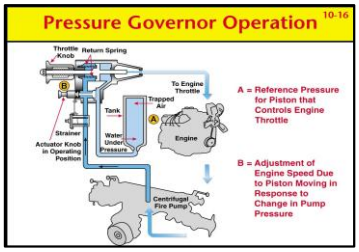
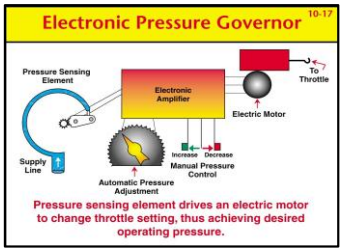
Pressure Governors

Purpose: To describe the operation and function of the two types of pressure governors used on fire apparatus.





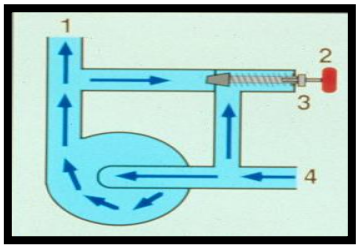
Pressure Governors control the pressure of the pump by controlling the speed of the apparatus engine. There are two types of governors, balanced stored pressure and electronic pressure governor.

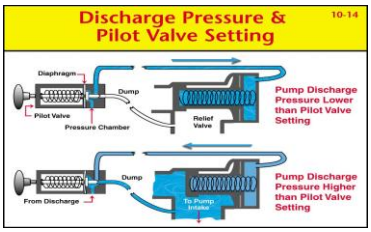
The Stored Pressure Governor is controlled mechanically. A desired pump pressure is obtained manually using the throttle on the pump panel. When the desired pressure is reached the actuator is activated. This activation sets a water/air pressure balance in the reference pressure piston chamber. This pressure is directly proportional to the desired engine pressure and this device controls the speed of the apparatus engine. As the pressure demands of the pump increase or decrease the related pressure in the reference pressure piston chamber will change causing the engine speed to adjust accordingly to maintain the desired pressure.

The Electronic Pressure Governor controls the speed the engine electronically. Using an electronic amplifier to detect the pressure fluctuations, this device controls engine throttle by activating an electric motor to maintain the desired engine speed. As with the Stored Pressure Governor both increased and decreased demand of the apparatus will be adjusted for. Also, the intake pressure of the pump will be compensated for with these devices.

Discharge Relief Valves

Purpose: To describe the function and the operation of the discharge relief valves on fire apparatus. There are two basic types of spring controlled pilot valves.





Discharge relief valves are set after the pump is set at it's desired pressure. In the above picture the relief valve is controlled by a wheel on the exterior of the pump panel. This wheel is turned until the valve opens and a pressure drop occurs on the main discharge gauge, then the wheel is reversed until desired pressure is reached again. The valve is now set to the desired pressure. If the pressure increases beyond the spring pressure against the diaphragm the valve will open and the excess pressure will be sent to the intake side of the pump.

The second spring controlled pilot valve operates using a remote spring control pilot valve that monitors and controls a spring and water compressed relief valve. The pump is set to the desired pressure and the knob handle is adjusted counter clockwise to the desired pressure. The pressure from the pilot valve to the relief valve, in combination with the spring tension incorporated into the relief valve will now hold the valve closed. If there is an over pressurization on the discharge side of the pump then the valve will activate until the pressure is reduced.

Intake Relief Valves

Intake relief valves are simple valves that are set at the factory at a desired pressure. They are a spring loaded valve used as a safety valve to limit the intake pressure of the pump so over-pressurization is not passed to the discharge side of the pump.