



151 INDUSTRIAL DRIVE  
ASHLAND, MISSISSIPPI 38603  
<http://www.tciauto.com>

TELEPHONE: 662-224-8972  
FAX LINE: 662-224-8255  
E-MAIL: [tech@tciauto.com](mailto:tech@tciauto.com)

# TCI<sup>®</sup> 220500 TRANS-SCAT<sup>®</sup>

## Installation Instructions for A500 (42RH/42RE) - 1989 and Up A518 (46RH/47RH) - 1989 and Up

This kit will allow you to modify your overdrive Torqueflite for your particular driving requirements.

**Street Plus:** This type of modification produces a very positive, sharp shift.

**Heavy Duty:** This type of modification is used for towing, campers, motor homes and other vehicles that put a lot of stress on the transmission. The shifts are firm but not harsh.

**Note:** This kit is not intended for installation in a transmission in poor general condition. It will not correct a malfunctioning or slipping transmission.

### **This TCI<sup>®</sup> 225000 Kit Contains:**

#### Quantity Description

- One (1) Filter
- One (1) A500 Pan Gasket
- One (1) A518 Pan Gasket
- One (1) Cupped Orifice
- One (1) 1-2 Governor Plug
- One (1) 1/8" Drill Bit
- One (1) 3/16" Drill Bit
- One (1) 7/64" Drill Bit
- One (1) Drill Guide
- One (1) Accumulator Blocker Rod

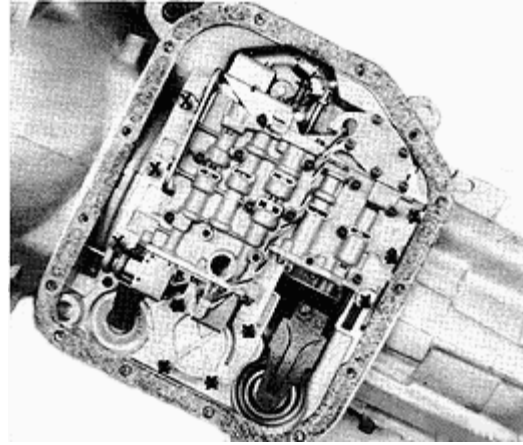
Read all instructions first to familiarize yourself with the parts & procedures. Work slowly and do not force any parts. Transmission components and valves are precision fit parts. Burrs and dirt are the top enemies of an automatic transmission. Cleanliness is very important, so a clean work area is necessary.

For additional clarification on disassembly and reassembly procedures it may be necessary to consult a comprehensive service manual for your transmission.

Automatic transmissions operate at temperatures between 150°F and 250°F. It is suggested that the vehicle be allowed to cool for a few hours to avoid burns from hot oil and parts. The vehicle should be off the ground for ease of installation. Jack stands, wheel ramps or a hoist will work fine. Make sure vehicle is firmly supported! Also, have a small box or pan handy to put bolts in so they won't be lost, and a drain pan to catch oil.

**Step 1** Drain oil pan. If you do not have a drain plug you should consider installing a TCI® 805800 drain plug kit at this time. To drain oil remove each pan bolt, working toward the front of the transmission. Remove the last two bolts slowly and the pan will tilt down to allow the last of the fluid to drain. If the pan sticks to the old gasket, pry it down slightly with a screwdriver before removing the last two bolts to break the seal. After the last bolt is removed the pan can be lowered and set aside.

**Step 2** The valve body will now be exposed. (See **Figure 1**) It is held in place by ten (10) ¼" x 20 bolts. Before valve body can be removed, you must disconnect shift & throttle linkage. (See **Figure 2**) Throttle linkage is located on the driver side of the case. The lever is attached to the throttle shaft and held in place with a pinch bolt. Use a 7/16" wrench or socket and loosen the bolt but do not remove it. Use a screwdriver to pry the lever up and off the shaft. Also, unplug the wiring harness connector that is pointing straight up.

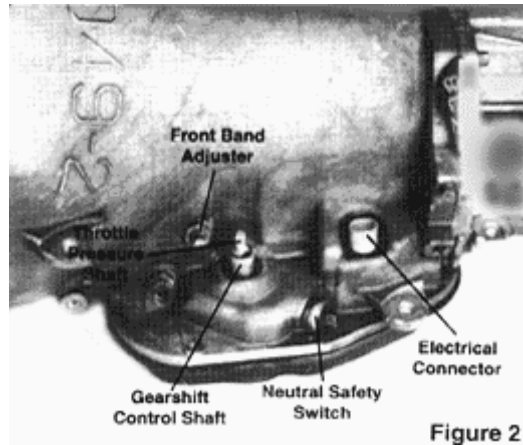


**Figure 1**

**Step 3** Now remove the valve body by removing the ten (10) attaching bolts with a 7/16" wrench or socket. There are springs between the valve body and the case so remove the last bolt slowly. This will also reduce the amount of splatter as the valve body is removed. Pull valve body down and forward to disengage park rod from back of case. It may be necessary to rotate drive shaft slightly to remove rod. If the 1-2 accumulator spring didn't come out with the valve body, it will need to be removed. (See **Figure 3**)

#### **Step 4 Band Adjustment for A500 (42RH)**

**Front Band:** Loosen band adjusting screw locknut and back off 4-5 turns. Tighten band to 72-in. lbs. using a 5/16" socket and 3 inch extension. Back off adjusting screw 2-1/2 turns. Hold adjuster screw in position and tighten locknut to 30-ft. lbs.



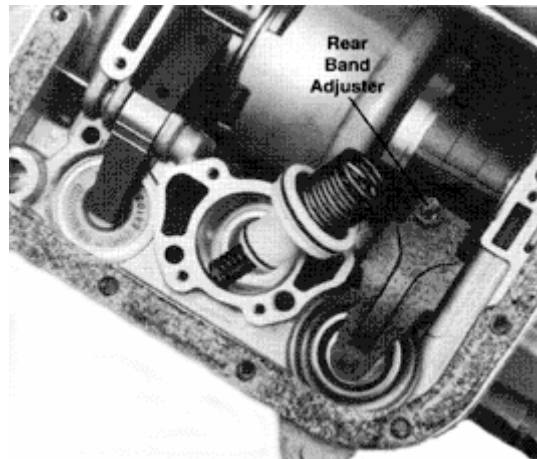
**Figure 2**

**Rear Band:** Loosen band adjusting screw locknut 5-6 turns. Tighten adjusting screw to 72-in. lbs. Back off adjusting screw four (4) turns. Hold adjusting screw in place and tighten locknut to 25-ft. lbs.

#### **Band Adjustment for 42RE**

**Front Band:** Loosen band adjusting screw locknut and back off 4-5 turns. Tighten band to 72 in. lbs. using a 5/16" socket and 3 in extension. Back off adjusting screw 3-5/8 turns. Hold adjuster screw in position and tighten locknut to 30 ft. lbs.

**Rear Band:** Same as A500 (42 RH)



**Figure 3**

## Band Adjustment for A518 (46RH/47RH)

**Front Band:** Same as A500 (42RH)

**Rear Band:** Loosen band adjusting screw locknut 5-6 turns. Tighten adjusting screw to 72-in. lbs. Back off adjusting screw two (2) turns. Hold adjusting screw in position and tighten locknut to 25-ft. lbs.

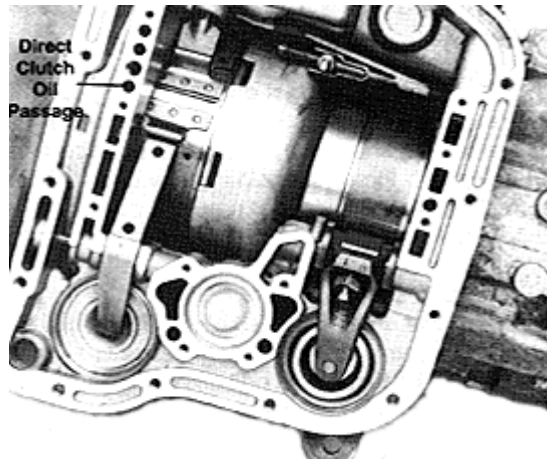


Figure 4

**Step 5** The 1-2 accumulator piston is located in the case between the front and rear servos. (See Figure 4) Remove the piston by pulling straight down. There will be a small amount of oil behind the piston, so be careful you don't get splattered. If there is a spring behind the accumulator piston, remove and discard it. DO NOT reinstall either spring into the accumulator assembly.

**Street Plus:** Install special accumulator blocker rod into the back of the piston before installation (See Figure 5) Install piston into bore being careful not to damage seal rings. Push up on piston until it stops.

**Heavy Duty:** Install piston as removed. Be careful not to damage the seal rings.

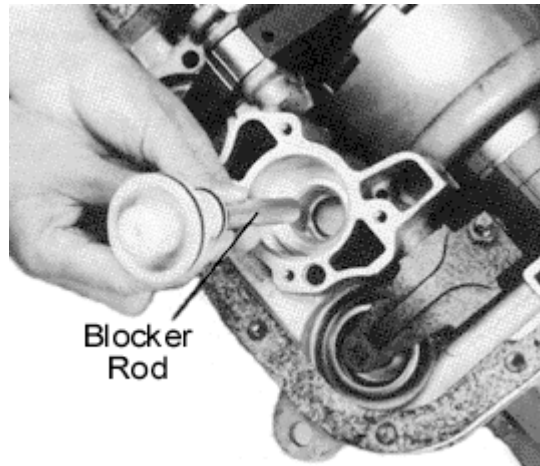


Figure 5

**Step 6** A51 8 (46RH/47RH) only. A500 (42RH/42RE) proceed to step 7. Install the furnished cupped orifice plug into the direct clutch oil passage in front of case. (See Figure 4)

**Step 7** Your workbench should be clean as stressed in the beginning of the instructions. Place the valve body on the bench with the filter side up. Remove the three filter screws and remove and discard the filter. Set the screws aside in a small tray, so they won't be lost. As you disassemble the valve body, when removing a valve and a spring, keep them together. Do not polish or sand aluminum valves or plugs. This will remove the special coating and cause the valves to stick and bind. Clean valve body components with a suitable cleaning solution. Blow dry with compressed air, never use a rag or shop towel. On 42RE models, wipe governor pressure solenoid valve and sensor with dry lint-free towels only. Do not attempt to service solenoid valve filter or adjust valve screw. Never use gasoline, kerosene, or any caustic solution to clean components. Remove park rod E-Clip, then separate rod from manual lever.

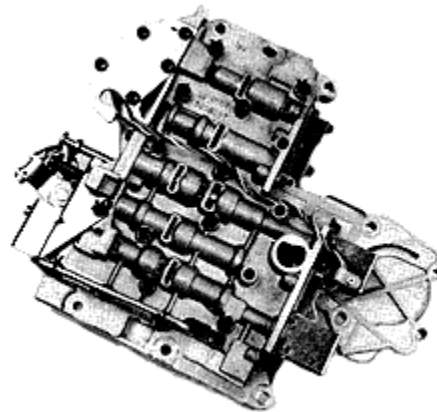
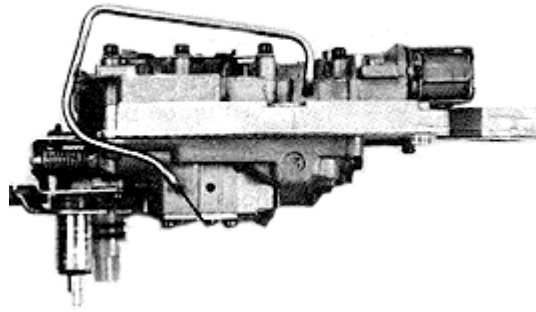


Figure 6

**Step 8** Orient the valve body on your bench as shown in **Figure 6**. The three (3) main valve body castings will be referred to in the following manner: the casting to which the two (2) side by side solenoids are bolted is the lower housing. The casting in the middle is the transfer plate. The casting containing the manual lever is the upper housing. If your valve body is equipped with a boost valve tube it must be removed. (**See Figure 7**) **CAUTION:** Do not use tools to loosen or pry the tube out of the valve body. Loosen and remove the tube by hand only. Start by disengaging the tube from the upper housing first. Now rock the tube back and forth to work it out of the lower housing. Remove the thirteen- (13) bolts holding the housings together. Also remove the bolt holding the adjusting screw bracket to the lower housing. (**See Figure 6**) If you are working with a 42RE you must now remove the governor body assembly. First, disconnect the wires from the pressure sensor and solenoid and remove the two - (2) screws. Remove the body and the gasket from the transfer plate. The solenoid valve O-Rings are serviceable but not supplied. The filter on the end of the solenoid is not serviceable. Also, do not attempt to turn the calibration screw on the end of the solenoid for any reason. Rotate the lower housing away from the adjusting screw bracket and lift it off of the transfer plate. Also remove the lower housing separator plate. Remove the transfer plate being careful not to loose the checkballs contained in the upper housing.



**Figure 7**

**Step 9** Turn the transfer plate over and remove the support plate and screws holding the separator plate and screws holding the separator plate down. Remove the separator plates and drill the orifices according to **Figure 8A** on page 5 and **Figure 8B** on page 6. Discard the checkballs located in the transfer plate under separator plate. Wash the separator plate to remove any chips. Be sure that the separator plate filter is clean and in place. Clean the transfer plate and lay the separator plate back on top and align the holes. Install the support plate and retaining screws and tighten screws finger tight. Place assembly aside for reassembly later.

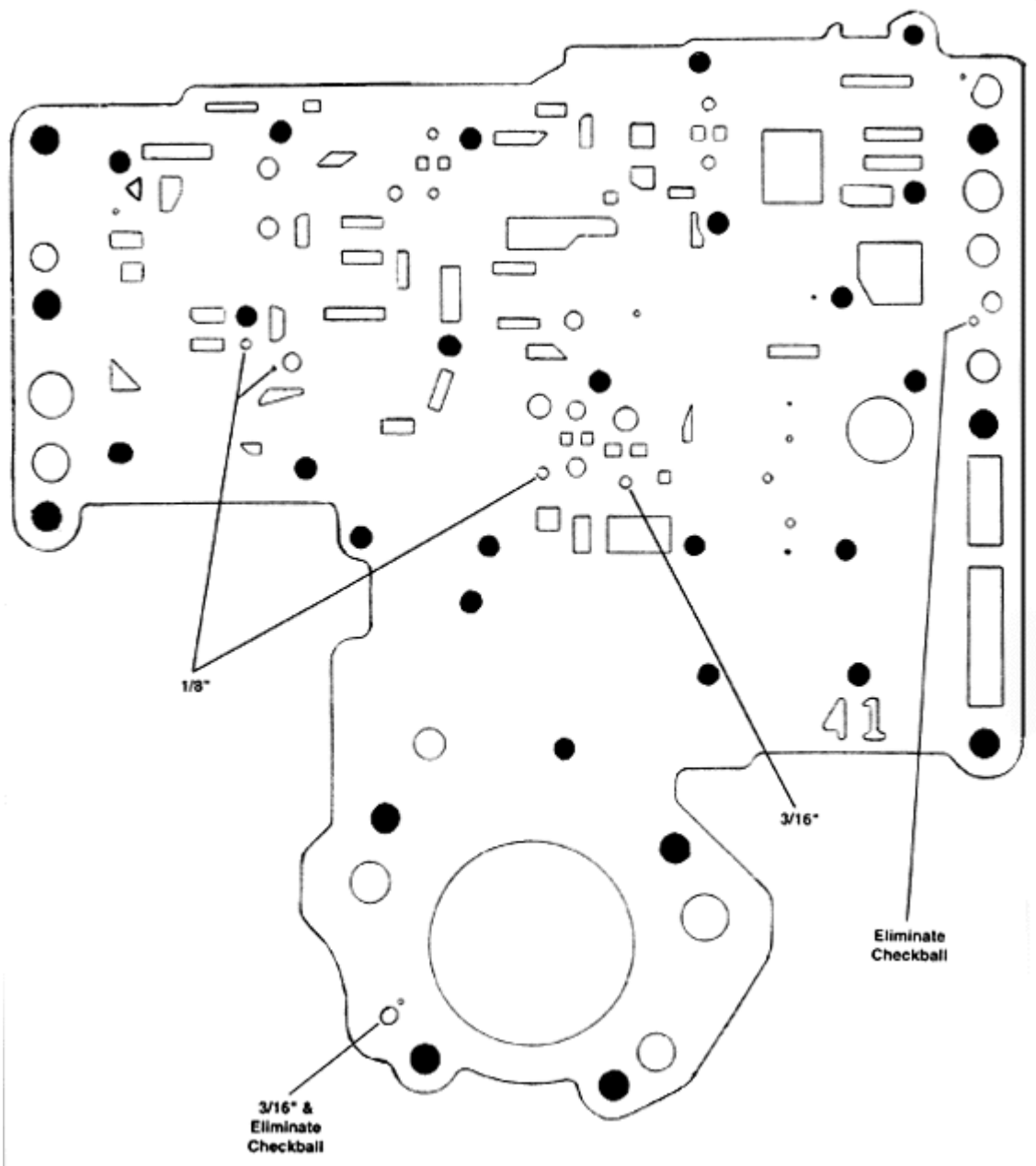
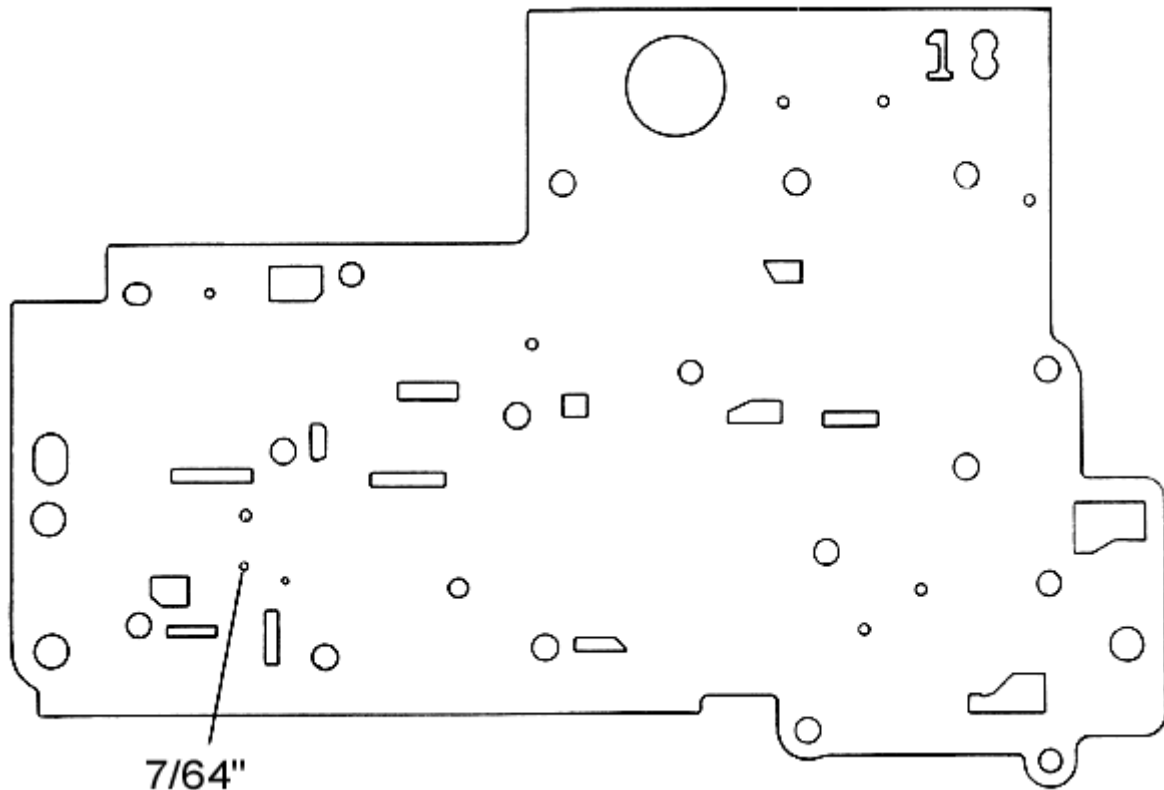
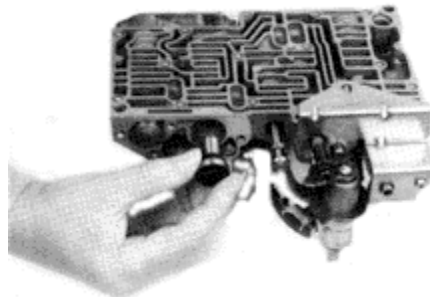


Figure 8A



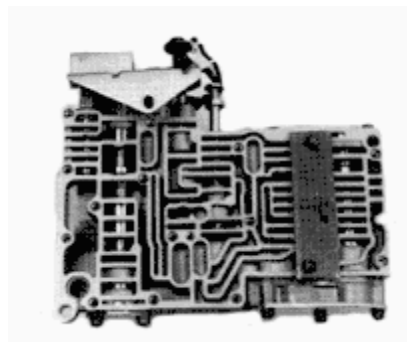
**Figure 8B**

**Step 10** Disassemble the upper housing as shown in **Figure 9** by removing the screws holding the steel end plates to the casting. **CAUTION:** All valves in the valve body ideally should fall out by turning the casting on its side. Some valves may require gentle tapping or careful removal with a small screwdriver. Do not use excessive force! Damaged castings or burred, nicked valves will create problems later and cause erratic shifts.



**Figure 9**

**Step 11** Install the special drill guide supplied with the kit in place on the casting as shown. (**See Figure 10**) Use two (2) short screws to hold it in place in the end holes with the arrow pointing towards you. The center hole is a drill guide to remove a section of the casting wall below it. Use the 3/16" drill bit supplied in the kit and wrap several layers of tape around the bit to act as a stop. You want 1/2" from the edge of tape to the end of the drill. Use a high-speed drill and slowly drill down into the casting wall until the tape just touches the face of the drill guide. Drilling further will cause damage. The drill should penetrate almost to the floor of the casting. Remove the drill guide and clean the casting to remove all the chips.



**Figure 10**

**Step 12** Reinstall the 2-3 shift valve and spring, 1-2 shift valve and spring, 1-2 shift control valve and spring and the limit valve housing, if applicable. Reinstall the 2-3 governor plug. The valve should

install almost flush with the surface of the casting and move freely with a spring loaded action. A special 1-2 governor plug has been supplied with the TRANS-SCAT®. Installing this plug will allow you to down shift into low at any speed. If you desire this capability, install the TCI® valve in place of the stock valve. The valve should install almost flush with the surface of the casting and move freely with a spring loaded action. Finally, install the shuttle valve spring and shuttle valve plug. Hold the governor end plate in place with your thumb and install five- (5) screws finger tight. If the plate does not fit flush with the casting, determine the problem and repair it now. Torque all of the end plate screws (8) to 35-in. lbs.

**Step 13** Lay the upper housing down and install the checkballs as follows: **(See Figure 11)**

**All Models:** One 11/32" ball in location one.

**Street Plus:** Five 1/4" balls in locations two through six.

**Heavy Duty:** Six 1/4" balls in locations two through seven.

Align the transfer plate assembly and the lower housing assembly and plate with the upper housing. Install the thirteen- (13) attaching screws finger tight. On models with a boost valve tube, the brace must now be reinstalled. Torque valve body screws to 35-in. lbs., starting from the center and working out to the sides.

**Step 14** If you do not have a boost valve tube proceed to Step 16. Lubricate tube ends with transmission fluid. Position tube behind tube brace. **(See Figure 12)** Start the tube in the lower housing port first, and then swing it downward and work the opposite end of the tube into the upper housing port. Seat both ends of the tube once they are in position. The tube brace may be bent slightly to ease the installation and then resecured.

**Step 15** Position adjusting screw bracket and secure with screw. Tighten to 35-in. lbs.

**Step 16** 42RE only — All others skip to Step 18. Install governor body, gasket and retainer plate onto transfer plate. **(See Figure 13)** Align the screw holes in the governor body, gasket, and transfer plate and install two (2)-retaining screws. Torque the screws to 35 in. lbs. Connect the wiring harness to the governor pressure solenoid, using care not to bend the terminals. Connect the wiring harness to the pressure sensor.

Checkball Locations

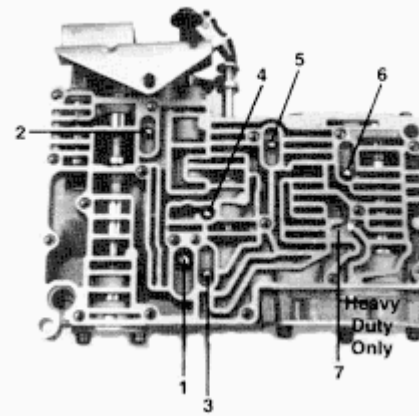


Figure 11

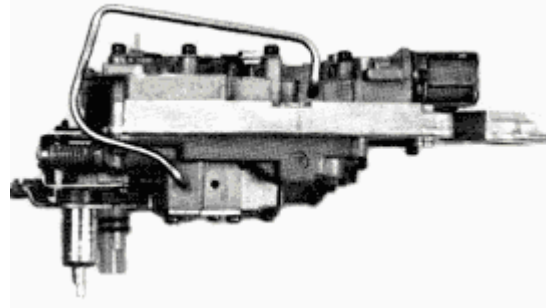


Figure 12

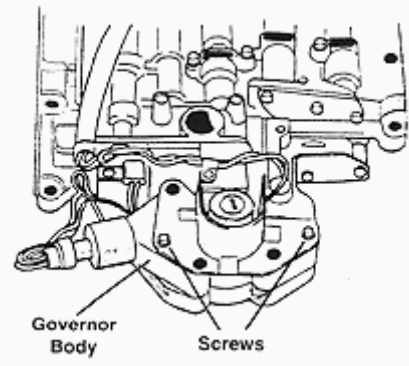


Figure 13

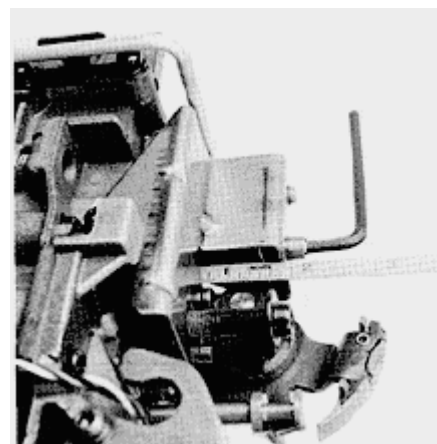


Figure 14

**Step 17** Line pressure adjustment. Measure the distance from the valve body to the inner edge of the adjusting screw with an accurate steel scale. **(See Figure 14)** To adjust distance, turn the adjusting screw in or out to obtain the following distances.

**Street Plus:** 1-3/16"

**Heavy Duty:** 1-1/4"

**Step 18** Throttle pressure adjustment **(See Figure 14)** Place the valve body on the bench so the throttle pressure assembly points up. Insert the 1/8" drill shank between the kickdown valve and the throttle pressure cam and adjust the throttle stop screw until it just touches the cam.

**Step 19** Using the three (3) long screws, attach the new filter supplied with the TRANS-SCAT<sup>®</sup>. Tighten screws to 35-in. lbs. Install the park rod back on the valve body and secure with the E-Clip. When reinstalling the valve body on the transmission, it may be easier to back the neutral safety switch out of the case. Verify that the valve body wiring harness is secure. Align and insert the parking rod into the case. Rotate the drive shaft until the parking rod engages the pawl. Align and seat the valve body on the case. Be sure that the manual lever and case connector are fully seated in the case. Also, be sure that the wiring harness is not pinched or kinked. Install and start the ten (10) valve body bolts, torque these bolts to 105-in. lbs. If you backed out the neutral safety switch, tighten it to 25-ft. lbs. Clean the oil pan and place a clean magnet on the small tab in the corner of the oil pan. Install a new pan gasket supplied with the kit and tighten the bolts to 13-ft. lbs. Check your drain plug if you have one and make sure it is tight.

**Step 20** Lower the vehicle but keep the rear wheels off the ground. Pour four (4) quarts of TCI<sup>®</sup> RTF, STF or Mopar ATF Plus Type 7176 into the transmission, start the engine and allow it to idle in neutral. Check the fluid level and fill to the "add" mark. Shift the transmission through all four (4) gears several times. Recheck the fluid level and make sure it is at least at the "add" mark. Drive the vehicle for a few miles to thoroughly warm the fluid. With the engine running and the shifter in neutral, make sure that the level is now between the "add" and the "full" marks. **DO NOT OVERFILL!** This will cause foaming and overheating.