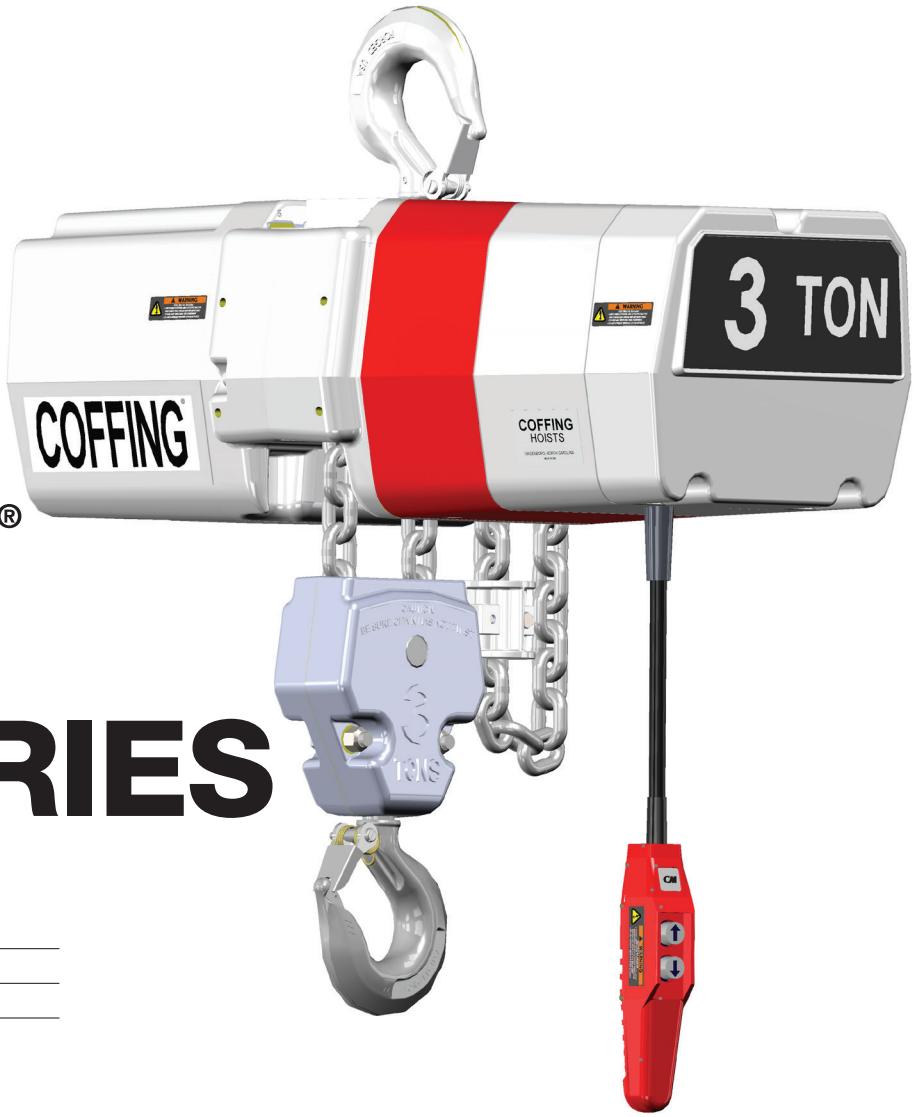
OPERATING, MAINTENANCE & PARTS MANUAL

ELECTRIC CHAIN



COFFING® HOISTS

EC3-SERIES

Before installing hoist, fill in the information below.

Model Number _____

Serial No. _____

Purchase Date _____

Please provide Serial Number when ordering parts.

FOR MODELS

EC-2032
EC-4016
EC-4024
EC-6010
EC-6016
EC-6016
EC-8008
EC-8012
EC-10005
EC-10008

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

COFFING® HOISTS

EC3-680-4 February 2026
Order # 5041558-0 & 5041679-0

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

As a COFFING 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.

LAS PIEZAS Y REPARACIONES DE LOS POLIPASTOS DE COFFING ESTÁN ASEGURADAS EN ESTADOS UNIDOS Y CANADÁ

Como usuario de un polipasto y carro de COFFING le aseguramos cualquier reparación o la disponibilidad de cualquier pieza de repuesto a través de una red de almacenes de piezas de repuesto y centros de servicio situados estratégicamente en Estados Unidos y Canadá. Estas instalaciones se han seleccionado en base a su capacidad demostrada en la reparación de equipos y suminstro de piezas de repuesto de forma rápida y eficaz. Para obtener la dirección del almacén de piezas de repuesto o del centro de servicio más cercano, llame al teléfono (800) 888-0985. Fax: (716) 689-5644 (sólo en Estados Unidos y Canadá).

LE SERVICE DE RÉPARATION ET DE PIÈCES POUR PALANS COFFING EST DISPONIBLE AUX ÉTATS-UNIS ET AU CANADA

Soyez assurés qu'en temps d'utilisateur de palan et treuil COFFING, d'un service de réparation et de pièces fiable par l'entremise d'un réseau de Centres de service et de Dépôts de pièces maîtresses qui sont stratégiquement situés aux États-Unis et au Canada. Ces établissements ont été sélectionnés sur une base de leur habileté démontrée à s'occuper promptement et efficacement des besoins de réparation de pièces. Appelez le (800) 888-0985, Fax: (716) 689-5644 pour obtenir rapidement le nom du dépôt de pièces maîtresses ou du centre de service situé le plus près.

⚠ 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 without the manufacturer's approval or without certification that it is in conformity with ANSI/AMSE B30 volumes.

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 load unless load chain is properly seated in the chain 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 CM Hoists recommended 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 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 COFFING equipment is intended. DO NOT use for guided loads.

*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 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

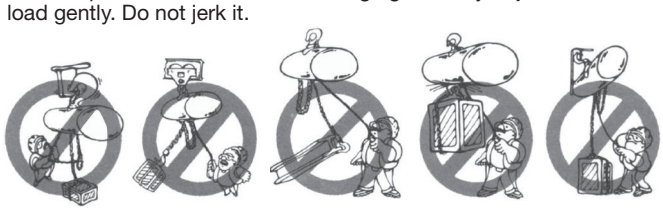
Be sure hoist is solidly held in the uppermost part of the support hook arc.

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.

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SECTION I INTRODUCTION

1-1. APPLICATION INFORMATION

This manual provides information for the safe operation and maintenance of Coffing® EC-3 Series Hoists. All persons operating or maintaining these hoists should be familiar with the information contained herein. Adherence to the precautions, procedures, and maintenance practices described should ensure long reliable operation.

⚠ CAUTION

To safeguard against the possibility of personal injury or property damage, follow the recommendations and instructions of this manual. This manual contains important information for the correct installation, operation, and maintenance of this equipment. All persons involved in the installation, operation, and maintenance of this equipment should be thoroughly familiar with the contents of this manual. Keep this manual for reference and further use.

⚠ WARNING

To avoid personal injury:

Do not use the equipment shown in this manual to lift, support, or otherwise transport people, or to suspend unattended loads over people.

1-2. SAFETY STANDARDS

All persons concerned with the installation, operation, inspection and maintenance of these hoists are urged to read American Society of Mechanical Engineers (ASME) B30.16. That Standard contains valuable guidelines concerning practices designed to minimize hazards associated with the use of overhead hoisting equipment.

ASME B30.16 also contains detailed procedures for establishing hoist inspection and maintenance programs and can be of significant assistance in maintaining compliance with OSHA regulations.

1-3. HOIST CONSTRUCTION AND FEATURES

EC-3 Series Hoists incorporate the following features:

a. Heat-treated alloy steel gearing.

b. Overload limiting clutch.

c. Completely independent mechanical and electrical brakes.

d. Adjustable limit switches.

e. Tough, nylon, weatherproof pushbutton stations.

f. Steel strain cable inside pushbutton cord.

g. Transformer isolated, low-voltage pushbutton controls.

h. Quick voltage conversion on dual-voltage unit.

1-4. BASIC HOIST DATA

The basic hoist models covered by this manual are listed in Table 1-1.

TABLE 1-1. BASIC HOIST DATA

Model No.	Rated Load (lb.)	Lift Speed at Rated Load (ft. per min.)	Motor HP
EC-2032	2000	32	2
EC-4016	4000	16	2
EC-4024	4000	24	3
EC-6010	6000	10	2
EC-6016	6000	16	3
EC-8008	8000	8	2
EC-8012	8000	12	3
EC-10005	10000	5	2
EC-10008	10000	8	3

1-5. APPLICATION INFORMATION

This hoist is intended for general industrial use in the lifting and transporting of freely suspended material loads within its rated load. Prior to installation and operation, the user should review his application for abnormal environmental or handling conditions and to observe the applicable recommendations as follows:

a. Adverse Environmental Conditions. Do not use the hoist in areas containing flammable vapors, liquids, gases or any combustible dusts or fibers. Refer to Article 500 of The National Electric Code. Do not use this hoist in highly corrosive, abrasive or wet environments. Do not use this hoist in applications involving extended exposure to ambient temperatures below -40°F or above 130°F.

b. Lifting of Hazardous Loads. This hoist is not recommended for use in lifting or transporting hazardous loads or materials which could cause Wide-spread damage if dropped. The lifting of loads which could explode or create chemical or radioactive contamination if dropped requires fail-safe redundant supporting devices which are not incorporated into this hoist.

c. Lifting of Guided Loads. This hoist is not recommended for use in the lifting of guided loads, including dumbwaiters and non-riding elevators. Such applications require additional protective devices which are not incorporated into this hoist. Refer to your state and local regulations governing the requirements for elevator and dumbwaiter installations.

1-6. WARRANTY

Every hoist is thoroughly inspected and tested prior to shipment from the factory. Should any problems develop, return the complete hoist prepaid to your nearest Coffing authorized Warranty Repair Station. If inspection reveals that the problem is caused by defective workmanship or material, repairs will be made without charge and the hoist will be returned, transportation prepaid.

This warranty does not apply where: (1) deterioration is caused by normal wear, abuse, improper or inadequate power supply, eccentric or side loading, overloading, chemical or abrasive actions, improper maintenance or excessive heat; (2) problems resulted from repairs. modifications or alterations made by persons other than factory or Coffing Authorized warranty Repair Station personnel: (3) the hoist has been abused or damaged as a result of an accident: (4) repair parts or accessories other than those supplied by Coffing Hoists are used on the hoist. Equipment and accessories not of the seller's manufacture are warranted only to the extent that they are warranted by the manufacturer. EXCEPT AS STATED HEREIN, COFFING HOISTS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE.

SECTION II INSTALLATION

2-1. SAFETY NOTES

a. Inspect the hoist for any evidence of shipping damage or loose parts.

b. The supporting structure and load attaching devices should have a load rating at least equal to that of the hoist.

c. This hoist is not suitable for use in uncovered outdoor locations or areas containing explosive dust, vapors or gases.

d. The installation area must provide safe operating conditions for the operator, including sufficient room for the operator and other personnel to stand clear of the load at all times.

e. In areas where slack chain hanging from the hoist may create a hazard, use a chain container (see Figure 2-2).

2-2. HANGING THE HOIST

Hook mounted hoists can be used with a variety of trolleys or stationary hangers. It is recommended that a hand-geared or motorized trolley be used when the pulling effort required to move the hoist exceeds 100 pounds or when the application requires frequent movement of the hoist.

a. Make sure that the hook latch closes after hanging the hoist.

b. See Figure 2-1 for instructions on adjusting lug-mounted plain trolleys.

c. Refer to Coffing Motorized Trolley Operating and Maintenance Instructions manual for motorized trolley installation instructions.

2-3. POWER SUPPLY CONNECTION

a. Disconnect power before making connections.

b. Voltage supplied to the hoist should be within plus or minus 10% of the voltage specified for the hoist. Hoists are tagged at the factory with a tag indicating the voltage for which the hoist is wired. Standard single-speed, three-phase hoists are convertible from 460 volts to 230 volts. See the Wiring section (paragraph 7-1) for voltage conversion instructions.

c. National Electrical Code (ASME C2) and local electrical codes should be consulted and proper disconnects, branch circuit protectors, and wiring provided.

d. Power cables furnished with the hoist have a green colored ground wire which must be securely connected to the electrical system ground.

e. When installing a three-phase hoist, make only temporary connections at the power line. Push the “’UP” button and observe the direction of the hook. If it raises, the phasing is correct and permanent connections may be made at the power line. If the load block lowers when the “UP” button is pushed, release the button immediately since the limit switches will not operate to protect the hoist from overtravel. Reverse the red and black wires at the power line connection to correct the hook direction.

⚠ CAUTION

Do not change connections in the hoist or the pushbutton assembly.

2-4. VENT PLUG

This hoist is shipped with a factory installed pressure relief fitting. This fitting needs no adjustments or maintenance before operating the hoist.

2-5. CHAIN LUBRICATION

The hoist chain should be liberally oiled before placing the hoist into operation. For lubrication instructions, see paragraph 5-6.a.

2-6. TESTING

a. Before placing the hoist into operation, check for proper limit switch operation. Push the ‘”UP” button and verify that the hook block stops at least 2 inches from the bottom of the hoist. Run the hoist down to its lower limit. At least 12 links of chain should remain on the slack end. If either switch is not correct, adjust according to the procedure outlined in paragraph 5-2.

NOTE: The upper and lower limit switches are factory set to provide the maximum allowable hook travel. This travel adjustment should not be increased. However, the switches may be adjusted to stop the hook sooner at either end of its travel.

b. Attach a light load to the hook and check the hoist for proper operation. The load should stop without noticeable drift when the pushbutton is released. Increase the load to near rated load. The hoist should still lift the load without hesitation and stop with no more than one-inch drift.

2-7. TROLLEY INSTALLATION

Coffing® CT Series trolleys can be mounted on American Standard I Beams from 6 to 18 inches high (8-inch minimum on 4- or 5-ton models). Adjustment for different beam dimensions is accomplished with the proper placement of spacer washers as described below in paragraph 2-7.a.

a. “I” Beam Adjustment. Adjustment for “I” beam sizes and tolerances is accomplished by locating the spacer washers as shown in Figure 2-1. Normal placement of washers is given in Table 2-2. Refer to Table 2-1 for identification of part names and numbers.

BEAM MANUFACTURING TOLERANCES ALLOW WIDE VARIATIONS FROM HANDBOOK FLANGE WIDTHS, AND SLIGHT CHANGES TO RECOMMENDED WASHER DISTRIBUTION MAY BE NECESSARY TO SUIT SPECIFIC INSTALLATIONS.

The particular beam on which your hoist is to be installed should be measured and trolley spacer washers adjusted as required to achieve a clearance of 3/32” to 1/8”.

b. Periodic Inspection. The trolley should be inspected periodically for evidence of excess wear or overload. Parts should be replaced as required.

c. Lubrication. Trolley wheels are equipped with sealed, lifetime lubricated, precision ball bearings which should not require lubrication for the normal service of the trolley.

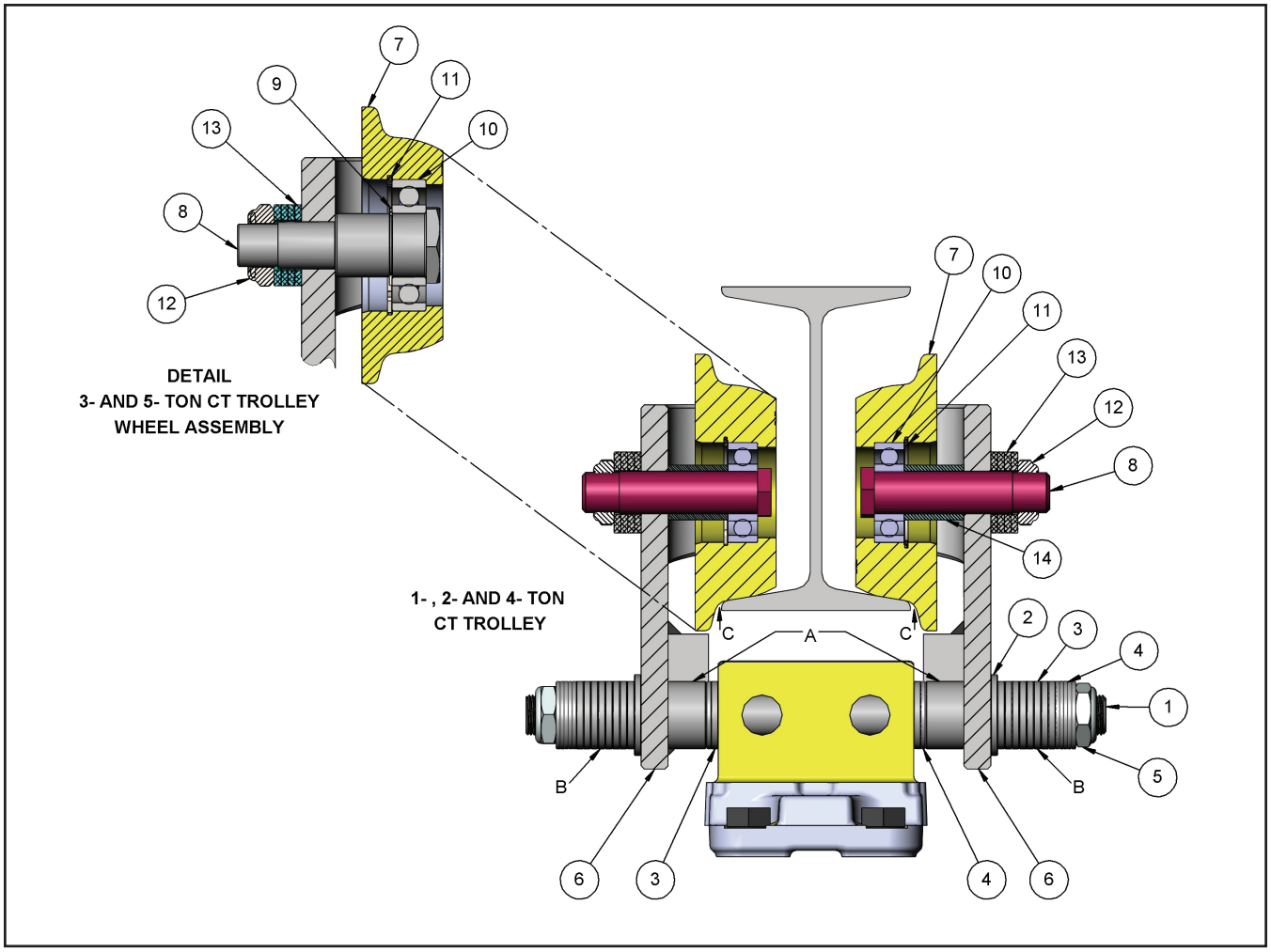


FIGURE 2-1. COFFING CT TROLLEY

TABLE 2-1. PARTS LIST FOR CT TROLLEY

Model No.	Part Name	Part Numbers	
		1, 2 & 4 Ton	3 & 5 Ton
1	Load Pin	103K30-2	103K30-2
2	Washer (1/8" Thick)	H-4211	H-4211
3	Washer (.135" Thick)	H-4209	H-4209
4	Washer (.075" Thick)	H-4210	H-4210
5	Nut	H-3945	H-3945
6	Side Plate	5K101	5K101
7	Wheel	45J1P	45J1P
8	Axle	102K11	102K11
9	Retaining Ring	H5549	H5549
10	Bearing	JF504-2	JF504-2
11	Retaining Ring	5K2658-6W	5K2658-6W
12	Nut (Axle)	H-3945	H-3946
13	Washer	H-4211	H-4212

TABLE 2-2. TROLLEY I-BEAM ADJUSTMENT DATA

		"I" Beam Size					
		6"	8"	10"	12'	15"	18"
1, 2 and 3 Ton							
Washers Between Hoist & Trolley	Thick	0	3	1	4	7	6
	Thin	1	0	8	5	3	8
Washers Outside Trolley	Thick	7	4	6	3	0	1
	Thin	8	9	1	4	6	1
4 and 5 Ton							
Washers Between Hoist & Trolley	Thick		1	1	3	6	6
	Thin		0	4	3	1	4
Washers Outside Trolley	Thick		6	6	4	1	1
	Thin		5	1	2	4	1

2-8. CHAIN CONTAINER INSTALLATION

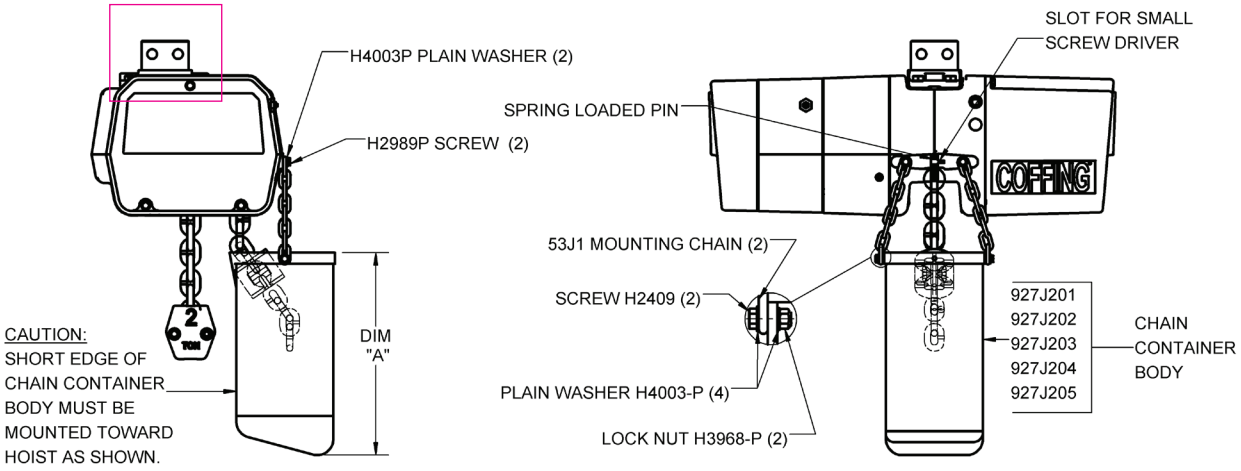
a. Operate hoist in "down" direction until it is stopped by the limit switch. Disconnect the slack end of the chain from the hoist by using a small screwdriver to slide the spring-loaded pin to the left. At least 12 inches of chain should hang from the hoist. If less than 12 inches of slack chain is present, readjust lower limit switch using the procedures detailed in paragraph 5-2.b.

b. Place the chain container in position with the spout toward the hoist. Place a hex head screw through each mounting chain with a flat washer between the chain and the head of the screw. Fasten each of the two mounting chains to the tapped holes on the side of the hoist, being sure the chains are not twisted.

c. Be sure the end of the chain is started into the container. Run hoist up until the hook block is even with the bottom of the chain container.

d. Reset upper limit switch at this position (see paragraph 5-2.a) to prevent the possibility of raising a load into the chain container.

For Models 927JG201-205

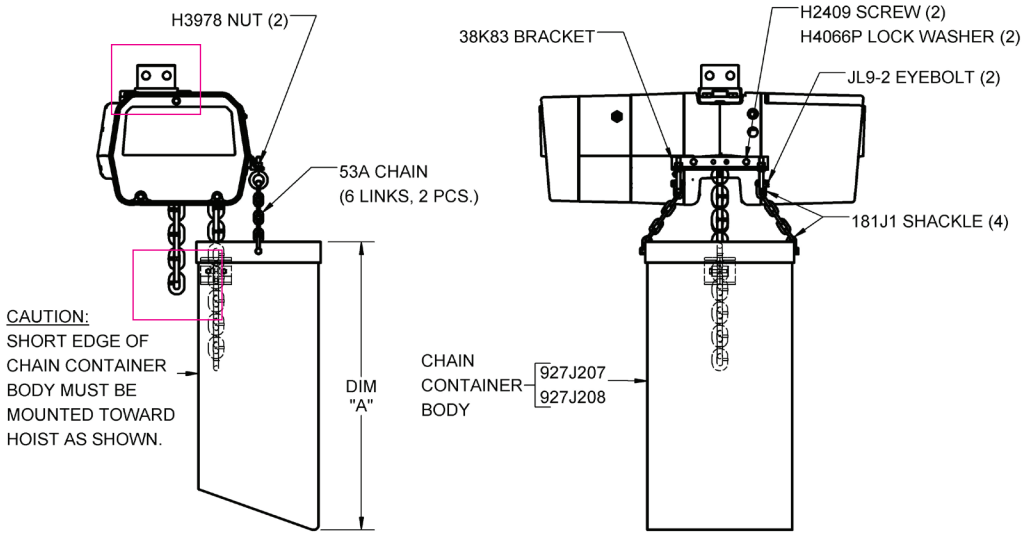


⚠ WARNING

Do not attempt to store more chain in chain container than that specified in table or serious damage to hoist may result and hazardous conditions may be created

Ass'y No.	DIM. "A"	Max Hoist Lift (Feet)		
		Single Chain	Double Chain	Triple Chain
927JG201	16"	15'	–	–
927JG202	20"	30'	15'	10'
927JG203	24"	50'	25'	16-1/2'
927JG204	35"	75'	37-1/2'	25'
927JG205	48-3/4"	100'	50'	33'

For Models 927JG207 & 927JG208



Ass'y No.	DIM. "A"	Max Hoist Lift (Feet)		
		Single Chain	Double Chain	Triple Chain
927JG207	28"	150'	75'	50'
927JG208	35"	200'	100'	66'

FIGURE 2-2. CHAIN CONTAINER INSTALLATION

SECTION III OPERATION

3-1. GENERAL

This section presents information concerning the proper operation of the Coffing® Electric Chain Hoist. It is not intended to serve as a handbook on rigging. Rigging, the process of moving heavy loads using mechanical devices, requires special knowledge and equipment. For information on the safe use of slings and similar rigging gear, users are urged to consult a textbook on rigging.

3-2. SAFETY NOTES

a. Inspect the hoist for any sign of loose, broken, or malfunctioning parts (see Section IV). Any malfunctioning hoist should be tagged as “out of order” and removed from service until the defect is corrected.

b. Before starting the hoist, the operator should be certain that all personnel are clear.

c. Do not lift more than the rated load of the hoist

d. Do not lift people or loads over people.

e. Avoid jogging controls or quick reversals of suspended loads.

f. Do not leave a suspended load unattended.

g. The operator should have a clear view of the load anytime it is moving and should be sure that the load does not contact any obstructions.

h. Read ASME I B30.16 Safety Standard for Overhead Hoists.

3-3. HANDLING THE LOAD

a. Align hoist directly over load. Avoid side pull.

b. The hoist chain should not be wrapped around the load. Use proper slings.

c. Be sure there are no twists in the load chain as it enters the hoist.

⚠ CAUTION

This condition should be constantly checked on double or triple chain hoists because it is possible for the load block to be “capsized” or flipped over one or more times, putting twist in the chain. The presence of twist may not be obvious when the hook block is in the lowered position but can cause serious chain binding when the hook block is in its fully raised position.

d. Bring the hook into engagement with the load and make sure it is well seated before proceeding to lift the load. On multiple reeved hoists, be sure that the load is equalized on all supporting chains.

e. Lift the load just clear of its supports and stop the hoist to check for proper brake operation.

f. Avoid letting the hook or load swing excessively while moving a trolley suspended hoist.

3-4. OVERLOAD LIMITING PROTECTION

This hoist is equipped with a factory-calibrated overload limiting clutch, which will permit the lifting of loads within its load rating, but will prevent the lifting of damaging overloads while the hoist is being operated. If the load being lifted exceeds the lifting capability of the overload clutch, the hoist motor will continue to run, causing overheating of both the clutch and the motor. This condition should be avoided by immediately releasing the “UP”’ button and reducing the load to within the hoist load rating.

⚠ CAUTION

The overload limiting clutch is an emergency protective device and should not be used to measure the maximum load to be lifted, or to sense the overload imposed by a constrained load. Manufacturing tolerances require that the clutch be set somewhat above the load rating of the hoist. The fact that the hoist will pick up loads in excess of its load rating does not in any way sanction the use of the hoist in an overloaded condition.

SECTION IV INSPECTION

4-1. GENERAL

A scheduled inspection routine should be established for this hoist based upon severity of use and environmental conditions. Some inspections should be made frequently (daily to monthly) and others periodically (monthly to yearly). It is suggested that an inspection and Maintenance Check List and an Inspector’s Report similar to those shown in Figures 4-4 and 4-5 be used and filed for reference. All inspections should be made by a designated inspector. Special inspections should be made after any significant repairs or any situation causing suspicion that the hoist may have been damaged. Any hoist which has been removed from service for an extended time should receive an inspection as described under Periodic Inspections. ASME B30.16, Safety Standard for Overhead Hoists, provides guidelines for hoist operation and inspection.

⚠ CAUTION

Any unsafe condition disclosed by any inspection must be corrected before operation of the hoist is resumed.

4-2. FREQUENT INSPECTION

a. Check pushbutton station, brake, and limit switches for proper operation.

b. Check hooks for deformation, chemical damage, or cracks. Bent hooks or hooks damaged from chemicals, deformation, cracks, or having excessive throat opening (see Figure 4-3) should be replaced. Visible deformation of any hook may be evidence of hoist abuse and overloading and indicates that a thorough inspection of the complete hoist should be made.

c. Check that bottom hook swivels freely.

d. Check for missing, bent or otherwise damaged hook latches.

e. Check pushbutton and power cord for cuts or other damage.

f. Check load chain for adequate lubrication, as well as for signs of excessive wear or stretch, cracked, damaged or twisted links, corrosion or foreign substance.

4-3. PERIODIC INSPECTION

The exact period for the following inspections will depend on the anticipated severity of hoist use. Determination of this period should be based on the user's experience. It is recommended that the user begin with a monthly inspection and extend the periods to quarterly, semi-annually, or annually, based on his monthly inspection experience.

a. Clean hoist of any dirt or foreign material. Inspect bottom block for accumulation of debris.

b. Perform all frequent inspections listed above.

c. Check for loose bolts, screws and nuts.

d. Check housings, load block, and other parts for wear, corrosion, cracks or distortion. Check for abnormal openings between housing sections.

e. Check motor brake for worn discs, oil contamination or excessive clearance (see paragraph 5-3).

f. Check mechanical load brake function (see Figure 4-1).

g. Inspect the entire length of chain for gouges, nicks, weld spatter, corrosion, distortion and wear. See CHAIN INSPECTION, paragraph 4-5.

h. Inspect hooks and suspension pans for cracks, distortion or extreme wear.

i. Inspect hooks for cracks using magnetic particle, dye penetrant or other crack detecting methods.

j. Check limit switch set points and reset if necessary (see paragraph 5-2).

k. Inspect all wiring for defective insulation and check to be sure all electrical connections are tight. Check motor reversing contactor or relay for burned contacts.

l. Inspect for oil leaks. Check oil level.

m. Inspect for missing or illegible capacity or warning labels.

n. Inspect the supporting structure for continued ability to support the hoist rated load.

4-4. LOAD BRAKE FUNCTION CHECK

To check the functioning of the mechanical load brake, proceed as follows:

a. Attach a light load to the hoist and lift it several inches.

b. DISCONNECT HOIST FROM POWER SUPPLY and remove short end brake cover (see Figure 8-1, Index No. 1).

c. Referring to Figure 4-1 and Figure 8-8, place screwdrivers No. 1 and No. 2 behind the plate and armature assembly and prepare to pry against the transmission cover.

NOTE: Do not allow either screwdriver to contact brake disc (see Figure 8-8, Index No. 7).

d. Carefully pry open motor brake (close solenoid gap) and observe action of load. If the load descends, the mechanical load brake is malfunctioning and must be repaired.

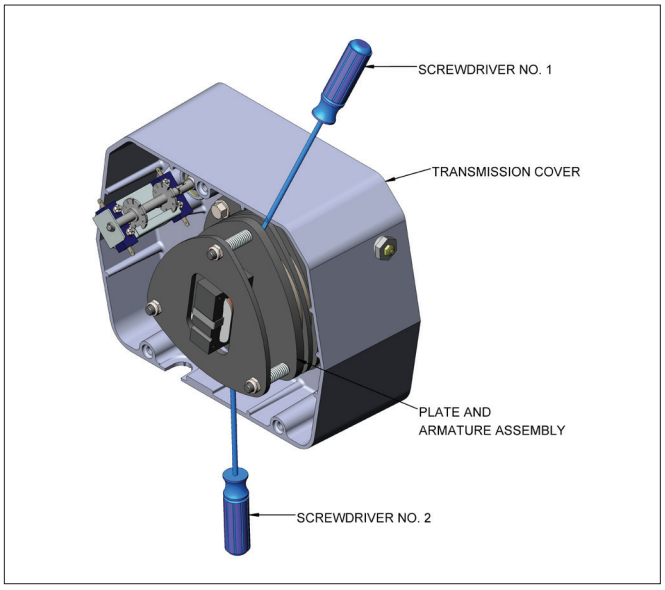


FIGURE 4-1. LOAD BRAKE FUNCTION CHECK

4-5. CHAIN INSPECTION

Chain inspection and lubrication are the most important aspects of hoist maintenance. Removal of the chain from the hoist usually is not necessary, but the chain should be run through the hoist enough that every link is made visible for inspection.

a. Check each link for gouges. Nicks, weld spatter, corrosion and distortion.

b. Inspect each link for wear to the diameter of the link (see Figure 4-2). The nominal link diameter is 0.437 inch. If the diameter of any link of chain is worn to less than 0.350, the entire chain must be replaced.

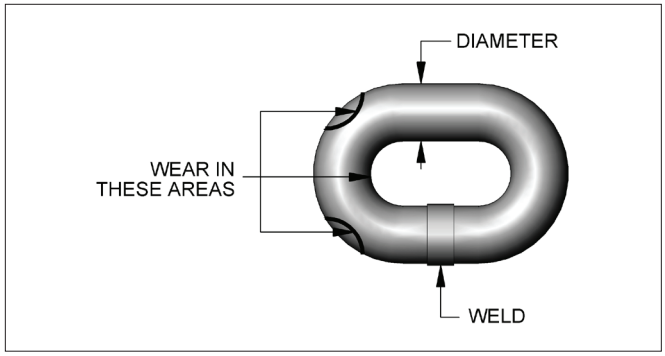


FIGURE 4-2. TYPICAL WEAR ON LINKS

c. 1.) Check the chain for overall wear or stretch by selecting an unworn, unstretched length of chain (at the slack end, for example). Let the chain hang vertically with a light load (about 20 lbs.) on the chain to pull it taut. Use a large caliper to measure the outside length of a convenient number of links (about 12 inches). Measure the same number of links in a used section of chain and calculate the percentage increase in length of the worn chain.

2.) If the length of the worn chain is more than 1-1/2% longer than the unused chain (.015" per inch of chain measured), than the chain should be replaced. If the chain is worn less than 1-1/2%, check it at several more places along its length. If any section is worn more than 1-1/2%, the chain should be replaced.

d. The chain used in this hoist is accurately calibrated to operate over the load sprocket and is very carefully heat treated for maximum wear life and strength.

⚠ WARNING

1. Do not weld or join hoist load chain.

2. Do not substitute another manufacturer's chain in this hoist.

3. Damage or wear, beyond the stated limits, to any portion of the chain requires that the entire length be replaced.

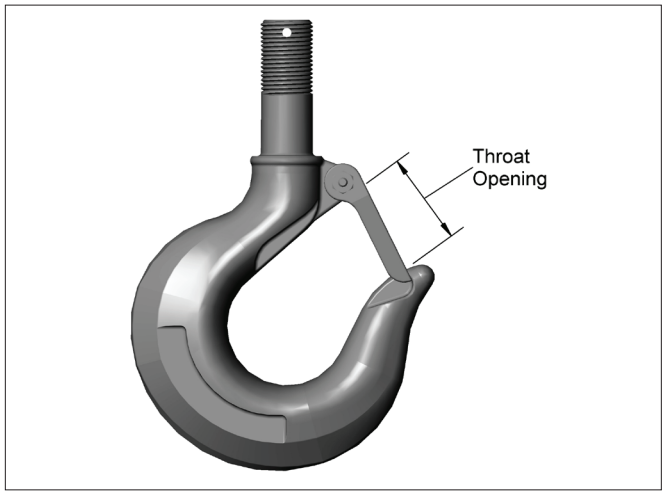


FIGURE 4-3. HOOK THROAT OPENING

Use Table 4-1 (below) to check hook throat opening.

TABLE 4-1. MAXIMUM ALLOWABLE HOOK THROAT OPENING

Hoist Load Rating (ton)	Top Hook* (in.)	Bottom Hook* (in.)
1 & 2	1-15/16	1-17/32
3 & 4	1-15/16	1-15/16
5	N/A	1-15/16

*Figures given are for hook with latch. Add 1/16" if measured without hook latch.

INSPECTION SCHEDULE AND MAINTENANCE REPORT

Type of Hoist				Capacity (Tons)		
Location				Original Installation Date		
Manufacturer				Manufacturer's Serial No.		
Item	Frequency of Inspection			Possible Deficiencies	OK	Action Required
	Frequent		Periodic 1-12 Months			
	Daily	Monthly				
Operating Controls	•	•	•	Any deficiency causing improper operation		
Limit Switches	•	•	• •	Any deficiency causing improper operation Pitting or deterioration		
Disc (Motor) Brake	•	•	• •	Slippage or excessive wear Glazing, contamination or excessive wear		
Load Brake/ Mechanical			•	Failure to support load with disc brake open (see paragraph 4-3 f)		
Hooks	•	•	• •	Excessive throat opening, bent or twisted more than 10 degrees, damaged hook latch, wear, chemical damage, worn hook bearing Cracks (use dye penetrant, magnetic particle or other suitable detection method)		
Suspension Lug (if used)			• •	Crack, excessive wear or other damage which may impair the strength of the lug cracks (use dye penetrant, magnetic particle or other suitable detection method)		
Chain	•	•	•	Inadequate lubrication, excessive wear or stretch, cracked damaged or twisted links, corrosion or foreign substance		
Hook and Suspension UigConnections			•	Cracks, bending, stripped threads, loose mounting screws		
Pins, Bearings, Bushings, Shafts, Couplings, Chain Guides			•	Excessive wear, corrosion, cracks, distortion		
Nuts, Bolts, Rivets			•	Looseness, stripped and damaged threads, corrosion		
Sheaves			•	Distortion, cracks and excessive wear. Buildup of foreign substances		
Housing, Load Block			•	Distortion, cracks and excessive wear, internal buildup of foreign substances		
Wiring and Terminals			•	Fraying, defective insulation		
Contact Block, Magnetic Hoist Control Switch, Other Electrical Apparatus			•	Loose connections, burned or pitted contacts		
Supporting Structure and Trolley (if used)			•	Damage or wear which restricts ability to support imposed loads		
Nameplates, Decals, Warning Labels			•	Missing, damaged or illegible		
Transmission Lubricant			•	Low level, requires changing		
Note: Refer to Maintenance and Inspection Sections of the Hoist Maintenance Manual for further details.						
FREQUENCY OF INSPECTION: Frequent - Indicates items requiring inspections daily to monthly. Daily inspections may be performed by the operator if properly designated. Periodic - Indicates items requiring inspection monthly to yearly Inspections to be performed by or under the direction of a properly designated person. The exact period of inspection will depend on frequency and type of usage. Determination of this period will be based on the user's experience. It is recommended that the user begin with a monthly inspection and extend the periods to quarterly, semi-annually or annually based on his monthly experience						

FIGURE 4-4. RECOMMENDED INSPECTION AND MAINTENANCE CHECK LIST

INSPECTOR'S REPORT

ITEM	REMARKS (LIST DEFICIENCIES AND RECOMMENDED ACTION)

Inspector's Signature	Date Inspected	Approved By	Date

FIGURE 4-5. RECOMMENDED INSPECTOR'S REPORT

SECTION V MAINTENANCE AND REPAIR

5-1. GENERAL

This section provides instructions for the most common routine maintenance and adjustments. Major repairs are not within the scope of this manual and should be referred to qualified service facilities.

SAFETY NOTE: Always remove load and disconnect hoist from power supply before removing end covers or making repairs.

5-2. LIMIT SWITCH ADJUSTMENT

Limit switches are provided to protect the hoist against damage resulting from overtravel. For easy identification the upper (No. 2, Figure 5-1) and lower (No. 3, Figure 5-1) limit switch adjusting nuts are colored brass and zinc respectively. Each limit switch nut has ten slots for adjustment, and the increment of adjustment is such that one slot is equivalent to one link of chain travel. Care should be exercised when adjusting either limit of travel. When a geared type limit switch is furnished (long lift hoists) each adjustment is equal to 3 links of chain, or 30 links per revolution.

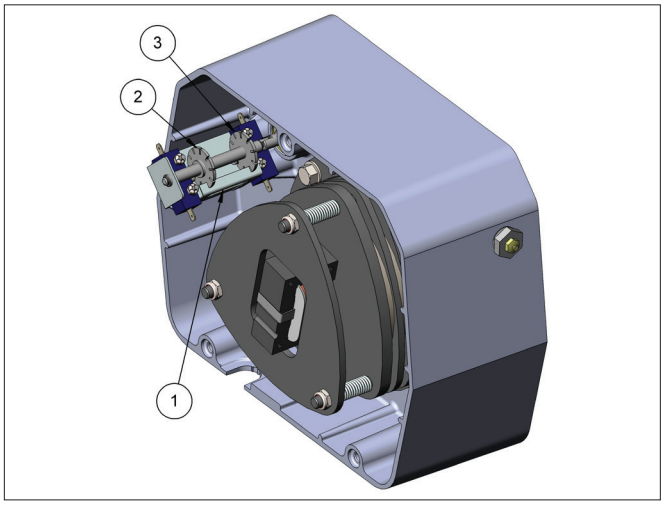


FIGURE 5-1. LIMIT SWITCH ADJUSTMENT

a. Adjusting Upper Limit (Brass Nut).

1. Carefully raise the load block to a point where its top is 3" or more from the hoist housing.
2. DISCONNECT POWER from the hoist and remove the short end cover.
3. With a screwdriver, pry the spring guide plate (No. 1, Figure 5-1) out of the slots in the colored limit switch nuts (Nos. 2 and 3).
4. Turn the slotted brass nut (No. 2) toward its limit switch until the switch clicks.
5. Release the spring guide plate and be sure it snaps back into the slots in both nuts. Do not disturb the other slotted nut if it has been previously set.
6. Replace the short end cover and reconnect power to the hoist.
7. Carefully raise the load block to its upper limit and observe to see if it stops automatically at the desired point. Do not allow the load block to run into the hoist housing. The stopping point should be at least 3" below the hoist housing.

b. Adjusting Lower Limit (Zinc Nut)

1. Carefully lower the load block to a point where at least 12 links of Slack chain hang down from the hoist housing.
2. DISCONNECT POWER from the hoist and remove the short end cover.
3. Adjust the zinc limit switch nut in the same manner described above for the red nut.
4. Replace the short end cover and reconnect power to the hoist.
5. Carefully lower the load block to its lower limit and observe if it stops automatically at the desired level. Do not run chain out of hoist or allow the slack end loop to become taut against the hoist housing. At least 12 links of slack chain should hang from the hoist.

NOTE: If upper and lower limits are not operating satisfactorily, repeat adjustment.

5-3. MOTOR BRAKE ADJUSTMENT

When properly adjusted, the multiple disc motor brake should release promptly, operate without noticeable chatter, and stop the load with no more than one inch of drift. If the hoist hesitates to lift the load promptly when the pushbutton is depressed, the brake should be adjusted per the following procedure.

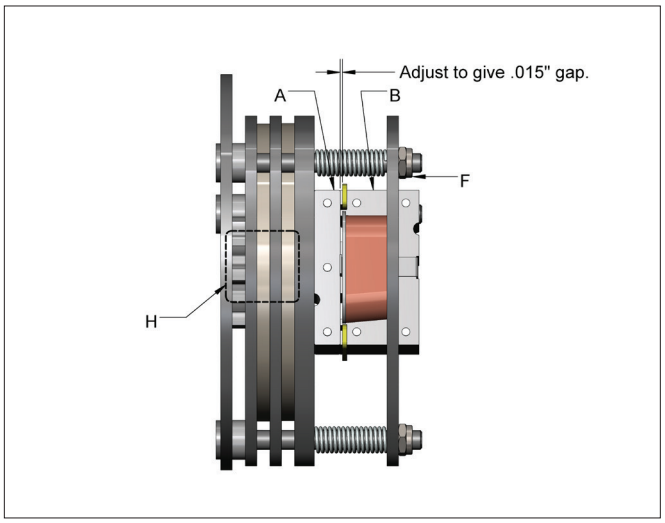


FIGURE 5-2. MOTOR BRAKE ADJUSTMENT

a. Remove any load and DISCONNECT POWER from hoist.

b. Remove the short end cover.

c. Referring to Figure 5-2, check the gap between armature (A) and frame (B). The correct gap is .015".

d. Adjust the gap by turning the three lock nuts (F) and check with a feeler gauge to be sure the gap is the same on both ends of the solenoid.

⚠ CAUTION

Be sure the bottom of the armature does not touch the splined adapter (H). As wear occurs, the original clearance will be reduced when this clearance is gone; THE BRAKE DISCS MUST BE REPLACED.

e. Replace short end cover and reconnect power. If the brake still chatters or is hesitant to release, refer to Section VI, Troubleshooting.

5-4. TOP SUSPENSION REMOVAL AND REPLACEMENT

A number of different top suspension assemblies are available to accommodate different methods of hanging the hoist. If it should be necessary to change top suspensions, proceed as follows:

a. DISCONNECT POWER from hoist and move the hoist to a safe working area. If necessary, remove trolley to gain access to the cap screws bolting the top suspension to the frame of the hoist.

b. Remove cap screws and lift off the suspension assembly.

NOTE: Due to the variety of mounting arrangements and different reeving available on EC-3 Series hoists it is possible for any suspension assembly to be mounted in several positions. Refer to the diagrams of Figure 5-3 for proper suspension location and orientation.

c. Check to be sure proper length cap screws are being used with any change of top suspension. Screws should have ¾ to 1 inch thread engagement.

d. Install new suspension assembly and tighten cap screws to 75 ft.-lbs. torque.

5-5. CHAIN REPLACEMENT (OLD CHAIN STILL IN HOIST)

Refer to Figure 5-5, Chaining Diagrams, and proceed as follows:

a. Run the load block up to its top limit.

b. DISCONNECT POWER from the hoist and remove the short end cover.

c. With a screwdriver, push the spring guide plate (No 1. Figure 5-1) out of the slots in the limit switch nuts. Turn the brass slotted nut (2) back to about the center of the threaded screw DO NOT DISCONNECT THE WIRES FROM THE LIMIT SWITCHES.

d. Remove the load hook assembly from the old chain.

e. Make a "C"-shaped chain link by grinding through one side of the end link of either the old or new chain. See Figure 5-4.

f. Hook the special "C" link to the end link of both chains thus joining them. BE SURE the welds of the upstanding links of the new chain are out away from the load sheave, and that proper orientation is observed for attachment of the slack end in paragraph j. below.

g. With the end cover off, connect the hoist to power supply. Be sure the green ground wire is properly grounded.

h. Carefully jog the "UP'" button and run the joined pieces of chain into the hoist until about 12 inches of the new chain comes out the other side.

i. DISCONNECT POWER from the hoist.

All standard top suspensions will be marked with a letter. Hoist center sections have each tapped mounting hole marked by a cast-in number. In order to obtain proper alignment of the top suspension with the load block, letters and numbers must be placed adjacent to each other according to the following table. When specified, spacers are used between the suspension and the hoist frame. See Section 5-4 for suspension change procedure.

Top Suspension	Hoist Capacity	Suspension Letter	Hoist Number	Spacer Length
Swivel or Rigid Hook	1, 2 Ton	A	3	None
	3 or 4 Ton	A	8	None
3-5/8" Square Box With Plain Trolley or Parallel Mount Motorized Trolley	1, 2 Ton	B	9	None
	3 Ton	B	2	None
3-5/8" Square Box With Cross Mount Motorized Trolley	1, 2 Ton	B	9	11/16"
	3 Ton	B	2	11/16"
7" Square Box With Trolley	4 Ton	C	3	None
	5 Ton	D	5	None
8 Wheel Plain Trolley	4 Ton	B	2	11/16"
	5 Ton	D	5	11/16"
8 Wheel Motorized Trolley	4 Ton	B	2	1 3/4"
	5 Ton	D	5	13/4"

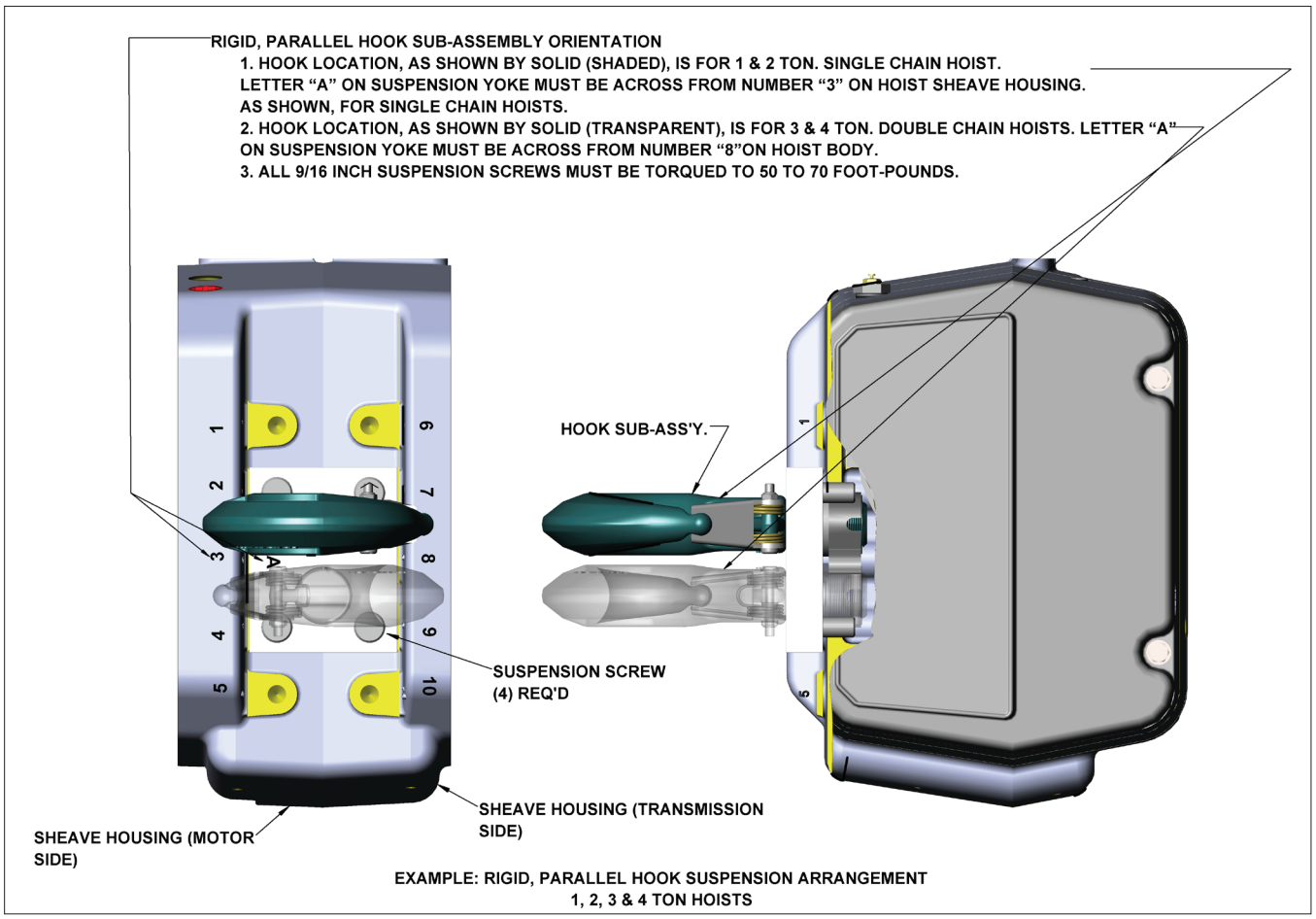


FIGURE 5-3. TOP SUSPENSION ORIENTATION

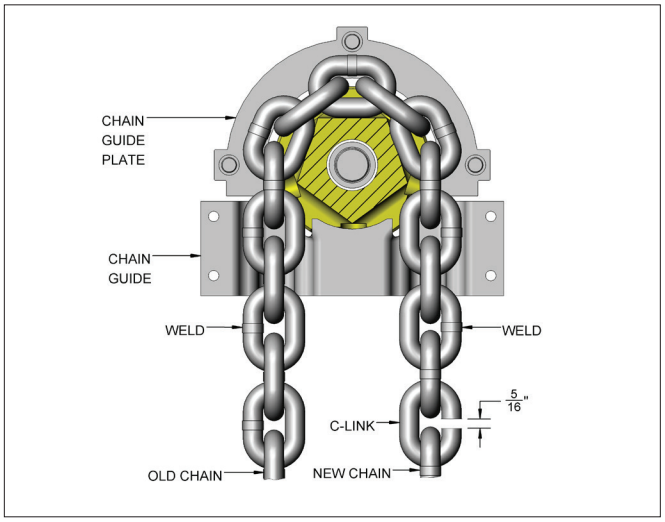


FIGURE 5-4. CHAINING HOIST

j. Remove both the "C" link and the old chain from the slack end pin (No. 13, Figure 8-6). This can be accomplished by depressing the pin against the slack end spring (14) with a small screwdriver. Depress the slack end pin and install the new chain observing proper orientation of the slack end of the chain when secured. Avoid twists in the chain.

k. Adjust the lower limit switch per paragraph 5-2.b.

l. Attach the bottom hook on single-chained hoists to the loose end of the chain. On double-chained hoists, feed the loose end of the chain through the load block (welds of the upstanding links will be in towards the sheave) and fasten the end of the chain to the dead end pin (No. 31, Figure 8-6B). On triple chain hoists, feed the loose end of the chain through the load block (welds toward sheave), around the idler sheave in the hoist, and to the center of the load block.

m. Adjust the upper limit switch per paragraph 5-2.a (No. 30, Figure 8-6C).

n. Lubricate the new chain per paragraph 5-6.a and perform an operation test of the hoist.

5-6. LUBRICATION

Proper lubrication is necessary for long, trouble-free hoist operation. Refer to the following and to Table 5-1, Recommended Lubrication Schedule, for lubrication points, type of lubricant, and frequency of lubrication.

a. Load Chain. Clean the load chain with a non-acid and non caustic solvent and coat with SAE 90 gear oil. Wipe excess oil to prevent dripping. If the hoist is used in an atmosphere containing abrasive dust, the chain should be cleaned and oiled more frequently. Never apply grease to the chain.

b. Gearing. The gear case of the hoist is filled at assembly with 1 gal. of a gear oil containing special friction-reducing additives.

⚠ WARNING

The use of gear oils other than that recommended in Table 5-1 can cause brake chatter or can render the load brake incapable of holding a load. A 1 gal. container of this oil is available from Coffing (Part No. 14J11).

c. To check the oil level, remove the 1/4" pipe plug from the side of the hoist. With the hoist hanging level, transmission oil should be even with the edge of the tapped plug hole.

d. The length of time between necessary oil changes will depend on the severity of use the hoist receives. In general, the oil should be changed every 12 months of normal operation, or every 200 hours of actual hoist on-time. Very heavy use or operation in high ambient temperatures (over 105°F) will require that oil be changed more often. An indication of the need for oil replacement is load brake noise. If an erratic tapping sound is made when lowering a load, the oil should be changed.

e. Limit Switch Shaft. To prevent rust, the threaded limit switch shaft should be given a light coat of grease or sprayed with a general purpose lubricant.

f. Idler Sheave Bearing (double and triple chain models only). Use a grease gun to put about a teaspoon of grease through the grease fining in the bottom block shaft. Avoid pumping an excessive amount of grease into the bottom block. On triple chain hoists, use a grease gun to lubricate the idler sheave in the hoist until fresh grease pumps from the ends of the sheave.

g. Hook Bearing. Apply a few drops of SAE 30 oil around the edge of the bearing.

5-7. CHAIN STOP INSTALLATION

Refer to Figures 8-6A, 6B and 6C, Chaining Parts, and proceed as follows:

a. Disconnect slack end of chain from hoist.

b. Count (approx.) 12 links from slack end of chain and capture the twelfth link with the two stop halves.

c. Install and tighten the two cap screws.

d. If no chain container is used, reattach the slack end of the chain to the hoist. If a chain container is used, drop the slack end of the chain into chain container.

e. Readjust "down" limit switch as necessary to give a minimum clearance of 11/2" between chain stop end and bottom of hoist.

⚠ WARNING

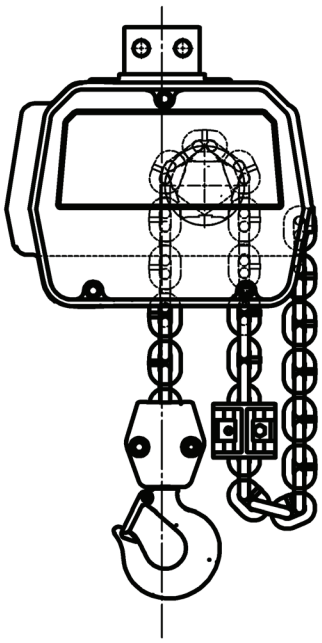
This is a safety device only and is not intended to be a substitute for the limit switch in the hoist.

TABLE 5-1. RECOMMENDED LUBRICATION SCHEDULE MODEL EC ELECTRIC CHAIN HOIST

Component	Type of Lubricant	Type of Service and Frequency of Lubrication		
		Heavy	Normal	Infrequent
Load Chain	SAE 90 Gear Oil	Daily	Weekly	Monthly
Gearing	Coffing No. H-7813 transmission oil (Kit No. 14J11 contains quantity of oil sufficient for one oil change)	At periodic inspection (See Figure 4-1, paragraph 5-6-B)		
Limit Switch Shaft	“WD-40” or general purpose spray lubricant	Monthly	Yearly	Yearly
Load Hook Bearing	SAE 30 Gear or Motor Oil	Weekly	Monthly	Yearly
Idler Sheave Bearing (Bushing)	NLGI #2 multi-purpose lithium base grease (Coffing No. H-7610)	At periodic inspection (See Figure 4-1)		

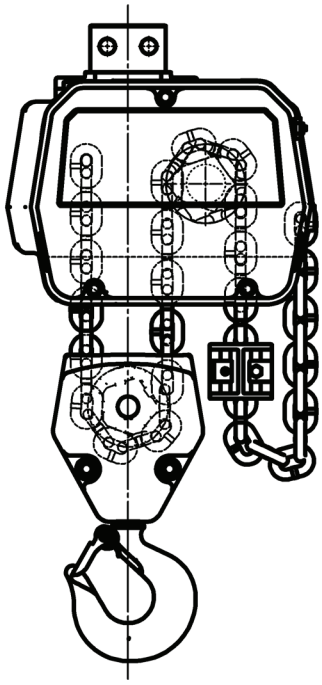
NOTE: All bearings except hook and idler sheave bearings are prelubricated and sealed.

* This lubrication schedule is based on a hoist operating in normal environmental conditions. Hoists operating in adverse atmospheres containing excessive heat, corrosive fumes or vapors, abrasive dust, etc., should he lubricated more frequently.

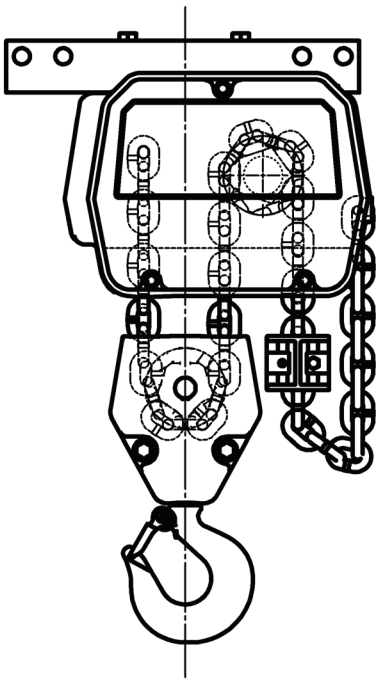


Single Chain
1 & 2 Ton Hoist

CAUTION: Top Suspension must be centered over bottom hook. See Fig. 5-3 Top Suspension orientation.

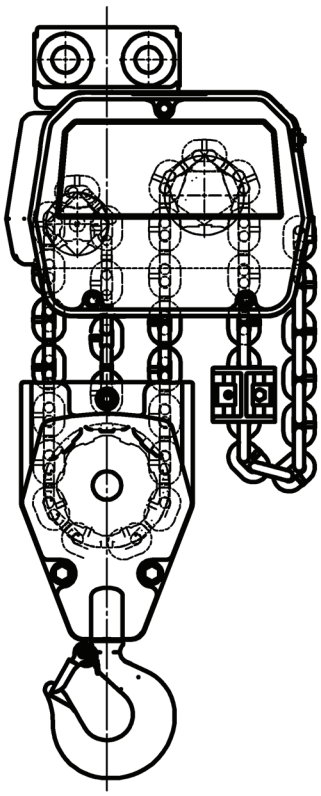


Double Chain
3 Ton Hoist



Double Chain
4 Ton Hoist

AS VIEWED FROM BRAKE COVER
END OF HOIST (1, FIGURE 8-1)



Triple Chain
5 Ton Hoist

FIGURE 5-5. CHAINING DIAGRAMS

SECTION VI TROUBLESHOOTING

6-1. GENERAL

Use the following table as an aid to troubleshoot your hoist. If you do not have an experienced machinist-electrician to do your repair work, we recommend that you send your hoist to an approved service center for repairs.

	Probable Cause	Remedy
Hook Fails to Stop at End of Travel.	1. Limit switches not operating.	1. Check adjustment. See paragraph 5-2. Check connections against wiring diagram. Tighten loose connections or replace.
	2. Limit switch nuts not moving on shaft.	2. Check for stripped threads or bent nut guide.
	3. Magnetic reversing switch malfunction.	3. Remove electrical cover and check reversing switch.
Hoist Does Not Respond to Pushbutton.	1. Power failure in supply lines.	1. Check circuit breakers, switches and connections in power supply lines.
	2. Wrong voltage or frequency.	2. Check voltage and frequency of power supply against the rating on the nameplate of the hoist.
	3. Improper connections in hoist or pushbutton station.	3. Check all connections at line connectors and on terminal block. Check terminal block on dual voltage hoists for proper voltage connections.
	4. Motor brake does not release.	4. Check connections to the solenoid coil. Check for open or short circuit. Check for proper adjustment. See paragraph 5-3.
	5. Faulty magnetic hoist control switch.	5. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed.
Hook Does Not Stop Promptly.	1. Hoist overloaded.	1. Reduce load to within rated capacity of hoist.
	2. Brake not holding.	2. Check motor brake adjustment (see paragraph 5-3) and load brake (Figure 4-3).
Hook Moves in Wrong Direction.	1. Three-phase reversal.	1. Reverse any two wires (except the green ground wire) at the power source (see paragraph 2-3).
	2. Improper connections.	2. Check all connections against Wiring Diagram.
Hoist Hesitates to Lift When Energized.	1. Hoist overloaded.	1. Reduce load to within rated capacity of hoist.
	2. Motor brake requires adjustment.	2. Check motor brake adjustment. See Figure 5-2.
	3. Worn overload limiting clutch.	3. Replace clutch.
	4. Low voltage.	4. Check voltage at hoist power cord with hoist starting. Voltage should be no less than 90% of voltage specified on hoist.
Hook Raises But Will Not Lower. (Motor not running)	1. “Down” circuit open.	1. Check circuit for loose connections. Check “Down” limit switch for malfunction.
	2. Broken conductor in pushbutton cable.	2. Check each conductor in the cable. If one is broken, replace entire cable.
	3. Faulty magnetic hoist control switch.	3. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed.
Hook Raises But Will Not Lower When Motor Is Operating.	Consult Factory or Authorized Duff-Norton Warranty Repair Station.	
Hook Lowers But Will Not Raise.	1. Hoist overloaded.	1. Reduce load to within rated capacity.
	2. Low voltage.	2. Determine cause of low voltage and bring up to at least 10% of the voltage specified on hoist. Line voltage should be measured while holding or lifting load.
	3. “UP” circuit open.	3. Check circuit for loose connections. Check “UP” limit switch for malfunction.
	4. Broken conductor in pushbutton cable.	4. Check each conductor in the cable. If one is broken, replace entire cable.
	5. Faulty magnetic hoist control switch.	5. Check coils for open or short circuit. Check all connections in control circuit. Check for burned Contacts. Replace as needed.
	6. Worn overload limiting clutch.	6. Replace clutch.

SECTION VI TROUBLESHOOTING

	Probable Cause	Remedy
Lack of Proper Lifting Speed.	1. Hoist overloaded.	1. Reduce load to within rated capacity of hoist.
	2. Motor brake is dragging.	2. Check for proper brake adjustment or other defects. Sec paragraph 5-3.
	3. Low voltage.	3. Bring up voltage to plus or minus 10% of voltage specified on hoist. Line voltage should be measured while hoist is lifting load.
	4. Overload limiting clutch intermittently slipping.	4. Replace clutch.
Load Brake "Noise." (Erratic tapping sounds or squeals)	1. Need transmission oil change, or improper lubricant has been used.	1. Change transmission oil. See Table 5-1. Note: Hoist Warranty is void if unapproved oil is used.
	2. Load brake malfunctioning.	2. Check load brake operation. See Figure 4-1.
Motor Brake Noise or Chatter. (While starting hoist)	1. Brake needs adjustment.	1. Adjust as per paragraph 5-3.
	2. Low voltage.	2. Check voltage at hoist power cord with hoist starting. Voltage should be no less than 90% of the voltage specified.
Motor Brake "Buzz." (Anytime hoist is running)	1. Brake needs adjustment.	1. Adjust as per paragraph 5-3.
	2. Broken shading coil on brake frame.	2. Replace shading coil or complete brake frame assembly.

SECTION VII WIRING

SAFETY NOTES
Disconnect power from hoist before removing end covers.

7-1.VOLTAGE CONVERSION

Standard single speed units are convertible from 460 to 230 volts. Conversion to the alternate voltage can be accomplished with the following procedure.

a. Be sure power is disconnected from hoist. Remove long end cover.

b. To convert the hoist from 460 to 230 volts, reconnect leads T4, T5 , T6, T7, T8, T9, H2, H4, SI, and S2 per the 230 volt connection diagram on Wiring Diagram, Figure 7-1.

⚠ CAUTION

Do not move any wires or make any changes to the wiring except at the gray terminal block.

c. After converting voltage, check for proper phasing of three phase units and check for proper limit switch operation.

7-2. WIRING DIAGRAMS

The wiring diagrams for standard hoist models are reproduced on the following pages. In addition, every hoist should have a wiring diagram located inside the long end cover.

FIGURE 7-1. 230/460V, 3 PHASE, SINGLE SPEED HOIST (WIRING DIAGRAM NO. 983LE2100-000)

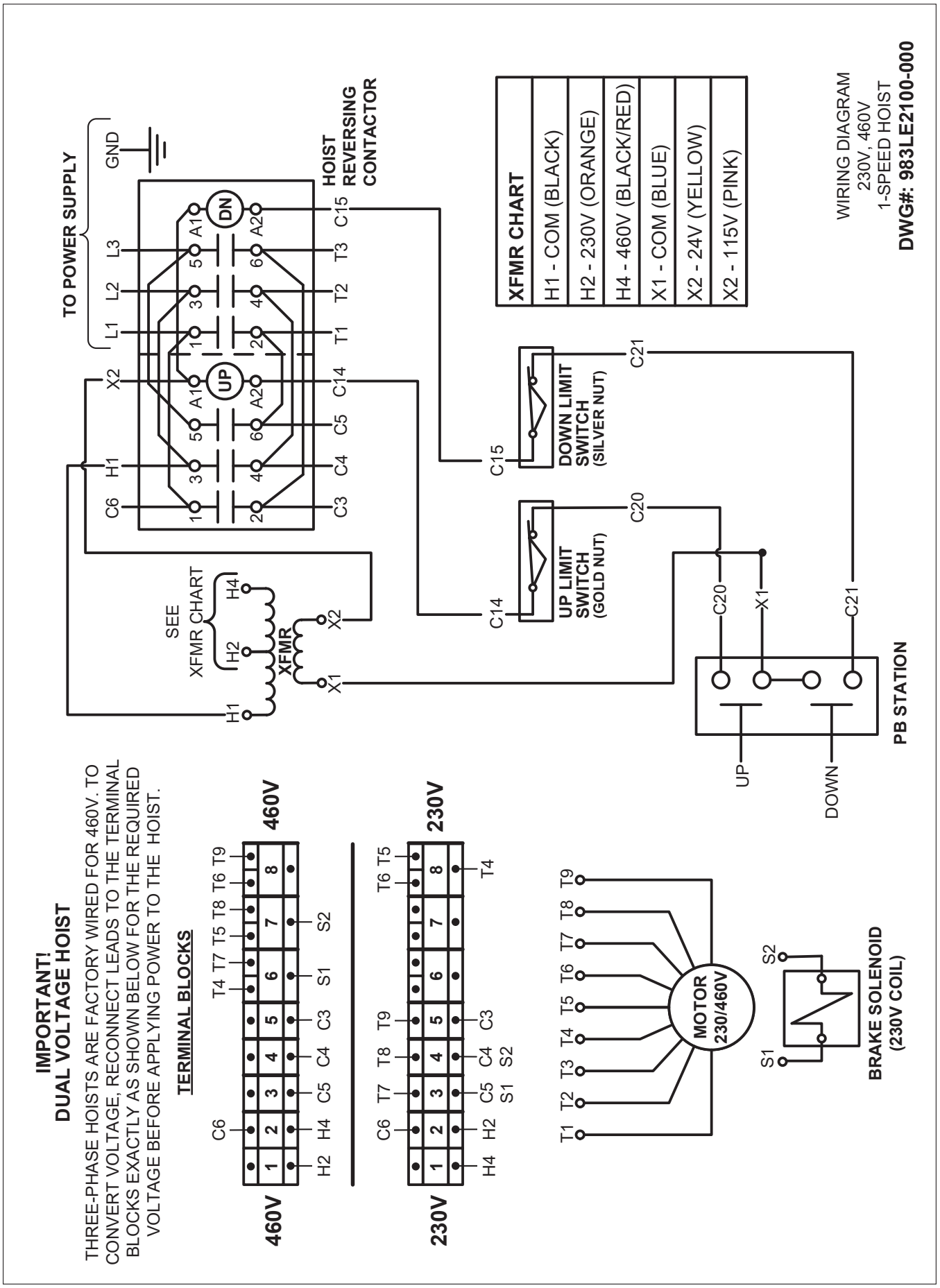
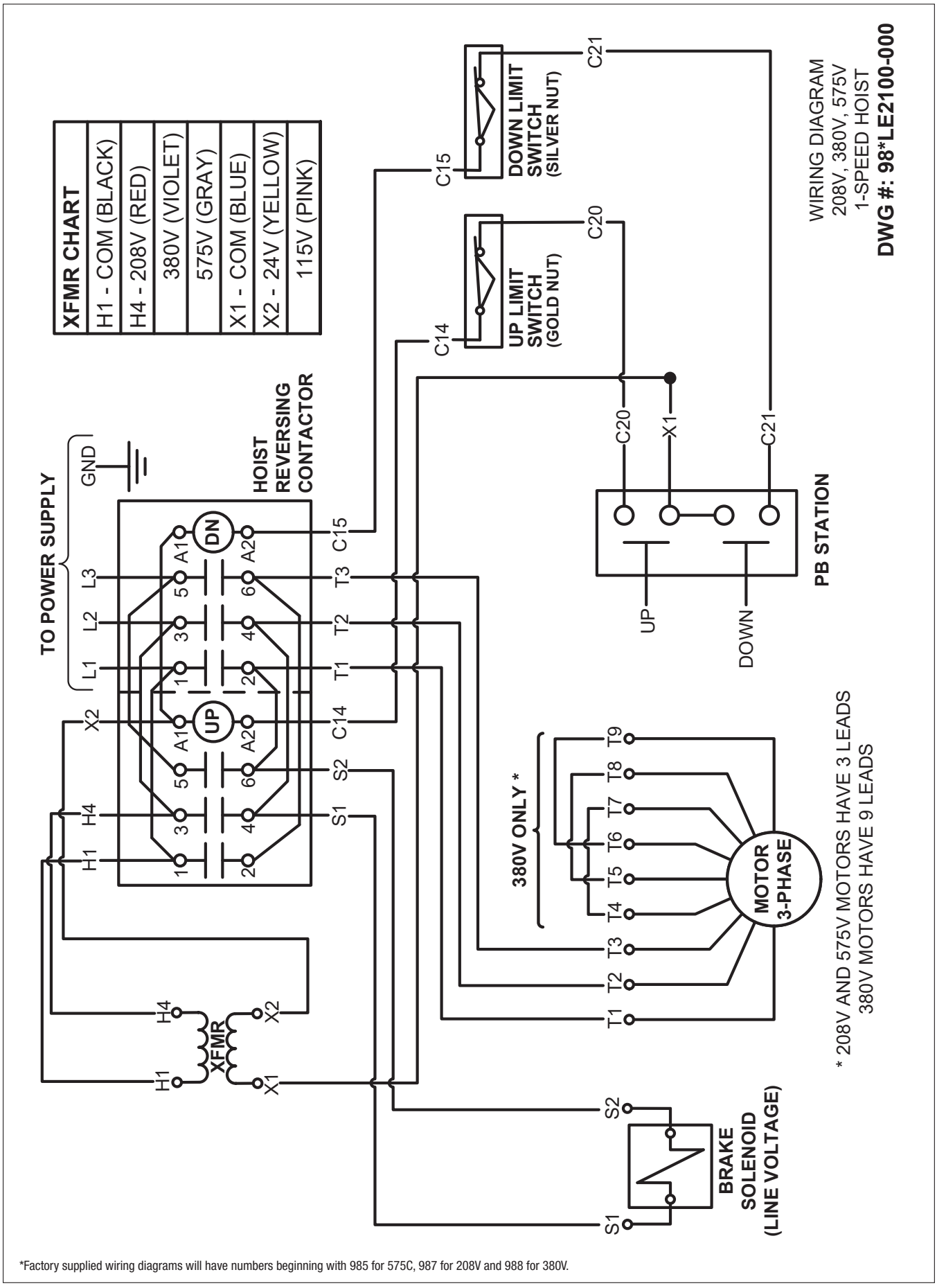
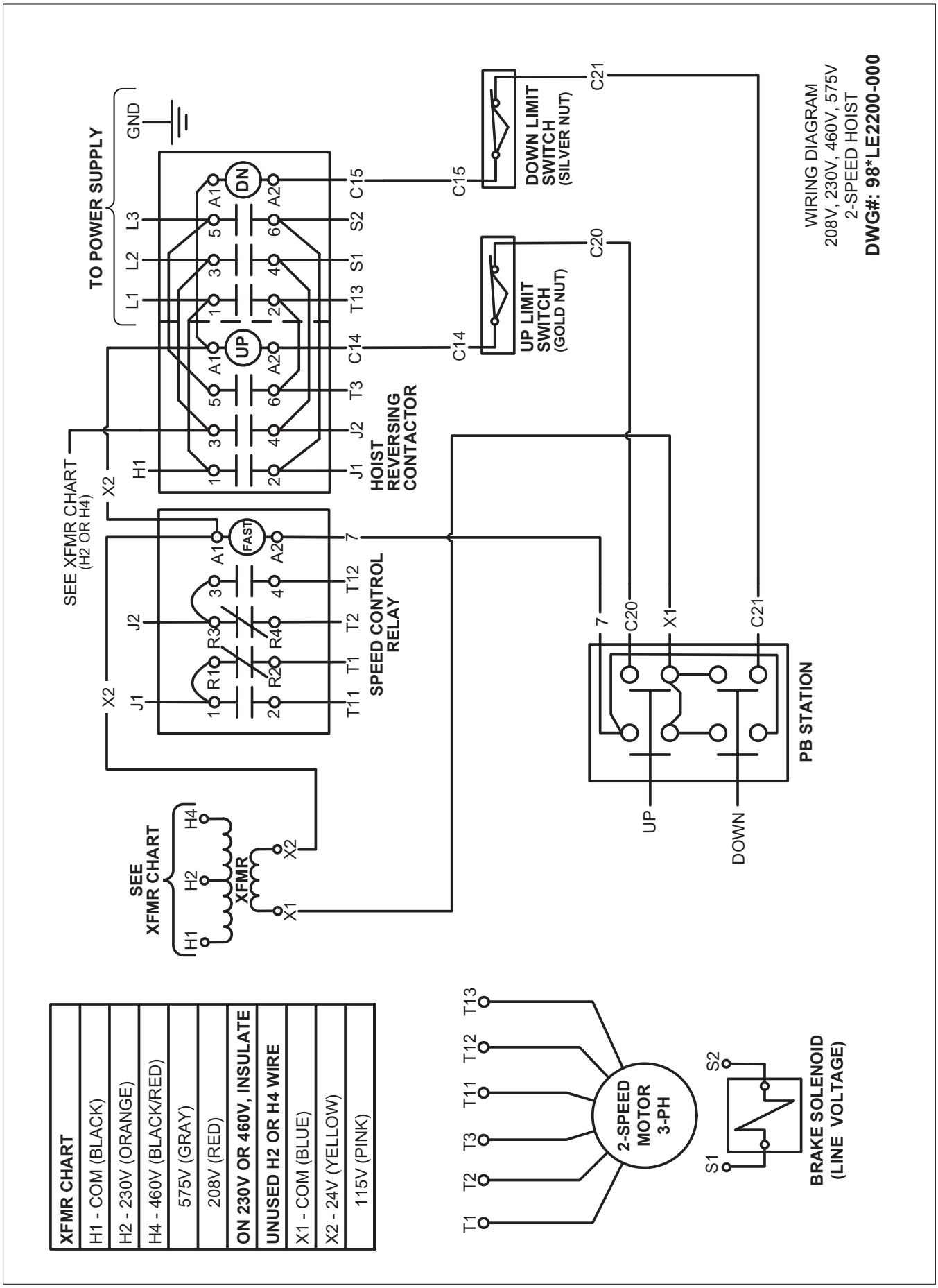


FIGURE 7-2. WIRING DIAGRAM – 208, 380 & 575V, 3 PHASE, SINGLE SPEED HOIST (WIRING DIAGRAM NO. 98*LE2100-00)



*Factory supplied wiring diagrams will have numbers beginning with 985 for 575C, 987 for 208V and 988 for 380V.

FIGURE 7-3. WIRING DIAGRAM – 230, 460, 575 & 208V, 3 PHASE, TWO SPEED HOIST (WIRING DIAGRAM NO. 98*LE2200-00)



REPAIR PARTS LIST

⚠ WARNING

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

TO AVOID INJURY

Use only COFFING supplied replacement parts. Parts may look alike but COFFING 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 label.
2. Serial number of the hoist stamped below identification label.
3. Voltage, phase, hertz from the identification plate.
4. When ordering motor parts, give the complete motor nameplate data in addition to the above.
5. Length of lift.
6. Part number of part from parts list.
7. Quantity of parts required.
8. Part name from parts list.

PARTS STAR BY COLUMBUS McKINNON

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.

Parts should be ordered from COFFING’s authorized Master Parts Depots conveniently located throughout the United States and Canada. To quickly obtain the name of the Master Parts Depot or Service Center located nearest you, call (800) 888-0985. Fax: (716) 689-5644 or visit www.cmworks.com

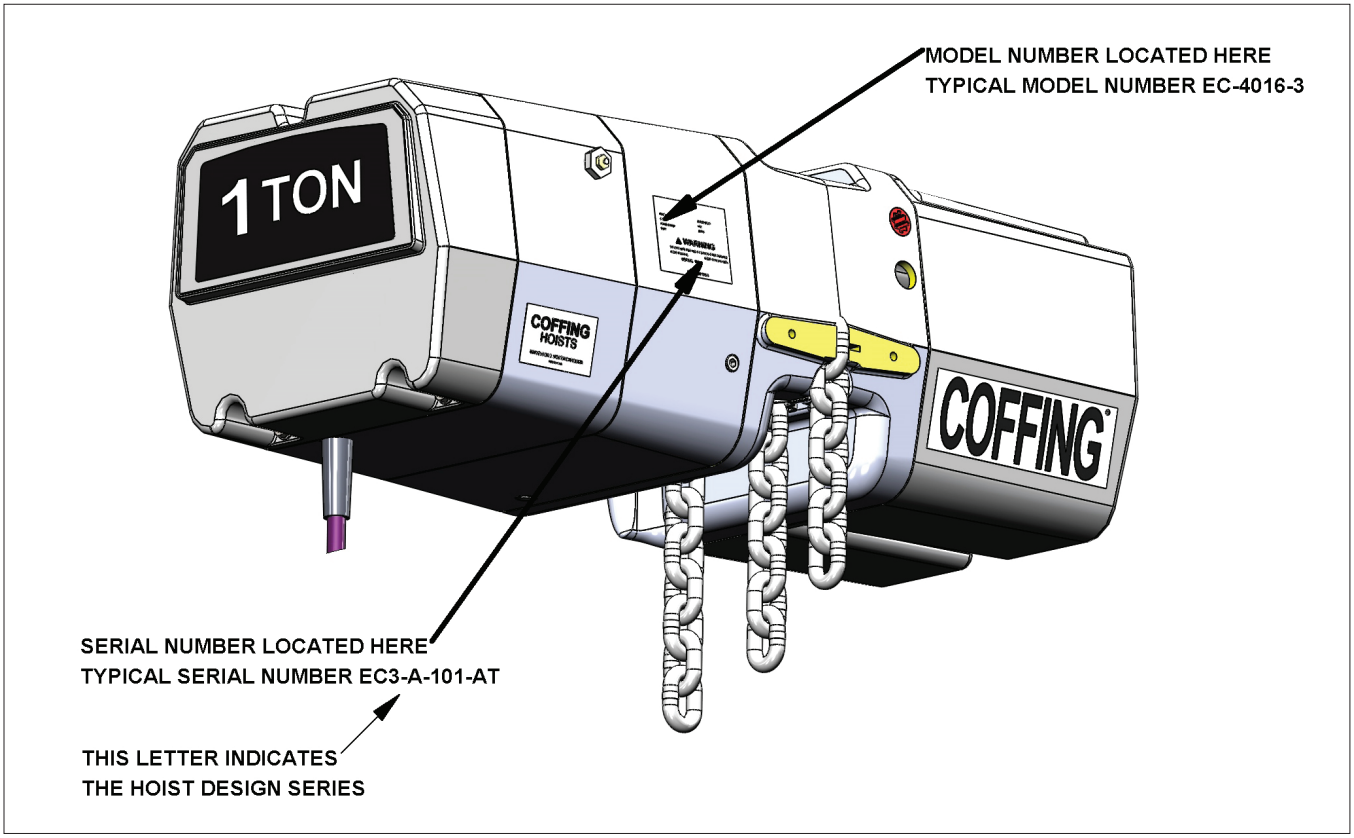
8-1. GENERAL

The following exploded drawings provide a complete list of parts used in the standard EC hoist models (shown in Table 1-1, page 6). Since several different models of hoists are covered by this manual, differences may be noted between the appearance of your hoist part and the reference illustration. If this is the case, the parts list will show several different pan numbers with sufficient information to allow the selection of the correct part number.

8-2. HOW TO USE THE PARTS LIST

a. The parts list consists of three columns as follows:

1. Index Number
2. Pan Number
3. In addition to basic pan name, this column contains descriptions which are essential for choosing the correct part number when more than one is listed.



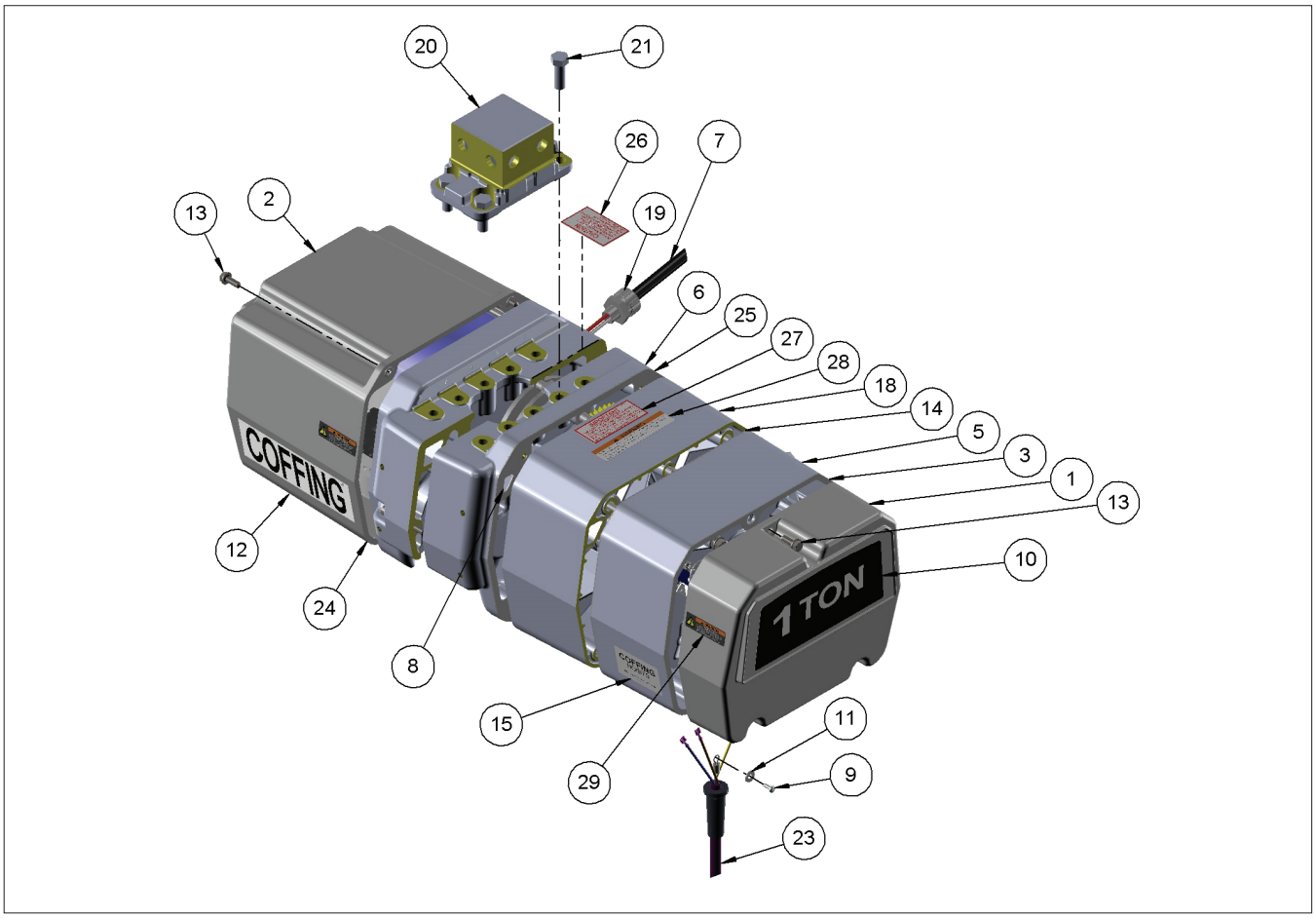


FIGURE 8-1. BASIC HOIST

Ref No	P/N	Description	Qty
1	36J4	Brake Cover	1
2	36J3	Control Cover	1
3	560J2	Gasket, Brake Cover	1
4	33J13	Sheave Housing_ Motor Side 1, (2, 3. & 4 ton)	1
4	33J11	Sheave Housing_ Motor Side (5 ton)	1
5	34J2	Transmission Cover	1
6	37J6	Sheave Housing, Transmission Side (I. 2. 3, & 4 ton)	1
6	37J5	Sheave Housing, Transmission Side (5 ton)	1
7	953KG5	Power Cord	1
8	940JE4	Wiring Harness (Single Speed)	1
8	940JE4-9	Wiring Harness (Two Speed)	1
9	H2981P	Screw	1
10	675J3B	Decal, Capacity (1 Ton)	1
10	675J5	Decal, Capacity (2 Ton)	1
10	675J6	Decal, Capacity (3 Ton)	1
10	675J7	Decal, Capacity (4 Ton)	1
10	675J8	Decal, Capacity (5 Ton)	1
11	H-4002P	Plain Washer	1
12	677J2	Decal, Coffing	1
13	H-2987-P	Screw	6
14	560J6	Gasket, Transmission Cover	1

Ref No	P/N	Description	Qty
15	676J2B	Decal. Coffing Hoists	1
16	679J3	Decal. Power Requirements (230/460V)	1
16	679J3	Decal. Power Requirements (230V)	1
16	679J4	Decal. Power Requirements (460V)	1
16	679J5	Decal. Power Requirements (575V)	1
16	679J6	Decal. Power Requirements (208V)	1
16	679J87	Decal. Power Requirements (380V-3Ph-50Hz)	1
16	679J87-1	Decal. Power Requirements (415V-3Ph-50Hz)	1
18	35J3	Transmission Housing	1
19	H-7609	Cord Grip	1
20		Suspension A.ssembly Kit (Reference-See figure 8-2)	
21		Screw (fncluded in all suspension assy.) (Reference-See figure 8-2)	
23	PBC2100 6	Push Button Cable (Reference-See figures 8-10A, 8- I0B)	
24	560J3	Gasket. Control Cover	1
25	560K15	Gasket. Transmission Adaptcr	1
26	687J1	Decal Warning	1
27	687K9	Decal (used with 3 5/8" Suspension Adapters)	1
27	687K10	Decal (Used with 7" Suspension Adapters)	1
28	JL687	Dumbwaiter Warning	2
29	24842	Electrical Warning	2

*Not Shown
Kit includes counterweights, threaded pins and hardware.

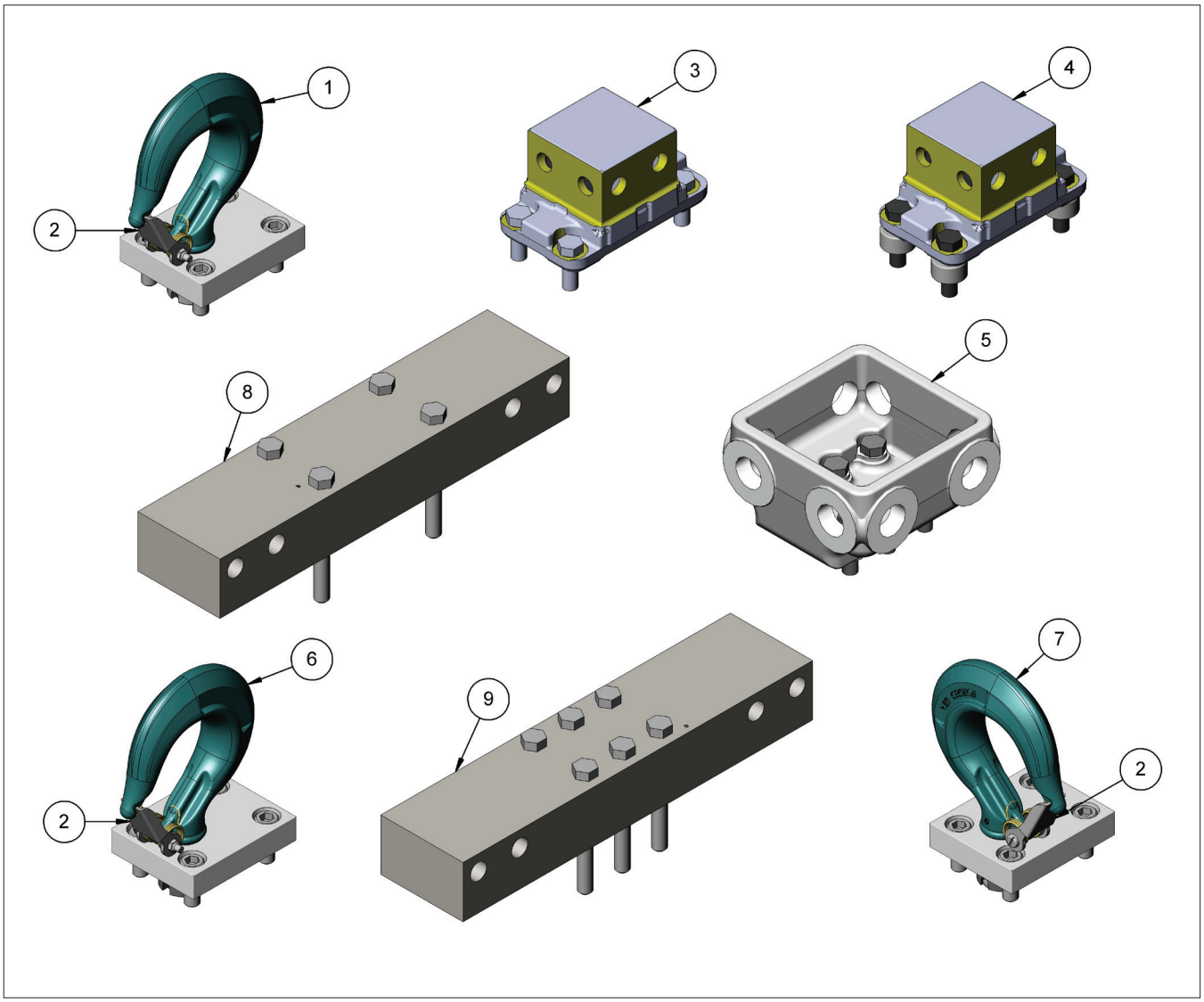


FIGURE 8-2. SUSPENSION ASSEMBLY KITS

Index No.	Part No.	Part Name
1	14J27	Swivel Hook Assembly, With Latch (1, 2, 3 & 4 Ton Models)
2	4X1309	Latch Kit
3	14J14	Trolley Lug Assembly (3 5/8")
3		Plain and Geared Trolley-Parallel or Cross Mounted
3		Motorized Trolley-Parallel Mounted ONLY, (1, 2 & 3 Ton Models)
4	14J15	Trolley Lug Assembly (3 5/8")
4		Motonzed Trolley-Cross Mounted (1, 2 & 3 Ton Models)
6	14J18	Lug Suspension (7")-For 5 Ton Lug Mounted Hoist ONLY
7	14J28	Rigid Hook Assembly, With Latch, Cross Mounted
8	14J29	Rigid Hook Assembly, With Latch, Parallel Mounted (Standard)
9	***	Load Bar 4-Ton (Standard on 8-Wheel Trolley, Cross Mounted)
10	***	Load Bar 5-Ton (Standard on 8-Wbeel Trolley, Cross Moun1ed)

*** Consult Factory for Kit No.

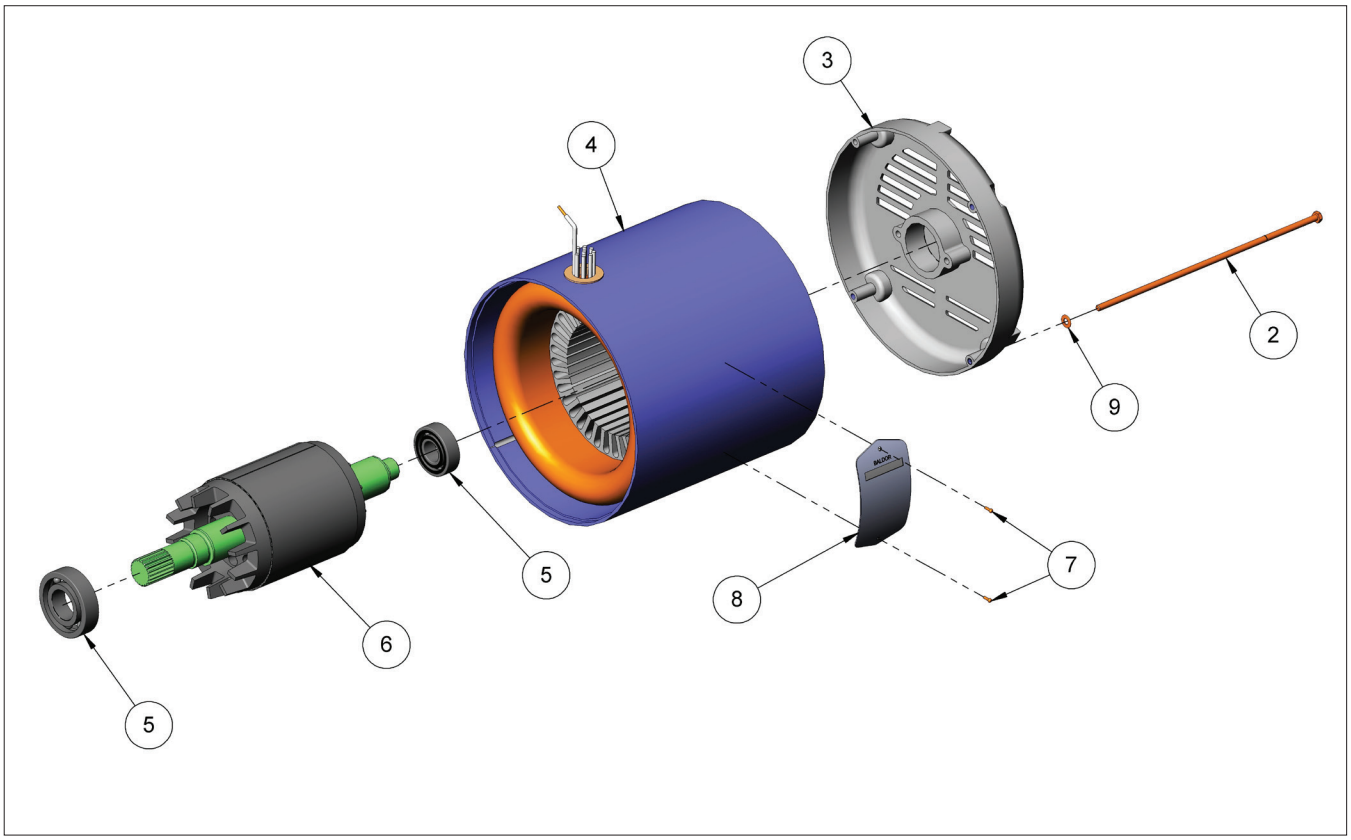


FIGURE 8-3. MOTOR PARTS

Ref No	P/N	Description	Qty
1	863J601B	2 HP Motor (230/460V-3Ph-60Hz)	1
	863J602B	3 HP Motor (230/460V-3Ph-60Hz)	1
	863J603B	2 HP Motor (575V-3Ph-60Hz)	1
	863J604B	3 HP Motor (575V-3Ph-60Hz)	1
	863J605B	2 HP Motor (208V-3Ph-60Hz)	1
	863J606B	3 HP Motor (208V-3Ph-60Hz)	1
	861J601B	1.67 HP Motor (380V-3-50HZ)	1
	861J602B	2.5 HP Motor (380V-3-50HZ)	1
	873J401	2 HP Two-speed Motor (230V-3Ph-60Hz)	1
	873J402	3 HP Two-speed Motor (230V-3Ph-60Hz)	1
	873J403	2 HP Two-speed Motor (460V-3Ph-60Hz)	1
	873J404	3 HP Two-speed Motor (460V-3Ph-60Hz)	1
	873J405	2 HP Two-speed Motor (575V-3Ph-60Hz)	1
	873J406	3 HP Two-speed Motor (575V-3Ph-60Hz)	1
	873J407	2 HP Two-speed Motor (208V-3Ph-60Hz)	1
	873J408	3 HP Two-speed Motor (208V-3Ph-60Hz)	1
	873J409	1.67 Two-speed Motor (380V-3-50HZ))	1
	873J410	2.5 Two-speed Motor (380V-3-50HZ)	1
5	CB-504	Bearing	2

NOTE: For other motor pans or for replacement motor for Design Series ·'A'' hoist (see Section 8-3), consult factory.

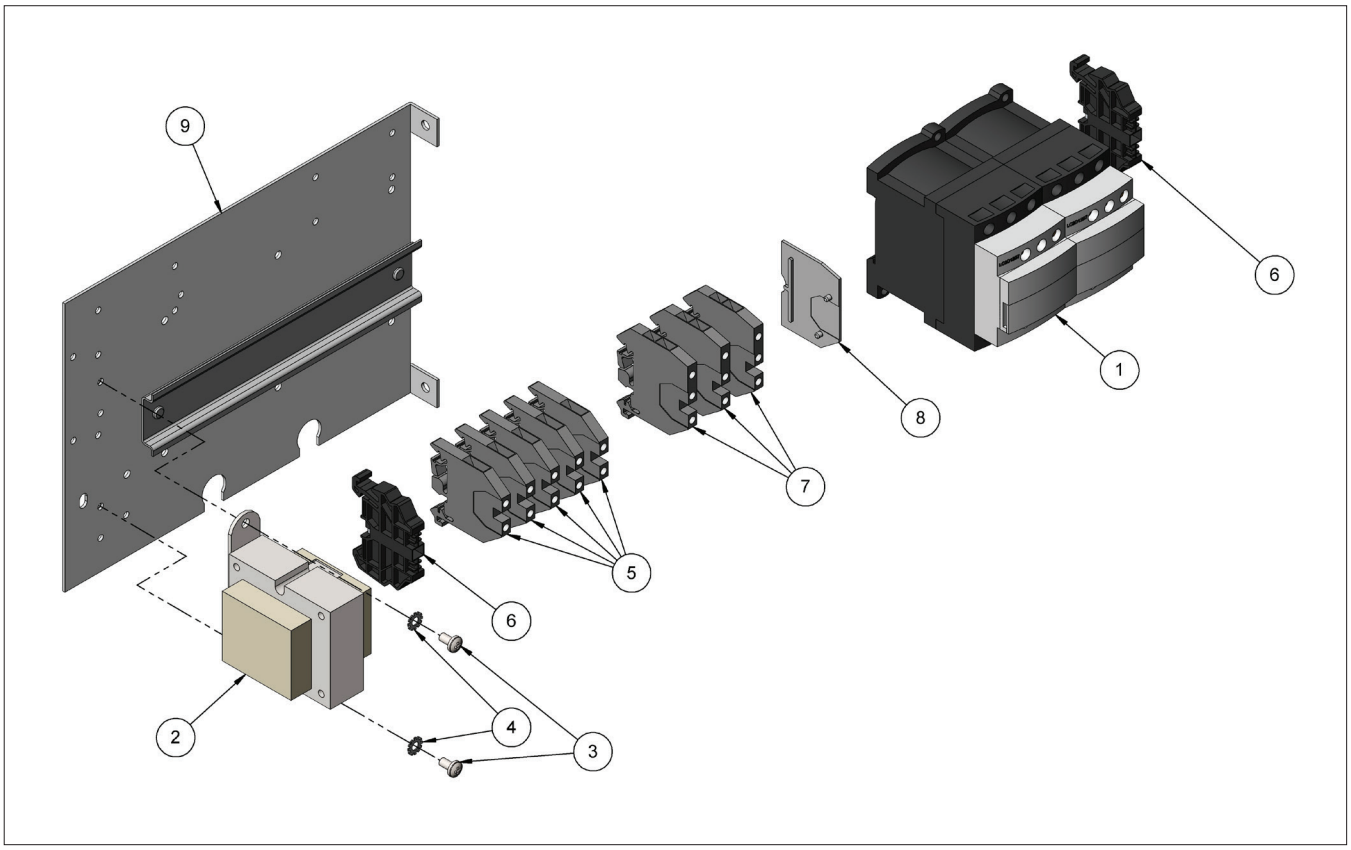


FIGURE 8-4A. CONTROLLER AREA (SINGLE SPEED HOIST)

Ref No	P/N	Description	Qty
1		Contactor, Reversing	
	25943	24V Coil	1
	24729	115V Coil	1
2		Transformer	
	821J432	Pri.: 230V/460V. Sec.: 24V	1
	821J431	Pri.: 230V/460V. Sec.: 115V	1
	821J452	Pri.: 575V. Sec.: 24V	1
	821J451	Pri.: 575V. Sec.: 115V	1
	821J472	Pri.: 208V. Sec.: 24V	1
	821J471	Pri.: 208V. Sec.: 115V	1
	821J482	Pri.: 380V. Sec.: 24V	1
	821J481	Pri.: 380V. Sec.: 115V	1
3	H2751	8-3UNC x 5/16" Screw	2
4	H4158	#8 External-Tooth Lockwasher	2
5	909J10	Terminal Block (230/460V)	5
6	909J13	End Clamp	2
7	909J14	Terminal Block (230/460V)	3
8	909J15	End Plate (230/460V)	2
9	257JG202	Panel Plate	1

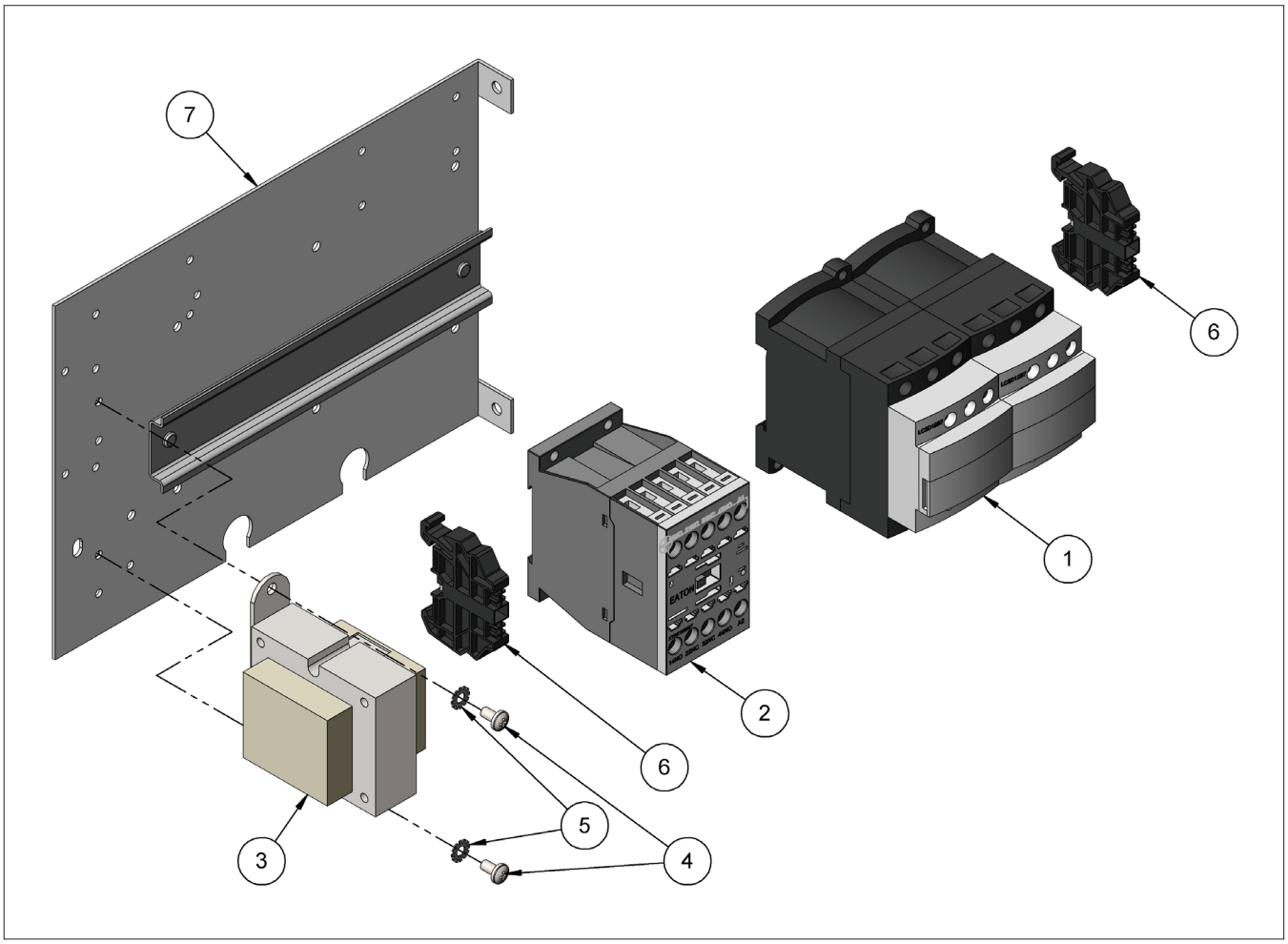


FIGURE 8-4B. CONTROLLER AREA (TWO SPEED HOIST)

Ref No	P/N	Description	Qty
1		Contactor, Reversing	
	25943	24V Coil	1
	24729	115V Coil	1
2		Speed Control Relay	
	820J34	24V Coil	1
	820J35	115V Coil	1
3		Transformer	
	821J432	Pri.: 230V/460V. Sec.: 24V	1
	821J431	Pri.: 230V/460V. Sec.: 115V	1
	821J452	Pri.: 575V. Sec.: 24V	1
	821J451	Pri.: 575V. Sec.: 115V	1
	821J472	Pri.: 208V. Sec.: 24V	1
	821J471	Pri.: 208V. Sec.: 115V	1
	821J482	Pri.: 380V. Sec.: 24V	1
	821J481	Pri.: 380V. Sec.: 115V	1
4	H2751	8-32UNC x 5/16" Screw	2
5	H4158	#8 External-Tooth Lockwasher	2
6	909J13	End Clamp	2
7	257JG202	Panel Plate	1

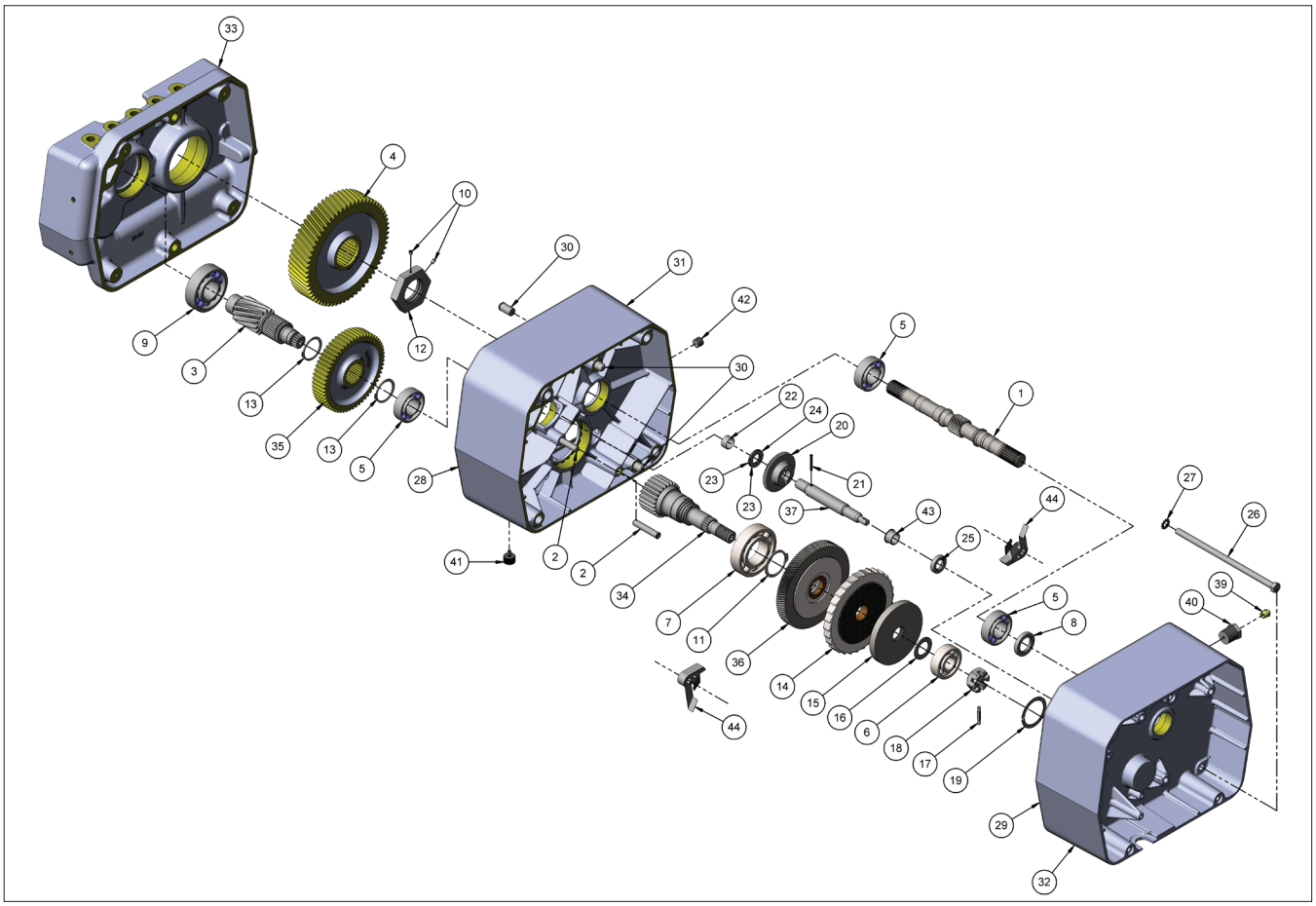


FIGURE 8-5. TRANSMISSION

Ref No	P/N	Description	Qty
1	400J7	High Speed Pinion	1
2	H-5493	Dowel Pin	2
3	404J3	Output Pinion	1
4	405J1	Output Gear	1
5	500K13	Bearing	3
6	500K14	Bearing	1
7	500K15	Bearing	1
8	500K18	Seal	1
9	500K35	Bearing	1
10	H2597	Setscrew	2
11	H5539	Retaining Ring	1
12	130J7	Lock Nut	1
13	H5540	Retaining Ring	2
14	7JG16 1	Ratchet Assembly	1
15	5J9	Pressure Plate	1
16	255K11	Thrust Washer	1
17	H5219	Driv-Lok Pin	1
18	130J8	Lock Nut (Load Brake)	1
19	H7834	Spring Washer	1
20	428J1	Limit Switch Gear	1
21	H5232	Spring Pin	1
22	530J24	Bushing	1
23	255J19	Thrust Washer	1
24	511J17	Thrust Bearing	1
25	561K17	Seal	1
26	H2333	Bolt	1

Ref No	P/N	Description	Qty
27	H4157	Lock Washer	1
28	560K15	Transmission Adapter Gasket (Reference-See Figure 8-1)	1
29	560J6	Transmission Cover Gasket (Reference-See Figure 8-1)	1
30	H5387	Dowel Pin	4
31	35J3	Transmission Housing (Reference-See Figure 8-1)	1
32	34J2	Transmission Cover (Reference-See Figure 8-1)	1
33	37J6	Sheave Housing, Transmission Side (Reference-See Figure 8-1)	1
34	402J6	Intermediate Pinion (Models EC4024, EC8012 & EC10008)	1
	402J7	Intermediate Pinion {Models EC4016, EC8008 & EC I0005)	1
	402J8	Intermediate Pinion (Model EC6010)	1
	402J9	Intermediate Pinion (Models EC2032 & EC6016)	1
35	403K4	Intermediate Gear (Models EC4016, EC8008 & EC10005)	1
	403K5	Intermediate Gear (Models EC4024, EC8012 & EC10008)	1
	403J6	Intermediate Gear (Model EC6010)	1
	403J7	Intermediate Gear (Models EC2032 & EC6016)	1
36	591JG12	Load Equalizer Assembly (Models EC4024, EC6016 EC8012 & EC10008)	1
	591JG13	Load Equalizer Assembly (Models EC2032. EC4016, EC6010, EC8008 & EC10005)	1
37	140J1	Standard Limit Switch Drive Shaft	1
39	SK1912-21W	Pressure Relief Fitting	1
40	H6294	1/2 NPT - 1/8 PTF, Alemite Part No A-113	1
41	H6268	Drain Plug	1
42	S25 9	Level Plug	1
43	530J29	Flanged Bearing	1
44	25JG4 1	Pawl Assembly	2

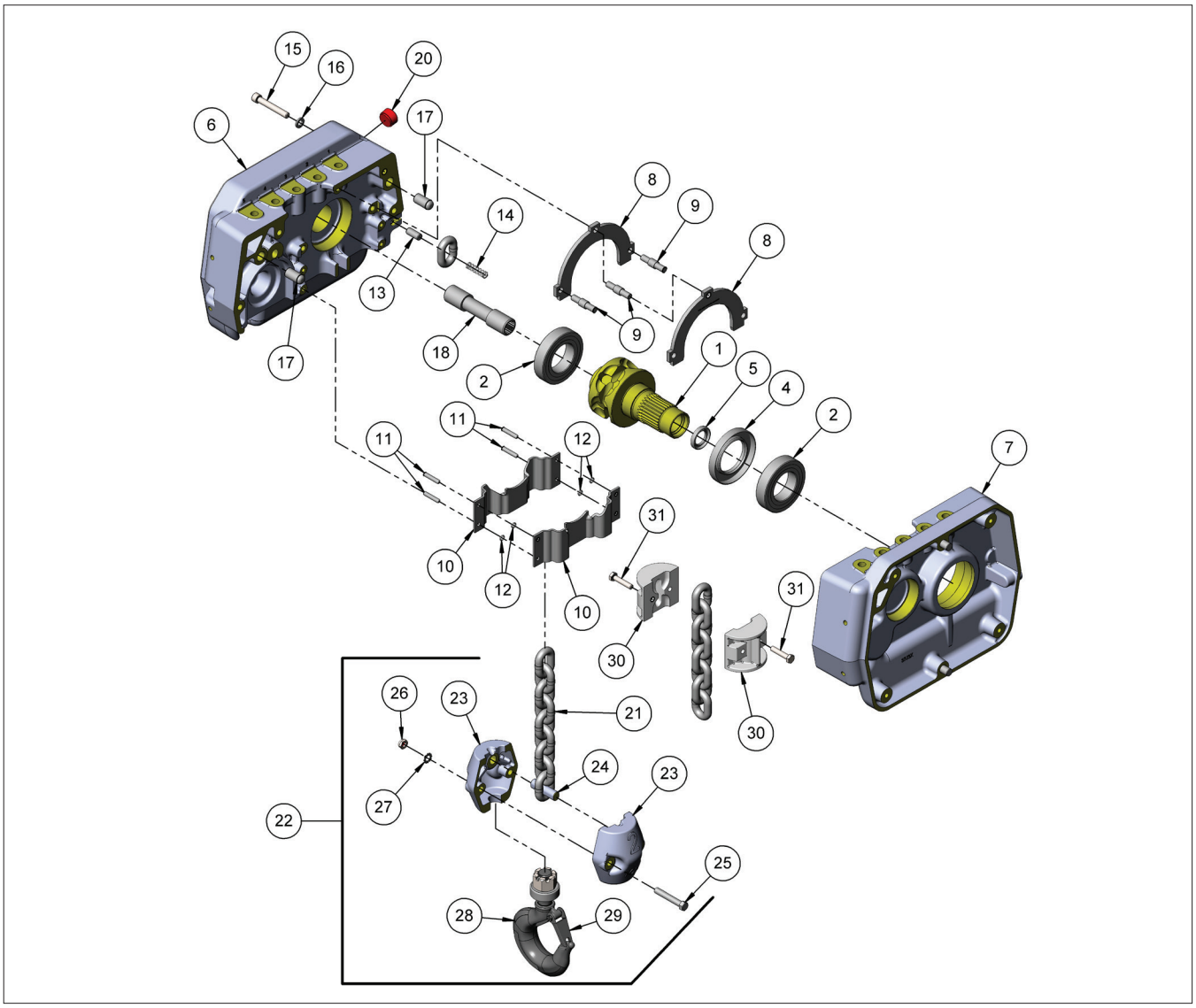


FIGURE 8-6A. CHAINING PARTS (SINGLE CHAIN)

Ref No	P/N	Description	Qty
1	16J9	Load Sheave	1
2	500K12	Bearing	2
4	561K19	Seal	1
5	561K18	Seal	1
6	33J13	Sheave Housing, Motor Side (Reference-See Figure 8-1)	1
7	37J6	Sheave Housing, Transmission Side (Reference-See Figure 8-1)	1
8	272J6	Chain Guide Plate	2
9	127J3	Chain Guide Plate Spacer	3
10	254J3	Chain Guide	2
11	H5393	Pin	4
12	X6477 39	O Ring	4
13	H5495P	Tail End Pin	1
14	23J5	Spring	1
15	H2219	Socket Head Cap Screw	4
16	H4063P	Lockwasher	4
17	H5392	Dowel Pin	2

Ref No	P/N	Description	Qty
18	107JG8 7	Drive Coupling	1
20	H6286	Pipe Plug	1
21	19J3	Load Chain (Standard)	AR
21	19J3Z	Load Chain (Zinc Plated)	AR
22	913JG2	Bottom Block Assembly (Consists of Ref No. 23-29)	
23	30J9	Load Block Frame	2
24	18J7	Pin	1
25	S44 33	Screw	2
26	H3978	Nut	2
27	H4157	Lock Washer	2
28	3M007C01S	Bottom Hook Assembly with latch	1
29	4X1307	Latch Kit	1
30	75J8	7/16" End Stop Frame	2
31	H2376	Screw	2
*	75JG8K	7/16" End Stop Kit (Consists of Ref No. 30 (2), 31 (2) and instruction Sheet.)	

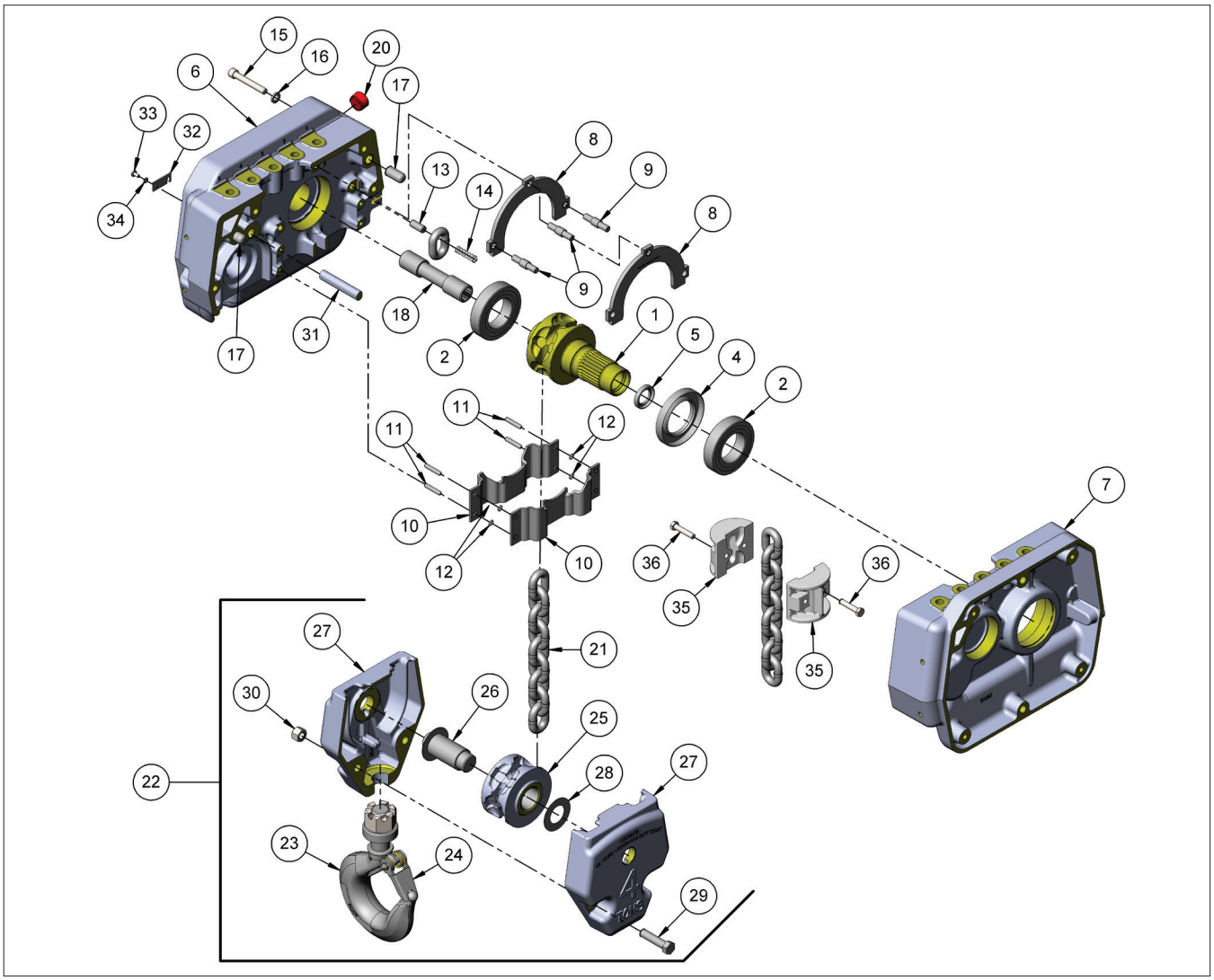


FIGURE 8-6B. CHAINING PARTS (DOUBLE CHAIN)

Ref No	P/N	Description	Qty
1	16J9	Load Sheave	1
2	500K12	Bearing	2
4	561K19	Seal	1
5	561K18	Seal	1
6	33J13	Sheave Housing, Motor Side (Reference-See Figure 8-1)	1
7	37J6	Sheave Housing, Transmission Side (Reference-See Figure 8-1)	1
8	272J6	Chain Guide Plate	2
9	127J3	Chain Guide Plate Spacer	3
10	254J3	Chain Guide	2
11	H5393	Pin	4
12	X6477 39	O Ring	4
13	H5495P	Tail End Pin	1
14	23J5	Spring	1
15	H2219	Socket Head Cap Screw	4
16	H4063P	Lockwasher	4
17	H5392	Dowel Pin	2
18	107JG8 7	Drive Coupling	1
20	H6286	Pipe Plug	1
21	19J3	Load Chain (Standard)	AR
21	19J3Z	Load Chain (Zinc Plated)	AR

Ref No	P/N	Description	Qty
22	914JG13	Bottom Block Assembly (For 3 Ton Hoist) (Consists of Ref No. 23-30)	
22	914JG14	Bottom Block Assembly (For 4 Ton Hoist) (Consists of Ref No. 23-30)	
23	3M009A03S	Bottom Hook Assembly with latch	1
24	4X1309	Latch Kit	1
25	28JG5	Chain Sprocket assembly	1
26	122JG6	Sheave Pin assembly	1
27	30J10	Load Block Frame (For 3 ton Hoists)	1
27	30J11	Load Block Frame (For 4 ton Hoists)	1
28	255J24	Sheave Washer	2
29	H2419P	Hex Head Cap Screw	2
30	H3966P	Hex Nut	2
31	18J5	Dead End Pin	1
32	285J6	Dead End Pin Retainer	1
33	H1009P	Screw	1
34	H1082P	Lock Washer	1
35	75J8	7/16" End Stop Frame	1
36	H2376	Screw	1
*	75JG8K	7/16" End Stop Kit (Consists of Ref No. 35 (2), 36 (2) and instruction Sheet.)	

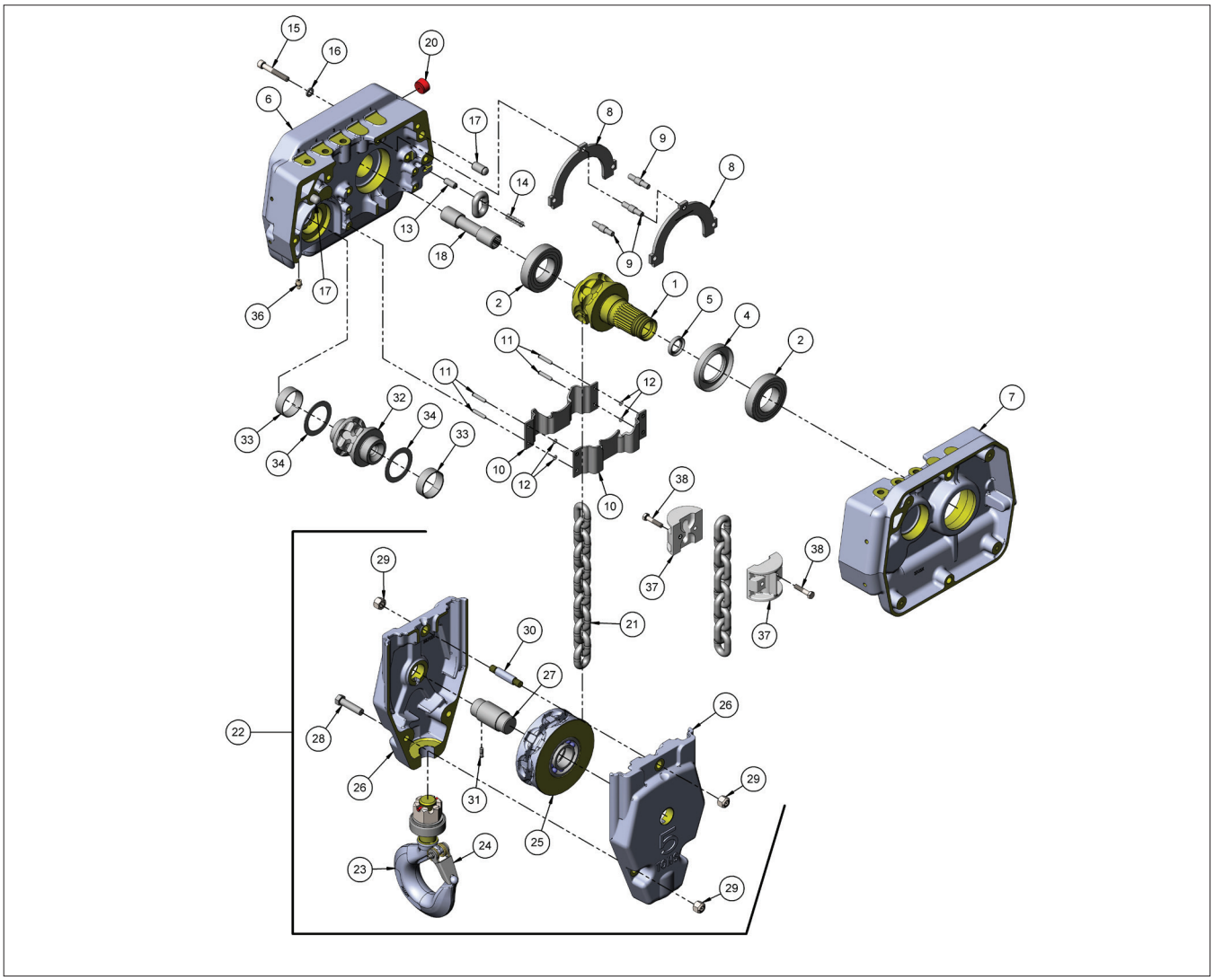


FIGURE 8-6C. CHAINING PARTS (TRIPLE CHAIN)

Ref No	P/N	Description	Qty
1	16J9	Load Sheave	1
2	500K12	Bearing	1
4	561K19	Seal	1
5	561K18	Seal	1
6	33J11	Sheave Housing, Motor Side (Reference-See Figure 8-1)	1
7	37J5	Sheave Housing, Transmission Side (Reference-See Figure 8-1)	1
8	272J6	Chain Guide Plate	1
9	127J3	Chain Guide Plate Spacer	1
10	254J3	Chain Guide	1
11	H-5393	Pin	1
12	X6477 39	O Ring	1
13	H5495P	Tail End Pin	1
14	23J5	Spring	1
15	H2219	Socket Head Cap Screw	1
16	H4063P	Lockwasher	1
17	H5392	Dowel Pin	1
18	107JG8 7	Drive Coupling	1
20	H-6286	Pipe Plug	1
21	19J3	Load Chain (Standard)	AR
21	19J3Z	Load Chain (Zinc Plated)	AR

Ref No	P/N	Description	Qty
22	914JG12	Bottom Block Assembly (For 3 Ton Hoist) (Consists of Ref No. 23-31)	
23	3M009A07S	Bottom Hook Assembly with latch	1
24	4X1309	Latch Kit	1
25	28JG6	Chain Sprocket assembly	1
26	30J12	Load Block Frame	2
27	122J7	Sheave pin	1
28	H2419P	Hex Head Cap Screw	2
29	H3966P	Hex Nut	4
30	18J6	Dead End Pin	1
31	H5210	Driv-Lok pin	1
32	28J4	Idler Sheave	1
33	530J10	Idler Sheave Bushing	2
34	255J23	Thrust Washer	2
36	SK974 32	Grease Fitting	1
37	75J8	7/16" End Stop Frame	2
38	H-2376	Screw	2
*	75JG8K	7/16" End Stop Kit (Consists of Ref No. 37 (2), 38 (2) and instruction Sheet.)	

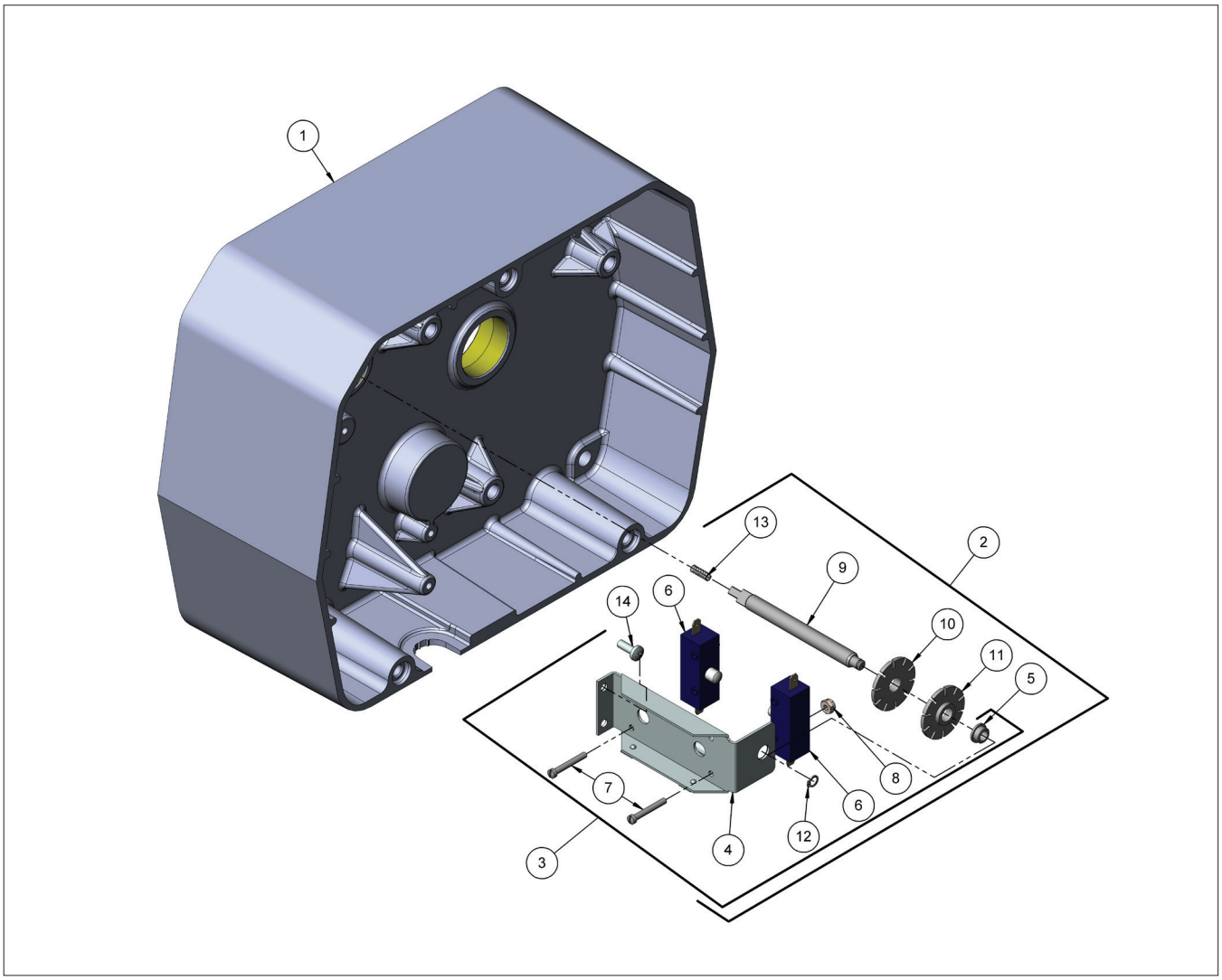


FIGURE 8-7A. STANDARD LIMIT SWITCH PARTS USED ON STANDARD LIFT HOISTS

Ref No	P/N	Description	Qty
1	34J2	Transmission Cover (Reference - See Figure 8-1)	1
2	918JG4	Limit Switch and Shaft Assembly (Consists of Ref no 3- 12)	
3	918JG3	Limit Switch Assembly (Consists of Ref No 4-8)	1
4	JF900 3	Limit Switch Bracket Assembly (includes Ref no 5)	1
5	JF531 4	Limit Switch Bushing	
6	815J1	Microswitch, Limit	2
7	H1402P	Screw	4
8	H3944	Nut	4
9	JF117 3S	Limit Switch Shaft (Stainless Steel)	1
10	SK6000-63Z	Limit Switch Nut (Zinc/Silver)	1
11	SK6000-63W	Limit Switch Nut (Brass/Gold)	1
12	H5520	Retaining Ring	1
13	JF343 3	Spring	1
14	H2981P	Screw	2

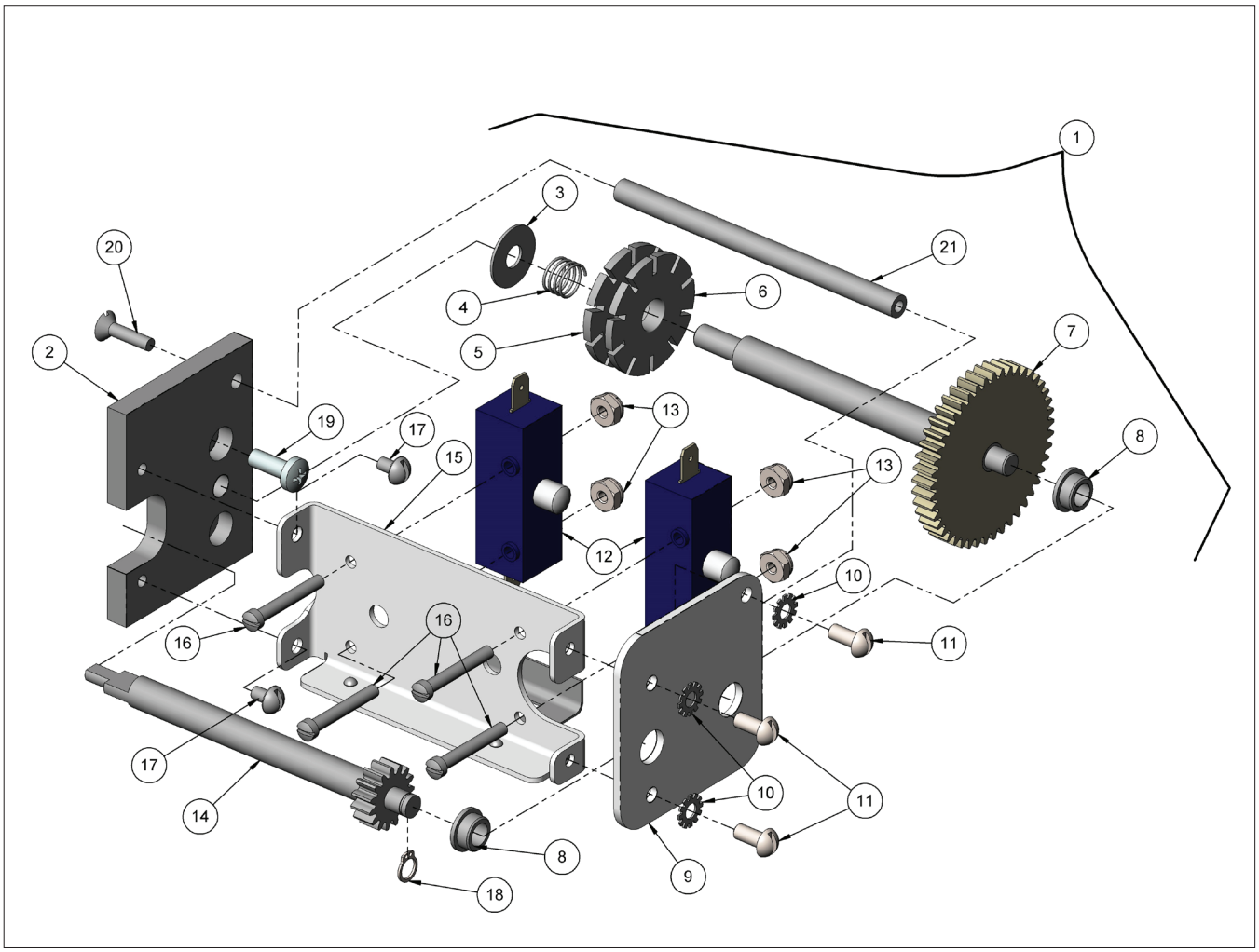


FIGURE 8-7B. GEARED LIMIT SWITCH PARTS USED ON LONG LIFT HOISTS

Ref No	P/N	Description	Qty
1	944JG6	Long Lift Limit Switch Asssembly (all items except 19)	
2	129J1	Mounting Plate	1
3	255K I6	Thrust Washer	1
4	PB-287	Spring	1
5	SK6000-63Z	Limit Switch Nut (Zinc/Silver)	1
6	SK6000-63W	Limit Switch Nut (Brass/Gold)	1
7	117JG2	Shaft and Gear Assembly	1
8	JF531 4	Bushing	1
9	258J8	End Plate	1
10	H4158	Lock Washer	3
11	H2741P	Screw	3
12	815J1	Switch	2
13	H3944	Locknut	4
14	427J1	Drive Pinion	1
15	258JG7	Frame and Guide Assembly	1
16	H1402P	Screw	4
17	854823	Screw	2
18	H5520	Retaining Ring	1
19	H2981P	Mounting Screw	2
20	H1210	Flat Head Screw	1
21	110J14	Post	1

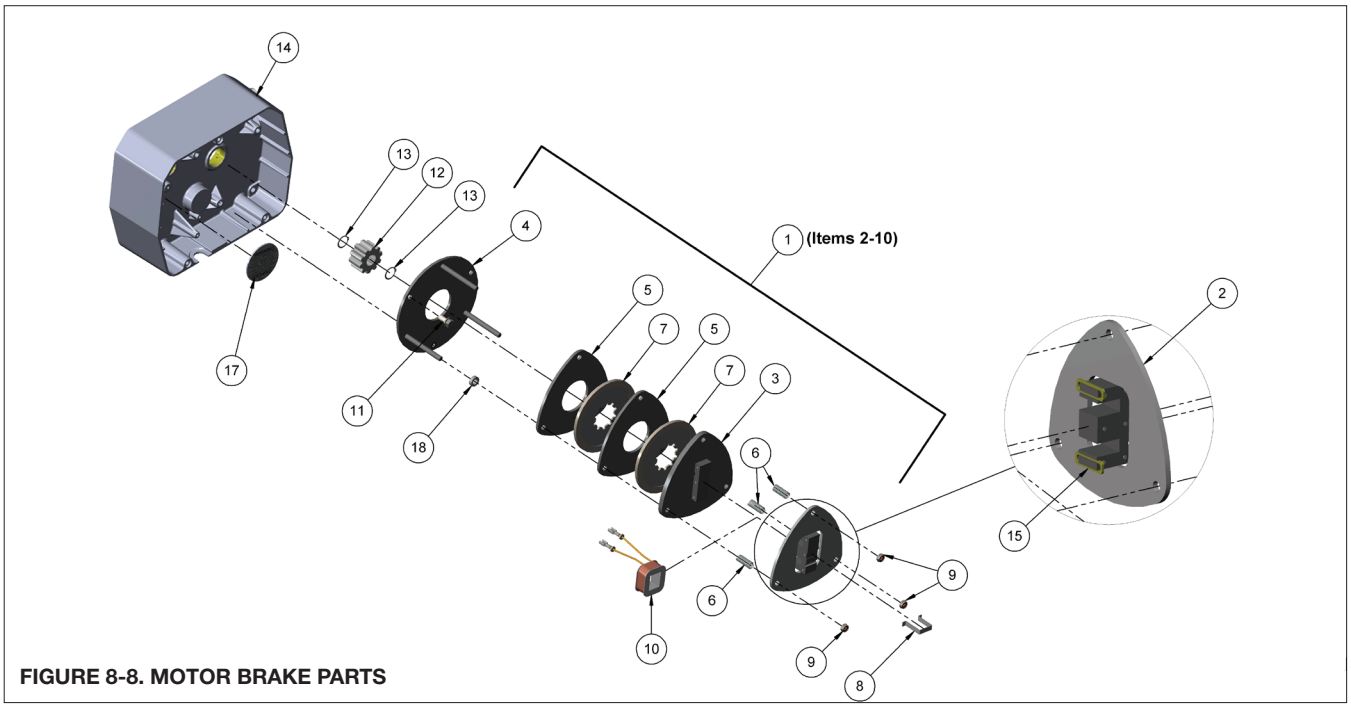


FIGURE 8-8. MOTOR BRAKE PARTS

Ref No	P/N	Description	Qty
	854JG24	Brake Assembly (230V, for 2HP Hoists)	
	854JG20	Brake Assembly (230V, for 3HP Hoists)	
	854JG25	Brake Assembly (460V, for 2HP Hoists)	
	854JG21	Brake Assembly (460V, for 3HP Hoists)	
	854JG26	Brake Assembly (575V, for 2HP Hoists)	
	854JG22	Brake Assembly (575V, for 3HP Hoists)	
	854JG27	Brake Assembly (208V, for 2HP Hoists)	
	854JG23	Brake Assembly (208V, for 3HP Hoists)	
	854JG37	Brake Assembly (380V, for 2HP Hoists)	
	854JG36	Brake Assembly (380V, for 3HP Hoists)	
2	291JG8	Plate and Frame Assembly	1
3	291JG9	Plate and Armature Assembly	1
4	290JG4	Plate and Stud Assembly	1
5	291J10	Plate	2
6	344J4	Spring	3
7	581JG2	Brake Disc assembly	3
8	JF710	Retainer	1
9	H3978	Lock Nut	3
10	JF853 2	Coil (230V, 60Hz)	1
	JF853 3	Coil (460V, 60Hz)	1
	JF853 4	Coil (575V, 60Hz)	1
	JF853 5	Coil (208V, 60Hz)	1
	JF853 6	Coil (380V, 50Hz)	1
11	H2988P	Screw	3
12	142J2	Brake Adapter	1
13	H5527	Retaining Ring	2
14	34J2	Transmission Cover (Reference - See Figure 8-1)	1
15	860J1	Shading Coil Element (Must attache to frame with H7812 adhesive)	2
16	H7812	Adhesive (1 oz. tube) (Not Shown)	1
17	676J1	Decal (Warning)	1
18	200J15	Spacer (Replaces Ref. No. 7 (1) on 2 Hp Brake Assembly Only)	3

NOTE: Standard 230/460 dual voltage units use 230v.

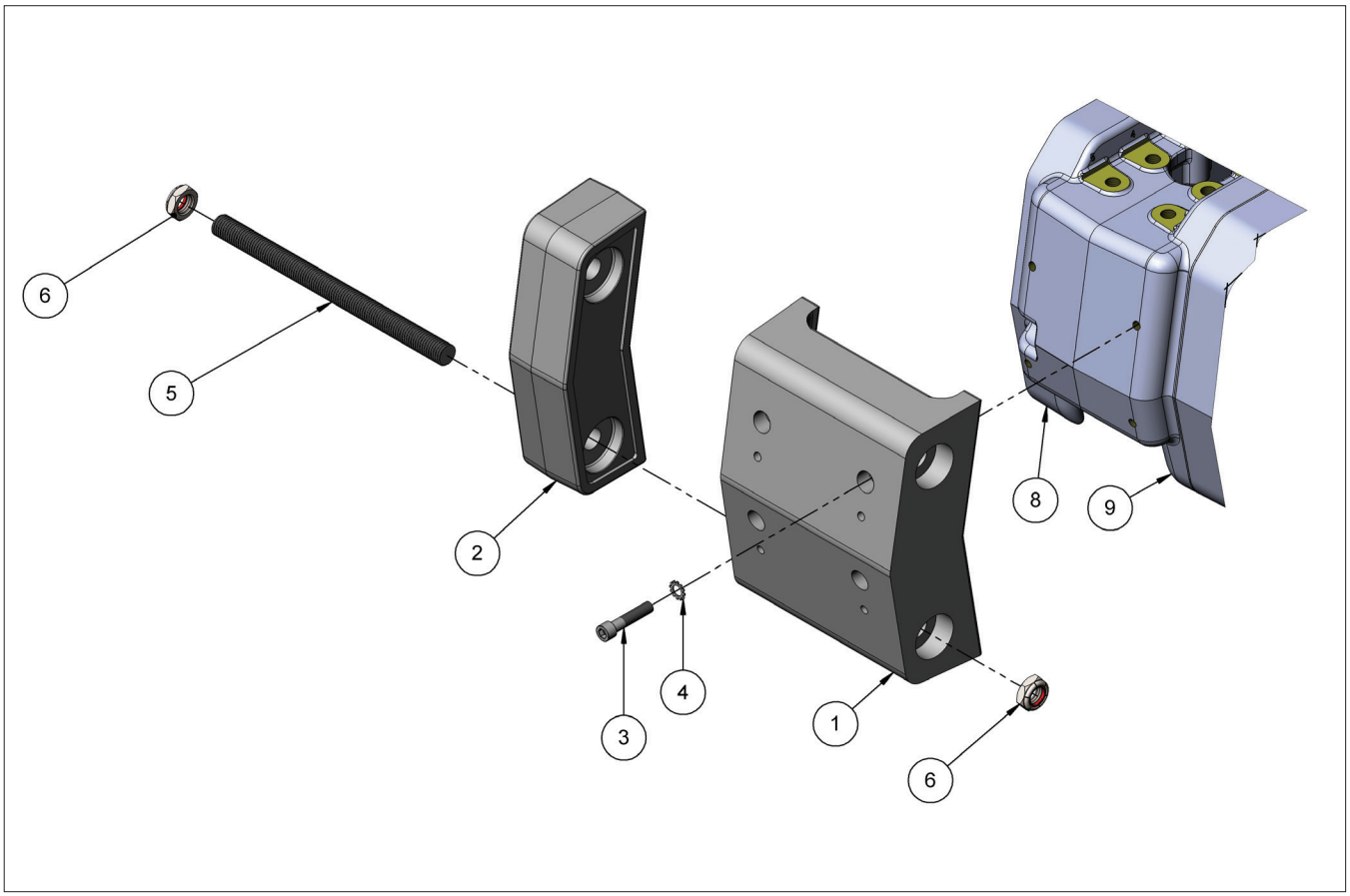


FIGURE 8-9. COUNTERWEIGHTS

Ref No	P/N	Description
1	52J2	Counterweight (40 lbs)
2	52J3	Counterweight (20 lbs)
3	S49 22	Socket Head Cap Screw
4	H4157	Lock Washer
5		Pin, Threaded
6	H3947	Nut
8		Sheave Housing, Motor Side (Reference - See Figure 8-1)
9		Sheave Housing, Transmission Side (Reference - See Figure 8-1)
10*	12951	Counterweight Kit (40 lbs)
11*	12952	Counterweight Kit (60 lbs)
12*	12953	Counterweight Kit (80 lbs)
13*	12954	Counterweight Kit (100 lbs)
14*	12955	Counterweight Kit (120 lbs)
15*	12956	Counterweight Kit (140 lbs)
16*	12957	Counterweight Kit (160 lbs)
17*	12958	Counterweight Kit (180 lbs)
18*	12959	Counterweight Kit (200 lbs)
19*	12960	Counterweight Kit (220 lbs)

*Not Shown
Kit includes counterweights, threaded pins and hardware.

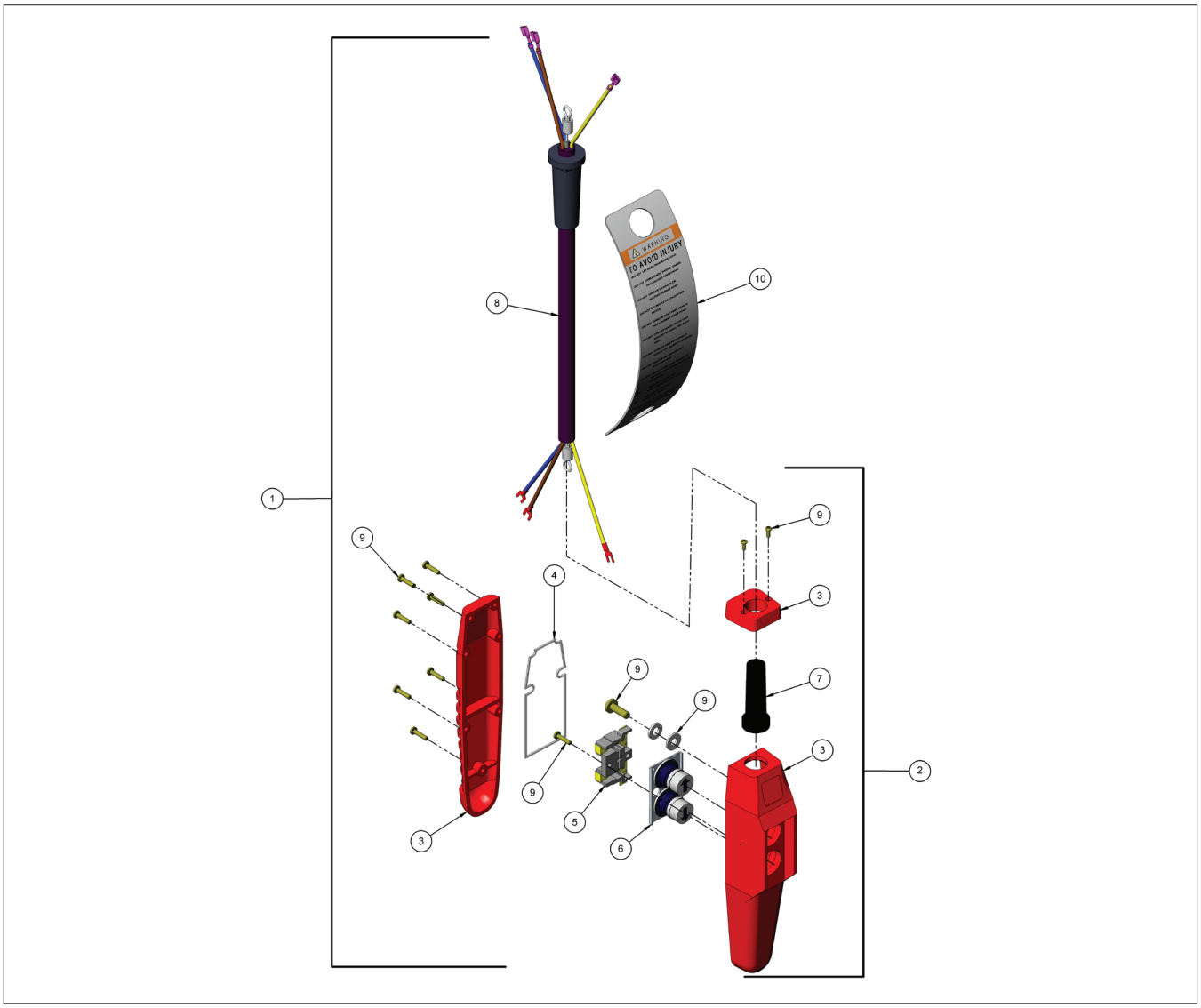


FIGURE 8-10A. PUSHBUTTON (SINGLE SPEED HOISTS)

Ref No	P/N	Description
1		Pushbutton Station & Control Cable Assembly (Consists of Ref. No 2-10)
	PB2100 6	Pushbutton Cable Assembly 6 ft. Cable Length (Consists of Ref. No. 2-10)
	PB2100 11	Pushbutton Cable Assembly 11 ft. Cable Length (Consists of Ref. No. 2-10)
	PB2100 16	Pushbutton Cable Assembly 16 ft. Cable Length (Consists of Ref. No. 2-10)
	PBS2100-*	Special Drop (* Equal to the Cable Length)
2	36900R	Pushbutton Station (Consists of Ref. No. 3-7, & 9)
3	36998R	Enclosure
4	36986	Gasket
5	36987	Contact Assembly (Consists of Ref. No. 5 & No. 6)
6	36988	Button Assembly
7	36989	Grommet
8	PBC2100 6	Control Cable Assembly 6 ft. Cable Length
	PBC2100 11	Control Cable Assembly 11 ft. Cable Length
	PBC2100 16	Control Cable Assembly 16 ft. Cable Length
	PBCS2100 *	Special Drop (* Equal to the Cable Length)
9	36939	Hardware Kit
10	687K3W	Warning Tag

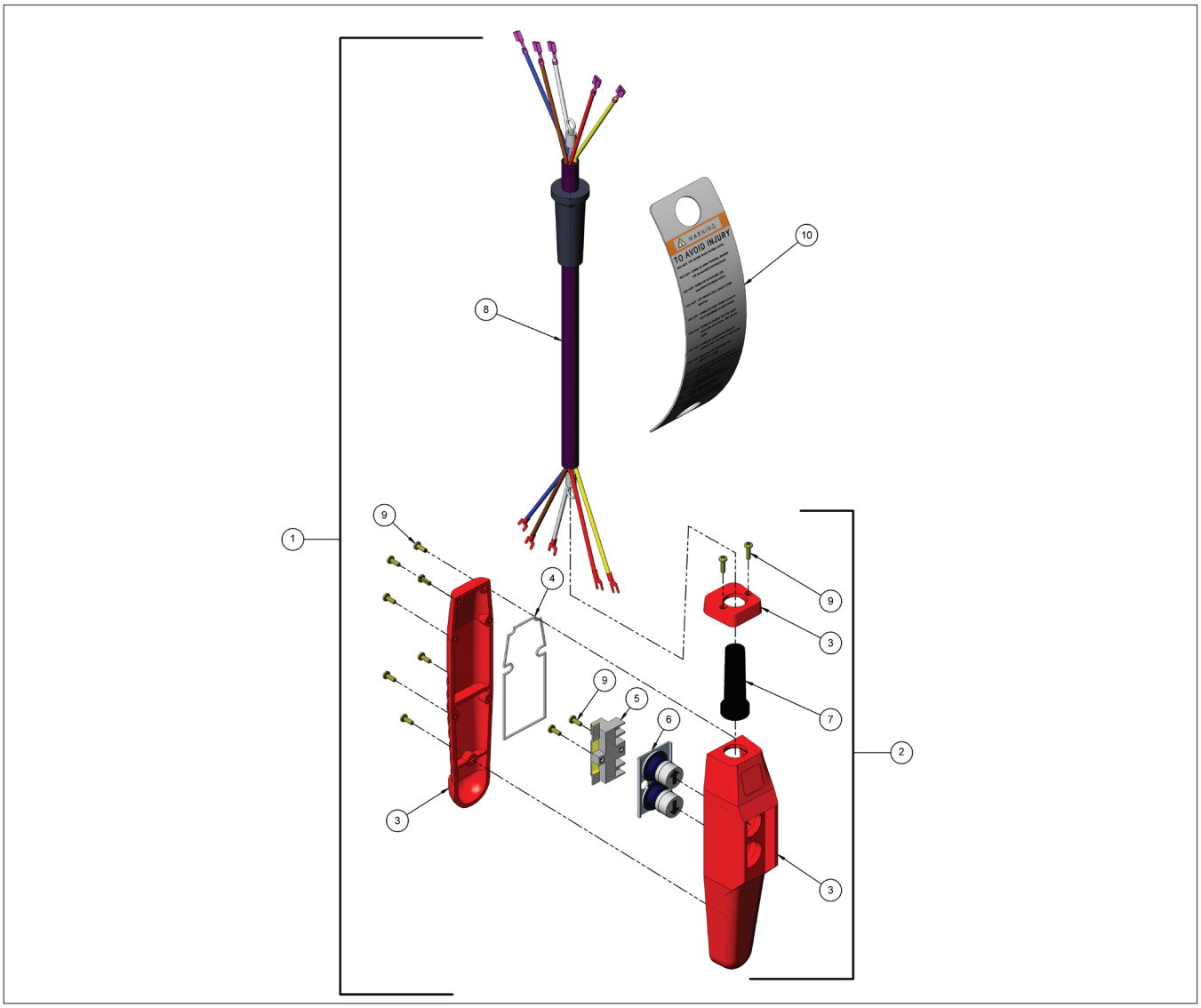


FIGURE 8-10B. PUSHBUTTON (TWO SPEED HOISTS)

Ref No	P/N	Description
1		Pushbutton Station & Control Cable Assembly (Consists of Ref. No 2-9)
	PB2200 6	Pushbutton Cable Assembly 6 ft. Cable Length (Consists of Ref. No. 2-9)
	PB2200 11	Pushbutton Cable Assembly 11 ft. Cable Length (Consists of Ref. No. 2-9)
	PB2200 16	Pushbutton Cable Assembly 16 ft. Cable Length (Consists of Ref. No. 2-9)
	PBS2200-*	Special Drop (* Equal to the Cable Length)
2	36800R	Pushbutton Station (Consists of Ref. No. 3-6)
3	36998R	Enclosure
4	36986	Gasket
5	70964	Contact Assembly (Consists of Ref. No. 5 & No. 6)
6	36988	Button Assembly
7	36866	Grommet
8	PBC2200 6	Control Cable Assembly 6 ft. Cable Length
	PBC2200 11	Control Cable Assembly 11 ft. Cable Length
	PBC2200 16	Control Cable Assembly 16 ft. Cable Length
	PBCS2200 *	Special Drop (* Equal to the Cable Length)
9	36939	Hardware Kit
10	687K3W	Warning Tag

NOTES

WARRANTY

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.

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.

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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.**

CMCO INTELLIGENT MOTION

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