



Congratulations on the purchase of your RAM Assault Weapon clutch. You have obtained the very finest unit available and if you follow the instructions in this owner's manual, your clutch will provide you with many laps of trouble free performance. Please read this manual COMPLETELY before installing your new clutch. If you have any questions, our technicians will gladly talk you through the installation. Call 803.788.6034 between 9 and 11 AM and 1 to 3 PM Eastern Standard Time.

DEFINITIONS:

BUTTON STYLE CLUTCH – RAM clutch that is built for use with an automatic transmission flexplate.

FULL FLYWHEEL CLUTCH – RAM clutch that is built on an aluminum flywheel with the ring gear.

PRELOAD MEASUREMENT – The gap between the bottom edge of the clutch cover and either the shoulder of the stud (button style clutches) or the aluminum support ring (full flywheel units) BEFORE the cover is bolted into position. This measurement assures optimum plate pressure and holding power for the clutch.

PRESSURE PLATE – The first steel plate inside the clutch unit under the cover.

COVER – Gold or red top plate that holds the diaphragm spring in place.

BEFORE INSTALLING YOUR NEW RAM CLUTCH:

Check the crankshaft for burrs. Clean up with a file or emery cloth if necessary.

Check the bellhousing for alignment. This is critical to the proper operation of your RAM clutch. Misalignment is most prevalent on aftermarket steel bellhousings, and most manufacturers include instructions on alignment with the bellhousing. If the housing is not square to the block and the transmission pilot hole not concentric with the crank, improper release and accelerated wear WILL occur.

To check alignment, use a dial indicator with the base mounted to the crank flange to check the transmission pilot hole for concentricity to the crankshaft center line with +/- .010". Check the face of the bellhousing (where the transmission bolts up) for squareness to the back of the block. Variance should be no more than +/- .010" side-to-side and top to bottom.

Check the pilot bushing/bearing for wear. This item should ALWAYS be replaced, as input shaft run out will cause erratic release, broken discs or center hubs, or severe chatter.

CLUTCH INSTALLATION:

If you are installing a button flywheel unit, place the flexplate onto the crank hub and install the button flywheel. Full flywheel units should bolt up directly to the crank. Make sure the flywheel bolt heads do not protrude above the friction surface (button flywheel units) or keep the first drive plate from sitting flat against the flywheel (aluminum flywheel units). Use high quality grade 8 fasteners only.

ADJUSTMENTS SHIMS – Your new RAM clutch (button style units) is assembled with a shim on each of the cover-mounting studs. Be careful not to lose these shims and that they are in place. These shims provide the factory preload setting of the clutch. **DO NOT REMOVE!**

Install the first drive floater plate (aluminum flywheel units only) and the remaining components of the clutch pack. All the disc pads should line up, and all the hubs should be installed with the FLAT SIDE (where the hub rivets are smashed) facing the transmission. Installing a dummy alignment shaft at this point will greatly ease installation of the transmission later.

Install the top drive pressure plate, making sure that it does not bind and floats freely on the drive studs. Place the cover assembly on the unit, and torque cover nuts to 25 – 30 ft/lbs.

As the cover nuts are tightened, the clutch fingers will pull down into a position just slightly above center.

ABOUT THE RELEASE BEARING

RAM Assault Weapon clutches will operate best if a bearing with a rounded or angular contact face is used. Flat release bearings tend to push on the outer part of the clutch fingers, resulting in a hard pedal, loosened diaphragm rivets, non-release, and premature slippage. RAM offers these bearings for GM and Ford, as well as internal hydraulic release bearings.

ADJUSTING THE RELEASE BEARING:

Adjustment of your RAM clutch is critical. Over-traveling the diaphragm spring will result in damage to the spring and a resulting loss of holding power.

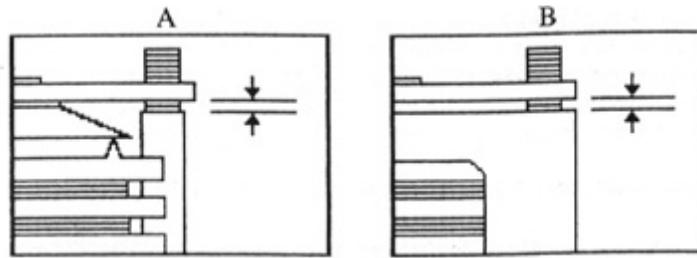
The key to proper adjustment lies in obtaining the minimum release necessary for the clutch to operate without the clutch “pulling” when depressed. Use the roll method of adjustment with the engine off.

Adjust the bearing so that it barely releases the clutch. With the pedal depressed, try to roll the car. Continue to add release, little by little, until the car rolls freely. Now add just a little bit more release. Start the engine and test the clutch. If the transmission won't shift or the car tries to pull, add a little more release.

It is important to check release periodically as the clutch fingers will tend to come back towards the bearing as the clutch friction surfaces wear.

If using a hydraulic release bearing, check with the manufacturer as to compatibility with your RAM clutch. We recommend the use of our hydraulic units, PN 48100 for GM applications, 48200 for Ford applications.

PRELOAD MEASUREMENT WITH BUTTON FLYWHEEL (A) AND WITH ALUMINUM FLYWHEEL CLUTCH (B)



MAINTENANCE OF YOUR RAM CLUTCH

When properly installed, your RAM clutch will require little maintenance. Follow these guidelines for best results:

Check release adjustment often. If the bearing is riding on the fingers the clutch holding power will be reduced, and over-travel of the diaphragm spring will result as well as premature disc wear.

To check the wear on your RAM clutch, you must check the PRELOAD MEASUREMENT, which provides the clamping force on the clutch pack. With the clutch cover in place, but **NOT** bolted down, measure the gap between the bottom edge of the cover and the shoulder of the mounting stud. If this gap averages about .060" or less, remove the shims from the studs and re-install the cover. When the gap is decreased and the shims are already out, you will have to replace the disc pack or send the unit in for rebuilding. Call the tech line for further information.

Oils and grease will cause slippage and damage to the clutch components. Always check the oil pan and main seals for leakage.

Be sure to contact the factory if any other problems arise which you cannot diagnose.

REBUILDING SERVICES

When your RAM clutch wears to the point that adequate preload cannot be maintained, it is time to consider rebuilding the clutch. At this point, it is likely that not only the discs are worn, but also that the steel plates may have warpage and the diaphragm cover spring may be fatigued. **JUST REPLACING THE CLUTCH DISCS WILL NOT RESTORE THE CLUTCH.** It may get you by for a while, but it is really just a 'band-aid' fix. Consider returning the unit for a full rebuild. For slightly more than the cost of new discs, your clutch will be rebuilt with new discs, steel plates, pressure plate, and the cover rebuilt with a new diaphragm spring. The clutch preload is checked and reset, and when you get the unit back it will be like new.

RETURNING THE CLUTCH FOR REBUILD

Send your COMPLETE unit to RAM via UPS or other suitable means. Include a note detailing the problems encountered, return address, daytime phone number where you can be reached or be left a message, and whether or not you would like your clutch shipped COD, or by credit card (Visa or MasterCard). We'll need the credit card number with expiration date and the name that appears on the card before rebuilding the clutch, so please include this information with your note.

LIMITED WARRANTY

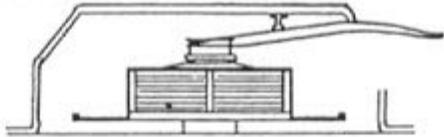
Your RAM clutch is covered by a limited warranty for 30 days from the date of purchase to be free of defects in materials and workmanship. Due to the abnormal abuses encountered by racing

clutches, no other warranty, either expressed or implied, is given. In the event of a suspected warranty, the unit must be returned, freight prepaid, to the factory with a copy of the original sales receipt. The clutch will be repaired or replaced at the sole discretion of RAM Automotive.

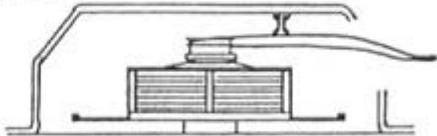
IMPORTANT RELEASE BEARING NOTES ON YOUR RAM CLUTCH FOR GM APPLICATIONS

The following diagrams show different irregularities in clutch fork geometry. Please pay close attention to these if you are using a mechanical or slave/master cylinder release system. Failure to do so will result in non-release of the clutch and possible damage to the clutch linkages.

Dia. 1



Dia. 2



Dia. 3

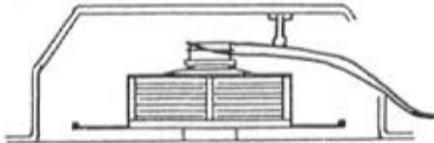


Diagram 1 shows the fork angled severely to the rear of the clutch housing. To correct this angle use RAM bearing PN 499.

Diagram 2 show the fork angled roughly parallel to the engine block. To correct this angle, use Ram bearing PN 498.

Diagram 3 shows the fork angle in the correct position for proper release and ease of pedal effort. Use RAM bearing PN 495.

An adjustable pivot ball or the long GM pivot ball in the clutch housing may be used in some cases to correct the fork angle.