



## 1300 Series Hydraulic Throw-Out Bearing Instructions



Congratulations! You have just purchased a precision engineered hydraulic throw out bearing assembly. Properly installed, this bearing assembly will provide proper clutch engagement and release for many trouble-free miles. Please review these instructions to become familiar with key parts along with the proper installation procedures for this product. Prior to beginning this installation, let's be certain you have the correct hydraulic throw out bearing assembly for your application. McLeod offers two distinct types of hydraulic throw out bearing assemblies, the Slip-On style, and the Bolt-On style. By taking a few easy measurements on your bell housing to clutch release fingers you can easily determine if this bearing is correct for your application.

**NOTE: McLeod Hydraulic Throw Out bearing assemblies will not work with counter weighted diaphragm style pressure plates (Centerforce). If the weights are removed the bearing will function as designed.**

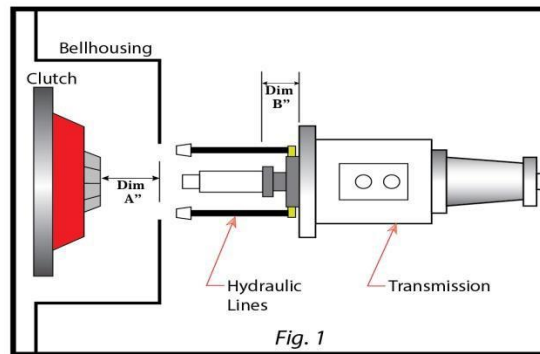
**NOTE: McLeod Hydraulic Throw Out bearing assemblies will not work with self-adjusting pressure plate (Factory GM LS-X). Use of non-adjusting pressure plate is required.**

## Hydraulic Bearing/Slave Dimensional Sheet

T-5 / T-10, Super T-10 / Toploader /Muncie /Auto-Gear Muncie/  
Saginaw / TKO 500/600

TKX Transmissions / Richmond 5 & 6 Speed.

This chart is to help determine the clearance you have between the tips of the fingers on the pressure plate and the face of the internal slave/hydraulic bearing. Before measuring, please make sure to have a precision measuring device that measures with at least .00" decimal place values. A tape measurer or ruler will NOT suffice for this exercise. A digital or dial caliper/veneer is the perfect tool for this exercise.



Measure and record your "A" dimension from the transmissions mounting surface to the tip of the pressure plate finger when clutch is fully installed and torqued down.

Write Dimension "A" Here \_\_\_\_\_

Measure and record your "B" dimension from the face of the bearing/slave to the mating surface of the transmission, with the bearing fully compressed before fluid is used.

Write Dimension "B" Here \_\_\_\_\_

Subtract Dim "A" & "B" and your equation "C" is your clearance.

Write Dimension "C" Here. \_\_\_\_\_

**You need a minimum .100" to a maximum .250" clearance.**

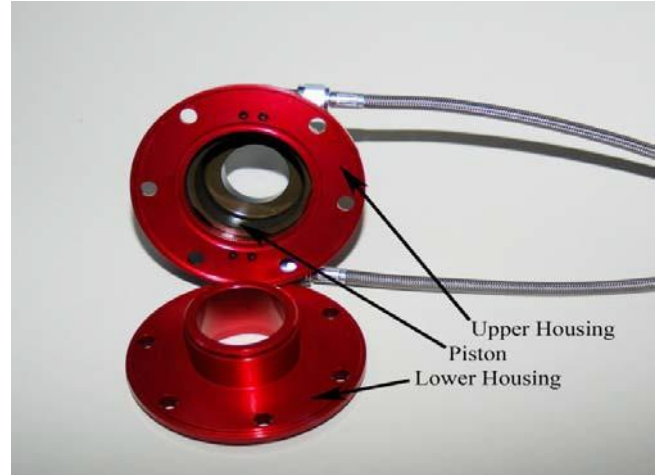
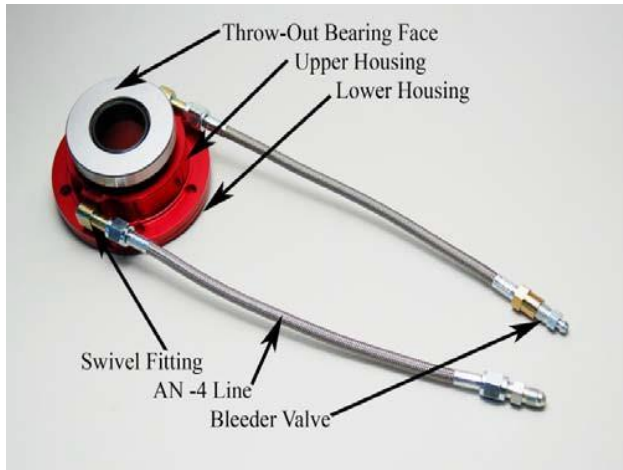
We offer two versions of the 1300 series bearing. One with an adjustable height piston in the picture to the left, and the fixed position piston pictured to the right. We ask that you establish your "A" dimension. Once this dimension is determined then you'll be able to determine if the adjustable height piston or the fixed position piston is right for your application. The Fixed Position piston fits applications with an "A" dimension of 2.31" to 2.49". This piston is indicated in the part number with a "-1" after the four-digit part number. Example: 1300-1 or 1364-1 etc. The adjustable height piston is applicable for "A" dimensions from 2.50" to 2.99" and is indicated by a 4-digit part number only. Example: 1300 or 1364 etc.

The Adjustable height piston has a steel collar that registers to the I.D. of the black anodized piston. This steel collar will accept (3) aluminum shim spacers. These spacers are worth .150" of adjustment for a total of .450" of adjustment. There is not enough material on the steel collar to add additional spacers and have the collar register to the piston safely. If more adjustment is needed beyond the parameters of the adjustable height piston that comes standard, McLeod offers a second longer piston option. (Sold Separately) Part Number 139079.



This hydraulic bearing is designed with a constant running bearing that will always touch the fingers of the clutch but does not apply pressure when the clutch is engaged. The assembly consists of four

major parts: 1) Upper Housing, 2) Lower Housing, 3) Piston, 4) Constant running bearing. The unit does not need any tools to disassemble unless you want to remove the AN-4 lines. See Fig A & B.



Step 1) Be sure the throw-out bearing is in its fully collapsed position. Place assembly on the bench with the bearing face up. Push down on the bearing face until it stops. This 1300 series bearing is designed to replace the factory bearing retainer on your transmission. Unbolt the 4 bolts that hold the bearing retainer attached to the transmission face. Prior to installing the bearing assembly onto the face of the transmission, it is strongly recommended you fabricate a protective cover for the AN -4 lines where these lines exit the bell housing. The protective cover can be rubber hose, such as heater hose or similar material. This hose should be about 6" in length for each AN -4 line. Slice the rubber hose lengthwise and slip it over the AN -4 lines and secure with zip ties or safety wire. This will prevent the AN -4 lines from chafing on the bell housing and prematurely failing.

**Remove the bearing retainer/input collar from the front of the transmission.**

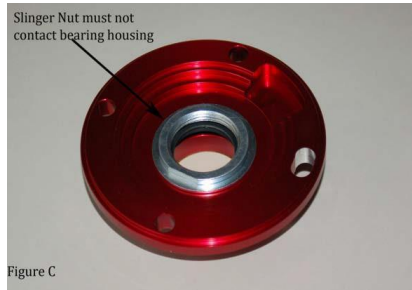
**For 1302/ 1364/ 1350 Bearing Assemblies:** There is a factory bearing race and shim(s) between the input collar and the input shaft bearing assembly. **The race/shim(s) must be installed between the input shaft bearing and the McLeod bearing assembly!** Place the hydraulic bearing assembly over the input shaft and bolt it onto the front of the transmission. Allen head bolts about 1/4" longer than factory bolts work well. The relief at the rear of the lower housing must be aligned to the transmission like the stock relief position.

**Note: A small bead of silicone will help seal the lower housing to the transmission. Remember the line with the bleeder valve must be at the top position!**

**Muncie Transmissions:** If your transmission has a slinger nut (found under the bearing collar) you must machine or grind the slinger flange off the nut (approx. .200") to clear the rear of the new bearing housing. The stock OD of the slinger nut measures 2.00", when machined the OD should measure 1.800". See Figure C & D

**Caution –** The slinger nut is a left-hand thread. Remove by rotating clockwise. Reinstall slinger nut

onto trans.



STEP 2) The braided steel AN -4 lines on the hydraulic bearing are designed to swivel. Before installing the transmission, swivel both lines forward parallel with the input shaft. Tie a heavy string around both lines, making the string long enough to feed the string through the opening in the bell housing where the lines will feed through (typically the fork hole) before the transmission is fully engaged into the bell housing. As the transmission is installed into the bell housing the string can be pulled simultaneously, thus swiveling, and guiding the AN -4 lines out through the bell housing hole. These lines must not contact the spinning clutch or flywheel when the engine is running. Be sure the protective hose on the lines is in the proper position to protect the AN -4 lines from chafing on the bell housing. Zip Tie or use a rubber lined worm clamp to tie off the bleeder hose away from free moving parts.

**Always have the AN -4 line with the bleeder valve at the top when the bearing is properly installed. It is OK to swap the lines on the swivel fittings if necessary. Remember the line with the bleeder valve must be at the top 12 O'clock position!**



Step 3) After securing the transmission and driveline; connect a line (not included with the bearing assembly) from the master cylinder to the input line (bottom line) of the hydraulic bearing using an A.N. -4 female flare. This bearing assembly is supplied with an A.N.-4 fitting screwed into the line. Fill the master cylinder with DOT 3 or DOT4 brake fluid. **DO NOT USE SILICONE BASED DOT 5 FLUID!!** Use of **silicone** fluid will damage the O-rings resulting in leaks and or damage to the assembly. After the master cylinder is filled, bleed the bearing assembly. Example: Pump the pedal 3 to 4 times, with the bleeder valve open and the end of the opening submerged in a cup partially filled with brake fluid. This will release fluid and air trapped in the system. Continue the bleeding process until all the air is removed from the system. Always keep fluid in the master cylinder while performing the bleeding process. Now reach into the cup and tighten the bleeder fitting. Set the cup aside and then be sure to tighten the bleeder valve. Once the bleeding is complete refill the master cylinder, just don't fill it all the way to the top. The fluid level should be  $\frac{1}{2}$ " to  $\frac{3}{4}$ " from the top. This will allow room for the brake fluid in the reservoir when the bearing self-adjusts. Unlike brakes, the fluid level will rise in the reservoir, as the clutch wears, not lower.



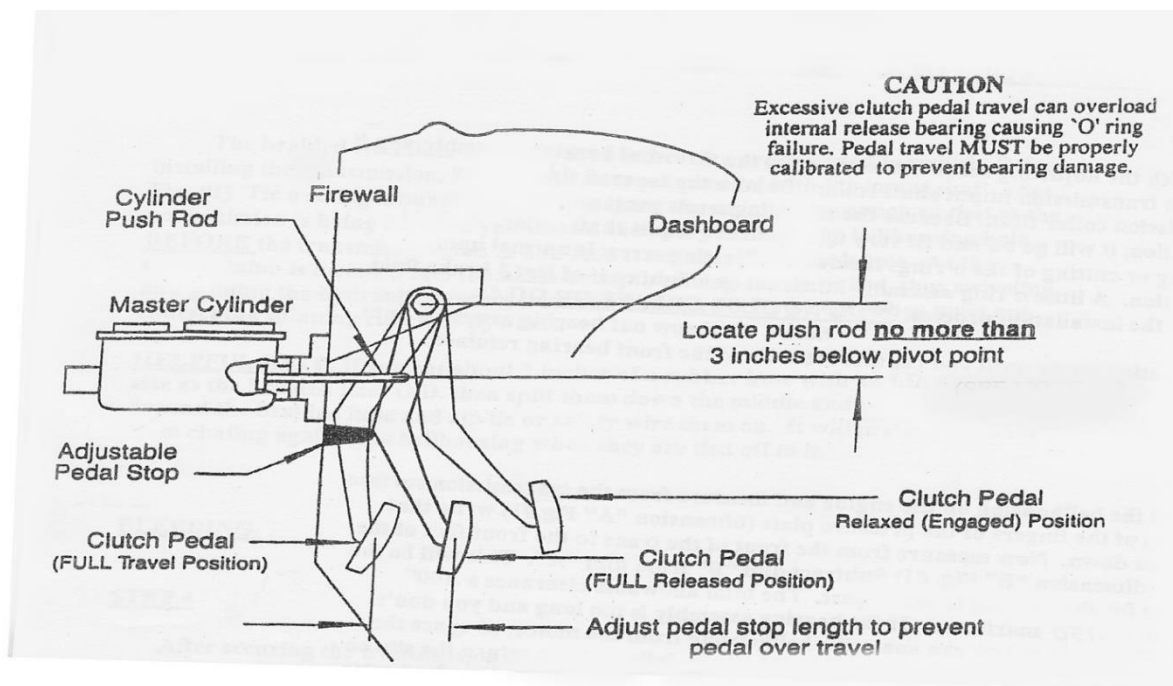
Before installing the hydraulic Throw out Bearing Assembly let's look at your master cylinder and pedal assembly combination.

Key parts to the system:

- 1) Master cylinder bore size ( $\frac{3}{4}$ " recommended). Bore Diameter found on side of most aftermarket master cylinders.
- 2) Clutch pedal travel.
- 3) Master cylinder "Push Rod" stroke should be 1" minimum.
- 4) 6:1 Pedal ratio.

The master cylinder push rod needs a minimum of 1" of stroke if using a  $\frac{3}{4}$ " bore master cylinder. Less travel is required with a larger diameter bore, although pedal effort will increase. More travel is required with a smaller diameter bore, with decrease in pedal effort. If a larger than  $\frac{3}{4}$ " bore is required for your application, you can ease pedal effort by mounting the master cylinder and push rod higher up the pedal toward the pivot point. This will increase the amount of leverage you have with the pedal, thus an easier push. You will lose some push rod travel by doing this. However, with the larger bore master cylinder you are dispensing more fluid per stroke to compensate for the loss of pedal travel.

A 6 to 1 ratio is recommended with a  $\frac{3}{4}$ " bore master cylinder. Example...If the center of the pedal pad is 12" from the pivot point, the push rod connecting point should be 2" below the pivot point. Quick math: Pedal pad is 12" below pivot point, divided by 6 (desired ratio) = 2". A push rod should be attached to the pedal assembly 2" from the pivot point.



## **Replacement Parts.**

Bleeder Line – 139009-11

Supply Line – 139100-11

Seal Rebuild Kit – 139115

McLeod D.O.T. 3-4 Fluid - 13900

Replacement Bearing – 139050

Replacement Adjustable Piston – 2.50” to 2.99” “A” Dim. – 139077

Replacement Adjustable Piston – 3.00” Plus “A” Dim. – 139079

**Note: If you have an “A” dimension of 2.31” to 2.49” and you have a standard issue adjustable height piston, you will need a fixed position piston. This unit will need to come back to McLeod Racing for service. Please reach out to the McLeod Tech Line for an RMA #. 714-630-2764.**



## Limited Warranty

McLeod Racing LLC, products are warranted to be free from defects in material and workmanship for the period of **ninety (90) days**, from the date of purchase. McLeod does not warrant or make any representations concerning its products when not installed and/or used strictly in accordance with the manufacturer's instructions for such, installation, and operation, and in accordance with good installation and maintenance practices of the automotive industry. Products purchased used do not carry a warranty. This warranty is for the original purchaser and is non-transferable.

**McLeod Racing LLC will not be held liable for the labor charges and other intangible or consequent losses that might be claimed as a result of the failure of any part, nor shall it be liable for damages or injury to persons or property resulting from the misuse or improper installation of any part subject to this warranty.**

No merchandise may be returned for any reason unless a prior return merchandise authorization number (RMA) has been obtained from McLeod. An RMA number may be obtained via [www.mcleodracing.com](http://www.mcleodracing.com) or by calling McLeod directly.

McLeod Racing LLC reserves the right to examine all parts returned for warranty claim to determine whether or not any such part has failed because of a defect in material or workmanship. McLeod's obligation under this warranty shall be limited to repairing, replacing, or crediting, at its option, any part found to be defective. All products returned to McLeod for warranty inspection must be prepaid by the customer under this warranty.

In a racing environment, the type of stress placed on automotive parts can vary dramatically by the type of use, driving style, track preparation, differing tire style and other variables that are out of McLeod's control. **For this reason, any parts used in a racing environment shall be void of any warranty either expressed or implied.**

There are no other warranties, either expressed or implied including, but not limited to, warranty of merchantability, and warranty of fitness for a particular purpose which extend beyond those set forth in the preceding paragraphs. This warranty shall be interpreted and applied in accordance with California law.

For any changes or updated versions of the warrant described above, please refer to [www.mcleodracing.com](http://www.mcleodracing.com) before installation of product.

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## How to Bleed Hydraulic Bearing

When bleeding your hydraulic bearing, you want to first make sure your master cylinder has been bench bled. This will ensure that you don't have air trapped.

Now you're ready to bleed the bearing. Get a clear drinking cup or plastic water bottle with the top 1/3 cut off. Fill the bottle ½ full of brake fluid. Use DOT 3 or DOT4 brake fluid. **DO NOT USE SILICONE BASED FLUID or DOT 5 FLUID!!** Open the bleeder valve to the point where the bleeder screw will almost fall off the line and completely submerge the valve and fitting into the brake fluid. ***(DO NOT use an extension hose to reach the bottle. Air will enter around the threads of the valve).***

Now have someone push the pedal completely down to the floor quickly, pause for 2-3 seconds, then release the pedal slowly back up and wait 2-3 seconds to replenish the fluid. ***(As you push the pedal, air bubbles will escape and as the pedal is released, it will suck brake fluid back into the bearing.)*** Repeat this until you no longer see bubbles. Now with your index finger and thumb reach into the bottle, while keeping the fitting submerged, and tighten the valve. Remove the bleeder valve from the bottle and finish tightening the valve with a wrench.

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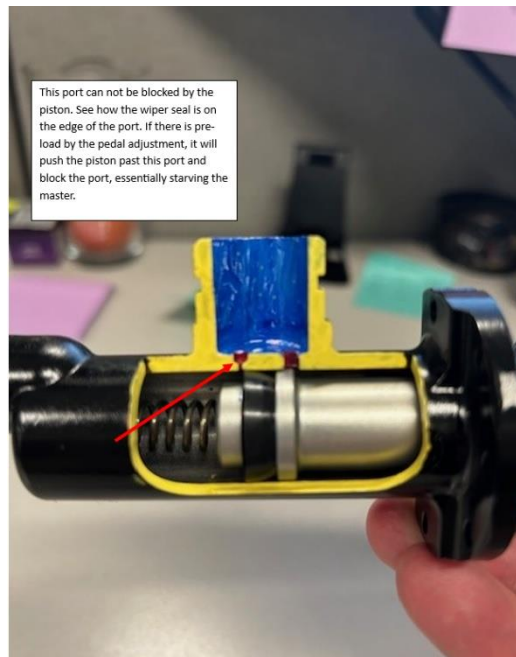
## Master Cylinder Rod Adjustment.

We have a common issue with customers that say, “my clutch wont bleed”, “I can’t build pressure” So we ask you, have you played with the rod’s adjustment at the pedal?

The most common issue with not bleeding or building pressure is the master cylinders rod pre-loading the piston inside of the master cylinder when the pedal is in the “home” position.

When this happens, the piston falls short of butting up against the snap ring and blocks the cylinders transfer port to draw a full and complete charge from the reservoir (**essentially starving the master cylinder**)

By adjusting the tension on the master cylinders rod when it’s sitting in the home position towards the back of the car you will allow the piston to go all the way to the snap ring and allow the piston to completely clear the transfer port. This will allow the cylinder to get packed with a full charge of fluid and be allowed to build pressure.



This port can not be blocked by the piston. See how the wiper seal is on the edge of the port. If there is pre-load by the pedal adjustment, it will push the piston past this port and block the port, essentially starving the master.

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