INSTALLATION INSTRUCTIONS FOR A REPLACEMENT TANK

THE LONG RANGER

THE BIG TANK FOR A BIG COUNTRY

MADE IN AUSTRALIA

FJ CRUISER

2011 on Petrol models (non US models)

TA71L – AUXILIARY 120-LITRE TANK

TA71S – AUXILIARY 84-LITRE TANK

A "HD" option is available on both model tanks

GENERAL NOTES

a) Take a few minutes to read through this installation guide before proceeding.

b) Fitting time is approximately 5.5 hours for experienced tank fitters

c) This LONG RANGER tank locates behind the rear diff.

d) The lowest point of these LONG RANGER tanks lies within the standard departure angle, but the 84lt offers significant more ground clearance.

e) A 2 or 4 post vehicle hoist is not essential but will speed the job up significantly.

f) This LONG RANGER tank is filled via a Twin filler. Fuel is transferred as required to the original tank via an electric pump and dash mounted switch.

g) This installation included a carbon canister and pump timer to automatically turn the transfer pump off.

h) Check that tools, clothing and footwear are clean before working on the interior of the vehicle.

i) LONG RANGER tanks are coated with a high-performance primer. For added protection, a topcoat may be added. If the vehicle has been rust proofed, it is suggested that the tank (and any changes made to the vehicle during fitting) be touched up after installation.

j) The "HD" option is available at time of manufacture with an extra 4mm steel plate fully welded to the underside of the tank giving a total 6mm base thickness, these are built to order.

k) Besides the tank shape the only other difference between models is the sender unit in the fitting kit.

Special tools*: An electrical crimping tool, metal cutting equipment, drill, fuel sealant, 20mm step drill or hole saw.*

Owners Information Pack

- ❑ 1 Warranty Information Sheet and Return Card
- ❑ 1 Long Ranger sticker
- ❑ 1 Long Ranger owner operating manual
- ❑ 1 TA71 owner's manual supplement (stick on)

INSTALLATION KIT – TA71

QTY DESCRIPTION This LONG RANGER installation kit has been checked by _____

- ❑ 1 LONG RANGER TANK (**TA71L, 120lt**)
- ❑ 1 LONG RANGER TANK (**TA71S, 85lt**)
- ❑ 2 Side Mounting brackets #**TR69SB1**
- ❑ 1 U-bolt M10 #**FAUBOLTA61** (*front mounting*)
- ❑ 4 Bolt M10 x 25mm with tag #**SF11M** (*rear mounting through chassis*)
- ❑ 1 **TA65SFN1** (new twin filler neck)
- ❑ 1 **TA71FH1** (38/35mm rubber filler hose)
- ❑ 1 **TA71BH1** (13mm rubber hose, Main tank breather)
- ❑ 1 **TA71BH2** (13mm rubber hose, Aux tank breather)
- ❑ 1 Canister mounting bracket #**TR71CM**
- ❑ 1 Carbon canister TLR #**CC01**
- ❑ 2 Tag bolt M8 x 25 #SF01 (for carbon canister)
- ❑ 2 Plain ZP nut M8 canister
- ❑ 2 Flat washers M8 x 19 canister
- ❑ 2 Spring washer M8 canister
- ❑ 4 Bolt M6 x 20 canister
- ❑ 4 Self-locking nuts M6 canister
- ❑ 8 Flat washers M6 canister
- ❑ 2 Bolt M10 x 30mm (*rear mounts*)
- ❑ 8 Self-locking nuts M10
- ❑ 8 Flat washers M10 x 20mm (*rear mounting*)
- ❑ 2 Flat washers M10 x 30mm (*front mounting*)
- ❑ 2 Bolts M6 x 20 (pump mounting)
- ❑ 2 Self-locking nuts M6 (rear tank & pump mounts)
- ❑ 4 Flat washers M6 x 16 (pump mount)
- ❑ 5 M4 x 8 screws
- ❑ 4 Hose clamps HS24 (filler)
- ❑ 4 Hose clamps MH6 (fast fill breather)
- ❑ 12 Hose clamps MH4 (system breather, fuel transfer)
- ❑ 10 Cable ties 200mm
- ❑ 6 Cable ties 200mm (canister)
- ❑ 10 Cable ties 300mm
- ❑ 1 Fuel pump 12-volt (**ELFUPU12V03)**
- ❑ 1 Brass fittings 1/8 BSP x 8mm straight
- ❑ 1 Brass fitting 1/8 BSP x 8mm angle
- ❑ 2 Brass fittings 1/4 BSP x 8mm elbow (for canister)
- ❑ 2 Hose joiner 8mm (Canister)
- ❑ 1 Fuel filter in-line 8mm" Z14
- ❑ 1 Convoluted tube 7mm x 1000mm long (use on wiring at pump unit)
- ❑ 1 Terminal red male bullet connector
- ❑ 1 Terminal red female bullet connector
- ❑ 2 Terminal red female spade connector
- ❑ 1 Power take off (female)
- ❑ 1 Power take off (red male spade)
- ❑ 1 Switch/Gauge timer module with wiring loom (**ELSWGA354-8**)
- ❑ 1 Switch/Gauge LED 24mm round (**ELSWGATIMER12V01B**)
- ❑ 1 Fuel level sender unit, # **ELSETLR2-90TA71L OR ELSETLR2-90TA71S**
- ❑ 1 Fuel hose 8mm ID x 380mm (Fuel transfer, aux pickup to filter)
- ❑ 1 Fuel hose 8mm ID x 50mm (filter to pump inlet)
- ❑ 1 Fuel hose 8mm ID x 300mm (Fuel transfer, pump outlet to twin filler)
- ❑ 1 Fuel hose, 8mm ID x 1000mm long (system breather to main tank)
- ❑ 2 Fuel hose 8mm x 2000mm (carbon canister)
- ❑ 1 Long Ranger auxiliary tank fitting guide

INSTALLATION GUIDE

1. Check that all items listed in the LONG RANGER kit have been received, and that nothing has been damaged in transit.
2. Although the LONG RANGER tank has been cleaned and sealed at the factory, it is recommended that its interior be vacuumed again as an added precaution against blocked filters and/or fuel pump damage.
3. If parts are missing or damaged, if foreign matter is found in the tank, or if any problems arise during installation, contact the factory office without delay for advice phone (02) 4953 3288, fax (02) 4953 1916 or visit www.thelongranger.com.au or email any comments about tank fitting to fitting@thelongranger.com.au.
4. During the installation apply rust proofing or paint to any metal parts that are modified, deburr metal pipes that have been modified and think how to place hose clamps, ensure they can be removed after installation.
5. ***IMPORTANT: The FJ cruiser is fitted with SRS Air Bags. Exercise EXTREME CARE when working on the electrical system***.
6. **Refer to Photo 1-3**: Locate a suitable position for the switch and drill hole with 20mm step drill, This switch is inline with existing switch and 18mm from the edge. Some plastic will need to be removed from the panel behind to suit the switch. This panel can be removed by pulling up at the angle shown. We recommend consultation with the vehicle's owner if there is any doubt about the placing of the switch.
7. Mount timer module under dash in suitable location (black box).
8. **As per wiring diagram and Photo 4**: Plug the switch into loom from timer module, remove the fuse from holder and plug main loom into module, as per wiring diagram connect earth and power wires under dash. Connect the red power wire from the timer module to a 12v power source (We found the white with green trace on a 2011 model), (A better alternative to the provided scotch lock would be to solder these connections). Connect earth to bolt in behind switch panel Note: leave all trim panels off till we test a bit later.



Photo 1: pull panel up on an angle

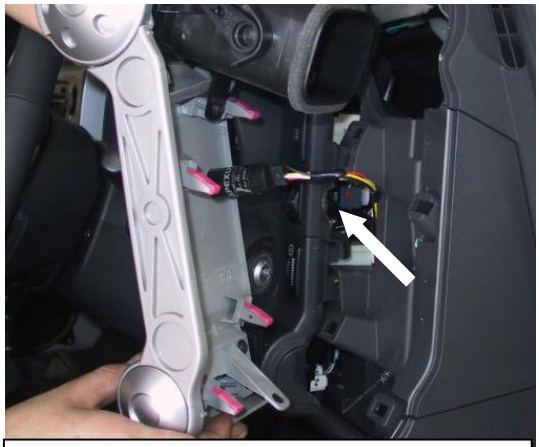


Photo 2: Remove plastic to suit switch

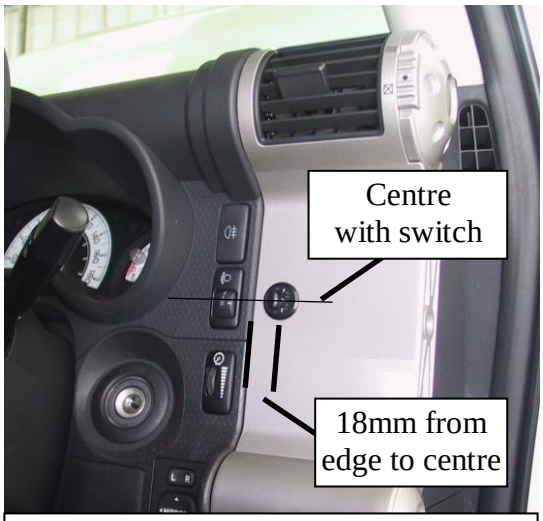


Photo 3: Switch location

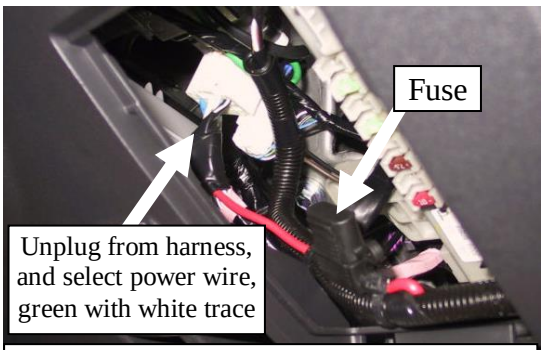


Photo 4: Fuse and power source

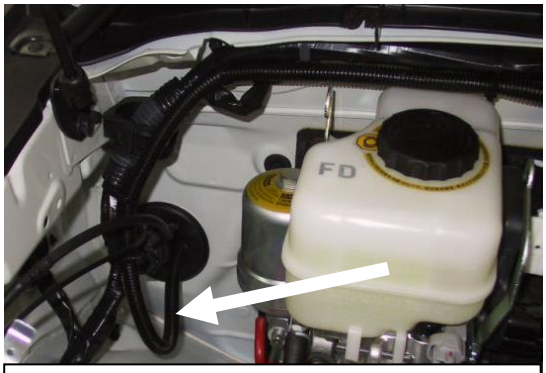


Photo 5: Wiring through grommet



Photo 6: Wiring along firewall and down to chassis

9. **As per photo 5-6**: Run the wire loom through grommet in firewall just to the right of the accelerator pedal *being careful not to pierce any other wiring*, up over firewall and down along top of chassis towards front of main fuel tank, and leave here at this stage, cable tie in place.

   Warning: the next few steps require cutting metal and the potential for fuel vapor to ignite, so ensure there are no fuel fumes present, the fuel system should still be intact and sealed at this stage.

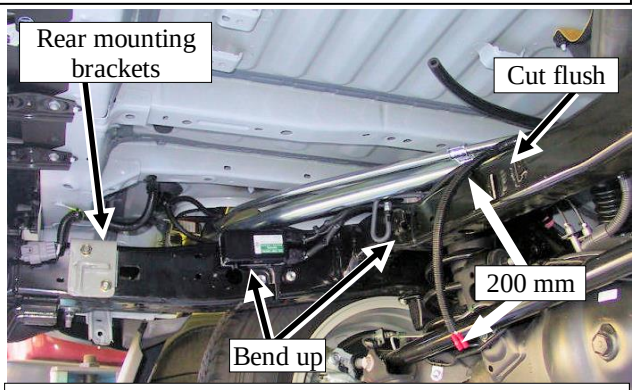


Photo 7: Preparing the tank area

10. **As per photo 7**: Prepare the tank area, cut from crossmember the center bracket and bend the other up and flat to the chassis (or cut off).
    Bend up fuel module approximately 3mm, Note only use your hand to do this and check clearance when tank fitted.

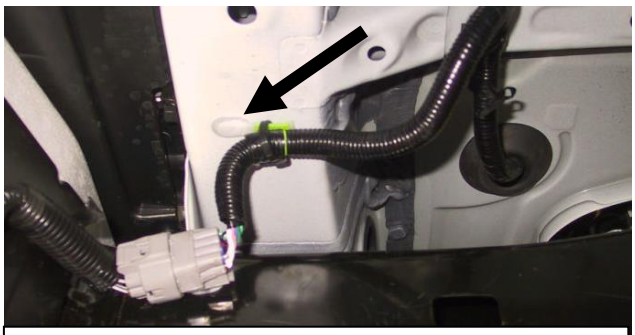


Photo 8: Re-clip harness into new hole

11. **As per Photo 8**: Carefully remove the wiring harness from chassis and re-clip into existing hole in floor rib.

12. **As per photo 9**: Fit the two rear tank mountings to either side chassis rail, drill 10mm holes and fit SF11 (bolt with tag), washers and nylocs. *Note: Have a 5mm gap between edge of bracket and rectangle hole in chassis.*

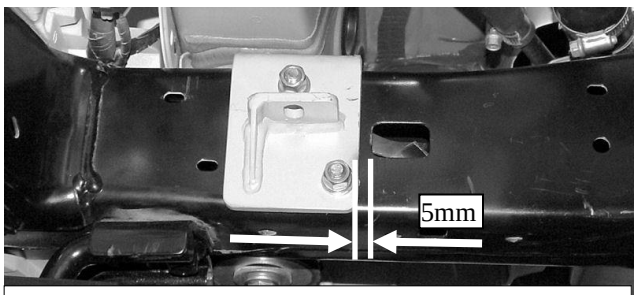


Photo 9: Rear mounting

13. Remove the filler and breather hoses from the main tank steel filler tube and undo the mounting bolt ready for filler removal shortly.

14. Lower vehicle and remove the filler neck cover from the inner mudguard area and completely remove the filler assembly.

15. **As per photo 10**: Mount transfer pump on the front side of the inner guard below the filler neck, drill 6mm clearance holes and mount using 6mm bolts,

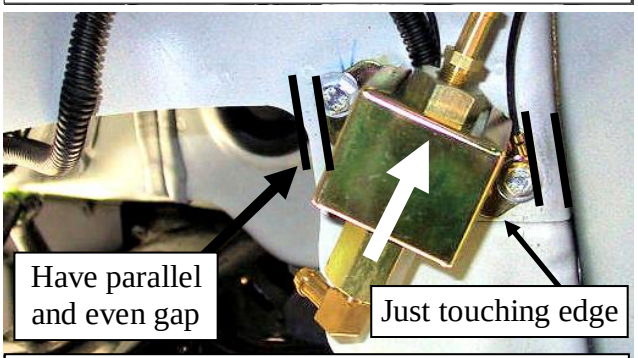


Photo 10: Transfer pump mounting

washers & nyloc nuts, fit pump earth to one of the mounting bolts, *Note: Have even gap either side of pump and parallel with edges and the flow direction should be aiming up.*
With a suitable sealant fit the brass straight to the pump outlet and the brass elbow to the inlet and aim to the rear just missing the metal bodywork.

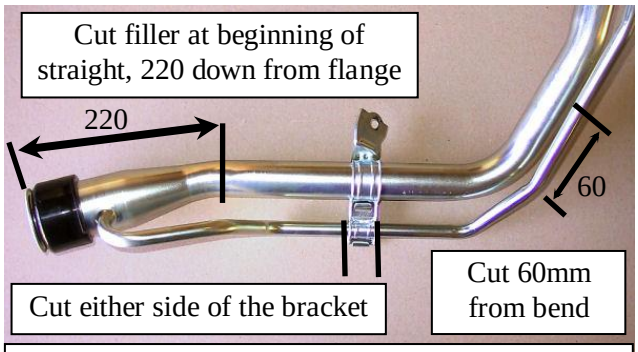


Photo 11: Modify filler neck

16. **As per photo 11**: Trim the filler assembly, cut the main filler pipe 220 down from end. Cut the fast filler breather either side of the bracket and 60mm down from bend shown. Loosely refit filler back in place but no mounting bolt at this stage. ***Warning**: Ensure safety with fuel or fumes when cutting metal*.
17. Raise the vehicle and connect the steel filler back to the OE tank and loosely fit the lower mounting bolt.
18. **As Per photo 12**: Run wiring along pipe work above tail shaft to tank area as shown in photo 7.

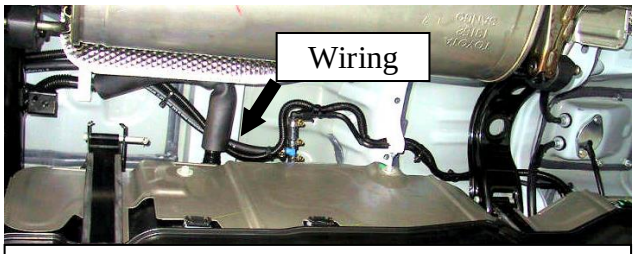


Photo 12: run wiring along here

19. **As per wiring diagram and photo 7**: Complete wiring of transfer pump and terminate the sender wires with 200mm past the crossmember for later connection to tank.


Photo 13: Fit sender unit and fuel transfer hose

20. Install the fuse under dash, test the sender with a multimeter, it should read 2-90 ohms, temporarily connect the sender, test the operation of the pump and sender unit. The gauge should be on empty (red LED). The pump should be audible when turned on, the amber pump LED with illuminate and should be flashing with an empty tank. Set sender to full and ensure all green lights illuminate when ignition is turned on, you can also move the float arm and watch the gauge go down after waiting a minute or so or cycle the power from "Off" to "On" to get an instant reading after moving sender to new position.
21. **As per photo 13**: Fit sender unit to tank with M4 screws and gasket supplied, this has been set-up in our factory and when held on side of tank should be just off the bottom when on empty. This should only fit in one position with the float aiming towards the rear, *Note: check float will not foul on baffles.*
22. **As per photo 13**: Fit 8mm pickup hose to tank.
23. **AS per photo 14**: Remove brake line mounting bolt on LH chassis rail. Slide canister bracket up in behind brake line mount, with canister mount parallel with chassis refit bolt and tighten. Note: rear canister mount hole should align with an existing hole.
24. Drill remaining front mounting hole through chassis, fit tag bolts, washers and nyloc nuts. Cut excess tag from bolts.

25. **As per photo 14**: Note the orientation and fit brass fittings to canister using a small amount of fuel sealant. With fittings towards front of vehicle, fit canister to mount with M6 bolts and washers supplied.

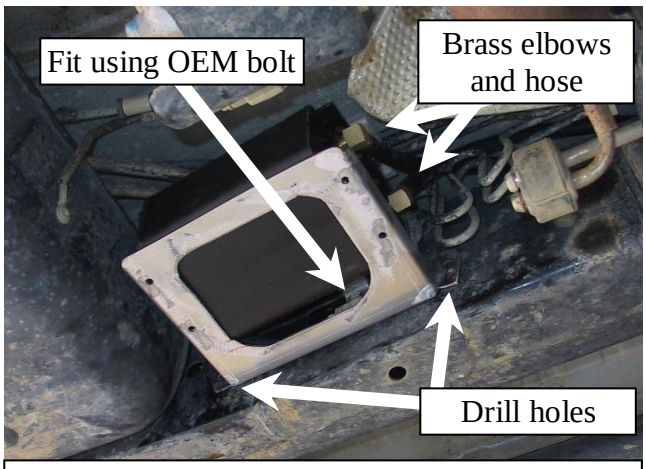


Photo 14: Canister fitting

26. **As per plumbing diagram and photo 14**: Fit both 2.0m x 8mm hose to canister, cable tie along chassis rail up into engine bay and close to firewall. *Note: Keep hose behind exhaust heat shield and run on outer top side of steel pipes to give maximum clearance on exhaust system for rubber hose. Note: barb selection is not important.*

27. **As per Canister Plumbing Diagram**: Cut "Canister Outlet" vent hose from OEM canister in engine bay 150mm down from canister and connect both hoses from secondary canister using clamps and joiners supplied. Neatly fasten hose with cable ties. *Note: keep maximum clearance from exhaust and suspension system.*

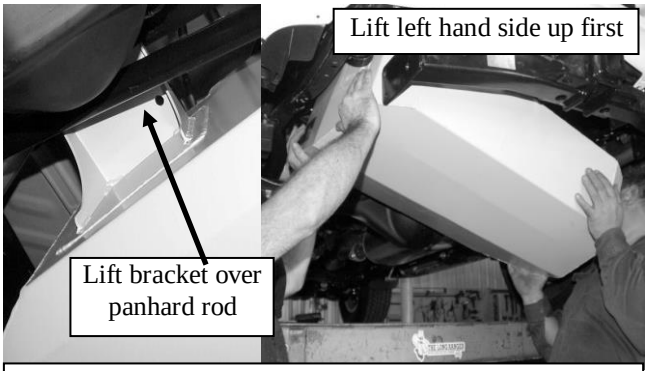


Photo 15: Lifting tank into place

28. **As per photo 15**: Lift The LONG RANGER tank into position. Lift front bracket up between panhard rod and cross member, lift LHS up over rear mounting bracket, then lift RHS up over mounting bracket. Support front with U-bolt, large washers and nyloc nuts at the front. Fit bolts, nylocs and washers on the rear. Check that the tank lies evenly between chassis rails, it should be approximately 40mm either side and check for clearance all round and tighten all mounting bolts.

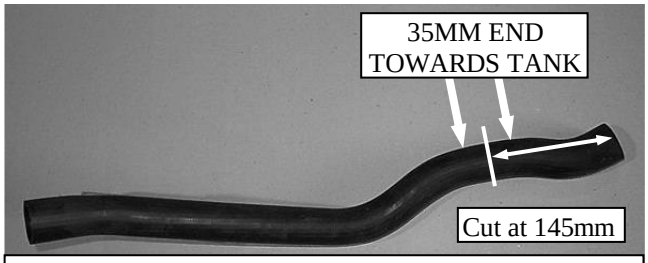


Photo 16: Cut TA71FH1 rubber filler hose

29. <u>NOTE</u>: To ensure trouble-free performance when re-fuelling, the following principles must be applied to the following steps with respect to fuel hoses. Ensure that there are no kinks, and no pinched or drooping sections. Ensure the filler and breather hoses have a steady and <u>consistent rise</u> throughout their full length, with <u>no low points</u> where fuel could lie (airlock) and hinder airflow during filling. Ensure there is adequate clearance between all hoses and moving vehicle components. Do not over tighten cable ties and squash hoses.

30. **As per photo 16, 17,18 and plumbing diagram**: Fit both the rubber filler hoses, auxiliary TA71BH2 fast fill breather and the 8mm fuel transfer hose to the twin filler and fit into place, NOTE: Have the lager 38mm hose ends

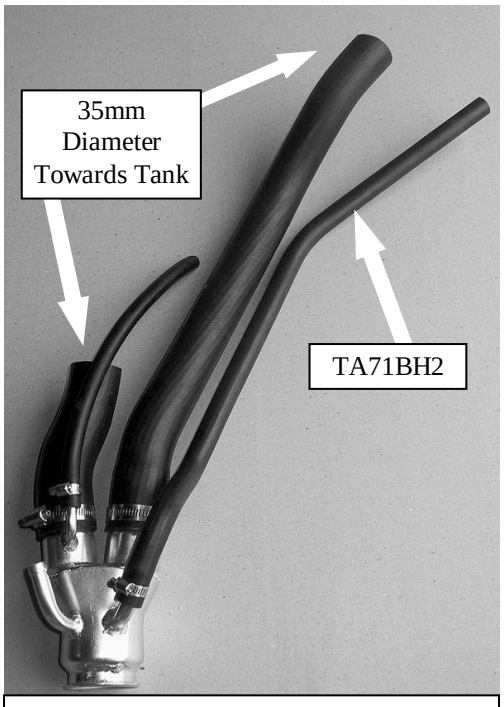


Photo 17: Twin filler setup

connecting to the twin filler. Connect both the filler hoses and loosely fit filler mounting nut, do not tighten filler hose clamps at this stage. View inside the twin filler and rotate to have it angled at 15 degrees, EG the main tank filler will be slightly higher.

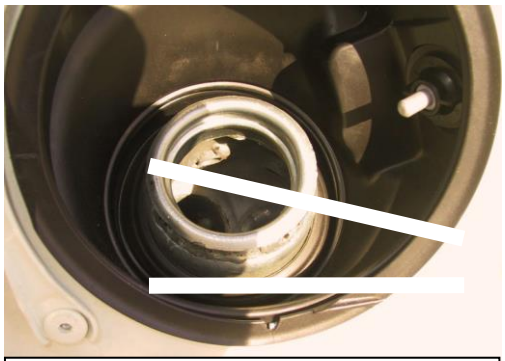
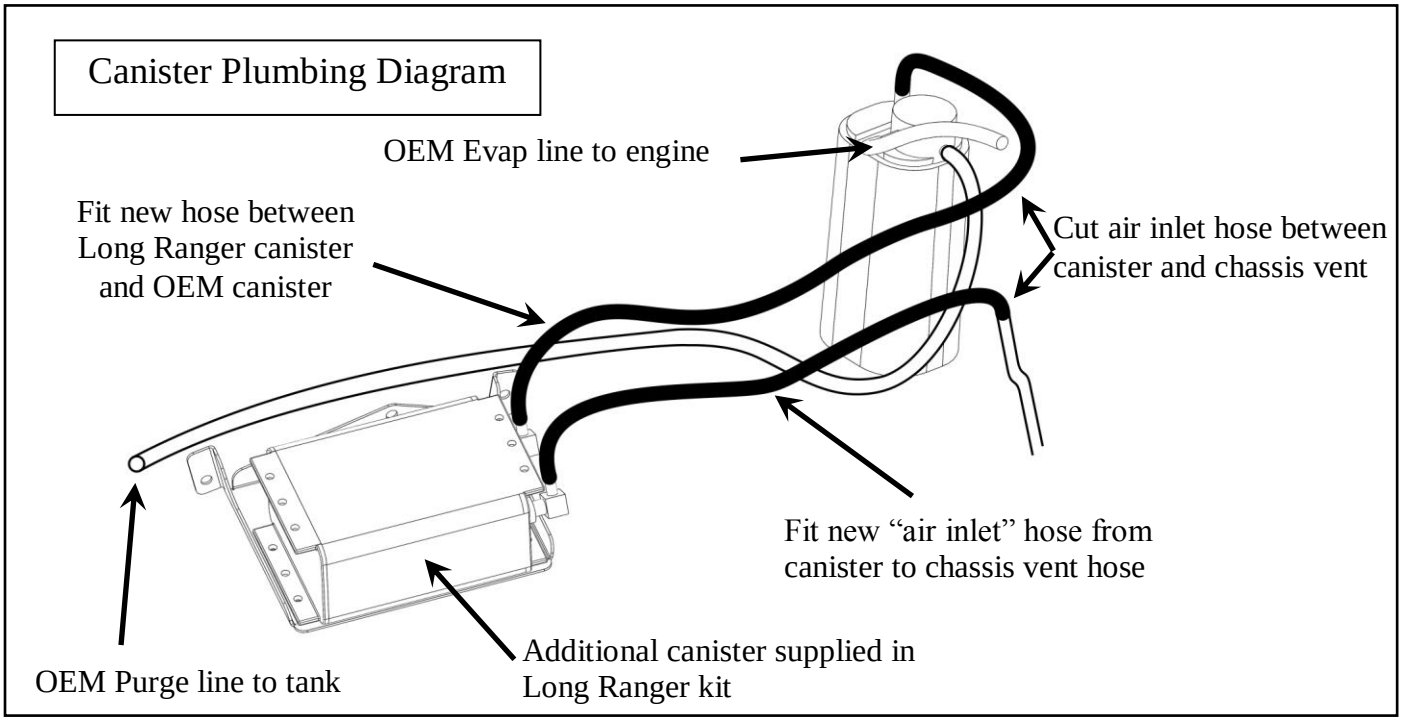
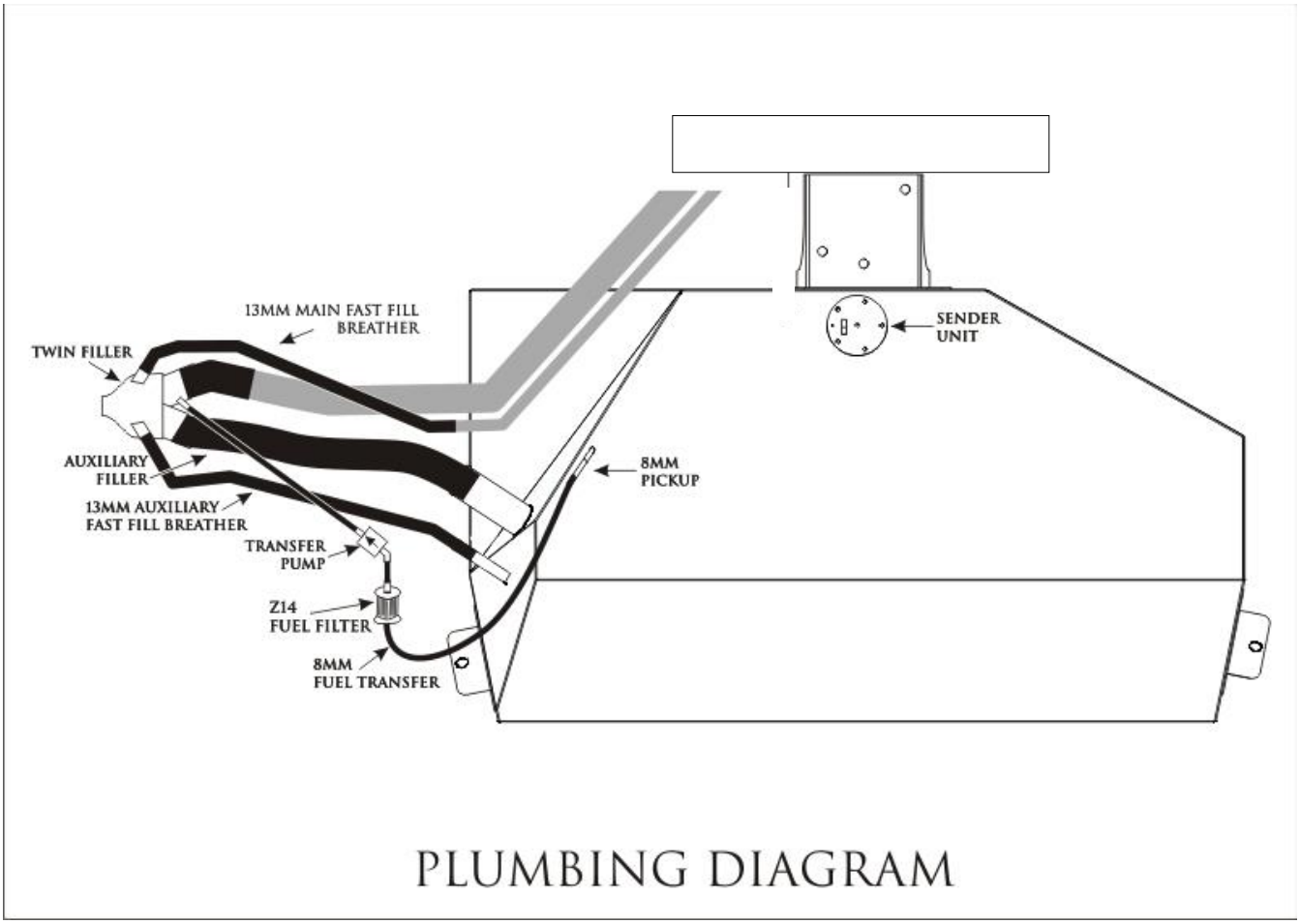


Photo 18: Angle twin filler 15deg

31. **As per plumbing diagram**: Fit fuel filter to pump and connect to tank with flow direction towards the pump.
32. Fit auxiliary fast fill breather to tank.
33. Check the twin filler is fitted correctly in rubber grommet and as square as can be and tighten hose clamps. Note: by adjusting the filler hoses up and down independently you can raise and lower each side to level up filler neck in grommet.
34. Fit Main tank fast fill breather, finish fastening all bolts and hose clamps on main filler, Cable tie the filler hoses neatly together, check for adequate clearance (approx. 10mm) on sharp edge of body lip.
35. Double-check all hose clamps and fittings, re-fit the filler neck cover, tighten steel filler mounting bolts.
36. Clean yourself up and neatly fasten all wiring under dash to prevent chafing. Fit switch, replace all trim and tidy area from fingerprints and off cuts of wire.
37. We suggest that the tank be filled with a test load of fuel, test drive vehicle and inspect all fittings for leaks (not included in the quoted price).
38. Place the owner's information pack on the passenger's seat





PLUMBING DIAGRAM

