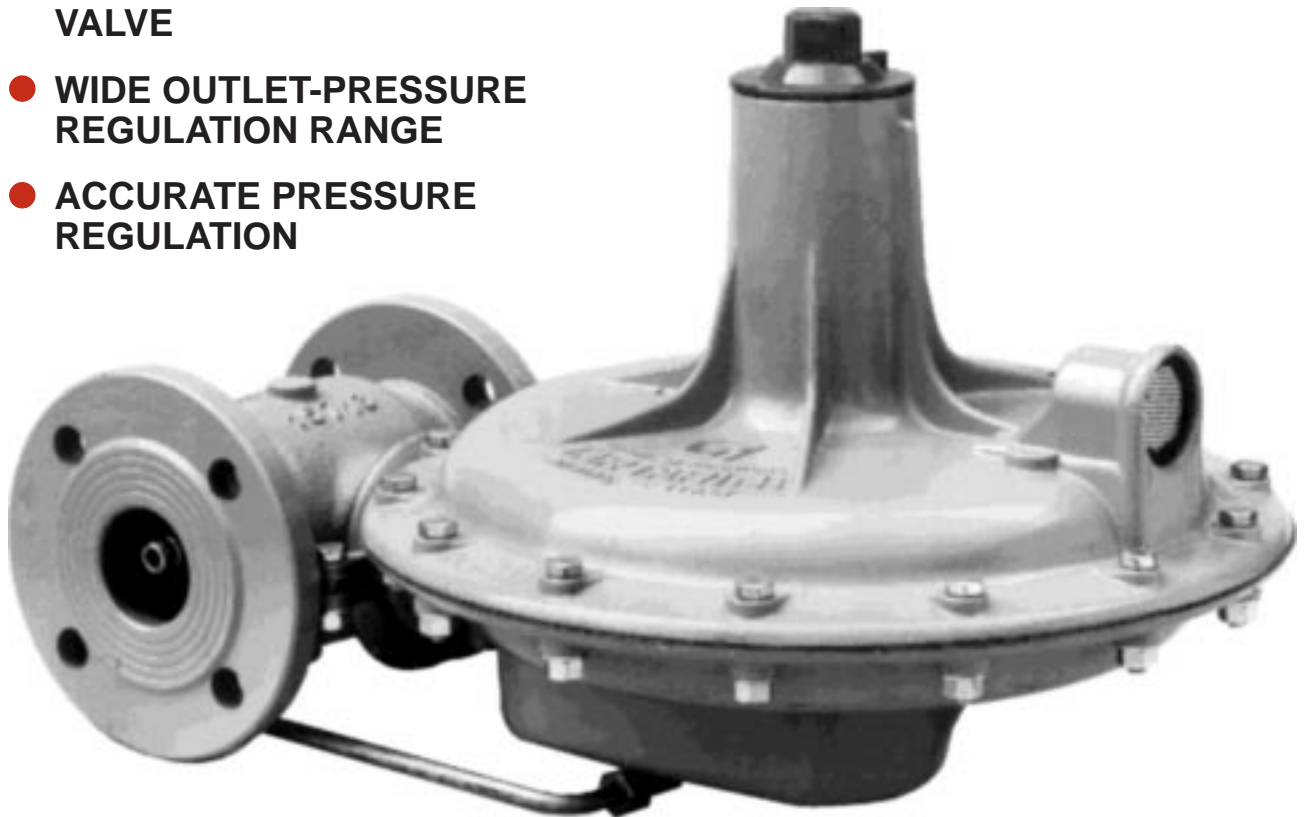


# A/140 SERIES PRESSURE REGULATORS

- BALANCED VALVE
- FULL SEAL AT ZERO FLOW
- OPTIONAL MAXIMUM AND/OR MINIMUM PRESSURE SLAM-SHUT VALVE
- WIDE OUTLET-PRESSURE REGULATION RANGE
- ACCURATE PRESSURE REGULATION



Construction and performance features make the **A/140 series** spring-loaded regulators the ideal choice in applications involving sudden changes in capacity or where the gas shut-off is solenoid-controlled as with domestic or industrial burners.

These regulators can be employed with natural, manufactured, propane, air and other gases so long as they are duly filtered and do not contain high percentages of benzol.

## CONSTRUCTION FEATURES

The A/140 series spring-loaded regulators feature plain seat and balanced valve. Compact size, high-quality materials, easy setting and accurate pressure regulation are all distinctive features of these specially designed regulators. In particular, they have been constructed for maximum ease of maintenance: access to the valve seat and to the seals for inspection or replacement can be gained without removing the regulator from the line.

The regulators come both in standard and high-pressure (AP) models:

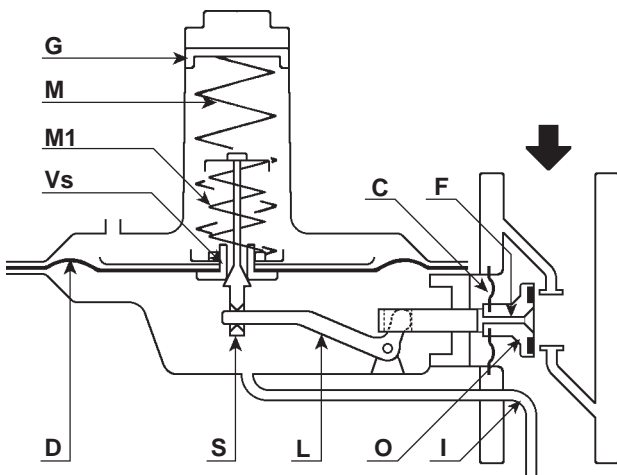
**A/141 and A/141-AP** - without relief valve and slam-shut valve

**A/142 and A/142-AP** - with outlet pressure relief valve

**A/148 and A/148-AP** - with an independently operating pneumatically-controlled slam-shut valve for minimum and/or maximum outlet pressure

**A/149 and A/149-AP** - as for A/148 with the addition of an outlet pressure relief valve

**All models in the series are fitted with DN50 PN16 flanged connections.**



## OPERATION

The movements of diaphragm (D) are relayed via stem (S) and lever (L) to valve disc (O).

The outlet pressure acts on diaphragm (D) via impulse connection (I), generating a force that is countered by spring (M). The pressure exerted by the gas on the diaphragm works to close the valve while the pressure of the spring works to open it. Under steady gas flow conditions, the balance thus achieved between the two contrasting actions, ensures positioning of the valve disc so as to guarantee constant pressure outlet-gas flow.

Any capacity variation causing a relative increase or decrease in pre-set pressure activates the moving parts of the valve until a new balance is achieved, thus restoring desired pressure.

The valve disc is kept in perfect balance by diaphragm (C), activated by the inlet pressure of the gas delivered via orifice (F). In this way, outlet pressure is kept constant and not affected by any variation of inlet pressure.

In regulators fitted with internal relief valve, stem (S) and diaphragm (D) are held together by spring (M1). When regulator is closed, any increase in outlet pressure over and above spring (M1) set-point causes diaphragm (D) to move upwards, thus opening the internal relief valve (Vs)

itself, which releases small quantities of excess gas into the atmosphere.

In regulators fitted with slam-shut valve, any pressure variation over and above valve set-point trips the valve, thus shutting off gas flow.



## SETTING

Turn the register (G) clockwise to increase outlet pressure and anticlockwise in order to decrease it. Next, check pressure value by using either a master gauge with appropriate scale or a water column. With relief valve (Vs) fitted regulators, adjustment of triggering pressure is effected by means of the spring (M1) adjusting nut.

Regulators are fully factory tested and set at the values shown on the data plate, which correspond to those specified in client order.

## COMMISSIONING

Proceed as follows:

Slightly open the outlet shut-off valve, and then slightly and very slowly open the inlet shut-off valve. Next, reset the slam-shut valve (when fitted) and wait for outlet pressure to stabilize, then fully and very slowly open the outlet valve.

## PERIODICAL CHECKS AND MAINTENANCE

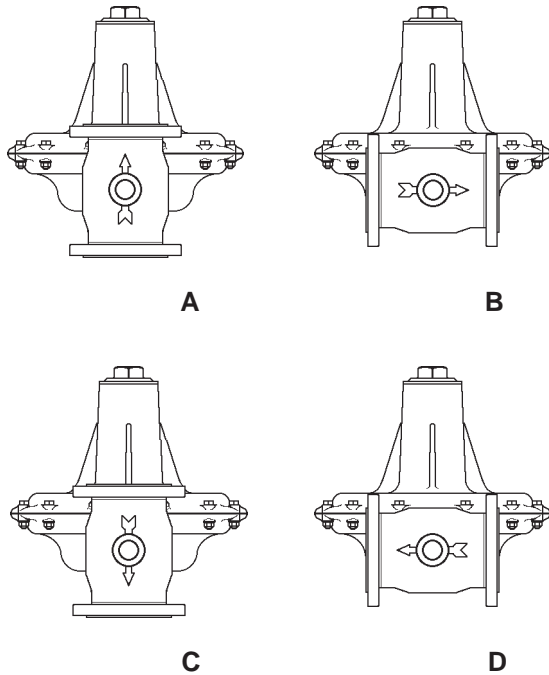
For optimum regulator performance, regular and thorough checks should be carried out. Please closely follow checking and maintenance instructions accompanying the regulator (see Bulletin 0132). An extra copy of the Bulletin can always be requested from supplier, if required.

## INSTALLATION

The standard version of the A/140 series regulators features specifications as illustrated in Fig. B. Non-standard versions are supplied on request.

All versions, whether standard or non-standard, can be mounted both on horizontal or vertical piping. In all cases, gas flow direction as indicated by arrow on regulator casing must be scrupulously observed.

**IMPORTANT:** Impulse pipe must be fitted into appropriate coupling upon installation.



## MATERIALS

Actuator casing	die-cast aluminium
Cover	die-cast aluminium
Valve casing*	GS500-7 UNI 4544-74 cast-iron
Valve disc	OT58 UNI 2012 brass
Valve seat	OT58 UNI 2012 brass
Diaphragm	Buna-N rubber
Seals	Buna-N rubber

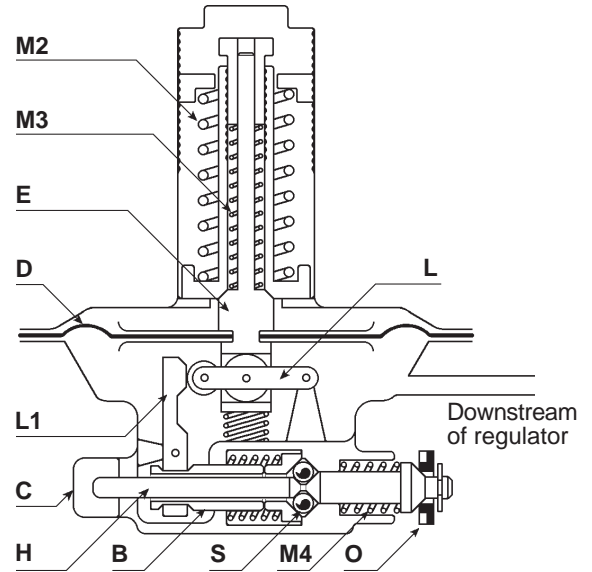
\* Steel valve casing available on request

## TECHNICAL DATA

Inlet pressure		Max. = 5	bar
Outlet pressure	Standard version	Max. = 75	mbar
	H.P. version	Max. = 300	mbar
		Min. = 10	mbar
		Min. = 50	mbar
Operating temperature		-10°C to +50°C	
Capacity coefficients	C1 = 28		
	Cg = 390 for inlet pressures between 0.03 and 3 bar		
	Cg = 300 for inlet pressures between 3 and 5 bar		

## SAFETY DEVICE

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.



## SAFETY DEVICE OPERATION

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).

## SAFETY DEVICE 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.

## PRESSURE SETTING

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

## OS/66 SETTING RANGE

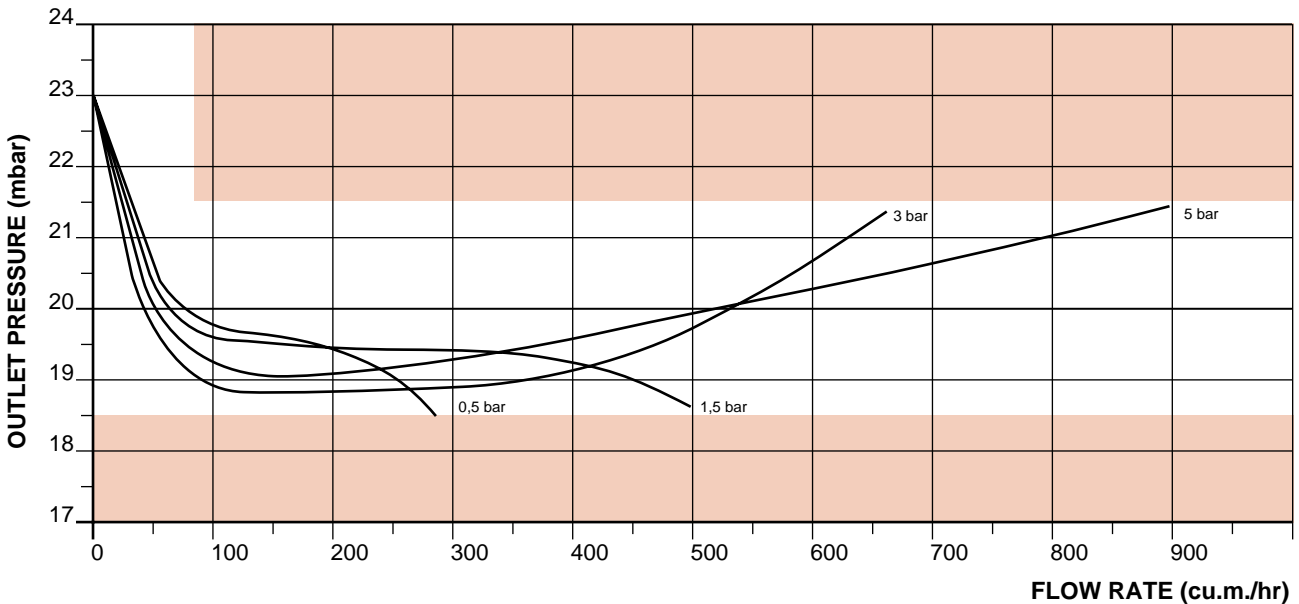
Overpressure trip range (mbar)	Underpressure trip range (mbar)
25 to 500	7 to 400

## CAPACITY CHART

	Outlet pressure (mbar)	Inlet pressure (bar)															Spring Code	
		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	0122940
	20	—	75	100	120	150	170	220	250	280	340	400	500	600	650	750	900	0122950
	30	—	60	90	110	150	170	220	250	280	340	400	500	600	650	750	900	0127870
	40	—	—	80	100	140	170	210	250	280	340	400	500	600	650	750	900	0122850
	50	—	—	70	90	140	160	210	240	270	340	400	500	600	650	750	900	0122850
	75	—	—	—	—	120	150	200	240	270	340	400	500	600	650	750	900	0128070
A.P.	100	—	—	—	—	100	140	190	230	250	340	400	500	600	650	750	900	0245760
	150	—	—	—	—	—	100	170	220	250	330	390	500	600	650	750	900	1303210
	200	—	—	—	—	—	—	140	200	240	330	390	500	600	650	750	900	0136150
	300	—	—	—	—	—	—	—	150	210	310	380	500	600	650	750	900	0184070

Capacities (cu.m./hr) are applicable to natural gas with a specific gravity of 0.702. For other gases, the values shown in the chart below must be multiplied by 0.595 for propane, 0.518 for butane, 0.755 for nitrogen and 0.744 for air.

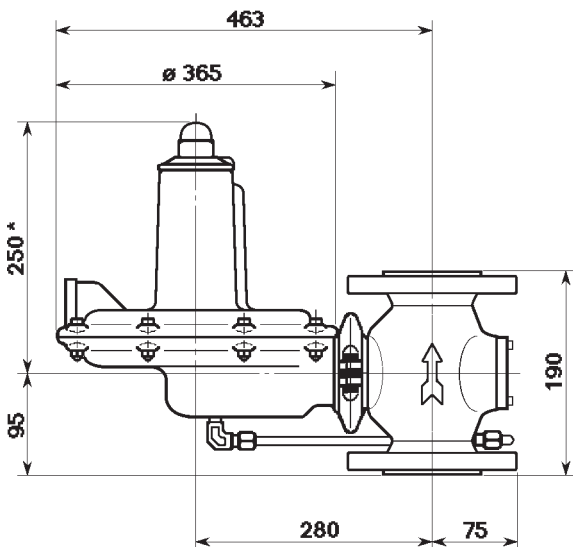
## CHARACTERISTIC CURVES - Set point 20 mbar



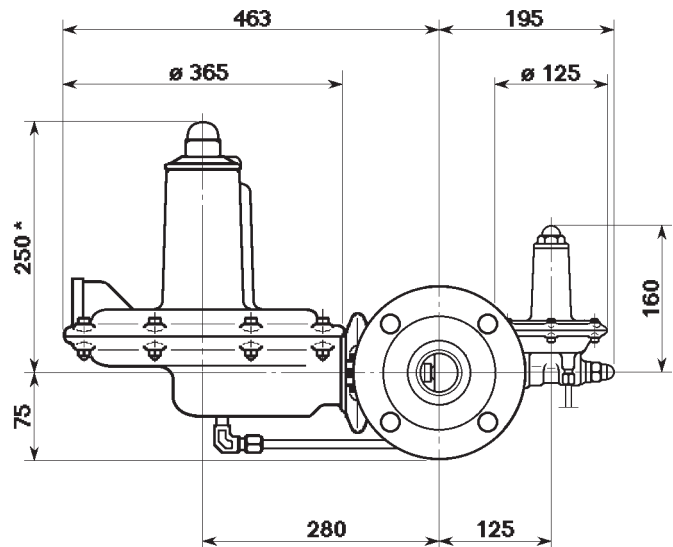
## OUTLINE DIMENSIONS (mm)

(Dimensions are not binding)

A/141 A/142



A/148 A/149



\* In high pressure versions, this dimension must be increased by 100 mm.