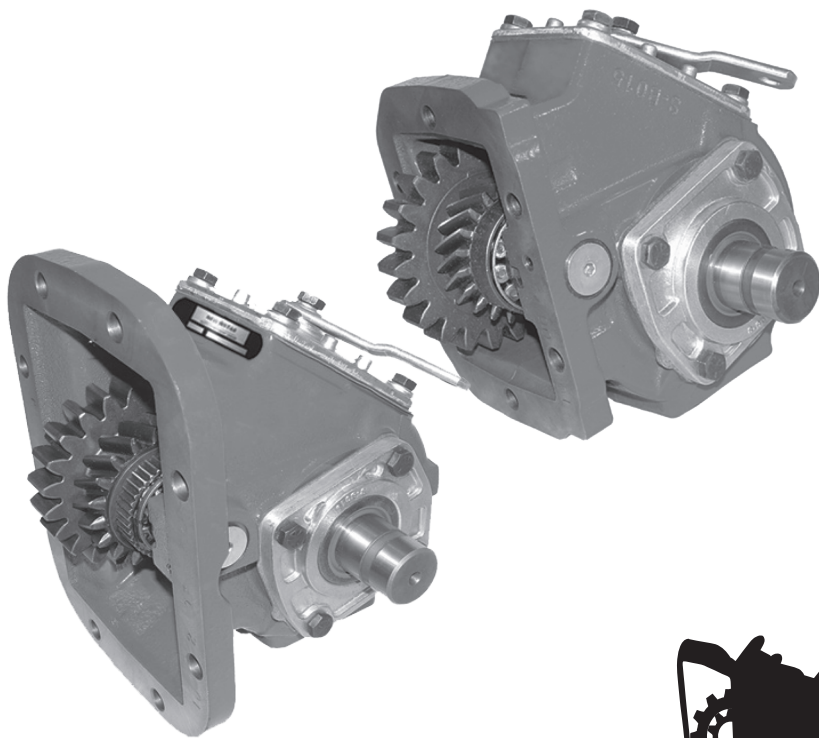


INSTALLATION INSTRUCTIONS & OWNER'S MANUAL

625, 825 & 6LS PTOs

(FORMERLY NS442 & NS489)



PTO Operation & Warning labels

Always wear safety glasses. Read entire manual before installation.

1. If you are mounting any kind of Drive line (Driveshaft) to the PTO output the following labels need to be installed. With your PTO there are 2 Warning labels that need to be mounted to the outside truck frame, where they will be visible to the operator.



2. Place the caution label within the cab of the vehicle and in easy view of the operator. It should be located near the PTO control.
3. Install PTO operating instructions label on the visor. Do not put this label over the Air Bag warning label if so equipped.



POWER TAKE OFF OPERATION
MECHANICALLY SHIFTED P.T.O.'S

I MANUALLY SHIFTED TRANS.

- 1) STOP THE VEHICLE, ENGAGE THE VEHICLE BRAKES.
(DO NOT ENGAGE THE PARKING BRAKE AT THIS TIME).
- 2) DISENGAGE CLUTCH AND SHIFT TRANSMISSION TO NEUTRAL. WAIT FOR THE TRANSMISSION OR P.T.O. GEARS TO STOP ROTATING.
- 3) SHIFT THE POWER TAKE OFF.
- 4) FOR A STATIONARY OPERATION LEAVE THE TRANSMISSION IN NEUTRAL.
- 5) RELEASE THE PARKING BRAKE, ENGAGE CLUTCH.
- 6) RELEASE VEHICLE BRAKES.

II AUTOMATIC TRANSMISSION

- 1) STOP THE VEHICLE AND ENGAGE THE VEHICLE BRAKES.
(DO NOT ENGAGE THE PARKING BRAKE AT THIS TIME)
- 2) SHIFT TRANSMISSION LEVER INTO ANY OF THE DRIVE POSITIONS. (THIS WILL STOP THE TRANSMISSION GEARS FROM TURNING).
- 3) SHIFT THE POWER TAKE OFF.
- 4) FOR A STATIONARY OPERATION LEAVE THE TRANSMISSION GEARS ROTATING AHEAD.
- 5) FOR A STATIONARY OPERATION, APPLY THE PARKING BRAKE.
- 6) RELEASE VEHICLE BRAKES.



IMPORTANT

This vehicle is equipped with a **POWER TAKE - OFF**

- READ OWNERS MANUAL LOCATED IN THE GLOVE BOX.

- SEE SUN VISOR FOR OPERATING INSTRUCTIONS.

LOCATE (NEAR P.T.O. CONTROL)

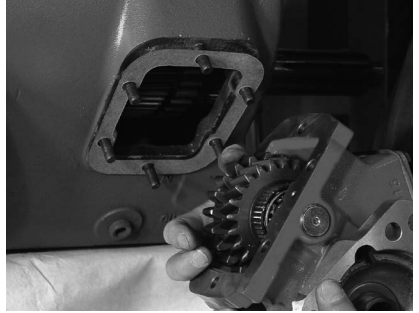
Mounting the PTO on the Transmission for 625 or 825 series Applications

1. Turn Truck off and remove keys for safety.
2. Drain oil from the transmission. If you are working on an Allison automatic you don't need to drain the oil but be prepared for some oil to run out of PTO opening.
3. Remove PTO cover plate from transmission. Discard the cover plate and cover plate gasket. Clean the aperture pad using a putty knife or gasket remover.



NOTE: Stuff a rag in the aperture opening to prevent dirt from entering the transmission while you are cleaning it.

4. Check to make sure PTO driver gear and the transmission gear that mate up are in the right location.
5. Rock the gears in the transmission to get a feel for the amount of backlash already in the transmission PTO driver gear.
6. Install studs furnished, in their proper location. Make sure to put the thread lock end of stud into transmission. This will help seal the holes that go all the way through the transmission housing.

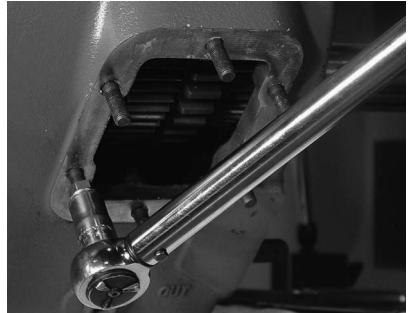


NOTE: Avoid contact of Permatex with automatic transmission fluid in automatic. Always Check to be sure that the studs do not interfere with transmission gears.



Mounting the PTO on the Transmission (Continued) for 625 or 825 series Applications

7. Tighten studs securely and torque to
17-19ft. lbs. (2.35-2.63 kg meters) for 6 bolt
19-21ft. lbs. (2.63-2.90 kg meters) for 8 bolt.

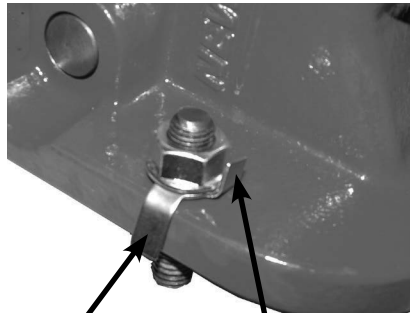


8. Place the correct number of gaskets over studs. Do not use Permatex between gaskets. You may need to add or subtract gaskets later in order to obtain proper backlash.



NOTE:

- * When mounting a PTO use gaskets between all mounting surfaces.
 - * Do not stack more than 3 gaskets together.
 - * Usually one thick gasket .020 (.50mm) will be required.
 - * Remember the lubricant in the transmission also lubricates the PTO. Therefore, at least one gasket must always be used on either side of filler blocks, adapter assemblies or adapter plates. More gaskets may be required when establishing proper backlash.
9. Put lock Tabs over studs and then the nuts. Tighten PTO to the transmission using the following bolt torque.



Stud & Nuts 6 bolt 35-40ft. lbs
Stud & Nuts 8 bolt 55-60ft. lbs
Cap screw bolts 6 bolt 30-35ft. lbs
Cap screw bolts 8 bolt 45-50ft. lbs

Bend down toward
PTO base

Bend Up toward nut

625 & 825 series PTO'S

Checking Backlash

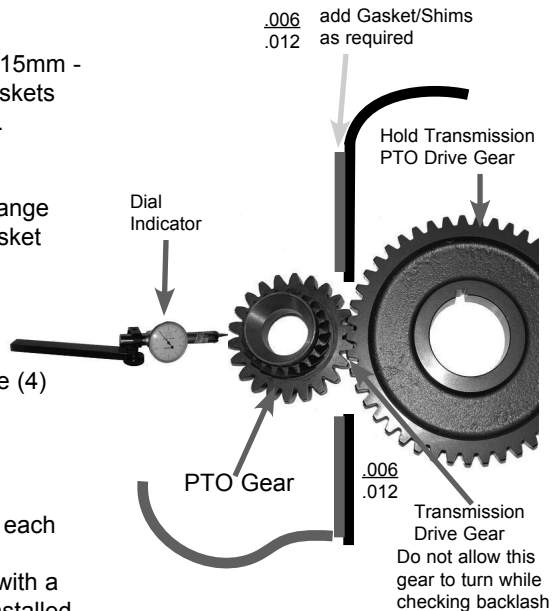
To check for proper backlash on PTO'S with shift cover

1. Remove the PTO shift cover.
2. Mount the dial indicator so that it registers movement of the input gear (driven gear) of the PTO
3. Hold the PTO driver gear in transmission with a screwdriver or bar and rock the PTO input gear (driven gear) back and forth with your hand. Note the total movement on the dial indicator.
4. Establish backlash at $.006'' - .012''$ [$.15\text{mm} - .30\text{mm}$] by adding or subtracting gaskets between the PTO and transmission.

General rule: A $.010''$ gasket will change backlash approx. $.006''$. A $.020''$ gasket changes backlash approx. $.012''$.

5. Replace the shift cover and retorque (4) four capscrews to 16-20 ft. lbs.

NOTE: Apply a drop of Loctite 290 on each capscrew before reinstalling. Capscrews that are furnished with a conversion kit and are being installed for the first time do not require the drop of Loctite.



Lubricant In Transmission/Inspect Installation

1. Remove the filler plug from the transmission and add recommended transmission lubricant to the level prescribed by the transmission or truck manufacturer

NOTE: If the PTO is mounted below oil level, additional lubricant will be required.

2. Run the PTO for 5-10 minutes and check for oil leaks and noise.
3. Should a quiet PTO become noisy after the universal joint connection is made, check the PTO driveline components for an out of phase condition, excessive or unequal joint angles or possibly worn parts in the driven accessory.
4. Re-torque all mounting bolts, nuts, cap screws and set up inspection routine of the PTO driveline components and the driven auxiliary equipment.

NOTE: Anticipate slight increase in PTO noise level as oil thins out at operating temperatures.

PTO Installation Tips for Automatic Transmissions

The procedure for installing a PTO on an automatic is basically the same as for a mechanical transmission. Power Take-Offs for automatic transmissions are assembled with a special drilled input shaft which allows the input gear to be pressure lubricated during operation. After installing a PTO on an automatic transmission, connect pressure lubrication hose to the PTO and the transmission per installation instructions.



WARNING: Use only wire control with PTO made for wire cable control. If lever is desired, order PTO for lever control. The internal shifting mechanism for wire is not designed for heavy forces usually encountered with lever control linkage.

Driveline (Drive Shafts)

An auxiliary power shaft transmits torque from the power source to the driven accessory. The shaft must be capable of transmitting the maximum torque and R.P.M. required of the accessory, plus any shock loads that develop.

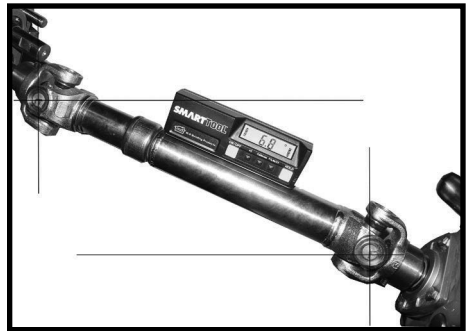
An auxiliary power shaft operates through constantly relative angles between the power source and the driven accessory, therefore, the length of the auxiliary power shaft must be capable of changing while transmitting torque. This length change, commonly called "slip movement", is caused by movement of the power train due to torque reactions and chassis deflections.

Joint operating angles are very important in an auxiliary power joint application. In many cases, the longevity of a joint is dependent on the operating angles. (See chart below)

Drive Shaft Universal Joint Operating Angles			
PROP. SHAFT R.P.M.	MAX. NORMAL OPERATING ANGLE	PROP. SHAFT R.P.M.	MAX. NORMAL OPERATING ANGLE
3000	5° 50'	1500	11° 30'
2500	7° 00'	1000	11° 30'
2000	8° 40'	500	11° 30'

Caution: A Driveline that has excessive angles, is out of phase or poorly balanced. Could cause premature damage to the PTO output and driven equipment.

A poorly designed Driveline will void all warranties.

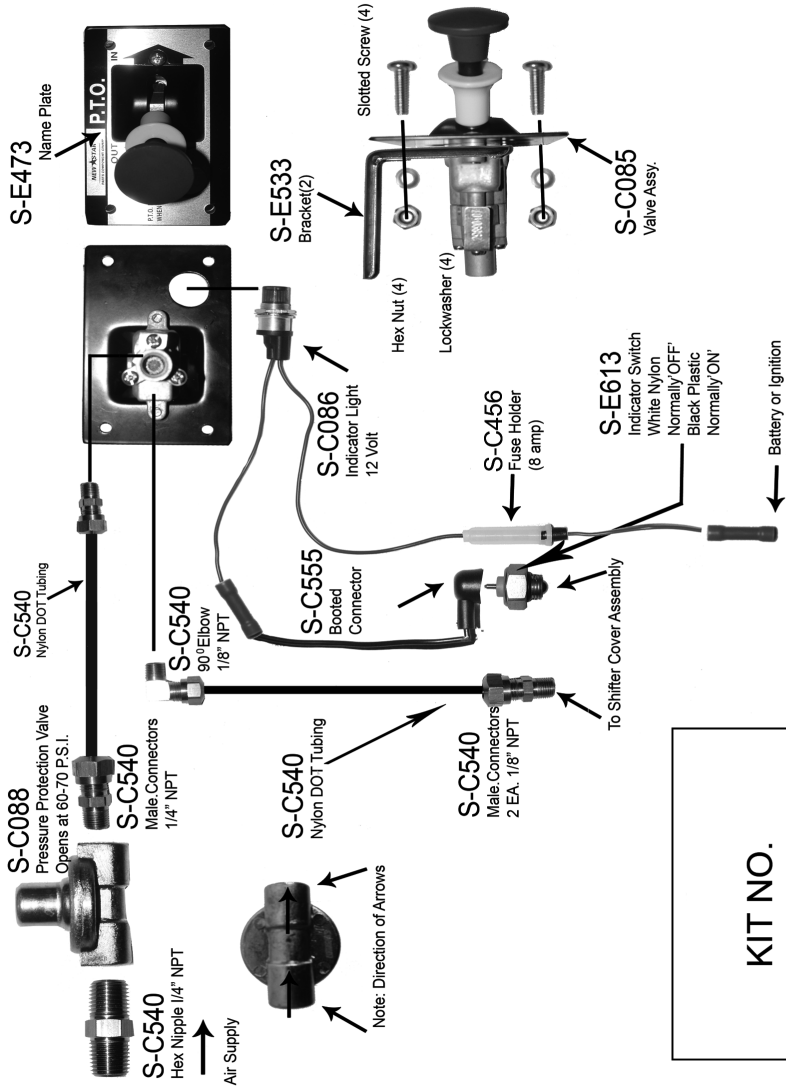


Determining Drive Shaft Type

1. Solid or tubular?
 - a. In applications requiring more than 1000 R.P.M. or where the application necessitates a highly balanced auxiliary power shaft, a tubular shaft should be used.
 - b. Solid drive shaft's or auxiliary power joints are designed for 1000 or less R.P.M. intermittent service such as:

- Driving small hydraulic pumps
- Driving winches
- Driving low speed product pumps

AIR SHIFT INSTALLATION DIAGRAM FOR 625 and 825 PTO'S (FORMERLY NS442 and NS489)



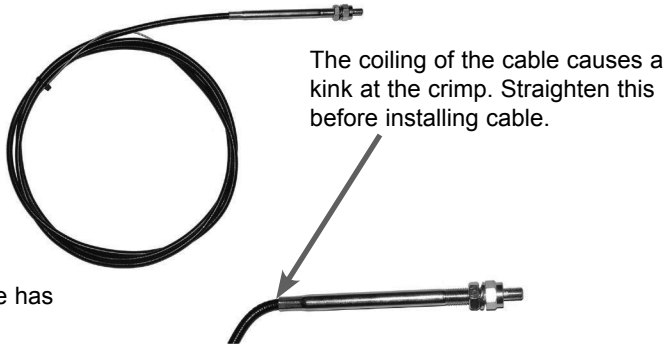
**KIT NO.
S-C581**

CAUTION: WHEN INSTALLING NYLON TUBING AVOID SHARP ANGLES, EXHAUST AND MANIFOLD SYSTEMS.
IMPORTANT: WHEN THIS INSTALLATION IS USED ON VEHICLES WITH AUTOMATIC TRANSMISSIONS THE P.T.O. DRIVE GEAR MUST BE STOPPED BEFORE SHIFTING.
NOTE: TUBE NUT IS REUSABLE AS LONG AS NYLON TUBING IS NOT REMOVED FROM THE TUBE NUT.

WARNING: CONNECT DIRECTLY TO AIR SUPPLY. DO NOT USE TUBING BETWEEN AIR SUPPLY AND PRESSURE PROTECTION VALVE.

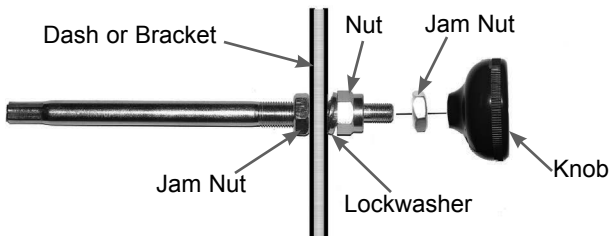
Cable Shift Installation Instruction

Be sure vehicle is not running when installing or adjusting cable control. After removing the cable from shipping liner (being very careful to hold cable so that it cannot uncoil and cause injury), straighten cable at crimp that has resulted from being coiled. Make sure cable has free travel before installing.



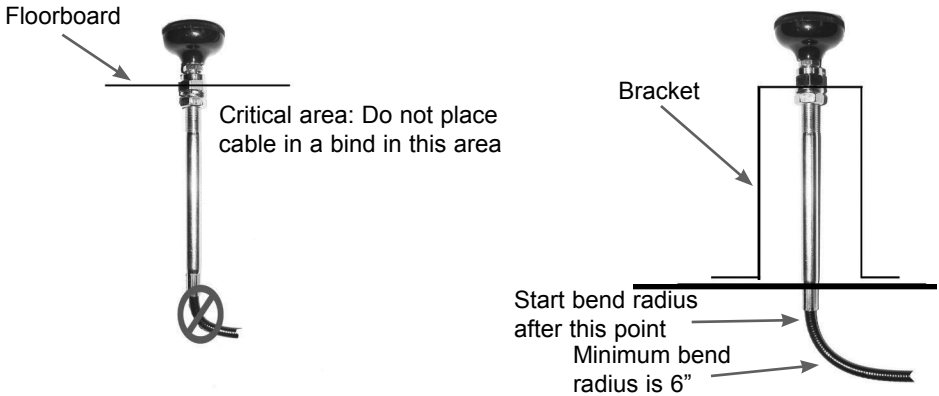
Make sure cable has free travel.

1. Find a suitable location for the control cable and the indicator light. The cable control should be installed so that the operator has easy access to push in and pull out the control without obstruction or interference by other controls or components in the cab.
2. Drill a 1/2" hole in dash or control bracket (not provided).
3. Install the control head through the hole and attach with the lock washer and nuts provided.
4. Knob can be screwed into place, using the jam nut to secure.



5. Route the length of cable through the floorboard or firewall and to the PTO. The cable needs to be routed clear of manifold, exhaust systems, and rotating and moving components. When routing the control cable avoid kinking the cable and do not bend to radius of less than 6".

Cable Shift Installation Instructions (Continued)



6. The lever on the PTO shifter assembly is designed so that it can be moved to allow the cable approach to be from the front or the back of the PTO. This should be determined by the routing method causing the least amount of bends and the shortest cable length.
7. The lever, also must be positioned so that when you pull on the control knob that the PTO engages.
8. To adjust the lever, mark the position of the lever where it's engaged when the cable would pull the lever. Remove the shift cover from the PTO. Remove the locking capscrew from the control lever. Lift the lever from the serrated post. Line up the lever with your mark. Line up the serrated hole and post making sure that the poppet and the shift plate are in their respective positions. Replace the locking capscrew and torque to 18 ft. lb. Reinstall shift cover assembly. Double check the installation by referring back to step 7.



Continuity Check

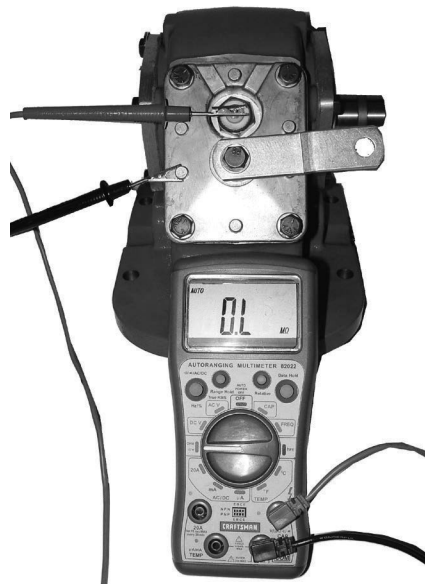
In order to insure that the switch is functioning properly, the following procedure can be used with the unit on a bench, or installed.

1. Use a continuity checker, battery type, either meter or light. Attach one probe to a screw on the indicator switch.
2. With the other probe, make contact with the shifter cover or housing.
3. Actuate shifting device and the meter or light* should be actuated when PTO gear is engaged.
4. Shift unit out of gear and the meter or light* should return to normal.

This test procedure can be used to check wire, lever, and air shifter covers, although an air source would be necessary for the latter.

NOTE: if a meter is not available the light in the switch can be used. A six volt battery is all that is necessary for a power source.

Make sure Indicator Switches in the PTO shifter or housing are torqued to 10-15 lbs. ft.



PTO Shifting Procedure & Precautions

This vehicle is equipped with a **POWER TAKE-OFF**

Shut Engine off before working on Power Take-Off or getting below Vehicle. Consult Operating Instructions before using (See Sun Visor).

Power Take-Off operation vehicle stationary

I. Manual Transmission

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

II. Automatic Transmission with Manual shift PTO (includes Air Shift)

On automatic transmissions, the gears in the transmission turn when the transmission is in neutral, therefore, gear clashing will occur if the Power Take-Off is shifted into gear at this time.

A. With Converter Driven Gear:

1. Shift transmission lever into any of the drive positions (this will transmission gear from turning).
2. Shift Power Take-Off into gear.
3. Shift transmission into neutral (this will start gears turning).

B. With Engine Driven Gear:

1. Shift PTO into gear before starting engine. This procedure should eliminate gear clash.

III. Automatic Transmission with Powershift PTO

Engage PTO with engine at idle speed.

Power Shift PTO'S: Engine must be at idle when PTO is engaged.

See transmission manufacturer's instructions for special procedures.

IMPORTANT: Failure to follow proper shifting or operating sequences will result in premature PTO failure with possible damage to other equipment.



WARNING

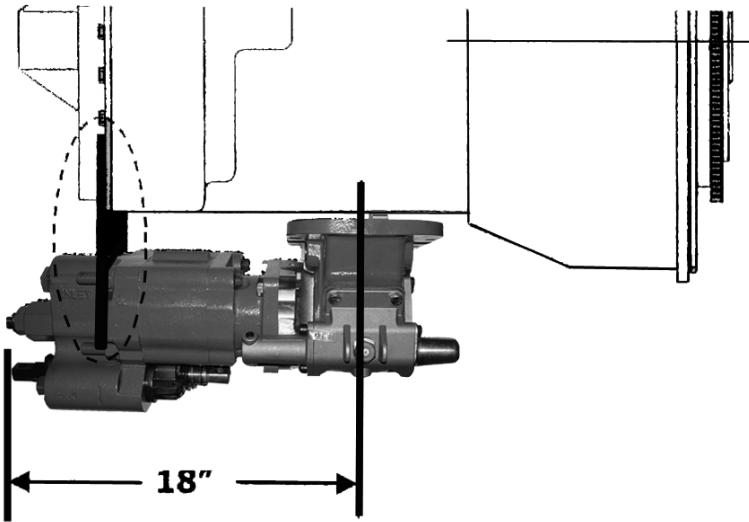
Do not attempt to work on an installed Power Take-Off with the engine running.

Make sure to block any moving or raised device that may injure a person working on or under the truck. A lever or its linkage may be accidentally moved causing movement of the device which could cause injury to a person near the device.

Pump Installation Warning

Always use support brackets to support the pump to the transmission. Brackets should attach at 2 or more bolt locations on the transmission and on the PTO. The PTO warranty will be void if a pump bracket is not used when:

- * The pump weighs 40 pounds or more, or the combined length of the pump and PTO is 18 inches or more from the PTO centerline to the end of the pump.



Due to the normal and sometimes severe torsional vibrations that Power Take-Off units experience, operators should follow a set maintenance schedule for inspections. Failure to service loose bolts or Power Take-Off leaks could result in potential auxiliary Power Take-Off or transmission damage.

Daily: Check all air, hydraulic and working mechanisms before operating P.T.O. Perform maintenance as required.

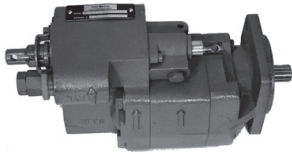
The background of the page is a grayscale image showing two PTO (Power Take-Off) units. The units are shown from a front-three-quarter perspective, highlighting their housing and internal gear mechanisms. The units are labeled with 'S-8011' on their side. The image is slightly faded and serves as a backdrop for the text.

WARRANTY

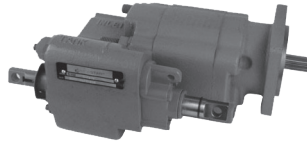
We warrant all new units against defective material or workmanship when used in appropriate applications. WE will NOT extend this warranty where failure or damage was caused by misapplication, accident, or abuse.

Unless otherwise stated, authorization from an authorized Distributor is required to initiate any return for warranty. If our examination shows the unit to be defective, we will replace the unit free of charge. We disclaim liability for labor and/or special or consequential damages of any nature.

Copyright © 2007 All rights reserved.



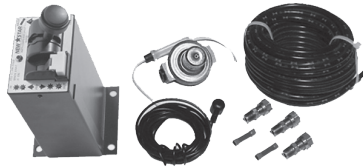
"G" SERIES DIRECT MOUNT



"C" SERIES DIRECT MOUNT



HYDRAULIC TANKS



**COMBINATION PTO/DUMP
PUMP AIR CONTROL KIT**



TAILGATE LOCK KITS



AIR CONTROL KITS