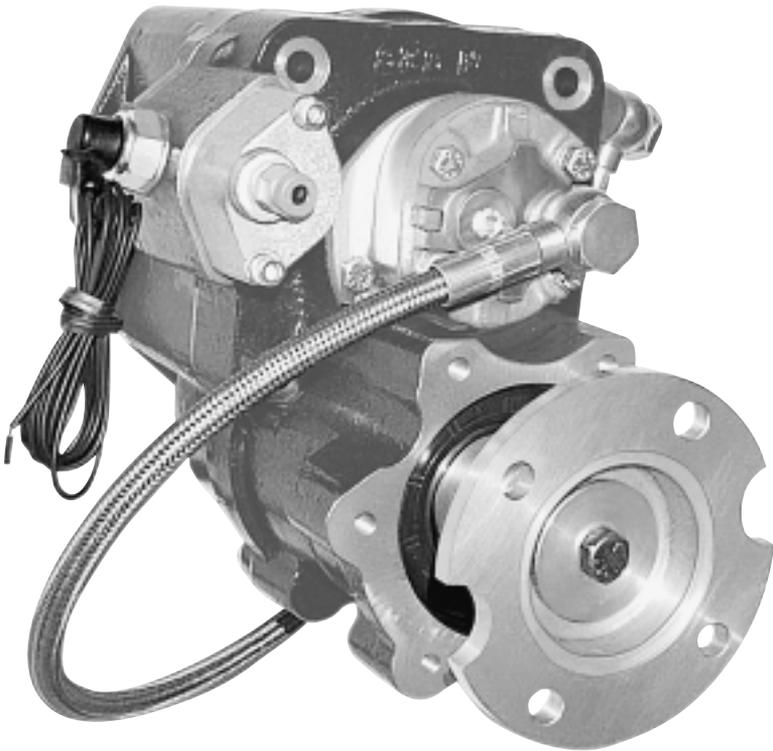




**KEEP IN VEHICLE**  
READ OPERATING INSTRUCTIONS  
INSIDE BEFORE OPERATING PTO

# RS4S SERIES COUNTERSHAFT PTO INSTALLATION

FOR EATON LIGHTNING TRANSMISSIONS



# WARNING

DO NOT ATTEMPT TO INSTALL OR SERVICE ANY POWER TAKE-OFF WITH THE TRUCK ENGINE RUNNING. PUT THE IGNITION KEYS IN YOUR POCKET BEFORE GETTING UNDER THE TRUCK.

DO NOT ALLOW TRUCK ENGINE TO BE STARTED WHILE WORKERS ARE UNDER THE TRUCK.

IMMOBILIZE TRUCK WHEELS WITH SUITABLE CHOCKS BEFORE WORKING UNDER TRUCK.

BE SURE TO BLOCK ANY RAISED BODY OR MECHANISM BEFORE WORKING ON OR UNDER THE EQUIPMENT.

INSTALLED POWER TAKE-OFFS MUST NEVER BE SHIFTED IN OR OUT OF GEAR BY ANY MEANS EXCEPT BY THE CONTROLS IN THE CAB OF THE TRUCK.

STAY CLEAR OF SPINNING DRIVESHAFTS TO AVOID BECOMING ENTANGLED AND INJURED.

IT SHALL BE THE RESPONSIBILITY OF THE INSTALLER OF A MUNCIE POWER TAKE-OFF TO DECIDE WHETHER TO INSTALL GUARDS IN THE PTO AND/OR DRIVELINE AREA BECAUSE OF POTENTIAL EXPOSURE TO DANGER.

THIS IS BECAUSE MOST MUNCIE PTOS ARE INSTALLED BY EQUIPMENT DISTRIBUTORS OR MANUFACTURERS AND THEREFORE, THE RESPONSIBILITY OF THE INSTALLATION IS BEYOND THE CONTROL OF MUNCIE POWER PRODUCTS.

The PTO is supplied with a packet containing warning labels. If you did not receive any, or if you need extra, you may order them, no charge, by phone or mail. They are available through your nearest Muncie distributor or at the number and address below:

1-800-FOR-PTOS (367-7867)

Muncie Power Products, Inc.

P.O. Box 548

Muncie, IN 47308-0548

[info@munciepower.com](mailto:info@munciepower.com)

# RS4S SERIES PTO INSTALLATION FOR EATON LIGHTNING TRANSMISSIONS

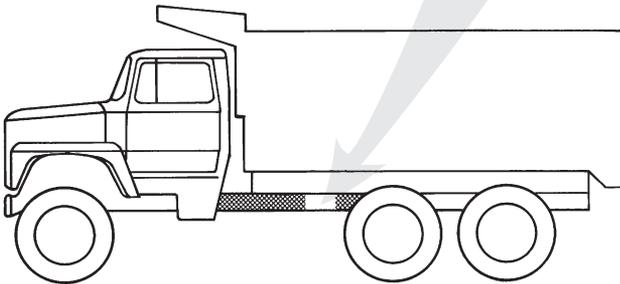
## PTO INSTALLATION INSTRUCTIONS

*Always wear safety glasses. Read entire manual before starting installation.*

1. There is a packet with the PTO which contains 4 WARNING LABELS. Before adhering the labels, make sure the surfaces are free of dirt and grease. Place the labels supplied as follows:

There are two (2) labels which measure approximately 4" x 8" which are to be placed on the outside of the vehicle frame rail, making them easy to be seen by anyone who might go under the truck or near the PTO. One label is to be placed on each side of the vehicle. **Fig 1**

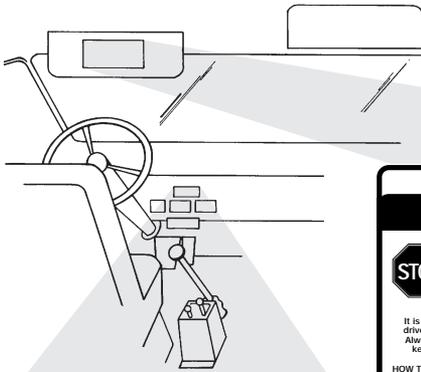
Should the body installed on the chassis cover the frame rail, place the label on the body in a position easily visible by anyone who might go under the vehicle or near the PTO. **Do not paint over labels.**



**Fig 1**

There are two (2) 4" X 8" labels supplied and one is to be placed on each side of the vehicle.

2. The 2" x 3" PTO Equipped Caution Label is to be placed within the cab of the vehicle and in easy view of the vehicle operator. It should be located near the PTO control, when the control is installed in the vehicle dash. Fig 2. This label directs the operator to read the PTO operating instructions on the "Visor Label". The Visor Label 5 1/2" x 8 1/2" is to be placed on the visor on the operator's side of the vehicle. Fig 2



<p><b>THIS VEHICLE IS EQUIPPED WITH A POWER TAKE-OFF</b></p> <p><b>CAUTION</b></p> <p>READ &amp; FOLLOW OPERATING INSTRUCTIONS BEFORE USING THIS EQUIPMENT.</p> <p>(SEE SUN VISOR)</p>	<p><b>Este vehículo está equipado con una TOMAFUERZA</b></p> <p><b>PRECAUCION</b></p> <p>Lea y siga las instrucciones de manejo en el parascal antes de usar esta maquinaria.</p> <p>(Atención al parascal)</p>
<p>© Muncie Power Products, Inc. 2001 Part No. 36M35652 (Rev. 5-01)</p>	

<p>UNDERSTAND THIS LABEL BEFORE USING POWER TAKE-OFF (PTO)</p> <p><b>WARNING</b></p> <p><b>NEVER GET UNDER THIS TRUCK IF THE ENGINE IS RUNNING!</b></p> <p><b>STOP</b></p> <p>Hands, clothes hair, etc. can get caught on spinning shafts and U-joints.</p> <p><b>YOU MAY BE HURT OR KILLED.</b></p> <p>It is against Federal Law to try to fix PTO driven machinery if the engine is running. Always turn the engine off. Then, put the keys in your pocket. (OSHA 1910.147)</p>	<p>ASEGURESE DE ENTENDER ESTE ROTULO ANTES DE USAR LA TOMAFUERZA</p> <p><b>ADVERTENCIA</b></p> <p><b>¡NUNCA SE META DEBAJO DEL CAMIÓN CUANDO EL MOTOR ESTÉ EN MARCHA!</b></p> <p><b>ALTO</b></p> <p>Las manos, ropa, pelo, etc. pueden engancharse en ejes y ensamblajes en rotación.</p> <p><b>¡USTED PUEDE RESULTAR HERIDO O MUERTO.</b></p> <p>Esta es contra de la ley Federal intentar arreglar maquinaria accionada por tomafuerza con el motor en marcha. Apague siempre el motor y guarde las llaves en el bolsillo. (OSHA 1910.147)</p>
<p><b>HOW TO USE THE POWER TAKE-OFF (PTO)</b></p> <p><b>STATIONARY APPLICATIONS: CHECK WHEELS BEFORE ENGAGING PTO.</b></p> <p><b>Manual Shift PTO (including Air Shift)</b></p> <ol style="list-style-type: none"> <li>1. Push in clutch pedal.</li> <li>2. Shift transmission into neutral.</li> <li>3. Engage PTO.</li> <li>4. Lift clutch pedal out.</li> </ol> <p><b>Power Shift PTO Manual or Automatic Transmissions</b></p> <ol style="list-style-type: none"> <li>1. Lift engine idle.</li> <li>2. Engage PTO with switch.</li> <li>3. Release operating speed.</li> </ol>	<p><b>COMO USAR LA TOMAFUERZA</b></p> <p><b>APLICACIONES ESTACIONARIAS: BLOQUEAR LLANTAS ANTES DE APLICAR TOMA DE FUERZA</b></p> <p><b>Manoal de Cambio Manualmente (incluyendo la de accionamiento neumático)</b></p> <p><b>Cambio de marchas manual</b></p> <ol style="list-style-type: none"> <li>1. Pise el embrague.</li> <li>2. Poner transmisión en neutral.</li> <li>3. Conecte la tomafuerza.</li> <li>4. Suelte el embrague.</li> </ol> <p><b>Cambio de marchas automatico</b></p> <ol style="list-style-type: none"> <li>1. Deje el motor marchar en vacío.</li> <li>2. Señale freno, permanezca en el asiento de conductor.</li> <li>3. Presione el selector de cambios en cualquier marcha.</li> <li>4. Conecte la tomafuerza.</li> <li>5. Poner transmisión en neutral o park, frenaebros Accionados Mecanicamente</li> </ol> <p><b>Cambio de marchas manual o automatico</b></p> <ol style="list-style-type: none"> <li>1. Deje el motor marchar en vacío.</li> <li>2. Conecte la tomafuerza accionando el interruptor.</li> <li>3. Señale la velocidad de operación.</li> </ol>
<p>Part No. 36M05445 (Rev. 5-01)</p>	

Fig 2

3. Locate the transmission countershaft bearing cover on the rear of the Lightning Transmission. Fig 3



Fig 3

4. The RS4S PTO can be mounted to the right or left opening and the recommended orientation of each location is shown. PTO mounted on the left side (Driver) may also be mounted horizontal. Fig 4

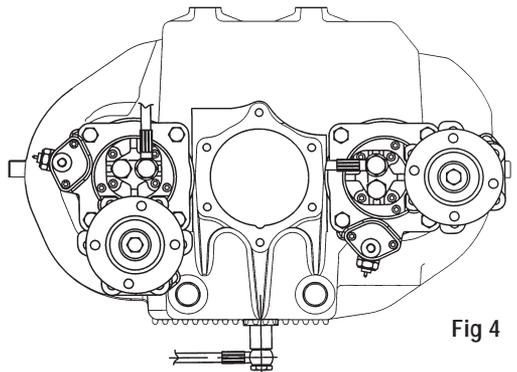
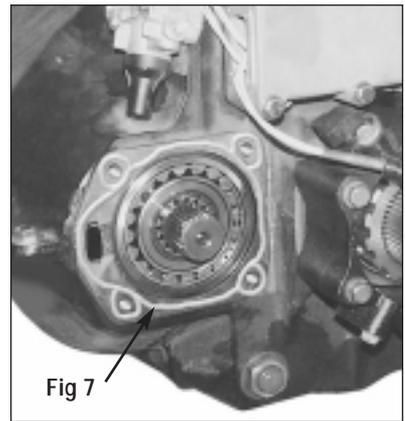
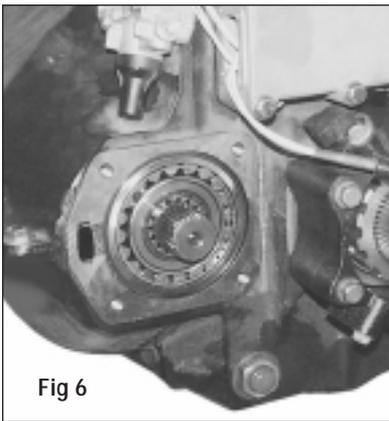
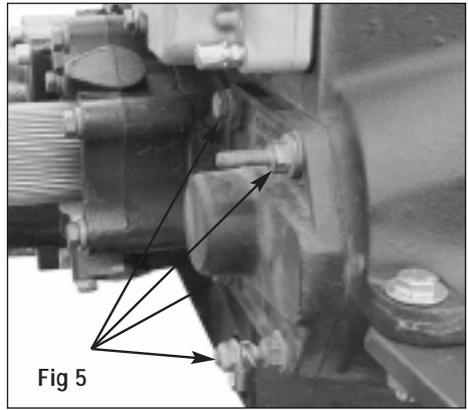
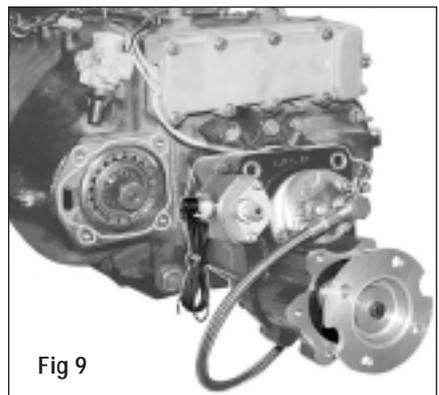
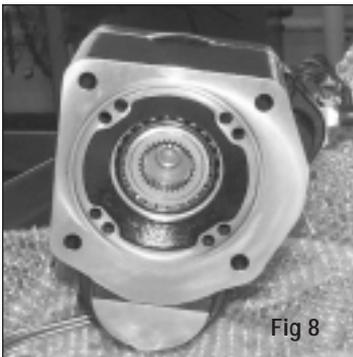


Fig 4

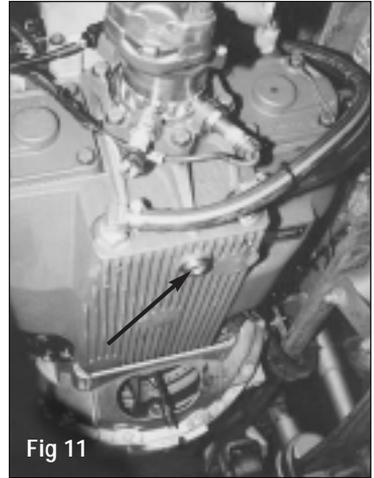
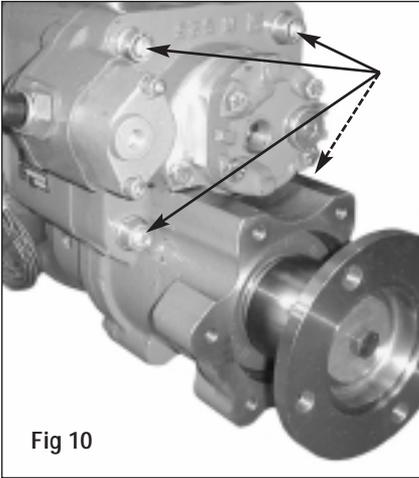
5. Remove the bearing cap by removing the installed cap-screws/studs. The cap is sealed with anaerobic sealant and will require the bearing cap to be gently tapped with a hammer to remove the cover. **Fig 5**
6. Clean the mounting surfaces of all sealant and grime. **Fig 6**
7. Locate the tube of gasket eliminator provided in the supplied mounting kit and apply evenly in a pattern to match the opening. **Fig 7**



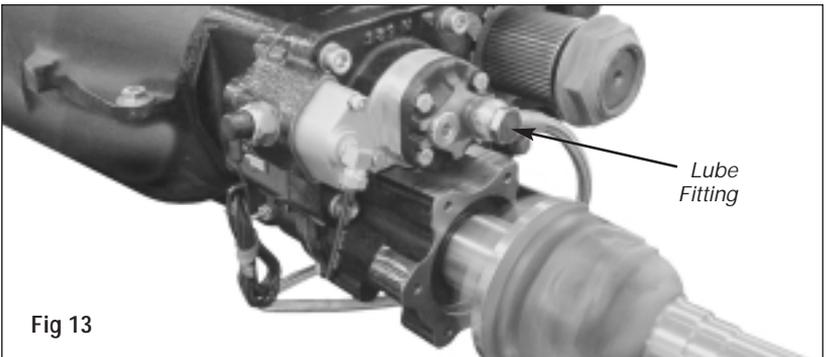
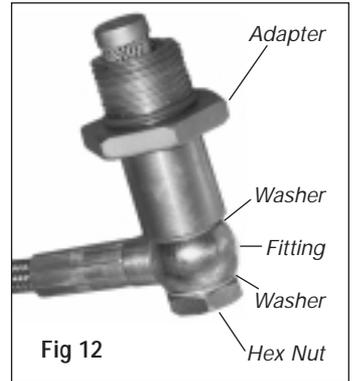
8. Check the PTO splines and mounting pad and clean any contamination before mounting. **Fig 8**
9. Locate the 4 capscrews from the mounting kit supplied and insert them into the PTO housing. Install the PTO by sliding the splined shafts together and tighten the capscrews. **Fig 9**



10. Torque the capscrews to 37 lb.ft. Fig 10
11. Locate transmission drain plug. **CAUTION:** Transmission fluid may be HOT! Remove the drain plug and collect in a clean receptacle for re-use later. The recommended oil is Eaton CD-50. Fig 11



12. The PTO is supplied with a lubrication pump. Locate the swivel fitting as shown here and loosen the hex bolt in the end of the adapter. Install the adapter into the drain port of the transmission and tighten to 74 lb.ft. Fig 12
13. Route the other end of the lube hose to the PTO port in the lube pump which is integral to the RS4S series PTO, tighten the hex bolt at both ends of the lube hose to 42 lb.ft. Fig 13



Refill transmission with approved transmission fluid before operating the PTO.

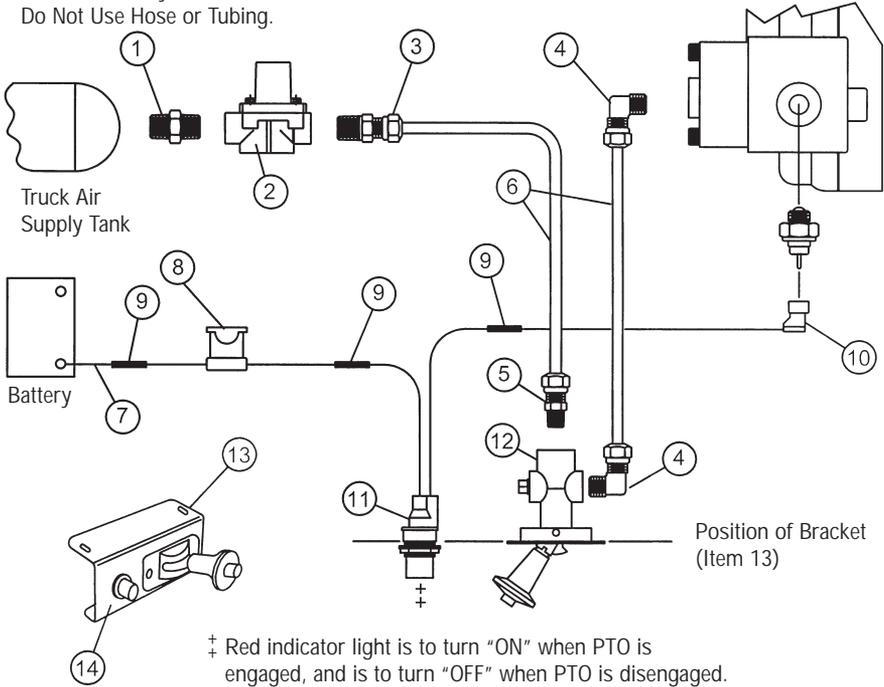
# Air shift install by following the diagrams on pages 6-7:

for Manual Air Shift this page; for Electric/Air shift next page.

## RS4S SERIES STANDARD AIR SHIFT SYSTEM

Parts List and Description Activation Kit 48M61250A

Connect Directly to Air Tank.  
Do Not Use Hose or Tubing.

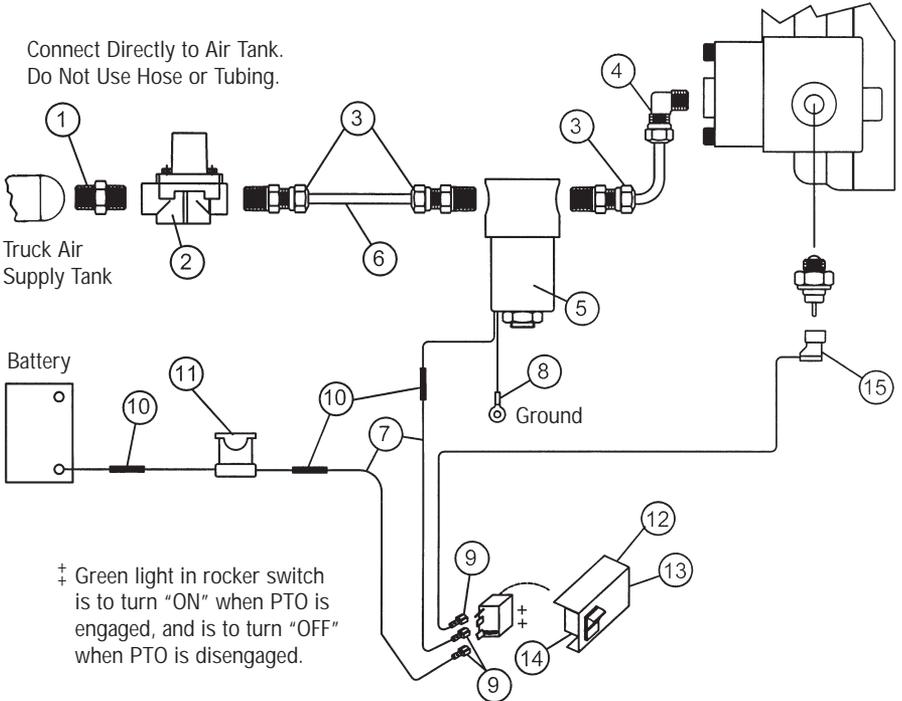


ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	44MB2164	Pipe Nipple
2	1	31M15759	Pressure Protection Valve
3	3	44MB6844	Tube Fitting
4	1	44MB6942	Tube Fitting(Elbow)
5	1	44MB6842	Tube Fitting
6	1	45M44430	Air Tubing - 30 ft
7	30	37M18000	Electric Wire - 30 ft
8	1	33T36299	Fuse Assembly
9	3	34M18002	Butt Splice
10	1	34T38163	Booted Connector
11	1	32M12001	Light Assembly 12v
12	1	35M18653	Air Valve
13	1	36MA1004	Dash Bracket
14	1	36M01005	Face Plate
NS	1	36MK1007	Bolt Kit - Dash Bracket

# RS4S SERIES ELECTRIC/AIR SHIFT SYSTEM

Parts List and Description Activation Kit 48M61200A

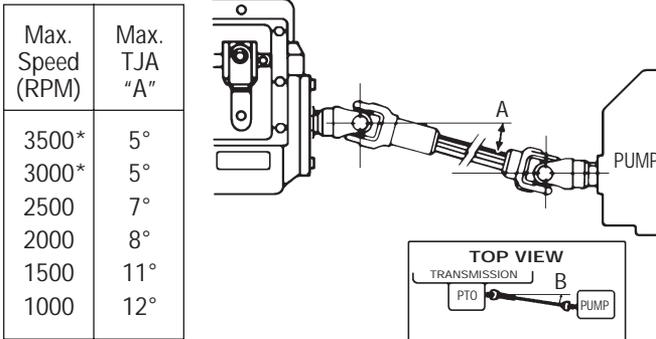
Connect Directly to Air Tank.  
Do Not Use Hose or Tubing.



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	44MB2164	Pipe Nipple
2	1	31M15759	Pressure Protection Valve
3	3	44MB6844	Tube Fitting
4	1	44MB6942	Tube Fitting(Elbow)
5	1	35M30692	12V Solenoid Valve
		35M31692	24V Solenoid Valve
6	1	45M44430	Air Tubing - 30 ft
7	30	37M18000	Electric Wire - 30 ft
8	1	34M18009	Eye Terminal
9	3	34M18250	Spade Terminal
10	3	34M18002	Butt Splice
11	1	33T36299	Fuse Assembly
12	1	36MA1005	Dash Bracket
13	1	36M01007	Face Plate
14	1	30T35687	Switch 12VDC
		30T35712	Switch 24VDC
15	1	34T38163	Booted Connector
NS	1	36MK1007	Bolt Kit - Dash Bracket

## DRIVELINE PHASING

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 below.



\* For speeds over 2500 RPM contact Muncie for Approval.

For installations with angles in the top and side views use this formula to compute the true joint angle (TJA):

$$TJA = \sqrt{A^2 + B^2}$$

## PTO WITH DIRECT COUPLE HYDRAULIC PUMP INSTALLATION

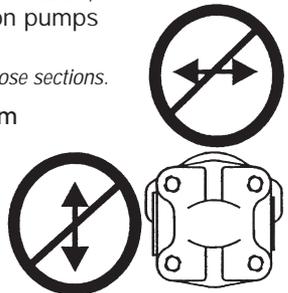
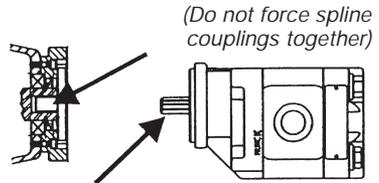
Before bolting the pump to the PTO, place non-seizing compound or grease on the PTO shaft and pump shaft. All Muncie direct mount PTOs are supplied with the appropriate grease. Reusing an existing pump will require inspection of the pump splines. Clean any old grease from pump prior to installation. It is not recommended to mount hydraulic pumps weighing over 40 lbs.\*, exceeding 12" in length, or for tandem or multiple section pumps to the RS4S Series PTO.

\*Weight includes fittings, oil, and unsupported hose sections.

This requirement does not take into account the system duty cycles, vehicle vibrations, application, terrain, and other external influences. We recommend direct mounted components of any size or weight be driveline driven when these conditions are extreme or unknown.

This recommendation is based upon our experiences to date. Any failure as a result of damage caused by unsupported weight attached to the PTO will affect any warranty considerations.

Most Muncie direct mount flanges offer multiple mounting bolt holes which allow the flange to be rotated to multiple locations on the PTO for improved port location or clearance. Be sure to torque the cap screw to 25 ft.lb., and it is advisable to use a thread locker to secure the cap screws (Loctite 241 or NyLoc or equivalent).



# PTO SHIFTING PROCEDURE & PRECAUTIONS

## Mechanical Transmission Power Take-Off Operation - Vehicle Stationary

### WARNING

#### STATIONARY OPERATION REQUIREMENTS:

- **PARKING BRAKE MUST ALWAYS BE SET**
- **VEHICLE'S WHEELS MUST ALWAYS BE CHOCKED**
- **TRANSMISSION MUST ALWAYS BE IN NEUTRAL**

**An operator must always be in the driver's seat whenever the engine is running and the transmission is in gear, in order to prevent or stop any unexpected movement of the vehicle which may cause injuries to the operator or others in the vicinity.**

- A. A power take-off is, and should be, operated as an integral part of the main transmission.
- B. Before shifting the Power Take-Off into or out of gear disengage the clutch and wait for transmission or PTO gears to stop rotating.

## PTO MAINTENANCE

The Power Take-Off, being an integral part of the transmission, should be serviced at the same intervals as the transmission. Transmission fluid changes should follow the interval recommended by the vehicle manufacturer for **severe** service. Transmission oil level is important. Checking for PTO leaks and checking the transmission oil level should be done on a regular basis.

The Power Take-Off is also part of a *system*. The PTO system may include the activation control parts, a driveshaft, or hydraulic pump. This PTO system requires periodic checks and service. Typically the interval for maintenance checks of the PTO system depends on the application of the system. Every time the chassis is lubricated or a mechanic is under the vehicle the PTO system should be checked and serviced. For severe duty PTO system applications, it is recommended that the system be checked for service every 100 hours of use (this guideline can be adjusted based on past service history once you have it established). Service should include checking and lubricating direct mount pump shaft connections. If pitting, galling, cracking, or deformation of the gears or splines has occurred, then the PTO needs to be rebuilt or replaced.

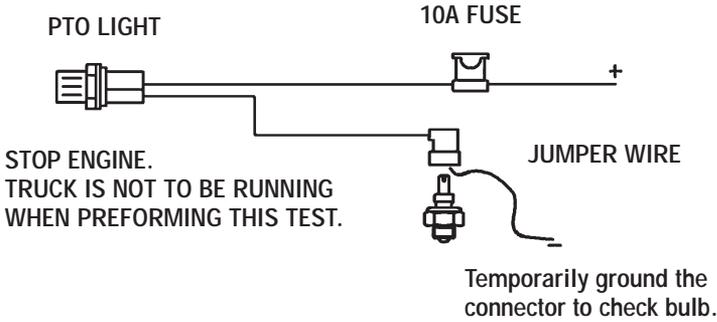
Within the first week of use, recheck the installation of the PTO. Check for leaks and loose mounting hardware (studs, cap screws, nuts). At regular maintenance intervals, check adjustments and lubricate moving parts, tighten and repair the connections, mounting hardware, cable or lever linkages.

Pumps that are mounted directly to the PTO output require the application of an anti-seize or a high temperature, high pressure grease. (Muncie PTOs are initially supplied with the required grease.) The purpose of this grease is to help make the PTO easier to service and to reduce the effects of fretting corrosion on the mating PTO and pump shafts. PTO applications under severe duty cycles and/or high torque requirements may require servicing this shaft connection by periodically re-greasing the shafts. Vehicles with low speed diesel engines are also severe applications due to the vibrations inherent in these vehicles. Fretting corrosion cannot be stopped by applying grease, the grease is only a deterrent.

# INDICATOR LIGHT CHECK

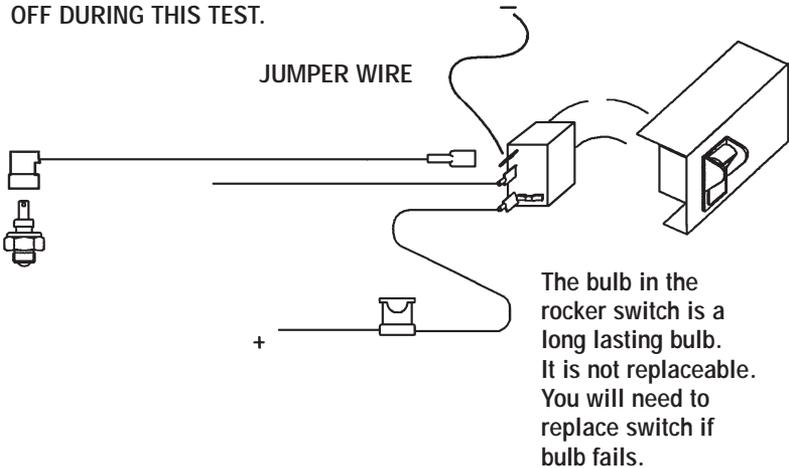


Procedure for checking the PTO Indicator Switch



STOP ENGINE.  
TRUCK IS NOT TO BE RUNNING  
WHEN PREFORMING THIS TEST.  
ROCKER SWITCH IS TO BE TURNED  
OFF DURING THIS TEST.

Temporarily ground the  
terminal to check bulb.



## POWER TAKE-OFF WARRANTY

The Muncie Power Take-Off is warranted to be free of defects in material or workmanship and to meet Muncie's standard written specifications at the time of sale. Muncie's obligation and liability under this warranty is expressly limited to repairing or replacing, at Muncie's option, within one year after date of original installation any defective part or parts or any product not meeting the specifications.

**THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. MUNCIE MAKES NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PARTICULAR PURPOSE. MUNCIE'S OBLIGATION UNDER THIS WARRANTY SHALL NOT INCLUDE ANY TRANSPORTATION CHARGES OR COSTS OF INSTALLATION OR ANY LIABILITY FOR DIRECT, INDIRECT SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OR DELAY. THE REMEDIES SET FORTH HEREIN ARE EXCLUSIVE, AND MUNCIE'S LIABILITY WITH RESPECT TO ANY CONTRACT OR SALE OR ANYTHING DONE IN CONNECTION THEREWITH, WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY, OR OTHERWISE, SHALL NOT, EXCEPT AS EXPRESSLY PROVIDED HEREIN, EXCEED THE PRICE OF THE PRODUCT OR PART ON WHICH SUCH LIABILITY IS BASED.**

If requested by Muncie, products or parts for which a warranty claim is made are to be returned transportation prepaid to a Muncie Service Center. Any installation or use not in accordance with catalogue or package instructions, other improper use, operation beyond capacity, substitution of parts not approved by Muncie, use with equipment other than the equipment on which the Power Take-Off is first installed, or alteration or repair made to the Power Take-Off other than at a Muncie Service Center shall void this warranty. No employee or representative of Muncie is authorized to change this warranty in any way or to grant any other warranty.



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