

RPS-0148 07/02

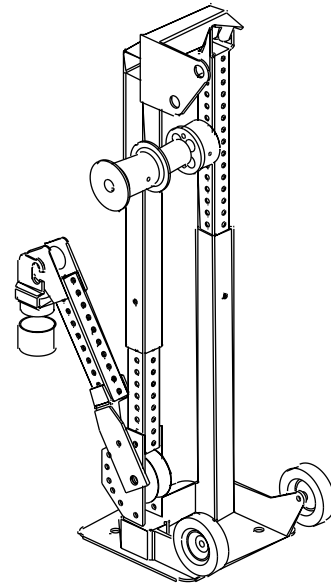
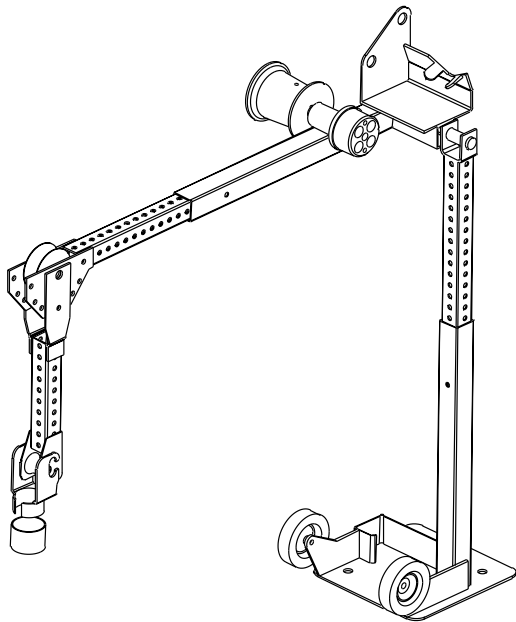
IMPORTANT RECEIVING INSTRUCTIONS

Visually inspect all components for shipping damage. If shipping damage is found, notify carrier at once. Shipping damage is NOT covered by warranty. The carrier is responsible for all repair and replacement costs resulting from damage in shipment.

SAFETY ISSUES

IMPORTANT – USER SAFETY AND PROTECTION: In setting up systems to fit your operations, care must be taken to select the proper components and design to insure that all safety measures have been taken to avoid the risk of personal injury and property damage from your application or system.

GARDNER BENDER IS NOT RESPONSIBLE FOR DAMAGE OR INJURY CAUSED BY UNSAFE USE, MAINTENANCE OR THE APPLICATION OF ITS PRODUCTS. Please contact Gardner Bender for guidance when you are in doubt as to the proper safety precautions to be taken in designing and setting up your particular application. Technical Support # 1-800-624-4320.



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1.0 DESCRIPTION


This cable puller is designed to be used together with the power drive from a portable power threader. The product has been tested with the Mini-Collins® and Rigid™ pipe threader. Other brands you may already have can also be used.


Each cable puller application will depend upon your particular need. In this manual we will cover general procedures as they apply to our equipment.


Please read and understand this manual before attempting to use this equipment. Most important is the safety of the operator.

2.0 SAFETY SYMBOL DEFINITIONS

The symbol below is used to call your attention to instructions concerning your personal safety. Watch for these symbols. They point out important safety precautions. They mean **“ATTENTION! Become alert. Your personal safety is involved.”** Read the message that follows and be alert to the possibility of personal injury or death.

 **DANGER:** Indicates a high probability that death, severe bodily injury or major property damage could result.

 **WARNING:** Is serious but less inevitable. There is some probability that death, severe bodily injury or major property damage could result.


 **CAUTION:** Is less serious but still demands attention. Indicates a hazard which may result in minor injury or property damage.


3.0 WARNINGS


This section contains information for your protection, safety and quick reference. When using an electrical appliance basic precautions should always be followed, including the following.

Read all Instructions before using the CP2000.


Always have this manual available for reference at the job site.


 **DANGER:** Do not allow anyone to operate this equipment until they have read and understood all operating and safety instructions.

 **WARNING:** This cable puller is not to be used as a hoist for lifting, supporting, or transporting people or loads. Failure to observe these precautions could result in serious injury.

 **WARNING:** Never stand directly behind the path of a pulling rope. Keep exposed part of pulling rope as short as possible. A broken pulling rope can whip with extreme force.

 **WARNING:** Only operate in well lighted areas.


 **DANGER:** Do not operate in an area that contains hazardous or combustible material. A fire or explosion can result.


 **WARNING:** All pulling system components must be rated to withstand the maximum pull forces.


 **DANGER:** Never stand directly under a vertical pull.


 **WARNING:** Keep the work area clear of all bystanders.

 **CAUTION:** Check all pulling system parts before use. Never use worn or defective components.

 **DANGER:** Pulling system components can break during use. Always protect yourself by wearing gloves, protective glasses and hard hat.

 **DANGER:** Do not allow anyone to operate this equipment until they have read and understood all operating and safety instructions.


 **WARNING:** Only use rope that is rated for the pulling force required. Check the rope often for damage. Damaged rope can break and cause eye or other bodily injury.


 **DANGER:** Electrical equipment must be grounded while in use to protect the operator from electric shock.

 **DANGER:** Only use extension cords that are rated and marked for outdoor use.


 **DANGER:** Never use this equipment in rain or damp locations.

 **DANGER:** Disconnect power before service or repair.

 **WARNING:** The rope on the capstan can crush your hand during operation. Do not allow the rope to wrap around any part of your body. Keep loose clothing, hands and body away from moving parts.

 **WARNING:** This cable puller is not to be used as a hoist for lifting, supporting, or transporting people or loads. Failure to observe these precautions could result in serious injury.

 **WARNING:** Keep hands and loose objects away from moving parts during operation. Serious injury may occur.

 **CAUTION:** This unit contains a pin designed to shear if maximum recommended load is exceeded. This sudden shearing action may send a shock to the rope, possibly causing injury. Avoid such hazards by wearing leather gloves and never wrap the rope around yourself.

4.0. PRODUCT COMPONENTS

1. 2000 Pound Puller: Adjustable for pulling from all directions. Includes capstan and guide pulley.

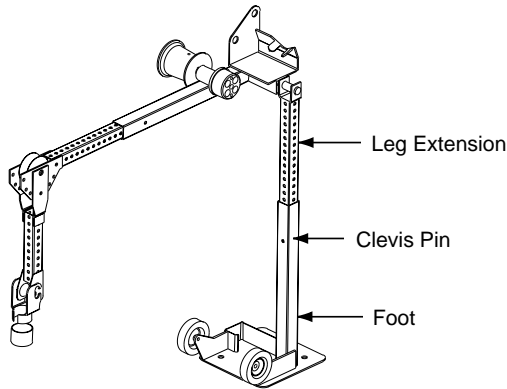


Figure 1. 2000 Pound Puller

2. Switch Clamp: Attaches over the switch on the power drive.

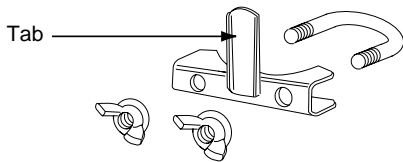


Figure 2. Switch Clamp

3. Pipe Threader, Power Drive (not included): Provides the power for puller operations. It attaches to the drive adaptor on the puller body. See its manual for additional operating information.

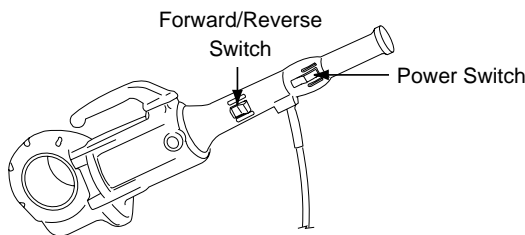


Figure 3. Mini-Collins® Power Drive (not included)

5.0 PULLER SPECIFICATIONS

Puller Specifications	
Weight*	65 lb
Maximum Extended Height	116"
Maximum Arm Reach	70"
Continuous Pull Force	2000 lbs
Breakout Pull Force	2500 lbs
Power Source	Portable Pipe Threader
Drive Speed	25 rpm
Pulling Speed	18 fpm
Required Rope Diameter	1/2"
Required Rope Type	Double Braided Polyester

*Without power drive or foot switch.

6.0 INTRODUCTION TO CABLE PULLING

Each cable pulling operation can be different. Only experienced personnel should be responsible for setup and operation of this equipment. During a cable pull, very high forces can be developed. Any failure of the components of the system can be dangerous.

⚠ WARNING: All pulling system components must be rated to withstand the maximum pull forces.

Safe and efficient cable pulling will require knowledge of the following subjects.

1. Planning

Each operation will need its own special set up. Selection of the proper sheaves, ropes and puller is critical.

Planning the length of the pull is another important consideration. Cable weight and internal conduit bends will create resistance to the pull. Size of conduit and cables already present must be considered. To keep the pulling force within equipment specifications, shorter pulls may be required.

2. Installation

Make sure the puller is secured in place. Fastening the puller to the floor can be accomplished by using the four through holes on the puller base. Position the puller so the force is parallel to the conduit. When securing components to other objects, make sure they can support the pulling force.

3. Safe Operation

Know what the limits of your puller are. Always check equipment for damage prior to operation.

⚠ WARNING: All pulling system components must be rated to withstand the maximum pull forces.

⚠ CAUTION: Check all pulling system parts before use. Never use worn or defective components.

Thoroughly inspect the work area. Make sure ample space is available for equipment and personnel. Check for secure footing and ventilation of any combustible gasses.

⚠ WARNING: Only operate in well lighted areas.

⚠ DANGER: Do not operate in an area that contains hazardous or combustible material. A fire or explosion can result.

Capstan Theory

The capstan uses the friction of the pulling rope to multiply force. The total pulling force is determined by:

1. Number of wraps of rope on the capstan.
2. Tailing force the operator applies to the rope.

With the full 5 wraps of rope on the capstan, the operator can easily generate sufficient pulling force for most applications. For the best operator control during cable pulling, use the fewest rope wraps needed to maintain an even pull. Only add more rope wraps to the capstan if the operator needs additional leverage. Never add or remove wraps from a moving capstan.

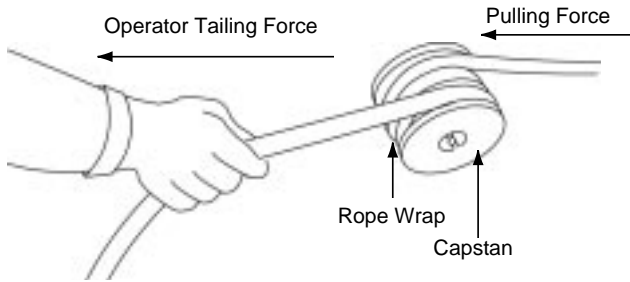


Figure 4. Pull

⚠ WARNING: The rope on the capstan can crush your hand during operation. Do not allow the rope to wrap around any part of your body. Keep loose clothing, hands and body away from moving parts.

During normal pulling operations, the cable resistance will constantly change. This will require the operator to change his tailing force in response. The operator can relax this force completely and stop the pull at any time. The capstan requires some tailing force before it will pull. This assures complete operator control. Do not continue to hold the rope on the capstan if it starts to slip. Rope wear from friction and heat will result. This could cause the rope to break. Turn off the motor and secure the rope.

On a vertical pull, resistance to the force of gravity will tend to reverse the pull. The weight of the cable will increase as the vertical height of the pull increases due to the added cable length. Resistance created by friction will require more pulling force, but will not reverse the pull.

⚠ DANGER: Never stand directly under a vertical pull.

Using Sheaves

Sheaves are used to change the direction of pull and reduce the friction load. When you install a sheave, make sure the sheave support can withstand the total force. The force on the sheave can be as high as double the pulling force. See Figure 5.

⚠ WARNING: All pulling system components must be rated to withstand the maximum pull forces.

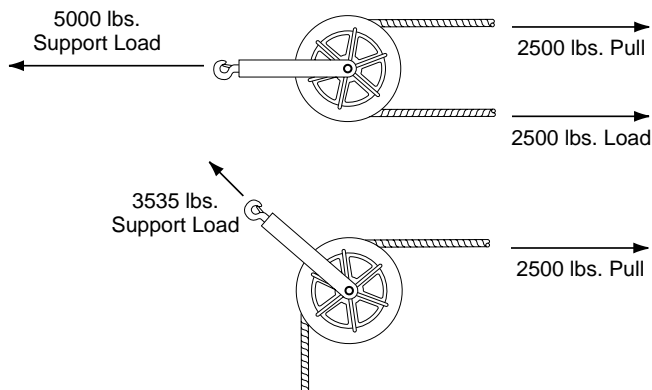


Figure 5. Pull vs. Load

Pulling Rope

⚠ WARNING: Only use rope that is rated for the pulling force required. Check the rope often for damage. Damaged rope can break and cause eye or other bodily injury.

The pulling rope is a very important part of the cable pulling system. Use a rope with a low stretch factor that has a load rating greater than the total estimated pulling forces expected.

⚠ WARNING: Never stand directly behind the path of a pulling rope. Keep exposed part of pulling rope as short as possible. A broken pulling rope can whip with extreme force.

7.0 ASSEMBLY

1. Extend the CP2000:

Remove the clevis pin from the foot. Raise the leg extension to release the puller arm from the base. See Figure 7. Reinstall the clevis pin in the foot to secure the foot to the leg extension. Rotate the puller arm to a parallel position. Set the arm extension on an available support. The arm length can be adjusted by removing the clevis pin. Slide the arm extension in or out as needed and reinstall the clevis pin.

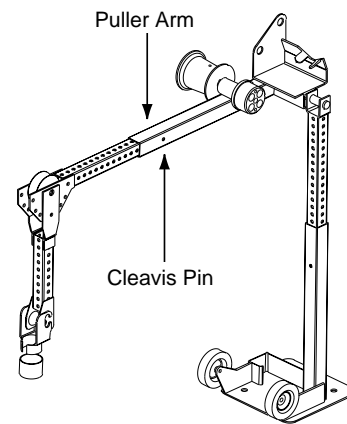


Figure 7. CP2000 Extended

2. Install the power drive.

The CP2000 requires a power drive (Figure 8) to supply the pulling force. The CP2000 puller is designed to use a portable pipe threader power drive such as the Mini-Collins® or Rigid™. Other power drives that you may already have may also be used. Before you install the power drive on the CP2000 you must depress and secure the power switch with the clamp provided (Figure 9).

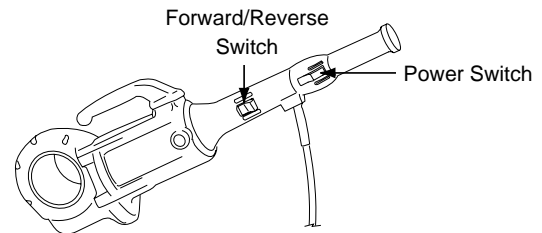


Figure 8. Mini-Collins® Power Drive

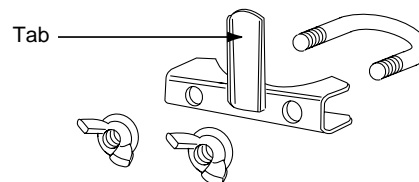


Figure 9. Switch Clamp

Install the switch clamp on the power drive handle so the tab depresses the power switch to the "ON" position. See Figure 10.

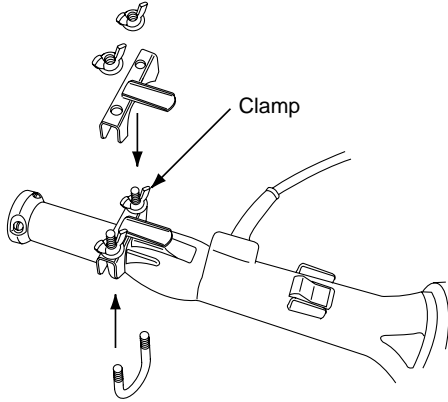


Figure 10. Power Drive Handle

Remove the side handle from the power drive. Slide the power drive head onto the drive coupler on the puller. Rotate the power drive to ease installation and clear the drive cradle. When installed correctly, the power drive will set into the cradle. See Figure 11.

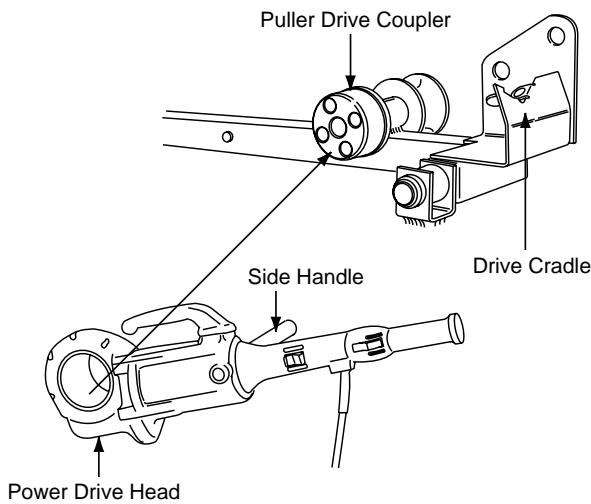


Figure 11. Power Drive and Puller Drive

Put the side handle through the hole in the cradle and install into the pipe threader. See Figure 12. This will secure the power drive to the puller. Other power drive units will require a similar procedure.

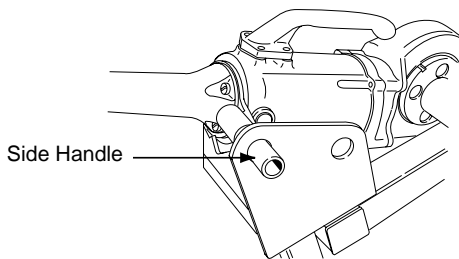


Figure 12. Power Drive Side Handle

3. Install the foot switch (optional - model CP15).

Use of a foot switch with this puller is recommended to insure optimal operator control. Connect the power drive

cord to the foot switch. Connect the foot switch to a suitable receptacle or extension cord. Always use extension cords rated for outdoor use.

⚠ DANGER: Electrical equipment must be grounded while in use to protect the operator from electric shock.

⚠ DANGER: Only use extension cords that are rated and marked for outdoor use.

⚠ DANGER: Never use this equipment in rain or damp locations.

⚠ DANGER: Disconnect power before service or repair.

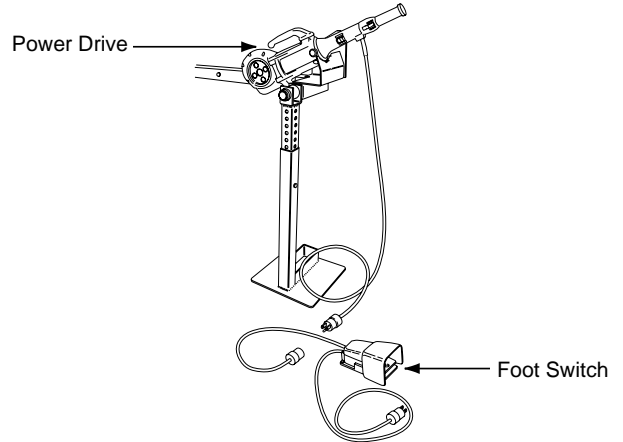


Figure 13. Foot Switch

8.0 OPERATION

8.1 Preparation

Preparing for the pull is a very important part of the operation. This can affect the safety of all the personnel and prevent damage to the equipment.

1. Check the conduit and raceway system. Is it secure and able to withstand the total pulling forces? Is it the proper size for the cables?
2. Check all the pulling system components. Make sure they are in good operating condition and have the proper load rating.
3. Determine the length and direction of each pull segment. Consider the puller load rating.
4. Inspect the operation area. Is there ample room for all personnel and equipment? Is the area safe?

⚠ WARNING: Only operate in well lighted areas.

⚠ DANGER: Do not operate in an area that contains hazardous or combustible material. A fire or explosion can result.

5. Make sure there are enough personnel to operate the pull safely. Clear the area of all other people.

⚠ WARNING: Keep the work area clear of all bystanders.

8.2 Setup

The CP2000 can be adjusted to reach and pull from many positions. This can reduce the need to install additional

sheaves and extensions. Remove the clevis pin from the foot and raise or lower the puller arm to the needed height. Reinstall the clevis pin. Remove the clevis pin from the puller arm and extend or retract the arm extension as needed. Reinstall the clevis pin. The puller arm also pivots up and down to provide additional adjustment. See Figure 14.

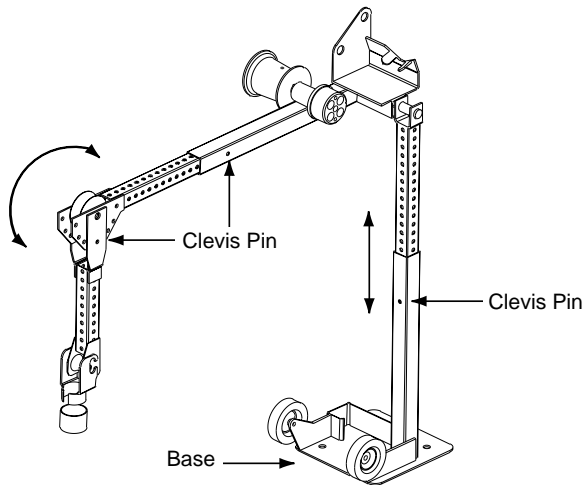


Figure 14. Height and Reach Adjustment

Pull Direction

The puller arm sheave can be positioned for either RIGHT, LEFT, UP or DOWN pulling operations. It is important that the sheave is in the correct position.

To position the puller arm sheave:

Remove the clevis pin from the puller arm. Remove the arm extension from the puller arm. Rotate the arm extension to the needed position and reinsert the arm extension into the puller arm. Adjust the length of the arm and install the clevis pin.

To Pull UP:

The puller sheave must be on the upper side of the puller arm. See Figure 15.

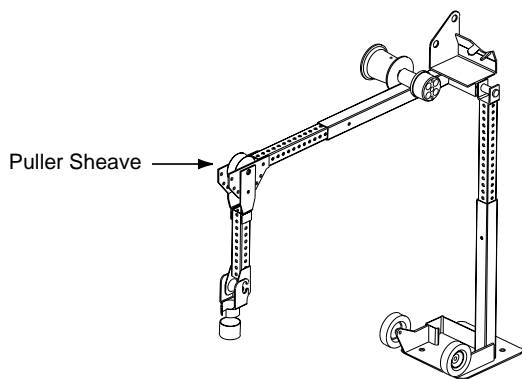


Figure 15. Set Up for Upward Pulls

To Pull DOWN:

Puller sheave must be on the upper side of the puller arm. Rotate the entire puller arm upside down to position the puller sheave to the bottom. The power drive will be held in the cradle by its handle. See Figure 16.

⚠ DANGER: Never stand directly under a vertical pull.

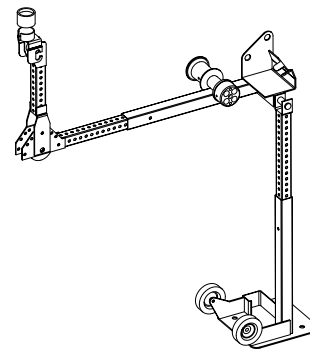


Figure 16. Set Up for Downward Pull

To pull to the RIGHT:

Rotate the puller arm to the right.

To pull to the LEFT:

Rotate the puller arm to the right as you would for a right pull. Rotate the entire puller arm upside down to position the puller sheave to the left. The power drive will be held in the cradle by its handle.

Puller Position

To position the puller sheave, adjust the puller arm according to the previous instructions in the “HEIGHT AND REACH ADJUSTMENT” section in this manual. Set the puller sheave for the direction of the pull. Align the puller sheave with the conduit opening. Rest the puller arm securely on the conduit in the access box.

NOTE: Additional adapters may be needed if the puller arm cannot contact the conduit. The puller foot may be fastened to the floor for added stability if needed.

⚠ WARNING: All pulling system components must be rated to withstand the maximum pull forces.

8.3 Pulling Cable

This section of this manual will only cover the cable pulling operation of the CP2000 unit. We will assume that the conduit has been cleaned and tested for obstructions and the rope is fed and connected securely to the cable. Position observers at critical points of the pull and have clear communication with them.

To Start the Pull:

Position the rope over the sheave on the puller. Wrap the tailing end of the rope once (1) around the capstan. Grasp the tailing rope firmly and well behind the capstan.

⚠ WARNING: Never stand directly behind the path of a pulling rope. Keep exposed part of pulling rope as short as possible. A broken pulling rope can whip with extreme force.

Depress and hold the foot switch. Apply a medium pulling force to the tailing rope. If the pull will not begin, release the foot switch. Apply an additional wrap of tailing rope to the capstan and repeat. Only add one (1) wrap at a time up to a total of five (5). For the best operator control during cable pulling, use the fewest rope wraps needed to maintain an even pull. Only add more rope wraps to the capstan if the operator needs additional leverage. Never add or remove wraps from a moving capstan.

Completing the Pull:

Allow the tailing rope to coil on the floor between you and the puller as the pull continues. Never allow the rope to

accumulate behind or around your legs. If you lose control of the pull, the rope can be pulled back violently toward the capstan.

⚠ WARNING: The rope on the capstan can crush your hand during operation. Do not allow the rope to wrap around any part of your body. Keep loose clothing, hands and body away from moving parts.

During normal pulling operations, the cable resistance will constantly change. This will require the operator to change his tailing force in response. The operator can relax this force completely and stop the pull at any time. The capstan requires some tailing force before it will pull. This assures complete operator control. Do not continue to hold the rope on the capstan if it starts to slip. Rope wear from friction and heat will result. This could cause the rope to break. Turn off the motor and secure the rope.

⚠ CAUTION: This unit contains a pin designed to shear if maximum recommended load is exceeded. This sudden shearing action may send a shock to the rope possibly causing injury. Avoid such hazards by wearing leather gloves and never wrap the rope around yourself.

The CP2000 is equipped with a shear pin that will shear at 2500 lbs (1134kg) pulling force. This is for added protection for the operator and equipment. Do not attempt a pulling operation that exceeds this limit. If this should occur, secure the rope and repair the unit. See Section 9.0 Repair and Maintenance section in this manual.

On a vertical pull, resistance to the force of gravity will tend to reverse the pull. The weight of the cable will increase as the vertical height of the pull increases due to the added cable length. If your equipment fails during a vertical pull the entire cable and rope can fall. Resistance created by friction will require more pulling force, but will not reverse the pull. Always securely tie the rope when the pull is complete.

⚠ DANGER: Never stand directly under a vertical pull.

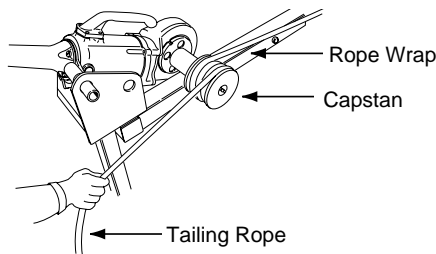


Figure 17. CP2000 Right View

9.0 REPAIR AND MAINTENANCE

9.1 Shear Pin Placement

1. Remove the power drive from the CP2000 arm:
 - Unthread the side handle from the power drive.
 - Rotate the power drive up and slide it off from the drive coupler.
2. Remove the drive coupler from the puller arm.
3. Remove the two (2) setscrews from the drive coupler.
4. Insert a small size punch into the setscrew hole and push the shear pin completely out. Be careful. Do not damage the internal threads.

NOTE: Use a wheel puller to remove the drive coupler from the shaft, if it needs replacement. Use only mild steel .25 dia. 2½" long as shear pin replacement. Use the punch to install a new shear pin and reassemble the unit.

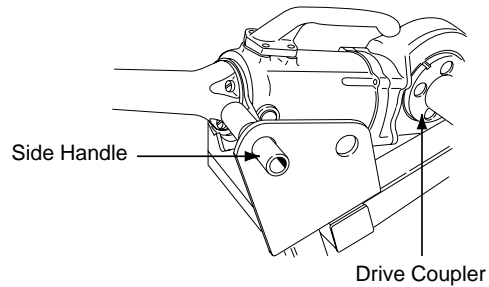


Figure 18. Power Drive

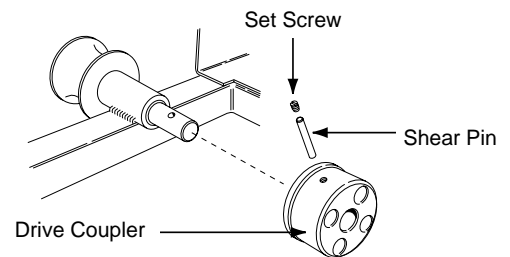


Figure 19. Shear Pin Replacement

9.2 Lubrication

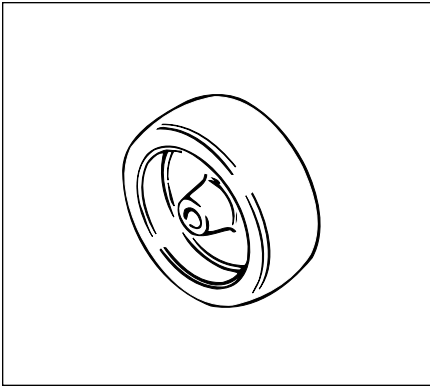
Monthly:

- Apply EP 80/90 gear lube to the arm pivot thru the hole in the shaft.
- Apply EP 80/90 gear lube to the puller sheave thru the hole in the sheave.
- Apply high temperature bearing grease to the grease fitting in the end of the capstan.
- Use a dry silicone spray as needed to lubricate the arm extension and leg extension. This will also protect against rust.

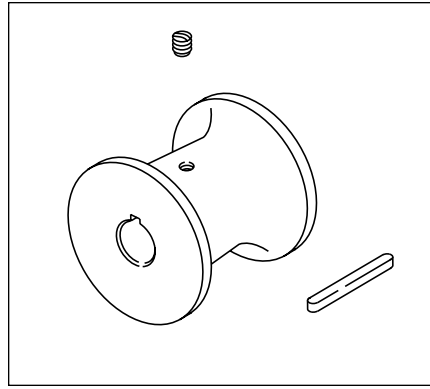
NOTE: Lubricate the power drive as per specifications of drive manufacturer.

10.0 PARTS LIST

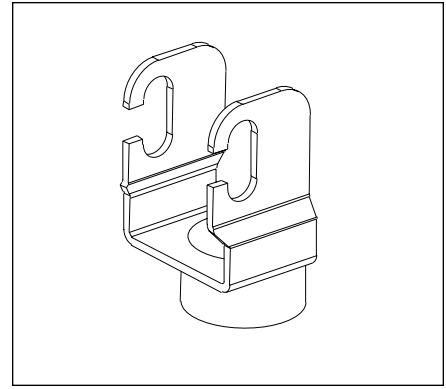
CP2000 Repair Parts Listing	
Part #	Description
CP2000-1	Wheel Kit
CP2000-2	Capstan
*see note	Key - Idler Shaft
*see note	Set Screw, 5/16" - 18 x 3/8"
CP2000-3	Conduit Adapter Arm
CP2000-4	1½" Conduit Coupling
CP2000-5	2" Conduit Coupling
CP2000-6	Shear Pin, ¼"
CP2000-7	Warning Label Kit
CP2000-8	Frame Adjustment Pin
CP2000-9	Switch Clamp Assembly
*Note: Comes with replacement capstan, #CP2000-2.	



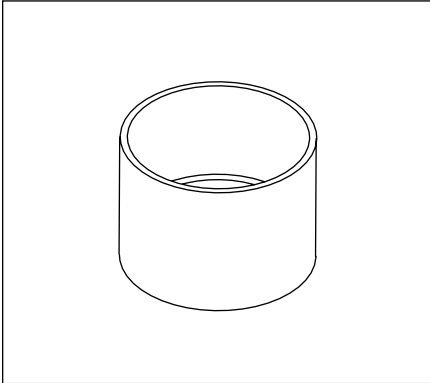
CP2000-1 Wheel Kit



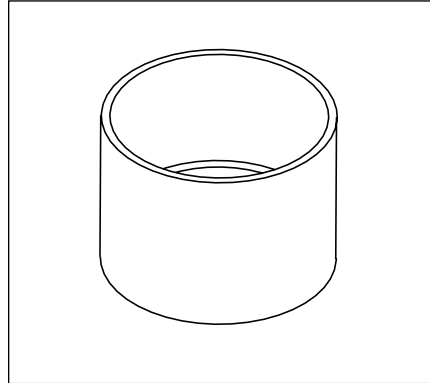
CP2000-2 Capstan



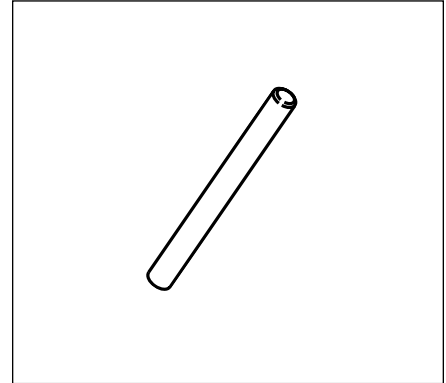
CP2000-3 Conduit Adapter Arm



CP2000-4 1 1/2" Conduit Coupling



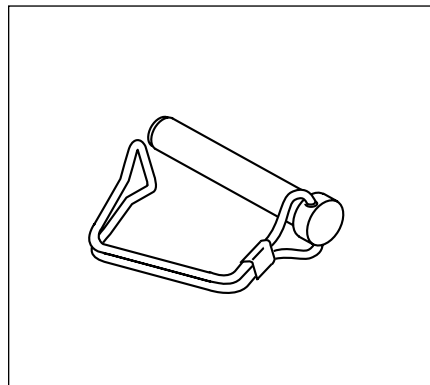
CP2000-5 2" Conduit Coupling



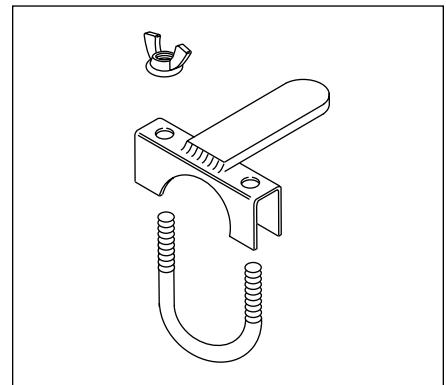
CP2000-6 Shear Pin, 1/4"



CP2000-7 Warning Label Kit



CP2000-8 Frame Adjustment Pin



CP2000-9 Switch Clamp Assembly

REPAIR AND SERVICE INSTRUCTIONS: For repair service and parts contact your nearest Gardner Bender Service Center. The Gardner Bender Service Center will provide complete and prompt service on all Gardner Bender products. For closest service center please visit our website @ www.gardnerbender.com.

PARTS AND SERVICE: For quality workmanship and genuine Gardner Bender parts, select an Authorized GB Service Center for your repair needs. Only repairs performed by an Authorized Service Center displaying the official GB Authorized sign are backed with full factory warranty. Contact Gardner Bender (414)352-4160 for the name of the nearest GB Authorized Service Center.

WARRANTY: Gardner Bender warrants its product against defects in workmanship and materials for 1 year from date of delivery to user. Chain is not warranted. Warranty does not cover ordinary wear and tear, abuse, misuse, overloading, altered products or use of improper fluid.

WARRANTY RETURN PROCEDURE: When question of warranty claim arises, send the unit to the nearest GB Authorized Service Center for inspection, transportation prepaid. Furnish evidence of purchase date. If the claim comes under the terms of our warranty the Authorized Service Center will REPAIR OR REPLACE PARTS AFFECTED and return the unit prepaid.



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