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Coding Information

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Title: Hard to Crank Condition on ProStar, LoneStar, and TranStar Vehicles

Applies To: ProStar, LoneStar, and TranStar Vehicles with Hydraulic Clutch Linkage and Solo Clutch

Description

ProStar, LoneStar, and TranStar model trucks built with Eaton Solo Clutches may experience a condition in which it is hard to get the vehicle to crank. This is caused by the clutch bearing contacting the clutch brake prior to the clutch release pedal passing the magnetic clutch safety switch, which closes the switch allowing the vehicle to crank. This may cause increased or unattainable pedal efforts to allow the vehicle to crank. The Eaton Solo clutch has been found to be operating lower than the clutch specification of 0.490" - 0.560" bearing to brake, causing the decrease in clutch release pedal movement.

Diagnostic Steps

Step	Description	Yes	No
1.	Check the vehicle build date. Was the vehicle built prior to 02/04/2014	Continue to Step 2	Continue to step 3
2.	Remove the driver control module modesty panel and inspect the clutch switch color. Is the installed switch gray and not black?	Continue to Step 3	Install clutch switch part number 2512776C91. Recheck operation. If the vehicle is operating correctly, return it to the customer. If the vehicle is still hard to crank, continue to step 3.
3.	Using a dial indicator, measure the clutch pedal free play. Is the free pedal from 0.7"-0.8"?	Continue to Step 4	Adjust clutch pedal free play. Recheck operation. If the vehicle is operating correctly, return it to the customer. If the vehicle is still hard to crank, continue to step 4.
4.	Measure clutch bearing to clutch brake distance. Is the gap less than 0.490"?	Contact Eaton for clutch replacement approval.	Open a tech services case file under the major group 11 clutch.

Step 1- Build Date Inspection

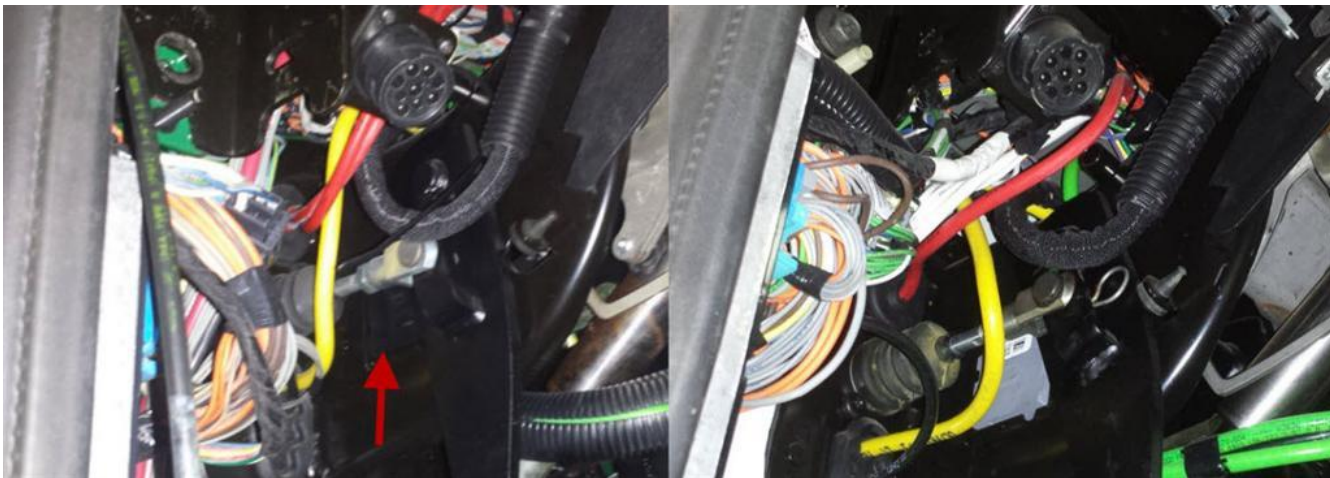
Using the service portal, enter in the chassis number and check the vehicle's build date. If the vehicle's build date is after 02/04/2014, then the vehicle has the new gray start switch. The new switch allows for the vehicle to crank with less clutch pedal travel. This accommodates for the Solo over adjust condition.

Step 2 - Clutch Switch Inspection

Remove the 11 self tapping pan head black screws, the 1 M6x35mm bolt, and the M8x45mm Bolt holding the 2 driver control module modesty panels. Once the fasteners are removed, the panels (4 and 5) can be removed and set aside.



Inspect the color of the clutch switch. If the switch body is black, it will need to be replaced with switch part number 2512776C91.



Step 3- Clutch Pedal Free Play Inspection

If the clutch release pedal requires excessive effort to allow the vehicle to crank after replacing the clutch switch, then check the clutch release pedal free travel. If the pedal is from 0.700" to 0.800", then move on to the next step. If the pedal is less than 0.700", then increase the free play to 0.700"-0.800".

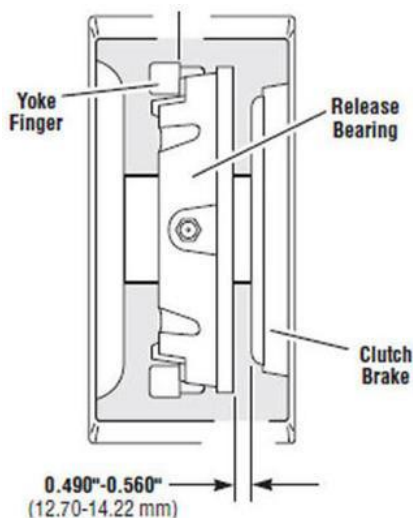
- Preferred Procedure- Use a dial indicator to measure the free play adjustment. When setting up the dial indicator, adjust the indicator so the needle does not slide across the pedal, but follows the pedal. This is the most accurate way to measure the clutch release pedal free play, and will allow the final adjustment point to be set accurately.
- Alternate Procedure- This should only be done if a dial indicator is not available. Using the tilt function on the steering column, align the steering wheel to the clutch release bearing travel position. Use a piece of masking tape and wrap the steering wheel in line with the clutch release pedal. Mark a line on the masking tape and measure from the pedal to the line at the top of the pedal range and at the bottom of the free play range. Using the tape measure, adjust the clutch release pedal free play to 3/4".



Step 4- Clutch Adjustment Inspection

Remove the clutch inspection cover, and measure the bearing to brake position. Inserting a bar that is about 0.500" is NOT an acceptable procedure for checking the clutch bearing to brake measurement.

- Preferred Procedure- Use a telescoping gage or inside caliper capable of a 0.400" - 0.600" range, and insert it between the clutch bearing and the clutch brake aligned with the center of the brake and the center of the bearing. Then measure the gage using a micrometer or a dial/digital caliper.
- Alternate Procedure- Use a feeler gage set (shim stack), and stack the correct number and size feeler gages to allow the feeler gage stack to fit snugly between the clutch bearing and brake. Then measure the feeler gage stack using a micrometer or a dial/digital caliper.



Or



Post Adjustment Evaluation

After making the clutch pedal free play adjustment, depress the clutch pedal to crank the vehicle. The starter should engage in a range from a little before to just after clutch brake contact, which is indicated by the pedal coming to a stop with the same amount of effort being applied to the clutch release pedal as was used to stroke the clutch release pedal.

- If the clutch internal bearing to brake measurement is less than 0.490", and the clutch release pedal free travel is adjusted to 0.700"-0.800" the vehicle does not crank, then the clutch will need to be replaced.
- Resetting the clutch will not affect the static bearing position.

- The clutch bearing to brake measurement, as taken when the clutch is installed in the vehicle, must be recorded on the pressure plate and the warranty claim to ensure there are no charge backs.

Compatible Replacement Clutches

Please see the below photos to identify a replacement clutch. These are clutches that must be used on all ProStar and LoneStar vehicles. Vehicles with a mechanical linkage system can continue to use clutches without the markings. All these clutches are certified to have a bearing gap above 0.530" at the Eaton end of line tester. These clutches can be identified by the following witness marks:

- A blue dot placed on the corner of the part label on the box
- A green line on the pressure plate ear nearest the cam tab

To ensure you receive a clutch that has a blue dot, please order a clutch from the PDC. When ordering the clutch, notate on the order " Please ensure the label on the clutch box has a blue dot on it, per IK1100031"



SRT

Operation Number	Group	Noun	Description	Time	Step
R08-8226A	08540	266	Clutch Switch Replacement- ProStar	0.6	2
S08-8226A	08540	266	Clutch Switch Replacement- LoneStar	0.6	2
Q08-8226A	08540	266	Clutch Switch Replacement- TranStar	0.6	2
A11-3140	11000	403	Clutch Linkage Adjustment	0.5	3
R11-1862A	11000	440	Replace Clutch- ProStar	5.1	4
S11-1862A	11000	440	Replace Clutch- LoneStar	5.1	4
Q11-1862A	11000	440	Replace Clutch- TranStar	5.1	4
R11-1862A-3	11000	440	With Manual Transmission Oil Cooler- ProStar	0.2	4
S11-1862A-3	11000	440	With Manual Transmission Oil Cooler- LoneStar	0.2	4
Q11-1862A-3	11000	440	With Manual Transmission Oil Cooler- TranStar	0.2	4

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