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Vehicles and Powertrains Affected:			
▶ Western Star 47X and 49X	▶ Detroit Engines	▶ Eaton Endurant Automated Manual Transmissions	▶
▶ Freightliner M2 Plus and SD Plus	▶ Allison 3500 / 4500 RDS	▶	▶

Disclaimer

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SYMPTOMS

Production sales codes for Split Shaft Power Take-Off (SSPTO) installation and control are not available for Western Star® 47X / 49X, or Freightliner® M2 Plus / SD Plus trucks.

ISSUE

Vehicles equipped with customer-installed SSPTO equipment without production controls require TEM configuration to support PTO mode delay and odometer pause.

SOLUTION

This document describes the wiring and parameter settings required to implement PTO mode delay and odometer pause for customer-installed SSPTO equipment on vehicles ordered without production SSPTO controls.

SCOPE

This document applies only to vehicles equipped with CEEA+ electrical architecture with production year 2025 or later software.

The procedures in this document apply to vehicles configured with the sales codes shown in [Table 1](#).

Sales Code	Description
376-800	Customer-installed SSPTO controls
377-800	Customer-furnished and installed SSPTO
342-Any	Any sales code for an Allison or Eaton Endurant transmission

Table 1, SSPTO Sales Codes

ALLISON AND EATON ENDURANT TRANSMISSIONS

Transmission-specific instructions are provided for vehicles equipped with Allison® or Eaton® Endurant™ transmissions.

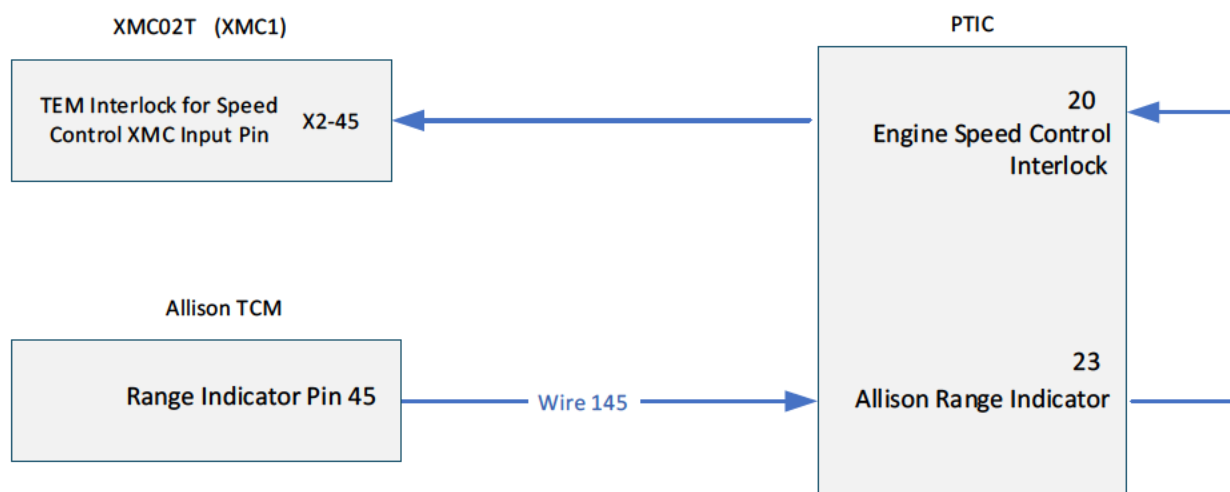
Allison Transmission

The Allison range indicator provides a ground signal to release the TEM speed control interlock when the transmission reaches the configured range for lockup.

Go to the following sections in this document and perform the following procedures:

- [Verify Installation of Wire 565A](#) to verify that wire 565A was installed on the vehicle
- [Odometer Pause](#) for wiring and odometer pause parameter settings
- [TEM Speed Control Interlock Parameters](#) for TEM speed control interlock parameter settings

- Step 1. Connect the range indicator output to the TEM Interlock for Speed Control XMC pin.
- Step 2. If wire 565A is present in PTIC cavity 20, install a jumper wire between PTIC pin 23 and PTIC pin 20 to enable PTO mode delay, as shown in [Fig. 1](#).
- Step 3. If wire 565A is not present in PTIC cavity 20, access the TEM Interlock for Speed Control input at XMC1 connector X2, pin 45.



Refer to Allison Package Guide - Output C functions to determine if the range indicator is at Pin 45 or 13.

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Figure 1, PTO Mode Delay Jumper Wiring

Step 4. Using the Allison DOC[®] software, modify the range indicator setting as shown in [Table 2](#).

Allison Modifiable Constant	Default Value	New Value	Description
Range Indicator	N	4 th or 5 th	4 th gear for six-speed models or 5 th gear for 4000 series seven-speed models. Remove the N selection.

Table 2, Allison transmission range indicator

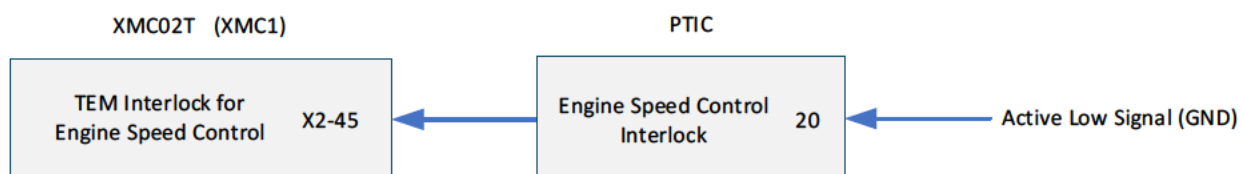
Eaton Endurant Transmission

After completing this procedure, the odometer will be paused, and PTO mode will be delayed until the TEM Interlock for Speed Control XMC Input Pin is at ground.

Go to the following sections in this document and perform the following procedures:

- [Verify Installation of Wire 565A](#) to verify that wire 565A was installed on the vehicle
- [Odometer Pause](#) for wiring and odometer pause parameter settings
- [TEM Speed Control Interlock Parameters](#) for TEM speed control interlock parameter settings

- Step 1. Connect the SSPTO Engaged Feedback signal to the TEM Interlock for Speed Control input.
- Step 2. If wire 565A is present in PTIC cavity 20, connect the SSPTO feedback signal to cavity 20, as shown in [Fig. 2](#).
- Step 3. If wire 565A is not present in PTIC cavity 20, access the TEM Interlock for Speed Control input at the XMC1 connector X2, pin 45.



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Figure 2, Engine Speed Control Wire is Present in Cavity 20

VERIFY INSTALLATION OF WIRE 565A

Vehicles ordered with sales codes 148-070 through 148-074 include an engine speed control interlock wire, providing access to the TEM Interlock for Speed Control XMC Input pin through the PTIC.

Inspect the PTIC connector to verify that the Engine Speed Control Interlock wire is present. See [Table 3](#).

End Point	Sales Codes	Cavity	Wire	Description	ECU	ECU Connector	Active/Inactive
PTIC	148-070 through 148-074	20	565A	Engine Speed Control Interlock	XMC1	X2-45	GND/ OPEN

Table 3, Engine Speed Control Interlock wiring

ODOMETER PAUSE

This section applies to Allison and Eaton Endurant transmissions.

Step 1. Verify that the parameters are set as described in [Table 4](#).

ECU	Domain Folder	Parameter	Parameter Value
CPC5	330-Vehicle Speed Sensor	Zero Vehicle Speed During Split Shaft Operation	Enable (see Note 1)
XMC1	External Powertrain Interface	PFSC_Svcout_ExtPTInterface1_sel	FlexibleCANEvent0001
		PFSC_Svcout_ExtPTInterface2_sel	FlexibleCANEvent0002
		PVDS_eptr_Flex_Input_Enable	Yes
	FSC CAN Event 1_32	PFSC_can_event0001_id	14FF088C
		PFSC_can_event0002_id	14FF088C
XMC2	External Powertrain Interface	PFSC_Svcout_ExtPTInterface1_sel	ConfigurableDigitalInput0001
		PFSC_Svcout_ExtPTInterface2_sel	ConfigurableDigitalInput0002
		PVDS_eptr_Flex_Input_Enable	Yes

Table 4, Odometer Pause Parameters

Note 1: The Zero Vehicle Speed During Split Shaft Operation parameter can only be viewed with DiagnosticLink Engineering.

Step 2. Install a relay to route the SSPTO engagement feedback signal through a diode pack to XMC2 pins X2-48 and X2-34 as shown in [Fig. 4](#).

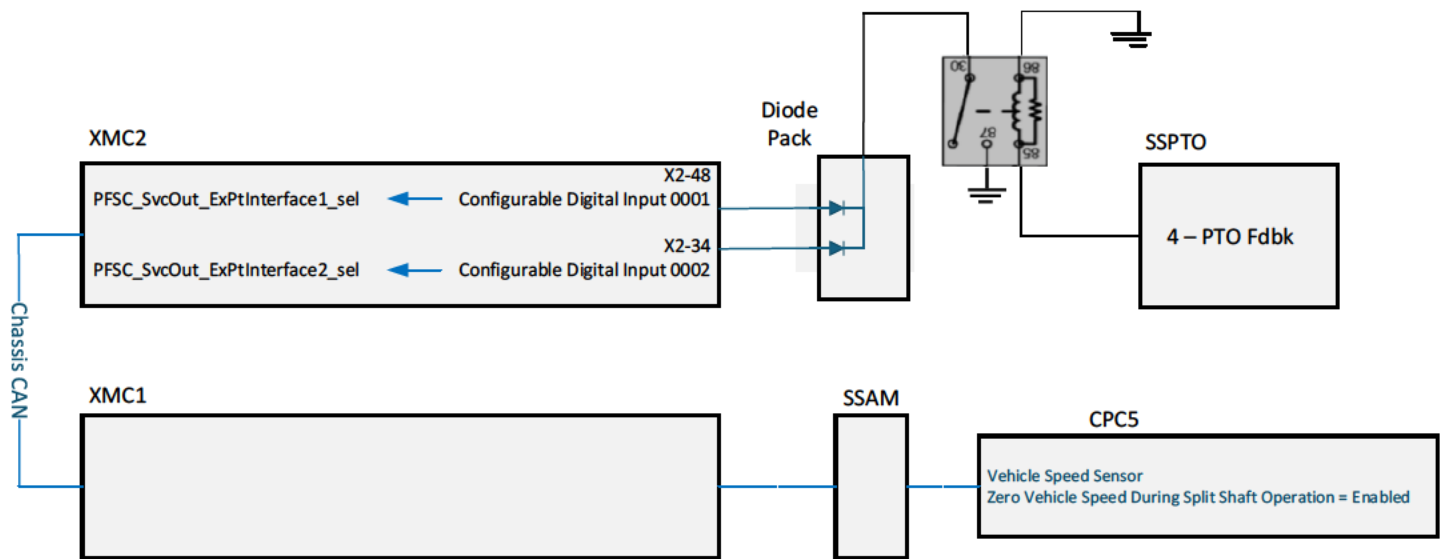


Figure 4, SSPTO Odometer Pause

TEM SPEED CONTROL INTERLOCK PARAMETERS

This section applies to Allison and Eaton Endurant transmissions.

Verify that the parameters are set as described in [Table 5](#).

ECU	Domain Folder	Parameter	Parameter Value
SSAM	PTC Nominal Engine Speed Specifications	TEM Interlock for Fixed Speed Control, XMC Input Pin	Function Available
SSAM	PTC- PTO W	TEM Interlock for Speed Control, XMC Input Pin	Function Available

Table 5, TEM Speed Control Interlock Parameters

CONTROLLING THE ENGINE SPEED CONTROL INTERLOCK PIN USING XMC3 (OPTIONAL)

As an alternative to hardwired inputs, an XMC3 can be programmed with customer-defined CHEC logic to generate the ground signal required for the TEM Interlock for Speed Control XMC Input Pin.

For information about CHEC and writing CHEC Features, refer to the following link. [CHEC Documentation](#).

WARRANTY

This document is informational only. Warranty does not apply.

REFERENCES

[PTIC Powertrain TEM Interface Connector \(Freightliner Plus series\)](#)

[PTIC Powertrain TEM Interface Connector \(Western Star X series\)](#)