



**Muncie[®]
Power
Products**

KEEP IN VEHICLE

**READ OPERATING INSTRUCTIONS
INSIDE BEFORE OPERATING PTO**

RAM 2013 & LATER

CS6B-I84-D1****

CS6B-I84-G1****

FA6B-I84-D3****

**PTO INSTALLATION
AND OPERATOR'S MANUAL**



**PTO INSTALLATION INSTRUCTIONS – MUNCIE CS6 PTO - USED ON
2013 & LATER CHASSIS WITH AS66RC OR AS69RC TRANSMISSION
ONLY - RAM ORDER CODE LBN (RIGHT SIDE OPENING)
FOR FA6B INSTALLATION, RAM ORDER CODE LBV (LEFT SIDE
OPENING) SKIP TO PAGE 7**

Supplement instructions; read Muncie Power Products PTO instructions found in IN84-03 Installation and Operator's manual completely before beginning work. Do not work on vehicle with hot exhaust. Let cool several hours before beginning PTO installation. See additional WARNINGS inside front cover of installation manual IN84-03.

The "G" shift option includes an integral drop-in solenoid valve mounted in the rear cover of the PTO, which is used for activation. The "G" shift option also includes a heat shield that mounts to the rear cover, which is designed to protect the coil on the solenoid valve from heat produced by the truck exhaust.

The "D" shift option includes a remote mount solenoid for activation. It does not include a heat shield.

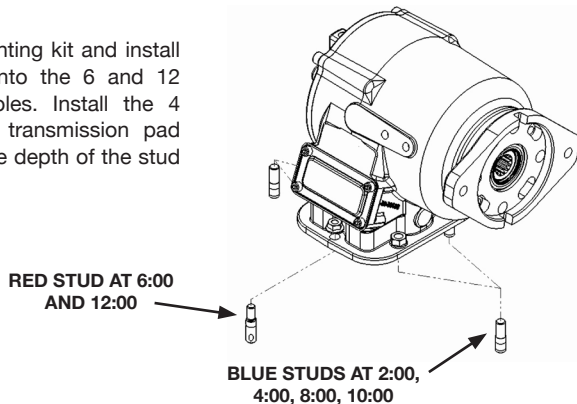
1. The PTO opening can be accessed by removing the rear package tray behind the seat. The seat can be unbolted and slid rearward. Remove the sill guards from passenger side and lift the floor mat. Locate the access panel under the floor mat.



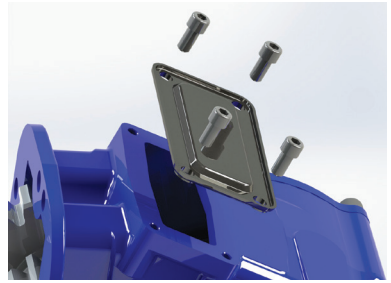
2. Remove this access panel to reveal the right side PTO opening. If you are installing a large pump, then insert it first into the hole and rest it on the exhaust until the PTO is installed. Remove the cover plate from the transmission taking care to avoid possible hot oil coming from the plate and opening. Clean the pad of any debris or sealing material.



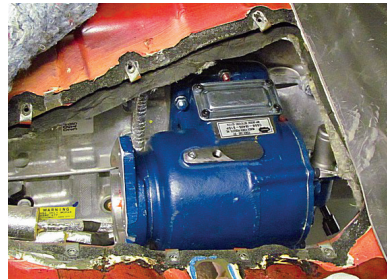
3. Locate the PTO mounting kit and install the two red studs into the 6 and 12 o'clock mounting holes. Install the 4 blue studs into the transmission pad taking care to limit the depth of the stud installation.



4. Remove the inspection cover from the PTO, as shown.

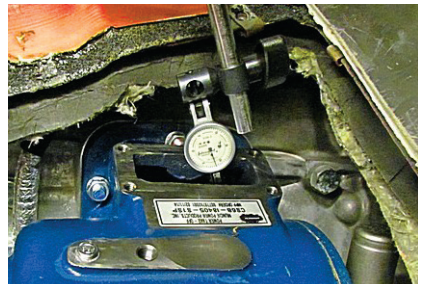
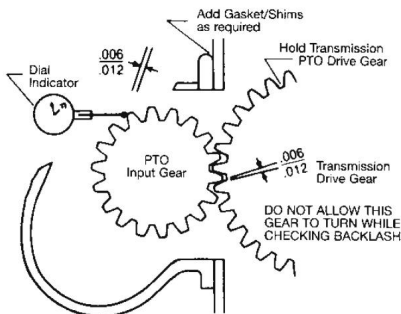


5. Place the PTO gaskets over the studs. Place the PTO onto the studs and the PTO pad. Mount nuts onto the red studs as shown in Step 3 (install at 6 and 12 o'clock positions). Torque to 18 ft.lbs.

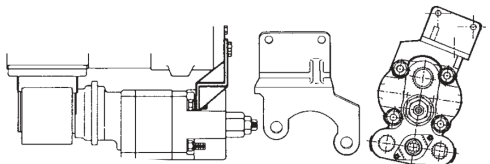


6. Check the backlash between the transmission gear and the PTO input gear. The backlash should be between .006 and .012". If not, remove nuts and remove or add gaskets until the proper backlash is achieved.

Once proper backlash is achieved, use the spirallock nuts on the 4 remaining studs. Tighten to 40-45 ft.lb.

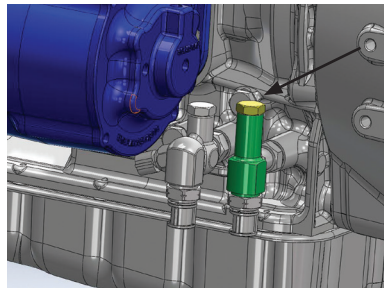


7. Replace the inspection cover and tighten the capscrews to 9 ft.lb.
8. Install the hydraulic pump. The right side opening is for hydraulic pump mounting only.
9. Pump systems over 40 lbs. total weight require a support for the pump. The support needs to be a rigid, gusseted bracket with 4 attachment points (2 each on pump and transmission).



MUNCIE POWER PRODUCTS DOES NOT SELL PUMP BRACKETS

- 10.** Locate and remove the plug from the transmission tee fitting on the right side of the transmission. The port shown here is the lubrication port, which can be found forward of the PTO pad.

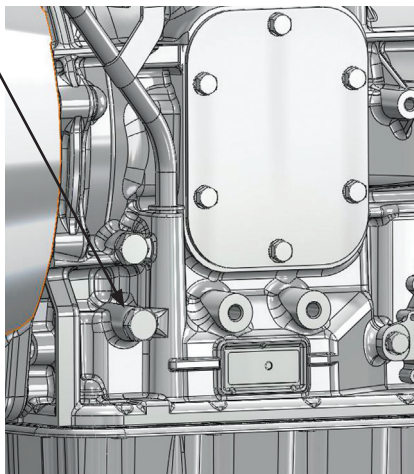


- 11.** Install a straight adapter 43T39222 into this port.



- 12.** Connect the 10" hydraulic line (45T36308) to this port. This line is the lubrication line.

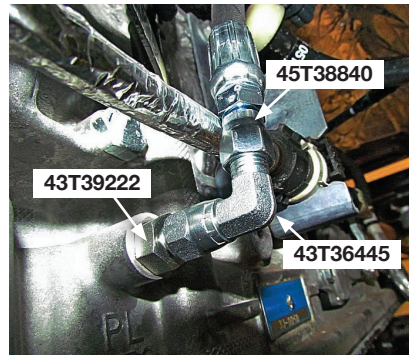
- 13.** Locate and remove the transmission plug for PTO activation and install the straight thread adapter. The AS66RC activation port is located on the left side of the transmission and is the lower plugged port found just forward of the PTO opening.



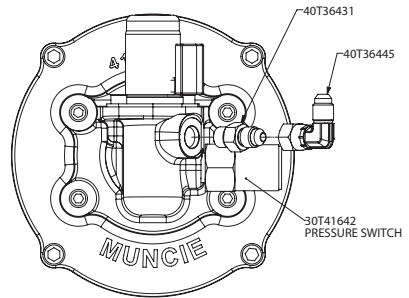
14. Install a straight adapter 43T39222 into the activation port and install a 90 degree elbow 43T36445 into this port. Connect the 3/8" hydraulic line (45T38840) to the elbow.

For "D" shift option, skip to page 8.

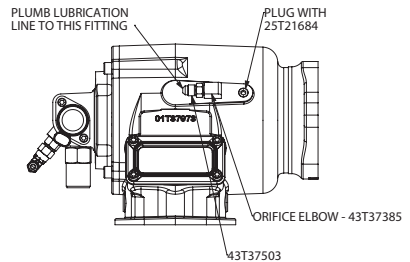
For "G" shift option, continue to step 15.



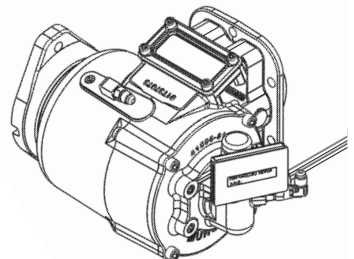
15. "G" Shift option ONLY. Install the 30T60223 pressure switch into the rear cover as shown. Connect the activation pressure port to the fitting installed in the activation port.



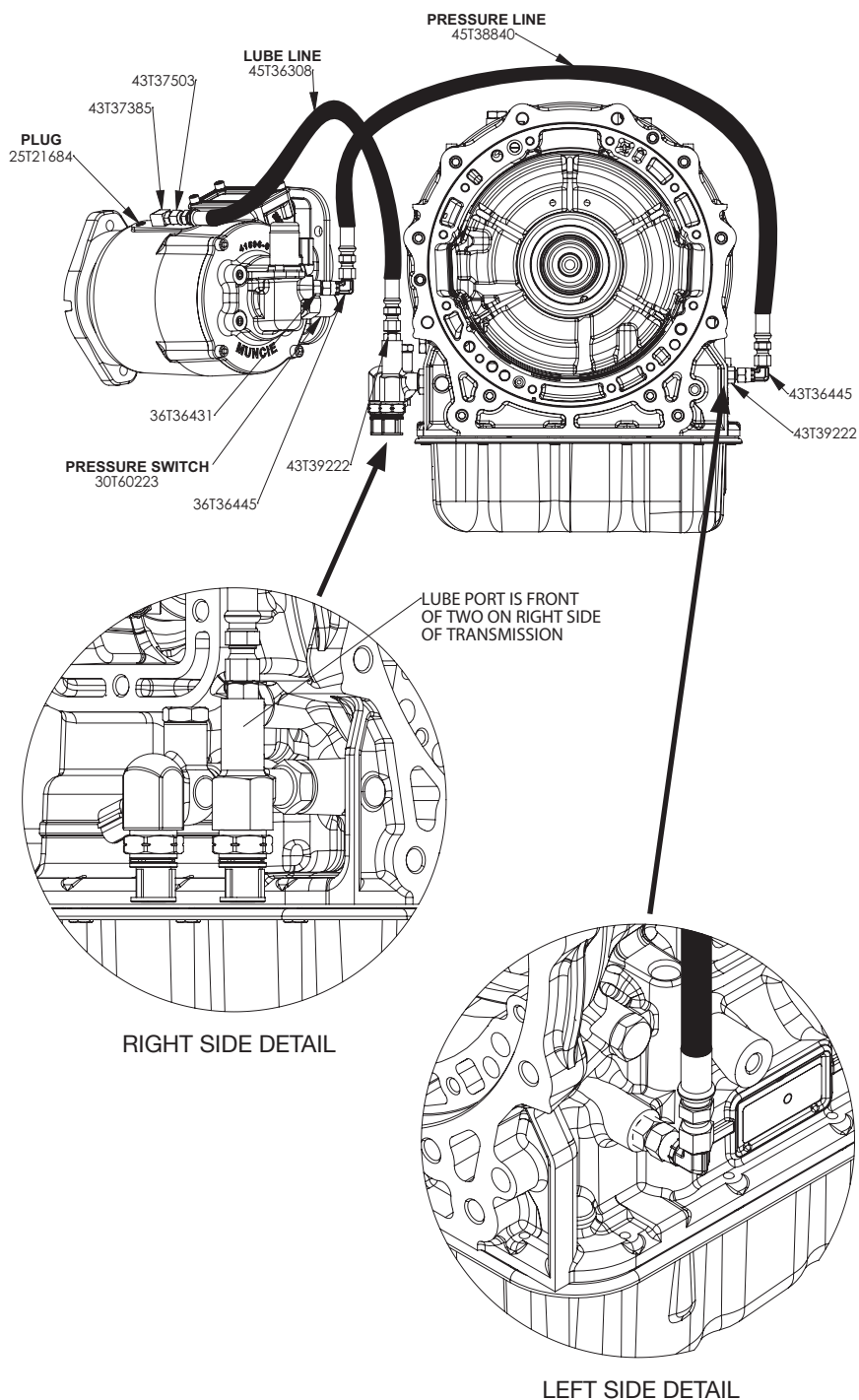
16. "G" Shift option ONLY. Connect the lubrication line into the orifice elbow installed on the side of the PTO.



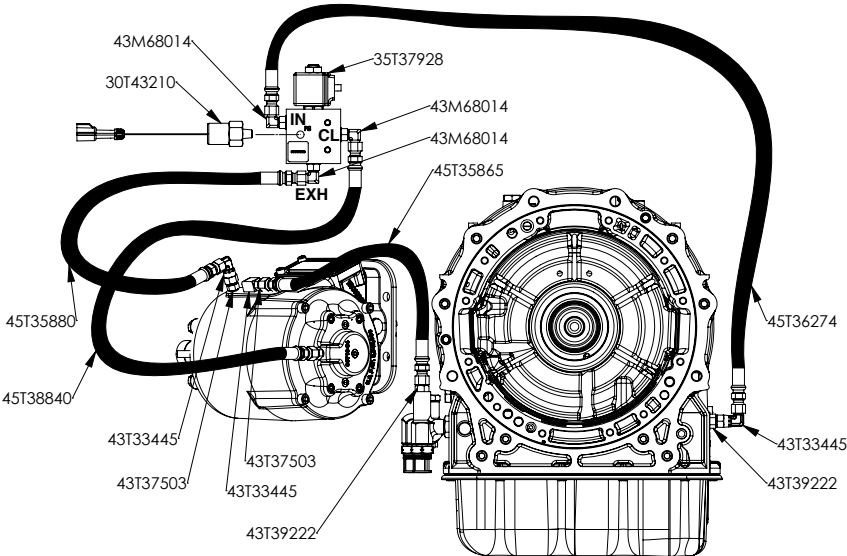
17. "G" Shift option ONLY. The "G" Shift option includes a heat shield that protects the solenoid valve from excess heat created by the truck exhaust. This shield is pre-installed at the factory, and should be present on the PTO upon arrival.



CS6B SERIES WITH "G" SHIFT OPTION



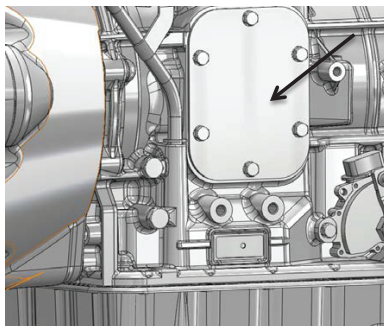
CS6B SERIES WITH “D” SHIFT OPTION



FA6B SERIES PTO INSTALLATION FOR THE LEFT SIDE OPENING

The left side PTO opening (only available with LBV option code) will only accept the Muncie FA6B Series PTO. This PTO has clearance to the floorboard. The PTO is available with a hydraulic mount or driveshaft output.

1. Remove the cover plate from the left side opening from underneath the vehicle.



2. Use caution as there might be hot oil on the plate or dripping from the PTO opening.

3. The FA6B PTO is provided with a mounting kit.

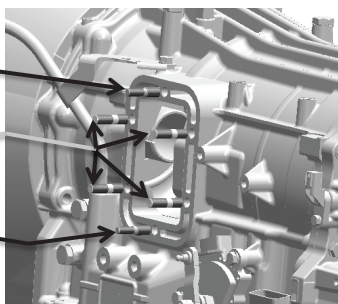
PART NUMBER 20TK6335

4. Install the mounting kit as shown in the diagram.

RED STUDS 6 & 12 o'clock positions

BLUE 1½"
METRIC STUDS

RED STUDS 6 & 12 o'clock positions



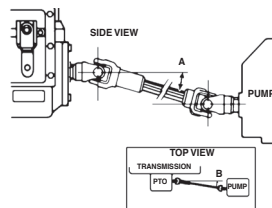
Using the gaskets provided with the PTO, place the gasket over the studs and onto the PTO mounting pad. Torque nuts to 40 ft.lb.

5. The PTO with hydraulic pump mounting can mount the pump at this time.

The FA6B has a maximum pump system limit of 40 lbs. Pump systems weighting more than 40 lbs. requires a gusseted support bracket.

- 6. 4x2 Chassis Only.** The FA6B with “B” option output shaft allows for mount of a 1000 series drive shaft to remote drive devices. If your system utilizes a driveline between the PTO and another device and if you have noise in your system that was not there before, the angularity or phasing of your driveline may be the cause. Check driveline angularity and reduce total angularity per recommendation on chart and be sure the PTO shaft is parallel within 1.5° to the pump shaft (or driven unit). Drivelines must be in phase, that is, the yoke ears on the PTO and pump shafts must be in alignment, as illustrated here.

Max Speed (RPM)	Max TJA “A”
3,500	5°
3,000	5°
2,500	7°
2,000	8°
1,500	11°
1,000	12°



Note: For installations with angles in the top and side views, use the following formula to compute the true joint angles (TJA) $TJA = \sqrt{A^2 + B^2}$

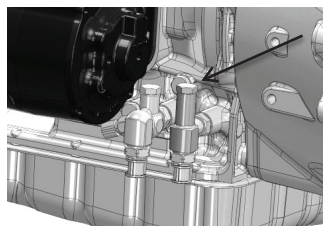
ACTIVATION KIT INSTALLATION (Instructions for “D” Shift Option Only Are Shown Here)

Activation kits for CS6 and FA6B are similar. There is a remote mounted solenoid valve which is connected to the PTO using activation hoses provided.

1. Locate and remove the plug from the transmission tee fitting on the Right side of the transmission. The port show here is the lubrication port and is forward of the PTO pad.

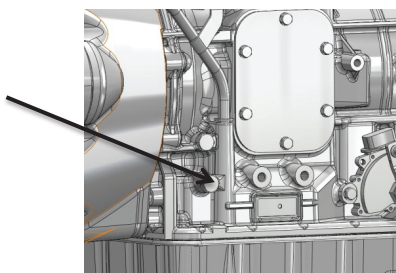


2. Install a straight adapter 43T39222 into this port.
3. Connect the 15" hydraulic line to this port.
4. Locate and remove the transmission plug for PTO activation and install the straight thread adapter. The AS69RC (A467) activation port is located on the left side of the transmission and is the lower plugged port.



On the older Aisin model transmission used in Ram Trucks prior to 2013 model year, the port is midway up the transmission, it is important to use the correct port.

Install a straight adapter 43T39222 into the activation port and install a 90 degree elbow 43T36445 into this port. Connect a hydraulic line to this port.



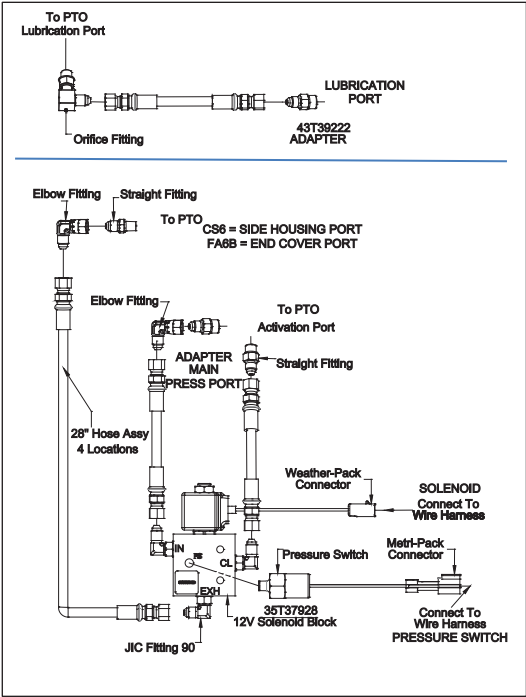
5. Connect the activation pressure port to the fitting installed in the IN port of the solenoid valve. (As shown in the diagram on page 8.)

6. Connect the lubrication line into the orifice elbow installed in the side of the PTO.
7. Install a fitting in the CL port and connect a hose to this port.
8. Install a fitting in pressure port on the end cover of the PTO and connect a hose to this port and to the "CL" port of the solenoid block.
9. The EXH port on the solenoid block will also get a fitting and hose.

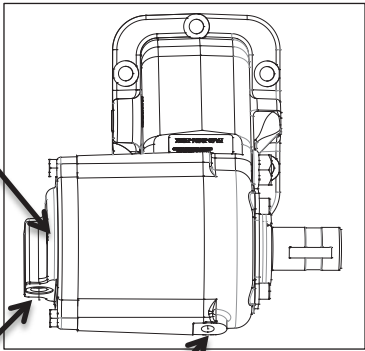
On the FA Series PTO, this line is connected to a port in the end cover. This is done by removing a pipe plug in the end cover and installing an adapter fitting.

Note that when using this port on the FA, care must be taken that the fitting is not bottomed out against the bearing inside the PTO.

Use pip thread sealant for the pipe thread fittings in this installation.



Remove plug from end cover, install straight adapter and elbow for Exhaust. Caution: do not over tighten fitting into port!



PTO Activation Port

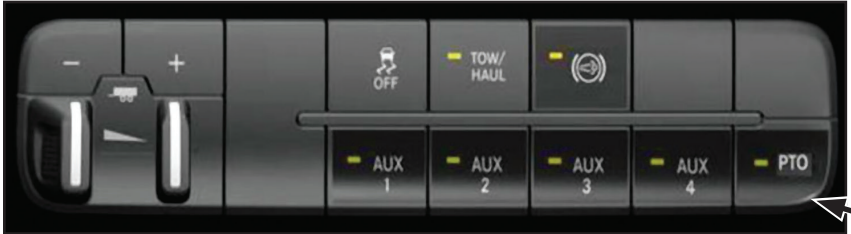
PTO Lubrication port. Install orifice elbow here.

FA6B SERIES

ELECTRICAL CONNECTIONS

The electrical connections for the 2013 and later chassis are different than the previous model years.

The 2013 and later chassis are provided with a PTO switch on the dash panel located with the other auxiliary switches.

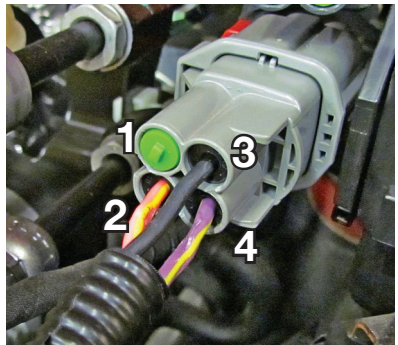


The Ram Truck provided switch allows for PTO operation with throttle advance options. The throttle advance is programmed through the Electronic Vehicle Information Center (EVIC) located in the center display. The 2013 & later vehicle is equipped with an electronic control system called the VSIM. The VSIM can be programmed for a single set speed.

Connections to the wiring are made with the Muncie wiring harness P/N 34T43408 ("G" shift), or P/N 34T43149 ("D" shift). Connection to our harness is made by using the Ram Truck provided wire leads found in the kit located in the glove box. Three wire leads are used from their kit. These have terminals and seals attached for use in the light gray connector. The gray connector is found in the engine compartment as shown in the photo at right. Remove the half of the connector with the blanking seals installed. The terminal locations are marked on this connector. Remove the blanking seals installed in pin locations 2, 3, & 4 and push the following wire leads into this connector.

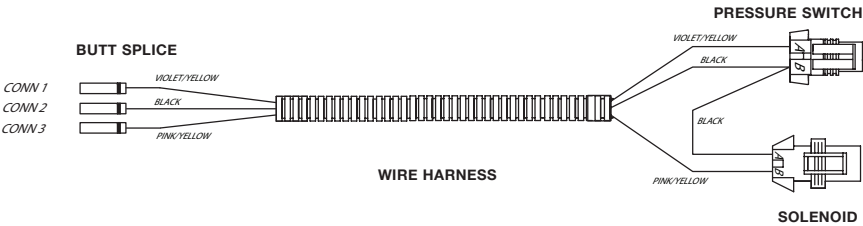


Pin #2 Pink/Tan
Pin #3 Black/Brown
Pin #4 Violet/Yellow
Pin #1 is not used.



Strip the insulation on these leads 1/2" for connection to the butt splice.

Using the Muncie Power wire harness, connect the wire leads to the appropriate butt splice.



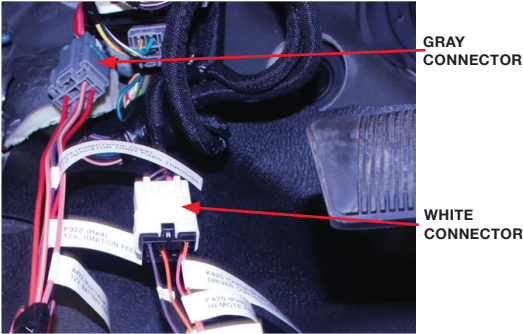
- Pin #2 Pink/Tan to Muncie Power Pink/Yellow
- Pin #3 Black/Brown to Muncie Power Black
- Pin #4 Violet/Yellow to Muncie Power Violet/Yellow

Crimp the butt splice and heat with gun to complete the heat shrink.

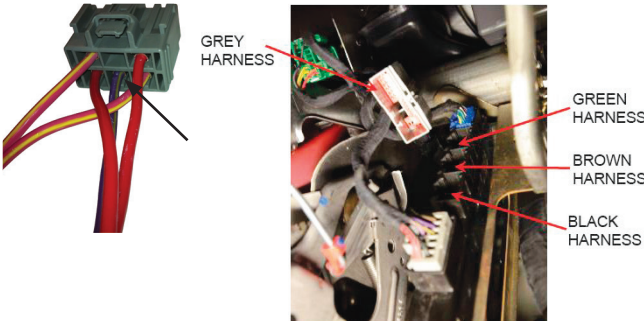
The Muncie Power harness has the plug for the PTO solenoid and the PTO pressure switch. The wires are connected as shown.

**VSIM CONNECTIONS MADE ON 2013 - 2018 MODEL YEARS ONLY
NOT REQUIRED ON 2019 & LATER MODEL YEARS**

On the inside of the cab locate the gray connector shown here. It is located behind the VSIM module which is a black plastic module next to the park brake bracket. The gray connector is tie wrapped in place.



From the Ram Truck wire and harness kit use the 6 terminal gray connector with wires already located in the cavities. Pin# 5 has a Violet/Yellow wire which is to be connected to the Ram Truck VSIM control.



The VSIM comes with 3 harnesses: Green, Brown, and Black. The 16 pin brown harness has an Orange/Brown wire located in Pin #8. This wire is to be connected to the Violet/Yellow wire from the gray connector.

Make sure that the brown connector and gray connector are firmly connected to their respective receptacles. Firmly plug in the connectors for the solenoid and pressure switch found on the Muncie Power wiring harness.



PTO ACTIVATION

ACTIVATION PARAMETERS:

The PTO function can be programmed through the Electronic Vehicle Information Center (EVIC) located between the Speedometer and Tachometer on the instrument display. You will be able to access the PTO functions by scrolling to the commercial settings and then to PTO.

The PTO modes are Standard, Mobile, and Remote.

STANDARD (Stationary Operation) (EVIC programmed for “Standard” Mode)

To operate PTO mode the following enablers must be met.

- Be in “park”
- Service brakes released and functional
- Vehicle running
- No transmission, engine, accelerator, brake switch faults
- PTO must be correctly installed using the vehicle provided circuits
- PTO switch activated

PTO OPERATION STATIONARY

Once PTO is activated by the in cab PTO switch, the throttle can be advanced by pressing the RES ACCEL cruise control button. If you need a single set speed, it can be programmed through the EVIC display in the dash. The PTO drive gear is torque converter driven. With the PTO engaged the torque converter will activate converter lock-up at engine speeds above 1,200 RPM. Below these speeds of the PTO output shaft will be dependent on the torque converter and the PTO may not perform to your specifications.

MOBILE (EVIC programmed for “Mobile” mode)

To operate PTO mode the above enablers must be met.

Mobile mode can be activated by the menu available on the Electronic Information Center screen the the center of the cluster. When this feature is selected Stationary and Remote PTO features are not available. The PTO can only be activated with the transmission in “Park”. Activate the PTO switch and then transmission can be shifted into forward or reverse gear.

PTO OPERATION MOBILE

For PTO operation with the vehicle moving the PTO must be engaged with the vehicle in “Park”. After engagement the vehicle may be placed in a forward or reverse gear and have PTO operation. There is no torque converter lock-up in this option and the PTO will stop operation when the vehicle is stopped and in a drive selection. The PTO will still function in “Neutral or Park”, but will not have elevated idle speed. To return to normal vehicle operation, simply turn the PTO switch OFF.

REMOTE (for remote switch operation of PTO) (EVIC programmed for “Remote” mode)

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. 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.

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

REMOTE SWITCH INSTALLATION

Additional information on this chassis and PTO options is available from Ram Truck website:
<http://www.rambodybuilder.com/2013/cc/ccmo.pdf> (best used with Internet Explorer)



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