

700-Series Hydraulic Release Bearing

Tilton's 700-Series hydraulic release bearing assembly installs easily into any late model (92'-on) hydraulic transmission when converting to a Tilton 2-plate 7.25" Carbon/Carbon or Cerametallic clutch. Carbon/Carbon clutches use assembly 61-772 and Rally clutches use assembly 61-777. 700-Series HRBs can also be adapted to other applications. These assemblies eliminate the stock mechanical release bearing linkage, slave cylinder, and all of its components. The Tilton hydraulic release bearing is ideal for racing and high performance use. Our release bearing components are machined out of billet aluminum, which results in a higher strength and lighter weight design. Each hydraulic assembly comes complete with hydraulic lines and fittings.

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.



61-777



61-772

INSTALLATION

1. Remove the original equipment (OE) from the front of the gearbox, including the release fork, release fork pivot, and slave cylinder.
2. Apply a small amount of grease to the pilot nose to allow the o-ring located in the internal bore to slide on easily.
3. Install the Tilton bearing assembly onto the front of the gearbox so that both hydraulic lines can be routed out the existing clutch release fork hole in the gearbox.
4. Insure that the assembly is seated flush with the bottom of the pilot tube.
5. The heights of the installed assemblies are 1.63" for P/N 61-772 and 1.70" for P/N 61-777 when the piston is fully retracted as seen in Diagram 1. These heights are measured from the bearing face to the flange mounting surface.

Note: The mounting surface is not the lower most surface on 700-Series HRB's, it is the smaller ring recessed .100" from the bottom.

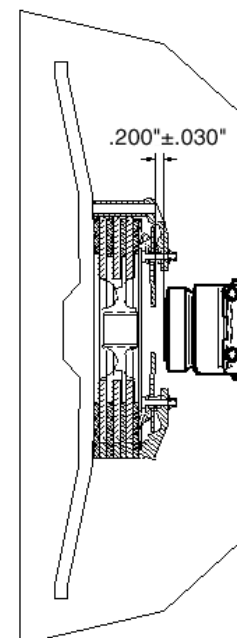
6. Please verify that there is approximately .200" clearance between the bearing face and the clutch diaphragm spring upon installation, as seen in Diagram 1.

Note: Compression of the bearing piston into the bearing base, prior to installation, to seat the seal may be required to achieve the set-up height dimension.

7. A pedal stop must be installed on the clutch pedal to prevent over stroking the hydraulic release bearing and damaging the clutch (see Pedal Stop section).

HYDRAULIC LINE INSTALLATION

Note: Fittings supplied in kit are -3AN 90° banjo fittings. It is important that the crush washers used with the banjo fittings are replaced if the banjo fittings are removed from this hydraulic base. DO NOT use PTFE tape or thread sealer. The single hydraulic line included in the kit is to be used to make both the supply line and bleed lines.

Diagram 1

SUPPLY LINE ASSEMBLY

1. Assemble one of the banjo fittings with the supplied crush washers and banjo bolt loosely onto the supply port of the hydraulic assembly (see Diagram 2).

Note: a crush washer needs to be placed on either side of the banjo fitting for proper installation.

2. Trial fit the line in place and determine the length required for the supply line to reach the master cylinder. Route the supply line clear of any obstructions to prevent damage and away from heat sources to prevent pedal fade.
3. Cut braided line to length and attach fittings.
4. Leave the banjo fitting loose for the supply line at this time.

BLEED LINE ASSEMBLY

1. Assemble the second banjo fitting with crush washers and banjo bolt and loosely place the fitting into the bleed port.
2. Trial fit the remainder of the line, selecting a location for the bleed fitting that is outside of the transmission housing.
3. Thread the supplied bleed screw into the newly attached fitting on the bleed line.

FINAL ASSEMBLY (REFER TO DIAGRAM 3)

1. With supply and bleed line assembled, clock banjo fittings inward, toward each other leaving a small gap in between.
2. Tighten banjo fittings.

DRIVELINE ASSEMBLY

1. While installing the transmission, carefully route both lines through the release fork window.
2. Once the transmission is seated, confirm that all parts of the release bearing and hydraulic lines clear the clutch and flywheel.
3. Complete the driveline installation.

MASTER CYLINDER SELECTION

The recommended master cylinder bore diameter for use with this hydraulic release bearing assembly and a 7.25" clutch is 3/4". If you are using the OEM clutch master cylinder, please check the bore diameter.

MASTER CYLINDER PRIMING

1. Fill the master cylinder with brake fluid. Use a DOT 3, DOT 4 or other non-silicone based fluid. Avoid DOT 5 (silicone based) fluids since they are not compatible with the seals.
 2. Open the bleed fitting (if equipped) at the master cylinder while the line port is closed.
 3. Gently depress the clutch pedal, close the bleed screw and release the clutch pedal.
 4. Repeat Steps 1 and 2 until fluid free of air bubbles emerges.
- Do not stroke a Tilton master cylinder more than 1".

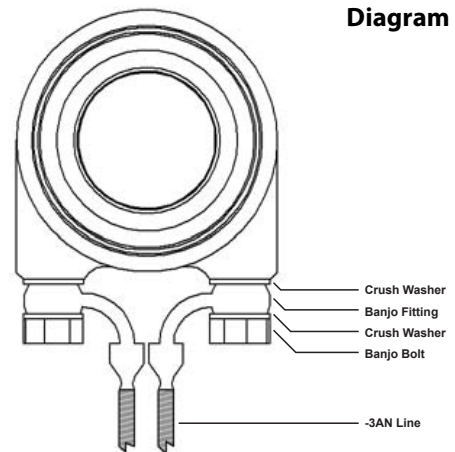
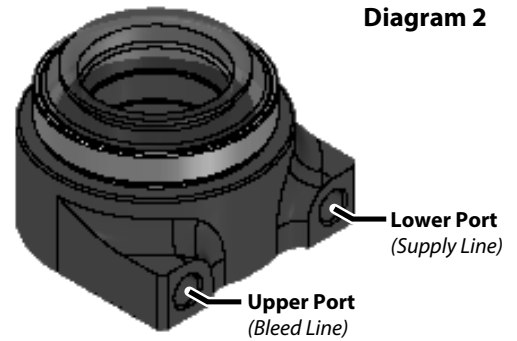
HYDRAULIC RELEASE BEARING BLEEDING

1. Fill the master cylinder reservoir with DOT 3 or DOT 4 brake fluid.
2. Apply approximately 3 lbs of force on the clutch pedal. You want enough force to hold the bearing out against the clutch diaphragm spring, but not enough to actually move the spring.
3. Open the bleed screw that is attached to the bleed line on the hydraulic release bearing.
4. Completely stroke the pedal.
5. Close the bleed screw.
6. Let the pedal return to its relaxed position and wait a few seconds.
7. Repeat Steps 2 through 6 while keeping an eye on the fluid level until all air is removed from the system.

Note: You do not want to stroke the clutch during the bleeding process.

All you are trying to do at this point is get all of the air out of the system.

Do not stroke the clutch until the pedal stop is set!



CLUTCH PEDAL STOP

A positive clutch pedal stop must be used to prevent over-stroking the hydraulic release bearing piston and the clutch. For access reasons, in many cars it is not easy to determine how far the master cylinder is being stroked.

The method listed below provides a very effective method for adjusting the pedal stop:

1. Lift the drive wheels off the ground and support the car on jack stands.
2. With the engine off, place the gearbox in first gear and have someone attempt to rotate the drive wheels.
3. Depress the clutch pedal slowly until the clutch disengages and the drive wheels can be rotated.
4. Adjust pedal stop to allow another 1/4" of pedal travel. This should provide clean release of the clutch. Do not stroke the pedal any further than this point throughout this procedure, otherwise you will over-stroke the clutch.

MAINTENANCE

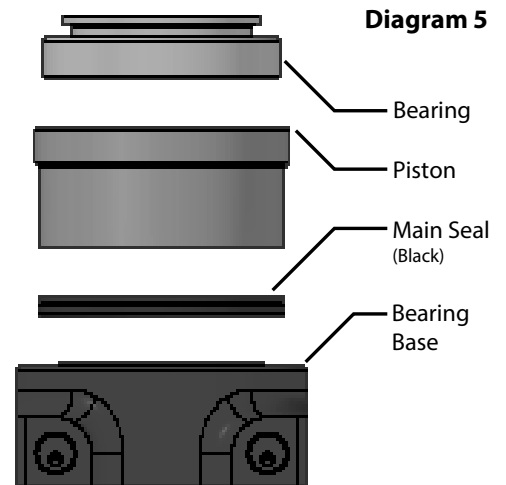
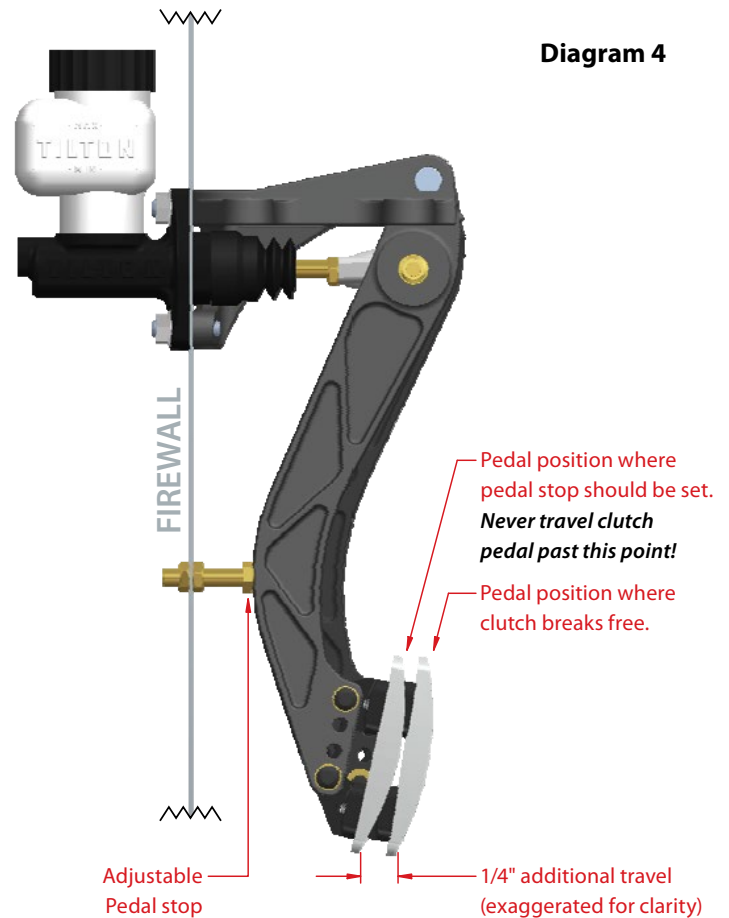
A few basic procedures will help to ensure that your hydraulic release assembly will provide a long and dependable life.

1. Spin the bearing race and check how it feels. If it has a higher than normal resistance or feels rough, replace the bearing.
2. The piston can be removed and replaced without breaking the hydraulic seal or requiring bleeding. Periodically, remove the piston and check for any scores in the bore or on the piston surface. Wipe the piston and orange dust wiper seal before reinstalling. You may find that the piston is not dry. This could be the rubber grease used when installing the new seal. Do not mistake this for brake fluid.
3. If the seal needs replacing, order Tilton's replacement seal kit (P/N 62-905). Instructions and the correct installation grease are included in the kit. We also recommend the use of a seal installation tool (P/N 96-002) to prevent damaging the seal during installation.

SERVICE INFORMATION

1. Contact Tilton's Repair Department (805-688-2353) and describe the problem or the service that is required.
2. If the bearing assembly needs to be sent in, a Returned Merchandise Authorization (RMA) number is required and will be provided by a Tilton representative.
3. Write the RMA number on the outside of the package and ship to:

Tilton Engineering
25 Easy Street
Buellton CA 93427



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/

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