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INSTALLATION INSTRUCTIONS  
FOR

# HP2315

## TH400 2-SPEED TRANSBRAKE VALVE BODY KIT 9/25/16

For over 45 years our goal has been to provide racers and enthusiasts with reliably engineered, U.S. manufactured, torque converters and drive train components for your high performance application. *Before you start your build, please take a few moments to review the important Product Safety Information and installation steps set out within this instruction manual.* If you still have questions; Hughes Performance® technical team is here to help: (1-800-274-RACE).

**Important Product Safety Information**

Throughout these instructions important safety information is generally preceded by one of three signal words indicating the relative risk of injury. The signal words mean:

**! WARNING** a hazardous situation which if not avoided could result in death or serious injury. **You CAN be Killed or Seriously Injured if you do not follow instructions.**

**! CAUTION** a hazardous situation which if not avoided could result in minor or moderate injury. **You CAN be moderately INJURED and also may suffer property damage if you don't follow instructions.**

**NOTICE** careful attention is required to follow this installation instruction or operation but does generally not relate to personal injury. Damage to your product or other property may result if you do not follow instructions.

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**! WARNING:** Improper selection of Hughes Performance® products, failure to follow installation instructions and/or misuse increases the risk of injury or accident. For your safety and the safety of others:

- Assure the Hughes Performance® product selected is intended for your application with an additional safety margin above your expected horsepower, torque, and intended usage of product and vehicle.
- These instructions are not intended to address all risks related to modification of your vehicle or use. Remember: *you are the builder and chief safety engineer for your modified vehicle.* Consult and follow all OEM warnings and operating limitations.

(For Calif. Residents-Prop. 65):

**! WARNING**

This product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

(for more information on Prop. 65 see [www.P65Warnings.ca.gov/product](http://www.P65Warnings.ca.gov/product))

To reduce risks: work with gloves, safety glasses, wash hands before eating, and dispose of any fluids properly.

**! WARNING:** Use protective eyewear and gloves. If dusty, use face mask, wet and wipe clean working surfaces. Transmission fluids and cleaning products are highly flammable! Avoid open flame, welding sparks, smoking, or other sources of ignition. Flexplate, torque converter, and transmission assembly involves heavy parts and pinch points. Use support jacks and review installation steps before attempting.

INSTALLATION INSTRUCTIONS  
FOR HP2315  
TH400 2-SPEED TRANSBRAKE VALVE BODY KIT

***Please read all instructions carefully before beginning installation! Installation should only be performed by a professional with experience in building TH400 drag racing transmissions.***

This valve body has been designed for use in a competition application only. This valve body is not intended for use in a street-driven application. Please read and follow these instructions carefully! ***CAUTION: Installation should be performed by qualified personnel. Improper installation may cause personal injury, property damage, or even death.***

**\*\*\*\*\*!WARNING\*\*\*\*\***

**DO NOT shift transmission into neutral during shutdown unless using a billet direct drum!!!**

**Transbrake will activate in low gear AND high gear! DO NOT activate or bump transbrake button down track or immediate transmission damage WILL occur! Personal injury, property damage, or even death may also result!**

**\*\*\*\*\***

Please verify all appropriate parts have been included with the transbrake kit before beginning installation. The following components will be included inside the box:

- Valve body
- Separator plate
- Upper and lower valve body gaskets
- Manual valve
- Rear accumulator spring
- Solenoid and o-ring
- (16) direct drum springs
- Brake valve
- Brake valve spring
- Pressure regulator spring

**NOTE:** Valve body is full manual with a forward shift pattern (P-R-N-2-1). Reverse is activated by engaging the solenoid while transmission shift lever is in reverse position. Powerglide shifter may be used with TH400 shift arm and shift cable bracket.

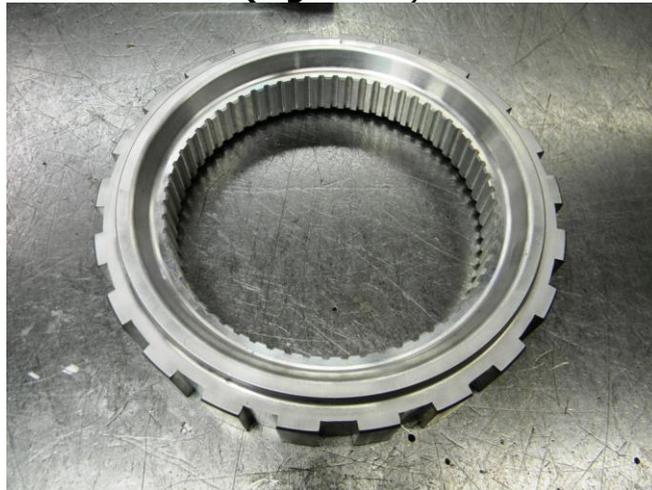
We recommend that you secure the services of an experienced transmission builder in order to achieve proper installation of this product. This guide is written to assist you in the installation of this product. It is not intended to be a transmission rebuilding guide, and is designed for the experienced professional to follow in detail for proper installation and transmission function.

1. If installing this valve body into TH400 that is already equipped with our HP2215 3-speed transbrake valve body then please read step **2**, then skip to step **16**.
2. We recommend replacing the cast iron direct drum assembly with Hughes Performance part number HP2234A billet aluminum direct drum assembly for any 2-speed application. If electing to retain cast iron direct drum assembly then exercise extreme caution as follows: **! WARNING: DO NOT shift transmission into neutral during shut down unless using a billet direct drum!!! Shifting transmission into neutral during shut down or from speed can result in explosion of cast iron direct drum!**
3. Begin transmission disassembly by removing front pump, input shaft and forward drum assembly, and direct drum assembly.
4. **NOTICE** Remove and discard the intermediate band.
5. If desired, you may remove the center support and reaction carrier (front planetary) in order to remove the low roller clutch. The low roller clutch may be discarded as it is no longer necessary for proper transmission function with the HP2315 2-speed valve body. This step is **not** required for proper transmission function, and is up to the discretion of the end-user.
6. At this point you have two options: you can eliminate the intermediate clutch pack and apply piston from the transmission by installing our billet aluminum intermediate clutch pack eliminator available separately under part number HP2260 (recommended), or you can leave the intermediate clutch pack functional and in place.

**NOTICE** Use of HP2260 clutch eliminator **requires** use of HP2234B direct drum or HP2234A direct drum (**we recommend HP2234A!**). HP2260 **will not** work with conventional drum set up for 34-element intermediate sprag.

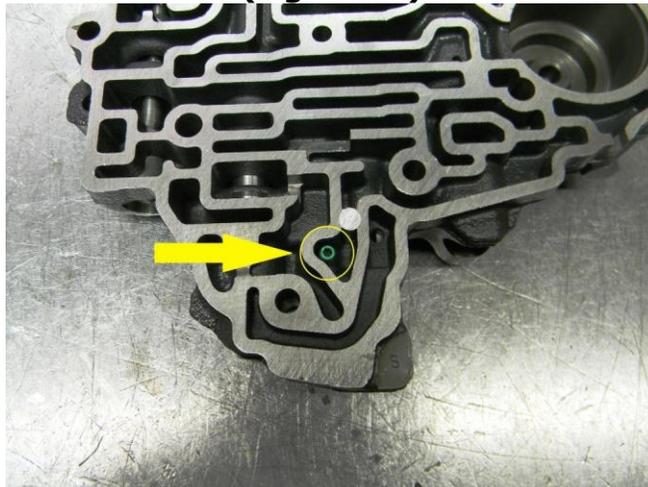
If you are choosing to install HP2260 (with HP2234A/B drum) then remove intermediate clutch pack, intermediate clutch spring retainer, intermediate clutch return springs, and intermediate clutch apply piston with seals. Replace these intermediate components with HP2260 clutch eliminator (*see figure 1A*).

(Figure 1A)



**If you are leaving the intermediate clutch pack and components in place and functional then you *must* remove the plug located in the valve body that is highlighted with green paint.** (*see figure 1B*) **DO NOT** remove plug if you are using the HP2260 clutch eliminator.

(Figure 1B)



7. If re-using the original cast iron direct drum (refer back to step 2) then disassemble direct drum completely by removing clutch pack, spring

retainer, springs, apply piston, and seals. **NOTICE** Using a 1/16" drill bit, drill a constant bleed orifice into the direct drum from the inside out behind the piston area. The drill may be held at a 45 degree angle for more drilling room (*see figure 2*).

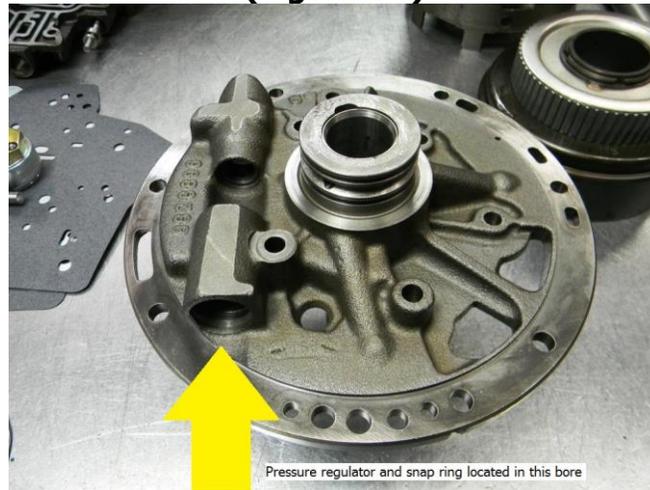
(Figure 2)

Drill 1/16" constant bleed orifice into direct drum here:



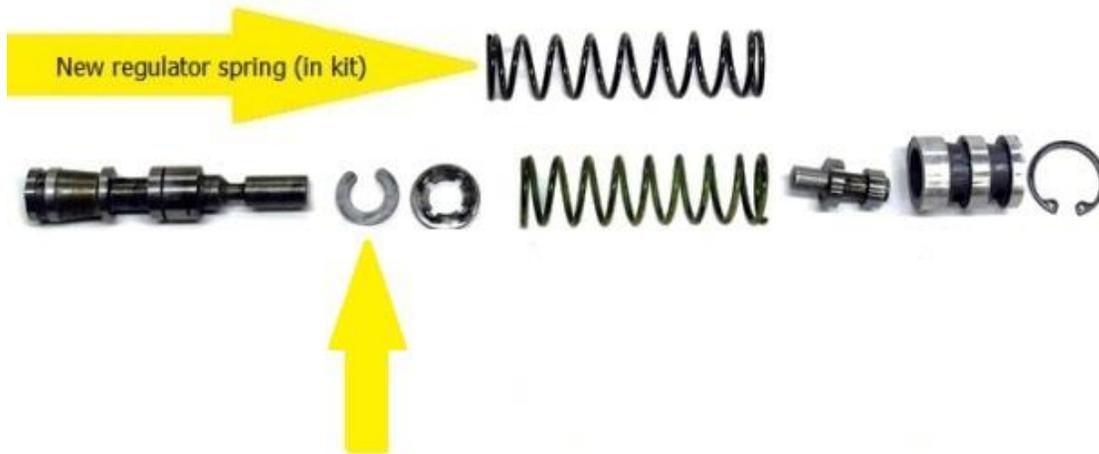
8. Once the bleed hole has been installed, **remove the center lip seal from inside the drum and discard it.** Re-install the direct apply piston. Install the direct return springs as supplied with the kit. Re-install the retainer and snap ring. Re-install the direct clutches and steels. We recommend .050" - .070" total clearance in the direct clutch pack. **Remove the second sealing ring from the center support (as viewed from the front of the transmission) and discard it.** Removal of the center lip seal from the piston and second sealing ring from the center support will properly dual feed the direct clutch. We recommend the use of Teflon sealing rings on the other three ring lands of the center support (as well as the pump stator).
9. Locate the pressure regulator snap ring that retains the pressure regulator assembly in the front pump (*see figure 3A*).

(Figure 3A)



Apply pressure to the booster sleeve and remove the snap ring. Slowly remove the booster sleeve assembly. **! CAUTION** Be careful when handling these parts in order to prevent injury, as the unit is under spring tension. You may have to tap on the sleeve to free it from the bore. Remove the booster sleeve and valve, pressure regulator spring, spring retainer, spacers, and the pressure regulator valve. Replace the original pressure regulator spring with the spring supplied in the kit. Discard any horseshoe spacers. Slip the spring over the small end so it comes in contact with the retainer. Push the entire assembly up into the case. Push up on the booster sleeve and install snap ring (*see figure 3B*). Make sure the snap ring seats completely in the groove!

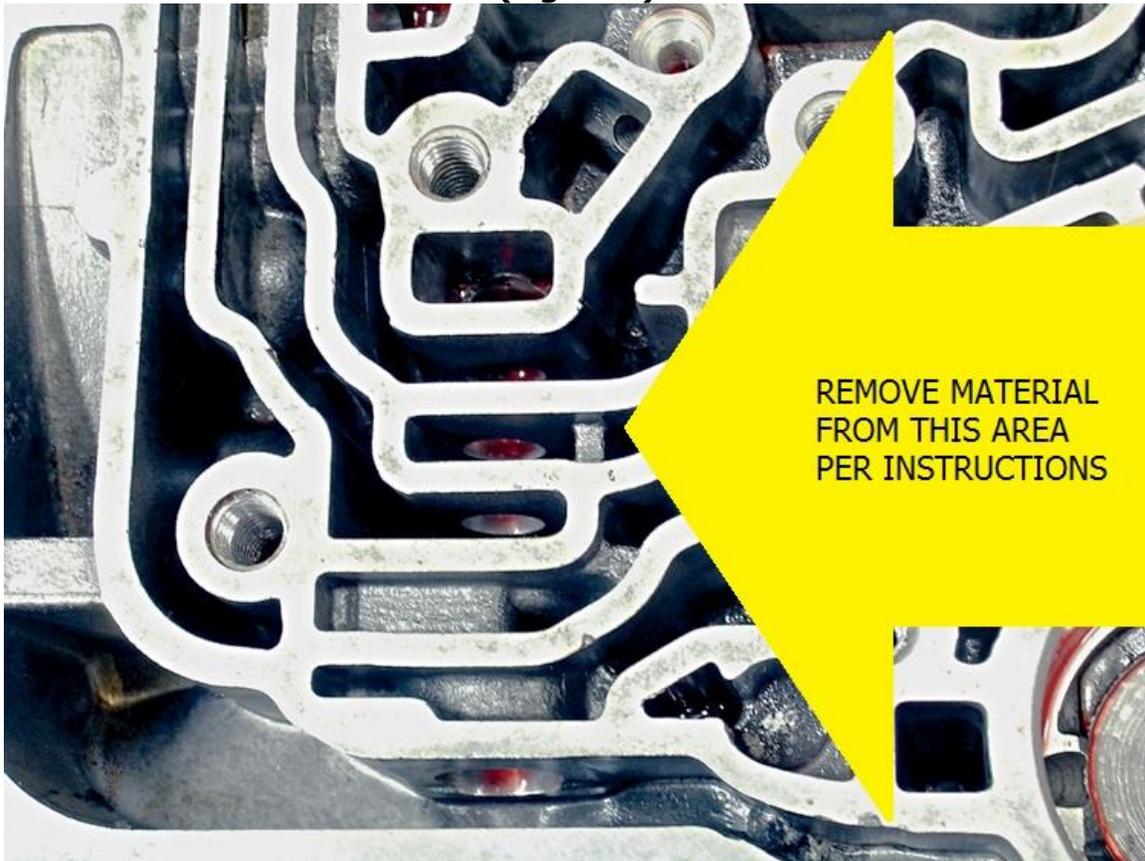
(Figure 3B)



Discard any horseshoe spacers per step 9

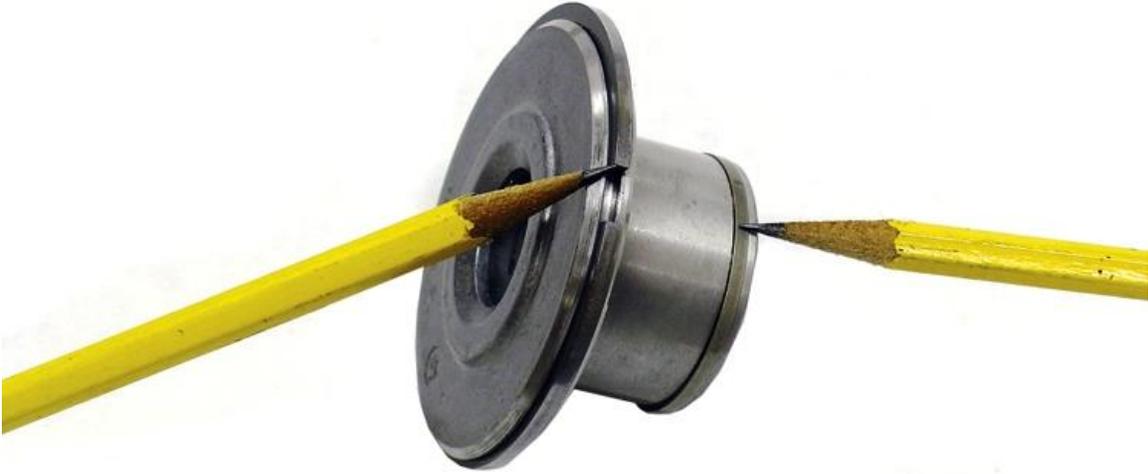
10. Reassemble the drums and front pump into the transmission case. Exercise caution to not pinch or damage the sealing rings on the center support or pump stator! Be sure to verify correct end-play (.010" - .025").
11. Remove the original valve body, separator plate, and gaskets. Remove governor, governor supply tubes, and discard them. Remove and discard all check balls. Remove and discard intermediate band apply servo and spring. Re-install governor cover.
12. **NOTICE** Using an 1/8" round rat-tail file, carefully open passage area adjacent to modulator bore (*see figure 4*). At least half of the casting wall should be removed. Care should be taken to not scratch or nick the bore area where the brake valve enters. This modification is necessary for proper transbrake release.

(Figure 4)



13. Remove the 6 bolts holding the servo cover to the case and remove reverse servo assembly. Remove and discard the sealing rings that are on the accumulator piston (*see figure 5*).

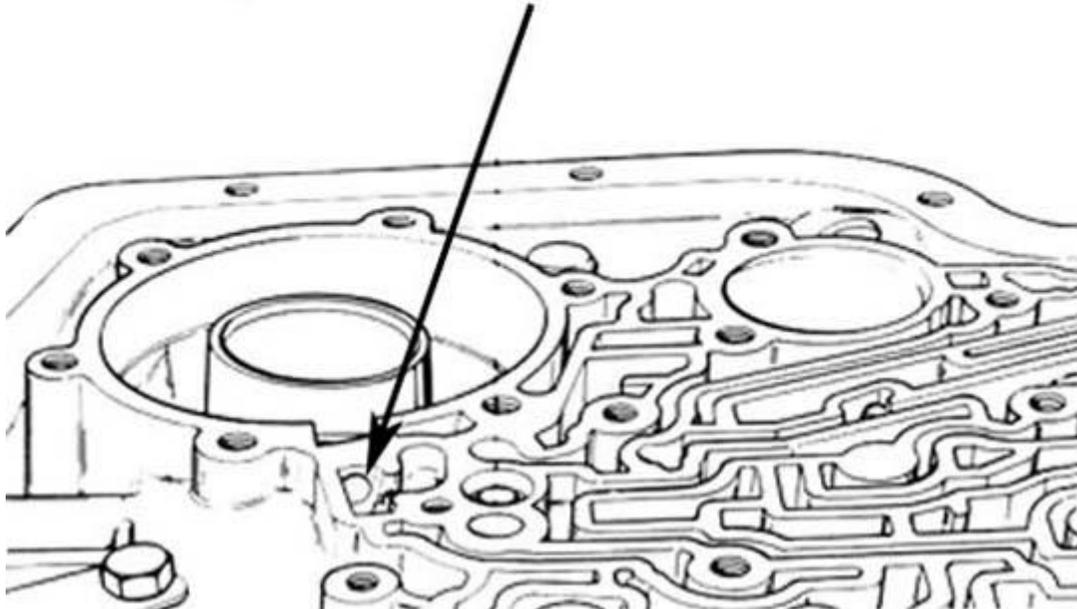
(Figure 5)



14. **NOTICE** For installations in late model cases that are equipped with a factory-installed restriction in the reverse servo piston apply hole, remove and discard the restrictor. The restrictor resembles a freeze plug installed in the apply hole (*see figure 6*).

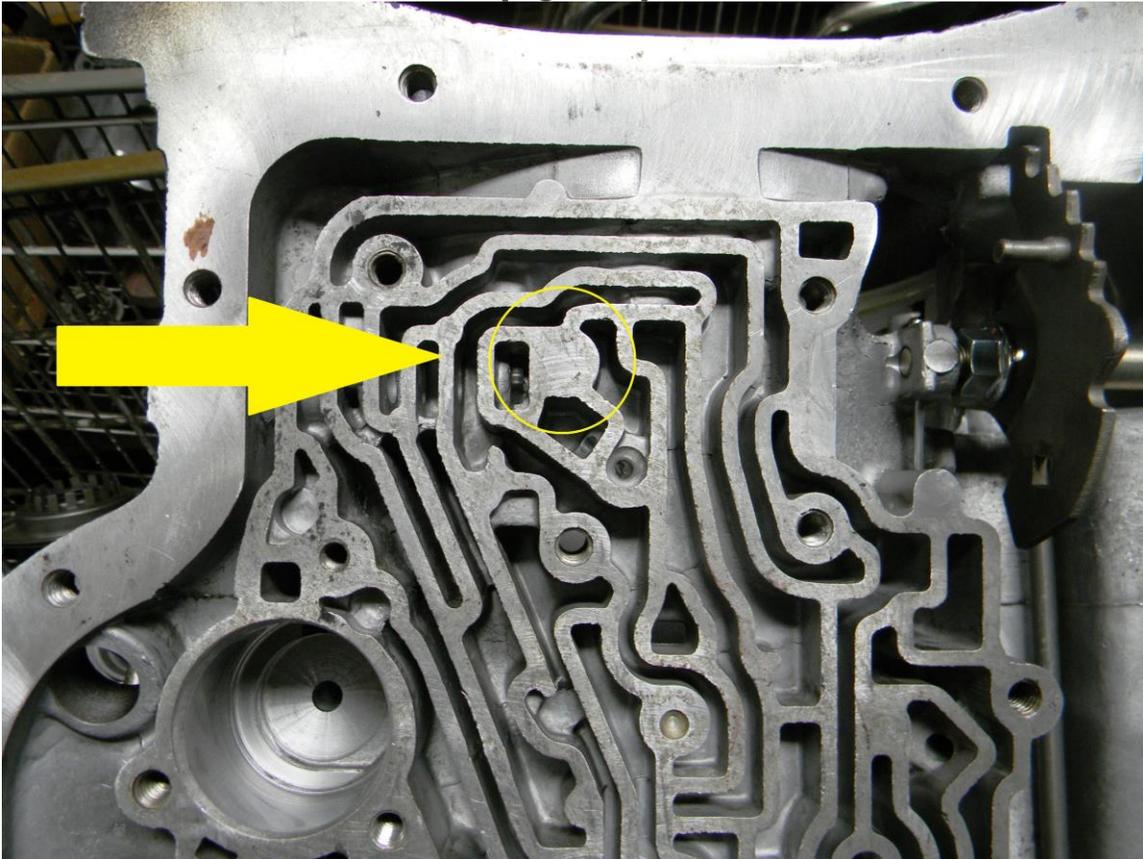
(Figure 6)

**REVERSE SERVO PISTON APPLY HOLE  
REMOVE RESTRICTOR PLUG IN LATE "87" & UP  
(JULIAN DATE 87327 & HIGHER)**



15. Reassemble reverse servo assembly with new accumulator spring as supplied in the kit.
  
16. **! CAUTION** Drill and tap 12<sup>th</sup> valve body bolt hole in transmission case if your case does not have this bolt hole (*see figure 7*). Using the new valve body as a template, use a transfer punch through the bolt hole in the valve body to mark location on case. We recommend using the valve body as a guide for drilling and tapping so that the new hole in case remains straight and true. Install a drill stop on a letter "F" drill bit so that bolt hole in case is drilled to a depth of 5/8". Drill bolt hole in case to 5/8" depth. Tap hole with 5/16"-18 bottoming tap. Thoroughly clean all debris from case and valve body. **NOTICE** Exercise ***extreme caution when drilling into case so as not to drill through case!***

(Figure 7)



17. Remove vacuum modulator, modulator valve, and discard both items. Install brake valve spring onto brake valve. Install brake valve and spring assembly into modulator valve bore. Push on valve while it is in the case to make sure that there is no drag and that valve moves freely. Install solenoid and o-ring into modulator bore re-using the original modulator retainer clamp and bolt to secure it to the case.
18. Remove plug in new valve body for transmissions still using intermediate clutches (refer back to red highlighted note in step 6). Install new transbrake valve body with separator plate and gaskets as supplied in kit, taking care to install 12<sup>th</sup> valve body bolt as supplied in kit. Use manual valve as supplied in kit, taking care to make sure the manual valve is properly engaged with internal shift linkage.
19. Install filter and pan.

**NOTE:** Cooler fittings should never be plugged. If a cooler is not used, connect lines together with a loop.

After assembly of transmission is completed, necessary wiring for the transbrake solenoid may be performed. Use a high quality momentary switch for transbrake activation. Connect a minimum 14 gauge wire from lead of switch to reliable 12V+ source. Connect other lead from switch to one of the solenoid wires. Connect other solenoid wire to a good source of chassis ground that is free of paint, rust, grease, dirt, etc. The transmission case is **not** a good source of ground! We do not recommend the use of a relay on the transbrake solenoid. A 20-amp in-line fuse may be installed for safety purposes. Be sure to use good quality wiring connections, preferably with solder for maximum durability and conductivity.

**NOTE:** Valve body is full manual with a forward shift pattern (P-R-N-2-1). Reverse is activated by engaging the solenoid while transmission shift lever is in reverse position. Powerglide shifter may be used with TH400 shift arm and shift cable bracket.

## **WARRANTY**

Hughes Performance offers a limited warranty covering all race transmission components for 30 days from the original date of purchase to be free from flaws in material and workmanship. The warranty is non-transferable. Under no circumstances will Hughes Performance extend its warranty to products, new or repaired, which have abused, misused, or incorrectly installed. Disassembly of any product by any means other than a Hughes Performance technician will void any potential warranty. All warranty claims must be accompanied by the original invoice and are subject to the approval of Hughes Performance. During the specified warranty period Hughes Performance will repair or replace any parts determined to be defective due to workmanship or material. Defective product(s) must be returned to Hughes Performance via freight prepaid by the purchaser. Additional charges will be made for damaged parts due to improper installation, misuse, or abuse. This Hughes Performance warranty is limited to the value of the part(s) covered by this warranty and is in lieu of all other warranties expressed or implied, including the warranty of merchantability and fitness of the product for any purpose. No consequential damages or other charges, implied or expressed, are allowed.

Under no circumstances will Hughes Performance be held responsible for incidental and/or consequential damages arising from or in connection with the installation or use of any Hughes Performance product. The installation of any Hughes Performance products shall indicate an awareness on the part of the customer that he/she is modifying said vehicle to compete with and operate in a

potentially hazardous environment. The customer accepts full responsibility for consequential damages and liabilities, indemnifying Hughes Performance.