

6L80 & 6L90 Installation Guide

Read This Entire Document Before Installing Your
Transmission



Extremely Important

Warranty Requirements

This Transmission has critical installation requirements. Failure to adhere to these requirements VOIDS your warranty



BEFORE REMOVING THE OLD TRANSMISSION

You **MUST** have a scanner and scan the vehicle for any codes. All codes **MUST** be fixed **BEFORE** installing the new transmission.

INSTALLATION SUGGESTIONS

1. The cooling system on this vehicle **SHOULD** be replaced. The plate cooler in this vehicle cannot be properly flushed and is a non-serviceable component which should be replaced with new.

Bypass Valve

If your vehicle is equipped with a bypass valve below, it must be cleaned and all provided sealing o-rings including cooler line fitting clips and o-rings must be replaced.

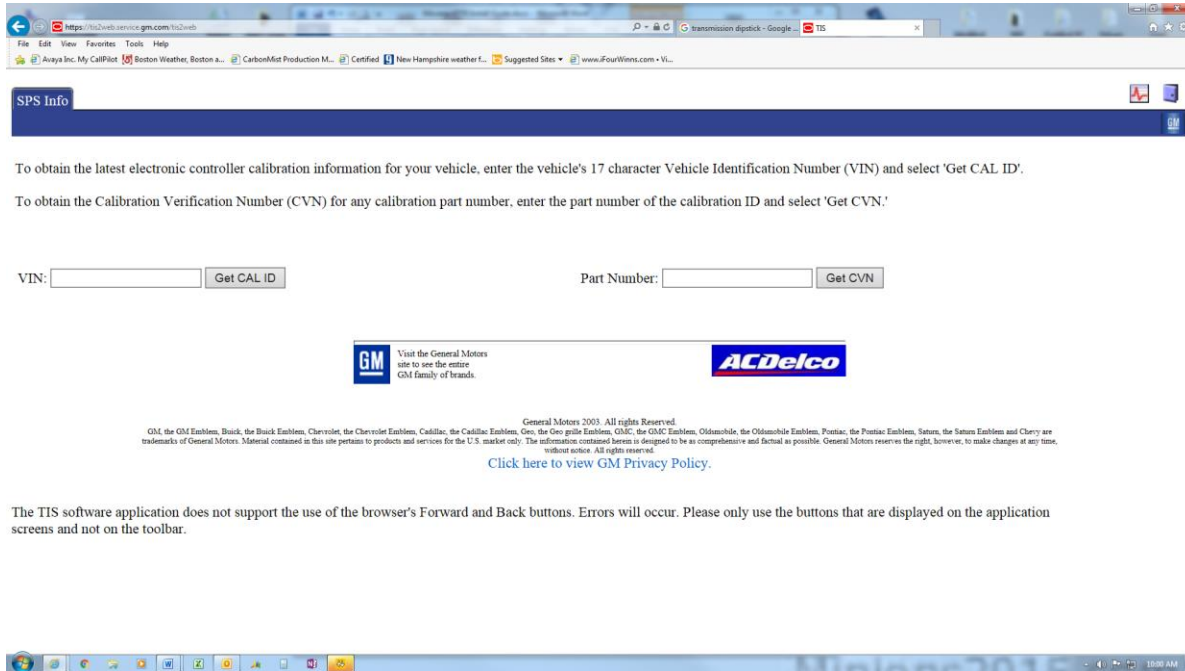


DO NOT OPERATE VEHICLE UNTIL REPROGRAMMING PROCEDURE IS COMPLETE

This transmission is an electronically controlled unit with an internal TCM (transmission control module) that must be Reprogrammed before operating the vehicle. Failure to do so will destroy the transmission. If an in shop Reprogram cannot be accomplished the vehicle must be flat bedded to a dealership for Reprogramming. For a reasonable fee they will perform all steps required.

Reprogramming Procedure

1. Visit the GM website <https://tis2web.service.gm.com/tis2web> enter the VIN and make sure that you have the latest software for the vehicle.



2. Start and follow the prompts on GM's Service Programming System site
3. Verify that the Engine Control Module (ECM) and the Transmission Control Module (TCM) are programmed to the latest available OEM calibrations. If not programmed properly the

Malfunction Indicator Lamp on the dash may illuminate and the powertrain may only operate in fail safe (limp) mode. Both the TCM and ECM must be Reprogrammed during the same visit.

Reprogramming Tools required: -Dedicated Laptop with cable connection to internet -SAE compatible J2534 pass through device	 -Power supply for the laptop -Power supply for vehicle must be designed for reprogramming
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Properly fill with Dexron VI Automatic Transmission Fluid:

Fluid Fill Procedure with Dipstick

- **BEFORE YOU START THE VEHICLE** fluid must be touching the bottom of the stick.
- **Make sure the Vehicle is on level ground**
- **Start the vehicle and move the shift through all ranges pausing for 3 secs in each range.**
- **Final level check, engine idling, transmission in park, temperature must be 86-122°F**
 - **Fluid temperature may be checked in the Driver Information Center or with a scan tool**

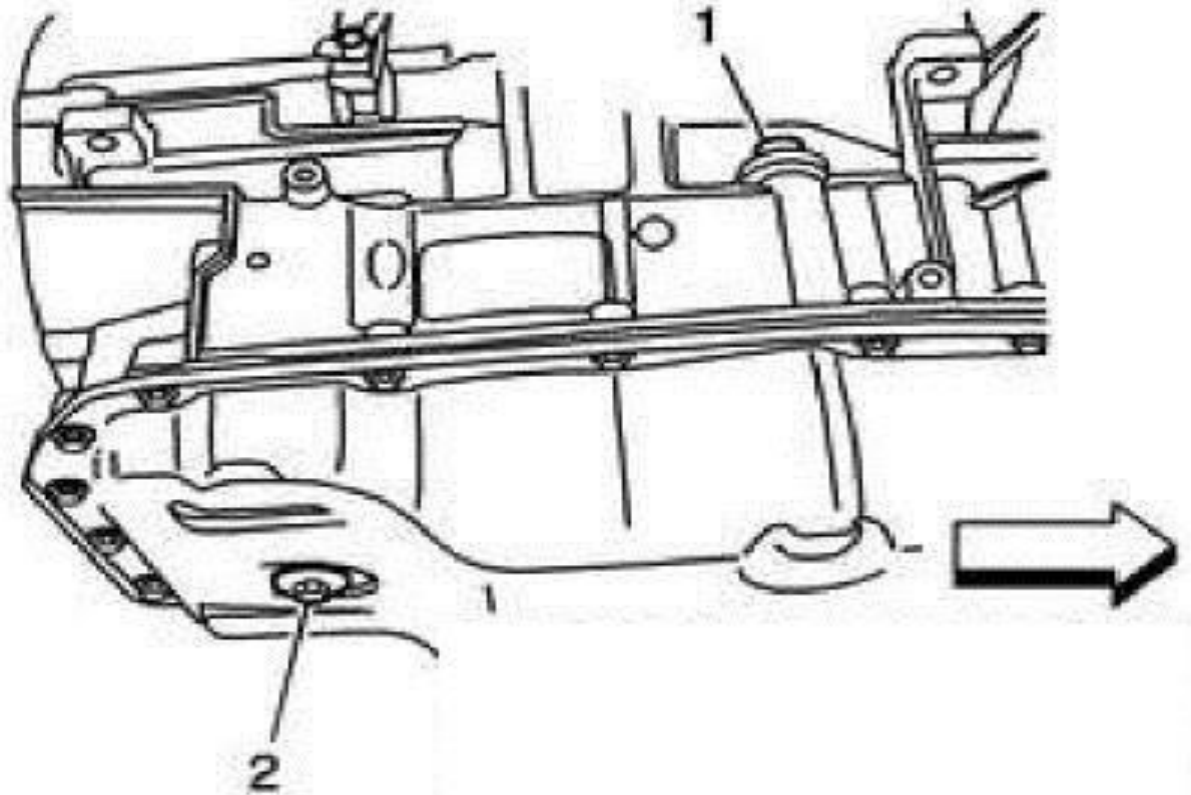
Fluid should read in the cross hatches on the dipstick. **DO NOT OVERFILL**



Fluid Fill Procedure without Dipstick

- Perform this procedure if vehicle is not equipped with a fill tube and dipstick. Based on accessibility, transmission fluid may be added through the fill tube plug assembly hole (1) or through the oil level check plug hole in the bottom of the transmission fluid pan (2).
- **Final level check, engine idling, transmission in park, temperature must be 86-122°F**

Fluid temperature may be checked in the Driver Information Center or with a scan tool



1. Remove Fill Plug, and Level Check Plug.
2. Fluid must have a fast drip from Level Check hole, add fluid until fluid streams slightly from hole.

3. If steady stream of fluid comes from hole when Level Check Plug is removed (overflow condition), allow fluid to flow until only a fast drip remains.
4. Reinstall Level Check Plug, and Fill Plug.



Service Fast Learn Adapts:

- 1) After successfully re-calibrating the ECM and TCM the Service Fast Learn Adapts must be reset.
- 2) Verify that the vehicle is on level ground and that, that the wheels are chocked properly and that the parking brake is applied.
- 3) The vehicle engine should be at idle, no throttle should be applied as well as no external engine RPM control.
- 4) The transmission fluid temperature should be between 158°F and 239°F.
- 5) Now preform 3 shift cycles of Park to Reverse. When this is complete, shift the vehicle back into the Park position.
- 6) Start the Service Fast Learn Adapts procedure (if supported) on your scan tool at this time.
- 7) Follow your specific scan tool instructions on the scan tool display.
- 8) When the procedure is complete exit out to the main screen, turn off scan tool and remove it from the DLC.
- 9) Shut off the engine, remove key from ignition. Restart engine.
- 10) Service Fast Learn Adapts should now be complete.

Garage Shift Adapts

1. With the engine running and the vehicle in park verify the ATF is above 86° F.
2. With the engine at idle, shift from REVERSE to DRIVE and leave the shift lever in DRIVE for 5 seconds. After 5 seconds, shift back to REVERSE and leave the shift lever in REVERSE for 5 seconds. Perform this procedure 20 times—(R to D to R to D, etc.). The shift transitions must be made directly between Drive and REVERSE with momentary pause in neutral.
3. With the engine at idle, shift from NEUTRAL to DRIVE and leave the shift lever in DRIVE for 5 seconds. Perform this procedure 10 times.
4. With the engine at idle shift from NEUTRAL to REVERSE and leave the shift lever in REVERSE for 5 seconds. After 5 seconds shift back to NEUTRAL and the leave the lever in NEUTRAL for 5 seconds. Perform this procedure 10 times.

After this procedure it still may take several days of driving the vehicle for the transmission to fully adapt and begin to shift properly.

Once the reprogramming and relearn steps are complete, perform a thorough test drive with multiple accelerations and from a stop with light throttle application.

Rescan the vehicle. If codes are present, compare these to the original codes. Use a scan tool for DTC's and correct the codes and re-road test the vehicle.

INSTALLATION CHECKLIST

- Scan vehicle and fix all codes
- Replace the cooling system (Radiator) and replace or clean cooling lines
- Inspect flex plate for cracks or breakage. Damaged flex plates are common
- Compare bolt pattern on flex plate to bolt pattern on new torque converter
- Inspect crankshaft pilot bore for wear and apply grease to aid with installation
- Compare replacement transmission and torque converter to original before installation
- Verify all dowel pins are present, clean, and in good condition – these are critical for proper alignment
- Do not tighten bell housing bolts with force; may damage torque converter if shifted in transit
- Inspect wiring harness and connector for damage and /or corrosion
- Inspect entire electrical system including ground, battery, alternator, mass air flow sensor and throttle position sensor.
- Inspect axle shaft splines and check transmission/engine mounts
- Install supplied tail shaft housing gaskets and seals
- If 4WD application, replace transfer case input shaft seal
- Inspect transmission mounts, carrier bearing, driveshaft, yoke and U-joints. Excessive vibration due to defective mounts and other faulty driveline parts is the main cause of broken cases.

Road Test Check list

- Does vehicle hold in park
- Engagement into reverse
- Acceleration in reverse
- Does engine free spin in neutral
- Engagement into Over Drive
- Acceleration in Over Drive
- 1-2 shift in Over Drive
- 2-3 shift in Over Drive
- 3-4 shift in Over Drive
- 4-5 shift in Over Drive
- 5-6 shift in Over Drive
- 6-5 downshift in Over Drive
- 5-4 downshift in Over Drive
- 4-3 downshift in Over Drive
- 3-2 downshift in Over Drive
- 2-1 downshift in Over Drive
- Engine braking in manual 1
- Engine braking in manual 2
- Torque Converter lock up and release