ACE Manufacturing & Parts Co.
American Made Clutches Since 1967

Clutch Installation and Adjustment Guide

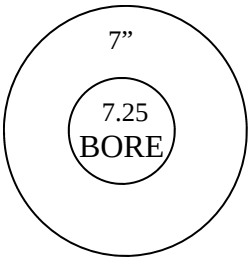
STOP!

READ CAREFULLY BEFORE INSTALLING CLUTCH

This clutch must be installed by a qualified installer. Improper installation or failure to replace or resurface the flywheel, or to replace the pilot bearing, clutch brake or other worn drive train components may cause poor clutch release or early failure and void the manufacturer's warranty.

Before you install this clutch, you must measure the flywheel opening to determine if you have the correct clutch for your application.

Your flywheel bore size



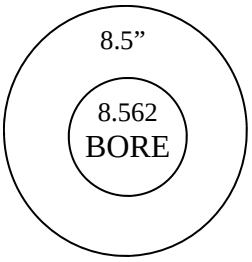
Must Use

8 SPRING DISC

Use one of these models only

E-Z RIDER® Clutch choices
EZ108391-81B
EZ108390-80
EZ108-391-77B
EZ108391-81B
EZ108391-82B

Standard Clutch choices
107391-77
107390-80
107391-77B
107391-81B
107391-82B

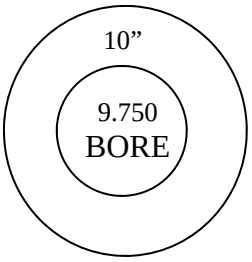


10 SPRING DISC

Use one of these models only

E-Z RIDER® Clutch choices
EZ208391-74B
EZ208391-78B
EZ208391-93B
EZ208391-93H

Standard Clutch choices
107391-74B
107391-78B
107391-93B



Use one of these models only

E-Z RIDER® Clutch choices
EZ208925-82B
EZ208925-82H
EZ208935-51 Mack Only
EZ208935-51H Mack Only

Standard Clutch choices
107925-82B
107935-51 Mack Only

7 & 9 SPRING DISC

CHOOSING THE WRONG CLUTCH FOR YOUR APPLICATION VOIDS YOUR WARRANTY!

E-Z RIDER® IS A REGISTERED TRADEMARK OF ACE FMG. & PARTS CO., INC. SULLIVAN, MO. USA

Does your new clutch need a clutch brake spacer?

This clutch was pre-adjusted at the factory. Therefore, no adjustment should be required at the time of installation. However, if the flywheel has been reground and/or the transmission flange is worn, you may need to use a fiber spacer in conjunction with the new clutch brake you are installing with the clutch.

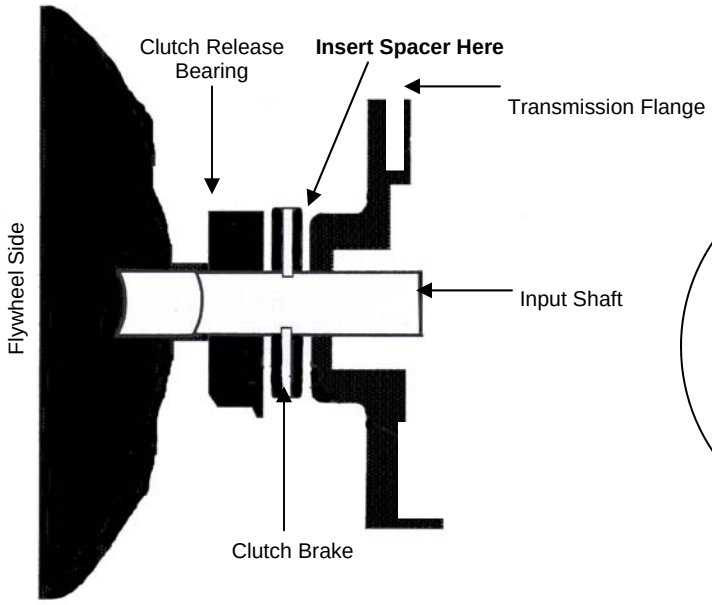
On vehicles with this type of wear, the common complaint at time of installation is "can't get the clutch brake to squeeze". The solution could be to use the 1/8" fiber brake washer. Or, you may need to replace the flywheel.

Before deciding that, however, we suggest you install the spacer to see if that solves the problem. One is included with this clutch for that purpose. If you do not need it, discard or save for future installations.

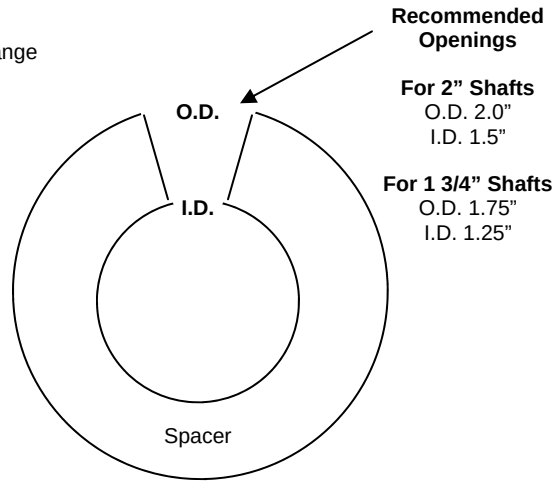
To use the spacer, slide the fiber washer onto the input shaft next to the transmission before the clutch brake itself is put on. Then install the clutch and set the linkage per your usual procedure.
(see schematic 1)

If the clutch and the transmission are already installed without the spacer and you are having release problems, it may be possible to install the spacer without removing the clutch and clutch brake. Cut a "V" shape on the fiber so it can be twisted and slipped onto the input shaft from the side. Be sure to cut the bottom of the "V" smaller than the O.D. of the input shaft so it won't fall off during operation.
(see schematic 2)

You should now be able to twist the fiber and fit it over the input shaft between the clutch brake and the transmission flange. You can now proceed to reset the clearance between the bearing lid and clutch brake at 1/2" to 9/16" with the internal clutch adjuster.



Schematic 1



Schematic 2

1 3/4" Fiber Part No. A153

2" Fiber Part No. A148

GENERAL INSTALLATION GUIDELINES

For 14” and 15.5” Two-plate Clutches

1. (14” & 15.5’) Check condition of flywheel. If it is cracked or warped, resurface or replace flywheel. Surface must be smooth or premature clutch failure can occur. Flywheel depth must be 2.937” for 14” two-plate clutches. The 15.5” clutch uses a flat flywheel. REMEMBER: Machining the flywheel past the .060” recommended moves the pressure plate away from the transmission. In this event, install a fiber spacer (provided) on the pilot shaft between the clutch brake and the transmission. The release yoke in the bell housing may not align properly with the pressure plate release bearing housing. Linkage adjustment may be required.
2. (14” & 15.5 “) Inspect and dial-indicate the mating surface of engine flywheel housing and clutch bell housing for alignment and also check flywheel run out. CAUTION: If misalignment is greater than limits recommended, this will cause poor clutch release, rapid wear on transmission pilot shaft and destruction of the clutch disc. Excessive flywheel run out may cause severe vibration in vehicle drive line.
3. (14” & 15.5 “) A new pilot bearing must be used. Before installing pilot bearing into flywheel, check freedom of movement on transmission pilot shaft.
4. (14” Only) Drive pins in the flywheel must be replaced. Check and be sure drive pin heads are square with the flywheel friction surface. (If drive pins are not replaced, assume that they are not square. The constant pounding of the center plate may have changed the position of the drive pins in the flywheel. Play it safe—Replace them all!)
5. (14” Only) After the drive pins are installed and properly aligned, position the center plate onto the drive pins and check the clearance with a feeler gauge. Clearance should be .006” to .010” and be measured from the same side of the drive pin at each location. The center plate should move up and down freely on the pins.
6. (14” Only) Install front clutch disc, center plate and rear disc as marked.
7. (14” Only) Insert alignment shaft through both clutch discs making sure it enters the pilot bearing. (NOTE: If an old pilot shaft with worn splines is used to align clutch disc, transmission pilot shaft may damage clutch hubs during installation of transmission.)
8. (14” Only) Position cover assembly onto the pilot shaft and guide towards flywheel mounting surface, making sure the cover fits into the flywheel pilot. Start cap screws.
9. (15.5” Only) Insert alignment shaft through bearing housing. Install rear disc, center plate, and front disc on alignment shaft. Move clutch housing towards flywheel making sure cover fits into flywheel pilot.
10. (14” & 15.5”) Install the cap screws that fasten the clutch housing on the flywheel. Tighten the cap screws to the specified torque and the sequence specified by the manufacturer of the vehicle or transmission. Cap screws should be Class 5 or greater.
11. (14” & 15.5”) Examine transmission pilot shaft for wear and replace if necessary. (Worn splines on pilot shaft will cause clutch to release improperly and may cause splined hubs in clutch disc to break out.)
12. (14” & 15.5”) Inspect release bearing yoke and both cross shaft bushings in bell housing and replace if worn. (NOTE: For proper clutch release, release bearing housing on cover must ‘squeeze’ clutch brake during clutch disengagement. Worn parts in bell housing may prevent full movement of release bearing during operation of vehicle.)
13. (14” & 15.5”) If clutch brake is to be used, place on transmission pilot shaft.
14. (14” & 15.5”) Rotate release bearing housing on cover assembly until flat section is on top. (NOTE: Bell housing cross shaft on some vehicles may be below center. This requires the flat section on release bearing to be in down position.) Note position on clutch when being removed.
15. (14” & 15.5”) Using extreme caution, guide transmission through cover and disc assembly, rotating bell housing shaft so that release yoke fingers are clear of the pads on the release bearing assembly. (warning: Transmission must not hang or be forced into the clutch. This can warp the clutch disc and prevent the clutch from releasing.)
16. (14” & 15.5”) Start bell housing cap screws and tighten progressively to the torque recommended by the vehicle manufacturer.
17. (14” & 15.5”) Release bearing has been pre-packed with grease from the factory.
18. (14” & 15.5”) Install clutch linkage. See “Clutch Adjustment Procedure”.

CLUTCH ADJUSTMENT PROCEDURE

NOTE: Clutches are adjusted at the factory to original equipment specifications and should require very little internal adjustment to achieve proper release and engagement. The clutch must not be adjusted to accommodate thin or worn flywheels, or worn linkage, yoke and/or cross shaft bushings, or to accommodate other drive train deficiencies. Adjustment for such purposes will either cause the clutch to not function properly or will cause early clutch failure and will be apparent on factory inspection of warranty claims, thereby voiding the manufacturer warranty.

THIS PROCEDURE COVERS BOTH 14" AND 15-1/2" CLUTCHES

STEP #1

After clutch installation, check the clearance between the yoke tips and wear pads on bearing housing for 1/8" clearance. This determines pedal free play. *(See illustration)*

Adjust the clutch linkage to increase or decrease the yoke-to-bearing clearance. **NEVER USE THE INTERNAL CLUTCH ADJUSTMENT FOR THIS PURPOSE.**

STEP #2

Check for proper clutch brake and bearing gap of 1/2" to 9/16". If the gap is not within these tolerances, add the spacer brake if needed and check clearance again.

If the clutch does need adjusting, push & turn adjust nut collar and set the clearance between the bearing and clutch brake at 1/2" to 9/16". **THIS DIMENSION IS CRITICAL. DO NOT VARY—EITHER OVER OR UNDER THESE DIMENSIONS—UNDER ANY CIRCUMSTANCES.** Over adjusting either way will cause the clutch to slip or not release.

Use the internal adjustment on the clutch to move the bearing. Turn adjuster clockwise to move bearing towards transmission (to decrease clearance) or counter clockwise to move the bearing towards the engine (to increase clearance). If internal adjustment exceeds 4 notches either way the clutch may not release or may slip.

Put tension on the linkage to be sure bearing is stretched and no movement towards the engine is noticed. Measure clutch brake and bearing gap with 1/2" - 9/16" gauge. *(See Illustration)*

REMINDER: The bearing must move a minimum of 1/2" or clutch will not release. Eliminate lost motion before checking for 1/2" movement. Lost motion is generally caused by loose or worn linkage, or worn yoke or cross shaft bushings.

STEP #3

If internal clutch adjustment was made, re-verify the 1/8" clearance between the yoke tips and wear pads on bearing housing shown in Step #1 above. If necessary, re-align linkage to obtain proper clearance. *(See Illustration)*

STEP #4

Re-verify the clutch brake squeeze by inserting .010 feeler gauge between bearing and clutch brake, then depressing the pedal to end of stroke. The feeler must be tightly clamped between the bearing and the clutch brake. (See Illustration) This verifies the contact of the bearing to the clutch brake.

The clutch brake will be squeezed if the total pedal stroke slightly exceeds the movement required to move the yoke/fork 5/8" to 11/16" (the combined total of the 1/8" clearance between yoke tips and wear pads and the 1/2" - 9/16" brake squeeze gap.

IN THE EVENT THE BRAKE IS NOT BEING SQUEEZED, DO NOT CHANGE THE 1/2" - 9/16" GAP FOR THE CLUTCH BRAKE, OR THE 1/8" CLEARANCE FOR THE BEARING HOUSING—CONSULT THE VEHICLE MANUFACTURER SERVICE MANUAL.

In analyzing the reasons for the brake not being squeezed, other things to check for are:

A. Worn linkage components or yoke and cross shaft bushings. If necessary, replace those components.
B. Improper linkage assembly. Verify that linkage is assembled in the correct hole locations.
C. Pedal stroke. To adjust, raise the upper and/or lower the lower pedal stops.

CLUTCH ADJUSTMENT PROCEDURE (con't.)

NOTE: MAXIMUM BRAKE SQUEEZE (IN CAB OF TRUCK) SHOULD NOT EXCEED 1" FROM THE END OF PEDAL STROKE. IF IT DOES, IT CAN BE ADJUSTED BY:

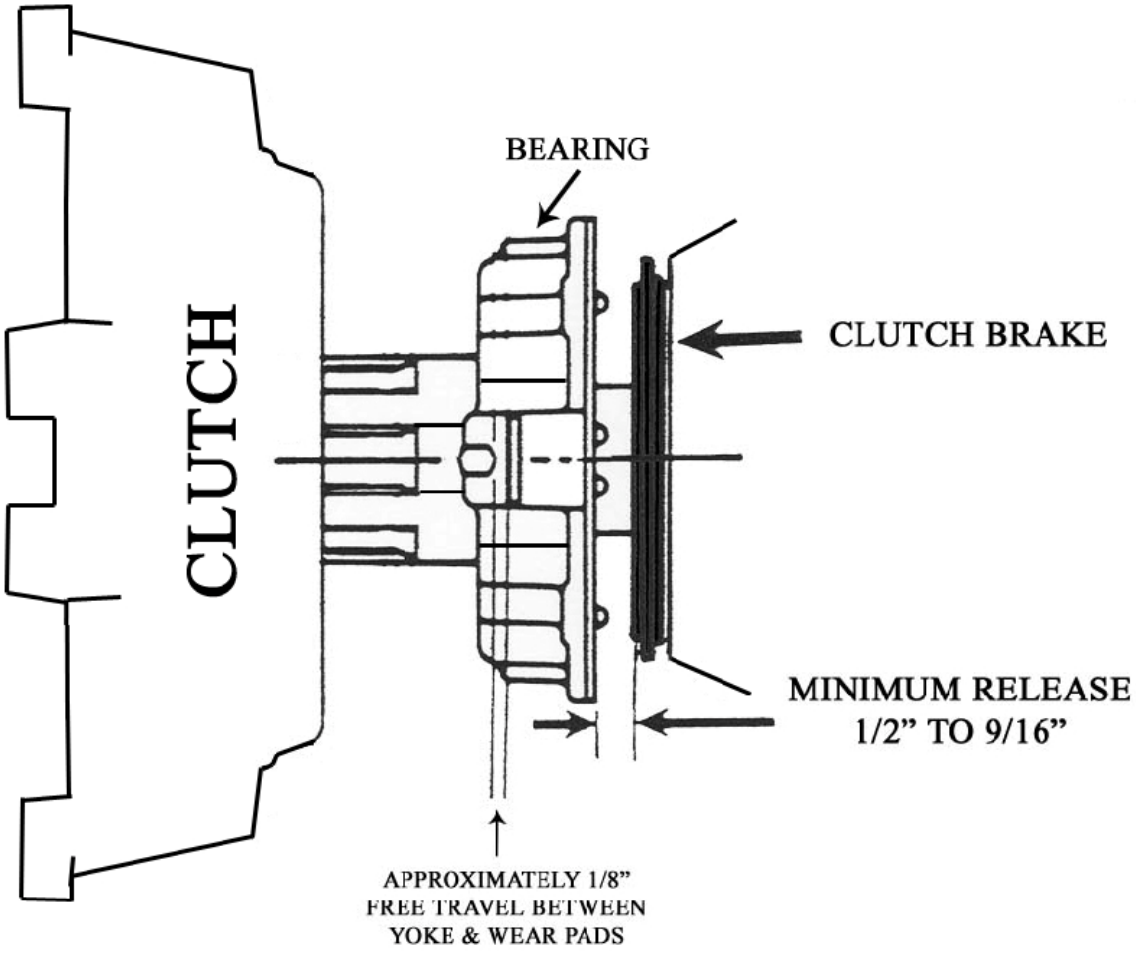
A. Changing pedal stops in cab to reduce total pedal stroke.
B. Increasing 1/8" yoke-to-bearing setting to lower squeeze. (This will increase free-pedal travel.)

STEP #5

Once the external parts are in tune with the clutch, record the measured amount of free-pedal movement in the vehicle log. This is the normal (standard) pedal travel for this vehicle. Then, if and when the clutch again needs adjustment, it should be adjusted back to this standard.

Example: If pedal travel standard is 2", the clutch may need adjustment when wear has reduced it to about 1" of travel.

INSTALLER SHOULD CAREFULLY CHECK TO VERIFY THAT THERE IS 1/8" OF FREE TRAVEL BETWEEN THE YOKE AND THE WEAR PADS AND A MINIMUM OF 1/2" TO 9/16" OF SPACE BETWEEN THE BEARING AND THE CLUTCH BRAKE.



Maintenance Tips

IT IS IMPORTANT TO NOTE THAT THESE ARE GENERAL GUIDELINES ONLY AND THAT THE INSTALLER SHOULD ALWAYS REFER TO THE VEHICLE MAINTENANCE MANUAL FOR SPECIFIC DETAILS.

1. The clutch should be lubricated after each adjustment.
2. Only high temperature grease should be used for clutch bearing housing and linkage lubrication. Do not use chassis lubricant for clutch lubrication. Refer to the vehicle maintenance manual for lubricant specifications.
3. Lubricate the clutch release bearing each time the chassis is lubricated.
4. When lubricating the clutch, apply lubricant to each fitting on the clutch housing.
5. Every point in the clutch linkage must be lubricated in addition to the clutch housing.
6. Adjust the clutch before the pedal clearance has disappeared. Failure to do so will result in slippage and adjustment afterwards may not be effective.
7. If the clutch is hydraulically assisted, make sure the slave and master cylinders are functioning properly.

Manufacturing & Parts Co.
American Made Clutches Since 1967

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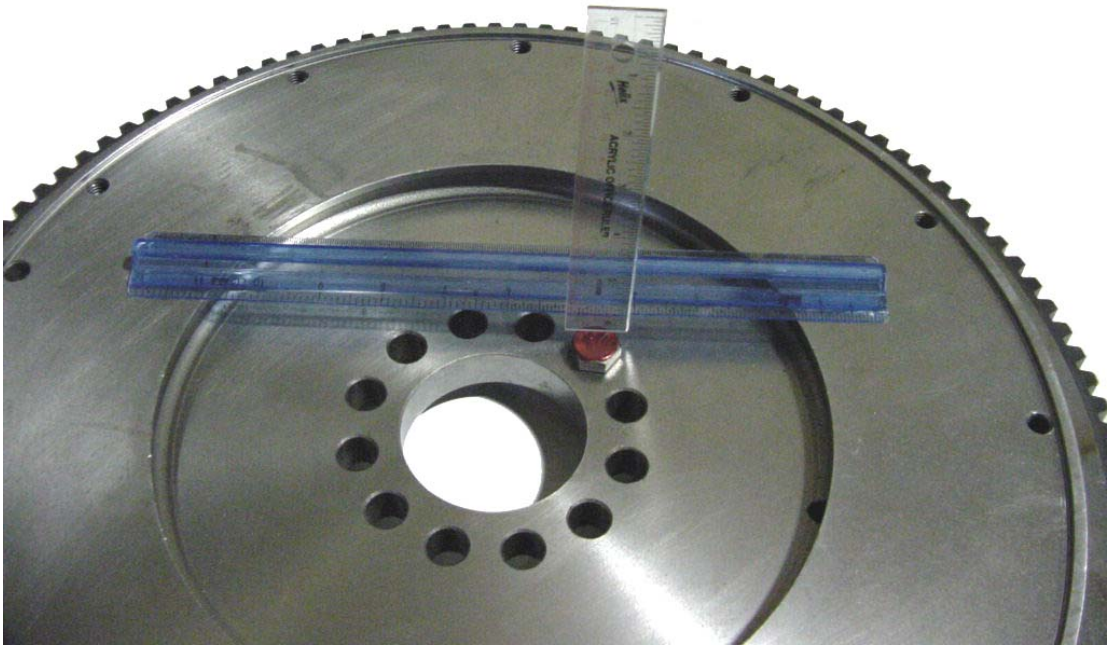
Limited Warranty

This heavy duty clutch is warranted against defective material or workmanship for a period of one year with unlimited mileage. Friction materials used in this clutch are specifically excluded. This warranty is void if the manufacturer installation procedures are not followed. It is also void if a new pilot bearing is not installed in the flywheel; the flywheel is not re-surfaced at time of installation; or if the unit has been dropped, tampered with, repaired, altered, improperly installed, or used in an application other than that for which it was originally intended. This warranty is restricted to the original purchaser. Acceptance of any claim against this warranty is contingent on Ace having received the clutch serial number; date purchased; proof that a new pilot bearing was installed; flywheel re-surfaced at time of installation; information showing vehicle type and class; engine make, model, and flywheel bore size. Warranty action is limited to repair or replacement, at the complete discretion of Ace Manufacturing & Parts Company, Inc. Labor claims will be evaluated on a case by case basis with no guarantee of reimbursement. If full or partial labor reimbursement is offered, it will be in the form of product only. No returned unit will be accepted under this warranty unless prior approval has been obtained from Ace Customer Services and identified with a returned goods authorization (RGA) number, and freight has been prepaid. This warranty is in lieu of any other warranty, whether expressed or implied, including without limitation any implied warranty, merchantability or fitness of purpose. In no event shall Ace Manufacturing & Parts Company, Inc. be liable for indirect, incidental, or consequential damages resulting from the use or any claimed failure of this unit. Contact your dealer for the warranty claim form and procedure.

Tech Tip



You must have a minimum of 5/16” distance from the friction surface (face) of your flywheel to the top of the bolthead that holds the flywheel to the crankshaft.
If it is less than 5/16”, you need a NEW flywheel!