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Author: Al Schnellenberger

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Title: Power Take Off (PTO) Programming on DuraStar Models with the Eaton® Procision™ Tansmission

Applies To: 0013GBX, 0013GBY, 0013GYU, 0013GYV, 0013WEP, DuraStar

CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

03/02/2018 - Initial Article Release

DESCRIPTION

This document will guide the user through the required Diamond Logic® Builder (DLB) and Eaton® ServiceRanger programming to support Power Take Off (PTO) engagement, on DuraStar model trucks, built with with the Eaton® Procision™ transmission.

The Transmission Control Module (TCM) and Body Controller (BC) must be programmed correctly and the correct wiring needs to be in place, for PTO engagement to work correctly.

For the single PTO application, installed on the Eaton® Procision™ Transmission, the TCM and the Body Controller send confirmation messages, to each other, over the J1939 Data Link.

The Body controller sends “PTO Request”, to the TCM when the PTO switch is activaterd.

If all conditions in the Transmission are satisfied the TCM sends a message, back to the Body Controller, allowing it to send out the PTO activation signal.

If a second PTO is installed, it must be hardwid to the TCM. Seethe [Eaton® Procision™ 7-Speed Dual ClutchTransmission TRIG0990 EN-US](#) documentation for more information.

The TCM also looks for a “PTO Confirm” signal from the Body Controller. The Body Controller sends “PTO Confirm” when the Body Controller sees the PTO feedback at either the Body Controller input or the RPM input, as programmed.

SYMPTOM(s)

After installing a PTO and programming the Body Controller, for a PTO feature, the PTO will not engage.

Diagnostic Trouble Code(s) & Dashboard Indicator Light(s):

DTC/Light	Description
SPN 3456 FMI 13 (link to FCAP) Previously Active	Engagement Consent -Transmission input shaft PTO 1
SPN 3457 FMI 13 (link to FCAP) Previously Active	Engagement Consent -Transmission input shaft PTO 2

Customer Observations or Concerns:

PTO will not engage and PTO switch indicator flashes

SPECIAL TOOL(s) / SOFTWARE

Tool Description	Comments	Instructions
Eaton® Service Ranger™ 4		
International® Diamond Logic® Builder	You will need Level 2 Dealer access to perform any programming	

SERVICE PARTS INFORMATION

Not Applicable

DIAGNOSTIC STEP(s)

 WARNING:	
To prevent property damage, personal injury, and / or death, park vehicle on hard flat surface, turn engine off, set parking brake, and install wheel chocks to prevent vehicle from moving in both directions.	

 WARNING:	
To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.	

 WARNING:	
To prevent property damage, personal injury and / or death, remove the ground cable from the negative terminal of the battery box before disconnecting any electrical components. Always connect the ground cable last.	

CAUTION:

You will be prosecuted to the extent possible under the law if you illegally access, use, alter, damage, disclose or destroy this computer system, data or documentation. International Truck and Engine Corporation will not be liable for personal injury or equipment damage resulting from the use of the Diamond Logic® Builder program. Users are encouraged to perform comprehensive vehicle testing of all programs created with Diamond Logic® Builder before releasing equipment for public sale or usage.

NOTE:

Ensure all other DTC's are resolved before proceeding with the diagnostics.

Step	Action	Decision
1	DIAGNOSTIC: Connect to the TCM with ServiceRanger™ 4. Ensure the PTO programming is set, as shown in Figure 1. Is the programming set correctly ?	Yes. Go to Diagnostic Step 2
		No. Refer to Figure #1 1. Using Service Ranger 4, program the Transmission accordingly and Test PTO operation. 2. Operate the PTO to see if the PTO will engage and the PTO indicator in the cluster will illuminate, if it does return vehicle to service. 3. If the PTO does not engage or the PTO indicator in the cluster does not illuminate, go to Diagnostic Step 2

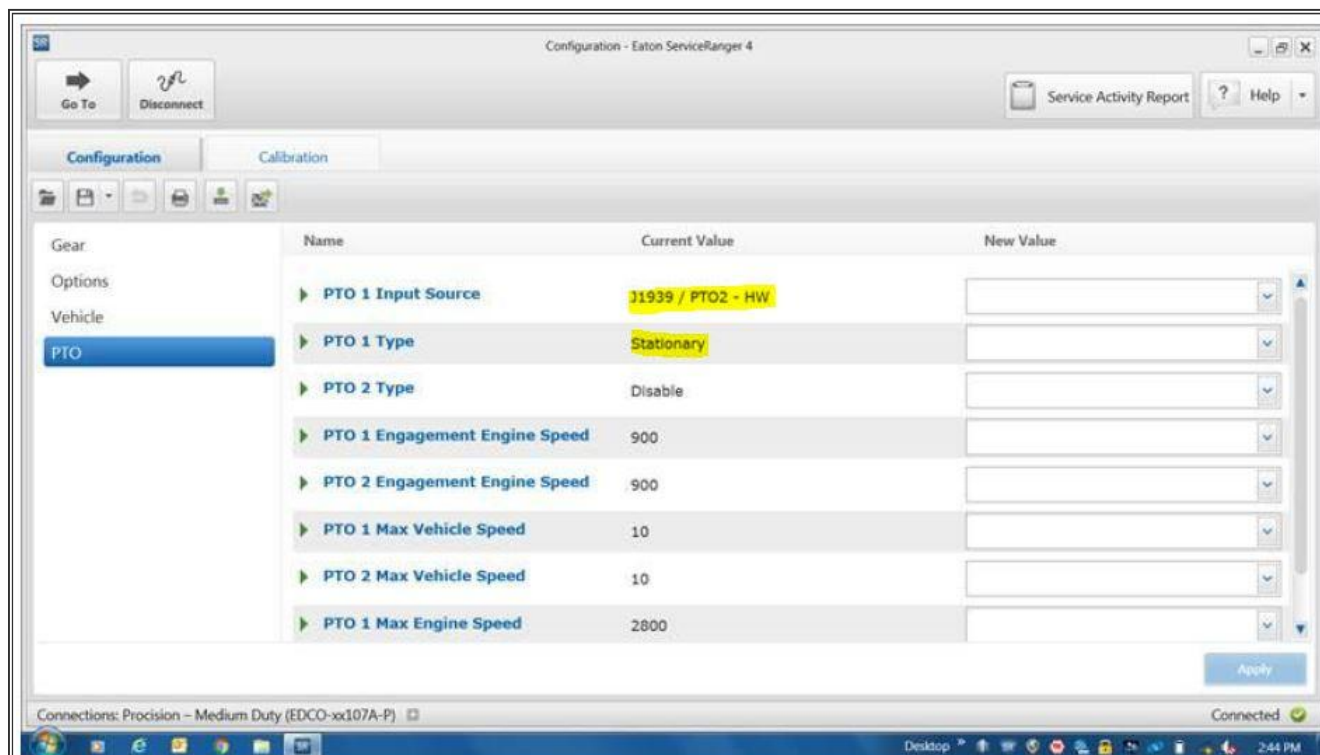


Figure 1: Eaton® ServiceRanger™ 4 PTO Programming Settings

Step	Action	Decision
2	DIAGNOSTIC: Connect with DLB and ensure Feature 595BYC is enabled, as shown in Figure 2. Is the programming set correctly ?	Yes. Go to Step 3
		No. Refer to Figure #2 1. Using Diamond Logic Builder, program the Body Controller for feature 595BYC accordingly and Test PTO operation. 2. Operate the PTO to see if the PTO will engage and the PTO indicator in the cluster will illuminate, if it does return vehicle to service. 3. If the PTO does not engage or the PTO indicator in the cluster does not illuminate, go to Diagnostic Step 3.

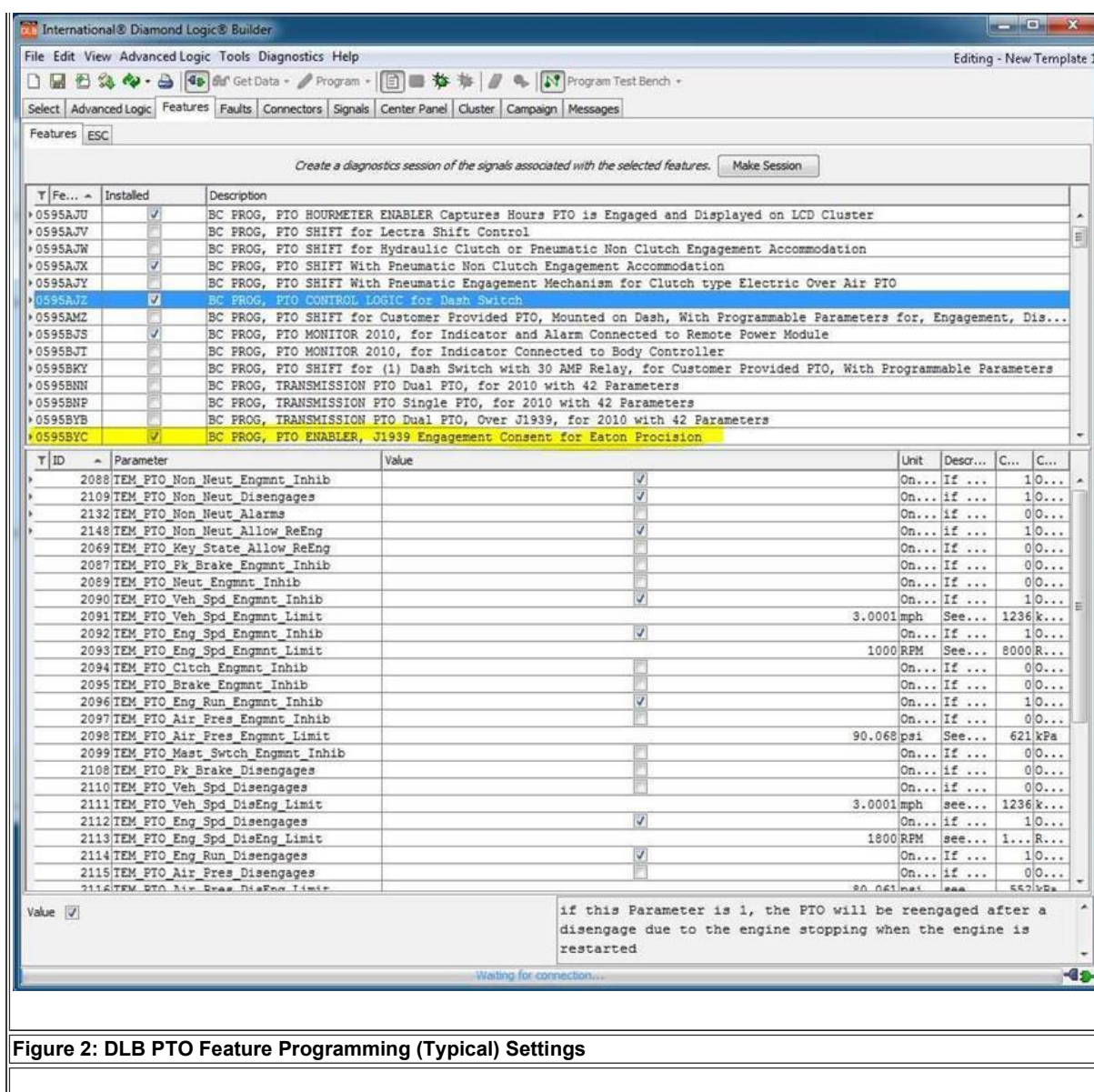


Figure 2: DLB PTO Feature Programming (Typical) Settings

Step	Action	Decision
3	DIAGNOSTIC: Refer to Figure 2 If the PTO programming is not configured with PTO feature codes 595BKJ, 595BKK, 595BNN, 595BNP, 595BYA or 595BYB, ensure the DLB PTO programming includes a feature code for PTO feedback. Use 595BJS for PTO Feedback to RPM 1 Connector J3, pin 18 or use 595BJT for PTO feedback to body controller Connector 1600 pin B7. Is the correct programming for PTO Feedback enabled? Note: PTO programming configured with 595BKJ or 595BNP is automatically configured for PTO feedback to body controller Connector 1602 pin F14. Note: PTO programming configured with 595BKK or 595BNN is automatically configured for PTO feedback to body controller Connector 1602 pin F14 and 1602 pin F15. Note: PTO programming configured with 595BYA or 595BYB is automatically configured for PTO feedback to RPM 1 J3-18 and J3-19.	Yes. Go to Step 4 No. Refer to Figure #2 - Using Diamond Logic Builder, program the Body Controller to use feature 595BJS, for PTO feedback to the Remote Power Module, or 595BJT, for PTO feedback to the Body Controller. - Ensure Parameter 2147 or 2199 are set as desired. Setting these for "Input Grounded" is recommended. - Go to diagnostic step 4

Step	Action	Decision
4	DIAGNOSTIC: Use DLB, in diagnostic mode, to monitor the PTO feedback signal, when the correct feedback signal is applied to the RPM or Body Controller. Does the feedback signal activate when the PTO feedback signal is applied to the RPM or Body Controller?	Yes. Go to Step 5
		No. Diagnose possible problem with the RPM or the Body Controller

Step	Action	Decision
5	DIAGNOSTIC: Use DLB, in diagnostic mode, to monitor PTO engagement and the PTO feedback signal, when the PTO is engaged and the feedback signal is applied to the RPM or Body Controller. Does the PTO engage and feedback signal activate when the PTO engages?	Yes. Return Vehicle to service.
		No. Diagnose the base PTO programming, the interlock programming, PTO wiring and PTO installation. Refer to the Power Take Off (PTO) section of the 2010–2017 DuraStar / WorkStar Technician Manual (Service and Diagnostic) Refer to the Power Take Off (PTO) Section in the Body Builder Electrical Guide Post 2007 HPV

REPAIR STEP(s)

NONE

WARRANTY INFORMATION

Warranty Claim Coding:

Refer to the [Warranty Coding Manual](#) for Group and Noun Codes.

Standard Repair Time(s):

Refer to the [SRT Manual](#) for Repair Times

OTHER RESOURCES

[Master Service Information Site](#)

[Power Take Off \(PTO\) section of the 2010–2017 DuraStar / WorkStar Technician Manual \(Service and Diagnostic\)](#)

[Body Builder Web Site](#)

[Power Take Off PTO Section in the Body Builder Electrical Guide Post 2007 HPV](#)

[Eaton® Procision™ 7-Speed Dual ClutchTransmission TRIG0990 EN-US](#)

[Eaton® PTO Information Guide TRIG2600 EN-US](#)



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