



IMPORTANT! READ AND FOLLOW THESE INSTRUCTIONS!

In order to achieve proper operation of this transmission in your vehicle, it may be necessary to make adjustments and calibration changes described in these instructions. Failure to perform these adjustments and calibrations may result in poor vehicle performance and possible transmission damage. Additional modifications may be required to install this assembly in a vehicle not originally equipped with a 4L60 transmission.

This instruction sheet is intended as a supplement to General Motors service manuals, which describe service procedures in detail. It is *not* intended to replace comprehensive service manuals and parts catalogs which cover GM transmissions and components.

Service manuals for GM vehicles are available from:

Helm, Inc.
P.O. Box 07130
Detroit, MI 48207

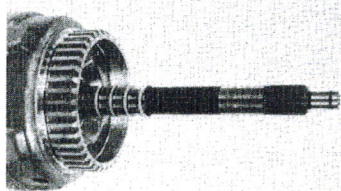
Please read this entire instruction sheet before starting work to familiarize yourself with the installation procedure. Observe all safety precautions and warnings in GM service manuals when installing the 4L60 transmission assembly. Wear eye protection and appropriate protective clothing. Support the vehicle securely with jackstands when working under or around it. Use only the proper tools. Exercise extreme caution when working with flammable, corrosive, and hazardous materials.

Some procedures require special equipment and skills. If you do not have the appropriate training, expertise, and tools to perform any part of this installation safely, this work should be done by a professional.

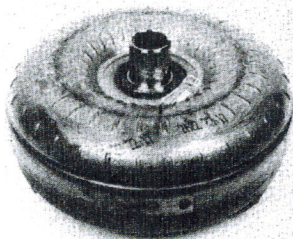
TECHNICAL FEATURES

The 4L60 four-speed automatic overdrive transmission assembly (PN 12363206) is General Motors' first over-the-counter automatic transmission assembly designed specifically for high-performance vehicles. It has a 3.06:1 first gear ratio that provides quick acceleration, and a .70:1 overdriven fourth gear and lock-up torque converter that reduce engine speed and enhance fuel economy during highway cruising.

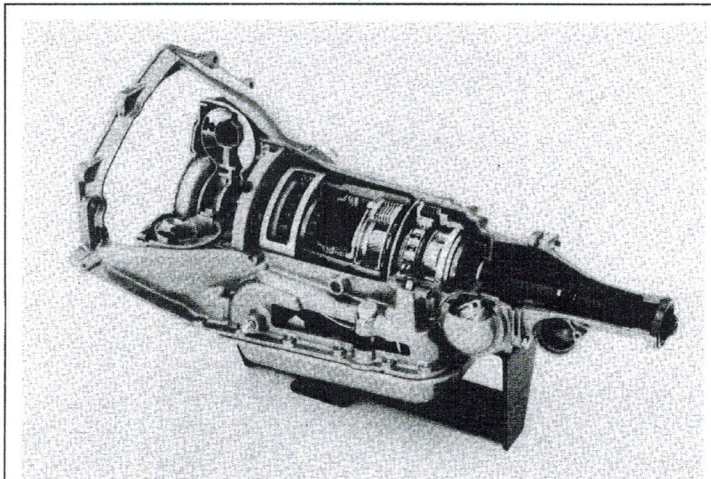
This heavy-duty transmission is assembled with the following premium components:



- Turbine input shaft shot-peened to improve durability.



- High-strength steel 298mm (11 $\frac{3}{4}$ " diameter torque converter with furnace-brazed fins.
- Lock-up converter clutch rated for 350 lb-ft torque.



4L60 TRANSMISSION ASSEMBLY SPECIFICATIONS

Part Number: 12363206
Type: Automatic four-speed overdrive with torque converter clutch
Gear Ratios:
 1st 3.06
 2nd 1.63
 3rd 1.00
 4th 0.70
 Reverse 2.29
Converter Diameter: 298mm (11.7 inches)
Converter Stall Torque Ratio: 1.91

Maximum Engine Speed: 6250 rpm
Maximum Towing Capacity: 7000 lbs.
Maximum Gross Vehicle Weight: 8600 lbs.
Fluid Capacity: 11 qts. approx. (dry)
 (Refer to service manual for complete instructions on fluid fill capacity)
Fluid Type: Dexron II
Weight (with converter): 164 lbs. (dry)
 184 lbs. (wet)
Shift Quadrant: P, R, N, D, 3, 2, 1

- High-ratio (.74:1) servo with increased surface area.
- Valve body calibrated for 5500 rpm upshifts at wide open throttle.
- Stall speed approximately 1800 rpm (will vary with engine output).
- 3-4 clutch pack with upgraded friction material.

APPLICATIONS

This assembly is based on the 4L60 transmission ("3FMM" code) installed as original equipment in 1993 Camaro Z28s equipped with the optional 3.23:1 rear axle ratio. It is a direct replacement for 4L60 transmissions installed in 1993 model vehicles *only*.

With minor modifications, the 4L60 will replace 700R4 transmissions in rear-wheel-drive GM vehicles. The wiring harness in pre-'93 computer-controlled vehicles must be adapted to the 4L60 transmission as described in these instructions. The 4L60 can also be wired for proper operation without a computer in emission-exempt and off-highway operations (street rods, off-road trucks, etc.).

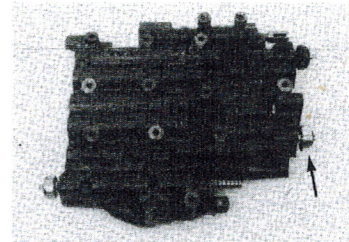
The 4L60 assembly is a replacement for 700R4 transmissions used in Camaros, Caprices, full-size pickups, and similar vehicles only. It does *not* replace the 700R4 transmissions installed in Corvettes.

The 4L60 can also replace a 200R4 or short-stroke Turbo-hydramatic 400 transmission if its rear extension housing is changed as described later in these instructions.

CALIBRATIONS

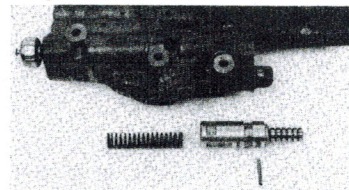
If you are installing this transmission assembly in a 1993 Camaro or Firebird originally equipped with a 4L60 transmission, no calibration changes are necessary. If you are installing this transmission in any other vehicle, you must make the following calibration adjustments to ensure proper transmission operation.

Before installing the 4L60 assembly in the vehicle, remove the transmission oil pan to provide access to the valve body. **Note:** It is not necessary to remove the valve body from the transmission.

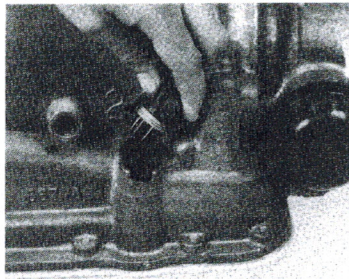


Fourth Gear Clutch Switch: The 4L60 transmission is assembled with a fourth gear clutch switch that is normally open. When installing this transmission in a pre-1993 computer-controlled GM vehicle, this switch must be exchanged for a normally closed switch. Unscrew the original fourth gear clutch switch and replace it with the normally closed switch (PN 8683502) supplied with the 4L60 transmission assembly. Do not change the switch if you are installing this transmission in a non-computer-controlled vehicle!

Throttle Valve Spring: The throttle valve spring (TV spring) installed in the 4L60 assembly is calibrated for engines equipped with Tuned Port Injection (TPI) or Throttle Body Injection (TBI). If your vehicle's engine is equipped with a carburetor, you must replace the original TV spring to obtain the proper shift points and shift feel.



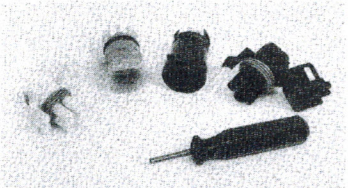
To replace the TV spring, remove the TV linkage and pull out the roll pin that retains the throttle valve. Remove the throttle valve and TV spring. Replace the original spring with the spring supplied. Reinstall the throttle valve, roll pin, TV linkage, and transmission oil pan.



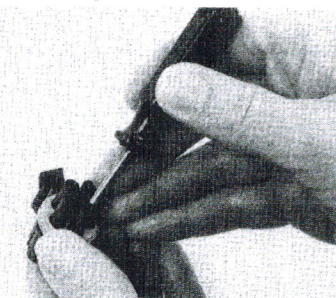
WIRING HARNESS

Computer-Controlled Vehicles: The 4L60 transmission's torque converter clutch (TCC) is activated by an electrical signal from the vehicle's engine control module (ECM). The 4L60 transmission uses a five-pin TCC connector that was introduced on 1993 model vehicles. The wiring harness in a 1983-1992 vehicle with a four-pin TCC connector can be modified to fit the transmission's five-pin TCC connector as follows:

Using the terminal removal tool supplied with the transmission assembly, remove all of the wires from the five-pin TCC connector wiring harness that is supplied with the transmission. Then transfer the wires from the vehicle's four-pin TCC connector to the five-pin connector. Remove the wire from the four-pin TCC connector marked "A" and insert it in the "A" terminal of the five-pin TCC connector. Repeat this procedure for the "B", "C", and "D" terminals, transferring the wires from the four-pin connector to the same respective terminals on the five-pin connector. (Remove the plug in the five-pin connector's "C" terminal before transferring the wire.) The fifth terminal "E" is *not* used in this conversion; do not connect a wire to it.



The 4L60 transmission assembly uses a five-pin TCC connector (right). A pre-1993 wiring harness with a four-pin TCC connector (left) can be modified to work with the 4L60 transmission.



Transfer the wires from the four-pin connector to the respective terminals in the five-pin connector ("A" to "A", "B" to "B", etc.). The fifth "E" terminal is not used.

Non-Computer-Controlled Vehicles: When installing a 4L60 transmission in a non-computer-controlled vehicle, connect the supplied wiring harness for the 4L60 transmission's five-pin TCC connector to a 12-volt power source through a stop lamp/torque converter switch (PN 25529860) to allow disengagement of the converter clutch during brake application. (**Note:** This circuit should be "live" only when the ignition is switched on.) This wiring system will apply the torque converter clutch whenever the transmission is in fourth gear. **Do not change the fourth gear clutch switch when installing the 4L60 transmission in a non-computer-controlled vehicle.**

SPEEDOMETER CALIBRATION

Variables such as the vehicle's axle ratio and tire diameter affect the accuracy of the speedometer. The following speedometer drive gears and driven gears are available for the 4L60 transmission:

SPEEDOMETER GEAR CHART

Drive Gear	Color	Part Number
15T	Gray	8642620
17T*	Red	8640517
18T	Blue	8640518

*Transmission drive gear as shipped

Driven Gear w/Sleeve	Color	Part Number
34T*	Lt. Green	9774413
35T	Orange	25522477
36T	White	25522479
37T*	Red	1359271
38T*	Blue	1359272
39T	Brown	25522485
40T	Black	25522487
41T	Yellow	25522489
42T	Green	25522491
43T	Purple	25522493
44T	Dk. Gray	25522495
45T*	Lt. Blue	9775187

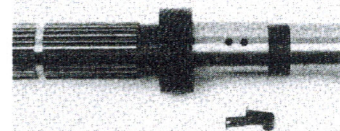
*Gear only

To determine the correct speedometer gears for your application, use the following formula to calculate the number of teeth on the driven gear (round to the nearest available gear):

$$\frac{\# \text{ DRIVE TEETH} \times \text{AXLE RATIO} \times \text{TIRE REV. PER MI.}}{1001} = \# \text{ DRIVEN TEETH}$$

Use the following formula to calculate "tire revolutions per mile" for the formula above:

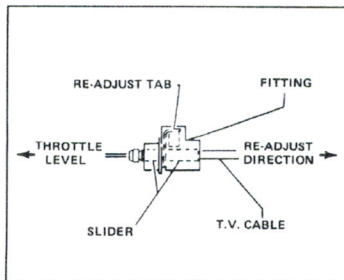
$$\text{TIRE REV. PER MI.} = \frac{20168}{\text{TIRE DIAM. (inches)}}$$



A spring clip retains the speedometer drive gear on the transmission output shaft.



Twelve speedometer driven gears are available for the 4L60 transmission to calibrate the speedometer with various axle ratios and tire diameters.



THROTTLE VALVE CABLE

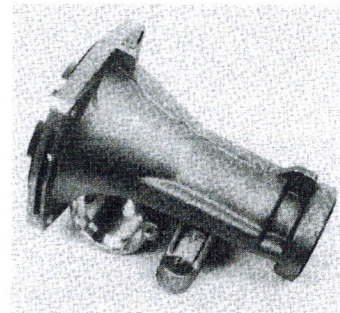
The Throttle Valve ("TV") cable must be installed and adjusted correctly for proper transmission operation. The TV cable adjustment affects shift point, shift feel, detents, and downshifts.

Adjust the TV cable after the transmission has been installed in the vehicle. Adjustment of the TV cable must be made by rotating the throttle lever at the carburetor or throttle body. Do not use the accelerator pedal to rotate the throttle lever.

1. Stop engine.
2. Depress and hold down the metal re-adjustment tab at the engine end of the TV cable.
3. Move the slider until it stops against the fitting.
4. Release the re-adjustment tab.
5. Rotate the throttle lever to its full travel position.
6. The slider must move (ratchet) toward the lever when the lever is rotated to its full travel position.
7. Check that the cable moves freely. The cable may appear to function properly when the engine is stopped and cold. Recheck after the engine is hot.
8. Road test the vehicle.

The following components are recommended when installing a 4L60 transmission in a street rod or other vehicle that was not originally equipped with a TV cable:

Part Number	Description
25515598	Throttle valve cable
22504927	Cable bracket (for Quadrajet carburetor)



EXTENSION HOUSING

An extension housing (PN 8673406) is available for the 4L60 transmission that moves the rear transmission mount to the same position as a TH400 (short-style) or 200R4 transmission. This extension housing ("tailshaft") can eliminate transmission crossmember modifications when replacing a TH400 or 200R4 transmission with a 4L60 assembly.

Note: When replacing a TH400 transmission, the driveshaft yoke must be changed to fit the 4L60 output shaft.

RELATED COMPONENTS

The following components are recommended when installing a 4L60 transmission in a vehicle not originally equipped with a similar transmission:

Part Number	Description
15531900	Indicator ("dipstick") for B-body (Caprice) and G-body (Monte Carlo, etc.)
10126485	Filler tube for above
10079807	Indicator ("dipstick") for 1982-92 Camaro/Firebird
10085252	Filler tube for above
1259475	Seal, filler tube
14091903	Torque converter cover (for 12 3/4" flywheel)
15650700	Torque converter cover (for 14" flywheel)
1261968	Torque converter bolt
25529860	Stop lamp/torque converter switch