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HUGHES PERFORMANCE® HP3210R VALVE BODY
Installation Instructions 2/21/17

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.



! 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 HP3210R 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.

! 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 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
- Steel cup plug to delete intermediate servo
- Modulator plug and o-ring
- (17) springs for direct drum

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 2nd and 3rd 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 when using this valve body in applications exceeding 500 flywheel horsepower, or any application being used in a severe duty or abusive environment. Hughes Performance® offers a custom direct drum with 36-element intermediate sprag under part number HP3279.
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 the transmission pan, filter, valve body, separator plate, support plate, and gaskets. Remove and discard all check balls. Remove and discard intermediate servo and spring.
5. 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.
6. Partially disassemble transmission by removing front pump and direct drum assembly. **NOTICE:** Specialty tools are required in order to properly remove front pump from transmission assembly.
7. Remove and discard the intermediate band.
8. Disassemble the direct drum by removing the snap ring, pressure plate, direct frictions and steels, spring retainer and snap ring, and apply piston. **NOTICE** Specialty tools are required in order to properly remove spring retainer and snap ring from direct drum. **! CAUTION:** Spring retainer and snap ring are under spring tension.

9. Remove the center lip seal from inside the drum and discard it. Re-install the direct apply piston into the direct drum, taking care not to damage the lip seal. Re-install the springs, retainer, and snap ring. Re-install the direct clutches, steels, pressure plate, and snap ring. 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 1*). 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 on 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 1)

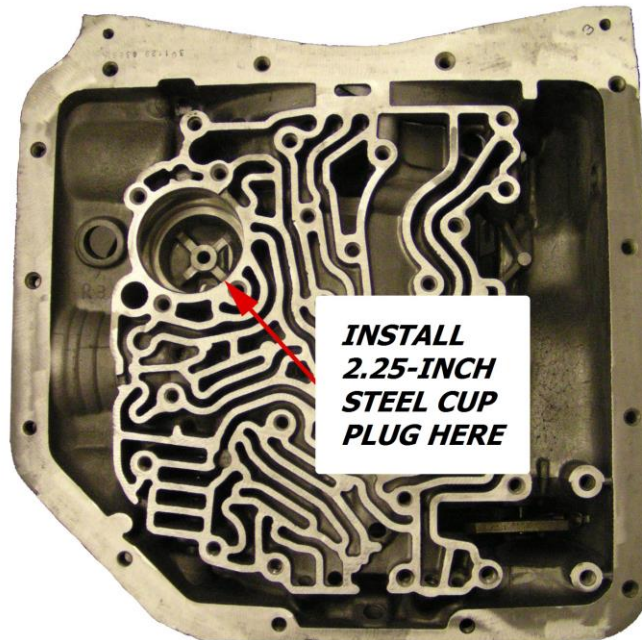


10. Reassemble the direct drum and front pump into the transmission case. Retain the use of the intermediate steel wave plate. Tighten all front pump bolts to 15 foot/pounds using an appropriate foot/pound torque wrench. **NOTICE:** Do not pinch or damage the sealing rings on the

center support or the pump stator! Be sure to verify correct end-play (.010-inch to .025-inch).

11. 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 2*).

(Figure 2)



12. Install new upper valve body gasket, new separator plate, and new lower valve body gasket onto transmission case. Install support plate to hold gasket 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.
13. Install new valve body. Be sure to properly engage the manual valve "S" clip with shift linkage. Tighten all valve body bolts to 100 inch/pounds using an appropriate inch/pound torque wrench.
14. Remove and discard vacuum modulator. Leave original modulator valve in place inside the transmission case. Install modulator plug and o-ring into modulator bore. Re-use the original modulator retainer clamp and bolt to secure the plug to the case.

15. Remove and discard 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 outside lip of the governor cover during re-installation in order to help keep cover secured to transmission case.

16. 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.

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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). *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!**