Pietro Fiorentini

Aperval

Pressure Regulators

Aperval

Aperval is pilot-controlled pressure regulator for medium and low pressure applications.
Aperval is normally a fail to open regulator and specificaly will open under the following conditions:
- breakage of main diaphragm;
- lack of sensing line connection.

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

Modular Design

The modular design of pressure regulator Aperval allows retrofiting of an emergency monitor PM/182 or slam shut valve and/or silencer on the same body. The Aperval 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.

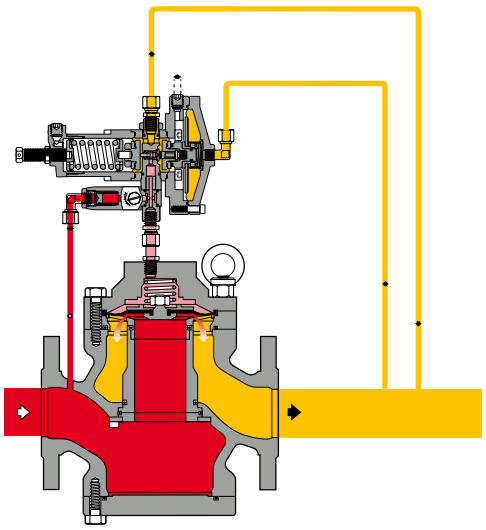
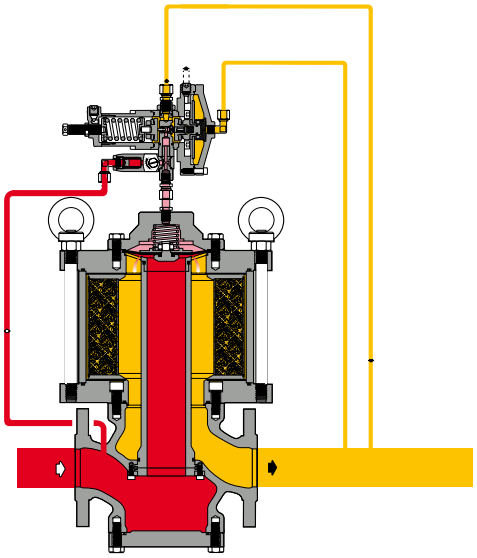


Fig. 1



Aperval + 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
- VERY LOW OPERATING ΔP

SILENCER DB/93 Aperval

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

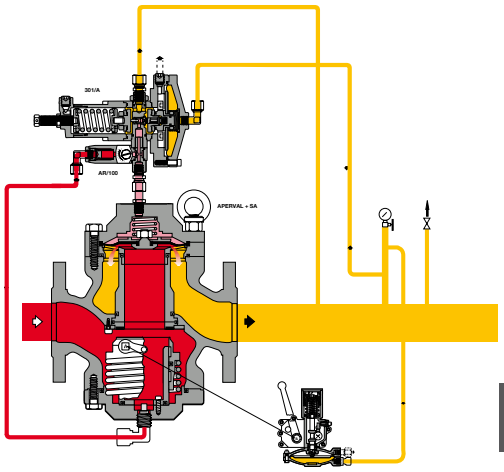


Fig. 3

The Aperval pressure regulator offers the possibility of installing an incorporated slam shut valve SA valve, 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 5 or 10% (depending on the slam shuth type) 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/182 Aperval

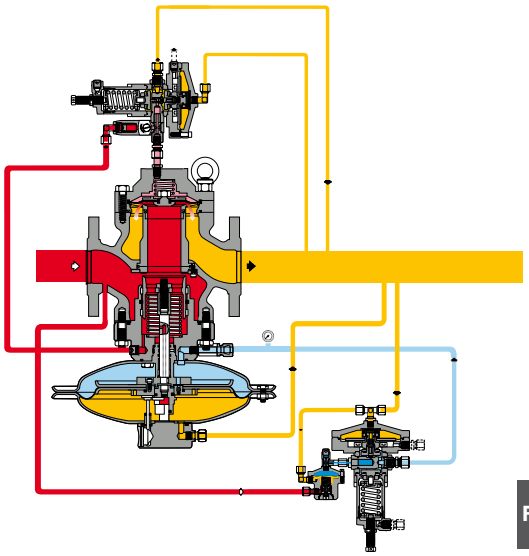


Fig. 4

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/182 monitor are the same as for the Reval 182 regulator
The Cg and KG coefficients of regulator having an incorporated monitor are 5% 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.

MAIN FEATURES Aperval

> Design pressure: up to 25 bar (362 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: 0,5 to 25 bar (7.25 to 362 Psig)
> Range of outlet pressure Wh: 5 mbar to 9500 mbar (2"w.c. to 137.5 Psig) depending on installed pilot
> Minimum working differential pressure: 450 mbar (6,52 Psig)
> Maximum working differential pressure: 19 bar (275,5 Psig)
> Accuracy class AC: up to 2,5
> Closing pressure class SG: up to 5
> Available size DN: 1" -2" -2"1/2 -3" -4"
> Flanging: class 150 RF or RTJ according to ANSI B16.5 and PN25/40 according to ISO 7005.

MATERIALS — Aperval

Body	Cast steel ASTM A216 WCB for all sizes Ductile iron GS 400-18 ISO 1083 for all size
Head covers	Rolled or forged carbon steel
Valve seat	Technopolymer
Diaphragm	Vulcanized rubber
Seals	Nitrile rubber
Compression fittings	According to DIN 2353 in zinc-plated carbon steel

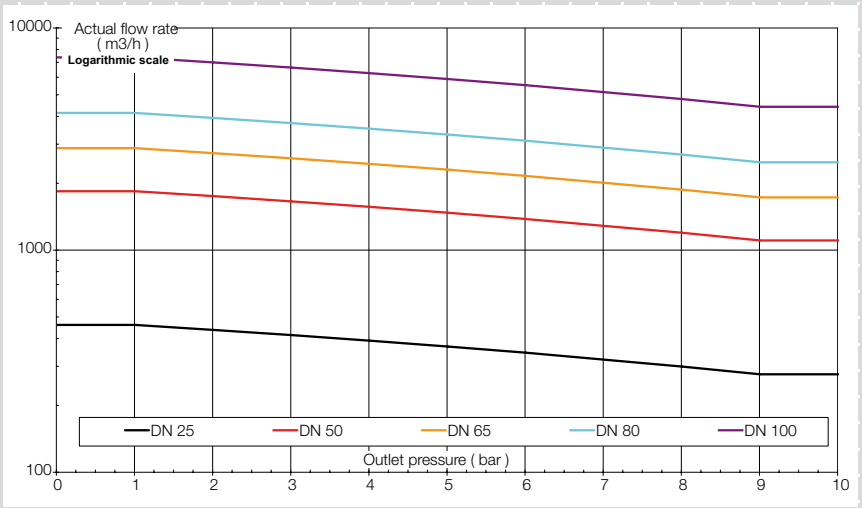
The characteristics listed above are referred to standard products. Special characteristics and materials for specific applications may be supplied upon request.

Cg, K_G and K1 coefficient — Aperval

Nominal diameter (mm)	25	50	65	80	100
Size (inches)	1”	2”	2”1/2	3”	4”
Cg flow coefficient	584	1978	3530	4525	6719
K_G flow coefficient	613	2077	3706	4751	7055
K1 body shape factor	90	101	101	101	101

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 — Aperval

Aperval regulators are equipped with series 300 pilot as listed below:
- 301/. control range Wh: 5 mbar to 100 mbar; (2" W.c. to 1,45 Psig)
- 301/.TR control range Wh: 0,1 to 2 bar; (1,45 to 29 Psig)
- 302/. control range Wh: 0,8 to 9,5 bar; (11,6 to 137 Psig)

Pilots may be adjusted manually or remotely

Pilot adjustments — Aperval

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 pressure regulator setting, pressure reducing station monitoring and indirect flow measurement (Reflux 819 - all models - and Reval 182 only)

Restrictor

The pilot loop is completed with a device called restrictor, external to the pilot.
The restrictor listed below is available:
- **AR 100**: variable restrictor to adjust regulator response time complete with integral filter at the inlet. Standard supply with all pilots of 300 Series

PRESSOSTATIC DEVICE — Aperval

MOD. SA	MIN.	MAX
./31	0,01 ÷ 0,9	0,025 ÷ 1,1
./32	0,25 ÷ 3	0,7 ÷ 5
./33	0,8 ÷ 7,7	3 ÷ 13,3

values in bar(g)

OPTIONALS — Aperval

For Regulator
- reduced cage
- flow-limiting devices
- steel fittings, single or dual sealing

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

IN-LINE MONITOR Aperval

The monitor is generally installed upstream of the main regulator. Depending on service specification, the monitor may be chosen as follow:

> Aperval pressure regulator, identical to the main regulator (fig.5), the only difference is that monitor is set at a higher pressure than the main regulator.

> Reval 182 pressure regulator (fig.6),

The Cg and KG coefficients of the regulator plus in-line monitor system are about 20% lower than those of the regulator alone.

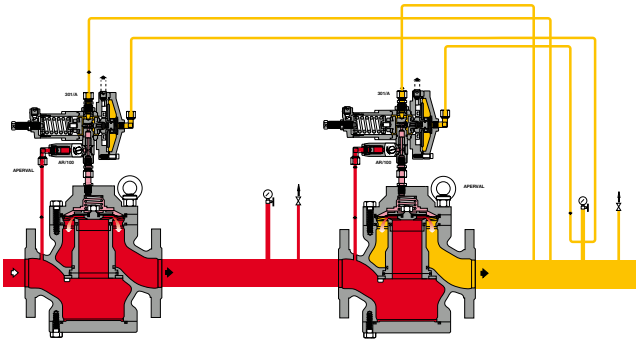


Fig. 5

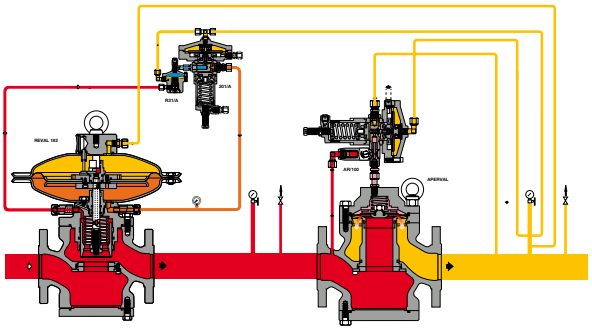


Fig. 6

M/A ACCELERATOR Aperval

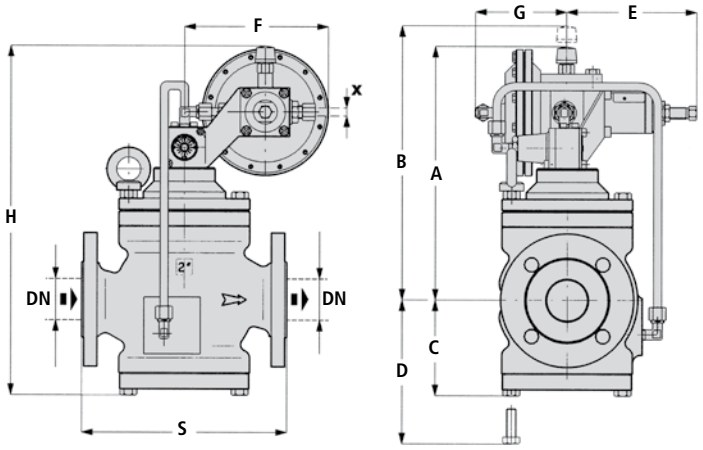
Only for monitor type Reval or PM 182

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.

A V/25 accelerator is available too with pressure set range Who 15 mbar to 6 bar.

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



Overal dimensions in mm

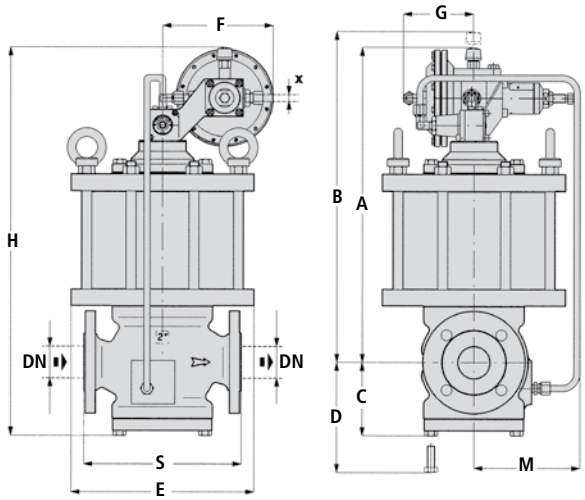
Size (mm)	25	50	65	80	100
Inches	1"	2"	2"1/2	3"	4"
S - Ansi 150/PN 16	183	254	276	298	352
A	282	313	341	346	429
B	292	323	351	356	439
C	88	120	133	142	180
D	118	155	168	182	230
E	160	160	160	160	160
F	178	178	178	178	178
G	115	115	115	115	115
H	370	433	474	488	950
Tubing Connections			Δe10 x Δi 8		

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

Weights in Kgf

S - Ansi 150/PN 16	20	34	45	57	110

Pietro Fiorentini

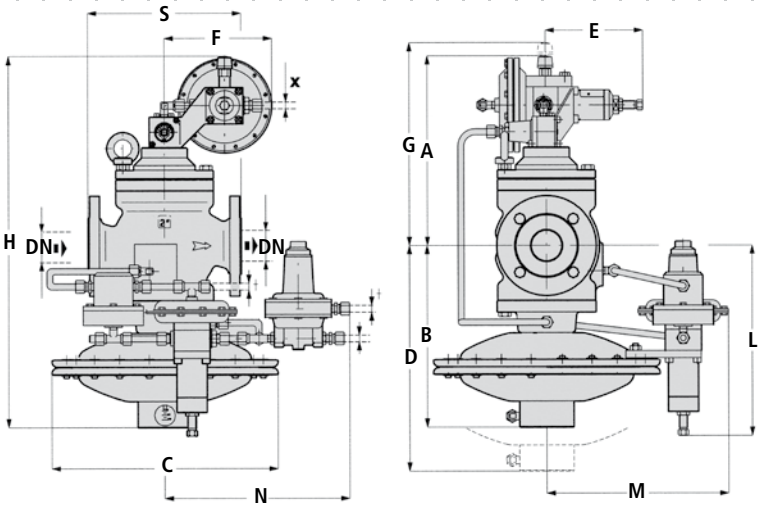


Overal dimensions in mm

Size (mm)	25	50	65	80	100
Inches	1"	2"	2 1/2"	3"	4"
S - Ansi 150/PN 16	183	254	276	298	352
A	449	507	577	601	760
B	459	517	587	611	688
C	88	120	133	142	180
D	118	155	168	182	230
E	220	295	325	330	390
F	178	178	178	178	178
G	115	115	115	115	115
H	537	627	710	743	940
M	120	158	173	175	205
Tubing Connections			Δe10 x Δi 8		

Weights in Kgf

S - Ansi 150/PN 16	44	84	88	112	178



Overal dimensions in mm

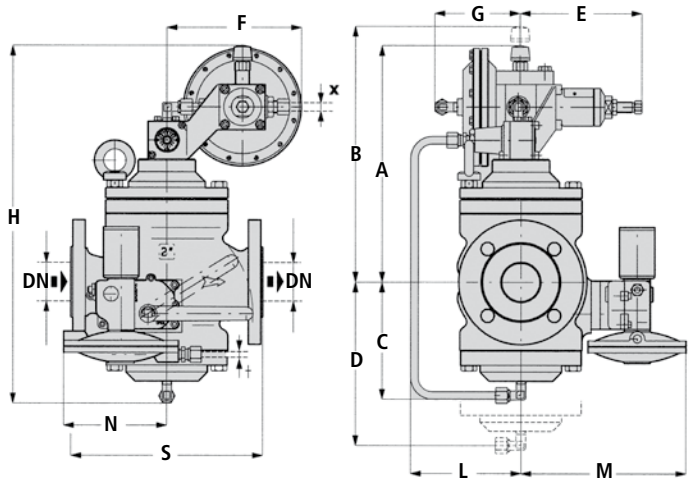
Size (mm)	25	50	65	80	100
Inches	1"	2"	2"1/2	3"	4"
S - Ansi 150/PN 16	183	254	276	298	352
A	282	313	341	346	429
B	269	300	374	379	414
C	375	375	495	495	495
D	329	385	474	484	537
E	160	160	160	160	160
F	178	178	178	178	178
G	292	323	351	356	439
H	551	613	715	725	843
L	243	315	364	369	404
M	300	300	350	350	350
N	306	306	310	310	310
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	41	69	72	87	110

Pietro Fiorentini



Overal dimensions in mm

Size (mm)	25	50	65	80	100
Inches	1"	2"	2"1/2	3"	4"
S - Ansi 150/PN 16	183	254	276	298	352
A	292	323	351	356	439
B	292	323	351	356	439
C	145	161	178	185	404
D	212	255	292	322	636
E	160	160	160	160	160
F	178	178	178	178	178
G	115	115	115	115	115
H	427	474	519	531	833
L	98	146	146	146	146
M	194	219	322	246	263
N	125	125	125	130	130
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	22	35	46	59	113

Pietro Fiorentini Solutions

Reducing and metering stations

Metering

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

The data are not binding. We reserve the right to make eventual changes without prior notice.

CT-s 521-E November 10

www.fiorentini.com