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INSTRUCTION AND MAINTENANCE MANUAL

HPNGV4 Series Compressed Natural Gas Vehicle Regulator High Pressure Lock Off (HPLO) Replacement

WARNING: These instructions must be read carefully prior to installation and system startup. Failure to follow these instructions may cause unexpected gas release, injury or property damage.

INTRODUCTION: This repair kit includes all parts required to replace an HPLO on the NGV fuel pressure regulator.

This kit does not include tools, lubricants, or thread locking compounds required for correct repair of the HPLO.

PREPARATION: Locate and close the manual tank shut off valve, isolating the supply of CNG from the engine. Start and run the vehicle at idle speed until the engine dies from lack of fuel.

Turn off the vehicle key.

Disconnect the cable from the negative battery terminal post.

CAUTION: Allow the engine to cool prior to disconnecting gas and coolant lines from the regulator. Ensure the work area is free from potential ignition sources, such as open flames or hot work.

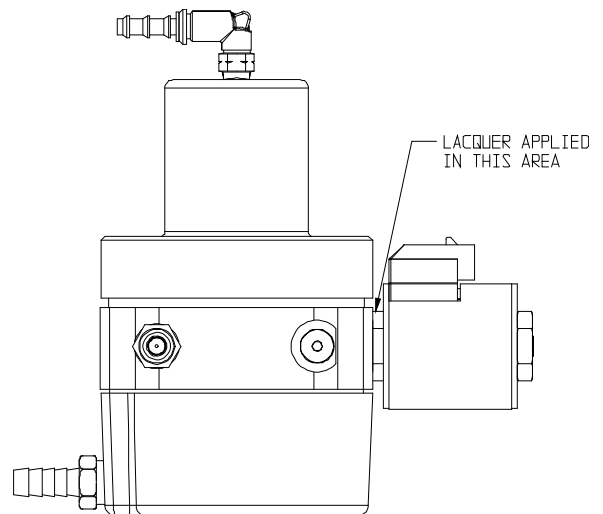
WARNING

Conoflow's products are designed and manufactured using materials and workmanship required to meet applicable standards. The use of these products should be confined to services specified and/or recommended in the Conoflow catalogs, instructions, or by Conoflow application engineers.

To avoid personal injury or equipment damage resulting from misuse or misapplication of a product, it is necessary to select the proper materials of construction and pressure-temperature ratings which are consistent with performance requirements.

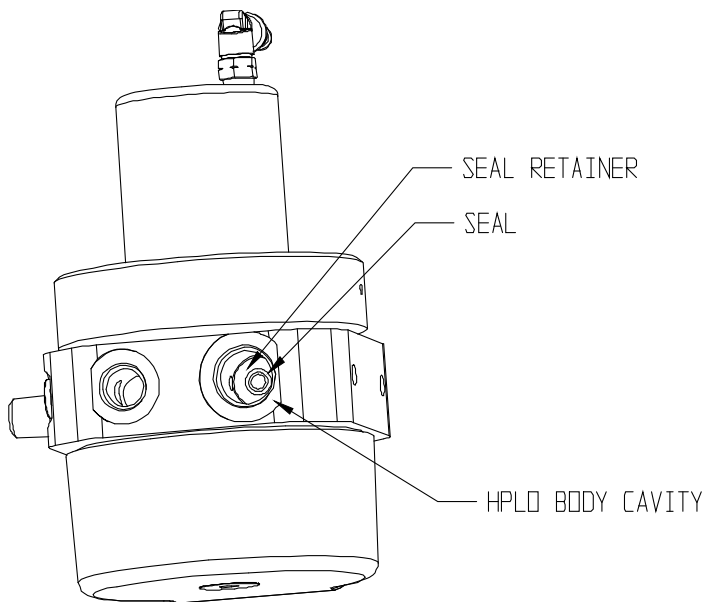
Remove the regulator from the vehicle and cap all open connections to prevent dirt from entering the pressure regulator. Use caution to prevent or contain released engine coolant during removal of the regulator.

HPLO REMOVAL: Secure the regulator and begin to remove the HPLO assembly by unscrewing (counterclockwise when looking at the electrical connection on the coil) the coil nut. Clean the exterior of the regulator around the HPLO, to prevent any dirt from entering the regulator during HPLO removal and installation. Make sure all lacquer has been removed. Remove the brass HPLO from the regulator. A 7/8" deep socket can be used for removing both the nut and HPLO assembly.



With the HPLO unscrewed from the regulator, remove the plastic retainer and seal. Use care not to damage the HPLO body cavity. Clean the regulator body HPLO cavity with compressed air.

ASSEMBLY: Keep new parts clean prior to assembly. Clean if needed. Install the new seal in the body cavity. Orient the seal retainer (rounded side inward) and install the seal retainer in the HPLO body cavity. Lightly push the seal retainer into the bottom of the HPLO body cavity to secure the seal in place. Visually check the inside of the port to ensure both the o-ring and retainer are in place and correctly oriented. If either appears damaged, replace the components.



Carefully remove the tower and armature from the package, keeping the armature and spring inside the tower. Keep these parts clean. Any particulates can result in a leak. Lubricate the port threads, port seal surface and black o-ring with Christo-Lube MCG-111 grease. This prevents particle generation and protects the o-ring from damage during tightening. Thread the tower and armature into the HPLO body port finger tight.

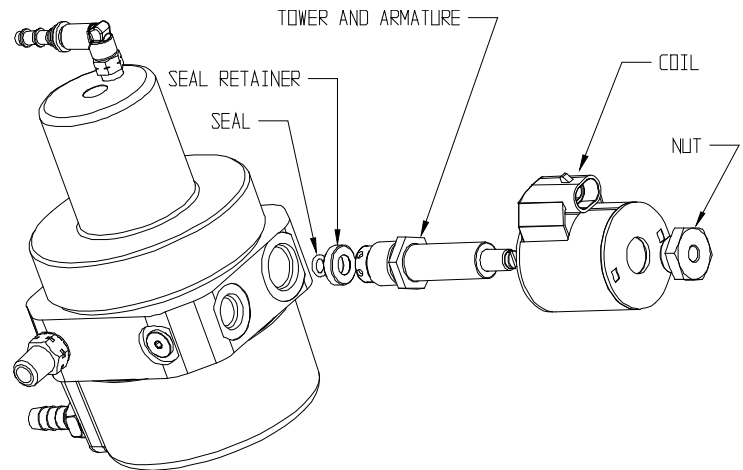
Tighten the tower into the HPLO body port to 25 +/- 2.5 ft-lb with a deep 6-point 7/8" socket wrench.

Slide the coil over the tower, with the electrical plug connection outward. Orient the coil so the electrical connection is upward, and secure the coil with the nut.

Tighten the nut with a small air impact wrench and a 7/8 inch socket until the coil is difficult to rotate on the tower.

BENCH TEST: Verify the HPLO will open freely by a simple bench test. Apply 12 or 24 volts (model dependent) direct current power to the coil. The

armature should move quickly and an audible "click" noise will be heard when the HPLO opens.



INSTALLATION AND VEHICLE TEST: Reinstall the regulator into the vehicle bracket. Tighten the inlet fitting to the regulator body; leave the outlet fitting to the regulator body disconnected from the outlet fuel pipe.

Slowly open the manual main fuel shutoff valve, pressurizing the HPLO and regulator.

CAUTION: The HPLO internal leak test can allow flammable gas to quickly exit the outlet fitting of the regulator.

Leak test the inlet fitting and the HPLO valve tower assembly. Repair any leaks found. If the regulator outlet fitting is flowing any gas, this indicates the HPLO is not sealing off the supply of gas. In this case there may be a problem with the repair, or the regulator-HPLO assembly may require complete replacement. Resolve the problem before continuing.

When there are no leaks from the regulator and HPLO, connect and tighten the outlet pipe connection, and turn the ignition on. This will pressurize the piping downstream of the regulator. Test all the downstream fittings and components for leaks. Repair any leaks found.

Start and run the vehicle at idle. Unplug the wiring harness at the HPLO and verify the engine stalls in a few minutes: this will verify that the HPLO is closing properly. Reconnect the harness.

Test-drive the vehicle to ensure proper operation.