Roadranger®

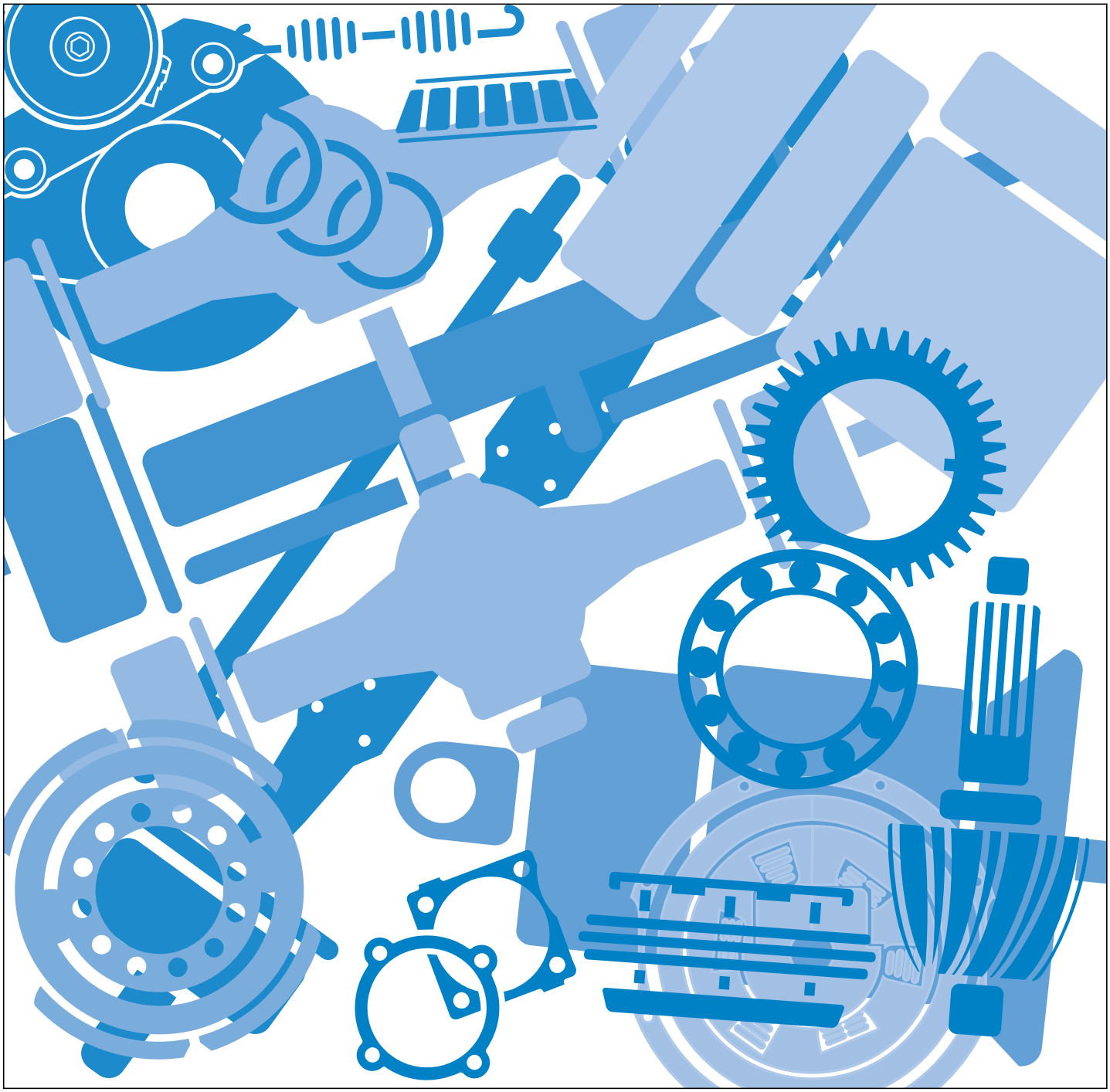
Eaton® Fuller® Clutches

Diagnostic Procedure for Solo Seized Cam

DANA | EATON

One Great Drivetrain from Two Great Companies

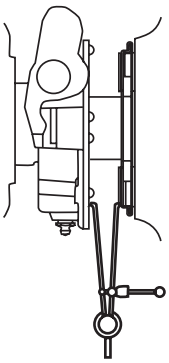
Troubleshooting Guide CLMT-1308 October 2001



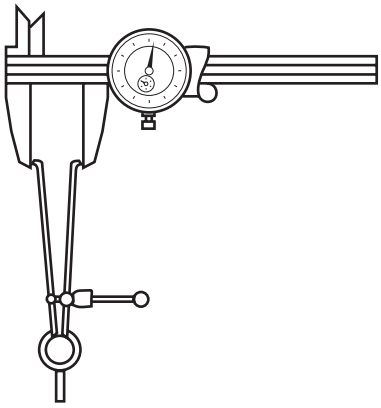
For the most current information, visit the Roadranger web site at www.roadranger.com

Measure Release Bearing Position

1. Remove inspection cover (replace it when procedure is completed).
2. Tug on the release bearing to ensure it is stretched toward transmission.
3. Use inside caliper to gauge the distance between the release bearing and the clutch brake. Do not force the bearing toward the engine or you will get an incorrect “false” measurement.



4. Measure the calipers.



The correct measurement should be between .490" and .560":

- If your measurement is correct, go to “Measure Clutch Brake Squeeze” on page 3.
- If measurement is more than .560", go to “Measurement More Than .560"” on page 1.
- If measurement is less than .490", go to “Measurement Less Than .490"” on page 2.

Measurement More Than .560"

Symptoms:

- Wear tab stopped moving
- Clutch has been working properly for some time
- Clutch has not been removed and re-installed on flywheel
- There has been a slow (gradual) loss of free pedal and now has zero free pedal in the cab.

Possible Causes:

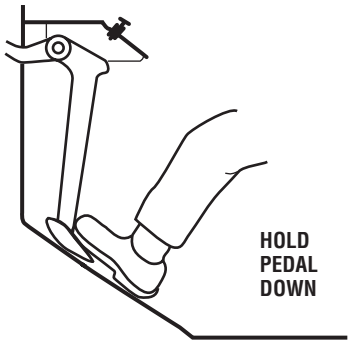
A. Clutch is worn out - wear tab is in the “Replace” position. (The clutch has reached its maximum service life.) Replace clutch.

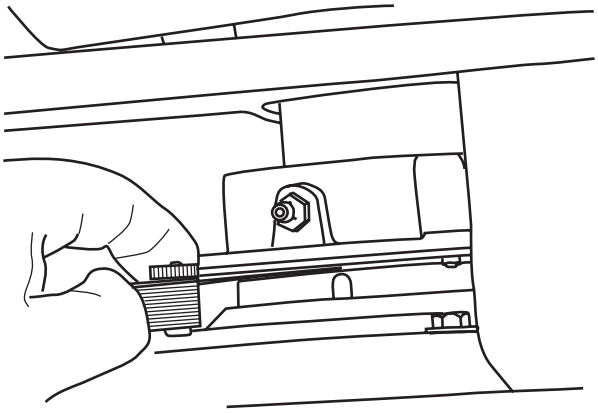
B. The clutch has failed to make proper adjustments. This could be due to the cam's becoming contaminated enough to prevent normal adjustment.

C. The linkage has not been correctly adjusted to allow for clutch to set bearing in proper position.

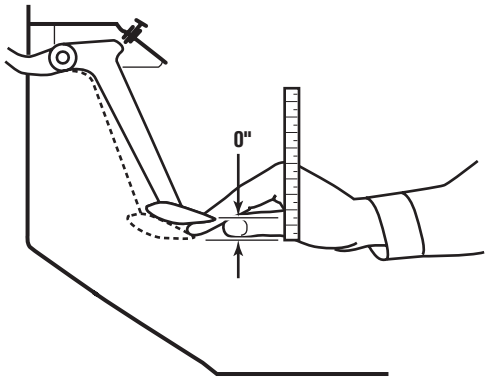
Solution:

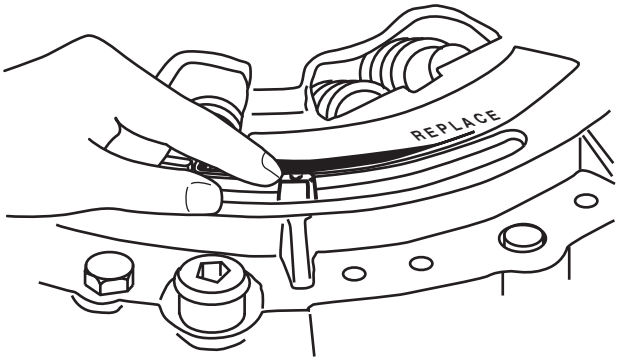
A. Push pedal down and hold. Verify that bearing moves against clutch brake and will squeeze .010" feeler gauge. Let up on the pedal.



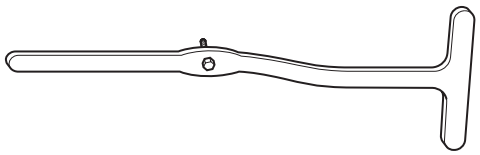


B. If there is no free pedal and the bearing is still more than .560" from brake, verify that truck linkage moves bearing approximately .600". Then push the pedal down and move the wear indicator to the right toward the “Replace” position. (If the tab moves, then the release bearing should move slightly closer to the brake when the pedal is up.)





C. If the tab cannot be moved using finger pressure, use the "Solo Tool" and follow the procedures for use of the tool (see “Use Seized Cam Adjustment Tool” on page 4).



Tool Part Code: CLPI-SOLOTOOL

D. Replace the clutch if the use of the tool does not allow you to free up the cam, reduce the bearing to brake to normal distances (.500" to .560") and gain free pedal in the cab.

Measure the release bearing position again (see “Measure Release Bearing Position” on page 1).

Measurement Less Than .490"

Consult Solo Troubleshooting Guide Manual CLTS-1295

A. Overadjust-rapid gain in free pedal, clutch has been in service and has been operating correctly.

B. If clutch has just been installed, consult Solo troubleshooting manual CLTS1295.

Measure the release bearing position again (see “Measure Release Bearing Position” on page 1).

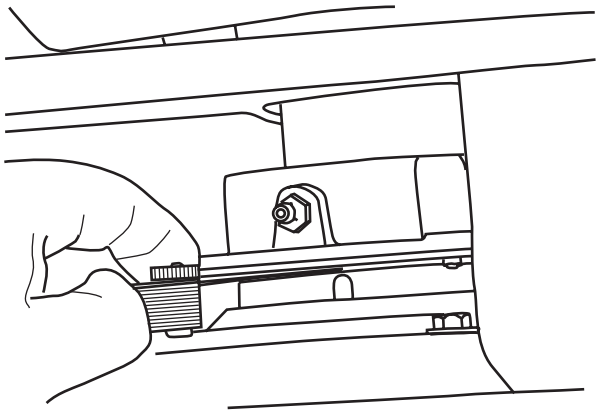
Measure Clutch Brake Squeeze

Definition

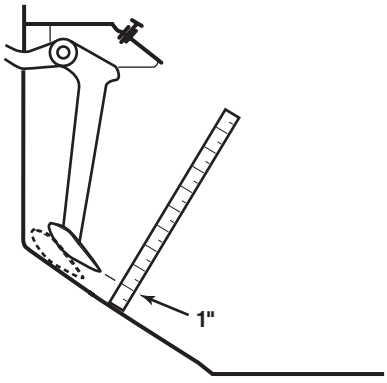
When the truck linkage is capable of pulling the bearing enough to force it against the transmission and squeeze a .010" feeler gauge.

Procedure

1. Insert a .010" feeler gauge (or business card) between the release bearing and clutch brake.



2. Push the pedal completely down, the feeler gauge should be squeezed (if not, adjust the truck linkage).
3. Slowly raise the clutch pedal while pulling slightly on the feeler gauge.
4. Whenever the gauge can be removed, the pedal should not be more than 1" from the end of the pedal stroke. (Depending on your system, follow either the Hydraulic Release System or Mechanical Linkage Instructions.)



Hydraulic Release System

If proper clutch brake squeeze is achieved, the release system is functioning correctly.

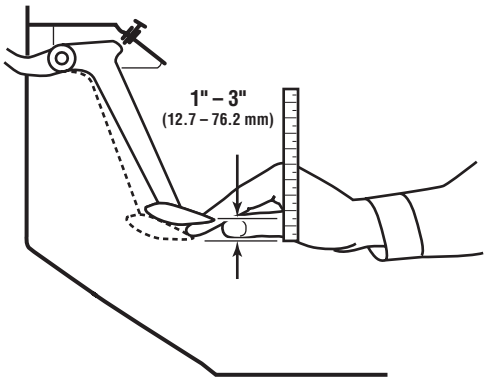
If clutch brake squeeze cannot be achieved, consult the OEM service manual and service updates/bulletins. If the bearing is in the proper position and clutch brake cannot be achieved, then it is a truck linkage problem. There is not enough yoke rotation to perform correct clutch release and adjustment.

Mechanical Linkage

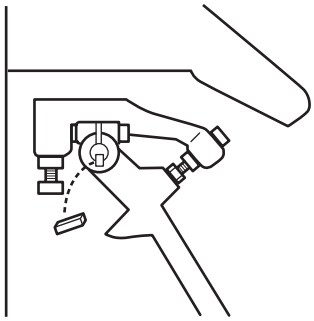
Adjust the truck linkage to achieve clutch brake squeeze no more than 1" from the end of the pedal stoke/floor.

Check Free Pedal

The truck linkage must be able to allow for free pedal when the bearing is in the correct position and clutch brake is squeezed. The truck linkage must be adjusted to change the pedal position when the clutch brake is squeezed. Do not change the clutch adjustment or "Reset" the clutch by moving the wear indicator to the "New" position.



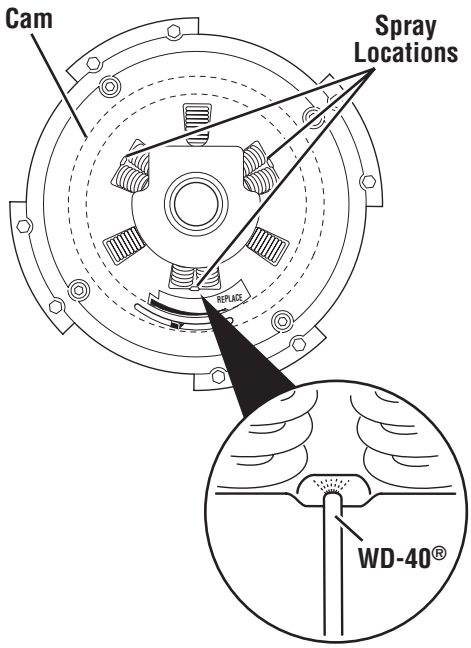
In some cases it may be necessary to change the pedal stroke to gain additional yoke movement. Adjust or modify the upper pedal stop in the cab to raise or lower pedal height. Check OEM service manuals for proper setup.



Use Seized Cam Adjustment Tool

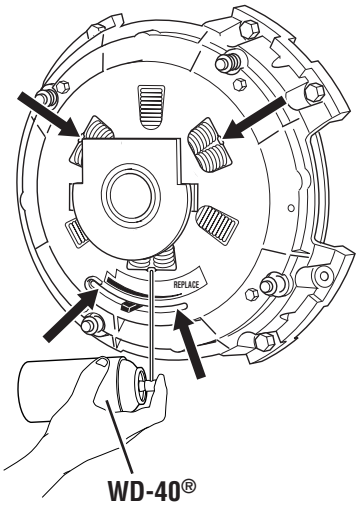
Overview

- The cam is a ring 11 inches in diameter.
- A seized cam is caused by grease, dust or other debris building up around the outer perimeter of the cam.
- To free a seized cam, spray generous amounts of WD-40® on to the small lip at each of the three spring perches and into the cam slot.
- Allow the WD-40 to penetrate around the entire cam perimeter.
- Use the tool to help jiggle the cam free.
- Do not use heavy force on the tool; heavy force could break the cam.

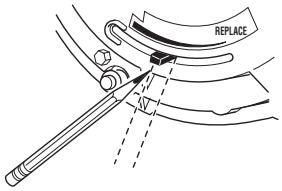


Preparation

1. Spray WD-40 into cam slot and all three spring perches.
   - Do not substitute another penetrant for WD-40. WD-40 is safe to use with cam material.
   - Make sure there is full penetration of liquid into cam.
   - Rotate engine to access all three locations.

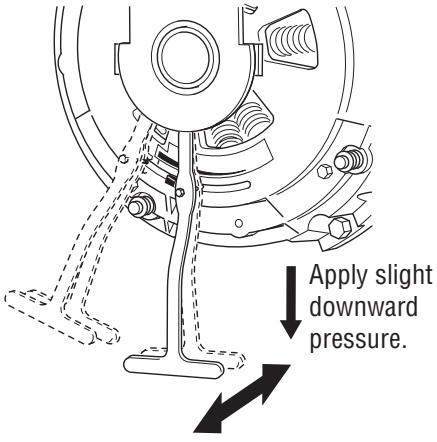


2. Mark cam tab position. This mark will later serve as an indicator for cam adjustment.



Loosen Cam

3. Have an assistant hold clutch pedal down.
4. Insert end of tool under bearing.
5. Position tool so that threaded bolt extends down into slot in the cam.



6. Push tool to move cam toward engine. Spray WD-40 into cam slot. Jiggle the tool to free cam. Use finesse, not force.

7. If cam is still seized:

   Repeat WD-40 spray at all three spring perches.

   Let up and push down on clutch pedal.

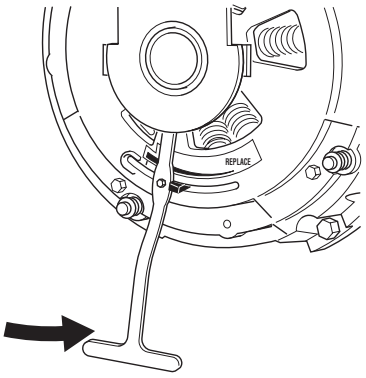
   When clutch pedal is down, jiggle the tool in the cam slots to apply pressure in all directions.

Adjust Cam

8. Use the tool to move the cam toward the “Replace” position.

   Do not force the cam down into the clutch. Instead, use sideways pressure so the cam can rotate.

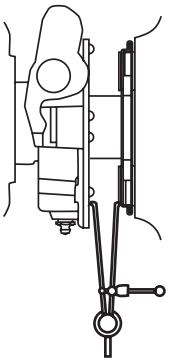
   When the cam moves to the right of the original marked position, the release bearing should have moved closer to the clutch brake, increasing the free pedal in the cab.

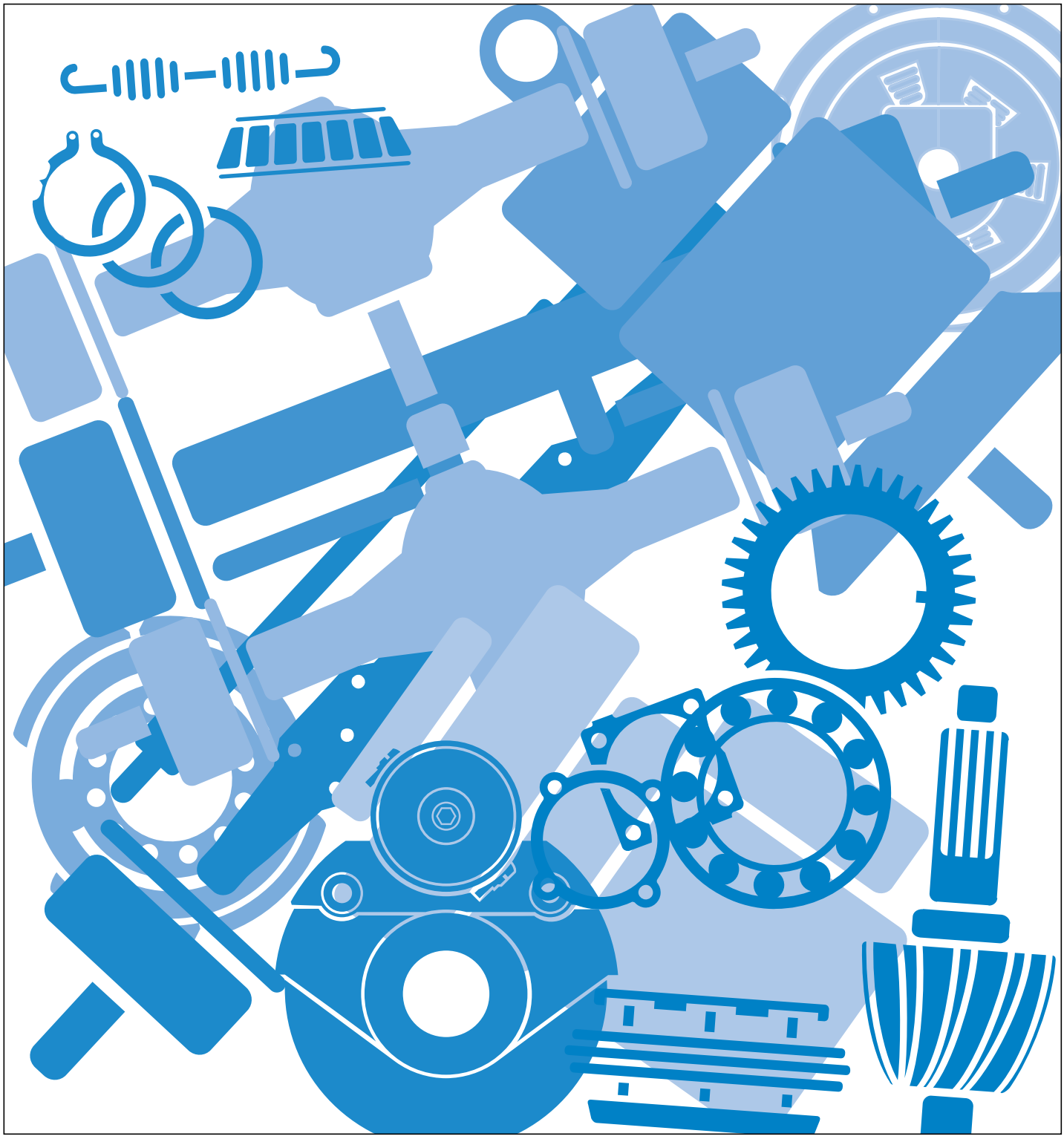


Verify Bearing Position

Measure bearing position to verify that bearing is less than .560" from clutch brake (see “Measure Release Bearing Position” on page 1).

Push pedal down to verify that linkage moves bearing against clutch brake and will squeeze a .010" feeler gauge between the bearing and brake (see “Measure Clutch Brake Squeeze” on page 3). Adjust truck linkage if needed.





National Institute for AUTOMOTIVE SERVICE EXCELLENCE

Roadranger
MORE TIME ON THE ROAD

The Roadranger® System is an unbeatable combination of the best products from Eaton and Dana – partnering to provide you the most advanced, most trouble-free drivetrain in the industry. And it's backed by the Roadrangers – the most experienced, most expert, most accessible drivetrain consultants in the business.

For spec'ing or service assistance, call 1-800-826-HELP (4357) 24 hours a day, 7 days a week, (Mexico: 001-800-826-HELP (4357)) for more time on the road. Or visit our web site at www.roadranger.com.

DANA | EATON

One Great Drivetrain from Two Great Companies

CLMT-1308
10/01 PDF
Printed in USA