



Read this Owner's Manual thoroughly before operating the equipment. Keep it with the equipment at all times. Replacements are available from Thern, PO Box 347, Winona, MN 55987, 507-454-2996. [www.thern.com](http://www.thern.com)

**IMPORTANT:** Please record product information on page 2. This information is required when calling the factory for service.

**ORIGINAL TEXT**



# Owner's Manual

For  
3CP1 Series Capstan Winch

## Two-Year Limited Warranty

**Please record the following:**

Date Purchased: \_\_\_\_\_

Model No.: \_\_\_\_\_

Serial No.: \_\_\_\_\_

**This information is required when calling the factory for service.**

Thern, Inc. warrants its products against defects in material or workmanship for two years from the date of purchase by the original using buyer, or if this date cannot be established, the date the product was sold by Thern, Inc. to the dealer. To make a claim under this warranty, contact the factory for an RGA number. The product must be returned, prepaid, directly to Thern, Inc., 5712 Industrial Park Road, Winona, Minnesota 55987. The following information must accompany the product: the RGA number, the date of purchase, the description of the claimed defect, and a complete explanation of the circumstances involved. If the product is found to be defective, it will be repaired or replaced free of charge, and Thern, Inc. will reimburse the shipping cost within the contiguous USA.

This warranty does not cover any damage due to accident, misuse, abuse, or negligence. Any alteration, repair or modification of the product outside the Thern, Inc. factory shall void this warranty. This warranty does not cover any costs for removal of our product, downtime, or any other incidental or consequential costs or damages resulting from the claimed defects. This warranty does not cover brake discs, wire rope or other wear components, as their life is subject to use conditions which vary between applications.

FACTORY AUTHORIZED REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY TO THE CONSUMER. THERN, INC. SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY ON THIS PRODUCT. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

**Note: Thern, Inc. reserves the right to change the design or discontinue the production of any product without prior notice.**

## About This Manual

The Occupational Safety and Health Act of 1970 states that it is the employer's responsibility to provide a workplace free of hazard. To this end, all equipment should be installed, operated, and maintained in compliance with applicable trade, industrial, federal, state, and local regulations. It is the equipment owner's responsibility to obtain copies of these regulations and to determine the suitability of the equipment to its intended use.

This Owner's Manual, and warning labels attached to the equipment, are to serve as guidelines for hazard-free installation, operation, and maintenance. They should not be understood to prepare you for every possible situation.

The information contained in this manual is applicable only to the Thern 3CP1 series Capstan. Do not use this manual as a source of information for any other equipment.

**The following symbols are used for emphasis throughout this manual:**

**⚠WARNING**

Failure to follow 'WARNING!' instructions may result in equipment damage, property damage, and/or serious personal injury.

**⚠CAUTION**

Failure to follow 'CAUTION!' instructions may result in equipment damage, property damage, and/or minor personal injury.

**Important!**

Failure to follow 'important!' instructions may result in poor performance of the equipment.



## Suggestions for Safe Operation

### **⚠WARNING**

#### DO the following:

Read and comply with the guidelines set forth in this Owner's Manual. Keep this manual, and all labels attached to the winch, readable and with the equipment at all times. Contact Thern, Inc. for replacements.

Before each use inspect the winch for leaks or other damage.

Install the rope securely to the winch drum.

Install the winch in a well-lit area, free of clutter and trip hazards. It should be positioned where there is a good line of sight of the winch, rigging and load being moved. Use a spotter if load path is obstructed. The mounting should take into consideration the ergonomics of handling the rope as well as operating the rope lock.

Use the proper amount of rope wraps on the drum to keep the hand effort to about 20 pounds of pull. This will vary based on the load being moved, rope size, and rope construction. See section 1.3 for additional information.

Keep hands away from the pinch points between the drum and the rope, and other moving parts of the equipment.

Wear hearing protection when operating the winch.

Keep all unnecessary personnel away from winch while in operation. Keep out of the path of the load.

Disconnect electric power before servicing the equipment.

Stay out of path of potential spring back of broken rope.

Position the winch such that the load line fleet angle is minimized. See section 1.1 for additional information.

Secure the rotation stop used with the swivel mount, when supplied, before operation to prevent unexpected rotation. Properly align winch with load to prevent rotation or damage to rotation stop.

Before operation with the swivel mount, when supplied, verify the pivot bolt and nut are secure with safety cotter pin properly in place.

Ensure mounting surface or vehicle is rated for expected loads, including potential shock loads.

Use only Thern manufactured accessories with the Thern 3CP1 series capstan winch. Use of non-Thern accessories may result in injury, poor performance, and loss of warranty.



## Suggestions for Safe Operation

### ⚠️ WARNING

#### DO NOT do the following:

Do not lift people or things over people. Do not walk or work under a load or in the line of force of any load.

Do not exceed the load rating of the winch or any other component in the system. Doing so could result in failure of the equipment.

Do not use more than one winch to move a load unless each winch was designed for a multiple winch system.

Do not use damaged or malfunctioning equipment. Doing so could result in failure of the equipment.

Do not position yourself under the load being moved.

Do not position yourself between the winch and the load being moved.

Do not operate the winch with rope lock, rope keeper gate, drive guards or gear covers removed or improperly installed.

Do not install rope with hand line next to reducer. Always have the load line closest to the reducer.

Do not let go of the rope when operating the winch.

Do not modify the equipment in any way. Doing so could cause equipment failure.

Do not wrap the rope around the load. This damages the rope and could cause the load to escape. Use approved rigging connectors to secure the rope to the load.

Do not divert your attention from the operation. Stay alert to the possibility of accidents, and try to prevent them from happening.

Do not jerk or swing the load. Avoid shock loads by starting and stopping the load smoothly. Shock loads overload the equipment and may cause damage.

Do not rely on winch to hold unattended loads. Do not leave a suspended load.

Do not operate the winch without the rope lock.

Do not adjust the rope lock while the lock is securing the rope. Accidental release of the rope or injury may occur.

Do not position the winch where the load line or hand line will result in an excessive fleet angle. See section 1.1 for additional information.

Do not operate the winch without all fasteners and pins securely in place.

Do not use the hitch mount accessory with lightweight or otherwise unstable vehicles that may move during operation.

## 1.1 Installing the Winch

### ▲WARNING

**Do not install the winch in an area defined as hazardous by the National Electric Code, unless installation in such an area has been thoroughly approved.**

**Do not install the winch near corrosive chemicals, flammable materials, explosives, or other elements that may damage the winch or injure the operator. Adequately protect the winch and the operator from such elements. Do not install the winch in an area defined as hazardous or potentially explosive.**

**Position the winch so the operator can stand clear of the load, and out of the path of a broken rope that could snap back and cause injury.**

**Attach the winch to a rigid and level foundation that will support the winch and its load under all load conditions, including shock loading.**

### Important!

- Inspect the winch immediately following installation according to the Instructions for Periodic Inspection. This will give you a record of the condition of the winch with which to compare future inspections.
- A qualified professional should inspect or design the foundation to insure that it will provide adequate support.
- Locate the winch so it will be visible during the entire operation
- Do not weld the winch frame to the foundation or support structure. Welding the frame may void warranty, contact Thern, Inc. Use fasteners as instructed.

- 1.1.1 CONSULT APPLICABLE CODES AND REGULATIONS for specific rules on installing the equipment.
- 1.1.2 LOCATE THE WINCH in an area clear of traffic and other obstacles. Make sure the winch is accessible for maintenance and operation.
- 1.1.3 LOCATE THE WINCH in an area with ambient temperatures between -4°F to +122°F (-20°C to +50°C)
- 1.1.4 LOCATE THE WINCH to maintain an appropriate fleet angle. **The rope fleet angle should never exceed 15 degrees when exiting the drum or rope lock.** Secure the rotation stop used with the swivel mounting bracket before operation to prevent unexpected rotation. Properly align winch with load to prevent rotation or damage to rotation stop. See Figure 1.
- 1.1.5 FASTEN THE WINCH securely to the foundation.
  - a FOR STANDARD PRODUCTS referred to in this manual, use a minimum of four coarse thread fasteners, 1/2 – 5/8 inch grade 5 (12 – 16mm, grade 8.8) or better. Make sure the winch is secured to a solid foundation able to support the winch and load under all conditions with design factors based on accepted engineering practices.

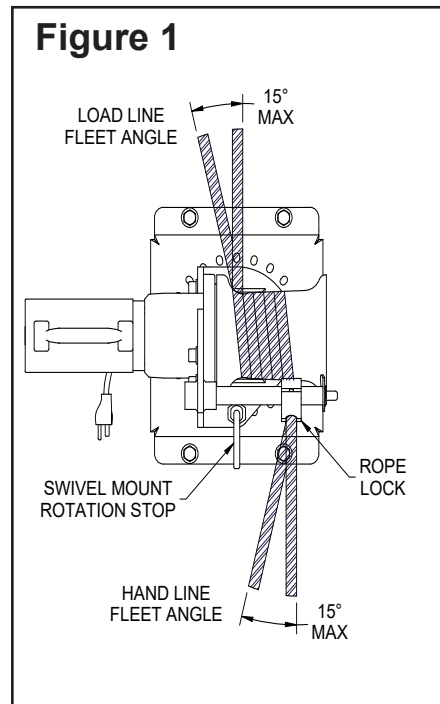
Suggested Fastener Torque Values (ft-lbs)

	Plain & Dry	Zinc Plated	Lubricated (eg. loctite)
1/2 inch grade 5	75	65	55
5/8 inch grade 5	150	125	110
M12 grade 8.8	65	55	49
M16 grade 8.8	160	135	120

When using the hitch mount accessory, tighten fasteners to 65 ft-lbs.

Refer to manufacturer's instructions for other fastener types with specific torque or installation instructions.

- b NON-STANDARD PRODUCTS that vary from the original design may have different fastening requirements. Contact a structural engineer or Thern, Inc. for this information.



- 1.1.6 HITCH MOUNT ACCESSORY should be attached to an appropriate vehicle with a 2 inch receiver using the supplied clevis and cotter pin.

**Do not use the hitch mount accessory with lightweight or otherwise unstable vehicles that may move during operation.**

**⚠WARNING** WITH LOCAL CODES, CONTACT A QUALIFIED PROFESSIONAL TO OBTAIN PROPER STRUCTURE OR FOUNDATION SPECIFICATIONS FOR THE MOUNTING OF THERN PRODUCTS.

**Important!**

- Use components rated for the power supply you will be using.
- Always disconnect electric power when the unit is not in use.

## 1.2 Connecting Electric Power

**⚠WARNING**

**Install proper branch circuits, disconnect devices, protection, and grounding as required by article 430 of the National Electric Code.**

**All electrical work must be performed by a licensed electrician. Failure to do so could result in electric shock, poor winch operation, or damage to equipment.**

**Locate control devices so the operator will be able to view the load through the entire operation.**

**Locate control devices so the operator will be clear of the load.**



Image 1

- 1.2.1 USE AN APPROPRIATELY sized extension cord to plug into a grounded 115 Volt +/- 10%, single phase, 50 or 60 Hertz power source. See Image 1.
  - a RECOMMENDED GENERATOR size is 4500 Starting (Peak) Watts.



Image 2

Extension Cord Diameter (gauge)	Maximum Cord Length (feet)
14	75
12	125
10	200
8	300
6	500



Image 3

- 1.2.2 PLUG IN foot switch cord as shown in Image 2.
- 1.2.3 TWIST FOOT SWITCH PLUG CLOCKWISE to secure.
- 1.2.4 TEST POWER BY operating the foot switch as shown in Image 3.

**Important!**

- Use synthetic fiber rope and other rigging equipment rated for the size of the largest load you will be moving.
- Do not drag the synthetic fiber rope through dirt or debris to avoid causing damage or poor operation.
- Use proper protection when handling synthetic fiber rope.



Image 4



Image 5



Image 6



Image 7



Image 8

## 1.3 Installing the Rope

**⚠WARNING**

**Wrap the rope securely to the drum. A poorly secured rope could slip and allow the load to escape.**

**Select a rope that has a high melting point, low stretch, and a good resistance to abrasion. Avoid rope materials that may glaze when subjected to heat caused by friction with the drum or that may build up a static charge. Do not use polypropylene rope.**

**Always install the rope overwound so the load line is closest to the motor. Failure to do so can cause an unsafe condition and may result in equipment damage or injury.**

**Never add or subtract rope wraps to the drum while the load is suspended.**

1.3.1 Thern recommends 1/2 to 3/4 inch (12 to 19mm) double braided SAMSON Stable Braid rope. Contact factory for more information.

1.3.2 TO INSTALL ROPE, open safety gate. See Image 4. Wrap the rope counter-clockwise (looking at the drum from the bell) with the load line starting at the narrow end of the drum closest to the motor. See Image 5.

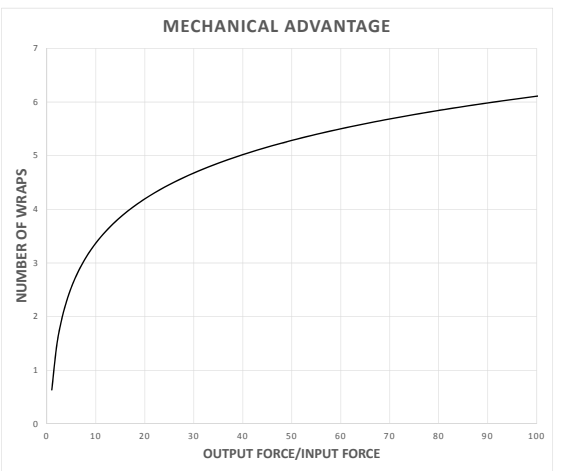
1.3.3 USE THE PROPER NUMBER OF ROPE WRAPS on the drum for the load being lifted or lowered. The number of wraps required varies depending with the weight of the load and should result in about 20 pounds of effort by the user to allow easy operation. Four wraps are a good starting point, but adding or subtracting wraps may be required to find the proper number. See Figure 2. **Avoid placing too many wraps on the drum as this can lead to uncontrolled lifting.**

1.3.4 INSERT ROPE INTO ROPE LOCK by pulling open cam and positioning rope as shown in Image 6. **Do not operate the winch without the rope lock.**

1.3.5 RELEASE THE CAM to secure rope in place. See Image 7 and 8.

1.3.6 TO REMOVE ROPE, reverse the steps above.

**Figure 2**



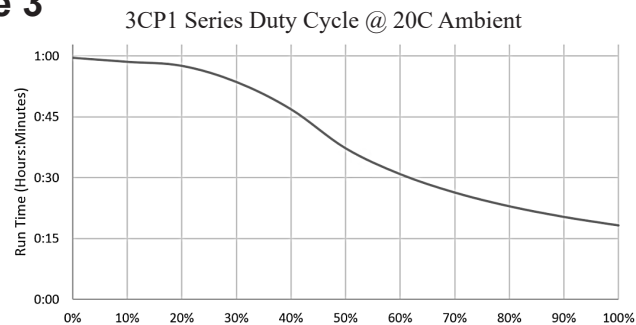
## 2.1 General Theory of Operation

### Important!

- To help ensure rated performance, make sure voltage at the motor is equal to the motor's voltage rating.
- It is your responsibility to detect and account for different factors affecting the condition and performance of the equipment.

- 2.1.1 THE PULL REQUIRED to move the load must not exceed the load rating of the winch. Consider the total force required to move the load, not the weight of the load.
- 2.1.2 THIS EQUIPMENT CAN develop forces that will exceed the load rating. It is the responsibility of the equipment user to limit the size of the load. Inspect the equipment regularly for damage according to the instructions contained in this manual.
- a LOAD RATING represents the maximum pull that can be placed on new equipment.
- 2.1.3 DUTY RATINGS refer to the type of use the equipment is subject to. Consider the following when determining duty rating.
- a ENVIRONMENT: harsh environments include hot, cold, dirty, wet, corrosive, or explosive surroundings. **Protect the equipment from harsh environments when possible.**
- b MAINTENANCE: poor maintenance, meaning poor cleaning, lubrication, or inspection, leads to poor operation and possible damage of the equipment. **Minimize poor maintenance by carefully following the instructions contained in this manual.**
- c LOADING: severe loading includes shock loading and moving loads that exceed the load rating of the equipment. **Avoid shock loads, and do not exceed the load rating of the equipment.**
- d FREQUENCY OF OPERATION: frequent start and stop functions increase wear and shorten the life span of the power train and load brake components. Lengthy operations cause power train to become hot, which also decreases the life span of the gear train. See Figure 3.

### Figure 3



The duty cycle data shown in figure 2 was collected with a 20°C ambient temperature. Ambient temperatures above and below this will have an effect on the duty cycle.



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## 2.2 Breaking-In the Winch

- 2.2.1 BREAK-IN OCCURS during the first few minutes of normal operation. During break-in, mating surfaces become polished, and clearances increase. This is desired for efficient operation of bearings and gears.
- 2.2.2 INSPECT THE WINCH following break-in according to the Instructions for Periodic Inspection. See Section 3.2 - Inspecting the Equipment.

**Important!**

- When determining whether the load will exceed the load rating, consider the total force required to move the load.

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## 2.3 Preparing for Operation

- 2.3.1 CONSIDER THE OPERATION. Do not begin until you are sure you can perform the entire operation without hazard.
- 2.3.2 INSPECT ALL COMPONENTS of the system.
- a INSPECT THE WINCH and other equipment according to the Instructions for Frequent Inspection.
  - b OPERATORS must be in good health, alert, thoroughly trained in operating the equipment, and properly clothed (hard hat, hearing protection, safety shoes, gloves and safety glasses, no loose clothing).
  - c THE LOAD must be clear of other objects and free to move. Make sure the load will not tip, spin, roll away, or in any way move uncontrollably.
- 2.3.3 KNOW YOUR LOAD and make sure you do not exceed the load rating of the winch or any other equipment in the system.
- 2.3.4 HAVE A METHOD FOR HANDLING ROPE. As the rope is pulled off the drum, lay the rope into a container. Use a clean box or wastebasket. This will help prevent tripping or entanglement with the rope.

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## 2.4 Attaching the Load

**⚠WARNING**

**Do not wrap the rope around the load. This damages the rope and could cause the load to escape. Use an approved lifting device.**

- 2.4.1 CLEAR OBJECTS from the path of the load so you can move it freely and observe it at all times during the operation.
- 2.4.2 ATTACH THE ROPE TO THE LOAD using an approved lifting device. Follow the recommendations of the rope, shackle, and/or sling manufacturer. Knots and other rope terminations may decrease the strength of the rope.
- 2.4.3 DO NOT ATTEMPT to move a load that is directly above the winch. Reposition the winch to achieve the least amount of fleet angle to the load. See Figure 1.

**Important!**

- Obey a stop signal from anyone.
- Maintain tension on the synthetic fiber rope to keep it tightly and evenly wound on the drum.
- If the winch and load are not visible during the entire operation, get help from another person.
- Appoint a supervisor if more than one person is involved in the operation. This will reduce confusion and increase safety.



Image 6



Image 7



Image 8

**2.5 Moving the Load**

- 2.5.1 **SECURELY GRASP HAND LINE** end of rope.
- 2.5.2 **MOVE THE LOAD** slowly and smoothly, only a small distance at first. Make sure the load is balanced and securely attached before continuing. Make sure the supporting structure, winch mount bracket(s), and/or vehicle is stable and secure before continuing.
- 2.5.3 **USE FOOT SWITCH CONTROL** to operate the winch motor. The foot pedal is a momentary contact type so the winch will stop when the operator releases the switch.
- 2.5.4 **TO RAISE THE LOAD**, pull on hand-line end of rope. See Image 7. **Always ensure hand-line is running through rope lock during operation.**
- 2.5.5 **OBSERVE THE ROPE** as it winds onto the drum. Keep tension on the hand-line of the rope. If it becomes loose, uneven, or overlapped, stop the operation and re-wind the rope before continuing. **Continued operation with overlapped or uneven rope can damage the rope or cause a dangerous and unsafe condition.**
- a **TIE-OFF POINT LOAD RATING** is 1000 lbs (450 kg) when using the eye nut supplied with 3CP1S-AFS mounting hardware. See Parts Diagram on Page 19 item 23.
- 2.5.6 **TO LOWER THE LOAD**, raise the load slightly to remove tension on the rope lock cam. See Image 7.
- a **PULL CAM OPEN** to disengage from rope. Use the rope lock pull cord to hold the cam open during lowering. See Image 6.
- b **PAY OUT HAND LINE** to lower the load. To reduce rope wear, lower the load without the motor running. See Image 8.
- 2.5.7 **ALLOW THE WINCH TO COOL DOWN** to ambient temperature during rest periods between operations.
- 2.5.8 **OBSERVE THE WINCH** during operation for signs of overheating. Frequent overheating may be a sign of damage.
- a **WATCH FOR SMOKE**, the smell of burnt lubricant, and other signs of overheating. Use a thermocouple or other device to monitor winch temperature. The maximum allowable surface temperature of the motor is 65°C. Prevent rope damage by limiting the heat transfer from the drum to the rope.
- b **STOP OPERATION** if the winch overheats and allow the winch to cool. **Continued operation while hot may cause damage to the winch and rope.**

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## 2.6 Operating Rope Lock

- 2.6.1 PULL ON THE ROPE LOCK PULL CORD to allow for rope entry. See Image 6.
- 2.6.2 RELEASE CAM to engage on rope. See Image 7. Always run rope through rope lock.
- 2.6.3 PULL ROPE to raise load. See Image 7.
  - a TO STOP, release tension on rope and let cam close to secure. See Image 8.
- 2.6.4 TO LOWER LOAD while winch is running, raise the load to remove tension on the cam. See Image 7.
  - a PULL CAM OPEN to disengage from rope. See Image 6.
  - b PAY OUT HAND LINE while cam is held open, to allow load to lower. See Image 8. Use the rope lock pull cord to hold the cam open during use.

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## 2.7 Adjusting The Rope Lock



Image 9



Image 10



Image 11

- 2.7.1 LOOSEN OR REMOVE the two M12 socket head cap screws on the motor end of the rope lock assembly. See Image 9.
- 2.7.2 ADJUST ROPE LOCK to the desired location and tighten the M12 socket head cap screws to 37 ft-lb. The rope lock adjustment should take into consideration the ergonomics of handling the rope.
  - a ROTATE THE ROPE LOCK MOUNTING BRACKET and cam block to increase the rope lock range of motion. See Images 10 and 11.
- 2.7.3 ADJUST THE ANGLE OF THE CAM BLOCK by loosening the M6 socket head cap screw as shown in Image 11. Tighten the M6 socket head cap screw to a minimum torque of 5 ft-lb to prevent unwanted rotation of the rope lock.

**Important!**

Increase the frequency of maintenance procedures if the unit is:

- Operated for long periods.
- Used to pull heavy loads.
- Operated in wet, dirty, hot, or cold surroundings.

**Important!**

- Start an inspection program as soon as you put the winch into use.
- Appoint a qualified person to be responsible for regularly inspecting the equipment.
- Keep written records of inspection. This allows comparison with comments from previous inspections so you can see changes in condition or performance.

**Perform frequent inspections:**

- Before each operation.
- Every 3 hours during operation.
- Whenever you notice signs of damage or poor operation.

**Perform periodic inspections:**

- Every 6 months.
- Whenever you return the winch to service from storage.
- Whenever you notice damage or poor operation in a frequent inspection.
- Whenever you have, or think you may have, overloaded or shock loaded the winch.

**Frequent Rope Inspection:**

- Use rope manufacturers guidelines for rope inspection, replacement and maintenance.

## 3.1 Cleaning the Winch

Keep capstan clean of dirt and free of oil. Never allow oil to collect on the drum. Clean the winch to remove dirt and help prevent rust and corrosion.

- 3.1.1 CLEAN THE WINCH whenever it is dirty.
- a WIPE ALL EQUIPMENT with a mild detergent to remove dirt and grease.
  - b WIPE OFF excessive amounts of oil to avoid the accumulation of dirt.
- 3.1.2 DO NOT APPLY grease or oil to drum.

## 3.2 Inspecting the Equipment

**⚠WARNING**

**Do not use damaged or malfunctioning equipment. Use Lock Out/Tag Out procedures per your company.**

**Completely correct all problems before continuing. Use the troubleshooting chart to help determine the cause of certain problems. See Table 2.**

Inspect the winch to detect signs of damage or poor operation before they become hazardous. See Table 1 - Inspection Checklist.

- 3.2.1 CONSULT APPLICABLE CODES AND REGULATIONS for specific rules on inspecting the winch and other equipment.
- 3.2.2 **Instructions for Frequent Inspection**
- a VISUALLY INSPECT the winch and all other equipment.
    - Check all equipment for cracks, dents, bending, rust, wear, corrosion and other damage.
    - Check the reducer for signs of leakage.
    - Make sure the mounting fasteners are tightened securely. When using the swivel mount, make sure the cotter pin used with the pivot bolt castle nut is securely in place
    - Make sure the foundation is in good condition, and capable of supporting the winch and its load under all load conditions.
    - Check electrical wiring and connections for wear, corrosion, cuts, and other damage.
  - b TEST WINCH PERFORMANCE by operating the winch with a load not exceeding the load rating.
    - Listen for unusual noises and look for signs of damage as you operate the winch.
    - Make sure the load moves smoothly, without hesitation or strain.
    - Make sure the winch responds to the foot pedal control. It must rotate when you actuate, and turn off when you release the control.

**Table 1 – Inspection Checklist**

*checked boxes indicate damage or problem in need of repair*

	<b>damages</b>	<b>problems</b>
<b>general</b>	<input type="checkbox"/> finish weathered, flaking, otherwise damaged <input type="checkbox"/> parts cracked, bent, rusted, worn, otherwise damaged	<input type="checkbox"/> winch jerks or hesitates during operation <input type="checkbox"/> unusual noises, other signs of malfunction
<b>fasteners</b>	<input type="checkbox"/> stripped threads, bent, worn, otherwise damaged	<input type="checkbox"/> loose, not tightened to proper torque
<b>reducer</b>	<input type="checkbox"/> gears, bearings, or shafts loose, worn, otherwise damaged <input type="checkbox"/> lubricant leakage	<input type="checkbox"/> not properly lubricated <input type="checkbox"/> lubricant contaminated
<b>end connections</b>	<input type="checkbox"/> corroded, rusted, worn, otherwise damaged	<input type="checkbox"/> not securely attached
<b>drum</b>	<input type="checkbox"/> worn, distorted, otherwise damaged	<input type="checkbox"/> excessive movement or backlash
<b>motor</b>	<input type="checkbox"/> motor corroded, burnt out, otherwise damaged	<input type="checkbox"/> motor is sluggish, motor pulls high amps, or operates poorly
<b>brake</b>	<input type="checkbox"/> brake worn, corroded, otherwise damaged	<input type="checkbox"/> brake does not operate properly
<b>control device</b>	<input type="checkbox"/> electric components corroded, burnt, otherwise damaged	<input type="checkbox"/> fails to control winch properly
<b>electric circuit</b>	<input type="checkbox"/> electric wires worn, cut, corroded, otherwise damaged <input type="checkbox"/> connections loose, corroded, otherwise damaged	<input type="checkbox"/> wires unprotected, obstructing traffic voltage at motor =
<b>labels and plates</b>	<input type="checkbox"/> dirty, illegible, otherwise damaged	<input type="checkbox"/> loosely attached or missing

**comments**

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authorized signature \_\_\_\_\_ date \_\_\_\_\_

3.2.3 **Instructions for Periodic Inspection****Important!**

- It is your responsibility to determine when to replace parts. When considering whether to continue using a part or to replace it, remember that replacing it is the best way to avoid further equipment damage.
- Appoint a qualified person to be responsible for all repairs to the equipment.

**Important!**

- Keep a record of what you ship, and when you send it.

- a VISUALLY INSPECT the winch and all other equipment.
  - Disassembly may be required in order to properly inspect individual components. Contact factory for assembly/disassembly instructions. Disassembly of the gearbox before contacting Thern, Inc. voids all warranties.
  - Check the finish for wear, flaking, or other damage.
  - Check all equipment for cracks, dents, bending, rust, wear, corrosion and other damage. If the equipment was overloaded, or if you notice cracks and other signs of overloading and damage, promptly remove equipment from use and have it repaired or replaced. **DO NOT CONTINUE TO USE DAMAGED OR OVERLOADED EQUIPMENT OR ROPE.**
  - Check all fasteners for stripped threads, wear, bends, and other damage.
  - Check the gearbox for signs of leakage. Contact the factory if there are any signs of lubricant leaking from the gearbox.
  - Make sure all labels and name-plates are legible, firmly attached, free of damage and clean. Replacements are available from the factory.
- b INSPECT ROPE. Refer to rope manufacturer's guidelines for inspection.
- c MOVE THE DRUM with your hands.
  - Check for excessive movement indicating worn or loose gears, fasteners, or bearings. Excessive movement is caused by overloading, overheating, or loose fasteners, and is a sign that your application may require a larger power winch.
  - Disassemble the winch if necessary. Inspect keys, bearings, seals, and shafts for wear, distortion, and other damage. Contact factory.
- d INSPECT FOUNDATION AND RIGGING.
  - Check mounting fasteners for stripped threads, wear, and other damage.
  - Check the foundation for cracks, corrosion, and other damage.
- e TEST WINCH PERFORMANCE by operating the winch with a test load equal to the load rating.
  - Listen for unusual noises, and look for signs of damage as you operate the winch.
  - Observe the rotating drum, look for signs of loose or misaligned bearings.
  - Make sure the winch responds to the control device. It must rotate counter clockwise -when looking at the drum from the bell-and it must turn off when you release the control.
  - Make sure the load moves smoothly, without hesitation or strain.
  - Check the internal brake. Raise the load, then lower it and suspend it a few feet off the ground. If the drum continues to rotate contact the factory.
  - Check the rope lock. Raise the load, then lower it and suspend it a few feet off the ground. If the rope slips through the rope lock contact the factory.
- f DISCONNECT ELECTRIC POWER and inspect electrical equipment.
  - Check electrical wires for worn insulation, cuts, corroded connections, and other damage.

**Table 2 – Troubleshooting Chart**

Contact the factory for assembly/disassembly instructions. Disassembly of the gearbox before contacting Thern, Inc. voids all warranties.

<b>lubricant leakage</b>	<ul style="list-style-type: none"> <li>worn bearings . . . . .inspect and replace as necessary</li> <li>damaged oil seals or gaskets . . . . .inspect and replace as necessary</li> <li>cracked or damaged reducer . . . . .inspect and repair as necessary</li> </ul>
<b>excessive end play on drive shaft</b>	<ul style="list-style-type: none"> <li>loose or damaged keys or keyways . . . . .inspect and replace as necessary</li> <li>excessively worn gears . . . . .inspect and repair as necessary</li> </ul>
<b>excessively worn gears or bearings</b>	<ul style="list-style-type: none"> <li>load too heavy . . . . .lighten load</li> <li>poor lubrication of reducer or bearings . . . . .inspect and replace as necessary</li> </ul>
<b>overheating</b>	<ul style="list-style-type: none"> <li>operated too long without rest. . . . .allow to cool</li> <li>load too heavy. . . . .lighten load</li> <li>poor lubrication . . . . .inspect and replace as necessary</li> <li>bearing seized up . . . . .inspect and replace as necessary</li> </ul>
<b>unusual noises</b>	
high pitched squeak	<ul style="list-style-type: none"> <li>poor lubrication . . . . .inspect and replace as necessary</li> </ul>
grinding noise	<ul style="list-style-type: none"> <li>contaminated lubrication . . . . .replace as necessary</li> <li>broken gears or bearings . . . . .inspect and replace as necessary</li> </ul>
whining motor	<ul style="list-style-type: none"> <li>load too heavy. . . . .lighten load</li> <li>motor overheated . . . . .allow to cool</li> <li>motor bearings burnt out. . . . .replace motor or bearings</li> </ul>
rattling noise	<ul style="list-style-type: none"> <li>loose fasteners or set screws . . . . .tighten all fasteners and screws</li> </ul>
heavy thump during operation	<ul style="list-style-type: none"> <li>contaminants in lubricant . . . . .replace as necessary</li> <li>loose set screws or keys in gears or shafts . . .inspect and repair as necessary</li> <li>bearings defective . . . . .inspect and replace as necessary</li> </ul>
Excessively loud or unusual noise while running motor	<ul style="list-style-type: none"> <li>worn out motor brushes . . . . .contact factory</li> </ul>
motor runs intermittently, not as expected	<ul style="list-style-type: none"> <li>worn out motor brushes . . . . .contact factory</li> </ul>

### 3.3 Repairing the Winch

- 3.3.1 GET FACTORY AUTHORIZATION for all repairs. Unauthorized repairs will void the warranty, and may lead to damage or failure of the winch.
- 3.3.2 REPLACE DAMAGED OR POORLY OPERATING PARTS with Thern repair parts.
- a MOTOR BRUSH LIFE will vary depending on use and duty cycle. Expect approximately 70-75 hours of runtime if frequently running loaded. Contact Thern for replacement kit.
- 3.3.3 REFINISH AREAS or replace components where the finish is worn or flaking. A good finish helps to protect against corrosion and weather damage.
- a REMOVE THE FINISH from damaged areas, down to the bare metal.
- b CLEAN THE AREA thoroughly.
- c REPAINT with a high quality primer and finishing coat.
- c DO NOT APPLY PAINT to plated winch components.
- 3.3.4 TO ORDER REPAIR PARTS, contact your local dealer. Include the following information when ordering:
- model number
  - serial number (or code number)
  - part number
  - date purchased, and from whom
  - description of what happened, or what is wrong
  - your name and return address

<b>Table 3 – Weight Chart</b>		<b>lbs</b>	<b>kg</b>
3CP1M-AFS	Capstan winch with floor/wall mount	63	28.6
3CP1S-AFS	Capstan winch with swivel mount	77	34.9
3CP1S-HM	Hitch mount for 3CP1S swivel capstan	26	11.8



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## 4.1 Transporting the Winch

When not in use, place the capstan in a durable container or a secure location. This will help prevent damage from being struck by other objects or theft of product.

- 4.1.1 **PACK THE WINCH** for transport using the original packaging materials, if possible. If the original packaging is not available, see the following.
  - a **FASTEN THE WINCH** to a wooden base using bolts, to keep it from moving during transport.
  - b **SEAL THE WINCH** in plastic with a desiccant to help protect it from rust, corrosion, and other damage.
  - c **CONSTRUCT WOODEN SIDES** and top to protect the motor and drum from impact during transport.
  - d **PACK LOOSE PARTS** in small boxes or ship separately.
- 4.1.2 **INSPECT THE WINCH** according to the Instructions for Periodic Inspection before installing it in a new location.
- 4.1.3 **CARRY THE WINCH** using the handle and rope lock bar to securely grip the winch to carry it safely.

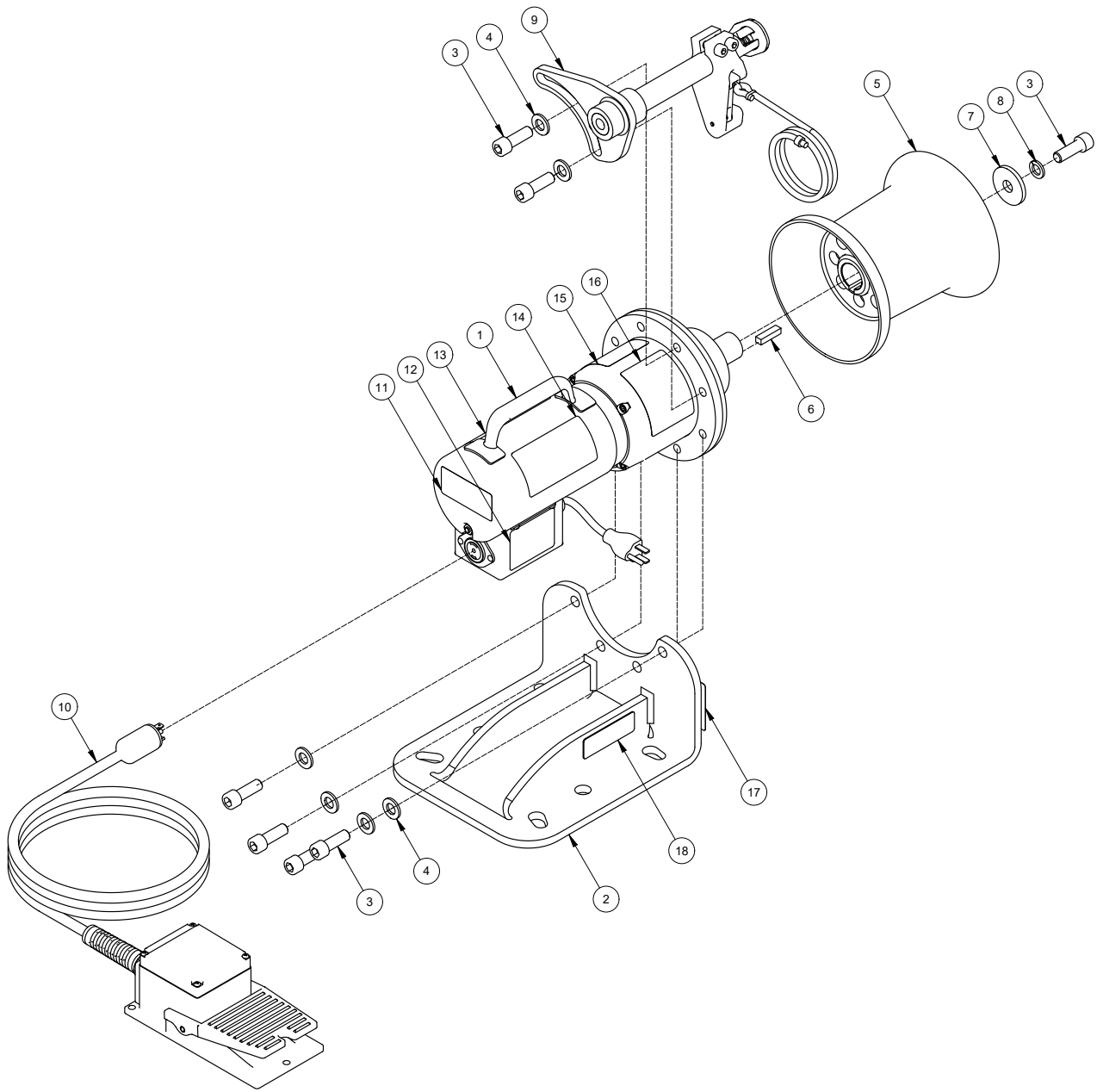
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## 4.2 Storing the Winch

- 4.2.1 **SEAL THE WINCH** in plastic with a desiccant to help protect it from rust, corrosion, and other damage.
- 4.2.2 **STORE THE WINCH** upright, in a cool clean place away from corrosive chemicals and moisture.
- 4.2.3 **ROTATE THE DRUM PERIODICALLY** to keep bearing and gear surfaces from becoming lacquered.
- 4.2.4 **INSPECT THE WINCH** according to the Instructions for Periodic Inspection before installing it for operation.

**Model 3CP1M-AFS Capstan Winch**

item	description	part number	qty.
1	MOTOR	A21173	1
2	FRAME 3CP1M	A21384	1
3	CAPSCR SOKHD M12-1.75 X 35MM ZNPL 12.9	A21951	7
4	WASHER FLT M12 X 24MM X 2.5MM ZNPL	A9879	6
5	DRUM 3CP1	A21400	1
6	KEY 8MM X 7MM X 30MM 4140HT BES	A10098	1
7	RETAINER DRUM PLATE	A21950	1
8	WASHER HELSPRLK M12	A10123	1
9	ROPE LOCK ASSEMBLY	A24639	1
10	CAPSTAN FOOTSWITCH ASSEMBLY	A24640	1
11	LABEL FACTORY TESTED	A27273	1
12	LABEL WARNING DISCONNECT ELECTRIC POWER	A2256	1
13	LABEL LIBERTY WINCH	A25010	1
14	LABEL MODEL/CAPACITY 3CP1M-AFS	A24602	1
15	LABEL WARNING 3CP1	A22049	1
16	LABEL WARNING CAPSTAN FLEET ANGLE	A28952	1
17	LABEL DRUM ROTATION 3CP1	A23843	1
18	LABEL THERN 1.00 X 3.20	A6889	2

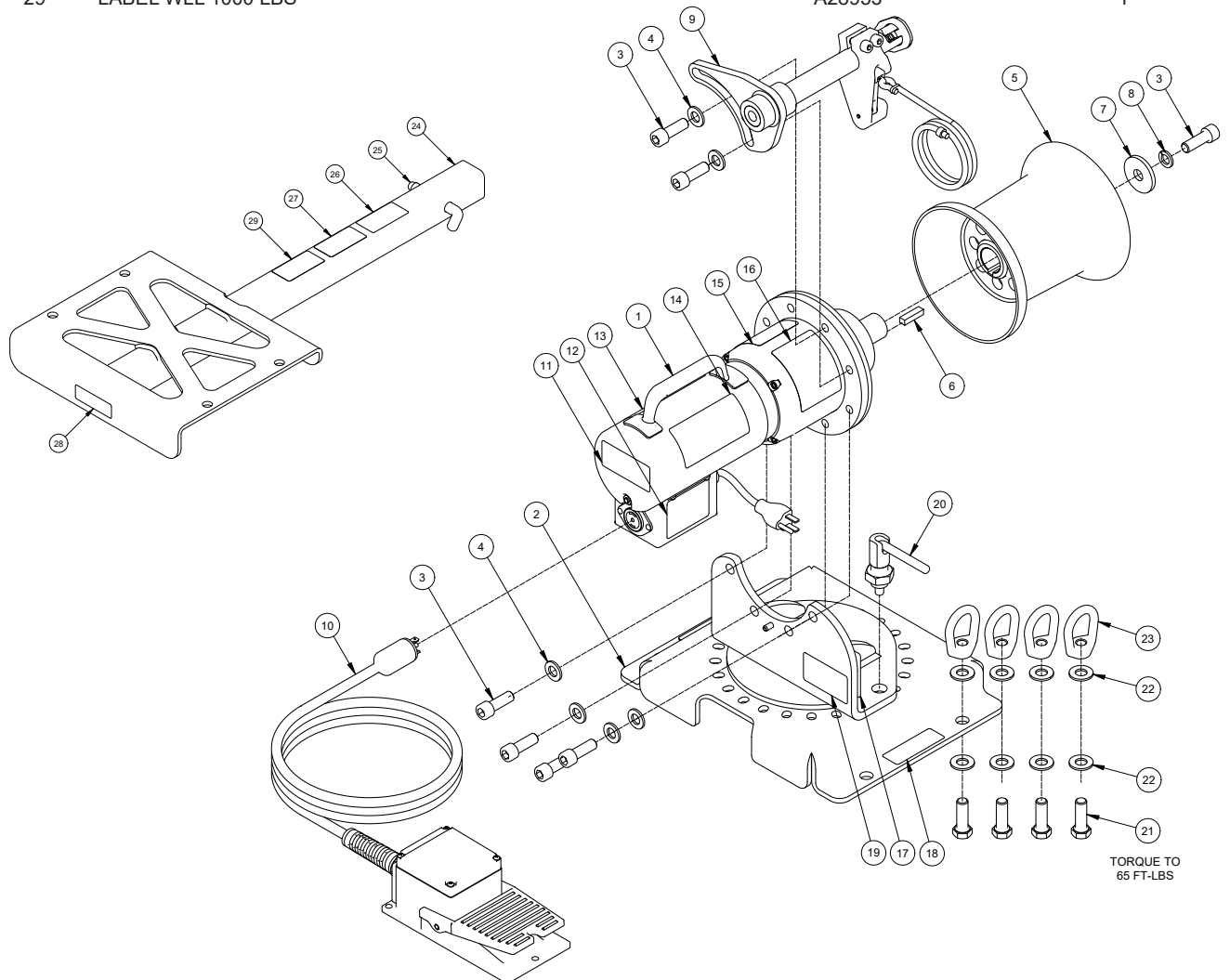


**Model 3CP1S-AFS Swivel Capstan Winch**

item	description	part number	qty.
1	MOTOR	A21173	1
2	SWIVEL MOUNT ASSEMBLY	A27374	1
3	CAPSCR SOKHD M12-1.75 X 35MM ZNPL 12.9	A21951	7
4	WASHER FLT M12 X 24MM X 2.5MM ZNPL	A9879	6
5	DRUM 3CP1	A21400	1
6	KEY 8MM X 7MM X 30MM 4140HT BES	A10098	1
7	RETAINER DRUM PLATE	A21950	1
8	WASHER HELSPRLK M12	A10123	1
9	ROPE LOCK ASSEMBLY	A24639	1
10	CAPSTAN FOOTSWITCH ASSEMBLY	A24640	1
11	LABEL FACTORY TESTED	A27273	1
12	LABEL WARNING DISCONNECT ELECTRIC POWER	A2256	1
13	LABEL LIBERTY WINCH	A25010	1
14	LABEL MODEL/CAPACITY 3CP1S-AFS	A27318	1
15	LABEL WARNING 3CP1	A22049	1
16	LABEL WARNING CAPSTAN FLEET ANGLE	A28952	1
17	LABEL DRUM ROTATION 3CP1	A23843	1
18	LABEL THERN 1.00 X 3.20	A6889	2
19	LABEL CAUTION ROTATION STOP	A27270	1
20	ROTATION LOCK ASSEMBLY .750-16NF SST	A27016	1
21	CAPSCR HEXHD .500-13NC X 1.500 ZNPL GR5	A3134	4
22	WASHER FLT SAE .500 X 1.062 X .095 ZNPL	A2932	8
23	NUT EYE 3/8 BAIL 1/2-13UNC	A27838	4

**Model 3CP1S-HM Hitch Mount for Swivel Capstan**

item	description	part number	qty.
24	3CP1S HITCH MOUNT	A37215	1
25	PIN HITCH .625 X 3.000 EFF LENGTH ZNPL	A27214	1
26	LABEL WARNING VEHICLE STABILITY	A27271	1
27	LABEL WARNING REMOVE HITCH MOUNT	A27432	1
28	LABEL THERN 1.00 X 3.20	A6889	1
29	LABEL WLL 1000 LBS	A28953	1





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