

PTO GENERAL GUIDELINES

- The Ram 3500/4500/5500 Chassis cab models equipped with gas and diesel engines that have the PTO prep option (LBN) have the capability of mounting and controlling a PTO.
- The Aisin AS69RC automatic transmission can use devices up to 60HP and 250 ft lbs torque. While the model, the number, and HP/torque capability of the transmission have increased, the Chelsea 270 and Muncie CS6 models continue to mount to the right side of the transmission as in previous years.
- The G56 manual transmissions are limited in power output only by the PTO manufacturers' maximums. Chelsea 442 (deep mount) series fit this transmission, however on 4x4 models this PTO is very close to the front driveshaft. Muncie Alpha series fits this transmission.
- For 2012 and later a left hand side PTO (option code LBV) will be available as a factory option on 4x2 chassis cab models. This should allow for easier PTO installation on 4x2 models and allow for the shaft driven applications. In this position, Muncie model FA6B is the only PTO that fits. However Chelsea is creating a model as well so contact them for the latest information.

Pump sizes

- The automatic transmission models have been test fit with 19 GPM rated single pumps and tandem 13GPM rated pumps. While these larger pumps have limited clearance to the exhaust system and it has been mentioned as a concern, it should be noted that the diesel exhaust in the PTO area is a double wall pipe which provides significant insulation. In fact, in our testing in over 100 degree Fahrenheit ambient temperatures we never exceeded 200 degrees F on the PTO pump or hoses. The gasoline models have larger clearance envelopes than the diesels. However, the higher heat rejection of the gasoline engine exhaust system requires special care to ensure the PTO pump system is protected.
- The manual transmission models are as follows: The 4x2 models have no particular packaging limitations with respect to direct mount pumps. The 4x4 models are limited by the location of the front driveshaft to approximately a standard 11 GPM rated pump (although larger pumps may have been successfully fitted in the field). However, some customers have had success using bent axis piston pumps (mounted forward) to get substantially higher flows.
- If you have specific PTO and pump fitment questions and can provide the actual PTO and pump combination, we can test fit it and provide pictures and instructions on how to install your specific combination.

PTO Limitations

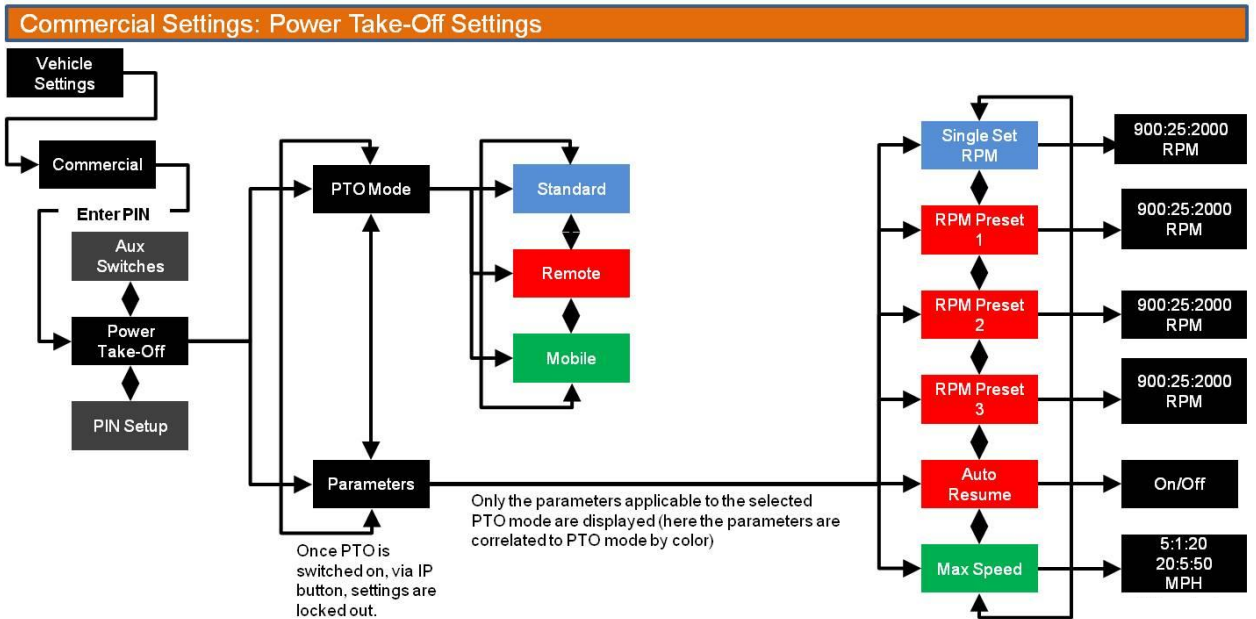
Please read this information carefully and call us with any questions before you order a vehicle so you understand the specific capabilities of our PTO system.

- The Automatic transmission PTO is turbine driven not engine driven. What this means is that the PTO will work only with the stationary mode in park, or in mobile mode with the vehicle moving at approximately 7 mph and above or in neutral. Because of this the PTO system is not a suitable system for vehicles like: snow plows, autoloader wreckers, or dump trucks if they are used to dump and spread at a crawling speed. These vehicles are more effective with an engine driven 'clutch pump' type hydraulic pump. Alternatively, Parker-Chelsea makes a product called Stored Energy Management System (SEMS) that allows such applications to function.
- The manual transmission currently has the capability to support a split shaft PTO. Approximately, mid-year the automatic also will have this capability. The EVIC screen in the center of the instrument cluster will have a split shaft programming function that will program the vehicle to shift to direct drive (4th gear) and hold without upshifting. This mode will require an electrical connection to the split shaft unit confirming that the rear driveshaft is disconnected.



Below is the new PTO programming menu contained within the Electronic Vehicle Information Center (EVIC). The EVIC is located between the Speedometer and Tachometer. You will be able to access the PTO functions by scrolling to the commercial settings and then to PTO.

- The vehicle will be factory set to stationary single mode with driver adjustable PTO speed. If this is the mode that is needed no change in settings is required.
- The factory (default) pin setting is 0000
- If you require a single set speed, scroll through the PTO/Standard menu to Single Set RPM and set your speed.
- If you require this speed or other settings to be 'locked' so that only approved people can reset the settings. Change the 4 digit PIN code by entering the PIN setup menu. Now only people who have the PIN code can change the settings.
- Once you have the correct modes programmed, you can proceed to the quick start menu on the next page.
- Settings must be made with the key in the run position but with the engine off
- **NOTE: You must use remote mode with an aftermarket switch when using Hard Wired Remote Start/Stop**

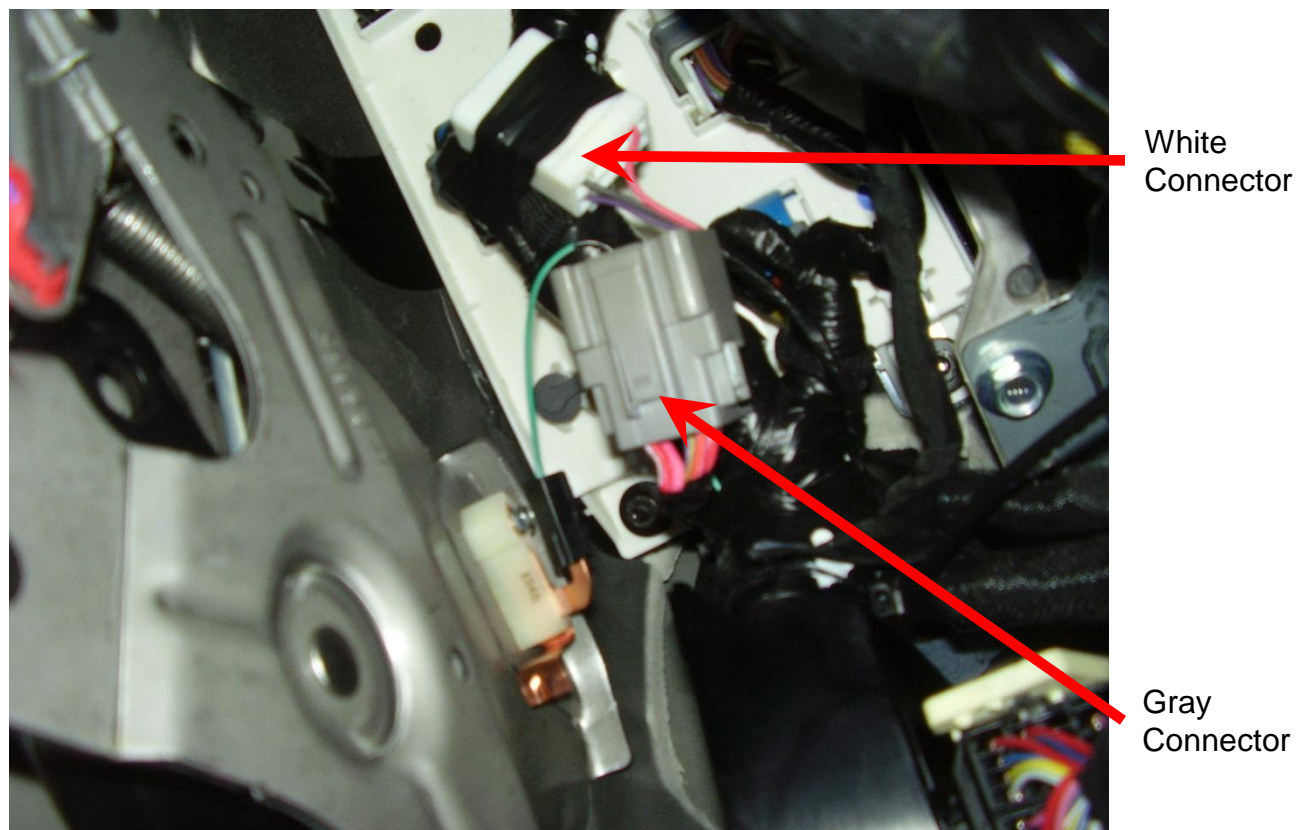


PTO Quick Start Information

This section will give you specific instructions on how to wire a PTO on the 2013 3500/4500/5500 models. The information is tailored toward those familiar with PTO installation on the 2007 to 2012 but can be equally helpful to anyone installing a PTO.

Wire Locations

There are two connectors under the dash which are used. They are the same connectors as previous years, but their locations are altered.



Both of these connectors are located behind the VISM module towards the front of the vehicle. The VISM module is the black plastic module next to the park brake bracket. The view above shows the connectors on a vehicle that does not have a VISM module as it would block the view of these connectors. The white connector is 'tear taped' in place and can be accessed by pulling the connector and tearing the tape without pulling on the wires themselves. The gray connector is tie wrapped in place so the tie wrap must be cut to access the gray connector.

The white connector contains the following circuits:

1. Z907 (Black) PTO switch return **Note: V937 (Violet/brown) does not function for 2013.**
2. F425 (Pink) Remote PTO switch. Connects to Z907 via the upfitter added switch. For remote/multi-speed mode only.

The mate to this connector is the smaller black connector that comes in the upfitter kit plastic bag.

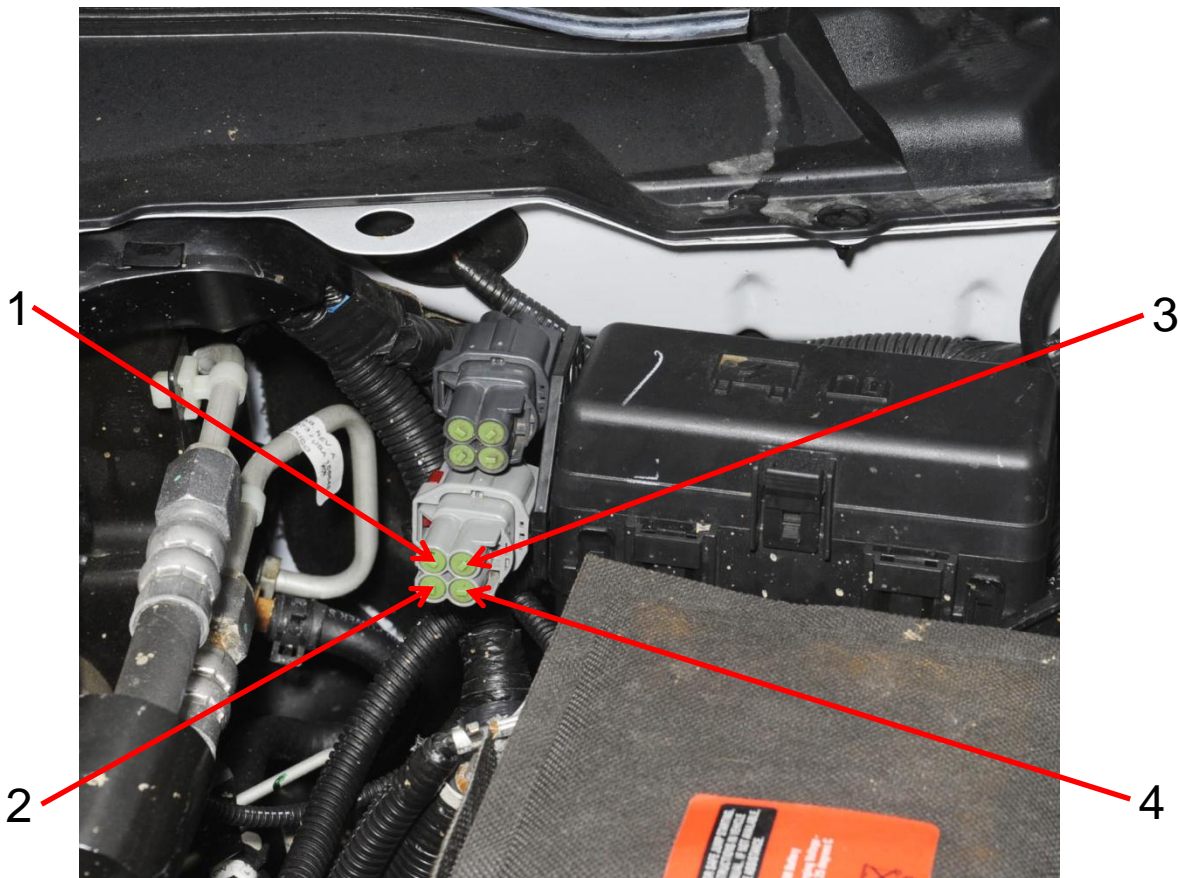
The gray connector contains the following circuits.

1. F922 (Pink/yellow). This typically used for 12V+ ignition feed power for a PTO indicator light if you are not using the in dash switch.
2. G425 this is the pass through wire that comes from the under hood wire you will connect to the pressure switch.

There is a gray mating connector also in the upfitter kit plastic bag.

Note: The ground signal from the pressure switch must be connected to circuit W708 (orange/brown) located on the brown connector of the VISM. If circuit W708 does not see a ground signal, the PTO will turn off in 30 seconds.

See the VISM section for additional instructions.



The light gray connector under the hood shown in the figure above (below the dark gray connector) next to the auxiliary PDC contains the following connections. The Pin numbers below are molded into the surface of the connector. The wires that plug to this connector are also in the upfitter kit plastic bag.

1. Not used for 2013 or later automatic transmission models
2. F928 (pink /yellow) Switched 12 v output that connects to the hot shift solenoid.
3. Z907 (Black) ground
4. G 425 (violet/yellow) PTO indicator light feed. This wire connects to the PTO pressure switch and feeds through the dash to the gray under dash connector mentioned above connects to circuit W708 when the in dash PTO switch is used.

NOTE: In all PTO modes VISM circuit W708 must see a ground signal either through the PTO pressure switch or a direct ground circuit. If no ground is seen by engine controller, the PTO will turn off after 30 seconds.



PTO Operation

The 3500/4500/5500 Ram Chassis Cab vehicle, when equipped with either the automatic Aisin 6spd or manual G-56 6spd transmissions, will allow for an aftermarket upfit with a transmission driven PTO (power take off). The customer will have the ability to operate the PTO in either a “stationary” or “mobile” mode. Under normal operation the vehicle will go to a 900 rpm when PTO is engaged. By utilizing the cruise switches the idle speed can then be adjusted to between 900 and 2000 rpm’s.

Stationary Mode

This feature interacts with the transmission to utilize an auxiliary PTO to drive equipment. Activated by a switch inside the cab, this feature operates only when the vehicle is stationary.

Once active, the engine speed increased by holding the RES ACCEL button on the steering wheel or decreased by holding the COAST button.

This is the factory programmed setting. If you need a single set speed, you will now be able to program it (and disable the cruise switches) via the Electronic Vehicle Information Center (EVIC) screen in the center of the cluster.

Stationary PTO is available only when the vehicle is stationary. When the truck is equipped with an automatic transmission, it must be in Park and the service brake must be released and functional. When the truck is equipped with a manual transmission, the Parking Brake must be Set and the service brake must be released and functional

To operate the PTO in this mode the vehicle must meet the following conditions:

- Be in “park” position (vehicles equipped with automatic transmission)
- PTO switch has been activated
- Parking brake applied (vehicles equipped with manual transmission)
- Clutch not depressed (clutch interlock switch)
- Vehicle must be running
- No transmission, engine, accelerator, brake or clutch switch faults present
- PTO must be correctly installed using the vehicle provided circuits

To operate the PTO via a remote switch the customer must make sure the above conditions are met. It is vital for proper operation that the PTO and remote have been installed correctly paying special attention to ensure the vehicle provided wiring has been connected properly. This is the responsibility of the installer of the PTO and switches/remote system. It is the responsibility of the PTO manufacturer to ensure that their electrical (switches and remote) system is compatible with the vehicle’s electrical architecture and software functionality.

Mobile Mode

Mobile mode allows for use of the PTO when the vehicle is in motion. This feature, when activated by the menu available on the Electronic Vehicle Information Center (EVIC) screen in the center of the cluster, will allow you to enter mobile PTO mode when you press the PTO switch on the dash.

When this feature is selected stationary PTO and Remote PTO features are not available.



To operate the PTO in this mode the vehicle must meet the following conditions:

- PTO switch has been activated
- Vehicle must be in “park” position (vehicles equipped with automatic transmission)
- Parking brake must not be applied
- Clutch not depressed (clutch interlock switch)
- No transmission, engine, accelerator, brake or clutch switch faults present
- Vehicle must be running
- PTO must be correctly installed using the vehicle provided circuits

The customer may choose to use the PTO while the vehicle is moving. To do so the PTO function must be activated prior to taking the vehicle out of “park”. This is accomplished by activating the PTO on/off switch. At this point the customer may place the vehicle in a forward or reverse gear and have PTO operation.

The PTO will also function in park and neutral but without an increase in idle speed. However, the accelerator pedal can be used to increase PTO speed. Mobile mode does not provide the exact same capability as a ‘live drive’ i.e. you cannot have PTO capability at zero vehicle speed in drive. However some customers have had success with shifting the vehicle into neutral and allowing the vehicle to coast.

To disengage PTO operation and return to “standard vehicle operation” simply turn the up fitter provided on/off switch to the off position.

Remote Mode Features

Remote mode allows the use of an aftermarket auxiliary switch to actuate the PTO. Presumably this will be from a location other than the cab of the truck, or some automated/relay driven method to turn on the PTO is required.

Remote PTO can be calibrated for one to three selectable engine speeds.

Remote mode also is the only method that accommodates multiple PTO speeds. Up to three different PTO speeds can be programmed. These speeds are programmed via the Electronic Vehicle Information Center (EVIC) screen in the center of the cluster (see page 2). The circuits that enable these multiple speeds are contained in the Vehicle System Interface Module (VSIM). The VSIM module is located under the dash on the driver’s side. The connecting wires are contained in the upfitter wiring kit and VSIM wiring kit. Click here for VSIM section.

Remote PTO feature has a higher priority than Idle Up. If the Remote PTO feature is active the Idle Up switches are ineffective. The Idle Up or Stationary PTO feature cannot be activated until the Remote PTO relinquishes control

To operate the PTO in this mode the vehicle must meet the following conditions:

- Be in “park” position (vehicles equipped with automatic transmission)
- Upfitter provider (on/off) switch has been activated
- Parking brake applied (vehicles equipped with manual transmission)
- Clutch not depressed (clutch interlock switch)
- Vehicle must be running
- No transmission, engine, accelerator, brake or clutch switch faults present
- PTO must be correctly installed using the vehicle provided circuits



Various features provided by the Cummins module

NOTE: these features must be enabled by the dealer

Remote Throttle and Remote Throttle Switch

This feature allows the use of a 0-10K or 0-100K potentiometer to function as a remote throttle. By connecting the circuits K400, F856, and K128 to the each end and the movable center leg respectively, the potentiometer will function as a remote throttle. These circuits are located on a connector on the driver's side of the transmission bellhousing area. The wiring and for this and two functions below as well as schematics are contained in the upfitters wiring kit delivered with every vehicle. The dealer must enable this feature. Circuit K129 must be connected to circuit V937 to turn on this feature.

Accelerator interlock

This allows the accelerator to be locked out when activated. This feature is often used in conjunction with remote PTO or remote throttle. While active it disables the vehicles accelerator pedal typically for safety reasons. This feature is activated by connecting circuit K 810 to V937 and must be enabled by the dealer.

Switched Max Operating Speed

This feature selects a lower maximum engine speed when the switch is on (closed to ground). The lowered engine speed is can be changed. This feature is enabled by the dealer who also will set the maximum speed you require.

Switch Return

Electrical return/ground for switch circuits.

J1939 Interface (Cummins only)

Cummins provides this interface to "gate" certain CAN messages for customer use. It is an industry standard three way connector located underhood, on the driver's side of the engine near the connection to the intake manifold. Messages included are vehicle speed, engine speed, park brake on/off, system voltage – filtered, brake switch status, clutch switch engaged, wait to start lamp status and coolant temp.

PTO Circuit Definition Chart

Location E Transmission Bellhousing Drivers Side

The following chart is provided to assist in correctly interfacing the PTO with the vehicle:

Circuit Name	Type/Gauge/Color	Circuit Functionality	Description	Usage
F856	18T - YL/PK	5V engine sensor feed	5 volt pwr supply to the remote potentiometer (remote's control power circuit). Supplied by the engine controller	Remote throttle control
K400	18T - BR/VT	accel pedal position sensor	Remote's ground (ground to the potentiometer of remote). Supplied by the engine controller. Do not hook to other grounding location	Remote throttle control
K128	18T - DB/LG	remote throttle signal	Remote signal sent to the engine controller. Signal from the remote's potentiometer.	Remote throttle control
K129	18T - DB	remote throttle switch	On/Off switch provided by customer to "turn on/off remote function. Remote switch closes to ground.	Remote throttle control
K119	18T - LG/BK	maximum operating speed switch	Feature selects a lower maximum engine speed when switch is "on". Switch closes to ground. Customer supplied switch.	Max operating speed switch
K810	18T - VT/DG	Accelerator interlock switch	Disable accelerator control of engine by closing an operator installed switch. This switch closes to ground.	Customer supplied switch
F425	18T - PK	Remote PTO Switch	Customer supplied remote PTO on/off switch. Switch closes to ground.	Remote PTO
V937	18T - VT/BR	Non-Functional for 2013	Ground for 2014	Signal Return



