ALTECH-ECO CORPORATION

CNG CONVERSION SYSTEM INSTALLATION MANUAL

2015-2017 FORD F-150 5.0L BI-FUEL / DEDICATED

COMPLETE CNG SYSTEM

Updated 11-16-17

CNG

TABLE OF CONTENTS

NOTE: Disconnect the vehicle battery before install. This includes partial install, servicing, and or maintenance.

- All owner information supplied by Ford must remain with the unit. The incomplete vehicle manual is not owner information and is excluded from this requirement.
- Compressed natural gas is a combustible fuel, flammable and highly explosive.
- CNG is stored under high pressure (maximum of 3,600psi) at 70ºF (21ºC).
- Tampering with or improperly maintaining the high pressure fuel system can result in fatality or serious injury.
- Never attempt to modify the fuel system and always have the fuel system maintenance performed at an authorized dealership by qualified technicians.
- Exercise extreme caution and follow all related safety guidelines.
- Always leave 1/4 tank of gasoline in the tank as not to damage the OEM fuel pump.

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!! WARNING !! Follow instructions as directed in the installation manual and do not attempt shortcuts. Follow proper safety procedures. Failure to do so can lead to bodily harm or fatality. Tampering with or improperly maintaining the high pressure fuel system can also result in 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 and at 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.

On Bi-Fuel systems gasoline shall not remain uncirculated for extended periods of time (over 60 days).

Check list:

1. Confirm packing slip to insure that you have received all components, assemblies, and sub-assemblies.
2. Make sure none of the components and assemblies have been damaged during shipping.
3. Pre-inspect the vehicle following the QVM, Q185, and NFPA 52 regulations (Contact ALTECH-ECO for the inspection check list).
4. Begin your conversion process.
   - -Cylinder Installation
   - -Regulator assembly installation
   - -Fuel fill installation
   - -High pressure line installation and routing
   - -Low pressure and coolant line installation and routing
   - -Underhood installation
   - -Wiring (Including switch and gauge) Installation
   - -Decal placement
   - -Fill and leak test
   - -Begin your QC Process
5. Check tire pressure before test driving.
6. Check and fill coolant fluid before starting and test driving.
7. Be sure the rear harness is routed properly and is not loose under the vehicle.
8. Be sure all provided parts are installed.
9. Final test drive.

Attaching Accessories to Aluminum Panels and Structure

Q-222

SVE BULLETIN

SPECIAL VEHICLE ENGINEERING – BODY BUILDERS ADVISORY SERVICE

E-Mail via Website: www.fleet.ford.com/truckbbas (click "Contact Us")

Toll-free: (877) 840-4338

QVM Bulletin: Q-222 Date: 22 July, 2014

Attaching Accessories to Aluminum Panels and Structure

Background:

The high-strength aluminum alloy in the all-new F-150 does not produce red rust like steel. We have gone to great lengths to develop coatings to inhibit corrosion. However, customers should take note that when installing aftermarket equipment, aluminum can still corrode if the aluminum is attached to dissimilar metals. This type of corrosion is called “galvanic corrosion” and it occurs where there is contact between different metals, like steel or stainless steel fasteners.

Protecting against galvanic corrosion

When installing aftermarket equipment, it is necessary that the installer pay special attention when drilling or clamping dissimilar metals to the aluminum body.

- Anytime the factory paint is damaged, it is recommended that the paint be repaired with a suitable coating prior to installing aftermarket equipment (i.e. splash guards, bug shields, tool boxes, etc.)
- When installing fasteners into the mounting hole the fastener should not have contact or have an interference fit with the sheet metal
- For zinc coated steel bolts and screws, an aluminum washer should be used
- For further protection, an isolation layer should be used between the two dissimilar metals
- When clamping onto the truck, a polypropylene or urethane tape can be used as the isolating layer

Paint, Isolator, and Fastener Recommendations

We have tested many combinations of fasteners and coatings that are widely used in the aftermarket and have provided a list of approved products to help ensure durability, strength and quality.

** For small repair of factory paints around mounting hole. Follow manufacturer’s directions for use.

Approved Anti-Corrosion Coatings**

- ✓ Motorcraft PM13-A
- ✓ NOX-Rust 7703-W
- ✓ Zinc Rich Primer

Recommended Acrylic Lacquer Touch-up Paints**

- ✓ Motorcraft
- ✓ Duplicolor
- ✓ Rustoleum

Approved Fasteners

- ✓ Aluminum Clamps
- ✓ Aluminum Pop Rivets
- ✓ Zinc coated steel fasteners used with an aluminum washer
- ✓ Plastic Scrivets
- ✓ Plastic Push Pins
- ✓ Aluminum Rivnuts

Isolator Recommendations

- ✓ Aluminum washer
- ✓ Urethane tape
- ✓ Polypropylene tape

Examples

In this section we illustrate some best practices to isolate steel from coming in contact with aluminum. Using the previously listed fasteners and coatings in addition to good isolation techniques will help ensure durability, strength and quality of your F150.

Note: The following illustrations are not vehicle specific and are intended for reference only.

Figure 1 shows a plastic accessory attached to the aluminum sheet metal and the fastener properly isolated from contact with the aluminum sheet metal.

Figure 2 shows a steel accessory and steel fastener properly isolated from contact with the aluminum sheet metal.

Note: both figures show the fastener using an aluminum washer and having an oversize hole providing an air gap to the aluminum sheet metal.

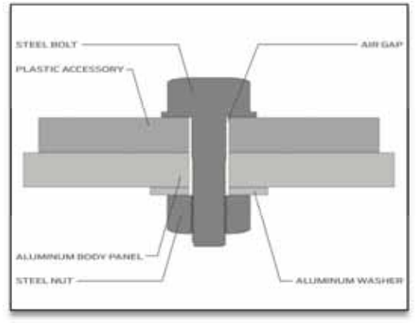


Figure 1

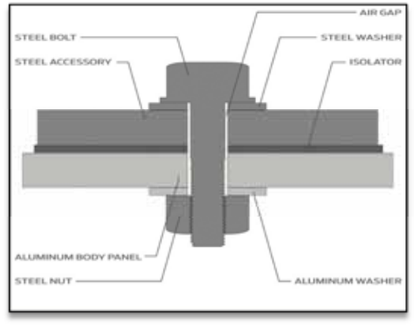


Figure 2

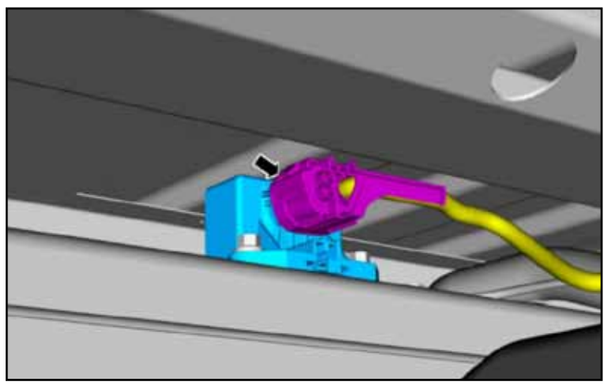
Important: Fasteners or coatings that should be avoided

The items listed below can accelerate galvanic corrosion in aluminum and should be avoided. If a steel fastener must be used it is necessary to properly isolate from contact with the aluminum.

- ✘ self-tapping screws
- ✘ steel rivnut
- ✘ steel pop rivets
- ✘ steel spring clips
- ✘ RTV silicone
- ✘ stainless steel fastener

If you have any questions, please contact the Ford Truck Body Builders Advisory Service as shown in the header of this bulletin.

Disconnect the fuel pump.



Fuel system Pressure Release

1. With the vehicle in NEUTRAL, position it on a hoist.
2. NOTE: The Fuel Pump Control Module is located on the frame rail above the fuel tank. Disconnect the fuel pump control module electrical connector.
3. Start the engine and allow it to idle until it stalls.
4. After the engine stalls, crank the engine for approximately 5 seconds to make sure the fuel rail pressure has been released.
5. Turn the ignition switch to the OFF position.
6. When the fuel system service is complete, reconnect the fuel pump control module electrical connector.
7. Cycle the ignition key and wait 3 seconds to pressurize the fuel system. Check for leaks before starting the engine.
8. When service on the fuel system is completed, start the engine and check for leaks.

Have Ford factory vehicle manual available for additional instructions necessary for the CNG system installation.

Disconnect the negative terminal on the battery and place a plastic cap on it to protect from accidental contact.

Remember to always lubricate ALL o-rings right before component installation.

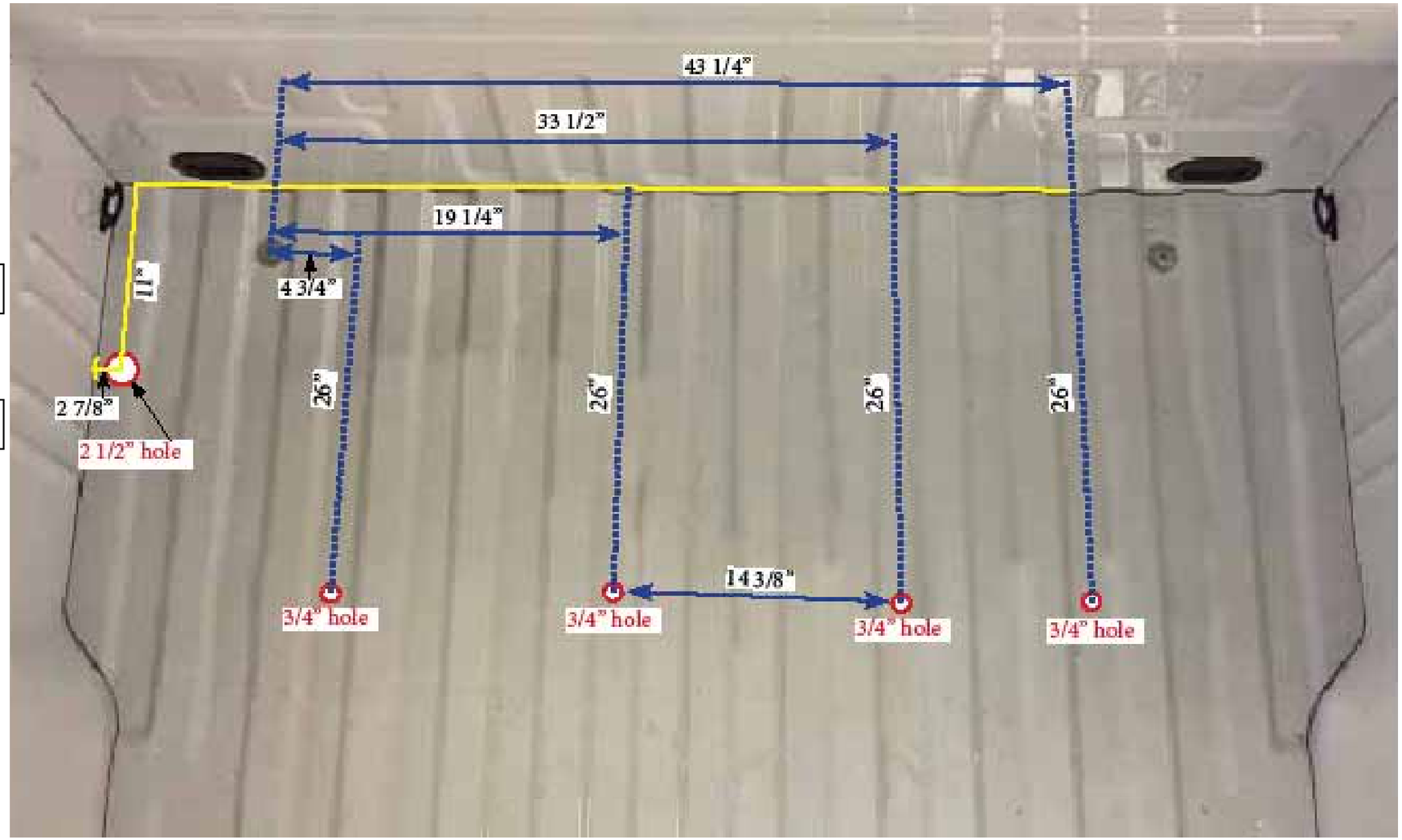
Refer to packing slip for part details.

CYLINDER INSTALL - 6.5' SHORT BED (21x60 CYLINDER)

1. Use the template layout and measure out each drill point. Mark the holes in shown locations. Always verify your measurements before drilling.
2. Drill each hole according to the template. Deburr and rust proof any exposed metal.

6.5 ft. Bed - Drill holes as shown.

Note: This template is also available for download at www.AltechEco.com



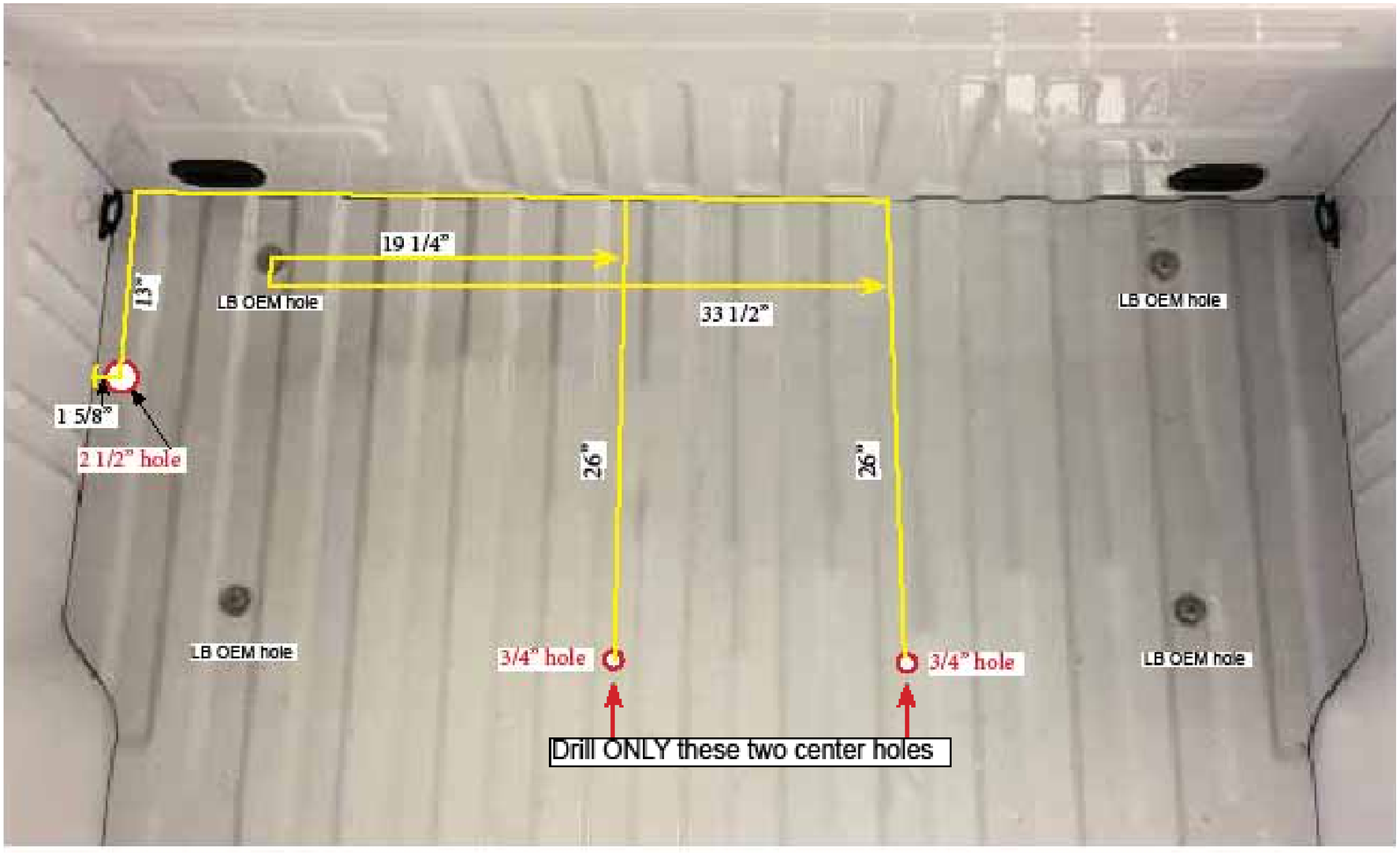
Updated: 3/20/17 **15-17F5.0-DRILLTEMP21x60-6.5**

CYLINDER INSTALL - 8’ LONG BED (21x60 CYLINDER)

1. Use the template layout and measure out each drill point. Mark the holes in shown locations. Always verify your measurements before drilling.
2. Drill each hole according to the template. Deburr and rust proof any exposed metal.

8 ft. Bed - Use four OEM holes and drill two center holes as shown.

Note: This template is also available for download at www.AltechEco.com



Updated: 2/03/17 **15-17F5.0-DRILLTEMP21x60-8**

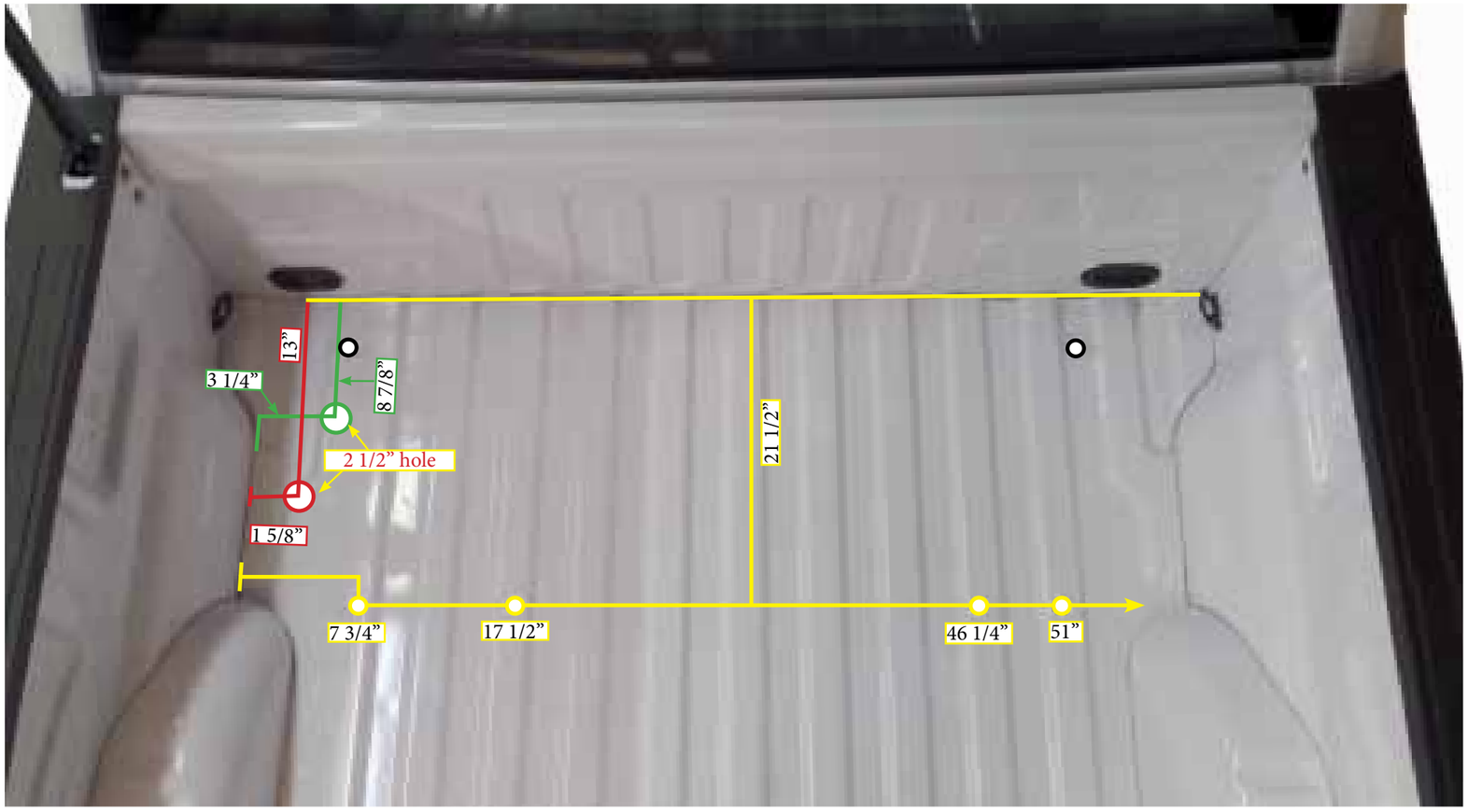
CYLINDER INSTALL - 5.5’ SHORT BED / 6.5’ SHORT BED (18x60 CYLINDER)

1. Remove and discard the two front OEM bolts.
2. Use the template layout and measure out each drill point. Mark the holes in shown locations. Always verify your measurements before drilling.
3. Drill each hole according to the template. Deburr and rust proof any exposed metal.

2015-2017 FORD F-150 5.0L COMPRESSED NATURAL GAS CONVERSION SYSTEM

2015-2017 F-150 5.0L Drill Template - 5.5’ SHORT BED / 6.5’ SHORT BED

For 18 x 60 Cylinder.



Short Bed, 5.5’
Short Bed, 6.5’
Both Beds
9/16” hole
OEM hole

Update: 9-30-16

15-17F5.0-DRILLTEMP18x60

CYLINDER INSTALL - 6.5’ SHORT BED / 8’ LONG BED

6.5’ BED

1. Install grommet.
2. Remove two OEM front bolts and discard.
3. Install the assembled cylinder package.

NOTE: Use caution and do not damage the bed walls.

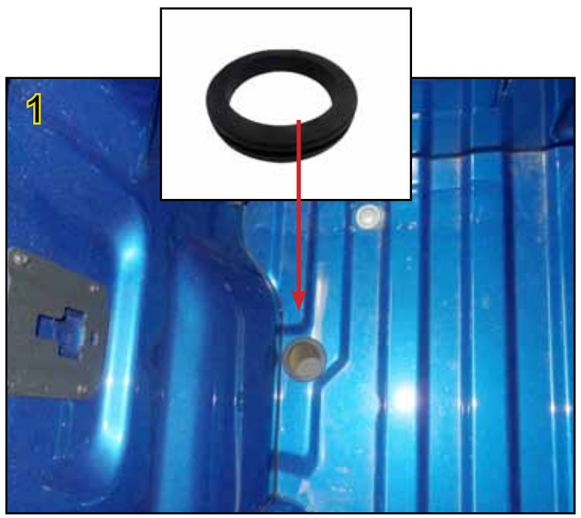
Secure with kit bolts.
-Two M12-1.75 x 110mm bolts and 1/2” washers into the front cylinder plate. These two will replace two front OEM bolts.
-Four 1/2”-13 x 2” bolts into the rear cylinder plate. Secure the rear plate using the mounting backing plates underneath, combine with 1/2” washers and 1/2-13 Nylock nuts. Tighten each bolt to 70-75 ft-lbs.

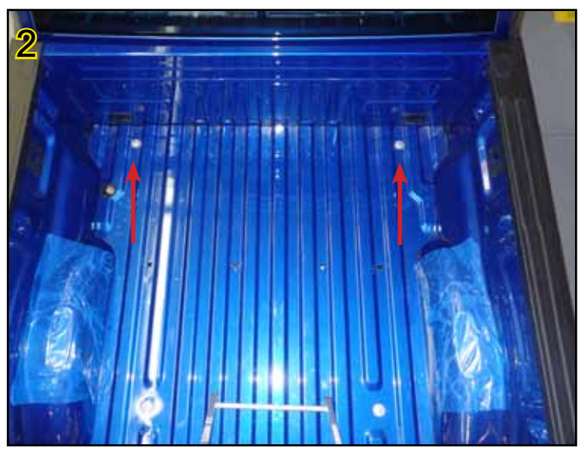
6.5’ Bed

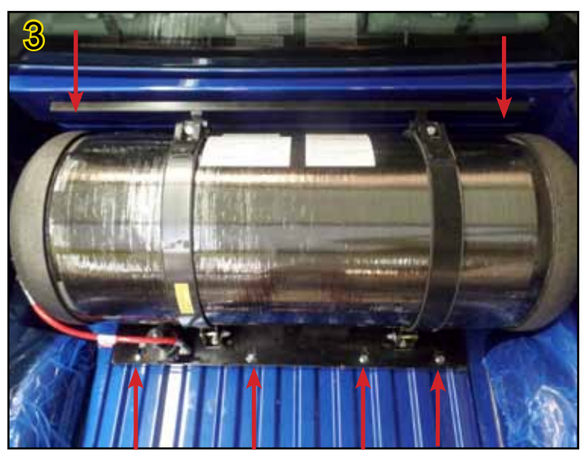
8’ Bed

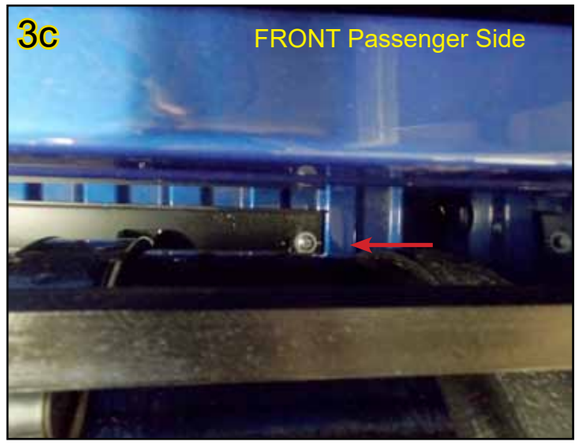
8’ BED

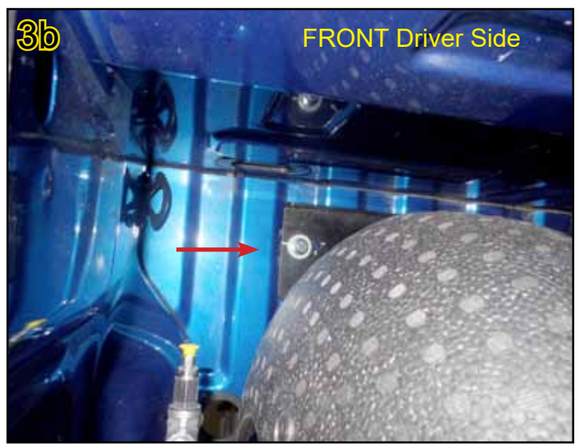
1. Remove four OEM bolts and discard.
2. Drill holes using the template provided in the previous page. Deburr and rust proof any exposed metal.
3. Install the cylinder package. Secure with four M12-1.75 x 110mm bolts and 1/2” washers. two 1/2”-13 x2” bolts and backing plates underneath. Tighten each bolt to 70-75 ft-lbs.











CYLINDER INSTALL - 6.5’ SHORT BED / 8’ LONG BED

4. Connect Low Pressure fuel line to the regulator once it is routed. Torque to 30-35 ft-lbs.
Connect Rear Harness to the high pressure sensor located at the cylinder valve, once the harness has been routed.
Connect Coolant hoses to the regulator once hoses are routed. Secure with coolant hose clamps.

Note: Once Low Pressure hose, Rear Harness, and Coolant hoses have been routed, secure them with a zip tie near the grommet to eliminate any slack in the lines.

Low pressure connection.

Rear harness connection.

Coolant hoses connection.

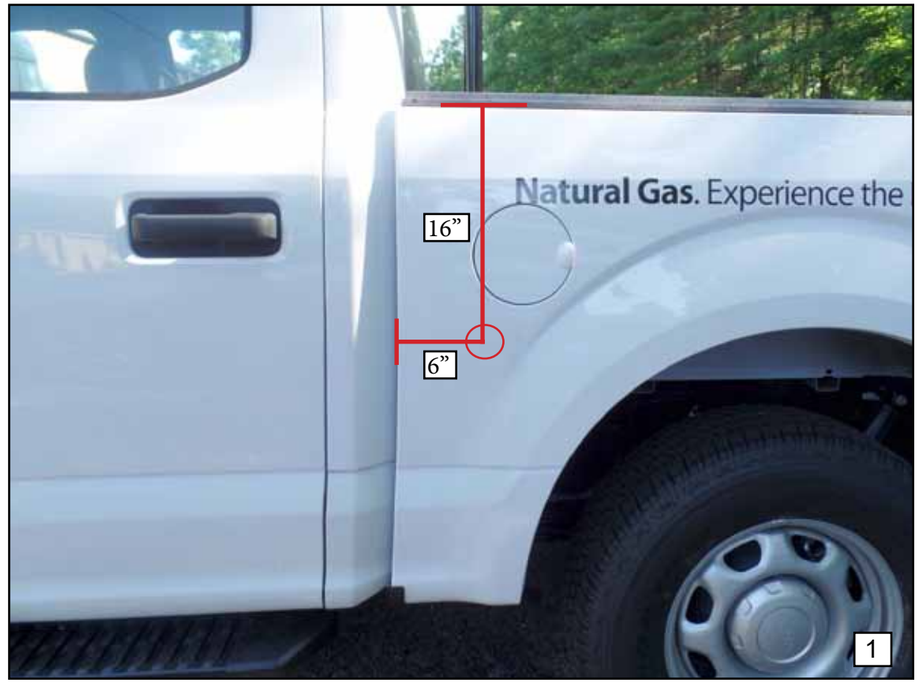
FUEL FILL INSTALLATION - SIDE MOUNT

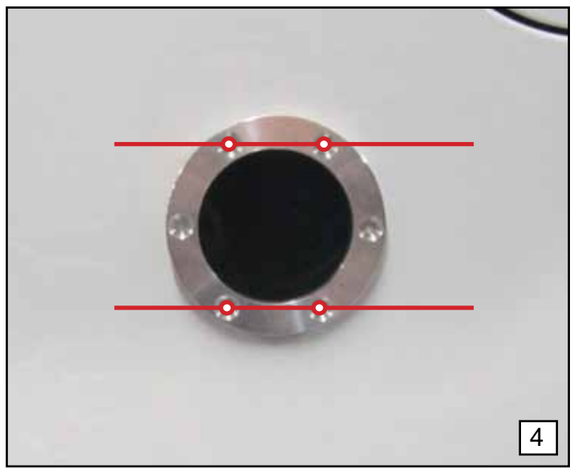
Prepping and Installing into Truck Bed - 5.5 FT SHORT BED

1. Measure 6” x 16” and mark the drill point.
2. Drill a 1/4” pilot hole first. Double check measurements. Then using a hole saw, drill a 2 1/2” hole.

Note: Use caution when drilling so as not to damage surrounding area.

3. Deburr and clean off any debris around the hole. Rust proof the hole to avoid corrosion.
4. Place the Fuel Fill Ring (FRR) into the hole and use it as a template and to mark the holes that will be used to secure the ring to the fuel fill cup housing. Position the ring exactly as shown.
5. Drill 3/16” holes the fuel fill ring. It is alright if you slightly enlarge the holes in the ring while drilling.





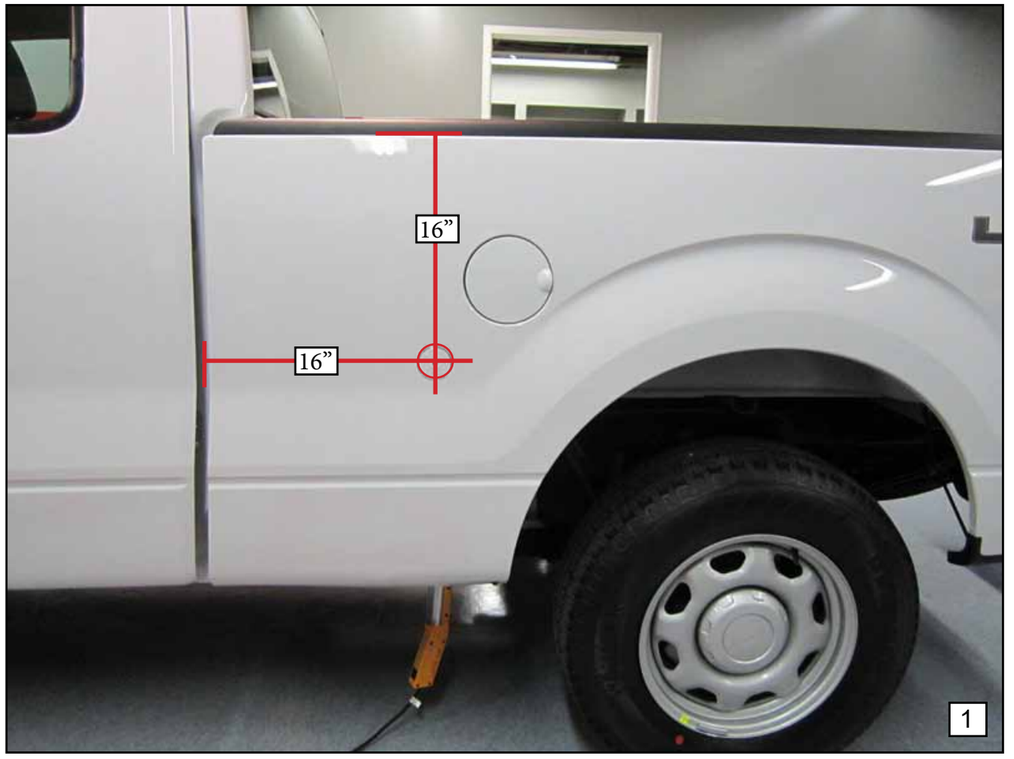
FUEL FILL INSTALLATION - SIDE MOUNT

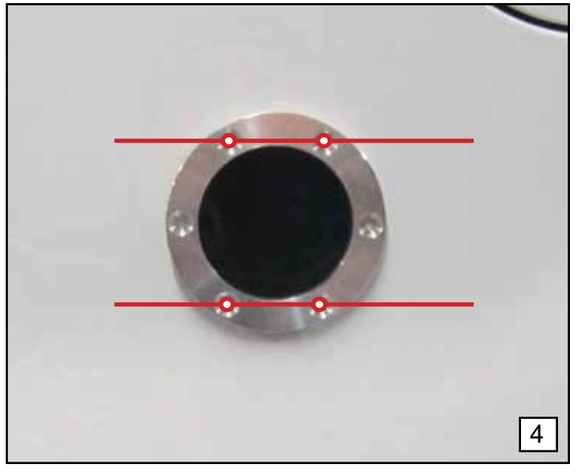
Prepping and Installing into Truck Bed - 6.5 FT SHORT BED

1. Measure 16” x 16” and mark the drill point.
2. Drill a 1/4” pilot hole first. Double check measurements. Then using a hole saw, drill a 2 1/2” hole.

Note: Use caution when drilling so as to not damage surrounding area.

3. Deburr and clean off any debris around the hole. Rust proof the hole to avoid corrosion.
4. Place the Fuel Fill Ring (FRR) into the hole and use it as a template and to mark the holes that will be used to secure the ring to the fuel fill cup housing. Position the ring exactly as shown.
5. Drill 3/16” holes the fuel fill ring. It is alright if you slightly enlarge the holes in the ring while drilling.





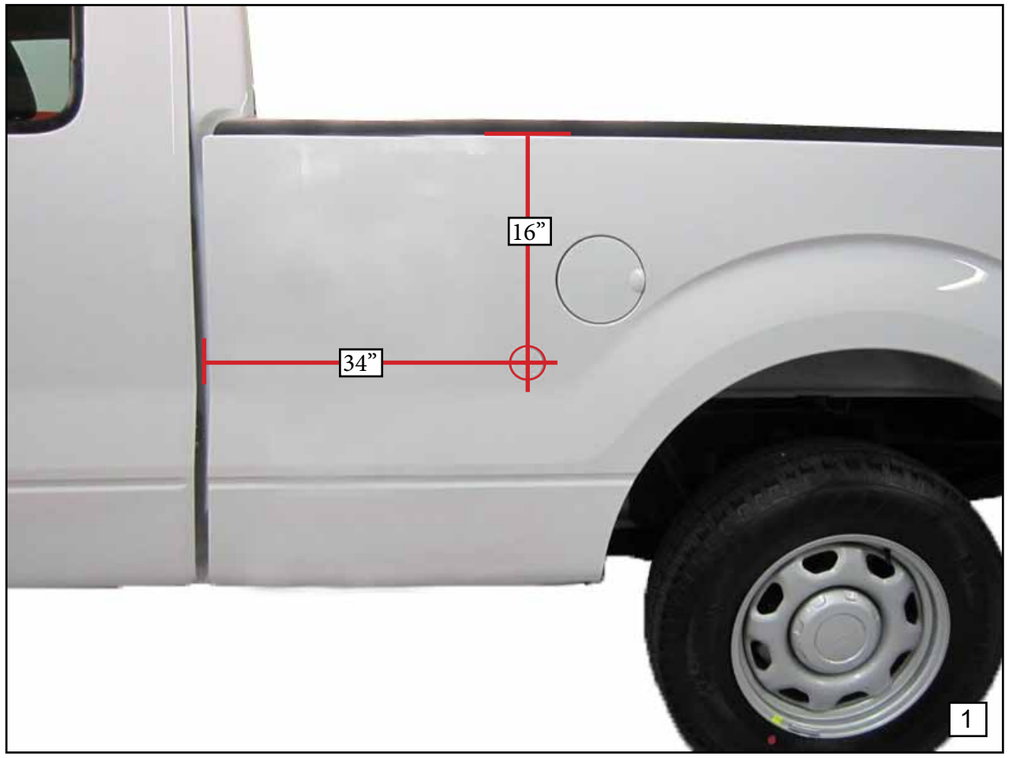
FUEL FILL INSTALLATION - SIDE MOUNT

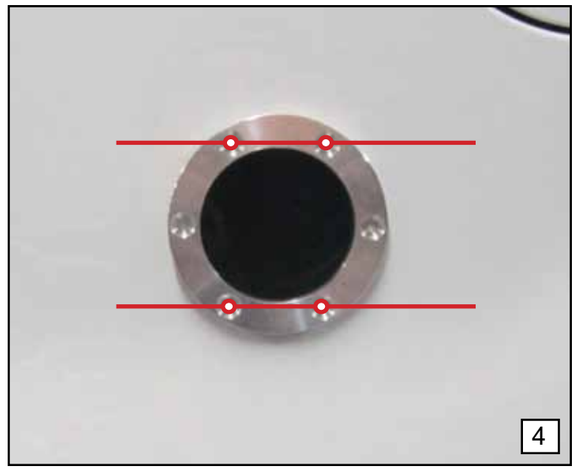
Prepping and Installing into Truck Bed - 8 FT LONG BED

1. Measure 34” (horizontal) x 16” (vertical) and mark the drill point.
2. Drill a 1/4” pilot hole first. Double check measurements. Then using a hole saw, drill a 2 1/2” hole.

Note: Use caution when drilling so as to not damage surrounding area.

3. Deburr and clean off any debris around the hole. Rust proof the hole to avoid corrosion.
4. Place the Fuel Fill Ring (FRR) into the hole and use it as a template and to mark the holes that will be used to secure the ring to the fuel fill cup housing. Position the ring exactly as shown.
5. Drill 3/16” holes the fuel fill ring. It is alright if you slightly enlarge the holes in the ring while drilling.

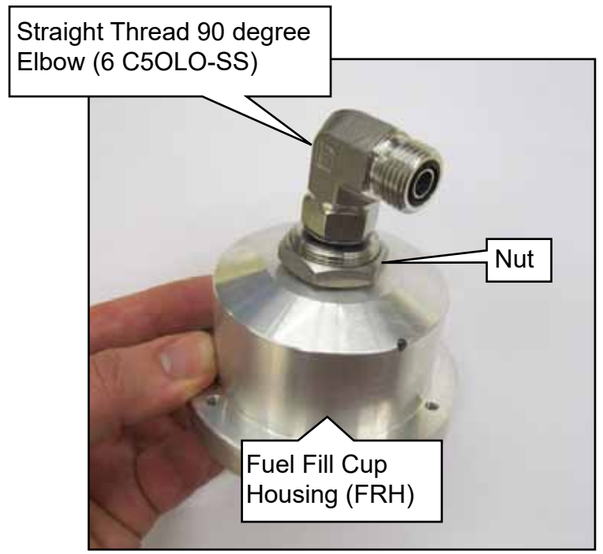




FUEL FILL INSTALLATION - SIDE MOUNT

Receptacle and Fitting Assembly

1. Obtain the fuel fill cup and joining components. Remove the rubber cap and the sandwich nut located on the back end off the receptacle. Rubber cap may be re-installed unto receptacle once the fuel fill installation is complete.
2. Begin with sandwiching the receptacle through fuel fill cup housing (FRH). Place the receptacle nut on the back end of the fuel fill cup housing.
3. Tighten and torque the receptacle and nut to 35 ft-lbs.
4. Combine the straight thread 90 degree elbow (6 C5OLO-SS) to the back of the receptacle. Torque to 35 ft-lbs.

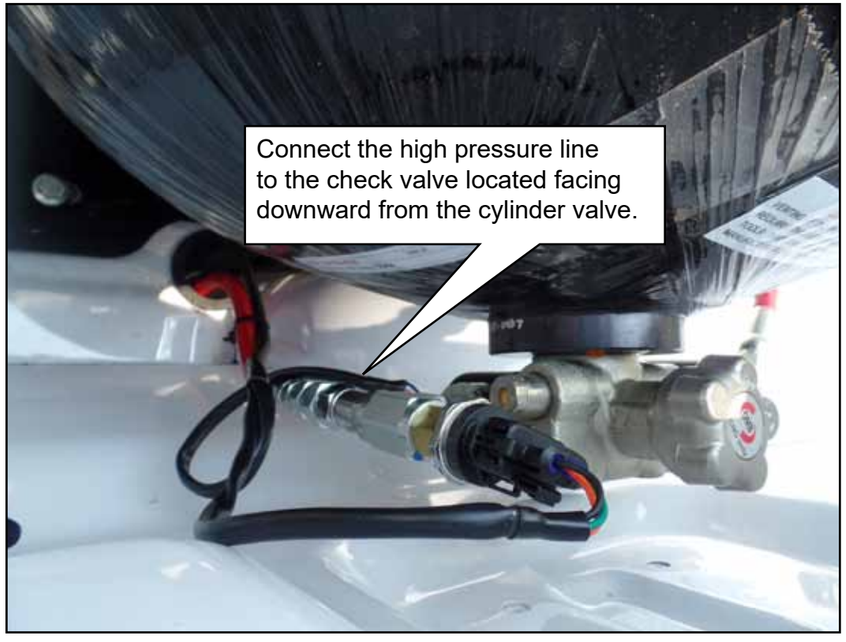


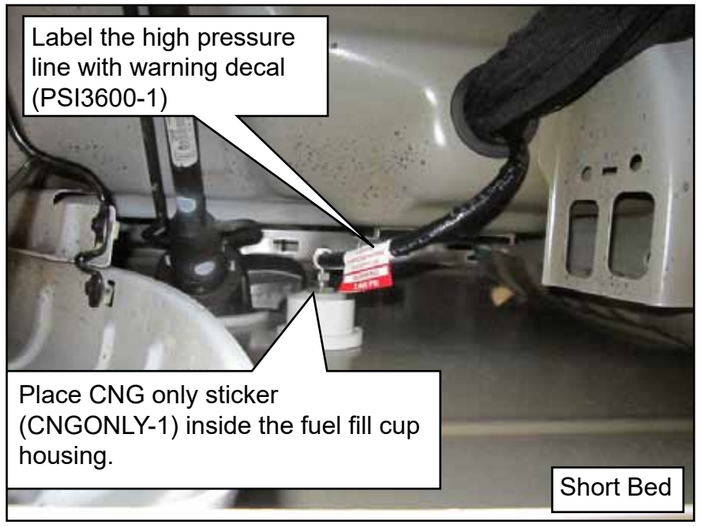
FUEL FILL INSTALLATION - SIDE MOUNT

Securing and Making the Connection Points

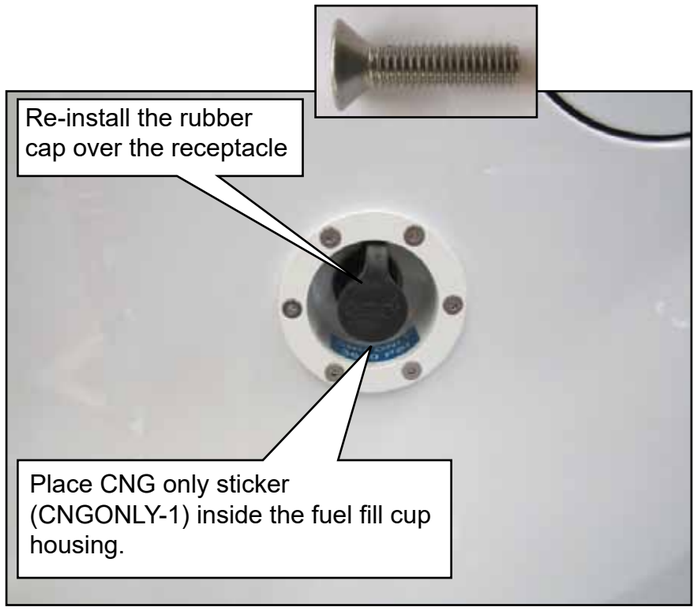
5. Install the fuel fill cup housing with fitting behind the truck bed wall. Secure the cup housing from the front using the fuel fill housing screws. The open end of the fitting must be facing directly down. Tighten.
6. SHORT BED - Connect the 24” high pressure hose (HPH24) to the receptacle and check valve located within the bed. Tighten to 30-35 ft-lbs.
7. LONG BED 24 GGE - Connect the 44” high pressure hose (HPH44) to the receptacle and check valve located within the bed. Tighten each end to 30-35 ft-lbs. Secure the hose to the channel with a 5/8 p-clamp (PC5/8) and a 1” self tapping screw (135-H).
   Connect rear harness to the sensor when it has been ran and secured. Zip to the fuel fill hose.

Note: When sandwiching the fuel fill ring to the fuel fill cup housing, you must secure the bolts in a criss cross method in the same manor as securing a wheel to the vehicle when changing a spare tire.





Fuel fill ring screw (182)



Used with the long bed

Self tapping screw (135-H)

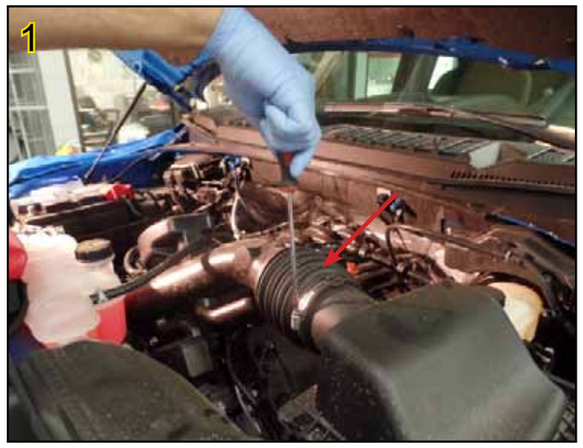
5/8” P-clamp (PC5/8)

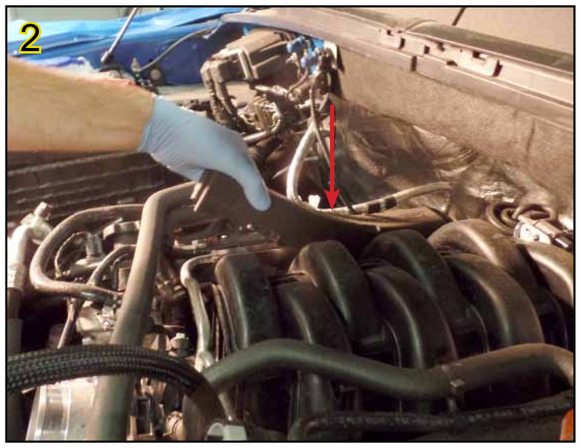
LOW PRESSURE

1. Remove air intake hose/tube.
2. Remove foam insulation.
3. Disconnect OEM connectors from the injectors.

Separate instructions on page 18 for the Dedicated CNG fuel rail installation.

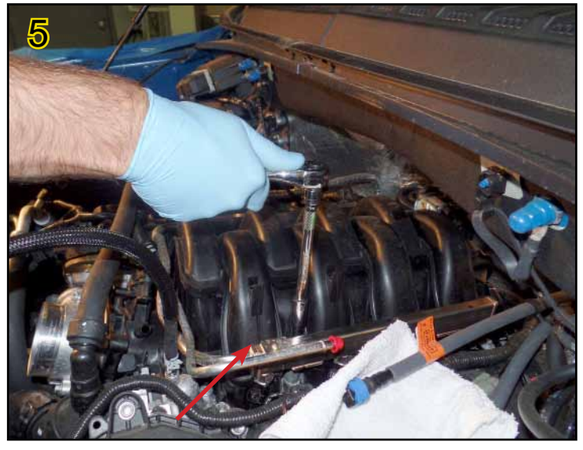
DO NOT USE POWER TOOLS!

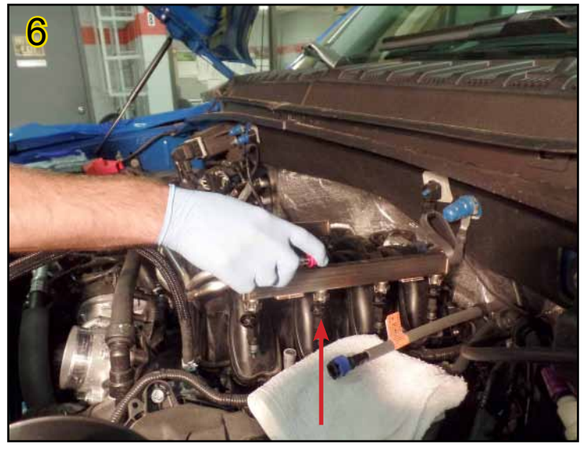




LOW PRESSURE

4. Safely disconnect OEM gasoline line. Plug the line.
   CAUTION: Fuel line may be under pressure.
5. Remove and discard the four OEM fuel rail bolts.
6. Remove OEM fuel rails.
   Note: Rails contain gasoline.
7. Retrieve the CNG fuel rails and connect both rails with the 16” low pressure hose. Torque each end to 30-35 ft-lbs.

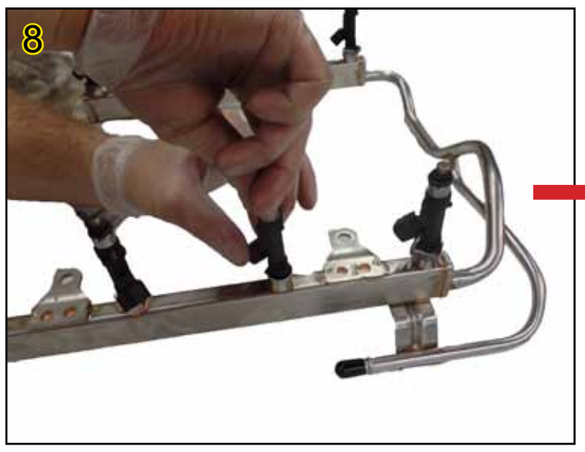


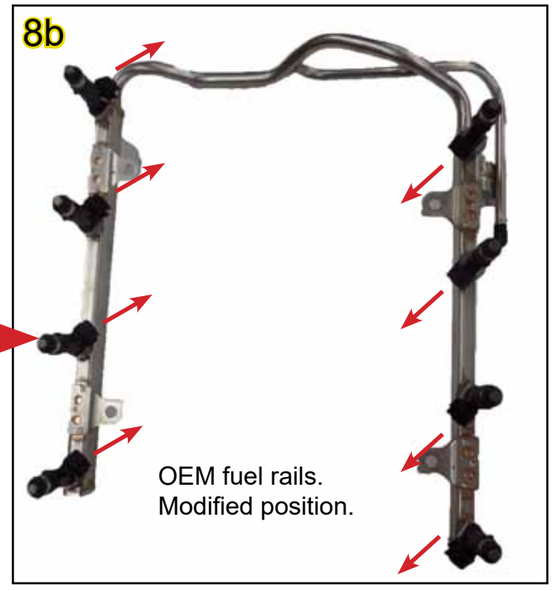


LOW PRESSURE

8. Remove injector clips from the OEM rails. Rotate the injectors 180 degrees. Re-install clips.
9. Remove and discard four OEM manifold bolts.
   Two from front (passenger side), two from the rear (driver side)

VERIFY ALL OEM INJECTOR CLIPS ARE CLIPPED IN PROPERLY TO THE FUEL RAILS. IF NOT POSITIONED CORRECTLY, THIS WILL CAUSE A FUEL LEAK.





Passenger side

Driver side

LOW PRESSURE

10. Install CNG and OEM fuel rail assembly (same location as where OEM injectors fit into).
    Secure with kit bolts and spacers.
    Torque to 89 in-lbs.
11. Connect OEM and CNG injectors to OEM harness connectors and to the main CNG harness (once harness is installed).
    Connect CNG harness to the CNG low pressure sensor.
12. Connect low pressure hose to the CNG fuel rails (once the hose is installed).

END

LOW PRESSURE - DEDICATED

Follow steps 1-7 in the low pressure install section of this manual. Then continue with the following steps:

1. Remove OEM fuel rails and discard. Save OEM bolts for reuse.
   Note: Rails contain gasoline.
2. Retrieve the CNG fuel rails and join both rails with the 11 1/4" low pressure hose. Torque each end to 30-35 ft-lbs.
3. Install CNG fuel rail assembly (same location as OEM injectors fit into).
   Secure with four OEM bolts.
   Torque to 89 in-lbs.
4. Connect the kit jumpers to the OEM injector connectors and to the CNG injectors.
5. Connect CNG harness to CNG low pressure sensor.
6. Connect low pressure hose (once installed) to the fuel rail.

Dedicated CNG Fuel Rails

Jumper

END

WIRING - AFCM

1. Assemble AFCM bracket.
   Place U-nuts on each end.
   Attach AFCM.
   Secure with 3/4” bolts.
   Wrench tighten.
2. Use AFCM assembly as a template. Center the assembly between the fuel rails, go as high as possible. Mark three holes.
3. Drill 25/64” holes. **CAUTION: Place something below to collect debris.** Deburr and rust proof.
4. Install three rivet nuts. (Rivet gun not included)


RIVET NUT GUN NOT INCLUDED


1


1b

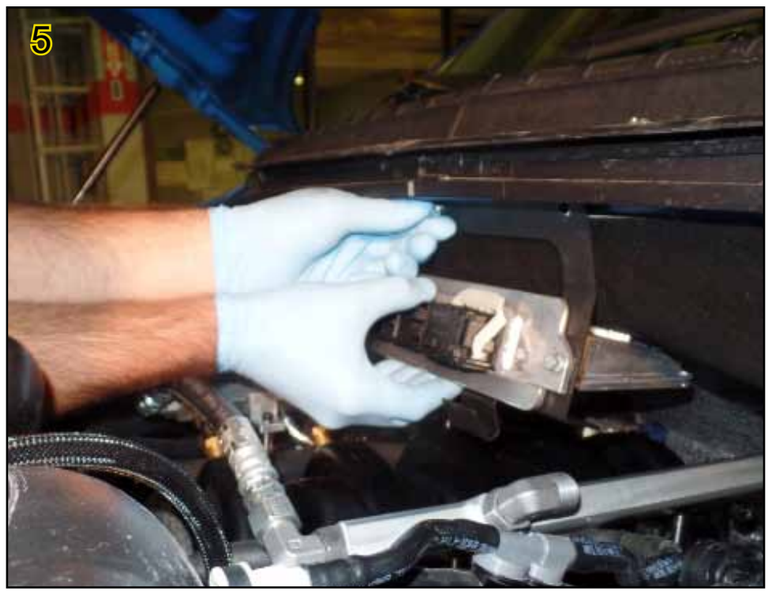

2


3


4

WIRING - AFCM

5. Install AFCM assembly.
   Secure with three 3/4” bolts.
   Wrench tighten.
6. Attach fuse box in location shown after CNG harness routing.



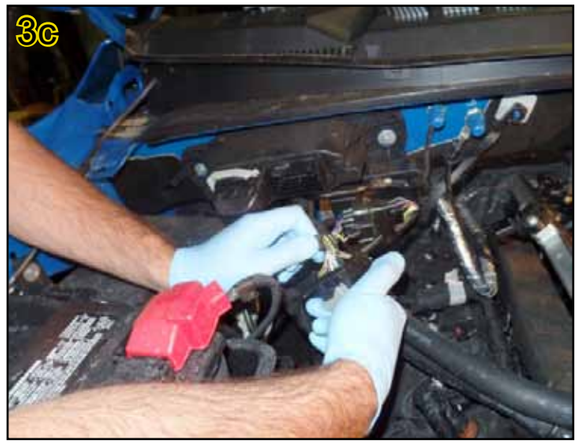
WIRING - CAN BUS

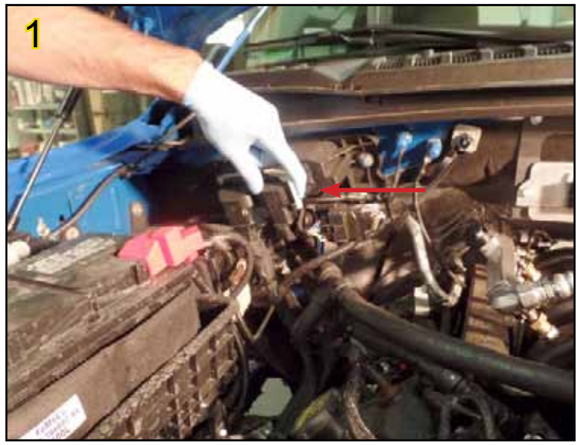
1. Remove PCM connector **A** and **B**.
2. Remove protective tape to expose OEM wires.
3. Remove gray locking tabs to gain access to the terminals.
4. Retrieve and refer to the BI-FUEL **PIN-OUT** *(included with system).*

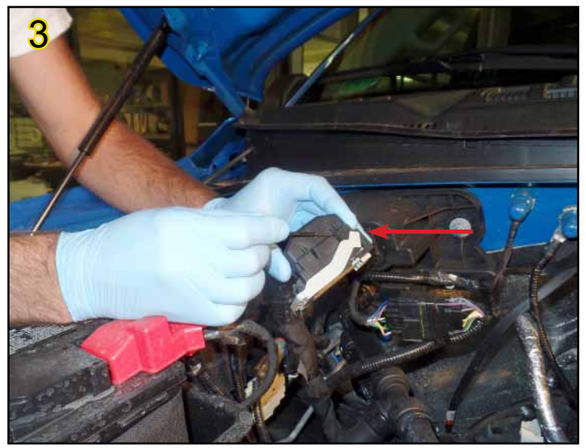

CAN Bus Harness

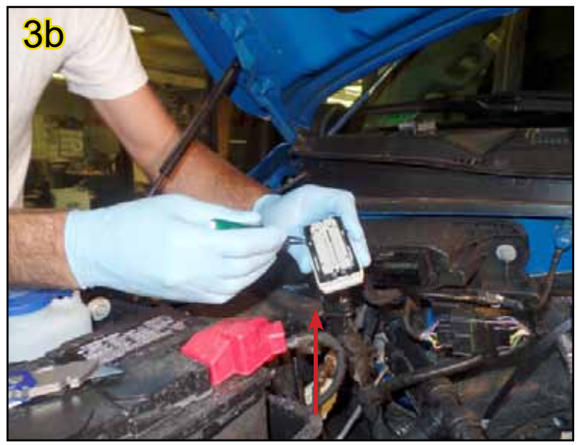
USE THE PIN OUT DIAGRAM.

PULL ONE WIRE AT A TIME!







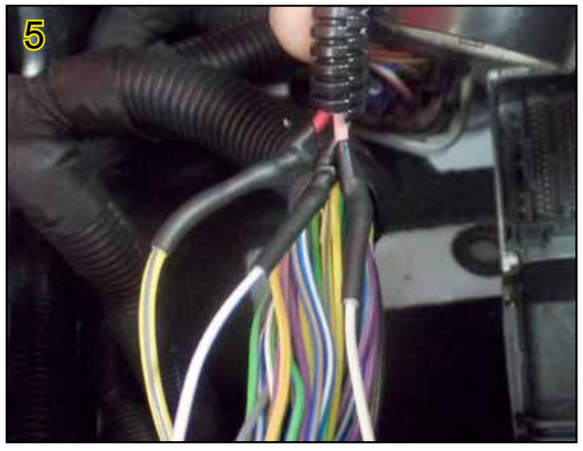


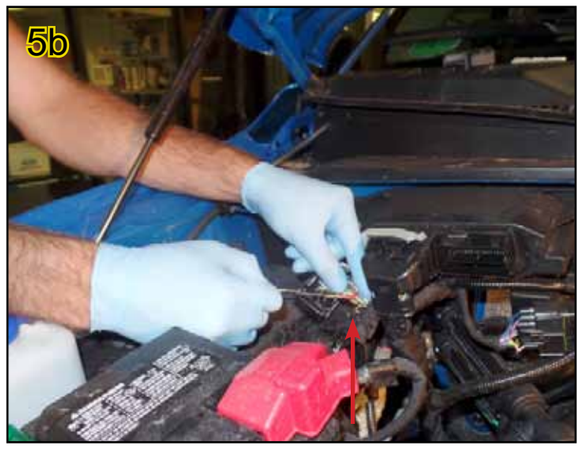
WIRING - CAN BUS

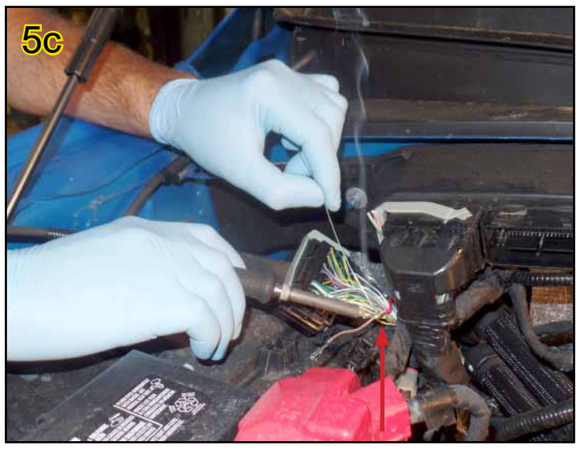
5. Solder to the five OEM wires accordingly. Place shrink tube on each end before soldering.

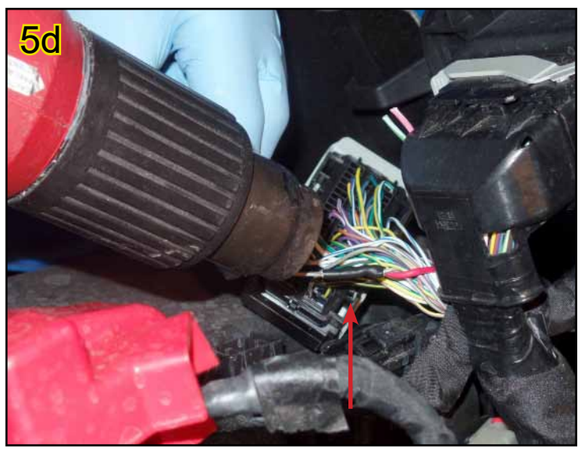
   IMPORTANT: Perform this task ONE WIRE AT A TIME!

6. Re-install the protective covers and apply electric tape on any exposed wires.
7. Re-install gray locking tab.
8. Re-install PCM connectors.
9. Reconnect all OEM harnesses.
10. Connect CAN Bus harness with CNG Main Harness.







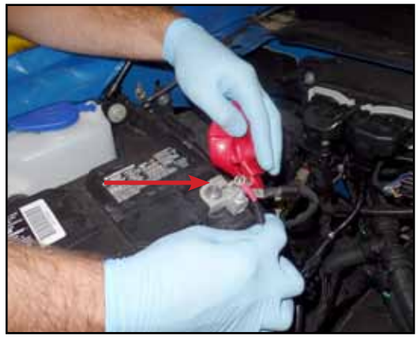


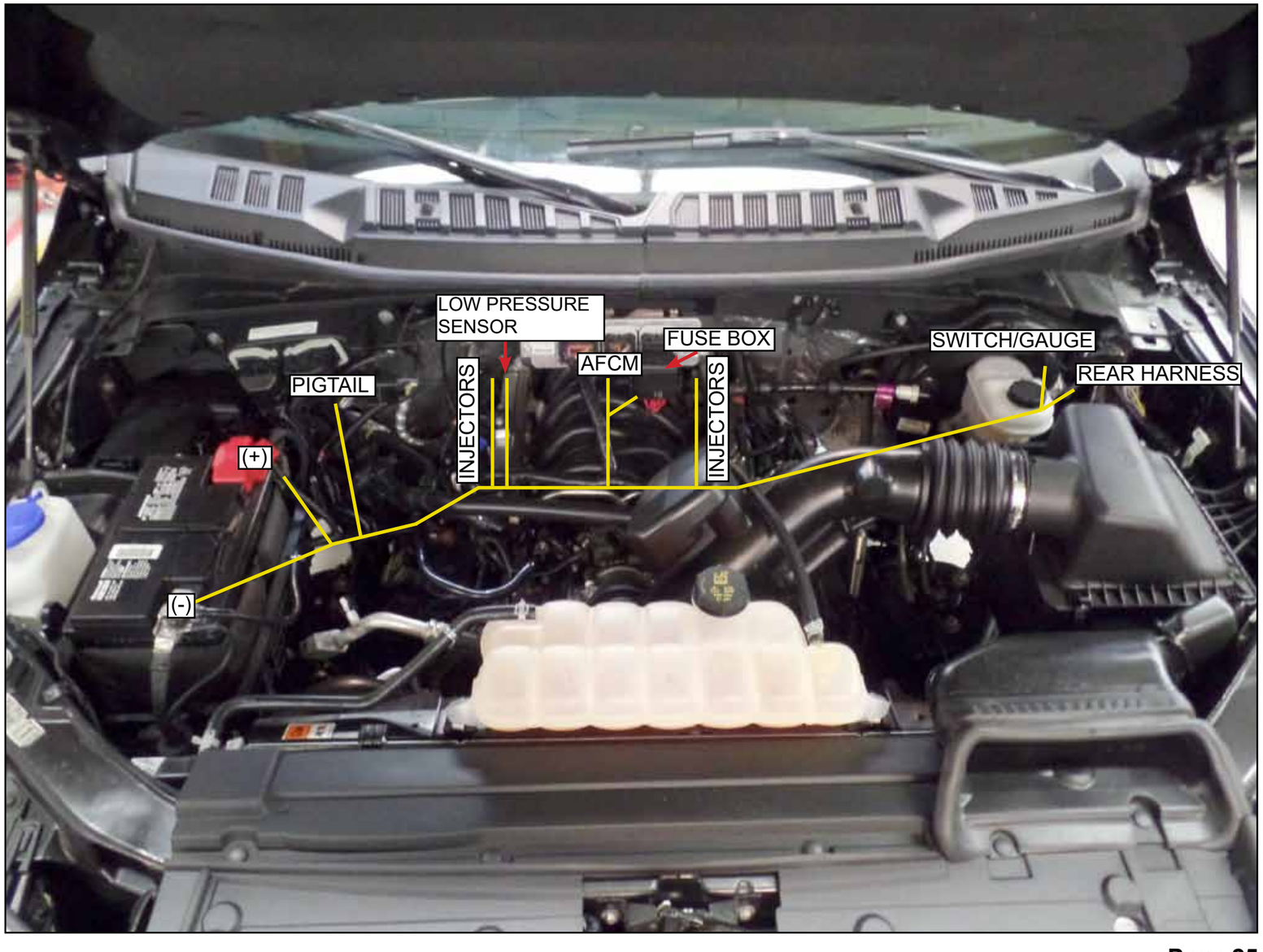
WIRING - CNG HARNESS

Route as shown and zip tie every 1 - 1 1/2 feet, or loose areas.

Dedicated ONLY: Verify that the jumpers connect CNG injectors to OEM connectors (once the fuel rails have been installed).


Jumper





SWITCH / GAUGE ROUTING

1. Below the steering column, mark 3 sides of the insulation and cut to accommodate a 7/8” hole.
   This hole will be used for the harness leading into the engine compartment.
2. Drill a 7/8” hole. Rust proof and deburr.
3. Feed the switch/gauge harness through the hole and into the engine compartment. Secure the harness grommet.
4. Attached to the main CNG harness

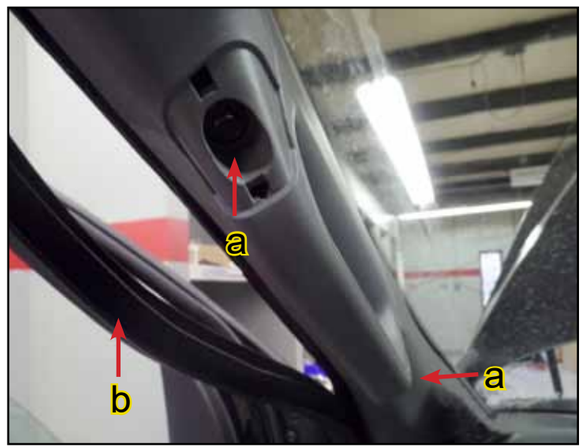
Perform ONLY the fuel gauge portion of this install for a DEDICATED CNG system.

SWITCH / GAUGE ROUTING

PREPARATION: REMOVE SHOWN PLASTIC PANELS, COVERS, AND CAPS FIRST. See below.

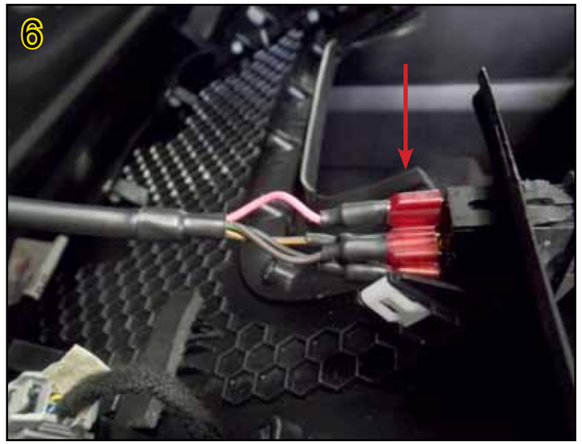
a. Remove the caps and unscrew the OEM bolts, save for reuse.
b. Loosen the rubber strip and remove the driver side A piller.
c. Detach top of the control panel without removing it.
(OPTIONAL) Remove control panel underneath the steering wheel.
Disconnect OEM wiring.
Remove four OEM bolts.

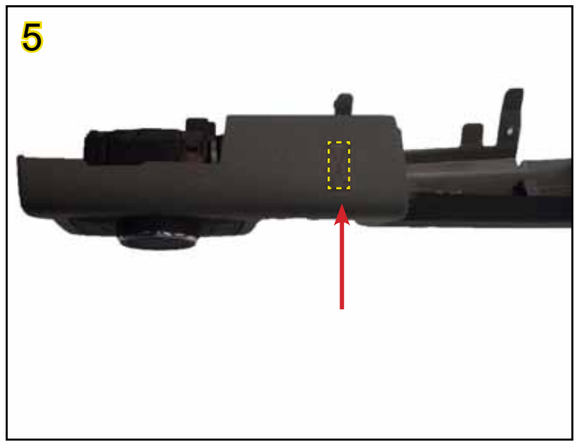
NOTE: The fuel gauge portion of this install is a standard install. Refer to the following section for the optional center console fuel gauge install.

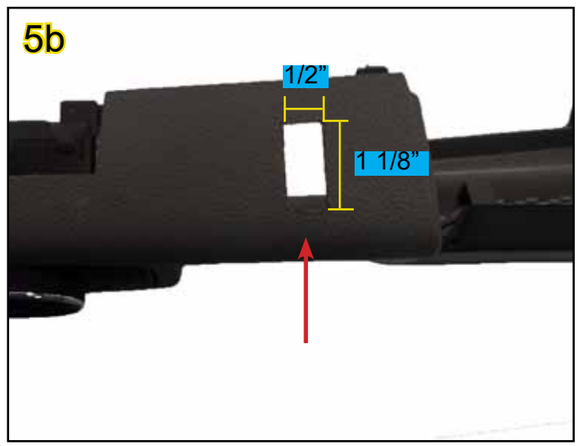


SWITCH / GAUGE ROUTING

5. Use switch template and cut out the area for the switch.
6. Run the switch/gauge harness with switch connectors through the precut whole and the gauge harness upwards A pillar. Be sure to zip tie any loose wiring to the OEM wiring (trim the zip ties for a clean installation).
7. Re-install panel if previously removed.
   Reconnect all OEM connections.
   Install switch and use the pin out sheet to connect harness to switch.

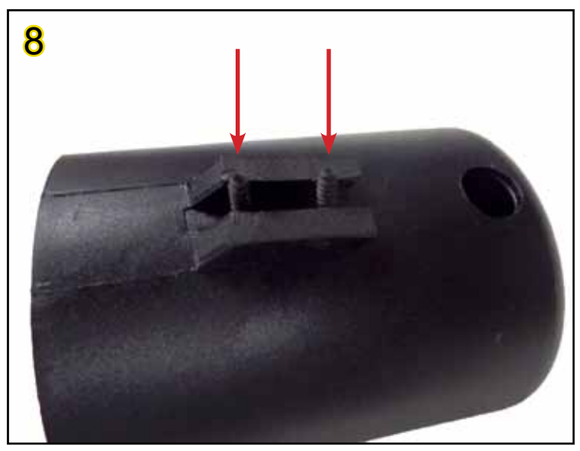






SWITCH / GAUGE ROUTING

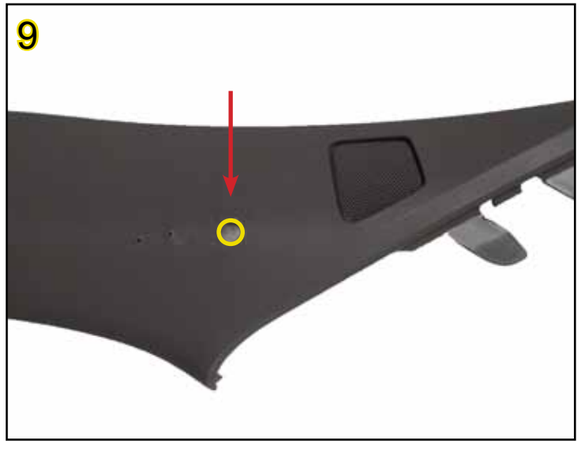
8. Modify the gauge pod.
Using a drill, drill two small holes to fit pod kit screws.
Drill a small hole directly above the two holes on modified pod base. This will be used to screw in the pod to the A pillar.

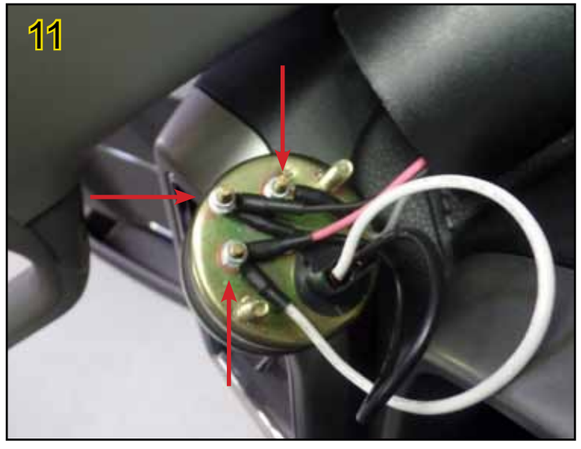


SWITCH / GAUGE ROUTING

9. Modify the A pillar by drilling a 3/8” hole in location shown.
10. Using the two screws included with the pod kit, secure the pod to the panel. Use the pilot hole and a screw driver to screw in the two screws through the pod and into the panel to secure. Ensure the pod (3/8” hole) lines up with the hole on the panel.
    Run the gauge wire through and into the pod.
11. Fit the rubber o-ring around the gauge (included with gauge kit).
    Using the pin out, connect the wires to the gauge.
    Caution: Do not overtighten the nuts after connecting harness wires to the gauge.
12. Fit the gauge inside the pod, adjust as needed to ensure clear even visibility.
    Re-install column panel and secure at the handle with the two OEM bolts.
    Re-install both handle caps.
13. Re-install and reattach all OEM panels. Verify all OEM harnesses are reconnected.
    See finished product.

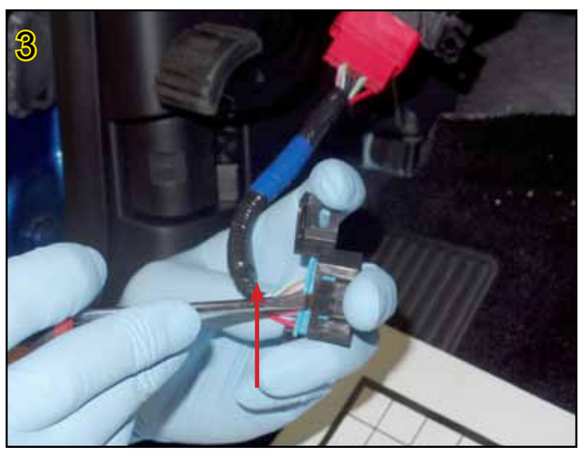
END

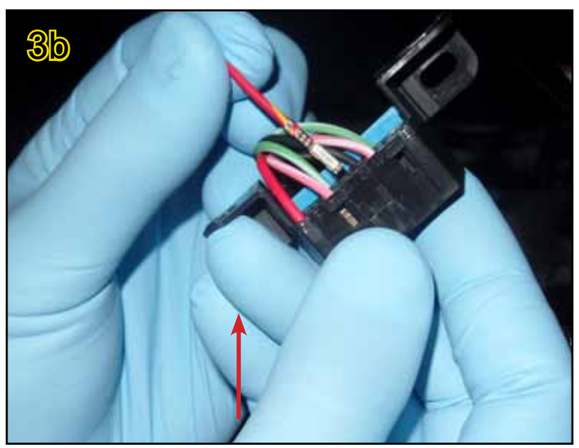




OBD PIN

1. Remove OEM OBD Connector.
2. Connect “Passthru” harness to OEM OBD connector.
   Red to Black.
3. Remove blue pin retainer.
   Plug red/yellow wire into the passthru connector (black side), pin 13.
4. Re-install retainer cap.
5. Install passthru into OEM OBD location.





SWITCH / GAUGE ROUTING - CONSOLE MOUNT

Gauge pod instructions:

A. Use the included gauge pod kit. Apply sticky adhesive to the pod base and mount in the location shown.
   Secure with two screws.
B. Drill a 3/8” hole underneath the pod mount and fit the gauge harness through the hole and into the pod.
C. Fit the gauge with the rubber o-ring and connect harness to the gauge.
D. Using the pin out, connect gauge harness to the gauge.
E. Fit the gauge into the pod and adjust as needed for clear visibility..

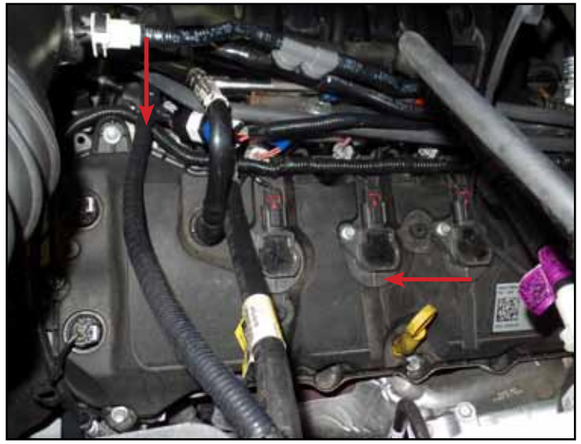
END

Secure pod with two screws in the location shown.

LOW PRESSURE HOSE ROUTING / QUARTER TURN VALVE

1. Route along the frame as shown. Connect one end to the regulator and other end to the fuel rail. Tighten each end to 35 ft-lbs. Verify proper routing first before securing.
2. Install 5/16” short U-nut and secure quarter turn valve assembly with a 5/16” bolt.
3. Secure hose where shown with 13/16” p-clamp.
   -First install 1/4in-20 aluminum poly nut and 1/4in-20 x 3/4” bolts.
   -Note: Use location towards the rear of the vehicle to secure both p-clamps used on low pressure hose and coolant hoses.

(see next page for additional pictures)

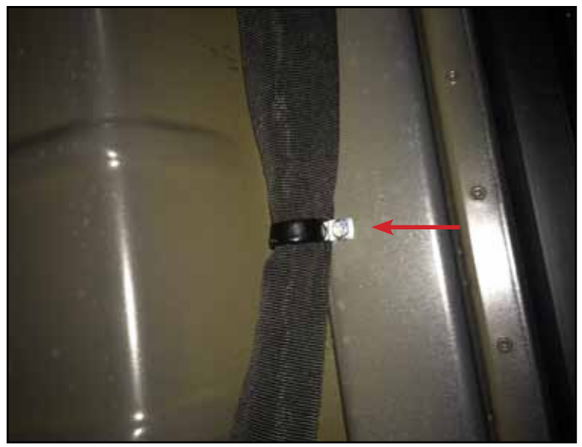


LOW PRESSURE HOSE ROUTING / QUARTER TURN VALVE

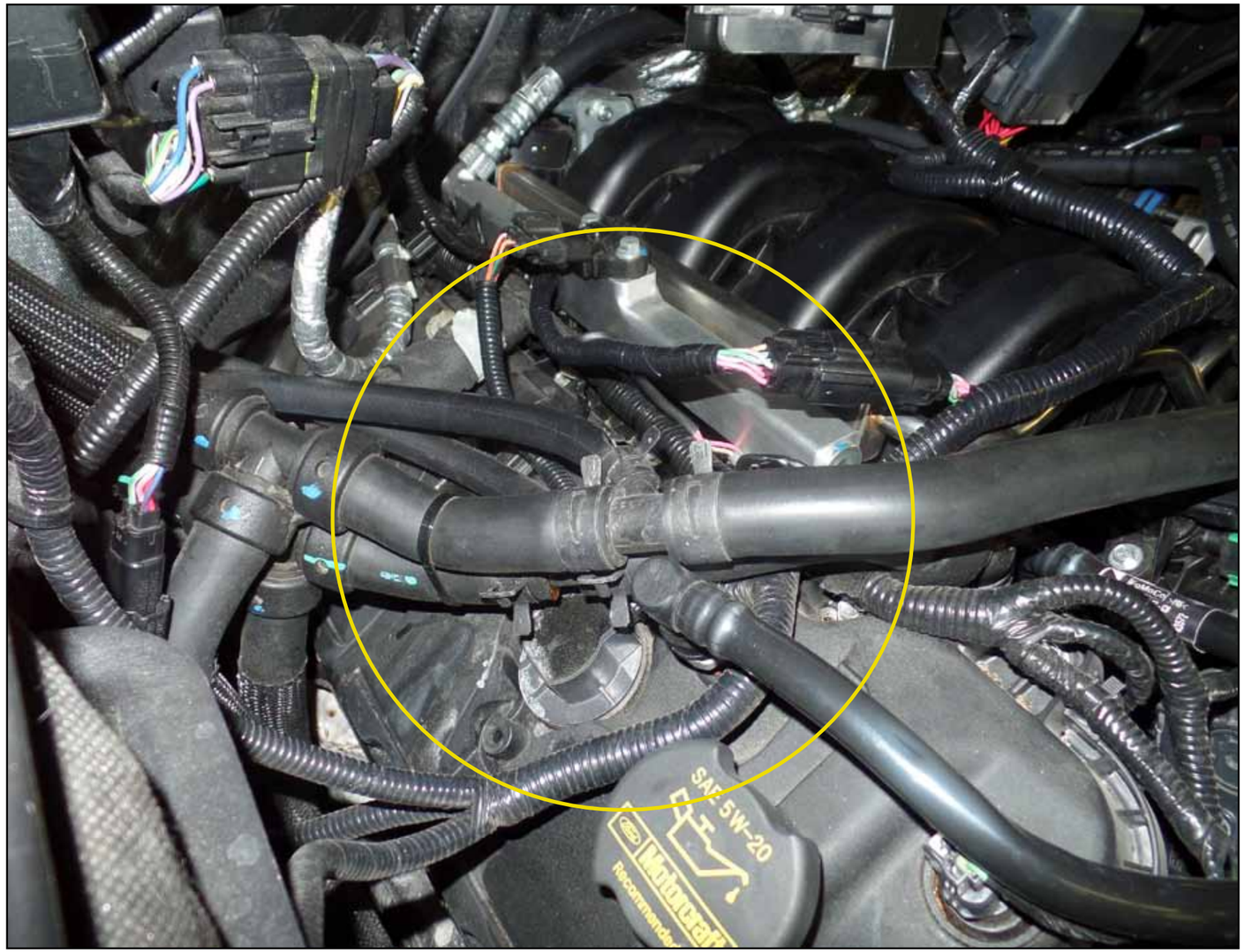
Continued...

COOLANT HOSE ROUTING

1. Route from high pressure area under the bed and follow beneath the cab and onto the passenger side.
   Secure with 1 1/8” p-clamps and 1/4in-20 x 3/4 bolts.
2. Connect to the regulator at the rear and tap into OEM coolant lines at the front (NOTE: Some coolant fluid escape. Ensure to top off the fluid after installation).
   Y side facing to the rear.
   Secure with 3/4” and 17mm hose clamps.
   (see next page for a close up).



COOLANT HOSE ROUTING



CLOSE UP

REAR HARNESS ROUTING

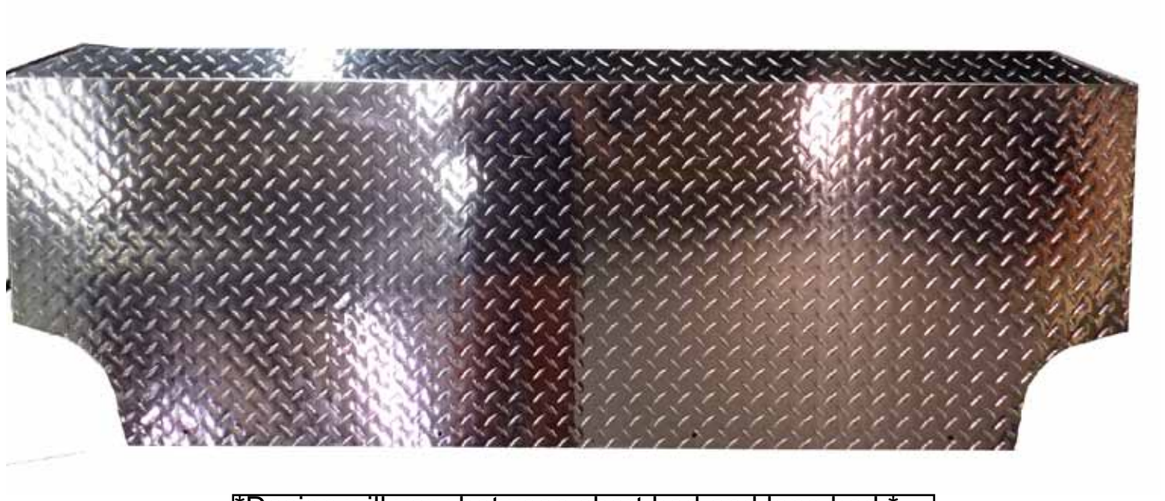
1. Route rear harness along same path as the low pressure hose and zip any slack in the wire. Connect harness to sensor and solenoid(s).

CYLINDER COVER

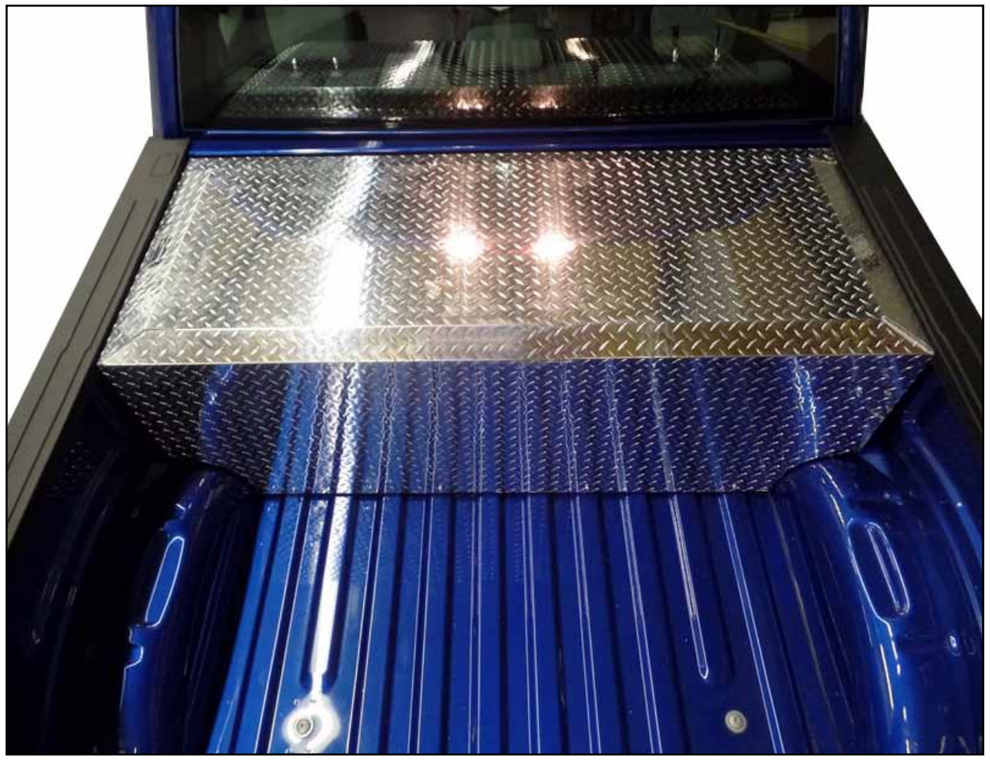
1. Install the toolbox over the cylinder.
   Secure toolbox to the truck bed with four hooks (two on each side) and bolts supplied with kit.
2. Place four u-nuts (333) onto rear cylinder base plate.
   Drill four holes on toolbox lip and place four u-nuts (333).
3. Place cover decal 

on the inside of the skirt. Decal must be clearly visible.
   Place cover decal inside the cylinder cover and one on cylinder strap closest to the valve.
4. Place skirt into place and secure with eight 1/4-20 x 1” bolts (334).
5. Center and place Altech Eco logo decal on toolbox.

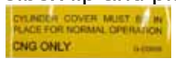
NOTE: Perform a leak check first before placing cover!!



Design will vary between short bed and long bed.



CYLINDER COVER - TOOL BOX OPTION

1. Install the toolbox over the cylinder.
   Secure toolbox to the truck bed with four hooks (two on each side) and bolts supplied with kit.
2. Place four u-nuts (333) onto rear cylinder base plate.
   Drill four holes on toolbox lip and place four u-nuts (333).
3. Place cover decal 

on the inside of the skirt. Decal must be clearly visible.
   Place cover decal inside the cylinder cover and one on cylinder strap closest to the valve.
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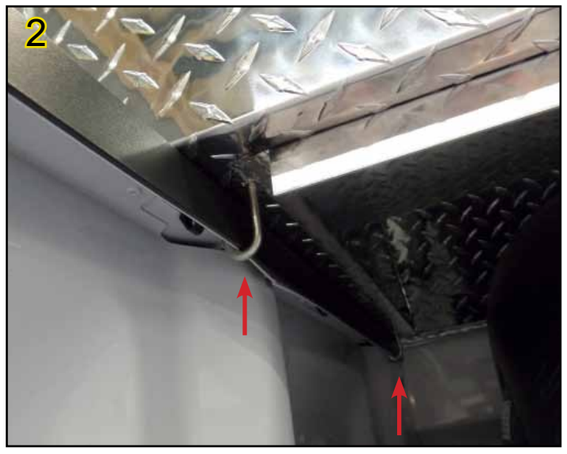
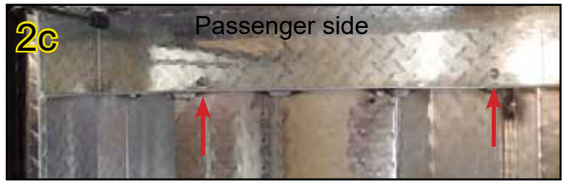
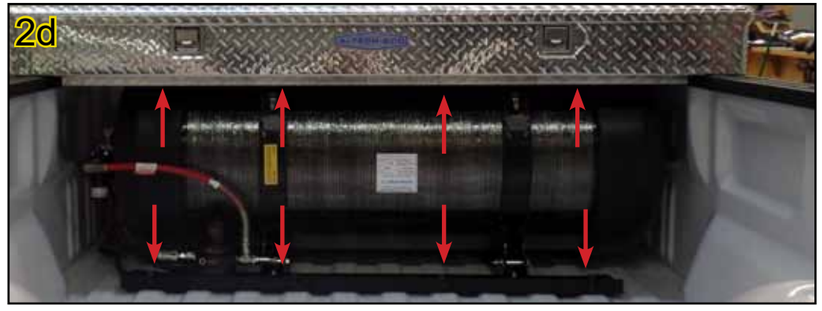
5. Center and place Altech Eco logo decal on toolbox.

NOTE: Perform a leak check first before placing cover!!







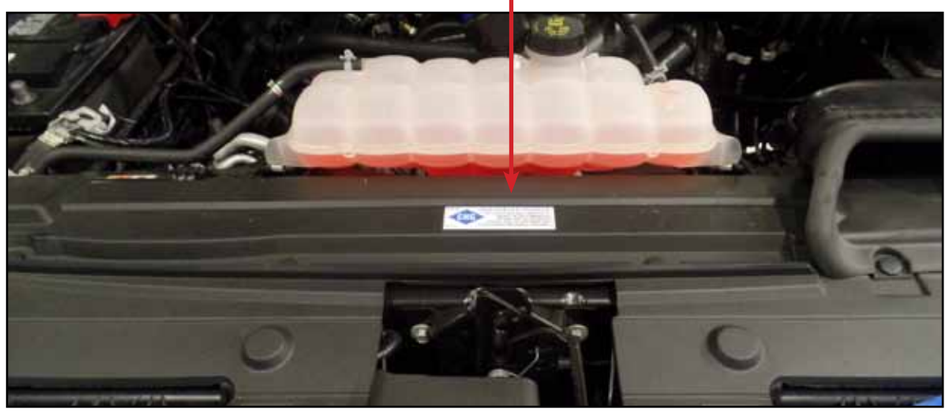
DECAL PLACEMENT

Remove the word “E-85”

Remove

DECAL PLACEMENT

CNG ONLY
3600 PSI



NOTE: All high pressure hoses must be labeled with a high pressure sticker.

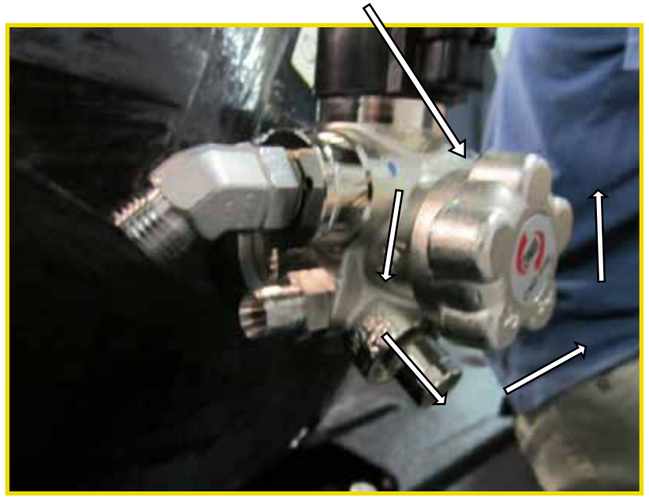
LEAK CHECKING THE SYSTEM

After the ALTECH-ECO CNG system has been installed on the vehicle, all fuel connections, fuel rails and injectors must be checked for leaks. Also check the overall installation of wiring, zip ties and components to make sure they are not loose or hanging.
Tools:

- Combustible Gas Leak Detector TPI 721 (Davis Instruments)
- Soapy Water Solution or Liquid Leak Check Solution

1. Double check and verify wiring is correct and secure with nothing hanging loose. Check that zip ties are snipped properly to avoid potential injury.
2. Check and verify that all installed hoses and fittings are not loose and are secure per torque specifications.
3. Close the valve by turning clockwise and pressurize the system to 3600 psi.
4. Leak test using a methane detector or bubble soap.
   a. PASS: Continue to step 5.
   b. FAIL: Depressurize the system and correct the issue before continuing.
5. Open the manual valve on the fuel tank. Using your hand, rotate the manual valve counter clockwise until fully open. Then close the valve back 1/4 turn (this is will help avoid the valve sticking in the future).
6. Fill the tank with CNG.
7. Pressurize the system by turning the ignition on but do not start the vehicle (3 key cycles). This opens the solenoid and fills the lines.
8. Turn the ignition off, then back on and start the engine. This is to pressurize the lines again. While the engine is running, perform a leak test by using a methane detector, bubble soap, or other appropriate means.
   a. PASS: Complete required paper work and notify your supervisor.
   b. FAIL: Turn off the ignition and manually shut-off on the cylinder (tank) valve. Depressurize the system and correct any issues. After all corrections have been made, open the manual shut-off valve and start the engine. Run the leak test again. For un-repairable issues, notify appropriate personnel for further instructions.
9. Third party installers: After completing the final checklist, it is required that an original or a copy of the entire completed checklist be sent to ALTECH-ECO. Failure to do so will void the warranty and may result in suspension of installer's license. For additional information, contact your supervisor.

Open manual valve counter-clockwise until fully open. Then a 1/4 turn back.



Contact Information

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