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HUGHES PERFORMANCE® HP2229 VALVE BODY

Installation Instructions 8/10/16

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)

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

SAFETY INFORMATION SPECIFIC TO THE HP2229 VALVE BODY

NOTICE This valve body is intended for use in street-driven or mild street/strip vehicles. This valve body should not be used in off-road applications where full manual control of the transmission is a more appropriate choice. This valve body should not be used in combinations producing in excess of 750 flywheel horsepower. Please use a full manual valve body in such a combination. This valve body should not be used in supercharged or turbocharged applications unless adequate measures have been taken to insure proper vacuum modulator function when the engine transitions into positive manifold pressure (boost).

! CAUTION: We recommend that you secure the services of an experienced transmission builder in order to achieve proper installation of this product. These instructions and Safety messages are a general guide to assist the builder in the installation of this product. They are not intended to be a transmission rebuilding guide. The steps herein are designed for the experienced professional to follow in detail for proper installation and transmission function. Specialty tools are required to complete proper installation of this valve body.

! WARNING: Do not shift the transmission into neutral under load or with vehicle or drive shaft in motion. Do not turn off engine under load or with vehicle or drive shaft in motion. Doing so will cause an over speed condition of the direct drum within the transmission, increasing risk of direct drum failure, explosion, and injury.

! CAUTION: Recommended Burn Out Procedure: (1). Place transmission in second gear. (2). Begin burn out procedure and shift transmission into third gear while tires are still spinning. (3). Complete burn out procedure accordingly with transmission remaining in third gear. Failure to follow this burn out procedure is considered product misuse, and will result in excessive shock to the intermediate sprag within the transmission, resulting in premature sprag wear and increased risk of transmission failure.

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

- Valve body
- Separator plate
- Upper and lower valve body gaskets
- Pressure regulator spring
- (3) check balls

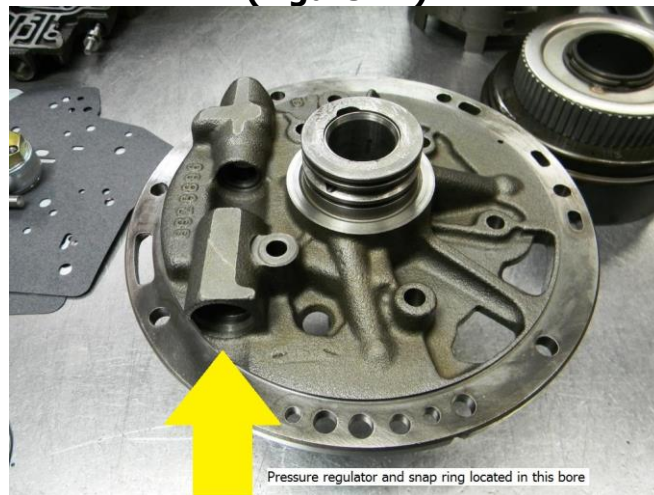
NOTICE: Valve body features automatic shifting when transmission is placed in 3rd (D) gear. Valve body will allow manual upshifting or downshifting at any road speed or engine RPM. Valve body features forward shift pattern (P-R-N-3-2-1).

Installation Sequence

! 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.

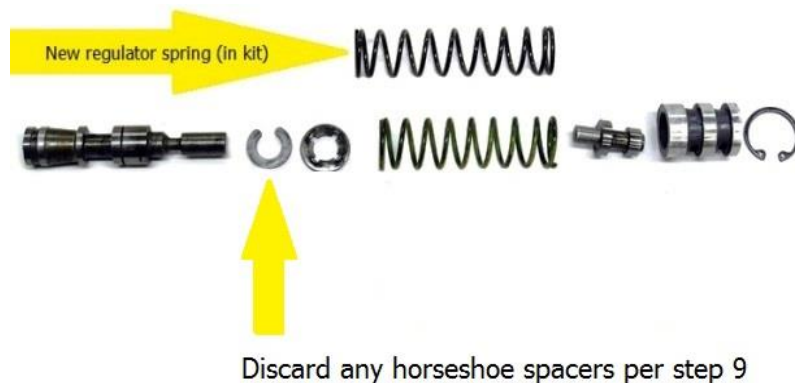
1. Clean all dirt, grease, oil, and any other foreign substances or contaminants from the outside of the transmission and all associated surfaces. Be sure to dispose of all cleaning products and chemicals in a manner consistent with local regulations.
2. Properly secure transmission to a clean work bench or appropriate transmission service stand. If performing valve body installation while transmission is still in vehicle then take proper steps to properly support vehicle. **! WARNING:** Failure to properly support vehicle may result in serious injury or even death.
3. **NOTICE** Remove transmission pan, filter, valve body, separator plate, upper and lower valve body gaskets, governor tubes, and all check balls from inside of transmission case.
4. Locate the pressure regulator snap ring that retains the pressure regulator assembly in the front pump (*see figure 1A*).

(Figure 1A)



Apply pressure to the booster sleeve and remove the snap ring. Slowly remove the booster sleeve assembly. 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 1B*). Make sure the snap ring seats completely in the groove! **! CAUTION:** Pressure regulator components are under spring tension. Specialty tools are required for proper removal and installation.

(Figure 1B)



5. If the transmission has been removed from the vehicle then install (3) new check balls included in the kit into the transmission case. If the transmission is still in the vehicle then install the (3) new check balls included in the kit on top of the new upper valve body gasket and new separator plate. Use some TransJel® assembly lubricant or petroleum jelly to hold the check balls in place if necessary (*see figure 2*). **DO NOT** install any other check balls into transmission other than the (3) new check balls included in the kit.

(Figure 2)

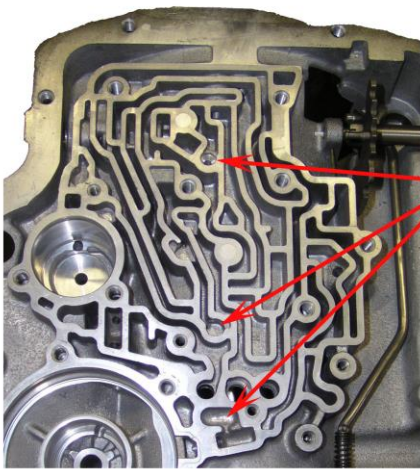


Figure 1: if transmission is on bench

INSTALL (1) NEW
CHECKBALL
AT EACH
OF THESE
LOCATIONS

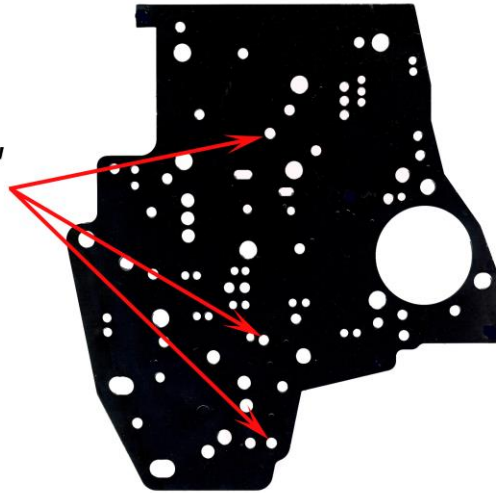


Figure 2: if transmission is in vehicle

6. **NOTICE** Install upper valve body gasket and separator plate onto transmission case. Install detent solenoid and bolts in order to hold gasket and plate in place on the transmission case. Only hand-tighten the detent solenoid bolts. DO NOT tighten detent solenoid bolts completely until valve body is installed.
7. Install new lower valve body gasket, new valve body, and governor tubes onto transmission. Be sure to properly engage the manual valve into the shift linkage when installing the valve body. Tighten all valve body bolts to 100 inch/pounds using an appropriate inch/pound torque wrench.
8. Install filter and pan.
9. Make sure that vacuum modulator is connected to a source of manifold vacuum on the engine. DO NOT use a complete length of soft hose or tubing to connect modulator to manifold vacuum source. Use 3/16-inch or 1/4-inch hard line over the length of the modulator line, with only very short soft hose or tubing to act as unions between the vacuum nipples and hard line. **NOTICE** Failure to connect vacuum modulator to manifold vacuum source on engine will result in transmission malfunction, and may lead to premature transmission failure. **NOTICE** Failure to use appropriate length of hard line to create vacuum connection between modulator and engine may result in transmission malfunction, including but not limited to damage to transmission.

! WARNING: Cooler fittings should never be plugged. If a cooler is not used, connect lines together with a loop of hard line or appropriate flexible hose that is compatible with automatic transmission fluid and that carries a minimum 500 PSI rating. Street-driven vehicles should ALWAYS utilize a quality transmission fluid cooler.

NOTICE: Valve body features automatic shifting when transmission is placed in 3rd (D) gear. Valve body will allow manual upshifting or downshifting at any road speed or engine RPM. Valve body features forward shift pattern (P-R-N-3-2-1).

Your Hughes Performance® product is covered by our Exclusive Limited Warranty (see separate term sheet or online at www.hughesperformance.com). *Failure to follow these instructions is considered misuse which at Hughes option may void your coverage under your Limited Warranty.* If you have any questions regarding your purchase, installation, or other Hughes Performance® products, please contact us at: 1-800-274-RACE, (fax: 602-340-8429), or online at www.hughesperformance.com

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WE APPRECIATE YOUR SUPPORT OF OUR PRODUCTS!**