

UJL680-2

# UJL

## Operating, Maintenance & Parts Manual

# Concert Series

**1/2 Ton (454 kg)****UJL1016****UJL1032****1 Ton (907 kg)****UJL2016****2 Ton (1,814 kg)****UJL4008**

**Follow all instructions and warnings for inspecting, maintaining and operating this lifting motor.**

The use of any lifting motor 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 lifting motor, 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 lifting motor operator.** Failure to operate the equipment as directed in the manual may cause injury.

Should you have any questions or have problems with this product, please call Coffing Hoists at **(800) 477-5003**.



Before using the lifting motor, fill in the information below:

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

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

Purchase Date \_\_\_\_\_

# COFFING®

## HOISTS

## SAFETY PRECAUTIONS

Each UJL Lifting Motor 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 lifting motors, installers are required to provide current overload protection and grounding on the branch circuit section in keeping with the code. Check each installation for compliance with the application, operation and maintenance sections of these articles.

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

### WARNING

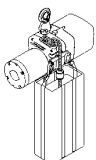
**Improper operation of a lifting motor can create a potentially hazardous situation which, if not avoided, could result in death or serious injury. To avoid such a potentially hazardous situation, THE OPERATOR SHALL:**

1. **NOT** operate a damaged, malfunctioning or unusually performing lifting motor.
2. **NOT** operate the lifting motor until you have thoroughly read and understood the manufacturer's Operating and Maintenance Instructions or Manuals.
3. **NOT** operate a lifting motor which has been modified without the manufacturer's approval or without certification that it is in conformity with ANSI/ASME B30 volumes.
4. **NOT** lift more than rated load for the lifting motor.
5. **NOT** use lifting motor with twisted, kinked, damaged, or worn load chain.
6. **NOT** use the lifting motor to lift, support, or transport people.
7. **NOT** stand beneath a moving load! Do not move a load in such a manner as to endanger personnel.
8. **NOT** operate a lifting motor unless all persons are and remain clear of the supported load.
9. **NOT** operate unless load is centered under lifting motor.
10. **NOT** attempt to lengthen the load chain or repair damaged load chain.
11. Protect the lifting motor's load chain from weld splatter or other damaging contaminants.
12. **NOT** operate lifting motor when it is restricted from forming a straight line from hook to hook in the direction of loading.
13. **NOT** use load chain as a sling, or wrap chain around load.
14. **NOT** apply the load to the tip of the hook or to the hook latch.
15. **NOT** apply load unless load chain is properly seated in the chain sprocket(s).
16. **NOT** apply load if bearing prevents equal loading on all load supporting chains.
17. **NOT** operate beyond the limits of the load chain travel.
18. **NOT** leave load supported by the lifting motor unattended unless specific precautions have been taken.

### CAUTION

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

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



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## LIFTING MOTOR SPECIFICATIONS

The UJL is a rugged and portable lifting motor designed for the demands of rigging applications. With its compact construction and ability to operate inverted, the UJL allows for greater flexibility in mounting the unit as required by each application. The light weight and high strength of the aluminum alloy housings are a plus when the lifting motor is moved from site to site. The UJL's oil filled gearbox provides smooth and reliable operation, while its magnetic disc brake provides the sure stopping and secure holding of loads that is expected in rigging applications. The lifting motor's travel is regulated by adjustable up and down limit switches. As a standard, all UJL hooks are equipped with hook latches.

## APPLICATION INFORMATION

The UJL is intended for professional use in rigging applications to lift and support material loads within its rated capacity. It is designed as a component to be integrated into a rigging system. The user is responsible for ensuring the adequacy and reliability of their controller and power supply. Coffing Hoists can not be held responsible for applications other than those for which the UJL is intended. 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:

**Table 1 - Lifting Motor Specifications**

| Model   | Capacity<br>(tons) | Lifting<br>Speed |       | HP  | Approximate Motor Amperage at Full Load |          |      |                 |      |      |
|---------|--------------------|------------------|-------|-----|---|----------|------|-----------------|------|------|
|         |                    | fpm              | m/min |     | 1-Phase<br>115/230V                     | 230/460V | 208V | 3-Phase<br>380V | 415V | 575V |
| UJL1016 | 1/2                | 16               | 4.1   | 1/2 | 7.6/3.8                                 | 2/1      | 2.3  | 1.2             | 1.1  | .76  |
| UJL1032 | 1/2                | 32               | 8.2   | 1   | 14/7                                    | 3.2/1.6  | 3.6  | 1.9             | 1.8  | 1.2  |
| UJL2016 | 1                  | 16               | 4.1   | 1   | 14/7                                    | 3.2/1.6  | 3.6  | 1.9             | 1.8  | 1.2  |
| UJL4008 | 2                  | 8                | 2     | 1   | 14/7                                    | 3.2/1.6  | 3.6  | 1.9             | 1.8  | 1.2  |

**Note:** The 1HP, 115/230V models must have a dedicated power circuit rated for at least 20A, 125V when they are wired for 115V. As a load is lifted, the lifting motors will experience an initial current surge of up to three times the values listed.

### ADVERSE ENVIRONMENTAL CONDITIONS

Do not use the lifting motor in areas containing flammable vapors, liquids, gases or any combustible dusts or fibers. Refer to Article 500 of the National Electrical Code. Do not use this lifting motor in highly corrosive, abrasive or wet environments. Do not use this lifting motor in applications involving extended exposure to ambient temperatures below -10°F or above 130°F.

### LIFTING OF HAZARDOUS LOADS

This lifting motor 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 lifting motor.

### LIFTING OF GUIDED LOADS

This lifting motor is recommended only for lifting freely suspended loads and is not for use in the lifting of guided loads, including dumbwaiters and elevators. Such applications require additional protective devices which are not incorporated into this lifting motor. 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).

## WARNING

**Failure to comply with safety precautions outlined throughout this manual can result in serious injuries or death. Before using this lifting motor, each operator should become thoroughly familiar with all warnings, instructions and recommendations in this manual.**

## SUSPENDING LOADS OVER PEOPLE

The suspension of loads over people demands the highest level of rigging knowledge, equipment, and equipment maintenance. The UJL must be installed and used in accordance to rigorous rigging standards required when suspending loads over people. These include the following important precautions.

1. It is preferred that the load always be tied off with auxiliary chains or cables before access to the area beneath the load is permitted. As an alternative, the system may be designed such that malfunction or failure of one lifting motor's load bearing components does not cause load loss and/or overloading of any other lifting motors in the system. Note that in such a system, lifting motor performance and function must be monitored visually or with the use of load cells.
2. **Never operate the lifting motor while people are under the load.**

## SAFETY INFORMATION

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA) in the United States.
2. The lifting motor must be securely and adequately grounded. The power pigtail includes a green lead for grounding.
3. 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).

### **⚠ WARNING**

**Always disconnect the power source before working on or near a lifting motor 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.**

4. Protect the power and control cables from coming in contact with sharp objects.
5. Do not kink the electrical cables and never allow them to come in contact with oil, grease, hot surfaces, or chemicals.
6. Make certain that the power source conforms to the requirements of your equipment.
7. Inspect the unit daily before operating lifting motor.
8. Cluttered areas and benches invite accidents.
9. The operator should not engage in any practice which will divert his attention while operating the lifting motor.
10. Before using the lifting motor, the operator should be certain that all personnel are clear.
11. Do not operate lifting motor with loads exceeding its rated capacity.
12. Supporting frames or beams used as a lifting motor hanger must have a greater load capacity than the lifting motor.
13. Do not attempt to operate lifting motor beyond normal maximum lift range.

14. Align lifting motor for a straight line pull. Avoid side pull or end pull.
15. Do not operate lifting motor with twisted or damaged chain.
16. Do not operate a damaged or malfunctioning lifting motor until necessary adjustments or repairs have been made.
17. Do not use lifting motor to lift people or to carry loads over people.
18. Do not leave a load suspended in the air unattended.
19. Always remove load before making repairs.
20. Do not remove or obscure capacity or warning decals.

## INSTALLATION

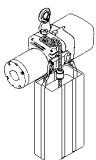
### POWER & CONTROL SYSTEM REQUIREMENTS

The UJL must be connected to a power and control system that is properly designed to operate the lifting motor and to handle the power consumption of the motor. Note the motor amperages listed on page 3. Be aware that the instantaneous current surge experienced when lifting is typically up to three times the steady current. The unit has a control pigtail and power pigtail for electrical connections. Control voltage is 115V as a standard (24V optional). Power conductors and branch circuits connected to the unit should be adequate to handle the current draw. This is especially important to consider when a unit is wired for 115V (See Table 2, page 11).

### PRELIMINARY CHECKS

Before installing the lifting motor, check the following:

1. After unpacking the unit, carefully inspect for any damage that may have occurred during transit. Check for loose, missing or damaged parts. Shipping damage claims must be filed with the carrier. Be sure that the voltage labeled on the unit matches your power supply.
2. Make sure all supporting structures and attaching devices have the strength to withstand several times the weight of the intended loads. If in doubt, consult a qualified structural engineer.
3. Provide proper branch circuit protection for the lifting motor as required by the prevailing electrical codes in your area.
4. Lifting motors should not experience voltage drops of more than 10% of the supply voltage. It is critical to use adequate sized power cables, especially with 1-phase models (See Table 2). On dual voltage lifting motors, the installer must ensure that the lifting motor is correctly wired for the intended voltage (See WIRING, page 9).
5. **ALWAYS DISCONNECT LIFTING MOTOR FROM POWER SUPPLY** before removing electrical cover or when making any electrical connection in the lifting motor.
6. The user's control board must be grounded in accordance with the electrical codes that are applicable in your area. Power cables to lifting motors must include a ground conductor. The power pigtail includes a green grounding conductor.
7. 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.





## INSTALLING THE LIFTING MOTOR

1. Be certain that supporting structures and attachment points have the strength to withstand several times the weight of the intended loads.
2. Hooks should be attached to appropriate points such that the load will be applied at the saddle of the hook only. Never allow a load to rest on the tip of a hook. Hook latches should always close completely.
3. The UJL can be mounted upright or upside down.
4. Connect the controls to the lifting motor as shown in the Wiring Diagrams starting on page 11. When installing a three-phase lifting motor, check to make sure the lifting motor travels in the direction intended when operating the controls. To correct improper motor travel, reverse any two wires (except the green ground wire) at the power source. Do not change connections in the lifting motor. Once the direction of travel is verified to be correct, permanent connections can be made at the power source.
5. Once the controls are properly connected, run the motor in the down direction to allow enough length of chain to attach the load hook to its suspension point. Once again, you should be certain of the structural strength at the attachment point and ensure that the load will bear on the saddle of the hook. The lifting motor should be permitted to align itself for a straight line pull. Do not attempt to pull around corners.
6. Reset the limit switches to allow for only the amount of travel required (See LIMIT SWITCH ADJUSTMENT, page 8).
7. It is imperative that no twists exist in the chain, especially on double-reeved units. **Chain twists can create hazardous conditions!** Twists occur when the 2-ton load block is capsized or when the slack end of chain is not properly attached at the side of the lifting motor.
8. If necessary, lubricate the chain, see LUBRICATION, page 9.

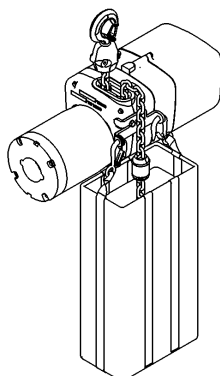
## CHAIN BAG (OPTIONAL ACCESSORY)

It is strongly recommended to use a chain bag with the UJL. Chain bags like shown in Figure 1 are available from Coffing Hoists. The bags, which are colored black, fit closely to the lifting motor and are as inconspicuous as possible. Be sure to follow the directions that come with UJL chain bags before installing.

## CAUTION

**Do not attempt to store more chain in a chain bag than outlined on its instruction sheet or serious damage to the lifting motor may result and hazardous conditions may be created.**

**Note:** UJL4008 uses twice the amount of chain than the single-reeved models.



**Figure 1 - UJL With Optional Chain Bag**

**Product Codes:**  
08768  
80 ft Chain Capacity  
08769  
120 ft Chain Capacity

## OPERATION

This lifting motor is designed for operation within the limits of its rated capacity. It is controlled by a user supplied control system or a pushbutton station. The UP direction is controlled by closing the circuit between X1 and C20. DOWN is controlled by closing the circuit between X1 and C21 (See Figures 7A-7C).

## WARNING

**Do not use lifting motor to lift, support or otherwise transport people.**

## OVERLOAD LIMITING PROTECTION

This lifting motor is equipped with a factory-calibrated overload limiting clutch that will permit the lifting of loads within its rated capacity, but will prevent the lifting of damaging overloads while the lifting motor is being operated. If the load being lifted exceeds the lifting capability of the overload clutch, the motor will continue to run, causing overheating of both the clutch and motor. This condition should be avoided by immediately releasing the "UP" button and reducing the load to within the rated capacity of the lifting motor. See GEARING, page 10, for additional instructions on this device.

## 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. While the overload limiting clutch will protect the lifting motor from damaging overloads, it will not ensure that a load is within the rated capacity of the lifting motor.**

## WARNING

**Do not purposely allow the overload limiting clutch to slip. Excessive slippage will damage the clutch and motor. Hazardous conditions will be created!**

## LIMITS OF TRAVEL

The UJL's travel is limited by "UP" and "DOWN" limit switches that should be adjusted for the application to prevent dangerous conditions or incidents that could occur with overtravel. The operator should be aware of the location of the load at all times. If the extreme limits are encountered, the user should immediately stop the motor.

With properly set limits, tandem units can be synchronized by easing each one to its corresponding limit. Depending on the application, you will use the "UP" or "DOWN" limit as your guide.

## OPERATING NOTES

Here are some points which must be observed to maintain proper operation.

1. Do not overload the lifting motor.
2. Do not make extreme side pulls with the lifting motor.
3. **Do not sling the lifting motor load chain around an attachment point. Use a proper sling.**
4. 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. Load must be supported in saddle of hook, not by hook tip or hook latch.

5. Do not stand beneath a moving load! Do not move a load in such a manner as to endanger personnel.
6. Do not lower into areas where visibility is obscured unless someone else is guiding the operation.
7. Use common sense at all times when operating a lifting motor.
8. Do not operate if direction of hook travel is not the same as indicated on button being pushed.
9. Do not operate unless hook travel limit devices function. Test without load each shift.
10. Do not operate when lifting motor is not centered over load.
11. Do not operate if chain is not seated properly in sprockets or sheave grooves.
12. Do not operate a damaged or malfunctioning lifting motor.
13. DO NOT USE LIFTING MOTOR TO LIFT, SUPPORT OR OTHERWISE TRANSPORT PEOPLE.

## MAINTENANCE

### INSPECTIONS

A planned inspection routine should be established for this lifting motor based upon frequency of use, severity of use, and environmental conditions. 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 8A and 8B, be used and filed for reference. All inspections should be performed or overseen by a designated inspector. Special inspections should be made following any significant repairs or any operating occurrence leading one to suspect that the lifting motor's capability may have been impaired.

### LOWERING WITHOUT POWER

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

1. DISCONNECT LIFTING MOTOR FROM POWER SUPPLY AND REMOVE ELECTRICAL COVER.



### WARNING

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

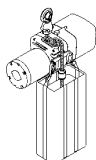
**TO AVOID INJURY:**

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

2. Open disc brake manually by using two screwdriver blades, one on each side of the brake at a point close to the brake spring posts. Apply pressure to the underside of the armature plate (points "X", Figure 4, page 9) to close the solenoid and release the brake.

### WARNING

**Do not allow screw driver blades to touch rotating friction disc "C" (See Figure 4, page 9).**



### CAUTION

**Do not allow the load to descend rapidly. This causes the motor to race and serious damage may result.**

3. Use several quick releases instead of holding brake open continuously. Do not exceed normal lowering speed.

### HOOKS

Refer to Figure 2.

1. 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° from the plane of an unbent hook must also be replaced.
2. The hook latches should be inspected to ensure that they close the hook throat opening in a secure manner when a load is applied. Inspect the hook shank and nut for any stripping of the threads or other damage. The hook nut should be fully restrained by the retaining pin.
3. In addition to above, hooks should be inspected for cracks by the magnetic particle, dye penetrant or other suitable crack testing inspection method. This should be done at least once a year.

| Lifting Motor Capacity | "X" Dimension*                    |                                   |
|------------------------|-----------------------------------|-----------------------------------|
|                        | Suspension Hook                   | Load Hook                         |
| 1 Ton & Under          | 1 <sup>11</sup> / <sub>32</sub> " | 1 <sup>7</sup> / <sub>32</sub> "  |
| 2 ton                  | 1 <sup>11</sup> / <sub>32</sub> " | 1 <sup>11</sup> / <sub>32</sub> " |

(\*) Maximum permissible throat opening of hook.

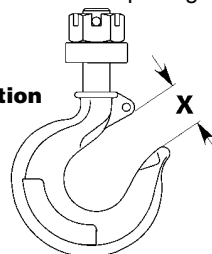


Figure 2 — Hook Inspection

### CHAIN

Chain is to be kept clean and lubricated (See LUBRICATION, page 9). Visually check chain every time lifting motor is used. The lifting motor must not be operated when chain is twisted or kinked. An important phase of lifting motor maintenance is chain inspection. Check individual links and check for chain elongation.

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 pounds) on the chain to pull it taut. Use a large caliper to measure the outside length of a convenient

### CAUTION

**The chain used on this lifting motor has very carefully controlled dimensions and has been heat treated. Do not attempt to substitute any other manufacturer's chain.**

number of links (about 12"). 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 1½% longer than the unused chain (0.015" per inch of chain measured), then the chain should be replaced. If the chain is worn less than 1½%, check it at several more places along its length. If any section is worn more than 1½%, the chain should be replaced.

#### Chain Replacement with Chain in Lifting Motor

1. With the unit hanging by the suspension hook (decals upside down), run the load hook to its "UP" limit.
2. DISCONNECT LIFTING MOTOR FROM POWER SUPPLY and remove the electrical cover.



### WARNING

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

#### TO AVOID INJURY:

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

3. Using a screwdriver, pry the spring guide plate out of the slots in the limit switch nuts (See Figure 5). Turn the gold nut back to about the center of the threaded shaft. Do not disconnect the wires from the limit switches.
4. Remove the load block assembly from the old chain. On double-chained lifting motors detach the chain from the chain support and pull it through the load block assembly.
5. Make a "C" shaped chain link by grinding through the end link on the load end of the old chain.
6. Using the "C" link, attach the new chain to the load end of the old chain. Be sure that the welds of the upstanding links of the new chain will face outward from the load sheave. The end links must be oriented for attachment to the dead-end shackle and the chain support (double-chained only) without any twist in the chain. Note that the chain end is attached to the shackle with a split link.
7. With the electrical cover off, connect the lifting motor to the power supply. Be sure that the green ground wire is properly grounded (See INSTALLATION, page 4).
8. Carefully jog the "UP" button and run the joined pieces of chain into the lifting motor until about 15" of the new chain comes out the other side.
9. DISCONNECT LIFTING MOTOR FROM POWER SUPPLY.



### WARNING

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

#### TO AVOID INJURY:

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

10. Remove the "C" link and the old chain. Remove the chain stop from the old chain by prying off its retaining ring with a flathead screwdriver. If attached, remove the old chain from the shackle on the side of the lifting motor by opening up the split link.

11. Attach the chain stop to the slack end of the new chain by capturing the 12<sup>th</sup> link with the two stop halves positioned with their tapered ends pointing towards the lifting motor. Slide the sleeve over the halves and attach the retaining ring. If you are not using a chain container, attach the slack end of the new chain to the shackle on the side of the unit using the split link. DO NOT allow twists in the chain.
12. Adjust the lower limit switch (See ADJUSTING LOWER LIMIT, page 8).
13. Attach the load block on single-chained lifting motors using a new load block screw or pin (See Figure 19). On double-chained lifting motors, feed 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 chain support using a new chain support pin (See Figure 19). Be sure there are no twists in the chain.
14. Adjust the upper limit switch (See ADJUSTING UPPER LIMIT, page 8).

#### Chain Replacement with No Chain in Lifting Motor

Refer to Figure 3.

1. DISCONNECT LIFTING MOTOR FROM POWER SUPPLY and move lifting motor to a work table. Do not remove the electrical cover.



### WARNING

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

#### TO AVOID INJURY:

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

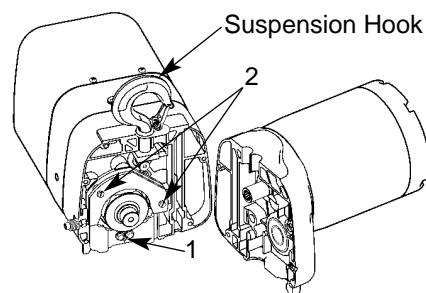
2. Lay the lifting motor on its side and remove the four screws that attach the sheave housing to the gear housing (See Figure 10, Ref. No. 2).
3. Carefully pull the sheave housing and motor assembly loose from the gear housing.



### CAUTION

**There are wires running through the lifting motor. Carefully ease the lifting motor sections apart. Do not jerk them apart.**

4. Turn the two lifting motor sections at right angles and remove the chain guide screws and the nearest chain guide (Ref. No. 1, Figure 3).



**Figure 3 — Chain Replacement with No Chain in Lifting Motor**

5. Remove the two chain guide plate screws (Ref. No. 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. Allow about 15" of chain below the lifting motor on the slack end. 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 lifting motor 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 lifting motor sections together. Be sure the dead-end nut, the top hook and the chain support (double-chained lifting motors only) are all in place. On single-chained lifting motors, the hook shank goes in the center hole; on double-chained lifting motors, it goes in the off-center hole. Be careful not to pinch any of the wiring. Turn the lifting motor on its side and replace the four screws and tighten securely.
9. Follow steps 11 through 14 in the previous section, CHAIN REPLACEMENT WITH CHAIN IN LIFTING MOTOR, to complete the chain replacement procedure.

## LIMIT SWITCH ADJUSTMENT

Refer to Figure 5.

**IMPORTANT:** Before placing lifting motor in operation, check the limit switch adjustment. Limit switches are provided to protect the lifting motor against damage resulting from overtravel or to allow setting the hook travel within the factory-set limits of travel. The standard UJL limit switch allows for the maximum amount of lift, which is 134 ft on 1/2 ton lifting motor models, 143 ft on the 1 ton models, and 71 ft on the 2 ton models.

The limit switch adjusting nuts are color-coded gold for the "UP" limit and silver for the "DOWN" limit. Movement of the limit switch nuts toward or away from each other increases or decreases the hook travel respectively.

### Adjusting Upper Limit (Gold Nut)

1. Suspend the lifting motor. For single-chained models operate "UP" until there is a minimum clearance of 2" from the lifting motor housing and the top of the block. Double-chained models require a minimum clearance of 1" from the chain support to the top of the load block.
2. DISCONNECT LIFTING MOTOR FROM POWER SUPPLY and remove the electrical cover.
3. With a screwdriver, pry the spring guide plate out of the slots in the limit switch nuts.
4. Turn the slotted gold nut 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 limit switch nuts. Do not disturb the silver slotted nut if it has been set previously.

### Adjusting Lower Limit (Silver Nut)

1. Suspend the lifting motor. Operate "DOWN" to a point where the slack-end loop of the chain hangs down 6" or more from the lifting motor housing (or the limit desired in any particular

application allowing the minimum 6"). There should be a minimum clearance of 1½" between the chain stop and the bottom of the lifting motor.

2. DISCONNECT LIFTING MOTOR FROM POWER SUPPLY and remove the electrical cover.
3. With a screwdriver, pry the spring guide plate out of the slots in the limit switch nuts.
4. Turn the slotted silver nut toward 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 limit switch nuts. Do not disturb the gold slotted nut if it has been set previously.

### Check Both Upper and Lower Limits

1. Connect the lifting motor to the power supply. Be sure the green ground wire is properly grounded.

## CAUTION

**If the wires running to the limit switches are ever disconnected for any purpose, be sure to replace wires in accordance with the correct wiring diagram (See Figures 7A - 7C).**

2. Check the direction of hook travel (See INSTALLING THE LIFTING MOTOR, page 5).
3. Carefully operate to upper limit and observe if it stops automatically at desired level. Do not allow load block to run into the lifting motor housing — this will damage the lifting motor. Maintain a minimum clearance of 2" from the lifting motor housing and the load block on single-chained models and 1" from the chain support to the load block on double-chained models.
4. Carefully operate to lower limit and observe if it stops automatically at the desired level. Do not allow slack-end loop of chain to become taut against lifting motor housing. This will damage the lifting motor. There should be a minimum clearance of 1½" between the chain stop and the lifting motor.
5. If upper and lower limits operate satisfactorily, lifting motor is ready for use. If they are not as desired, repeat adjustment.

## BRAKE

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

### Brake Adjustment

Refer to Figure 4.

1. DISCONNECT LIFTING MOTOR FROM POWER SUPPLY and remove the electrical cover.

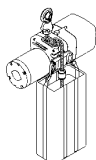


## WARNING

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

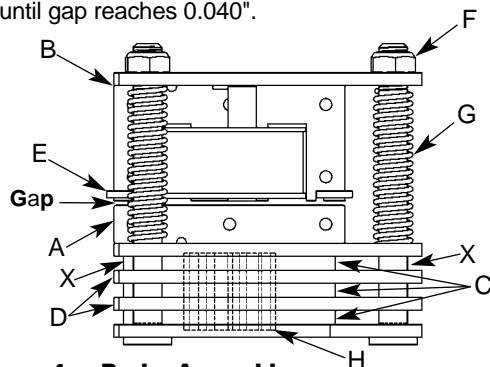
### TO AVOID INJURY:

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





2. With reference to Figure 4, 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 0.040".



**Figure 4 — Brake Assembly**

3. Adjust gap by adjusting the 3 locknuts "F" and checking with a feeler gauge to be sure gap is the same on both ends of the solenoid.
4. Adjustment is now complete and the brake properly set. Replace the electrical cover, reconnect the power supply, and check lifting motor brake action.

## CAUTION

**Be sure the bottom of the armature does not bear against the splined adapter "H". As adjustments are made, the built-in clearance will be reduced. When this clearance is gone REPLACE BRAKE DISCS. Minimum allowable disc thickness is .162". See Figure 13 for further illustration.**

## WIRING

Refer to Figures 7A, 7B and 7C.

Single-phase units (115/230V) are wired for 230V and 230/460V-3 phase units are wired for 230V unless otherwise specified when ordering. Lifting motors ordered with other 3-phase voltages are single-voltage only. Conversion of dual voltage units can be done simply and quickly as follows.

1. DISCONNECT LIFTING MOTOR FROM POWER SUPPLY and remove electrical cover.
2. On 230/460V-3 phase units converting to 460V requires removing the C1, C2 and C3 jumpers as shown on the wiring diagram 983UE0100-000. The motor leads T4, T5 and T6 are then connected to the blocks as shown. Save the three jumper wires for conversions back to 230V. One of the transformer leads H2 (230V) and H4 (460V) is connected to the contactor as shown depending on the voltage.  
On 115/230V-1 phase units, connections are only modified at the terminal blocks as shown on wiring diagram 981UE0100-000.
3. Make sure that all of the screw clamps on the contactor and terminal blocks are tightened. **Tug on the wires to ensure they are securely connected.**
4. Check the operation of the lifting motor, ensuring that the direction of travel is correct (See INSTALLING LIFTING MOTOR, page 5).

**IMPORTANT:** Always refer to the wiring diagram located on the inside of the electrical cover or Figures 7A, 7B and 7C when performing electrical repairs. Make sure all terminals are securely fastened and check for damaged insulation. It is also imperative that the power circuit has conductors of adequate size.

## LUBRICATION

Refer to Figure 9.

Proper lubrication is necessary to ensure a long and reliable lifting motor life. Refer to the following and the RECOMMENDED LUBRICATION SCHEDULE for lubrication points, type of lubricant, and frequency of lubrication.

## Load Chain

Clean the load chain with acid-free solvent and coat with new SAE 90 gear oil. Wipe excess oil to prevent dripping. Never apply grease to the chain.

## Gearing

The gearbox of this lifting motor is filled at assembly with 1½ pints of SAE 90 EP gear oil. To check oil level, hang the unit by the suspension hook (the unit and decals will be upside down) and remove the oil level check plug. With the lifting motor hanging level, the gear oil should be even with the hole.

## 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.

## Limit Switch Shaft

Remove any dirt accumulation and spray with a general purpose lubricant.

## Hook Bearing

Apply a few drops of new SAE 30 gear or motor oil around the edge of the bearing.

## Idler Sheave Bearing (Bushing)

Disassemble load block and apply a light coat of NLGI #2 grease, or equivalent, inside of bearing.

**NOTE:** If lifting motor is used in an atmosphere containing abrasive dust, frequent cleaning and oiling may be necessary.

## LIFTING MOTOR REPAIRS

**NOTE:** If you do not have an experienced mechanic to do your repair work, we recommend that you send your lifting motor to an approved service station for repairs. Use authorized repair parts only.

## WARNING

**Remove load and disconnect lifting motor from power supply before starting to do any repairs or to take any sections apart.**

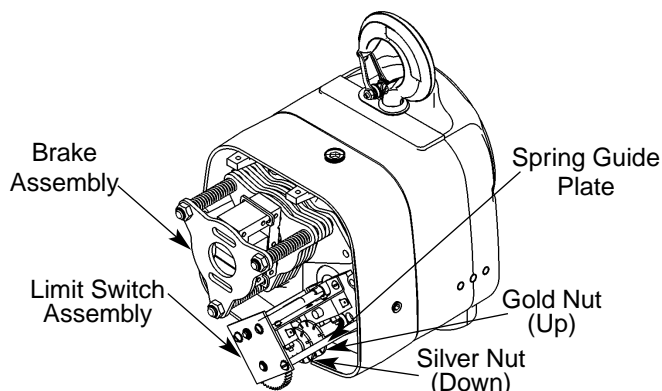
1. For major repairs or when the lifting motor is to be sectioned in the suspension area, it will be necessary to move the lifting motor to a workbench or table.
2. For repairs which can be done by removing the electrical cover only, the lifting motor need not be moved. Lowering the lifting motor to a convenient working level is desirable.

The following repair instructions will help you in understanding repair procedures, when related to the Replacement Parts List starting on page 16. For clarity these are broken down into areas.

### Electrical Parts and Brake

1. Refer to Figures 14 and 15. Remove the cover to access the controls. Single-phase models also have a starting switch and capacitor mounted on the motor as shown in Figure 12. The terminal blocks and end clamps snap off of the rails on the plate using a small screwdriver. DO NOT SLIDE THE END CLAMPS.

The contactor can be slid off the rail, but must be snapped on. Where the contactor fits the rail, one side has springs or pads that apply pressure against the edge of the rail. By pressing against that side at the base of the contactor, you can snap the part on or off using a rotating action. Note the numbers that label the terminals on the contactor and orient the part as shown in Figures 7A-7C. Single-phase contactors have a small jumper that is not present on the 3-phase (note the 3 and 5 terminals on the reversing contactor in Figure 7A).



**Figure 5 - Brake and Limit Switch Assembly**

2. Remove the electrical panel by removing the stand-off screws (See Figures 14 & 15). The limit switch and brake are now accessible as shown in Figure 5.
3. Remove the transformer bolted to the back of the panel plate if it requires replacement.
4. Refer to Figure 13 to disassemble the brake. See BRAKE ADJUSTMENT on page 8 to properly set the brake.
5. Refer to Figure 16 to disassemble the limit switch. See LIMIT SWITCH ADJUSTMENT on page 8 to properly set the upper and lower limits of travel.
6. Refer to Figure 17 for repairs on the pushbutton station. Also refer to the wiring diagram inside the electrical cover or Figures 7A, 7B and 7C for wiring instructions.

### Motor

Refer to Figures 11 and 12.

The lifting motor's 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.

1. If it is necessary to replace or repair the motor, DISCONNECT THE LIFTING MOTOR FROM THE POWER SUPPLY and remove the electrical cover.
2. Loosen the screw clamps on the terminal blocks and reversing contactor to disconnect the motor leads (See Figures 14 and 15).



## WARNING

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

### TO AVOID INJURY:

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

3. Remove the four motor mounting bolts attaching the motor to the housing. It will come loose at the motor coupling.
4. Inspect the motor coupling, motor shaft and all the bearings. Replace as necessary.
5. Install new or repaired motor according to the wiring diagram located inside the electrical cover or Figures 7A, 7B and 7C.

### Gearing

Use the Replacement Parts List for Basic Unit and Gearbox Parts to help in repairs on gearing (See Figures 10 and 18). As disassembly is extensive for gearing, disconnect the lifting motor and move it to a workbench.

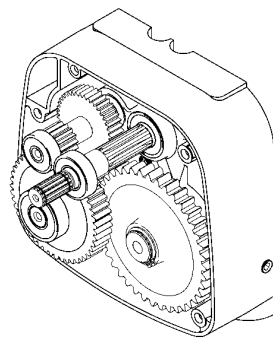
1. Remove electrical cover.
2. Remove electrical panel.
3. Remove brake assembly.
4. Drain oil from the gearbox.
5. Remove the four screws attaching the gearbox cover to the gear housing and remove the gearbox cover.
6. Inspect gears for broken or severely worn teeth and inspect all bearings. Replace as necessary. The overload slip clutch is factory calibrated and must not be disassembled or readjusted.



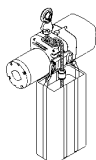
## CAUTION

**Do not disassemble or readjust clutch, or replace with a clutch assembly from another lifting motor. Doing so will void the warranty and may create an unsafe condition. If replacement is needed due to wear or loss of adjustment, always use a new clutch assembly.**

7. Reassemble in reverse order of disassembly making sure the 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.
8. Check all wire terminals to be sure they are properly seated and in accordance with wiring diagram. Before placing lifting motor back into service, check brake adjustment.



**Figure 6 - Assembled Gearing**



## Suspension

Use the Parts List for Basic Unit and Chaining Parts to help in repairs in this section (See Figures 10 and 19). The lifting motor sections must be separated at the top hook line in order to inspect the load sheave and chain guides. See CHAIN REPLACEMENT WITH NO CHAIN IN LIFTING MOTOR, page 7.

While this section is apart, check the following:

- Load sheave
- Chain, Chain guides and plates
- Chain support (on 2 ton models)
- Bearings

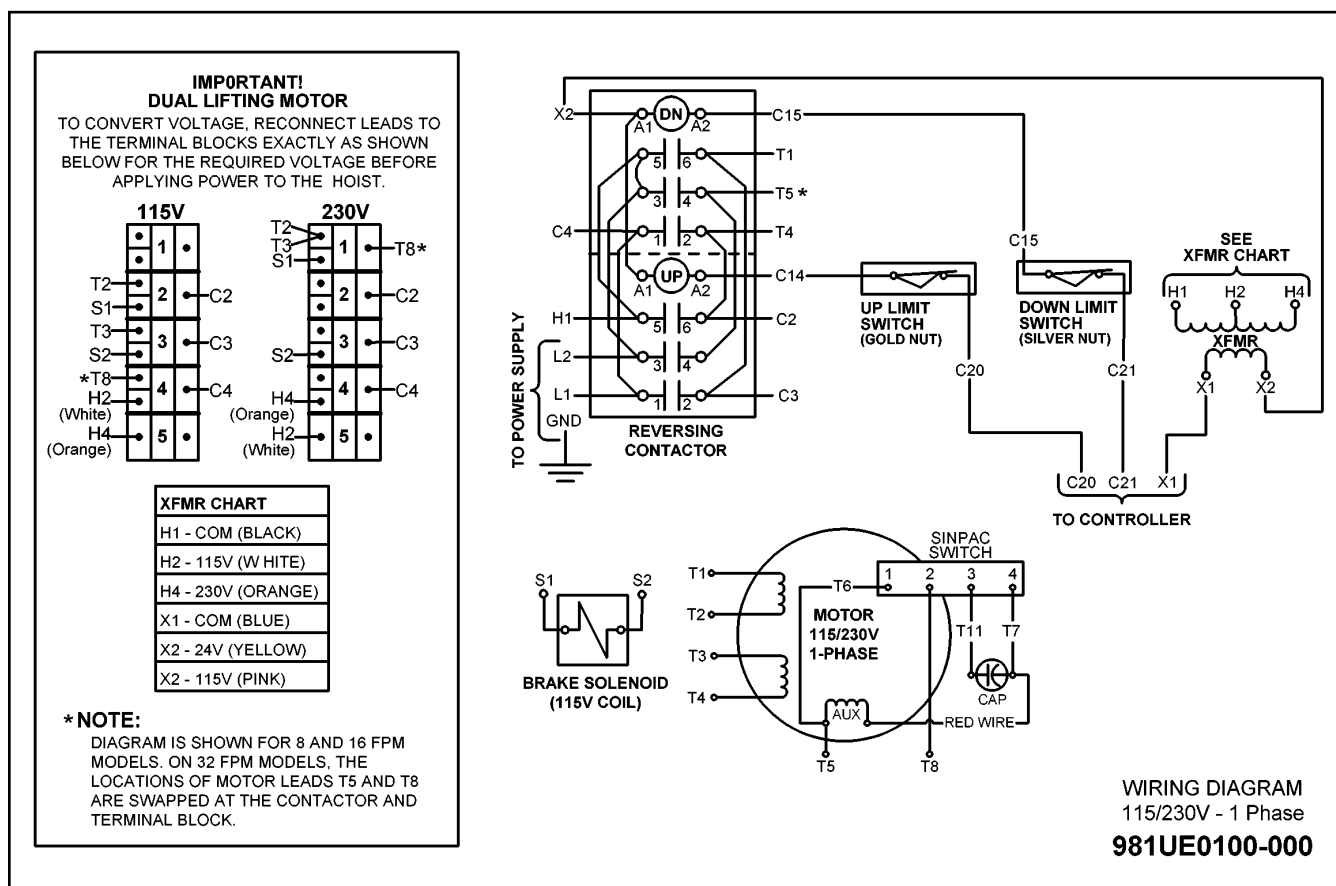
Replace parts as necessary including screws, lockwashers, etc. When reassembled, recheck operation.

## POWER CORD PRECAUTIONS WITH 1-PHASE LIFTING MOTORS

Electric lifting motors require a sufficient power supply. It is especially important with single-phase voltage to ensure that the conductors running to the lifting motor from the power source are adequate in size to handle the power requirements of the lifting motor. Inadequate **power cables** and **branch circuits** will cause low voltage, high amperage, damage to the lifting motor, and potential fire hazards. Such problems can be minimized by using 230V power on 115/230V hoists. The following are recommendations for the conductor gage size depending on the length, horsepower, and voltage.

**Table 2 - Recommended Conductor Sizes for 1-Phase Lifting Motors**

| HP  | Voltage<br>(1-Phase) | Maximum Length of Power Cord in Feet |        |        |       |
|-----|----------------------|--------------------------------------|--------|--------|-------|
|     |                      | 14 AWG                               | 12 AWG | 10 AWG | 8 AWG |
| 1/2 | 115V                 | 40                                   | 60     | 100    | 150   |
|     | 230V                 | 200                                  | 330    | 520    | 810   |
| 1   | 115V                 | 0                                    | 30     | 50     | 75    |
|     | 230V                 | 120                                  | 190    | 310    | 490   |



**Figure 7A — Wiring Diagram for 115/230V - 1 Phase Models**

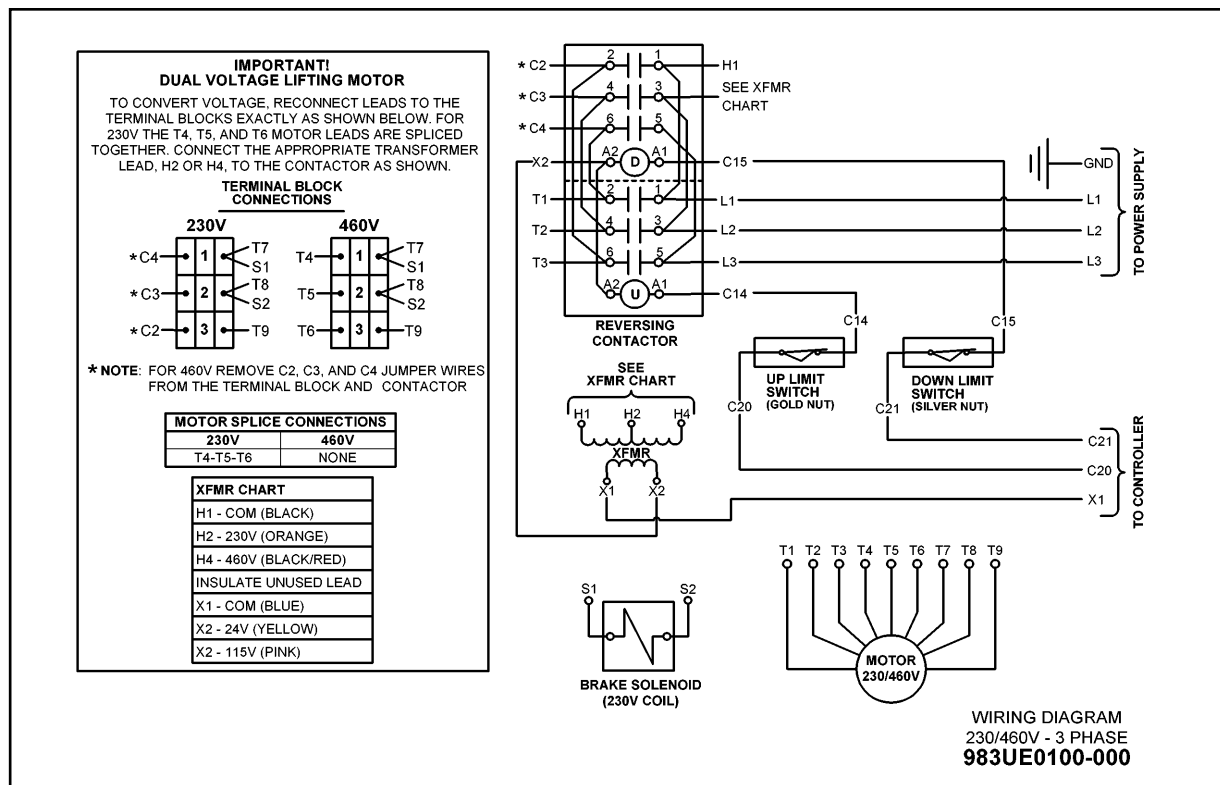


Figure 7B — Wiring Diagram for 230/460V - 3 Phase Models

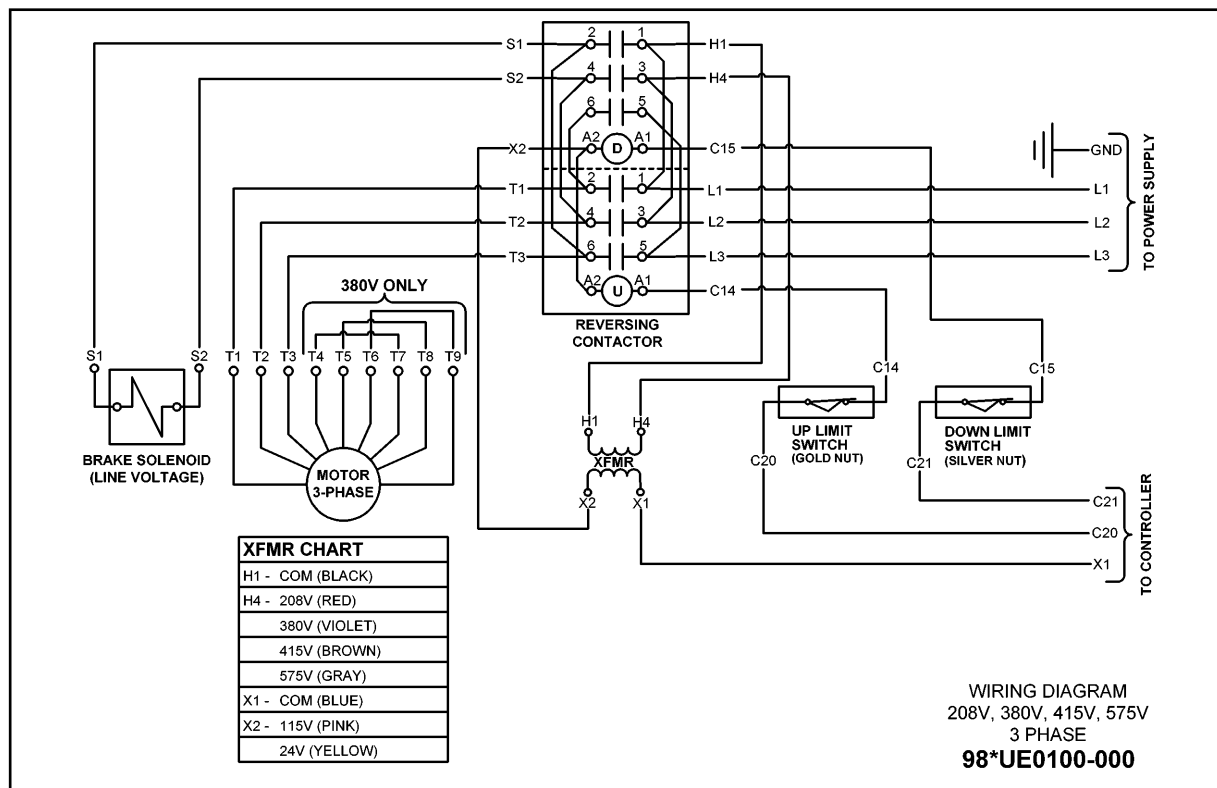
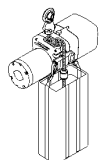


Figure 7C - Wiring Diagram for 208V, 380V, 415V and 575V - 3 Phase Models

\*Factory supplied wiring diagrams will have numbers beginning with 985 for 575V, 987 for 208V, 988 for 380V and 989 for 415V.





## TROUBLE SHOOTING

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



## WARNING

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

### TO AVOID INJURY:

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

— Probable Cause —

— Remedy —

|   |   |
|---|---|
| <b>Hook fails to stop at end of travel</b>  |   |
| <ol style="list-style-type: none"> <li>Limit switch not operating</li> <li>Brass limit switch nuts not moving on shaft</li> <li>Reversing contactor malfunctioning</li> </ol>   | <ol style="list-style-type: none"> <li>Check adjustment (See LIMIT SWITCH ADJUSTMENT, page 8). Check connections against wiring diagram. Tighten loose connections or replace.</li> <li>Check for stripped threads or bent nut guide.</li> <li>Remove electrical cover and check reversing contactor.</li> </ol>  |
| <b>Lifting motor does not respond to pushbutton</b>   |   |
| <ol style="list-style-type: none"> <li>Power failure in supply lines</li> <li>Wrong voltage or frequency</li> <li>Improper connections in lifting motor or pushbutton station</li> <li>Brake does not release</li> <li>Faulty reversing contactor</li> </ol>  | <ol style="list-style-type: none"> <li>Check circuit breakers, switches and connections in power supply lines.</li> <li>Check voltage and frequency of power supply against the rating on the nameplate of the motor.</li> <li>Check all connections at line connectors and on terminal block. Check terminal block on dual voltage lifting motors for proper voltage connections.</li> <li>Check connections to the solenoid coil. Check for open or short circuit. Check for proper adjustment (See BRAKE ADJUSTMENT, page 8).</li> <li>Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed.</li> </ol>   |
| <b>Hook does not stop promptly</b>  |   |
| <ol style="list-style-type: none"> <li>Lifting motor overloaded</li> <li>Brake not holding</li> </ol>   | <ol style="list-style-type: none"> <li>Reduce load to within rated capacity of lifting motor.</li> <li>Check brake adjustment (See BRAKE ADJUSTMENT, page 8). It may be necessary to replace discs.</li> </ol>  |
| <b>Hook moves in wrong direction</b>  |   |
| <ol style="list-style-type: none"> <li>Three phase reversal</li> <li>Improper connections</li> </ol>  | <ol style="list-style-type: none"> <li>Reverse any two wires (except the green ground wire) at the power source (See INSTALLATION, page 4).</li> <li>Check all connections against wiring diagram.</li> </ol>   |
| <b>Lifting motor hesitates to lift when energized</b>   |   |
| <ol style="list-style-type: none"> <li>Lifting motor overloaded</li> <li>Motor brake requires adjustment</li> <li>Worn overload limiting clutch</li> <li>Low voltage</li> <li>Faulty SINPAC® starting switch or start capacitor (single phase lifting motors only)</li> </ol>   | <ol style="list-style-type: none"> <li>Reduce load within rated capacity of lifting motor.</li> <li>Check motor brake adjustment (See BRAKE ADJUSTMENT, page 8).</li> <li>Replace clutch.</li> <li>Determine cause of low voltage and bring up to within plus or minus 10% of the voltage specified on the motor. Measure voltage at the lifting motor reversing contactor while lifting a load.</li> <li>Replace faulty component.</li> </ol>  |
| <b>Hook raises but will not lower</b>   |   |
| <ol style="list-style-type: none"> <li>"DOWN" circuit open</li> <li>Broken conductor in pushbutton cable</li> <li>Faulty reversing contactor</li> </ol>   | <ol style="list-style-type: none"> <li>Check circuit for loose connections. Check "DOWN" limit switch for malfunction.</li> <li>Check each conductor in the cable. If one is broken, replace entire cable.</li> <li>Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed.</li> </ol>   |
| <b>Hook lowers but will not raise</b>   |   |
| <ol style="list-style-type: none"> <li>Lifting motor overloaded</li> <li>Low voltage</li> <li>"UP" circuit open</li> <li>Broken conductor in pushbutton cable</li> <li>Faulty reversing contactor</li> <li>Faulty capacitor (single phase lifting motor only)</li> <li>Worn overload limiting clutch</li> <li>Loose screw clamps</li> </ol> | <ol style="list-style-type: none"> <li>Reduce load to within rated capacity of lifting motor.</li> <li>Determine cause of low voltage and bring up to within plus or minus 10% of the voltage specified on the motor. Measure voltage at the lifting motor reversing contactor while lifting a load.</li> <li>Check circuit for loose connections. Check "UP" limit switch for malfunction.</li> <li>Check each conductor in the cable. If one is broken, replace entire cable.</li> <li>Check coils for open or short circuit, check all connections in control circuit. Check for burned contacts. Replace as needed.</li> <li>Check starting capacitor on motor. Replace if necessary.</li> <li>Replace overload clutch assembly.</li> <li>Ensure that screw clamps are tightened on the terminal blocks and reversing contactor.</li> </ol> |
| <b>Motor overheats</b>  |   |
| <ol style="list-style-type: none"> <li>Excessive load</li> <li>Low voltage</li> <li>Extreme external heating</li> <li>Frequent starting or reversing</li> <li>Brake dragging</li> </ol>   | <ol style="list-style-type: none"> <li>Reduce load to within rated capacity of lifting motor.</li> <li>Determine cause of low voltage and bring up to within plus or minus 10% of the voltage specified on the motor. Measure voltage at the lifting motor reversing contactor while lifting a load.</li> <li>As the ambient temperature rises towards the 130°F limitation of the unit, frequency of the lifting motor operation must be limited to avoid overheating of the motor. See ADVERSE ENVIRONMENTAL CONDITIONS, page 3.</li> <li>Excessive inching, jogging or reversing should be avoided since this type of operation will drastically shorten the life of motor, contactor and brake.</li> <li>Check brake adjustment (See BRAKE ADJUSTMENT, page 8).</li> </ol>  |
| <b>Lack of proper lifting speed</b>   |   |
| <ol style="list-style-type: none"> <li>Lifting motor overloaded</li> <li>Brake dragging</li> <li>Low voltage</li> <li>Overload limiting clutch intermittently slipping</li> </ol>   | <ol style="list-style-type: none"> <li>Reduce load to within rated capacity of lifting motor.</li> <li>Check for proper brake adjustment or other defects.</li> <li>Ensure that the voltage at the reversing contactor is within ±10% of the nominal voltage while lifting a load.</li> <li>Replace overload clutch assembly.</li> </ol>  |

## TROUBLE SHOOTING (Continued)

### Motor brake noise or chatter (while starting lifting motor)

- |                           |   |
|---------------------------|---|
| 1. Brake needs adjustment | 1. See BRAKE ADJUSTMENT, page 8.  |
| 2. Low voltage            | 2. Ensure that the voltage at the reversing contactor is within $\pm 10\%$ of the nominal voltage while lifting a load. |

### Motor brake "buzz" (anytime lifting motor is running)

- |                                       |   |
|---------------------------------------|---|
| 1. Brake needs adjustment             | 1. See BRAKE ADJUSTMENT, page 8.                          |
| 2. Broken shading coil on brake frame | 2. Replace shading coil or complete brake frame assembly. |

## INSPECTION AND MAINTENANCE CHECK LIST ELECTRIC POWERED OVERHEAD CHAIN LIFTING MOTOR

Type of Lifting Motor \_\_\_\_\_ 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  | *                       | *       | *        | 1. Any deficiency causing improper operation<br>2. Pitting or deterioration  |    |                 |
| Brake Mechanism   | *                       | *       | *        | 1. Slippage or excessive drift<br>2. 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. To find cracks, (use dye penetrant, magnetic or other suitable detection methods) |    |                 |
| Suspension Lug (if used)  | *                       | *       | *        | Cracks, excessive wear or other damage which may impair the strength of the lug. To find cracks, (use dye penetrant, magnetic particle or other suitable detection methods)  |    |                 |
| 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<br>Shafts, Couplings                       |                         |         | *        | Excessive wear, corrosion, cracks, distortion  |    |                 |
| Nuts, Bolts, Rivets   |                         |         | *        | Looseness, stripped and damaged threads, corrosion   |    |                 |
| Sheaves   |                         |         | *        | Distortion, cracks, and excessive wear.<br>Build-up of foreign substances  |    |                 |
| Housings, Load Block  |                         |         | *        | Cracks, distortion. Excessive wear, internal build-up of foreign substances  |    |                 |
| Wiring and Terminals  |                         |         | *        | Fraying, defective insulation  |    |                 |
| Lifting Motor Reversing<br>Contactor, other Electrical<br>Apparatus |                         |         | *        | Loose connections, burned or pitted contacts   |    |                 |
| Supporting Structure and Trolley<br>(if used)                       |                         |         | *        | Damage or wear which restricts ability to support imposed loads  |    |                 |
| Nameplates, Decals,<br>Warning Labels                               |                         |         | *        | Missing, damaged or illegible  |    |                 |

**NOTE:** Refer to Maintenance and Inspection Sections of the Lifting Motor-Maintenance Manual for further details.

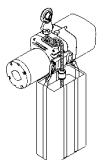
### FREQUENCY OF INSPECTION

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 period. 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 user's monthly experience.

### Figure 8A — 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 ASME B30.16. It is, however, the ultimate responsibility of the employer/user to interpret and adhere to the applicable requirements of this safety standard.



| INSPECTOR'S REPORT |  |           |              |               |
|--------------------|--|-----------|--------------|---------------|
| ITEM               | REMARKS (LIST DEFICIENCIES AND RECOMMENDED ACTION) |           |              |               |
|                    |  |           |              |               |
|                    |  |           |              |               |
|                    |  |           |              |               |
|                    |  |           |              |               |
|                    |  |           |              |               |
|                    |  |           |              |               |
|                    |  |           |              |               |
|                    |  |           |              |               |
|                    |  |           |              |               |
|                    |  |           |              |               |
|                    |  |           |              |               |
|                    |  |           |              |               |
| Inspector's        | Date   | Signature | Inspected by | Approved Date |

**Figure 8B — Recommended Inspector's Report**

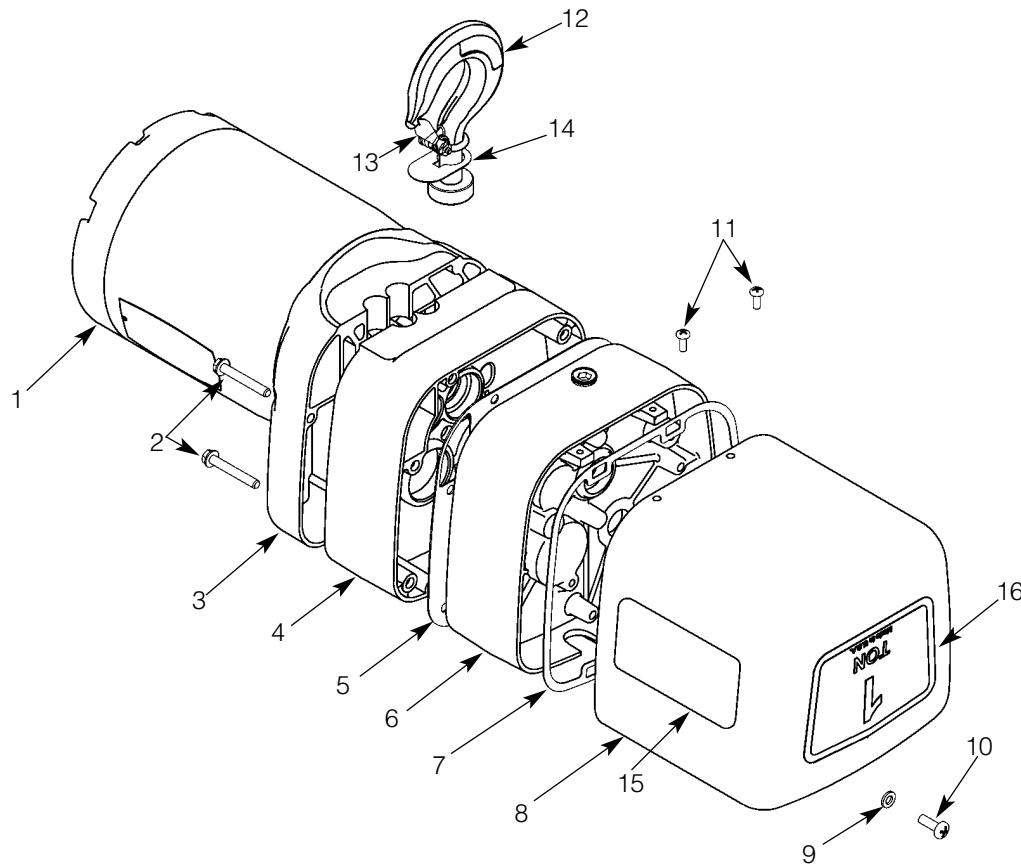
| RECOMMENDED LUBRICATION SCHEDULE* |  |   |  |         |            |
|-----------------------------------|--|---|--|---------|------------|
| LIFTING MOTOR                     |  |   |  |         |            |
| FIGURE & REFERENCE NO.            | COMPONENT                                  | TYPE OF LUBRICANT<br>(USE ONLY NEW LUBRICANT) | TYPE OF SERVICE AND FREQUENCY OF LUBRICATION |         |            |
|                                   |  |   | HEAVY  | NORMAL  | INFREQUENT |
| Figure 19<br>Ref. No. 18          | Load Chain                                 | SAE 90 gear oil                               | Daily  | Weekly  | Monthly    |
| Figure 18                         | Gearing                                    | SAE 90 extreme pressure (EP) gear oil         | At periodic inspection (See Figure 8A)       |         |            |
| Figure 19<br>Ref. No. 38 & 50     | Load Hook Bearing                          | SAE 30 gear or motor oil                      | Weekly                                       | Monthly | Yearly     |
| Figure 19<br>Ref. No. 44          | Idler Sheave Bearing<br>(Bushing) Assembly | NLGI #2 multi-purpose<br>lithium base grease  | At periodic inspection (See Figure 8A)       |         |            |

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

(\*) This lubrication schedule is based on a lifting motor operating in normal environment conditions. Lifting motors operating in adverse atmospheres containing excessive heat, corrosive fumes or vapors, abrasive dust, etc., should be lubricated more frequently.

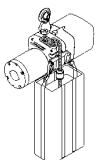
**Figure 9 — Recommended Lubrication Schedule**

## Figure 10 - Basic Unit



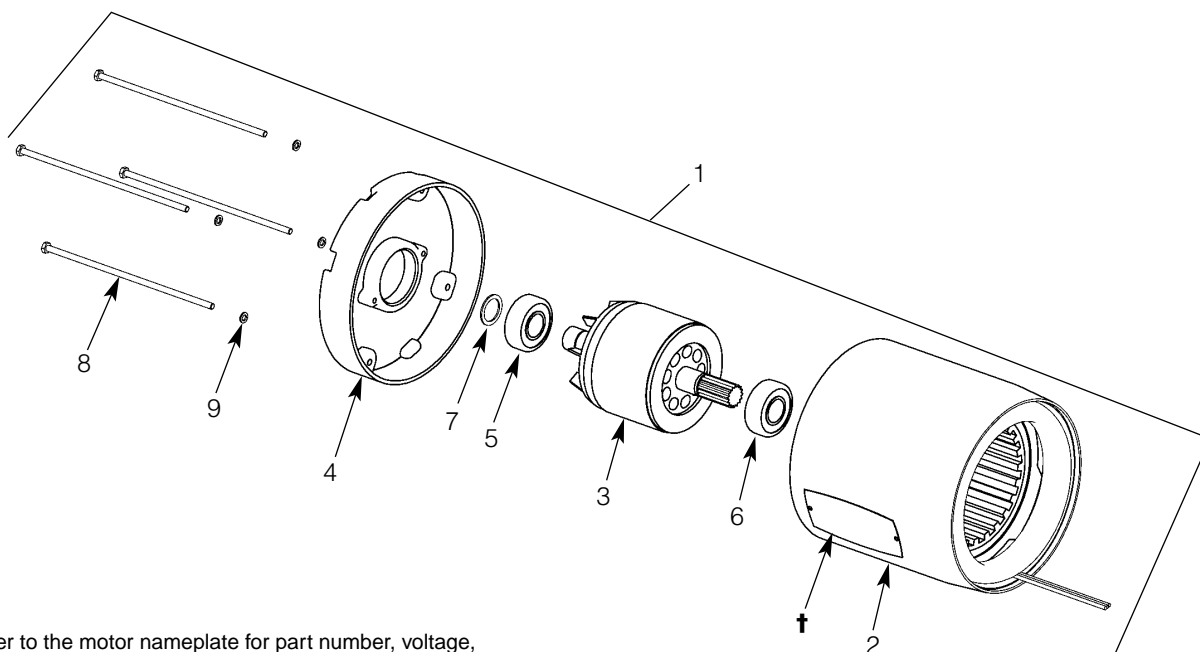
### Parts List for Basic Unit

| Ref No. | Description             | Part No. | Qty | Ref No. | Description              | Part No.  | Qty |
|---------|-------------------------|----------|-----|---------|--------------------------|-----------|-----|
| 1       | Motor                   | —        | 1   | 8       | Electrical Cover         | JF36-6    | 1   |
|         | (See Figure 11 & 12)    |          |     | 9       | 1/4" Spring Lockwasher   | H4062P    | 1   |
| 2       | Sheave Housing Screw    | H2978P   | 4   | 10      | 1/4 - 20UNC X 3/4" Screw | H1106P    | 1   |
| 3       | Sheave Housing          |          |     | 11      | 10 - 24UNC X 1/2" Screw  | H2970     | 2   |
|         | 1/2 Ton                 | JL33     | 1   | 12      | Suspension Hook w/Latch  | 3M205A01S | 1   |
|         | 1 & 2 Ton               | JL39     | 1   | 13      | Latch Kit Assembly       | 4X1305    | 1   |
| 4       | Gear Housing            |          |     | 14      | Hook Hole Cover          | JF277-1   | 1   |
|         | 1/2 Ton                 | JL35     | 1   | 15      | UJL Decal                | 677J7R    | 2   |
|         | 1 & 2 Ton               | JL44     | 1   | 16      | Capacity Decal           |           |     |
| 5       | Gearbox Gasket          | JL560    | 1   |         | 1/2 Ton                  | UJL675-1  | 1   |
| 6       | Gearbox Cover           | JL34     | 1   |         | 1 Ton                    | UJL675-2  | 1   |
| 7       | Electrical Cover Gasket | JL563    | 1   |         | 2 Ton                    | UJL675-3  | 1   |





## Figure 11 - Motor, 3-Phase



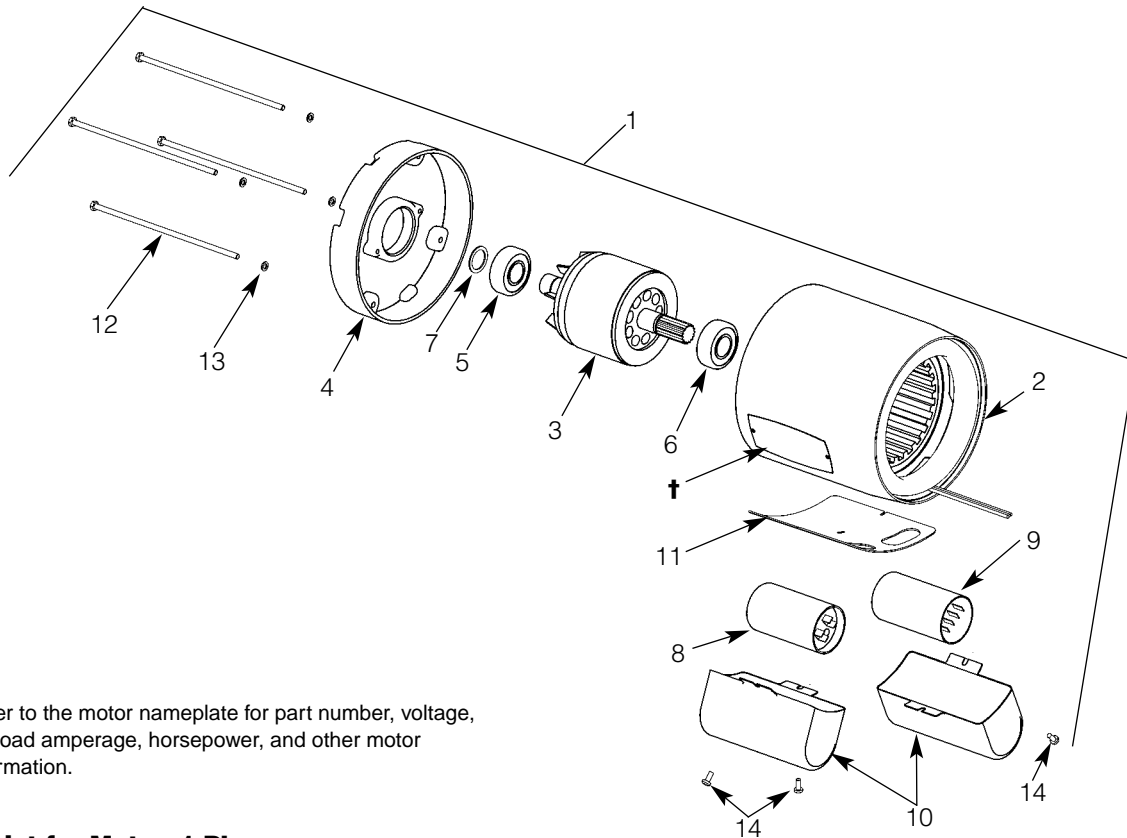
† Refer to the motor nameplate for part number, voltage, full load amperage, horsepower, and other motor information.

### Parts List for Motor, 3-Phase

| Ref. No. | Description               | Part No. | Qty. | Ref. No. | Description           | Part No.    | Qty. |
|----------|---------------------------|----------|------|----------|-----------------------|-------------|------|
| 1        | Motor                     |          |      | 2        | Stator Assembly       | *           | 1    |
|          | 1/2 hp, 230/460V-3Ph-60Hz | 863JL2   | 1    | 3        | Rotor Assembly        | *           | 1    |
|          | 1 hp, 230/460V-3Ph-60Hz   | 863JL4   | 1    | 4        | End Shield            | JL021209-20 | 1    |
|          | 1/2 hp, 208V-3Ph-60Hz     | 863JL10  | 1    | 5        | Rear Bearing          | 500K3       | 1    |
|          | 1 hp, 208V-3Ph-60Hz       | 863JL12  | 1    | 6        | Front Bearing         | 732012C     | 1    |
|          | 1/2 hp, 380V-3Ph-50Hz     | 863JL2   | 1    | 7        | Shim Washer           | JL4301-01   | 1    |
|          | 1 hp, 380V-3Ph-50Hz       | 863JL4   | 1    | 8        | Thru Bolt             |             |      |
|          | 1/2 hp, 415V-3Ph-50Hz     | 863JL26  | 1    |          | 1/2 hp                | JL003801-62 | 4    |
|          | 1 hp, 415V-3Ph-50Hz       | 863JL28  | 1    |          | 1 hp                  | JL003801-35 | 4    |
|          | 1/2 hp, 575V-3Ph-60Hz     | 863JL6   | 1    | 9        | #10 Spring Lockwasher | H4082P      | 4    |
|          | 1 hp, 575V-3Ph-60Hz       | 863JL8   | 1    |          |                       |             |      |

\* Not available as an individual part.

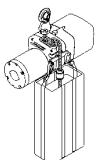
**Figure 12 - Motor, 1-Phase**



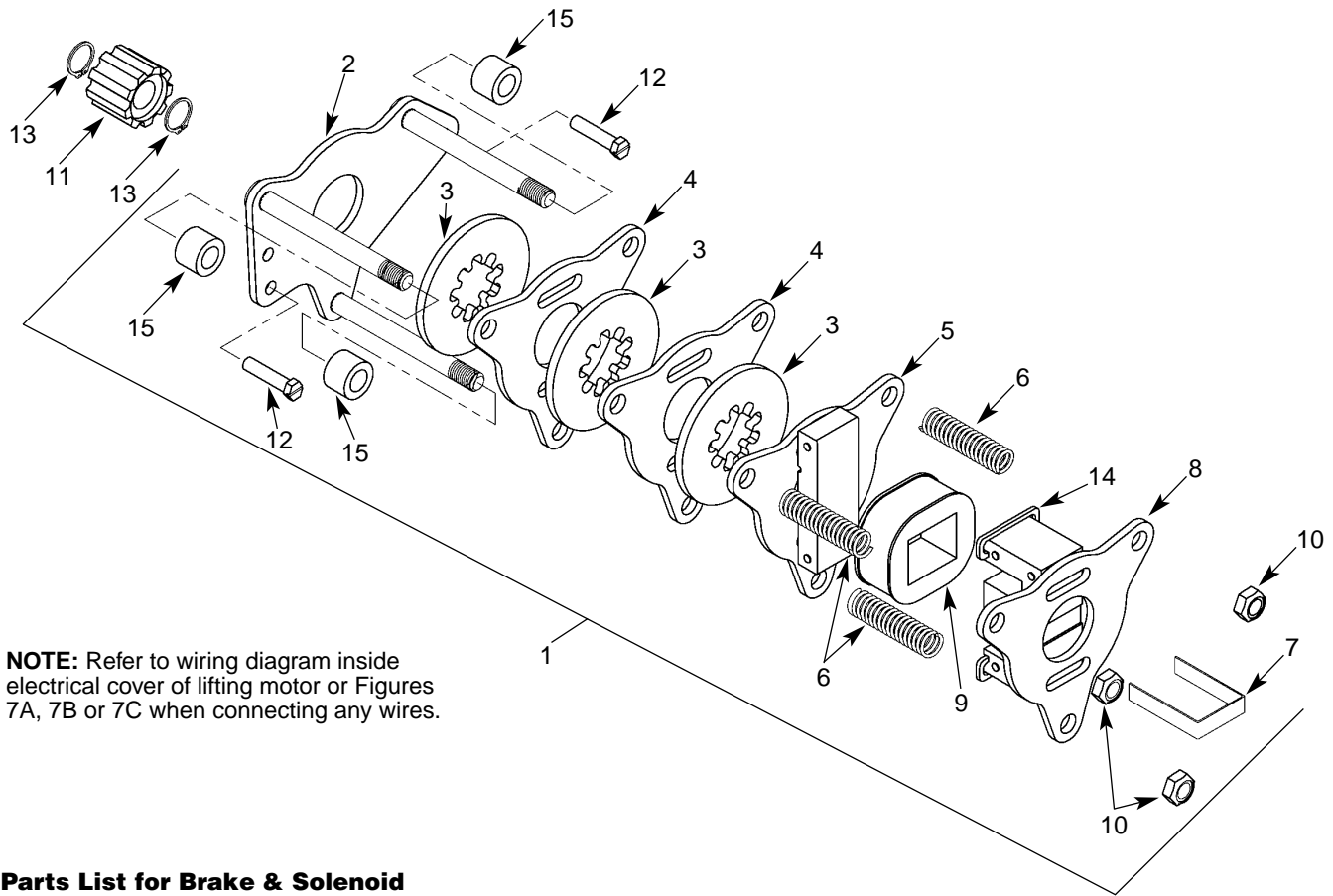
**Parts List for Motor, 1-Phase**

| Ref. No. | Description   | Part No.                   | Qty    |
|----------|---|----------------------------|--------|
| 1        | Motor<br>1/2 hp, 115/230V-1Ph<br>1 hp, 115/230V-1Ph | 861JL12<br>861JL14         | 1<br>1 |
| 2        | Stator Assembly                                     | *                          | 1      |
| 3        | Rotor Assembly                                      | *                          | 1      |
| 4        | End Shield  | JL021209-20                | 1      |
| 5        | Rear Bearing  | 500K3                      | 1      |
| 6        | Front Bearing                                       | 732012C                    | 1      |
| 7        | Shim Washer   | JL4301-01                  | 1      |
| 8        | Capacitor<br>1/2 hp<br>1 hp                         | JL810-7<br>JL810-4         | 1<br>1 |
| 9        | SINPAC® Starting Switch                             | 839J2                      | 1      |
| 10       | Capacitor/Start Switch Cover                        | JL3108-03                  | 2      |
| 11       | Gasket  | JL564                      | 1      |
| 12       | Thru Bolt<br>1/2 hp<br>1 hp                         | JL003801-41<br>JL003801-19 | 4<br>4 |
| 13       | #10 Spring Lockwasher                               | H4082P                     | 4      |
| 14       | 8-32UNC X 5/16" Screw                               | H2751                      | 3      |

\* Not available as an individual part.



## Figure 13 - Brake & Solenoid Parts



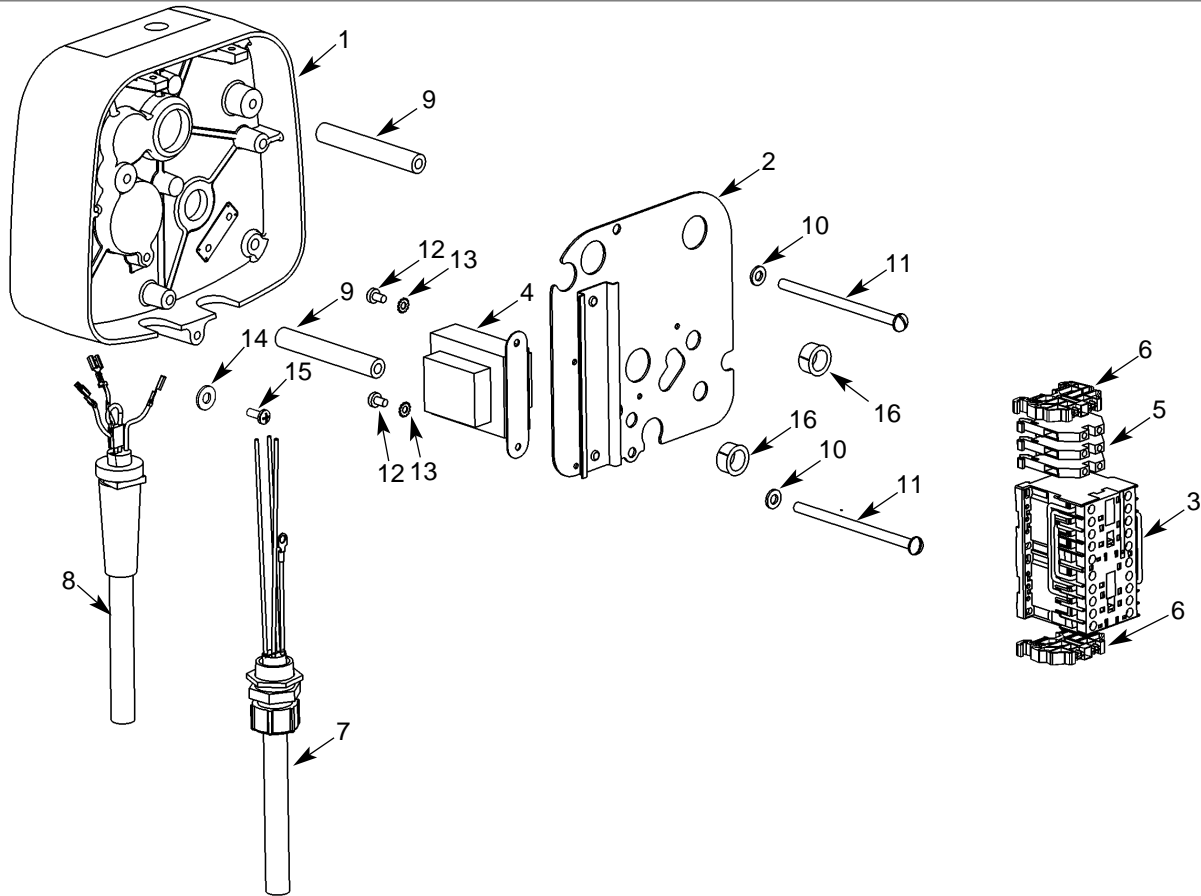
**NOTE:** Refer to wiring diagram inside electrical cover of lifting motor or Figures 7A, 7B or 7C when connecting any wires.

### Parts List for Brake & Solenoid

| Ref No. | Description           | Part No. | Qty | Ref No. | Description               | Part No. | Qty |
|---------|-----------------------|----------|-----|---------|---------------------------|----------|-----|
| 1       | Disc Brake Assembly*  |          |     | 5       | Plate & Armature Assembly | JF858    | 1   |
|         | 1/2 hp, 115V Coil*    | 854JL2   | 1   | 6       | Spring                    | 344J6    | 3   |
|         | 1 hp, 115V Coil*      | 854JL3   | 1   | 7       | Retainer                  | JF710    | 1   |
|         | 1/2 hp, 230V Coil*    | 854JL5   | 1   | 8       | Plate & Frame Assembly    | JF857    | 1   |
|         | 1 hp, 230V Coil*      | 854JL6   | 1   | 9       | Brake Coil*               |          |     |
|         | 1/2 hp, 575V Coil     | 854JL11  | 1   |         | 115V*                     | 853JL1   | 1   |
|         | 1 hp, 575V Coil       | 854JL12  | 1   |         | 230V*                     | 853JL2   | 1   |
|         | 1/2 hp, 208V Coil     | 854JL14  | 1   |         | 575V                      | 853JL4   | 1   |
|         | 1 hp, 208V Coil       | 854JL15  | 1   |         | 208V                      | 853JL5   | 1   |
|         | 1/2 hp, 380V Coil     | 854JL17  | 1   |         | 380V                      | 853JL6   | 1   |
|         | 1 hp, 380V Coil       | 854JL18  | 1   |         | 415V                      | 853JL7   | 1   |
|         | 1/2 hp, 415V Coil     | 854JL20  | 1   | 10      | Locknut                   | H3978    | 3   |
|         | 1 hp, 415V Coil       | 854JL21  | 1   | 11      | Adapter                   | JL142    | 1   |
| 2       | Plate & Stud Assembly | JF859A   | 1   | 12      | Screw                     | H2976P   | 2   |
| 3       | Brake Disc            |          |     | 13      | Retaining Ring            | H5501    | 2   |
|         | 1/2 hp                | 581J1A   | 2   | 14      | Shading Coil              | 860J1    | 2   |
|         | 1 hp                  | 581J1A   | 3   |         | Shading Coil Adhesive     | H7812    | 1   |
| 4       | Brake Plate           | JF291    | 2   | 15      | Spacer for 1/2 hp         | 141J2    | 3   |

\* **Note:** 115/230V-1Phase models use 115V brake coils.  
230/460V-3 Phase models use 230V brake coils.

**Figure 14 - Electrical Parts, 3-Phase**

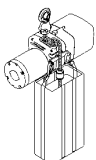


**Parts List for Electrical Parts, 3-Phase**

| Ref No. | Description                | Part No. | Qty |
|---------|----------------------------|----------|-----|
| 1       | Gear Box Cover             | JL34     | 1   |
| 2       | Panel Plate                | 257JL201 | 1   |
| 3       | Reversing Contactor*       |          |     |
|         | 24V Coil                   | 28860    | 1   |
|         | 115V Coil                  | 24799    | 1   |
| 4       | Transformer*               |          |     |
|         | Pri.: 230/460V, Sec.: 24V  | 821J432  | 1   |
|         | Pri.: 230/460V, Sec.: 115V | 821J431  | 1   |
|         | Pri.: 208V, Sec.: 24V      | 821J472  | 1   |
|         | Pri.: 208V, Sec.: 115V     | 821J471  | 1   |
|         | Pri.: 380V, Sec.: 24V      | 821J482  | 1   |
|         | Pri.: 380V, Sec.: 115V     | 821J481  | 1   |
|         | Pri.: 415V, Sec.: 24V      | 821J492  | 1   |
|         | Pri.: 415V, Sec.: 115V     | 821J491  | 1   |
|         | Pri.: 575V, Sec.: 24V      | 821J452  | 1   |
|         | Pri.: 575V, Sec.: 115V     | 821J451  | 1   |

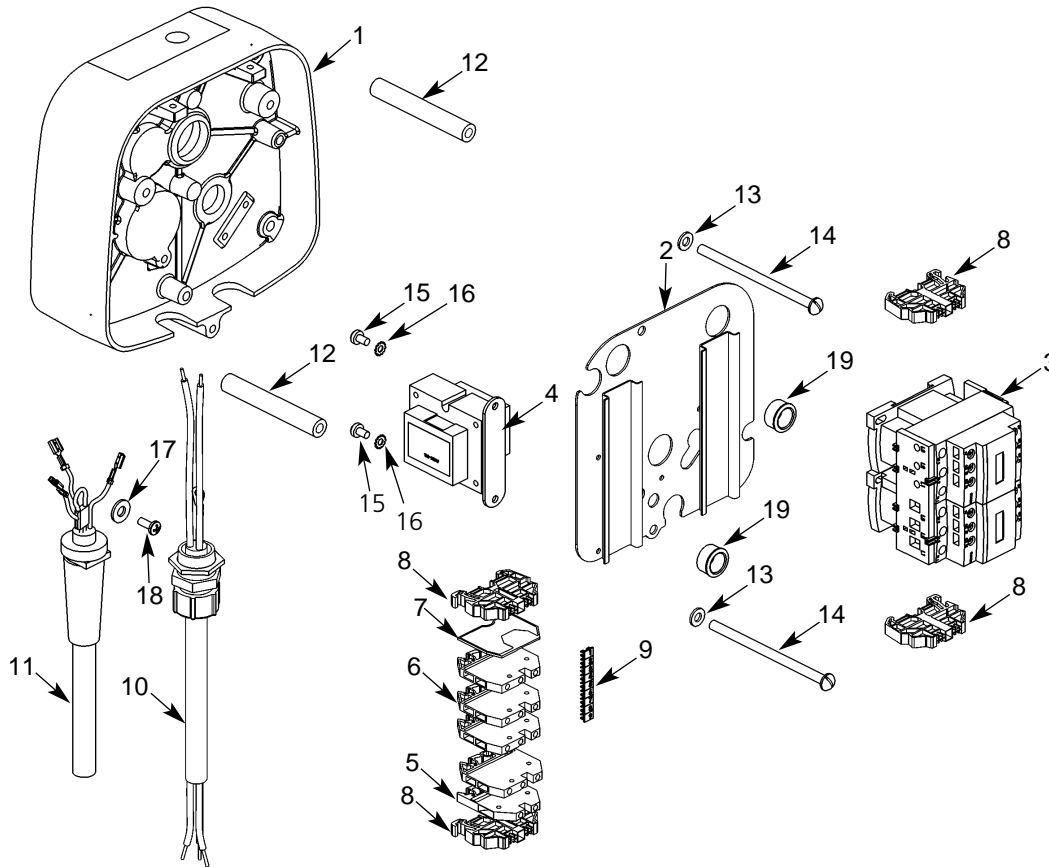
| Ref No. | Description                    | Part No. | Qty |
|---------|--------------------------------|----------|-----|
| 5       | Terminal Block, 230/460V       | 909J10   | 3   |
| 6       | End Clamp                      | 909J13   | 2   |
| 7       | Power Pigtail                  | 953JL2   | 1   |
| 8       | Control Pigtail                | 299JG4-2 | 1   |
| 9       | Panel Standoff Spacer          | 110JL1   | 2   |
| 10      | 1/4" Internal-tooth Lockwasher | H4134    | 2   |
| 11      | 1/4-20UNC X 4" Screw           | H1110P   | 2   |
| 12      | 8-32UNC X 5/16" Screw          | H2751    | 2   |
| 13      | #8 External-tooth Lockwasher   | H4158    | 2   |
| 14      | 1/4" Flatwasher                | H4002P   | 1   |
| 15      | 10-24UNC X 1/2" Screw          | H2970    | 1   |
| 16      | Grommet                        | H9086    | 2   |

\* Coil voltage of the contactor and the secondary voltage of the transformer are the same. This is referred to as the control voltage. Standard units are supplied with 115V Control.





## Figure 15 - Electrical Parts, 1-Phase

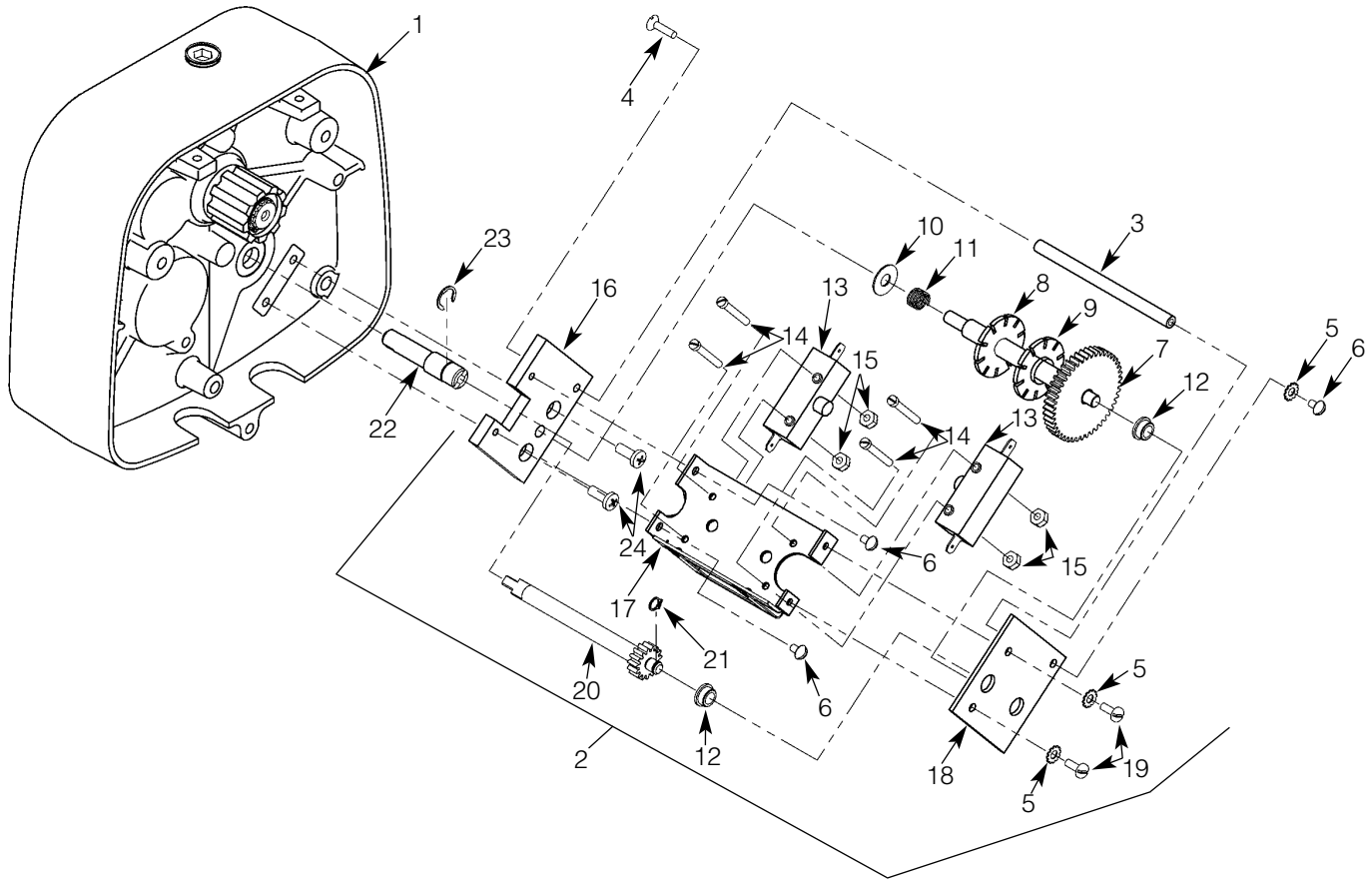


### Parts List for Electrical Parts, 1-Phase

| Ref No. | Description                | Part No. | Qty | Ref No. | Description                    | Part No. | Qty |
|---------|----------------------------|----------|-----|---------|--------------------------------|----------|-----|
| 1       | Gear Box Cover             | JL34     | 1   | 7       | End Plate                      | 909J15   | 1   |
| 2       | Panel Plate                | 257JL200 | 1   | 8       | End Clamp                      | 909J13   | 4   |
| 3       | Reversing Contactor*       |          |     | 9       | Marking Strip                  | 909J11   | 1   |
|         | 1/2 hp:                    |          |     | 10      | Power Pigtail                  | 952JL2   | 1   |
|         | 24V Coil                   | 28860    | 1   | 11      | Control Pigtail                | 299JG4-2 | 1   |
|         | 115V Coil                  | 24799    | 1   | 12      | Panel Standoff Spacer          | 110JL1   | 2   |
|         | 1 hp:                      |          |     | 13      | 1/4" Internal-tooth lockwasher | H4134    | 2   |
|         | 24V Coil                   | 24791    | 1   | 14      | 1/4-20UNC X 4" Screw           | H1110P   | 2   |
|         | 115V Coil                  | 28905    | 1   | 15      | 8-32UNC X 5/16" Screw          | H2751    | 2   |
| 4       | Transformer*               |          |     | 16      | #8 External-tooth Lockwasher   | H4158    | 2   |
|         | Pri.: 115/230V, Sec.: 24V  | 821J412  | 1   | 17      | 1/4" Flatwasher                | H4002P   | 1   |
|         | Pri.: 115/230V, Sec.: 115V | 821J411  | 1   | 18      | 10-24UNC X 1/2" Screw          | H2970    | 1   |
| 5       | Terminal Block             | 909J10   | 1   | 19      | Grommet                        | H9086    | 2   |
| 6       | Terminal Block             | 909J14   | 4   |         |                                |          |     |

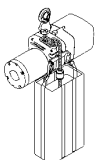
\* Coil voltage of the contactor and the secondary voltage of the transformer are the same. This is referred to as the control voltage. Standard units are supplied with 115V Control.

**Figure 16 - Limit Switch Parts**

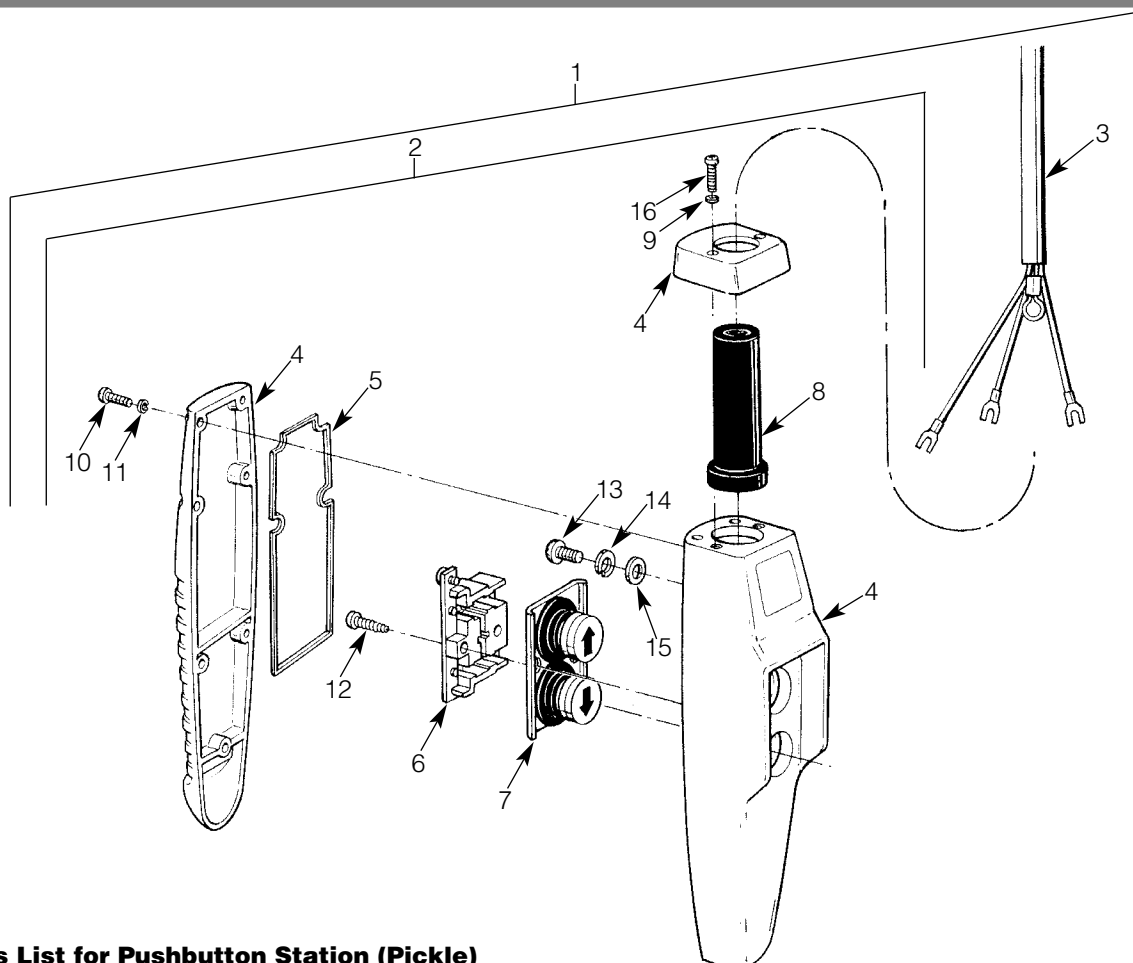


**Parts List for Limit Switch**

| Ref No. | Description                  | Part No.   | Qty | Ref No. | Description              | Part No. | Qty |
|---------|------------------------------|------------|-----|---------|--------------------------|----------|-----|
| 1       | Gear Box Cover               | JL34       | 1   | 13      | Switch                   | 815J1    | 2   |
| 2       | Limit Switch Assembly        | 944JG6     | 1   | 14      | 6-32UNC X 1" Screw       | H1402P   | 4   |
|         | (Includes items 3 - 21)      |            |     | 15      | 6-32UNC Elastic Locknut  | H3944    | 4   |
| 3       | Post                         | 110J14     | 1   | 16      | Mounting Plate           | 129J1    | 1   |
| 4       | 8-32UNC X 1/2" Screw         | H1210      | 1   | 17      | Frame and Guide Assembly | 258JG7   | 1   |
| 5       | #8 External-tooth Lockwasher | H4158      | 3   | 18      | End Plate                | 258J8    | 1   |
| 6       | 8-32UNC X 1/4" Screw         | 854823     | 3   | 19      | 8-32UNC X 3/8" Screw     | H2741P   | 2   |
| 7       | Limit Switch Shaft & Gear    | 117JG2     | 1   | 20      | Drive Pinion             | 427J1    | 1   |
| 8       | Limit Switch Nut (gold)      | SK6000-63W | 1   | 21      | Retaining Ring           | H5520    | 1   |
| 9       | Limit Switch Nut (silver)    | SK6000-63Z | 1   | 22      | Limit Switch Stub Shaft  | JL140    | 1   |
| 10      | Thrust Washer                | 255K16     | 1   | 23      | E-Ring                   | H5563    | 1   |
| 11      | Spring                       | PB287      | 1   | 24      | 10-24UNC X 3/8" Screw    | H2981P   | 2   |
| 12      | Bushing                      | JF531-4    | 2   |         |                          |          |     |



## Figure 17 - Pushbutton Station (Pickle) - Optional Accessory

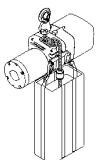
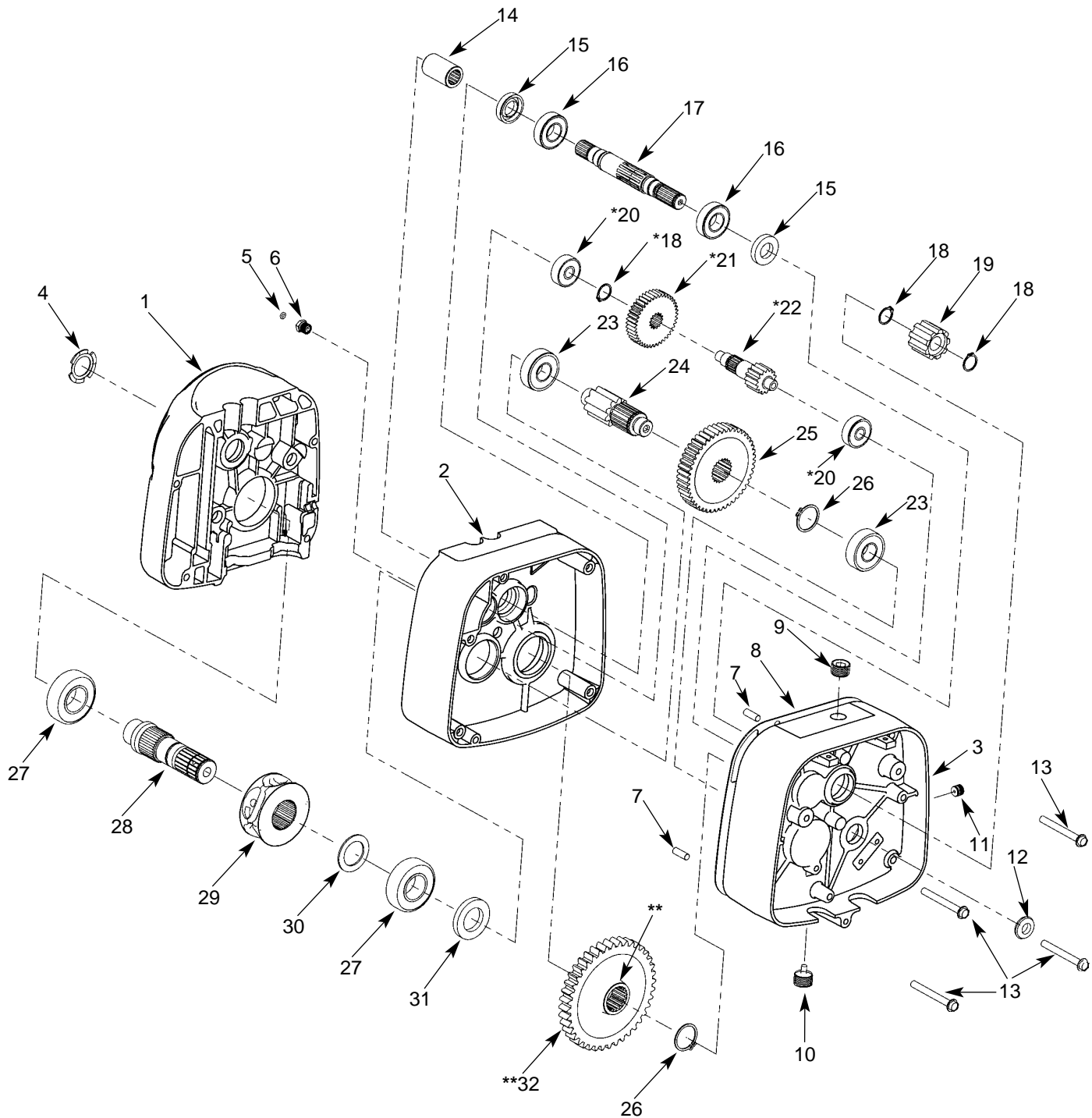


### Parts List for Pushbutton Station (Pickle)

| Ref No. | Description                                 | Part No.  | Qty | Ref No. | Description                         | Part No. | Qty |
|---------|---|-----------|-----|---------|-------------------------------------|----------|-----|
| 1       | Pushbutton Station & Control Cable Assembly |           |     | 4       | Enclosure                           | 36998    | 1   |
|         | 6 ft Cable Length                           | PB299-6C  | 1   | 5       | Gasket                              | 36986    | 1   |
|         | 11 ft Cable Length                          | PB299-11C | 1   | 6       | Contact Assembly                    | 36987    | 1   |
|         | 16 ft Cable Length                          | PB299-16C | 1   |         | (Includes Items 6 & 7 when ordered) |          |     |
|         | Special Drop                                | PB299- †C | 1   | 7       | Button Assembly                     | 36988    | 1   |
| 2       | Pushbutton Station Assembly                 | 36900     | 1   | 8       | Grommet                             | 36989    | 1   |
| 3       | Control Cable Assembly                      |           |     | *       | Hardware Kit                        | 36939    | 1   |
|         | 6 ft Cable Length                           | PBC299-6  | 1   |         | (Includes Items 9-16)               |          |     |
|         | 11 ft Cable Length                          | PBC299-11 | 1   | △       | Warning Tag                         | 687K3W   | 1   |
|         | 16 ft Cable Length                          | PBC299-16 | 1   |         |                                     |          |     |
|         | Special Drop                                | PBC299- † | 1   |         |                                     |          |     |

† Equal to cable length.

## Figure 18 - Gearbox

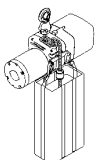
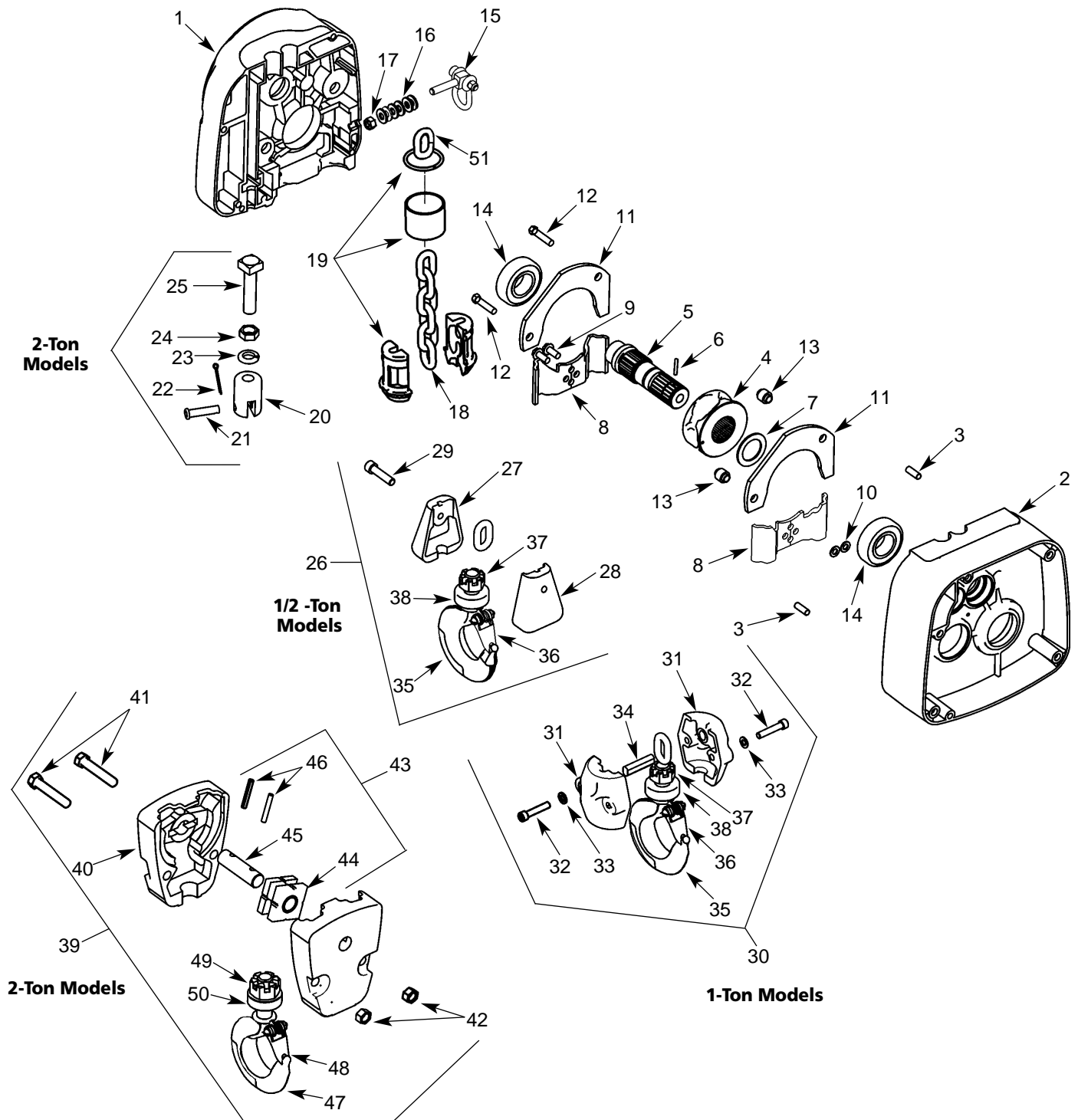


## Parts List for Gearbox

| Ref. No. | Description                       | Part No.   | Qty   |
|----------|-----------------------------------|------------|-------|
| 1        | Sheave Housing                    |            |       |
|          | 1/2 Ton                           | JL33       | 1     |
|          | 1 & 2 Ton                         | JL39       | 1     |
| 2        | Gear Housing (Includes oil seals) |            |       |
|          | 1/2 Ton                           | JL35       | 1     |
|          | 1 & 2 Ton                         | JL44       | 1     |
| 3        | Gear Box Cover                    | JL34       | 1     |
|          | (Includes oil seals)              |            |       |
| 4        | Spring Washer                     | 360J1      | 1     |
| 5        | O-Ring                            | H5605      | 1     |
| 6        | Pressure Relief Fitting           | SK1912-21W | 1     |
| 7        | Dowel Pin                         | H5382      | 2     |
| 8        | Gear Case Gasket                  | JL560      | 1     |
| 9        | Oil Fill Plug                     | S25-4      | 1     |
| 10       | Oil Drain Plug                    | H6268      | 1     |
| 11       | Oil Level Check Plug              | S25-13     | 1     |
| 12       | Oil Seal                          | JL561      | 1     |
| 13       | Screw                             | H2978P     | 4     |
| 14       | Motor Coupling                    | JL107      | 1     |
| 15       | Oil Seal                          | 561K2      | 2     |
| 16       | Bearing                           | 500K33     | 2     |
| 17       | Input Pinion                      |            |       |
|          | 8 & 16 fpm                        | JL400B     | 1     |
|          | 32 fpm                            | JL400-1    | 1     |
| 18       | Retaining Ring                    | H5501      | 3     |
| 19       | Brake Adapter                     | JL142      | 1     |
| 20       | Bearing for 8 & 16 fpm            | 500K34     | 2     |
| 21       | High Speed Gear for 8 & 16 fpm    | JL426      | 1     |
| 22       | Intermediate Pinion for           |            |       |
|          | 1/2 ton, 16 fpm                   | JL402A     | 1     |
|          | 1 & 2 ton                         | JL403A     | 1     |
| 23       | Bearing                           | 500K36     | 2     |
| 24       | Output Pinion                     | JL401      | 1     |
| 25       | Overload Clutch Assembly          |            |       |
|          | 1/2 Ton, 16 fpm                   | 591JG16    | 1     |
|          | 1/2 Ton, 32 fpm                   | 591JG21    | 1     |
|          | 1 & 2 Ton                         | 591JG17    | 1     |
| 26       | Retaining Ring                    | H5503      | 2     |
| 27       | Bearing                           | JF504-2    | 2     |
| 28       | Load Sheave Shaft Assembly        | —          | 1     |
|          | (See Figure 19)                   |            |       |
| 29       | Load Sheave                       | —          | 1     |
|          | (See Figure 19)                   |            |       |
| 30       | Spacer                            | —          | 1     |
|          | (See Figure 19)                   |            |       |
| 31       | Oil Seal                          | 561K20     | 1     |
| 32       | Output Gear                       |            |       |
|          | 1/2 Ton                           | JL420      | 1     |
|          | 1 & 2 Ton                         | JL421      | 1     |
| *        | Gear Oil                          | H7642      | 1½ pt |

\* Not Shown

## Figure 19 - Chaining Parts





### Parts List for Chaining Parts

| Ref No. | Description  | Part No. | Qty | Ref No. | Description                    | Part No. | Qty |
|---------|--|----------|-----|---------|--------------------------------|----------|-----|
| 1       | Sheave Housing                                       |          |     | 21      | Chain Support Pin              | JL18     | 1   |
|         | 1/2 Ton  | JL33     | 1   | 22      | Cotter Pin                     | H5025P   | 1   |
|         | 1 & 2 Ton  | JL39     | 1   | 23      | Lockwasher                     | H4083P   | 1   |
| 2       | Gear Housing   |          |     | 24      | 1/2-20UNF Hex Jam Nut          | H3621P   | 1   |
|         | 1/2 Ton  | JL35     | 1   | 25      | Chain Support Screw            | JF703    | 1   |
|         | 1 & 2 Ton  | JL44     | 1   | 26      | Load Block Assembly            |          |     |
| 3       | Dowel Pin  | H5382    | 2   |         | 1/2 Ton                        | 913JG4AS | 1   |
| 4       | Load Sheave  |          |     | 27      | Load Block Frame               | JF20-2   | 1   |
|         | 1/2 Ton  | JF16-4   | 1   | 28      | Load Block Frame (threaded)    | JF20-3   | 1   |
|         | 1 & 2 Ton  | JF16-3   | 1   | 29      | Load Block Screw               | JF700    | 1   |
| 5       | Load Sheave Shaft                                    | JL132    | 1   | 30      | Load Block Assembly, 1 Ton     | 913JG3AS | 1   |
| 6       | Roll Pin   | H5240    | 1   | 31      | Load Block Frame               | 30J14    | 2   |
| 7       | Spacer, 1 & 2 Ton                                    | JF285    | 1   | 32      | 1/4-20UNC x 1 1/4"             |          |     |
| 8       | Chain Guide  |          |     |         | Socket Head Cap Screw          | S49-77   | 2   |
|         | 1/2 Ton  | JF250-3  | 2   | 33      | 1/4" Internal-Tooth Lockwasher | H4134    | 2   |
|         | 1 & 2 Ton  | JF254-3  | 2   | 34      | Load Block Pin                 | 18J8     | 1   |
| 9       | Chain Guide Screw                                    | H2976P   | 2   | 35      | Load Hook Assembly             |          |     |
| 10      | Washer, 1/2 Ton                                      | H4134    | 2   |         | W/Latch, 1 Ton & Under         | 3JG20S   | 1   |
| 11      | Chain Guide Plate                                    |          |     | 36      | Latch Kit                      | 4X1304   | 1   |
|         | 1/2 Ton  | JF272    | 2   | 37      | Slotted Hex Nut                | H3986P   | 1   |
|         | 1 & 2 Ton  | JF273    | 2   | 38      | Bearing                        | JF510    | 1   |
| 12      | Chain Guide Plate Screw                              | H2692P   | 2   | 39      | Load Block Assembly, 2 Ton     | JF914-6  | 1   |
| 13      | Chain Guide Plate Spacer                             | JF127    | 2   | 40      | Load Block Frame               | JF30 1   | 2   |
| 14      | Bearing  | JF504-2  | 2   | 41      | Load Block Screw               | H2403P   | 2   |
| 15      | Dead End Shackle                                     | 945KG26  | 1   | 42      | 3/8-24 Hex Locknut             | H3964P   | 2   |
| 16      | 1/4" Flatwasher                                      | H4002P   | 6   | 43      | Sheave Shaft Assembly          | JF917-1  | 1   |
| 17      | Dead End Screw Nut                                   | H3845P   | 1   | 44      | Sheave & Bearing Assembly      | JF916    | 1   |
| 18      | Load Chain   |          |     | 45      | Sheave Shaft                   | JF122-1  | 1   |
|         | 1/4" dia., 1/2 Ton                                   | JL19B    | •   | 46      | Roll Pin                       | H5234    | 2   |
|         | 9/32" dia., 1 & 2 Ton                                | JL19-1   | •   | 47      | Load Hook Assembly             |          |     |
| 19      | Chain Stop Kit                                       |          |     |         | with Latch, 2 Ton              | 3KG1W    | 1   |
|         | 1/2 Ton  | 75JG7K   | 1   | 48      | Latch Kit                      | 4X1305   | 1   |
|         | 1 & 2 Ton  | 75JG6K   | 1   | 49      | Slotted Hex Nut                | H3991P   | 1   |
|         | (Kits include halves,<br>sleeve, and retaining ring) |          |     | 50      | Bearing                        | JF511    | 1   |
|         |  |          |     | 51      | Split Link                     | H7596    | 1   |
| 20      | Chain Support  | JF109    | 1   |         |                                |          |     |

**\* Replacement chain is sold by the foot. For single-chained models, add 2 ft to the lift for the total amount of feet. For double-chained models, double the lift and add 3 ft.**

# COFFING<sup>®</sup> WARRANTY



Every lifting motor is thoroughly inspected and performance tested prior to shipment from the factory. If any properly installed, maintained and operated lifting motor as outlined in the applicable accompanying Coffing Hoists manual develops a performance problem due to defective materials or workmanship as verified by Coffing Hoists, repair or replacement of the lifting motor will be made to the original purchaser without charge and the lifting motor will be returned, transportation prepaid. This warranty does not apply where deterioration is caused by normal wear, abuse,

improper or inadequate power supply, improper or inadequate maintenance, eccentric or side loading, overloading, chemical or abrasive actions, excessive heat, unauthorized modifications or repairs, or use of non-Coffing repair parts.

**EXCEPT AS STATED HEREIN, COFFING HOISTS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

## **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 not use equipment to lift, support or otherwise transport people**
- **Do not suspend unattended loads over people**

## **COFFING<sup>®</sup>** **HOISTS**

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