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. Select the Advanced Products Functions category.
3. Double click on the transmission model under the Advanced Products Functions to list the various commands for the ECA.
4. Select the Request Clutch Adjustment command to automatically initiate the ECA to open and close the clutch five times causing a clutch adjustment.

Lubricate

Eaton recommends that the ECA Clutch use a lithium-complex grease with a minimum of 325°F (163°C) operating range meeting N.L.G.I. Grade 2 or 3 spec.

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.

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

Apendix

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

NOTE: To remove the LCIB the transmission and the Electronic Clutch Actuator must be removed. Refer to Installation Guide TRIG1110 for ECA and transmission removal.

Installation:

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.

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).

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.
**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.

1. Insert aligning tool through bearing.
2. Install second disc onto aligning tool. Follow the orientation instructions on the disc.
3. Install two 7/8” x 14 UNC x 5” studs into upper mounting holes. Install assembled clutch.
4. Remove four yellow shipping bolts in an even 1/4 turn crisscross pattern.
5. Remove the aligning tool.
6. Position the release bearing so the orientation of the lube fitting is in the 4 O’clock position.
7. Put transmission in neutral. Be sure new LCIB has been installed.
8. 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.

**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.
3. Before installing the mounting bolts the lube tube will have to be reconnected to the clutch 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.
5. Install mounting bolts and torque to OEM specs.

**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.

**4 Install Electronic Clutch Actuator (ECA)**

**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.

1. Apply 1” band of anti-seize to barrel of ECU.
2. Install the ECA into the clutch housing bore and align it with the lower cross-shaft.
3. Install the ECA mounting flange and tighten to 35 - 45 lb-ft. (47 - 61 Nm).
4. Install the 4 cap screws from 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 4 cap screws for the ECA are longer than the ECA bracket cap screws.