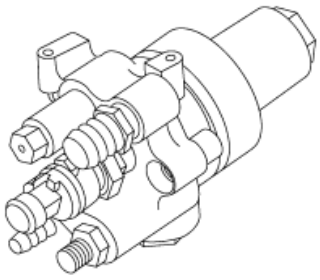
Operation and Function of the Compressed Natural Gas Fuel Regulator

High Pressure Regulator:



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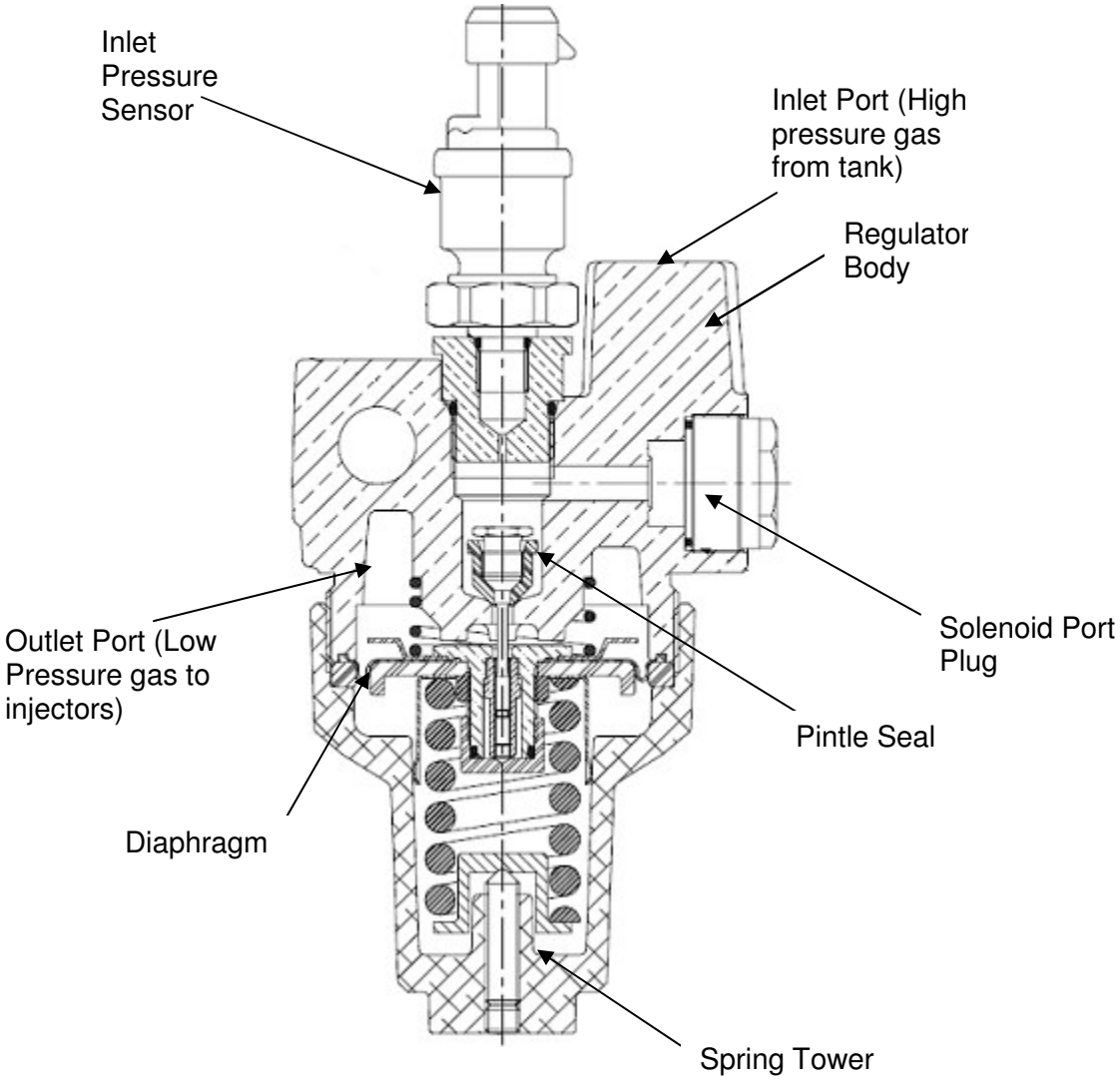
Following is a cross section showing the components of a 2L34-9C968-AA Fuel Pressure Regulator.



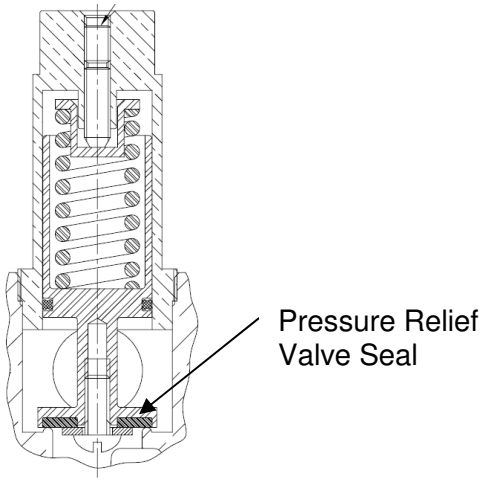
High pressure gas from the storage tank passes through a solenoid controlled tank shut-off valve. Gas then passes through a coalescing filter and then enters the regulator inlet port where it is filtered again by a sintered metal filter. High pressure gas then enters the regulator inlet chamber and flows through a variable orifice at the pintle seal which reduces the pressure and fills the outlet chamber. Desired outlet pressure is achieved by pre-compressing the tower spring which balances out the pressure in the outlet chamber. When the gas flow demand increases, pressure in the outlet chamber drops which lifts the pintle up due to a force imbalance. This allows greater flow through the regulator. The intended outlet pressure at a certain flow is used to initially set the regulator and is called regulator set point. Fuel regulator 2L34-9C968-AA has a set point of 100-115 Psig at 90 SCFH. This pressure is constant at start-up and at operating temperature. Depending on the temperature and flow rate the pressure regulator will maintain fuel delivery within the following specified parameters:

Typical Parameter Values:

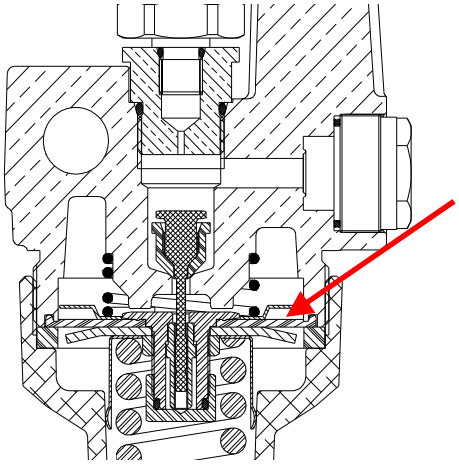
Allowable fuel pressure	60 to 150 psi (414 to 1035 kPa)
Maximum fuel rate	110 lb/hr (50 kg/hr)
Allowable fuel temperature	-40°F to 250°F (-40°C to 125°C)

Pressure Relief Valve:

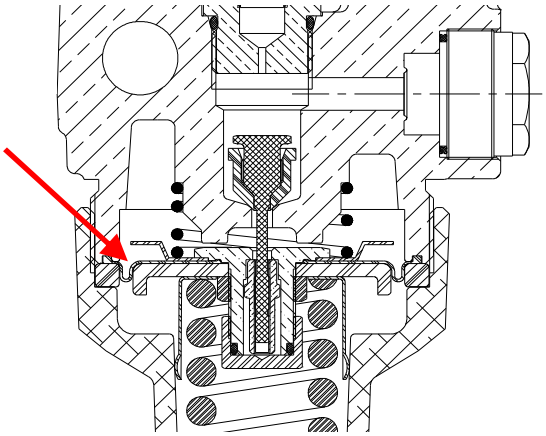
The pressure relief valve prevents outlet pressure from rising above a predetermined level in order to prevent damage to the downstream components. The pressure relief valve consists of a spring loaded seal. Under normal conditions the spring force is greater than the force due to outlet pressure over the area of the pressure relief valve seal. In the case where the outlet pressure rises above the predetermined relief level, the force on the seal overcomes the spring force and the pressure relief valve opens and vents natural gas out of the outlet port. When the pressure in the regulator outlet chamber drops the spring force closes the pressure relief valve. The following cross section shows components of the pressure relief valve in a 2L34-9C968-AA fuel regulator which has a relief pressure setting of 175 Psig.



Comparison between F850-9C968-BAGF and 2L34-9C968-AA Diaphragm Design



F850-9C968-BAGF (Flat Diaphragm)



2L34-9C968-AA (Rolling Diaphragm)