



**ALTECH-ECO**  
**C O R P O R A T I O N**

**VEHICLE MAINTENANCE PROCEDURES**

**2011-2022 F-250/350**

# INDEX

INTRODUCTION.....	2-3
REPLACING A LOW PRESSURE HOSE.....	4-7
REPLACING A HIGH PRESSURE SENSOR.....	8-11
REPLACING A LOW PRESSURE SENSOR.....	12-15
REPLACING A GAUGE/SWITCH HARNESS, REAR HARNESS, AND MAIN HARNESS.....	16-18
REPLACING THE FUEL GAUGE.....	19-22
REPLACING A COELASCENT FILTER.....	23-28
REPLACING A BI-FUEL SWITCH.....	29-32
VENTING A HIGH PRESSURE CYLINDER(S).....	33
REPLACING THE REGULATOR ASSEMBLY.....	34-37
REPLACING HIGH PRESSURE HOSE(S).....	38-41
REPLACING FUEL RAILS.....	42-48
REPLACING COOLANT LINES.....	49-51
REPLACING AN INJECTOR(S).....	52-57

# INTRODUCTION

**Note:** Before beginning maintenance, we encourage you to read the installation manual thoroughly and familiarize yourself with the install.

1. Do a quick inventory check using the provided packing slip and make sure your kit is complete. You can also refer to the parts list located in the back of the manual. If you discover shipping damage or a missing component, please contact Altech-Eco immediately.
2. Review our limited warranty with care.
3. Make sure safety is a priority by wearing eye protection, steel toe boots, keep your work area clean and always be aware of your surroundings.
4. No smoking near or around your work area during any portion of the install.
5. Never work on a hot engine.
6. Obey all traffic laws when testing the vehicle.
7. Always do a clean snip of all zip ties.
8. Clean up all debris caused by the installation.
9. Read and be familiar with the latest NFPA 52 codes and safety procedures for dealing with natural gas before you begin the install.
10. Make sure all proper paperwork is filled out before, during, and after the install. The paperwork packet will be provided to you by Altech-Eco.
11. Never attempt to modify the fuel system and always have the fuel system maintenance performed at an authorized dealership by qualified technicians.
12. Dedicated systems – Always leave at least  $\frac{1}{4}$  tank of gasoline in the tank to avoid low fuel light on the vehicle dashboard display.

**!! WARNING !!** Follow instructions as directed in the installation manual and do not attempt shortcuts. Failure to follow proper safety procedures can lead to bodily harm or fatality.

**!! WARNING !!** Batteries normally produce explosive gas. Therefore, do not allow flames, sparks or lighted substances to come near the battery. When

charging or working near a battery, always shield your face and protect your eyes. Always provide ventilation. Failure to follow these instructions may result in personal injury.

**!! CAUTION !!** Be aware that this installation requires the use of **High Pressure, Flammable, and Highly Explosive** compressed natural gas. CNG is stored under at maximum of 3,600psi at uniform 70°F (21°C).

**!! CAUTION !!** Failure to complete the pre-installation checklist may result in severe engine damage after installation is complete.

**!! CAUTION !!** This installation is intended for unmodified vehicles. If the vehicle has been modified, consult Altech-Eco before beginning the install.

## DISCLAIMER

Altech-Eco assumes no responsibility for damages occurring from accident, misuse, abuse, improper installation, improper operation, and lack of reasonable care or all previously stated reasons resulting in incompatibility with other manufacturer's products.

## Chemicals and Lubricants

1. Silicone lubricant spray is required on all o-rings.
2. Epoxy primer or equivalent to rust proof any exposed metal.
3. Ford approved coolant liquid to top off the reservoir.
4. Silicon
5. Gasoline
6. CNG

***Note:** Refer to the vehicle installation manual for torque specifications. You may also refer to Ford's vehicle workshop manual for OEM specifications.*

## **REPLACING A LOW PRESSURE HOSE**

**NOTE:** BE AWARE OF STICKER LABELS. UNDER NO CIRCUMSTANCE SHOULD YOU TOUCH THE HIGH PRESSURE HOSE (3600 PSI) WHILE UNDER PRESSURE.

1. Disconnect the battery.

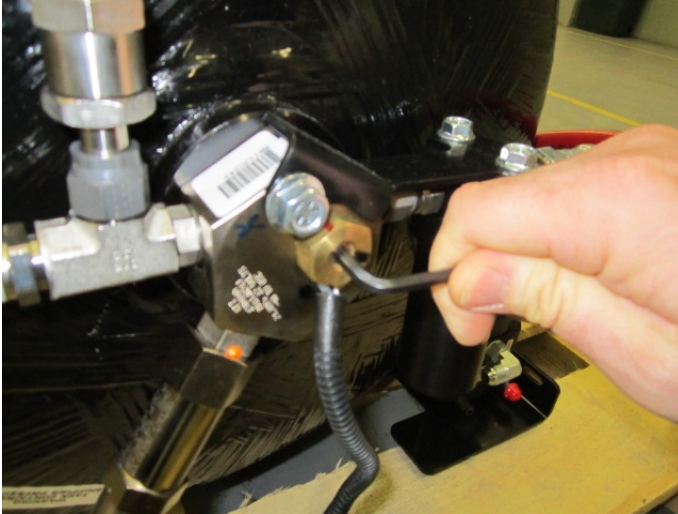


2. Remove toolbox skirt.



3. Manually shut off cylinder valve(s).

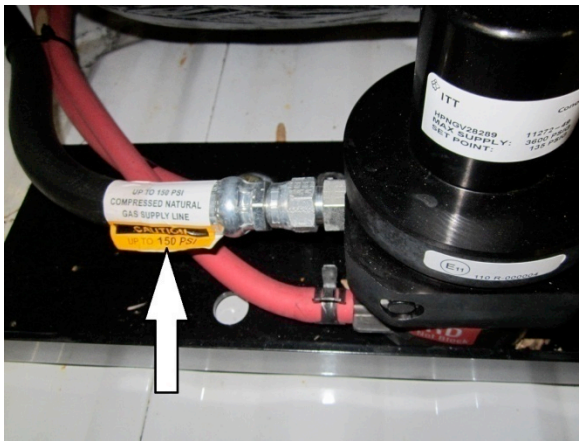
**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.



4. If vehicle is **operational** (does not apply to Bi-Fuel systems), depressurize the system by running the vehicle on CNG until the vehicle stalls. As an extra safety precaution, also crack the low pressure hose one half turn at a time to ensure all gas has been vented. If the vehicle is **NOT operational**, crack and loosen the low pressure hose at the regulator side until all pressure has been vented.



5. Remove the low pressure hose by disconnecting it from the fuel rail and from the regulator and un-securing it from the undercarriage. The p-clamps and self tapping screws may be reused.
6. Install new hose and secure into place using previous p-clamps and self tapping screws. Ensure the new hose is installed according to Altech-Eco designated routing (*refer to Altech-Eco F-250/350 installation manual, or routing depicted in below diagram*). Tighten and torque both ends to 35 ft-lbs. Verify warning labels are on both ends of the hose.



7. Reconnect the vehicle battery.
8. Open the cylinder valve completely and back to close by  $\frac{1}{4}$  turn. Re-pressurize the system using the 3 key on/off cycles.

9. Leak test the hose on both connections using an approved methane detector and leak test liquid solution.



10. Re-install toolbox skirt.
11. If there is a leak, add an additional  $\frac{1}{4}$  turn to the low pressure hose connection. Perform another leak test. If leak persists, notify your supervisor for further instructions.



## **REPLACING A HIGH PRESSURE SENSOR (TRANSDUCER)**

**NOTE:** BE AWARE OF STICKER LABELS. UNDER NO CIRCUMSTANCE SHOULD YOU TOUCH THE HIGH PRESSURE HOSE (3600 PSI) WHILE UNDER PRESSURE.

**NOTE:** Lubricate all o-rings.

1. Disconnect the battery.

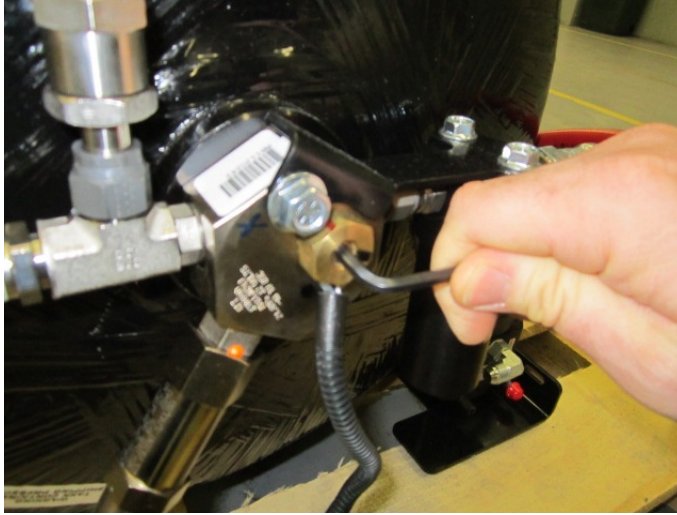


2. Remove toolbox skirt.



3. Manually shut off cylinder valve(s).

**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.



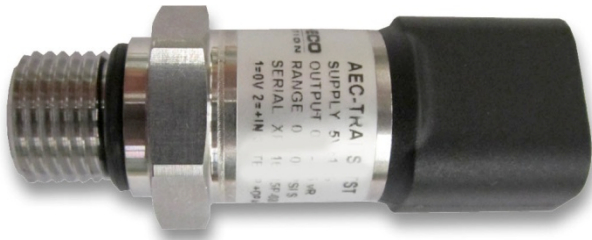
4. If vehicle is **operational** (does not apply to Bi-Fuel systems), depressurize the system by running the vehicle on CNG until the vehicle stalls. As an extra safety precaution, also crack the low pressure hose one half turn at a time to ensure all gas has been vented. If the vehicle is **NOT operational**, crack and loosen the low pressure hose at the regulator side until all pressure has been vented.



5. Disconnect the rear harness from the transducer. Transducer location may vary.



6. Verify the replacement transducer is rated for 5000psi. Replace transducer and tighten/torque to 35 ft-lb.



7. Reconnect rear harness to transducer.
8. Re-install toolbox skirt.
9. Reconnect the vehicle battery.
10. Open the cylinder valve completely and back to close by  $\frac{1}{4}$  turn. Re-pressurize the system using the 3 key on/off cycles.
11. Leak test the hose on both connections using an approved methane detector and leak test liquid solution.



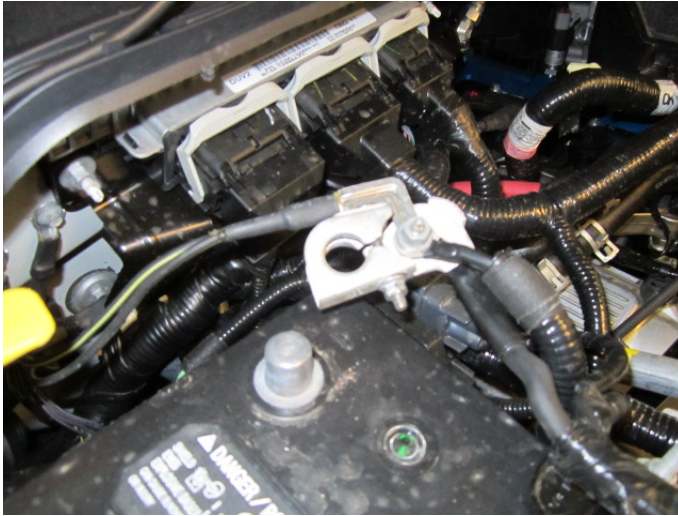
12. If there is a leak, add an additional  $\frac{1}{4}$  turn to the low pressure hose. Tighten the high pressure fuel line in same manner as the low pressure hose. Perform another leak test. If leak persists, notify your supervisor for further instructions.

## **REPLACING A LOW PRESSURE SENSOR (TRANSDUCER)**

**NOTE:** BE AWARE OF STICKER LABELS. UNDER NO CIRCUMSTANCE SHOULD YOU TOUCH THE HIGH PRESSURE HOSE (3600 PSI) WHILE UNDER PRESSURE.

**NOTE:** Lubricate all o-rings.

1. Disconnect the battery.

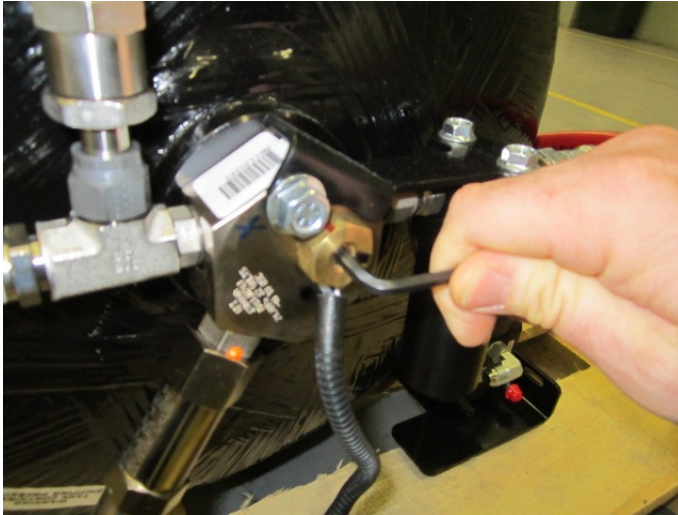


2. Remove toolbox skirt.



3. Manually shut off cylinder valve(s).

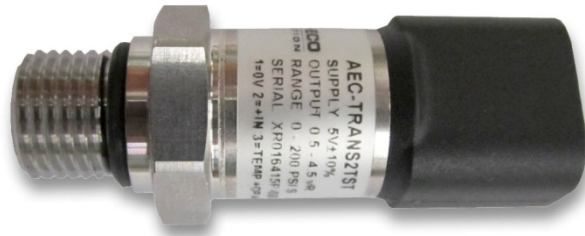
**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.



4. If vehicle is **operational** (does not apply to Bi-Fuel systems), depressurize the system by running the vehicle on CNG until the vehicle stalls. As an extra safety precaution, also crack the low pressure hose one half turn at a time to ensure all gas has been vented. If the vehicle is **NOT operational**, crack and loosen the low pressure hose at the regulator side until all pressure has been vented.



5. Disconnect the fuel rail transducer plug.
6. Verify that replacement sensor is rated for 200psi. Install new sensor (transducer) and torque to 35 ft-lb. Ensure sturdy support when torque'ing or tightening in order to avoid damage to the fuel rail and/or threading.



7. Reconnect the vehicle battery.
8. Fully open the main cylinder valve(s) and back ¼ turn. Re-pressurize using 3 key on/off cycles.
9. Leak test all connections that were loosened or removed using an approved methane detector and leak test liquid solution.



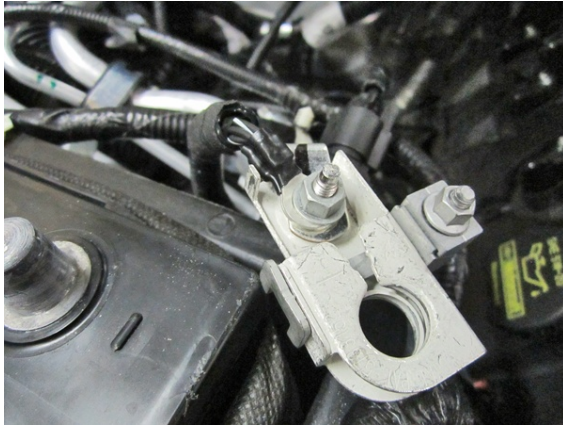
10. Re-install toolbox skirt.

11. If there is a leak, add an additional  $\frac{1}{4}$  turn to the low pressure hose connection or transducer connection. Perform another leak test. If leak persists, notify your supervisor for further instructions



## REPLACING A GAUGE/SWITCH HARNESS, REAR HARNESS, AND MAIN HARNESS

1. Disconnect the battery.



2. Remove toolbox skirt.



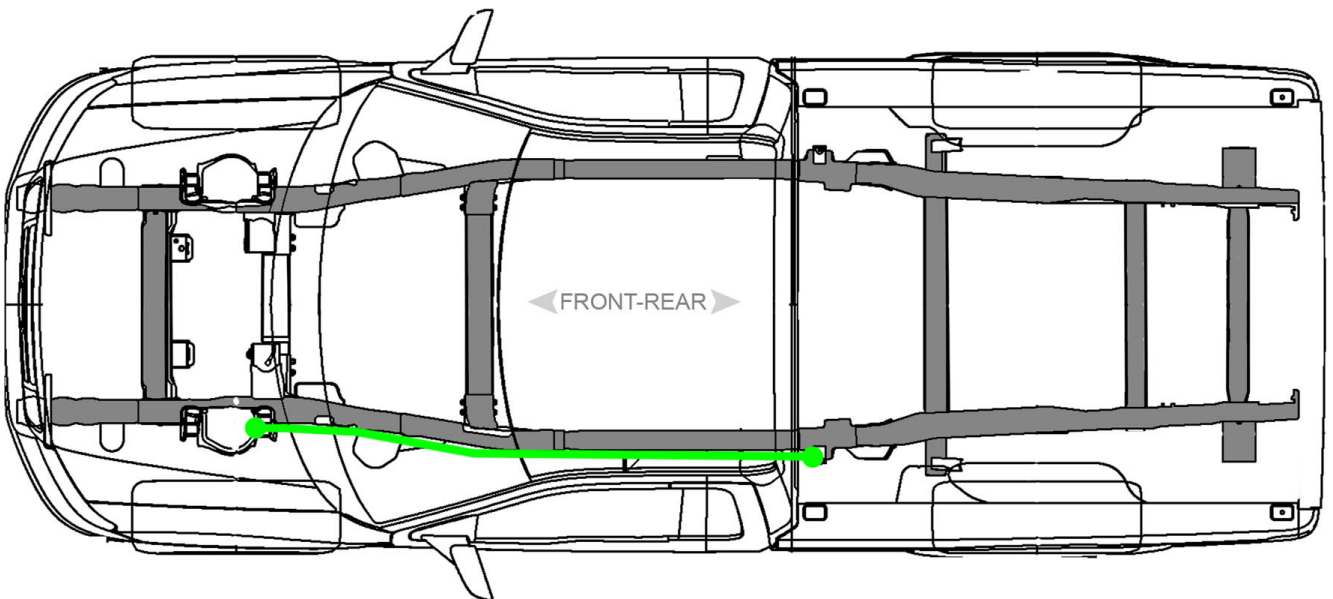
3. Manually shut off cylinder valve(s).

**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.



4. Locate the wiring harness that needs to be replaced.

Main harness and Jumpers/Interceptor harness



Rear harness

**Note:** Switch and/or gauge harness requires taking dash components off.

5. Disconnect the wiring harness from all connectors.

6. Replace the wiring harness.

**Note:** Refer to vehicle installation manual for proper routing.

7. Secure the new harness according to specifications stated in the installation manual. Ensure that no part of the harness is loose or routed underneath the steering column.

8. Re-install any/all OEM parts removed or set aside.

9. Connect the vehicle battery.

10. Fully open the main cylinder valve(s) then back  $\frac{1}{4}$  turn. Re-pressurize using 3 key on/off cycles.

11. Re-install toolbox skirt.

12. Use a MyCanic to verify all sensors are operating successfully.

## **REPLACING THE FUEL GAUGE**

1. Disconnect the vehicle battery.

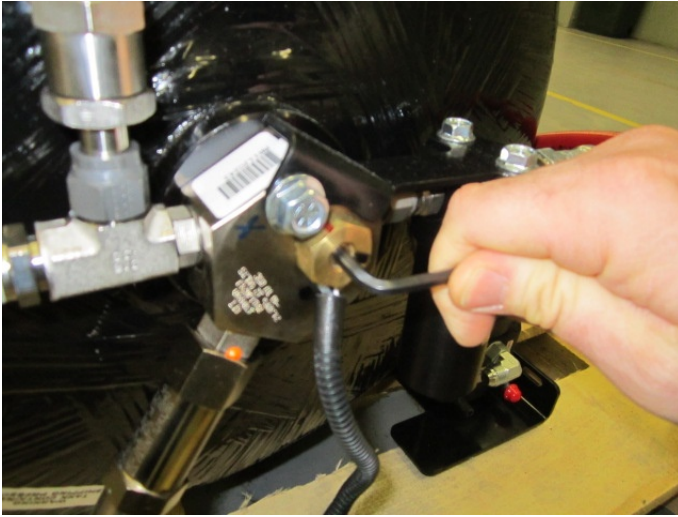


2. Remove toolbox skirt.



3. Manually shut off cylinder valve(s).

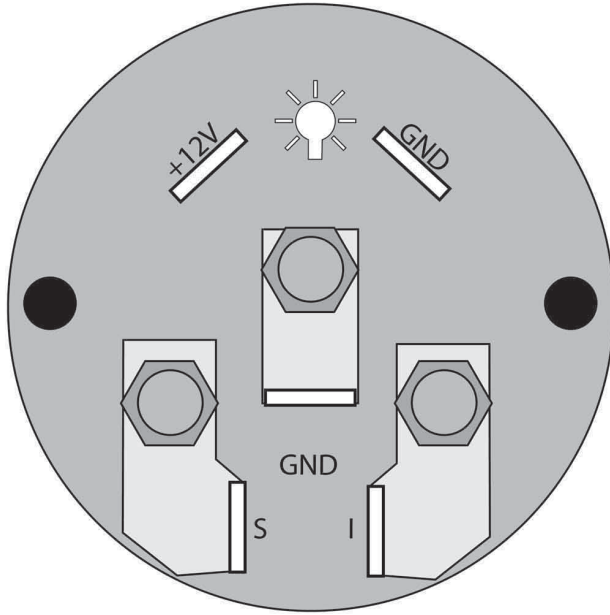
**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.



4. Remove center panel from the dash then remove fuel gauge and disconnect wiring.



5. Replace fuel gauge. Ensure harness connections to fuel gauge are correct.



- Single Red wire to “+12V”
- Single Black wire to “GND”
- Double Red wire to terminal “I”
- Double Black wire to “GRD”
- Single Gray wire to “S”

6. Reinstall the dash into dash with new gauge



7. Reconnect the vehicle battery.

8. Fully open the valve(s) and back ¼ turn.

9. Verify fuel gauge is operating successfully.



10. Re-install toolbox skirt.

## **REPLACING A COELASCENT FILTER**

### **Required Tools:**

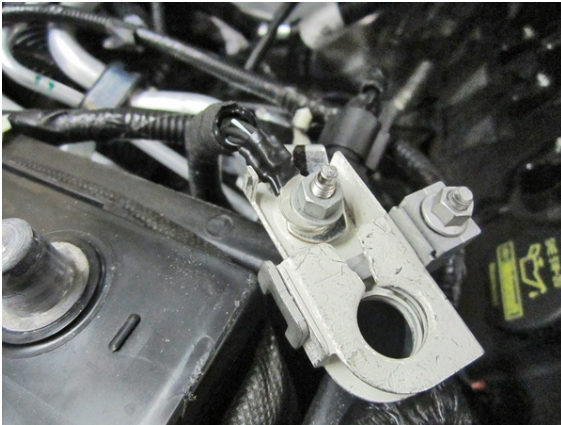
- Torque wrench (in ft-lb's)
- Parker Lube & Seal or other higher grade lubricant
- (2) 7/8" or (2) 22mm open end wrenches
- 3/16" Allen wrench
- Filter socket (Not included sold separately. Available for purchase from Altech-Eco corp. #AEC-FSS STEEL)
- Bubble soap or a high grade methane detector (recommended model: TPI 721)

### **Parts included with "Coalescent Filter" package:**

- Coalescent filter (#AEC-FILTER)

**NOTE:** BE AWARE OF STICKER LABELS. UNDER NO CIRCUMSTANCE SHOULD YOU TOUCH THE HIGH PRESSURE HOSE (3600 PSI) WHILE UNDER PRESSURE

1. Disconnect the battery.



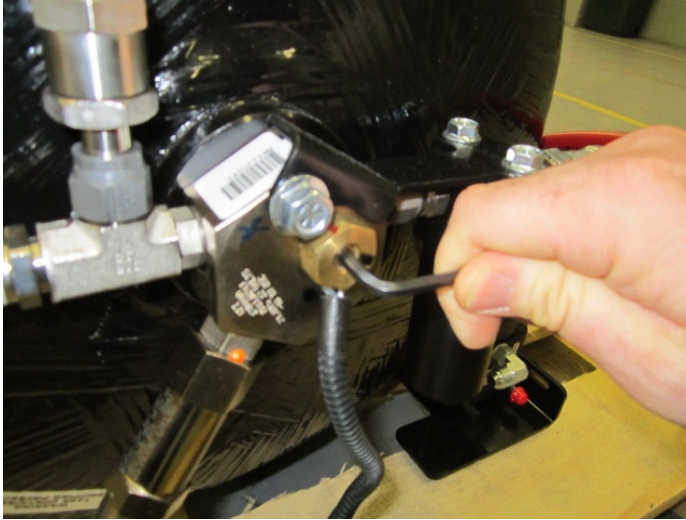
2. Remove toolbox skirt.





3. Manually turn off cylinder valve(s).

**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.



4. If vehicle is **operational** (does not apply to Bi-Fuel systems), depressurize the system by running the vehicle on CNG until the vehicle stalls. As an extra safety precaution, also crack the low pressure hose one half turn at a time to ensure all gas has been vented. If the vehicle is **NOT operational**, crack and loosen the low pressure hose at the regulator side until all pressure has been vented.



5. Locate filter housing and using the filter housing socket, loosen and unscrew the filter housing.



6. Remove filter.



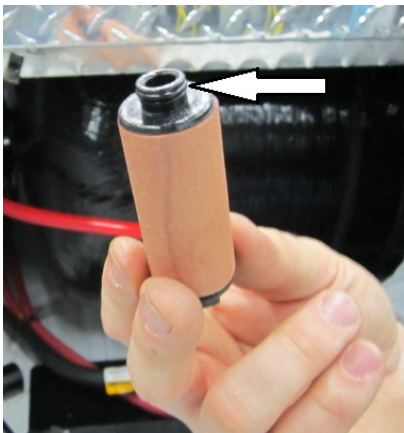
7. Remove old o-ring from the filter housing. Clean the filter housing by removing any excess oil or debris.



8. Install a new o-ring. Use parker lube and spread it generously over the new o-ring.



9. Apply parker lube and seal to the top of the filter as well and install new filter. Filter will snap into place when installed into its corresponding hole located inside top filter housing.



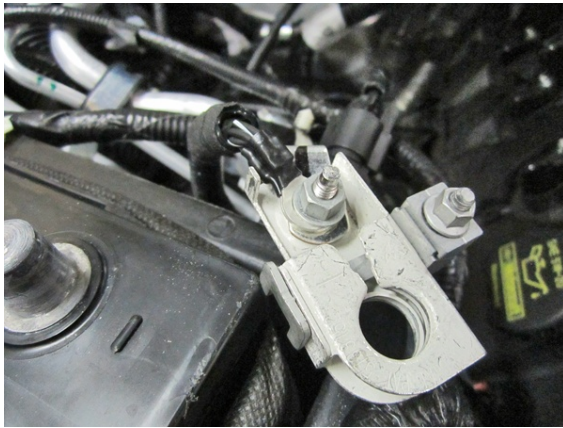
10. Using the filter socket, re-install filter housing and torque to 45 ft-lb.
11. Connect the vehicle battery.
12. Fully open the valve(s) and back  $\frac{1}{4}$  turn and re-pressurize the system using 3 key on/off cycles.
13. Leak test all connections that were loosened or removed using an approved methane detector and leak test liquid solution.
14. Re-install toolbox skirt.



15. If there is a leak, add an additional  $\frac{1}{4}$  turn to the low and/or high pressure hose connection. Perform another leak test. If leak persists, notify your supervisor for further instructions.

## **REPLACING A BI-FUEL SWITCH**

1. Disconnect the battery.

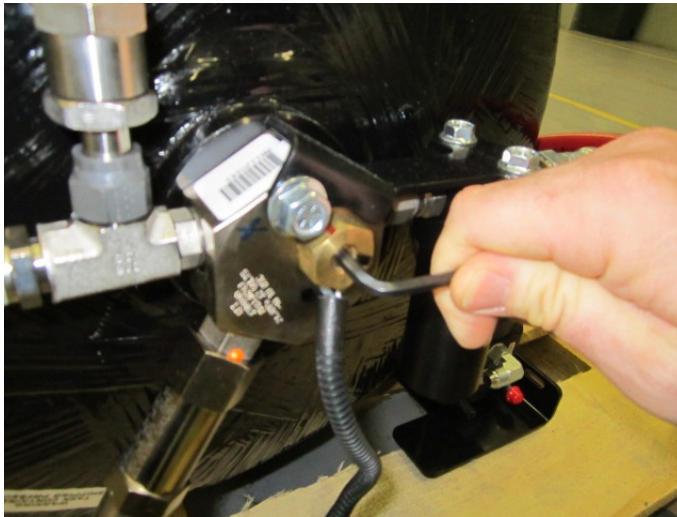


2. Remove toolbox skirt.



3. Manually turn off cylinder valve(s).

**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.



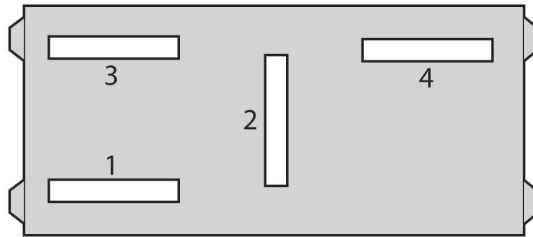
4. Carefully remove all necessary panels and trim around the speedometer. Then remove the speedometer panel. To access the CNG fuel switch.



5. Unplug and remove old switch then install new switch.



6. Ensure harness connections to fuel gauge are correct.



- Terminal 1 to Black wire
- Terminal 2 to Brown/green
- Terminal 3 to Brown/orange
- Terminal 4 to Red wire

7. Re-install all panels and OEM parts back into place.



8. Reconnect the vehicle battery.
9. Fully open the valve(s) and back  $\frac{1}{4}$  turn.
10. Re-install toolbox skirt.
11. Start the vehicle and check for successfully operating bi-fuel switch. Allow up to 90 seconds between initial fuel selecting.



## **VENTING A HIGH PRESSURE CYLINDER(S)**

*(refer to NFPA 52 section 6.14.1.1-6.14.3.3)*

1. If vehicle is operational, leave vehicle running to run CNG out.
2. Disconnect the battery.
3. The gas to be removed from the container shall be discharged into a closed transfer system, or shall be vented by an approved method of atmospheric venting.
4. A valve shall be used to control the discharge of gas from high-pressure systems to a venting system.
5. Personnel performing container depressurization shall do the following:
  - Use grounding to prevent static electrical charge buildup.
  - Limit the rate of gas release from plastic-lined containers to a valve not greater than that specified by the container manufacturer.
  - Restrain containers during depressurization to prevent container movement.

6. Direct gas venting shall be done through a vent tube that diverts the gas flow to atmosphere.
7. The vent tube shall have a gastight connection to the container prior to venting, and all components shall be grounded.
8. The vent tube shall be constructed of schedule 80 pipe of at least 2in (55 mm) diameter.
9. The vent tube shall not be provided with any feature that limits or obstructs gas flow.

## **REPLACING THE REGULATOR ASSEMBLY**

**NOTE:** BE AWARE OF STICKER LABELS. UNDER NO CIRCUMSTANCE SHOULD YOU TOUCH THE HIGH PRESSURE HOSE (3600 PSI) WHILE UNDER PRESSURE

1. Disconnect the battery.

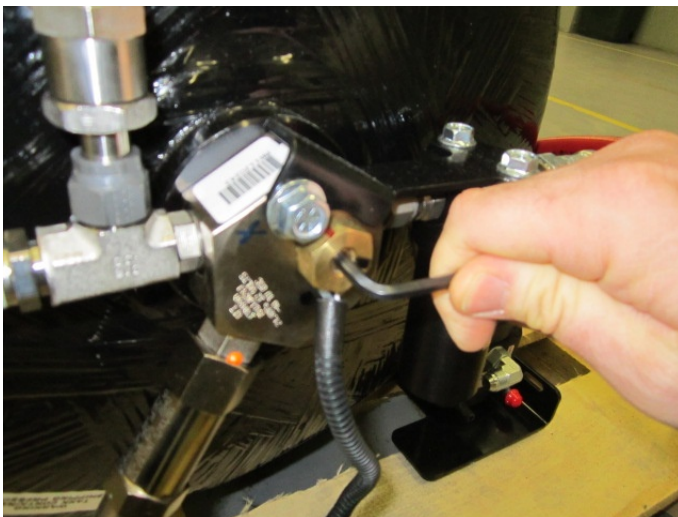


2. Remove toolbox skirt.



3. Manually shut off cylinder valve(s).

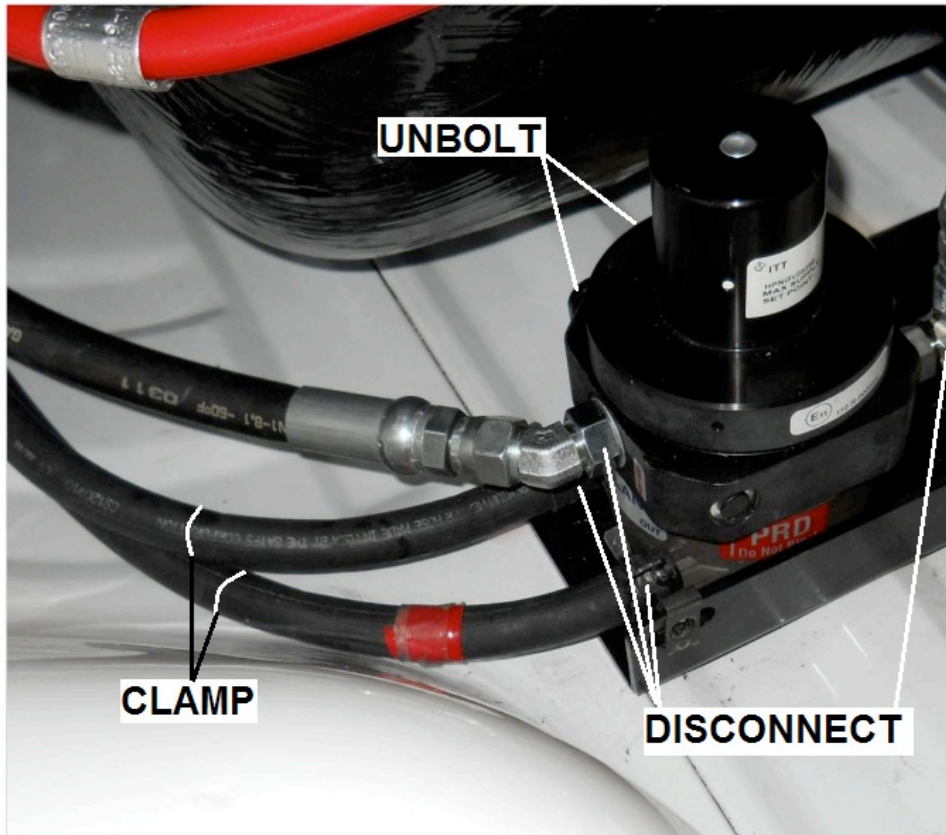
**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.



4. If vehicle is **operational** (does not apply to Bi-Fuel systems), depressurize the system by running the vehicle on CNG until the vehicle stalls. As an extra safety precaution, also crack the low pressure hose one half turn at a time to ensure all gas has been vented. If the vehicle is **NOT operational**, crack and loosen the low pressure hose at the regulator side until all pressure has been vented. Once fully vented, disconnect low pressure hose completely.



5. Using hose clamps, restrict the flow of coolant on both coolant hoses. Disconnect hoses from regulator. Disconnect high pressure hose from regulator. Unbolt the regulator from its bracket. Remove regulator.



12. Attach the new regulator assembly. Ensure all labels are present. Verify the base of the regulator is not touching the cylinder base plate; allow a minimum of ¼” clearance. Torque the bolts holding the regulator to the vehicle to 40 ft-lb. Ensure to connect coolant hoses accordingly, IN to IN and OUT to OUT. Move the fittings from old regulator to the new regulator then tighten and torque to 35 ft-lb. Remove clamps and release the coolant flow. Reconnect the low pressure hose and torque to 35 ft-lb. Reconnect the high pressure hose, torque to 35 ft-lb.
13. Reconnect the vehicle battery.
14. Fully open the valve(s) and back ¼ turn. Re-pressurize the system using 3 key on/off cycles.
15. Leak test the system. Use recommended methane detector and bubble soap.

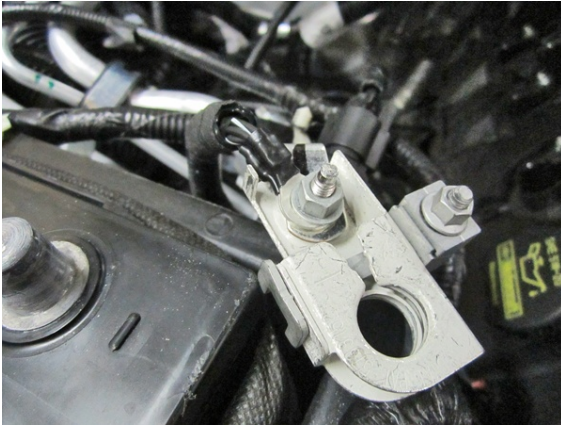


16. Re-install toolbox skirt.

## **REPLACING HIGH PRESSURE HOSE(S)**

**NOTE:** BE AWARE OF STICKER LABELS. UNDER NO CIRCUMSTANCE SHOULD YOU TOUCH THE HIGH PRESSURE HOSE (3600 PSI) WHILE UNDER PRESSURE.

1. Disconnect the battery.



2. Remove toolbox skirt.



3. Manually shut off the cylinder valve(s).

**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.

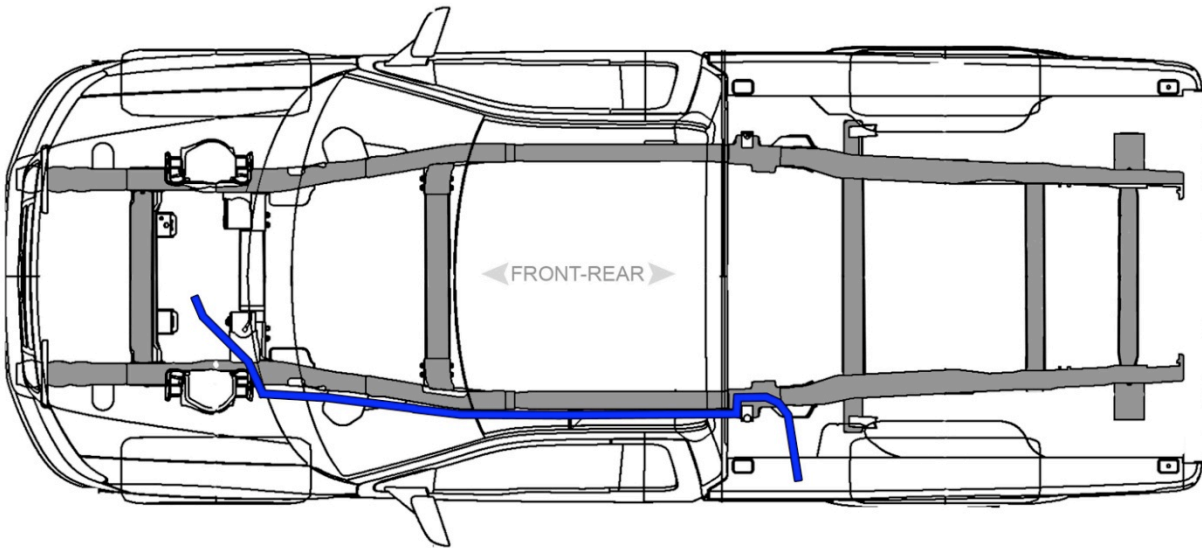


4. If vehicle is **operational** (does not apply to Bi-Fuel systems), depressurize the system by running the vehicle on CNG until the vehicle stalls. As an extra safety precaution, also crack the low pressure hose one half turn at a time to ensure all gas has been vented. If the vehicle is **NOT operational**, crack and loosen the low pressure hose at the regulator side until all pressure has been vented.





5. Once the low pressure hose has been vented, it is safe to disconnect and remove the desired high pressure hose(s).
6. Replace high pressure hose(s) and torque to 35 ft-lb. Ensure warning sticker is attached to the hose(s). Re-use P-clamps and self tapping screws
7. Secure the low pressure line and torque to specification.



8. Reconnect vehicle battery.
9. Fully open the valve(s) and back  $\frac{1}{4}$  turn. Re-pressurize the system with 3 key on/off cycles.

10. Leak test the CNG system with an approved methane detector and bubble soap.



11. Re-install toolbox skirt.

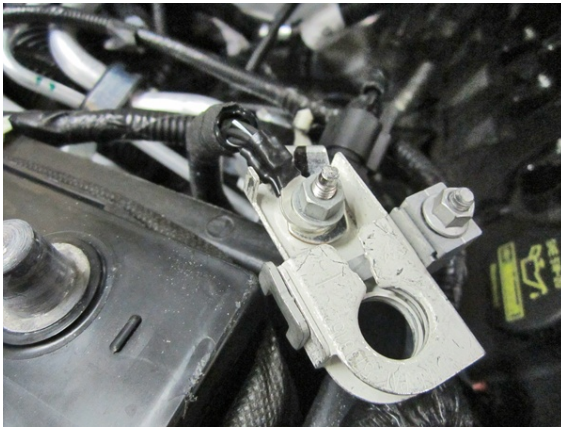
## **REPLACING FUEL RAIL**

**NOTE:** DO NOT USE POWER TOOLS IN THIS SECTION.

**NOTE:** BE AWARE OF STICKER LABELS. UNDER NO CIRCUMSTANCE SHOULD YOU TOUCH THE HIGH PRESSURE HOSE (3600 PSI) WHILE UNDER PRESSURE.

**NOTE:** Lubricate all o-rings.

1. Disconnect the battery.



2. Remove toolbox skirt.

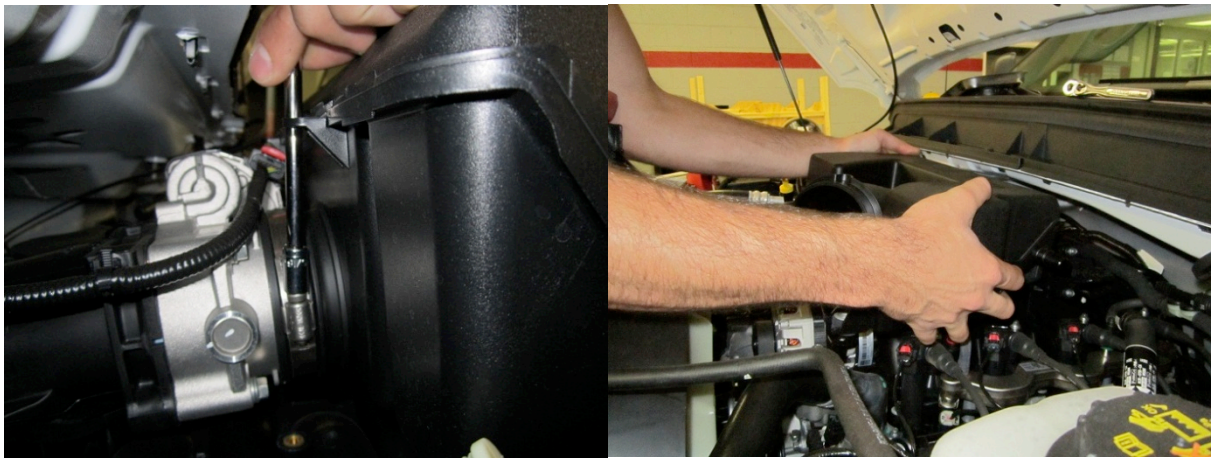


3. Manually shut off cylinder valve(s).

**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.



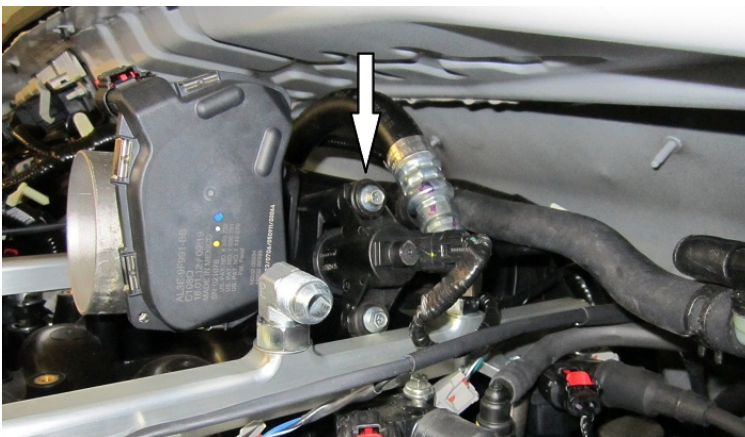
4. If vehicle is **operational** (does not apply to Bi-Fuel systems), depressurize the system by running the vehicle on CNG until the vehicle stalls.
5. Detach hoses all connections to the air box and remove it. When detaching the air box, ensure you remove it with the boot located behind the air box. Ensure the boot is secured to the air box with no gaps. A loose fitting boot will pop an engine code.



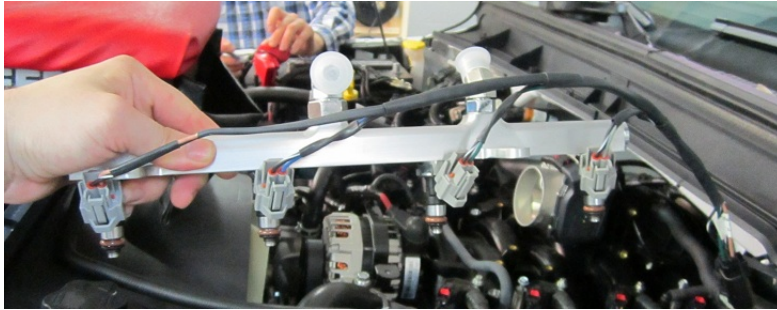
6. If the vehicle is **NOT operational**, crack and loosen the low pressure hose at the regulator side until all pressure has been vented.



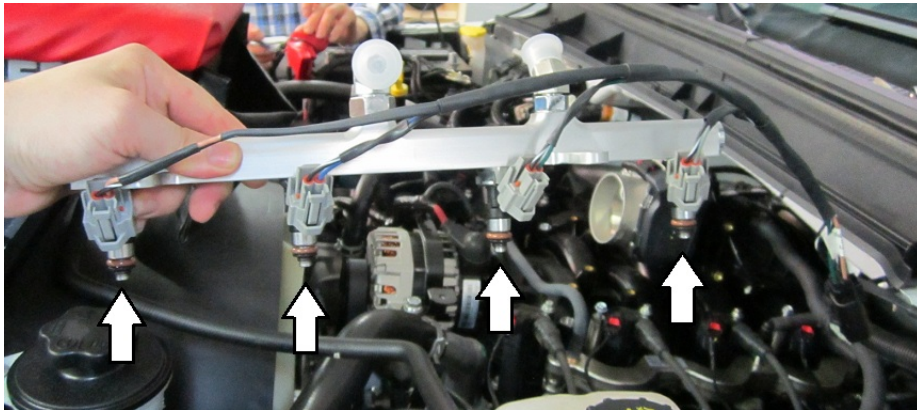
7. Upon fully releasing the pressure, loosen the fuel rail. Then:
  - a. Disconnect low pressure hose.
  - b. For driver side fuel rail replacement, remove the fitting connecting the low pressure hose to the fuel rail. Set aside to be reused.
  - c. For passenger side fuel rail, unplug and remove transducer from fuel rail. Set aside to be reused.
  - d. Detach the interceptor harness from CNG main harness or jumpers going into the CNG injectors and OEM harness.
8. Completely unbolt and remove the fuel rail.
9. If replacing driver sided fuel rail, remove the EVAP sensor to gain easier access.



10. Detach the crossover hose connecting the two CNG fuel rails. Then unbolt the fuel rail and remove it from its housing.



11. Remove the injectors and reuse on new fuel rail(s).



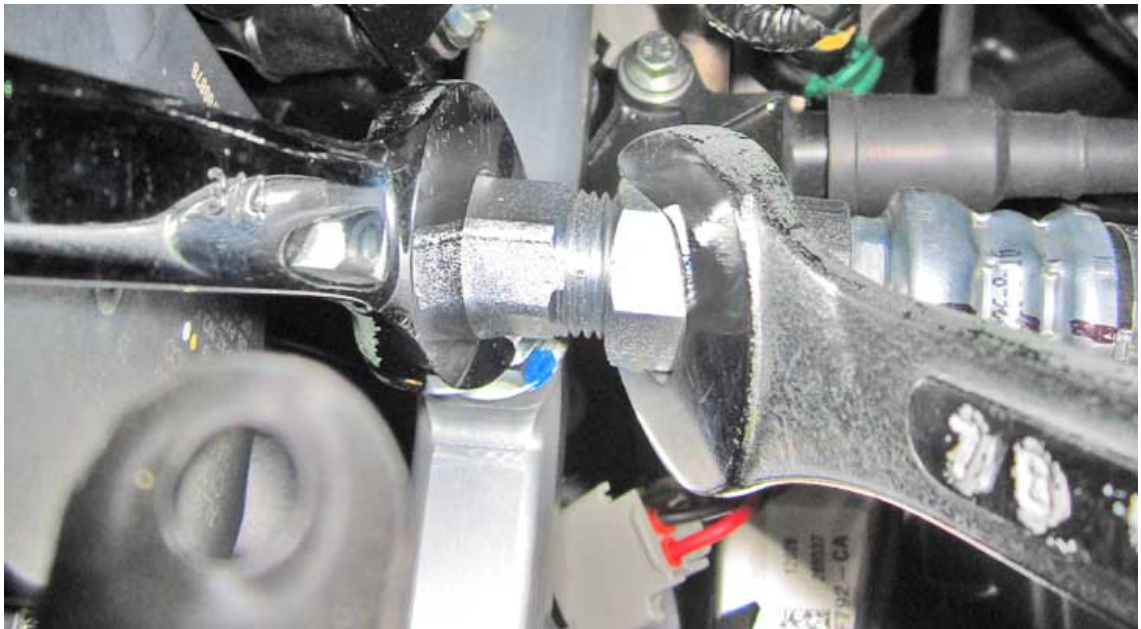
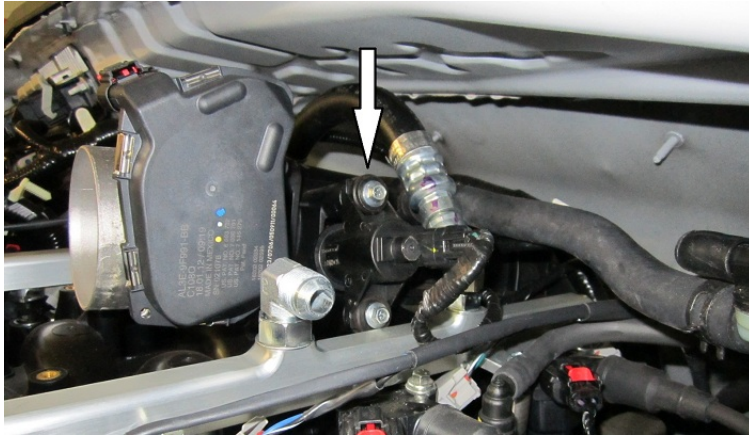
12. Spray the new injector o-ring(s) with silicone and install CNG injector(s) into new fuel rail(s). Use caution when sliding injector into its housing to avoid o-ring damage. Verify they are secured correctly with injector clips.
13. Re-attach fitting connecting the low pressure hose and fuel rail (driver side) and/or transducer (passenger side). If replacing both fuel rails, re-attach the crossover hose connecting the two fuel rails at this time, torque to 35 ft-lb.
14. Plug all injector connections and ensure they are fully clicked in, then nudge fuel rail evenly from side to side and ease it into place. If replacing one fuel rail, re-attach the crossover hose at this time, torque to 35 ft-lb.



15. Reconnect the injector interceptor harness to CNG main harness or jumpers to OEM wire harness for dedicated systems. Tighten the fuel rail bolts to Ford OEM bolt specifications.



16. Re-attach the EVAP sensor. Re-attach low pressure hose and torque to 35 ft-lb, and/or transducer plug if applicable to same torque specification.



17. Re-install air box with boot. Re-attach all hoses and any OEM components removed or dislodged prior to maintenance.
18. Connect the vehicle battery, open the valve(s) completely and back  $\frac{1}{4}$  turn, and re-pressurize the system using 3 key on/off cycles.



19. Leak test all connections that were loosened or removed using an approved methane detector and leak test liquid solution. For a successful leak test, re-attach skirt back onto the toolbox and wrench tighten the bolts.



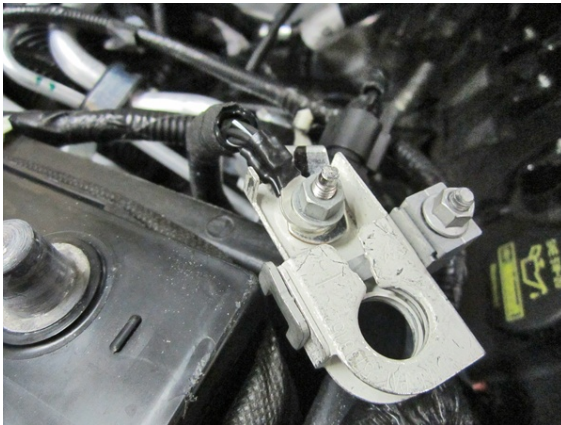
20. Re-install toolbox skirt.
21. If there is a leak, add an additional  $\frac{1}{4}$  turn to the low pressure hose connection. Leaks originating from injector connection points indicate a damaged o-ring, if so, replace o-ring. Perform another leak test. If leak persists, notify your supervisor for further instructions.

## REPLACING COOLANT LINES

1. Remove toolbox skirt.



2. Disconnect the battery.



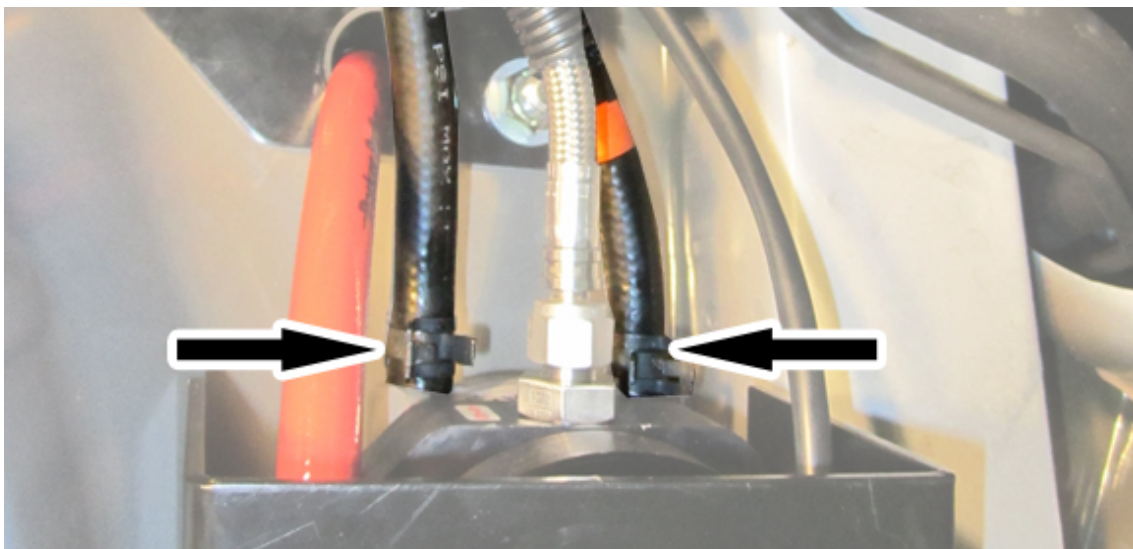
3. Manually shut off cylinder valve(s).

**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.

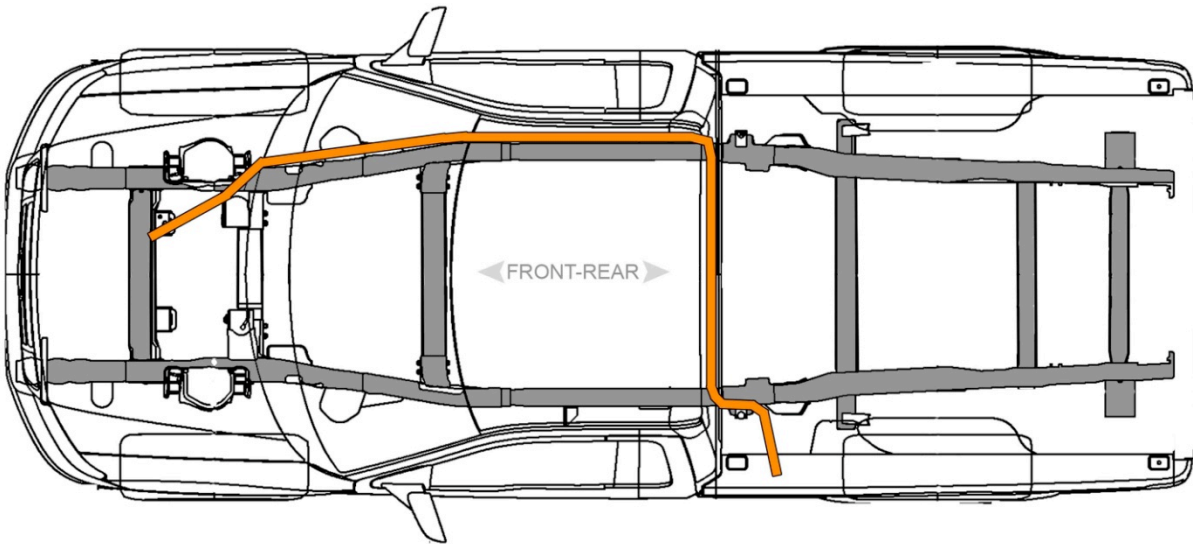


4. Clamp the OEM coolant hoses to restrict coolant flow.
5. Unclamp the CNG system coolant lines and disconnect the lines from both ends.

**Note:** there is coolant fluid still remaining in the lines. Drain the coolant hoses.



6. Unclamp coolant hoses from the vehicle undercarriage and remove the lines.
7. Run the new hoses and secure them with p-clamps in same location as previous hose.



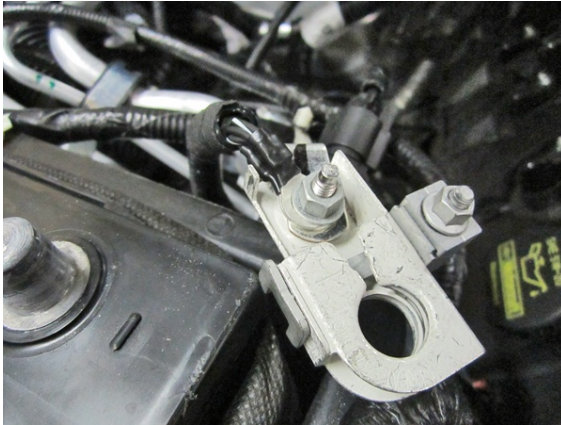
8. Re-attach the coolant hoses on both ends. Ensure hose are connecting accordingly, IN to IN and OUT to OUT. Hoses are marked to help ensure proper connection.
9. Remove OEM coolant lines hose clamps.
10. Connect the vehicle battery, open the main valve(s) and re-pressurize using 3 key on/off cycles.
11. Refill vehicle coolant reservoir as needed with ford approved coolant fluid.
12. Check for coolant leaks.
13. Re-install toolbox skirt.

## **REPLACING AN INJECTOR(S)**

### **NOTE:**

- DO NOT USE POWER TOOLS IN THIS SECTION.
- This procedure can also be used in replacing an o-ring on an injector.
- Always lubricate all o-rings.
- For Dedicated system, the fuel rail fits into same location as OEM fuel rail and abides by same bolt torque specification provided by ford.
- **NOTE:** BE AWARE OF STICKER LABELS. UNDER NO CIRCUMSTANCE SHOULD YOU TOUCH THE HIGH PRESSURE HOSE (3600 PSI) WHILE UNDER PRESSURE

1. Disconnect the battery.



2. Remove toolbox skirt.



3. Manually shut off cylinder valve(s).

**Note:** Using a 3/16" Allen wrench, Turn GFI valve clockwise to close, and counterclockwise to open.

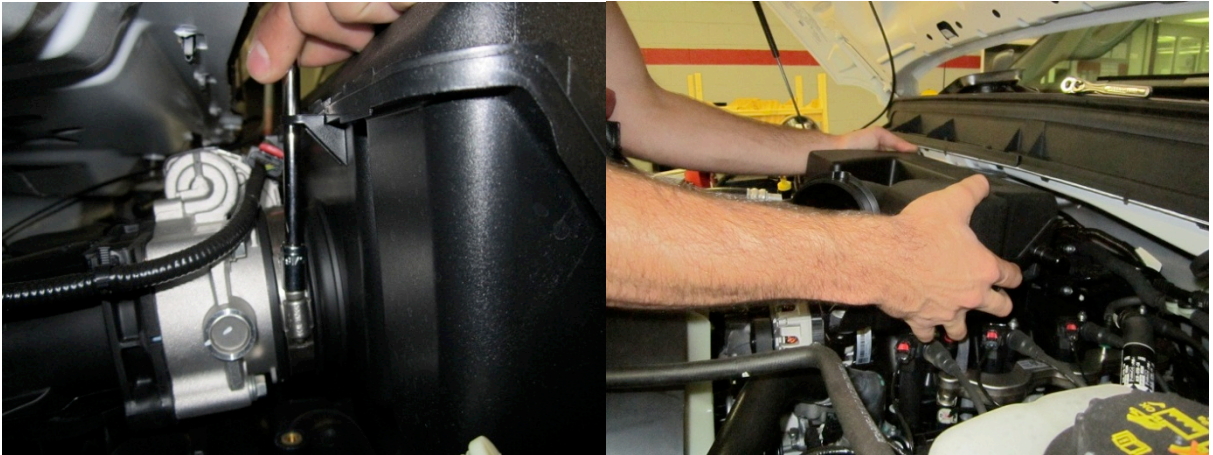


4. If vehicle is **operational** (does not apply to Bi-Fuel systems), depressurize the system by running the vehicle on CNG until the vehicle stalls. If the vehicle is **NOT operational**, crack and loosen the low pressure hose at the regulator side until all pressure has been vented.



5. Detach hoses all connections to the air box and remove it. When detaching the air box, ensure you remove it with the boot located behind

the air box. Ensure the boot is secured to the air box with no gaps. A loose fitting boot will pop an engine code.



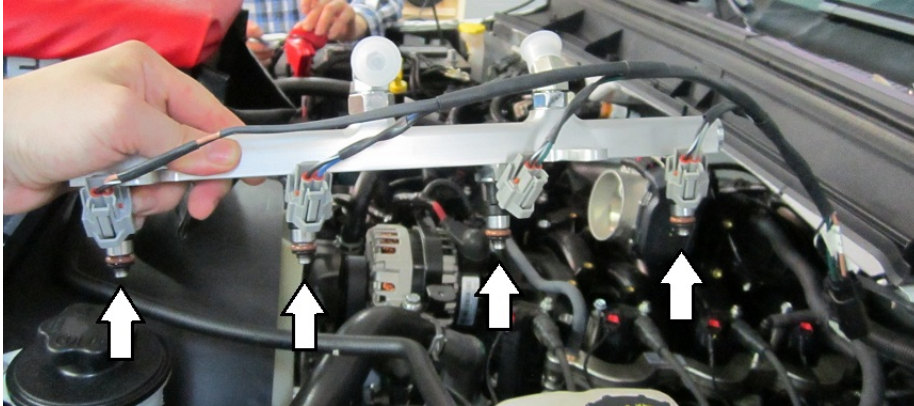
6. Disconnect the jumper plugs from OEM harness or interceptor harness from CNG main harness. Disconnect the transducer plug and/or low pressure hose depending on side being worked on. If working on the low pressure side, remove the EVAP sensor to gain easier access.



7. Unbolt the fuel rail and remove it from its housing.



8. Remove the damaged injector(s).



9. Spray the new injector o-ring(s) with silicone and install new injector(s) into place. Use caution when sliding injector into its housing to avoid o-ring damage. Verify they are secured correctly with injector clips.
10. Plug all injector connections and ensure they are fully clicked in, then nudge fuel rail evenly from side to side and ease it into place.

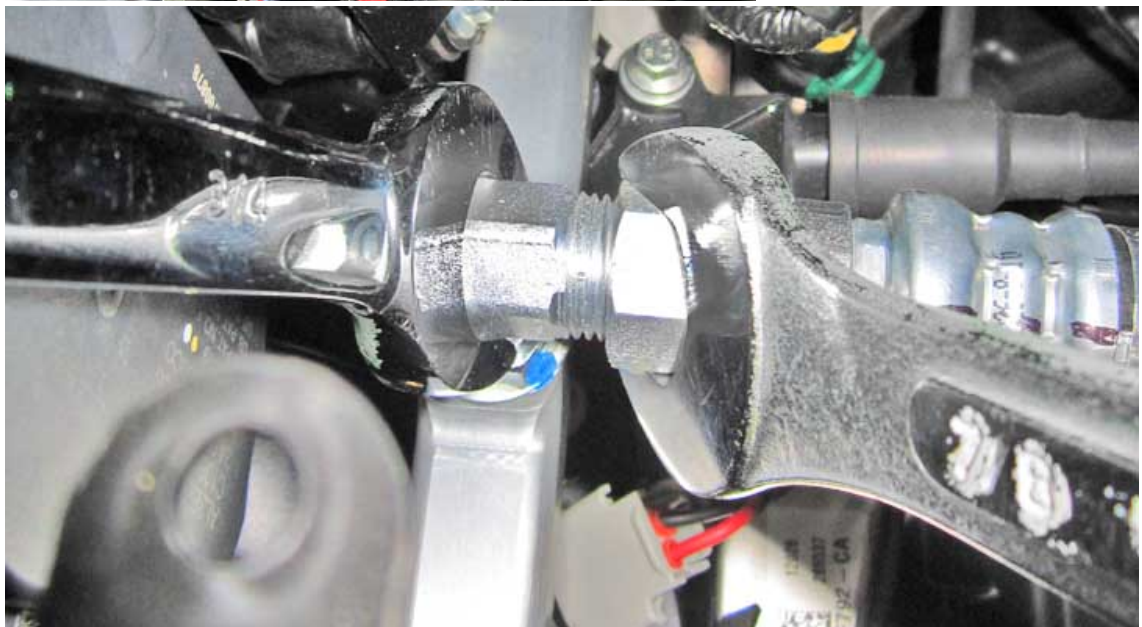


11. Reconnect the injector interceptor harness to CNG main harness or jumpers to OEM wire harness for dedicated systems. Tighten the fuel rail bolts to Ford OEM bolt specifications.





12. Re-attach the EVAP sensor. Re-attach low pressure hose and torque to 35 ft-lb, and/or transducer plug if applicable.



13. Re-install air box with boot. Re-attach all hoses and any OEM components removed or dislodged prior to maintenance.
14. Connect the vehicle battery, open the valve(s) completely and back  $\frac{1}{4}$  turn, and re-pressurize the system using 3 key on/off cycles.
15. Leak test all connections that were loosened or removed using an approved methane detector and leak test liquid solution.



16. Re-install toolbox skirt.
17. If there is a leak, add an additional  $\frac{1}{4}$  turn to the low pressure hose connection. Leaks originating from injector connection points indicate a damaged o-ring, if so, replace o-ring. Perform another leak test. If leak persists, notify your supervisor for further instructions.





*LAST UPDATED:9/25/12 v1.0 -M.O.*

