



Fitting Instruction for MFK1045G3 - LS V8 to Toyota LandCruiser 4.5 Petrol 5 Speed Manual Adaptor Kit



Important Information

This instruction booklet can be used standalone for the above stated conversion but we would also recommend having a workshop manual for your Toyota LandCruiser vehicle to cover any factory torque / installation settings.

The instruction booklet describes the required modifications (if any) and installation process in order for our kit to fit and work properly.

Marks 4WD Adaptors cannot and will not take responsibility for knowing everything that may impact on your conversion. Before beginning any work, thoroughly work through the sequence of changes, work and potential impact of your conversion. You must ensure you completely understand all the factors that may impact on achieving your desired results.

Step 1 Engine Removal (removing the transmission & transfer case is also helpful)

1. Remove the bonnet from vehicle.
2. Disconnect and label all the hoses and wiring attached to the old engine.
3. Remove air-conditioning compressor and power steering (if fitted).
4. Remove the complete exhaust system from vehicle.
5. Drain radiator and engine of all fluids.
6. Remove the radiator from the vehicle.
7. Support the transmission with a jack and remove the bellhousing to engine bolts.
8. Undo and remove the front engine mounting rubbers and remove the engine assembly from the vehicle using suitable engine lifting equipment. Do not discard the old engine, as some parts are required for the conversion.
9. Remove the original Land Cruiser clutch and pressure plate. The bolts will be required to secure the new clutch to the new flywheel.
10. Remove the oil pressure and water temperature senders from the Toyota engine.

Step 2 Other Modifications before Engine Fitment

1. Relocate the ABS wires (if fitted) under the chassis rail.
2. Relocate the rear brake pipe to the top of the chassis. **Note:** Make sure that the pipe doesn't rub on the chassis.
3. Relocate the fuel lines as per the photos 1.1 **Note:** Make sure they do not touch the body or each other.
4. Fit heat shield kit if purchased.



Image 1.1 Relocate fuel lines and rear brake pipe



Image 1.2 Relocate fuel lines and rear brake pipe

Right Hand Coil Pack and Rocker Cover Clearance

5. The fire wall on the right hand side of the vehicle will need to be modified. I used a piece of 90mm x 45mm /4"x2" soft wood about 30cm/12" long as a drift. I finished the sharp edges off one end and with the aid of a hammer, enabled me to push the fire wall back about 35mm without having to remove the sound proofing. To hold the sound proofing hard into the new cavity I cut an oval shape disc (100mm x 150mm) out of some steel mesh and screwed it into position using two tech screws. See the next photo.
6. The A/C pipe also needs to be moved over the top of the steering shaft in order to clear the R/H cylinder head. Rotate the bracket about 180 degrees, this will shift the pipe approximately 60mm. See the following photo



Image 1.3 Firewall mod – right hand side.

7. On LS1 engines remove the GM oil pressure sender from the back of the engine – fit the supplied adaptor in its place sealing with Teflon tape. Note: Use the copper washer to help with correct orientation of the Toyota oil pressure sender. On LS2/LS3 engines you need to run the GM oil pressure sender.



Image 1.4 Oil pressure sender

8. Remove the socket head cap screw located in the driver side cylinder head at the rear. Fit the water temperature adaptor and the original vehicle sender. **See photos below**



Image 1.5 Remove plug from head



Image 1.6 Fit Adaptor (be carefull not to break off in head) and sender

9. The engine and transmission both need to be shifted forward 25mm to help with the firewall to coil pack clearance. Remove the transmission cross member and slot the mounting holes. **See photo below**



Image 1.7 Slot transmission rubber to cross member holes

10. Re-install the cross member and push the transmission forward before tightening the mounting nuts.
11. Fit the rear drive shaft spacer to the back of the transfer case using the studs and nuts supplied.

Step 3 Adaptor Kit Preparation

1. Remove the Chevy flex plate or flywheel if fitted from the engine.
2. Remove the Chevy spigot bearing if fitted.
3. Fit the flywheel cover plate to the back of the Chevy engine. The cover plate should fit snugly over the two Chevy dowels.
4. Fit the adaptor housing to the back of the Chevy engine and secure it using the socket head cap screws supplied in the kit.
NOTE: Make sure the engine is fitted with the two 5/8" locating dowels.
5. Fit the M8 x 20 dowel (MFC197) to the gearbox side of the new adaptor housing. The dowel hole is located top left hand side (passenger side)
6. Fit the stepped dowel to the adaptor housing. The dowel hole is located on the centre right hand side of the housing (driver side). **NOTE:** Use Loctite on this dowel.
7. Fit the M11 studs to the crankshaft, use Loctite 262 on all threads. **NOTE 1:** Make sure you fit the studs the correct way around. The thread in the crankshaft is M11 x 1.5 and the thread in the nuts, M11 x 1. **NOTE 2:** Do not use a stud remover on these studs as any burrs on them will make it impossible to fit the flex plate and crank adaptor. To fit the studs use 2 of the M11 x 1 nuts locked together on the stud, see the photo 3.1.
8. Torque the studs to 35 ft lb.



Image 3.1 Fit studs with Loctite



Image 3.2 Tighten studs

Step 4 Flexplate / Flywheel Preparation

1. Thoroughly clean the flex plate stiffener and crank adaptor as they may be shipped with rust preventing coating.
2. The GM flex plate has an elongated hole which needs to be drilled out to accept the M12 bolts that secure it to the flex plate stiffener. See photo below.



Image 4.1 Drill out the elongated hole to 12mm

3. Remove all burrs around the flex plate holes. Also remove any burrs around the crankshaft holes.
4. Fit the flex plate to the back of the flex plate stiffener. For correct alignment use the tool supplied in the kit. See photo 4.2
5. Secure them using the 3 x M12 x 20 bolts and M12 spring washes supplied in the kit. Use Loctite 262 on the threads and torque to 88nm/64ftlb.



Image 4.2 Bolt flex plate to flywheel

6. Fit the flex plate assembly to the back of the engine. A smear of grease inside the crankshaft bore and on the studs will help as it can be quite tight. A soft hammer will need to be used when fitting.

7. Fit the flywheel adaptor over the studs and secure it using the M11 nuts supplied in the kit. **NOTE:** Torque the M11 crank nuts to 88nm/64ftlb. Also use Loctite on these threads. See photo 4.3



Image 4.3 Bolt flywheel adaptor on

8. Using a dial indicator check the crank adaptor run-out, this should be no more than 0.05mm total. See photo 4.4



Image 4.4 Check run-out

9. Fit the starter motor to the engine using the GM bolts. Seal the flywheel cover plate around the starter motor using silastic.

10. Fit the spigot bearing in the crank adaptor using the flexplate aligning tool as a drift. See the following photo



Image 4.5 Install spigot bearing

11. Make sure the 2 x M10 dowels (MFC197) are fitted to the flywheel, they are required for correct clutch location
12. Fit the flywheel to the crankshaft adaptor and secure it using the six M12 x 1.25 x 25L bolts supplied. Use Loctite on the bolt threads. Torque the bolts to 88nm/64ftlb. See photo 4.6

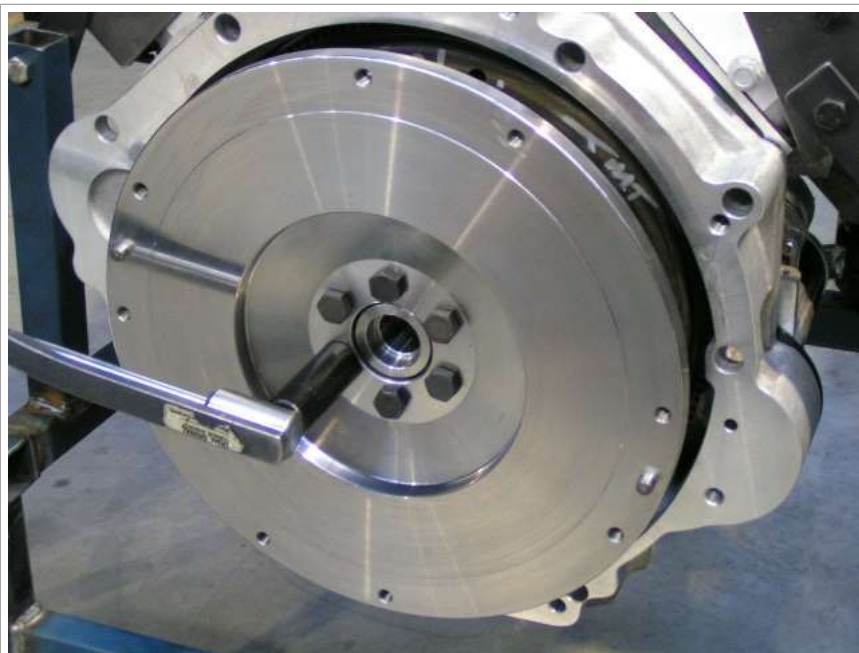


Image 4.6 Install spigot bearing

13. Fit the heavy duty clutch and pressure plate to the new flywheel. **NOTE:** Use a suitable clutch aligning tool, and secure it using the original Toyota bolts.

Step 5 Engine Mounting

1. Lift the engine into the engine bay. Carefully align the clutch spline to the gearbox input shaft spline. **NOTE 1:** Lift one of the rear wheels so that it just clears the ground. Put the transfer case in high range and the gearbox in 4th or 5th gear, slowly rotate the wheel backward and forward as you push the engine back into position. **NOTE 2:** Make sure that the bell housing faces are parallel. This is extremely important as the fine pitch Toyota bolts are easily cross threaded.
2. After tightening all of the bell housing bolts, raise the engine as far as it will go.
3. Fit the engine mounting brackets to the engine block using the bolts and spring washers supplied in the kit
4. Install the Toyota engine mounting rubbers. **NOTE:** The top stud on the passenger side mount will need to be cut down by approximately 10mm
5. Tighten all of the engine mounting nuts and bolts
6. Check to make sure that the clutch operates correctly by depressing the clutch pedal and then turning the rear wheel while it's still off the ground. If the clutch doesn't disengage, rectify the problem before proceeding
7. Fit the radiator. **NOTE:** The top tank on the radiator requires a hole to be drilled and taped for a air bleeder fitting. This must be fitted to prevent air locks in the cooling system.
8. Fit the bottom radiator hose. **NOTE:** The original 4.5ltr bottom hose will fit, some trimming is required.
9. Fit the fan shroud with the fan clutch and fan supplied in the kit. The fan shroud incorporates a new radiator header tank, which is designed to accept the original Toyota cap.
10. Fit the top radiator hose.
11. Fit heater hoses.
12. Connect the power steering pump, pressure hose to the GM pump. **NOTE:** The banjo fitting will need to be modified. Using a 100mm grinder with a cut off wheel fitted; remove the orientation lug welded to the side of the fitting. Check the banjo bolt length as you may need to cut or grind a couple of threads off the end to allow it to fully tighten the fitting.
13. Fit the air-conditioning hoses to the air conditioning compressor. We recommend you have a specialist do this job as aluminium fitting will need to be fabricated. **NOTE:** The GM fitting can be used modification.
14. Complete the exhaust system. **NOTE:** A complete system is required including headers.
15. Complete the wiring. **NOTE:** Marks 4WD Adaptors now manufacture a range a wiring looms for Gen3 engines.
16. The Toyota A/C compressor and oil pressure wires are located on the driver side inner guard, both of these wires will need to be extended. The A/C wire will also require a spade terminal to fit the terminal in the interface loom. The oil pressure wire need only to reach the oil pressure switch located at the back of the manifold.
17. Connect the air intake.
18. Connect the accelerator cable.
19. Check all fluid levels.
20. Double check, all of the mounting bolts are tight.
21. Start the engine and check for - Fuel leaks - Oil leaks - Water leaks - Exhaust leaks.
22. Allow the engine to warm up and recheck the above.

Thank you for purchasing this product manufactured by Marks 4WD Adaptors. Components supplied in this kit are designed and machined for a specific conversion only as outlined in this guide. Modifications to or substitution for any of the components without the written consent of Marks 4WD Adaptors will void any possible warranty or return privileges.

The following instructions are intended as a guide and only for Marks 4WD Adaptors kits. If you do not fully understand the steps, modifications or changes required to complete the conversion, contact our sales department for more information. We recommend that you purchase a service manual pertaining to your vehicle for specific torque values, wiring diagrams and other related information.

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