18/05/10

FITTING INSTRUCTIONS FOR

MFK1060G3 & MFK1060G3T

HOLDEN and CHEVY V8 GEN3 PETROL

TO

LAND CRUISER 4.2ltr 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.

This kit has been designed to directly replace the original Land Cruiser, 4.2ltr diesel engine.

The A/C compressor and pulleys from a Gen3/LS1 will need to be purchased when fitting a Gen4/LS2 6ltr engine.

Engine Removal

1. Remove the bonnet from vehicle.
2. Disconnect and label all the hoses and wiring attached to the old engine.
3. Degas the air-conditioning and remove the hoses.
4. Drain the power steering system and remove the hoses.
5. Remove the complete exhaust system from vehicle. Don't throw the system away as you will require some of the mounting brackets for your new system.
6. Drain radiator and engine of all fluids.
7. Remove the radiator from the vehicle.
8. Support the transmission with a jack and remove the bellhousing to engine bolts.
9. 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.

Chevy Engine and Engine Mount Set Up

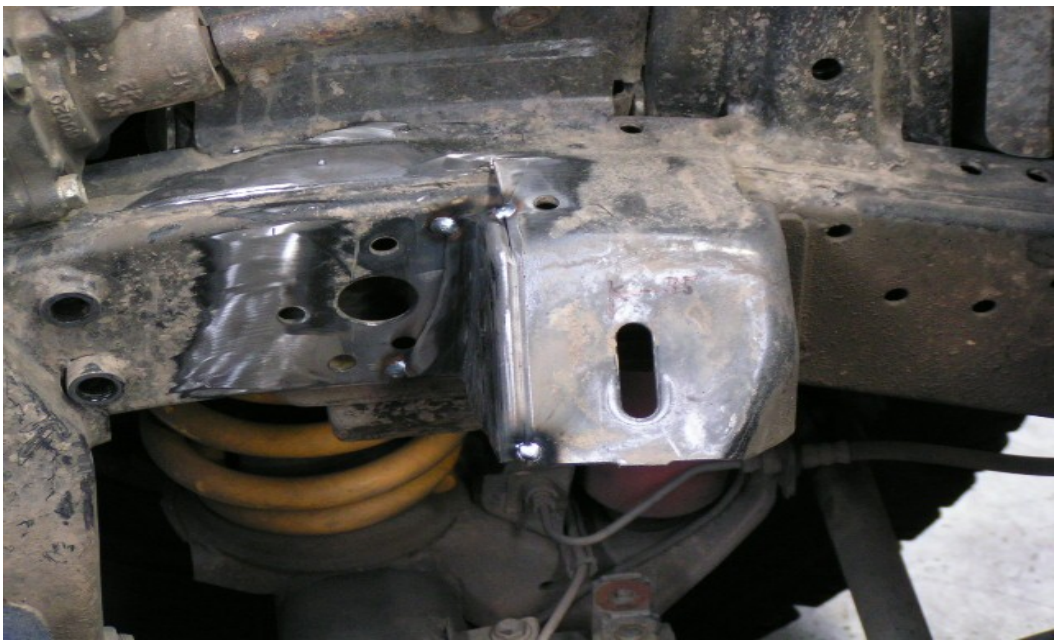
1. The front of the drivers side (right hand side) chassis mounting must be modified to allow the air conditioning compressor to be fitted.

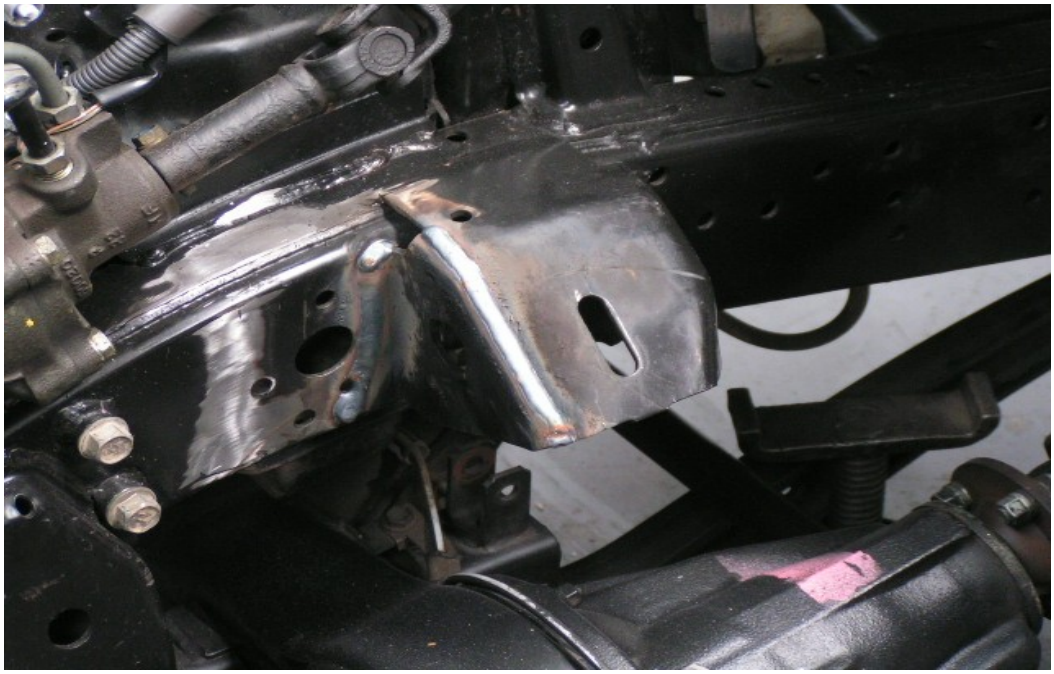
As shown in the photo above mark a line on the bracket 35mm from the front edge of the rear slot. This line should go all the way back to the weld on the top of the chassis. The white line on the left of the photo should also be marked back to the chassis. The section you remove should be 65mm wide.

Using a 100mm/4” grinder fitted with a cut off disc remove the front sections of the mounting bracket. Note: To make the job easier undo the 4 bolts that hold the steering box to the chassis, then the box can be pushed sideways to allow easy access to the top weld on the chassis.

2. Chamfer and de-burr the remaining parts.

3. Tack the front section of the bracket into place. See photo below.



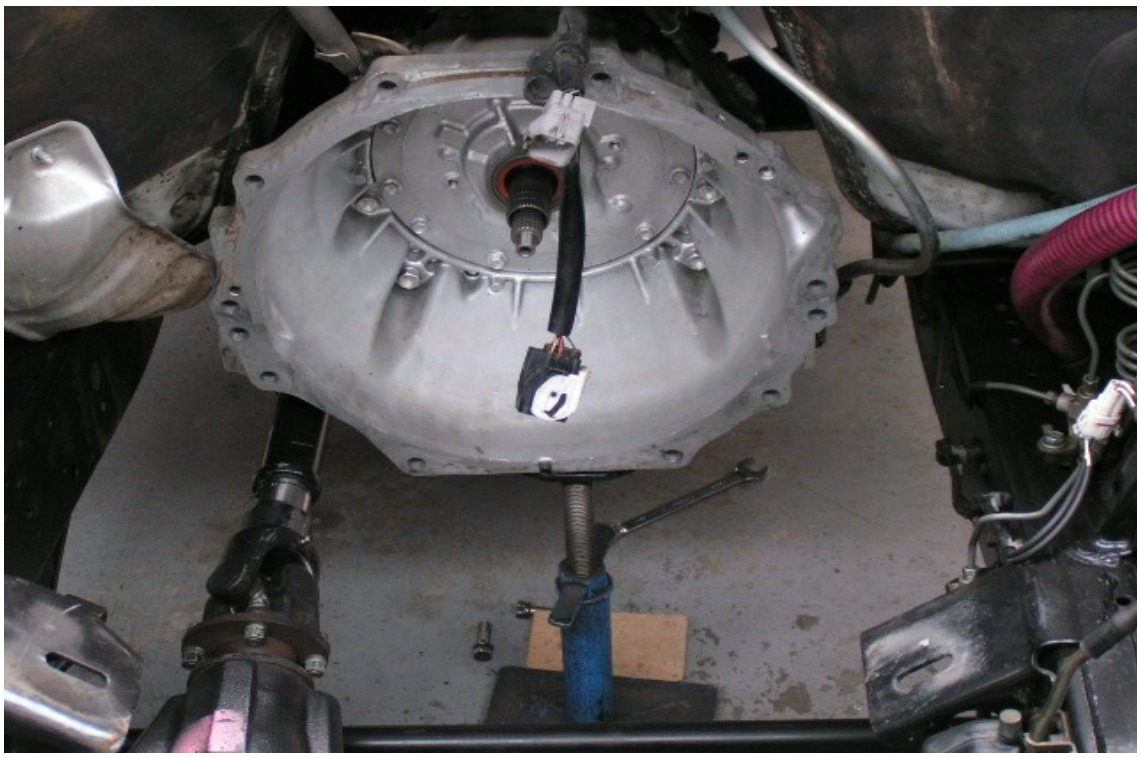


4. Complete the welding of the bracket and grind of any access weld. Re-paint the chassis rail and mounting.

5. Re-install the steering box mounting bolts.

Exhaust Clearance

1. Remove the front sway bar and its chassis mounting brackets. See the next photo.



2. Relocate the ABS wires (if fitted) under the chassis rail.

3. Relocate the rear brake pipe to the top of the chassis. Located on the left hand side.

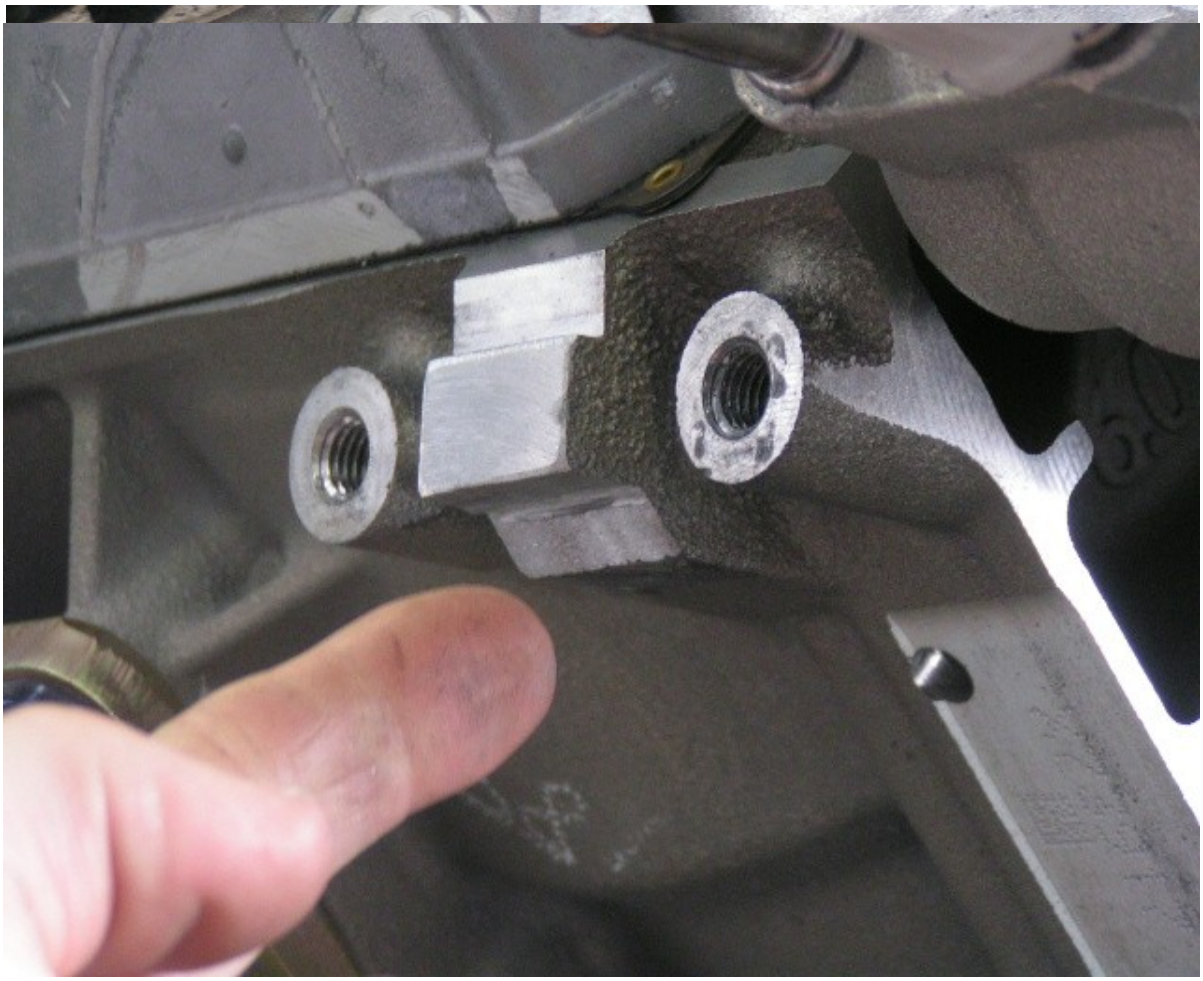
Right hand Coil pack and Rocker cover clearance

1. 1. 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 linished the sharp edges of 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.

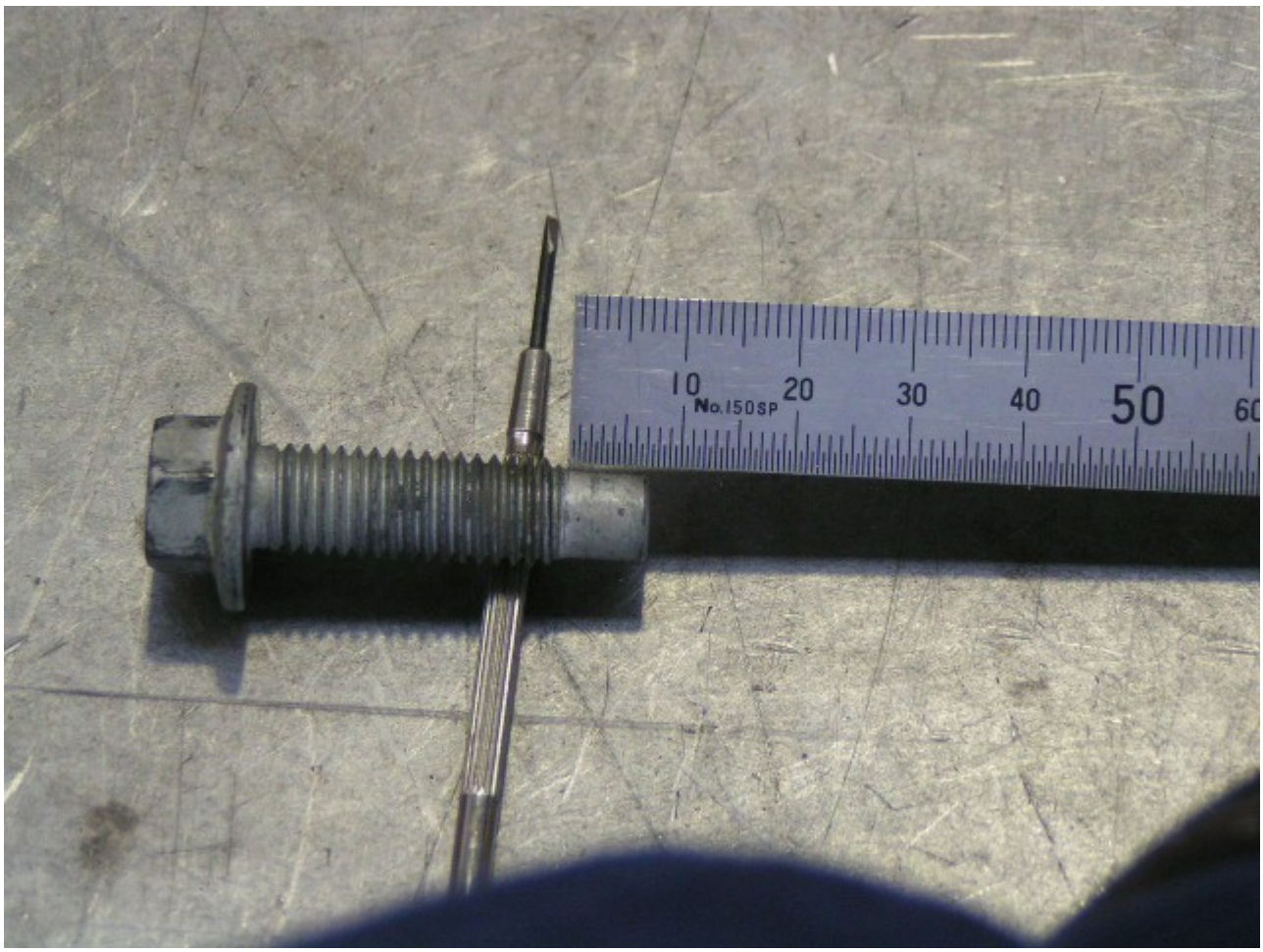
Engine completion.

1. To fit the re-machined air conditioning bracket the bolts will need to be cut down by 5mm. See next photo.

2. The engine block has a small machined section which slots into the back of the air conditioning bracket. This section will need to be cut down by 5mm to allow the re-machined bracket to fit properly. See the photo below. ***NOTE:*** Some late model Gen3 and Gen4 engines require a section under the square pad to also be ground away.



3. The A/C compressor mounting bolts will also need to be shortened by 5mm. See the following photo.



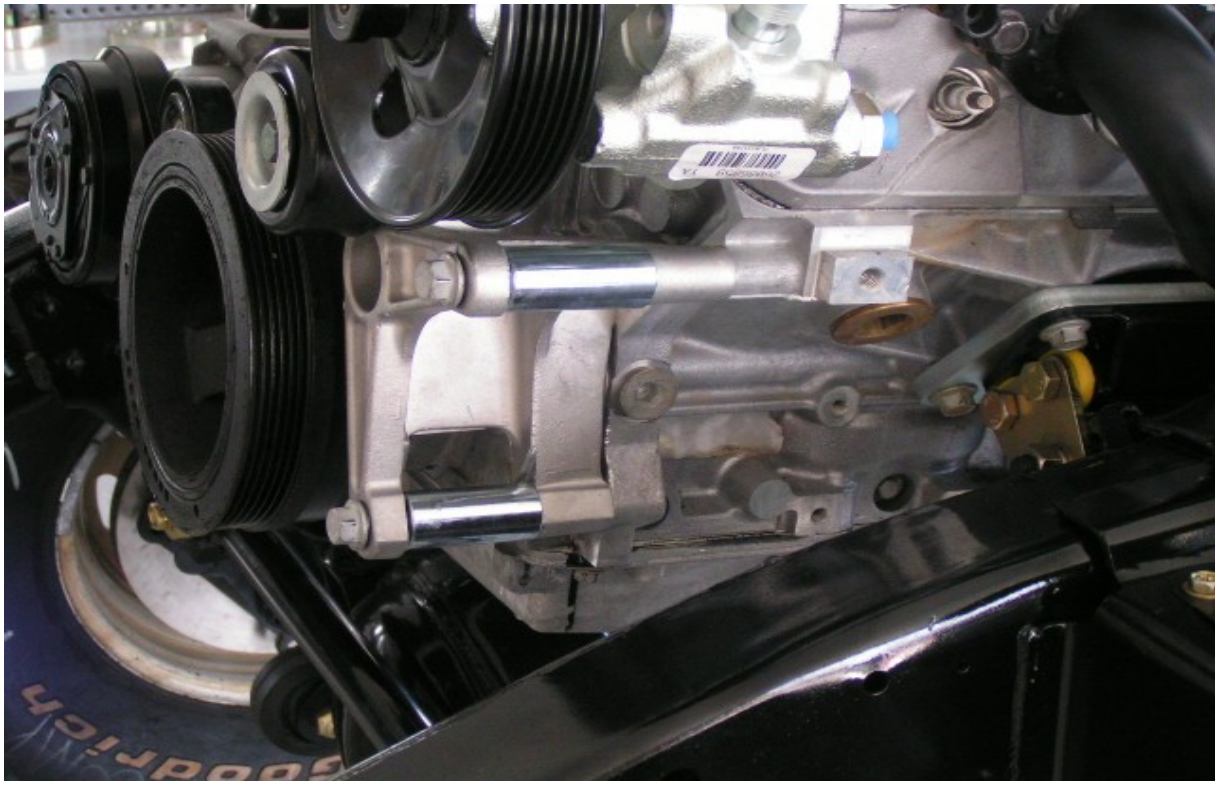
4. The A/C belt tensioner will also need to be modified. Grind away the small section of casting around the end of the tensioner spring. See photo below.

Alternator Relocation

The alternator is relocated to the top of the engine to help obtain chassis clearance for the A/C compressor fittings on the other side of the engine.

1. Remove the alternator and the stay bracket fitted between the block and the alternator. *NOTE:* One of the bolts will be required to hold the new alternator bracket to the front of the engine.

2. Fit the two 51mm long spacers supplied in place of the alternator and secure then using the original alternator bolts. See the photo below.



3. Remove the power steering reservoir and hoses.

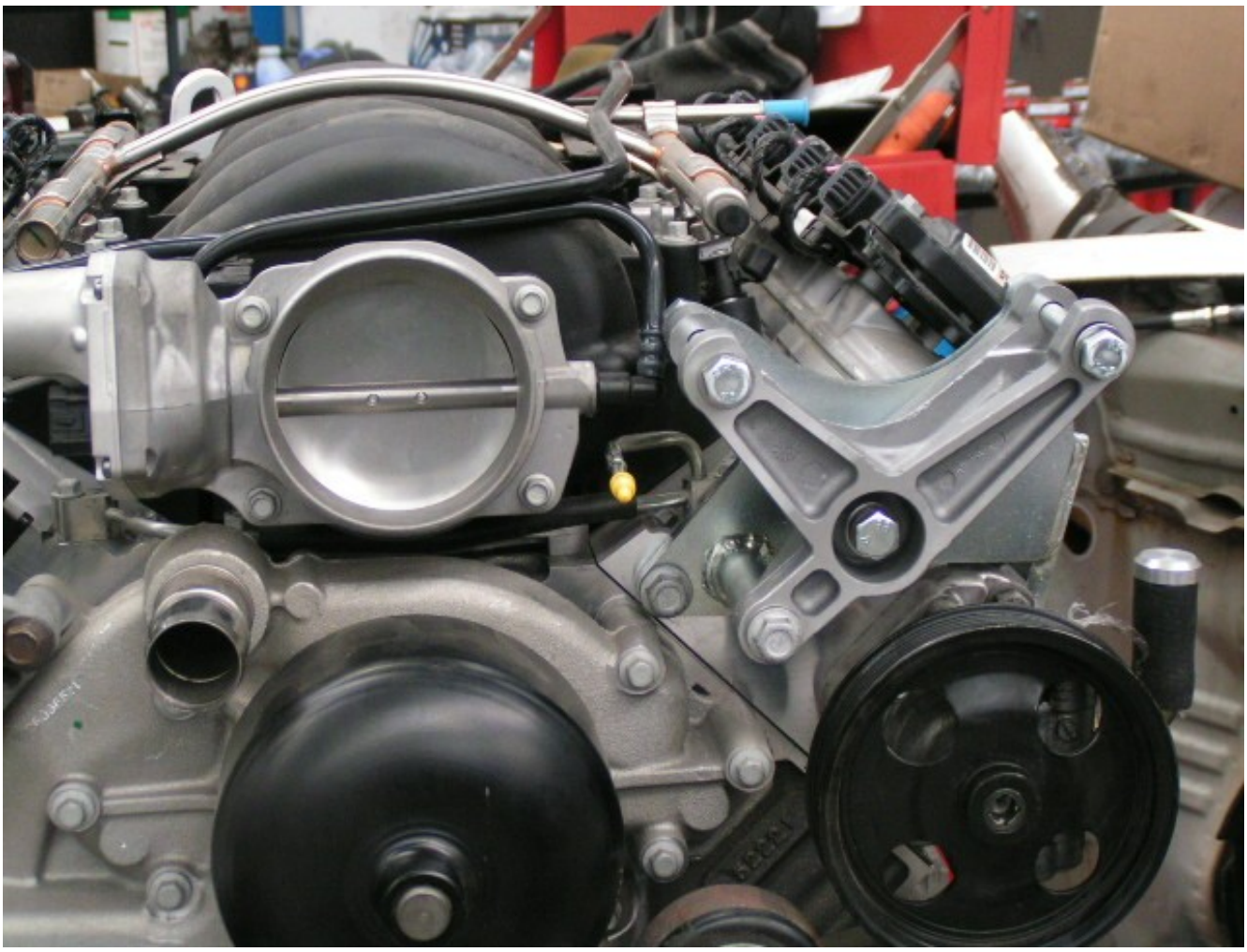
4. Remove the power steering/lifting bracket from the front of the left hand cylinder head. *NOTE:* The bolts will be required to hold the new alternator bracket to the front of the engine.

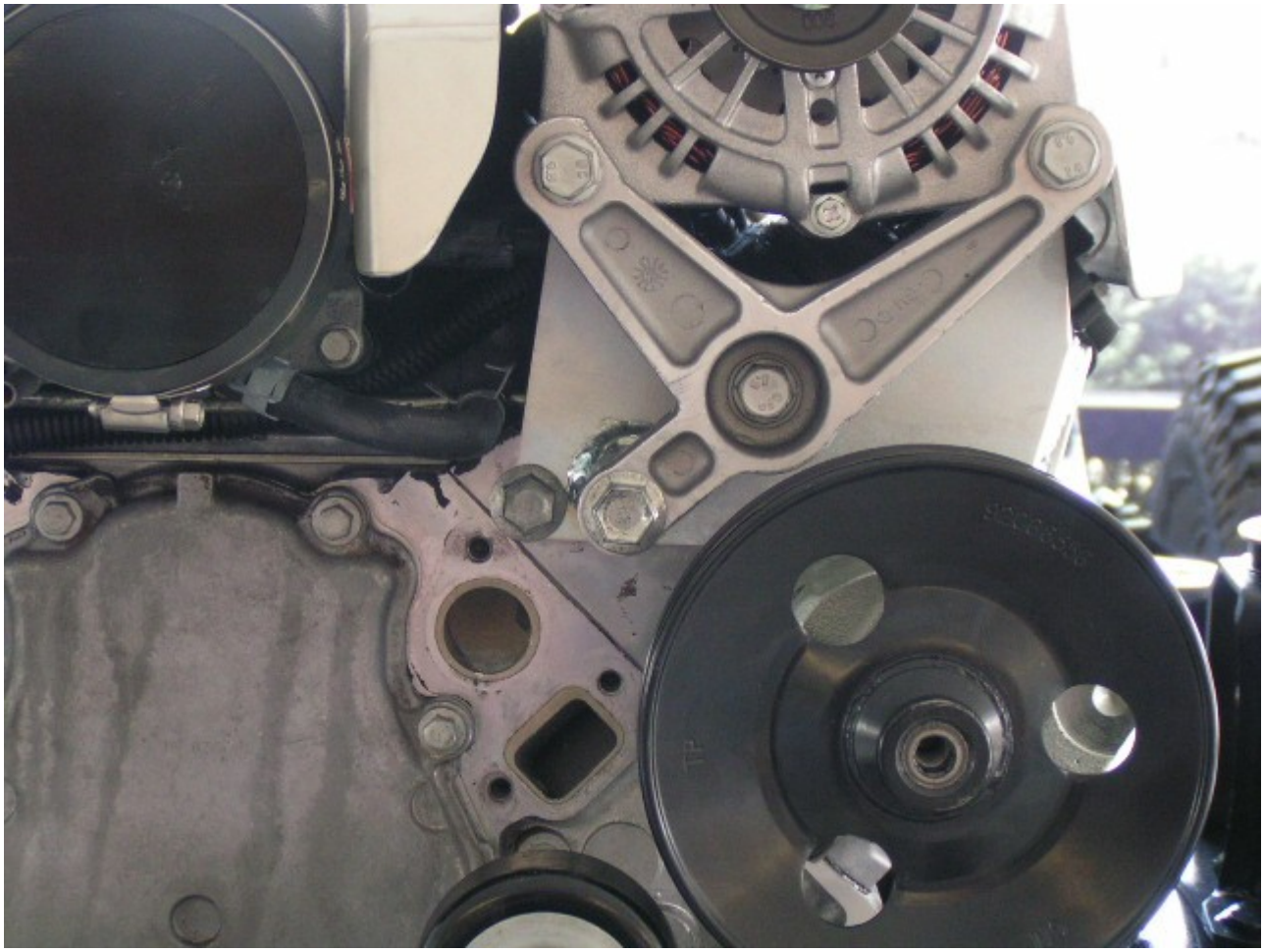
5. Fit the new steel alternator bracket along with the re machined aluminium alternator bracket to the front of the left hand cylinder head. Secure them using the M10x1.5x90 and the M10x1.5x25 long bolts, flat washers and spring washers supplied in the kit. Also use the two bolts previously used to secure the lifting bracket. See the next two photos.

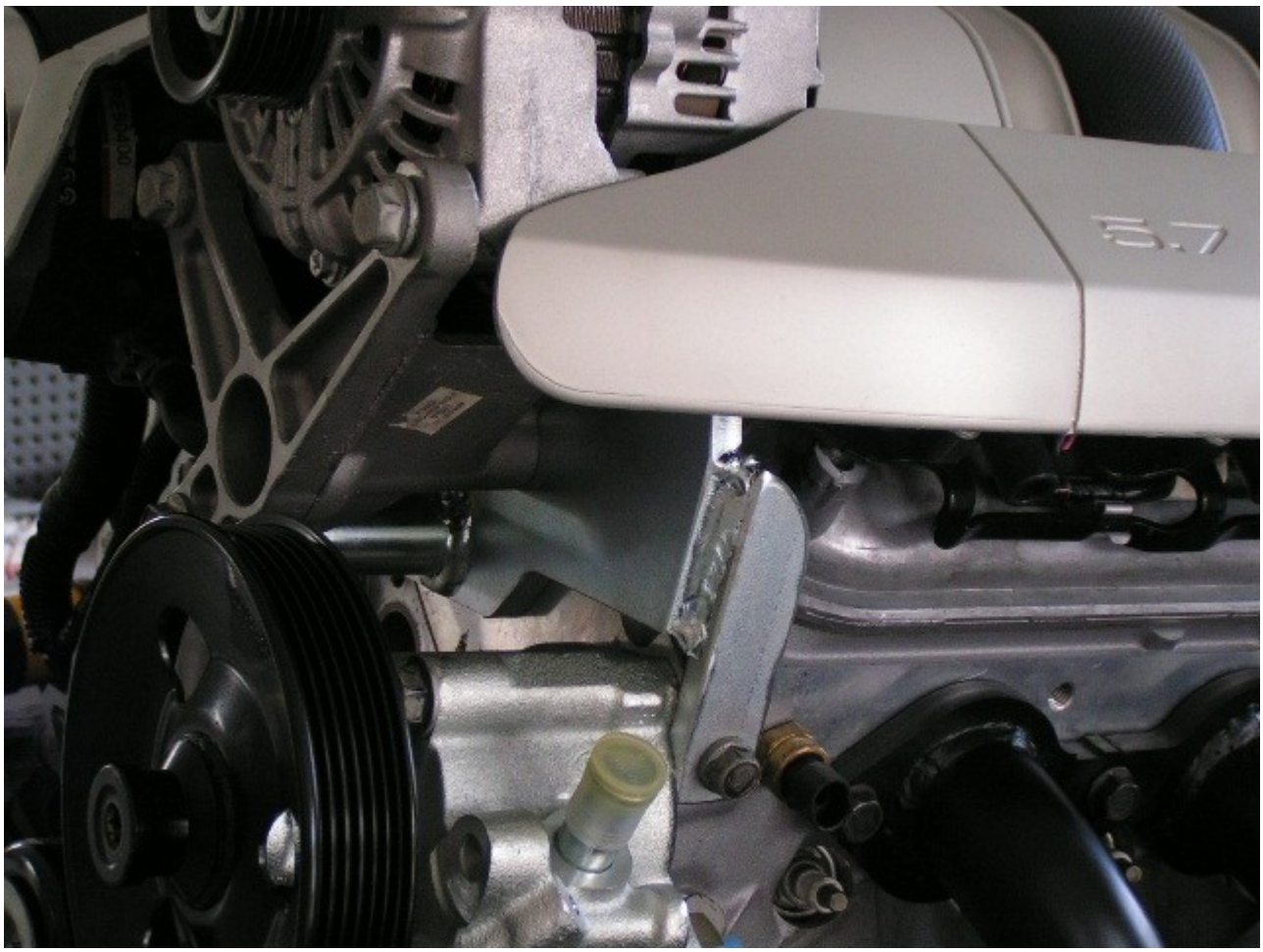
6. The 6ltr engine in the photo below has had the purge vacuum hose reversed (swapped end for end) to clear the alternator bracket.

7. The coil pack bracket will need to be modified to allow for clearance behind the alternator. See the following photo's.

8. Fit the alternator using the two M10 bolts, nuts, spring and flat washers supplied in the kit.



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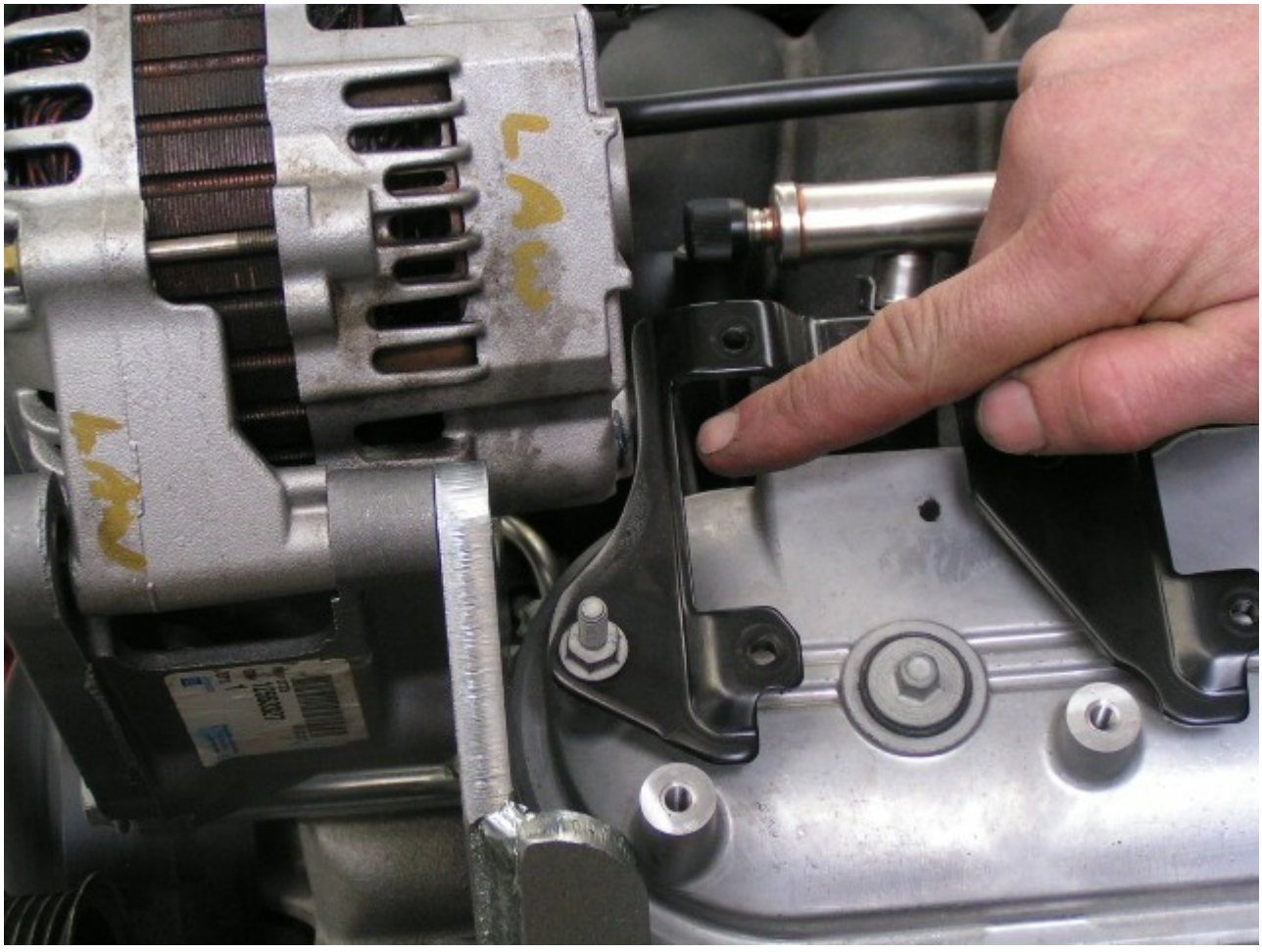


Water Pump Pulley

The new water pump pulley is designed to accept a reverse rotation fan and viscous coupling as supplied in the kit.

1. Remove the water pump from the engine.

2. Using a hydraulic puller, remove the pulley. ***Note:*** You will most likely need to heat the pulley over the shaft. Have a wet rag on hand to cool the shaft when the pulley is off.

3. Remove the cover on the back of the water pump exposing the impeller. Using a press while supporting the impeller shaft press the new pulley all the way onto the shaft. ***Note: 1*** Make sure you don't press on the impeller as this can bend it out of shape causing it to rub on the housing. ***Note: 2*** Do not press directly on the small spigot end of the pulley as this can easily distort the shape of the end making it impossible to fit the viscous coupling.

4. Reinstall the rear cover on the pump. Depending on the condition of the o'ring you may need to apply some silicone sealer to the faces.

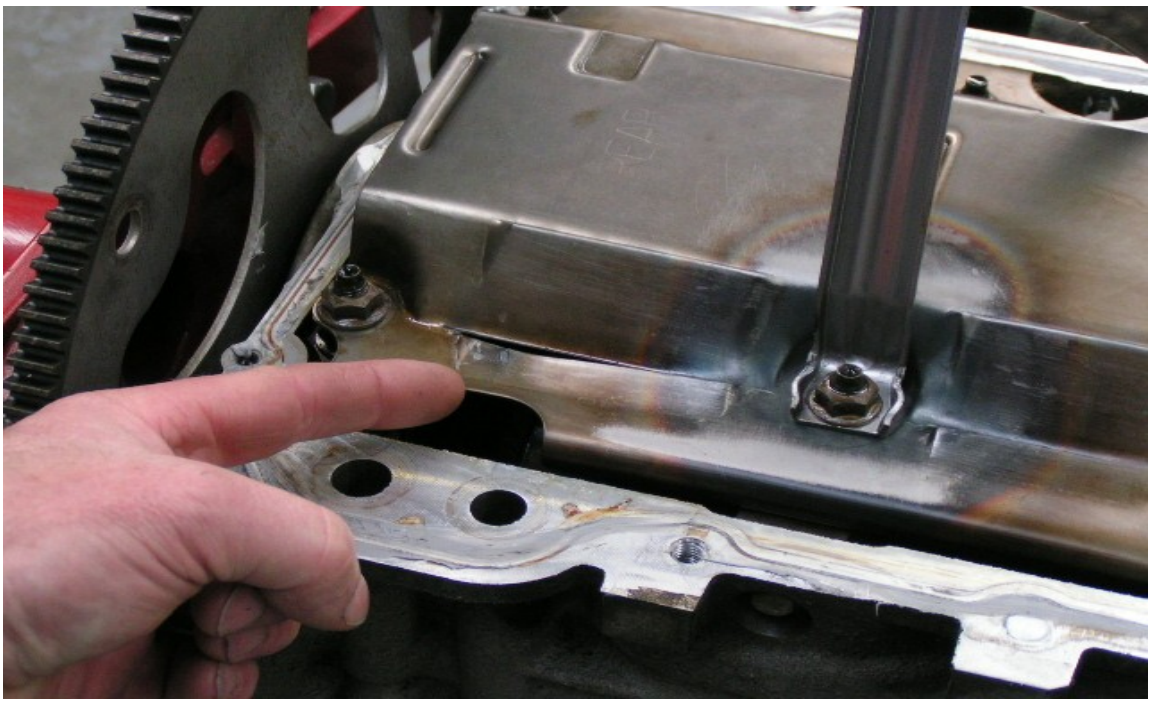
5. Reinstall the water pump onto the engine. Depending on the condition of the gaskets you may need to apply some silicone sealer to the faces.

Engine Sump Modifications

No standard Chevy or Commodore sump will fit without modifications, we highly recommend using the Chevy truck style as its design is best suited for off road vehicles.

Note: The following instruction assumes you have purchased one of our modified truck sumps.

1. To fit the Chevy truck rear drop sump to the Commodore Gen3 engine you will need to make some modifications to the windage tray.



2. The windage tray will need to be modified to allow for the new pickup bracket position. See photo above.

3. The windage tray will also need to be modified in the position pointed out in the above photo. This

section will need to be cut out or bent up to clear the cast section in the sump just above the oil filter. See next photo.

4. Before fitting the modified engine sump and pickup you must take the following step.

5. To re-install the dipstick tube, you will need to remove the small plug fitted in the engine block just in front of the starter motor.

6. Fit the modified oil pickup.

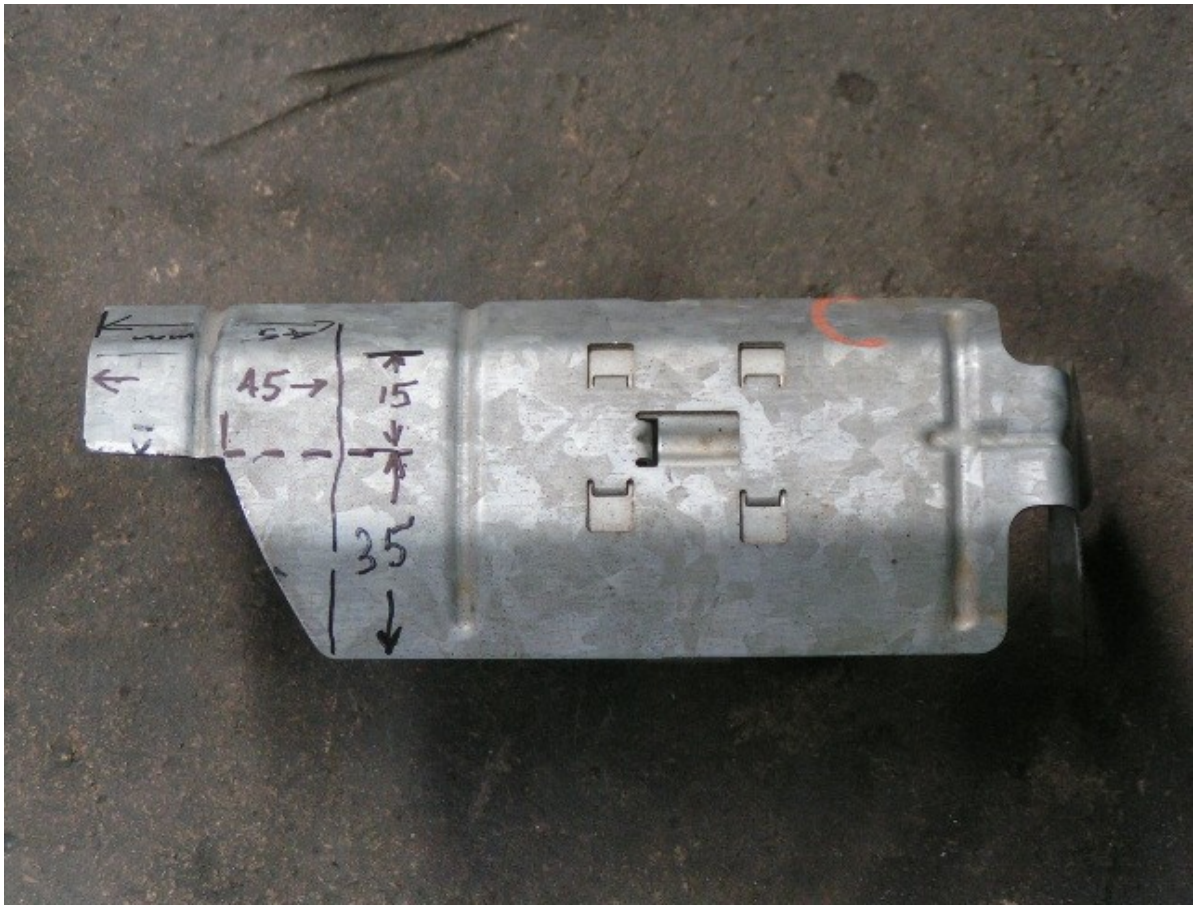
7. Fit the modified engine sump. Use a small amount of silicone on the engine side of the gasket were the timing cover joins the block. Do the same at the other end were the rear main seal housing meats the block. Secure the sump using the original Commodore bolts. ***NOTE:*** Use a straight edge to get the back face of the sump flush with the engine block.

8. The Commodore dip stick needs to be modified to allow for the deeper sump. Fill the engine with 7ltrs of engine oil. And then adjust the length of the stick to indicate the engine is full. ***NOTE 1:*** The stick should require an extra 50mm of length, the easiest way to modify it is by cutting down the dipstick tube by this amount. ***Note 2:*** The bracket on the side of the Commodore dipstick will need modifying, this is to attach the dip stick tube to one of the coil packs.

9. The truck dip stick can be used without any length modifications. ***Note:*** The bracket on the side of the truck dipstick will need modifying, this is to attach the dip stick tube to one of the coil packs.

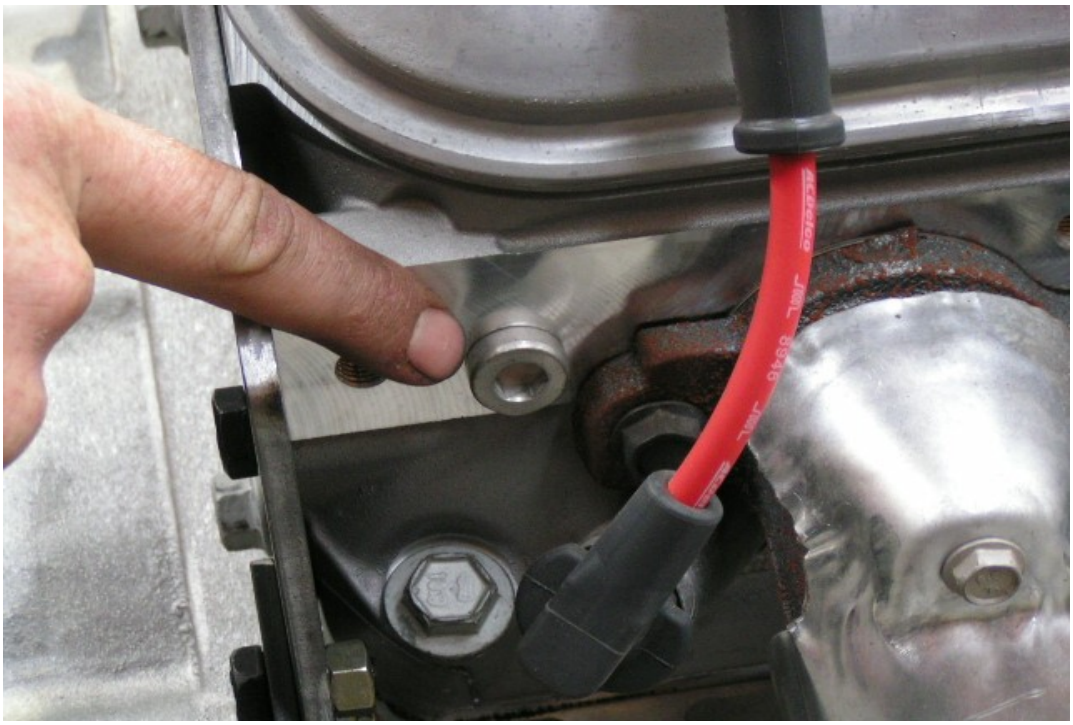
10. The truck style oil filter part number is GM 89017524 (AC Delco PF48), it uses a larger thread to hold it in place. If you don't want to use the truck type filter you can replace the threaded boss in the truck sump with the one from the Holden sump.

11. The heat shield on the starter motor will need to be modified to allow the dipstick tube to be fitted in its new location. The rear corner needs to be cut of. See the photo below.

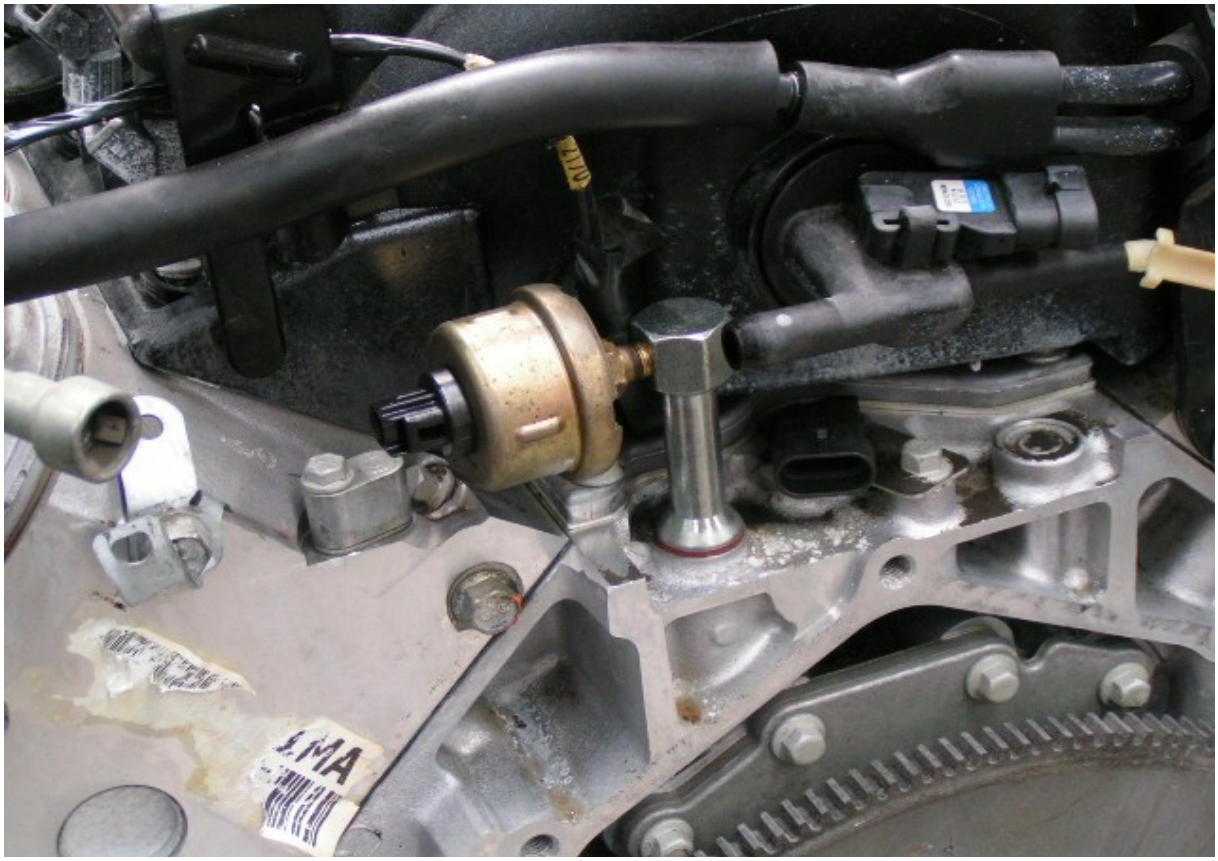


10. Remove the socket head cap screw located in the driver side cylinder head at the rear. ***See photos below.***

11. Fit the water temperature adaptor in the drivers side (right hand side) rear of the cylinder head. Fit the Toyota temperature sender. ***NOTE:*** Use Teflon tape or liquid Teflon as required. See photos below.



12. Remove the original GM oil pressure switch. Fit the oil pressure adaptor in its place. ***NOTE:*** Use the copper washer supplied in the kit to help with correct orientation of the Toyota oil pressure sender. The original GM oil pressure switch is not used. ***Note:*** If your sender is to big for the adaptor you will need to purchase the correct on from Toyota, part number 83420-16040. ***NOTE:*** Use Teflon tape or liquid Teflon as required. ***See photo below.***



13. Remove the exhaust manifolds.

14. 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.

15. Re-install the cross member and push the transmission forward before tightening the mounting nuts.

16. Fit the rear drive shaft spacer to the back of the transfer case using the studs and nuts supplied.

Adaptor Kit Preparation

1. Remove the Chevy flex plate or flywheel if fitted.

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 two M8 x 20 dowels (MFC197) to the gearbox side of the new adaptor housing.

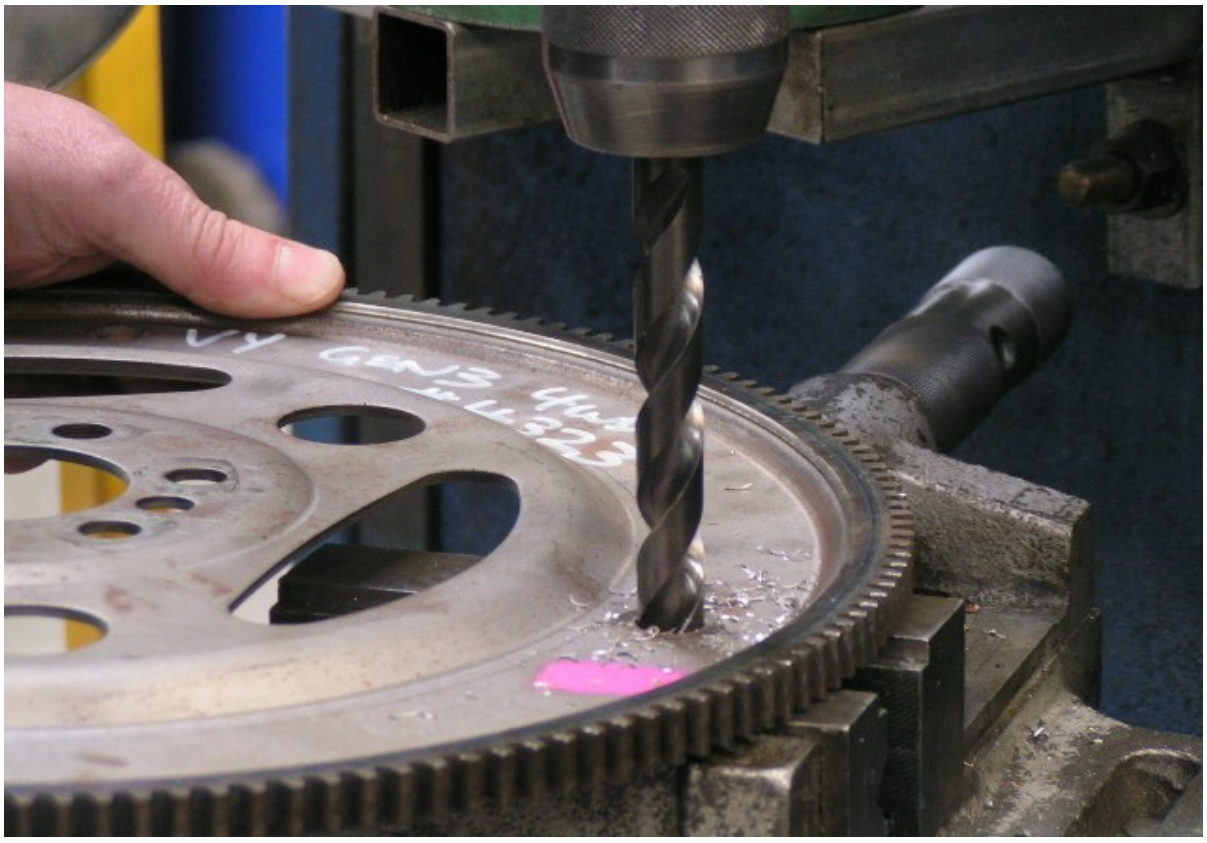
6. Fit the M11 studs to the crankshaft, use loctite 262 on all threads. **NOTE 1:** Make sure you fit the studs the correct way around. The thread in the crankshaft is M11 x 1.5 and the thread in the nuts, M11 x 1. **NOTE 2:** Do not use a stud remover on these studs as any burrs on them will make it impossible to fit the flex plate/flex plate stiffener and crank adaptor. To fit the studs use 2 of the M11 x 1 nuts locked together on the stud, see the photo next page.

7. Torque the studs to 35 ft lb.

Flywheel Preparation

1. Clean thoroughly the flexplate stiffener, flywheel and crank adaptor, they may be shipped with rust preventing grease.

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.

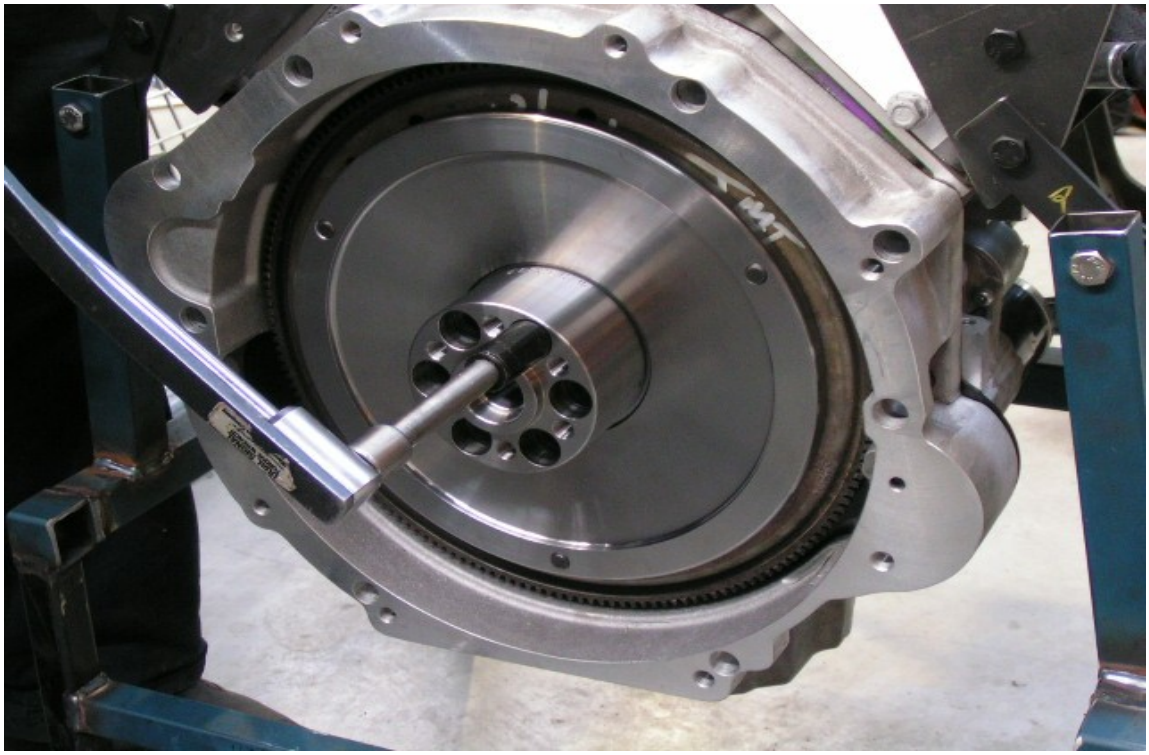


1. Remove all burrs around the flex plate holes. Also remove any burrs around the crankshaft holes.

2. Fit the flex plate to the back of the flex plate stiffener. For correct alignment use the tool supplied in the kit. See photo next page.

3. 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. See next photo.

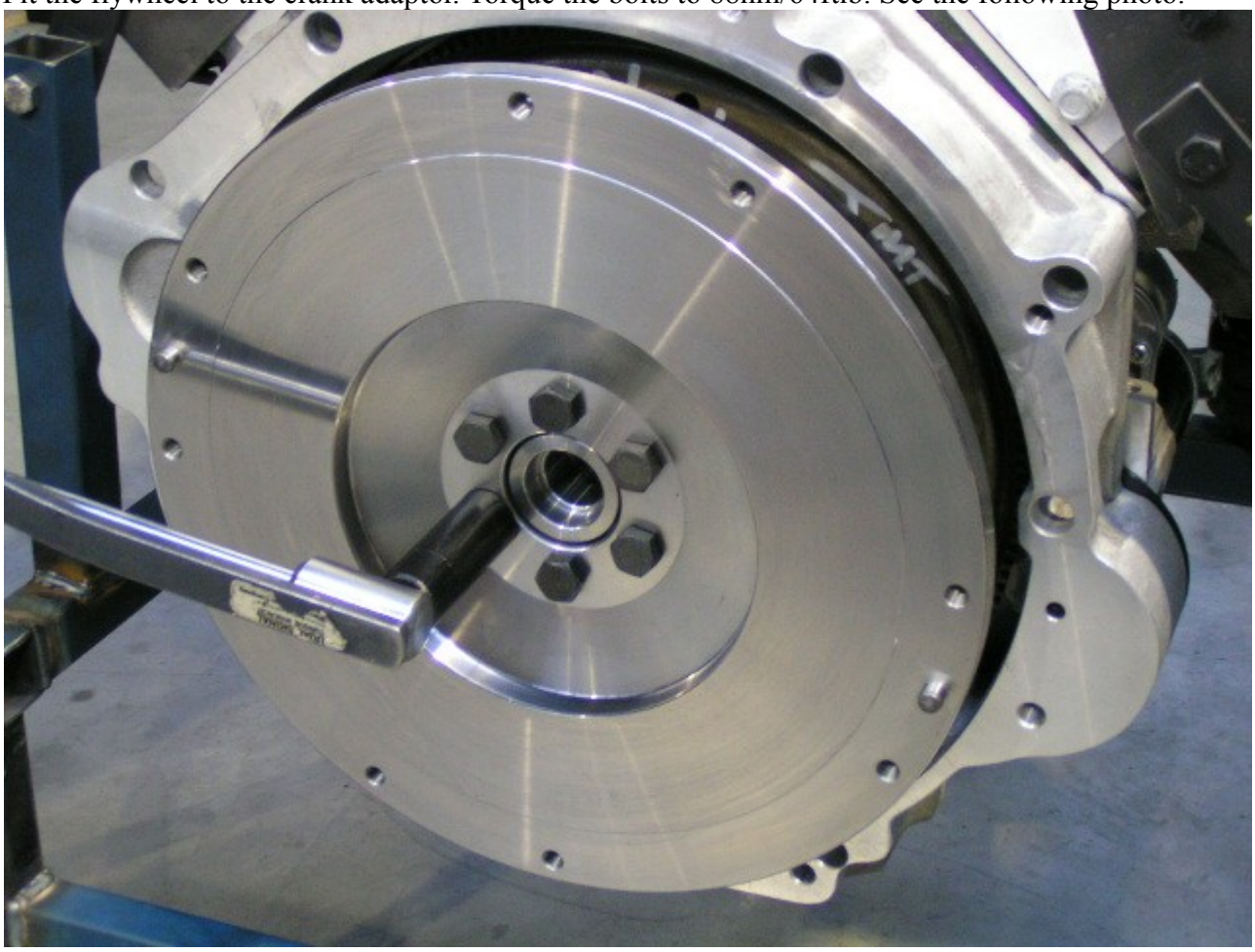
4. Fit the flex plate assembly to the back of the engine. A smear of grease inside the crankshaft bore will help as they can be quite tight. A soft hammer will need to be used when fitting. **NOTE:** The M11 x 1 nuts may need to be fitted at the same time. Torque the M11 crank nuts to 88nm/64ftlb. See photo below.



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

6. Fit the spigot bearing to the crankshaft adaptor. Use the flexplate aligning tool as a drift, this will also allow it to be fitted flush with the back of the adaptor. See the following photo.

7. Fit the flywheel to the crank adaptor. Torque the bolts to 88nm/64ftlb. See the following photo.



8. Fit the heavy duty clutch plate and pressure plate, use a suitable clutch-aligning tool, secure it using the original Toyota bolts. The heavy duty clutch kit part numbers MCK120HD or MCK120XHD should be used. Torque the bolts to 39N-m/29ft-lb.

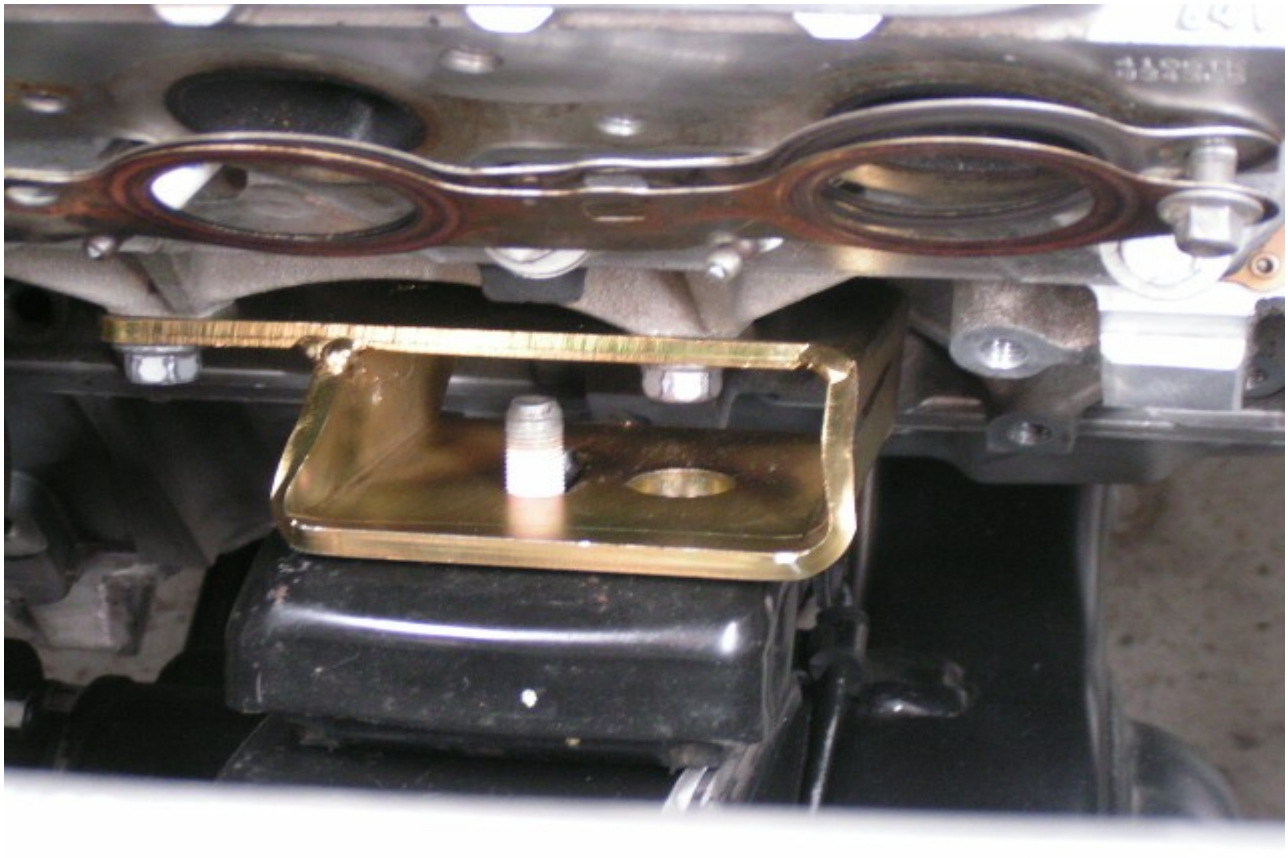
9. Fit the starter motor to the engine using the GM bolts. Seal the flywheel cover plate around the starter motor using silastic.

Engine Mounting

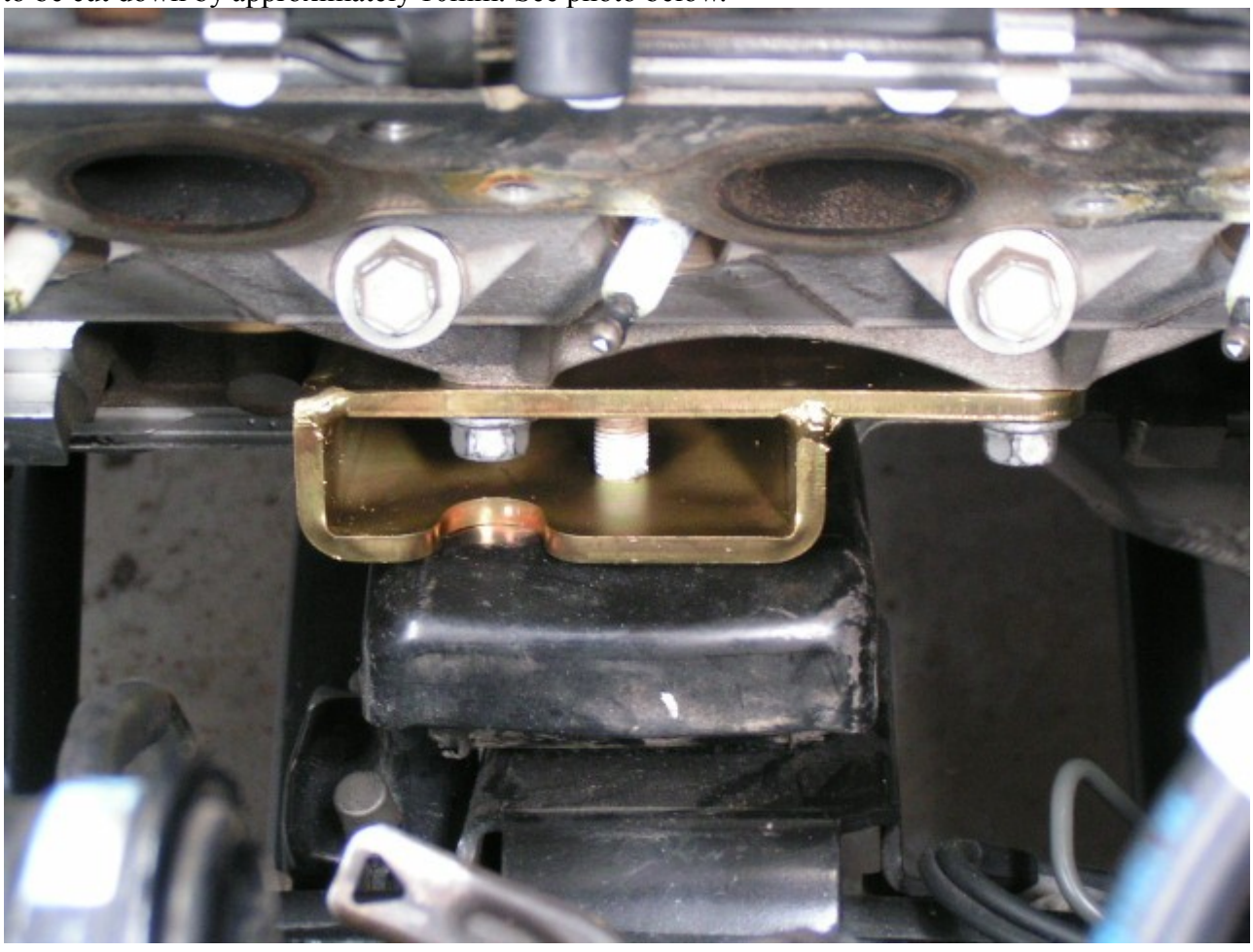
1. Lift the engine into the engine bay. Carefully align the engine to the bellhousing making sure that the faces are parallel. This is extremely important as the fine pitch Toyota bolts are easily cross threaded.

2. After tightening all of the bellhousing 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. See photos below.



4. Install the Toyota engine mounting rubber. **NOTE:** The top stud on the passenger side mount will need to be cut down by approximately 10mm. See photo below.

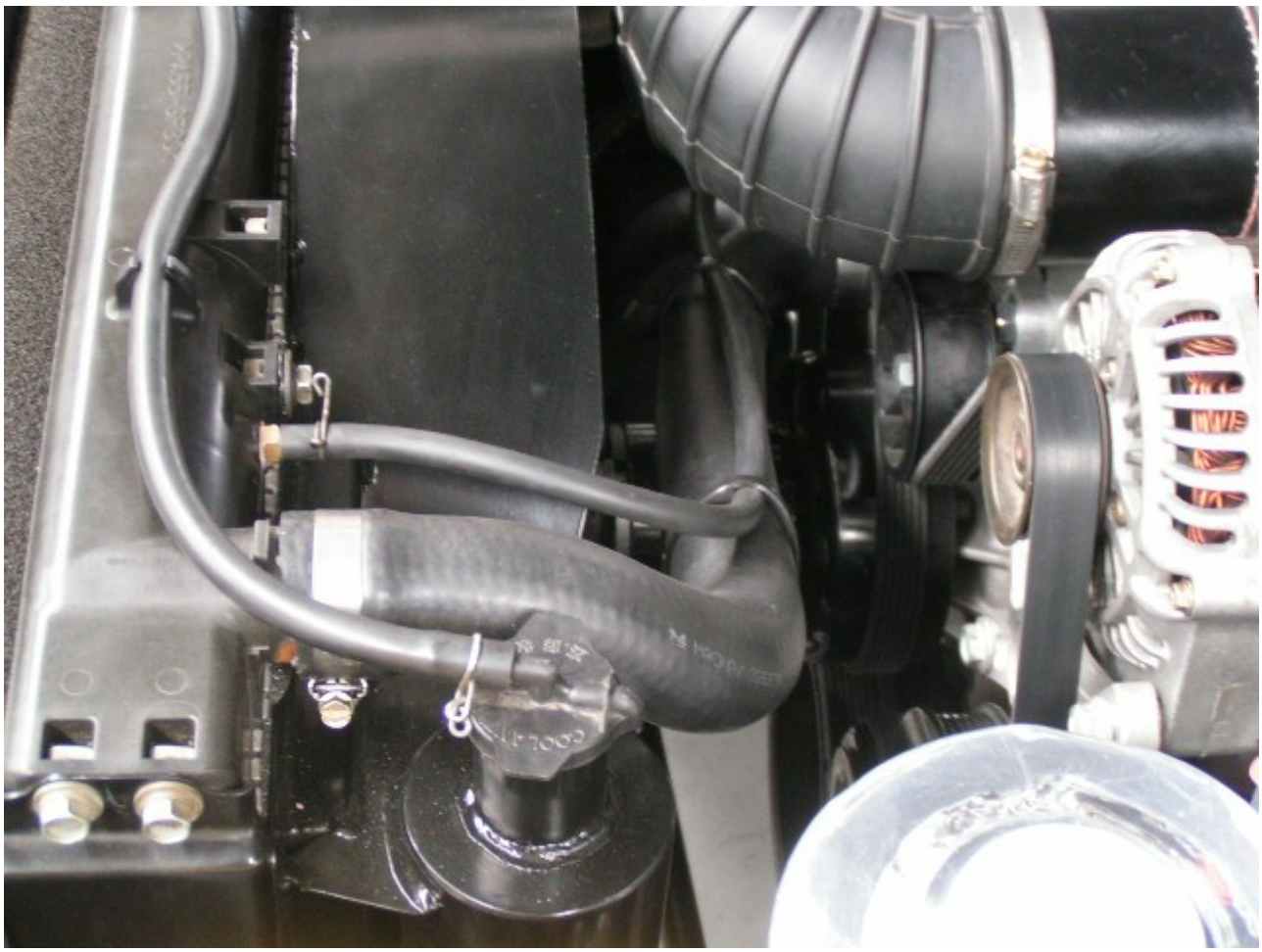


5. Tighten all of the engine mounting nuts and bolts.

6. 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. See the following photo:

7. Fit the bottom radiator hose. ***NOTE:*** The original 4.5ltr bottom hose will fit, some trimming is required.

8. 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. See photos below: ***NOTE:*** The bushes used to support the bottom of the Toyota fan shroud must be fitted to the new shroud.



9. Fit the top radiator hose.

10. Fit heater hoses.

11. 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.

12. 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.

13. Complete the exhaust system. **NOTE:** A complete system is required including headers. We now manufacture headers. Part number MFH1790. See photos below.

Power Steering Reservoir

1. Modify the GM power steering bracket to fit to the inner guard just above the power steering pump. Cut the GM oil supply hose to fit between the reservoir and the power steering pump, secure it using the original hose clamps.

2. Connect the Toyota power steering return hose to the other fitting on the reservoir.

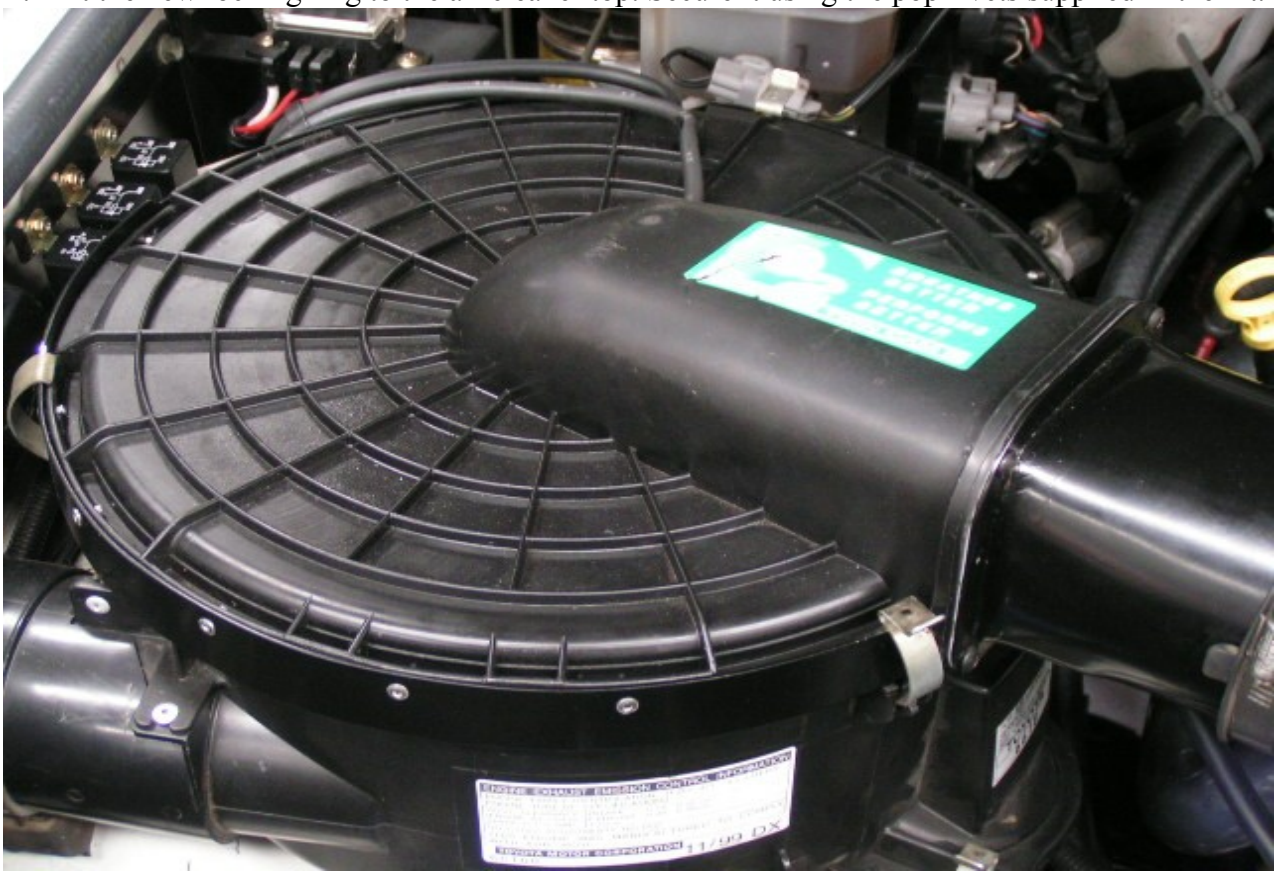
Air Cleaner Modification

1. Cut the old Toyota Mass Air Flow adaptor off the air cleaner.

2. Trial fit the new adaptor using the self tapping screws supplied.

3. Apply a smear of silicone to the mating faces and secure them with the screws supplied.

4. Fit the new locking ring to the air cleaner top. Secure it using the pop rivets supplied in the kit.



Wiring

1. Complete the wiring. **NOTE:** Marks 4WD Adaptors now manufacture a range a wiring looms for Gen3 engines.

2. 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.

3. Check all fluid levels.

4. Double check all of the mounting bolts are tight.

5. Start the engine and check for the following -

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.

Remember an inexpensive phone call can save a costly mistake!

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