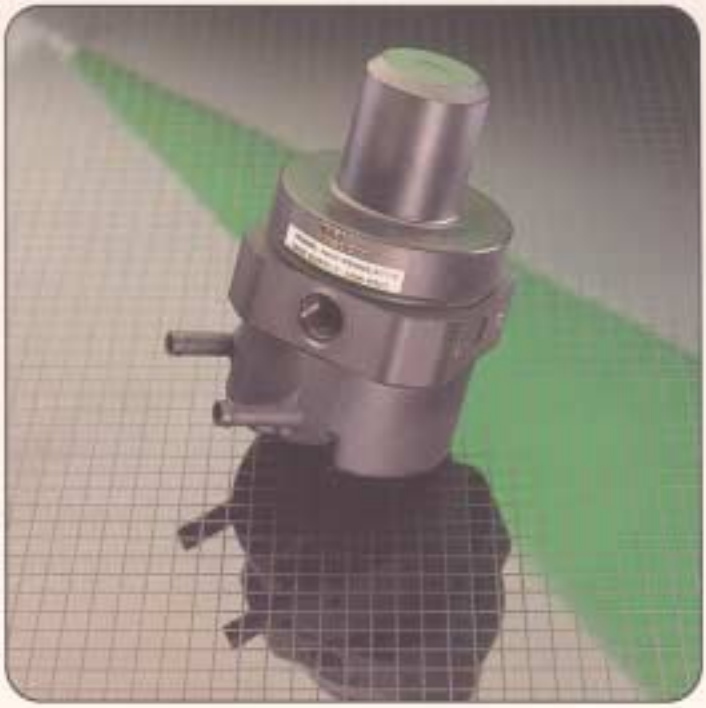
ITT CONOFLOW COMPRESSED NATURAL GAS REGULATORS

HPNGV-1* NATURAL GAS VEHICLES



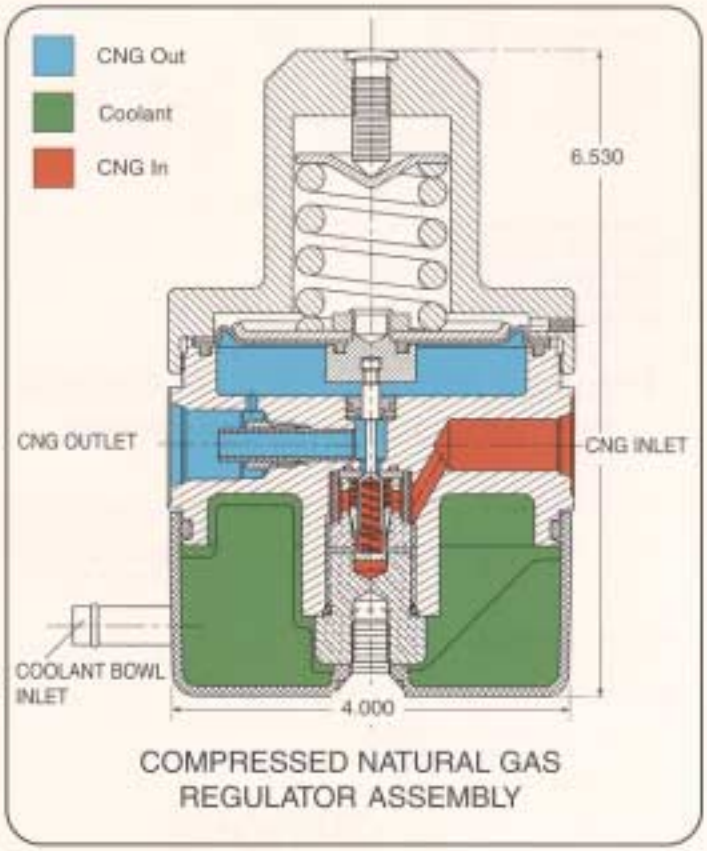
PRINCIPLE OF OPERATION

The function of this pressure regulator is to safely reduce the pressure of compressed natural gas (CNG) from the vehicle storage tanks (up to 3600 PSIG) to a preset level which allows an engine fuel metering system to properly control the gas. This is accomplished by a large pressure sensing element and controlled force moving a control valve to regulate gas flow in response to downstream pressure levels. The control valve provides sufficient flow for all vehicle operating conditions (i.e., fuel tank pressure, ambient and fuel temperature extremes, and flow requirements), while the diaphragm provides precise pressure sensing. The HPNGV-1* provides for supply pressure immunity through the use of an optimal diaphragm to valve effective area ratio and minimal pressure drop with increasing flow through the use of a flow bypass. To prevent moisture and ice accumulation problems, the regular design incorporates a coolant bowl and internal coolant circulation controls. The hot engine coolant is routed along the vehicle chassis and connects to the regulator coolant bowl preventing any "freeze up."

PERFORMANCE SPECIFICATIONS

Regulated Media: Compressed natural gas
Maximum Inlet Pressure: 3600 PSIG (24.8 MPa)
Minimum Inlet Pressure: 250 PSIG (1.72 MPa)
Nominal Output Pressure Range: Factory preset 65-175 PSIG Set Point. Assuming regulator set point of 110 PSIG, output pressure window of 99 to 125 PSIG(683 to 863 kPa) can be expected.
Flow Rate: 0-125 lb/hr (Varies with output pressure set point)
Internal Filtration: 40 micron sintered element
Maximum Droop: 10 PSIG (69 kPa) at no flow to maximum flow
Maximum Supply Effect: 4.0 PSI output increase per 1000 PSI supply decrease
Leakage (Ambient and Valve): Bubble tight
Moisture Tolerance: To 7 lbs water per million standard cubic feet
Temperature Range: Ambient, Inlet, and Coolant: -40°F to +257°F (-40°C to 125°C)
Integral Relief Valve: Flush to surface and preset (See options)
Vehicle Applications: Normally aspirated or turbocharged EFI spark ignition engines
Porting:
- Stand inlet: SAE-6 (9/16-18 thread)
- Standard outlet: SAE-8 (3/4-16 thread) per SAE Spec. J1926
- Standard Coolant: 3/8" hose connections per SAE Spec. J962

Mounting Threads: M8 x 1.25 x 18 mm, 2 places 45.7 mm apart suitable for 20 mm bolts
Weight: 3.89 lbs (1.77 Kg)



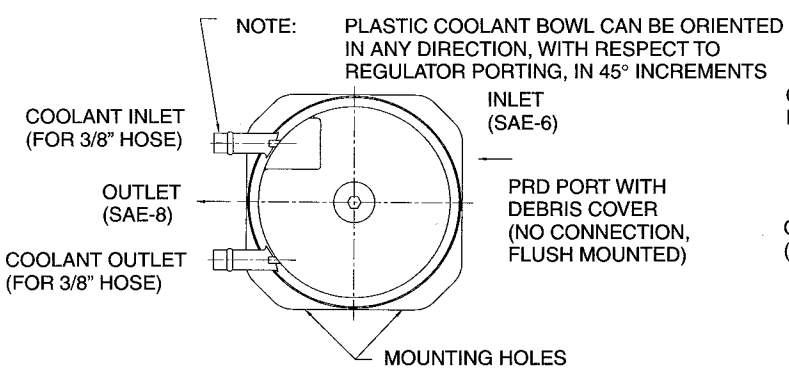
COMPRESSED NATURAL GAS REGULATOR ASSEMBLY

*U.S. Patents 5,890,512 and 5,443,083.
TUV European Certification applied for.

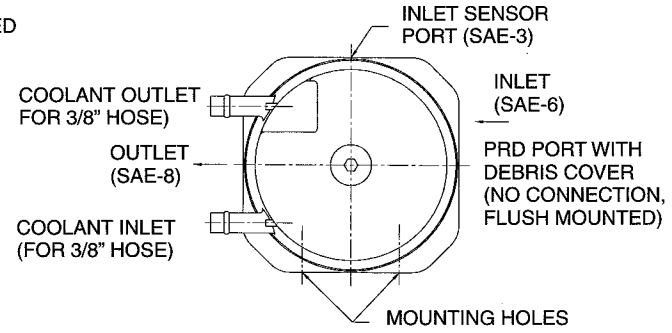
Date: 8/99
Printed in U.S.A.

Drawing Definition Notes

Pressure Regulator Connection Options Utilizing Plastic Coolant Bowl

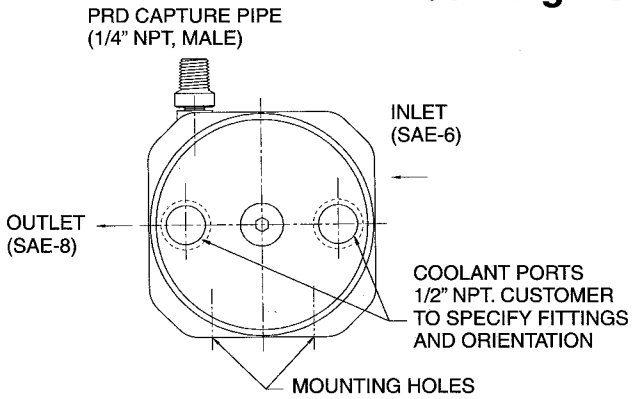


PLASTIC BOWL (WITH OR WITHOUT THERMOSTAT), AND FLUSH PRD ADJACENT TO THE INLET PORT AS VIEWED FROM BOWL END

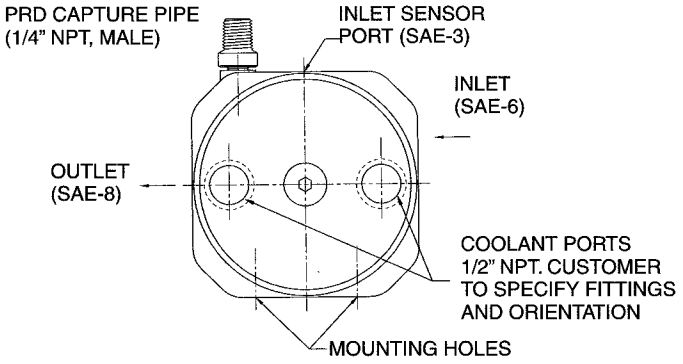


PLASTIC BOWL (WITH OR WITHOUT THERMOSTAT), A FLUSH PRD ADJACENT TO THE INLET PORT AND OPTIONAL SAE-3 HIGH PRESSURE SENSOR PORT (VIEWED FROM BOWL END)

Pressure Regulator Connection Options Utilizing Metal Coolant Bowl

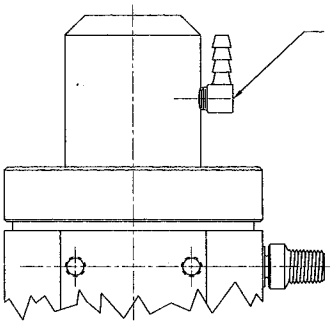


CONFIGURATION WITH METAL COOLANT BOWL AND PRD CAPTURE PIPE OPTIONS. CONFIGURED WITH PRD OPPOSITE FROM THE MOUNTING BOLT HOLES. AS VIEWED FROM BOWL END.



CONFIGURATION WITH METAL COOLANT BOWL, PRD CAPTURE PIPE, AND OPTIONAL SAE-3 HIGH PRESSURE SENSOR PORT CONFIGURED WITH PRD OPPOSITE FROM THE MOUNTING BOLT HOLES. AS VIEWED FROM BOWL END.

Pressure Regulator Bonnet Options For Turbocharged Applications



FOR TURBOCHARGED APPLICATIONS, AN OUTPUT PRESSURE BIAS PORT AND SEALED BONNET IS AVAILABALE. CUSTOMER TO SPECIFY FITTING FOR THE 1/8" NPT BONNET BIAS PORT.

OPTIONS

Pressure Relief Device

The PRD can be set at either

350±60PSIG, 275±60 PSIG, or 200±40 PSIG

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