Dual Tank Fuel Pump System Installation Manual

Single Pump Kit

KIT Includes:

255 LPH Fuel Pump w/Install Components
Fuel Pre-Filter, 20 Micron (x2)
Tank Selection Switch (Main/Aux)
Female Disconnect, ¼-Inch (x4)
5/16-Inch x 3/8-inch Long PTFE Tube (x2)
Motorized Valve
Fuel Post-Filter, 10 Micron
Weather Pack Connector Kit
P-Clamps for Filters

Installer-Supplied Materials:

Crosslink Wire, 12 AWG GXL
Fuel Hose, EFI Rated, 3/8-Inch ID
EFI Hose Clamps, 3/8-Inch Hose
5/16-Inch Bolts (Length App Dependent) (x2)
Self-tapping screws
Crosslink Wire, 18 AWG GXL
Fuel Hose, EFI Rated, 5/16-Inch ID
EFI Hose Clamps, 5/16-Inch Hose
5/16-Inch Split (Lock) Washer (x2)
Cable Ties or ¾-inch P-Clamps for Hose

Tools Required:

Drill
Hose Cutter
Wire Stripper
Female Disconnect Crimp Tool
Drill Bit, 11/64 Inch
Flat Head Screwdriver or 7mm Nut Driver
Weather Pack Crimp Tool

Optionally Required:

Bulkhead Fuel Port Kit for returned fuel (x2) (for tanks with no 5/16-inch or larger fuel return.)

Introduction: When upgrading vehicles with twin fuel tanks to EFI a challenge is immediately encountered: Not only must a fuel source be selected but the return-style fuel regulator must return the fuel to the same tank. Further, if the vehicle has a shared fuel level gauge (as most do) then it is necessary to simultaneously switch the fuel source, fuel return and fuel level sender. This kit allows the installer to do precisely that.

This installation manual has three sections. The Overview provides a listing of the steps required to complete the installation. The Best Practices gives more detailed tips for success. The Diagrams provides separate plumbing and wiring diagrams for the installer.

OVERVIEW

1. Completely disconnect the battery at the ground post.

2. Lift and secure the vehicle at an appropriate height for under-chassis work. Note that in many cases it will be necessary to drop the tank(s) to complete the installation.

3. Confirm the location of a fuel sender outlet that is 3/8-inches in diameter and fuel return port that is 5/16-inches in diameter on each tank. Install fuel return port (purchased separately) if not available on the tank.

4. Identify the locations to mount the pre-filters, motorized valve, fuel pump, and post filter. Secure these in place (loosely.)

5. Plumb 3/8-inch feed line from the main tank, through one of the pre-filters, to the motorized valve. Plumb a second 3/8-inch feed line from the auxiliary tank, through the pre-filters, to the motorized valve. Plumb a third 3/8-inch line from the motorized valve, through the fuel pump , then through the post-filter, and on to the EFI System.

6. Plumb a 5/16-inch return line from the regulator back to the motorized valve. Plumb two more 5/16-inch return lines from the motorized valve, one to the return port on the main tank and the other to the return port on the auxiliary tank.

7. Identify the location for the Main/Aux tank selection switch and mount loosely.

8. Chassis ground the indicated terminal of the tank selection switch.

8. Route fuel pump power wire to the fuel pump (ie, the blue wire on the Sniper, or green wire on the Terminator.) Before securing, tap a wire into the fuel pump power from the indicated terminal on the tank selection switch. Then, cut to the fuel pump wire to length, terminate with included ring terminal and secure to fuel pump (+).

9. Ground fuel pump to Battery (-) Terminal. Do not reconnect terminal to battery at this point.

10. Route and terminate the wires that run between the tank selection switch and the motorized valve. Terminate according to wiring diagram to ensure the correct tank is selected.

11. Terminate the fuel level sender wires into the motorized valve connector as indicated.

12. Tighten all component mounting points, secure all wiring, and re-check all hose clamps. Finally, reconnect the battery terminals to the ground post.

BEST PRACTICES

Tank Identification: Start by identifying one tank as the "Main" and the other tank as the "Auxiliary" tank. This is entirely up to the installer. What is important is that the plumbing and wiring diagrams be followed so that the gauge is reading the sender from which the fuel is being supplied and returned. Once the choice is made we recommend using tape to identify the filler neck, fuel tank outlet, and fuel level sender wire as either "Main" or "Aux" so that this is not confused during the installation.

Fuel Hose: Fuel hose is not included. This allows the installer to purchase only the hose they need. The fuel lines feeding fuel from the fuel tank to the EFI system will be 3/8-inch ID fuel hose. The fuel lines returning excess fuel back to the tank will be 5/16-inch ID fuel hose. **All fuel hose and clamps should be EFI Rated, INCLUDING the return lines!** These are our favorites:

http://bit.ly/fuel-hose Earl's Vapor Guard EFI Hose
http://bit.ly/hose-clamps Vibrant EFI Fuel Hose Clamps

Motorized Valve Fuel Ports: There are six fuel ports on the motorized valve and a small ¼-inch vent. Nothing needs to be done with the vent so it will not be mentioned again. There are four fuel ports on one side and two on the other. The side with the two ports (one 3/8-inch, the other 5/16-inch) provides the feed and return ports to the EFI system. The side with the four ports (two of each size) provides the feed and return ports to the tanks. You will note that there is an "L" embossed near the two ports at the far end of the motorized valve. These are the ports for the main tank. The ports near the embossed "R" (closer to the middle of the valve) are for the auxiliary tank.

Fuel Pump Mounting Location: Select the location of the Pre-Filters, Motorized Valve, and Fuel Pump so that the fuel pump is located as low and as close to the tank as possible. We have seen a 100% success rate when following this rather general advice as closely as possible. Try to locate all components so that they are not in danger of being damaged if something solid is run over by the vehicle. Mount the motorized valve using two 5/16-18 bolts with a split (lock) washer between the bolt head and the supporting component.

Fuel Tank Supply Outlet: Some fuel tanks only have a 5/16-inch fuel supply outlet. Trying to clamp a 3/8-inch hose to a 5/16-inch supply line is a recipe for leaks. We include a pair of 5/16" ID x 3/8" OD PTFE Tubes that can be slipped over the 5/16-inch line to allow it to accommodate a 3/8-inch hose without leaking. You will generally need to warm this to make it fit. We use a little water in a glass dish in the microwave and bring to a boil and it will then generally slip right on.

Fuel Tank Return Port: Some fuel tanks do not have an appropriate return port. For a 255 LPH pump a return port not smaller than 5/16-inch is required. The fuel should be returned to the bottom of the tank, preferably near the fuel pickup, not sprayed from the top. We offer a bulkhead fuel port kit that includes a convoluted PTFE tube to return the fuel to the bottom of the tank.

Wiring Connections: Terminals are included to make all electrical connections to the fuel pump, the motorized valve, and the tank selector switch. The quality of these connections is critical to the success of the installation! Some tips:

1. Use a high quality crimper designed for the specific connector. For the quick disconnects (some call these spade terminals) on the tank selector switch and the ring terminals on the fuel pump power and ground, any high quality disconnect crimper is good, like this Accel 170036. For the Weather Pack connectors, a dedicated Weather Pack / Metri Pack crimper like our 533 Crimper is critical to making a quality crimp.

http://bit.ly/Accel-170036 Accel Disconnect Crimper

http://bit.ly/533-Crimper 533 Weather Pack Crimper

2. When crimping the terminals to go into the 6-position Weather Pack connector on the motorized valve, be sure to first put one of the included Weather Pack seals over the wire. The included Weather Pack terminals have two crimp sections: One crimps onto the stripped wire, the other crimps onto and holds the seal in place. This seal prevents moisture and debris from entering the contact area of the connector.

Insert the terminal into the connector according to the wiring diagram and place the included Weather Pack cavity plug into the vacant position (Position F.) If you insert a wire in the wrong position they can be removed but this is most easily done with a Weather Pack Removal Tool.

http://bit.ly/weather-pack-tool Weather Pack Terminal Removal Tool

3. The power wire to the fuel pump must be tapped to provide power to the tank selector switch. We do not endorse the use of vampire taps for this purpose. Instead, we recommend that the insulation be removed from the point of the tap without cutting the fuel pump power wire. Solder the tap wire to the fuel pump power wire and finish with heat shrink tubing, as shown here:

Fuel Pump Ground: The fuel pump should be grounded all the way back to the battery with wire that is at least as heavy in gauge as the fuel pump power wire. Failure to do so will cause the pump to draw more power than is required, making it run hotter and louder and resulting in premature failure.

Fuel Pump Power Source: The fuel pump power source must meet these standards:

1. Switched by the ECU (not manually by the user) through a 30 amp relay.

2. Protected by a 30 amp fuse.

3. At least 12 AWG wire

All of the requirements are true for the fuel pump power wire provided by the Sniper, Terminator, and many other EFI Systems. For these systems, no additional relay or fuse is necessary (and is why none is shown on the wiring diagram.)

DIAGRAMS

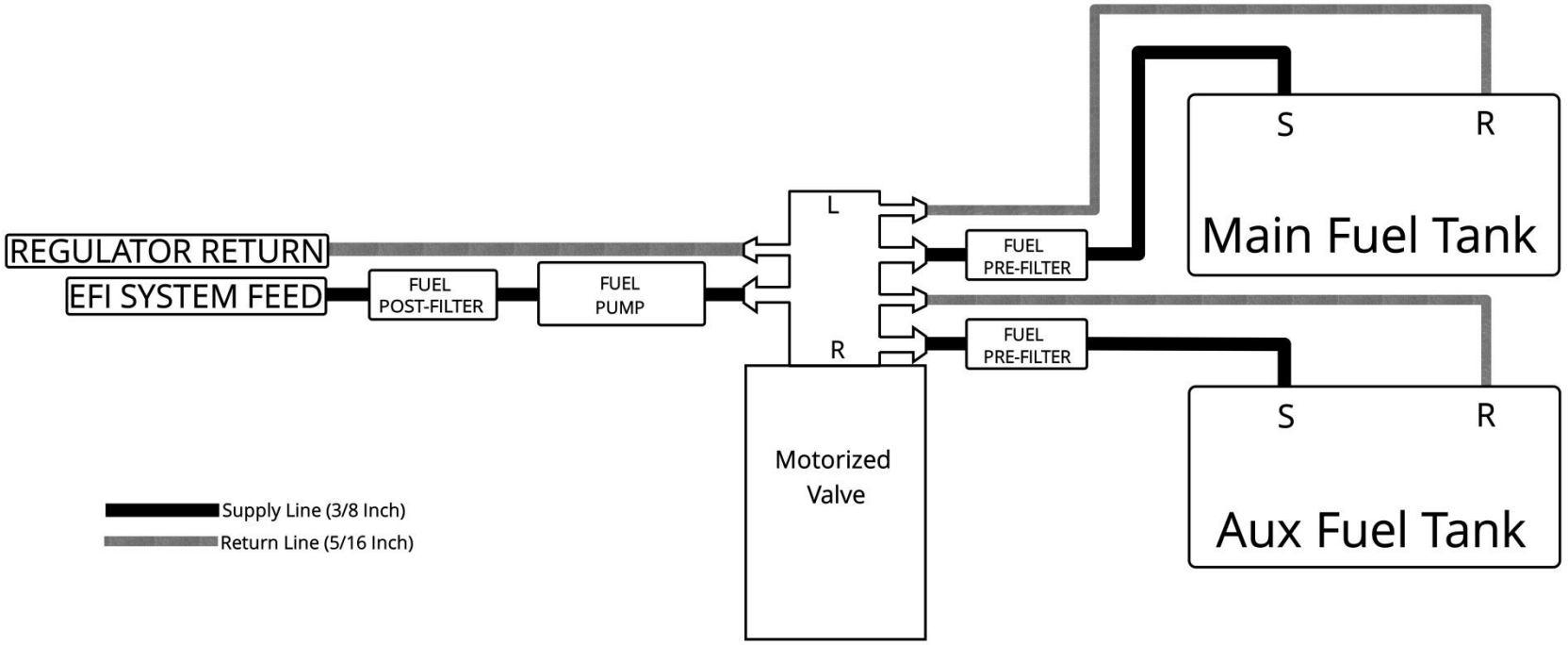

Figure 1: Fuel Line Plumbing Diagram

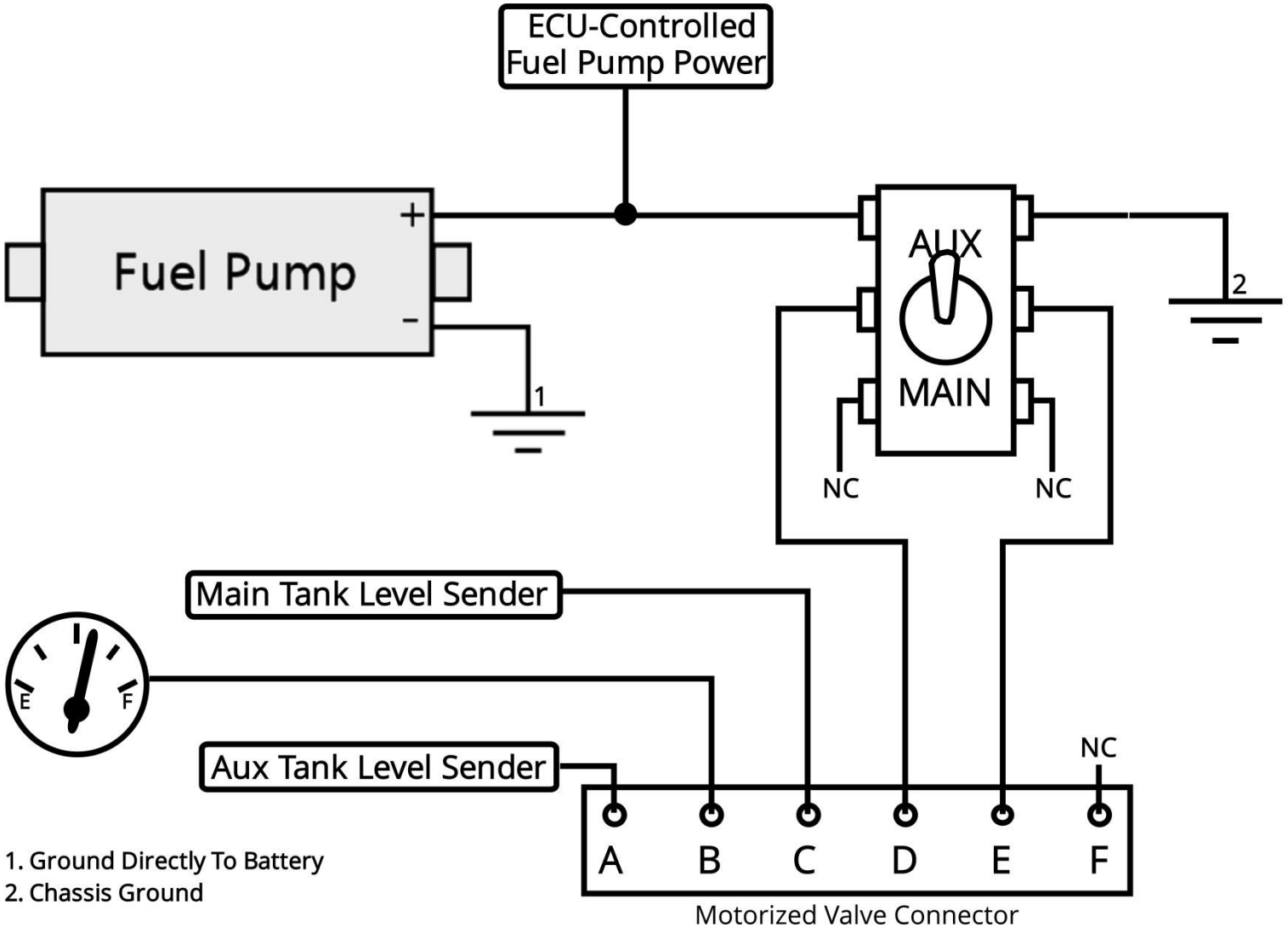

Figure 2: Wiring Diagram