

RAM HYDRAULIC RELEASE BEARING INSTALLATION INSTRUCTIONS

INSTALLING MY RAM BEARING VIDEO: <https://youtu.be/1569zHJ5KmM>



PRELIMINARY INSTALLATION NOTES

IMPORTANT! DO NOT RETURN THIS PRODUCT TO YOUR DISTRIBUTOR. If you have questions, please review additional information available on our website and/or contact the factory directly. **Read these instructions CAREFULLY** as there are many details to the install that must be followed for success.

ALL INSTRUCTIONS ARE AVAILABLE ONLINE FROM THIS LINK: <https://ramclutches.com/hydraulic-bearings-instructions/>

TIP: DOWNLOAD AND PRINT THE WORKSHEET BELOW BEFORE BEGINNING YOUR INSTALLATION ON ANY RAM HYDRAULIC BEARING KIT. IF YOU NEED ADDITIONAL TECHNICAL ASSISTANCE WITH YOUR INSTALL, WE WILL REQUIRE THIS INFO IN ORDER TO HELP

HYDRAULIC BEARING WORKSHEET: <https://ramclutches.com/wp-content/uploads/2026/01/bearing-SETUP-RAM-formRB-1.pdf>.

NEED TO KNOW'S: OVERALL TRAVEL, MASTER CYLINDER REQUIREMENTS, SETUP GAPS – CLEARANCES

- Overall travel of the RAM hydraulic bearing = .800"
- A master cylinder with a bore of 3/4" and a stroke of 1.125" is required to achieve .500" bearing travel
- Recommended bearing clearance - .200"

Proper bearing clearance is critical to allow for clutch wear, achieve proper clutch release, and avoid O-ring damage to the hydraulic bearing.

IMPORTANT NOTES

TECHNICAL ASSISTANCE

All technical assistance for RAM products is **initiated** online. Use the Support form at the link below and a RAM representative will be in contact quickly to help you with your questions. This information is critical for us to properly assist you.

HYDRAULIC BEARING SUPPORT REQUEST: <https://ramclutches.com/hydraulic-bearing-troubleshooting-form>

APPLICATION SPECIFIC INSTRUCTIONS – 78130-78192

Be sure to access the following instruction supplement for specific details on each application specific hydraulic bearing kit listed above.

APPLICATION SPECIFIC BEARING INSTRUCTIONS: <https://ramclutches.com/wp-content/uploads/2022/07/Application-Specific-Instructions-B1002-1-2022.pdf>

BELLOUSING ALIGNMENT

Your RAM bearing is a floating assembly. Misalignment of the transmission input shaft and engine block may cause O-ring failure. Aftermarket bellhousings **MUST** be dial indicated to the engine to insure proper alignment. Follow your bellhousing manufacturer's instructions to complete this procedure.

HYDRAULIC FLUID

You **MUST** use a DOT 3 or DOT 4 fluid with RAM hydraulic bearings or damage to the o-rings will occur. If the hydraulic system had another type of fluid prior to installing this bearing, **THOROUGHLY** flush the system before installing your new bearing kit.

POTENTIAL CONTACT WITH WEIGHTS ON CENTERFORCE CLUTCHES

Verify clearance of the RAM hydraulic bearing cylinder with weights on Centerforce pressure plates. Contact is possible with these units. If you need a compatible pressure plate, contact RAM technical assistance. No warranty will be allowed on bearing cylinders, lines, or fittings that show evidence of contact with outside sources.

PROPERLY SEALED INLET/OUTLET FITTINGS

The inlet and outlet fittings on the bearing cylinder must be properly sealed to avoid potential leaks. Use **TEFLON TAPE ONLY** on these fittings. Do **NOT** use any liquid, PST, or other types of sealants. **THIS IS THE NUMBER ONE CAUSE OF LEAKAGE IN HYDRAULIC BEARING UNITS.**

GUIDE STUD LENGTH

Once you have measured and fitted the bearing, make sure the guide stud is not too long or short by manually extending the bearing to its full .800" stroke and visually inspecting. Cut off the stud if necessary to avoid contact with the clutch cover.

OVER-EXTENSION OF THE BEARING HOUSING

If you install the bearing with more than .200" clearance or use a master cylinder larger than ¾" bore, the bearing housing may over-extend and come off the piston. This will result in a fluid leak. Taking proper measurements is paramount to avoid this problem. If you choose to use a larger master cylinder, you may need to use a pedal stop.

6 SPEED BEARING RETAINER



6 speed bearing kits include a collar that mounts to the front plate of the transmission. This plate is designed so that it can be mounted in several positions to align the bearing fittings to point to the opening in your bellhousing. Use the supplied bolts and spacer (if applicable) to install this collar on the front of your transmission housing.

ALUMINUM BEARING COLLAR SPACERS

Your 6 speed RAM hydraulic bearing may have shipped with an aluminum collar spacer in ½ to 1 ¼ inch thicknesses. We have determined that many applications require this spacer for proper bearing clearance. **All applications may not require this depending on your clutch choice.** If you received this spacer in your kit, you should install it prior to taking your setup measurements.

TROUBLESHOOTING LEAKS

- **If you should develop a leak with your bearing, BEFORE REMOVAL OR DISASSEMBLY it is imperative to determine where the leak is coming from before contacting us for support.**
- Check your fluid. Contaminated fluid can cause deterioration of o-rings, which will lead to failure or leakage. The fluid should be clear and free of any debris or water and should not smell burnt.
- Should the fluid appear burnt or have debris, make sure all hydraulic lines are routed away from headers and exhaust that can heat the fluid. The bearing may need to be disassembled and cleaned, and the system flushed and re-bled.
- Remove or pull back the transmission so you have sight access to the release bearing or allow the bearing to hang and manually push the bearing housing all the way back onto the piston.
- Have someone press the clutch pedal while you watch. Identify the location of the leak. Make sure it is not coming from any of the fittings, connections, or lines.
- Once you have determined the nature of the leak:
- Leaking fittings – remove fittings and re-tape. Make sure tape extends to the end of the fitting but does not overlap the bottom. Securely tighten the feed and bleed lines to the bearing.
- O-rings – after noting the position of the leak, examine the top and bottom o-rings for damage. If damaged, order the proper replacement set for your part number bearing.

BEARING DISASSEMBLY/O-RING REPLACEMENT

If you must disassemble your RAM bearing for any reason, extreme care must be taken when reinserting the base into the cylinder so as not to damage the o-rings. A step-by-step video for O-ring replacement can be found below.

BEARING DISASSEMBLY/O-RING REPLACEMENT: <https://youtu.be/2zHE2tr3Wlw>

NOTE: Newer model RAM hydraulic bearings do not have a snap ring at the top of the piston. If your bearing has this snap ring, remove it.

- If your current bearing utilizes white Teflon wiper rings, these are required. Replace using part number 78509-1.
- When installing new O-rings or re-assembling the bearing, coat O-rings and piston with Parker super O-lube lubricant*.
- Clean and inspect the piston and cylinder, inspecting for any damage.
- Carefully replace the housing over the piston.

REPLACEMENT O-RINGS KITS

- Most RAM bearings except those listed below – Use O-ring kit part# 78509
- RAM bearing part #78125 – Uses O-ring kit part# 78505
- RAM bearing part# 78141 and part# 78142 - Uses O-ring kit part# 78508
- RAM bearing part# 78126HDL - Uses O-ring kt part# 78506
- RAM bearing part # 78143 – Uses O-ring set 78507
- Use instructions included for replacement or see video link below

BEARING DISASSEMBLY/O-RING REPLACEMENT: <https://youtu.be/2zHE2tr3Wlw>

**RAM recommends using Parker Super 'O-Lube' O-ring lubricant ONLY for assembly of the bearing. Do not use any petroleum-based lubricant as these will damage and deteriorate the o-rings.*

INSTALLING YOUR RAM HYDRAULIC RELEASE BEARING

It is critical to understand how your hydraulic release bearing operates and to get the bearing set up properly to avoid any future problems. As your clutch system wears, the fingers of the clutch move closer to the release bearing. It is important to make sure you have the proper gap between the release bearing and the fingers of the clutch. By following our worksheet and video link below, we will guide you through your installation step by step to determine if the bearing will fit your application, setting up the bearing, and testing the operation of the system.

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DETERMINING THE FITMENT OF YOUR RAM HYDRAULIC BEARING WITH YOUR CLUTCH

TOOLS NEEDED:

- 18 inch straight edge or steel ruler
- Minimum 6 inch, preferably 12 inch dial (Vernier) caliper

Use the hydraulic bearing worksheet referenced throughout these instructions to record your measurements.

DETERMINE THE CRANK FLANGE PROTRUSION (A)

Measure the distance that the crank flange protrudes out from the back of the engine block. If you are using any type of block plate, this should be in place when taking this measurement. Record this as Dimension A on the worksheet.

DETERMINE THE BELLHOUSING DEPTH TO THE RELEASE BEARING (B)

Attach the bellhousing to the transmission with a few bolts to make this measurement. Slide the hydraulic release bearing over the input collar, making sure it is fully retracted on the piston. Using the straight edge, lay it across the face of the bellhousing and measure from the straight edge down to the face of the release bearing. Be sure to subtract the thickness of the straight edge, and record this measurement on the setup sheet as dimension B.

DETERMINE THE SETUP HEIGHT OF YOUR CLUTCH (C)

The clutch setup height is the height of your clutch system as it will be installed in the vehicle. It is measured with the clutch **bolted to the flywheel with the disc in place**. The crank flange of your flywheel may not be flush with the outer diameter of the flywheel. **TIP:** Do not set the clutch/flywheel directly on a bench. Set the assembly so that the crank flange of the flywheel is located on a base or pedestal, up off the bench. Now measure from the tip of the clutch fingers, down through the spline center of the disc, to the backside of the flywheel. Take an average reading in 3 or 4 positions. Record this as dimension C.

SAMPLE SETUP – DO THE MATH

Dimension A = .300"

Dimension B = 3.700"

Dimension C = 3.100"

$B - A = 3.400''$ – this is the available space in the bellhousing to fit the clutch system

Now to determine fit/current gap:

$B - (A + C) = .300''$

In this example, the remaining clearance is .300". To get to the target .200" clearance, and an additional .100" of shim will need to be added behind the bearing. You can check this by re-measuring the C dimension after installing shims, with a target measurement of 3.60".

Because all clutch and bearing combos vary, it is POSSIBLE that you may require additional shims or spacers. This is not unusual, and you can find additional shims and spacers, as well as longer drive studs by following the RAM online store link below.

RAM HYDRAULIC ACCESSORIES: [Hydraulics Accessories & Repair Parts - RAM Clutches](#)

If the bearing setup clearance is less than .200", or even possibly a negative number, adjustments will have to be made to achieve proper fit. This may include but not be limited to using a thinner flywheel (RAM offers a full selection), spacing the bellhousing or transmission back, or machining the base of the input collar to allow the bearing to sit further back in the bellhousing.

Once you have completed these measurements and double checked your math, you are ready to proceed with testing and final installation.

TESTING THE BEARING TRAVEL AND PRESSURE CONNECTIONS

You may be tempted to skip these procedures. It is HIGHLY recommended that you take the extra time and complete this section to ensure you do not have any problems on final install.

COMPLETE BEARING TRAVEL INSTRUCTION LINK: <https://storage.googleapis.com/ssm-ramprod/2020/02/test-ram-hydraulic-release-bearing.pdf>

BEARING TRAVEL VIDEO LINK: <https://youtu.be/PAFNh-L5xDw>

INSTALLING THE HYDRAULIC BEARING

4 AND 5 SPEED – remove one of the 4 input collar bolts and install the provided stud so that the bearing is positioned with the inlet and outlet fittings pointing towards the bellhousing opening.

6 SPEED – Install drive stud so as to point bearing inlet and outlet fittings towards an opening in the bellhousing.

Slide your pre-determined shims and the bearing assembly over the input collar.

Now check the drive stud length. Manually extend the bearing to its full travel of .800". If the stud is protruding from the slot on the bearing, mark it and trim so that it does not protrude (this stud could contact the clutch cover if too long).

INSTALLING THE TRANSMISSION (4 and 5 speed)

If not already in place, install the inner sleeve O-ring into the piston that was included with the bearing kit.

Attach one end of the feed line for the master cylinder and the bleed line with screw to the bearing and tighten securely. **The bleed line must be installed on the uppermost fitting.**

Lubricate the inner O-ring and start the bearing on the input collar until the O-ring contacts the collar. Start the transmission into the bellhousing, routing the lines through the fork hole opening. As you continue in with the transmission, make sure the bearing housing slot locates onto the drive stud.

Connect the other end of the feed line to the master cylinder and bleed the system.

INSTALLING THE TRANSMISSION (6 speed)

Since the 6 speed installs with the bellhousing attached, the transmission install is easier. Assemble the bearing onto the 6 speed collar, connect the lines, and route through the appropriate opening. **The bleed line must be installed on the uppermost fitting.** Then install the transmission to the engine. Connect the feed line to the master cylinder and bleed the system.

BLEEDING THE SYSTEM

Bleed the hydraulic bearing in a similar manner to bleeding your brake system. We have found it easiest to simply pump the pedal many times with the bleeder screw closed. You may need to manually pull the pedal up with your toe until you begin to get fluid circulating. Continue to pump the pedal until it has a solid feel, top to bottom. Make sure someone is paying attention to the fluid level in the reservoir as you do this, so it does not run dry.

FINALIZING THE INSTALL

At this point you have properly tested and set up your new hydraulic release system and given yourself the best chance for trouble free operation. Make sure your feed line to the master cylinder is not located too close to any high heat sources such as headers. If you have any doubts, use a heat insulating wrap around the line.

TROUBLESHOOTING

Q: My RAM hydraulic bearing is leaking. What do I do?

A: If your hydraulic bearing is leaking, the first thing you must do before contacting us is determine the cause of the leak. Is the fluid leaking from the fittings or lines? Is it leaking from the seals/O-rings?

If the fittings are leaking, make sure you have used Teflon tape to seal the fittings in the bearing. Liquid and Teflon tube sealants WILL NOT hold the pressures this bearing sees and will ultimately leak. Re-check the tightness of the fittings and the hoses.

If the seals/O-rings are leaking, why? Double check your setup heights on the bearing to make sure the bearing has the proper clearance. Other possibilities include contaminated fluid, overheated fluid, use of improper fluid.

Q: My clutch is not disengaging after installing my hydraulic bearing. Why?

A: There are several possibilities. The master cylinder that is being used may not have sufficient bore, stroke, or diameter to move enough fluid for full travel. RAM recommends a minimum $\frac{3}{4}$ bore size with a minimum 1.125" inch stroke. This combination typically yields travel of .500".

Improper set-up height of the bearing could cause a situation where the bearing is too far away from the fingers and sufficient travel cannot be reached before the bearing bottoms out on the snap ring. All measurements should be rechecked to make sure the bearing was installed correctly the first time.

If your bleed is not sufficient and air remains in the system, travel may be limited. Usually this is the case if the master cylinder size is correct.

Q: I bled the bearing, but my clutch pedal is mushy.

A: If the pedal feels mushy or softer at the top, you do not have a complete bleed and need to repeat the bleeding procedures or continue to pump the pedal until the feel is solid top to bottom.

Q: I have done all the installation measurements and with no shims my RAM hydraulic bearing will not fit. What can I do?

A: Some applications are simply not going to provide enough room for the RAM hydraulic bearing without modifications. Possible reasons for this include thicker factory flywheels or taller than usual clutch assemblies. If you must use this product, you will need to reduce the overall setup height of your clutch assembly, possibly with a thinner flywheel or shorter clutch cover, trim some material off the base of the input collar, Space the bellhousing back from the engine, or the transmission will need to be spaced back from the bellhousing to increase bearing clearance.