

TCI[®] 321500 TH-350 TransBrake[®] Valve Body

This TCI[®] TransBrake[®] Valve Body Kit has been designed to work with a Turbo 350 Non-lock up transmission. This is a reverse shift pattern valve body with no engine braking.

Shifting Pattern:

Park - Reverse - Neutral - First - Second - Third

Turbo 350 TransBrake[®] Valve Body Kit contains:

Qty. Description

- (1) TCI[®] 3215000 350 TransBrake[®] Valve Body
- (1) Separator Plate
- (2) Gaskets: Valve Body and Case
- (17) High Gear Springs
- (1) Solenoid
- (1) Solenoid Brake Valve and Spring
- (2) 1/8" Allenhead Plugs
- (1) O-Ring
- (1) Detent Cable Plug

The installation of this valve body will require modifications of the transmission. This will not work on a lock-up transmission. Before you start installation read these instructions completely. This will help you allow the proper amount of time and allow you to get tools necessary for this job. When installing this kit refer to a Motor or Chiltons Transmission Rebuilding Manual for aid in assembly.

Always allow the transmission to cool before work begins. This will prevent burns that can be caused from hot fluid or transmission parts.

To aid in this project, you may want to get several boxes to use to keep parts separated during disassembly and assembly.

Installation Instructions:

STEP 1 You will need to remove transmission from vehicle.

STEP 2 Place transmission in a holding fixture or put assembly on a good work bench area. Make sure that the area you are using is clean.

STEP 3 Remove torque converter assembly.

STEP 4 The front pump assembly must be removed. Remove the eight pump attaching bolts. The pump body can then be pulled out of the case. Remove and disassemble pump assembly and check for worn parts. **(See Photo 1)**. Locate rings on pump stator. Remove middle ring on pump stator. Replace seal, bushing and gasket.



PHOTO 1

Note: Second ring from pump.



PHOTO 2

STEP 5 Remove intermediate clutch cushion spring, intermediate clutch plates and intermediate overrun brake band. Inspect the condition of the friction and steel plates. If the plates show wear it is suggested that you should replace the plates. The steel plates should be wiped dry and checked for heat discoloration and severe heat spots. Replace as necessary. Do not reinstall the waved plate if using a 32-element performance sprag.

STEP 6 Remove direct and forward clutch assembly. Remove intermediate overrun clutch front retainer ring and retainer. Disassemble intermediate overrun roller clutch assembly and inspect. Remove direct clutch pressure plate to clutch drum retaining ring and pressure plate. Remove friction plates and steel plates from direct clutch housing. Remove direct clutch piston return spring seat retaining ring. To remove the direct clutch piston you will need to use a piston press. Remove spring retainer, spring and piston. Remove direct clutch piston inner and outer seals. Remove and discard direct clutch piston center seal (*middle size seal*). Now that the drum assembly is completely disassembled, a bleed off hole must be drilled into the direct clutch drum.

STEP 7 Direct Clutch Drum Modification: It is best to drill the bleed off hole in the drum from the inside-out behind the piston area (**See Photo 2**). The drill may be held at a slight angle (45-degree). The bleed off hole should be 1/16" or 0.0625". After you have drilled the hole always deburr and clean with solvent. This must be done as any fragments of metal could cause damage or improper function of the transmission.

STEP 8 Remove front ring gear, two thrust washers or two Torrington bearings and check for excessive wear. Replace parts if worn. Remove output snap ring by using snap ring pliers. Remove front output carrier assembly. Remove sungear shell assembly. The snap ring that holds the sungear to the sungear shell is prone to cause transmission failure. To cure this problem tack weld the snap ring to the sungear. Weld snap ring to front side of gear. Remove retaining snap ring that holds the low roller clutch support. Grasp the output shaft. Pull up until the low roller clutch is out of the case tabs. Next remove the low roller clutch and the case retaining spring. Remove the reaction carrier, low and reverse clutches and steels. If the shaft speedometer gear is removed, the output shaft and ring gear will come out through the front of the transmission case. Using a press tool, compress low and reverse piston spring retainer and remove the retaining ring. This will allow the piston and spring to come out of the case. It is best to apply air to the reverse feed hole under the valve body to remove this piston. You should remove and replace all OEM lip seals, since you have the transmission down to this stage. TCI® part number 329000 has these seals. Do not reinstall the center seal (*middle size*) on the low and reverse piston.

STEP 9 After you have done this modification you are ready to reassemble direct clutch assembly. Do not use the center cushion seal on the high clutch drum. (**DISCARD THIS SEAL**)

Install the direct piston into housing. Use transmission fluid to aid assembly. Install spring retainer and replace OEM spring with the 17 special TCI[®] high clutch springs.

NOTE: Set clutch pack clearance to .060" to .080". **IMPORTANT:** Remove all cushion and wave plates. Do not use with TransBrake[®] Valve Body. Compress spring retainer and install retaining ring. Lubricate with transmission fluid and install friction plates and steel plates starting with a steel plate and alternating steel and friction. Install direct clutch pressure plate and retaining ring. Install intermediate overrun roller clutch assembly. Install intermediate clutch overrun outer ring. When the intermediate overrun clutch outer ring is installed, it should turn free in a counterclockwise direction only. Install intermediate over-run clutch retainer and retaining ring. Tack weld the snap ring to the retainer.

NOTE: *Clutch Clearances:*

Forward Drum: .015-.030"
Intermediate: .080-.100"
Direct Drum: .060-.080"
Low-Reverse: .040-.060"
End Clearance:.005-.025"

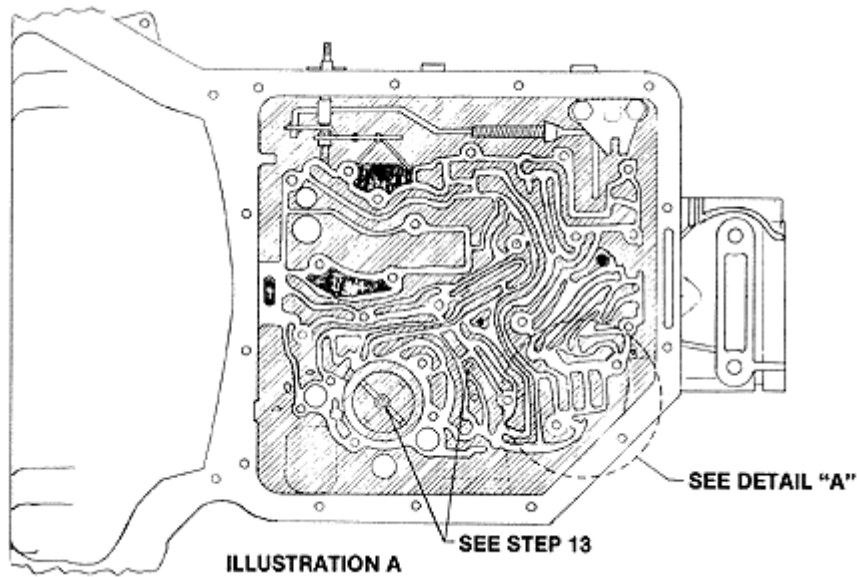
STEP 12 Remove filter assembly and filter gasket. Remove detent roller and spring assembly from valve body. Remove actuator lever assembly. Remove detent control link. Remove valve body attaching bolts and valve body. Remove valve body spacer support, plate, spacer plate and gaskets. Remove four (4) check balls.

STEP 10 You have completed this part of the transmission modification. Next, you will modify the transmission after you have reassembled transmission up to this point. Install assembly in the reverse order that the parts were removed. **Do not use the intermediate band.**

STEP 11 The transmission valve body must be removed and replaced with TCI[®] 321500. If the transmission fluid has not been drained from the transmission, you will need a pan to catch fluid. Remove transmission oil pan bolts. When removing bolts, remove so the pan will be held into place until fluid is drained. Remove gasket. If gasket material sticks to transmission pan or case, remove material completely. If your transmission oil pan does not have a drain plug, you may want to install a TCI[®] 805800 universal drain plug kit into your pan. This will allow easy service in the future for changing the transmission fluid.

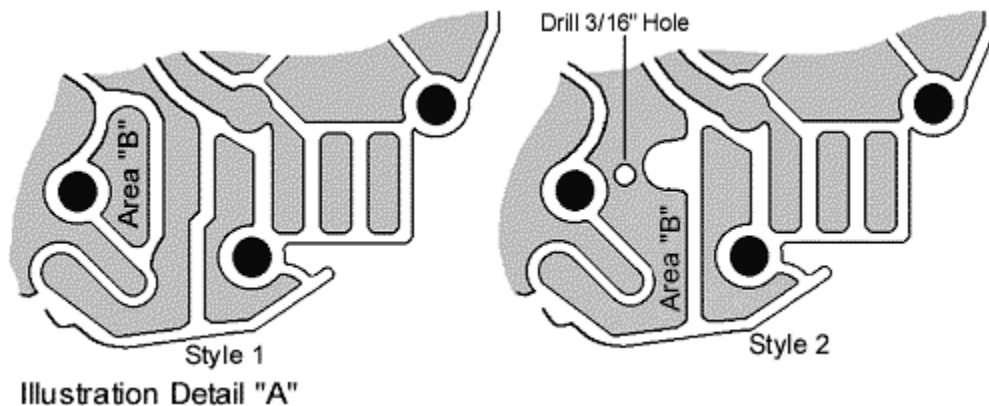
STEP 13 Transmission Case Modifications:

NOTE: From 1967-1968, 1969, 1970-1979 and 1980 the Turbo 350 transmission was manufactured with different case configurations. Your case may not look exactly like illustrations shown but the functions of the transmission is the same.



Remove intermediate servo piston, washer, spring seat and apply spring. **See Illustration of transmission.** Drill and tap a hole using an 11/32" drill in the area shown in **Illustration A**. Also, drill and tap a second hole in the second gear accumulator area. Plug both holes using 1/8" Allen head plugs included in kit. Next, locate area B in **Detail "A"**. This details the modulator valve bore where the TransBrake valve will go. The two illustrations shown in **Detail "A"** are typical of the most common case variations. Insert Brake Valve and Spring into the bore. If your case is configured like **Style 1**, you should be able to see the Brake Valve Spring in **Area "B"** and no case modifications will be necessary.

If your case is configured like **Style 2** and you can not see the modulator spring, then you will need to drill a 3/16" hole through the transmission casting where indicated. Remove Brake Valve Spring assembly before you drill case. **See Illustration Detail "A"**. You will replace modulator assembly with Solenoid, Brake Valve and Spring supplied with your TCI® 321500 Kit. **IMPORTANT:** You must clean and deburr case thoroughly to remove any metal that could cause damage or improper functioning of the transmission. After you have completed the drill and tap modifications, you are ready to install TransBrake® solenoid. Install o-ring onto solenoid. Install spring over end of brake valve. Install spring, valve and solenoid into modulator assembly area.



STEP 14 You are ready to reinstall valve body parts back into place. Replace old separator plate with plate and gaskets enclosed with kit. Reinstall OEM support plate. **Do not reuse check balls.** Reinstall valve body in reverse order of disassembly.

STEP 15 After you have completely reassembled your transmission, you should install it into your vehicle. You will be ready to wire solenoid/micro switch. You will need some twelve (12) gauge wire and wire end connectors. (TCI® has available, Part Number TCI® 388400 micro switch on a retractable cord.) Run a hot wire from the micro switch, to the battery. The other remaining wire goes directly to the solenoid. Be sure to solder the wires and use proper connectors. After wires have been correctly connected, you may want to wrap with black electrical tape. Remember to strap any loose wires to the frame of the vehicle to avoid wires coming in contact with any moving parts.

STEP 16 Remember to fill transmission with fluid before you put transmission into operation. We recommend using TCI®'s Racing Transmission Fluid. Our fluid is designed for race applications. Fill transmission with four quarts of fluid. Now start engine and let the transmission warm up. Shift the transmission several times and recheck fluid level on dipstick. You will need to add additional fluid until the fluid is level with the full mark on your dipstick.

Testing TransBrake:®

While the vehicle is securely on jack stands, shift the transmission. The new shift pattern is Park, Reverse, Neutral First, Second and Third. After you have warmed up vehicle and shifted the transmission you are ready to test the TransBrake® **Do Not Test until the shift linkage is operating properly.** If everything is working properly shift transmission into First gear. Next, press TransBrake® button. When the button is pressed, the transmission acts like it is in Neutral. The rear tires should not be turning. Now, press on the accelerator and bring the engine RPM's up to about 2500. Release the TransBrake® button and rear wheel should turn. The transmission has to be in **First** gear for the TransBrake® to work. **Note:** You will not feel a shift without putting a load against the clutches by lightly applying the vehicle brakes.

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