



Tight Fit In-Tank Conversion Module

Installation Guide

v. 2.1

Overview

The purpose of this manual is to guide you through the installation of the Aces Tight-Fit In-Tank Conversion Module. The system is designed to provide an in-tank fuel pump compatible with almost any fuel tank, especially tanks or cells with limited space.

Critical Warnings

 **WARNING:** Failure to follow these instructions may result in an improper installation, which could cause serious injury, death, or property damage. Improper installation or misuse of this Aces product will void all warranties.

 **WARNING:** Installation, adjustment, and repair should only be performed by a trained mechanic with adequate experience in fuel and automotive electrical systems.

 **WARNING:** Aces EFI systems consist of multiple sophisticated components. Failure of a single component does not justify a warranty claim for the entire system. Individual components are available for warranty replacement.

 **WARNING:** To preserve the warranty, these installation instructions must be read and followed thoroughly. Failure to follow instructions can void the warranty and may result in serious injury or property damage.

 **WARNING:** Fuel vapors are heavier than air and can accumulate in low areas, where they may be ignited by sparks or flames, resulting in property damage, injury, or death. Always prevent fuel spills to eliminate this risk.

 **WARNING:** Work must be performed in a well-ventilated area. Do not smoke or have open flames nearby, as gasoline vapors are highly flammable and can cause explosions.

 **WARNING:** Aces EFI systems offer extensive adjustability, and proper setup and calibration are essential for safe operation. If you are not comfortable with engine fundamentals and EFI tuning, we recommend having the system installed and calibrated by an Aces authorized installer or qualified tuning shop. Our technical support team is also available at acesefi.com or +1 (423) 590-2237 to help answer basic installation, setup, and troubleshooting questions.

AF4015 Kit Contents

1. (1) Pump Main Assembly
2. (1) C-Ring (Red)
3. (1) Foam Gasket
4. (1) Return Tube
5. (1) Outlet Tube
6. (1) Submersible Hose
7. (2) Fuel Hose Clamps
8. (2) Electrical connectors w/ boots
9. (6) M5x35mm Countersunk Screws, (6) MS Keps Nuts, (6) O-Ring Seals
10. (2) Tie Wraps
11. (1) Filter Sock V1
12. (1) Filter Sock V2
13. (1) 255 LPH Fuel Pump

Recommended Tools

- Slow speed Drill
- 2-1/8" diameter hole saw
- Round fine file
- Shop vacuum
- Screwdriver: Phillips
- Screwdriver: Flathead
- 3/8" Socket and 1/4" Drive ratchet
- 5/16" Diameter Drill Bit (Optional)

Special Instructions

 **WARNING:** Before beginning installation, disconnect the negative battery terminal. Wear proper eye protection and keep a fire extinguisher nearby. Work only with a clean fuel tank, free of combustible fumes, in a well-ventilated area clear of fire hazards. Gasoline fumes are toxic and highly flammable; drilling and grinding are potential ignition sources. For the safest installation, use a new fuel tank or have the existing tank professionally cleaned. Failure to follow these warnings may result in injury or death.

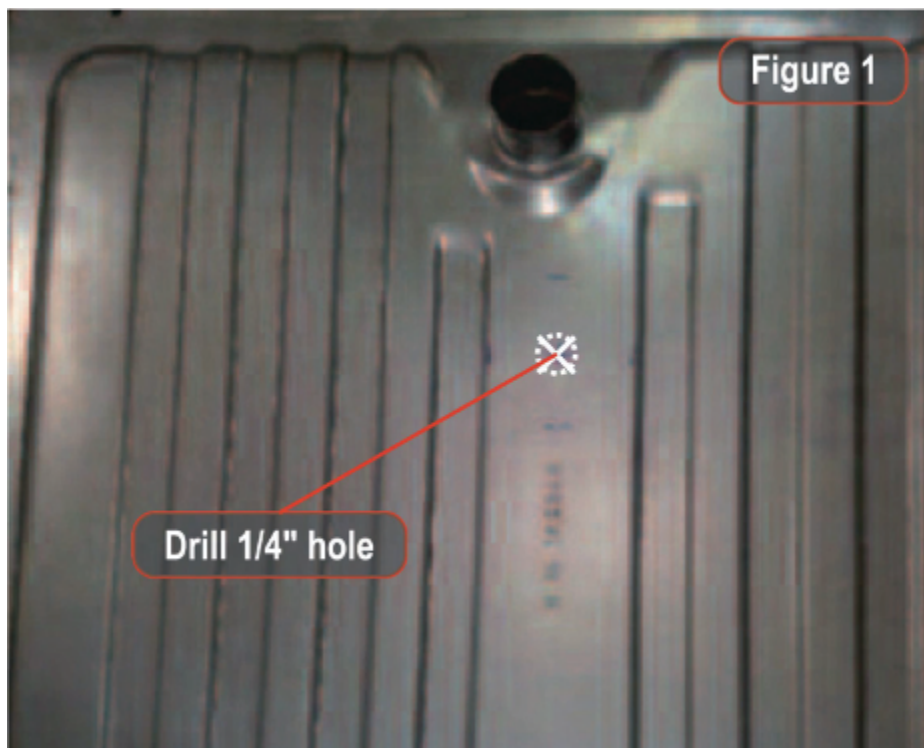
- To maximize the service life of your pump, keep the fuel tank filled above $\frac{1}{8}$ capacity at all times during use.
- If using hard fuel lines, ensure they are high-pressure EFI rated and equipped with flared fittings.
- Ensure all low pressure flex joints on factory fuel lines are replaced with EFI rated fuel hoses and use proper flared connections and clamps.
- Be careful not to mix 45° SAE fitting and 37° AN fittings, as they are not cross-compatible.
- If using a return line, ensure it is at least $\frac{3}{8}$ ".
- Aces does not recommend the use of aluminum fuel lines, which are typically not manufactured at the required $\frac{3}{8}$ " diameter.
- Ensure that all hoses and fittings are produced by the same manufacturer. Hoses and fittings from different manufacturers are typically not cross-compatible and could cause leaks.
- Aces recommends using unleaded gasoline with no greater than 15% ethanol content.
- Relieve the pressure from within the system before opening the fuel system.
- **NOTE:** Your fuel tank must have a vent or use a vented cap to prevent pressure building up inside the tank.

Installation Instructions for Stock Tanks

If you are installing the pump module into a stock tank, you will first need to drill a properly sized hole in the exterior of the tank to accommodate the mounting rings. If your tank already comes with a suitable opening, skip to **step 4** of the following section (Installing the Red C-Ring and Pump Assembly).

⚠ WARNING: Wear eye protection and ensure the tank is free of combustible fumes while drilling. Have a professional boil out the tank to eliminate the risk of an explosion.

1. Before cutting the 2-1/2" diameter hole, position the red C- ring (#2) centrally on a flat area of the fuel tank, ensuring adequate clearance from the tank edge for the filter sock (#11). If a flat area is unavailable due to tank ribs, the supplied thick foam gasket will allow installation over the uneven surface.
2. When selecting your hole location, be sure to avoid the stock fuel level sending unit assembly and stock fuel pump pickup. See Figure 1.

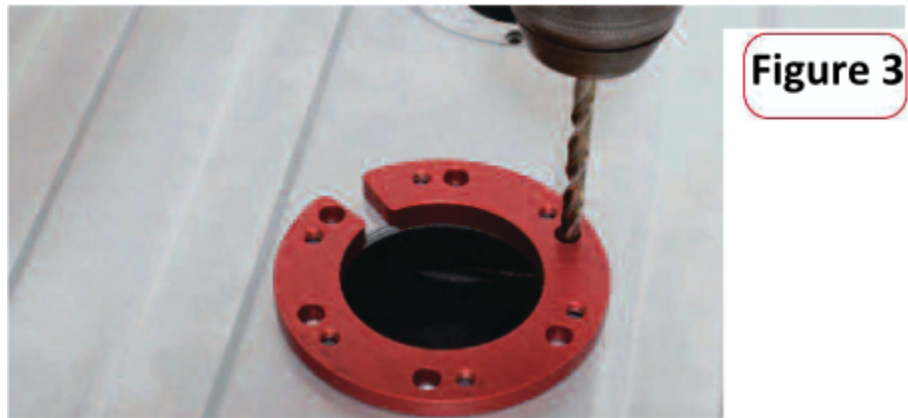


3. With the red ring in position, mark a spot in the center of the ring. To ensure accuracy, scribe a circle around the outside of the red ring and then measure from the scribed line to find the center.
4. Drill a 1/4" pilot hole on the marked point. See Figure #2.

5. Using a slow speed drill with a 4-1/2" hole saw, cut a hole in the tank. See Figure #2.



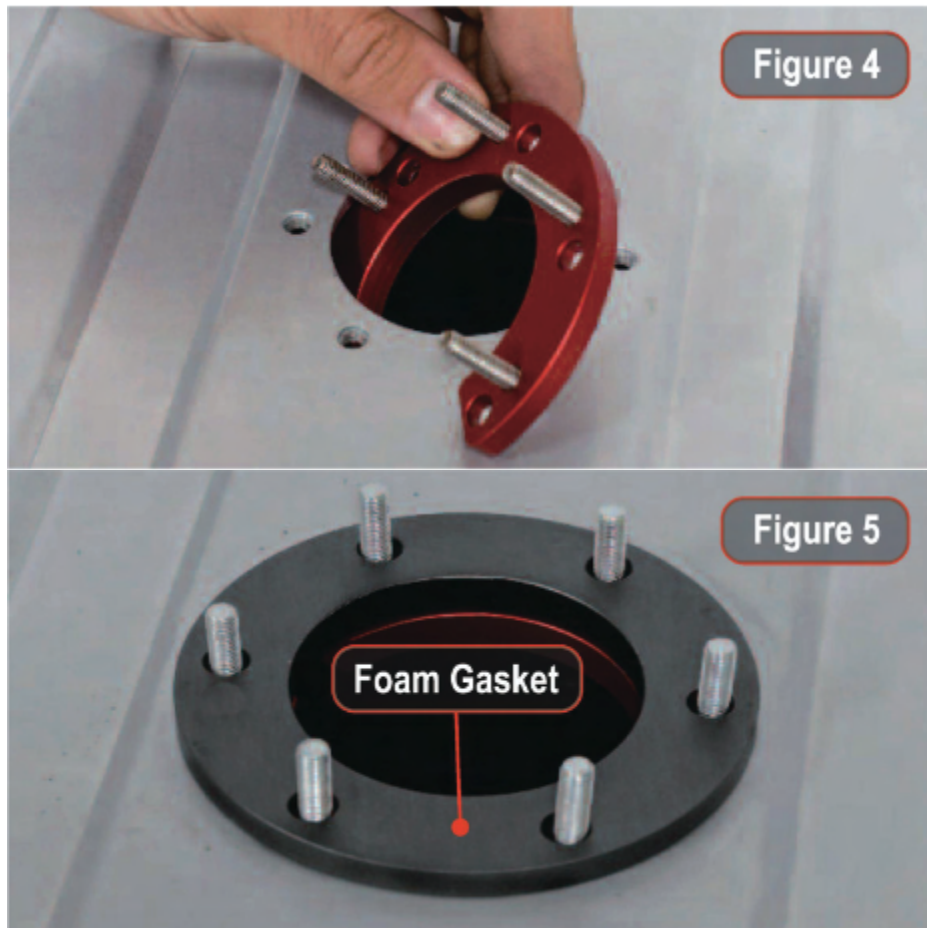
6. Use a file to deburr the sharp edges. See Figure #3.



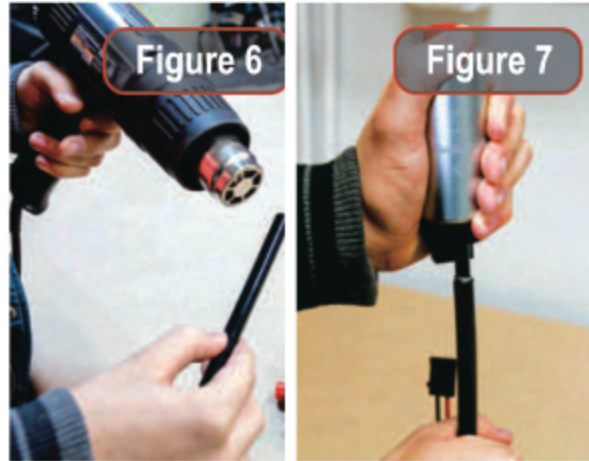
7. Thoroughly clean the tank to remove all of the metal chips and debris inside and out. **Do not continue with installation until the tank is entirely clean.**

Installing The Red C-Ring and Pump Assembly

1. Using the red C-Ring as a template, drill six 1/4" holes in the tank. See Figure 3.
2. Deburr the drilled holes, and thoroughly clean the tank to remove all of the metal chips and debris inside and out. **Do not continue with installation until the tank is entirely clean.**
3. Screw the MS Countersunk Screws (#9) into the Red C-Ring and tighten.
4. Slide the Red C-Ring into the 2-1/8" diameter hole (see Figure 4), inserting the screws back up through the six drilled holes. Then install the Foam Gasket (#3) as shown in Figure 5. See Figure 13 for proper assembly of these parts.

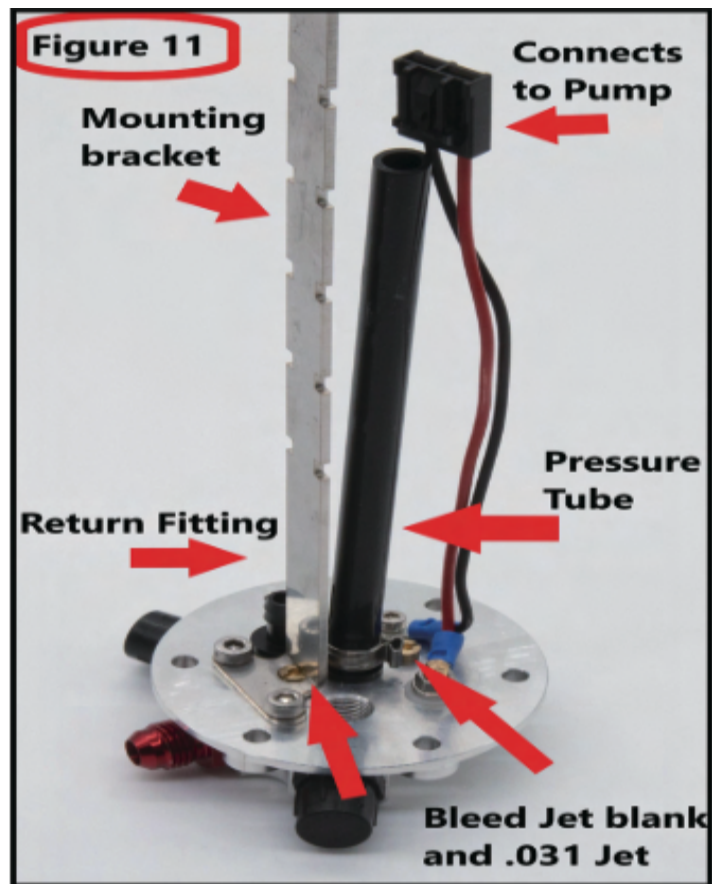


5. Snap the Filter Sock (#12) onto the end of the Fuel Pump.
6. Measure the tank depth to determine the vertical position of the pump. Ensure the filter sock is positioned within 1/8" of the tank bottom upon installation. Cut the Outlet Tube (#5) to the required length. Using a heat gun, heat the end of the hose intended for the fuel pump (see Figure 6). Press the heated hose onto the pump outlet nipple (see Figure 7) and secure it with a hose clamp. The pump should engage the tube easily; resistance indicates insufficient heating.



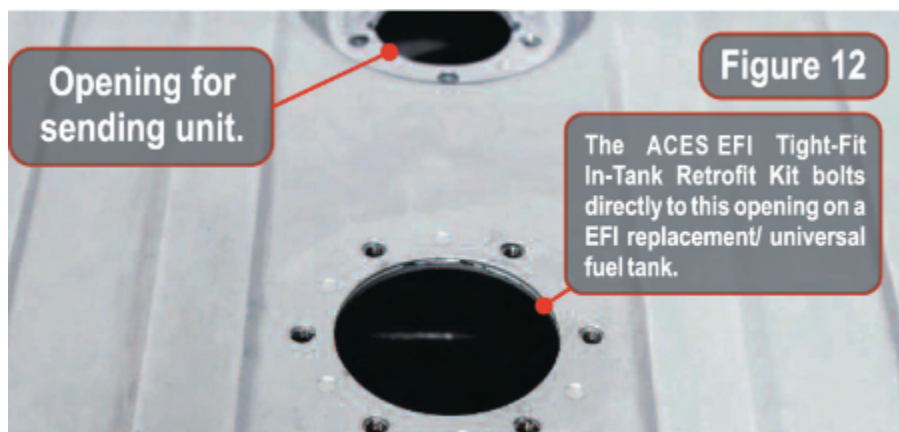
7. Determine the required length for the return tube and mounting bracket (Item 4). The components should terminate 1/8" to 1/4" from the tank floor. Trim the bracket and hose to size, then install the hose onto the barbed return fitting (see Figure 11). Secure with a hose clamp. **NOTE:** For 440 LPH or larger pumps, the return hose and bracket must be trimmed above the pump bell.
8. Locate the pump against the mounting bracket and ensure it is secured into position with two Tie Wraps (#10). Make sure Tie Wraps are pulled tight (see Figure 9). Plug the electrical connector onto the Fuel Pump.
9. Insert Main Assembly into tank. Lower down over extended MS Countersunk Screws (see Figure 5 and Figure 10).
10. Install O-Rings on bolts and thread the six Nuts (#9) onto the exposed bolts and tighten securely using a crisscross pattern to tighten them down evenly.





Reinstalling Fuel Tank & Wiring

1. Set the fuel tank into the vehicle and attach the fuel lines.
2. Attach the fuel pump power wire to the positive terminal and cover the terminal with the provided installation boot.
3. Attach one side of the ground wire to the negative terminal and the other end to a good ground on the chassis. Make sure the positive terminal has clearance and/or insulation to prevent hitting the bottom of the car floorpan. If necessary, lay a piece of foam over the top of the pump to insure the pump will not short.
4. Run a return line from the return fitting on the throttle body to the return port on the unit if applicable. If running returnless, plumb a -6 fuel line from the unit to an inlet port on the fuel injection system. See Figure #12. See below for more complete information on plumbing return or returnless style systems.

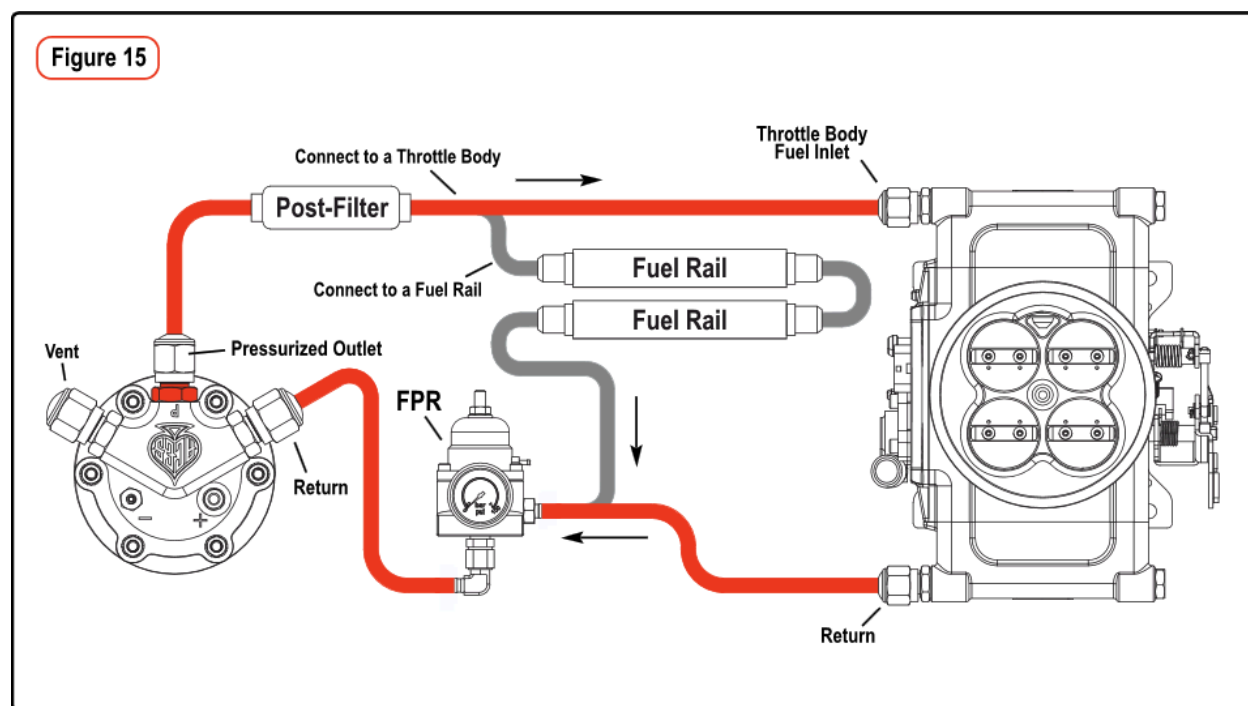


5. Ensure there is gas in the tank.
6. Reconnect the battery.
7. Turn your key to the "On" position, don't crank.
8. Thoroughly check for any leaks.
9. If no leaks are present then you are ready to start your vehicle.

Plumbing for a Return Style System

The Tight-Fit In-Tank Retrofit Kit requires a return fuel line. The center -6 ORB fitting (marked P) is the pressure outlet. The vent and return ports must be used only for their designated purposes (see Figure 11). **Do not use the vent port for a return line.** If the fuel tank lacks internal venting, utilize the vent port as a vent (see Figure 15 for return style plumbing).

An external fuel pressure regulator is required, as the supplied pump exceeds 60 PSI. If the pump and fuel tank are installed within the vehicle cabin, the vent hose must be routed from the kit vent port to the vehicle exterior.



Wiring Notes:

1. Mount fuse close to power source.
2. Mount relay close to pump.
3. If you are using this kit with an Aces EFI system, you must connect the loose black wire labeled "Pump" from the Aces EFI system to the positive terminal on the pump, or the R-pump wire from the PDM. Utilize an extension wire if necessary.

IF YOUR TANK IS LESS THAN 7 INCHES DEEP:

1. Switch the position of the fuel pump tube and the fitting (see Figure 17).

2. Ensure the threads of the fitting are sealed to prevent any fuel leakage back to the tank, causing loss of fuel pressure to the EFI system.
3. Cut the submersible fuel hose (#6) to the proper length for your tank.
4. Push the hose onto the fitting and install the pump onto the other end of the tube. Secure it with the supplied hose clamp (#7) (see Figures 21 and 22).

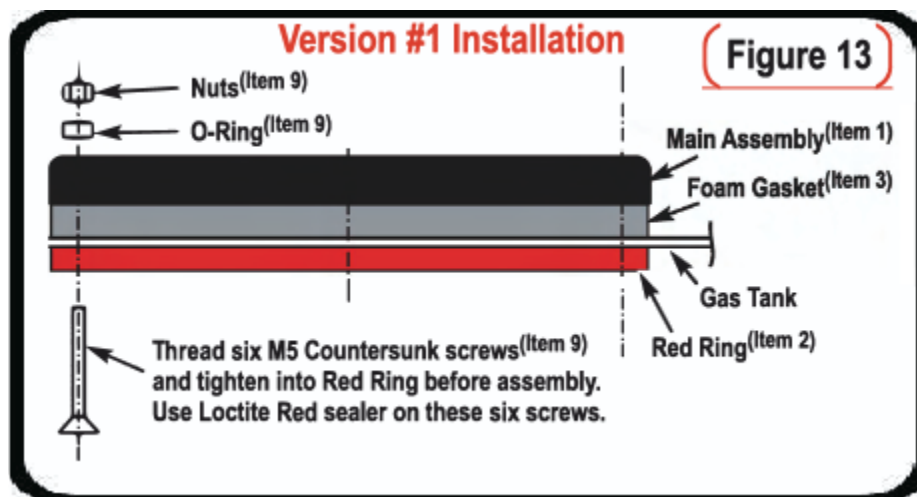
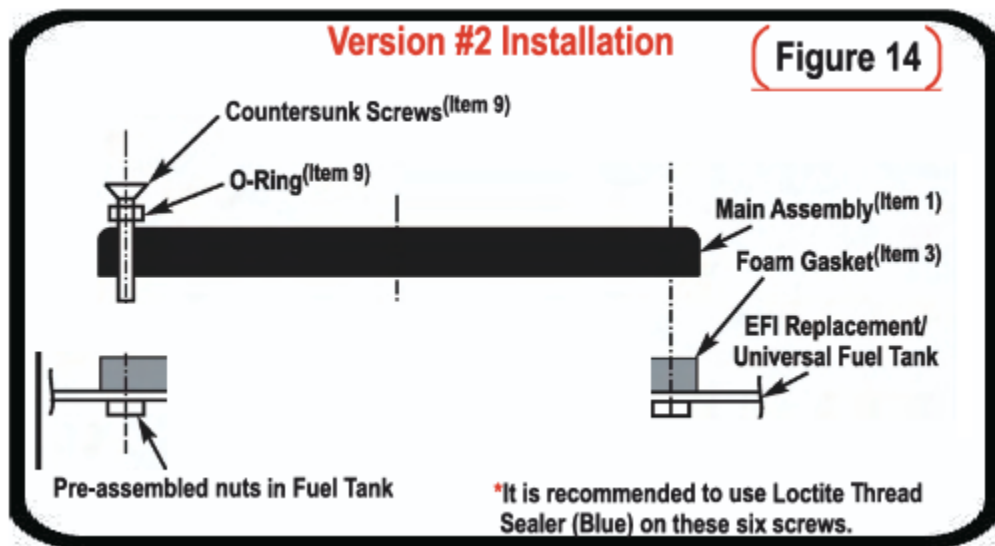


Figure 16

Notes:

1. Mount fuse close to power source.
2. Mount relay close to pump.
3. If a mechanical feeder pump is used, connect ECU/controller fuel pump power wire directly to Relay Terminal 86.
4. Relay shown is typical of Bosch 12V/40A SPSP Relay.

If you are using this kit with an Aces EFI system, you must connect the loose orange wire labeled "Pump" from the Aces EFI system to the positive terminal on the pump. If the wire is not long enough to reach, an extension wire can be used.

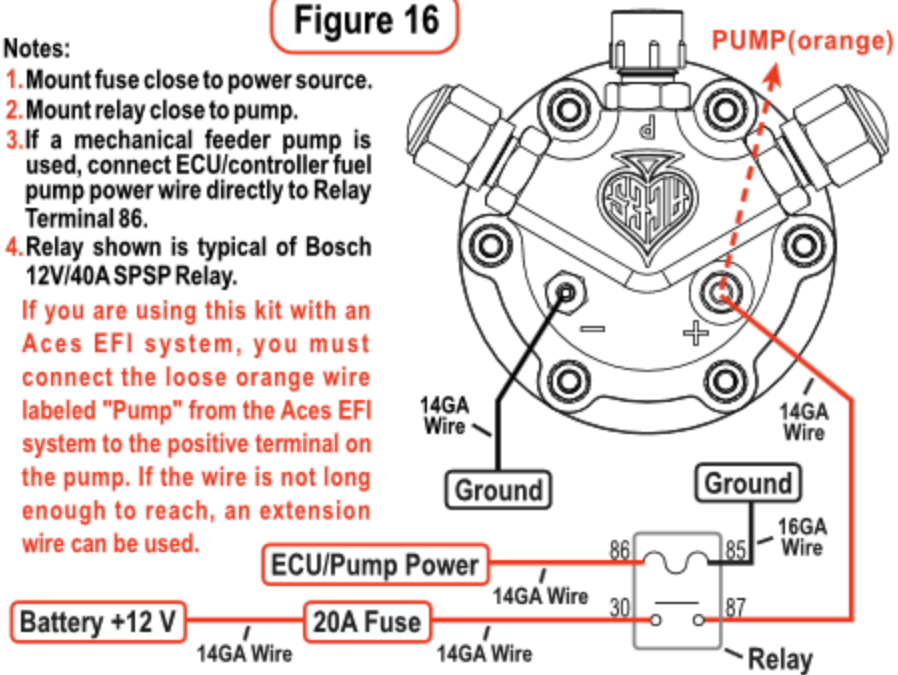


Figure 17



Figure 18



Figure 19



