

PTO Operation

The 3500/4500/5500 Dodge 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. The vehicles will be factory set to the “stationary” mode. In order to select the “mobile” mode a DaimlerChrysler Dealership is required to modify the vehicles settings using their proprietary Dealer service tool.

Stationary Mode

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)
- Vehicle must be running
- No vehicle, brake or clutch switch faults present
- PTO must be correctly installed using the vehicle provided circuits

The customer has the choice to operate the PTO by utilizing the cruise control switches or by utilizing a remote control (provided by the PTO supplier). To operate the feature using the cruise control switches the customer must first activate the up fitter provided on/off switch. Next, the cruise control “on” switch is selected. Following this step the “set” switch must be depressed. The vehicle is now in the PTO mode and is ready for use. In order to increase or decrease the engine idle speed, to optimize the PTO function, the “accel” and “decel” cruise switches can be used respectively.

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

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

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

- Dealer selected “mobile” mode activated via Dealer proprietary service tool
- Upfitter provider (on/off) switch has been activated

- Vehicle must be in “park” or “drive” position (vehicles equipped with automatic transmission)
- Parking brake must not be applied
- No vehicle, 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 up fitter provided PTO on/off switch. At this point the customer may place the vehicle in a forward or reverse gear and have PTO operation.

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

NOTE: For application specific information with respect to PTO and pump requirements and additional vehicle information (wiring schematics, preset idle values, engine speed limits, and vehicle hardware and software requirements) please refer to the Dodge Body Builders Guide by accessing “[Wiring Diagrams](#)” and choosing the appropriate links.

Raptor Feature Description (6.7L Diesel)

ECM: Engine Control Module

FCI: 10 Way Connector located @ left side bell housing

Idle up

I/O – ECM Pins B40 & B56

Developed to aid Cabin Heating by elevating the idle speed upon operator command through the steering wheel mounted cruise switches.

To engage, the operator first presses the Cruise On switch. Then pressing and releasing the Set switch. The feature engages and engine speed increases to 1100 RPM.

The operator may “ramp” the engine speed up to 2000 RPM by holding the Res Accel switch. The operator may “ramp” the engine speed down to 900 RPM by holding the Coast switch.

When Idle Up is engaged it can be disabled several ways. The Cruise Cancel switch, pressing the brake pedal, moving the PRNDL from Park or Neutral or vehicle speed greater than 2 MPH will disable Idle Up.

Several calibrations are available for Idle Up. The engine speed range, max engine torque and engine speed ramp rate for example.

Stationary PTO

I/O – ECM B16 – FCI Conn pin 9

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

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

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.

Remote PTO

I/O ECM Pin B18 – FCI Conn pin 7

This feature interacts with the transmission to utilize an auxiliary shaft to drive equipment. Activated by a switch outside of the cab, this feature operates only when the vehicle is stationary. The input is switched to ground.

Once active, the engine speed is changed when the switch changes from Off (open circuit) to On (closed to ground) or toggled in less than ½ second. Toggling the switch On-Off-On triggers the engine to change to the next calibrated engine speed. This can be repeated for up to five engine speed settings. Repeated toggles cycles through the engine speed 1-2-3-4-5-1-2 and so on.

Remote PTO can be calibrated for one to five selectable engine speeds. The engine speeds are also calibrated.

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

Mobile PTO

Selected by service tools

This feature interacts with the transmission auxillary shaft. The feature is activated by a switch (closed to ground) in the cab after selected by a service tool. When active, this feature limits engine speed and road speed to calibrated values.

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

Remote Throttle and Remote Throttle Switch

I/O:

Remote Throttle Switch – ECM B8 – FCI conn Pin 4

Remote Throttle Signal – ECM B37 – FCI conn Pin 3

Remote Throttle 5 Volt Supply – ECM B27 – FCI conn Pin 1

Remote Throttle Sensor Return – ECM B28 – FCI conn Pin 2

This feature allows the user of a continuously variable throttle. This throttle potentiometer is power by the 5 volt supply and sensor return lines provided. This feature is activated when the Remote Throttle Switch is On (closed to ground) and the main throttle is closed. Remote Throttle does not require idle validation switches and is not to be used for main vehicle accelerator.

Accelerator Interlock

I/O – ECM B17 – FCI conn Pin 6

This feature disables accelerator control of the engine speed when indicates a desired condition. The desired condition is indicated by a switch closed to ground.

Switched Max Operating Speed

I/O – ECM B7 – FCI conn Pin 5

This feature selects a lower maximum engine speed when the switch is On (closed to ground). The lowered engine speed is calibratable.

Switch Return

I/O – ECM B33 – FCI conn Pin 8

Electrical return/ground for switch circuits.

Stationary PTO/Remote PTO Calibrations:

Maximum Engine Torque

The engine torque will be limited to this value when PTO or Remote PTO is Active.

Maximum Vehicle Speed

The maximum vehicle speed allowed before deactivating PTO. Range 1-25 MPH.

Minimum Engine Speed

Defines the lower limit engine speed can be adjusted to when PTO/Remote PTO is active. The engine speed can be reached by either Ramp down or Bump down.

Maximum Engine Speed

Defines the upper limit engine speed can be adjusted to when PTO/Remote PTO is active. The engine speed can be reached by either Ramp up or Bump Up.

Engine Speed Ramp Rate

The ERPM/second change rate allowed during a ramp up or ramp down.

Idle Up Set Speed

Initial engine speed when Idle up is activated.

Number of Remote PTO Speed Settings

Total number of engine speed selections available to Remote PTO feature. Range 1-5.

Remote PTO Speed Setting 1, 2, 3, 4 and 5

Individual engine speed settings available to Remote PTO feature.

Electrical Connection to the Vehicle (FCI Connector Pinout)

The vehicle wiring provides an easy access point to connect your PTO. There is a 10 way connector located on the left side of the vehicle near the bell housing of the transmission. This connector contains the circuits required to integrate the PTO to the vehicles electrical system. The following chart is provided to assist in correctly interfacing the PTO with the vehicle:

Cavity Number	Circuit Name	Type/Gauge/Color	Circuit Functionality	Description	Usage
1	K854F	18T - VT/BR	remote throttle 5 volt supply	5 volt pwr supply to the remote potentiometer (remote's control power circuit). Supplied by the engine controller	Remote throttle control
2	K400E	18T - BR/VT	remote throttle sensor return (gnd)	Remote's ground (ground to the potentiometer of remote). Supplied by the engine controller. Do not hook to other grounding location	Remote throttle control
3	K128	18T - DB/LG	remote throttle signal	Remote signal sent to the engine controller. Signal from the remote's potentiometer.	Remote throttle control
4	K129	18T - DB/DG	remote throttle switch	On/Off switch provided by customer to "turn on/off remote function. Remote switch closes to ground. Connect ground side of switch to pin #8 in this connector. Do not ground to vehicle.	Remote throttle control
5	K119	18T - LG/BK	Maximum engine speed limit	Feature selects a lower maximum engine speed when switch is "on". Switch closes to ground. Customer supplied switch. Connect ground side of switch to pin #8 in this connector. Do not ground to vehicle.	Max operating speed switch
6	K810	18T - VT/DG	Accelerator interlock	Disable accelerator control of engine by closing an operator installed switch. This switch closes to ground. Connect ground side of switch to pin #8 in this connector. Do not ground to vehicle.	Customer supplied switch
7	F425	18T - PK	Remote PTO Switch	Customer supplied remote PTO on/off switch. Switch closes to ground. Connect ground side of switch to pin #8 in this connector. Do not ground to vehicle.	Remote PTO
8	V937C	18T - VT/BR	Cruise control switch return	Electrical ground for switch circuits. Ground returns to the engine controller. Do not hook to other grounding location. All customer supplied PTO switches ground to this pin. Please make appropriate protected splice.	Master ground for all added PTO switches. Do not apply any "dirty" grounds to this location.
9	K425	18T - OR/BR	PTO switch	Circuit switches to ground using operator installed switch. Connect ground side of switch to pin #8 in this connector. Do not ground to vehicle.	Stationary PTO
10	N/A		N/A	N/A	N/A



REPLACE PART INFORMATION:

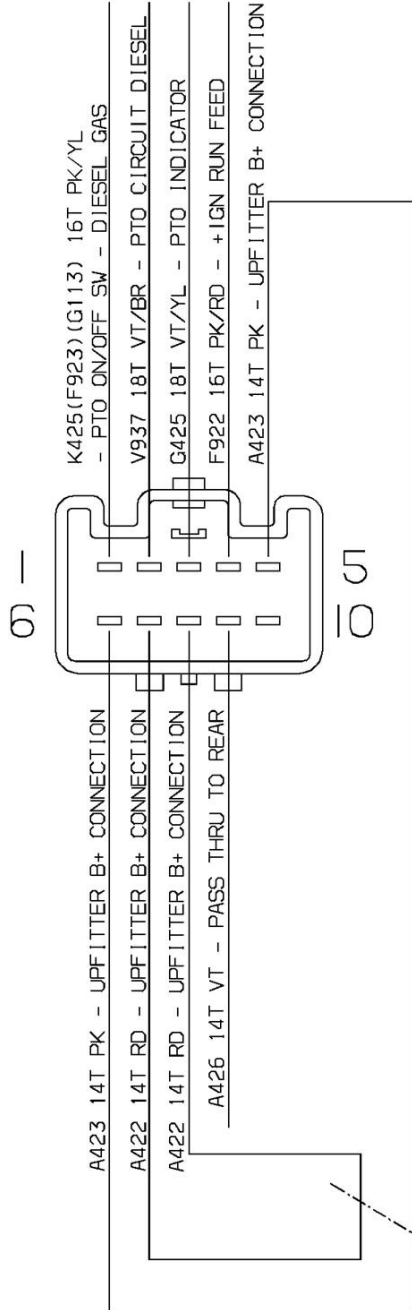
RELAY (SUPPLIER: TYCO)
P/N: 4671168E

RELAY TERMINAL (SUPPLIER: MOLE)
P/N: 33113-0003 AND 33113-0005

FUSE (SUPPLIER: LITTELFUSE)
P/N: 0299020, ZX00R (20A)
P/N: 0299025, ZX00R (25A)

UPFITTER JUMPER

UNTERMINATED AND HEATSHRUNK



CIRCUITS CAN BE USED AS PASS THROUGHS TO PROVIDE A B+ FEED TO THE EXTERIOR REAR OF VEHICLE OR CUT AND USED INDIVIDUALLY.

NOTE: THESE ARE CONNECTOR END VIEWS.

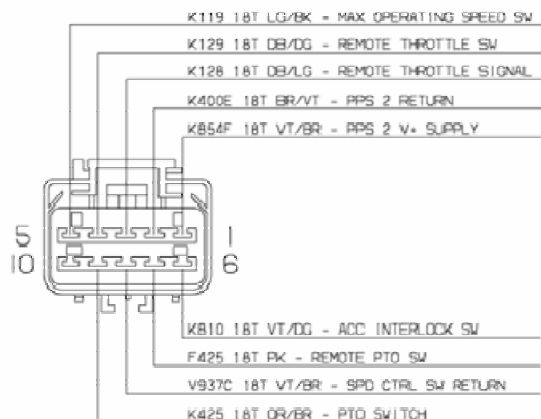


PTO CONNECTOR AND PINOUT

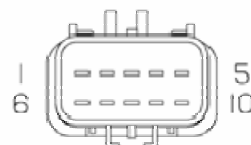
(UNDER VEHICLE ON TRANS BRACKET)

10 POSITION FCI CONN
LOCATED REAR OF ENGINE
TOP OF BELL HOUSING

MATING CONNECTOR INFORMATION:
(SUPPLIER: FCI)



04687907-INSULATOR ASSY
4687766-TERMINAL
56038308-PLUG



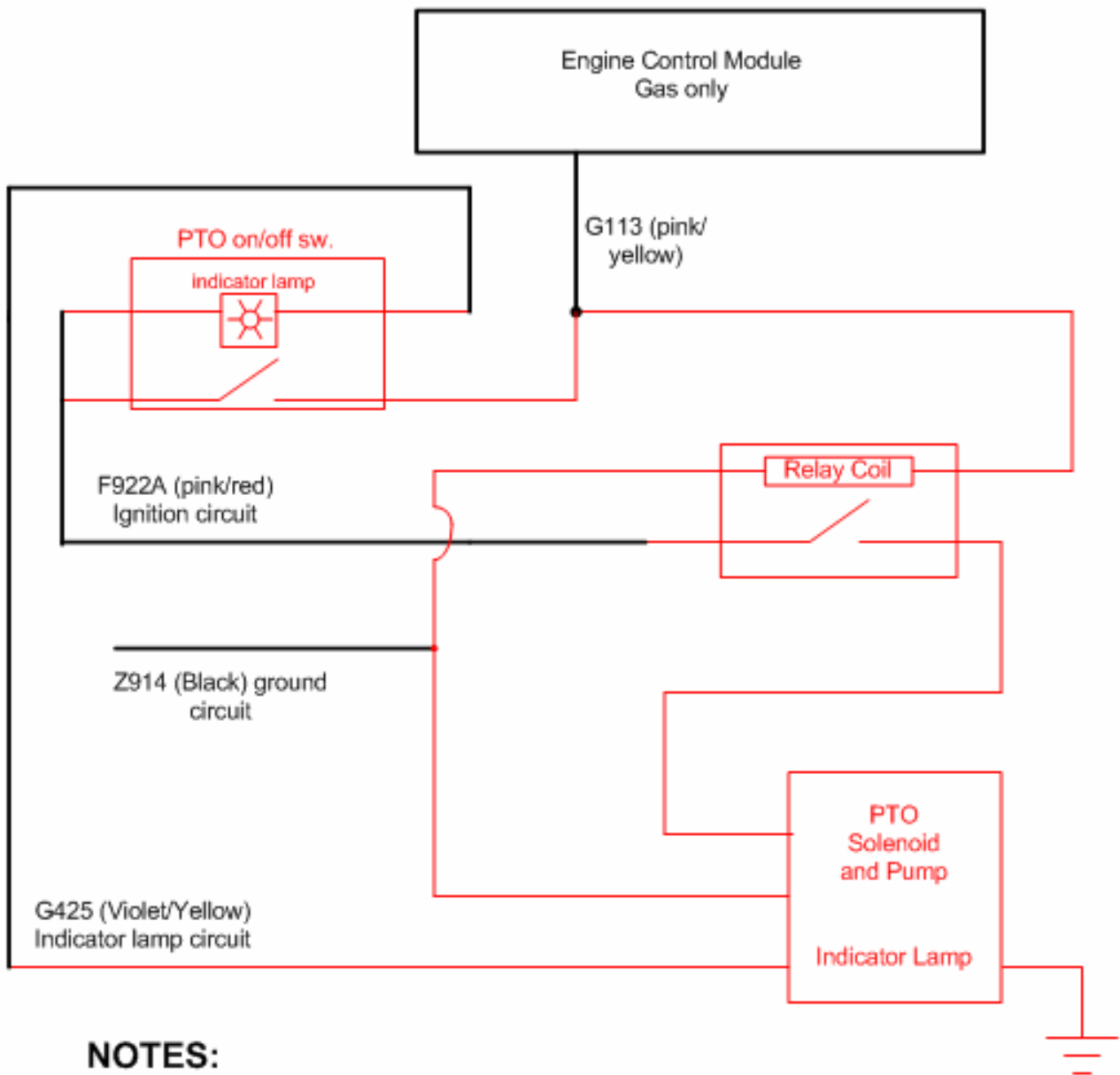
TRAILER TOW AND UPFITTER CIRCUITS

(UNTERMINATED AND HEATSHRUNK REAR OF FRAME)

CIRCUIT GUAGE COLOR FUNCTION

A100	14	RD/VT	TRAILER TOW B+ FEED(30A MAX)
A422A	14	RD	UPFITTER B+ FEED (25A MAX)
A423A	14	PK	UPFITTER B+ FEED (25A MAX)
A426	14	VT	PASS THROUGH TO CABIN
B40	14	DG	ELECTRIC BRAKE FEED
L1E	18	WT/LG	BACKUP LAMPS
L50B	18	WT/TN	STOP LAMPS
L50C	18	WT/TN	AFTER MARKET CHMSL
L673	18	YL	LEFT STOP/TURN
L674	18	LG	RIGHT STOP/TURN
L678	18	BR	TRAILER TOW PARK LAMPS
Z927BD	12	BK	GROUND

5.7L Gas G56 Stationary in Cab and Mobile Mode



NOTES:

F922A, G425, G113 and Z914 can be found underhood as one of the unterminated circuits located on left side near dash panel

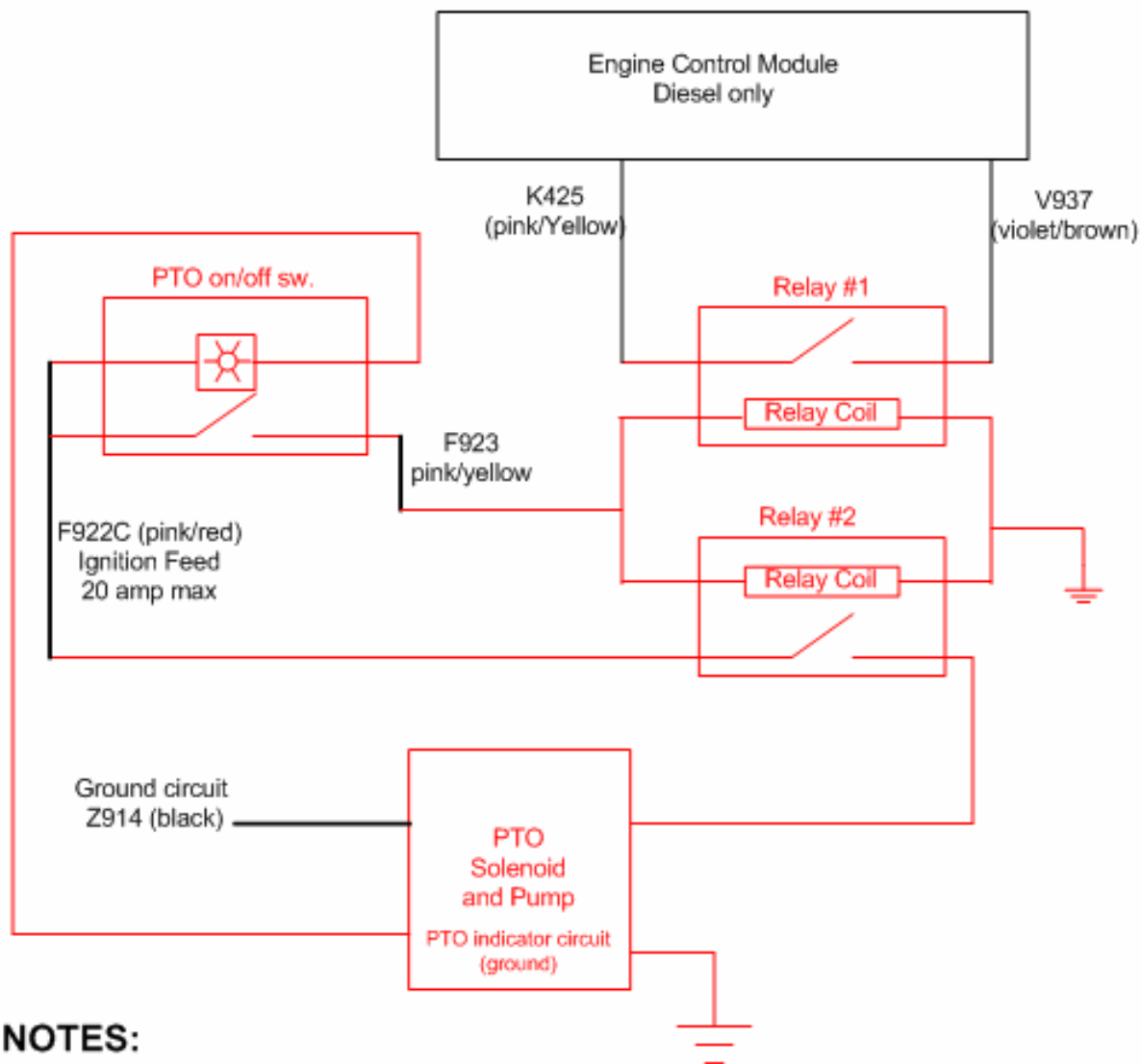
All other wiring, switches, relays and other components will need to be provided by the PTO Installer. Anything in black comes with the truck

The PTO switch is assumed to be installed inside the cab.

Upfitter relays can be mounted to the Aux PDC bracket.

For further wiring and circuit definition [PLEASE CLICK HERE](#)

6.7L Diesel Electric Air Shaft with G56



NOTES:

K425, V937 and K427 are circuits that can be found in the 10-way connector located near the left side at top of bell housing

F922C, F923 and Z914 can be found underhood as one of the unterminated circuits located on left side near dash panel

All other wiring, switches, relays and other components will need to be provided by the PTO installer. Anything in black comes with the truck

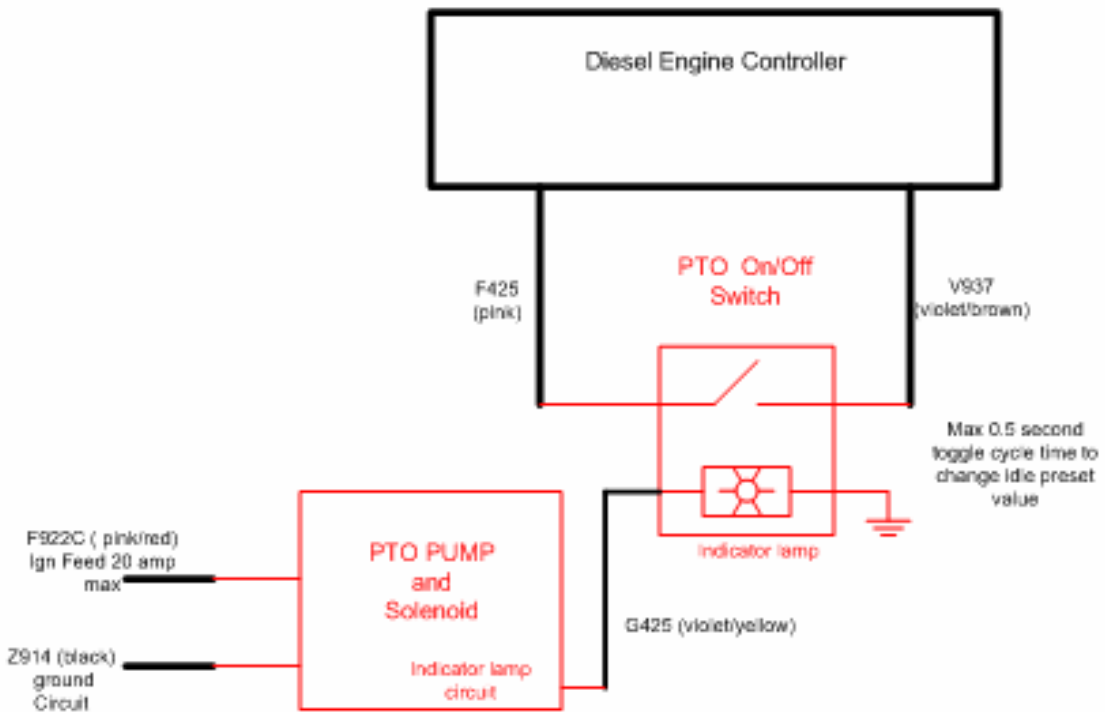
The PTO switch is assumed to be installed inside the cab.

Upfitter relays can be mounted to the Aux PDC bracket.

Do NOT externally ground circuit V937 to anything.

For further wiring and circuit definition PLEASE [CLICK HERE](#)

6.7L Diesel PTO with G56 Stationary Remote Present Mode



NOTES:

V937 and F425 are circuits that can be found in the 10-way FCI connector located near the left side at top of bell housing

F922C, G425 and Z914 can be found underhood as one of the unterminated circuits located on left side near dash panel

All other wiring, switches, relays and other components will need to be provided by the PTO installer

Do NOT externally ground circuit V937 to anything.

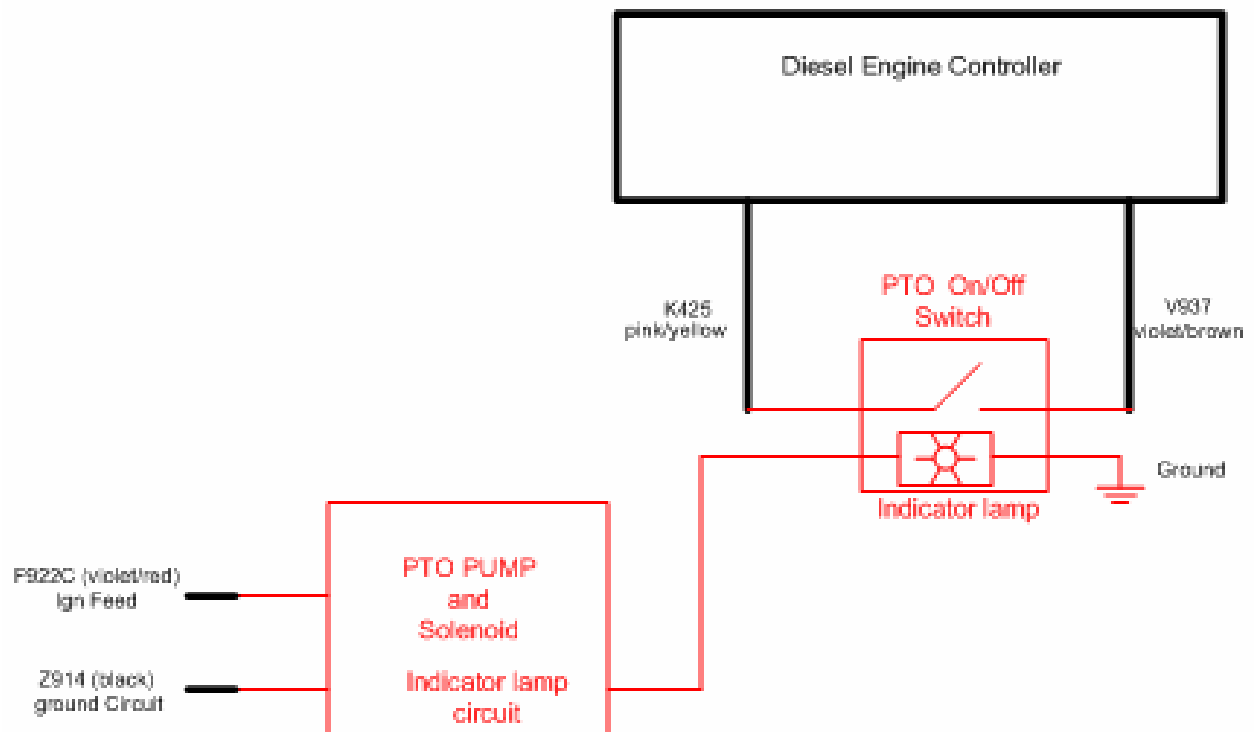
For further wiring and circuit definition (i.e. gauge, color, etc...) [PLEASE CLICK HERE](#)

Preset Operation

Turn ON the PTO ON/OFF Switch, engine goes to first preset (900 RPM)_ and ECU disables OBDII

Next toggle the PTO ON/OFF Switch (ON/OFF/ON) to go to next engine speed preset (total of five presets)

6.7L Diesel PTO with G56 Stationary Stationary and Mobile Mode



NOTES:

V937 and F425 are circuits that can be found in the 10-way FCI connector located near the left side at top of bell housing

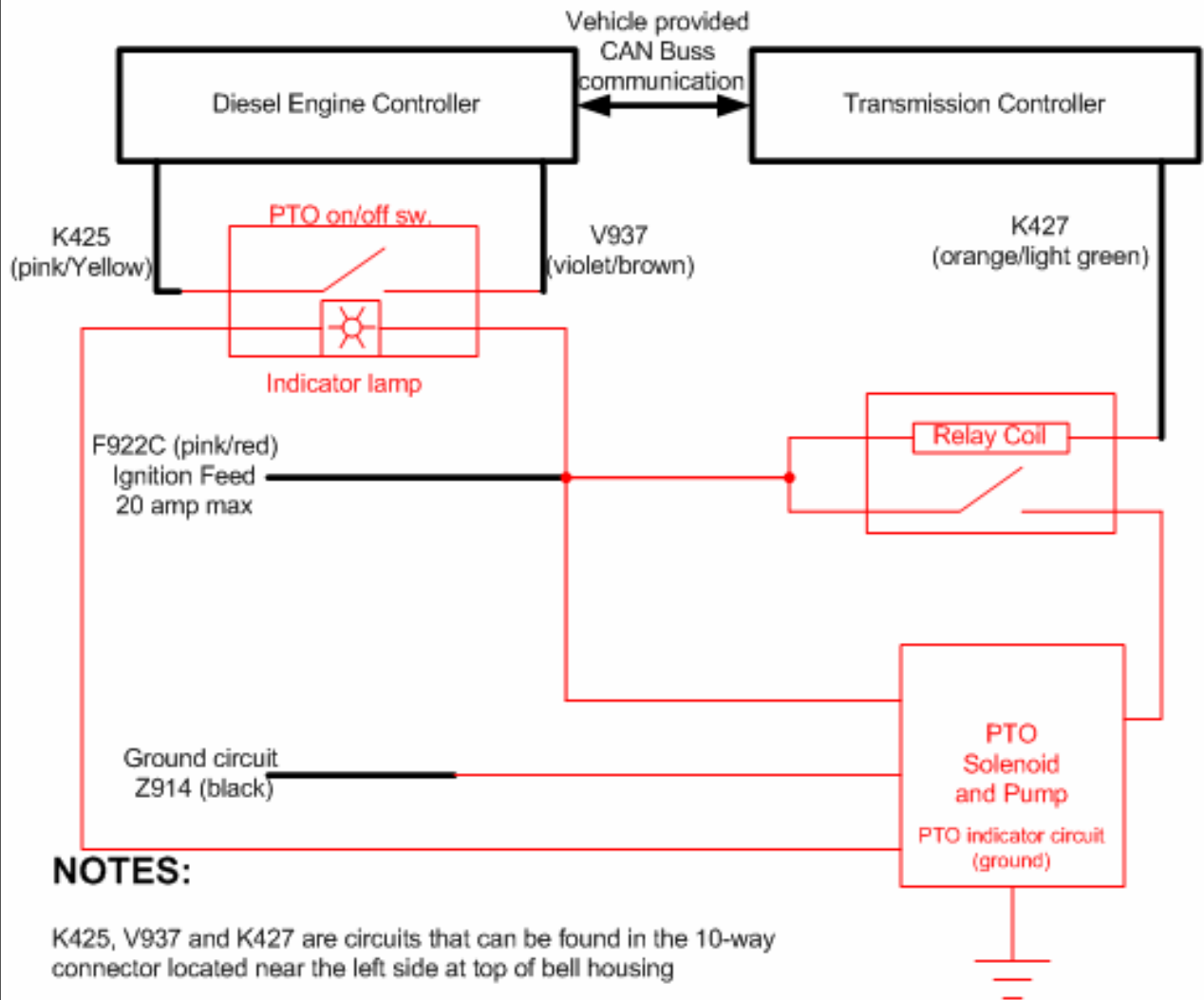
F922C and Z914 can be found underhood as one of the unterminated circuits located on left side near dash panel

All other wiring, switches, relays and other components will need to be provided by the PTO installer

Do NOT externally ground circuit V937 to anything.

For further wiring and circuit definition (i.e. gauge, color, etc...) PLEASE [CLICK HERE](#)

6.7L Diesel with Aisin in Cab Stationary and Mobile Mode



NOTES:

K425, V937 and K427 are circuits that can be found in the 10-way connector located near the left side at top of bell housing

F922C and Z914 can be found underhood as one of the unterminated circuits located on left side near dash panel

All other wiring, switches, relays and other components will need to be provided by the PTO installer. Anything in black comes with the truck

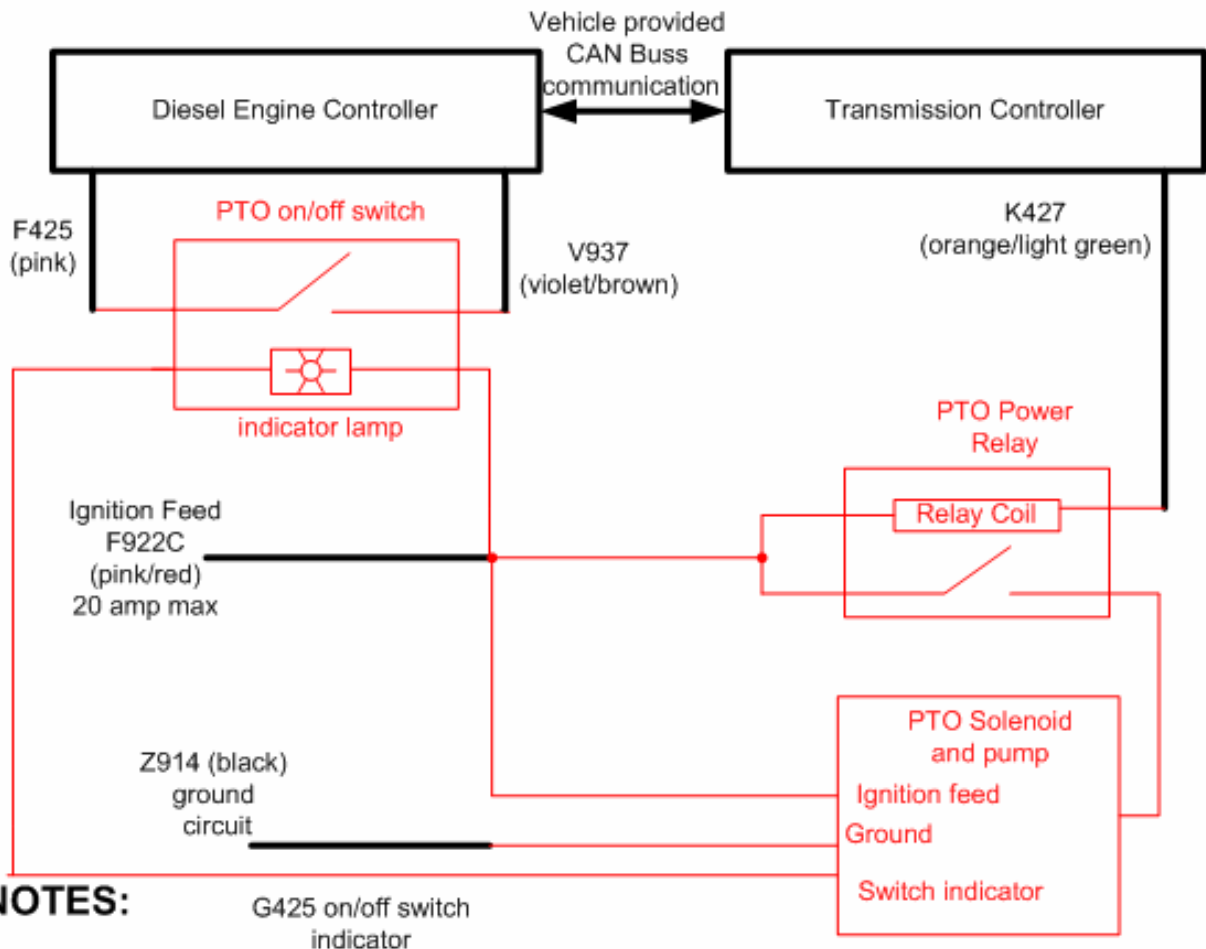
The PTO switch is assumed to be installed inside the cab.

Upfitter relays can be mounted to the Aux PDC bracket.

Do NOT externally ground circuit V937 to anything.

For further wiring and circuit definition PLEASE [CLICK HERE](#)

6.7L Diesel with Aisin Stationary Remote Mode



NOTES:

G425 on/off switch
indicator

F425, V937 and K427 are circuits that can be found in the 10-way FCI connector located near the left side at top of bell housing

F922C, G425 and Z914 can be found underhood as one of the unterminated circuits located on left side near dash panel

All other wiring, switches, relays and other components will need to be provided by the PTO installer

Do NOT externally ground circuit V937 to anything.

For further wiring and circuit definition (i.e. gauge, color, etc...) PLEASE [CLICK HERE](#)