CONSTRUCTION OF REGULATOR AND AIR LUBRICATOR

Construction of Regulator

The Pressure Regulator has a spring loaded metallic diaphragm provided with an aperture A spring loaded plunger rests on the aperture. A valve disc is connected at the top of the plunger, rests on valve seat, either opens or closes the air passage from primary supply line to the down stream secondary line. The regulator body below the diaphragm houses the main spring and an external knob to adjust the required pressure setting . The body is provided with vent holes

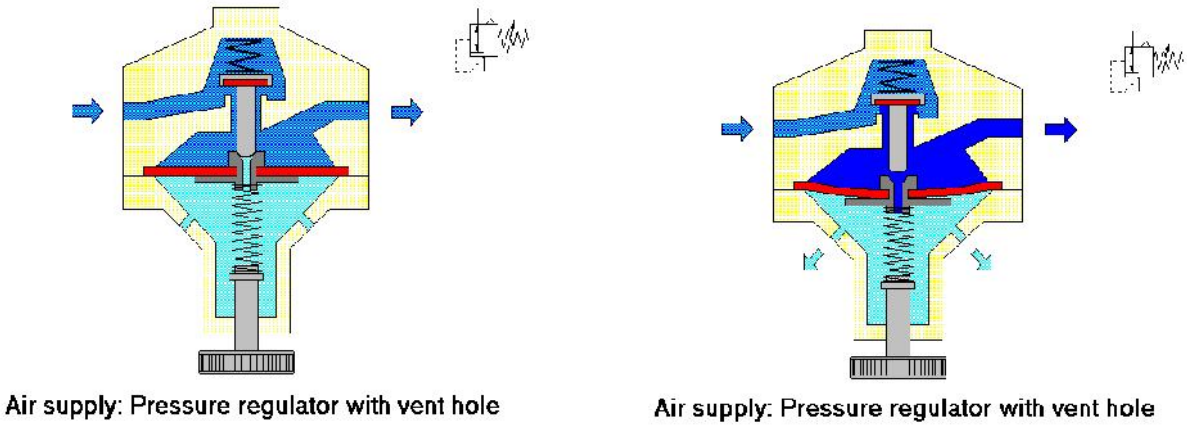

Figure 10. 10 Compressed Air Regulator [Vent Type]

When the primary pressure on the upstream side of the Regulator is more than the pressure setting of the Regulator, the pressure exerted by the primary pressure above the diaphragm deflects it slightly downwards. This results in down ward movement of the

plunger. A valve disc at the top of the plunger closes the supply passage until the pressure above the diaphragm falls below the spring setting of the regulator.

This result in deflection of the diaphragm upwards followed by upward movement of plunger which further opens the supply line passage. The repeated movement of the plunger and opening of closing of the valve disc results in an equilibrium setting for a given pressure

During periods when the sudden closure of valves on the down stream side takes place ,the secondary line pressure is momentarily is more on the diaphragm thereby the diaphragm deflects down wards The diaphragm deflects to a greater extent such that the bottom of the plunger cannot close the aperture on the diaphragm there by relieving excess pressure from secondary line to escape through aperture and vent holes

Figure 10.11. Compressed Air Service Unit

Compressor Air Lubricator

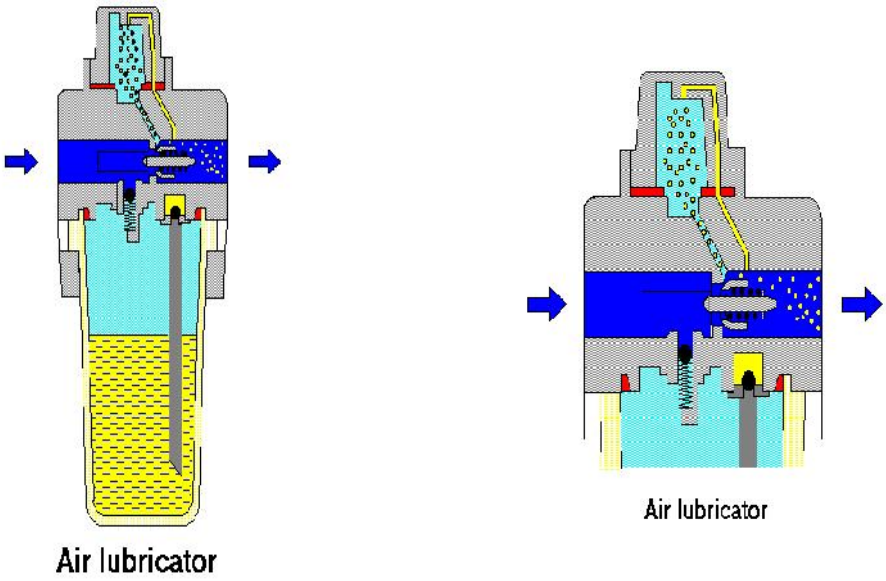

Figure 10.12. Compressed Air Lubricator

Lubrication of moving parts of cylinder and valves is very essential in Pneumatic system For this purpose Compressed Air Lubricators are used ahead of each Pneumatic equipment
Correct grade of lubricating oil usually with kinematic viscosity around 20- 50 centi-stokes should be used.
Low pressure is created at the throat portion of the venturi due to flow of air taking place in the Lubricator. This low pressure will assist automatic suction of the lubricating oil from the oil bowl to the drip chamber where drop by drop of oil is diffused in to air stream

Typical feature of any compressed air lubricator should incorporate the following:
•Automatic suction of oil from oil bowl due to suction created by the venturi portion
•Transparent Drip Chamber for visual observation
•Non return valve to prevent back flow of air from secondary to primary side of lubricator
•Non return valve arrangement to prevent air loss during opening of oil bowl to replenish the lubricating oil during operation without interruption
•Regulating screw for adjustment of oil feed rate in to air
•Transparent oil bowl with Oil filling cap

Operation
•Number of oil drops lets should be around 10 to 20 drops per 1000 lit of air .
•It is necessary to diffuse the lubricating oil in to compressed air in the form of fog or mist
•The Lubricator should be preferably located not more than 5 m from the pneumatic equipment