OPERATING, MAINTENANCE & PARTS MANUAL

ELECTRIC CHAIN HOIST

CM SHOPSTAR

COFFING HOISTS SLC SERIES

BUDGIT Hoists SHOPHOIST

LITTLE MULE SLM SERIES

Before installing hoist, fill in the information below.

Model Number _____

Serial No. _____

Purchase Date _____

Follow all instructions and warnings for inspecting, maintaining and operating this hoist.

The use of any hoist presents some risk of personal injury or property damage. That risk is greatly increased if proper instructions and warnings are not followed. Before using this hoist, each operator should become thoroughly familiar with all warnings, instructions and recommendations in this manual. **Retain this manual for future reference and use.**

Forward this manual to the hoist operator. Failure to operate equipment as directed in manual may cause injury.

Columbus McKinnon Corporation
205 Crosspoint Parkway
Getzville, NY 14068

P/N 192047138 Rev AA January 2018

CM HOIST PARTS AND SERVICES ARE AVAILABLE IN THE UNITED STATES AND IN CANADA

As a CM Hoist and Trolley user you are assured of reliable repair and parts services through a network of Master Parts Depots and Service Centers that are strategically located in the United States and Canada. These facilities have been selected on the basis of their demonstrated ability to handle all parts and repair requirements promptly and efficiently. To quickly obtain the name of the Master Parts Depot or Service Center located nearest you, call (800) 888-0985. Fax: (716) 689-5644.

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P/N 192047138 Rev AA January 2018

⚠ WARNING

Improper operation of a hoist can create a potentially hazardous situation which, if not avoided, could result in death or serious injury. To avoid such a potentially hazardous situation, THE OPERATOR SHALL:

a. **NOT** operate a damaged, malfunctioning or unusually performing hoist.

b. **NOT** operate the hoist until you have thoroughly read and understood this Operating, Maintenance and Parts Manual.

c. **NOT** operate a hoist which has been modified.

d. **NOT** lift more than rated load for the hoist.

e. **NOT** use hoist with twisted, kinked, damaged, or worn load chain.

f. **NOT** use the hoist to lift, support, or transport people.

g. **NOT** lift loads over people.

h. **NOT** operate a hoist unless all persons are and remain clear of the supported load.

i. **NOT** operate unless load is centered under hoist.

j. **NOT** attempt to lengthen the load chain or repair damaged load chain.

k. Protect the hoist's load chain from weld splatter or other damaging contaminants.

l. **NOT** operate hoist when it is restricted from forming a straight line from hook to hook in the direction of loading.

m. **NOT** use load chain as a sling, or wrap chain around load.

n. **NOT** apply the load to the tip of the hook or to the hook latch.

o. **NOT** apply the load unless load chain is properly seated in the chain wheel(s) or sprocket(s).

p. **NOT** apply load if bearing prevents equal loading on all load supporting chains.

q. **NOT** operate beyond the limits of the load chain travel.

r. **NOT** leave load supported by the hoist unattended unless specific precautions have been taken.

s. **NOT** allow the load chain or hook to be used as an electrical or welding ground.

t. **NOT** allow the load chain or hook to be touched by a live welding electrode.

u. **NOT** remove or obscure the warnings on the hoist.

v. **NOT** operate a hoist on which the safety placards or decals are missing or illegible.

w. **NOT** operate a hoist unless it has been securely attached to a suitable support.

x. **NOT** operate a hoist unless load slings or other approved single attachments are properly sized and seated in the hook saddle.

y. Take up slack carefully - make sure load is balanced and load holding action is secure before continuing.

z. Shut down a hoist that malfunctions or performs unusually and report such malfunction.

aa. Make sure hoist limit switches function properly.

ab. Warn personnel of an approaching load.

⚠ CAUTION

Improper operation of a hoist can create a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. To avoid such a potentially hazardous situation, THE OPERATOR SHALL:

a. Maintain firm footing or be otherwise secured when operating the hoist.

b. Check brake function by tensioning the hoist prior to each lift operation.

c. Use hook latches. Latches are to retain slings, chains, etc. under slack conditions only.

d. Make sure the hook latches are closed and not supporting any parts of the load.

e. Make sure the load is free to move and will clear all obstructions.

f. Avoid swinging the load or hook.

g. Make sure hook travel is in the same direction as shown on the controls.

h. Inspect the hoist regularly, replace damaged or worn parts, and keep appropriate records of maintenance.

i. Use factory parts when repairing the unit.

j. Lubricate load chain per hoist manufacturer's recommendations.

k. **NOT** use the hoist's overload limiting clutch to measure load.

l. **NOT** use limit switches as routine operating stops. They are emergency devices only.

m. **NOT** allow your attention to be diverted from operating the hoist.

n. **NOT** allow the hoist to be subjected to sharp contact with other hoists, structures, or objects through misuse.

o. **NOT** adjust or repair the hoist unless qualified to perform such adjustments or repairs.

SAFETY PRECAUTIONS

Each Shopstar Electric Hoist is built in accordance with the specifications contained herein and at the time of manufacture complied with our interpretation of applicable sections of the National Electrical Code (ANSI/NFPA 70). Installers are required to provide current overload protection and grounding in keeping with the code. Check each installation for compliance with the applicable sections of the code as well as the National, State and Local Codes that may apply to the installation. In addition, safety code requirements associated with the operation of a hoist in the inverted (theatrical) position (chain port up), as with any mechanical equipment, vary depending upon locality. Therefore, before installing the hoist, the user should consult his insurance company and/or local authority to see if a deviation is required to permit the use of the hoist in this particular application.

The safety laws for elevators, lifting of people and for dumbwaiters specify construction details that are not incorporated into the hoists. For such applications, refer to the requirements of applicable state and local codes, and the American National Safety Code for elevators, dumbwaiters, escalators and moving walks (ASME A17.1). We cannot be responsible for applications other than those for which the equipment is intended.

*Copies of this standard can be obtained from ASME Order Department, 22 Law Drive, PO Box 2300, Fairfield, NJ 07007- 2300, U.S.A., www.asme.org, 800-843-2763.

⚠ **THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH IF NOT FOLLOWED COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL AND ANY PROVIDED WITH THE EQUIPMENT BEFORE ATTEMPTING TO OPERATE YOUR SHOPSTAR HOIST.**

HOIST SAFETY IS UP TO YOU...

⚠ WARNING

DO NOT LIFT MORE THAN RATED LOAD.

CHOOSE THE RIGHT HOIST FOR THE JOB...

Choose a hoist with the capacity for the job. Know the capacities of your hoists and the weight of your loads. Then match them.

The application, the size and type of load, the attachments to be used and the period of use must also be taken into consideration in selecting the right hoist for the job.

Remember, the hoist was designed to ease our burden and carelessness not only endangers the operator, but in many cases, a valuable load.

⚠ WARNING

DO NOT OPERATE DAMAGED OR MALFUNCTIONING HOIST.

DO NOT OPERATE WITH TWISTED, KINKED, OR DAMAGED CHAIN.

INSPECT

All hoists should be visually inspected before use, in addition to regular, periodic maintenance inspections.

Inspect hoists for operations warning notices and legibility.

Deficiencies should be noted and brought to the attention of supervisors. Be sure defective hoists are tagged and taken out of service until repairs are made.

Under no circumstances should you operate a malfunctioning hoist.

Check for gouged, twisted, distorted links and foreign material. Do not operate hoists with twisted, kinked, or damaged chain links.

Load chain should be properly lubricated.

Hooks that are bent, worn, or whose openings are enlarged beyond normal throat opening should not be used. If latch does not engage throat opening of hook, hoist should be taken out of service.

Chains should be checked for deposits of foreign material which may be carried into the hoist mechanism.

Check brake for evidence of slippage under load.

⚠ WARNING

DO NOT PULL AT AN ANGLE. BE SURE HOIST AND LOAD ARE IN A STRAIGHT LINE.

DO NOT USE LOAD CHAIN AS A SLING.

USE HOIST PROPERLY

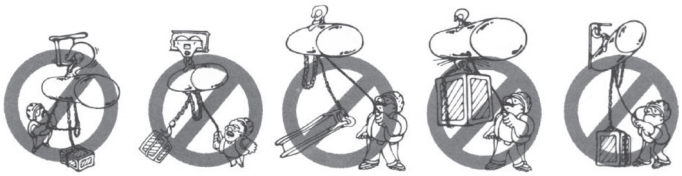
Be sure hoist is solidly held in the uppermost part of the support hook arc.

Be sure hoist and load are in a straight line.
Do not pull at an angle.

Be sure load is hooked securely. Do not tip load the hook. Do not load hook latch. Hook latch is to prevent detachment of load under slack chain conditions only.

Do not use load chain as a sling. Such usage damages the chain and lower hook.

Do not operate with hoist head resting against any object. Lift the load gently. Do not jerk it.



⚠ WARNING

DO NOT LIFT PEOPLE OR LOADS OVER PEOPLE

LIFT PROPERLY

Do not lift co-workers with a hoist.

Make sure everyone is clear of the load when you lift.

Do not remove or obscure operational warning notices.

MAINTAIN PROPERLY

CLEANING

Hoists should be kept clean and free of dust, dirt, moisture, etc., which will in any way affect the operation or safety of the equipment.

LUBRICATION

Chain should be properly lubricated.

AFTER REPAIRS

Carefully operate the hoist before returning it to full service.

VIOLATIONS OF ANY OF THE WARNINGS LISTED MAY RESULT IN SERIOUS PERSONAL INJURY TO THE OPERATOR OR NEARBY PERSONNEL BY NATURE OF RELEASED LOAD OR BROKEN HOIST COMPONENTS.

FOREWORD

This manual contains important information to help you properly install, operate and maintain your hoist for maximum performance, economy and safety.

Please study its contents thoroughly before putting your hoist into operation. By practicing correct operating procedures and by carrying out the recommended preventive maintenance suggestions, you will experience long, dependable and safe service. After you have completely familiarized yourself with the contents of this manual, we recommend that you carefully file it for future reference.

The information herein is directed to the proper use, care and maintenance of the hoist and does not comprise a handbook on the broad subject of rigging.

Rigging can be defined as the process of lifting and moving heavy loads using hoists and other mechanical equipment. Skill acquired through specialized experience and study is essential to safe rigging operations. For rigging information, we recommend consulting a standard textbook on the subject.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

SPECIFICATIONS

Standard features of the Electric Chain Hoist include:

- Alloy steel, oblique lay liftwheel that provides constant chain speed and reduces chain wear.
- Hoistaloy® load chain for long and dependable service.
- Grease lubricated, hardened spur gears provide smooth and quiet operation.
- Thermally protected, hoist duty motor.
- Forged steel upper and lower hooks with latch.
- ProtectorTM that prevents lifting dangerous overloads.
- D.C. disc type motor brake plus regenerative braking.
- 10 foot (3 M) lift. Longer lifts can be supplied on a per order basis.
- 6 foot (1.8 M) power cord with three prong plug for grounding on 115-1-50/60 units. 6 foot (1.8 M) power cord with provisions for grounding is standard on 220-1-50 and three phase units.
- Rugged NEMA 4 (weatherproof) control station is suspended on a TYPE SO cord six feet (2.8 M) below the bottom of the hoist. Longer cords can be provided on a per order basis.
- Lightweight die cast aluminum frames and covers.
- Ball or needle bearings at all rotating points.
- Compact, yet rugged, design provides minimum headroom and long, trouble-free service
- 220-1-50, 380 to 460-3-50/60, 220 to 240-3-50/60 and 575-3-60 units available. Lift speeds are based on 60 hertz power supply. For 50 hertz power supply lift speeds will be 5/6 of those indicated.
- Speeds and capacities based on Table 1, below.
- UL and cUL listed.
- Lifetime Warranty.

Follow all instructions and warnings for inspecting, maintaining and operating this hoist.

The use of any hoist presents some risk of personal injury or property damage. That risk is greatly increased if proper instructions and warnings are not followed. Before using this hoist, each operator should become thoroughly familiar with all warnings, instructions, and recommendations in this manual.

Retain this manual for future reference and use.

Forward this manual to the hoist operator. Failure to operate the equipment as directed in the manual may cause injury. Before putting hoist into service, fill in the information below. Refer to the hoist identification plate.

Model Number _____

Serial No. _____

Purchase Date _____

Voltage _____

Rated Load _____

Table 1 - Specifications

Lift	6 fpm	8 fpm	12 fpm	13.3 fpm	16 fpm	20 fpm	24 fpm	40 fpm
250 lb					x		x	x
300 lb					x	x	x	x
500 lb		x	x		x	x	x	
550 lb				x				
600 lb		x	x					
1000 lb	x	x	x					

REPAIR/REPLACEMENT POLICY

All Electric Chain Hoists are inspected and performance tested prior to shipment. If any properly maintained hoist develops a performance problem, due to a material or workmanship defect, as verified by the factory, repair or replacement of the unit will be made to the original purchaser without charge. This repair/replacement policy applies only to Shopstar Hoists installed, maintained and operated as outlined in this manual, and specifically excludes hoists subject to normal wear, abuse, improper installation, improper or inadequate maintenance, hostile environmental effects and unauthorized repairs/modifications.

We reserve the right to change materials or design if, in our opinion, such changes will improve our product. Abuse, repair by an unauthorized person, or use of non-factory replacement parts voids the guarantee and could lead to dangerous operation. All Shopstar Electric Chain Hoists are backed with a lifetime warranty. Refer to the back cover for details and limitations.

⚠ WARNING

Alterations or modification of hoist and use of non-factory repair parts can lead to dangerous operation and injury.

TO AVOID INJURY:

- Do not alter or modify equipment.
- Do use only factory replacement parts.

P/N 192047138 Rev AA January 2018

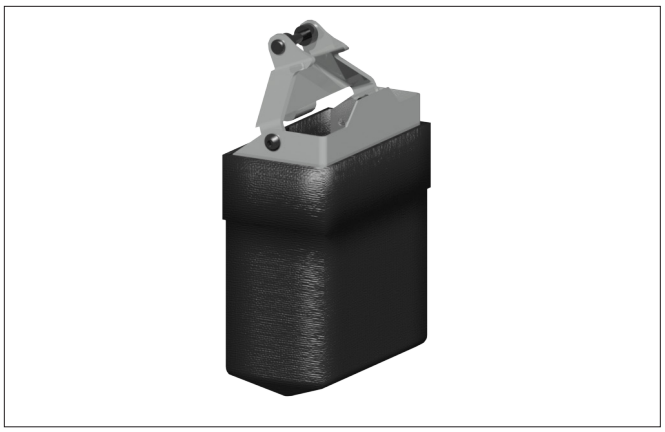


Figure 1 - Chain Container

Figure 2 - Latchlok Hook

Figure 3 - 632 Trolley

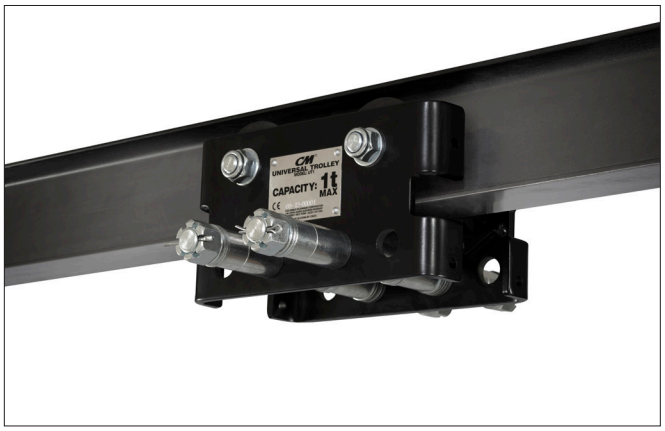


Figure 4 - UT Trolley

Figure 5 - CM® Rocket™ Universal Pendant Control

ACCESSORIES

HOOK SUSPENSIONS

Swivel and rigid type hook suspensions are available for all Shopstar Electric Hoists. However, swivel type hook suspensions are normally recommended for most applications.

CHAIN CONTAINER

This accessory item (Figure 1) is used to hold the slack chain and it is supplied with mounting hardware and instructions. Chain containers are recommended for those applications where slack chain will interfere with the load or drag on the floor as may more often be the case with the double-reeved units (500, 600, 1,000lb - 226, 272, and 453kg). Chain containers are shipped separately and can be furnished for units already in service.

LATCHLOK®HOOKS

CM's Latchlok hooks are available (Figure 2) to replace the standard upper and lower hooks used on the Shopstar Electric Hoists.

CM SERIES 632 TROLLEY

This lightweight, yet, rugged, manual push type trolley (Figure 3) is designed to fit a wide range of monorail beams and negotiate tight curves. Provides mobility of your hoist.

CM UNIVERSAL (UT) TROLLEY

The CM Universal Trolley (UT) is designed to fit virtually all Columbus McKinnon powered chain hoists up to 3 ton capacities. The rugged UT is available as a convertible plain unit, a geared unit ideal for precise hoist positioning, and a motorized unit that's perfect for applications requiring high cycling and long distance hoist travel.

CM® ROCKET™ UNIVERSAL PENDANT CONTROL

The CM Rocket Pendant Control is engineered for maximum operator comfort, while delivering the precision control your application demands.

INSTALLATION

UNPACKING

After opening the carton, carefully inspect the hoist frame, cords, hooks, chain and control station for damage that may have occurred during shipment. If there is damage, refer to the packing slip envelope.

Make sure that the power supply to which the hoist is to be connected is the same as that shown on the identification plate located on bottom of hoist.

⚠ WARNING

Operating a unit with obvious external damage may cause load to drop and that may result in personal injury and/or property damage.

TO AVOID INJURY:

Carefully check unit for external damage prior to installation.

MOUNTING THE HOIST

Hang the hoist from its intended support. The structure used to support the hoist must have sufficient strength to withstand several times the load imposed. If in doubt consult a registered engineer and local building codes.

⚠ WARNING

Suspending the hoist from an inadequate support may allow the hoist and load to fall and cause injury and/or property damage.

TO AVOID INJURY:

Make sure the attachment point has sufficient strength to hold several times the hoist and its rated load. Using the upper hook, hang the hoist from the support. **Be sure hoist is solidly held in the uppermost part of the hook arc and the latch is tightly against the hook tip.**

POWER SUPPLY SYSTEM

(Refer to Figure 6 or 7). To insure proper operation, to avoid damage to hoist and electrical system and to reduce the risk of electric shock or fire, the branch circuit supplying power to the hoist must:

1. Have ample capacity to prevent excessive voltage drop during starting and operation (refer to Figure 8). When determining the size of branch circuit components and conductors, special consideration should be given to the starting current-amps (approximately three times that shown on the hoist identification plate) and the length of the conductors. As a minimum, the system should be rated for 15 amps and it should have #16 AWG, or larger, wiring.
2. Be in accordance with the National Electrical Code (ANSI/NFPA-70) and applicable National, State and Local Codes.
3. Effectively ground the hoist in accordance with National Electrical Code and other applicable codes. Proper grounding provides a path of least resistance for electric current to reduce the risk of electric shock. The power cord of the hoist includes a green-yellow wire for grounding the hoist to the external power supply system. Be sure that the receptacle opening that receives the longest prong is properly grounded. If grounding is to be through the trolley trackwheels, each section of the runway must be grounded to the building ground system using metal to metal connections.
4. Include slow blow type fuses or inverse trip time circuit breakers to permit the hoist to start and accelerate load.
5. Include a disconnecting means capable of being locked in the “open” position.

⚠ WARNING

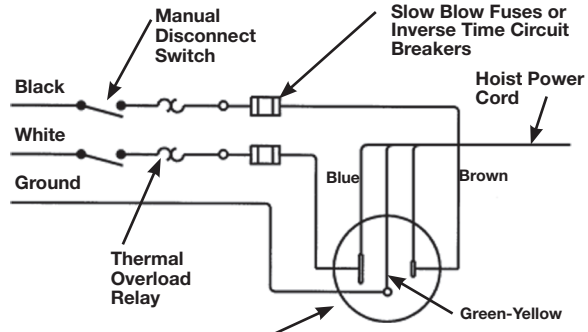
Failure to properly ground the hoist presents the danger of electric shock.

TO AVOID INJURY:

Permanently ground the hoist as instructed in this manual.

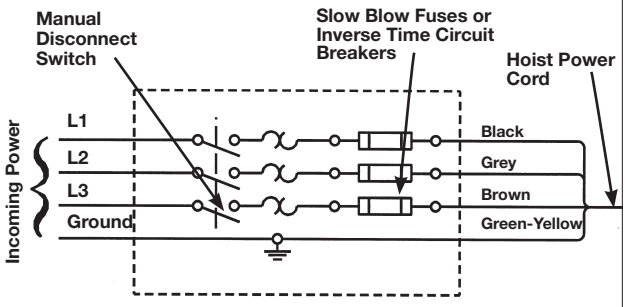
⚠ CAUTION

To reduce the risk of electric shock or injury, use indoors only.



Receptacle Rated for 15 amp Minimum (220-1-50 units do not include Power Cord Plug). Wire Blue and Brown Wires to Fuses or Circuit Breakers and Green-Yellow Wire to Ground.

Figure 6 - Single Phase Systems



Must be per National Electrical Code and These Devices are to be Supplied by the User.

Figure 7 - Three Phase Systems

⚠ WARNING

Failure to provide a proper power supply system for the hoist may cause hoist damage and offers the potential for a fire.

TO AVOID INJURY:

Provide the hoist with a 15 amp, minimum, overcurrent protected power supply per the National Electrical Code (ANSI/NFPA 70) and applicable local codes as instructed in this manual.

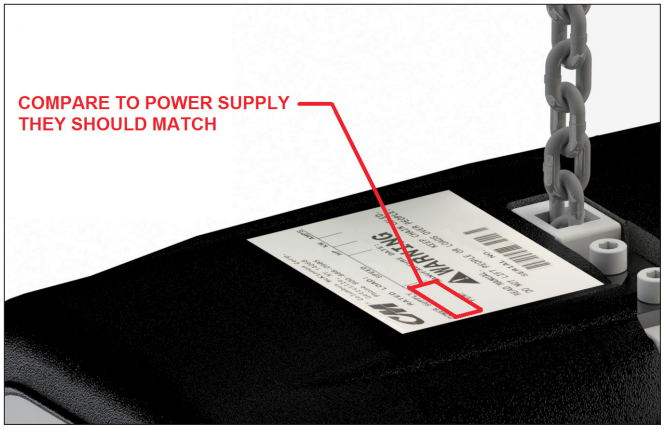


Figure 8 - Nameplate

Note
In this manual, nominal voltages are used when referring to power supply systems. However, with no modification, the Shopstar Hoist will operate on a range of voltages as indicated below:

Table 2 - Nominal Voltage

NOMINAL VOLTAGE	VOLTAGE RANGE	HERTZ	TRADITIONAL CONTACTOR	PRINTED CIRCUIT BOARD
230	208-240	60	AVAILABLE	AVAILABLE
460	440-480	60	AVAILABLE	NOT AVAILABLE
220	200-240	50	AVAILABLE	AVAILABLE
380	365-395	50	AVAILABLE	AVAILABLE
415	400-415	50	AVAILABLE	AVAILABLE
430	415-430	50	AVAILABLE	NOT AVAILABLE
575	550-600	60	AVAILABLE	NOT AVAILABLE

THREE PHASE HOISTS

Since the motor in a three phase hoist can rotate in either direction, depending on the manner in which it is connected to the power supply, the direction of hook movement must be checked during the original installation and each time hoist is moved to a new location as follows:

1. Move the manual disconnect switch handle to the “OFF” position.
2. Connect the BROWN, GREY AND BLACK wires of hoist power cord to load side of disconnect switch. Connect the GREEN-YELLOW wire of hoist power cord to power supply ground.
3. Move the manual disconnect switch handle to the “ON” position.
4. Depress the (up) control. If the hook moves in the up direction, the hoist is ready for operation. If the hook lowers, move the disconnect switch handle to the “OFF” position and interchange the BLACK and BROWN leads at the disconnect switch. Move the disconnect switch handle to the “ON” position and the hoist is now ready for operation.

CHECKING FOR ADEQUATE VOLTAGE AT HOIST

The hoist must be supplied with adequate electrical power for proper operation and to reduce problems that may result from insufficient power (low voltage). These include:

- Noisy hoist operation due to brake and/or contactor chatter.
- Heating of the hoist motor and other internal components as well as heating of wires and connectors in the circuit feeding the hoist.
- Failure of the hoist to lift the load due to motor stalling.
- Blowing fuses or tripping circuit breakers.
- Dimming of lights or slowing of motors connected to the same circuit.

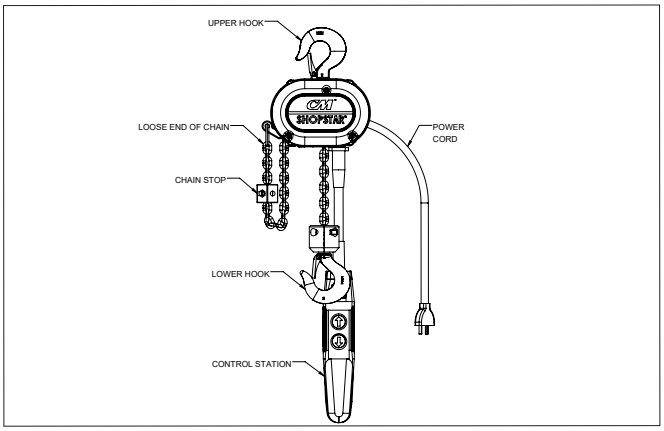


Figure 9 - Hoist Components

For proper operation and to avoid these low voltage problems, voltage (measured at end of the power cord while lifting rated load) should be as the following chart indicates.

Table 3 - Start-up Voltage

NOMINAL POWER SUPPLY	MINIMUM * MIN. VOLTAGE OPERATING AT INSTANT OF START
115-1-50/60	108
220-1-50	198
208-3-60	187
220-3-50	198
230-3-60	207
380-3-50	365
415-3-50	399
460-3-60	414
575-3-60	518

*The drop in voltage upon energizing the hoist should not be below the value listed.

Low voltage can also be caused by using an undersize extension cord to supply power to the hoist. The following charts should be used to determine the size wires in the extension cord in order to minimize the voltage drop between the power source and the hoist.

115-1-50/60 units with contactor, 220-1-50 units and three phase units (hoists with black control station)

Table 4a - Adequate Power Supply

MAXIMUM LENGTH OF EXTENSION CORD		
Wire Size	Single Phase Hoist	Three Phase Hoist
#16 A.W.G.	135 ft (40m)	245 ft (73m)
#14 A.W.G.	220 ft (66m)	395 ft (120m)
#12 A.W.G.	354 ft (107m)	630 ft (192m)

115-1-50/60 units without contactor (hoists with orange control station)

Table 4b - Adequate Power Supply

LENGTH OF CONTROL CORD ft(m)	MAXIMUM LENGTH OF EXTENSION CORD BASED ON SIZE OF WIRE		
	#16 AWG	#14 AWG	#12 AWG
1.0 to 10.0 (0.3 to 3.0)	105ft (32m)	170ft (51m)	270ft (82m)
11.1 to 20.0 (3.1 to 6.0)	75ft (22m)	120ft (36m)	190ft (58m)
21.1 to 30.0 (6.1 to 9.0)	45ft (14m)	70ft (21m)	110ft (33m)
31.1 to 40.0 (9.1 to 12.0)	15ft (4.5m)	20ft (6m)	35ft (11m)

After the hoist is suspended from its support and you have made sure the power supply complies with the above, the hoist is ready for operation.

On the Double units, cut and discard the ties used to hold the two strands of chain together. With no load on the lower hook, depress the UP button in the control station and raise the lower hook until it is about 2 feet below the bottom of the hoist. Check both strands of chains for twists. Twists occur if the lower hook block has been capsized between the strands of chain during packing, shipment and/or handling. Reverse the capsize to remove twists.

OPERATING INSTRUCTIONS

The hoist is equipped with a Protector™ that is designed to allow the first gear to slip on an excessive overload. An overload is indicated when the hoist speed slows down, it raises the load in a jerky manner or it will not lift the load at all. Also, some clutching noise may be heard if the hoist is loaded beyond rated capacity. Should this occur, immediately release the UP button to stop the operation of the hoist. At this point, the load should be reduced to the rated capacity or the hoist should be replaced with one of the proper capacity. When the excessive load is removed, normal hoist operation is automatically restored.

⚠ CAUTION

The Protector™ is susceptible to overheating and wear when slipped for extended periods. Under no circumstance should the Protector be allowed to slip for more than a few seconds.

Due to the above, the hoist is not recommended for use in any application where there is a possibility of adding to an already suspended load to the point of overload. This includes dumbwaiter installations, containers that are loaded in mid-air, etc. Also, if the hoist is used at unusual extremes of ambient temperatures, above 150º F (65ºC). or below 15ºF (-9ºC)., changes in lubricant properties may permit the hoist to raise larger loads than under normal operating conditions and present possibility of damage or injury.

On units without contactor (hoists with orange control station) it is necessary to stop the hoist before changing direction. Therefore, when lowering a load, the push button in the control station must be released momentarily before the UP button is depressed to raise the load. If this is not done, the hoist will continue to operate in the down direction while the UP push button is depressed, and it will continue to lower the load until the control push button is released. As a result, the direction must not be reversed quickly (plug reversed).

There are no electrical switches to stop the operation of the hoist at the upper and lower limits of lift. As a result, it is necessary to release the push button in the control station to stop the hoist components from damage. However, continued, prolonged or repeated slipping of the Protector will damage the Protector and cause overheating of the internal hoist components.

⚠ WARNING

Allowing the hook block to run into the hoist when raising a load or allowing the chain stop to run into the hoist when lowering a load may break the chain and allow the load to drop.

TO AVOID INJURY:

Do not allow the hook block or the chain stop to contact the hoist frame.

Hoist operation is controlled by depressing the control station push buttons. Depressing the UP push button will move the load hook toward the hoist head; depressing the DOWN push button will move the load hook away from the hoist head.

The UP and DOWN buttons are momentary type and the hoist will operate in the selected direction as long as the button is held in the depressed position. Release the push button and the hoist will stop.

It is preferred that the load always be tied off with auxiliary chains or cables before access to the area beneath the load is permitted. As an alternative, the system may be designed such that malfunction or failure of one hoist's load bearing components does not cause load loss and/or overloading of any other hoists in the system. Note that in such a system, hoist performance and function must be monitored visually or with the use of load cells. Check the supporting structure to which the load hook is to be attached. Make sure the attachment point as well as the structure have sufficient strength to withstand several times the load imposed. If in doubt, consult a registered engineer and local building codes.

⚠ WARNING

Attaching the load hook to an inadequate support may allow the hoist and load to fall and cause injury and/or property damage.

TO AVOID INJURY:

Make sure the structure and the load hook attachment point have sufficient strength to hold several times the hoist and rated load.

1. When preparing to lift a load, be sure that the attachments to the load hook are firmly seated in hook saddle. Avoid off center loading of any kind, especially loading on the point of the hook.
2. When lifting, raise the load only enough to clear the floor or support and check to be sure that the attachments to the hook and load are firmly seated. Continue lift only after you are assured the load is free of all obstructions.
3. Do not load the hoist beyond the rated capacity shown on the brake end cover. Overloading can cause immediate failure of some load-carrying part or create a defect causing subsequent failure at less than rated capacity. When in doubt, use the next larger capacity of hoist.
4. Do not use this or any other overhead materials handling equipment for lifting persons or allow people on unsecured load.
5. Stand clear of all loads and avoid moving a load over heads of other personnel. Warn personnel of your intention to move a load in their area. Do not leave unsecured load over people.
6. Do not leave the load suspended in the air unattended.
7. Permit only qualified personnel to operate unit.
8. Do not wrap the load chain around the supporting structure and hook onto itself as a choker chain. Doing this will result in:
    1. The loss of the swivel effect of the load hook which could mean twisted chain and a jammed liftwheel.
    2. The chain could be damaged at the load hook.
9. On the Double-reeved hoists, check for twists in the load chain. A twist can occur if the lower block has been capsized between the strands of chain. Reverse the capsize to remove twist.
10. Do not allow a load to bear against the hook latch. The latch is to help maintain the hook in position while the chain is slack before taking up the slack chain.
11. Take up a slack load chain carefully and start load easily to avoid shock and jerking of hoist chain. If there is any evidence of overloading, immediately lower the load and remove the excess load.
12. Do not allow the load to swing or twist while hoisting.
13. Never operate the hoist when flammable materials or vapors are present. Electrical devices produce arcs or sparks that can cause a fire or explosion.
14. STAY ALERT! Watch what you are doing and use common sense. Do not use the hoist when you are tired, distracted or under the influence of drugs, alcohol or medication causing diminished control.

⚠ WARNING

TO AVOID INJURY:

DO NOT Lift more than rated load.

DO NOT Operate with twisted, kinked or damaged chain.

DO NOT Operate damaged or malfunctioning hoist

DO NOT Lift people, loads over people, allow people on unsecured load or leave unsecured load over people.

DO NOT Operate hoist when load hook is not centered overhoist.

DO NOT Permit load hook block to contact hoist frame or chain container.

DO Replace damaged or malfunctioning hook latch.

DO Keep load chain well oiled.

DO Read ASME B30.16 Safety Code for Hoist and appropriate operating instructions.

MAINTENANCE

INSPECTION

To maintain continuous and satisfactory operation, a regular inspection procedure must be initiated to replace worn or damaged parts before they become unsafe. Inspection intervals must be determined by the individual application and are based on the type of service to which the hoist will be subjected. The type of service to which the hoist is subjected can be classified as “Severe”, “Normal”, or “Stand by Service” per ANSI E1.6-2.

Severe Service: Hoist operates in excess of 200 days a year.

Normal Service: Hoist operates 200 or fewer days a year but more than 25.

Stand by Service: Hoist operates 25 or fewer days per year but at least once per year.

Two classes of inspection - frequent and periodic – must be performed.

Frequent Inspections: Visual examination shall be performed by a competent person following the items listed in the inspection table Records of such inspections are recommended.

Periodic Inspections: Inspection shall be performed by a qualified person following the items listed in inspection table. Records of this inspection shall be recorded and retained for a minimum of 36 months after the hoist is taken out of service.

Lifting and lowering functions shall be tested under no-load conditions. (Testing through complete rated lift length is not required). Brake(s) operation shall be tested under no-load conditions.

⚠ CAUTION

Any deficiencies found during inspections are to be corrected before the hoist is returned to service. Also, the external conditions may show the need for disassembly to permit a more detailed inspection, which, in turn, may require the use of nondestructive type testing.

PREVENTIVE MAINTENANCE

In addition to the above inspection procedure, a preventive maintenance program should be established to prolong the useful life of the hoist and maintain its reliability and continued safe use. The program should include the periodic and frequent inspections with particular attention being paid to the lubrication of the various components using the recommended lubricants (see page 15).

Note

To perform some of the periodic inspections, it is necessary to partially disassemble the hoist. Refer to Disassembly - Assembly starting on page 23.

Any deficiencies noted must be corrected before the hoist is returned to service. Also, the external conditions may show the need for more detailed inspection which, in turn, may require the use of nondestructive-type testing.

Any parts that are deemed unserviceable are to be replaced with new parts before the unit is returned to service. It is very important that the unserviceable parts be destroyed to prevent possible future use as a repair item and properly disposed of.

⚠ WARNING

Allowing a load to bear against the hook latch and/or hook tip can result in loss of load.

TO AVOID INJURY:

Do not allow a load to bear against the hook latch and/or hook tip. Apply load to hook bowl or saddle only

	Inspection Table					
	Service Classifications					ITEM
	Severe	Normal	Stand By	Rental	Out of Service	
Frequent Inspections	Weekly to Monthly	Monthly	Every 3 Months	Prior to Next Use or Rental	Prior to Reintroduction into Service	Hoist braking system for proper operation.
						Hooks and attachment hardware for correct assembly, damage, cracks, twists, excessive throat openings, latch engagement, and latch operation.
						Load chain for adequate lubrication, signs of wear, damaged links, corrosion, or foreign matter.
						Load chain for proper reeving and twists.
						Limit switches for function, if equipped
Periodic Inspections	Every 3 Months	Yearly	Yearly	Yearly		All items listed in Inspection Table for frequent inspections.
						Evidence of loose screws, bolts or nuts.
						Evidence of worn, corroded, cracked or distorted hook block body, suspension screws, gears, bearings, chain dead end and chain pin.
						Evidence of damage or excessive wear of the lift wheel and hook block sheave chain pockets.
						Link by link inspection of the chain for evidence of excessive interlink wear and damage.
						Evidence of chain guide wear or damage where the chain enters the hoist.
						Evidence of excessive wear and/or damage of brake parts. Proper brake adjustment.
						If the hoist is equipped with a reversing contactor, inspect contactors for functionality and free operation of the interlock.
						Electrical cords, grommets, connectors, cables, and control station enclosure (if applicable) for damage or wear.
						Check bearings for excessive wear or damage.
						Suspension components for damage, cracks, wear and correct operation.
						Evidence of lubricant leakage.

HOOK INSPECTION

Hooks damaged from chemicals, deformations or cracks, or any visibly apparent bend or twist from the plane of the unbent hook, excessive opening or seat wear must be replaced. Also, hooks that are opened and allow the latch to not engage the tip must be replaced. Any hook that is twisted or has excessive throat opening indicates abuse or overloading of the unit. Inspect other load sustaining parts, hook block screws, load pins and hook block bodies for damage.

On latch type hooks, check to make sure that the latch is not damaged or bent and that it operates properly with sufficient spring pressure to keep the latch tightly against the tip of the hook and allow the latch to spring back to the tip when released. If the latch does not operate properly, it should be replaced. See Figure 8 to determine when the hook must be replaced.

Suspension bolts should be replaced any time the suspension is removed from the hoist.

HOOK REPLACEMENT CRITERIA

Based on ASME B30.10, hooks shall be removed from service if damage such as the following is visible and shall only be returned to service when approved by a qualified person:

1. Missing or illegible rated load identification or illegible hook manufacturers' identification or secondary manufacturer's identification.
2. Excessive pitting or corrosion. Cracks, nicks, or gouges.
3. Wear--any wear exceeding 10% of the original section dimension of the hook or its load pin.
4. Deformation--any visibly apparent bend or twist from the plane of the unbent hook.
5. Throat opening-any distortion causing an increase in the throat opening of 5% not to exceed 1/4" (6mm).
6. Inability to lock- any self-locking hook that does no lock.
7. Inoperative latch, any damaged latch or malfunctioning latch that does not close the hook's throat.
8. Thread wear, damage, or corrosion.
9. Evidence of excessive heat exposure or unauthorized welding.
10. Evidence of unauthorized alterations such as drilling, machining, grinding, or other modifications.

INSPECTING THE LOAD CHAIN

The chain must be inspected at regular intervals, with a minimum of once annually. As the frequency of use increases, the time Intervals between inspections must be reduced. During inspection, the chain link must be examined along their entire length, including the hidden parts. If the lifting equipment is frequently used with a constant lifting distance or in other words the switch from upward to downward often takes place in the same area, a particularly thorough inspection and lubrication is required in that area. Worn chain can also be an indication of worn hoist components. For this reason, the hoist's chain guides, hook blocks and liftwheel (sprocket) should be examined for wear and replaced as necessary when replacing chain.

1. Check to see if chain is dirty or poorly lubricated.
2. Clean the chain with a non-caustic/non-acid type solvent and make a link by link inspection for wear or cracks in the links, twisted or deformed links. Chain with any one of these defects must be replaced.
3. Slack the portion of the chain that normally passes over the lift-wheel (sprocket) or idler sprocket on multi-reeved hoist. Examine the chain links for wear. If the wire diameter anywhere on the link measures less than 90% of the nominal wire diameter, the chain must be replaced.
4. Based upon ASME B30.16, should also be checked for elongation. Select an unworn, un-stretched length of the chain (at the slack end for example). Suspend the chain vertically under tension and using a knife blade caliper type gauge, measure the outside length of any convenient number of links, 11 is recommended. Measure the same number of links in the used sections and calculate the percentage in increased length. The chain should be replaced if the length of the used portion is more than 1.5% longer than the unused portion of the chain. Also, if the pitch of any individual link has elongated by more than 5%, the chain should be replaced.

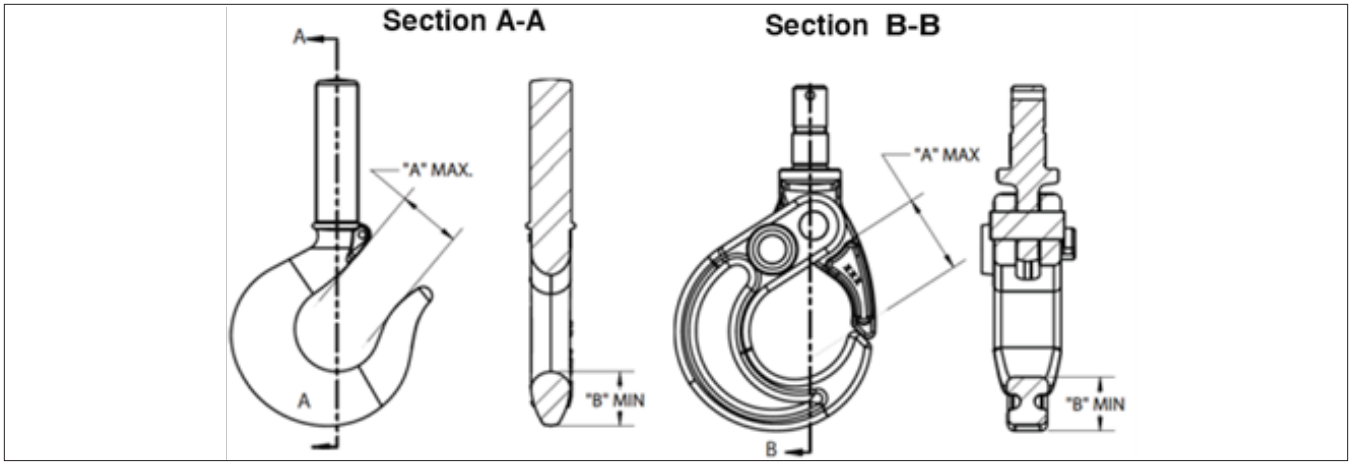


Figure 10 - Hook Inspection

Latch Type Hook		Latchlok® Hook	
"A" Max	"B" Min	"A" Max	"B" Min
1.12" (28.5mm)	.71" (18.0mm)	1.48" (37.7mm)	.75" (18.8mm)

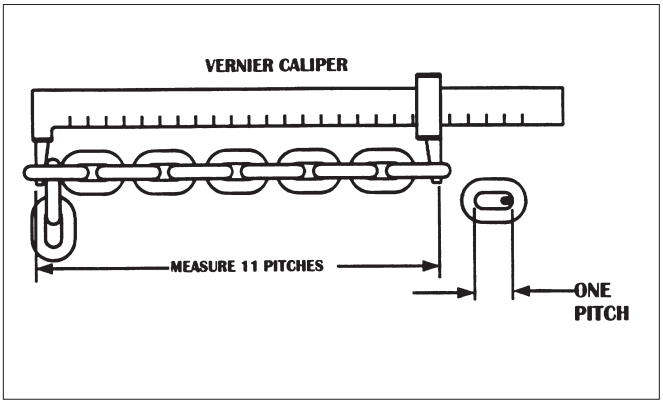


Figure 11: Chain Inspection

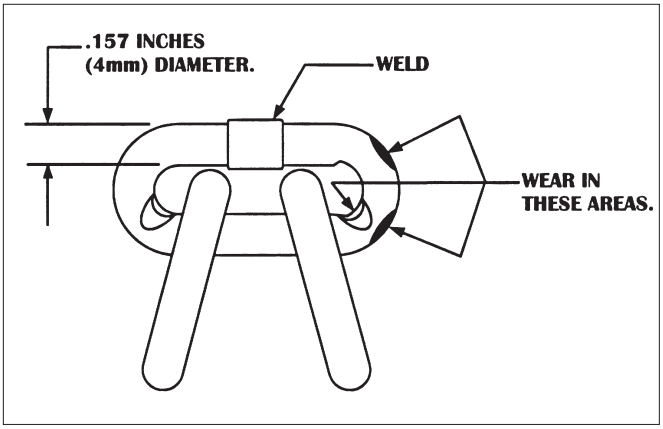
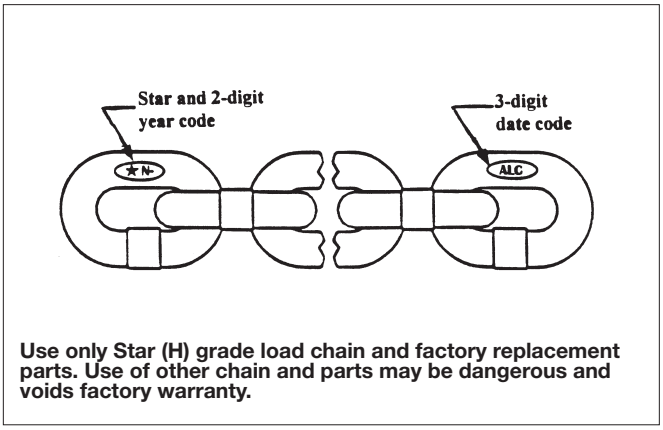


Figure 12: Chain Wear Areas



Use only Star (H) grade load chain and factory replacement parts. Use of other chain and parts may be dangerous and voids factory warranty.

Figure 13: Chain Identification

Use only Star (*) grade load chain and original replacement parts. Use of other chain and parts may be dangerous and voids factory warranty.

IMPORTANT: Do not use replaced chain for other purposes such as lifting or pulling. Load chain may break suddenly without visual deformation. For this reason, cut replaced chain into short lengths to prevent use after disposal.

⚠ WARNING

Use of commercial or other manufactures' chain and parts to repair hoists may cause load loss.

TO AVOID INJURY:

Use only factory supplied replacement load chain and parts. Chain and parts may look alike, but our chain and parts are made of specific materials or processed to achieve specific properties.

Use only a "Knife-edge" caliper to eliminate possibility of false reading by not measuring full pitch length.

Note that worn chain can be an indication of worn hoist components. For this reason, the hoist's chain guide, hook block and liftwheel should be examined for wear and replaced as necessary when replacing worn chain.

Also, these chains are specially heat treated and hardened and should never be repaired.

IMPORTANT: Do not use replaced chain for other purposes such as lifting or pulling. Load chain may break suddenly without visual deformation. For this reason, cut replaced chain into short lengths to prevent use after disposal.

CHAIN LUBRICATION

A small amount of lubricant will greatly increase the life of load chain. Do not allow the chain to run dry.

Keep it clean and lubricate at regular intervals with Lubriplate® Bar and Chain Oil 10-R (Fiske Bros. Refining Co.) or equal lubricant. Normally, weekly lubrication and cleaning is satisfactory, but under hot and dirty conditions, it may be necessary to clean the chain at least once a day and lubricate it several times between cleaning.

When lubricating the chain, apply sufficient lubricant to obtain natural run-off and full coverage, especially in the interlink area.

⚠ WARNING

Used motor oils contain known carcinogenic materials.

TO AVOID HEALTH INJURIES

Never use used motor oils as a chain lubricant. Only use Lubriplate® Bar and Chain Oil 10-R as a lubricant for the load chain.

LUBRICATION

To assure extra long life and top performance, be sure to lubricate the various parts of the Shopstar Hoist using the lubricants specified below. If desired, these lubricants may be purchased from the factory. Contact customer service for more information.

⚠ WARNING

The lubricants used in and recommended for the Shopstar Hoist may contain hazardous materials that mandate specific handling and disposal procedures.

TO AVOID CONTACT AND CONTAMINATION:

Handle and dispose of lubricants only as directed in applicable material safety data sheets and in accordance with applicable local, state and federal regulations.

Part Number for Packaged Lubricants used on the Shopstar Electric Chain Hoists

Lubricant Usage	Type of Lubricant	Part Numbers and Packaged Quantity of Lubricants
Hoist Gears	Grease (Special)	28605
Lower Hook Thrust Bearing	*Oil	Heavy Machine Oil obtain locally

*These oils are not furnished by CM in Packaged Quantities. When ordering lubricants, specify the type of lubricant, part number and packages quantity required.

GEARS

The Protector (620-111) should operate for the normal life of the hoist without service. The device has been lubricated and calibrated by the factory and should not be adjusted.

⚠ CAUTION

The Protector™ is to be used with “Century Lubricants HB-11, #3” grease. Do not use any other grease or the Protector will not operate properly and parts could be damaged.

The gears and Protector are packed at assembly with grease and should not need to be renewed unless the gears have been removed from the housing and degreased.

⚠ CAUTION

Never degrease the Protector™ or attempt to disassemble this device. Degreasing the Protector may damage parts and using a device that has been degreased may cause erratic, inconsistent operation. If the Protector has been degreased, it must be replaced by a factory calibrated device.

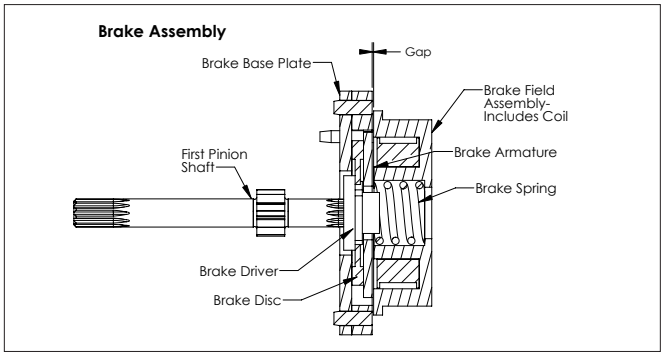


Figure 14: Brake Field Assembly

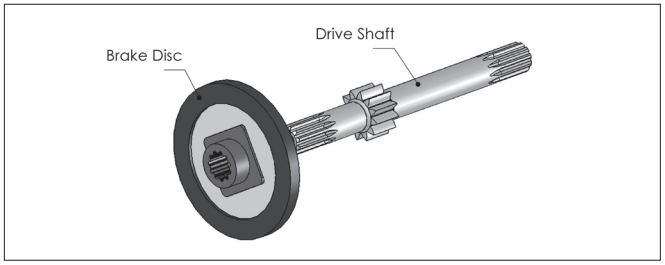


Figure 15: Drive Shaft Assembly

If the gears are removed from the housing, wipe the excess grease off the outside surfaces of the Protector with a soft cloth and degrease the remaining gears and housings. Upon reassembly, add 2 oz. of the above grease to gears and housing. Also, coat the spline on the end of the first pinion and shaft with a Molydisulphide lubricant such as Moly-Duolube 67 (Hercules Packing Co.)

BEARINGS

Rotor bearings are pre-lubricated and require no lubrication. Needle bearings) are packed at assembly with grease and should not need to be relubricated. However, if the housings, liftwheel or sheave wheel have been degreased, these bearings should be greased using “Century Lubricants HB-11, #3” grease.

SEALS

When reassembling the unit, wipe the inside surface of the seals with “Century Lubricants HB-11, #3” grease.

HOOK BLOCK

If the hook blocks are disassembled for inspection purposes, wipe the grease from the hook knob and the hook knob cavities in the hook blocks. At reassembly, coat the underside of the hook knob and the knob bearing surfaces of cavities in the hook blocks with Molykote BR-2-S (Dow Corning Corp.) grease or equivalent.

CHAIN GUIDE, LIFTWHEEL AND SHEAVE WHEEL

When the hoist is disassembled for inspection and/or repair, the chain guide, stripper, sheave wheel (on double chain unit) and liftwheel must be lubricated with Lubriplate® Bar and Chain Oil 10-R (Fiske Bros. Refining Co.) prior to reassembly. The lubricant must be applied in sufficient quantity to obtain natural runoff and full coverage of these parts.

LOAD CHAIN

Refer to page 13 for lubrication of the load chain.

EXTERIOR FINISH

The exterior surface of the hoist has a durable, scratch resistant baked powder coating. Normally, the exterior surfaces can be cleaned by wiping with a cloth. However, if the finish is damaged, compatible touch-up paint can be purchased from the factory. Refer to page 19 for information on ordering the paint.

ELECTRIC BRAKE

The brake is non-adjustable with a nominal .004 inch (0.102 mm) air gap and the brake disc must be replaced when the air gap reaches .012 inch (0.305 mm). The brake spacer should be no more than .012 inch (0.305 mm) thicker than the combined thickness of the brake disc and armature plate. Refer to Figure 16.

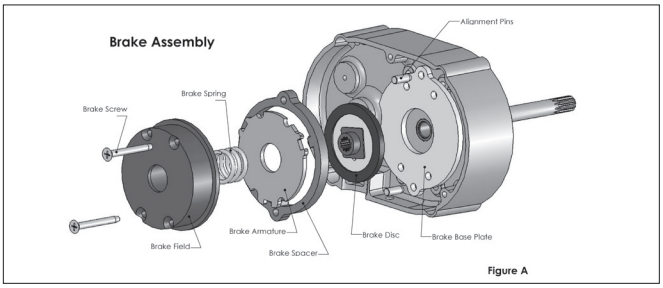


Figure 16: Brake Assembly

⚠ WARNING

Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.

TO AVOID INJURY:

Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.

To inspect the brake gap, disconnect the hoist from power and remove brake end cover.

1. Refer to Figure 16 and disassemble the brake. Depress and hold the field assembly while removing the four brake screws. The field assembly is under spring pressure and will spring-out if not held. Examine the base plate, brake disc) and armature for excessive wear, scoring or warpage. Make sure the brake disc is not glazed, the coil firmly fixed in the field) and the brake spring is not damaged. Worn, scored, warped, glazed or damaged parts should be replaced before preceding.
2. Refer to Figure 16 and assemble the brake. Depress and hold the field assembly while installing the four brake screws through the brake parts and mount the brake on the gear housing. Tighten the four brake screws to 25 in.lb.

PROTECTOR™

The Protector should operate for the normal life of the hoist without service. The device has been lubricated and calibrated and it should not be adjusted. If the Protector is not operating properly (see testing on page 13), it must be replaced with a properly calibrated unit from the factory.

PREVENTATIVE MAINTENANCE

A preventative maintenance program should be established to prolong the useful life of the hoist and maintain its reliability and continued safe use. The program should include the periodic and frequent inspections with particular attention being paid to the lubrication schedule on page 12.

TROUBLESHOOTING CHART

Always disconnect unit from the power supply system before removing hoist covers or the back cover of control station.

Symptom	Possible Cause(s)	Corrective Action
1. Hook does not respond to the control station	A.) No voltage at hoist-main line or branch circuit switch open; branch line fuse blown or circuit breaker tripped.	A.) Check for blown fuse or tripped circuit breaker or open disconnect switch in main line or branch circuit. Replace fuse, reset circuit breaker or close switch.
	B.) Open control circuit due to loose connections or broken wires in circuit; motor thermal protector open; control station contacts not closing; open or Shorted winding in transformer; transformer thermal cut-out open; mechanical binding in contactor; open or shorted winding in contactor coil or blown Printed Circuit Board fuse.	B.) Check electrical continuity thru motor thermal protector. If it is open, allow motor to cool. If this does not correct the trouble, use wiring diagram to check electrical continuity of wiring, transformer, contactor and control station contacts. Repair wiring or replace defective part. Check Printed Circuit Board fuse & replace if needed.
	C.) Wrong voltage or frequency.	C.) Make sure that the power supply to hoist is the same as that shown on identification plate on button of hoist.
	D.)Low Voltage.	D.)Check power supply system to make sure it complies with the requirements listed under “power supply system” starting on page 3.
	E.) Brake not releasing due to open or shorted coil, defective diodes or brake disc binding.	E.)Check coil continuity, diodes and connections. Make sure brake disc slides freely on brake driver and brake spring is not broken. Replace coil (brake field), repair connections, remove burrs from brake driver so that brake disc slides freely and/or replace brake spring.
	F.) Excessive load.	F.) Reduce load to capacity limit as indicated on identification and capacity labels on hoist.
	G.) Phase failure (single phasing-three phase units only) - open circuit, grounded or faulty connection in one line of power supply system, hoist wiring, contactor, motor leads or windings.	G.) Check for electrical continuity and repair or replace defective part.
2.) Hook moves in the wrong direction.	A.) Wiring connections reversed in control station or hoist.	A.)Use wiring diagram and check wiring connections.
	B.) Failure of cut-out device (single phase units only) to effect dynamic braking at time of reversal.	B.) Check connections to cut-out device. Replace damaged device or faulty capacitor
	C.) Phase reversal (three phase unit only).	C.) See “Three Phase Hoists.”
3.) Hook lowers but will not raise.	A.) Excessive load.	A.) See item 1F.
	B.) Hoisting circuit is OPEN due to loose connections or broken wire in circuit; control station contacts are not making; open or shorted winding in contactor coil.	B.) Use wiring diagram to check electrical continuity of wiring and control station contacts. Repair wiring or replace defective part.
	C.) Motor cut-out device not operating. (single phase units only).	C.) Check cut-out device and connections to same. Repair connections and/or replace cut-out device.
	D.) Phase failure (three phase units only).	D.) See item 1G.
4.) Hook raises but will not lower.	A.) Lowering circuit is OPEN due to loose connections or broken wire; control station contacts not closing; open or shorted winding in contactor coil.	A.) See item 1B.
	B.) Motor reversing switch not operating (single phase unit only).	B.) See item 3C
	C.) Phase reversal (three phase units only).	C.) See item 2C
	D.) Phase failure (three phase units only).	D.) See item 1G.
5.) Hook does not stop promptly.	A.) Brake slipping.	A.) Check electric brake, especially the brake disc for wear or glazing and make sure brake spring is not broken. Replace worn or glazed brake disc or replace brake spring.
	B.) Excessive load.	B.) See item 1F.

Symptom	Possible Cause(s)	Corrective Action
6.) Hoist operates sluggishly.	A.) Excessive load.	A.) See item 1F.
	B.) Low voltage.	B.) See item 1D.
	C.) Phase failure or unbalanced current in the phases (three phase unit only).	C.) See item 1G.
	D.) Brake dragging.	D.) Check electric brake. Check to make sure brake disc is free to move on brake driver. Check for warped or bent brake disc and base plate. Free-up brake disc by removing burrs on driver. Replace warped armature base plate or brake disc.
7.) Hoist operates sluggishly.	A.Excessive load.	A.) See item 1F.
	B.) Low voltage.	B.) See item 1D.
	C.) Extreme external heat.	C.) Above an ambient temperature of 104°F (40°C), the frequency of hoist operation must be limited to avoid overheating the motor. Special provisions should be made to ventilate the space around the hoist and shield it from radiant heat.
	D.)Frequent starting or reversing.	D.)Avoid excessive inching, jogging and reversing. This type of operation drastically shortens motor cut-out device, capacitor, control station and contactor contact life and causes excessive brake wear.
	E.) Brake dragging.	E.)See item 6C.
	F.) Motor cut-out device not opening start winding circuit (single phase units only).	F.) See item 3C.
	G.) Phase failure or unbalanced current in phases (three phase units only).	G.) See Item 1G.
8. Hook fails to stop in either direction.	A.) Brake not closing or ineffective.	A.) Check electric brake, and armature for binding, broken brake spring, first pinion shaft broke, brake driver worn, brake disc worn. Correct binding of armature; replace broken or worn parts.
9. Hook lowers when up button is depressed.	A.) Phase reversal (three phase units only).	A.) See Item 2C.

⚠ WARNING

Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.

TO AVOID INJURY:

Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.

ELECTRICAL DATA

OPEN OR SHORT CIRCUIT IN ELECTRICAL COMPONENTS

Open circuits in electrical components may be detected by isolating the component and checking for continuity using an ohmmeter. Short circuits are indicated by D.C. resistance substantially below the nominal D.C. resistance. Motor current draw should be measured at the end of the power cord while the hoist is raising rated load. Check cut-out device (on single phase units only) by measuring coil resistance (terminals 3 and 4) and making sure the contact (terminals 2 and 4) is open.

Table 5 - Electrical Data for Components

Stators					
Volts-Phase-Hertz	Full Load Current (amp)			Nominal DC Resistance (ohm)	
110 to 120-1-50/60	2.7			Yellow to Red: 7.7 Blue to Black: 6.2	
220-1-50	1.1			Yellow to Red: 27.7 Blue to Black: 24.2	
220-3-50	1.1			White to Red: 26.8 White to Black: 26.8 Red to Black: 26.8	
230-3-60	0.6				
380-3-50	0.63			White to Red: 72.6 White to Black: 72.6 Red to Black: 72.6	
415-3-50	0.58				
460-3-60	0.88				
575-3-60	0.4			White to Red: 140.0 White to Black: 140.0 Red to Black: 140.0	
Transformers					
Primary	220/380v.	230/460v.	460v.	575v.	575v.
Secondary	48v.	115v.	48v.	115v.	48v.
Leads	Nominal DC Resistance (ohm)				
Black to Purple	11.7	71.0	11.9	73	98
White to Red	228.0	224.0			
White to Yellow	614.0	902.0			
Red to Yellow	384.0	682.0			
White to Orange			916.0	1100	1100

Coils			
	Voltage (V)	**Current Draw (amp)**	**Nominal DC Resistance (ohm)**
Contactor Coils	115	0.02	765
	48	0.2	98.4
Brake Field	*115	-	*272
	**220	-	1120
	***280	-	1608
Cut-out Device	*115	0.1	Terminals 3 to 4: 0.3

*to measure 115 volt brake coil resistance, carefully cut and peel back the shrink tubing on the brake coil leads to expose the diodes. Trace the leads from the coil to the diodes. Connect the ohmmeter leads at the coil side of the diodes (refer to the wiring diagram) and measure the resistance. If coil is ok, reinsulate the brake coil leads and diodes using electrical tape. Diodes are checked by connecting the ohmmeter to the ends of the brake coil leads, checking for an open or short circuit, reversing the connections to the ohmmeter and again checking for an open or short circuit. If there is an indication of an open or short circuit with the original and reversed connections, diodes are defective and the brake field, which includes the diodes, must be replaced. Usable diodes are indicated by continuity with the original connections and an open circuit when the connections are reversed or, an open circuit with the original connection and continuity with reversed connections.

** 220 volt brake coil is used on 220-1-50, 220-3-50/60, 380-3-50, 415-3-50 and 460-3-60 hoists.

***280 volt brake is used on 575-3-60 hoists.

⚠ CAUTION

To reduce the risk of electric shock or injury, use indoors only.

WIRING DIAGRAMS

The following wiring diagrams are representative. For actual wiring diagram, refer to the diagram supplied with the hoist.
Note: Pendant wiring detail may not match wiring diagram for Rocket Pendant.

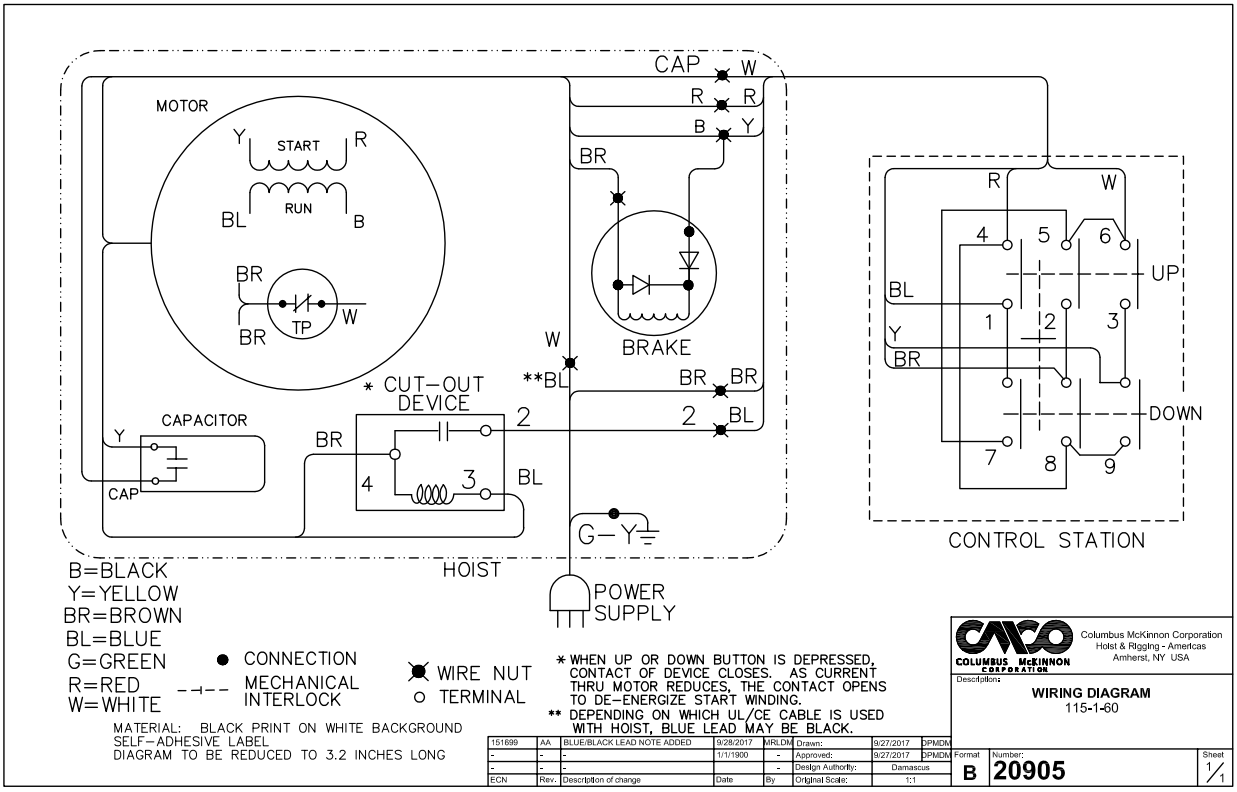


Figure 17 - 110-1-50, 115-1-60 Hoists without Contactor (Orange Control Station)

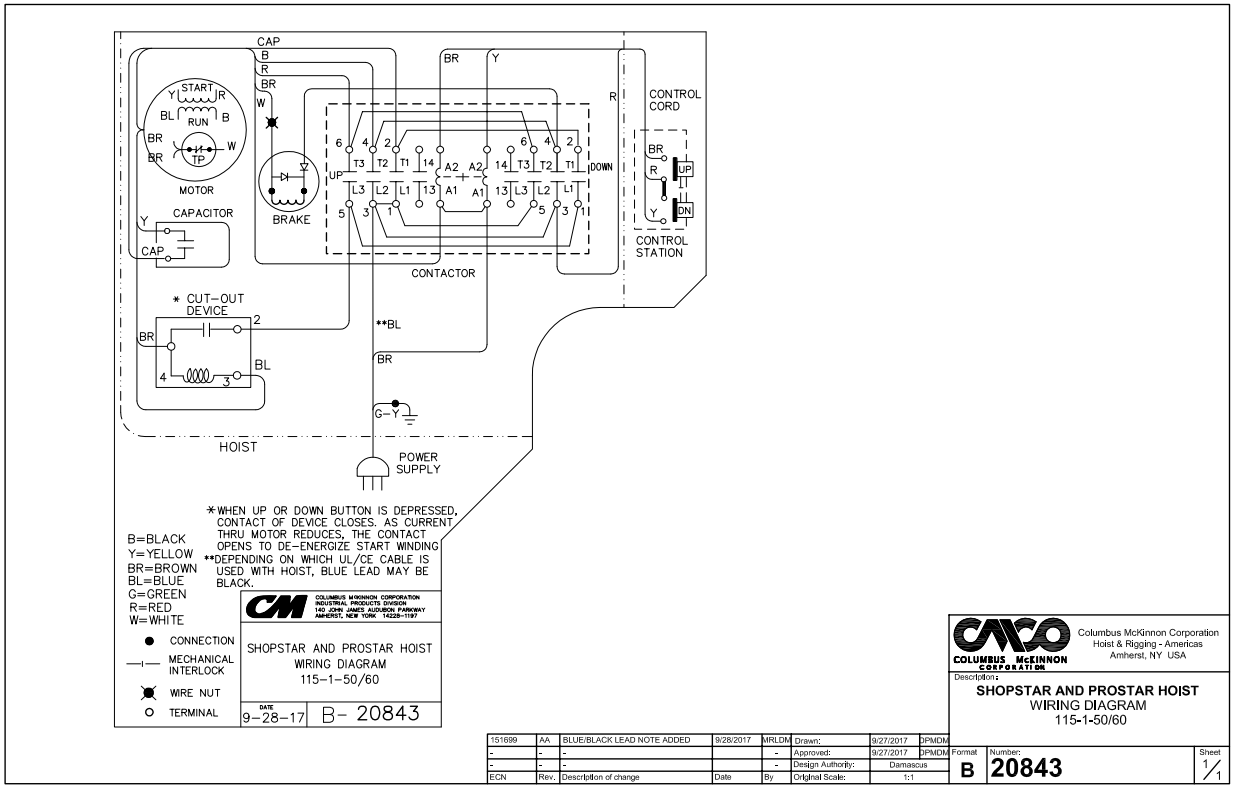


Figure 18 - 110-1-50, 115-1-60 Hoists with Contactor (Black Control Station)

WIRING DIAGRAMS

The following wiring diagrams are representative. For actual wiring diagram, refer to the diagram supplied with the hoist.
Note: Pendant wiring detail may not match wiring diagram for Rocket Pendant.

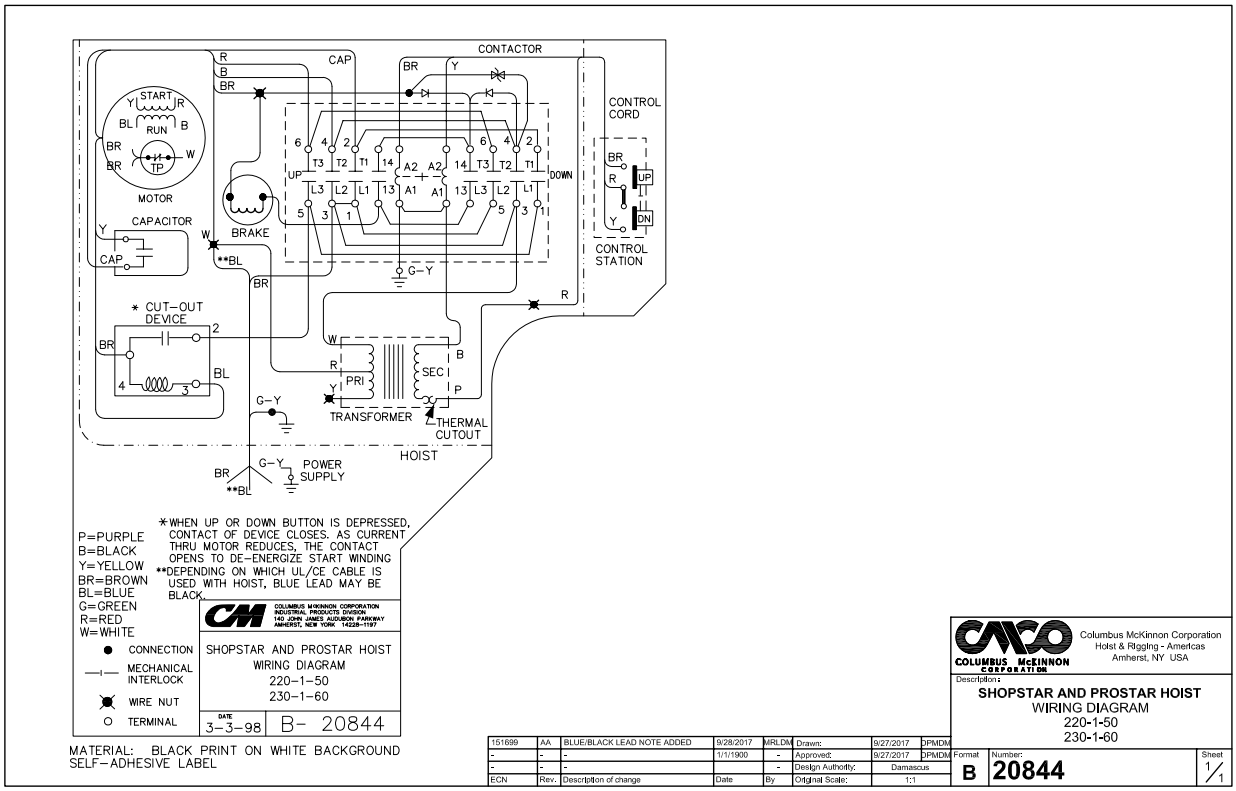


Figure 19 - 220-1-50, 230-1-60 Hoists with Contactor (Black Control Station)

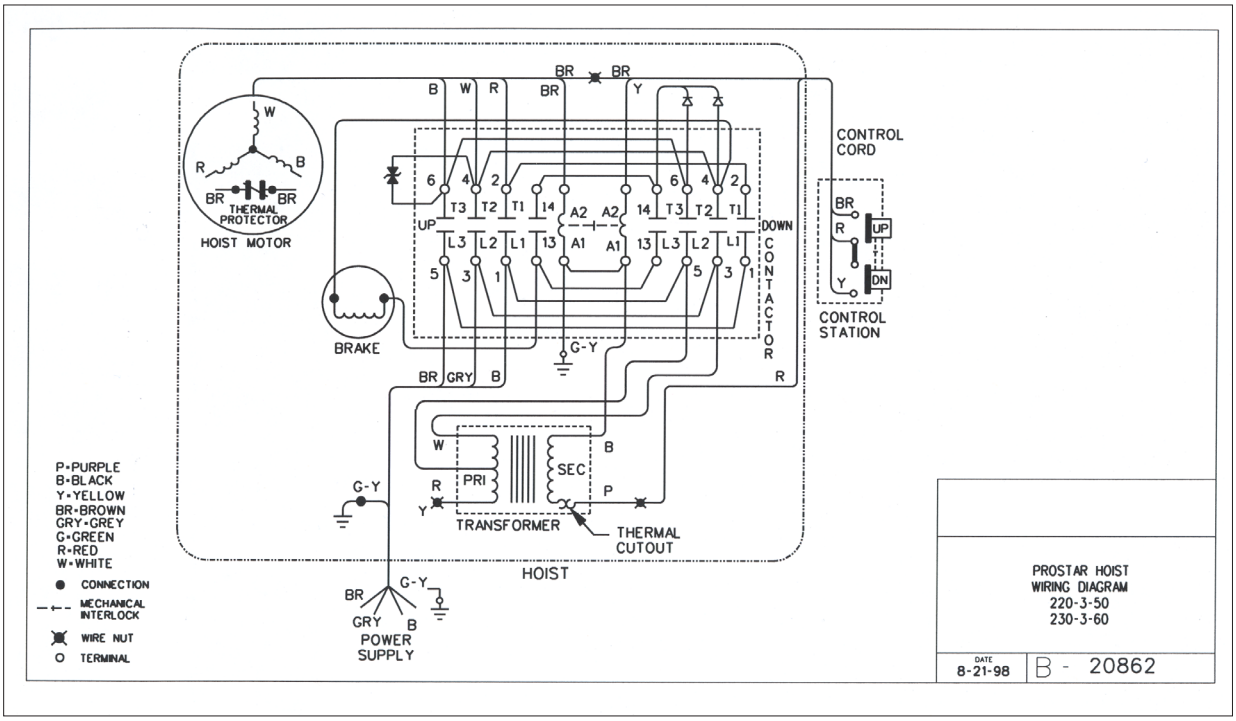


Figure 20 - 220-3-50, 230-3-60 Hoists with Contactor (Black Control Station)

WIRING DIAGRAMS

The following wiring diagrams are representative. For actual wiring diagram, refer to the diagram supplied with the hoist.
Note: Pendant wiring detail may not match wiring diagram for Rocket Pendant.

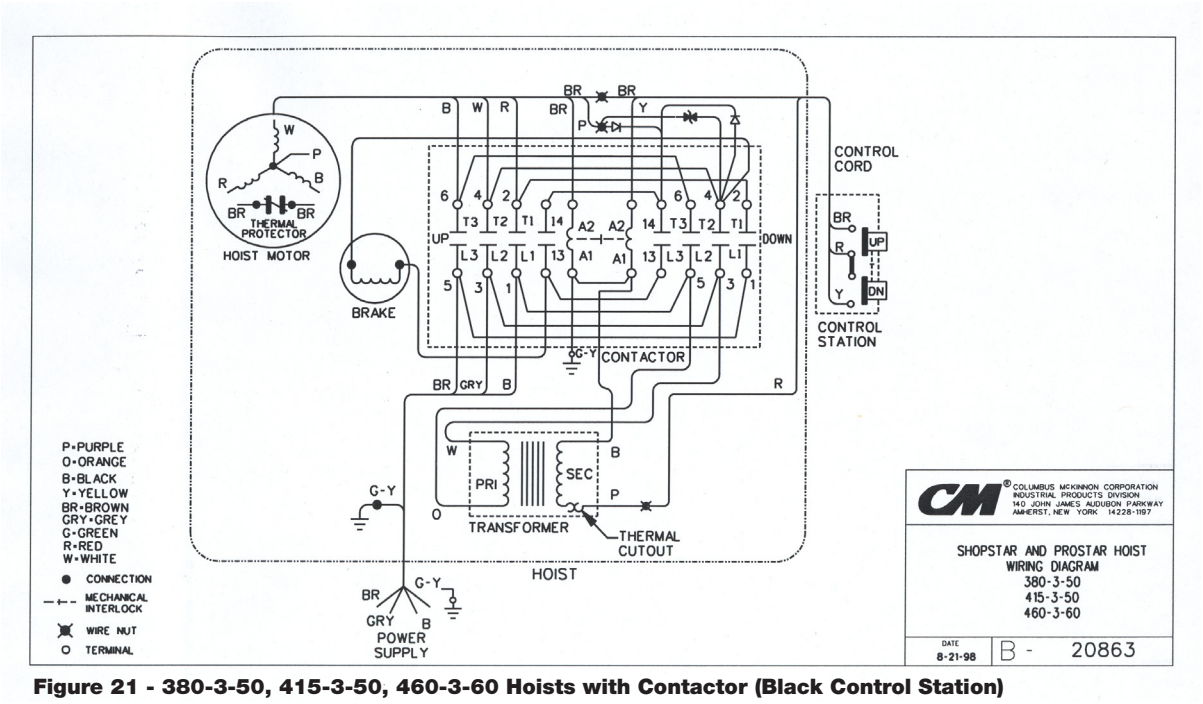


Figure 21 - 380-3-50, 415-3-50, 460-3-60 Hoists with Contactor (Black Control Station)

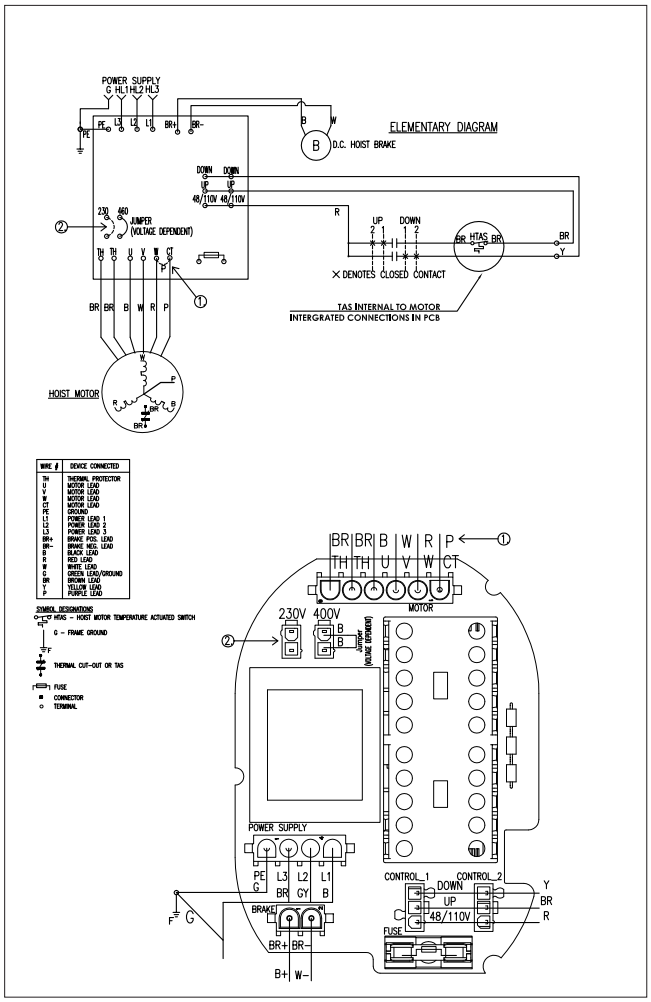


Figure 22 - 230-3-60, 400-3-50 PCB (Printed Circuit Board) Unit

WIRING DIAGRAMS

The following wiring diagrams are representative. For actual wiring diagram, refer to the diagram supplied with the hoist.
Note: Pendant wiring detail may not match wiring diagram for Rocket Pendant.

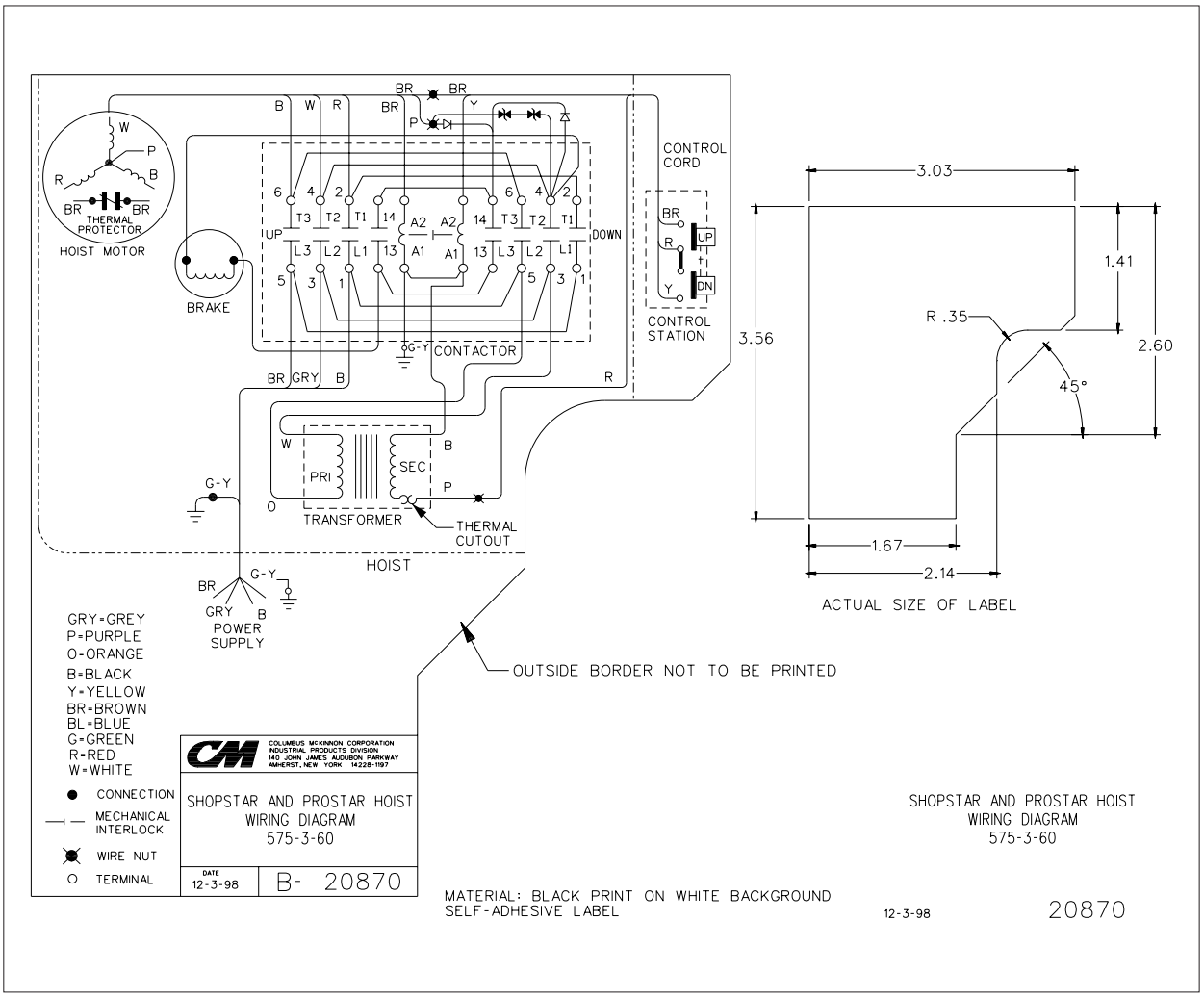


Figure 23 - 575-3-60 Hoists with Contactor (Black Control Station)

DISASSEMBLY-ASSEMBLY

When disassembling and assembling the Shopstar Hoist, refer to the exploded view and the parts list on pages 15 through 18. These show the proper relationship of the parts, the names of the parts and the required quantities of the parts. In addition, please observe the following:

1. Needle bearings are pressed into the gear housing, main frame, liftwheel and lower sheave wheel. Unless they are to be replaced, do not attempt to remove these bearings.
2. A liftwheel seal is pressed into the main frame and a seal is pressed into the end of the liftwheel shaft. Be careful that these seals are not cut or damaged during disassembly and reassembly.

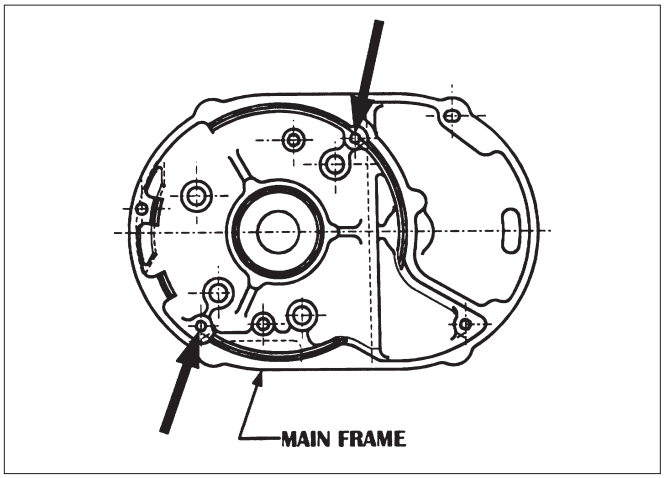


Figure 24 - Main Frame

3. Refer to page 13 for disassembly, inspection, reassembly and adjustment of the brake.
4. Do not attempt to disassemble the Protector™ - refer to page 13.
5. Refer to page 14 for lubrication instructions.
6. See next section for load chain removal and installation.
7. Tighten the various screws as follows:

Table 6 - Torque Settings

Part Name	Seating lb·in	Torque (N·m)
Pin Retainer Plate Screw	25	2.8
Motor Cover Screw	25	2.8
Gear Housing Screw	25	2.8
Brake End Cover Screw	25	2.8
Dead End Plate Screw	125	14.1
Hook Retainer Screw	10	1.1
Hook Block Screw, Double-reeved, 500, 600 and 1,000 lb (226, 272 and 453 kg)	72-78	8-9
Hook Block Screw, Single-reeved, 250, 300 and 500 lb (113, 136 and 226 kg)	72-78	8-9
Power Cord Ground Screw	20	2.2

8. When removing the stator , first remove the brake end cover. Disconnect stator leads from the wiring or contactor. At the other end, remove the motor end cover. On single phase units, use an insulated screw driver to short between the bare terminals of the capacitor to discharge it. A spark may be produced. Disconnect wiring to the capacitor and then remove the capacitor. Remove the cut-out device and disconnect the wires from it. Remove the rotor assembly and thrust washer. Then slide the stator out of the main frame.

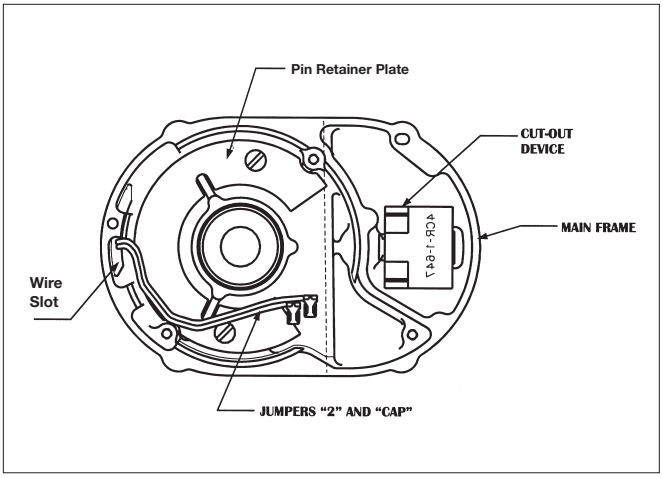


Figure 25 - Stator Installation

9. To install the stator, (Refer to Figure 24) and make sure that the pin retainer plate has been assembled to the main frame. On single phase units slide jumpers "2" and "CAP" through the wire slot in the main frame. Route these wires around the rotor bearing boss in the main frame as shown in Figure 25. Attach the brown and blue stator leads and "2" jumper to cut-out device (refer to wiring diagram). Slide the cut-out device into the cavity as shown. Push the cut-out device down until it sets on the main frame. Place the capacitor on top of the cut-out device and attach "CAP" jumper and the yellow stator lead to it. Re-route jumpers "2" and "CAP", if necessary to make sure they clear the rotor bearing boss as shown in Figure 25. On all units slide stator leads through wire slot. Align the slots in the stator shell with the threaded holes in the main frame, as shown in Figure 24. With the leads down, slide the stator into the main frame. Slide the rotor, large bearing first, into stator. Place the rotor thrust washer on top of the exposed rotor bearing and then assemble the motor end cover to the main frame. Using wiring diagram, complete the wiring at the brake end of the unit.
10. Properly install the upper hook as shown in Figure 27, then slide the hook retainer into the cavity on top of the hoist and secure it using hook retainer screw. Tighten screw to a seating torque of 10 in. lbs. (1.1 NM).

LOAD CHAIN REMOVAL/INSTALLATION

1. If unit has a chain container, remove it from the chain guide.
2. Remove the chain stop. Depress DOWN button and run chain out of hoist.

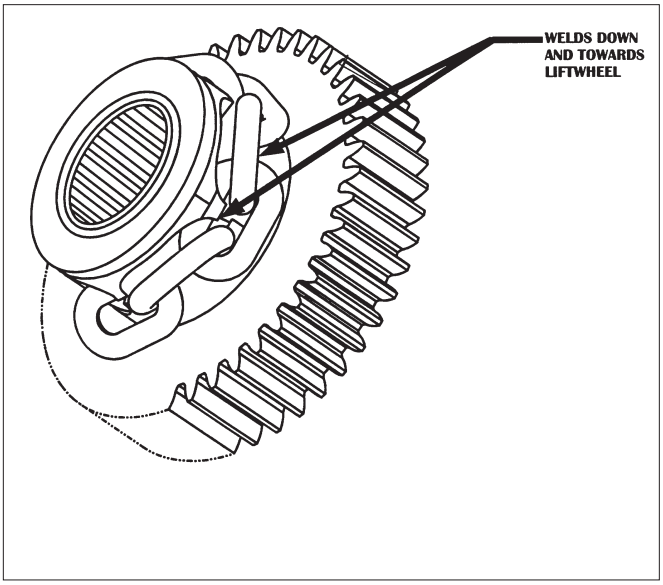


Figure 26: Chaining Hoist

3. Feed a short length of soft wire through the opening in the chain guide/stripper until it comes out of the hoist. Attach “new” chain to end of the wire which is in the center of the hoist. Position the chain so that the welds will be down and towards the liftwheel as shown above in Figure 26.
4. Jog the UP push button while pulling on the free end of wire until the chain comes out of the hoist. Remove the wire and attach the chain stop as shown in Figure 28. On units with chain container, place chain stop and loose end of chain in chain container. Attach chain container to chain guide.
5. On the 250, 300 and 500 lbs (single reeved), (113, 136 and 226 kg) units, remove the hook block from the old chain and attach it to the new chain by reusing the chain pin. On the 500, 600 and 1000 lbs (226, 272 and 453 kg) units:

- Remove dead end plate from hoist.
- Remove dead end pin from the last link of chain and pull chain out of dead end plate.
- Pull old chain out of hook block and disassemble the hook block.
- Make sure the new chain is not twisted and wrap the chain around the sheave wheel with welds down and towards the sheave wheel.
- Reassemble hook block and pull the new chain through the hook block.
- Slide the dead end plate over the last link and secure it using the dead end pin.

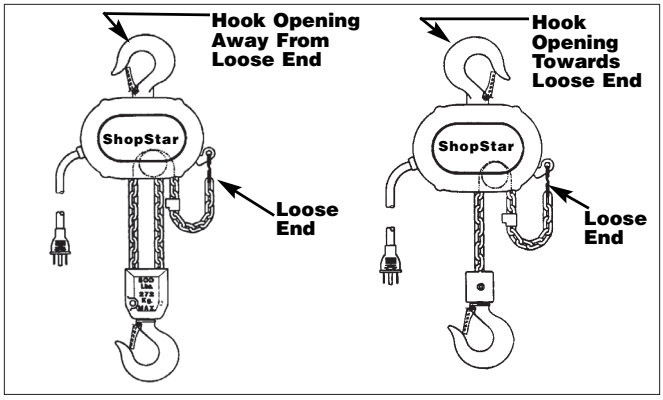


Figure 27 - Chaining Diagram

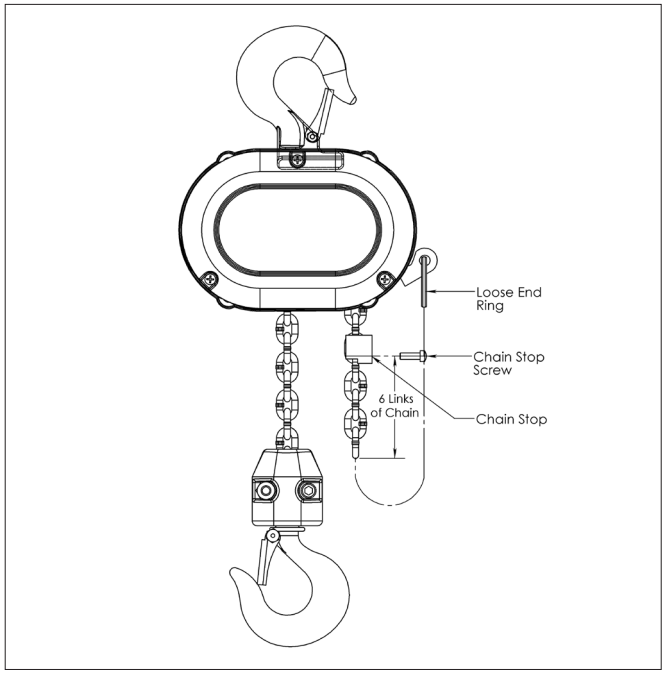


Figure 28 - Chain Stop

- Making sure the chain is not twisted between the hook block and hoist, attach the dead end plate to the chain guide/stripper.
- Retrace the new chain and check for twists. If chain is twisted, start over.

IMPORTANT: Do not use “old” chain for other purposes such as lifting or pulling. Load chain may break suddenly without visual deformation. For this reason, cut the “old” chain into short lengths to prevent use after disposal.

CUTTING CHAIN

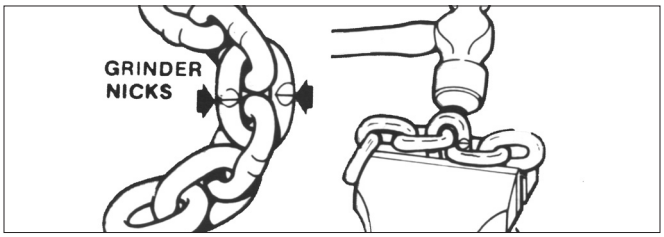


Figure 29 - Cutting Chain by Nicking

Hoistaloy® load chain ishardened and it is difficult to cut. The following methods are recommended when cutting a length of new chain from stock or cutting off worn chain. Always wear eye protection when cutting chain.

1. Use a grinder and nick the link on both sides (see right), then secure the link in a vise and break off with a hammer.
2. Use a 7” (177 mm) minimum diameter by 1/8” (3.1 mm) thick abrasive wheel (or type recommended by wheel supplier) that will clear adjacent links.

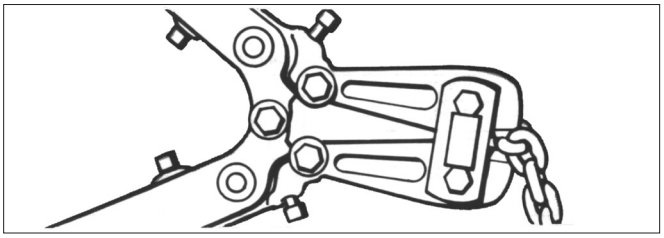


Figure 30 - Cutting Chain with a Bolt Cutter

⚠ WARNING

Cutting chain can produce flying particles.

TO AVOID HEALTH PROBLEMS:

- Wear eye protection.
- Place a shield over chain to prevent flying objects.

3. Use a bolt cutter (see right) with special cutter jaws for cutting hardened chain. Jaws should be 1 inch (25.4 mm) long.

TESTING

Before using, all altered, repaired or used hoists that have not been operated for the previous 12 months must be tested by the user for proper operation. First, test the unit without a load and then with a light load of 50 pounds (23 kg) times the number of load supporting parts of load chain to be sure that the hoist operates properly and that the brake holds the load when control is released. Next test with a load of *125% of rated capacity. In addition hoists in which load sustaining parts have been replaced should be tested with *125% of rated capacity by or under the direction of an appointed person and written report prepared for record purposes. After this test, check that the Protector functions. If the Protector permits lifting a load in excess of 200% of rated load, it should be replaced.

*If the Protector prevents lifting of a load of 125% of rated capacity, reduce load to rated capacity.

REPAIR PARTS LIST

⚠ WARNING

Using “Commercial” or other manufacturer’s parts to repair the CM Shopstar Hoists may cause load loss.

TO AVOID INJURY

Use only CM supplied replacement parts. Parts may look alike but CM parts are made of specific materials or processed to achieve specific properties.

ORDERING INSTRUCTIONS

The following information must accompany all correspondence orders for replacement parts:

1. Hoist Model Number from identification plate.
2. Serial number of the hoist stamped below identification plate.
3. Voltage, phase, hertz from the identification plate.
4. Length of lift.
5. Part number of part from parts list.
6. Number of parts required.
7. Part name from parts list.

Note

When ordering replacement parts, it is recommended that consideration be given to the need for also ordering such items as gaskets, fasteners, insulators, etc. These items may be damaged or lost during disassembly or just unfit for future use because of deterioration from age or service.

RECOMMENDED SPARE PARTS

To insure continued service of the Shopstar Hoist, the following is a list of parts that are recommended to be kept on hand at all times to replace parts that have worn or failed. Parts applicable to your hoist should be stocked.

	Part Name	Part Quantity
Contact manufacturer	Brake field assem.	1
20698	Brake disc	1
Contact manufacturer	Capacitor	1
20709	Cut-out device	1
Contact manufacturer	Transformer	1
Contact manufacturer	Reversing contactor	1
Contact manufacturer	Control station	1
Contact manufacturer	Control station parts kit	1

PARTS STAR™
BY COLUMBUS McKINNON

UNITED STATES MASTER PARTS DEPOT

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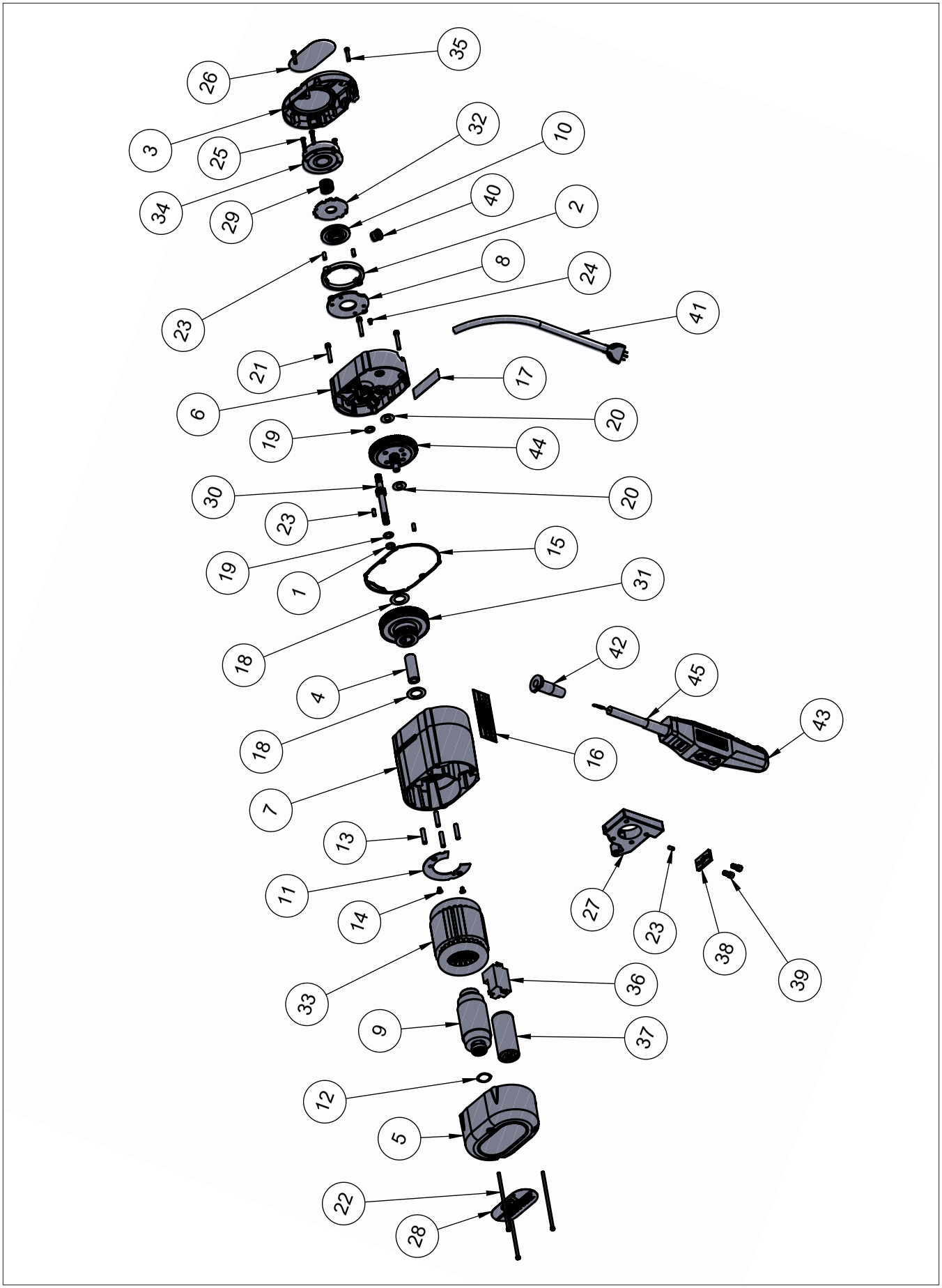
P/N 192047138 Rev AA January 2018

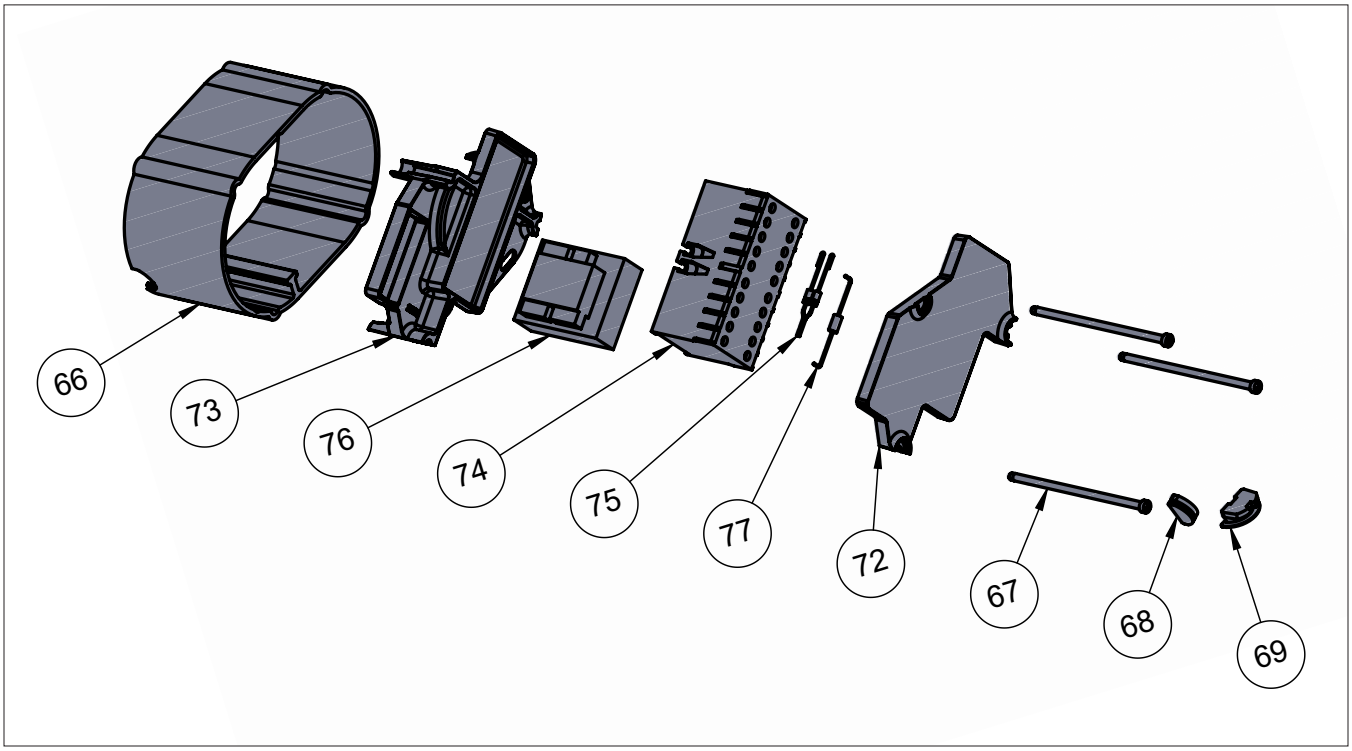
SHOPSTAR MAIN ASSEMBLY



P/N 192047138 Rev AA January 2018

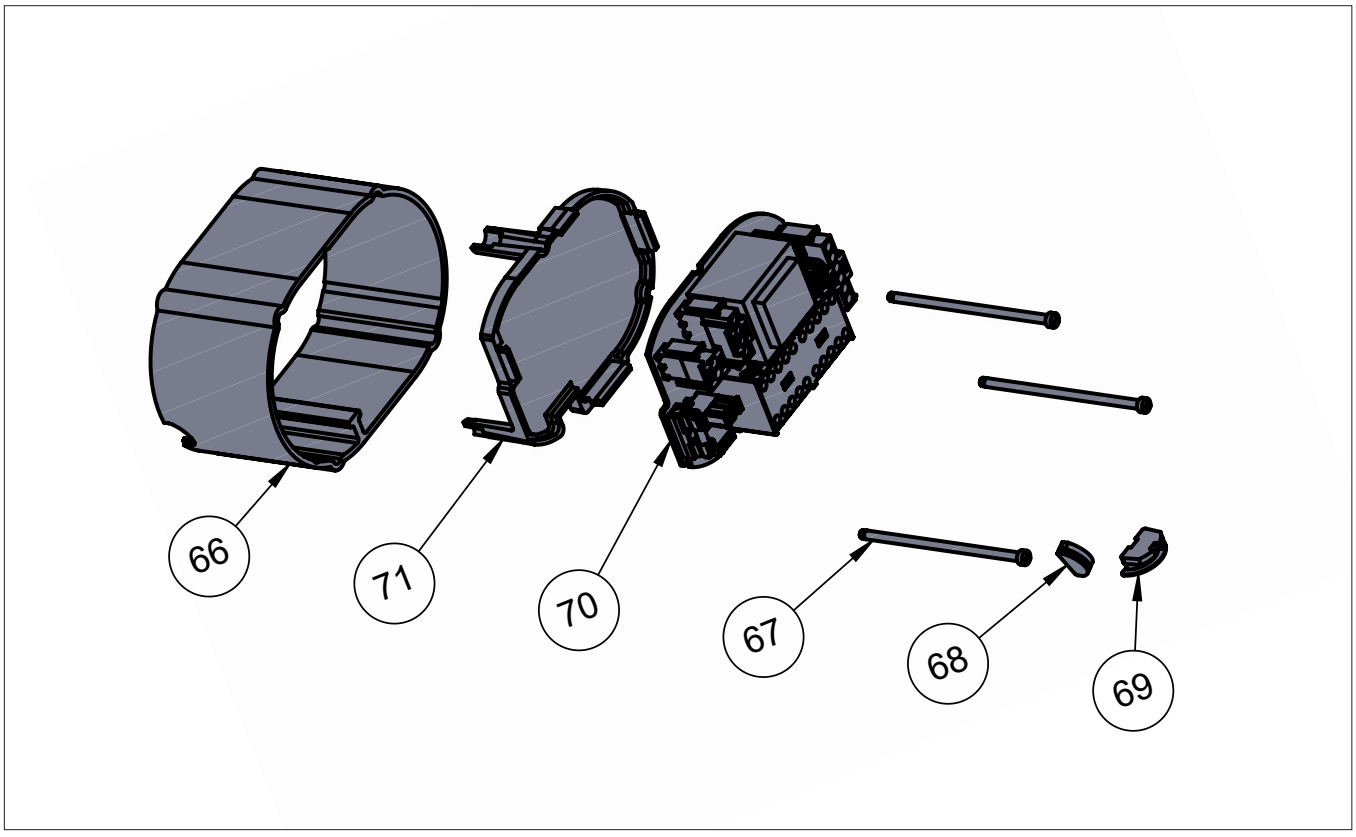
SHOPSTAR MAIN ASSEMBLY

HOIST WITH CONTACTOR

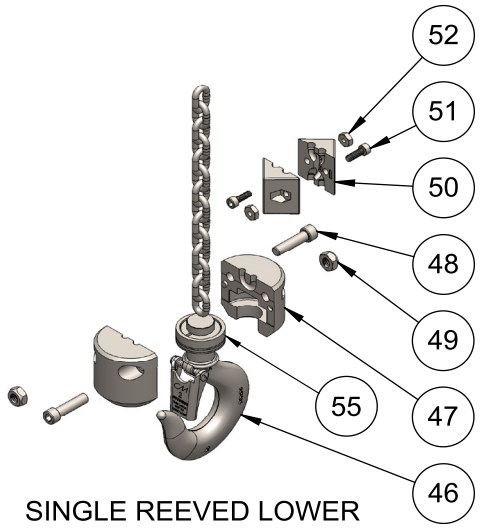


SHOPSTAR MAIN ASSEMBLY

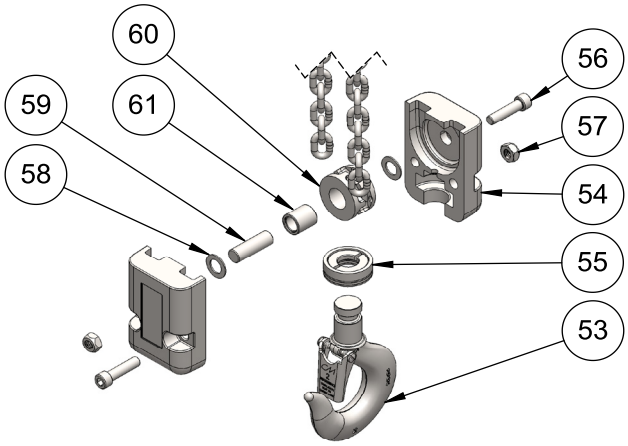
HOIST WITH PRINTED CIRCUIT BOARD



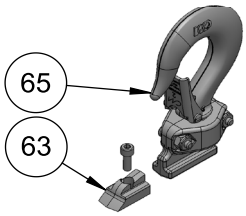
LOWER HOOK ASSEMBLIES



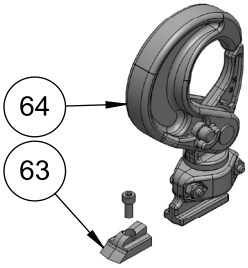
SINGLE REEVED LOWER HOOK & BLOCK



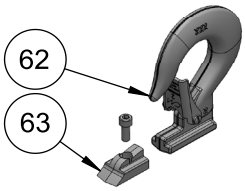
DOUBLE REEVED LOWER HOOK & BLOCK



SWIVEL HOOK SUSPENSION ASSEMBLY



SWIVEL LATCHLOK ASSEMBLY



RIGID HOOK SUSPENSION ASSEMBLY

SHOPSTAR PARTS LIST

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	20704	LIFTWHEEL SHAFT SEAL	1
2	20723	BRAKE SPACER	1
3		BRAKE END COVER	
	20323	BRAKE END COVER - ORANGE	1
	20377	BRAKE END COVER - WHITE	1
	20366	BRAKE END COVER - YELLOW	1
4	20313	LIFTWHEEL SHAFT	1
5		MOTOR END COVER	
	20302	MOTOR END COVER - ORANGE	1
	20356	MOTOR END COVER - WHITE	1
	20369	MOTOR END COVER - YELLOW	1
6		GEAR HOUSING	
	20350	GEAR HOUSING - ORANGE	1
	20371	GEAR HOUSING -WHITE	1
	20368	GEAR HOUSING - YELLOW	1
7		MAIN FRAME	
	20352	MAIN FRAME - ORANGE	1
	20370	MAIN FRAME - WHITE	1
	20367	MAIN FRAME - YELLOW	1
8	20419	BRAKE BASE PLATE	1
9	20651	ROTOR ASSEMBLY	1
10	20698	BRAKE DISC	1
11	20700	PIN RETAINER PLATE	1
12	20727	ROTOR THRUST WASHER	1
13	20729	CHAIN GUIDE/STRIPPER PIN	4
14	20743	PIN RETAINER PLATE SCREW	2
15	20755	GASKET	1
16	20758	CAUTION LABEL	1
17	24842	WARNING LABEL	2
18	88638	LIFTWHEEL THRUST WASHER	2
19	88639	FIRST PINION THRUST WASHER	2
20	88640	PROTECTOR THRUST WASHER	2
21	920718	GEAR HOUSING SCREW	4
22	920719	MOTOR COVER SCREW	3
23	920720	DOWEL PIN	4
24	920756	WIRE NUT	*
25	10001215	BRAKE SCREW	4
26		CAPACITY WARNING LABEL	
	20762	CAPACITY WARNING LABEL - 250 lbs.	1
	20737	CAPACITY WARNING LABEL - 300 lbs.	1
	20763	CAPACITY WARNING LABEL - 500 lbs.	1
	20738	CAPACITY WARNING LABEL - 600 lbs.	1
	20884	CAPACITY WARNING LABEL - 1,000 lbs.	1
27	20304/ 20305	INDIVIDUAL CHAIN GUIDE/STRIPPER	1

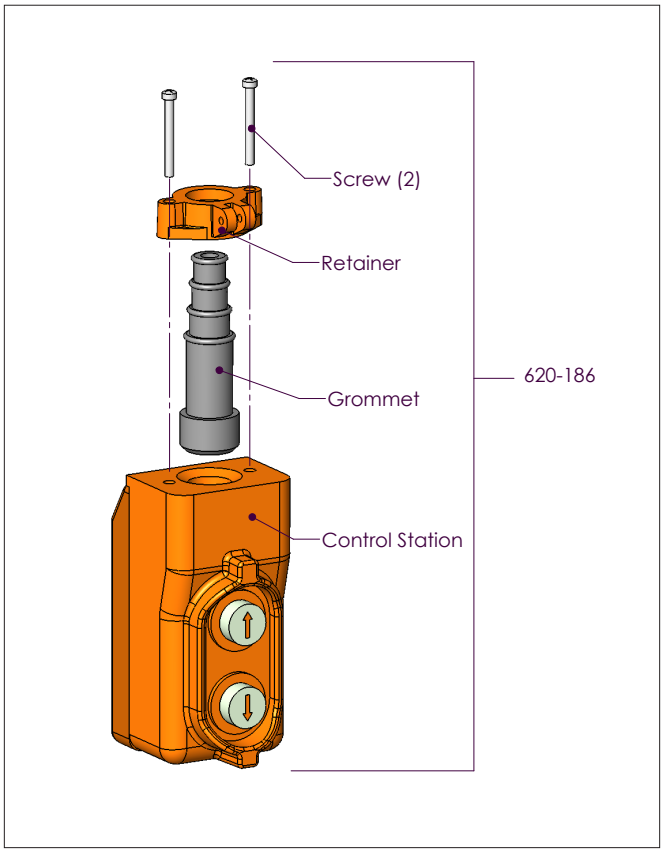
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
28		HOIST LABEL	
	20753	SERIES LABEL (SHOPSTAR)	1
	20874	SERIES LABEL (SHOPHOIST)	1
	20901	SERIES LABEL (SLC)	1
	20903	SERIES LABEL (SLM)	1
29	20887	BRAKE SPRING STANDARD	1
	20996	BRAKE SPRING 250 kg & 500 kg	1
30	20422	FIRST PINION AND DRIVE SHAFT, STANDARD.	1
	20423	FIRST PINION AND DRIVE SHAFT - 12 fpm, 500 lbs, 6 fpm, 1000 lbs.	1
31		LIFTWHEEL AND GEAR ASSEMBLY	
	20666	LIFTWHEEL AND GEAR ASSEMBLY - 6 fpm, 1,000 lbs.	1
	20664	LIFTWHEEL AND GEAR ASSEMBLY - 8 fpm, 500, 600 & 1,000 lbs.	1
	20666	LIFTWHEEL AND GEAR ASSEMBLY - 12 fpm, 500 lbs.	1
	20647	LIFTWHEEL AND GEAR ASSEMBLY - 12 fpm, 600 & 1000 lbs.	1
	20664	LIFTWHEEL AND GEAR ASSEMBLY - 16 fpm, 250, 300 & 500 lbs.	1
	20657	LIFTWHEEL AND GEAR ASSEMBLY - 20 fpm, 500 & 600 lbs.	1
	20647	LIFTWHEEL AND GEAR ASSEMBLY - 24 fpm, 250, 300 & 500 lbs.	1
	20657	LIFTWHEEL AND GEAR ASSEMBLY - 40 fpm, 250 & 300 lbs.	1
32	20420	BRAKE ARMATURE	1
33		STATOR	
	20707	STATOR - 115-1-50/60 HOISTS	1
	20328	STATOR - 220-1-50 HOISTS	1
	20329	STATOR - 220-3-50/60 HOISTS	1
	20330	STATOR - 380-3-50, 415-3-50 & 460-3-60 HOISTS	1
	20344	STATOR - 575-3-60 HOISTS	1
	192039309	STATOR - 220/230-3-50/60 WITH PCB	1
	192039311	STATOR 380-3-50, 400-3-50, 415-3-50 WITH PCB	1
34		BRAKE FIELD (INCLUDES BRAKE COIL)	
	20659	BRAKE FIELD (INCLUDES BRAKE COIL) - 115-1-50/60 HOISTS	1
	20658	BRAKE FIELD (INCLUDES BRAKE COIL) - 220-1-50, 220-3-50/60, 380-3-50, 415-3-50 & 460-3-60 HOISTS	1
	20629	BRAKE FIELD (INCLUDES BRAKE COIL) - 575-3-60 HOISTS	1
	192039344	BRAKE FIELD - PCB	1
35		BRAKE END COVER SCREW	
	920715	BRAKE END COVER SCREW - HOISTS WITHOUT CONTACTOR	3
	20957	BRAKE END COVER SCREW - HOISTS WITH CONTACTOR	3
36		CUT-OUT DEVICE	
	20709	CUT-OUT DEVICE - 115-1-50/60 HOISTS	1
	20786	CUT-OUT DEVICE - 220-1-50, 230-1-60 HOISTS	1
37		CAPACITOR	
	20708	CAPACITOR - 115-1-50/60 HOIST	1
	20785	CAPACITOR - 220-1-50 HOIST	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
38	20714	DEAD END PLATE (DOUBLE CHAINED)	1
39	73715	DEAD END PLATE SCREW (DOUBLE CHAINED)	2
40	20717	POWER CORD GROMMET (NOT SHOWN)	1
41		POWER CORD	
	20635	POWER CORD - 115-1-50/60 HOISTS WITH CONTACTOR	1
	20608	POWER COR - 115-1-50/60 HOISTS WITHOUT CONTACTOR	1
	20633	POWER CORD - 220-1-50 HOISTS	1
	20628	POWER CORD - 220-3-50/60, 380-3-50, 415-3-60, 460-3-60 & 575-3-60 HOISTS	1
	192039303	PCB POWER CORD - "SHORT" 3'	1
	23657605	PCB POWER CORD - 5' - FOR 10' LIFT	1
	23657610	PCB POWER CORD - 10' - FOR 15' LIFT	1
	23657615	PCB POWER CORD - 15' - FOR 20' LIFT	1
42	20711	CONTROL CORD GROMMET (NOT SHOWN)	1
43	**	CONTROL STATION	A/R
44		PROTECTOR ASSEMBLY1	
	20665	PROTECTOR ASSEMBLY - 6 fpm, 1,000 lbs.	1
	20645	PROTECTOR ASSEMBLY - 8 fpm, 500 & 600 lbs.	1
	20660	PROTECTOR ASSEMBLY - 8 fpm, 1000 lbs.	1
	20665	PROTECTOR ASSEMBLY - 12 fpm 500 lbs.	1
	20638	PROTECTOR ASSEMBLY - 12 fpm, 600 lbs.	1
	20662	PROTECTOR ASSEMBLY - 12 fpm, 1000 lbs.	1
	20645	PROTECTOR ASSEMBLY - 16 fpm, 250 & 300 lbs.	1
	20660	PROTECTOR ASSEMBLY - 16 fpm, 500 lbs.	1
	20648	PROTECTOR ASSEMBLY - 20 fpm, 500 lbs	1
	20661	PROTECTOR ASSEMBLY - 20 fpm, 600 lbs.	1
	20638	PROTECTOR ASSEMBLY - 24 fpm, 250 & 300 lbs	1
	20662	PROTECTOR ASSEMBLY - 24 fpm, 500 lbs.	1
	20648	PROTECTOR ASSEMBLY - 40 fpm, 250 lbs	1
	20661	PROTECTOR ASSEMBLY - 40 fpm, 300 lbs.	1
45		CONTROL CORD ASSEMBLY	
	20607	CONTROL CORD ASSEMBLY - ORANGE CONTROL STATION 10 ft. lift	
	20615	CONTROL CORD ASSEMBLY - ORANGE CONTROL STATION 15 ft. lift	
	20616	CONTROL CORD ASSEMBLY - ORANGE CONTROL STATION 20 ft. lift	
	20642	CONTROL CORD ASSEMBLY - BLACK CONTROL STATION 10 ft. lift	
	20643	CONTROL CORD ASSEMBLY - BLACK CONTROL STATION 15 ft. lift	
	20644	CONTROL CORD ASSEMBLY - BLACK CONTROL STATION 20 ft. lift	
	192039304	CONTROL CORD ASSEMBLY - PCB CONTROL - Short 3' cord	
	23658206	CONTROL CORD ASSEMBLY - PCB CONTROL - 6' - 10' lift	
	23658211	CONTROL CORD ASSEMBLY - PCB CONTROL - 11' - 15' lift	
	23658216	CONTROL CORD ASSEMBLY - PCB CONTROL 16' - 20' lift	
	23654206	CONTROL CORD ASSEMBLY - CM ROCKET PENDANT - 10' lift	
	23654211	CONTROL CORD ASSEMBLY - CM ROCKET PENDANT - 15' lift	
	23654216	CONTROL CORD ASSEMBLY - CM ROCKET PENDANT - 20' lift	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
46	10001931B	LATCH TYPE SWIVEL HOOK – BLACK	1
47	10001878	LOWER HOOK BLOCK (1 REEVE)	2
48	10264605	CAP SCREW, SOCKET HEAD	2
49	82638	HOOK BLOCK NUT (1 REEVE)	2
50	20428	CHAIN STOP	2
51	25848	CHAIN STOP SCREW	2
52	982472	CHAIN STOP NUT	2
53	10001931B	LATCH TYPE SWIVEL HOOK – BLACK	1
54	192041692	HOOK BLOCK (2 REEVE)	2
55	****	BEARINGS/WASHERS/RINGS	A/R
56	82554	HOOK BLOCK CAP SCREW (2 REEVE)	2
57	82638	HOOK BLOCK NUT (2 REEVE)	2
58	88639	THRUST WASHER (2 REEVE)	2
59	20318	SHEAVE WHEEL SHAFT (2 REEVE)	1
60	20316	SHEAVE WHEEL (2 REEVE)	1
61	88641	BEARING - SHEAVE WHEEL (2 REEVE)	1
62	20650	LATCH HOOK ASSEMBLY RIGID	A/R
63	20713K	HOOK RETAINER & SCREW	1
64	10001297	LATCHLOK HOOK ASSEMBLY SWIVEL	A/R
65	10001130	LATCH HOOK ASSEMBLY SWIVEL	A/R
N/S	595522	HOOK LATCH KIT	1
66		FRAME SPACER	
	20333C	FRAME SPACER - ORANGE	1
	20333W	FRAME SPACER - WHITE	1
	20333Y	FRAME SPACER - YELLOW	1
67	20957	MOTOR COVER SCREW	3
68	20781	POWER CORD PLUG	1
69	20780	PLUG, CONTROL CORD	1
70	10001998	PCB - 48V	1
	10001999	PCB - 110V	1
71	10001979	PCB RETAINER	1
72	20777	OUTBOARD COMPONENT BRACKET	1
73	20778	INBOARD COMPONENT	1
74	20787	CONTACTOR 48V	1
	20814	CONTACTOR 110V	1
75	20789	DIODE S/A	1
76	20851	TRANSFORMER 48V	1
	20831	TRANSFORMER 110V	1
77	20861	VOLTAGE SUPPERSSOR	1
78	***	JUMPERS	A/R

A/R - As Requested - Contact Factory.
* Quantity is application dependent.
** See Control Station Section.
*** Contact Factory for Jumpers based on application.
**** Contact Factory for specific components.

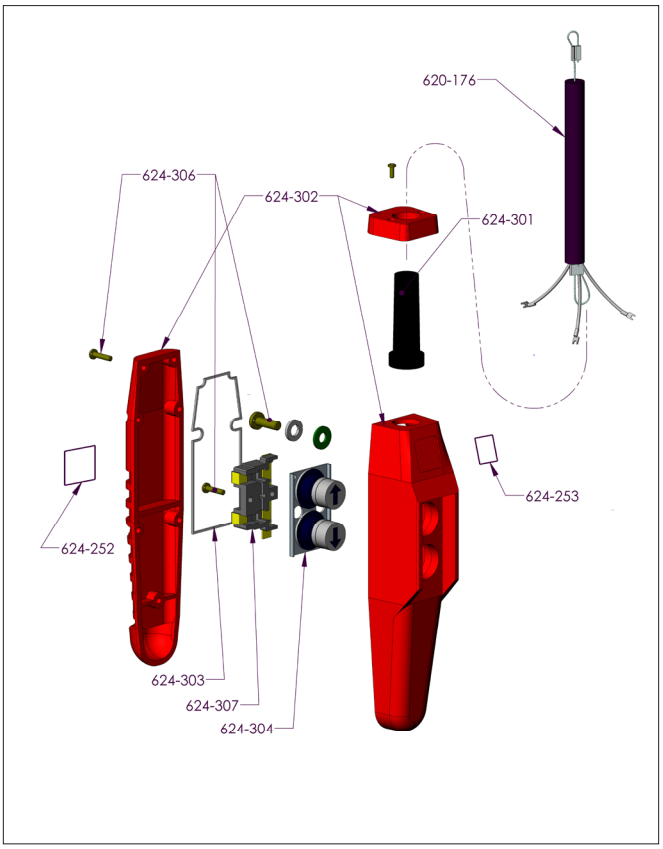
CONTROL STATIONS



CONTROL STATION (ORANGE) FOR USE ON 115 1-50/60 HOISTS WITHOUT CONTACTOR

PARTS LIST

Key No.	No. Part Name	Required	Part Number
620-186	Control station with retainer, screws and grommet	1	24807

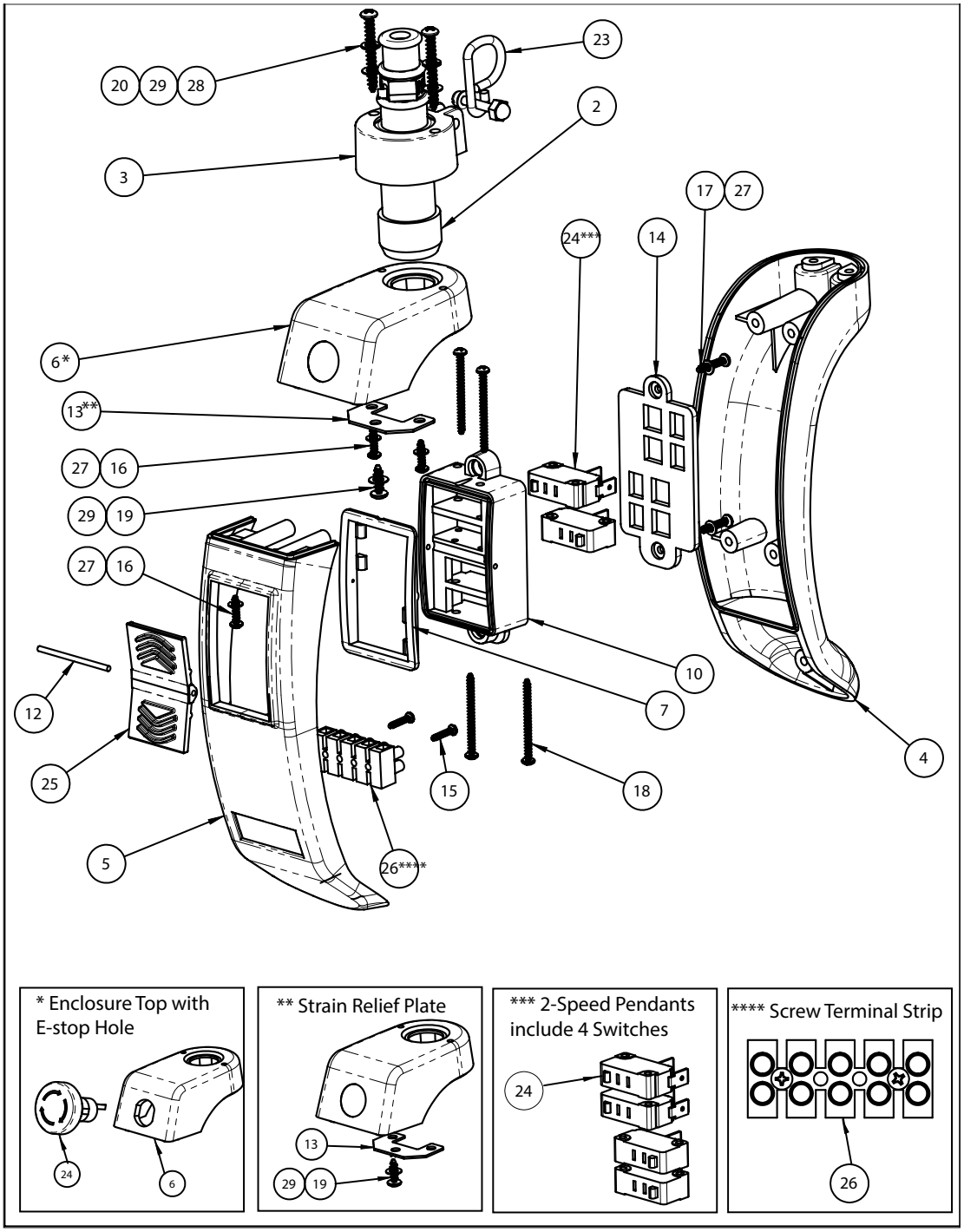


CONTROL STATION (BLACK) FOR USE ON 115-1-50/60 HOISTS WITH CONTACTOR, 220-1-50 AND THREE PHASE UNITS

CONTROL STATION

Key No.	No. Part Name	Required	Part Number
624-232	Control Station (Includes 624-301 thru 624-307)	1	36900B
624-252	Warning Label (Electrical)	1	24842
624-253	Manufacturer Label	1	28470
624-301	Control Station Grommet	1	36989
624-302	Control Station Housing	1	36998B
624-303	Gasket	1	36986
624-304	Control Station Button Assembly	1	36988
624-306	Control Station Parts Kit	1	36939
624-307	Contact Assembly (Includes 624-304)	1	36987
624-308	Warning Label	1	24845

CM ROCKET UNIVERSAL PENDANT



Rocket Universal Pendant Control	
Product Code	Description
ECUR-1S	Rocket Pendant Control - Single-Speed, No E-stop
ECUR-1SE	Rocket Pendant Control - Single-Speed with E-stop
ECUR-2S	Rocket Pendant Control - 2-Speed, No E-stop
ECUR-2SE	Rocket Pendant Control - 2-Speed with E-stop
ECUR-1S-25P	25 PACK: Rocket Pendant Control - Single-Speed, No E-stop
ECUR-1SE-25P	25 PACK: Rocket Pendant Control - Single-Speed with E-stop
ECUR-2S-25P	25 PACK: Rocket Pendant Control - 2-Speed, No E-stop
ECUR-2SE-25P	25 PACK: Rocket Pendant Control - 2-Speed with E-stop

Replacement Parts		
Product Code	Description	Qty
ECUR-0001	Strain Relief Kit	1
ECUR-0010	Switch Repair Kit, 2-Speed, 4 Switch	1
ECUR-0011	Switch Repair Kit, Single-Speed, 2 Switch	1
ECUR-0020	Enclosure Repair Kit, No E-Stop	1
ECUR-0021	Enclosure Repair Kit, With E-Stop	1
ECUR-0030	Label Kit	1
23608124	Emergency Stop Push Button	1
23608110	Rocket Bushing CBL 13.3-16.5mm	1

NOTES

P/N 192047138 Rev AA January 2018

WARRANTY

LIMITATION OF WARRANTIES, REMEDIES AND DAMAGES

INDEMNIFICATION AND SAFE OPERATION

Buyer shall comply with and require its employees to comply with directions set forth in instructions and manuals furnished by Seller and shall use and require its employees to follow such instructions and manuals and to use reasonable care in the use and maintenance of the goods. Buyer shall not remove or permit anyone to remove any warning or instruction signs on the goods. In the event of personal injury or damage to property or business arising from the use of the goods, Buyer shall within 48 hours thereafter give Seller written notice of such injury or damage. Buyer shall cooperate with Seller in investigating any such injury or damage and in the defense of any claims arising therefrom.

If Buyer fails to comply with this section or if any injury or damage is caused, in whole or in part, by Buyer's failure to comply with applicable federal or state safety requirements, Buyer shall indemnify and hold Seller harmless against any claims, loss or expense for injury or damage arising from the use of the goods.

CMCO Warranty (HOISTS)

A. Columbus McKinnon Corporation ("Seller") warrants to the original end user ("Buyer") that: (a) for a period of one (1) year from the date of Seller's delivery of the goods (collectively, the "Goods") to the carrier, the electrical components of the Goods will be free from defects in workmanship and materials; and (b) for the life of the Goods, the mechanical components of the Goods will be free from defects in workmanship and materials.

B. IN THE EVENT OF ANY BREACH OF SUCH WARRANTY, SELLER'S SOLE OBLIGATION SHALL BE EXCLUSIVELY LIMITED TO, AT THE OPTION OF SELLER, REPAIR OR REPLACEMENT, F.O.B. SELLER'S POINT OF SHIPMENT, OF ANY GOODS THAT SELLER DETERMINES TO HAVE BEEN DEFECTIVE OR, IF SELLER DETERMINES THAT SUCH REPAIR OR REPLACEMENT IS NOT FEASIBLE, TO A REFUND OF THE PURCHASE PRICE UPON RETURN OF THE GOODS TO SELLER. NO CLAIM AGAINST SELLER FOR ANY BREACH OF (i) SUCH WARRANTY WITH RESPECT TO THE ELECTRICAL COMPONENTS OF ANY GOOD SHALL BE VALID OR ENFORCEABLE UNLESS BUYER'S WRITTEN NOTICE THEREOF IS RECEIVED BY SELLER WITHIN ONE (1) YEAR FROM THE DATE OF SELLER'S DELIVERY TO THE CARRIER AND (ii) SUCH WARRANTY WITH RESPECT TO THE MECHANICAL COMPONENTS OF ANY GOOD SHALL BE VALID OR ENFORCEABLE UNLESS BUYER'S WRITTEN NOTICE THEREOF IS RECEIVED BY SELLER WITHIN ONE (1) YEAR FROM THE DATE THE DATE ANY ALLEGED CLAIM ACCRUES. EXCEPT FOR THE WARRANTY SET FORTH ABOVE, SELLER MAKES NO OTHER WARRANTIES WITH RESPECT TO THE GOODS, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUALITY AND/OR THOSE ARISING BY STATUTE OR OTHERWISE BY LAW OR FROM ANY COURSE OF DEALING OR USE OF TRADE, ALL OF WHICH ARE HEREBY EXPRESSLY DISCLAIMED.

C. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY THIRD PARTY WITH RESPECT TO ANY GOOD, WHETHER IN CONTRACT, TORT OR OTHER THEORY OF LAW, FOR LOSS OF PROFITS OR LOSS OF USE, OR FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, DIRECT OR INDIRECT DAMAGES, HOWSOEVER CAUSED. SELLER'S MAXIMUM LIABILITY TO BUYER WITH RESPECT TO THE GOODS SHALL IN NO EVENT EXCEED THE PRICE PAID BY BUYER FOR THE GOODS THAT ARE THE SUBJECT OF THE APPLICABLE CLAIM.

D. Seller shall not be liable for any damage, injury or loss arising out of the use of the Goods if, prior to such damage, injury or loss, such Goods are: (1) damaged or misused following Seller's delivery to the carrier; (2) not maintained, inspected, or used in compliance with applicable law and Seller's written instructions and recommendations; or (3) installed, repaired, altered or modified without compliance with such laws, instructions or recommendations.

E. This warranty is limited and provided only to the original end user. **Each Good must be registered within sixty (60) days of receipt of each product to establish eligibility.** Please register at www.cmworks.com/hoist-warranty-registration or submit registration card via US mail.

F. Any action against Seller for breach of warranty, negligence or otherwise in connection with the electrical components of any Good must be commenced by Buyer within one (1) year after: (a) the date any alleged claim accrues; or (b) the date of delivery of the Goods to Buyer, whichever is earlier. Any action against Seller for breach of warranty, negligence or otherwise in connection with the mechanical components of any Good must be commenced by Buyer within one (1) year after the date any alleged claim accrues.

⚠ WARNING

Alterations or modifications of equipment and use of non-factory repair parts can lead to dangerous operation and injury.

TO AVOID INJURY:
- **Do not alter or modify equipment.**
- **Do use only factory replacement parts.**

COLUMBUS McKINNON CORPORATION

FAMILY OF BRANDS

CM · ABELL-HOWE · BUDGIT Hoists · CHESTER HOIST · COFFING HOISTS · UNIFIED · Yale HOISTS · SHAW-BOX · MAGNETEK

Distributed by Tri-State Equipment Company Inc.
sales@tsoverheadcrane.com
www.tsoverheadcrane.com
Tel: (314) 869-7200

P/N 192047138 Rev AA January 2018

Electric Chain

Operating, Maintenance & Parts Manual

SHOPSTAR®

Capacities

250 lbs (113 kg) 300 lbs (136 kg)
500 lbs (226 kg) 600 lbs (272 kg)
1,000 lbs (453 kg)

Follow all instructions and warnings for inspecting, maintaining and operating this hoist.

The use of any hoist presents some risk of personal injury or property damage. That risk is greatly increased if proper instructions and warnings are not followed. Before using this hoist, each operator should become thoroughly familiar with all warnings, instructions, and recommendations in this manual. **Retain this manual for future reference and use.**

Forward this manual to the hoist operator.
Failure to operate the equipment as directed in the manual may cause injury.

Should you have any questions or have problems with this product, please call the number located on the inside front cover.

Before using the hoist, fill in the information below. Model and serial numbers are stamped into the aluminum hoist housing.

Model Number _____

Serial Number _____

Purchase Date _____

CM®
Columbus McKinnon Corporation
Industrial Products Division
140 John James Audubon Parkway Amherst,
New York 14228-1197

Note: When ordering parts, always furnish Rated Load, Voltage, Phase, Hertz and Serial Number of hoist on which the parts are to be used.
For the location of the nearest Repair Station, see the list located on the inside front cover.

LIMITATION OF WARRANTIES, REMEDIES AND DAMAGES

THE WARRANTY STATED BELOW IS GIVEN IN PLACE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, NO PROMISE OR AFFIRMATION OF FACT MADE BY ANY AGENT OR REPRESENTATIVE OF SELLER SHALL CONSTITUTE A WARRANTY BY SELLER OR GIVE RISE TO ANY LIABILITY OR OBLIGATION.

Seller warrants that on the date of delivery to carrier the goods are free from defects in workmanship and materials.

SELLER'S SOLE OBLIGATION IN THE EVENT OF BREACH OF WARRANTY OR CONTRACT OR FOR NEGLIGENCE OR OTHERWISE WITH RESPECT TO GOODS SOLD SHALL BE EXCLUSIVELY LIMITED TO REPAIR OR REPLACEMENT, F.O.B. SELLER'S POINT OF SHIPMENT, OF ANY PARTS WHICH SELLER DETERMINES TO HAVE BEEN DEFECTIVE or if Seller determines that such repair or replacement is not feasible, to a refund of the purchase price upon return of the goods to Seller.

Any action against Seller for breach of warranty, negligence or otherwise, must be commenced within one year after such cause of action occurs.

NO CLAIM AGAINST SELLER FOR ANY DEFECT IN THE GOODS SHALL BE VALID OR ENFORCEABLE UNLESS BUYER'S WRITTEN NOTICE THEREOF IS RECEIVED BY SELLER WITHIN ONE YEAR FROM THE DATE OF SHIPMENT. Seller shall not be liable for any damage, injury or loss arising out of the use of the goods if, prior to such damage, injury or loss, such goods are (1) damaged or misused following Seller's delivery to carrier; (2) not maintained, inspected, or used in compliance with applicable law and Seller's written instructions and recommendations; or (3) installed, repaired, altered or modified without compliance with such law, instructions or recommendations.
UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES AS THOSE TERMS ARE DEFINED IN SECTION 2-715 OF THE UNIFORM COMMERCIAL CODE.

INDEMNIFICATION AND SAFE OPERATION

Buyer shall comply with and require its employees to comply with directions set forth in instructions and manuals furnished by Seller and shall use and require its employees to follow such instructions and manuals and to use reasonable care in the use and maintenance of the goods. Buyer shall not remove or permit anyone to remove any warning or instruction signs on the goods. In the event of personal injury or damage to property or business arising from the use of the goods, Buyer shall within 48 hours thereafter give Seller written notice of such injury or damage. Buyer shall cooperate with Seller in investigating any such injury or damage and in the defense of any claims arising therefrom.

If Buyer fails to comply with this section or if any injury or damage is caused, in whole or in part, by Buyer's failure to comply with applicable federal or state safety requirements, Buyer shall indemnify and hold Seller harmless against any claims, loss or expense for injury or damage arising from the use of the goods.

⚠ WARNING

Alterations or modifications of equipment and use of non-factory repair parts can lead to dangerous operation and injury.

TO AVOID INJURY:

- Do not alter or modify equipment.
- Do use only factory replacement parts.

Columbus McKinnon Corporation • Industrial Products Division • 140 John James Audubon Parkway
Amherst, New York 14228-1197 • 1-800-888-0985 • Fax 716-689-5644

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08/09

CM HOIST PARTS AND SERVICE ARE AVAILABLE IN THE UNITED STATES AND IN CANADA

As a CM Hoist user, you are assured of reliable repair and parts services through a network of Master Parts Depots and Service Centers that are strategically located in the United States and Canada. These facilities have been selected on the basis of their demonstrated ability to handle all parts and repair requirements promptly and efficiently.

Below is a list of the Master Parts Depots in the Unites States and Canada. To quickly obtain the name of the U.S. Service Center located nearest you. In the following list, Service Centers are indicated.

UNITED STATES MASTER PARTS DEPOT

Tri-State Equipment Company Inc.
sales@tsoverheadcrane.com
www.tsoverheadcrane.com
Tel: 314-869-7200

*ARE ALSO MASTER PARTS DEPOTS

**MASTER PARTS DEPOT ONLY

SAFETY PRECAUTIONS

Each Shopstar Electric Chain Hoist is built in accordance with the specifications contained herein and at the time of manufacture complies with our interpretation of applicable sections of *American Society of Mechanical Engineers Code (ASME) B30.16 “Overhead Hoists,” the National Electrical Code (ANSI/NFPA 70) and the Occupational Safety and Health Act (OSHA). Since OSHA states the National Electrical Code applies to all electric hoists, installers are required to provide current overload protection and grounding on the branch circuit section in keeping with the code. Check each installation for compliance with the application, operation and maintenance sections of these articles.

*Copies of this Standard can be obtained from ASME Order Department, 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300, U.S.A.

⚠WARNING

Improper operation of a hoist can create a potentially hazardous situation which, if not avoided, could result in death or serious injury. To avoid such a potentially hazardous situation, THE OPERATOR SHALL:

1. **NOT** operate a damaged, malfunctioning or unusually performing hoist.
2. **NOT** operate the hoist until you have thoroughly read and understood this Operating, Maintenance and Parts Manual.
3. **NOT** operate a hoist which has been modified without the manufacturer’s approval or without certification that it is in conformity with ANSI/AMSE B30 volumes.
4. **NOT** lift more than rated load for the hoist.
5. **NOT** use hoist with twisted, kinked, damaged, or worn load chain.
6. **NOT** use the hoist to lift, support, or transport people.
7. **NOT** lift loads over people.
8. **NOT** operate a hoist unless all persons are and remain clear of the supported load.
9. **NOT** operate unless load is centered under hoist.
10. **NOT** attempt to lengthen the load chain or repair damaged load chain.
11. Protect the hoist’s load chain from weld splatter or other damaging contaminants.
12. **NOT** operate hoist when it is restricted from forming a straight line from hook to hook in the direction of loading.
13. **NOT** use load chain as a sling, or wrap chain around load.
14. **NOT** apply the load to the tip of the hook or to the hook latch.
15. **NOT** apply load unless load chain is properly seated in the chain sprocket(s).
16. **NOT** apply load if bearing prevents equal loading on all load supporting chains.
17. **NOT** operate beyond the limits of the load chain travel.
18. **NOT** leave load supported by the hoist unattended unless specific precautions have been taken.
19. **NOT** allow the load chain or hook to be used as an electrical or welding ground.
20. **NOT** allow the load chain or hook to be touched by a live welding electrode.
21. **NOT** remove or obscure the warnings on the hoist.
22. **NOT** operate a hoist on which the safety placards or decals are missing or illegible.
23. **NOT** operate a hoist unless it has been securely attached to a suitable support.
24. **NOT** operate a hoist unless load slings or other approved single attachments are properly sized and seated in the hook saddle.
25. Take up slack carefully - make sure load is balanced and load holding action is secure before continuing.
26. Shut down a hoist that malfunctions or performs unusually and report such malfunction.
27. Make sure hoist limit switches function properly.
28. Warn personnel of an approaching load.

⚠WARNING

Improper operation of a hoist can create a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. To avoid such a potentially hazardous situation, THE OPERATOR SHALL:

1. Maintain firm footing or be otherwise secured when operating the hoist.
2. Check brake function by tensioning the hoist prior to each lift operation.
3. Use hook latches. Latches are to retain slings, chains, etc. under slack conditions only.
4. Make sure the hook latches are closed and not supporting any parts of the load.
5. Make sure the load is free to move and will clear all obstructions.
6. Avoid swinging the load or hook.
7. Make sure hook travel is in the same direction as shown on the controls.
8. Inspect the hoist regularly, replace damaged or worn parts, and keep appropriate records of maintenance.
9. Use Shopstar recommended parts when repairing the unit.
10. Lubricate load chain per hoist manufacturer’s recommendations.
11. **NOT** use the hoist’s overload limiting clutch to measure load.
12. **NOT** use limit switches as routine operating stops. They are emergency devices only.
13. **NOT** allow your attention to be diverted from operating the hoist.
14. **NOT** allow the hoist to be subjected to sharp contact with other hoists, structures, or objects through misuse.
15. **NOT** adjust or repair the hoist unless qualified to perform such adjustments or repairs.

Hoist safety is up to you...

⚠WARNING — DO NOT LIFT MORE THAN RATED LOAD.

1 CHOOSE THE RIGHT HOIST FOR THE JOB . . .

Choose a hoist with the capacity for the job. Know the capacities of your hoists and the weight of your loads. Then match them.

The application, the size and type of load, the attachments to be used and the period of use must also be taken into consideration in selecting the right hoist for the job.

Remember the hoist was designed to ease our burden and carelessness not only endangers the operator, but in many cases, a valuable load.

⚠WARNING — DO NOT OPERATE DAMAGED OR MALFUNCTIONING HOIST
— DO NOT OPERATE WITH TWISTED, KINKED OR DAMAGED CHAIN.

2 INSPECT

All hoists should be visually inspected before use, in addition to regular, periodic maintenance inspections.

Inspect hoists for operations warning notices and legibility.

Deficiencies should be noted and brought to the attention of supervisors. Be sure defective hoists are tagged and taken out of service until repairs are made.

Under no circumstances should you operate a malfunctioning hoist.

Check chain for gouged, twisted, distorted links and foreign material. Do not operate hoists with twisted, kinked or damaged links.

Load chain should be properly lubricated.

Hooks that are bent, worn or whose openings are enlarged beyond normal throat opening should not be used. If latch does not engage throat opening of hook, hoist should be taken out of service.

Check for misphasing—hook travel should correspond to control direction.

Carefully check limit switches without a load. Care should be taken not to damage the hoist.

⚠WARNING — DO NOT PULL AT AN ANGLE. BE SURE HOIST AND LOAD ARE IN A STRAIGHT LINE.
— DO NOT USE LOAD CHAIN AS A SLING.

3 USE HOIST PROPERLY

Be sure hoist is solidly held in the uppermost part of the support hook arc.

Be sure hoist and load are in a straight line. Do not pull at an angle.

Be sure load is hooked securely. Do not tip load the hook. Do not load hook latch. Hook latch is to prevent detachment of load under slack chain conditions only.

Do not use load chain as a sling. Such usage damages the chain and makes the limit switch setting ineffective.

Do not operate with hoist head resting against any object. Lift the load gently. Do not jerk it.

⚠WARNING — DO NOT LIFT PEOPLE OR LOADS OVER PEOPLE.

4

Do not lift co-workers with a hoist.

Make sure everyone is clear of the load when you lift.

Do not remove or obscure operational warning notices.

5

CLEANING
Hoists should be kept clean and free of dust, dirt, moisture, etc., which will in any way affect the operation or safety of the equipment.

LUBRICATION
Chain should be properly lubricated.

AFTER REPAIRS
Carefully operate the hoist before returning it to full service.

VIOLATION OF ANY OF THE WARNINGS LISTED MAY RESULT IN SERIOUS PERSONAL INJURY TO THE OPERATOR OR NEARBY PERSONNEL BY RELEASED LOAD OR BROKEN HOIST COMPONENTS.

Figure 1A

SPECIFICATIONS

The ShopStar Electric Chain Hoist is a highly versatile materials handling device that can be used to lift loads that are within its rated load capacity. It is available in five load ratings: 250, 300, 500, 600 and 1,000 pounds (113,136, 226, 272 and 453 kg).

Standard features of the ShopStar Electric Chain Hoist include:

- Alloy steel, oblique lay liftwheel that provides constant chain speed and reduces chain wear.
- Hoistaloy® load chain for long and dependable service.
- Grease lubricated, hardened spur gears provide smooth and quiet operation.
- Thermally protected, hoist duty motor.
- Forged steel upper and lower hooks with latch.
- Protector™ that prevents lifting dangerous overloads.
- D.C. disc type motor brake plus regenerative braking.
- 10 foot (3 M) lift. Longer lifts can be supplied on a per order basis.
- 6 foot (1.8 M) power cord with three prong plug for grounding on 115-1-50/60 units. 6 foot (1.8 M) power cord with provisions for grounding is standard on 220-1-50 and three phase units.
- Rugged NEMA 4 (weatherproof) control station is suspended on a TYPE SO cord six feet (2.8 M) below the bottom of the hoist. Longer cords can be provided on a per order basis.
- Lightweight die cast aluminum frames and covers.
- Ball or needle bearings at all rotating points.
- Compact, yet rugged, design provides minimum headroom and long, trouble-free service.
- 6 fpm (1.8 m/min) lift speed available on 1000 lbs (453 kg) units.
- 8 fpm (2.4 m/min) lift speed available on 500-600-1000 lbs (226, 272 and 453 kg) units.
- 12 fpm (3.6 m/min) lift speeds available on 500-600-1000 lbs (226, 272 and 453 kg) units.
- 16 fpm (4.9 m/min) lift speeds available on 250-300-500 lbs (113, 136 and 226 kg) units.
- 20 fpm (6.1 m/min) lift speeds available on 500-600 lbs (226 and 272 kg) units.
- 24 fpm (7.3 m/min) lift speeds available on 250-300-500 lbs (113, 136 and 226 kg) units.
- 40 fpm (12.2 m/min) lift speeds available on 250-300 lbs (113 and 136 kg) units.
- 220-1-50, 380 to 460-3-50/60, 220 to 240-3-50/60 and 575-3-60 units available. Lift speeds are based on 60 hertz power supply. For 50 hertz power supply lift speeds will be 5/6 of those indicated.
- UL and cUL listed.
- Lifetime Warranty.

REPAIR/REPLACEMENT POLICY

All Columbus McKinnon (CM®) ShopStar Electric Chain Hoists are inspected and performance tested prior to shipment. If any properly maintained hoist develops a performance problem, due to a material or workmanship defect, as verified by CM, repair or replacement of the unit will be made to the original purchaser without charge. This repair/replacement policy applies only to ShopStar Hoists installed, maintained and operated as outlined in this manual, and specifically excludes hoists subject to normal wear, abuse, improper installation, improper or inadequate maintenance, hostile environmental effects and unauthorized repairs/modifications.

⚠ WARNING

Alterations or modification of hoist and use of non-original repair parts can lead to dangerous operation and injury.

TO AVOID INJURY:

- Do not alter or modify equipment.
- Do use only original replacement parts.

We reserve the right to change materials or design if, in our opinion, such changes will improve our product. Abuse, repair by an unauthorized person, or use of non-CM replacement parts voids the guarantee and could lead to dangerous operation. For full Terms of Sale, see Sales Order Acknowledgment. Also, refer to the back cover for Limitations of Warranties, Remedies and Damages, and Indemnification and Safe Operation.

ACCESSORIES

Chain Container

This accessory item (Figure 1A) is used to hold the slack chain and it is supplied with mounting hardware and instructions. Chain containers are recommended for those applications where slack chain will interfere with the load or drag on the floor as may more often be the case with the (500, 600 and 1,000 lbs., 226, 272 and 453 kg., Double Reeved units). Chain containers are shipped separately and can be furnished for units already in service.

CM Series 632

This lightweight, yet rugged, manual push type trolley (Figure 2A, pg 2) is designed to fit a wide range of monorail beams and negotiate tight curves. Provides mobility for your ShopStar Hoist.

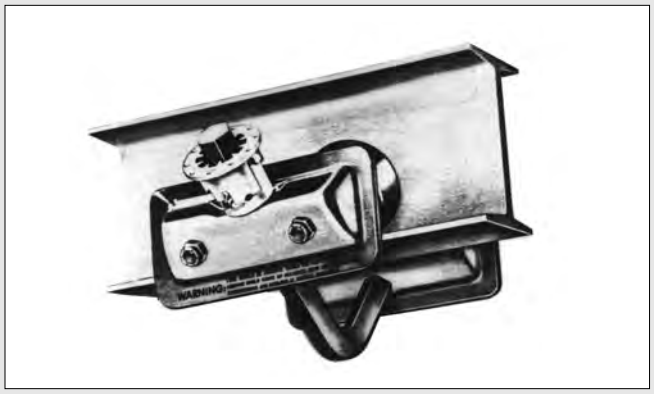


Figure 2A

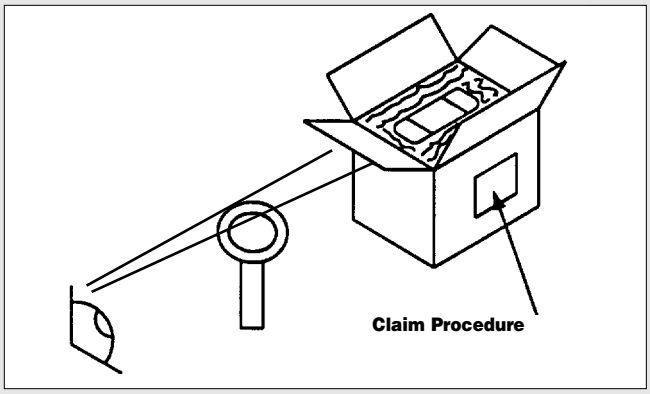


Figure 2B

INSTALLATION

UNPACKING

After opening the carton (Figure 2B) , carefully inspect the hoist frame, cords, hooks, chain and control station for damage that may have occurred during shipment. If there is damage, refer to the packing slip envelope.

WARNING

Operating a unit with obvious external damage may cause load to drop and that may result in personal injury and/or property damage.

TO AVOID INJURY:

Carefully check unit for external damage prior to installation.

Make sure that the power supply (Figure 3A) to which the hoist is to be connected is the same as that shown on the identification plate located on bottom of hoist.

MOUNTING THE HOIST

Hang the hoist from its intended support. The structure used to support the hoist must have sufficient strength to withstand several times the load imposed. If in doubt consult a registered engineer and local building codes.

WARNING

Suspending the hoist from an inadequate support may allow the hoist and load to fall and cause injury and/or property damage.

TO AVOID INJURY:

Make sure the structure has sufficient strength to hold several times the hoist and its rated load. Using the upper hook, hang the hoist from the support. **Be sure hoist is solidly held in the uppermost part of the hook arc and the latch is tightly against the hook tip.**

POWER SUPPLY SYSTEM

(Refer to Figure 4A or 4B on page 4.) To insure proper operation, to avoid damage to hoist and electrical system and to reduce the risk of electric shock or fire, the branch circuit supplying power to the hoist must:

1. Have ample capacity to prevent excessive voltage drop during starting and operation (refer to “Checking for Adequate Voltage at Hoist” on page 3). When determining the size of branch circuit components and conductors, special consideration should be given to the starting current-amps (approximately three times that shown on the hoist identification plate) and the length of the conductors. As a minimum, the system should be rated for 15 amps and it should have #16 AWG, or larger, wiring.
2. Be in accordance with the National Electrical Code (ANSI/NFPA-70) and applicable National, State and Local Codes.
3. Effectively ground the hoist in accordance with National Electrical Code and other applicable codes. Proper grounding provides a path of least resistance for electric current to reduce the risk of electric shock. The power cord of the hoist includes a green-yellow wire for grounding the hoist to the external power supply system. On the standard 115-1-60 units, the power cord is equipped with a three prong plug. Be sure that the receptacle opening that receives the longest prong is properly grounded. If grounding is to be through the trolley trackwheels, each section of the runway must be grounded to the building ground system using metal to metal connections.

WARNING

Failure to properly ground the hoist presents the danger of electric shock.

TO AVOID INJURY:

Permanently ground the hoist as instructed in this manual.

4. Include slow blow type fuses or inverse trip time circuit breakers to permit the hoist to start and accelerate load.
5. Include a disconnecting means capable of being locked in the “open” position.

WARNING

Failure to provide a proper power supply system for the hoist may cause hoist damage and offers the potential for a fire.

TO AVOID INJURY:

Provide the hoist with a 15 amp, minimum, overcurrent protected power supply per the National Electrical Code (ANSI/NFPA 70) and applicable local codes as instructed in this manual.

NOTE: IN THIS MANUAL, NOMINAL VOLTAGES ARE USED WHEN REFERRING TO POWER SUPPLY SYSTEMS. HOWEVER, WITH NO MODIFICATION, THE SHOPSTAR HOIST WILL OPERATE ON A RANGE OF VOLTAGES AS INDICATED BELOW:

NOMINAL VOLTAGE	VOLTAGE RANGE	HERTZ
230	208-240	60
460	440-480	60
220	200-240	50
380	365-395	50
415	400-430	50
575	550-600	60

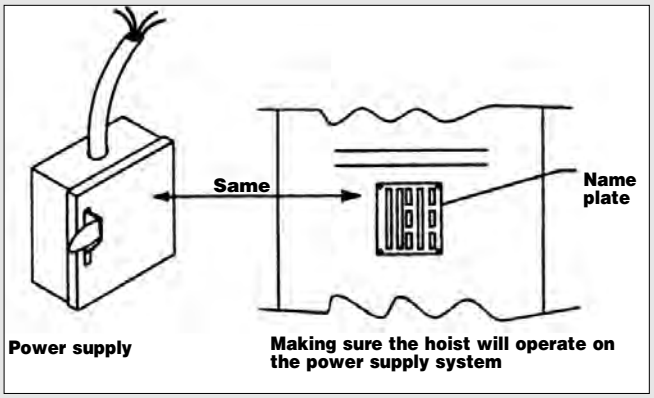


Figure 3A

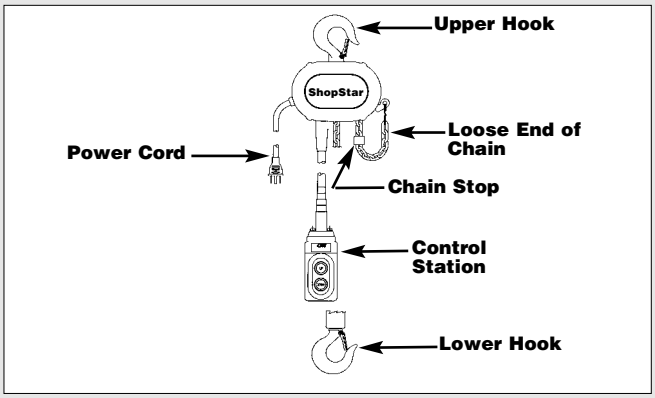


Figure 3B

Three Phase Hoists

Since the motor in a three phase hoist can rotate in either direction, depending on the manner in which it is connected to the power supply, the direction of hook movement must be checked during the original installation and each time hoist is moved to a new location as follows:

1. Move the manual disconnect switch handle to the "OFF" position.
2. Connect the BROWN, GREY AND BLACK wires of hoist power cord to load side of disconnect switch. Connect the GREEN-YELLOW wire of hoist power cord to power supply ground.
3. Move the manual disconnect switch handle to the "ON" position.
4. Depress the ⇧ (up) control. If the hook moves in the up direction, the hoist is ready for operation. If the hook lowers, move the disconnect switch handle to the "OFF" position and interchange the BLACK and BROWN leads at the disconnect switch. Move the disconnect switch handle to the "ON" position and the hoist is now ready for operation.

⚠ WARNING

Allowing the hook block to run into the bottom of the hoist when raising a load or allowing the chain stop to run into the bottom of the hoist when lowering a load may break the chain and allow the load to drop.

TO AVOID INJURY:

Do not allow the hook block or the chain stop to contact the bottom of the hoist.

Checking for Adequate Voltage at Hoist

The hoist must be supplied with adequate electrical power for proper operation and to reduce problems that may result from insufficient power (low voltage). These include:

- Noisy hoist operation due to brake and/or contactor chatter.
- Heating of the hoist motor and other internal components as well as heating of wires and connectors in the circuit feeding the hoist.
- Failure of the hoist to lift the load due to motor stalling.
- Blowing fuses or tripping circuit breakers.
- Dimming of lights or slowing of motors connected to the same circuit.

NOMINAL POWER SUPPLY	MINIMUM OPERATING VOLTAGE	* MIN. VOLTAGE AT INSTANT OF START
115-1-50/60	108	103
220-1-50	198	182
208-3-60	187	172
220-3-50	198	182
230-3-60	207	190
380-3-50	365	336
415-3-50	399	367
460-3-60	414	380
575-3-60	518	506

For proper operation and to avoid these low voltage problems, voltage (measured at end of the power cord while lifting rated load) should be as the above chart indicates.

****The drop in voltage upon energizing the hoist should not be below the value listed.***

Low voltage can also be caused by using an undersized extension cord to supply power to the hoist. The following charts should be used to determine the size wires in the extension cord in order to minimize the voltage drop between the power source and the hoist.

115-1-50/60 units without contactor (hoists with orange control station)

LENGTH OF CONTROL CORD ft(M)	MAXIMUM LENGTH OF EXTENSION CORD BASED ON SIZE OF WIRE		
	#16 AWG	#14 AWG	#12 AWG
1.0 to 10.0 (0.3 to 3.0)	105 ft (32 M)	170 ft (51 M)	270 ft (82 M)
10.1 to 20.0 (3.1 to 6.0)	75 ft (22 M)	120 ft (36 M)	190 ft (58 M)
20.1 to 30.0 (6.1 to 9.0)	45 ft (14 M)	70 ft (21 M)	110 ft (33 M)
30.1 to 40.0 (9.1 to 12.0)	15 ft (4.5 M)	20 ft (6 M)	35 ft (11 M)

115-1-50/60 units with contactor, 220-1-50 and three phase units (hoists with black control station)

MAXIMUM LENGTH OF EXTENSION CORD		
Wire Size	Single Phase Hoist	Three Phase Hoist
#16 AWG	135 feet(40 M)	245 feet(73 M)
#14 AWG	220 feet(66 M)	395 feet(120 M)
#12 AWG	354 feet(107 M)	630 feet(192 M)

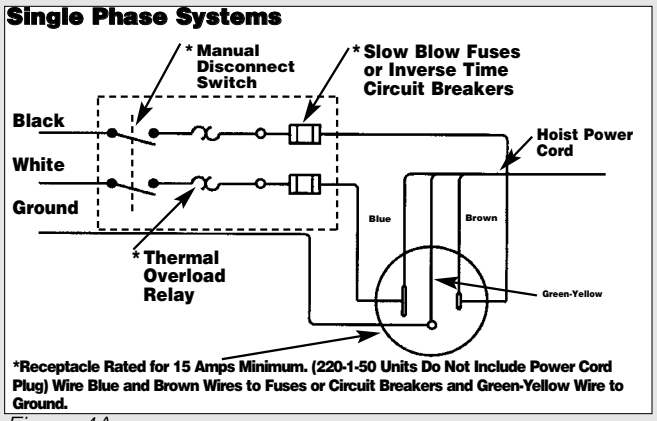


Figure 4A

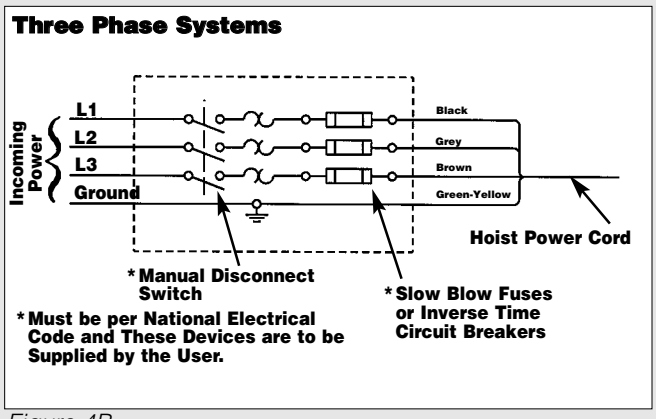


Figure 4B

After the hoist is suspended from its support and you have made sure the power supply complies with the requirements on the previous page, the hoist is ready for operation.

On the (500, 600 and 1,000 lbs., 226, 272 and 453 kg., Double Reeved units), cut and discard the ties used to hold the two strands of chain together. With no load on the lower hook, depress the "UP" button in the control station and raise the lower hook until it is about 2 feet below the bottom of the hoist. Check both strands of chains for twists. Twists occur if the lower hook block has been capsized between the strands of chain during packing, shipment and/or handling. Reverse the capsize to remove twists.

CHAIN CONTAINER

If the chain container is to be used, attach it to the hoist per the instructions provided.

OPERATING INSTRUCTIONS

The hoist is equipped with a Protector™ that is designed to allow the first gear to slip on an excessive overload. An overload is indicated when the hoist speed slows down, it raises the load in a jerky manner or it will not lift the load at all. Also, some clutching noise may be heard if the hoist is loaded beyond rated capacity. Should this occur, immediately release the "UP" button to stop the operation of the hoist. At this point, the load should be reduced to the rated capacity or the hoist should be replaced with one of the proper capacity. When the excessive load is removed, normal hoist operation is automatically restored.

CAUTION: The Protector™ is susceptible to overheating and wear when slipped for extended periods. Under no circumstance should the Protector be allowed to slip for more than a few seconds.

Due to the above, the hoist is not recommended for use in any application where there is a possibility of adding to an already suspended load to the point of overload. This includes dumbwaiter installations, containers that are loaded in mid-air, etc. Also, if the hoist is used at unusual extremes of ambient temperatures, above 150° F (65°C), or below 15°F (-9°C), changes in lubricant properties may permit the hoist to raise larger loads than under normal operating conditions and present possibility of damage or injury.

On units without contactor (hoists with orange control station) it is necessary to stop the hoist before changing direction. Therefore, when lowering a load, the push button in the control station must be released momentarily before the "UP" button is depressed to raise the load. If this is not done, the hoist will continue to operate in the down direction while the "UP" push button is depressed, and it will continue to lower the load until the control push button is released. As a result, the direction must not be reversed quickly (plug reversed).

There are no electrical switches to stop the operation of the hoist at the upper and lower limits of lift. As a result, it is necessary to release the push button in the control station to stop the hoist before the hook block or chain stop contacts the bottom of the hoist frame. If the hook block or chain stop contacts the hoist frame, the Protector™ will function to stop the hoisting or lowering operation and protect the hoist components from damage. However, continued, prolonged or repeated slipping of the Protector™ will damage the Protector™ and cause overheating of the internal hoist components.

⚠ WARNING

Allowing the hook block to run into the hoist when raising a load or allowing the chain stop to run into the hoist when lowering a load may break the chain and allow the load to drop.

TO AVOID INJURY:

Do not allow the hook block or the chain stop to contact the hoist frame.

Hoist operation is controlled by depressing the control station push buttons. (Refer to Figure 5A) Depressing the "UP" push button will move the load hook toward the hoist; depressing the "DOWN" push button will move the load hook away from the hoist.

The "UP" and "DOWN" buttons are momentary type and the hoist will operate in the selected direction as long as the button is held in the depressed position. Release the push button and the hoist will stop.

1. When preparing to lift a load, be sure that the attachments to the hook are firmly seated in hook saddle. Avoid off center loading of any kind, especially loading on the point of the hook.
2. When lifting, raise the load only enough to clear the floor or support and check to be sure that the attachments to the hook and load are firmly seated. Continue lift only after you are assured the load is free of all obstructions.
3. Do not load the hoist beyond the rated capacity shown on the brake end cover. Overloading can cause immediate failure of some load-carrying parts or create a defect causing subsequent failure at less than rated capacity. When in doubt, use the next larger capacity of the ShopStar Hoist.

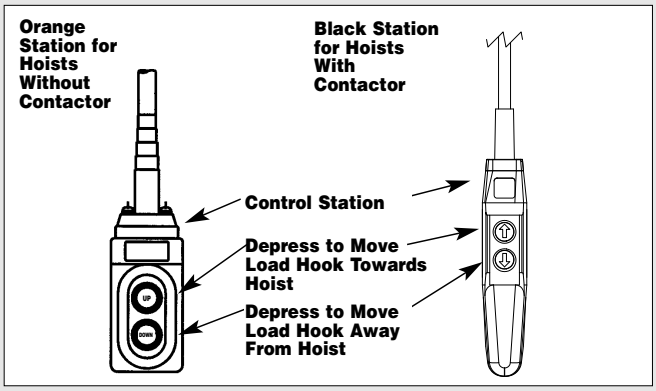


Figure 5A

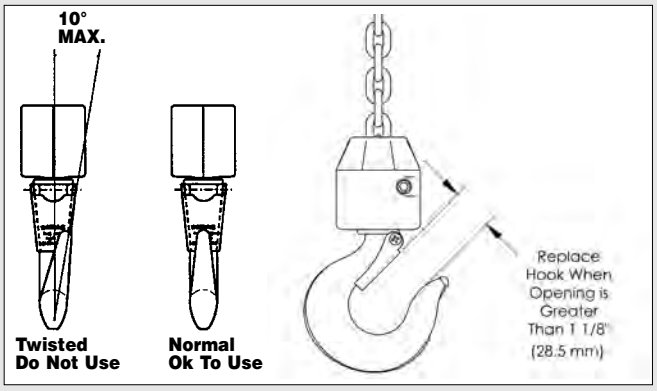


Figure 5B

4. Do not use this or any other overhead materials handling equipment for lifting persons.
5. Stand clear of all loads and avoid moving a load over heads of other personnel. Warn personnel of your intention to move a load in their area.
6. Do not leave the load suspended in the air unattended.
7. Permit only qualified personnel to operate unit.
8. Do not wrap the load chain around the load and hook onto itself as a choker chain.

   Doing this will result in:

   a. The loss of the swivel effect of the hook which could mean twisted chain and a jammed liftwheel.

   b. The chain could be damaged at the hook.
9. On the (500, 600 and 1,000 lbs., 226, 272 and 453 kg., Double Reeved) hoists, check for twists in the load chain. A twist can occur if the lower block has been capsized between the strands of chain. Reverse the capsize to remove twist.
10. Do not allow a load to bear against the hook latch. The latch is to help maintain the hook in position while the chain is slack before taking up the slack chain.

⚠ WARNING

Allowing a load to bear against the hook latch and/or hook tip can result in loss of load.

TO AVOID INJURY:

Do not allow a load to bear against the hook latch and/or hook tip. Apply load to hook bowl or saddle only.

11. Take up a slack load chain carefully and start load easily to avoid shock and jerking of hoist chain. If there is any evidence of overloading, immediately lower the load and remove the excess load.
12. Do not allow the load to swing or twist while hoisting.
13. Never operate the hoist when flammable materials or vapors are present. Electrical devices produce arcs or sparks that can cause a fire or explosion.
14. STAY ALERT! Watch what you are doing and use common sense. Do not use the hoist when you are tired, distracted or under the influence of drugs, alcohol or medication causing diminished control.

⚠ WARNING

TO AVOID INJURY:

-DO NOT	Lift more than rated load.
-DO NOT	Operate with twisted, kinked or damaged chain.
-DO NOT	Operate damaged or malfunctioning hoist.
-DO NOT	Lift people or loads over people.
-DO NOT	Operate hoist when load is not centered under hoist.
-DO NOT	Permit lower hook block to contact hoist frame or chain container.
-DO	Replace damaged or malfunctioning hook latch.
-DO	Keep load chain well oiled.
-DO READ	ASME B30.16 Safety Code for Hoist and appropriate operating instructions.

MAINTENANCE

INSPECTION

To maintain continuous and satisfactory operation, a regular inspection procedure must be initiated so that worn or damaged parts can be replaced before they become unsafe. The intervals of inspection must be determined by the individual application and are based upon the type of service to which the hoist will be subjected. The inspection of hoists is divided into two general classifications designated as “frequent” and “periodic”.

Frequent Inspections

These inspections are usually visual examinations by the operator or other designated personnel. Frequent inspections are to be performed daily or monthly and shall include the following items:

a. Operate the hoist, with no load, and check for visual signs or abnormal noises which could indicate a potential problem - daily.

b. Brake for evidence of slippage - daily.

c. Chain for lubricant, wear, damaged links or foreign material - daily (see below).

d. Hooks for damage, cracks, twist, latch engagement and latch operation - daily (see below).

Any deficiencies must be corrected before the hoist is returned to service.

Periodic Inspections

These are visual inspections by an appointed person who records apparent external conditions to provide a basis for continuing evaluation. Periodic inspections are to be performed semi-annually and they should include the following:

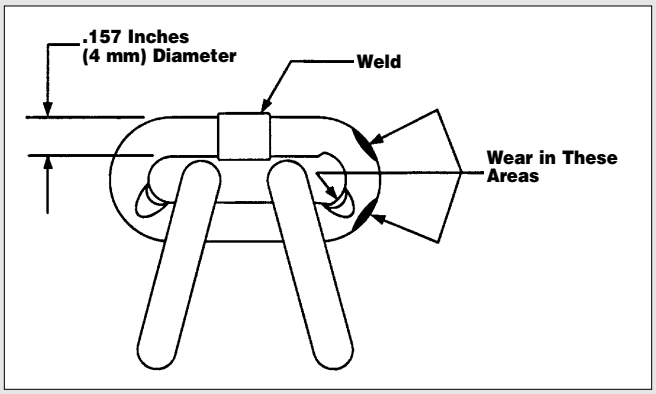


Figure 6A

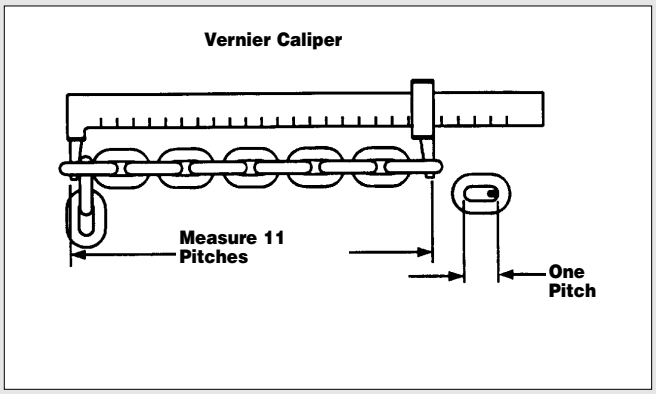


Figure 6B

a. All items listed under frequent inspections.
b. External evidence of loose screws.
c. External evidence of worn, corroded, cracked or distorted hook block, gears, bearings, chain stop and hook retainer.
d. External evidence of damage or excessive wear of the liftwheel or sheave (double reeved unit). Widening and deepening of pockets may cause chain to lift-up in the pockets and cause binding between liftwheel and chain guide or between lower sheave and hook block. Check chain guide for wear or burring where the chain enters the hoist. Severely worn or damaged parts should be replaced.
e. External evidence of excessive wear of brake parts - see page 8.
f. Check the control station push buttons to make sure they operate freely and spring back when released.
g. Check power cord, control cord and control station for damaged insulation.
h. Check for pitting and any deterioration of contactor contacts (hoists with black control station).
i. Check the chain pin or dead end pin and chain stop for wear and cracks.
j. Check for lubricant leaks at gasket between main frame and gear housing. Tighten gear housing screws to stop leak. If leak persists, replace gasket.
k. Inspect splines on first pinion shaft and motor coupling for signs of wear or deterioration. Replace splined parts if worn or damaged.

NOTE: To perform some of the periodic inspections, it is necessary to partially disassemble the hoist. Refer to Disassembly - Assembly starting on page 12.

Any deficiencies noted must be corrected before the hoist is returned to service. Also, the external conditions may show the need for more detailed inspection which, in turn, may require the use of nondestructive-type testing.

Any parts that are deemed unserviceable are to be replaced with new parts before the unit is returned to service. It is very important that the unserviceable parts be destroyed to prevent possible future use as a repair item and properly disposed of.

Hook Inspection

Hooks damaged from chemicals, deformations or cracks or that have more than a 10° twist from the plane of the unbent hook or excessive opening must be replaced.

Any hook that is twisted or has excessive throat opening indicates abuse or overloading of the unit. Other load-sustaining components of the hoist should be inspected for damage.

On latch type hooks, check to make sure that the latch is not damaged or bent and that it operates properly with sufficient spring pressure to keep the latch tightly against the tip of the hook and allow the latch to spring back to the tip when released. If the latch does not operate properly. It should be replaced. See Figure 5B, pg. 5 to determine when the hook must be replaced.

LOAD CHAIN

Chain should feed smoothly into and away from the hoist or hook block (500, 600 and 1,000 lbs., 226, 272 and 453 kg., Double Reeved) units. If chain binds, jumps or is noisy, first clean and lubricate it (see below). If trouble persists, inspect chain and mating parts for wear, distortion or other damage.

Chain Inspection

First clean chain with a non-caustic/non-acid type solvent and make a link by link inspection for nicks, gouges, twisted links, weld spatter, corrosion pits, sitriations (minute parallel lines), cracks in weld areas, wear and stretching. Chain with any one of these defects must be replaced.

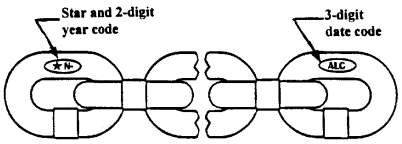
Slack the portion of the chain that normally passes over the liftwheel. Examine the interlink area for the point of maximum wear (polishing, see Figure 6A). Measure and record the stock diameter at this point of the link. Then measure stock diameter in the same area on a link that does not pass over the liftwheel (use the link adjacent to the loose end link for this purpose). Compare these two measurements. If the stock diameter of the worn link is 0.010 inches (0.254mm), or more, less than the stock diameter of the unworn link, the chain must be replaced.

On the (500, 600 and 1,000 lbs., 226, 272 and 453 kg., Double Reeved) units, repeat this examination of the chain that passes through the hook block.

Also check chain for stretch using a vernier caliper as shown in Figure 6B. Select an unused, unstretched section of chain (usually at the loose end) and measure and record the length over 11 chain links (pitches). Measure and record the same length on a worn section of chain. Obtain the amount of stretch and wear by subtracting the measurement of the unworn section from the measurement of the worn section. If the result (amount of stretch and wear) is greater than 0.145 inch (3.7 mm), the chain must be replaced.

Use only a “Knife-edge” caliper to eliminate possibility of false reading by not measuring full pitch length.

Note that worn chain can be an indication of worn hoist components. For this reason, the hoist’s chain guide, hook block and liftwheel should be examined for wear and replaced as necessary when replacing worn chain.



Use only Star (*) grade load chain and original replacement parts. Use of other chain and parts may be dangerous and voids factory warranty.

Figure 7A

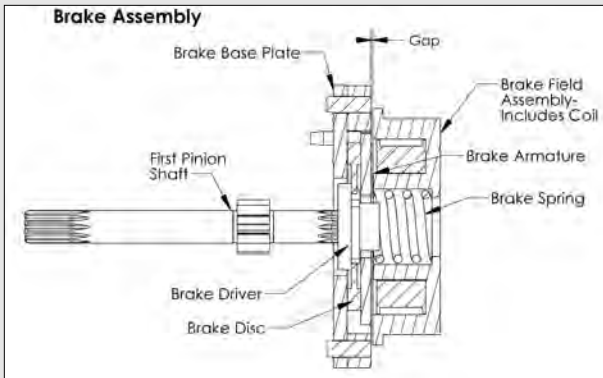


Figure 7B

Also, these chains are specially heat treated and hardened and should never be repaired.

WARNING

Use of commercial or other manufactures' chain and parts to repair ShopStar Hoists may cause load loss.

TO AVOID INJURY:

Use only factory supplied replacement load chain and parts. Chain and parts may look alike, but factory original chain and parts are made of specific materials or processed to achieve specific properties. See Figure 7A.

IMPORTANT: Do not use replaced chain for other purposes such as lifting or pulling. Load chain may break suddenly without visual deformation. For this reason, cut replaced chain into short lengths to prevent use after disposal.

Chain Lubrication

A small amount of lubricant will greatly increase the life of load chain. Do not allow the chain to run dry. Keep it clean and lubricate at regular intervals with Lubriplate® Bar and Chain Oil 10-R (Fiske Bros. Refining Co.) or equal lubricant. Normally, weekly lubrication and cleaning is satisfactory, but under hot and dirty conditions, it may be necessary to clean the chain at least once a day and lubricate it several times between cleanings.

WARNING

Used motor oils contain known carcinogenic materials.

TO AVOID HEALTH PROBLEMS:

Never use used motor oils as a chain lubricant. Only use Lubriplate® Bar and Chain Oil 10-R as a lubricant for the load chain.

When lubricating the chain, apply sufficient lubricant to obtain natural run-off and full coverage, especially in the interlink area.

LUBRICATION

Refer to Exploded View and Parts List pages 14 thru 18.

WARNING

The lubricants used in and recommended for the ShopStar may contain hazardous materials that mandate specific handling and disposal procedures..

TO AVOID CONTACT AND CONTAMINATION:

Handle and dispose of lubricants only as directed in applicable material safety data sheets and in accordance with applicable local, state and federal regulations.

NOTE: To assure extra long life and top performance, be sure to lubricate the various parts of the ShopStar using the lubricants specified below. If desired, these lubricants may be purchased from CM. Refer to page 18 for information on ordering the lubricants.

Gears

- The Protector™ (620-111) should operate for the normal life of the hoist without service. The device has been lubricated and calibrated by CM and should not be adjusted.

CAUTION: The Protector is to be used with "Century Lubricants HB-11, #3" grease. Do not use any other grease or the Protector will not operate properly and parts could be damaged.

The gears and Protector are packed at assembly with grease and should not need to be renewed unless the gears have been removed from the housing and degreased.

CAUTION: Never degrease the Protector or attempt to disassemble this device. Degreasing the Protector may damage parts and using a device that has been degreased may cause erratic, inconsistent operation. If the Protector has been degreased, it must be replaced by a CM calibrated device.

If the gears are removed from the housing, wipe the excess grease off the outside surfaces of the Protector™ with a soft cloth and degrease the remaining gears and housings. Upon reassmbly, add 2 oz. of the above grease to gears and housing. Also, coat the spline on the end of the first pinion and shaft (620-131) with a Molydisulphide lubricant such as Moly-Duolube 67 (Hercules Packing Co.).

Bearings

Rotor bearings (620-102 and 620-103) are pre-lubricated and require no lubrication. Needle bearings (620-109, 620-114, 620-115, 620-128 and 620-164) are packed at assembly with grease and should not need to be relubricated. However, if the housings (620-113 and 620-107), liftwheel (620-127) or sheave wheel (620-162) have been degreased, these bearings should be greased using "Century Lubricants HB-11, #3" grease.

Seals

When reassembling the unit, wipe the inside surface of the seals (620-108 and 620-130) with "Century Lubricants HB-11 #3" grease.

Hook Block

If the hook blocks are disassembled for inspection purposes, wipe the grease from the hook knob and the hook

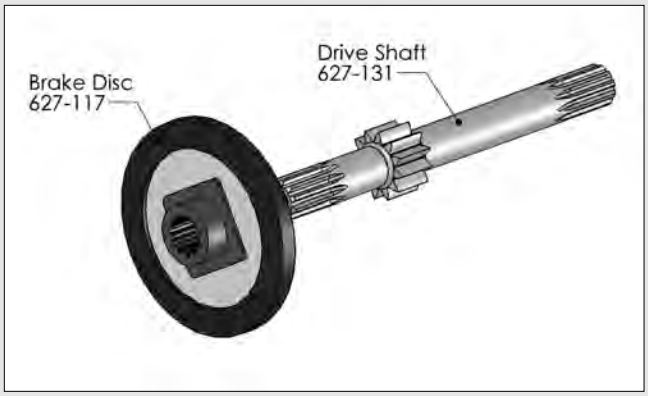


Figure 8A

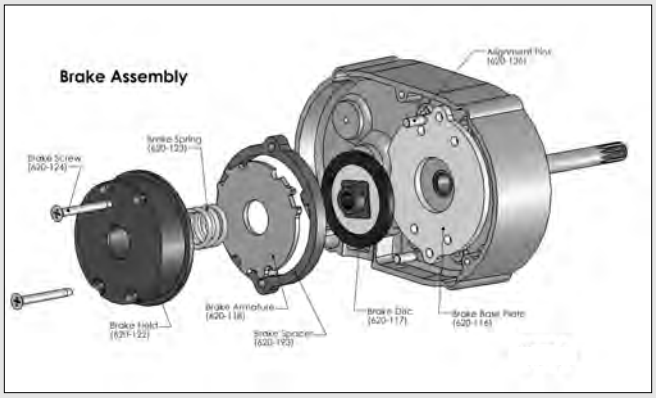


Figure 8B

knob cavities in the hook blocks. At reassembly, coat the underside of the hook knob and the knob bearing surfaces of cavities in the hook blocks with Molykote BR-2-S (Dow Corning Corp.) grease or equivalent.

Chain Guide, Liftwheel and Sheave Wheel

- When the hoist is disassembled for inspection and/or repair, the chain guide, stripper, sheave wheel (on double chain unit) and liftwheel must be lubricated with Lubriplate® Bar and Chain Oil 10-R (Fiske Bros. Refining Co.) prior to reassembly. The lubricant must be applied in sufficient quantity to obtain natural runoff and full coverage of these parts.

Load Chain

Refer to page 7 for lubrication of the load chain.

Exterior Finish

The exterior surface of the hoist has a durable, scratch resistant baked powder coating. Normally, the exterior surfaces can be cleaned by wiping with a cloth.

ELECTRIC BRAKE

The brake is non-adjustable with a nominal .004 inch (0.102 mm) air gap and the brake disc must be replaced when the air gap reaches .012 inch (0.305 mm). The brake spacer should be no more than .012 inch (0.305 mm) thicker than the combined thickness of the brake disc and armature plate. Refer to Figure 7B, pg. 7.

To inspect the brake gap, disconnect the hoist from power and remove brake end cover (620-132).

WARNING

Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.

TO AVOID INJURY:

Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.

1. Refer to Figure 8B and disassemble the brake. Depress and hold the field assembly (620-122) while removing the four brake screws (620-124). The field assembly is under spring pressure and will spring-out if not held.

   Examine the base plate (620-116), brake disc (620-117) and armature (620-118) for excessive wear, scoring or warpage. Make sure the brake disc is not glazed, the coil firmly fixed in the field (620-122) and the brake spring (620-123) is not damaged. Worn, scored, warped, glazed or damaged parts should be replaced before preceding.

2. Refer to Figure 8B and assemble the brake. Depress and hold the field assembly (620-122), while installing the four brake screws through the brake parts and mount the brake on the gear housing (620-113). Tighten the four brake screws (620-124) to 25 in.lb. (2.8 NM).

PROTECTOR

The Protector™ should operate for the normal life of the hoist without service. The device has been lubricated and calibrated and it should not be adjusted. If the Protector™ is not operating properly (see testing on page 13), it must be replaced with a properly calibrated unit from the factory.

PREVENTATIVE MAINTENANCE

A preventative maintenance program should be established to prolong the useful life of the hoist and maintain its reliability and continued safe use. The program should include the periodic and frequent inspections with particular attention being paid to the lubrication of the various components using the recommended lubricants (see page 18).

RECOMMENDED SPARE PARTS

To insure continued service of the ShopStar, the following is a list of parts that are recommended to be kept on hand at all times to replace parts that have worn or failed. Parts applicable to your hoist should be stocked.

Key No.	Part Name	Qty. Per Hoist	Key No.	Part Name	Qty. Per Hoist
620-122	Brake Field Assembly	1	620-117	Brake Disc	1
620-186	Control Station (orange)	1	620-110	Cut-Out Device	1
620-106	Capacitor	1	620-178	Reversing Contactor	1
620-181	Transformer	1	624-306	Control Station Parts Kit	1
624-232	Control Station	1			

Refer to page 13 for ordering instructions and the Parts List for part numbers.

TROUBLE SHOOTING

Always disconnect unit from the power supply system before removing hoist covers or the back cover of control station.

WARNING

Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.

TO AVOID INJURY:

Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.

	—— Probable Cause ——	*—— Remedy——*
1.	*Hook does not respond to control station.*	
A.	No voltage at hoist.	A. Check for blown fuse or tripped circuit breaker or open disconnect switch in main line or branch circuit. Replace fuse, reset circuit breaker or close switch.
B.	Open control circuit due to loose connections or broken wires in circuit; motor thermal protector open; control station contacts not closing; open or shorted winding in transformer; transformer thermal cut-out open; mechanical binding in contactor; open or shorted winding in contactor coil.	B. Check electrical continuity through motor thermal protector. If it is open, allow motor to cool. If this does not correct the trouble, use wiring diagram to check electrical continuity of wiring, transformer, contactor and control station contacts. Repair wiring or replace defective part.
C.	Wrong voltage or frequency.	C. Make sure that the power supply to hoist is the same as that shown on the identification plate on buttom of hoist.
D.	Low voltage.	D. Check power supply system to make sure it complies with the requirements listed under “power supply system” starting on page 2.
E.	Brake not releasing due to open or shorted coil, defective diodes or brake disc binding.	E. Check coil continuity, diodes (see page 10) and connections. Make sure brake disc slides freely on brake driver and brake spring is not broken. Replace coil (brake field), repair connections, remove burrs from brake driver so that brake disc slides freely and/or replace brake spring.
F.	Excessive load.	F. Reduce load to capacity limit as indicated on identification and capacity labels on hoist.
G.	Phase failure (single phasing-three phase units only) - open circuit, grounded or faulty connection in one line of power supply system, hoist wiring, contactor, motor leads or windings.	G. Check for electrical continuity and repair or replace defective part.
2.	*Hook moves in wrong direction.*	
A.	Wiring connections reversed in control station or hoist.	A. Use wiring diagram and check wiring connections.
B.	Failure of cut-out device (single phase units only) to effect dynamic braking at time of reversal.	B. Check connections to cut-out device. Replace damaged device or faulty capacitor.
C.	Phase Reversal (three phase units only).	C. See “Three Phase Hoists” on page 3.
3.	*Hook lowers but will not raise.*	
A.	Excessive load.	A. See item 1F.
B.	Hoisting circuit is OPEN due to loose connections or broken wires in circuit; control station contacts are not making; open or shorted winding in contactor coil.	B. Use wiring diagram to check electrical continuity of wiring and control station contacts. Repair wiring or replace defective part.
C.	Motor cut-out device not operating. (single phase units only).	C. Check cut-out device and connections to same. See page 10. Repair connections and/or replace cut-out device.
D.	Phase failure (three phase units only).	D. See item 1G.
4.	*Hook raises but will not lower.*	
A.	Lowering circuit is OPEN due to loose connections or broken wires; control station contacts not closing; open or shorted winding in contactor coil.	A. See item 1B.
B.	Motor cut-out device not operating (single phase units only).	B. See item 3C.
C.	Phase reversal (three phase units only).	C. See item 2C.
D.	Phase failure (three phase units only).	D. See item 1G.
5.	*Hook does not stop promptly.*	
A.	Brake slipping.	A. Check electric brake (see page 8), especially the brake disc for wear or glazing and make sure brake spring is not broken. Replace worn or glazed brake disc or replace brake spring.
B.	Excessive load.	B. See item 1F.
6.	*Hoist operates sluggishly.*	
A.	Excessive load.	A. See item 1F.
B.	Low voltage.	B. See item 1D.
C.	Brake dragging.	C. Check electric brake (see page 8). Check to make sure brake disc is free to move on brake driver. Check for warped or bent brake disc and base plate. Free-up brake disc by removing burrs on driver. Replace warped armature base plate or brake disc.
D.	Phase failure or unbalanced current in phases (three phase units only).	D. See item 1G.
7.	*Motor overheats (Hoist will not operate in up or down direction - motor thermal protector open).*	
A.	Excessive load.	A. See item 1F.
B.	Low voltage.	B. See item 1D.
C	Extreme external heat.	C. Above an ambient temperature of 104°F (40°C), the frequency of hoist operation must be limited to avoid overheating the motor. Special provisions should be made to ventilate the space around the hoist and shield it from radiant heat.
D.	Frequent starting or reversing.	D Avoid excessive inching, jogging and reversing. This type of operation drastically shortens motor cut-out device, capacitor, control station and contactor contact life and causes excessive brake wear.
E.	Brake dragging.	E. See item 6C.
F.	Motor cut-out device not opening start winding circuit (single phase units only).	F. See item 3C.
G.	Phase failure or unbalanced current in phases (three phase units only).	G. See item 1G.
8.	*Hook fails to stop in either direction.*	
A.	Brake not closing or ineffective.	A. Check electric brake (see page 8), and armature for binding, broken brake spring, first pinion shaft broke, brake driver worn, brake disc worn. Correct binding of armature; replace broken or worn parts.
9.	*Hook lowers when “UP” button is depressed.*	
A.	Phase reversal (three phase units only).	A. See item 2C.

ELECTRICAL DATA

Open or Short Circuit in Electrical Components

Open circuits in electrical components may be detected by isolating the component and checking for continuity using an ohmmeter. Short circuits are indicated by D.C. resistance substantially below the nominal D.C. resistance. Motor current draw should be measured at the end of the power cord while the hoist is raising rated load. Check cut-out device (on single phase units only) by measuring coil resistance (terminals 3 and 4) and making sure the contact (terminals 2 and 4) is open.

Electrical Data for Components

Stators

Volts-Phase-Hertz	*Full Load Current (Amps)*	*Nominal D.C. Resistance (Ohms)*
110 to 120-1-50/60	2.7	Yellow to Red: 7.7 Blue to Black: 6.2
220-1-50	1.1	Yellow to Red: 27.7 Blue to Black: 24.2
220-3-50 230-3-60	1.1 0.6	White to Red: 26.8 White to Black: 26.8 Red to Black: 26.8
380-3-50 415-3-50 460-3-60	0.63 0.58 0.88	White to Red: 72.6 White to Black: 72.6 Red to Black: 72.6
575-3-60	0.4	White to Red: 140.0 White to Black: 140.0 Red to Black: 140.0

Transformers

Primary	220/380v.	230/460v.	460v.	575v.	575v.
Secondary	48v.	115v.	48v.	115v.	48v.
Leads		Nominal D.C. Resistance (ohms)			
Black to Purple	11.7	71.0	11.9	73	98
White to Red	228.0	224.0			
White to Yellow	614.0	902.0	-	-	-
Red to Yellow	384.0	682.0	-	-	-
White to Orange	-	-	916.0	1100	1100

Coils

	Voltage	*Current Draw (Amps)*	*Nominal D.C. Resistance (Ohms)*
Contactor Coils	115 48	0.02 0.2	765 98.4
Brake Field	*115 **220 ***280	- - -	*272 1120 1608
Cut-out Device	115	0.1	Terminals 3 to 4: 0.3

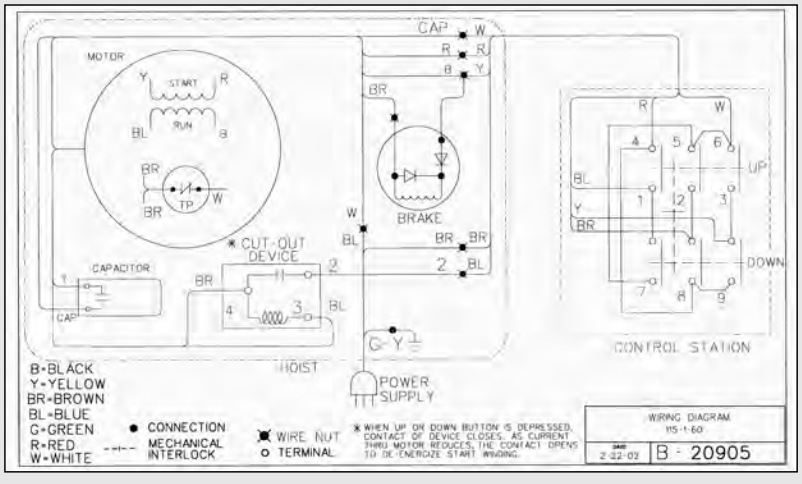
*To measure 115 volt brake coil resistance, carefully cut and peel back the shrink tubing on the brake coil leads to expose the diodes. Trace the leads from the coil to the diodes. Connect the ohmmeter leads at the coil side of the diodes (refer to the wiring diagram) and measure the resistance. If coil is ok, reinsulate the brake coil leads and diodes using electrical tape. Diodes are checked by connecting the ohmmeter to the ends of the brake coil leads, checking for an open or short circuit, reversing the connections to the ohmmeter and again checking for an open or short circuit. If there is an indication of an open or short circuit with the original and reversed connections, diodes are defective and the brake field (620-122), which includes the diodes, must be replaced. Usable diodes are indicated by continuity with the original connections and an open circuit when the connections are reversed or, an open circuit with the original connection and continuity with reversed connections.

**220 volt brake coil is used on 220-1-50, 220-3-50/60 and, 380-3-50, 415-3-50 and 460-3-60 hoists.

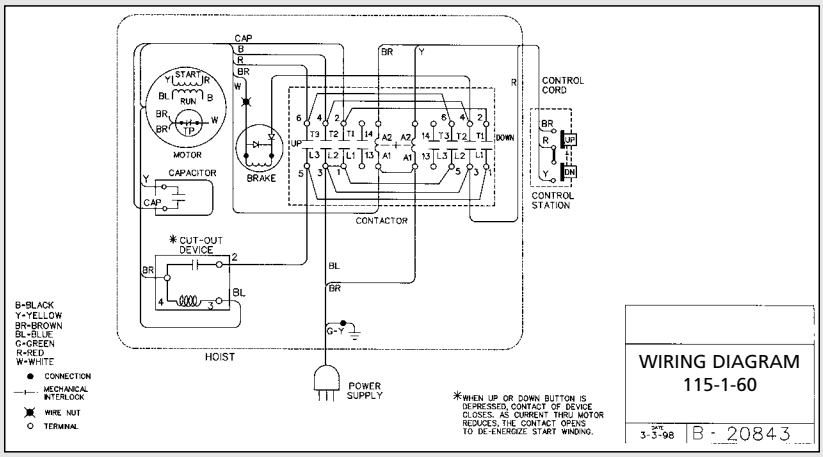
***280 volt brake is used on 575-3-60 hoists.

WIRING DIAGRAMS

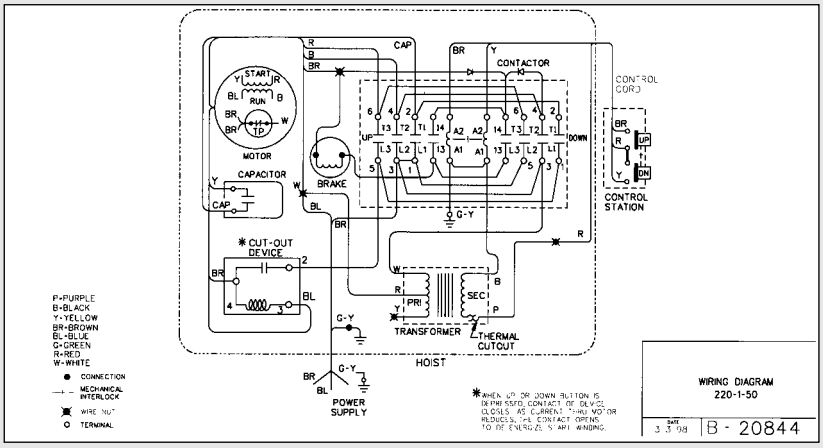
THE FOLLOWING WIRING DIAGRAMS ARE REPRESENTATIVE. FOR ACTUAL WIRING DIAGRAM, REFER TO THE DIAGRAM SUPPLIED WITH THE HOIST. NOTE: FOR 575-3-60 UNITS, REFER TO WIRING DIAGRAM SUPPLIED WITH HOISTS.



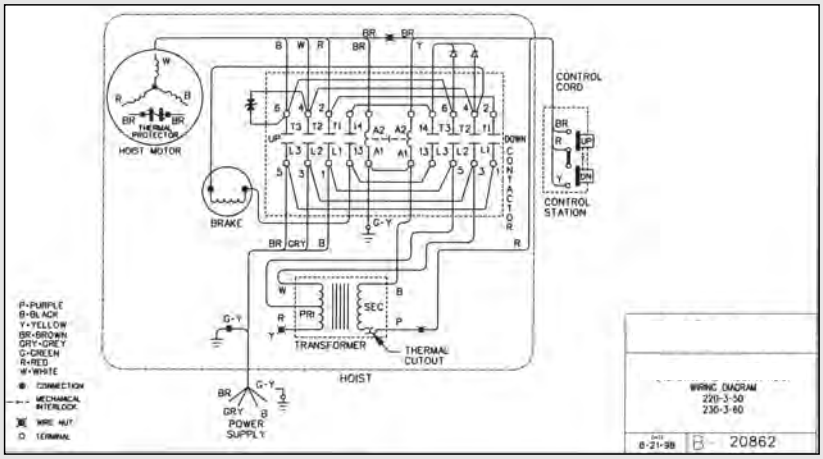
115-1-50/60 HOISTS WITHOUT CONTACTOR (Orange Control Station)



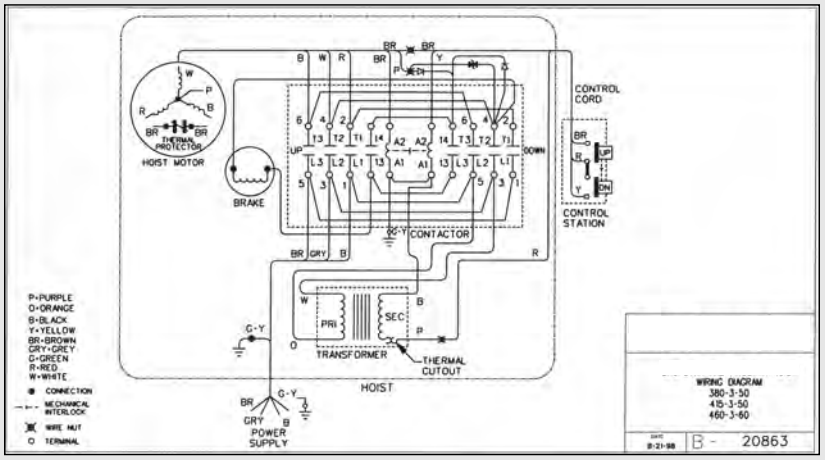
115-1-60 HOISTS WITH CONTACTOR (Black Control Station)



220-1-50 HOISTS WITH CONTACTOR (Black Control Station)



220-3-50 230-3-60 HOISTS WITH CONTACTOR (Black Control Station)



380-3-50 415-3-50 460-3-60 HOISTS WITH CONTACTOR (Black Control Station)

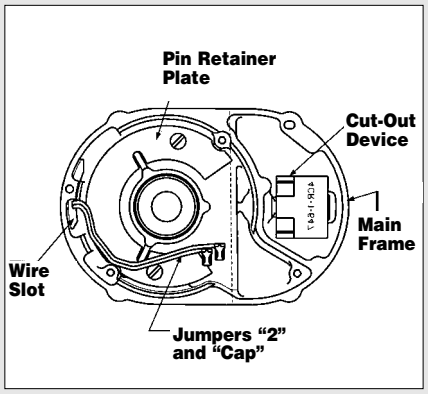


Figure 12A

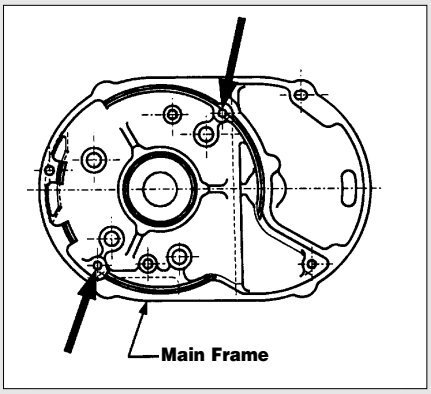


Figure 12B

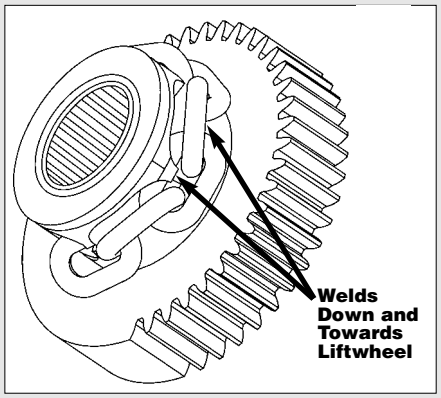


Figure 12C

DISASSEMBLY-ASSEMBLY

When disassembling and assembling the ShopStar Hoist, refer to the exploded view and the parts list on pages 14 thru 18. These show the proper relationship of the parts, the names of the parts and the required quantities of the parts. In addition, please observe the following:

1. Needle bearings are pressed into the gear housing (620-113), main frame (620-107), liftwheel (620-127) and lower sheave wheel (620-162). Unless they are to be replaced, do not attempt to remove these bearings.
2. A liftwheel seal (620-108) is pressed into the main frame (620-107) and a seal (620-130) is pressed into the end of the liftwheel shaft (620-148). Be careful that these seals are not cut or damaged during disassembly and reassembly.
3. Refer to page 8 for disassembly, inspection and reassembly of the brake.
4. Do not attempt to disassemble the Protector™ - refer to page 8.
5. Refer to page 7 for lubrication instructions.
6. See next section for load chain removal and installation.
7. Tighten the various screws as follows:

KEY-NO.	PART NAME	SEATING LB. IN.	TORQUE NM
620-126	Pin Retainer Plate Screw	25	2.8
620-154	Motor Cover Screw	25	2.8
620-134	Gear Housing Screw	25	2.8
620-133	Brake End Cover Screw	25	2.8
620-168	Dead End Plate Screw	125	14.1
620-140	Hook Retainer Screw	10	1.1
620-157	Hook Block Screw 500, 600 and 1000 lbs (226, 272 and 453 kg) (Double Reeved) units 250, 300 and 500 lbs (113, 136 and 226 kg) (Single Reeved) units	125 50	14.1 5.6
620-152	Power Cord Ground Screw	20	2.2

8. When removing the stator (620-100), first remove the brake end cover (620-132). Disconnect stator leads from the wiring or contactor. At the other end, remove the motor end cover (620-105). On single phase units, use an insulated screw driver to short between the bare terminals of the capacitor to discharge it. A spark may be produced. Disconnect wiring to the capacitor and then remove the capacitor. Remove the cut-out device (620-110) and disconnect the wires from it. Remove the rotor assembly (620-101) and thrust washer (620-104). Then slide the stator out of the main frame (620-107).
9. To install the stator refer to Figure 12A and make sure that the pin retainer plate (620-125) has been assembled to the main frame (620-107). On single phase units slide jumpers "2" and "CAP" through the wire slot in the main frame. Route these wires around the rotor bearing boss in the main frame as shown in Figure 12A. Attach the brown and blue stator leads and "2" jumper to cut-out device (refer to wiring diagram). Slide the cut-out device into the cavity as shown. Push the cut-out device down until it sets on the main frame. Place the capacitor on top of the cut-out device and attach "CAP" jumper and the yellow stator lead to it. Re-route jumpers "2" and "CAP", if necessary to make sure they clear the rotor bearing boss as shown in Figure 12A. On all units slide stator leads through wire slot. Align the slots in the stator shell with the threaded holes in the main frame, as shown in Figure 12B. With the leads down, slide the stator into the main frame. Slide the rotor, large bearing first, into stator. Place the rotor thrust washer (620-104) on top of the exposed rotor bearing and then assemble the motor end cover (620-105) to the main frame. Using wiring diagram, complete the wiring at the brake end of the unit.
10. Properly install the upper hook as shown in Figure 13A, then slide the hook retainer (620-139) into the cavity on top of the hoist and secure it using hook retainer screw (620-140). Tighten screw to a seating torque of 10 in. lbs. (1.1 NM).
11. After reassembly, test the unit per instructions on page 13.

LOAD CHAIN REMOVAL/INSTALLATION

1. If unit has a chain container, remove it from the chain guide.
2. Remove the chain stop (620-146). Depress "DOWN" button and run chain out of hoist.
3. Feed a short length of soft wire through the opening between the chain guide (620-141), and stripper (620-143) until it comes out of the hoist. Attach "new" chain to end of the wire which is in the center of the hoist. Position the chain so that the welds will be down and towards the liftwheel as shown above in Figure 12C.
4. Jog the "UP" push button while pulling on the free end of wire until the chain comes out of the hoist. Remove the wire and attach the chain stop as shown in Figure 13B. On units with chain container, place chain stop and loose end of chain in chain container. Attach chain container to chain guide.
5. On the single-chained units, remove the hook block from the old chain and attach it to the new chain by reusing the chain pin (620-158).

   On the double-chained units:

   - Remove dead end plate (620-160) from hoist.
   - Remove dead end pin (620-161) from the last link of chain and pull chain out of dead end plate.
   - Pull old chain out of hook block and disassemble the hook block.
   - Make sure the new chain is not twisted and wrap the

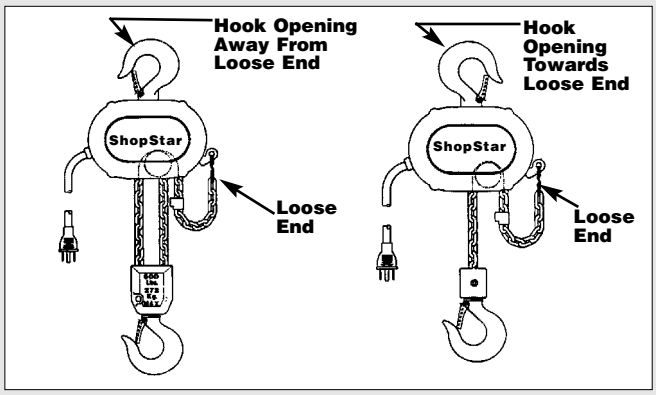


Figure 13A

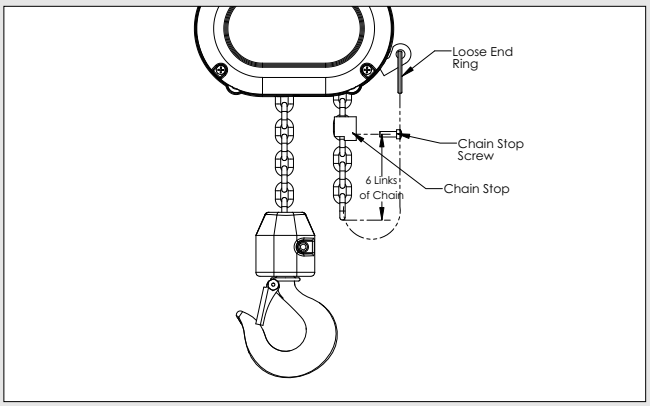


Figure 13B

chain around the sheave wheel (620-162) with welds down and towards the sheave wheel.

- Reassemble hook block and pull the new chain through the hook block.
- Slide the dead end plate over the last link and secure it using the dead end pin.
- Making sure the chain is not twisted between the hook block and hoist, attach the dead end plate to the stripper (620-143).
- Retrace the new chain and check for twists. If chain is twisted, start over.

IMPORTANT: Do not use "old" chain for other purposes such as lifting or pulling. Load chain may break suddenly without visual deformation. For this reason, cut the "old" chain into short lengths to prevent use after disposal.

CUTTING CHAIN

Hoistaloy® load chain is hardened and it is difficult to cut. The following methods are recommended when cutting a length of new chain from stock or cutting off worn chain. Always wear eye protection when cutting chain.

1. Use a grinder and nick the link on both sides (see right), then secure the link in a vise and break off with a hammer.

2. Use a 7"(177 mm) minimum diameter by 1/8" (3.1 mm) thick abrasive wheel (or type recommended by wheel supplier) that will clear adjacent links.

⚠ WARNING

Cutting chain can produce flying particles.

TO AVOID HEALTH PROBLEMS:

- Wear eye protection.
- Place a shield over chain to prevent flying objects.

3. Use a bolt cutter (see right) with special cutter jaws for cutting hardened chain. Jaws should be 1 inch (25.4 mm) long.

TESTING

Before using, all altered, repaired or used hoists that have not been operated for the previous 12 months must be tested by the user for proper operation. First, test the unit without a load and then with a light load of 50 pounds (23 kg) times the number of load supporting parts of load chain to be sure that the brake holds the load when control is released. Next test with a load of *125% of rated capacity. In addition hoists in which load sustaining parts have been replaced should be tested with *125% of rated capacity by or under the direction of an appointed person and a written report prepared for record purposes. After this test, check the Protector™ functions. If the Protector™ permits lifting a load in excess of 200% of rated load, it should be replaced.

*If the Protector™ prevents lifting of a load of 125% of rated capacity, reduce load to rated capacity.

REPAIR PARTS

NOTE: For additional information on inspection and testing, refer to ASME B30.16 "Overhead Hoists" obtainable from ASME Order Department, 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300, U.S.A.

ORDERING INSTRUCTIONS

The following information must accompany all correspondence and orders for replacement parts:

1. Hoist rated load from identification plate.
2. Serial number of the hoist stamped below identification plate.
3. Voltage, Phase, Hertz from identification plate.
4. Length of lift.
5. Key number of part from parts list.
6. Number of parts required.
7. Part name from parts list.
8. Part number from the parts list.

NOTE: When ordering replacement parts, it is recommended that consideration be given to the need for also ordering such items as gaskets, fasteners, seals, etc. These items may be damaged or lost during disassembly or just unfit for future use because of deterioration from age or service.

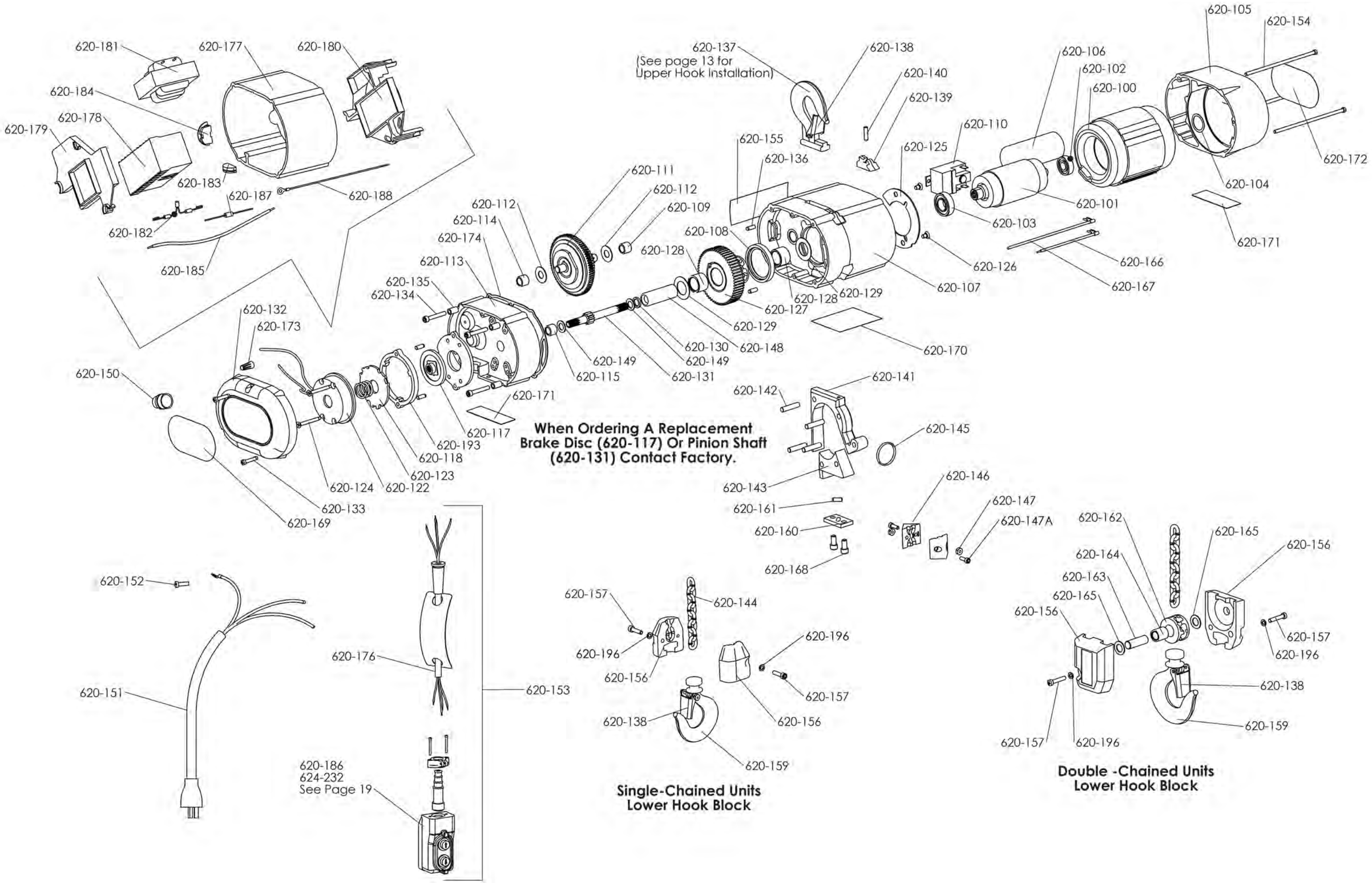
⚠ WARNING

Using "commercial" or other manufacturer's parts to repair the ShopStar Hoist may cause load loss.

TO AVOID INJURY:

Use only factory supplied replacement parts. Parts may look alike but factory original parts are made of specific materials or processed to achieve specific properties.

NOTES



When Ordering A Replacement Brake Disc (620-117) Or Pinion Shaft (620-131) Contact Factory.

Single-Chained Units Lower Hook Block

Double -Chained Units Lower Hook Block

SHOPSTAR ELECTRIC HOIST
PARTS LIST

KEY NUMBER	PART NAME	NO. REQ'D	PART NUMBER
620-100	Stator		
	115-1-50/60 Hoists	1	20707
	220-1-50 Hoists	1	20328
	220-3-50/60 Hoists	1	20329
	380-3-50, 415-3-50 and 460-3-60 Hoists	1	20330
	575-3-60 Hoists	1	20344
620-101	Rotor Assembly (Includes 620-102 and 620-103)	1	20651
620-102	Rotor Bearing, Outboard	1	88487
620-103	Rotor Bearing, Inboard	1	88486
620-104	Rotor Thrust Washer	1	20727
620-105	Motor End Cover	1	20302
620-106	Capacitor		
	115-1-50/60 Hoists	1	20708
	220-1-50 Hoist	1	20785
620-107	Main Frame (Includes 620-108 and 620-109)	1	20352
620-108	Liftwheel Seal	1	20705
620-109	Protector Bearing, Main Frame Side	1	88636
620-110	Cut-Out Device		
	115-1-50/60 Hoists	1	20709
	220-1-50 Hoists	1	20786
620-111	Protector Assembly		
	6 fpm, 1,000 lbs.	1	20665
	8 fpm, 500 & 600 lbs.	1	20645
	8 fpm, 1000 lbs.	1	20660
	12 fpm 500 lbs.	1	20665
	12 fpm, 600 lbs.	1	20638
	12 fpm, 1000 lbs.	1	20662
	16 fpm, 250 & 300 lbs.	1	20645
	16 fpm, 500 lbs.	1	20660
	20 fpm, 500 lbs	1	20648
	20 fpm, 600 lb.s.	1	20661
	24 fpm, 250 & 300 lbs.	1	20638
	24 fpm, 500 lbs.	1	20662
	40 fpm, 250 lbs.	1	20648
	40 fpm, 300 lbs.	1	20661
620-112	Protector Thrust Washer	2	88640
620-113	Gear Housing (Includes 620-114 and 620-115)	1	20350
620-114	Protector Bearing - Gear Housing Side	1	88636
620-115	First Pinion Bearing	1	88635
620-116	Brake Base Plate	1	20419
620-117	Brake Disc	1	Contact Factory
620-118	Brake Armature	1	20420
620-122	Brake Field (Includes Brake Coil)		
	115-1-50/60 Hoists	1	20659
	220-1-50, 220-3-50/60, 380-3-50, 415-3-50 and 460-3-60 Hoists	1	20658
	575-3-60 Hoists	1	20629
620-123	Brake Spring	1	20887
620-124	Brake Screw	4	920740
620-125	Pin Retainer Plate	1	20700
620-126	Pin Retainer Plate Screw	2	20743
620-127	Liftwheel and Gear Assembly		
	6 fpm, 1,000 lbs.	1	20666
	8 fpm, 500, 600 & 1,000 lbs.	1	20664
	12 fpm, 500 lbs.	1	20666
	12 fpm, 600 & 1000 lbs.	1	20647
	16 fpm, 250, 300 & 500 lbs.	1	20664
	20 fpm, 500 & 600 lbs.	1	20657
	24 fpm, 250, 300 & 500 lbs.	1	20647
	40 fpm, 250 & 300 lbs.	1	20657

KEY NUMBER	PART NAME	NO. REQ'D	PART NUMBER
620-128	Liftwheel Bearing	2	88637
620-129	Liftwheel Thrust Washer	2	88638
620-130	Liftwheel Shaft Seal	1	20704
620-131	First Pinion and Shaft	1	Contact Factory
620-132	Brake End Cover	1	20323
620-133	Brake End Cover Screw		
	Hoists without contactor	3	920715
	Hoists with contactor	3	20808
620-134	Gear Housing Screw	4	920718
620-135	Gear Housing Screw Seal (No longer used)	4	20701
620-136	Frame Pin	2	920720
620-137	Hook (Includes 620-138)	1	20650
620-138	Hook Latch Kit	1	595522
620-139	Hook Retainer	1	20712
620-140	Hook Retainer Screw	1	920725
620-141	Chain Guide	1	20304
620-142	Chain Guide/Stripper Pin	4	20729
620-143	Stripper	1	20305
620-144	Load Chain (Specify Lift or Length Required)	-	85988
620-145	Loose End Ring	1	20744
620-146	Chain Stop	2	20428
620-147	Chain Stop Screw	2	25848
620-147A	Chain Stop Screw Nut	2	982472
620-148	Liftwheel Shaft	1	20313
620-149	First Pinion Thrust Washer	2	88639
620-150	Power Cord Grommet	1	20779
620-151	Power Cord		
	115-1-50/60 Hoists with contactor	1	20635
	115-1-50/60 Hoists without contactor	1	20608
	220-1-50 Hoists	1	20633
	220-3-50/60, 380-3-50, 415-3-60, 460-3-60 and 575-3-60 Hoists	1	20628
620-152	Power Cord Ground Screw	1	982877
620-153	Control Station and Cord Assembly (Includes control station, cord, warning tag and upper grommet)		
	Orange Control Station for:		
	10 ft. lift	1	20607
	15 ft. lift	1	20615
	20 ft. lift	1	20616
	Black Control Station for:		
	10 ft. lift	1	20642
	15 ft. lift	1	20643
	20 ft lift	1	20644
	For other lifts contact CM		-
620-154	Motor Cover Screw	1	920719
620-155	Caution Label	1	20758
620-156	Hook Block (Single Chained)	2	20995
	Hook Block (Double Chained)	2	20739
620-157	Hook Block Screw (Single Chained)	2	920730
	Hook Block Screw (Double Chained)	2	920724
620-159	Hook (Includes 620-138)	1	23030
	Latchlok Hook	1	40618
620-160	Dead End Plate, (Double chained)	1	20714
620-161	Dead End Pin, (Double chained)	1	920720
620-162	Sheave Wheel w/620-164, (Double chained)	1	20652
620-163	Sheave Wheel Shaft, (Double chained)	1	20318
620-164	Sheave Wheel Bearing, (Double chained)	1	88641
620-165	Sheave Wheel Thrust Washer, (Double chained)	2	88639
620-166	Jumper (#2)	1	20610
620-167	Jumper (Cap)	1	20609
620-168	Dead End Plate Screw, (Double chained)	2	73715

SHOPSTAR ELECTRIC HOIST
PARTS LIST

Key Number	Part Name	No. Req'd	Part Number
620-168	Dead End Plate Screw, (Double chained)	2	73715
620-169	Capacity Warning Label		
	250 lbs.	1	20762
	300 lbs.	1	20737
	500 lbs.	1	20763
	600 lbs.	1	20738
	1,000 lbs.	1	20884
620-170	I.D. Label	1	Contact Factory
620-171	Warning Label	2	24842
620-172	Shopstar Label	1	20753
620-173	Wire Nut (specify No. Req'd)	-	920756
620-174	Gasket	1	20755
620-176	Control Cord Assembly (includes cord, strain relief and warning tag)		
	For Orange Control Station and		
	10 ft. lift	1	20667
	15 ft. lift	1	20668
	20 ft. lift	1	20669
	For Black Control Station and		
	10 ft. lift	1	20675
	15 ft. lift	1	20676
	20 ft. lift	1	20677
	For other lifts, contact factory	-	-
650-177	Frame Spacer	1	20333C
620-178	Contactor (includes power jumpers)		
	115 VAC Coils	1	20814
	48 VAC Coils	1	20787

Key Number	Part Name	No. Req'd	Part Number
620-179	Components Board - Outboard	1	20777
620-180	Components Board - Inboard	1	20778
620-181	Transformer		
	48 Volt Secondary (220/380 primary)	1	20851
	48 Volt Secondary (460 primary)	1	20834
	115 Volt Secondary (230/460 primary)	1	20831
	115 Volt Secondary (575 primary)	1	20876
	48 Volt Secondary (575 primary)	1	20866
620-182	Diode Assembly	1	20789
	Diode/TVS Assembly	1	20383
620-183	Control Cord Plug	1	20780
620-184	Power Cord Plug	1	20781
620-185	Contactor Jumper (Specify No. Req'd)	-	20332
620-187	Voltage Suppressor		
	230-3-50/60, 380-3-50 and 460-3-60 Hoists	1	20861
	575-3-60 Hoists	1	20869
620-188	Gound Jumper	1	20641
620-193	Brake Spacer	1	20723
620-196	Hook Block Screw Lockwasher (Double Chained)	2	940802
	Hook Block Screw Lockwasher (Single Chained)	2	983544

Part Number for Packaged Lubricants Used in the ShopStar Electric Chain Hoist

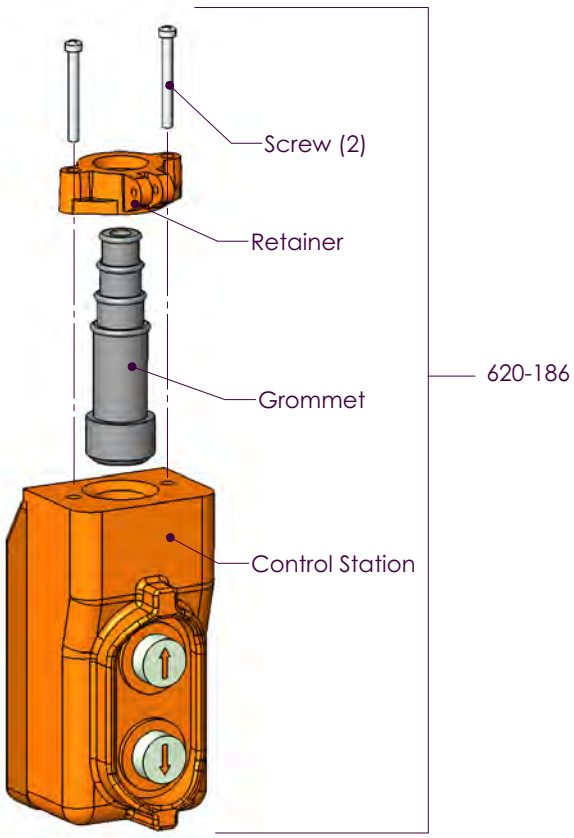
(Refer to Page 7 for Lubrication Instructions)

Lubricant Usage	Type Lubricant	Part Numbers and Packaged Quantity of Lubricants
Hoist Gears	Grease Century Lubricants HB-11, #3	28605 for 1/2 lb. Can 28616 for 1 lb. Can 28617 for 4 lb. Can
Spline on end First Pinion and Shaft	Oil-Graphite Mixture Hercules Packing Co. Moly Duolube 67	40628 for 1 Pint Can
Load Chain	Oil Fiske Bros. Lubriplate Bar and Chain Oil #10R	28608 for 1 Pint Can 28619 for 1 Gal. Can
Lower Hook Knob	Grease Dow Corning Molykote BR-2-S	28606 for 1/2 lb. Can 28618 for 1 lb. Can

When ordering lubricants, specify the type of lubricant, part number and packaged quantity required.
Touch-up paints for ShopStar Electric Chain Hoist:
Order# *(1) Case (12-12 oz. Aerosol Cans) of Orange Touch-up Paint Part Number 84190.
*Touch-up paints are only available in case quantities.
Note: When painting hoists, also order warning labels, etc. that may be coated during painting.

CONTROL STATION (ORANGE) FOR USE ON 115-1-50/60 HOISTS WITHOUT CONTACTOR

NOTE: Individual components are not available for repairs

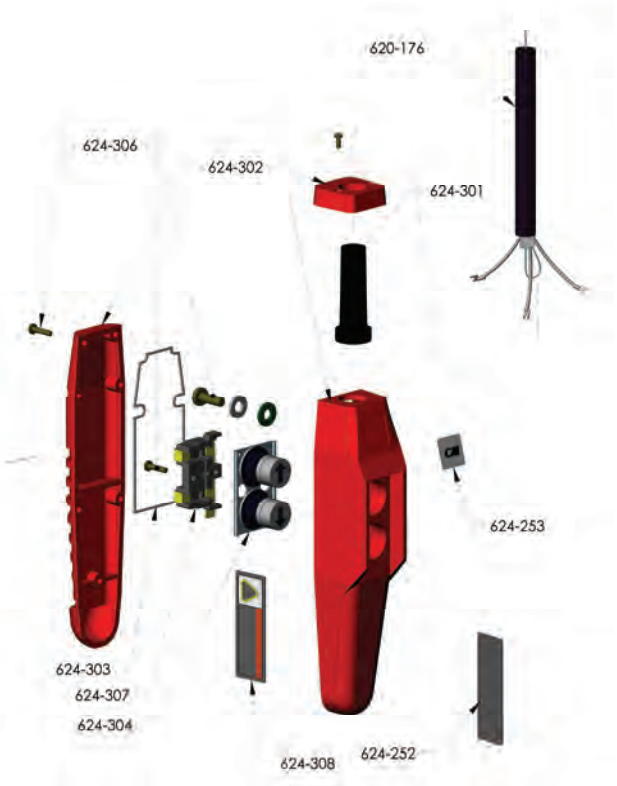


PARTS LIST

KEY NO.	No. PART NAME	REQ'D.	PART NUMBER
620-186	Control station with retainer, screws and grommet	1	24807

Control Station (Black) for use on 115-1-50/60 hoists with contactor, 220-1-50 and three phase units.

CONTROL STATION			
Key No.	**Part Name**	**No. Req'd**	**Part No.**
624-232	Control Station (Includes 624-301 thru 624-307)	1	36900B
624-252	Warning Label (Electrical)	1	24842
624-253	Manufacturer Label	1	28470
624-301	Control Station Grommet	1	36989
624-302	Control Station Housing	1	36998B
624-303	Gasket	1	36986
624-304	Control Station Button Assembly	1	36988
624-306	Control Station Parts Kit	1	36939
624-307	Contact Assembly (Includes 624-304)	1	36987
624-308	Warning Label	1	24845



NOTES

NOTES

OPERATING, MAINTENANCE & PARTS MANUAL

ELECTRIC CHAIN

Distributed by Tri-State Equipment Company Inc.
sales@tsoverheadcrane.com
www.tsoverheadcrane.com
Tel: (314) 869-7200

CM® SHOPSTAR® VS

Before installing hoist, fill in the information below.

Model Number _____

Serial No. _____

Purchase Date

Please provide Serial Number when ordering parts.

CAPACITIES:
250 LBS (113 KG)
300 LBS (136 KG)
500 LBS (226 KG)
550 LBS (250 KG)
600 LBS (272 KG)
1,000 LBS (453 KG)
1,100 LBS (500 KG)

Follow all instructions and warnings for inspecting, maintaining and operating this hoist.

The use of any hoist presents some risk of personal injury or property damage. That risk is greatly increased if proper instructions and warnings are not followed. Before using this hoist, each operator should become thoroughly familiar with all warnings, instructions and recommendations in this manual. **Retain this manual for future reference and use.**

Forward this manual to operator. Failure to operate equipment as directed in manual may cause injury.

Columbus McKinnon Corporation
205 Crosspoint Parkway
Getzville, NY 14068

Manual No. 10001928 Rev. AA August 2016

CM HOIST PARTS AND SERVICES ARE AVAILABLE IN THE UNITED STATES AND IN CANADA

PARTS FOR YOUR HOIST ARE AVAILABLE FROM YOUR LOCAL AUTHORIZED REPAIR STATION.
FOR THE NAME OF THE NEAREST PARTS OR SERVICE CENTER, VISIT OUR WEB SITE WWW.CMWORKS.COM
OR CALL OUR CUSTOMER SERVICE DEPARTMENT AT 1-800-888-0985.

⚠ WARNING

Improper operation of a hoist can create a potentially hazardous situation which, if not avoided, could result in death or serious injury. To avoid such a potentially hazardous situation, THE OPERATOR SHALL:

1. **NOT** operate a damaged, malfunctioning or unusually performing hoist.
2. **NOT** operate the hoist until you have thoroughly read and understood this Operating, Maintenance and Parts Manual.
3. **NOT** operate a hoist which has been modified without the manufacturer's approval or without certification that it is in conformity with ANSI/AMSE B30 volumes.
4. **NOT** lift more than rated load for the hoist.
5. **NOT** use hoist with twisted, kinked, damaged, or worn load chain.
6. **NOT** use the hoist to lift, support, or transport people.
7. **NOT** lift loads over people.
8. **NOT** operate a hoist unless all persons are and remain clear of the supported load.
9. **NOT** operate unless load is centered under hoist.
10. **NOT** attempt to lengthen the load chain or repair damaged load chain.
11. Protect the hoist's load chain from weld splatter or other damaging contaminants.
12. **NOT** operate hoist when it is restricted from forming a straight line from hook to hook in the direction of loading.
13. **NOT** use load chain as a sling, or wrap chain around load.
14. **NOT** apply the load to the tip of the hook or to the hook latch.
15. **NOT** apply load unless load chain is properly seated in the chain sprocket(s).
16. **NOT** apply load if bearing prevents equal loading on all load supporting chains.
17. **NOT** operate beyond the limits of the load chain travel.
18. **NOT** leave load supported by the hoist unattended unless specific precautions have been taken.
19. **NOT** allow the load chain or hook to be used as an electrical or welding ground.
20. **NOT** allow the load chain or hook to be touched by a live welding electrode.
21. **NOT** remove or obscure the warnings on the hoist.
22. **NOT** operate a hoist on which the safety placards or decals are missing or illegible.
23. **NOT** operate a hoist unless it has been securely attached to a suitable support.
24. **NOT** operate a hoist unless load slings or other approved single attachments are properly sized and seated in the hook saddle.
25. Take up slack carefully - make sure load is balanced and load holding action is secure before continuing.
26. Shut down a hoist that malfunctions or performs unusually and report such malfunction.
27. Make sure hoist limit switches function properly.
28. Warn personnel of an approaching load.

⚠ CAUTION

Improper operation of a hoist can create a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. To avoid such a potentially hazardous situation, THE OPERATOR SHALL:

1. Maintain firm footing or be otherwise secured when operating the hoist.
2. Check brake function by tensioning the hoist prior to each lift operation.
3. Use hook latches. Latches are to retain slings, chains, etc. under slack conditions only.
4. Make sure the hook latches are closed and not supporting any parts of the load.
5. Make sure the load is free to move and will clear all obstructions.
6. Avoid swinging the load or hook.
7. Make sure hook travel is in the same direction as shown on the controls.
8. Inspect the hoist regularly, replace damaged or worn parts, and keep appropriate records of maintenance.
9. Use CM Hoists recommended parts when repairing the unit.
10. Lubricate load chain per hoist manufacturer's recommendations.
11. **NOT** use the hoist's overload limiting clutch to measure load.
12. **NOT** use limit switches as routine operating stops. They are emergency devices only.
13. **NOT** allow your attention to be diverted from operating the hoist.
14. **NOT** allow the hoist to be subjected to sharp contact with other hoists, structures, or objects through misuse.
15. **NOT** adjust or repair the hoist unless qualified to perform such adjustments or repairs.

SAFETY PRECAUTIONS

Each Shopstar Electric Chain Hoist is built in accordance with the specifications contained herein and at the time of manufacture complies with our interpretation of applicable sections of *American Society of Mechanical Engineers Code (ASME) B30.16 "Overhead Hoists," the National Electrical Code (ANSI/NFPA 70) and the Occupational Safety and Health Act (OSHA). Since OSHA states the National Electrical Code applies to all electric hoists, installers are required to provide current overload protection and grounding on the branch circuit section in keeping with the code. Check each installation for compliance with the application, operation and maintenance sections of these articles.

The safety laws for elevators, lifting of people and for dumbwaiters specify construction details that are not incorporated into the hoists. For such applications, refer to the requirements of applicable state and local codes, and the American National Safety Code for elevators, dumbwaiters, escalators and moving walks (ASME A17.1). Columbus McKinnon Corporation cannot be responsible for applications other than those for which CM equipment is intended.

*Copies of this standard can be obtained from ASME Order Department, 22 Law Drive, PO Box 2300, Fairfield, NJ 07007- 2300, U.S.A., www.asme.org, 800-843-2763.

⚠ **THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH IF NOT FOLLOWED COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL AND ANY PROVIDED WITH THE EQUIPMENT BEFORE ATTEMPTING TO OPERATE YOUR Shopstar HOIST.**

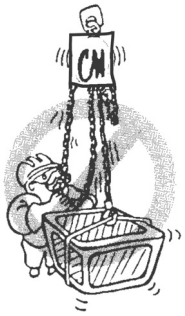
HOIST SAFETY IS UP TO YOU...

⚠ WARNING

DO NOT LIFT MORE THAN RATED LOAD.

DO OPERATE WITH MANUAL POWER ONLY (ONE OPERATOR)

CHOOSE THE RIGHT HOIST FOR THE JOB...



Choose a hoist with the capacity for the job. Know the capacities of your hoists and the weight of your loads.

Then match them.

The application, the size and type of load, the attachments to be used and the period of use must also be taken into consideration in selecting the right hoist for the job.

Remember, the hoist was designed to ease our burden and carelessness not only endangers the operator, but in many cases, a valuable load.

⚠ WARNING

DO NOT OPERATE DAMAGED OR MALFUNCTIONING HOIST.

DO NOT OPERATE WITH TWISTED, KINKED, OR DAMAGED CHAIN.

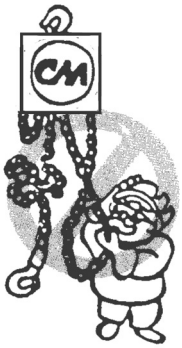
INSPECT

All hoists should be visually inspected before use, in addition to regular, periodic maintenance inspections.

Inspect hoists for operations warning notices and legibility.

Deficiencies should be noted and brought to the attention of supervisors. Be sure defective hoists are tagged and taken out of service until repairs are made.

Under no circumstances should you operate a malfunctioning hoist.



Check for gouged, twisted, distorted links and foreign material. Do not operate hoists with twisted, kinked, or damaged chain links.

Load chain should be properly lubricated.

Hooks that are bent, worn, or whose openings are enlarged beyond normal throat opening should not be used. If latch does not engage throat opening of hook, hoist should be taken out of service.

Chains should be checked for deposits of foreign material which may be carried into the hoist mechanism.

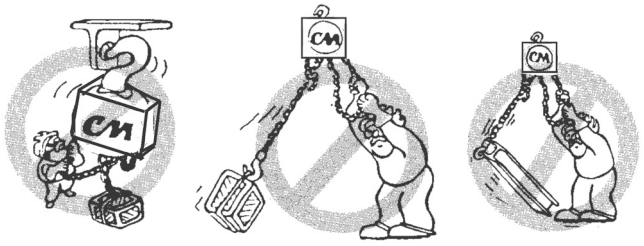
Check brake for evidence of slippage under load.

⚠ WARNING

DO NOT PULL AT AN ANGLE. BE SURE HOIST AND LOAD ARE IN A STRAIGHT LINE.

DO NOT USE LOAD CHAIN AS A SLING.

USE HOIST PROPERLY



Be sure hoist is solidly held in the uppermost part of the support hook arc.

Be sure hoist and load are in a straight line. Do not pull at an angle.

Be sure load is hooked securely. Do not tip load the hook. Do not load hook latch. Hook latch is to prevent detachment of load under slack chain conditions only.

Do not operate with hoist head resting against any object. Lift the load gently. Do not jerk it.

⚠ WARNING

DO NOT LIFT PEOPLE OR LOADS OVER PEOPLE

PRACTICE CAUTION ALWAYS

Do not lift co-workers with a hoist.

Make sure everyone is clear of the load when you lift.

Do not remove or obscure operational warning notices.

OPERATOR SERVICE

CLEANING

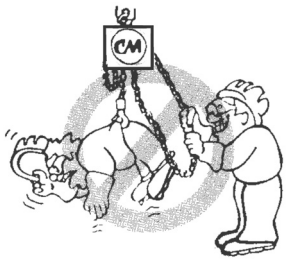
Hoists should be kept clean and free of dust, dirt, moisture, etc., which will in any way affect the operation or safety of the equipment.

LUBRICATION

Chain should be properly lubricated.

AFTER REPAIRS

Carefully operate the hoist before returning it to full service.



VIOLATIONS OF ANY OF THE WARNINGS LISTED MAY RESULT IN SERIOUS PERSONAL INJURY TO THE OPERATOR OR NEARBY PERSONNEL BY NATURE OF RELEASED LOAD OR BROKEN HOIST COMPONENTS.

FOREWORD

This manual contains important information to help you properly install, operate and maintain your hoist for maximum performance, economy and safety.

Please study its contents thoroughly before putting your hoist into operation. By practicing correct operating procedures and by carrying out the recommended preventive maintenance suggestions, you will experience long, dependable and safe service. After you have completely familiarized yourself with the contents of this manual, we recommend that you carefully file it for future reference.

The information herein is directed to the proper use, care and maintenance of the hoist and does not comprise a handbook on the broad subject of rigging.

Rigging can be defined as the process of lifting and moving heavy loads using hoists and other mechanical equipment. Skill acquired through specialized experience and study is essential to safe rigging operations. For rigging information, we recommend consulting a standard textbook on the subject.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

GENERAL INFORMATION

SPECIFICATIONS

The ShopStar Electric Chain Hoist is a highly versatile materials handling device that can be used to lift loads that are within its rated load capacity. It is available in seven load ratings: 250, 300, 500, 550, 600, 1,000 and 1,100 pounds (113,136, 226, 250, 272, 453, and 500 kg).

Standard features of the ShopStar Electric Chain Hoist include:

- Alloy steel, oblique lay liftwheel that provides constant chain speed and reduces chain wear.
- Hoistaloy® load chain for long and dependable service.
- Grease lubricated, hardened spur gears provide smooth and quiet operation.
- Thermally protected, hoist duty motor.
- Forged steel upper and lower hooks with latch.
- Protector™ that prevents lifting dangerous overloads.
- D.C. disc type motor brake plus regenerative braking.
- 10 foot (3 M) lift. Longer lifts can be supplied on a per order basis.
- 6 foot (1.8 M) power cord with three prong plug for grounding on 115-1-50/60 units. 6 foot (1.8 M) power cord with provisions for grounding is standard on 220-1-50 and three phase units.
- Rugged NEMA 4 (weatherproof) control station is suspended on a TYPE SO cord six feet (2.8 M) below the bottom of the hoist. Longer cords can be provided on a per order basis.
- Lightweight die cast aluminum frames and covers.
- Ball or needle bearings at all rotating points.
- Compact, yet rugged, design provides minimum headroom and long, trouble-free service.
- 13 fpm (3.9m/min) lift speed available on 1100 lb (500 kg) units.
- 19 fpm (5.8 m/min) lift speed available on 1000 lb (453 kg) units.
- 31 fpm (9.4 m/min) lift speeds available on 600 lb (272 kg) units.
- 26 fpm (7.9m/min) lift speed available on 550 lb (250 kg) units.
- 39 fpm (11.9m/min) lift speed available on 500 lb (226 kg) units.
- 63 fpm (19.2 m/min) lift speed available on 250/300 lb (113/136 kg) units.
- 100 thru 240-1-50/60 power. Three phase supplies can be used by connecting 2 of 3 phases.
- UL and cUL listed.
- Lifetime Warranty

REPAIR/REPLACEMENT POLICY

All Columbus McKinnon (CM®) ShopStar Electric Chain Hoists are inspected and performance tested prior to shipment. If any properly maintained hoist develops a performance problem, due to a material or workmanship defect, as verified by CM, repair or replacement of the unit will be made to the original purchaser without charge. This repair/replacement policy applies only to ShopStar Hoists installed, maintained and operated as outlined in this manual, and specifically excludes hoists subject to normal wear, abuse, improper installation, improper or inadequate maintenance, hostile environmental effects and unauthorized repairs/modifications.

⚠ WARNING

Alterations or modification of hoist and use of non-original repair parts can lead to dangerous operation and injury.

TO AVOID INJURY

- Do not alter or modify equipment.
- Do use only original replacement parts.

We reserve the right to change materials or design if, in our opinion, such changes will improve our product. Abuse, repair by an unauthorized person, or use of non-CM replacement parts voids the guarantee and could lead to dangerous operation. For full Terms of Sale, see Sales Order Acknowledgment. Also, refer to the back cover for Limitations of Warranties, Remedies and Damages, and Indemnification and Safe Operation.

ACCESSORIES

FIGURE 1

CHAIN CONTAINER

This accessory item (Figure 1) is used to hold the slack chain and it is supplied with mounting hardware and instructions. Chain containers are recommended for those applications where slack chain will interfere with the load or drag on the floor as may more often be the case with the (600, 1,000, and 1,100 lbs., 272, 453, and 500 kg., Double Reeved units). Chain containers are shipped separately and can be furnished for units already in service.

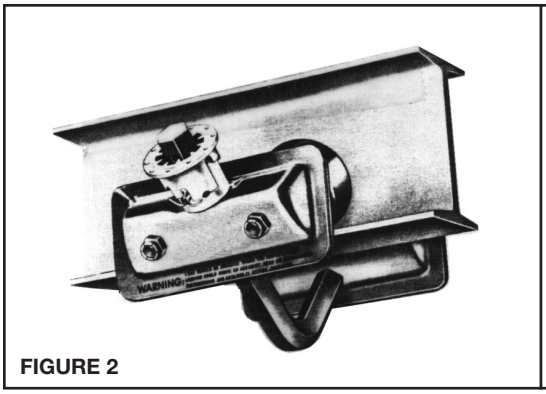


FIGURE 2

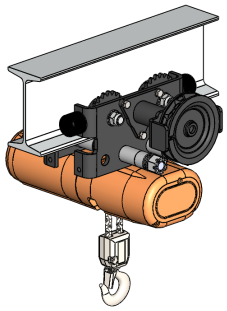


FIGURE 3

TROLLEYS

The 632 trolley is a light weight, yet rugged, manual push Trolley designed to fit a wide range of monorail beams and negotiate tight turns. (Figure 2) The UT trolley is available in manual and hand geared versions. (Figure 3)

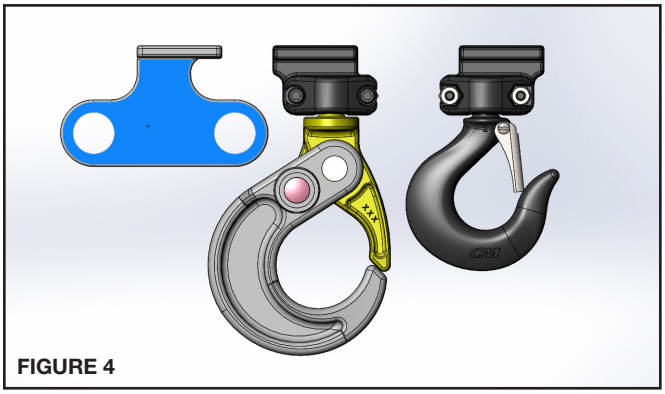


FIGURE 4

HOOKS

Alternate hook styles are available. (Figure 4) shows UT trolley lug, swivel Latchlok (upper and lower), and swivel latch types.

INSTALLATION

UNPACKING INFORMATION

When received, the hoist should be carefully inspected for damage which may have occurred during shipment or handling. Check the hoist frame for dents or cracks, the external cords for damaged or cut insulation, the control station for cut or damaged enclosure, and inspect the load chain for nicks and gouges.

If shipping damage has occurred, refer to the packing list envelope on the carton for claim procedure. Before installing the hoist, make sure that the power supply to which it will be connected is the same as that shown on the nameplate located on the side of the hoist.

NOTE: See Electrical Installation instructions

MOUNTING THE HOIST

Hang the hoist from its intended support. The structure used to support the hoist must have sufficient strength to withstand several times the load imposed. If in doubt consult a registered engineer and local building codes.

⚠ WARNING

Suspending the hoist from an inadequate support may allow the hoist and load to fall and cause injury and/or property damage.

TO AVOID INJURY

Make sure the structure has sufficient strength to hold several times the weight of the hoist and its rated load. Using the upper hook, hang the hoist from the support. Be sure hoist is solidly held in the uppermost part of the hook arc and the latch is tightly against the hook tip.

POWER SUPPLY AND ELECTRICAL CONNECTIONS

(Refer to Figure 6-7.) To insure proper operation, to avoid damage to hoist and electrical system and to reduce the risk of electric shock or fire, the branch circuit supplying power to the hoist must:

1. Have ample capacity to prevent excessive voltage drop during starting and operation (refer to “Checking for Adequate Voltage at Hoist” on page 3). When determining the size of branch circuit components and conductors, special consideration should be given to the starting current-amps (approximately three times that shown on the hoist identification plate) and the length of the conductors. As a minimum, the system should be rated for 15 amps and it should have #16 AWG, or larger, wiring.
2. Be in accordance with the National Electrical Code (ANSI/NFPA-70) and applicable National, State and Local Codes.
3. Effectively ground the hoist in accordance with National Electrical Code and other applicable codes. Proper grounding provides a path of least resistance for electric current to reduce the risk of electric shock. The power cord of the hoist includes a green-yellow wire for grounding the hoist to the external power supply system. On the standard 115-1-60 units, the power cord is equipped with a three prong plug. Be sure that the receptacle opening that receives the longest prong is properly grounded. If the trolley trackwheels are used as a secondary ground path, each section of the runway must be grounded to the building ground system using metal to metal connections.

⚠ WARNING

Failure to properly ground the hoist presents the danger of electric shock.

TO AVOID INJURY

Permanently ground the hoist as instructed in this manual.

4. Include slow blow type fuses or inverse trip time circuit breakers to permit the hoist to start and accelerate load.
5. Include a disconnecting means capable of being locked in the “open” position.

⚠ WARNING

Failure to provide a proper power supply system for the hoist may cause hoist damage and offers the potential for a fire.

TO AVOID INJURY

Provide the hoist with a 15 amp, minimum, overcurrent protected power supply per the National Electrical Code (ANSI/NFPA 70) and applicable local codes as instructed in this manual.

The hoist contains a PFC (power factor correction) circuit that allows it to operate on a wide voltage input range between 100 volts AC, up to 240 volts AC single phase, either 50/60 Hz. For single phase voltages above 120 volts, remove the 120 volt plug. Attach the cord to a 220-240 volt single phase plug, or hardwire to a junction box. For three phase voltages between 208-240, 50/60 Hz, connect to 2 of the 3 power legs per diagram 7.

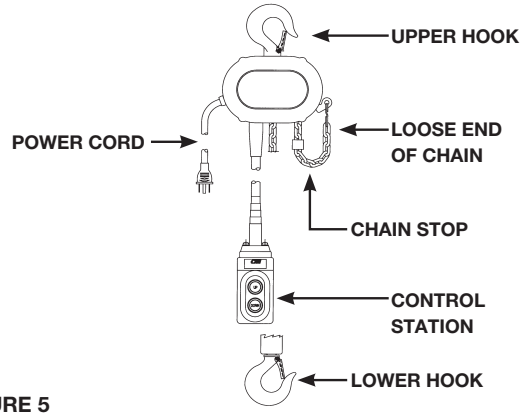
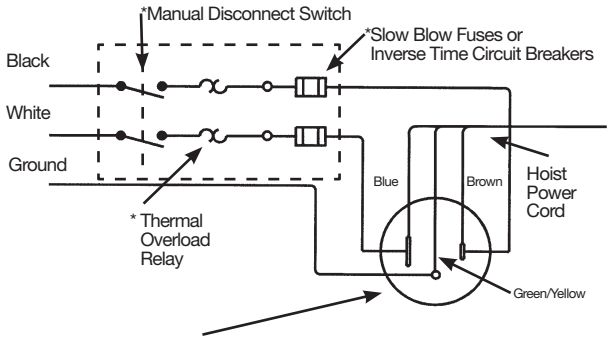


FIGURE 5

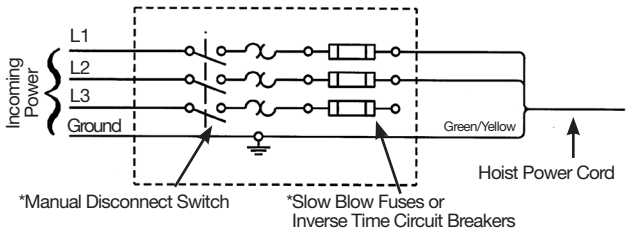
SINGLE PHASE SYSTEMS



*Receptacle Rated for 15 Amps Minimum. (220-1-50 Units Do Not Include Power Cord Plug) Wire Blue and Brown Wires to Fuses or Circuit Breakers and Green-Yellow Wire to Ground.

FIGURE 6

THREE PHASE SYSTEMS



*Must be per National Electrical Code and These Devices are to be Supplied by the User.

FIGURE 7

HOIST ROTATION

The two power wires can be connected in any order to L1 and L2. This will not affect the direction of operation.

⚠ WARNING

Allowing the hook block to run into the bottom of the hoist when raising a load or allowing the chain stop to run into the bottom of the hoist when lowering a load may break the chain and allow the load to drop.

TO AVOID INJURY

Do not allow the hook block or the chain stop to contact the bottom of the hoist.

CHECKING FOR ADEQUATE VOLTAGE AT HOIST

The hoist must be supplied with adequate electrical power for proper operation and to reduce problems that may result from insufficient power (low voltage).

- If the hoist voltage drops to 85 volts, the control will fault and stop the hoist. The voltage must be raised above 90 volts to reset the control and start operation.

For proper operation and to avoid these low voltage problems, voltage (measured at end of the power cord while lifting rated load) should be 100 volts minimum.

***The drop in voltage upon energizing the hoist should not be below the value listed.**

Low voltage can also be caused by using an undersized extension cord to supply power to the hoist. The following charts should be used to determine the size wires in the extension cord in order to minimize the voltage drop between the power source and the hoist.

Maximum Length of Extension Cord	
Wire Size	**Wingle Phase Hoist**
#16 AWG	100 feet (30M)
#14 AWG	200 feet (61M)

After the hoist is suspended from its support and you have made sure the power supply complies with the requirements on the previous page, the hoist is ready for operation.

On the (600, 1,000, and 1,100 lbs., 272, 453, and 500 kg., Double Reeved units), cut and discard the ties used to hold the two strands of chain together. With no load on the lower hook, depress the "UP" button in the control station and raise the lower hook until it is about 2 feet below the bottom of the hoist. Check both strands of chain for twists. Twists occur if the lower hook block has been capsized between the strands of chain during packing, shipment and/or handling. Reverse the capsize to remove twists.

CHAIN CONTAINER

If the chain container is to be used, attach it to the hoist per the instructions provided.

OPERATING INSTRUCTIONS

The hoist is equipped with a Protector™ that is designed to allow the first gear to slip on an excessive overload. An overload is indicated when the hoist speed slows down, it raises the load in a jerky manner or it will not lift the load at all. Also, some clutching noise may be heard if the hoist is loaded beyond rated capacity. Should this occur, immediately release the "UP" button to stop the operation of the hoist. At this point, the load should be reduced to the rated capacity or the hoist should be replaced with one of the proper capacity. When the excessive load is removed, normal hoist operation is automatically restored.

CAUTION: The Protector™ is susceptible to overheating and wear when slipped for extended periods. Under no circumstance should the Protector be allowed to slip for more than a few seconds.

Due to the above, the hoist is not recommended for use in any application where there is a possibility of adding to an already suspended load to the point of overload. This includes dumbwaiter installations, containers that are loaded in mid-air, etc. Also, if the hoist is used at unusual extremes of ambient temperatures, above 150° F (65°C), or below 15°F (-9°C), changes in lubricant properties may permit the hoist to raise larger loads than under normal operating conditions and present possibility of damage or injury.

There are no electrical switches to stop the operation of the hoist at the upper and lower limits of lift. As a result, it is necessary to release the push button in the control station to stop the hoist before the hook block or chain stop contacts the bottom of the hoist frame. If the hook block or chain stop contacts the hoist frame, the Protector™ will function to stop the hoisting or lowering operation and protect the hoist components from damage. However, continued, prolonged or repeated slipping of the Protector™ will damage the Protector™ and cause overheating of the internal hoist components.

⚠ WARNING

Allowing the hook block to run into the hoist when raising a load or allowing the chain stop to run into the hoist when lowering a load may break the chain and allow the load to drop.

TO AVOID INJURY

Do not allow the hook block or the chain stop to contact the hoist frame.

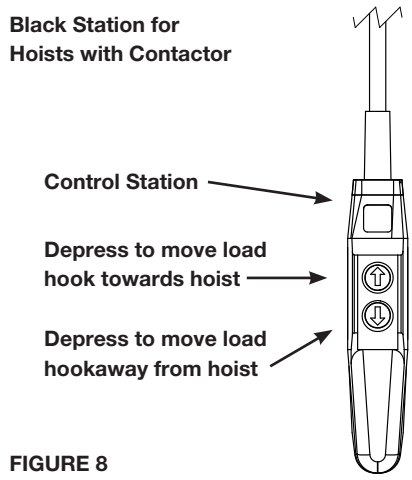


FIGURE 8

Hoist operation is controlled by depressing the control station push buttons. (Refer to Figure 8) Depressing the "UP" push button will move the load hook toward the hoist; depressing the "DOWN" push button will move the load hook away from the hoist. The "UP" and "DOWN" buttons are momentary type and the hoist will operate in the selected direction as long as the button is held in the depressed position. Release the push button and the hoist will stop.

1. When preparing to lift a load, be sure that the attachments to the hook are firmly seated in hook saddle. Avoid off center loading of any kind, especially loading on the point of the hook.
2. When lifting, raise the load only enough to clear the floor or support and check to be sure that the attachments to the hook and load are firmly seated. Continue lift only after you are assured the load is free of all obstructions.
3. Do not load the hoist beyond the rated capacity shown on the brake end cover. Overloading can cause immediate failure of some load-carrying parts or create a defect causing subsequent failure at less than rated capacity. When in doubt, use the next larger capacity of the ShopStar Hoist.
4. Do not use this or any other overhead materials handling equipment for lifting persons.
5. Stand clear of all loads and avoid moving a load over heads of other personnel. Warn personnel of your intention to move a load in their area.
6. Do not leave the load suspended in the air unattended.
7. Permit only qualified personnel to operate unit.
8. Do not wrap the load chain around the load and hook onto itself as a choker chain. Doing this will result in:
   a. The loss of the swivel effect of the hook which could mean twisted chain and a jammed liftwheel.
   b. The chain could be damaged at the hook.
9. On the (600, 1,000, and 1,100 lbs., 272, 453, and 500 kg., Double Reeved) hoists, check for twists in the load chain. A twist can occur if the lower block has been capsized between the strands of chain. Reverse the capsize to remove twist.
10. Do not allow a load to bear against the hook latch. The latch is to help maintain the hook in position while the chain is slack before taking up the slack chain.

⚠ WARNING

Allowing a load to bear against the hook latch and/or hook tip can result in loss of load.

TO AVOID INJURY

Do not allow a load to bear against the hook latch and/or hook tip. Apply load to hook bowl or saddle only.

11. Take up a slack load chain carefully and start load easily to avoid shock and jerking of hoist chain. If there is any evidence of overloading, immediately lower the load and remove the excess load.
12. Do not allow the load to swing or twist while hoisting.
13. Never operate the hoist when flammable materials or vapors are present. Electrical devices produce arcs or sparks that can cause a fire or explosion.
14. STAY ALERT! Watch what you are doing and use common sense. Do not use the hoist when you are tired, distracted or under the influence of drugs, alcohol or medication causing diminished control.

HOIST OPERATIONAL MODES:

Four modes of pendant operation are available:

(1) 3-step infinitely variable mode; (2) 3-step /3 speed mode;

(3) 2-step infinitely variable mode; (4) 2-step/2 speed mode.

The mode of operation as well as operational parameters are configurable through an external serial interface (described in the communcations section below). The speed of the hoist operation is determined by the force that is applied to the UP or DOWN buttons. There are 4 distinct levels, or switch positions, for both switches. These switch positions can be characterized in the following manner:

(1) Position 0-resting position, the switch is not pressed.

(2) Position 1-the switch is pressed to the 1st position down;

(3) Position 2-the switch is pressed to the 2nd, or middle, position down;

(4) Position 3-the switch is pressed to the 3rd, or bottom, position down; (3 step pendants only)

3-STEP INFINITELY VARIABLE

When both the UP and DOWN buttons are at position 0, the hoist is stopped and the brake is set. Pressing either the UP or DOWN button will result in the following actions at the listed positions:

(1) Position 1- moving from position 0 to position 1 will cause the brake to release and the hoist to accelerate to the minimum programmed speed. Moving from position 2 to position 1 will cause the hoist to decelerate from the current speed down to the minimum programmed speed.

(2) Position 2- this will hold the present running speed.

(3) Position 3- moving from position 2 to position 3 will cause the hoist to accelerate from the present speed up to the maximum programmed speed.

3-STEP/ 3 SPEED

When both the UP and DOWN buttons are at position 0, the hoist is stopped and the brake is set. Pressing either the UP or DOWN button will result in the following actions at the listed positions:

(1) Position 1- moving from position 0 to position 1 will cause the brake to release and the hoist to accelerate to the minimum programmed speed. Moving from position 2 to position 1 will cause the hoist to decelerate from the current speed down to the minimum programmed speed.

(2) Position 2- changing from positon 1 or position 3 will cause the speed to accelerate or decelerate to the mid-level programmed speed.

(3) Position 3- moving from position 2 to position 3 will cause the hoist to accelerate from the present speed up to the maximum programmed speed. Factory default is 2750 motor rpm.

2-STEP INFINITELY VARIABLE

When both the UP and DOWN buttons are at position 0, the hoist is stopped and the brake is set. Pressing either the UP or DOWN button will result in the following actions at the listed positions:

(1) Position 1- moving from position 0 to position 1 will cause the brake to release and the hoist to accelerate to the minimum programmed speed. Moving from position 2 to position 1 will cause the hoist to hold the current speed.

(2) Position 2- moving from position 1 to position 2 will cause the hoist to accelerate from the present speed up to the maximum programmed speed.

2-STEP / 2 SPEED

When both the UP and DOWN buttons are at position 0, the hoist is stopped and the brake is set. Pressing either the UP or DOWN button will result in the following actions at the listed positions:

(1) Position 1- moving from position 0 to position 1 will cause the brake to release and the hoist to accelerate to the minimum programmed speed. Moving from position 2 to position 1 will cause the hoist to decelerate to the minimum programmed speed.

(2) Position 2- moving from position 1 to position 2 will cause the hoist to accelerate from the minimum programmed speed up to the maximum programmed speed.

COMMUNICATIONS

Hoist operating parameters can be modified and life information can be obtained through an external serial port. The port is accessed by removing a rubber plug located on top of the brake end cover of the hoist, and connecting an optional serial interface cable between the hoist and a computer with available USB port. A serial cable kit can be obtained through Columbus McKinnon. The input parameters can set the following:

A) The operation mode as controlled by the pendant. See previous sections.

B) The minimum, medium, and maximum hoist lifting speed.

C) The hoist acceleration and deceleration rates.

PROTECTION MODES

CURRENT: The hoist will stop movement if the current reaches a preset current limit caused by conditions such as overload or jammed chain.

THERMAL: The hoist circuitry contains four thermistors to monitor the temperature of various components. If an initial temperature threshold is reached, the hoist will go into a “foldback” mode which reduces the maximum operating speed. Greater differences between the current temperature and the threshold will reduce the speed further. If excessive use continues and a second higher limit is reached, the hoist will stop until it has cooled below these limits. Reducing the temperature below the initial limit will allow the hoist to run at full speed. These functions are to prevent additional heat rise and potential damage to the internal components.

INSPECTION

To maintain continuous and satisfactory operation, a regular inspection procedure must be initiated to replace worn or damaged parts before they become unsafe. Inspection intervals must be determined by the individual application and are based on the type of service to which the hoist will be subjected.

The type of service to which the hoist is subjected can be classified as “Normal”, “Heavy”, or “Severe”.

NORMAL SERVICE:

Involves operation with randomly distributed loads within the rated load limit, or uniform loads less than 65 percent of rated load for not more than 25 percent of the time.

HEAVY SERVICE:

Involves operating the hoist within the rated load limit which exceeds normal service.

SEVERE SERVICE:

Normal or heavy service with abnormal operating conditions or constant exposure to the elements of nature. Two classes of inspection - frequent and periodic - must be performed.

FREQUENT INSPECTIONS:

These inspections are visual examinations by the operator or other designated personnel. Records of such inspections are not required. The frequent inspections are to be performed monthly for normal service, weekly to monthly for heavy service, and daily to weekly for severe service, and they should include those items listed in Table 4.

PERIODIC INSPECTIONS:

These inspections are visual inspections of external conditions by an appointed person. Records of periodic inspections are to be kept for continuing evaluation of the condition of the hoist. Periodic inspections are to be performed yearly for normal service, semi-annually for heavy service and quarterly for severe service, and they are to include those items listed in Table 4.

CAUTION: Any deficiencies found during inspections are to be corrected before the hoist is returned to service. Also, the external conditions may show the need for disassembly to permit a more detailed inspection, which, in turn, may require the use of nondestructive type testing.

PREVENTATIVE MAINTENANCE

In addition to the above inspection procedure, a preventive maintenance program should be established to prolong the useful life of the hoist and maintain its reliability and continued safe use. The program should include the periodic and frequent inspections with particular attention being paid to the lubrication of the various components using the recommended lubricants (see page 25).

HOOK INSPECTION

Hooks damaged from chemicals, deformations or cracks, or any visibly apparent bend or twist from the plane of the unbent hook, excessive opening or seat wear must be replaced. Also, hooks that are opened and allow the latch to not engage the tip must be replaced. Any hook that is twisted or has excessive throat opening indicates abuse or overloading of the unit. Inspect other load sustaining parts, hook block screws, load pins and hook block bodies for damage.

On latch type hooks, check to make sure that the latch is not damaged or bent and that it operates properly with sufficient spring pressure to keep the latch tightly against the tip of the hook and allow the latch to spring back to the tip when released. If the latch does not operate properly, it should be replaced. See Figure 9 to determine when the hook must be replaced.

HOOK REMOVE CRITERIA

Based on B30-10 Hooks shall be removed from service if damage such as the following is visible and shall only be returned to service when approved by a qualified person:

a. Missing or illegible rated load identification or illegible hook manufacturers’ identification or secondary manufacturer’s identification.

b. Excessive pitting or corrosion.

c. Cracks, nicks, or gouges.

d. Wear — any wear exceeding 10% of the original section dimension of the hook or its load pin.

e. Deformation — any visibly apparent bend or twist from the plane of the unbent hook.

f. Throat opening — any distortion causing an increase in the throat opening of 5% not to exceed ¼” (6mm).

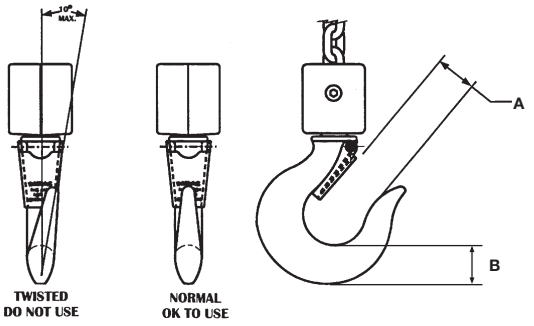


FIGURE 9

g. Inability to lock — any self-locking hook that does not lock.

h. Inoperative latch — any damaged or malfunctioning latch that does not close the hook's throat.

i. Thread wear, damage, or corrosion.

j. Evidence of excessive heat exposure or unauthorized welding.

k. Evidence of unauthorized alterations such as drilling, machining, grinding, or other modifications.

Models	Latch Type Hook		Latchlok® Hook	
	"A" Max	"B" Min	"A" Max	"B" Min
All Capacities	1.12" (28.5mm)	.71" (18.0mm)	1.48" (37.7mm)	.75" (18.8mm)

Table 3. Minimum Frequent Inspections			
TYPE OF SERVICE			**ITEM**
Normal	Heavy	Severe	
Monthly	Weekly to Monthly	Daily to Weekly	a) Brake for evidence of slippage.
			b) Control functions for proper operation.
			c) Hooks for damage, cracks, twists, excessive throat opening, latch engagement and latch operation - see page 12.
			d) Load chain for adequate lubrication, as well as for signs of wear, damaged links or foreign matter - see page 14-15.
			e) Load chain for proper reeving and twists.

Table 4. Minimum Periodic Inspections			
TYPE OF SERVICE			**ITEM**
Normal	Heavy	Severe	
Yearly	Every 6 Months	Every 3 Months	a) All items listed in Table 4 for frequent inspections.
			b) External evidence of loose screws, bolts, or nuts.
			c) External evidence of worn, corroded, cracked or distorted hook block, suspension screws, gears, bearings, dead end plate, or chain pin.
			d) External evidence of damage to hook retaining nut and pin. Also, check the upper suspension adapter, making sure it is fully seated in the hoist frame and that the screw is tight.
			e) External evidence of damage or excessive wear of the liftwheel and hook block sheave chain pockets. Widening and deepening of the pockets may cause the chain to lift-up in the pocket and result in binding between liftwheel and chain guides or between the sheave and hook block. Also, check the chain guide for wear or burring where the chain enters the hoist. Severely worn or damaged parts should be replaced.
			f) External evidence of excessive wear of brake parts, and brake adjustment - see page 16.
			g) Check the operation of the control station making sure the buttons operate freely and do not stick in either position.
			h) Inspect the electrical cords and cables and control station enclosure for damaged insulation.
			i) Inspect trolley trackwheels for external wear on tread and flange and for wear on internal bearing surfaces as evidenced by a looseness on the stud. Suspension components for damage, cracks, wear and operation. Also check suspension adapter screw for proper tightness - see page 16.
			j) Inspect the loose end ring, loose end screw and dead end block on double reeved units. Replace worn or distorted parts.
			k) Inspect the suspension lug or hook for excess free play or rotation. Replace worn parts as evidenced by excess free play or rotation.
			l) Inspect for signs of lubricant leaks at the gasket between the gear housing and back frame. Tighten screws holding back frame to gear housing. If leak persists, repack housing and gears with grease and install a new gasket.

INSPECTING THE LOAD CHAIN

The chain must be inspected at regular intervals, with a minimum of once annually. As the frequency of use increases, the time intervals between inspections must be reduced. During inspection, the chain must be examined along its entire length, including the hidden parts. If the lifting equipment is frequently operated over the same section of chain along with repeatable stopping positions, a particularly thorough inspection and lubrication is required in that area. Worn chain can be an indication of worn hoist components. For this reason, the hoist's chain guides, hook blocks and liftwheel (sprocket) should be examined for wear and replaced as necessary when replacing chain.

1. Check to see if chain is dirty or poorly lubricated.
2. Clean the chain with a non-caustic/non-acid type solvent and make a link by link inspection for wear or cracks in the links, twisted or deformed links. Chain with any one of these defects must be replaced.
3. Slack the portion of the chain that normally passes over the lift-wheel (sprocket) or idler sprocket on multi-reeved hoist. Examine the chain links for wear (see figure 10). If the wire diameter anywhere on the link measures less than 90% of the nominal wire diameter, the chain must be replaced.

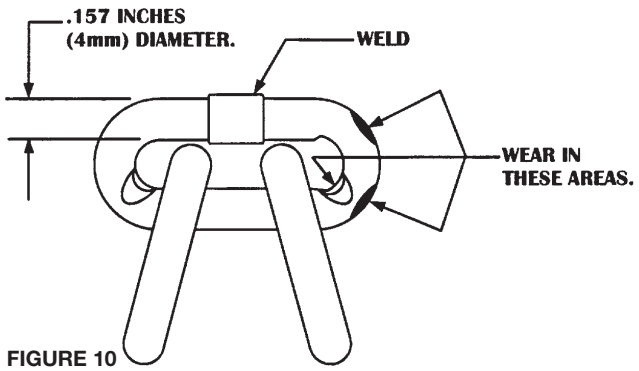


FIGURE 10

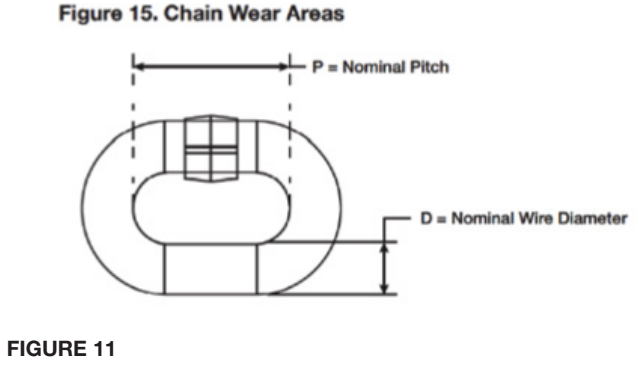


FIGURE 11

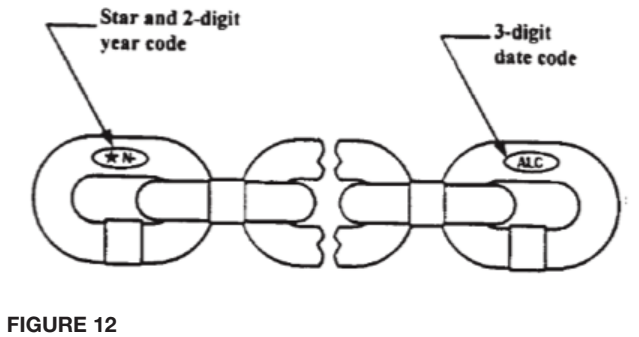


FIGURE 12

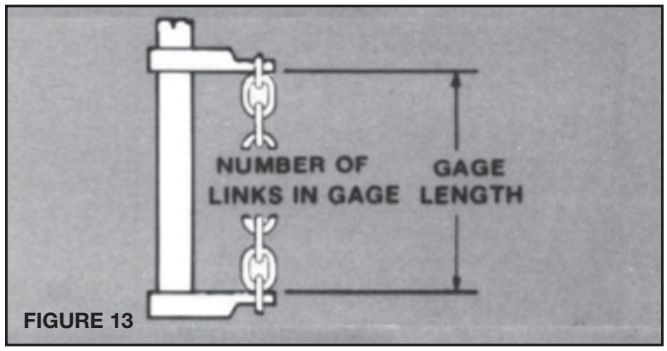


FIGURE 13

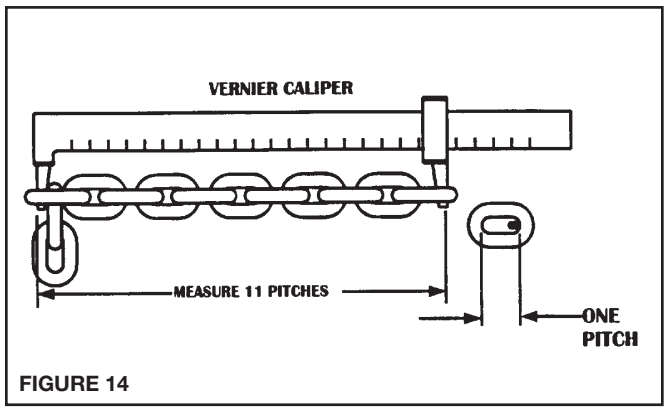


FIGURE 14

4. Based upon ASME B30.16, 2012 chain should also be checked for elongation. Select an unworn, unstretched length of the chain (at the slack end for example).Suspend the chain vertically under tension and using a knife blade caliper type gauge, measure the outside length of any convenient number of links, 11 is recommended. Measure the same number of links in the used sections and calculate the percentage in increased length. The chain should be replaced if the length of the used portion is more than 2% longer than the unused portion of the chain. Also, if the pitch of any individual link has elongated by more than 5%,the chain should be replaced.

Use only Star (*) grade load chain and original replacement parts. Use of other chain and parts may be dangerous and voids factory warranty.

IMPORTANT: Do not use replaced chain for other purposes such as lifting or pulling. Load chain may break suddenly without visual deformation. For this reason, cut replaced chain into short lengths to prevent use after disposal.

⚠ WARNING

Use of commercial or other manufacturer's chain and parts to repair CM hoists may cause load loss.

TO AVOID INJURY

Use only CM supplied replacement load chain and parts. Chain and parts may look alike, but CM chain and parts are made of specific material or processed to achieve specific properties.

MAINTENANCE

CHAIN LUBRICATION

A small amount of lubricant will greatly increase the life of load chain. Do not allow the chain to run dry. Keep it clean and lubricate at regular intervals with Lubriplate® Bar and Chain Oil 10-R (Fiske Bros. Refining Co.) or equal lubricant. Normally, weekly lubrication and cleaning is satisfactory, but under hot and dirty conditions, it may be necessary to clean the chain at least once a day and lubricate it several times between cleanings.

⚠ WARNING

Used motor oils contain known carcinogenic materials.

TO AVOID INJURY

Never use used motor oils as a chain lubricant. Only use Lubriplate® Bar and Chain Oil 10-R as a lubricant for the load chain.

When lubricating the chain, apply sufficient lubricant to obtain natural run-off and full coverage, especially in the interlink area.

HOIST LUBRICATION

Refer to Exploded View and Parts List pages 23-25.

⚠ WARNING

The lubricants used in and recommended for the ShopStar may contain hazardous materials that mandate specific handling and disposal procedures..

TO AVOID INJURY

Handle and dispose of lubricants only as directed in applicable material safety data sheets and in accordance with applicable local, state and federal regulations

NOTE: To assure extra long life and top performance, be sure to lubricate the various parts of the ShopStar using the lubricants specified below. If desired, these lubricants may be purchased from CM. Refer to page 25 for information on ordering the lubricants.

GEARS

- The Protector™ (620-111) should operate for the normal life of the hoist without service. The device has been lubricated and calibrated by CM and should not be adjusted.

CAUTION: The Protector is to be used with "Century Lubricants HB-11, #3" grease. Do not use any other grease or the Protector will not operate properly and parts could be damaged. The gears and Protector are packed at assembly with grease and should not need to be renewed unless the gears have been removed from the housing and degreased.

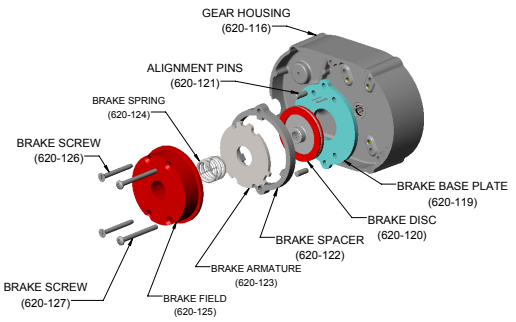


FIGURE 15

CAUTION: Never degrease the Protector or attempt to disassemble this device. Degreasing the Protector may damage parts and using a device that has been degreased may cause erratic, inconsistent operation. If the Protector has been degreased, it must be replaced by a CM calibrated device.

If the gears are removed from the housing, wipe the excess grease off the outside surfaces of the Protector™ with a soft cloth and degrease the remaining gears and housings. Upon reassmbly, add 2 oz. of the above grease to gears and housing. Also, coat the spline on the end of the first pinion and shaft with a Molydisulphide lubricant such as Moly-Duolube 67 (Hercules Packing Co.).

BEARINGS

Rotor bearings are pre-lubricated and require no lubrication. Needle bearings are packed at assembly with grease and should not need to be relubricated. However, if the housings, liftwheel or sheave wheel have been degreased, these bearings should be greased using “Century Lubricants HB-11, #3” grease.

SEALS

When reassembling the unit, wipe the inside surface of the seals with “Century Lubricants HB-11 #3” grease.

HOOK BLOCK

If the hook blocks are disassembled for inspection purposes, wipe the grease from the hook knob and the hook knob cavities in the hook blocks. At reassembly, coat the underside of the hook knob and the knob bearing surfaces of cavities in the hook blocks with Molykote BR-2-S (Dow Corning Corp.) grease or equivalent.

CHAIN GUIDE, LIFTWHEEL AND SHEAVE WHEEL

- When the hoist is disassembled for inspection and/or repair, the chain guide, stripper, sheave wheel (on double chain unit) and liftwheel must be lubricated with Lubriplate® Bar and Chain Oil 10-R (Fiske Bros. Refining Co.) prior to reassembly. The lubricant must be applied in sufficient quantity to obtain natural runoff and full coverage of these parts.

LOAD CHAIN

Refer to page 15 for lubrication of the load chain.

TROLLEY LUBRICATION

See appropriate trolley manual.

EXTERIOR FINISH

The exterior surface of the hoist has a durable, scratch resistant baked powder coating. Normally, the exterior surfaces can be cleaned by wiping with a cloth.

ELECTRIC BRAKE

The brake is non-adjustable with a nominal .004 inch (0.102 mm) air gap and the brake disc must be replaced when the air gap reaches .012 inch (0.305 mm). The brake spacer should be no more than .012 inch (0.305 mm) thicker than the combined thickness of the brake disc and armature plate. Refer to Figure 16, pg. 17.

To inspect the brake gap, disconnect the hoist from power and remove the PFC end cover. (128)

WARNING

Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.

TO AVOID INJURY

Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.

1. Refer to Figure 15 and disassemble the brake. Depress and hold the field assembly (125) while removing the four brake screws (126 & 127). The field assembly is under spring pressure and will spring-out if not held.

   Examine the base plate (119), brake disc (120) and armature (123) for excessive wear, scoring or warpage. Make sure the brake disc is not glazed, the coil firmly fixed in the field (125) and the brake spring (124) is not damaged. Worn, scored, warped, glazed or damaged parts should be replaced before preceding.

2. Refer to Figure 15 and assemble the brake. Depress and hold the field assembly (125), while installing the four brake screws through the brake parts and mount the brake on the gear housing (116). Tighten the four brake screws (126 & 127) to 25 in-lb (2.8 N-m).

PROTECTOR

The Protector™ should operate for the normal life of the hoist without service. The device has been lubricated and calibrated and it should not be adjusted. If the Protector™ is not operating properly (see testing on page 21), it must be replaced with a properly calibrated unit from the factory.

PREVENTATIVE MAINTENANCE

A preventative maintenance program should be established to prolong the useful life of the hoist and maintain its reliability and continued safe use. The program should include the periodic and frequent inspections with particular attention being paid to the lubrication of the various components using the recommended lubricants (see page 25).

ELECTRICAL DATA

The only devices that can be checked are the power cord, pendant and cable assembly, wiring harness, and brake coil. The brake coil has a resistance of approximately 1,120 ohms. The operation of the pendants can be seen in the wiring diagram shown on page following page. The continuity of the above components can be checked with an ohm meter. The circuit boards located in the end covers are not repairable and must be replaced if all other items have been checked for faults and the hoist is still inoperable.

Always disconnect unit from the power supply system before removing hoist covers or the back cover of control station.

⚠ WARNING

Failure to follow proper lockout/tagout procedures may present the danger of electrical shock.

TO AVOID INJURY:

Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.

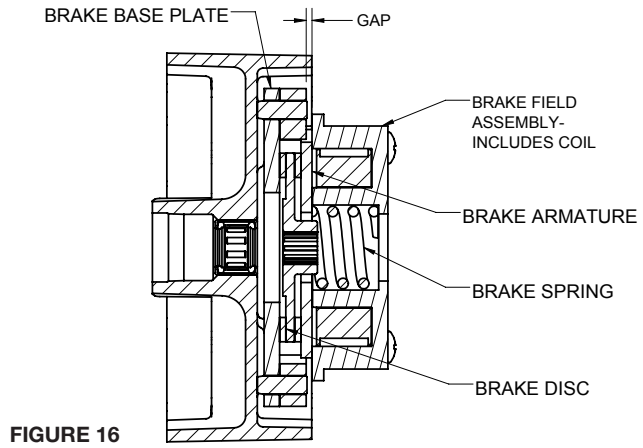


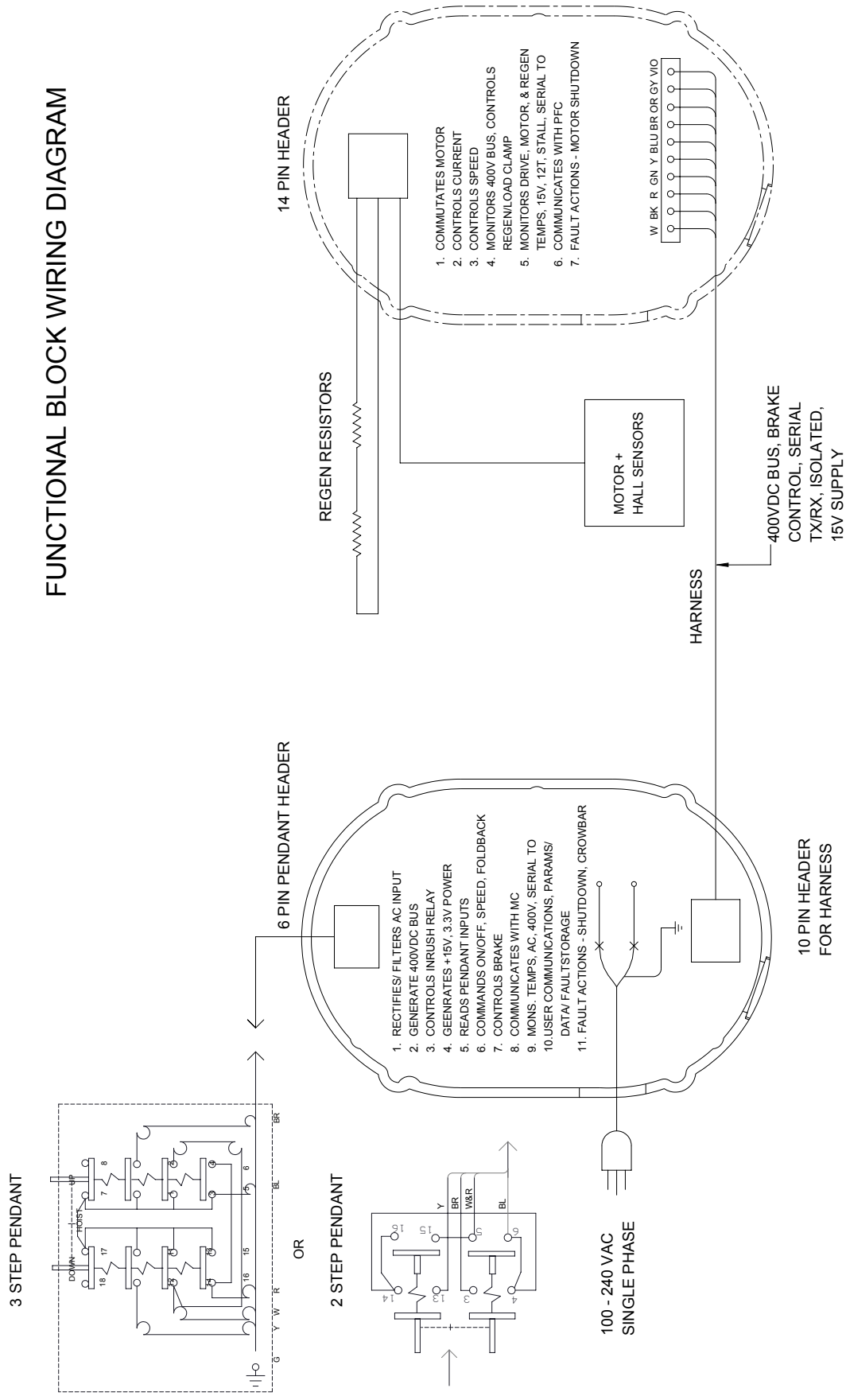
FIGURE 16

AMP DRAW FOR 300, 500, 600, 1000 LBS UNITS (136, 226, 272, 453 KG UNITS)

Hertz	Volts	Amps UP	Amps DOWN
60	100	7.6	0.08
60	110	6.85	0.09
60	120	6.14	0.09
60	208	3.57	0.06
60	230	3.22	0.06
50	100	7.55	0.11
50	110	6.75	0.10
50	220	3.33	0.07
50	240	3.02	0.06

AMP DRAW FOR 550, 1100 LBS UNITS (250, 500 KG UNITS)

Hertz	Volts	Amps UP	Amps DOWN
60	100	5.10	0.07
60	110	4.60	0.10
60	120	4.25	0.09
60	208	2.43	0.06
60	230	2.24	0.06
50	100	5.30	0.10
50	110	4.70	0.08
50	220	2.26	0.06
50	240	2.12	0.06


FUNCTIONAL BLOCK WIRING DIAGRAM
14 PIN HEADER
1. COMMUTATES MOTOR
2. CONTROLS CURRENT
3. CONTROLS SPEED
4. MONITORS 400V BUS, CONTROLS REGEN/LOAD CLAMP
5. MONITORS DRIVE, MOTOR, & REGEN TEMPS, 15V, 12T, STALL, SERIAL TO
6. COMMUNICATES WITH PFC
7. FAULT ACTIONS - MOTOR SHUTDOWN
W BK R GN Y BLU BR OR GY VIO
REGEN RESISTORS
MOTOR + HALL SENSORS
HARNESS
400VDC BUS, BRAKE CONTROL, SERIAL TX/RX, ISOLATED, 15V SUPPLY
6 PIN PENDANT HEADER
1. RECTIFIES/ FILTERS AC INPUT
2. GENERATE 400VDC BUS
3. CONTROLS INRUSH RELAY
4. GEENRATES +15V, 3.3V POWER
5. READS PENDANT INPUTS
6. COMMANDS ON/OFF, SPEED, FOLDBACK
7. CONTROLS BRAKE
8. COMMUNICATES WITH MC
9. MONS. TEMPS, AC, 400V, SERIAL TO
10. USER COMMUNICATIONS, PARAMS/ DATA/ FAULTSTORAGE
11. FAULT ACTIONS - SHUTDOWN, CROWBAR
10 PIN HEADER FOR HARNESS
100 - 240 VAC SINGLE PHASE
3 STEP PENDANT
UP
HOIST
DOWN
G Y W R
BR
BL
OR
2 STEP PENDANT
Y
BR
W&R
BL

TROUBLESHOOTING

Always disconnect unit from the power supply system before removing hoist covers or the back cover of control station

Problem	Probable Cause	Remedy
1. Hook does not respond to control station.	A. No voltage at hoist.	A. Check for blown fuse or circuit breaker, or open disconnect switch in main line or branch circuit. Replace fuse, reset circuit breaker, or close switch.
	B. Open control circuit due to loose connections or broken wire in circuit.	B. Use wiring diagram to check electrical continuity of wiring and control station contacts Use wiring diagram to check electrical continuity of wiring and control station contacts. Repair wiring or replace defective part.
	C. Wrong voltage or frequency.	C. Make sure the power supply to the hoist is the same as that shown on the I.D. tag on the bottom of the hoist.
	D. Low voltage.	D. Check power supply system to make sure it complies with the requirements listed under "POWER SUPPLY AND ELECTRICAL CONNECTIONS" starting on page 8.
	E. Brake not releasing due to open or shorted coil, or binding brake disc or armature.	E. Check coil continuity and connections. Make sure brake disc slides freely on the 1st pinion spline. Check for broken brake spring. Remove any brake dust from components of the brake assembly.
	F. Excessive load.	F. Reduce load to capacity limit as indicated on I.D. tag and capacity labels.
2. Hook lowers but will not raise.	A. Excessive load.	A. See item 1F.
	B. Hoisting circuit is OPEN due to loose connections or broken wires in circuit, or control station is not making contact.	B. See item 1B.
3. Hook raises but will not lower.	A. Hoisting circuit is OPEN due to loose connections or broken wires in circuit, circuit, or control station is not making contact.	A. See item 1B.
4. Hook does not stop promptly.	A. Brake slipping.	A. Check electric brake (page 16). Check to make sure brake disc is free to move on 1st pinion. Check for warped brake disc, base plate, armature. Clean brake dust from assembly.
	B. Excessive load.	B. See item 1F.
5. Hoist operates sluggishly.	A. Excessive load.	See item 1F.
	B. Brake dragging.	See item 1E.
	C. Hoist is too hot.	See thermal protection on page 11.
6. Motor overheats (Hoist will not run up or down)	A. Excessive load.	A. See item 1F.
	B. Brake dragging.	See item 1E.
	C. Extreme external heat.	Hoist ambient temperature must be reduced below 104°F (40°C). Provisions should be made to ventilate the space around the hoist and/or shield it from radiant heat.

* A more detailed explanation of electronics troubleshooting can be found with the CM interface cable kit. This procedure requires use of extracted fault codes from the hoist memory, plus multimeter readings.

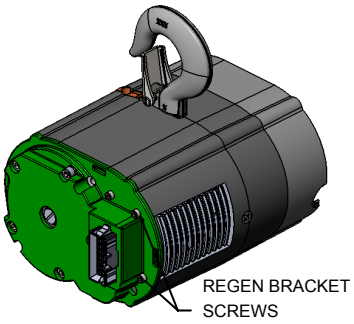


FIGURE 17

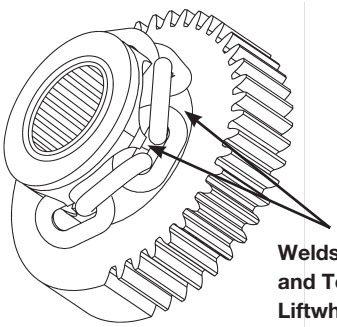


FIGURE 18

DISASSEMBLY-ASSEMBLY INSTRUCTIONS

When disassembling and assembling the ShopStar Hoist, refer to the exploded view and the parts list on pages 23-24. These show the proper relationship of the parts, the names of the parts and the required quantities of the parts. In addition, please observe the following:

1. Needle bearings are pressed into the gear housing (116), main frame (100), liftwheel (109) and lower sheave wheel (161). Unless they are to be replaced, do not attempt to remove these bearings.
2. A liftwheel seal (100a) is pressed into the main frame (100) and a seal (111) is pressed into the end of the liftwheel shaft (110). Be careful that these seals are not cut or damaged during disassembly and reassembly.
3. Refer to page 16 for disassembly, inspection and reassembly of the brake.
4. Do not attempt to disassemble the Protector™ - refer to page 16.
5. Refer to page 15 for lubrication instructions.
6. See next section for load chain removal and installation.
7. Tighten the various screws as follows:

Key No.	Part Name	Seating LB. IN.	Torque NM
105	Pin Retainer Plate Screw	25	2.8
129	Motor Cover Screw	25	2.8
118	Gear Housing Screw	25	2.8
140	Brake End Cover Screw	25	2.8
158	Dead End Plate Screw	125	14.1
143	Hook Retainer Screw	10	1.1
155	Hook Block Screw 600, 1,000, and 1,100 lbs., 272, 453, and 500 kg (Double Reeved) units 250, 300 and 500 lbs (113, 136 and 226 kg)	125	14.1
	(Single Reeved) units	50	5.6
164	Power Cord Ground Screw	20	2.2

8. To remove the stator, first remove the three motor cover screws (129) and pull the motor control end cover a few inches away from the motor. Ground screw (164) must be removed from the motor end bell. Also remove the 10 wiring harness leads from the motor control PCB by individually lifting the spring loaded retention levers on the terminal strip and pulling the wire from the block. Remove the regen bracket screw (141), and loosen the two screws holding the regen bracket to the end bell. (Figure 17)
9. Before assembling the stator, install the pin plate retainer (104) and mounting screws (105). The screws holding the regen bracket to the motor end bell should be partially loosened. Slide the motor into the main frame (100) being careful not to damage the heat transfer tape located on the edge of the regen bracket. If the motor does not drop all the way in, spin the motor shaft with a flat blade screw driver to align the splines with the first pinion (113). Snug the two regen bracket screws. Install the side regen bracket screw (141), then tighten the two end screws. Install the 10 harness wires into the terminal strip on the motor control PCB. Be sure the color of the wire matches the printing on the PCB. Install the ground wire screw (164). Install the cover and the three mounting screws (129).
10. Properly install the upper hook as shown in Figure 19 & 20, then slide the hook retainer (142) into the cavity on top of the hoist and secure it using hook retainer screw (143). Tighten screw to a seating torque of 10 in-lbs (1.1 N-m).
11. After reassembly, test the unit per instructions on page 21.

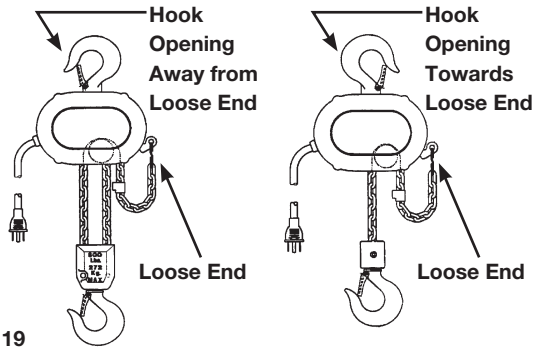


FIGURE 19

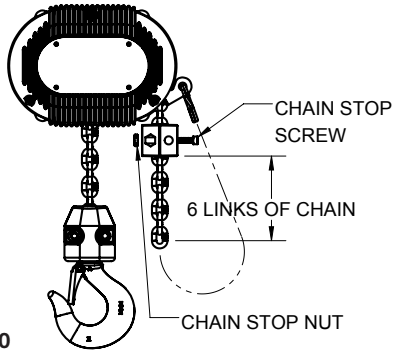


FIGURE 20

REMOVAL AND INSTALLATION OF LOAD CHAIN

⚠ WARNING

Improper installation (reeving) of the load chain can result in a dropped load.

TO AVOID INJURY

- Verify use of proper size and type of hoist load chain for specific hoist.
- Install load chain properly as indicated below.

USE ONLY CM EN (formerly DIN) OR STAR (*) GRADE LOAD CHAIN AND CM REPLACEMENT PARTS. USE OF OTHER CHAIN AND PARTS MAY BE DANGEROUS AND VOIDS FACTORY WARRANTY.

See Figure 12

CUTTING CHAIN

CM®Load chain is hardened and it is difficult to cut. The following methods are recommended when cutting a length of new chain from stock or cutting off worn chain:

1. Use a grinder and nick the link on both sides (Figure 21), then secure the link in a vise and break off with a hammer.
2. Use a 177.8 mm (7 inches) minimum diameter by 3.175 mm (1/8 inch) thick abrasive wheel (or type recommended by wheel supplier) that will clear adjacent links.
3. Use a bolt cutter (Figure 22) similar to the H.K. Porter No. 0590MTC with special cutter jaws for cutting hardened chain (25.4mm-1 inch) long cutting edge.

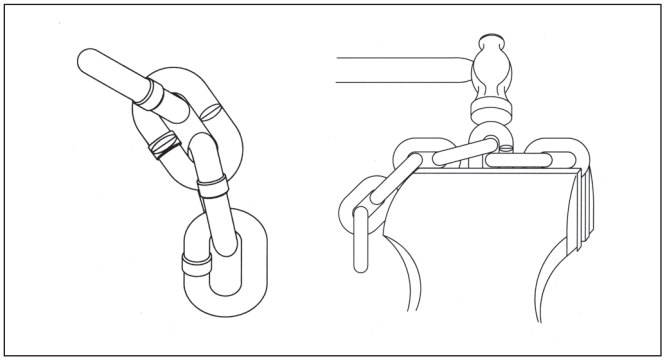


Figure 21. Cutting Chain by Nicking

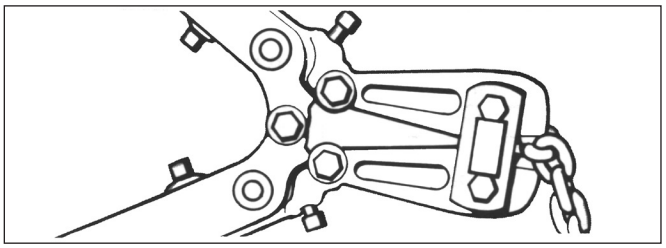


Figure 22. Cutting Chain with a Bolt Cutter

⚠ WARNING

Cutting Chain Can Produce Flying Particles.

TO AVOID INJURY:

- Wear Eye Protection.
- Provide a shield over chain to prevent flying particles.

⚠ WARNING

TESTING OF MECHANICAL OVERLOAD PROTECTION

Before using, all altered, repaired or used hoists that have not been operated for the previous 12 months shall be tested by the user for proper operation. First test the unit without a load and then with a light load of 22.7 kg. (50 lb.) times the number of load supporting parts of load chain to be sure that the hoist operates properly and that the brake holds the load when the control is released. Next test with a load of *125% of rated capacity. In addition, hoists in which load sustaining parts have been replaced should be tested with *125% of rated capacity by or under the direction of an appointed person and written report prepared for record purposes. After this test, check that the Load-limiter functions.

***If Load-limiter prevents lifting of a load of 125% of rated capacity, reduce load to rated capacity and continue test.**

NOTE: For additional information on inspection and testing, refer to Code B30.16 “Overhead Hoists” obtainable from ASME Order Department, 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300, U.S.A

REPAIR PARTS LIST

⚠ WARNING

Using “Commercial” or other manufacturer’s parts to repair the CM Shopstar Hoists may cause load loss.

TO AVOID INJURY

Use only CM supplied replacement parts. Parts may look similar but CM parts are made of specific materials or processed to achieve specific properties.

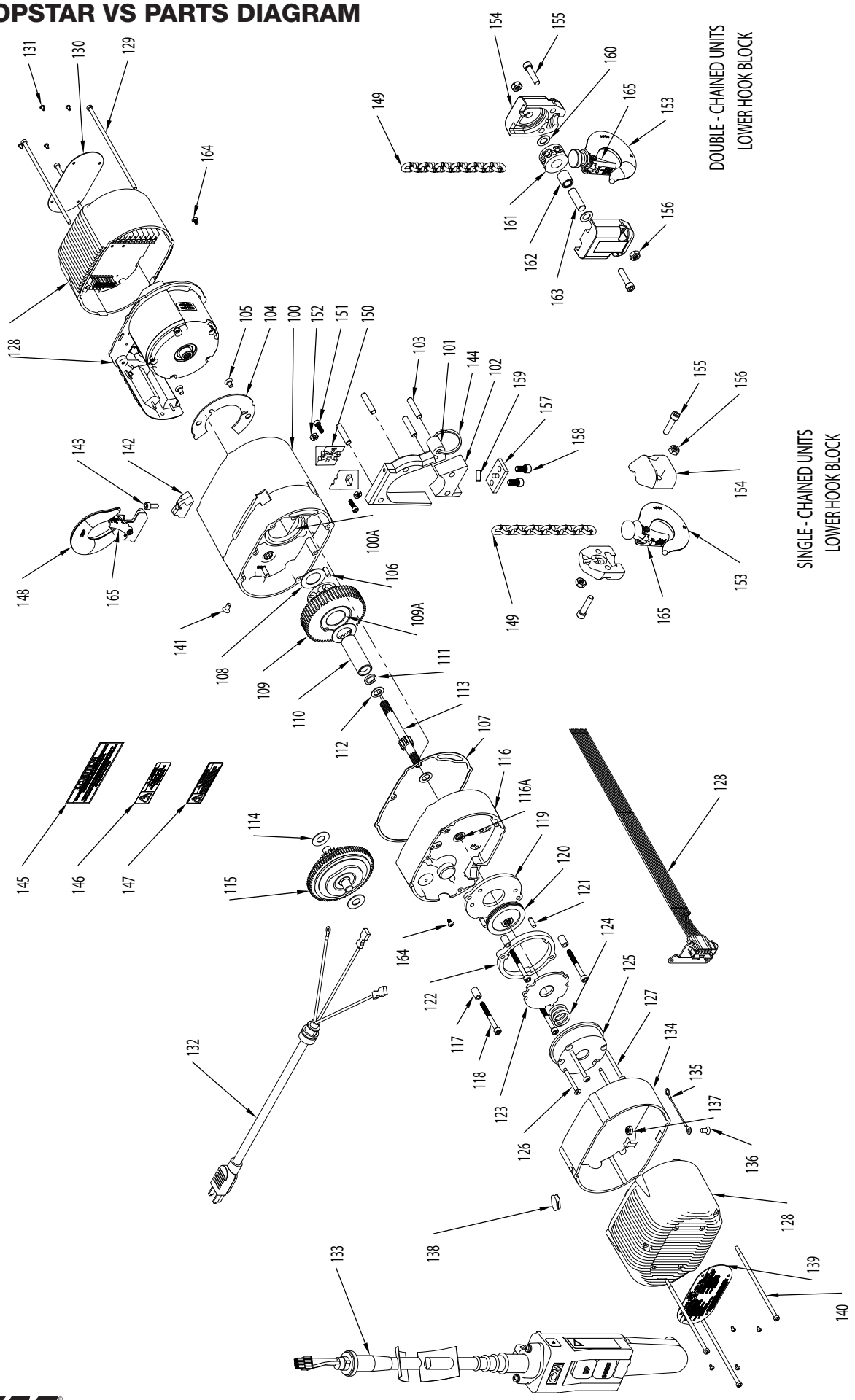
ORDERING INSTRUCTIONS

The following information must accompany all correspondence orders for replacement parts:

1. Hoist Model Number from identification plate.
2. Serial number of the hoist stamped below identification plate.
3. Voltage, phase, hertz from the identification plate.
4. Length of lift.
5. Part number of part from parts list.
6. Number of parts required.
7. Part name from parts list.

NOTE: When ordering replacement parts, it is recommended that consideration be given to the need for also ordering such items as gaskets, fasteners, insulators, etc. These items may be damaged or lost during disassembly, or just unfit for future use because of deterioration from age or service.

SHOPSTAR VS PARTS DIAGRAM



SHOPSTAR VS PARTS LIST

Item Number	Part Name	NO. Req'd	Part Number
100	Main Frame Assembly (Includes Seal 100A)	1	10001597C
100A	Main Frame Seal	1	20705
101	Chain Guide	1	20304
102	Stripper	1	20305
103	Guide/Stripper Pins	4	20729
104	Pin Retainer Plate	1	20700
105	Pin Retainer Plate Screw	2	20743
106	Frame Pin	2	920720
107	Gasket	1	20755
108	Liftwheel Thrust Washer	2	88638
109	Liftwheel and Gear Assembly (Includes bearing 109A)		
	63 fpm, 250 & 300 lbs. 31 fpm, 600 lbs.	1	20657
	39 fpm, 500lbs. 20 fpm, 1000lbs.	1	20647
	26 fpm, 550 lbs. 13 fpm, 1100 lbs.	1	20664
109A	Liftwheel Bearing	2	88637
110	Liftwheel Shaft	1	20313
111	Liftwheel Shaft Seal	1	20704
112	First Pinion Thrust Washer	2	88639
113	First Pinion	1	20422
114	Protector Thrust Washer	2	88640
115	Protector Assembly		
	63 fpm, 250 & 300 lbs. 31 fpm, 600 lbs.	1	20661
	39 fpm, 500 lbs. 20 fpm, 1000 lbs.	1	20662
	26 fpm, 550 lbs. 13 fpm, 1100 lbs.	1	20660
116	Gear Housing Assembly	1	20350
116A	First Pinion Bearing	1	88635
117	Gear Housing Screw Spacer	4	20964
118	Gear Housing Screw	4	20384
119	Brake Base Plate	1	20419
120	Brake Disc	1	20698
121	Brake Plate Pins	2	920720
122	Brake Spacer	1	20723
123	Armature	1	20420
124	Brake Spring	1	20887
125	Brake Field Assembly	1	10001689
126	Brake Field Screw	2	920740
127	Brake Field Screw	2	10001685
128*	Electrical Wiring Kit (4 parts)	1	10001687
129	Motor Cover Screw	3	10001683
130	Shopstar VS Series Label	1	10001500
131	Series/Capacity Label Screw	8	10001686
132	Power Cord	1	10001803
133	2 Step Pendant, 10' Lift	1	33359606
	2 Step Pendant, 15' Lift		33359611
	2 Step Pendant, 20' Lift		33359616
	3 Step Pendant, 10' Lift		33359506
133	3 Step Pendant, 15' Lift	1	33359511
	3 Step Pendant, 20' Lift		33359516
134	Frame Spacer	1	10001598C
135	Ground Jumper	1	10001918
136	Ground Jumper Screw	1	10001684
137	Ground Jumper Nut	1	10001917
138	Cap Plug	1	10001920
139	Capacity Label 250 lb	1	10001513
	Capacity Label 300 lb		10001503
	Capacity Label 500 lb		10001502
	Capacity Label 550 lb		10001504
	Capacity Label 600 lb		10001514
	Capacity Label 1000 lb		10001505
	Capacity Label 1100 lb		10001515
140	Brake Cover Screw	3	10001599
141	Regen Bracket Screw	1	10001684
142	Hook Retainer	1	20713
143	Hook Retainer Screw	1	10392004
144	Loose End Ring	1	20744
145	Caution Label	1	20758
146	Electrical Warning Label	1	24884
147	Warning Label	2	24842
148	Latch Hook Assembly Rigid	1	20650
	Latch Hook Assembly Swivel		10001130
	Latchlok Hook Assembly Swivel		10001297
	UT Trolley Lug		20655
149	Chain (Burnished & Oiled)	A/R	85988
	Chain (Zinc Plated)		85989
150	Chain Stop	2	20428
151	Chain Stop Screw	2	25848
152	Chain Stop Nut	2	982472
153	Latch Hook Assembly	1	23030
	Latchlok Hook Assembly		40618
154	Hook Block (Single Reeve)	2	20995
	Hook Block (Double Reeve)		20739
155	Hook Block Screw	2	82554
156	Hook Block Nut	2	82638
157	Dead End Plate	1	20714
158	Dead End Plate Screw	2	73715
159	Dead End Pin	1	920720
160	Sheave Thrust Washer	2	88639
161	Sheave Wheel Assembly	1	20652
162	Sheave Wheel Bearing	1	88641
163	Sheave Wheel Shaft	1	20318
164	Ground Screw	2	982877
165	Latch Kit	2	595522

***Item 128 consists of (1) PFC end cover/circuit assembly, (1) motor control end cover/circuit assembly, (1) motor/regen resistor assembly, and (1) wiring harness.**

LUBRICANTS

Part Number for Packaged Lubricants Used in the ShopStar Electric Chain Hoist (Refer to Page 15 for Lubrication Instructions)		
Lubricant Usage	**Type Lubricant**	**Part Numbers and Package Quantity of Lubricants**
Hoist Gears	Grease Century Lubricants HB-11, #3	28605 for 1/2 lb. Can 28616 for 1 lb. Can 28617 for 4 lb. Can
Spline on end First Pinion and Shaft	Oil-Graphite Mixture Hercules Packing Co. Moly Duolube 67	40628 for 1 Pint Can
Load Chain	Oil Fiske Bros. Lubriplate Bar and Chain Oil #10R	28608 for 1 Pint Can 28619 for 1 Gal. Can
Lower Hook Knob	Grease Dow Corning Molykote BR-2-S	28606 for 1/2 lb. Can 28618 for 1 lb. Can

When ordering lubricants, specify the type of lubricant, part number and packaged quantity required.

Touch-up paints for ShopStar Electric Chain Hoist:

Order# *(1) Case (12-12 oz. Aerosol Cans) of Orange Touch-up Paint Part Number 84190.

*Touch-up paints are only available in case quantities.

Note: When painting hoists, also order warning labels, etc. that may be coated during painting.

WARNING

To Reduce the Risk of Electric Shock or Injury, **Use Indoors Only.**

RECOMMENDED SPARE PARTS

To ensure continued service of the ShopStar, the following is a list of parts that are recommended to be kept on hand at all times to replace parts that have worn or failed. Parts applicable to your hoist should be stocked.

Key No.	Part Name	Qty. Per Hoist
125	Brake Field Assembly	1
120	Brake Disc	1
148	Upper Hook Assembly	1
153	Lower Hook Assembly	1
165	Upper Latch	1
165	Lower Latch	1
149	Load Chain	

WARNING

Alterations or modifications of equipment and use of any parts other than Shopstar VS manual hoist repair parts can lead to dangerous operation and injury.

TO AVOID INJURY:

Do not alter or modify equipment. Only use Shopstar VS replacement parts.

NOTES

NOTES

WARRANTY

LIMITATION OF WARRANTIES, REMEDIES AND DAMAGES

Note: When ordering parts, always furnish Rated Load, Voltage, Phase, Hertz and Serial Number of hoist on which the parts are to be used. For the location of the nearest Repair Station, see the list located on the inside front cover.

THE WARRANTY STATED BELOW IS GIVEN IN PLACE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, NO PROMISE OR AFFIRMATION OF FACT MADE BY ANY AGENT OR REPRESENTATIVE OF SELLER SHALL CONSTITUTE AWARRANTY BY SELLER OR GIVE RISE TO ANY LIABILITY OR OBLIGATION.

Seller warrants that on the date of delivery to carrier the goods are free from defects in workmanship and materials.

SELLER'S SOLE OBLIGATION IN THE EVENT OF BREACH OF WARRANTY OR CONTRACT OR FOR NEGLIGENCE OR OTHERWISE WITH RESPECT TO GOODS SOLD SHALL BE EXCLUSIVELY LIMITED TO REPAIR OR REPLACEMENT, F.O.B. SELLER'S POINT OF SHIPMENT, OF ANY PARTS WHICH SELLER DETERMINES TO HAVE BEEN DEFECTIVE or if Seller determines that such repair or replacement is not feasible, to a refund of the purchase price upon return of the goods to Seller.

Any action against Seller for breach of warranty, negligence or otherwise, must be commenced within one year after such cause of action occurs.

NO CLAIM AGAINST SELLER FOR ANY DEFECT IN THE GOODS SHALL BE VALID OR ENFORCEABLE UNLESS BUYER'S WRITTEN NOTICE THEREOF IS RECEIVED BY SELLER WITHIN ONE YEAR FROM THE DATE OF SHIPMENT. Seller shall not be liable for any damage, injury or loss arising out of the use of the goods if, prior to such damage, injury or loss, such goods are (1) damaged or misused following Seller's delivery to carrier; (2) not maintained, inspected, or used in compliance with applicable law and Seller's written instructions and recommendations; or (3) installed, repaired, altered or modified without compliance with such law, instructions or recommendations.

UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES AS THOSE TERMS ARE DEFINED IN SECTION 2-715 OF THE UNIFORM COMMERCIAL CODE.

INDEMNIFICATION AND SAFE OPERATION

Buyer shall comply with and require its employees to comply with directions set forth in instructions and manuals furnished by Seller and shall use and require its employees to follow such instructions and manuals and to use reasonable care in the use and maintenance of the goods. Buyer shall not remove or permit anyone to remove any warning or instruction signs on the goods. In the event of personal injury or damage to property or business arising from the use of the goods, Buyer shall within 48 hours thereafter give Seller written notice of such injury or damage. Buyer shall cooperate with Seller in investigating any such injury or damage and in the defense of any claims arising therefrom.

If Buyer fails to comply with this section or if any injury or damage is caused, in whole or in part, by Buyer's failure to comply with applicable federal or state safety requirements, Buyer shall indemnify and hold Seller harmless against any claims, loss or expense for injury or damage arising from the use of the goods.

⚠ WARNING

Alterations or modifications of equipment and use of non-factory repair parts can lead to dangerous operation and injury.

TO AVOID INJURY:
- **Do not alter or modify equipment.**
- **Do use only factory replacement parts.**

COLUMBUS McKINNON CORPORATION

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