

TECH TIP

Group:	0-GENERAL
Bulletin No:	TT-17-004
Issue Date:	5-5-2017

COE TRUCK PTO INSTALLATION INSTRUCTIONS

SUBJECT VEHICLES: 2013MY-2018MYHino COE trucks equipped with an Aisin Transmission

Note: This tech tip is provided as technical information and is not authorization for a warrantable repair.

OVERVIEW: The following tech tip is for installing a single speed Power Take Off (PTO) switch and harness on a Hino Cab Over Engine (COE) truck.

Disclaimer: Hino Motor Sales U.S.A Inc. is an incomplete vehicle manufacturer. It is the responsibility of the final stage manufacturer that the complete vehicle complies with local, state, and federal requirements. Additionally, the final stage manufacturer is responsible to understand all systems and controls to power and operate equipment that interface with Hino vehicles. This should include but is not limited to the design, utility, application, safe operation, performance, durability, controls, installation, and parts availability.

KIT NUMBER HN001234055

Part Number	Description
8298937270B	PTO Harness
8469037040	PTO Switch

Recommended special tools: Below is a list of special tools that may be required for the installation and configuration of the PTO to the transmission.

Hino DX software – Required to change Engine Control Module (ECU) parameters. Please visit hino.com and navigate to the service tab, then to the diagnostics section for more information.



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Recommended supporting literature: Below is a list of recommended supporting literature to review prior to design and installation of a PTO. This is not a complete list due to many of the documents reference other documents based on application. The below list is a high level overview of fundamental information that needs to be considered when designing and installing a PTO system on a Hino vehicle with an Aisin Transmission. The body builder guide can be found at hino.com. For information related to the PTO, driven component, and/or related system manufacturers, contact the respective manufacturer for supporting documents.

- Hino Motor Sales Body Builder Guide

- Chapter 7 Includes electrical interface information.
- Chapter 11 includes PTO interface information.
- Chapter 12 includes wiring schematics.

- Respective PTO manufacturer technical information

- Respective driven component technical information

- Technical information for any related equipment attached or impacted by a power take off system

Power take off (PTO): A PTO is a piece of equipment attached to the drive train used to power auxiliary equipment.

Types of power take off's: There are many different types of power take off's and a PTO is one part of a larger system that requires a thorough understanding of electrical, mechanical, and hydraulic SYSTEMS at a minimum. Failure to understand the entire system can lead to a system that may not function to unsafe operation and/or major component failure.



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In Cab Preset Stationary Controls: The following is one example of a general guide to operate auxiliary equipment from inside the cabin of the vehicle at a pre-set RPM level.

Example 1: A Hino model 195 with an Aisin A465 transmission has one transmission mounted clutch type PTO that requires raised pressure for operation installed. An on/off switch has been added inside the cab and is supplying 12V to the PTO Switch #1 ECM interface. The vehicle will be operating in stationary mode at 1300RPM. Due to a requirement by the company that owns the vehicle, they also would like the accelerator pedal not to function while the vehicle is PTO mode.

Configuration and RPM Control:

Utilizing the Hino DX software access the customization tab for the ECM and make the changes to the parameters as outlined immediately below. Reference tables one and two at the end of this document for DX parameter information.

Parameter	Original Value	New Value
279	0	1300
224	0	1

In Cab Variable Stationary Controls: The following is a general guide to operate auxiliary equipment from inside the cabin of the vehicle at a variable RPM level.

Example 1: A Hino Model 195 with an Aisin A465 transmission has one PTO installed. The engine RPM control needs to be carried out with the cruise switches after activation of the PTO switch with a maximum engine speed of 1500 RPM. The switch will supply 12 volts to the PTO switch #1 ECM interface when activated. The cruise switch can now be utilized to increase and decrease the engine RPM's. In this scenario, the park brake needs to be applied for RPM control to function. Additionally due to a requirement by the company that owns the vehicle, they also would like the accelerator pedal not to function while the vehicle is PTO mode.

Utilizing the Hino DX software access the customization tab for the ECM and make the changes to the parameters as outlined immediately below. Reference tables one and two at the end of this document for DX parameter information.

Parameter	Original Value	New Value
224	0	1
233	0	1
229	0	1
285	0	1500



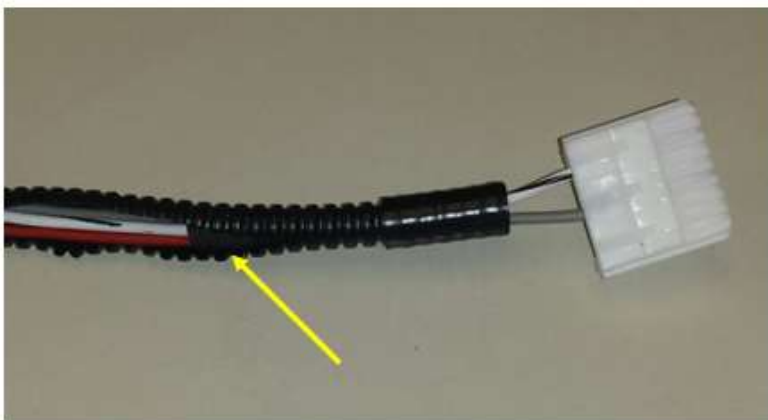
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NOTE: There is an additional 12V wire drop out (red wire is 12 V in the ON position or when depressed) encased *in the sheathing of the interface harness* as outlined below. It can be used as a power source for a control circuit, warning light, etc. Please consult with the final stage manufacturer and/or PTO installer to determine if the wire provided is correct for the application.

The splice point is near the switch connector on the interface harness (sheathing must be split open to access red wire if required).



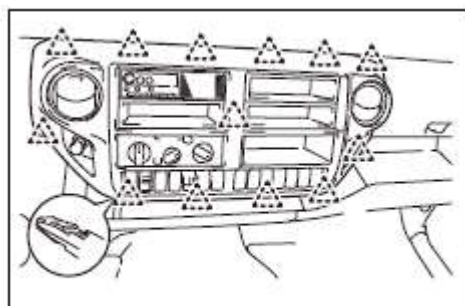
Harness appearance with the 12V wire pulled out of the sheathing.



Harness with PTO switch installed

Installation:

1. Remove the center cluster trim piece and corresponding storage compartment by releasing the clips and disconnecting the electrical connectors.



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2. With the trim cover installed, the mating connectors are located behind the storage compartments indicated below.



3. With the trim cover removed, the connectors are taped to an existing harness located behind the bracket as shown below.



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4. Once the connectors are released from the harness, connect the interface harness, route and secure the harness accordingly.

Note: Refer to the body builder book found at www.hino.com for more specific information if needed.



5. The PTO switch will fit in any blank switch position available as shown below. Remove the switch cover that was preferred and pull through the switch electrical connector. Connect the PTO switch to the electrical connector and install the switch into the dash.



Refer to the following pages of this document for specific information on the ECM parameters that may need to be modified if the vehicle was not ordered with PTO RPM control option.



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Table 1 – DX Parameters

DX Number	DX Description	Operational Description	
279	PTO Engine Speed Setting	PTO Set Engine Speed Setting	0-1800 RPM
263	Preset Engine Speed Rate of Increase	When a preset parameters is used this can influence the ramp rate. The scale is from 1-100 with 1 being the slower ramp rate and 100 being the faster ramp rate.	Percentage
293	PTO Accelerator Maximum Engine Speed Setting	When PTO switch is activated the accelerator and Hino hand throttle are both impacted. With PTO switch off only the hand throttle is impacted 100% of the time.	RPM
294	Engine Speed Conditions to Enable Accelerator Control	Allows for PTO operation only when the engine speed is lower than the preset speed.	RPM
295	Engine Speed Conditions to Cancel Accelerator Control	When the RPM gets to the set value, the RPM control is cancelled and the engine returns to idle.	RPM
268	Vehicle Speed Conditions to Enable PTO Accelerator Control	This parameter only functions with the Hino Hand throttle. PTO operation is not allowed unless the vehicle speed is at or below the speed set by this customization. When PTO operation is to be allowed when the vehicle is stopped completely set a value greater than "0". When "0" is entered, PTO operation may require additional time. If the PTO is mounted via split shaft gear case, the vehicle speed is detected at the time of PTO operation. This setting value should be lower than value in vehicle speed conditions to cancel the PTO accelerator control.	MPH
269	Vehicle Speed Conditions to Cancel PTO Accelerator Control	This parameter only functions with the Hino hand throttle.	MPH



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Table 1 – DX Parameters

DX Number	DX Description	Operational Description	
269	Vehicle Speed Conditions to Cancel PTO Accelerator Control	This parameter only functions with the Hino hand throttle. The PTO is cancelled when the vehicle speed exceeds the speed set by this customization. If the vehicle moves slightly, set “vehicle speed conditions to enable PTO accelerator control” in the customization menu to a comparatively small value and set a slightly higher value for this customization. If the PTO is mounted via split shaft gear case, the vehicle speed is detected at the time of PTO operation. This setting value should be higher than the value in “vehicle speed conditions to enable PTO accelerator control”.	MPH
285	Cruise Control Switch PTO Maximum Engine Speed		RPM
267	Cruise Control Switch PTO Engine Speed Rate of Increase	Cruise switch ramp rate each time the switch is depressed	RPM
286	Preset PTO #1 Engine Speed Set	Preset engine RPM	RPM
287	Preset PTO #2 Engine Speed Set	Preset engine RPM Engine ECU can incorrectly detect diagnostic code P073D (incorrect info from the TCM) during Allison Transmission lock-up control. If the PTO lock-up signal goes to the TCM, only the PTO idle-up signal goes to the engine ECU. From the 15MY unit, this problem can be resolved by the following procedure: 1. “Preset PTO Flag” should be set at 0. 2. “PTO set engine speed” should be set at 750 RPM. 3. “PTO lock-up signal” should be sent to TCM.	RPM



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Table 2 – Interlock DX Parameters

DX Number	DX Description	Operational Description	
212	PTO Accelerator Inhibit Safety Control Flag	Hino remote hand throttle on/off	0=OFF 1=ON
224	PTO Operation Accelerator Pedal Disable Flag	RPM control by the accelerator pedal when PTO is on	0=OFF 1=ON
225	PTO Operation Inhibit Safety Control Flag	Hino remote hand throttle on/off regardless of PTO switch activation	0=OFF 1=ON
226	PTO Operation Idle Knob Disable Flag	Hino remote hand throttle is disabled	0=OFF 1=ON
227	Automatic Engine Idling Speed Increase Disable During PTO Operation Flag	Automatic idle speed increasing for engine warm up/air compressor during PTO operation becomes enabled	0=OFF 1=ON
232	PTO Speed Control Operation Parking Brake Interlock Safety Control Flag	PTO RPM change is only allowed when park brake is engaged if parameter is changed to 1	0=OFF 1=ON
233	PTO Speed Control Operation Neutral Status Interlock Safety Control Flag	RPM control when the vehicle is not in neutral	0=OFF 1=ON
357	Engine Stop Switch During PTO Operation Flag	Initial setting is that engine stop switch does NOT work during PTO operation when the vehicle is moving at 30km/h (18.7 MPH) or more.	0=OFF 1=ON
234	PTO Speed Control Operation Enable with Application of Brake Pedal Flag	The brake pedal will need to be depressed prior to PTO activation. Once this is completed once it does not need to occur again until the key is cycled.	0=OFF 1=ON
235	PTO Speed Control Operation Disable with Application of Brake Pedal Flag	The brake pedal will interrupt TPO engine RPM control when depressed	0=OFF 1=ON



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Table 2 – Interlock DX Parameters

DX Number	DX Description	Operational Description	
236	PTO Speed Control Operation Enable with Application of Clutch Pedal Flag	PTO operation activated when PTO switch is turned ON and the clutch pedal is applied.	0=OFF 1=ON
237	PTO Speed Control Operation Disable with Application of Clutch Pedal Flag	PTO operation can be cancelled when the clutch pedal is applied.	0=OFF 1=ON
231	Preset PTO Flag	Allows for preset parameter to operate when changed from 0-1.	0=OFF 1=ON
229	Cruise Control Switch Inhibit During PTO Operation Flag	Set/resume switch = decrease/ increase RPM. This setting does NOT work when Pre-Set PTO flag is activated. This setting does not work in the following conditions. (1) Cruise main switch is NOT turned ON (08MY or before), (2) Vehicle speed is NOT "0", (3) Gear position is NOT neutral, (4) Service brake is applied, (5) Clutch pedal is applied. From the 15MY unit, engine speed control is possible by cruise control even if the vehicle speed is NOT "0" during PTO operation.	0=OFF 1=ON



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FAQ's

Q: We are working on changing a customer from one brand to Hino and would like to discuss power take off's with someone from Hino, who should we contact?

A: Contact James Utz from Hino Motor Sales. The contact information is immediately below.

James Utz

Application Support Specialist, Product Planning

Product Planning Operations

Hino Motors Sales U.S.A., Inc.

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utz@hino.com

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Q: I read through this document and did not see the answer I was looking for. Can I just call and get the answer instead of looking at the suggested supporting material or contacting the OEM/up fitter?

A: Please read and understand referenced supporting material then contact Hino Application Support.

Q: We are transferring a body from brand "x" company with a PTO interface. We transplanted all of the parts, but it is not working properly. What should I do next?

A: Chassis may require PTO parameter changes in order for PTO to operate.



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