



NOTE: THIS KIT IS NOT COMPATIBLE WITH AND
DOES NOT WORK WITH KDSS OR AIR SUSPENSION
-EQUIPPED VEHICLES



LONG RANGE AUTOMOTIVE/LONG RANGE AMERICA

Product Information/Install Instructions for

Lexus GX470/4G 4Runner 2002-2009

Kit P/N TL470GXA24G-US



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NOTE: This product is **NOT FOR SALE TO, OR USE BY, CALIFORNIA RESIDENTS**. This product has not been approved, certified, rated or otherwise passed upon by any Federal or State regulatory agency.



PRODUCT INFORMATION/INSTALL INSTRUCTIONS

Lexus GX470/4G 4Runner 2002-2009

Direct-fit extended range fuel tank to serve expedition, long-distance travel and hauling needs...buy fuel when the price is right and be prepared for the long haul. These tank kits from Long Range Automotive of Melbourne, Australia were developed to meet the needs of North American light truck and SUV owners. We provide additional fuel capacity from a high-quality aluminized steel auxiliary or replacement tank that integrates seamlessly with factory fuel systems and emission controls in North American vehicles. These tanks are built by specialists with three decades of experience, serving customers around the world.

Part Number	TL470GXA-US
Type	Auxiliary
Capacity –Gallons	24
Fill Point	OEM-SPLIT
Fuel	Petrol/Gas
Location	Behind Rear Axle
Relocate Spare	Yes
Exhaust	Standard



**Tank shown has supplemental coating*

This kit is NOT KDSS or Air Suspension compatible. This tank **may** be installed by a general automotive shop or mechanically competent vehicle owner, given adequate tools, skills and the help of a friend. **We strongly recommend that, to avoid potential injury and property damage, the tank be installed by a trained professional.** Please call if you have pre-install questions (800-224-7801 x101 Ward Harris)

Long Range Automotive fuel tanks are imported by Long Range America, LLC
LongRangeAmerica.com
1-800-224-7801

I. BEFORE YOU BEGIN

A. INTRODUCTIONS

1. We at **Long Range Automotive** (LRA) and **Long Range America** (LRAM) appreciate your selection of a Long Range Automotive fuel system for your vehicle. Please read this entire Guide before beginning installation.
2. This Guide provides information necessary to install this LRA product in your vehicle. PLEASE NOTE: We strive to be detailed and accurate with this information...however, errors and omissions can occur. Changes to install instructions can occur without notice. These Guides are constant works in progress...we are constantly working to make them as user-friendly, detailed and accurate as possible, and we welcome install feedback notes, photos, comments and suggestions to make them so. **If you see an error or omission, or need additional information not provided in this manual, please contact Long Range America at 800-224-7801, extension 101 (Ward Harris).**
3. This product is designed to suit vehicles as delivered when new. Modifications such as suspension, skid plates, bumpers, hitches and other aftermarket additions may impact or prevent installation.

B. DO's AND DON'Ts

1. **DO: WE HIGHLY RECOMMEND ALL WORK TO BE COMPLETED BY A PROFESSIONAL INSTALLER.**
2. **DO:** Review these install instructions and plan your installation - tools, helpers and questions - ask ahead of time.
3. **DO:** Power wash the vehicle underside, especially if there is a lot of mud or debris underneath.
4. **DO:** Unpack the tank and installation kit, and review the packing list and kit.
5. **DO: Call 800-224-7801 ext. 101 (Ward Harris) with any questions** - he will get you the right answer from the right source.
6. **DO:** Use **fuel rated thread sealer** or Teflon tape on all fittings.
7. **DO:** Keep all fuel lines away from the exhaust system and any sharp edges.
8. **DO:** Use Long Range Automotive fuel systems and parts in conjunction with original manufacturer's equipment or other Long Range Automotive systems and components.
9. **DON'T:** DO NOT have any open flames or heat sources in the installation area.
10. **DON'T:** DO NOT CUT any of the existing fuel pipes while in the vehicle or while attached to the fuel tank.
11. **DON'T:** DO NOT USE Long Range Automotive fuel systems and components with other aftermarket fuel systems. This type of use can result in malfunction and will void the Limited Warranty.

I. BEFORE YOU BEGIN *(continued)*

C. SAFETY PREPARATIONS

- 1. BEFORE BEGINNING INSTALLATION, TURN OFF THE KEY AND DISCONNECT THE VEHICLE BATTERY.**
- 2. ALWAYS WEAR THE PROPER SAFETY EQUIPMENT (SAFETY GLASSES, HEARING PROTECTION, GLOVES, ETC. AS APPROPRIATE).**
- 3. BE SURE TO KEEP HEAT, SPARKS AND OPEN FLAME AWAY FROM THE INSTALLATION AREA.**

I. BEFORE YOU BEGIN *(continued)*

D. INSTALLATION KIT CONTENTS

HARDWARE	HOSES & CLAMPS	MISC PARTS
4 x M8 x 25mm Bolt 2 x M10 x 90mm Bolt 4 x M12 x 30mm Bolt Fine 1.25 Pitch 4 x M8 x 25mm Flat Washer 4 x M8 Spring 4 x M10 x 25mm Flat Washer 2 x M10 Spring 2 x M10 Nyloc Nut 2 x M10 Nut 4 x M12 Spring Washer 1 x 30mm 3/8" Spacer 1 x M8 x 50mm Bolt 4 x M12 x 30mm Washer	1 x 6mm Fuel Hose @ 40" Long 1 x 8mm Fuel Hose @ 32" Long 1 x 12mm Fuel Hose @ 24" Long 2 x 25mm Fuel Hose @ 6" Long 1 x 25mm Fuel Hose @ 3" Long 1 x 5/8" Fuel Vapor Line @ 36" Long 8 x 1/4" Hose Clamp 2 x 1/2" Hose Clamp 6 x 1" Hose Clamp 3 x 5/8" Hose Clamp	1 x 25mm x 25mm x 25mm Tee Filler 1 x 1/4" Weld-on Half Cut Socket 1 x Roll Over Valve 1 x LRA-FTG-2 1 x Fuel Transfer Pump & Filter 1 x Fuel Transfer Pump Mounting Bracket 8 x 7" Cable Tie Magnet (for use inside the auxiliary tank)
BRASS	ELECTRICAL	
1 x P3 5/16" x 1/8" Straight 1 x 5/8" x 5/8" Straight 1 x P6 5/16" x 1/4" Elbow 1 x P3 x 1/2" x 1/4" Straight 1 x P6 1/2" x 1/4" Elbow 1 x P14 1/4" Tee 1 x P7 5/8" Hose Joiner 1 x 25E-4502 1/8" MxF Elbow (for pump inlet)	1 x LRA-PG210 Switch/Gauge 1 x 3mm Two Core Wire @ 197" Long 1 x 4mm Single Core Blue Wire@11.8" Long 1 x 5 Amp Fuse 1 x Fuse Holder 2 x Fuse Holder Terminal 2 x Red Ground Eye 1 x Red Insulated Terminal 3 x Heat Shrink @ 1" 1 x VDO 220-004 0-90 Ohm Fuel Tank Gauge Sender with 12" Ground Wire (setup and installed in aux tank)	

NOTE: If a replacement fuel filler cap is needed, they are available at AutoZone (Duralast, p/n 6817A)



I. BEFORE YOU BEGIN *(continued)*

E. TOOLS NEEDED

1. Safety Items
 - a) Safety Glasses
 - b) Hearing Protection
 - c) Gloves
2. Ratchet Wrench
 - a) Metric Socket Set
 - b) Socket Extensions
3. Drill
 - a) Metric Drill Bit Set
 - b) Uni-Bit (step drill bit)
4. Catch Pan/Spill Mats
5. Vehicle Owner's Manual
6. Mallet
7. Hydraulic Jack
8. Flat Screwdriver
9. Chain Pipe Cutter
10. Digital Multimeter
11. Fuel Rated Thread Sealer
12. Circuit Test Light
13. Metric Measuring Device
14. Welder (to weld the threaded socket to the original filler neck)

II. VEHICLE PREPARATION

A. GET READY

1. We recommend power washing the underside of the vehicle, to remove mud and debris.
2. Unpack tank and installation kit. Review packing list and kit.

B. REMOVE THE SPARE WHEEL AND SPARE WHEEL CARRIER

1. Remove rear wheels along with the spare wheel. This tank takes the place of the spare wheel, the wheel will not be reinstalled:
 - a) Lower and remove the spare tire.
 - b) Remove the bolts holding in the guide for the spare tire crank (Fig. A).
 - c) Cut the spare tire carrier out as well as the support on the cross member (Fig. B).



II. VEHICLE PREPARATION *(continued)*

C. RELOCATE CANISTER FILTER ASSEMBLY

1. Remove the canister filter assembly and set aside (save to reuse) (Figs. C, D, E).



II. VEHICLE PREPARATION *(continued)*

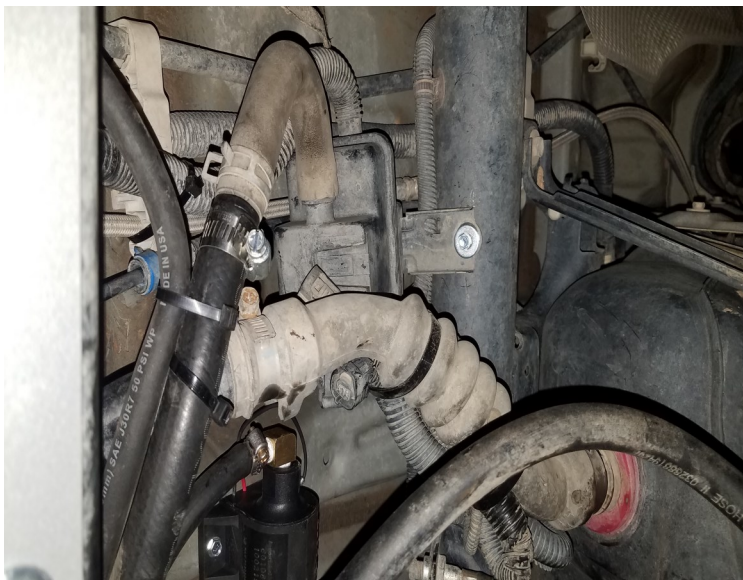
C. RELOCATE CANISTER FILTER ASSEMBLY *(continued)*

2. On the round factory cross member, measure from the edge of the brake line bracket 6-3/8". Drill a small pilot hole for the Tek screw. Using supplied Tek screw, mount the canister filter assembly to the round factory cross member (Figure F).
3. Using the supplied 5/8" double-ended barb and 5/8" fuel vapor hose, route the "J" hose from the canister filter assembly back to the factory location on the filler neck, using supplied zip ties to keep all hoses from excessive heat and moving parts. Using the factory flex line, re-attach canister filter assembly to the evap canister (Figure G).

FIG. F



FIG. G



II. VEHICLE PREPARATION *(continued)*

C. RELOCATE CANISTER FILTER ASSEMBLY *(continued)*

4. Relocate vehicle wiring harness as needed (Figure H).
5. Final configuration before tank is installed (Figure I, J).

FIG. H



FIG. I



FIG. J

III. FILLER & TANK PREPARATION

NOTE: A SMALL WELD IS REQUIRED TO MODIFY THE ORIGINAL FILLER NECK, TO INSTALL A THREADED SOCKET THAT WILL ACCEPT A 90 DEGREE BRASS FITTING. DO NOT CUT OR WELD THE FILLER NECK IN THE VEHICLE, OR WHILE ATTACHED TO THE FUEL TANK.

A. MODIFY FILLER PIPE & NECK

1. Raise the tank into position and use the front mounts to mark the two holes to be drilled in the factory cross member.
2. Remove the tank and drill the two holes marked to 3/8"
3. Measuring from the steel bracket holding the 3 pipes (Figure K), mark the pipes at 2-1/4".



FIG. K

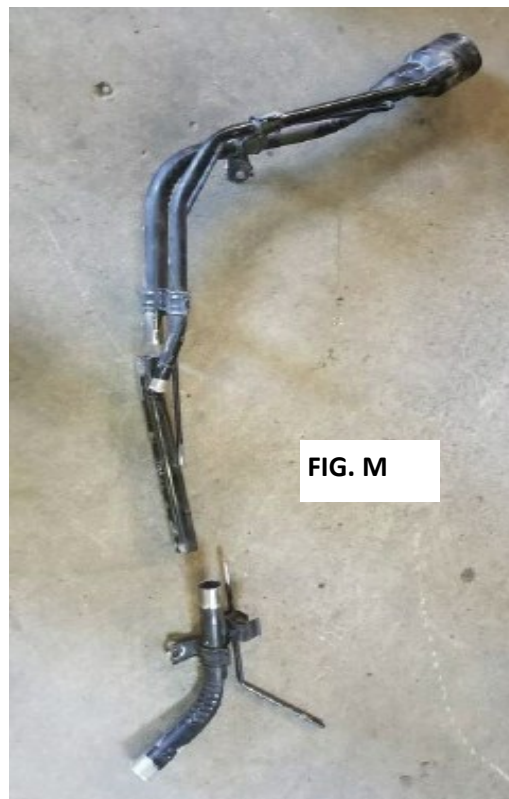
III. FILLER & TANK PREPARATION (*continued*)

A. MODIFY FILLER PIPE & NECK (*continued*)

4. Measuring from the plastic retaining bracket above the cross member (Figure L) , mark at 2".



5. Remove factory filler neck, cut at marks and de-burr (Figure M). **CAUTION: Do not cut pipe while installed, a non-sparking cutter is recommended.**



III. FILLER & TANK PREPARATION *(continued)*

A. MODIFY FILLER PIPE & NECK *(continued)*

6. Cut the 1/4-inch steel line about 3 inches before the "Y" pipe.
7. Cut and install the brass "T" fitting supplied.
8. Reinstall section of filler neck to main tank using supplied 3/8" spacer and long M8 bolt (Figure N).



FIG. N

III. FILLER & TANK PREPARATION (*continued*)

A. MODIFY FILLER PIPE & NECK (*continued*)

9. Drill a hole and weld the 1/4-inch fitting into the top of the factory filler (Figures O, P, Q).
10. Install the 90 degree 1/2-inch fitting into the filler (Figures R, S, T).
11. Attach 1/2" hose to 90 degree barb and clamp.
12. Reinstall upper filler pipe with "Y" pipe and supplied clamps and hoses.



FIG. O



FIG. P

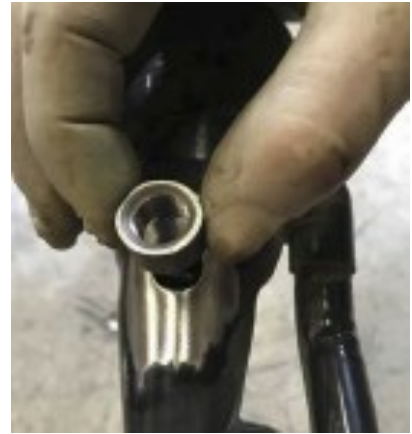


FIG. Q



FIG. R



FIG. S



FIG. T

III. FILLER & TANK PREPARATION (*continued*)

B. SET UP AUXILIARY TANK

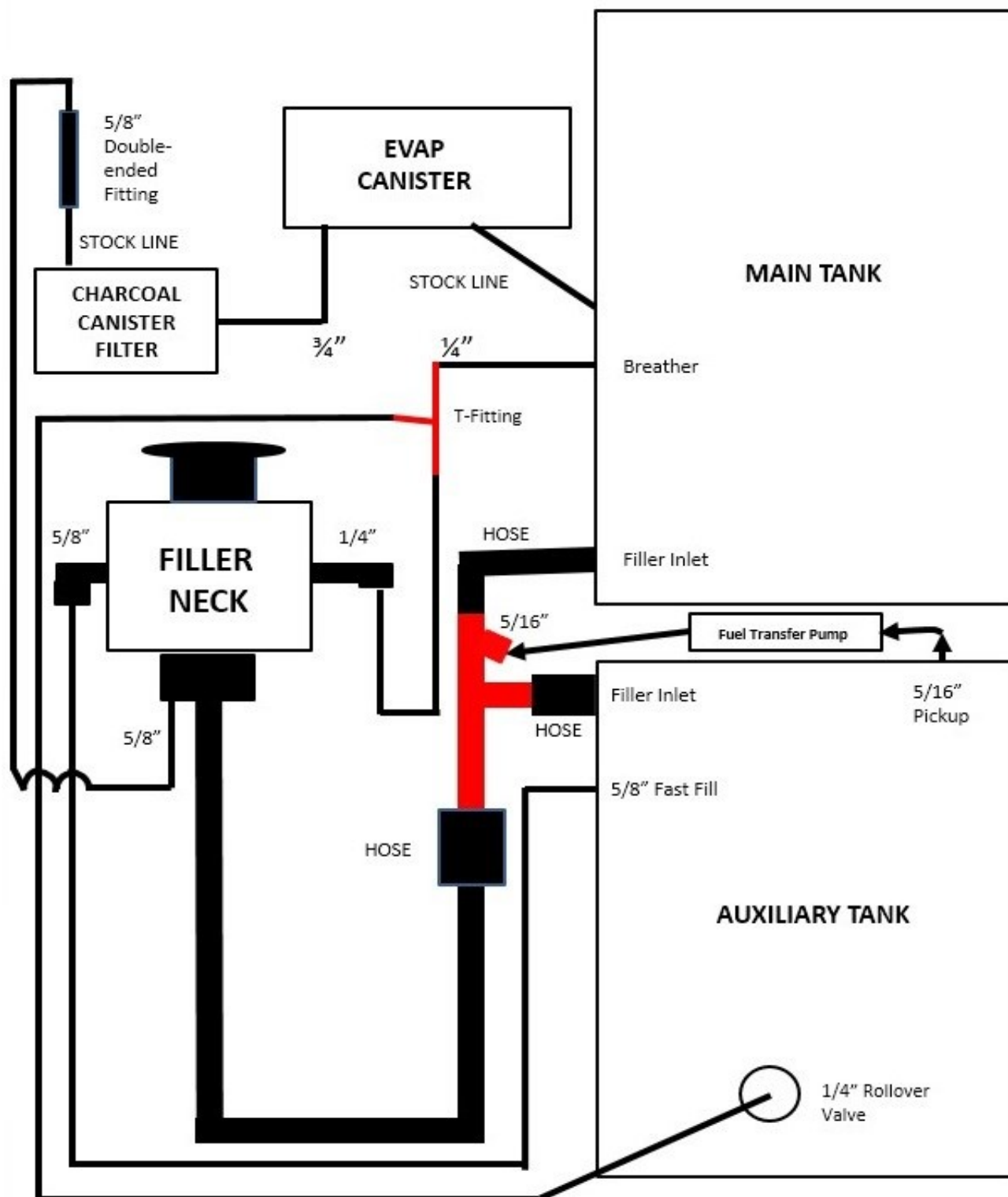
1. The plastic valve goes in the top of the tank with the grommet (dish soap will ease installation).
2. The 5/16" elbow also goes in the top of the tank near the fuel gauge sending unit. Attach 5/16" fuel line to 90 degree fitting and clamp.
3. The 1/2" straight barb goes in the left-hand side of the tank.
4. The 5/16" straight barb goes in the "Y" pipe.
5. Remove the fuel gauge sending unit , install the provided magnet as close to the fuel pickup as possible, and reinstall the sending unit.

C. INSTALL FUEL TRANSFER PUMP

1. Mount the fuel transfer pump securely in a suitable location, making sure to avoid excessive heat and moving parts (Figure U). **THE PUMP MUST BE INSTALLED ABOVE THE FUEL LEVEL OF THE NEW TANK, AND WITHIN 12 VERTICAL INCHES OF THE NEW TANK BOTTOM. THE FUEL PUMP SHOULD BE MOUNTED WITH THE OUTLET HORIZONTAL OR ABOVE THE INLET. THIS WILL HELP TO PREVENT LOCATION-RELATED GRAVITY FEED, CHECK ENGINE LIGHTS (CELS), AND VAPOR LOCK ISSUES.**
2. Complete pump wiring. Attach the yellow wire to the positive side of the fuel pump. **DO NOT** ground the pump to the mounting bracket, instead, drill a hole in the body and clear an area for the body ground terminal to be firmly connected to bare metal. The transfer pump is sensitive to power interruption when on and a good ground is imperative.
3. Attach the 5/16" fuel line coming from the top of the auxiliary tank to the provided fuel filter, then to the inlet side of the pump.
4. Route the pump outlet to the 5/16" barb on the "Y" pipe.



IV. HOSE ROUTING SCHEMATIC



V. SWITCH/GAUGE UNIT WIRING & INSTALLATION

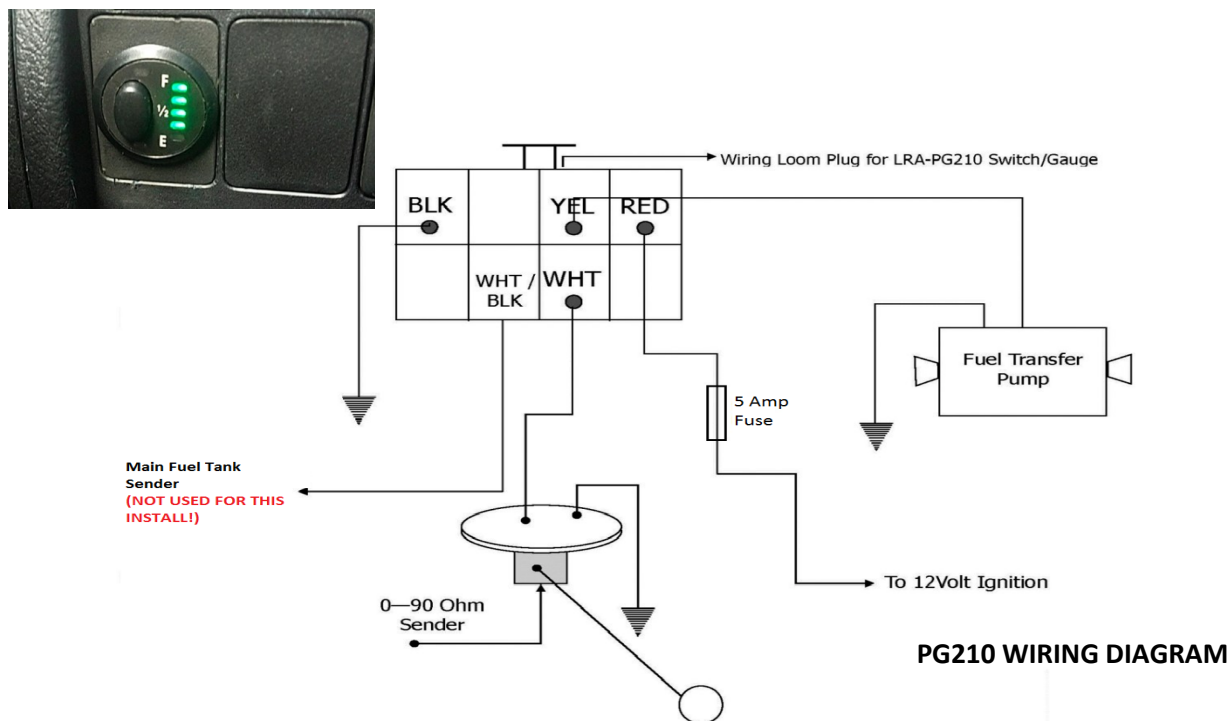
A. INSTALL THE FUEL TRANSFER SWITCH/GAUGE

1. Select a suitable location in the dash to mount the switch/gauge unit. We recommend using one of the switch blanks (see photo, below).
2. The switch is fairly sensitive to installation. The hole diameter needs to be just the right size (20mm or .78"). If it is too small, and the switch is forced into place, the switch may be damaged or not function properly. You will need to test-fit and file or cut out more material if needed. **DO NOT FORCE SWITCH INTO PLACE WHILE TEST-FITTING OR AT ANY TIME!.**
3. Connections should be soldered and heat shrunk, not just crimped.
4. Double-check all connections when done.

B. WIRE THE FUEL TRANSFER SWITCH/GAUGE

1. A 12 volt ignition source can be found at the cigarette lighter circuit. Carry out wiring as per the wiring diagram, below. The 5 amp fuse goes in the red wire between the ignition power source and the switch.
2. Run the twin core sheath cable under the scuff plates and behind the quarter panel trim and out through the grommet in the jack storage area.
3. Leave enough wire to reach the fuel gauge sending unit.
4. The white and black striped wire will not be used.

PLEASE REFER TO OPERATING INSTRUCTIONS FOR THIS UNIT ON PAGES 22 & 24



VI. TANK INSTALLATION

A. CONNECT HOSES TO TOP OF AUXILIARY TANK

1. Install the 1/4" hose to the plastic valve with clamp.
2. Install the 5/16" hose to the barb on the top of the tank with clamp.

B. JACK THE TANK INTO POSITION AND SECURE

1. Jack the auxiliary tank into position, feeding the hoses over the cross member and frame rail.
2. Fit the fill hose on as the tank goes into position. Be sure to connect the fuel gauge sender wires at this point.
3. Using supplied hardware, bolt the tank into final position.
4. Attach the 1/4" hose from the top of the tank to the "T" fitting installed earlier.
5. Tighten all clamps at this time.
6. Attach 1/2" hose from filler neck to the auxiliary tank (Figures V, W):



VI. TANK INSTALLATION (*continued*)

C. FINISH INSTALLATION

1. Check all clearances and neatly cable tie all hoses and wiring. Check over all hoses and connections.
2. Reconnect vehicle battery.
3. To test, fill main and auxiliary tanks full. Drive the vehicle until the fuel level in the main tank goes to 3/4 full, then transfer some fuel from the auxiliary tank to the main tank. Test transfer pump operation and make sure the gauge is working properly, the level lights are correct and listen for undue noise (a “tic-tock” noise is normal when the pump is running).
4. Check again for leaks.

VII. FINAL INSTALLATION CHECKLIST

- A. Are all hose clamps tight and secure?
- B. Are all nuts and bolts secured?
- C. Are mounting brackets and straps secure?
- D. Are Fuel Gauge Sending Unit bolts secured?
- E. Are all fuel lines secure with no kinks?
- F. Does tank interfere with, or rub on, other vehicle components?
- G. Is tank calibration accurate?



Congratulations! You have completed the install!



TANK USER GUIDE



WELCOME

And congratulations on the purchase of your new tank from Long Range Automotive of Melbourne, Australia. Properly installed and maintained, the tank is easy to operate and will provide you with years of service.

As North American agent, Long Range America is here to help along the way. Your first stop with questions about tank, installation and use is this guide, followed by a call to your installer and if need be, a visit to our website for more help.

Your kit is covered by a three-year limited warranty you can see on our website here <https://longrangeamerica.com/tank-warranty-registration/tank-limited-warranty/> and we strongly encourage you to register your purchase with us at this link <https://longrangeamerica.com/tank-warranty-registration/>

Why register? We want you to have a flawless experience, but sometimes things happen (we need to make repairs, replacements, etc.). Registration is our way of keeping track of our tanks after they leave the warehouse.

We need to collect this information within thirty days of kit purchase – whether direct sale from LRAM or through one of our authorized dealers. In addition, we occasionally make improvements to our in-service products and there may even be recalls. For these reasons, we need this information. Please help us serve and support you!

OPERATIONS

New Configuration:

Your new tank installation included addition of a T-Fill fuel point that serves both original tank and your added 24-gallon auxiliary tank. Both tanks are filled through the same point.

Adding Fuel:

When filling, fuel flows first into the main tank until full and then into the auxiliary tank until full. At this point, the fill rate may slow due to normal venting as excess air in the tank is vented.

While filling, the operator must be sensitive to venting of the tank(s) as fuel is added. You may need to pause briefly and then adjust the flow rate as the dual tank fill/vent system accommodates newly added fuel.

If the pump fill control will not allow a “high speed” fill at this point, do not worry, it is just the tank venting that excess air. Fill at the allowed rate until the tank is full (patience is a virtue) and DO NOT ATTEMPT TO TOP OFF THE TANK.

While Driving:

Your engine will draw fuel from the main tank and that gauge will operate normally. The stock tank has 23 gallons of capacity. As you consume fuel, the gauge will go down and at some point, you will need to transfer fuel from the auxiliary tank. When you do that is up to you.

Auxiliary Tank Fuel Monitor:

Your installation included the addition of a combination control module as seen here.

There are a series of LEDs that combine to display the contents of the auxiliary tank as follows:

1. The RED and GREEN lights display the contents of the auxiliary tank.
2. All GREEN shows FULL as shown at right. As fuel is transferred, the LEDs will go dark from top to bottom, indicating $\frac{3}{4}$ tank, $\frac{1}{2}$ tank, $\frac{1}{4}$ tank of fuel remaining.
3. When all of the fuel has been transferred, the RED flashing light will indicate the tank's status as EMPTY.



Auxiliary Tank Fuel Transfer:

1. When it is time to transfer fuel, simply press the button at the left side of the module to activate the transfer pump.
2. The transfer tank is self-priming and will make a clicking sound until it fills with fuel and begins pumping. That sound will reduce somewhat when fuel is flowing.
3. When the switch is turned ON and the ORANGE light is displayed this indicates that fuel is being transferred.
4. Fuel is transferred at around **2 quarts per minute**.
5. Fuel will be transferred from the auxiliary tank into the main tank until the auxiliary gauge shows a RED flashing light at which point the pump will continue to run for 2 minutes and then the pump will automatically shut off.
6. You can restart the pump by simply pushing the switch button again, the pump will run again for another 2 minutes before automatically shutting off.
7. It isn't possible to overfill the main tank, it will simply drain into the auxiliary tank via the "T" in the filler line.



QUESTIONS & SUPPORT

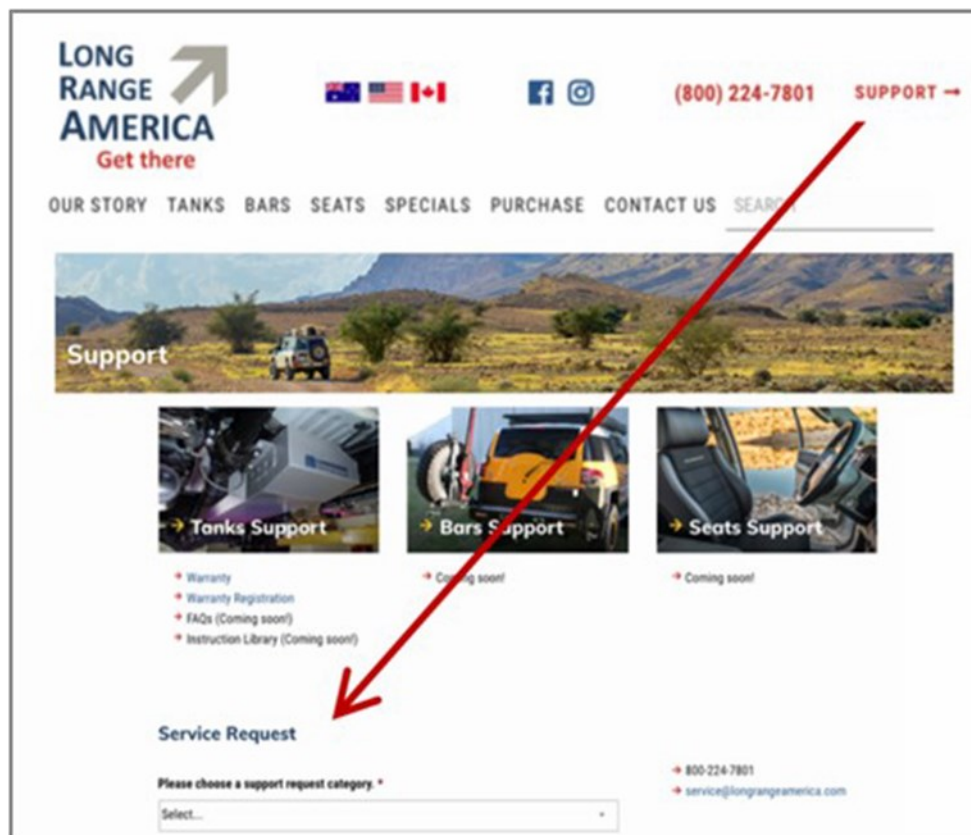
Frequently Asked Questions:

- **Will I fill the tank in the same way as before?** See instructions on page 21.
- **Will the Distance to Empty (DTE) Function work as before?** If present, your computer will accurately report on fuel range based upon fuel level in the main tank only.
- **Who do I call with questions, or for assistance?** Your first contact should be to the installer. If you are the installer, or if the installer cannot answer your question, please contact Long Range America in any of the following ways – **our business hours are 8am to 5pm (Pacific Time) Monday to Friday.**
 - Website via <https://longrangeamerica.com/support/> (see below)
 - Email via service@longrangeamerica.com
 - Phone via 1-800-224-7801 extension 101 (Ward Harris)

And let us know how we can better serve you!

Best regards,

LONG RANGE AMERICA



We have attached a PDF copy of the Apexus PG210 Gauge/Switch Setup Guide, for additional information...when viewing this guide, open the file attached to the guide to view the information.