

COFFING®

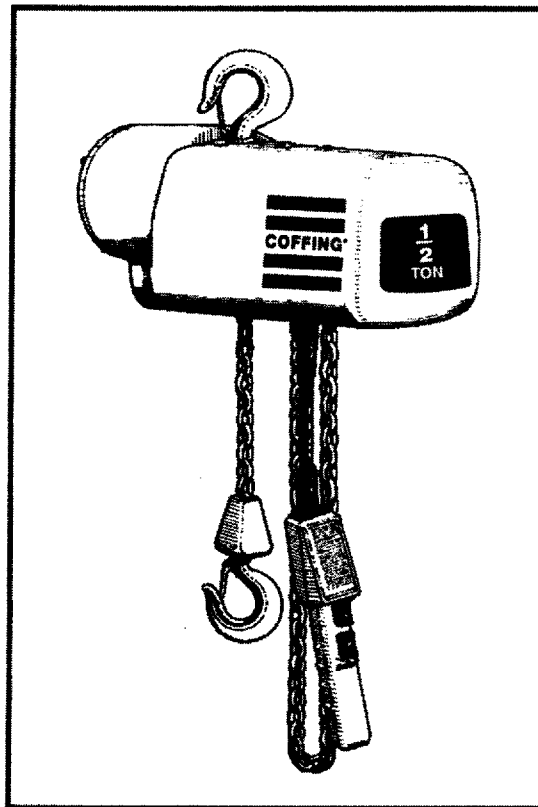
OPERATING & MAINTENANCE INSTRUCTIONS

WITH PARTS LIST

PUBLICATION PART NO. JL680-1

HOISTS

ELECTRIC CHAIN HOISTS



ELC SERIES

250 to 4000 Lbs.
(1/8 to 2 Tons)

Model Nos.

ELC 0232

ELC 0516

ELC 0532

ELC 1016

ELC 1032

ELC 2016

ELC 4008

IMPORTANT — 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 prevent 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.

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DO'S AND DO NOT'S

Electric and Air Powered Hoists

The following warnings and operating practices have been taken from American National (Safety) Standards ANSI B30.16 and are intended to avoid unsafe hoisting practices which might lead to personal injury or property damage.

These recommendations apply to all electric and air powered hoists for vertical lifting service involving material handling of freely suspended unguided loads.

WARNING: TO AVOID INJURY

1. **DO** read ANSI B30.16 Safety Standard for Overhead Hoists and Hoist Manufacturer's Operating and Maintenance Instructions.
2. **DO** be familiar with hoist operating controls, procedures and warnings.
3. **DO** make sure hook travel is in the same direction as shown on controls.
4. **DO** make sure hoist limit switches function properly.
5. **DO** maintain firm footing when operating hoist.
6. **DO** make sure that load slings or other approved sling attachments are properly sized and seated in the hook saddle.
7. **DO** make sure that the hook latch, if used, is closed and not supporting any part of the load.
8. **DO** make sure that load is free to move and will clear all obstructions.
9. **DO** take up slack carefully, check load balance, lift a few inches and check load holding action before continuing.
10. **DO** avoid swinging of load or load hook.
11. **DO** make sure that all persons stay clear of the suspended load.
12. **DO** warn personnel of an approaching load.
13. **DO** protect wire rope and load chain from weld spatter or other damaging contaminants.
14. **DO** promptly report any malfunction, unusual performance, or damage of the hoist.
15. **DO** inspect hoist regularly, replace damaged or worn parts, and keep appropriate records of maintenance.
16. **DO** use the hoist manufacturer's recommended parts when repairing a hoist.
17. **DO** use hook latches wherever possible.

18. **DO** apply lubricant to the wire rope or load chain as recommended by the hoist manufacturer.
19. **DO NOT** lift more than rated load.
20. **DO NOT** use the hoist load limiting device to measure the load.
21. **DO NOT** use damaged hoist or hoist that is not working correctly.
22. **DO NOT** use the hoist with twisted, kinked, damaged or worn wire rope or chain.
23. **DO NOT** lift a load unless wire rope is properly seated in its groove(s) or unless chain is properly seated in chain wheel(s) or sprocket(s).
24. **DO NOT** use load rope or load chain as a sling or wrap rope or chain around the load.
25. **DO NOT** lift a load if any binding prevents equal loading on all supporting ropes or chains.
26. **DO NOT** apply the load to the tip of the hook.
27. **DO NOT** operate unless load is centered under hoist.
28. **DO NOT** allow your attention to be diverted from operating the hoist.
29. **DO NOT** operate the hoist beyond limits of load rope or load chain travel.
30. **DO NOT** use limit switches as routine operating stops unless recommended. They are emergency devices only.
31. **DO NOT** use hoist to lift, support or transport people.
32. **DO NOT** lift loads over people.
33. **DO NOT** leave a suspended load unattended unless specific precautions have been taken.
34. **DO NOT** allow sharp contact between two hoists or between hoist and obstructions.
35. **DO NOT** allow the rope, chain or hook to be used as a ground for welding.
36. **DO NOT** allow the rope, chain or hook to be touched by a live welding electrode.
37. **DO NOT** remove or obscure the warnings on the hoist.
38. **DO NOT** adjust or repair a hoist unless qualified to perform hoist maintenance.
39. **DO NOT** attempt to lengthen the load rope or chain or repair damaged load rope or chain.

SECTION I

INTRODUCTION

1-1. General Information

- a. This Electric Chain Hoist is a rugged, easily portable hoist for quick, precise lifting. Its specially designed pushbutton control station with 24-volt control permits one-hand operation so that operator has one hand free to help guide the load. Housing and frame are of tough die-cast aluminum alloy for light weight, constructed in sections to permit easy access to electrical controls.
- b. Limit switch can be adjusted easily. Brake is instant release type for reliable, sure operation. Gearing is heat treated alloy steel. Quick-connect terminals facilitate changing voltages on all dual voltage motors.
- c. Hooks with latches are standard equipment at no additional cost on all hoist models.

1-2. Application Information

This hoist is intended for general industrial use in the lifting and transporting of freely suspended material loads within its rated capacity. Prior to installation and operation, we caution the user to 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 -20°F or above 140°F .
- b. **Lifting of Hazardous Loads** – This hoist is not recommended for use in lifting or transporting hazardous loads or materials which could cause widespread 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.

SECTION 11

INSTALLATION

2-1. Safety Notes

- a. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
- b. Hoist must be securely and adequately grounded. Hoist power cable is provided with an additional lead (green) for grounding purposes.
- c. Always disconnect power source before working on or near a hoist or its connected load. If the power disconnect point is out of sight, lock it in the open position and tag to prevent unexpected application of power.
- d. Be careful when touching the exterior of an operating motor—it may be hot enough to be painful or cause injury. With modern motors this condition is normal if operated at rated load and voltage—modern motors are built to operate at higher temperatures.
- e. Protect the power cable and control cable from coming in contact with sharp objects.
- f. Do not kink power cable and control cable and never allow the cable to come in contact with oil, grease, hot surfaces, or chemicals.
- g. Make certain that the power source conforms to the requirements of your equipment.
- h. Inspect the unit daily before operating hoist.
- i. Cluttered areas and benches invite accidents.
- j. The operator should not engage in any practice which will divert his attention while engaged in operating the hoist.
- k. Before using the hoist, the operator should be certain that all personnel are clear.
- l. Do not operate hoist with loads exceeding its rated capacity.
- m. Supporting frames or beams used as a hoist hanger must have a greater load capacity than the hoist.
- n. Do not attempt to operate hoist beyond normal maximum lift range.
- o. Align hoist for a straight line pull. Avoid side pull or end pull.
- p. Do not operate hoist with twisted or damaged chain.
- q. Do not operate a damaged or malfunctioning hoist until necessary adjustments or repairs have been made.
- r. Do not use hoist to lift people or to carry loads over people.
- s. Do not leave a load suspended in the air unattended.
- t. Always remove load before making repairs.
- u. Do not remove or obscure capacity or warning decals.

2-2. Hoist Installation

2-2-1. Before installing the hoist, check the following:

- a. Make sure all supporting structures and attaching devices are strong enough to hold your intended loads.
- b. Provide proper branch circuit protection for the hoist as recommended in the National Electrical Code.
- c. Power supply should be plus or minus 10% of the voltage specified on the motor name plate. Be sure dual voltage hoists are connected or wired to correspond with your power supply (See Section VII, Wiring).
- d. Installation area must provide proper operating conditions for the operator including sufficient room for the operator and other personnel to stand clear of the load at all times.
- e. On installations where the slack chain hanging from the unit may be objectionable, the use of a chain container is recommended. See paragraph 2-3 for installation instructions.

2-2-2. Install vent plug. The hoist is shipped with a temporary plug in the top of the hoist. Remove this plug and install the vent plug which is in the envelope that is attached. To prevent oil spillage, a solid plug must be installed whenever the hoist is transported.

2-2-3. Before operating the hoist, be sure to observe the following:

- a. ALWAYS DISCONNECT HOIST FROM POWER SUPPLY before removing electrical cover or when making any electrical connection in the hoist or pushbutton station.
- b. The ground wire (green colored) of the power cable should always be connected to a suitable ground by means of a screw or clamp.
- c. When installing a three-phase hoist, make only temporary connections at the power source.
Push the UP button and observe the direction of the load block. If it raises, the phasing is correct and permanent connections may be made at the power source. 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 over-travel. Reverse any two wires (except the green ground wire) at the power source to correct the load hook direction (phasing). Do not change connections in the hoist or pushbutton assembly.
- d. Make sure load chain is not twisted as it travels into the hoist.
- e. Operate hoist in a hanging position only. Hoist should be permitted to align itself for a straight line pull. Do not attempt to pull around corners.
- f. Read ANSI-B30. 16 Safety Code for Hoists.

2-2-4. Lubricate chain, See Lubrication, paragraph 4-9.

2-2-5. Check function of limit switches. Before placing hoist in operation, check limit switch adjustment. Operate pushbutton until near stop point and inch into stop limit both top and bottom. If either switch is not correct, adjust according to limit switch adjustment under Maintenance, paragraph 4-6.

2-3. Chain Container Installation

NOTE

A chain container should be used where the surplus chain interferes with the work area or otherwise creates a hazardous condition. See page 31 for chain container specification information.

The chain container is illustrated in Figure 2-1. While referencing Figure 2-1, proceed as follows to install the chain container.

- Remove dead end screw and washers and let chain hang free.
- Place chain container bracket flush against housing. Replace washers and screw. Tighten securely.
- Attach chain container to bracket with two open links and then close the links.
- Run load hook down to its lowest position. Place the slack end of chain in chain container. Feed the remainder of chain into container by operating hoist in the Up direction to the top limit. This will permit chain to pile freely and eliminate possibility of fouling which may occur if chain is placed in container by hand.

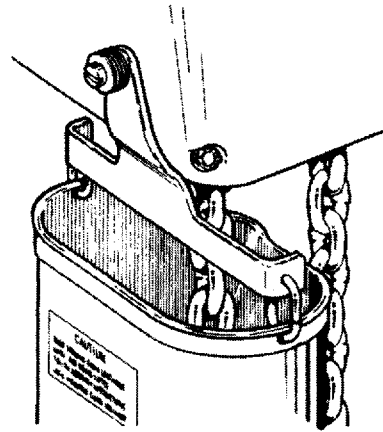


FIGURE 2-1
CHAIN CONTAINER INSTALLATION

CAUTION

Do not allow load to come in contact with chain container. If this situation exists, reset the Up limit switch (See Limit Switch Adjustment, paragraph 4-6) so that hook block stops below chain container.

CAUTION

Do not use a chain container for longer lifts than specified in the table on page 31. Serious damage to the hoist may result.

SECTION III

OPERATION

3-1. Overload Limiting Protection

This hoist is equipped with a factory-calibrated overload limiting clutch which permits lifting loads within rated capacity and prevents lifting excessive loads which could damage the hoist. If the load exceeds the lifting capability of the overload clutch, the hoist will not lift the load, but the motor will run as long as the UP button is pressed. Repeated attempts to lift an excessive load will overheat the overload clutch and cause permanent damage to the clutch.

CAUTION

The overload limiting clutch is an emergency protection device. It should not routinely be used to measure the maximum load to be lifted.

3-2. Safety Notes

This hoist is designed for safe operation within the limits of its rated load. There are many safety features to protect the operator from injury due to failure of the hoist. Here are some points which should be observed to maintain safe operation.

- A strain cable is built into the pushbutton cable and is securely anchored to the pushbutton station and the hoist housing. The pushbutton station may be used to pull the hoist when mounted on a free moving trolley.

- Don't overload the hoist.
- Don't make extreme side pulls with the hoist.
- Operate the hoist only in a hanging position with adequate support.
- Be sure there are no twists in the load chain as it travels into the hoist housing. This condition should be constantly checked on double chain hoists because it is possible for the load block to be "capsized" or turned over one or more times.

CAUTION

Do not sling the hoist load chain around the load to be lifted. Use a proper sling.

- Before raising a load, always check to see that it is held securely in the hook or sling chains, etc. Raise the load only until the load chain is taut and then double check the rigging before continuing to raise the load.
- Do not stand beneath a load! Do not move a load in such a manner as to endanger personnel.
- Don't lower into areas where visibility is obscured unless someone else is guiding the operation.
- Use common sense at all times when operating a hoist.

- j. Do not operate if direction of hook travel is not the same as indicated on button being pushed.
- k. Do not operate unless hook travel limit devices function. Test without load each shift.
- l. Do not operate when hoist is not centered over load.
- m. Do not operate if chain is not seated properly in sprockets or sheave grooves.
- n. Do not operate a damaged or malfunctioning hoist.
- o. **DO NOT USE HOIST TO LIFT, SUPPORT OR OTHERWISE TRANSPORT PEOPLE.**

SECTION IV

MAINTENANCE AND INSPECTION

4-1. General

A planned inspection routine should be established for this hoist based upon frequency of use, severity of use, and environmental conditions. (Reference American National Standard ANSI-B30.16). Some inspections should be made frequently (daily to monthly) and others periodically (monthly to yearly). It is strongly recommended that an Inspection and Maintenance Check List and an Inspector's Report, similar to those shown in Figures 4-6 and 4-7, be used and filed for reference. All inspections should be made by, or under the directions of, a designated inspector. Special inspections should be made following any significant repairs or any operating occurrence leading one to suspect that the hoist's capabilities may have been impaired.

4-2. Lowering Without Power

If the power fails with a load suspended, the hoist will automatically stop. In an emergency the load can be lowered without power as follows:

- a. **DISCONNECT HOIST FROM POWER SUPPLY AND REMOVE ELECTRICAL COVER.**
- b. Open disc brake manually by using two screwdriver blades, one on each side of brake at point close to brake spring posts. Using housing flange as pivot point, apply pressure to underside of armature plate (points "X", Figure 4-5) to close solenoid and release brake. **CAUTION:** Do not allow screwdriver blades to touch rotating friction discs "C."

CAUTION

DO NOT ALLOW THE LOAD TO DESCEND RAPIDLY. This causes the motor to race and serious damage may result. Use several quick releases instead of holding brake open continuously. Do not exceed normal lowering speed.

4-3. Hooks

- a. Inspect hooks once daily for cracking, extreme wear or spreading. Replace hooks showing any of these signs. If the throat openings are spread wider than the maximum permissible 15% increase listed here, the hooks have been overstressed and must be replaced. Any hook that is bent or twisted more than 10 degrees from the plane of an unbent hook must also be replaced.
- b. Inspect to see that hook latches perform function of closing off the hook throat opening in a secure manner when load is attached. Also, inspect hook threaded connections for stripping or other damage. Retaining method should be intact. Unthreaded pinned collars should have pin removed and examined for cracks or bending. This inspection should be

performed as often as practical, but not less than once every six months.

- c. In addition to above, load hooks should be inspected for cracks by the magnetic particle, dye penetrant or other suitable crack testing inspection methods. This should be done at least once a year.

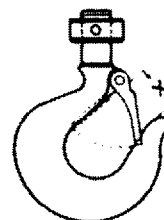


FIGURE 4-1. HOOK INSPECTION

Hoist Capacity	"X" Dimension*	
	Top Hook	Bottom Hook
1/8, 1/4, 1/2 and 1 Ton	17/32"	15/32"
2 Ton	17/32"	17/32"

* Dimension of throat opening of hook with latch fully retracted.

4-4. Chain

Chain is to be kept clean and lubricated. See Lubrication (paragraph 4-9). Visually check chain every time hoist is used. Hoist must not be operated when chain is twisted or kinked. An important phase of hoist maintenance is chain inspection. Check individual links and check for chain elongation.

- a. 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 pounds) 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.
- b. If the length of the worn chain is more than 1 1/2% longer than the unused chain (.015" per inch of chain measured), then 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.

CAUTION

The chain used on this hoist has very carefully controlled dimensions and heat treat. Do not attempt to substitute other manufacturer's chain.

4-5. Chain Replacement

a. With Chain Already in Hoist

(See Chaining Diagram, Figure 4-3)

- 1) Run hook up to its top limit.
- 2) DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover.
- 3) With a screwdriver, push the spring guide plate (#1) out of the slots in the plastic limit switch nuts. Turn the slotted nut nearest you (#2) back to about the center of the threaded screw. Do not disconnect the wires from the limit switches (See Figure 4-2).

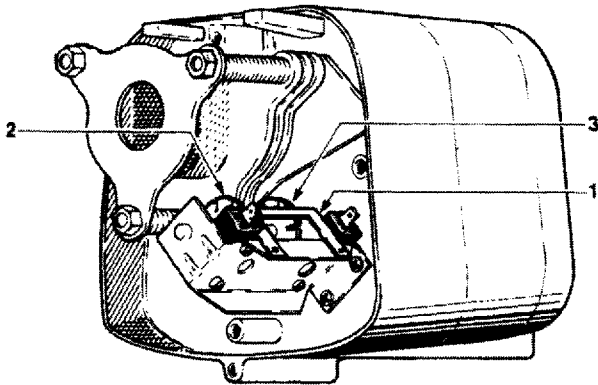


FIGURE 4-2. CHAIN REPLACEMENT

- 4) Remove the load hook from the old chain.
- 5) Make a "C" shaped chain link by grinding through one side of the end link of either the old or new chain.

6) Hook the special "C" link to the end link of the new chain and to the end link of the old chain 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 dead end in Step 10.

7) With the electrical cover off, connect the hoist to power supply. Be sure the green ground wire is properly grounded. (See Installation, paragraph 2-2-3, b).

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

9) DISCONNECT HOIST FROM POWER SUPPLY

10) Remove both the "C" link and the old chain from the dead-end screw on the side of the hoist with the soft link supplied, observing proper orientation of the dead end of the chain when secured. Avoid twists in the chain.

11) Adjust the lower limit switch (See Adjusting Lower Limit, paragraph 4-6, b).

12) Attach the bottom hook on single-chained hoists using a new load block screw (Figure 8-6). On double-chained hoists, feed the chain through the load block (welds of the upstanding links will be in toward the sheave) and fasten the end of the chain to the chain support that is attached to the bottom of the hoist using a new chain support pin (#172, Figure 8-6). Be sure there are no twists in the chain.

13) Adjust the upper limit switch (See Adjusting Upper Limit, paragraph 4-6, a).

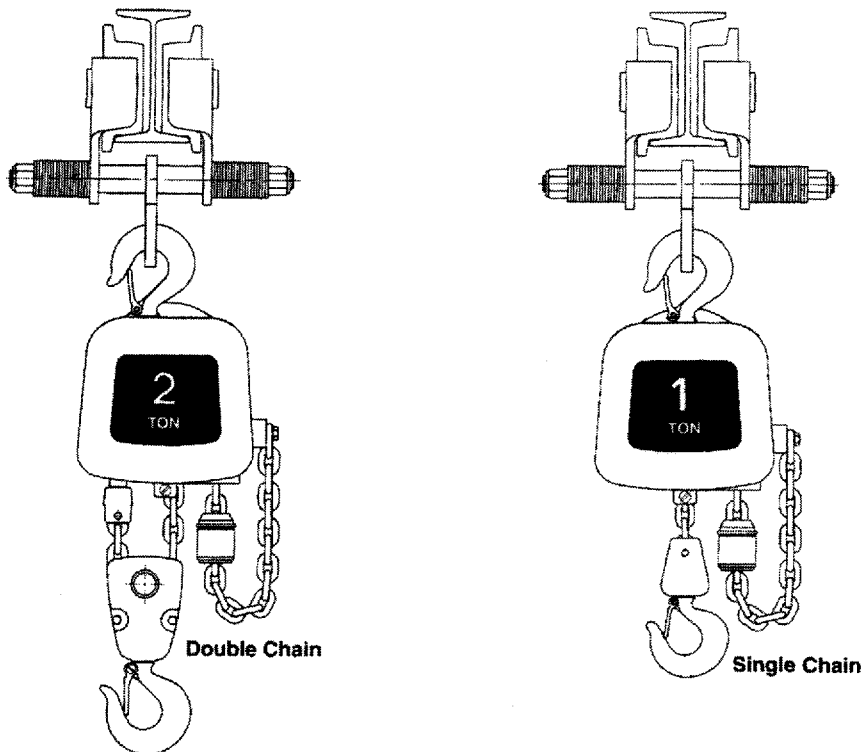


FIGURE 4-3. CHAINING DIAGRAMS

b. With No Chain in Hoist Refer to Figure 4-4 and proceed as follows:

- 1) DISCONNECT HOIST FROM POWER SUPPLY and move hoist to a work table. Do not remove the electrical cover.
- 2) Lay hoist on its side and remove four screws from the motor end of the hoist housing.
- 3) Carefully pull the motor and housing assembly off the hoist. The two sections come apart where the chain enters the hoist.

CAUTION

There are wires running through the hoist. Carefully ease the hoist sections apart — do not jerk them apart.

- 4) Turn the two hoist sections at right angles and remove the chain guide screw(s) on the nearest chain guide (#1).
- 5) Remove the two chain guide plate screws (#2) and the nearest chain guide plate. Be careful not to lose the two spacers that are between the chain guide plates.

NOTE

Inspect chain guides and load sheave for wear, replace as needed.

- 6) Lay the new chain over the load sheave. Be sure the welds of the upstanding links are out away from the load sheave and that proper orientation is observed for attachment of the dead end. Also be sure the load hook assembly (if already attached to the chain) is toward the center of the hoist or to your right as you face the load sheave.
- 7) Replace the chain guide plate and the chain guide. Grease the splined shafts that project from both the housing and the motor.
- 8) Place the motor coupling on the splined shaft and carefully fit the two hoist sections together. Be sure the dead-end nut, the top hook and the support screw (double-chained hoists only) are all in place. On single-chained hoists, the hook shank goes in the center hole; on double-chained hoists, it goes in the off-center hole. Be careful not to pinch any of the wiring. Turn the hoist on its side and replace the four screws and tighten securely.
- 9) Fasten the end of the chain nearest to the dead-end screw to this screw on the side of the hoist with a soft chain link. **THE DEAD END OF THE CHAIN IS THE ONLY PLACE A SOFT LINK IS EVER TO BE USED.** Space chain out with flat washers so no force is exerted on hoist housing by the first regular link in the chain. Avoid twists in the chain. Attach the bottom hook to the other end of the chain on single-chained models. On double-chained hoists, feed the free end of the chain through the load block (welds on the upstanding links will be in toward the sheave) and fasten end link of chain to the chain support located on the bottom of the hoist. Be sure there are no twists in the chain.
- 10) Adjust both the upper and lower switches (See Limit Switch Adjustment, paragraph 4-6).

4-6. Limit Switch Adjustment (Refer to Figure 4-2.)

IMPORTANT—Before placing hoist in operation, check the limit switch adjustment. Limit switches are provided to protect the

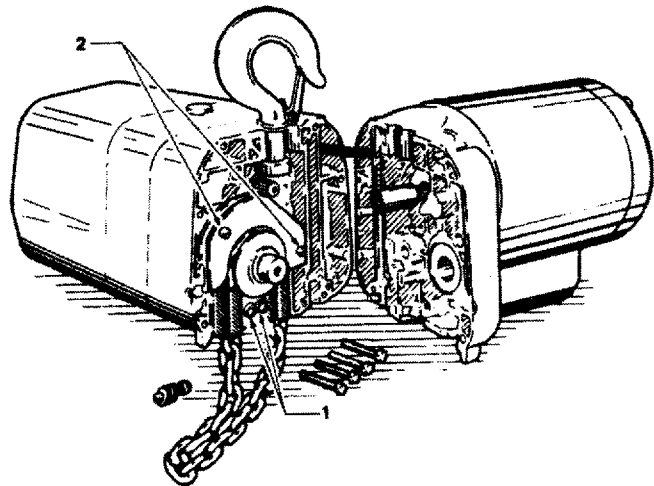


FIGURE 4-4. CHAIN REPLACEMENT

hoist against damage resulting from over-travel or to allow setting the hook travel within the factory-set limits of travel. For easy identification and association with the proper direction of travel the upper and lower limit switch adjusting nuts are color-coded gold and silver respectively. Each limit nut has 10 slots for fine adjustment, and the increment of adjustment is such that one (1) slot is equivalent to approximately one (1) link of chain travel. Movement of the limit switch nuts toward or away from each other increases or decreases the hook travel respectively. Care should be exercised when adjusting either limit of travel.

a. Adjusting Upper Limit (Gold Nut)

- 1) Suspend the hoist. Carefully raise the load block to point where the top of it is 3" or more from the hoist housing (or to the limit desired in any particular application, allowing the minimum of 3").
- 2) DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover.
- 3) With a screwdriver, pry the spring guide plate (#1) out of the slots in the colored limit switch nuts (#2 & #3).
- 4) Turn the slotted gold nut (#2) toward its limit switch until the switch "clicks," then turn two slots farther. Release the spring guide plate and be sure it slips back into the slots in both colored limit switch nuts. Do not disturb the other slotted nut if it has been set previously.

b. Adjusting Lower Limit (Silver Nut)

- 1) Suspend the hoist. Carefully lower the load block to a point where the dead-end loop of the chain hangs down 6" or more from the hoist housing (or the limit desired in any particular application allowing the minimum 6").
- 2) DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover.
- 3) With a screwdriver, push the spring guide plate (#1) out of the slots in the colored limit switch nuts (#2 & #3).
- 4) Turn the slotted silver nut (#3) towards its limit switch until the switch "clicks," then turn two slots farther. Release the spring guide plate and be sure it slips back in the slots in both colored limit switch nuts. Do not disturb the other slotted nut if it has been set previously.

c. Check Both Upper and Lower Limits

- 1) Connect hoist to power supply. Be sure the green ground wire is properly grounded (See Installation, paragraph 2-2-3, b).
- 2) Check load hook direction (See Installation, paragraph 2-2-3, c).
- 3) Carefully raise load block to upper limit and observe if it stops automatically at desired level. Do not allow load block to run into hoist housing—this will damage the hoist. Maintain a minimum of 3 1/2 chain links between housing and top of hook swivel on single chain models and 2 chain links from dead-end support to top of load block on double chain models.
- 4) Carefully lower load block to lower limit and observe if it stops automatically at the desired level. Do not allow slackend loop of chain to become taut against hoist housing. This will damage the hoist. Maintain minimum of 13 chain links in the slack chain loop after hook block has reached its lowermost limit.
- 5) If upper and lower limits operate satisfactorily, hoist is ready for use. If they are not as desired, repeat adjustment.

CAUTION

If the wires running to the limit switches are ever disconnected for any purpose, be sure to replace wires in accordance with wiring diagrams, Section VII.

4-7. Brake

- a. Properly adjusted, this brake will release promptly when energized; is capable of both smoothly stopping and securely holding the rated capacity of the hoist. If the hoist develops either undesirable over-travel after the pushbutton is released (this condition is most noticeable in the lowering direction) or hesitates to lift the load promptly when the pushbutton is depressed (this condition is most noticeable in the hoisting direction) the brake should be adjusted.

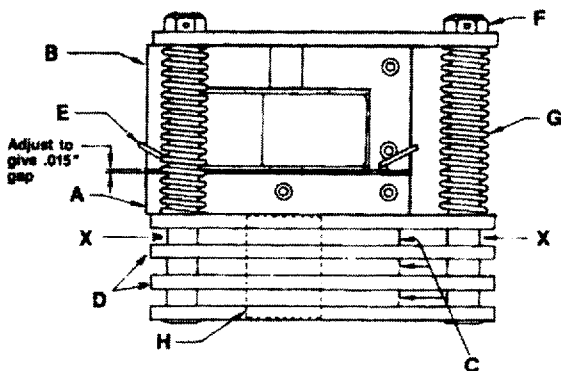


FIGURE 5-5. BRAKE ADJUSTMENT

b. Brake Adjustment

- 1) DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover.

- 2) With reference to Figure 4-5, the gap between the brake armature "A" and the field "B" should be checked. The correct gap is 0.015". Adjustment should not be necessary until gap reaches 0.050".
- 3) Adjust gap by adjusting the 3 lock nuts "F" and checking with a feeler gauge to be sure gap is the same on both ends of the solenoid.

CAUTION

Be sure the bottom of the armature does not bear against the splined adaptor "H." As adjustments are made, the built-in clearance will be reduced. When this clearance is gone REPLACE BRAKE DISCS.

- 4) Adjustment is now complete and the brake properly set. Replace the electrical cover, reconnect the power supply, and check hoist brake action.

4-8. Controller

Both the pushbutton and the magnetic controller are mechanically interlocked to prevent shorting the circuit and causing serious damage.

As part of maintenance, always check for proper closure of contact points as well as for burned contacts. If replacement is necessary, see Electrical Parts, Figure 8-4, for replacement parts.

4-9. Lubrication

Proper lubrication is necessary for long and relatively trouble-free hoist operation. Refer to the following and to Figure 4-8, Recommended Lubrication Schedule, for lubrication points, type of lubricant and frequency of lubrication.

- a. **Load Chain.** Clean the load chain with acid-free 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, frequent cleaning and oiling may be necessary. Never apply grease to the chain. See Lubrication Schedule, Figure 4-8.
- b. **Gearing.** The gear case of this hoist is filled at assembly with 1 1/2 pints of gear oil. Oil level can be checked by the following method. Lay hoist on its side as in Figure 4-9. Remove vent plug. Oil level should be even with the edge of the vent plug hole. See Figure 4-8 for recommended lubricants.
- c. **Bearings.** All bearings except hook and idler sheave bearings are lubricated at the factory and should not require additional lubrication. Noisy or worn bearings should be replaced.
- d. **Limit Switch Shaft.** The threaded limit switch shaft (Figure 8-9, ref. no. 287) should be given a light coat of grease to prevent rust.
- e. **Hook Bearings.** Apply a few drops of SAE 20-30 gear oil inside edge of shield and outside edge of bearing.
- f. **Idler Sheave Bearing (Bushing).** Disassemble load block and apply a light coat of NLGI #2 grease, or equivalent, inside of bearing. See Lubrication Schedule, Figure 4-8.

NOTE

If hoist is used in an atmosphere containing abrasive dust, frequent cleaning and oiling may be necessary.

**INSPECTION AND MAINTENANCE CHECK LIST
ELECTRIC POWERED OVERHEAD CHAIN HOIST**

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			
	DAILY	MONTHLY	1-12 MO.			
Operating Controls	*	*	*	Any deficiency causing improper operation		
Limit Switches	*	*	*	Any deficiency causing improper operation Pitting or deterioration		
Brake Mechanism	*	*	*	Slippage or excessive drift Glazing, contamination or excessive wear		
Hooks	*	*	*	Excessive throat opening 15% 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)	*	*	*	Cracks, 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 Lug Connections			*	Cracks, bending, stripped threads		
Pins, Bearings Bushings, Shafts, Couplings			*	Excessive wear, corrosion, cracks, distortion		
Nuts, Bolts, Rivets			*	Looseness, stripped and damaged threads, corrosion		
Sheaves			*	Distortion, cracks and excessive wear Build-up of foreign substances		
Housings, Load Block			*	Cracks, distortion Excessive wear, internal build-up 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		

NOTE: Refer to Maintenance and Inspection Sections of the Hoist Maintenance Manual for further details.

FREQUENCY OF INSPECTION:

Frequent — Indicates items requiring inspection 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 4-6. RECOMMENDED INSPECTION AND MAINTENANCE CHECK LIST

NOTE: This inspection and maintenance check list is in accordance with our interpretation of the requirements of the safety standard for overhead hoists ANSI-B30.16. It is, however, the ultimate responsibility of the employer/user to interpret and adhere to the applicable requirements of this safety standard.

SECTION V

TROUBLESHOOTING

TROUBLE	REMEDY
Hook Fails To Stop At End Of Travel.	
<ol style="list-style-type: none"> 1. Limit switches not operating. 2. Plastic limit switch nuts not moving on shaft. 3. Magnetic reversing switch malfunction. 	<ol style="list-style-type: none"> 1. Check adjustment. See paragraph 4-7. Check connections against wiring diagram. Tighten loose connections or replace. 2. Check for stripped threads or bent nut guide. 3. Remove electrical cover and check reversing switch.
Hoist Does Not Respond To Pushbutton.	
<ol style="list-style-type: none"> 1. Power failure in supply lines. 2. Wrong voltage or frequency. 3. Improper connections in hoist or pushbutton station. 4. Motor brake does not release. 5. Faulty magnetic hoist control switch. 	<ol style="list-style-type: none"> 1. Check circuit breakers, switches and connections in power supply lines. 2. Check voltage and frequency of power supply against the rating on the nameplate of the motor. 3. Check all connections at line connectors and on terminal block. Check terminal block on dual-voltage hoists for proper voltage connections. 4. Check connections to the solenoid coil. Check for open or short circuit. Check for proper adjustment. See paragraph 4-7. 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.	
<ol style="list-style-type: none"> 1. Hoist overloaded. 2. Brake not holding. 	<ol style="list-style-type: none"> 1. Reduce load to within rated capacity of hoist. 2. Check motor brake adjustment (see paragraph 4-7).
Hook Moves In Wrong Direction.	
<ol style="list-style-type: none"> 1. Three-phase reversal. 2. Improper connections. 	<ol style="list-style-type: none"> 1. Reverse any two wires (except the green ground wire) at the power source (see paragraph 2-2-3). 2. Check all connections against Wiring Diagram.
Hoist Hesitates To Lift When Energized.	
<ol style="list-style-type: none"> 1. Hoist overloaded. 2. Motor brake requires adjustment. 3. Worn overload limiting clutch. 4. Low voltage. 5. Faulty centrifugal switch or start capacitor (single phase hoists only). 	<ol style="list-style-type: none"> 1. Reduce load within rated capacity of hoist. 2. Check motor brake adjustment, see Figure 4-5. 3. Replace clutch. 4. Check voltage at hoist power cord with hoist starting. Voltage should be no less than 90% of voltage specified on hoist. 5. Replace faulty component.
Hook Raises But Will Not Lower. (Motor not running)	
<ol style="list-style-type: none"> 1. "Down" circuit open. 2. Broken conductor in pushbutton cable. 3. Faulty magnetic hoist control switch. 	<ol style="list-style-type: none"> 1. Check circuit for loose connections. Check "Down" limit switch for malfunction. 2. Check each conductor in the cable. If one is broken, replace entire cable. 3. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed.
Hook Lowers But Will Not Raise.	
<ol style="list-style-type: none"> 1. Hoist overloaded. 2. Low voltage. 3. "UP" circuit open. 4. Broken conductor in pushbutton cable. 5. Faulty magnetic hoist control switch. 6. Faulty capacitor (single-phase hoists only). 7. Worn overload limiting clutch. 	<ol style="list-style-type: none"> 1. Reduce load to within rated capacity. 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. Check circuit for loose connections. Check "UP" limit switch for malfunction. 4. Check each conductor in the cable. If one is broken, replace entire cable. 5. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed. 6. Check starting capacitor. Replace if necessary. 7. Replace clutch.
Lack Of Proper Lifting Speed.	
<ol style="list-style-type: none"> 1. Hoist overloaded. 2. Motor brake is dragging. 3. Low voltage. 4. Overload limiting clutch intermittently slipping. 	<ol style="list-style-type: none"> 1. Reduce load to within rated capacity of hoist. 2. Check for proper brake adjustment or other defects. See paragraph 5-3. 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. Replace clutch.
Motor Brake Noise Or Chatter. (While starting hoist)	
<ol style="list-style-type: none"> 1. Brake needs adjustment. 2. Low voltage. 	<ol style="list-style-type: none"> 1. Adjust as per paragraph 4-7. 2. Check voltage at hoist power cord with hoist starting. Voltage should be no less than 90% of the voltage specified. 115 volt hoists are particularly subject to voltage drop problems due to their high current draw. Conversion to 230 volt operation is suggested in extreme cases.
Motor Brake "Buzz." (Anytime hoist is running)	
<ol style="list-style-type: none"> 1. Brake needs adjustment. 2. Broken shading coil on brake frame. 	<ol style="list-style-type: none"> 1. Adjust as per paragraph 4-7. 2. Replace shading coil or complete brake frame assembly.

SECTION VI

HOIST REPAIRS

CAUTION

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 station for repairs. Use authorized repair parts only.

6-1. Preparation

- a. REMOVE LOAD AND DISCONNECT HOIST FROM POWER SUPPLY before starting to do any repairs or to take any sections apart.
- b. For major repairs or when the hoist is to be sectioned in the suspension area, it will be necessary to move the hoist to a work bench or table. For repairs which can be done by removing the electrical cover only, the hoist need not be moved. Lowering the hoist to a convenient working level is desirable.

The following repair instructions will help you in understanding repair procedures when related to the illustrated parts list in Section VIII of this manual. For clarity, these are broken down into areas.

6-2. Electrical Parts and Brake

- a. Remove electrical cover. All electrical parts are in this area except for motor and capacitor (single-phase only) which are on the opposite end of hoist. The contactor and terminal block are now accessible without further disassembly. Refer to wiring diagram inside cover. It will be necessary to remove the electrical panel to replace transformer, solenoid, limit switches, or brake parts.
- b. Remove electrical panel by removing three standoff screws. (See Electrical Parts, Figure 8-4. Figure 6-1 shows this area with panel removed.)

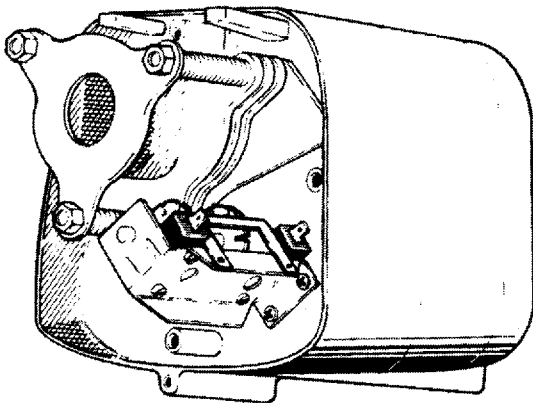


FIGURE 6-1. ELECTRICAL PANEL REMOVAL

- c. Remove transformer bolted to back of panel plate if necessary to replace. With the electrical panel taken off, the limit switch and brake are exposed.
- d. Refer to parts on Brake Parts, Figure 8-7, to disassemble brake. See Brake Adjustment (paragraph 4-7) in Maintenance Section to adjust brake.

- e. Refer to Limit Switch Parts, Figure 8-10, to disassemble limit switch. See Limit Switch Adjustment in Maintenance Section to adjust limit switch.
- f. For work on pushbutton, refer to Figure 8-8 for pushbutton parts and wiring diagram inside electrical cover for wiring instructions.

The hoist motor is located on the opposite end to that of the electrical parts, but the two are tied together with electrical leads running through the housing. Refer to Motor Parts (Single Phase, Figure 8-2; Three Phase, Figure 8-3) and to wiring diagram inside electrical cover.

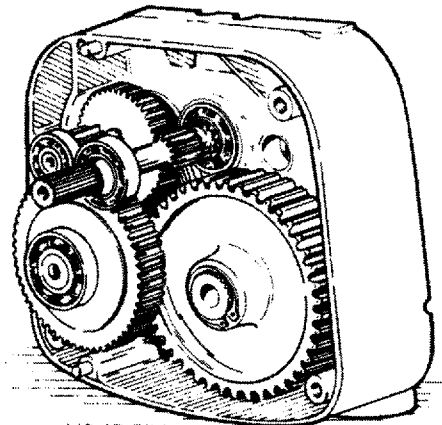


FIGURE 6-2. ASSEMBLED GEARING

6-3. Gearing

Use illustrated parts lists Basic Hoist, Figure 8-1, and Transmission, Figure 8-5, to help in repairs on gearing. As disassembly is extensive for gearing, disconnect hoist and move to a work bench.

- a. Remove electrical cover.
- b. Remove electrical panel.
- c. Remove brake assembly and limit switch assembly.
- d. Drain oil from transmission.
- e. Remove four screws attaching gear box cover to gear housing and remove gear box cover. Limit switch drive shaft will come along with the cover.
- f. Inspect gears for broken or severely worn teeth and inspect all bearings. Replace as necessary.
- g. The overload slip clutch should be checked for wear or loss of adjustment.

CAUTION

Do not disassemble or readjust clutch, or interchange with a clutch assembly from another hoist. Doing so will void the warranty and may create an unsafe condition. If replacement is needed, always use a new clutch assembly.

- h. Reassemble in reverse order of disassembly making sure gasket is in place and in good condition. Coat gasket with Permatex® or other gasket cement. Extreme care should be taken to avoid damage to oil seals.

- i. Check all wire terminals to be sure they are properly seated and in accordance with wiring diagram. Before placing hoist back into service, check brake adjustment and limit switch stops.

6-4. Motor

- a. If it is necessary to replace the motor, DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover.
- b. Remove cable clamp from electrical panel and all terminals leading from the motor to the electrical section (Reference Figure 8-4).
- c. Remove four motor mounting bolts attaching the motor to the housing. It will come loose at the motor coupling.
- d. Inspect motor coupling, motor shaft and all bearings. Replace as necessary.
- e. Replace with new motor being sure to follow wiring diagram.

6-5. Suspension

- a. Use illustrated parts list, Chaining Parts, Figure 8-6, and Basic Hoist, Figure 8-1, to help in repairs in this section. A chain can be replaced in both single and double-chained hoists without disassembling. (See Maintenance—Chain Replacement, paragraph 4-5, a). The hoist sections must be separated at the top hook line in order to inspect load sheave, chain guide and shedder. (See Maintenance—Chain Replacement with no chain in hoist, paragraph 4-5, b).
- b. While this section is apart, check the following:

Chain	Chain guides
Swivel or load block	Bearing
Shedder	Chain support
- c. Replace parts as necessary including screws, lockwashers, etc. When reassembled, recheck limit switch operation. (See Limit Switch Adjustment, paragraph 4-6.)

SECTION VII

WIRING

7-1. Voltage Conversion

Single phase units (115/230V) are shipped wired for 115V and the three phase units (230/460V) are wired for 460V. Conversion to either the higher or lower voltage can be done simply and quickly as follows:

- a. DISCONNECT HOIST FROM POWER SUPPLY and remove the electrical cover.
- b. Each dual-voltage hoist has a terminal block for the interconnection of the electrical components of the hoist. To convert voltage, reconnect the leads to the terminal block according to the wiring diagram located inside the electrical

cover. Do not move any wires or make any changes to the electrical circuit except at the terminal block.

- c. After converting voltage, recheck phasing and limit switch operation (see Installation, paragraph 2-2-3, c and paragraph 2-2-5).

CAUTION

Always refer to wiring diagram located on the inside of the electrical cover when performing electrical repairs. Make sure all terminals are securely fastened and check for damaged insulation.

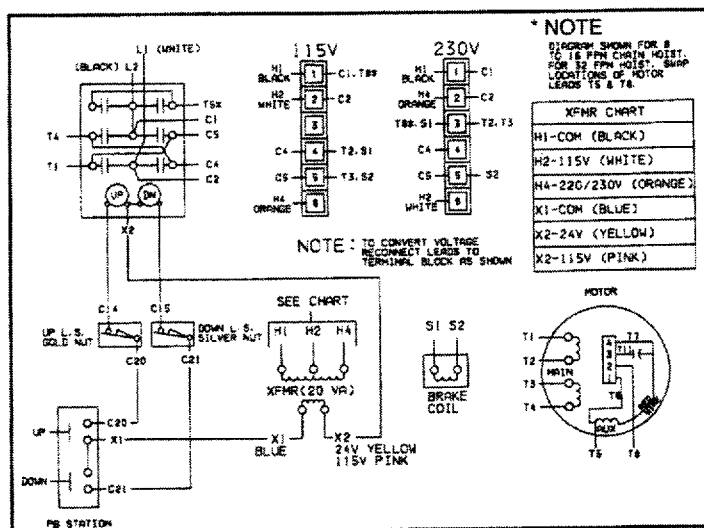


FIGURE 7-1. 115/230V, SINGLE PHASE (6-WIRE MOTOR)

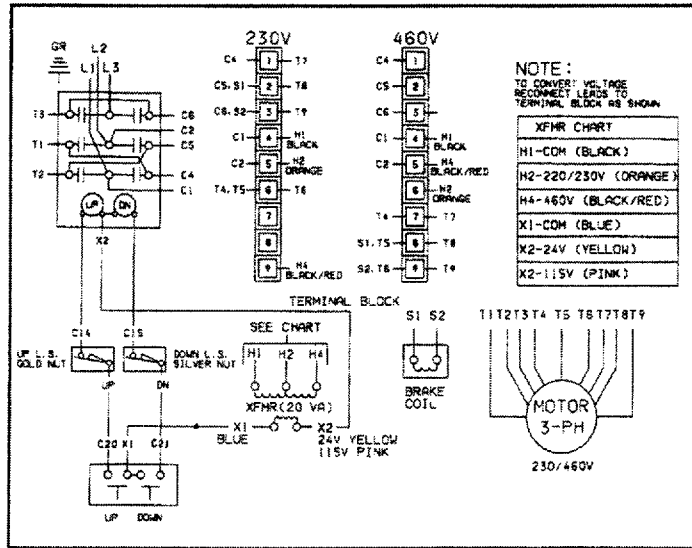


FIGURE 7-2. 230/460V, THREE PHASE

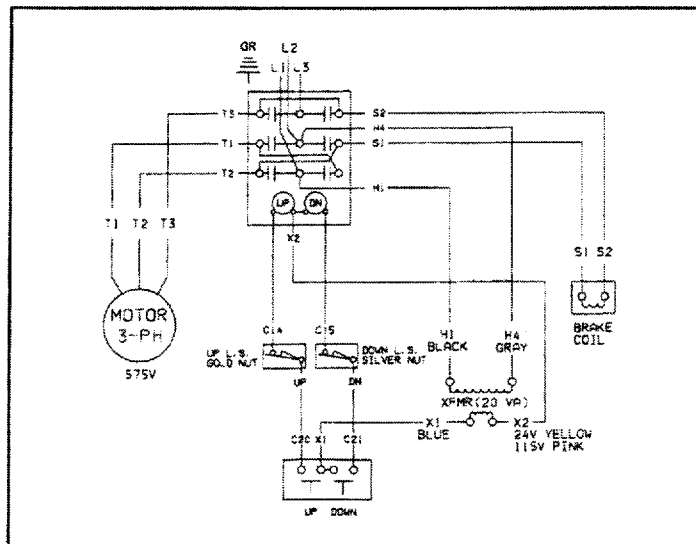


FIGURE 7-3. 575V, THREE PHASE

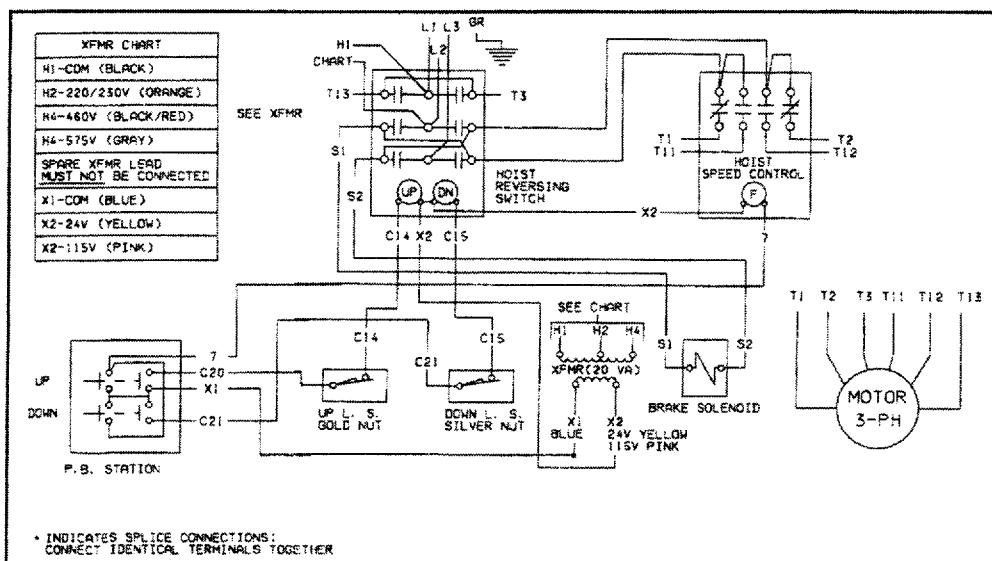


FIGURE 7-4. 2-SPEED, THREE PHASE

SECTION VIII

ILLUSTRATED PARTS LISTS

BASIC HOIST PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
3	—	Motor, Complete (Ref.—See Motor Parts)
4	H-2978-P	Screw, Sheave Housing
5	H-4062-P	Lock Washer
		Sheave Housing
6 (A)	JL-33	1/8, 1/4 & 1/2 Ton
6 (B)	JL-39	1 & 2 Ton
7	H-5382—	Dowel Pin
		Gear Housing
8 (A)	JL-35	1/8, 1/4 & 1/2 Ton
8 (B)	JL-44	1 & 2 Ton
9	JL-560	Gear Case Gasket
10	JL-34	Gear Box Cover

REF. NO.	PART NO.	DESCRIPTION
11	JL-36	Electrical Cover
		Capacity Decal
12	See page 31	1/8, 1/4, 1/2, 1, 2 Ton
13	H-1106-P	Cover Screw
14	H-2970	Screw
15	JF-277-3	Hook Hole Cover
16	JL3S	Hook Assembly W/Latch
17	H-7540	Latch Kit
18	JL-563	Gasket
19	See page 31	Brand Decal
20	JL-687	Warning Label
21	50KG84	Lug Assembly (Includes Item 15)

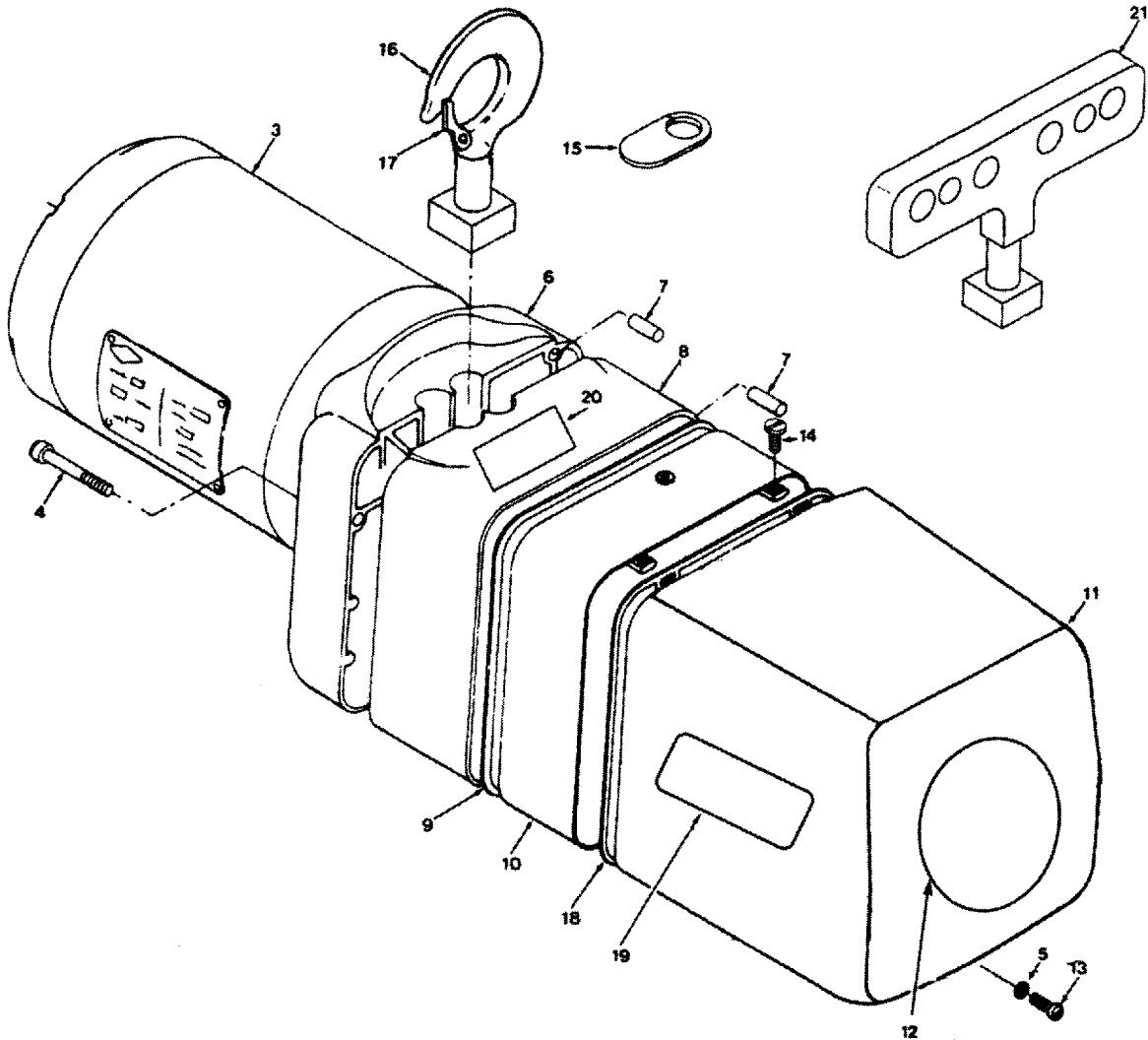


FIGURE 8-1. BASIC HOIST

ELECTRIC MOTOR PARTS LIST (SINGLE PHASE)

REF. NO.	PART NO.	DESCRIPTION
31 (A)	JL861-11	Motor, Complete 1/4 HP, 115/230V, 60 Hz
31 (B)	JL861-12	Motor, Complete 1/2 HP, 115/230V, 60 Hz
31 (C)	JL861-14	Motor, Complete 1 HP, 115/230V, 60 Hz
32	—	Stator & Housing Assembly Not Available Separately
33	*	Rotor & Shaft Assembly 1/4 HP, 115/230V, 60 Hz 1/2 HP, 115/230V, 60 Hz 1 HP, 115/230V, 60 Hz
34	*	End Shield

REF. NO.	PART NO.	DESCRIPTION
35	500K3	Front Bearing Capacitor
38 (A)	*	1/4 HP
38 (B)	*	1/2 HP
38 (C)	*	1 HP
39	*	Capacitor Cover
40	*	Motor Mounting Screw (See Basic Lifting Motor)
42	732012	Rear Bearing
45	H-4062-P	Lock Washer
46	*	Screw
48	*	Shim Washer
49	839J2	SINPAC® Switch

*Contact factory with complete electric motor nameplate data.

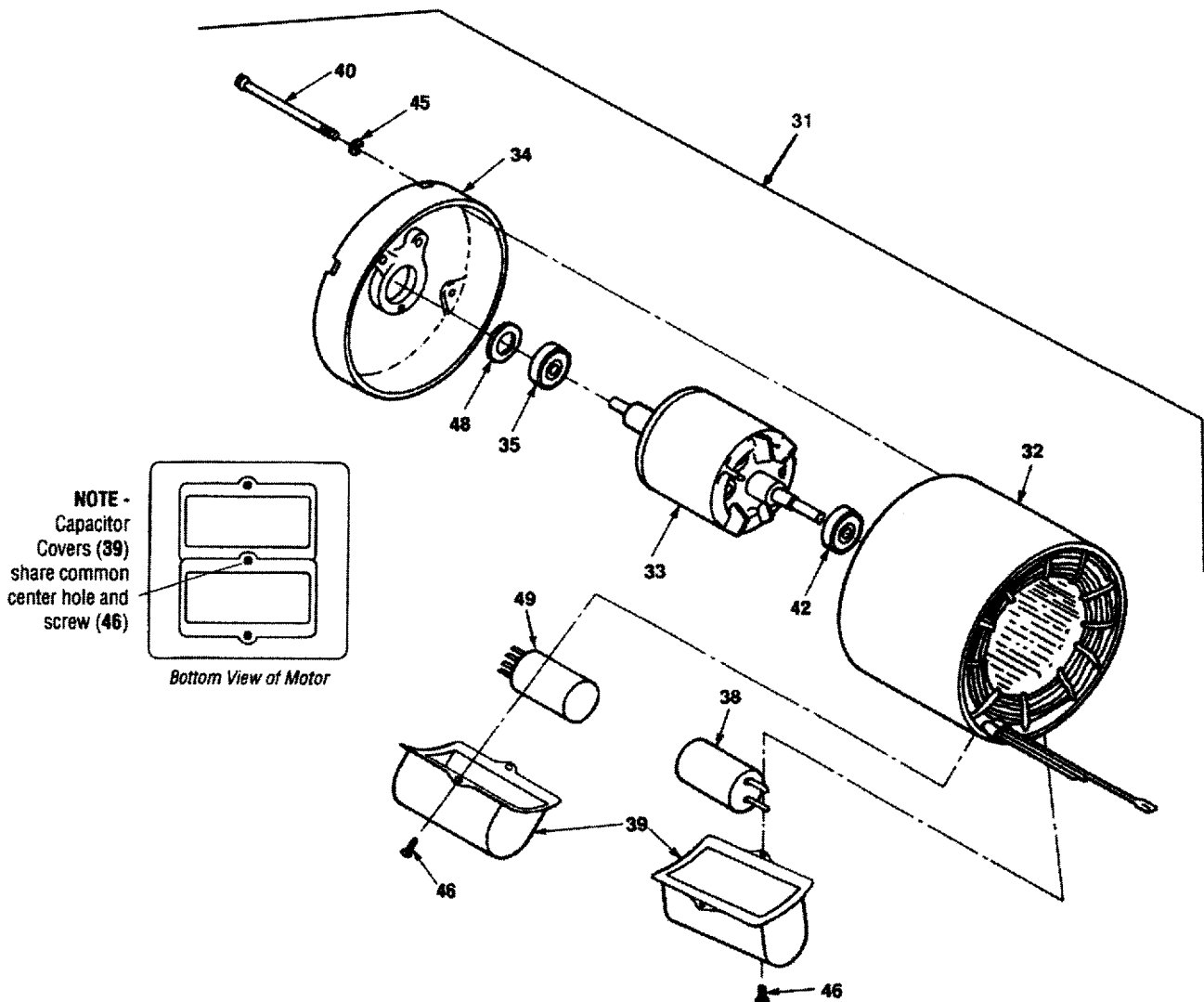


FIGURE 8-2. ELECTRIC MOTOR PARTS (SINGLE PHASE)

MOTOR PARTS LIST (THREE PHASE)

REF. NO.	PART NO.	DESCRIPTION
		Motor, Complete (Single Speed)
60 (A)	JL-863-1	1/4 HP, 230/460V
60 (B)	JL-863-2	1/2 HP, 230/460V
60 (C)	JL-863-4	1 HP, 230/460V
60 (D)	JL-863-5	1/4 HP, 575V
60 (E)	JL-863-6	1/2 HP, 575V
60 (F)	JL-863-8	1 HP, 575V
60 (G)	JL-863-9	1/4 HP, 208V
60 (H)	JL-863-10	1/2 HP, 208V
60 (J)	JL-863-12	1 HP, 208V
		Motor, Complete (Two Speed)
60 (K)	JL-873-1	1/4 HP, 230V
60 (L)	JL-873-2	1/2 HP, 230V
60 (M)	JL-873-4	1 HP, 230V
60 (N)	JL-873-5	1/4 HP, 460V
60 (P)	JL-873-6	1/2 HP, 460V
60 (R)	JL-873-8	1 HP, 460V
60 (S)	JL-873-9	1/4 HP, 575V
60 (T)	JL-873-10	1/2 HP, 575V
60 (U)	JL-873-12	1 HP, 575V
60 (V)	JL-873-13	1/4 HP, 208V
60 (W)	JL-873-14	1/2 HP, 208V
60 (X)	JL-873-16	1 HP, 208V

REF. NO.	PART NO.	DESCRIPTION
61	—	Stator and Housing Assembly Not Available Separately
64	500K3	Front Bearing
65	*	Motor Mounting Screw (See Basic Hoist)
66	H-4062-P	Lock Washer
68	732012	Rear Bearing
69	*	Rotor and Shaft Assembly 1 HP, 230/460V, 60 Hz
70	*	End Shield
71	*	Shim Washer

*Contact factory with complete electric motor nameplate data.

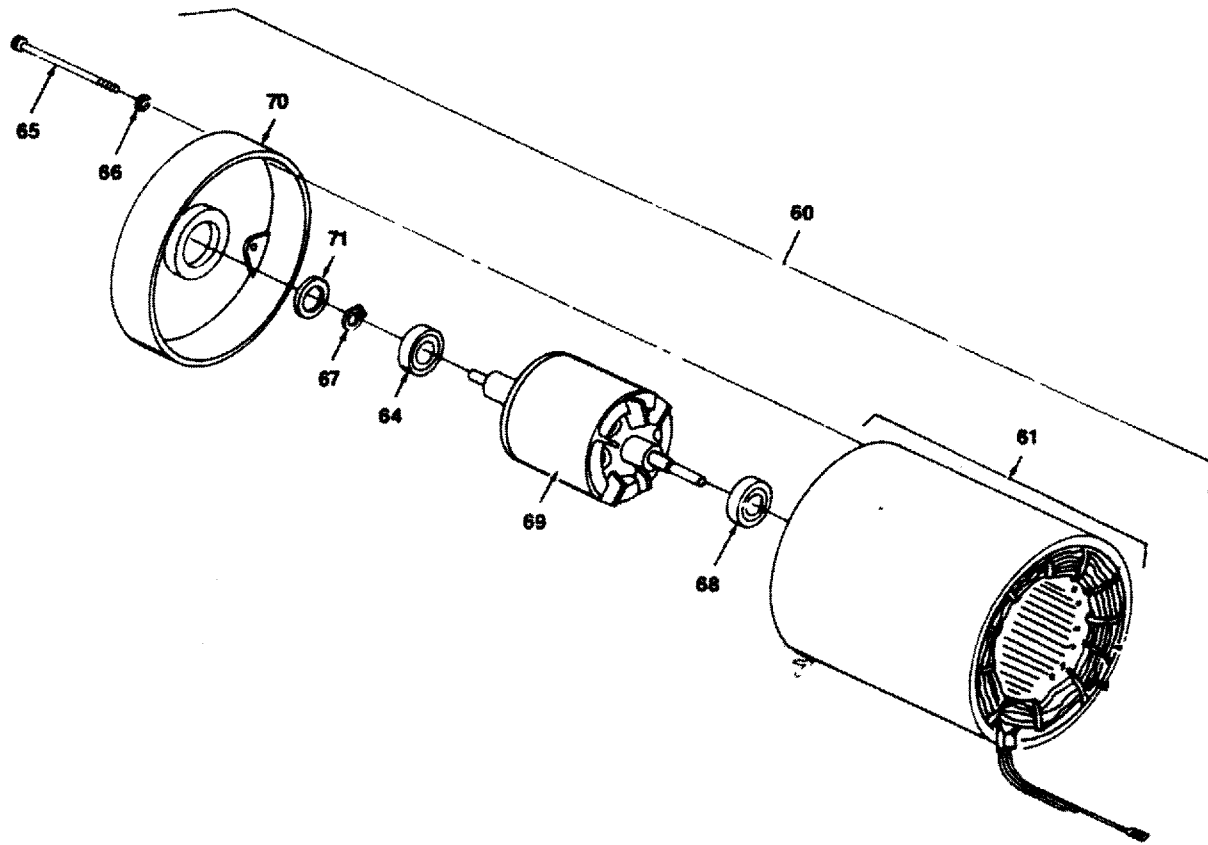


FIGURE 8-3. MOTOR PARTS (THREE PHASE)

ELECTRICAL PARTS LIST (SINGLE SPEED HOIST)

REF. NO.	PART NO.	DESCRIPTION
81	JL-34	Gear Box Cover
82	JL110	Standoff
83	JL-257	Panel Plate
84	H-2751	Screw
		Transformer
85 (A)	JL821-212	Pri.: 115/230V, Sec.: 24V
	JL821-211	Pri.: 115/230V, Sec.: 115V
85 (B)	JL821-232	Pri.: 230/460V, Sec.: 24V
	JL821-231	Pri.: 230/460V, Sec.: 115V
85 (C)	JL821-252	Pri.: 575V, Sec.: 24V
	JL821-251	Pri.: 575V, Sec.: 115V
85 (D)	JL821-272	Pri.: 208V, Sec.: 24V
	JL821-271	Pri.: 208V, Sec.: 115V
86	H-2751	Screw
87	H-1026-P	Screw
88	H-4158	Lockwasher
89	H-4134	Lockwasher

REF. NO.	PART NO.	DESCRIPTION
91	H-6503	Clamp
92	JF-759-3	Insulator
93	JF-829-1	Contactor (24V Coils)
	JF-829	Contactor (115V Coils)
94	JF-37916-25	Coil (24V)
	JF-37916-32	Coil (115V)
96 (A)	909K6	Terminal Block (1 Phase)
96 (B)	909K9	Terminal Block (3 Phase)
97	H-2752	Screw
99	H-4081-P	Lockwasher
		Power Cord (15 ft.)
100 (A)	JF-951	Single Phase (3-Cond.)
100 (B)	JF-953	Three Phase (4-Cond.)
101	H-4002-P	Lockwasher
102	H-2970	Screw
104	H-3861-P	Nut
105	H-1403-P	Screw

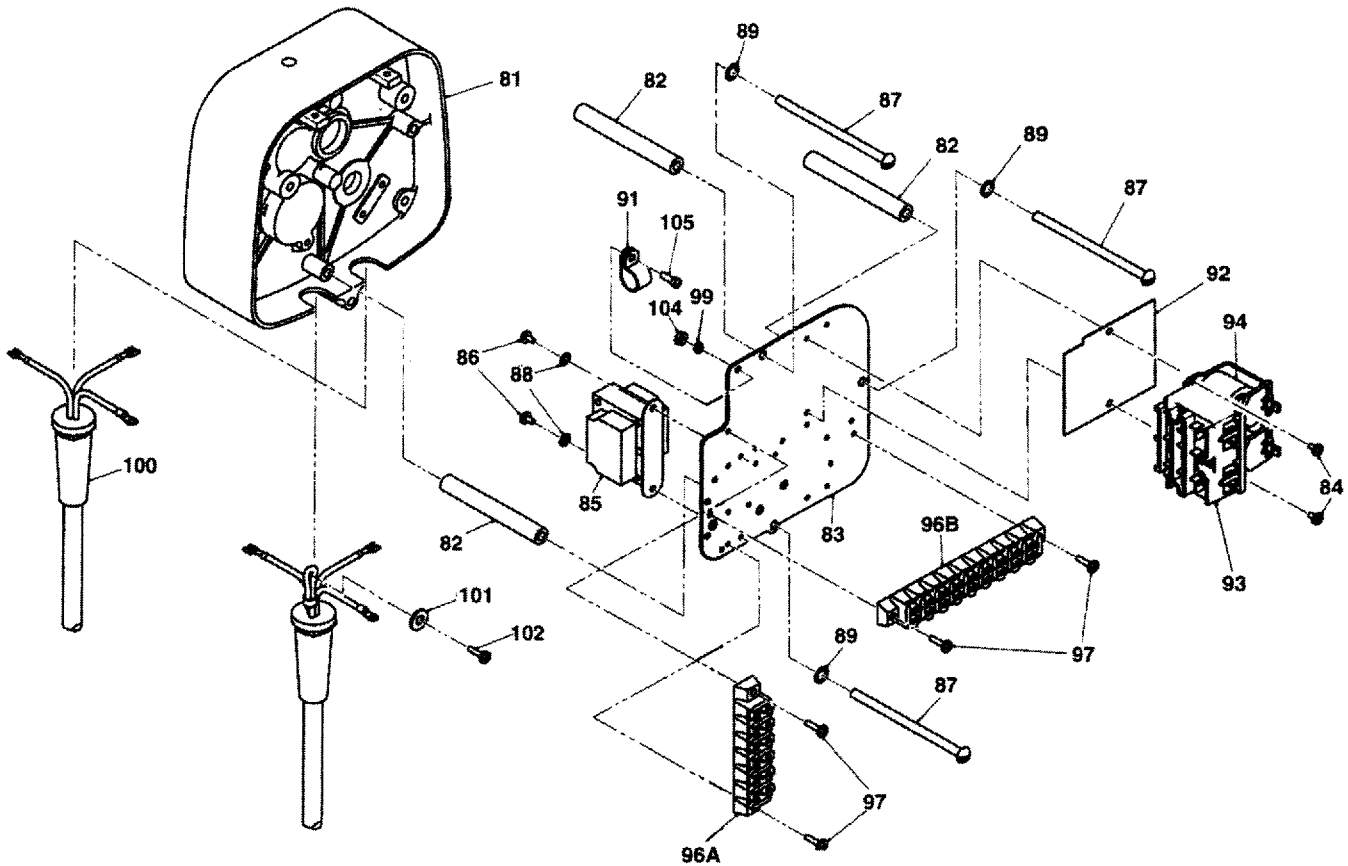


FIGURE 8-4. ELECTRICAL PARTS (SINGLE SPEED HOIST)

ELECTRICAL PARTS LIST (TWO SPEED HOIST)

REF. NO.	PART NO.	DESCRIPTION
81	JL-34	Gear Box Cover
82	JL110	Standoff
83	JL-257	Panel Plate
84	H-2751	Screw
		Transformer
85 (A)	JL821-232	Pri.: 230V, Sec.: 24V
	JL821-232	Pri.: 460V, Sec.: 24V
85 (B)	JL821-231	Pri.: 230V, Sec.: 115V
	JL821-231	Pri.: 460V, Sec.: 115V
85 (C)	JL821-252	Pri.: 575V, Sec.: 24V
	JL821-251	Pri.: 575V, Sec.: 115V
85 (D)	JL821-272	Pri.: 208V, Sec.: 24V
	JL821-271	Pri.: 208V, Sec.: 115V
86	H-2751	Screw
87	H-1026-P	Screw
88	H-4158	Lockwasher
89	H-4134	Lockwasher

REF. NO.	PART NO.	DESCRIPTION
91	H-6503	Clamp
92	JF-759-3	Insulator
93	JF-829-1	Contactor (24V Coils)
	JF-829	Contactor (115V Coils)
94	JF-37916-25	Coil (24V)
	JF-37916-32	Coil (115V)
95	820J3	Speed Relay (24V Coil)
	820J4	Speed Relay (115V Coil)
96	H-1901	Screw
99	H-4081-P	Lockwasher
		Power Cord (15 ft.)
100 (A)	JF-951	Single Phase (3-Cond.)
100 (B)	JF-953	Three Phase (4-Cond.)
101	H-4002-P	Lockwasher
102	H-2970	Screw
104	H-3861-P	Nut
105	H-1403-P	Screw

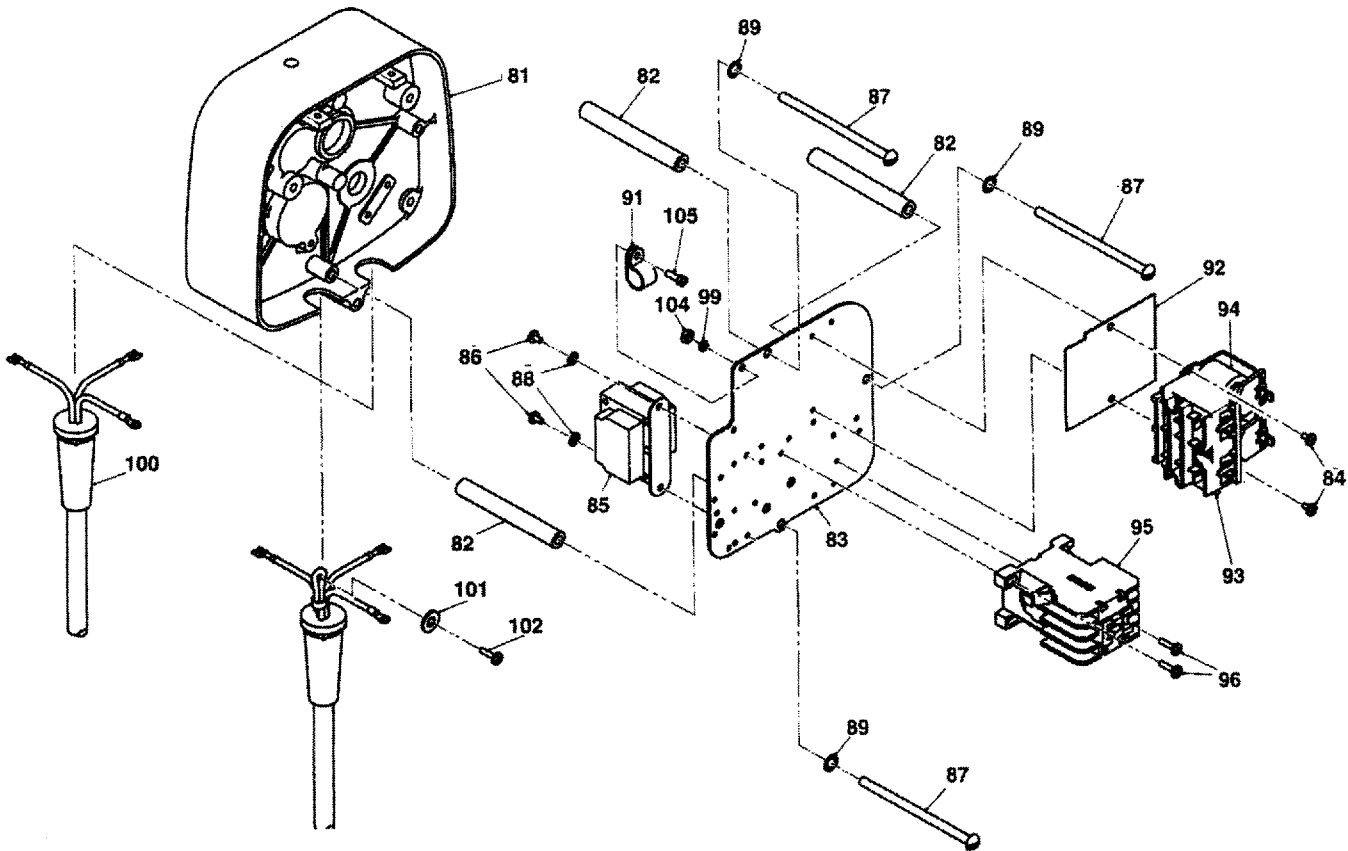


FIGURE 8-4. ELECTRICAL PARTS (TWO SPEED HOIST)

TRANSMISSION PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
117	—	Load Sheave (Ref.—See Chaining Parts)
118	—	Load Shaft Assembly (Ref.—See Chaining Parts)
119	—	Spacer (Ref.—See Chaining Parts)
120	—	Sheave Housing (Ref.—See Chaining Parts)
121 (A)	JL-420	Output Gear 1/8, 1/4 & 1/2 Ton
121 (B)	JL-421	1 & 2-Ton
122	—	Gear Housing (Ref.—See Basic Hoist)
123	—	Gear Box Cover (Ref.—See Basic Hoist)
124	—	Adaptor (Ref.—See Brake & Solenoid Parts)
125	JL-107	Motor Coupling
126	H-5503	Retaining Ring
127	561K20	Oil Seal
128	JL-561	Oil Seal
129	561K2	Oil Seal
130	H-6268	Drain Plug
131	S25-4	Fill Plug
132	H-5501	Retaining Ring

REF. NO.	PART NO.	DESCRIPTION
133	H-5503	Retaining Ring
134	H-5501	Retaining Ring
135	500K36	Bearing
136	500K34	Bearing
137	500K33	Bearing
138	—	Bearing (Ref.—See Chaining Parts)
139	360J1	Bearing Spring
140 (A)	JL-400B	Input Pinion 8 & 16 fpm
140(B)	JL-400-1	32 fpm
141	JL-426	High Speed Gear High Speed Pinion
142 (A)	JL-402A	1/8, 1/4 & 1/2 Ton
142 (B)	JL-403A	1 & 2 Ton Overload Clutch Assembly
143 (A)	591JG25	1/4 Ton, 16 fpm
143 (B)	591JG22	1/8 & 1/4 Ton, 32 fpm
143 (C)	591JG16	1/2 Ton, 16 fpm
143 (D)	591JG21	1/2 Ton, 32 fpm
143 (E)	591JG17	1 & 2 Ton
144	JL-401	Intermediate Pinion
145	H-7642	Lubricant (24 oz. req'd.)
146	H-2693-P	Screw
147	SK1912-21W	Pressure Relief Fitting
148	H-5605	O-ring

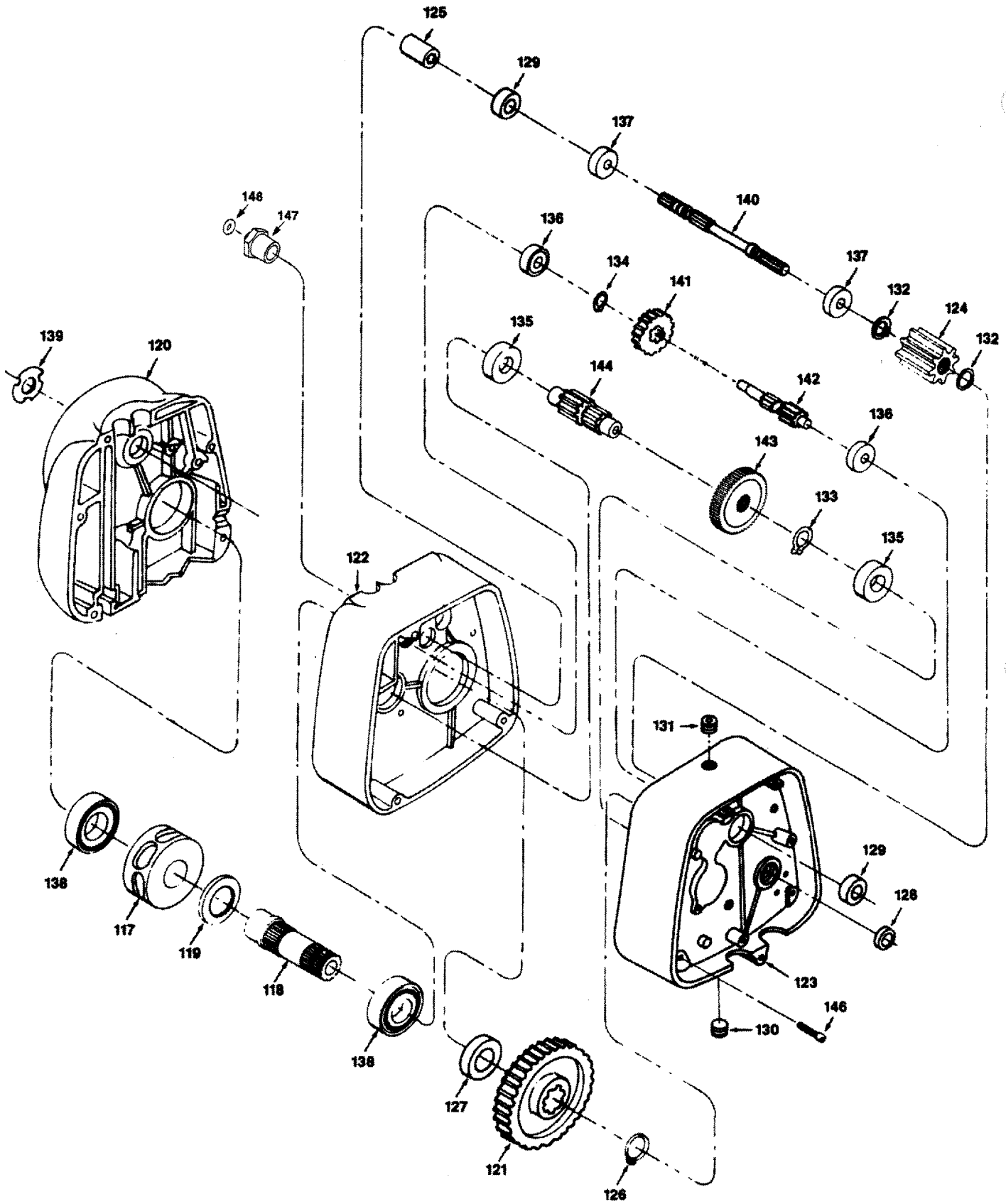


FIGURE 8-5. TRANSMISSION PARTS

CHAINING PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
		Load Sheave
156 (A)	JF-16-4	1/8, 1/4 & 1/2 Ton
156 (B)	JF-16-3	1 & 2 Ton
157	JL-132	Load Shaft
158	JF-285	Spacer (1 & 2 Ton only)
159	—	Sheave Housing (Ref.—See Basic Hoist)
160	H-5382	Dowel Pin
161	—	Gear Housing (Ref.—See Basic Hoist)
162	JF-127	Chain Guide Spacer
		Chain Guide
163 (A)	JF-250-3	1/4" Chain (1/8, 1/4 & 1/2 Ton)
163 (B)	JF-254-3	9/32" Chain (1 & 2 Ton)
164	H-2982-P	Screw
		Chain Guide Plate
165 (A)	JF-272	1/4" Chain (1/8, 1/4 & 1/2 Ton)
165 (B)	JF-273	9/32" Chain (1 & 2 Ton)
166	H-2692-P	Screw
167	CB-504	Bearing
168	H-3942-P	Dead-End Screw Nut
169	H-4002-P	Flat Washer
170	S49-12	Dead-End Screw
171	JF-109	Chain Support
172	JL-18	Chain Support Pin
173	H-5025-P	Cotterpin
174	H-4083-P	Lock Washer
175	H-5240	Roll Pin
176	H-3621-P	Lock Nut
177	JF-703	Chain Support Screw
178 (A)	JL-19B	1/4" Chain (1/8, 1/4 & 1/2 Ton) †
178 (B)	JL-19-1	9/32" Chain (1 & 2 Ton) †
179	JF-20-2	Load Block Frame
180	JF-20-3	Load Block Frame (Threaded)

REF. NO.	PART NO.	DESCRIPTION
181	JF-700	Load Block Screw
182	3JG20S	Bottom Hook With Latch Assembly
183	H-7540	Latch Kit
184	JF-914-6	Bottom Block Assembly (2 Ton)
185	H-2403-P	Load Block Screw
186	H-4085-P	Lock Washer
187	JF-30-1	Load Block Frame
188	3KGI	Bottom Hook With Latch Assembly For 2 ton double chain models.
189	H-3473-P	Nut
190	JF-917-1	Sheave Shaft Assembly (Includes Items 191, 192 & 193)
191	JF-916	Sheave & Bearing Assembly
192	JF-122	Sheave Shaft
193	H-5234	Pin
194	H-7596	Dead-End Link
195	3JG20S	Hook and Latch Assembly
196	H-7540	Latch Kit
197	30I14	Frame
198	18J8	Dead-End Pin
199	S-49-77	Screw
200	H-4134	Lock Washer
201	913JG3AS	Bottom Block Assembly (1 Ton)
202	913JG4AS	Bottom Block Assembly (1/8, 1/4 & 1/2 Ton)
203	285J21	Round Wire Retaining Ring
204	201J3	Sleeve
205		End Stop Frame
	75J6	9/32" Dia. Chain (1 & 2 Ton)
	75J7	1/4" Dia. Chain (1/8, 1/4 & 1/2 Ton)

† Order chain as required, per foot.

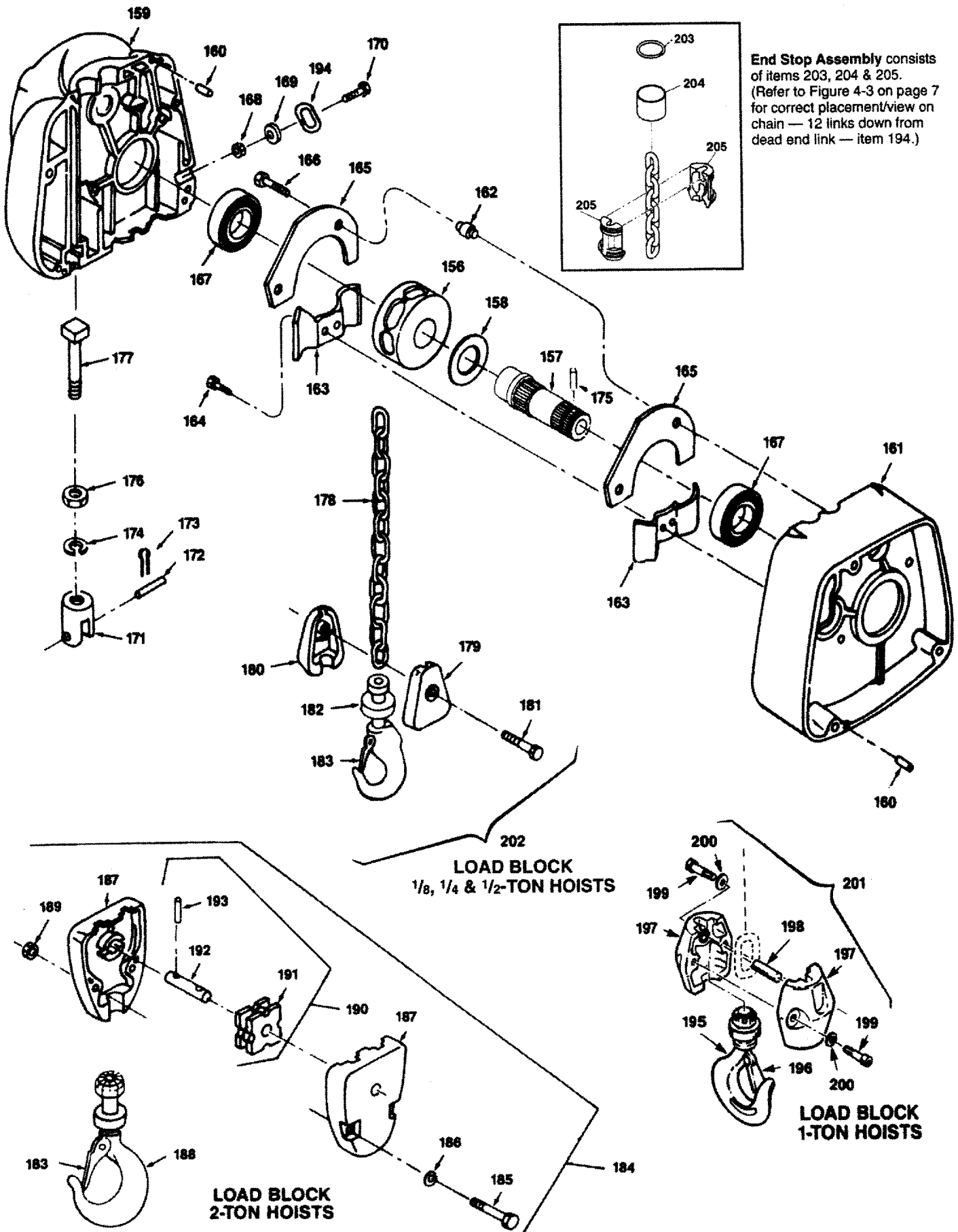


FIGURE 8-6. CHAINING PARTS

BRAKE AND SOLENOID PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
213 (A)	JL-854-6	Disc Brake Assy. (Single Speed)* 1/4 HP, 115/230V, 1 Ph.
213 (B)	JL-854-7	1/4 HP, 230/460V, 3 Ph.
213 (C)	JL-854-9	1/4 HP, 575V, 3 Ph.
213 (D)	JL-854-10	1/4 HP, 208V, 3 Ph.
213 (E)	JL-854-1	1/2 HP, 115/230V, 1 Ph.
213 (F)	JL-854-2	1/2 HP, 230/460V, 3 Ph.
213 (G)	JL-854-4	1/2 HP, 575V, 3 Ph.
213 (H)	JL-854-5	1/2 HP, 208V, 3 Ph.
213 (J)	JF-854-1C	1 HP, 115/230V, 1 Ph.
213 (K)	JF-854-2C	1 HP, 230/460V, 3 Ph.
213 (L)	JF-854-4C	1 HP, 575V, 3 Ph.
213 (M)	JF-854-5C	1 HP, 208V, 3 Ph.
Disc Brake Assy. (Two Speed)*		
213 (N)	JL-854-7	1/4 HP, 230V, 3 Ph.
213 (O)	JL-854-8	1/4 HP, 460V, 3 Ph.
213 (P)	JL-854-9	1/4 HP, 575V, 3 Ph.
213 (R)	JL-854-10	1/4 HP, 208V, 3 Ph.
213 (S)	JL-854-1	1/2 HP, 230V, 3 Ph.
213 (T)	JL-854-3	1/2 HP, 460V, 3 Ph.
213 (U)	JL-854-4	1/2 HP, 575V, 3 Ph.
213 (V)	JL-854-5	1/2 HP, 208V, 3 Ph.
213 (W)	JF-854-2C	1 HP, 230V, 3 Ph.
213 (X)	JF-854-3C	1 HP, 460V, 3 Ph.
213 (Y)	JF-854-4C	1 HP, 575V, 3 Ph.
213 (Z)	JF-854-5C	1 HP, 208V, 3 Ph.

REF. NO.	PART NO.	DESCRIPTION
214	JF-859A	Plate & Stud Assembly
215	581J1A	Brake Disc
216	JF-291	Brake Plate
217	JF-858	Plate & Armature Assembly
218	344J6	Spring
219	JF-710	Retainer
220	JF-857	Plate & Frame Assembly Coil
221 (A)	JF-853-1	115/230V, 1 Phase
221 (B)	JF-853-2	Single Speed Hoist 230V/460V, 3 Phase
		Two Speed Hoist 230V, 3 Phase
221 (C)	JF-853-3	Two Speed Hoist 460V, 3 Phase
221 (D)	JF-853-4	575V, 3 Phase
221 (E)	JF-853-5	208V, 3 Phase
222	H-3978	Lock Nut
223	JL-142	Adapter
224	H-2982-P	Screw
225	H-5501	Retaining Ring
226	860J1	Shading Coil
226 (A)	H-7812	Adhesive (not shown)
227 (A)	JL-141	Spacer (1/4 HP only)
227 (B)	141J2	Spacer (1/2 HP only)

* Includes all items except 223 and 225.

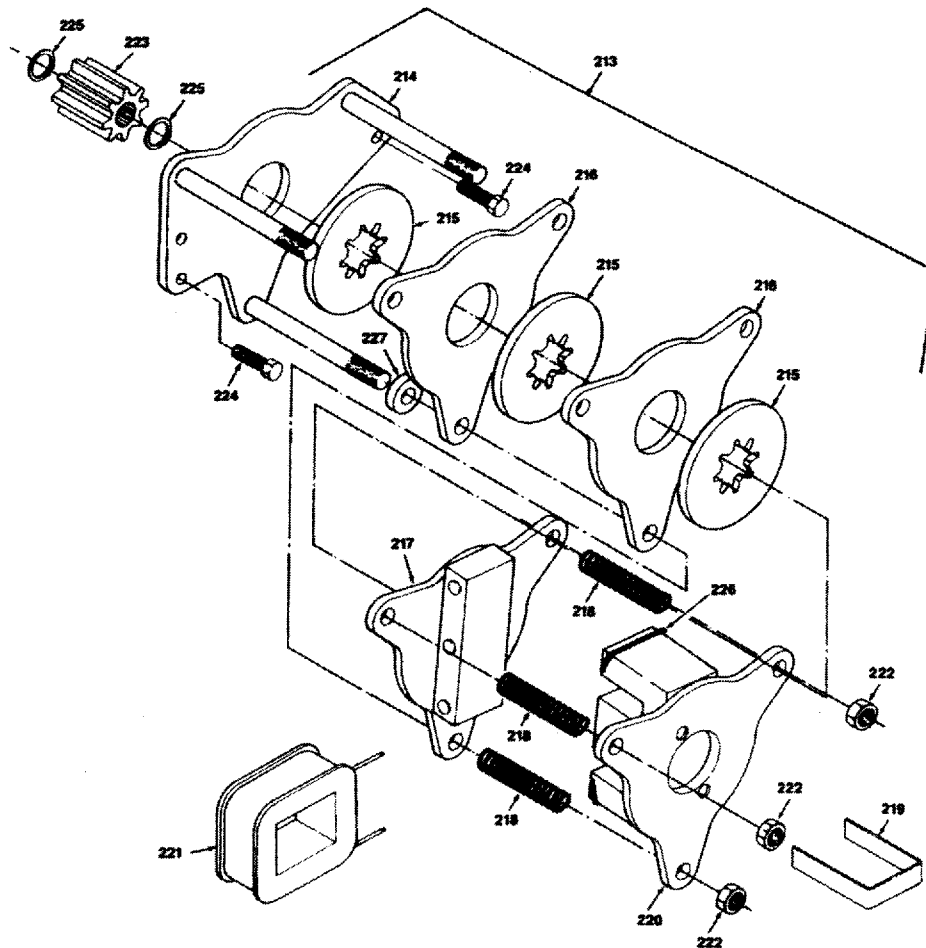


FIGURE 8-7. BRAKE AND SOLENOID PARTS

PUSHBUTTON STATION PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
239 (A)	PB-299-6B	Pushbutton and Cable Assembly, 6' Drop (10' Lift)
239 (B)	PB-299-11B	Pushbutton and Cable Assembly, 11' Drop (15' Lift)
239 (C)	PB-299-16B	Pushbutton and Cable Assembly, 16' Drop (20' Lift)
240 (A)	PB-299-6	Cable Assembly, 6' Drop (10' Lift)
240 (B)	PB-299-11	Cable Assembly, 11' Drop (15' Lift)
240 (C)	PB-299-16	Cable Assembly, 16' Drop (20' Lift)
241	534K97B	Pushbutton Assembly (Includes items 242-262)
242	PB-282-4	Enclosure
243	PB-298	Cover
244	PB-284-2	Pushbutton
245	PB-285	Interlock

REF. NO.	PART NO.	DESCRIPTION
246	PB-286	Boot
247	PB-287	Spring, Compression
248	PB-288	Spring, Conical
249	PB-289	Contact Plate
250	PB-290	Contact Plate, Common
251	PB-291	Contact Washer
252	PB-301	Screw
253	PB-293	Washer, Boot
254	PB-294-1	Grommet
255	PB-295	Cap
256	X-6477-1	O-ring
257	H-7851	Seal (2 ft. req'd.)
258	H-2991	Screw
259	H-2992	Screw
260	H-2993	Screw
261	PB-296	Warning Label
262	H-4160	Lock Washer

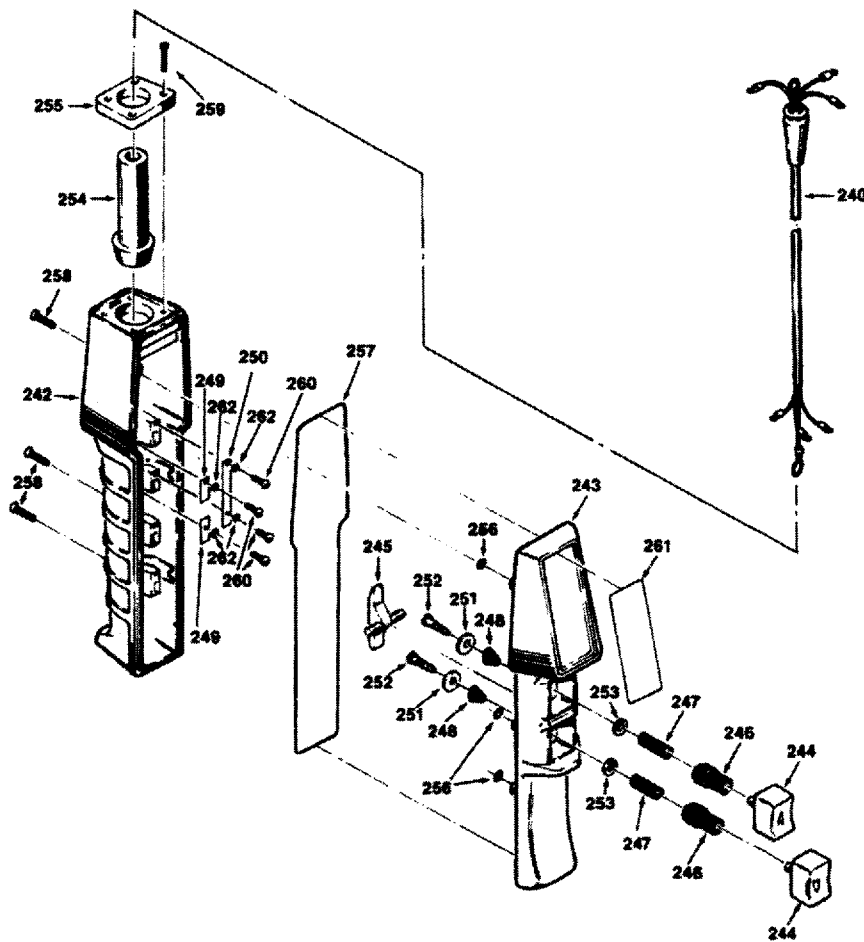


FIGURE 8-8. PUSHBUTTON STATION PARTS

PUSHBUTTON PARTS LIST (TWO SPEED HOIST)

REF. NO.	DESCRIPTION	PART NO.
1	Pushbutton and Cable Assembly: (Consists of Index Nos. 2 thru 31) PB Drop In Feet: 6 Ft. 11 Ft. 16 Ft. Special PB Drop	534JG4-6 534JG4-11 534JG4-16 534JG4-*
2	Rubber Grommet	JF-761
3	Pushbutton Cable Assembly: PB Drop In Feet: 6 Ft. 11 Ft. 16 Ft. Special PB Drop	PB-300-6 PB-300-11 PB-300-16 PBS-300-*
4	Pushbutton Assembly: (Consist of Index Nos. 5 thru 31)	534JG4
5	Enclosure	PB-282-4
6	Cover	PB-298
7	Pushbutton	PB-284-22
8	Interlock	PB-285-1
9	Boot	PB-286
10	Spring, Compression	PB-287
11	Spring, Conical	PB-288
12	Contact Plate	PB-289
13	Contact Plate, Common	PB-290
14	Washer, Contact	PB-291
15	Screw	H-1852-P
16	Washer, Boot	PB-293
17	Grommet	PB-294-1
18	Cap, Enclosure	PB-295
19	"O" Ring	X-6477-1
20	Rubber Seal	H-7851
21	Screw (Enclosure)	H-2925
22	Screw (Cap)	H-2992
23	Screw (Plates)	H-2993
24	Warning Tab	PB-296
25	Lock Washer	H-4160
26	2-Speed Adapter	PB-308
27	Insulating Bushing	755J1
28	Spring, Lower	344J5
29	Contact Button	201J1
30	Bushing	200J16
31	Jumper Wire	JF-940-42

(* Equal To P.B. Drop)

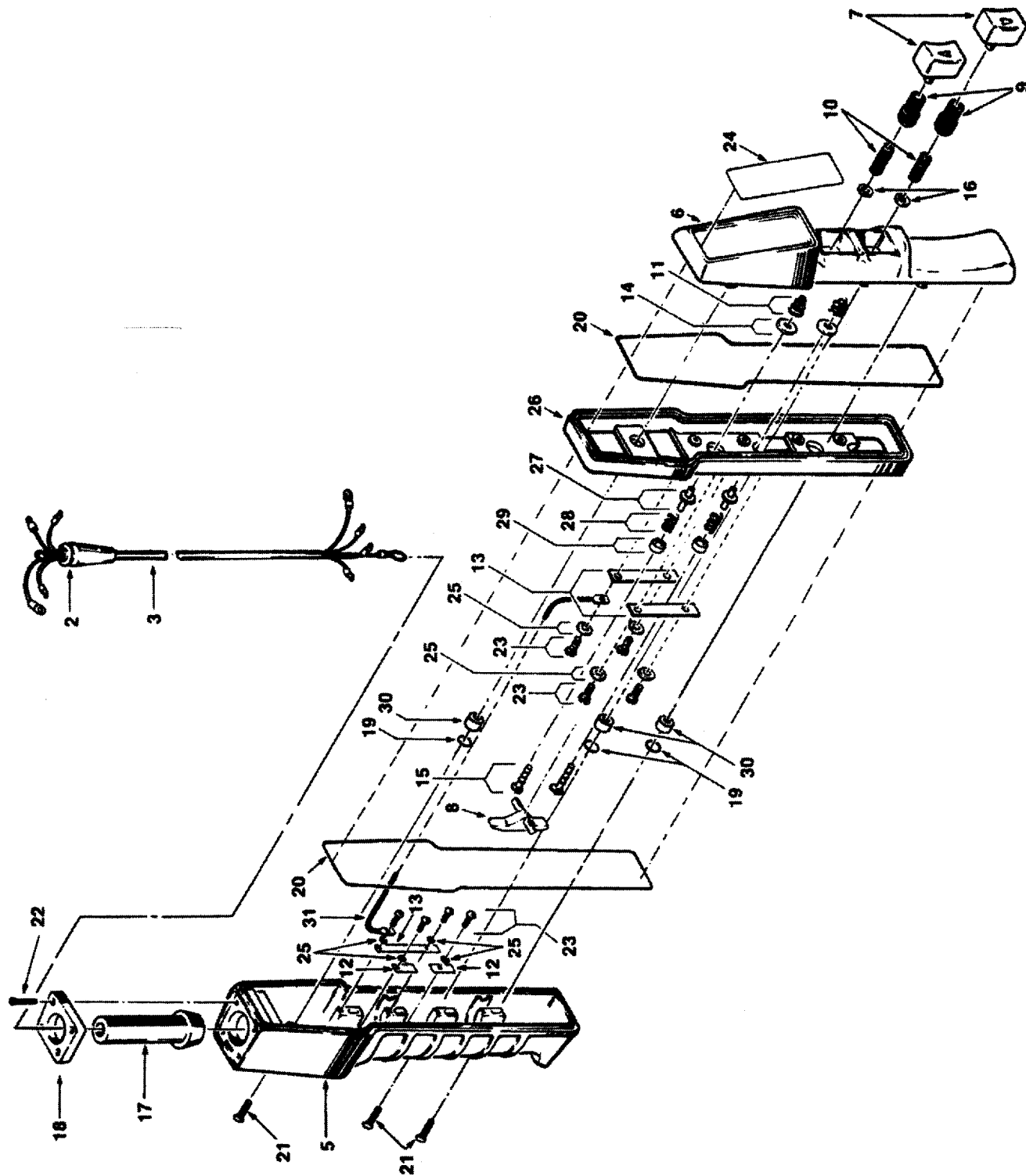


FIGURE 8-9. PUSHBUTTON PARTS (TWO SPEED HOIST)

LIMIT SWITCH PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
273	—	Load Sheave (Ref.—See Chaining Parts)
274	—	Load Shaft Assembly (Ref.—See Chaining Parts)
275	—	Spacer (Ref.—See Chaining Parts)
276	JF-754	Insulator
277	—	Gear Box Cover (Ref.—See Basic Hoist)
278	JF-343-3	Spring
279	H-2981-P	Screw
280	918JG4	Limit Switch & Shaft Assembly (Includes Items 281-292)

REF. NO.	PART NO.	DESCRIPTION
281	918JG3	Limit Switch Assembly (Includes Items 282-286)
282	815J1	Switch
283	H-1402-P	Screw
284	H-3944	Nut
285	JF-900-3	Limit Switch Bracket
286	JF-531-4	Bushing
287 (A)	JF-117-3	Limit Switch Shaft
287 (B)	JF-117-3S	S. S. Limit Switch Shaft
288	SK6000-63W	Brass Limit Switch Nut (Gold)
289	SK6000-63Z	Zinc Limit Switch Nut (Silver)
290	H-5520	Retaining Ring
291	JL-140	Limit Switch Stud Shaft
292	H-5563	E Ring

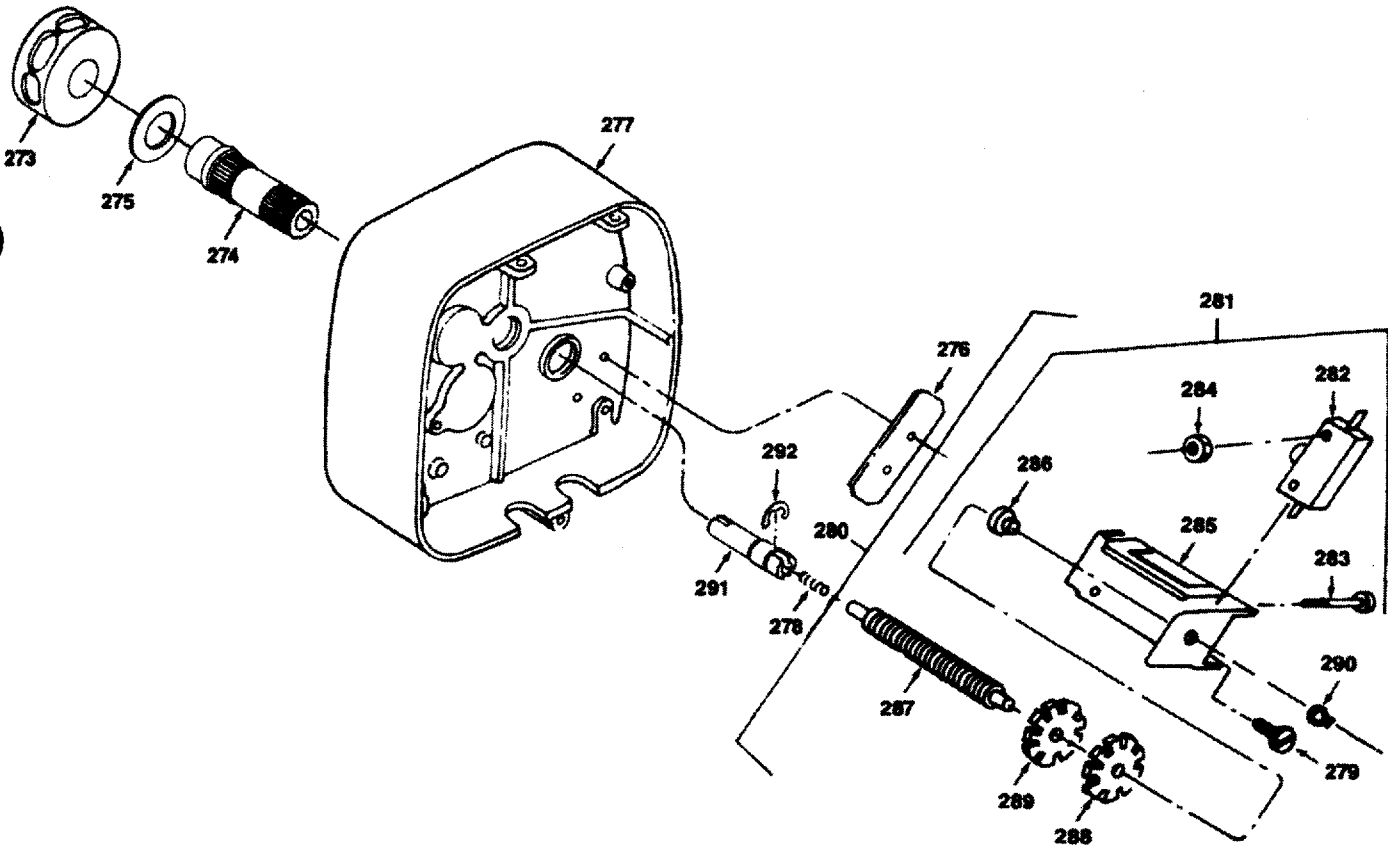


FIGURE 8-10. LIMIT SWITCH PARTS

PARTS LIST FOR LONG LIFT LIMIT (120 FT. MAX LIFT)

REF. NO.	PART NO.	DESCRIPTION
1	944JG6	Long Lift Limit Switch Assembly (all items except No. 19)
2	129J1	Mounting Plate
3	155K16	Thrust Washer
4	PB-287	Spring
5	SK6000-63W	Brass Nut (Gold)
6	SK6000-63Z	Zinc Nut (Silver)
7	117J2S	S. S. Shaft
8	JF-531-4	Bushing
9	258J6	End Plate
10	H-4158	Lock Washer

REF. NO.	PART NO.	DESCRIPTION
11	H-2741-P	Screw
12	815J1	Switch
13	H-3844	Locknut
14	427J1	Drive Pinion
15	258JG7	Frame and Guide Assembly
16	H-1402-P	Screw
17	854823	Screw
18	H-5520	Retaining Ring
19	H-2981-P	Mounting Screw
20	H-1210	Flat Head Screw
21	110J14	Post
22	428J2	Limit Switch Gear

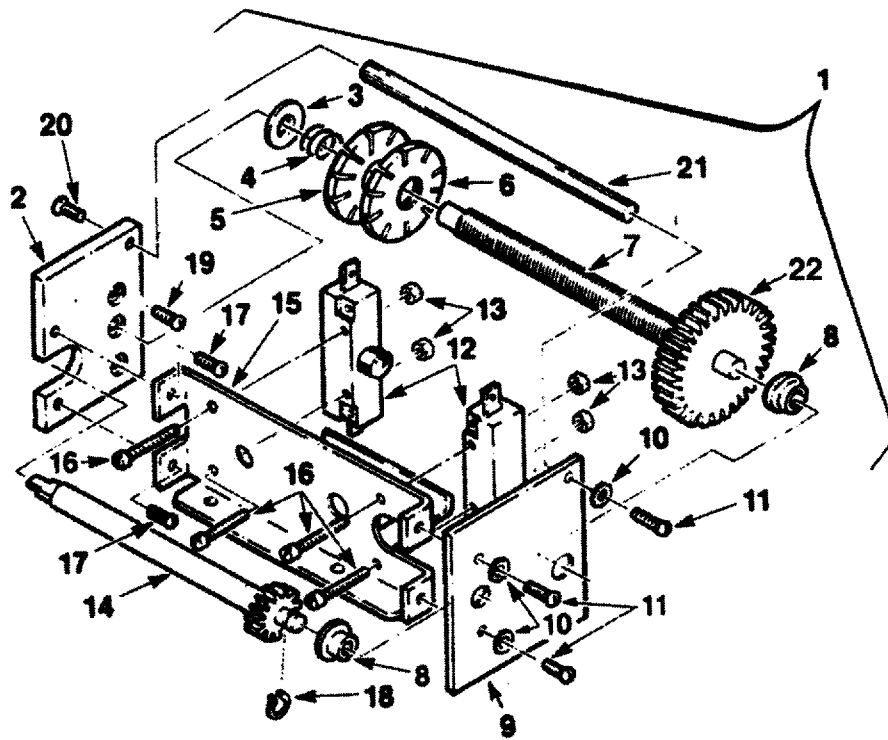


FIGURE 8-11. LONG LIFT LIMIT SWITCH PARTS

ADHESIVE LABELS (Reference Page 16)

REF. NO.	PART NO.	DESCRIPTION
		Capacity Decal
12 (A)	JL-675-1	1/8 Ton
12 (B)	JL-675-2	1/4 Ton
12 (C)	JL-675-3	1/2 Ton
12 (D)	JL-675-4	1 Ton
12 (E)	JL-675-5	2 Ton
19	JL-677	Coffing Decal

CHAIN CONTAINER SPECIFICATION

CONTAINER PART NO.	CHAIN CAPACITY (Max. Hoist Lift in Feet)		
	1/8, 1/4 & 1/2 Ton	1 Ton	2 Ton
LCC-11	26	20	10
LCC-12	42	35	17
LCC-13	54	50	25

COFFING®

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® 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® MAKES NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

⚠WARNING

To prevent 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.

Coffing® Hoists

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