



Reflex 819/FO
Pressure Regulators

Pressure regulators

Reflux 819/FO

Reflux 819/FO is pilot-controlled pressure regulator for medium and high pressure applications.

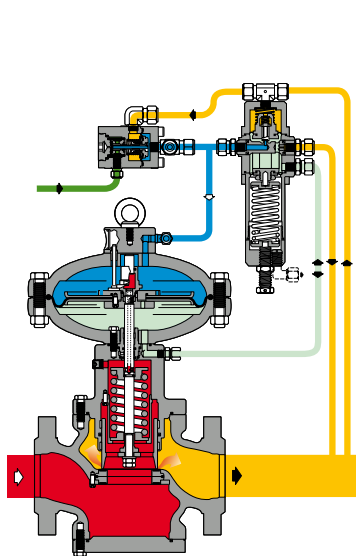
Reflux 819/FO is normally a fail to open regulator and specifically will open under the following conditions:

- breakage of main diaphragm;
- lack of feeding to the pilot loop.

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

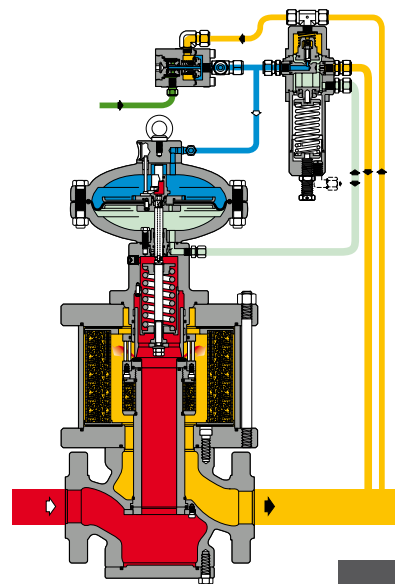
Modular Design

The modular design of pressure regulator Reflux 819/FO allows retrofitting 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 retrofitting 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

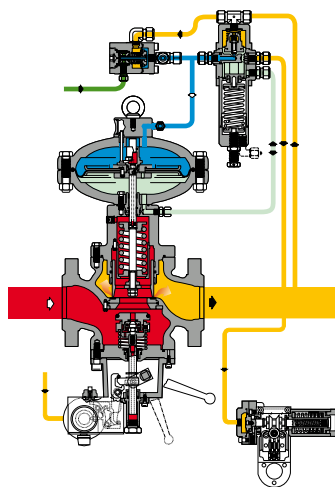
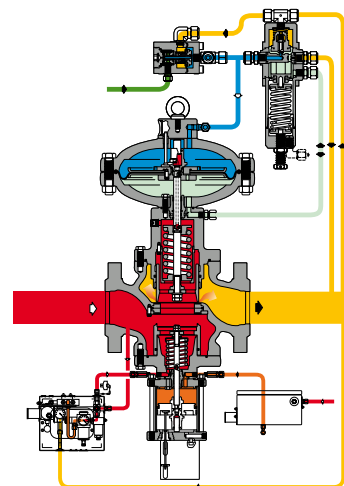
SILENCER DB/819
Reflux 819/FO

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 retrofitted 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.

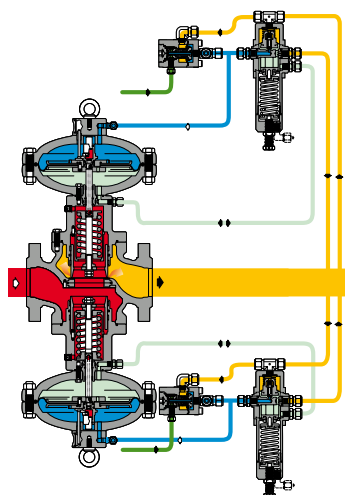
SLAM SHUT SB/82 OR HB/97
Reflux 819/FO

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 retrofitted in the field. Retrofitting can be done without modifying the pressure regulator assembly.

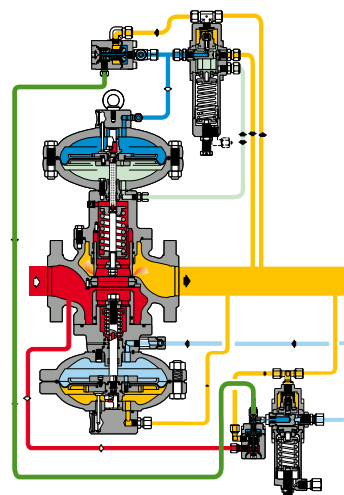
The Cg and KG coefficients of a regulator plus incorporated slam-shut system are 7% lower than those for standard versions.

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 independent 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
Valve seat	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.

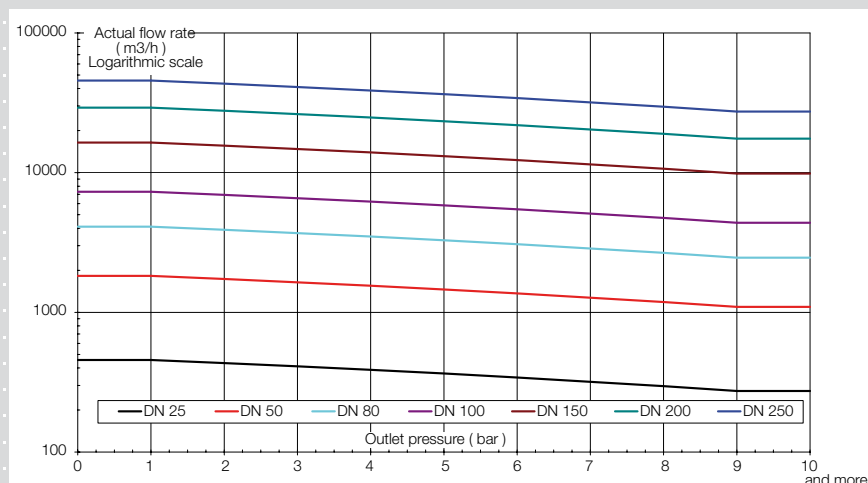
Cg, KG and K1 coefficient
Reflux 819/FO

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

For Regulator

- stroke limiter
- flow-limiting devices
- limit switches
- position transmitters
- steel fittings, single or dual sealing

Reflux 819

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 C_g and K_g 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).

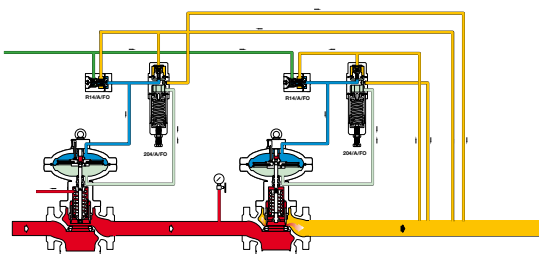


Fig. 7

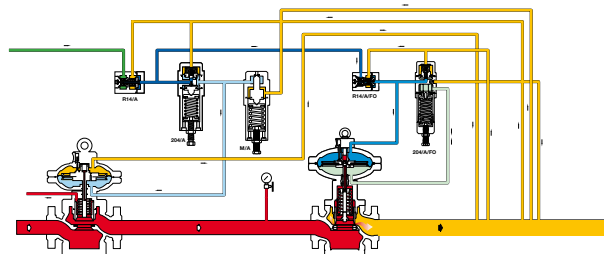


Fig. 8

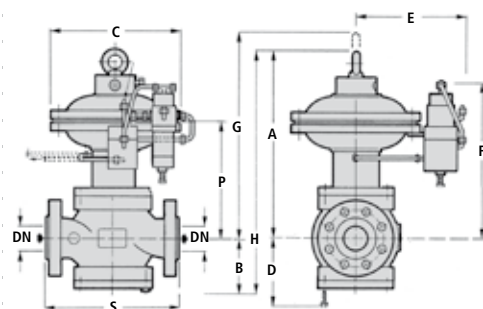
M/A ACCELERATOR

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.



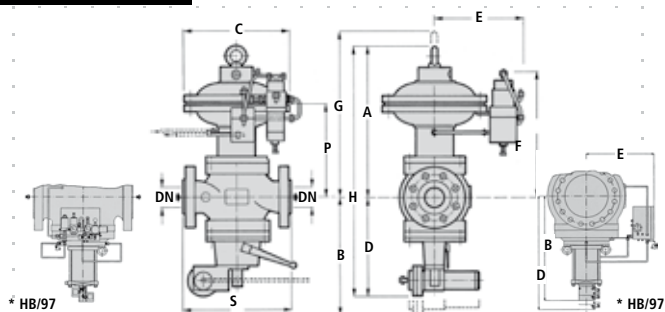
Overall dimensions in mm

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	$\Delta e 10 \times \Delta i 8$						

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

Weights in Kg

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



Overall dimensions in mm.

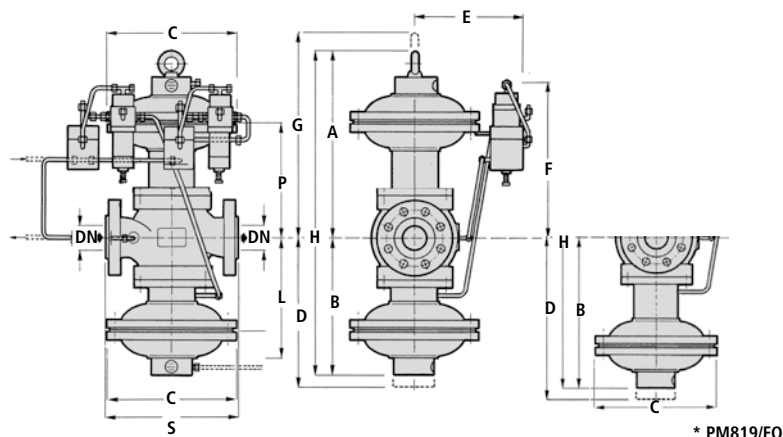
Size (mm)	25	50	80	100	150	200	250
Inches	1"	2"	3"	4"	6"	8"	10"
S - Ansi 150/PN 16	184	254	298	352	451	543	673
S - Ansi 300	197	267	317	368	473	568	708
S - Ansi 600	210	286	336	394	508	609	752
A	371	435	490	532	789	887	1075
B	215	240	270	300	375	450	530
C	278	278	360	360	510	510	610
D	280	330	380	440	560	625	730
E	310	310	320	320	420	420	470
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	$\Delta e 10 \times \Delta i 8$						

*indicated Dimensions with the MODEL HB/97

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

Weights in Kg

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*



Overall 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	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							

Tubing Connections

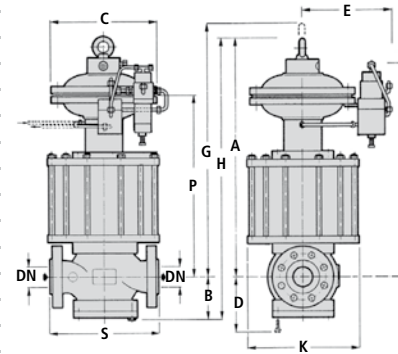
Δe10xΔi8

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

Weights in Kgf

S - Ansi 150/PN 16	84	105	180	245	517	670	1400
S - Ansi 300	85	106	184	255	554	731	1450
S - Ansi 600	86	108	187	264	569	756	1500



REFLUX 819/FO + DB/819
Reflux 819/FO

Overall dimensions in mm.

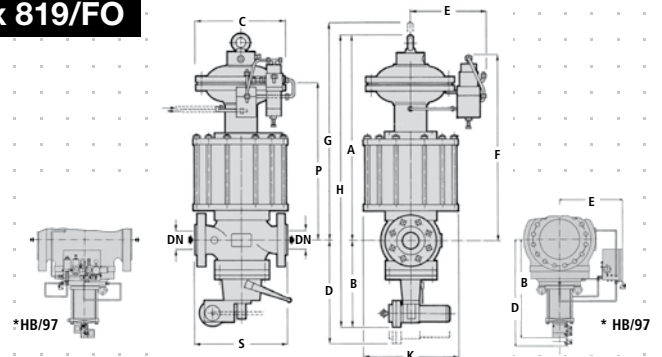
Size (mm)	25	50	80	100	150	200	250
Inches	1"	2"	3"	4"	6"	8"	10"
S - Ansi 150/PN 16	184	254	298	352	451	543	673
S - Ansi 300	197	267	317	368	473	568	708
S - Ansi 600	210	286	336	394	508	609	752
A	571	660	760	842	1074	1222	1575
B	100	130	150	190	225	265	340
C	278	278	360	360	510	510	610
D	130	160	200	250	275	320	440
E	310	310	320	320	420	420	470
F	476	580	675	812	934	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

Tubing Connections

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

 $\Delta e 10 \times \Delta i 8$
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

Overall 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	571	660	760	842	1074	1222	1575
B	215	240	270	300	375	450	530
C	278	278	360	360	510	510	610
D	280	330	380	440	560	625	730
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	796	900	1030	1142	1449	1672	2105
P	421	485	565	617	827	907	1275
K	220	300	330	390	480	595	695

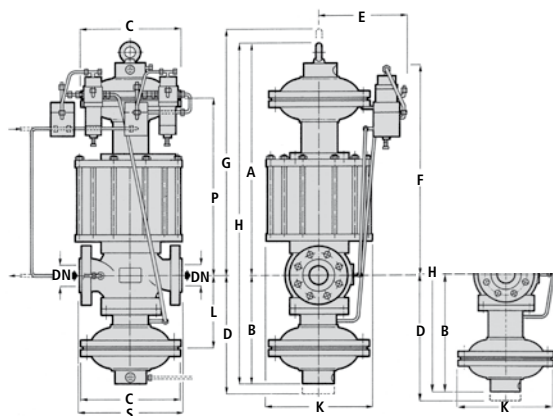
Tubing Connections

*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	577	887	1330
S - Ansi 300	82	139	217	304	628	980	1430
S - Ansi 600	83	141	220	313	660	1500	1480



* PM819/FO

Overall 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	571	660	760	842	1074	1222	1575
B	320	371*	350	435*	430	490*	532*
C	278	278	360	360	510	510	610
D	410	461*	430	515*	530	590*	600
E	310	310	320	320	642*	735	874*
F	476	580	675	812	934	1032	1375
G	661	725	845	937	1259	1387	1775
H	891	942*	1010	1095*	1190	1250*	1332
P	421	485	320	617	827	907	1275
L	221	221*	200	285*	260	320*	290
K	220	300	330	390	332*	320	459*
Tubing Connections	Δe10xΔi8						

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

Weights in Kg

S - Ansi 150/PN 16	110	170	270	359	774	1097	1780
S - Ansi 300	112	172	267	388	783	1185	1880
S - Ansi 600	113	174	270	397	815	1210	1930





**Reducing and metering
stations**



Slam shut valves



Ball valves



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CT-s 504-E September 13

www.fiorentini.com