

# **PART # 4VB/RPFMTB**

## **Reverse Pattern Full Manual Transbrake Valve Body Assembly**

Extensive research and development was performed during the inception of this product and has continued throughout its production. The product has received many improvements over the years and will continue to be updated as needed to maintain its status at the forefront of GMTH400 technology.

This product is designed for off road and drag racing applications only. This product should be installed by a professional transmission mechanic who is fluent with servicing the GMTH400 transmission. Shift pattern is Park, Reverse, Neutral, Low, Second, and High. Get ready to smile: No need to activate the Transbrake to engage Reverse.

### **Kit Contents:**

- 1 High Rate Pressure Regulator Spring**
- 1 Pressure Regulator Bore Plug**
- 1 Rear Servo Spring**
- 1 Transbrake Solenoid**
- 1 Transbrake Scheduling Valve**
- 1 Transbrake Scheduling Valve Return Spring**
- 16 Direct Clutch Release Springs**
- 1 Intermediate Clutch Snap Ring**
- 1 Intermediate Clutch Snap Ring Support**
- 1 .375" Cup Plug**
- 1 Transbrake Valve Body Assembly**
- 1 Separator Plate**
- 3 Valve Body Mounting Bolts**
- 1 Brass Set Screw**

## Oil Pump Modifications

Remove the OEM pressure regulator components and replace them with the supplied High Rate Pressure Regulator Spring and Pressure Regulator Bore Plug. See Figures 1 and 2.



## Rear Servo Modifications

Remove the rear servo assembly from the transmission case. Remove the rear accumulator piston and spring from the rear servo. The rear accumulator piston and spring will be replaced with the supplied rear servo spring. See Figures 3 and 4.

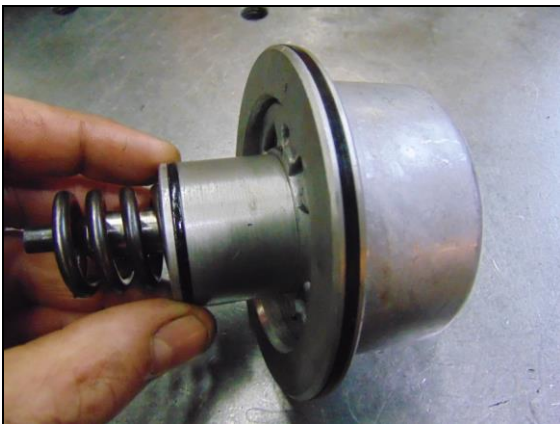


FIGURE 3

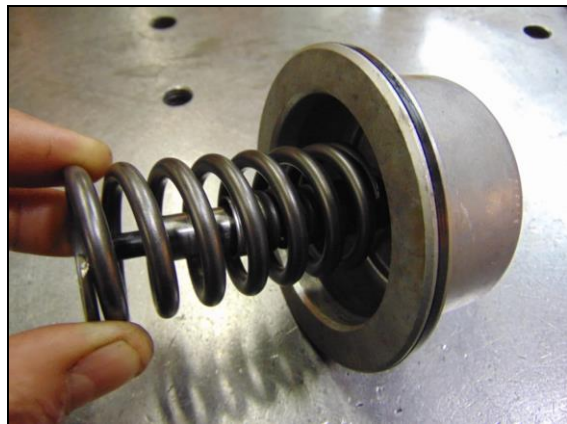
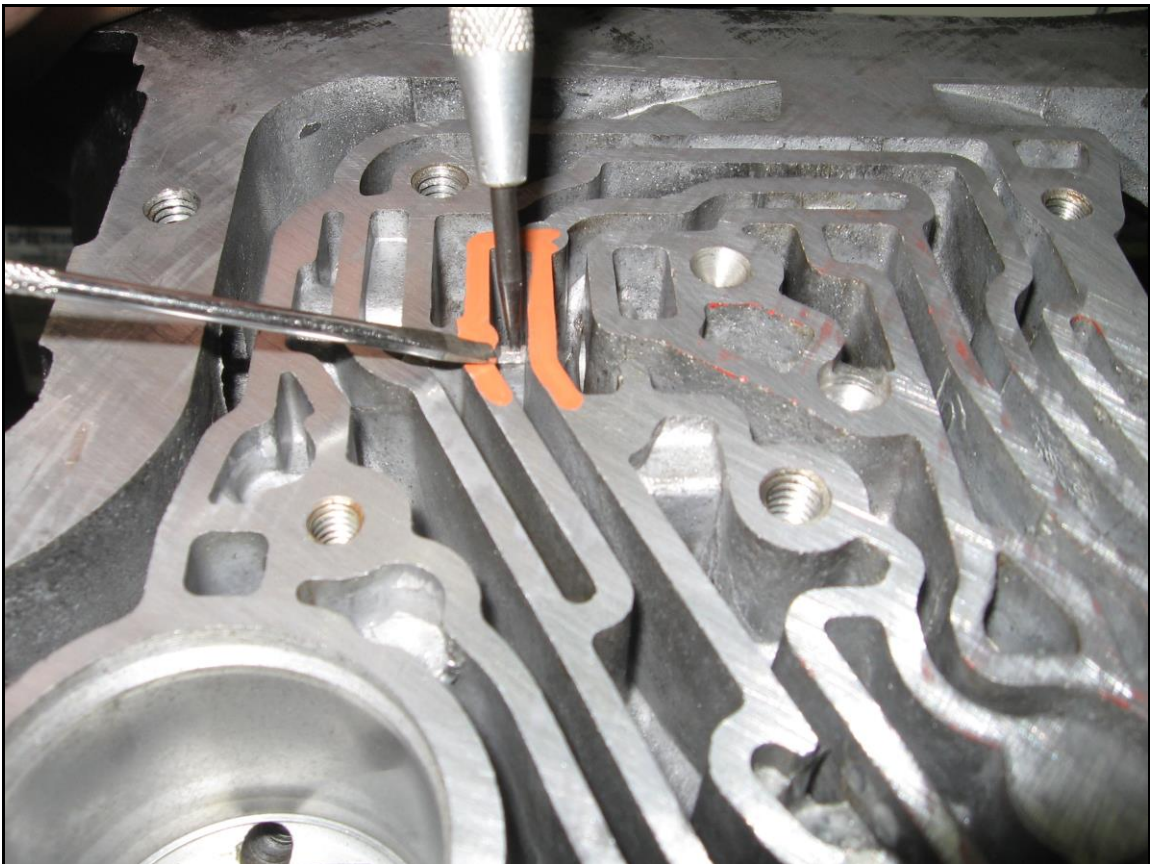


FIGURE 4

## **Transmission Case Modifications**

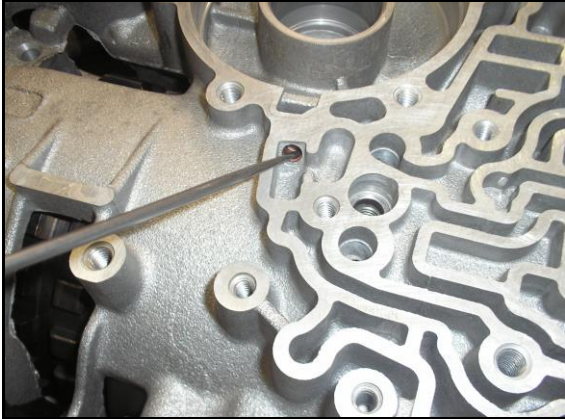
Remove the vacuum modulator retaining bolt and bracket. Remove the vacuum modulator and vacuum modulator valve. On some models there is a wall in the passage at the location shown in Figure 5. Reverse and Transbrake Apply Oil flows over this wall on its way to the direct clutch housing. When present, the wall is an obstruction to adequate oil flow in the circuit, and should be modified for quick direct clutch application. If the top of the wall is less than 3/16" or .187" from the valve body mounting surface of the case, use a center punch to snap a hole at the center of the wall and drill the wall to the recommended depth. If the use of the center punch and drill bit poses a problem to the installer, the use of a small file to perform the modification is recommended.



**FIGURE 5**

Fit the transbrake scheduling valve spring over the inboard end of the transbrake scheduling valve and install into the transmission case. Fit the solenoid and check for smooth in and out operation of the valve by depressing the solenoid by hand.

Check the case for the presence of an orifice cup plug installed in the rear servo feed passage. See Figure 6. If present, drill the orifice in the cup plug out to a minimum of .125". Using a suitable method, install a .250" checkball into the feed passage shown in Figure 7.

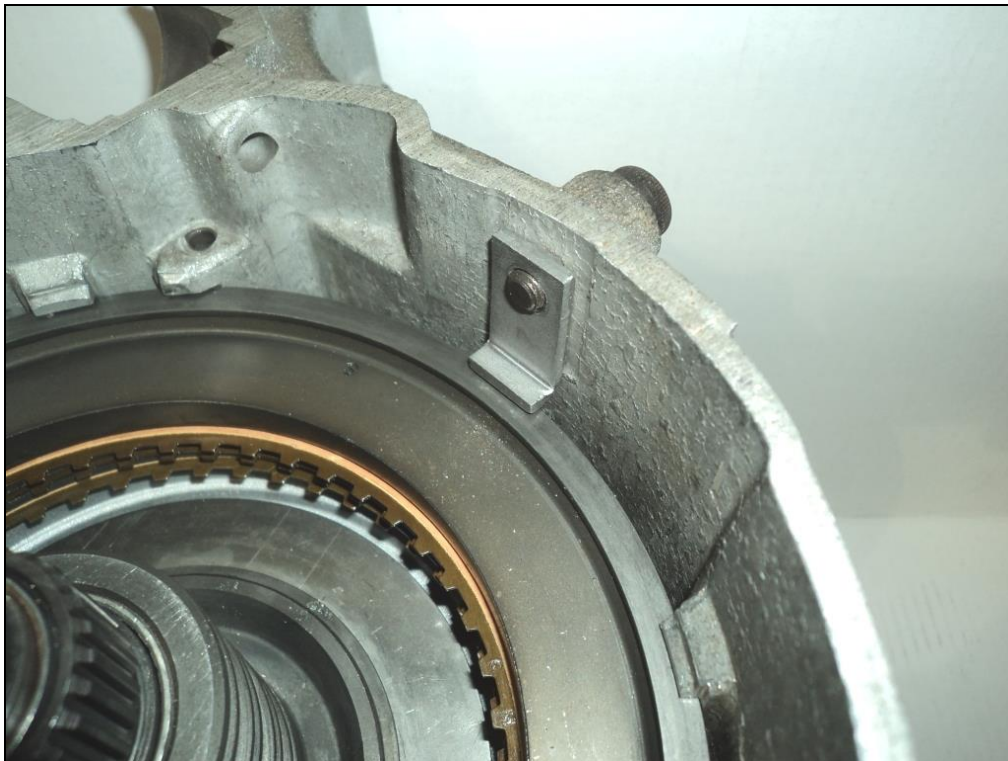


**FIGURE 6**



**FIGURE 7**

A heavy duty intermediate clutch snap ring and intermediate clutch snap ring support are supplied in this kit to reduce the chances of transmission case lug blowout. Use a punch to knock out the intermediate band anchor pin from the transmission case. Install the supplied shoulder bolt into the pin bore and attach the snap ring support bracket. Torque the shoulder bolt to 165 inch pounds. See Figure 8.



**FIGURE 8**

## Direct Clutch Housing Modifications

Remove the center lip seal from the direct clutch housing. Drill a .055" to .067" hole at a 45 degree angle through the bottom of the drum at the location shown in Figure 9. This is at the lowest 90 degree corner/machined surface of the drum right below where the bottom of the outer lip seal would be. Its purpose is to vent oil behind the direct clutch piston when the transbrake is released. Install the 16 supplied direct clutch release springs. Set direct clutch clearance to .040" to .060". Note that the use of waffle type direct clutch plates will improve transbrake apply, transbrake release, and 2-3 shift feel. It will also reduce spin losses, improving operational efficiency.

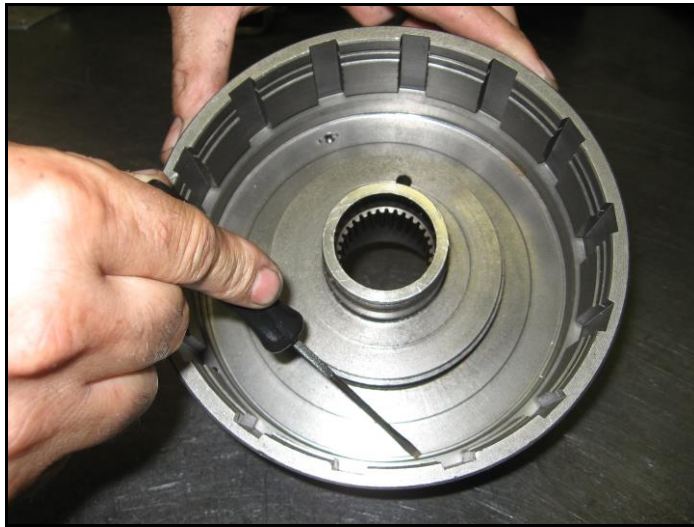


FIGURE 9

## Center Support Modifications

Remove/do not install the second center support oil sealing ring. See Figure 10.

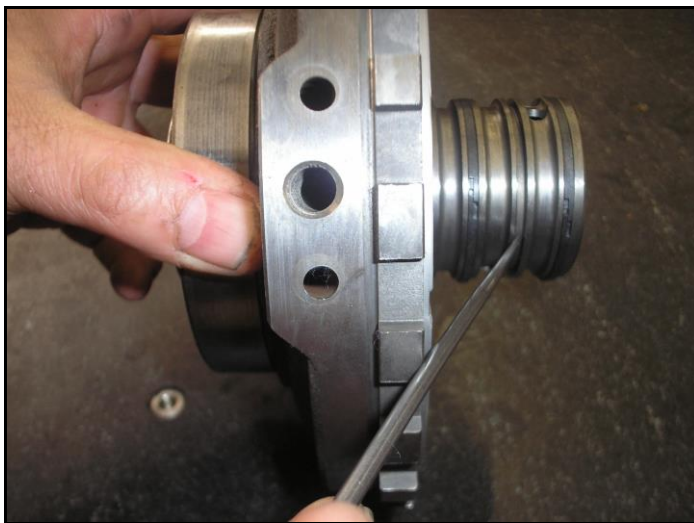


FIGURE 10

## **Cup Plug Installation**

Install the supplied .375” cup plug into the direct clutch feed passage shown in Figure 11. Be sure it is fully seated against the center support.

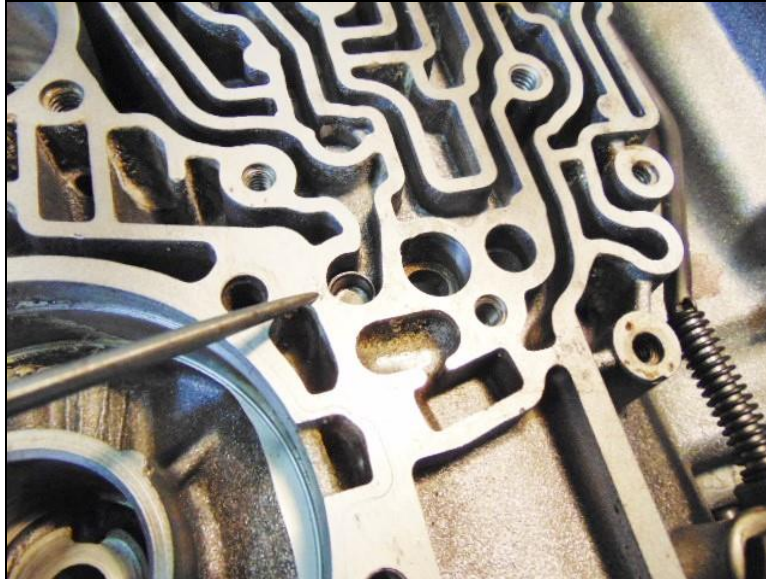


FIGURE 11

### **Additional Information**

No valve body gaskets or checkballs are required. If any gaskets or checkballs are installed, a myriad of problems can and will occur.

Removal of modulator, governor, and intermediate servo and band required.

Replace the three short valve body mounting bolts with the supplied replacements.

Torque large valve body bolts to 185 inch pounds and three small bolts to 165 inch pounds.

The transbrake solenoid requires power and ground to operate properly. It doesn't matter which side of the solenoid power or ground is supplied to.

The transbrake should be activated with a fused 20 amp momentary switch.

Start your burnout in 2<sup>nd</sup> gear and upshift to third under medium throttle. Failure to do so can result in intermediate sprag failure. Note that the use of TH400 style waved intermediate clutch plates will reduce shock loading of the intermediate sprag and greatly improve its performance and service life.

Any questions or comments regarding the operation of this product can be addressed by contacting us. Thank you for selecting our products.

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## Important Converter Charge Pressure Information

Modifying the pressure regulation system for increased line pressure is necessary when maximum torque capacity is required. Because torque converter charge pressure is a derivative of line pressure, increases in line pressure result in increased converter charge pressure. If left as is, this increase in charge pressure acting on the inside of the torque converter can push the converter, flexplate, and crankshaft forward with enough force to quickly destroy the crankshaft main thrust bearing. This occurrence is very common with the Buick Turbo V6 engine, but can occur with most small and big block engines as well. Placing a restriction in the converter charge circuit reduces the chances of this occurrence. With the pressure regulation system supplied in this kit expect 195 to 200 psi line pressure, and 65 to 75 psi converter charge pressure @ and above 1000 rpm. The following modification should be performed on all TH400 transmissions with increased or fixed line pressure to reduce converter charge pressure to a safe level. Locate the converter charge passage in the pump cover. See Figure A. Using a 5/16-18 tap, thread the passage to a depth of approximately .250". See Figure B. Install the supplied 5/16-18 X 3/16 brass set screw shown in Figure C into the tapped hole, ensuring it is installed to a depth below the pump cover face. Drill out a new .110" to .115" converter charge orifice thru the set screw. See Figure D. IT IS NOW FIXED.



FIGURE A



FIGURE B



FIGURE C

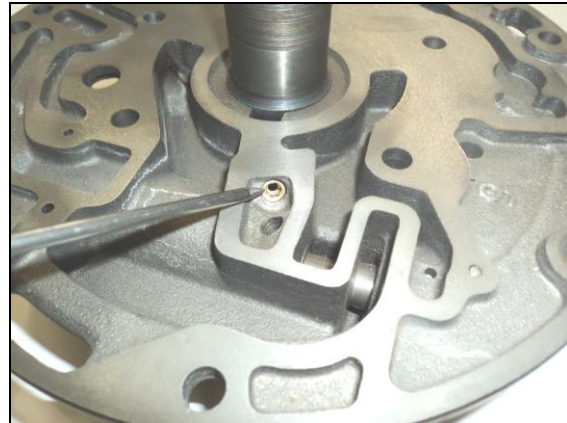


FIGURE D