INSTALLATION INSTRUCTIONS FOR A REPLACEMENT TANK

THE LONG RANGER

THE BIG TANK FOR A BIG COUNTRY

MADE IN AUSTRALIA

New Defender 110 - L663

TR90P - 174lt Petrol 2020 – on

This tank replaces 90lt OEM saddle tank.

GENERAL NOTES

a) Fitting time is approximately 5.5 hours. No major vehicle modifications are required. This LONG RANGER tank locates under the vehicle in place of the standard tank.

b) New tank sits the same height as the underbody felt that fitted around the OEM tank. This underbody felts is removed and not refitted.

c) A hoist is essential but will speed the job up significantly.

d) The original filler, fuel level sender unit, pick-up unit, are reused in this installation. Extreme care and cleanliness is recommended when handling fuel level sender and submerged fuel pump units. Inspect any components that are to be reused from the original tank installation for serviceability and replace any item found to be defective.

e) The original tank has a hole cut in it to remove some components and cannot be reused..

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

g) The trip meter distance to empty will no longer work as intended by the manufacturer, it is expected you could double the DTE reading with the new larger tank fitted.

Observe safety precautions during the installation of the LONG RANGER fuel tank

INSTALLATION KIT TR90P

QTY DESCRIPTION

- ❑ 1 LONG RANGER Tank #**TR90PA** (Smaller RHS 29KG)
- ❑ 1 LONG RANGER Tank #**TR90PB** (Larger LHS 31KG)
- ❑ 1 Plastic bag 900mm long ??
- ❑ 1 Rollover valve #**VAROLL07** (*Factory fitted in top of petrol tank).*
- ❑ 1 Rollover valve grommet #**VAROLL08** (*Factory fitted in top of petrol tanl).*
- ❑ 1 Clamp ring #**R63CR (pickup unit)**
- ❑ 1 Canister mounting bracket #**TR90CM**
- ❑ 1 Sender unit float mount #**TR90SUM** (LHS tank)
- ❑ 1 Underbody felt mounting #**TR90B3 RHS**
- ❑ 1 Underbody felt mounting #**TR90B4 LHS**
- ❑ 1 O-Ring #**TR63ORING**
- ❑ 1 Plastic joiner quick release #**PLJOQC1916B**
- ❑ 2 **SF06** M6 x 20 Bolt with tag (Canister mount)
- ❑ 1 Carbon canister TLR #**CC01**
- ❑ 8 Screws M5 x 10mm (LHS tank float mounting)
- ❑ 8 Screws M5 x 12mm (RHS pickup unit mounting)
- ❑ 14 Bolt M6 x 20 (canister and felt mounting)
- ❑ 2 M6 Nyloc nut
- ❑ 2 M6 Plain nut
- ❑ 6 M6 x 12 Flat washers (canister)
- ❑ 10 M6 x 19 Flat washer (underbody felt)
- ❑ 14 Spring washer M6
- ❑ 2 M6x1.0 Speed Nut Extruded Short #**FAM6 SNEXSH** (Underbody felt mounting and mudflaps)
- ❑ 8 Bolt, M8 x 30mm Long, (tank mounting)
- ❑ 8 8x24 flat washers
- ❑ 8 M8 spring washers
- ❑ 4 Bolt, M10 x 30mm Long, (tank mounting)
- ❑ 4 M10x30 flat washers
- ❑ 4 M10 spring washers
- ❑ 10 Cable tie 5mm x 200mm
- ❑ 2 Stickon cable tie pads (#56448)
- ❑ 2 Hose clamp MH4 (6.5mm & 8mm hose)
- ❑ 6 Hose clamp MH6 (10mm & 13mm hose)
- ❑ 4 Hose clamp MH8 (16mm hose)
- ❑ 4 Hose clamp HS12 (19mm hose)
- ❑ 2 Hose clamp HS28 (38mm filler link hose)
- ❑ 1 Brass fitting 1/4 BSP x 16mm straight (for new canister)
- ❑ 1 Plastic fitting 1/4 BSP x 19mm straight (for new canister)
- ❑ 1 Fuel hose 6.5mm x 180mm (Small rollover valve to elbow on LHS tank)
- ❑ 1 Fuel hose 10mm x 950mm (External fuel transfer between tanks)
- ❑ 1 Fuel hose 10mm x 300mm (**SPECIAL IN TANK FUEL HOSE**)
- ❑ 1 Fuel hose 16mm x 480mm (TLR canister to OEM air intake filter)
- ❑ 1 Fuel hose 16mm x 400mm (OEM fast fill breather to elbow on LHS tank)
- ❑ 1 Fuel hose 19mm x 840mm (TLR canister to OEM canister quick connect elbow)
- ❑ 1 Fuel hose 38mm x 190mm (Filler link)
- ❑ 1 Sheathed wire twin-core 2mm x 600mm long (sender extension) AXC0799L 10amp
- ❑ 2 Terminal red male bullet connector
- ❑ 2 Terminal red female bullet connector
- ❑ 2 Terminal red straight connector
- ❑ 1 Fitting instructions
- ❑ 1 Warranty information sheet and return card
- ❑ 1 LONG RANGER sticker

INSTALLATION GUIDE

DANGER - WHILE WORKING WITH FLAMABLE LIQUID
AVOID FLAMES, SMOKING AND GRINDING SPARKS WITH FUEL PRESENT
BE PREPARED WITH SUITABLE FIRE FIGHTING EQUIPMENT ON HAND

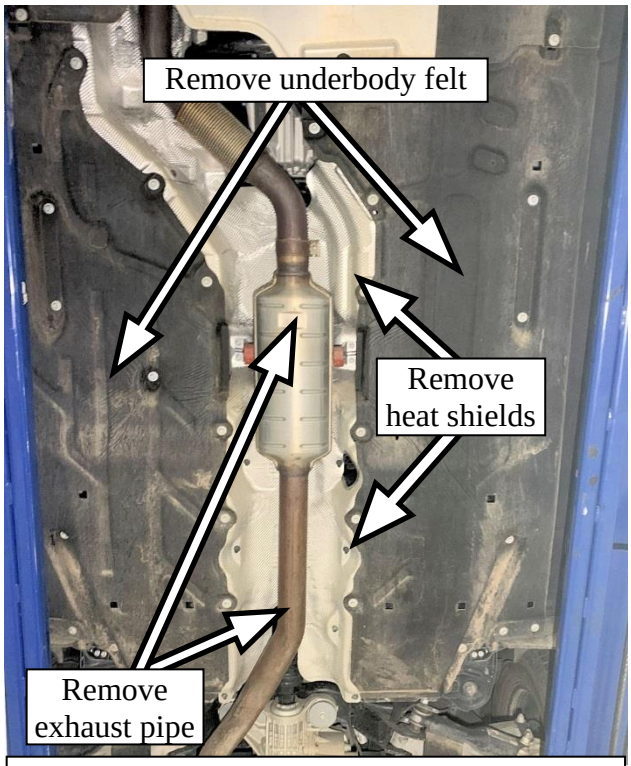


Photo 1: Underbody felt removal

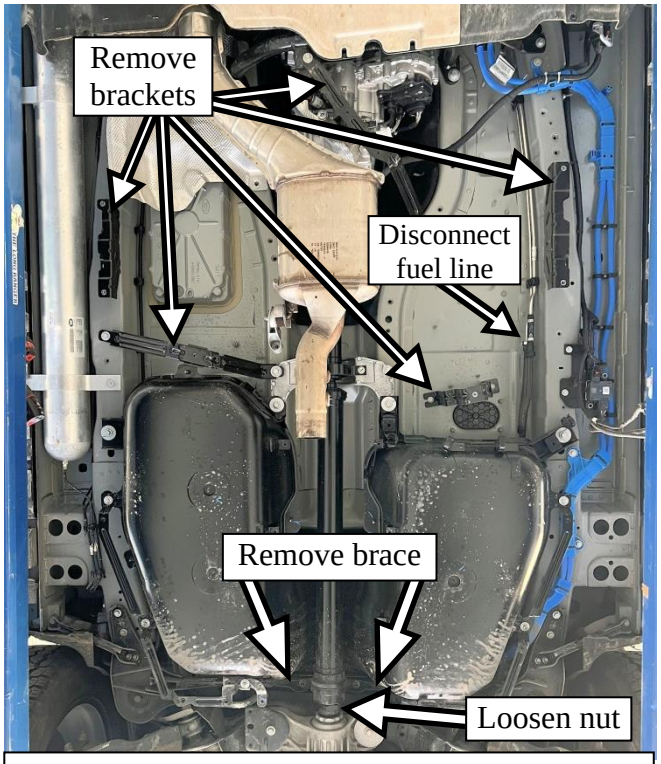


Photo 2: Tank area preparation

1. Take a few minutes to read through this installation guide before proceeding.
2. Check that all items listed in the Long Ranger kit have been received, and that nothing has been damaged in transit
3. 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
4. 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 email fitting@thelongranger.com.au
   Our web page also contains an FAQ , so some of your questions may already be answered
5. **As per Photo 1&2:** Remove the underbody felt and all its mounting brackets. *Note: diesel vehicle shown in photo 2, petrol will be slightly different*
6. **As per Photo 1:** Remove exhaust system from join just in front of muffler to rear of vehicle
7. **As per Photo 1&2:** Remove two heat shields and mounting brackets at rear of transfer case and retain for later use

8. **As per Photo 2:** Remove bolts from centre bearing and loosen large nut on rear diff to remove tail shaft, drop tail shaft from diff and centre bearing and remove from rear of transfer. *NOTE: complete removal of the tail shaft makes job a lot easier but not essential*
9. **As per Photo 2:** Remove tubular brace from rear of tank. *Note: some models appear to have a spacer block that also requires temporary removal, ensure it goes back in the same configuration*
10. If fitted, some side steps may need to be removed if they protrude underneath OEM tank
11. **As per Photo 2:** Disconnect fuel supply line on L/H chassis rail (plastic line)
12. Disconnect fuel filler at rear of tank
13. Support tank and remove eight tank mounting bolts
14. Lower tank 100mm, disconnect fast fill breather fitting and 2x electrical fittings
15. Remove tank. *Note: Weight distribution may be uneven depending on which side of the tank all the fuel is, if a half full tank you can expect it will all be in the RHS*
16. **As per Photo 3:** Unclip plastic fuel line from OEM tank and refit to steel hard line on L/H rail, cable tie to adjacent line
17. **As per Photo 3:** Remove a harness bolt from blue cable harness and refit through tank bracket later
18. **As per photo 3**:Cable tie 10mm x 900mm fuel line along cross member (TLR to TLR pick up and transfer)
19. Remove pickup/sender unit from OEM tank, with unit partially removed, disconnect internal electrical connection and fuel line 90 deg quick connect fitting connected to pick up. *Note: See how to squeeze quick connect in photo 7*
20. Cut 90 deg plastic quick connect fitting from fuel line inside of OEM tank and retain
21. **As per photo 4**: Remove OEM sender unit in left side of tank by unclipping plastic cradle and remove from tank. This is done by pushing the tab indicated in and up to release from holder, twist and rotate with care to remove unit from tank
22. **As per photo 5&6**: **As per photo 6**: Mount sender unit into TLR cradle #TR90SUM and fit into TLR left tank using Supplied "O" ring and

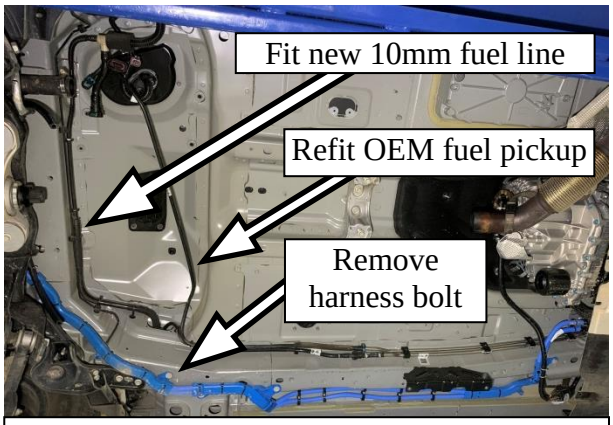


Photo 3: Tank area preparation

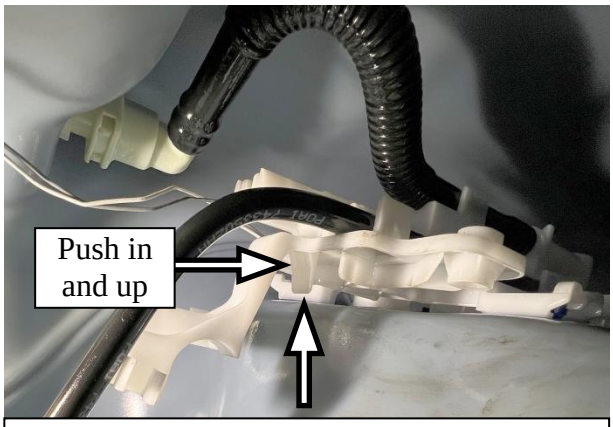


Photo 4: LHS sender unit removal

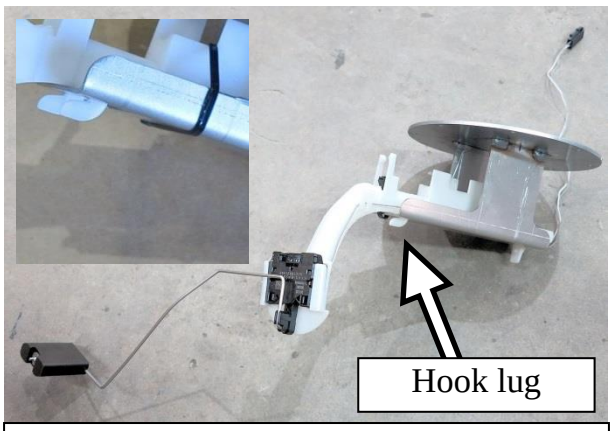


Photo 5: Mount to cradle

M5x10 screws. Orientate float as per photo and guide wiring out of tank via 38mm pipe on side of tank. *Note: Breather hose is discarded*

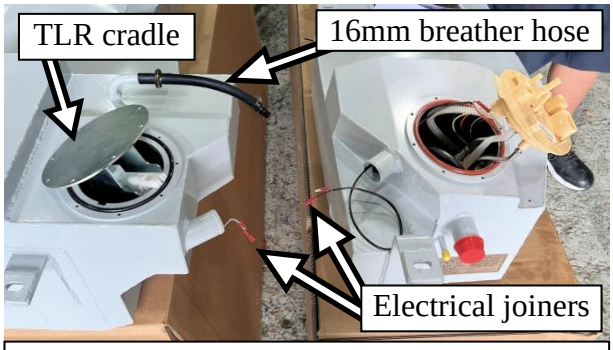


Photo 6: Tank preparation

23. **As per photo 6**: Cut electrical plug from sender wiring protruding from 38mm fill pipe. *TIP: cut one at 60mm and the other at 40mm from the plug, crimp 1x male and 1x female bullet terminal to the wires, this ensures the connections are offset*
24. Extend wiring on cut off plug with supplied twin core 600mm wiring and joiners, ensure OEM wires are correctly connected to corresponding colours, crimp male and female Bullet terminals to opposite end.
25. Plug electrical plug with extended wiring back into OEM pump/sender unit and cable tie to existing wires
26. **As per photo 6&7**: Connect supplied 10mm x 300mm "in-tank" fuel hose to plastic click fitting previously removed in step 20. Connect other end of hose to 10mm steel pipe inside TLR right tank. (**NOTE: THIS MUST BE *"IN TANK"* FUEL HOSE**)

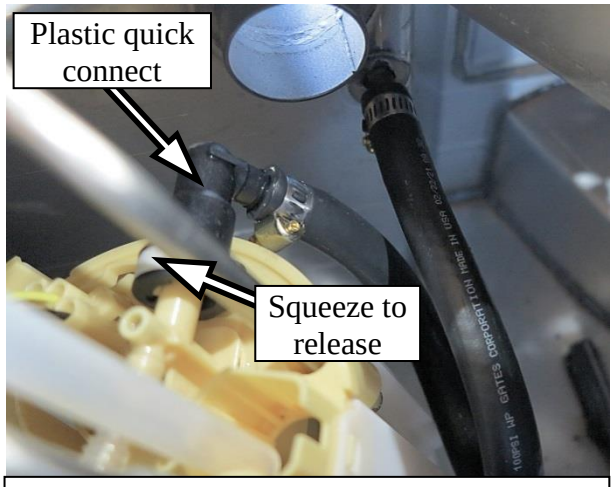


Photo 7: 10mm in tank fuel hose

27. **As per photo 6&7**: Using the OEM "O" ring, install pickup/sender unit into TLR right side tank whilst doing this plug the transfer hose with 90 deg quick connect fitting onto pick up unit and guide wires out of tank via 38mm fill pipe at left rear of tank. Use TLR TR63 clamp ring and M5 x 12mm screws.
Note: Ensure the sender unit wires do not foul on the sender unit float arm
Note: Ensure hose is not kinked

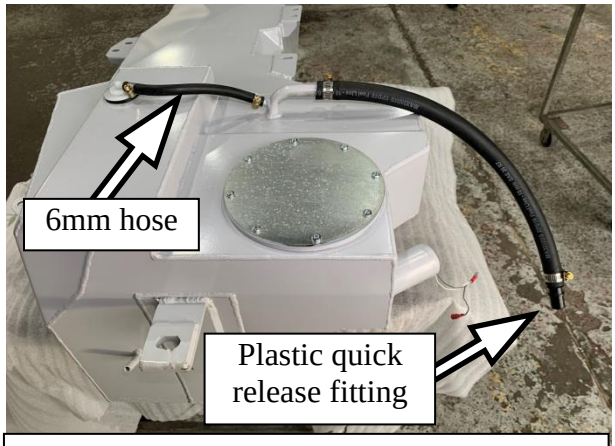


Photo 8: Breather hoses

28. **As per diagram & photo 8**: Connect 6mm x 180mm hose between TLR roll over valve and barb
29. **As per diagram & photo 8**: Connect 16mm x 400 hose to fast fill on TLR left tank and fit supplied plastic quick release/barb fitting to other end of hose with clamp supplied
30. **As per bolt layout diagram** : Lift left TLR tank into place and support, secure tank using OEM and TLR fasteners, but leave the rear M10 bolt loose at this stage. *Note: refit blue cable harness with OEM bolts previously removed*
31. **As per diagram**: Reconnect 16mm fast fill breather with the quick connect fittings
32. Fit 38 x 190 filler hose to pipe at left rear of R/H tank, secure with clamp supplied and pull sender unit wires through hose

33. Lift R/H tank into place and support about 50mm down from final fitted location. Connect fuel pickup line and two electrical plugs to top of OEM pump/sender unit
34. **As per diagram**: Connect sender wiring between 2 TLR tanks whilst lifting R/H tank to final location. Connect 32mm hose to L/H tank and clamp. *Note: Any excess wire should be pushed into the LHS tank to avoid fouling the RHS sender unit float arm*
35. **As per bolt layout diagram:** Secure R/H tank using OEM and TLR hardware as per diagram, but leave the rear M10 bolt loose at this stage
36. Refit chassis brace at rear of tanks and ensure all fasteners including loosely fitted M10 bolts now tight
37. Connect previously hung 10mm pickup line at rear of left and right TLR tanks. Secure with MH06 clamps supplied
38. Connect OEM filler hose to rear of R/H TLR tank
39. Refit tail shaft, and exhaust system
40. Check clearance all round
41. **As per photo 10**: Remove 10 speed nuts from the two discarded OEM heat shields and refit to mounting holes in supplied underbody felt brackets. Fit brackets to either side chassis rails. *Note: will need to remove one tank mounting bolt*
42. **As per photo 9&11**: Trim & Refit the underbody felt with M6 bolts and washers provided. Measure in 180mm from profile indicated and trim, check fitment against tank. New holes will need to be drilled into felt to align with speed nuts once the outer edges are in place *Note: Ensure mudflaps have all fasteners refitted and sit square, we have supplied two extra speed nuts for the mudflaps if required. New holes will need to be made through felt to mount to brackets*

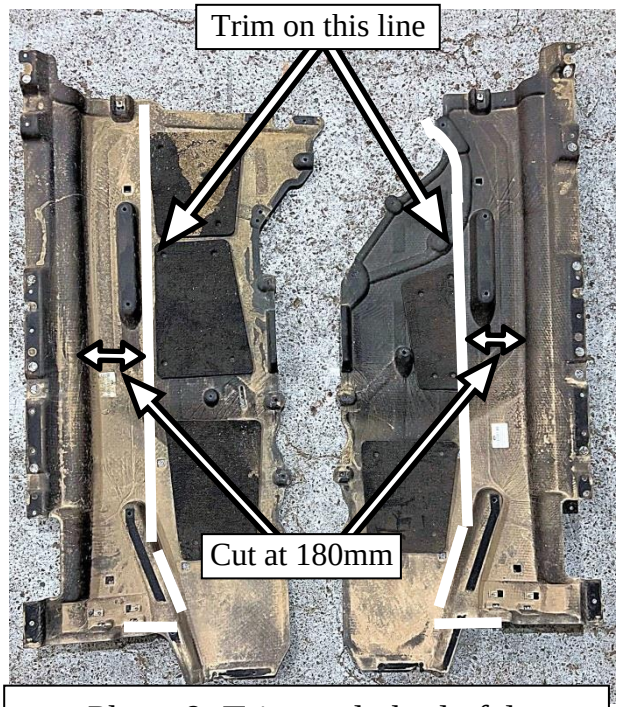


Photo 9: Trim underbody felt

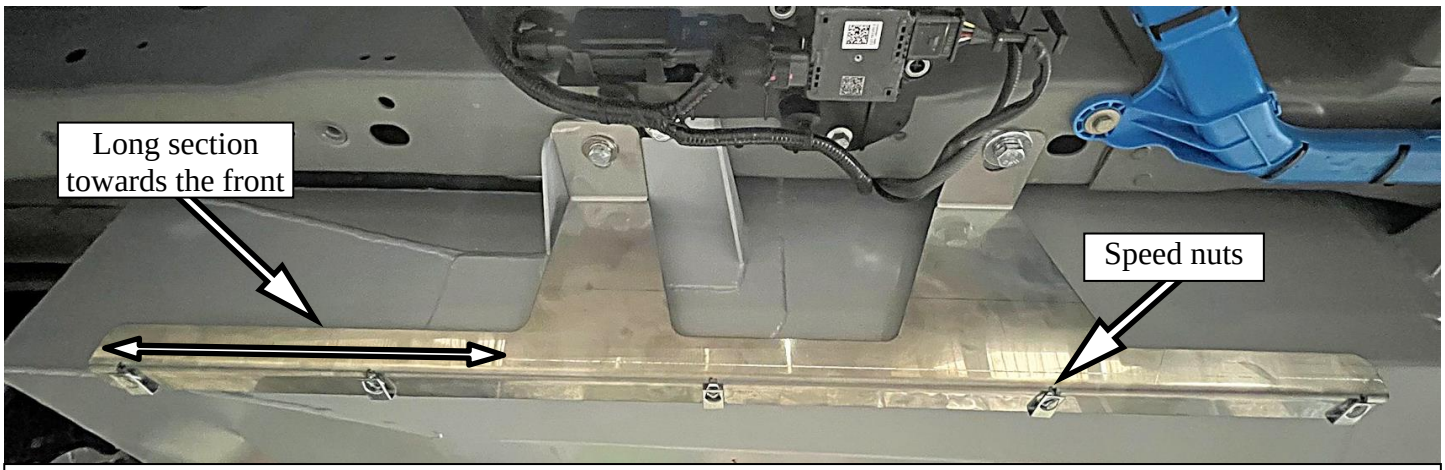


Photo 10: Under body felt bracket – LHS diesel model shown

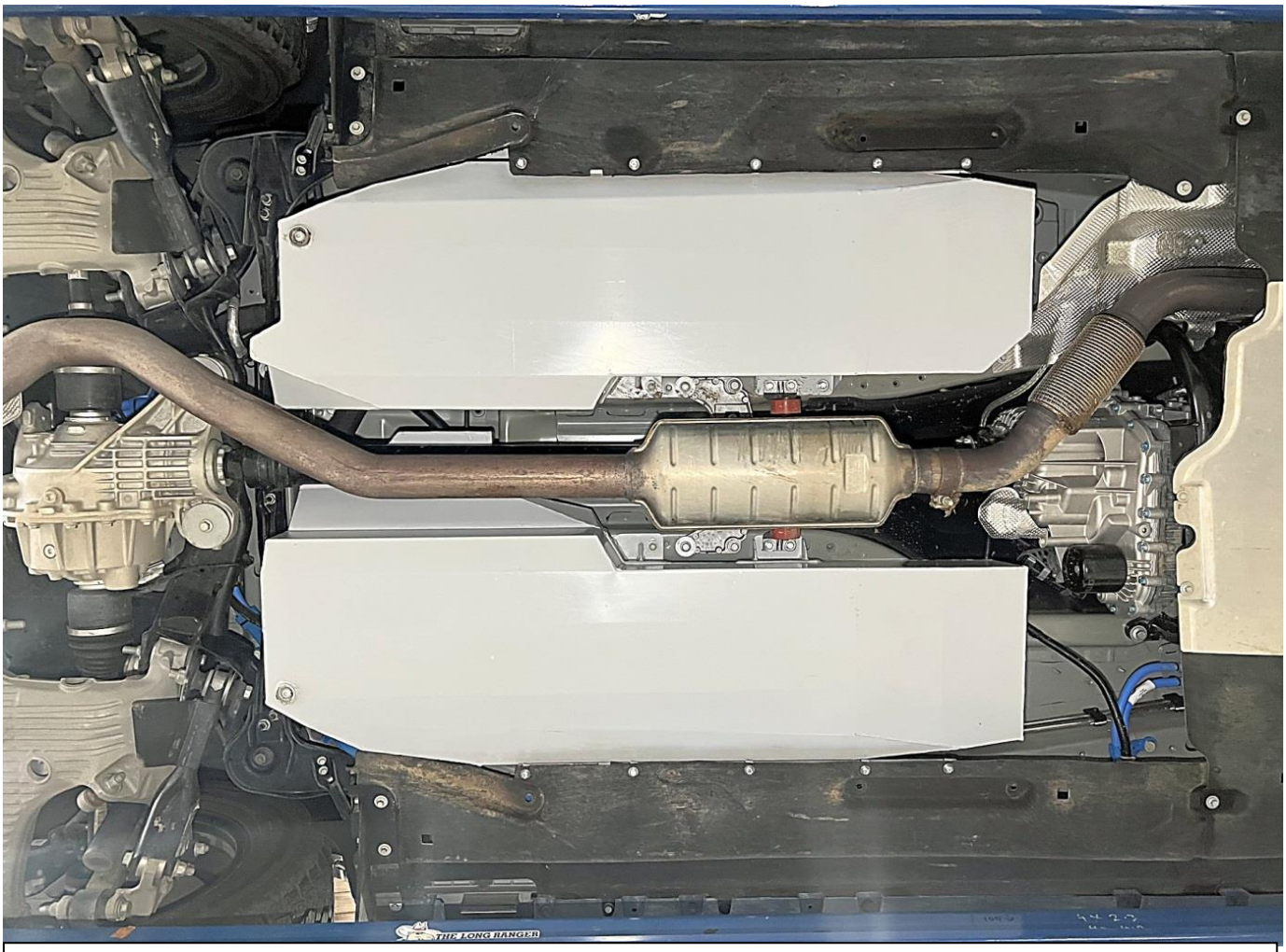


Photo 11: Final fitment of under body felt

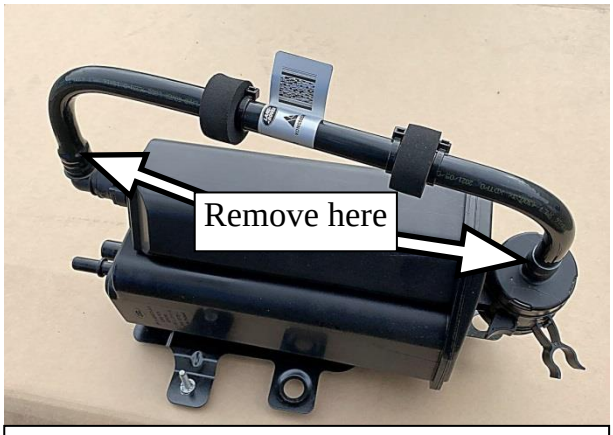


Photo 12: Trim hose from fittings

43. Remove L/H rear inner guard (Wheel removal not necessary, but makes the job significantly easier)
44. **As per photo 14**: Disconnect 2x lines at front of OEM carbon canister
45. Remove 3x bolts securing canister and remove canister
46. Cut cable ties holding filter to rear of canister
47. **As per photo 12**: Cut hard line from fitting at front top of canister and at the filter. Retain filter and fittings
48. **As per photo 13**: Connect TLR 19x 840mm OEM breather hose to top fitting on front of canister. Refit canister and route hose over top and hanging down at rear
49. Reconnect fittings at front of canister
50. Remove exhaust hanger bolts above mud flap.
51. **As per photo 14**: Sit TLR canister mount in place and refit exhaust hanger.

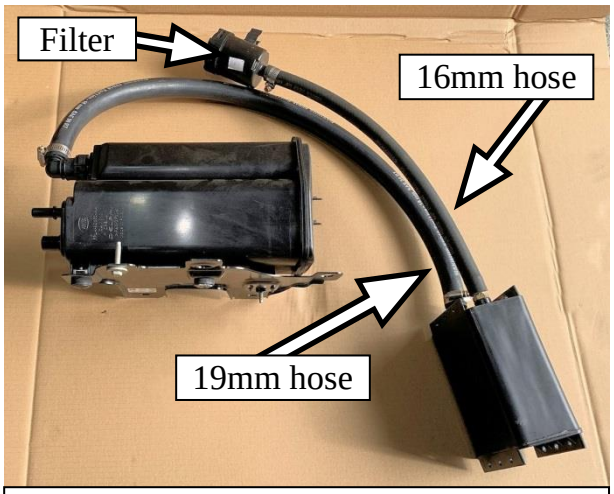


Photo 13: Hose layout

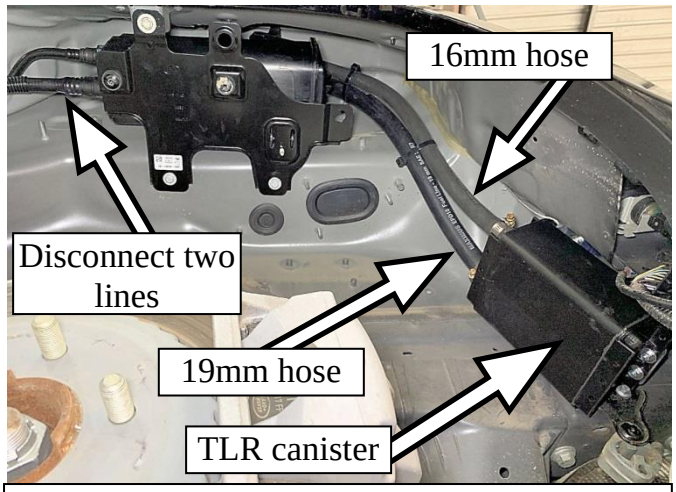


Photo 14: Canister fitment

52. Secure top of mount with 2x tag bolts #S06 and nuts supplied

53. **As per plumbing diagram**: Fit 1x 16mm x ¼ BSP brass and 1x 19mm x ¼ BSP plastic fittings to TLR canister with a suitable sealant

54. Mount canister to cradle with fittings at top, use flat washer and M6 bolts with nylocs nuts at bottom and plain nuts and spring washers at the top with captive nuts

55. **As per plumbing diagram & photo 13**: Connect hose from OEM canister top fitting to TLR canister 19mm fitting

56. **As per plumbing diagram & photo 13**: Fit removed air filter to 16mm x 480mm hose with clamp supplied. Connect other end to remaining 16mm fitting on TLR canister. Filter will sit at rear of OEM canister, secure with cable ties

57. Refit inner guard

58. Transfer the fuel removed earlier to the new Long Ranger tank.

59. We suggest that the tank is filled with a test load of fuel, test drive vehicle and inspect all fittings for leaks (not included in the quoted price).

60. Visually check the job over, make sure all bolts and clamps are fastened correctly, ensure all fuel hoses and electrical wiring will not chafe on nearby components and moving suspension, detail the area involved in the work before returning the vehicle to its owner.

Explain to the owner the operation of the LONG RANGER TANK.

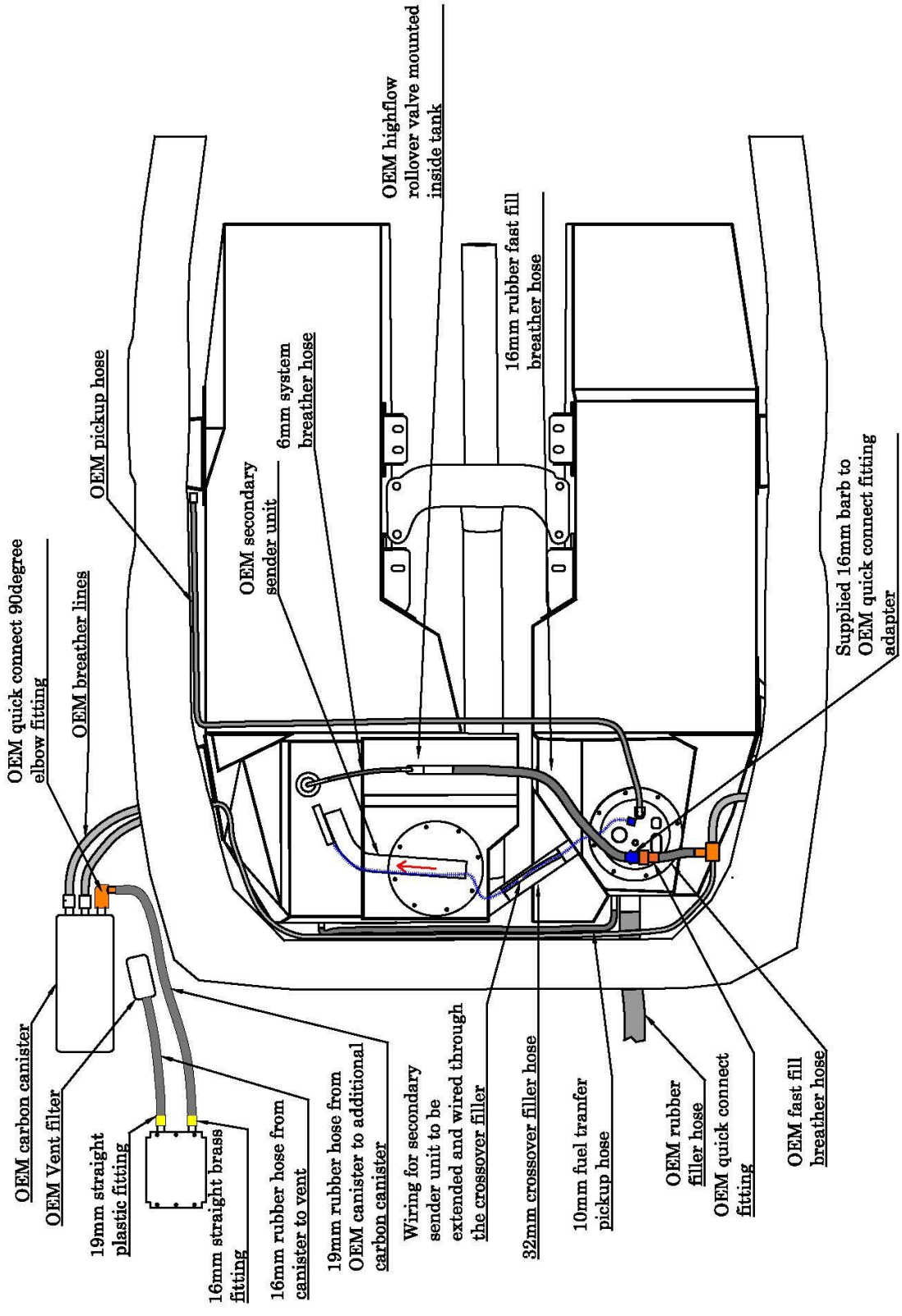
61. The LONG RANGER tank will fill in a similar fashion to the tank it replaces, but the operator has the option of carrying a substantially larger quantity of fuel.
62. Due to the different shape of the LONG RANGER tank, the gauge will measure a larger quantity of fuel and will remain on *FULL* for a longer distance before slowly moving to *EMPTY*. The top half of the new tank is bigger than the bottom half.
63. The **trip computer** with distance (driving range) to empty will no longer accurately show the distance left to travel. The computer still thinks the tank only has the OEM capacity and will not give a larger range reading with the new tank installed. It is suggested that the readings be cautiously interpreted along with the gauge until familiar with the new readings. As a rough guide the DTE will be approximately 100% greater with this new 174lt tank installed.
64. The Owner's manual states the low fuel light is activated with approximately 11lt in OEM tank, this figure is now approximately doubled with the longranger tank fitted.
65. The quoted capacity of the LONG RANGER tank was determined by a bench test. The actual operating capacity may vary slightly from vehicle to vehicle.
66. The LONG RANGER tank is a premium quality accessory that will provide many years of satisfactory service provided that the Care and Maintenance items listed below are taken care of each time the vehicle is serviced.

Hand these instructions, together with the Warranty Registration card and warranty information, to the owner. Neatly apply the LONG RANGER sticker to the rear bumper or window.

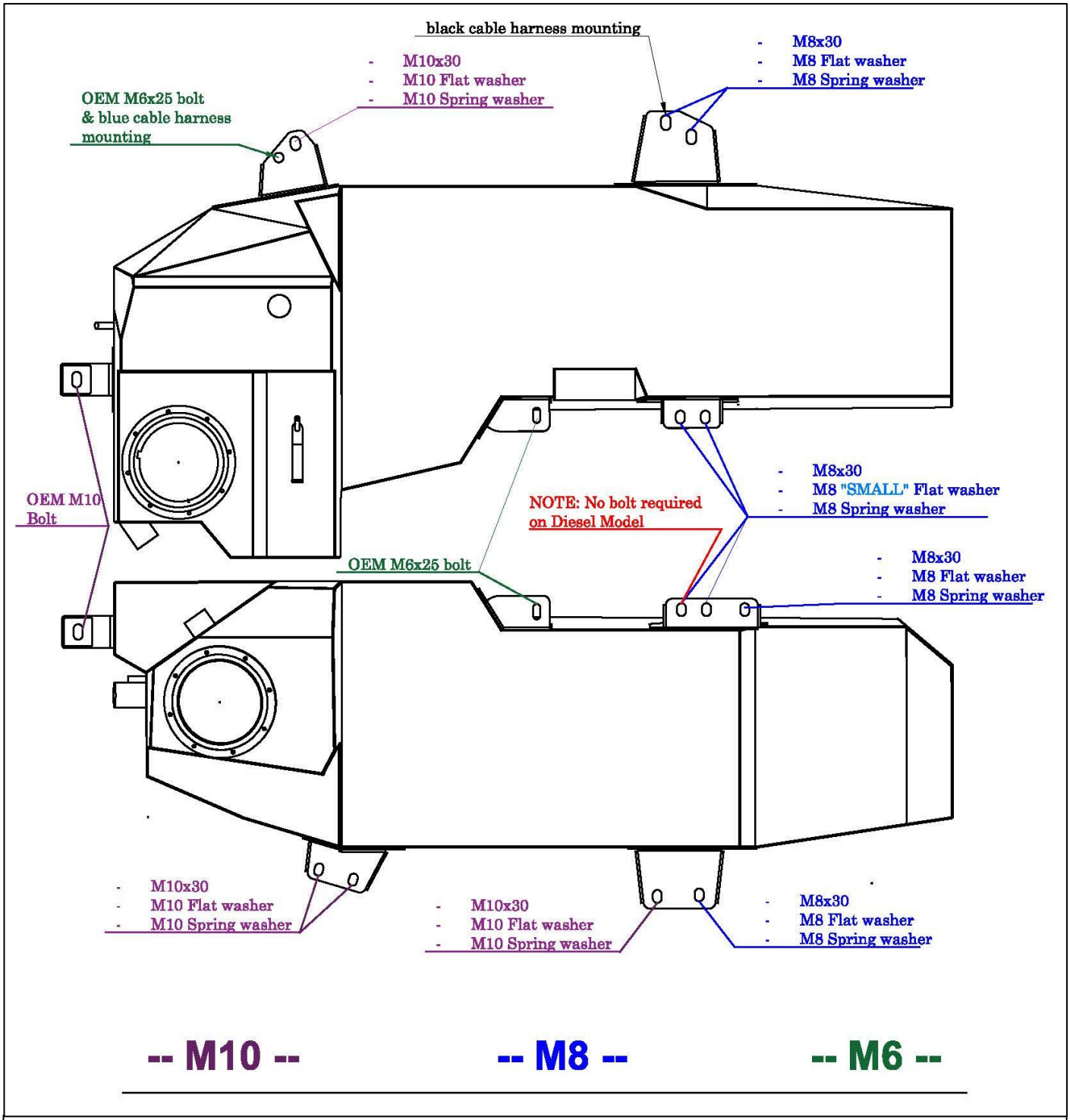
CARE AND MAINTENANCE

1. After the first 1,000 kilometers, clean or replace the fuel filter, check that there is no rubbing or chafing of the tank, fuel hoses or associated components.

2. At each of the vehicle manufacturer's recommended services, check all fastenings for the correct tension, that rust preventative has been correctly applied where applicable, release the tank drain plug and confirm that there is no water present, and replace the fuel filter according to manufacturer's recommendations.



PLUMBING & WIRING DIAGRAM



Bolt layout guide