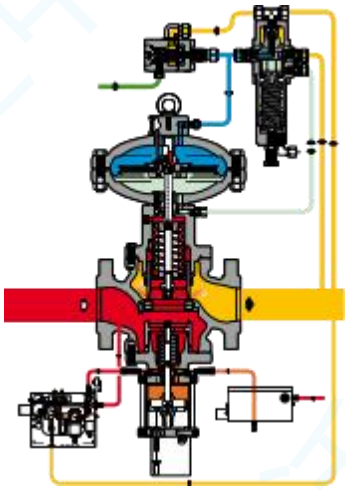


Fig. 4

The Reflux 819 pressure regulator offers the possibility of installing an incorporated slam shut valve SB/82 or HB/97 valve, depending on the regulator size, and this can be done either during the manufacture process or be retrofited in the field. Retrofiting can be done without modifying the pressure regulator assembly.

The Cg and KG coefficients of a regulator plus incorporated slam-shut system are 7% lower than those for standard versions.

The main characteristics of this device are:

- intervention for over pressure and/or under pressure
- manual re-setting with internal by-pass activated by the lever mechanism;
- manual push button control;
- compact dimensions;
- easy maintenance;
- optional pneumatic or electromagnetic remote control;
- optional installation remote signal devices (contact switches or proximity switches).

MONITOR PM/819 Reflux 819/FO

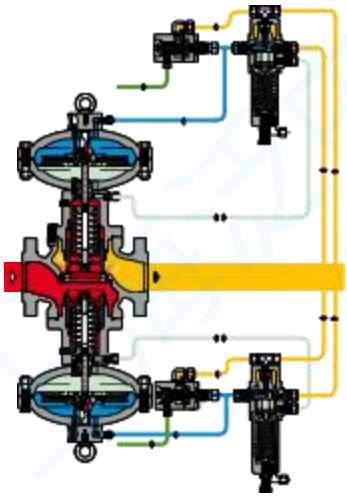


Fig. 5

Reflux 819/FO + PM/819/FO

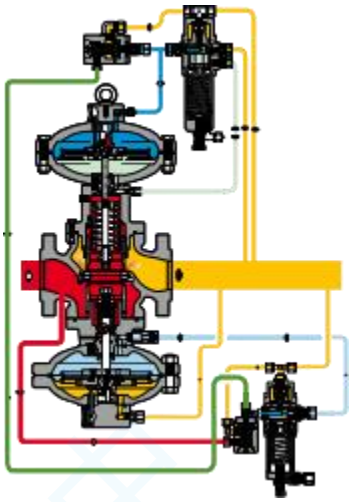


Fig. 6

Reflux 819/FO + PM/819

This emergency regulator (monitor) is directly integrated to the body of the main regulator. Both pressure regulators, therefore, use the same valve body, although they have indipendent actuators, pilots and valve seats.

The operational characteristics of the PM/819 monitor are the same as for the Reflux 819/FO regulator

The Cg and KG coefficients of regulator having an incorporated monitor are 7% lower than those for standard version.

Another great advantage offered by the incorporated monitor regulator is that it can be installed at any time, even on an already existing regulator, without piping modification. This solution allows the construction of reduction lines with compact dimensions.

The monitor regulator can either be a PM/819/FO fail open regulator (fig. 5) or a PM/819 fail close regulator (fig. 6).

MaIN FEaTURES Reflux 819/FO

> Design pressure: up to 102 bar (1479 Psig)
> Design temperature: -10°C to + 60°C (+14 to + 140°F) (-20°C to + 60°C - 4 to + 140°F on request)
> ambient temperature: -10°C to + 60°C (+14 to + 140°F) (-20°C to + 60°C - 4 to + 140°F on request)
> Range of inlet pressure bpe: 3 to 102 bar (43 to 1479 Psig)
> Range of outlet pressure Wh: 1 to 74 bar (14,5 to 1073 Psig) depending on installed pilot
> Minimum working differential pressure: 2 bar (30 Psig) when used alone; 0.5 bar (7.25 Psig) when used in combination with a Reflux 819 FC monitor."
> accuracy class aC: up to 1
> Closing pressure class SG: from 5 to 1 depending on outlet pressure
> available size DN: 1" -2" -3" -4" -6" -8" -10"
> Flanging: class 150-300-600 RF or RTJ according to aNSI b16.5 and PN16 according to ISO 7005.

MaTERIaLS — Reflux 819/FO

body	Cast steel ASTM A352 LCC for classes 300 and 600 ASTM A216 WCB for classes 150 and PN16
Head covers	ASTM A350 LF2 Forged steel
Stem	AISI 416 Stainless steel
Plug	ASTM A 350 LF2 Nickel coated on sealing surfaces
Valveseat	Steel + vulcanized rubber
Seals	Nitrile rubber
Compression fittings	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.

Cg, KG and K1 coefficient — Reflux 819/FO

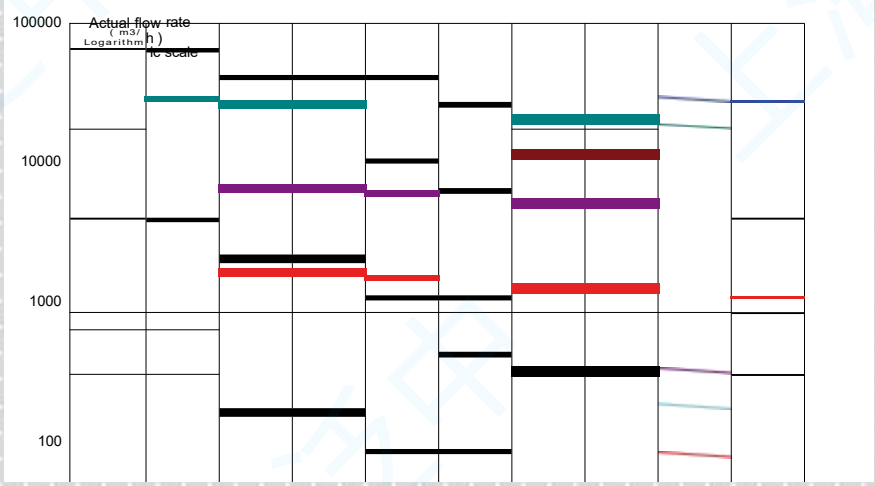
Nominal diameter (mm)	25	50	80	100	150	200	250
Size (inches)	1”	2”	3”	4”	6”	8”	10”
Cg flow coefficient	575	2220	4937	8000	16607	25933	36525
KG flow coefficient	605	2335	5194	8416	17471	27282	38425
K1 body shape factor	106,78	106,78	106,78	106,78	106,78	106,78	106,78

For sizing formula refer to www.fiorentini.com/sizing

CaUTION:

The graph gives a quick reference of maximum recommended regulator capacity depending on selected size.

Values are expressed in actual m3/h of Natural gas (s.g. 0,6): to have the data directly in Nm3/h it is necessary to multiply the value by the outlet pressure value in bar – absolute.



PILOTS — Reflux 819/FO

Reflux 819 regulators are equipped with series 200 pilot as listed below:
- 204/FO. control range Wh: 1.0 to 33 bar; (14,5 to 478 Psig)
- 205/FO. control range Wh: 20 to 60 bar; (290 to 870 Psig)
- 207/FO. control range Wh: 41 to 74 bar; (595 to 1073 Psig)

Pilots may be adjusted manually or remotely

Pilot adjustments — Reflux 819/FO

Pilot type .../a	Manual setting
Pilot type .../D	Electric remote setting control
Pilot type .../CS	Pneumatic remote setting control
F.I.O.	Smart unit for remote setting, monitoring flow limitation and indirect flow measurement

Preregulators

The pilot loop is completed with a device called preregulator, separate from the pilot.
The preregulators listed below are available:

- **R14/FO**: self adjusting preregulator that automatically regulates the feeding pressure to the pilot complete with integral filter at the inlet.

PRESSOSTaTIC DEVICE — Reflux 819/FO

MOD. Sb	MIN.	Max
101M	0,01* ÷ 0,26*	0,02 ÷ 1*
102M	0,04 ÷ 2,8	0,2 ÷ 5,5
102MH	2,8 ÷ 5,5	0,2 ÷ 5,5
103M	0,2 ÷ 8	2 ÷ 22
103MH	8 ÷ 19	2 ÷ 22
104M	1,6 ÷ 18	7,5 ÷ 45
104MH	18 ÷ 41	7,5 ÷ 45
105M	3 ÷ 44	30 ÷ 90
105MH	44 ÷ 90	30 ÷ 90

MOD. Hb	MIN.	Max
103	0,4 ÷ 6,8	1.3 ÷ 11
104	1,01 ÷ 20,6	10 ÷ 31,5
105	2,5 ÷ 50	25 ÷ 76
105/92	45 ÷ 75	58 ÷ 85

values in bar(g)

OPTIONaLS — Reflux 819

For Regulator
- stroke limiter
- flow-limiting devices
- limitswitches
- position transmitters
- steel fittings, single or dual sealing

For Pilot
- supplementary filter CF 14
- dehydrating filter CF 14/D

IN-LINE MONITOR — Reflux 819/FO

The monitor is generally installed upstream of the main regulator. Although the function of the monitor regulator is different, the two regulators are virtually identical from the point of view of their mechanical components. The only difference is that monitor is set at a higher pressure than the main regulator. The Cg and KG coefficients of the regulator plus in-line monitor system are about 20% lower than those of the regulator alone.

The in-line monitor can either be a Reflux 819/FO fail open regulator (fig.7) or a Reflux 819 fail close regulator (fig.8).

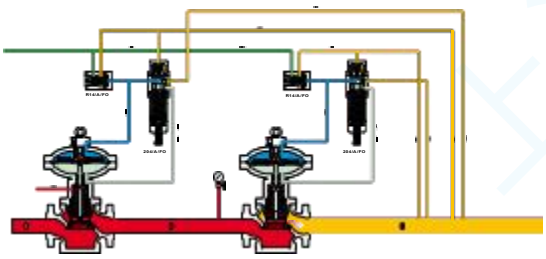


Fig. 7

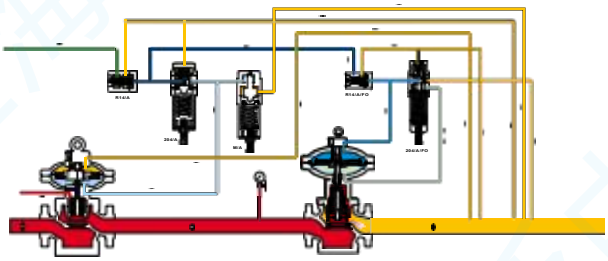


Fig. 8

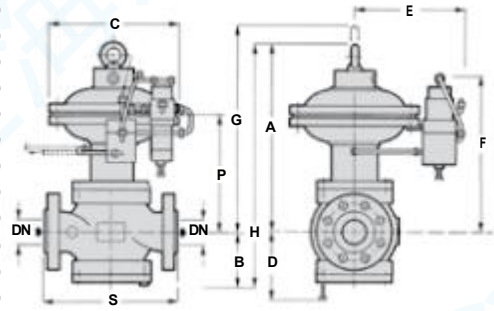
M/aaCCELERaTOR — Reflux 819/FO

When the monitor is required to take over rapidly in the event of a main regulator failure, an M/A accelerator pilot installation on the monitor is recommended. Installation of the accelerator is mandatory when monitor is used as safety accessory according to PED directive. This device, connected by sensing line to the downstream pressure, discharges the gas enclosed in the motorization chamber of the monitor regulator, allowing the monitor to take over faster.

The set point of M/A accelerator is usually higher than set point of the monitor by 0.3 to 0.5 bar.

In case of working monitor configuration (two stage pressure cut with monitor override) the accelerator may not be necessary.

REFLUx 819/FO — Reflux 819/FO



Overal dimensions in mm

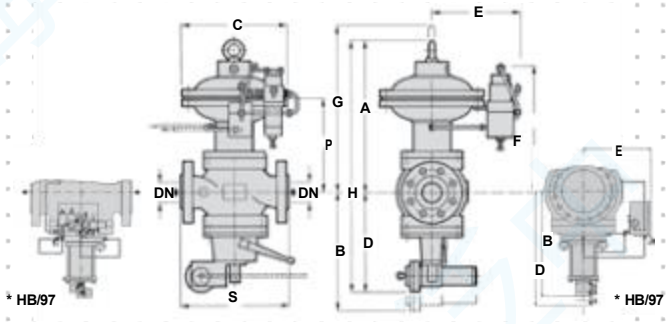
Size (mm)	25	50	80	100	150	200	250
Inches	1"	2"	3"	4"	6"	8"	10"
S -ansi 150/PN 16	184	254	298	352	451	543	673
S -ansi 300	197	267	317	368	473	568	708
S -ansi 600	210	286	336	394	508	609	752
a	371	435	490	532	789	887	1075
b	100	130	150	190	225	265	340
C	278	278	360	360	510	510	610
D	130	160	200	250	275	320	440
E	310	310	320	320	420	420	470
F	311	375	410	422	549	597	847
G	461	515	590	642	874	987	1175
H	471	560	640	722	1014	1152	1515
P	220	285	320	332	459	507	775
Tubing Connections				Δe10 x Δi 8			

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

Weights in Kgf

S -ansi 150/PN 16	44	61	105	146	308	408	900
S -ansi 300	45	62	109	156	345	470	950
S -ansi 600	46	64	112	165	360	495	1000

REFLUx 819/FO + Sb82 / + Hb97 — Reflux 819/FO



Overal dimensions in mm

Size (mm)	25	50	80	100		150		200		250	
Inches	1"	2"	3"	4"		6"		8"		10"	
S -ansi 150/PN 16	184	254	298	352		451		543		673	
S -ansi 300	197	267	317	368		473		568		708	
S -ansi 600	210	286	336	394		508		609		752	
a	371	435	490	532		789		887		1075	
b	215	240	270	300	518*	375	645*	450	687*	530	796*
C	278	278	360	360		510		510		610	
D	280	330	380	440	650*	560	835*	625	900*	730	1060*
E	310	310	320	320	358*	420	410*	420	445*	470	510*
F	311	375	410	422		549		597		847	
G	461	515	590	642		874		987		1147	
H	471	675	760	832		1164		1337		1515	
P	221	285	320	332		459		507		775	
Tubing Connections				Δe10 x Δi 8							

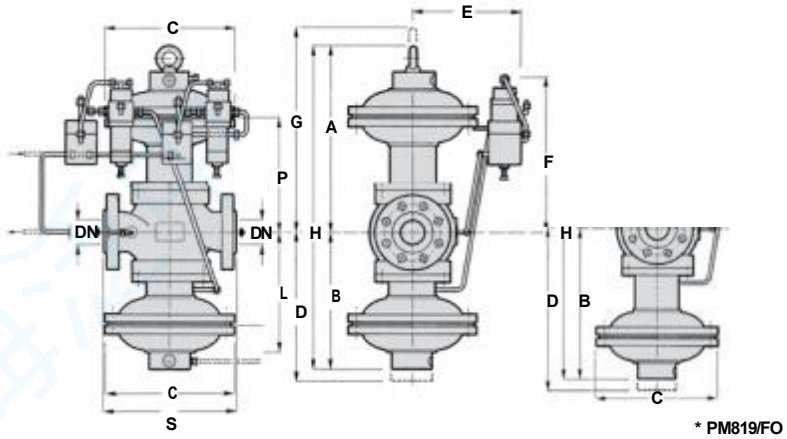
*indicated Dimensions with the MODEL HB/97

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

Weights in Kgf

S -ansi 150/PN 16	53	71	115	160	150*	320	310*	460	414*	950	894*
S -ansi 300	55	73	122	171	230*	365	424*	525	599*	1000	1090*
S -ansi 600	56	75	125	180	276*	380	476*	550	684*	1050	1200*

Pietro Fiorentini



* PM819/FO

Overal dimensions in mm

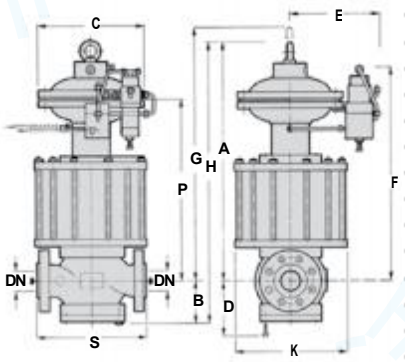
Size(mm)	25		50		80		100		150		200		250	
Inches	1"		2"		3"		4"		6"		8"		10"	
S-ansi150/PN16	184		254		298		352		451		543		673	
S-ansi300	197		267		317		368		473		568		708	
S-ansi600	210		286		336		394		508		609		752	
a	371		435		490		532		789		887		1075	
b	320	371*	350	435*	430	490*	490	532*	650	789*	750	887*	800	1075*
C	278		278		360		360		510		510		610	
D	410	461*	430	515*	530	590*	600	642*	735	874*	850	987*	900	1175*
E	310		310		320		320		420		420		470	
F	311		375		410		422		549		597		847	
G	461		515		590		642		874		987		1175	
H	691	742*	785	870*	920	980*	1022	1064*	1439	1578*	1637	1774*	1875	2150*
P	221		285		320		332		459		507		847	775*
L	170		200		260		290		320		370		500	
TubingConnections							Δe10xΔi8							

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

Weights in Kgf

S-ansi150/PN16	84	105	180	245	517	670	1400
S-ansi300	85	106	184	255	554	731	1450
S-ansi600	86	108	187	264	569	756	1500

REFLUx 819/FO + Db/819 — Reflux 819/FO



Overal dimensions in mm

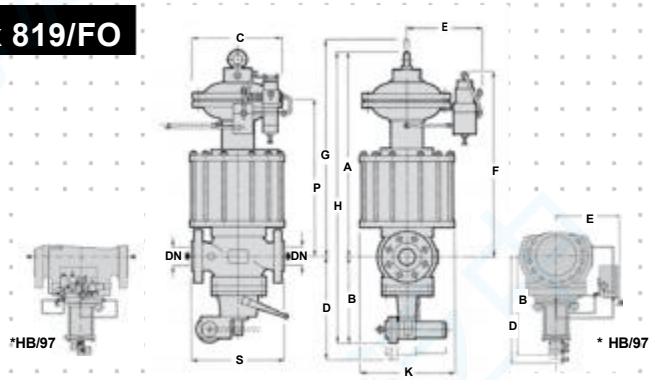
Size(mm)	25	50	80	100	150	200	250
Inches	1"	2"	3"	4"	6"	8"	10"
S-ansi150/PN16	184	254	298	352	451	543	673
S-ansi300	197	267	317	368	473	568	708
S-ansi600	210	286	336	394	508	609	752
a	571	660	760	842	1074	1222	1575
b	100	130	150	190	225	265	340
C	278	278	360	360	510	510	610
D	130	160	200	250	275	320	440
E	310	310	320	320	420	420	470
F	476	580	675	812	394	1032	1375
G	661	725	845	937	1259	1387	1775
H	671	790	910	1032	1299	1487	1915
P	421	485	565	627	829	907	1275
K	220	300	330	390	480	595	695
TubingConnections				Δe10xΔi8			

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

Weights in Kgf

S -ansi 150/PN 16	70	126	195	260	565	835	1280
S -ansi 300	72	128	204	289	608	925	1380
S -ansi 600	73	130	207	298	640	950	1430

REFLUx 819/FO+Db/819+Sb82 /+Hb97 — Reflux 819/FO



Overal dimensions in mm

Size(mm)	25	50	80	100		150		200		250	
Inches	1"	2"	3"	4"		6"		8"		10"	
S-ansi150/PN16	184	254	298	352		451		543		673	
S-ansi300	197	267	317	368		473		568		708	
S-ansi600	210	286	336	394		508		609		752	
a	571	660	760	842		1074		1222		1575	
b	215	240	270	300	518*	375	645*	450	687*	530	796*
C	278	278	360	360		510		510		610	
D	280	330	380	440	650*	560	835*	625	900*	730	1060*
E	310	310	320	320	358*	420	410*	420	445*	470	510*
F	476	580	675	812		934		1032		1375	
G	661	725	845	937		1259		1387		1775	
H	796	900	1030	1142		1449		1672		2105	
P	421	485	565	617		827		907		1275	
K	220	300	330	390		480		595		695	
TubingConnections				Δe10xΔi8							

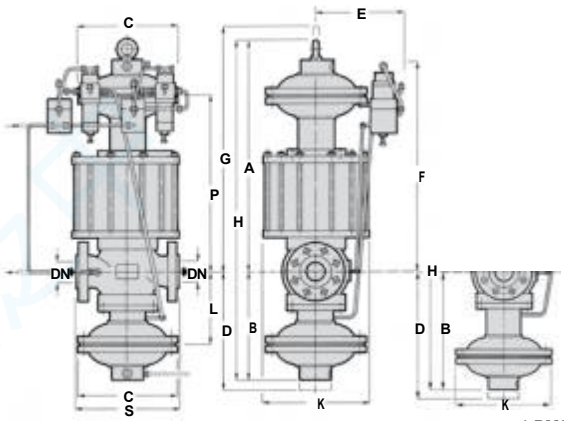
*indicated Dimensions with the MODEL HB/97

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

Weights in Kgf

S -ansi 150/PN 16	79	136	205	274	266*	577	569*	887	569*	1330	569*
S -ansi 300	82	139	217	304	363*	628	687*	980	687*	1430	687*
S -ansi 600	83	141	220	313	409*	660	756*	1500	756*	1480	756*

Pietro Fiorentini



* PM819/FO

Overal dimensions in mm

Size(mm)	25		50		80		100		150		200		250	
Inches	1"		2"		3"		4"		6"		8"		10"	
S-ansi150/PN16	184		254		298		352		451		543		673	
S-ansi300	197		267		317		368		473		568		708	
S-ansi600	210		286		336		394		508		609		752	
a	571		660		760		842		1074		1222		1575	
b	320	371*	350	435*	430	490*	490	532*	650	789*	750	887*	800	925*
C	278		278		360		360		510		510		610	
D	410	461*	430	515*	530	590*	600	642*	735	874*	850	987*	900	1025*
E	310		310		320		320		420		420		470	
F	476		580		675		812		934		1032		1375	
G	661		725		845		937		1259		1387		1775	
H	891	942*	1010	1095*	1190	1250*	1332	1374*	1724	1863*	1972	2109*	2375	2650*
P	421		485		320		617		827		907		1275	
L	221	221*	200	285*	260	320*	290	332*	320	459*	370	507*	500	625*
K	220		300		330		390		480		595		695	
TubingConnections							Δe10xΔi8							

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

Weights in Kgf

S-ansi150/PN16	110	170	270	359	774	1097	1780
S-ansi300	112	172	267	388	783	1185	1880
S-ansi600	113	174	270	397	815	1210	1930

Pietro Fiorentini Solutions

Reducing and metering stations

Slam shut valves

Ball valves

Pietro Fiorentini

Pietro Fiorentini S.p.A.
via E.Fermi 8/10
I-36057 Arcugnano (VI) Italy

Tel. +39 0444 968.511
Fax. +39 0444 960.468

CT-s 504-E September 13

www.fiorentini.com