Return to Instruction Sheet index

TCI® 400000 Trans-Scat®

Turbo Hydramatic 400 - 1965-Up

This kit will allow you to re-program your transmission valve body. This kit will give you firm positive shifts for street performance. All automatic shift features are retained when the transmission is shifted into the drive position.

Please read all the instructions before you begin. You may want to refer to a "Motor Service Manual" or any good "How To" Manual if you are not completely familiar with reworking a transmission. Work slowly and do not force any parts. Transmissions components are precision fit parts and care must be taken to install properly. Burrs and dirt are the number one enemies of an automatic transmission. Cleanliness is very important, so a clean work area is a must. Use a large piece of cardboard to cover work bench tops if they can not be cleaned adequately.

NOTE The TCI® Trans-Scat® kit ***will not*** *work* in a transmission in poor condition. This is not a rebuild kit. *DO NOT* install in a transmission that is slipping or not operating correctly.

This TCI® 400000 Kit Contains:

QTY. Description
One (1) Valve Body Gasket VB (Valve Body Side)
One (1) Valve Body Gasket C (Transmission Case Side)
One (1) Separator Plate
One (1) Pan Gasket
One (1) Detent Solenoid Gasket (Aluminum)
One (1) Pressure Regulator Spring
One (1) Pressure Regulator Spring Shim
Two (2) Oil Pick-Up O-Rings
One (1) Booster Valve Snap Ring
One (1) .190" Expansion Plug

Tools Required for Installation:
Speed Handle or Ratchet - 3/8" Drive
1/2" Socket - 3/8" Drive
7/16" Socket - 3/8" Drive
Small Blade Screwdriver
Torque Wrench
Snap Ring Pliers (Needle Tip)
Small Hammer
Vise

DISASSEMBLY

Automatic transmissions operate at temperatures between 150° F and 250° F. It is suggested that the vehicle be allow to cool for a few hours before disassembly to avoid burns from hot oil and parts. The vehicle should be off the ground 1-2 feet so you will have plenty of room to work. ***MAKE SURE THE VEHICLE IS FIRMLY SUPPORTED!*** Jack stands (in good condition), wheel ramps or a hoist will work fine. Make sure the jack stands will support the weight of the vehicle. You will need a box or pan to put small parts into, so they will not be lost.

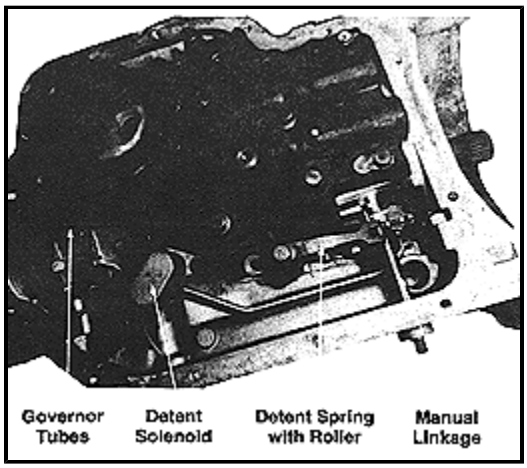
You will need a drain pan to catch the transmission fluid when the transmission pan is removed.

STEP 1: Turbo 400 transmissions do not have drain plugs. You will need to remove the back transmission pan bolts first and work toward the front until you have two (2) bolts left in place. If the transmission pan has not dropped down, insert a screwdriver between the transmission pan and transmission case. This should loosen the pan enough to allow the transmission fluid to drain. After the fluid has drained, slowly remove the front two (2) bolts and carefully remove the pan. Not all of the fluid will be out of the transmission but you should be able to remove the pan without too much of a problem. Put your transmission pan bolts into the pan and set aside. (You may want to consider installing a TCI® 805800 Universal Drain Plug Kit now that you have removed your transmission pan.)

STEP 2: After you have removed your transmission pan you will need to remove the oil filter. Two (2) types are common:

1) **'65- '67**—This filter is a long box-like unit, which runs along the driver's side of the case. This filter can be removed by grasping both ends of the filter and pull straight down. Watch out for oil splatter. Remove the O-ring from the hole in the transmission case, if it did not come out with the oil pick-up tube.

2) **'68 and Later** —This filter is a large flat ripple-surface filter in the center of the transmission case. This filter is held in place with a bolt. Use a 1/2" wrench to remove this special shouldered bolt (You must use this bolt when reinstalling the transmission filter). After you have removed the bolt pull the filter straight down. Watch out for oil splatter. If the pick-up tube does not come out with the filter, pull the pickup tube out and remove the 0-ring from the hole in the case.



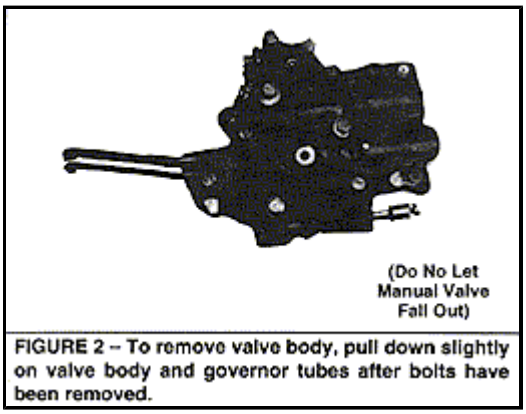


FIGURE 2 – To remove valve body, pull down slightly on valve body and governor tubes after bolts have been removed.

Figure 1

STEP 3: Observe the location of the manual linkage (shifter) and detent spring with roller. See how the linkage engages the manual valve in the valve body. Note the location of the governor tubes and their routing, observe the detent solenoid (oval can) and wire connector, white smog switch wire ('71 and Later Only) and the routing of the wire **(See Figure 1)**. Now remove all the valve body bolts except one (1). Three (3) are 1/4"x20 and the rest are 5/16"x18. If you have a '71 or Later model Turbo 400 transmission you will need to disconnect the white smog switch wire from the valve body. Let it hang free. Hold the valve body in place and remove the last bolt from the valve body. The valve body may spring down slightly. To remove the valve body pull down on the valve body and governor tubes at the same time. *DO NOT* let the manual valve fall out.. .this can cause damage **(See Figure 2 and Figure 3)**. Place the valve body in the transmission pan or in a clean box until you are ready to modify the valve body. **NOTE**: The front servo may fall out on some '71 and Later transmissions when you remove the valve body. *DO NOT PANIC.* The servo can easily be replaced. Reassemble in this order: Spring, Retainer, Shaft with U-Clip, Piston with flat face out. Use grease to hold the servo in place.

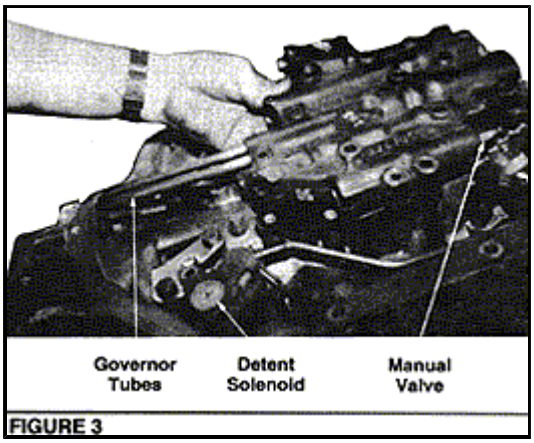
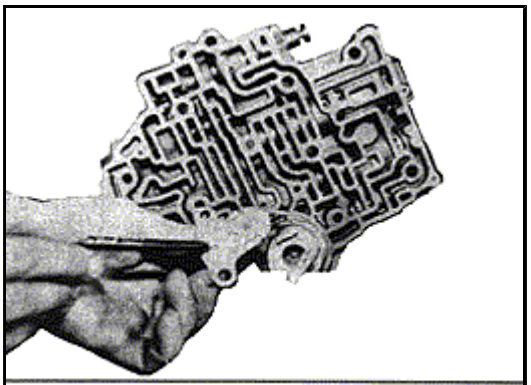


FIGURE 3


FIGURE 4 – Check detent solenoid by grounding the solenoid – you should hear it click.

STEP 4: Remove the two (2) bolts that hold the detent solenoid in place. Next, remove the detent solenoid - this will have to hang by its wire (You may want to check the detent solenoid by grounding the solenoid while 12 volts are applied to the wire) **(See Figure 4)**. Remove the separator plate and gasket by pulling separator plate straight down. There are six (6) *1/4"* steel check balls that are held in place with the separator plate (1987-Up models will have seven (7) check balls). Be careful not to loose any of these check balls. They must be reinstalled into place. Put these check balls in your parts box. Scrape all gasket material from the transmission case. Keep the gasket material out of the transmission. These flakes can cause the transmission to work improperly. Remember to keep everything clean.

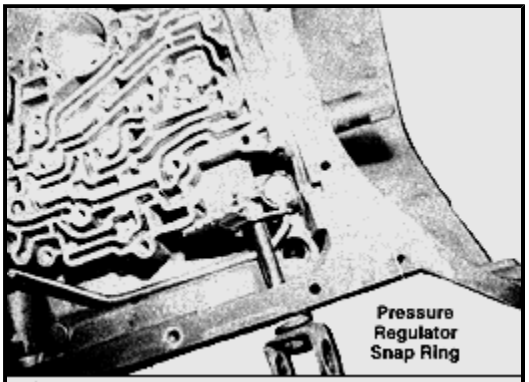


FIGURE 5

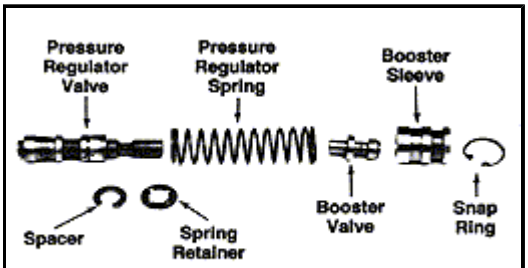


FIGURE 6 – Pressure Regulator Assembly

STEP 5: Locate the pressure regulator snap ring in the transmission case near the selector lever linkage **(See Figure 5)**. Push up on the aluminum sleeve and remove the snap ring. The unit is under spring tension. After you have removed the snap ring - be careful to not let the booster sleeve assembly fly apart. If the assembly does not easily drop out you may need to tap the face of the sleeve. Observe the order in which the booster sleeve assembly comes out of the transmission: Snap Ring, Booster Sleeve, Booster Valve, Pressure Regulator Spring, Spring Retainer, Shim (may be more than one or no shim at all, it depends on the model of the transmission), and Pressure Regulator Valve **(See Figure 6)**. Replace the pressure regulator spring with the pressure spring that is supplied with your TCI® Trans-Scat II Kit. You will need to use the shim that is provided with your kit. If your transmission came with a shim - use the one (1) that came with your kit. If your transmission had one or more shims, then use only one from your transmission and the one from your TCI® Trans Scat Super II Kit. *DO NOT USE MORE THAN TWO (2) SHIMS!* To install the Pressure Regulator Assembly, place two (2) shims on the pressure regulator valve and slip the retainer in place with the tangs facing the pressure regulator spring. Slip the spring over the small end of the pressure regulator valve. The spring will contact the retainer. Push the entire Pressure Regulator Assembly into the transmission case. Push the booster sleeve in and install the new snap ring. The snap ring must set into the retaining grooves of the valve body.

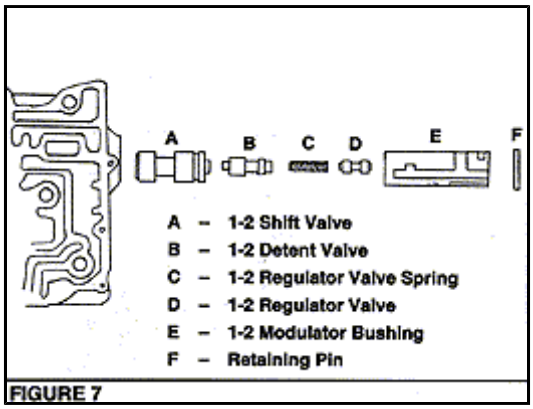
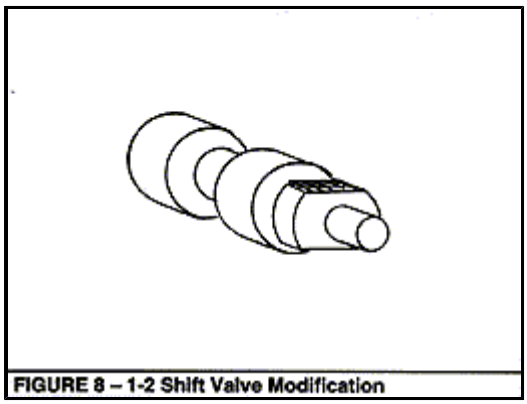
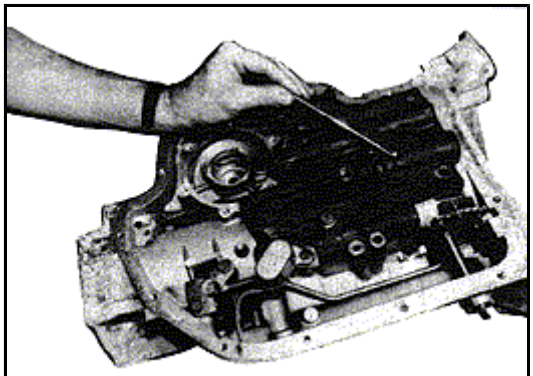


FIGURE 7


FIGURE 8 – 1-2 Shift Valve Modification

STEP 6: Now it's time to modify the transmission valve body. **(See Figure 7)** With the channel side of the valve body up, remove the retaining pin holding the 1-2 shift modulator bushing in place. Remove the sleeve carefully. Be careful not to burr any parts during the removal of the bushing assembly. The bushing should ease out using a small screwdriver. Also remove the 1-2 shift valve at the bottom of the bore. After you have removed the 1-2 shift valve carefully grind the two (2) flats on the large diameter land as shown in **Figure 8**. Be careful not to damage the other lands and remove all burrs. Install the 1-2 shift valve into the valve body. Install the 1-2 shift valve assembly as removed. Replace the retaining pin **(See Figure 7).**

STEP 7: Turn the valve body over and install the special expansion plug in the hole as shown **(See Figure 9).** Tap it down until it is flush with the surface of the valve body. *DO NOT USE EXCESSIVE FORCE -- THIS MAY CAUSE DAMAGE TO THE VALVE.*


FIGURE 9 – Brass Expansion Plug

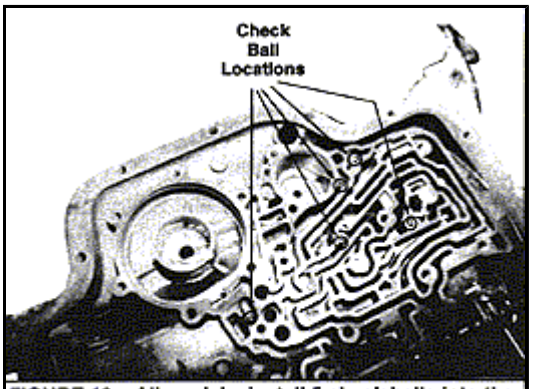


FIGURE 10 – All models, install 5 check balls into the transmission case section of the valve body. It is very important that the check balls are installed in the CORRECT position.

REASSEMBLY

STEP 8: Place the valve body gasket (C-Case) onto the separator plate. Use a small amount of grease to hold gasket into place. Reinstall check balls into check ball location in case. Only five (5) will be used in valve body **(See Figure 10)**. Use grease to hold check balls into case. With the check bails in position, install the separator plate and gasket against case. Use a pan bolt in the center of the plate to hold in position for now.

STEP 9: Install detent solenoid in position using the new aluminum gasket supplied with kit, only if detent solenoid does not have a rubber seal **(See Figure 11).** Install your ¼"x20 bolts "finger tight". Now remove the pan bolt that held the separator plate and gasket in position.

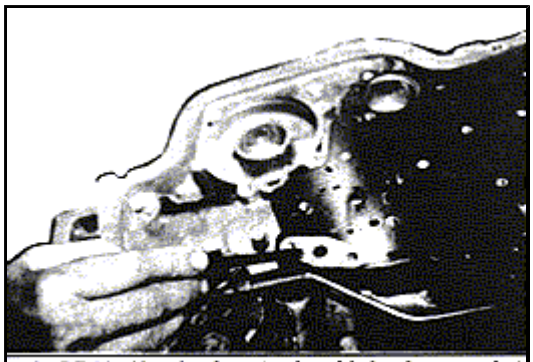


FIGURE 11 – Use the detent solenoid aluminum gasket only if your OEM gasket does NOT have a rubber seal.

STEP 10: Install the valve body Into the transmission. Guide the governor tubes back into the holes at the rear of the transmission. Push up on the valve body, governor tubes and engage the manual valve with the shifter linkage. Hold the valve body in place using one (1) valve body bolt. Now line up the valve body and install the rest of the valve body bolts "finger tight".

STEP 11: Check the detent spring to see that it is in position and rides on the manual linkage. Tighten valve body bolts and detent solenoid to 8-10 foot pounds of torque. Route the white smog wire and connect the switch on valve body. Run selector lever through all gear positions to check the operation of the manual valve and shifter.

STEP 12: Replace your filter. We recommend a new TCI® 228500 if your transmission has a flat type filter. Any transmission with over 20,000 miles needs a new filter.

STEP 13: Replace the two (2) O-rings on your pick-up tube. Before installation lubricate the O-rings (supplied in your kit) with transmission fluid. Push the pick-up tube and filter assembly into the transmission. On ‘68 and Later models the filter is held in place with that special shouldered bolt, use the same bolt and torque to 10 foot-pounds.

STEP 14: Clean transmission pan and scrape off all gasket material. Remove all gasket material from transmission case. Using the pan gasket supplied with your kit, install the transmission pan. Torque bolts to 12-13 foot-pounds.

STEP 15: Check shifter adjustment. Place shifter in neutral. Loosen pinch bolt on shifter rod cable. Align selector lever on shifter to neutral and tighten pinch bolt. Shift transmission in all gear ranges. Make sure detents in transmission correspond exactly with shifter selector lever position.

STEP 16: Add four (4) quarts of automatic transmission fluid (for stock depth pans). With the rear wheels off the ground start engine and shift the transmission through all gear ranges. Place the transmission in neutral and check fluid level. It should be between the "Full" and "Add" marks on your dip stick. *DO NOT OVERFILL* — This can cause a foaming action that could cause the transmission to not operate properly.

STEP 17: Lower vehicle and drive for 1-2 miles to warm up transmission. Recheck fluid levels. If necessary add fluid. Safe level is between the "Full" and "Add" marks. You should be able to feel the harder positive shifts of the Trans-Scat® Kit!

03/2000

Back to Top