VIRTUAL CATALOGUE

PRESSURE REGULATOR SUTON SERIES

- *FAIL TO OPEN REGULATOR*
- *BALANCED VALVE*
- *HIGH FLOW COEFFICIENT*
- *WIDE PRESSURE-REGULATION RANGE*
- *FAST RESPONSE*
- *FULL SEAL AT ZERO FLOW*
- *CAN BE SUPPLIED WITH MINIMUM / MAXIMUM PRESSURE SLAM-SHUT VALVE*
- *HIGH PRECISION REGULATION*
- *SIMPLE MAINTENANCE; NO NEED TO REMOVE FROM GAS LINE*
- *CONNECTIONS*
  DN25 PN25 (ANSI 150)
  DN40 PN25 (ANSI 150)
  DN50 PN25 (ANSI 150)
- *SUITABLE UP TO Pe 20 bar*

APQ

SUTON/S

Use

Due to their characteristics, SUTON series regulators are used with optimum results both in high gas pressure reducing stations and in industrial facilities where a fast response is required for quick changes in flow. They can work with natural or manufactured gas, propane, air and other gases that do not contain a high percentage of benzol.

Construction characteristics

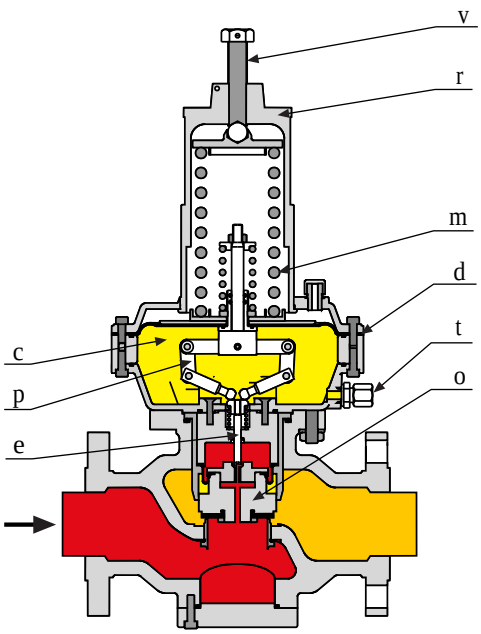
SUTON series regulators are direct acting, with regulation by spring and balanced valve. They can be supplied with incorporated shut-off valve.
This series of regulators has been designed with easy, practical maintenance in mind and any element can be substituted without having to remove the regulator from the gas line.
The products are equiped with an anti-pump device in order to slow up the flow and backflow of gas and air in the regulation head.
The /S models have a minimum and/or maximum slam-shut valve included, with a self-adjusting lock-up plug.

Control operations

Movement in the membrane or diaphragm (d) via the lever (p) and shaft (e) is transmitted to the balanced valve (o). The outlet pressure ist transferred to the chamber (c) via the port (t) and increases the force on the membrane (d); this is countered by the decreasing force exercised by the calibration spring (m).
The increase in outlet gas pressure in the chamber (c) lifts the membrane (d) and gradually closes off the flow of gas by means of the balanced valve (o). The force exercised by the calibration spring (m) gradually opens the gas flow. The balance between these two forces results in the different flows having a constant outlet pressure.

Versions

Type	Entry ANSI 150	Entry DIN PN 25	Exit ANSI 150	Exit DIN PN 25	Slam-Shut Valve
SUTON 25	special	25	special	25	no
SUTON 25/S	special	25	special	25	yes
SUTON 40	special	40	special	40	no
SUTON 40/S	special	40	special	40	yes
SUTON 50	special	50	special	50	no
SUTON 50/S	special	50	special	50	yes



Setting up the regulator

To set up the SUTON regulator, create a small consumption by slightly opening the exit valve or a purge valve located downstream from the ports. Then slowly open the entry valve until it is fully open. Check that the regulator stabilises itself and then slowly open the exit valve until it's fully open.
To ensure the regulator operates effectively and has a long service life, the gas reaching the regulator should be perfectly filtered and dry.
If the regulator has an incorporated safety shut of valve:
Open the entry valve fully but carefully. Slightly turn the release lever to allow a small amount of flow gas. Check that the exit pressure increases then stabilises at a level close to that of the regulation level, then continue turning the lever until it is totally reset.
Then slowly open the exit valve until it is fully open.

Adjusting the regulator

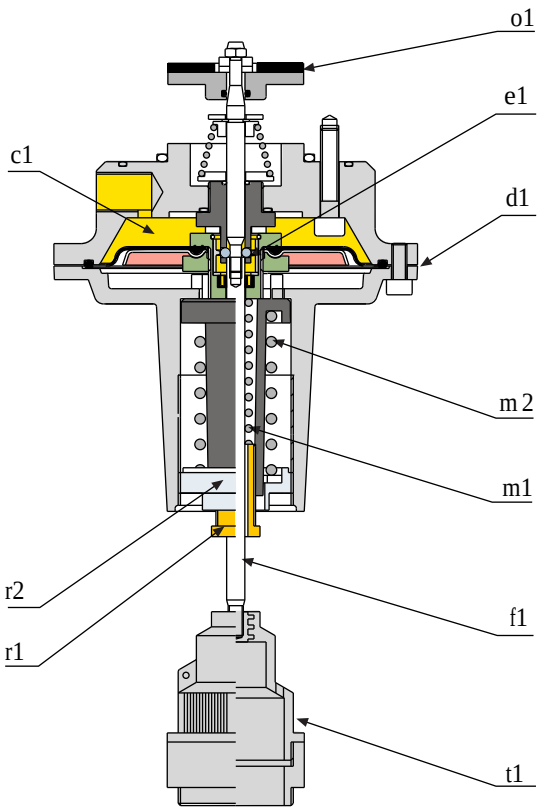
To increase outlet pressure, the calibration spring (m) must be compressed until the desired pressure is reached, which should be checked by means of a manometer installed downstream of the regulator.
To increase the pressure, turn the dial (r) clockwise until you notice significant resistance, then turn the screw (v) in the same direction until the desired pressure is reached.
To decrease the pressure, turn above-mentioned adjustment screw (v) anti-clockwise.
APQ supplies the regulator with the settings requested by the client and these values are indicated on both the regulator label and the quality certificate.

Safety valve

SUTON regulators can be supplied with a minimum and/or maximum pressure safety valve, in this case being known as SUTON .../S.
The function of this valve is to cut off the gas flow when the regulator exit pressure doesn't reach or exceeds the pre-ajusted minimum or maximum pressure values.
Safety valves act totally independently of the pressure regulation system.

Safety valve operations

The outlet pressure arrives at the chamber (c1) via the port and exercises a force on the membrane or diaphragm (d1), gradually moving it. This membrane also undergoes a counterforce exercised by the minimum (m1) and maximum (m2) calibration springs.
Under these balanced conditions, the spheres (e1) hold the shaft (f1) with the lock-up plug (o1) mounted at one end. An increase or decrease in exit pressure exceeding the value tolerated by the moving parts makes the spheres move (e1), releasing the shaft (f1) and blocking the flow of gas by means of the plug (o1).



Safety adjustment limits

Type	Actuation pressure in mbar	
	By minimum	By maximum
S-BP	15 ÷ 100	40 ÷ 200
S-MP	50 ÷ 300	150 ÷ 500
S-AP	200 ÷ 2500	400 ÷ 5000

Reset of the safety valve

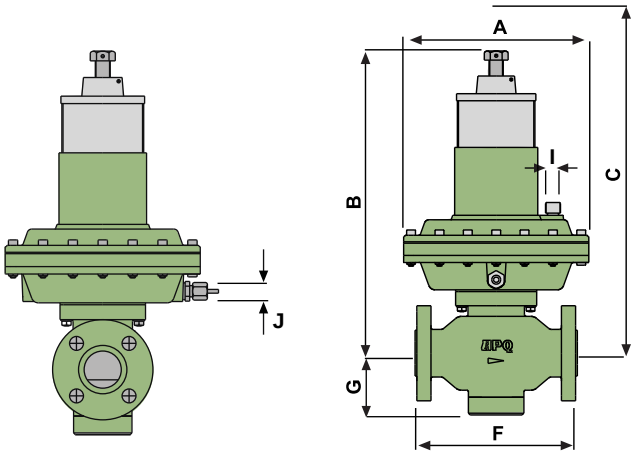
To reset the safety valve, remove the plastic top (t1) and, inverting it, screw it onto the end of the shaft (f1). Then pull slowly; check that the gas passes through the regulator and then stabilises. Continue pulling until the end and, after checking that the valve is reset, unscrew the shaft top (t1) and, inverting it, screw it onto the top of the lock-up valve so that it will protect the safety valve controls. This top has a hole for sealing.

Setting the safety valve

The safety valve is adjusted at the factory at the value indicated on the label of the valve itself and on the quality certificate. Should you wish to modify the value of the safety maximum or minimum, proceed as described below:
If the safety valve has a minimum setting, you should always start with this. Turn the minimum dial (r1) clockwise to increase the minimum value and anti-clockwise to reduce it. If you wish to cancel the minimum, simply remove the minimum spring and dial (r1).
To set the safety maximum, turn the dial (r2) clockwise to increase the value and anti-clockwise to reduce it. To cancel the safety maximum, turn the dial (r2) clockwise to a value where actuation would be illogical.

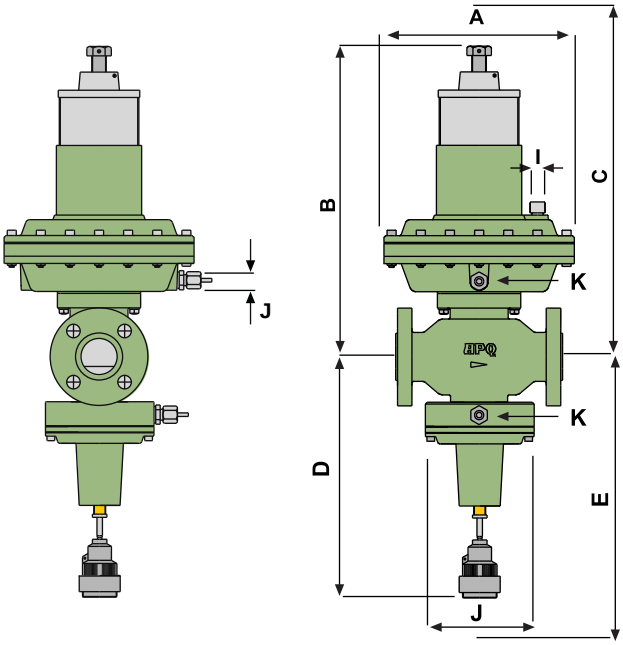
TECHNICAL CHARACTERISTICS

Response	On opening
Body design pressure	Pzul 20 bar
Maximum entry pressure	Pemx 20 bar
Entry pressure field	bpe 0.2 ÷ 20 bar
Regulation field	Wh 20 ÷ 4000 mbar
Regulation accuracy	RG 5
Closure overpressure	SG 10
Entry connection	DIN PN25 or ANSI 150
Exit connection	DIN PN25 or ANSI 150
Operational temperature	-10° ÷ 60 °C



MATERIALS

Regulator body	Spheroid cast iron
Servomotor body	Injected aluminium
Balanced valve	Brass
Valve seat	Stainless steel/brass
Membranes	Woven nitrile
Joints	Nitrile, Viton
Regulation shaft	Steel
Shut of valve cover	Injected aluminium



FLOW COEFFICIENT Cg

Type	Regulator w/o lock-up valve	Regulator with lock-up valve
SUTON 25	540	490
SUTON 40	830	760
SUTON 50	920	840

C1= 28

Flow conversion

For other gases, the flow must be converted to natural gas, in accordance with the following formula:

Nm^3/h natural gas = Nm^3/h gas to be converted / factor f of gas to be converted

Conversion factor f			
Butane	0.55	Methane	1.08
Propane	0.64	City gas	1.23
Bio gas	0.85	Oxygen	0.76
Air	0.80	Nitrogen	0.81
Carbon Monoxide	0.81	Hydrogen	3.04

DIMENSIONS

Regulator Type	Connection Entry/Exit	A	B	C	D	E	F	G	I	J	K	Weight
SUTON 25	DN25 or 1"	210/280	340/370	420/450	-	-	184	66	1/4"	120	10	14,5 Kg
SUTON 25/S	DN25 or 1"	210/280	340/370	420/450	220	230	184	-	1/4"	120	10	14,5 Kg
SUTON 40	DN40 or 1.1/2"	210/280	360/385	450/465	-	-	223	77	1/4"	120	10	20,0 Kg
SUTON 40/S	DN40 or 1.1/2"	210/280	360/385	450/465	240	250	223	-	1/4"	120	10	20,0 Kg
SUTON 50	DN50 or 2"	210/280	410/395	490/475	-	-	254	86	1/4"	120	10	24,0 Kg
SUTON 50/S	DN50 or 2"	210/280	410/395	490/475	250	260	254	-	1/4"	120	10	26,0 Kg

The measurements are in mm
C = Distance required to change the regulation spring
E = Distance required to change the safety springs

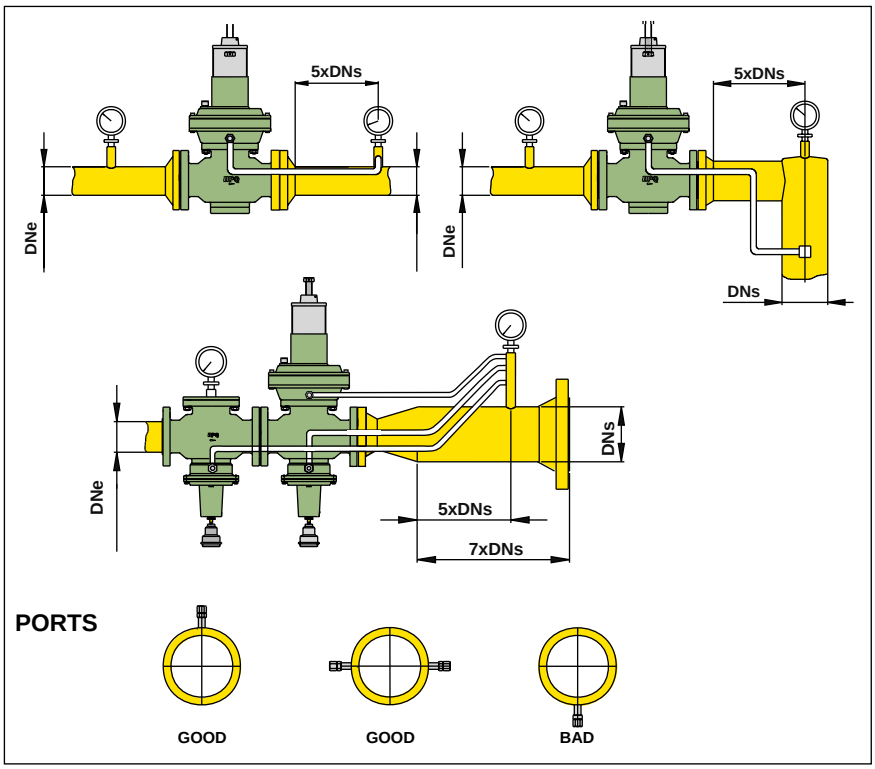
INSTALLATION

a) Install in a gas line that is sufficiently strong to bear the weight of the regulation unit.
b) Ensure that there is a cut-off valve, a manometer with the suitable range and filter at the entry point.
c) Ensure that there is a manometer with the suitable range, a 1/2" port and cut-off valve at the exit point.
d) Install the regulator following the flow indicated on the regulator body.
e) Verify that the port for outlet pressure in the pipe is at least 5 times the pipe diameter from the outlet flange of the regulator. Do not install cut-off valves in the ports.
f) Verify that the gas entry speed and especially exit speed do not exceed that requested or recommended by the gas company. In no case should the following conditions be exceeded:

Gas speed at regulator outlet, especially in ports:
Pa < 0.5 bar; V.max 15m/sec
Pa < 1.5 bar; V max 20 m/sec
Pa > 4.0 bar; V max 25m/sec

g) In fast switch-off installations with on-off electro valves, the exit lung capacity must be the correct size and at least 0.02% of the flow in Nm^3/h.

Example:
Flow 1000 Nm^3/h; Pa 50 mbar
Necessary diameter DN 150
Necessary volume 0.2 m^3
Resulting length 12 metres



The data contained in this catalogue may be modified without prior notice.

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