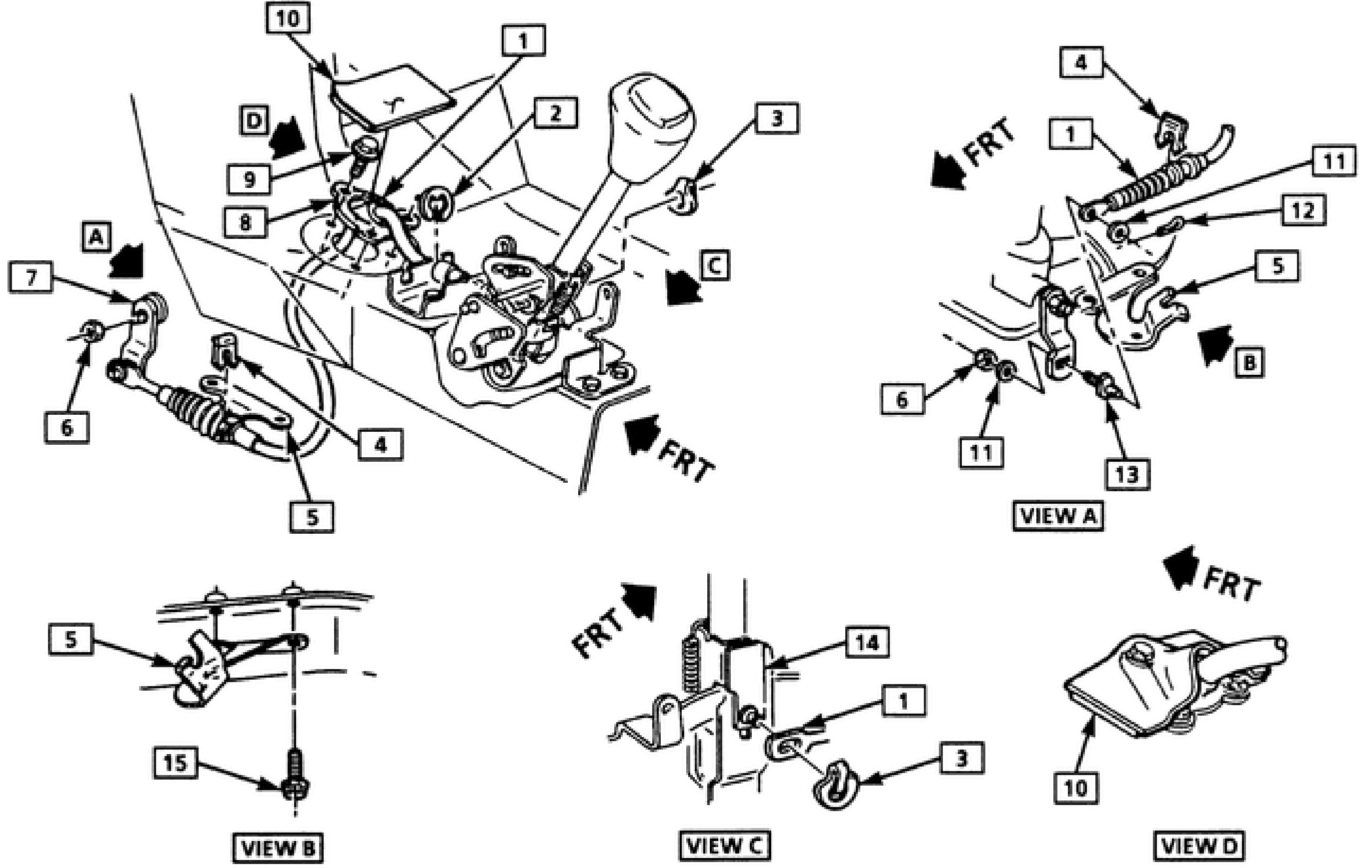
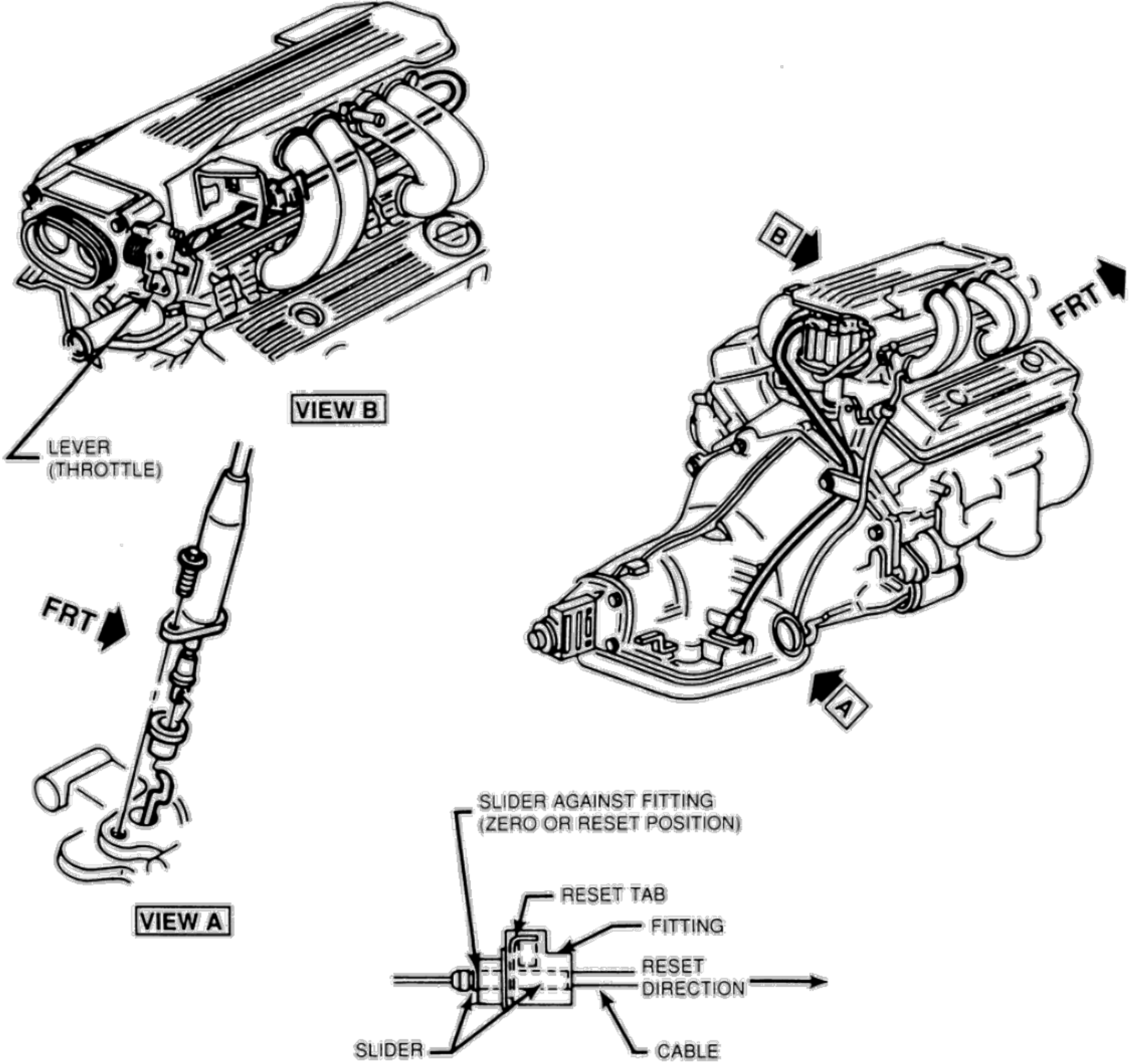


1	TRANSMISSION CONTROL CABLE	6	NUT	11	WASHER
2	RETAINER	7	LEVER	12	COTTER PIN
3	RETAINER	8	GROMMET	13	PIN
4	RETAINER	9	SCREW	14	CONTROL
5	BRACKET	10	INSULATOR	15	BOLT



ADJUSTMENT PROCEDURE

1. AFTER INSTALLATION OF CABLE TO THE ENGINE BRACKET AND THROTTLE IDLER LEVER, CHECK TO ASSURE THAT THE CABLE SLIDER IS IN THE ZERO OR FULLY RESET POSITION (IF NOT, REFER TO THE RESET PROCEDURE)
2. ROTATE THE THROTTLE IDLER LEVER TO THE "FULL TRAVEL STOP" POSITION
3. SLIDER MUST MOVE (RATCHET) TOWARD LEVER WHEN LEVER IS ROTATED TO "FULL TRAVEL STOP POSITION"
4. RELEASE LEVER

RESET PROCEDURE

1. DEPRESS AND HOLD METAL RESET TAB
2. MOVE SLIDER BACK THROUGH FITTING IN DIRECTION AWAY FROM THROTTLE IDLER LEVER UNTIL SLIDER STOPS AGAINST FITTING
3. RELEASE RESET TAB
4. REPEAT STEP 2 & 3 OF ADJUSTMENT PROCEDURE

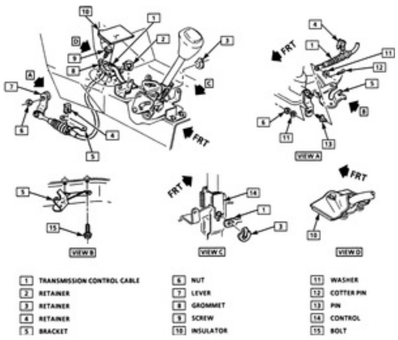
1990 Chevrolet CORVETTE

Submodel: | **Engine Type:** V8 | **Liters:** 5.7
Fuel Delivery: FI | **Fuel:** GAS

Shift Linkage/Control Cable

1. Disconnect the negative battery cable.
2. Place the control lever in the **N** position.
3. Raise and support the vehicle safely.
4. Loosen the cable attachment at the shift lever.

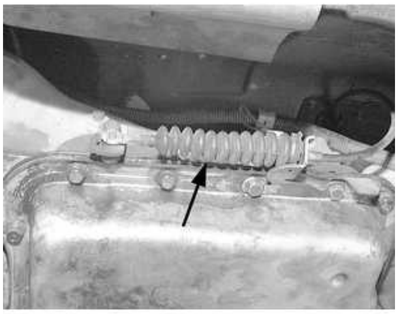
Fig. 1: Typical shift control cable attachment



5. Rotate the shift lever clockwise to **P** detent and then back to **N**.
6. Tighten the cable attachment to 15 ft. lbs. (20 Nm).

   NOTE: The lever must be held out of the P position when tightening the nut.
7. Lower the vehicle.

Fig. 2: The control cable is mounted to the side of the transmission, just above the transmission fluid pan



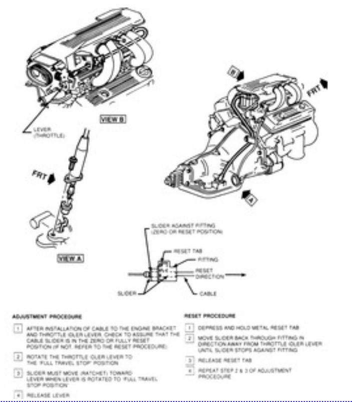
8. Check the cable adjustment by rotating the control lever through the detents.
9. Connect the battery negative cable.

TV Cable

1984–91 VEHICLES

To adjust the Throttle Valve (TV) cable on these vehicles, please refer to the accompanying figure.

Fig. 3: Throttle Valve (TV) cable adjustment procedure — 1984–91 vehicles



1992–96 VEHICLES

Beginning in 1992, the Acceleration Slip Regulation (ASR) system was added to all Corvettes. This required a cable adjuster assembly which has the ability to extend cables slightly, according to commands from the control module. This extension allows the throttle close regardless of accelerator pedal position. The adjuster does not have the ability to apply throttle, it can only release it.

The cable adjuster assembly must be adjusted each time the throttle and/or TV cables are disconnect. On some models, the TV cable is also attached to a servo. The cable may be adjusted BEFORE cable adjuster assembly adjustment.

1. Make sure the TV cable is installed into servo bracket.
2. Pull servo assembly end of cable toward servo without moving the throttle lever.
3. If 1 out of the 5 holes in the servo assembly tab aligns with the cable pin, push pin through hole and connect pin to tab with retainer.
4. If the tab holes does not align with the pin, move the cable away from the servo assembly until the next closest tab hole aligns and connect the pin to the tab with the retainer.

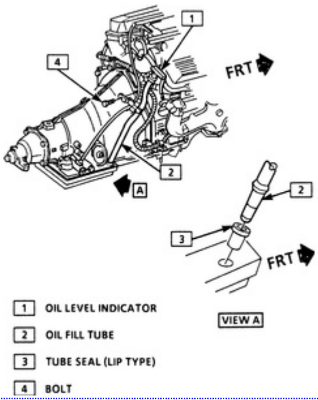
1990 Chevrolet CORVETTE

Submodel: | **Engine Type:** V8 | **Liters:** 5.7
Fuel Delivery: FI | **Fuel:** GAS

The engine must be supported before removing the transmission assembly in order to prevent the vapor blow pipe located across the rear of the engine from contacting the dash panel.

1. Disconnect the negative battery cable and remove the transmission fluid level indicator.
2. Disconnect the TV cable at the throttle lever or the adjuster assembly.
3. Remove the transmission fluid level indicator.

Fig. 1: You must remove the transmission fluid level dipstick



4. Raise and support the vehicle safely.
5. If equipped, remove the upper and lower underbody braces.
6. Remove the complete exhaust system.
7. Support the transmission with a suitable jack.
8. Remove the driveline support beam.
9. Matchmark and remove the driveshaft.
10. Disengage the speedometer electrical connector, then disconnect the shift control cable and the remaining electrical leads from the transmission.
11. Remove the torque converter cover and mark the relationship of the converter to the flywheel, then remove the converter-to-flywheel bolts.

Fig. 2: Unfasten the retainers and remove the torque converter cover . . .

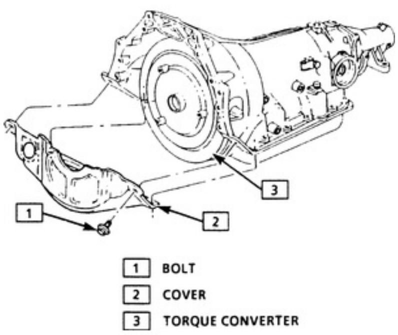
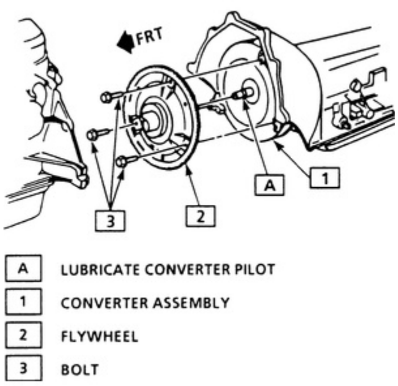


Fig. 3: . . . then remove the converter-to-flywheel bolts



12. Disconnect the oil cooler pipes at the transmission. Plug the openings to prevent system contamination or excessive fluid loss.
13. Disconnect the TV cable at the transmission.
14. Remove the transmission-to-engine mounting bolts and fasten the torque converter to the transmission using a converter restraining tool or a length of wire.
15. Carefully move the transmission rearward, downward and out from under the vehicle. If interference is encountered with cables, cooler lines, etc., remove the component(s) before

finally lowering the transmission.

To install:

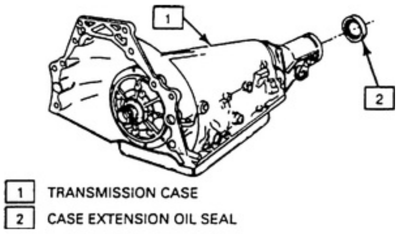
16. Flush the transmission oil cooler lines using J-35944 or an equivalent transmission cooler and line flushing tool.
17. Install a converter restraint tool to hold the torque converter in place.
18. Support the transmission with a suitable jack, then raise the transmission into position and remove the torque converter holding tool.
19. Install and tighten the transmission to engine bolts to 35 ft. lbs. (47 Nm).
20. Connect the TV cable to the transmission.
21. Remove the plugs, then connect the oil cooler pipes to the transmission.
22. Align the marks made during removal and start the torque converter to flywheel bolts by hand. Tighten the bolts to 46 ft. lbs. (62 Nm).
23. Install converter cover and tighten screws to 89 inch lbs. (10 Nm).
24. Engage the electrical connectors to the transmission.
25. Connect the shift control cable.
26. Engage the speedometer electrical connector.
27. Align the marks made earlier and install the driveshaft, then the driveline support beam.
28. Install the exhaust system, if equipped, the underbody braces.
29. Lower the vehicle and install the oil level indicator.
30. Connect the TV cable to the throttle lever or to the adjuster assembly.
31. Connect the negative battery cable.
32. Check and add the proper type and amount of transmission fluid.
33. Because the driveline support beam was removed, check clearance between the air intake duct and the throttle body. If the air duct becomes dislodged from the throttle body, a driveability problem could occur.

1990 Chevrolet CORVETTE

Submodel: | **Engine Type:** V8 | **Liters:** 5.7
Fuel Delivery: FI | **Fuel:** GAS

1. Disconnect the negative battery cable, then raise and safely support the vehicle.
2. For convertibles, remove the upper and lower underbody braces.
3. Remove the complete exhaust system.
4. Support the transmission assembly with a suitable jack.
5. Remove the bolts securing the driveline support beam at the axle and transmission. Remove the driveline support beam from the vehicle, as outlined in later in this section.
6. Matchmark the position of the shaft to the companion flange and disconnect the rear universal joint by removing the trunnion bearing straps. Make sure to tape the bearing cups to avoid dropping and/or losing the bearing rollers.
7. There may be some fluid leakage from the transmission output shaft housing, so place a suitable catch pan underneath, then slide the slip yolk from the transmission and remove the shaft.
8. Carefully pry the old seal out using a suitable seal removal tool, working around the perimeter of the seal, removing it a little at a time, until the seal can be removed.

Fig. 1: Location of the case extension oil seal — 1995 vehicle shown, other similar



To install:

9. Coat the lip of a new seal with automatic transmission fluid.
10. Using a suitable seal installation tool, as shown in the accompanying figure, place a new seal on the tool and install the seal.
11. Install the propeller shaft. Make sure to align the shaft with the matchmarks made during removal, remove the tape over the trunnion bearing caps and connect the exposed caps to the companion flange. Tighten the strap retaining bolts to 12.5 ft. lbs. (17 Nm).
12. The remainder of installation is the reverse of the removal procedure.
13. Refer to the procedure located later in this section for driveline support beam installation and tightening specifications.
14. Check the transmission fluid level add if necessary. Keep in mind that the transmission should be level when checking the fluid level.

1990 Chevrolet CORVETTE

Submodel: | **Engine Type:** V8 | **Liters:** 5.7
Fuel Delivery: FI | **Fuel:** GAS

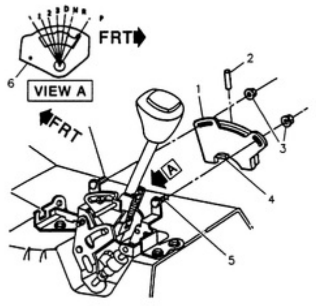
The park/neutral and back-up lamp switch is one unit mounted to the side of the shifter assembly. The park/neutral portion of the switch allows electrical current to travel to the ignition system when the shift selector is in Park or Neutral only. The vehicle will not start when the selector is in any other gear. The back-up portion operates the rear back-up lamps when the selector is in the reverse gear.

1990 Chevrolet CORVETTE

Submodel: | **Engine Type:** V8 | **Liters:** 5.7
Fuel Delivery: FI | **Fuel:** GAS

1. Disconnect the negative battery cable.
2. For 1984–92 vehicles, remove the shifter knob, then remove the console assembly, as outlined in Section 10 of this manual.
3. For 1993–96 vehicles, remove the console trim plate.
4. Unfasten the switch mounting nuts, then remove the switch.
5. Remove the gage pin.

Fig. 1: Exploded view of the park/neutral position switch



To install:

NOTE: After switch adjustment, make sure that the car will only start in Park or Neutral. If the engine starts in any other position, the switch must be readjusted.

6. To install using a new switch, perform the following:
   A. Place the shift control lever in Neutral.
   B. Insert the carrier tang on the switch into the slot on the shifter.
   C. Install the mounting nuts and tighten to 26 inch lbs. (3 Nm).

      NOTE: If the holes do not align with the shift control, make sure the shift control lever is in Neutral. Do not rotate the switch as it is pinned in the Neutral position. If the switch has been rotated and the pin broken, the switch can be adjusted using the old switch procedure.

   D. Move the shift control lever out of the Neutral position, in order to shear the plastic pin.
7. If installing an old switch, perform the following:
   A. Place the shift control lever in Neutral.
   B. Align the carrier tang on the switch with the tang slot on the shift control.
   C. Loosely assembly the mounting nuts to the case.
   D. Rotate the switch to align the service adjustment hole with the carrier pin hole.
   E. Insert a 0.94 in. (2.34mm) gage pin in the service adjustment hold and rotate the switch until the pin drops in to a depth of 0.59 in. (15mm).
   F. Tighten the nuts to 26 inch lbs. (3 Nm).
8. Install the gage pin.
9. Install the console and shifter knob or console trim plate as applicable.
10. Connect the negative battery cable, then make sure that the car only starts in Park or Neutral. If the engine starts in any other position, you must readjust the switch.

1990 Chevrolet CORVETTE

Submodel: | **Engine Type:** V8 | **Liters:** 5.7
Fuel Delivery: FI | **Fuel:** GAS

The automatic transmission allows engine torque and power to be transmitted to the rear wheels within a narrow range of engine operating speeds. It will allow the engine to turn fast enough to produce plenty of power and torque at very low speeds, while keeping it at a sensible rpm at high vehicle speeds (and it does this job without driver assistance). The transmission uses a light fluid as the medium for the transmission of power. This fluid also works in the operation of various hydraulic control circuits and as a lubricant. Because the transmission fluid performs all of these functions, trouble within the unit can easily travel from one part to another. For this reason, and because of the complexity and unusual operating principles of the transmission, a very sound understanding of the basic principles of operation will simplify troubleshooting.

The hydraulic pressure used to operate the servos comes from the main transmission oil pump. This fluid is channeled to the various servos through the shift valves. There is generally a manual shift valve which is operated by the transmission selector lever and an automatic shift valve for each automatic upshift the transmission provides.

NOTE: Many new transmissions are electronically controlled. On these models, electrical solenoids are used to better control the hydraulic fluid. Usually, the solenoids are regulated by an electronic control module.

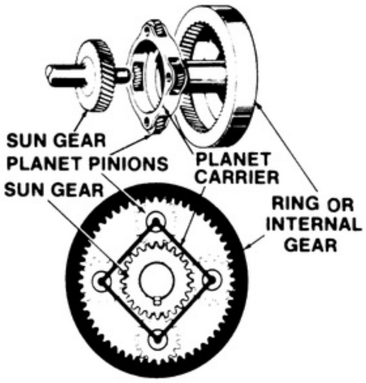
There are two pressures which affect the operation of these valves. One is the governor pressure which is effected by vehicle speed. The other is the modulator pressure which is effected by intake manifold vacuum or throttle position. Governor pressure rises with an increase in vehicle speed, and modulator pressure rises as the throttle is opened wider. By responding to these two pressures, the shift valves cause the upshift points to be delayed with increased throttle opening to make the best use of the engine's power output.

Most transmissions also make use of an auxiliary circuit for downshifting. This circuit may be actuated by the throttle linkage the vacuum line which actuates the modulator, by a cable or by a solenoid. It applies pressure to a special downshift surface on the shift valve or valves.

The transmission modulator also governs the line pressure, used to actuate the servos. In this way, the clutches and bands will be actuated with a force matching the torque output of the engine.

The ability of the torque converter to multiply engine torque is limited. Also, the unit tends to be more efficient when the turbine is rotating at relatively high speeds. Therefore, a planetary gearbox is used to carry the power output of the turbine to the driveshaft.

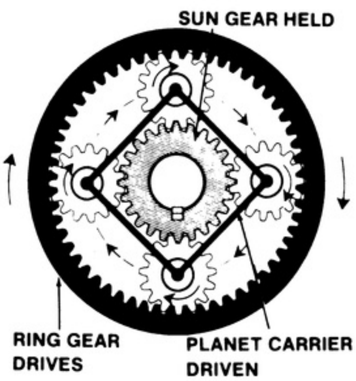
Fig. 1:Planetary gears work in a similar fashion to manual transmission gears, but are composed of three parts



Planetary gears function very similarly to conventional transmission gears. However, their construction is different in that three elements make up one gear system, and, in that all three elements are different from one another. The three elements are: an outer gear that is shaped like a hoop, with teeth cut into the inner surface; a sun gear, mounted on a shaft and located at the very center of the outer gear; and a set of three planet gears, held by pins in a ring-like planet carrier, meshing with both the sun gear and the outer gear. Either the outer gear or the sun gear may be held stationary, providing more than one possible torque multiplication factor for each set of gears. Also, if all three gears are forced to rotate at the same speed, the gearset forms, in effect, a solid shaft.

Fig. 2:Planetary gears in the maximum reduction (low) range. The ring gear is held and a lower gear ratio is obtained

Fig. 3:Planetary gears in the minimum reduction (drive) range. The ring gear is allowed to revolve, providing a higher gear ratio



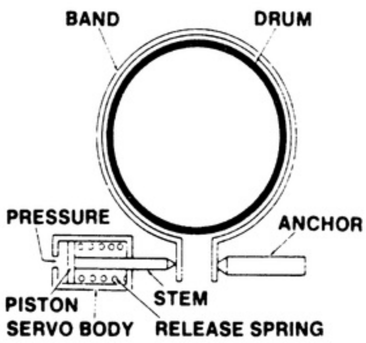
Most automatics use the planetary gears to provide various reductions ratios. Bands and clutches are used to hold various portions of the gearsets to the transmission case or to the shaft on which they are mounted. Shifting is accomplished, then, by changing the portion of each planetary gearset which is held to the transmission case or to the shaft.

1990 Chevrolet CORVETTE

Submodel: | **Engine Type:** V8 | **Liters:** 5.7
Fuel Delivery: FI | **Fuel:** GAS

The servos are hydraulic pistons and cylinders. They resemble the hydraulic actuators used on many other machines, such as bulldozers. Hydraulic fluid enters the cylinder, under pressure, and forces the piston to move to engage the band or clutches.

Fig. 1:Servos, operated by pressure, are used to apply or release the bands, to either hold the ring gear or allow it to rotate



The accumulators are used to cushion the engagement of the servos. The transmission fluid must pass through the accumulator on the way to the servo. The accumulator housing contains a thin piston which is sprung away from the discharge passage of the accumulator. When fluid passes through the accumulator on the way to the servo, it must move the piston against spring pressure, and this action smoothes out the action of the servo.

1990 Chevrolet CORVETTE

Submodel: | **Engine Type:** V8 | **Liters:** 5.7
Fuel Delivery: FI | **Fuel:** GAS

The torque converter replaces the conventional clutch. It has three functions:

1. It allows the engine to idle with the vehicle at a standstill, even with the transmission in gear.
2. It allows the transmission to shift from range-to-range smoothly, without requiring that the driver close the throttle during the shift.
3. It multiplies engine torque to an increasing extent as vehicle speed drops and throttle opening is increased. This has the effect of making the transmission more responsive and reduces the amount of shifting required.

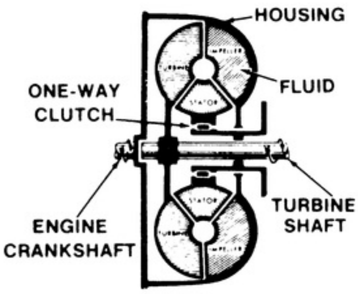
The torque converter is a metal case which is shaped like a sphere that has been flattened on opposite sides. It is bolted to the rear end of the engine's crankshaft. Generally, the entire metal case rotates at engine speed and serves as the engine's flywheel.

The case contains three sets of blades. One set is attached directly to the case. This set forms the torus or pump. Another set is directly connected to the output shaft, and forms the turbine. The third set is mounted on a hub which, in turn, is mounted on a stationary shaft through a one-way clutch. This third set is known as the stator.

A pump, which is driven by the converter hub at engine speed, keeps the torque converter full of transmission fluid at all times. Fluid flows continuously through the unit to provide cooling.

Under low speed acceleration, the torque converter functions as follows:

Fig. 1:The torque converter housing is rotated by the engine's crankshaft, and turns the impeller — The impeller then spins the turbine, which gives motion to the turbine shaft, driving the gears



The torus is turning faster than the turbine. It picks up fluid at the center of the converter and, through centrifugal force, slings it outward. Since the outer edge of the converter moves faster than the portions at the center, the fluid picks up speed.

The fluid then enters the outer edge of the turbine blades. It then travels back toward the center of the converter case along the turbine blades. In impinging upon the turbine blades, the fluid loses the energy picked up in the torus.

If the fluid was now returned directly into the torus, both halves of the converter would have to turn at approximately the same speed at all times, and torque input and output would both be the same.

In flowing through the torus and turbine, the fluid picks up two types of flow, or flow in two separate directions. It flows through the turbine blades, and it spins with the engine. The stator, whose blades are stationary when the vehicle is being accelerated at low speeds, converts one type of flow into another. Instead of allowing the fluid to flow straight back into the torus, the stator's curved blades turn the fluid almost 90° toward the direction of rotation of the engine. Thus the fluid does not flow as fast toward the torus, but is already spinning when the torus picks it up. This has the effect of allowing the torus to turn much faster than the turbine. This difference in speed may be compared to the difference in speed between the smaller and larger gears in any gear train. The result is that engine power output is higher, and engine torque is multiplied.

As the speed of the turbine increases, the fluid spins faster and faster in the direction of engine rotation. As a result, the ability of the stator to redirect the fluid flow is reduced. Under cruising conditions, the stator is eventually forced to rotate on its one-way clutch in the direction of engine rotation. Under these conditions, the torque converter begins to behave almost like a solid shaft, with the torus and turbine speeds being almost equal.