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**HUGHES PERFORMANCE® HP3215 VALVE BODY**

Installation Instructions 8/11/16

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.

**SAFETY INFORMATION SPECIFIC TO THE HP3215 VALVE BODY**

**! WARNING:** This valve body is intended for use in a competition application only never to be used on public streets or highways. This valve body is not intended for use in a street-driven application.

**! 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.

**! WARNING:** Do not activate transbrake feature with vehicle or drive shaft in motion. Activation of transbrake feature with vehicle or drive shaft in motion will result in transmission damage and potential injury.

**! CAUTION:** Do not perform a 3-2 downshift under load or with vehicle or drive shaft in motion. Performing a 3-2 downshift under load or with vehicle or drive shaft in motion will excessively shock the intermediate sprag within the transmission, resulting in premature sprag wear or even failure. Progressive, accelerated damage will occur within the transmission in the result of an intermediate sprag failure.

**! 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 transbrake kit before beginning installation. The following components will be included inside the box:

- Valve body
- Separator plate
- Upper and lower valve body gaskets
- Solenoid and o-ring
- (17) direct drum springs
- Brake valve
- Brake valve spring
- Steel cup plug to delete intermediate servo

**NOTICE:** Valve body requires manual shifting in all modes of operation, and features a reverse shift pattern (P-R-N-1-2-3). Engine braking feature in 2<sup>nd</sup> and 3<sup>rd</sup> forward ranges is deleted as the intermediate band function is eliminated in the transmission with this valve body installed.

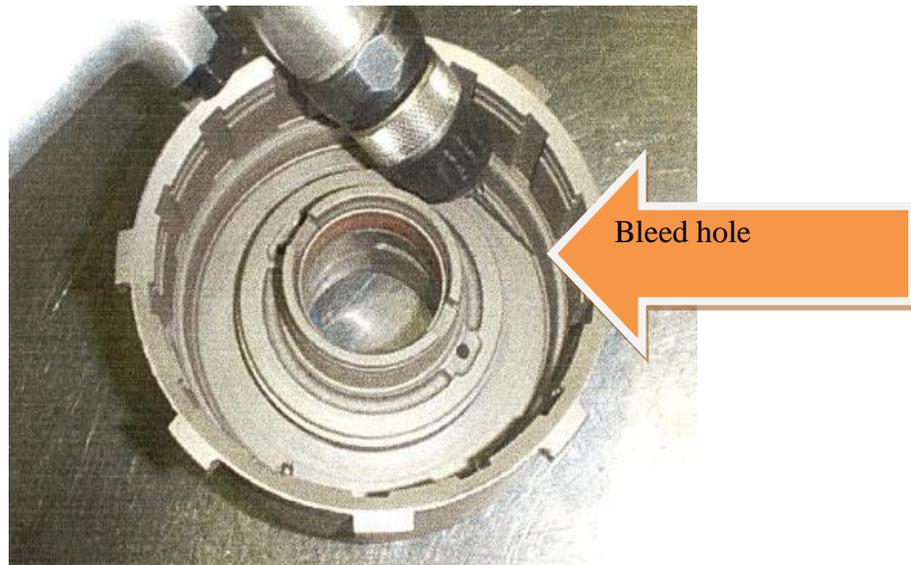
## **Installation Sequence**

**! 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. We recommend that a custom direct drum equipped with a 36-element intermediate sprag or with a mechanical diode be installed in the transmission. Hughes Performance® offers a custom direct drum with 36-element intermediate sprag under part number HP3279. **! WARNING** The original GM intermediate roller clutch design is prone to failure when used with a transbrake valve body. Use of an OE-style intermediate roller clutch may result in progressive, accelerated wear and/or damage to the transmission, including but not limited to catastrophic transmission failure, personal injury, and/or death.
2. 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.
3. Properly secure transmission to a clean work bench or appropriate transmission service stand.
4. Remove transmission pan, filter, valve body, support plate, separator plate, upper and lower valve body gaskets, and all check balls from transmission case. Discard all check balls. Remove and discard the intermediate servo assembly.
5. Remove and discard the governor. Governor is located under the round stamped steel cover located on the driver side of the transmission case. Re-install governor cover. You may choose to use a small amount of red permanent thread locking compound on the outer lip of the governor cover during re-installation in order to insure cover remains in place.
6. The kickdown feature is deleted from the transmission when using this valve body. Delete kickdown cable from transmission. Plug hole in the transmission case accordingly.

7. Completely disassemble transmission by removing front pump, direct drum, input shaft and forward drum assembly, planetary gear sets, sun shell, and low/reverse roller clutch housing. Complete disassembly is required in order to gain access to the reverse clutch pack. **NOTICE:** Specialty tools are required in order to properly remove front pump from transmission assembly.
8. Remove and discard the intermediate band.
9. If re-using the original cast iron direct drum, disassemble direct drum completely by removing clutch pack, spring retainer, springs, apply piston, and seals. Discard the original springs. Using a .050-inch drill bit, and wearing safety glasses/gloves, 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 1*). **! CAUTION:** Spring retainer and springs are under spring tension. Specialty tools are required for proper removal of spring retainer.

**(Figure 1)**



10. 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 new direct return springs as supplied with the kit. Re-install the retainer and snap ring. Re-install the direct clutches and steels. We recommend that (5) clutches and (5) steels be installed in the direct clutch pack. We recommend .040 - .050-inch total clearance in the direct clutch pack. Remove the second sealing ring from the pump stator (*as viewed from the front of the transmission*) and discard it (**see figure 2**). Removal of the center lip seal from the piston and second sealing ring

from the pump stator will properly dual feed the direct clutch. We recommend the use of Teflon sealing rings on the other four ring lands of the pump stator. **NOTICE:** Use of cast iron sealing rings or any other sealing ring material other than Teflon will result in premature wear within the bore of the direct drum, and may lead to premature transmission failure.

(Figure 2)



11. We recommend a minimum of (5) clutches and (5) steels in the reverse clutch pack. Overall reverse clutch pack clearance should be set between .030 - .040-inch total.
12. Reassemble the transmission rotating assembly and front pump into the transmission case in the reverse order of disassembly. Retain the use of the intermediate wave steel. Tighten all front pump bolts to 15 foot/pounds using an appropriate foot/pound torque wrench. **NOTICE:** Do not pinch or damage the sealing rings on the pump stator! Be sure to verify correct end-play (.010-inch to .025-inch).

13. Remove vacuum modulator and discard. 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 the valve moves freely. Use a small amount of ATF, TransJel® assembly lubricant, or petroleum jelly on the brake valve as pre-lube and to insure smooth operation. Install solenoid and o-ring into modulator bore re-using the original modulator retainer clamp and bolt to secure solenoid to the case.
14. Install the 2.25-inch steel cup plug included with the kit into the transmission case bore where the intermediate servo was originally installed (*see figure 3*).

**(Figure 3)**



15. Install new upper valve body gasket, new separator plate, and new lower valve body gasket onto transmission case. Install support plate to hold gaskets and separator plate in place. Only hand-tighten the support plate bolts. DO NOT tighten support plate bolts completely until valve body has been installed onto transmission.
16. Install new valve body. Be sure to properly engage the manual valve "S" clip with shift linkage. DO NOT re-install any check balls into transmission. Tighten all valve body bolts to 100 inch/pounds using an appropriate inch/pound torque wrench.
17. Install filter and pan.

**! 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.

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. **! WARNING:** Failure to use appropriate wiring methods, tools, and electrical components can result in improper product function, premature product failure, short circuits, and fire.

**NOTICE:** Valve body requires manual shifting in all modes of operation, and features a reverse shift pattern (P-R-N-1-2-3).

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Your Hughes Performance® product is covered by our Exclusive Limited Warranty (see separate term sheet or online at [www.hughesperformance.com](http://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](http://www.hughesperformance.com)

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WE APPRECIATE YOUR SUPPORT OF OUR PRODUCTS!**