Fitting Instructions for
MFK40400
Transfer Case Adaptor Kit GM 6L80E Automatic to Toyota 5 Speed Split Transfer Case—19 spline

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 vehicle and for the engine/transmission you are installing to cover any factory torque / installation settings to complete the installation.

The instruction booklet describes the required modifications (if any) and installation process in order for our kit to fit and work properly. These instructions **make no assumption** on whether additional changes need to be considered or made. It is highly possible that other aspects of your vehicle and/or third party products, eg. Engine, transmission etc. will have an impact on all that is required for you to achieve your desired outcome.

Marks 4WD Adaptors do not and cannot 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.

NOTE: We have fitted this conversion into the Toyota LandCruiser FJ60 with a three-piece cross member. If fitting to different models or configurations, modifications may be required.

Step 1 Transmission Preparation

Remove the output shaft nut, yoke and extension housing. *See image 1.1*

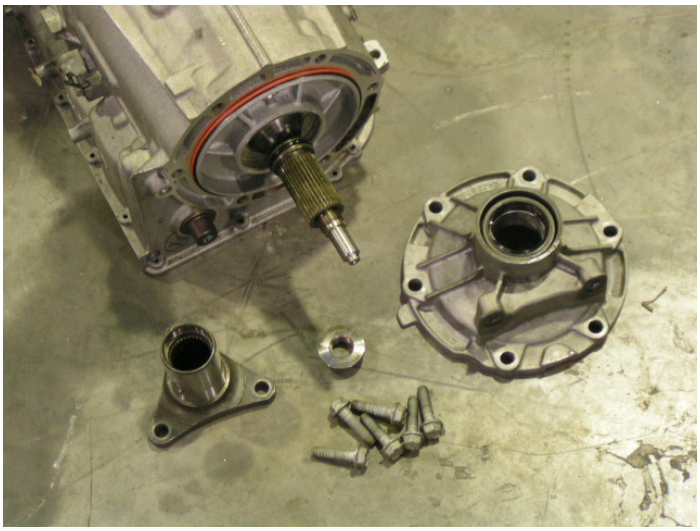


Image 1.1 Transmission Parts Removed

Step 2 Transmission Modifications

Cut output shaft of 6L80E transmission at threaded shoulder.

Chamfer the end of the shaft so that the shaft coupler supplied, can slide freely over the spline.

See image 2.1 & image 2.2

The rear right mounting lug on the 6L80E transmission will need to be removed. *See image 2.3* as a reference.

Note: Shield the rear of the transmission from metal particles with a rag or similar.

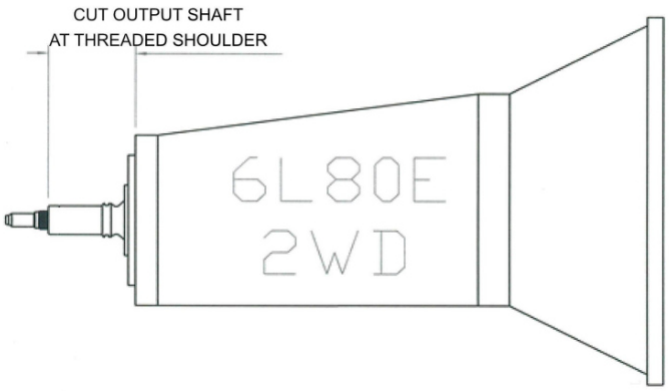


Image 2.1 Location to Cut Output Shaft

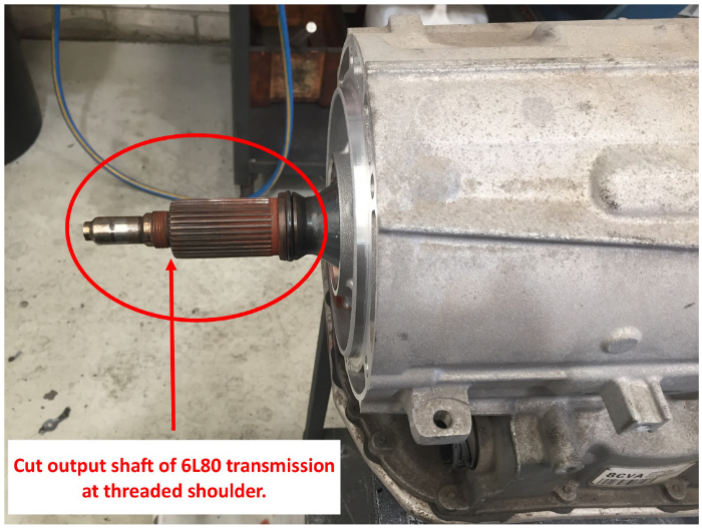


Image 2.2 Location to Cut Output Shaft 2

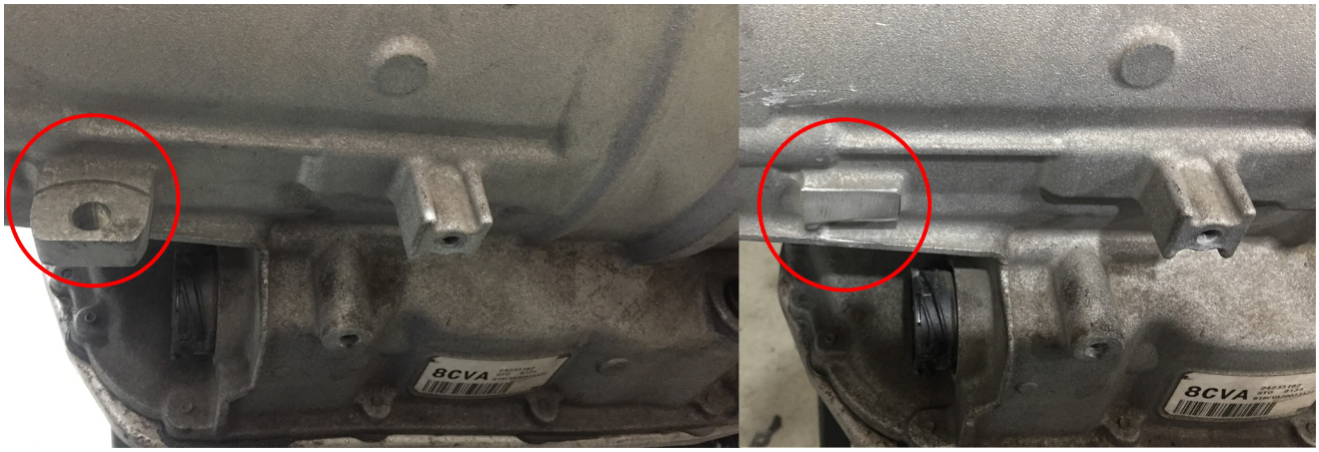


Image 2.3 Rear Mounting Lug Location

Step 3 Install Adaptor Plate

Install the new extension housing seal and then install the MFC1945 steel adaptor plate.
Note: Correct orientation. *See image 3.1*
Use 6 of the supplied M10 x 30 flanged headed bolts with medium strength thread locker applied.
Then using a calibrated torque wrench, torque to 55Nm.

Image 3.1 Adaptor Plate Installed

Step 4 Adaptor Housing

Install the supplied 15/16 brass welsh plug with sealant into housing. *See image 4.1*
Now install the two newly supplied M12 x 20 dowels into the adaptor housing.

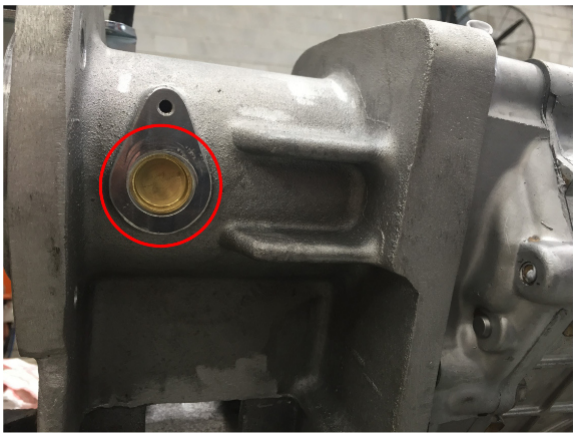


Image 4.1 Welsh Plug Installed

Step 5 Remove Linkages

Remove the transfer case linkages, guide lockout plate, and pivot pin from the old transmission assembly. *See image 5.1*
Retain all these removed items. At a later stage in the build process, you will require them.

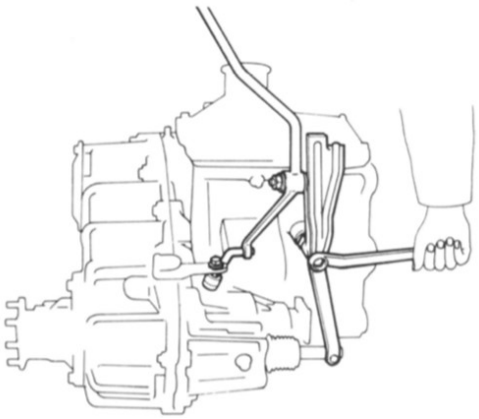


Image 5.1 Linkages

Step 6 Remove Gearbox Output Shaft Lock Nut (Located under tin hat)

Remove the transfer case cover plate (tin hat) and gasket on the rear of the transfer case.
Using a hammer and chisel, loosen the staked part of the nut.
While holding the rear output flange, remove the gearbox output shaft lock nut and the washer. *See image 6.1*

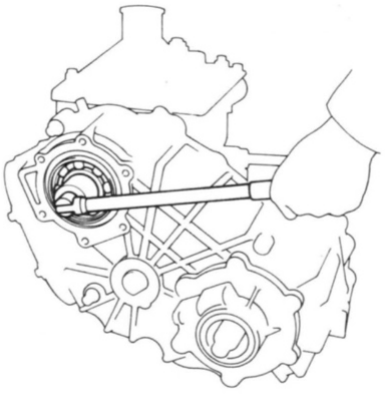


Image 6.1 Gearbox Output Shaft Lock Nut

Step 7 Remove Rear Output Flange

Using a hammer and chisel, loosen the staked part of the nut which holds the rear output flange.
While holding the rear output flange, remove the rear output flange lock nut. *See image 7.1*
Now remove rear output flange.
Remove the six bolts, then remove the rear output shaft rear bearing retainer.*See image 7.2*

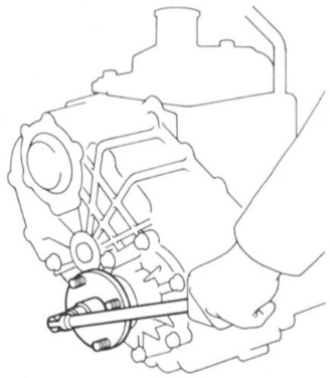


Image 7.1 Rear Output Flange

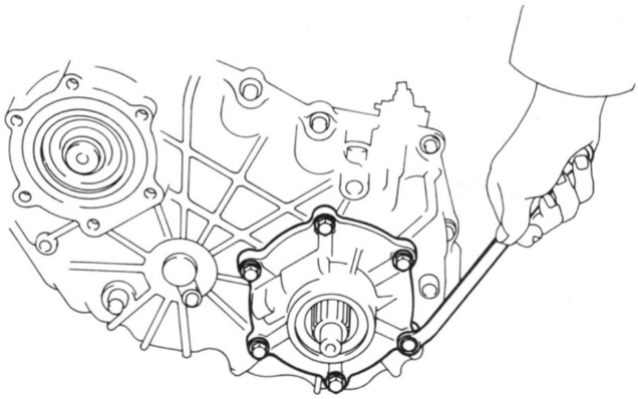


Image 7.2 Rear Output Shaft Rear Bearing Retainer

Step 8 Remove Power Take Off Cover

Remove the six bolts, and remove the power take off cover. *See Image 8.1*

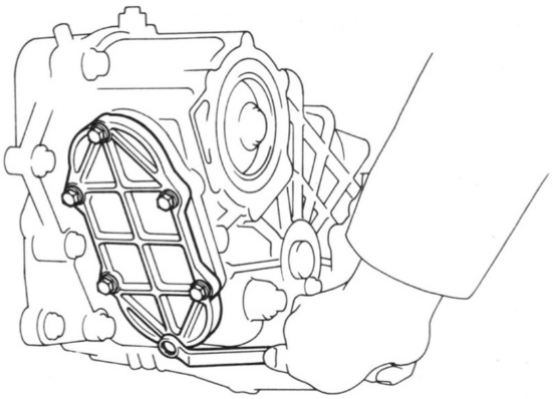


Image 8.1 Power Take Off Cover

Step 9 Remove Transfer Rear Case

Remove the bolt holding the idler gear shaft, lock plate. *See Image 9.1*
You will find its location between the transfer case cover plate (tin hat) and the rear output flange.
Remove the 14 bolts securing the transfer case rear housing to the front housing. *See Image 9.2*
Using a plastic-faced hammer, remove the transfer rear case.
Clean the transfer case thoroughly, removing all old gasket material.

Image 9.1 Idler Gear Shaft Lock Plate

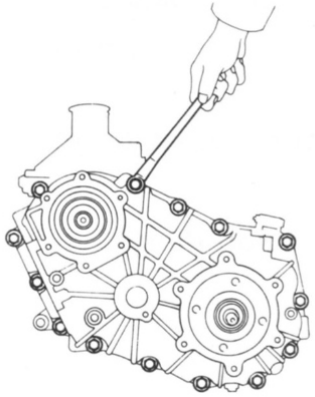


Image 9.2 Remove Transfer Rear Case

Step 10 Remove Internal Parts
Remove the rear bearing, two transfer case gears, and spacer from the main shaft. Inspect the gears for damage. If the spline or teeth are worn, now is an excellent time to replace them.

NOTE: Fitting the old gears with a worn internal spline onto the new shaft coupler will result in premature wear of the new shaft coupler spline.

Step 11 Remove Transfer Front Case
Remove the transfer case front housing by removing the four remaining bolts attached to the gearbox, thoroughly clean, and remove all the old gasket material. *See Image 11.1*

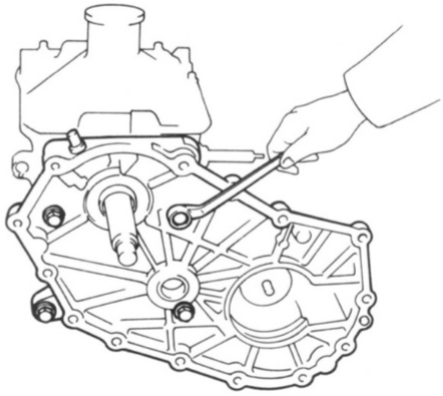


Image 11.1 Transfer Front Case

Step 12 Seal Transfer Front Case
Install the new seal to the transfer case using a suitable sealer and drift.

NOTE: Make sure the spring part of the seal faces the automatic transmission.

The following steps refer to Image 15.2

Step 13 Install Bearing
Press the bearing TM307NR onto the shaft coupler with the circlip end first. *See image 13.1*

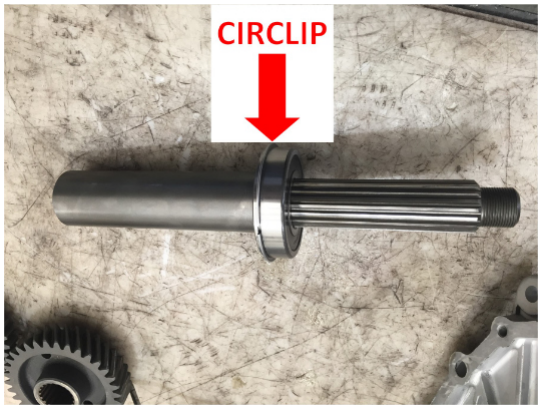


Image 13.1 Bearing Pressed on Shaft

NOTE: This bearing is a particular type of transmission bearing and has been fitted with special seals to prevent metal particles from entering but still allows the oil in for lubrication.

Step 14 Install Assembly
Install the shaft coupler and bearing assembly into the front of the transfer case housing. *See image 14.1*

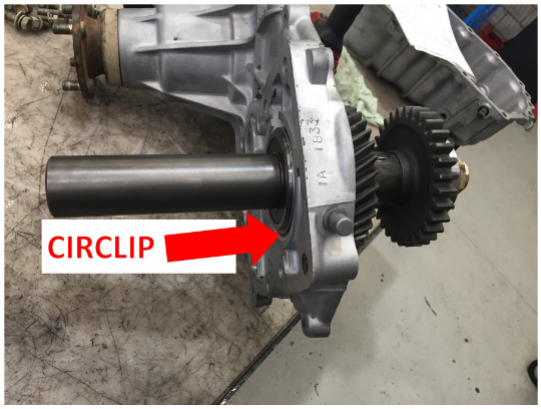


Image 14.1 Assembly Installed Front Case

NOTE: The circlip fits inside the circlip groove, machined into the transfer, case front housing. The outer part of the bearing slides inside the transfer case housing.

Step 15 Install Parts Refer Image 15.2
Install the following parts in this order,
No.11 Gear Original Toyota Transfer Case Input,
No.12 Spacer Original Toyota,
No.13 Gear Original Toyota PTO,
No.14 Bearing Original Toyota Rear Mainshaft,
No.15 Spacer Spud Shaft (MFC103 if required),
No.16 Washer Original Toyota and
No.17 the new Nut M26 x 1.5 Locking.
See image 15.1

DO NOT fully tighten the nut.

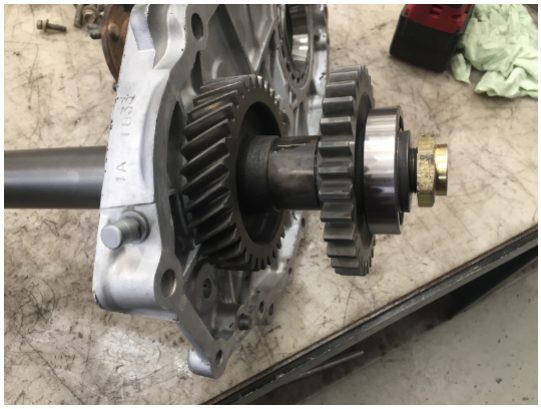
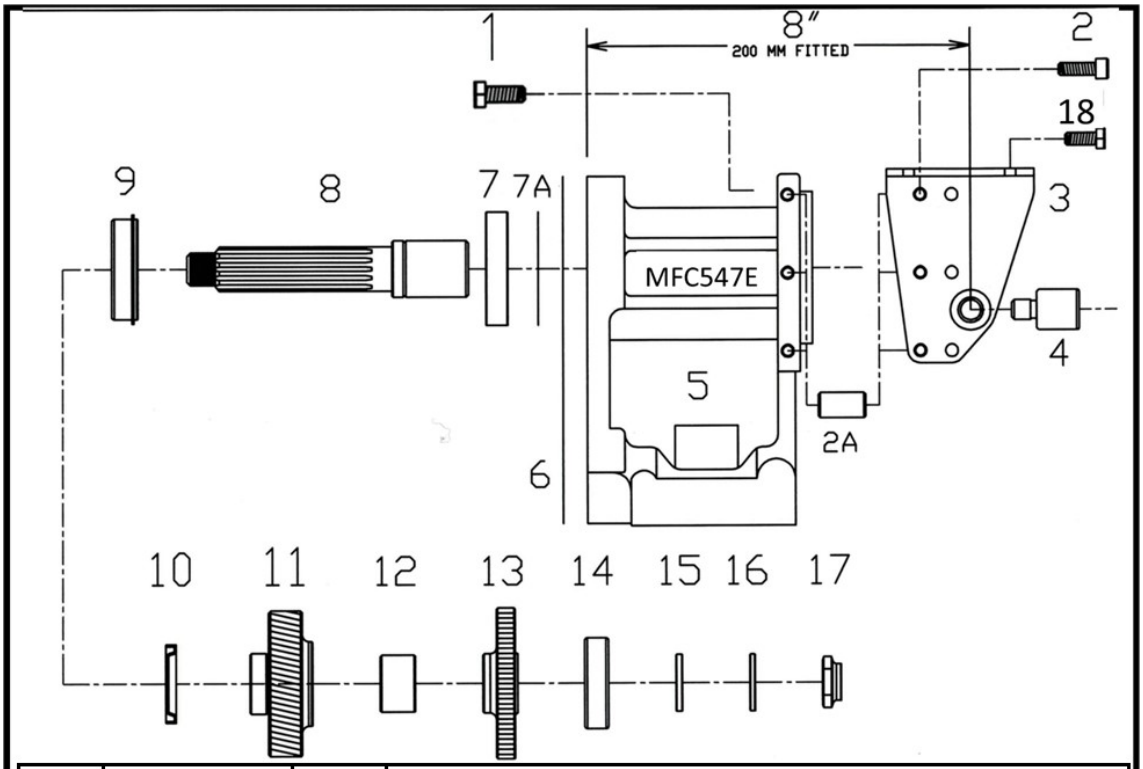


Image 15.1 Gears Installed

Image 15.2 Parts Layout



KEY	PART No.	QTY	DESCRIPTION
1	BT-2425	4	Bolt - M10 x 1.5 x 30 - Flanged Head H/ T Z/P
2	SHCS-6040	3	SHCS - 3/8" UNC x 2 1/2" - H/T - Z/P
2A	MFC898	3	Spacer - 19 x 10 x 38L
3	MFC236	1	Hi/Low Lever Bracket to Suit Landcruiser T/C
4	MFC548	1	Hi - Low Pivot Extension
5	MFC547E	1	Adaptor Housing - TH700/4L60E to Landcruiser T/C
6	3314260030	1	Gasket - Transfer Case - Front
7	MFC397	1	Spacer - Landcruiser Transfer Case Input Bearing
7A	MFC397A	1	Shim - 0.25
8	MFC40252	1	Shaft Coupler 6L80 to 5 Speed Split Transfer
9	TM307NR	1	Bearing
10	NAK9018	1	Seal - Transfer Case - Input
11		1	Gear Original Toyota Transfer Case Input
12		1	Spacer Original Toyota
13		1	Gear Original Toyota PTO
14		1	Bearing Original Toyota Rear Mainshaft
15	MFC103	1	Spacer - Spud Shaft - 35 x 45 x 5L
16		1	Washer Original Toyota
17	90179-26002	1	Nut - M26 x 1.5 - Locking
18	BT2125	1	Bolt - M10 x 1.25 x 20mm - H/T - Z/P

The following steps are for Transfer Case Input Shaft End Float Adjustment

Step 16 Measure
Using a straight edge and a set of feeler gauges, measure the distance between the TM307NR bearing and the front of the transfer case housing.

NOTE: To measure, sit the transfer case housing on top of a 20ltr drum with the shaft and gears hanging inside.

Step 17 Remove End Float
To remove the measured end float you carried out in the previous step, we have supplied five (MFC397A) 0.25mm shims. You must install the correct quantity of shims required inside the 80mm counterbore behind the bearing spacer (MFC397). Include the spacer in the 74mm ID against the shims.

Step 18 Dowels
Install the original dowels to the front transfer case housing.

Step 19 Install Transfer Front Case
Lubricate the oil seal.
Install the transfer front case with supplied gasket to the adaptor housing using the original bolts.
Apply an appropriate liquid sealer to the bolts and install.
Then using a calibrated torque wrench, torque to specs from the Toyota workshop manual. *See image 19.1*

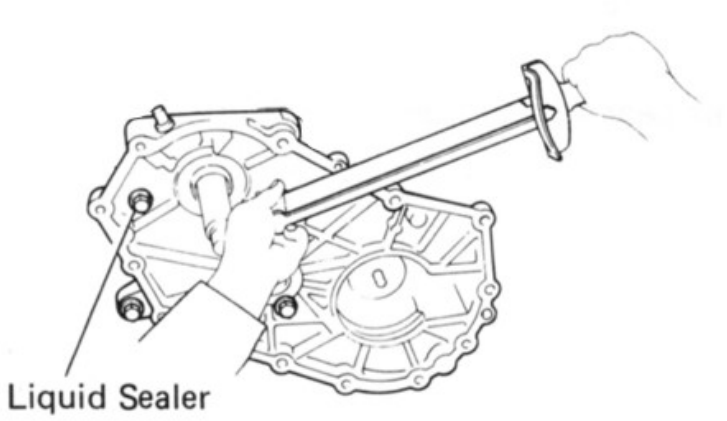


Image 19.1 Install Transfer Front Case

Step 20 Shaft Coupler Bearing
The shaft coupler bearing TM307NR is now between the transfer front case and the adaptor housing.

Step 21 Assemble Transfer Case
Refer to the Toyota workshop manual for this stage of assembling the transfer case.
Proceed with the rest of the transfer case rebuild using the new gaskets and parts supplied in the kit.
Including installing all internal parts, replacement gears, bearings or shafts as mentioned in Step 10, then transfer rear case, o'ring & lockplate for idler shaft, rear output flange and power take-off cover.

<u>DO NOT</u> torque or stake the shaft coupler lock nut or install transfer case cover plate (tin hat).

Step 22 Install Shaft Coupler Lock Nut

Remove the shaft coupler lock nut.
While holding the rear output flange, Use a small amount of thread locker, install nut and then using a calibrated torque wrench, torque to specs from the Toyota workshop manual.
Stake the shaft coupler lock nut, using a punch to flatten the rear of the nut. *See image 22.1*

Install the transfer case cover plate (tin hat) with a new gasket to the transfer rear case.
Apply liquid sealer to the six bolts. Install bolts and then using a calibrated torque wrench, torque to specs from the Toyota workshop manual. *See image 22.2*

NOTE: Face the gasket & cover plate notch downward.

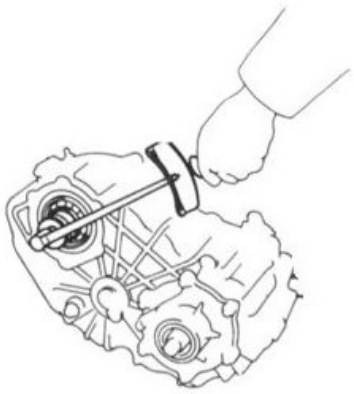


Image 22.1 Install Shaft Coupler Lock Nut

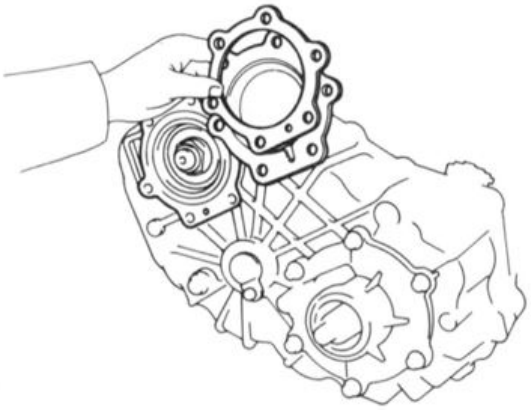


Image 22.2 Install Cover Plate (Tin Hat)

Step 23 Connect to Automatic Transmission

Install the transfer case with adaptor housing assembly to the automatic transmission.
Use four of the supplied M10 x 30 flanged-headed bolts and medium strength thread locker applied.
Then using a calibrated torque wrench, torque to 55Nm.
See image 23.1

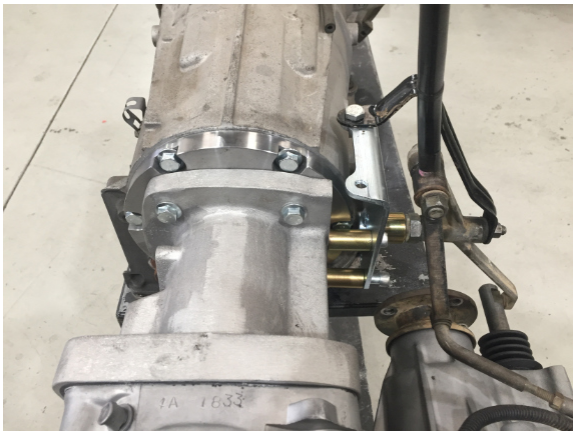


Image 23.1 Connect to Automatic Transmission

Step 24 Install Hi/Low Lever Bracket

Install the new Hi/Low lever bracket (MFC236)
to the side of the adaptor housing.
Secure the bracket using the three (MFC898) spacers and three(SHCS-6040) bolts supplied.
NOTE: *See Image 15.2* for reference of parts and *See Image 24.1* for bracket bolt hole location.

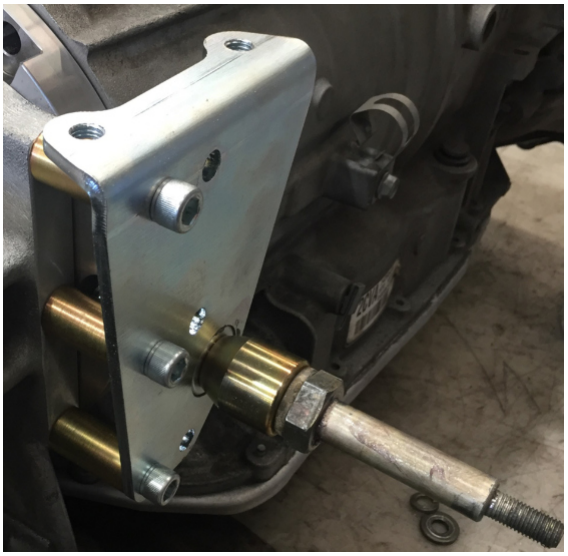


Image 24.1 Hi/Low Lever Bracket

Step 25 Install Hi/Low Pivot Extension

Screw the Hi/Low Pivot Extension (MFC548) into the hi/low lever bracket.
NOTE: *See Image 15.2 Key 4 & See Image 24.1*
Then screw the original Toyota pivot shaft into the extension.

Step 26 Install in Vehicle

Install the complete assembly into the vehicle.
The adaptor housing accepts the original Toyota mounting rubber, which bolts to the Toyota cross member. Due to cross member relocation rearwards, the floor requires a slight change above the transfer case cover plate (tin hat) to give adequate clearance.
This can be done with ball peen hammer using the rounded end. *See Image 26.1*
NOTE: Use **MFK40440** Crossmember Mounting LS-60 Series Kit. (Seperate Purchase)
The cross member will require relocation rearwards. *See Image 26.2 & See Image 26.3 & See Image 26.4*

Image 26.1 Floor Clearance

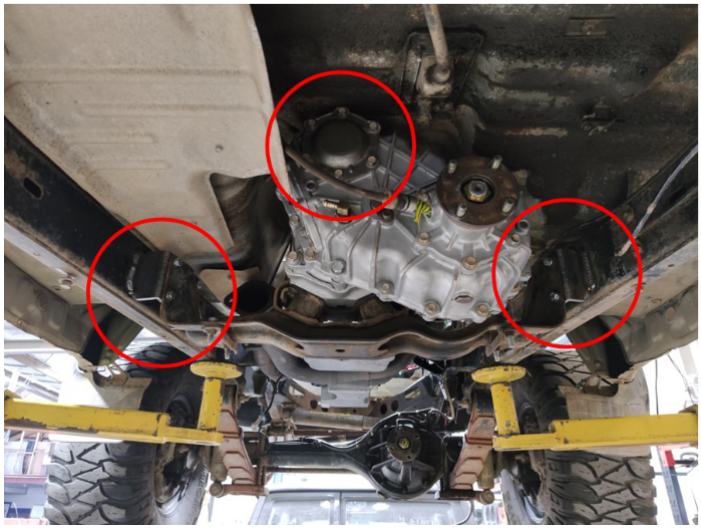


Image 26.2 Rear Crossmember

Image 26.3 LHS Crossmember Mount

Image 26.4 RHS Crossmember Mount

Step 27 Guide - Transfer Case Shift Lever

It is necessary to modify the transfer case, shift lever lock-out guide.
Removal of the white shaded section is required. *See Image 27.1*
When completed, the shift lever lock-out guide should look like the one in the photo. *See Image 27.2*

Image 27.1 Original Guide - TC Shift Lever

Image 27.2 Modified Guide - TC Shift Lever

Step 28 Transfer Case Shift Lever

Due to the transfer case not mounting in the factory location, modifying the transfer case shift lever is necessary. The original transfer case shift lever *See Image 28.1*
You will require some heat (oxygen and acetylene) or similar to change the shape of the transfer case shift lever. Some variation in shape may be necessary, depending on your conversion.
When completed, the shift lever should look similar to the one in the photos. *See Image 28.2 & Image 28.3*

Image 28.1 Original

Image 28.2 Modified

Image 28.3 Modified Installed

Step 29 Install Transfer Case Shift Lever & Lockout Guide

Install the transfer case, shift lever lockout guide, hi/low lever, and linkages.

The lockout guide requires a new top bolt M10 x 1.25 x 20mm (BT2125) supplied. *See Image 15.2 Key 18*

The new bolt (BT2125) goes through the modified lockout guide and into the (MFC236) Hi/Low lever bracket already installed in step 24.

See Image 29.1 & Image 29.2

Image 29.1 BT2125 Top View

Image 29.2 BT2125 Under Body View

Step 30 Drive Shafts

Measure the distance between the transfer case output flanges and the diff pinion flanges.

This measurement is needed to modify the drive shafts.

Install the modified front driveshaft and check the clearance between it and the side of the automatic transmission oil pan. *See Image 30.1 & Image 30.2*

The clearance distance must take into account the front suspension travel.

Install the modified rear driveshaft.

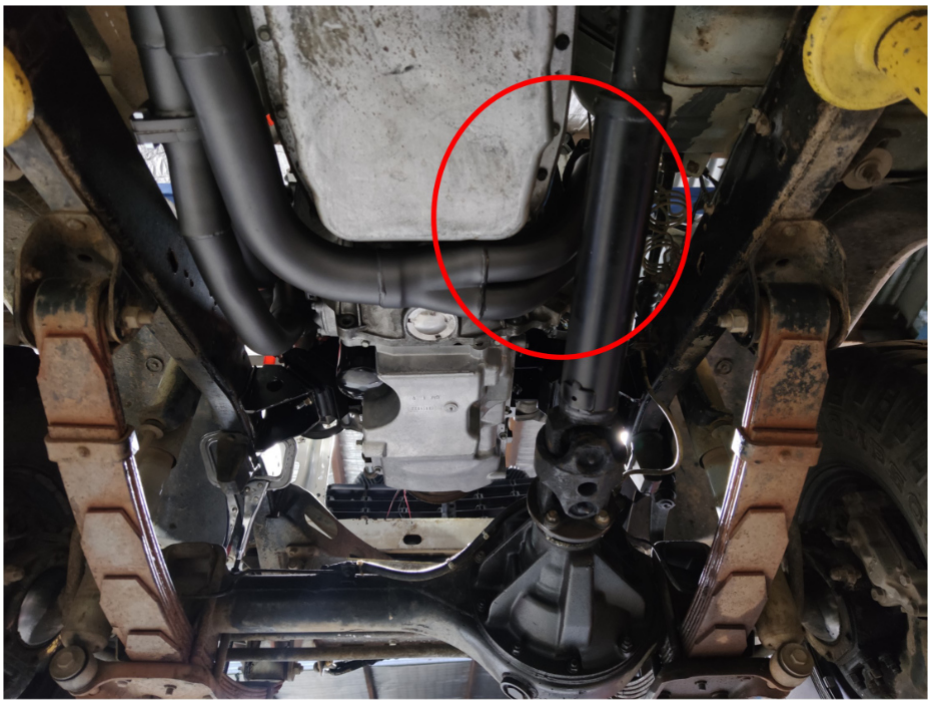


Image 30.1 Shaft Under View

Image 30.2 Shaft Top View

Step 31 Transmission Cooler

Install a suitable automatic transmission cooler. When connecting your transmission oil line hoses, use the supplied Marks4WD Transmission Cooler Manifold Assembly MFG20256 and then using a calibrated torque wrench, torque to 25Nm. *See Image 31.1 & Image 31.2*

Image 31.1 Transmission Cooler Manifold Assembly

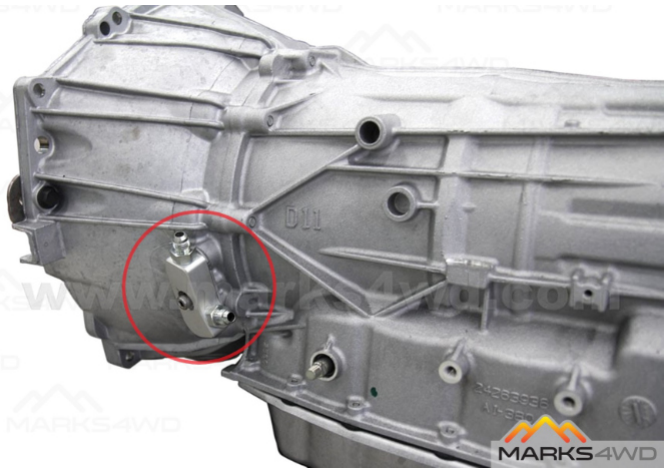


Image 31.2 MFG20256 Installed

Step 32 Gear Shifter

Install your transmission gear shifter.

NOTE: You could use a commodore shifter or similar for this conversion.

Or use Marks4WD Gear Indicator 6L80E / 6L90E GDS-5011 (Separate Purchase)

The gear indicator displays the current gear data by scanning the vehicle's CAN bus allowing you to monitor the current gear used by the transmission, not just the lever position.

When you select a gear, it is displayed on a 5x8 LED dot-matrix display housed in a rugged plastic enclosure.

Step 33 Wiring

Connect gear shifter inhibiter switch and reverse light switch. If not incorporated in the wiring harness you use for the engine & transmission conversion.

Step 34 Oils

Fill the transmission and the transfer case with the correct specification and quantity of oil.

Step 35 Checks

Road test the vehicle. Check correct operation of transmission and transfer case, then inspect and for oil leaks.

Terms and Conditions

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.

Contact Information

Web:	http://www.marks4wd.com/
Email:	sales@marks4wd.com
Phone:	+61 3 9552 6555
Address:	385-393 Lower Dandenong Rd
	Dingley, Victoria, 3172
	Australia