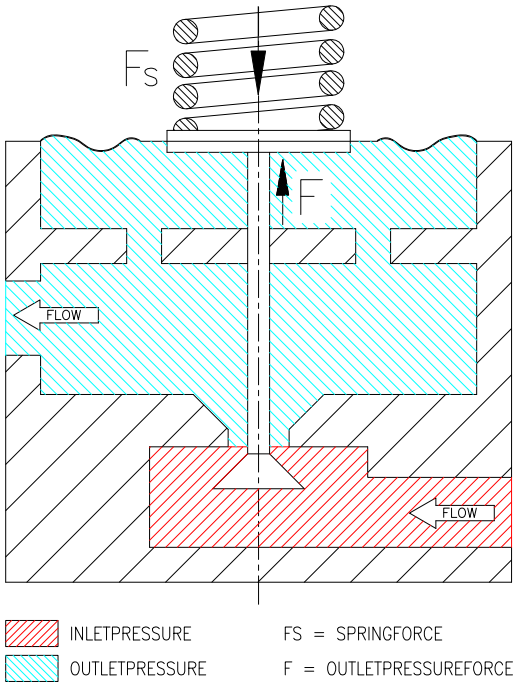
SPRINGLOADED PRESSURE REGULATORS

FUNCTION

The function of a pressure regulator is to reduce a pressure and to keep this pressure as constant as possible while the inlet pressure and the flow may vary.

HOW DOES IT WORK?

A pressure regulator has a sensing element (piston, diaphragm or bellows) which is on one side subject to load force (Fs) created by a spring or a gas pressure. On the other side the sensing element is subject to the force (F) of the controlled fluid. When the load force (Fs) is higher than force (F) the valve will open until the two forces are in balance. As soon as force (F) is equal to or slightly higher than force (Fs) the valve will close. At this point the required outlet pressure has been reached.



INSTALLING A REGULATOR

It is advisable to use a good filter close to the inlet of the regulator. Swarf, burrs, wire etc. may cause valve leakage. Therefore, before installing the regulator, clean all pipes and connections. Avoid the use of teflon tape on pipe threads and be careful with anaerobic (loctite type) sealing compounds which may get into the regulator and lock moving parts.

HOW TO OPERATE A REGULATOR

- Fully unwind the control knob anti-clockwise.
- Apply pressure to the regulator inlet. There should be no flow from the outlet port.
- Wind the knob clockwise. The outlet pressure will continue to rise until the knob adjustment stops.
  At any outlet pressure there should be no tendency to creep upwards.
- Wind the control knob until the desired outlet pressure has been reached.
  Open the downstream valve to obtain flow through the system.
  You will now observe a small drop in the outlet pressure, which recovers when the flow stops.

TROUBLE SHOOTING

The most common problem is rise in outlet pressure, which is almost invariably caused by a damaged seat.

Seat damage: Quite often the seat is damaged by pieces of swarf - from welding or fitting- which bed in the seat causing leakage.

Remedy: Use a proper filter on the inlet of the pressure regulator.

Effect	Causes	Remedy
• Rise in outlet pressure	1. Damaged main valve seat	Fit a new valve/seat
	2. Dirty main valve or seat	Clean main valve
	3. Broken valve spring	Renew spring
	4. Damaged O-ring on valve assembly	Replace O-ring
• Continual bleed of media from vent port (outlet pressure drops)	1. Relief stem wrongly adjusted	Readjust
	2. Damaged relief valve of seat	Replace
	3. Relief valve spring broken	Replace
	4. Piston or piston plate O-ring damaged	Replace O-ring
• Inability to control	Broken main spring	Replace

REGULATOR FEATURES

- **Balanced valve**
  In many of our regulators the valve is balanced so that inlet and outlet pressure have little influence on the position of the valve.
  Because of this variation in inlet pressure has little influence on the outlet pressure.

- **Leak tightness on the seat**
  Our manufacturing techniques guarantee leak tight shut-off $\leq 1 \times 10^{-4}$ mbar l/sec. of the valve under no-flow conditions. However, a pressure regulator is not a stop valve .
  Stop valves should be installed upstream and downstream of a pressure regulator.

- **Internal relief valve**
  Some of our regulators have built-in relief valve (sometimes adjustable). This allows reducing of the outlet pressure in a no-flow situation by simply turning the control knob anti-clockwise.
  Note: This type of relief valve is not a safety valve!!

- **Outlet pressure range**
  Always try to select the outlet pressure range in such a way that the maximum required pressure in your system lies close to the maximum pressure of the selected range.
  Regulators should not be used in the lower 10% of the outlet range.

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