ALTECH-ECO
CORPORATION

VEHICLE MAINTENANCE PROCEDURES

2011-2013 Transit Connect

INDEX

INTRODUCTION

Note: Before beginning installation, 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 ¼ 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 70ºF (21ºC).

!! 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 the beginning 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.

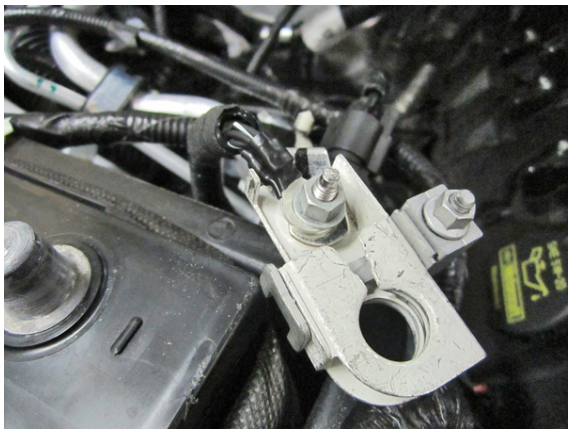
Chemicals and Lubricants

1. Silicone lubricant spray is required on all o-rings on fittings.
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

1. Disconnect the battery.

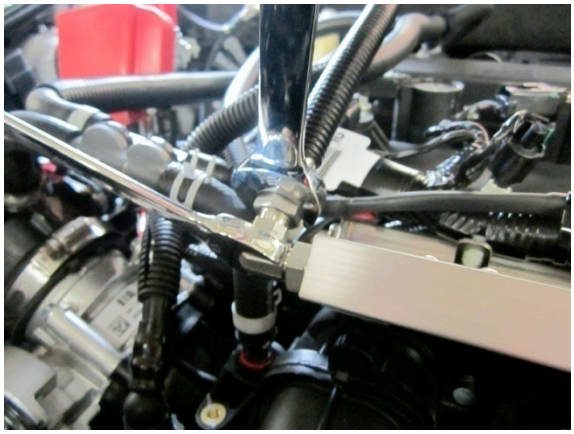


2. Manually shut off cylinder valve(s).

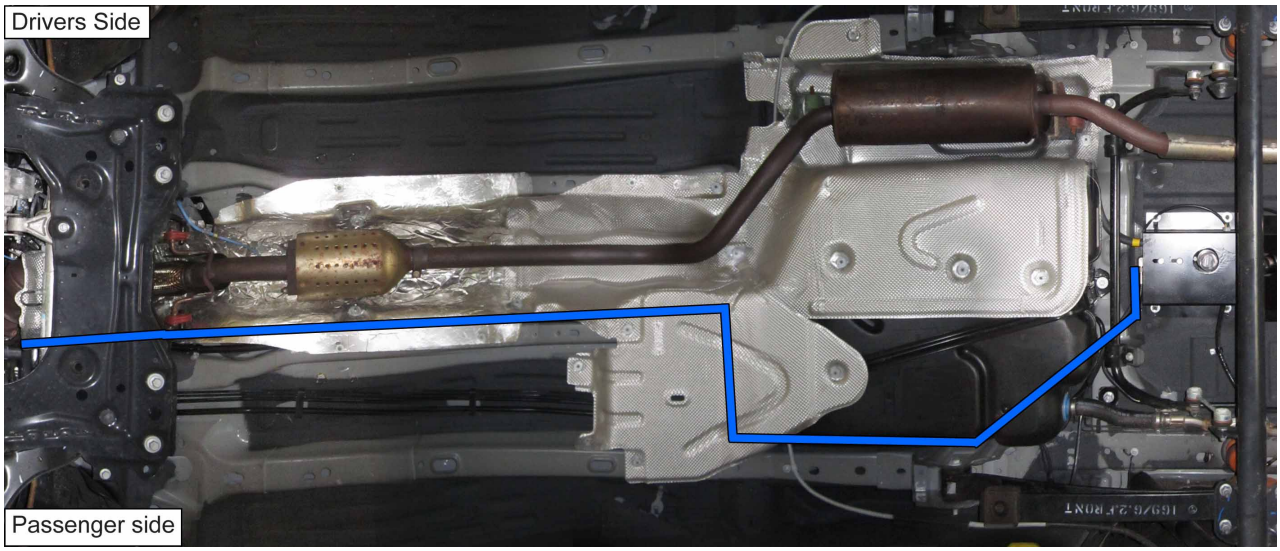
   Note: Vega valve can be opened and closed by hand. Counterclockwise to open and clockwise to close.

3. 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 pressure has been vented. If the vehicle is **not**

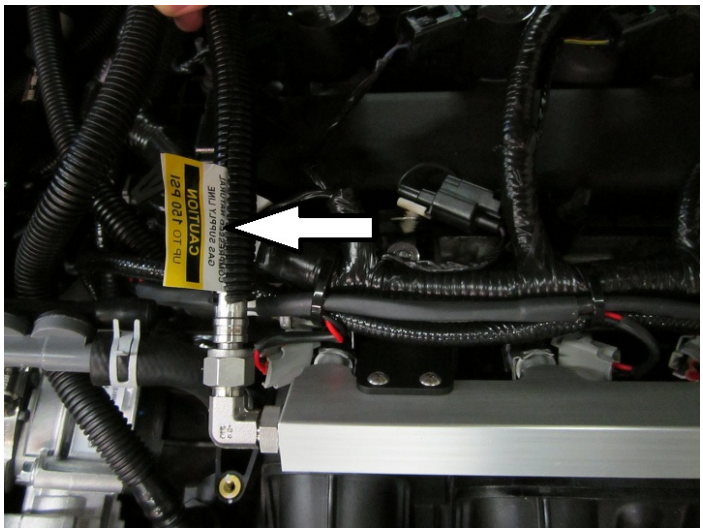
operational, crack and loosen the low pressure hose on the fuel rail side one half turn at a time until all pressure has been vented.



4. Remove the low pressure line by disconnecting it from the fuel rail and from the regulator and un-securing it from the undercarriage. The p-clamps and screws may be reused.



5. Install new hose and secure into place. Hand tighten both ends of the hose to their designated connection point and using a wrench tighten an additional ¼-1/2 turn. Verify warning labels are on both ends of the hose.



6. Reconnect the vehicle battery.
7. Tighten the low pressure hose. To tighten the low pressure hose, first hand tighten as much as possible, then make a mark and make a full rotation plus ¼-1/2. When tightening, ensure you have a counter balance to avoid damaging the fitting, fuel rail, or threads.
8. Reconnect the vehicle battery
9. Open the cylinder valve completely and back to close by ¼ turn. Re-pressurize the system using the 3 key on/off cycles.
10. Leak test the hose on both connections using an approved methane detector and leak test liquid solution.


11. If there is a leak, add an additional ¼ 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:

- **Power tools should never be used in this part of the manual.**
- **You should never temper with or loosen any hoses while the system is under pressure.**
- **Always lubricate all o-rings.**

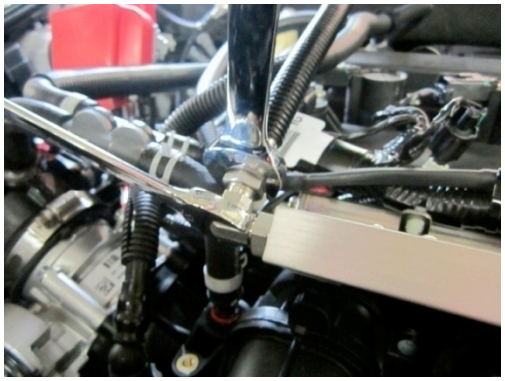
1. Disconnect the battery.

2. Manually shut off cylinder valve(s) by completely turning the valve clockwise.

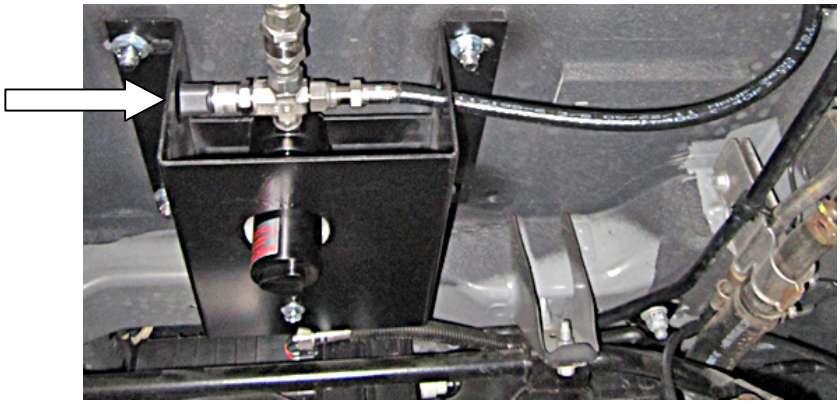
   Note: Vega valve can be opened and closed by hand. Counterclockwise to open and clockwise to close.

3. 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

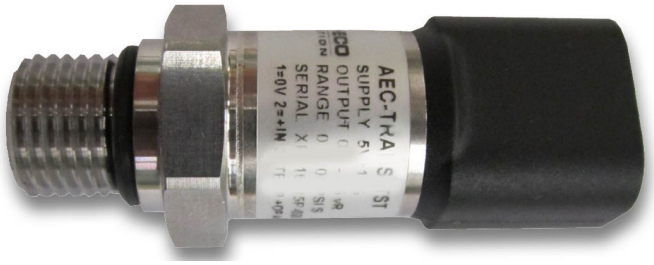
time to ensure all pressure has been vented. If the vehicle is **not operational**, crack and loosen the low pressure hose on the fuel rail side one half turn at a time until all pressure has been vented.



4. Remove spare tire.
5. Disconnect the rear harness from the transducer. (Transducers location is designated by the arrow).



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. Reinstall the spare tire.

9. Tighten the low pressure hose. To tighten the low pressure hose, first hand tighten as much as possible, then make a mark and make a full rotation plus ¼-1/2. When tightening, ensure you have a counter balance to avoid damaging the fitting, fuel rail, or threads
10. Reconnect the vehicle battery.

11. Open the cylinder valve completely and back to close by ¼ turn. Re-pressurize the system using the 3 key on/off cycles.
12. Leak test the hose on both connections using an approved methane detector and leak test liquid solution.

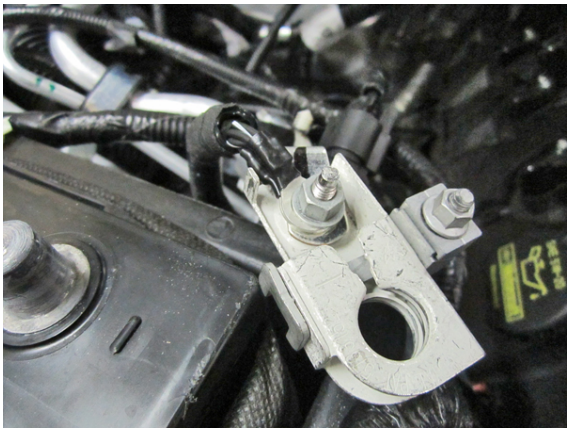
12. If there is a leak, add an additional ¼ turn to the low pressure hose and or transducer. Perform another leak test. If leak persists, notify your supervisor for further instructions.

REPLACING A LOW PRESSURE SENSOR (TRANSDUCER)

NOTE:

- **Power tools should never be used in this part of the manual.**
- **You should never temper with or loosen any hoses while the system is under pressure.**
- **Always lubricate all o-rings.**

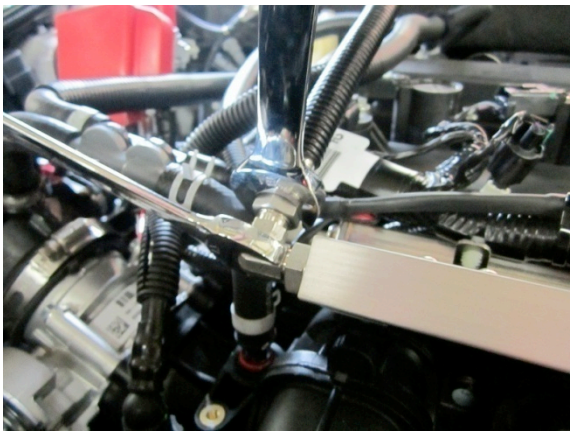
1. Disconnect the battery.



2. Manually shut off cylinder valve(s).

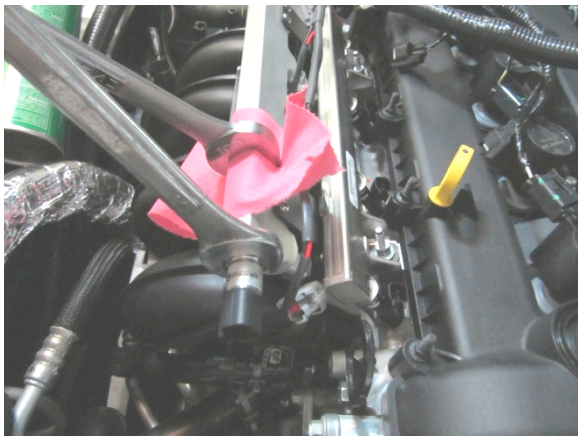
   Note: Vega valve can be opened and closed by hand. Counterclockwise to open and clockwise to close.

3. 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 pressure has been vented. If the vehicle is **not operational**, crack and loosen the low pressure hose on the fuel rail side one half turn at a time until all pressure has been vented.



4. Disconnect the fuel rail transducer plug.

5. 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.



6. Re-tighten the low pressure hose. To tighten the low pressure hose, first hand tighten as much as possible, then make a mark and make a full rotation plus ¼-1/2. When tightening, ensure you have a counter balance to avoid damaging the fitting, fuel rail, or threads.

7. Reconnect the vehicle battery.

8. Tighten the low pressure hose. To tighten the low pressure hose, first hand tighten as much as possible, then make a mark and make a full rotation plus ¼-1/2. When tightening, ensure you have a counter balance to avoid damaging the fitting, fuel rail, or threads.

9. Reconnect the vehicle battery

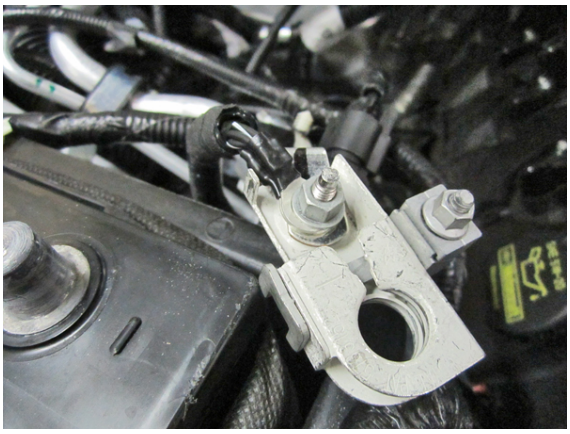
10. Fully open the main cylinder valve(s) and back ¼ turn. Re-pressurize using 3 key on/off cycles.

11. Leak test all connections that were loosened or removed using an approved methane detector and leak test liquid solution.

12. If there is a leak, add an additional ¼ 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

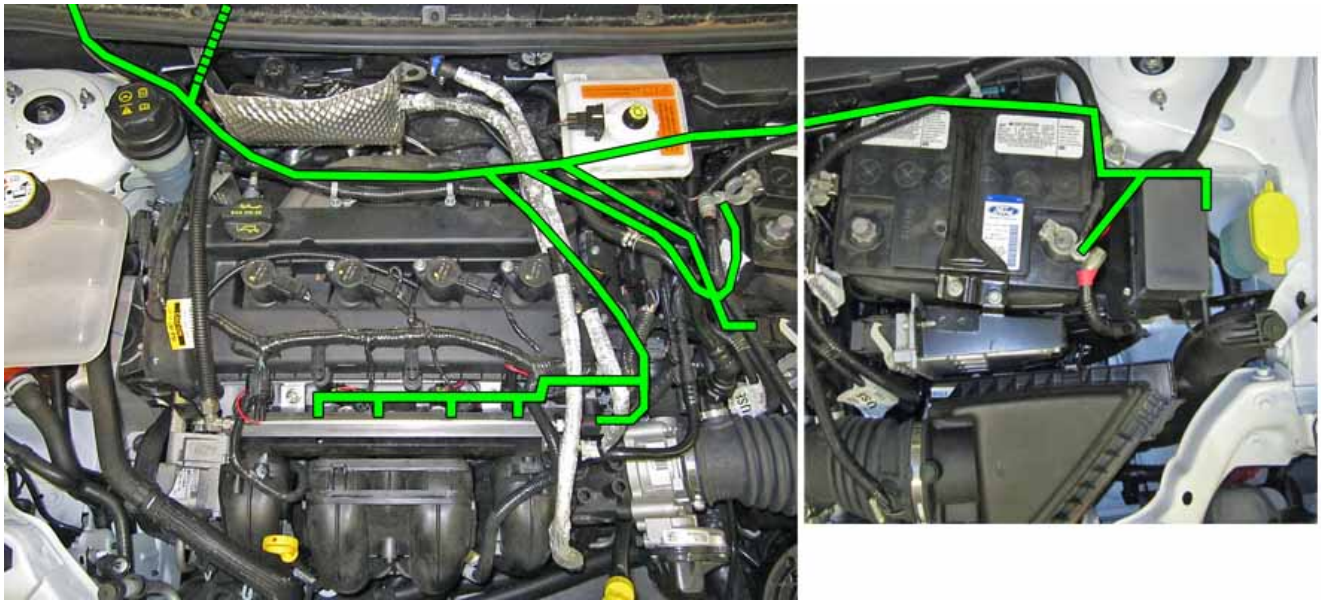
1. Disconnect the battery.



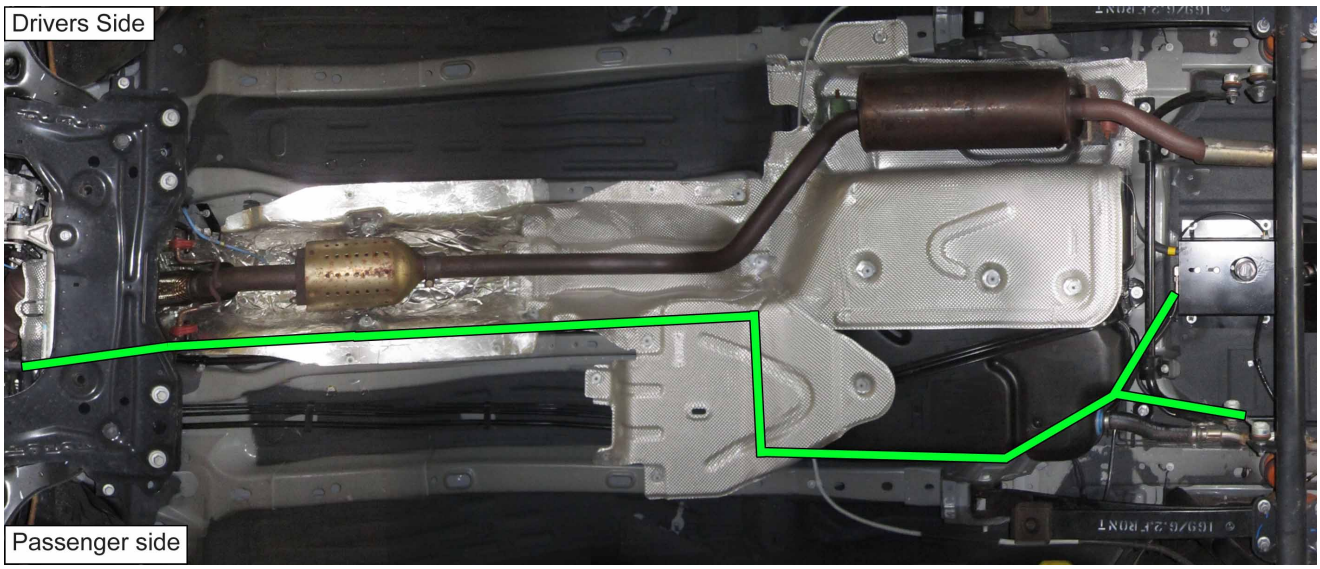
2. Manually shut off cylinder valve(s).

   Note: Vega valve can be opened and closed by hand. Counterclockwise to open and clockwise to close.

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



Main harness and Jumpers/Interceptor harness



Rear harness

4. Disconnect the wiring harness from all connectors.

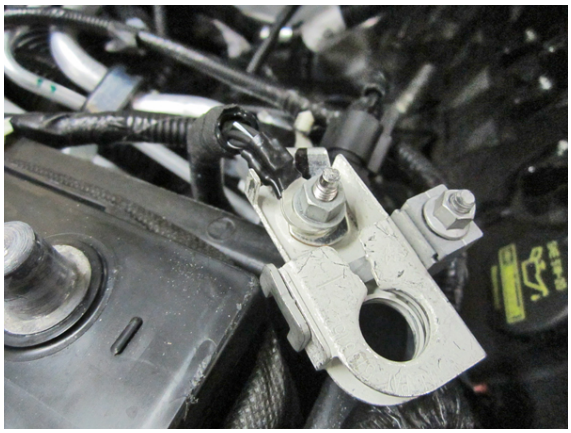
5. Replace the wiring harness.

Note: Refer to vehicle installation manual for additional routing help.

6. 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 or pedals.
7. Re-install any/all OEM parts removed or set aside.
8. Connect the vehicle battery.
9. Fully open the main cylinder valve(s) then back ¼ turn. Re-pressurize using 3 key on/off cycles.
10. Use a MyCanic to verify all sensors are operating successfully.

REPLACING THE FUEL GAUGE

1. Disconnect the vehicle battery.

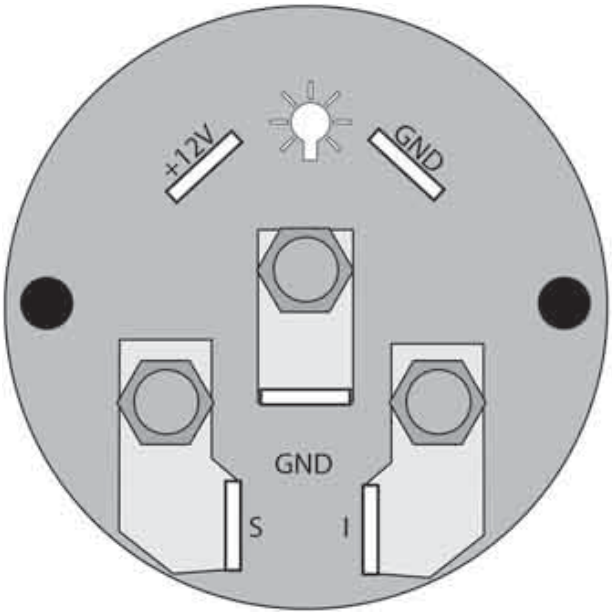


2. Manually shut off cylinder valve(s).

Note: Vega valve can be opened and closed by hand. Counterclockwise to open and clockwise to close.

3. Remove Fuel gauge from dash and disconnect wiring.

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



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

5. Reconnect the vehicle battery.
6. Fully open the valve(s) and back ¼ turn.
7. Verify fuel gauge is operating successfully.

REPLACING A COELASCENT FILTER

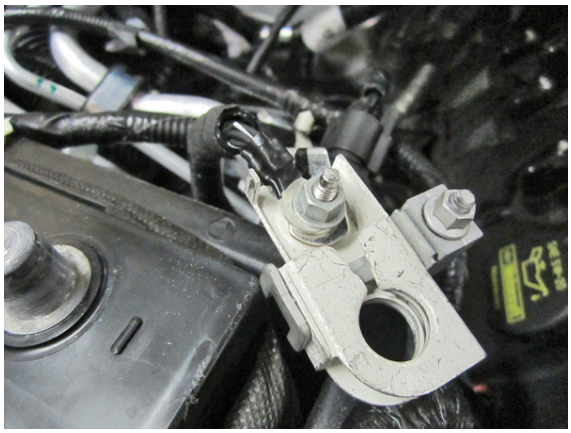
Required Tools:

- **Torque wrench (in ft-lb's)**
- **Parker Lube & Seal or other higher grade lubricant**
- **(2) 7/8" or (2) 22mm open end wrenches**
- **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)**

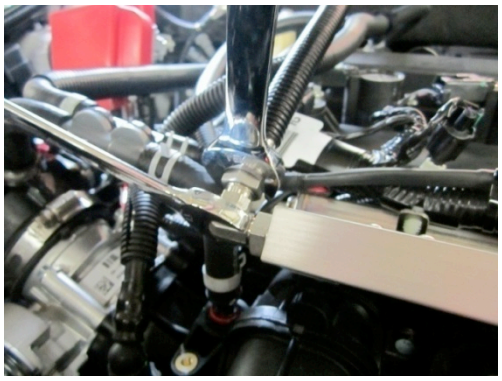
1. Disconnect the battery.



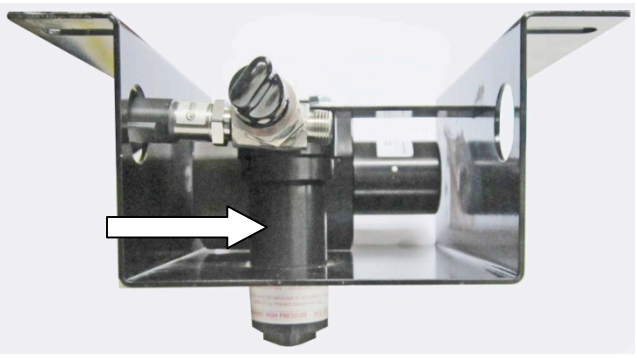
2. Manually turn off cylinder valve(s).

Note: Vega valve can be opened and closed by hand. Counterclockwise to open and clockwise to close.

3. 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 pressure has been vented. If the vehicle is **not operational**, crack and loosen the low pressure hose on the fuel rail side one half turn at a time until all pressure has been vented.



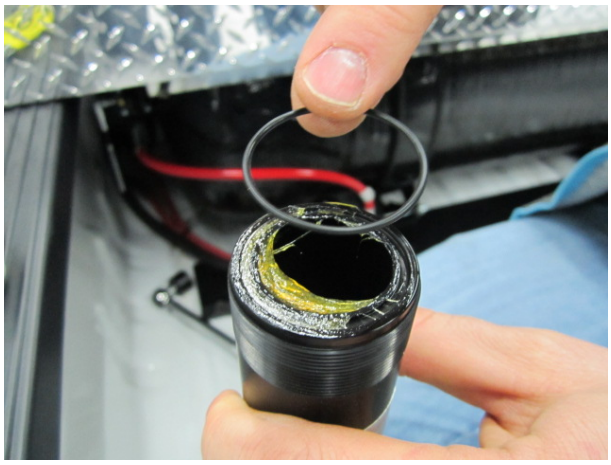
4. Locate filter housing and using the filter housing socket, loosen and unscrew the filter housing.



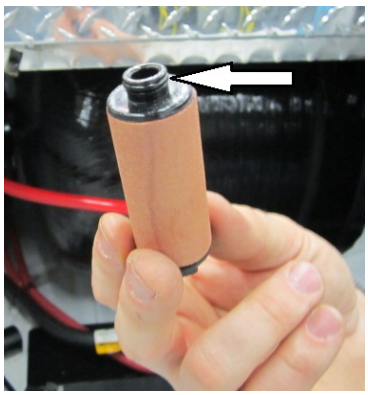
5. Remove filter.

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

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



8. Install seal (Small O-ring included in filter packaging.) to the top of the filter. Apply Parker lube and install new filter. Filter will snap into place when installed into its corresponding hole located inside top filter housing.



9. Using the filter socket, re-install filter housing and torque to 45 ft-lb.

10. Tighten the low pressure hose. To tighten the low pressure hose, first hand tighten as much as possible, then make a mark and make a full rotation

plus ¼-1/2. When tightening, ensure you have a counter balance to avoid damaging the fitting, fuel rail, or threads.

11. Reconnect the vehicle battery.

12. Connect the vehicle battery.

13. Fully open the valve(s) and back ¼ turn and re-pressurize the system using 3 key on/off cycles.

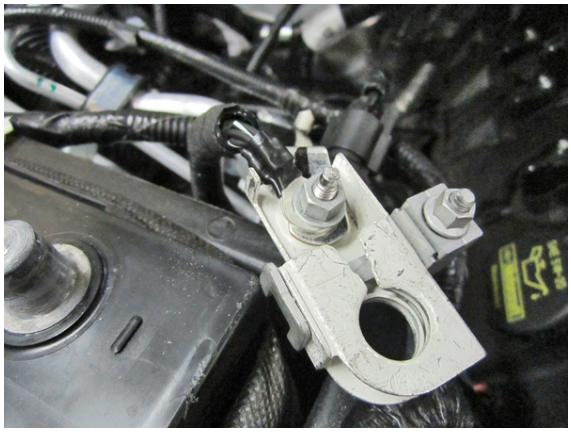
14. Leak test all connections that were loosened or removed using an approved methane detector and leak test liquid solution.

15. If there is a leak, add an additional ¼ turn to the low 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. Manually turn off cylinder valve(s).

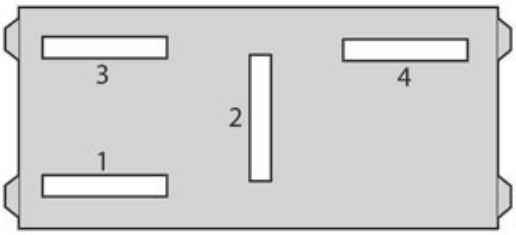
   Note: Vega valve can be opened and closed by hand.



3. From behind the dash, pushes out switch. Unplug and remove.

4. Install new switch.

5. 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 Pink wire

6. Reconnect the vehicle battery.
7. Fully open the valve(s) and back ¼ turn.
8. 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.

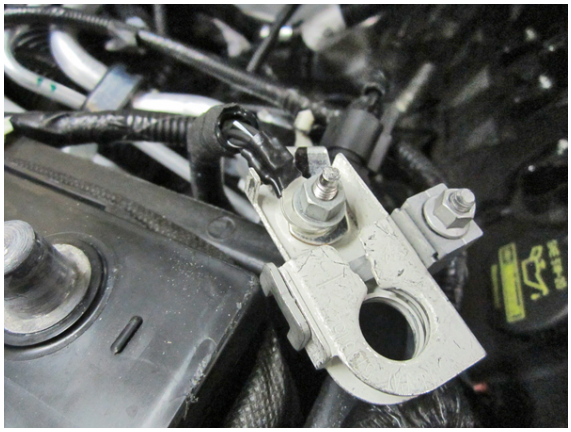
9. The vent tube shall not be provided with any feature that limits or obstructs gas flow.

REPLACING THE REGULATOR ASSEMBLY

NOTE:

- **Power tools should never be used in this part of the manual.**
- **You should never temper with or loosen any hoses while the system is under pressure.**
- **Always lubricate all o-rings.**

1. Disconnect the battery.

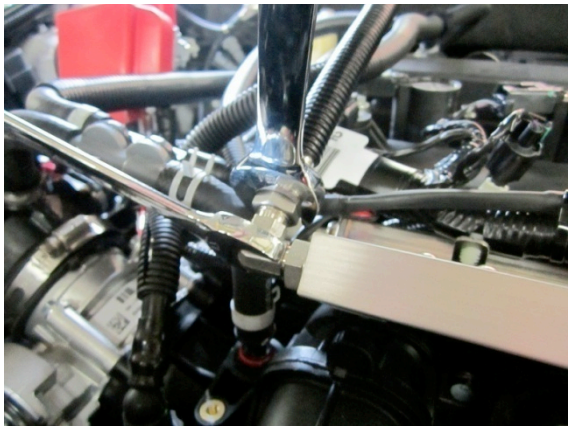


2. Manually shut off cylinder valve(s).

Note: Vega Valve can be closed and open by hand

3. 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 pressure has been vented. If the vehicle is **not operational**, crack and loosen the low pressure hose on the fuel rail side one half turn at a time until all pressure has been vented.



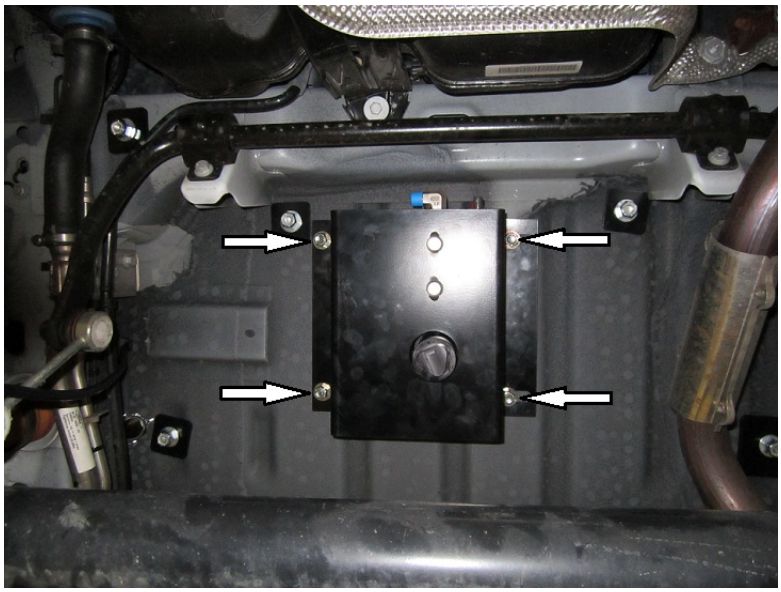
4. Remove spare tire.

5. Using hose clamps, restrict the flow of coolant on both coolant hoses. Disconnect hoses from regulator.

6. Disconnect transducer plug. Transducer plug is part of the rear harness.

7. Disconnect regulator assembly from fuel fill hose, and low pressure hose.

8. Unbolt the regulator assembly. Use caution. Do not allow the assembly fall.



9. Attach the new regulator assembly. Ensure all labels are present. Reconnect all hoses and rear harness. Hand tighten low pressure hose then make a mark on the nut of the hose and make a full rotation plus ¼-1/2 turn. 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. Remove clamps and release the coolant flow. Tighten and torque fuel fill hose to 35 ft-lb.

10. Reinstall spare tire.

11. Tighten the low pressure hose. To tighten the low pressure hose, first hand tighten as much as possible, then make a mark and make a full rotation plus ¼-1/2. When tightening, ensure you have a counter balance to avoid damaging the fitting, fuel rail, or threads.

12. Reconnect the vehicle battery.

13. Fully open the valve(s) and back ¼ turn. Re-pressurize the system using 3 key on/off cycles.

14. Leak test the system. Use recommended methane detector and bubble soap.

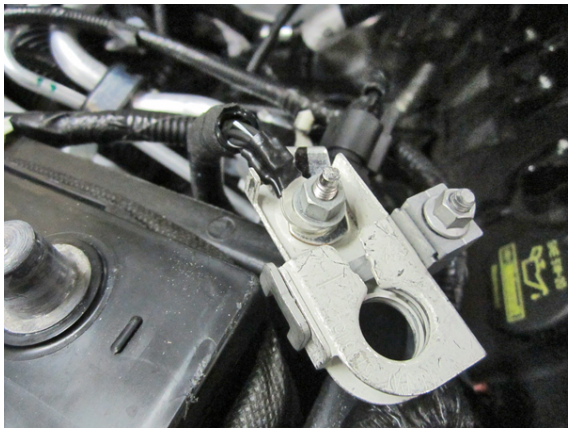
15. If there is a leak, add an additional ¼ turn to the low pressure hose on the corresponding connection end. Perform another leak test. If leak persists, notify your supervisor for further instructions.

REPLACING HIGH PRESSURE HOSE(S)

NOTE:

- **Power tools should never be used in this part of the manual.**
- **You should never temper with or loosen any hoses while the system is under pressure.**
- **Always lubricate all o-rings.**

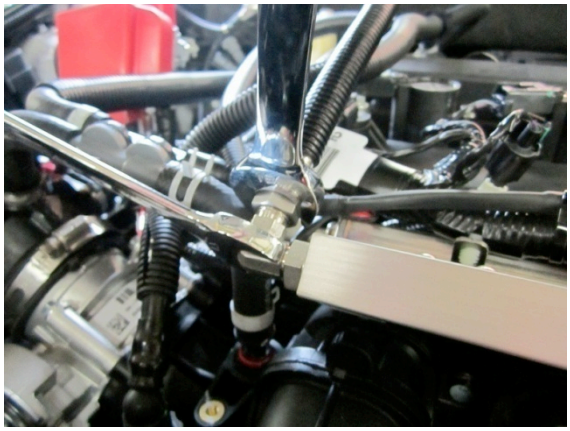
1. Disconnect the battery.



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

   Note: Vega Valve can be closed and opened by hand. Counterclockwise to open and clockwise to close.

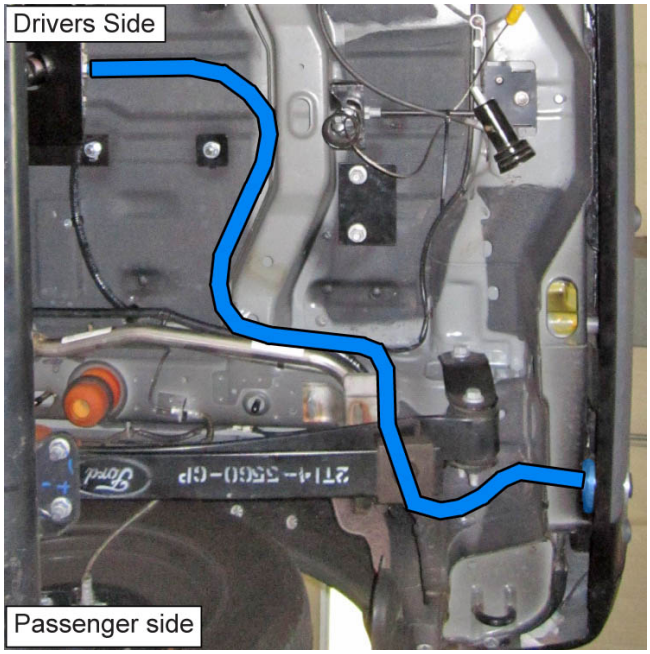
3. If vehicle is **operational** (does not apply to Bi-Fuel systems), depressurize the system by running the vehicle on CNG until the vehicle stalls. As an extra safety precaution, also crack the low pressure hose one half turn at a time to ensure all pressure has been vented. If the vehicle is **not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



4. Disconnect and remove desired high pressure hose(s).

5. 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.

6. Secure the high pressure hose is secured in same location.



7. Reconnect vehicle battery.

8. Tighten the low pressure hose. To tighten the low pressure hose, first hand tighten as much as possible, then make a mark and make a full rotation plus ¼-1/2. When tightening, ensure you have a counter balance to avoid damaging the fitting, fuel rail, or threads
9. Reconnect the vehicle battery

10. Fully open the valve(s) and back ¼ turn. Re-pressurize the system with 3 key on/off cycles.

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

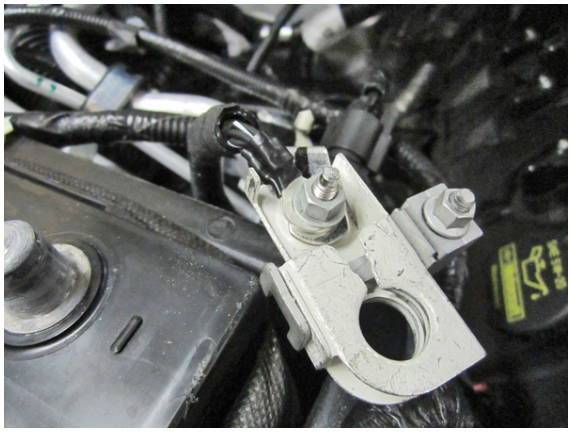
12. If there is a leak, add an additional ¼ turn to the low pressure hose or high pressure hose connection(s). Perform another leak test. If leak persists, notify your supervisor for further instructions

REPLACING FUEL RAIL

NOTE:

- **Power tools should never be used in this part of the manual.**
- **You should never temper with or loosen any hoses while the system is under pressure.**
- **Always lubricate all o-rings.**

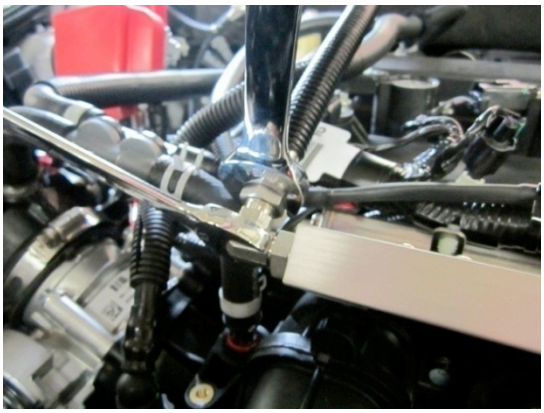
1. Disconnect the battery.



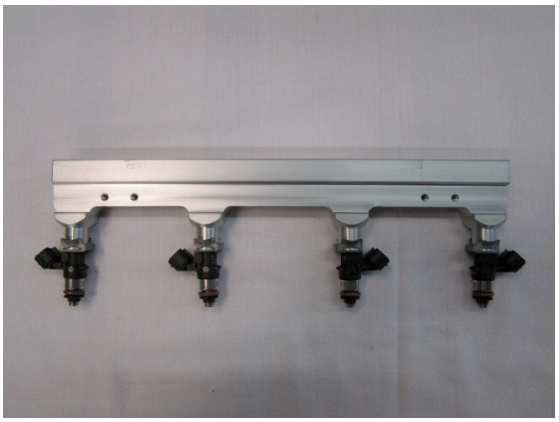
2. Manually shut off cylinder valve(s).

Note: Vega valve can be opened and closed by hand. Counterclockwise to open and clockwise to close.

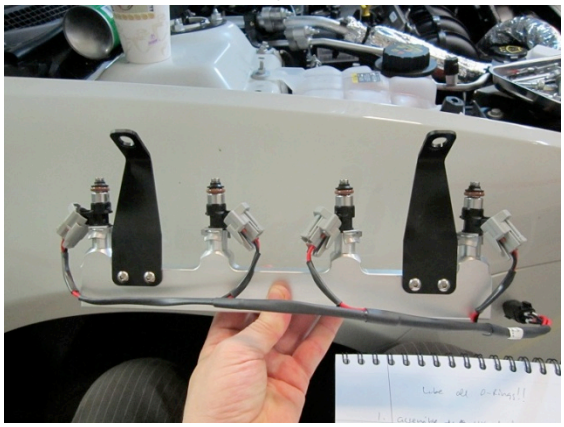
3. If vehicle is **operational** (does not apply to Bi-Fuel systems), depressurize the system by running the vehicle on CNG until the vehicle stalls. As an extra safety precaution, also crack the low pressure hose one half turn at a time to ensure all pressure has been vented. If the vehicle is **not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



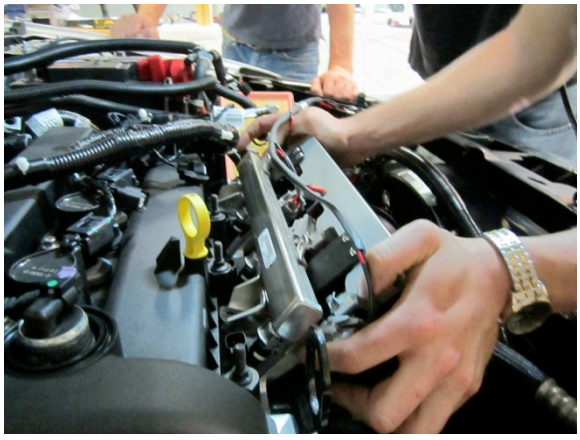
4. Upon fully releasing the pressure, loosen the fuel rail. Then:
    a. Disconnect low pressure hose.
    b. Remove the fitting connecting the low pressure hose to the fuel rail. Set aside to be reused.
    c. Unplug and remove transducer from fuel rail. Set aside to be reused.
    d. Detach the interceptor harness or jumpers (Dedicated system) going into the CNG injectors.
    e. Completely unbolt and remove the fuel rail. Remove fuel rail brackets and set aside to be reused.



5. Assemble fuel rail with Injectors, fuel rail brackets (leave loose), and harness (bi-fuel system interceptor harness) or jumpers (dedicated system).

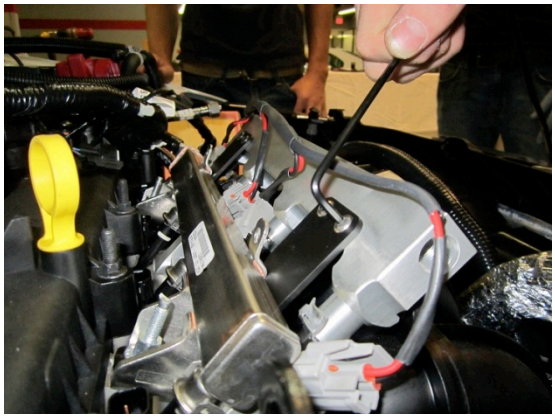


5. Plug all injector connections, then carefully nudge fuel rail evenly from side to side and ease it into place to avoid o-ring damage.

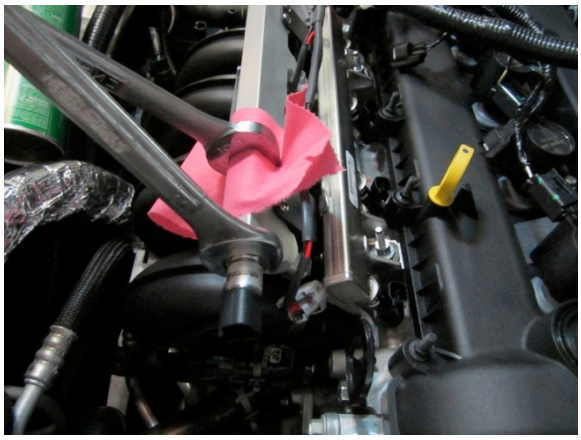


6. Hand start the fuel rail bolts, then tighten to Ford specification. Use caution to avoid cross threading.

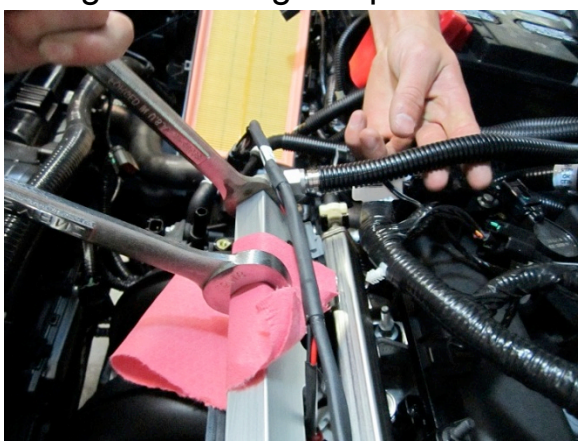
7. Tighten the fuel rail brackets using an Allen wrench.



8. Low pressure sensor (Transducer) torque to 35 ft-lb.

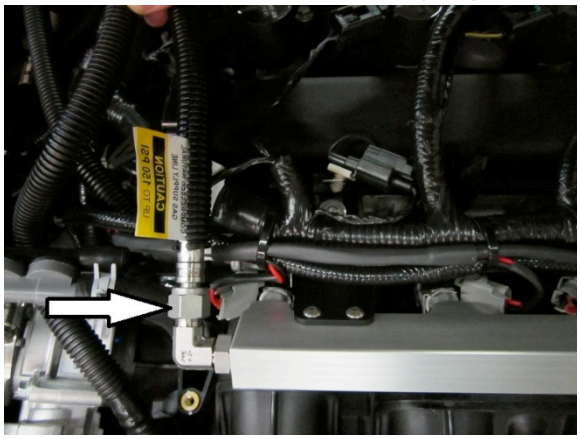


9. Fitting connecting low pressure hose to fuel rail, torque to 35 ft-lb.



10. Connect harness plug to transducer and connect the low pressure hose. To tighten the low pressure hose, first hand tighten as much as possible, then make

a mark and make a full rotation plus ¼-1/2. When tightening, ensure you have a counter balance to avoid damaging the fitting or threads.



11. Re-install all and any OEM parts taken out or set aside.

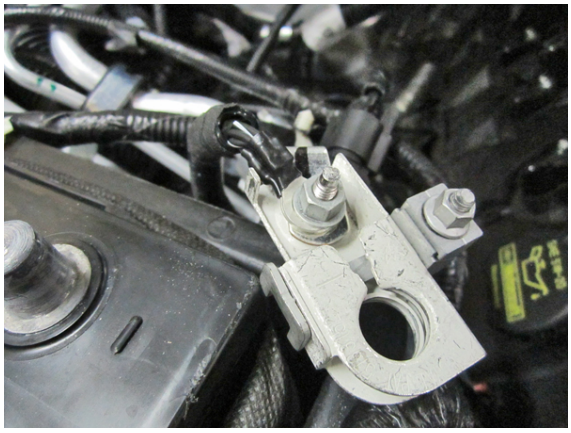
12. Connect the vehicle battery, open the main valve(s) and re-pressurize using 3 key on/off cycles.

13. Leak test all connections that were loosened or removed using an approved methane detector and leak test liquid solution.

14. If there is a leak, add an additional ¼ turn to the low pressure hose connection or transducer connection. Perform another leak test. If leak persists, notify your supervisor for further instructions

REPLACING COOLANT LINES

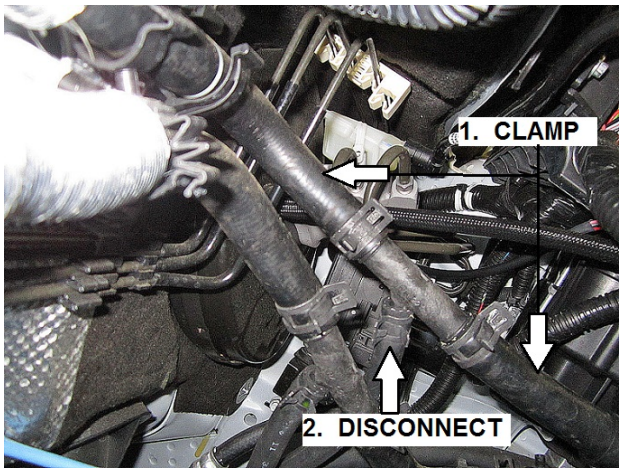
1. Disconnect the battery.



2. Manually shut off cylinder valve(s).

   Note: Vega valve can be opened and closed by hand. Counterclockwise to open and clockwise to close.

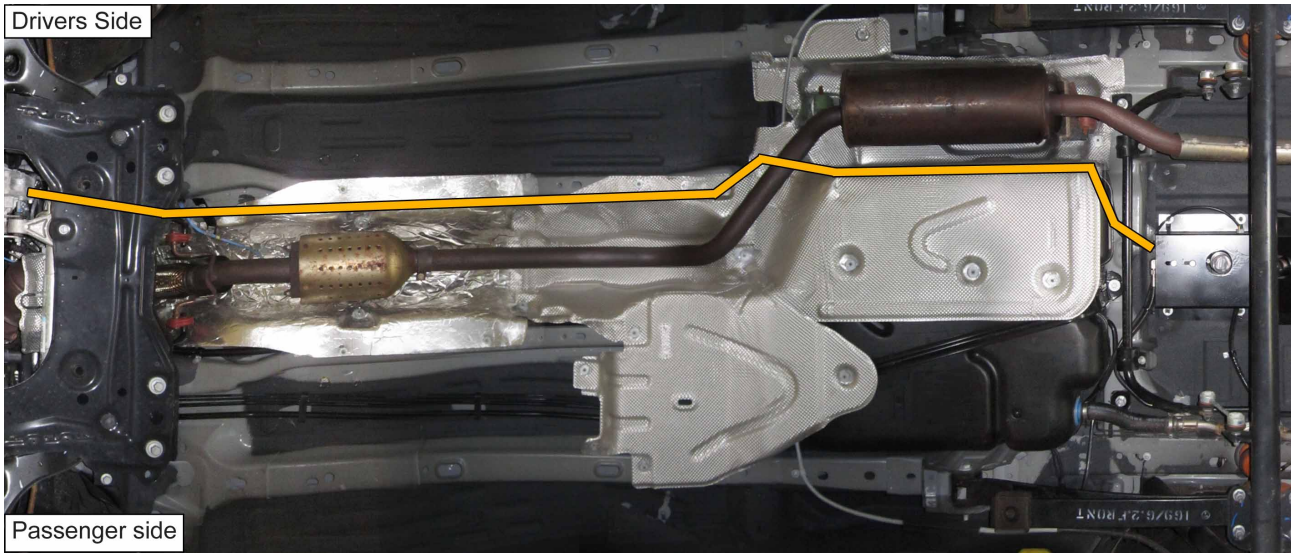
3. Clamp the OEM coolant hoses to restrict coolant flow. Work on one hose end at a time.



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

4. Unclamp and remove coolant hoses secured under vehicle undercarriage.

5. Run the new hoses and secure re-use p-clamps and self tapping screws.



6. Re-attach the coolant hoses on both ends. Verify hose connections are attached to the corresponding direction of flow. IN to IN, OUT to OUT.

7. Remove OEM coolant lines hose clamps to restore flow.

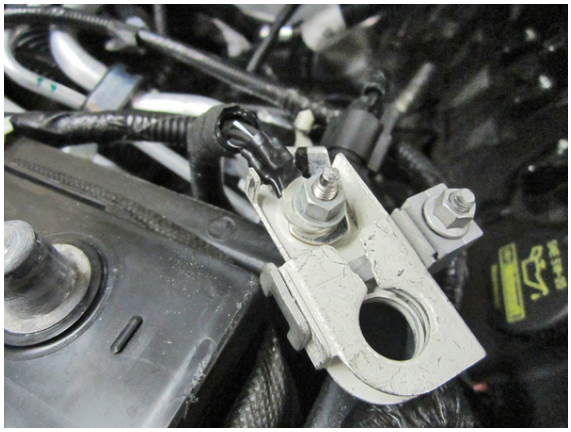
8. Connect the vehicle battery, open the main valve(s) and re-pressurize using 3 key on/off cycles.
9. Refill vehicle coolant reservoir as needed with ford approved coolant fluid before starting the vehicle.

REPLACING AN INJECTOR(S)

NOTE:

- **Power tools should never be used in this part of the manual.**
- **You should never temper with or loosen any hoses while the system is under pressure.**
- **Always lubricate all o-rings.**

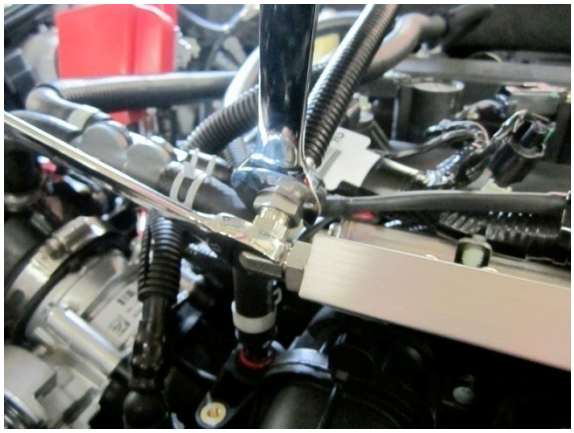
1. Disconnect the battery.



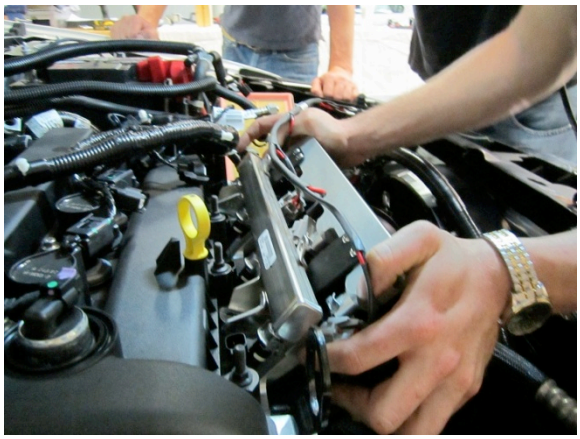
2. Manually shut off cylinder valve(s).

Note: Vega valve can be opened and closed by hand. Counterclockwise to open and clockwise to close.

3. 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 pressure has been vented. If the vehicle is **not operational**, crack and loosen the low pressure hose on the fuel rail side one half turn at a time until all pressure has been vented. Completely disconnect the low pressure hose.

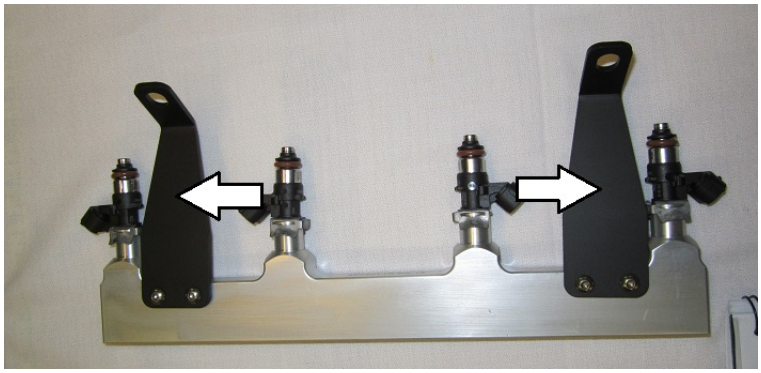


4. Disconnect the injectors from its jumper plugs or interceptor harness.
5. Disconnect the transducer plug.
6. Loosen the CNG fuel rail brackets and then unbolt the fuel rail and remove it from its housing.



7. Remove the damaged injector(s).

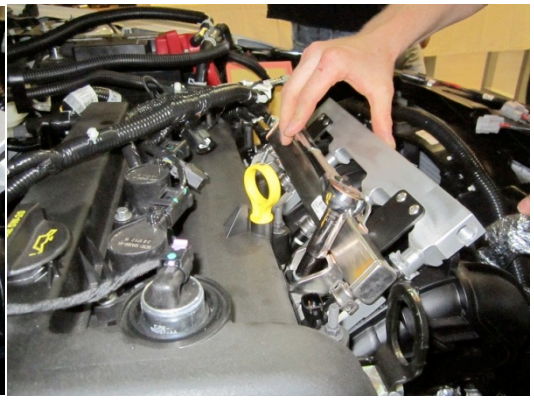
8. Spray the new injector o-ring(s) with silicone and install new injector(s) into place.



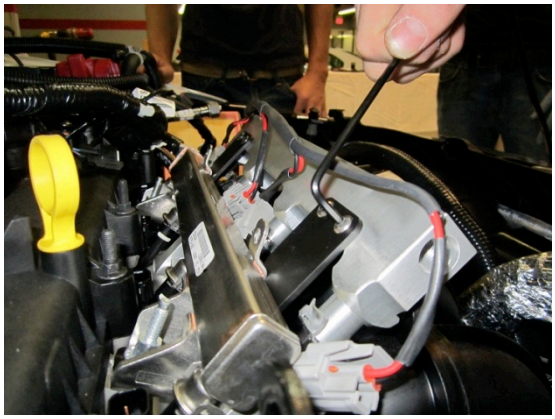
9. Plug in all injector connections, including interceptor harness or jumpers then nudge fuel rail evenly from side to side and ease it into place.

10. Reconnect the transducer plug.

11. Hand start the fuel rail bolts, then tighten to Ford specification. Use caution when doing this to avoid cross threading.

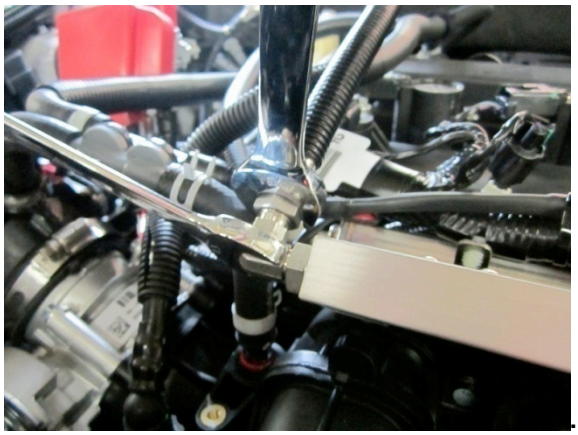


12. Tighten the fuel rail brackets using an Allen wrench.



13. Once fuel rail has been secured, reconnect and tighten the low pressure hose. To tighten the low pressure hose, first hand tighten as much as possible, then make a mark and make a full rotation plus ¼-1/2. When tightening, ensure you have a counter balance to avoid damaging the fitting, fuel rail, or threads.

14. Reconnect the vehicle battery.



15. Connect the vehicle battery, open the valve(s) completely and back ¼ turn, and re-pressurize the system using 3 key on/off cycles.

16. Leak test all connections that were loosened or removed using an approved methane detector and leak test liquid solution.

17. If there is a leak, add an additional ¼ 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.

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