



 **Aperval**
Pressure Regulators

APERVAL

INTRODUCTION

Aperval is pilot-controlled pressure regulator for medium to low pressure applications.

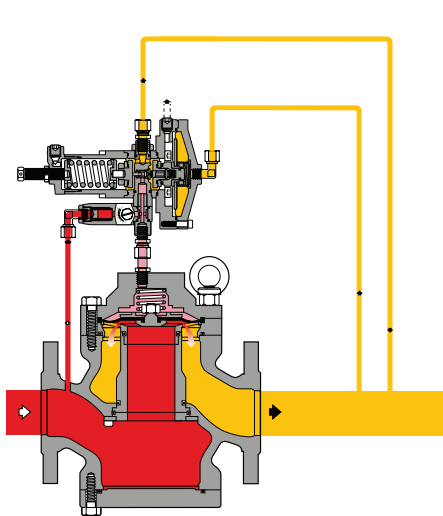
Aperval is normally a fail to open regulator and specifically will open under the following conditions:

- breakage of main diaphragm
- lack of sensing line connection

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

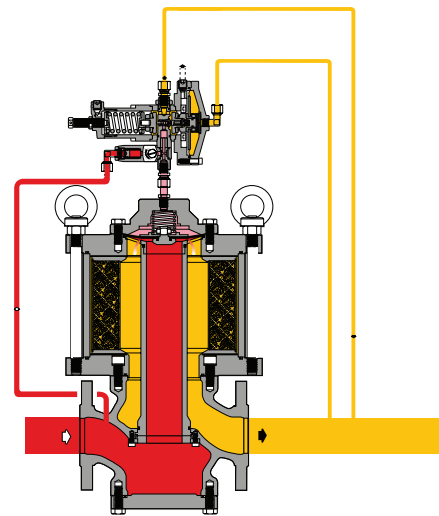
MODULAR DESIGN

The modular design of pressure regulator Aperval allows retrofitting of an emergency monitor PM/182, 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 retrofitting options in the field. The unique dynamic balancing system ensures an outstanding turndown ratio combined with an extreme accurate outlet pressure control.



Aperval

Fig. 1



Aperval + DB

Fig. 2

**DESIGNED
WITH YOUR
NEEDS IN
MIND**

- COMPACT DESIGN
- EASY MAINTENANCE
- TOP ENTRY
- LOW NOISE
- OUTSTANDING TURNDOWN RATIO
- HIGH ACCURACY
- LOW OPERATION COST
- VERY LOW OPERATING ΔP

SILENCER DB/93

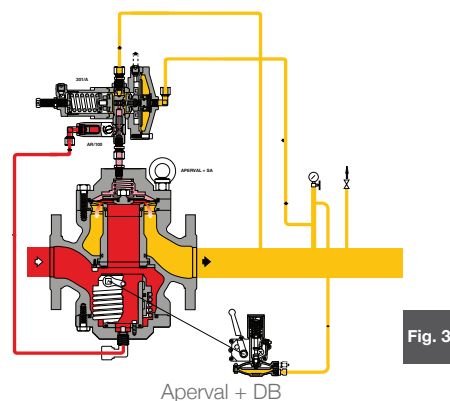
Whenever certain noise limit is required, the silencer allows you to considerably reduce the noise level (dBA) up to the required value.

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. With the modular arrangement of the regulator, the silencer may be retrofitted to both standard Aperval version as well as those with incorporated slam-shut or monitor without any need for piping modification.

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

SLAM-SHUT SA



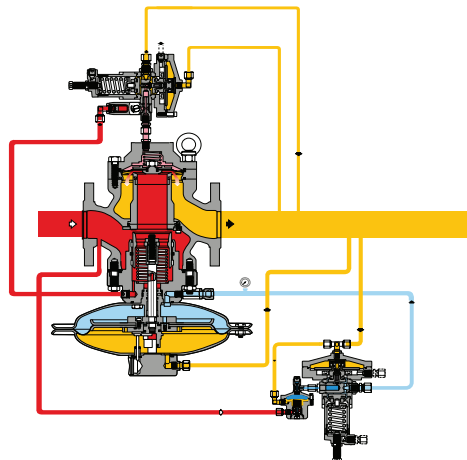
The Aperval pressure regulator offers the possibility of installing an incorporated slam-shut valve SA valve, and this can be done either during the manufacture process or be retrofitted in the field. Retrofitting can be done without modifying the pressure regulator assembly.

The Cg and KG coefficients of a regulator plus incorporated slam-shut system are 5 or 10% (depending on the slam shut 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)

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This emergency regulator (monitor) is directly integrated to the body of the main regulator. Both pressure regulators use the same valve body, although they have independent valves, 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.

FUNCTIONAL FEATURES *

- **Design inlet pressure:** 275 PSIG
- **Range of inlet pressure:** 7.25 to 275 PSIG
- **Range of downstream pressure:** 2" W.C. to 137.5 PSIG depending on installed pilot (see pilot section)
- **Minimum working differential pressure:** 7.5 PSIG
- **Minimum ambient temperature:** Execution up -40°F
- **Maximum ambient temperature:** 140°F
- **Flowing gas temperature:** -4°F to 140°F
- **Accuracy class AC:** Up to 2.5% gauge
- **Look-up pressure class SG:** Up to 5% gauge

DESIGN FEATURES

- **Nominal dimensions DN:** 1" 2" 2 1/2" 3" 4"
- **Flanged connections:** Class 150 RF according to ANSI B16.5 and PN 16 according to UNI 2282 or DIN 2263, (ISO 7005)

: * Different functional features available on request. ** The materials indicated above refer to the standard models. Different materials can be provided according to specific needs.

MATERIALS

Body	Cast steel ASTM A216 WCB for all sizes Ductile iron GS 400-18 ISO 1083 for all sizes
Head covers	Rolled or forged carbon steel
Valve seat	Technopolymer
Diaphragm	Vulcanized rubber
Seals	Nitrile rubber
Compression fittings	3/8" O.D. stainless steel double locking

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

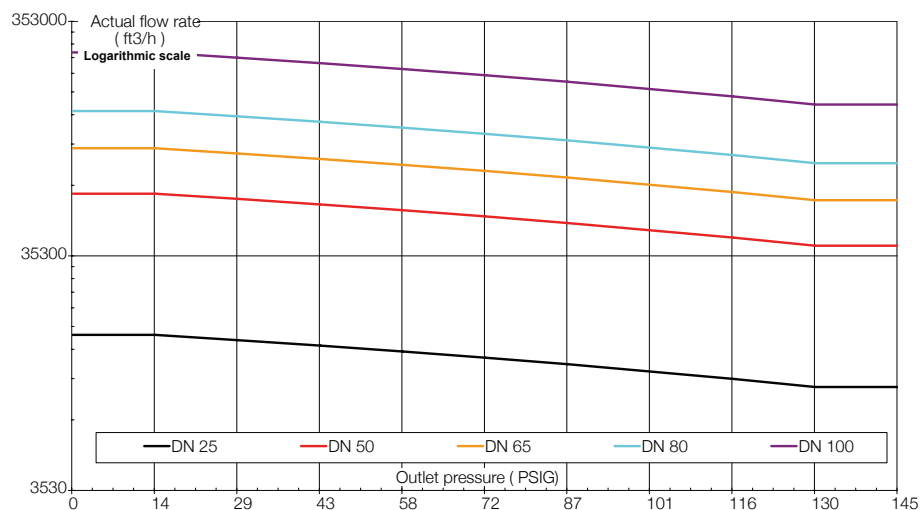
SIZING

Nominal diameter (mm)	25	50	65	80	100
Size (inches)	1"	2"	2½"	3"	4"
Cg flow coefficient	584	1978	3530	4525	6719
KG flow coefficient	613	2077	3706	4751	7055
K1 body shape factor	90	101	101	101	101

For sizing formulas 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 ft³/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.



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Pilot System

Aperval regulators are equipped with series 300 pilot as listed below:

- 301/. control range Wh: 2" W.C. to 1.45 PSIG
- 301/TR. control range Wh:1.45 to 29 PSIG
- 302/. control range Wh:11.6 to 137 PSIG

Pilots may be adjusted manually or remotely.

Pilots

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 control of the regulator which includes station monitoring and indirect flow measurement (Reflux 819 and Reval 182 only)

Restrictor

The pilot is completed with a device called the restrictor, attached to the pilot.

The restrictor listed below is the:

AR100: The variable restrictor is use to adjust the regulators response time and comes complete with a built in filter at the inlet. This is a standard component to all pilots.

PRESSURE SWITCH

MOD. SA	MIN>	MIN>
.J31	0.14 - 13.05	0.36 - 15.95
.J32	3.62 - 43.51	10.15 - 72.51
.J33	11.6 - 111.67	43.5 - 192.9

Options

For Regulator

- reduced cage
- flow-limiting devices
- steel fittings, single or duallocking

For Pilot

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

In-Line Monitor

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.

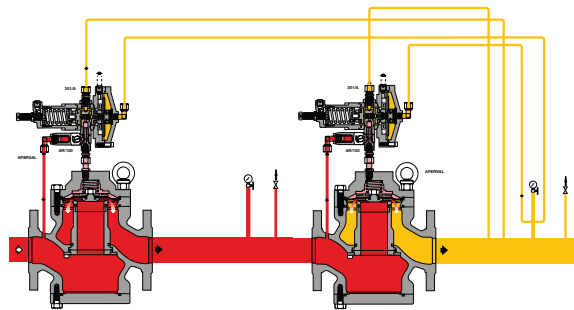


Fig. 5

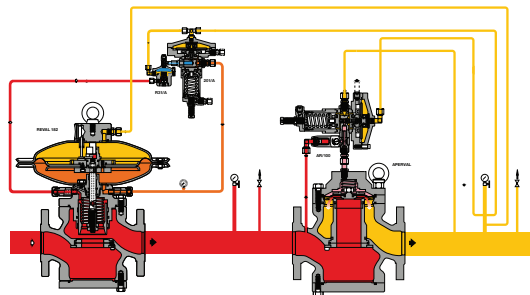


Fig. 6

M/A Accelerator

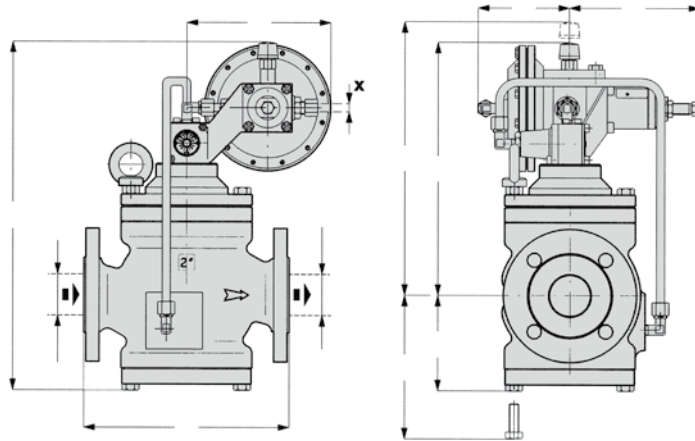
Only for monitor type Reval or PM 182

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. This device is connected by sensing line to the downstream pressure and 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 4.35 to 7.25 PSIG. A V/25 accelerator is available too with pressure set range Wh 0.2 to 87 PSIG. In the case of working monitor configuration (two stage pressure cut with monitor override) the accelerator may not be necessary.

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Dimensions and weights



Overall dimensions in inches

Size (mm)	25	50	65	80	100
Inches	1"	2"	2½"	3"	4"
S - Ansi 150/PN 26	7.2	10	10.86	11.73	13.85
A	11.1	12.32	13.42	13.62	16.88
B	11.49	12.71	13.81	14.01	17.28
C	3.46	4.72	5.23	5.59	7.08
D	4.64	6.1	6.61	7.16	9.05
E	6.29	6.29	6.29	6.29	6.29
F	7	7	7	7	7
G	4.52	4.52	4.52	4.52	4.52
H	14.56	17.04	18.66	19.21	37.4

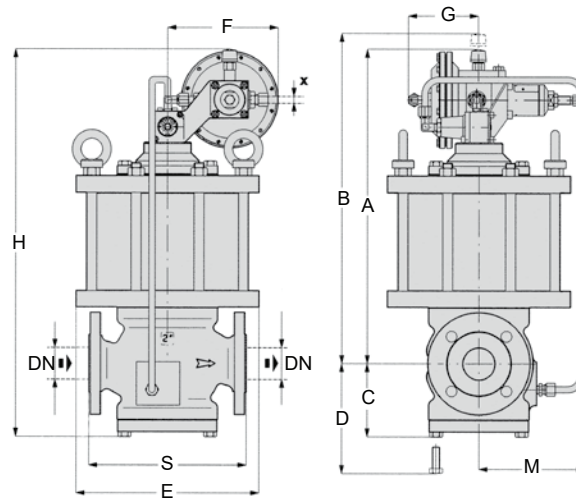
Tubing Connections

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

Weight in lbs.

S - Ansi 150/PN 16	44	74.9	99.2	125.6	242.5
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Dimensions and weights



Overall dimensions in inches

Size (mm)	25	50	65	80	100
Inches	1"	2"	2½"	3"	4"
S - Ansi 150/PN 26	7.2	10	10.86	11.73	13.85
A	17.67	19.96	22.71	23.66	29.92
B	18.07	20.35	23.11	24.05	27.08
C	3.46	4.72	5.23	5.59	7.08
D	4.64	6.1	6.61	7.16	9.05
E	8.66	11.61	12.79	12.99	15.35
F	7	7	7	7	7
G	4.52	4.52	4.52	4.52	4.52
H	21.14	24.68	27.95	29.25	37
M	4.72	6.22	6.81	6.88	8.07

Tubing Connections

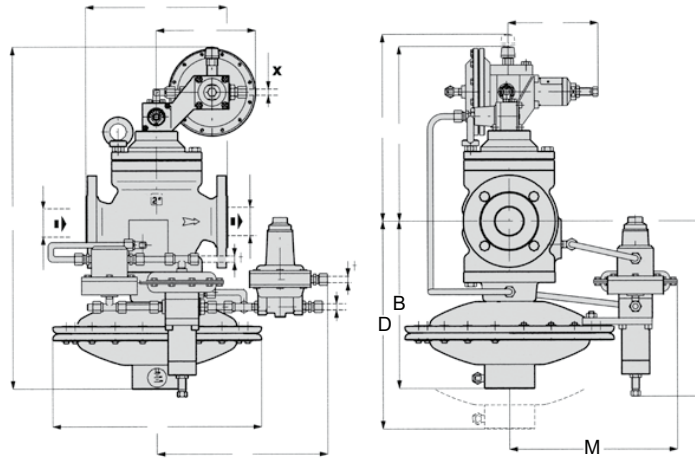
Face to face dimensions S according to IEC 534-3 and EN 334

Weight in lbs.

S - Ansi 150/PN 16	97	185.1	194	246.9	392.4
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APERVAL

Dimensions and weights



Overall dimensions in inches

Size (mm)	25	50	65	80	100
Inches	1"	2"	2½"	3"	4"
S - Ansi 150/PN 26	7.2	10	10.86	11.73	13.85
A	11.1	12.32	13.42	13.62	16.88
B	10.59	11.81	14.72	14.92	16.29
C	14.76	14.76	19.48	19.48	19.48
D	12.95	15.15	18.66	19.05	21.14
E	6.29	6.29	6.29	6.29	6.29
F	7	7	7	7	7
G	11.49	12.71	13.81	14.01	17.28
H	21.69	24.13	28.14	28.54	33.18
L	9.56	12.4	14.33	14.42	15.9
M	11.81	11.81	13.77	13.77	13.77
N	12.04	12.04	12.2	12.2	12.2

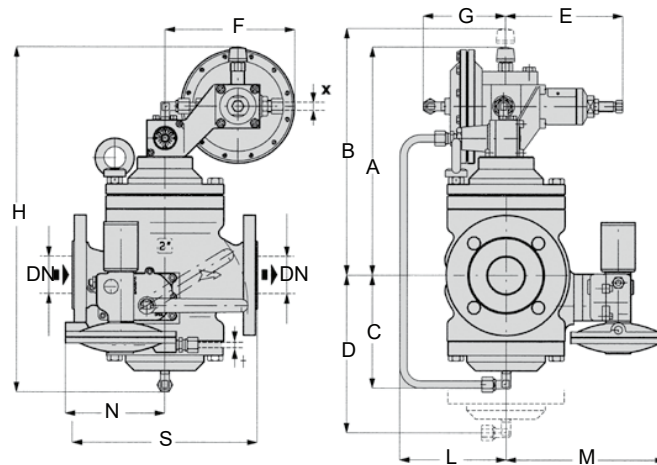
Tubing Connections

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

Weight in lbs.

S - Ansi 150/PN 16	90.3	152.1	158.7	191.8	242.5
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Dimensions and weights



Overall dimensions in inches

Size (mm)	25	50	65	80	100
Inches	1"	2"	2½"	3"	4"
S - Ansi 150/PN 26	7.2	10	10.86	11.73	13.85
A	11.49	12.71	13.81	14.01	17.28
B	11.49	12.71	13.81	14.01	17.28
C	5.7	6.33	1	7.28	15.9
D	8.34	10.03	11.49	12.67	25.03
E	6.29	6.29	6.29	6.29	6.29
F	7	7	7	7	7
G	4.52	4.52	4.52	4.52	4.52
H	16.81	18.66	20.43	20.9	32.79
L	3.85	5.74	5.74	5.74	5.74
M	7.63	8.62	12.67	9.68	10.35
N	4.92	4.92	4.92	5.11	5.11
Tubing Connections					

Face to face dimensions S according to ANSI B16.5, IEC 534-3, and EN 334

Weight in lbs.

S - Ansi 150/PN 16	48.5	77.1	101.4	130	249.1
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EQUIPMENT CONTROLS COMPANY

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