ZENITH POWER PRODUCTS LLC

Purpose Built Industrial Engines Powering Industry

ZPP 428-644 NG/LPG Vaporizer Regulator-Fuel Pressure Diagnosis

Units equipped with Vaporizer (Skip this step if not equipped)

Fuel enters engine from high pressure lock-off at 10-300 PSIG when equipped with a vaporizer regulator. (***Fig 1***)

Fig 1

Fuel passes through orifice then enters first stage of regulation which reduces to 1.5 PSIG (***Fig 2).*** Heated water prevents freeze-up of the fuel as it is passed through the orifice. The test port is located at the back of the unit with a 1/8" NPT plug fitting.

The fuel then passes through a valve to the second stage of regulation where it is reduced to approximately 5-7" wc and delivered to the engines balanced fuel pressure regulator.

This port is open to both sides of the regulator and can be tested using the port with the ½" NPT plug fitting.

- Two Stage
- From 10 to 300 PSIG Inlet pressure
- 1st. Stage Vaporizes Liquids, reduces pressure to 1.5 PSIG
- 2nd. Stage Reduces to 5-7" WC

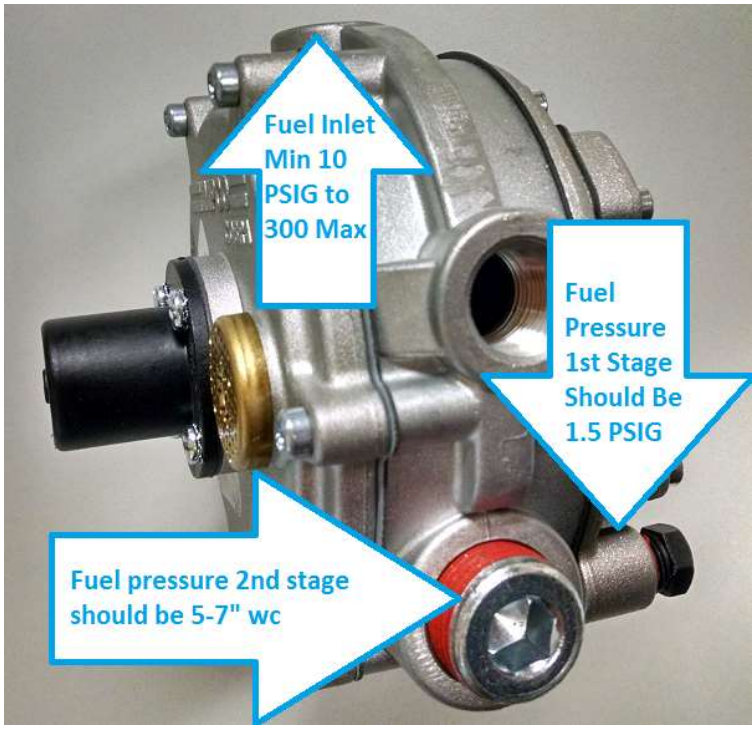

Fig 2

<u>Units with or without Vaporizer</u>

Fuel enters the fuel lock-off valve (***Low pressure lock-off only on units not equipped with vaporizer. Fig 3***) and fuel pressure regulator inlet at 5-7 inWC, then regulator valve is controlled by a fuel trim valve which is pulsed to increase or decrease the differential pressure flow through an orifice to control valve lift on the regulator. (***Fig 4***)

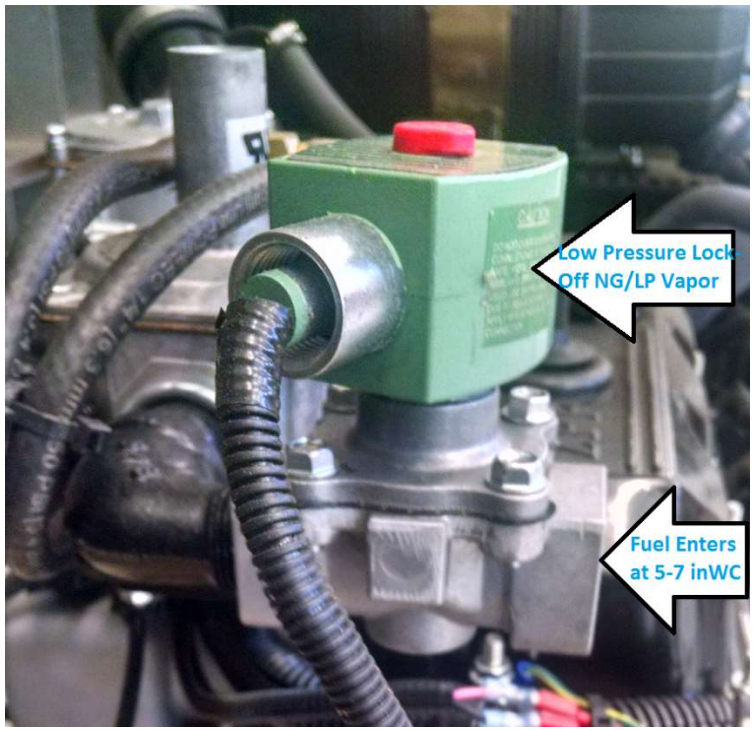

Fig 3

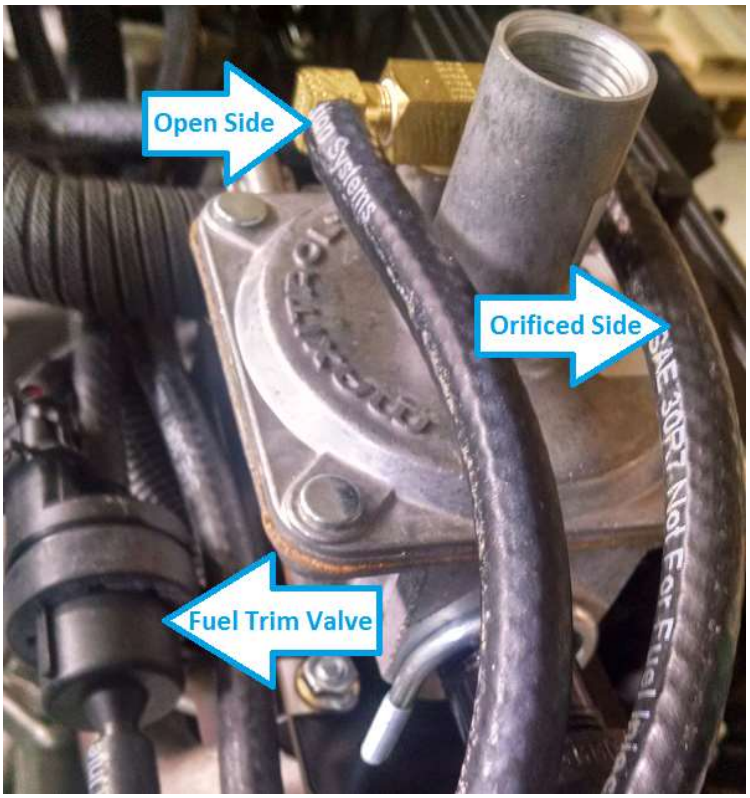
Open Side
Orificed Side
Fuel Trim Valve

Fig 4


Sealed Tamper Proof Soft plug
Prevents Loss of Pressure for
Proper Valve Control
1 PSIG MAX

Fig 5

Trouble Shooting

Recommended tools and equipment:

Sparrowatch PC based USB Diagnostic cable and software kit ***ZPP part number C194-123*** to read engine fuel trims and data and to read and reset trouble codes

Manometer or gauge that reads inWC

Pressure gauge that reads in PSIG

1/8" NPT barb fitting and line for gauge

½" NPT barb fitting and line for gauge

- Check plug on top of fuel pressure regulator to assure there are no air leaks (***Fig 5***). **Air leaks will cause the valve to not function and set DTC P0172, DTC P0132.**
- Trim valve stuck in the open position will cause the engine to run "lean" which could set DTC P0171, P0131.
- Trim valve stuck in the closed position will cause the engine to run "rich" and set DTC P0172, P0132.
- Low inlet fuel pressure to the fuel vaporizer will cause the engine to run lean and reduce engine power or die under load
- High inlet fuel pressure can damage the vaporizer and cause engine to flood or run rich