TARTARINI

Spring loaded regulator A/140 series

EMERSON™
Process Management

A/140 series

The regulators of the A/140 series due to their operating specifications are mainly used in those system where sudden capacity variations are required, or else, where the cut-off of the gas distribution is controlled by solenoid valve, such as for the feeding of burners.

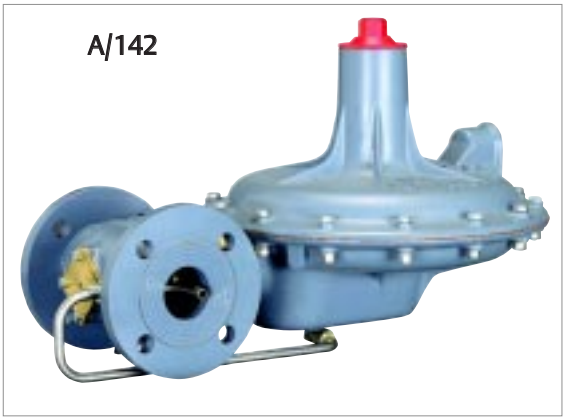
They can be used with natural gas, manufactured gas, air, propane and other gases, as long as they do not contain a high percentage of benzole.

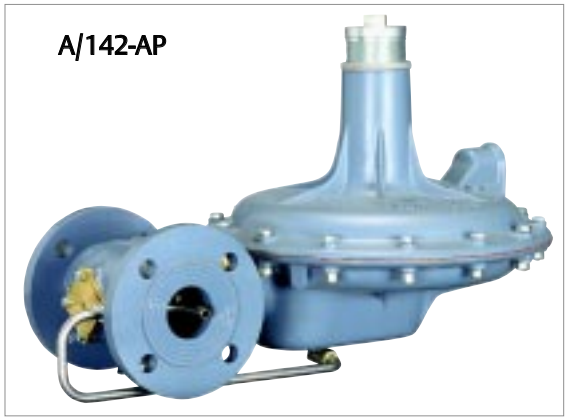
The A/140 series regulators are springcontrolled single seated, whit counterbalanced valve disc.

They are usually supplied with safety valve and builtin filter and can be also provided with shut-off device for minimum pressure, maximum pressure or minimum and maximum downstream pressure.

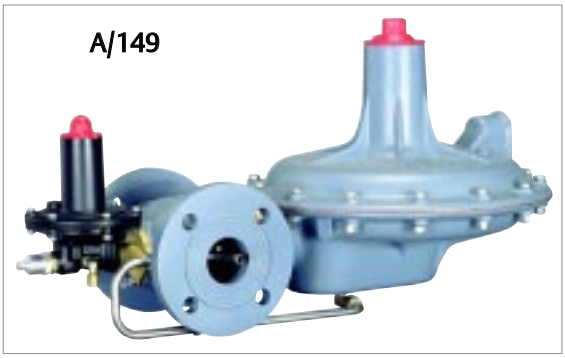
The regulators of the series A/140 have been devised keeping in consideration the functionality of maintenance.
In fact is possible to replace the seat or the seals without removing the body from the fine.

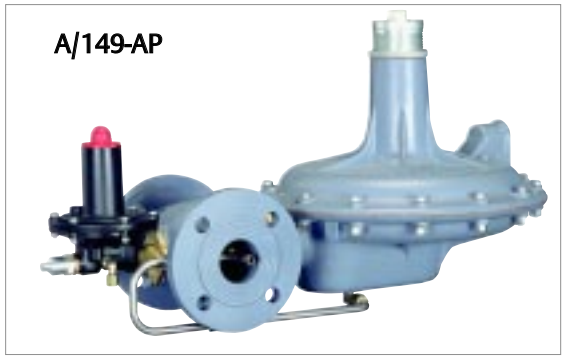
Version without safety shut-off device





Version with safety shut-off device





Construction features

- Counterbalanced valve
- Available with or without refilief valve
- AE/149 and AE/149-AP monitor version available
- Overpressure and underpressure slam shut valve
- Manual reset
- Inlet and outlet in-line

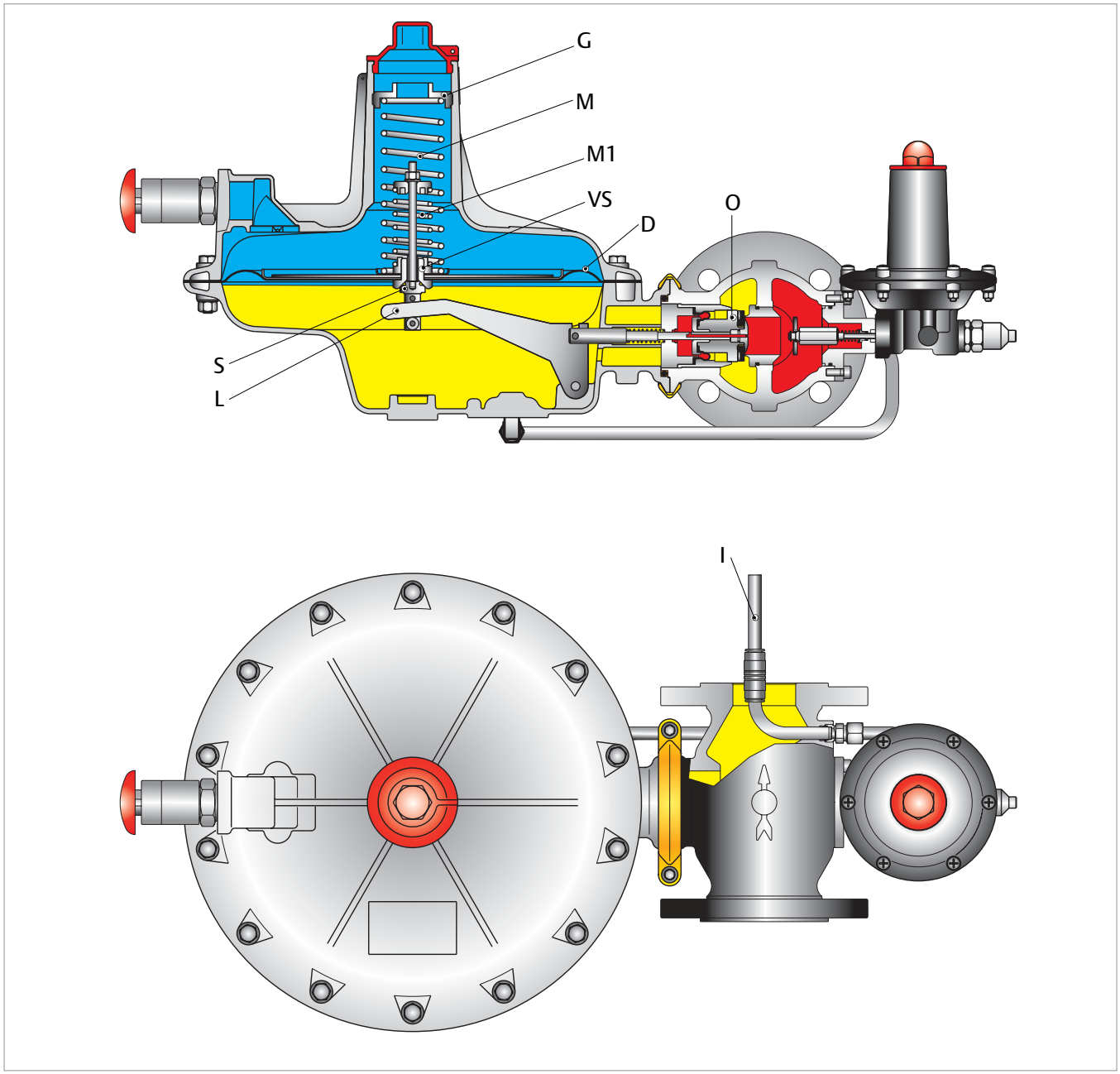
Regulator operation

The movements of the diaphragm (D) are transmitted to the valve disc (O) by the stem (S) and the lever (L).
The downstream pressure through the pulse pipe (I) exerts a force under diaphragm (D) and this force is counteracted by the adjusting spring (M).

The gas pressure on the diaphragm tends to close the valve disc; the antagonist action of the adjustment spring tends to open it. Under normal conditions the balance between these antagonist actions positions the valve disc in such a way as to ensure a constant pressure and therefore the downstream capacity.

Upon any capacity variation tending to cause an increase or decrease of pressure in relation to the pre-set pressure, the moving unit reacts and finds a new balance, so re-establishing the pressure.

Upon request the regulator is also provided with safety valve (Vs) incorporated in the diaphragm (D); the adjustment at the pre-set value is performed by means of spring (M1).



Shut-off device operation

The A/140 series pressure regulators can be fitted with an OS/66 slam-shut valve.
This safety device operates independently of the regulator and, according to customer request, can be made to trigger by any pressure variation, whether above or below set point, or by both.

How the shut-off device works

Outlet pressure acting upon diaphragm (D) is counteracted by maximum pressure spring (M2), thus overcoming the action of the minimum pressure valve (M3).
Under such conditions, the moving part (E) of the valve is held in balance so that lever (L) is aligned with the projecting part of lever (L1).
In addition, the balls (S) are held in their seat by bush (B) and, in turn, these hold the valve disc (O) open.

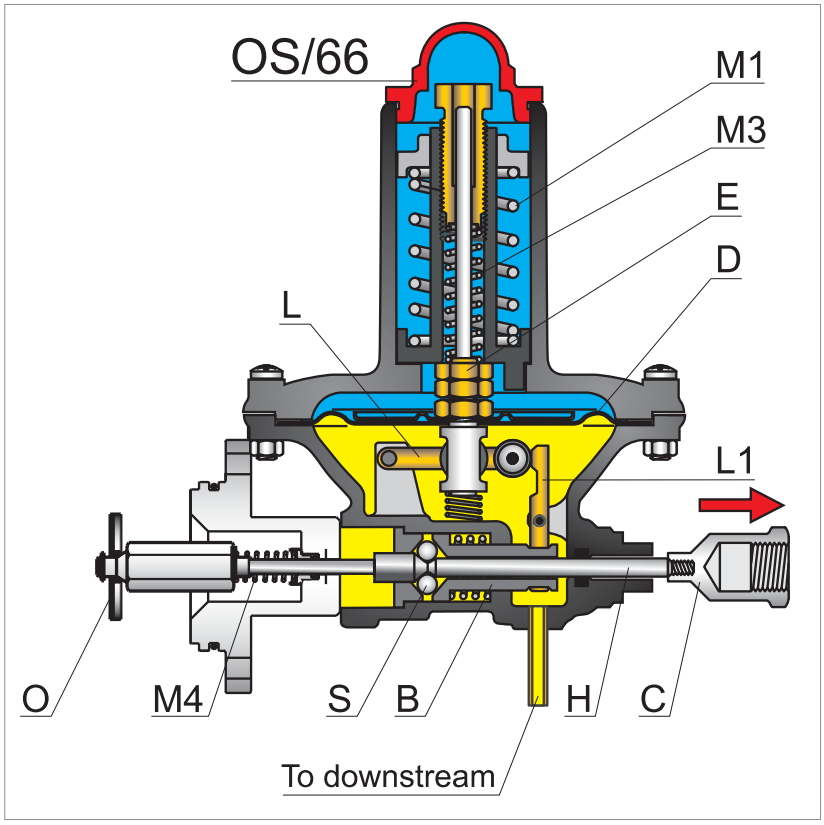
Any outlet pressure variation over and above preset value breaks the existing balance.
In fact, in case of an increase in outlet pressure, spring (M2) load is overcome by pressure load; in case of a decrease in outlet pressure, spring (M3) load overcomes pressure load.
In both cases, moving part (E) is activated, causing lever (L) to move with it so that lever (L) is no longer aligned with lever (L1).
In this way, lever (L1) releases balls (S), thereby allowing valve disc (O) to close under the action of spring (M4).

Resetting

The safety device is fitted with an internal by-pass for easy resetting even in case of high inlet pressure.
For resetting, proceed as follows: Remove rear cap (C), screw it to stem (H) and pull outwards.
Allow a few moments for inlet pressure to flow downstream.
Next, pull cap fully outwards.
Allow a few moments for outlet pressure to stabilize.
Next, release cap and make sure that device remains in the reset position.
If not, repeat the above steps. Once reset, replace cap in its initial position.

Setting

The maximum and minimum trip values are independently set by springs (M2) and (M3), respectively.



Features

Technical specifications

Body allowable pressure	PS :	up to 20 bar
Highest operating pressure	P_{max} :	300 mbar
Permissible inlet pressure	$P_{e,max}$:	6 bar
Inlet pressure range	b_{pe} :	0.1 to 6 bar
Set range	W_h :	10 to 300 mbar
Accuracy class	AC :	up to ± 5%
Lock-up pressure class	SG :	up to +10%
Maximum flow rate	Q_{max} :	up to 900 Stm³/h

Built-in slam shut valve

Independent pneumatic control

Accuracy class	AG :	± 5%
Response time	t_a :	≤ 1 sec.

Orifice

1 3/16”

Flanged connections

DIN 50

Flange rating

PN 16 UNI/DIN

Temperature

Standard version:	working	-10 °C +60 °C
	ambient	-20 °C +80 °C
Low-temperature version:	working	-20 °C +60 °C
	ambient	-30 °C +80 °C

Configurations

Without relief valve

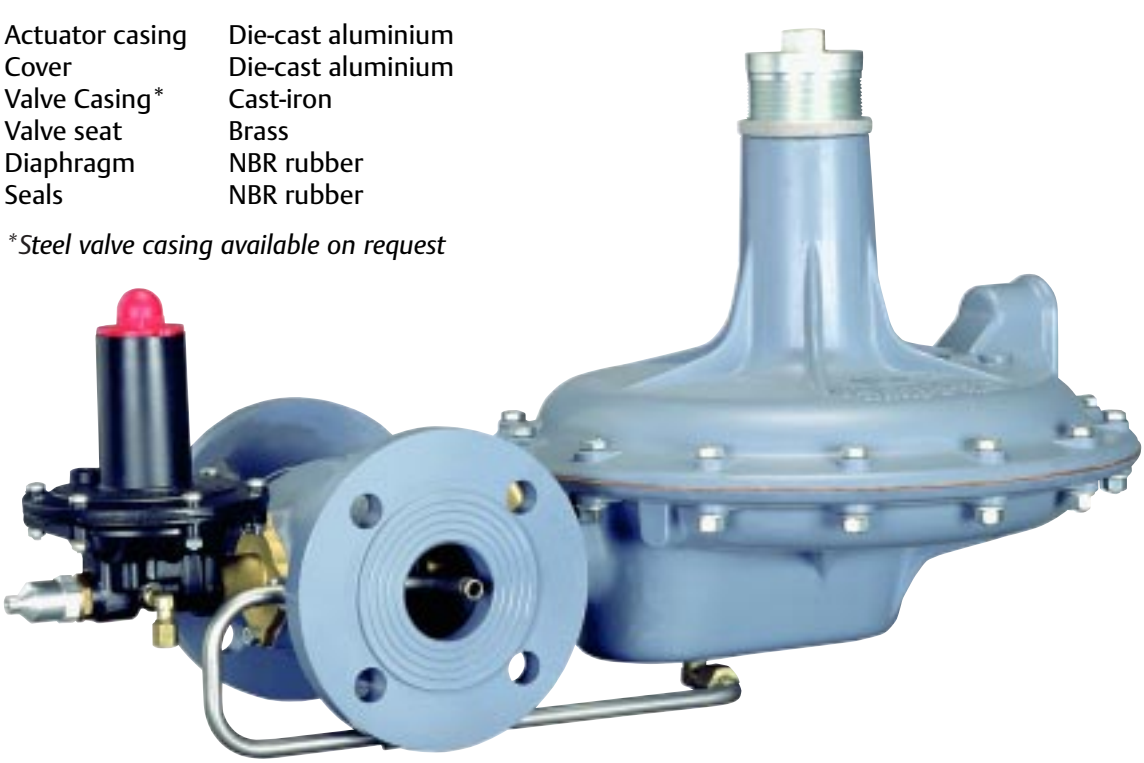
Applications

Non-corrosive gases
Low temperature

Materials

Actuator casing	Die-cast aluminium
Cover	Die-cast aluminium
Valve Casing*	Cast-iron
Valve seat	Brass
Diaphragm	NBR rubber
Seals	NBR rubber

**Steel valve casing available on request*



Pilot

Configurations

The following pilots are used with A/140 series regulator with built-in shut-off device:

- **OS/66** Series spring loaded pilot

Technical features

Model	Servomotor body resistance (bar)	Overpressure set range W_{ho} (bar)		Underpressure set range W_{hu} (bar)	
		min.	max	min.	max
OS/66	6	0.022	0.6	0.007	0.45
OS/66-AP	6	0.2	5	0.1	2.5

Materials

Body	Aluminium
Cover	Steel
Diaphragm	NBR rubber

Flow rates table Stm^3/h

Following flow table (referred to Natural Gas) is advised for an optimal use of the A/140 series regulators.

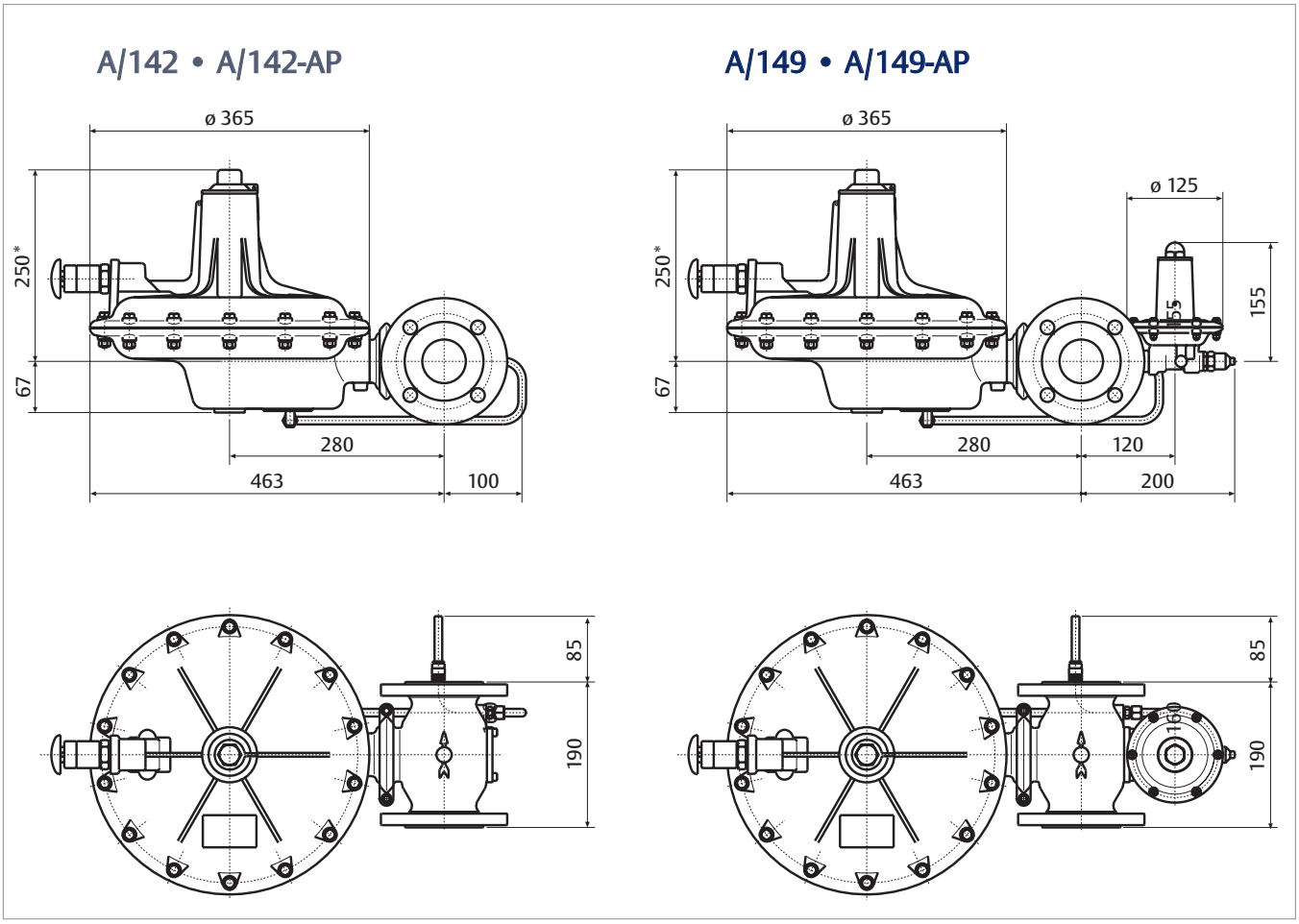
For other gases with different densities, the flow rate must be multiplied by the correction factor:

$$F = \sqrt{\frac{0,6}{d}}$$

Gas	Relative Density d	Factor F
Air	1	0.78
City gas	0.44	1.17
Butane	2.01	0.55
Propane	1.53	0.63
Nitrogen	0.97	0.79
Carbon dioxide	1.52	0.63
Hydrogen	0.07	2.93

Outlet pressure mbar		Inlet pressure bar															
		0.03	0.05	0.075	0.1	0.15	0.2	0.3	0.4	0.5	0.75	1	1.5	2	3	4	5
STANDARD	15	50	80	100	120	150	170	220	250	280	340	400	50	600	650	750	900
	20	—	75	100	120	150	170	220	250	280	340	400	500	600	650	750	900
	30	—	60	90	110	150	170	220	250	280	340	400	500	600	650	750	900
	40	—	—	80	100	140	170	210	250	280	340	400	500	600	650	750	900
	50	—	—	70	90	140	160	210	240	270	340	400	500	600	650	750	900
	75	—	—	—	—	120	150	200	240	270	340	400	500	600	650	750	900
A.P.	100	—	—	—	—	100	140	190	230	250	340	400	500	600	650	750	900
	150	—	—	—	—	—	100	170	220	250	330	390	500	600	650	750	900
	200	—	—	—	—	—	—	140	200	240	330	390	500	600	650	750	900
	300	—	—	—	—	—	—	—	150	210	310	380	500	600	650	750	900

Overall dimensions mm



*In high pressure versions (AP), this dimension must be increased by 100 mm.

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