

6000-Series Hydraulic Release Bearing

The hydraulic release bearing assembly is self-adjusting in that the bearing stays close to the clutch spring at all times, even though the spring changes position with clutch wear. There is no extra return spring that pulls the piston back all the way to the bottomed position. In this respect, the piston in the hydraulic bearing assembly works like the piston in a disc brake caliper, returning only as far as forced. This is why with a Tilton hydraulic release bearing assembly the clutch pedal feel does not change with clutch wear allowing the driver to make more consistent shifts.

The piston of this assembly has .700" of total stroke. Precision measurement of clearances and the correct adjustment of the pedal stop are extremely important to the correct function of this unit.



FREE PLAY AND HEIGHT ADJUSTMENT

1. Disconnect and remove any existing mechanical clutch linkage, fork and bearing.
2. Install the flywheel, clutch and bellhousing onto the engine. Tighten all components in place following their respective manufacturer's instructions. Do not install the transmission at this time.
3. Using a pair of dial calipers or a depth micrometer, measure the distance from the transmission face of the bellhousing to the bearing contact point of the clutch spring. Record this distance as "Dimension A". See Diagram 1.
4. For HRB with flat-face or 54mm radius-face bearing, subtract .125" from Dimension A. For HRB with 38mm or 44mm radius face bearing, subtract .200" from Dimension A. This should be the installed distance from the face of the release bearing to the face of the transmission (with the bearing and piston completely compressed into the hydraulic base). See "Dimension B" in Diagram 2.
5. Install the threaded adjustment sleeve (except for P/N 60-6105 & 60-6106) onto the snout of the bearing retainer on the front of your transmission. A small amount of petroleum jelly may be used during assembly. The o-ring end of the adjustment sleeve should be towards the transmission. **Note: Pilot tube may need to be cut shorter to clear the ID of 38mm/44mm/52mm contact bearing models in Ford applications.**
6. Thread the bearing onto the threaded sleeve until Dimension B is achieved.
7. There is a small ear and slot machined into the hydraulic base. The supplied stud fits through this slot to prevent rotation. Once the correct height of the HRB has been determined, locate and remove the transmission bearing retain bolt closest to the ear. The removed bolt will be replaced by the anti-rotation stud provided. Remove HRB and threaded sleeve from bearing retainer, being careful not to change HRB height adjustment on the threaded sleeve. Install anti-rotation stud through the slot on the hydraulic base and reinstall HRB and sleeve onto bearing retainer. Using Loctite 272 (red) thread locking compound, install anti-rotation stud into hole that original retainer bolt was removed. Torque to 16 lb-ft. DO NOT OVERTIGHTEN.

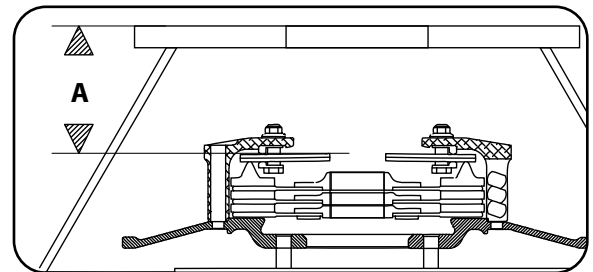
Note: If anti-rotation stud is too long and extends past face of release bearing, cut shorter to avoid any interference with clutch.

8. The hydraulic lines supplied have been installed at the factory using the proper tooling and assembly lubricant. They are designed to rotate once while installed. There is no need to remove these prior to assembly.
9. Double check that the bearing to clutch clearance is .125" (tolerance +/- .025") for flat-face or 54mm radius-face bearing HRBs or .200" (tolerance +/- .030") for 38mm or 44mm radius-face bearing HRBs.

DRIVELINE ASSEMBLY

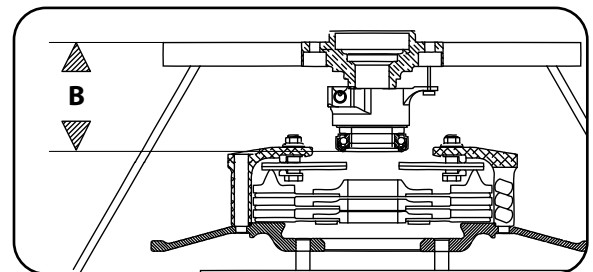
1. While installing the transmission, carefully route both lines through either the release fork window or holes that have been drilled to accommodate the lines.
2. Ensure that the lines do not interfere with the clutch or flywheel. A string may be used to help guide the lines around any obstacles during installation.
3. Once the transmission is seated, confirm that all parts of the release bearing clear the clutch and flywheel. Complete the driveline installation.

Diagram 1



Distance from Spring Fingers to Bellhousing Face

Diagram 2



Installed Distance

MASTER CYLINDER SELECTION

When used with a clutch pedal ratio between 5:1 and 7:1, the master cylinder bore sizes shown in **Diagram 3** are suggested for use with 6000-Series HRBs.

HYDRAULIC LINES

This bearing is supplied with two identical lines installed for the supply and bleed ports. Both lines are sized AN-4 and should only be used with AN type fittings. It is important that whichever line is on the bottom is used as the supply line (connected to the master cylinder) and whichever line is on top is used as the bleeder.

1. Attach the supply line to the master cylinder using your choice of rigid or flexible line. If using a Tilton master cylinder (which have AN-3 outlets) you will need a AN-3 male to AN-4 male adapter (such as Earl's part number 963243).
2. Attach the supplied bleed adapter and bleed fitting to the bleed line.

HYDRAULIC RELEASE BEARING BLEEDING

1. Fill the master cylinder reservoir with DOT3 or DOT 4 brake fluid. Do not use DOT 5, silicone based or high temperature resistant brake fluids designed for more than 550°F as some will cause the seals to swell.
2. Apply light force on the clutch pedal. You want enough force to hold the bearing out against the clutch diaphragm spring, but not enough to compress the clutch diaphragm spring.
3. Open the bleedscrew that is attached to the bleed line on the hydraulic release bearing.
4. Completely stroke the pedal and hold the pedal down.
5. Close the bleedscrew that is attached to the bleed line on the hydraulic release bearing.
6. Let the pedal return to its relaxed position and wait a few seconds. Repeat Steps 2 through 6 until all air is removed from the system.

Note: Do not stroke the pedal again before the pedal stop is set.

SETTING THE CLUTCH PEDAL STOP

You **MUST** use a pedal stop to limit the amount of bearing travel. Failure to do this **WILL** result in clutch, bearing and/or transmission damage!

1. Lift the drive wheels off the ground and support the car on jackstands.
2. With the engine off, put the transmission into 1st gear and have someone attempt to rotate the drive wheels.
3. Depress the clutch pedal slowly until the clutch disengages and the drive wheel can be rotated. Do not push it any further.
4. Note the clutch pedal position at this point. Adjust the pedal stop bolt to allow an additional 1/4" of pedal travel.

MAINTENANCE

Spin the bearing race and check how it feels. If it has a higher than normal resistance or has a slightly notchy feel, replace the bearing.

The piston can be removed and replaced without having to break the hydraulic seal or performing the bleeding procedure. Remove the piston assembly and check for any scoring in the bore or on the piston surface. Wipe the piston and orange wiper seal before installing. You may find that the piston is not dry. This could be the rubber grease used when installing the new seal at the factory. Do not mistake this for brake fluid.

If the seal needs to be replaced, the seal replacement kit is Tilton part number 62-905. Remove the piston assembly to access the hydraulic seal. Inspect the piston and hydraulic assembly bore for scratches. To remove the hydraulic seal from the release bearing assembly, block one hydraulic port and apply 5 PSI of air pressure to the other port. Wear safety glasses and point the seal exit path away from you! Never try to pry the seal out of the assembly. Refer to **Diagram 4** when installing the new seals and ensure that the flat side of the main hydraulic seal rides against the piston. Always use rubber grease, such as Tilton P/N RG-2, when installing the seal. Take care not to damage the seals during installation.

Diagram 3

Clutch	Master Cylinder Stroke	Recommended Master Cylinder Bore
4.5"	1.0"	5/8"
	1.1"	
5.5"	1.0"	5/8"
	1.1"	
7.25"	1.0"	3/4"
	1.1"	
10.5" or 11" diaphragm-type	1.0"	13/16"
	1.1"	
	1.4"	7/10"
10.5" or 11" lever-type	1.0"	7/8"
	1.1"	
	1.4"	3/4"



SCAN ME

Scan to watch a video on Clutch Pedal Stop: How to Set a Clutch Pedal Stop or visit www.tiltonracing.com/technical/technical-videos/

Diagram 4

