



A Dfuser.com Diesel Performance Company
108 Evergreen Rd, Georgetown, TX 78633 U.S.A.
Main: 512-750-7102 Fax: 512-650-3663

LR19FJB – 19 Gallon FJ Cruiser Auxiliary Fuel Tank Installation Instructions

BEFORE STARTING THE INSTALLATION

YOUR FAILURE TO READ, UNDERSTAND, AND ACT IN ACCORDANCE WITH, THE INFORMATION CONTAINED IN THIS DOCUMENT MAY (A) ENDANGER YOUR LIFE AND, SAFETY AND THE LIFE AND SAFETY OF OTHERS; (B) CAUSE DAMAGE TO THE SYSTEM, YOUR VEHICLE AND /OR OTHER PROPERTY.

THE SYSTEM IS DESIGNED AND INTENDED ONLY FOR OFF-ROAD USE,

BEFORE BEGINNING INSTALLATION PLEASE REVIEW THE PACKING LIST AND VERIFY YOU HAVE ALL THE PARTS LISTED.

DESCRIPTION AND COLORS OF PARTS DESCRIBED IN THESE INSTALLATION INSTRUCTIONS MAY DIFFER FROM THE PARTS INCLUDED WITH YOUR FUEL TANK KIT.

PLEASE NOTE, IF YOU HAVE SOME TYPES OF AFTERMARKET REAR BUMPER ASSEMBLY OR AN AFTERMARKET EXHAUST SYSTEM YOUR VEHICLE MAY REQUIRE FURTHER MODIFICATION FROM WHAT IS DETAILED IN THIS INSTRUCTION MANUAL.

TOOLS NEEDED:

- ¼ drive ratchet
- 3/8 drive ratchet
- varying ¼ and 3/8 extensions may be needed
- 3/8 ¼ nut
- 8mm ¼ drive socket
- 10mm ¼ drive socket
- 12mm 3/8 drive socket
- 13mm Open end Wrench
- 11/16 Open end wrench
- ¼ Allen Key / Hex Socket
- Flat blade screwdriver
- Phillips screwdriver
- Panel clip removal tool
- Electrical pliers
- Long nose pliers
- Hose Cutter
- Drill
- Drill bits for pilot holes
- ¾ Drill bit
- File

****If Fitting Optional Sending Unit****

- Air hacksaw (Body Saw), hacksaw or hot knife
- 2" Hole saw.

SECTION A -FILL NECK / TANK INSTALLATION:

1. Disconnect the negative battery terminal.
2. Remove the 4 plastic clips from the driver's side rear wheel well. Remove the plastic trim panel.
3. Remove single 12mm bolt, hose clamps, and fuel / vent hoses from the original factory fill neck. You will also need to undo the bolts holding the charcoal canister filter and charcoal canister in place, and allow them to drop (hang by the hoses). This will give you enough room to remove the original fill neck.
4. Fit one of the straight ½ barb brass fittings to the threaded port on the MAF fill neck, and fit the MAF modified unit onto the vehicle in the location of the old fill neck... Refit the original fuel tank hoses and vent lines, as well as the 12mm bolt that you removed in step 3. Do not fit the MAF auxiliary tank fill hose at this step.
5. Route the 16ft long wiring for the fuel pump and optional sending unit (enclosed in the 14ft long wire loom) from the center of the rear bumper into the engine bay. We prefer to run it along the frame rail, then up and under the brake unit / lines and terminate at the driver's side inner fender, behind the main engine fuse box. Your application and any accessories may require you to route it differently. Leave the wiring in the engine bay at this time that will be completed later.
6. Position the MAF fuel tank under the vehicle in the correct orientation. Different step height mounting tabs will be towards the front of the vehicle. Install optional sending unit, or sending unit block off plate now. The holes in the MAF tank mounting flange will allow the sending unit to be fitted in only one direction. If the sending unit is fitted, connect the white wire from step 5 to the sending unit post and secure with supplied 3/8 nut.

7. Fit the 2x 90 degree ½ barb elbow fittings to the threaded holes on the top of the MAF tank. The one on the passenger side of the vehicle will be the fuel feed port, and the one on the driver side of the vehicle will be for the MAF vent port. Fit the 2.5ft length of ½ inch hose to the MAF vent fitting. Pay attention to the angle the brass fitting faces in the pictures. It must face towards the rear of the vehicle, and the ½ vent hose must run underneath the Aux filler hose. This is the vent for the MAF tank. Make sure the passenger side fuel feed port fitting is also facing the rear of the vehicle.
8. Install the fuel pump. We usually install the fuel pump inboard of the rear frame crossmember in the center, using the pump's mounting holes and 12mm bolts. This may or may not be applicable depending on your vehicle accessories. Connect the red wire from step 5 to the positive (+) terminal / red wire on the fuel pump using the supplied bullet terminal. The fuel pump is grounded by running a wire from the negative (-) terminal / black wire on the fuel pump to the fuel pump mounting bolt / frame. Cut the bullet terminal off this lead and connect a grounding eye terminal to it. **Make sure (IN) is facing the passenger side of the vehicle!!!**
9. Connect the 5ft length of ½ inch hose to the fuel feed fitting on the passenger side of the vehicle. Route this hose to the (IN) side of your MAF fuel pump that was installed in step 8. Cut to size and connect to fuel pump (IN). This hose should be stretched TIGHT – remember it will slacken when you lift the tank into the vehicle.
10. Using the remainder of the ½ inch hose, route it from the (OUT) side of the MAF fuel pump to the ½ inch barb fitting installed on the filler neck in step 4. Tighten all hose clamps. This is the completion of the fuel feed circuit.
11. Fit the large fill neck hose to the MAF tank fill neck, and tighten this hose clamp.
12. With a friend, lift the tank up and align the bolt holes with the corresponding frame holes. There will be two on the left and right frame rails, and two stepped facing the front of the vehicle. It may be necessary to drop the exhaust tailpipe from the last two hangers to access the passenger side bolt holes on some vehicles. Loosely screw the supplied 6x M8 (12mm head) bolts, lock washers and flat washers into the frame rails so it will secure the tank without letting it fall.
13. Check on top of the tank that all of the hoses (fuel feed circuit and MAF tank vent) are NOT restricted, kinked or bent. If necessary, zip tie them so they cannot be crushed or kinked by the tank.
14. With the tank still loose, slide the filler neck into the MAF fill neck hose. This can be tricky. WD40 will help. **Don't forget to put a hose clamp on it before you fit the fill neck!** Don't tighten the filler neck side hose clamp yet. Also make sure the Aux Vent hose from Step 7 is over the frame rail, between the frame rail and the body.
15. **Recheck all hoses are as straight as possible and have no kinks, sharp bends or any possibility of rubbing on any component that can cause it to wear through. Make sure all hoses are away from any heat sources.**
16. **Recheck all hose clamps to avoid leaks.**
17. Tighten the 6 MAF tank mounting bolts.
18. Tighten the fill neck side hose clamp fitted in step 14.
19. **Triple check that the MAF tank hoses are not restricted in any way.**
20. Fit the drain plug bung into the drain plug hole using your ¼ hex key.
21. Refit the plastic trim panel from the rear driver's side wheel well. Refit the plastic clips.

SECTION B - ELECTRICAL SYSTEM INSTALLATION:

1. Locate a suitable place in the engine bay, away from heat, sharp or moving objects, to fit the supplied relay for the MAF fuel pump power. We usually position it on the driver's side fender well, close to the factory engine bay fuse box. Check for clearance of the hood gas struts when the hood is closed to make sure they do not contact the relay.
2. Cut a small length (2 – 3 inch) from the supplied black wire, with a female spade terminal on one end and a 5/16 ring terminal on the other. Attach this to Relay terminal 86 and ground the ring end to the relay securing bolt on the inner fender. This will serve as the relay ground.
3. With the supplied yellow wire, approximate how much you will need to run it from the relay to either the battery (+) positive terminal or the hot wire terminal in the factory engine bay fuse box. This is found by lifting the cover off the engine bay fuse box, and is the post with a 10mm nut on it in the right side of the fuse box closest to the engine. Attach a female spade terminal to the wire and a 5/16 ring terminal to the other end. Connect the spade terminal end to Relay terminal 30 and the ring end to your chosen constant B+ power source. This is your relay constant power. This does not require a fuse as the relay has a 15A fuse built in.
4. Find the wires that were routed into the engine bay in **“FILL NECK / TANK INSTALLATION step 5”**. Attach a female spade terminal to the red wire and attach it to Relay terminal 87. This will provide power to your fuel pump when the relay is triggered.
5. Attach a female spade terminal to the supplied pink wire and connect it to the Relay terminal 85. This will be connected to the switch on the dash. Take the loose end of the pink wire and the white wire that was routed from the MAF sending unit in **“FILL NECK / TANK INSTALLATION step 5.”**, and run these two wires through a firewall grommet and into the passenger compartment. If you installed the relay on the driver's side inner fender, you can run these through the large grommet near the brake booster. This will put the wires above the driver's footrest inside the vehicle. You will need at least 2 foot of wire (for both pink and white) inside the cabin. Supplied with the install kit are some extra butt connectors if you need to join wires to reach the desired length. **If you are not fitting the optional sending unit and gauge, the pink wire will be the only one run through the firewall.**
6. Now choose your gauge / switch mounting location. We prefer to use the silver trim panel that includes the air vent located on the driver's side. This can be removed by pulling outward from the top “bulge” of the vent. It is held in place by clips and should snap out. The area behind this panel is fairly restricted in terms of where you can place the gauge. **If you are not fitting the optional sending unit and gauge, you can skip to step 9.**
7. Undo the 10mm bolt, and as shown in the picture below, you will need to use a cutting device (Air hacksaw (body saw), hacksaw or hot knife) to cut the plastic out from behind the panel. This will allow the gauge and switch to fit without any interference, and make wiring and any future modification or troubleshooting easier.
8. The black rectangular box (Radio Suppressor) can be slid off its metal bracket and relocated. Bend both metal brackets backwards as far as you can. The nut welded onto this bracket will serve as a ground point for the switch and gauge later on.
9. **If you are not fitting the optional sending unit and gauge, the following steps will only apply for the switch.** With the gauge, switch and panel on your workbench, figure out where you would like to locate everything within the panel. Recheck that you have clearance behind the panel and that everything will fit nicely. Once ready, trace the outline with of the gauge and switch onto the silver panel with pencil.
10. Using the pilot drill bit, drill pilot holes into the center of both the gauge and switch trace lines.
11. Using the 2” Hole saw, drill out the hole for the gauge.
12. Using the ¾ drill bit, drill out the hole for the switch.

13. File down the edges of the panel holes, and check to make sure both the switch and gauge fit. The switch has several tabs which may need to be shaved to allow a perfect fit. Test fit the panel into the dash. Using the supplied bracket tighten the gauge into position. Fit the light bulb and holder to the gauge as well.

14. Now the wiring!

The pink and white wires that ran through the firewall can now be routed to the back of the silver panel. You may have more wire than you require, so estimate how much you will need and then you can cut it shorter if you like.

- Switch Wiring

- Pink Wire: Attach a small female spade terminal to this wire and connect it to the middle terminal of the supplied switch. This is the switching signal for the MAF fuel pump relay and is connected to Relay terminal 85 as described in “**Electrical Step 5**”
- Yellow Wire: Attach a small female spade terminal to this wire and connect it to the bottom terminal of the supplied switch. Attach a male spade terminal to the loose end of this wire. This will be run to the ACC ON wire leading to the Remote Mirror Controller. By reaching in from the hole left by removing the silver dash panel, you can access the back of the Remote Mirror Controller. Pushing from the back outwards will dislodge the Controller from the dash board and allow you access to the factory wiring loom. Using 2 supplied red wire taps, crimp them both over the GREY wire for the Remote Mirror Controller. Refit the controller into the dash, and connect the yellow wire male spade end into one of the red wire taps.
- Black Wire: Attach a small female terminal to the black wire and connect it to the top terminal of the switch. Attach a 5/16 ring terminal to the other end and ground it to the welded nut on the metal bracket that was bent in “**Electrical Step 7.**” Secure it with the 10mm bolt. **If you are not fitting the optional sending unit and gauge, you can skip to step 15.**

- Gauge Wiring

- White Wire: Attach a large female spade terminal to this wire and connect it to gauge terminal 'S'. This is the gauge signal wire.
- Yellow Wire: Attach a female spade terminal to one end of the wire, and connect it to the 'I' terminal on the gauge. Attach a male spade terminal to the other end and connect it to the 2nd red wire tap running of the remote mirror control wire as installed above. This is the power wire for the gauge.
- Black Wire: Attach a female spade terminal to one end and a 5/16 Ring terminal to the other. The spade terminal is attached to the ground terminal on the gauge and the ring terminal is connected to the same ground point as used for the switch above.

- Gauge Light Wiring

- Yellow Wire: Attach one side to the white wire coming out of the Gauge light bulb harness using the butt connectors, and the opposite side to a male spade terminal. This will be connected to the lighting control rheostat signal wire. To access this, reach behind the dash through the hole left by the removed silver trim panel and push the lighting control rheostat out. It will pop out of the dash panel, and you will be able to access the wiring loom. Crimp a red wire tap onto the green wire, and push the light control rheostat back into the dash panel. Connect the yellow male spade terminal end to the red wire tap you just fitted.
- Black Wire: Attach one side to the black wire coming from the gauge light bulb holder using a butt connector, and on the other end attach a 5/16 ring terminal. Ground the ring terminal out to the same bolt as the gauge and switch are grounded to.

15. You can now carefully zip tie the wires together and refit your silver dash panel. Also zip tie the pink and white wires under the dash together to stop any chance of it being caught while driving.

16. Check that the pump works by turning the vehicle on and pressing the switch. The switch should light up and you should hear the pump working. If not, retrace your steps to troubleshoot the problem.
17. If it works, great! You are now ready to go and fill the tank!

Fill it only partially at first to check for any leaks. Turn the fuel pump on and check that it transfers fuel without any leaks or abnormal noises. Check that the gauge reads accurately. If all is well, then fill the remainder of the remainder of the gas tank. Again check for any leaks as the tank reaches capacity. Fill both tanks.

NEVER – Fill the vehicle with the Ignition on or the vehicle running.
NEVER - Pump more gas after the Gas station pump automatically shuts off.
NEVER – Fill the gas up to the top of the fuel neck.

Enjoy your new fuel range!!

PICTURES

Pictures are organized by section letter first (A or B) followed by the number of the step associated with the picture.

For example, A2 is Section A – Fill Neck/Tank Installation, Step 2.

SECTION A – FILL NECK/TANK INSTALLATION

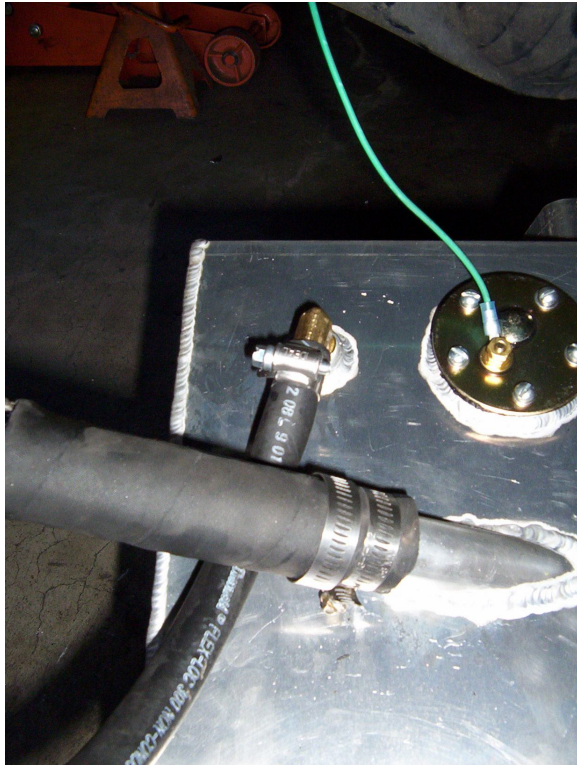
A2.



A3.



A6.
A7.



A8.



A12.



SECTION B – ELECTRICAL SYSTEM INSTALLATION

B1.



B3.



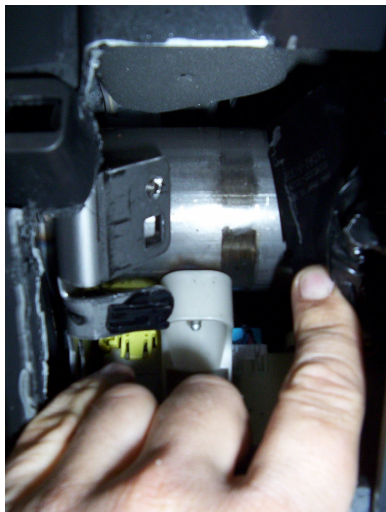
B6.



B7.



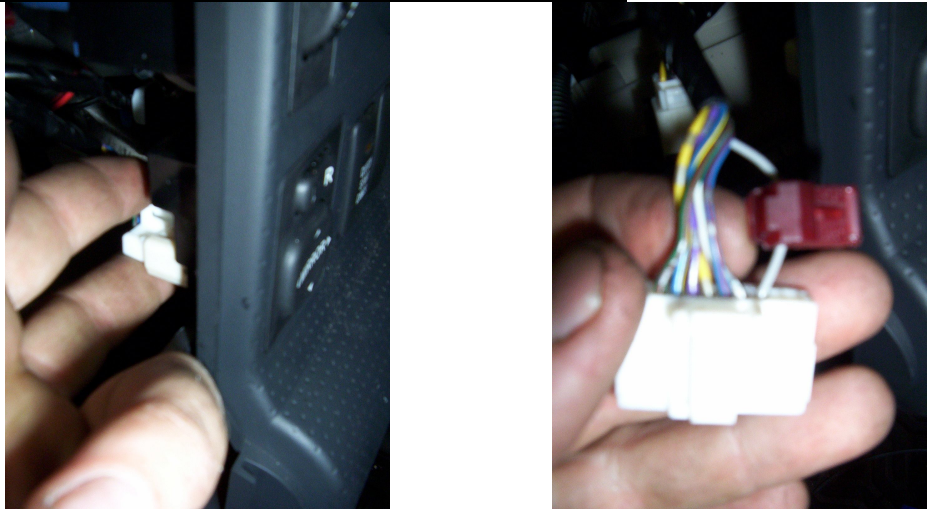
B8.



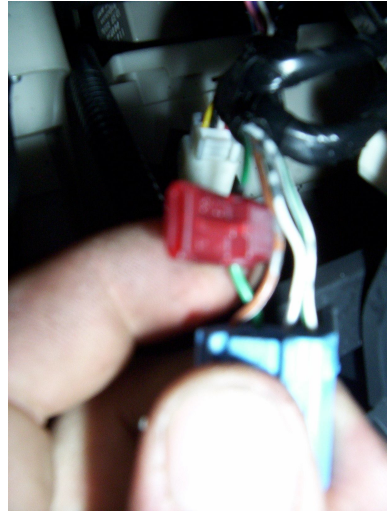
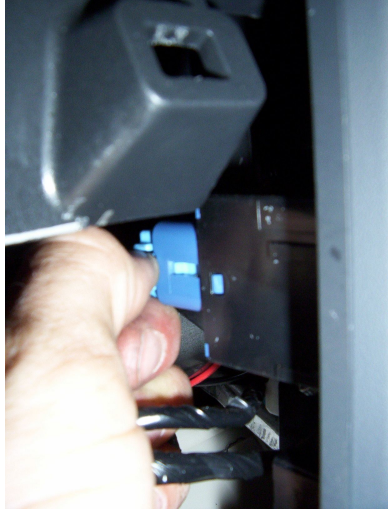
B9.



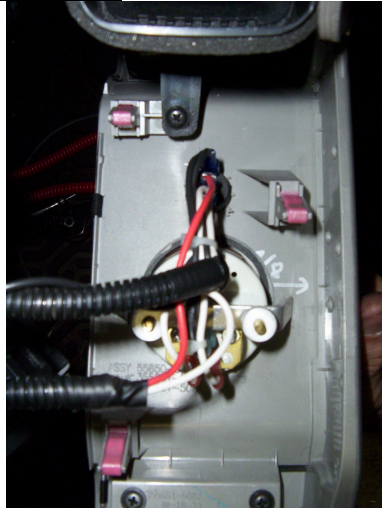
B14. ACC power, Remote Mirror Controller.



B14. Light power, Rheostat.



B14, Guage and Switch Wiring



B14. Ground Location



B15.

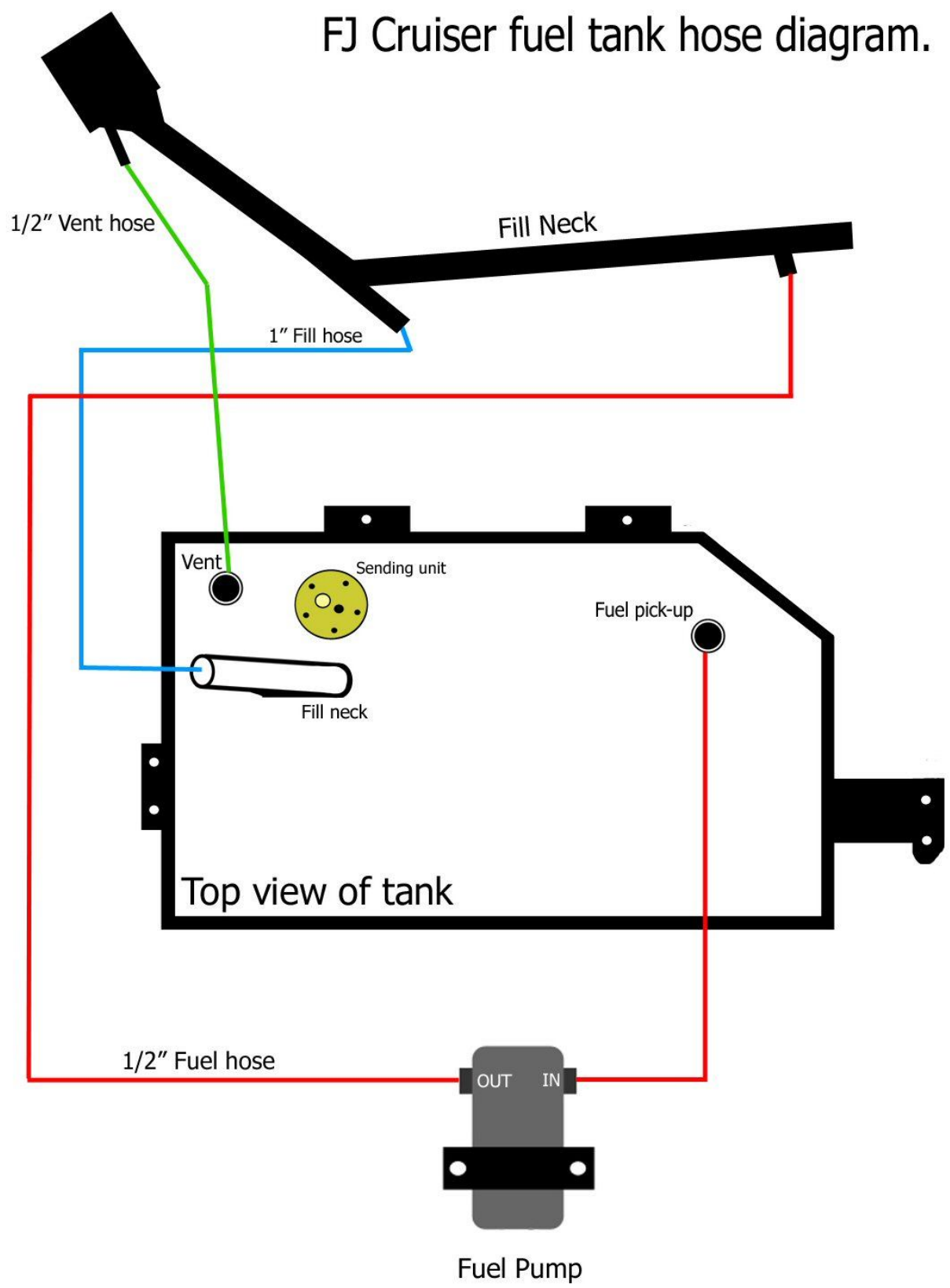


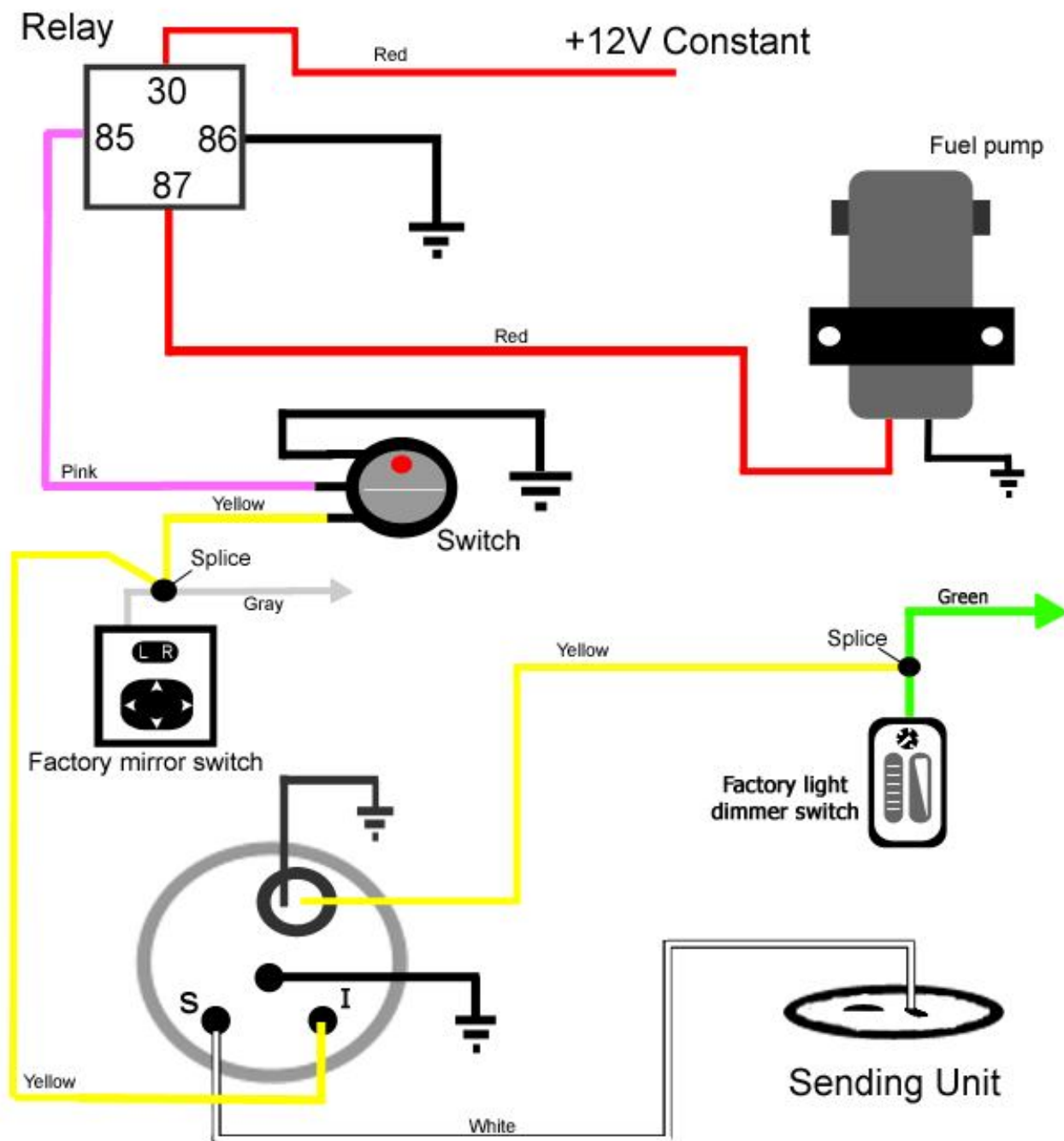
FINISHED!!!





FJ Cruiser fuel tank hose diagram.





Wiring Diagram for use with gauge and sending unit.
 Man-A-Fre Inc. Tech Help: 805-578-8712