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TCI® 496500 E4OD/4R100 Valve Body Performance Improver Kit

Kit includes:

- | | | |
|--|---------------------|-------------------------------------|
| (3) Purple Accumulator Springs | (1) 1/16" Drill Bit | (1) Sheet Metal Screw |
| (3) 3 Red Accumulator Springs | (1) 5/64" Drill Bit | (1) Shoulder Washer |
| (1) White Line Pressure Modulator Spring | (1) 3/32" Drill Bit | (1) Bushing |
| (1) Blue Outer Accumulator Spring | (1) 7/64" Drill Bit | (1) Metal Drain Back Valve Assembly |
| (1) Blue Pressure Regulator Spring | (1) Paper Clip | (1) Orifice Cup Plug |

Please Note: Complete installation of this kit requires removal of transmission pump assembly. Modifications to the accumulator system may be made with the transmission installed in the vehicle.

Disassembly

1. Drain oil pan. You will need a pan to catch fluid. Remove transmission oil pan bolts. When removing bolts, remove so pan will not drop completely off but will be held in place so that one side will allow the fluid to be drained. After the fluid has drained, remove the rest of the bolts and pour out the remaining fluid. Dispose of the fluid in an environmentally responsible manner.
2. Carefully remove the oil filter by pulling down and rotating as necessary. Inspect the oil filter. Replace the filter if it is dirty or has not been changed in over 25,000 miles.
3. Locate the accumulator valve body. It is closest to the front of the transmission. Remove the eleven (11) 8mm accumulator body bolts and two (2) 10mm nuts.
4. It is not necessary to remove the main valve body, solenoid body or separator plate. If you do remove these for additional servicing, make note of your check ball locations. Common checkball locations are also provided in this instruction for your reference.

Installation:

1. Reference **Figure 1**. Line pressure Modulator valve train.

Follow this step to one of the three options given.

a. Light Duty: Skip this step completely.

b. Normal to Heavy Duty: (*recommended for most applications*)

Install the spring seat supplied on the line pressure modulator valve as shown and reuse the original springs.

c. Extreme Heavy Duty:

Install the spring seat supplied on the line pressure modulator valve as shown and replace the original outer spring with the white spring supplied.

2. Remove the 2nd accumulator plunger. Using a scribe or bending a hook on paper clip supplied, remove clip from end plug. Use a valve body bolt to remove end plug. Discard short inner O.E. spring. Place red spring supplied inside the O.E. outer spring. Place purple spring inside red spring. (**If installing in ambulance**, do not install the purple spring in any of the accumulators.) Reinstall plug and clip. Repeat above procedure at the 3rd/Reverse accumulator and at the 4th accumulator.

Note: 4R100 accumulator bodies do not have the short inner O.E. spring. Still follow this step the same way by adding the two inner springs supplied. It is not uncommon to find a broken outer accumulator spring. The smaller blue spring is supplied to replace any one of the three outer springs if needed.

3. Reinstall the accumulator valve body and tighten all fasteners to 80-100 in.-lbs.

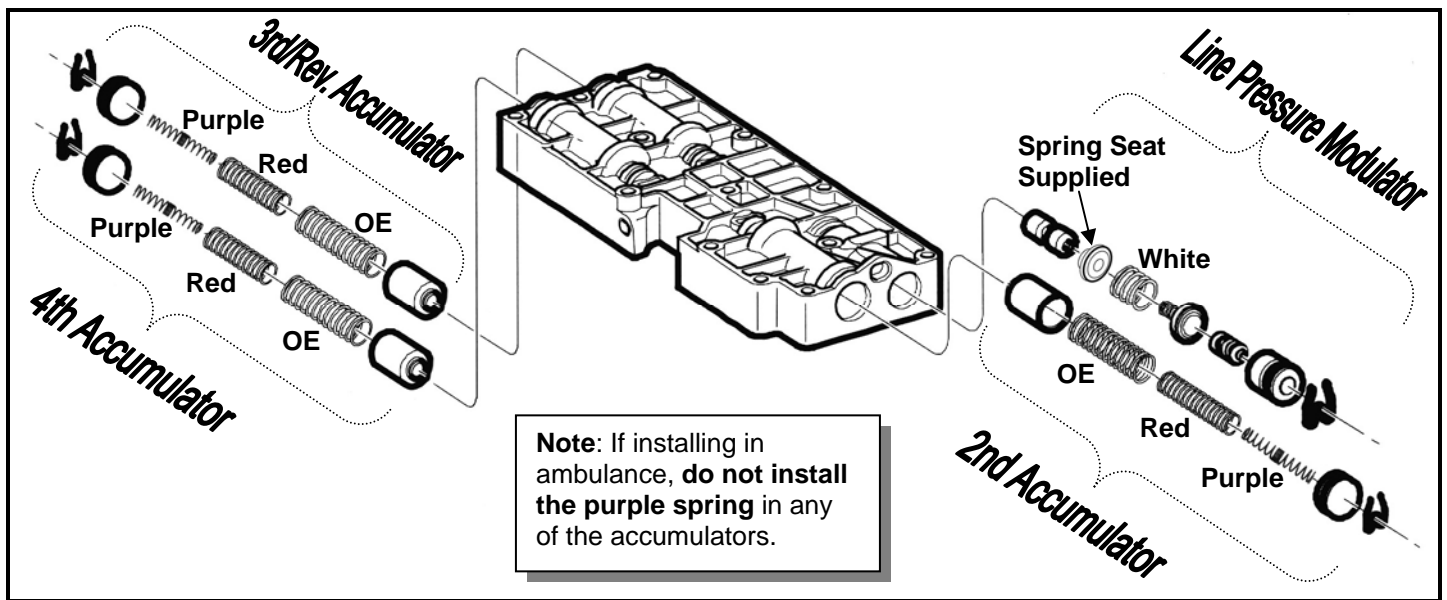


Figure 1

4. **Do not adjust the EPC solenoid.** After completion of rebuild, road test the vehicle. If **all** the shifts were either too hard or too soft, install a pressure gauge at the EPC tap. (The EPC tap is located close to where the wiring harness plugs into the case.) With wiring harness disconnected and engine running at 1,000 RPM, pressure should read between 90 and 100 PSI. Anything over 100 PSI is too high. Replacement of the solenoid is recommended. If the pressure reading is correct, go to your Ford manual and set the throttle position sensor (TPS) to factory specifications.

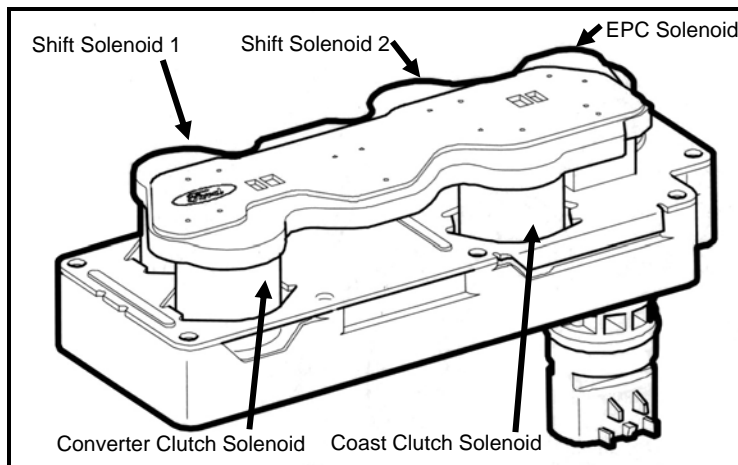


Figure 2

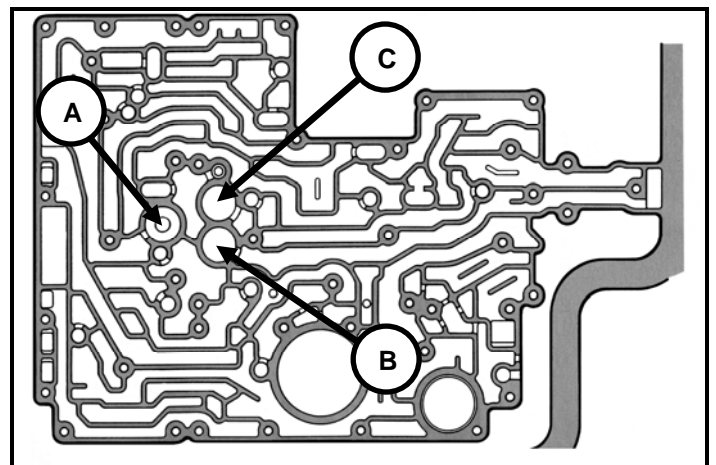


Figure 3

If rebuilding your transmission, follow these steps:

1. **Very Important.** Check the part of the case where the three (3) center support bolts are located. (See circle in **Figure 3**.) Take a straight edge or valve body spacer plate and a .001" feeler gauge. Lay the straight edge over the bolt holes at the center support. If the feeler gauge will slide under the straight edge, work that area with a file or stone until the case is perfectly flat. If the case is badly distorted, use two case gaskets when reassembling. Torque bolt A to 6-10 ft.-lbs. and bolts B & C to 8-12 ft.-lbs. using a 13mm socket. We also recommend using thread locking compound on these bolts.
2. **Pump Modifications:** See **Figure 4**. Remove the orifice cup plug in rear of pump stator shaft using the tool supplied; sheet metal screw [A], shoulder washer [B], bushing [C]. Assemble tool as shown and position over orifice cup plug. Turn screw clockwise to drive the point of the screw into orifice in plug and continue turning until plug comes out. Remove plastic drain back valve, guide, spring and discard. The plastic may be melted so be sure you get it all out and blow both ways with an air gun.

Snap the black spring supplied onto the metal guide and drain back valve supplied. Install into pump. Drive orifice cup plug supplied into bore so edge of cup plug is about 0.050" below flush of the edge of the bore. Use a sharp punch and stake bore in a couple places to prevent orifice plug from backing out against bearing on end of stator.

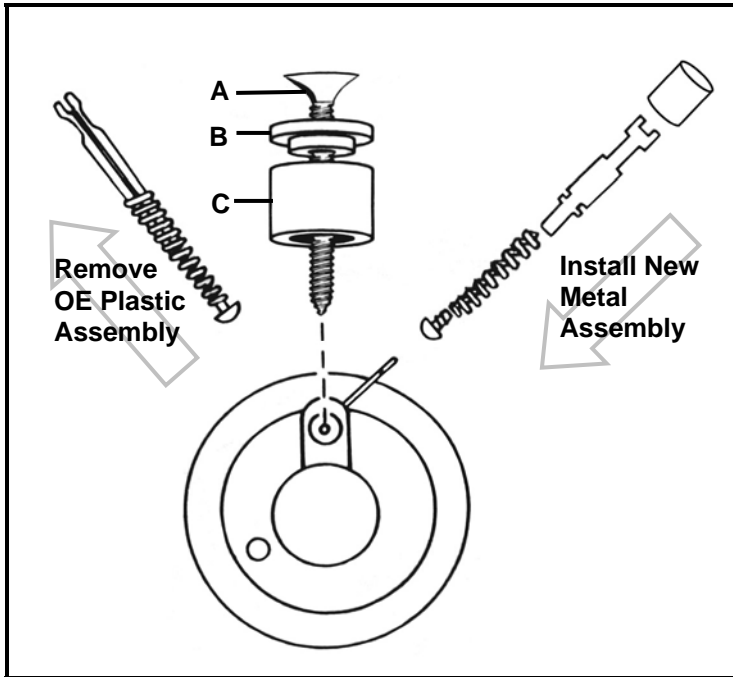


Figure 4

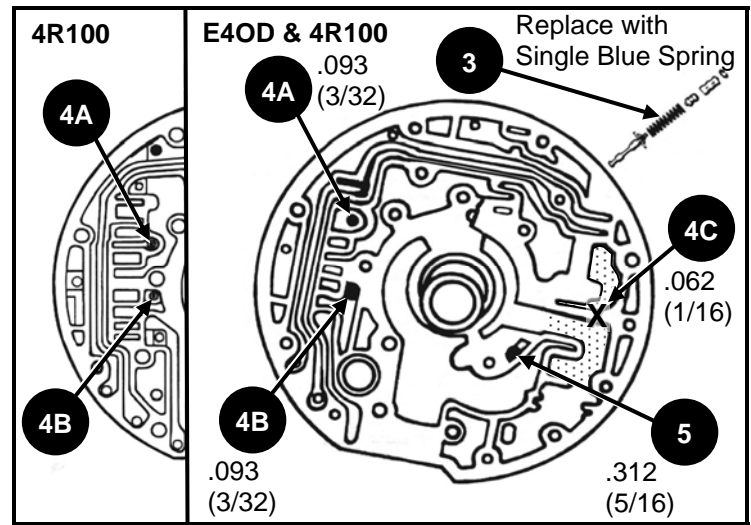


Figure 5

3. Refer to **Figure 5**. Replace the two springs on the pressure regulator valve with the blue spring supplied.
4. Drill pump with bits supplied as follows:
 - A. **TCC exhaust. Regular duty**, enlarge orifice plug to 5/64" (0.078"); **Heavy Duty**, enlarge orifice plug to 3/32" (.093"). Optional: For more shift feel this orifice can be enlarged up to 7/64" (.109"); bit not included. 4R100 PWM applications will not have an orifice plug at this location. Move on to hole 4B.
Note: If pump has been modified for code 62, do not drill orifice to .109" as this can cause a harsh lock-up engagement.
 - B. **Cooler Feed:** Enlarge orifice plug to 3/32" (.093")
 - C. Cross drill at the **X** to connect the shaded areas with 1/16" (.062") bit supplied.
5. Enlarge this hole to 5/16" (.312"); drill bit not included.
6. **Preventing front seal blow out.** Refer to **Figure 6**. Remove bushing and seal from pump body. **Note:** Late 1993 and later pumps have a .020" ridge on the outside lip of bushing bore to keep pump bushing from walking toward the seal. Be sure to drive or press bushing from opposite side to prevent damage to the ridge and/or pump body. Use a 5/16" (.312") drill bit to enlarge drain back hole located in outside bushing bore connecting with slot inside body being careful not to drill too deep. The factory stakes the bushing from the outside however, we believe it should be staked from the inside. Cut two slots in pump as shown in illustration. Mark bushing where drain back hole is located. Cut a slot in bushing approximately .200" deep and .300" wide at this location. Use tape on inside of bushing if you are using a stone to cut the slot. Install bushing in pump (using thread locking compound) and stake bushing at the two slots you cut.
Note: Be sure to never stake bushing where there is a seam. Install an **E4OD** seal using thread locking compound.
Warning! Do not use a C6 seal. Use of a brass bushing is best if it is certain that the torque converter has a hardened hub.

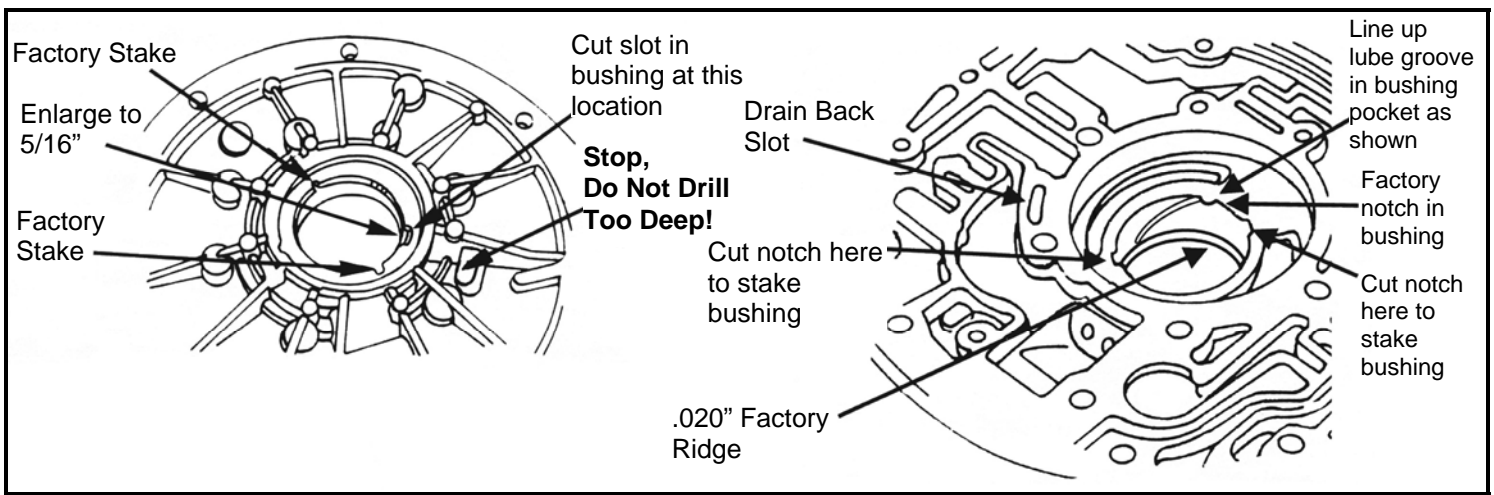
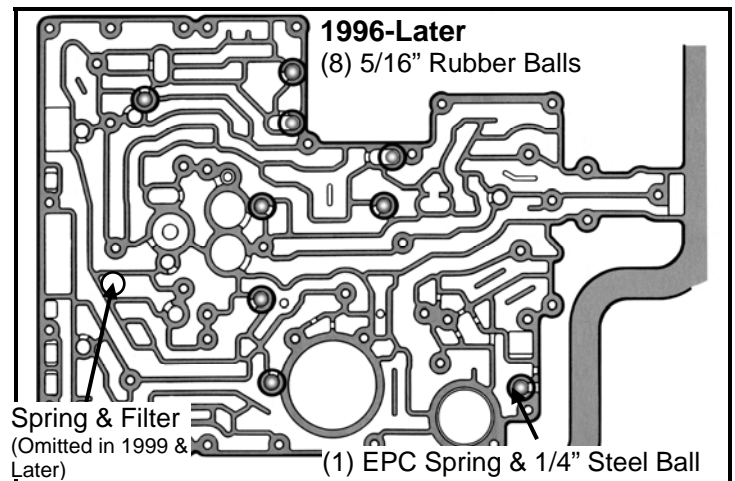
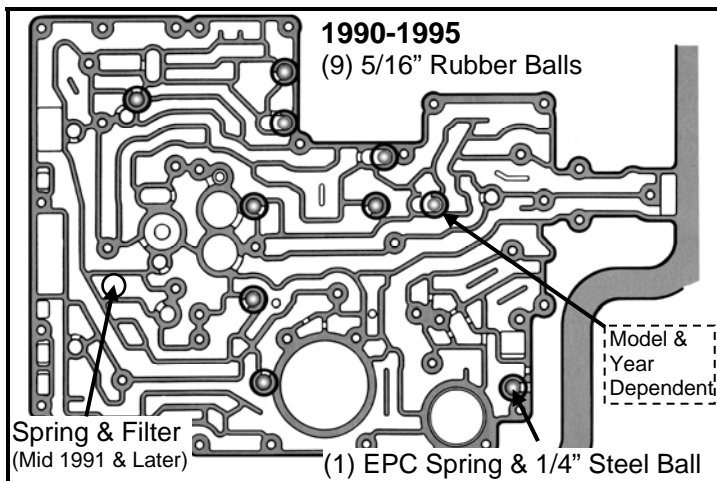
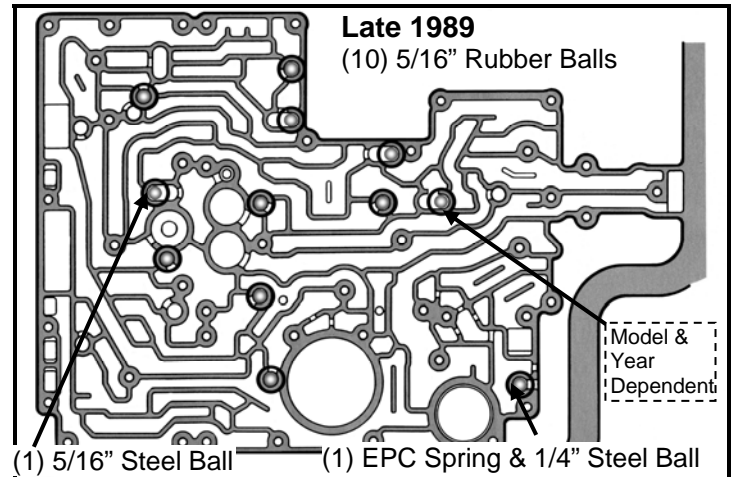
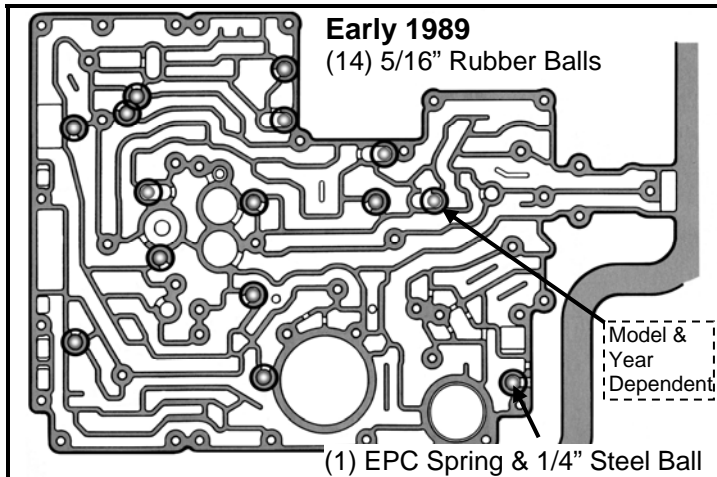
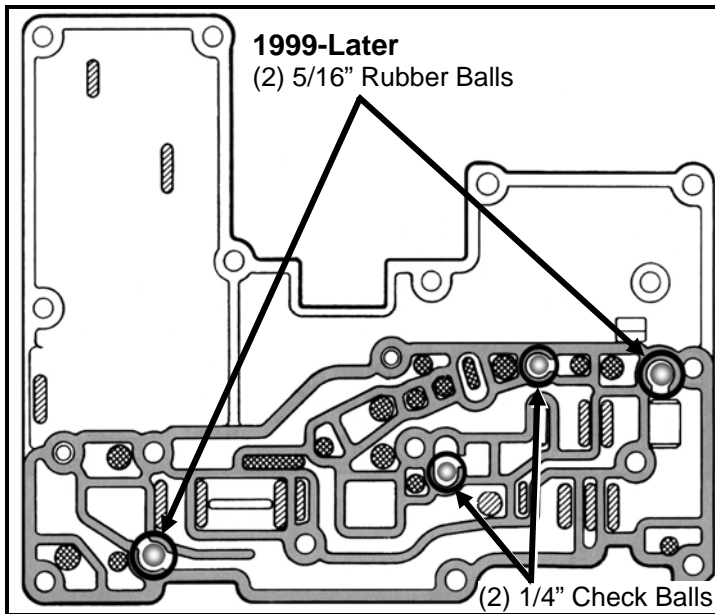
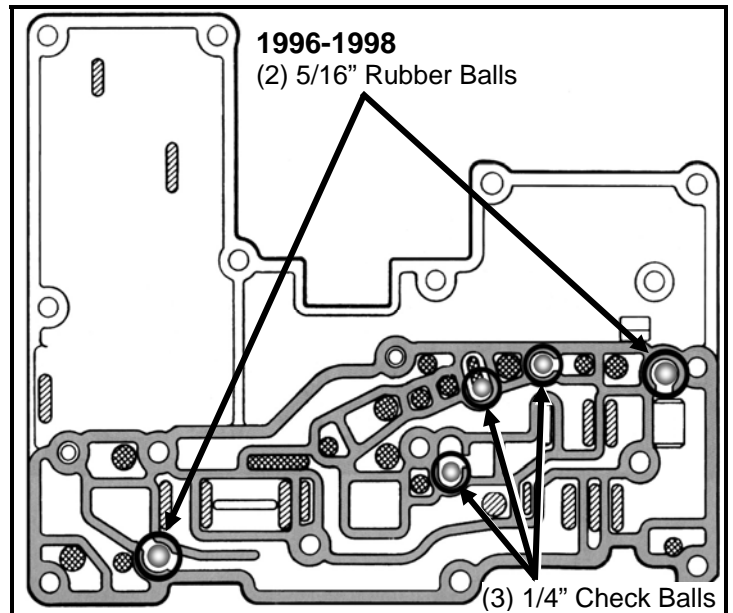
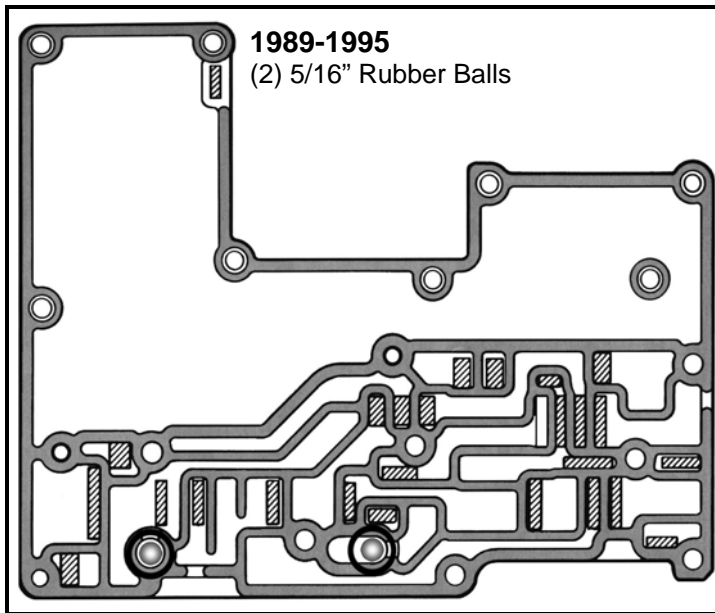


Figure 6

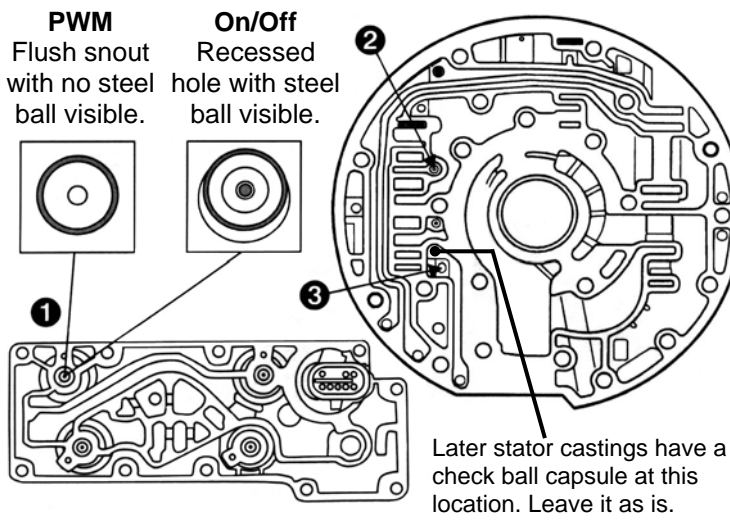
7. (1989-1995) Leave out every 3rd spring on the reverse clutch return spring assembly. (1996 and up) Leave all springs in the assembly.

8. Check Ball Locations





The following modifications will convert a PWM lock-up to an on/off lock-up. This modification is optional.



This modification is only necessary if the unit has been having converter related burn-ups or slippage problems.

Use either an early E4OD converter or a TCI® TruckMaster™ unit. Higher stall PWM converters may give a slipping feel between shifts if used with this conversion.

1. Use the earlier solenoid pack (1996-'98 Ford part no. F81Z-7G391-BA or equivalent.) Note: The earlier solenoid pack has a different TCC solenoid design. Insure you are using the on/off TCC type solenoid pack. See illustration.

Remove the TCC valve train before the following modifications are made.

2. Drive the supplied cup plug into the open hole location shown. Note: Non-PWM pumps will already have an orifice plug at this location.

3. Drill out the orifice plug shown with the 1/8" (.125") drill bit supplied. Thoroughly clean the pump and replace the TCC valve train.

Some other great E4OD/4R100 parts from

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TCI®'s premium line of high quality aluminum deep pans turns the ordinary into the extraordinary. The TCI® 498010 E4OD/4R100 pan holds 7.5 additional quarts of fluid and features a black powder-coated finish to increase the heat dissipation, therefore dropping internal transmission temperature 20 to 30 degrees and increasing transmission life. Additionally, these trick looking pans are built from aircraft-quality aluminum and feature added cooling fins to further improve cooling.

The TCI® premium transmission pan comes ready to install with everything you need including new stainless-steel installation hardware and Allen wrenches. The included magnetic drain plug helps keep loose metal from being circulated through the transmission and the unique o-ringed sealing surface ensures against leaks. For those looking to install a temperature gauge, you'll appreciate the 1/8"-NPT port machined directly into the pan.

Ford diesel-powered trucks are well known for their hauling and towing capabilities. TCI®'s new Ford TruckMaster™ Torque Converters offer an easy way to deliver all that monstrous torque to the pavement, far more efficiently than OEM converters. TCI® incorporates a heavy duty stator, furnace-brazed fins, forged or billet steel cover and a heavy duty lockup clutch to create a bullet-proof torque converter that delivers a high ratio of torque multiplication.

- **492200** - 1989-up Ford E4OD RV/Towing, 4-lug forged steel front w/ single-disc clutch
- **492201** - 1989-up Ford E4OD/4R100 RV/Towing, 6-lug forged steel front w/ single-disc clutch
- **492202** - 1989-up Ford E4OD/4R100 RV/Towing, 6-lug forged steel front w/ triple-disc clutch & hand-crafted, custom steel stator. Ideal for highly modified applications.

