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Owner's Manual Adapter Gears

626, 628, 630, 645 Series



! WARNING — User Responsibility

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Patent Information

The Chelsea® Power Take-Off or its components shipped with this owner's manual may be manufactured under one or more of the following U.S. patents:

7,159,701 7,007,565 6,962,093 1,326,036 60,321,840.7 9494227 B2 Other patents pending.

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Owner's Manual Adapter Gears

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Owner's Manual **Geared Adapters**

Foreword

Since our major objective is to show you how to get additional and more profitable miles from truck, tractor and trailer components, we want to provide you with information on the installation of Chelsea Power Take-Offs.

We all realize that an inadequate transmission will overwork any Power Take-Off in a very short period of time. In addition, a mismatched transmission/PTO combination can result in unsatisfactory performance of the equipment right from the start.

Before you order new trucks, be sure you're getting the right transmission/PTO combination. It is of vital importance for efficient performance to have adequate power. To help you select the proper type, size and design of PTO it is advisable to discuss your specific requirements with Chelsea PTO specialists. They know the products and have easy access to manufacturers of equipment, transmissions and Power Take-Offs. They can inform you about everything you need to know about power, at the right time, before you specify components.



These instructions are for your safety and the safety of the end user. Read them carefully until you understand them.

Safety Information

To prevent injury to yourself and/or damage to the equipment:

- Read carefully all owner's manuals, service manuals, and/or other instructions.
- Always follow proper procedures, and use proper tools and safety equipment.
- Be sure to receive proper training.
- Never work alone while under a vehicle or while repairing or maintaining equipment.
- Always use proper components in applications for which they are approved.
- Be sure to assemble components properly.
- Never use wornout or damaged components.
- Always block any raised or moving device that may injure a person working on or under a vehicle.
- Never operate the controls of the Power Take-Off or other driven equipment from any position that could result in getting caught in the moving machinery.

Proper Matching of PTO

WARNING: A Power Take-Off must be properly matched to the vehicle transmission and to the auxiliary equipment being powered. An improperly matched Power Take-Off could cause severe damage to the vehicle transmission, the auxiliary driveshaft, and/or the auxiliary equipment being powered. Damaged components or equipment could malfunction causing serious personal injury to the vehicle operator or to others nearby.

To avoid personal injury and/or equipment damage:

- Always refer to Chelsea catalogs, literature, and owner's manuals and follow Chelsea recommendations when selecting, installing, repairing, or operating a Power Take-Off.
- Never attempt to use a Power Take-Off not specifically recommended by Chelsea for the vehicle transmission.
- Always match the Power Take-Offs specified output capabilities to the requirements of the equipment to be powered.
- Never use a Power Take-Off whose range of speed could exceed the maximum safe speed of the equipment to be powered.



This symbol warns of possible personal injury.



General Information

Safety Information (Continued)

Cold Weather Operation of Powershift PTOs

WARNING: During extreme cold weather operation [32°F (0°C) and lower], a disengaged Powershift Power Take-Off can momentarily transmit high torque that will cause unexpected output shaft rotation. This is caused by the high viscosity of the transmission oil when it is extremely cold. As slippage occurs between the Power Take-Off clutch plates, the oil will rapidly heat up and the viscous drag will quickly decrease.

The Power Take-Off output shaft rotation could cause unexpected movement of the driven equipment resulting in serious personal injury, death, or equipment damage.

To avoid personal injury or equipment damage:

- Driven equipment must have separate controls.
- The driven equipment must be left in the disengaged position when not in operation.
- Do not operate the driven equipment until the vehicle is allowed to warm up.

Rotating Auxiliary Driveshafts



WARNING



- Rotating auxiliary driveshafts are dangerous. You can snag clothes, skin, hair, hands, etc. This can cause serious injury or death. Exposed rotating driveshafts must be guarded.
- Do not go under the vehicle when the engine is running.
- Do not work on or near an exposed shaft when the engine is running.
- Shut off the engine before working on the Power Take-Off or driven equipment.

Guarding Auxiliary Driveshafts

WARNING: We strongly recommend that a Power Take-Off and a directly mounted pump be used to eliminate the auxiliary driveshaft whenever possible. If an auxiliary driveshaft is used and remains exposed after installation, it is the responsibility of the vehicle designer and PTO installer to install a guard.



This symbol warns of possible personal injury.



General Information

Safety Information (Continued)

Using Set Screws

WARNING: Auxiliary driveshafts may be installed with either recessed or protruding set screws. If you choose a square head set screw, you should be aware that it will protrude above the hub of the yoke and may be a point where clothes, skin, hair, hands, etc. could be snagged. A socket head set screw, which may not protrude above the hub of the yoke, does not permit the same amount of torquing as does a square head set screw. Also, a square head set screw, if used with a lock wire, will prevent loosening of the screw caused by vibration. Regardless of the choice made with respect to a set screw, an exposed rotating auxiliary driveshaft must be guarded.

IMPORTANT: Safety Information and Owner's Manual

Chelsea Power Take-Offs are packaged with safety information decals, instructions, and an owner's manual. These items are located in the envelope with the PTO mounting gaskets. Also, safety information and installation instructions are packaged with some individual parts and kits, such as adapter gear assemblies. Be sure to read the owner's manual before installing or operating the PTO Always install the safety information decals according to the instructions provided. Place the owner's manual in the vehicle glove compartment.

Mounting the Adapter Gear Assembly

Because it is impossible to reach the PTO driver gear in the transmission, some PTO applications require adapter assemblies.

A geared adapter assembly changes the

rotation of the PTO, which may be necessary for driving pumps or other accessory equipment. Using an adapter can some times compensate for obstructions, such as a bulge in the transmission, exhausts pipes, or motor mounts.

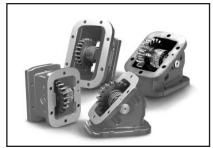
 Drain the oil from the transmission and remove the PTO aperture cover plate (Fig. 1).

CAUTION: The exhaust pipes and the oil are hot so avoid contact with them.

Discard the cover plate and cover plate gasket, and then clean the aperture pad using a putty knife or wire brush (Fig. 2).

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

 Install the proper studs (furnished with the PTO) in the PTO aperture pad using a stud driver. Studs may have either interference fit threads (plain) or pre-applied locking/sealing compound (Fig. 3).



Typical Adapter Assembly Configurations



Fig. 1

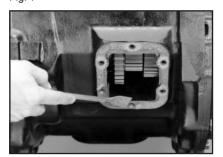


Fig. 2



Fig. 3

General Rule:

A Chelsea .010" (.25 mm) gasket will change backlash approximately .006" (.15 mm), and a .020" (.50 mm) gasket changes backlash approximately .012" (.30 mm).



Mounting the Adapter Gear Assembly (Continued)

4. Install the six or eight studs until the shoulder of the stud is flush with the transmission mounting surface (Fig. 4).

CAUTION: Over tightening of studs or running the shoulder past the transmission mounting surface may damage the stud and/or transmission threads.

5. Mount the adapter to the transmission with the gaskets provided. Then check and set backlash between the adapter and the transmission (Fig. 5).

NOTE: See page 9 for checking proper backlash.

NOTE: If installing a 630-02 adapter for the Eaton I-Brake, install adapter with the gasket provided (part #35-P-96) with 630-02. There is no need to set backlash when using this gasket. Torque flange nuts at this time (See page 8 Item 11 for proper torque specs.) After mounting adapter refer to installation instructions (379985) for proper I-Brake installation.

- 6. Remove the adapter, gaskets, and filler block, if required, from the transmission. Keep the gaskets and filler block as a package (Fig. 6).
- 7. Bench mount the adapter to the PTO Install the appropriate length studs in the adapter body (Fig. 7).



Fig. 4



Fig. 5



Fig. 6

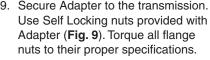


Fig. 7



Mounting the Adapter Gear Assembly (Continued)

- 8. Set the proper backlash between the adapter and PTO After backlash is set remove PTO from adapter and set aside PTO and gaskets. See page 9 for setting proper backlash (Fig. 8).
- 9. Secure Adapter to the transmission. Adapter (Fig. 9). Torque all flange



NOTE: Self Locking nuts do not require lock washers.

NOTE: See torque specs in step 10.

- 10. Fasten the PTO to the Adapter. Torque the self locking nuts to their proper specifications.
 - 379744 3/8" for 6-Bolt applications 35-40 lbs-ft (4.83-5.52 kg.m.)
 - 379745 7/16-20 for 8-Bolt applications 55-60 lbs-ft (7.59-8.28 kg.m.) Torque cap screws to their proper specifications.
 - 6-Bolt to 30-35 lbs-ft (4.14-4.84 kg.m.)
 - 8-Bolt to 45-50 lbs-ft (6.22-6.91 kg.m.) (Fig 10)

NOTE: If installing the Eaton Inertia Brake, refer to installation instructions (379985).



Fig. 8

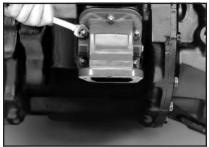


Fig. 9

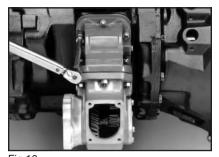


Fig.10

Mounting the Adapter Gear Assembly (Continued)

 Run the PTO momentarily to check for noise.

CAUTION: The transmission and PTO have no lubrication at this time so running time should be as short as possible.

NOTE: If the PTO whines, it may be mounted too tight - too little backlash. This is an indication that gaskets should be added.

If the PTO clatters, it may be mounted too loose - too much backlash. This is an indication that gaskets should be removed.

 Refill the transmission to its appropriate fill level. Normally, the addition of a six bolt PTO will require an additional quart of oil.

Checking Backlash

To check for proper backlash on PTOs with shift cover.

- 1. Remove the PTO shift housing and/ or inspection plate.
- Mount the dial indicator so that it registers movement of the input gear (driven gear) of the PTO (Fig. 10).

NOTE: See Figure 11 for proper location of dial indicator contact point. (Two common type dial indicators shown).

- 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" [.15mm .30mm] by adding or subtracting gaskets.

General rule: A Chelsea .010" gasket will change backlash approx. .006". A .020" gasket changes backlash approx. .012".

 Replace the shift housing and/ or inspection plate and retorque (4) four capscrews to 16 - 20 lbs-ft (2.21 - 2.76 kg meters).



Fig. 10

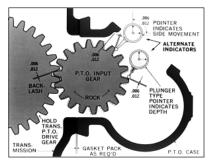


Fig. 11

Power Take-Off Maintenance

Owner's Manual **Geared Adapters**

Due to the normal and sometime 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.

Periodic PTO MAINTENANCE is required by the owner/operator to ensure proper, safe and trouble free operation.

Daily: Check all air, hydraulic and working mechanisms before operating

PTO Perform maintenance as required.

Monthly: Inspect for possible leaks and tighten all air, hydraulic and mounting hardware, if necessary. Torque all bolts, nuts, etc. to Chelsea specifications. Ensure that splines are properly lubricated, if applicable. Perform maintenance as required.

With regards to the direct mounted pump splines, the PTO requires the application of a specially formulated anti-fretting, high pressure, high temperature grease. The addition of the grease has been proven to reduce the effects of the torsional vibrations, which result in fretting corrosion on the PTO internal splines as well as the pump external splines. Fretting corrosion appears as a "rusting and wearing" of the pump shaft splines. Severe duty applications, which require long PTO running times and high torque may require more frequent regreasing. Applications such as Utility Trucks that run continuously and are lightly loaded also require frequent regreasing due to the sheer hours of running time. It is important to note that service intervals will vary for each and every application and is the responsibility of the end user of the product. Chelsea also recommends that you consult your pump owners manuals and technical services for their maintenance guidelines. Fretting corrosion is caused by many factors and without proper maintenance; the anti-fretting grease can only reduce its effects on components.

Chelsea offers the grease to our customers in two packages. The first is a 5/8 fluid ounce tube (379688), which is included with every applicable PTO, and the second is a 14-ounce grease cartridge (379831). Chelsea also offers greaseable shafts for most output designators.

Warranty: Failure to comply entirely with the provisions set forth in the appropriate Owner's Manual will result in voiding of ALL Warranty consideration.

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- 17. Governing Law. This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

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07/14



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