

22/07/10



FITTING INSTRUCTIONS FOR

MFK1060C168, MFK1060C168T

**MFK1060CD, MFK1060CDT, MFK1060CL168, MFK1060H, MFK1060HT and
MFK1060L168T**

HOLDEN and CHEVY V8 PETROL and CHEVY DIESEL

TO

LAND CRUISER 1HZ AND 1HDT DIESEL - 5 SPEED TRANSMISSIONS

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.

These kits have been designed to directly replace the original Land Cruiser 1HZ and 1HDT diesel engines.

Engine Removal

1. Remove 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 bell housing 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.
10. If the new engine uses a different grade of fuel than the original engine, drain the fuel tank and fuel

lines.

11. Remove the oil pressure and water temperature senders from the Toyota engine.

Adaptor Kit Preparation

1. Fit the two M8 x 20 dowels (MFC170) to the rear of the new adaptor housing.
2. Fit the adaptor housing assembly to the rear of the Chevy engine using the 5 long and 1 short SHCS supplied. Check the block thread. We have supplied both metric and imperial SHCS to suit either block thread. Make sure that the engine is fitted with the 2 locating dowels.
3. Fit the flywheel cover plate using the 3 bolts (MFC432), 3 spring washers (MFC435) and 3 flat washers (MFC436).
4. Fit the starter motor to the engine using the Chevy bolts. Seal the plate around starter motor using silastic.

CHEVY NOTE: Due to various Chevy petrol starter motor offsets, a small portion may have to be ground off the starter locating hole in the flywheel cover plate. If the hole in the cover plate supplied is in a totally different position, then you have ordered the incorrect kit. Chevy petrol and diesel engines have different size flywheels and therefore have different starter motor offsets. Please call our sales staff for further recommendations should this problem arises. **Chevy Diesel and Big Block engines will require firewall modification behind R/H cylinder head.**

FLYWHEEL.

Two types of flywheels are available:

1. The cast iron version. Instructions 5 to 8

5. Fit the Chevy flex plate to the rear of the new flywheel (MFC366C for 1HZ, MFC1046E for 1HDT) using the 6 bolts (MFC904) and 6 spacers (MFC076). Use loctite on these bolts.

NOTE 1: One of the holes in the flex plate will require re-drilling or filling out to allow the bolt to be fitted.

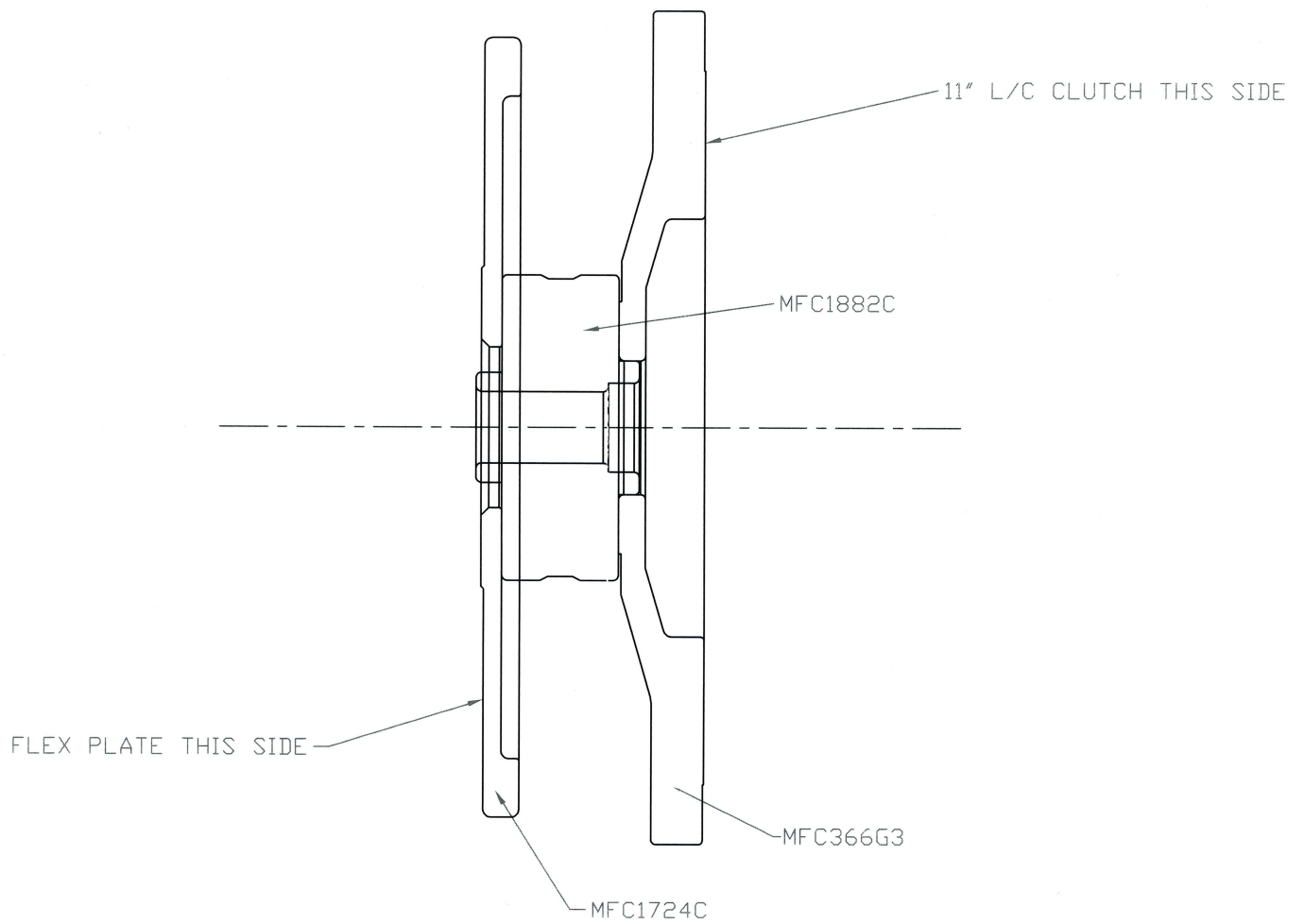
NOTE 2: Chevy petrol and Holden flex plates only have 3 holes for attaching the torque converter; these 3 holes are used to attach the flywheel to the flex plate. Chevy diesel flex plates have 6 holes.

6. Fit the flywheel assembly to the engine and secure it with the 6 bolts supplied (check the crank depth and use the appropriate bolts. Use loctite on these bolts. **NOTE: PLEASE CHECK!** GM engines were fitted with various rear main seal types, the flywheel to crankshaft bolts can touch in some applications. To prevent this a flat washer could be used under the head of the bolt.

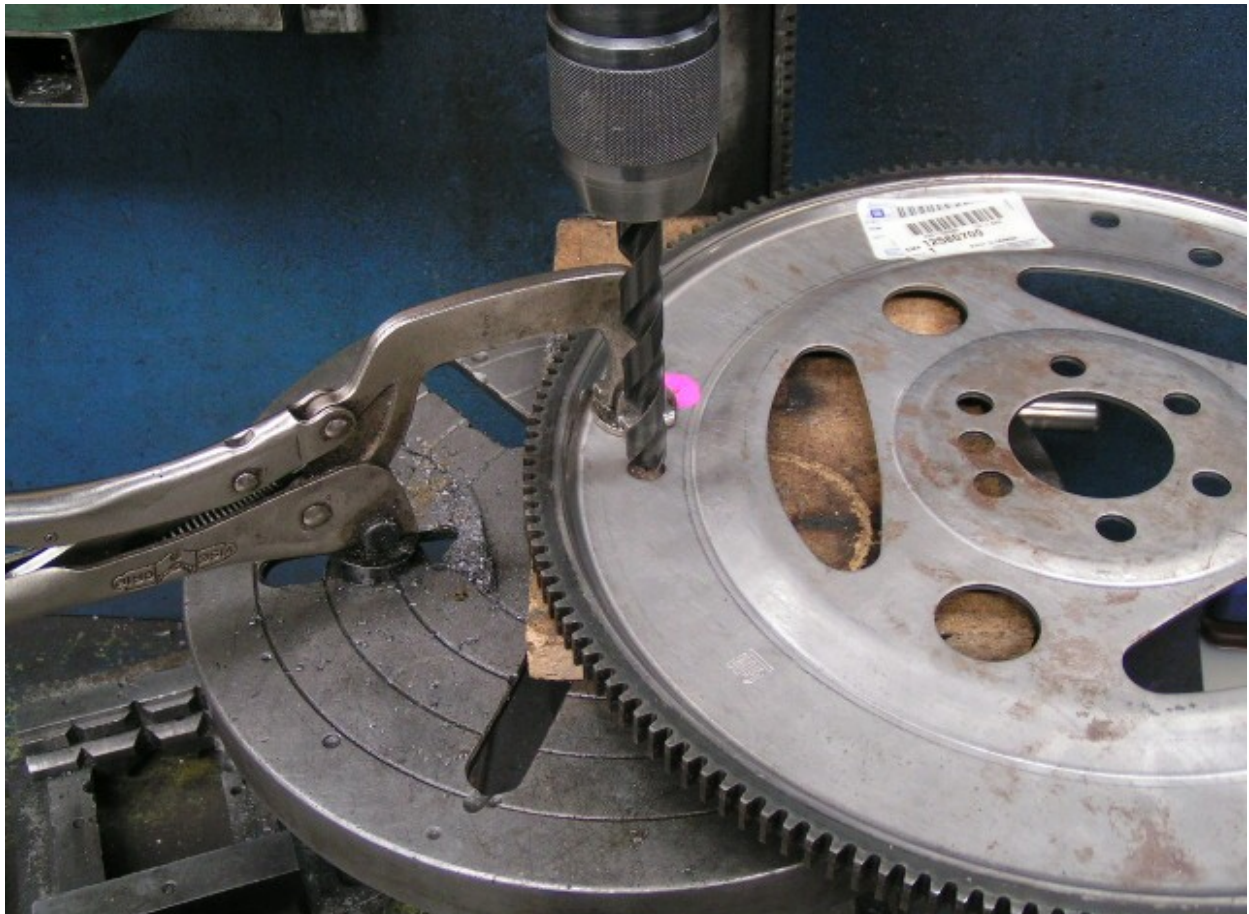
7. Fit the spigot bearing into the flywheel using a suitable drift. **NOTE:** 1HZ 78/79/100 series vehicles are fitted with an R151 gearbox, this R151 gearbox has a 21 tooth spline with a 12mm spigot diameter. If you have this gearbox you must fit the MFC1508 spigot adaptor in the flywheel and then fit the 6001 bearing.

8. Make sure the (3 x M10 dowels MFC197 For 1HZ or 2 x M10 dowels MFC197 for 1HDT) are fitted to the flywheel, they are required for correct clutch location.

2. The steel version. Instructions 5 to 10



5. One of the holes in the flex plate will require re-drilling or filling out to allow the bolt to be fitted.



6. Fit the Chevy/Holden flex plate to the rear of the flex plate stiffener, use the aligning tool supplied in the kit. Secure it using loctite on the bolts supplied.



7. Fit the flexplate/stiffener assembly to the engine, then the crank adaptor and secure it with the 6 socket head cap screws supplied. **NOTE: PLEASE CHECK!** the crank depth to make sure that the socket head cap screws do not bottom out). GM engines were fitted with various rear main seal types, the flywheel to crankshaft bolts/socket head cap screws can touch in some applications. To prevent this a flat washer could be used under the head of the bolt. Use loctite on all crankshaft/flywheel bolts.



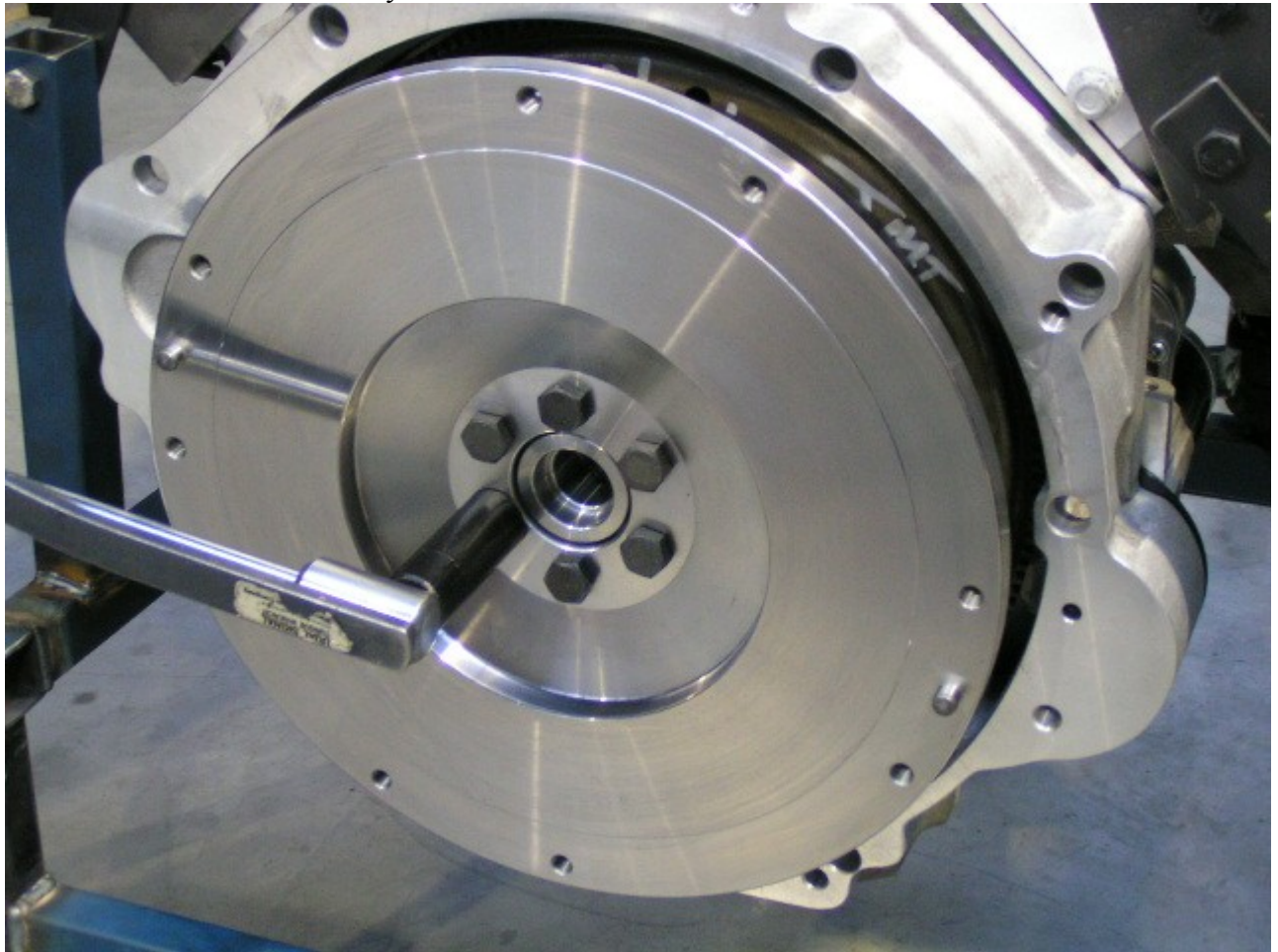
8. Using a dial indicator check that the crank adaptor runout is less than $.05 \pm 0.2\text{mm}$. If the runout exceeds this amount remove the crank adaptor and flexplate assembly. Check and remove any burrs on the flexplate and try again.



9. Fit the spigot bearing into the crank adaptor using the aligning tool as a drift. **NOTE:** 1HZ 78/79/100 series vehicles are fitted with an R151 gearbox, this R151 gearbox has a 21 tooth spline with a 12mm spigot diameter. If you have this gearbox you must fit the MFC1508 spigot adaptor in the flywheel and then fit the 6001 bearing.



10. Fit the flywheel to the crank adaptor and secure it using the bolts supplied in the kit. Use loctite on all crankshaft/flywheel bolts.



11. Make sure the (3 x M10 dowels MFC197 For 1HZ or 2 x M10 dowels MFC197 for 1HDT) are fitted to the flywheel, they are required for correct clutch location.

CLUTCH KIT

1. Fit the Toyota clutch and pressure plate to the new flywheel using a suitable clutch-aligning tool, secure it using the original Toyota bolts.

NOTE 1: If the clutch is worn replace it along with the thrust bearing. **NOTE 2:** When using weld on engine brackets it may be easier to fit the clutch after the engine chassis brackets have been welded to the chassis.

NOTE 2: Remove the Toyota starter motor stud protruding from the front of the bell housing.

NOTE 3: The **70 series models (with weld in mounts)** have a brake pipe bracket located on the driver side chassis rail, this bracket is secured with a captive nut in the top of the chassis. Remove the pipe bracket and re-drill the new chassis bracket to allow the brake pipe bracket to be re-fitted after the new engine mount is welded.

2. Lift the engine into the engine bay using suitable lifting gear. Align the gearbox input shaft spline with the clutch spline by jacking one of the rear wheels off the ground. Put the gearbox in 4th gear and the transfer case in HI range. Rock the wheel backward and forward while pushing the engine back to the bell housing face.

3. Secure the adaptor to the bell housing using the original Toyota bolts.
4. While the rear wheel is in the air check the clutch operation. If all is well proceed, if not rectify the problem.

Chevy Engine Mountings.

MFK1062

1. Fit the left-hand engine bracket (MFC1062, the smaller of the two) to the engine mount rubber and fit the original washer and nut. Do not tighten the nut at this stage.
2. Fit the right hand engine bracket (MFC1063, the larger of the two) to the engine mount rubber and fit the original washer and nut. Do not tighten the nut at this stage.
3. Lift the engine as high as it will go and locate the left hand mounting rubber stud through the chassis bracket.
4. Locate the right hand mounting rubber stud through the chassis bracket.
5. Lower the engine slightly and fit the bolts (MFC1101), flat washers (MFC052) and spring washers (MFC196) through the engine brackets and into the engine block.

When you have all of the 3/8"UNC bolts fitted, lower the engine down onto the chassis brackets and tighten all of the engine bracket to block bolts.

6. Tighten the top engine mounting rubber nuts.
7. Fit the bottom engine mounting rubber washers and nuts and tighten them.

Holden Engine and Engine Mount Set Up

1. Lift the engine into the engine bay using suitable lifting gear.
2. Secure the adaptor to the bell housing using 2 of the original Toyota bolts located roughly central on the left and right of the bell housing.

Holden Engine Mountings.

MFK671CK or Chev Engine Mountings MFK680CK

1. Fit the original Holden left and right engine block brackets.
2. Fit the new engine mounting rubbers to the block brackets using the nuts and washers supplied or directly to the engine block if fitting a Chevy.
3. Fit the new chassis brackets to the engine mounting rubbers using the bolts washers and nuts supplied. **NOTE:** The longer bracket (MFC672/681) to the RHS and the (MFC671/680) to the LHS.
4. Lower the engine so that the top flange plate sits on top of the chassis rails. **NOTE:** The top flange will not sit flat on the chassis.
5. Tack weld the brackets to the side of the chassis and remove the engine.

6. Complete the welding of the bracket to the side of the chassis.
7. Using an oxy acetylene torch heat the top flange plate until its cherry red. Then shape it to the chassis rail using a hammer.
8. Complete the welding and allow them to cool.
9. Paint the chassis and brackets.

Holden Engine

1. Fit the Toyota clutch and pressure plate to the new flywheel using a suitable clutch-aligning tool, secure it using the original Toyota bolts.

NOTE: If the clutch is worn replace it along with the thrust bearing

2. Lift the engine into the engine bay using suitable lifting gear. Align the gearbox input shaft spline with the clutch spline by jacking one of the rear wheels off the ground. Put the gearbox in 4th gear and the transfer case in HI range. Rock the wheel backward and forward while pushing the engine back to the bell housing face.

3. Secure the adaptor to the bell housing using the original Toyota bolts.

4. While the rear wheel is in the air check the clutch operation. If all is well proceed, if not rectify the problem.
5. Fit the engine mountings and secure them with the bolts supplied.

Engine Accessories

The original Toyota accessories can be used however you will need to fabricate the necessary mounting brackets etc.

Most GM engine accessories can be used. However in some cases the GM accessories must be moved, for example late model Holden EFI 5ltr V8 engines have the power steering pump mounted low on the right hand side of the engine, in this position they interfere with the power steering box, therefore they must be moved.

Engine completion.

1. Fit the Toyota oil pressure sender using the adaptor supplied.
2. Fit the water temperature sender using the adaptor supplied. **NOTE 1:** Use Teflon tape or liquid Teflon. **NOTE 2:** Holden VT V8 engines do not have a separate water temp sender for the Commodore gauge, you will need to drill and tap a 1/8" NPSF 27tpi hole into the water jacket of the intake manifold. Then the adaptor supplied can be fitted.
3. Fit heater and radiator hoses.
4. Connect the power steering pump hoses and reservoir if required.
5. Connect the air conditioning compressor hoses and re-gas if required.
6. Connect the alternator wiring.

7. Complete all other wiring.
8. Fit the tachometer interface (MFK1165) as per instructions if required.
9. Complete the exhaust system.
10. Check all fluid levels.
11. Double check, all of the mounting bolts are tight.
12. Start the engine and check for-

Fuel leaks.

Oil leaks.

Water leaks.

Exhaust leaks.

Allow the engine to warm up and recheck the above.

10. Refit the bonnet.

The components supplied in the kit are designed for specific type conversions. Modifications to any components without the written consent from Marks 4WD Adaptors will void any possible warranty or return privileges. Should you have any further questions that are not covered in the instruction sheet, please contact our sales department for assistance.

Proudly Manufactured by:

Marks 4WD Adaptors

385-393 Lower Dandenong Road, Dingley Vic. 3172

Tel: (03) 9552 6555, Fax: (03) 9551 8060,

E-Mail: sales@marks4wd.com

Catalogue: <http://www.marks4wd.com/>