

# 6T70 & 6T75

## GM 6-Speed Automatic Transmission

### INSTALLATION GUIDE

**Important:** Your warranty depends on your adherence to these installation instructions.

**This Guide Contains:**

- Pre-Installation Tips
- Checking Fluid Levels
- Reflashing Procedures
- Service Fast Learn & Garage Shift Adapt Procedures
- General Installation Tips
- Troubleshooting Installation Problems



# [PRE-INSTALLATION]

6T70/6T75

Prior to installation of the replacement transmission, determine the cause or causes of failure of the previous unit.

- Check transmission cooler for glycol and/or water contamination
- Scan vehicle computer, record any codes, and fix all causes of codes before installation of replacement transmission

A restricted and/or contaminated transmission cooling system is the #1 cause of transmission failure after a replacement.

- If the transmission cooler has evidence of transmission hard parts failure, it must be replaced.
- Plate-type oil-to-air (OTA) transmission coolers must always be replaced.
- Entire transmission cooling system must be completely cleaned, hot flushed, and flow tested.

## SHIPPING/CORE RETURN INFORMATION

The Transmission Control Module (TCM) connectors on GM 6T70 / 6T75 transmissions are prone to damage during shipment and handling. Since the connector is integral to the TCM, a damaged connector will render the TCM useless.

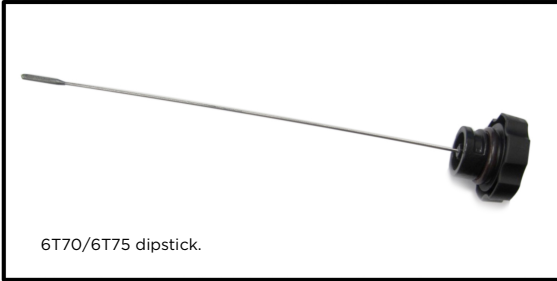
As a result, ETE is shipping all of its 6T70 / 6T75 units with a TCM connector cover.

Also, any core transmission being returned to ETE must have the TCM connector cover installed during the return shipment process.

If damaged during return shipment, any units found to not have the TCM connector cover properly in place will have core charges adjusted for any damaged parts: TCM, TCM connector, side cover, etc.



Top and front view of connector cover.



Proper fluid level for 6T70/6T75 transmissions is indicated in the cross-hatched area of the dipstick.

1. Verify vehicle is on level ground when performing fluid level check procedure.
2. Verify drive wheels are blocked and parking brake is applied.
3. Verify engine is idling at 0% throttle.
4. Verify transmission fluid temperature (TFT) is at least 86°F -122°F.
5. Shift transmission through entire range - hold in each range for at least three (3) seconds. When complete, shift vehicle back into PARK.
6. Remove dipstick and observe fluid level on end of dipstick. Fluid level should be indicated within the cross-hatched area of dipstick.
7. If fluid level does not reach cross-hatched area of dipstick (underfill condition), add fluid until it is within acceptable range.
8. If fluid level is higher than cross-hatched area of dipstick (overfill condition), use appropriate tool to remove enough fluid that it returns within acceptable range.
9. Reinstall dipstick.

If needed, fill transmission with **Synthetic ATF** or **Dexron VI** (synthetic required).

# [REFLASHING]

6T70/6T75

This is an electronically-controlled transmission. The following information is **VERY IMPORTANT** to understand and perform correctly. Failure to do so may cause damage to your new transmission and/or be the main cause for transmission performance problems.

- **Check for proper installation of all vehicle ground connections.** Erratic transmission performance may be caused by faulty or missing ground(s) at various connection locations under the hood.
- Inspect transmission wiring harness for damaged wires or connectors. Verify proper function of the entire electrical system including the battery, alternator, mass air flow sensor, and throttle position sensor.
- Verify battery has proper charge before attempting reflash. Before starting reflash procedure, battery voltage should be between 12VDC - 16VDC. If battery voltage is low, charge battery BEFORE initiating reflash process. **DO NOT INSTALL BATTERY CHARGER AT ANY TIME DURING THE REFLASH PROCESS.**
- Please note: Your local dealership can perform the following steps for a nominal charge, after installation. If reflash service is to be performed at dealer, the vehicle must be transferred via flatbed. **Do not operate the transmission prior to reflash.**

***If you do not have the proper equipment, do not attempt to perform these procedures.***

- Required Reflash Tools
  - Pass-thru J2534-compliant vehicle reflash hardware, such as CarDAQ-Plus or equivalent:  
<http://www.drewtech.com/products/cardaqplus.html>
  - GM Service reprogramming subscription
  - Hi-speed Internet connection
  - PC with Windows 7, a USB port, and sufficient USB cabling to reach between the PC and vehicle.
- Reflash Procedure
  - Visit the GM web site <http://tis2web.service.gm.com/tis2web> to verify the vehicle's Engine Control Module (ECM) has the latest software updates and calibrations to ensure proper transmission operation and shift quality.
  - Verify that the Engine Control Module (ECM) and Transmission Control Module (TCM) are programmed to the latest available **factory OEM** calibrations. If not programmed properly, the Malfunction Indicator Lamp (MIL) warning light on the dashboard may illuminate, and the powertrain may only operate in fail-safe or "limp" mode.
  - The TCM cannot be reflashed independently - it must be reflashed at the same time as the ECM.

***Powertrains with aftermarket calibrations will void the warranty.***

***DO NOT attempt to operate the vehicle before reflash procedure is complete. Permanent damage to the transmission will result.***

After the replacement transmission is installed and ECM/TCM calibrations are complete, perform a vehicle Service Fast Learn Adapts procedure using the following procedural steps:

1. Use a suitable scan tool capable of performing the Service Fast Learn Adapts procedure.
2. Apply parking brake.
3. Verify transmission fluid temperature (TFT) is between 158°F – 230°F.
4. With brake pedal applied, move shift selector in and out of gear three times.
5. Use scan tool to clear any adaptive data that might be stored in the TEHCM.
6. Select fast learn process from the scan tool menu.
7. Apply brake pedal.
8. Shift transmission into DRIVE and maintain vehicle in stationary position; TCM will individually apply clutches and calculate clutch volumes.
9. Shift transmission into reverse with vehicle stationary; TCM will individually apply clutches and calculate clutch volumes.
10. Turn engine off for at least 30 seconds.
11. Open and close door to allow Retained Accessory Power to expire or false DTCs may be set.

After at least 30 seconds, engine can be restarted and scan tool turned off. The Service Fast Learn Adapts process is now complete.

The Service Fast Learn Adapts procedure **will not** be completed if:

- DTC's are not cleared prior to fast learn, or new DTC's are set during fast learn procedure.
- Transmission fluid temperature (TFT) is not between 158°F – 230°F.
- The brake switch is not functioning correctly.
- Throttle position is 0% but engine RPM increases or is fluctuating during the test.
- Park-Neutral switch is not adjusted properly or is not functioning correctly.
- Line pressure control system is not functioning correctly.

Next, the Garage Shift Adapts must be completed:

1. With engine still running and vehicle still secured, verify transmission fluid temperature is still above 86°F.
2. With engine at idle, shift from REVERSE to DRIVE and leave shift lever in DRIVE for five (5) seconds. After five seconds, shift back to REVERSE and leave shift lever in REVERSE for five seconds. Perform this procedure twenty (20) times (R-D-R-D-R-D...). **The shift transitions must be made directly between DRIVE and REVERSE – no stopping in Neutral.**
3. With engine at idle, shift from NEUTRAL to DRIVE and leave shift lever in DRIVE for five (5) seconds. After five seconds, shift back to NEUTRAL position and leave shift lever in NEUTRAL for five seconds. Perform this procedure ten (10) times (N-D-N-D-N-D...).
4. With the engine at idle, shift from NEUTRAL to REVERSE and leave shift lever in REVERSE for five (5) seconds. After five seconds, shift back to NEUTRAL position and leave shift lever in NEUTRAL for five seconds. Perform this procedure ten (10) times (N-R-N-R-N-R...).

Advise customer that it may take several days of driving for the transmission to fully adapt.

A final system scan is required after the road test, or if problems are detected during the test drive. If codes are present, compare to original code scan recorded prior to transmission replacement.

Use a scan tool to check for Diagnostic Trouble Codes (DTCs) stored by the ECM and the TCM. Perform diagnostic and/or repair procedures to correct these codes prior to returning the vehicle to customer.

# [OTHER INFORMATION] 6T70/6T75

## ADDITIONAL GENERAL INSTALLATION INFORMATION

- Inspect flex plate for cracks or any damage
- 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!
- **Verify torque converter is properly and completely installed onto input shaft** (common mistake)
- Do not tighten bell housing bolts with force; may damage torque converter if shifted in transit
- Install supplied tailshaft housing gaskets and seals
- If 4WD application, inspect and/or 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.

**OTHER POSSIBLE PROBLEMS**

Aftermarket/performance air filters are shipped pre-oiled and may contaminate the Mass Air Flow sensor with excess oil. MAF sensor must be tested with a voltmeter at the sensor - some vehicle computers may compensate for out-of-range signal. Your scanner will only display compensated values.

Torque converter clutch application must be checked at less than 30% throttle. If there is none present, check the vehicle's brake light bulbs for presence of LED lamps. In many cases, aftermarket LED lamps cannot be used.

Shift concerns or complaints may be caused by poorly-routed wiring for the manual shift lever mounted on the steering column, if so equipped. Wiring can be damaged by the steering column cover mounting screw.

