

CHANCE® Series 90 Capstan Hoist Owner's Manual



NOTICE: To prevent SERIOUS INJURY and PROPERTY DAMAGE thoroughly read, understand, and follow the warnings and instructions in this manual. Keep the instructions with the product for future reference.



Hubbell has a policy of continuous product improvement. Please visit hubbellpowersystems.com to confirm current design specifications.

Introduction

Thank you for purchasing a Hubbell Chance® Capstan Hoist. This Owner's Manual contains important information for protecting yourself and others and preventing equipment problems. Failure to follow these safety instructions and precautions can lead to property damage, serious injuries, or death. For safe operation, read this entire manual before operating the Capstan Hoist.

All information in this publication is based on the latest product information available at the time of printing. Hubbell Power Systems reserves the right to make changes at any time without notice and without incurring any obligation. This Owner's Manual must always be kept with the hoist and should remain with the hoist if it is transferred or sold.

These instructions neither cover all details or possible situations in which you may use a Capstan Hoist, nor do they provide for every possible contingency to be encountered in relation to installation, operation or maintenance. Before each lift, think through each step, consider your safety, and the safety of others.

Should additional information and details be desired or if situations arise which are not covered adequately for your purpose, please contact Hubbell Power Systems.

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Guide to Warnings within Manual

The following is a list of warnings used within this manual and should be read in their entirety to ensure safe practices.



This is the safety alert symbol. Obey all safety messages that follow this symbol to avoid possible injury or death. This safety alert symbol precedes any safety message about risk of personal injury. It may also have one of the following signal words.

DANGER

A DANGER refers to operating procedures, techniques, etc., that, if not followed carefully could RESULT IN DEATH.

WARNING

A WARNING refers to operating procedures, techniques, etc., that, if not followed carefully could RESULT IN INJURIES OR DEATH.

CAUTION

A CAUTION refers to operating procedures, techniques, etc., that, if not followed carefully could RESULT IN DAMAGE TO EQUIPMENT or LOSS OF SERVICE to customers.

NOTICE

A NOTICE refers to information that is considered important but not hazard related.

Product Safety

CAUTION

ALWAYS be aware of and comply with all federal, state, and local safety regulations, industry standards, and internal safety guidelines.

The equipment covered in this manual must be used and serviced only by competently trained personnel familiar with and following approved work and safety practices. This equipment is for use by such personnel and this manual is not intended as a substitute for adequate training and experience in safe procedures for this type of equipment.

These instructions neither cover all details or situations in equipment use, nor do they provide for every possible contingency to be encountered in relation to installation, operation or maintenance. Should additional information and details be desired or if situations arise which are not covered adequately for the user's purpose, the specifics should be referred to Hubbell Power Systems.

CAUTION

Under extreme loading, when operating an electric hoist from a limited power source such as a truck driven generator, the hoist motor may stall before reaching maximum capability. The hoist should not be operated under these conditions to avoid damage to the motor.

WARNING

Polypropylene rope is seriously weakened whenever use of it generates friction heat. This is particularly true if it is used over a Capstan. Because of this condition, the continued slipping of polypropylene rope over a capstan should be avoided. Poly-Dacron rope is suggested as it has a higher heat resistant capability.

DANGER

NEVER use hoist to lift or move people. Capstan hoists are NOT designed to lift personnel.

Overhead loads can fall. Will cause damage to equipment, severe injury, or death. Do not allow people to stand under or near the load. Keep rope securely on capstan drum and under control by the operator. Do not remove wraps of rope from the drum while supporting a load. Do not allow the rope to overwrap itself or to ride up over the end of the drum flange.

WARNING

Read all instructions and follow your Company work rules.
Use only with mounts authorized by Hubbell Power Systems.
Do not obscure or remove labels.
Do not use this hoist unless you are properly trained.
Do not lift more than rated load.
Do not use if damaged or malfunctioning.
Do not lift people or lift loads above people.
Do not stand between load and hoist.
Do not tangle fall line with operator or equipment.
Do not remove wraps of rope from drum while supporting a load.
Do not remove or modify the Rope Hook.

Product Safety (cont.)

WARNING

For Electric Models:

Do not use electrical wire sizes or types other than those specified or included with this product. Protect extension cords from sharp objects, excessive heat, and damp or wet areas.

When connecting ANY electric models, observe the following:

- NEVER route electrical cables across sharp edges.
- NEVER route electrical cables near parts that get hot.
- NEVER route electrical cables through standing water.
- NEVER route electrical cables through or near moving parts.

When connecting 12 V DC electric models, ALSO observe the following as well:

- NEVER lean over a vehicle battery while making connections.
- NEVER route electrical cables over battery terminals.
- NEVER short battery terminals with metal objects.
- ALWAYS verify area is clear of fuel lines, fuel tank, brake lines, electrical wires, etc., if drilling is required.

WARNING

For Gasoline Models:

CARBON MONOXIDE HAZARD. Engine exhaust contains colorless and odorless carbon monoxide gas. To prevent SERIOUS INJURY or DEATH, never operate gas powered motors in enclosed spaces without adequate ventilation. Maintain the engine per the instructions supplied with the engine. When any engine is stored for an extended period, the gasoline should be removed from the gas tank and carburetor.

Refueling Information:

- When refueling with a portable container, it shall be equipped with an automatic closing cap and flame arrester.
- Hoists shall not be refueled with the engine running or when the engine is hot.
- Fuel containers shall be stored in properly vented areas.
- Smoking, open flames, and the use of non-intrinsically safe devices shall be prohibited within 25 ft. (7.62 m) of the refueling operation.

WARNING

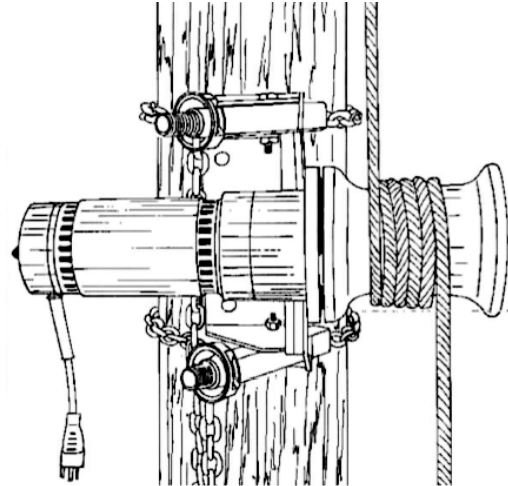
For Hydraulic Models:

- a) High Pressure Oil Hazard. To prevent serious injury or death:
- Relieve pressure before disconnecting hydraulic lines.
 - Inspect hydraulic system for fluid leaks and pinholes. DO NOT use hands. Use a piece of cardboard to detect leaks.
 - If any amount of hydraulic fluid penetrates the skin, get medical help IMMEDIATELY.
- b) Read and follow the guidance from the hydraulic system manufacturer related to the proper personal protective equipment required for that system.

Function and Design Overview

The CHANCE® Series 90 Capstan Hoist is a compact, portable one-piece unit with high torque capabilities to perform a variety of material handling jobs under constant control. Capstan Hoists are designed with a multiple-planetary drive/back-stop clutch assembly on the center shaft of a steel gear case with full-length internal teeth. This design allows the hoist to lift a variety of loads while allowing the operator to maintain precise control.

The Series 90 Capstan Hoist is available in Electric, Hydraulic, and Gasoline power to provide versatility across a range of worksites. These models are available in 1,000 lb and 3,000 lb load ratings.



Safety Features

Capstan Hoist

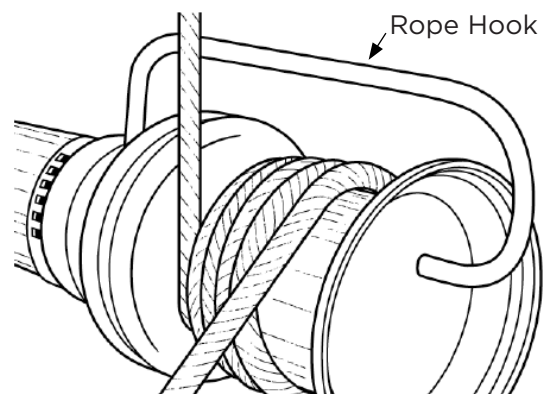
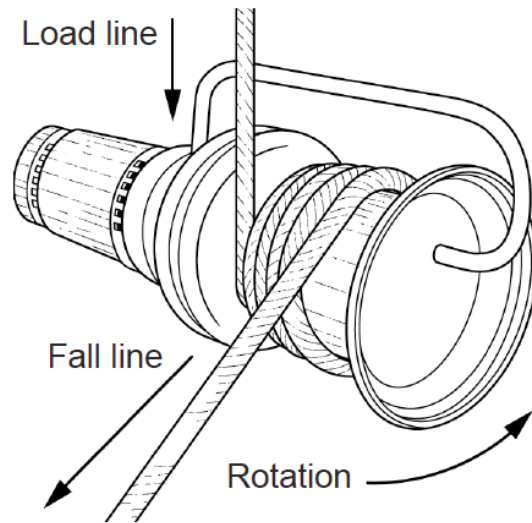
For safe operation and positive control over the load being lifted, the capstan has been designed to turn in only one direction. A backstop clutch built into the hoist prevents the capstan from reversing.

Note that 3/4" diameter rope is the largest that can be conveniently wrapped around the capstan.

Rope Hook

When properly utilized, the rope hook provides protection against the rope escaping off the end of the capstan drum. It also provides a means of capturing an escaped wrap of rope, allowing the operator to stop the hoist, secure the load, and correct the rope position on the drum.

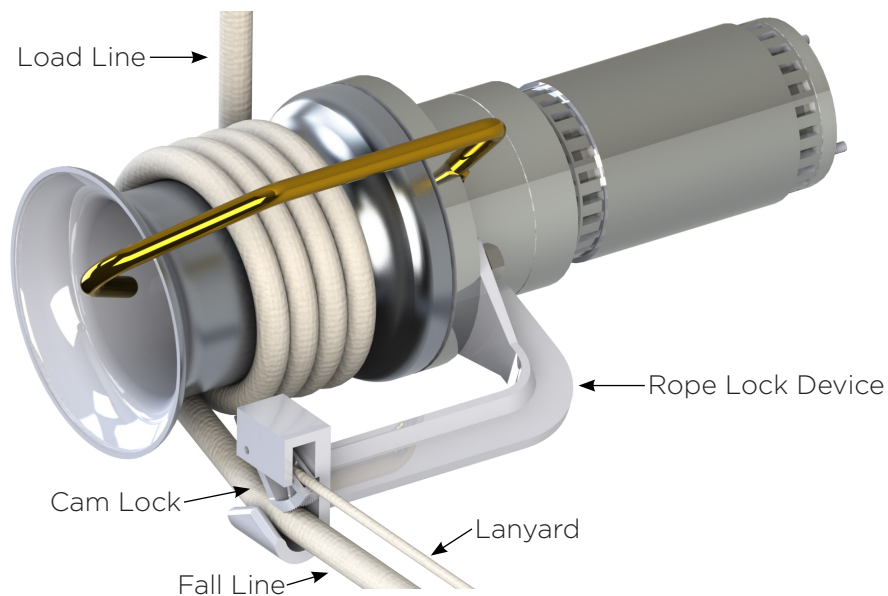
Each rope hook is factory installed using a tamper-resistant fastener.



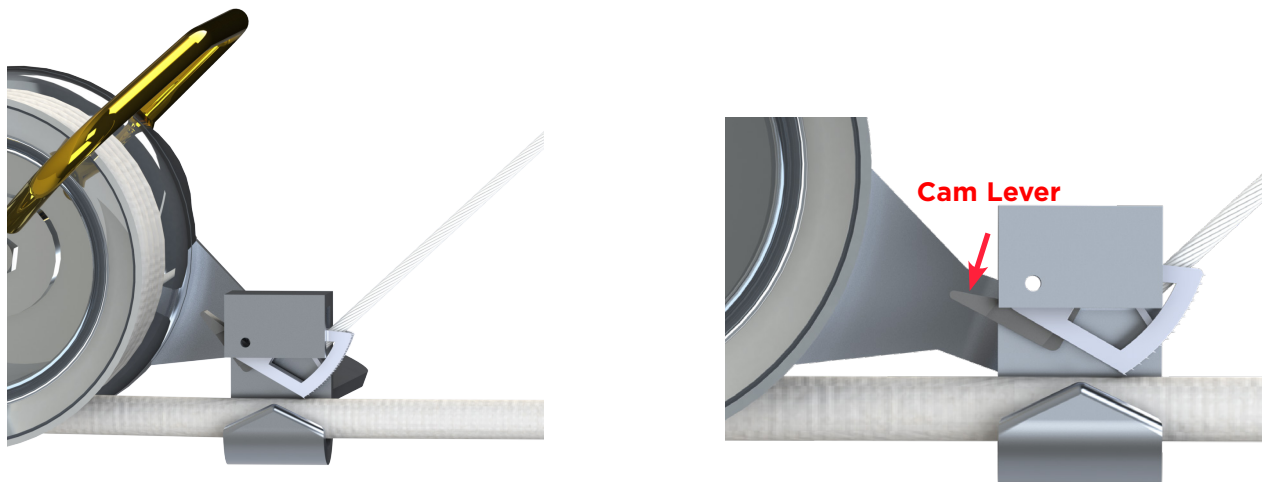
⚠ WARNING

Do not remove or modify the Rope Hook.

Rope Lock Device (optional accessory)



Combined with a properly functioning Capstan Hoist and with rope appropriately wrapped around the drum, the Rope Lock Device grips the rope to hold the load whenever the operator stops pulling.



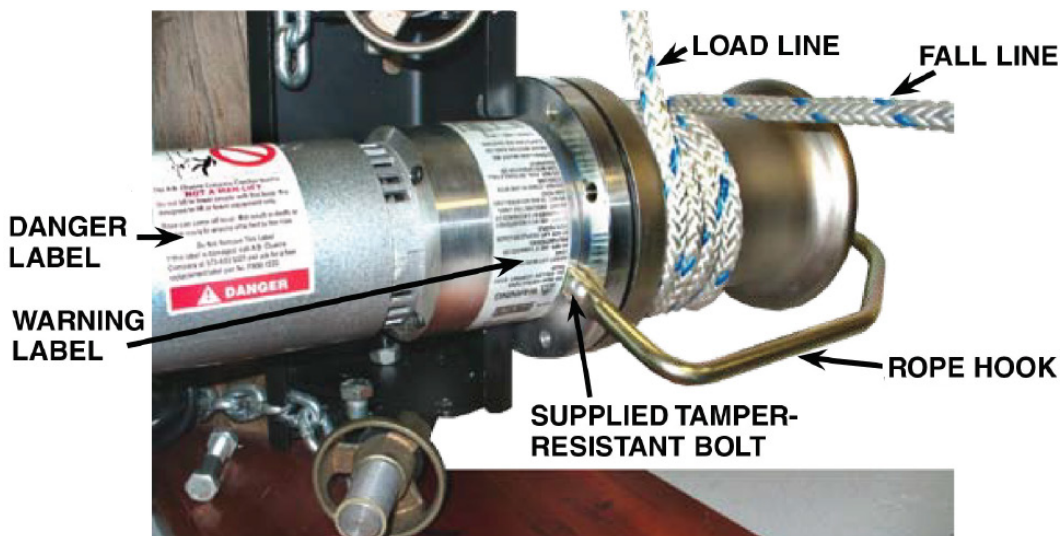
Lifting the cam lever opens the rope lock so that the fall line can be placed into the rope guide.

After the rope is in place, release the cam lever. The unit now is in operating position. To remove the rope from the guide, lift the lever, as for inserting rope.

The cam allows the rope to freely travel through the guide toward the operator pulling on the fall line. When the operator releases the fall line, the cam rotates, locking the rope in the guide.

To lower a load, the operator first pulls on the fall line, then pulls the cam open with the small lanyard. The cam must be held open for load lowering.

Capstan Rope Hook Information



For CHANCE® Capstan Hoists that come factory equipped with a rope hook, please read these instructions and warnings, then retain these instructions for future reference. If you have purchased a rope hook to retrofit or repair an existing CHANCE® Capstan Hoist, please read and follow these installation instructions and warnings.

Installation:

Position the rope hook as shown in the illustration above. NOTE: It is recommended that the rope hook be on the same side as the operator and not the same side as the load when the hoist is in use. Install the supplied tamper-resistant bolt and tighten to 20 - 25 ft. lb.

Use:

Wrap the rope around the capstan drum per the instructions on page 14. Pass the rope between the end of the hook and drum to add wraps of rope. The "fall line" should be positioned as near the hook as practical. Ensure the "fall line" is pulled nearly 90°, or perpendicular, to the drum.

⚠ WARNING

Do not replace the supplied bolt with any other fastener. Using other fasteners will allow unauthorized removal of the hook and may result in damage to equipment, injury, or death.

⚠ WARNING

This hook must always be properly installed on the hoist prior to any use. Failure to read and follow these instructions may result in injury or death. Do not remove or modify the rope hook.

⚠ WARNING

Position the fall line so that it will not pull over the end of the drum. If the rope comes off the end of the drum and the hook catches it, stop the hoist, secure the load, and correct the rope position on the drum.

Do not try to lower the load until the rope has been correctly repositioned on the drum. Injury or death could result.

Capstan Hoist Major Components

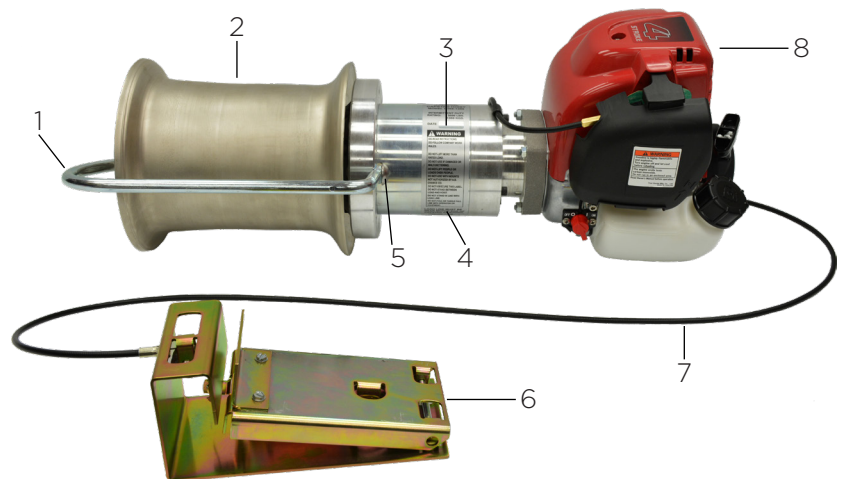
Electric Models

1. Rope Hook
2. Capstan Drum
3. Tamper Resistant Bolt
4. Safety & Identification Labels
5. Stamped Manufacture Date Code
6. Motor
7. Strain Relief
8. Power Cord



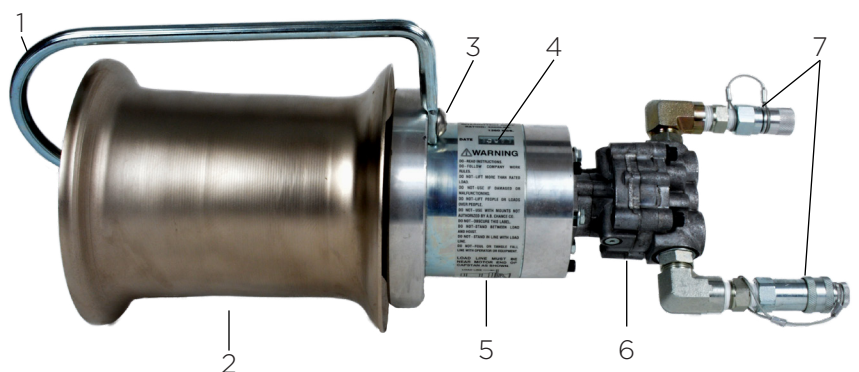
Gasoline Models

1. Rope Hook
2. Capstan Drum
3. Stamped Manufacture Date Code
4. Safety & Identification Label
5. Tamper Resistant Bolt
6. Foot Control
7. Throttle Cable
8. Engine



Hydraulic Models

1. Rope Hook
2. Capstan Drum
3. Tamper Resistant Bolt
4. Stamped Manufacture Date Code
5. Safety & Identification Label
6. Motor
7. Couplers, S-372 3/8"



Before Hoisting

WARNING

ALWAYS inspect hoist, rope, and any rigging equipment before use. Frayed, kinked, or damaged rope must be replaced immediately. Damaged components must be replaced before use. Protect parts from damage.

ALWAYS choose a mounting location that is strong enough to withstand the maximum pulling capacity of your hoist.

ALWAYS use with mounts, components, and accessories authorized by Hubbell Power Systems.

ALWAYS use grade 5 mounting hardware.

NEVER weld mounting bolts.

ALWAYS keep foot control, power cords, and/or hydraulic lines clear of the capstan, rope, and rigging. Inspect for cracks, pinches, frayed wires or loose connections. Damaged components must be replaced before operation.

ALWAYS remove any element or obstacle that may interfere with safe operation of the hoist.

NEVER operate a capstan hoist without the appropriate foot control switch.

The most important part of the hoisting process is proper planning to ensure your safety and the safety of others before starting the work. Knowing proper hoisting techniques can help keep you and others around you safe.

Please be aware the information in this Owner's Manual is general in nature. Because no two situations are alike, it would be impossible to review every potential use of a capstan hoist. This manual provides you with the general principles and techniques to help you use the capstan hoist safely and effectively.

1. ALWAYS take your time to assess your situation and plan your lift carefully.

ALWAYS be aware of and comply with all federal, state, and local safety regulations, industry standards, and internal safety guidelines.

A competent person shall apply careful thought to choose the safest arrangement possible. As with any project involving lifting of loads, a competent person must analyze the forces, direction of those forces, and consider what can happen in the event that there is a failure of a component of the rigging system. This allows the competent person to ensure the proper hoist, rope, blocks, and rigging are used to minimize risks.

A competent person shall thoroughly inspect the worksite and equipment to spot potential safety issues.

When mounting the hoist, verify the mounting location (tower, truck, or other mounting structure) can withstand the forces the capstan will apply and will not be adversely impacted by the mounting and operation of the capstan hoist.

Before Hoisting (cont.)

WARNING

To prevent SERIOUS INJURY or DEATH: NEVER exceed the capacity of any component of the hoisting system, including rope, blocks, and rigging. The lowest capacity rating of any component of the lifting system is the MAXIMUM capacity for that system.

2. NEVER exceed the capacity of any component of the hoisting system, including rope, blocks, and rigging.

ALWAYS check the weight rating for single blocks. Single blocks will be subject to greater forces.

As an example, if a single block is used to lift a load weighing 400 pounds; it must be rated for a minimum of 880 pounds.

Why? The 400 pound load is pulling down on the block from one side. At the same time the hoist has to pull 400 pound from the other side to lift the load.

The 400 pound load plus the 400 pound pull from the hoist equals an 800 pounds downward load on the block.

Friction will also add additional load on the block. A rule of thumb for friction is ten percent (10%) of the load, so this would be an additional 80 pounds. The block in this example would need to have a capacity of over 880 pounds.

3. ALWAYS use the right equipment for your situation.

Confirm the adequacy of the rated capacity for the hoist, rope, blocks, and rigging before use. Inspect all load components for damage prior to use and replace or repair all damaged components.

Never overload the hoist.

Unlike a block and tackle, when operating a capstan, the operator can't "feel" the weight. This makes lifting loads nearly effortless on the operator. Because of this, the operator must know what the weight of the object or the force to pull the cable will be before starting the job.

4. ONLY the operator should handle the rope and operate the foot control.

5. ONLY competent and properly trained employees should operate the hoist.

As with any piece of equipment, safe and effective operation depends on the proper training of personnel. Each operator should be properly trained by their employer regarding their policies and procedures for hoisting, including proper rigging procedures for the loads and to stop operation immediately and secure the load in the event of a safety related issue.

Mounting the Hoist

WARNING

To prevent serious injury or death, always mount the hoist before connecting the power source, e.g. supply hoses for hydraulic models or the foot pedal for electric models.

1. Inspect Hoist, Rope, and Mounting Bracket for signs of wear, rust, and damage.

DO NOT use if damaged. If any damage is found, remove all damaged component(s) from service. Make sure any loose fittings, bolts, etc., are tightened before use.

2. ONLY attach hoist to appropriate CHANCE® mounting brackets. Verify mounting bolts are secure prior to use.

3. It is recommended to mount the hoist so that the rope hook is on the same side as the operator and not on the same side as the load.

4. Select Mounting Location

A secure mounting location point is critical to hoisting operations and must be strong enough to withstand both load and the forces for each load. When evaluating a possible mounting location for a Capstan hoist, a competent person should be aware of the structural capacity of the member and the recommended mounting procedures in this manual.

A mounting location should not be used until it has been deemed adequate by a competent person. Under no circumstances should a mounting location be used if a competent person determines that particular location to be unsafe.

In the event that a less than ideal mounting location must be used, the competent person should determine if the job can be completed safely by increasing the factor of safety utilized (e.g. to address the possibility of the bracket shifting), or consult a qualified engineer.

Always choose a mounting location that allows the rope to align with the intended path of the load. Minimizing the fleet angle allows the rope to pass over the capstan evenly while lifting.

Mount the bracket so the load pulls the bracket against, instead of away from, the mounting location. It is also better to pull in a direction that is "in line" with a mounting location rather than a direction that will try to turn the hoist and bracket "around" the mounting location.

5. Mount Hoist

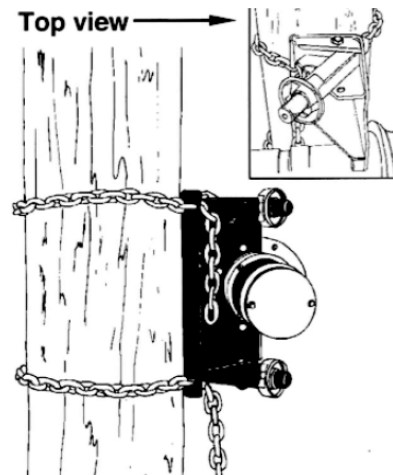
Only use an appropriate CHANCE® mounting bracket to mount hoist. Contact your Hubbell representative for more information.

Always mount the hoist to the proper bracket using bolts and fasteners supplied with the bracket. If bolts or fasteners are damaged or missing, replace them with grade 5 hardware.

The fasteners must be tightened evenly to the proper torque to ensure "load sharing" by all the fasteners.

After the hoist has been mounted in the desired location, connect the appropriate power supply to the hoist.

Mounting the Hoist (cont.)

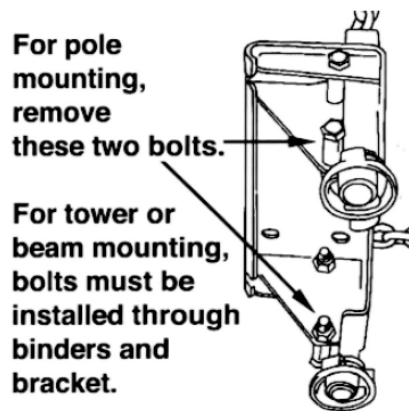


Mounting on a Pole

Remove the bolts in chain tubes (at wheel-tensioner end) to allow tubes to pivot. Prior to mounting the hoist, open the binder all the way by turning wheel-tensioner counter-clockwise.

Drape the top chain over the capstan drum, hold the hoist against the pole with the upper leg. This leaves both hands free to grasp the top chain and extend it forward around the pole as if hugging it. Exchange the chain from hand to hand behind the pole so the chains can be hooked into the slots on the bracket.

The hoist is securely held to a pole, tree, or other object by a screw-type binder. After hooking the chain, turn the binders clockwise to secure the hoist. After heavy initial loading, it may be necessary to again tighten the binders by taking additional turns on the wheel tensioners.



Mounting on Tower or Beam

Be sure the two bolts (at wheel-tightener end of chain binders) are secured in place through binders and bracket. This forms a 90° shoulder between the chain binders and the bracket base for mounting the hoist to a square-cornered member. This is the only difference from the above steps in the pole-mounting procedures.

Mounting on Vehicle Receiver

The optional hitch mount with swivel base for 1,000 lb electric models allows the operator to properly align the load without repositioning the service vehicle. It also gives the operator line of sight and helps with communication with other personnel.

Operating the Hoist

⚠ DANGER

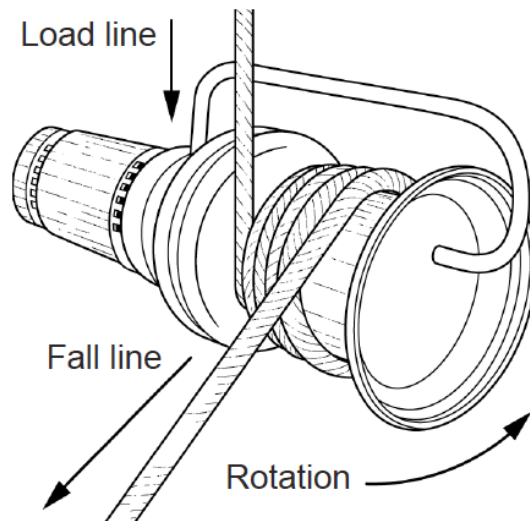
A load should never be raised by taking so many wraps around the capstan that the operator is not required to pull rope off the capstan as it turns. This could result in the rope overwrapping, causing loss of control of the load and injury.

⚠ WARNING

NEVER place your hands near the capstan when it is turning or the rope is under tension. Keep body parts out of the coils of the rope. Do not loop the tail of the rope around your hands. There is no internal safety device built into the hoist to prevent the load from falling if the operator releases the rope. Do not rely upon the rope hook to prevent the load from falling.

⚠ WARNING

NEVER place load line near the outboard (large) end of the drum.



After the hoist, bracket, and foot control are properly mounted into position, you are ready to start lifting or pulling. Bring the rope from the load through the necessary blocks and to the capstan drum. All CHANCE® hoist drums only rotate in a counter-clockwise direction when viewed from the drum end, except for model C3080940 (3,000 lb Hydraulic Reversible Hoist). Wrap the pulling rope around the drum in this direction starting with the load line nearest the motor end of the drum.

Rope Wraps on Capstan Drum

The proper method of wrapping the rope around the capstan for optimum rope action is shown above. Wrapping the rope in this manner will place the “load wrap” on the inboard end of the capstan where the diameter is the smallest. This provides a stable condition for the rope to feed smoothly over the capstan without jumping or changing position for both raising and lowering loads.

Continued on next page.

Operating the Hoist (cont.)

Continued from previous page.

It is important to use the proper number of rope turns. Many variables (such as the load to be raised, amount of mechanical advantage in the tackle, size, and age of rope) affect the number of turns. The final determination is made by feel. "Feel" is the amount of force required to keep the rope just tight enough around the capstan to raise or lower a load. With the proper number of wraps, a slight (approximately 20-lb.) pull should raise or lower a load. Adding wraps decreases the amount of pull required to control the load. Removing wraps increases the amount of pull required.

NOTE: Before learning this technique, there is a natural tendency either to pull harder than necessary or, conversely, to use an excessive number of turns. For most applications, 3 to 4 turns are adequate.

The best method for lowering a load is with the hoist motor running. Although the capstan turns in a direction opposite that of the rope when doing so, rope action on the capstan is smoother than merely allowing the rope to slip on a stationary capstan.

If, however, starting the hoist before lowering a load could raise the load and thereby cause an unsafe condition, lower the load by just slipping the rope without rotating the capstan. When the load is in the clear, rotate the capstan by running the hoist motor for smoother rope action.

DANGER

Do not operate hoist without the appropriate foot control switch. Loss of control, damage, injury, or death could result.

Performing the Lift

RECOMMENDATION: Perform a short test lift by raising the load a short distance off the ground, then slowly lower it back down. This allows the operator to fine-tune and test the Capstan system, such as turns of rope on the capstan drum and proper alignment of the load line before the actual lift is performed.

Lifting the load or pulling cable is a simple matter of starting the hoist by stepping on the foot control and applying pull to the fall line. Continue a steady pull, hand over hand, to complete the lift. When the load is near the final point, slow down on the fall line pull to ease the load into position. With minimal practice, the operator can place the load within a fraction of an inch. Once the load is in place, lifting your foot from the foot control stops the hoist.

To Lower a Load

The CHANCE® hoist is equipped with an anti-reversing brake which prevents the drum from turning backwards. This allows the load to be held in position by holding the fall line. If the load needs to be lowered, simply allow the rope to slip back around the drum slowly, allowing the operator to lower the load safely and in full control.

Ensure the load is clear of obstructions or energized lines prior to starting capstan.

NOTE: Load will be raised slightly before being lowered once the capstan starts turning.

DANGER

Overhead loads can fall. Will cause damage to equipment, severe injury, or death. Do not allow people to stand under or near the load. Keep rope securely on capstan drum and under control by the operator. Do not remove wraps of rope from the drum while supporting a load. Do not allow the rope to overwrap itself or to ride up over the end of the drum flange.

Operating the Hoist (cont.)

To Pull a Load

Lay out your rope so the load will not hang up or dig in while you are pulling the load. Try to attach the rope in such a manner so the front end of the load is pulled.

Do not attempt to pull down or through an obstruction, such as when a load is being pulled up a slope or ramp and then over a break.

As a general rule, if the rope is dragging on the ground when the load is being pulled, the rigging is not correct.

Do not pull a load down a slope towards your location. The load could slide and you could not stop it.

After Hoisting

1. Remove your foot from the foot control to stop the hoist.

2. Secure the load.

Once the load is in position, be sure to maintain tension on the rope while the load is secured.

3. Check mount before hoisting the next load.

It may be necessary to re-tighten the binder chains or align hoist again.

4. Disconnect foot control after final load is secure.

Disconnect the foot control from the hoist. Hoisting operations are now complete.

Breakdown and Storage

1. Disconnect the power supply.

- Disconnect the foot control for electric model hoists.
- Turn off engine for gasoline model hoists.
- Close valve(s) and disconnect the supply lines for hydraulic model hoists.

2. Inspect the rope after each hoisting operation.

If the rope has become kinked or frayed it will have to be replaced.

3. Keep hoist, rope, and foot control free from contaminants.

Use a clean rag or towel to remove any dirt and debris. Inspect the foot control for damage after every use.

4. For 12 volt models, operating your hoist for a long period of time will place an extra burden on your vehicle's battery.

Be sure to check and maintain your battery and battery cables according to manufacturer guidelines. Also, inspect the foot control and all connections to be certain they are clean and tight fitting.

5. Store all components in a protected, clean, dry area.

Common Hoist Applications

Pulling Transformers and Poles

Using the portable hoist and the fall line from a set of blocks, transformers, and poles can be pulled from the truck to rear property lines. This method offers several advantages over using truck winch power. Rigging with the portable hoist also eliminates the hazard of tripping over and the obstacle of working around the return rope to the truck.

Raising and Lowering Transformers, Setting Poles

Using the portable hoist, transformers can easily be raised and lowered and replacement poles easily and safely set. The hoist is particularly valuable for private property work since it eliminates the necessity of a worker to relay signals between the workman on the pole and the truck parked in the street. Use of the hoist also allows all the workers to be in the immediate job area for maximum control over all hoisting or lowering operations.

Pulling Pole Stubs

Pulling pole stubs located in private property can be facilitated by using the portable hoist. To lessen the required pulling force, the ground should be broken loose all around the stub before attempting to pull it.

Sagging Wire (De-energized and grounded)

Using the hoist, a handline and come-along, wire can be pulled in and up to sag. This method is particularly useful in new subdivision work for putting up and sagging secondaries.

Communication Tower Work

Using the hoist, antenna equipment can be efficiently lifted into position on communication structures. 1,000 lb Capstan Hoists can be easily maneuvered into position while anchored to a vehicle when used with the Swivel Base Truck Mount, model PSC3081563.

Pulling Wire

The hoist can be used for some cable pulling jobs. It is particularly handy for pulling cable to pad-mounted transformers located on private property.

Transmission Tower Work

Using the hoist, large crossarms, strings of disc insulators, and tools can be pulled up onto steel transmission towers. The hoist also can be used to lower and raise conductors (de-energized and grounded) so that splices, patch rods, repair of damaged conductor sections, and other mid-span work can be performed on the ground.

1,000 lb Capstan Hoist Accessories

Model	Description
C3081335	All-Purpose Mounting Bracket for 1,000 lb (includes 2 of E3081334P)
E3081321P	Bolt-Down Mounting Bracket for 1,000 lb (bracket only)
E3081334P	Chain Clamp for All-Purpose or Bolt-Down Mounting Brackets
C3080925	Universal Mounting Bracket (recommended for 1,000 lb Gas)
C4170346	Chain Clamp for use with Universal Bracket Only
PSC3081563	Hitch Mount with Swivel Base for 1,000 lb Hoist only
E3081327P	Replacement Capstan Drum for 1,000 lb Hoist
C3080856	Rope Lock Device for Series 90 Capstan Hoists
C4176145	Foot Control Switch for 12 V DC Electric Hoists
C4170337	Foot Control Switch for 115 V and 230 V AC Electric Hoists
C3080685	Foot Control for Hydraulic Hoist model C3081180
T3080997	Foot Control for Gas Hoists

3,000 lb Capstan Hoist Accessories

Model	Description
C3081443	All-Purpose Mounting Bracket for 3,000 lb Hoist (includes 2 of E3081334P)
E3081434P	Bolt-Down Mounting Bracket for 3,000 lb Hoist (bracket only)
E3081334P	Chain Clamp for All-Purpose or Bolt-Down Mounting Brackets
E3081362P	Replacement Capstan Drum for 3,000 lb Hoist
C3080820	Bayonet Adapter for 3,000 lb Hydraulic Hoist
C4170341	Removable Capstan Drum (for use with Bayonet Adapter)
C3080856	Rope Lock Device for Series 90 Capstan Hoists
C4170337	Foot Control Switch for 115 V AC Electric Hoists
C3080685	Foot Control for Hydraulic Hoist model C3081380
T3080997	Foot Control for Gas Hoists

Contact your local Hubbell representative for pricing and availability on Capstan Hoist accessories.

Maintenance

When properly cared for, the Capstan Hoist should provide years of trouble-free service. Abuse, misuse, overloading and/or shock loading will damage the unit rendering it unsafe for operation. **If any component of the capstan hoist system is damaged or does not function properly then remove the hoist from service. Properly tag and return it to the manufacturer for repairs.** A brief inspection of the Capstan Hoist before each use is essential for safe, economical and trouble-free operation.

Rotating Drum

- Inspect the drum to ensure it is bolted securely into place.
- Inspect the drum plating and surface condition for damage. The drum surface should be completely smooth, exhibit no grooving, free of dents and raised imperfections that would cause abrasive damage to the rope. The drum plating should be fully intact and free of rust.
- Inspect the drum edges for dents, which may suggest that the hoist has been dropped or abruptly impacted. Such wear can lead to the damage of other hoist components.
- Ensure the drum is secure to the motor, rotates in only one direction and does not have backlash.

Rope Hook

- Inspect the rope hook to ensure it is present and bolted securely in place over the top of the drum and loops into the end of the drum.

Foot Control

- Inspect the foot control to ensure it is free of nicks, kinks and bends.
- Inspect the foot control end fittings and connections to ensure they are securely tightened into position.
- Test the foot control switch under a no-load condition to ensure smooth and proper on/off operation.

Electric Motor

- Inspect the power cord and plug for cuts or fraying.
- Confirm the power cord is securely mounted to the motor and not pulled loose. **The cord is not a handle for carrying the hoist.**
- Confirm the ground prongs on the power cord are in place and not damaged.
- Do not cut or remove the power cord grounding prong. Use only 3-wire power cords with the grounding prong and socket intact.
- Inspect all cords, plugs, etc. for proper size. Undersized cords increases current draw and will damage the electric motor.
- Inspect the electric motor for any external damage. Dents to the electric motor may suggest that the hoist has been dropped or abruptly impacted. Such wear can lead to the damage of other internal hoist components, especially the brushes, magnets and the rotor.
- Test the electric motor under a no-load condition to observe for excessive sparking, arcing, grinding, crackling, hitting or stalling. The hoist should run smoothly.

Maintenance (cont.)

Gas Engine

- Inspect the gas motor for any external damage. Dents and broken parts on the gas engine may suggest that the hoist has been dropped or abruptly impacted. Such wear can lead to the damage of other hoist components.
- Inspect and clean the gas engine thoroughly to remove dirt and debris from the cylinder area and carburetor to prevent overheating.
- Inspect and clean as necessary the air cleaner element in hot water and soap. Do not use gasoline or solvents for cleaning. Blow dry with air.
- Inspect for and repair any fuel leaks.
- Inspect for loose or missing fasteners and tighten or replace as necessary.
- Inspect oil level in the gas engine crankcase per the supplied engine manual.
- Inspect, gap and/or replace the spark plug as necessary.
- Inspect and clean the fuel filter as necessary.
- Remove any carbon deposits from the muffler and exhaust port.
- Inspect throttle cable and foot control for proper operation.

Gear Box

- Inspect the gearbox for any external damage. Dents to the gearbox may suggest that the hoist has been dropped or abruptly impacted. Such wear can lead to the damage of other hoist components.
- Inspect the gearbox for any fluid leaks around the mounting flange, beneath the drum or from the motor.
- Test the capstan hoist under a no-load condition to observe the gearbox for excessive grinding, hitting and/or vibration.

Labeling & Instruction Manual

- Inspect the capstan hoist labeling to ensure it is present and readable. Replacement labels can be obtained from the manufacturer.
- Read, understand, and follow all labels and the instruction manuals.

Authorized Repairs and Replacement Parts

For Hubbell Power Systems authorized repair or load testing, please contact:

BEVINS
Protecting crews since 1957

M.W. Bevins Co.
9903 E. 54th St.
Tulsa, OK 74146
(918) 627-1273
(918) 627-1294 (FAX)
www.bevinsco.com



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General Specifications

Rated Capacity: 1,000 lb. OR 3,000 lb. (see I.D. label on the hoist)

Storage: Store only in a clean, dry location.

Limitations: Do not use if damaged or malfunctioning. Keep safety labels clean and readable. The use of Power Inverters is **not** recommended. Use only with mounts authorized by Hubbell Power Systems. Electric models: use appropriate gage and length extension cord for the amperage rating.

Power Source Requirements

Electric Models: Power source requirement is determined by the Capstan hoist model being powered.

115 Volt models: 60 Hz, 20 A

230 Volt models: 50/60 Hz, 10 A

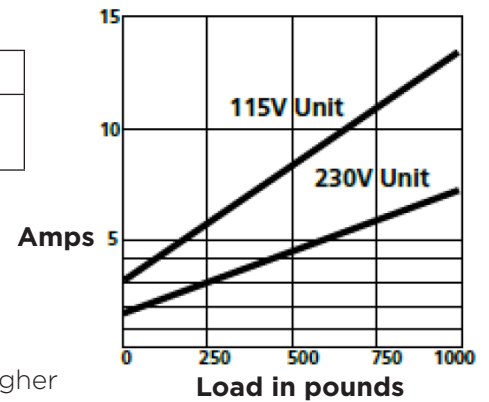
12 Volt DC models: 100 A; minimum 350 Cold Cranking Amps from 12 V DC vehicle battery

Duty Cycle: 20% (e.g. 20% of 1 hour @ full rated load)

Portable Generators: Recommended output is 4,000 Watts or higher.

Extension cord recommendations (115 V and 230 V models):

Cord Length	1-100'	101-250'
Cord Gauge (min.)	115 V: 14 AWG 230 V: 14 AWG	115 V: 12 AWG 230 V: 14 AWG



Hydraulic Models: 1000 psi @ 8 gpm

Installed Couplers: S-372 3/8"

Gasoline Models: Unleaded gasoline, pump octane rating 86 or higher

Model Specific Information for Common 1,000 lb Hoists

Model	Description	Rope Speed	Dimensions	Weight
C3081170	Electric 115 V AC	40 ft/min	23"L x 7"W x 9.5"H	39 lb
C3081180	Hydraulic	93 ft/min	17"L x 7"W x 9.5"H	27 lb
C3081190	Gasoline	40 ft/min	23"L x 11"W x 10"H	39 lb

Model Specific Information for Common 3,000 lb Hoists

Model	Description	Rope Speed	Dimensions	Weight
C3081370	Electric 115 V AC	12 ft/min	29"L x 9"W x 11"H	52 lb
C3081380	Hydraulic	30 ft/min	21"L x 9"W x 10"H	39 lb
C3081390	Gasoline	11 ft/min	27"L x 11"W x 10"H	52 lb

Ten Safety Recommendations

Capstan hoisting devices have been used to lift or move heavy loads for centuries. CHANCE® Series 90 capstans make back-breaking work fast, easy and productive. Safety is the most important consideration in work. A shortcut or misapplication of equipment can cause damage, injury or worse. Follow these safety tips when using capstan hoists.



ONE

NEVER OVERLOAD THE HOIST.

Always take the time to understand the job at hand, the equipment being used, and the procedures required to perform the task. Every CHANCE® capstan comes with an instruction booklet and a label on the hoist. Read both of these documents carefully and be sure you understand all the warnings before using the product. Unlike a block and tackle, when operating a capstan, the operator can't "feel" the weight. This makes it nearly effortless on the operator. Because of this, the operator must know what the weight of the object or the force to pull the cable will be before starting the job.

Remember: These hoists are for lifting equipment or pulling cable, not for lifting personnel.

Never lift people or loads over people.



TWO

NEVER MOVE A LOAD THE OPERATOR CANNOT SEE WITHOUT PROPER COMMUNICATION.

Many times the hoist operator cannot be located in a position to view the load being moved. In these cases, communication with a second worker watching the load is necessary. Most companies have their own standardized hand signals that have been developed for this purpose. In some remote cases radio communication may be necessary.

Ten Safety Recommendations (Cont.)



THREE

NEVER USE A MALFUNCTIONING OR DAMAGED HOIST!

Before every job, thoroughly inspect the work site and equipment to spot dangers. Inspect the hoisting equipment for proper function. Check for damaged or missing parts from previous jobs. Make sure all of the equipment being used is rated for the loads involved.

FOUR

BEWARE OF POTENTIAL DANGER ZONES AND STAY CLEAR.



Arranging equipment or “rigging” for a job is extremely important. Proper rigging makes a job easy. Improper rigging can make a job unsafe. The crew must analyze each job to determine the equipment required and the possible location for each piece of equipment. Several options may be available. Careful thought must be given to choose the safest arrangement possible. Analyze the forces, direction of those forces, and what can happen if something breaks during the job.

Most objects are stronger in compression than tension or bending. If you have a choice, use an item in compression. For example, mount the bracket so the load pulls the bracket against, instead of away from, the pole. This puts less tension on the clamps. It is also better to pull in a direction that is “in line” with a pole rather than a direction that will try to turn the hoist and bracket “around” the pole.

When steering clear of potential danger zones, the proper choice of hoist, bracket, clamping means, rope, blocks, slings, and gins are but a few of the items to be considered. Take, for example, selection of a rope sheave. If a single sheave rope block is used to lift a transformer weighing 400 lb. it must be rated for 880 lb. minimum. Why? The load (400 lb.) is pulling down on the block. At the same time the hoist has to pull 400 lb. to lift the load. This pull is also pulling down on the block. So 400 lb. (load) plus 400 lb. (hoist pull) equals 800 lb. downward load on the block. Friction will add additional load on the block so that must be taken into account also. 10 percent of the load is a rule of thumb that may be used for friction, so 800 lb. plus 80 lb. (10%) equals 880 lb. The same is true for a gin or sling used to support the block.

Ten Safety Recommendations (Cont.)



The rope to be used over a capstan drum needs three things: adequate working load, good frictional characteristics, and high temperature melting point. As rope goes around a capstan drum, it must slip a small amount to advance across the drum. This creates friction which causes the drum to heat. If the drum is allowed to rotate without advancing the rope, heat builds up quickly and melts plastic ropes.

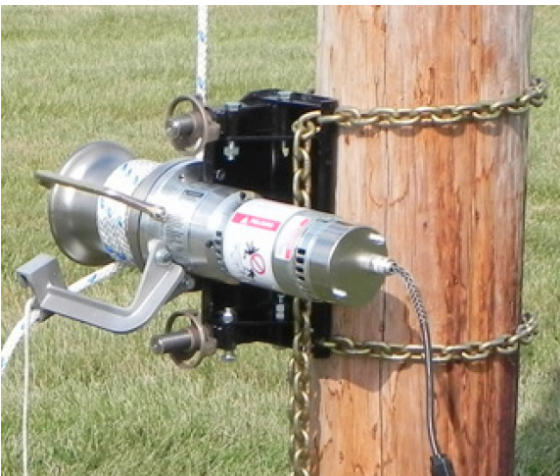
WARNING: Allowing the drum to turn without advancing the rope is a dangerous condition as the melted rope may break or "weld" to the drum which will then wrap up the rope like a winch. A composite fiber braided rope is recommended, like catalog number C4000799. This 1/2"-diameter rope has low stretch and excellent gripping power on a capstan.



Always mount the hoist to the proper bracket using the high strength bolts and fasteners supplied with each hoist. If fasteners are damaged or missing, replace them with the same type and grade designation. The fasteners must be tightened evenly to the proper torque to insure "load sharing" by all the fasteners.

Follow the manufacturer's instructions for installing the bracket on the pole or other structure to be used. Align the capstan drum so the rope will feed perpendicular to the drum axis and onto the large radius of the drum near the motor end.

This allows rope to feed smoothly across the drum as the load is moved. Do not allow the load line to rub on the pole or other objects as this will degrade the rope. Be sure to retighten the chain binders after initial loading to compensate for "seating" of the chain and bracket into the pole.



Ten Safety Recommendations (Cont.)



FIVE

NEVER OPERATE A HOIST WITHOUT THE FOOT CONTROL.

The hoist is started and stopped by a foot operated control. Stepping on the control starts the drum turning and releasing pressure on the control stops the hoist.

SIX

THREE VERY IMPORTANT THINGS TO REMEMBER ABOUT TURNS OF ROPE ON THE DRUM:

Never add or remove turns of rope while a load is suspended. Use the same number of turns to lower a load as is required to raise the load. And, never use so many turns of rope that no pull is required on the fall line to activate the load.

If any of the above rules are broken, the operator could lose control, or drop the load.

After the hoist, bracket, and foot control are properly installed, you are ready to start lifting or pulling. Bring the rope from the load through the necessary blocks and to the capstan drum. All Chance® hoist drums rotate in a counter-clockwise direction when viewed from the drum end. Wrap the pulling rope around the drum in this direction starting with the load line nearest the motor end of the drum. The number of turns of rope around the drum is determined by the load to be lifted.

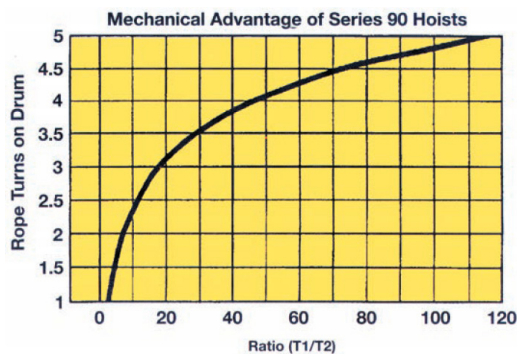
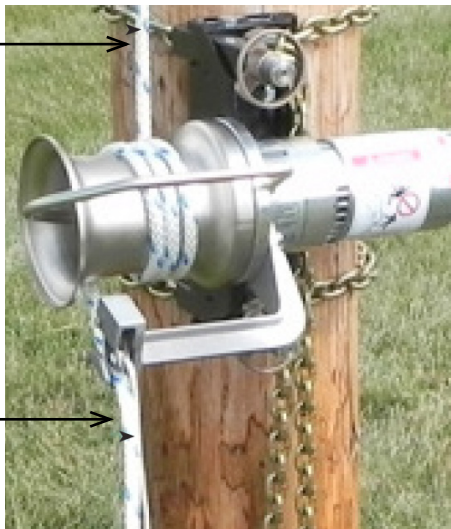
The chart to the left illustrates the advantage of the hoist based on the number of turns of rope on the drum. On the left side find 3.5 turns, follow the horizontal line to the graphed line, then vertically down to the bottom which falls at 30. This means for every pound of pull on the fall line, the hoist applies 30 lb. to the load line. Thus, a 600 lb. load can be lifted with 20 lb. pull on the fall line using 3.5 turns of rope on the drum. Select the number of turns which will allow control of the load with 20 to 40 lb. pull on the fall line.

The graph and diagram at the left shows the capstan principle in action. Operator effort remains low for typical loads simply by adding wraps on the capstan drum. Very little effort is required, any crew member can run the hoist. Control is highly accurate, loads can be moved fractions of an inch.

Example: 4 wraps of rope = 1:44 ratio. That is, 1 lb. pull on fall line develops 44 lb. on load line. Therefore, 20 lb. of pull develops 880 lb. of lift.

T1
(Load Line)

T2
(Fall Line)



Ten Safety Recommendations (Cont.)



Lifting the load or pulling cable is a simple matter of starting the hoist by stepping on the foot control and applying pull to the fall line. Continue a steady pull, hand over hand, to complete the lift.



When the load is near the final point, slow down on the fall line pull to ease the load into position. With minimal practice, the operator can place the load within a fraction of an inch. Once the load is in place, lifting the foot from the control stops the hoist.



The Chance® hoist is equipped with an anti-reversing brake which keeps the drum from turning backwards. This allows the load to be held in position by holding the fall line. If the load needs to be lowered, simply allow the rope to slip back around the drum slowly, allowing the operator to lower the load safely and in full control.

Ten Safety Recommendations (Cont.)

SEVEN



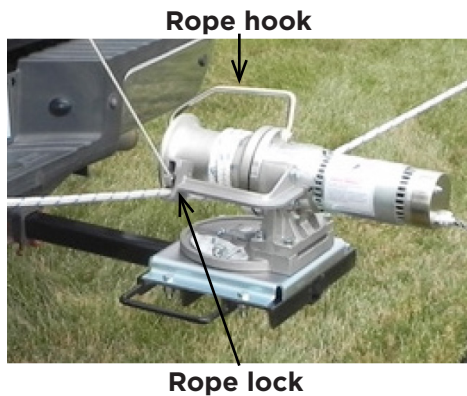
ROPE HOOK IS STANDARD...

for the Series 90 hoists (except 3,000-lb. hydraulic units with bayonet adapter for collapsible reels).

Position the fall line so it will not pull over the end of the drum. Should this happen and the hook catches the rope, stop the hoist, secure the load and correct the rope position on the drum.

Never remove the rope hook. It is installed with a permanent fastener to prevent removal. Removal can cause personnel injury or allow rope to feed off the end of the drum which could result in dropping the load.

EIGHT



AN OPTIONAL ROPE LOCK ATTACHMENT IS AVAILABLE...

for the Series 90 hoists, which allows the operator to hold a load in position without having to tie knots or hold the rope.

With the fall line fed through the rope lock, the device automatically grips the rope to hold the load whenever the operator stops pulling.

A capstan hoist is a versatile tool for lifting, or pulling heavy loads. A few minutes of thought and preparation will make your lifting jobs safe and efficient.

NINE

USE ONLY MANUFACTURERS APPROVED ACCESSORIES

We test and rate our equipment using only our manufactured accessories.

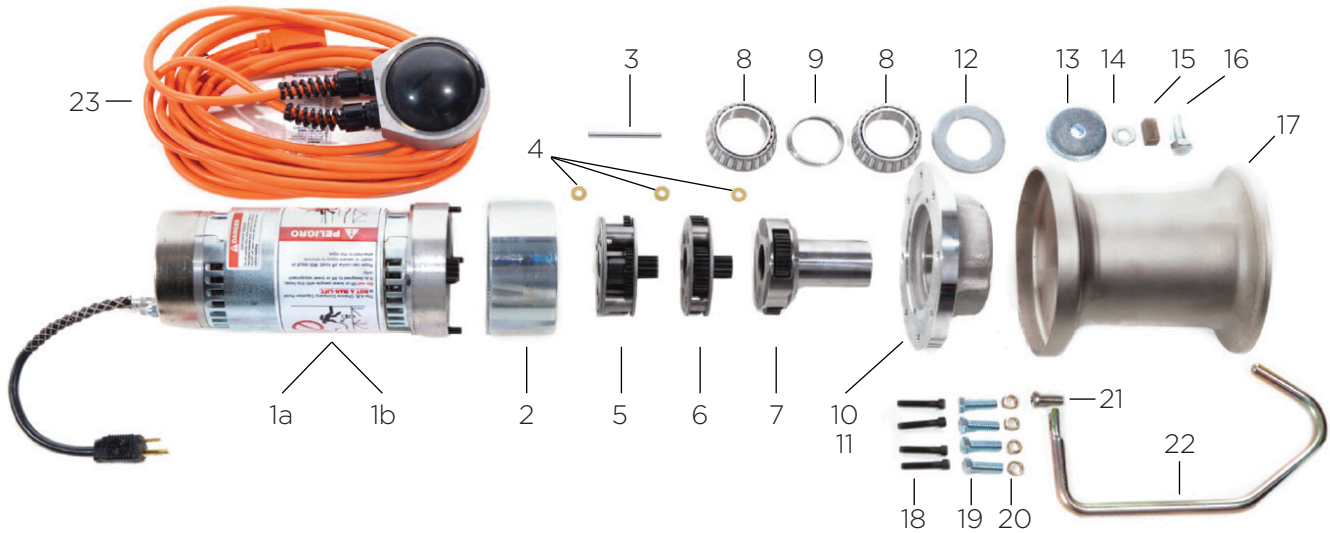
TEN

VERIFY THE POLE, TOWER, TRUCK OR OTHER MOUNTING STRUCTURE CAN WITHSTAND THE FORCES THE CAPSTAN WILL APPLY

The integrity of the system is critical for safety.

Parts Breakdown: 1,000 lb Electric Capstan Hoists

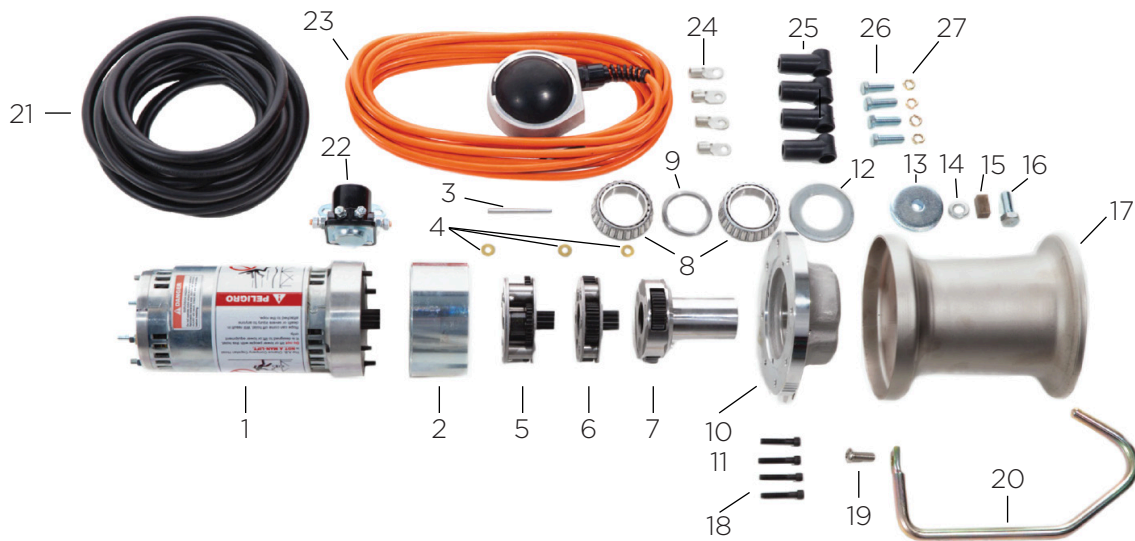
Models: C3081170, C3081171, T3081519



Item	Description	Part Number	Qty
1a	Motor Assembly 115 V Complete (C3081170, T3081519 only)	RMA-115V	1
1b	Motor Assembly 230 V Complete (C3081171 only)	RMA-1171	1
2	Ring Gear (1,000 lb) (internal tooth) R74	P308-1341	1
3	Center Pin (1,000 lb)	P308-1226	1
4	Thrust Washer	P308-1029	3
5	1st Carrier Assembly	RCA-1ST	1
6	2nd Carrier Assembly	RCA-2ND	1
7	Output Shaft Assembly (1,000 lb)	RSA-1000#	1
8	Cone Bearing	P316-0299	2
9	Bearing Spacer (1,000 lb)	P308-1025	1
10	Bearing Race (inside item #11)	P316-0300	2
11	Output Housing (1,000 lb)	P308-1028-B	1
12	Nilos Ring	P316-0298	1
13	Washer RD 0.531 x 2.375 Plated (for drum attachment)	P308-0287	1
14	Split Lockwasher 0.5" Plated	P001-0994	1
15	Drum Key (1,000 lb)	P308-1157	1
16	Hex Capscrew 0.5"-13 x 1.25" Grade 5	P001-1521	1
17	Capstan Drum Assembly (1,000 lb)	RDA-1000#	1
18	Socket Head Capscrew 0.25"-20 x 1.5"	P001-1542	4
19	Hex Head Capscrew 3/8"-16 x 1.25" Grade 5 Zinc Plated	P001-1161	4
20	Lock Washer 3/8" HC Plated	P001-1195	4
21	Button-Head Socket Capscrew SS 3/8"-16 x 1" (not included with T3081519)	P308-1517	1
22	Rope Hook Assembly (1,000 lb) (includes item #21) (not included with T3081519)	RHA-1000#	1
23	Electric Foot Switch Repair Kit	RFS-ELEC	1
24	Grease (not pictured)	C303-1234	1 can
25	Decal and Literature Replacement Kit for C3081170 (not pictured)	RMD-1170	1
26	Decal and Literature Replacement Kit for C3081171 (not pictured)	RMD-1171	1
27	Decal and Literature Replacement Kit for T3081519 (not pictured)	RMD-1519	1

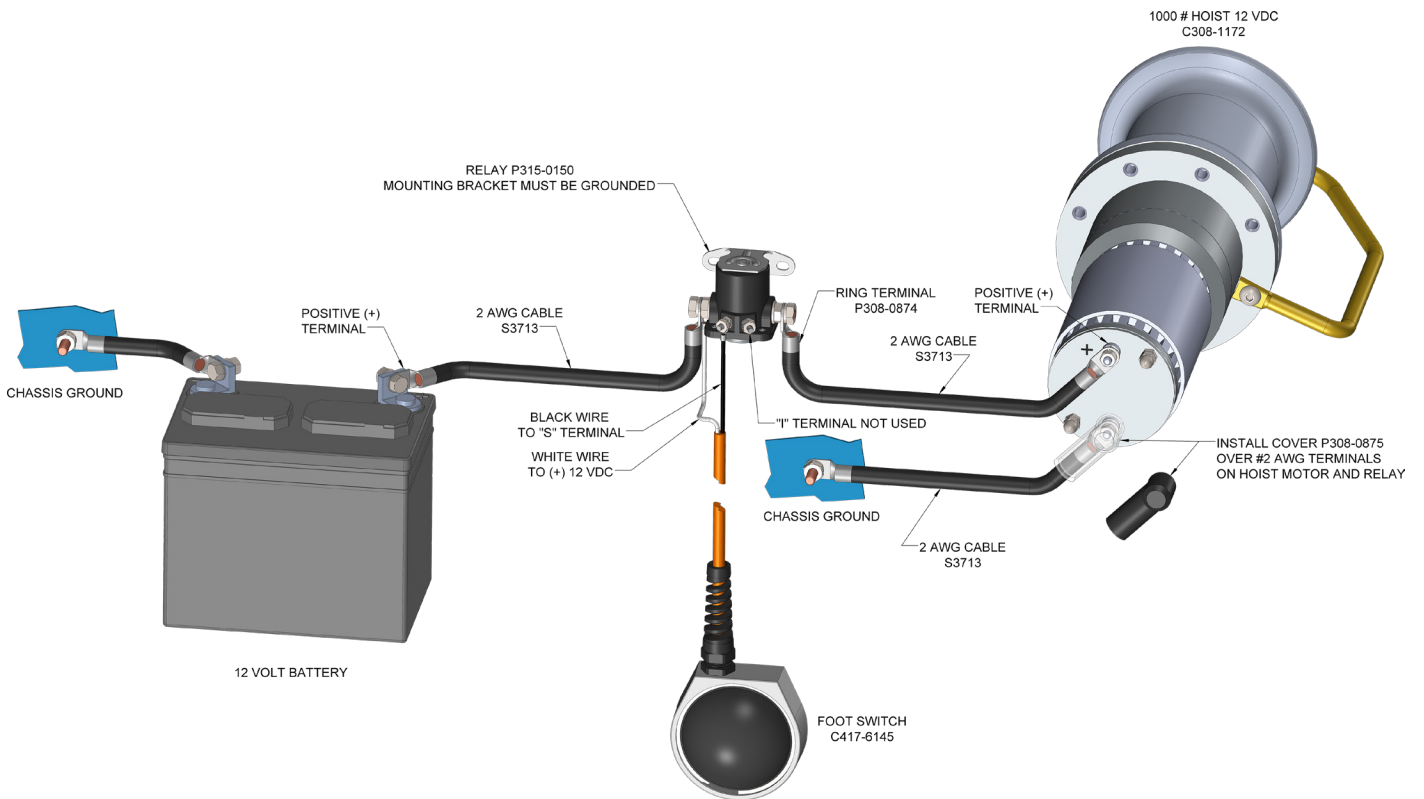
Parts Breakdown: 1,000 lb 12 Volt DC Capstan Hoist

Model: C3081172



Item	Description	Part Number	Qty
1	Motor Assembly 12V Complete	RMA-1172	1
2	Ring Gear (1,000 lb) (internal tooth) R74	P308-1341	1
3	Center Pin (1,000 lb)	P308-1226	1
4	Thrust Washer	P308-1029	3
5	1st Carrier Assembly	RCA-1ST	1
6	2nd Carrier Assembly	RCA-2ND	1
7	Output Shaft Assembly (1,000 lb)	RSA-1000#	1
8	Cone Bearing	P316-0299	2
9	Bearing Spacer (1,000 lb)	P308-1025	1
10	Bearing Race (inside item #11)	P316-0300	2
11	Output Housing (1,000 lb)	P308-1028-B	1
12	Nilos Ring	P316-0298	1
13	Washer RD 0.531 x 2.375 Plated (for drum attachment)	P308-0287	1
14	Split Lockwasher 0.5" Plated	P001-0994	1
15	Drum Key (1,000 lb)	P308-1157	1
16	Hex Capscrew 0.5"-13 x 1.25" Grade 5	P001-1521	1
17	Capstan Drum Assembly (1,000 lb)	RDA-1000#	1
18	Socket Head Capscrew 0.25"-20 x 1.5"	P001-1542	4
19	Button-Head Socket Capscrew SS 3/8"-16 x 1"	P308-1517	1
20	Rope Hook Assembly (1000 lb) (includes item #19)	RHA-1000#	1
21	Copper Cable, GRD 2 AWG	S3713	25'
22	Relay Switch 70-914	P315-0150	1
23	12v Foot Switch Repair Kit	RFS-ELEC 12V	1
24	Terminal Ring 2 AWG	P308-0874	4
25	Terminal Ring Cover	P308-0875	4
26	Hex Head Capscrew 3/8"-16 x 1.25" Grade 5 Zinc Plated	P001-1161	4
27	Lock Washer 3/8" HC Plated	P001-1195P001-1195	4
28	Grease (not pictured)	C303-1234	1 can
29	Decal and Literature Replacement Kit for C308-1172 (not pictured)	RMD-1172	1

C3081172 Wiring Diagram



Parts Breakdown: 3,000 lb Electric Capstan Hoist

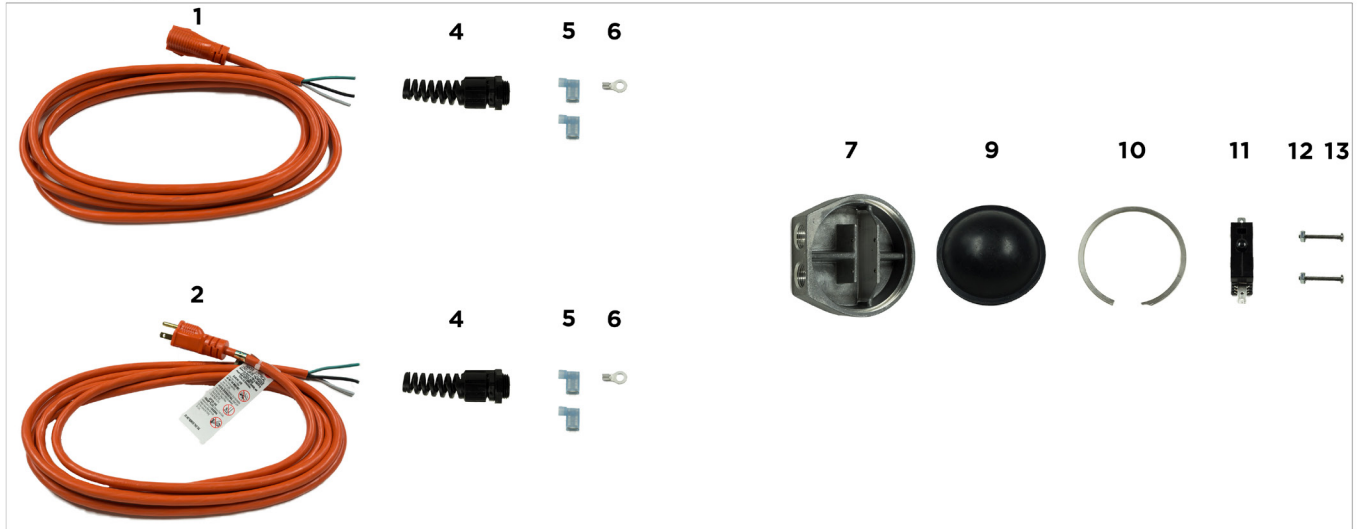
Model: C3081370



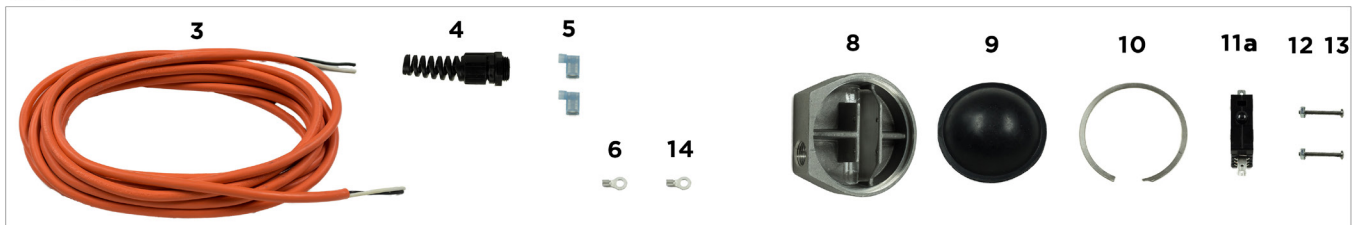
Item	Description	Part Number	Qty
1	Motor Assembly 115 V Complete	RMA-115V	1
2	Ring Gear (3000#) (internal tooth) R74	P308-1301	2
3	Center Pin (3000 lb)	P308-1222	2
4	Thrust Washer	P308-1029	4
5	1st Carrier Assembly	RCA-1ST	1
6	2nd Carrier Assembly	RCA-2ND	1
7	3rd Carrier Assembly	RCA-3RD	1
8	Output Shaft Assembly (3000 lb)	RSA-3000#	1
9	Cone Bearing	P316-0299	2
10	Bearing Spacer (3000 lb)	P308-1023	1
11	Bearing Race (inside Item 12)	P316-0300	2
12	Output Housing (3000 lb)	P308-1015	1
13	Nilos Ring	P316-0298	1
14	Washer RD 0.531 x 2.375 Plated (for drum attachment)	P308-0287	1
15	Split Lockwasher 0.5" Plated	P001-0994	1
16	Drum Key (3000 lb)	P308-1156	1
17	Hex Capscrew 0.5"-13 x 1.25" Grade 5	P001-1521	1
18	Capstan Drum Assembly (3000 lb)	RDA-3000#	1
19	Socket Head Capscrew 0.25"-20 x 1.5"	P001-1542	8
20	Mounting Capscrew 1/2" x 1.25" Grade 5 Zinc Plated	P001-1349	8
21	Lock washer 1/2" HC Plated	P001-1221	8
22	Button-Head Socket Capscrew SS 1/2-13x1"	P308-1528	1
23	Rope Hook Assembly (3000 lb) (includes item #22)	RHA-3000#	1
24	Electric Foot Switch Repair Kit	RFS-ELEC	1
25	Grease (not pictured)	C303-1234	1 can
26	Decal and Literature Replacement Kit for C3081370 (not pictured)	RMD-1370	1

Parts Breakdown: Electric Foot Control Switch

C4170337
(115/230 V)



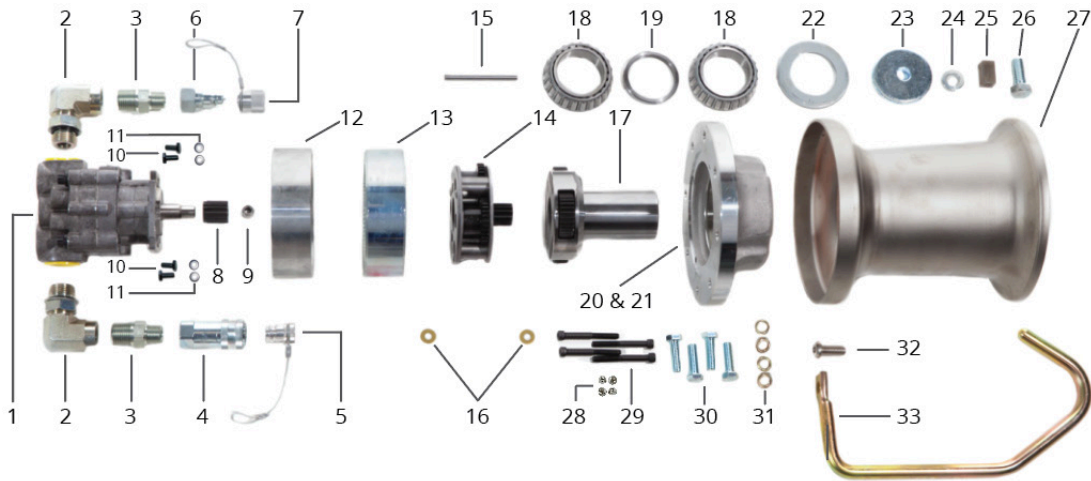
C4176145
(12 V)



Item	Description	Part Number	C4170337 Qty	C4176145 Qty
1	Cord Assembly, Female 12.5' (includes parts 1,4,5,6)	T308-0870	1	0
2	Cord Assembly, Male 12.5' (includes parts 2,4,5,6)	T308-0871	1	0
3	Cord Assembly, 25' for 12 Volt	P308-0881	0	1
4	Connector, Flexible Strain Relief	P315-0346	2	1
5	Disconnect Flag	P308-0701	4	2
6	Ring Terminal, 3/16" Stud	P308-0307	2	1
7	Base for Foot Switch	P308-0706	1	0
8	Base for 12 Volt Foot Switch	P308-0717	0	1
9	Cover	P308-0707	1	1
10	Retaining Ring	P308-0709	1	1
11	Switch	P308-0708	1	0
11a	Switch modified for 12 Volt	P308-0708a	0	1
12	Nut, KEPS #6-32 PLT	P001-1199	2	2
13	Screw, Pan MCH #6-32 X 1.5"SS	P001-1488	2	2
14	Ring Terminal, 5/16" Stud	Z-096	0	1

Parts Breakdown: 1,000 lb Hydraulic Capstan Hoist

Model: C3081180

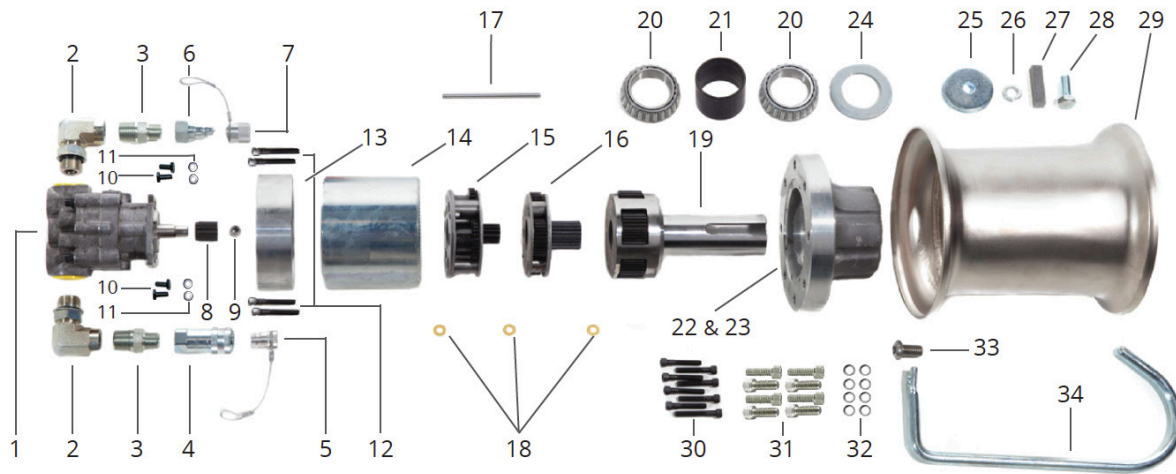


Item	Description	Part Number	Qty
1	Hydraulic Motor Assembly Complete (includes parts 8 & 9)	RMA-1380	1
2	Elbow	P316-0200	2
3	Fitting, Hex Nipple 0.5 x 0.375"	P308-0214	2
4	Female Coupler	P308-0489	1
5	Plug	P308-0211	1
6	Male Coupler	P308-0488	1
7	Cap	P308-0210	1
8	Sun Gear	P308-1003	1
9	J-45 Bearing	P308-1155	1
10	Capscrew, HH 0.25"-20 x 0.63"	P001-1808	4
11	Washer, RD 0.281" x 0.625"	P001-0664	4
12	Motor Adapter, Hydraulic	P308-1281	1
13	Ring Gear, Hydraulic	P308-1288	1
14	1st Carrier Assembly	RCA-1ST	1
15	Center Pin, Hydraulic	P308-1286	1
16	Thrust Washer	P308-1029	2
17	Output Shaft Assembly (1000 lb)	RSA-1000#	1
18	Cone Bearing	P316-0299	2
19	Bearing Spacer (1000 lb)	P308-1025	1
20	Bearing Race (inside item #21)	P316-0300	2
21	Output Housing (1000 lb)	P308-1028-B	1
22	Nilos Ring	P316-0298	1
23	Washer RD 0.531 x 2.375 Plated (for drum attachment)	P308-0287	1
24	Split Lockwasher 0.5" Plated	P001-0994	1
25	Drum Key (1000 lb)	P308-1157	1
26	Hex Capscrew 0.5"-13 x 1.25" Grade 5	P001-1521	1
27	Capstan Drum Assembly (1000 lb)	RDA-1000#	1
28	Acorn Nut -1/4"	P001-0920	4
29	Socket Head Capscrew 0.25"-20 x 3.5"	P001-1631	4
30	Hex Head Capscrew 3/8"-16 x 1.25" Grade 5 Zinc Plated	P001-1161	4
31	Lock Washer 3/8" HC Plated	P001-1195	4
32	Button-Head Socket Capscrew SS 3/8"-16 x 1"	P308-1517	1
33	Rope Hook Assembly (1000 lb) (includes item #32)	RHA-1000#	1
34	Grease (not pictured)	C303-1234	1 can
35	Decal and Literature Replacement Kit for C308-1180 (not pictured)	RMD-1180	1



Parts Breakdown: 3,000 lb Hydraulic Capstan Hoist

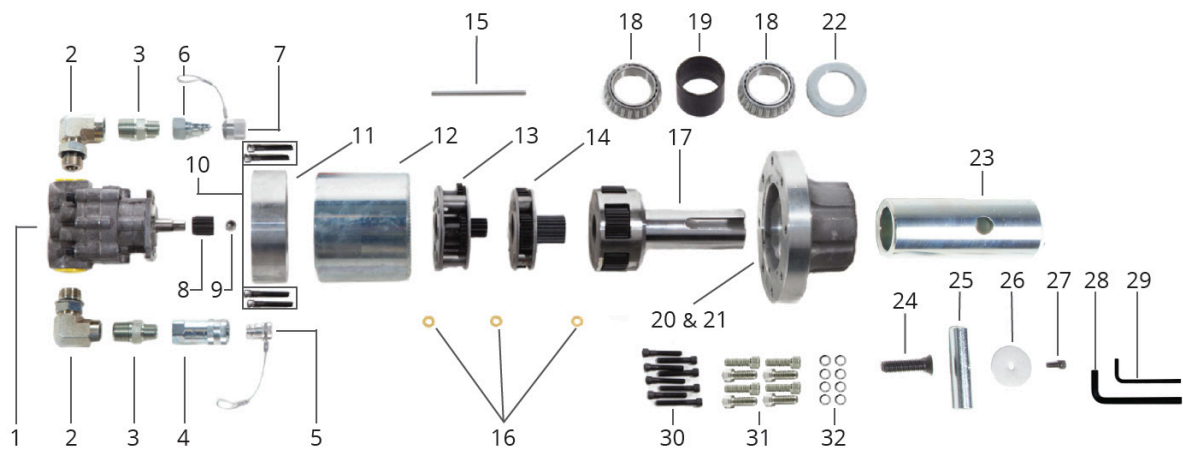
Model: C3081380



Item	Description	Part Number	Qty
1	Hydraulic Motor Assembly Complete (includes parts 8 & 9)	RMA-1380	1
2	Elbow	P316-0200	2
3	Fitting, Hex Nipple 0.5 x 0.375"	P308-0214	2
4	Female Coupler	P308-0489	1
5	Plug	P308-0211	1
6	Male Coupler	P308-0488	1
7	Cap	P308-0210	1
8	Sun Gear	P308-1003	1
9	J-45 Bearing	P308-1155	1
10	Capscrew, HH 0.25"-20 x 0.63"	P001-1808	4
11	Washer, RD 0.281" x 0.625"	P001-0664	4
12	Socket Head Capscrew 0.25"-20 x 1.75"	P001-1577	4
13	Motor Adapter, Hydraulic	P308-1281-B	1
14	Ring Gear, 3000 lb Hydraulic	P308-1289	1
15	1st Carrier Assembly	RCA-1ST	1
16	3rd Carrier Assembly	RCA-3RD	1
17	Center Pin, 3000 lb Hydraulic	P308-1287	1
18	Thrust Washer	P308-1029	3
19	Output Shaft Assembly (3000 lb)	RSA-3000#	1
20	Cone Bearing	P316-0299	2
21	Bearing Spacer (3000 lb)	P308-1023	1
22	Bearing Race (inside item #23)	P316-0300	2
23	Output Housing (3000 lb)	P308-1015-B	1
24	Nilos Ring	P316-0298	1
25	Washer RD 0.531 x 2.375 Plated (for drum attachment)	P308-0287	1
26	Split Lockwasher 0.5" Plated	P001-0994	1
27	Drum Key (3000 lb)	P308-1156	1
28	Hex Capscrew 0.5"-13 x 1.25" Grade 5	P001-1521	1
29	Capstan Drum Assembly (3000 lb)	RDA-3000#	1
30	Socket Head Capscrew 0.25"-20 x 1.5"	P001-1542	8
31	Mounting Capscrew 1/2"-13 x 1.25" Grade 5 Zinc Plated	P001-1349	8
32	Lock Washer 1/2" HC Zinc Plated	P001-1221	8
33	Button-Head Socket Capscrew SS 1/2-13x1"	P308-1528	1
34	Rope Hook Assembly (3000 lb) (includes item #33)	RHA-3000#	1
35	Grease (not pictured)	C303-1234	1 can
36	Decal and Literature Replacement Kit for C3081380 (not pictured)	RMD-1380	1

Parts Breakdown: 3,000 lb Hydraulic Capstan Hoist

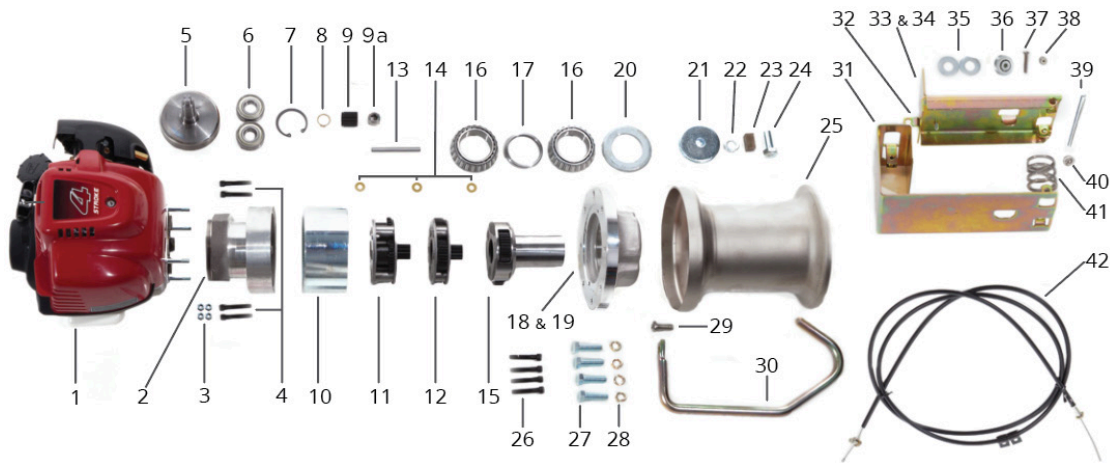
Model: C3080900



Item	Description	Part Number	Qty
1	Hydraulic Motor Assembly Complete (includes parts 8 & 9)	RMA-1380	1
2	Elbow	P316-0200	2
3	Fitting, Hex Nipple 0.5 x 0.375"	P308-0214	2
4	Female Coupler	P308-0489	1
5	Plug	P308-0211	1
6	Male Coupler	P308-0488	1
7	Cap	P308-0210	1
8	Sun Gear	P308-1003	1
9	J-45 Bearing	P308-1155	1
10	Socket Head Capscrew 0.25"-20 x 1.75"	P001-1577	4
11	Motor Adapter, Hydraulic	P308-1281	1
12	Ring Gear, 3000 lb Hydraulic	P308-1289	1
13	1st Carrier Assembly	RCA-1ST	1
14	3rd Carrier Assembly	RCA-3RD	1
15	Center Pin, Hydraulic	P308-1287	1
16	Thrust Washer	P308-1029	3
17	Output Shaft Assembly (3000 lb)	RSA-4000#	1
18	Cone Bearing	P316-0299	2
19	Bearing Spacer (3000 lb)	P308-1023	1
20	Bearing Race (inside item 21)	P316-0300	2
21	Output Housing (3000 lb)	P308-1015	1
22	Nilos Ring	P316-0298	1
23	C.R. Reel Adapter	E308-0821	1
24	Flat Capscrew, SCH 0.25"-13 x 2"	P001-1630	1
25	Pin, #5 Drill - 0.25"-20 TAP	P308-0309	1
26	Fender Washer, 0.255 I.D. x 1.740 O.D. x 0.032 TH	P308-0823	1
27	Capscrew, SCH 0.25"-20 x 0.5"	P001-1120	1
28	Key, SOC Short Arm 5/16"	P001-0388	1
29	Key, SOC Short Arm 3/16"	P001-0387	1
30	Socket Head Capscrew 0.25"-20 x 1.5"	P001-1542	8
31	Mounting Capscrew 1/2" x 1.25" Grade 5 Zinc Plated	P001-1349	8
32	Lock Washer 1/2" HC Zinc Plated	P001-1221	8
33	Grease (not pictured)	C303-1234	1
34	Decal and Literature Replacement Kit for C3080900 (not pictured)	RMD-0900	1

Parts Breakdown: 1,000 lb Gas Capstan Hoist

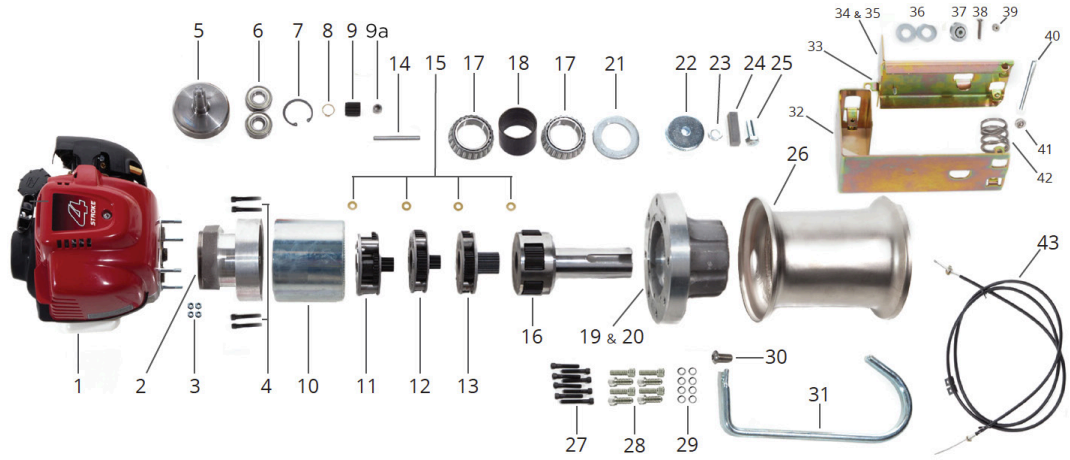
Model: C3081190



Item	Description	Part Number	Qty
1	Engine Assembly Complete with Studs (Honda 4 cycle)	RMA-GAS	1
2	Gas Adapter Body	P308-0975-B	1
3	Nut 0.25-20	P066654	4
4	Capscrew, SCH 0.25-20 x 1.75"	P001-1577	4
5	Cup Shaft	P308-0974	1
6	Bearing	P316-0411	2
7	Retaining Ring 1.5" ID	P001-1579	1
8	Retaining Ring 0.625" ID	P308-1294	1
9	Sun Gear	P308-1003	1
9a	J-45 Bearing	P308-1155	1
10	Ring Gear (1000 lb) (internal tooth) R74	P308-1341	1
11	1st Carrier Assembly	RCA-1ST	1
12	2nd Carrier Assembly	RCA-2ND	1
13	Center Pin	P308-1226	1
14	Thrust Washer	P308-1029	3
15	Output Shaft Assembly (1000 lb)	RSA-1000#	1
16	Cone Bearing	P316-0299	2
17	Bearing Spacer (1000 lb)	P308-1025	1
18	Bearing Race (inside item #19)	P316-0300	2
19	Output Housing (1000 lb)	P308-1028-B	1
20	Nilos Ring	P316-0298	1
21	Washer RD 0.531 x 2.375 Plated (for drum attachment)	P308-0287	1
22	Split Lockwasher 0.5" Plated	P001-0994	1
23	Drum Key (1000 lb)	P308-1157	1
24	Hex Capscrew 0.5"-13 x 1.25" Grade 5	P001-1521	1
25	Capstan Drum Assembly (1000 lb)	RDA-1000#	1
26	Socket Head Capscrew 0.25"-20 x 1.5"	P001-1542	4
27	Hex Head Capscrew 3/8"-16 x 1.25" Grade 5 Zinc Plated	P001-1161	4
28	Lock Washer 3/8" HC Plated	P001-1195	4
29	Button-Head Socket Capscrew SS 3/8"-16 x 1"	P308-1517	1
30	Rope Hook Assembly (1000 lb) (includes item #29)	RHA-1000#	1
31	Base for foot control	P308-0982	1
32	Pedal for foot control	P308-0983	1
33	Toe stop bracket (shown assembled to #32)	P308-0984	1
34	Screw, Tap Tite 10-24 x 1/2 Slot (Shown assembled to #32 & #33)	P001-1011	2
35	Flat Washer 0.51 x 1.06 x 0.026/0.32	P001-1916	2
36	Pulley	P403-2734	1
37	Screw 10-32 x 3/4" SS	O59712	1
38	Hex Nut 10-32 SS	O55171	1
39	Pivot Pin	P308-0989	1
40	Push Nut	P001-1915	1
41	Compression Spring	P700-2541	1
42	Throttle Cable Assembly	P308-0990	1
43	Grease (not pictured)	C303-1234	1 can
44	Gas Foot Control Assembly (includes items 31 - 42)	T308-0997	1
45	Decal and Literature Replacement Kit for C3081190 (not pictured)	RMD-1190	1

Parts Breakdown: 3,000 lb Gas Capstan Hoist

Model: C3081390



Item	Description	Part Number	Qty
1	Engine Assembly Complete with Studs (Honda 4 cycle)	RMA-GAS	1
2	Gas Adapter Body	P308-0975-B	1
3	Nut 0.25-20	P066654	4
4	Capscrew, SCH 0.25-20 x 1.75"	P001-1577	4
5	Cup Shaft	P308-0974	1
6	Bearing	P316-0411	2
7	Retaining Ring 1.5" ID	P001-1579	1
8	Retaining Ring 0.625" ID	P308-1294	1
9	Sun Gear	P308-1003	1
9a	J-45 Bearing	P308-1155	1
10	Ring Gear (3000 lb) (internal tooth) R74	P308-1301	1
11	1st Carrier Assembly	RCA-1ST	1
12	2nd Carrier Assembly	RCA-2ND	1
13	3rd Carrier Assembly	RCA-3RD	1
14	Center Pin (3000 lb)	P308-1222	1
15	Thrust Washer	P308-1029	4
16	Output Shaft Assembly (3000 lb)	RSA-3000#	1
17	Cone Bearing	P316-0299	2
18	Bearing Spacer (3000 lb)	P308-1023	1
19	Bearing Race (inside item 20)	P316-0300	2
20	Output Housing (3000 lb)	P308-1015	1
21	Nilos Ring	P316-0298	1
22	Washer RD 0.531 x 2.375 Plated (for drum attachment)	P308-0287	1
23	Split Lockwasher 0.5" Plated	P001-0994	1
24	Drum Key (3000 lb)	P308-1156	1
25	Hex Capscrew 0.5"-13 x 1.25" Grade 5	P001-1521	1
26	Capstan Drum Assembly (3000 lb)	RDA-3000#	1
27	Socket Head Capscrew 0.25"-20 x 1.5"	P001-1542	8
28	Mounting Capscrew 1/2" x 1.25" Grade 5	P001-1349	8
29	Lock washer 1/2" HC	P001-1221	8
30	Button-Head Socket Capscrew SS 1/2-13x1"	P308-1528	1
31	Rope Hook Assembly (3000 lb) (includes item #30)	RHA-3000#	1
32	Base for foot control	P308-0982	1
33	Pedal for foot control	P308-0983	1
34	Toe stop bracket (shown assembled to #33)	P308-0984	1
35	Screw, Tap Tite 10-24 x 1/2 Slot (shown assembled to #33 & #34)	P001-1011	2
36	Flat Washer 0.51 x 1.06 x 0.026/0.32	P001-1916	2
37	Pulley	P403-2734	1
38	Screw 10-32 x 3/4" SS	O59712	1
39	Hex Nut 10-32 SS	O55171	1
40	Pivot Pin	P308-0989	1
41	Push Nut	P001-1915	1
42	Compression Spring	P700-2541	1
43	Throttle Cable Assembly	P308-0990	1
44	Grease (not pictured)		
45	Gas Foot Control Assembly (includes items 32 - 43)	C303-1234	1 can
46	Decal and Literature Replacement Kit for C3081390 (not pictured)	T308-0997	1
		RMD-1390	1



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