

21/02/12



CHEVY LS1/LS2 V8 TO NISSAN GQ/GU AUTOMATIC TRANSMISSION

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. Some transmission tunnel modification (panel beating) is required for clearance between the bellhousing and the firewall. The location for these modifications is over the top of the bellhousing down to the passenger side foot well.

Note: 2. When fitting a 6ltr engine you will need the accessories from a LS1 engine, the LS2 A/C compressor will not fit in between the engine and the chassis rail.

ENGINE REMOVAL

1. Remove the bonnet from the vehicle. It is advisable that you mark the position of the hinges on the bonnet in order to aid alignment when refitting the bonnet once the conversion is completed.
2. Disconnect battery cables and remove battery from vehicle.
3. Drain the engine oil and coolant from the original engine and disconnect radiator and heater hoses attached to the original engine.
4. Disconnect and label all wiring attached to the original engine. This will make it easier to identify wires at a later stage.
5. Remove radiator and overflow tank from engine bay.
6. If your vehicle is equipped with air conditioning, evacuate the old gas out of the system and disconnect the air conditioning hoses from the compressor.
7. If your vehicle is equipped with power steering, disconnect hoses attached to the power steering pump.
8. Remove the radiator from the vehicle.
9. Remove the inspection plate on the front of the automatic transmission and remove the torque converter bolts.
10. Undo the engine to transmission bellhousing bolts.
11. Support the transmission using a jack stand and remove the complete engine assembly using suitable engine lifting equipment. Do not discard old engine yet as some parts from the original engine are still used for this conversion.

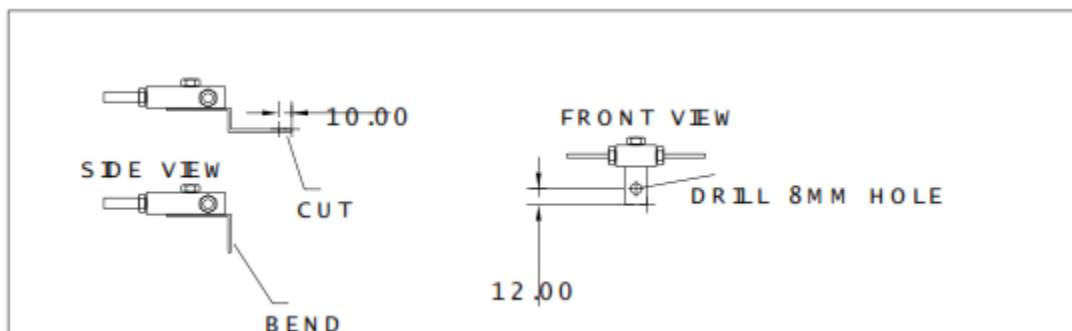
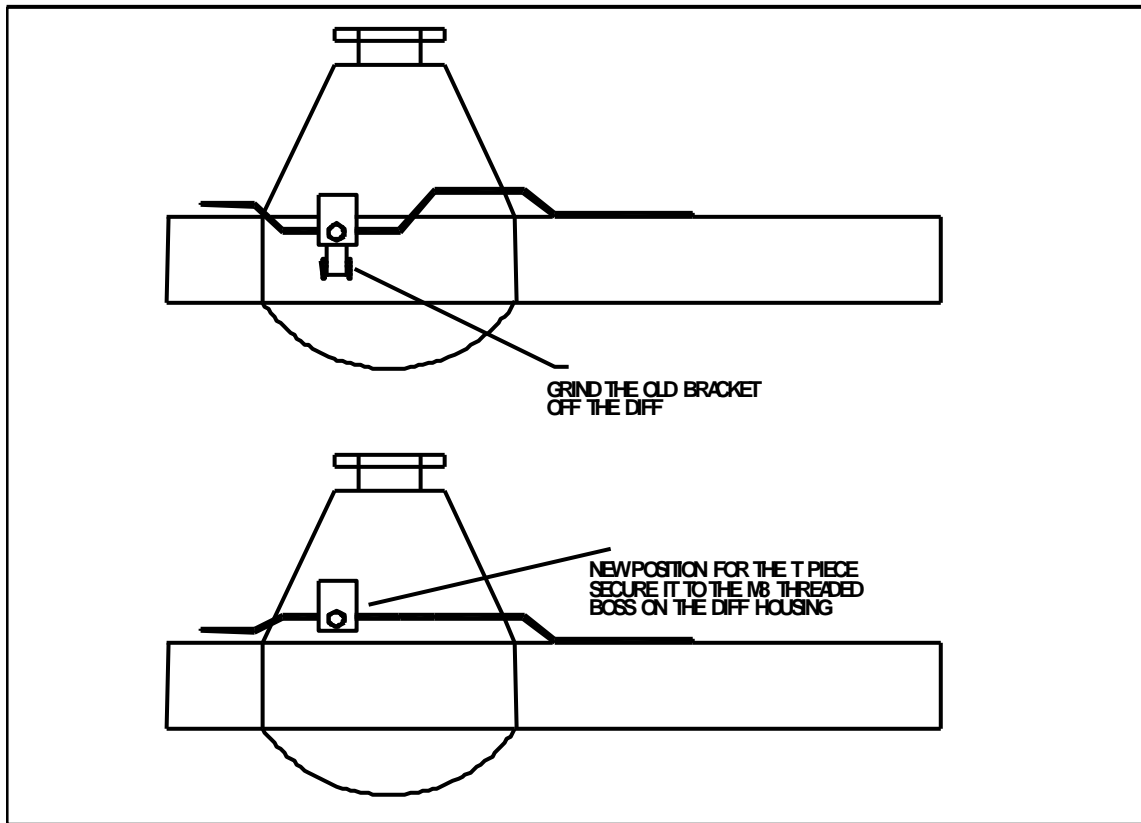
12. If you plan on using a different grade fuel, as to what the original engine ran on, drain the fuel tank and fuel lines.
13. Remove the oil pressure and temperature adaptors from the original Nissan engine.

UNDER BONNET AND ENGINE SUMP PREPARATION

NOTE: Not all Nissan Patrols are fitted with this type of bracket, check all engine, sump and starter clearances with the front springs removed.

In some Patrols It is necessary to relocate the brake line that is attached to the diff in order to provide greater A/C compressor to differential clearance. You must also use a Chevy rear bowl sump and pick up, some modifications are required to gain enough sump to track rod clearance. Marks 4WD Adaptors stock truck sumps that are modified for this application.

1. Remove the brake block bracket with a small grinder. Later model Nissan Patrols already have the T-piece in the correct position.
2. Cut 10mm off the original bracket. Refer to diagram

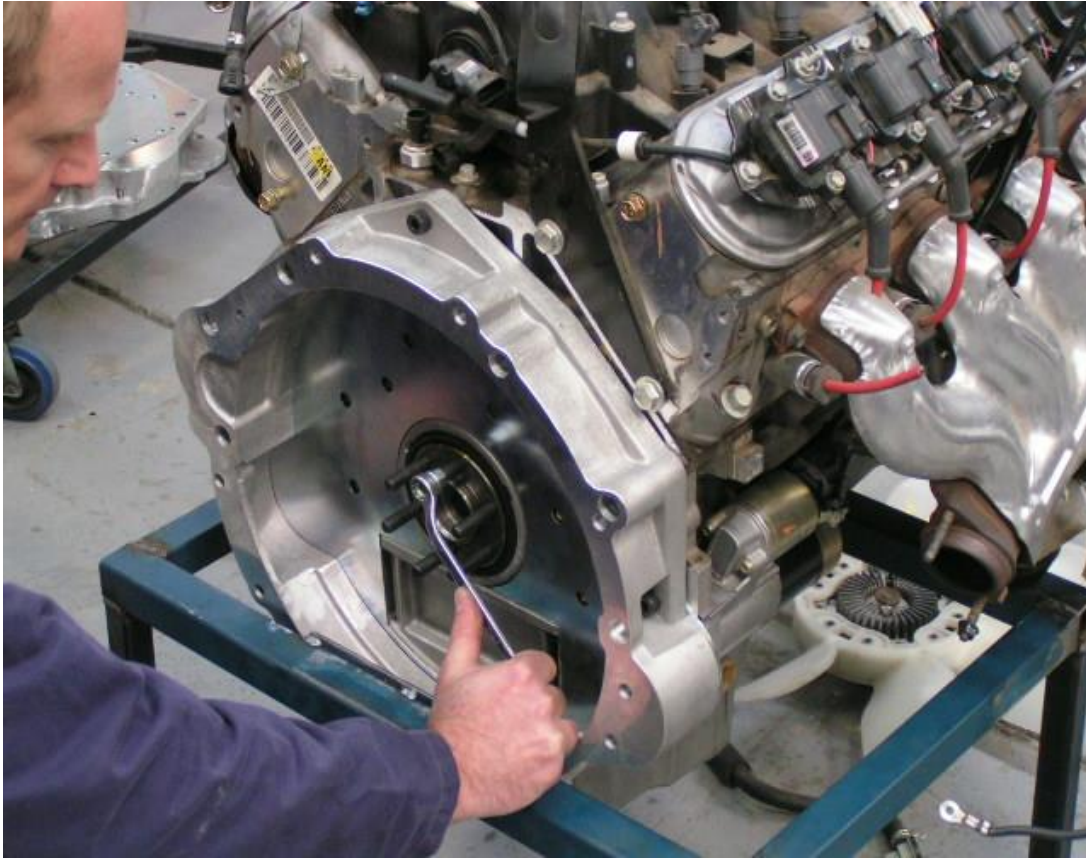


3. Bend the bracket down 90 degrees. **Refer to diagram**
4. Drill an 8mm hole in the bracket. **Refer to diagram**
5. Using a M8 X 12mm bolt, fix bracket to vacant mounting block and bend the pipes to follow closely the shape of the diff housing. **Refer to diagram**

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 bolts supplied in the kit.
5. Fit the 9.5mm dowels in the rear of the adaptor housing. These dowels are supplied in the kit.
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 thread in the nuts is 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 and crank adaptor. To fit the studs use 2 of the M11 x 1 nuts locked together on the stud, see the following photos.
7. Torque the studs to 35 ft lb.





Flex Plate / Flywheel Preparation

1. Thoroughly clean the flex plate stiffener and crank adaptor as 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.



3. Remove all burrs around the flex plate holes. Also remove any burrs around the crankshaft holes.
4. 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.
5. 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.



ENGINE PREPARATION

1. Fit the new studs in the crankshaft with the flywheel in place and use loctite on the threads. **Note:** To screw them in, fit two of the M11x1 nuts on the end of the stud and lock them together using two spanners, now use one spanner on the outside nut to do it up. Torque the studs to 35ft lb **See photos below. NOTE 2:** The following photos show the engine as fitted with an original manual flywheel, the installation procedure is the same when fitting the flexplate and flexplate stiffener components.

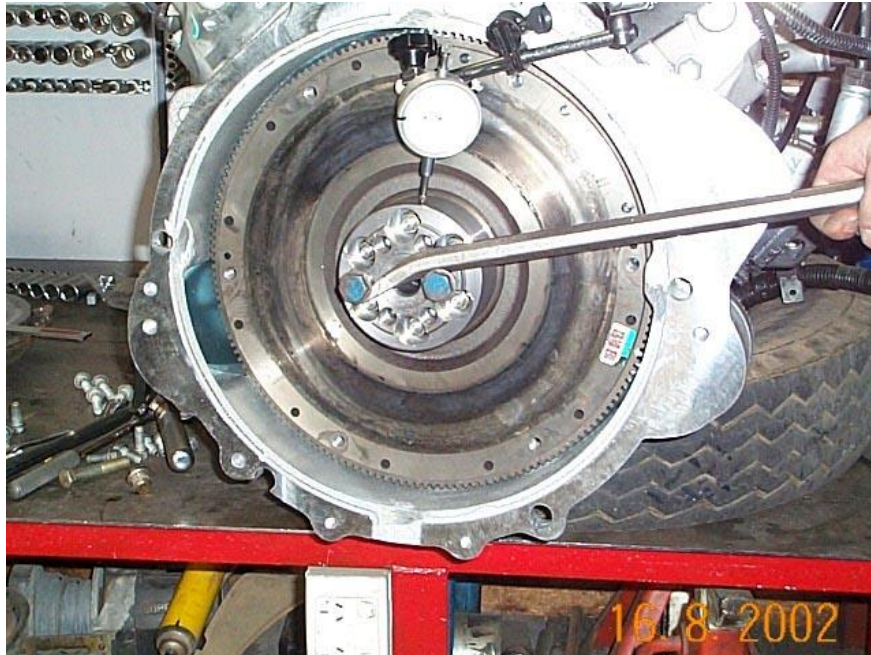


1. Fit the new crankshaft adaptor over the studs and up to the rear of the flywheel/flexplate stiffener. Use loctite on the M11 nuts supplied. Torque to specification 55 to 60ftlb or 75 to 80nm.

CHECKING CRANK ADAPTOR RUN OUT



1. By using the rear block surface as an accurate reference point, check that there is no excessive run out on the rear most edge of the new crank adaptor. If you do have excessive run out (more than 0.005") you will need to remove the crank adaptor and rotate it 180 degrees and recheck the run out. **Refer to photo.**

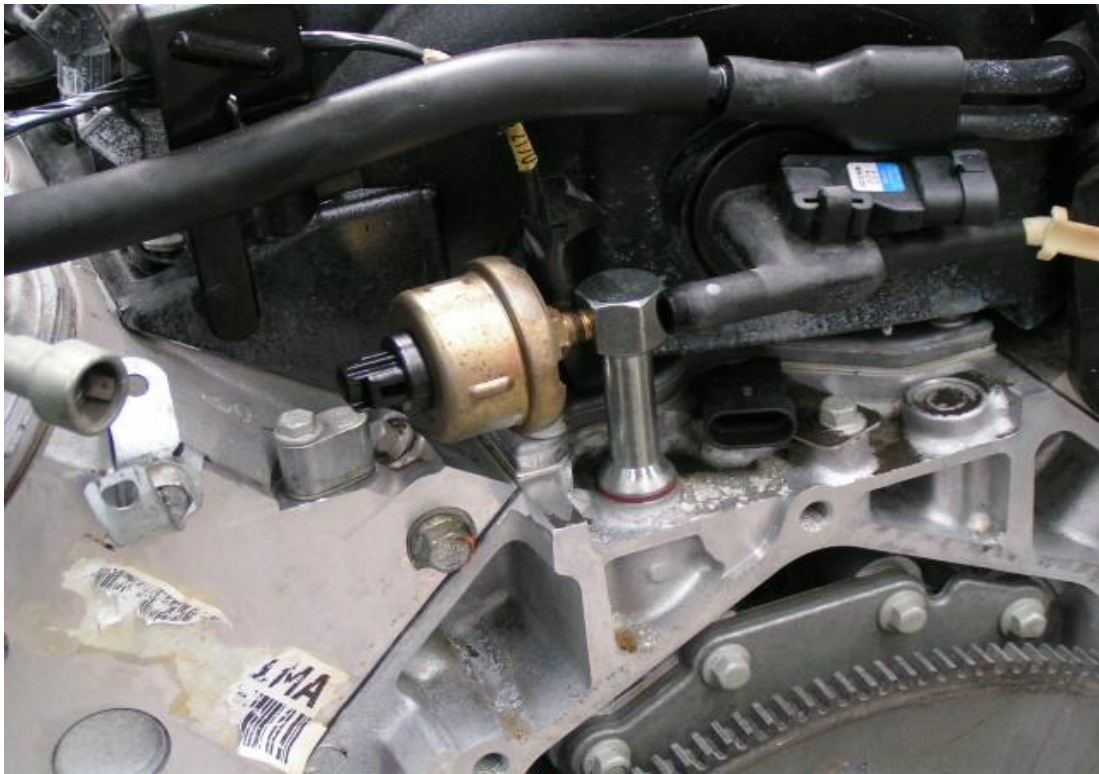


2. If everything checks OK so far, bolt the original Nissan flexplate and torque converter spigot locator to the rear of the new crank adaptor using loctite on the original bolts. Torque the bolts to specification 70ftlb or 95nm. **NOTE 1:** The spacer is located behind the flexplate between the crank and flexplate. Nissan use this spacer to locate the torque converter spigot to the crankshaft. If in doubt, refer to your Nissan workshop manual. The photos below are of the spacer with our crankshaft adaptor. **NOTE 2:** The ZD30 flex plate to crankshaft bolts will need to be shortened by approximately 4mm. Please also note the ZD30 crank adaptor is not shown in the photos. **NOTE 3:** If somehow you have managed to sell your old engine with adaptor and require a new one, the part numbers are as follows: 12330-1W400 suits ZD30/TD42 7 bolt crank, 12333-03J10 suits TB45, TB48, 6 bolt crank.

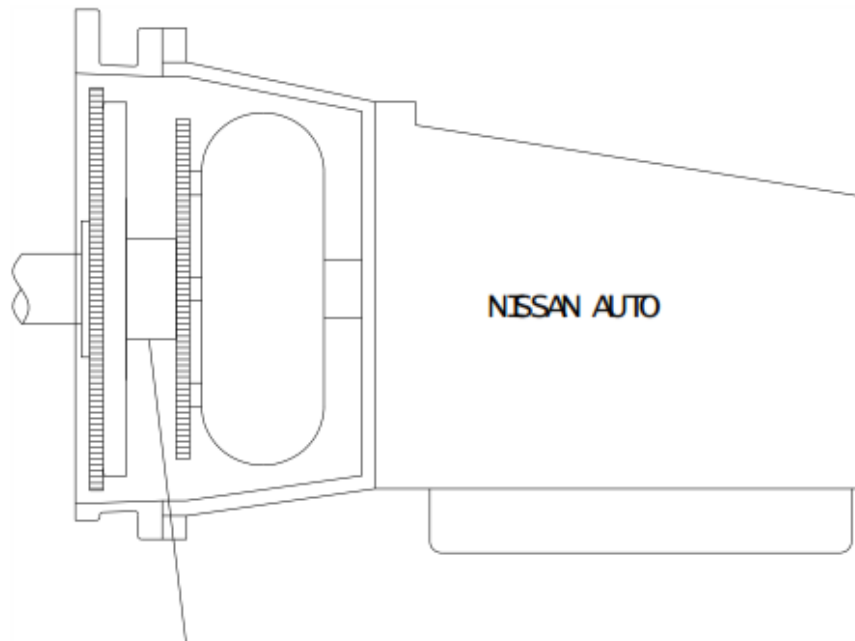




11. Fit the Nissan water temperature sender in the adaptor and then fit the assembly into the driver side rear cylinder head. **NOTE 1:** The adaptor is supplied with a copper washer and should be fitted, you should also use thread sealer. **NOTE 2:** The water temp sender on the left hand front cylinder head is used by the engine PCM.
12. Fit the oil pressure adaptor in place of the original GM sender located behind the intake manifold. Use thread sealer with the copper washer supplied in the kit. **Note 1:** The GM sender is no longer required. **Note 2:** If the oil pressure light flickers when the engine is idling change the oil pressure switch to an after market one. See photos below.
13. Fit the main drive belt, see the following photo.



ENGINE INSTALLATION



1. Make sure that the engine has the two dowels fitted to the rear.
2. Lower the engine into place and line up the torque converter boss with the centre of the crank adaptor.
3. Bolt the engine with the new adaptor housing to the bellhousing. Secure it using the original Nissan bolts.
4. Guide the engine over the chassis posts and refit the engine mounting rubbers, brackets and bolts.
5. Refit the original torque converter bolts and tighten to specification.
6. Fit the torque converter bolt, access cover to the adaptor housing and secure it using the two 1/4"unc bolts, 1/4" spring and flat washers supplied in the kit.
7. Fit the starter motor and seal up any gaps with silastic, this will prevent any water or mud from entering the housing, which can cause premature failure of seals etc.
8. Modify the radiator spouts to correspond with the new GM engine's outlets.
4. Refit the radiator.
5. Fit the top and bottom radiator hoses.
6. Fit the heater hoses.
7. Fit the power steering pump hoses.
8. Fit the air-conditioning compressor hoses and re-gas the system.

Important Notes:

1. The stall speed of a torque converter is determined by the amount of torque that is produced by the engine. Since the new engine that you intend fitting will have different torque characteristics to the original engine, it is recommended that you rework the torque converter to compliment the new engine. We suggest that you contact your local automatic transmission specialist for further advice.
2. Nissan transmissions are electronically controlled and therefore require some signals from the engine for them to operate correctly. They are engine RPM, and throttle position sensors. The kick down cable should also be connected. For the correct adjustment of these input signals we suggest you seek advice from your local transmission reconitioner.
3. Complete the wiring.
4. Check all fluid levels and fill fuel tank with required grade of fuel.
5. Double check all-mounting bolts are tight.
6. Start the engine and check for-
Fuel leaks.
Oil leaks.
Water leaks.
Exhaust leaks.
Allow the engine to warm up and recheck above.
21. 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.

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