



# Bezares USA Technical Bulletin

Date: March 2024

**Endurant transmissions may inconsistently receive PTO feedback signals. Changing the PTO confirmation (Ball Switch and Harness) may improve communication to the Eaton Endurant and PACCAR Transmissions.**

## **Warranty:**

There is no effect on current warranty coverage beyond the one-year installation date.

Standard warranty terms apply.

## **PTOs affected:**

4100/4110 Series Heavy Duty Bottom mount, 8-Bolt, Air shift.

- ✓ PT4100X\*N77\*\*\*
- ✓ PT4110X\*N75\*\*\*

## **Issue:**

Inconsistent feedback from the PTO switch to the Cab Controller / and or the transmission controller for several seconds causes the PTO to disengage. Changing the switch may improve the feedback signal to the Eaton Endurant HD, HDV, PACCAR TX-12, PACCAR TX-12 PRO, Endurant XD, XD PRO, and PACCAR TX-18, TX-18 PRO Transmissions.

## **Symptoms:**

PTO randomly disconnects during operation.

## **Root Cause:**

Communication between Cab Controller, Transmission TCM, and PTO confirmation switch.

**Resolution:**

Step 1, Resolve any defect codes between Cab Controller, Transmission TCM and the switch. If the switch needs replaced compare any resulting default codes to previous. Resolve all codes appropriately.

- 4100/4110 Series Bottom mount Heavy Duty, 8 Bolt, Air shift.
  - Change the current pressure switch **as per instructions** in the **Appendix below**. Verifying the software in the truck recognizes the in dash PTO switch and operates correctly. Verify fault codes are addressed properly and corrected.

Step 2, If after step 1 there is no improvement in PTO performance refer to TRIG2600 for pertinent wiring and connection specifications. Link below.

<https://www.eatoncummins.com/content/dam/eaton-cummins/products/endurant-xd/endurant-xd-series-pto-installation-guide-TRIG2620.pdf>

Step 3, if after step 1 & 2 there is no improvement in PTO performance, run a continuity check on PTO ball switch contacts, and engage PTO. If the PTO ball switch passes continuity test and has no resistance, when PTO is engaged, then contact vehicle manufacturer for further vehicle diagnostics and repair.

Step 4, if after steps 1, 2 & 3 there is no improvement in PTO performance call the Eaton/Bezares toll free technical service number @ 800-826-4357.

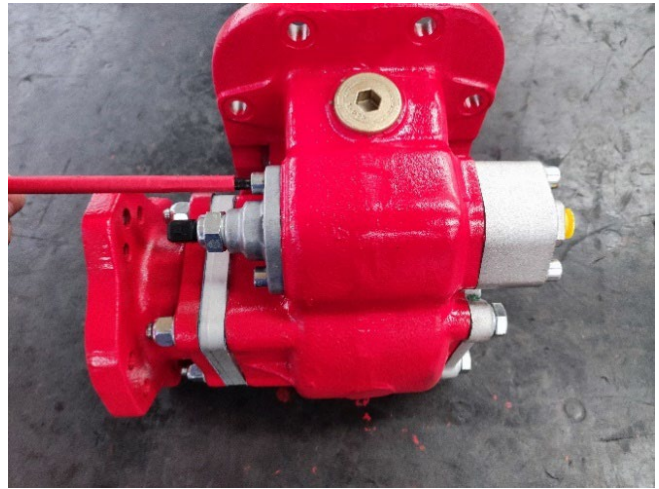
**Appendix:**

**4100/4110 MECHANICAL BALL SWITCH CONVERSION KIT**

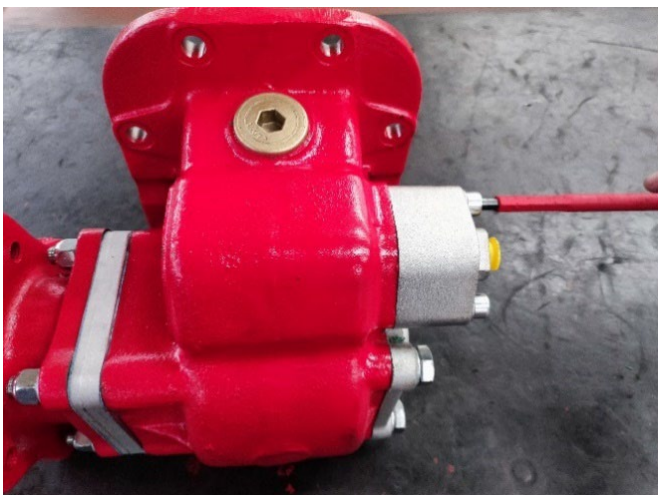
KIT #s **PT90100899-13** (1&3) assembly or **PT90100899-24** (2&4) assembly



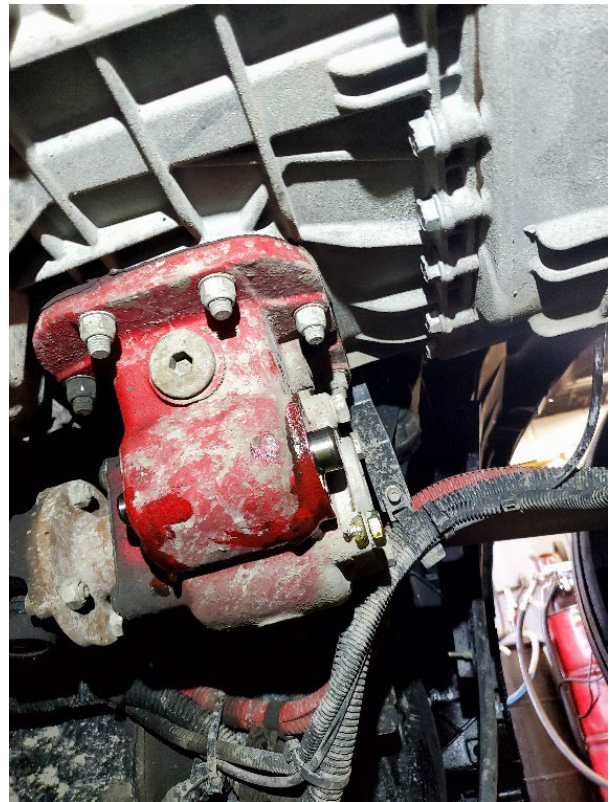
1. Clean any debris from switch carrier cover.  
Remove the cover and save the screws.



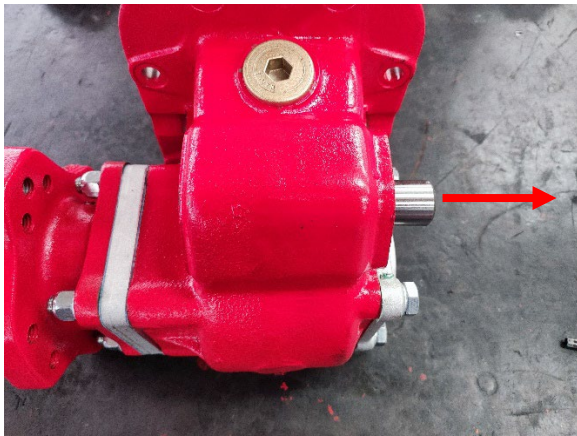
2. Remove the screws from the old switch carrier.



3. Remove the screws from the piston carrier cover.  
Make sure the piston carrier is clean.



Remove the cover, save it and the screws.



4. Pull gently from the piston bar to remove it.



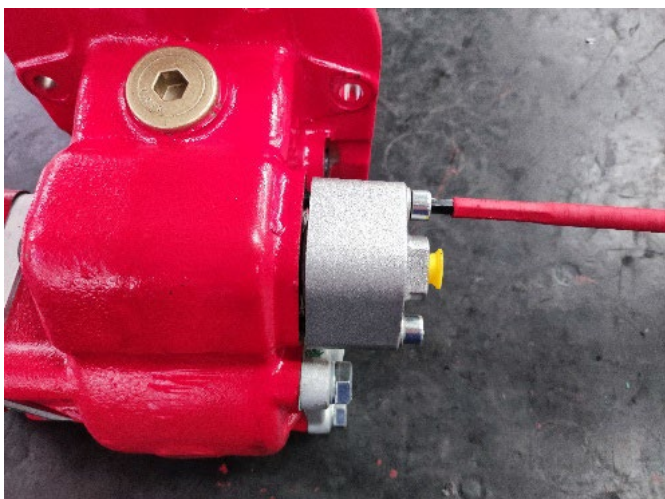
5. Lubricate new longer piston bar and insert into piston carrier side of housing.  
Insert piston promptly to minimize oil leaks.



6. Push in piston. Release and it should spring back.

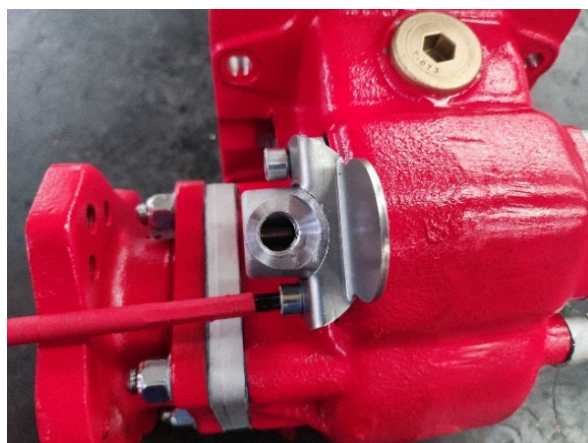
**Warning!**

If piston does not spring back, then PTO will have to be removed for inspection. If it is found that internal shifter components have become dislodged, the unit will need to be returned to authorized Bezares distributor for rebuild.



7. Install new O-Ring. Apply Loctite 270 to screws for piston carrier. Torque to 16-22 lb.-ft.

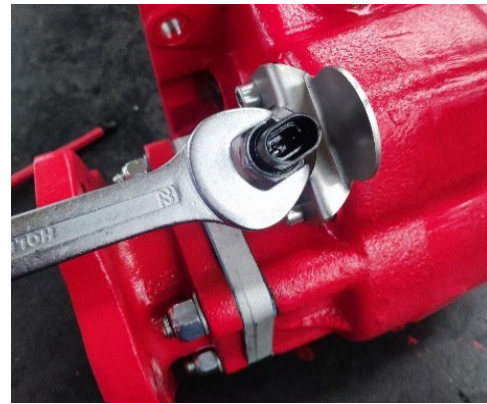
8. Install new O-Ring in new switch carrier cover. A dab of grease will help retain it.



9. Select the correct switch protector X881 for 1 & 3 assembly-X887 for 2 & 4

10. Apply Loctite 270 to the screws for the switch carrier cover, then install protection plate. Torque to 16-22 lb. ft.

Note: Don't need step 9 if correct conversion is ordered.



11. Apply a few drops of Loctite 270 to the new indicator switch thread  
**NOTE:** Do not apply too much. Avoid the Loctite contacting with the ball.

12. Attach copper washer onto ball switch.  
Torque new switch to (30Nm / 22Lb.ft)



13. Install wire harness to ball switch connector. If wire harness is butt connected make sure heat shrink tubing is used. Tie off any loose wires.

**MAKE SURE THE TRANSMISSION IS REFILLED PROPERLY ACCORDING TO THE ENDURANT PTO INSTALLATION MANUAL**

Last Revision Date	Description of Clarifications and Updates
March 2024	Engineering approval and release: Name: <u>Mikel Janitz</u> Title: <u>Application Engineer</u>