



MFK353, MFK353E, MFK354 and MFK354E

COMMODORE V6/V8 and TH700R-4 and 4L60E AUTOMATIC TRANSMISSION

TO

TOYOTA HILUX/4RUNNER and SURF

Thank you for purchasing a product manufactured by Marks 4WD Adaptors. The following instructions are intended as a guide. We recommend that you purchase a service manual pertaining to your vehicle for specific torque values, wiring diagrams and other related information.

NOTE 1: When fitting these transmissions with V8 engines the transfer case will need to be relocated rearward and drive shafts will require alteration. The transmission tunnel will also require alteration around the bellhousing area.

NOTE 2: The Toyota 4/Runner-Surf automatic transmission, transfer case and cross member can't be used in this conversion. The 4 cylinder model transfer case previously fitted with a 5-speed gearbox along with the cross member will be required to position the engine into the correct position. The drive shafts and Hi/Low lever will need to be altered accordingly.

Automatic Transmission Preparation

1. It is recommended that an automatic transmission specialist install the modified transmission output shaft to the automatic transmission. The automatic transmission requires complete disassembly as the output shaft is fitted from the front of the transmission. Make sure your specialist fits the correct seal to the front of the output shaft.
2. Remove the front and rear drive shafts, the gear lever and the 4WD lever.
3. Disconnect the speedometer cable and unplug the wiring from the gearbox and transfer case.
4. Remove the gearbox and transfer case from the vehicle.
5. Separate the transfer case from the gearbox assembly by undoing the six bolts on the rear of the extension housing.

NOTE: The 5-speed transfer case, 4WD-selector lever is fitted to the top of the extension housing.

The 4-speed transfer case, 4WD-selector lever is mounted directly to the top of the transfer case.

Transfer cases fitted to 5-speed transmissions

6. Remove the extension housing from the gearbox.

7. Remove the coupling sleeve from the gearbox, main output shaft. **Note** which way the coupling sleeve was fitted as it must be re-fitted to the rear of the automatic transmission main shaft exactly the same way. The counter bored end (blank spline end) of the coupling sleeve must be fitted toward the transfer case end. Failure to do so will result in not enough spline contact with the automatic transmission, output shaft. This will most likely result in spline damage.

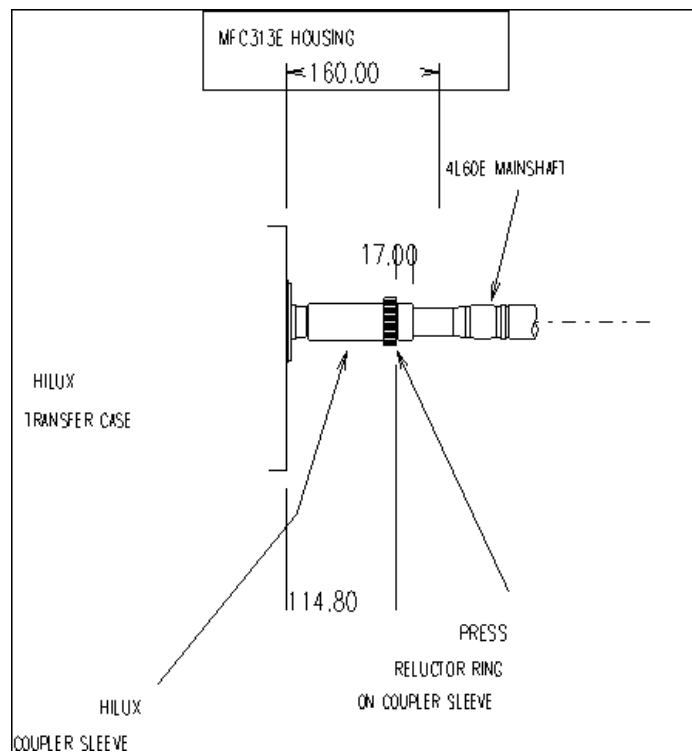
Transfer cases fitted to 4-speed transmissions

8. The new coupling sleeve supplied in the kit is fitted to the main output shaft. The counter bored end (blank spline end) of the coupling sleeve must be fitted toward the transfer case end. Failure to do so will result in not enough spline contact with the automatic transmission, output shaft. This will most likely result in spline damage and consequently loss of drive.

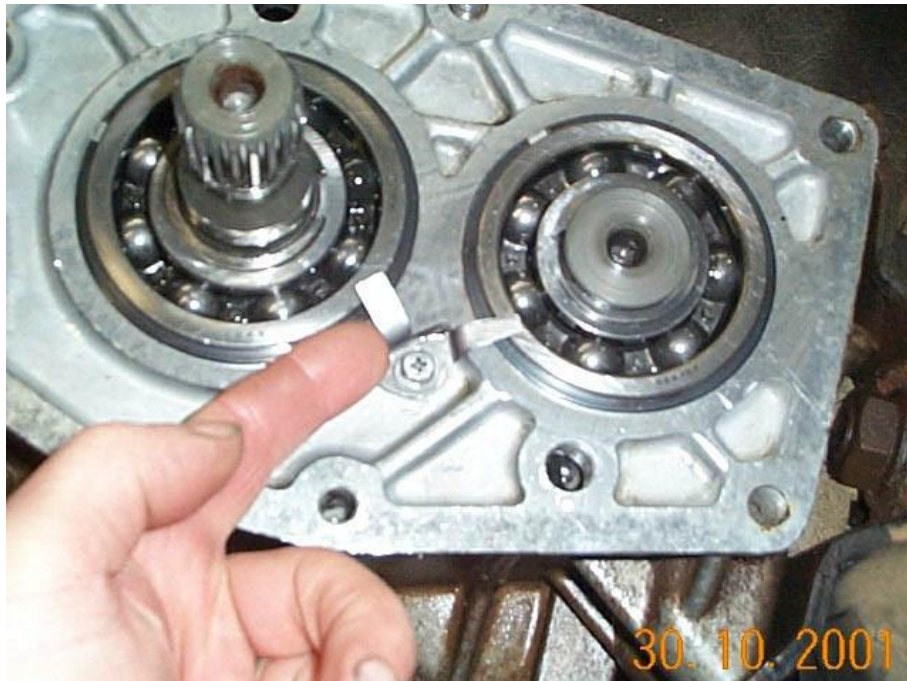
4L60E transmission

NOTE: Some early VR and imported 4L60E transmissions were fitted with a 2" diameter VSS this VSS can't be used in the new adaptor housing. The new adaptor is machined to suit the cheaper and more common 24mm one from VS and later model vehicles. The GM part number for the 24mm VSS is 10456520.

NOTE: When fitting a 4L60E transmission the reluctor ring supplied in the kit must be pressed onto the Hilux coupler sleeve. See drawing below.



9. Fit the new adaptor housing to the automatic transmission using the 4 M10x1.5 SHCS supplied.
10. Fit the new seal in the adaptor housing using a suitable sealer. Install the seal with the spring part facing the automatic transmission.
11. Remove the transfer case, bearing retainer clip and bolt from the front of the transfer case. The new adaptor housing has been designed to hold the bearing in place without the aid of the clip. See the photo below.



12. **NOTE:** This bearing retaining clip is not fitted to all model transfer cases.
13. Use a suitable sealer on the gasket supplied fit the transfer case to the adaptor housing using the original transfer case bolts.

14. Transfer cases fitted to 4-speed transmissions

Fit the small cover plate supplied in the kit over the hole located on top of the adaptor housing and secure it using the bolts supplied. **NOTE:** Use a suitable sealer such as silastic on these parts.

15. Transfer cases fitted to 5-speed transmissions

Fit the small shifter housing to the top of the adaptor housing and secure it using the original bolts. **NOTE:** Use a suitable sealer such as silastic on these parts.

16. Mount the complete assembly into the vehicle.
17. Check the clearance around the automatic transmission and the transmission tunnel. The transmission tunnel will require some panel beating on the right front to clear the servo, cooler pipes, and fittings. The left side will also require panel beating to clear the shifter and shifter rod.

Transfer case mounting V8 engines in 5-speed models

18. When fitting a V8 engine with the TH700-R4 or the 4L60E the transfer case will need to be shifted rearward. The cross member will need to be relocated and the drive shafts will require modifications. Marks 4WD Adaptors manufacture a pair of transfer case mounts that weld to the chassis rail and allow the Hilux cross member to be bolted to the chassis as standard. The cross member mounts will also improve the drive shaft angles by spacing the transfer case down by approximately 1".

Part number is as follows:

MFK 385 - Cross member relocation kit to suit the 5-speed cross member.

Transfer case mounting V6 and V8 engines in 4-speed models

19. **NOTE:** When replacing the 4-speed gearbox with the TH700-R4 or the 4L60E the transfer case will need to be shifted rearward. The cross member will need to be relocated and the drive shafts will require modifications. Marks 4WD Adaptors manufacture a pair of transfer case mounts that weld to the chassis rail and allow the Hilux cross member to be bolted to the chassis as standard. The cross member mounts will also improve the drive shaft angles by spacing the transfer case down by approximately 1".

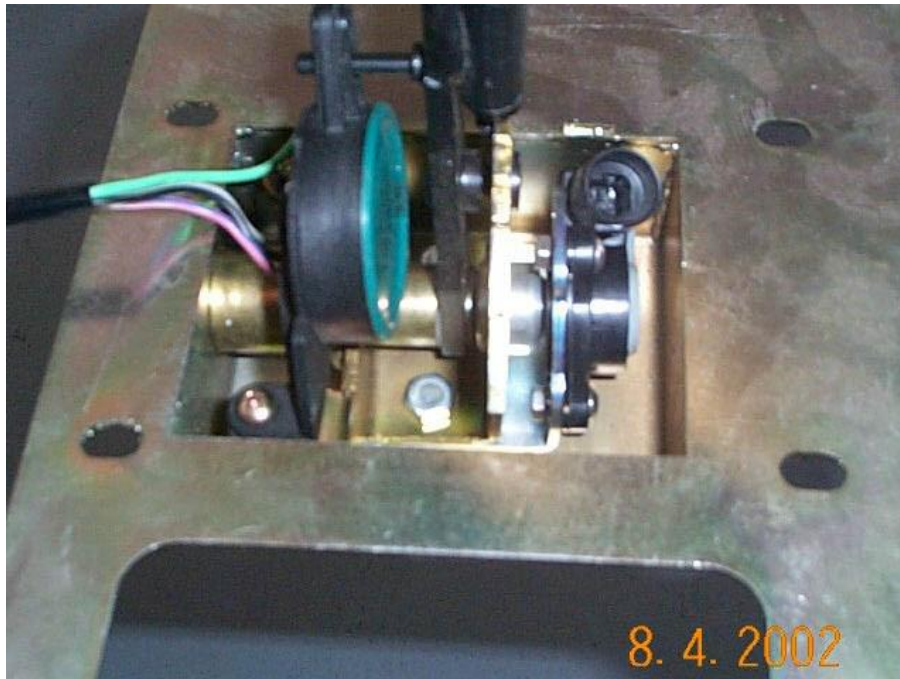
Part number is as follows:

MFK 389/4 - Cross member relocation kit to suit the 4-speed cross member.

1. Reinstall the torque converter and refit the engine making sure that all the bellhousing and torque converter bolts are tightened to specification.
2. Refit both front and rear drive shafts. **NOTE:** It is important that you carefully measure the distance between the front drive shaft and the transmission pan. If there is insufficient clearance to allow for maximum suspension travel, you should consider using a smaller diameter front drive shaft tube. Failure to have adequate clearance will result in the front tail-shaft tearing a hole in the oil pan.
3. Fit the GM torque converter cover plate to the transmission, this cover incorporates the strengthening bracket.

Shifter Installation

1. We recommend using the Holden Commodore T-bar shifter and linkage with our digital readout and shifter installation kit. Two shifter installation kits are available Hilux kit part no. MFK1199 and the 4/Runner kit part no. MFK1145.
2. The shifter mechanism needs to be removed from the Holden floor mounting plate. To do this, remove with a drill or grinder the two mounting rivets.
3. Fit the shifter mechanism to the shifter floor plate (Hilux MFC1199) (4/Runner MFC1215). Sandwich the (MFC1144) TPS bracket between the 2 parts, secure the 3 parts using 2 (MFC783) M6x15 bolts, 2 (MFC435) M6 spring washers and 2 (MFC061) M6 nuts.
4. Fit the TPS drive shaft (MFC1145) over the gearshift pivot nut.
5. Put the shifter in the fourth gear or drive gear position.
6. Fit the TPS over the drive shaft and rotate it anti-clockwise to set the TPS in approximately the centre of its movement. **NOTE:** If you can't do this the first time, remove the drive shaft and try a new position. Alternately you could rotate the nut by tightening slightly.



7. Secure the TPS using the 2 (MFC...) M5 screws and 2 (MFC...) nuts. **NOTE:** This position will not be final, adjustment will be required after the digital readout is wired.
8. Fit the floor plate and shifter assembly to the transmission tunnel and secure it using the original screws. **NOTE:** Use sealer between the floor plate and the transmission tunnel.
9. Fit the digital readout under the dash in a position easily seen by the driver; secure it using the 2 self tapping screws supplied.
10. Connect the black wire to earth.
11. Connect the red wire to IGN. B+.

VN, VP and VR ECM V6 and V8

12. Connect the white wire to the TCC wire (grey/red) which runs to pin A7 on the ECM.
13. Connect the blue wire to the check engine lamp control wire (brown/white) which runs to pin A5 on the ECM.

VR PCM V6 and V8

14. Connect the white wire to the TCC wire (grey/red) which runs to pin A9 on the PCM.
15. Connect the blue wire to the check engine lamp control wire (brown/white) which runs to pin A7 on the PCM.

VS PCM V6

16. Connect the white wire to the TCC wire (grey/red) which runs to pin C1 on the PCM.
17. Connect the blue wire to the check engine lamp control wire (brown/white) which runs to pin F5 on the PCM.

18. Plug the 3-pin plug into the TPS at the shifter.
19. Turn the ignition on, all of the 7 Green LED's under shift points 1 through to P will be illuminated the diagnostic light (F) will also be illuminated. One of the Red LED's will also be illuminated. Put the shifter into the 4th gear position and adjust the TPS position to align the Red LED adjacent to the 4th gear position. Move the shifter to the Park position and then to the 1st gear position, if the Red LED's don't line up properly re-adjust the TPS until they do.

NOTE: If you can't get them to line up exactly a trim pot is provided which will expand or contract the display range to aid with the alignment.

20. Remove the cover from the display.
21. A small vertical trim pot is located on the lower left-hand side of the printed circuit board. Make your adjustments small a few degrees at a time. Each time you adjust the pot move the shifter the full range 1st to park. If necessary, re-adjust the TPS for correct alignment.
22. Fit the selector shaft from the transmission to the shifter arm and adjust it so the all of the gears can be selected properly. **NOTE:** The shaft may need to be cut down and bent to clear the transmission tunnel.
23. Fit the HI-LOW lever and check to make sure that the shifter does not interfere with its operation. If it does bend the HI-LOW lever to clear.
24. The gear lever boot consists of 2 parts, the top part is removed from the bottom part and discarded.
25. The bottom boot will need to be cut in half, the HI-LOW lever end is retained. Use the new gear lever boot retaining plate as a template.
26. Fit the modified boot and secure it using the retaining plate and the original screws.
27. Remove the gear lever knob. It can be knocked off using a hammer and a soft drift such as a piece of pine with a C shape cut to go around the lever shaft.
28. Knock the roll pin out of the gear-locking knob and remove the knob.
29. Fit the console and secure it with the original screws.
30. Re-install the gear locking knob and the gear lever knob.

Torque Converter Clutch (TCC)

31. The 700R-4 automatic transmission is fitted with a Torque Converter Clutch (TCC) which improves the efficiency of the automatic transmission by mechanically coupling the transmission, input shaft to the engine flex plate. The torque converter clutch is activated when inputs from external sensors meet certain conditions. Your vehicle must be fitted with an operational Vehicle Speed Sensor for the TCC to operate.
32. On the left hand, side of the 700R-4 automatic transmission there is a 4-pin plug that is connected to the TCC solenoid fitted inside the automatic transmission. You must obtain the

loom section that has this plug on it.

33. The 4-pin plug must be wired as follows: ***NOTE:*** Only 3 pins are connected. Grey / Red wire - connect to terminal A7 of the ECM.
34. Pink / Blue wire - connect to ignition B+ 12 Volt supply.
35. Lt. Blue - connect to terminal C7 on the ECM.
36. A suitable transmission cooler must be fitted. This can be purchased from your local parts supplier and should be as large as possible.

Remember an inexpensive phone call can save a costly mistake!

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