

04/04/06



Fitting Instructions

## **MFK560H & MFK560HT**

**HOLDEN V8**

**TO**

**LANDCRUISER 3, 4 & 5 SPEED PETROL 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.

This kit has been designed to directly replace the original Land Cruiser F155, 2F and 3F engine. If replacing an H or 2H diesel engine, you must obtain a complete petrol bellhousing assembly to suit your vehicles transmission, or use one of our MFK371 kits. **NOTE:** The slave cylinder from a 2H diesel can be used with a 3F petrol clutch fork and cast iron one piece bellhousing.

**A.**

### **Engine Removal**

1. Remove the bonnet from the vehicle and tie back the hinges.
2. Disconnect and label all the hoses and wiring attached to the old engine.
3. Remove the air-conditioning compressor and power steering lines (if fitted).
4. Remove the complete exhaust system from vehicle.
5. Drain the radiator and engine of all fluids.
6. Remove the radiator from the vehicle.

**B.**

### **1F, 2F, and early 3F fitted with the one-piece cast iron bellhousing.**

1. Remove the bellhousing cover plate.
2. Remove the slave cylinder.

3. Undo the front engine mounts.
4. Support the transmission with a jack and remove the gearbox to bellhousing bolts.
5. Undo the side bellhousing mounts. **NOTE:** This applies to pre 08/80 vehicles only.
6. Remove the slave cylinder from the side of the bellhousing.
7. Remove the engine and bellhousing assembly from the vehicle using suitable engine lifting equipment.
8. Remove the Land Cruiser clutch.
9. Remove the flywheel.
10. Remove the bellhousing from the engine.
11. Remove the oil pressure and water temperature senders from the Toyota engine.

### **C.**

#### **3F fitted with the Two-piece aluminium bellhousing and cast iron sandwich plate.**

1. Undo the front engine mounts.
2. Support the transmission with a jack and remove the bellhousing bolts.
3. Remove the engine and bellhousing assembly from the vehicle using suitable engine lifting equipment.
4. Remove the Land Cruiser clutch.
5. Remove the flywheel.
6. Remove the sandwich plate from the engine. This part is re-used in the conversion.
7. Remove the oil pressure and water temperature senders from the Toyota engine.

### **D.**

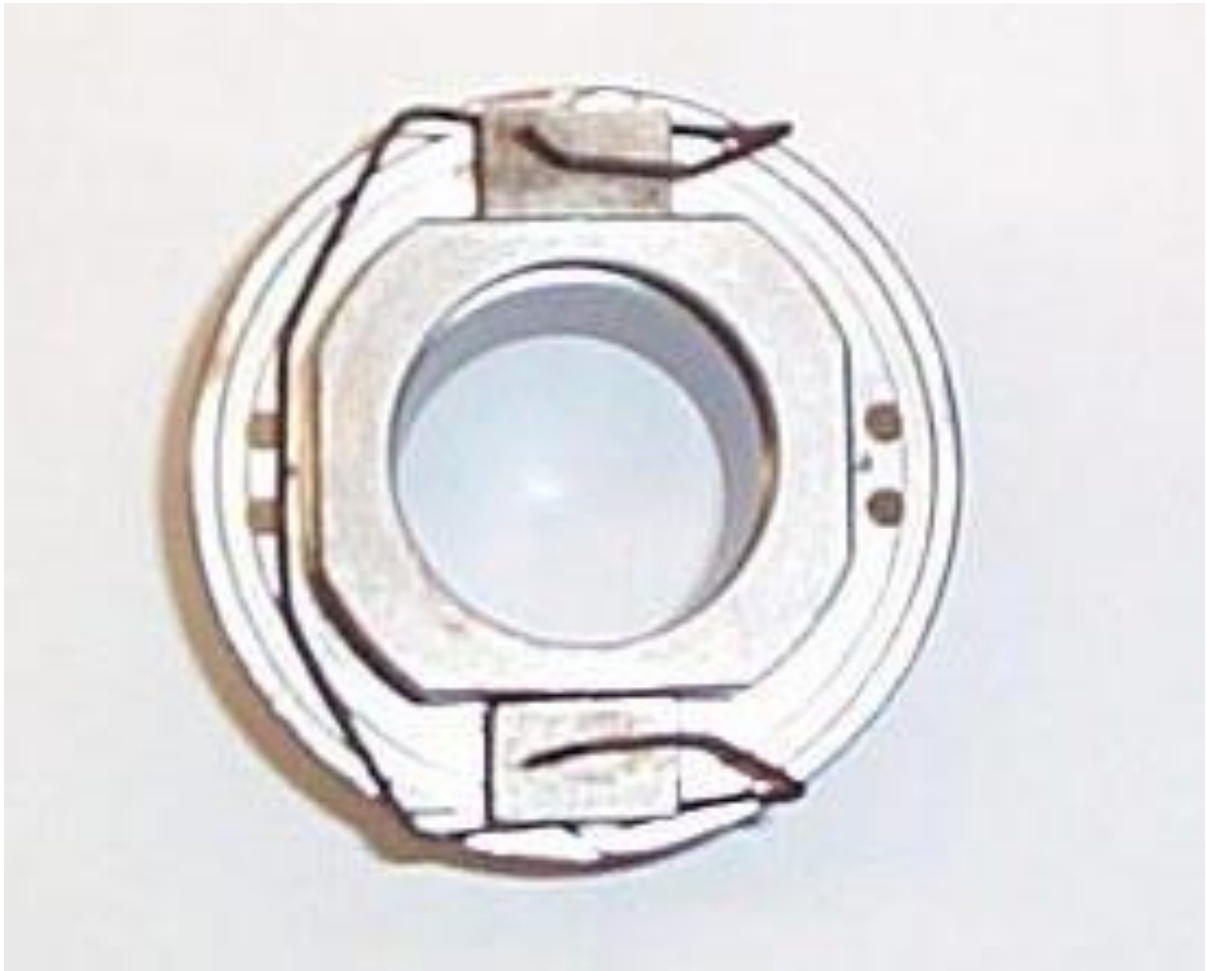
#### **Transmission and Adaptor Kit Preparation**

1. Remove the thrust bearing and carrier from the front of the gearbox.

1. If your vehicle is fitted with the **pressed metal thrust-bearing carrier and fork** remove the spring clip from the carrier.
2. The new carrier (2) has a groove machined in the back, sit the clip in the groove.
3. The bearing blocks (1) are then used to secure the spring clip. Fit the bearing blocks (1) to the carrier (2) using the 4 x M4 counter sunk screws supplied in the kit. **NOTE:** Use locktite on the screws.

**Refer to diagram A for the next step.**

1. Assemble the thrust-bearing carrier by first fitting the lock nut (4) onto the carrier (2) then screw the carrier into the sleeve (5).



1. Slide the thrust bearing extension carrier through the inside of the adaptor housing. Ensure that the tube slides in and out of the adaptor housing with ease. If the thrust bearing extension tube is tight, you may need to clean any burrs inside the housing with light emery paper.
2. Fill with grease the groove inside the middle of the adaptor housing and refit the thrust bearing extension tube.
3. Press the thrust bearing (SF0914) onto the front of the extension tube.

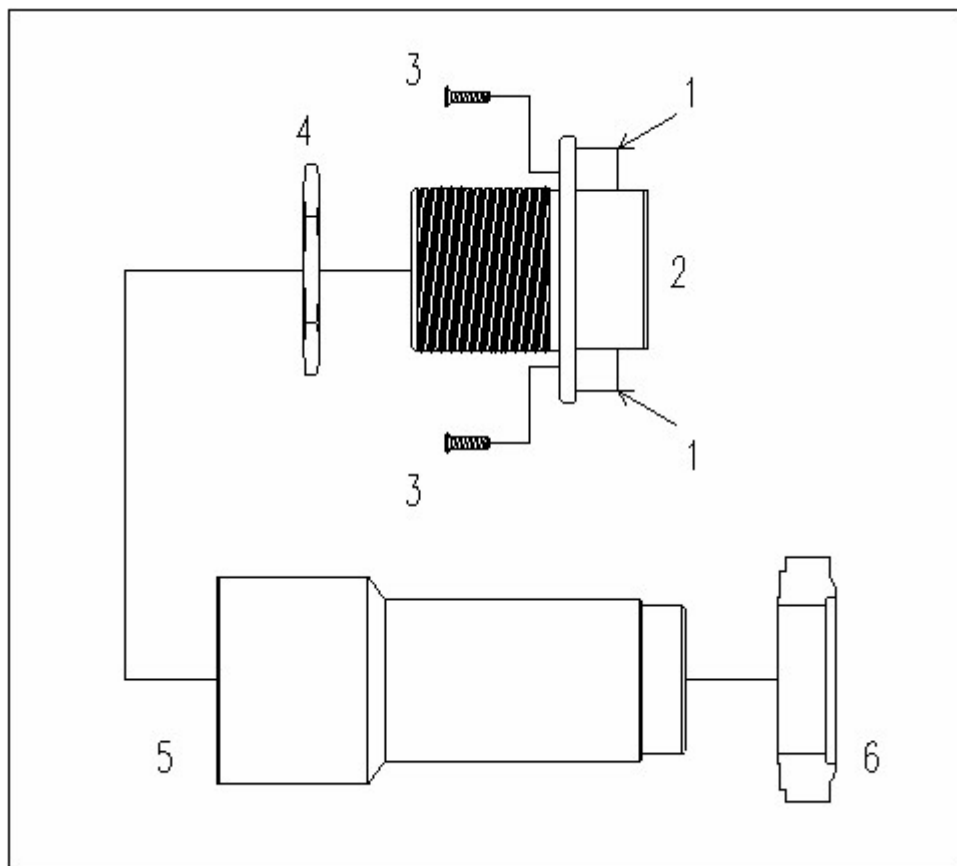
4. Fit the two 10-mm dowels (MFC197) into the gearbox end of the new adaptor housing.
5. Now is a good time to check the condition of the gearbox-input bearing and front seal. If faulty, replace then.

E.

**1F, 2F, and early 3F fitted with the one-piece cast iron bellhousing.**

1. Fit the adaptor housing assembly to the Toyota petrol bellhousing using the original bolts.
2. Fit the bellhousing and adaptor assembly to the gearbox.

**Diagram A.**



1. If your vehicle is fitted with a **cast iron thrust-bearing carrier and fork.**
2. There are two sets of flats machine into the new carrier the widest ones are used with the cast iron fork.
3. Fit the bearing blocks (1) to the carrier (2) using the 4 x M4 counter sunk screws supplied in the kit. **NOTE:** Use locktite on the screws.



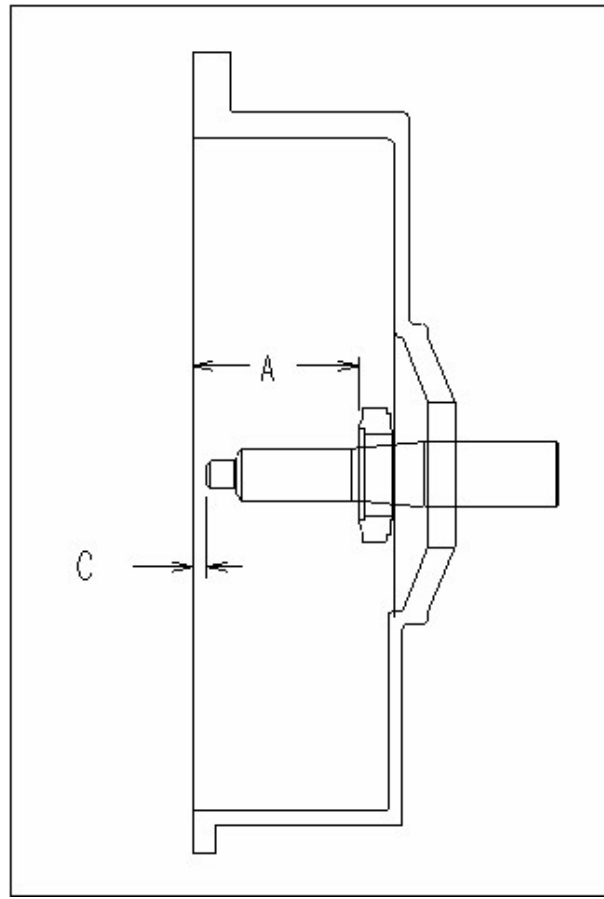
3. Refit the slave cylinder.
4. Using silastic or a suitable gap sealer, seal the slot between the adaptor housing and bellhousing. The slot is located on the driver side top of the housing. This hole was once used as the timing inspection hole.

**Refer to diagram B and C.**

This operation requires the slave cylinder, push rod, and clutch fork to be fitted.

0. Push the thrust bearing and carrier as far back as it will go. Measure the distance from adaptor housing engine face (Dimension A) to the front of the thrust bearing. This measurement should be 8mm  $\pm$  2-mm greater than the distance measured between the engine rear face and the pressure plate fingers.
1. Do not fit the input shaft extension to the transmission. This will make the engine mount set up procedure easier.

**Diagram B.**



**E**

**3F fitted with the Two-piece aluminium bellhousing and cast iron sandwich plate.**

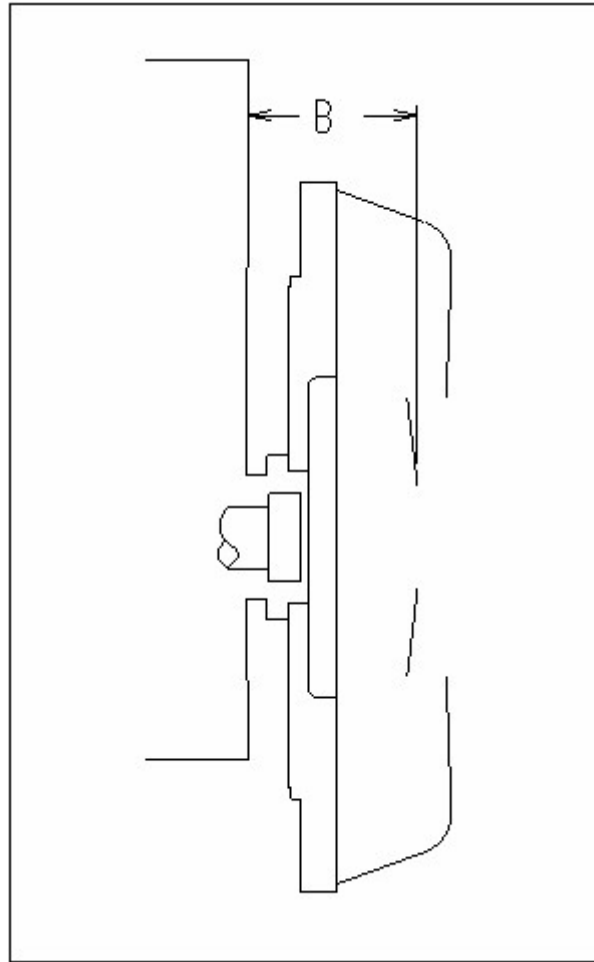
1. Fit the adaptor housing assembly to the sandwich plate using the original bolts.
2. Fit the sandwich plate and adaptor assembly to the gearbox.
3. Refit the thrust-bearing carrier retaining clips to the clutch fork.
4. Using silastic or a suitable gap sealer, seal the slot between the adaptor housing and bellhousing. The slot is located on the driver side top of the housing. This hole was once used as the timing inspection hole.

**Refer to diagram B and C.**

This operation requires the slave cylinder, push rod and clutch fork to be fitted.

5. Push the thrust bearing and carrier as far back as it will go. Measure the distance from adaptor housing engine face to the front of the thrust bearing. This measurement should be 8mm +-2-mm greater than the distance measured between the engine rear face and the pressure plate fingers.
6. Adjust the length of the carrier to obtain the 8mm clearance and then tighten the lock nut using the spanner supplied in the kit.

**Diagram C**

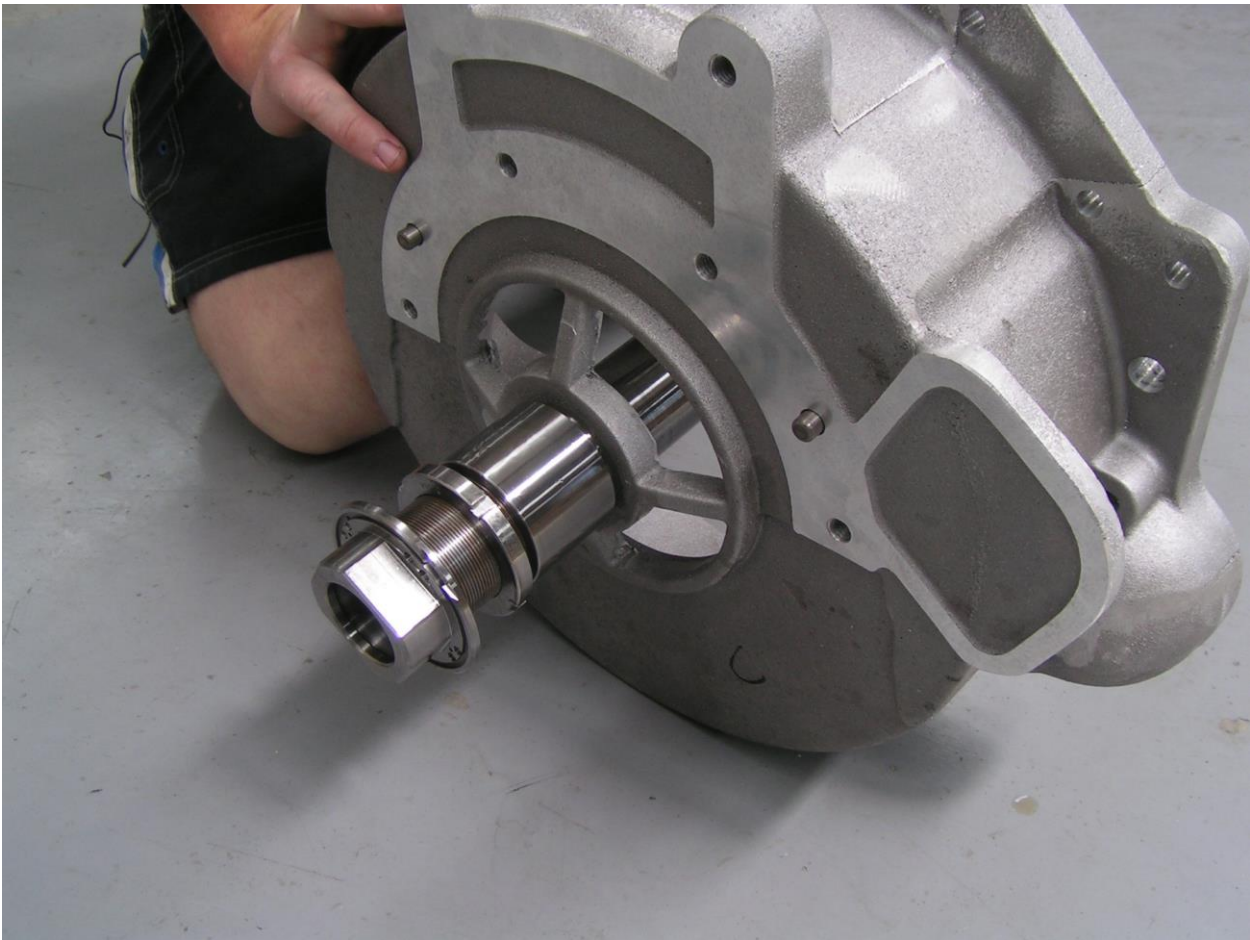


7. Do not fit the input shaft extension to the transmission. This will make the engine mount set up procedure easier.

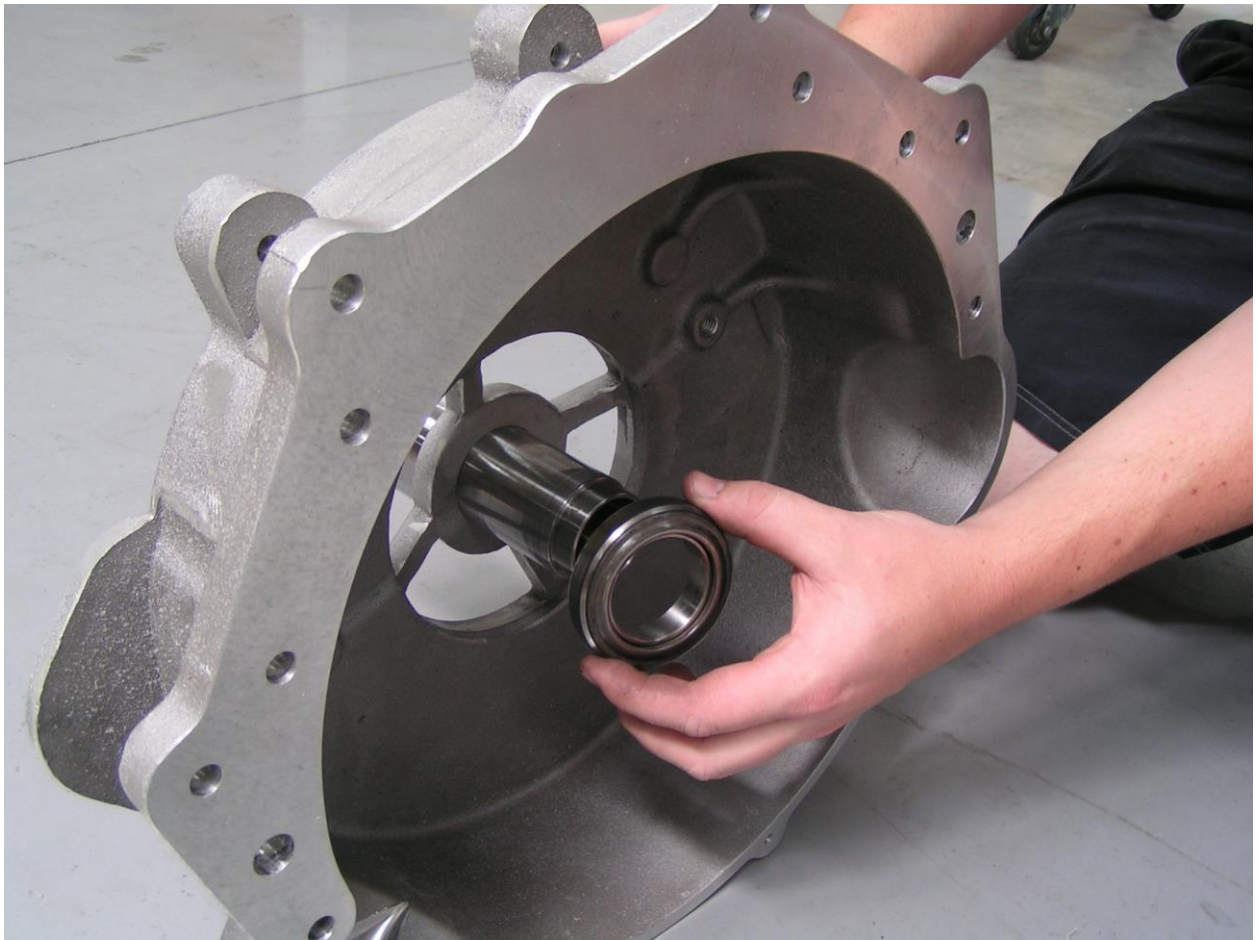
**G**

**Oil filter and pump clearance FJ4# Models**

When fitting a Holden V8 engine to all FJ4# models the oil filter and pump housing may be too close to the chassis. This will not allow the minimum legal clearance of 10-mm we recommend 20-mm. Marks 4WD Adaptors manufacture a special oil pump adaptor that will angle the oil pump housing and filter away from the chassis rails. Part No. MFK425







### **(H) Engine Mount Set Up**

The most accurate way of determining the position of the new mounts is to trial fit the engine.

1. Remove the original chassis mounts from the chassis by drilling or grinding the heads of the rivets then drifting the rest of the rivet through the chassis rails. If the mounts are welded simply grind them off the chassis.
2. Make sure that your engine has the original Holden engine mount brackets fitted to the block. **NOTE:** The early model block brackets are 45-mm high and the late EFI models are 60-mm high, either size can be used. Make sure they are both the same size.
3. Fit the engine mounting rubbers.
4. Loosely fit the chassis brackets to the rubbers. The smaller bracket is fitted to the left side of the vehicle and the larger one on the right side.
5. Make sure that the dowels are fitted to the rear of the engine.
6. Guide engine into place and bolt the engine to the bellhousing using the new bolts supplied.
7. Once satisfied with the engines positioning tack weld or bolt the mounts in place.
8. Remove the engine and complete the welding of the mounts.
9. Paint the welded area.

### **(I) GM Engine Preparation**

1. Fit the spigot bearing (6202) into the spigot bearing adaptor (MFC971) then fit the completed assembly to the rear of the crank using a suitable drift.

#### **WARNING**

**NOTE:** Some early model Holden 308ci engines and some stroked engines are machined with a shallow spigot bearing recess. Should this be the case the bearing inside the adaptor must be pushed all the way forward to allow clearance between the input shaft shoulder and the bearing. Measurements should be made to confirm that there is clearance. Any interference with the input shaft could damage the engine or gearbox bearings.

2. Bolt the GM flywheel to the engine using loctite on the bolts and torque to specification. **NOTE:** It is advisable to have the flywheel machined if fitting a new clutch kit.
3. Fit the clutch assembly to the flywheel using the input shaft extension supplied with the kit as a clutch aligning tool.

**Note:** The standard 10" Holden clutch kit is recommended. However if a Heavy-duty pressure plate is to be used the finger height must be set up to the same height as the standard one.

#### **Refer to diagram C.**

1. With the clutch fitted to the flywheel, take a measurement from the highest point on the pressure plate fingers to the rear of the engine block. This dimension should be 8mm +-2-mm less than the dimension obtained in the next step (J).
2. Fit the Toyota oil pressure and temperature senders to the engine using the adaptors supplied.

### **J. Final Adaptor Preparation**

#### **Refer to Diagram B.**

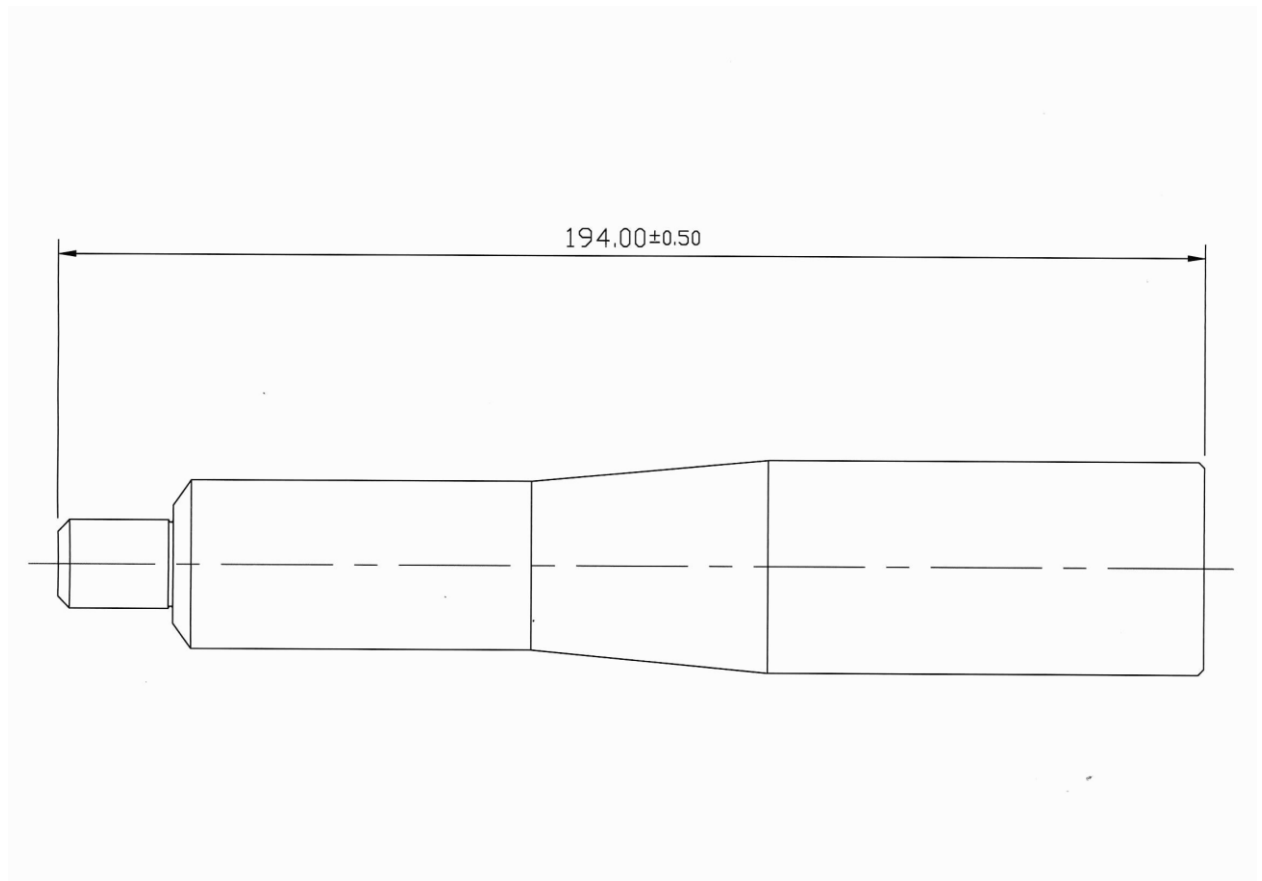
1. Using a soft faced hammer tap the input shaft extension over the gearbox input shaft until it bottoms out. The input shaft should be recessed from the face of the adaptor housing by 8 mm  $\pm$  3.5-mm.

**NOTE:** The input shaft extension shown in the diagram above will only suit the spigot bearing support which is a ball race (6202) used with the adaptor ring (MFC971). This input shaft was introduced in May 1997. Measures 194mm  $\pm$ .5mm.

If have an input shaft manufactured prior to this date then it will measure approximately 15mm longer than this one and must be used with the original GM bronze bush, part number 92020434.

### **K. Engine Installation**

1. Put the gearbox into 4th gear and the transfer case into high range. Raise one of the rear wheels off the ground.
2. Guide the engine into place and rock the back wheel backward and forward to help with the gearbox spline alignment into the clutch plate. Once aligned bolt engine in place using the bolts, spring washers and flat washers supplied.



3. Guide the engine over engine mounting rubbers and tighten all of the bolts once aligned.
4. Fit the new flywheel cover plate to the front of the adaptor housing, secure it using the bolts and washers supplied in the kit. **NOTE:** Silastic should be used to seal the cover plate against the back of the engine.
5. The engine is now sitting higher than the Toyota engine. This is to give the required legal sump clearance over the front diff. **NOTE:** A rear drop sump must be used for this conversion.
6. Check the Hi-Low lever for correct operation, a small bend in the lever may be required to clear the hole in the floor.
7. Modify the radiator spouts to correspond with the new engine outlets.
8. Fit the heater and radiator hoses.
9. Fit power steering pump and air-conditioning compressor if required. **NOTE:** Brackets will need to be fabricated if you are using the Toyota accessories.
10. If you plan to use a different grade fuel, drain the fuel tank and fuel lines.
11. Put 20 litres of the correct fuel into the tank.
12. Complete the wiring.
13. Complete the exhaust system.
14. Check all fluid levels.

15. Double check all mounting bolts are tight.

16. Start engine and check for-

Fuel leaks.

Oil leaks.

Water leaks.

Exhaust leaks.

Allow the engine to warm up and recheck above.

18. 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.

Remember an inexpensive phone call can save a costly mistake!

**Proudly Manufactured by:**

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