

## Reflex 819/FO

Pressure Regulators

## Pressure Regulators

### Reflux 819/FO

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

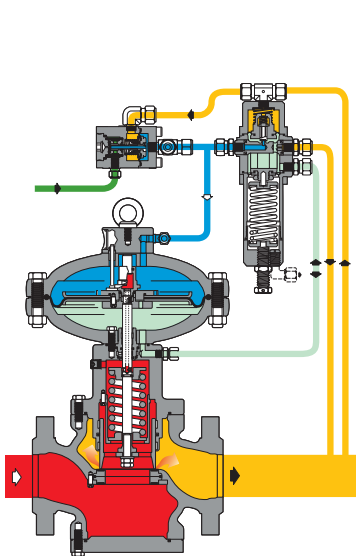
Reflux 819/FO is normally a fail to open regulator that will open under the following conditions:

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

The gas regulated by the Reflux should be clean, filtered, and non-corrosive..

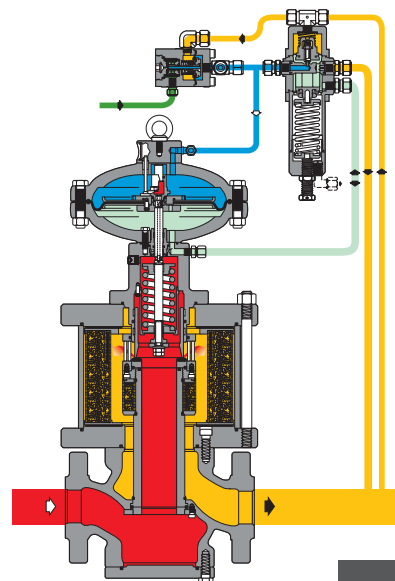
### Modular Design

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



Reflux 819/FO

Fig. 1



Reflux 819/FO + DB

Fig. 2

**DESIGNED  
WITH YOUR  
NEEDS IN MIND**

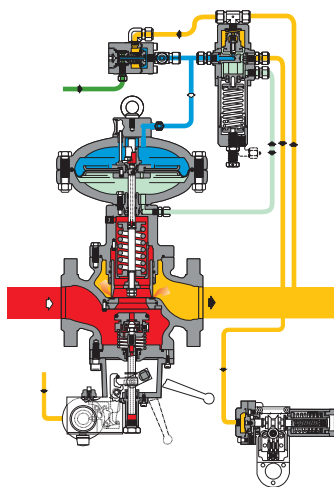
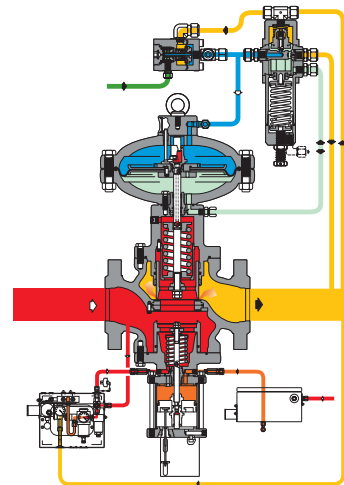
- COMPACT DESIGN
- EASY MAINTENANCE
- TOP ENTRY
- LOW NOISE

- OUTSTANDING TURN DOWN RATIO
- HIGH ACCURACY
- LOW OPERATION COST
- EXTREME FLEXIBILITY

**SILENCER DB/819**
**Reflux 819/FO**

With decibel noise limitations becoming an increasing safety concern, the DB silencer option is a unique feature that reduces regulator noise. When the DB silencer is installed, it allows for a considerable reduction in noise level (dBa) up to 30 dBa, depending upon the application.

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. The silencer may be retrofitted to the standard Reflux 819/FO as well as those with an incorporated slam-shut or monitor, without any need to modify the piping. Pressure reduction and control operate in the same manner as the standard version.

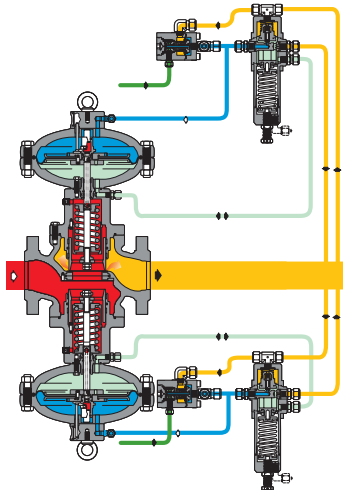
**SLAM SHUT SB/82 OR HB/97**
**Reflux 819/FO**

**Fig. 3**

**Fig. 4**

The Reflux 819 FO pressure regulator offers the possibility of installing an incorporated slam shut valve SB/82 or HB/97 valve, depending on the regulator size. This can be done either during the manufacturing process or be retrofitted in the field. Retrofitting can be done without modifying the pressure regulator assembly.

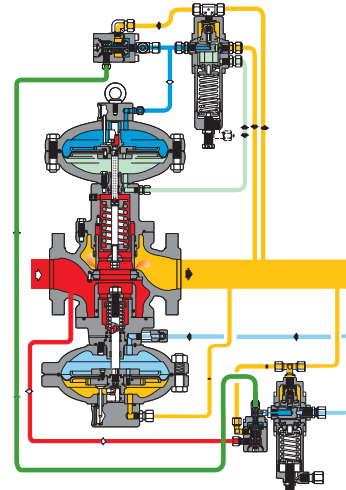
The Cg and KG coefficients of a regulator plus incorporated slam-shut system are 7% lower than those for standard versions.

The main characteristics of this device are:

- intervention for over pressure and/or under pressure
- manual re-setting with internal bypass 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 mounted onto 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 a regulator having an incorporated monitor are 7% lower than those for the 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 to open regulator (fig. 5) or a PM/819 fail to close regulator (fig. 6).

**MAIN FEATURES****Reflux 819/FO**

- > **Design pressure: up to 1450 PSIG (100 bar)**
- > **Design temperature: Pietro Fiorentini regulators are suitable for a minimum operating ambient temperature of -31°F to 140 °F if the following conditions are met:**
  - **Inlet flowing gas temperature shall be always higher than -4 °F;**
  - **Inlet flowing gas shall filtered, clean and without any liquid impurities;**
- > **Range of inlet pressure bpe: 43 to 1450 PSIG (3 to 100 bar)**
- > **Range of outlet pressure Wh: 14,5 to 1073 PSIG (1 to 74 bar) depending on installed pilot**
- > **Minimum working differential pressure: 30 PSIG (2 bar)**
- > **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**

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

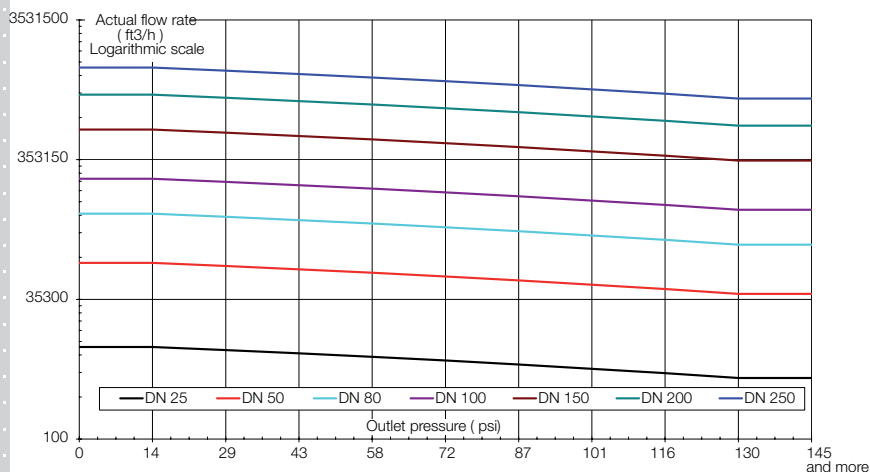
**C<sub>g</sub>, K<sub>G</sub> and K<sub>1</sub> coefficient**
**Reflux 819/FO**

<b>Nominal diameter (mm)</b>	25	50	80	100	150	200	250
<b>Size (inches)</b>	1"	2"	3"	4"	6"	8"	10"
<b>C<sub>g</sub> flow coefficient</b>	575	2,220	4,937	8,000	16,607	25,933	36,525
<b>K<sub>G</sub> flow coefficient</b>	605	2,335	5,194	8,416	17,471	27,282	38,425
<b>K<sub>1</sub> body shape factor</b>	106.78	106.78	106.78	106.78	106.78	106.78	106.78

For sizing formula refer to [www.fiorentini.com/sizing](http://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 SCFH of Natural gas (s.g. 0.6): to have the data directly in SCFH it is necessary to multiply the value by the outlet pressure value in psi – absolute.



## PILOTS

## Reflux 819/FO

Reflux 819/FO regulators are equipped with series 200 pilot as listed below:

- 204/FO. control range Wh: 14.5 to 478 PSIG; (1.0 to 33 bar)
- 205/FO. control range Wh: 290 to 870 PSIG; (20 to 60 bar)
- 207/FO. control range Wh: 595 to 1073 PSIG; (41 to 74 bar)

Pilots may be adjusted manually or remotely

## Pilot Adjustments

## Reflux 819/FO

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

## Pre-regulators

The pilot loop is completed with a device called pre-regulator, separate from the pilot.

The pre-regulators 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.

## Slam Shut Switch Selection Device

## Reflux 819/FO

MOD. SB	MIN.	MAX
101M	0.14* - 3.77*	0.29 - 14.5*
102M	0.58 - 40.61	2.9 - 79.77
102MH	40.61 - 79.77	2.9 - 79.77
103M	2.9 - 116.03	29 - 319.08
103MH	116.03 - 275.57	29 - 319.08
104M	23.20 - 261.06	108.77 - 652.66
104MH	261.06 - 594.65	108.77 - 652.66
105M	43.51 - 638.16	435.11 - 1,305.33
105MH	638.16 - 1,305.33	435.11 - 1,305.33

MOD. HB	MIN.	MAX
103	5.8 - 98.62	18.85 - 159.54
104	14.64 - 298.77	145.03 - 456.86
105	36.25 - 725.18	362.59 - 1,102.28
105/92	652.66 - 1,087.78	841.21 - 1,232.82

values in PSIG

**OPTIONS**
**For Regulator**

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

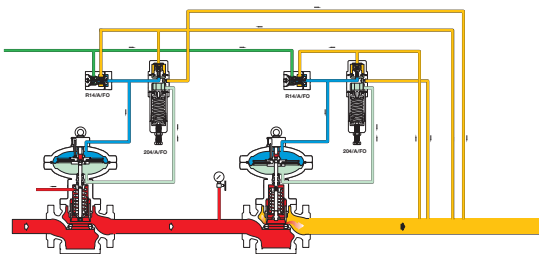
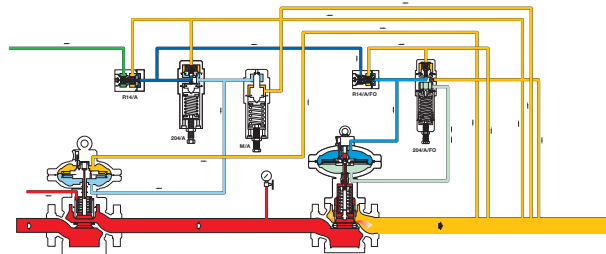
**Reflux 819**
**For Pilot**

- 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 the 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 to open regulator (fig.7) or a Reflux 819 fail to close regulator (fig.8).


**Fig. 7**

**Fig. 8**
**M/A ACCELERATOR**
**Reflux 819/FO**

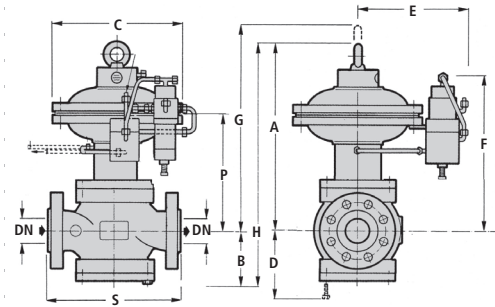
When the monitor is required to take over rapidly in the event of a main regulator failure, an M/A accelerator pilot installation on the monitor is recommended. Installation of the accelerator is mandatory when the monitor is used as a safety accessory. This device, connected by sensing line to the downstream 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 the set point of the monitor by 0.66 to 1.10 PSIG.

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**



**Overall dimensions in inches**

Inches	1"	2"	3"	4"	6"	8"	10"
<b>S - Ansi 150/PN 16</b>	7,25	10	11,75	13,88	17,75	21,38	26,5
<b>S - Ansi 300</b>	7,75	10,5	12,5	14,5	18,62	22,38	27,88
<b>S - Ansi 600</b>	8,25	11,25	13,25	15,5	20	24	29,62
<b>A</b>	14,6	17,12	19,29	20,94	31,06	34,92	42,32
<b>B</b>	3,93	5,11	5,9	7,48	8,85	10,43	13,38
<b>C</b>	10,94	10,94	14,17	14,17	20,07	20,07	24,01
<b>D</b>	5,11	6,29	7,87	9,84	10,82	12,59	17,32
<b>E</b>	12,2	12,2	12,59	12,59	16,53	16,53	18,5
<b>F</b>	12,24	14,76	16,14	16,61	21,61	23,5	33,34
<b>G</b>	18,14	20,27	23,22	25,27	34,4	38,85	46,25
<b>H</b>	18,54	22,04	25,19	28,42	39,92	45,35	59,64
<b>P</b>	8,66	11,22	12,59	13,07	18,07	19,96	30,51
<b>Tubing Connections</b>	1/4" NPT						

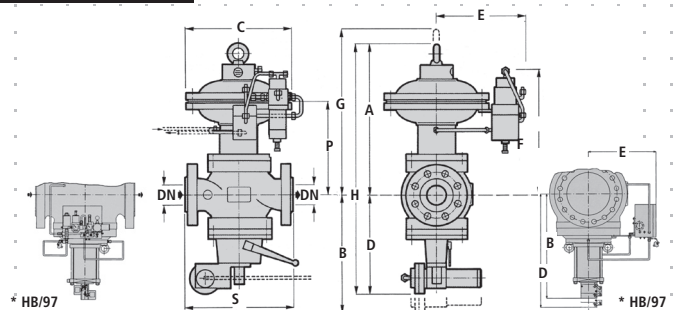
Face to face dimensions S according to IEC 534-3 and ANSI

**Weights in Lbs**

<b>S - Ansi 150/PN 16</b>	97	134.4	231.4	321.8	679	899.5	1,984.1
<b>S - Ansi 300</b>	99.2	136.6	240.3	343.9	760.5	1,036.1	2,094.3
<b>S - Ansi 600</b>	101.4	141	246.9	363.7	793.6	1,025.1	2,204.6

**REFLUX 819/FO + SB82 / + HB97**

**Reflux 819/FO**



**Overall dimensions in inches**

Inches	1"	2"	3"	4"	6"	8"	10"				
<b>S - Ansi 150/PN 16</b>	7,25	10	11,75	13,88	17,75	21,38	26,5				
<b>S - Ansi 300</b>	7,75	10,5	12,5	14,5	18,62	22,38	27,88				
<b>S - Ansi 600</b>	8,25	11,25	13,25	15,5	20	24	29,62				
<b>A</b>	14,6	17,12	19,29	20,94	31,06	34,92	42,32				
<b>B</b>	8,46	9,44	10,62	11,81	20,39*	14,76	25,39*	17,71	27,04*	20,86	31,33*
<b>C</b>	10,94	10,94	14,17	14,17	20,07	20,07	24,01				
<b>D</b>	11,08	12,99	14,96	17,32	25,59*	22,04	32,87*	24,6	35,43*	28,74	41,73*
<b>E</b>	12,2	12,2	12,59	12,59	14,09*	16,53	16,14*	16,53	17,51*	18,5	20,07*
<b>F</b>	12,24	14,76	16,14	16,61	21,61	23,5	34,4				
<b>G</b>	18,14	20,27	23,22	25,27	34,4	38,85	45,15				
<b>H</b>	18,54	26,57	29,92	32,75	45,82	52,63	59,64				
<b>P</b>	8,7	11,22	12,59	13,07	18,07	19,96	30,51				
<b>Tubing Connections</b>	1/4" NPT										

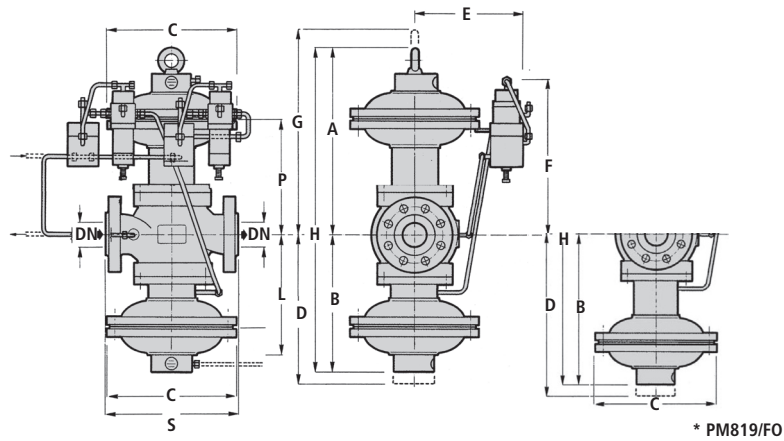
\*Indicates dimensions with the MODEL HB/97

\*Face to face dimensions S according to IEC 534-3 and ANSI

**Weights in Lbs**

<b>S - Ansi 150/PN 16</b>	116,8	156,5	253,5	352,7	330,6*	705,4	683,4*	1,014,1	9,12,7*	2,094,3	1,970,9*
<b>S - Ansi 300</b>	121,2	160,9	268,9	376,9	507*	804,6	934,7*	1,157,4	1,320,5*	2,204,6	2,403*
<b>S - Ansi 600</b>	123,4	165,3	275,5	396,8	608,4*	837,7	1,049,4*	1,212,5	1,507,9*	2,314,8	2,645,5*





\* PM819/FO

**Overall dimensions in inches**

Inches	1"	2"	3"	4"	6"	8"	10"							
<b>S - Ansi 150/PN 16</b>	7.24	10	11.73	13.85	26.5	26.5	26.5							
<b>S - Ansi 300</b>	7.75	10.51	12.48	14.48	27.88	27.88	27.88							
<b>S - Ansi 600</b>	8.26	11.25	13.22	15.51	29.62	29.62	29.62							
<b>A</b>	14.6	17.21	19.29	20.94	31.06	34.92	42.32							
<b>B</b>	12.59	14.6*	13.77	17.12*	16.92	19.29*	20.94*	25.59	31.06*	29.52	34.92*	31.49	42.32*	
<b>C</b>	10.94	10.94	14.17	14.17	20.07	20.07	24.01							
<b>D</b>	16.14	18.14*	16.92	20.27*	20.86	23.22*	23.62	25.27*	28.93	34.4*	33.46	38.85*	35.43	46.25*
<b>E</b>	12.2	12.2	12.59	12.59	16.53	16.53	18.5							
<b>F</b>	12.24	14.76	16.14	16.61	21.61	23.5	33.34							
<b>G</b>	18.14	20.27	23.22	25.27	34.4	38.85	46.25							
<b>H</b>	27.2	29.21*	30.9	34.25*	36.22	38.58*	40.23	41.88*	56.65	62.12*	64.44	69.84*	73.81	84.64*
<b>P</b>	8.7	11.22	12.59	13.07	18.07	19.96	30.51*							
<b>L</b>	6.69	7.87	10.23	11.41	12.59	14.56	19.68							

**Tubing Connections**

1/4" NPT

Face to face dimensions S according to IEC 534-3 and ANSI

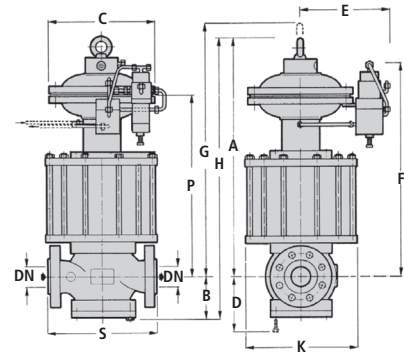
**Weights in Lbs**

<b>S - Ansi 150/PN 16</b>	185.1	231.5	396.8	540.1	1,139.7	1,477	3,086.4
<b>S - Ansi 300</b>	187.3	233.6	405.6	562.1	1,221.3	1,611.5	3,196.4
<b>S - Ansi 600</b>	189.5	238	412.2	582	1,254.4	1,666.6	3,306.9



**REFLUX 819/FO + DB/819**

**Reflux 819/FO**



**Overall dimensions in inches**

Inches	1"	2"	3"	4"	6"	8"	10"
<b>S - Ansi 150/PN 16</b>	7.25	10	11.75	13.88	17.75	21.38	26.5
<b>S - Ansi 300</b>	7.75	10.5	12.5	14.5	18.62	22.38	27.88
<b>S - Ansi 600</b>	8.25	11.25	13.25	15.5	20	24	29.62
<b>A</b>	22.48	25.98	29.92	33.14	42.28	48.11	62
<b>B</b>	3.93	5.11	5.9	7.48	8.85	10.43	13.38
<b>C</b>	10.94	10.94	14.17	14.17	20.07	20.07	24.01
<b>D</b>	5.11	6.29	7.87	9.48	10.82	12.59	17.32
<b>E</b>	12.2	12.2	12.59	12.59	16.53	16.53	18.50
<b>F</b>	18.74	22.83	26.57	31.96	35.51	40.62	54.13
<b>G</b>	26.02	28.54	33.26	36.88	49.56	54.6	69.88
<b>H</b>	26.41	31.1	35.82	40.62	51.14	58.54	75.39
<b>P</b>	16.57	15.15	22.24	24.68	32.63	35.7	50.19
<b>K</b>	8.66	11.81	12.99	15.35	18.89	23.42	27.36

**Tubing Connections**

1/4" NPT

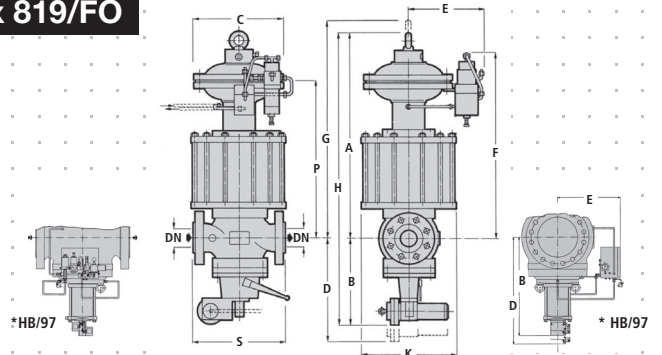
Face to face dimensions S according to IEC 534-3 and ANSI

**Weights in Lbs**

<b>S - Ansi 150/PN 16</b>	154.3	277.7	429.9	573.2	1,245.6	1,840.8	2,821.9
<b>S - Ansi 300</b>	158.7	282.1	449.7	637.1	1,340.6	2,039.2	3,042.3
<b>S - Ansi 600</b>	160.9	286.6	456.3	656.9	1,410.9	2,094.3	3,152.6

**REFLUX 819/FO+DB/819+SB82 /+HB97**

**Reflux 819/FO**



**Overall dimensions in inches**

Inches	1"	2"	3"	4"	6"	8"	10"
<b>S - Ansi 150/PN 16</b>	7.25	10	11.75	13.88	17.75	21.38	26.5
<b>S - Ansi 300</b>	7.75	10.5	12.5	14.5	18.62	22.38	27.88
<b>S - Ansi 600</b>	8.25	11.25	13.25	15.5	20	24	29.62
<b>A</b>	22.48	25.98	29.92	33.14	42.28	48.11	62
<b>B</b>	8.46	9.44	10.62	11.81	20.39*	14.76	25.39*
<b>C</b>	10.94	10.94	14.17	14.17	20.07	20.07	24.01
<b>D</b>	11.02	12.99	14.96	17.32	25.59*	32.87*	24.6
<b>E</b>	12.2	12.2	12.59	12.59	14.09*	16.53	16.14*
<b>F</b>	18.74	22.83	26.57	31.96	36.77	40.62	54.13
<b>G</b>	26.02	28.54	33.26	36.88	49.56	54.6	69.88
<b>H</b>	31.33	35.43	40.55	44.96	57.04	65.82	82.87
<b>P</b>	16.57	19.09	22.24	24.29	32.55	35.7	50.19
<b>K</b>	8.66	11.81	12.99	15.35	18.89	23.42	27.36

**Tubing Connections**

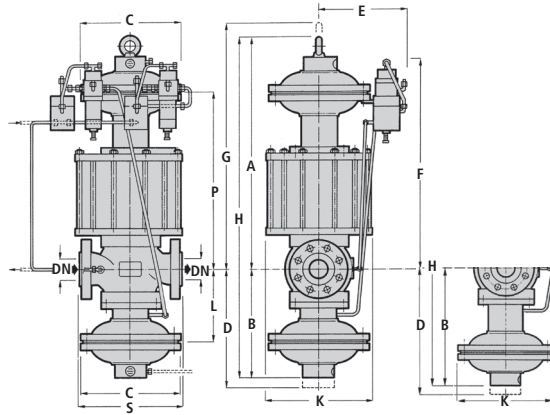
1/4" NPT

\*Indicates dimensions with the MODEL HB/97

Face to face dimensions S according to IEC 534-3 and ANSI

**Weights in Lbs**

<b>S - Ansi 150/PN 16</b>	174.1	299.8	451.9	604	586.4*	1,272	1,254.4*	1,955.5	1,254.4*	2,932.1	1,254.4*
<b>S - Ansi 300</b>	180.7	306.44	478.4	670.2	800.2*	1,384.5	1,514.5*	2,160.5	1,514.5*	3,152.6	1,514.5*
<b>S - Ansi 600</b>	182.9	310.8	485	690	901.6*	1,455	1,666.6*	3,306.9	1,666.6*	3,262.8	1,666.6*



\* PM819/FO

Overall dimensions in inches

Inches	1"	2"	3"	4"	6"	8"	10"							
S - Ansi 150/PN 16	7.25	10	11.75	13.88	17.75	21.38	26.5							
S - Ansi 300	7.75	10.5	12.5	14.5	18.62	22.38	27.88							
S - Ansi 600	8.25	11.25	13.25	15.5	20	24	29.62							
A	22.48	25.98	29.92	33.14	42.28	48.11	62							
B	12.59	14.6*	13.77	17.12*	16.92	19.29*	19.29	20.94*	25.59	31.06*	29.52	34.92*	31.49	36.41*
C	10.94	10.94	14.17	14.17	20.07	20.07	24.01							
D	16.14	18.14*	16.92	20.27*	20.86	23.22*	23.62	25.27*	28.93	34.4*	33.46	38.85*	35.43	40.35*
E	12.2	12.2	12.59	12.59	16.53	16.53	18.5							
F	18.74	22.83	26.57	31.96	36.77	40.62	54.13							
G	26.02	28.54	33.26	36.88	49.56	54.6	69.88							
H	35.07	37.08*	39.76	43.11*	46.85	49.21*	52.44	54.09*	67.87	73.34*	77.63	83.03*	93.5	104.33*
P	16.57	19.09	12.59	24.29	32.55	35.7	50.19							
L	8.7	8.7*	7.87	11.22*	10.23	12.59*	11.41	13.07*	12.59	18.07*	15.56	19.96*	19.68	24.6*
K	8.66	11.81	12.99	15.35	18.89	23.42	27.36							
Tubing Connections								1/4" NPT						

Face to face dimensions S according to IEC 534-3 and ANSI

Weights in Lbs

S - Ansi 150/PN 16	242.5	374.7	595.2	791.4	1706.3	2,418.4	3,924.2
S - Ansi 300	246.9	379.1	588.6	855.3	1,726.2	2,612.4	4,144.6
S - Ansi 600	249.12	383.6	595.2	875.2	1,796.7	2,667.5	4,254.9

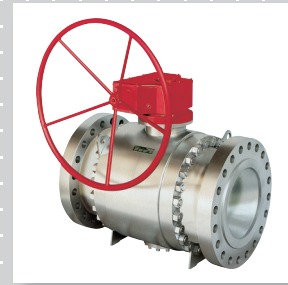




Reducing and Metering Stations



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