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# TCI® 221100 Turbo 400 Full Manual Valve Body

## Shift Pattern: Park-Reverse-Neutral-First-Second-Third

This Kit Contains:

Qty.	Description
One (1)	Turbo 400 Full Manual Valve Body
One (1)	Separator Plate & Gaskets
One (1)	Pressure Regulator Spring
One (1)	Reverse Release Spring
Two (2)	1/4" Check Balls
One (1)	Vacuum Modulator Plug & O-Ring

**NOTE:** You must reuse stock manual control valve. Retains engine braking in high gear only.

**IMPORTANT:** Before you begin installation allow transmission to cool to avoid burns from hot fluids or parts. Select a well lighted work area and it is very important to keep all parts clean. Use a box or pan to keep transmission parts from getting misplaced. Wash parts thoroughly with a good solvent.

**Step 1** Drain and remove transmission from vehicle. (Remember to dispose of fluid in a proper, safe way to protect the environment.)

**Step 2** Remove transmission oil pan.

**Step 3** Remove transmission filter (there are two types):  
1965-68 Models will pull off  
Other Models bolt on and off

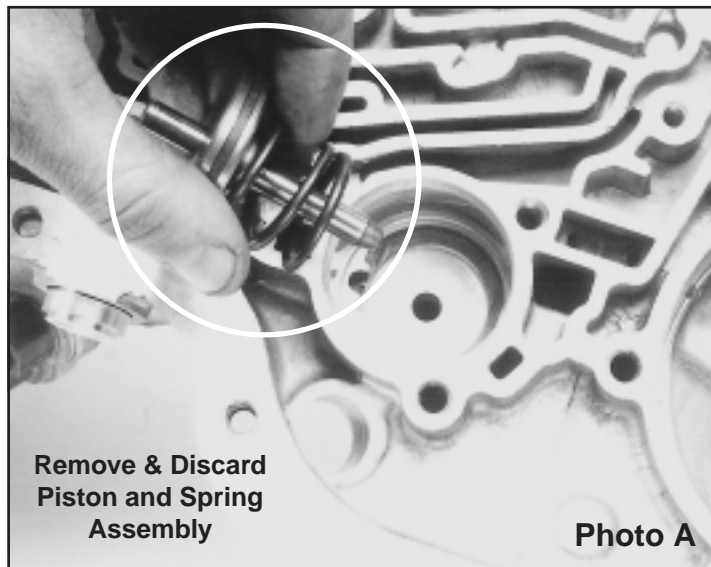
**Step 4** Remove valve body, separator plate, check balls and center support bolt.

**Step 5** Remove pump, forward drum, high gear drum and band. Discard band. Band will not be used. Remove and discard piston and spring assembly (See Photo A).



Remove & Discard  
Second Sealing  
Ring

Photo B



Remove & Discard  
Piston and Spring  
Assembly

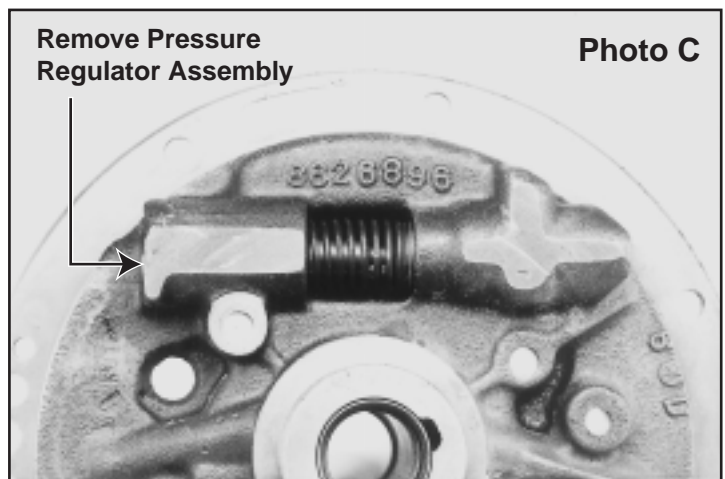
Photo A

**Step 6** Remove second gear clutch pack. Remove snap ring in case. Remove clutch pack. Remove center support snap ring and center support. Inspect center support bushing. Replace if necessary. Center support Modification (See Photo B): Remove and discard second seal ring from top. After modifications are complete, reinstall center support assembly and second gear clutch pack. Refer to transmission manual if you are unsure of the proper installation.

**Step 7** High Drum Modifications: Remove piston assembly from high clutch drum. Do not use center cushion seal on the high clutch drum. Discard this seal. Reinstall piston into high clutch drum. Set clutch pack clearance: .060" to .080".

**Step 8** Reinstall high gear drum and low gear drum.

**Step 9** Remove pressure regulator from front pump (See Photo C). Push down on the aluminum sleeve and remove snap ring. Slowly remove booster sleeve assembly. **NOTE:** Unit has spring tension - Do not let spring assembly fly out of bore. If sleeve is stuck, tap on it lightly to free from bore. Remove the booster sleeve and valve pres-



Remove Pressure  
Regulator Assembly

Photo C

sure regulator spring, spring retainer, shims (some models have one) and the pressure regulator valve. Disassembly and Assembly (See Photo D): Replace OEM pressure regulator spring with TCI spring supplied in kit. To install the assembly, slip the retainer in place with

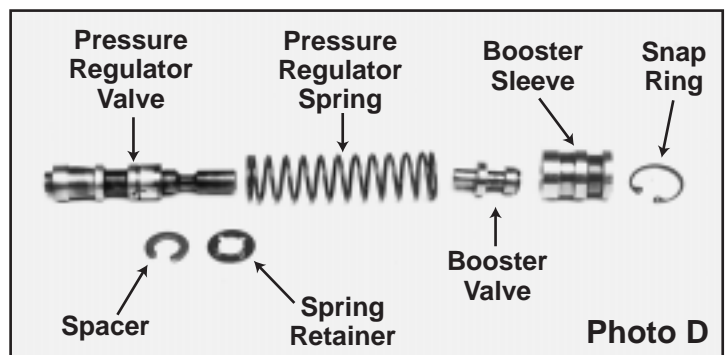
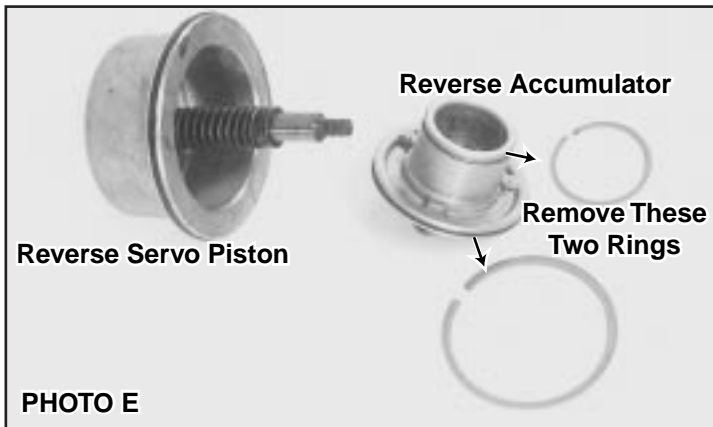


Photo D

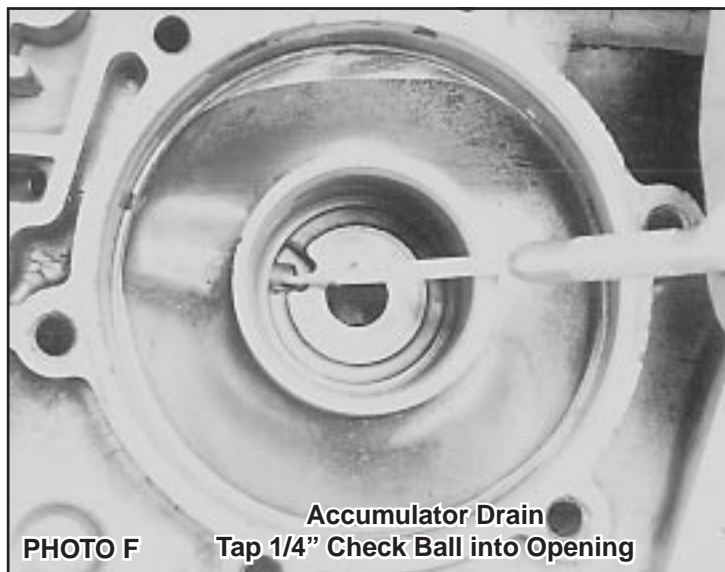
the tangs toward the spring. Slip the spring over the small end so it comes in contact with the retainer. Push up on the booster sleeve and install new snap ring. Make sure it seats completely into its groove. After modifications are complete, reinstall pump assembly.

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Step 10 Remove 6 (six) Rear (Reverse) Servo cover bolts. Remove rear servo piston (See Photo E). Remove and discard the two rings from the reverse accumulator. NOTE: Both springs will be reused.

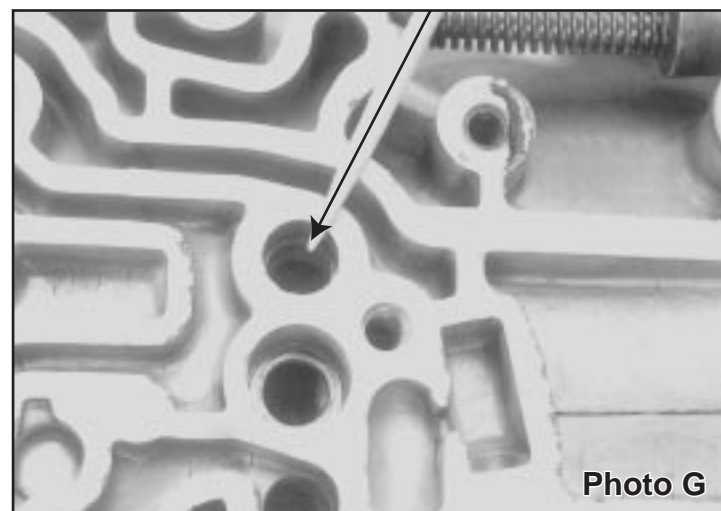


Step 11 Using a flat punch, tap 1/4" check ball supplied with this kit into an accumulator drain (See Photo F).



Step 12 Next, check surface of rear servo cover. Surface should be flat and smooth. Take some sand paper and attach to a flat surface. With even pressure sand the servo cover. Cover surface should sand evenly all around mating surface (if warped, replace). Wash cover and reinstall rear servo assembly. After installing rear servo and cover, you should air check for proper application.

Step 13 Install reverse release spring and check ball provided in kit. Reverse bore is located next to the center support bolt hole (See Photo G). Install spring, then install check ball. The check ball will sit on top of the reverse release spring. Next, measure the distance from the top of the check ball to the surface of the bore. The check ball must be 1/8" or .125" below the surface. If the distance is not correct, then remove the small spring and cut one coil off the spring and reinstall. Again, measure the distance of the check ball. It must be 1/8" below the surface. When the correct distance is obtained, the modification is complete and you are ready to go to the valve body assembly. This step must be done properly because this check ball MUST have proper clearance for the valve body to shift the transmission properly. Take time to do this step carefully!!! Transmission will lock up in 2nd if this is not done properly!



Step 14 You are now ready to install your TCI Manual Valve Body. Make sure that the transmission case is clean and all gasket material has been removed. To align the new Manual Valve Body, install

two guide pins into the transmission case. You must line up the manual valve with the pin or manual detent lever of your transmission. The OEM manual valve is used with this valve body kit. The manual valve has an opening that the detent will fit into. The detent lever moves the manual valve when you manually shift the vehicle. Now you are ready to install your valve body. Install: Gasket, TCI Separator Plate, Gasket and TCI Manual Valve Body. Bolt the valve body to the transmission. After you have started all the valve body bolts, tighten a few bolts and then remove the two guide pins and replace with the remaining bolts. Tighten the 5/16" bolts to 15 foot-pounds of torque and 1/4" bolts to 8 foot-pounds of torque. Next, move the transmission shifting arm by hand ... making sure the manual valve is connected properly and moves freely in the valve body bore.

Step 15 Reinstall filter, O-rings, pan gasket and transmission pan.

Step 16 Remove and discard the vacuum modulator. Remove the rubber O-ring from the original modulator and install it on the new TCI replacement vacuum modulator plug. Do not remove the modulator plug, put it back into the transmission case. The fluid should not leak between the case and the new plug.

Step 17 Install transmission into vehicle.

Step 18 Adjust manual linkage:

- A. Loosen adjusting nut on linkage rod or cable.
- B. Place transmission selector lever (car shifter) in Park.
- C. Align linkage rod or cable to correct adjustment and tighten nut.

NOTE: Move shifter to all gear locations and check detent locations on transmission. Some adjustments may be necessary.

Step 19 Fill transmission with four (4) quarts of fluid. We recommend our RTF (TCI part number 950600), formulated for performance applications. Start engine, place the transmission in neutral and let engine run for a few minutes. Recheck fluid level using transmission dipstick. Do not over fill transmission.

Step 20 With the vehicle jacked-up and secured properly, run transmission through each gear change and check transmission fluid level again. While you are shifting gears, you will have to apply a light brake pressure in order to feel the second gear shift. Run the transmission in third gear at 2000 RPMs for at least 30 seconds. If the transmission binds, shift back to second gear. You may have to repeat this several times before the transmission fluid fills all sections of the new valve body and check ball locations. Usually, you will only have to shift from second to third a few times before everything operates correctly. If the binding does not disappear in a reasonable amount of time, remove the valve body and repeat the indicated steps for pressure regulator (Step 9), second gear release spring (Step 13), and valve body alignment (Step 14). Check to make sure the check ball is 1/8" below the surface and also check the separator plate to make sure it is in alignment with the valve body.

## TROUBLESHOOTING GUIDE

PROBLEM	SOLUTION
No Reverse	Rear servo and high clutch pack not installed properly.
Sluggish In All Gears	Low Pressure. Re-check pressure regulator valve assembly.
No Gear In Any Selection	Manual Shift Valve not connected.
Fluid Foaming	Filter not sealing properly. Check for O-ring or filter spacer.

## TRANSMISSION LINE PRESSURE

GEAR	PRESSURE (PSI)
Park	180-200
Reverse	(pressure differs with RPMs) 100-300
Neutral	180-200
First	180-200
Second	180-200
Third	180-200

NOTE: Line pressure fitting is located on driver side of transmission close to shift lever.

If you have any questions regarding installation or operation of this product, please call TCI Technical Service Department.