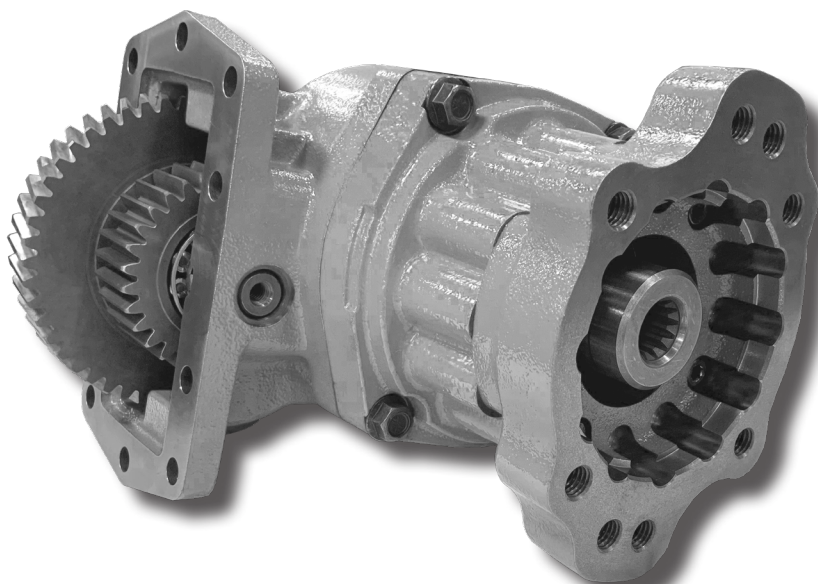




# H380 SERIES

**[INSTALLATION & OWNERS' MANUAL]**



[www.HeavyMotions.com](http://www.HeavyMotions.com)

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# SAFETY INFORMATION



**Please read this manual carefully until you understand it before installing or using the Power Take Off (PTO).**

- The PTO must be properly matched with the vehicle's transmission and the driven equipment, or it could cause severe damage to the equipment and/or may cause serious personal injury to the operator and others nearby.
- During extreme cold weather, 32°F (0° C) , the viscosity of the transmission oil is very high. This can cause a disengaged PTO to momentarily transmit an unexpected output shaft rotation which could cause unexpected movement of the driven equipment, resulting in equipment damage, serious personal injury, or death. To avoid this, the driven equipment must have separate controls, it must be left in the disengaged position when not in operation, and it must not be operated until the transmission is allowed to warm up.
- Exposed rotating driving shafts must have some form of guard to ensure safety.
- DO NOT go under the vehicle when the engine is running.
- DO NOT work on or near an exposed rotating shaft when the engine is running.
- DO NOT use worn-out or damaged components.
- DO NOT work alone while installing, repairing, or maintaining any equipment under the vehicle.
- Follow the proper procedure and use the proper tools and safety equipment.
- The operator should receive proper training regarding the PTO operation.



# SAFETY LABELS

 <b>DANGER</b>  <b>PELIGRO</b>
<p><b>NEVER</b> GET UNDER THIS TRUCK IF THE ENGINE IS RUNNING!</p> <p><b>¡NUNCA</b> SE META DEBAJO DEL CAMIÓN CUANDO EL MOTOR ESTÉ EN MARCHA!</p>  <p><b>HEAVY MOTIONS</b></p> <p style="text-align: right;"><b>YOU MAY BE INJURED OR KILLED. PUEDE LASTIMARSE O MORIR.</b></p>

**Frame rail label:** Two frame rail labels are supplied. Place on the truck frame rails, one on each side, in a place where it could be easily seen by anyone going under the truck near the PTO.

 <b>WARNING</b>	 <b>ADVERTENCIA</b>
<p>THIS VEHICLE IS EQUIPPED WITH A <b>POWER TAKE OFF</b></p> <p>READ AND FOLLOW HEAVY MOTIONS PTO OWNER'S MANUAL BEFORE USING THIS MACHINE</p> <p>DEATH OR SERIOUS INJURY COULD RESULT FROM FAILURE TO FOLLOW OPERATING INSTRUCTIONS.</p> <p><b>HEAVY MOTIONS</b></p>	<p>ESTE VEHICULO ESTA EQUIPADO CON UNA <b>TOMA DE FUERZA</b></p> <p>IMPORTANTE. FAVOR DE LEER Y CONSULTAR EL MANUAL DE OPERACION ANTES DE OPERAR Y MANEJAR ESTA UNIDAD.</p> <p>EL NO SEGUIR LAS INSTRUCCIONES DE OPERACION PUEDE RESULTAR EN HERIDAS PERSONALES O EN LA MUERTE.</p>

**PTO Control Label:**  
Place close to the PTO cabin control valve or device.

 <b>WARNING</b>	 <b>ADVERTENCIA</b>
<p><b>NEVER</b> GET UNDER THIS TRUCK IF THE ENGINE IS RUNNING!  <b>¡NUNCA</b> SE META DEBAJO DEL CAMIÓN CUANDO EL MOTOR ESTÉ EN MARCHA!  <small>Hands, clothes, hair etc. can get caught on spinning shafts and U-joints. Cuidese las manos, la ropa, el pelo etc. cuando la flecha cardán está girando.</small></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>Está en contra de leyes federales intentar arreglar el equipo manejado por la toma de fuerza cuando el motor está enmarcha. En todas circunstancias sin excepción, apague el motor y ponga las llaves en su bolsillo. (OSHA 1910.147)</p>	
<p><b>HOW TO USE THE POWER TAKE-OFF (PTO)</b></p> <p><b>STATIONARY APPLICATIONS:</b> CHOCK WHEELS BEFORE ENGAGING PTO</p> <p><b>Manual Shift PTOs (including Air Shift)</b>  <b>Manual Transmissions</b>          1. Push in clutch pedal.          2. Shift transmission into neutral.          3. Engage PTO.          4. Let clutch pedal out.</p> <p><b>Power Shift PTOs Manual or Automatic Transmissions</b>          1. Let engine idle.          2. Engage PTO with switch.          3. Resume operating speed.</p> <p><b>Manual Shift PTOs (including Air Shift)</b>  <b>Automatic Transmissions</b>          1. Let engine idle.          2. Engage PTO with switch.          3. Resume operating speed.</p> <p><b>HEAVY MOTIONS</b></p>	<p><b>COMO USAR LA TOMA DE FUERZA</b></p> <p><b>APLICACIONES ESTACIONARIAS BLOQUEAR LAS LLANTAS ANTES DE ACTIVAR LA TOMA DE FUERZA</b></p> <p><b>Tomas de fuerza de activación manual (incluye activación neumática)</b>  <b>Transmisiones estándares/ Transmisiones estándar</b>          1. Pise el embrague          2. Cambie la transmisión a neutral          3. Activa la toma de fuerza          4. Desembragar</p> <p><b>Transmisiones automáticas</b>          1. Prende el motor. No aumenta velocidad o RPM          2. Frene mientras está sentado en la silla del conductor          3. Cambia la transmisión a marcha (cualquier velocidad)          4. Activa la toma de fuerza          5. Cambia la transmisión a neutral o aparcamiento  <b>Tomas de fuerza de activación con embrague</b>  <b>Transmisiones estándares o automáticas</b>          1. Prende el motor          No aumenta velocidad o RPM          2. Activa la toma de fuerza con el interruptor          3. Aumenta las RPM a la velocidad de operación deseada</p> <p style="text-align: right;"><b>YOU MAY BE INJURED OR KILLED. PUEDE LASTIMARSE O MORIR</b></p> 

**Visor Label:**  
Place on the visor near the driver.



# PTO INSTALLATION

The installation shown in this manual is for the Left Side (street side) of the transmission.

\*Note: Always wear appropriate personal protective equipment during these procedures.

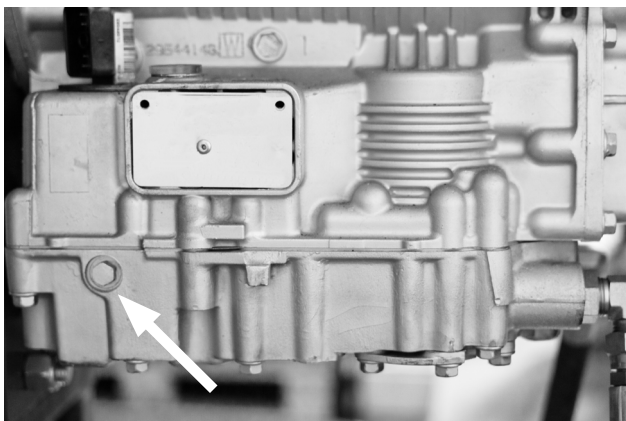
1. Install the elbow fitting and the pressure switch into the valve and cap assembly. Torque at 11 ft-lbs.



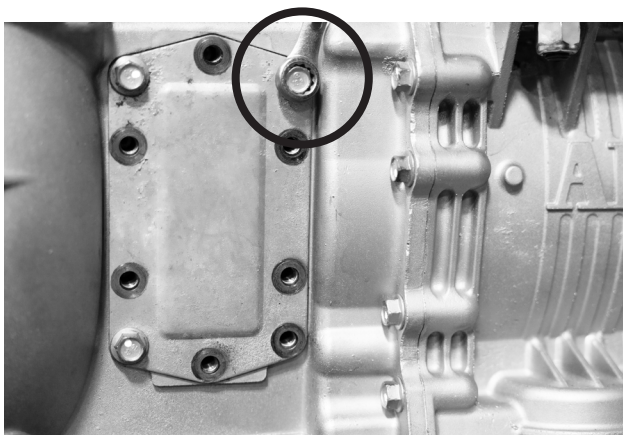
**Elbow**



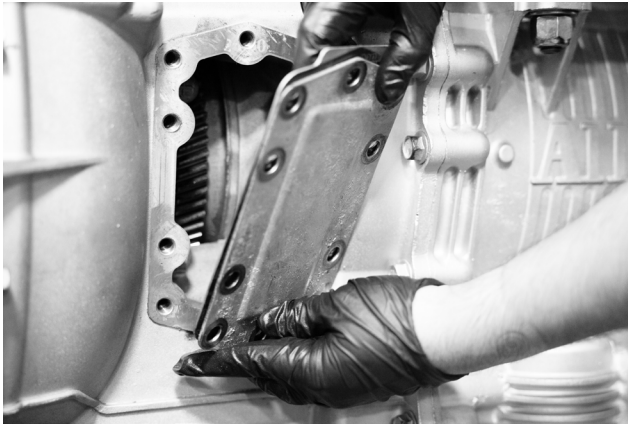
**Pressure Switch**



2. Remove the bottom transmission plug and drain the oil for the transmission.

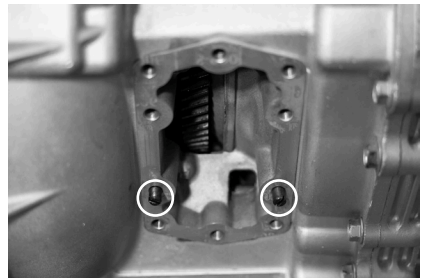


3. Remove the PTO opening cover plate from the transmission. Use a 15 mm socket.

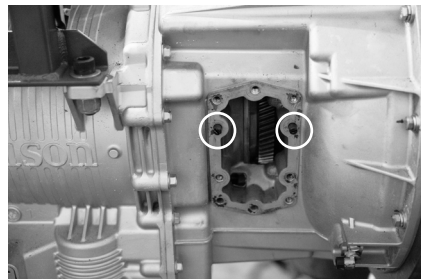


4. After removing the cover plate gasket, clean the surface of the PTO opening. Discard the cover plate gasket.
- 

5. Using a screwdriver, install and tighten the pilot screws in the locations shown.



Left Side Installation



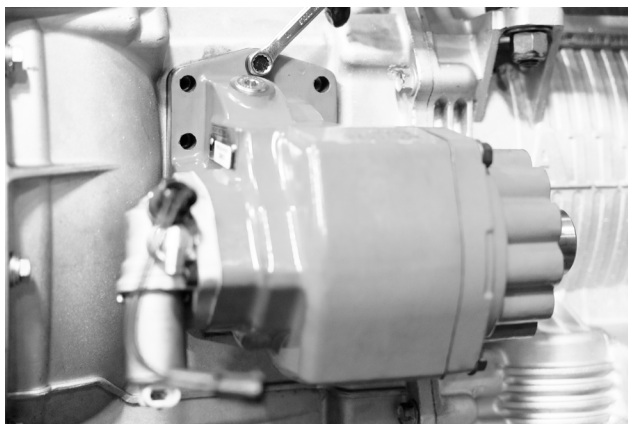
Right Side Installation



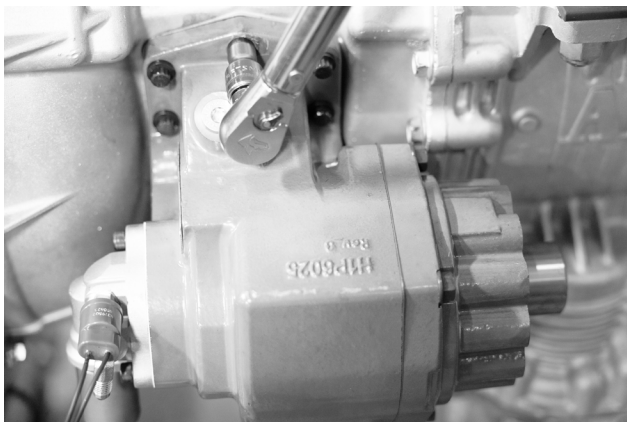
**\*Note:** Do not use gasket sealant, they're incompatible with automatic transmission fluid, they will create an uneven surface for the PTO.

**\*Note:** Use only the gasket in the provided installation kit. Any other gasket may compromise the backlash and seal between the PTO and transmission, and will create an uneven surface for the PTO.

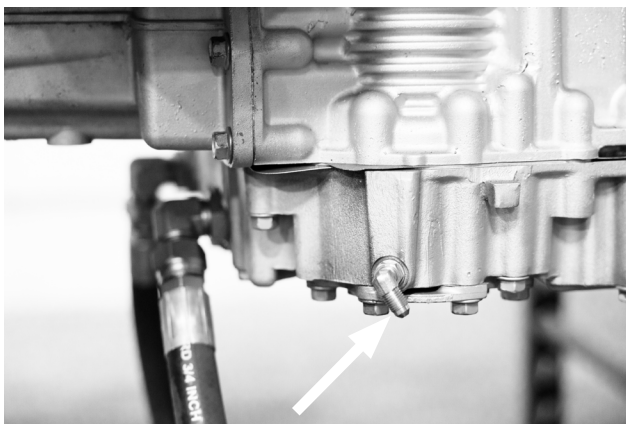
6. Install a new gasket making sure that the ribbed surface faces away from the transmission.
- 



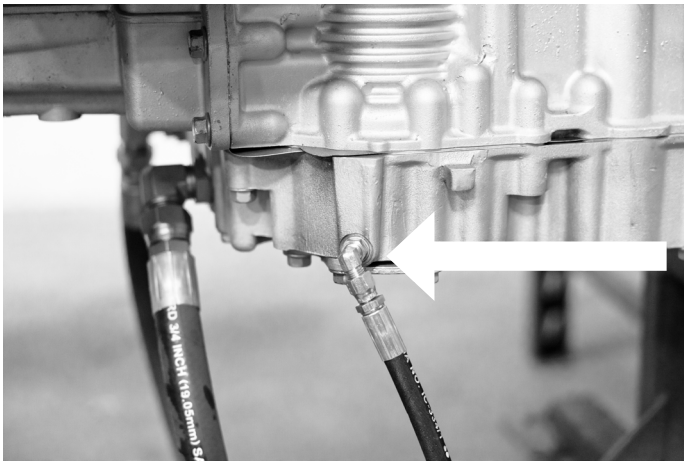
7. Install and hold the PTO with all 8 mounting cap screws. Install hand tight.



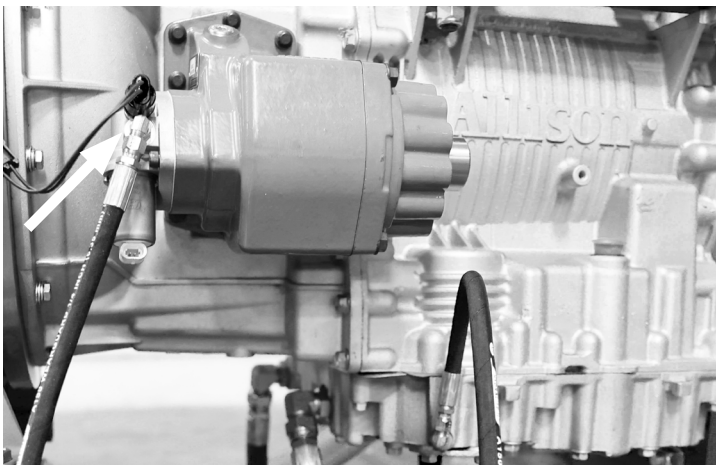
8. Torque to 45 ft-lbs. All 8 mounting cap screws in a cross pattern.
- 



9. Install the elbow fitting to the high pressure supply on the transmission and torque to 11 ft-lbs.

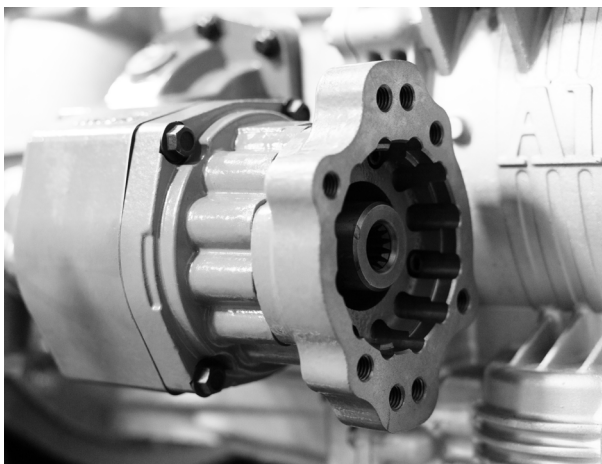


10. Connect the hydraulic hose to the fitting installed in the high pressure supply on the transmission.



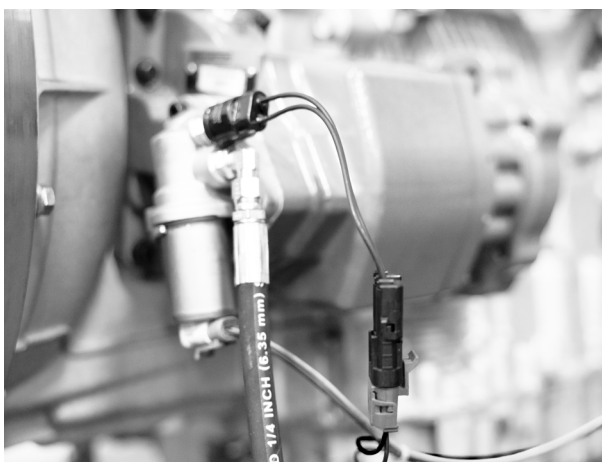
11. Connect the other end of the hydraulic hose to the fitting installed on the PTO cap assembly.





**\*Note:** It is important to consider the size/weight of the pump that will be used. See page 17 for more information.

12. If supplied, install, and align the pump flange and torque to 26 ft-lbs. in a cross-pattern.



**\*Note:** Do not use dielectric grease on electrical connections.

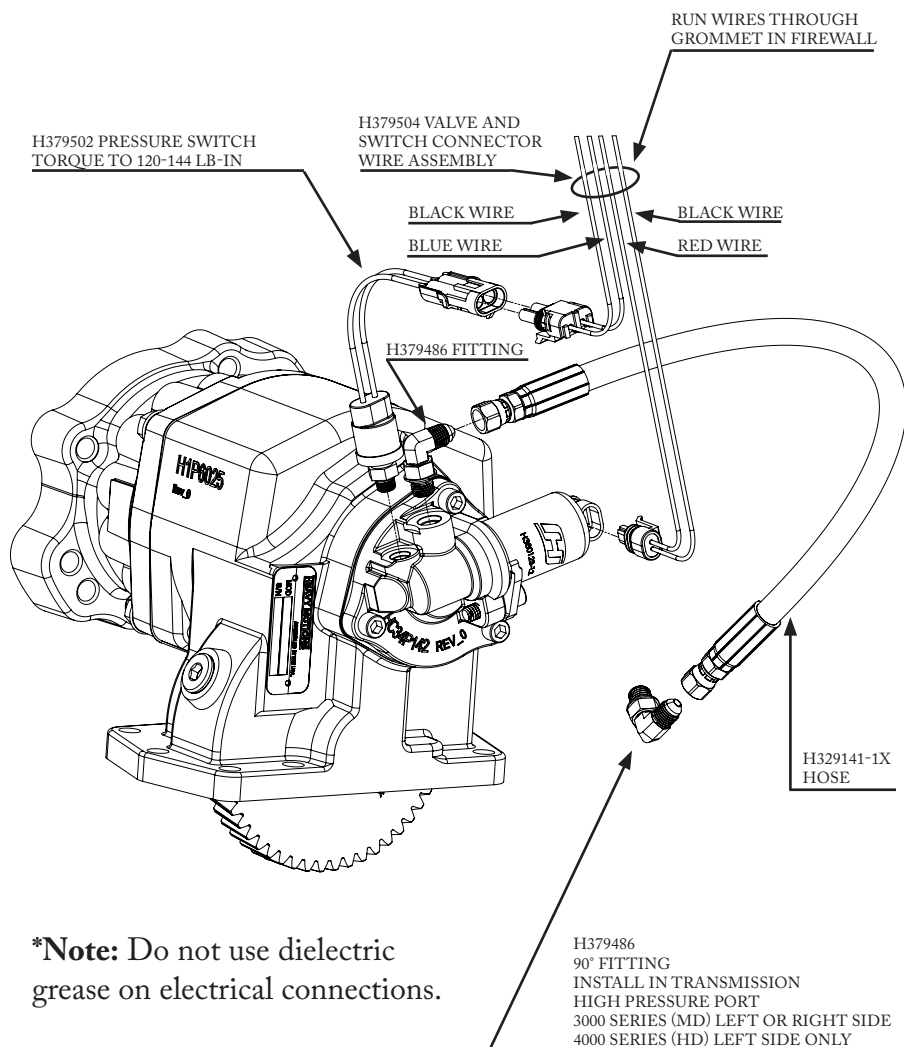
13. Install the control harness between the PTO solenoid valve and pressure switch, and the cabin control switch as shown in page 12.

14. Refill the transmission with new clean oil up to the proper level.
15. Break-in the PTO by engaging it as described in the “PTO Operation” section on page 18, and letting it run for 5 minutes without engaging the pump. Check for excessive noise or vibration, leaks, loose fittings or cap screws.

**DO NOT FORGET TO REFILL THE  
TRANSMISSION WITH CLEAN OIL UP  
TO THE PROPER LEVEL.**

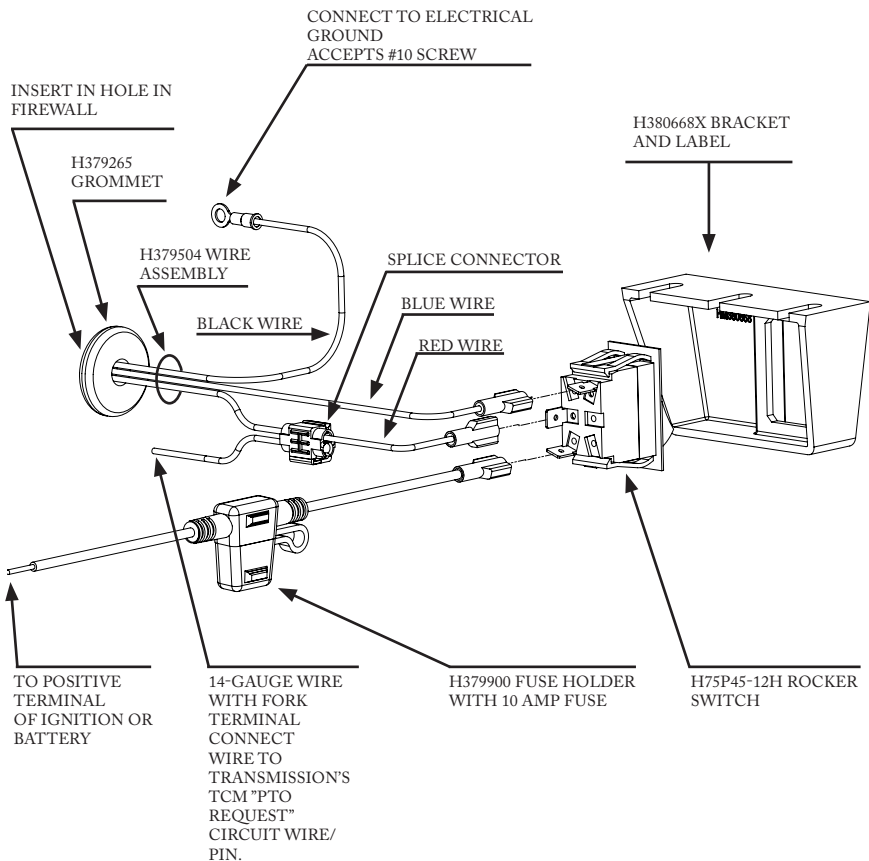


# SHIFTER INSTALLATION



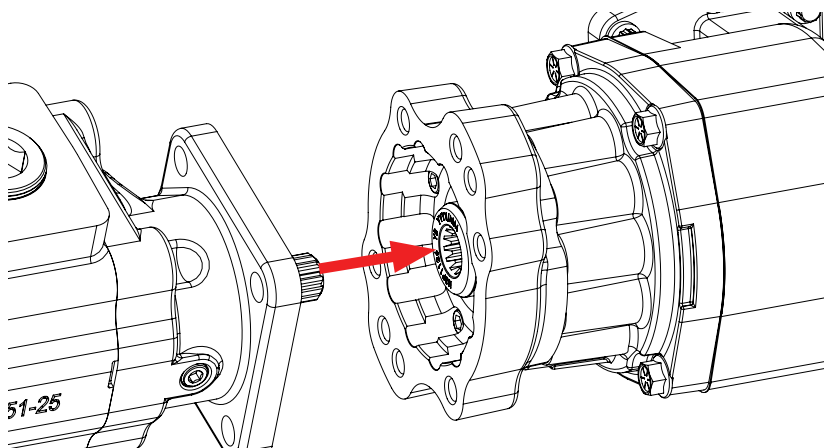
**\*Note:** Do not use dielectric grease on electrical connections.

# CABIN SWITCH INSTALLATION

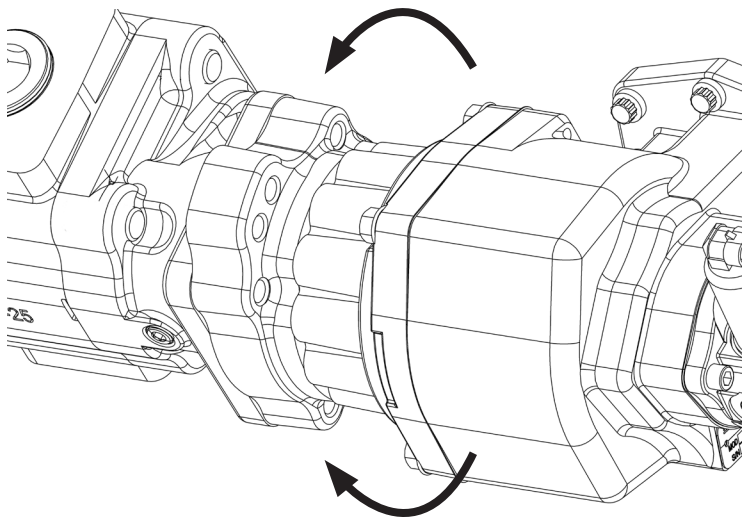


# PTO AND PUMP DRIVEN UNIT ASSEMBLY

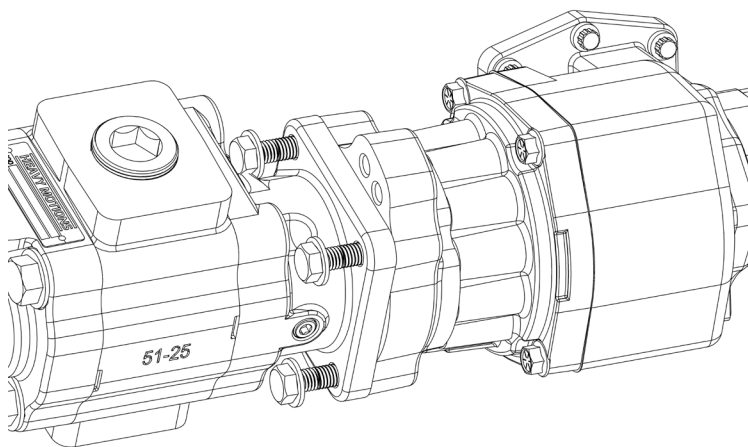
1. Grease the inner splined surfaces of the PTO output shaft with anti-fretting, high temperature, high pressure grease.
2. Install the pump into the PTO. After making the pump and the PTO splines match, insert the pump ensuring that the contact with the flange opening is good.



3. Rotate the pump so that the holes for the bolts on the pump flange and on the PTO flange are aligned.



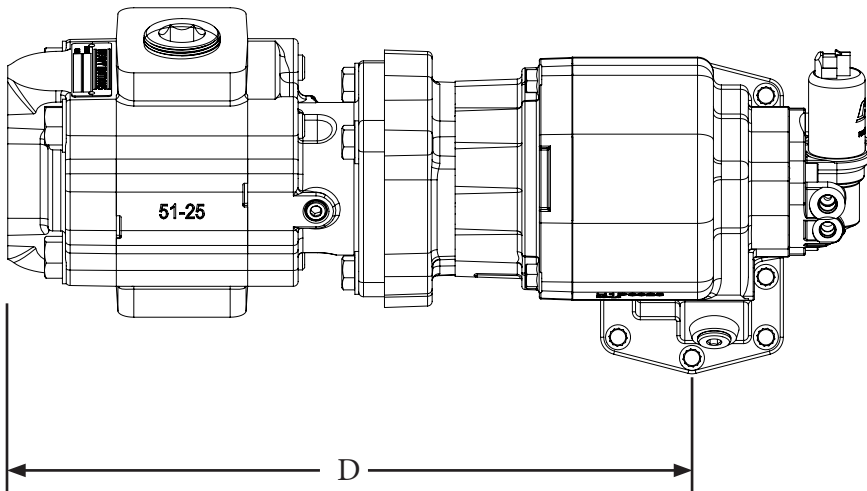
4. Apply a drop of Loctite 290 on each bolt, install the washers and bolts.



5. **Tighten the bolts in opposite angles, not in sequence.** Torque bolts to 60-70 lbs.ft (82 - 94N.m).

**Important:** Use a pump bracket on the rear of the pump to help support the weight of the pump if:

- The combined weight of the pump, its fittings, and hoses exceeds 40 lbs (18kg).
- The distance between the centerline of the PTO and the end of the pump is 18" (45cm) or longer (see figure below).



The bracket must be attached to at least 2 transmission bolt locations and at least 2 pump locations. Make sure that the bracket does not preload the pump/PTO mounting.

# PTO MAINTENANCE

To ensure a safe and trouble free operation, the owner and/or operator must perform the following periodic maintenance:

## **Daily:**

Look for hydraulic leaks, and make sure the mechanisms are working properly. Perform repairs as required.

## **Monthly:**

- Tighten all hydraulic lines and hardware to the proper torque.
- Direct Mount: Ensure that the PTO and Pump shaft splines are properly greased. Use anti-fretting, high temperature, high pressure grease only.
- Remote Mount: Check the PTO driveline components for an out of phase condition, excessive vibration, excessive u-joint angles or worn parts. Perform repairs as required.

# PTO OPERATION

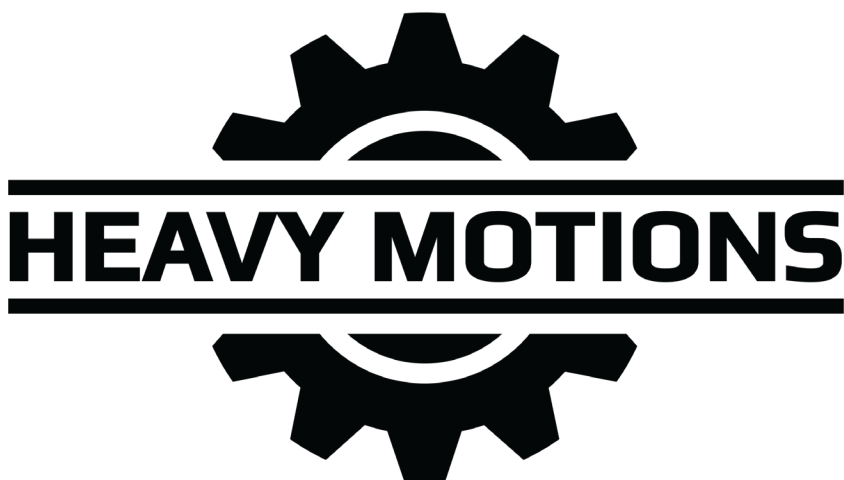
1. Let the engine idle
2. Engage the PTO using the dash mounted valve. The engine must be at idle or under 1000 RPM when the PTO is engaged. See the transmission manual for special procedures.

**NOTE:** Expect a slight increase in PTO noise level as oil thins out at operating temperature.

# COLD WEATHER OPERATION

During extreme cold weather, 32°F (0° C) , the viscosity of the transmission oil is very high. This can cause a disengaged PTO to momentarily transmit an unexpected output shaft rotation which could cause unexpected movement of the driven equipment, resulting in equipment damage, serious personal injury, or death. To avoid this, the driven equipment must have separate controls, it must be left in the disengaged position when not in operation, and it must not be operated until the transmission is allowed to warm up.

## This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



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