

5 Clutch Adjustment and Lubricate

Adjust Clutch

NOTE: ServiceRanger software is required to adjust the ECA clutch on an Eaton Electronic Clutch Actuator UltraShift Transmission.

NOTE: Refer to CLSM0200 Service Manual for specific instructions.

- 1 Connect ServiceRanger to the truck via the diagnostic port under the dashboard.
- 2 In ServiceRanger, select "Go To" then select "Service Routines."
- 3 Select "Clear Clutch Data" and follow on-screen prompts.
- 4 Select "Adjust Clutch" and follow on-screen prompts.

Lubricate

NOTICE: Eaton recommends the use of Roadranger EP2 for release bearing lubrication, or an equivalent Lithium Complex, NLGI #2 or #3 grease with an NLGI LB/GC performance rating and a dropping Point temperature of 220 °C (428 °F) or higher. Failure to use the proper grease may affect bearing life and void the warranty coverage on your Eaton product.

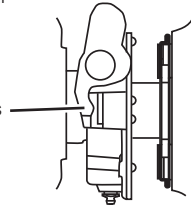
NOTE: Eaton requires a lube tube assembly to be used on the Electronic Clutch Actuator Ultrashift Transmission System.

NOTE: Failed lube lines will prevent grease from reaching the release bearing causing premature clutch release bearing failure.

CAUTION: Failure to properly lubricate the bearing/bushing will result in bearing and sleeve failures.

NOTICE: Do not lube the input shaft splines (never seize or grease).

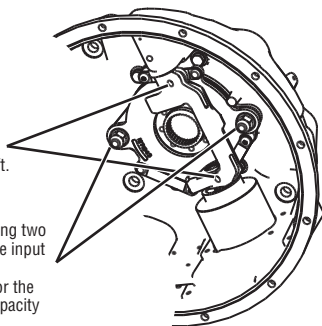
- 5 Open the inspection cover and verify the lube tube is attached to the release bearing and the clutch housing, and is functional. After inspection is complete close the inspection cover to prevent contaminants from entering the clutch housing.
- 6 Apply grease to the lube tube on the side of the clutch housing until grease purges from the release bearing housing.
- 7 Apply lube to the release yoke fingers to reduce wear to the pads on the release bearing housing.
- 8 Apply grease to the cross shaft bushings through the grease zerk on the side of the clutch housing.



A Appendix

Removal & Installation of the Low Capacity Inertia Brake (LCIB)

- 1 Remove the release yoke by unscrewing the two bolts and pulling it out of the cross-shaft.
- 2 Remove the LCIB by unscrewing two nuts and sliding LCIB off of the input shaft. The two nuts that were removed should be retained for the installation of the new Low Capacity Inertia Brake.



- 1 Slide the LCIB onto the input shaft.

Note: The input shaft may need to be rotated to make sure it meshes with the splines of the LCIB.

Note: The orientation of the LCIB is such that the two drive straps are positioned toward the bottom of the housing and are facing toward the flywheel.
- 2 Slide washers and nuts onto the bolts, and with the use of a torque wrench, tighten to 140–150 lb-ft of torque.
- 3 Re-install the release yoke to the cross-shaft by sliding the release yoke into the cross-shaft and with the use of a torque wrench tighten the two bolts to 35-45 lb-ft of torque.

Installation Procedure

Eaton Heavy-Duty 15.5" Adjustment-Free Clutch CLMT1400 EN-US

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Note: Refer to CLSM0200 for clutch removal procedures. Shipping bolts must be used to properly remove the clutch.



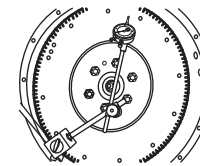
1 Measure

Measure Engine Flywheel Housing and Flywheel

Engine flywheel housing and flywheel must meet these specifications or there will be premature clutch wear. Remove old Pilot Bearing. All gauge contact surfaces must be clean and dry. Use a dial indicator and check the following:

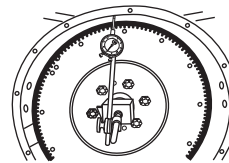
Flywheel Face Runout

Secure dial indicator base to flywheel housing face. Put gauge finger in contact with flywheel face near the outer edge. Rotate flywheel one revolution. Maximum runout is 0.008" (0.20 mm).



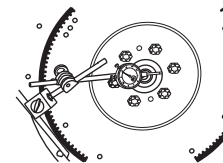
Flywheel Housing I.D. Runout

Secure dial indicator base to crankshaft. Put gauge finger against flywheel housing pilot I.D. Rotate flywheel one revolution. Maximum runout is 0.008" (0.20 mm).



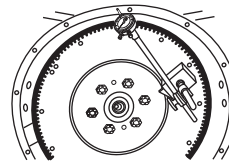
Pilot Bearing Bore Runout

Secure dial indicator base to flywheel housing face. Position gauge finger so that it contacts pilot bearing bore. Rotate flywheel one revolution. Maximum runout is 0.005" (0.13 mm).



Flywheel Housing Face Runout

Secure dial indicator base to flywheel near the outer edge. Put gauge finger in contact with face of flywheel housing. Rotate flywheel one revolution. Maximum runout is 0.008" (0.20 mm).



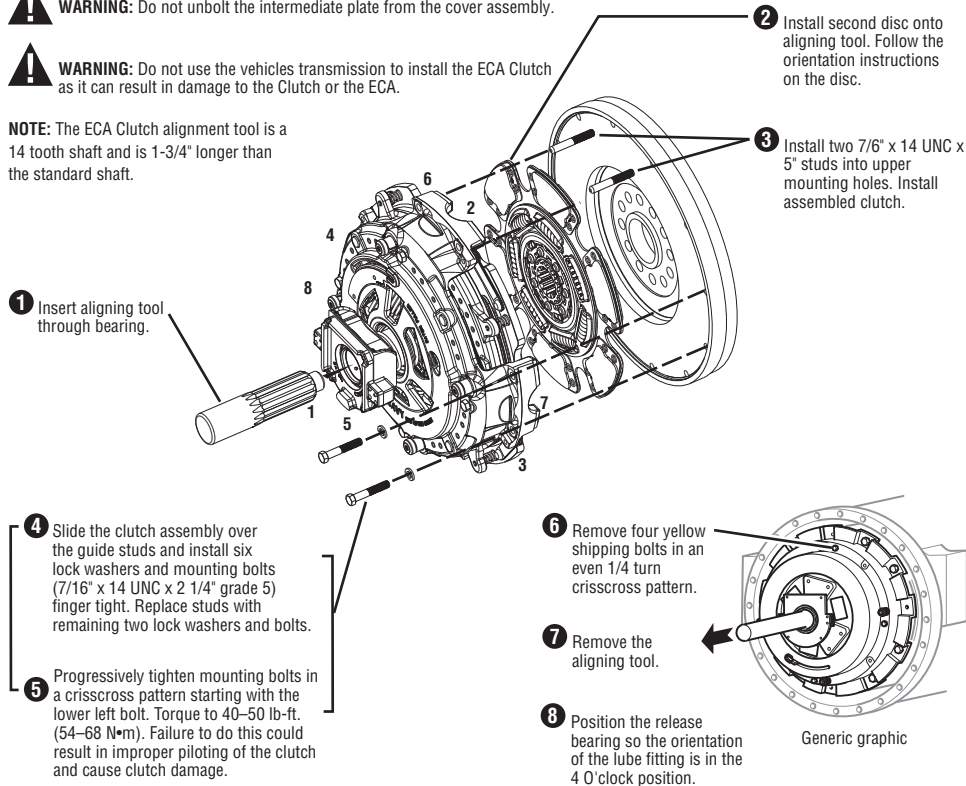
2 Install Clutch to Flywheel

CAUTION: An assembled clutch weighs about 150 lbs. (68 kg). Avoid the risk of injury. Use proper equipment when lifting a clutch.

WARNING: Do not unbolt the intermediate plate from the cover assembly.

WARNING: Do not use the vehicles transmission to install the ECA Clutch as it can result in damage to the Clutch or the ECA.

NOTE: The ECA Clutch alignment tool is a 14 tooth shaft and is 1-3/4" longer than the standard shaft.



4 Slide the clutch assembly over the guide studs and install six lock washers and mounting bolts (7/16" x 14 UNC x 2 1/4" grade 5) finger tight. Replace studs with remaining two lock washers and bolts.

5 Progressively tighten mounting bolts in a crisscross pattern starting with the lower left bolt. Torque to 40–50 lb-ft. (54–68 N·m). Failure to do this could result in improper piloting of the clutch and cause clutch damage.

6 Remove four yellow shipping bolts in an even 1/4 turn crisscross pattern.

7 Remove the aligning tool.

8 Position the release bearing so the orientation of the lube fitting is in the 4 O'clock position.

Generic graphic

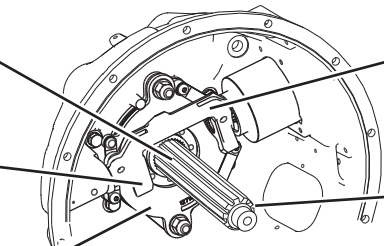
3 Install Transmission

Check Transmission For Wear
Replace any worn components.

Input Shaft
Wear (roughness) can reduce sleeve bushing life and cause it to become dislodged.

Release Yoke
Worn fingers can cause bushing wear and yoke interference when the Electronic Clutch Actuator is at the released position.

Low Capacity Inertia Brake (LCIB)
Eaton requires that you replace the LCIB when replacing the clutch. See Appendix A for LCIB removal and installation instructions.



Cross Shaft And Bushings
Excessive wear at these points can cause side loading on the sleeve bushing, bushing failures and yoke bridge contact with the clutch in the release/open position.

Input Shaft Splines
Any wear on the splines will prevent the driven discs from sliding freely, causing poor clutch release (clutch drag). Slide discs full length of shaft to check for twisted shaft splines.

Fasten Transmission To Flywheel Housing

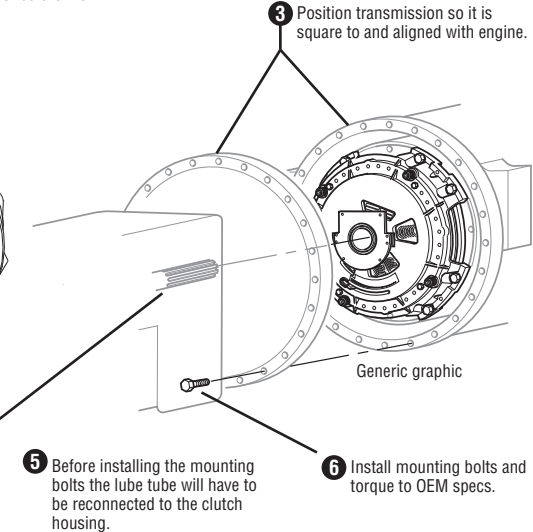
Transmission installation and clutch set-up procedures.

NOTE: To ensure the yoke fingers remain in the up position use the opening vacated by the ECA to rotate the yoke in the up position just before the transmission is going to be aligned.

1 Put transmission in neutral. Be sure new LCIB has been installed.

2 Make sure that the yoke fingers are rolled and remain in the up position until they are over the release bearing housing.

4 Mesh splines by moving transmission forward and rotating the input shaft. Do not use excessive force. Do not let the transmission hang unsupported in the discs.



4 Install Electronic Clutch Actuator (ECA)

1 Apply 1" band of anti-seize to barrel of ECU.

NOTE: Ensure you rotate the release yoke close to the cast dowel in the clutch housing prior to mating with the cross-shaft. This allows the release yoke to clear the release bearing during installation.

2 Install the ECA into the clutch housing bore and align it with the lower cross-shaft.

3 Install the 4 cap screws from the ECA mounting flange and tighten to 35 - 45 lb-ft. (47 - 61 Nm).

4 Install the 4 cap screws for the ECA bracket and tighten to 35 - 45 lb-ft. (47 - 61 Nm).

5 Apply Eaton lubricant (P/N 5564527) to the 8 and 3-Way connector terminals and reconnect the connectors to the ECA.

6 Reconnect the negative 12-volt battery cable.

NOTE: The ECA will have to be rotated to align with the slot in the clutch housing.

NOTE: The 4 cap screws for the ECA are longer than the ECA bracket cap screws.